YAMAHA 2020

SERVICE MANUAL

YZF-R1
YZF-R1M

YZFR1L
YZFR1LC
YZFR1ML
YZFR1MLC

LIT-11616-33-33 **B3L-28197-10**

EAS20003

IMPORTANT

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Please refer to “BASIC INFORMATION” (separate volume, Y0A-28197-10*) for basic instructions that must be observed during servicing. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

This model has been designed and manufactured to perform within certain specifications in regard to performance and emissions. Proper service with the correct tools is necessary to ensure that the vehicle will operate as designed. If there is any question about a service procedure, it is imperative that you contact a Yamaha dealer for any service information changes that apply to this model. This policy is intended to provide the customer with the most satisfaction from their vehicle and to conform to federal environmental quality objectives.

Yamaha Motor Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

TIP

- * If the contents of the manual are revised, the last digit of the manual number will be increased by one.
- This Service Manual contains information regarding periodic maintenance to the emission control system. Please read this material carefully.
- Designs and specifications are subject to change without notice.

EAS30001

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following notations.

⚠	**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**
⚠ WARNING	**A WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.**
NOTICE	**A NOTICE indicates special precautions that must be taken to avoid damage to the vehicle or other property.**
TIP	A TIP provides key information to make procedures easier or clearer.

EAS20002

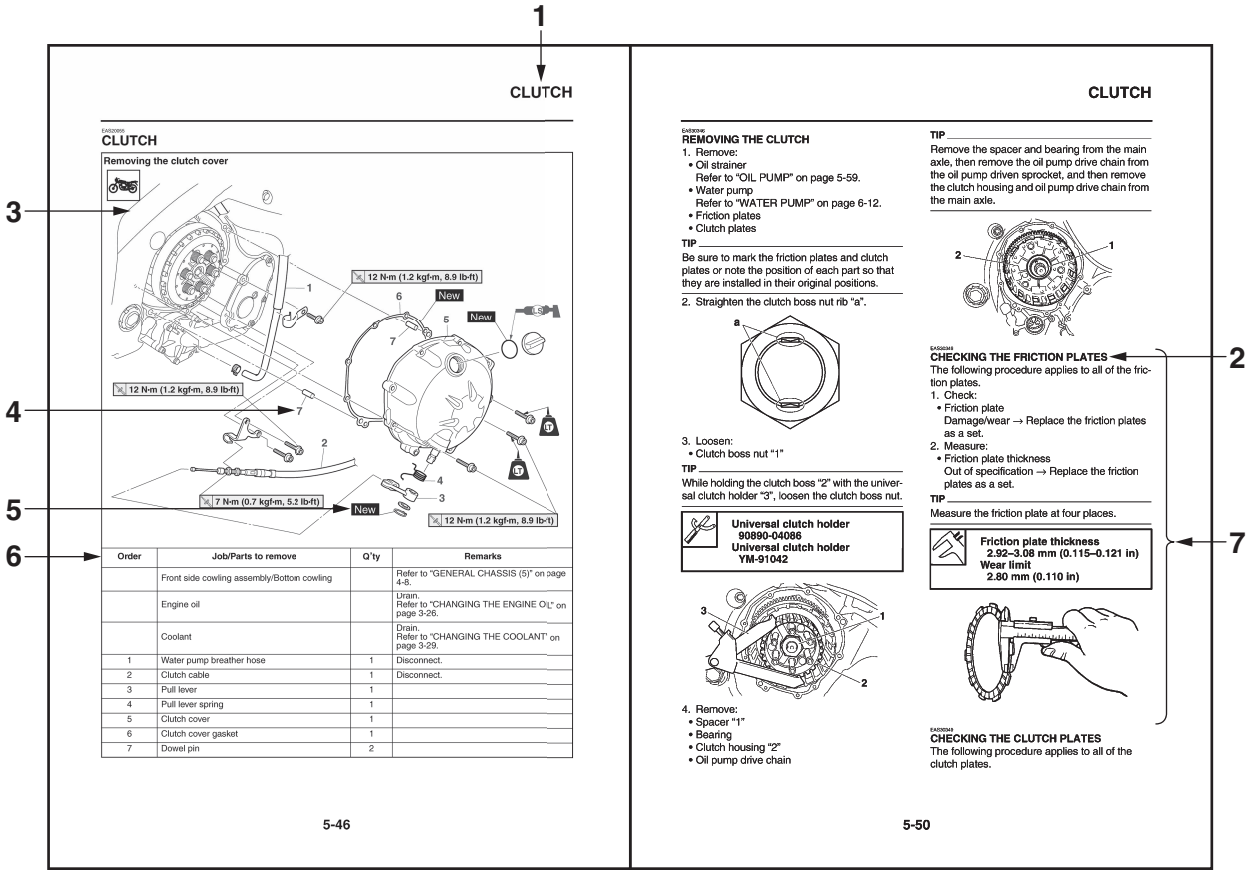
YZFR1L/YZFR1LC/YZFR1ML/YZFR1MLC
SERVICE MANUAL
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P/N LIT-11616-33-33

EAS20004

HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

- The manual is divided into chapters and each chapter is divided into sections. The current section title "1" is shown at the top of each page.
- Sub-section titles "2" appear in smaller print than the section title.
- To help identify parts and clarify procedure steps, there are exploded diagrams "3" at the start of each removal and disassembly section.
- Numbers "4" are given in the order of the jobs in the exploded diagram. A number indicates a disassembly step.
- Symbols "5" indicate parts to be lubricated or replaced.
  Refer to "SYMBOLS".
- A job instruction chart "6" accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc. This step explains removal and disassembly procedure only. For installation and assembly procedure, reverse the steps.
- Jobs "7" requiring more information (such as special tools and technical data) are described sequentially.



G088877

EAS20005

SYMBOLS

The following symbols are used in this manual for easier understanding.

TIP

The following symbols are not relevant to every vehicle.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Serviceable with engine mounted		Gear oil
	Filling fluid		Molybdenum disulfide oil
	Lubricant		Brake fluid
	Special tool		Wheel bearing grease
	Tightening torque		Lithium-soap-based grease
	Wear limit, clearance		Molybdenum disulfide grease
	Engine speed		Silicone grease
	Electrical data		Apply locking agent (LOCTITE®).
	Engine oil		Replace the part with a new one.

EAS10003

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GENERAL INFORMATION

IDENTIFICATION 1-1
VEHICLE IDENTIFICATION NUMBER 1-1
MODEL LABEL 1-1

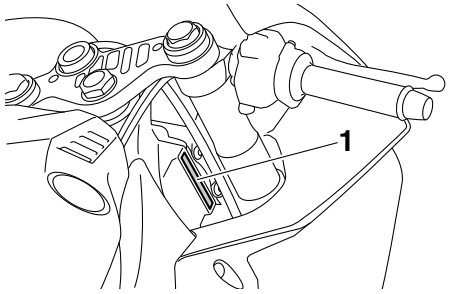
FEATURES 1-2
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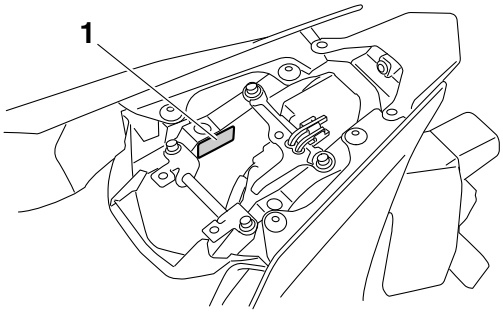
SPECIAL TOOLS 1-21

EAS20007
IDENTIFICATION

EAS30002
VEHICLE IDENTIFICATION NUMBER
The vehicle identification number “1” is stamped into the right side of the steering head pipe.



EAS30003
MODEL LABEL
The model label “1” is affixed to the frame under the passenger seat. This information will be needed to order spare parts.



EAS20008
FEATURES

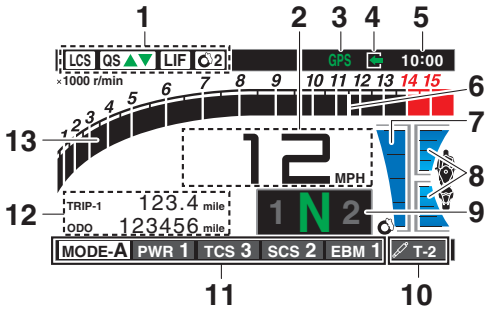
EAS31706
GLOSSARY
ABS - Anti-lock Brake System
ABS ECU - Anti-lock Brake System Electronic Control Unit
BC - Brake Control
CCU - Communication Control Unit
EBM - Engine Brake Management
ECU - Engine Control Unit
ERS - Electronic Racing Suspension
GPS - Global Positioning System
IMU - Inertial Measurement Unit
LCS - Launch Control System
LIF - Lift Control System
PWR - Power delivery mode
QS - Quick Shift
QSS - Quick Shift System
SC - Stability Control
SCS - Slide Control System
SCU - Suspension Control Unit
TCS - Traction Control System
YRC - Yamaha Ride Control

EAS31707
DISPLAY
The display has two different main screen display modes, STREET MODE and TRACK MODE. Most of the functions are viewable in either mode, but the layout differs slightly. The following items can be found on the display.
- Speedometer
- Tachometer
- Information display
- Transmission gear display
- Front brake pressure indicator
- Acceleration indicator
- YRC setting display MODE/PWR/TCS/SCS/EBM
- YRC setting display LCS/QS/LIF/BC
- ERS indicator (YZF-R1M)
- GPS indicator (CCU-equipped models)
- Logging indicator (CCU - equipped models)
- Clock
- Revolution peak hold indicator
- Lap timer
- Various warning icons
- Error mode warning “Err”

TIP

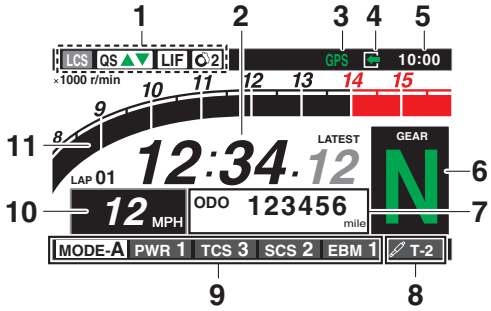
This model uses a thin-film-transistor liquid-crystal display (TFT LCD) for good contrast and readability in various lighting conditions. However, due to the nature of this technology, it is normal for a small number of pixels to be inactive.

STREET MODE



1. YRC items LCS/QS/LIF/BC
2. Speedometer
3. GPS indicator (CCU-equipped models)
4. Logging indicator (CCU-equipped models)
5. Clock
6. Revolution peak hold indicator
7. Front brake pressure indicator
8. Acceleration indicator
9. Transmission gear display
10. ERS indicator (YZF-R1M)
11. YRC items MODE/PWR/TCS/SCS/EBM
12. Information display
13. Tachometer

TRACK MODE



1. YRC items LCS/QS/LIF/BC
2. Lap timer
3. GPS indicator (CCU-equipped models)
4. Logging indicator (CCU-equipped models)
5. Clock
6. Transmission gear display
7. Information display
8. ERS indicator (YZF-R1M)

9. YRC items MODE/PWR/TCS/SCS/EBM
10. Speedometer
11. Tachometer

EWA18210

⚠ WARNING

Stop the vehicle before making any setting changes. Changing settings while riding can distract the operator and increase the risk of an accident.

Speedometer

The speedometer shows the vehicle's traveling speed.

TIP

The display can be switched between kilometers and miles. (Refer to ""Unit"" on page 1-13.)

Tachometer

The tachometer shows the engine speed, as measured by the rotational velocity of the crankshaft, in revolutions per minute (r/min).

TIP

- In TRACK MODE, the tachometer starts at 8000 r/min.
- In STREET MODE, the tachometer can be color-adjusted and has a revolution peak hold indicator which can be turned on or off.

ECA19660

NOTICE

Do not operate the engine in the tachometer red zone.

Information display

This section of the main screen is used to show additional riding related information such as air and coolant temperature readings, tripmeters, and fuel consumption statistics. The information display items can be set into four groups via the MENU screen.

The information display items are:

A.TEMP: air temperature
C.TEMP: coolant temperature
TRIP-1: tripmeter 1
TRIP-2: tripmeter 2
F-TRIP: fuel tripmeter
ODO: odometer
FUEL CON: the amount of fuel consumed
FUEL AVG: average fuel consumption
CRNT FUEL: current fuel consumption

TIP

- ODO will lock at 999999 and cannot be reset.
- TRIP-1 and TRIP-2 will reset to 0 and begin counting again after 9999.9 has been reached.
- When the fuel tank reserve level has been reached, F-TRIP appears automatically and begins recording distance traveled from that point.
- After refueling and traveling some distance, F-TRIP will automatically disappear.
- Refer to ""Unit"" on page 1-13 to change the fuel consumption units.
- The air temperature displayed may vary from the actual ambient temperature.
- In TRACK MODE, information display items FASTEST (fastest lap time) and AVERAGE (average lap time) are also available.

TRIP-1, TRIP-2, F-TRIP, FUEL CON, and FUEL AVE items can be individually reset.

[To reset information display items]

1. Use the wheel switch to scroll through the display items until the item you want to reset appears.
2. Short push the wheel switch and the item will flash for five seconds. (For STREET MODE, if both items are resettable items, the top item will flash first. Scroll down to select the bottom item.)
3. While the item is flashing, press and hold the wheel switch for one second.

Transmission gear display

This shows which gear the transmission is in. This model has 6 gears and a neutral position. The neutral position is indicated by the neutral indicator light "**N**" and by the transmission gear display "**N**".

Front brake pressure indicator

This shows how much braking power is being applied to the front brakes.

Acceleration indicator

This shows the vehicle's forward acceleration and deceleration forces.

Revolution peak hold indicator

This small bar momentarily appears within the tachometer to mark the most recent peak engine speed.

YRC items MODE/PWR/TCS/SCS/EBM

The current MODE (YRC mode) and its related PWR, TCS, SCS, and EBM settings are shown here.

The individual settings for YRC items PWR, TCS, SCS, LCS, QSS, LIF, EBM, and BC can be organized into four groups and set independently for each group. These groups of settings are the YRC modes MODE-A, MODE-B, MODE-C, and MODE-D. Use the mode switch to change YRC modes or make YRC item setting changes from the main screen.

TIP

The YRC modes come preset from the factory for different riding conditions.

When using the factory presets, the suggested YRC modes are as follows.

MODE-A: suitable for track riding

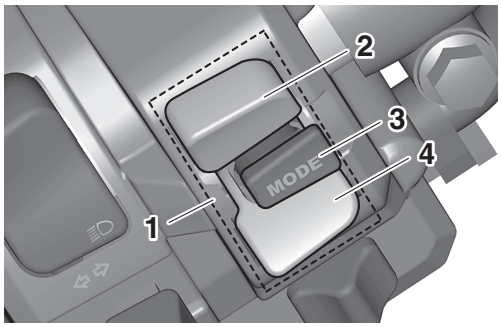
MODE-B: softer track-riding setting

MODE-C: suitable for road use

MODE-D: street use or rainy weather

[To change YRC modes or make setting changes]

1. Push the mode switch center button to scroll left to right and highlight the item you want to adjust.

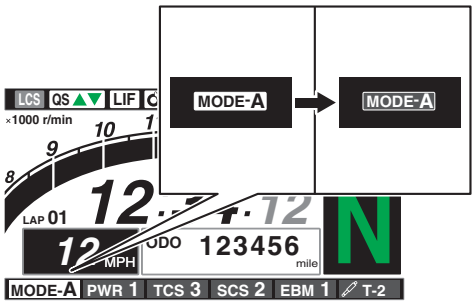


1. Mode switch “MODE”
2. Up button
3. Center button
4. Down button

2. Use the mode switch up button or down button to change the selected item value (vertical scrolling is not possible).

TIP

- When the malfunction indicator light is on, YRC settings cannot be adjusted.
- When a YRC function is actively engaged that item cannot be adjusted. For example, when decelerating EBM cannot be adjusted.
- When a YRC item is highlighted but cannot be adjusted, the YRC item box will return to black.



To turn off the traction control system select TCS with the center button, then push and hold the up button until TCS OFF is displayed. To turn TCS back on, select TCS OFF and then press the down button (TCS will return to its previous setting).

TIP

Turning off the traction control system will turn off the SCS, LCS, and LIF systems for all YRC modes.

YRC items LCS/QS/LIF/BC

The on/off status of YRC items LCS, QSS, LIF, and BC is shown here. When any of these systems are registered (not set to OFF) for the currently selected YRC mode, its respective icon will appear.

When LCS is registered for the currently selected YRC mode, its icon will be grey. To activate the launch control system, press and hold the center button until the LCS icon stops flashing and turns white.

TIP

LCS, QSS, LIF, and BC system setting levels can only be adjusted from the MENU screen.

ERS indicator (YZF-R1M)

This icon shows the current ERS mode. (Refer to ““YRC Setting”” on page 1-7 and “ERS (YZF-R1M)” on page 1-10 to change the registered ERS mode or adjust ERS setting levels.) If the ERS mode disappears from the ERS indicator (the icon turns blank), stop the vehicle and wait a few seconds until the mode reappears.

TIP

- The suspension will remain fixed at its most recent settings until self-reset has completed.

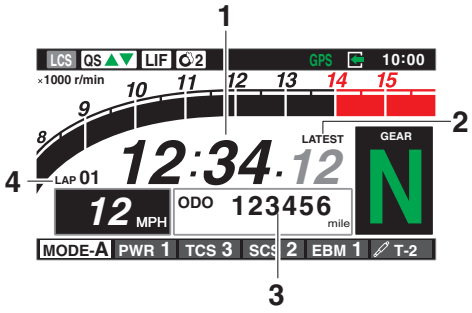
- If the ERS indicator does not return to normal. (Refer to “ELECTRONICALLY ADJUSTABLE SUSPENSION SYSTEM (for YZF-R1M)” on page 9-29.)

GPS indicator (CCU-equipped models)
This icon comes on when a GPS unit is synched with your vehicle.

Logging indicator (CCU-equipped models)
This icon comes on when vehicle data is being recorded via the logging function.

Clock
The clock uses a 12-hour time system.

Lap timer
This stopwatch function measures and records up to forty laps. On the main screen, the lap timer shows the current lap time and lap number (indicated by the LAP mark). Use the Pass/LAP switch to mark lap times. When a lap is completed, the lap timer will show the latest lap time (marked by the LATEST indicator) for five seconds.

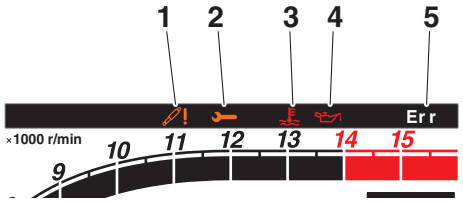


1. Lap time
2. Latest lap time indicator “LATEST”
3. Information display item
4. Lap number

[To use the lap timer]
1. Short push the wheel switch. The information display item will flash for five seconds.
2. While the information display item is flashing, rotate the wheel switch upward. The lap timer will flash for five seconds.
3. While the lap timer is flashing, long push the wheel switch to activate the lap timer or stop the lap timer.
4. When the lap timer has been activated, press the Pass/LAP switch to start the lap timer.

TIP
- The engine must be running to use the lap timer.
- Set the information display to FASTEST or AVERAGE for additional lap time information.
- Accessing the MENU screen will automatically stop the lap timer.
- Whenever the lap timer is stopped, the current lap will not be recorded.
- The lap time record can be viewed and reset from the MENU screen.

Warning icons



1. SCU trouble warning “ ”
2. Auxiliary system warning “ ”
3. Coolant temperature warning “ ”
4. Oil pressure warning “ ”
5. Error mode warning “Err”

When an error is detected, the following error-related warning icons will then be viewable.

SCU trouble warning (YZF-R1M)
This icon appears if a problem is detected in the front or rear suspension.

Auxiliary system warning
This icon appears if a problem is detected in a non-engine-related system.

Coolant temperature warning
This icon appears if the coolant temperature reaches 117 °C (242 °F) or higher. Stop the vehicle and turn off the engine. Allow the engine to cool.

ECA10022
NOTICE

Do not continue to operate the engine if it is overheating.

Oil pressure warning
This icon appears when the engine oil pressure is low. When the main switch is first turned to ON, engine oil pressure has yet to build, so this icon will come on and stay on until the engine has been started.

TIP
If a malfunction is detected, the oil pressure warning icon will flash repeatedly.

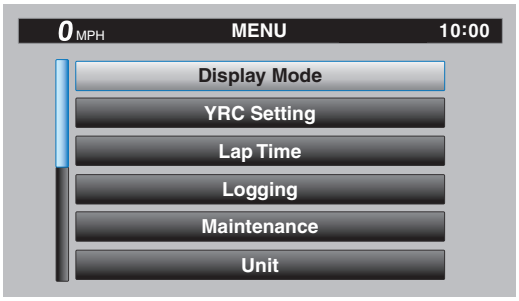
ECA22790
NOTICE

If the warning light comes on when the engine is running, stop the engine immediately and check oil level. If the oil level is below the minimum level, add sufficient oil of the recommended type to raise it up to the correct level. If the oil pressure warning light remains on even if the oil level is correct, immediately turn the engine off and check the vehicle.

Error mode warning
When an internal error occurs (e.g., communication with a system controller has been cut off), the error mode warning will appear as follows.
"Err" and "🔧" indicates an ECU error.
"Err" and "✎!" indicates an SCU error.
"Err" only indicates an ABS ECU error.

TIP
Depending on the nature of the error, the display may not function properly and YRC settings may be impossible to change. Additionally, ABS may not function properly. Use extra care when braking and check the vehicle immediately.

EAS31708
MENU SCREEN



The MENU screen contains the following setting modules. Select a module to make related setting changes. Although some settings can be changed or reset via the main screen, the MENU screen offers access to all display and control settings.

Module	Description
Display Mode	Switch the main screen display between street and track modes.
YRC Setting	Adjust YRC settings (all models) and ERS settings (YZF-R1M).
Lap Time	View and reset lap times.
Logging	Turn vehicle information logging function on/off (CCU-equipped models).
Maintenance	View and reset three maintenance item intervals.
Unit	Set fuel consumption and distance units.
Wallpaper	Set background colors.
Shift Indicator	Turn the shift indicator on/off and adjust tachometer settings.
Display Setting	Set the multi-function display window items.
Brightness	Adjust screen brightness.
Clock	Adjust the clock.
All Reset	Return all settings to factory default settings.

MENU access and operation
The following wheel switch operations are common operations for accessing, selecting, and moving within the MENU screen and its modules.
Long push - press and hold the wheel switch for one second to access the MENU screen or exit MENU entirely.

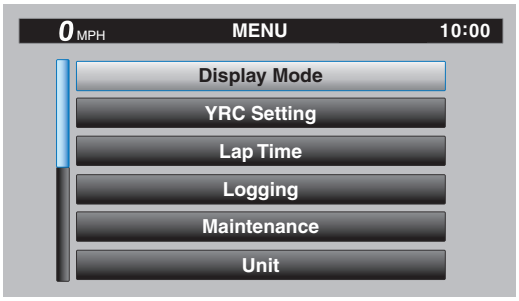
Select - rotate the wheel switch up or down to highlight the desired module or setting item and then short push the wheel switch (briefly press the wheel switch inward) to confirm the selection.
Triangle mark - certain setting screens have an upward pointing triangle mark item. Select the triangle mark to save setting changes made and exit that screen.

TIP

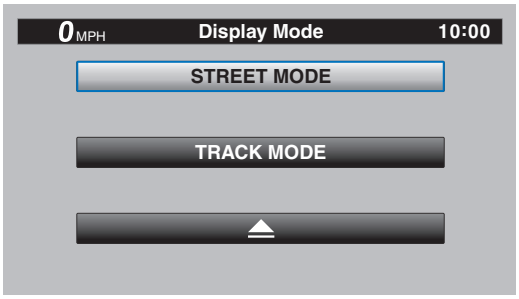
- Should vehicle motion be detected, the screen will automatically exit MENU and change to the main screen.
- To ensure that the desired setting changes are saved, be sure to exit via the triangle mark. Simply performing a long push and exiting the MENU screen entirely may not save setting changes.

"Display Mode"
There are two main screen display modes, STREET MODE and TRACK MODE.

[To set the main screen display mode]
1. From the MENU screen, select "Display Mode".



2. Select "STREET MODE" or "TRACK MODE" (or select the triangle mark to exit).



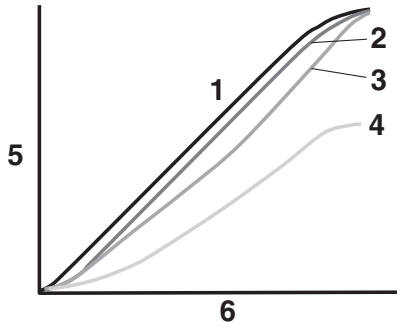
3. Long push the wheel switch to exit the MENU screen or use the wheel switch to select another module.

"YRC Setting"
This module allows you to customize the four YRC modes MODE-A, MODE-B, MODE-C, and MODE-D by adjusting the setting levels (or on/off status as applicable) of YRC items PWR, TCS, SCS, LCS, QSS, LIF, EBM, and BC. For YZF-R1M, you can select the ERS mode to be associated with each YRC mode, and also adjust the setting levels of the ERS modes.

TIP

- TCS has 9 setting levels and ERS has 6 modes.
- Whenever there are more selections (setting levels or modes) available than can be shown on the screen at one time, a scroll bar will appear to notify you that additional selections are available by scrolling.

PWR
Select PWR-1 for the most aggressive throttle response, PWR-2 and PWR-3 for smoother throttle grip/engine response, and use PWR-4 for rainy days or whenever less engine power is desirable.



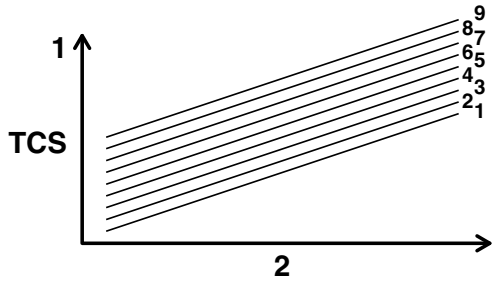
1. PWR 1
2. PWR 2
3. PWR 3
4. PWR 4
5. Throttle valve opening
6. Throttle grip operation

TCS
This model uses a variable traction control system. For each setting level, the further the vehicle is leaned over, the greater the amount of traction control (system intervention) is applied. There are 9 setting levels available. Setting level

1 applies the least amount of overall system intervention, while setting level 9 applies the greatest amount of overall traction control.

TIP

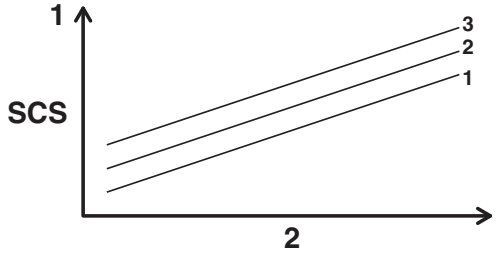
- TCS can only be turned on or off via the main screen using the mode switch.
- When TCS has been turned off, TCS, SCS, LCS, and LIF will be set to OFF and cannot be adjusted. When TCS is turned on again, these related-traction control functions will return to their previous setting levels.



1. System intervention
2. Lean angle

SCS

SCS can be set to OFF, 1, 2, and 3. OFF turns the slide control system off, setting level 1 provides the least amount of system intervention, and setting level 3 provides the greatest amount of system intervention.



1. System intervention
2. Sideward slide

LCS

LCS can be set to 1, 2, or OFF. Setting level 1 keeps engine speed from rising above 9000 r/min even when the throttle grip is fully turned. Setting level 2 keeps engine speed from rising above 8000 r/min. OFF disables the LCS function from the selected YRC mode (the LCS icon will not appear and the launch control function cannot be activated).

When LCS has been set to level 1 or 2 for the selected YRC mode, the LCS indicator on the main screen will appear in a grey color to indicate that LCS is available. When the launch control system has been activated (made ready for use via the mode switch), the LCS indicator will turn white.

TIP

LCS works in conjunction with the LIF system. LCS cannot be used if LIF is turned off.

QSS

The quick shift system is divided into QS ▲ (upshift) and QS ▼ (downshift) sections. QS ▲ and QS ▼ are not linked and can be independently turned on or off.

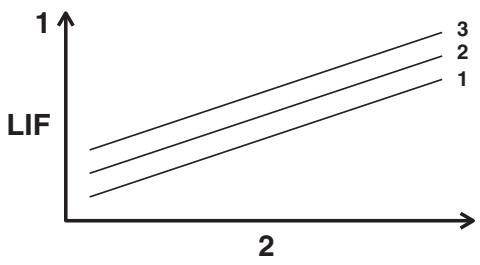
QS ▲ can be set to 1, 2, or OFF. Setting level 1 is designed for maximum acceleration, while setting level 2 is designed to give smooth shifts at halfway or less throttle openings. OFF turns the respective upshift or downshift function off, and the clutch lever must then be used when shifting in that direction.

TIP

- Set QS ▲ to 1 for track or sporty riding.
- Set QS ▲ to 2 for touring or around town-riding.

LIF

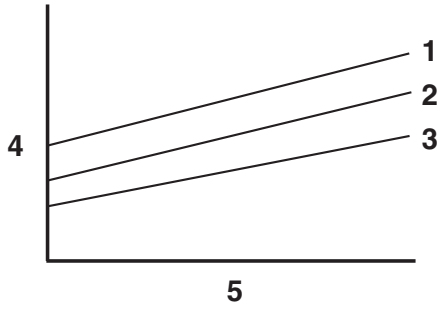
LIF can be set to 1, 2, 3, or OFF. Setting level 3 most strongly reduces wheel lift, and setting level 1 provides the least amount of system intervention. OFF turns LIF off and LCS will be disabled for the selected YRC mode.



1. System intervention
2. Wheel lift

EBM

The engine brake management system reduces engine torque when decelerating. The fuel injection, ignition timing, and electronic throttle valve are electronically adjusted by the ECU. There are 3 settings to suit the track, riding conditions, or your personal preference.



1. EBM1
2. EBM2
3. EBM3
4. Engine brake force
5. Engine r/min

BC

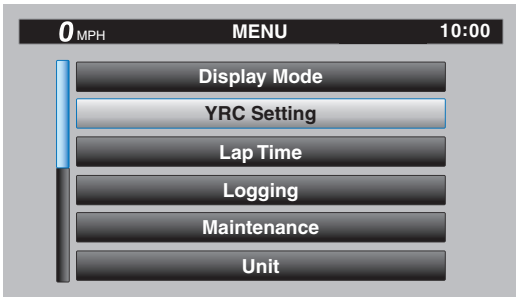
Select BC1 when only standard ABS is desired. Select BC2 to have the brake control system regulate brake pressure while cornering to suppress lateral wheel slip.

TIP

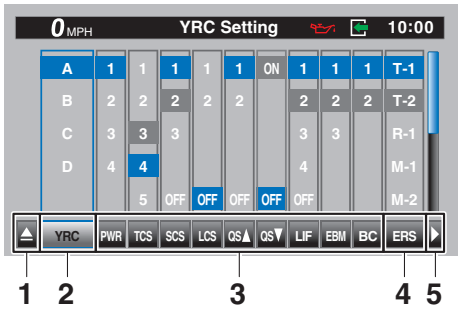
For skilled riders and when riding at the track, due to varying conditions BC2 brake system engagement may come on sooner than expected relative to your desired cornering speed or intended cornering line.

[To customize a YRC mode or adjust a YRC item]

1. From the MENU screen, select "YRC Setting".

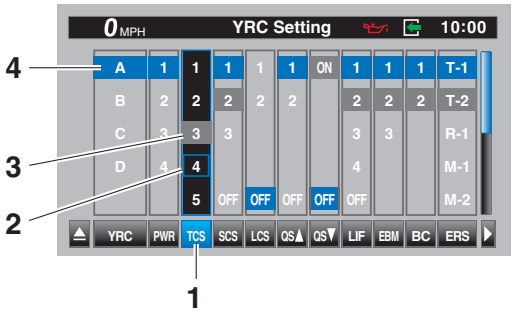


2. The "YRC Setting" screen is displayed, and the YRC mode box "YRC" is highlighted. Short push the wheel switch to enter the box and then select the YRC mode A, B, C or D that you want to adjust.



1. Triangle mark
2. YRC mode box
3. YRC item
4. ERS mode (YZF-R1M)
5. To ERS menu (YZF-R1M)

3. Select the YRC item PWR, TCS, SCS, LCS, QS▲, QS▼, LIF, EBM, BC, or ERS (YZF-R1M) that you want to adjust.



1. YRC item
2. Current level setting
3. Factory preset level
4. YRC mode

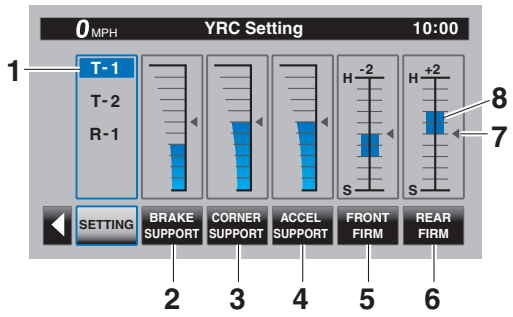
TIP

- When a YRC item is selected, the current setting level is indicated by a blue-framed square and the factory preset level is indicated in a grey box.
- Factory preset levels vary depending on the selected YRC mode.

4. To customize other YRC modes or adjust individual YRC items, repeat from step 2. When finished, select the triangle mark on the far left to return to the MENU screen, or for YZF-R1M select the "▶" mark to fine tune

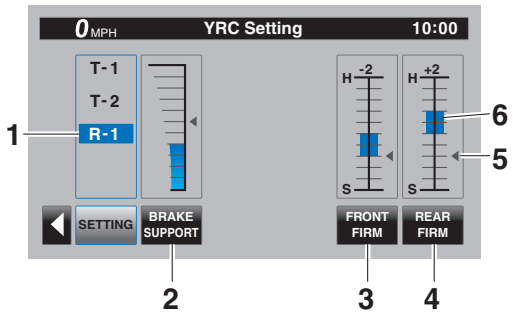
the ERS mode settings.

ERS (YZF-R1M)



1. ERS mode
2. Braking support level
3. Cornering support level
4. Acceleration support level
5. Front overall damping level
6. Rear overall damping level
7. Factory preset level
8. Current level

The ERS consists of three semi-active automatic modes (T-1, T-2, R-1) and three manual setting modes (M-1, M-2, M-3). When an automatic mode is selected, the SCU will adjust the compression and rebound damping forces based on running conditions. For all modes and models, spring preload is physically adjusted by hand.
For track modes T-1 and T-2, the following settings can be adjusted:
BRAKE SUPPORT: reduces nosedive (front-end pitch from braking)
CORNER SUPPORT: increases damping to absorb chassis fluctuations for smooth cornering. Reduce this setting for increased rear wheel grip.
ACCEL SUPPORT: reduces rear-end squat (rear-end pitch due to acceleration)
FRONT FIRM: hardens "H" or softens "S" overall damping of the front suspension
REAR FIRM: hardens "H" or softens "S" overall damping of the rear suspension

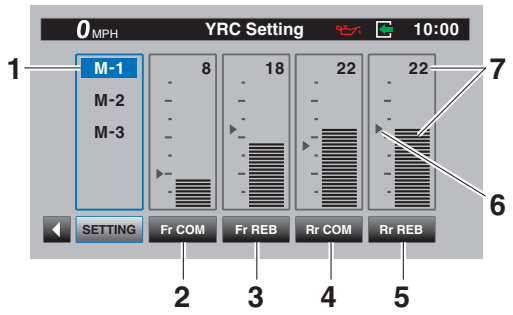


1. ERS mode
2. Braking support level
3. Front overall damping level
4. Rear overall damping level
5. Factory preset level
6. Current level

For the road mode R-1, the following settings can be adjusted:
BRAKE SUPPORT: reduces nosedive (front-end pitch from braking)
FRONT FIRM: hardens "H" or softens "S" overall damping of the front suspension
REAR FIRM: hardens "H" or softens "S" overall damping of the rear suspension

TIP

- T-1 is preset for track use with racing slick tires.
- T-2 is preset for track use with street tires.
- R-1 is preset for road use with street tires.



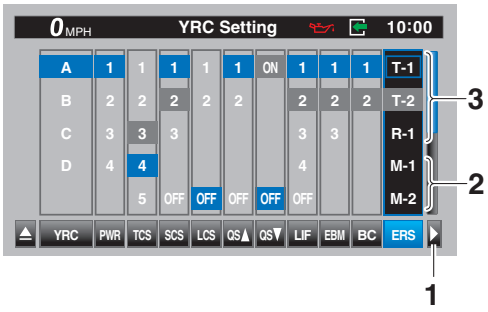
1. ERS mode
2. Front compression damping force
3. Front rebound damping force
4. Rear compression damping force
5. Rear rebound damping force
6. Factory preset level
7. Current level setting

For the manual setting modes M-1, M-2, and M-3, the following settings can be adjusted:
Fr COM: front compression damping
Fr REB: front rebound damping
Rr COM: rear compression damping
Rr REB: rear rebound damping

TIP

- M-1 is preset for track use with racing slick tires.
- M-2 is preset for track use with street tires.
- M-3 is preset for street use with street tires.

[To adjust the ERS mode settings]

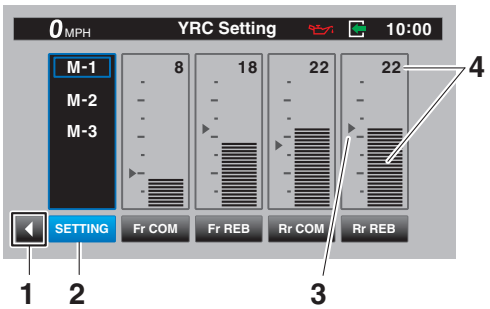


1. To ERS menu
2. Manual modes
3. Automatic modes

TIP

The ERS setting menu is divided into automatic and manual setting modes, and the two types are accessed separately. Before moving to the ERS setting menu, make sure the current ERS mode corresponds to the same type (automatic or manual) that you want to adjust.

1. Select the "▶" mark located to the right of ERS.
2. The display will change to the relevant suspension setting screen and the ERS mode selection box "SETTING" is highlighted. Short push the wheel switch to enter the box and select the ERS mode that you want to adjust.



1. To YRC Setting menu
2. ERS mode selection box "SETTING"
3. Factory preset level
4. Current level setting

3. Select the suspension item that you want to adjust, and then rotate the wheel switch to adjust the setting level.

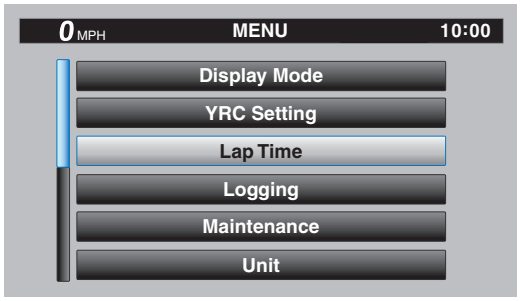
TIP

All ERS modes regardless of type are independent. Offset level setting changes made in one mode are not transferred to another mode.

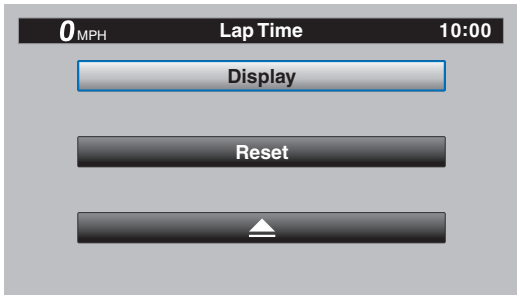
4. To adjust other ERS modes of the same type, repeat from step 1. To switch types or when finished, select the "◀" mark to return to the main "YRC Setting" menu.

"Lap Time"

This module allows you to view and delete the lap time record. The fastest lap and the average lap time stored in the lap time record are displayed at the top of the screen. Use the wheel switch to scroll and see all lap times. The top three fastest laps will be highlighted in silver. Up to 40 laps can be stored in memory. If more than 40 laps are recorded, the oldest laps (starting from lap 1) will be overwritten.

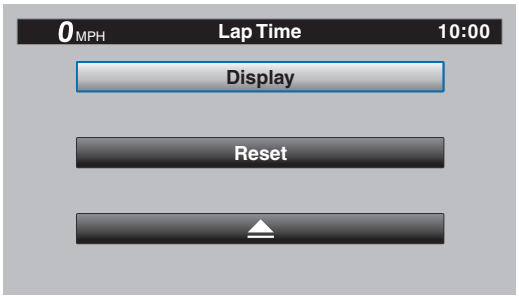


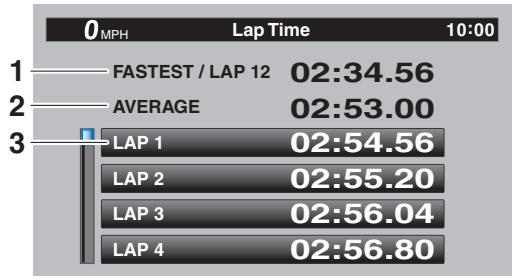
This module has two options. "Display" allows you to view the lap time record. "Reset" allows you to delete the lap time record data.



[To view the lap time record data]

1. Select “Display”.

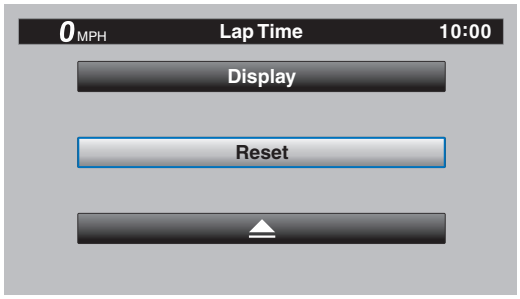




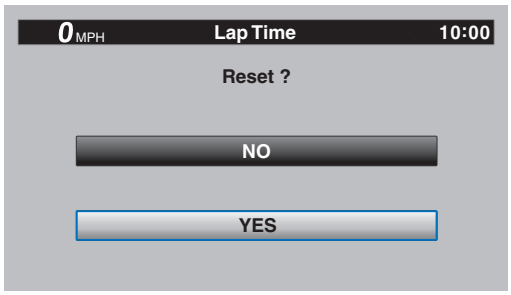
1. Fastest lap
2. Average lap time
3. Lap time record

[To reset the lap time record data]

1. Select “Reset”.



2. Select “YES” to delete all lap time data. (Select “NO” to exit and return to the previous screen without resetting the lap record.)

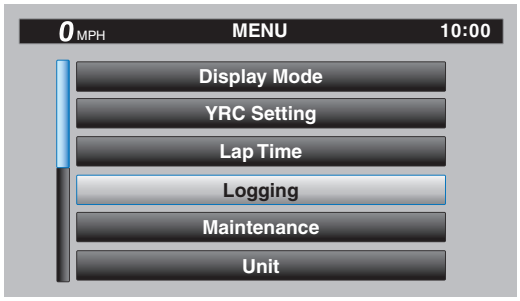


“Logging” (for CCU-equipped models)

Vehicle and riding information can be recorded (logged) and this data can be accessed with a smart device. (Refer to “CONNECTING TO THE CCU (for YZF-R1M)” on page 4-8.)

[To start and stop logging]

1. From the MENU screen, select “Logging”.



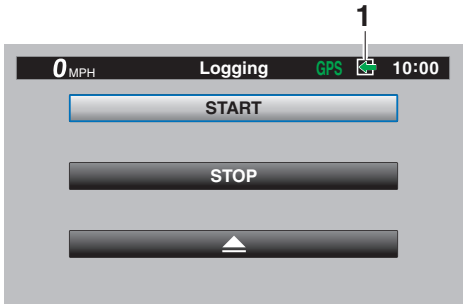
TIP

If a CCU is not installed, then the “Logging” module cannot be selected.

2. Select “START” to start logging.

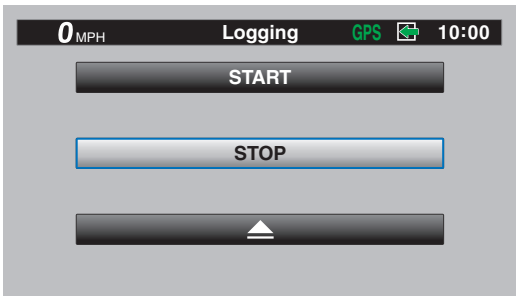
TIP

The arrow of the logging indicator is displayed in green.



1. Logging indicator

3. To stop the “Logging” function, select “STOP” or turn the vehicle off.



TIP

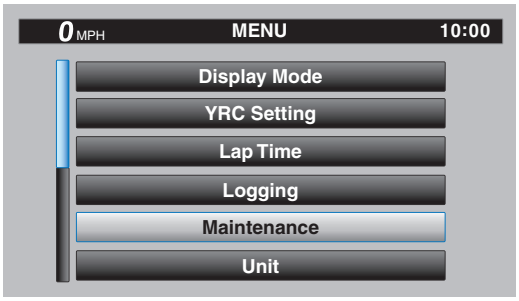
The logging function will also start automatically when you start off.

"Maintenance"

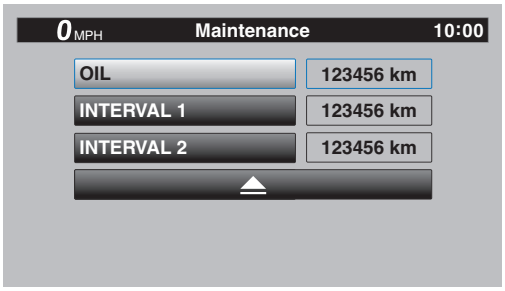
This module allows you to record distance traveled between engine oil changes (use the OIL item), and for two other items of your choice (use INTERVAL 1 and INTERVAL 2).

[To reset a maintenance item]

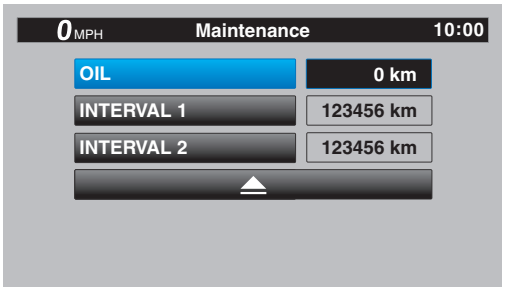
1. From the MENU screen, select "Maintenance".



2. Select the item you want to reset.



3. Long push the wheel switch to reset the item.



TIP

Maintenance item names cannot be changed.

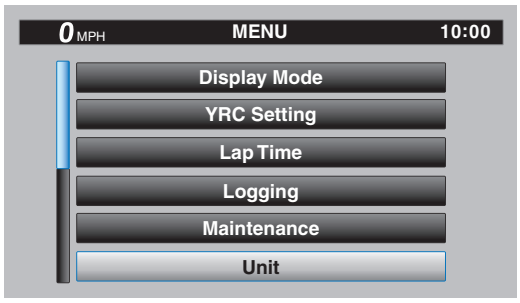
"Unit"

This module allows you to switch the display between kilometers and miles.

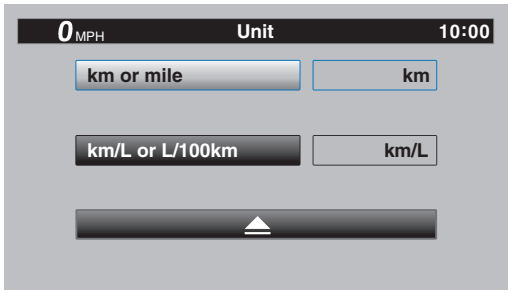
When using kilometers, the fuel consumption units can be changed between km/L or L/100km. When using miles, MPG will be available.

[To set the distance or fuel consumption units]

1. From the MENU screen, select "Unit".



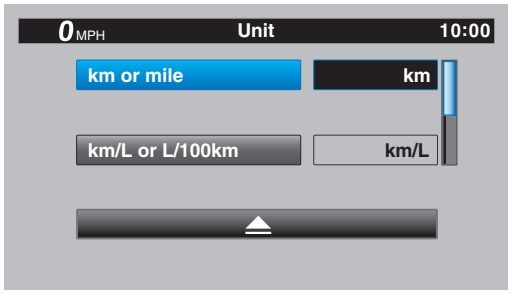
2. Select the distance or consumption unit item you want to adjust.



TIP

When "km" is selected, "km/L" or "L/100km" can be set as the fuel consumption units. To set the fuel consumption units, proceed as follows. If "mile" is selected, skip step 3.

3. Select the units you want to use.



4. Select the triangle symbol to exit.

"Wallpaper"

This module allows you to individually set the STREET MODE and TRACK MODE display background colors to black or white for both day

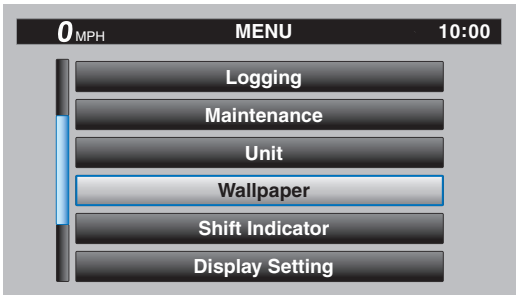
and night settings. A photo sensor equipped in the instrument panel detects lighting conditions and will automatically change the display between its day and night settings. The photo sensor also controls a subtle automatic brightness adjustment function within both day and night modes to suit ambient light conditions.



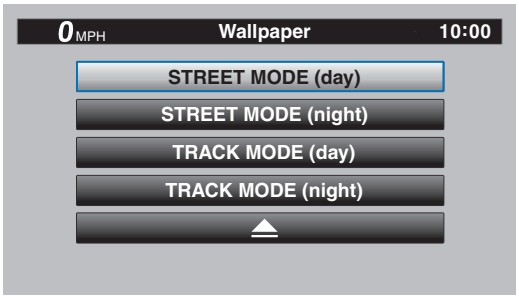
1. Photo sensor

[To set the wallpaper]

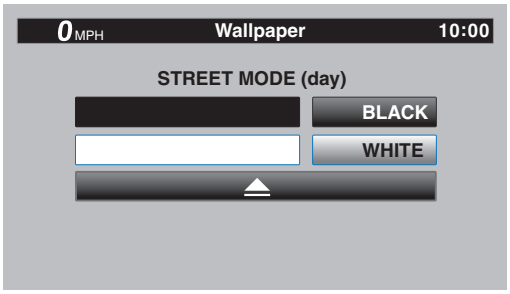
1. From the MENU screen, select “Wallpaper”.



2. Select the mode you want to adjust (select DAY for daytime display settings or NIGHT for nighttime display settings).



3. Select the background color (select “BLACK” for a black background or “WHITE” for a white background).

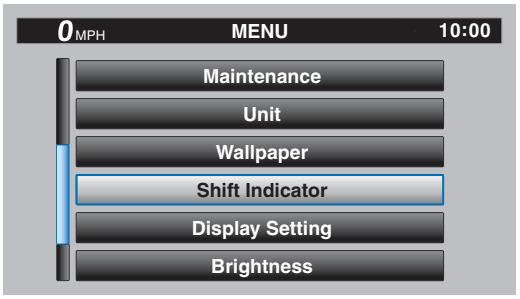


4. Select the triangle symbol to exit.
5. To set another background color, repeat from step 2 or select the triangle symbol to exit this module.

“Shift indicator”

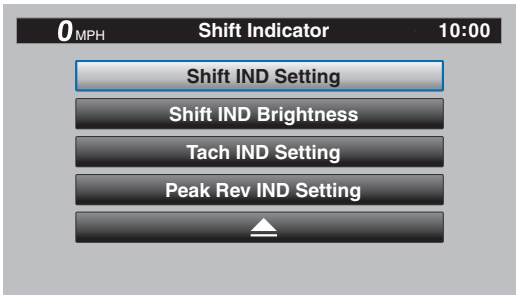
The shift indicator module contains the following modules.

Module	Description
Shift IND Setting	Set the shift indicator pattern to “ON”, “Flash”, or “OFF” and adjust at what r/min the indicator will come on and go off.
Shift IND Brightness	Adjust the brightness of the shift indicator.
Tach IND Setting	Set the tachometer color display to “ON” or “OFF” and adjust at what r/min the tachometer will be green and orange.
Peak Rev IND Setting	Set the tachometer peak rev indicator to “ON” or “OFF”.

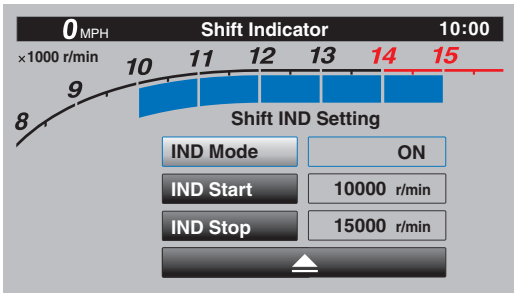


[To make setting changes]

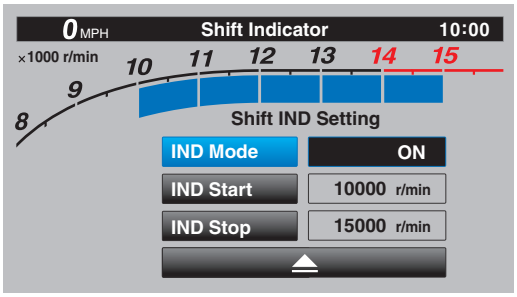
1. Select “Shift IND Setting”.



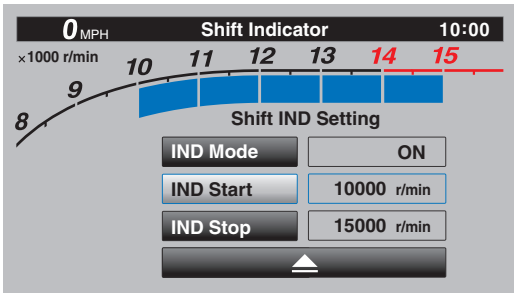
2. Select “IND Mode”.



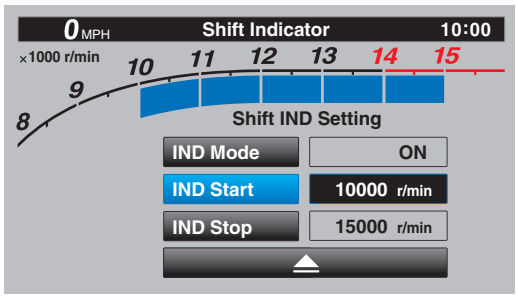
3. Select “ON” to have the indicator light steadily, “OFF” to turn the indicator off, or “Flash” to have the shift indicator flash when the indicator start threshold has been reached.



4. Select “IND Start”.



5. Rotate the wheel switch to adjust the r/min at which the shift timing indicator light will come on. “IND Start” operational range is 8000–14800 r/min.



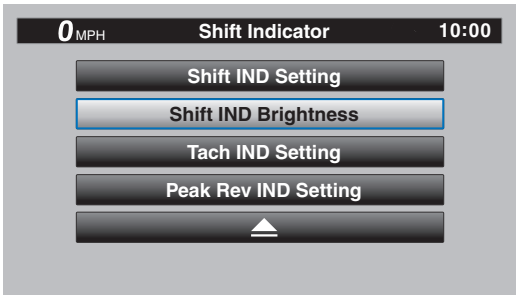
6. Select “IND Stop” then rotate the wheel switch to adjust the r/min at which the shift timing indicator will go off. “IND Stop” operational range is 8500–15000 r/min.

TIP

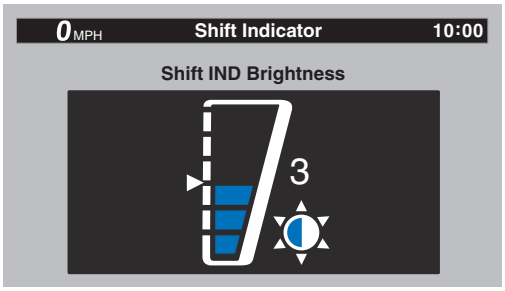
The blue area on the tachometer indicates the currently set operational range of the shift indicator light.

“Shift IND Brightness”

The shift timing indicator light has six brightness levels.



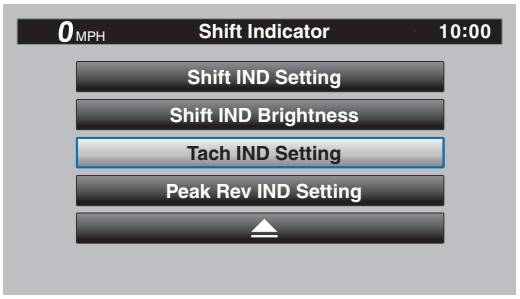
Select “Shift IND Brightness”, then use the wheel switch to adjust the setting. Short push the wheel switch to confirm the setting and exit.



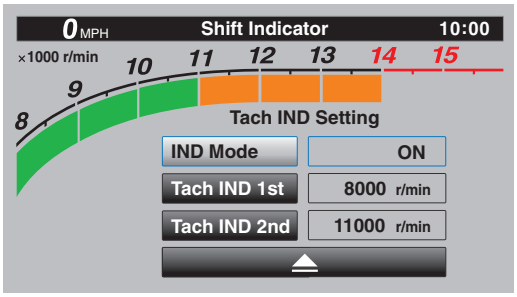
"Tach IND Setting"

This module allows you to turn the tachometer color display on or off. When turned off, the tachometer will display all r/min levels below the red zone in black or white (depending on wallpaper settings). When turned on, the mid and mid-to-high r/min zones can be set to come on in green and then orange colors.

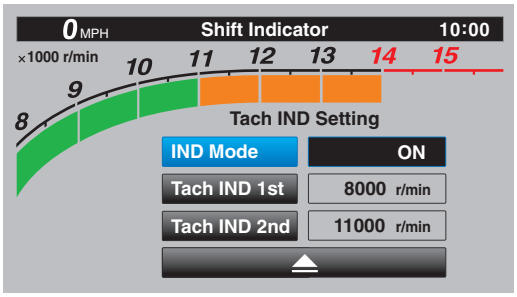
1. Select "Tach IND Setting".



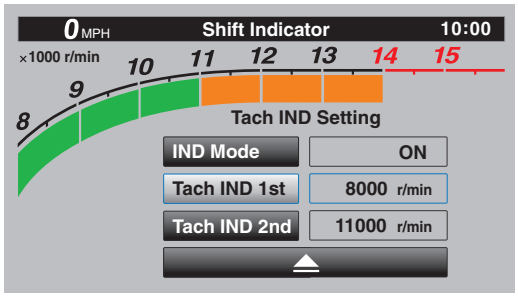
2. Select "IND Mode".



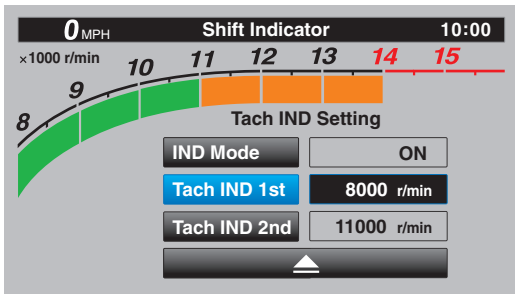
3. Select ON to turn the tachometer color display mode on (or select OFF to turn this function off).



4. Select "Tach IND 1st" to set the green zone starting r/min.



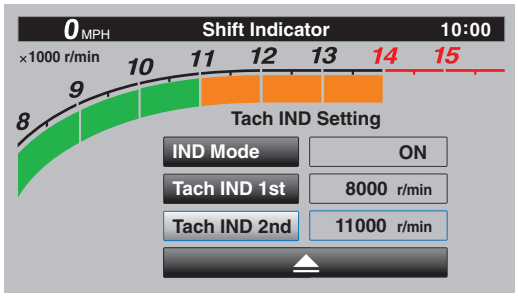
5. Set the starting r/min by rotating and then short pushing the wheel switch. All r/min above this value up to the "Tach IND 2nd" setting value (or the 14000 r/min red zone), will be displayed in green.



TIP

Green bar start setting range: 8000–10000 r/min.

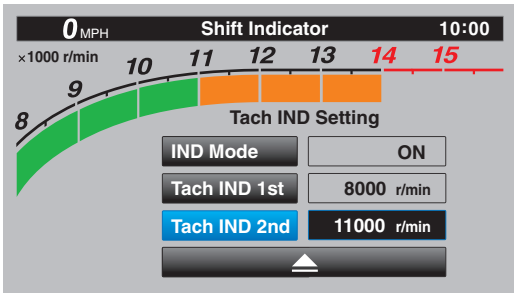
6. Select "Tach IND 2nd".



7. Set the orange color starting r/min by rotating and then short pushing the wheel switch. All r/min above this figure until the 14000 r/min red zone, will be displayed in orange.

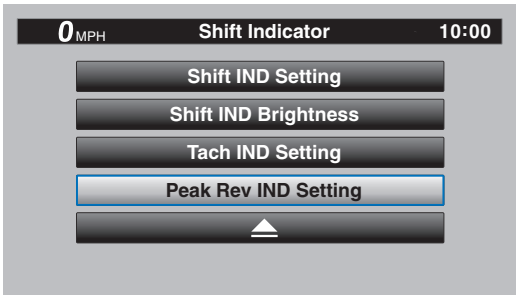
TIP

Orange bar start setting range: 8000–14000 r/min.

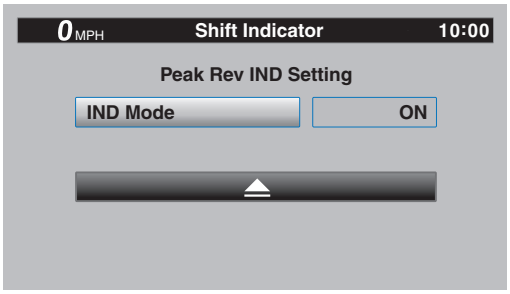


8. Select the triangle symbol to exit.

"Peak Rev IND Setting"
This module allows you to turn the revolution peak hold indicator on or off.
1. Select "Peak Rev IND Setting".

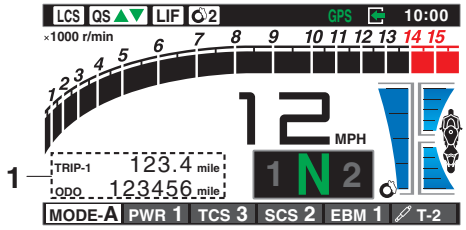


2. Select "IND Mode" and then select ON (to turn on the indicator) or OFF (to turn off the indicator).

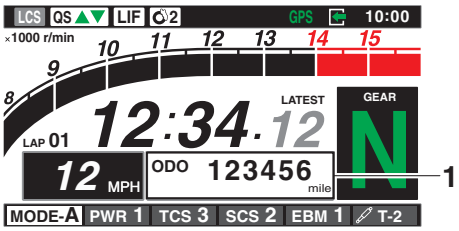


3. Select the triangle symbol to exit.

"Display Setting"
This module allows you to set how the information display items (like TRIP-1, ODO, C. TEMP, etc.) are grouped on the main screen. There are four display groups.

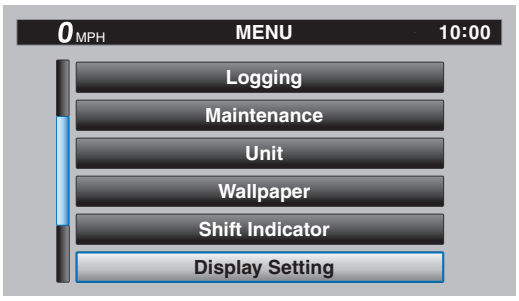


1. Information display item (STREET MODE)

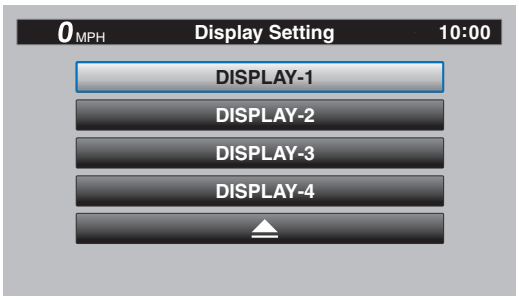


1. Information display item (TRACK MODE)

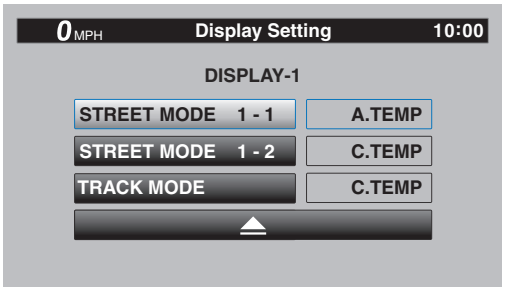
[To set the display groups]
1. Select "Display Setting".



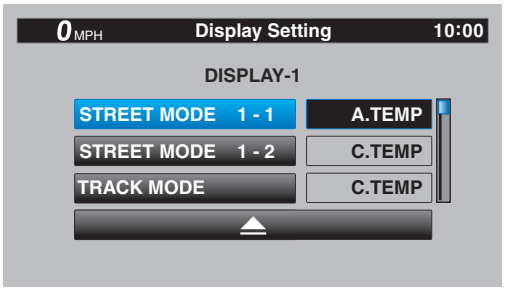
2. "DISPLAY-1", "DISPLAY-2", "DISPLAY-3" and "DISPLAY-4" are displayed.



3. For example, let's select "DISPLAY-1".
4. Select "STREET MODE 1-1".



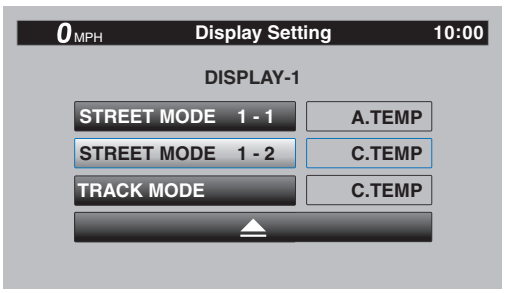
5. Select the desired information display item with the wheel switch.



TIP

The information display items which can be selected are:
A.TEMP: air temperature
C.TEMP: coolant temperature
TRIP-1: tripmeter 1
TRIP-2: tripmeter 2
ODO: odometer
FUEL CON: the amount of fuel consumed
FUEL AVG: average fuel consumption
CRNT FUEL: current fuel consumption

6. Select "STREET MODE 1-2" or "TRACK MODE" to set the remaining DISPLAY-1 group items.



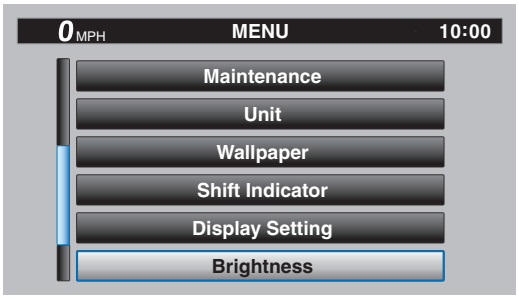
7. Select the triangle symbol to exit. To set the other display groups, repeat from step 3.

"Brightness"

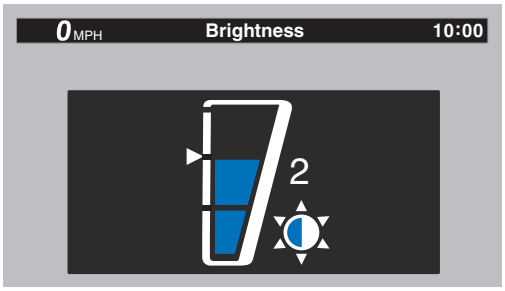
This module allows you to adjust the general brightness level of the display screen.

[To set the brightness]

1. Select "Brightness".



2. Select the desired brightness level by rotating the wheel switch, and then short push the wheel switch to fix the setting.

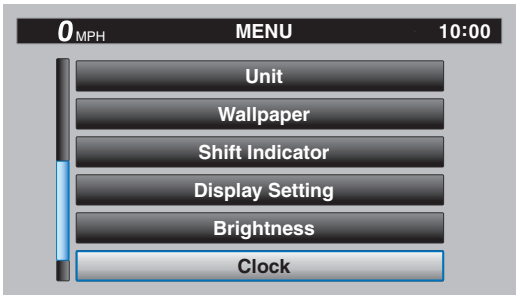


"Clock"

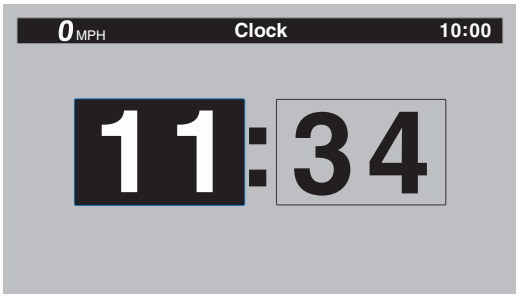
This module allows you to set the clock.

[To set the clock]

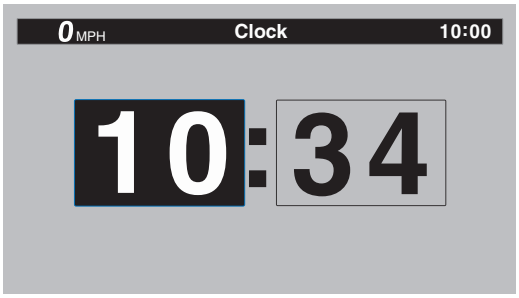
1. From the MENU screen, select "Clock".



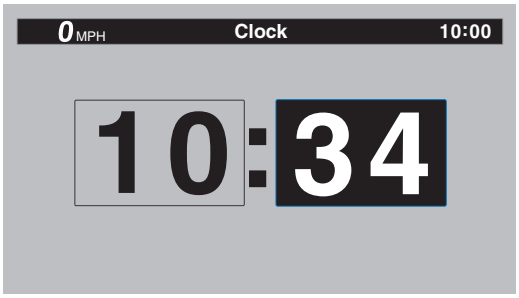
2. When “Clock” is selected, the hours figure will be highlighted.



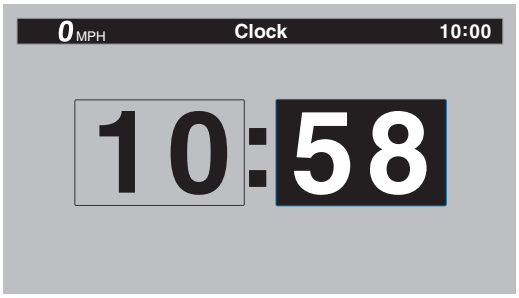
3. Set the hour by rotating and then short push the wheel switch.



4. The minutes figure will become highlighted.



5. Set the minutes figure by rotating and then short push the wheel switch.



6. Short push the wheel switch again to exit and go back to the MENU screen.

“All Reset”
This module resets everything, except the odometer and clock, to its factory preset or default setting.
Select YES to reset all items. After selecting YES, all items will be reset and the screen will automatically return to the MENU screen.

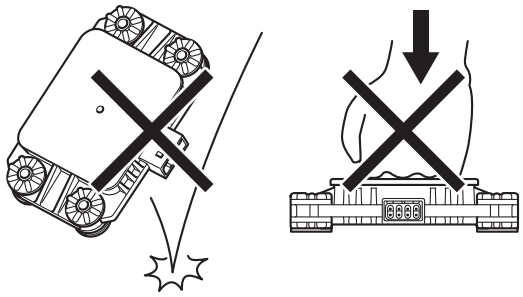
EAS20010
BASIC SERVICE INFORMATION

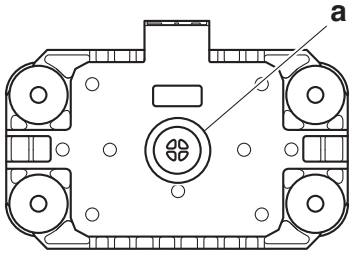
EAS30014
ELECTRICAL SYSTEM

Electrical parts handling

ECA22611
NOTICE

- **Do not perform angle adjustment of the IMU and battery box by pinching the washer and related parts.**
- **When installing the IMU, apply a thin coat of silicone grease onto the washer where contacting the IMU grommet.**
- **When installing the IMU, use only a genuine bolt and washer, and tighten the bolt to the specified torque.**
- **Pay attention not to expose the IMU to strong shocks, such as striking or dropping it.**
- **Do not place any foreign objects in and around the battery box.**
- **Do not obstruct breather opening "a" of the IMU.**
- **Do not clean the breather opening and do not blow it with compressed air.**
- **When replacing the collar or grommet, replace all four collars and grommets.**



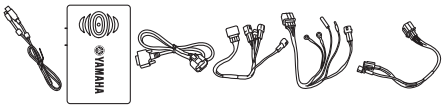
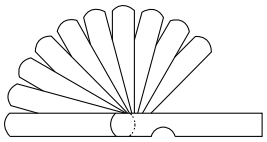
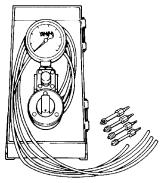
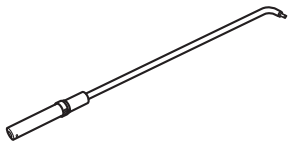
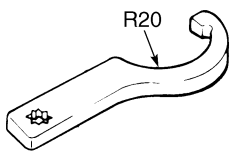


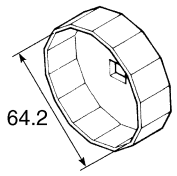
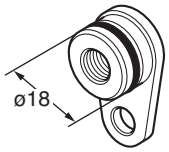
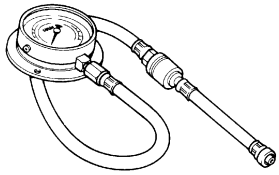
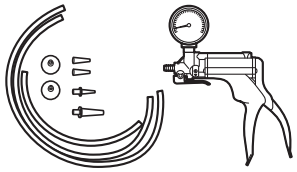
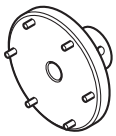
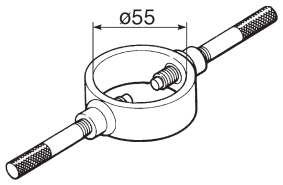
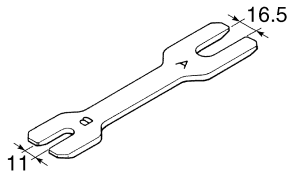
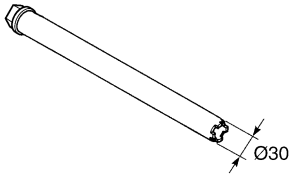
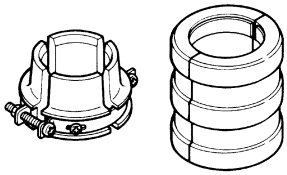
EAS20012
SPECIAL TOOLS

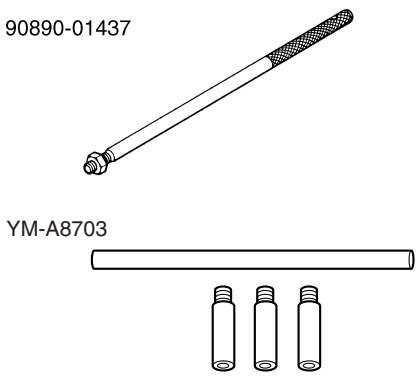
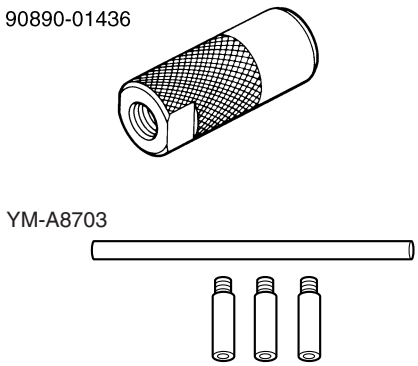
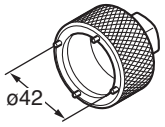
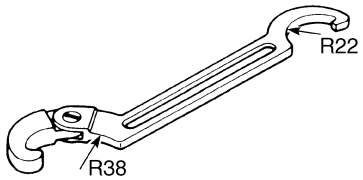
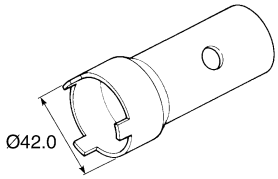
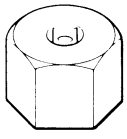
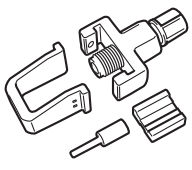
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country. When placing an order, refer to the list provided below to avoid any mistakes.

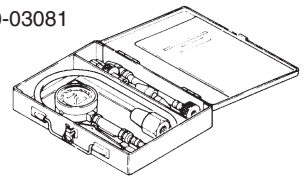
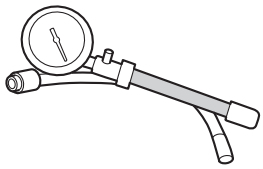
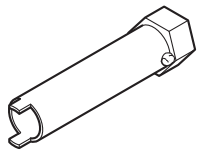
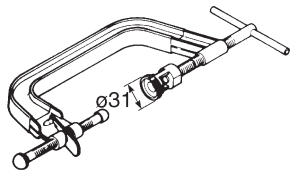
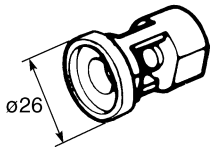
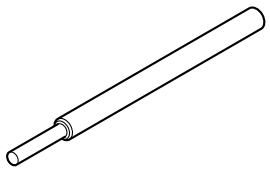
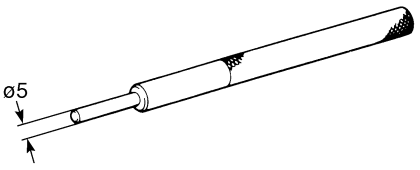
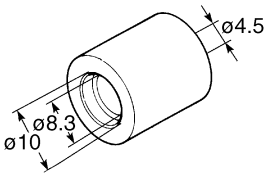
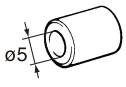
TIP

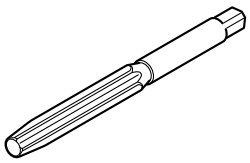
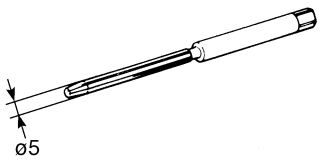
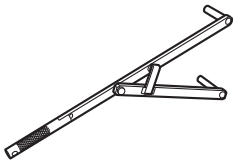
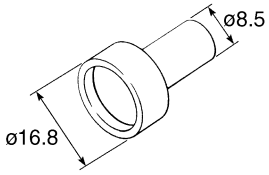
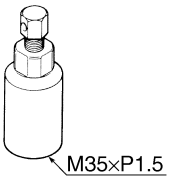
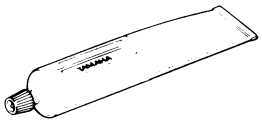
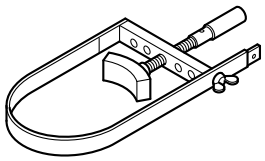
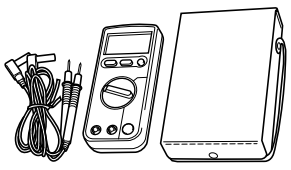
- For U.S.A. and Canada, use part numbers starting with "YM-", "YU-", or "ACC-".
- For others, use part numbers starting with "90890-".

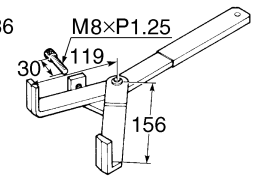
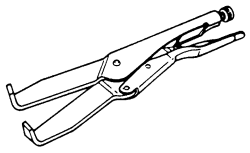
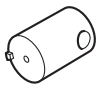
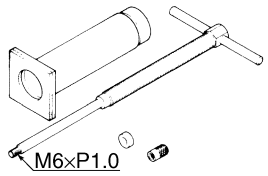
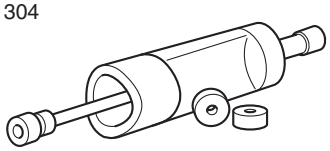
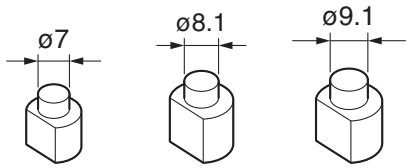
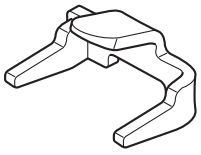
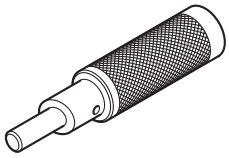
Tool name/Tool No.	Illustration	Reference pages
Yamaha diagnostic tool USB (US) 90890-03269		3-4, 4-80, 4-81, 9-2, 9-23, 9-24
Yamaha diagnostic tool (A/I) 90890-03264		3-4, 4-80, 4-81, 9-2, 9-23, 9-24
Thickness gauge 90890-03268 Feeler gauge set YU-26900-9		3-6, 3-7, 3-7, 3-7, 4-42, 4-51, 5-34, 5-65
Vacuum gauge 90890-03094 Vacuummate YU-44456	90890-03094  YU-44456 	3-10
Carburetor angle driver 2 90890-03173		3-10
Steering nut wrench 90890-01403 Exhaust flange nut wrench YU-A9472		3-20, 4-110

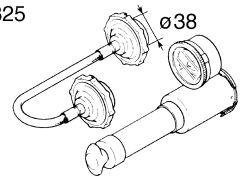
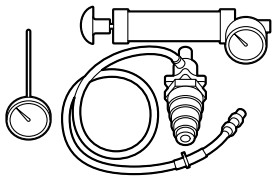
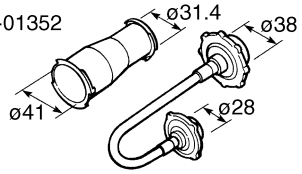
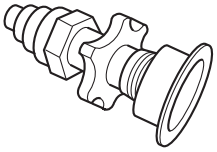
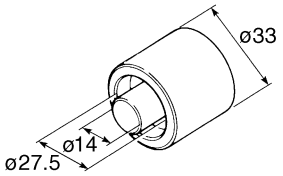
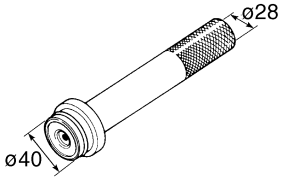
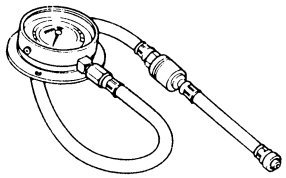
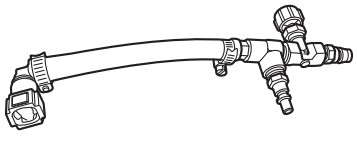
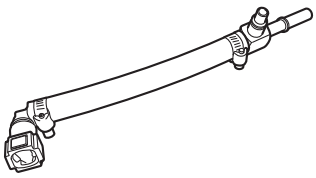
Tool name/Tool No.	Illustration	Reference pages
Oil filter wrench 90890-01426 Oil filter wrench YU-38411		3-29
Oil pressure gauge joint 18 mm 90890-04176 YU-04176		3-30
Oil pressure gauge set 90890-03120		3-30
Vacuum/pressure pump gauge set 90890-06945 Pressure/vacuum tester YB-35956-B		4-30
Wheel bearing ring nut tool 90890-01574 YM-01574		4-46, 4-48
Fork spring compressor 90890-01441 Fork spring compressor YM-01441		4-92, 4-97
Rod holder 90890-01434 Damper rod holder double ended YM-01434		4-92, 4-97
Damper rod holder (ø30) 90890-01506 Damper rod holder YM-01506		4-93, 4-95
Fork seal driver 90890-01442 Adjustable fork seal driver (36–46 mm) YM-01442		4-95, 4-95, 4-96, 4-105, 4-105

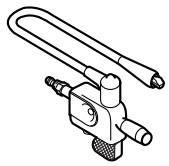
Tool name/Tool No.	Illustration	Reference pages
Rod puller 90890-01437 Universal damping rod bleeding tool set YM-A8703		4-96, 4-97
Rod puller attachment (M10) 90890-01436 Universal damping rod bleeding tool set YM-A8703		4-96, 4-97
Front fork cap bolt wrench 42mm 90890-01575 YM-01575		4-102, 4-103, 4-107
Ring nut wrench 90890-01268 Spanner wrench YU-01268		4-110
Ring nut wrench 90890-01507 Ring nut wrench YM-01507		4-122, 4-124
Damper rod holder (ø22) 90890-01365		4-122, 4-124
Drive chain cut & rivet tool 90890-01550 Drive chain cut & rivet tool YM-01550		4-126, 4-128

Tool name/Tool No.	Illustration	Reference pages
Compression gauge 90890-03081 Engine compression tester YU-33223	90890-03081  YU-33223 	5-9
Pivot shaft wrench 90890-01485 Frame mount insert wrench YM-01485		5-16, 5-16
Valve spring compressor 90890-04019 Valve spring compressor YM-04019		5-27, 5-30, 5-38, 5-43
Valve spring compressor attachment (ø26) 90890-01243 Valve spring compressor attachment (ø26) YM-01253-1		5-38, 5-43
Valve guide remover (ø4.5) 90890-04116 Valve guide remover (4.5 mm) YM-04116		5-40
Valve guide remover (ø5) 90890-04097 Valve guide remover (5.0 mm) YM-04097		5-40
Valve guide installer (ø4.5) 90890-04117 Valve guide installer (4.5 mm) YM-04117		5-40
Valve guide installer (ø5) 90890-04098 Valve guide installer (5.0 mm) YM-04098		5-40

Tool name/Tool No.	Illustration	Reference pages
Valve guide reamer (ø4.5) 90890-04118 Valve guide reamer (4.5 mm) YM-04118		5-40
Valve guide reamer (ø5) 90890-04099 Valve guide reamer (5.0 mm) YM-04099		5-40
15mm pin type rotor holding tool 90890-04171 YM-04171		5-46, 5-47
Crankshaft protector 90890-01382 Crankshaft protector YM-01382		5-46
Flywheel puller 90890-01404 Flywheel puller YM-01404		5-46
Yamaha bond No. 1215 90890-85505 Three bond No. 1215®		5-47, 5-74
Sheave holder 90890-01701 Primary clutch holder YS-01880-A		5-49, 5-49
Digital circuit tester (CD732) 90890-03243 Model 88 Multimeter with tachometer YU-A1927		5-52, 8-41, 8-42, 8-43, 8-44, 8-45, 8-45, 8-46, 8-47, 8-47, 8-48, 8-49, 8-50, 8-51, 8-51, 8-51, 8-52, 8-52

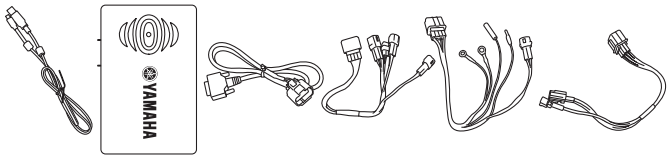
Tool name/Tool No.	Illustration	Reference pages
Universal clutch holder 90890-04086 Universal clutch holder YM-91042	90890-04086  YM-91042 	5-64, 5-67
Piston pin clip rotation tool 90890-04175 YM-04175		5-79
Piston pin puller set 90890-01304 Piston pin puller YU-01304	90890-01304  YU-01304 	5-80
Connecting rod big end bearing installer 90890-04193 Connecting rod big end bearing installer YM-04193	 	5-83, 5-86
Piston pin clip insertion tool 90890-04173 YM-04173		5-88
Piston pin clip installer tool 90890-04174 YM-04174		5-88

Tool name/Tool No.	Illustration	Reference pages
Radiator cap tester 90890-01325 Mityvac cooling system tester kit YU-24460-A	90890-01325  YU-24460-A 	6-5, 6-6
Radiator cap tester adapter 90890-01352 Pressure tester adapter YU-33984	90890-01352  YU-33984 	6-5, 6-6
Mechanical seal installer (ø33) 90890-04132 Water pump seal installer (ø33) YM-33221-A	 	6-16
Middle driven shaft bearing driver 90890-04058 Middle drive bearing installer 40 & 50 mm YM-04058	 	6-16
Pressure gauge 90890-03153 Pressure gauge YU-03153		7-18, 7-18
Fuel injector pressure adapter 90890-03210 Fuel injector pressure adapter YU-03210		7-18
Fuel pressure adapter 90890-03176 Fuel pressure adapter YM-03176		7-18

Tool name/Tool No.	Illustration	Reference pages
Ignition checker 90890-06754 Oppama pet–4000 spark checker YM-34487		8-45
Test harness– speed sensor (3P) 90890-03208 Test harness– speed sensor (3P) YU-03208		8-50

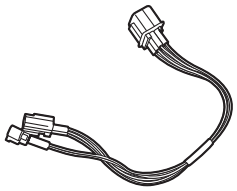
TIP

Yamaha diagnostic tool (A/I) 90890-03264
This special tool includes the YDT sub harness (6P) (90890-03266).



TIP

YDT sub harness (6P) 90890-03266
If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.



SPECIFICATIONS

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TIGHTENING TORQUES 2-12
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CHASSIS TIGHTENING TORQUES 2-14

CABLE ROUTING 2-17

EAS20013
GENERAL SPECIFICATIONS

Model	
Model	B3L2 (YZFR1L_except for California) B3L3 (YZFR1LC_for California) B4S2 (YZFR1ML_except for California) B4S3 (YZFR1MLC_for California)
Dimensions	
Overall length	2055 mm (80.9 in)
Overall width	690 mm (27.2 in)
Overall height	1165 mm (45.9 in)
Wheelbase	1405 mm (55.3 in)
Ground clearance	130 mm (5.12 in)
Minimum turning radius	3.4 m (11.16 ft)
Weight	
Curb weight	203 kg (448 lb) (YZF-R1) 204 kg (450 lb) (YZF-R1M)
Loading	
Maximum load	185 kg (408 lb) (YZF-R1) 184 kg (406 lb) (YZF-R1M)
Riding capacity	2 person

EAS20014
ENGINE SPECIFICATIONS

Engine	
Combustion cycle	4-stroke
Cooling system	Liquid cooled
Valve train	DOHC
Displacement	998 cm³
Cylinder arrangement	Inline
Number of cylinders	4-cylinder
Bore × stroke	79.0 × 50.9 mm (3.11 × 2.00 in)
Compression ratio	13.0 : 1
Compression pressure	1261–1624 kPa/210 r/min (12.6–16.2 kgf/cm²/210 r/min, 179.4–231.0 psi/210 r/min)
Starting system	Electric starter
Fuel	
Recommended fuel	Premium unleaded gasoline (E10 acceptable)
Fuel tank capacity	17 L (4.5 US gal, 3.7 Imp.gal)
Fuel reserve amount	3.0 L (0.79 US gal, 0.66 Imp.gal)
Engine oil	
Recommended brand	YAMALUBE
Type	Full synthetic
SAE viscosity grades	10W-40, 15W-50
Recommended engine oil grade	API service SG type or higher, JASO standard MA
Lubrication system	Wet sump
Engine oil quantity	
Oil change	3.90 L (4.12 US qt, 3.43 Imp.qt)
With oil filter removal	4.10 L (4.33 US qt, 3.61 Imp.qt)
Quantity (disassembled)	4.90 L (5.18 US qt, 4.31 Imp.qt)
Oil filter	
Oil filter type	Cartridge
Oil pump	
Oil pressure	200.0 kPa/5000 r/min (2.00 kgf/cm²/5000 r/min, 29.0 psi/5000 r/min)
Cooling system	
Coolant quantity	
Radiator (including all routes)	2.25 L (2.38 US qt, 1.98 Imp.qt)
Coolant reservoir (up to the maximum level mark)	0.25 L (0.26 US qt, 0.22 Imp.qt)
Radiator cap valve opening pressure	107.9–137.3 kPa (1.08–1.37 kgf/cm², 15.6–19.9 psi)
Cooling system leak test pressure	137.3 kPa (1.37 kgf/cm², 19.9 psi)
Thermostat	
Valve opening temperature	69.0–73.0 °C (156.20–163.40 °F)
Valve full open temperature	85.0 °C (185.00 °F)
Valve lift (full open)	8.0 mm (0.31 in)

Spark plug(s)	
Manufacturer/model	NGK/LMAR9E-J
Spark plug gap	0.6–0.7 mm (0.024–0.028 in)
Cylinder head	
Warpage limit	0.10 mm (0.0039 in)
Camshaft	
Camshaft cap inside diameter	25.500–25.521 mm (1.0039–1.0048 in)
Camshaft journal diameter	25.459–25.472 mm (1.0023–1.0028 in)
Camshaft-journal-to-camshaft-cap clearance	0.028–0.062 mm (0.0011–0.0024 in)
Limit	0.080 mm (0.0032 in)
Camshaft lobe dimensions	
Lobe height (Intake)	35.291–35.391 mm (1.3894–1.3933 in)
Limit	35.191 mm (1.3855 in)
Lobe height (Exhaust)	34.745–34.845 mm (1.3679–1.3718 in)
Limit	34.645 mm (1.3640 in)
Camshaft runout limit	0.050 mm (0.0020 in)
Rocker arm/rocker arm shaft	
Rocker arm inside diameter	7.987–8.002 mm (0.3144–0.3150 in)
Limit	8.017 mm (0.3156 in)
Rocker arm shaft outside diameter	7.967–7.979 mm (0.3137–0.3141 in)
Limit	7.936 mm (0.3124 in)
Valve, valve seat, valve guide	
Valve clearance (cold)	
Intake	0.09–0.17 mm (0.0035–0.0067 in)
Exhaust	0.18–0.23 mm (0.0071–0.0091 in)
Valve dimensions	
Valve seat contact width (intake)	0.90–1.10 mm (0.0354–0.0433 in)
Limit	1.6 mm (0.06 in)
Valve seat contact width (exhaust)	1.10–1.30 mm (0.0433–0.0512 in)
Limit	1.8 mm (0.07 in)
Valve stem diameter (intake)	4.975–4.990 mm (0.1959–0.1965 in)
Limit	4.960 mm (0.1953 in)
Valve stem diameter (exhaust)	4.460–4.475 mm (0.1756–0.1762 in)
Limit	4.425 mm (0.1742 in)
Valve guide inside diameter (intake)	5.000–5.012 mm (0.1969–0.1973 in)
Valve guide inside diameter (exhaust)	4.500–4.512 mm (0.1772–0.1776 in)
Valve-stem-to-valve-guide clearance (intake)	0.010–0.037 mm (0.0004–0.0015 in)
Limit	0.080 mm (0.0032 in)
Valve-stem-to-valve-guide clearance (exhaust)	0.025–0.052 mm (0.0010–0.0020 in)
Limit	0.100 mm (0.0039 in)
Valve stem runout	0.010 mm (0.0004 in)
Valve spring	
Inner spring	
Free length (intake)	34.52 mm (1.36 in)
Limit	32.79 mm (1.29 in)
Free length (exhaust)	36.94 mm (1.45 in)

Limit	35.09 mm (1.38 in)
Outer spring	
Free length (intake)	35.72 mm (1.41 in)
Limit	33.93 mm (1.34 in)
Free length (exhaust)	36.85 mm (1.45 in)
Limit	35.01 mm (1.38 in)
Cylinder	
Bore	79.000–79.010 mm (3.1102–3.1106 in)
Wear limit	79.060 mm (3.1126 in)
Piston	
Diameter	78.961–78.994 mm (3.1087–3.1100 in)
Measuring point (from piston skirt bottom)	8.0 mm (0.31 in)
Piston-to-cylinder clearance	0.006–0.049 mm (0.0002–0.0019 in)
Piston pin bore inside diameter	17.002–17.013 mm (0.6694–0.6698 in)
Limit	17.043 mm (0.6710 in)
Piston pin outside diameter	16.991–17.000 mm (0.6689–0.6693 in)
Limit	16.971 mm (0.6681 in)
Piston-pin-to-piston-pin-bore clearance	0.002–0.022 mm (0.0001–0.0009 in)
Piston ring	
Top ring	
End gap limit	0.50 mm (0.0197 in)
Ring side clearance	0.030–0.065 mm (0.0012–0.0026 in)
Side clearance limit	0.115 mm (0.0045 in)
2nd ring	
End gap limit	1.15 mm (0.0453 in)
Ring side clearance	0.020–0.055 mm (0.0008–0.0022 in)
Side clearance limit	0.115 mm (0.0045 in)
Connecting rod	
Oil clearance	0.033–0.057 mm (0.0013–0.0022 in)
Bearing color code	
Code 1	Blue
Code 2	Black
Code 3	Brown
Code 4	Green
Code 5	Yellow
Code 6	Pink
Crankshaft	
Runout limit	0.030 mm (0.0012 in)
Journal oil clearance	0.025–0.043 mm (0.0010–0.0017 in)
Bearing color code	
Code 0	White
Code 1	Blue
Code 2	Black
Code 3	Brown
Code 4	Green
Code 5	Yellow
Code 6	Pink

Balancer	
Balancer shaft runout limit	0.030 mm (0.0012 in)
Bearing color code	
Code 0	White
Code 1	Blue
Code 2	Black
Code 3	Brown
Code 4	Green
Code 5	Yellow
Code 6	Pink
Balancer shaft journal to balancer shaft bearing clearance	0.028–0.046 mm (0.0011–0.0018 in)
Clutch	
Clutch type	Wet, multiple-disc
Clutch lever free play	10.0–15.0 mm (0.39–0.59 in)
Assembly width	48.3–49.3 mm (1.90–1.94 in)
Friction plate 1 thickness	2.72–2.88 mm (0.107–0.113 in)
Wear limit	2.62 mm (0.103 in)
Plate quantity	3 pcs
Friction plate 2 thickness	2.72–2.88 mm (0.107–0.113 in)
Wear limit	2.62 mm (0.103 in)
Plate quantity	7 pcs
Clutch plate 1 thickness	2.46–2.74 mm (0.097–0.108 in)
Plate quantity	1 pcs
Warpage limit	0.10 mm (0.004 in)
Clutch plate 2 thickness	2.18–2.42 mm (0.086–0.095 in)
Plate quantity	7 pcs
Warpage limit	0.10 mm (0.004 in)
Plate quantity	1 pcs
Warpage limit	0.10 mm (0.004 in)
Clutch spring free length	47.36 mm (1.86 in)
Limit	44.99 mm (1.77 in)
Drivetrain	
Primary reduction ratio	1.634 (67/41)
Transmission type	Constant mesh 6-speed
Gear ratio	
1st	2.600 (39/15)
2nd	2.176 (37/17)
3rd	1.842 (35/19)
4th	1.579 (30/19)
5th	1.381 (29/21)
6th	1.250 (30/24)
Main axle runout limit	0.08 mm (0.0032 in)
Drive axle runout limit	0.08 mm (0.0032 in)
Secondary reduction ratio	2.563 (41/16)
Final drive	Chain
Shifting mechanism	
Installed shift rod length	258.5–260.5 mm (10.18–10.26 in)

Air filter	
Air filter element	Oil-coated paper element
Fuel pump	
Pump type	Electrical
Maximum consumption amperage	5.2 A
Fuel injector	
Resistance	12.0 Ω
Throttle body	
ID mark	B3L2 10 (except for California) B3L3 20 (for California)
Idling condition	
Engine idling speed	1200–1400 r/min
AI system	Inactive
O_2 feedback control	Inactive
Coolant temperature	90–110 °C (194–230 °F)
Intake vacuum	25.5 kPa (191 mmHg, 7.5 inHg)
Difference in vacuum pressure between the cylinders	0 kPa–1.3 kPa (0 mmHg–10 mmHg, 0 inHg–0.4 inHg)
CO%	1.0–4.0 %
Fuel line pressure (at idle)	300–390 kPa (3.0–3.9 kgf/cm², 43.5–56.6 psi)
Air induction system	
Solenoid resistance	18–22 Ω

EAS20015
CHASSIS SPECIFICATIONS

Chassis	
Frame type	Diamond
Caster angle	24.0 °
Trail	102 mm (4.0 in)
Front wheel	
Wheel type	Cast wheel
Rim size	17M/C X MT3.50
Radial wheel runout limit	1.0 mm (0.04 in)
Lateral wheel runout limit	1.0 mm (0.04 in)
Wheel axle bending limit	0.25 mm (0.01 in)
Rear wheel	
Wheel type	Cast wheel
Rim size	17M/C X MT6.00
Radial wheel runout limit	1.0 mm (0.04 in)
Lateral wheel runout limit	1.0 mm (0.04 in)
Wheel axle bending limit	0.25 mm (0.01 in)
Front tire	
Type	Tubeless
Size	120/70ZR17M/C (58W)
Manufacturer/model	BRIDGESTONE/BATTLAX RACING STREET RS11F
Rear tire	
Type	Tubeless
Size	190/55ZR17M/C (75W) (YZF-R1) 200/55ZR17M/C (78W) (YZF-R1M)
Manufacturer/model	BRIDGESTONE/BATTLAX RACING STREET RS11R
Tire air pressure (measured on cold tires)	
Front	250 kPa (2.50 kgf/cm², 36 psi)
Rear	290 kPa (2.90 kgf/cm², 42 psi)
Front brake	
Type	Hydraulic dual disc brake
Disc outside diameter × thickness	320.0 × 5.0 mm (12.60 × 0.20 in)
Brake disc thickness limit	4.5 mm (0.18 in)
Brake disc runout limit (as measured on wheel)	0.10 mm (0.0039 in)
Brake pad lining thickness limit	0.5 mm (0.02 in)
Master cylinder inside diameter	15.87 mm (0.62 in)
Caliper cylinder inside diameter (Left)	30.23 mm, 27.00 mm (1.19 in, 1.06 in)
Caliper cylinder inside diameter (Right)	30.23 mm, 27.00 mm (1.19 in, 1.06 in)
Specified brake fluid	DOT 4
Rear brake	
Type	Hydraulic single disc brake

Disc outside diameter × thickness	220.0 × 5.0 mm (8.66 × 0.20 in)
Brake disc thickness limit	4.5 mm (0.18 in)
Brake disc runout limit (as measured on wheel)	0.15 mm (0.0059 in)
Brake pad lining thickness limit	1.0 mm (0.04 in)
Master cylinder inside diameter	12.7 mm (0.50 in)
Caliper cylinder inside diameter	30.23 mm (1.19 in)
Specified brake fluid	DOT 4

Front suspension

Type	Telescopic fork
Spring	Coil spring
Shock absorber	Hydraulic damper (YZF-R1) Gas-hydraulic damper (YZF-R1M)
Wheel travel	120 mm (4.7 in)
Fork spring free length	219.5 mm (8.64 in) (YZF-R1) 260.0 mm (10.24 in) (YZF-R1M)
Limit	215.1 mm (8.47 in) (YZF-R1) 254.8 mm (10.03 in) (YZF-R1M)
Recommended oil	Yamaha Suspension Oil 01 (YZF-R1) Öhlins R&T 43 (YZF-R1M)
Inner tube bending limit	0.2 mm (0.01 in)
Quantity (left)	470.0 cm³ (15.89 US oz, 16.58 Imp.oz) (YZF-R1) 263.0 cm³ (8.89 US oz, 9.26 Imp.oz) (YZF-R1M)
Quantity (right)	470.0 cm³ (15.89 US oz, 16.58 Imp.oz) (YZF-R1) 263.0 cm³ (8.89 US oz, 9.26 Imp.oz) (YZF-R1M)
Level (left)	84 mm (3.3 in) (YZF-R1) 180 mm (7.1 in) (YZF-R1M)
Level (right)	84 mm (3.3 in) (YZF-R1) 180 mm (7.1 in) (YZF-R1M)
Spring preload	
Adjusting system	Mechanical adjustable type
Unit for adjustment	Turn
Adjustment value (Soft)	0
Adjustment value (STD)	6 (YZF-R1) 3 (YZF-R1M)
Adjustment value (Hard)	15
Rebound damping	
Adjusting system	Mechanical adjustable type (YZF-R1) Electronically adjustable type (YZF-R1M)
Unit for adjustment	Click (YZF-R1)
Adjustment value from the start position (Soft)	14 (YZF-R1)
Adjustment value from the start position (STD)	7 (YZF-R1)
Adjustment value from the start position (Hard)	1 (YZF-R1)
Compression damping	
Adjusting system	Mechanical adjustable type (YZF-R1) Electronically adjustable type (YZF-R1M)
Unit for compression damping adjustment	Click (YZF-R1)
Adjustment value from the start position (Soft)	23 (YZF-R1)
Adjustment value from the start position (STD)	17 (YZF-R1)
Adjustment value from the start position (Hard)	1 (YZF-R1)

Rear suspension	
Type	Swingarm (link suspension)
Spring	Coil spring
Shock absorber	Gas-hydraulic damper
Wheel travel	120 mm (4.7 in)
Spring preload	
Adjusting system	Mechanical adjustable type
Adjustment value (Soft)	77.5 mm (3.05 in) (YZF-R1) 0.0 mm (0.00 in) (YZF-R1M)
Adjustment value (STD)	78.5 mm (3.09 in) (YZF-R1) 4.0 mm (0.16 in) (YZF-R1M)
Adjustment value (Hard)	85.5 mm (3.37 in) (YZF-R1) 9.0 mm (0.35 in) (YZF-R1M)
Rebound damping	
Adjusting system	Mechanical adjustable type (YZF-R1) Electronically adjustable type (YZF-R1M)
Unit for adjustment	Click (YZF-R1)
Adjustment value from the start position (Soft)	23 (YZF-R1)
Adjustment value from the start position (STD)	12 (YZF-R1)
Adjustment value from the start position (Hard)	1 (YZF-R1)
Compression damping	
Adjusting system	Mechanical adjustable type (YZF-R1) Electronically adjustable type (YZF-R1M)
Fast compression damping	
Unit for adjustment	Turn (YZF-R1)
Adjustment value from the start position (Soft)	5.5 (YZF-R1)
Adjustment value from the start position (STD)	3 (YZF-R1)
Adjustment value from the start position (Hard)	0 (YZF-R1)
Slow compression damping	
Unit for adjustment	Click (YZF-R1)
Adjustment value from the start position (Soft)	18 (YZF-R1)
Adjustment value from the start position (STD)	12 (YZF-R1)
Adjustment value from the start position (Hard)	1 (YZF-R1)

Drive chain	
Size	525
Chain type	Sealed type
Number of links	113
Drive chain slack (When performing maintenance/Maintenance stand)	25.0–35.0 mm (0.98–1.38 in)
Drive chain slack (When replacing with a new one/Maintenance stand)	20.0–30.0 mm (0.79–1.18 in)
Drive chain slack limit (Maintenance stand)	35.0 mm (1.38 in)
15-link length limit	239.3 mm (9.42 in)

EAS20016
ELECTRICAL SPECIFICATIONS

Voltage	
System voltage	12 V
Ignition system	
Ignition system	TCI
Ignition timing (B.T.D.C.)	3.0–7.0 °s/1300 r/min
Engine control unit	
Model	TBDF3K
Ignition coil	
Primary coil resistance	0.85–1.15 Ω
Secondary coil resistance	8.50–11.50 kΩ
Charging system	
Charging system	AC magneto
Standard output	14.0 V, 26.3 A at 5000 r/min
Stator coil resistance	0.112–0.168 Ω
Rectifier/regulator	
Regulator type	Three-phase
Regulated voltage (DC)	14.3–14.7 V
Battery	
Model	YTZ7S(F)
Voltage, capacity	12 V, 6.0 Ah (10 HR)
Bulb wattage	
Headlight	LED
Brake/tail light	LED
Front turn signal/position light	LED
Rear turn signal light	LED
Auxiliary light	LED
License plate light	LED
Meter lighting	LED
Indicator light	
Neutral indicator light	LED
Stability control indicator light	LED
Oil pressure and coolant temperature warning light	LED
High beam indicator light	LED
Turn signal indicator light	LED
Fuel level warning light	LED
Malfunction indicator light	LED
ABS warning light	LED
Auxiliary system warning light	LED
Shift indicator light	LED

Starter motor	
Brush overall length limit	5.5 mm (0.22 in)
Brush spring force	4.80–7.20 N (489–734 gf, 17.28–25.92 oz)
Mica undercut (depth)	2.40 mm (0.09 in)
Solenoid	
Steering damper solenoid resistance	49.82–56.18 Ω
Intake solenoid resistance	42.0–48.0 Ω
Fuel injection sensor	
Crankshaft position sensor resistance	189–231 Ω
Cylinder identification sensor output voltage (ON)	4.8 V
Cylinder identification sensor output voltage (OFF)	0.8 V
Intake air temperature sensor resistance	5400–6600 Ω at 0 °C (5400–6600 Ω at 32 °F)
Intake air temperature sensor resistance	289–391 Ω at 80 °C (289–391 Ω at 176 °F)
Coolant temperature sensor resistance	2513–2777 Ω at 20 °C (2513–2777 Ω at 68 °F)
Coolant temperature sensor resistance	210–221 Ω at 100 °C (210–221 Ω at 212 °F)
Fuse(s)	
Main fuse	50.0 A
Headlight fuse	7.5 A
Signaling system fuse	7.5 A
Ignition fuse	15.0 A
Radiator fan motor fuse	15.0 A
Sub radiator fan motor fuse	10.0 A
Hazard fuse	7.5 A
ABS ECU fuse	7.5 A
SCU fuse	7.5 A (YZF-R1M)
Fuel injection system fuse	15.0 A
ABS motor fuse	30.0 A
ABS solenoid fuse	15.0 A
Auxiliary fuse	2.0 A
Backup fuse	7.5 A
Electronic throttle valve fuse	7.5 A

EAS20017
TIGHTENING TORQUES

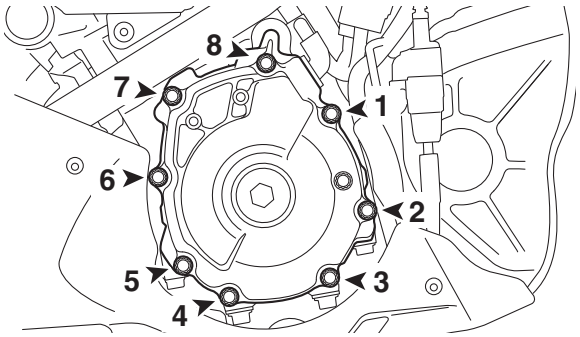
EAS30016
ENGINE TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Exhaust pipe nut	M8	8	20 N·m (2.0 kgf·m, 15 lb·ft)	
Muffler protector bolt	M6	1	10 N·m (1.0 kgf·m, 7.4 lb·ft)	
EXUP valve pulley cover bolt	M6	3	10 N·m (1.0 kgf·m, 7.4 lb·ft)	
Spark plug	M10	4	13 N·m (1.3 kgf·m, 9.6 lb·ft)	
Spark plug (new)	M10	4	18 N·m (1.8 kgf·m, 13 lb·ft)	
Cylinder head cover bolt	M6	6	10 N·m (1.0 kgf·m, 7.4 lb·ft)	
Generator rotor bolt	M10	1	85 N·m (8.5 kgf·m, 63 lb·ft)	E
Generator cover bolt	M6	8	See TIP.	
Clutch boss nut	M20	1	125 N·m (12.5 kgf·m, 92 lb·ft)	Stake. E
Clutch spring bolt	M6	3	10 N·m (1.0 kgf·m, 7.4 lb·ft)	
Clutch cover bolt	M6	10	See TIP.	
Oil filter cartridge	M20	1	17 N·m (1.7 kgf·m, 13 lb·ft)	
Oil filter cartridge union bolt	M20	1	70 N·m (7.0 kgf·m, 52 lb·ft)	E
Water pump drain bolt	M6	1	10 N·m (1.0 kgf·m, 7.4 lb·ft)	
Engine oil drain bolt	M14	1	23 N·m (2.3 kgf·m, 17 lb·ft)	

TIP

Generator cover bolt

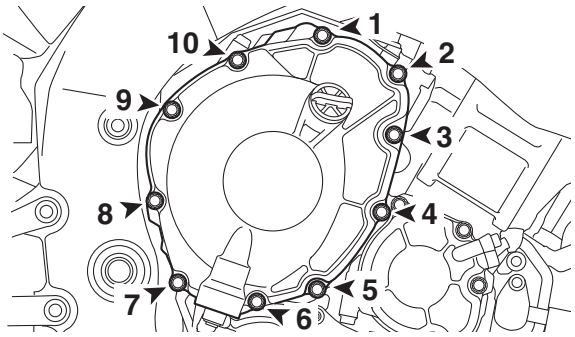
1. Tighten the bolts to 6 N·m (0.6 kgf·m, 4.4 lb·ft) with a torque wrench following the tightening order.
2. Perform the following procedure to all the bolts one by one in the tightening sequence as shown in the illustration.
   a. Loosen the bolt.
   b. Tighten the bolt to 3.0 N·m (0.30 kgf·m, 2.2 lb·ft) with a torque wrench.
   c. Tighten the bolt further to reach the specified angle 90°.



TIP

Clutch cover bolt

1. Tighten the bolts to 6 N·m (0.6 kgf·m, 4.4 lb·ft) with a torque wrench following the tightening order.
2. Perform the following procedure to all the bolts one by one in the tightening sequence as shown in the illustration.
   a. Loosen the bolt.
   b. Tighten the bolt to 3.0 N·m (0.30 kgf·m, 2.2 lb·ft) with a torque wrench.
   c. Tighten the bolt further to reach the specified angle 180°.



EAS30017
CHASSIS TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Front wheel axle nut	M24	1	115 N·m (11.5 kgf·m, 85 lb·ft)	
Front wheel axle pinch bolt	M8	4	21 N·m (2.1 kgf·m, 15 lb·ft)	See TIP.
Rear wheel sprocket nut	M10	5	100 N·m (10 kgf·m, 74 lb·ft)	
Rear wheel axle nut	M24	1	190 N·m (19 kgf·m, 140 lb·ft)	
Rear brake caliper bolt (front)	M12	1	27 N·m (2.7 kgf·m, 20 lb·ft)	LS
Rear brake caliper bolt (rear)	M8	1	12 N·m (1.2 kgf·m, 8.9 lb·ft)	LS, LT
Brake caliper bleed screw	M8	3	5 N·m (0.5 kgf·m, 3.7 lb·ft)	
Front brake caliper bolt	M10	4	35 N·m (3.5 kgf·m, 26 lb·ft)	
Handlebar bolt	M6	2	7 N·m (0.7 kgf·m, 5.2 lb·ft)	
Handlebar pinch bolt	M8	2	32 N·m (3.2 kgf·m, 24 lb·ft)	
Clutch cable locknut	M8	1	7 N·m (0.7 kgf·m, 5.2 lb·ft)	
Lower bracket pinch bolt	M8	4	23 N·m (2.3 kgf·m, 17 lb·ft)	See TIP.
Upper bracket pinch bolt	M8	2	26 N·m (2.6 kgf·m, 19 lb·ft)	
Lower ring nut	M30	1	See TIP.	
Drive sprocket nut	M22	1	140 N·m (14 kgf·m, 103 lb·ft)	Stake. E
Rear frame bolt	M10	4	37 N·m (3.7 kgf·m, 27 lb·ft)	

TIP

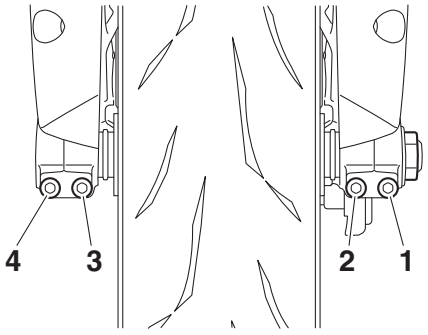
Lower ring nut

1. Tighten the ring nut to 52 N·m (5.2 kgf·m, 38 lb·ft) with a torque wrench, then loosen the lower ring nut completely.
2. Tighten the lower ring nut to 14 N·m (1.4 kgf·m, 10 lb·ft).

TIP

Front wheel axle pinch bolt

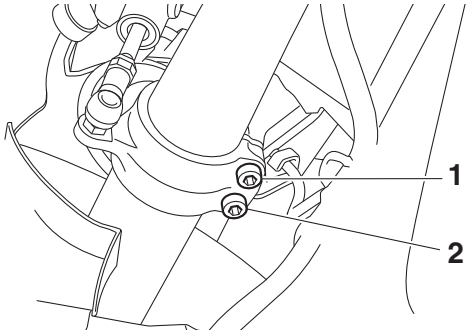
1. Tighten the pinch bolt "2", pinch bolt "1", and pinch bolt "2" to 21 N·m (2.1 kgf·m, 15 lb·ft) in this order.
2. Check that the right end of the front axle is flush with the front fork. If necessary, manually push the front axle or lightly tap it with a soft hammer until its end is flush with the front fork. However, if the surface of the front axle end is not parallel to the surface of the front fork, align a point on the outer edge of the axle with the fork, making sure that the axle does not protrude past the fork.
3. Tighten the pinch bolt "4", pinch bolt "3", and pinch bolt "4" to 21 N·m (2.1 kgf·m, 15 lb·ft) in this order.



TIP

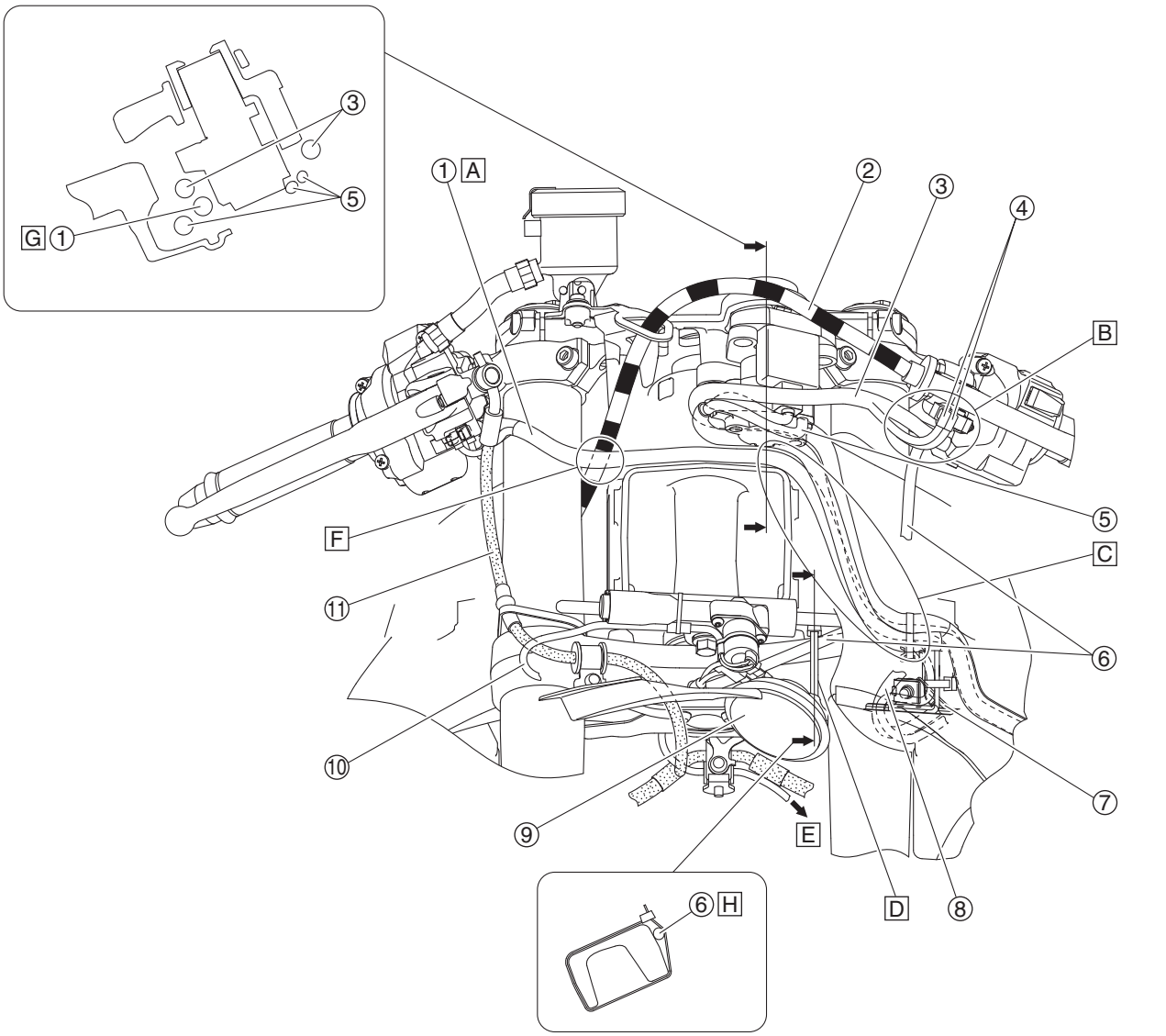
Lower bracket pinch bolt

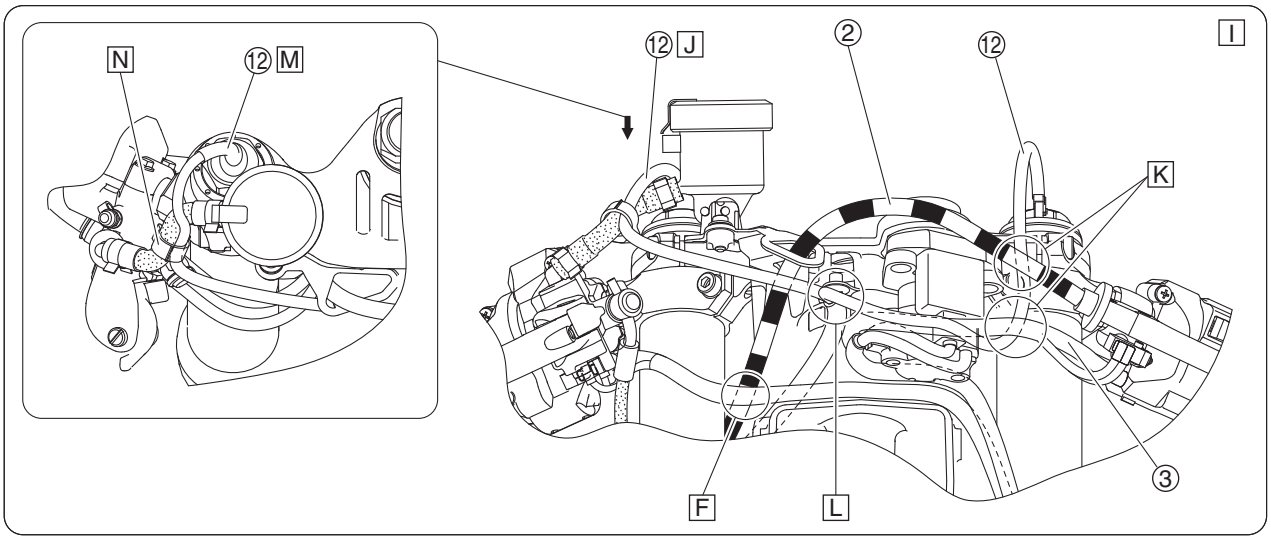
Tighten each bolt to 23 N·m (2.3 kgf·m, 17 lb·ft) in the order pinch bolt "1" → pinch bolt "2" → pinch bolt "1" → pinch bolt "2".



EAS20021
CABLE ROUTING

Handlebar (front view)

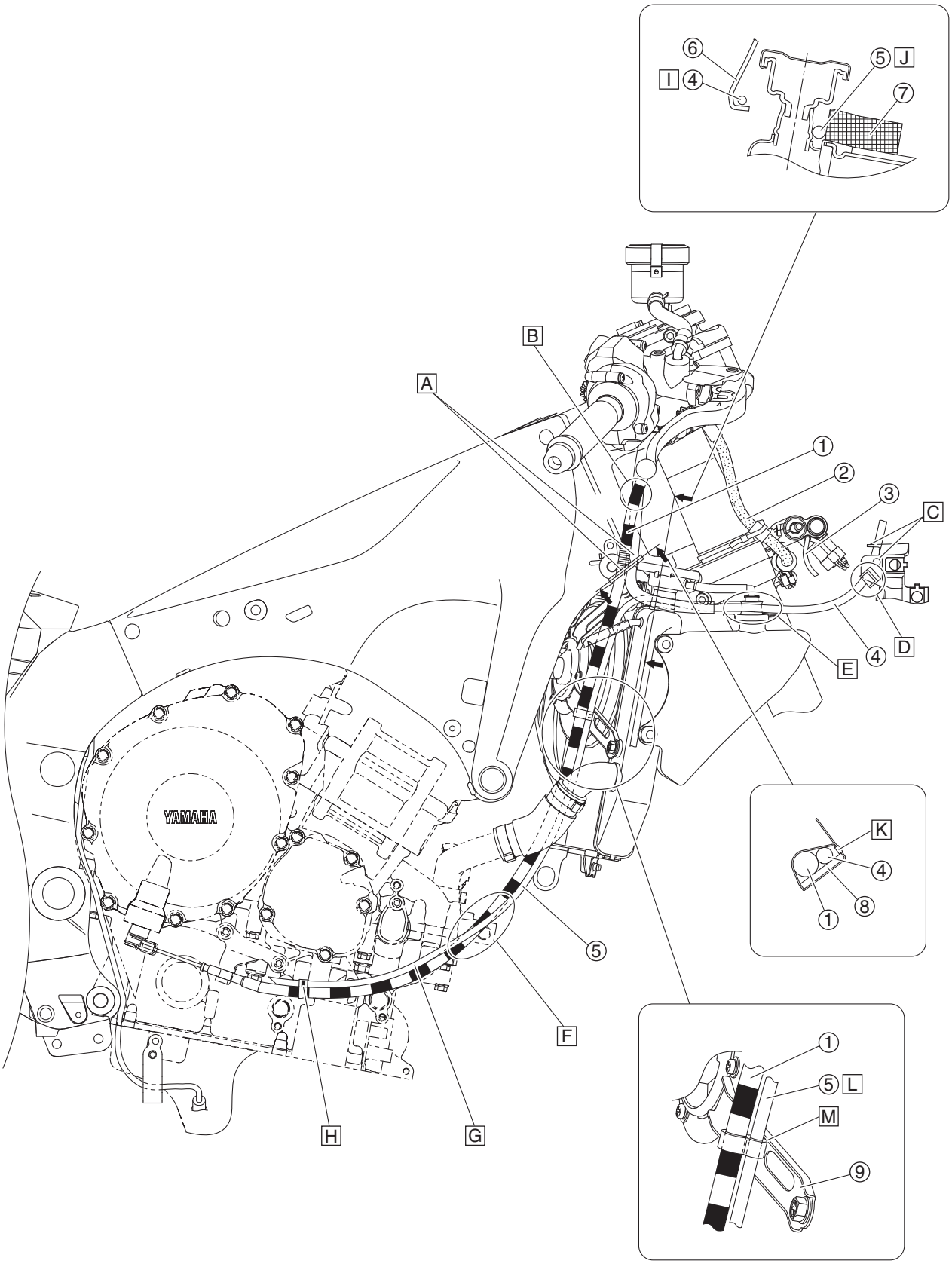




1. Handlebar switch lead (right)
2. Clutch cable
3. Handlebar switch lead (left)
4. Clutch switch connector
5. Main switch lead
6. Horn lead
7. Radiator bracket (left)
8. Intake solenoid vacuum hose
9. Horn
10. Steering damper solenoid lead
11. Front brake hose
12. Front fork stepping motor sub-wire harness

A. Route the handlebar switch lead (right) to the rear of the front brake hose. Be sure not to pinch the handlebar switch lead (right) between the front fork and the front brake hose.
B. Make sure that the horn lead and clutch switch lead do not cross.
C. Make sure that the leads do not cross within the range shown in the illustration.
D. Fasten the horn lead to the lower bracket with a plastic locking tie. Position the plastic locking tie between the outer tube and the steering lock portion of the lower bracket. Face the buckle of the plastic locking tie forward with the end pointing upward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.
E. To front wheel sensor
F. Route the clutch cable to the rear of the handlebar switch lead (right).
G. Route the handlebar switch lead (right) to the front of the main switch lead.
H. Route the horn lead to the front of the lower bracket.
I. For YZF-R1M
J. Connect the front fork stepping motor coupler (right), which is identified by the tape on the lead, to the right front fork leg.
K. Route the front fork stepping motor sub-wire harness to the rear of the clutch cable and handlebar switch lead (left).
L. Insert the projection on the front fork stepping motor sub-wire harness holder into the hole in the cable guide from the bottom of the guide. Route the front fork stepping motor sub-wire harness under the clutch cable.
M. Connect the front fork stepping motor coupler (left/right), and then slide the waterproof cover until it contacts the front fork cap bolt (left/right).
N. Fasten the front fork stepping motor sub-wire harness at the lower edge of the black tape to the straight section of the brake fluid reservoir hose with the holder. Face the catch of the holder downward.

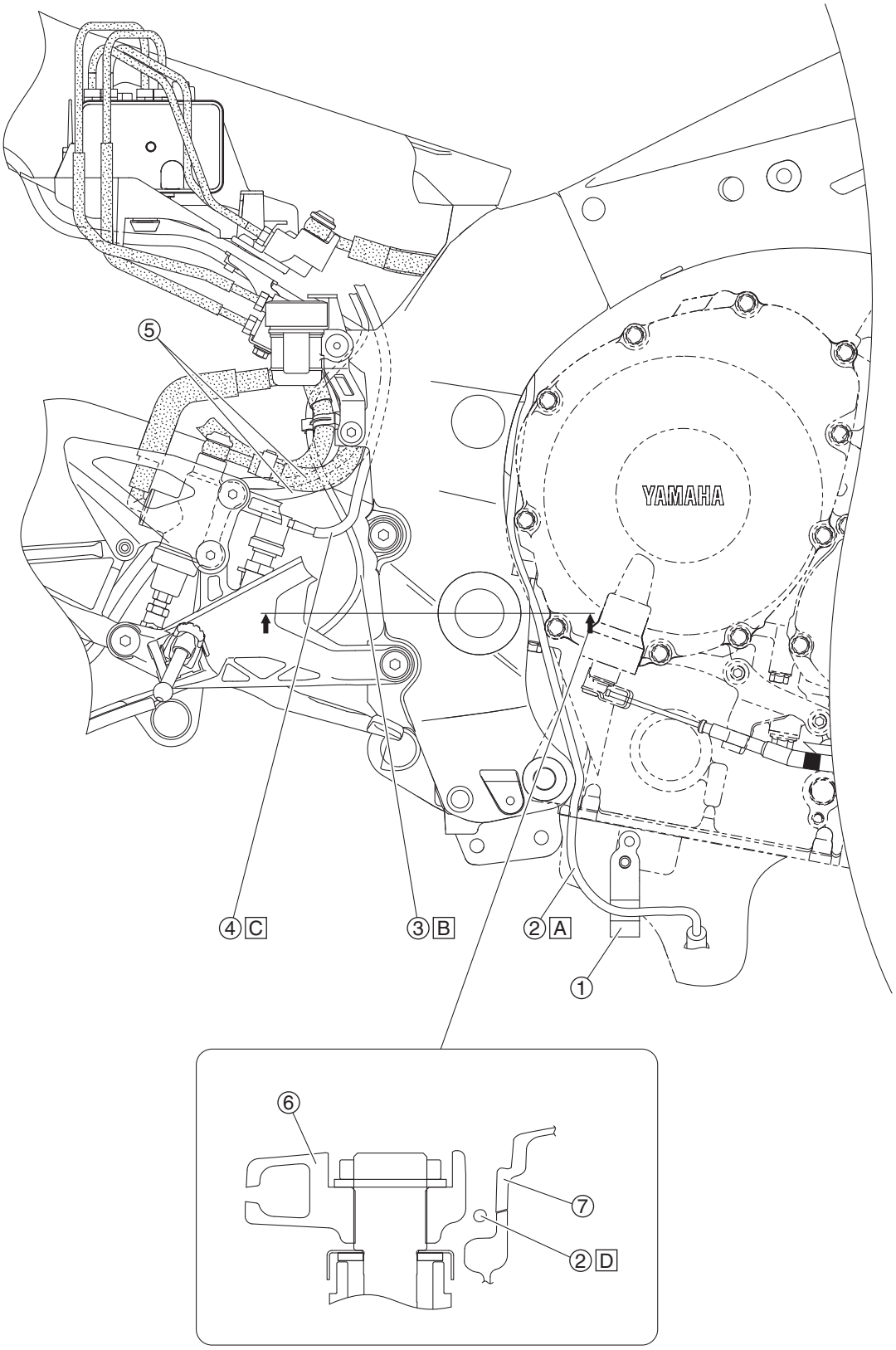
Frame (front right side view)



1. Clutch cable
2. Front brake hose (front brake master cylinder to hydraulic unit)
3. Steering damper solenoid lead
4. Front fork stepping motor sub-wire harness (for YZF-R1M)
5. Coolant reservoir breather hose
6. Side cover (right)
7. Damper
8. Radiator stay
9. Radiator bracket

A. Fasten the clutch cable and front fork stepping motor sub-wire harness (for YZF-R1M) at the positioning tape (white) on the cable and lead to the radiator stay with a plastic locking tie.
B. Route the front fork stepping motor sub-wire harness to the inside of the clutch cable. (For YZF-R1M)
C. Route the front fork stepping motor sub-wire harness between the ribs on the SCU stay. (For YZF-R1M)
D. Install the front fork stepping motor sub-wire harness holder completely onto the tab on the headlight stay. (For YZF-R1M)
E. Route the front fork stepping motor sub-wire harness to the outside of the coolant reservoir. (For YZF-R1M)
F. Cross the coolant reservoir breather hose and clutch cable so that the hose is routed to the outside of the cable.
G. Route the coolant reservoir breather hose along the clutch cable.
H. Fasten the coolant reservoir breather hose at the paint mark to the clutch cable with the holder. Route the coolant reservoir breather hose above the clutch cable.
I. Route the front fork stepping motor sub-wire harness between the right side cover and the radiator. Make sure that the front fork stepping motor sub-lead does not protrude past the right side cover. (For YZF-R1M)
J. Route the coolant reservoir breather hose between the damper and the radiator filler neck.
K. Point the end of the plastic locking tie outward. Do not cut off the excess end of the plastic locking tie.
L. Route the coolant reservoir breather hose to the outside of the clutch cable.
M. Fasten the coolant reservoir breather hose at the paint mark to the clutch cable with the holder. Make sure that the end of the holder contacts the radiator bracket as shown in the illustration.

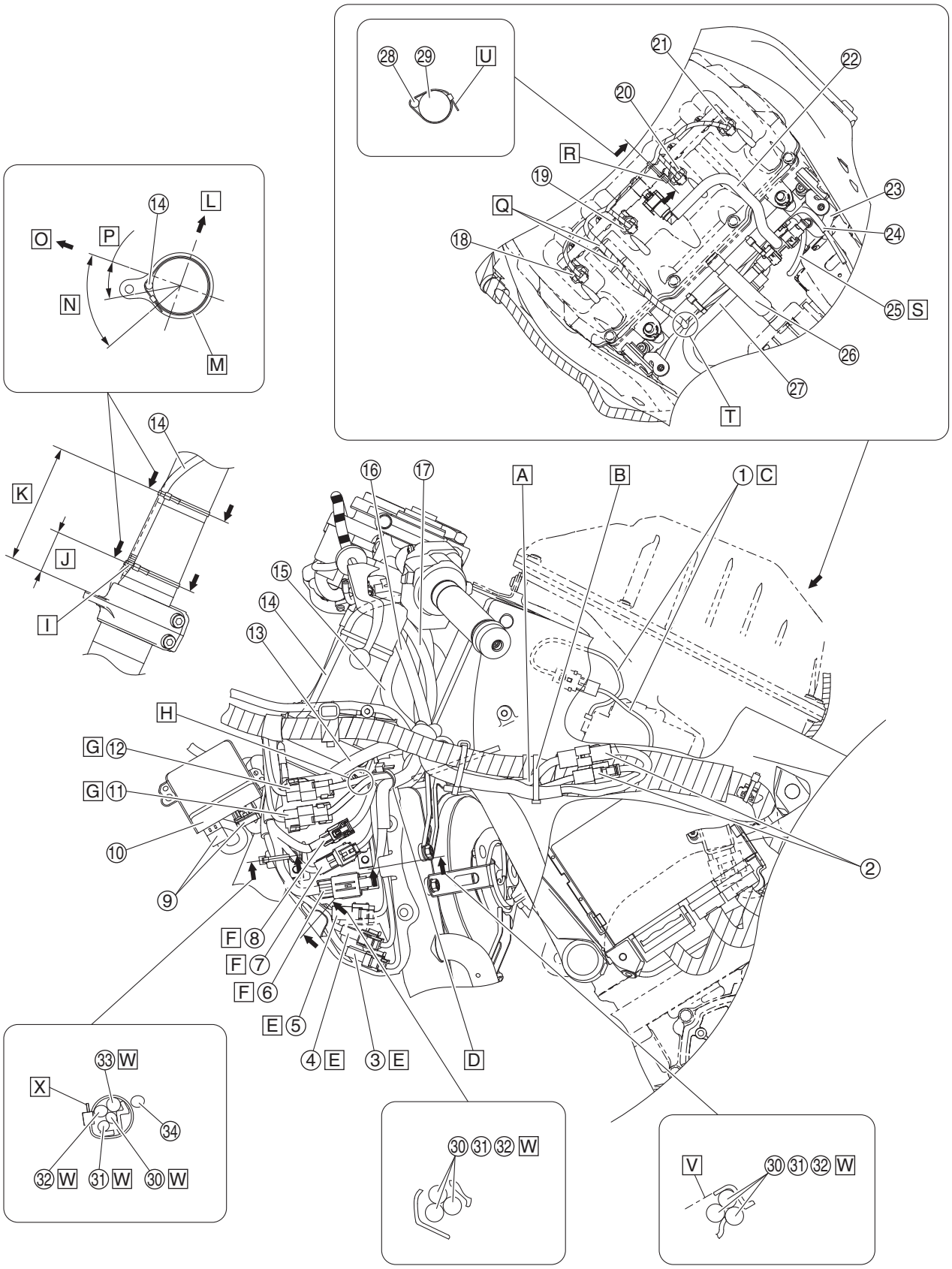
Frame (rear right side view)



1. Muffler protector bracket (right)
2. O_2 sensor lead
3. Rear wheel sensor lead
4. Rear brake light switch lead
5. EXUP cable
6. Frame
7. Clutch cover

A. Route the O_2 sensor lead over the muffler protector bracket (right).
B. Route the rear wheel sensor lead to the outside of the EXUP cables and to the inside of the brake hose.
C. Route the rear brake light switch lead to the outside of the rear wheel sensor lead.
D. Push in the O_2 sensor lead from the outside until it is aligned with the mating surface of the clutch cover.

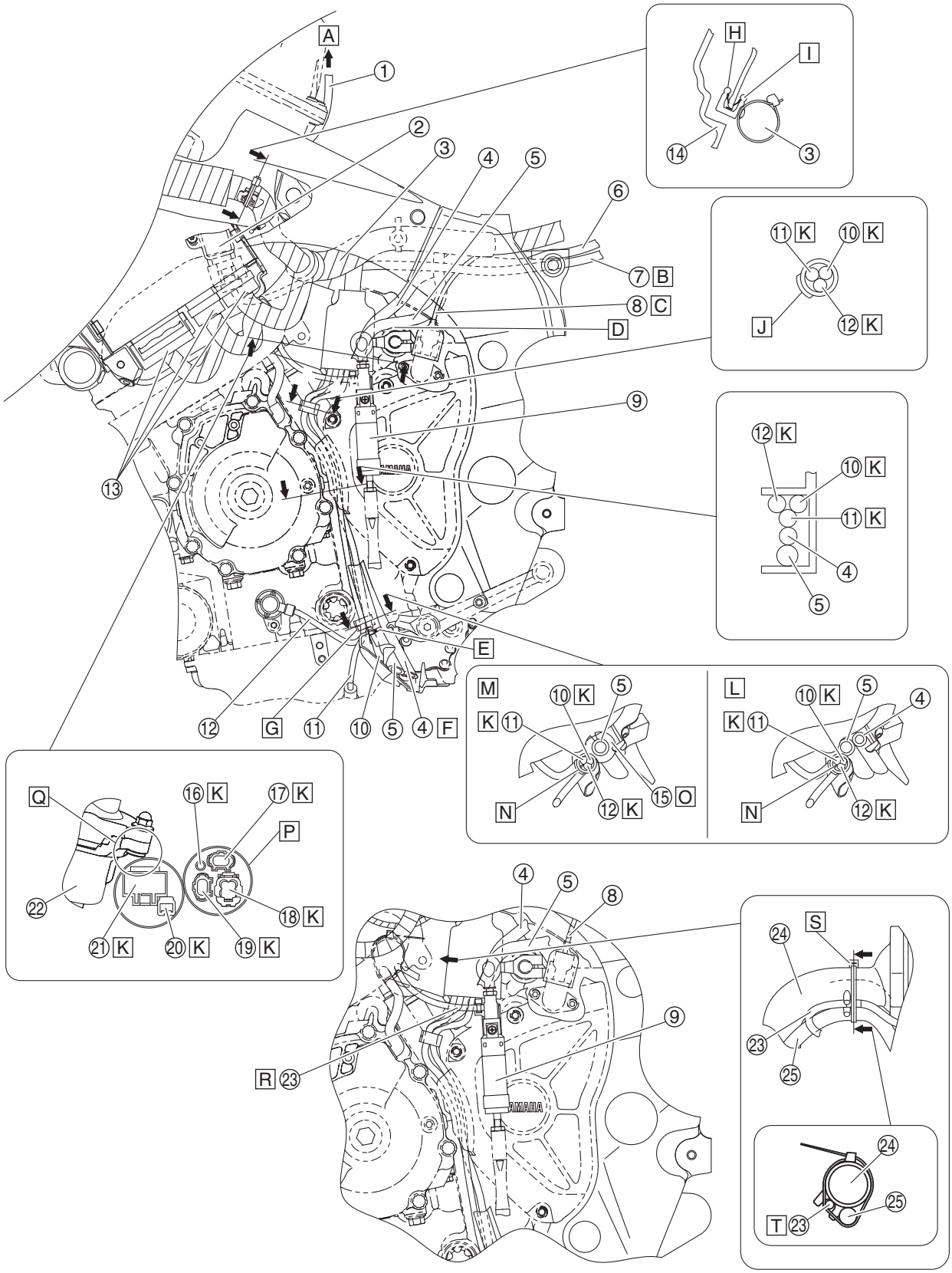
Electrical components tray (left side view)



1. Intake funnel servo motor lead
2. Main switch coupler
3. Handlebar switch coupler (right) (non-waterproof 4-pole)
4. Handlebar switch coupler (left) (non-waterproof 2-pole)
5. Handlebar switch coupler (right) (non-waterproof 6-pole)
6. Handlebar switch coupler (left) (waterproof 10-pole)
7. Handlebar switch coupler (right) (waterproof 4-pole)
8. Handlebar switch coupler (right) (waterproof 6-pole)
9. Headlight control unit coupler
10. Headlight control unit
11. Radiator fan motor lead coupler (right) (black)
12. Radiator fan motor lead coupler (left) (white)
13. Rectifier/regulator lead
14. Horn lead
15. Main switch lead
16. Handlebar switch lead (left)
17. Handlebar switch lead (right)
18. Secondary injector #1
19. Secondary injector #2
20. Secondary injector #3
21. Secondary injector #4
22. Fuel hose 2 (secondary injector fuel rail side)
23. Fuel hose 3 (fuel hose 2 to throttle body)
24. Rear shock absorber assembly stepping motor lead (for YZF-R1M)
25. Coolant temperature sensor lead
26. Crankcase breather hose
27. Fuel hose 1 (fuel tank to fuel hose 2)
28. Secondary injector lead
29. Fuel rail
30. Handlebar switch lead (right) (non-waterproof 4-pole)
31. Handlebar switch lead (left) (non-waterproof 2-pole)
32. Handlebar switch lead (right) (non-waterproof 6-pole)
33. Handlebar switch lead (left) (waterproof 10-pole)
34. Handlebar switch lead (right) (waterproof 4-pole)

A. Route the main switch leads under the wire harness.
B. Fasten the main switch leads at the white tape to the wire harness with a plastic locking tie. Position the plastic locking tie between the wire harness holder and the wire harness protector. Face the buckle of the plastic locking tie downward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.
C. Connect the intake funnel servo motor coupler on top of the frame, and then place it between the air filter case and the frame.
D. Fasten the right handlebar switch leads, left handlebar switch leads and radiator fan motor leads with a plastic locking tie. The leads may be fastened in any order. Do not fasten the rectifier/regulator lead with the plastic locking tie. Face the buckle of the plastic locking tie upward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.
E. Insert the projection on the coupler completely into the hole in the electrical components tray.
F. Install the coupler completely onto the tab on the electrical components tray.
G. Fasten the coupler with the holder on the electrical components tray.
H. The radiator fan motor leads may cross.
I. Fasten the horn lead at the white tape with a plastic locking tie.
J. 15–25 mm (0.59–0.98 in)
K. 90–100 mm (3.54–3.94 in)
L. Inward
M. Cut off the excess end of the plastic locking tie to 5 mm (0.20 in) or less.
N. 60°
Position the buckle of the plastic locking tie within the range shown in the illustration.
O. Forward
P. 30°
Position the horn lead within the range shown in the illustration.
Q. Fasten the secondary injector lead with the holders on the air filter case. Make sure that the white tape on the lead is positioned between the holders.
R. Fasten the secondary injector lead to the fuel rail with a plastic locking tie. Position the plastic locking tie at the narrow portion of the fuel rail.
S. Route the coolant temperature sensor lead under the fuel hose.
T. Route the secondary injector lead to the rear of the cross bar.
U. Fasten the secondary injector lead to the fuel rail with a plastic locking tie. Point the end of the plastic locking tie rearward. Do not cut off the excess end of the plastic locking tie.
V. Make sure that the leads do not protrude to the outside of the guide on the electrical components tray.
W. The leads may be fastened in any order.
X. Fasten the right handlebar switch leads and left handlebar switch lead with a plastic locking tie. Face the buckle of the plastic locking tie forward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.

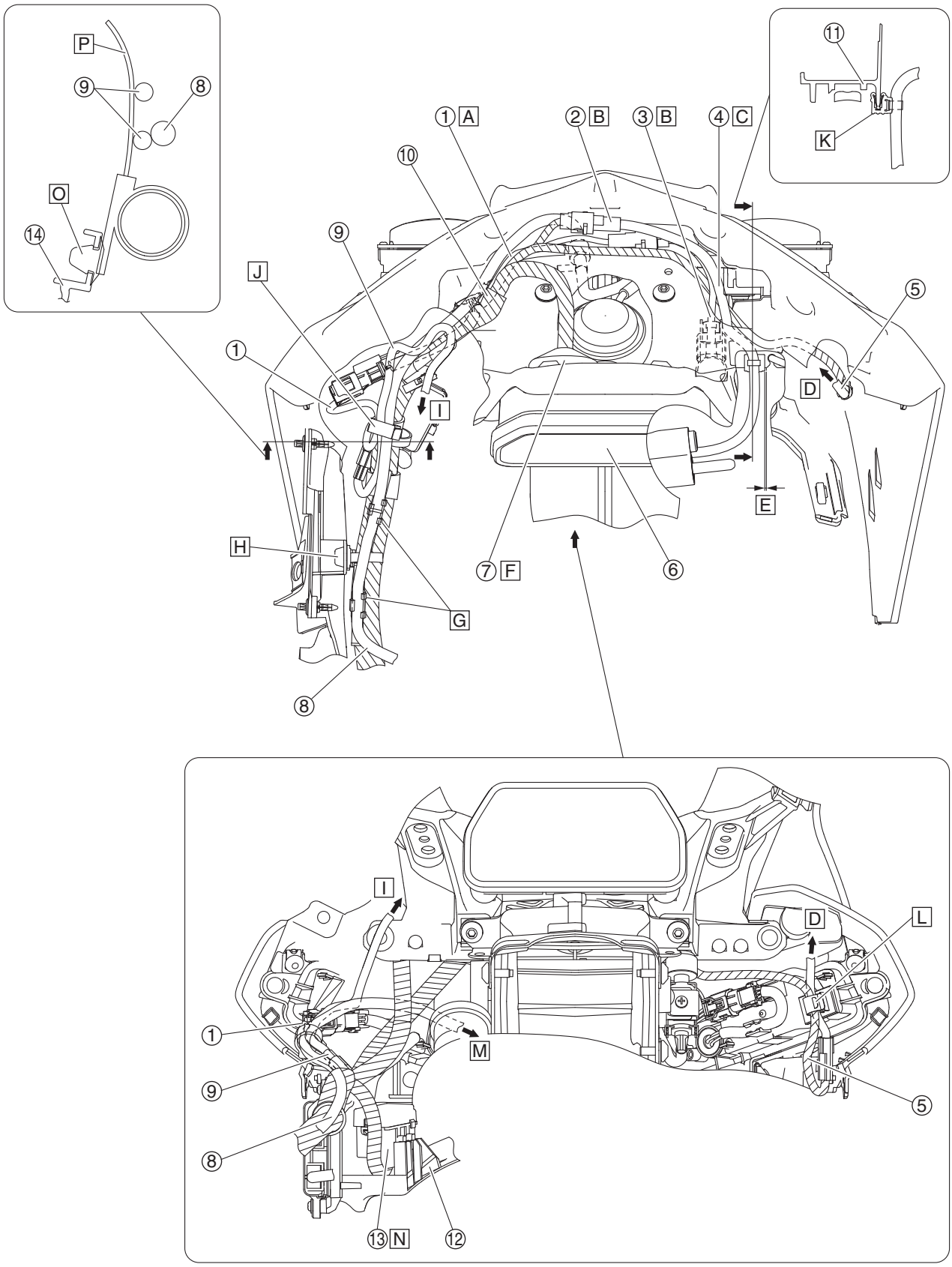
Frame (left side view)



1. Secondary injector lead
2. Throttle position sensor
3. Wire harness
4. Fuel tank breather hose (except for California)
5. Fuel tank drain hose
6. Engine ground lead
7. Starter motor lead
8. Gear position sensor lead
9. Shift sensor
10. Sidestand switch lead
11. O_2 sensor lead (left)
12. Oil pressure switch lead
13. ECU (engine control unit) coupler
14. Frame
15. Grommet
16. Oil pressure switch connector
17. Sidestand switch coupler (black)
18. O_2 sensor coupler
19. Shift sensor coupler (white)
20. Crankshaft position sensor coupler
21. Stator coil coupler
22. Thermostat assembly
23. Shift sensor lead
24. Thermostat assembly
25. Stator coil lead

A. To secondary injector
B. Route the starter motor lead under the engine ground lead.
C. Route the gear position sensor lead to the inside of the starter motor lead.
D. Route the fuel tank drain hose and fuel tank breather hose (except for California) over the boss for the shift shaft of the crankcase.
E. Route the fuel tank drain hose through the guide of the cover and position it in front of the fuel tank breather hose. Align the paint mark on the fuel tank drain hose to the guide area of the cover. (except for California)
F. Match the length of the fuel tank breather hose coming out of the guide to the length of the fuel tank drain hose. (except for California)
G. Position the cable holder below the oil level check window.
H. Insert the plastic locking tie into the frame hole. The position of the plastic locking tie may change after installation; however, make sure that it does not come off.
I. Fasten the wire harness with the plastic locking tie. Face the buckle of the plastic locking tie upward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.
J. Fasten the sidestand switch lead, O_2 sensor lead (left), and oil pressure switch lead with the holder. Position the holder between the coupler cover and the drive sprocket cover. The catch of the holder may be facing in any direction.
K. The leads may be routed in any order.
L. Except for California.
M. For California.
N. Fasten the sidestand switch lead, O_2 sensor lead (left), and oil pressure switch lead with the holder. The catch of the holder may be facing in any direction.
O. Make sure that the grommet does not protrude from the sidestand switch cover. Face the slit in the grommet inward. Make sure that the projection on the sidestand switch cover is hooked onto the groove in the grommet. Align the grommet with the paint mark on the fuel tank drain hose.
P. Place the coupler cover behind the coupler cover (stator coil side) and push it inside the projection on the chain case cover.
Q. Position the coupler cover (stator coil coupler, crankshaft position sensor coupler) to the inside of the thermostat assembly as shown in the illustration.
R. Route the shift sensor lead outside the fuel tank drain hose and fuel tank breather hose (except for California).
S. Fasten the stator coil lead and the shift sensor lead to the thermostat assembly at the positioning tape on the shift sensor lead with a plastic locking tie. Position the plastic locking tie to the inside of the protruding portion on the thermostat assembly. Point the end of the plastic locking tie rearward and upward. Do not cut off the excess end of the plastic locking tie.
T. Route the shift sensor lead between the protruding portions on the thermostat assembly.

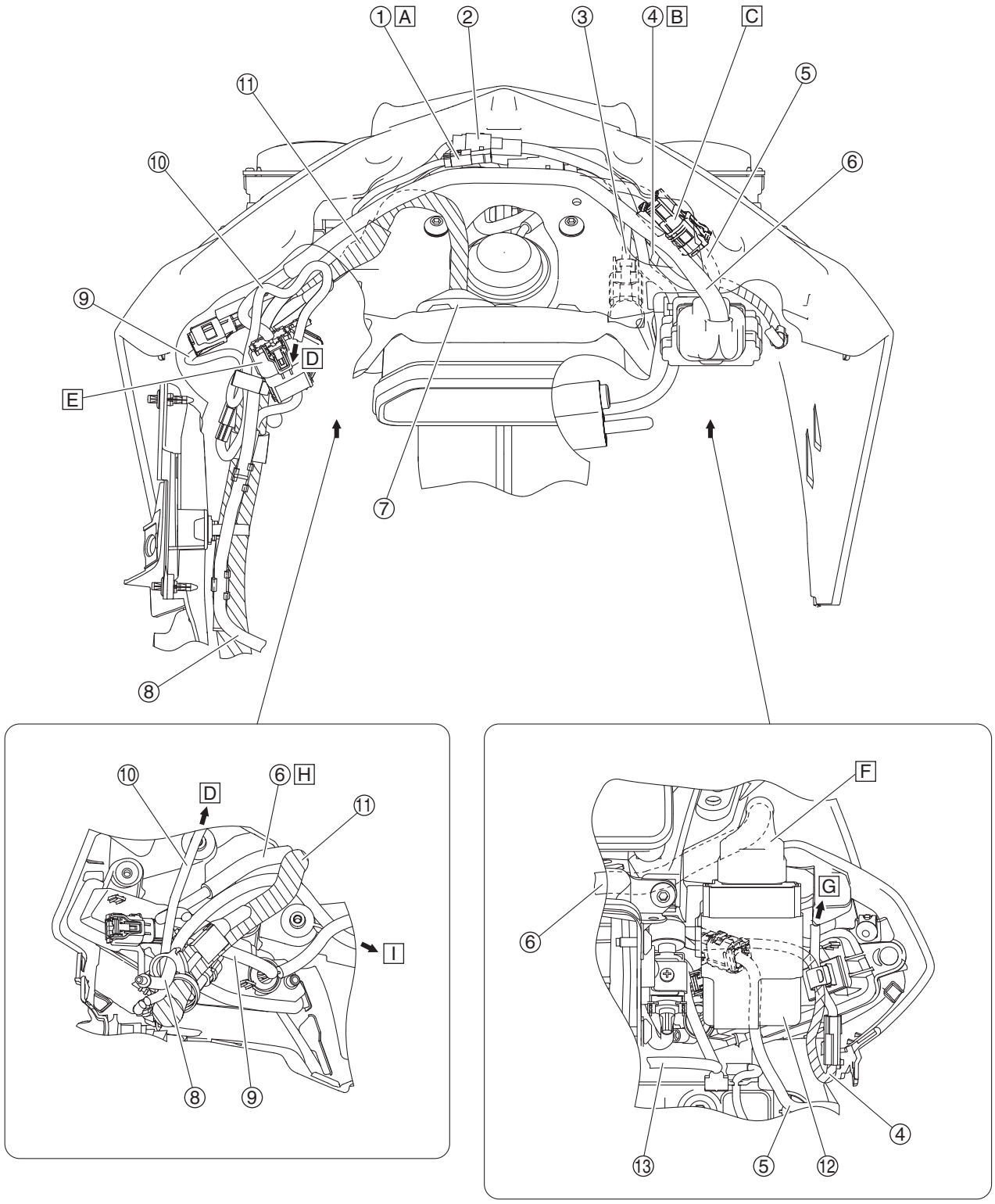
Frame (top view)



1. Auxiliary light lead
2. Steering damper solenoid coupler
3. Intake solenoid lead (sub-wire harness)
4. Steering damper solenoid lead
5. Front turn signal/position light lead (right)
6. Meter assembly
7. Meter assembly coupler
8. Intake solenoid vacuum hose
9. Front turn signal/position light lead (left)
10. Wire harness
11. Headlight assembly
12. Headlight cover
13. Fuse box 2
14. Front cowling

A. Route the auxiliary light lead under the wire harness.
B. Place the steering damper solenoid lead and intake solenoid lead (sub-wire harness) in the gap between the front cowling and front cowling assembly stay.
C. Route the front turn signal/position light lead (right) under the steering damper solenoid lead and intake solenoid lead (sub-wire harness).
D. To front turn signal/position light (right)
E. Install the holder on the steering damper solenoid lead to the curved section of the slit used for connecting the lead in the headlight assembly.
F. Install the meter assembly coupler and coupler cover securely to the meter assembly. Make sure that the edges of the coupler cover are not rolled up.
G. Fasten the intake solenoid vacuum hose with the holders on the wire harness (2 locations).
H. Insert the projection on the wire harness holder into the hole in the side cover bracket from the inside.
I. To front turn signal/position light (left)
J. Fasten the intake solenoid vacuum hose, front turn signal/position light lead (left), and auxiliary light lead with the holder. Position the holder to the outside of and above the head light control unit holder. The catch of the holder may be facing in any direction.
K. Face the holder on the steering damper solenoid lead downward, and then install the holder completely onto the rib of the headlight assembly.
L. Connect the front turn signal/position light coupler (right), and then fasten the front turn signal/position light leads (right) with the holder as shown in the illustration. The leads may be routed in any order.
M. To intake solenoid
N. Install fuse box 2 onto the rib of the front side cowling inner panel (left).
O. Insert the projection on the wire harness holder into the hole in the front cowling from the inside.
P. Position the plastic locking tie to the outside of the intake solenoid vacuum hose and front turn signal/position light lead (left).

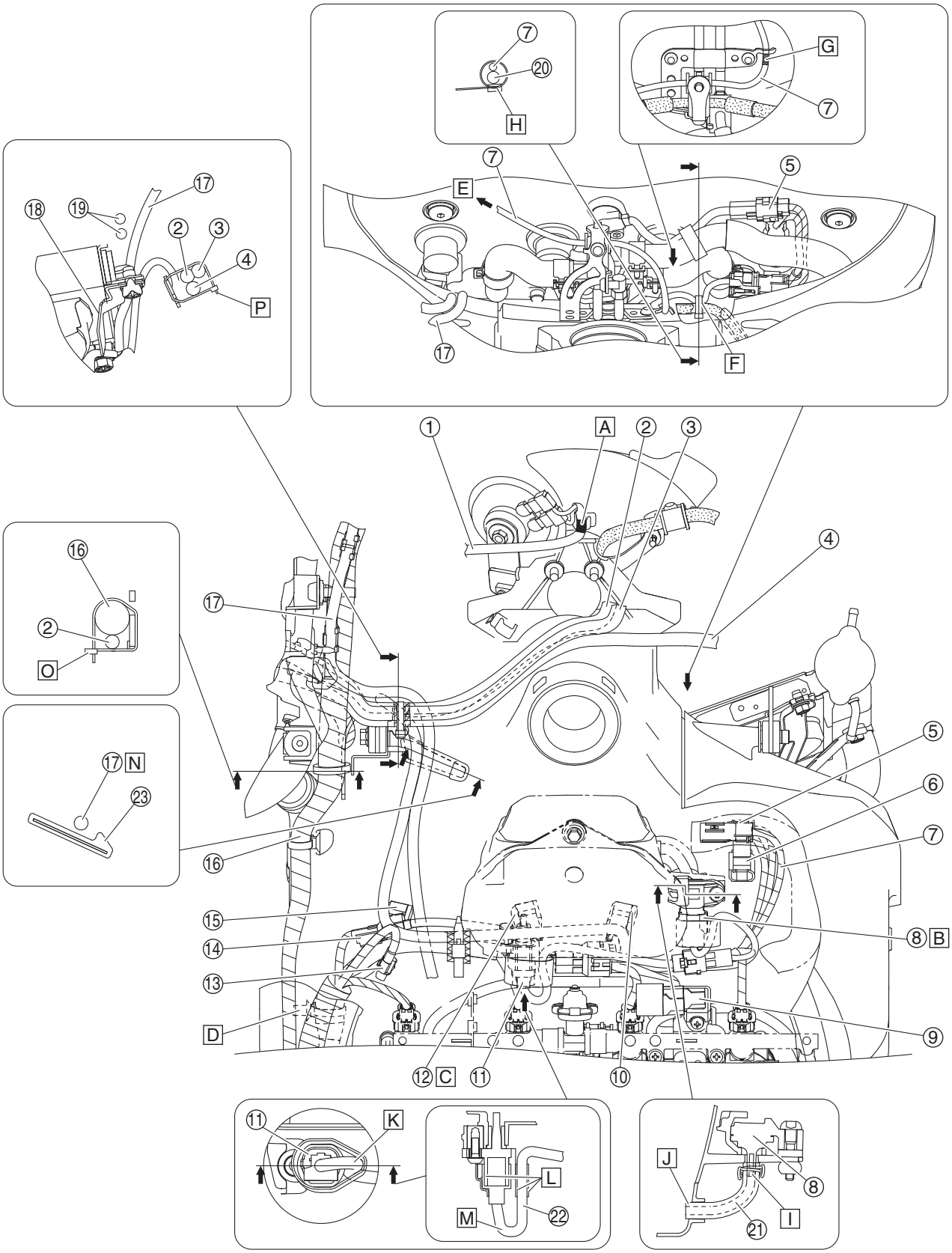
Frame (top view) (for YZF-R1M)



1. Steering damper solenoid coupler (Öhlins: OPTION)
2. Steering damper solenoid coupler
3. Intake solenoid lead
4. Front turn signal/position light lead (right)
5. Sub-wire harness (front fork stepping motor)
6. Sub-wire harness (SCU, steering damper solenoid, sub-wire harness)
7. Meter assembly coupler
8. Intake solenoid vacuum hose
9. Auxiliary light lead
10. Front turn signal/position light lead (left)
11. Wire harness
12. SCU (Suspension Control Unit)
13. Steering damper solenoid lead

A. The steering damper solenoid coupler (Öhlins: OPTION) may be positioned in any place.
B. Route the front turn signal/position light lead (right) under the intake solenoid lead, steering damper solenoid lead, and sub-wire harness (front fork stepping motor).
C. Connect the sub-wire harness (front fork stepping motor) to the sub-wire harness (SCU, steering damper solenoid, sub-wire harness).
D. To front turn signal/position light (left)
E. Connect the sub-wire harness (SCU, steering damper solenoid, sub-wire harness) to the wire harness.
F. After connecting the SCU coupler, install the rubber cover completely until it contacts the SCU (Suspension Control Unit). Make sure that the edges of the coupler cover are not rolled up.
G. To front turn signal/position light (right)
H. Route the sub-wire harness (SCU, steering damper solenoid, sub-wire harness) over the intake solenoid vacuum hose.
I. To intake solenoid

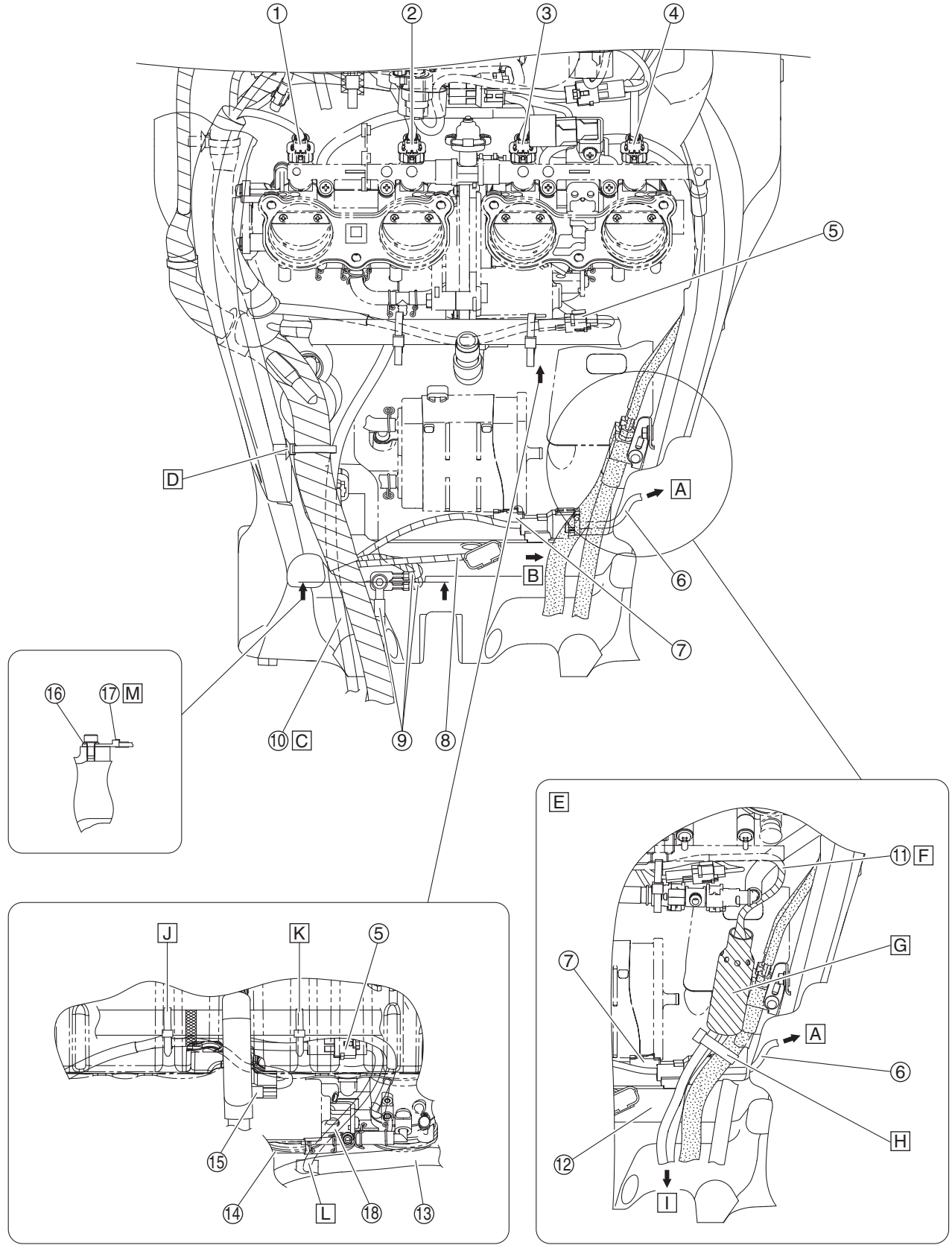
Frame (top view)



1. Horn lead
2. Main switch lead
3. Handlebar switch lead (left)
4. Handlebar switch lead (right)
5. Cylinder identification sensor coupler
6. Ignition coil #4 coupler
7. Front wheel sensor lead
8. Atmospheric pressure sensor coupler
9. Intake air pressure sensor coupler
10. Ignition coil #3 coupler
11. Intake air temperature sensor coupler
12. Ignition coil #2 coupler
13. Intake funnel servo motor coupler
14. Air induction system solenoid coupler
15. Ignition coil #1 coupler
16. Wire harness
17. Intake solenoid vacuum hose
18. Radiator bracket
19. Radiator fan motor lead
20. Front brake hose
21. Atmospheric pressure sensor hose
22. Intake air temperature sensor lead
23. Guide

A. Fasten the horn lead at the white tape with the holder on the lower bracket cover as shown in the illustration.
B. Identified by the mark “A” on the lead
C. Route the ignition coil #2 lead over the air induction system solenoid lead.
D. Insert the projection on the wire harness holder into the hole in the frame.
E. To front wheel sensor
F. Fasten the edge of the shrink-tubing portion of the front wheel sensor lead to the brake pipe with a plastic locking tie.
G. Fasten the front wheel sensor lead at the positioning tape with the holder as shown in the illustration.
H. Fasten the front wheel sensor lead at the bend in the brake pipe with a plastic locking tie as shown in the illustration. Point the end of the plastic locking tie rearward. Do not cut off the excess end of the plastic locking tie.
I. Make sure that the end of the atmospheric pressure sensor hose contacts the air filter case duct. Point the ends of the hose clamp to the rearward. Position the hose clamp 0–4 mm (0–0.2 in) from the end of the hose.
J. Make sure that the atmospheric pressure sensor hose is coming out of the inside of the air filter case duct.
K. Fold the intake air temperature sensor lead so that it does not get on the lock part of the coupler as shown in the illustration.
L. Wrap the insulating tape around the intake air temperature sensor lead, wrapping it more than once, then three wraps or more around the lead and the coupler together.
M. The folded portion of the intake air temperature sensor lead does not have to be wrapped with insulating tape.
N. Route the intake solenoid vacuum hose over the guide and to the outside of the projection on the guide.
O. Fasten the main switch lead and wire harness to the guide with a plastic locking tie. Face the buckle of the plastic locking tie downward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.
P. Fasten the leads (right handlebar switch lead [blue tape], left handlebar switch lead [gray tape] and main switch lead [white tape] at the positioning tape on each lead to the guide with a plastic locking tie. Face the buckle of the plastic locking tie rearward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.

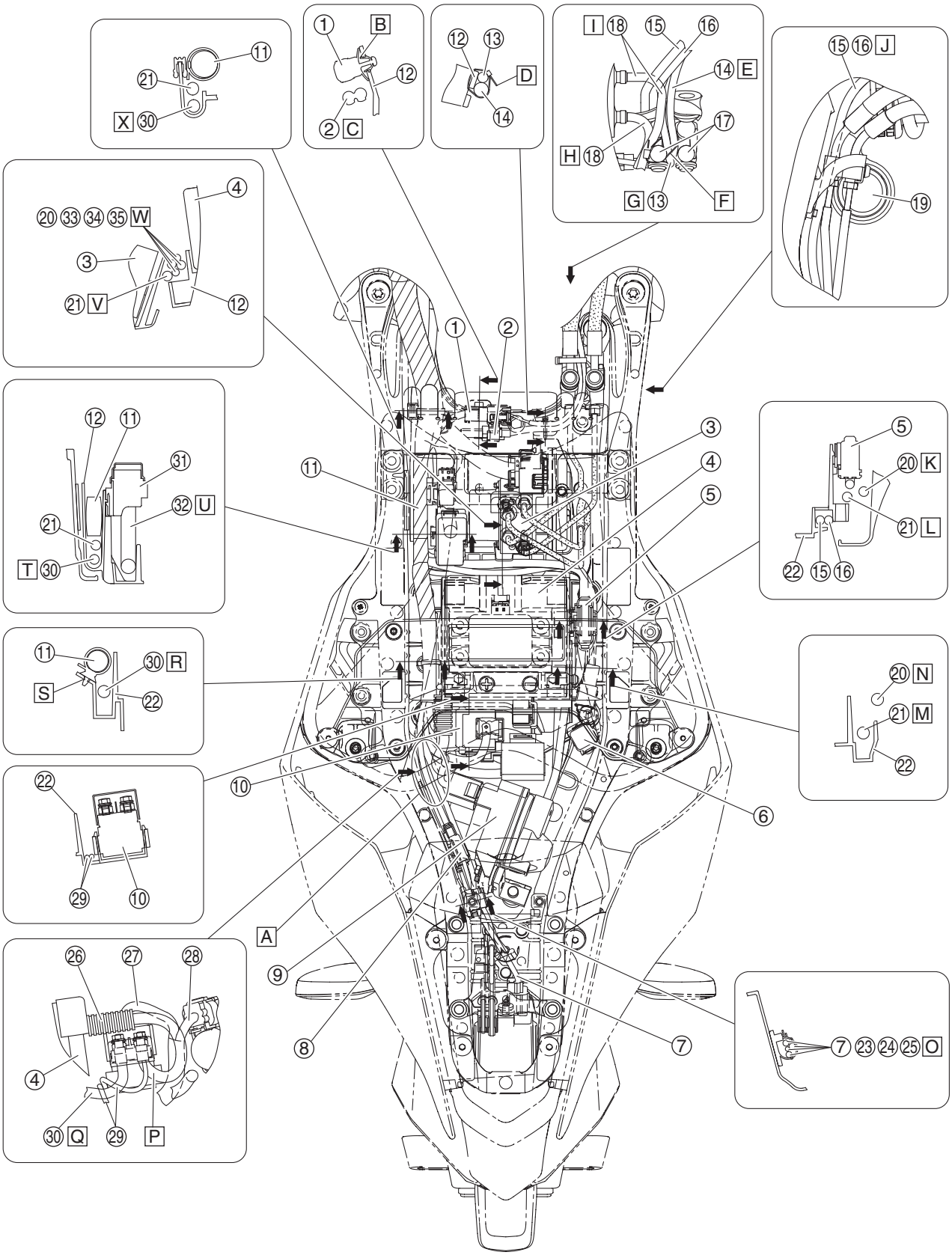
Frame (top view)



1. Primary injector #1
2. Primary injector #2
3. Primary injector #3
4. Primary injector #4
5. Coolant temperature sensor coupler (sub-wire harness)
6. O_2 sensor lead
7. Neutral switch coupler
8. Fuel pump lead
9. Engine ground lead
10. Starter motor lead
11. Rear shock absorber assembly stepping motor lead (for YZF-R1M)
12. Frame
13. Cooling system air bleed hose
14. Canister purge hose (for California)
15. Throttle servo motor coupler
16. Round terminal
17. Combination terminal
18. Coolant temperature sensor lead (sub-wire harness)

A. To O_2 sensor
B. To fuel pump
C. Route the starter motor lead under the wire harness.
D. Insert the projection on the wire harness holder into the hole in the frame.
E. For YZF-R1M
F. Route the rear shock absorber assembly stepping motor lead (for YZF-R1M) to the outside of the fuel hose.
G. Connect the rear shock absorber assembly stepping motor leads (for YZF-R1M) according to those with identification tape (yellow) and those without identification tape, and then cover the couplers with the coupler cover.
H. Fasten the rear shock absorber assembly stepping motor leads (for YZF-R1M) to the lower portion of the brake hose with a plastic locking tie. Position the plastic locking tie between the front of the frame and rear end of the coupler cover. Be sure to fasten the plastic locking tie around the protective sleeves of the leads, not the leads themselves. Face the buckle of the plastic locking tie inward with the end pointing downward. Do not cut off the excess end of the plastic locking tie.
I. To rear shock absorber assembly
J. Fasten the wire harness to the cross bar with a plastic locking tie at the concave portion of the air filter case. Point the end of the plastic locking tie downward. Do not cut off the excess end of the plastic locking tie.
K. Fasten the coolant temperature sensor lead and wire harness to the cross bar with a plastic locking tie at the concave portion of the air filter case. Point the end of the plastic locking tie downward. Do not cut off the excess end of the plastic locking tie.
L. Route the coolant temperature sensor lead to the engine side of the canister purge hose (for California) and the cooling system air bleed hose.
M. Fasten the engine ground leads with the bolt so that the crimped section of the terminal is facing upward.

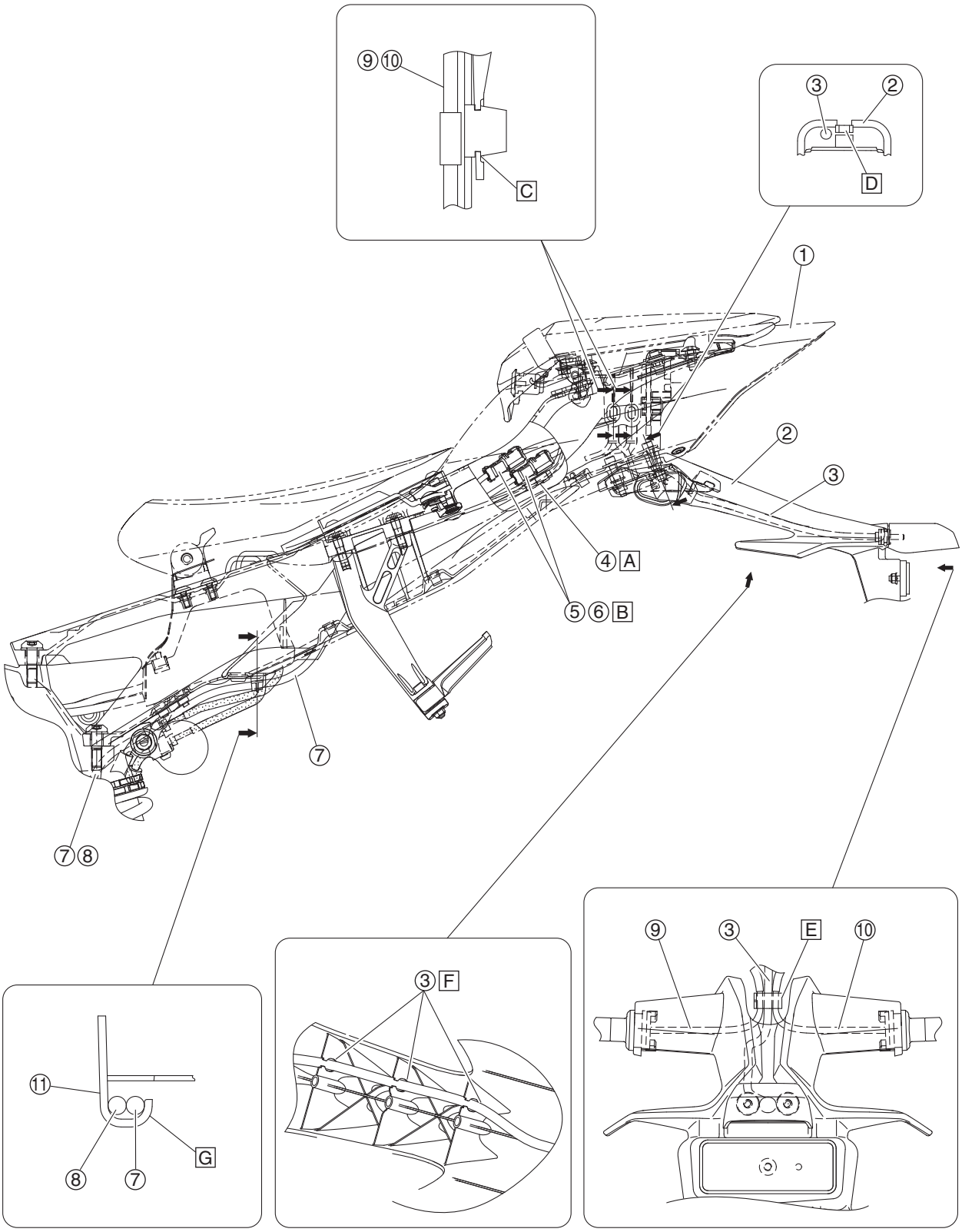
Rear fender (top view)



1. Rear wheel sensor coupler
2. Rear brake light switch coupler
3. Hydraulic unit
4. Battery
5. Joint coupler
6. Yamaha diagnostic tool coupler
7. Tail/brake light lead
8. Rear turn signal light coupler
9. EXUP servo motor
10. Starter relay
11. Wire harness
12. Hydraulic unit tray
13. Rear wheel sensor lead
14. Rear brake light switch lead
15. EXUP cable 2
16. EXUP cable 1
17. Brake hose
18. Rear shock absorber assembly stepping motor lead (for YZF-R1M)
19. Rear shock absorber assembly gas cylinder
20. Yamaha diagnostic tool coupler lead
21. Negative battery lead
22. Battery box
23. License plate light lead
24. Rear turn signal light lead (left)
25. Rear turn signal light lead (right)
26. Positive battery lead
27. Starter relay lead
28. EXUP servo motor lead
29. Main fuse lead
30. Starter motor lead
31. Fuse box
32. Fuse box lead
33. Joint coupler lead
34. IMU lead
35. CCU lead (To sub-wire harness for YZF-R1M)

A. The rear turn signal light leads, license plate light lead, and tail/brake light lead may be routed in any order.
B. Insert the projection on the rear wheel sensor coupler into the hole in the hydraulic unit tray.
C. Position the rear brake light switch coupler toward the hydraulic unit.
D. Fasten the rear wheel sensor lead and rear brake light switch lead to the hydraulic unit tray with a plastic locking tie. Point the end of the plastic locking tie upward, and then cut off the excess end of the tie to 5 mm (0.2 in) or less.
E. Route the rear brake light switch lead to the outside of the EXUP cables, and between the brake hoses.
F. Fasten the rear wheel sensor lead and rear brake light switch lead to the brake hose with a plastic locking tie. Point the end of the plastic locking tie downward.
G. Route the rear wheel sensor lead to the outside of the EXUP cables, and between the brake hoses.
H. Route the rear shock absorber assembly stepping motor lead to the inside of the brake hose and to the inside of rear brake light switch lead. (For YZF-R1M)
I. Route the rear shock absorber assembly stepping motor lead to the outside of the EXUP cables, to the inside of the rear brake light switch lead, and to the inside of the brake hose. (For YZF-R1M)
J. Route the EXUP cables to the front of the rear shock absorber assembly gas cylinder.
K. Route the Yamaha diagnostic tool coupler lead under the joint coupler.
L. Route the negative battery lead under the joint coupler.
M. Route the negative battery lead between the ribs.
N. Route the Yamaha diagnostic tool coupler lead outside of the negative battery lead.
O. Fasten the tail/brake light lead, license plate light lead with the holder. The leads may be routed in any order.
P. Route the positive battery lead over the EXUP servo motor lead and starter relay lead.
Q. Route the starter motor lead under the main fuse lead.
R. Route the starter motor lead into the space in the battery box.
S. Insert the projection on the holder into the hole in the battery box.
T. Route the starter motor lead under the wire harness and negative battery lead.
U. Route the fuse box lead between the outer rib of the hydraulic unit tray and the rib for installing the fuse box.
V. Route the negative battery lead under the other leads.
W. Route the Yamaha diagnostic tool coupler lead, joint coupler lead, IMU lead, and CCU lead to the inside of the rib on the hydraulic unit tray. The leads may be routed in any order.
X. Route the starter motor lead under the negative battery lead.

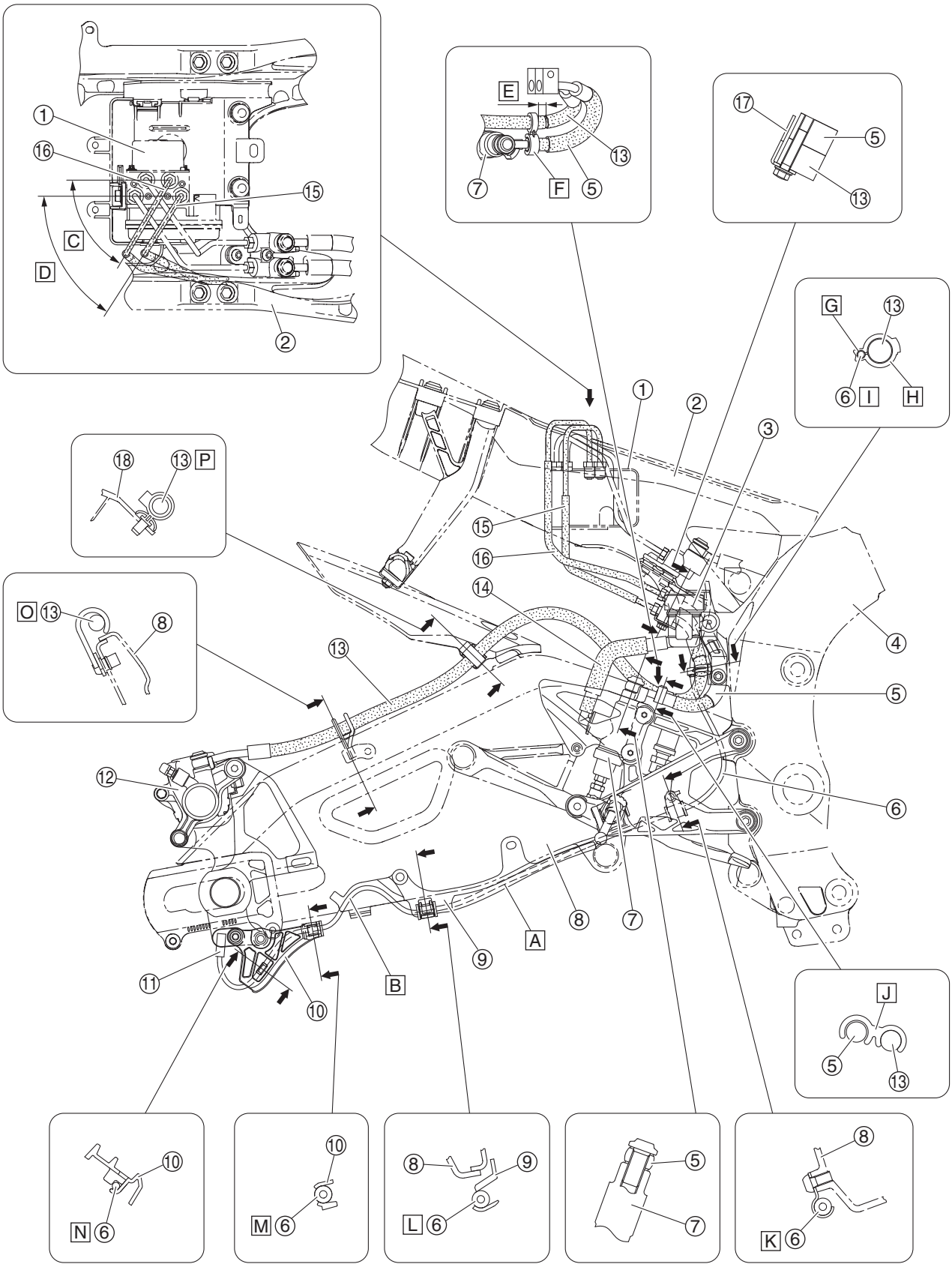
Rear fender (left side view)



1. Rear fender
2. Mudguard assembly
3. License plate light lead
4. License plate light coupler
5. Rear turn signal light coupler (left)
6. Rear turn signal light coupler (right)
7. EXUP cable 2
8. EXUP cable 1
9. Rear turn signal light lead (left)
10. Rear turn signal light lead (right)
11. Hydraulic unit tray

A. Route the license plate light lead under the rear turn signal light couplers.
B. Rear turn signal light (left): Connect the black sections of the coupler. Rear turn signal light (right): Connect the white sections of the coupler. The rear turn signal light coupler (left) and rear turn signal light coupler (right) may be positioned in any order.
C. Insert the projection on each rear turn signal light lead holder into the hole in the tail/brake light bracket. The rear turn signal light lead holders may be placed in any order.
D. Make sure that the license plate light lead is not positioned on top of the nut on the mudguard assembly.
E. Fasten the license plate light lead and rear turn signal light leads with the holder. Position the holder to the rear of the ends of the protective sleeves of the rear turn signal light leads, making sure that the protective sleeves are not rolled up.
F. Fasten the license plate light lead with the holders on the mudguard assembly.
G. Route the EXUP cables through the guide on the hydraulic unit tray.

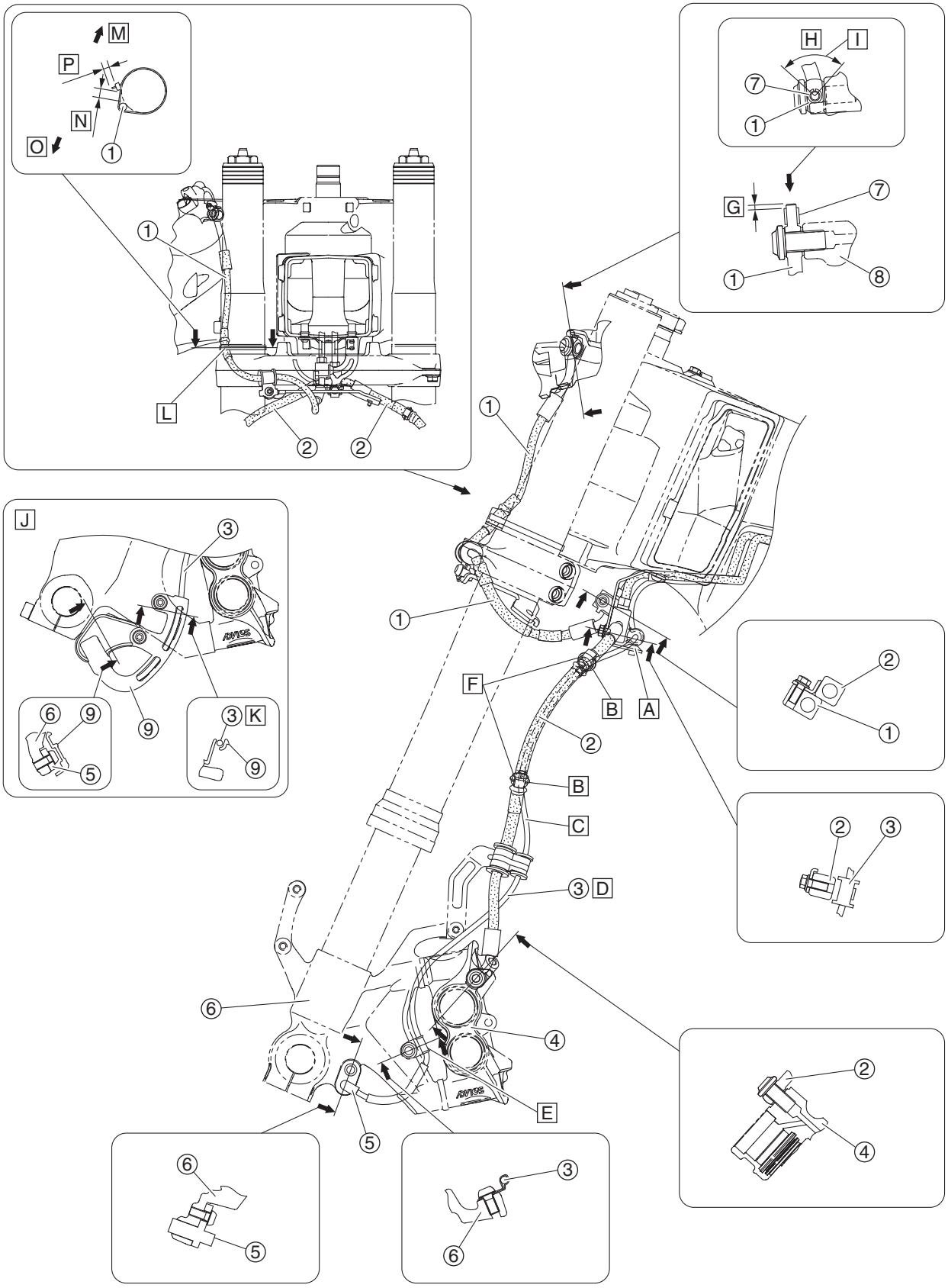
Rear brake hose (right side view)



1. Hydraulic unit
2. Rear frame
3. Brake fluid reservoir
4. Frame
5. Brake hose (rear brake master cylinder to hydraulic unit)
6. Rear wheel sensor lead
7. Rear brake master cylinder
8. Swingarm assembly
9. Rear wheel sensor lead cover
10. Rear wheel sensor protector
11. Rear wheel sensor
12. Rear brake caliper
13. Brake hose (hydraulic unit to rear brake caliper)
14. Brake fluid reservoir hose
15. Hydraulic unit brake pipe (hydraulic unit to rear brake caliper)
16. Hydraulic unit brake pipe (rear brake master cylinder to hydraulic unit)
17. Rear brake hose bracket
18. Rear fender

A. Make sure that the rear wheel sensor lead does not protrude from the rear wheel sensor lead cover.
B. Route the rear wheel sensor lead between the swingarm assembly and the rear wheel sensor lead cover.
C. 59.3°
D. 57.3°
E. Install the holder 0–10 mm (0–0.39 in) from the slit in the brake hose protector.
F. Position the holder as shown in the illustration.
G. Route the rear wheel sensor lead to the rear of the brake hose (hydraulic unit to rear brake caliper).
H. Position the holder 0–10 mm (0–0.39 in) from the top edge of the brake hose protector.
I. Fasten the rear wheel sensor lead under the white tape on the lead with the holder.
J. Install the larger diameter side of the holder on the metal fitting section of the brake hose (rear brake master cylinder to hydraulic unit).
K. Fasten the grommet on the rear wheel sensor lead with the holder.
L. Fasten the grommet on the rear wheel sensor lead with the holder on the rear wheel sensor lead cover.
M. Fasten the grommet on the rear wheel sensor lead with the holder on the rear wheel sensor protector.
N. Fasten the rear wheel sensor lead with the holder on the rear wheel sensor protector.
O. Route the brake hose (hydraulic unit to rear brake caliper) between the rear brake hose holder and the swingarm assembly.
P. Fasten the brake hose (hydraulic unit to rear brake caliper) with the holder. Face the catch of the holder upward.

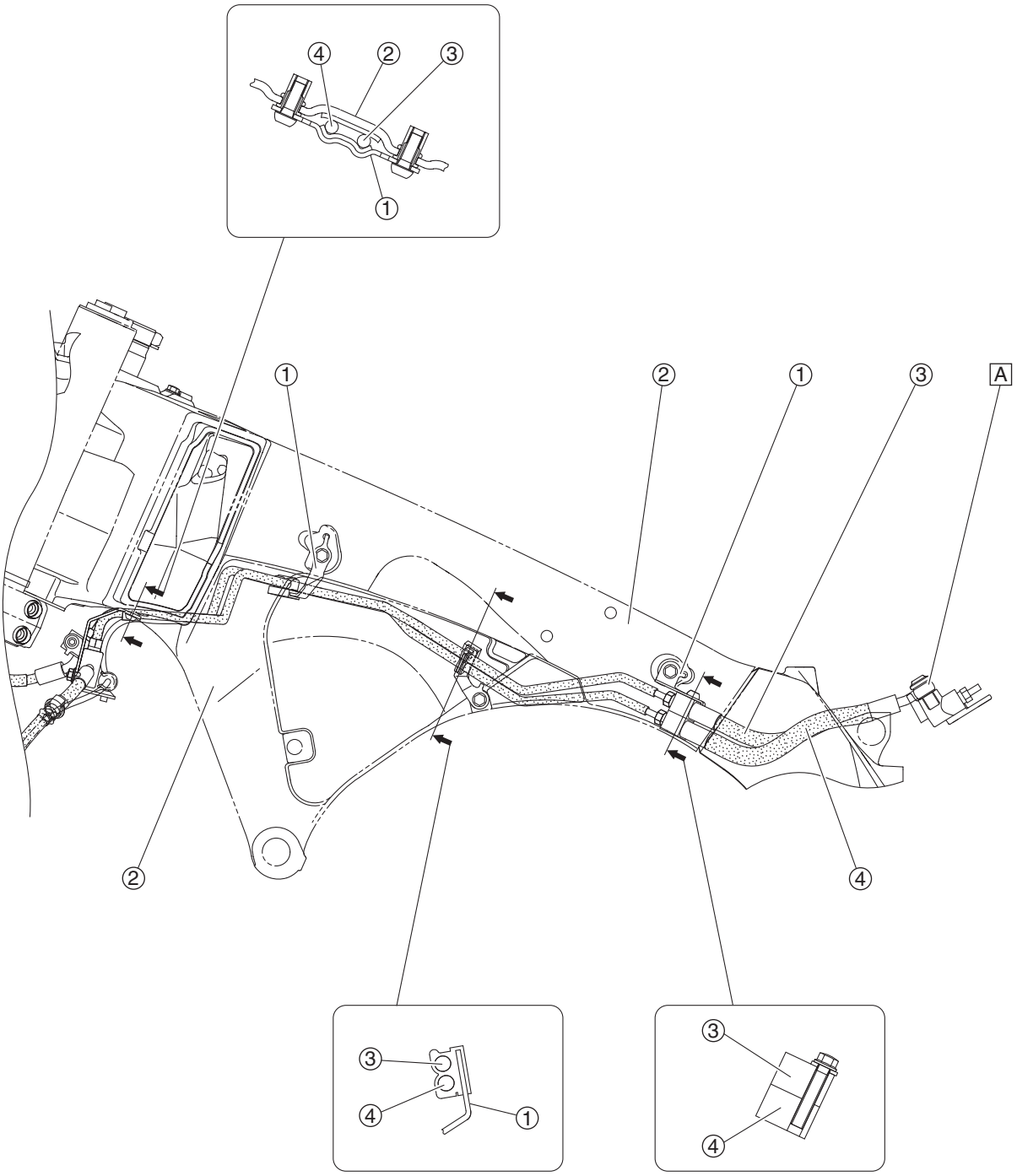
Front brake hose (left side view)



1. Brake hose (front brake master cylinder to hydraulic unit)
2. Brake hose (hydraulic unit to front brake calipers)
3. Front wheel sensor lead
4. Front brake caliper
5. Front wheel sensor
6. Front fork leg
7. Collar
8. Front brake master cylinder
9. Front wheel sensor protector

A. Point the open ends of the holder forward.
B. Fasten the front wheel sensor lead to the brake hose (hydraulic unit to front brake calipers) with the holder. Position the holder above the flange on the brake hose (hydraulic unit to front brake calipers). Route the front wheel sensor lead to the inside of the brake hose (hydraulic unit to front brake calipers).
C. Route the front wheel sensor lead along the left hose of the brake hose (hydraulic unit to front brake calipers) without any slack.
D. Route the front wheel sensor lead to the inside of the brake hose (hydraulic unit to front brake calipers).
E. Fasten the front wheel sensor lead at the white tape with the holder.
F. Install the holder on the shrink-tubing portion of the brake hose (hydraulic unit to front brake calipers).
G. Install the collar so that the edge of the collar is positioned 1–2 mm (0.04–0.08 in) from the end of the projection.
H. 90°
I. Install the collar so that its slit is positioned within the range shown in the illustration.
J. For YZF-R1M
K. Route the front wheel sensor lead through the guide on the front wheel sensor protector.
L. Fasten the brake hose (front brake master cylinder to hydraulic unit) at the shrink-tubing portion of the hose to the outer tube with a plastic locking tie. Position the plastic locking tie below the flange on the brake hose (front brake master cylinder to hydraulic unit).
M. Rearward
N. Position the buckle of the plastic locking tie 10 mm (0.39 in) or more from the brake hose (front brake master cylinder to hydraulic unit).
O. Forward
P. Cut off the excess end of the plastic locking tie to 5 mm (0.2 in) or less. The end of the plastic locking tie may be pointing in any direction.

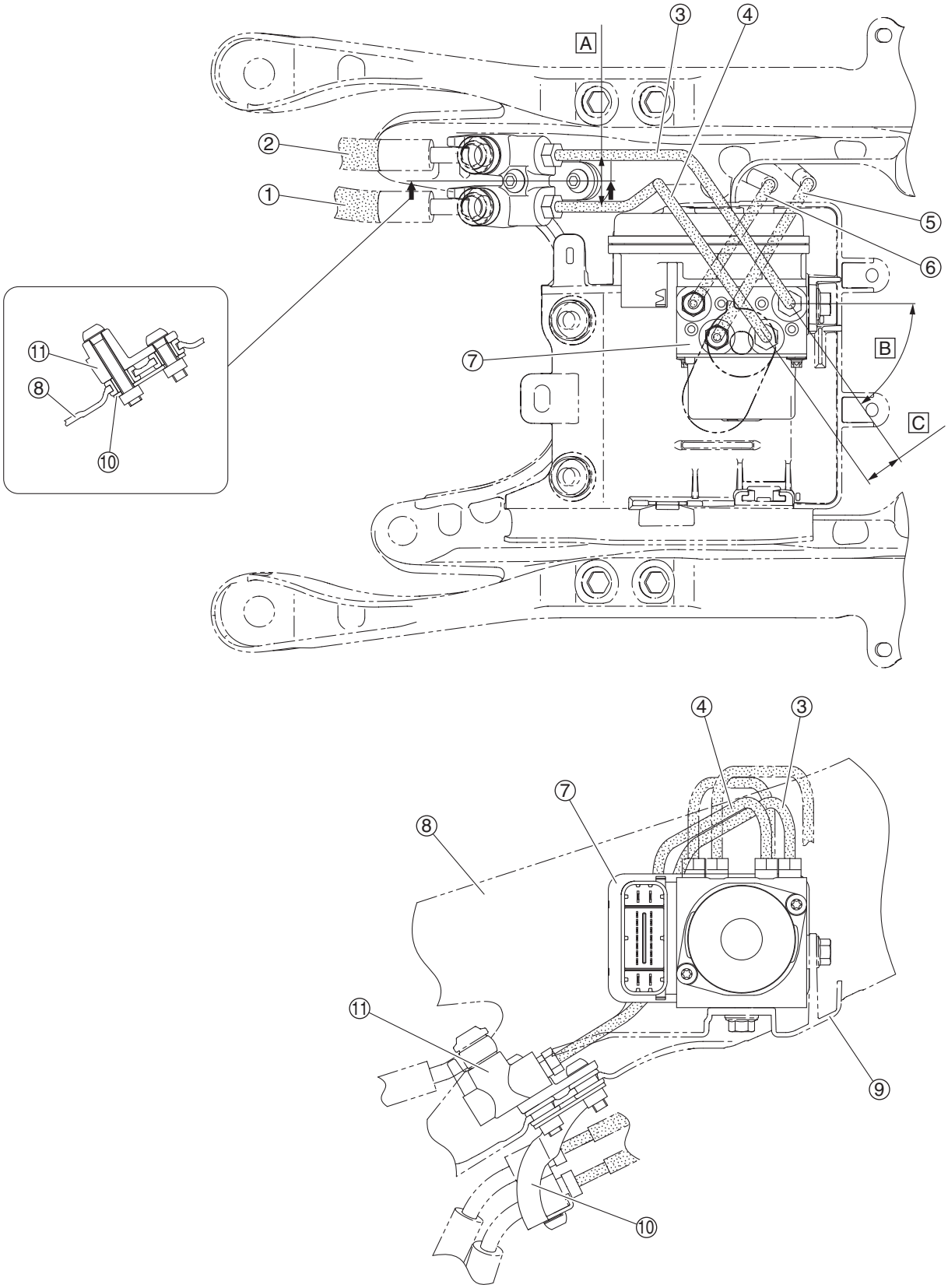
Front brake hose (left side view)



1. Brake hose bracket
2. Frame
3. Brake hose (hydraulic unit to front brake calipers)
4. Brake hose (front brake master cylinder to hydraulic unit)

A. Install the brake hose (front brake master cylinder to hydraulic unit) so that it is on the inside relative to the brake hose (hydraulic unit to front brake calipers). There is an identifying white paint mark on the upper surface of the pipe of the brake hose (front brake master cylinder to hydraulic unit).

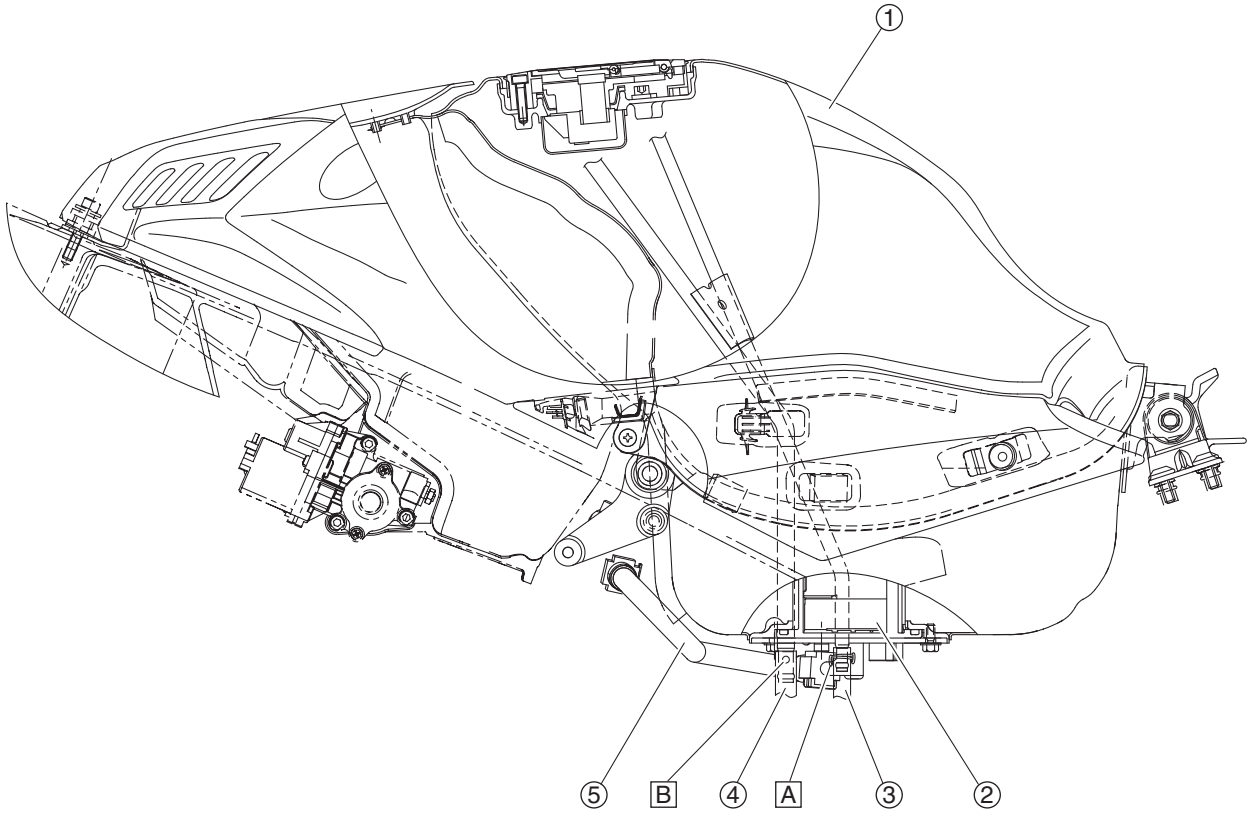
Hydraulic unit assembly (top and left side view)

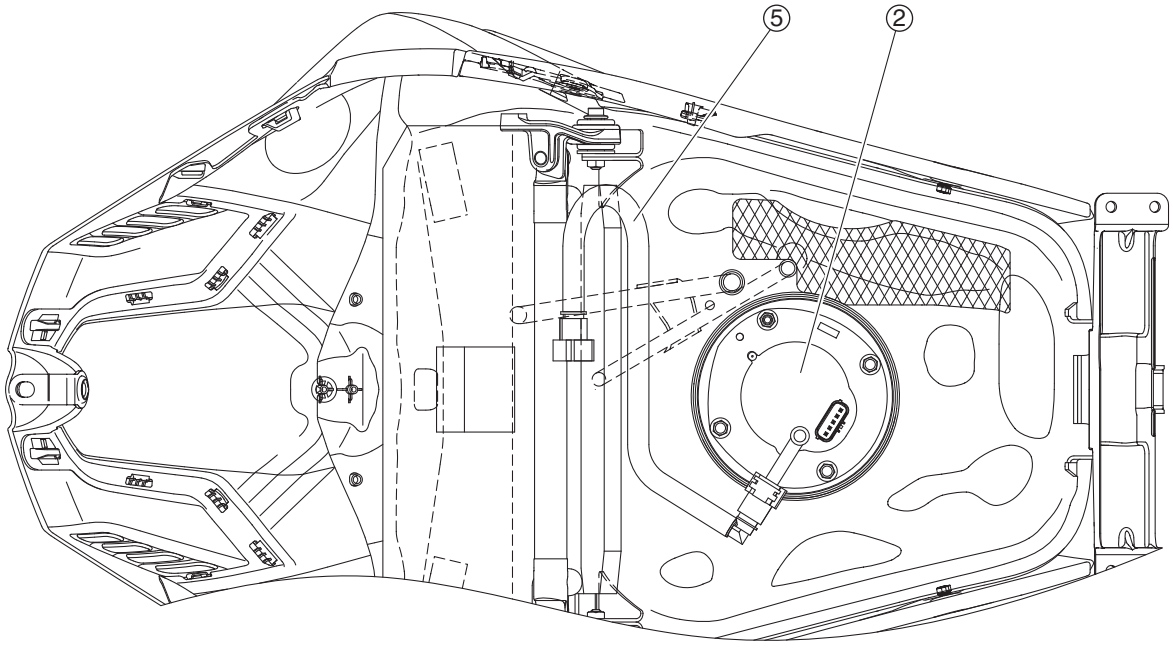


1. Brake hose (front brake master cylinder to brake hose joint)
2. Brake hose (front brake calipers to brake hose joint)
3. Brake hose (front brake caliper side brake hose joint to hydraulic unit)
4. Brake hose (front brake master cylinder side brake hose joint to hydraulic unit)
5. Brake hose (rear brake master cylinder to hydraulic unit)
6. Brake hose (hydraulic unit to rear brake caliper)
7. Hydraulic unit
8. Rear frame
9. Hydraulic tray
10. Rear brake hose bracket
11. Brake hose joint

A. 23 mm (0.91 in)
B. 54.8°
C. 17.2 mm (0.68 in)
   Install the hydraulic unit brake pipe (front brake master cylinder to hydraulic unit) and hydraulic unit brake pipe (hydraulic unit to front brake calipers) so that they are parallel to each other.

Fuel tank (top and left side view)

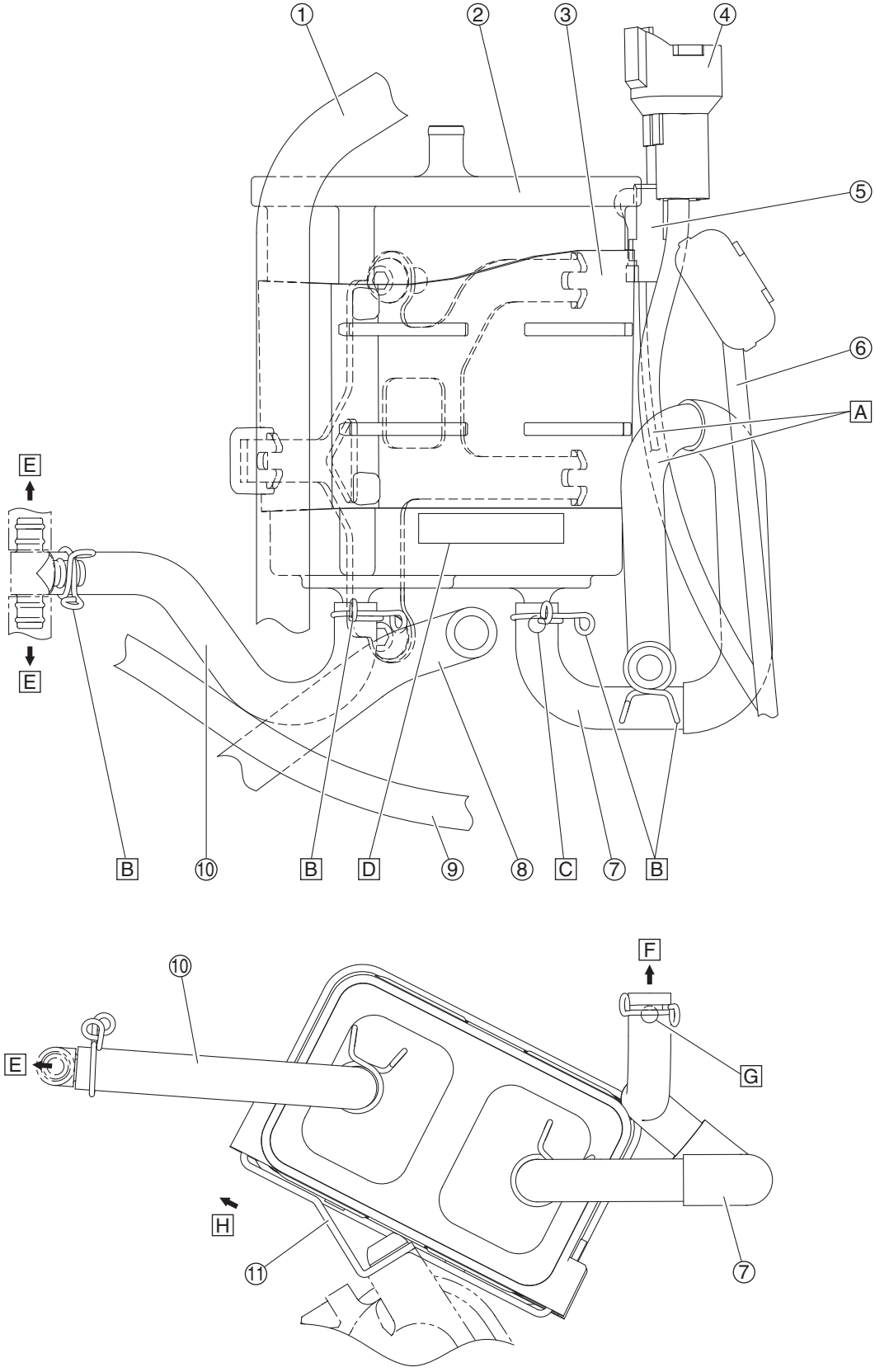




1. Fuel tank
2. Fuel pump
3. Fuel tank breather hose
4. Fuel tank drain hose
5. Fuel hose 1 (fuel tank to fuel hose 2)

A. Point the end of the hose clamp outward.
B. Install the fuel tank drain hose with its white paint mark facing outward.

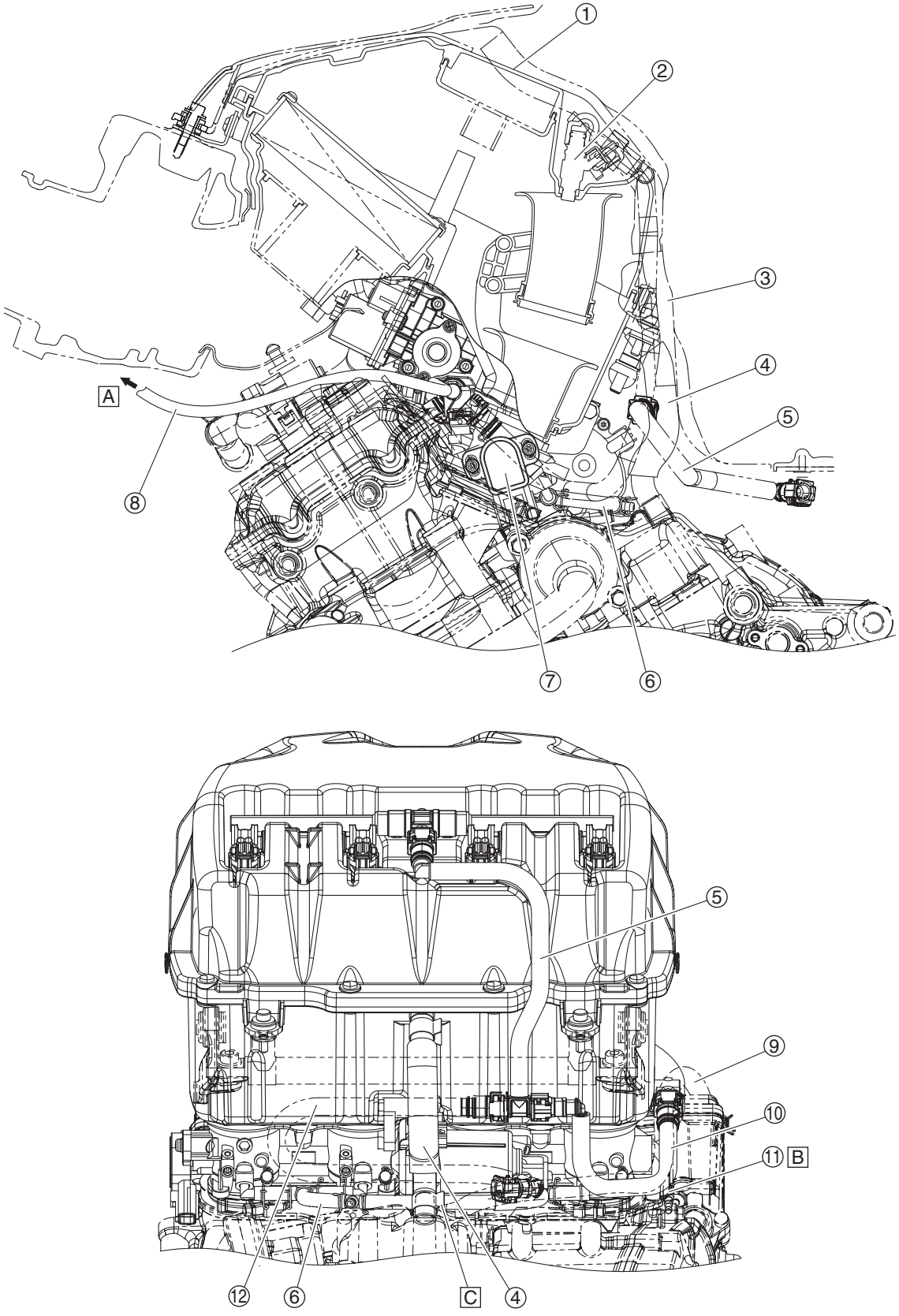
Canister (for California)



1. Fuel hose 1 (fuel tank to fuel hose 2)
2. Canister
3. Canister holder
4. O_2 sensor coupler
5. Neutral switch coupler
6. Fuel pump lead
7. Fuel tank breather hose (fuel tank to canister)
8. Fuel tank drain hose
9. Starter motor lead
10. Canister purge hose (hose joint to canister)
11. Canister bracket

A. Route the neutral switch lead and O_2 sensor lead to the front of and under the fuel tank breather hose (fuel tank to canister).
B. Point the ends of the hose clamp in the direction shown in the illustration.
C. Install the fuel tank breather hose (fuel tank to canister) with its yellow paint mark facing upward.
D. Install the canister with its stamped mark facing upward.
E. To throttle bodies
F. To fuel tank
G. Install the fuel tank breather hose (fuel tank to canister) with its white paint mark facing outward.
H. Install the canister purge hose (hose joint to canister) onto the canister so that the end of the hose is pointing in the direction of the arrow shown.

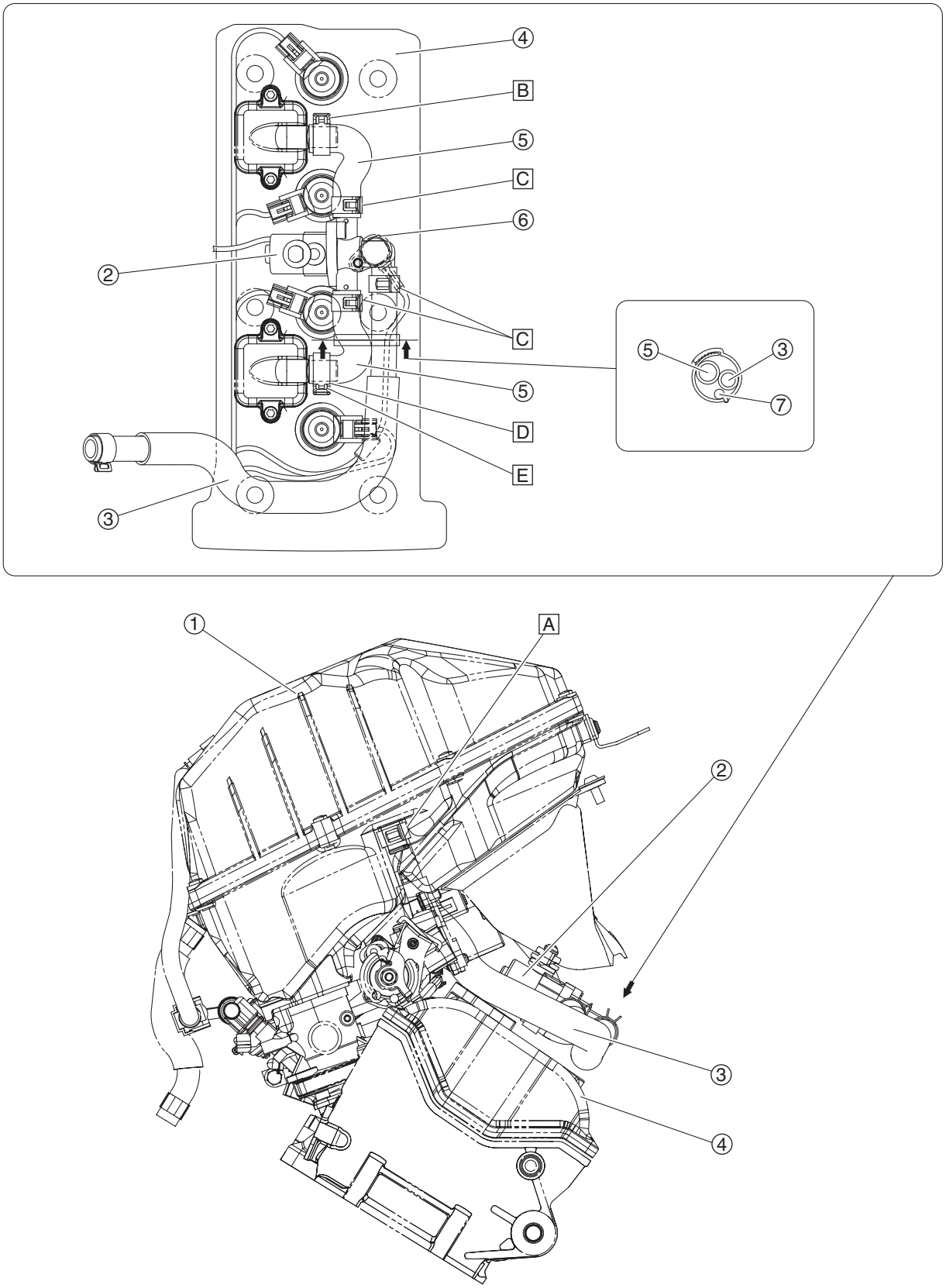
Air filter case and throttle bodies (top and left side view)



1. Air filter case
2. Secondary injector
3. Fuel hose (fuel rail to fuel rail)
4. Crankcase breather hose
5. Fuel hose 2 (secondary injector fuel rail side)
6. Canister purge hose (for California)
7. Throttle body position sensor
8. Intake solenoid vacuum hose
9. Cooling system air bleed hose
10. Fuel hose 3 (fuel hose 2 to throttle body)
11. Service hose
12. Fuel hose 1 (fuel tank to fuel hose 2)

A. To one-way valve (intake solenoid)
B. Route the service hose to the under the cooling system air bleed hose.
C. Point the ends of the hose clamp to the right. Position the hose clamp 0–5 mm (0–0.2 in) from the end of the hose.

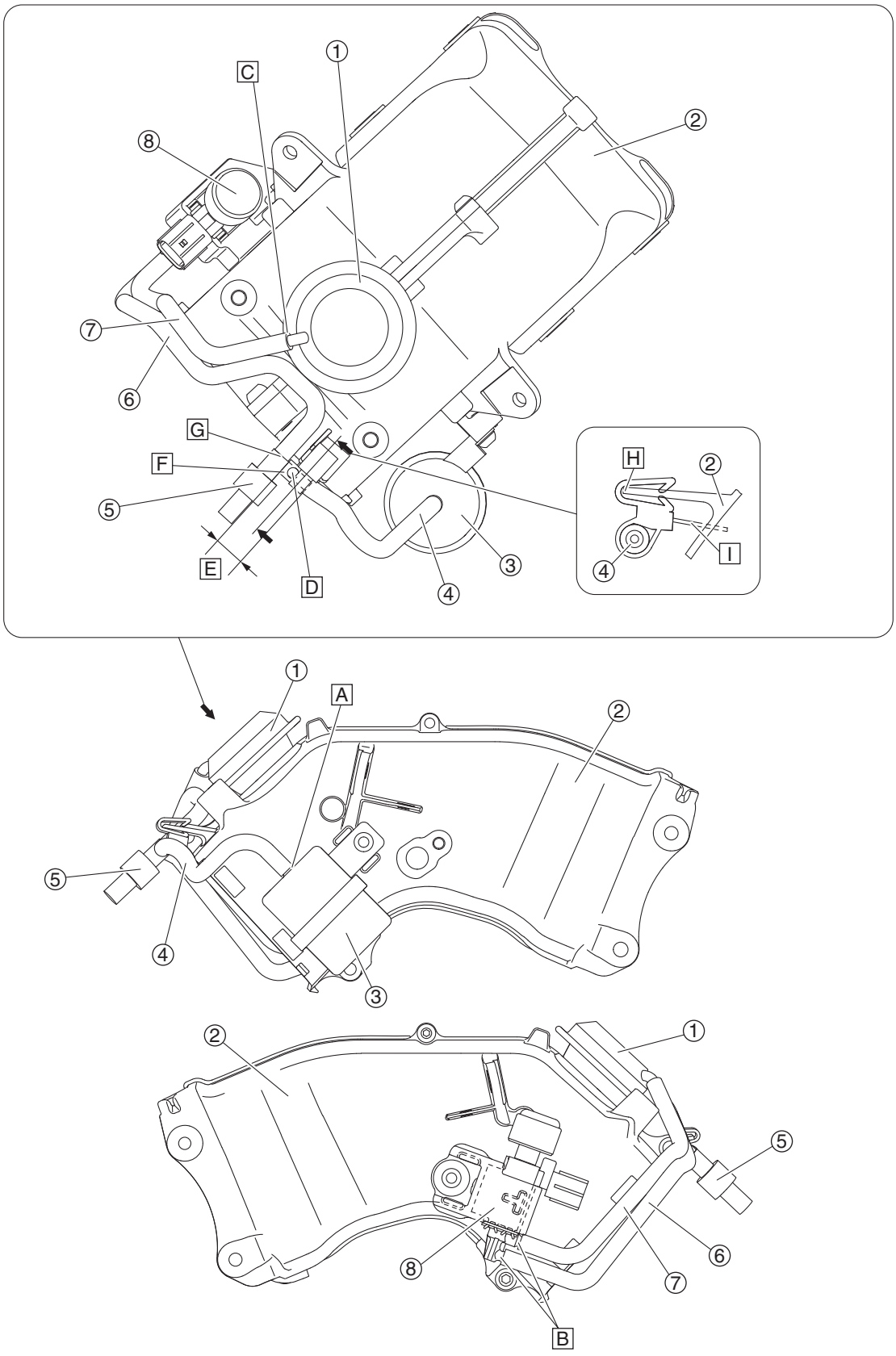
Air cut-off valve (right side view)



1. Air filter case
2. Air cut-off valve
3. Air induction system hose (air filter case to air cut-off valve)
4. Cylinder head cover
5. Air induction system hose (air cut-off valve to reed valve cover)
6. Cylinder identification sensor
7. Cylinder identification sensor lead

A. Point the end of the clamp to the right. Install the air induction system hose (air filter case to air cut-off valve) with its white paint mark facing outward. Make sure that the clamp is not installed on the flange of the hose fitting of the air filter case.
When installing the air induction system hose (air filter case to air cut-off valve), may apply water to the air induction system hose.
B. Point the end of the clamp to the left.
C. Point the end of the clamp upward.
D. Insert the air induction system hose (air cut-off valve to reed valve cover) until it contacts the reed valve cover. Make sure that the clamp is not installed on the flange of the hose fitting of the reed valve cover.
E. Point the end of the clamp to the right.

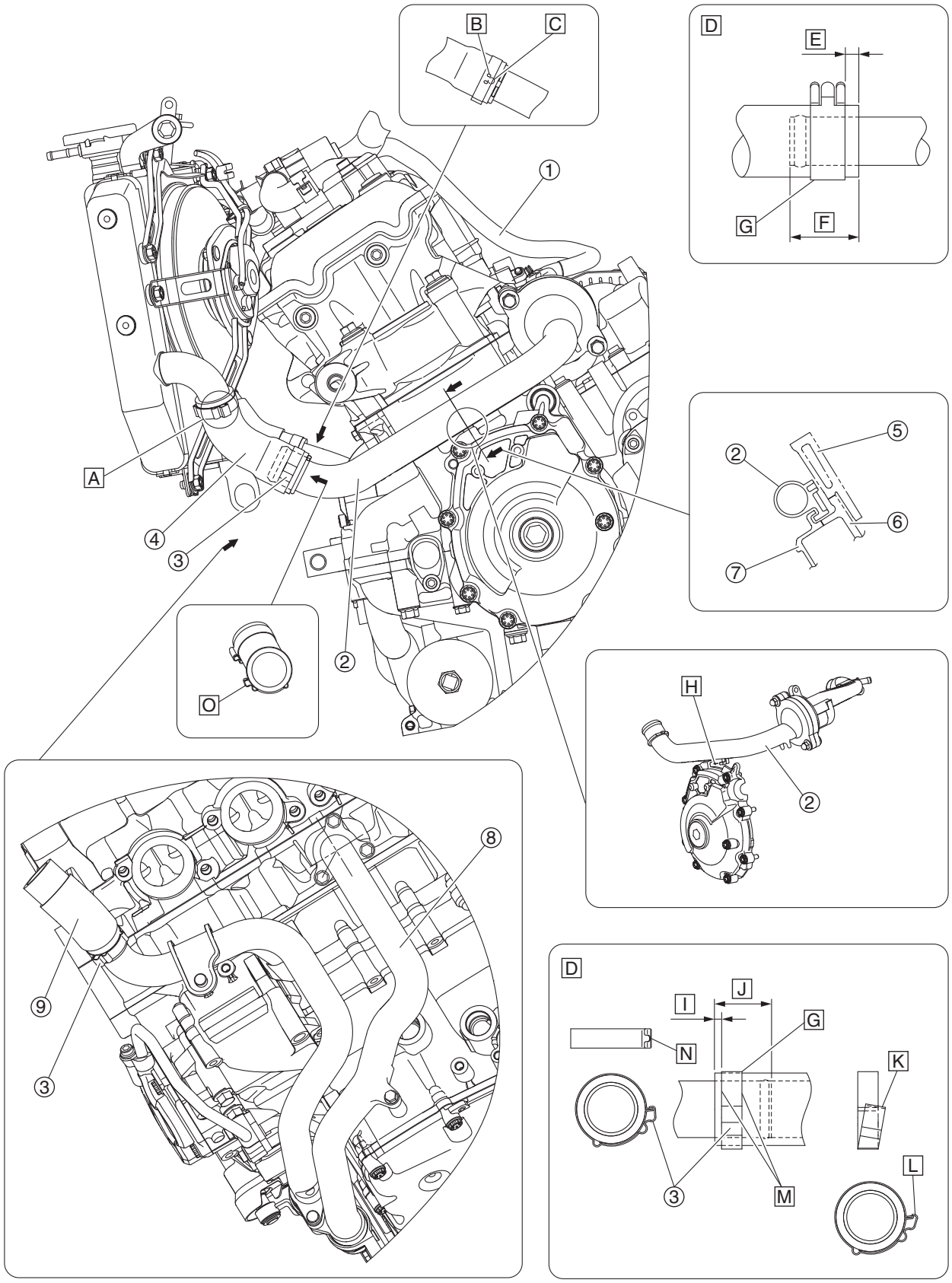
Air duct (left and right side view)



1. Air intake duct valve
2. Air intake duct
3. Surge tank
4. Surge tank hose
5. One-way valve
6. Intake solenoid vacuum hose (one-way valve to intake solenoid)
7. Intake solenoid vacuum hose (intake solenoid to air intake duct valve)
8. Intake solenoid

A. Install the surge tank hose onto the surge tank, making sure that the end of the hose contacts the tank.
B. Install the intake solenoid vacuum hoses onto the intake solenoid, making sure that the end of each hose contacts the solenoid.
C. Install the intake solenoid vacuum hose (intake solenoid to air intake duct valve) up to the bend in the hose fitting of the air intake duct valve.
D. Install the surge tank hose with its white paint mark facing upward.
E. Position the hose holder 13 mm (0.51 in) or less from the end of the one-way valve.
F. Install the surge tank hose onto the one-way valve, making sure that the end of the hose contacts the valve.
G. Install the intake solenoid vacuum hose (one-way valve to intake solenoid) onto the one-way valve, making sure that the end of the hose contacts the valve.
H. Install the plastic locking tie completely onto the rib on the air intake duct.
I. Cut off the excess end of the plastic locking tie to 5 mm (0.2 in) or less.

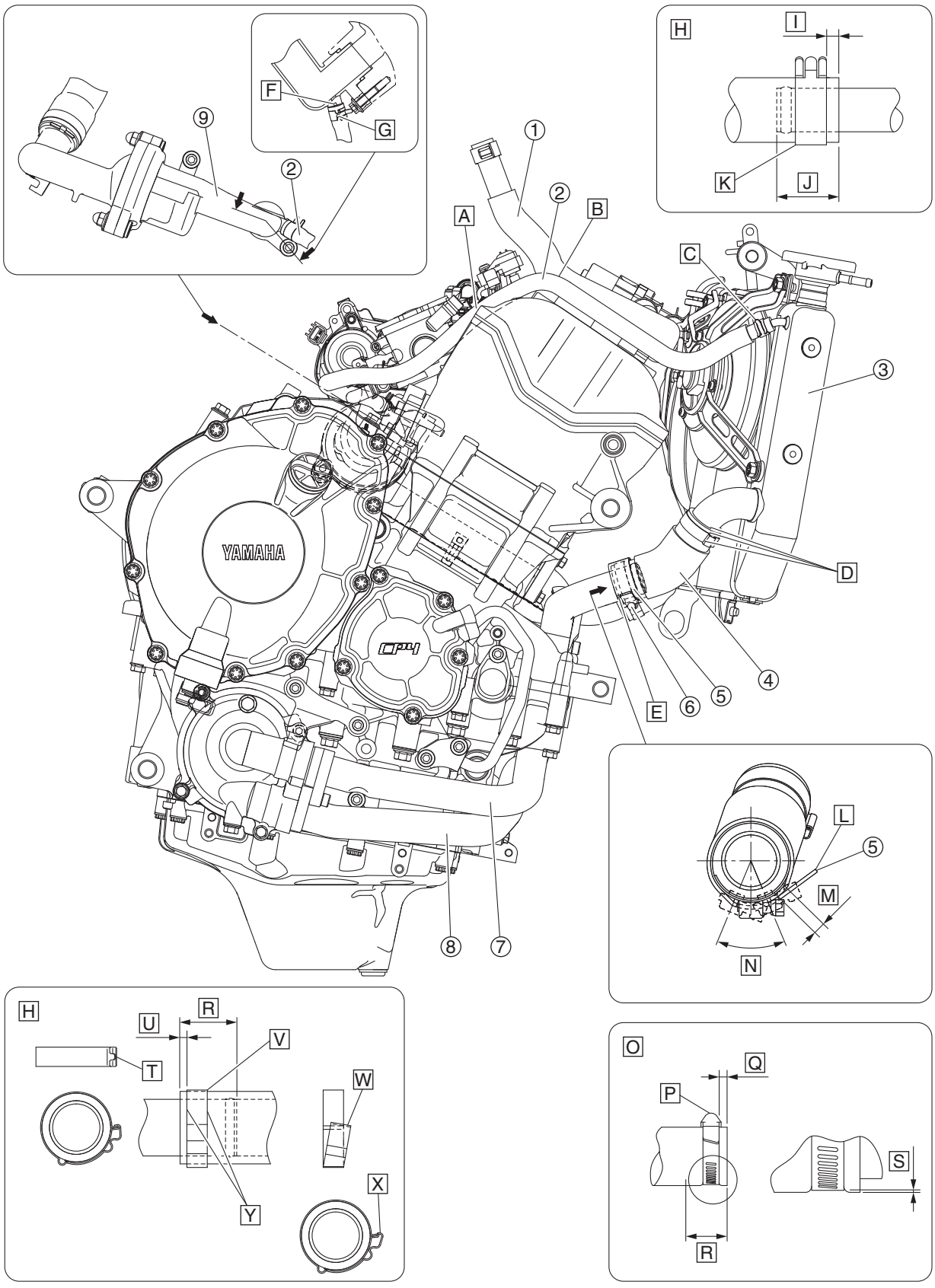
Radiator (left side view)



1. Cooling system air bleed hose
2. Thermostat assembly
3. Hose clamp
4. Radiator inlet hose
5. Cylinder
6. Crankcase
7. Generator cover
8. Water pump outlet pipe
9. Radiator outlet hose

A. Align the white paint mark on the radiator inlet hose, projection on the radiator pipe, and crimped section of the hose clamp. Install the radiator inlet hose up to the center of the projection on the radiator pipe. After installing the hose clamp, the end of the radiator inlet hose should cover the projection on the radiator pipe.
B. Oval shaped projection on the hose clamp (2 locations)
C. Align the yellow paint mark on the radiator inlet hose, projection on the thermostat assembly, and oval shaped projections on the hose clamp. Install the radiator inlet hose until it contacts the projection on the thermostat assembly.
D. Hose clamp installation details
E. 2 mm (0.08 in) or more
F. Installed length: 20 mm (0.79 in)
G. Make sure not to install the hose clamp on the raised portion of the hose fitting of the thermostat assembly.
H. When installing the thermostat assembly, make sure that the projection on the thermostat assembly fits into the slot in the generator cover.
I. 3 mm (0.12 in) or more
J. Installed length
K. Make sure that the hose clamp is not installed in a slanted position as shown in the illustration.
L. Make sure to hook the end of the hose clamp securely onto the projection on the hose clamp. (Do not install the hose clamp as shown in the illustration.)
M. Install the hose clamp so that both edges are parallel to each other.
N. Make sure that the projection on the center of the hose clamp fits into the cutout in the clamp.
O. Face the crimped section of the hose clamp to the left.

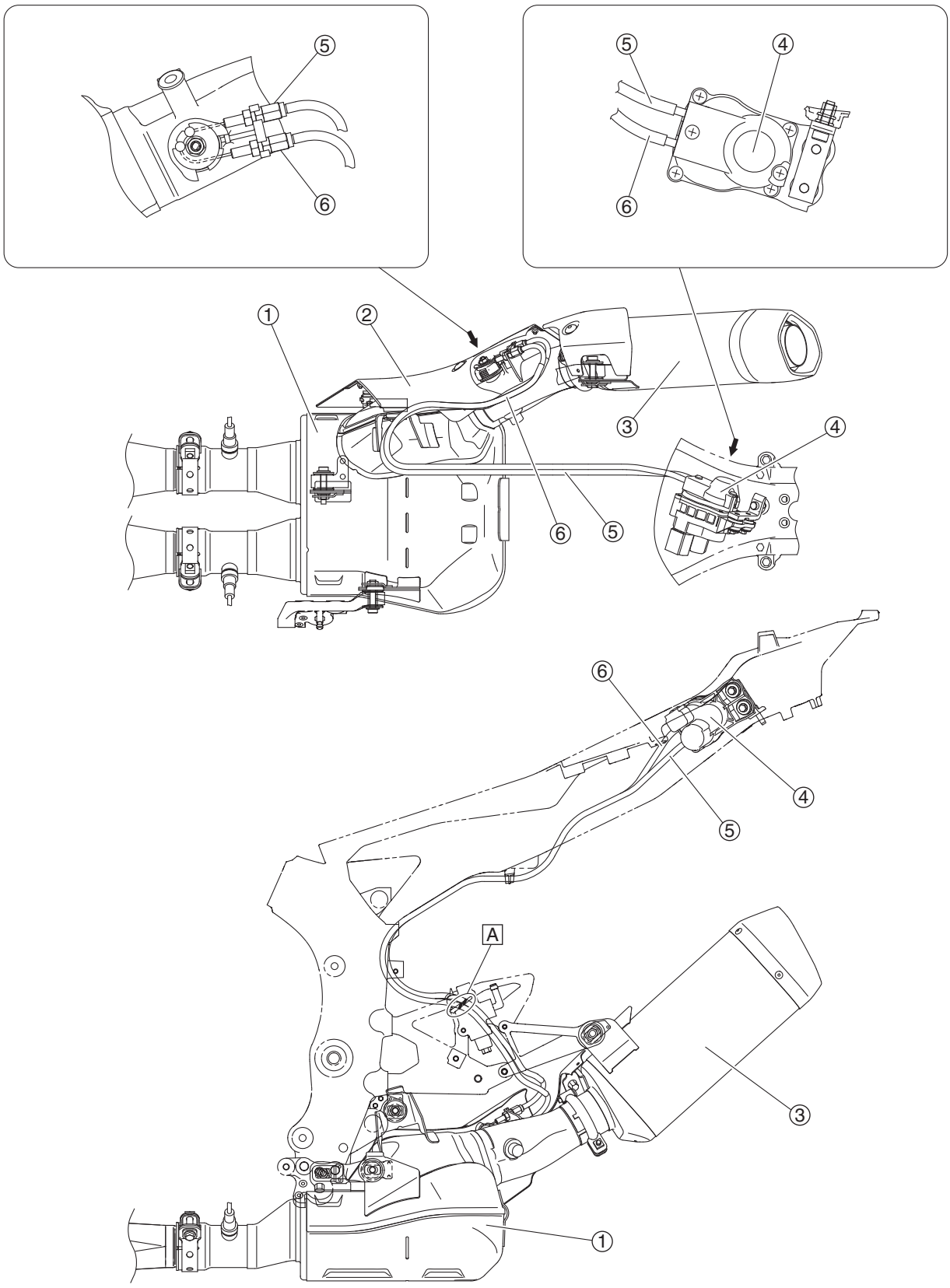
Radiator (right side view)



1. Air induction system hose
2. Cooling system air bleed hose
3. Radiator
4. Radiator outlet hose
5. Hose clamp cover
6. Hose clamp
7. Water pump inlet pipe
8. Water pump outlet pipe
9. Thermostat assembly

A. Route the cooling system air bleed hose under the fuel rail.
B. Route the cooling system air bleed hose to the outside of the air induction system hose.
C. Point the ends of the hose clamp to the right. Make sure not to install the hose clamp on the raised portion of the hose fitting.
D. Install the radiator outlet hose onto the radiator pipe until the end of the hose contacts the projection on the pipe. Align the white paint mark on the radiator outlet hose with the projection on the radiator pipe. Align the white paint mark on the radiator outlet hose with the outer ribs on the hose fittings.
E. Align the yellow paint mark on the radiator outlet hose, the black paint mark on the water pump inlet pipe, and the crimped section of the hose clamp. Insert the radiator outlet hose up to the center of the white paint mark on the water pump inlet pipe.
F. Align the white paint mark on the cooling system air bleed hose with the projection on the thermostat housing. Install the cooling system air bleed hose onto the thermostat housing until the end of the hose contacts the projection on the pipe.
G. Point the ends of the hose clamp away from the projection on the thermostat housing and toward the bolt. Make sure not to install the hose clamp on the raised portion of the hose fitting.
H. Hose clamp installation details
I. 2 mm (0.08 in) or more
J. Installed length: 20 mm (0.79 in)
K. Make sure not to install the hose clamp on the raised portion of the hose fitting.
L. Install the hose clamp cover so that the end of the cover is pointed to the right.
M. Position the yellow paint mark on the radiator outlet hose within the range shown in the illustration. Install the screw clamp with the screw head facing to the right.
N. Face the fastener of the screw clamp to the right within the 45° range shown in the illustration.
O. Detail of the hose fitting portion: Keep a hose clamp interference of 0–1 mm (0–0.04 in) with respect to the basic diameter of the hose as shown. The hose clamp interference refers to the basic external hose diameter and excludes any bulging at the end of the hose.
P. Make sure not to install the hose clamp on the raised portion of the hose fitting.
Q. 3 mm (0.12 in) or more
R. Installed length
S. 0–1 mm (0–0.04 in)
T. Make sure that the projection on the center of the hose clamp fits into the cutout in the clamp.
U. 3 mm (0.12 in) or more
V. Make sure not to install the hose clamp on the raised portion of the hose fitting of the water pump inlet pipe.
W. Make sure that the hose clamp is not installed in a slanted position as shown in the illustration.
X. Make sure to hook the end of the hose clamp securely onto the projection on the hose clamp. (Do not install the hose clamp as shown in the illustration.)
Y. Install the hose clamp so that both edges are parallel to each other.

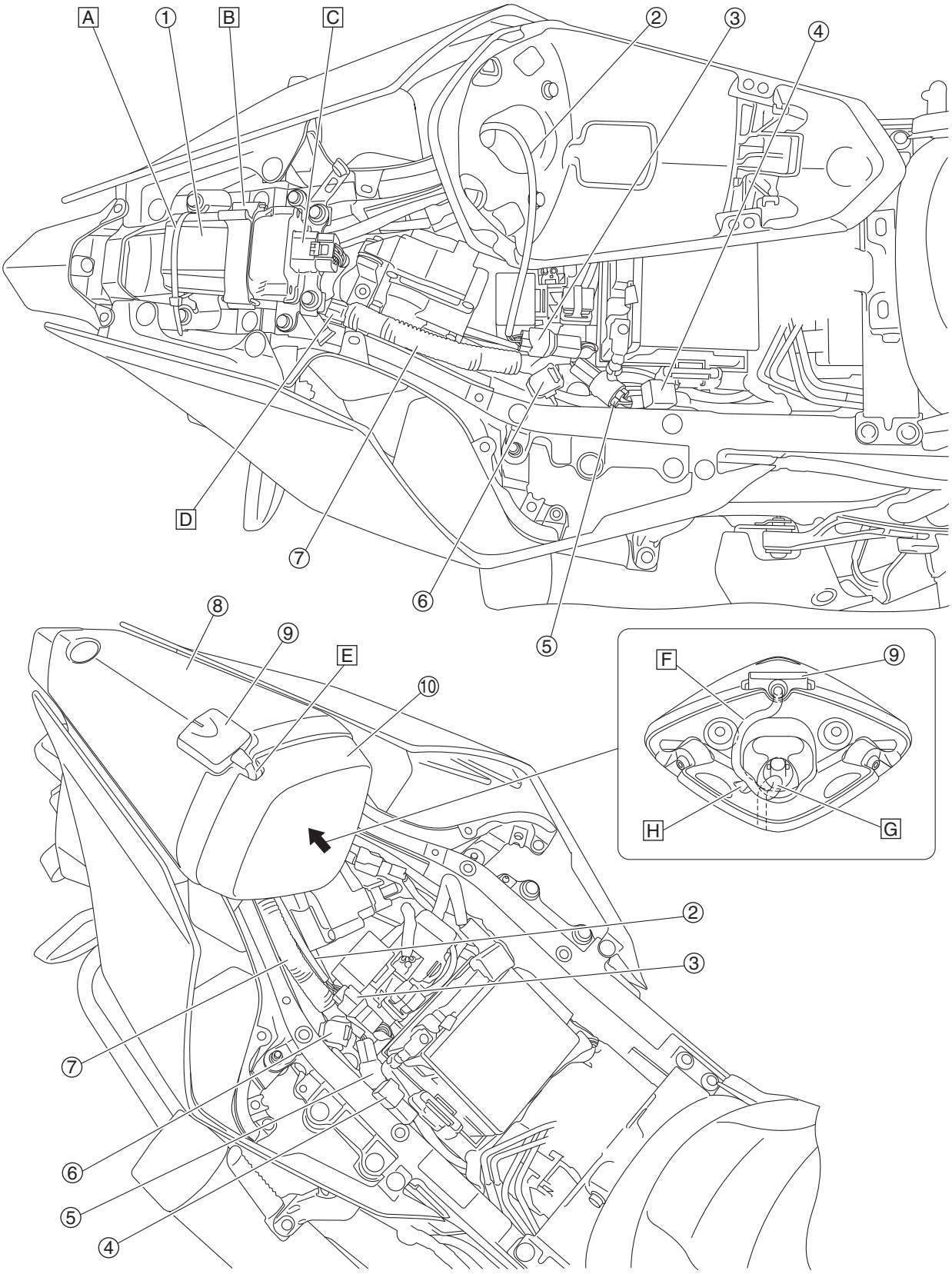
Muffler (top and left side view)



1. Exhaust chamber
2. EXUP valve pulley cover
3. Muffler
4. EXUP servo motor
5. EXUP cable 2
6. EXUP cable 1

A. Route EXUP cable 1 and EXUP cable 2 through the guide. Route EXUP cable 1 above EXUP cable 2. Align the white paint mark on each cable with the guide.

CCU (top and right side view) (for YZF-R1M)



1. CCU (Communication Control Unit)
2. GPS unit lead
3. GPS unit coupler
4. Wire harness coupler cap
5. Wire harness coupler (to sub-wire harness)
6. Yamaha diagnostic tool coupler
7. CCU (Communication Control Unit) lead (sub-wire harness)
8. Passenger seat cover
9. GPS unit
10. Rear cover

A. Fasten the CCU and CCU bracket with the plastic locking tie.
B. Fasten the CCU and CCU bracket with the band.
C. Connect the CCU coupler (sub-wire harness) to the CCU.
D. Fasten the sub-wire harness to the rear frame with the clamp. Align the corrugated end of the sub-wire harness with end of the clamp.
E. Route the GPS unit lead between the passenger seat cover and the rear cover.
F. Route the GPS unit lead as shown in the illustration.
G. Route the GPS unit lead to the inside of the vehicle through the hole in the passenger seat cover.
H. Fasten the GPS unit lead with the clamp on the passenger seat cover.

PERIODIC CHECKS AND ADJUSTMENTS

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EAS20022
PERIODIC MAINTENANCE

EAS30022
INTRODUCTION
This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

EAS30614
PERIODIC MAINTENANCE CHART FOR THE EMISSION CONTROL SYSTEM

TIP
- From 24000 mi (37000 km) or 36 months, repeat the maintenance intervals starting from 8000 mi (13000 km) or 12 months.
- Items marked with an asterisk require special tools, data and technical skills, have a Yamaha dealer perform the service.

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1000 km) or 1 month	4000 mi (7000 km) or 6 months	8000 mi (13000 km) or 12 months	12000 mi (19000 km) or 18 months	16000 mi (25000 km) or 24 months	20000 mi (31000 km) or 30 months
1	*	Fuel line	• Check fuel hoses for cracks or damage. • Replace if necessary.		√	√	√	√	√
2	*	Spark plugs	• Check condition. • Adjust gap and clean.		√		√		√
			• Replace.			√		√	
3	*	Valve clearance	• Check and adjust valve clearance when engine is cold.	Every 26600 mi (42000 km)					
4	*	Crankcase breather system	• Check breather hose for cracks or damage. • Replace if necessary.		√	√	√	√	√
5	*	Fuel injection	• Adjust synchronization.	√	√	√	√	√	√
6	*	Exhaust system	• Check for leakage. • Tighten if necessary. • Replace gasket(s) if necessary.		√	√	√	√	√
7	*	Evaporative emission control system (for California only)	• Check control system for damage. • Replace if necessary.				√		√
8	*	Air induction system	• Check the air cut-off valve, reed valve, and hose for damage. • Replace any damaged parts if necessary.				√		√

EAS30615
GENERAL MAINTENANCE AND LUBRICATION CHART

TIP
- From 24000 mi (37000 km) or 36 months, repeat the maintenance intervals starting from 8000 mi (13000 km) or 12 months.
- Items marked with an asterisk require special tools, data and technical skills, have a Yamaha dealer perform the service.

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1000 km) or 1 month	4000 mi (7000 km) or 6 months	8000 mi (13000 km) or 12 months	12000 mi (19000 km) or 18 months	16000 mi (25000 km) or 24 months	20000 mi (31000 km) or 30 months
1	*	**Diagnostic system check**	• Perform dynamic inspection using Yamaha diagnostic tool. • Check the error codes.	√	√	√	√	√	√
2	*	**Air filter element**	• Replace.	Every 24000 mi (37000 km)					
3	*	**Clutch**	• Check operation. • Adjust or replace cable.	√	√	√	√	√	√
4	*	**Front brake**	• Check operation, fluid level, and for fluid leakage. • Replace brake pads if necessary.	√	√	√	√	√	√
5	*	**Rear brake**	• Check operation, fluid level, and for fluid leakage. • Replace brake pads if necessary.	√	√	√	√	√	√
6	*	**Brake hoses**	• Check for cracks or damage. • Check for correct routing and clamping.		√	√	√	√	√
			• Replace.	Every 4 years					
7	*	**Brake fluid**	• Change.	Every 2 years					
8	*	**Wheels**	• Check runout and for damage. • Replace if necessary.		√	√	√	√	√
9	*	**Tires**	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	√
10	*	**Wheel bearings**	• Check bearings for smooth operation. • Replace if necessary.		√	√	√	√	√
11	*	**Swingarm pivot bearings**	• Check operation and for excessive play.		√	√	√	√	√
			• Moderately repack with lithium-soap-based grease.	Every 32000 mi (50000 km)					
12		**Drive chain**	• Check chain slack, alignment and condition. • Adjust and lubricate chain with a special O-ring chain lubricant thoroughly.	Every 500 mi (800 km) and after washing the motorcycle, riding in the rain or riding in wet areas					
13	*	**Steering bearings**	• Check bearing assemblies for looseness.	√	√	√	√	√	√
			• Moderately repack with lithium-soap-based grease.	Every 16000 mi (25000 km)					
14	*	**Steering damper**	• Check operation and for oil leakage.		√	√	√	√	√
15	*	**Chassis fasteners**	• Check all chassis fitting and fasteners. • Correct if necessary.		√	√	√	√	√
16		**Brake lever pivot shaft**	• Apply silicone grease lightly.		√	√	√	√	√
17		**Brake pedal pivot shaft**	• Apply lithium-soap-based grease lightly.		√	√	√	√	√
18		**Clutch lever pivot shaft**	• Apply lithium-soap-based grease lightly.		√	√	√	√	√
19		**Shift pedal pivot shaft**	• Apply molybdenum disulfide grease lightly.		√	√	√	√	√
20		**Sidestand pivot**	• Check operation. • Apply lithium-soap-based grease lightly.		√	√	√	√	√

No.		ITEM	ROUTINE	INITIAL	ODOMETER READINGS				
				600 mi (1000 km) or 1 month	4000 mi (7000 km) or 6 months	8000 mi (13000 km) or 12 months	12000 mi (19000 km) or 18 months	16000 mi (25000 km) or 24 months	20000 mi (31000 km) or 30 months
21	*	**Sidestand switch**	• Check operation and replace if necessary.	√	√	√	√	√	√
22	*	**Front fork**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
23	*	**Shock absorber assembly**	• Check operation and for oil leakage. • Replace if necessary.		√	√	√	√	√
24	*	**Rear suspension link pivots**	• Check operation. • Correct if necessary.			√		√	
25		**Engine oil**	• Change (warm engine before draining).	√	√	√	√	√	√
26	*	**Engine oil filter cartridge**	• Replace.	√		√		√	
27	*	**Cooling system**	• Check hoses for cracks or damage. • Replace if necessary.		√	√	√	√	√
			• Change coolant.					√	
28	*	**EXUP system**	• Check operation, cable free play and pulley position.	√	Every 12000 mi (19000 km)				
29	*	**Front and rear brake switches**	• Check operation.	√	√	√	√	√	√
30	*	**Control cables**	• Apply Yamaha cable lubricant or other suitable cable lubricant thoroughly.	√	√	√	√	√	√
31	*	**Throttle grip**	• Check operation. • Lubricate throttle grip housing tube guides.		√	√	√	√	√
32	*	**Lights, signals and switches**	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

TIP

- Air filter
  - This model's air filter uses a disposable oil-coated paper element. This element cannot be cleaned with compressed air, doing so will only damage it.
  - The air filter element needs to be replaced more frequently when riding in unusually wet or dusty areas.
- Hydraulic brake service
  - Regularly check the front and rear brake fluid levels. Replenish if necessary.
  - Every two years replace the rear brake master cylinder, the internal components of the front brake master cylinder, and the brake calipers, and change the brake fluid.
  - Replace the brake hoses every four years or sooner if cracked, damaged, or if any section of the stainless steel brake hose has turned black.

EAS32024
CHECKING THE VEHICLE USING THE YAMAHA DIAGNOSTIC TOOL

Use the Yamaha diagnostic tool and check the vehicle according to the following procedure.

1. Remove:
   - Rider seat
   - Battery cover
   Refer to "GENERAL CHASSIS (1)" on page 4-1.
2. Remove the protective cap, and then connect the Yamaha diagnostic tool to the coupler.



Yamaha diagnostic tool USB (US)
90890-03269
Yamaha diagnostic tool (A/I)
90890-03264

TIP

- Yamaha diagnostic tool (A/I) (90890-03264) includes YDT sub harness (6P) (90890-03266).
- If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.

Refer to "YDT" on page 9-2.

3. Check:
   - DTC

TIP

Use the "Diagnosis of malfunction" function of the Yamaha diagnostic tool to check the DTC. For information about using the Yamaha diagnostic tool, refer to the operation manual that is included with the tool.

DTC number is displayed → Check and repair the probable cause of the malfunction. Refer to "SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE" on page 9-32.

4. Perform:
   - Dynamic inspection

TIP

Use the "Dynamic inspection" function of the Yamaha diagnostic tool version 3.0 and after to perform the dynamic inspection. For information about using the Yamaha diagnostic tool, refer to the operation manual that is included with the tool.

5. Install:
   - Rider seat
   - Battery cover
   Refer to "GENERAL CHASSIS (1)" on page 4-1.

EAS30619
CHECKING THE FUEL LINE (Primary injector)

The following procedure applies to all of the fuel, drain and breather hoses.

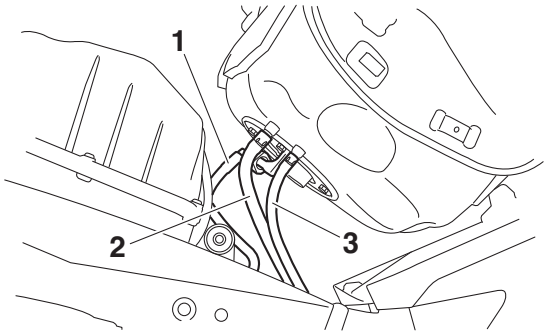
1. Remove:
   - Rider seat
   Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Fuel tank
   Refer to "FUEL TANK" on page 7-1.
2. Check:
   - Fuel hose "1"
   - Fuel tank drain hose "2"
   - Fuel tank breather hose "3"
   Cracks/damage → Replace.
   Loose connection → Connect properly.

ECA14940
NOTICE

Make sure the fuel tank breather hose is routed correctly.

TIP

Before removing the fuel hoses, place a few rags in the area under where it will be removed.



3. Install:
   - Fuel tank
   Refer to "FUEL TANK" on page 7-1.
   - Rider seat
   Refer to "GENERAL CHASSIS (1)" on page 4-1.

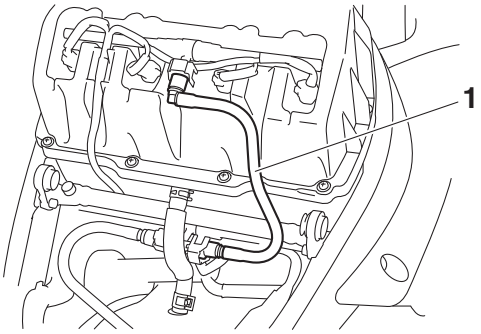
EAS31633
CHECKING THE FUEL LINE (Secondary injector)

1. Remove:
   - Rider seat
   Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Fuel tank cover
   - Fuel tank
   Refer to "FUEL TANK" on page 7-1.

2. Check:
   • Fuel hose “1”
   Cracks/damage → Replace.
   Loose connection → Connect properly.

TIP

Before removing the fuel hose, place a few rags in the area under where it will be removed.



3. Install:
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.
   • Rider seat
   Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS30620
CHECKING THE SPARK PLUGS

The following procedure applies to all of the spark plugs.

1. Remove:
   • Rider seat
   Refer to “GENERAL CHASSIS (1)” on page 4-1.
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.
   • Air filter case
   Refer to “AIR FILTER CASE” on page 7-5.
   • Air cut-off valve
   Refer to “AIR INDUCTION SYSTEM” on page 7-20.
2. Remove:
   • Ignition coils
   • Spark plugs

ECA13320
NOTICE

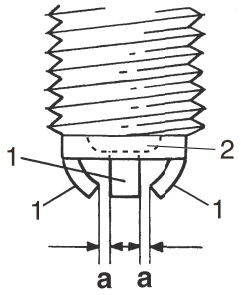
Before removing the spark plugs, blow away any dirt accumulated in the spark plug wells with compressed air to prevent it from falling into the cylinders.

3. Check:
   • Spark plug type
   Incorrect → Change.

Manufacturer/model
NGK/LMAR9E-J

4. Check:
   • Electrode “1”
   Damage/wear → Replace the spark plug.
   • Insulator “2”
   Abnormal color → Replace the spark plug.
   Normal color is medium-to-light tan.
5. Clean:
   • Spark plug
   (with a spark plug cleaner or wire brush)
6. Measure:
   • Spark plug gap “a”
   (with a wire thickness gauge)
   Out of specification → Regap.

Spark plug gap
0.6–0.7 mm (0.024–0.028 in)



G088880

7. Install:
   • Spark plugs
   • Ignition coils

Spark plug
13 N·m (1.3 kgf·m, 9.6 lb·ft)
Spark plug (new)
18 N·m (1.8 kgf·m, 13 lb·ft)

TIP

- Before installing the spark plug, clean the spark plug and gasket surface.
- If the spark plug is a new one, tighten it to 18 N·m (1.8 kgf·m, 13 lb·ft).

8. Install:
   • Air cut-off valve
   Refer to “AIR INDUCTION SYSTEM” on page 7-20.
   • Air filter case
   Refer to “AIR FILTER CASE” on page 7-5.
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.

• Rider seat
Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS30622
ADJUSTING THE VALVE CLEARANCE

The following procedure applies to all of the valves.

TIP

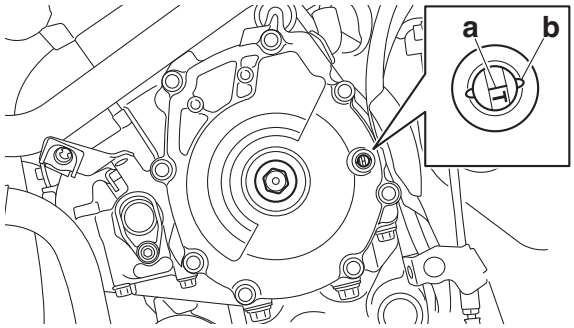
- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.

1. Remove:
   - Rider seat
     Refer to “GENERAL CHASSIS (1)” on page 4-1.
   - Front panel cover
     Refer to “GENERAL CHASSIS (3)” on page 4-9.
   - Front side cowling
     Refer to “GENERAL CHASSIS (5)” on page 4-16.
   - Side cover
   - Front side cowling inner panel
     Refer to “GENERAL CHASSIS (6)” on page 4-23.
   - Side cover bracket
     Refer to “GENERAL CHASSIS (8)” on page 4-32.
   - Electrical components tray
     Refer to “GENERAL CHASSIS (9)” on page 4-34.
   - Fuel tank
     Refer to “FUEL TANK” on page 7-1.
   - Air filter case
     Refer to “AIR FILTER CASE” on page 7-5.
   - Air cut-off valve
     Refer to “AIR INDUCTION SYSTEM” on page 7-20.
   - Radiator
     Refer to “RADIATOR” on page 6-3.
2. Remove:
   - Ignition coils
   - Spark plugs
   - Cylinder head cover
   - Cylinder head cover gasket
     Refer to “CAMSHAFTS” on page 5-18.
3. Remove:
   - Timing mark accessing bolt
   - Crankshaft end cover
     Refer to “GENERATOR” on page 5-44.
4. Measure:
   - Valve clearance
     Out of specification → Adjust.



Valve clearance (cold)
Intake
0.09–0.17 mm (0.0035–0.0067 in)
Exhaust
0.18–0.23 mm (0.0071–0.0091 in)

a. Turn the crankshaft counterclockwise.
b. When piston #1 is at TDC on the compression stroke, align the TDC mark “a” on the generator rotor with the generator rotor cover slot “b”.



TIP

TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

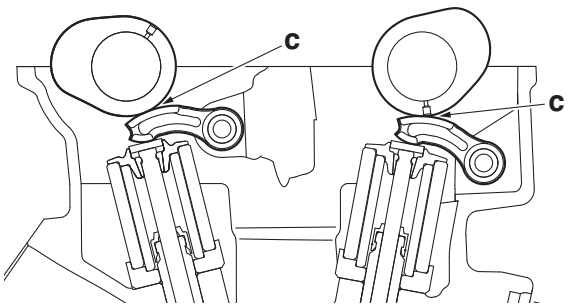
c. Measure the valve clearance #1 with a thickness gauge.

TIP

Measure the valve clearance between the cam lobe and rocker arm “c”.



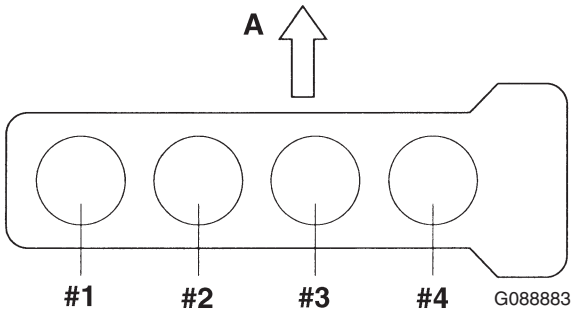
Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9



TIP

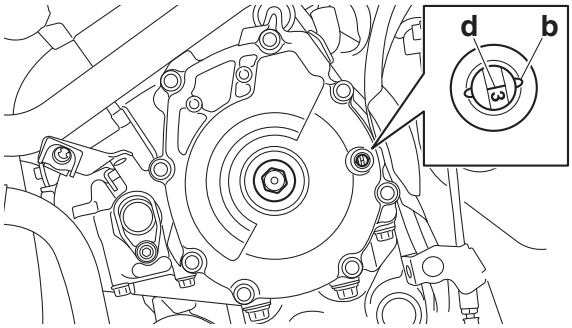
- If the valve clearance is incorrect, record the measured reading.
- Measure the valve clearance in the following sequence.

Valve clearance measuring sequence
Cylinder #1 → #3 → #2 → #4



A. Front

d. Turn the crankshaft counterclockwise.
e. When piston #3 is at TDC on the compression stroke, align the TDC mark "d" on the generator rotor with the generator rotor cover slot "b".

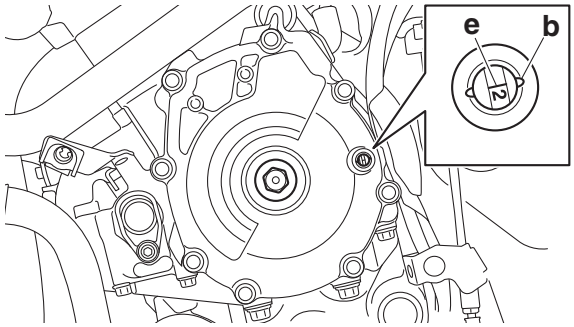


f. Measure the valve clearance #3 with a thickness gauge.



Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9

g. Turn the crankshaft counterclockwise.
h. When piston #2 is at TDC on the compression stroke, align the TDC mark "e" on the generator rotor with the generator rotor cover slot "b".

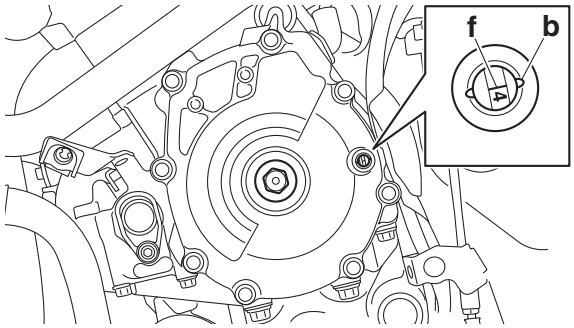


i. Measure the valve clearance #2 with a thickness gauge.



Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9

j. Turn the crankshaft counterclockwise.
k. When piston #4 is at TDC on the compression stroke, align the TDC mark "f" on the generator rotor with the generator rotor cover slot "b".



l. Measure the valve clearance #4 with a thickness gauge.



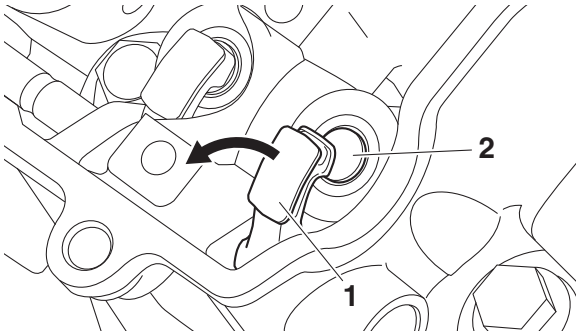
Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9

5. Remove:
   - Camshaft

TIP

- Refer to "CAMSHAFTS" on page 5-18.
- When removing the timing chain and camshafts, fasten the timing chain with a wire to retrieve it if it falls into the crankcase.

6. Adjust:
   - Valve clearance
     a. Pull the rocker arm "1" up, and then remove the valve pad "2".



TIP

- Cover the timing chain opening with a rag to prevent the valve pad from falling into the crankcase.
- Make a note of the position of each valve pad so that they can be installed in the correct place.

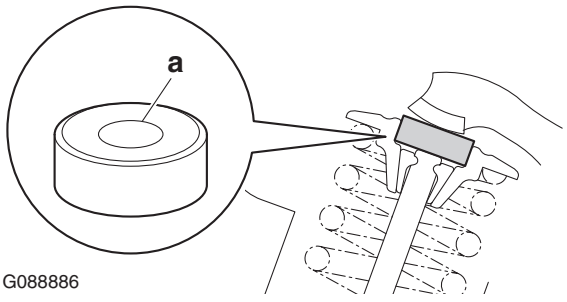
b. Calculate the difference between the specified valve clearance and the measured valve clearance.
Example:
Specified valve clearance = 0.09–0.17 mm (0.004–0.007 in)
Measured valve clearance = 0.20 mm (0.008 in)
0.20 mm (0.008 in) - 0.17 mm (0.007 in) = 0.03 mm (0.001 in)

c. Check the thickness of the current valve pad.

TIP

- The letter and number “a” marked on the valve pad indicate the valve pad thickness.
- The letter A marked on the valve pad indicates 1 mm (0.04 in), while B indicates 2 mm (0.08 in).
- The number marked on the valve pad indicates hundredths of millimeters.

Example:
If the valve pad is marked “A60”, the pad thickness is 1.60 mm (0.063 in).
If the valve pad is marked “B30”, the pad thickness is 2.30 mm (0.091 in).



d. Calculate the sum of the values obtained in steps (b) and (c) to determine the required valve pad thickness and the valve pad number.
Example:
1.60 mm (0.063 in) + 0.03 mm (0.001 in) = 1.63 mm (0.064 in)
The valve pad number is A63.

e. Round off the valve pad number according to the following table, and then select the suitable valve pad.

Last digit	Rounded value
0, 1, 2	0
3, 4, 5, 6	5
7, 8, 9	10

TIP

Refer to the following table for the available valve pads.

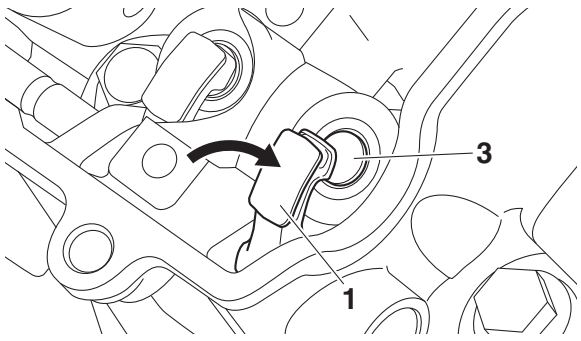
Valve pad range	No. A60–A99, B00–B40
Valve pad thickness	1.60–2.40 mm (0.0630–0.0944 in)
Available valve pads	17 thicknesses in 0.05 mm (0.002 in) increments

Example:
Valve pad number = A63
Rounded value = A65
New valve pad number = A65

f. Install the new valve pad “3” and then, push the rocker arm “1” down.

TIP

- Lubricate the valve pad with molybdenum disulfide oil.
- Install the valve pad in the correct place.



g. Install the exhaust and intake camshafts, timing chain and camshaft caps.

Camshaft cap bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)
Camshaft cap bolt (new)
10 N·m (1.0 kgf·m, 7.4 lb·ft)

TIP

- Refer to "CAMSHAFTS" on page 5-18.
- Lubricate the camshaft lobes and camshaft journals.
- First, install the exhaust camshaft.
- Align the camshaft sprocket marks with the cylinder head surface.
- If the camshaft cap bolt is a new one, it is not necessary to apply engine oil onto the mating surface and threads of the bolt.
- If the camshaft cap bolt is a new one, tighten it to 10 N·m (1.0 kgf·m, 7.4 lb·ft).
- Turn the crankshaft counterclockwise several full turns to seat the parts.

h. Measure the valve clearance again.
i. If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.

7. Install:
   - All removed parts

TIP

For installation, reverse the removal procedure.

EAS31017
CHECKING THE ENGINE IDLING SPEED

TIP

Prior to checking the engine idling speed, the throttle body synchronization should be adjusted properly, the air filter element should be clean, and the engine should have adequate compression.

1. Start the engine and let it warm up for several minutes.
2. Check:
   - Engine idling speed
     Out of specification → Go to next step.

Engine idling speed
1200–1400 r/min

3. Check:
   - ISC (Idle Speed Control) learning value
     "00" or "01" → Check the intake system.
     "02" → Clean the throttle bodies.
     Refer to "CHECKING AND CLEANING THE THROTTLE BODIES" on page 7-15.
     a. Connect the Yamaha diagnostic tool. Use the diagnostic code number "67". Refer to "SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE" on page 9-32.
     b. Check the ISC (Idle Speed Control) leaning value.

EAS30797
SYNCHRONIZING THE THROTTLE BODIES

TIP

Before synchronizing the throttle bodies, check the following items:
- Valve clearance
- Spark plugs
- Air filter element
- Throttle body joints
- Fuel hose
- Exhaust system
- Breather hoses

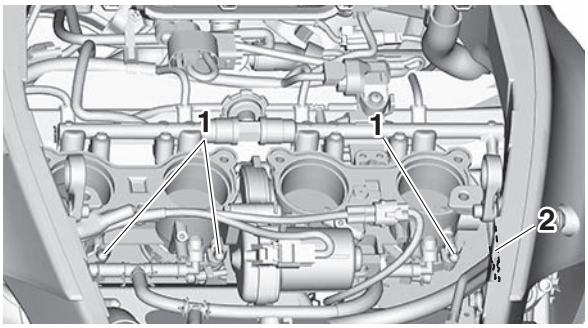
Checking the throttle body synchronization

1. Stand the vehicle on a level surface.

TIP

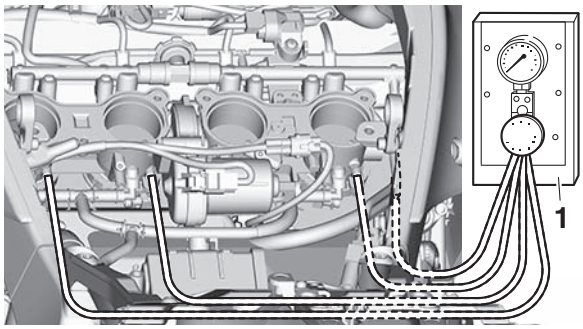
Place the vehicle on a maintenance stand.

2. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
   - Air filter case
     Refer to "AIR FILTER CASE" on page 7-5.
3. Remove:
   - Caps "1"
   - Service hose cap "2"



4. Install:
   - Vacuum gauge "1"

Vacuum gauge
90890-03094
Vacuummate
YU-44456



5. Install:
   - Air filter case
     Refer to "AIR FILTER CASE" on page 7-5.
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
6. Check:
   - Throttle body synchronization
     a. Start the engine, warm it up for several minutes, and then let it run at the specified engine idling speed.

Engine idling speed
1200–1400 r/min

     b. Check the vacuum pressure.

Difference in vacuum pressure between the cylinders
0 kPa–1.3 kPa (0 mmHg–10 mmHg, 0 inHg–0.4 inHg)

If out of specification → Adjust the throttle body synchronization.

Adjusting the throttle body synchronization

1. Adjust:
   - Throttle body synchronization
     a. Start the engine, warm it up for several minutes, and then let it run at the specified engine idling speed.

Engine idling speed
1200–1400 r/min

     b. Using the throttle body that has the bypass air screw "1" with a white paint mark as the standard, adjust the other throttle bodies by turning its bypass air screw in or out.

ECA21300

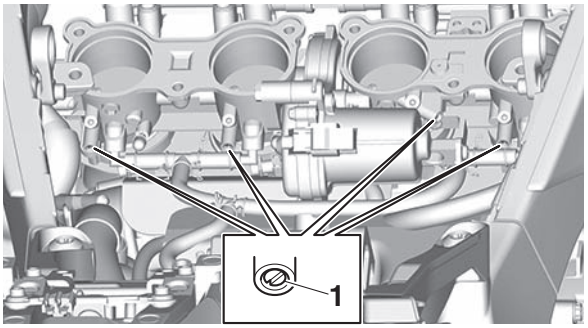
NOTICE

Do not turn the bypass air screw (white paint mark) of the throttle body that is the standard. Otherwise, the engine may run roughly at idle and the throttle bodies may not operate properly.

TIP

- Turn the bypass air screw using the carburetor angle driver.
- After each step, rev the engine two or three times, each time for less than a second, and check the synchronization again.
- If a bypass air screw was removed, turn the screw in fully and be sure to synchronize the throttle bodies.
- If the throttle body synchronization can not be adjusted using the bypass air screw, clean or replace the throttle bodies.
- The difference in vacuum pressure between the throttle bodies should not exceed 1.33 kPa (10 mmHg).

Carburetor angle driver 2
90890-03173



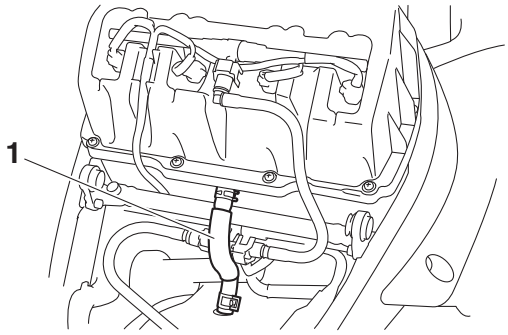
2. Stop the engine and remove the measuring equipment.
3. Install:
   - Caps
   - Service hose cap
4. Install:
   - Air filter case
     Refer to "AIR FILTER CASE" on page 7-5.
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.

EAS31318
CHECKING THE THROTTLE BODY JOINTS
1. Remove:
   - Throttle bodies
     Refer to "THROTTLE BODIES" on page 7-11.
2. Check:
   - Throttle body joints
     Cracks/damage → Replace.
     Refer to "THROTTLE BODIES" on page 7-11.
3. Install:
   - Throttle bodies
     Refer to "THROTTLE BODIES" on page 7-11.

EAS30800
CHECKING THE CRANKCASE BREATHER HOSE
1. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
2. Check:
   - Crankcase breather hose "1"
     Cracks/damage → Replace.
     Loose connection → Connect properly.

ECA13450
NOTICE

Make sure the crankcase breather hose is routed correctly.

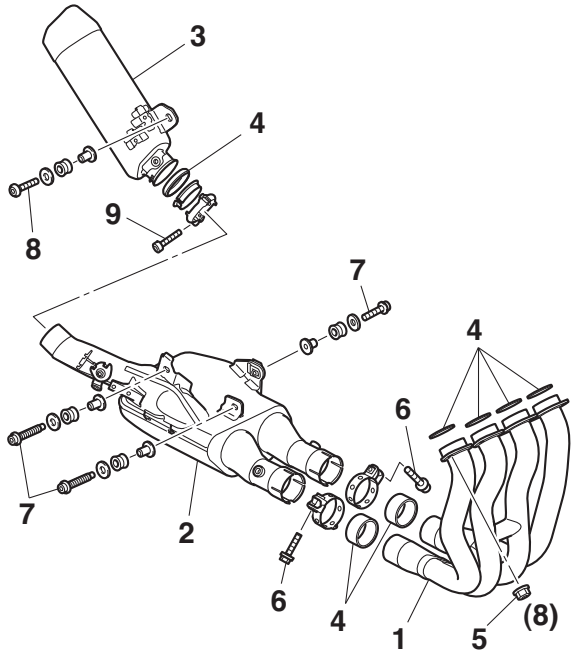


3. Install:
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.

EAS30625
CHECKING THE EXHAUST SYSTEM
1. Check:
   - Exhaust pipe "1"
   - Exhaust chamber "2"
   - Muffler "3"
     Cracks/damage → Replace.
   - Gasket "4"
     Exhaust gas leaks → Replace.
2. Check:
   Tightening torque
   - Exhaust pipe nut "5"
   - Exhaust pipe joint bolt "6"
   - Exhaust chamber bolt "7"
   - Muffler bolt "8"
   - Muffler joint bolt "9"



Exhaust pipe nut
20 N·m (2.0 kgf·m, 15 lb·ft)
Exhaust pipe joint bolt
20 N·m (2.0 kgf·m, 15 lb·ft)
Exhaust chamber bolt
20 N·m (2.0 kgf·m, 15 lb·ft)
Muffler bolt
20 N·m (2.0 kgf·m, 15 lb·ft)
Muffler joint bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)

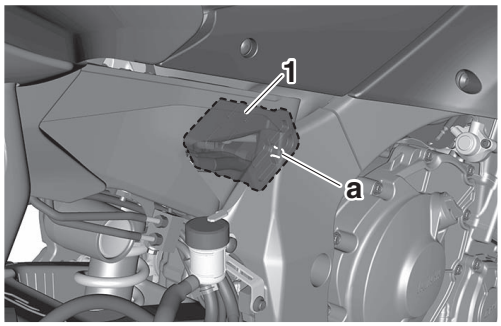


EAS30626
CHECKING THE CANISTER (for California only)
1. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.

2. Check:
   • Canister “1”
   • Canister purge hose
   • Fuel tank breather hose
   Cracks/damage → Replace.
   Loose connection → Connect properly.

TIP

Make sure that the canister breather “a” is not blocked, and if necessary, clean it.



3. Install:
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.
   • Rider seat
   Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS30627

CHECKING THE AIR INDUCTION SYSTEM

Refer to “AIR INDUCTION SYSTEM” on page 7-20.

EAS30628

REPLACING THE AIR FILTER ELEMENT

1. Remove:
   • Rider seat
   Refer to “GENERAL CHASSIS (1)” on page 4-1.
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.
2. Remove:
   • Upper air filter case
   • Air filter element
   Refer to “AIR FILTER CASE” on page 7-5.
3. Check:
   • Air filter element
   • Air filter seal
   Damage → Replace.

TIP

- Replace the air filter element every 40000 km (24000 mi) of operation.
- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.

4. Install:
   • Air filter element
   • Upper air filter case

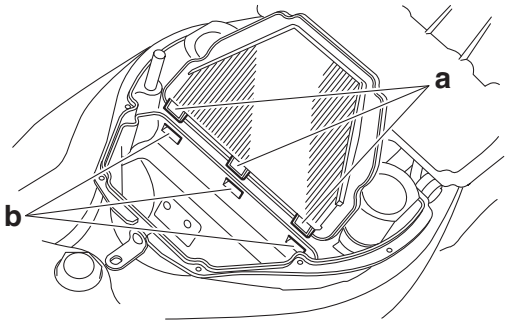
ECA20710

NOTICE

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect throttle body synchronization, leading to poor engine performance and possible overheating.

TIP

- Align projections “a” of the air filter element to the slots “b” of the air filter case and install.
- When installing the air filter element into the air filter case, make sure that the sealing surfaces are aligned to prevent any air leaks.



5. Install:
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.
   • Rider seat
   Refer to “GENERAL CHASSIS (1)” on page 4-1.

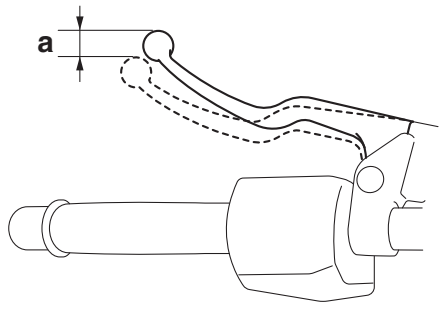
EAS30629

ADJUSTING THE CLUTCH LEVER FREE PLAY

1. Check:
   • Clutch lever free play “a”
   Out of specification → Adjust.



Clutch lever free play
10.0–15.0 mm (0.39–0.59 in)

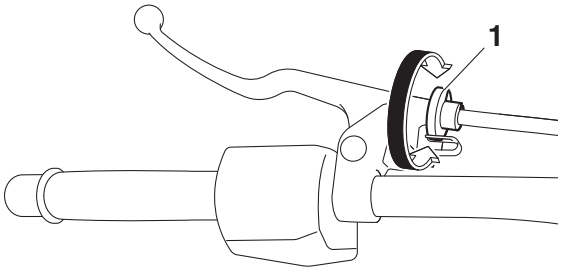


G088887

2. Adjust:
   • Clutch lever free play

Handlebar side

a. Turn the adjusting bolt "1" until the specified clutch lever free play is obtained.



G088888

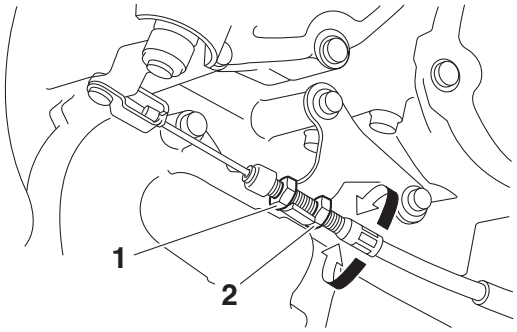
TIP

If the specified clutch lever free play cannot be obtained on the handlebar side of the cable, use the adjusting nut on the engine side.

Engine side

a. Remove the front side cowling (right). Refer to "GENERAL CHASSIS (5)" on page 4-16.
b. Loosen the locknut "1".
c. Turn the adjusting nut "2" until the specified clutch lever free play is obtained.
d. Tighten the locknut "1".

	Clutch cable locknut **7 N·m (0.7 kgf·m, 5.2 lb·ft)**



e. Install the front side cowling (right). Refer to "GENERAL CHASSIS (5)" on page 4-16.

EAS30801
CHECKING THE BRAKE OPERATION

1. Check:
   • Brake operation
   Brake not working properly → Check the brake system.
   Refer to "FRONT BRAKE" on page 4-52 and "REAR BRAKE" on page 4-63.

TIP

Drive on the dry road, operate the front and rear brakes separately and check to see if the brakes are operating properly.

EAS30632
CHECKING THE BRAKE FLUID LEVEL

1. Stand the vehicle on a level surface.

TIP

• Place the vehicle on a maintenance stand.
• Make sure the vehicle is upright.

2. Check:
   • Brake fluid level
   Below the minimum level mark → Add the specified brake fluid to the proper level.

	Front brake **Specified brake fluid** **DOT 4** **Rear brake** **Specified brake fluid** **DOT 4**

EWA13090

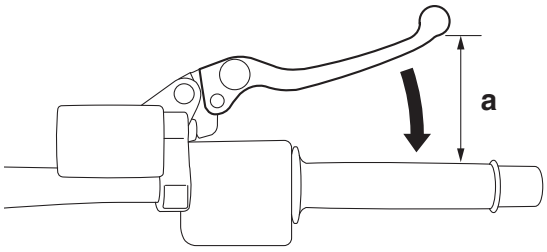
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540
NOTICE
Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

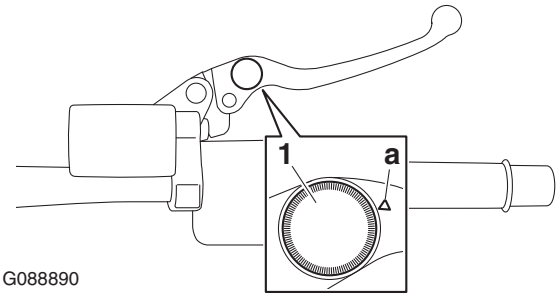
TIP
In order to ensure a correct reading of the brake fluid level, make sure the top of the brake fluid reservoir is horizontal.

EAS30630
ADJUSTING THE FRONT DISC BRAKE
1. Adjust:
   • Brake lever position
   (distance "a" from the throttle grip to the brake lever)



G088889

   a. Push the brake lever forward.
   b. Turn the adjusting dial "1" until the brake lever is in the desired position.
   c. Align the appropriate setting on the adjusting dial with the mark "a" on the brake lever.

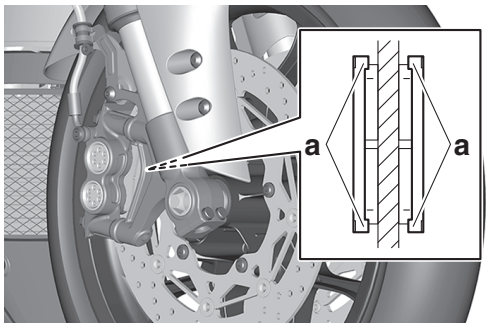


G088890

EWA17050
⚠ WARNING
- **After adjusting the brake lever position, make sure the pin on the brake lever holder is firmly inserted in the hole in the adjusting dial.**
- **A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce brake performance resulting in loss of control and possibly cause an accident. Therefore, check and if necessary, bleed the brake system.**

ECA13490
NOTICE
After adjusting the brake lever position, make sure there is no brake drag.

EAS30633
CHECKING THE FRONT BRAKE PADS
The following procedure applies to all of the brake pads.
1. Operate the brake.
2. Check:
   • Front brake pad
   Wear indicators "a" almost touch the brake disc → Replace the brake pads as a set.
   Refer to "FRONT BRAKE" on page 4-52.



EAS30631
ADJUSTING THE REAR DISC BRAKE
1. Adjust:
   • Brake pedal position
      a. Loosen the locknut "1".
      b. Turn the adjusting bolt "2" until the specified brake pedal position is obtained.

EWA18830
⚠ WARNING
After adjusting the brake pedal position, check that the end of the adjusting bolt "a" is visible through the hole "b".

      c. Tighten the locknut "1" to specification.



Rear brake master cylinder locknut
16 N·m (1.6 kgf·m, 12 lb·ft)

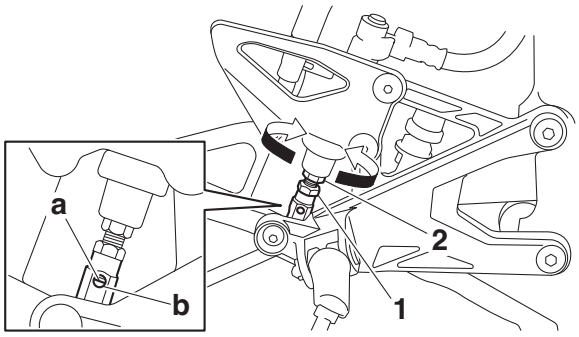
EWA17030
⚠ WARNING
A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. Before the vehicle is operated, the

air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance.

ECA13510

NOTICE

After adjusting the brake pedal position, make sure there is no brake drag.



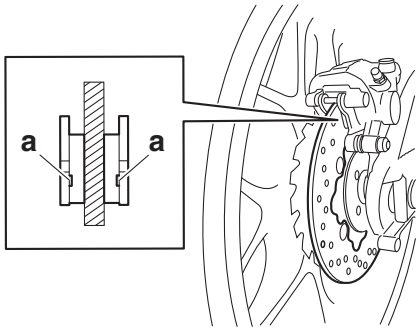
2. Adjust:
   - Rear brake light switch
     Refer to "ADJUSTING THE REAR BRAKE LIGHT SWITCH" on page 3-35.

EAS30634

CHECKING THE REAR BRAKE PADS

The following procedure applies to all of the brake pads.

1. Operate the brake.
2. Check:
   - Rear brake pad
     Wear indicator grooves "a" almost disappeared → Replace the brake pads as a set.
     Refer to "REAR BRAKE" on page 4-63.

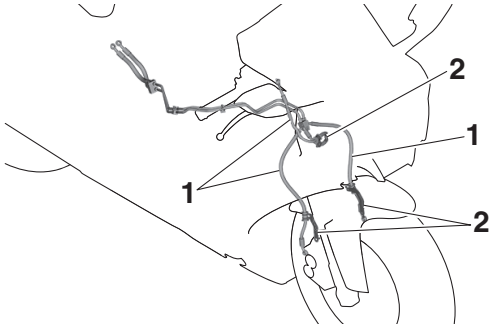


EAS30635

CHECKING THE FRONT BRAKE HOSES

The following procedure applies to all of the brake hoses and brake hose holders.

1. Check:
   - Brake hose "1"
     Cracks/damage/wear → Replace.
2. Check:
   - Brake hose surface
     Partly blackened surface on the brake hose → Replace.
3. Check:
   - Brake hose holder "2"
     Loose → Tighten the holder bolt.

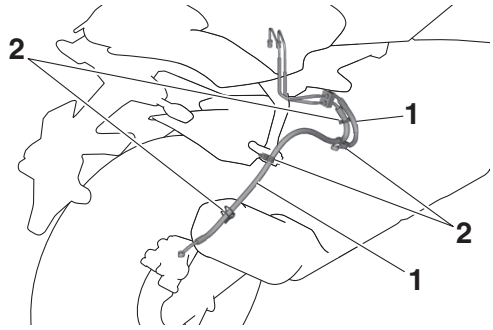


4. Hold the vehicle upright and apply the brake several times.
5. Check:
   - Brake hose
     Brake fluid leakage → Replace the damaged hose.
     Refer to "FRONT BRAKE" on page 4-52.

EAS30636

CHECKING THE REAR BRAKE HOSE

1. Check:
   - Brake hose "1"
     Cracks/damage/wear → Replace.
2. Check:
   - Brake hose holder "2"
     Loose connection → Tighten the holder bolt.



3. Hold the vehicle upright and apply the rear brake several times.
4. Check:
   - Brake hose
     Brake fluid leakage → Replace the damaged hose.
     Refer to "REAR BRAKE" on page 4-63.

EAS30893
BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)

EWA14000
WARNING

Always bleed the brake system when the brake related parts are removed.

ECA22640
NOTICE

- **Bleed the brake system in the following order.**
- **1st step: Front brake master cylinder**
- **2nd step: Front brake calipers**
- **3rd step: Rear brake caliper**

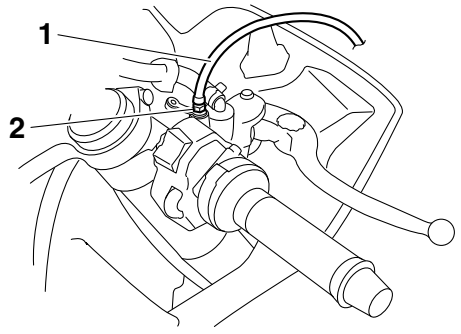
EWA16530
WARNING

Bleed the ABS whenever:
- **the system is disassembled.**
- **a brake hose is loosened, disconnected or replaced.**
- **the brake fluid level is very low.**
- **brake operation is faulty.**

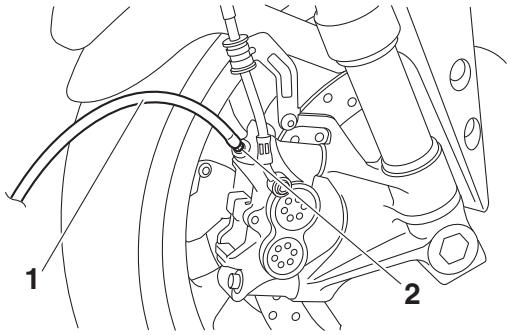
TIP
- Be careful not to spill any brake fluid or allow the brake fluid reservoir to overflow.
- When bleeding the ABS, make sure that there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the ABS, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours.
- Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

1. Bleed:
   - ABS
     a. Fill the brake fluid reservoir to the proper level with the specified brake fluid.
     b. Install the diaphragm (brake fluid reservoir).
     c. Connect a clear plastic hose “1” tightly to the bleed screw “2”.

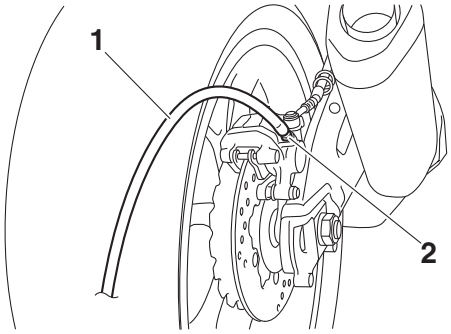
A



B



C



A. Front brake master cylinder
B. Front brake caliper (left/right)
C. Rear brake caliper

     d. Place the other end of the hose into a container.
     e. Slowly apply the brake several times.
     f. Fully squeeze the brake lever or fully depress the brake pedal and hold it in position.
     g. Loosen the bleed screw.

TIP

Loosening the bleed screw will release the pressure and cause the brake lever to contact the throttle grip or the brake pedal to fully extend.

     h. Tighten the bleed screw and then release the brake lever or brake pedal.
     i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.
     j. Check the operation of the hydraulic unit. Refer to “HYDRAULIC UNIT OPERATION TEST” on page 4-79.

ECA17061
NOTICE

Make sure that the main switch is turned to “OFF” before checking the operation of the hydraulic unit.

     k. After operating the ABS, repeat steps (e) to (i), and then fill the brake fluid reservoir to the proper level with the specified brake fluid.

l. Tighten the bleed screw to specification.



Front brake master cylinder bleed screw
5 N·m (0.5 kgf·m, 3.7 lb·ft)
Brake caliper bleed screw
5 N·m (0.5 kgf·m, 3.7 lb·ft)

m. Fill the brake fluid reservoir to the proper level with the specified brake fluid. Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-13.

EWA13110

⚠ WARNING

After bleeding the hydraulic brake system, check the brake operation.

EAS31428

CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:
   • Wheel
   Damage/out-of-round → Replace.

EWA13260

⚠ WARNING

Never attempt to make any repairs to the wheel.

TIP

After a tire or wheel has been changed or replaced, always balance the wheel.

EAS31429

CHECKING THE TIRES

The following procedure applies to both of the tires.

1. Check:
   • Tire pressure
   Out of specification → Regulate.

EWA13181

⚠ WARNING

- **The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.**
- **The tire pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.**
- **Operation of an overloaded vehicle could cause tire damage, an accident or an injury. NEVER OVERLOAD THE VEHICLE.**



Tire air pressure (measured on cold tires)
Front
250 kPa (2.50 kgf/cm², 36 psi)
Rear
290 kPa (2.90 kgf/cm², 42 psi)
Maximum load
185 kg (408 lb) (YZF-R1)
184 kg (406 lb) (YZF-R1M)
*** Total weight of rider, passenger, cargo and accessories**

2. Check:
   • Tire surfaces
   Damage/wear → Replace the tire.

EWA13190

⚠ WARNING

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.



Wear limit (front)
1.0 mm (0.04 in)
Wear limit (rear)
1.0 mm (0.04 in)

EWA14090

⚠ WARNING

After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this vehicle.



Front tire
Size
120/70ZR17M/C (58W)
Manufacturer/model
BRIDGESTONE/BATTLAX RACING STREET RS11F



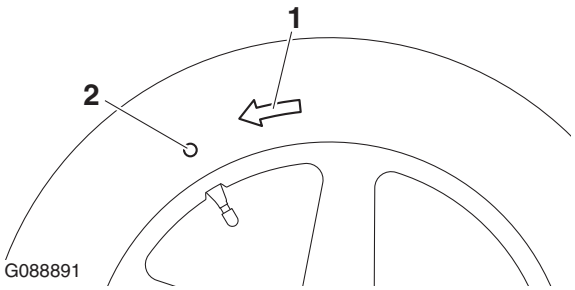
Rear tire
Size
190/55ZR17M/C (75W) (YZF-R1)
200/55ZR17M/C (78W) (YZF-R1M)
Manufacturer/model
BRIDGESTONE/BATTLAX RACING STREET RS11R

EWA13210
⚠ WARNING

New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.

TIP

For tires with a direction of rotation mark "1":
- Install the tire with the mark pointing in the direction of wheel rotation.
- Align the mark "2" with the valve installation point.



EAS30641
CHECKING THE WHEEL BEARINGS

The following procedure applies to all of the wheel bearings.
1. Check:
   - Wheel bearings
     Refer to "CHECKING THE FRONT WHEEL" on page 4-38 and "CHECKING THE REAR WHEEL" on page 4-47.

EAS30802
CHECKING THE SWINGARM OPERATION

1. Check:
   - Swingarm operation
     Swingarm not working properly → Check the swingarm.
     Refer to "SWINGARM" on page 4-120.
2. Check:
   - Swingarm excessive play
     Refer to "SWINGARM" on page 4-120.

EAS30643
LUBRICATING THE SWINGARM PIVOT

1. Lubricate:
   - Oil seals
   - Collars

	Recommended lubricant **Lithium-soap-based grease**

Refer to "INSTALLING THE SWINGARM" on page 4-123.

EAS31923
DRIVE CHAIN SLACK

Checking the drive chain slack

EWA13120
⚠ WARNING

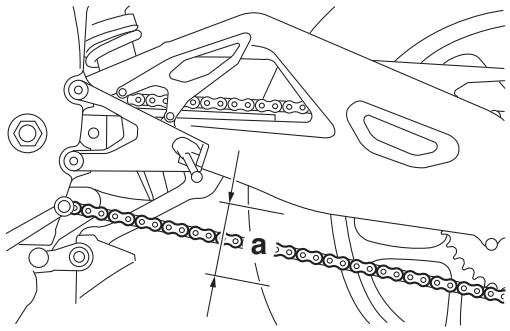
Securely support the vehicle so that there is no danger of it falling over.

ECA13550
NOTICE

A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.

1. Shift the transmission into the neutral position.
2. Check:
   - Drive chain slack "a"
     Out of specification → Adjust.

	Drive chain slack (When performing maintenance/Maintenance stand) **25.0–35.0 mm (0.98–1.38 in)** **Drive chain slack (When replacing with a new one/Maintenance stand)** **20.0–30.0 mm (0.79–1.18 in)** **Drive chain slack limit (Maintenance stand)** **35.0 mm (1.38 in)**



ECA20870
NOTICE

Improper drive chain slack will overload the engine as well as other vital parts of the motorcycle and can lead to chain slippage or breakage. If the drive chain slack is more than the specified limit, the chain can dam-

age the frame, swingarm, and other parts. To prevent this from occurring, keep the drive chain slack within the specified limits.

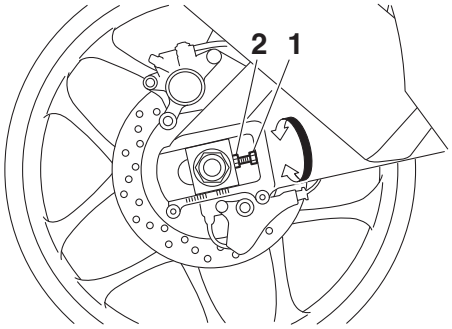
Adjusting the drive chain slack

EWA13120

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

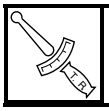
1. Loosen:
   - Wheel axle nut
     Refer to "REAR WHEEL" on page 4-43.
2. Adjust:
   - Drive chain slack
     a. Loosen both locknuts "1".
     b. Turn both adjusting bolts "2" until the specified drive chain slack is obtained.



TIP

- To maintain the proper wheel alignment, adjust both sides evenly.
- There should be no clearance between the adjusting block and adjusting bolt.

     c. Tighten the wheel axle nut to specification.

	**Rear wheel axle nut** **190 N·m (19 kgf·m, 140 lb·ft)**

     d. Tighten the locknuts to specification.

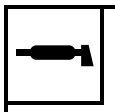
	**Chain puller adjusting bolt locknut** **16 N·m (1.6 kgf·m, 12 lb·ft)**

EAS30803

LUBRICATING THE DRIVE CHAIN

The drive chain consists of many interacting parts. If the drive chain is not maintained properly, it will wear out quickly. Therefore, the drive chain should be serviced, especially when the vehicle is used in dusty areas.

This vehicle has a drive chain with small rubber O-rings between each side plate. Steam cleaning, high-pressure washing, certain solvents, and the use of a coarse brush can damage these O-rings. Therefore, use only kerosene to clean the drive chain. Wipe the drive chain dry and thoroughly lubricate it with chain lubricant that is suitable for O-ring chains. Do not use any other lubricants on the drive chain since they may contain solvents that could damage the O-rings.

	**Recommended lubricant** **Chain lubricant suitable for O-ring chains**

EAS30645

CHECKING AND ADJUSTING THE STEERING HEAD

1. Stand the vehicle on a level surface.

EWA13120

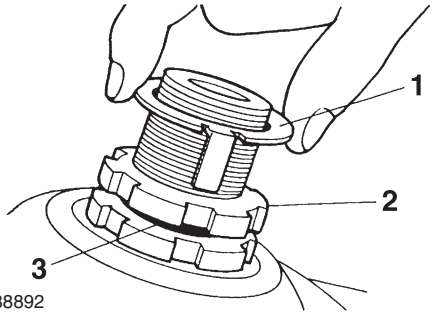
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

TIP

Place the vehicle on a maintenance stand so that the front wheel is elevated.

2. Check:
   - Steering head
     Grasp the bottom of the front fork legs and gently rock the front fork.
     Blinding/looseness → Adjust the steering head.
3. Remove:
   - Upper bracket
4. Adjust:
   - Steering head
     a. Remove the lock washer "1", the upper ring nut "2", and the rubber washer "3".

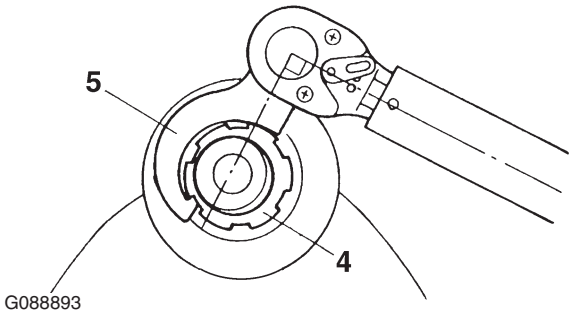


G088892

     b. Loosen the lower ring nut "4" and then tighten it to specification with a steering nut wrench "5".

TIP

- Set the torque wrench at a right angle to the steering nut wrench.
- Move the steering to the left and right a couple of times to check that it moves smoothly.



Steering nut wrench
90890-01403
Exhaust flange nut wrench
YU-A9472

Lower ring nut (initial tightening torque)
52 N·m (5.2 kgf·m, 38 lb·ft)

c. Loosen the lower ring nut completely, then tighten it to specification.

EWA13140

⚠ WARNING

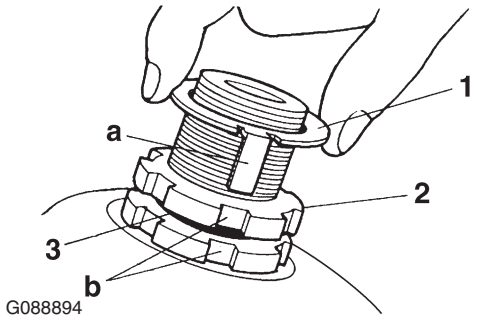
Do not overtighten the lower ring nut.

Lower ring nut (final tightening torque)
14 N·m (1.4 kgf·m, 10 lb·ft)

d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings.
Refer to "STEERING HEAD" on page 4-108.
e. Install the rubber washer "3".
f. Install the upper ring nut "2".
g. Finger tighten the upper ring nut, then align the slots of both ring nuts. If necessary, hold the lower ring nut and tighten the upper ring nut until their slots are aligned.
h. Install the lock washer "1".

TIP

Make sure the lock washer tabs "a" sit correctly in the ring nut slots "b".



5. Install:
   - Upper bracket
   Refer to "HANDLEBARS" on page 4-83.

EAS30646

LUBRICATING THE STEERING HEAD

1. Lubricate:
   - Upper bearing
   - Lower bearing
   - Bearing race

Recommended lubricant
Lithium-soap-based grease

EAS31634

CHECKING THE STEERING DAMPER

Refer to "CHECKING THE STEERING DAMPER" on page 4-111.

EAS31186

CHECKING THE CHASSIS FASTENERS

Make sure that all nuts, bolts, and screws are properly tightened.
Refer to "CHASSIS TIGHTENING TORQUES" on page 2-14.

EAS30804

LUBRICATING THE BRAKE LEVER

Lubricate the pivoting point and metal-to-metal moving parts of the lever.

Recommended lubricant
Silicone grease

EAS30805

LUBRICATING THE CLUTCH LEVER

Lubricate the pivoting point and metal-to-metal moving parts of the lever.

Recommended lubricant
Lithium-soap-based grease

EAS30649
LUBRICATING THE PEDAL
Lubricate the pivoting point and metal-to-metal moving parts of the pedal.

Recommended lubricant
Molybdenum disulfide grease

EAS30650
CHECKING THE SIDESTAND
1. Check:
   - Sidestand operation
     Check that the sidestand moves smoothly.
     Rough movement → Repair or replace.

EAS30651
LUBRICATING THE SIDESTAND
Lubricate the pivoting point, metal-to-metal moving parts and spring contact point of the sidestand.

Recommended lubricant
Lithium-soap-based grease

EAS30652
CHECKING THE SIDESTAND SWITCH
Refer to "ELECTRICAL COMPONENTS" on page 8-38.

EAS30653
CHECKING THE FRONT FORK
1. Stand the vehicle on a level surface.

EWA13120
WARNING
Securely support the vehicle so that there is no danger of it falling over.

2. Check:
   - Inner tube
     Damage/scratches → Replace.
   - Front fork leg
     Oil leaks between inner tube and outer tube → Replace the oil seal.
     Refer to "FRONT FORK (for YZF-R1)" on page 4-89 or refer to "FRONT FORK (for YZF-R1M)" on page 4-100.
3. Hold the vehicle upright and apply the front brake.
4. Check:
   - Front fork operation
     Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
     Rough movement → Repair.
     Refer to "FRONT FORK (for YZF-R1)" on page 4-89 or refer to "FRONT FORK (for YZF-R1M)" on page 4-100.

EAS30806
ADJUSTING THE FRONT FORK LEGS (for YZF-R1)
The following procedure applies to both of the front fork legs.

EWA13120
WARNING
Securely support the vehicle so that there is no danger of it falling over.

Spring preload

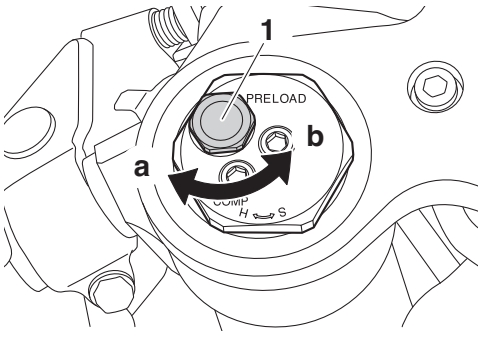
EWA17040
WARNING
Always adjust both front fork legs evenly. Uneven adjustment can result in poor handling and loss of stability.

ECA13590
NOTICE
Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Spring preload
     a. Turn the adjusting nut "1" in direction "a" or "b".

Direction "a"
Spring preload is increased (suspension is harder).
Direction "b"
Spring preload is decreased (suspension is softer).

Spring preload
Minimum (soft)
0 turn(s) in direction "a"*
Standard
6 turn(s) in direction "a"*
Maximum (hard)
15 turn(s) in direction "a"*
*** With the adjusting nut fully turned in direction "b"**



Rebound damping

ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Rebound damping
     a. Turn the adjusting bolt "1" in direction "a" or "b".

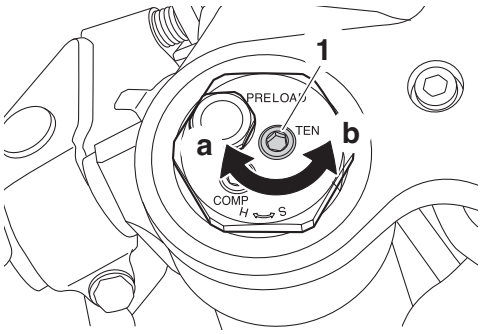
Direction "a"
Rebound damping is increased (suspension is harder).
Direction "b"
Rebound damping is decreased (suspension is softer).

Rebound damping
Minimum (soft)
14 click(s) in direction "b"*
Standard
7 click(s) in direction "b"*
Maximum (hard)
1 click(s) in direction "b"*

*** With the adjusting bolt fully turned in direction "a"**

TIP

- Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, check the number of clicks and modify the minimum and standard specifications as necessary.
- When turning the damping force adjusting bolt in direction "a", the 0 click position and the 1 click position may be the same.



Compression damping

ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Compression damping
     a. Turn the adjusting bolt "1" in direction "a" or "b".

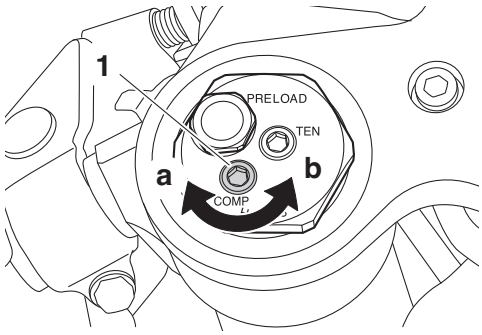
Direction "a"
Compression damping is increased (suspension is harder).
Direction "b"
Compression damping is decreased (suspension is softer).

Compression damping
Minimum (soft)
23 click(s) in direction "b"*
Standard
17 click(s) in direction "b"*
Maximum (hard)
1 click(s) in direction "b"*

*** With the adjusting bolt fully turned in direction "a"**

TIP

- Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, check the number of clicks and modify the minimum and standard specifications as necessary.
- When turning the damping force adjusting bolt in direction "a", the 0 click position and the 1 click position may be the same.



EAS31635
ADJUSTING THE PRELOAD OF THE FRONT FORK LEGS (for YZF-R1M)

The following procedure applies to both of the front fork legs.

EWA13120
WARNING

Securely support the vehicle so that there is no danger of it falling over.

Spring preload

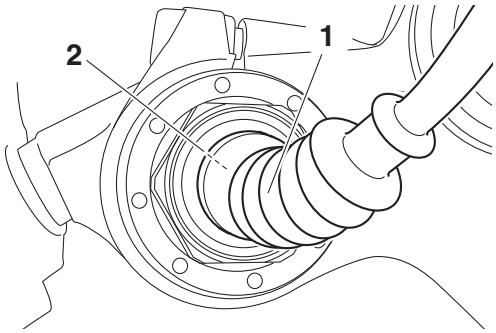
EWA17040
WARNING

Always adjust both front fork legs evenly. Uneven adjustment can result in poor handling and loss of stability.

ECA13590
NOTICE

Never go beyond the maximum or minimum adjustment positions.

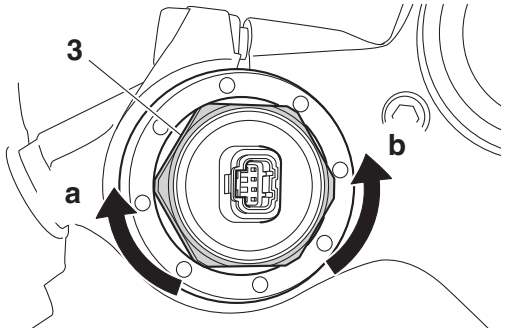
1. Adjust:
   - Spring preload
     a. Turn the main switch to “OFF”.
     b. Slide the rubber cover “1” back at each coupler.
     c. Disconnect the coupler “2” on each front fork.



     d. Turn the adjusting bolt “3” in direction “a” or “b”.

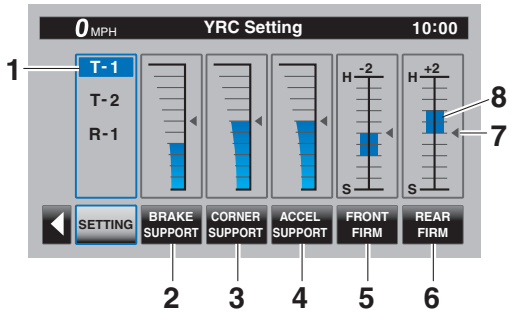
Direction “a”
Spring preload is increased (suspension is harder).
Direction “b”
Spring preload is decreased (suspension is softer).

Spring preload
Minimum (soft)
0 turn(s) in direction “a”*
Standard
3 turn(s) in direction “a”*
Maximum (hard)
15 turn(s) in direction “a”*
*** With the adjusting nut fully turned in direction “b”**



     e. Connect the coupler on each fork.
     f. Slide the rubber cover to the original position.

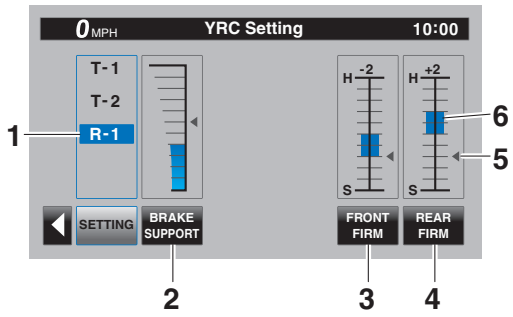
EAS30941
ADJUSTING THE DAMPING FORCE OF THE FRONT FORK LEGS AND REAR SHOCK ABSORBER ASSEMBLY (for YZF-R1M)



1. ERS mode
2. Braking support level
3. Cornering support level
4. Acceleration support level
5. Front overall damping level
6. Rear overall damping level
7. Factory preset level
8. Current level

The ERS consists of three semi-active automatic modes (T-1, T-2 and R-1) and three manual setting modes (M-1, M-2 and M-3). When an automatic mode is selected, the SCU will adjust the compression and rebound damping forces

based on running conditions. For all modes and models, spring preload is physically adjusted by hand.
For track modes T-1 and T-2, the following settings can be adjusted:
BRAKE SUPPORT: reduces nosedive (front-end pitch from braking)
CORNER SUPPORT: increases damping to absorb chassis fluctuations for smooth cornering. Reduce this setting for increased rear wheel grip.
ACCEL SUPPORT: reduces rear-end squat (rear-end pitch due to acceleration)
FRONT FIRM: hardens "H" or softens "S" overall damping of the front suspension
REAR FIRM: hardens "H" or softens "S" overall damping of the rear suspension

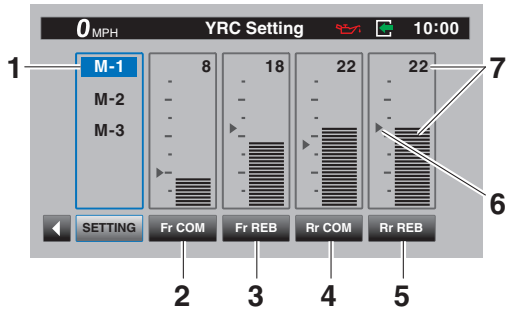


1. ERS mode
2. Braking support level
3. Front overall damping level
4. Rear overall damping level
5. Factory preset level
6. Current level

For the road mode R-1, the following settings can be adjusted:
BRAKE SUPPORT: reduces nosedive (front-end pitch from braking)
FRONT FIRM: hardens "H" or softens "S" overall damping of the front suspension
REAR FIRM: hardens "H" or softens "S" overall damping of the rear suspension

TIP

- T-1 is preset for track use with racing slick tires.
- T-2 is preset for track use with street tires.
- R-1 is preset for road use with street tires.



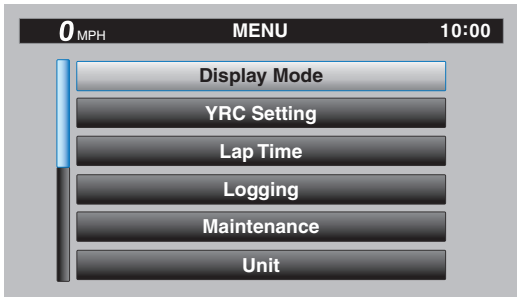
1. ERS mode
2. Front compression damping force
3. Front rebound damping force
4. Rear compression damping force
5. Rear rebound damping force
6. Factory preset level
7. Current level setting

For the manual setting modes M-1, M-2, and M-3, the following settings can be adjusted:
Fr COM: front compression damping
Fr REB: front rebound damping
Rr COM: rear compression damping
Rr REB: rear rebound damping

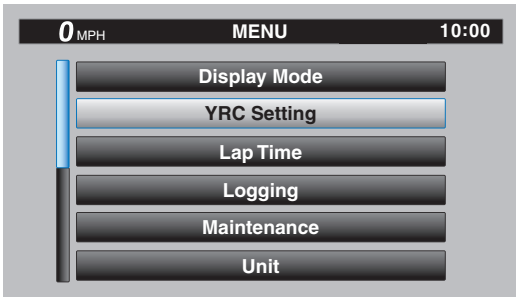
TIP

- M-1 is preset for track use with racing slick tires.
- M-2 is preset for track use with street tires.
- M-3 is preset for street use with street tires.

1. Adjust:
   - Damping force
     a. Turn the main switch to "ON".
     b. Long push the wheel switch to enter the MENU screen.



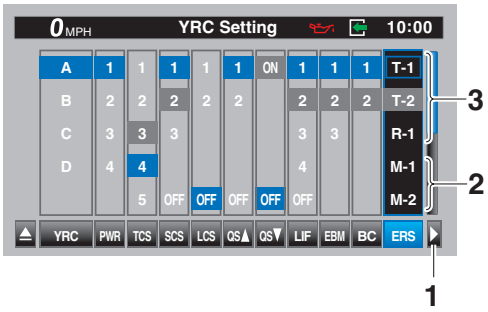
c. Select "YRC Setting".



d. Select the "▶" mark located to the right of ERS.

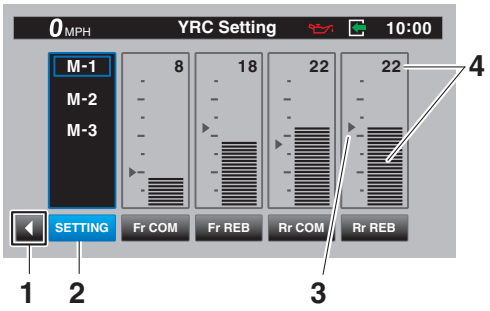
TIP

The ERS setting menu is divided into automatic and manual setting modes, and the two types are accessed separately. Before moving to the ERS setting menu, make sure the current ERS mode corresponds to the same type (automatic or manual) that you'd like to adjust.



1. To ERS menu
2. Manual modes
3. Automatic modes

e. The display will change to the relevant suspension setting screen and the ERS mode selection box "SETTING" is highlighted. Short push the wheel switch to enter the box and select the ERS mode that you want to adjust.



1. To YRC Setting menu
2. ERS mode selection box "SETTING"
3. Factory preset level
4. Current level setting

f. Select the suspension item that you want to adjust, and then rotate the wheel switch to adjust the setting level.

TIP

All ERS modes regardless of type are independent. Offset level setting changes made in one mode are not transferred to another mode.

g. To adjust other ERS modes of the same type, repeat from step (d). To switch types or when finished, select the "◀" mark to return to the main "YRC Setting" menu.

EAS30808

CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

Refer to "CHECKING THE REAR SHOCK ABSORBER ASSEMBLY" on page 4-117.

EAS30655

ADJUSTING THE REAR SHOCK ABSORBER ASSEMBLY (for YZF-R1)

EWA13120

WARNING

Securely support the vehicle so that there is no danger of it falling over.

Spring preload

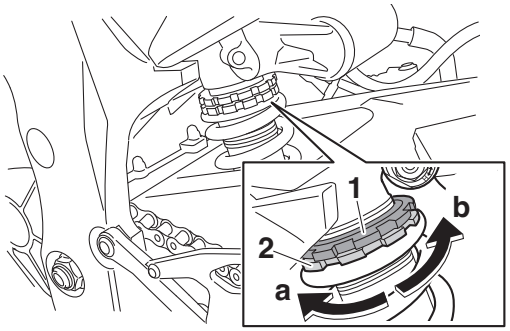
ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

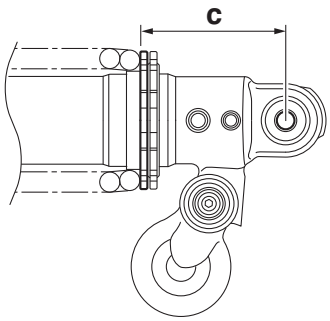
1. Adjust:
   - Spring preload
     a. Loosen the locknut "1".
     b. Adjust the spring preload with the special wrench included in the owner's tool kit.
     c. Turn the adjusting ring "2" in direction "a" or "b".

Direction "a"
Spring preload is increased (suspension is harder).
Direction "b"
Spring preload is decreased (suspension is softer).



TIP

The spring preload setting is determined by measuring distance “c”. The longer distance “c” is, the higher the spring preload; the shorter distance “c” is, the lower the spring preload.



Spring preload
Minimum
77.5 mm (3.05 in)
Standard
78.5 mm (3.09 in)
Maximum
85.5 mm (3.37 in)

d. Tighten the locknut to the specified torque.

Spring preload adjusting ring locknut (for YZF-R1)
28 N·m (2.8 kgf·m, 21 lb·ft)

Rebound damping

ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Rebound damping
     a. Turn the adjusting screw “1” in direction “a” or “b”.

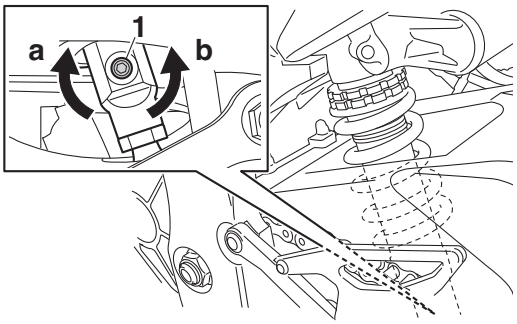
Direction “a”
Rebound damping is increased (suspension is harder).
Direction “b”
Rebound damping is decreased (suspension is softer).

Rebound damping
Minimum (soft)
23 click(s) in direction “b”*
Standard
12 click(s) in direction “b”*
Maximum (hard)
1 click(s) in direction “b”*

*** With the adjusting screw fully turned in direction “a”**

TIP

- Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, check the number of clicks and modify the minimum and standard specifications as necessary.
- When turning the damping force adjusting screw in direction “a”, the 0 click position and the 1 click position may be the same.



Compression damping (for fast compression damping)

ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Compression damping (for fast compression damping)
     a. Turn the adjusting bolt “1” in direction “a” or “b”.

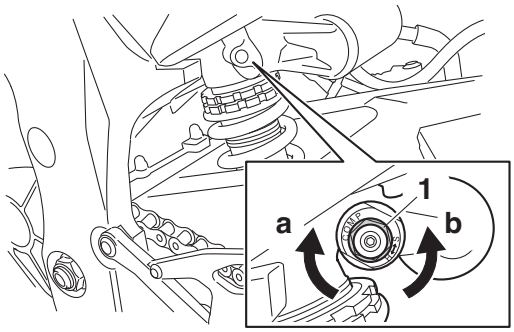
Direction “a”
Compression damping is increased (suspension is harder).
Direction “b”
Compression damping is decreased (suspension is softer).

Fast compression damping
Minimum (soft)
5.5 turn(s) in direction “b”*
Standard
3 turn(s) in direction “b”*
Maximum (hard)
0 turn(s) in direction “b”*

*** With the adjusting bolt fully turned in direction “a”**

TIP

Although the total number of turns of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of turns always represents the entire adjusting range. To obtain a precise adjustment, check the number of turns and modify the minimum and standard specifications as necessary.



Compression damping (for slow compression damping)

ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

1. Adjust:
   - Compression damping (for slow compression damping)
     a. Turn the adjusting screw “1” in direction “a” or “b”.

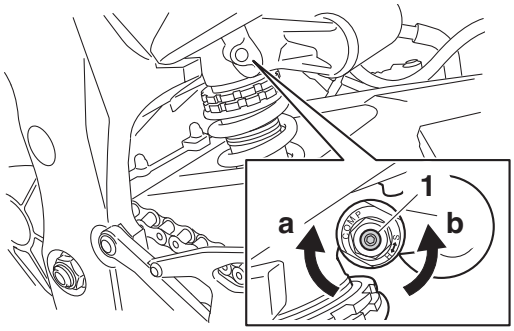
Direction “a”
Compression damping is increased (suspension is harder).
Direction “b”
Compression damping is decreased (suspension is softer).

Slow compression damping
Minimum (soft)
18 click(s) in direction “b”*
Standard
12 click(s) in direction “b”*
Maximum (hard)
1 click(s) in direction “b”*

*** With the adjusting screw fully turned in direction “a”**

TIP

- Although the total number of clicks of a damping force adjusting mechanism may not exactly match the above specifications due to small differences in production, the actual number of clicks always represents the entire adjusting range. To obtain a precise adjustment, check the number of clicks and modify the minimum and standard specifications as necessary.
- When turning the damping force adjusting screw in direction “a”, the 0 click position and the 1 click position may be the same.



EAS30942

ADJUSTING THE PRELOAD OF THE REAR SHOCK ABSORBER ASSEMBLY (for YZF-R1M)

EWA13120

⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

Spring preload

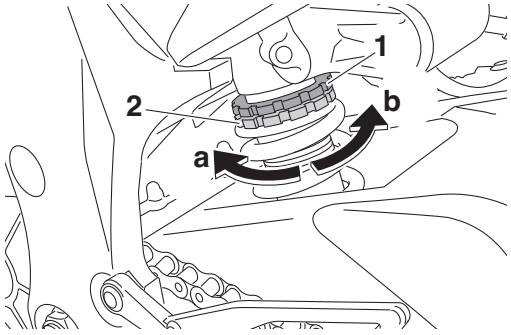
ECA13590

NOTICE

Never go beyond the maximum or minimum adjustment positions.

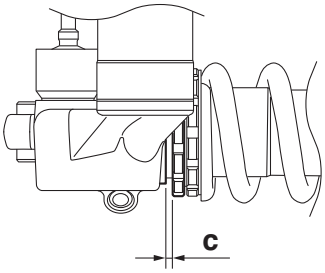
1. Adjust:
   - Spring preload
     a. Loosen the locknut "1".
     b. Adjust the spring preload with the special wrench included in the owner's tool kit.
     c. Turn the adjusting ring "2" in direction "a" or "b".

Direction "a"
Spring preload is increased (suspension is harder).
Direction "b"
Spring preload is decreased (suspension is softer).



TIP

The spring preload setting is determined by measuring distance "c". The longer distance "c" is, the higher the spring preload; the shorter distance "c" is, the lower the spring preload.



Spring preload
Minimum
0 mm (0.00 in)
Standard
4 mm (0.16 in)
Maximum
9 mm (0.35 in)

d. Tighten the locknut to the specified torque.

Spring preload adjusting ring locknut (for YZF-R1M)
25 N·m (2.5 kgf·m, 18 lb·ft)

EAS30809

CHECKING THE CONNECTING ARM AND RELAY ARM

Refer to "CHECKING THE CONNECTING ARM AND RELAY ARM" on page 4-117.

EAS30656

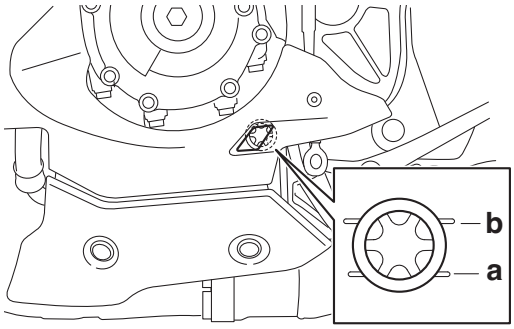
CHECKING THE ENGINE OIL LEVEL

1. Stand the vehicle on a level surface.

TIP

- Place the vehicle on a maintenance stand.
- Make sure the vehicle is upright.

2. Start the engine, warm it up for several minutes, and then turn it off.
3. Check:
   - Engine oil level
     The engine oil level should be between the minimum level mark "a" and maximum level mark "b".
     Below the minimum level mark → Add the recommended engine oil to the proper level.



Recommended brand
YAMALUBE
Type
Full synthetic
SAE viscosity grades
10W-40, 15W-50
Recommended engine oil grade
API service SG type or higher, JASO standard MA

ECA13361
NOTICE

- **Engine oil also lubricates the clutch and the wrong oil types or additives could cause clutch slippage. Therefore, do not add any chemical additives or use engine oils with a grade of "CD" or higher and do not use oils labeled "ENERGY CONSERVING II".**
- **Do not allow foreign materials to enter the crankcase.**

TIP

Before checking the engine oil level, wait a few minutes until the oil has settled.

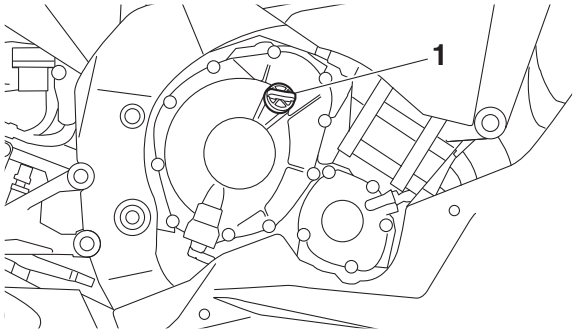
4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check the engine oil level again.

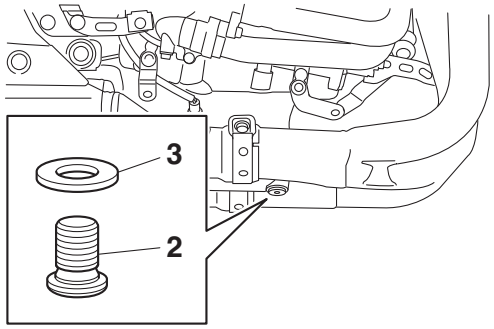
TIP

Before checking the engine oil level, wait a few minutes until the oil has settled.

EAS30657
CHANGING THE ENGINE OIL

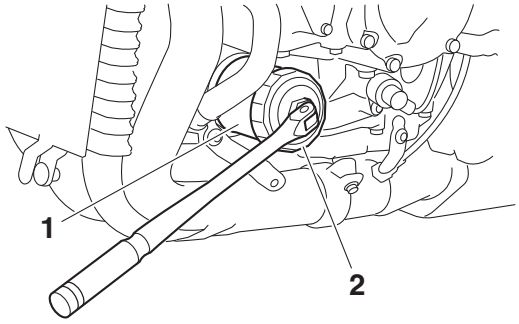
1. Start the engine, warm it up for several minutes, and then turn it off.
2. Place a container under the engine oil drain bolt.
3. Remove:
   - Engine oil filler cap "1"
   - Engine oil drain bolt "2"
   - Gasket "3"





4. Drain:
   - Engine oil
   (completely from the crankcase)
5. If the oil filter cartridge is also to be replaced, perform the following procedure.
   a. Remove the front side cowling (left). Refer to "GENERAL CHASSIS (5)" on page 4-16.
   b. Remove the oil filter cartridge "1" with an oil filter wrench "2".

Oil filter wrench
90890-01426
Oil filter wrench
YU-38411



   c. Lubricate the O-ring of the new oil filter cartridge with a thin coat of lithium-soap-based grease.

ECA25890
NOTICE

Make sure the O-ring is positioned correctly in the groove of the oil filter cartridge.

   d. Tighten the new oil filter cartridge to specification with an oil filter wrench.

Oil filter cartridge
17 N·m (1.7 kgf·m, 13 lb·ft)

   e. Install the front side cowling (left). Refer to "GENERAL CHASSIS (5)" on page 4-16.

6. Install:
   • Engine oil drain bolt
   (along with the gasket New)

Engine oil drain bolt
23 N·m (2.3 kgf·m, 17 lb·ft)

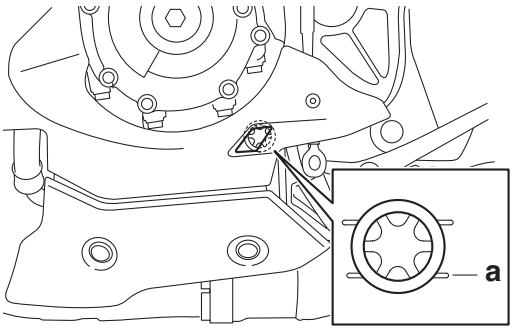
7. Fill:
   • Crankcase
   (with the specified amount of the recommended engine oil)

Engine oil quantity
Oil change
3.90 L (4.12 US qt, 3.43 Imp.qt)
With oil filter removal
4.10 L (4.33 US qt, 3.61 Imp.qt)
Quantity (disassembled)
4.90 L (5.18 US qt, 4.31 Imp.qt)

8. Install:
   • Engine oil filler cap
   (along with the O-ring New)
9. Start the engine, warm it up for several minutes, and then turn it off.
10. Check:
    • Engine
    (for engine oil leaks)
11. Check:
    • Engine oil level
    Refer to "CHECKING THE ENGINE OIL LEVEL" on page 3-28.

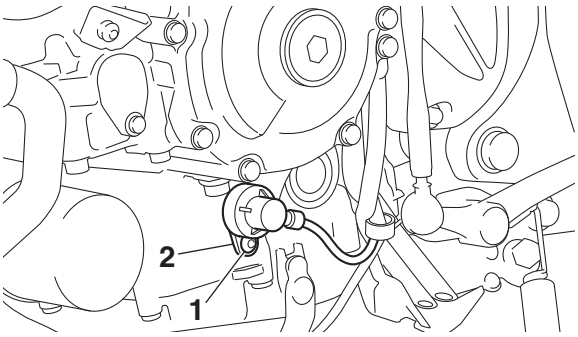
EAS30810
MEASURING THE ENGINE OIL PRESSURE

1. Check:
   • Engine oil level
   Below the minimum level mark "a" → Add the recommended engine oil to the proper level.



2. Remove:
   • Front side cowling (left)
3. Remove:
   • Oil pressure switch joint bolt "1"
   • Oil pressure switch joint (with the oil pressure switch) "2"

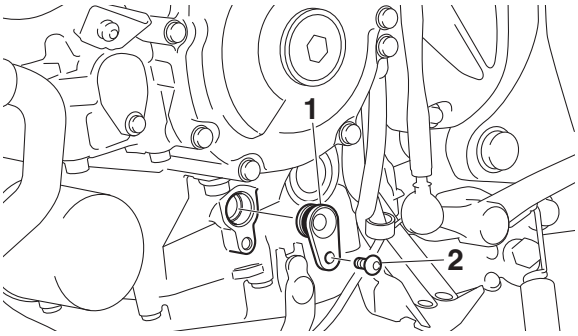
EWA12980
WARNING
The engine, muffler and engine oil are extremely hot.



4. Install:
   • Oil pressure gauge joint 18 mm "1"
   • Oil pressure switch joint bolt "2"

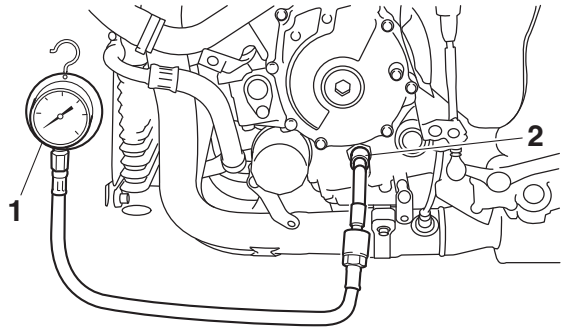
Oil pressure gauge joint 18 mm
90890-04176
YU-04176

Oil pressure switch joint bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)



5. Install:
   • Oil pressure gauge "1"
   • Adapter C "2"

Oil pressure gauge set
90890-03120



6. Start the engine, warm it up for several minutes.

ECA13410

NOTICE

When the engine is cold, the engine oil will have a higher viscosity, causing the engine oil pressure to increase. Therefore, be sure to measure the engine oil pressure after warming up the engine.

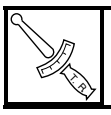
7. Measure:
   - Engine oil pressure
     (at the following conditions)



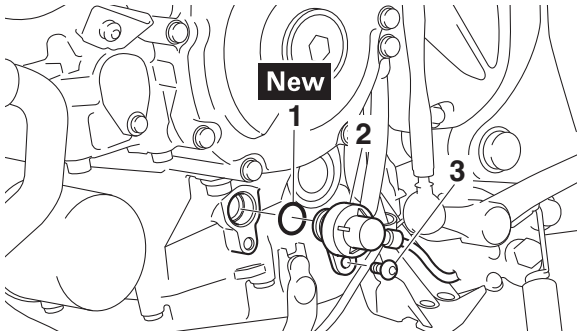
Oil pressure
200.0 kPa/5000 r/min (2.00 kgf/cm²/5000 r/min, 29.0 psi/5000 r/min)

Engine oil pressure	Possible causes
Below specification	• Faulty oil pump • Clogged oil filter • Leaking oil passage • Broken or damaged oil seal
Above specification	• Faulty oil filter • Oil viscosity too high

8. Remove:
   - Oil pressure gauge
   - Adapter C
   - Oil pressure switch joint bolt
   - Oil pressure switch joint (with the O-ring)
9. Install:
   - O-ring “1” New
   - Oil pressure switch joint (with the oil pressure switch) “2”
   - Oil pressure switch joint bolt “3”



Oil pressure switch joint bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)



EAS30811

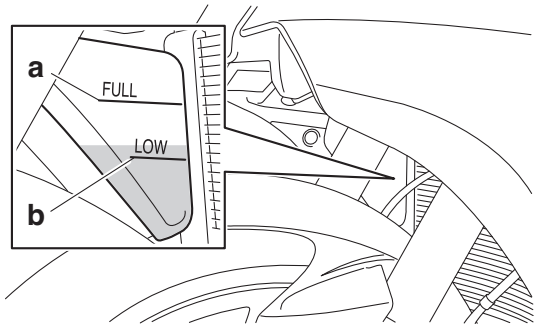
CHECKING THE COOLANT LEVEL

1. Stand the vehicle on a level surface.

TIP

- Place the vehicle on a maintenance stand.
- Make sure the vehicle is upright.

2. Check:
   - Coolant level
     The coolant level should be between the maximum level mark “a” and minimum level mark “b”.
     Below the minimum level mark → Add the recommended coolant to the proper level.



ECA21281

NOTICE

- **Adding water instead of coolant dilutes the antifreeze concentration of the coolant. If water is used instead of coolant; check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**

3. Start the engine, warm it up for several minutes, and then turn it off.
4. Check:
   - Coolant level

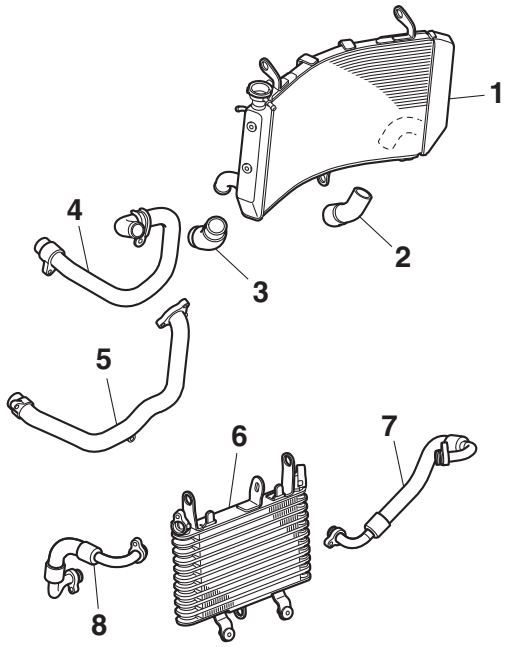
TIP

Before checking the coolant level, wait a few minutes until it settles.

EAS30812
CHECKING THE COOLING SYSTEM

1. Check:
   - Radiator “1”
   - Radiator inlet hose “2”
   - Radiator outlet hose “3”
   - Water pump inlet pipe “4”
   - Water pump outlet pipe “5”
   - Oil cooler “6”
   - Oil cooler outlet hose “7”
   - Oil cooler inlet hose “8”

   Cracks/damage → Replace.
   Refer to “RADIATOR” on page 6-3, “OIL COOLER” on page 6-7, “THERMOSTAT” on page 6-9 and “WATER PUMP” on page 6-13.



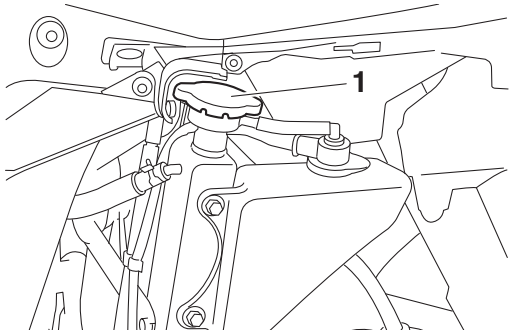
EAS30813
CHANGING THE COOLANT

1. Remove:
   - Front side cowling (right)
   - Front muffler protector (right)

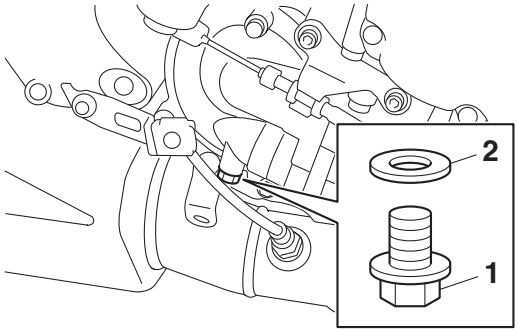
   Refer to “GENERAL CHASSIS (5)” on page 4-16.
   - Radiator cap “1”

EWA13030
⚠ WARNING

A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.

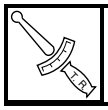


2. Remove:
   - Water pump drain bolt “1”
   - Copper washer “2”

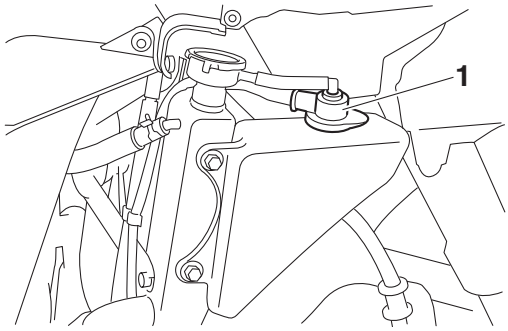


3. Drain:
   - Coolant

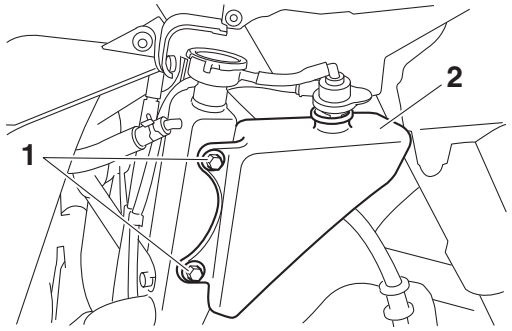
   (from the engine and radiator)
4. Install:
   - Water pump drain bolt
   - Copper washer New

	**Water pump drain bolt** **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

5. Remove:
   - Coolant reservoir cap “1”



6. Remove:
   - Coolant reservoir bolt “1”
   - Coolant reservoir “2”



7. Drain:
   • Coolant
   (from the coolant reservoir)
8. Install:
   • Coolant reservoir
   • Coolant reservoir bolt

	Coolant reservoir bolt **7 N·m (0.7 kgf·m, 5.2 lb·ft)**

9. Fill:
   • Cooling system
   (with the specified amount of the recommended coolant)

Recommended antifreeze
High-quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines
Mixing ratio
1 : 1 (antifreeze : water)
Coolant quantity
Radiator (including all routes)
2.25 L (2.38 US qt, 1.98 Imp.qt)
Coolant reservoir (up to the maximum level mark)
0.25 L (0.26 US qt, 0.22 Imp.qt)

Handling notes for coolant
Coolant is potentially harmful and should be handled with special care.

EWA13040

⚠ WARNING

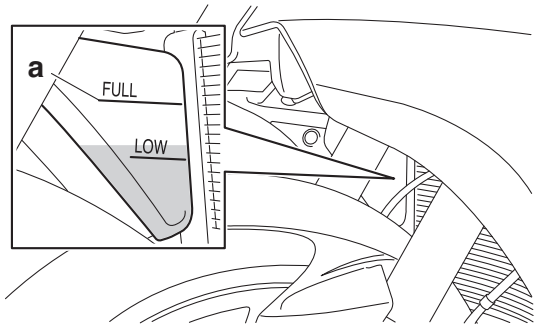
- **If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.**
- **If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.**
- **If coolant is swallowed, induce vomiting and get immediate medical attention.**

ECA21291

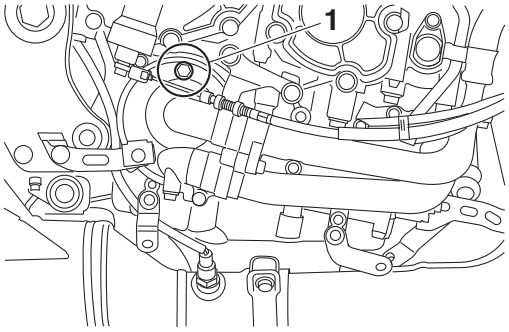
NOTICE

- **Adding water instead of coolant dilutes the antifreeze concentration of the coolant. If water is used instead of coolant; check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**
- **If coolant comes into contact with painted surfaces, immediately wash them with water.**
- **Do not mix different types of antifreeze.**

10. Fill:
    • Coolant reservoir
    (with the recommended coolant to the maximum level mark “a”)



11. Install:
    • Coolant reservoir cap
12. Loosen the water pump air bleed bolt “1” to allow any trapped air to escape from the water pump.



13. When coolant begins to flow out, tighten the water pump air bleed bolt to the specified torque.

	Water pump air bleed bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

14. Pour the specified coolant into the radiator until it is full.
15. Install:
    - Radiator cap
16. Start the engine, warm it up for several minutes, and then turn it off.
17. Check:
    - Coolant level
      Refer to "CHECKING THE COOLANT LEVEL" on page 3-31.

TIP

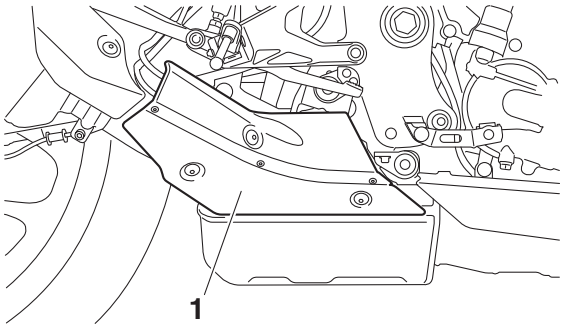
Before checking the coolant level, wait a few minutes until the coolant has settled.

18. Install:
    - Front muffler protector (right)
    - Front side cowling (right)
      Refer to "GENERAL CHASSIS (5)" on page 4-16.

EAS31389

ADJUSTING THE EXUP CABLES

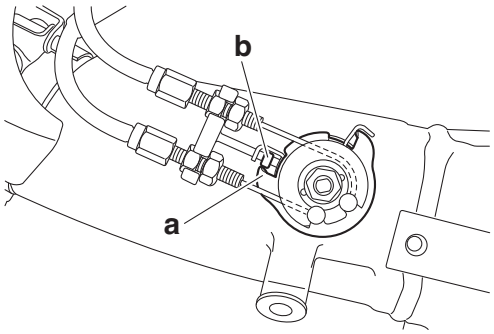
1. Remove:
   - EXUP valve pulley cover "1"



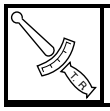
2. Check:
   - EXUP system operation
     a. Activate the diagnostic mode and select the diagnostic code number "53".
        Refer to "FUEL INJECTION SYSTEM" on page 9-11.
     b. Set the start/engine stop switch to "◯".
     c. Check that the EXUP valve operates properly.

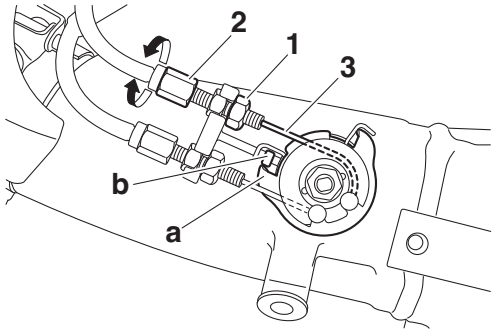
TIP

Check that the projection "a" on the EXUP valve pulley contacts the stopper "b" (fully open position). If the projection does not contact the stopper, adjust the EXUP cable free play.

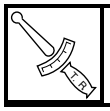


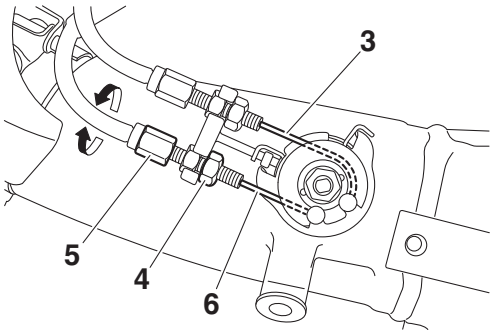
3. Adjust:
   - EXUP cable free play
     a. Turn the main switch to "ON".
     b. Loosen the locknut "1".
     c. Turn the adjusting nut "2" until the projection "a" on the EXUP valve pulley slightly contacts the stopper "b" and make sure the EXUP cable (black metal) "3" is not slack.
     d. Tighten the locknut "1" to specification.

	**EXUP cable locknut** **6 N·m (0.6 kgf·m, 4.4 lb·ft)**



     e. Loosen the locknut "4".
     f. Turn the adjusting nut "5" until the tension of the EXUP cable (white metal) "6" is the same as that of the EXUP cable (black metal) "3".
     g. Tighten the locknut "4" to specification.

	**EXUP cable locknut** **6 N·m (0.6 kgf·m, 4.4 lb·ft)**



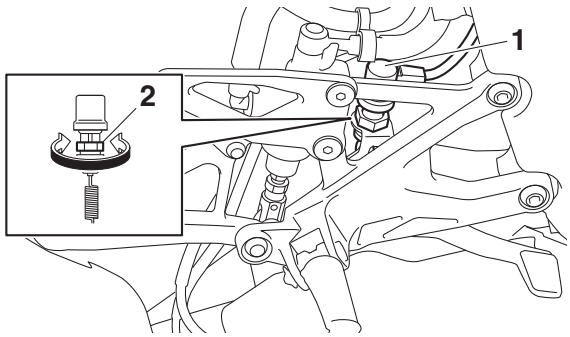
4. Install:
   • EXUP valve pulley cover

	EXUP valve pulley cover bolt 10 N·m (1.0 kgf·m, 7.4 lb·ft)

EAS32661
CHECKING THE FRONT BRAKE LIGHT SWITCH
Refer to "ELECTRICAL COMPONENTS" on page 8-38.

EAS30659
ADJUSTING THE REAR BRAKE LIGHT SWITCH
TIP
The rear brake light switch is operated by the movement of the brake pedal.
Adjustment is correct when the brake light comes on by depressing the brake pedal 5.5–12.0 mm (0.22–0.47 in) or more.

1. Check:
   • Rear brake light operation timing
   Incorrect → Adjust.
2. Adjust:
   • Rear brake light operation timing
   a. Hold the main body "1" of the rear brake light switch so that it does not rotate and turn the adjusting nut "2" until the rear brake light comes on at the proper time.



EAS30660
CHECKING AND LUBRICATING THE CABLES
The following procedure applies to all of the inner and outer cables.
EWA13270
WARNING
Damaged outer cable may cause the cable to corrode and interfere with its movement. Replace damaged outer cable and inner cables as soon as possible.

1. Check:
   • Outer cable
   Damage → Replace.
2. Check:
   • Cable operation
   Rough movement → Lubricate.

	Recommended lubricant Engine oil or a suitable cable lubricant

TIP
Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

EAS30815
CHECKING THE THROTTLE GRIP
1. Check:
   • Throttle grip movement
   Rough movement → Lubricate or replace the defective part(s).

	Recommended lubricant Suitable cable lubricant

TIP
With the engine stopped, turn the throttle grip slowly and release it. Make sure that the throttle grip turns smoothly and returns properly when released.
Repeat this check with the handlebar turned all the way to the left and right.

EAS30816
CHECKING AND CHARGING THE BATTERY
Refer to "CHECKING AND CHARGING THE BATTERY" on page 8-42.

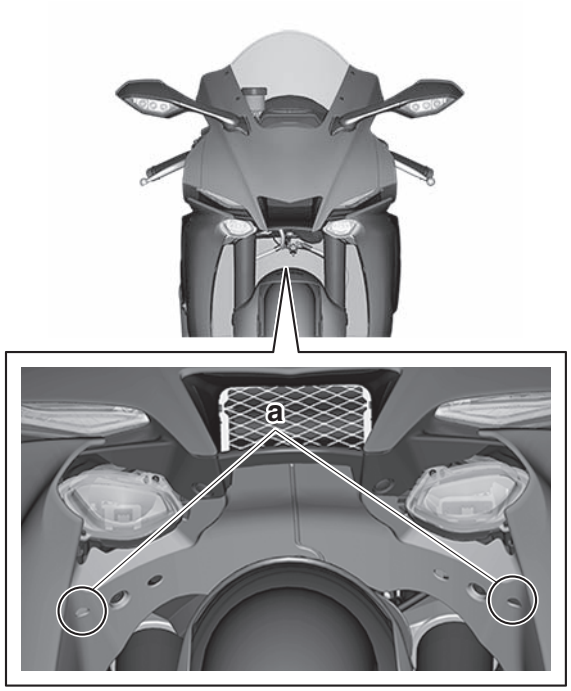
EAS30662
CHECKING THE FUSES
Refer to "CHECKING THE FUSES" on page 8-41.

EAS30664
ADJUSTING THE HEADLIGHT BEAMS

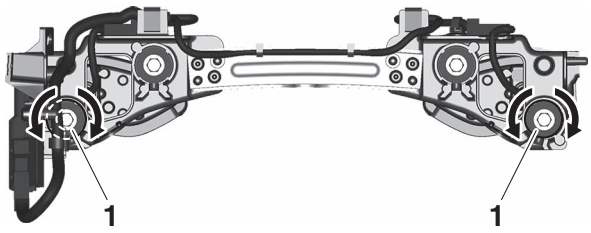
1. Adjust:
   • Headlight beam (vertically)

TIP

To adjust the headlight beam (vertically), insert a crosshead screwdriver into the holes “a” in the headlight cover and turn the adjusting screw.



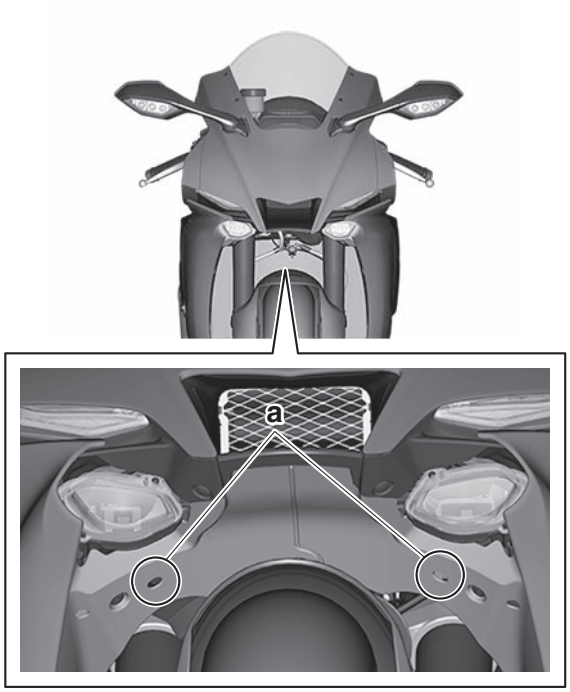
a. Turn the adjusting screws “1”.



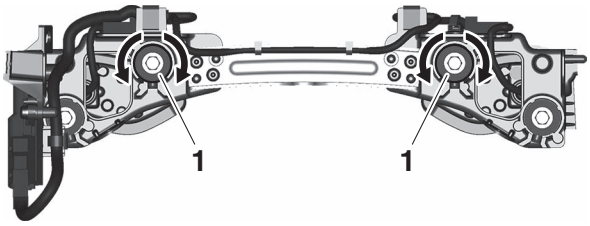
2. Adjust:
   • Headlight beam (horizontally)

TIP

To adjust the headlight beam (horizontally), insert a crosshead screwdriver into the holes “a” in the headlight cover and turn the adjusting screw.



a. Turn the adjusting screws “1”.



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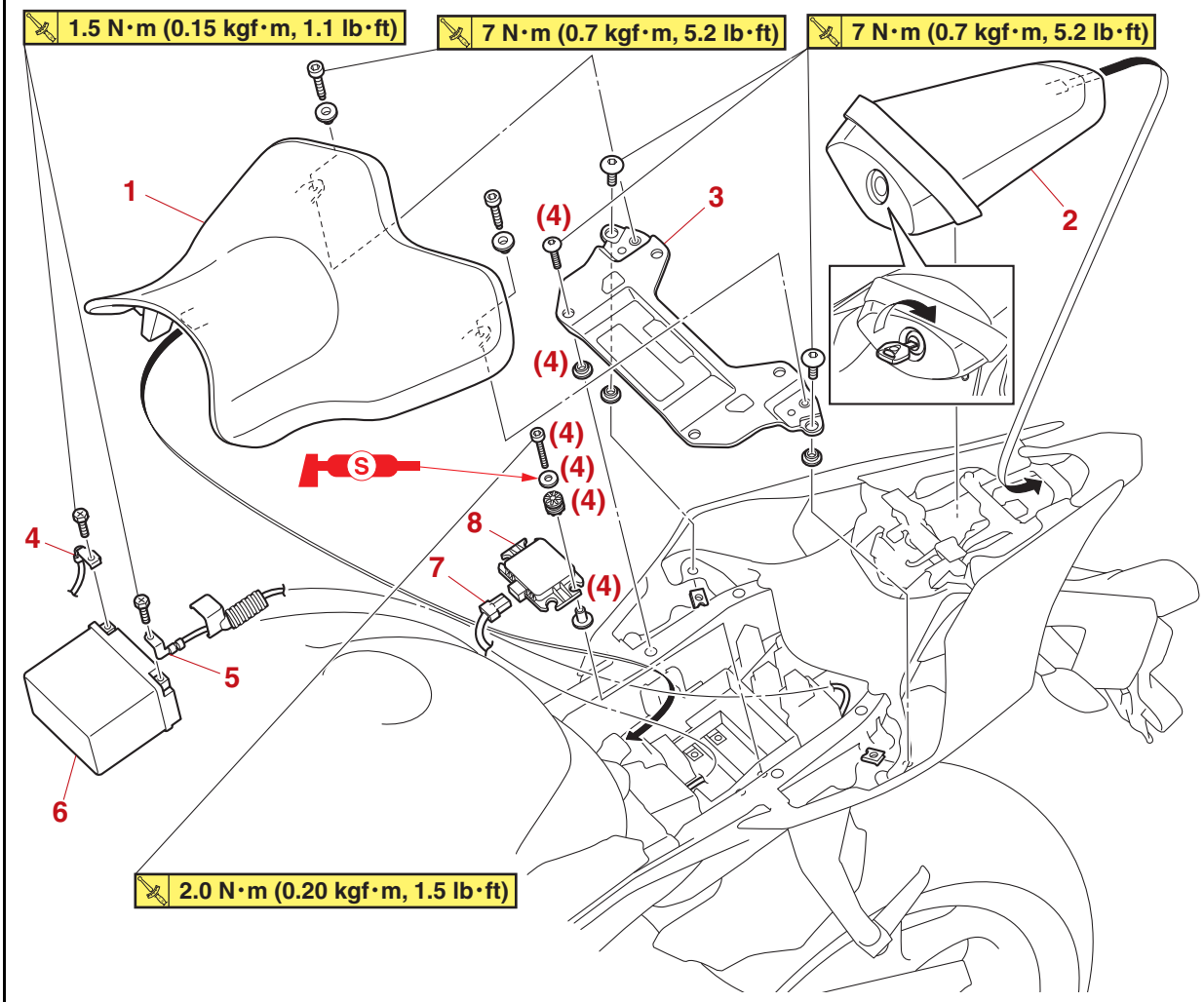
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EAS20026

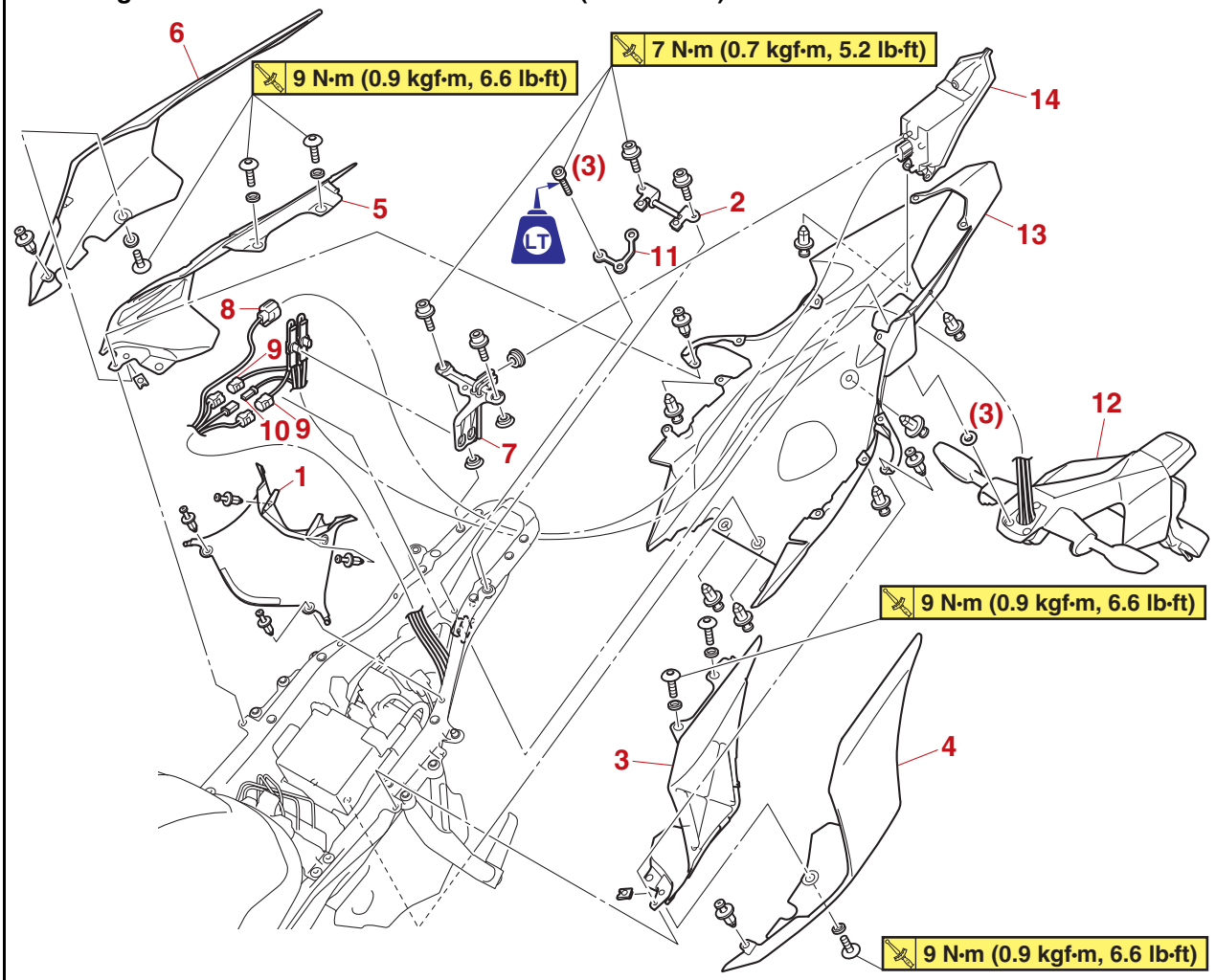
GENERAL CHASSIS (1)

Removing the seats and battery



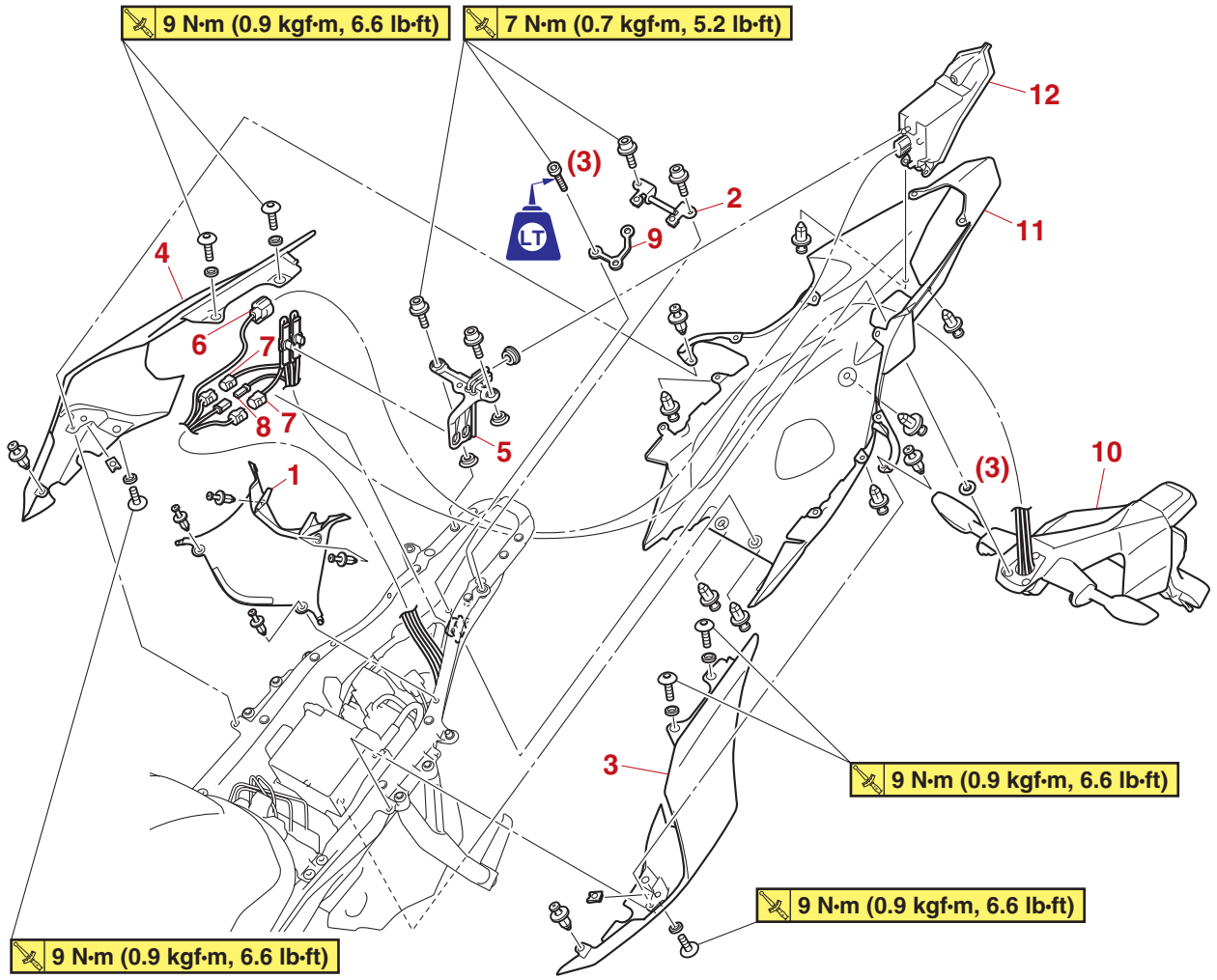
Order	Job/Parts to remove	Q'ty	Remarks
1	Rider seat	1	
2	Passenger seat	1	
3	Battery cover	1	
4	Negative battery lead	1	Disconnect.
5	Positive battery lead	1	Disconnect.
6	Battery	1	
7	IMU coupler	1	
8	IMU (Inertial Measurement Unit)	1	

Removing the rear side covers and rear fender (for YZF-R1)



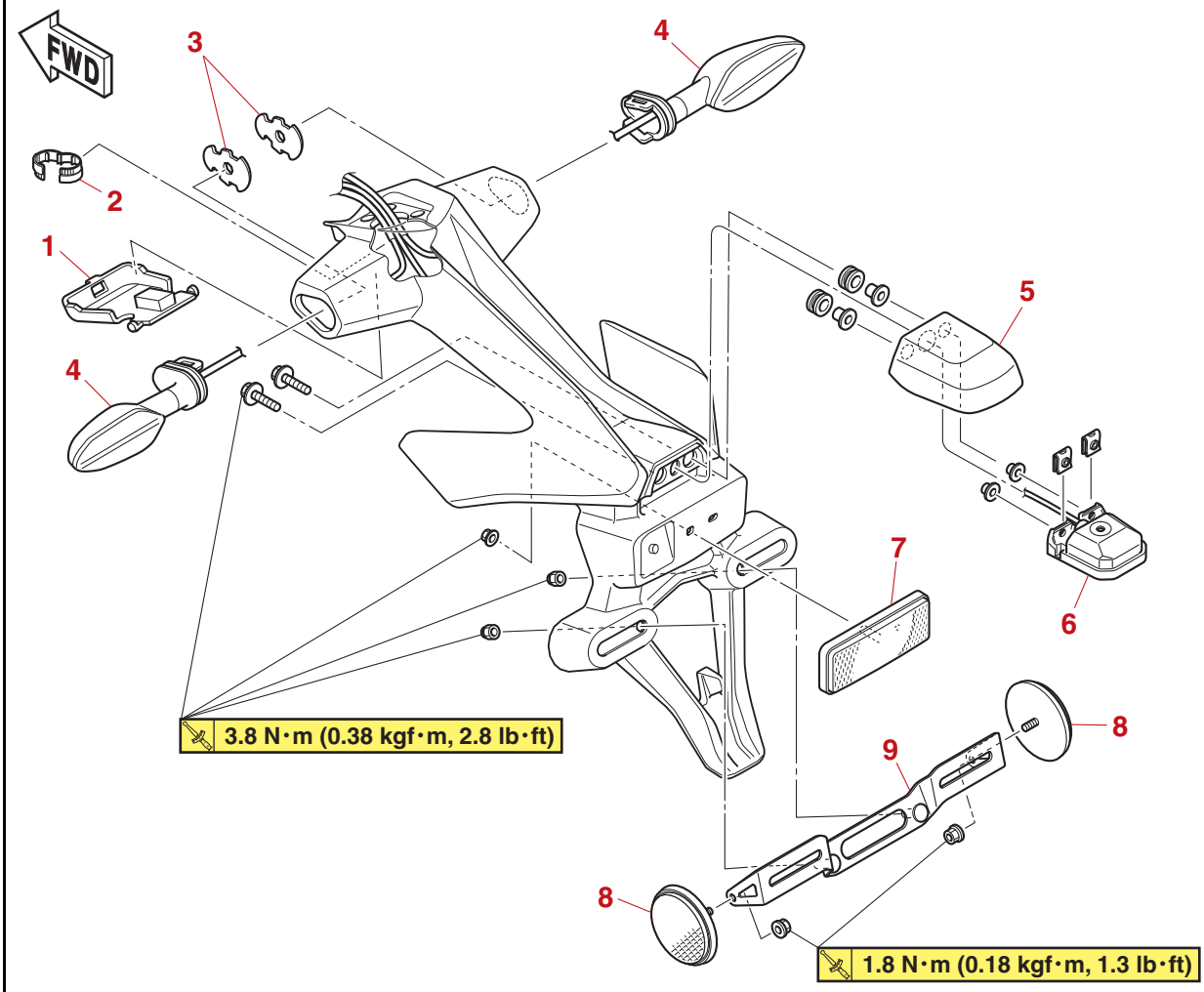
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Passenger seat/Battery cover		Refer to "GENERAL CHASSIS (1)" on page 4-1.
1	Tail cover	1	
2	Seat lock bracket	1	
3	Rear side inner cover (left)	1	
4	Rear side outer cover (left)	1	
5	Rear side inner cover (right)	1	
6	Rear side outer cover (right)	1	
7	Tail/brake light bracket	1	
8	Tail/brake light coupler	1	Disconnect.
9	Rear turn signal light coupler	2	Disconnect.
10	License plate light coupler	1	Disconnect.
11	Special washer	1	
12	Mudguard assembly	1	
13	Rear fender	1	
14	Tail/brake light	1	

Removing the rear side covers and rear fender (for YZF-R1M)



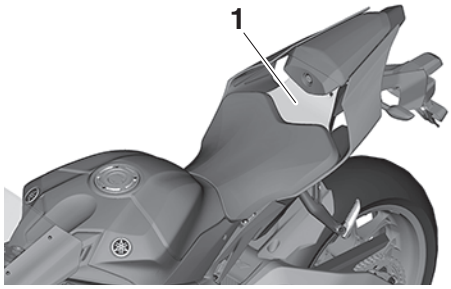
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Passenger seat/Battery cover		Refer to "GENERAL CHASSIS (1)" on page 4-1.
1	Tail cover	1	
2	Seat lock bracket	1	
3	Rear side cover (left)	1	
4	Rear side cover (right)	1	
5	Tail/brake light bracket	1	
6	Tail/brake light coupler	1	Disconnect.
7	Rear turn signal light coupler	2	Disconnect.
8	License plate light coupler	1	Disconnect.
9	Special washer	1	
10	Mudguard assembly	1	
11	Rear fender	1	
12	Tail/brake light	1	

Disassembling the mudguard assembly

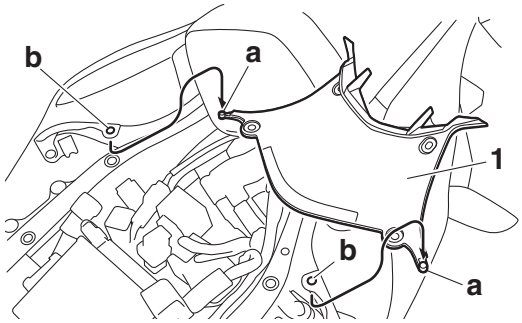


Order	Job/Parts to remove	Q'ty	Remarks
1	Mudguard assembly cover	1	
2	Clamp	1	
3	Stay	2	
4	Rear turn signal light	2	
5	Cover	1	
6	License plate light	1	
7	Rear reflector	1	
8	Rear reflector	2	
9	Reflector bracket	1	

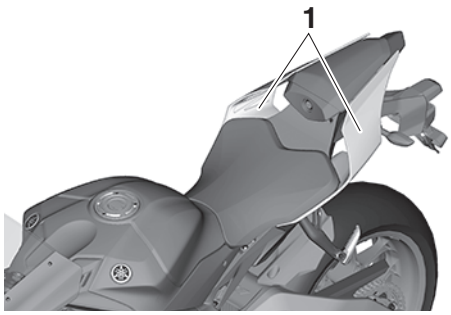
EAS33139
REMOVING THE TAIL COVER
1. Remove:
   • Tail cover “1”



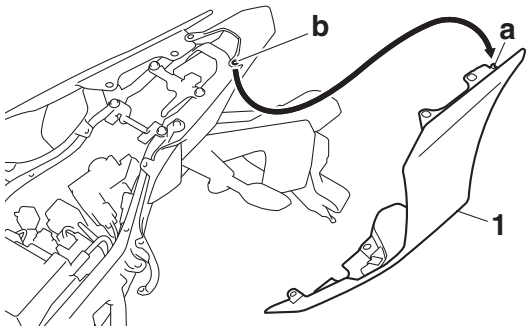
   a. Remove the quick fasteners.
   b. Unhook the projections “a” on the tail cover “1” from the holes “b” in the rear fender, and then remove the tail cover.



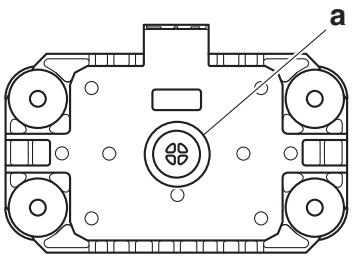
EAS31908
REMOVING THE REAR SIDE COVER
The following procedure applies to both of the rear side covers.
1. Remove:
   • Rear side inner covers and rear side outer covers (YZF-R1) “1”
   • Rear side covers (YZF-R1M) “1”



   a. Remove the bolts and quick fastener.
   b. Unhook the projection “a” on the rear side inner covers (YZF-R1)/rear side covers (YZF-R1M) from the hole “b” in the rear fender, and then remove the rear side inner covers (YZF-R1)/rear side covers (YZF-R1M).



EAS31636
INSTALLING THE IMU
ECA22611
NOTICE
- **Do not perform angle adjustment of the IMU and battery box by pinching the washer and related parts.**
- **When installing the IMU, apply a thin coat of silicone grease onto the washer where contacting the IMU grommet.**
- **When installing the IMU, use only a genuine bolt and washer, and tighten the bolt to the specified torque.**
- **Pay attention not to expose the IMU to strong shocks, such as striking or dropping it.**
- **Do not place any foreign objects in and around the battery box.**
- **Do not obstruct breather opening “a” of the IMU.**
- **Do not clean the breather opening and do not blow it with compressed air.**
- **When replacing the collar or grommet, replace all four collars and grommets.**



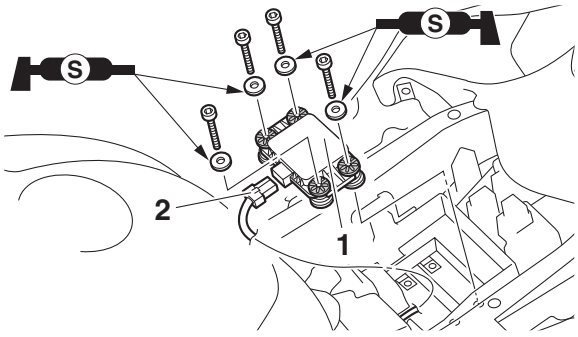
1. Install:
   • IMU (Inertial Measurement Unit) “1”
      a. Connect the IMU coupler “2” to the IMU.
      b. Install the IMU “1”, washers and IMU bolts, and then tighten the bolts to specification.

TIP

Apply a thin coat of silicone grease onto the washers where contacting the grommets.

Recommended lubricant
Silicone grease

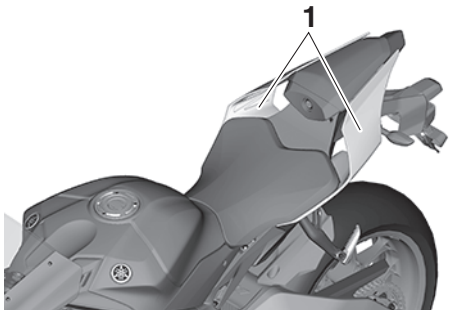
IMU bolt
2.0 N·m (0.20 kgf·m, 1.5 lb·ft)



EAS31909
INSTALLING THE REAR SIDE COVER

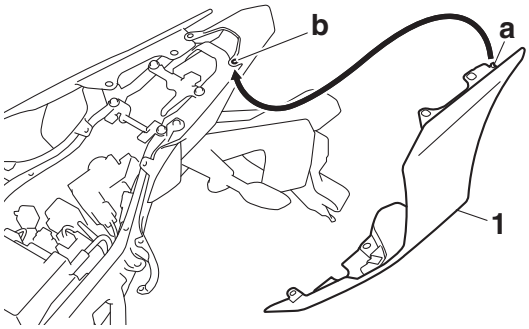
The following procedure applies to both of the rear side covers.

1. Install:
   - Rear side cover “1”



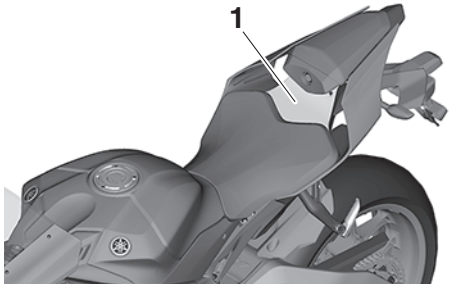
a. Fit the projection “a” on the rear side inner covers (YZF-R1)/rear side covers (YZF-R1M) into the hole “b” in the rear fender, and then tighten the rear side cover bolts.

Rear side cover bolt
9 N·m (0.9 kgf·m, 6.6 lb·ft)

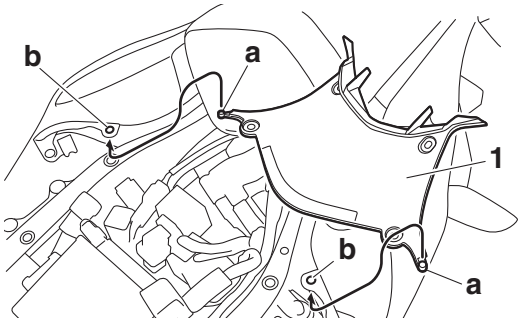


EAS33140
INSTALLING THE TAIL COVER

1. Install:
   - Tail cover “1”



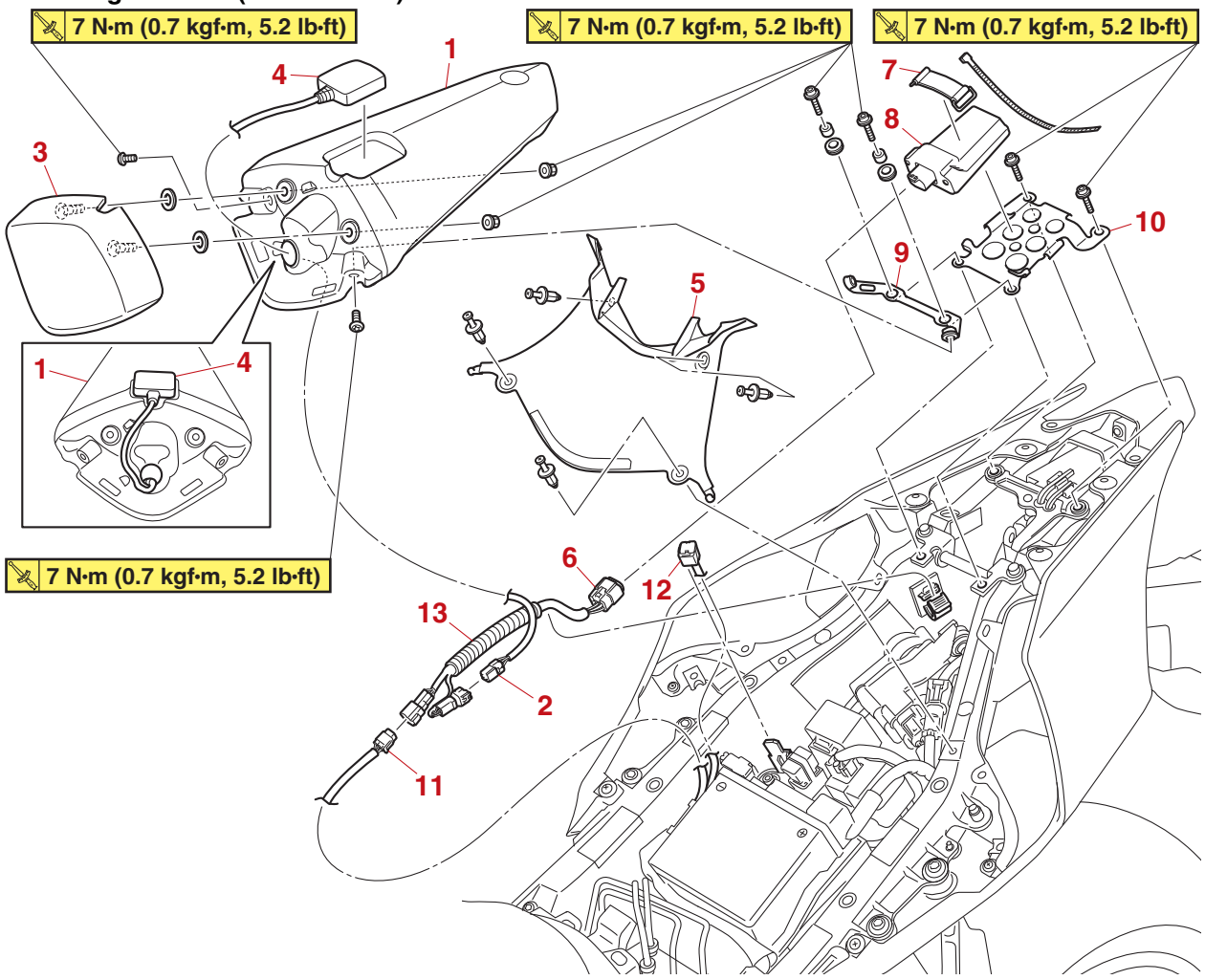
a. Fit the projections “a” on the tail cover “1” into the holes “b” in the rear fender, and then install the quick fasteners.



EAS20155

GENERAL CHASSIS (2)

Removing the CCU (for YZF-R1M)



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Passenger seat/Battery cover		Refer to "GENERAL CHASSIS (1)" on page 4-1.
1	Passenger seat cover	1	
2	GPS unit coupler	1	Disconnect.
3	Cushion	1	
4	GPS unit	1	
5	Tail cover	1	
6	CCU coupler (sub-wire harness)	1	Disconnect.
7	Band	1	
8	CCU (Communication Control Unit)	1	
9	CCU bracket 1	1	
10	CCU bracket 2	1	
11	Wire harness coupler	1	Disconnect.
12	Yamaha diagnostic tool coupler	1	
13	Sub-wire harness	1	

EAS33363
REMOVING THE TAIL COVER
Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS33371
INSTALLING THE CCU (for YZF-R1M)
TIP

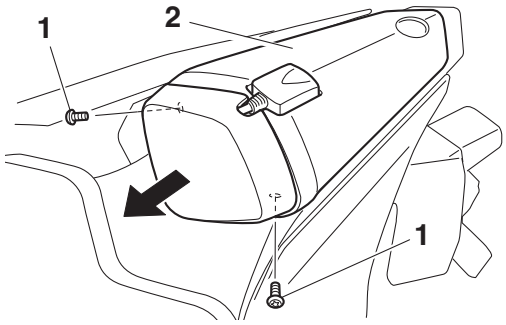
When the passenger seat cover is attached, the total number of occupants is reduced to one person. Depending on your area’s regulations, it may be necessary to change the vehicle’s registration to reflect this. Contact your local authorities.

EAS31676
CONNECTING TO THE CCU (for YZF-R1M)
The CCU (Communication Control Unit) connects to the vehicle’s CAN (Controller Area Network) and has a GPS receiver to enable the recording of vehicle and riding data. (Refer to “MENU SCREEN” on page 1-6.) Logging data and YRC setting data can be accessed when a smartphone or tablet is connected to the CCU wireless network.

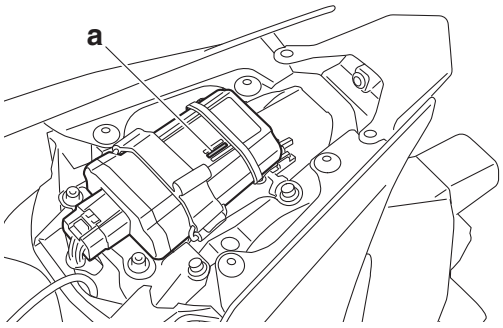
TIP

From the Google© or Apple© application store, download the “Y-TRAC” application to make use of the logging data and the “YRC Setting” application to remotely adjust the YRC settings.

1. Connect:
   • CCU wireless network
   a. Remove the bolts “1” and then remove the passenger seat cover assembly “2” as shown.



   b. Note down the CCU serial number “a”.

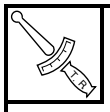


   c. Turn the main switch to “ON” and approach the vehicle with a wireless capable smartphone or tablet.
   d. Connect to the wireless network “Yamaha Motor Network” by inputting the CCU serial number as the password.

TIP

Since all CCU-equipped models put out a similarly named wireless network, have only one vehicle turned on at a time to avoid confusion.

   e. Install the passenger seat cover assembly to the original position, and then install the bolts.



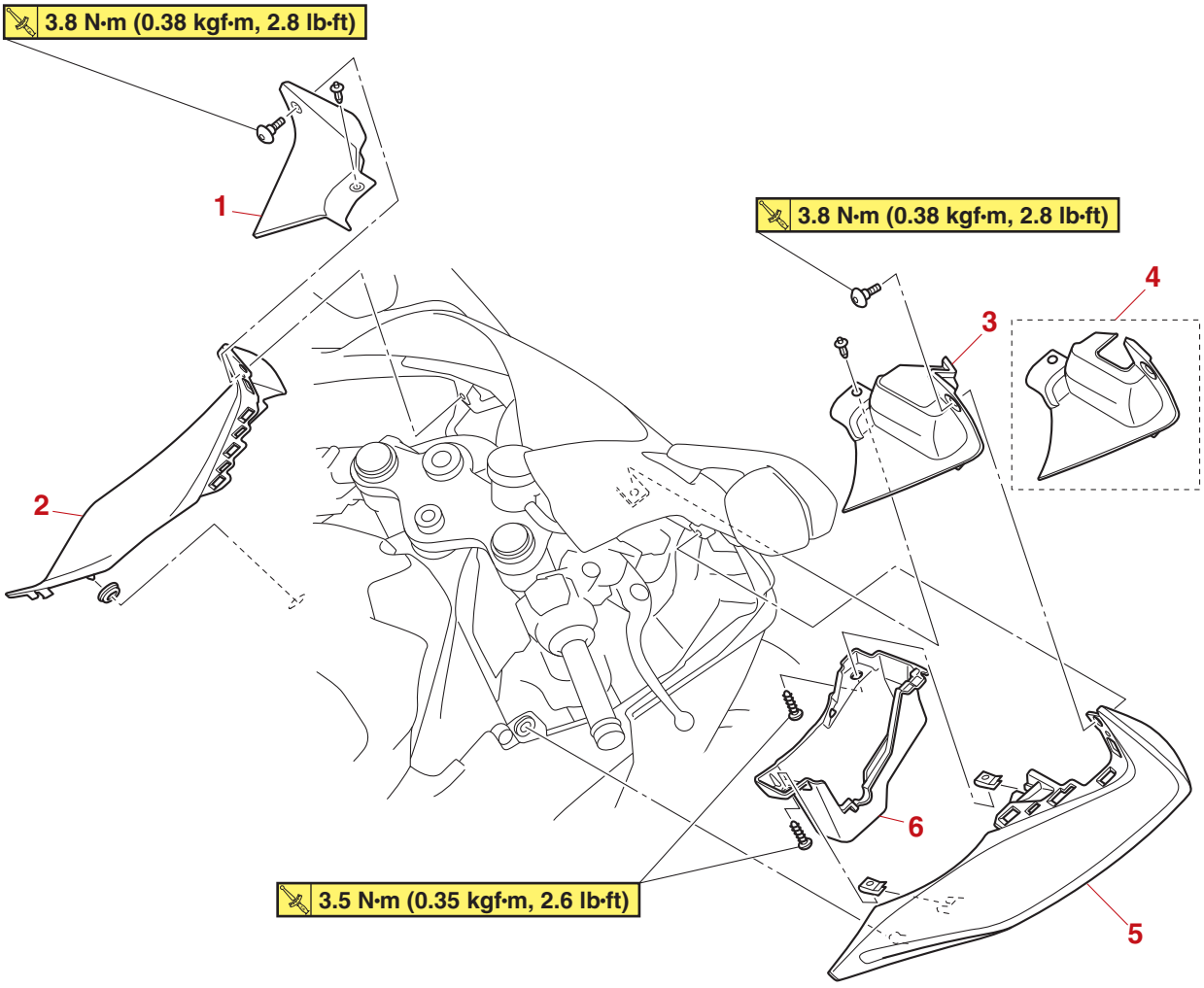
Passenger seat cover bolt (for YZF-R1M)
7 N·m (0.7 kgf·m, 5.2 lb·ft)

EAS33364
INSTALLING THE TAIL COVER
Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS20156

GENERAL CHASSIS (3)

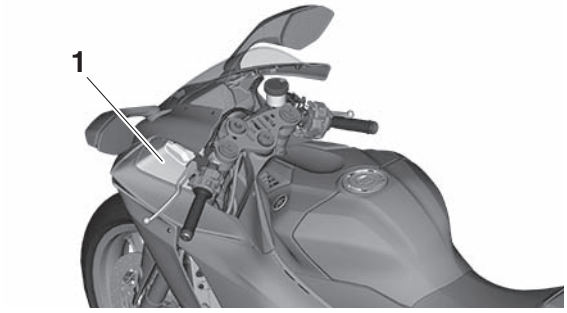
Removing the front panel covers



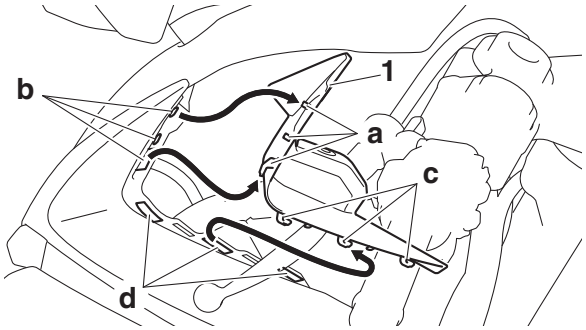
Order	Job/Parts to remove	Q'ty	Remarks
1	Front panel (left)	1	
2	Front panel cover (left)	1	
3	Front panel (right)	1	For YZF-R1
4	Front panel (right)	1	For YZF-R1M
5	Front panel cover (right)	1	
6	Storage compartment	1	

EAS31352
REMOVING THE FRONT PANEL (LEFT)

1. Remove:
   • Front panel (left) “1”

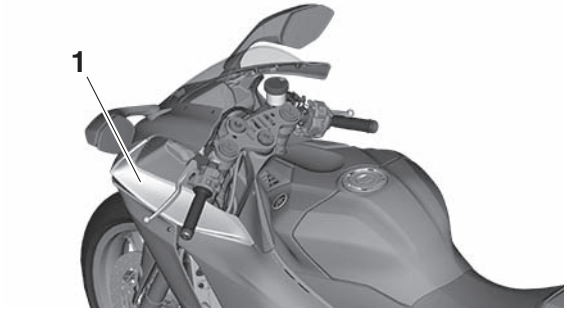


   a. Remove the quick fastener and bolt.
   b. Slide the front panel (left) upward. Unhook the projections “a” on the front panel (left) “1” from the holes “b” in the front panel cover (left).
   c. Slide the front panel (left) forward. Unhook the projections “c” on the front panel (left) “1” from the holes “d” in the front panel cover (left).

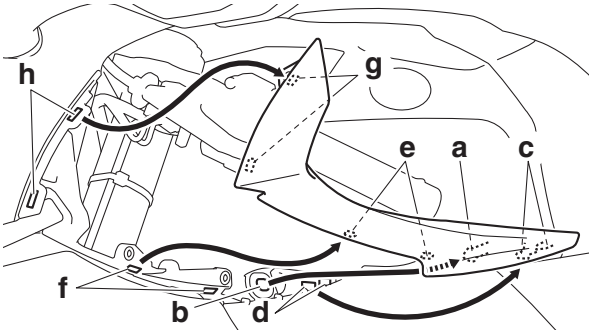


EAS33347
REMOVING THE FRONT PANEL COVER (LEFT)

1. Remove:
   • Front panel cover (left) “1”

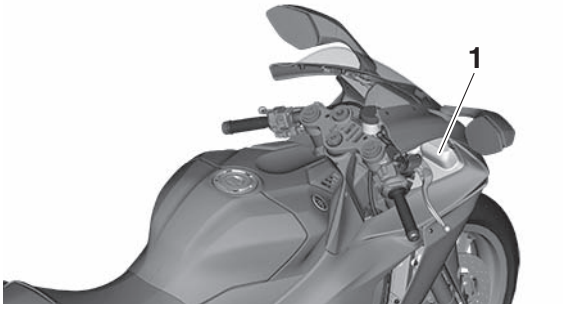


   a. Unhook the projection “a” on the front panel cover (left) from the grommet “b” on the side cover bracket.
   b. Unhook the projections “c” on the front panel cover (left) from the holes “d” on the side cover bracket.
   c. Unhook the projections “e” on the front panel cover (left) from the holes “f” on the front cowling.
   d. Unhook the projections “g” on the front panel cover (left) from the holes “h” on the front upper cowling.

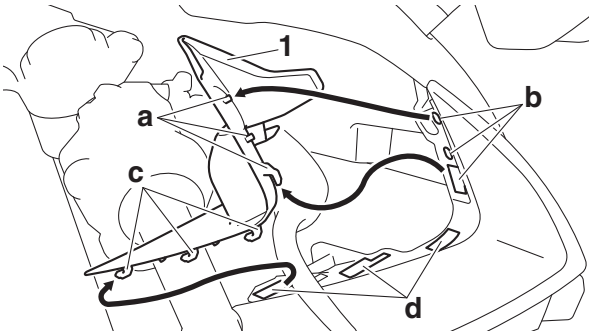


EAS33346
REMOVING THE FRONT PANEL (RIGHT)

1. Remove:
   • Front panel (right) “1”

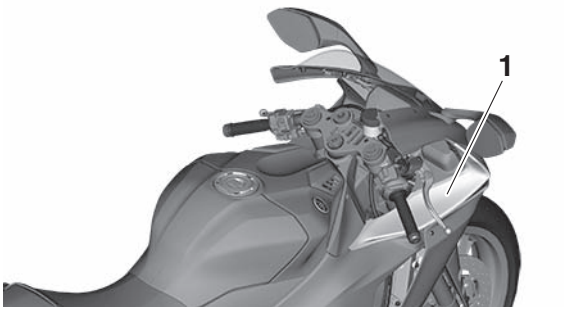


   a. Remove the quick fastener and bolt.
   b. Slide the front panel (right) upward. Unhook the projections “a” on the front panel (right) “1” from the holes “b” in the front panel cover (right).
   c. Slide the front panel (right) forward. Unhook the projections “c” on the front panel (right) “1” from the holes “d” in the front panel cover (right).

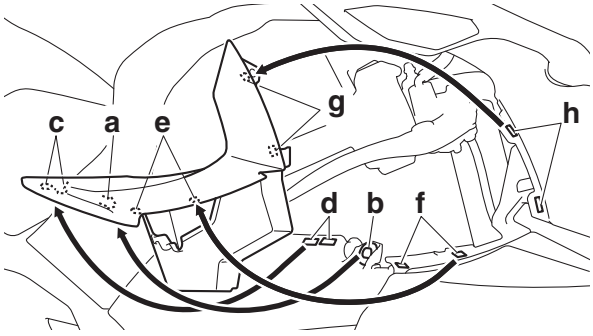


EAS33348
REMOVING THE FRONT PANEL COVER (RIGHT)

1. Remove:
   • Front panel cover (right) “1”

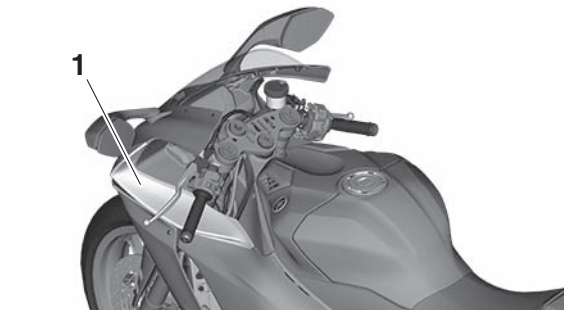


   a. Unhook the projection “a” on the front panel cover (right) from the grommet “b” on the side cover bracket.
   b. Unhook the projections “c” on the front panel cover (right) from the holes “d” on the side cover (right).
   c. Unhook the projections “e” on the front panel cover (right) from the holes “f” on the front cowling.
   d. Unhook the projections “g” on the front panel cover (right) from the holes “h” on the front upper cowling.

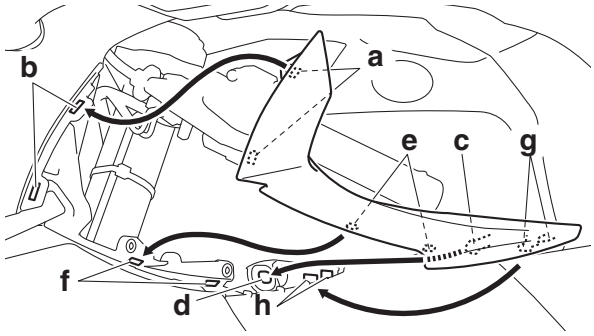


EAS33349
INSTALLING THE FRONT PANEL COVER (LEFT)

1. Install:
   • Front panel cover (left) “1”

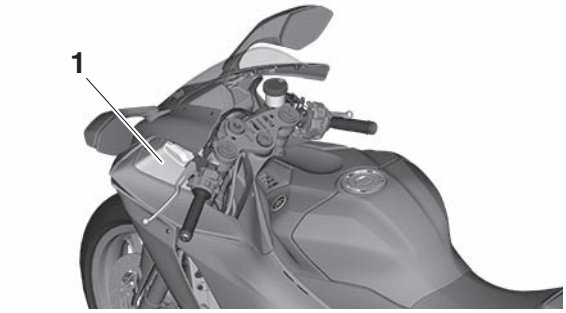


   a. Fit the projections “a” on the front panel cover (left) into the holes “b” on the front upper cowling.
   b. Insert the projections “c” on the front panel cover (left) into the grommets “d” on the side cover bracket.
   c. Fit the projections “e” on the front panel cover (left) into the holes “f” on the front cowling.
   d. Fit the projections “g” on the front panel cover (left) into the grommets “h” on the side cover bracket.



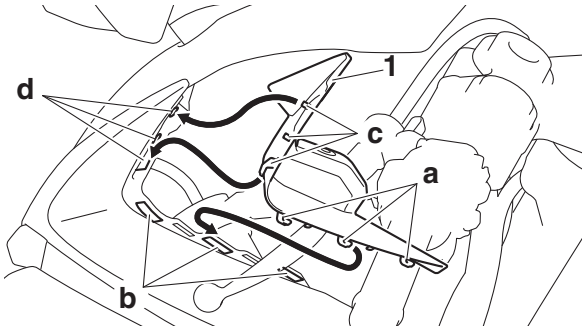
EAS31353
INSTALLING THE FRONT PANEL (LEFT)

1. Install:
   • Front panel (left) “1”



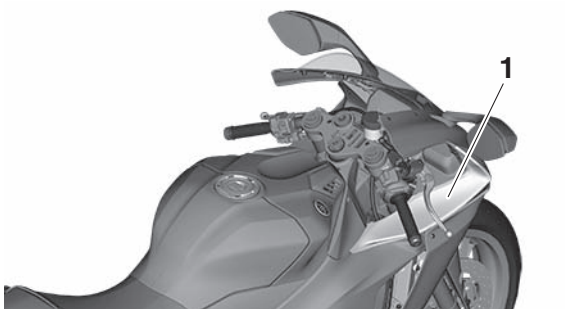
   a. Fit the projections “a” on the front panel (left) “1” into the holes “b” in the front panel cover (left). Slide the front panel (left) rearward.
   b. Fit the projections “c” on the front panel (left) “1” into the holes “b” in the front panel cover (left). Slide the front panel (left) downward.
   c. Install the bolt and quick fastener.

	Front panel bolt (left) **3.8 N·m (0.38 kgf·m, 2.8 lb·ft)**

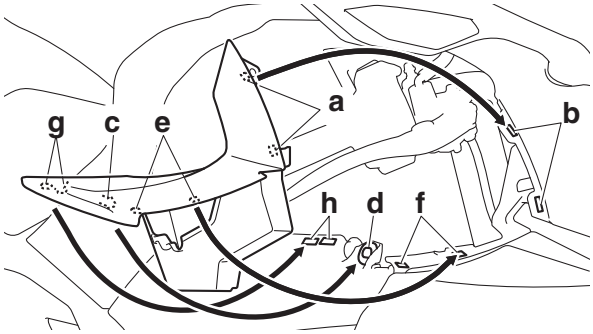


EAS33350
INSTALLING THE FRONT PANEL COVER (RIGHT)

1. Install:
   • Front panel cover (right) “1”

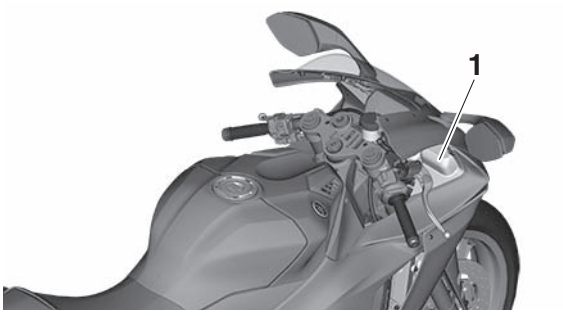


a. Fit the projections “a” on the front panel cover (right) into the holes “b” on the front upper cowling.
b. Insert the projections “c” on the front panel cover (right) into the grommets “d” on the side cover (right).
c. Fit the projections “e” on the front panel cover (right) into the holes “f” on the front cowling.
d. Fit the projections “g” on the front panel cover (right) into the grommets “h” on the side cover (right).

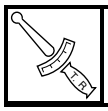


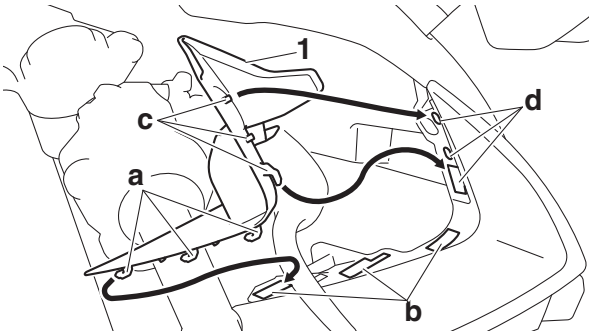
EAS33352
INSTALLING THE FRONT PANEL (RIGHT)

1. Install:
   • Front panel (right) “1”



a. Fit the projections “a” on the front panel (right) “1” into the holes “b” in the front panel cover (right). Slide the front panel (right) rearward.
b. Fit the projections “c” on the front panel (right) “1” into the holes “d” in the front panel cover (right). Slide the front panel (right) downward.
c. Install the bolt and quick fastener.

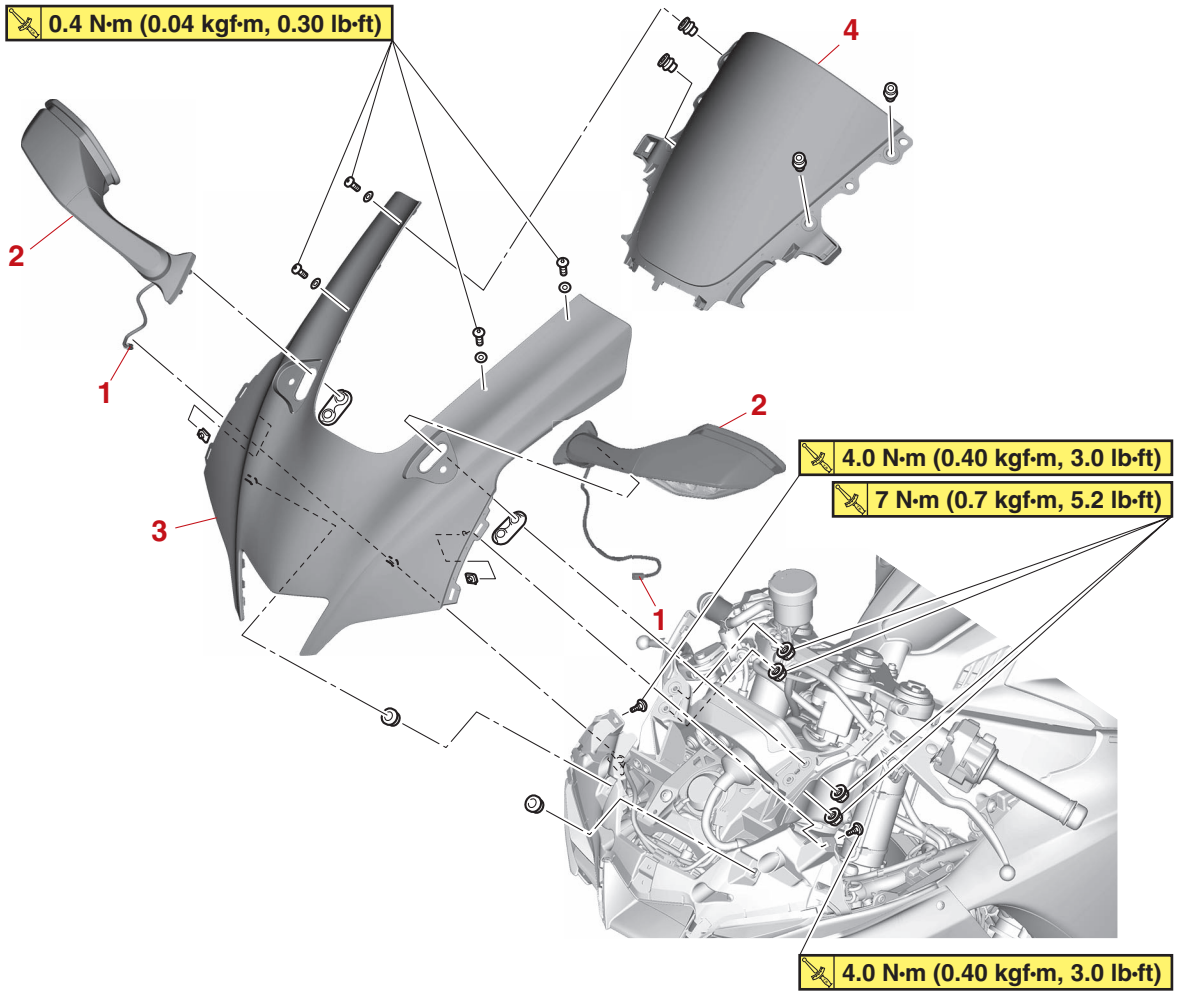
	**Front panel bolt (right)** **3.8 N·m (0.38 kgf·m, 2.8 lb·ft)**



EAS20157

GENERAL CHASSIS (4)

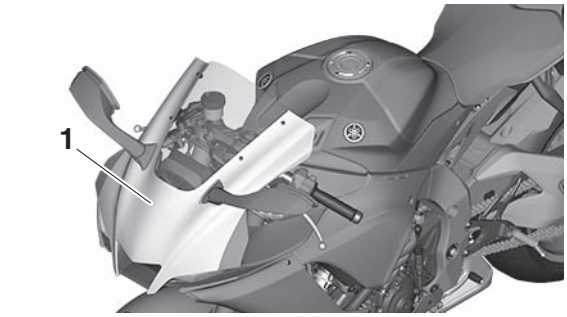
Removing the Rearview mirrors and windshield



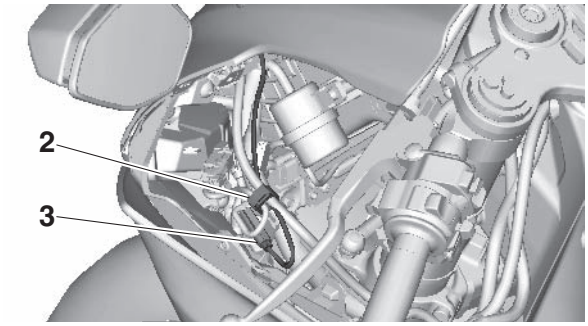
Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
1	Front turn signal/position light coupler	2	Disconnect.
2	Rearview mirror	2	
3	Front upper cowling	1	
4	Windshield	1	

EAS31362
REMOVING THE FRONT UPPER COWLING

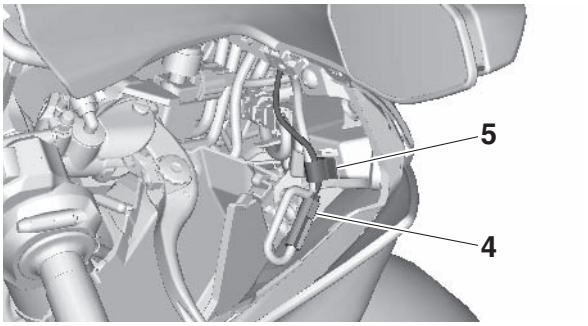
1. Remove:
   • Front upper cowling “1”



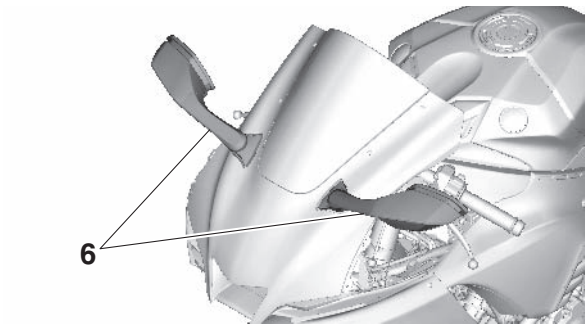
a. Remove the holder “2” from the front turn signal/position light lead (left) and auxiliary light lead. Disconnect the front turn signal/position light coupler (left) “3”.



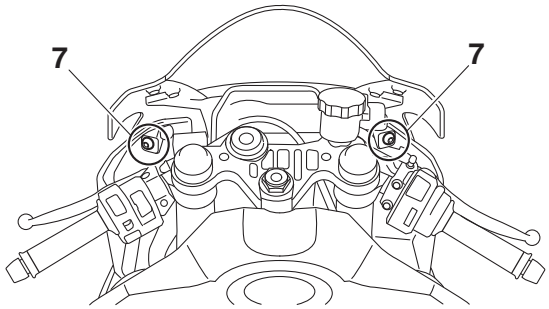
b. Disconnect the front turn signal/position light coupler (right) “4”. Remove the front turn signal/position light lead from the holder “5”.



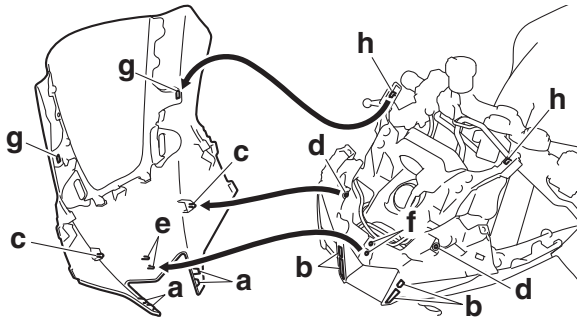
c. Remove the rearview mirror nuts, and then remove the rearview mirrors “6”.



d. Remove the front upper cowling bolts “7”.

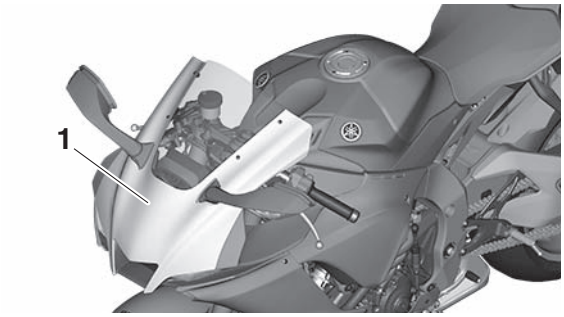


e. Remove the front upper cowling “1”.
f. Unhook the projections “a” on the front upper cowling from the holes “b” on the front cowling assembly. Unhook the projection “c” on the front upper cowling from the grommets “d” in the front cowling assembly. Unhook the projections “e” on the front upper cowling from the holes “f” on the front cowling assembly. Slide the front upper cowling upward and then, unhook the holes “g” in the front upper cowling from the projections “h” on the front cowling assembly.



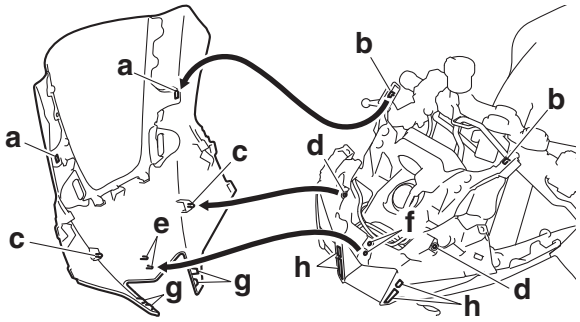
EAS31363
INSTALLING THE FRONT UPPER COWLING

1. Install:
   • Front upper cowling “1”



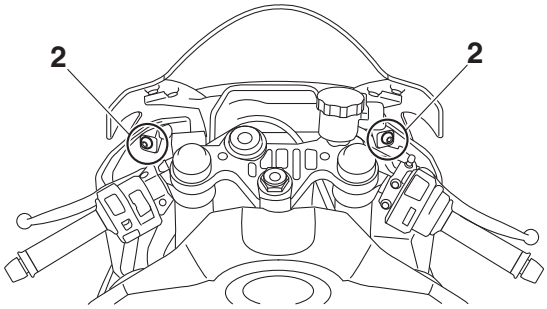
a. Install the front upper cowling “1”.
b. Fit the holes “a” in the front upper cowling into the projections “b” on the front cowling assembly and then, slide the front upper cowling downward. Fit the projection “c”

on the front upper cowling into the grommets “d” in the front cowling assembly. Fit the projections “e” on the front upper cowling into the holes “f” on the front cowling assembly. Fit the projections “g” on the front upper cowling into the holes “h” on the front cowling assembly.



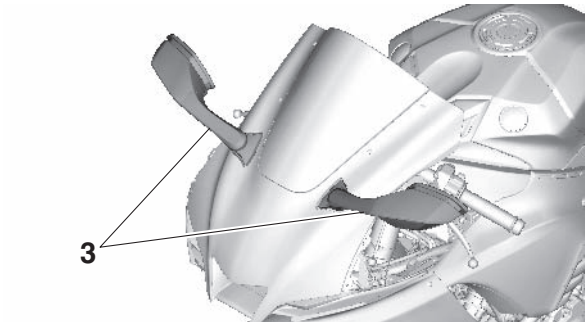
c. Install the front upper cowling bolts “2”, and then tighten the bolts to specification.

	Front upper cowling bolt **4.0 N·m (0.40 kgf·m, 3.0 lb·ft)**

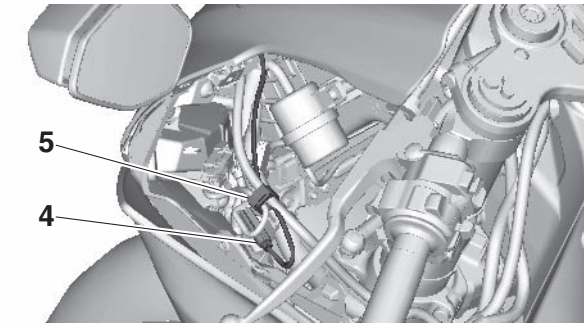


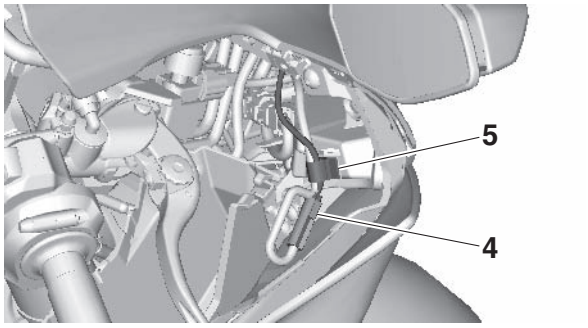
d. Install the rearview mirrors “3” and rearview mirror nuts, and then tighten the nuts to specification.

	Rearview mirror nut **7 N·m (0.7 kgf·m, 5.2 lb·ft)**



e. Connect the front turn signal/position light couplers “4”.
Fasten the front turn signal/position light leads to the holders “5”.

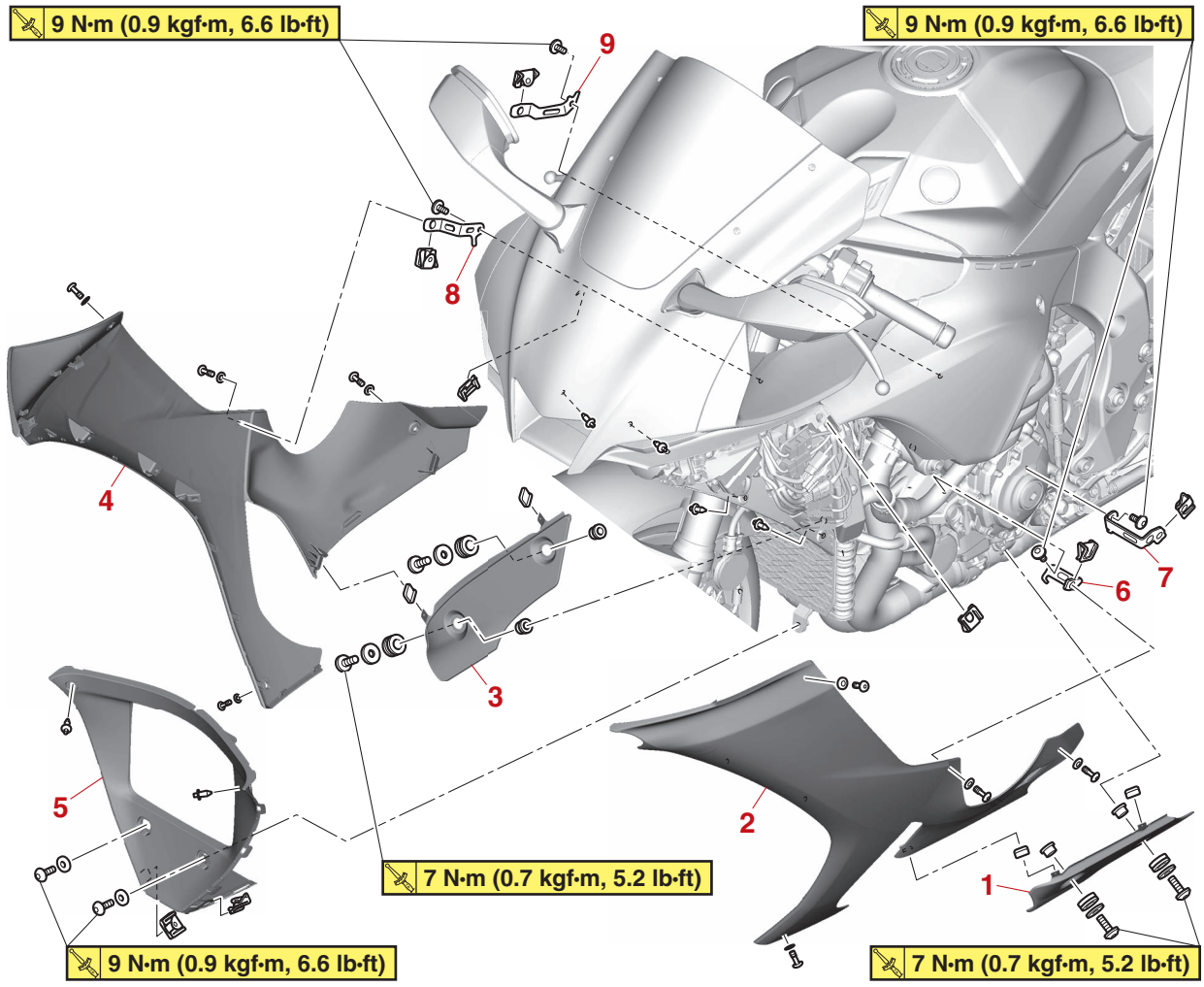




EAS20158

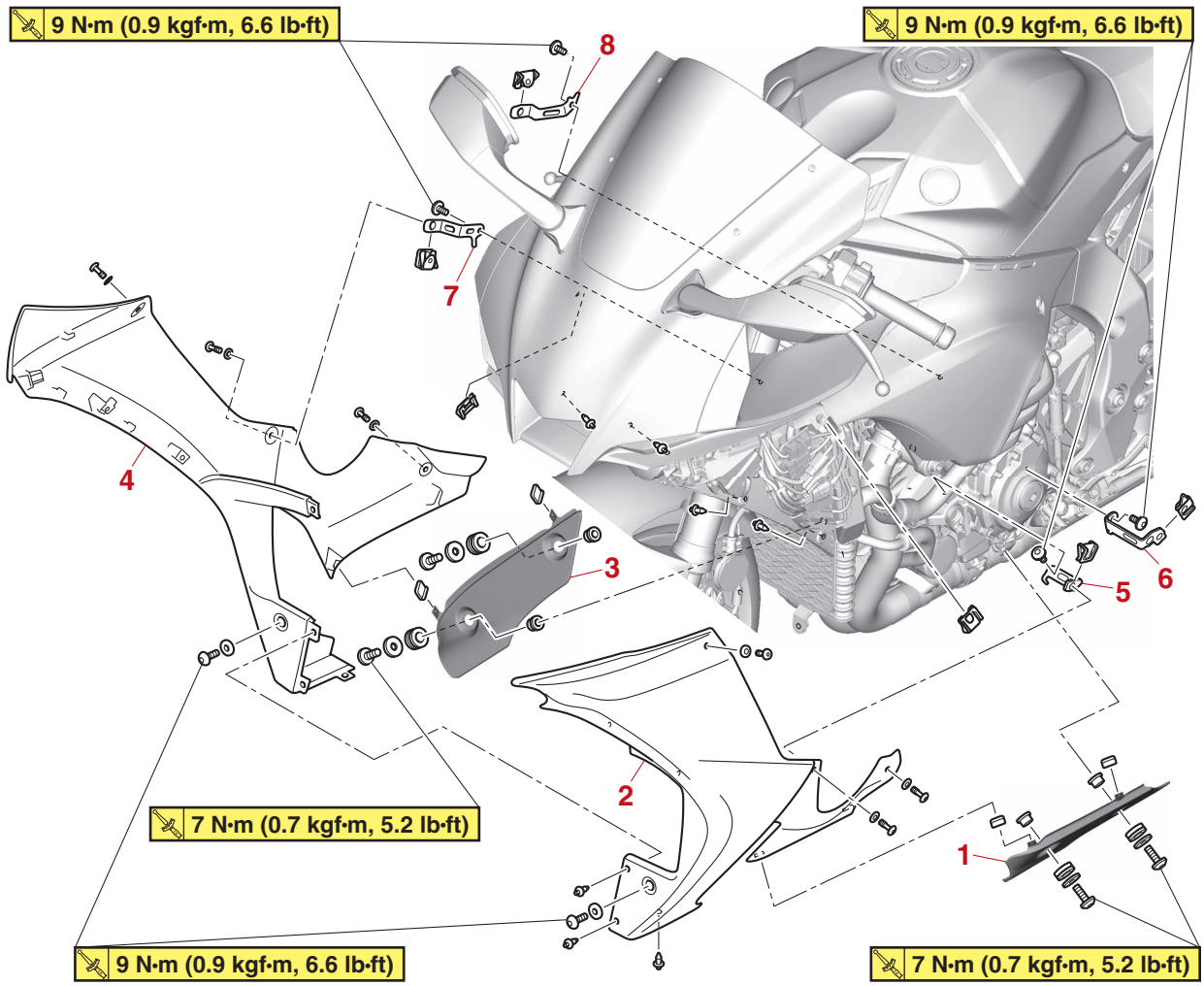
GENERAL CHASSIS (5)

Removing the front side cowlings (for YZF-R1)



Order	Job/Parts to remove	Q'ty	Remarks
1	Front muffler protector (left)	1	
2	Front side cowling (left)	1	
3	Front muffler protector (right)	1	
4	Front side cowling (right)	1	
5	Bottom cowling	1	
6	Front side cowling bracket (front left)	1	
7	Front side cowling bracket (rear left)	1	
8	Front side cowling bracket (front right)	1	
9	Front side cowling bracket (rear right)	1	

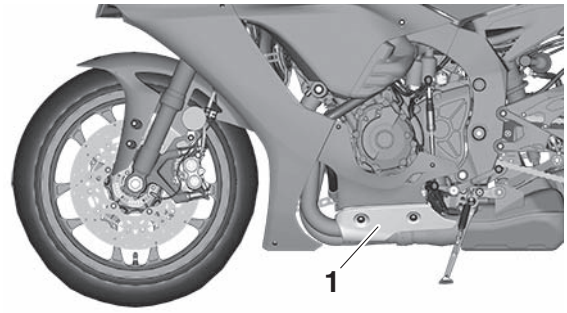
Removing the front side cowlings (for YZF-R1M)



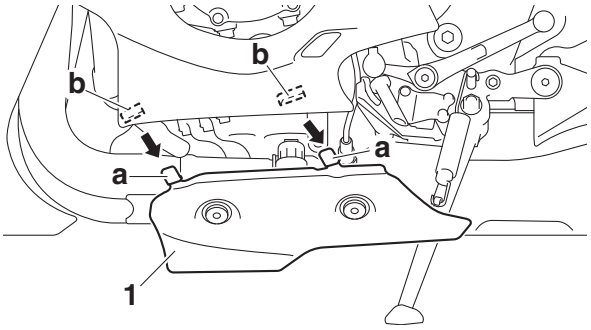
Order	Job/Parts to remove	Q'ty	Remarks
1	Front muffler protector (left)	1	
2	Front side cowling (left)	1	
3	Front muffler protector (right)	1	
4	Front side cowling (right)	1	
5	Front side cowling bracket (front left)	1	
6	Front side cowling bracket (rear left)	1	
7	Front side cowling bracket (front right)	1	
8	Front side cowling bracket (rear right)	1	

EAS33365
REMOVING THE FRONT MUFFLER PROTECTOR (LEFT)

1. Remove:
   • Front muffler protector (left) “1”

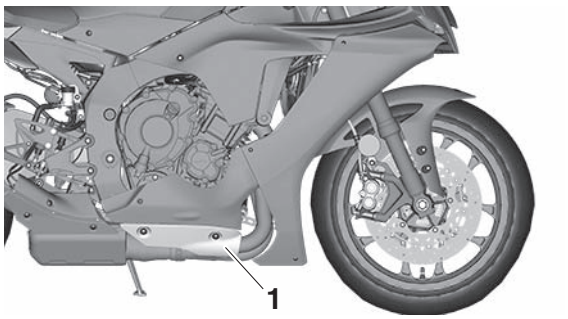


   a. Remove the front muffler protector bolts (left).
   b. Pull the front muffler protector (left) “1” downward.
   c. Unhook the projections “a” on the front muffler protector (left) “1” from the holes “b” of the front cowling (left).

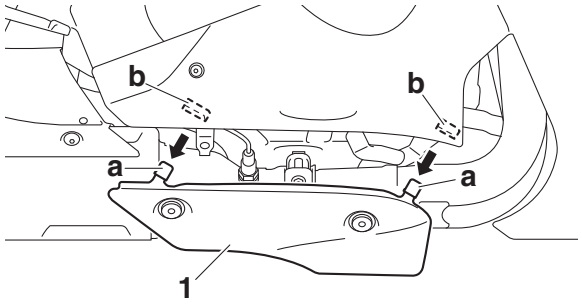


EAS33366
REMOVING THE FRONT MUFFLER PROTECTOR (RIGHT)

1. Remove:
   • Front muffler protector (right) “1”

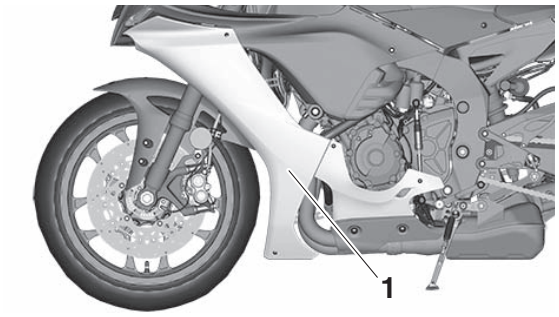


   a. Remove the front muffler protector bolts (right).
   b. Pull the front muffler protector (right) “1” downward.
   c. Unhook the projections “a” on the front muffler protector (right) “1” from the holes “b” of the front cowling (right).

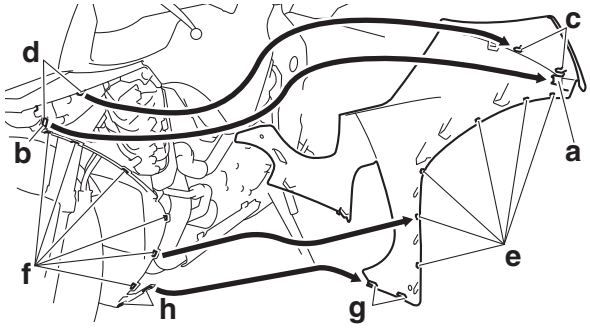


EAS31696
REMOVING THE FRONT SIDE COWLING (LEFT) (for YZF-R1)

1. Remove:
   • Front side cowling (left) “1”

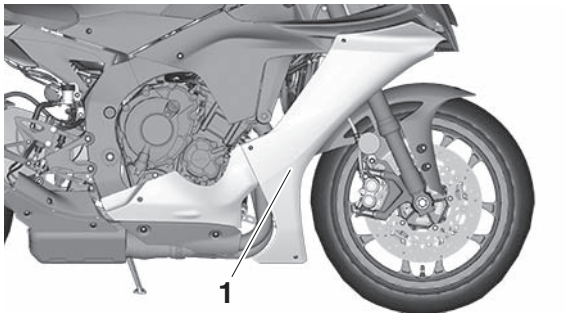


   a. Remove the quick fastener screws.
   b. Pull the front side cowling (left) “1” forward, and then unhook the projection “a” on the front side cowling (left) “1” from the hole “b” of the front cowling.
   c. Unhook the projections “c” on the front side cowling (left) “1” from the slits “d” on the front cowling.
   d. Unhook the projections “e” on the front side cowling (left) “1” from the holes “f” on the bottom cowling.
   e. Unhook the projections “g” on the front side cowling (left) “1” from the holes “h” on the bottom cowling.

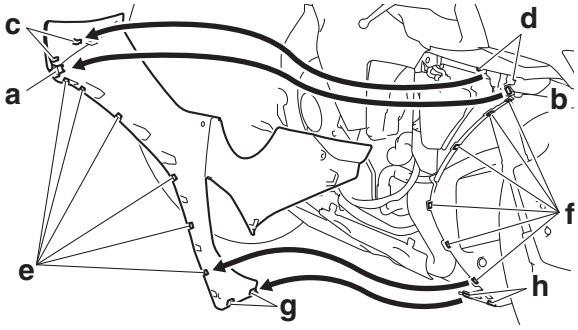


EAS33340
REMOVING THE FRONT SIDE COWLING (RIGHT) (for YZF-R1)

1. Remove:
   • Front side cowling (right) “1”

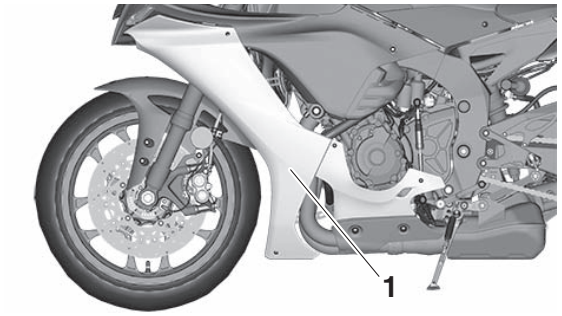


   a. Remove the quick fastener screws.
   b. Pull the front side cowling (right) “1” forward, and then unhook the projection “a” on the front side cowling (right) “1” from the hole “b” of the front cowling.
   c. Unhook the projections “c” on the front side cowling (right) “1” from the slits “d” on the front cowling.
   d. Remove the projections “e” on the front side cowling (right) “1” from the holes “f” on the bottom cowling.
   e. Remove the projections “g” on the front side cowling (right) “1” from the holes “h” on the bottom cowling.

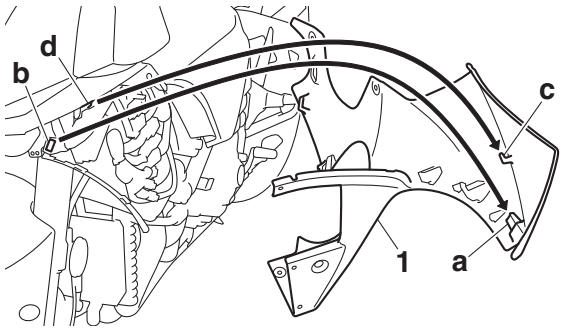


EAS33344
REMOVING THE FRONT SIDE COWLING (LEFT) (for YZF-R1M)

1. Remove:
   • Front side cowling (left) “1”

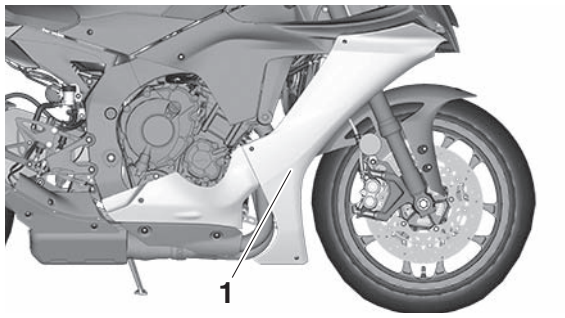


   a. Remove the front side cowling bolts, quick fastener screws and quick fasteners.
   b. Pull the front side cowling (left) “1” forward, and then unhook the projection “a” on the front side cowling (left) “1” from the hole “b” of the front cowling.
   c. Unhook the projection “c” on the front side cowling (left) “1” from the slit “d” on the front cowling.

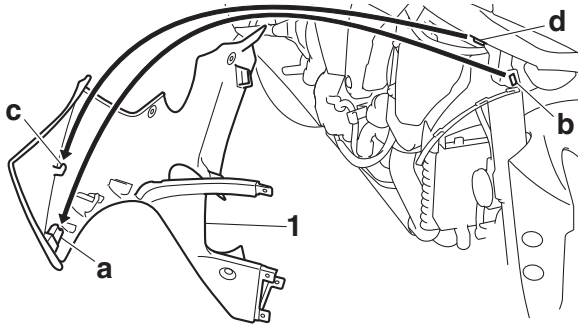


EAS33351
REMOVING THE FRONT SIDE COWLING (RIGHT) (for YZF-R1M)

1. Remove:
   • Front side cowling (right) “1”

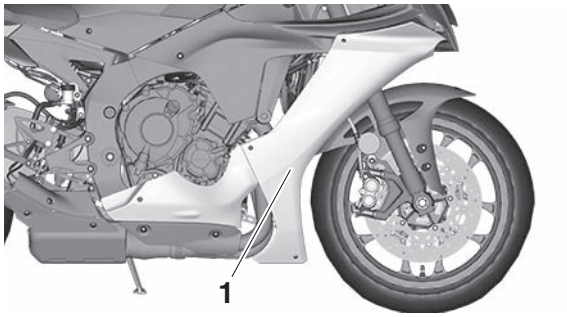


   a. Remove the front side cowling bolts and quick fastener screws.
   b. Pull the front side cowling (right) “1” forward, and then unhook the projection “a” on the front side cowling (right) “1” from the hole “b” of the front cowling.
   c. Unhook the projection “c” on the front side cowling (right) “1” from the hole “d” on the front cowling.

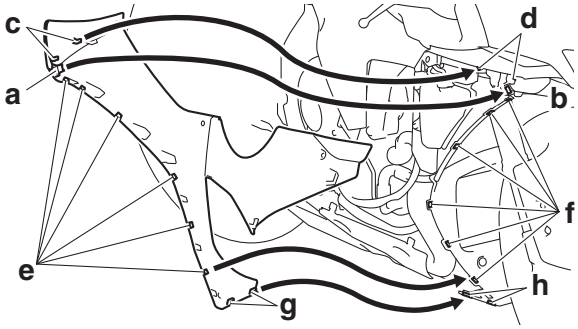


EAS33341
INSTALLING THE FRONT SIDE COWLING (RIGHT) (for YZF-R1)

1. Install:
   • Front side cowling (right) “1”



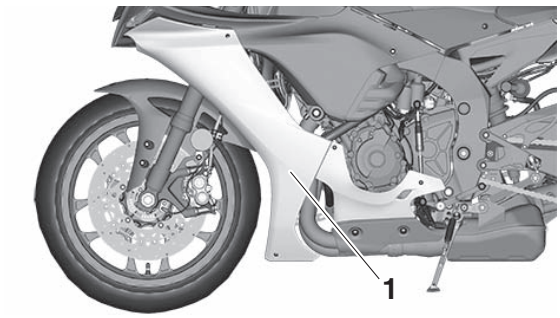
   a. Fit the projection “a” on the front side cowling (right) “1” into the hole “b” on the front cowling and slide the front side cowling (right) “1” backward.
   b. Fit the projection “c” on the front side cowling (right) “1” into the slits “d” on the front cowling.
   c. Fit the projections “e” on the front side cowling (right) “1” into the holes “f” on the bottom cowling.
   d. Fit the projections “g” on the front side cowling (right) “1” into the holes “h” on the bottom cowling.



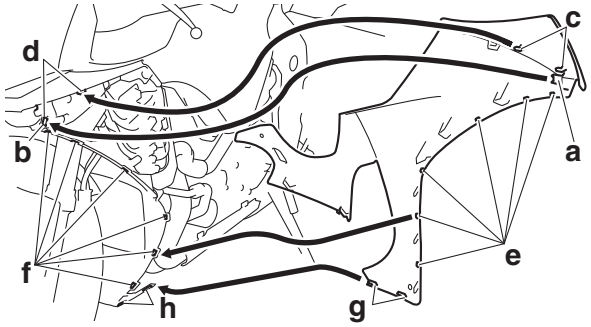
   e. Install the quick fastener screws.

EAS31697
INSTALLING THE FRONT SIDE COWLING (LEFT) (for YZF-R1)

1. Install:
   • Front side cowling (left) “1”



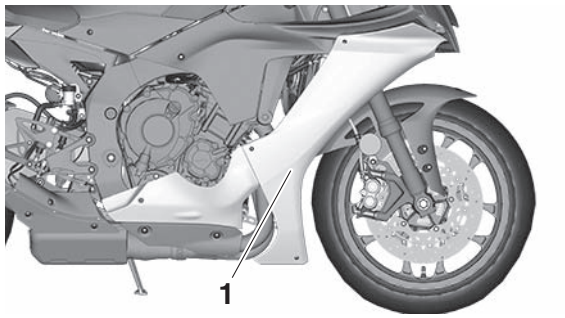
   a. Fit the projection “a” on the front side cowling (left) “1” into the hole “b” on the front cowling.
   b. Fit the projection “c” on the front side cowling (left) “1” into the slits “d” on the front cowling.
   c. Fit the projections “e” on the front side cowling (left) “1” into the holes “f” on the bottom cowling.
   d. Fit the projections “g” on the front side cowling (left) “1” into the holes “h” on the bottom cowling.



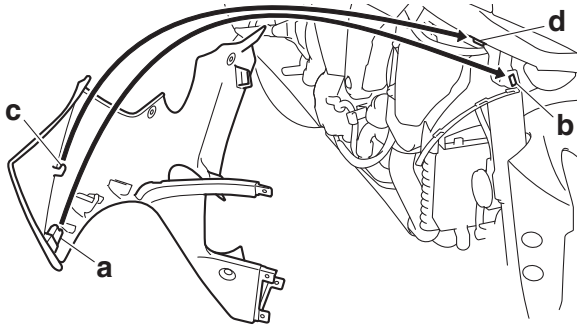
   e. Install the quick fastener screws.

EAS33353
INSTALLING THE FRONT SIDE COWLING (RIGHT) (for YZF-R1M)

1. Install:
   • Front side cowling (right) “1”



   a. Fit the projection “a” on the front side cowling (right) “1” into the hole “b” on the front cowling.
   b. Fit the projection “c” on the front side cowling (right) “1” into the hole “d” on the front cowling.



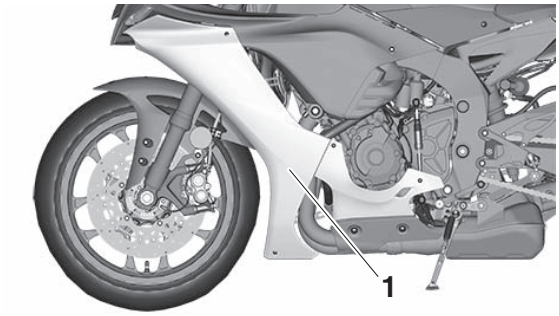
c. Install the front side cowling bolts, quick fastener screws and quick fasteners.

	Front side cowling bolt **9 N·m (0.9 kgf·m, 6.6 lb·ft)**

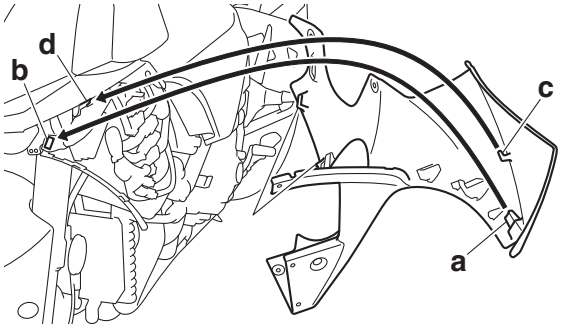
EAS33345

INSTALLING THE FRONT SIDE COWLING (LEFT) (for YZF-R1M)

1. Install:
   • Front side cowling (left) “1”



a. Fit the projection “a” on the front side cowling (left) “1” into the hole “b” on the front cowling.
b. Fit the projection “c” on the front side cowling (left) “1” into the hole “d” on the front cowling.



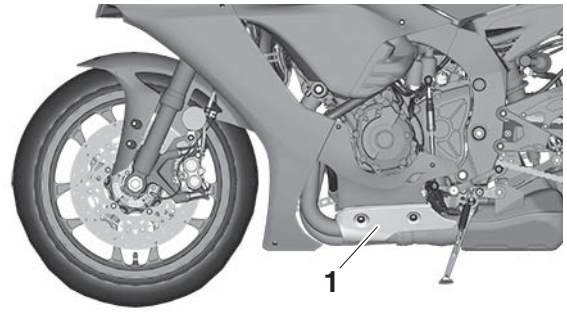
c. Install the front side cowling bolts, quick fastener screws and quick fasteners.

	Front side cowling bolt **9 N·m (0.9 kgf·m, 6.6 lb·ft)**

EAS33367

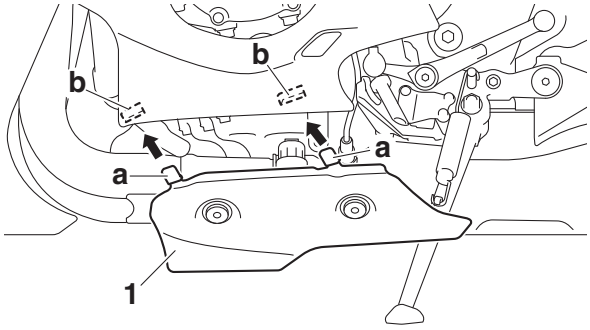
INSTALLING THE FRONT MUFFLER PROTECTOR (LEFT)

1. Install:
   • Front muffler protector (left) “1”



a. Fit the projections “a” on the front muffler protector (left) “1” into the holes “b” on the front cowling (left).
b. Tighten the front muffler protector bolt.

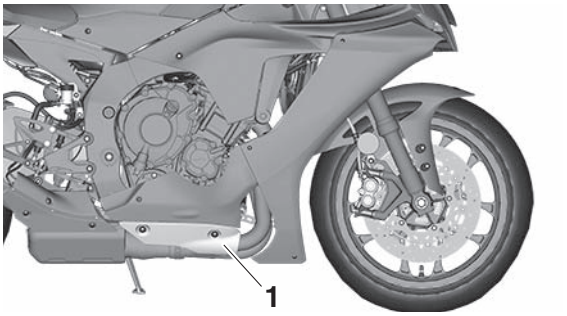
	Front muffler protector bolt **7 N·m (0.7 kgf·m, 5.2 lb·ft)**



EAS33368

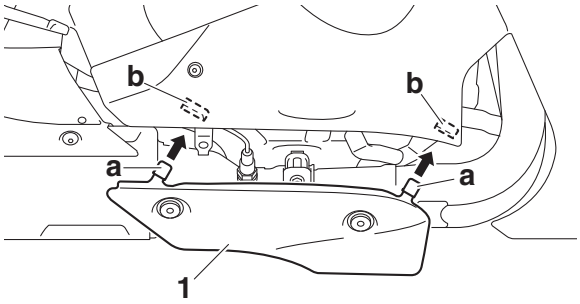
INSTALLING THE FRONT MUFFLER PROTECTOR (RIGHT)

1. Install:
   • Front muffler protector (right) “1”



a. Fit the projections “a” on the front muffler protector (right) “1” into the holes “b” on the front cowling (right).
b. Tighten the front muffler protector bolt.

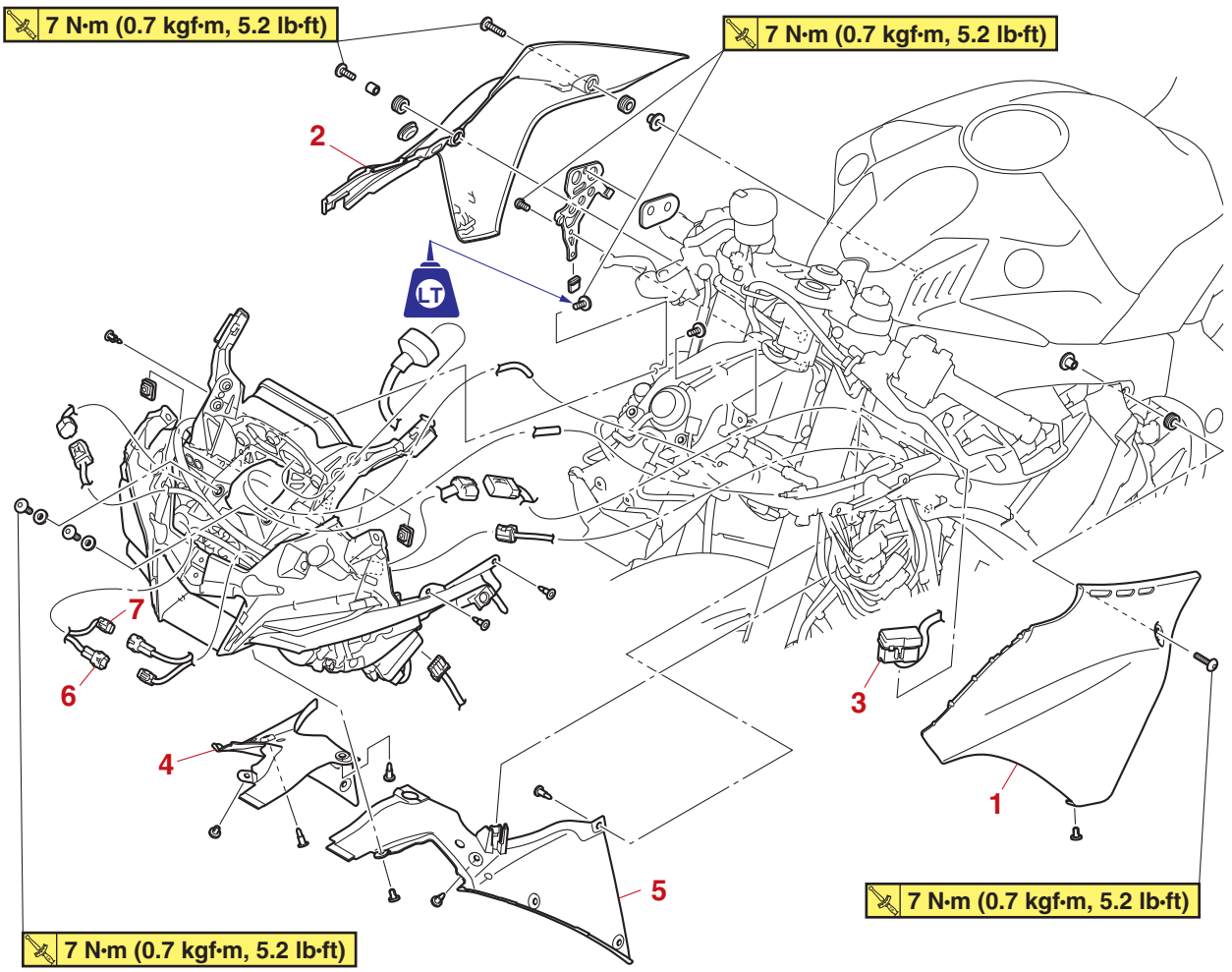
	Front muffler protector bolt **7 N·m (0.7 kgf·m, 5.2 lb·ft)**



EAS20159

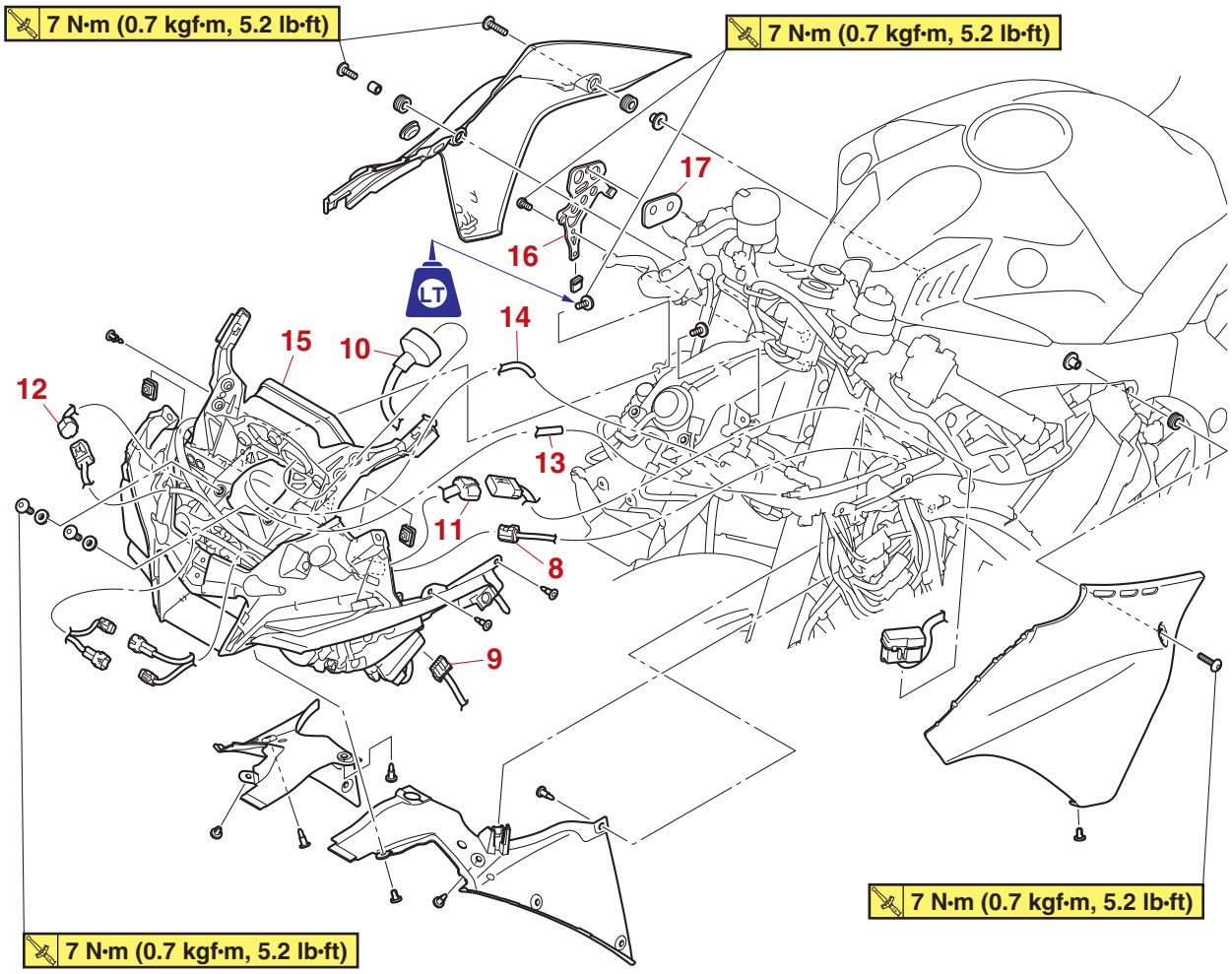
GENERAL CHASSIS (6)

Removing the side covers and front cowling assembly



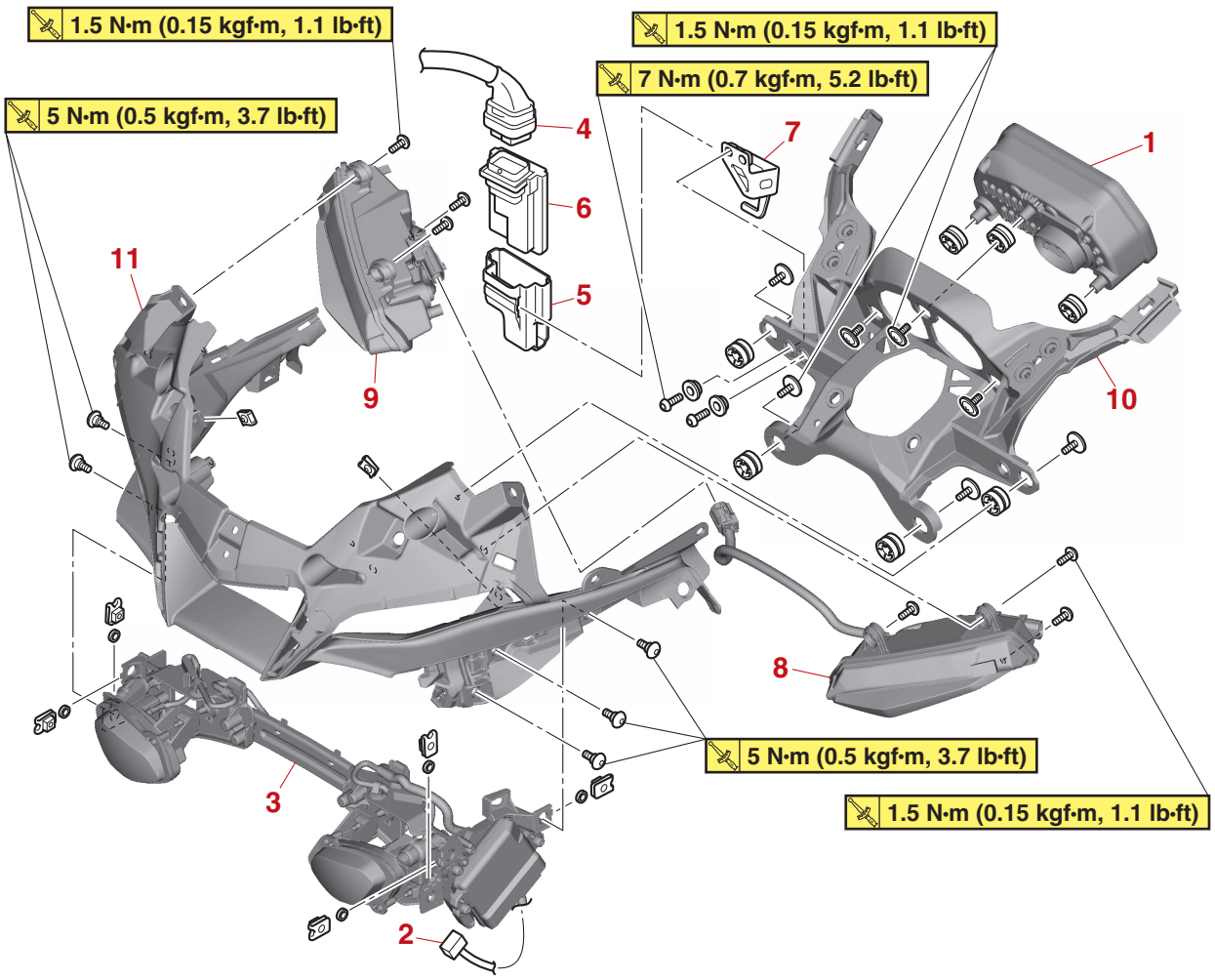
Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Windshield		Refer to "GENERAL CHASSIS (4)" on page 4-13.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
1	Side cover (left)	1	
2	Side cover (right)	1	
3	Fuse box	1	
4	Front side cowling inner panel (right)	1	
5	Front side cowling inner panel (left)	1	
6	Steering damper solenoid coupler	1	Disconnect.
7	Intake solenoid coupler	1	Disconnect.

Removing the side covers and front cowling assembly



Order	Job/Parts to remove	Q'ty	Remarks
8	Auxiliary light coupler	1	Disconnect.
9	Headlight control unit coupler	1	Disconnect.
10	Meter assembly coupler	1	Disconnect.
11	Sub-wire harness coupler	1	Disconnect. For YZF-R1M
12	Front fork stepping motor coupler	1	Disconnect. For YZF-R1M
13	Intake solenoid vacuum hose	1	Disconnect.
14	Surge tank hose	1	Disconnect.
15	Front cowling assembly	1	
16	Side cover bracket (right)	1	
17	Damper	1	

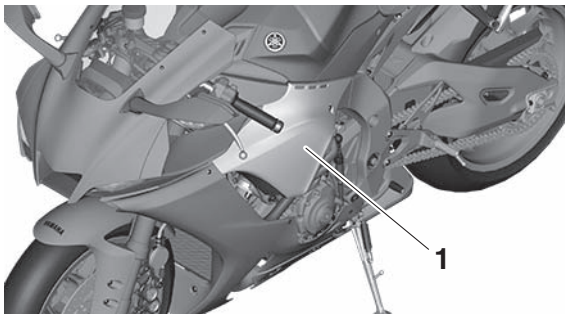
Disassembling the front cowling assembly



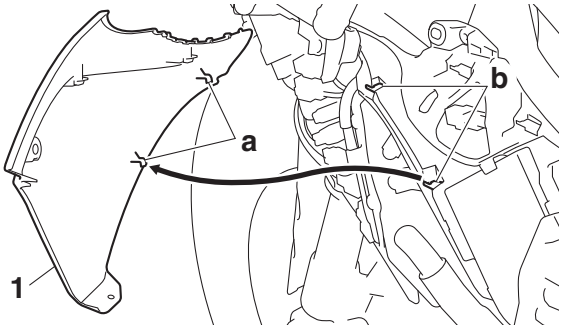
*** When installing the auxiliary light onto the front cowling, tighten this screw last.**

Order	Job/Parts to remove	Q'ty	Remarks
1	Meter assembly	1	
2	Headlight control unit coupler	1	Disconnect.
3	Headlight	1	
4	SCU coupler	1	Disconnect. For YZF-R1M
5	SCU cover	1	For YZF-R1M
6	SCU (Suspension Control Unit)	1	For YZF-R1M
7	SCU bracket	1	For YZF-R1M
8	Auxiliary light (left)	1	
9	Auxiliary light (right)	1	
10	Front cowling assembly stay	1	
11	Front cowling	1	

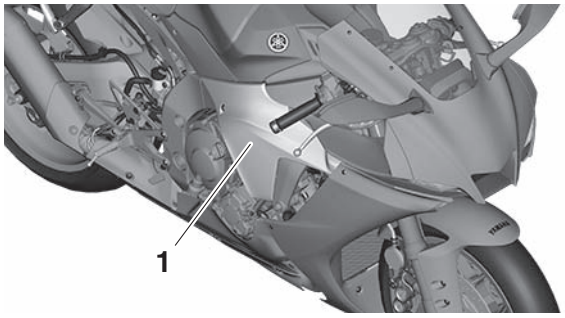
EAS33354
REMOVING THE SIDE COVER (LEFT)
1. Remove:
   • Side cover (left) “1”



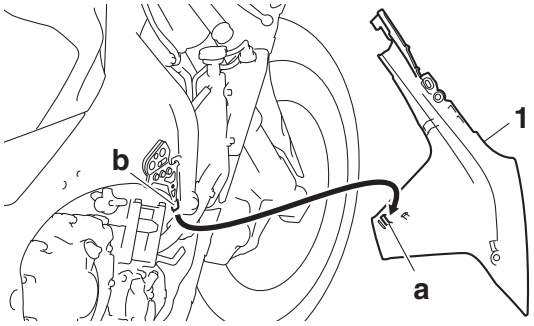
   a. Remove the side cover bolt (right) and quick fastener.
   b. Pull the side cover (left) “1” rearward and unhook the projections “a” on the side cover (left) “1” from the holes “b” of the side cover bracket.



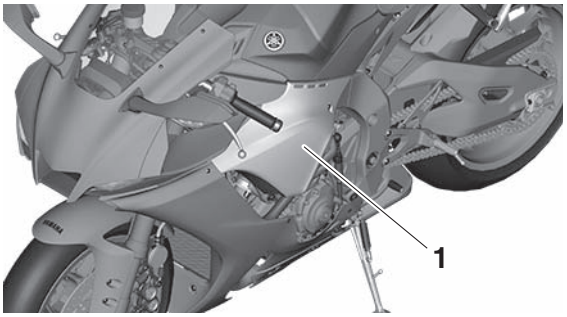
EAS33355
REMOVING THE SIDE COVER (RIGHT)
1. Remove:
   • Side cover (right) “1”



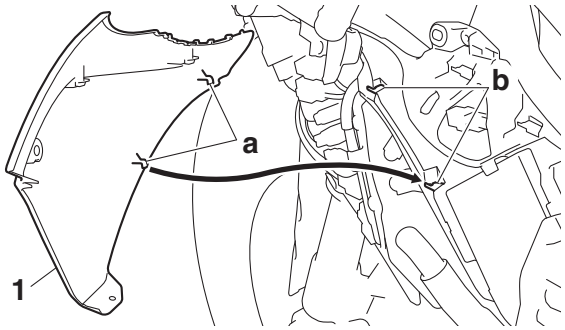
   a. Remove the side cover (left) bolts.
   b. Pull the side cover (right) “1” downward and remove the hole “a” of the side cover (right) “1” from the projection “b” on the side cover bracket (right).



EAS33356
INSTALLING THE SIDE COVER (LEFT)
1. Install:
   • Side cover (left) “1”



   a. Fit the projections “a” on the side cover (left) into the holes “b” of the side cover bracket “1” and slide the side cover (left) forward.



   b. Install the side cover bolt (left) and quick fastener.

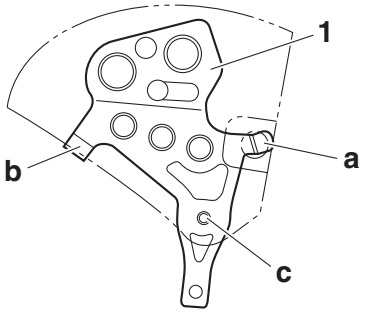
	Side cover bolt (left) **7 N·m (0.7 kgf·m, 5.2 lb·ft)**

EAS33380
INSTALLING THE SIDE COVER BRACKET (RIGHT)
1. Install:
   • Side cover bracket (right) “1”
   • Damper

	Side cover bracket bolt (right) **7 N·m (0.7 kgf·m, 5.2 lb·ft)**

TIP

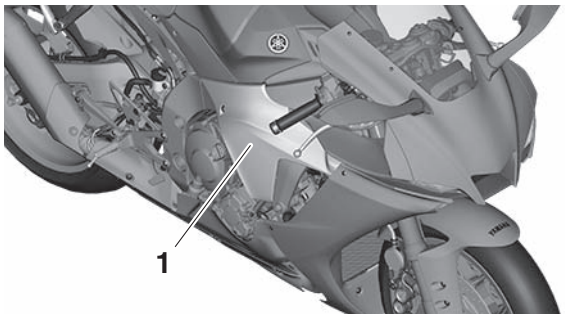
- Insert the projection “a” on the side cover bracket (right) “1” in the hole of the frame.
- Hook the projection “b” on the side cover bracket (right) “1” to the frame.
- Push the projection “b” on the side cover bracket (right) “1” to align the hole “c” on the side cover bracket (right) “1” with the hole on the frame.



EAS33357

INSTALLING THE SIDE COVER (RIGHT)

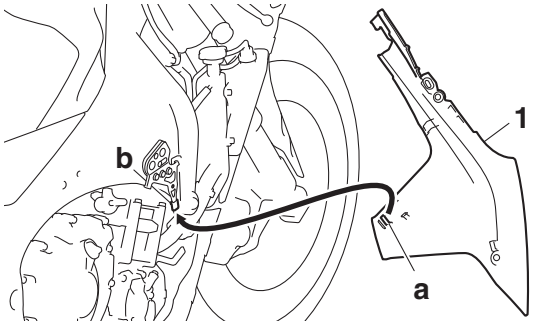
1. Install:
   - Side cover (right) “1”

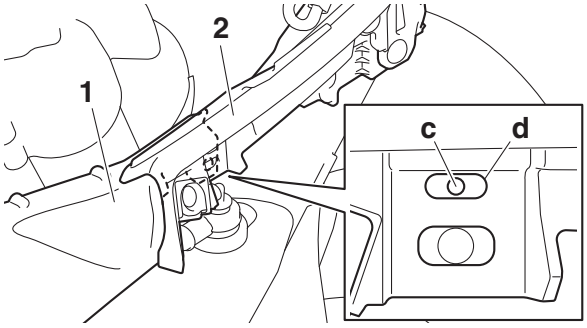


   a. Fit the hole “a” in the side cover (right) “1” onto the projection “b” on the side cover bracket and slide the side cover (right) upward.

TIP

- Position the front cowling assembly “2” on the side cover (right) “1”.
- Make sure that there is projection “c” on the side cover (right) “1” in the hole “d” in the front cowling assembly “2”.





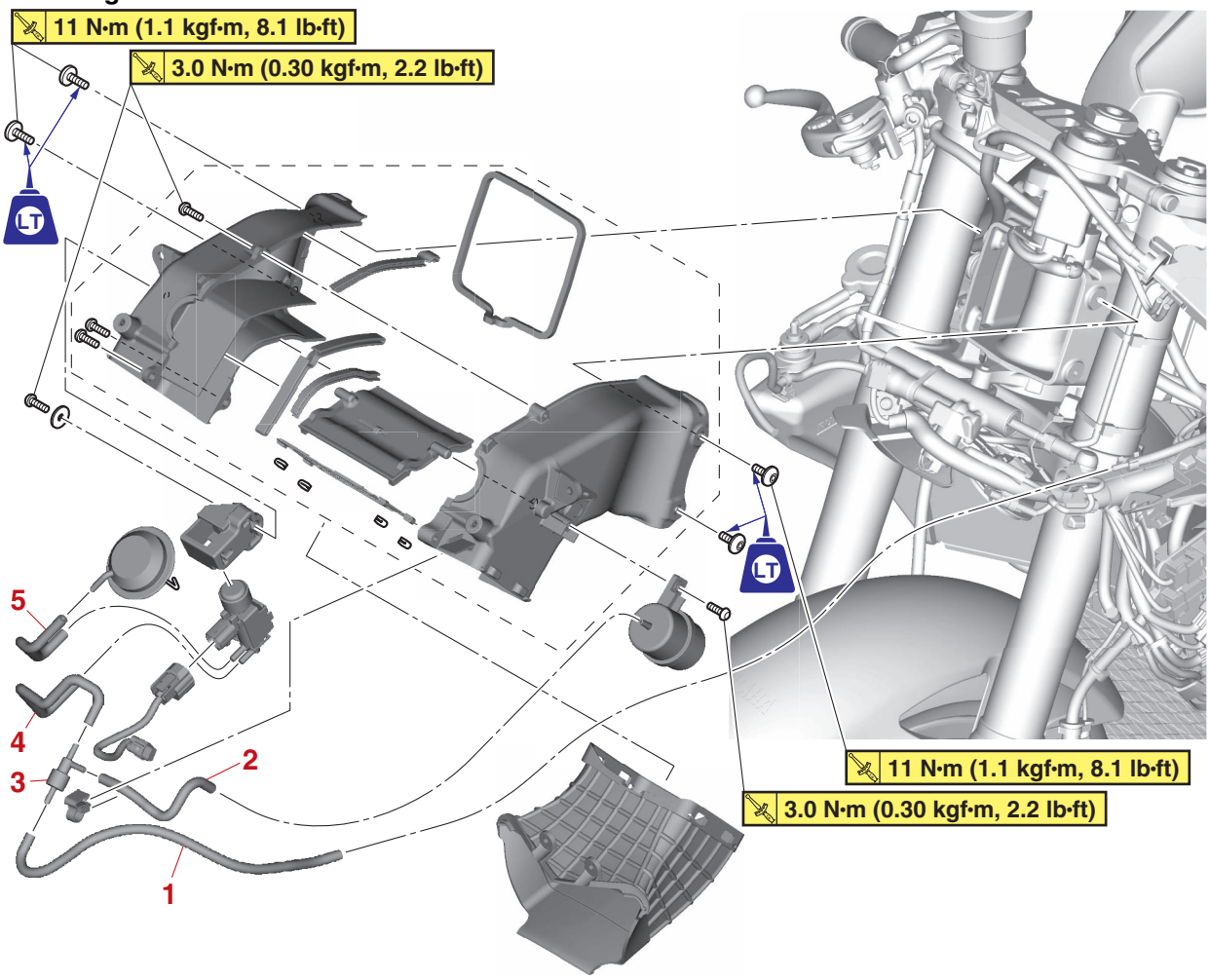
   b. Install the side cover bolt (right).

	**Side cover bolt (right)** **7 N·m (0.7 kgf·m, 5.2 lb·ft)**

EAS20193

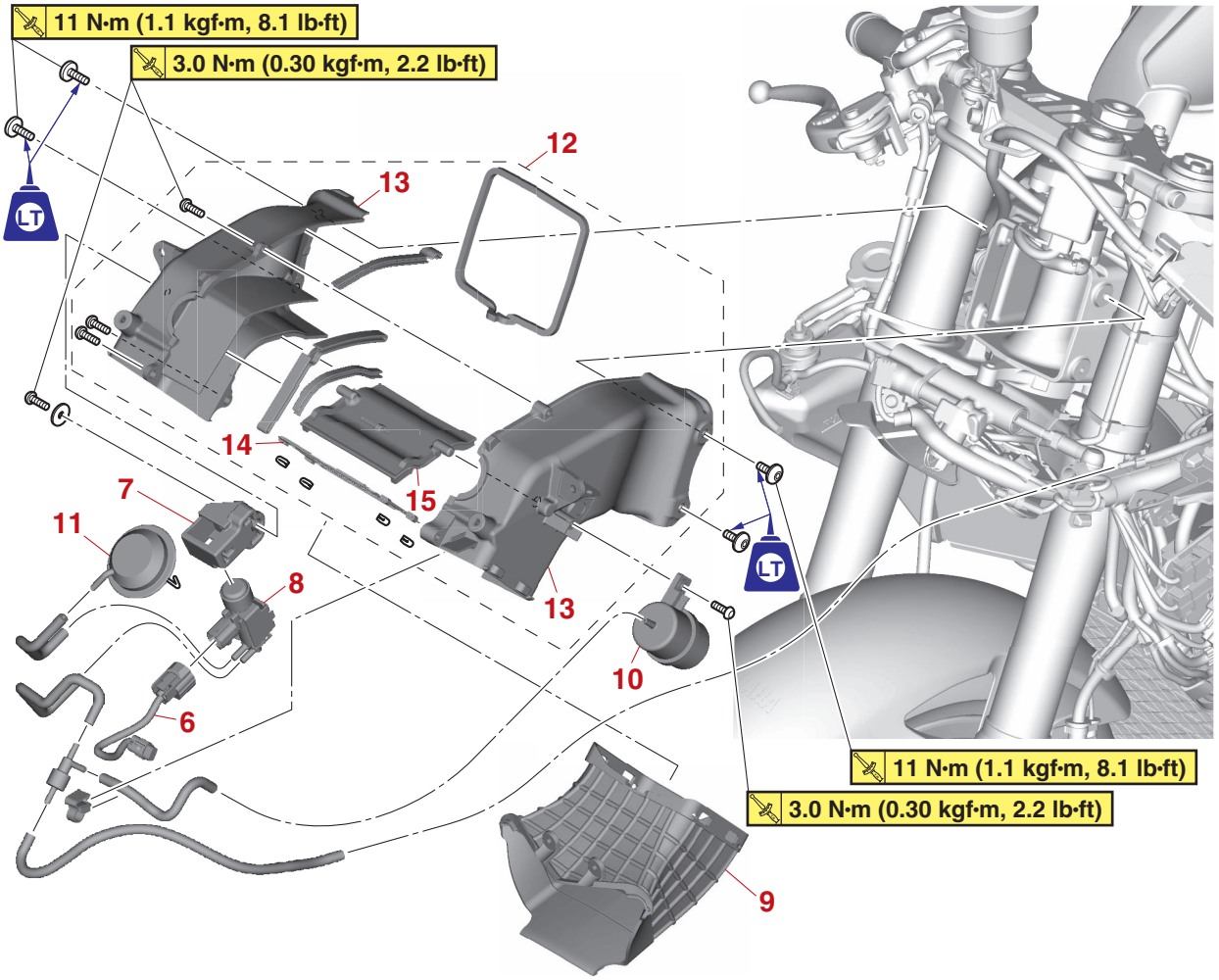
GENERAL CHASSIS (7)

Removing the air intake duct



Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Windshield		Refer to "GENERAL CHASSIS (4)" on page 4-13.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front cowling assembly		Refer to "GENERAL CHASSIS (6)" on page 4-23.
1	Intake solenoid vacuum hose	1	
2	Surge tank hose	1	
3	One-way valve	1	
4	Intake solenoid vacuum hose (one-way valve to intake solenoid)	1	
5	Intake solenoid vacuum hose (intake solenoid to air intake duct valve)	1	

Removing the air intake duct



Order	Job/Parts to remove	Q'ty	Remarks
6	Intake solenoid lead (sub-wire harness)	1	
7	Intake solenoid bracket	1	
8	Intake solenoid	1	
9	Air duct	1	
10	Surge tank	1	
11	Diaphragm	1	
12	Air intake duct assembly	1	
13	Air intake duct	1	
14	Air intake duct guard	1	
15	Air intake duct valve	1	

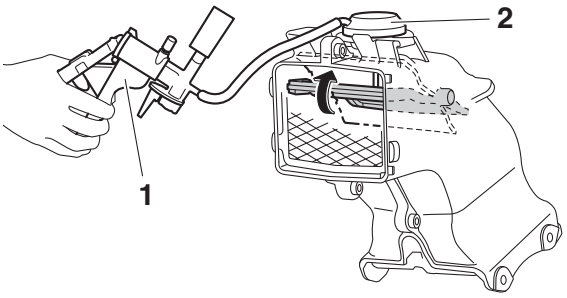
EAS31645
CHECKING THE AIR INTAKE DUCT VALVE

1. Check:
   - Air intake duct valve operation
     a. Connect the vacuum/pressure pump gauge set "1" to the air intake duct valve "2".



Vacuum/pressure pump gauge set
90890-06945
Pressure/vacuum tester
YB-35956-B

     b. Check that the air intake duct valve operates when vacuum pressure is applied to the valve using the vacuum/pressure pump gauge set.
     Faulty → Replace the air intake duct valve.

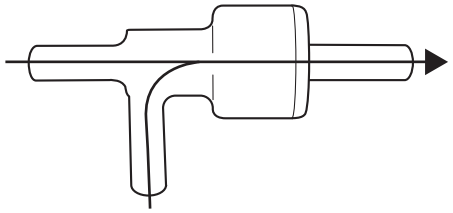


EAS31646
CHECKING THE VACUUM LINE

1. Check:
   - Hoses
   Loose connections → Connect properly.
   Cracks/damage → Replace.
2. Check:
   - Surge tank
   Cracks/damage → Replace.
3. Check:
   - One-way valve
   Cracks/damage/faulty → Replace.

TIP

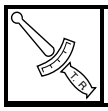
Check that air flows smoothly only in the direction of the arrow shown in the illustration.



4. Check:
   - Intake solenoid
   Damage → Replace.
5. Check:
   - Intake solenoid
   Refer to "SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE" on page 9-32.
6. Check:
   - Surge tank
   Cracks/damage → Replace.

EAS33358
ASSEMBLING THE AIR INTAKE DUCT ASSEMBLY

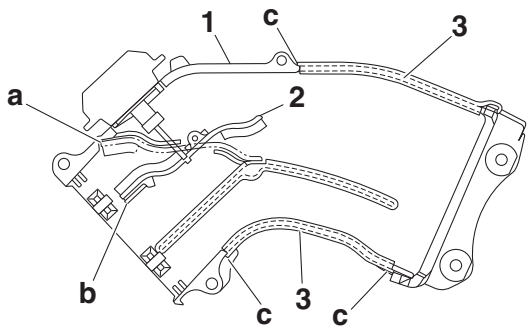
1. Install:
   - Air intake duct (left)
   - Air intake duct (right) "1"
   - Air intake duct valve "2"
   - Air intake duct guard
   - Rubber damper "3"



Air intake duct assembly bolt
3.0 N·m (0.30 kgf·m, 2.2 lb·ft)

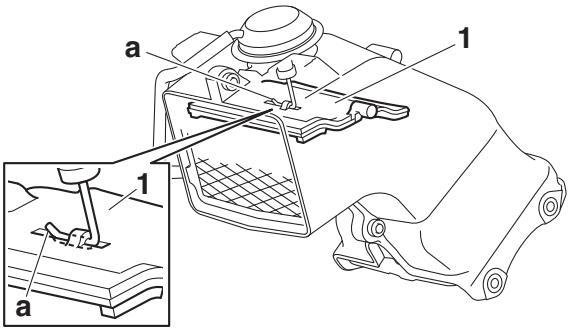
TIP

- Install the air intake duct valve within the range of stopper portion "a" and projection "b" inside the air intake duct.
- Install the rubber damper "3" in the direction of the illustration so that it makes contact with stepped portion "c" of the air intake duct.
- After installing the air intake duct, make sure that there is no gap between the air intake duct (left) and the air intake duct (right).

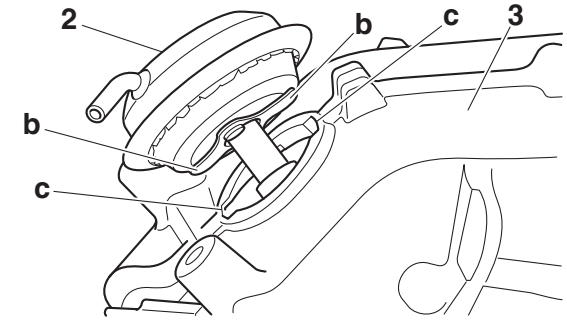


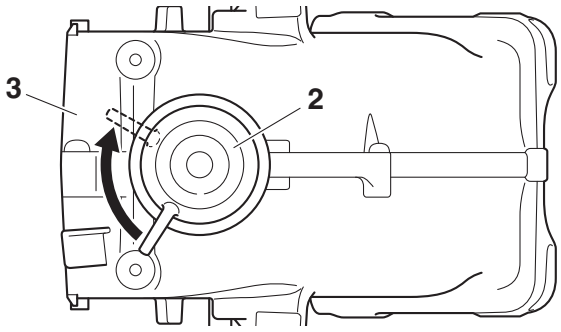
EAS31647
INSTALLING THE AIR INTAKE DUCT VALVE

1. Install:
   - Air intake duct valve
     a. Hook the end of the shaft “a” onto the plate “1” as shown.



     b. Align the tabs “b” on the air intake duct valve “2” with the cutouts “c” in the air intake duct “3”, and then turn the air intake duct valve 90° clockwise.

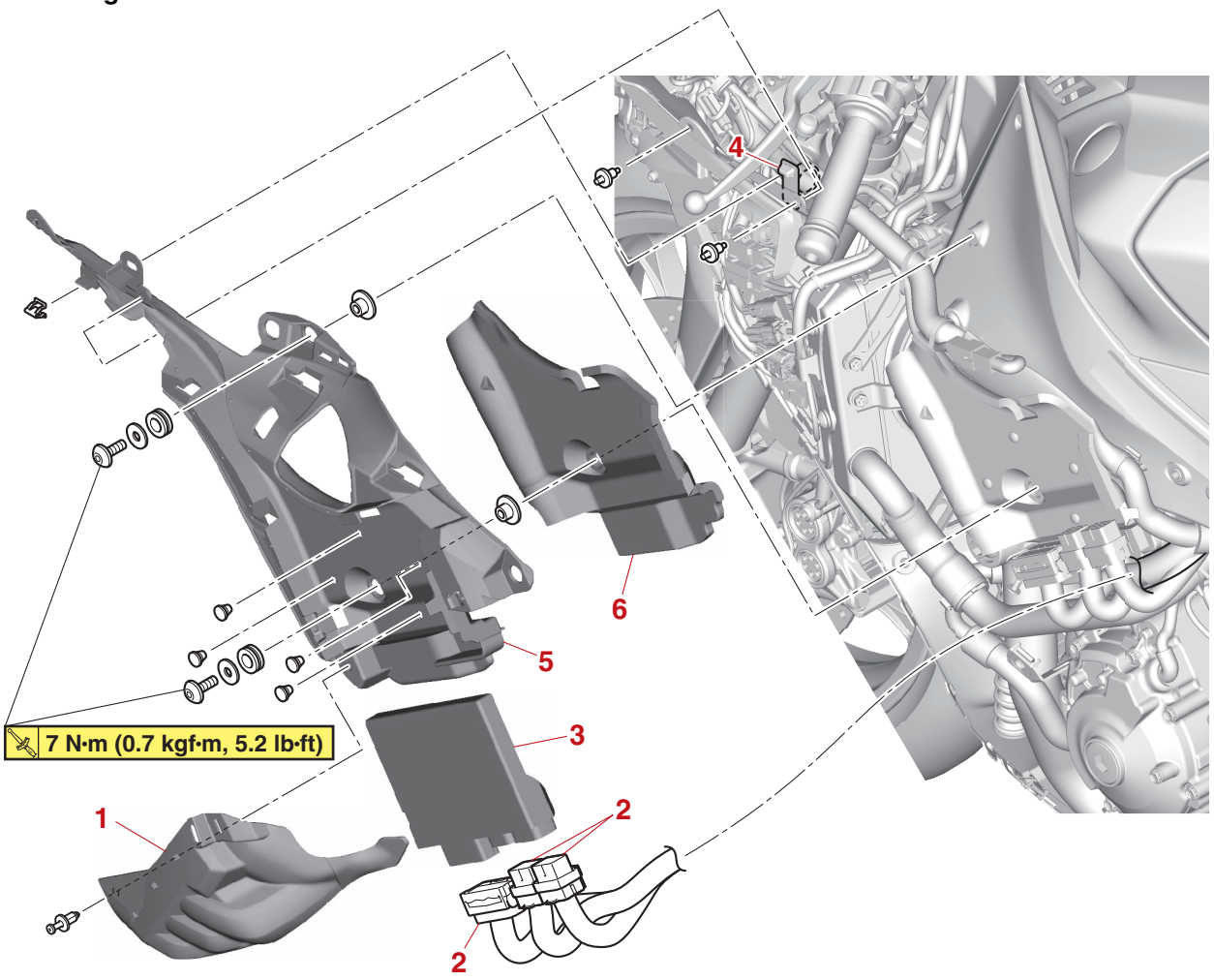




EAS20194

GENERAL CHASSIS (8)

Removing the ECU and side cover bracket

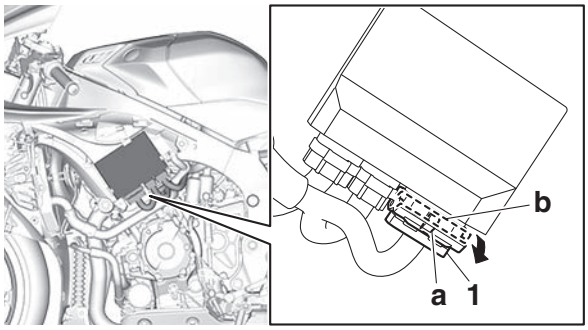


Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover (left)		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling (left)		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover (left)		Refer to "GENERAL CHASSIS (6)" on page 4-23.
1	ECU cover	1	
2	ECU coupler	3	Disconnect.
3	ECU (Engine Control Unit)	1	
4	Wire harness holder	1	
5	Side cover bracket	1	
6	Side cover bracket damper	1	

EAS31641
REMOVING THE ECU (engine control unit)
1. Disconnect:
   • ECU coupler “1”

TIP

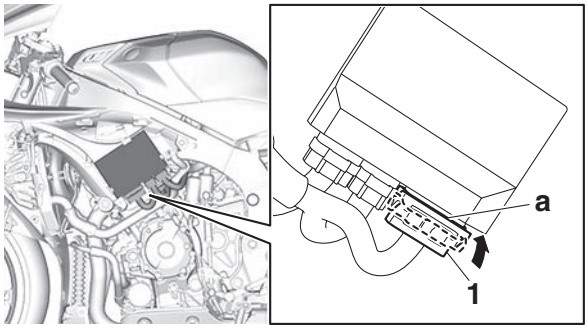
While pushing the portion “a” of the ECU coupler, move the lock lever “b” in the direction of the arrow shown to disconnect the coupler.



EAS31642
INSTALLING THE ECU (engine control unit)
1. Connect:
   • ECU coupler “1”

TIP

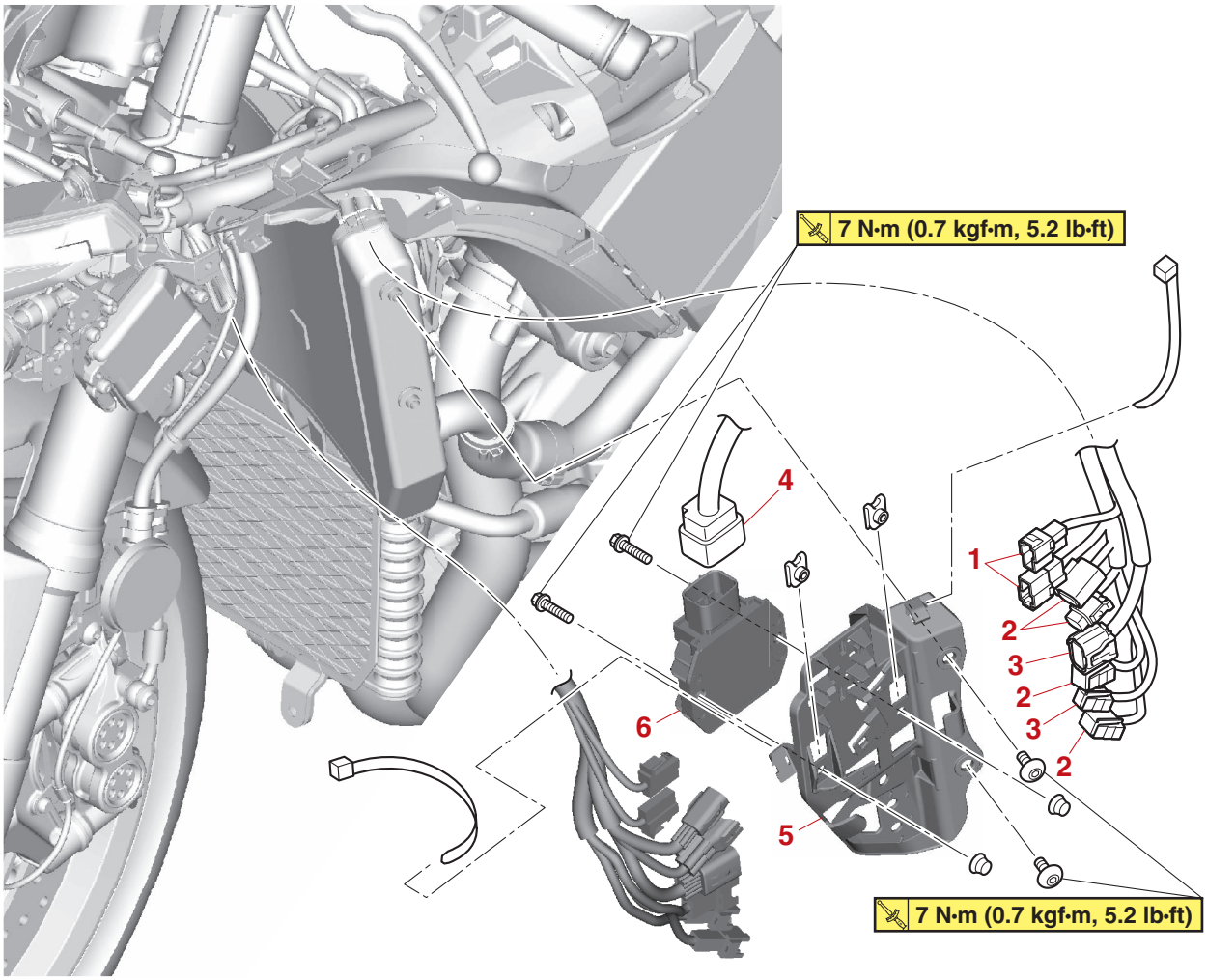
Connect the ECU coupler, and then push the lock lever “a” of the coupler in the direction of the arrow shown.



EAS20195

GENERAL CHASSIS (9)

Removing the electrical components tray

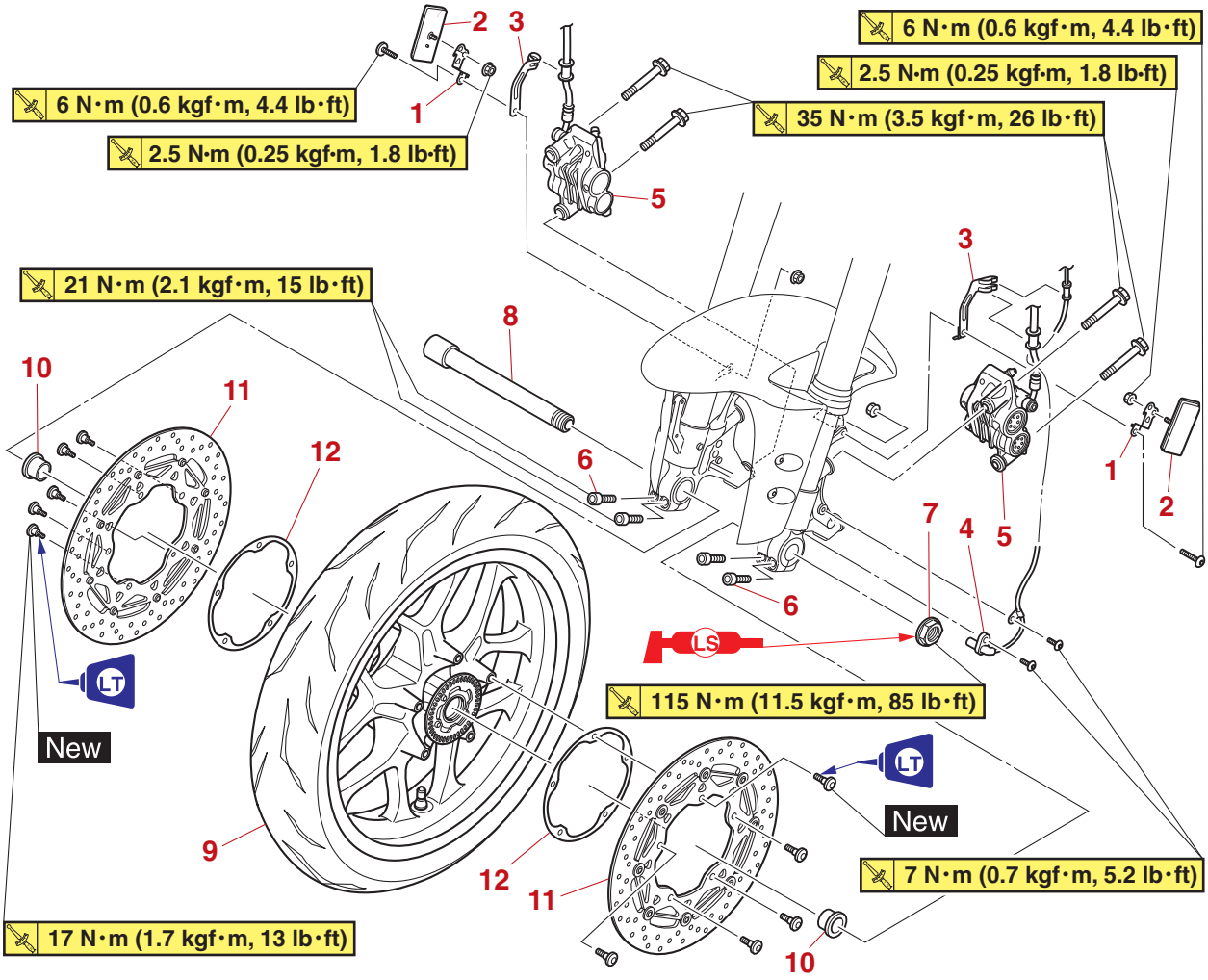


Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover (left)		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling (left)		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover (left)/Front side cowling inner panel (left)		Refer to "GENERAL CHASSIS (6)" on page 4-23.
1	Radiator fan motor coupler	2	Disconnect.
2	Handlebar switch coupler (right)	4	Disconnect.
3	Handlebar switch coupler (left)	2	Disconnect.
4	Rectifier/regulator coupler	1	Disconnect.
5	Electrical components tray	1	
6	Rectifier/regulator	1	

EAS20028

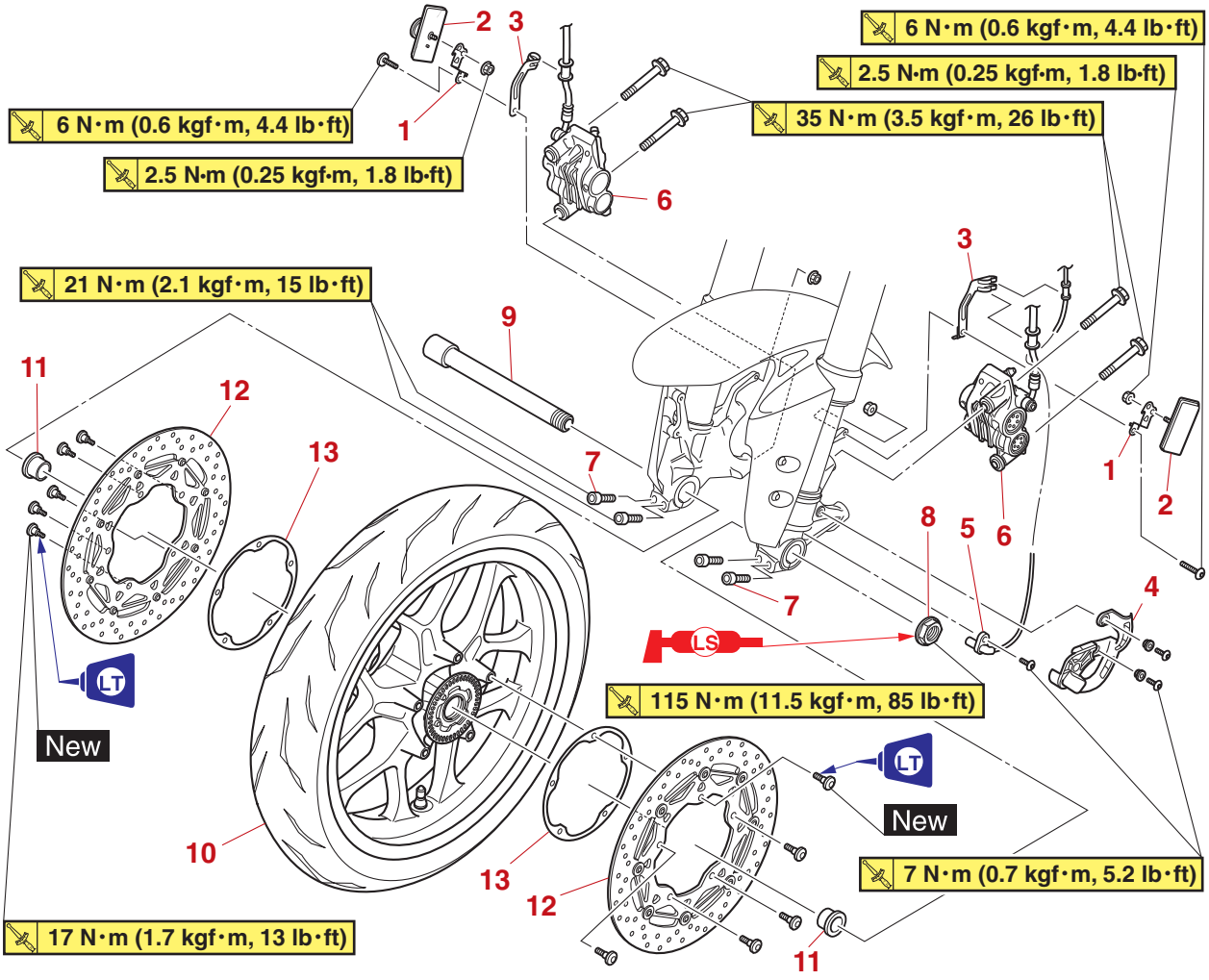
FRONT WHEEL

Removing the front wheel and brake discs (for YZF-R1)



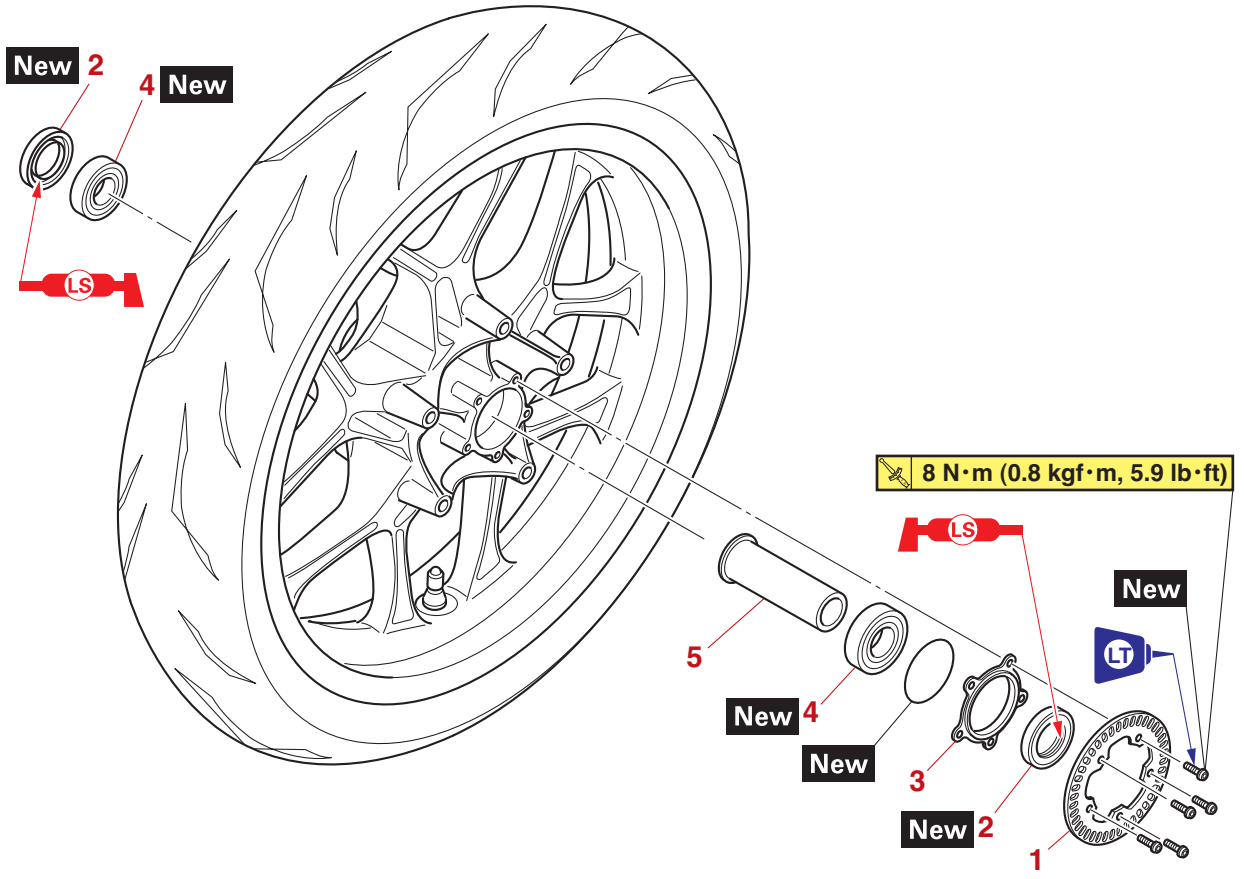
Order	Job/Parts to remove	Q'ty	Remarks
1	Reflector bracket	2	
2	Reflector	2	
3	Front brake hose holder	2	
4	Front wheel sensor	1	
5	Front brake caliper	2	
6	Wheel axle pinch bolt	4	Loosen.
7	Front wheel axle nut	1	
8	Front wheel axle	1	
9	Front wheel	1	
10	Collar	2	
11	Front brake disc	2	
12	Plate	2	

Removing the front wheel and brake discs (for YZF-R1M)



Order	Job/Parts to remove	Q'ty	Remarks
1	Reflector bracket	2	
2	Reflector	2	
3	Front brake hose holder	2	
4	Front wheel sensor protector	1	
5	Front wheel sensor	1	
6	Front brake caliper	2	
7	Wheel axle pinch bolt	4	Loosen.
8	Front wheel axle nut	1	
9	Front wheel axle	1	
10	Front wheel	1	
11	Collar	2	
12	Front brake disc	2	
13	Plate	2	

Disassembling the front wheel



Order	Job/Parts to remove	Q'ty	Remarks
1	Front wheel sensor rotor	1	
2	Oil seal	2	
3	Wheel ring	1	
4	Wheel bearing	2	
5	Spacer	1	

EAS30145
REMOVING THE FRONT WHEEL

ECA20981
NOTICE

• Keep any type of magnets (including magnetic pick-up tools, magnetic screwdrivers, etc.) away from the front wheel sensor or front wheel sensor rotor; otherwise, the sensor or rotor may be damaged, resulting in improper performance of the ABS system.
• Do not drop the front wheel sensor rotor or subject it to shocks.
• If any solvent gets on the front wheel sensor rotor, wipe it off immediately.

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Remove:
   • Front brake caliper (left)
   • Front brake caliper (right)
   • Front wheel sensor

ECA21440
NOTICE

• Do not apply the brake lever when removing the brake calipers.
• Be sure not to contact the sensor electrode to any metal part when removing the front wheel sensor from the sensor housing.

3. Elevate:
   • Front wheel

TIP

Place the vehicle on a maintenance stand so that the front wheel is elevated.

4. Loosen:
   • Wheel axle pinch bolt
5. Remove:
   • Front wheel axle
   • Front wheel

EAS30146
DISASSEMBLING THE FRONT WHEEL

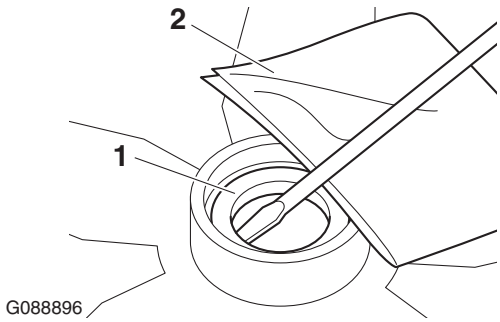
ECA21340
NOTICE

• Do not drop the wheel sensor rotor or subject it to shocks.
• If any solvent gets on the wheel sensor rotor, wipe it off immediately.

1. Remove:
   • Oil seals
   • Wheel bearings
   a. Clean the surface of the front wheel hub.
   b. Remove the oil seals “1” with a flat-head screwdriver.

TIP

To prevent damaging the wheel, place a rag “2” between the screwdriver and the wheel surface.



   c. Remove the wheel bearings with a general bearing puller.

EAS30147
CHECKING THE FRONT WHEEL

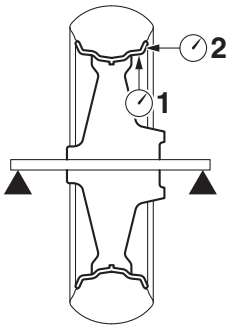
1. Check:
   • Wheel axle
   Roll the wheel axle on a flat surface.
   Bends → Replace.

EWA13460
⚠ WARNING

Do not attempt to straighten a bent wheel axle.

2. Check:
   • Tire
   • Front wheel
   Damage/wear → Replace.
   Refer to “CHECKING THE TIRES” on page 3-17 and “CHECKING THE WHEELS” on page 3-17.
3. Measure:
   • Radial wheel runout “1”
   • Lateral wheel runout “2”
   Over the specified limits → Replace.

Radial wheel runout limit
1.0 mm (0.04 in)
Lateral wheel runout limit
1.0 mm (0.04 in)



G088897

4. Check:
   - Wheel bearings
     Front wheel turns roughly or is loose → Replace the wheel bearings.
   - Oil seals
     Damage/wear → Replace.

EAS30151
ASSEMBLING THE FRONT WHEEL

ECA21340
NOTICE

• Do not drop the wheel sensor rotor or subject it to shocks.
• If any solvent gets on the wheel sensor rotor, wipe it off immediately.

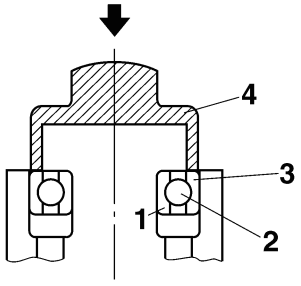
1. Install:
   - Wheel bearings New
   - Oil seals New
     a. Install the new wheel bearing (right side).

ECA18110
NOTICE

Do not contact the wheel bearing inner race "1" or balls "2". Contact should be made only with the outer race "3".

TIP

Use a socket "4" that matches the diameter of the wheel bearing outer race.

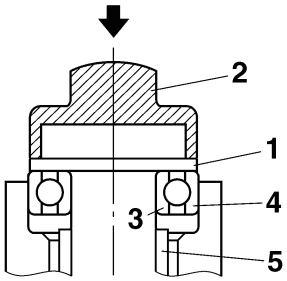


G088898

     b. Install the spacer.
     c. Install the new wheel bearing (left side).

TIP

Place a suitable washer "1" between the socket "2" and the bearing so that both the inner race "3" and outer race "4" are pressed at the same time, and then press the bearing until the inner race makes contact with the spacer "5".



G088899

     d. Install the new oil seals.
2. Install:
   - Front wheel sensor rotor

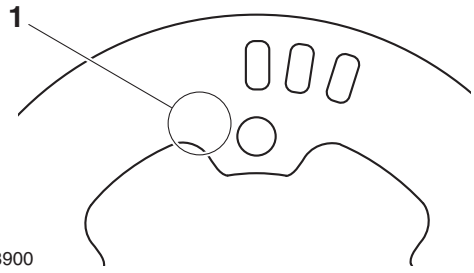
	**Wheel sensor rotor bolt** **8 N·m (0.8 kgf·m, 5.9 lb·ft)** **LOCTITE®**

ECA17200
NOTICE

Replace the wheel sensor rotor bolts with new ones.

TIP

Install the wheel sensor rotor with the stamped mark "1" facing outward.



G088900

3. Measure:
   - Wheel sensor rotor runout
     Out of specification → Correct the wheel sensor rotor runout or replace the wheel sensor rotor.
     Refer to "MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR" on page 4-40.

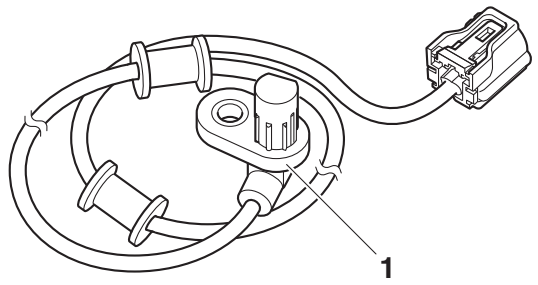
	**Wheel sensor rotor runout limit** **0.25 mm (0.01 in)**

EAS30155
MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR

ECA21070
NOTICE

- **Handle the ABS components with care since they have been accurately adjusted. Keep them away from dirt and do not subject them to shocks.**
- **The front wheel sensor cannot be disassembled. Do not attempt to disassemble it. If faulty, replace with a new one.**
- **Keep any type of magnets (including magnetic pick-up tools, magnetic screwdrivers, etc.) away from the front wheel sensor or front wheel sensor rotor.**
- **Do not drop or shock the wheel sensor or the wheel sensor rotor.**

1. Check:
   - Front wheel sensor "1"
     Cracks/bends/distortion → Replace.
     Iron powder/dust → Clean.



2. Check:
   - Front wheel sensor rotor
     Cracks/damage/scratches → Replace the front wheel sensor rotor.
     Iron powder/dust/solvent → Clean.

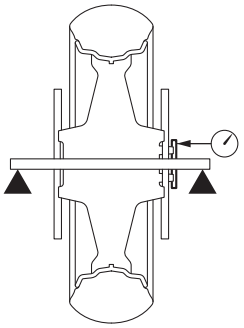
TIP

- The wheel sensor rotor is installed on the inner side of the wheel hub.
- When cleaning the wheel sensor rotor, be careful not to damage the surface of the sensor rotor.

3. Measure:
   - Wheel sensor rotor runout
     Out of specification → Clean the installation surface of the wheel sensor rotor and correct the wheel sensor rotor runout, or replace the wheel sensor rotor.

Wheel sensor rotor runout limit
0.25 mm (0.01 in)

   a. Hold the dial gauge at a right angle against the wheel sensor rotor surface.
   b. Measure the wheel sensor rotor runout.



G088902

   c. If the runout is still above specification, replace the wheel sensor rotor.

EAS30152
ADJUSTING THE FRONT WHEEL STATIC BALANCE

TIP

- After replacing the tire, wheel or both, the front wheel static balance should be adjusted.
- Adjust the front wheel static balance with the brake disc installed.
- Be sure to use stick-on type balancing weights.

1. Remove:
   - Balancing weight(s)
2. Find:
   - Front wheel's heavy spot
3. Adjust:
   - Front wheel static balance
4. Check:
   - Front wheel static balance

EAS30154
INSTALLING THE FRONT WHEEL (DISC BRAKE)

1. Install:
   - Plate
   - Front brake discs

Front brake disc bolt
17 N·m (1.7 kgf·m, 13 lb·ft)
LOCTITE®

ECA19150
NOTICE

Replace the brake disc bolts with new ones.

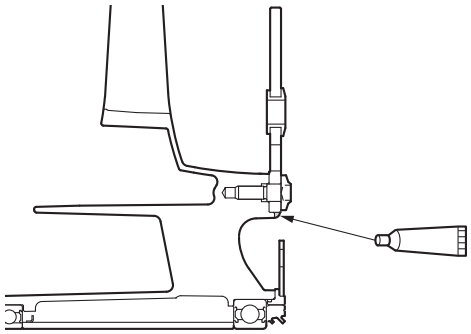
TIP

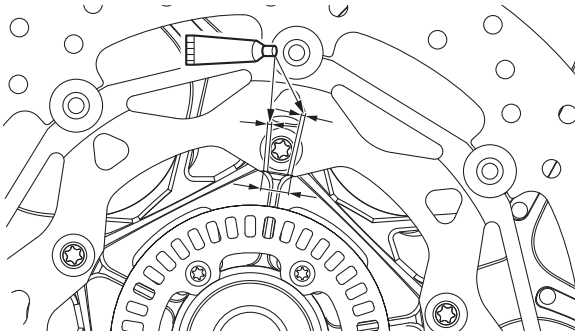
Tighten the brake disc bolts in stages and in a crisscross pattern.

2. Apply:
   - Sealant

TIP

Apply Three Bond No. 1215B® onto the corner of brake disc and wheel.





3. Check:
   - Front brake discs
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.
4. Lubricate:
   - Oil seal lips

	Recommended lubricant **Lithium-soap-based grease**

5. Install:
   - Collar
   - Front wheel
   - Front wheel axle
   - Front wheel axle nut

TIP

Apply lithium soap-based grease onto the mating surface of the front wheel axle nut.

6. Tighten:
   - Front wheel axle nut

	Front wheel axle nut **115 N·m (11.5 kgf·m, 85 lb·ft)**

ECA14140

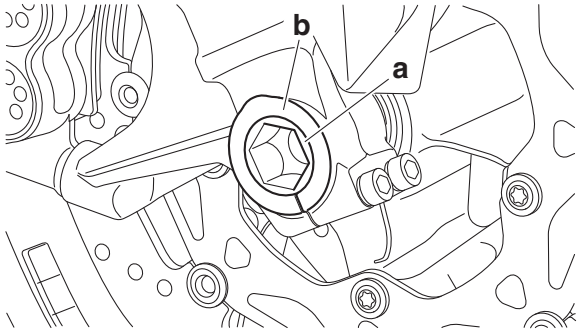
NOTICE

Before tightening the wheel axle nut, push down hard on the handlebar(s) several times and check if the front fork rebounds smoothly.

7. Tighten:
   - Front wheel axle pinch bolt
     a. Tighten the pinch bolt "2", pinch bolt "1", and pinch bolt "2" to the specified torque in this order.

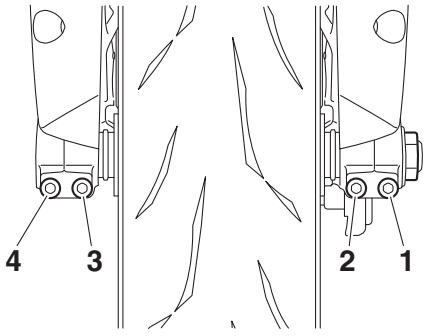
	Front wheel axle pinch bolt **21 N·m (2.1 kgf·m, 15 lb·ft)**

     b. Check that the right end "a" of the front axle is flush with the front fork "b". If necessary, manually push the front axle or lightly tap it with a soft hammer until its end is flush with the front fork. However, if the surface of the front axle end is not parallel to the surface of the front fork, align a point on the outer edge of the axle with the fork, making sure that the axle does not protrude past the fork.



     c. Tighten the pinch bolt "4", pinch bolt "3", and pinch bolt "4" to the specified torque in this order.

	Front wheel axle pinch bolt **21 N·m (2.1 kgf·m, 15 lb·ft)**



8. Install:
   • Front wheel sensor
   • Front wheel sensor protector (for YZF-R1M)

Front wheel sensor bolt
7 N·m (0.7 kgf·m, 5.2 lb·ft)
Front wheel sensor protector bolt (for YZF-R1M)
7 N·m (0.7 kgf·m, 5.2 lb·ft)

ECA21020
NOTICE

Make sure there are no foreign materials in the front wheel sensor rotor and front wheel sensor. Foreign materials cause damage to the front wheel sensor rotor and front wheel sensor.

TIP
- When installing the front wheel sensor, check the front wheel sensor lead for twists.
- To route the front wheel sensor lead, refer to "CABLE ROUTING" on page 2-17.

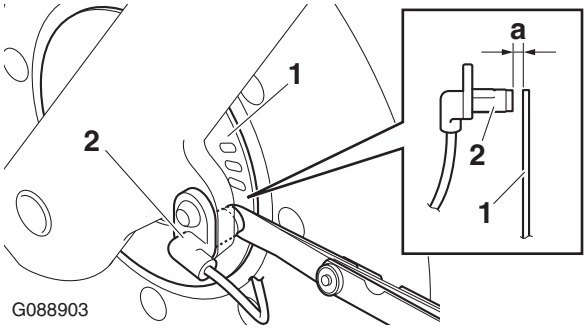
9. Measure:
   • Distance "a"
   (between the front wheel sensor rotor "1" and front wheel sensor "2")
   Out of specification → Check the wheel bearing for looseness, and the front wheel sensor and sensor rotor installation conditions (warpage caused by overtorque, wrong installation direction, rotor decentering, LOCTITE® on the mounting surface of the rotor, deformation caused by an impact during service and caught foreign materials). If there is any defective part, repair or replace the defective part.

Distance "a" (between the front wheel sensor rotor and front wheel sensor)
0.9–1.7 mm (0.035–0.067 in) (for YZF-R1)
1.1–1.9 mm (0.043–0.075 in) (for YZF-R1M)

TIP

Measure the distance between the front wheel sensor rotor and front wheel sensor in several places in one rotation of the front wheel. Do not turn the front wheel while the thickness gauge is installed. This may damage the front wheel sensor rotor and the front wheel sensor.

Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9



10. Install:
   • Front brake calipers
   • Front brake hose holder

Front brake caliper bolt
35 N·m (3.5 kgf·m, 26 lb·ft)
Front brake hose holder bolt
6 N·m (0.6 kgf·m, 4.4 lb·ft)

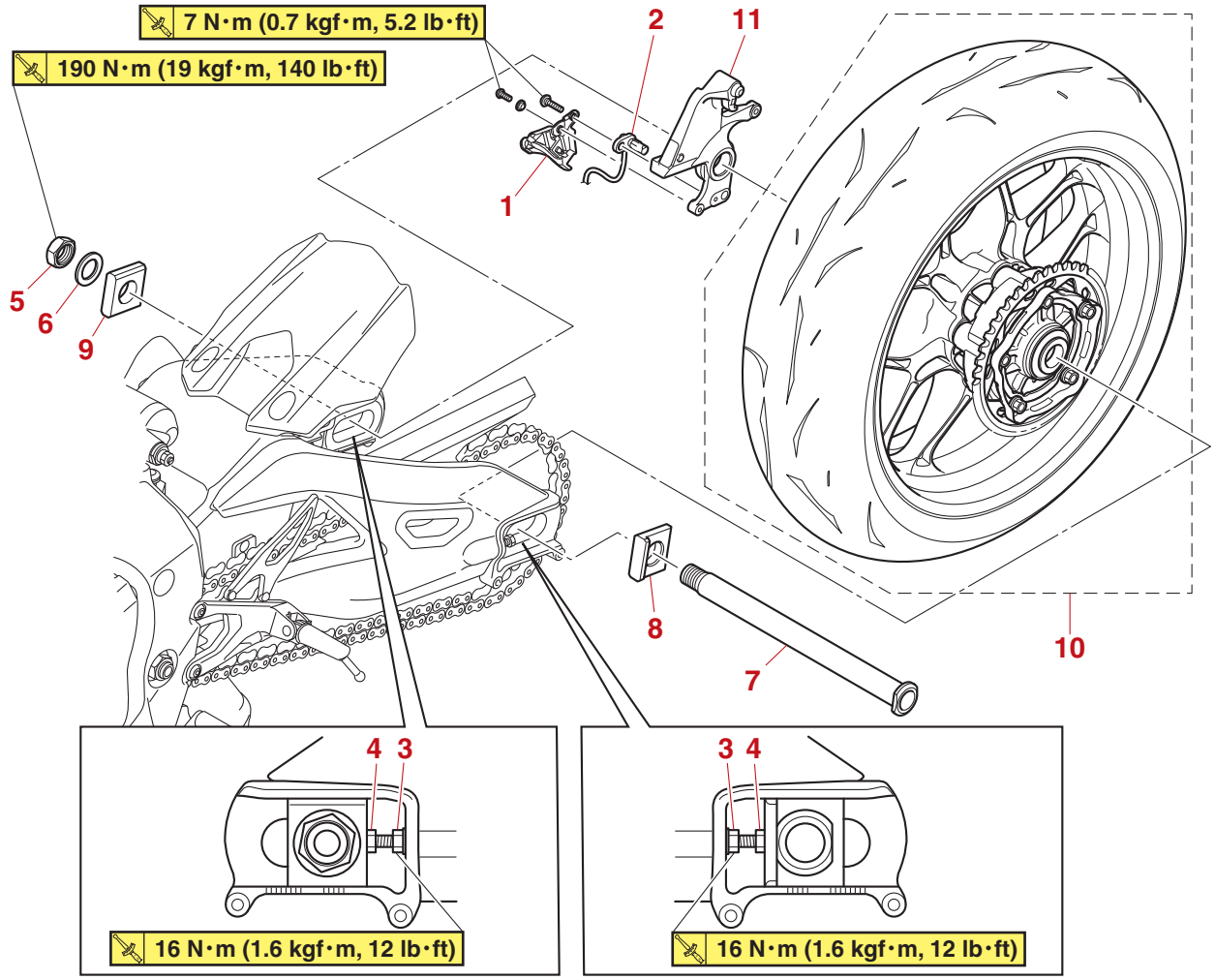
EWA13500
⚠ WARNING

Make sure the brake hose is routed properly.

EAS20029

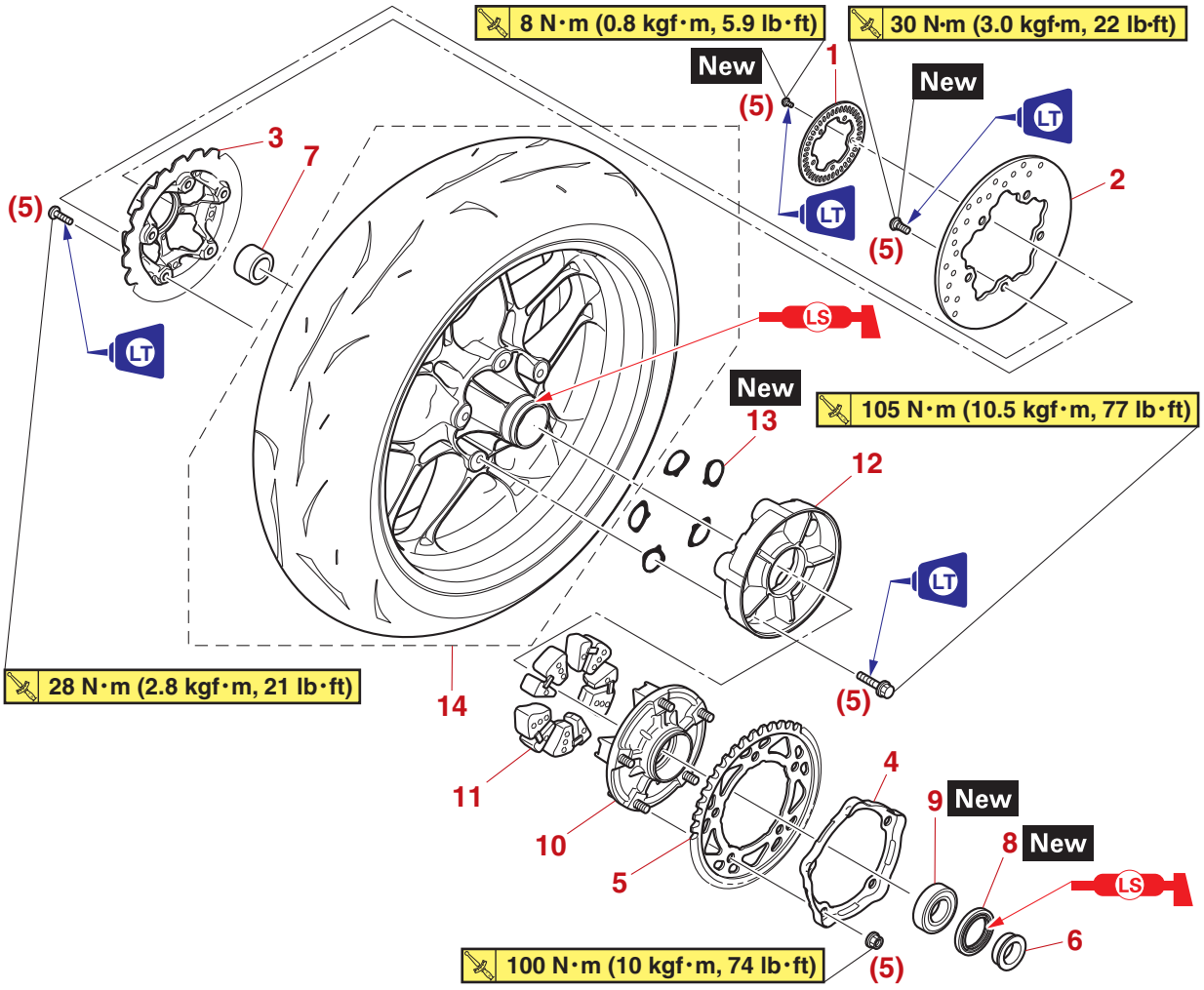
REAR WHEEL

Removing the rear wheel



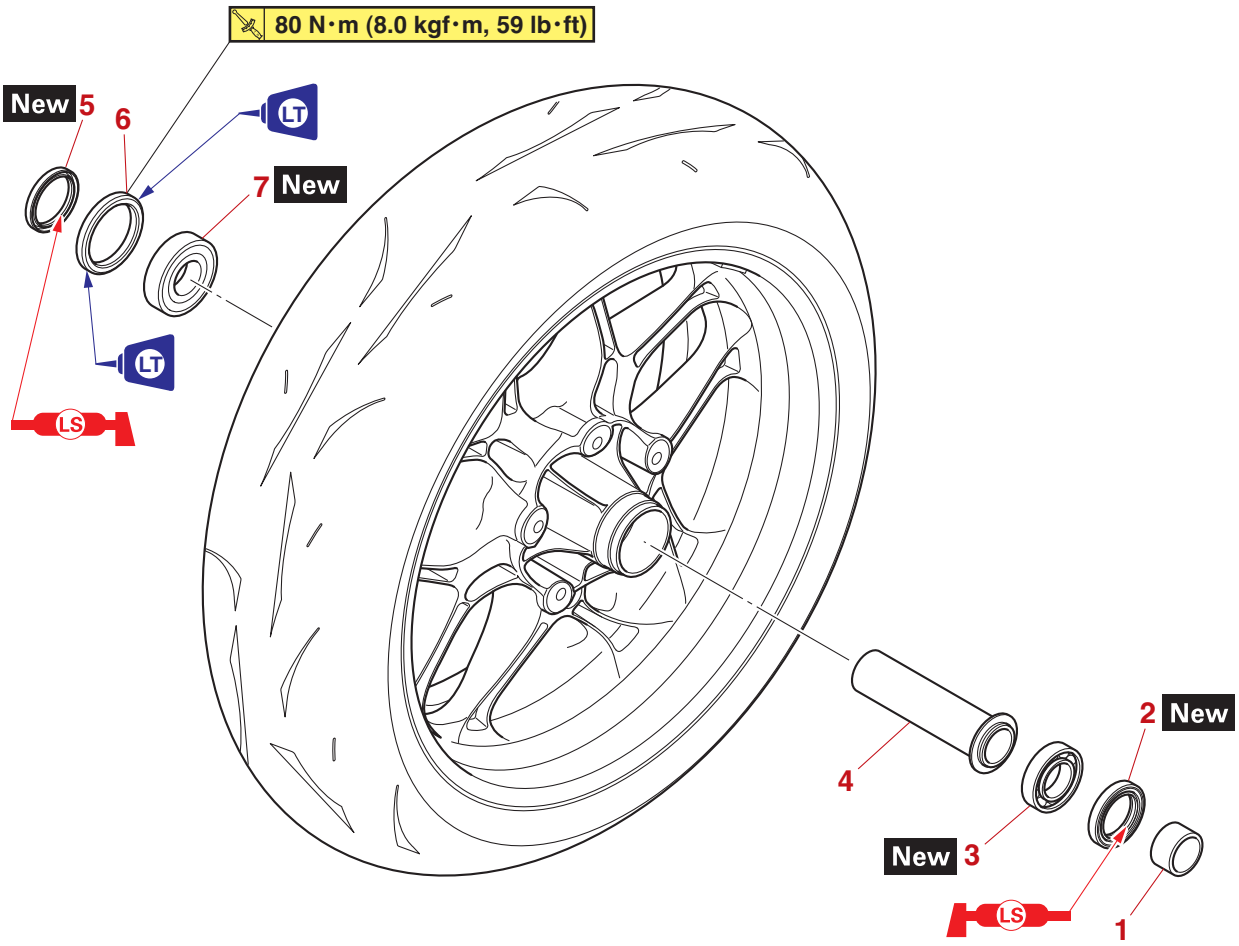
Order	Job/Parts to remove	Q'ty	Remarks
	Rear brake caliper		Refer to "REAR BRAKE" on page 4-63.
1	Rear wheel sensor protector	1	
2	Rear wheel sensor	1	
3	Locknut	2	Loosen.
4	Adjusting bolt	2	Loosen.
5	Rear wheel axle nut	1	
6	Washer	1	
7	Rear wheel axle	1	
8	Adjusting block (left)	1	
9	Adjusting block (right)	1	
10	Rear wheel	1	
11	Brake caliper bracket	1	

Removing the brake disc and rear wheel sprocket



Order	Job/Parts to remove	Q'ty	Remarks
1	Rear wheel sensor rotor	1	
2	Rear brake disc	1	
3	Brake disc carrier	1	
4	Rear wheel sprocket bracket	1	
5	Rear wheel sprocket	1	
6	Collar	1	
7	Collar	1	
8	Oil seal	1	
9	Bearing	1	
10	Rear wheel drive hub 1	1	
11	Rear wheel drive hub damper	5	
12	Rear wheel drive hub 2	1	
13	Gasket	5	
14	Rear wheel	1	

Disassembling the rear wheel



Order	Job/Parts to remove	Q'ty	Remarks
1	Collar	1	
2	Oil seal	1	
3	Wheel bearing	1	
4	Spacer	1	
5	Oil seal	1	
6	Wheel bearing ring nut	1	
7	Wheel bearing	1	

EAS30910
REMOVING THE REAR WHEEL

ECA21030
NOTICE

• Keep any type of magnets (including magnetic pick-up tools, magnetic screwdrivers, etc.) away from the rear wheel sensor or rear wheel sensor rotor; otherwise, the sensor or rotor may be damaged, resulting in improper performance of the ABS system.
• Do not drop the rear wheel sensor rotor or subject it to shocks.
• If any solvent gets on the rear wheel sensor rotor, wipe it off immediately.

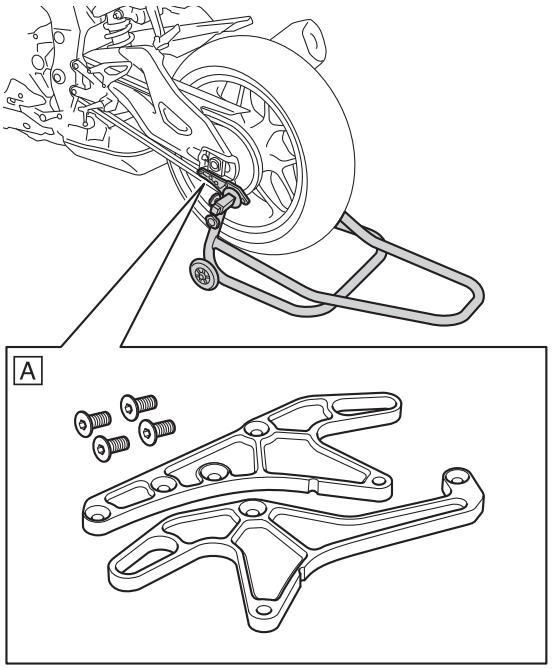
1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

TIP

Place the vehicle on a maintenance stand so that the rear wheel is elevated.



A. Recommended tool
Tool No.: 2CR-271A0-00
Tool name: STAND HOOK M1 Type

2. Remove:
• Rear brake caliper
• Rear wheel sensor protector
• Rear wheel sensor

ECA21040
NOTICE

• Do not depress the brake pedal when removing the brake caliper.
• Be sure not to contact the sensor electrode to any metal part when removing the rear wheel sensor from the rear brake caliper bracket.

3. Loosen:
• Locknuts
• Adjusting bolts
4. Remove:
• Rear wheel axle nut
• Washer
• Rear wheel axle
• Rear wheel
• Brake caliper bracket

ECA21400
NOTICE

Be sure to remove the rear wheel sensor before removing the brake caliper bracket, otherwise the sensor could be damaged.

TIP

Push the rear wheel forward and remove the drive chain from the rear wheel sprocket.

EAS30158
DISASSEMBLING THE REAR WHEEL

ECA21340
NOTICE

• Do not drop the wheel sensor rotor or subject it to shocks.
• If any solvent gets on the wheel sensor rotor, wipe it off immediately.

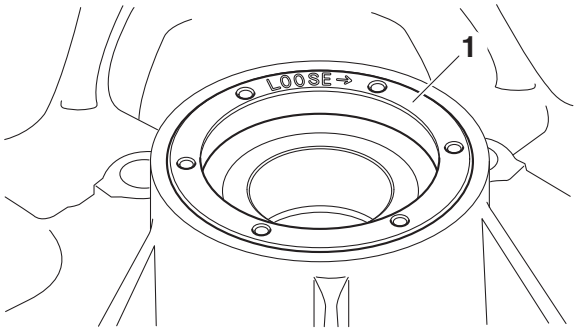
1. Remove:
• Wheel bearing ring nut “1”

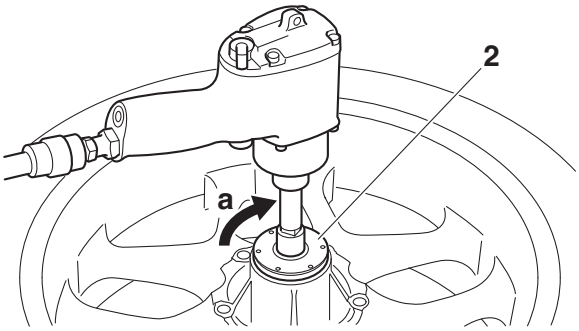
TIP

Use the wheel bearing ring nut tool “2” to remove the wheel bearing ring nut by turning it clockwise “a”.



Wheel bearing ring nut tool
90890-01574
YM-01574



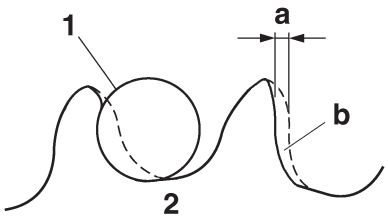


2. Remove:
   - Oil seal
   - Wheel bearings
   Refer to "DISASSEMBLING THE FRONT WHEEL" on page 4-38.

EAS30159
CHECKING THE REAR WHEEL
1. Check:
   - Wheel axle
   - Wheel bearings
   - Oil seals
   Refer to "CHECKING THE FRONT WHEEL" on page 4-38.
2. Check:
   - Tire
   - Rear wheel
   Damage/wear → Replace.
   Refer to "CHECKING THE TIRES" on page 3-17 and "CHECKING THE WHEELS" on page 3-17.
3. Measure:
   - Radial wheel runout
   - Lateral wheel runout
   Refer to "CHECKING THE FRONT WHEEL" on page 4-38.

EAS30160
CHECKING THE REAR WHEEL DRIVE HUB
1. Check:
   - Rear wheel drive hub
   Cracks/damage → Replace.
   - Rear wheel drive hub dampers
   Damage/wear → Replace.

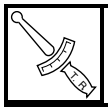
EAS30161
CHECKING AND REPLACING THE REAR WHEEL SPROCKET
1. Check:
   - Rear wheel sprocket
   More than 1/4 tooth "a" wear → Replace the drive sprocket, the rear wheel sprocket and the drive chain as a set.
   Bent teeth → Replace the drive sprocket, the rear wheel sprocket and the drive chain as a set.



G088904

b. Correct
1. Drive chain roller
2. Rear wheel sprocket

2. Replace:
   - Rear wheel sprocket
   a. Remove the rear wheel sprocket nuts, rear wheel sprocket bracket and the rear wheel sprocket.
   b. Clean the rear wheel drive hub with a clean cloth, especially the surfaces that contact the sprocket.
   c. Install the new rear wheel sprocket and rear wheel sprocket bracket.

	**Rear wheel sprocket nut 100 N·m (10 kgf·m, 74 lb·ft)**

TIP

Tighten the rear wheel sprocket nuts in stages and in a crisscross pattern.

EAS33361
CHECKING THE REAR WHEEL SPROCKET BRACKET
1. Check:
   - Rear wheel sprocket bracket
   Cracks/damage → Replace.

EAS30163
ASSEMBLING THE REAR WHEEL

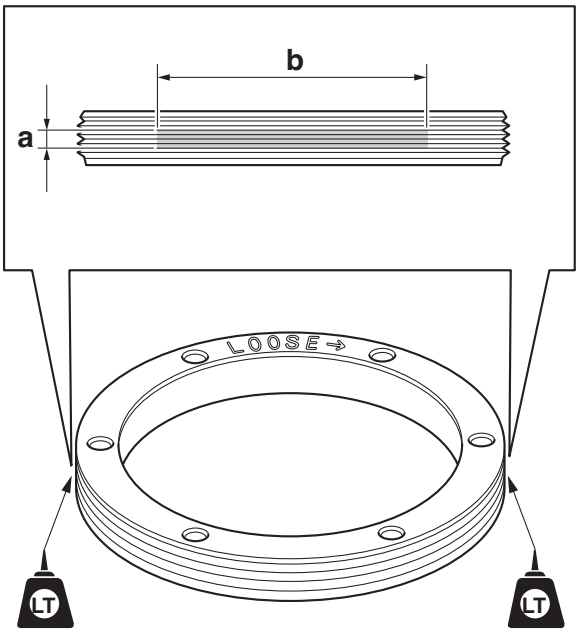
ECA21340
NOTICE

- **Do not drop the wheel sensor rotor or subject it to shocks.**
- **If any solvent gets on the wheel sensor rotor, wipe it off immediately.**

1. Install:
   - Wheel bearings New
   - Oil seal New
   Refer to "ASSEMBLING THE FRONT WHEEL" on page 4-39.
2. Install:
   - Wheel bearing ring nut

TIP

Apply locking agent (LOCTITE®) onto the two symmetric places on the circumference of the threads of the wheel bearing ring nut.



a. Width: two grooves of the threaded portion
b. Length: more than 40 mm (1.57 in)

3. Tighten:
   - Wheel bearing ring nut "1"

TIP

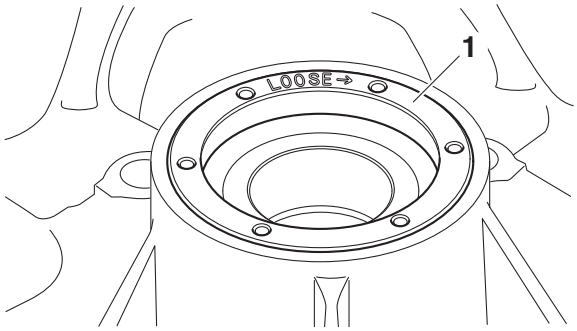
Use the wheel bearing ring nut tool "2" to tighten the wheel bearing ring nut by turning it counterclockwise "a".

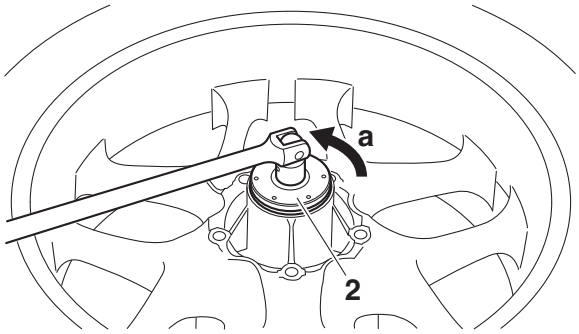


Wheel bearing ring nut tool
90890-01574
YM-01574



Wheel bearing ring nut
80 N·m (8.0 kgf·m, 59 lb·ft)
LOCTITE®

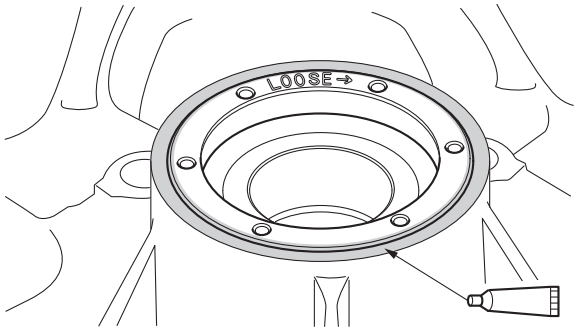


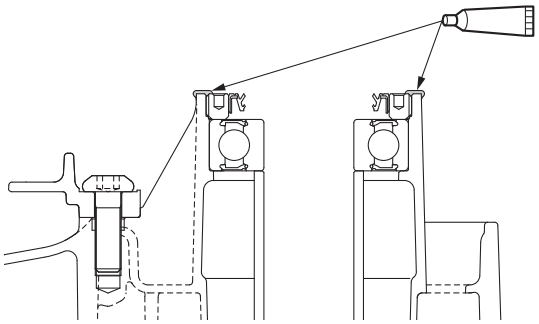


4. Apply:
   - Sealant

TIP

Apply Three Bond No. 1215B® between the wheel bearing ring nut and the wheel surface.





EAS30167
MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR

ECA21060
NOTICE

- **Handle the ABS components with care since they have been accurately adjusted. Keep them away from dirt and do not subject them to shocks.**
- **The rear wheel sensor cannot be disassembled. Do not attempt to disassemble it. If faulty, replace with a new one.**
- **Keep any type of magnets (including magnetic pick-up tools, magnetic screwdrivers, etc.) away from the rear wheel sensor or rear wheel sensor rotor.**
- **Do not drop or shock the wheel sensor or the wheel sensor rotor.**

1. Check:
   - Rear wheel sensor
     Refer to "MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR" on page 4-40.
2. Check:
   - Rear wheel sensor rotor
     Refer to "MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR" on page 4-40.
3. Measure:
   - Wheel sensor rotor runout
     Refer to "MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR" on page 4-40.

EAS30164
ADJUSTING THE REAR WHEEL STATIC BALANCE

TIP

- After replacing the tire, wheel or both, the rear wheel static balance should be adjusted.
- Adjust the rear wheel static balance with the brake disc and rear wheel drive hub installed.
- Be sure to use stick-on type balancing weights.

1. Adjust:
   - Rear wheel static balance
     Refer to "ADJUSTING THE FRONT WHEEL STATIC BALANCE" on page 4-40.

EAS30165
INSTALLING THE REAR WHEEL (DISC BRAKE)

1. Install:
   - Rear brake disc
   - Rear wheel sensor rotor



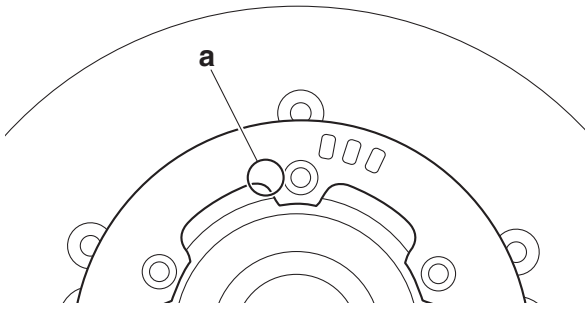
Rear brake disc bolt
30 N·m (3.0 kgf·m, 22 lb·ft)
LOCTITE®
Rear wheel sensor bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)
LOCTITE®

ECA21011
NOTICE

- **Do not drop the wheel sensor rotor or subject it to shocks.**
- **If any solvent gets on the wheel sensor rotor, wipe it off immediately.**
- **Replace the brake disc bolts and wheel sensor rotor bolts with new ones.**

TIP

- Tighten the brake disc bolts in stages and in a crisscross pattern.
- Install the wheel sensor rotor with the stamped mark "a" facing outward.



2. Check:
   - Rear brake disc
     Refer to "CHECKING THE REAR BRAKE DISC" on page 4-68.
3. Lubricate:
   - Oil seal lips

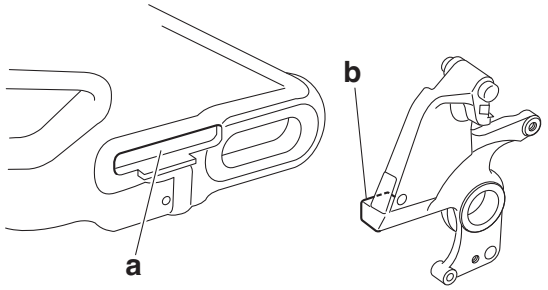


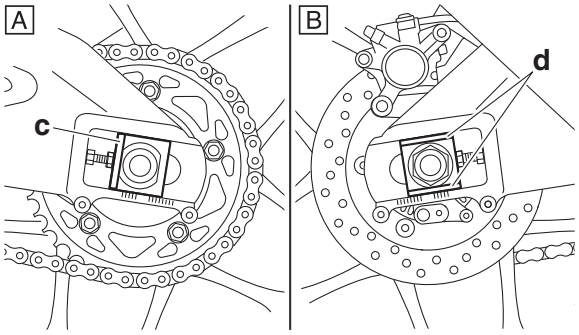
Recommended lubricant
Lithium-soap-based grease

4. Install:
   • Collars
   • Brake caliper bracket
   • Rear wheel
   • Adjusting blocks
   • Rear wheel axle
   • Washer
   • Rear wheel axle nut

TIP

- Do not install the brake caliper.
- Align the slot "a" in the swingarm with the projection "b" of the brake caliper bracket.
- Install the adjusting block (left) so that projection "c" faces to the front of the vehicle.
- Install the adjusting block (right) so that chamfered "d" portions become the top and bottom.





A. Left side
B. Right side

5. Adjust:
   • Drive chain slack
   Refer to "Adjusting the drive chain slack" on page 3-19.

Drive chain slack (When performing maintenance/Maintenance stand)
25.0–35.0 mm (0.98–1.38 in)
Drive chain slack (When replacing with a new one/Maintenance stand)
20.0–30.0 mm (0.79–1.18 in)
Drive chain slack limit (Maintenance stand)
35.0 mm (1.38 in)

6. Tighten:
   • Rear wheel axle nut
   • Rear brake caliper bolts

Rear wheel axle nut
190 N·m (19 kgf·m, 140 lb·ft)
Rear brake caliper bolt (front)
27 N·m (2.7 kgf·m, 20 lb·ft)
Rear brake caliper bolt (rear)
12 N·m (1.2 kgf·m, 8.9 lb·ft)
LOCTITE®

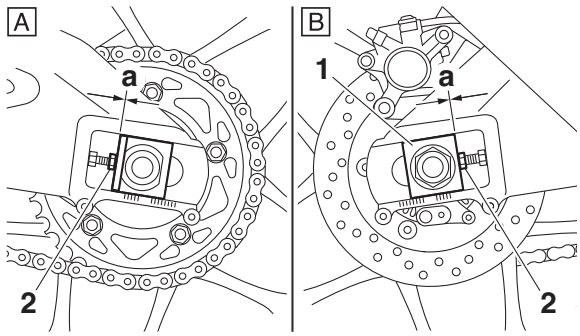
EWA13500

WARNING

Make sure the brake hose is routed properly.

TIP

When tightening the wheel axle nut, there should be no clearance "a" between the adjusting block "1" and adjusting bolt "2".



A. Left side
B. Right side

7. Install:
   • Rear wheel sensor
   • Rear wheel sensor protector

Rear wheel sensor bolt
7 N·m (0.7 kgf·m, 5.2 lb·ft)
Rear wheel sensor protector bolt
7 N·m (0.7 kgf·m, 5.2 lb·ft)

ECA21080

NOTICE

Make sure there are no foreign materials in the rear wheel sensor rotor and rear wheel sensor. Foreign materials cause damage to the rear wheel sensor rotor and rear wheel sensor.

TIP

When installing the rear wheel sensor, check the rear wheel sensor lead for twists.

8. Measure:
   - Distance “a”
     (between the rear wheel sensor rotor “1” and rear wheel sensor “2”)
     Out of specification → Check the wheel bearing for looseness, and the rear wheel sensor and sensor rotor installation conditions (warpage caused by overtorque, wrong installation direction, rotor decentering, LOCTITE® on the mounting surface of the rotor, deformation caused by an impact during service and caught foreign materials). If there is any defective part, repair or replace the defective part.



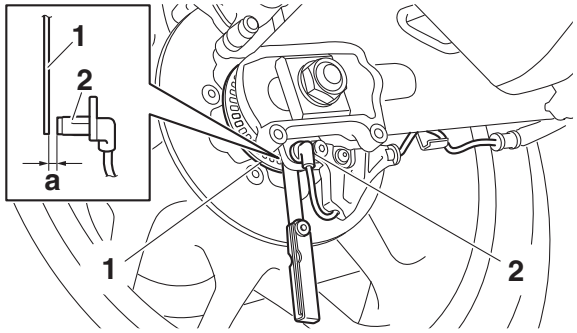
Distance “a” (between the rear wheel sensor rotor and rear wheel sensor)
1.3–2.1 mm (0.051–0.083 in)

TIP

Measure the distance between the rear wheel sensor rotor and rear wheel sensor in several places in one rotation of the rear wheel. Do not turn the rear wheel while the thickness gauge is installed. This may damage the rear wheel sensor rotor and the rear wheel sensor.

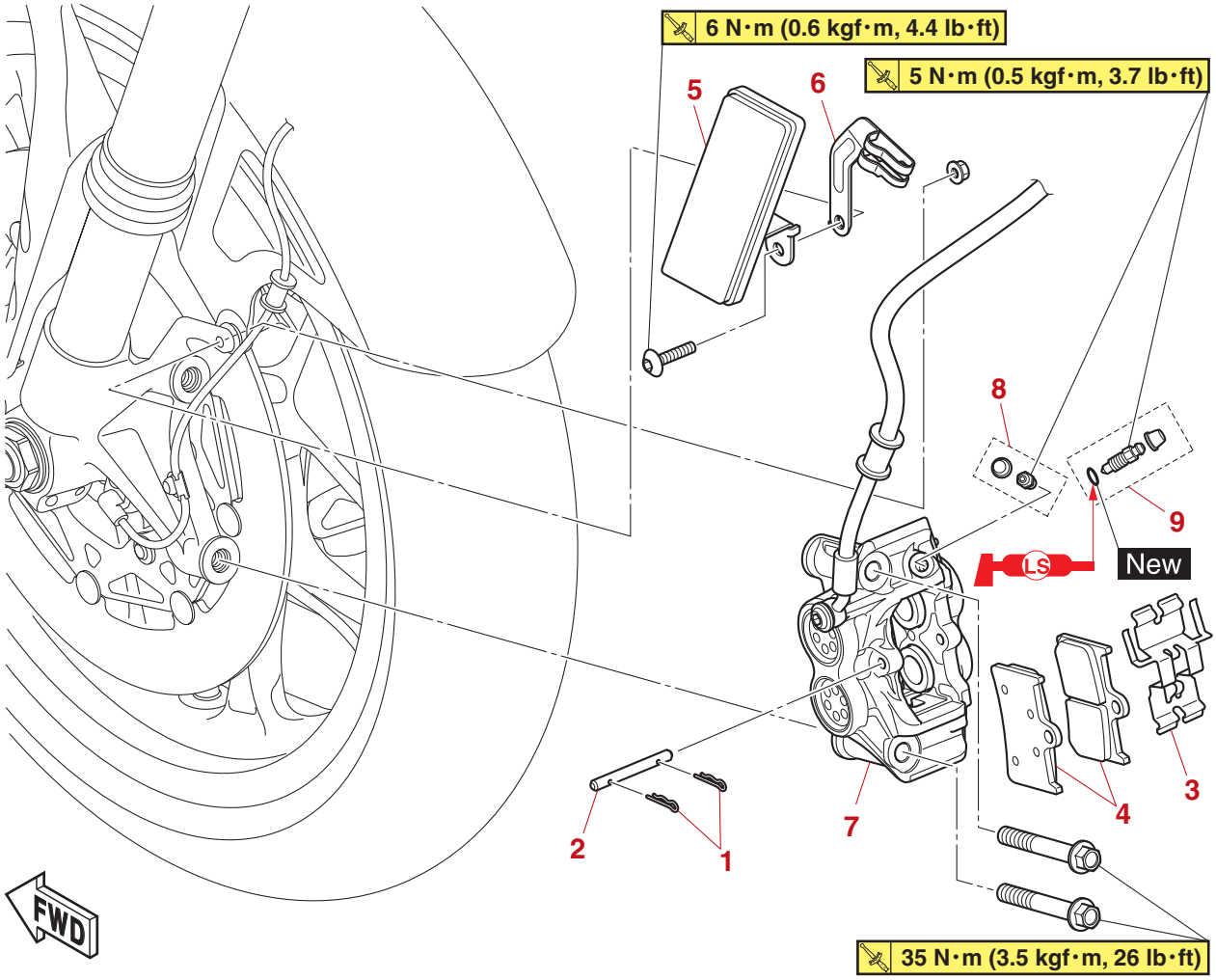


Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9



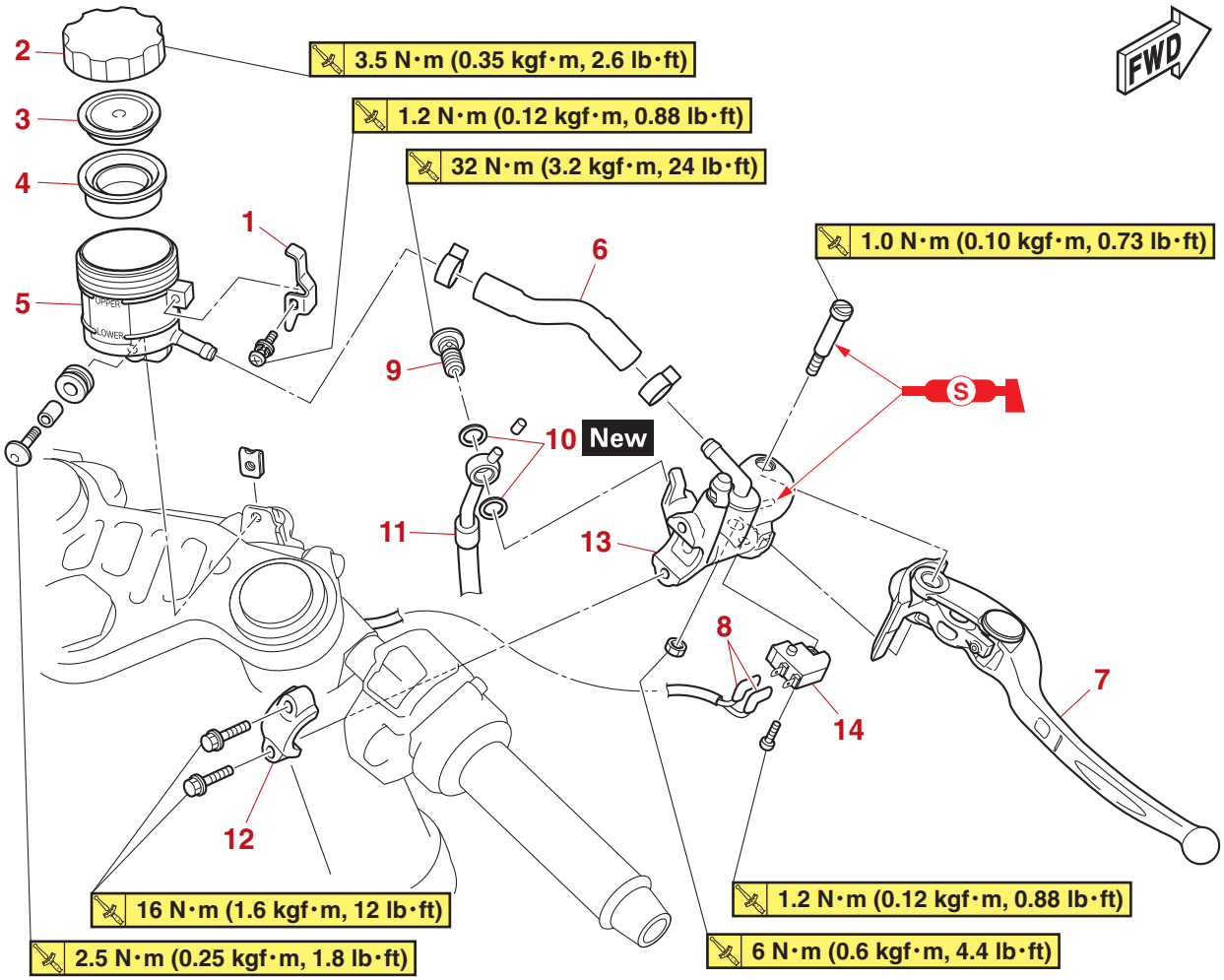
EAS20030
FRONT BRAKE

Removing the front brake pads



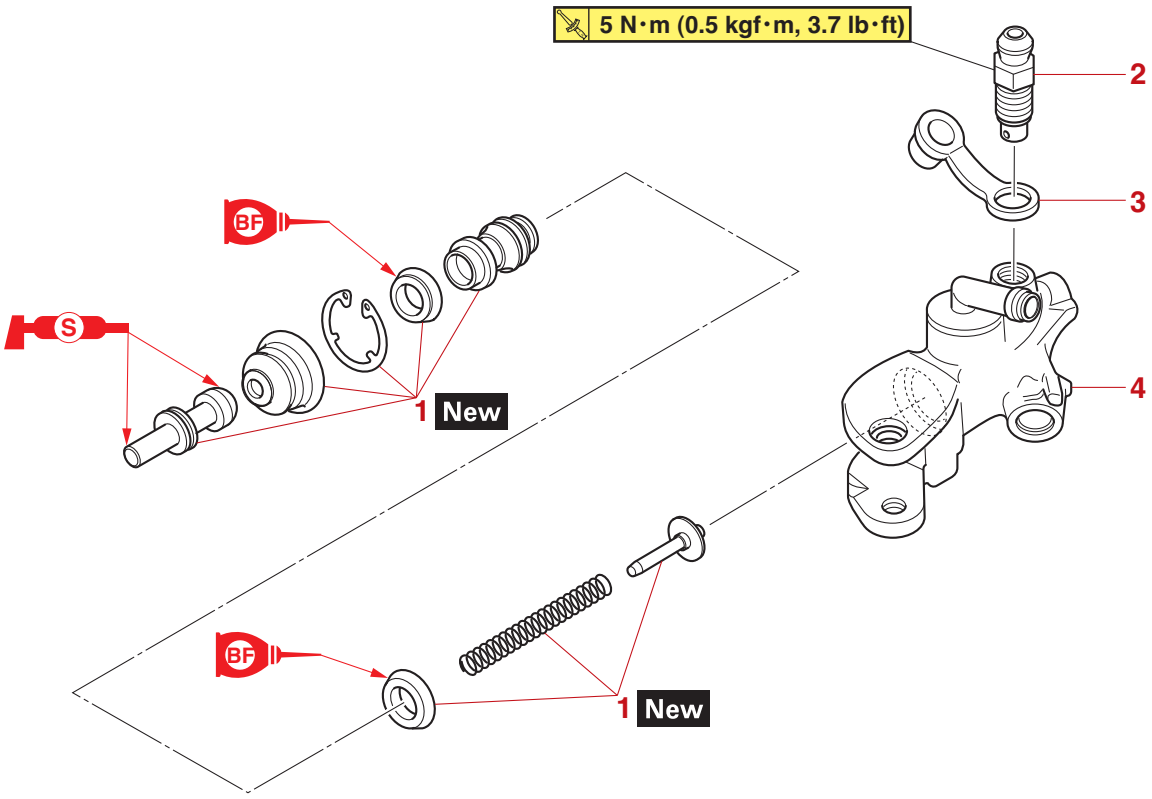
Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front brake calipers.
1	Brake pad clip	2	
2	Brake pad pin	1	
3	Brake pad spring	1	
4	Brake pad	2	
5	Reflector	1	
6	Front brake hose holder	1	
7	Front brake caliper	1	
8	Bleed screw	1	
9	Bleed screw	1	Right brake caliper side.

Removing the front brake master cylinder



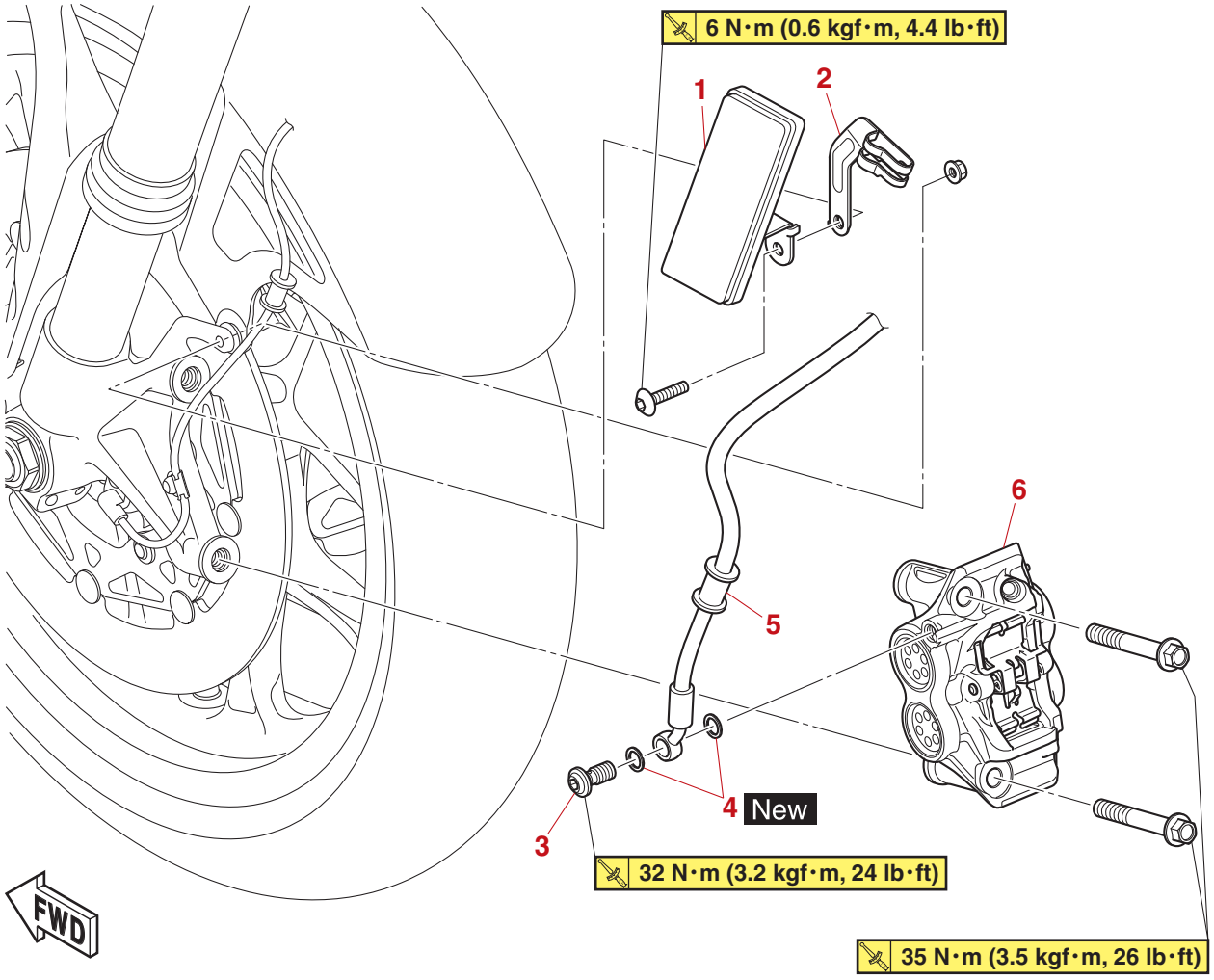
Order	Job/Parts to remove	Q'ty	Remarks
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
1	Brake fluid reservoir cap stopper	1	
2	Brake fluid reservoir cap	1	
3	Brake fluid reservoir diaphragm holder	1	
4	Brake fluid reservoir diaphragm	1	
5	Brake fluid reservoir	1	
6	Brake fluid reservoir hose	1	
7	Brake lever	1	
8	Front brake light switch lead connector	2	Disconnect.
9	Brake hose union bolt	1	
10	Brake hose gasket	2	
11	Brake hose	1	
12	Front brake master cylinder holder	1	
13	Front brake master cylinder	1	
14	Front brake light switch	1	

Disassembling the front brake master cylinder



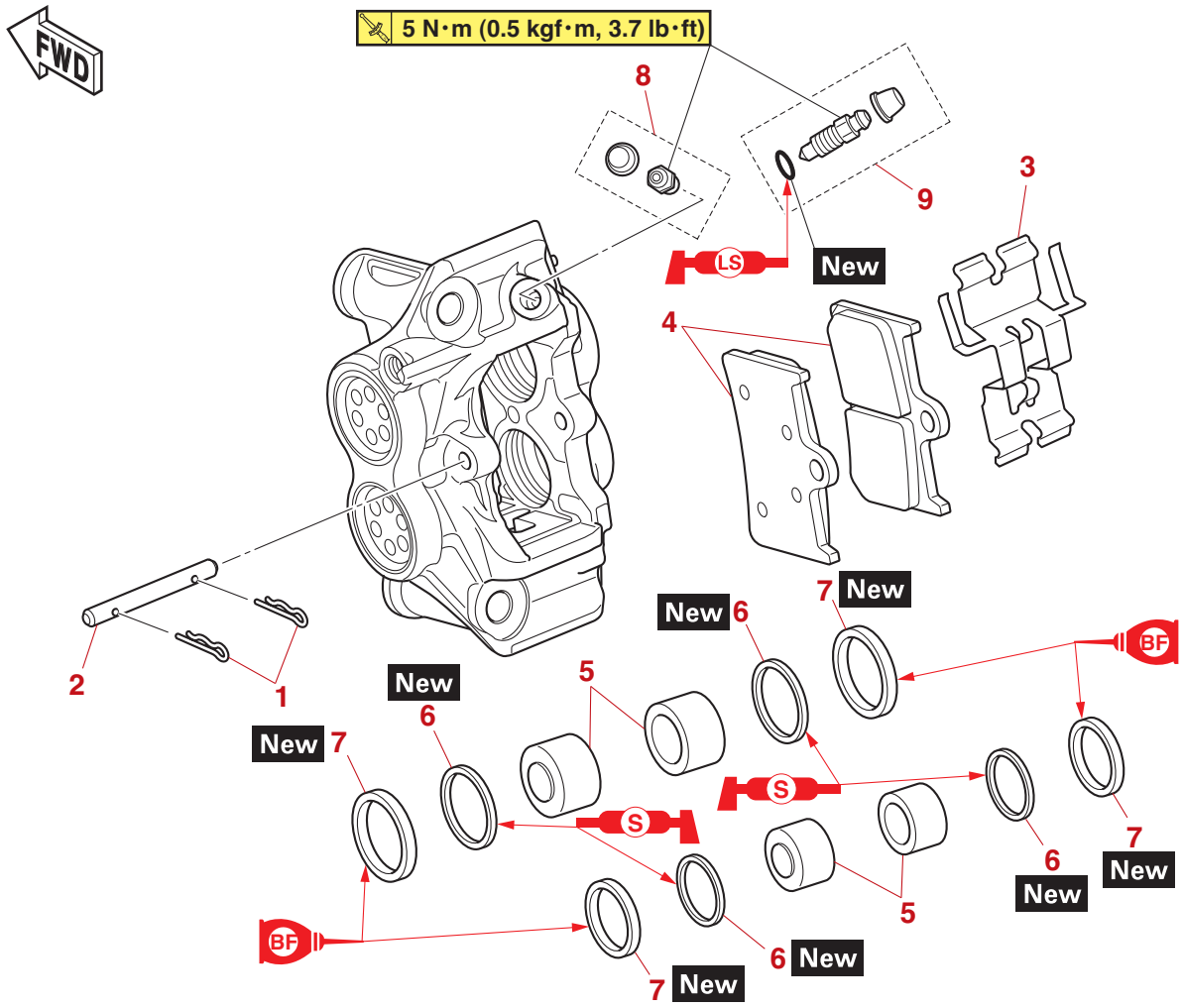
Order	Job/Parts to remove	Q'ty	Remarks
1	Brake master cylinder kit	1	
2	Bleed screw	1	
3	Cap	1	
4	Brake master cylinder body	1	

Removing the front brake calipers



Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front brake calipers.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
1	Reflector	1	
2	Front brake hose holder	1	
3	Brake hose union bolt	1	
4	Brake hose gasket	2	
5	Brake hose	1	
6	Front brake caliper	1	

Disassembling the front brake calipers



Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front brake calipers.
1	Brake pad clip	2	
2	Brake pad pin	1	
3	Brake pad spring	1	
4	Brake pad	2	
5	Brake caliper piston	4	
6	Brake caliper piston dust seal	4	
7	Brake caliper piston seal	4	
8	Bleed screw	1	
9	Bleed screw	1	Right brake caliper side.

EAS30168
INTRODUCTION

EWA14101
⚠ WARNING

Disc brake components rarely require disassembly. Therefore, always follow these preventive measures:
- **Never disassemble brake components unless absolutely necessary.**
- **If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal brake components.**
- **Use only clean or new brake fluid for cleaning brake components.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Avoid brake fluid coming into contact with the eyes as it can cause serious injury.**

FIRST AID FOR BRAKE FLUID ENTERING THE EYES:
- **Flush with water for 15 minutes and get immediate medical attention.**

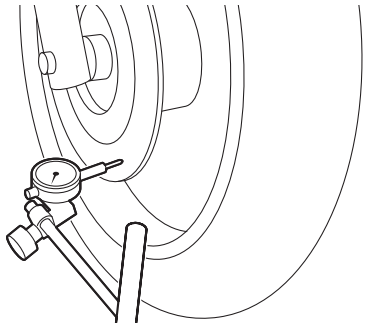
EAS30169
CHECKING THE FRONT BRAKE DISCS

The following procedure applies to both brake discs.

1. Check:
   - Front brake disc
     Damage/galling → Replace.
2. Measure:
   - Brake disc runout
     Out of specification → Correct the brake disc runout or replace the brake disc.

Brake disc runout limit (as measured on wheel)
0.10 mm (0.0039 in)

   a. Place the vehicle on a maintenance stand so that the front wheel is elevated.
   b. Remove the brake caliper.
   c. Hold the dial gauge at a right angle against the brake disc surface.
   d. Measure the runout 1.5 mm (0.06 in) below the edge of the brake disc.



G098641

3. Measure:
   - Brake disc thickness
     Measure the brake disc thickness at a few different locations.
     Out of specification → Replace.

Brake disc thickness limit
4.5 mm (0.18 in)

4. Adjust:
   - Brake disc runout
     a. Remove the brake disc.
     b. Rotate the brake disc by one bolt hole.
     c. Install the brake disc.

Front brake disc bolt
17 N·m (1.7 kgf·m, 13 lb·ft)
LOCTITE®

ECA19150
NOTICE

Replace the brake disc bolts with new ones.

TIP

Tighten the brake disc bolts in stages and in a crisscross pattern.

   d. Measure the brake disc runout.
   e. If out of specification, repeat the adjustment steps until the brake disc runout is within specification.
   f. If the brake disc runout cannot be brought within specification, replace the brake disc.

EAS30170
REPLACING THE FRONT BRAKE PADS

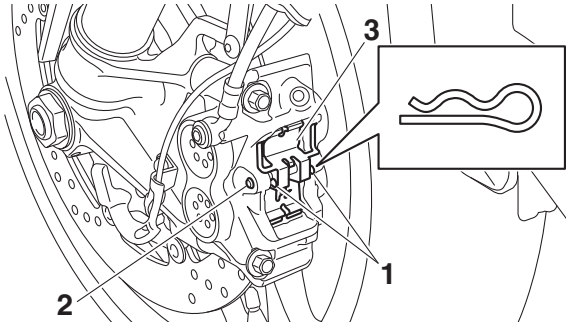
The following procedure applies to both brake calipers.

TIP

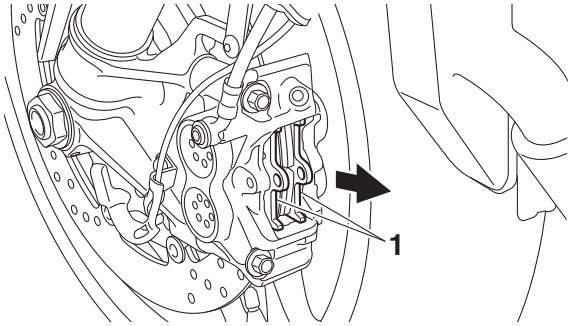
When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Remove:
   - Brake pad clips “1”

- Brake pad pin “2”
- Brake pad spring “3”

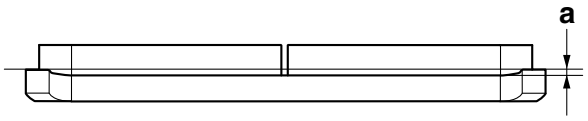


2. Remove:
   - Brake pads “1”



3. Measure:
   - Brake pad wear limit “a”
     Out of specification → Replace the brake pads as a set.

	Brake pad lining thickness limit 0.5 mm (0.02 in)

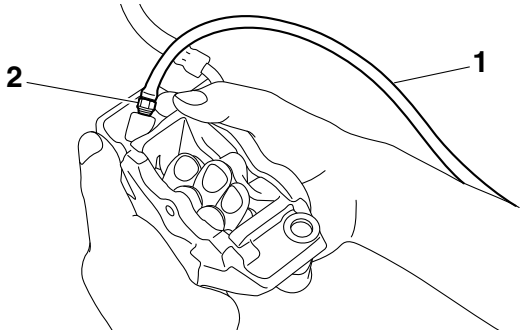


4. Remove:
   - Brake caliper
5. Install:
   - Brake pads
   - Brake pad spring

TIP

Always install new brake pads and new brake pad spring as a set.

a. Connect a clear plastic hose “1” tightly to the bleed screw “2”. Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper pistons into the brake caliper with your finger.



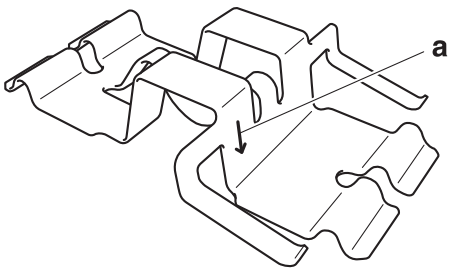
c. Tighten the bleed screw.

	Brake caliper bleed screw 5 N·m (0.5 kgf·m, 3.7 lb·ft)

d. Install the brake pads and brake pad spring.

TIP

The arrow mark “a” on the brake pad spring must point in the direction of disc rotation.



6. Install:
   - Brake pad pin
   - Brake pad clips
   - Front brake caliper

	Front brake caliper bolt 35 N·m (3.5 kgf·m, 26 lb·ft)

7. Check:
   - Brake fluid level
     Below the minimum level mark → Add the specified brake fluid to the proper level.
     Refer to “CHECKING THE BRAKE FLUID LEVEL” on page 3-13.

8. Check:
   • Brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.

EAS30171
REMOVING THE FRONT BRAKE CALIPERS
The following procedure applies to both of the brake calipers.

TIP

Before removing the brake caliper, drain the brake fluid from the entire brake system.

1. Remove:
   • Brake hose union bolts
   • Brake hose gaskets
   • Brake hoses

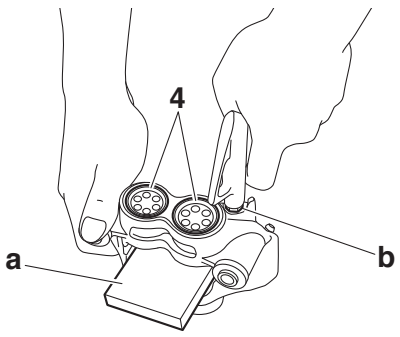
TIP

Put the end of the brake hose into a container and pump out the brake fluid carefully.

EAS30172
DISASSEMBLING THE FRONT BRAKE CALIPERS
The following procedure applies to both of the brake calipers.
1. Remove:
   • Brake caliper pistons
   • Brake caliper piston dust seals
   • Brake caliper piston seals
   a. Secure the right side brake caliper pistons with a piece of wood "a".
   b. Blow compressed air into the brake hose joint opening "b" to force out the left side pistons from the brake caliper.

EWA17060
WARNING

• Never try to pry out the brake caliper pistons.
• Do not loosen the bolts "4".



   c. Remove the brake caliper piston dust seals and brake caliper piston seals.
   d. Repeat the previous steps to force out the right side pistons from the brake caliper.

EAS30173
CHECKING THE FRONT BRAKE CALIPERS
The following procedure applies to both of the brake calipers.

Recommended brake component replacement schedule	
Brake pads	If necessary
Piston seals	Every two years
Piston dust seals	Every two years
Brake hoses	Every four years
Brake fluid	Every two years and whenever the brake is disassembled

1. Check:
   • Brake caliper pistons
   Rust/scratches/wear → Replace the brake caliper pistons.
   • Brake caliper cylinders
   Scratches/wear → Replace the brake caliper assembly.
   • Brake caliper body
   Cracks/damage → Replace the brake caliper assembly.
   • Brake fluid delivery passages (brake caliper body)
   Obstruction → Blow out with compressed air.

EWA13611
WARNING

Whenever a brake caliper is disassembled, replace the brake caliper piston dust seals and brake caliper piston seals.

EAS30174
ASSEMBLING THE FRONT BRAKE CALIPERS
EWA16560
WARNING

• Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.
• Never use solvents on internal brake components as they will cause the brake caliper piston dust seals and brake caliper piston seals to swell and distort.
• Whenever a brake caliper is disassembled, replace the brake caliper piston dust seals and brake caliper piston seals.

Specified brake fluid
DOT 4

EAS30175
INSTALLING THE FRONT BRAKE CALIPERS

The following procedure applies to both of the brake calipers.

1. Install:
   - Front brake caliper "1" (temporarily)
   - Brake hose gaskets New
   - Brake hoses "2"
   - Brake hose union bolts "3"

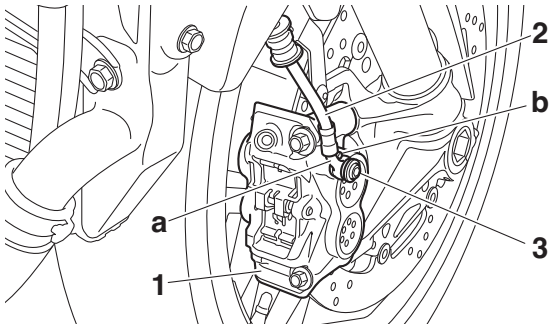
Front brake hose union bolt
32 N·m (3.2 kgf·m, 24 lb·ft)

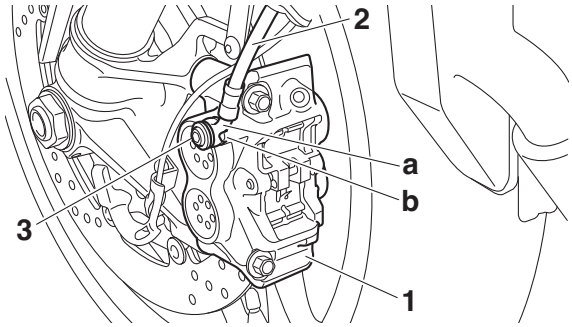
EWA13531
⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation.

ECA14170
NOTICE

When installing the brake hose onto the brake caliper "1", make sure the brake pipe "a" touches the projection "b" on the brake caliper.





2. Remove:
   - Front brake caliper
3. Install:
   - Brake pads
   - Brake pad spring
   - Brake pad pin
   - Brake pad clips
   - Front brake caliper

Front brake caliper bolt
35 N·m (3.5 kgf·m, 26 lb·ft)

Refer to "REPLACING THE FRONT BRAKE PADS" on page 4-57.

4. Fill:
   - Brake master cylinder reservoir (with the specified amount of the specified brake fluid)

Specified brake fluid
DOT 4

EWA13090
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540
NOTICE

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

5. Bleed:
   - Brake system
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
6. Check:
   - Brake fluid level
     Below the minimum level mark → Add the specified brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-13.
7. Check:
   - Brake lever operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.

EAS30179
REMOVING THE FRONT BRAKE MASTER CYLINDER

TIP

Before removing the front brake master cylinder, drain the brake fluid from the entire brake system.

1. Disconnect:
   - Brake light switch connectors (from the front brake light switch)
2. Remove:
   - Brake hose union bolt
   - Brake hose gaskets
   - Brake hose

TIP

To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

EAS30725
CHECKING THE FRONT BRAKE MASTER CYLINDER

1. Check:
   - Brake master cylinder
     Damage/scratches/wear → Replace.
   - Brake fluid delivery passages (brake master cylinder body)
     Obstruction → Blow out with compressed air.
2. Check:
   - Brake master cylinder kit
     Damage/scratches/wear → Replace.
3. Check:
   - Brake fluid reservoir
   - Brake fluid reservoir diaphragm holder
     Cracks/damage → Replace.
   - Brake fluid reservoir diaphragm
     Damage/wear → Replace.
4. Check:
   - Brake hoses
     Cracks/damage/wear → Replace.

EAS30181
ASSEMBLING THE FRONT BRAKE MASTER CYLINDER

EWA13520

WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components.**

Specified brake fluid
DOT 4

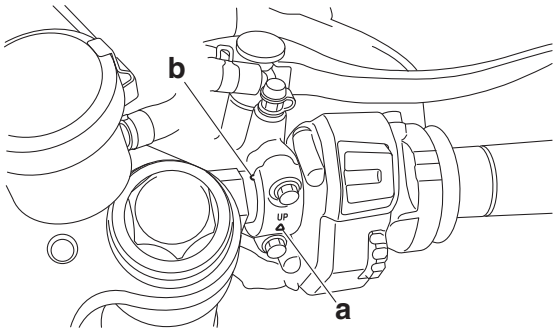
EAS30182
INSTALLING THE FRONT BRAKE MASTER CYLINDER

1. Install:
   - Front brake master cylinder
   - Front brake master cylinder holder

Front brake master cylinder holder bolt
16 N·m (1.6 kgf·m, 12 lb·ft)

TIP

- Install the front brake master cylinder holder with the “UP” mark “a” facing up.
- Align the end of the front brake master cylinder with the punch mark “b” on the handlebar.
- First, tighten the upper bolt, then the lower bolt.



2. Install:
   - Brake hose gaskets New
   - Brake hose
   - Brake hose union bolt

Front brake hose union bolt
32 N·m (3.2 kgf·m, 24 lb·ft)

EWA13531

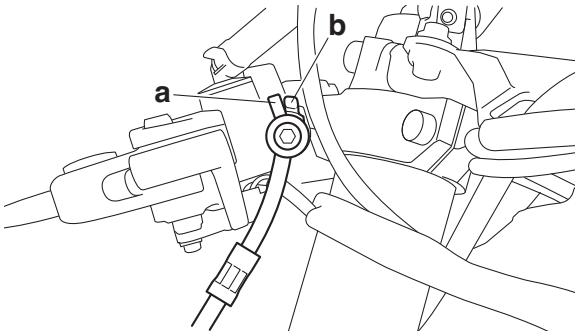
WARNING

Proper brake hose routing is essential to insure safe vehicle operation.

TIP

- When installing the brake hose onto the master cylinder, make sure the projection “a” on the brake hose touches the projection “b” on the master cylinder.
- While holding the brake hose, tighten the union bolt as shown.

• Turn the handlebars to the left and right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.



3. Fill:
   • Brake master cylinder reservoir
   (with the specified amount of the specified brake fluid)

Specified brake fluid
DOT 4

EWA13540

⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540

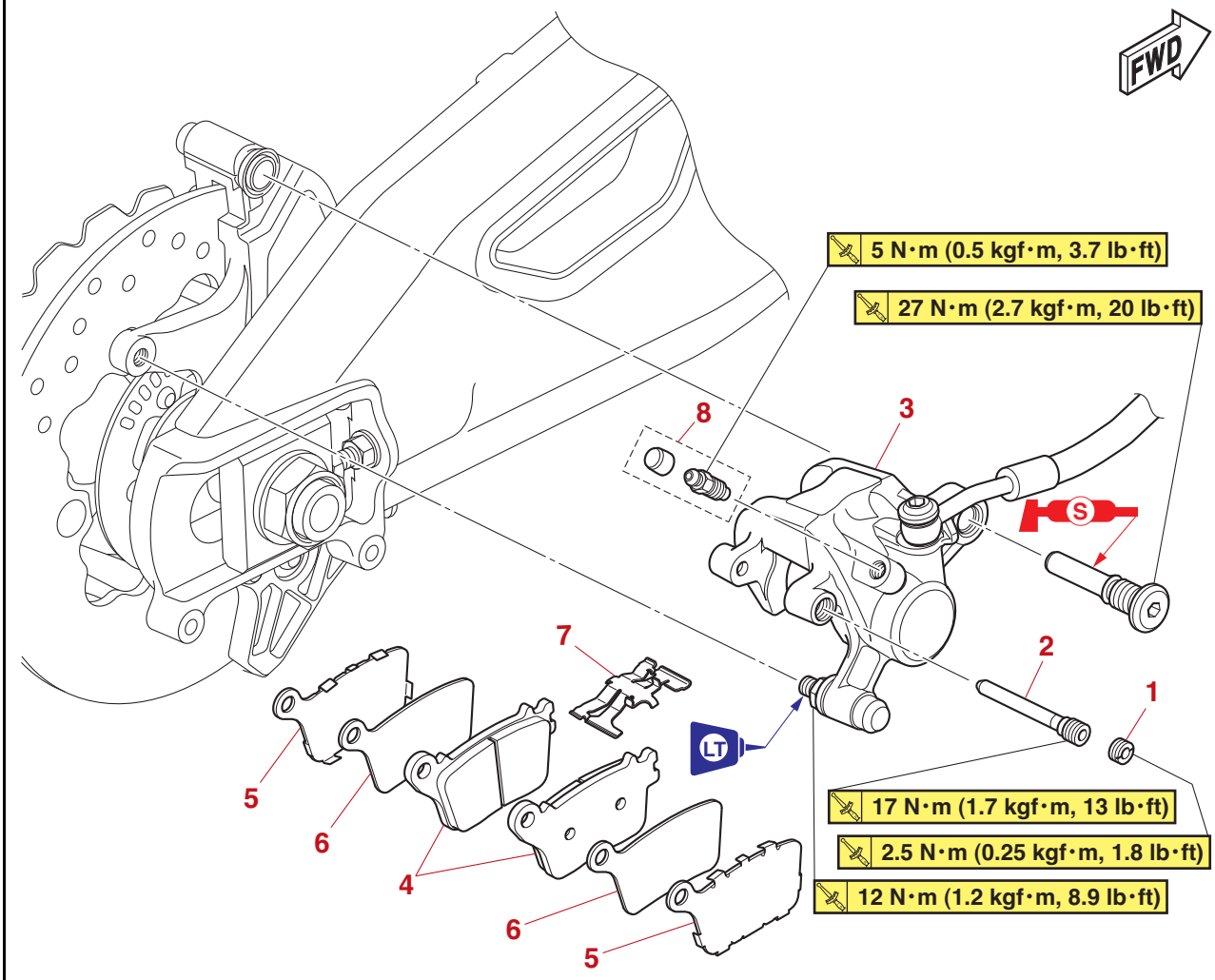
NOTICE

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

4. Bleed:
   • Brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
5. Check:
   • Brake fluid level
   Below the minimum level mark → Add the specified brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-13.
6. Check:
   • Brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.

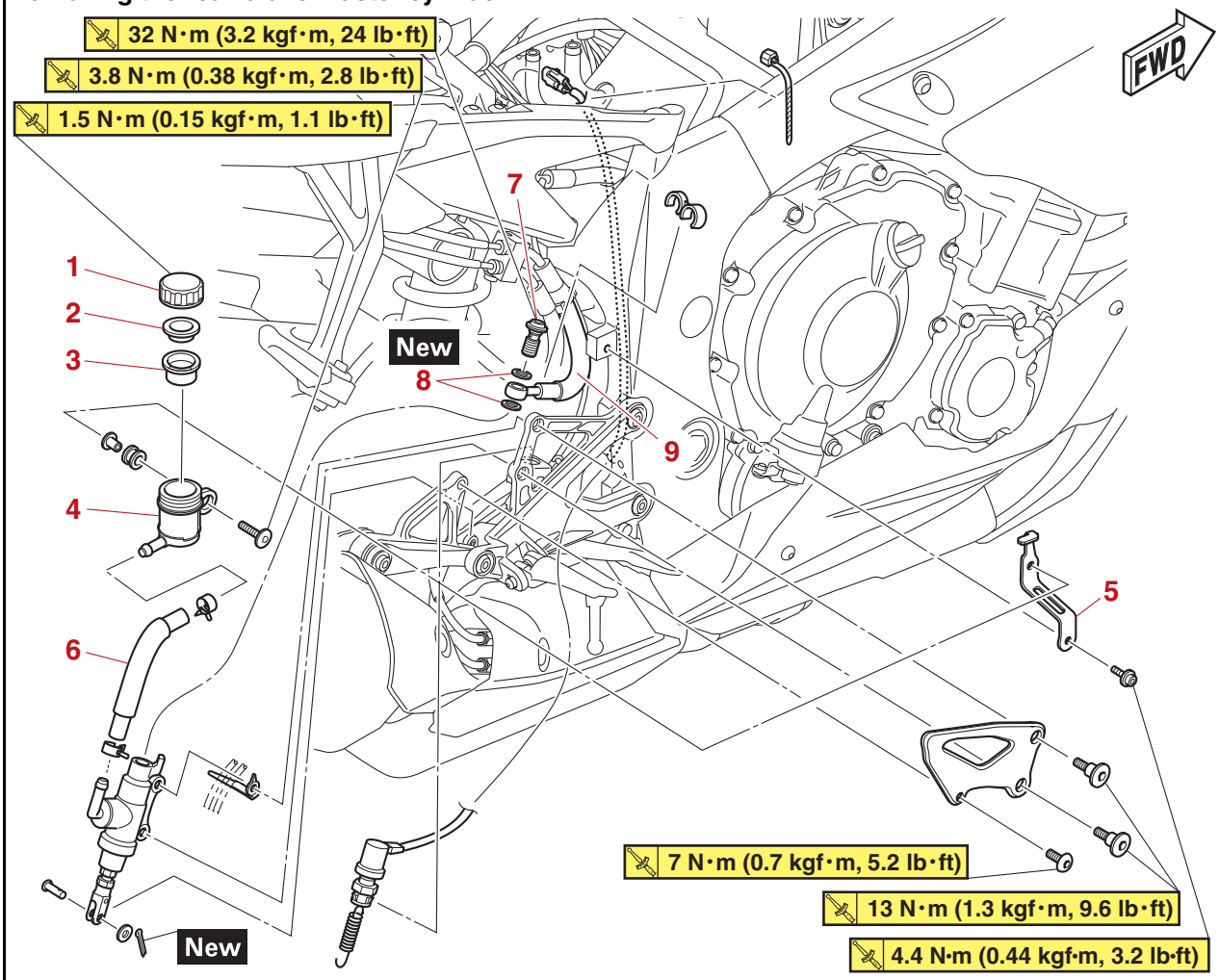
EAS20031
REAR BRAKE

Removing the rear brake pads



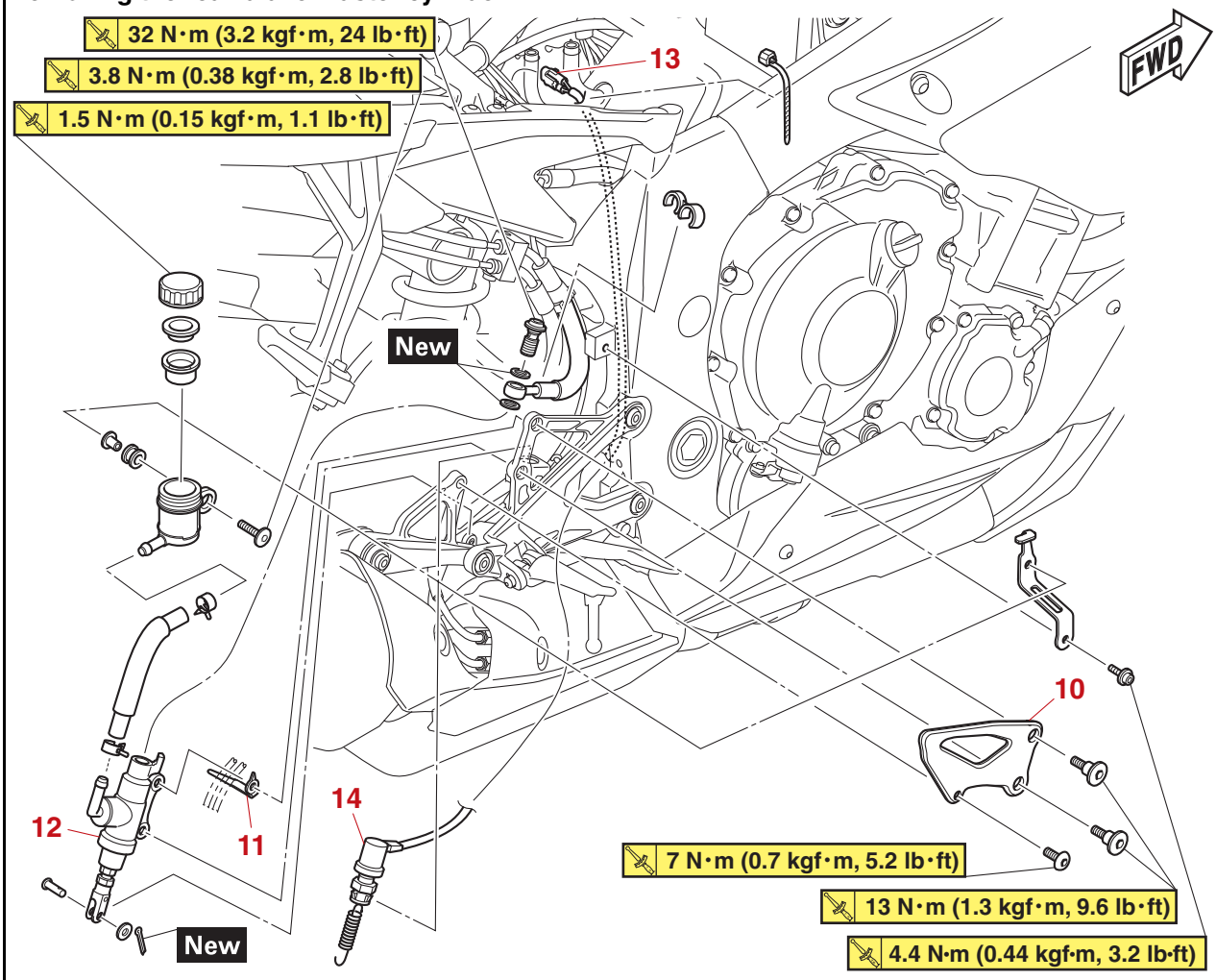
Order	Job/Parts to remove	Q'ty	Remarks
1	Screw plug	1	
2	Brake pad retaining bolt	1	
3	Rear brake caliper	1	
4	Brake pad	2	
5	Brake pad shim	2	
6	Brake pad insulator	2	
7	Brake pad spring	1	
8	Bleed screw	1	

Removing the rear brake master cylinder



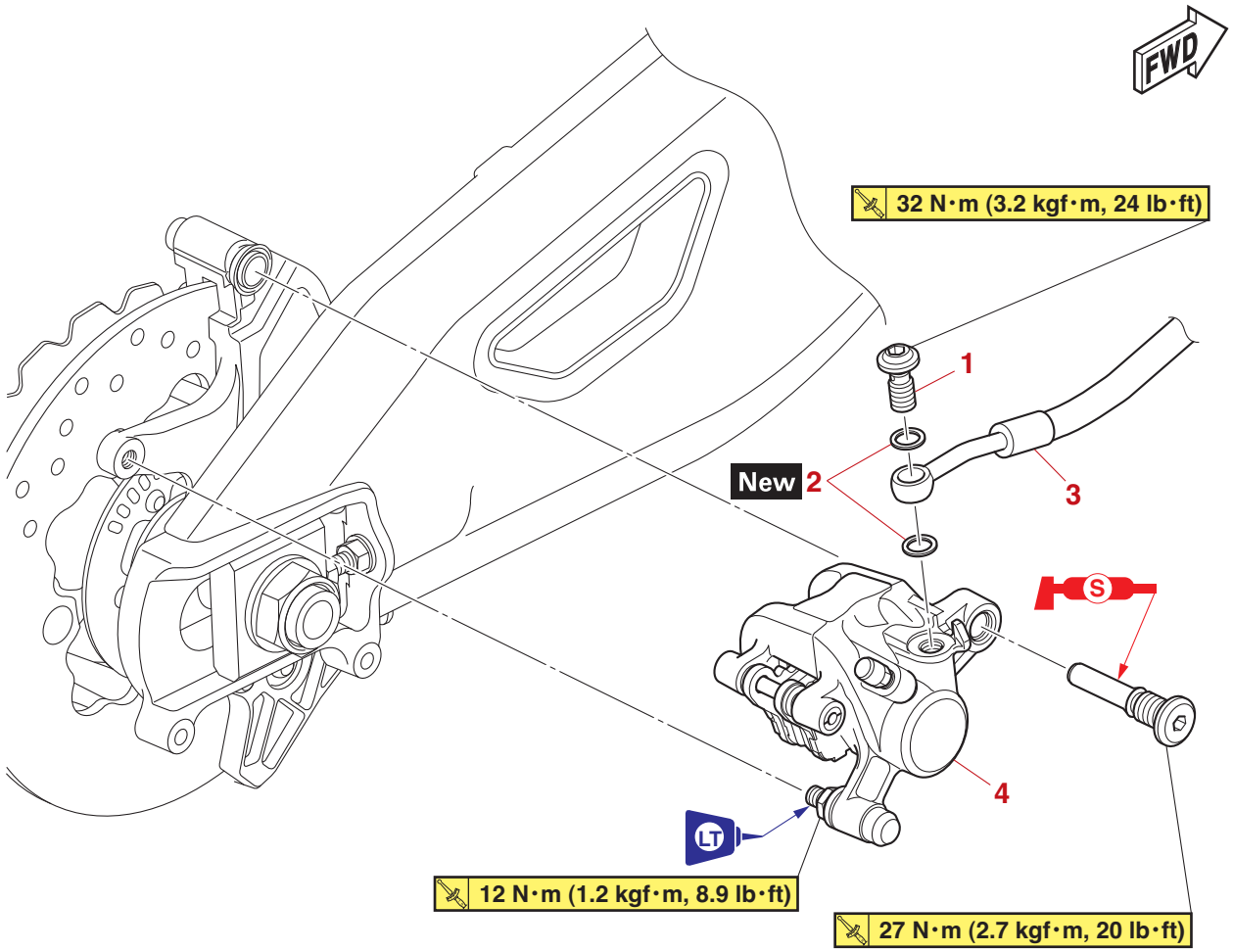
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
1	Brake fluid reservoir cap	1	
2	Brake fluid reservoir diaphragm holder	1	
3	Brake fluid reservoir diaphragm	1	
4	Brake fluid reservoir	1	
5	Brake fluid reservoir bracket	1	
6	Brake fluid reservoir hose	1	
7	Brake hose union bolt	1	
8	Brake hose gasket	2	
9	Brake hose	1	

Removing the rear brake master cylinder



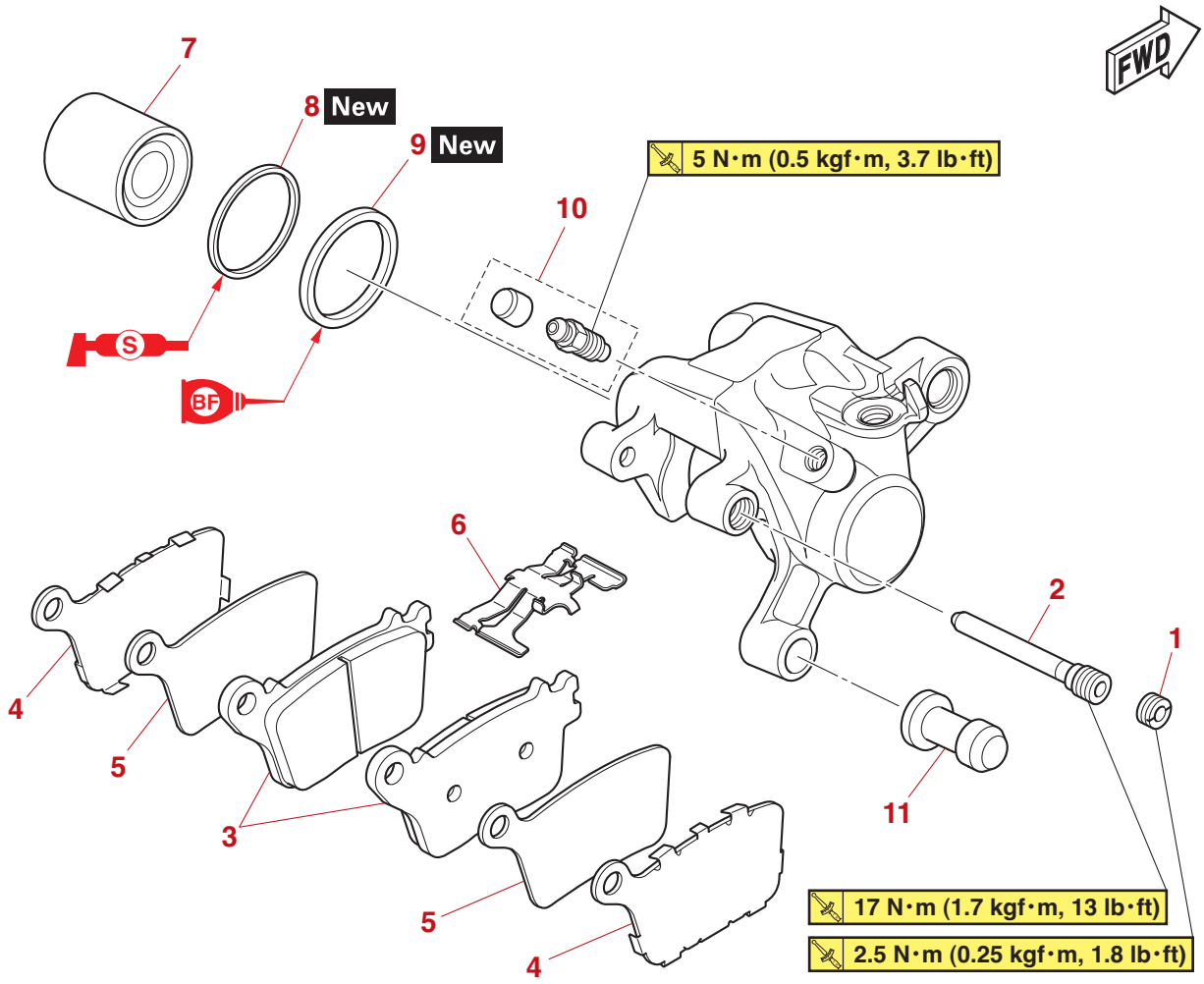
Order	Job/Parts to remove	Q'ty	Remarks
10	Footrest plate	1	
11	Cable guide	1	
12	Rear brake master cylinder assembly	1	Do not disassemble the rear brake master cylinder assembly.
13	Rear brake light switch coupler	1	Disconnect.
14	Rear brake light switch	1	

Removing the rear brake caliper



Order	Job/Parts to remove	Q'ty	Remarks
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
1	Brake hose union bolt	1	
2	Brake hose gasket	2	
3	Brake hose	1	
4	Rear brake caliper	1	

Disassembling the rear brake caliper



Order	Job/Parts to remove	Q'ty	Remarks
1	Screw plug	1	
2	Brake pad retaining bolt	1	
3	Brake pad	2	
4	Brake pad shim	2	
5	Brake pad insulator	2	
6	Brake pad spring	1	
7	Brake caliper piston	1	
8	Brake caliper piston dust seal	1	
9	Brake caliper piston seal	1	
10	Bleed screw	1	
11	Caliper bolt boot	1	

EAS30183
INTRODUCTION

EWA14101
⚠ WARNING

Disc brake components rarely require disassembly. Therefore, always follow these preventive measures:
- **Never disassemble brake components unless absolutely necessary.**
- **If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal brake components.**
- **Use only clean or new brake fluid for cleaning brake components.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Avoid brake fluid coming into contact with the eyes as it can cause serious injury.**

FIRST AID FOR BRAKE FLUID ENTERING THE EYES:
- **Flush with water for 15 minutes and get immediate medical attention.**

EAS30184
CHECKING THE REAR BRAKE DISC

1. Check:
   - Rear brake disc
     Damage/galling → Replace.
2. Measure:
   - Brake disc runout
     Out of specification → Correct the brake disc runout or replace the brake disc.
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.



Brake disc runout limit (as measured on wheel)
0.15 mm (0.0059 in)

3. Measure:
   - Brake disc thickness
     Measure the brake disc thickness at a few different locations.
     Out of specification → Replace.
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.



Brake disc thickness limit
4.5 mm (0.18 in)

4. Adjust:
   - Brake disc runout
     Refer to "CHECKING THE FRONT BRAKE DISCS" on page 4-57.



Rear brake disc bolt
27 N·m (2.7 kgf·m, 20 lb·ft)
LOCTITE®

EAS30185
REPLACING THE REAR BRAKE PADS

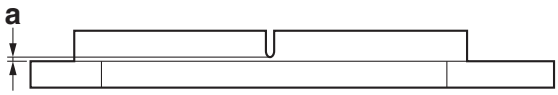
TIP

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.

1. Measure:
   - Brake pad wear limit "a"
     Out of specification → Replace the brake pads as a set.



Brake pad lining thickness limit
1.0 mm (0.04 in)

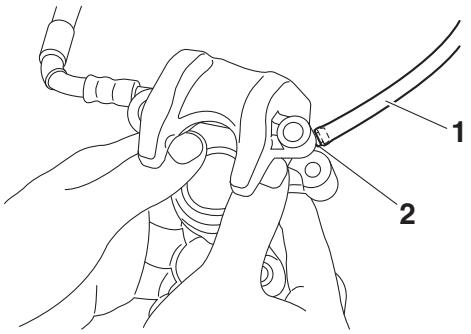


2. Install:
   - Brake pad insulators
   - Brake pad shims
     (onto the brake pads)
   - Brake pad spring
     (into the rear brake caliper)
   - Brake pads

TIP

Always install new brake pads, brake pad insulators, brake pad shims, and brake pad spring as a set.

a. Connect a clear plastic hose "1" tightly to the bleed screw "2". Put the other end of the hose into an open container.
b. Loosen the bleed screw and push the brake caliper piston into the brake caliper with your finger.



c. Tighten the bleed screw.

Brake caliper bleed screw
5 N·m (0.5 kgf·m, 3.7 lb·ft)

d. Install the brake pad insulators and brake pad shims onto each brake pads.

TIP

Apply silicone grease between the brake pad insulator and brake pad shim.

ECA14150

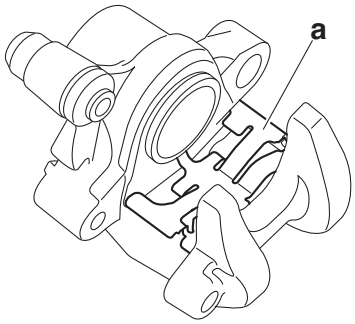
NOTICE

- **Do not allow grease to contact the brake pads.**
- **Remove any excess grease.**

e. Install the brake pads and brake pad spring.

TIP

The longer tangs "a" of the brake pad spring must point in the direction of the brake caliper piston.



3. Lubricate:
   - Rear brake caliper bolts

Recommended lubricant
Silicone grease

ECA14150

NOTICE

- **Do not allow grease to contact the brake pads.**
- **Remove any excess grease.**

4. Install:
   - Rear brake caliper
   - Brake pad retaining bolts
   - Screw plug

Rear brake caliper bolt (front)
27 N·m (2.7 kgf·m, 20 lb·ft)
Rear brake caliper bolt (rear)
12 N·m (1.2 kgf·m, 8.9 lb·ft)
LOCTITE®
Rear brake pad retaining bolt
17 N·m (1.7 kgf·m, 13 lb·ft)
Rear brake caliper screw plug
2.5 N·m (0.25 kgf·m, 1.8 lb·ft)

5. Check:
   - Brake fluid level
     Below the minimum level mark → Add the specified brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-13.
6. Check:
   - Brake pedal operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.

EAS30186

REMOVING THE REAR BRAKE CALIPER

TIP

Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

1. Remove:
   - Brake hose union bolt
   - Brake hose gaskets
   - Brake hose

TIP

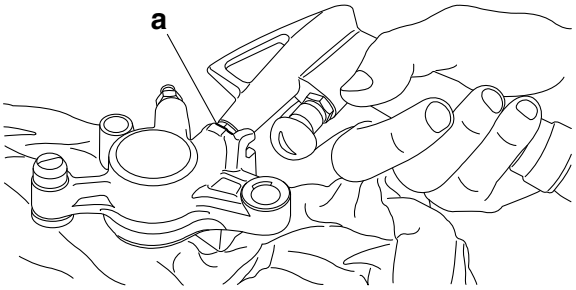
Put the end of the brake hose into a container and pump out the brake fluid carefully.

EAS30187

DISASSEMBLING THE REAR BRAKE CALIPER

1. Remove:
   - Brake caliper piston
   - Brake caliper piston dust seal
   - Brake caliper piston seal
   a. Blow compressed air into the brake hose joint opening "a" to force out the piston from the brake caliper.

EWA13550
WARNING
- **Cover the brake caliper piston with a rag. Be careful not to get injured when the piston is expelled from the brake caliper.**
- **Never try to pry out the brake caliper piston.**



b. Remove the brake caliper piston dust seal and brake caliper piston seal.

EAS30188
CHECKING THE REAR BRAKE CALIPER

Recommended brake component replacement schedule	
Brake pads	If necessary
Piston seal	Every two years
Piston dust seal	Every two years
Brake hoses	Every four years
Brake fluid	Every two years and whenever the brake is disassembled

1. Check:
   - Brake caliper piston
     Rust/scratches/wear → Replace the brake caliper piston.
   - Brake caliper cylinder
     Scratches/wear → Replace the brake caliper assembly.
   - Brake caliper body
     Cracks/damage → Replace the brake caliper assembly.
   - Brake fluid delivery passages (brake caliper body)
     Obstruction → Blow out with compressed air.

EWA13601
WARNING
Whenever a brake caliper is disassembled, replace the brake caliper piston dust seal and brake caliper piston seal.

2. Check:
   - Rear brake caliper bracket
     Cracks/damage → Replace.
     Refer to “REAR WHEEL” on page 4-43.

EAS30189
ASSEMBLING THE REAR BRAKE CALIPER

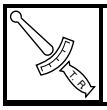
EWA17080
WARNING
- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the brake caliper piston dust seal and brake caliper piston seal to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper piston dust seal and brake caliper piston seal.**



Specified brake fluid
DOT 4

EAS30190
INSTALLING THE REAR BRAKE CALIPER

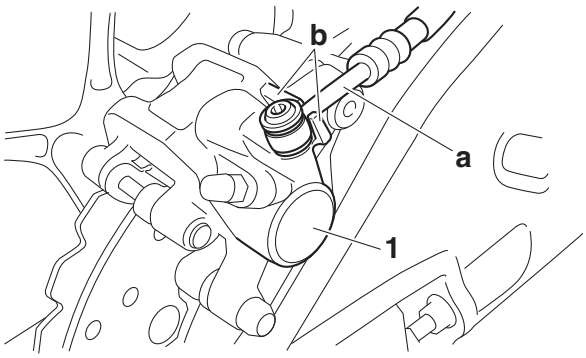
1. Install:
   - Rear brake caliper (temporarily)
   - Brake hose gaskets New
   - Brake hose
   - Brake hose union bolt



Rear brake hose union bolt
32 N·m (3.2 kgf·m, 24 lb·ft)

EWA13531
WARNING
Proper brake hose routing is essential to insure safe vehicle operation.

ECA19080
NOTICE
When installing the brake hose onto the brake caliper “1”, make sure the brake pipe “a” passes between the projections “b” on the brake caliper.



2. Remove:
   • Rear brake caliper
3. Install:
   • Brake pad insulators
   • Brake pad shims
   (onto the brake pads)
   • Brake pad spring
   (into the rear brake caliper)
   • Brake pads
   • Rear brake caliper
   Refer to "REPLACING THE REAR BRAKE PADS" on page 4-68.

Rear brake caliper bolt (front)
27 N·m (2.7 kgf·m, 20 lb·ft)
Rear brake caliper bolt (rear)
12 N·m (1.2 kgf·m, 8.9 lb·ft)
LOCTITE®
Rear brake pad retaining bolt
17 N·m (1.7 kgf·m, 13 lb·ft)
Rear brake caliper screw plug
2.5 N·m (0.25 kgf·m, 1.8 lb·ft)

4. Fill:
   • Brake fluid reservoir
   (with the specified amount of the specified brake fluid)

Specified brake fluid
DOT 4

EWA13090

WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540

NOTICE

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

5. Bleed:
   • Brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
6. Check:
   • Brake fluid level
   Below the minimum level mark → Add the specified brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-13.
7. Check:
   • Brake pedal operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.

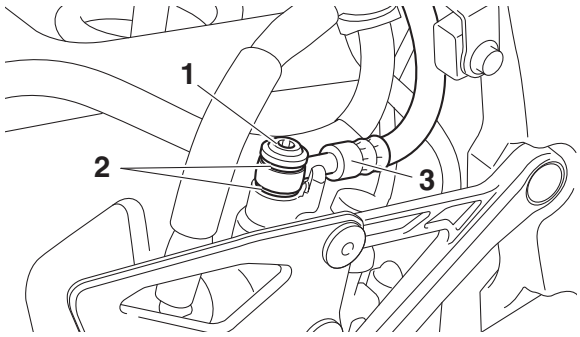
EAS30193

REMOVING THE REAR BRAKE MASTER CYLINDER

1. Remove:
   • Brake hose union bolt "1"
   • Brake hose gaskets "2"
   • Brake hose "3"

TIP

To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.



EAS30194
CHECKING THE REAR BRAKE MASTER CYLINDER

1. Check:
   - Brake master cylinder
     Damage/scratches/wear → Replace.
   - Brake fluid delivery passages
     (brake master cylinder body)
     Obstruction → Blow out with compressed air.
2. Check:
   - Brake fluid reservoir
   - Brake fluid reservoir diaphragm holder
     Cracks/damage → Replace.
   - Brake fluid reservoir diaphragm
     Damage/wear → Replace.
3. Check:
   - Brake hose
   - Brake fluid reservoir hose
     Cracks/damage/wear → Replace.

EAS31743
THE REAR BRAKE MASTER CYLINDER

ECA23000
NOTICE

Do not disassemble the rear brake master cylinder. If the master cylinder malfunctions, replace the rear brake master cylinder assembly.

EAS30196
INSTALLING THE REAR BRAKE MASTER CYLINDER

1. Install:
   - Brake hose gaskets New
   - Brake hose
   - Brake fluid reservoir hose
   - Brake hose union bolt

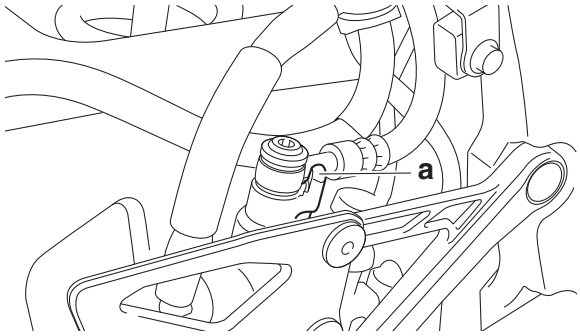
Rear brake hose union bolt
32 N·m (3.2 kgf·m, 24 lb·ft)

EWA13531
⚠ WARNING

Proper brake hose routing is essential to insure safe vehicle operation.

ECA14160
NOTICE

When installing the brake hose onto the brake master cylinder, make sure the brake pipe touches the projection "a" as shown.



2. Fill:
   - Brake fluid reservoir
     (with the specified amount of the specified brake fluid)

Specified brake fluid
DOT 4

EWA13090
⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540
NOTICE

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

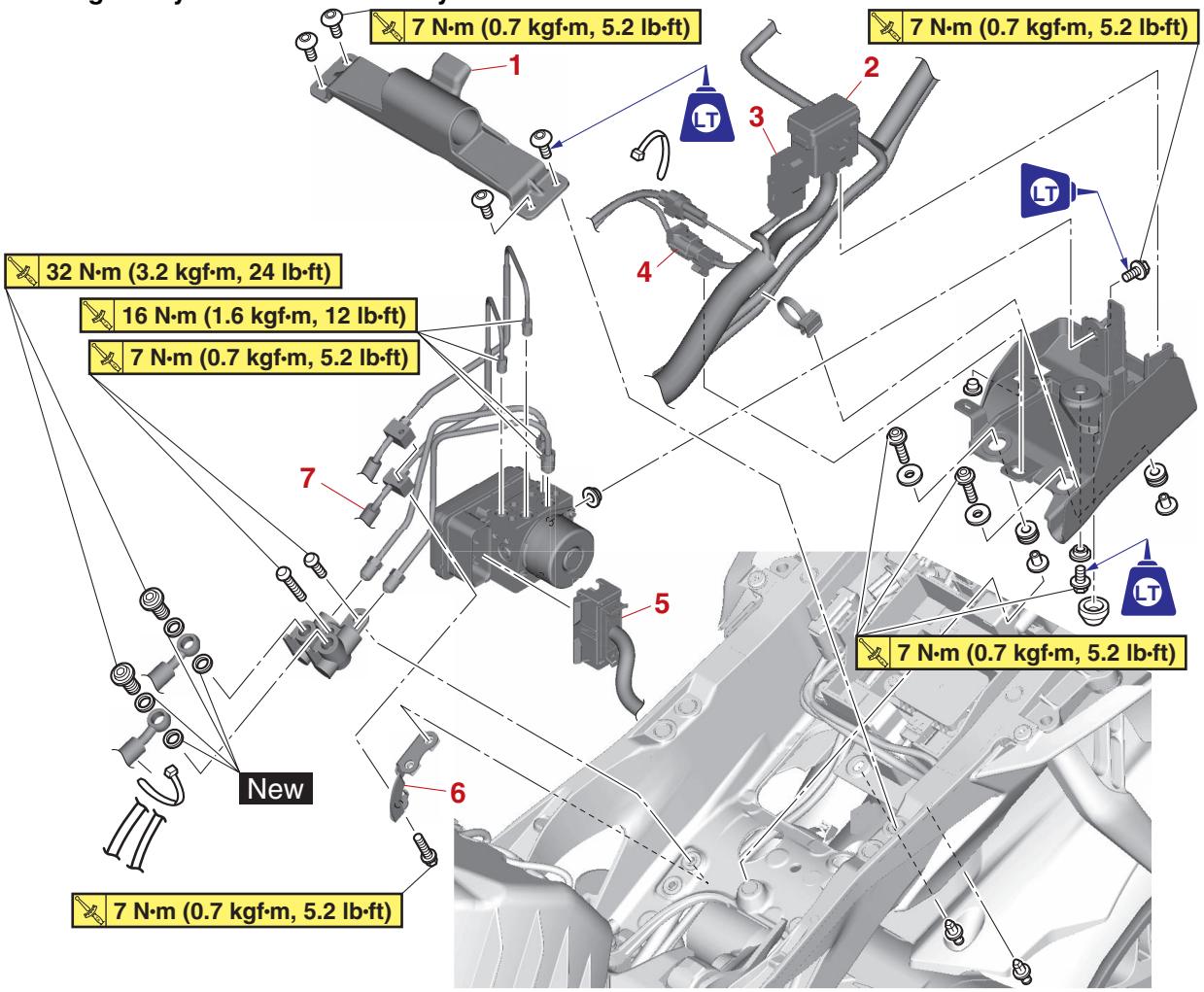
3. Bleed:
   - Brake system
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
4. Check:
   - Brake fluid level
     Below the minimum level mark "a" → Add the specified brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" on page 3-13.
5. Adjust:
   - Brake pedal position
     Refer to "ADJUSTING THE REAR DISC BRAKE" on page 3-14.

6. Adjust:
   • Rear brake light operation timing
   Refer to “ADJUSTING THE REAR BRAKE LIGHT SWITCH” on page 3-35.

EAS20032

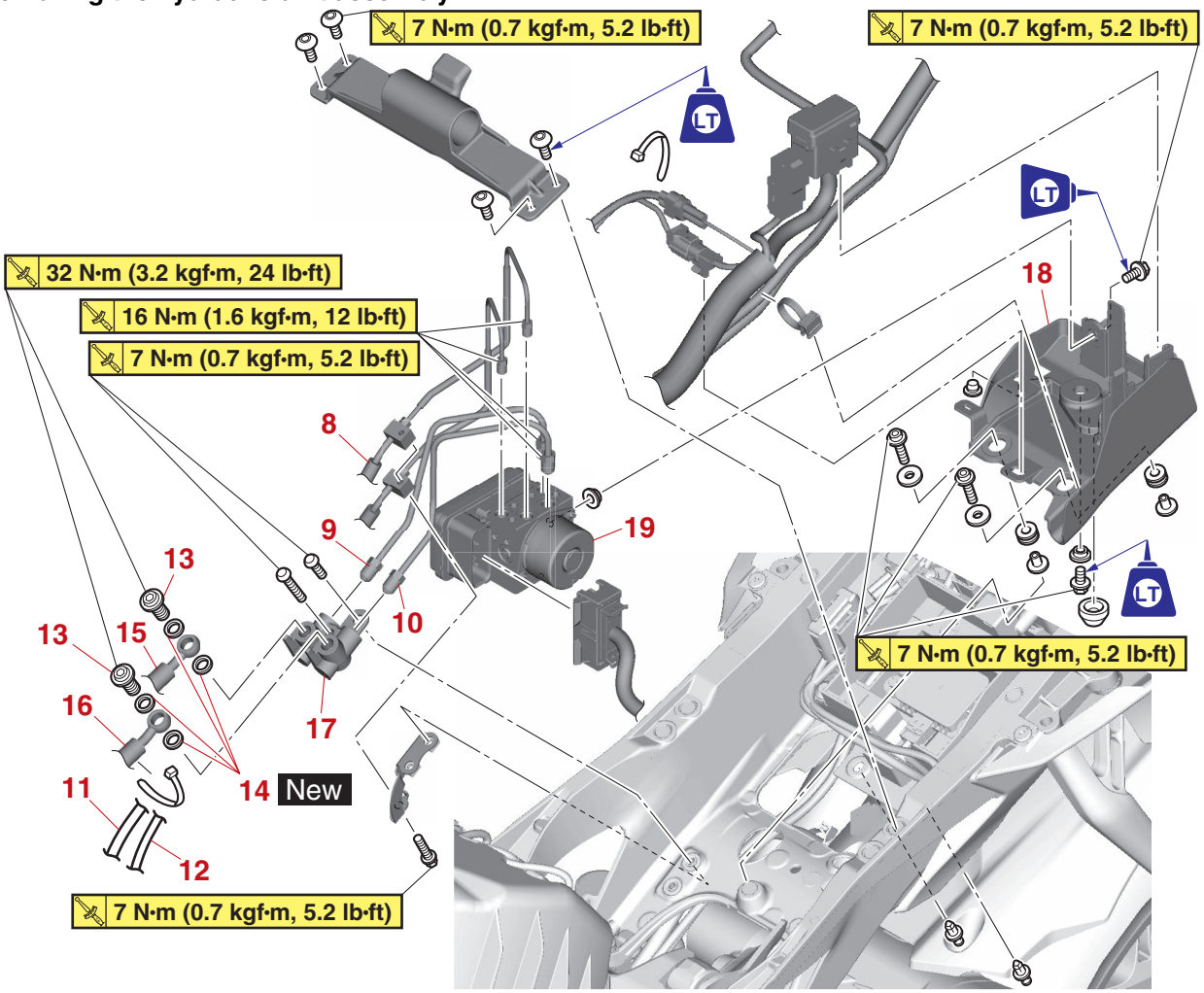
ABS (Anti-lock Brake System)

Removing the hydraulic unit assembly



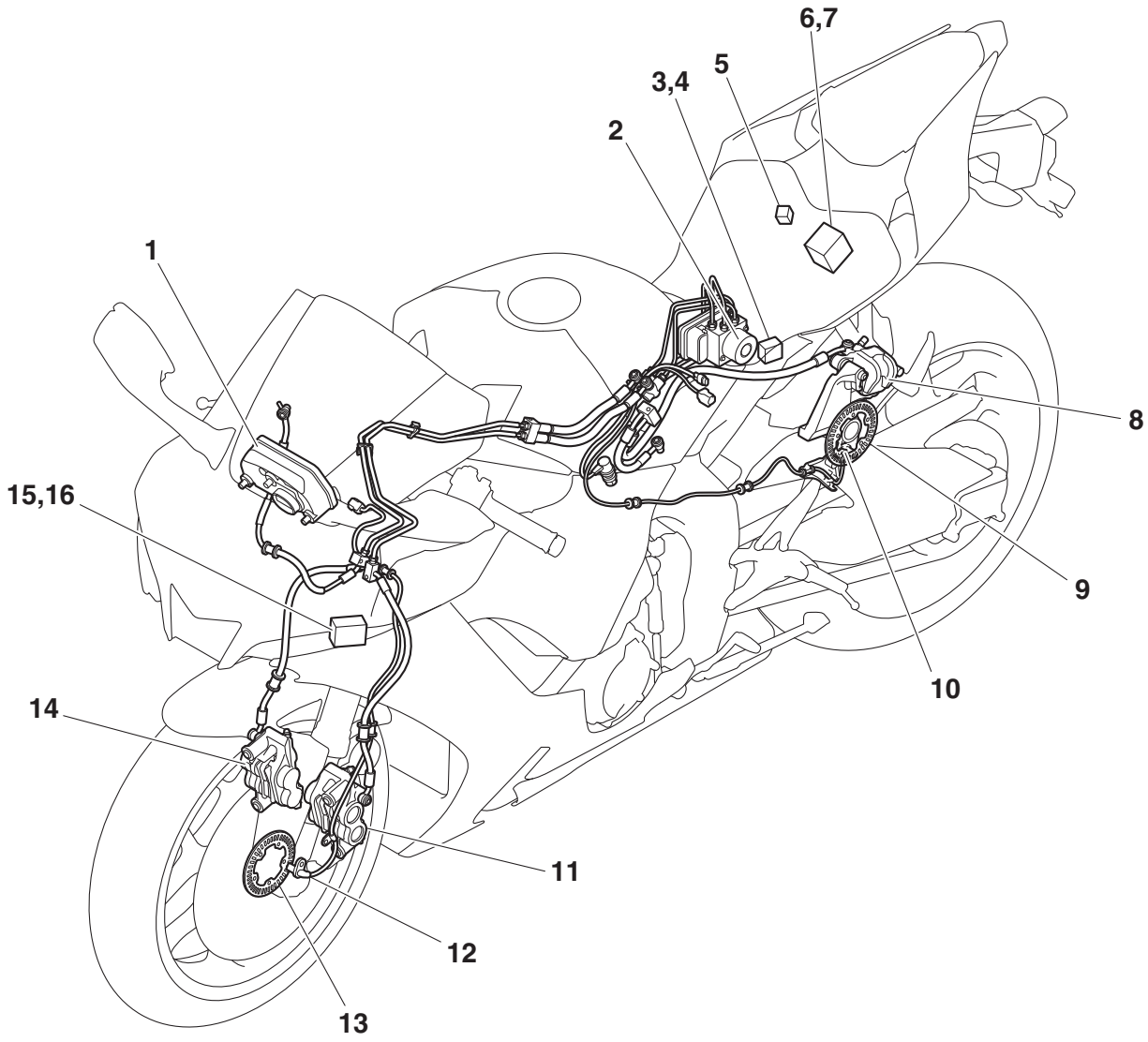
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Battery cover/Battery		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Brake fluid		Drain. Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
1	Fuel tank bracket	1	
2	Fuse box 1	1	
3	Radiator fan motor relay	1	
4	Rear wheel sensor coupler	1	
5	ABS ECU coupler	1	Disconnect.
6	Rear brake hose bracket	1	
7	Hydraulic unit brake pipe (hydraulic unit to rear brake caliper)	1	

Removing the hydraulic unit assembly



Order	Job/Parts to remove	Q'ty	Remarks
8	Hydraulic unit brake pipe (rear brake master cylinder to hydraulic unit)	1	
9	Hydraulic unit brake pipe (hydraulic unit to front brake calipers)	1	
10	Hydraulic unit brake pipe (front brake master cylinder to hydraulic unit)	1	
11	Rear brake light switch lead	1	
12	Rear wheel sensor lead	1	
13	Brake hose union bolt	2	
14	Gasket	4	
15	Brake hose (hydraulic unit to front brake calipers)	1	
16	Brake hose (front brake master cylinder to hydraulic unit)	1	
17	Brake hose joint	1	
18	Hydraulic unit tray	1	
19	Hydraulic unit assembly	1	

EAS30728
ABS COMPONENTS CHART



1. Meter assembly
2. Hydraulic unit assembly
3. Fuse box 1
4. ABS solenoid fuse
5. YDT coupler
6. Starter relay
7. ABS motor fuse
8. Rear brake caliper
9. Rear wheel sensor rotor
10. Rear wheel sensor
11. Front brake caliper (left)
12. Front wheel sensor
13. Front wheel sensor rotor
14. Front brake caliper (right)
15. Fuse box 2
16. Signaling system fuse

EAS30197
REMOVING THE HYDRAULIC UNIT ASSEMBLY

ECA18230
NOTICE

Unless necessary, avoid removing and installing the brake pipes of the hydraulic unit assembly.

EWA13930
WARNING

Refill with the same type of brake fluid that is already in the system. Mixing fluids may result in a harmful chemical reaction, leading to poor braking performance.

ECA19790
NOTICE

- **Handle the ABS components with care since they have been accurately adjusted. Keep them away from dirt and do not subject them to shocks.**
- **Do not set the main switch to "ON" when removing the hydraulic unit assembly.**
- **Do not clean with compressed air.**
- **Do not reuse the brake fluid.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Do not allow any brake fluid to contact the couplers. Brake fluid may damage the couplers and cause bad contacts.**
- **If the brake pipe flare nuts for the hydraulic unit assembly have been removed, be sure to tighten them to the specified torque and bleed the brake system.**

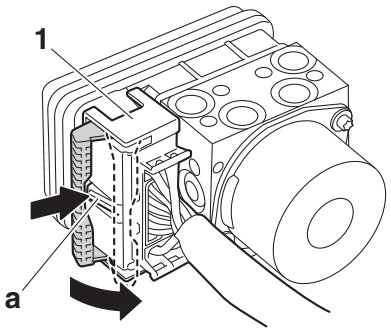
1. Disconnect:
   - ABS ECU coupler "1"

TIP

While pushing the portion "a" of the ABS ECU coupler, pull the lock lever up to release the lock.

ECA20080
NOTICE

Do not use a tool to disconnect the ABS ECU coupler.



2. Remove:
   - Brake hoses
   - Brake pipes

TIP

- Do not operate the brake lever and brake pedal while removing the brake hoses and brake pipes.
- Do not bend the brake pipe when loosening the brake pipe flare nuts.

ECA19800
NOTICE

- **When removing the brake hoses and brake pipes, cover the area around the hydraulic unit assembly to catch any spilt brake fluid. Do not allow the brake fluid to contact other parts.**
- **Before disconnecting the brake pipes from the hydraulic unit assembly, do not lift up or move the brake pipes.**

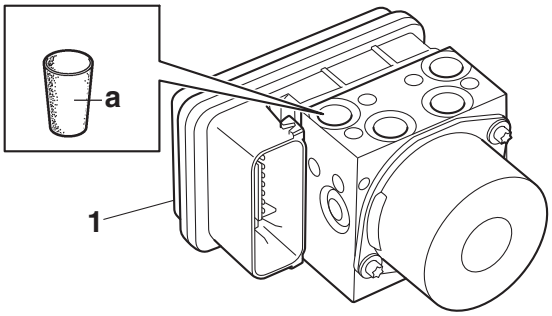
3. Remove:
   - Hydraulic unit assembly "1"

TIP

To avoid brake fluid leakage and to prevent foreign materials from entering the hydraulic unit assembly, insert a rubber plug "a" or a bolt (M10 × 1.00) into each flare nut hole.

ECA19810
NOTICE

When using a bolt, do not tighten the bolt until the bolt head touches the hydraulic unit. Otherwise, the brake pipe seating surface could be deformed.



EAS30198
CHECKING THE HYDRAULIC UNIT ASSEMBLY
1. Check:
   • Hydraulic unit assembly
   Cracks/damage → Replace the hydraulic unit assembly and the brake pipes that are connected to the assembly as a set.

EAS30199
CHECKING THE BRAKE PIPES
The following procedure applies to all of the brake pipes.
1. Check:
   • Brake pipe end (flare nut)
   Damage → Replace the hydraulic unit assembly, brake pipes, and related parts as a set.

EAS30200
INSTALLING THE HYDRAULIC UNIT ASSEMBLY
1. Install:
   • Hydraulic unit assembly

ECA18260
NOTICE

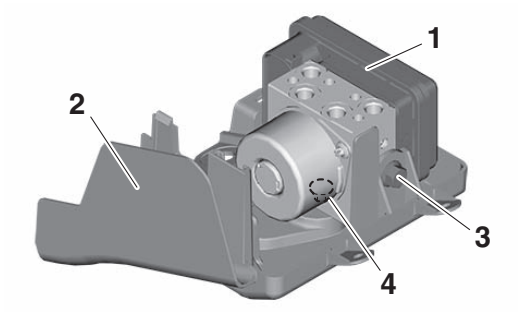
Do not remove the rubber plugs or bolts (M10 × 1.0) installed in the flare nut holes before installing the hydraulic unit assembly.

TIP

Do not allow any foreign materials to enter the hydraulic unit assembly or the brake hoses or brake pipes when installing the hydraulic unit assembly.

   a. Install the hydraulic unit assembly "1" on the hydraulic unit tray "2".
   b. Temporarily tighten the hydraulic unit assembly bolts "3", "4".
   c. Tighten the hydraulic unit assembly bolt "3", and bolt "4" to the specified torque in this order.

Hydraulic unit assembly bolt
7 N·m (0.7 kgf·m, 5.2 lb·ft)
LOCTITE®



2. Remove:
   • Rubber plugs or bolts (M10 × 1.0)
3. Install:
   • Hydraulic unit brake pipe
4. Tighten:
   • Hydraulic unit brake pipe flare nuts

Hydraulic unit brake pipe flare nut
16 N·m (1.6 kgf·m, 12 lb·ft)

ECA19820
NOTICE

If the brake pipe flare nut does not turn easily, replace the hydraulic unit assembly, brake pipes, and related parts as a set.

TIP

Do not bend the brake pipe when tightening the brake pipe flare nuts.

5. Install:
   • Gaskets New
   • Brake hose union bolts
   • Brake hoses "1"

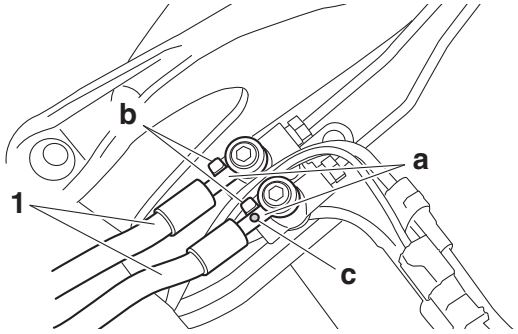
Front brake hose union bolt
32 N·m (3.2 kgf·m, 24 lb·ft)

ECA22800
NOTICE

When installing each brake hose onto the hydraulic unit brake pipe joint, make sure that the brake pipe "a" touches the projection "b" on the joint.

TIP

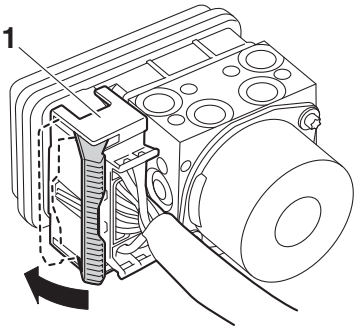
There is an identifying white paint mark "c" on the upper surface of the pipe of the brake hose (front brake master cylinder to the hydraulic unit).



6. Connect:
   • ABS ECU coupler "1"

TIP

Connect the ABS ECU coupler, and then push the lock lever of the coupler in the direction of the arrow shown.



7. Fill:
   • Brake fluid reservoir
   (with the specified amount of the specified brake fluid)

Specified brake fluid
DOT 4

EWA17280

WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir or brake fluid reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

ECA13540

NOTICE

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

8. Bleed:
   • Brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM (ABS)" on page 3-16.
9. Check the operation of the hydraulic unit according to the brake lever and the brake pedal response. (Refer to "HYDRAULIC UNIT OPERATION TEST" on page 4-79.)

ECA14770

NOTICE

Always check the operation of the hydraulic unit according to the brake lever and the brake pedal response.

10. Delete the DTC. (Refer to "SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE" on page 9-32.)
11. Perform a trial run. (Refer to "CHECKING THE ABS WARNING LIGHT" on page 4-82.)

EAS30201

HYDRAULIC UNIT OPERATION TEST

The reaction-force pulsating action generated in the brake lever and brake pedal when the ABS is activated can be tested when the vehicle is stopped.
The hydraulic unit operation can be tested using the following two methods.

- Brake line routing confirmation: this test checks the function of the ABS after the system was disassembled, adjusted, or serviced.
- ABS reaction-force confirmation: this test generates the same reaction-force pulsating action that is generated in the brake lever and brake pedal when the ABS is activated.

Brake line routing confirmation

EWA13120

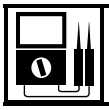
WARNING

Securely support the vehicle so that there is no danger of it falling over.

TIP

- For the brake line routing confirmation, use the diagnosis of function of the Yamaha diagnostic tool.
- Before performing the brake line routing confirmation, make sure that no malfunctions have been detected in the ABS ECU and that the wheels are not rotating.

1. Place the vehicle on a maintenance stand.
2. Turn the main switch to "OFF".
3. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
4. Check:
   - Battery voltage
     Lower than 12.8 V → Charge or replace the battery.



Battery voltage
Higher than 12.8 V

TIP

If the battery voltage is lower than 12.8 V, charge the battery, and then perform brake line routing confirmation.

5. Removing the protective cap, and then connect the Yamaha diagnostic tool to the Yamaha diagnostic tool coupler (6P).



Yamaha diagnostic tool USB (US)
90890-03269
Yamaha diagnostic tool (A/I)
90890-03264

TIP

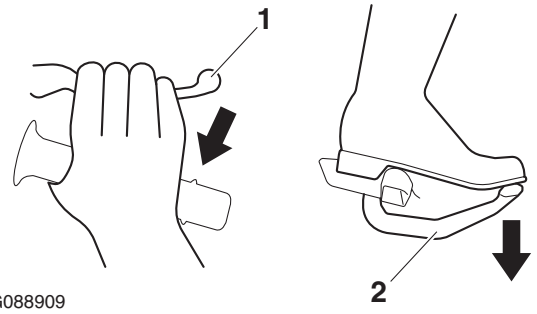
- Yamaha diagnostic tool (A/I) (90890-03264) includes YDT sub harness (6P) (90890-03266).
- If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.

Refer to "YDT" on page 9-2.

6. Start the Yamaha diagnostic tool and display the diagnosis of function screen.
7. Select code No. 2, "Brake line routing confirmation".
8. Click "Actuator Check", and then operate the brake lever "1" and brake pedal "2" simultaneously.

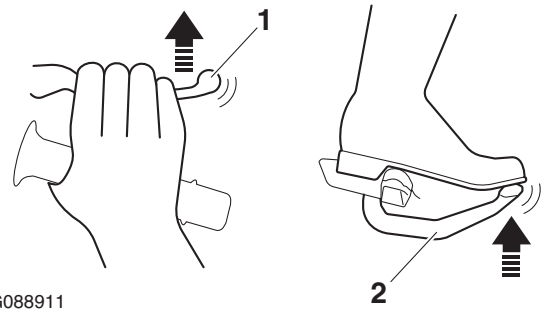
TIP

- The hydraulic unit operates 1 second after the brake lever and brake pedal are operated simultaneously and continues for approximately 5 seconds.
- The operation of the hydraulic unit can be confirmed using the indicator.
  On: The hydraulic unit is operating.
  Flashing: The conditions for operating the hydraulic unit have not been met.
  Off: The brake lever and brake pedal are not being operated.



G088909

9. Check:
   - Hydraulic unit operation
     Click "Actuator Check", a single pulse will be generated in the brake lever "1", brake pedal "2", and again in the brake lever "1", in this order.



G088911

TIP

"ON" and "OFF" on the tool screen indicate when the brakes are being applied and released respectively.

ECA17371

NOTICE

- **Check that the pulse is felt in the brake lever, brake pedal, and again in the brake lever, in this order.**
- **If the pulse is felt in the brake pedal before it is felt in the brake lever, check that the brake hoses and brake pipes are connected correctly to the hydraulic unit assembly.**
- **If the pulse is hardly felt in either the brake lever or brake pedal, check that the brake hoses and brake pipes are connected correctly to the hydraulic unit assembly.**

10. If the operation of the hydraulic unit is normal, delete all of the DTC.

ABS reaction-force confirmation

EWA13120

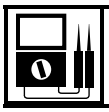
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

TIP

- For the ABS reaction-force confirmation, use the diagnosis of function of the Yamaha diagnostic tool. For more information, refer to the operation manual of the Yamaha diagnostic tool.
- Before performing the ABS reaction-force confirmation, make sure that no malfunctions have been detected in the ABS ECU and that the wheels are not rotating.

1. Place the vehicle on a maintenance stand.
2. Turn the main switch to "OFF".
3. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
4. Check:
   - Battery voltage
     Lower than 12.8 V → Charge or replace the battery.



Battery voltage
Higher than 12.8 V

TIP

If the battery voltage is lower than 12.8 V, charge the battery, and then perform ABS reaction-force confirmation.

5. Removing the protective cap, and then connect the Yamaha diagnostic tool to the Yamaha diagnostic tool coupler (6P).



Yamaha diagnostic tool USB (US)
90890-03269
Yamaha diagnostic tool (A/I)
90890-03264

TIP

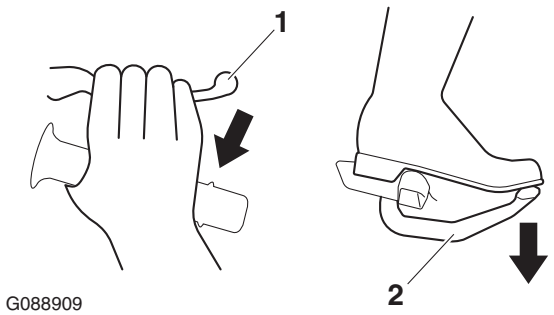
- Yamaha diagnostic tool (A/I) (90890-03264) includes YDT sub harness (6P) (90890-03266).
- If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.

Refer to "YDT" on page 9-2.

6. Start the Yamaha diagnostic tool and display the diagnosis of function screen.
7. Select code No. 1, "ABS reaction-force confirmation".
8. Click "Actuator Check", and then operate the brake lever "1" and brake pedal "2" simultaneously.

TIP

- The hydraulic unit operates 1 second after the brake lever and brake pedal are operated simultaneously and continues for approximately 5 seconds.
- The operation of the hydraulic unit can be confirmed using the indicator.
  On: The hydraulic unit is operating.
  Flashing: The conditions for operating the hydraulic unit have not been met.
  Off: The brake lever and brake pedal are not being operated.

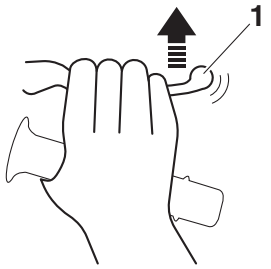


9. A reaction-force pulsating action is generated in the brake lever "1" and continues for a few seconds.

TIP

- The reaction-force pulsating action consists of quick pulses.

- Be sure to continue operating the brake lever and brake pedal even after the pulsating action has stopped.
- "ON" and "OFF" on the tool screen indicate when the brakes are being applied and released respectively.

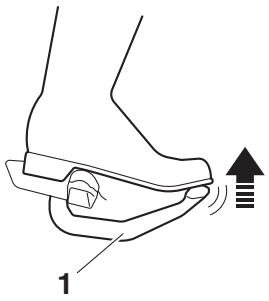


G088913

10. After the pulsating action has stopped in the brake lever, it is generated in the brake pedal "1" and continues for a few seconds.

TIP

- The reaction-force pulsating action consists of quick pulses.
- Be sure to continue operating the brake lever and brake pedal even after the pulsating action has stopped.
- "ON" and "OFF" on the tool screen indicate when the brakes are being applied and released respectively.



G088914

11. After the pulsating action has stopped in the brake pedal, it is generated in the brake lever and continues for a few seconds.

TIP

- The reaction-force pulsating action consists of quick pulses.
- "ON" and "OFF" on the tool screen indicate when the brakes are being applied and released respectively.

ECA17371

NOTICE

- **Check that the pulse is felt in the brake lever, brake pedal, and again in the brake lever, in this order.**
- **If the pulse is felt in the brake pedal before it is felt in the brake lever, check that the brake hoses and brake pipes are connected correctly to the hydraulic unit assembly.**
- **If the pulse is hardly felt in either the brake lever or brake pedal, check that the brake hoses and brake pipes are connected correctly to the hydraulic unit assembly.**

12. Turn the main switch to "OFF".
13. Remove the Yamaha diagnostic tool from the Yamaha diagnostic tool coupler, and then install the protective cap.
14. Turn the main switch to "ON".
15. Set the start/engine stop switch to "○".
16. Check for brake fluid leakage around the hydraulic unit.
    Brake fluid leakage → Replace the hydraulic unit, brake pipes, and related parts as a set.
17. If the operation of the hydraulic unit is normal, delete all of the DTC.

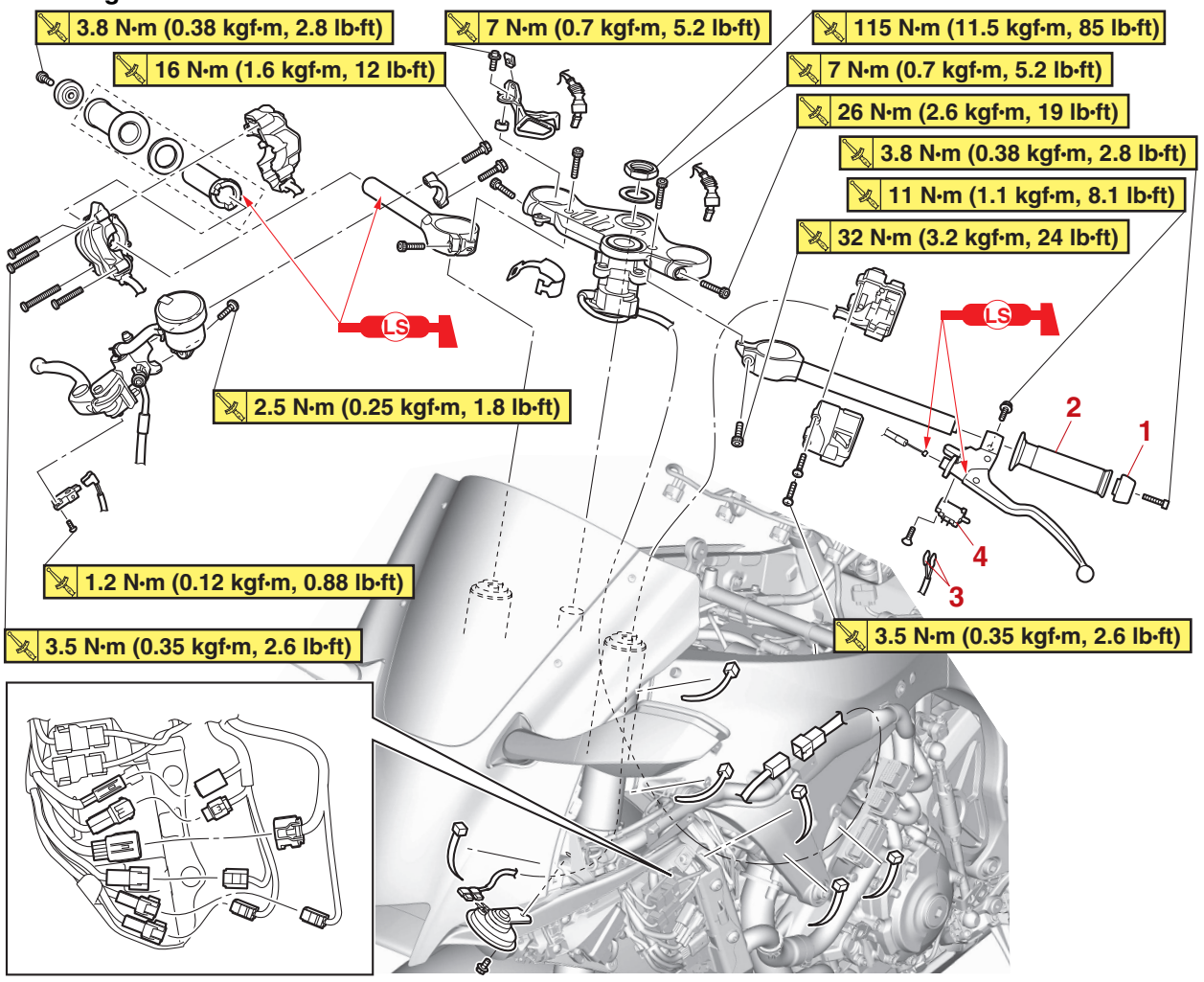
EAS30202

CHECKING THE ABS WARNING LIGHT

After all checks and servicing are completed, ensure that the ABS warning light goes off by walking the vehicle at a speed of faster than 5 km/h (3.1 mi/h) or performing a trial run.

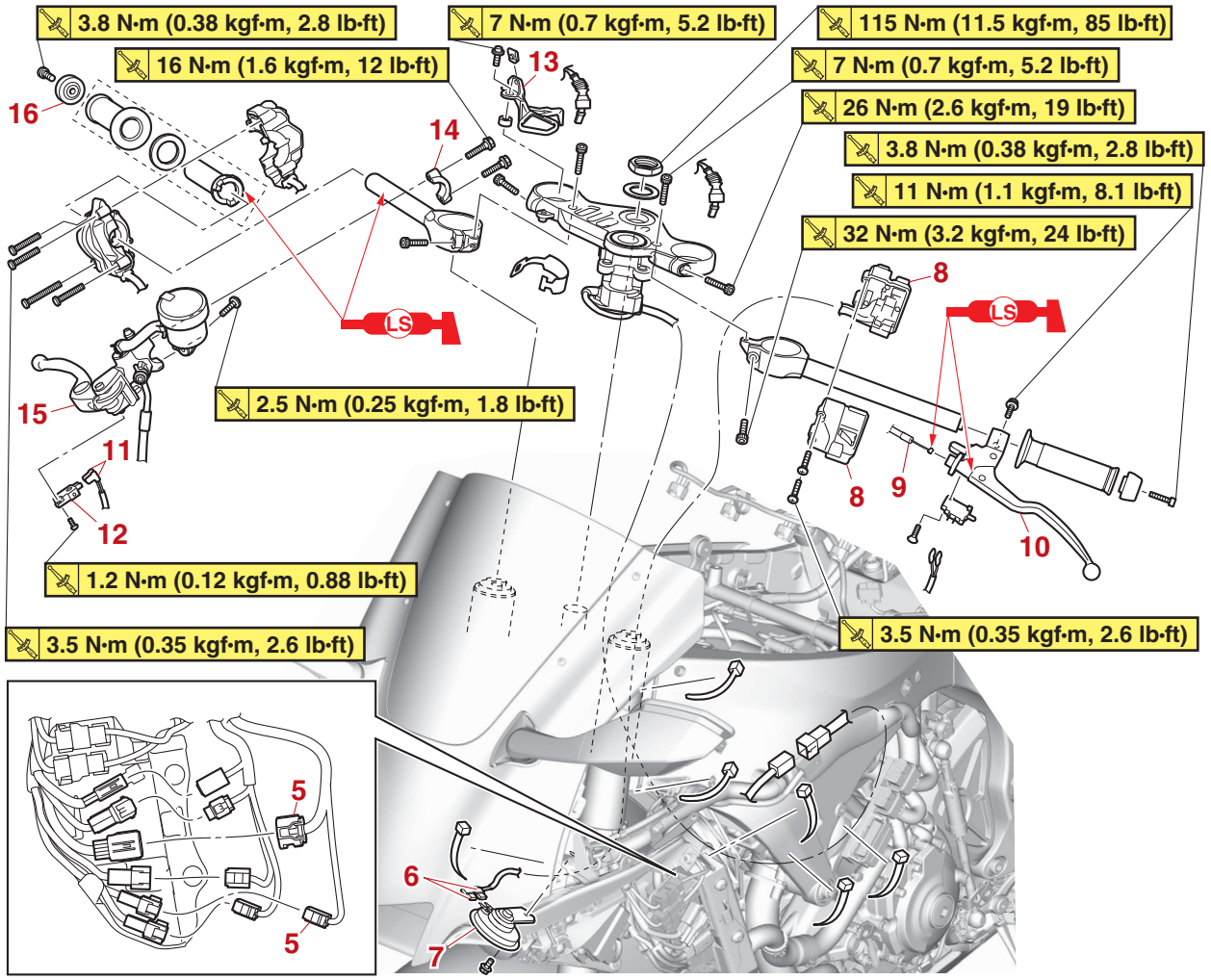
EAS20033
HANDLEBARS

Removing the handlebars



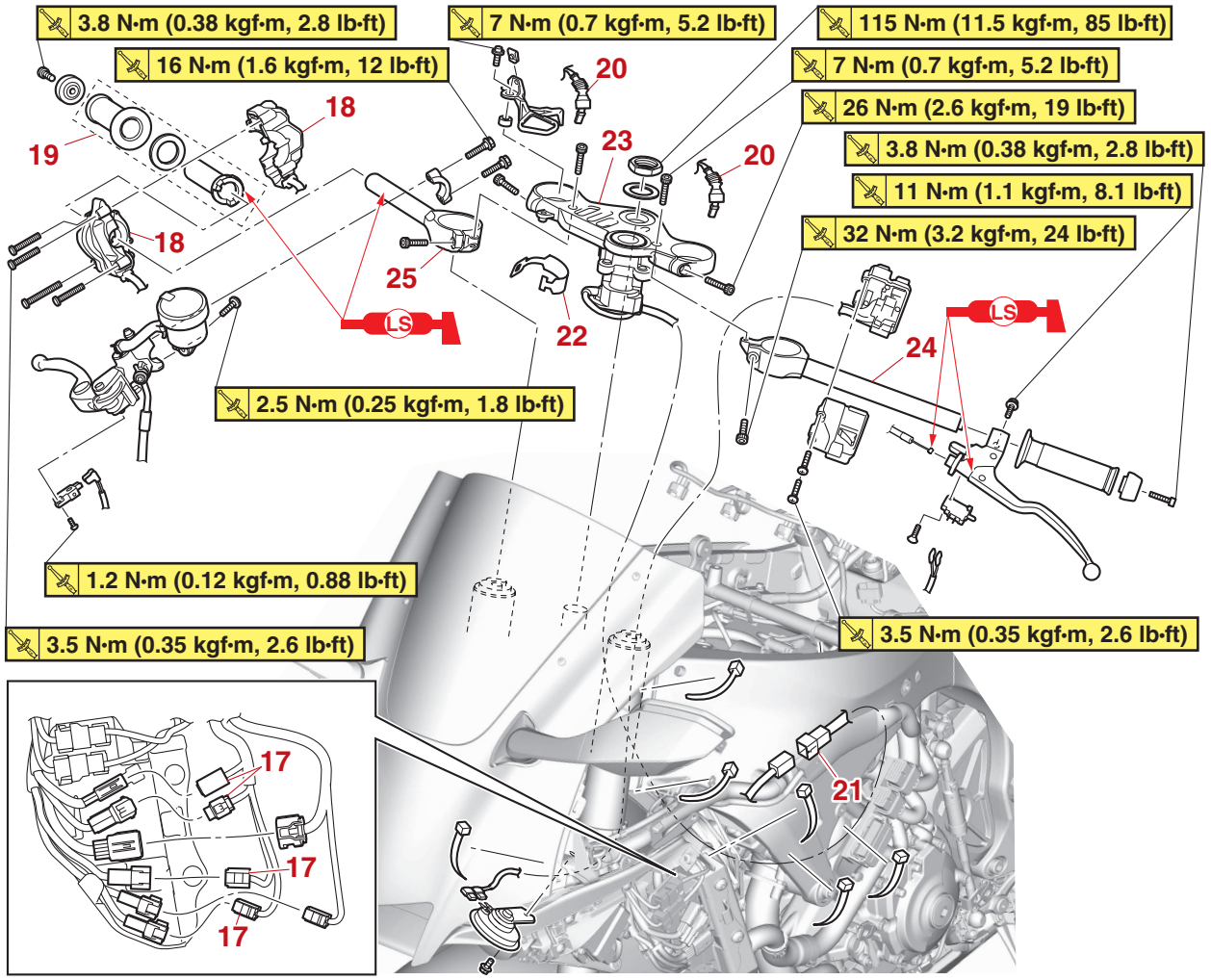
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Side cover bracket damper		Refer to "GENERAL CHASSIS (7)" on page 4-28.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling (left)		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover (left)		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
1	Grip end (left)	1	
2	Handlebar grip	1	
3	Clutch switch connector	2	Disconnect.
4	Clutch switch	1	

Removing the handlebars



Order	Job/Parts to remove	Q'ty	Remarks
5	Handlebar switch coupler (left)	2	Disconnect.
6	Horn connector	2	Disconnect.
7	Horn	1	
8	Handlebar switch (left)	1	
9	Clutch cable	1	Disconnect.
10	Clutch lever holder	1	
11	Front brake light switch connector	2	Disconnect.
12	Front brake light switch	1	
13	Front brake master cylinder bracket	1	
14	Front brake master cylinder holder	1	
15	Front brake master cylinder assembly	1	
16	Grip end (right)	1	

Removing the handlebars



Order	Job/Parts to remove	Q'ty	Remarks
17	Handlebar switch coupler (right)	4	Disconnect.
18	Handlebar switch (right)	1	
19	Throttle grip	1	
20	Front fork stepping motor coupler	2	Disconnect. (for YZF-R1M)
21	Main switch coupler	1	Disconnect.
22	Main switch cover	1	
23	Upper bracket	1	
24	Handlebar (left)	1	
25	Handlebar (right)	1	

EAS30203
REMOVING THE HANDLEBARS

1. Stand the vehicle on a level surface.

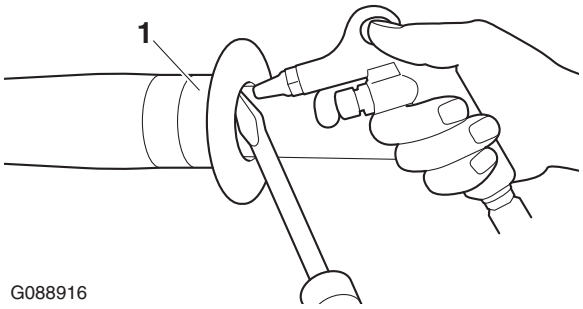
EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Remove:
   • Handlebar grip "1"

TIP

Blow compressed air between the left handlebar and the handlebar grip, and gradually push the grip off the handlebar.



EAS30204
CHECKING THE HANDLEBARS

1. Check:
   • Handlebar (left)
   • Handlebar (right)
   Bends/cracks/damage → Replace.

EWA13690
⚠ WARNING

Do not attempt to straighten a bent handlebar as this may dangerously weaken it.

EAS30205
INSTALLING THE HANDLEBARS

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

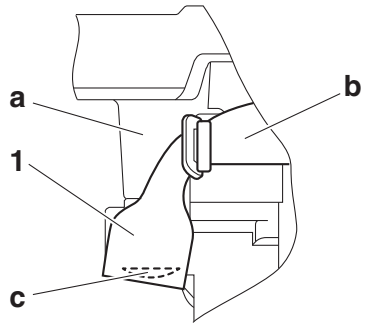
2. Install:
   • Handlebar (left)
   • Handlebar (right)
   • Upper bracket

Steering stem nut
115 N·m (11.5 kgf·m, 85 lb·ft)
Upper bracket pinch bolt
26 N·m (2.6 kgf·m, 19 lb·ft)
Handlebar bolt
7 N·m (0.7 kgf·m, 5.2 lb·ft)
Handlebar pinch bolt
32 N·m (3.2 kgf·m, 24 lb·ft)

3. Install:
   • Main switch cover "1"

TIP

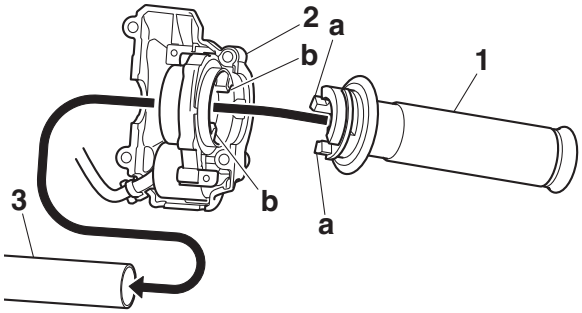
- Pass the main switch cover "1" between the projection "a" of the upper bracket and main switch "b", and hook the hook on one end of the main switch cover into the hole on the other end.
- Make sure that the main switch cover "1" covers the main switch bolt head "c".
- The main switch cover may be facing in any direction.



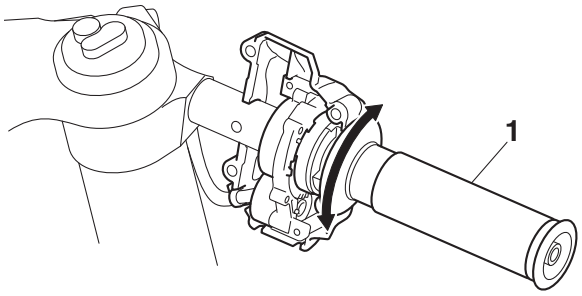
4. Install:
   • Handlebar switch (right)
   • Throttle grip
   • Grip end (right)

Handlebar switch screw
3.5 N·m (0.35 kgf·m, 2.6 lb·ft)
Grip end bolt
3.8 N·m (0.38 kgf·m, 2.8 lb·ft)

   a. Fit the slot "a" in the throttle grip "1" into the projection "b" in the handlebar switch (right, front side) "2" and the throttle grip "1" onto the handlebar "3".



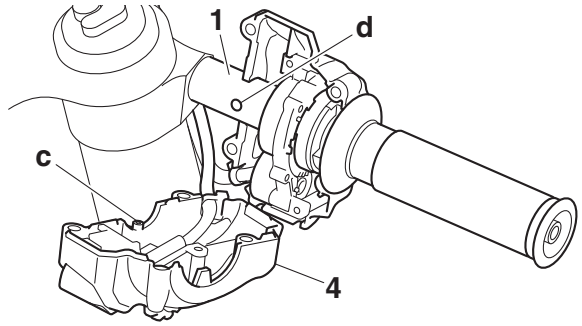
b. Make sure that the throttle grip "1" turns smoothly.



c. Install the handlebar switch (right, rear side) "4".

TIP

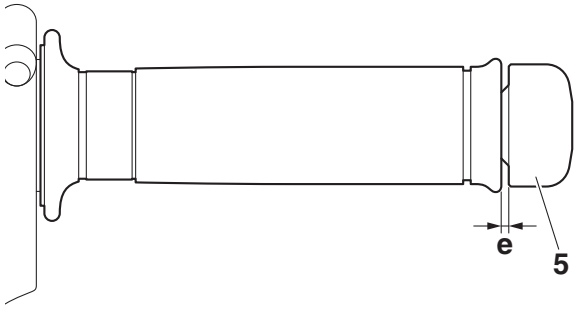
Align the projection "c" on the handlebar switch (right, rear side) "4" with the hole "d" in the handlebar "1".



d. Install the grip end (right) "5".

TIP

There should be 1–3 mm (0.04–0.12 in) of clearance "e" between the throttle grip and the grip end.

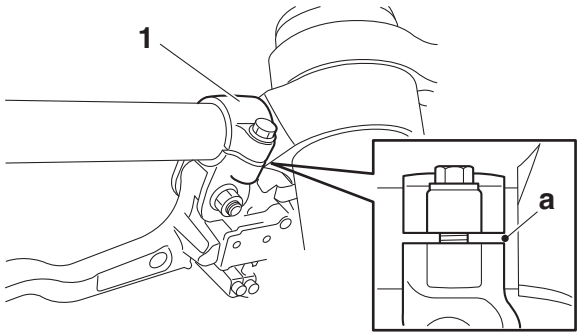


5. Install:
   - Front brake master cylinder assembly
   Refer to "INSTALLING THE FRONT BRAKE MASTER CYLINDER" on page 4-61.
6. Install:
   - Clutch lever holder "1"
   - Clutch cable

	Clutch lever holder pinch bolt 11 N·m (1.1 kgf·m, 8.1 lb·ft)

TIP

Align the center of slit on the clutch lever holder with the punch mark "a" on the handlebar.

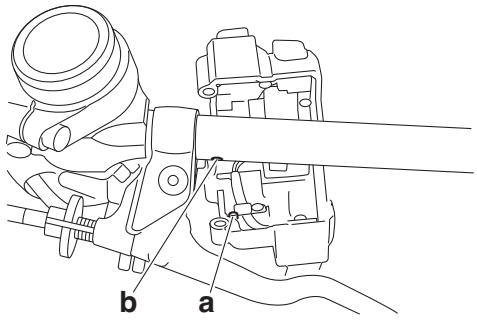


7. Install:
   - Handlebar switch screw (left)

	Handlebar switch screw 3.5 N·m (0.35 kgf·m, 2.6 lb·ft)

TIP

Align the projection "a" on the handlebar switch (left) with the hole "b" in the handlebar.



8. Install:
   • Handlebar grip “1”
   • Grip end (left) “2”

	Grip end bolt **3.8 N·m (0.38 kgf·m, 2.8 lb·ft)**

   a. Apply a thin coat of rubber adhesive onto the end of the left handlebar.
   b. Side the handlebar grip over the end of the left handlebar.
   c. Wipe off any excess rubber adhesive with a clean rag.

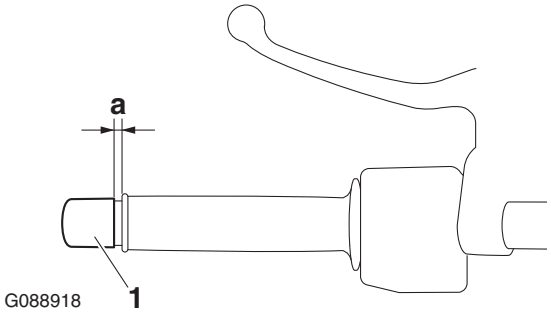
EWA13700

⚠ WARNING

Do not touch the handlebar grip until the rubber adhesive has fully dried.

TIP

There should be 1–3 mm (0.04–0.12 in) of clearance “a” between the handlebar grip and the grip end.



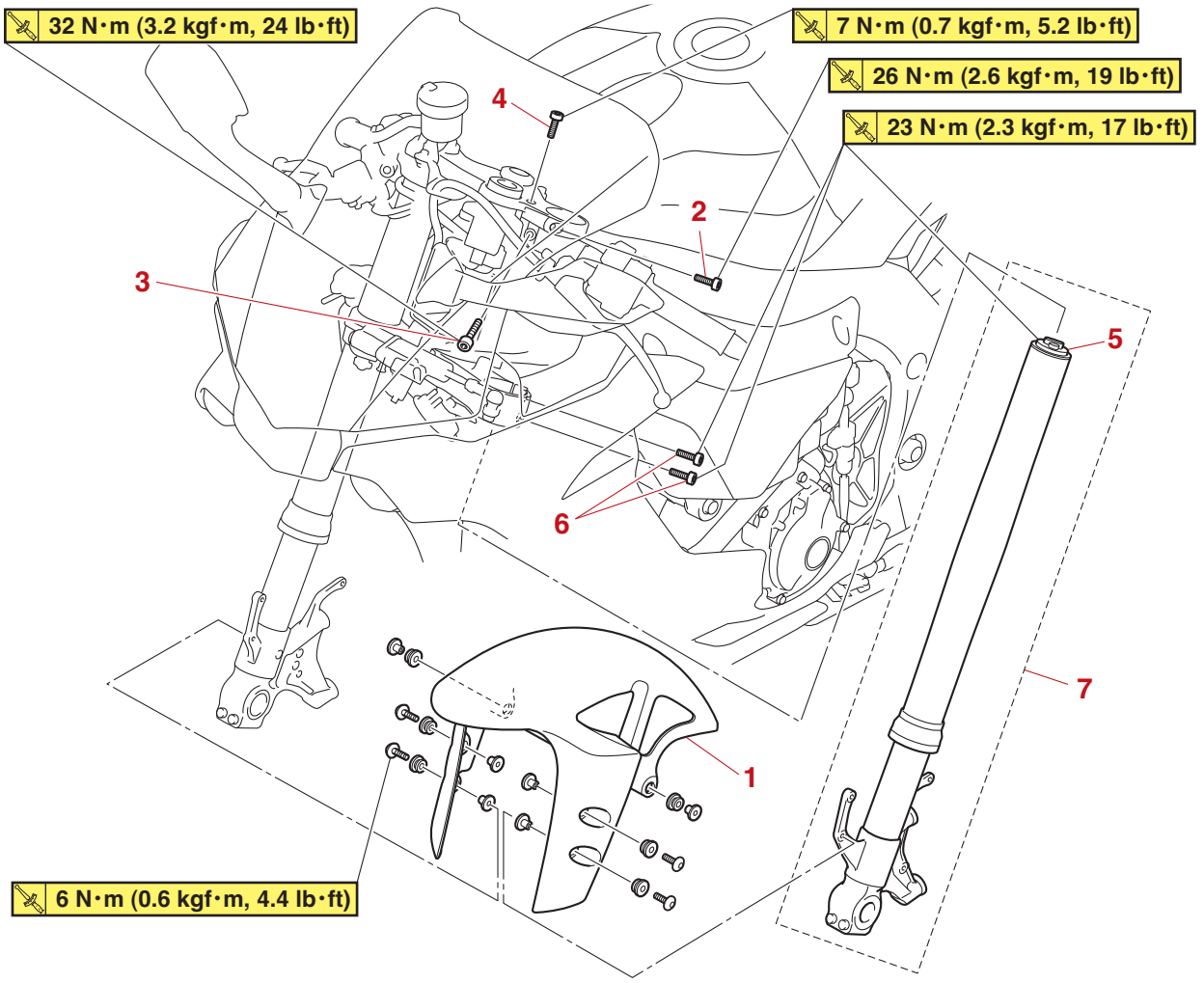
9. Adjust:
   • Clutch lever free play
   Refer to “ADJUSTING THE CLUTCH LEVER FREE PLAY” on page 3-12.

	Clutch lever free play **10.0–15.0 mm (0.39–0.59 in)**

EAS20034

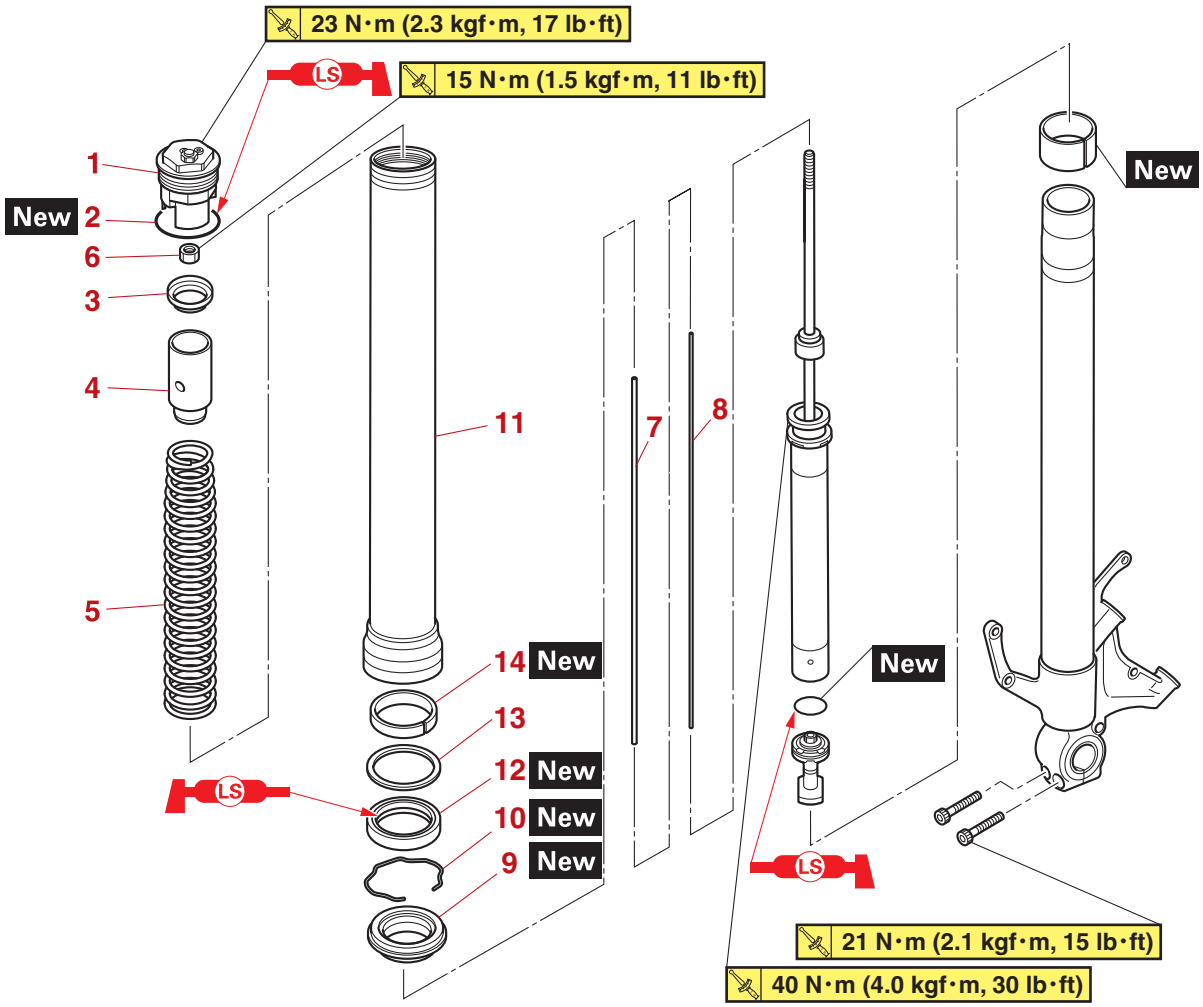
FRONT FORK (for YZF-R1)

Removing the front fork legs (for YZF-R1)



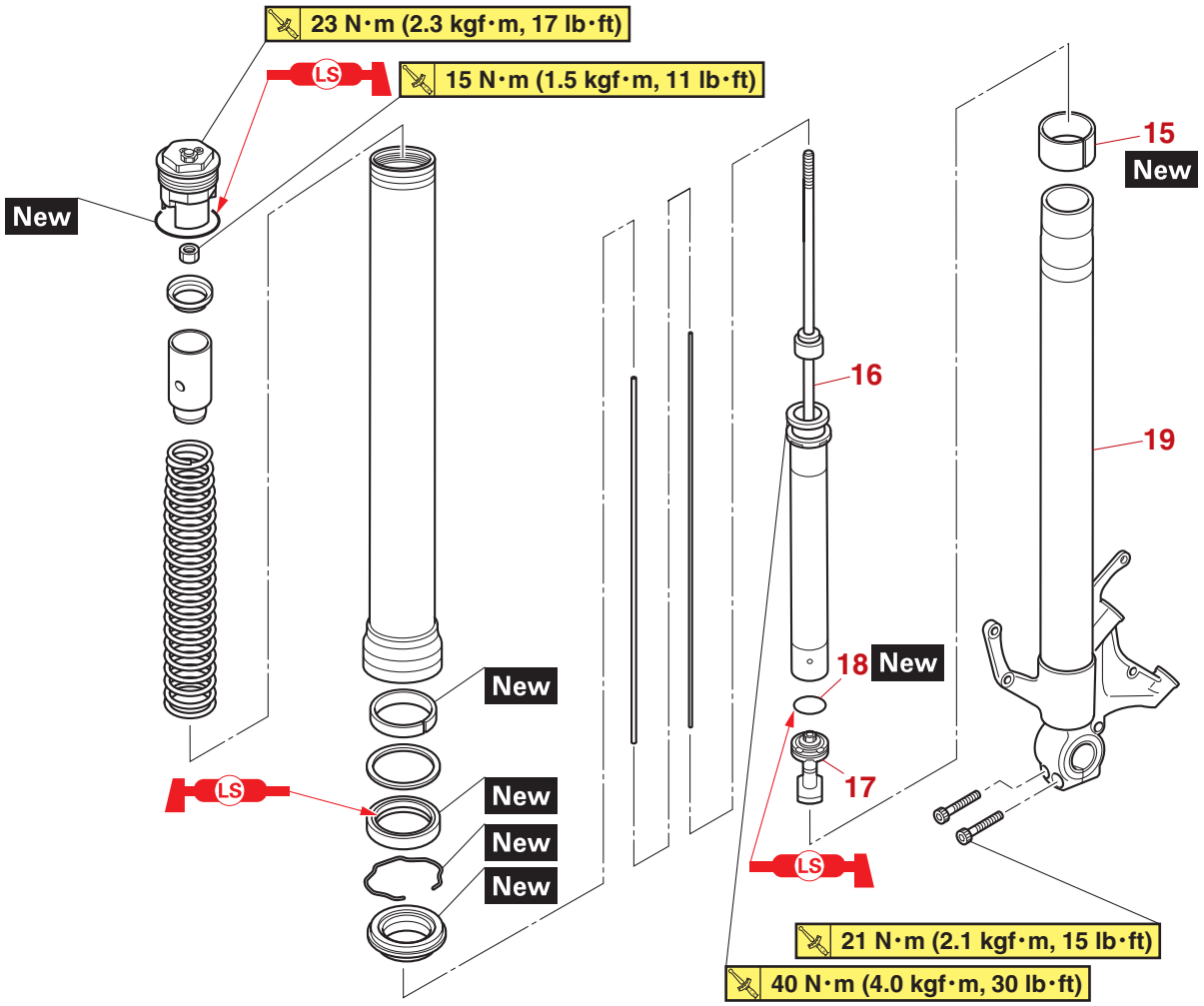
Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front fork legs.
	Front wheel		Refer to "FRONT WHEEL" on page 4-35.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
1	Front fender	1	
2	Upper bracket pinch bolt	1	Loosen.
3	Handlebar pinch bolt	1	Loosen.
4	Handlebar bolt	1	Loosen.
5	Cap bolt	1	Loosen.
6	Lower bracket pinch bolt	2	Loosen.
7	Front fork leg	1	

Disassembling the front fork legs (for YZF-R1)



Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front fork legs.
1	Cap bolt	1	
2	O-ring	1	
3	Guide	1	
4	Spacer	1	
5	Fork spring	1	
6	Locknut	1	
7	Damper adjusting rod 1	1	
8	Damper adjusting rod 2	1	
9	Dust seal	1	
10	Oil seal clip	1	
11	Outer tube	1	
12	Oil seal	1	
13	Washer	1	
14	Outer tube bushing	1	

Disassembling the front fork legs (for YZF-R1)



Order	Job/Parts to remove	Q'ty	Remarks
15	Inner tube bushing	1	
16	Damper rod assembly	1	
17	Base valve assembly	1	
18	O-ring	1	
19	Inner tube	1	

EAS30206
REMOVING THE FRONT FORK LEGS (for YZF-R1)

The following procedure applies to both of the front fork legs.

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

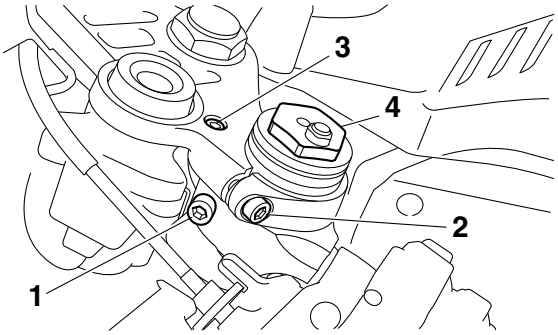
TIP

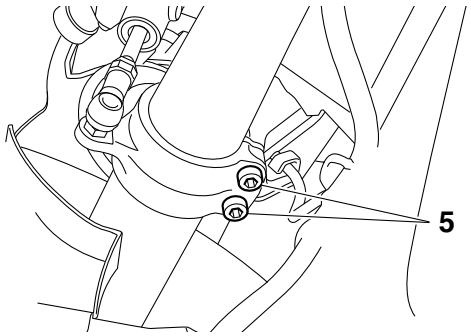
Place the vehicle on a maintenance stand so that the front wheel is elevated.

2. Remove:
   - Front brake caliper
     Refer to "FRONT BRAKE" on page 4-52.
   - Front wheel
     Refer to "FRONT WHEEL" on page 4-35.
3. Loosen:
   - Handlebar pinch bolt "1"
   - Upper bracket pinch bolt "2"
   - Handlebar bolt "3"
   - Cap bolt "4"
   - Lower bracket pinch bolts "5"

EWA13640
⚠ WARNING

Before loosening the upper and lower bracket pinch bolts, support the front fork leg.



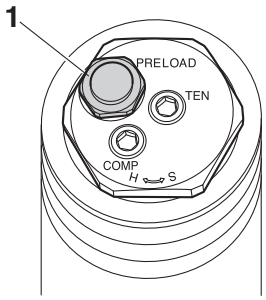


4. Remove:
   - Front fork leg

EAS30207
DISASSEMBLING THE FRONT FORK LEGS (for YZF-R1)

The following procedure applies to both of the front fork legs.

1. Turn the spring preload adjusting nut "1" counterclockwise until it stops.



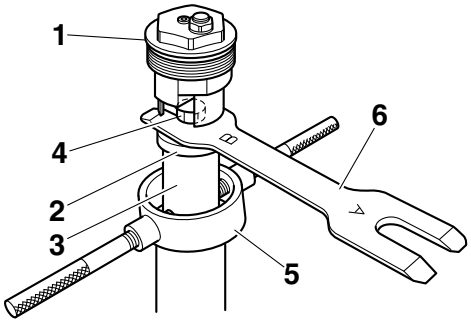
2. Remove:
   - Cap bolt "1"
     (from the damper rod assembly)
   - Guide "2"
   - Spacer "3"
   - Locknut "4"
   a. Press down on the spacer with the fork spring compressor "5".
   b. Install the rod holder "6" between the locknut "4" and the guide "2".



Fork spring compressor
90890-01441
Fork spring compressor
YM-01441
Rod holder
90890-01434
Damper rod holder double ended
YM-01434

TIP

Use the side of the rod holder that is marked "B".

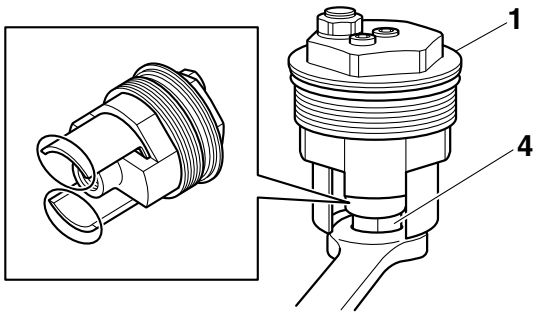


   c. Hold the cap bolt "1" and loosen the locknut "4".

ECA17390

NOTICE

When loosening the nut, be sure not to break the projections on the cap bolt collar of the cap bolt.

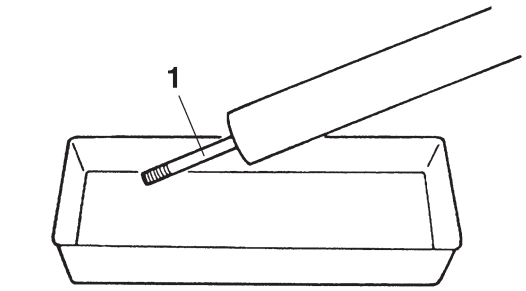


d. Remove the cap bolt and guide.
e. Remove the rod holder and fork spring compressor.
f. Remove the spacer and locknut.

3. Drain:
   • Fork oil

TIP

Stroke the damper rod assembly "1" several times while draining the fork oil.



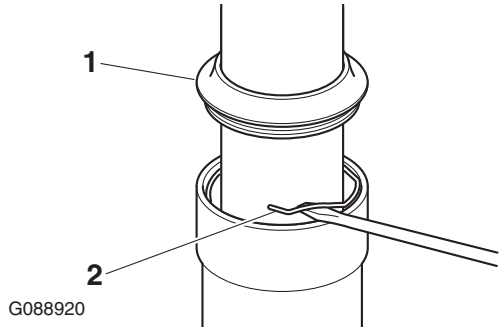
G088919

4. Remove:
   • Dust seal "1"
   • Oil seal clip "2"
   (with a flat-head screwdriver)

ECA19100

NOTICE

Do not scratch the outer tube.



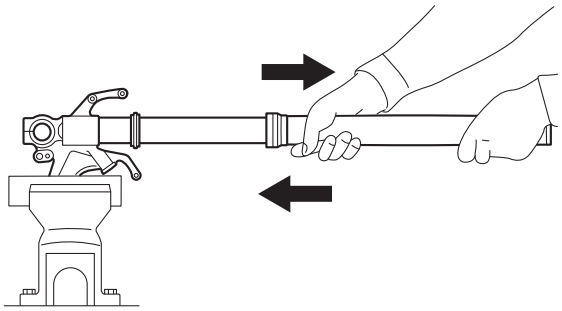
G088920

5. Remove:
   • Outer tube
   a. Hold the front fork leg horizontally.
   b. Securely clamp the brake caliper bracket in a vise with soft jaws.
   c. Separate the outer tube from the inner tube by pulling the outer tube forcefully but carefully.

ECA19880

NOTICE

Excessive force will damage the bushings. Damaged bushings must be replaced.



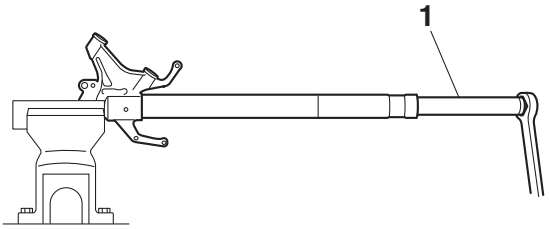
6. Remove:
   • Damper rod assembly

TIP

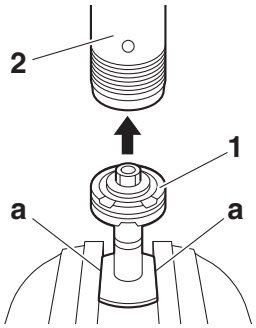
Remove the damper rod assembly with the damper rod holder "1".



Damper rod holder (ø30)
90890-01506
Damper rod holder
YM-01506



7. Remove:
   • Base valve assembly "1"
   a. Secure straight part "a" of the base valve assembly firmly in a vise with soft jaws.
   b. Pull up the damper rod assembly "2" and remove the base valve assembly "1".



EAS30208
CHECKING THE FRONT FORK LEGS (for YZF-R1)

The following procedure applies to both of the front fork legs.

1. Check:
   - Inner tube
   - Outer tube

   Bends/damage/scratches → Replace.

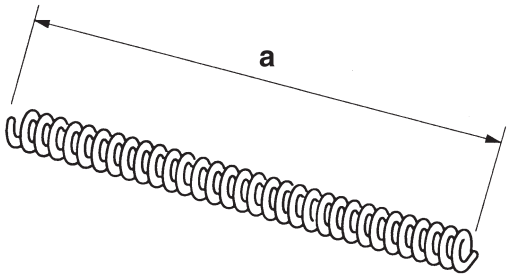
EWA13650
⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.

2. Measure:
   - Spring free length "a"

   Out of specification → Replace.

Fork spring free length
219.5 mm (8.64 in)
Limit
215.1 mm (8.47 in)



G088921

3. Check:
   - Damper rod

   Damage/wear → Replace.

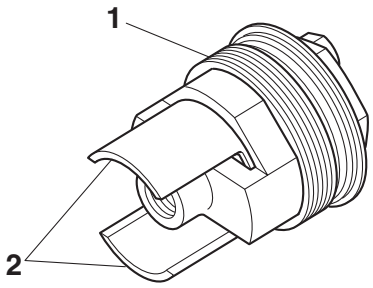
   Obstruction → Blow out all of the oil passages with compressed air.

ECA19110
NOTICE

- **The front fork leg has a very sophisticated internal construction, which are particularly sensitive to foreign material.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**

4. Check:
   - Cap bolt "1"
   - Cap bolt collar projection "2"

   Cracks/damage → Replace.



EAS30209
ASSEMBLING THE FRONT FORK LEGS (for YZF-R1)

The following procedure applies to both of the front fork legs.

EWA18360
⚠ WARNING

If both front fork legs are not filled with the specified amount of the fork oil, it may cause poor handling and a loss of stability.

TIP

- When assembling the front fork leg, be sure to replace the following parts:
  - –Inner tube bushing
  - –Outer tube bushing
  - –Oil seal
  - –Oil seal clip
  - –Dust seal
  - –O-ring
- Before assembling the front fork leg, make sure all of the components are clean.

1. Install:
   - Base valve assembly
   - Damper rod assembly

ECA22560
NOTICE

Allow the damper rod assembly to slide slowly down the inner tube. Be careful not to damage the inner tube.

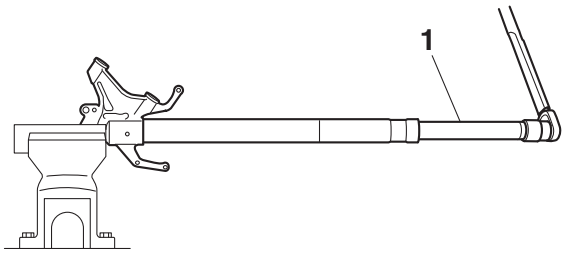
2. Tighten:
   - Damper rod assembly

Front fork damper rod assembly
40 N·m (4.0 kgf·m, 30 lb·ft)

TIP

Tighten the damper rod assembly with the damper rod holder "1".

	Damper rod holder (ø30) **90890-01506** **Damper rod holder** **YM-01506**



3. Lubricate:
   • Inner tube's outer surface

	Recommended oil **Yamaha Suspension Oil 01**

4. Install:
   • Dust seal "1" New
   • Oil seal clip "2" New
   • Oil seal "3" New
   • Washer "4"
   • Outer tube bushing "5" New
   • Inner tube bushing "6" New

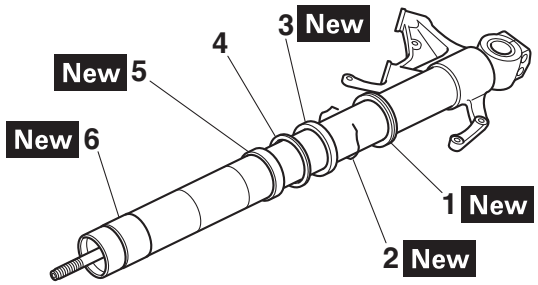
ECA19170

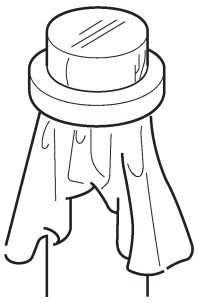
NOTICE

Make sure the numbered side of the oil seal faces bottom side.

TIP

- Before installing the oil seal, lubricate its lips with lithium-soap-based grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag to protect the oil seal during installation.

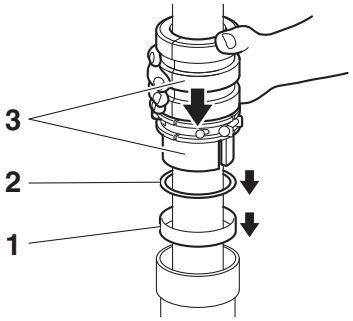




G088922

5. Install:
   • Outer tube
   (to the inner tube)
6. Install:
   • Outer tube bushing "1"
   • Washer "2"
   (with the fork seal driver "3")

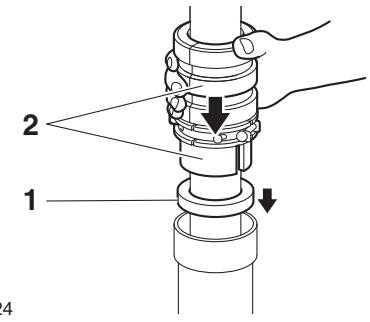
	Fork seal driver **90890-01442** **Adjustable fork seal driver (36–46 mm)** **YM-01442**



G088923

7. Install:
   • Oil seal "1"
   (with the fork seal driver "2")

	Fork seal driver **90890-01442** **Adjustable fork seal driver (36–46 mm)** **YM-01442**

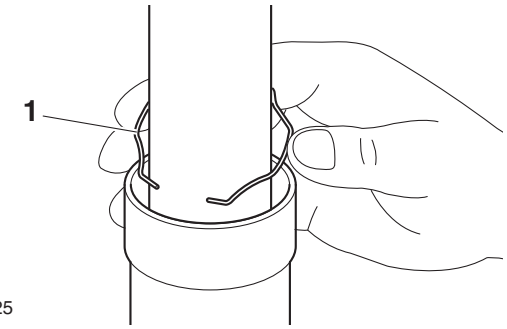


G088924

8. Install:
   • Oil seal clip “1”

TIP

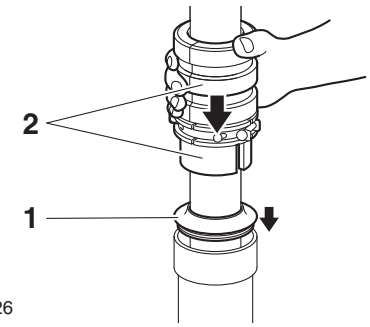
Adjust the oil seal clip so that it fits into the outer tube’s groove.



G088925

9. Install:
   • Dust seal “1”
   (with the fork seal driver “2”)

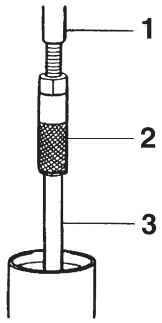
Fork seal driver
90890-01442
Adjustable fork seal driver (36–46 mm)
YM-01442



G088926

10. Install:
   • Rod puller “1”
   • Rod puller attachment (M10) “2”
   (onto the damper rod “3”)

Rod puller
90890-01437
Universal damping rod bleeding tool set
YM-A8703
Rod puller attachment (M10)
90890-01436
Universal damping rod bleeding tool set
YM-A8703



G088927

11. Fill:
   • Front fork leg
   (with the specified amount of the recommended fork oil)

Recommended oil
Yamaha Suspension Oil 01
Quantity (left)
470.0 cm³ (15.89 US oz, 16.58 Imp.oz)
Quantity (right)
470.0 cm³ (15.89 US oz, 16.58 Imp.oz)

ECA14230

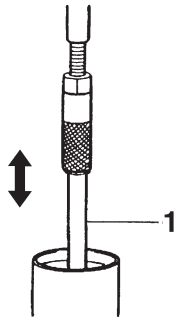
NOTICE

- **Be sure to use the recommended fork oil. Other oils may have an adverse effect on front fork performance.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**

12. After filling the front fork leg, slowly stroke the damper rod “1” up and down (at least ten times) to distribute the fork oil.

TIP

Be sure to stroke the damper rod slowly because the fork oil may spurt out.



G088929

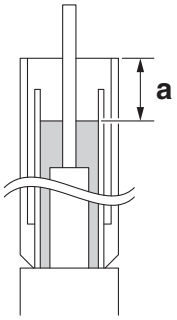
13.Before measuring the fork oil level, wait ten minutes until the oil has settled and the air bubbles have dispersed.

TIP

Be sure to bleed the front fork leg of any residual air.

14.Measure:
- Front fork leg oil level "a"
  (from the top of the outer tube, with the outer tube fully compressed and without the fork spring)
  Out of specification → Correct.

Level (left)
84 mm (3.3 in)
Level (right)
84 mm (3.3 in)



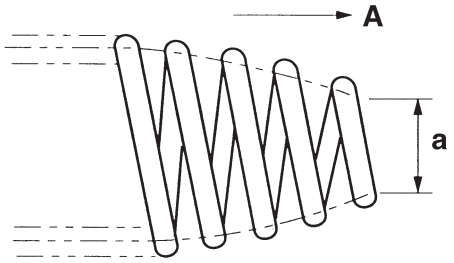
G088930

15.Install:
- Fork spring
- Spacer
- Locknut
- Damper adjusting rod 2
- Damper adjusting rod 1
- Guide
- Cap bolt

  (along with the O-ring New)
  a. Remove the rod puller and rod puller attachment.
  b. Install the fork spring.

TIP

Install the fork spring with the smaller diameter "a" facing up "A".



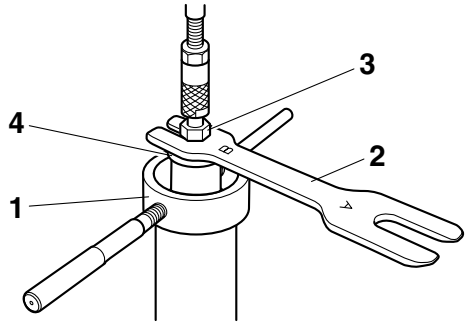
G088931

  c. Install the locknut all the way onto the damper rod assembly.
  d. Install the rod puller and rod puller attachment.
  e. Install the spacer and guide.
  f. Install the fork spring compressor.
  g. Press down on the spacer with the fork spring compressor "1".
  h. Pull up the rod puller and install the rod holder "2" between the locknut "3" and the guide "4".

Rod puller
90890-01437
Universal damping rod bleeding tool set
YM-A8703
Rod puller attachment (M10)
90890-01436
Universal damping rod bleeding tool set
YM-A8703
Fork spring compressor
90890-01441
Fork spring compressor
YM-01441
Rod holder
90890-01434
Damper rod holder double ended
YM-01434

TIP

Use the side of the rod holder that is marked "B".



i. Remove the rod puller and rod puller attachment.
j. Install the damper adjusting rods and cap bolt, and then finger tighten the cap bolt.

EWA13670

⚠ WARNING

Always use a new cap bolt O-ring.

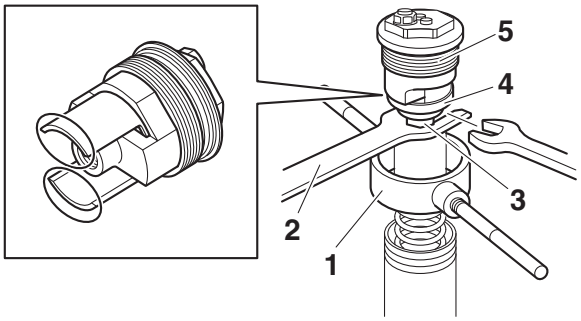
k. Hold the cap bolt “5” and tighten the locknut “3” to specification.

ECA17390

NOTICE

When loosening the nut, be sure not to break the projections on the cap bolt collar of the cap bolt.

	Front fork cap bolt locknut 15 N·m (1.5 kgf·m, 11 lb·ft)



l. Remove the rod holder and fork spring compressor.

16. Install:
- Cap bolt (to the outer tube)

TIP

- Temporarily tighten the cap bolt.
- When to tighten the cap bolt to the specified torque is after installing the front fork leg to the vehicle and tightening the lower bracket pinch bolts.

EAS30210

INSTALLING THE FRONT FORK LEGS (for YZF-R1)

The following procedure applies to both of the front fork legs.

1. Install:
- Front fork leg
  Temporarily tighten the upper and lower bracket pinch bolts.

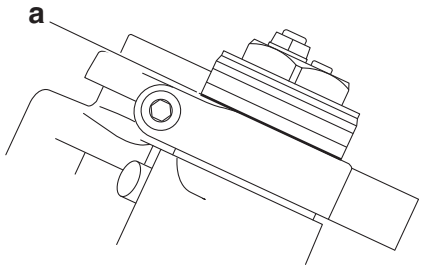
EWA13680

⚠ WARNING

Make sure the brake hoses are routed properly.

TIP

Align the outer tube with the position “a” as shown in the illustration.

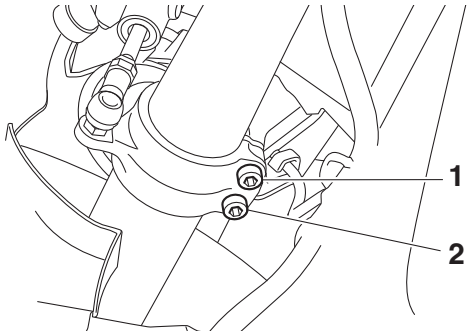


2. Tighten:
- Lower bracket pinch bolts “1” and “2”

	Lower bracket pinch bolt 23 N·m (2.3 kgf·m, 17 lb·ft)

TIP

Tighten each bolt to 23 N·m (2.3 kgf·m, 17 lb·ft) in the order pinch bolt “1” → pinch bolt “2” → pinch bolt “1” → pinch bolt “2”.



3. Tighten:
- Cap bolt “1”

	Front fork cap bolt 23 N·m (2.3 kgf·m, 17 lb·ft)

• Handlebar bolt “2”

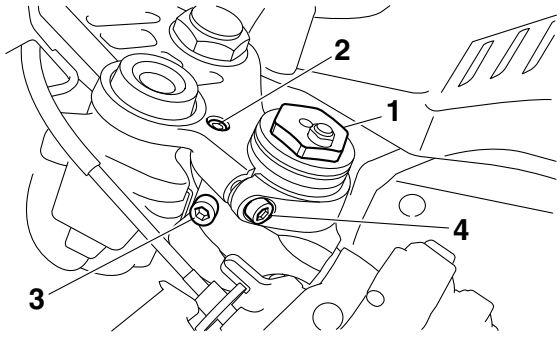
	Handlebar bolt **7 N·m (0.7 kgf·m, 5.2 lb·ft)**

• Handlebar pinch bolt “3”

	Handlebar pinch bolt **32 N·m (3.2 kgf·m, 24 lb·ft)**

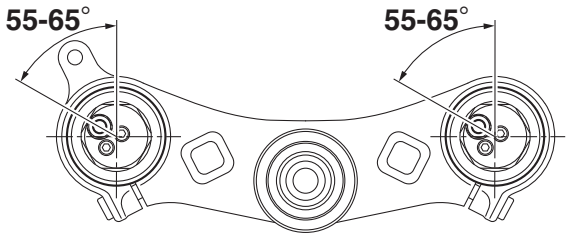
• Upper bracket pinch bolt “4”

	Upper bracket pinch bolt **26 N·m (2.6 kgf·m, 19 lb·ft)**



TIP

When installing the front fork legs, make sure that the spring preload adjusting nuts are positioned at the angles shown in the illustration.



4. Check:
   • Cable routing

TIP

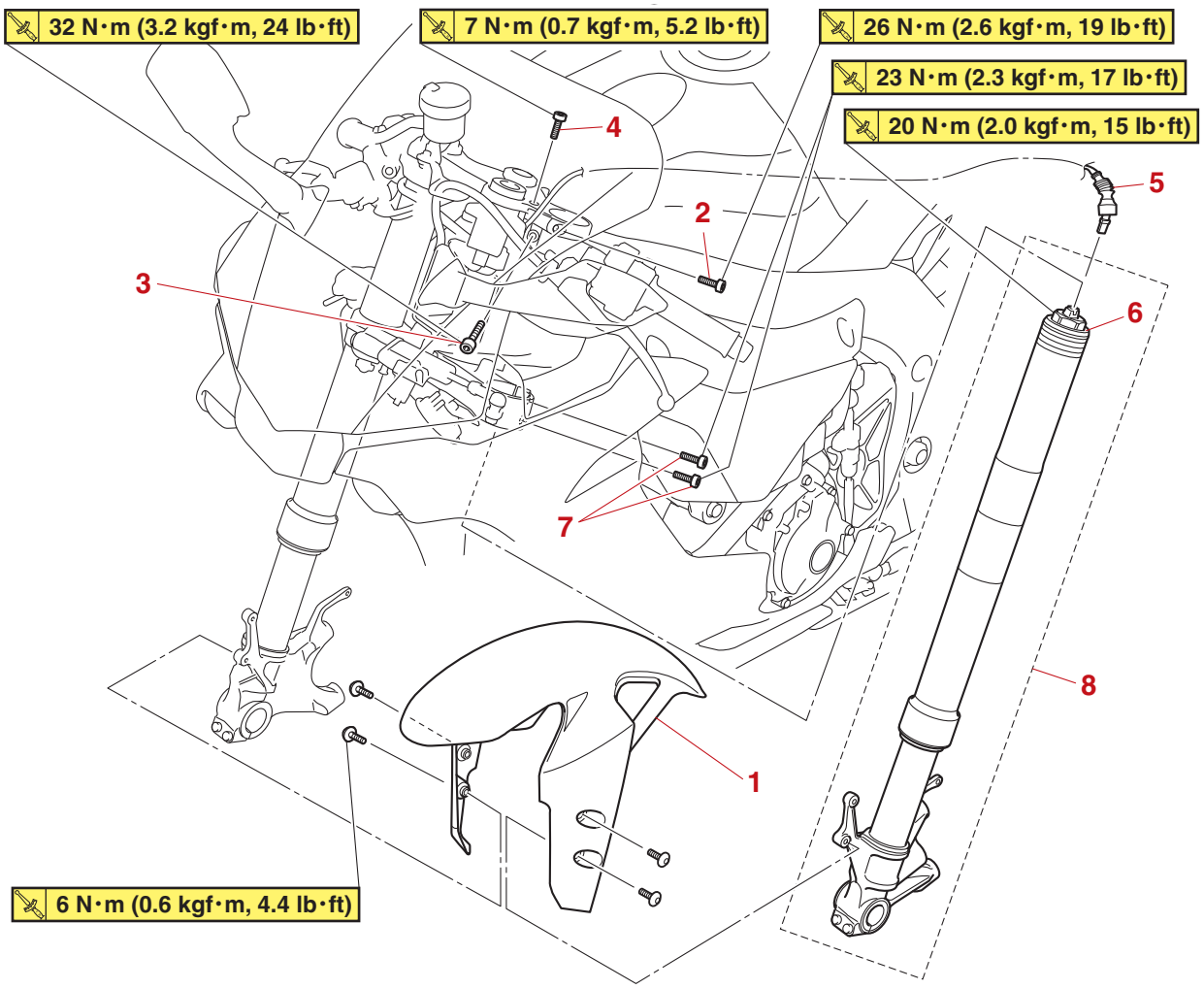
Make sure the brake hose, throttle cables, clutch cable, and handlebar switch leads are routed properly. Refer to “CABLE ROUTING” on page 2-17.

5. Adjust:
   • Spring preload
   • Rebound damping
   • Compression damping
   Refer to “ADJUSTING THE FRONT FORK LEGS (for YZF-R1)” on page 3-21.

EAS20169

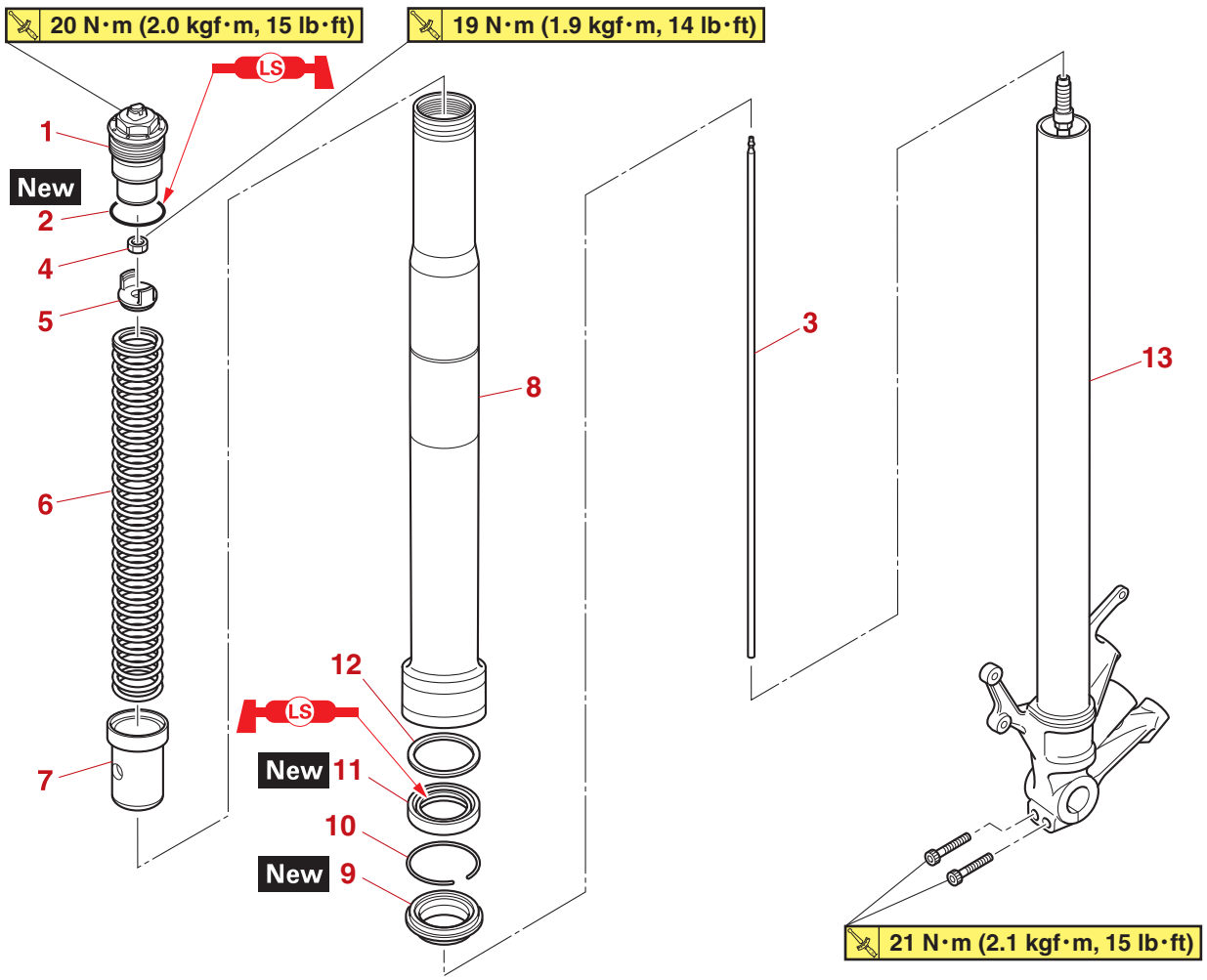
FRONT FORK (for YZF-R1M)

Removing the front fork legs (for YZF-R1M)



Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front fork legs.
	Front wheel		Refer to "FRONT WHEEL" on page 4-35.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
1	Front fender	1	
2	Upper bracket pinch bolt	1	Loosen.
3	Handlebar pinch bolt	1	Loosen.
4	Handlebar bolt	1	Loosen.
5	Front fork stepping motor coupler	1	Disconnect.
6	Cap bolt (with front fork stepping motor)	1	Loosen.
7	Lower bracket pinch bolt	2	Loosen.
8	Front fork leg	1	

Disassembling the front fork legs



Order	Job/Parts to remove	Q'ty	Remarks
			The following procedure applies to both of the front fork legs.
1	Cap bolt (with front fork stepping motor)	1	
2	O-ring	1	
3	Damper adjusting rod	1	
4	Locknut	1	
5	Upper spring seat	1	
6	Fork spring	1	
7	Spacer	1	
8	Outer tube	1	
9	Dust seal	1	
10	Oil seal clip	1	
11	Oil seal	1	
12	Washer	1	
13	Inner tube	1	

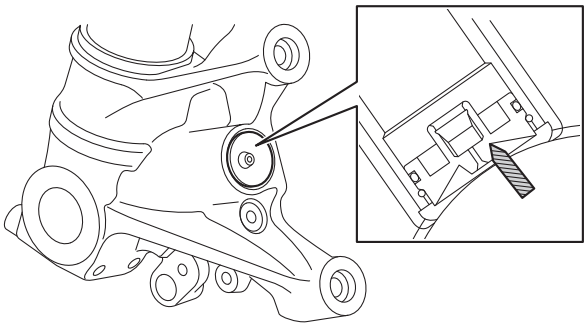
EAS33359
HANDLING THE FRONT FORK (for YZF-R1M)
EWA20910
⚠ WARNING

This front fork contains highly compressed nitrogen gas. Before handling the front fork, read and make sure you understand the following information. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling of the front fork.
- **Do not tamper or attempt to open the front fork.**
- **Do not subject the front fork to an open flame or any other source of high heat. High heat can cause an explosion due to excessive gas pressure.**
- **Do not deform or damage the front fork in any way. Front fork damage will result in poor damping performance.**

EAS33360
DISPOSING OF FRONT FORK LEG (for YZF-R1M)
1. Gas pressure must be released before disposing of a front fork. To release the gas pressure, drill a 2–3 mm (0.08–0.12 in) hole through the front fork as shown.

EWA13760
⚠ WARNING

Wear eye protection to prevent eye damage from released gas or metal chips.



EAS31648
REMOVING THE FRONT FORK LEGS (for YZF-R1M)
The following procedure applies to both of the front fork legs.
1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

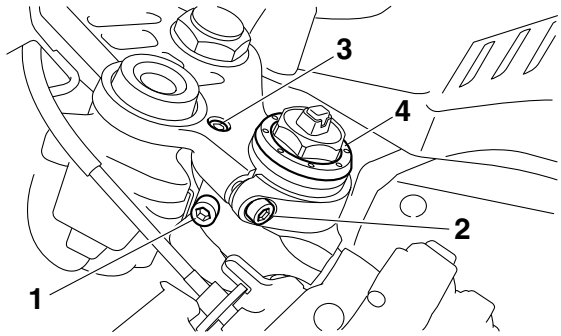
TIP

Place the vehicle on a maintenance stand so that the front wheel is elevated.

2. Remove:
   - Front brake caliper
     Refer to “FRONT BRAKE” on page 4-52.
   - Front wheel
     Refer to “FRONT WHEEL” on page 4-35.
3. Disconnect:
   - Front fork stepping motor coupler
4. Loosen:
   - Handlebar pinch bolt “1”
   - Upper bracket pinch bolt “2”
   - Handlebar bolt “3”
   - Cap bolt “4”
   - Lower bracket pinch bolts “5”

EWA13640
⚠ WARNING

Before loosening the upper and lower bracket pinch bolts, support the front fork leg.

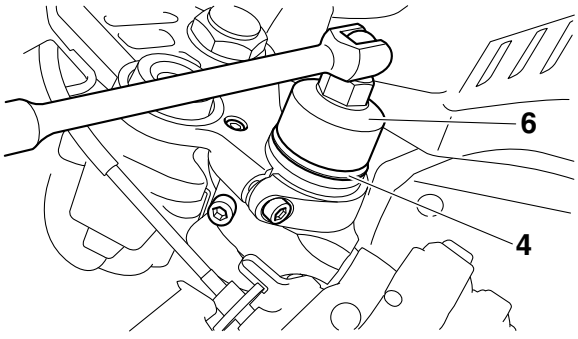


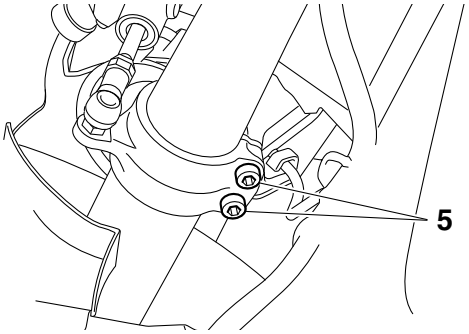
TIP

Loosen the cap bolt “4” using the front fork cap bolt wrench “6”.



Front fork cap bolt wrench 42mm
90890-01575
YM-01575





5. Remove:
   • Front fork leg

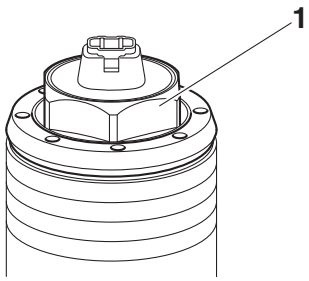
EAS31649
DISASSEMBLING THE FRONT FORK LEGS (for YZF-R1M)

The following procedure applies to both of the front fork legs.

1. Turn the spring preload adjusting bolt "1" counterclockwise until it stops.

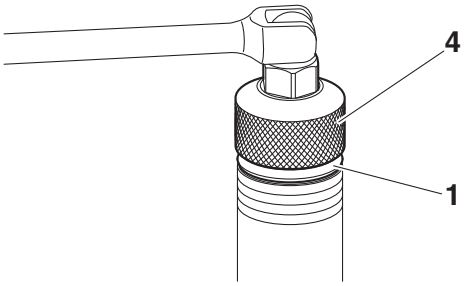
TIP

Turn the spring preload adjusting bolt "1" before removing the front fork from the vehicle.

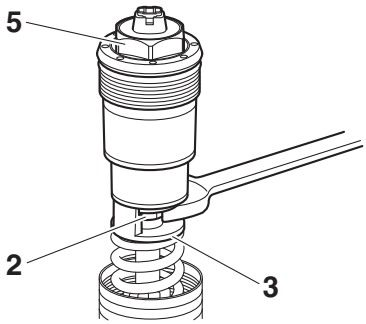


2. Remove:
   • Cap bolt "1"
   • Locknut "2"
   • Upper spring seat "3"
   • Damper adjusting rod
   a. Loosen the cap bolt "1" using the front fork cap bolt wrench "4" and then remove it from the outer tube.

	**Front fork cap bolt wrench 42mm** **90890-01575** **YM-01575**



   b. Hold the spring preload adjusting bolt "5" and loosen the locknut.

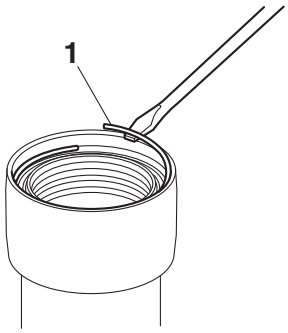


   c. Remove the cap bolt, damper adjusting rod, upper spring seat and fork spring.
3. Drain:
   • Fork oil

TIP

Separately from the fork oil in the inner tube, fork oil is in the inside cartridge of the lower part of the inner tube. The fork oil of the cartridge in the inner tube cannot be replaced.

4. Remove:
   • Outer tube
5. Remove:
   • Dust seal
   • Oil seal clip "1" (with a flat-head screwdriver)
   • Oil seal
   • Washer



EAS31650
CHECKING THE FRONT FORK LEGS (for YZF-R1M)

The following procedure applies to both of the front fork legs.

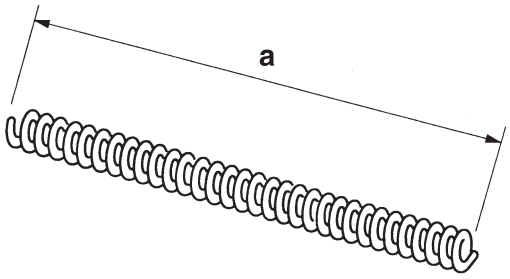
1. Check:
   - Inner tube
   - Outer tube
     Bends/damage/scratches → Replace.

EWA13650
⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.

2. Measure:
   - Spring free length “a”
     Out of specification → Replace.

Fork spring free length
260.0 mm (10.24 in)
Limit
254.8 mm (10.03 in)



G088921

3. Check:
   - Cap bolt
     Cracks/damage → Replace.

EAS31651
ASSEMBLING THE FRONT FORK LEGS (for YZF-R1M)

The following procedure applies to both of the front fork legs.

EWA18360
⚠ WARNING

If both front fork legs are not filled with the specified amount of the fork oil, it may cause poor handling and a loss of stability.

TIP
- When assembling the front fork leg, be sure to replace the following parts:
  –Oil seal
  –Dust seal
  –O-ring
- Before assembling the front fork leg, make sure all of the components are clean.

1. Lubricate:
   - Inner tube’s outer surface

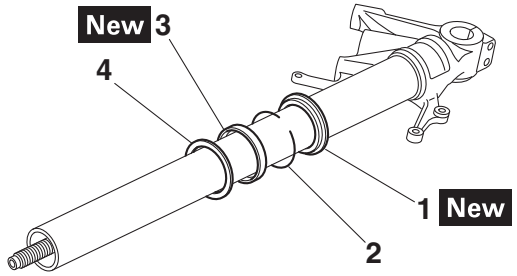
Recommended oil
Öhlins R&T 43

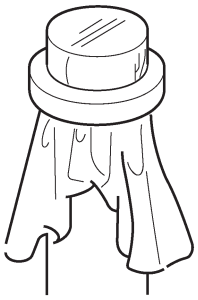
2. Install:
   - Dust seal “1” New
   - Oil seal clip “2”
   - Oil seal “3” New
   - Washer “4”

ECA19170
NOTICE

Make sure the numbered side of the oil seal faces bottom side.

TIP
- Before installing the oil seal, lubricate its lips with lithium-soap-based grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag to protect the oil seal during installation.

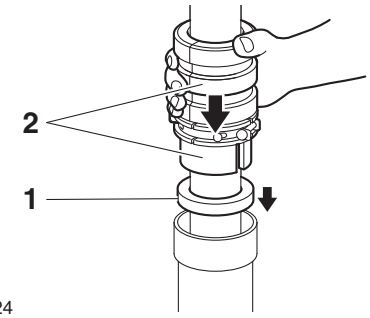




G088922

3. Install:
   - Outer tube
     (to the inner tube)
4. Install:
   - Washer
   - Oil seal “1”
     (with the fork seal driver “2”)

Fork seal driver
90890-01442
Adjustable fork seal driver (36–46 mm)
YM-01442

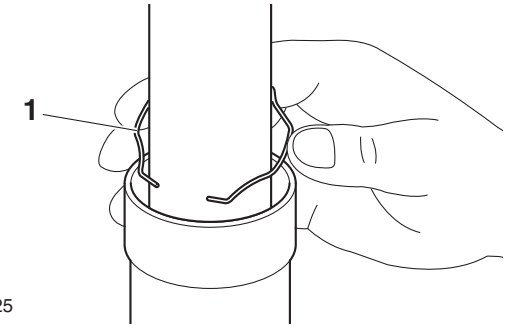


G088924

5. Install:
   • Oil seal clip “1”

TIP

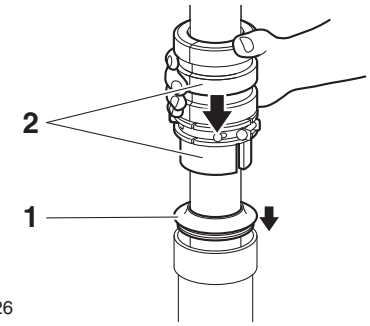
Adjust the oil seal clip so that it fits into the outer tube’s groove.



G088925

6. Install:
   • Dust seal “1”
   (with the fork seal driver “2”)

Fork seal driver
90890-01442
Adjustable fork seal driver (36–46 mm)
YM-01442



G088926

7. Fill:
   • Front fork leg
   (with the specified amount of the recommended fork oil)

Recommended oil
Öhlins R&T 43
Quantity (left)
263 cm³ (8.89 US oz, 9.26 Imp.oz)
Quantity (right)
263 cm³ (8.89 US oz, 9.26 Imp.oz)

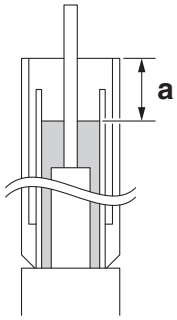
ECA14230

NOTICE

- **Be sure to use the recommended fork oil. Other oils may have an adverse effect on front fork performance.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**

8. Before measuring the fork oil level, wait ten minutes until the oil has settled and the air bubbles have dispersed.
9. Measure:
   • Front fork leg oil level “a”
   (from the top of the outer tube, with the outer tube fully compressed and without the fork spring)
   Out of specification → Correct.

Level (left)
180 mm (7.1 in)
Level (right)
180 mm (7.1 in)



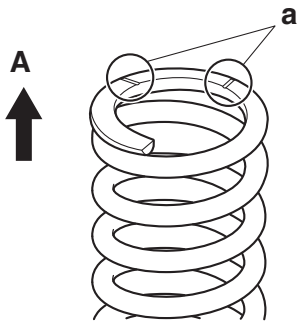
G088930

10. Install:
   • Spacer
   • Fork spring
   • Upper spring seat
   • Locknut
   • Damper adjusting rod

• Cap bolt
(along with the O-ring New)
a. Install the spacer and fork spring.

TIP

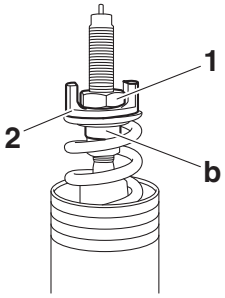
Install the fork spring with the marks “a” facing up “A”.



b. Install the locknut “1”, upper spring seat “2” and damper adjusting rod.

TIP

Touch the locknut “1” to the upper spring seat “2”, and install the locknut “1” until the upper spring seat “2” contacts with the width across flats “b” of the inner tube.



c. Install the cap bolt “3”.

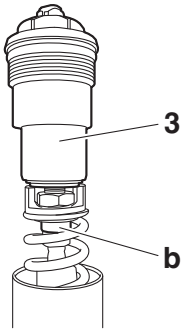
EWA13670

⚠ WARNING

Always use a new cap bolt O-ring.

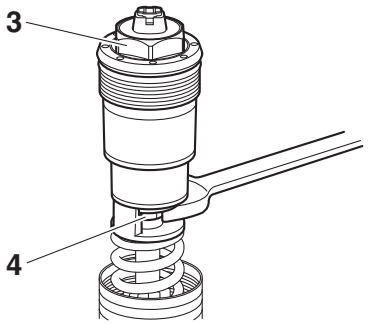
TIP

Tighten the cap bolt “3” by hand while holding the width across flats “b” of the inner tube.



d. Hold the spring preload adjusting bolt “3” and tighten the locknut “4” to specification.

	Front fork cap bolt locknut 19 N·m (1.9 kgf·m, 14 lb·ft)



11. Install:
• Cap bolt
(to the outer tube)

TIP

• Temporarily tighten the cap bolt.
• When to tighten the cap bolt to the specified torque is after installing the front fork leg to the vehicle and tightening the lower bracket pinch bolts.

EAS31652

INSTALLING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Install:
• Front fork leg
Temporarily tighten the upper and lower bracket pinch bolts.

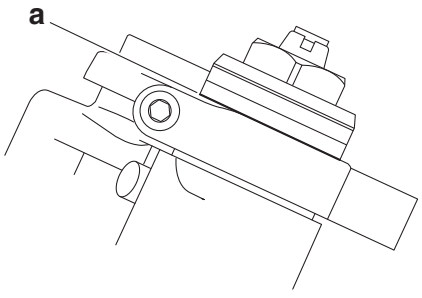
EWA13680

⚠ WARNING

Make sure the brake hoses are routed properly.

TIP

Align the outer tube with the position “a” as shown in the illustration.

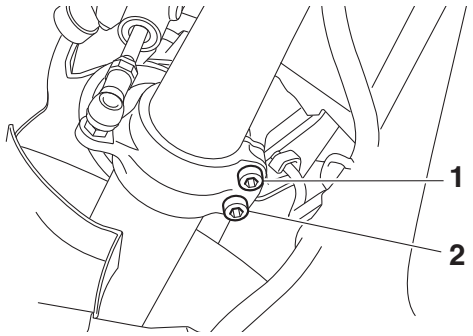


2. Tighten:
   • Lower bracket pinch bolts “1” and “2”

	Lower bracket pinch bolt 23 N·m (2.3 kgf·m, 17 lb·ft)

TIP

Tighten each bolt to 23 N·m (2.3 kgf·m, 17 lb·ft) in the order pinch bolt “1” → pinch bolt “2” → pinch bolt “1” → pinch bolt “2”.



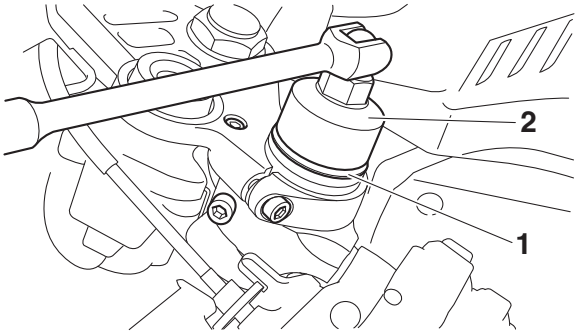
3. Tighten:
   • Cap bolt “1”

TIP

Tighten the cap bolt “1” using the front fork cap bolt wrench “2”.

	Front fork cap bolt wrench 42mm 90890-01575 YM-01575

	Front fork cap bolt 20 N·m (2.0 kgf·m, 15 lb·ft)



   • Handlebar bolt “3”

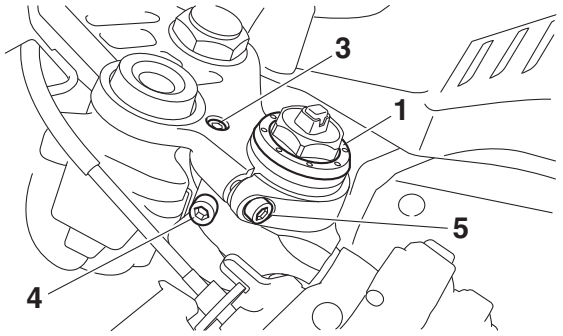
	Handlebar bolt 7 N·m (0.7 kgf·m, 5.2 lb·ft)

   • Handlebar pinch bolt “4”

	Handlebar pinch bolt 32 N·m (3.2 kgf·m, 24 lb·ft)

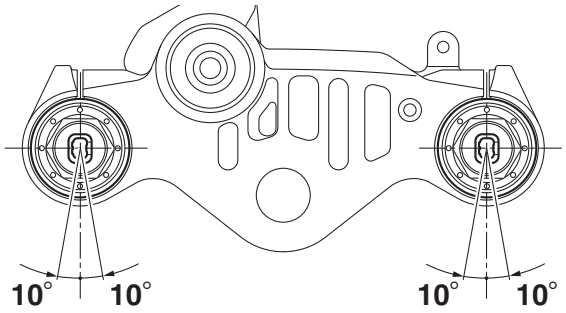
   • Upper bracket pinch bolt “5”

	Upper bracket pinch bolt 26 N·m (2.6 kgf·m, 19 lb·ft)



TIP

When installing the front fork legs, make sure that the front fork stepping motor couplers are positioned at the angles shown in the illustration.



4. Check:
   • Cable routing

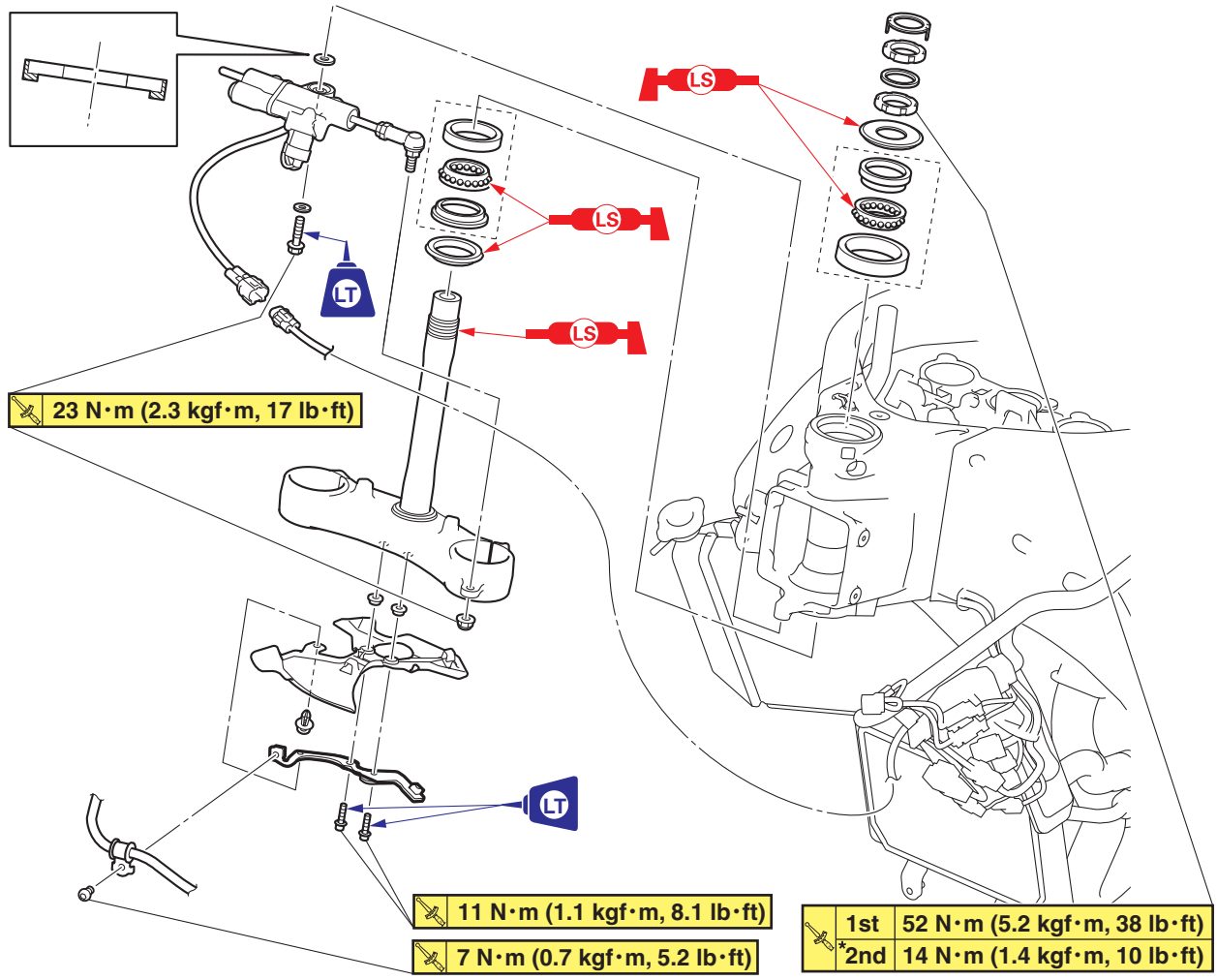
TIP

Make sure the brake hose, throttle cables, clutch cable, and handlebar switch leads are routed properly. Refer to “CABLE ROUTING” on page 2-17.

5. Adjust:
   • Spring preload
   • Rebound damping
   • Compression damping
   Refer to “ADJUSTING THE PRELOAD OF THE FRONT FORK LEGS (for YZF-R1M)” on page 3-23 and “ADJUSTING THE DAMPING FORCE OF THE FRONT FORK LEGS AND REAR SHOCK ABSORBER ASSEMBLY (for YZF-R1M)” on page 3-23.

EAS20035
STEERING HEAD

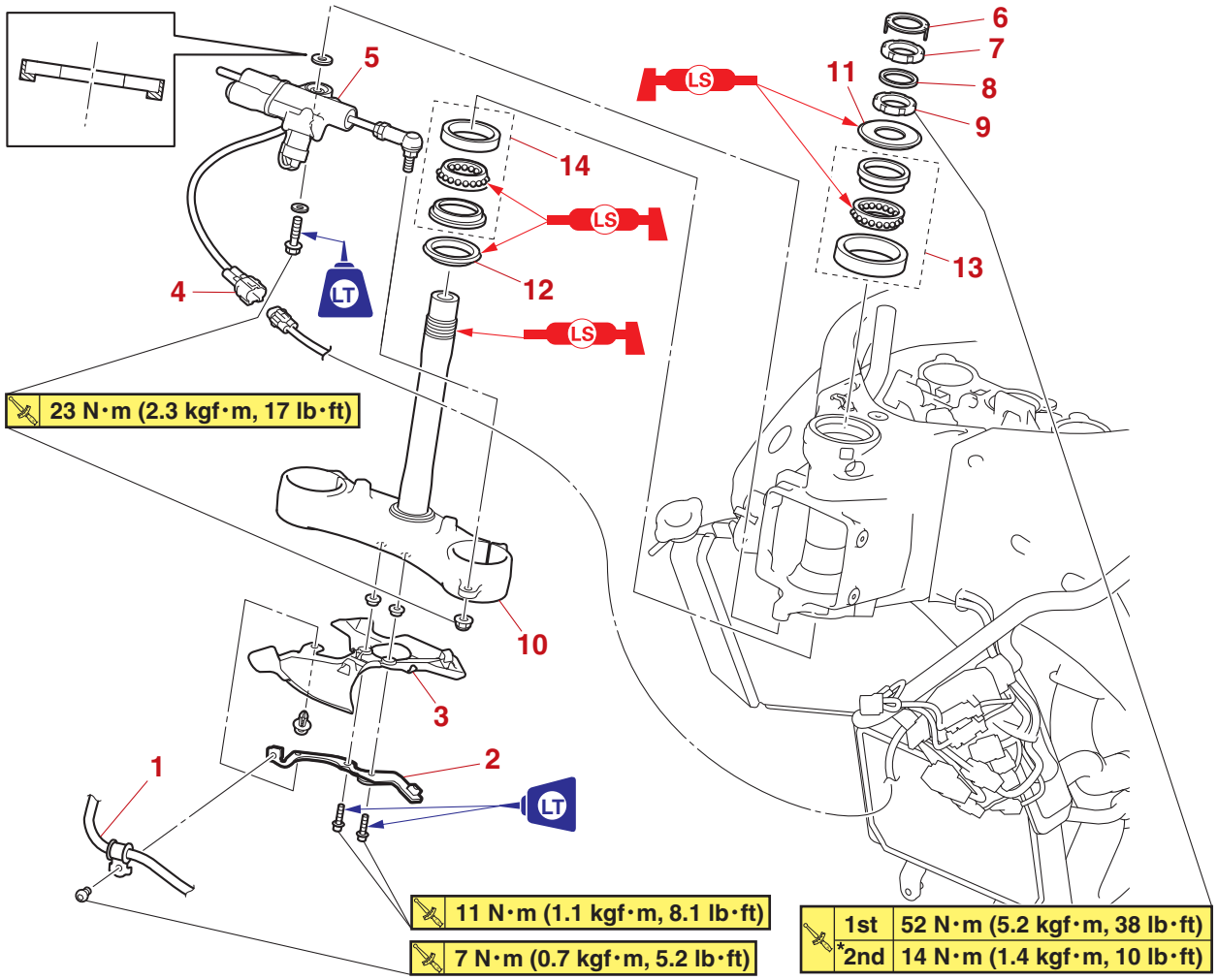
Removing the lower bracket



*** Loosen the lower ring nut completely, and then tighten it to specification.**

Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Windshield		Refer to "GENERAL CHASSIS (4)" on page 4-13.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Front cowling assembly		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Air intake duct		Refer to "GENERAL CHASSIS (7)" on page 4-28.
	Front wheel		Refer to "FRONT WHEEL" on page 4-35.
	Upper bracket/Handlebars		Refer to "HANDLEBARS" on page 4-83.
	Front fork legs		Refer to "FRONT FORK (for YZF-R1)" on page 4-89 or refer to "FRONT FORK (for YZF-R1M)" on page 4-100.

Removing the lower bracket



* **Loosen the lower ring nut completely, and then tighten it to specification.**

Order	Job/Parts to remove	Q'ty	Remarks
1	Front brake hose	1	
2	Horn bracket	1	
3	Lower bracket cover	1	
4	Steering damper solenoid coupler	1	Disconnect.
5	Steering damper solenoid	1	
6	Lock washer	1	
7	Upper ring nut	1	
8	Rubber washer	1	
9	Lower ring nut	1	
10	Lower bracket	1	
11	Bearing cover	1	
12	Lower bearing dust seal	1	
13	Upper bearing	1	
14	Lower bearing	1	

EAS30213
REMOVING THE LOWER BRACKET

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

2. Remove:
   - Upper ring nut “1”
   - Rubber washer
   - Lower ring nut “2”
   - Lower bracket

EWA13730
⚠ WARNING

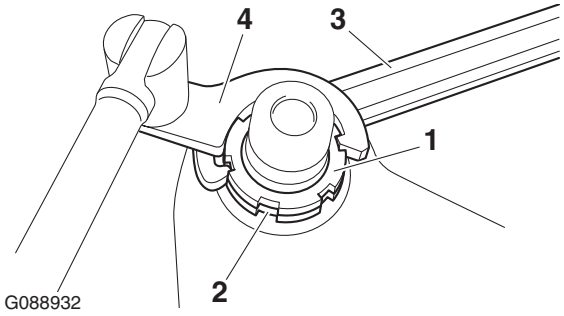
Securely support the lower bracket so that there is no danger of it falling.

TIP

- Hold the lower ring nut with steering nut wrench, and then remove the upper ring nut with the ring nut wrench “3”.
- Remove the lower ring nut with the steering nut wrench “4”.



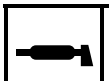
Ring nut wrench
90890-01268
Spanner wrench
YU-01268
Steering nut wrench
90890-01403
Exhaust flange nut wrench
YU-A9472



G088932

EAS30214
CHECKING THE STEERING HEAD

1. Wash:
   - Bearing
   - Bearing race



Recommended cleaning solvent
Kerosene

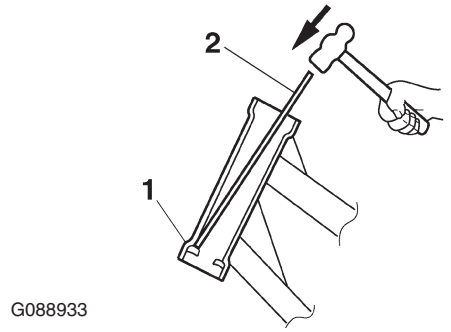
2. Check:
   - Bearing
   - Bearing race
     Damage/pitting → Replace the bearings and bearing races as a set.
3. Replace:
   - Bearing
   - Bearing race
     a. Remove the bearing races from the steering head pipe “1” with a long rod “2” and hammer.
     b. Remove the bearing race “3” from the lower bracket with a floor chisel “4” and hammer.
     c. Install a new dust seal and new bearing races.

ECA14270
NOTICE

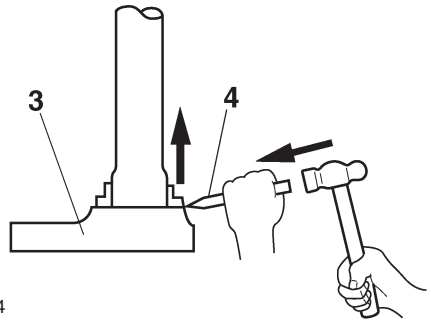
If the bearing race is not installed properly, the steering head pipe could be damaged.

TIP

- Always replace the bearings and bearing races as a set.
- Whenever the steering head is disassembled, replace the dust seal.



G088933



G088934

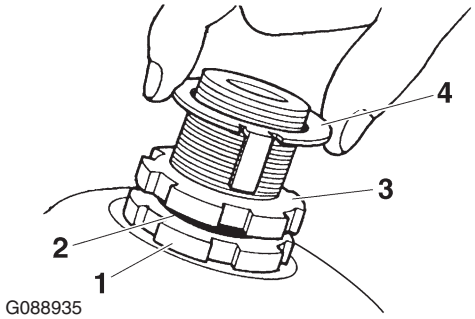
4. Check:
   - Upper bracket
   - Lower bracket
     (along with the steering stem)
     Bends/cracks/damage → Replace.

EAS30216
INSTALLING THE STEERING HEAD

1. Lubricate:
   • Upper bearing
   • Lower bearing

	Recommended lubricant **Lithium-soap-based grease**

2. Install:
   • Lower ring nut “1”
   • Rubber washer “2”
   • Upper ring nut “3”
   • Lock washer “4”
   Refer to “CHECKING AND ADJUSTING THE STEERING HEAD” on page 3-19.



G088935

3. Install:
   • Upper bracket
   • Steering stem nut
   Refer to “HANDLEBARS” on page 4-83.

TIP

Temporarily tighten the steering stem nut.

4. Install:
   • Front fork legs
   Refer to “FRONT FORK (for YZF-R1)” on page 4-89 or “FRONT FORK (for YZF-R1M)” on page 4-100.

TIP

Temporarily tighten the upper and lower bracket pinch bolts.

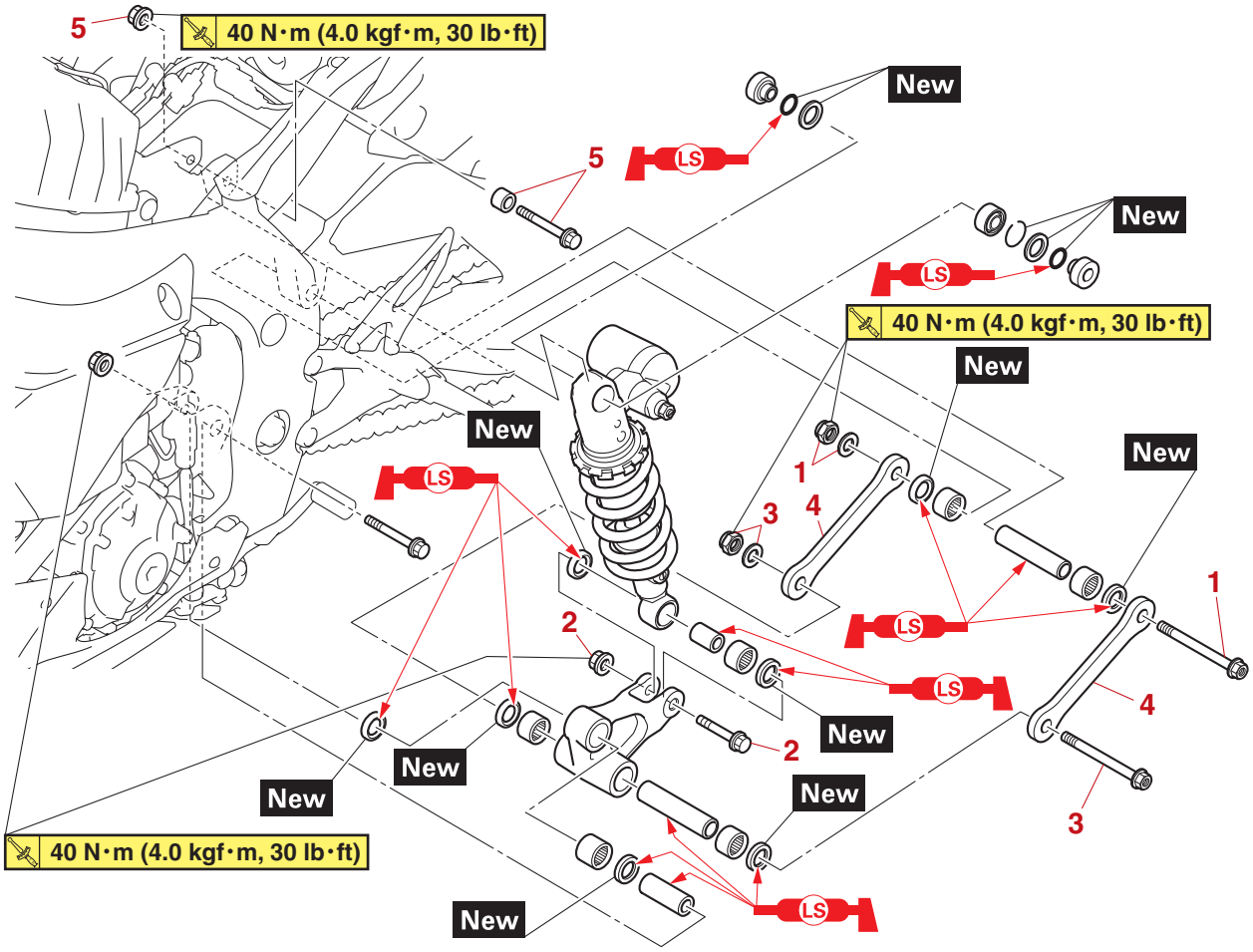
EAS30215
CHECKING THE STEERING DAMPER

1. Check:
   • Steering damper body
   Damage/oil leaks → Replace the steering damper assembly.
   • Steering damper rod
   Bends/scratch → Replace the steering damper assembly.
   • Bearing
   Damage/pitting → Replace the steering damper assembly.

EAS20036

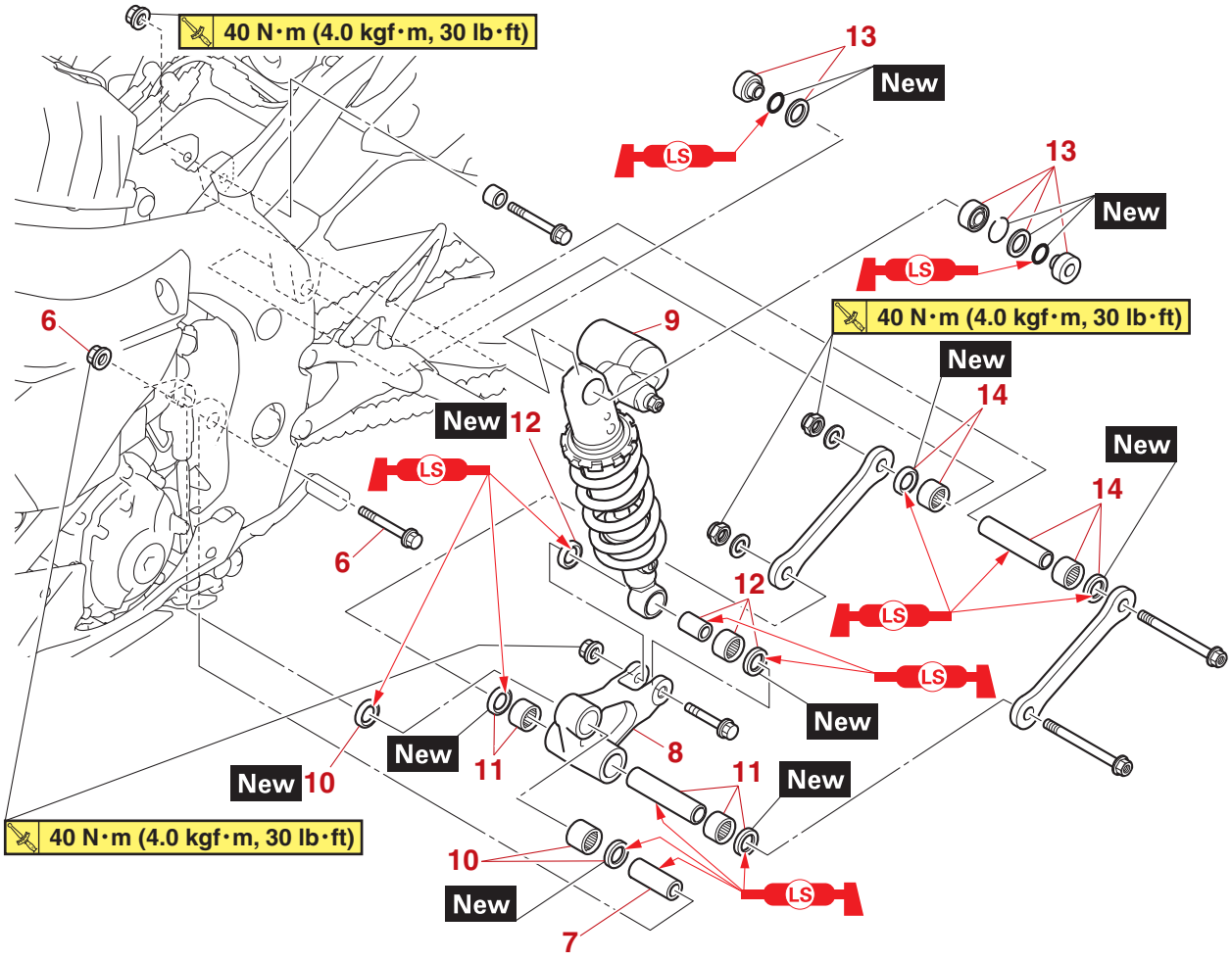
REAR SHOCK ABSORBER ASSEMBLY

Removing the rear shock absorber assembly (for YZF-R1)



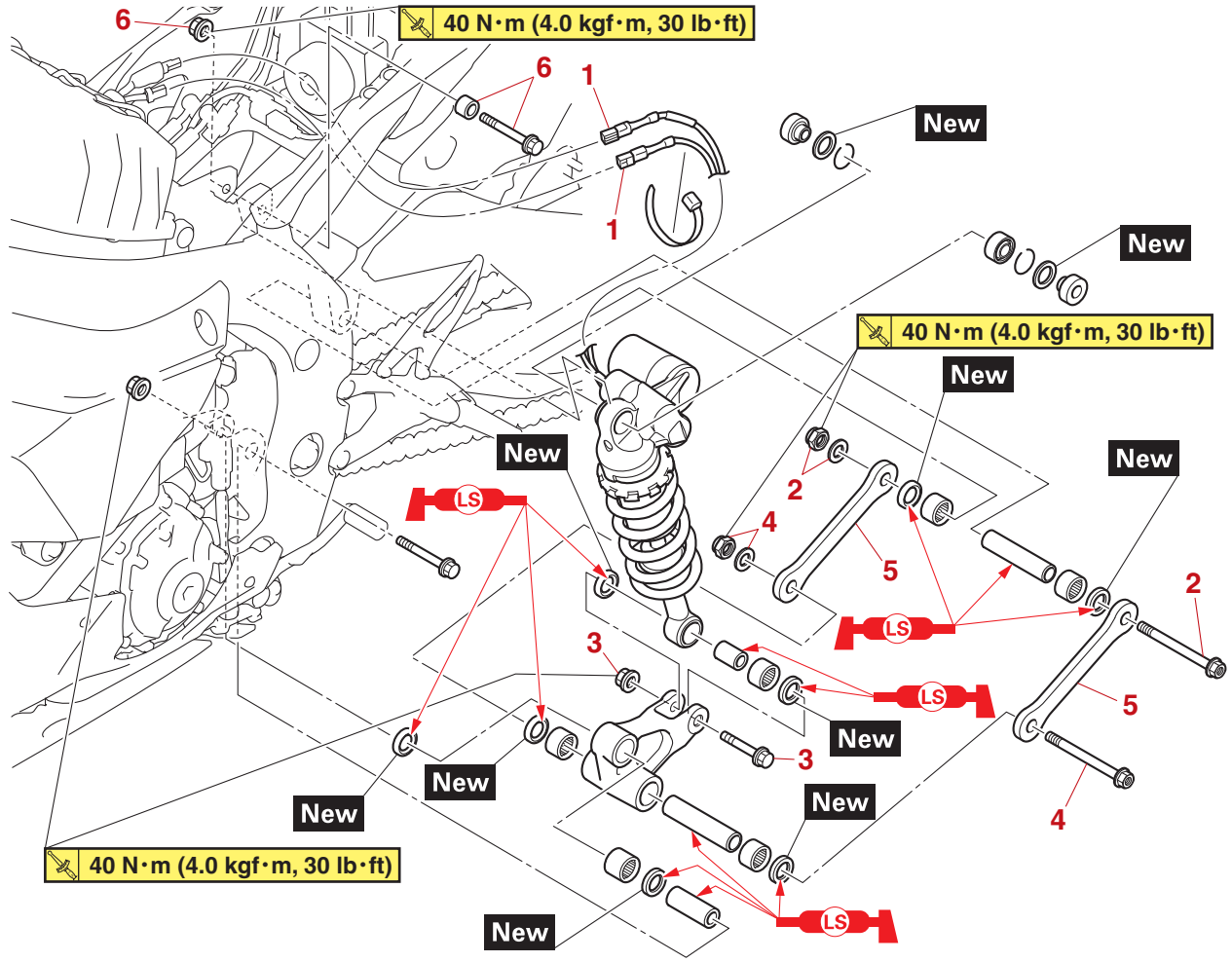
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Rear brake caliper		Refer to "REAR BRAKE" on page 4-63.
	Rear wheel		Refer to "REAR WHEEL" on page 4-43.
	Exhaust chamber		Refer to "ENGINE REMOVAL" on page 5-11.
1	Connecting arm upper nut/Washer/Bolt	1/1/1	
2	Rear shock absorber assembly lower nut/Bolt	1/1	
3	Connecting arm lower nut/Washer/Bolt	1/1/1	
4	Connecting arm	2	
5	Rear shock absorber assembly upper nut/Collar/Bolt	1/1/1	

Removing the rear shock absorber assembly (for YZF-R1)



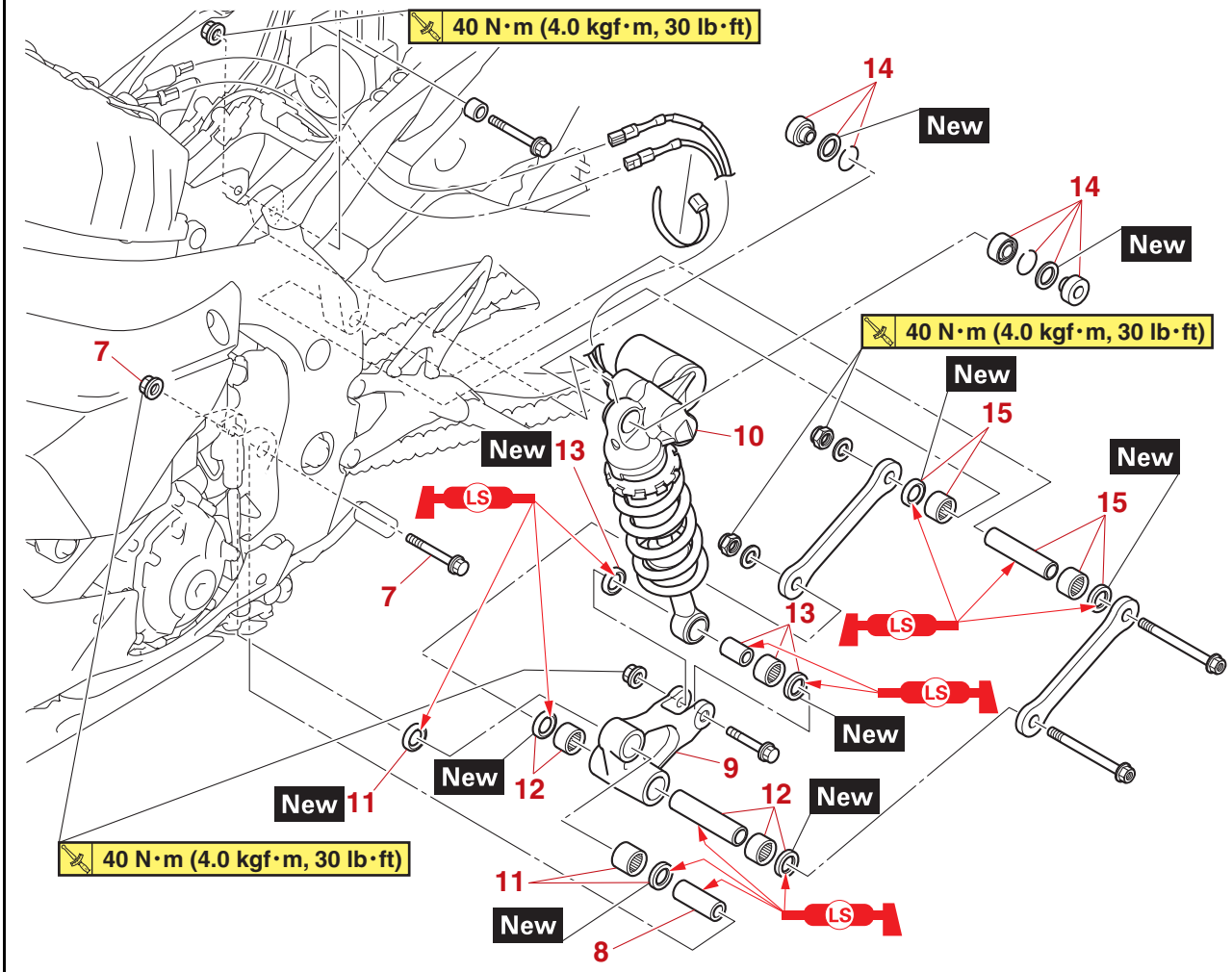
Order	Job/Parts to remove	Q'ty	Remarks
6	Relay arm nut/Bolt	1/1	
7	Collar	1	
8	Relay arm	1	
9	Rear shock absorber assembly	1	
10	Oil seal/Bearing	2/1	
11	Collar/Oil seal/Bearing	1/2/2	
12	Collar/Oil seal/Bearing	1/2/1	
13	Collar/Dust seal/Circlip/Bushing	2/2/1/1	
14	Collar/Oil seal/Bearing	1/2/2	

Removing the rear shock absorber assembly (for YZF-R1M)



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Rear brake caliper		Refer to "REAR BRAKE" on page 4-63.
	Rear wheel		Refer to "REAR WHEEL" on page 4-43.
	Exhaust chamber		Refer to "ENGINE REMOVAL" on page 5-11.
1	Rear shock absorber assembly stepping motor coupler	2	Disconnect.
2	Connecting arm upper nut/Washer/Bolt	1/1/1	
3	Rear shock absorber assembly lower nut/Bolt	1/1	
4	Connecting arm lower nut/Washer/Bolt	1/1/1	
5	Connecting arm	2	
6	Rear shock absorber assembly upper nut/Collar/Bolt	1/1/1	

Removing the rear shock absorber assembly (for YZF-R1M)



Order	Job/Parts to remove	Q'ty	Remarks
7	Relay arm nut/Bolt	1/1	
8	Collar	1	
9	Relay arm	1	
10	Rear shock absorber assembly	1	
11	Oil seal/Bearing	2/1	
12	Collar/Oil seal/Bearing	1/2/2	
13	Collar/Oil seal/Bearing	1/2/1	
14	Collar/Dust seal/Circlip/Bushing	2/2/2/1	
15	Collar/Oil seal/Bearing	1/2/2	

EAS30826
HANDLING THE REAR SHOCK ABSORBER

EWA13740
⚠ WARNING

This rear shock absorber contains highly compressed nitrogen gas. Before handling the rear shock absorber, read and make sure you understand the following information. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling of the rear shock absorber.
- **Do not tamper or attempt to open the rear shock absorber.**
- **Do not subject the rear shock absorber to an open flame or any other source of high heat. High heat can cause an explosion due to excessive gas pressure.**
- **Do not deform or damage the rear shock absorber in any way. Rear shock absorber damage will result in poor damping performance.**

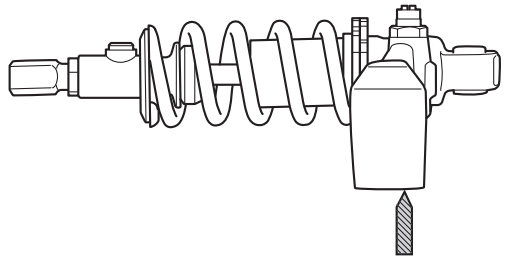
EAS30729
DISPOSING OF A REAR SHOCK ABSORBER

1. Gas pressure must be released before disposing of a rear shock absorber. To release the gas pressure, drill a 2–3 mm (0.08–0.12 in) hole through the rear shock absorber as shown.

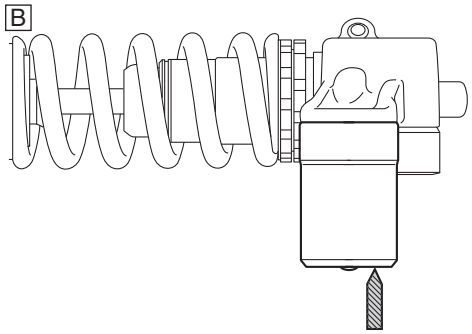
EWA13760
⚠ WARNING

Wear eye protection to prevent eye damage from released gas or metal chips.

A



B



A. YZF-R1
B. YZF-R1M

EAS30219
REMOVING THE REAR SHOCK ABSORBER ASSEMBLY

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

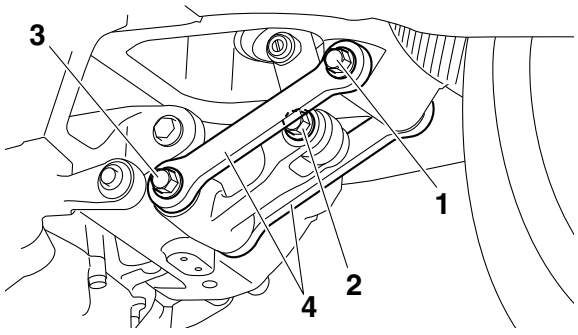
TIP

Place the vehicle on a maintenance stand so that the rear wheel is elevated.

2. Remove:
   - Connecting arm upper nut
   - Connecting arm upper bolt “1”
   - Rear shock absorber assembly lower nut
   - Rear shock absorber assembly lower bolt “2”
   - Connecting arm lower nut
   - Connecting arm lower bolt “3”
   - Connecting arm “4”

TIP

When removing the bolt, hold the swingarm so that it does not drop down.

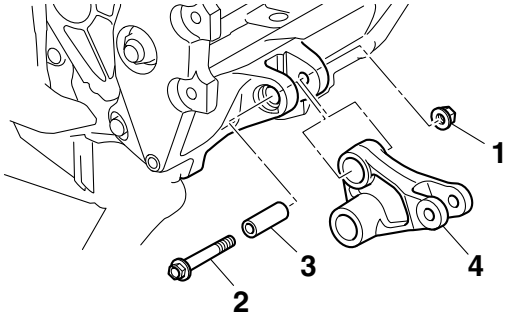


3. Remove:
   - Rear shock absorber assembly upper nut
   - Rear shock absorber assembly upper bolt
4. Remove:
   - Relay arm nut “1”
   - Relay arm bolt “2”

• Collar “3”
• Relay arm “4”

TIP

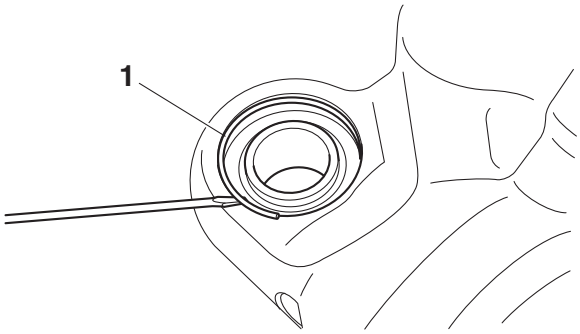
Pull out the collar “3” from the left side of the vehicle.



5. Remove:
   • Rear shock absorber assembly

EAS31653
DISASSEMBLING THE REAR SHOCK ABSORBER ASSEMBLY

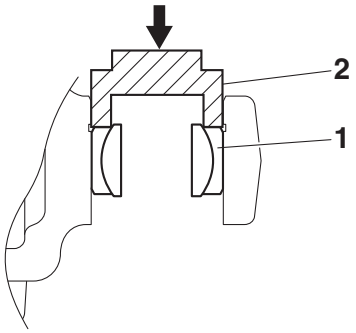
1. Remove:
   • Collar
   • Dust seal
2. Remove:
   • Circlip “1”
   (with a flat-head screwdriver)



3. Remove:
   • Bushing “1”

TIP

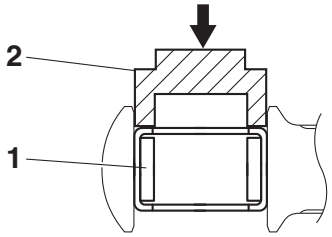
Remove the bushing with a socket “2” that matches its outside diameter.



4. Remove:
   • Oil seal
   • Bearing “1”

TIP

Remove the bearing with a socket “2” that matches its outside diameter.



EAS30220
CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Check:
   • Rear shock absorber rod
   Bends/damage → Replace the rear shock absorber assembly.
   • Rear shock absorber assembly
   Gas leaks/oil leaks → Replace the rear shock absorber assembly.
   • Spring
   • Bushings
   Damage/wear → Replace the bushings.
   • Bolts
   Bends/damage/wear → Replace.

EAS30221
CHECKING THE CONNECTING ARM AND RELAY ARM

1. Check:
   • Connecting arms
   • Relay arm
   Damage/wear → Replace.
2. Check:
   • Bearings

- Oil seals
  Damage/pitting → Replace.

3. Check:
   - Collars
     Damage/scratches → Replace.

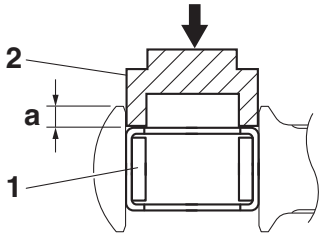
EAS31654
ASSEMBLING THE REAR SHOCK ABSORBER ASSEMBLY

1. Install:
   - Bearing “1”
   - Oil seal New

TIP

Install the bearing with a socket “2” that matches its outside diameter.

Installed depth “a”
4.0 mm (0.16 in)

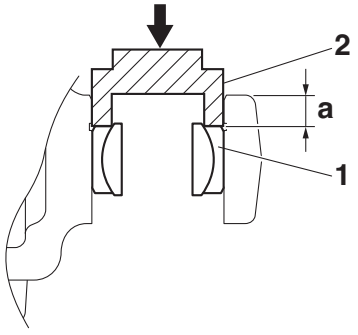


2. Install:
   - Bushing “1”
   - Circlip New (for YZF-R1)
   - Circlip (for YZF-R1M)
   - Dust seal New

TIP

Install the bushing with a socket “2” that matches its outside diameter.

Installed depth “a”
YZF-R1 6.0 mm (0.24 in)
YZF-R1M 3.0 mm (0.12 in)



EAS30222
INSTALLING THE RELAY ARM

1. Lubricate:
   - Collars
   - Oil seals

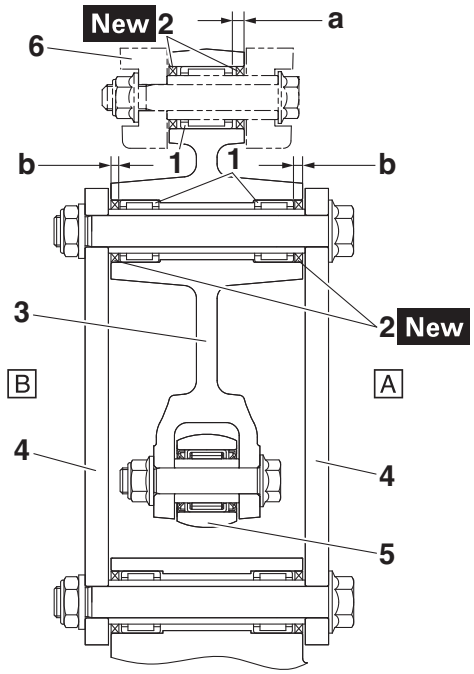
Recommended lubricant
Lithium-soap-based grease

2. Install:
   - Bearings “1”
     (to the relay arm)
   - Oil seals “2” New
     (to the relay arm)

Installed depth “a”
4.5 mm (0.18 in)
Installed depth “b”
3.5 mm (0.14 in)

TIP

- When installing the oil seals “2” to the relay arm, face the character stamp of the oil seals outside.
- Press in the oil seal so it does not protrude from the end surface of the relay arm.



3. Relay arm
4. Connecting arm
5. Rear shock absorber assembly
6. Frame

A. Left side
B. Right side

EAS30225

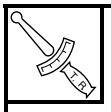
INSTALLING THE REAR SHOCK ABSORBER ASSEMBLY

1. Install:
   - Rear shock absorber assembly
   - Relay arm
   - Connecting arm

TIP

- Install the rear shock absorber assembly upper bolt, relay arm bolt, connecting arm lower bolt and connecting arm upper bolt from the left.
- When installing the rear shock absorber assembly, lift up the swingarm.

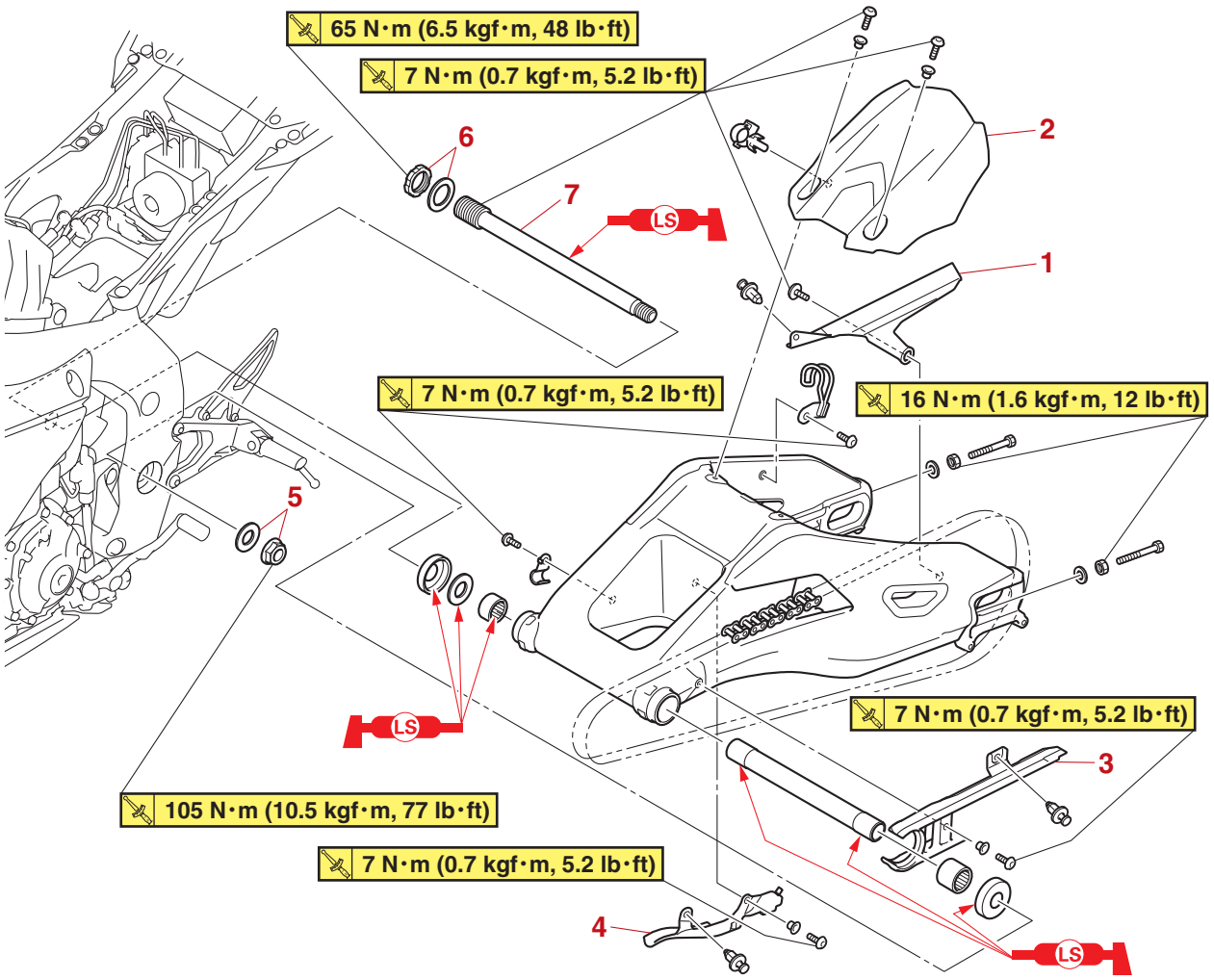
2. Tighten:
   - Relay arm nut
   - Rear shock absorber assembly upper nut
   - Connecting arm lower nut
   - Rear shock absorber assembly lower nut
   - Connecting arm upper nut



Relay arm nut
40 N·m (4.0 kgf·m, 30 lb·ft)
Rear shock absorber assembly upper nut
40 N·m (4.0 kgf·m, 30 lb·ft)
Connecting arm lower nut
40 N·m (4.0 kgf·m, 30 lb·ft)
Rear shock absorber assembly lower nut
40 N·m (4.0 kgf·m, 30 lb·ft)
Connecting arm upper nut
40 N·m (4.0 kgf·m, 30 lb·ft)

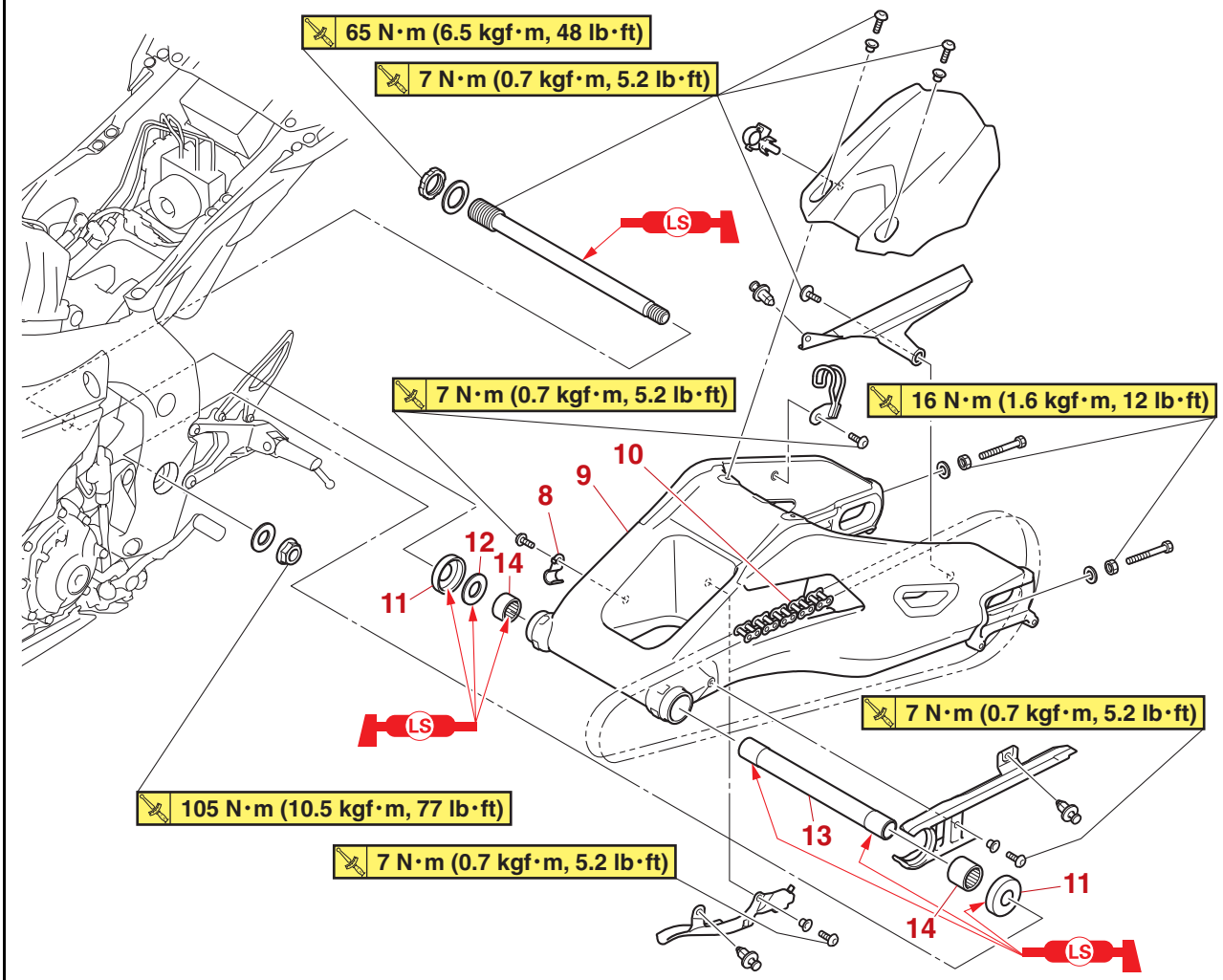
EAS20037
SWINGARM

Removing the swingarm



Order	Job/Parts to remove	Q'ty	Remarks
	Rear brake caliper		Refer to "REAR BRAKE" on page 4-63.
	Rear wheel		Refer to "REAR WHEEL" on page 4-43.
	Rear shock absorber assembly		Refer to "REAR SHOCK ABSORBER ASSEMBLY" on page 4-112.
	Drive sprocket		Refer to "CHAIN DRIVE" on page 4-125.
1	Drive chain guard	1	
2	Rear fender	1	
3	Drive chain guide	1	
4	Rear wheel sensor lead cover	1	
5	Pivot shaft nut/Washer	1/1	
6	Pivot shaft ring nut/Washer	1/1	
7	Pivot shaft	1	

Removing the swingarm



Order	Job/Parts to remove	Q'ty	Remarks
8	Rear wheel sensor lead hook	1	
9	Swingarm	1	
10	Drive chain	1	
11	Dust cover	2	
12	Washer	1	
13	Bushing	1	
14	Bearing	2	

EAS30226
REMOVING THE SWINGARM

1. Stand the vehicle on a level surface.

EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

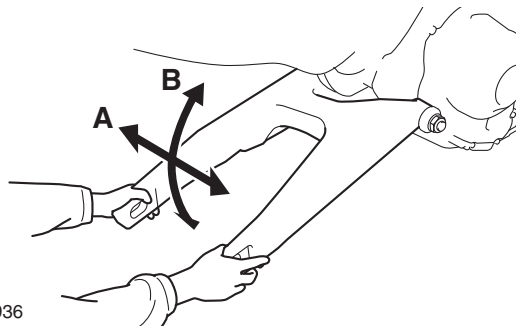
TIP

Place the vehicle on a maintenance stand so that the rear wheel is elevated.

2. Remove:
   - Rear shock absorber assembly
     Refer to "REAR SHOCK ABSORBER ASSEMBLY" on page 4-112.
3. Measure:
   - Swingarm side play
   - Swingarm vertical movement
   a. Measure the tightening torque of the pivot shaft nut.

Pivot shaft nut
105 N·m (10.5 kgf·m, 77 lb·ft)
Pivot shaft ring nut
65 N·m (6.5 kgf·m, 48 lb·ft)
Pivot shaft
7 N·m (0.7 kgf·m, 5.2 lb·ft)

   b. Check the swingarm side play "A" by moving the swingarm from side to side.
      If the swingarm has side-to-side play, check the collars, bearings, and dust covers.
   c. Check the swingarm vertical movement "B" by moving the swingarm up and down.
      If the swingarm vertical movement is not smooth or if there is binding, check the pivot shaft, collars, bearings, and dust covers.



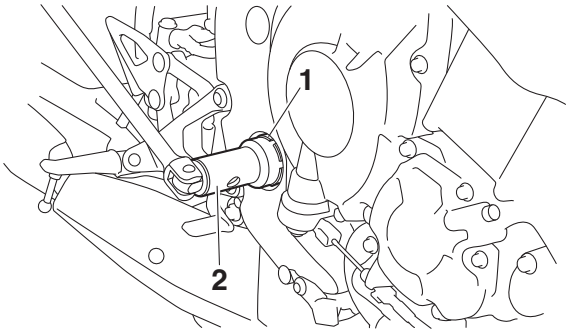
G088936

4. Remove:
   - Drive chain
     Refer to "REMOVING THE DRIVE CHAIN" on page 4-126.
5. Remove:
   - Pivot shaft nut
   - Pivot shaft ring nut "1"

TIP

Loosen the pivot shaft ring nut with the ring nut wrench "2".

Ring nut wrench
90890-01507
Ring nut wrench
YM-01507

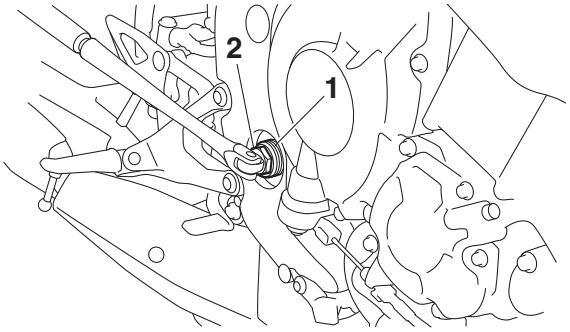


6. Remove:
   - Pivot shaft "1"

TIP

Loosen the pivot shaft with the damper rod holder "2".

Damper rod holder (ø22)
90890-01365



7. Remove:
   - Swingarm

EAS30227
CHECKING THE SWINGARM

1. Check:
   - Swingarm
     Bends/cracks/damage → Replace.
2. Check:
   - Pivot shaft
     Roll the pivot shaft on a flat surface.

Bends → Replace.

EWA13770

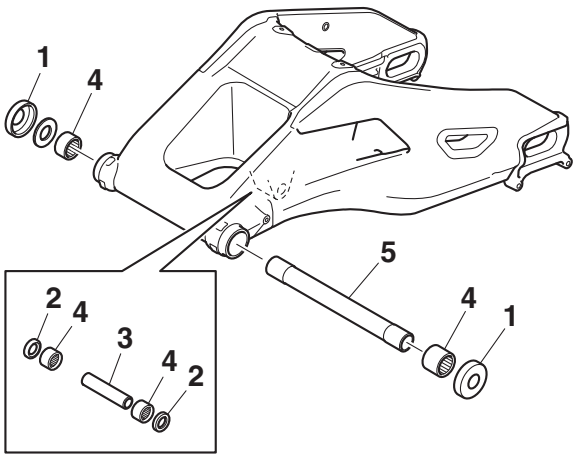
⚠ WARNING

Do not attempt to straighten a bent pivot shaft.

3. Wash:
   - Pivot shaft
   - Dust covers
   - Collar
   - Bushing
   - Washer

Recommended cleaning solvent
Kerosene

4. Check:
   - Dust covers “1”
   - Oil seals “2”
     Damage/wear → Replace.
   - Collar “3”
     Damage/scratches → Replace.
   - Bearings “4”
     Damage/pitting → Replace.
   - Bushing “5”
     Damage/pitting → Replace.



EAS30228

INSTALLING THE SWINGARM

1. Lubricate:
   - Dust covers
   - Pivot shaft
   - Oil seals
   - Collar
   - Bushing

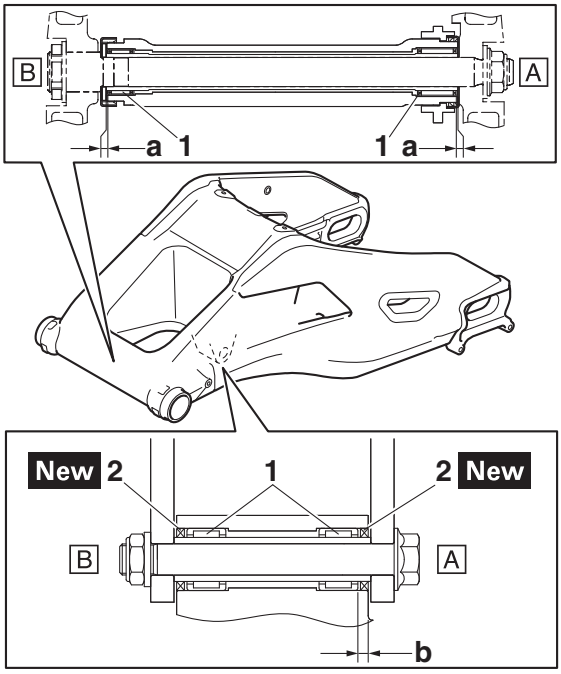
Recommended lubricant
Lithium-soap-based grease

2. Install:
   - Bearings “1”
     (to the swingarm)
   - Oil seals “2” New
     (to the swingarm)

Installed depth “a”
0–1.0 mm (0–0.04 in)
Installed depth “b”
4.0 mm (0.16 in)

TIP

- When installing the oil seals to the swingarm, face the character stamp of the oil seals outside.
- Press in the oil seal so it does not protrude from the end surface of the swingarm.



A. Left side
B. Right side

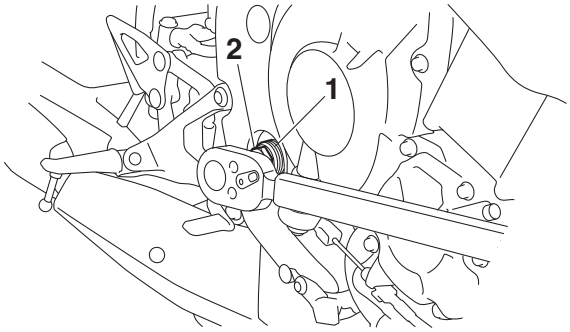
3. Install:
   - Swingarm
   - Pivot shaft “1”

Pivot shaft
7 N·m (0.7 kgf·m, 5.2 lb·ft)

TIP

Tighten the pivot shaft with the damper rod holder "2".

	Damper rod holder (ø22) **90890-01365**



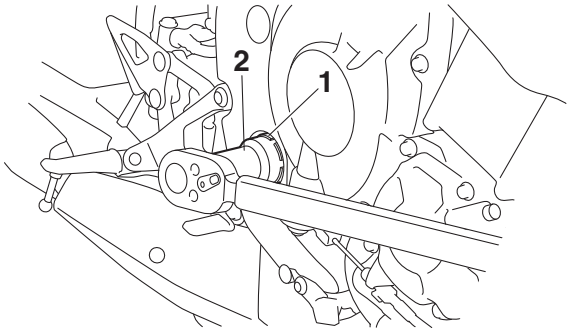
4. Install:
   • Pivot shaft ring nut "1"

	Pivot shaft ring nut **65 N·m (6.5 kgf·m, 48 lb·ft)**

TIP

Tighten the pivot shaft ring nut with the ring nut wrench "2".

	Ring nut wrench **90890-01507** **Ring nut wrench** **YM-01507**



5. Install:
   • Pivot shaft nut

	Pivot shaft nut **105 N·m (10.5 kgf·m, 77 lb·ft)**

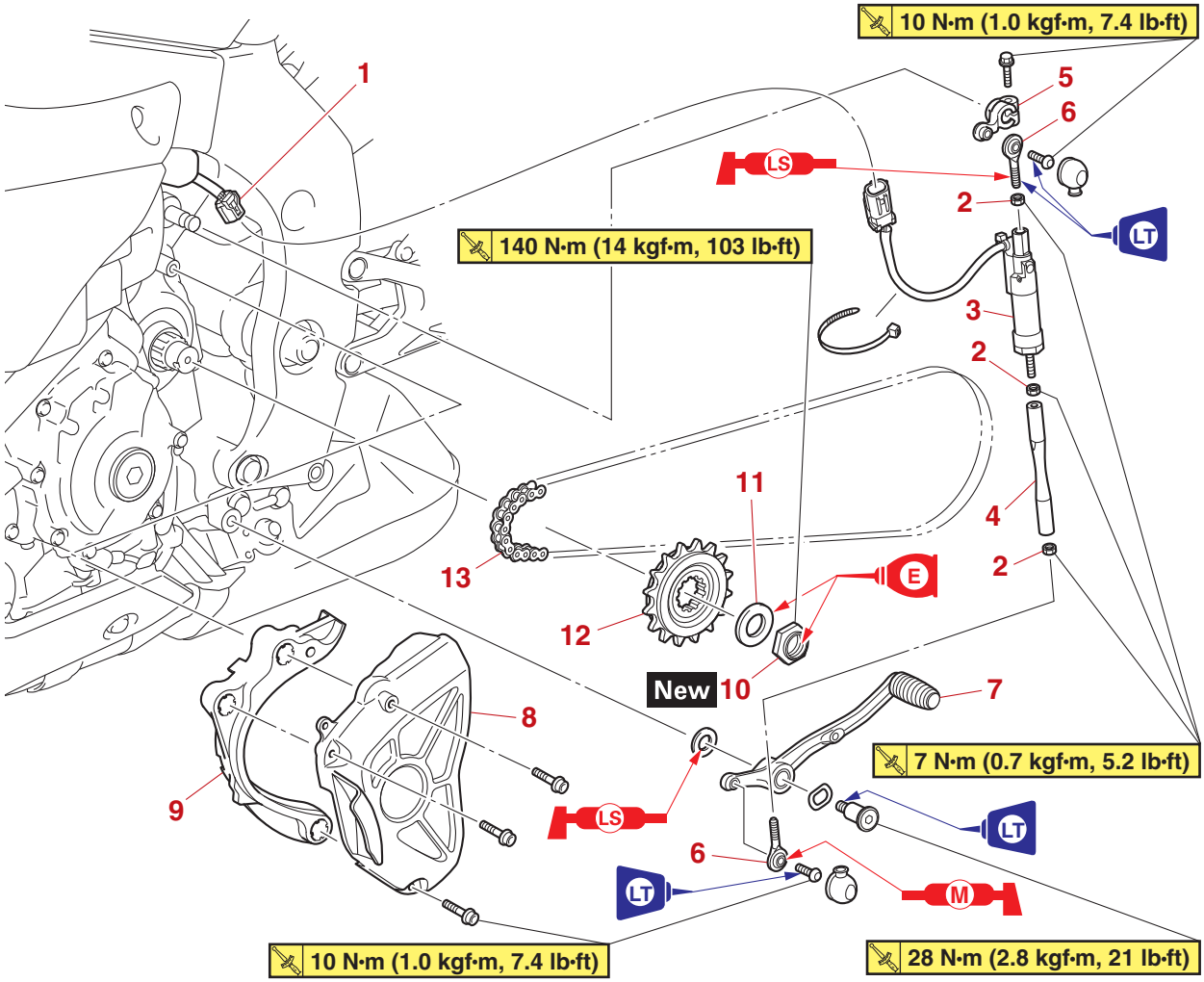
6. Install:
   • Drive chain
   Refer to "INSTALLING THE DRIVE CHAIN" on page 4-127.
   • Rear shock absorber assembly
   Refer to "REAR SHOCK ABSORBER ASSEMBLY" on page 4-112.
   • Rear wheel
   Refer to "REAR WHEEL" on page 4-43.
7. Adjust:
   • Drive chain slack
   Refer to "Adjusting the drive chain slack" on page 3-19.

	Drive chain slack (When performing maintenance/Maintenance stand) **25.0–35.0 mm (0.98–1.38 in)** **Drive chain slack (When replacing with a new one/Maintenance stand)** **20.0–30.0 mm (0.79–1.18 in)** **Drive chain slack limit (Maintenance stand)** **35.0 mm (1.38 in)**

EAS20038

CHAIN DRIVE

Removing the drive chain



Order	Job/Parts to remove	Q'ty	Remarks
1	Shift sensor coupler	1	Disconnect.
2	Locknut	3	
3	Shift sensor	1	
4	Shift rod	1	
5	Shift arm	1	
6	Shift rod joint	2	
7	Shift pedal	1	
8	Drive sprocket cover	1	
9	Drive chain guide	1	
10	Drive sprocket nut	1	
11	Washer	1	
12	Drive sprocket	1	
13	Drive chain	1	

EAS30229
REMOVING THE DRIVE CHAIN
1. Stand the vehicle on a level surface.

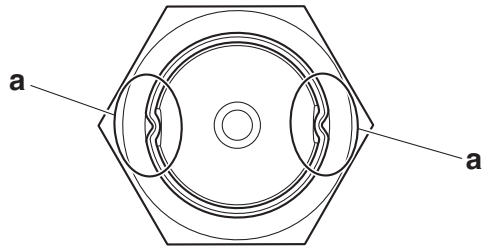
EWA13120
⚠ WARNING

Securely support the vehicle so that there is no danger of it falling over.

TIP

Place the vehicle on a maintenance stand so that the rear wheel is elevated.

2. Straighten the drive sprocket nut rib “a”.



3. Remove:
   • Drive chain

ECA17410
NOTICE

Be sure to put on safety goggles when working.

TIP

Cut the drive chain with the drive chain cut & rivet tool.



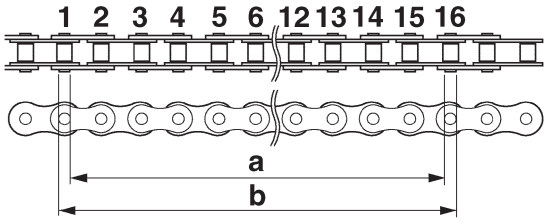
Drive chain cut & rivet tool
90890-01550
Drive chain cut & rivet tool
YM-01550

EAS30230
CHECKING THE DRIVE CHAIN
1. Measure:
   • 15-link section length “a” of the drive chain
   Out of specification → Replace the drive chain.



15-link length limit
239.3 mm (9.42 in)

   a. Measure the length “a” between the inner sides of the pins and the length “b” between the outer sides of the pins on a 15-link section of the drive chain as shown in the illustration.

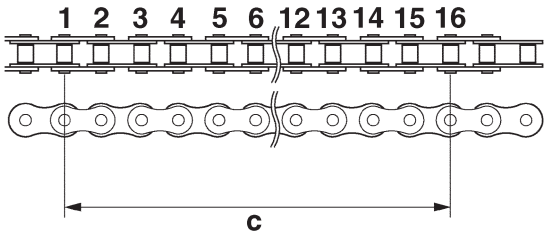


G088937

   b. Calculate the 15-link section length “c” of the drive chain using the following formula.
   Drive chain 15-link section length “c” = (length “a” between pin inner sides + length “b” between pin outer sides)/2

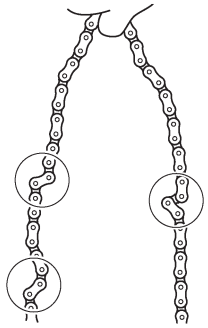
TIP

- When measuring a 15-link section of the drive chain, make sure that the drive chain is taut.
- Perform this procedure 2–3 times, at a different location each time.



G088938

2. Check:
   • Drive chain
   Stiffness → Clean and lubricate or replace.



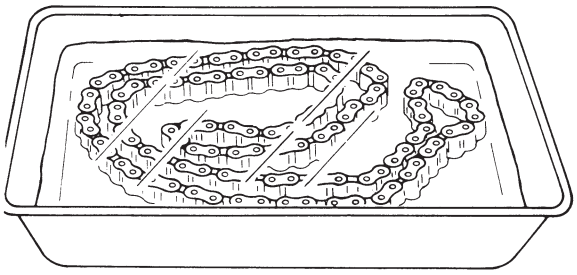
G088939

3. Clean:
   • Drive chain
   a. Wipe the drive chain with a clean cloth.
   b. Put the drive chain in kerosene and remove any remaining dirt.
   c. Remove the drive chain from the kerosene and completely dry it.

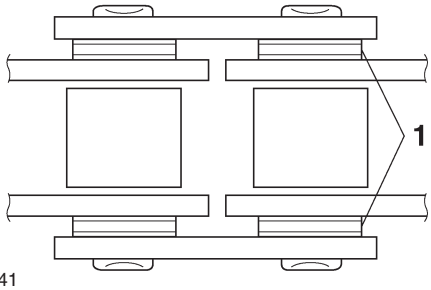
ECA19090

NOTICE

- **This vehicle has a drive chain with small rubber O-rings "1" between the drive chain side plates. Never use high-pressure water or air, steam, gasoline, certain solvents (e.g., benzine), or a coarse brush to clean the drive chain. High-pressure methods could force dirt or water into the drive chain's internals, and solvents will deteriorate the O-rings. A coarse brush can also damage the O-rings. Therefore, use only kerosene to clean the drive chain.**
- **Do not soak the drive chain in kerosene for more than ten minutes, otherwise the O-rings can be damaged.**

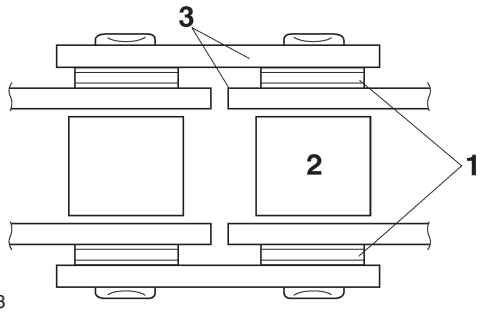


G088940



G088941

4. Check:
   - O-rings "1"
     Damage → Replace the drive chain.
   - Drive chain rollers "2"
     Damage/wear → Replace the drive chain.
   - Drive chain side plates "3"
     Damage/wear/cracks → Replace the drive chain.



G088943

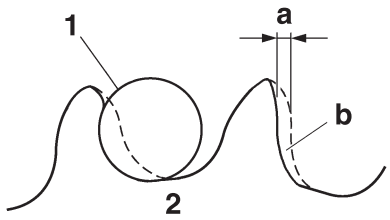
5. Lubricate:
   - Drive chain

Recommended lubricant
Chain lubricant suitable for O-ring chains

EAS30231

CHECKING THE DRIVE SPROCKET

1. Check:
   - Drive sprocket
     More than 1/4 tooth "a" wear → Replace the drive sprocket, the rear wheel sprocket and the drive chain as a set.
     Bent teeth → Replace the drive sprocket, the rear wheel sprocket and the drive chain as a set.



G088904

b. Correct
1. Drive chain roller
2. Drive sprocket

EAS30232

CHECKING THE REAR WHEEL SPROCKET

Refer to "CHECKING AND REPLACING THE REAR WHEEL SPROCKET" on page 4-47.

EAS30233

CHECKING THE REAR WHEEL DRIVE HUB

Refer to "CHECKING THE REAR WHEEL DRIVE HUB" on page 4-47.

EAS30234

INSTALLING THE DRIVE CHAIN

1. Install:
   - Drive chain

ECA17410

NOTICE

Be sure to put on safety goggles when working.

TIP

Install the drive chain joint with the drive chain cut & rivet tool.

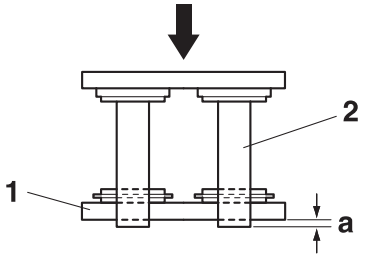


Drive chain cut & rivet tool
90890-01550
Drive chain cut & rivet tool
YM-01550

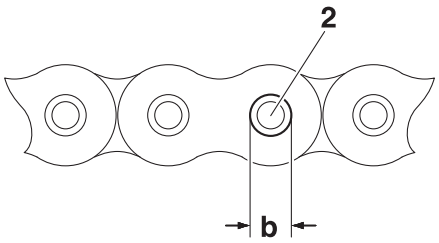
a. When press fitting the connecting plate "1", make sure the space "a" between the end of the connecting pin "2" and the connecting plate is 1.3–1.4 mm (0.05–0.06 in).

TIP

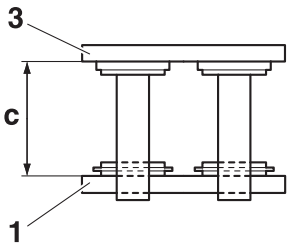
Apply lithium soap-based grease onto the connecting pin "2".



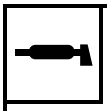
b. After riveting, make sure the diameter between the edges "b" of the connecting pin "2" is 5.5–5.8 mm (0.22–0.23 in).



c. After riveting, make sure the space "c", which is inside of the connecting link "3" and inside of the connecting plate "1", is 15.10–15.30 mm (0.594–0.602 in).

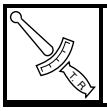


2. Lubricate:
   • Drive chain



Recommended lubricant
Chain lubricant suitable for O-ring chains

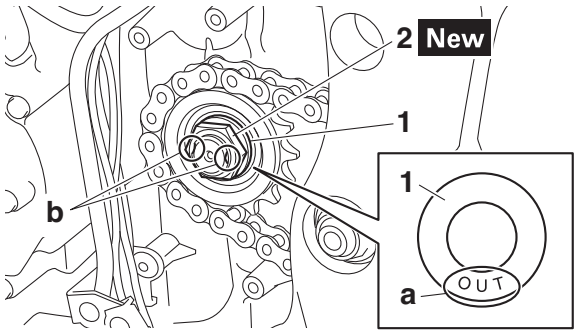
3. Install:
   • Drive sprocket
   • Washer "1"
   • Drive sprocket nut "2" New



Drive sprocket nut
140 N·m (14 kgf·m, 103 lb·ft)

TIP

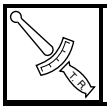
- While applying the rear brake, tighten the drive sprocket nut.
- Install washer "1" with the "OUT" mark "a" facing out.
- Stake the drive sprocket nut "2" at cutouts "b" in the drive axle.



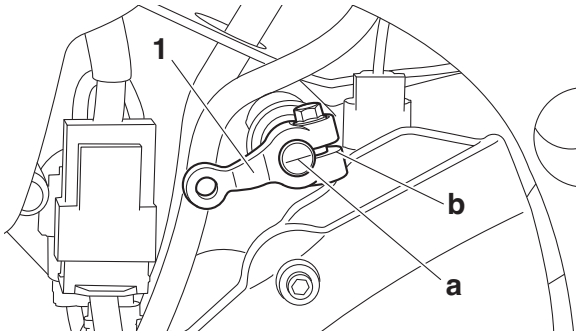
4. Install:
   • Shift arm "1"

TIP

Before installing, make sure to align the mark "a" of the shift shaft with the slot "b" of the shift arm.



Shift arm bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)

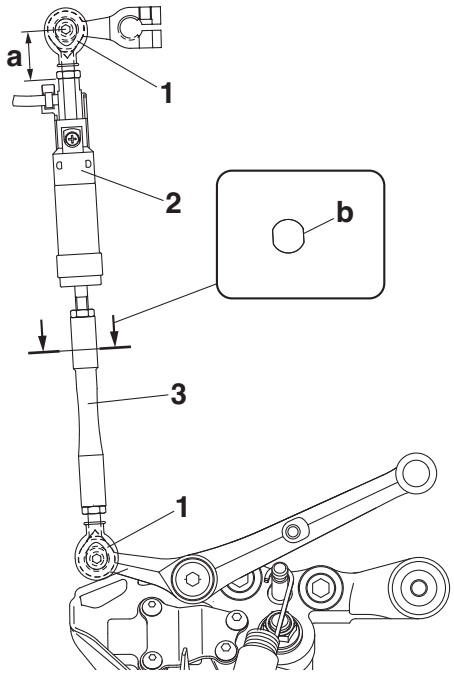


5. Install:
   - Shift rod joint "1"
   - Shift sensor "2"
   - Shift rod "3"

TIP

- Install the shift rod joint and shift sensor in the direction shown in the illustration.
- The allowable twist of the shift rod joint and shift sensor is ±5°.
- Install the shift rod so that the side "b" faces upward as shown in the illustration.

Shift rod joint bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)
LOCTITE®
Shift sensor locknut
7 N·m (0.7 kgf·m, 5.2 lb·ft)



a. 24 mm (0.94 in)

6. Adjust:
   - Installed shift rod length
     Refer to "ADJUSTING THE SHIFT PEDAL" on page 4-129.
7. Adjust:
   - Drive chain slack
     Refer to "Adjusting the drive chain slack" on page 3-19.

Drive chain slack (When performing maintenance/Maintenance stand)
25.0–35.0 mm (0.98–1.38 in)
Drive chain slack (When replacing with a new one/Maintenance stand)
20.0–30.0 mm (0.79–1.18 in)
Drive chain slack limit (Maintenance stand)
35.0 mm (1.38 in)

ECA13550

NOTICE

A drive chain that is too tight will overload the engine and other vital parts, and one that is too loose can skip and damage the swingarm or cause an accident. Therefore, keep the drive chain slack within the specified limits.

EAS31729

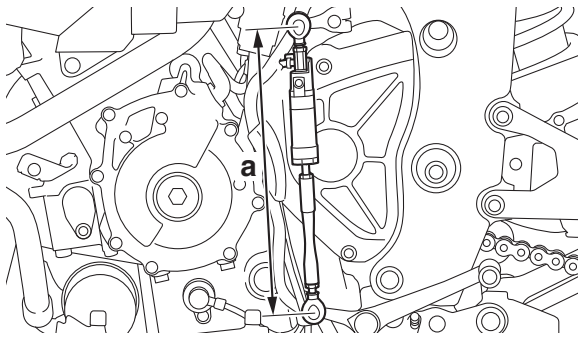
ADJUSTING THE SHIFT PEDAL

TIP

The shift pedal position is determined by the installed shift rod length.

1. Measure:
   - Installed shift rod length "a"
     Incorrect → Adjust.

Installed shift rod length
258.5–260.5 mm (10.18–10.26 in)

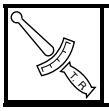


2. Adjust:
   - Installed shift rod length

a. Loosen both locknuts “1”.
b. Turn the shift rod until the specified installed shift rod length is obtained.
c. Tighten both locknuts.

TIP

Be sure to place the shift rod joints in parallel. The allowable twist of the shift rod joints is ±5°.

	**Shift rod locknut** **7 N·m (0.7 kgf·m, 5.2 lb·ft)**

d. Make sure the installed shift rod length is within specification.

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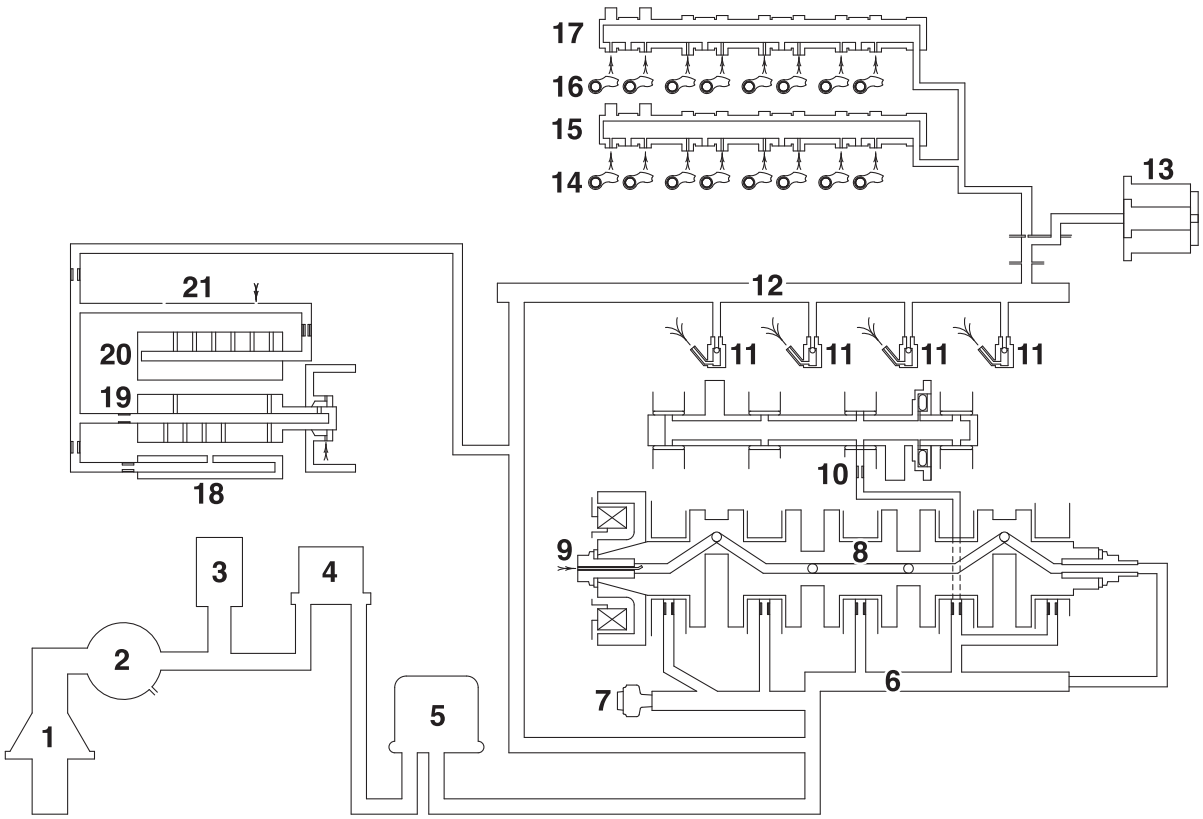
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EAS20298
LUBRICATION SYSTEM CHART AND DIAGRAMS

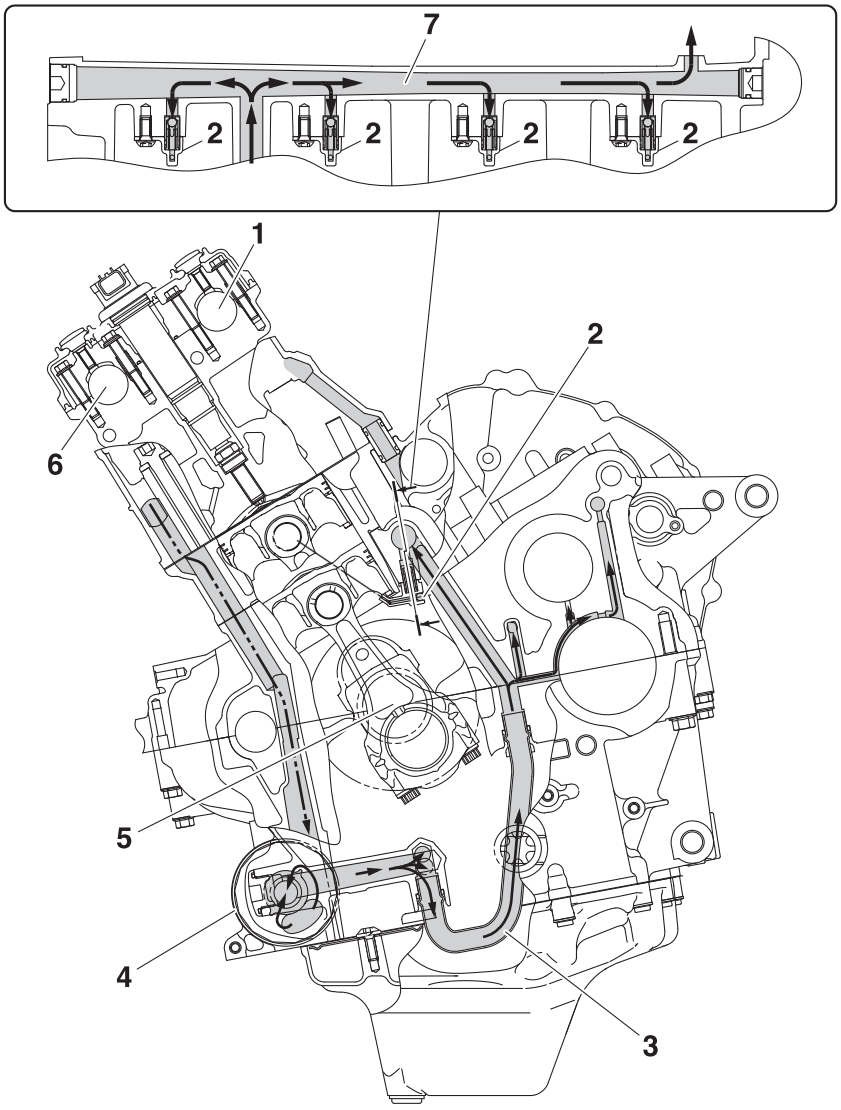
EAS32362
ENGINE OIL LUBRICATION CHART



1. Oil strainer
2. Oil pump
3. Relief valve
4. Oil cooler
5. Oil filter cartridge
6. Main gallery
7. Oil pressure switch
8. Crankshaft
9. Generator rotor
10. Balancer shaft
11. Oil nozzle
12. Sub gallery
13. Timing chain tensioner
14. Intake rocker arm
15. Intake camshaft
16. Exhaust rocker arm
17. Exhaust camshaft
18. Shift fork guide bar (upper)
19. Main axle
20. Drive axle
21. Mission shower

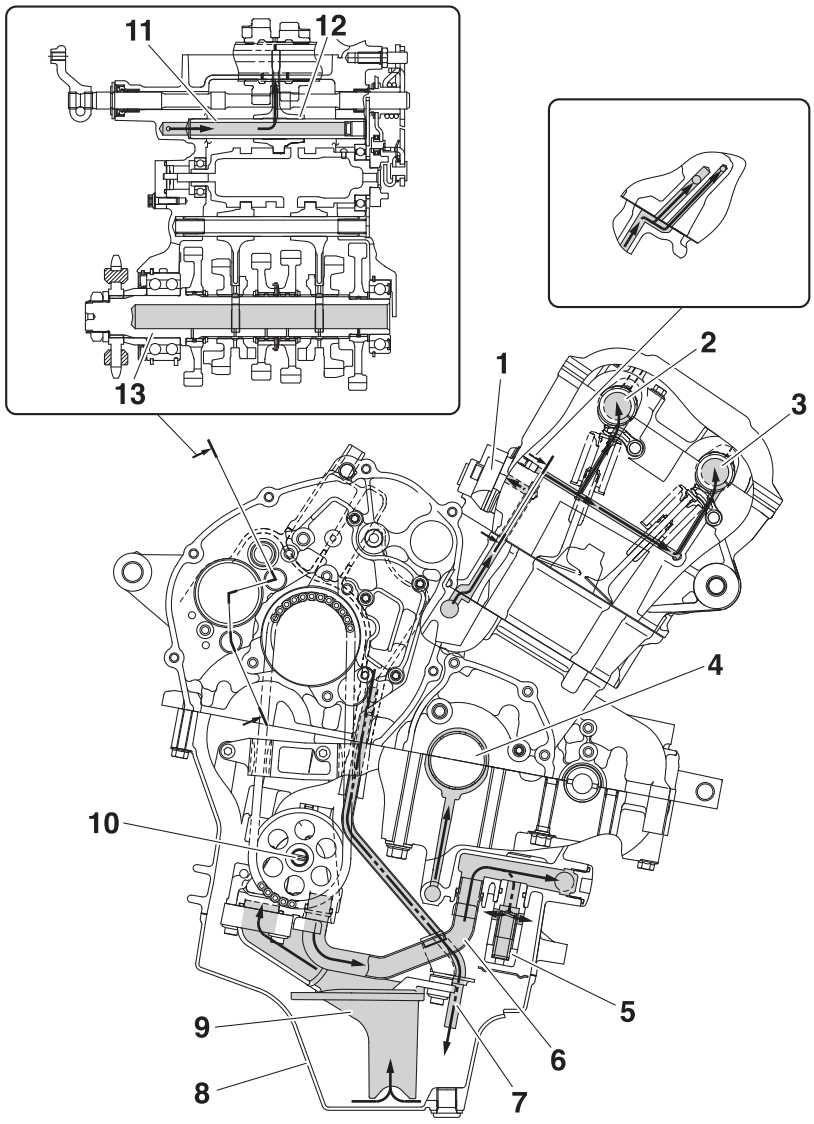
EAS32363
LUBRICATION DIAGRAMS

Crankcase, cylinder, and cylinder head (left side view)



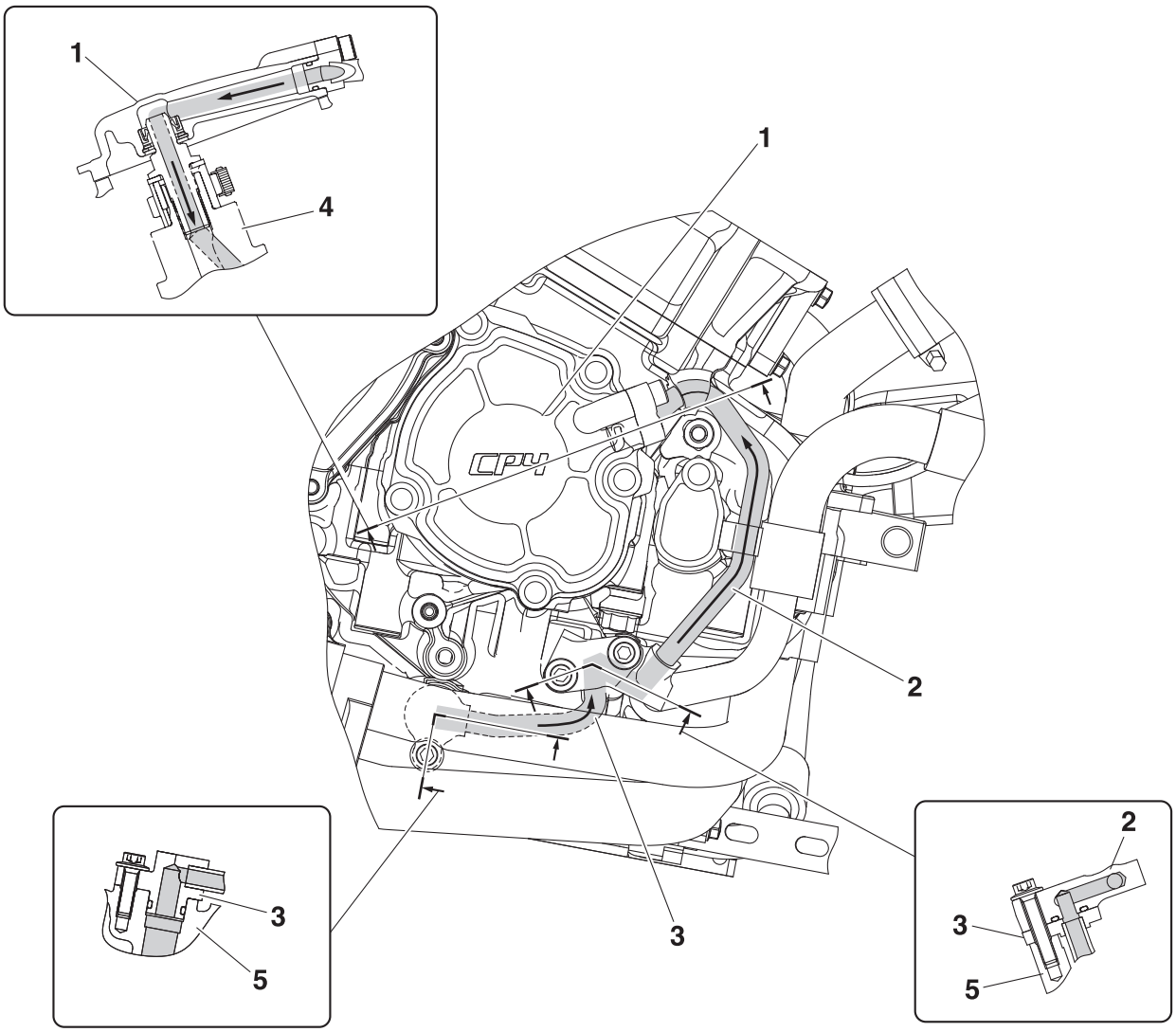
1. Intake camshaft
2. Oil nozzle
3. Oil delivery pipe 2
4. Oil filter cartridge
5. Crankshaft
6. Exhaust camshaft
7. Sub gallery

Crankcase and cylinder (right side view)



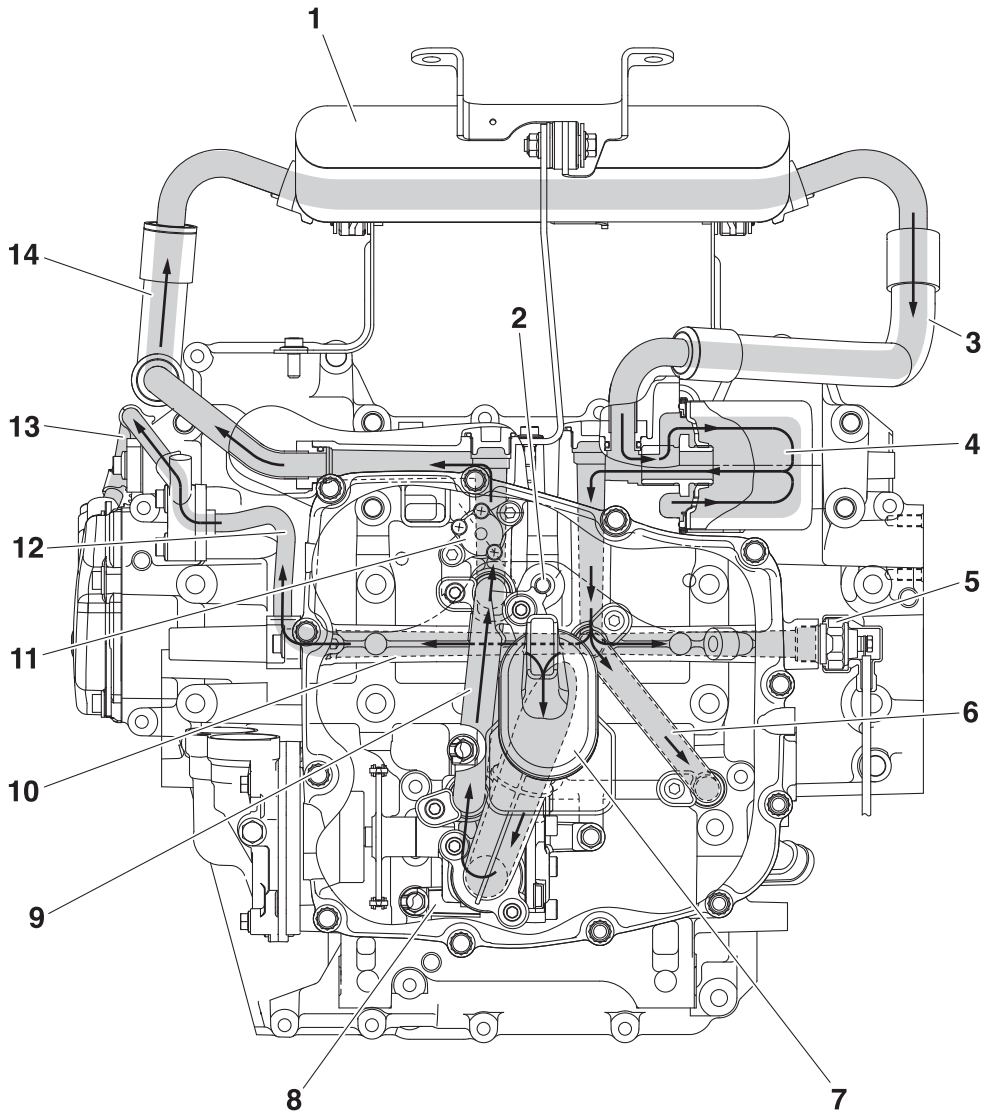
1. Timing chain tensioner
2. Intake camshaft
3. Exhaust camshaft
4. Crankshaft
5. Relief valve
6. Oil pipe 1
7. Oil delivery pipe 1
8. Oil pan
9. Oil strainer
10. Oil pump
11. Shift fork guide bar
12. Shift fork-C
13. Drive axle

Timing chain cover and oil pipe (right side view)



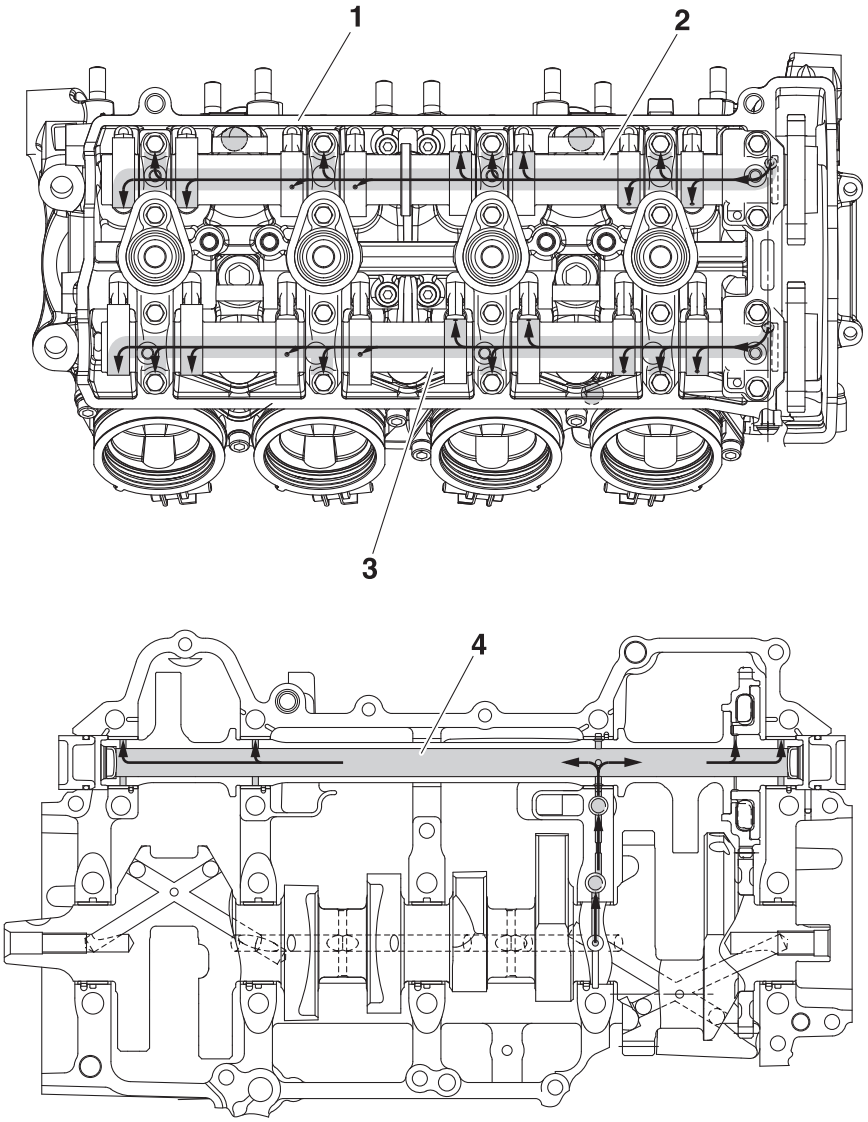
1. Timing chain cover
2. Oil pipe 3
3. Oil pipe 2
4. Crankshaft
5. Crankcase

Oil pump and oil cooler (bottom view)



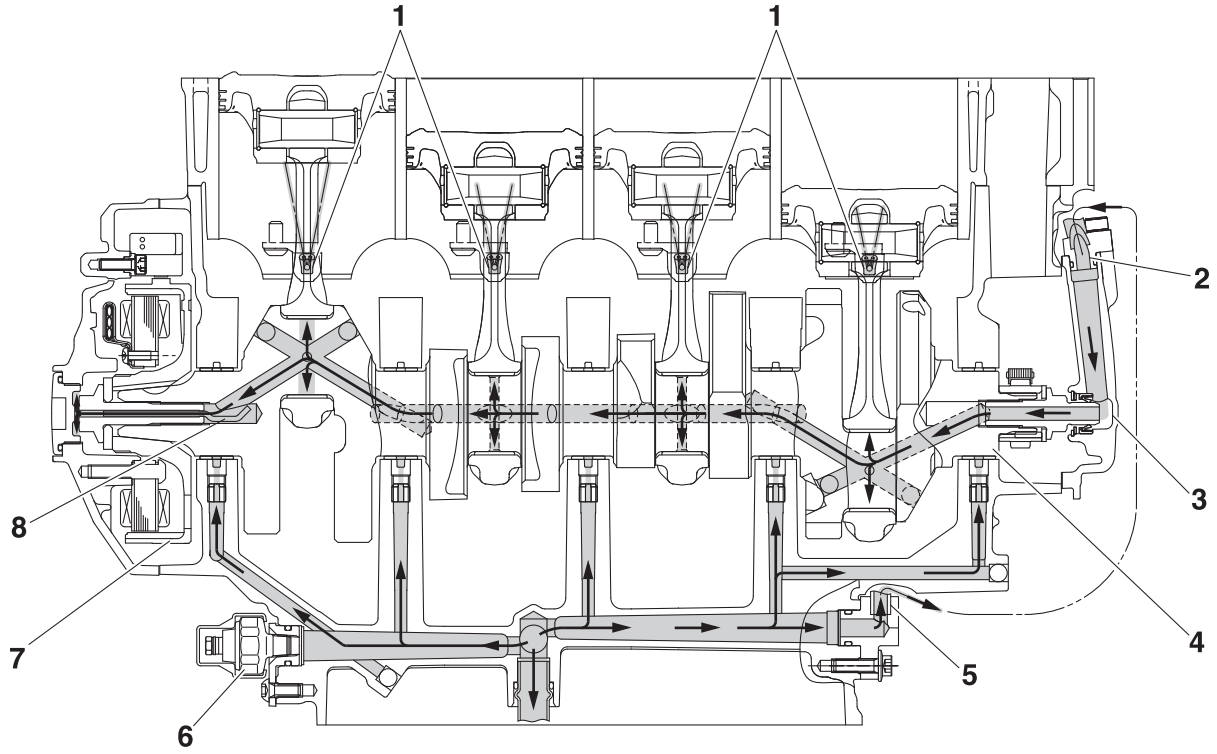
1. Oil cooler
2. Oil delivery pipe 1
3. Oil cooler outlet hose
4. Oil filter cartridge
5. Oil pressure switch
6. Oil delivery pipe 2
7. Oil strainer
8. Oil pump
9. Oil pipe 1
10. Main gallery
11. Relief valve
12. Oil pipe 2
13. Oil pipe 3
14. Oil cooler inlet hose

Camshaft and balancer shaft (top view)



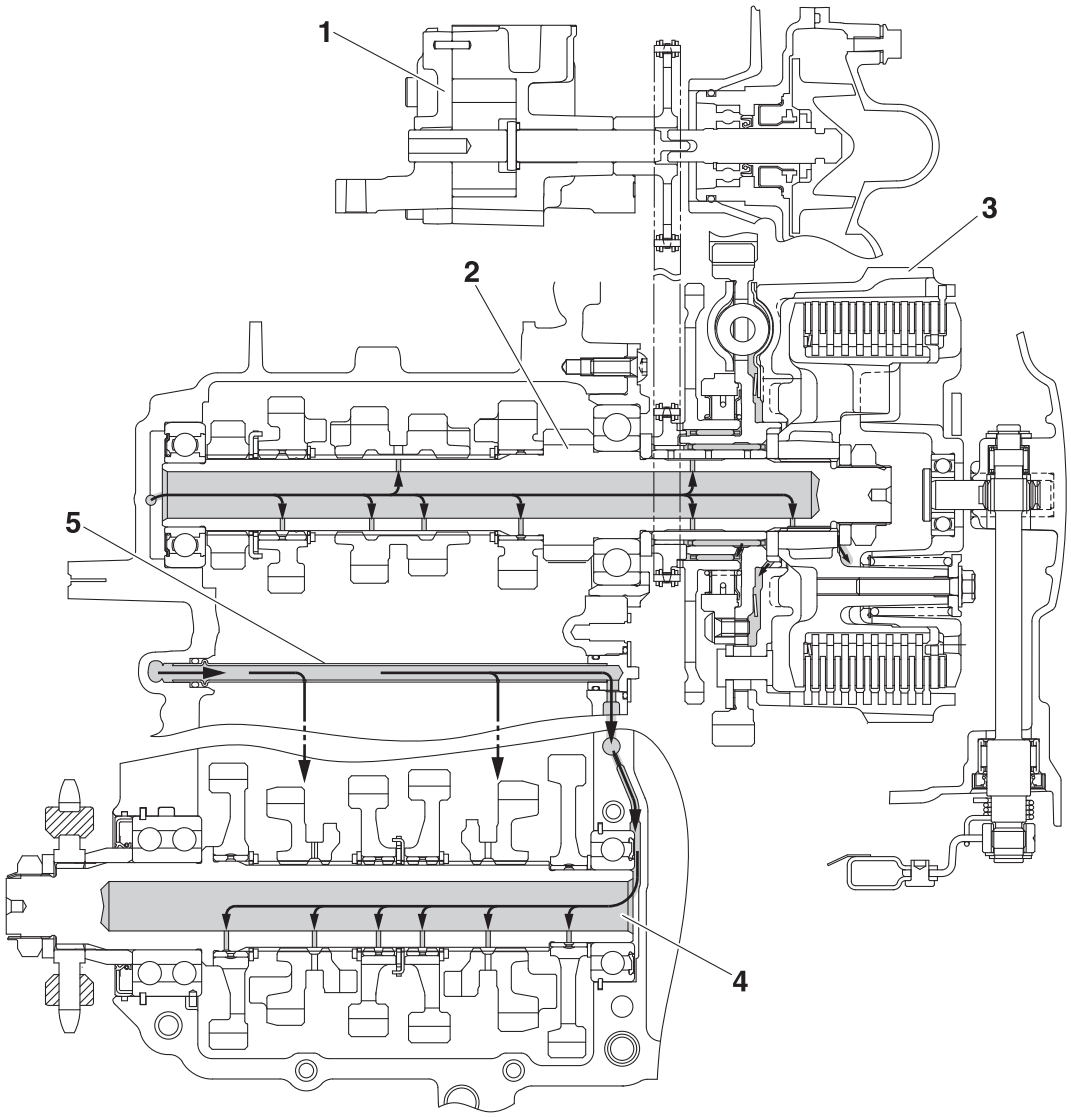
1. Cylinder head
2. Exhaust camshaft
3. Intake camshaft
4. Balancer shaft

Crankshaft (rear view)



1. Oil nozzle
2. Oil pipe 3
3. Timing chain cover
4. Crankshaft
5. Oil pipe 2
6. Oil pressure switch
7. Generator rotor
8. Shaft

Crankshaft and transmission (top view)



1. Oil pump
2. Main axle
3. Clutch housing
4. Drive axle
5. Oil delivery pipe 3

EAS20041
ENGINE INSPECTION

EAS30249
MEASURE THE COMPRESSION PRESSURE

The following procedure applies to all of the cylinders.

TIP

Insufficient compression pressure will result in a loss of performance.

1. Measure:
   - Valve clearance
     Out of specification → Adjust.
     Refer to "ADJUSTING THE VALVE CLEARANCE" on page 3-6.
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
   - Air filter case
     Refer to "AIR FILTER CASE" on page 7-5.
   - Air cut-off valve
     Refer to "AIR INDUCTION SYSTEM" on page 7-20.
   - Ignition coils
   - Spark plugs
     Refer to "CAMSHAFTS" on page 5-18.

ECA13340

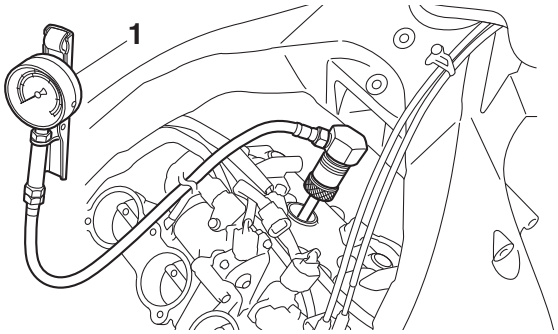
NOTICE

Before removing the spark plugs, use compressed air to blow away any dirt accumulated in the spark plug wells to prevent it from falling into the cylinders.

4. Install:
   - Compression gauge "1"



Compression gauge
90890-03081
Engine compression tester
YU-33223



5. Measure:
   - Compression pressure
     Out of specification → Refer to steps (c) and (d).



Compression pressure
1261–1624 kPa/210 r/min (12.6–16.2 kgf/cm²/210 r/min, 179.4–231.0 psi/210 r/min)

   a. Set the main switch to "ON".
   b. With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

EWA17100

⚠ WARNING

To prevent sparking the plug, remove all ignition coil couplers and fuel injector couplers before cranking the engine.

TIP

The difference in compression pressure between cylinders should not exceed 100 kPa (1 kgf/cm², 15 psi).

   c. If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces and piston crown for carbon deposits.
      Carbon deposits → Eliminate.
   d. If the compression pressure is below the minimum specification, pour a teaspoonful of engine oil into the spark plug bore and measure again.
      Refer to the following table.

Compression pressure (with oil applied into the cylinder)	
Reading	Diagnosis
Higher than without oil	Piston ring(s) wear or damage → Repair.
Same as without oil	Piston, valves, cylinder head gasket possibly defective → Repair.

6. Install:
   • Spark plugs



Spark plug
13 N·m (1.3 kgf·m, 9.6 lb·ft)
Spark plug (new)
18 N·m (1.8 kgf·m, 13 lb·ft)

TIP

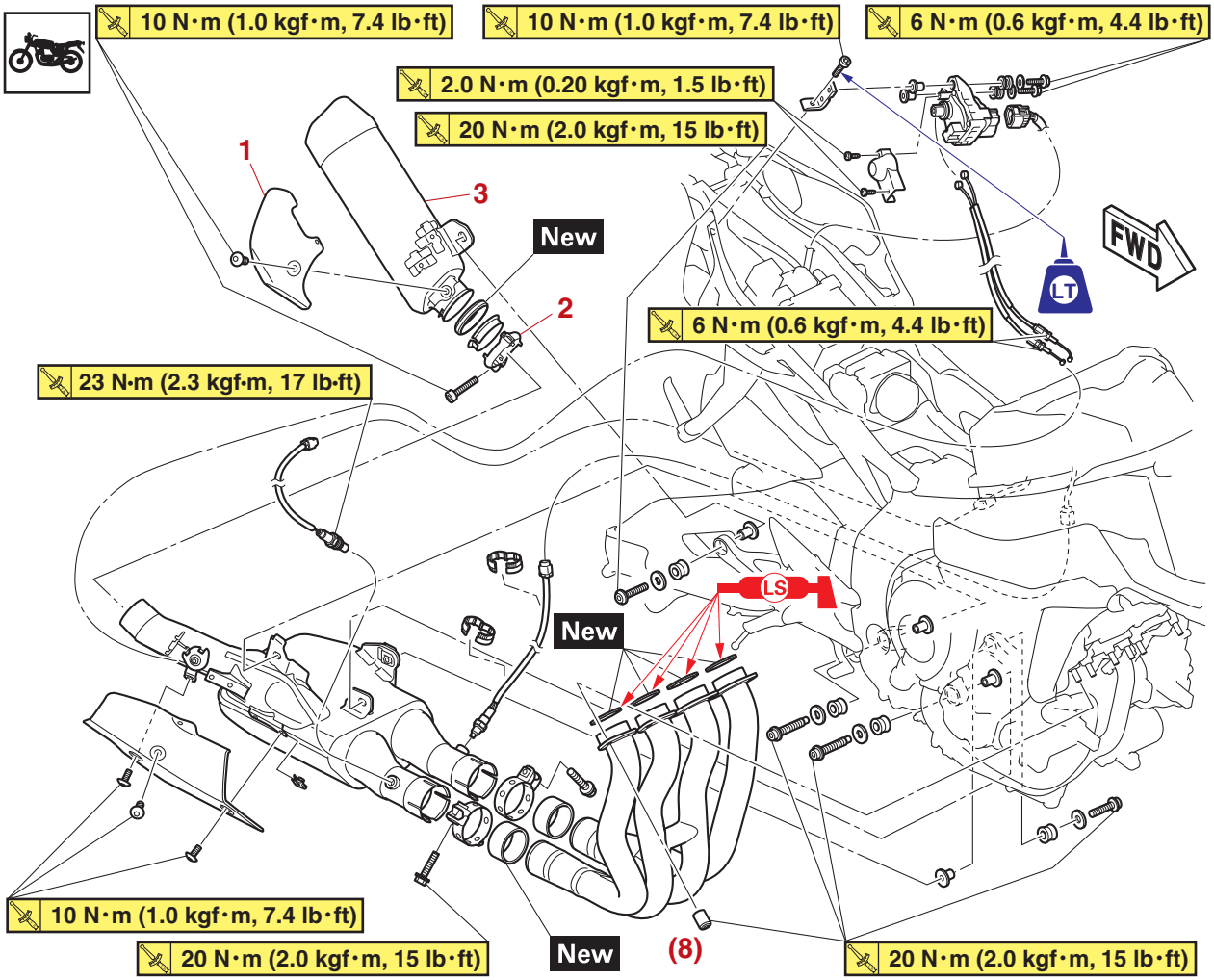
- Before installing the spark plug, clean the spark plug and gasket surface.
- If the spark plug is a new one, tighten it to 18 N·m (1.8 kgf·m, 13 lb·ft).

7. Install:
   • Ignition coils
   Refer to “CAMSHAFTS” on page 5-18.
   • Air cut-off valve
   Refer to “AIR INDUCTION SYSTEM” on page 7-20.
   • Air filter case
   Refer to “AIR FILTER CASE” on page 7-5.
   • Fuel tank
   Refer to “FUEL TANK” on page 7-1.
   • Rider seat
   Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS20042

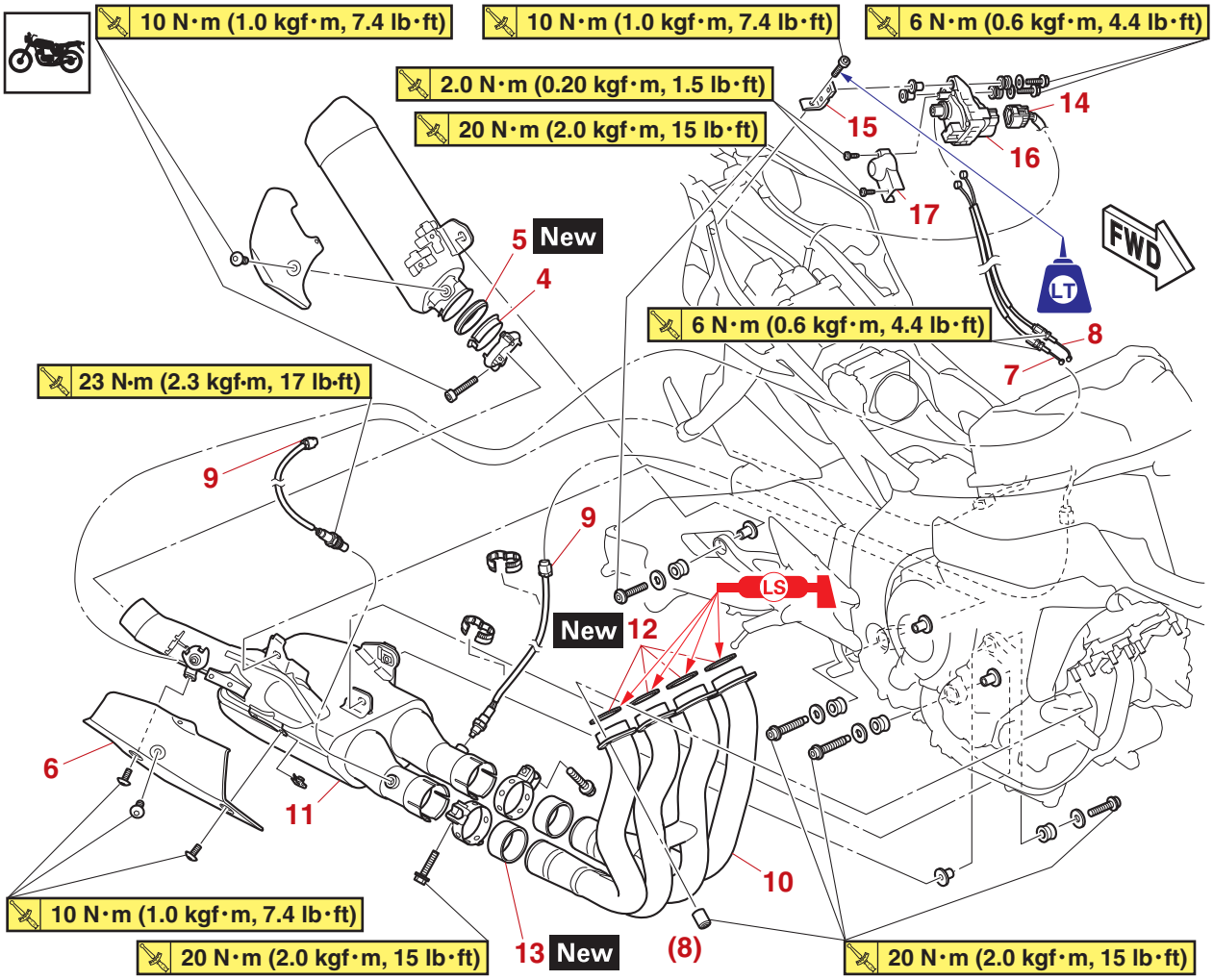
ENGINE REMOVAL

Removing the muffler and exhaust pipe



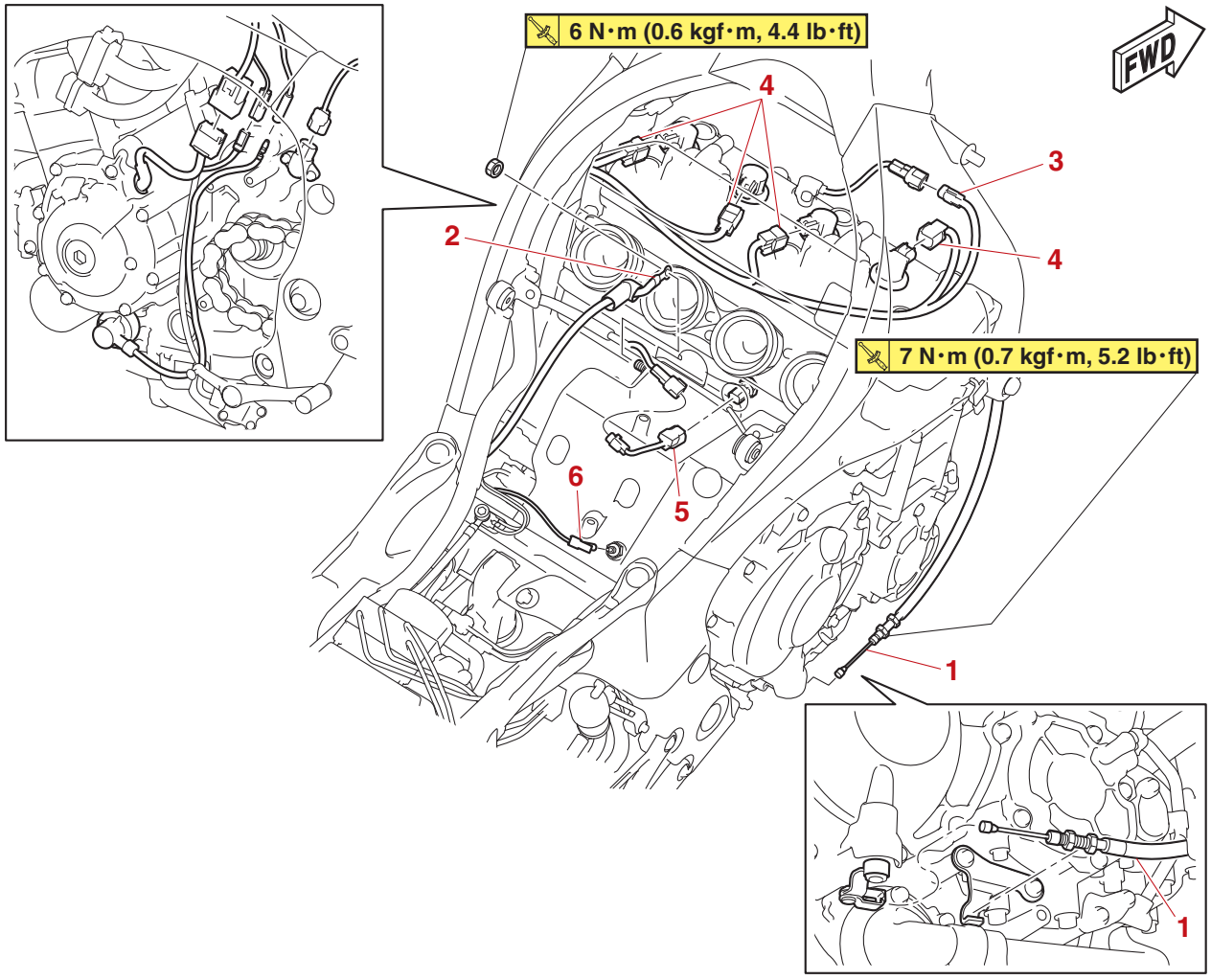
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat/Passenger seat/Battery cover/Tail cover		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front side cowling inner panel		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Electrical components tray		Refer to "GENERAL CHASSIS (9)" on page 4-34.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Radiator		Refer to "RADIATOR" on page 6-3.
	Oil cooler		Refer to "OIL COOLER" on page 6-7.
1	Muffler protector	1	
2	Muffler joint	1	
3	Muffler	1	

Removing the muffler and exhaust pipe



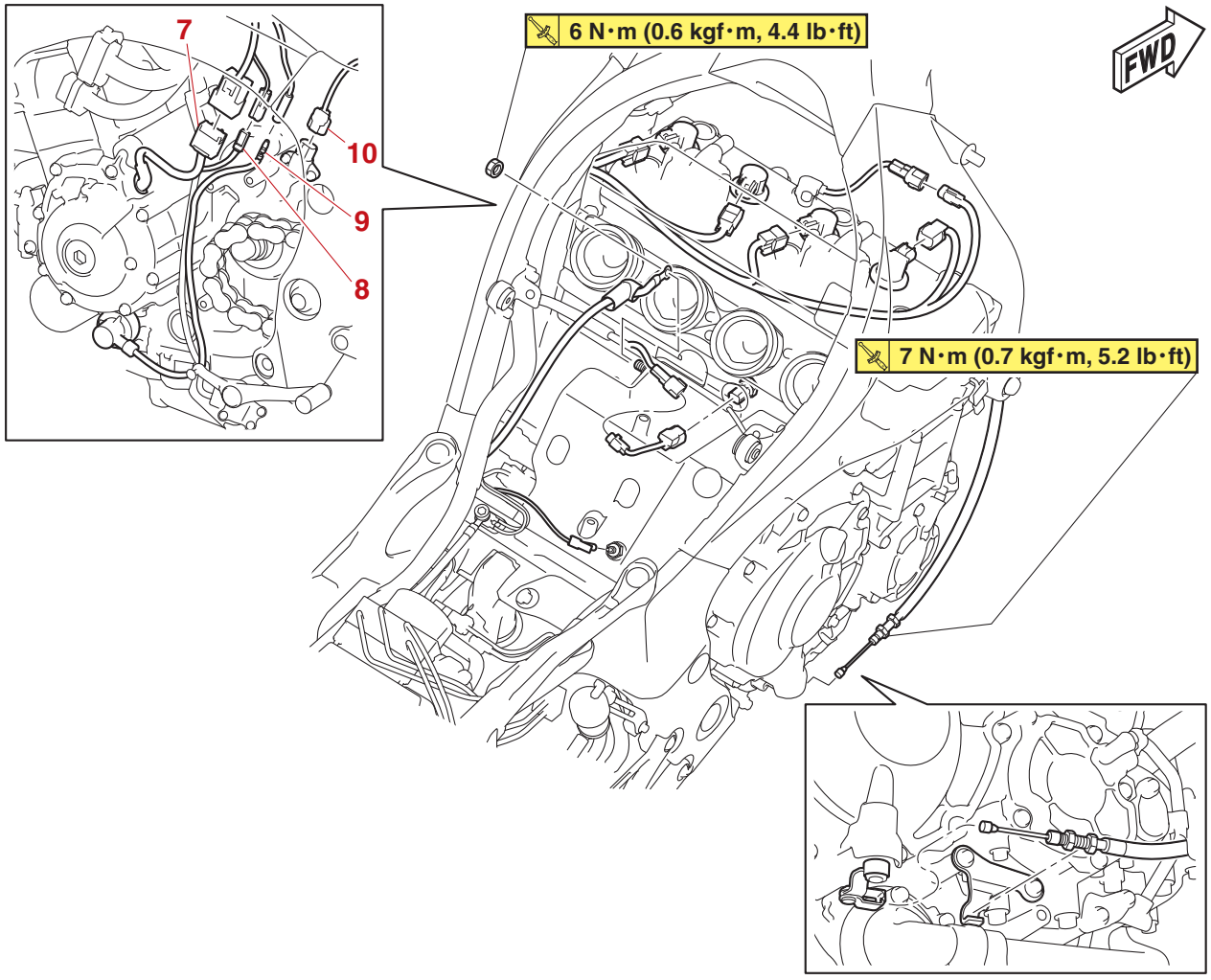
Order	Job/Parts to remove	Q'ty	Remarks
4	Ring	1	
5	Gasket	1	
6	EXUP valve pulley cover	1	
7	EXUP cable 2	1	
8	EXUP cable 1	1	
9	O_2 sensor coupler	2	Disconnect.
10	Exhaust pipe	1	
11	Exhaust chamber	1	
12	Gasket	4	
13	Gasket	2	
14	EXUP servo motor coupler	1	Disconnect.
15	EXUP servo motor bracket	1	
16	EXUP servo motor	1	
17	EXUP servo motor cover	1	

Disconnecting the leads and hoses



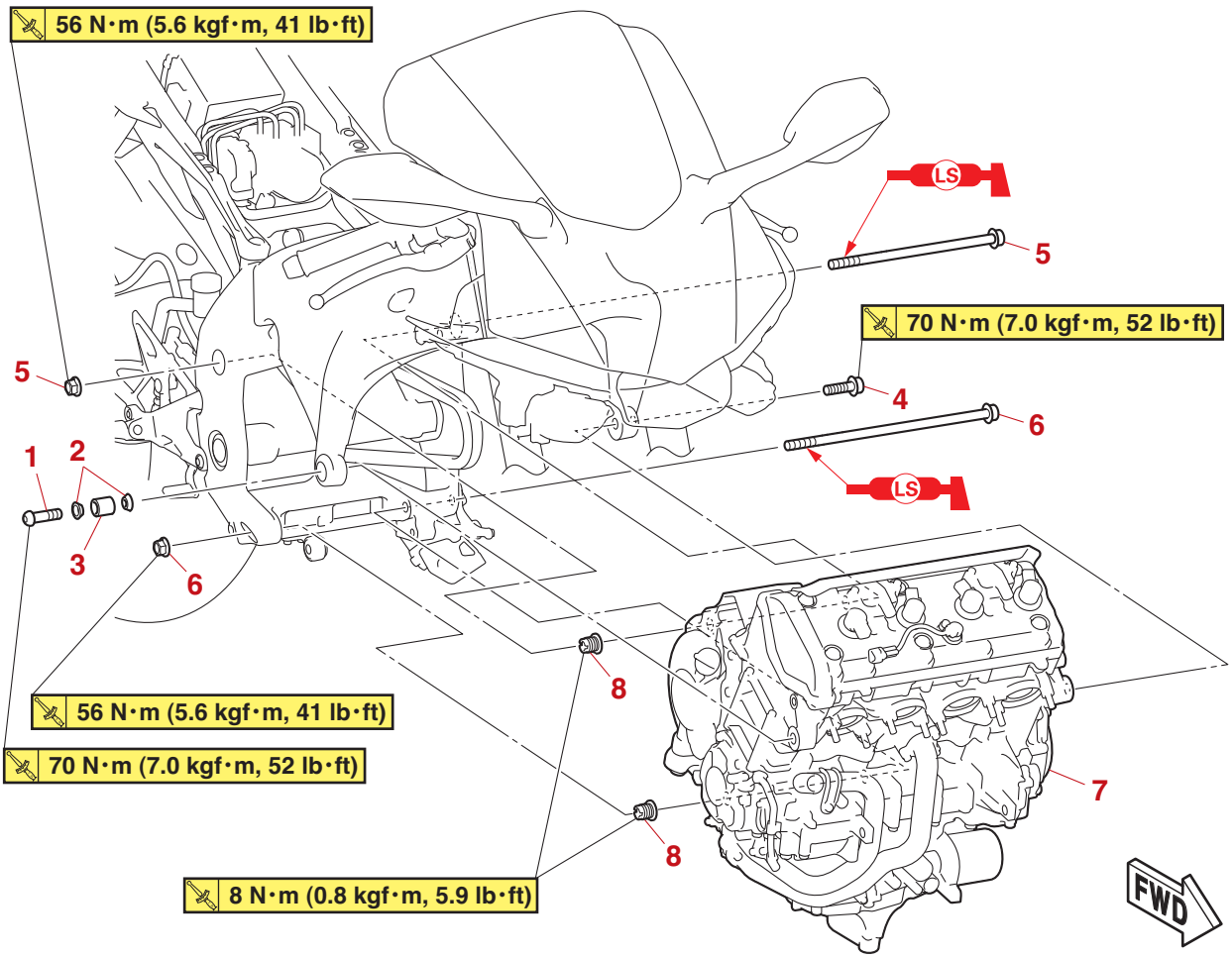
Order	Job/Parts to remove	Q'ty	Remarks
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
	Air filter case duct/Air cut-off valve		Refer to "AIR INDUCTION SYSTEM" on page 7-20.
	Canister		Refer to "FUEL TANK" on page 7-1. For California only.
	Throttle bodies		Refer to "THROTTLE BODIES" on page 7-11.
	Thermostat assembly		Refer to "THERMOSTAT" on page 6-9.
	Shift rod/Drive sprocket		Refer to "CHAIN DRIVE" on page 4-125.
1	Clutch cable	1	Disconnect.
2	Starter motor lead	1	Disconnect.
3	Cylinder identification sensor coupler	1	Disconnect.
4	Ignition coil coupler	4	Disconnect.
5	Coolant temperature sensor coupler (sub-wire harness)	1	Disconnect.
6	Neutral switch connector	1	Disconnect.

Disconnecting the leads and hoses



Order	Job/Parts to remove	Q'ty	Remarks
7	Stator coil coupler	1	Disconnect.
8	Crankshaft position sensor coupler	1	Disconnect.
9	Oil pressure switch connector	1	Disconnect.
10	Gear position sensor coupler	1	Disconnect.

Removing the engine



Order	Job/Parts to remove	Q'ty	Remarks
1	Engine mounting bolt (right front side)	1	
2	Collar	2	
3	Collar	1	
4	Engine mounting bolt (left front side)	1	
5	Engine mounting bolt (rear upper side)/Engine mounting nut (rear upper side)	1/1	
6	Engine mounting bolt (rear lower side)/Engine mounting nut (rear lower side)	1/1	
7	Engine	1	
8	Engine mounting adjust bolt	2	

EAS30250
REMOVING THE ENGINE

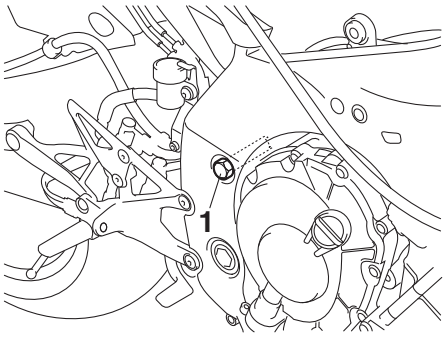
1. Loosen:
   • Engine mounting adjust bolt

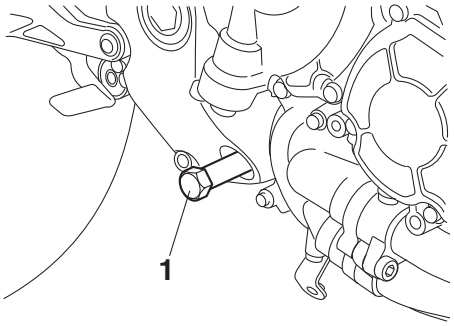
TIP

Loosen the engine mounting adjust bolt with the pivot shaft wrench “1”.



Pivot shaft wrench
90890-01485
Frame mount insert wrench
YM-01485



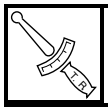


EAS30251
INSTALLING THE ENGINE

1. Install:
   • Engine mounting adjust bolt “1” (temporarily tighten)
2. Install:
   • Engine
3. Install:
   • Engine mounting bolt (rear lower side) “2”
   • Engine mounting bolt (rear upper side) “3”
4. Install:
   • Engine mounting bolt (left front side) “4” (temporarily tighten)
5. Install:
   • Collar “5”
   • Collar “6”
   • Engine mounting bolt (right front side) “7” (temporarily tighten)
6. Tighten:
   • Engine mounting adjust bolt “1”

TIP

- Tighten the engine mounting adjust bolt to specification with the pivot shaft wrench.
- Make sure that the flange on the engine mounting adjust bolt contacts the engine.

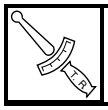


Engine mounting adjust bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)



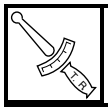
Pivot shaft wrench
90890-01485
Frame mount insert wrench
YM-01485

7. Install:
   • Engine mounting nut (rear lower side) “8”
   • Engine mounting nut (rear upper side) “9”
8. Tighten:
   • Engine mounting nut (rear lower side) “8”



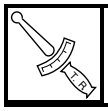
Engine mounting nut
56 N·m (5.6 kgf·m, 41 lb·ft)

9. Tighten:
   • Engine mounting nut (rear upper side) “9”



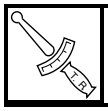
Engine mounting nut
56 N·m (5.6 kgf·m, 41 lb·ft)

10. Tighten:
    • Engine mounting bolt (left front side) “4”

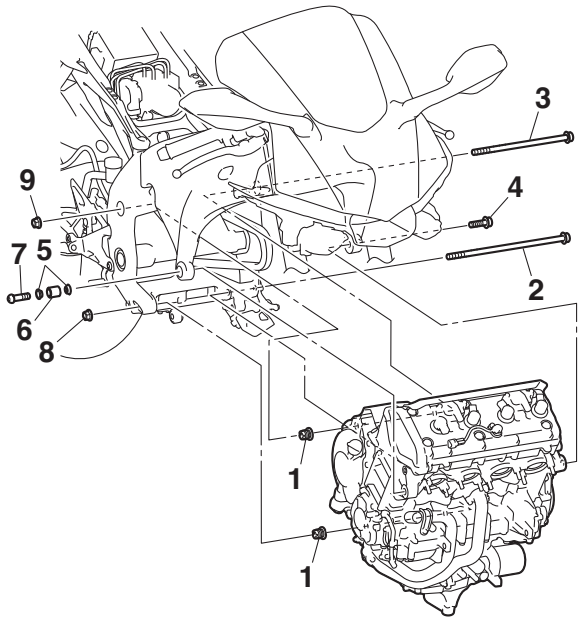


Engine mounting bolt
70 N·m (7.0 kgf·m, 52 lb·ft)

11. Tighten:
    • Engine mounting bolt (right front side) “7”



Engine mounting bolt
70 N·m (7.0 kgf·m, 52 lb·ft)



EAS30252

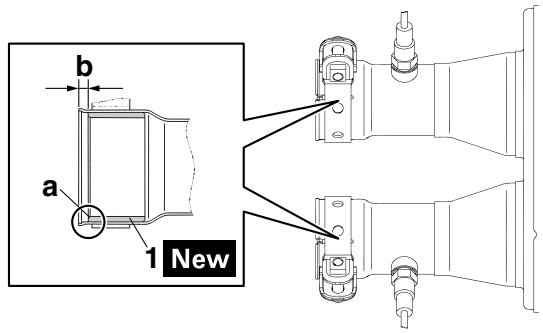
INSTALLING THE EXHAUST PIPE AND MUFFLER

1. Install:
   - Exhaust pipe
   - Gasket “1” New
     (to exhaust chamber)
   - Muffler

TIP

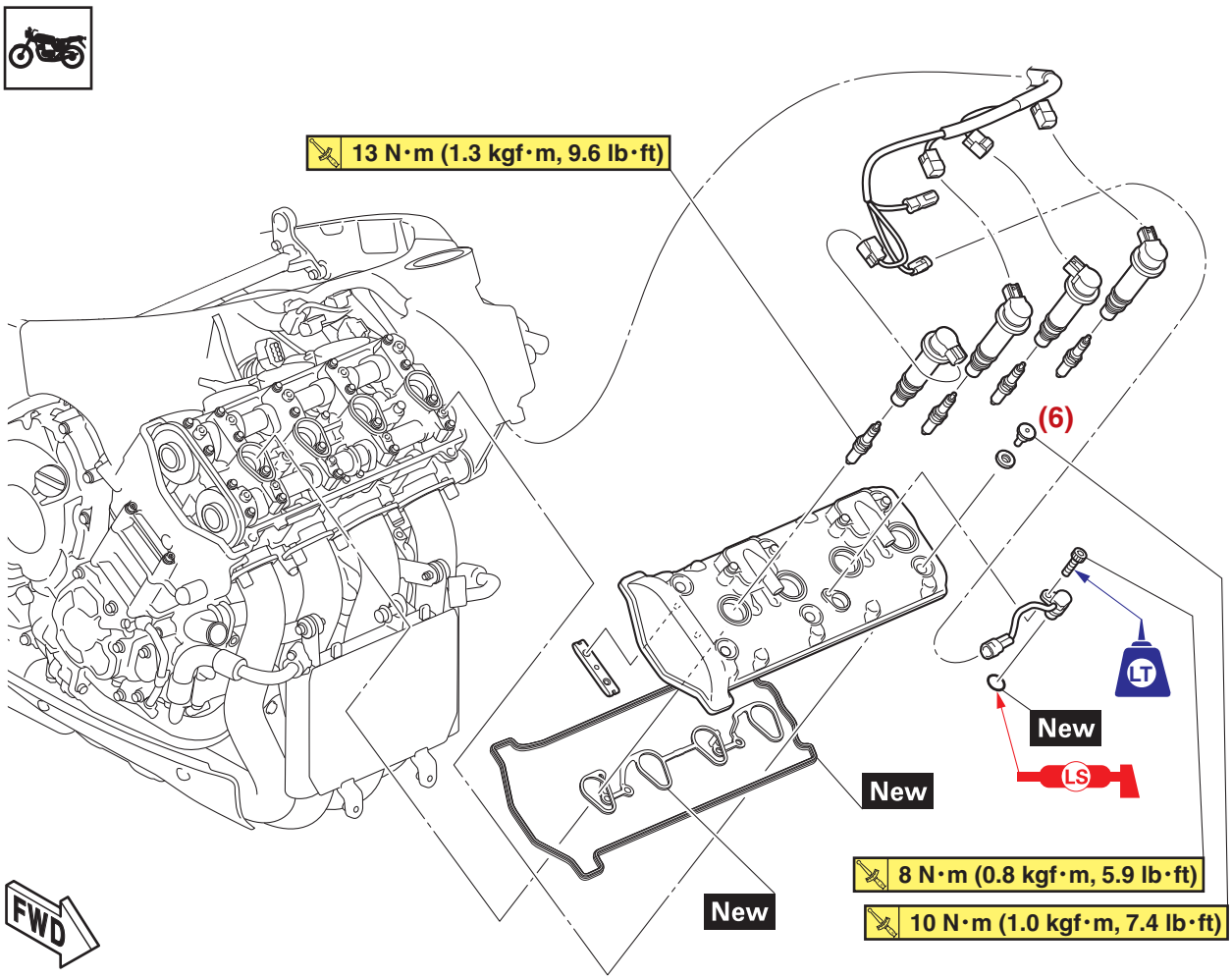
When installing the gasket, install it so that the chamfered side “a” of the gasket faces the exhaust pipe side as shown in the illustration.

	Installed depth of gasket “b” **5.0 mm (0.20 in)**



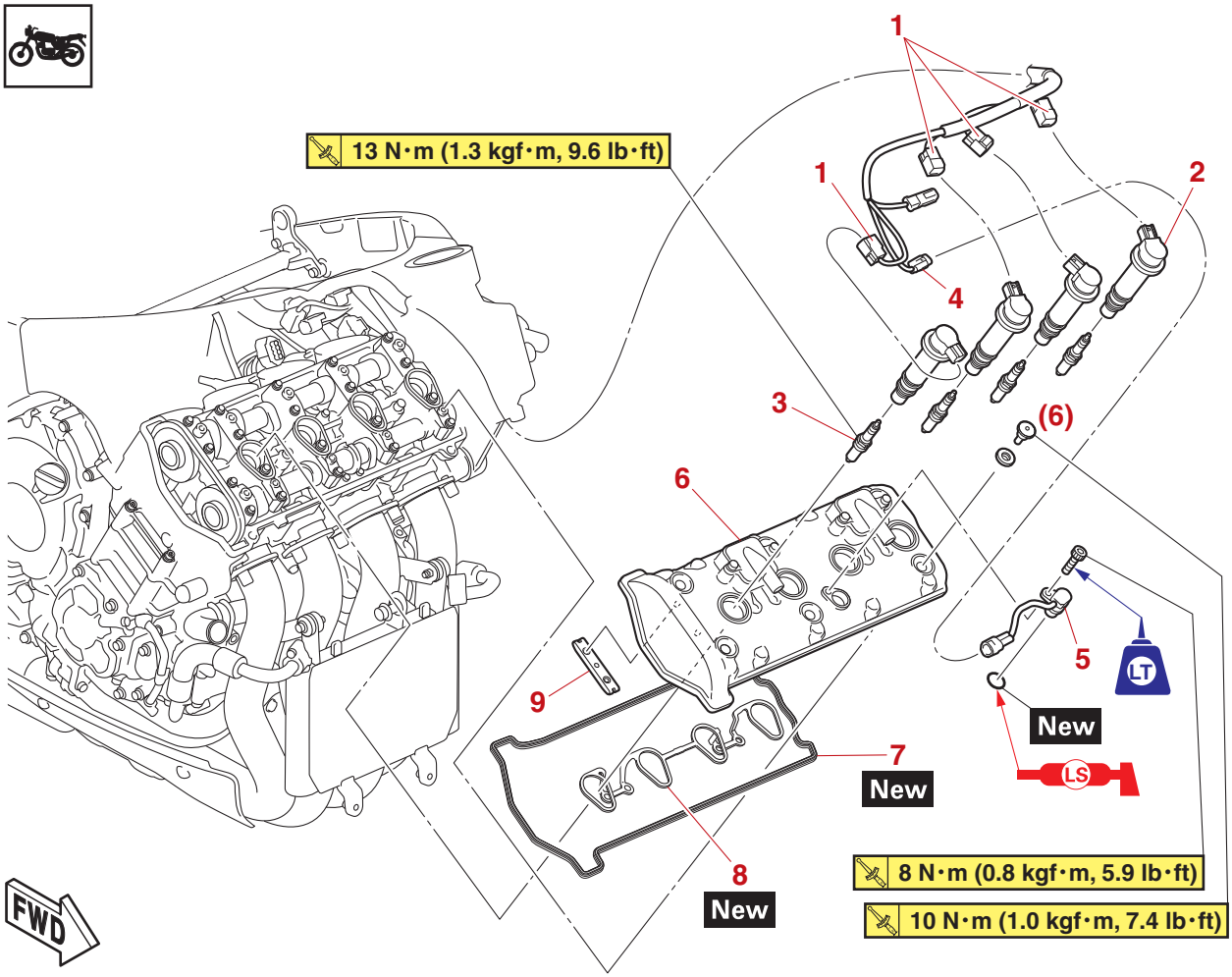
EAS20043
CAMSHAFTS

Removing the cylinder head cover



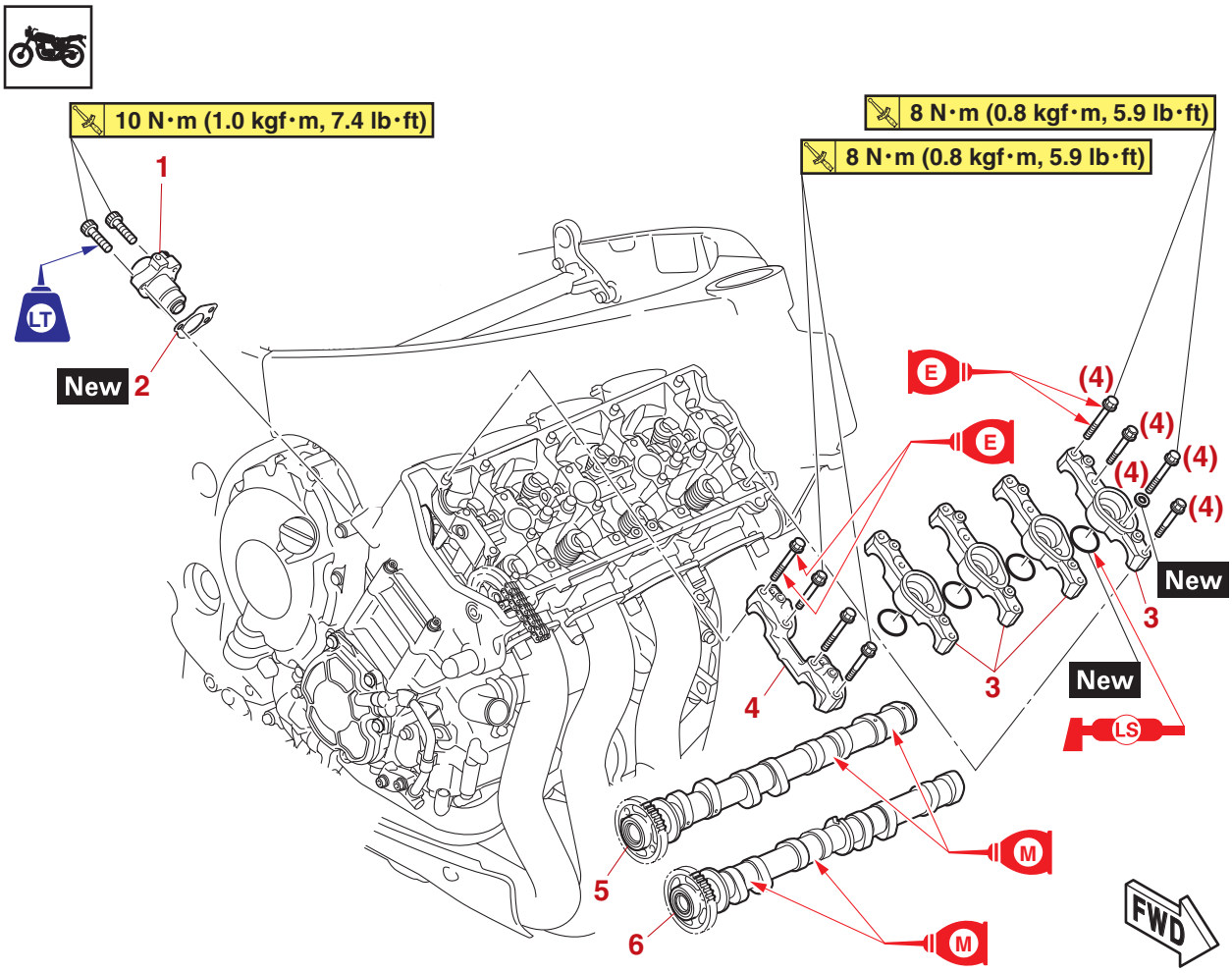
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front side cowling inner panel		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Electrical components tray		Refer to "GENERAL CHASSIS (9)" on page 4-34.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
	Radiator		Refer to "RADIATOR" on page 6-3.
	Air cut-off valve		Refer to "AIR INDUCTION SYSTEM" on page 7-20.

Removing the cylinder head cover



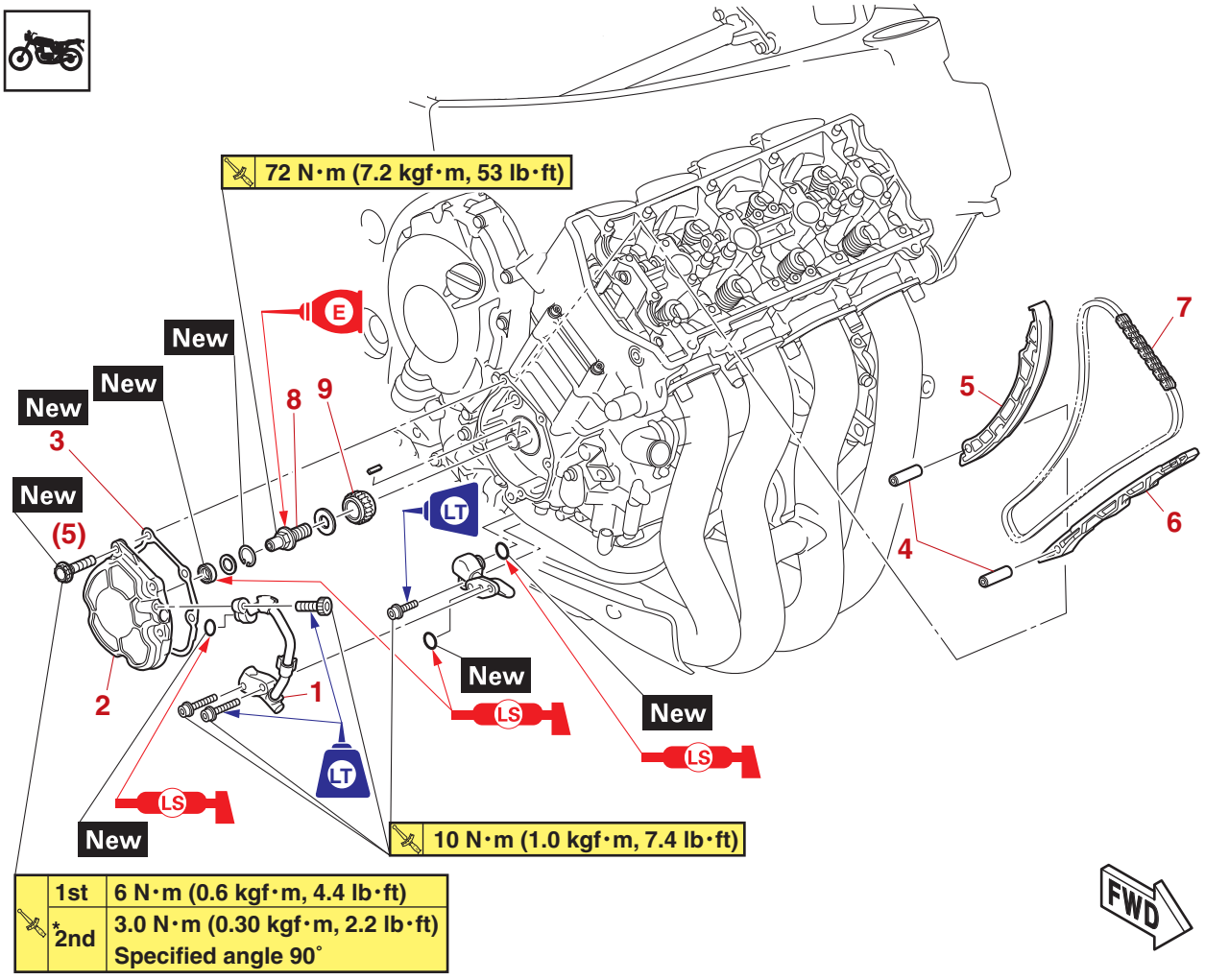
Order	Job/Parts to remove	Q'ty	Remarks
1	Ignition coil coupler	4	Disconnect.
2	Ignition coil	4	
3	Spark plug	4	If the spark plug is a new one, tighten it to 18 N·m (1.8 kgf·m, 13 lb·ft).
4	Cylinder identification sensor coupler	1	Disconnect.
5	Cylinder identification sensor	1	
6	Cylinder head cover	1	
7	Cylinder head cover gasket	1	
8	Cylinder head cover gasket	1	
9	Timing chain guide (top side)	1	

Removing the camshafts



Order	Job/Parts to remove	Q'ty	Remarks
	Crankshaft end cover/Timing mark accessing bolt		Refer to "GENERATOR" on page 5-44.
1	Timing chain tensioner	1	
2	Timing chain tensioner gasket	1	
3	Camshaft cap 1	4	• If the camshaft cap bolt is a new one, it is not necessary to apply engine oil onto the mating surface and threads of the bolt. • If the camshaft cap bolt is a new one, tighten it to 10 N·m (1.0 kgf·m, 7.4 lb·ft).
4	Camshaft cap 2	1	• If the camshaft cap bolt is a new one, it is not necessary to apply engine oil onto the mating surface and threads of the bolt. • If the camshaft cap bolt is a new one, tighten it to 10 N·m (1.0 kgf·m, 7.4 lb·ft).
5	Intake camshaft	1	
6	Exhaust camshaft	1	

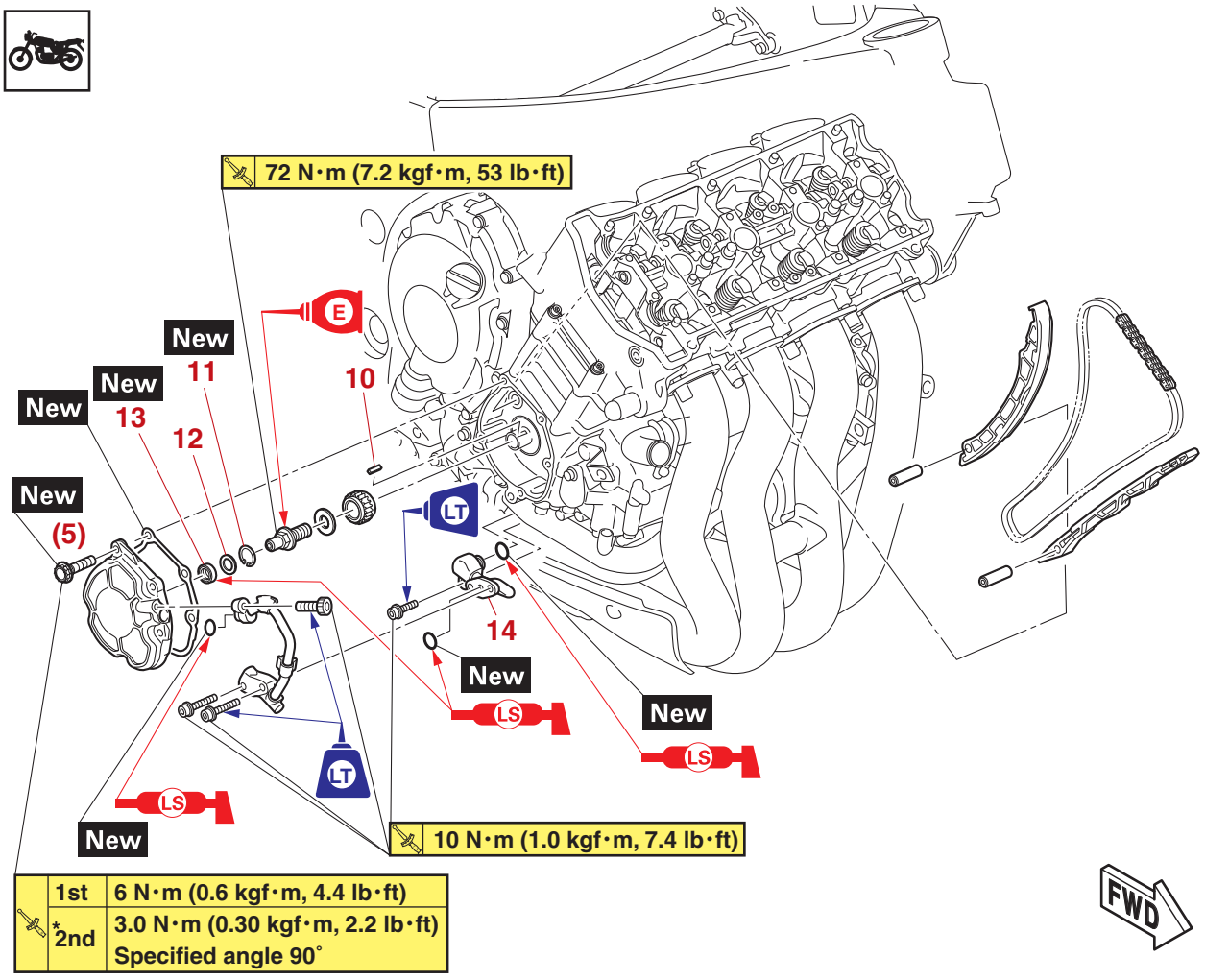
Removing the timing chain and timing chain guide



* **Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.**

Order	Job/Parts to remove	Q'ty	Remarks
1	Oil pipe 3	1	Install the oil pipe to the timing chain cover, and then install them to the crankcase.
2	Timing chain cover	1	Install the oil pipe to the timing chain cover, and then install them to the crankcase.
3	Timing chain cover gasket	1	
4	Dowel pin	2	
5	Timing chain guide (intake side)	1	
6	Timing chain guide (exhaust side)	1	
7	Timing chain	1	
8	Timing chain sprocket bolt	1	
9	Timing chain sprocket	1	

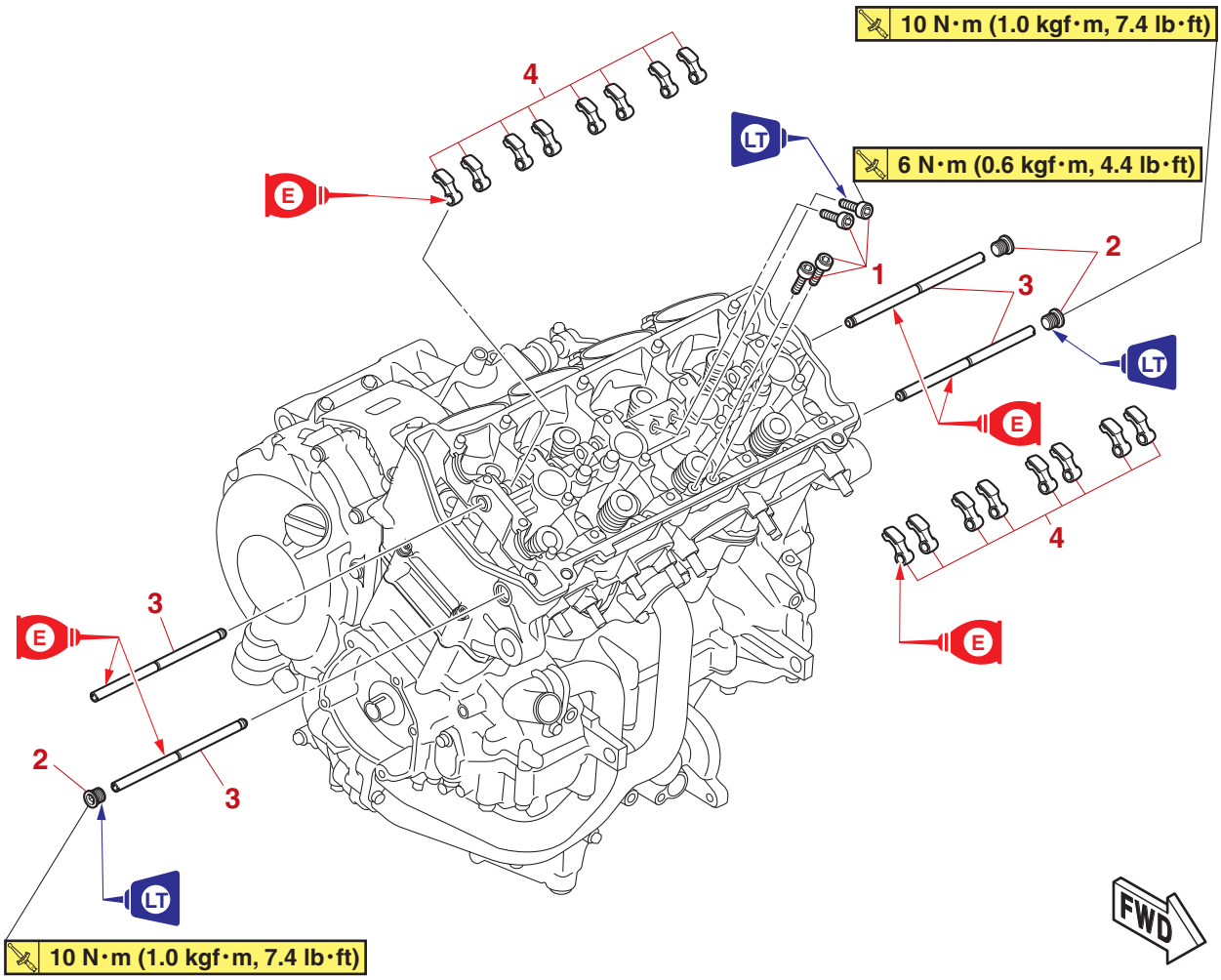
Removing the timing chain and timing chain guide



* **Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.**

Order	Job/Parts to remove	Q'ty	Remarks
10	Straight key	1	
11	Circlip	1	
12	Washer	1	
13	Oil seal	1	
14	Oil pipe 2	1	When removing the oil pipe 2, also remove the water pump inlet pipe. Refer to "WATER PUMP" on page 6-13.

Removing the rocker arms



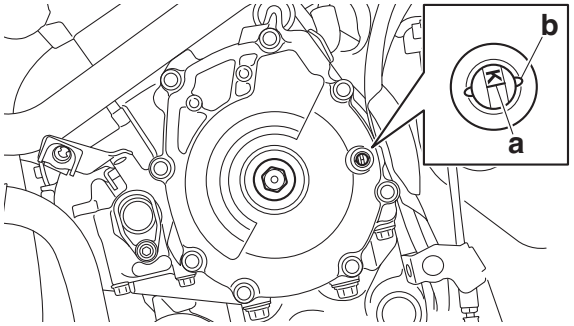
Order	Job/Parts to remove	Q'ty	Remarks
	Engine		Refer to "ENGINE REMOVAL" on page 5-11.
	Intake camshaft/Exhaust camshaft		Refer to "CAMSHAFTS" on page 5-18.
1	Rocker arm shaft bolt	4	
2	Straight plug (rocker arm shaft)	3	
3	Rocker arm shaft	4	
4	Rocker arm	16	

EAS30256
REMOVING THE CAMSHAFTS

1. Remove:
   - Timing mark accessing bolt
   - Crankshaft end cover
     Refer to "GENERATOR" on page 5-44.
2. Align:
   - Mark "a" on the generator rotor (with the generator rotor cover slot "b")
     a. Turn the crankshaft counterclockwise.
     b. When piston #1 is at BTDC105° on the compression stroke, align the BTDC105° mark "a" on the generator rotor with the generator rotor cover slot "b".

TIP

BTDC105° on the compression stroke can be found when the camshaft lobes are turned away from each other.



3. Remove:
   - Timing chain tensioner
   - Timing chain tensioner gasket
4. Remove:
   - Camshaft cap

ECA13720

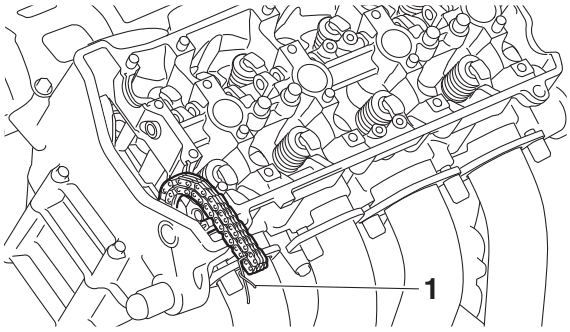
NOTICE

To prevent damage to the cylinder head, camshafts or camshaft caps, loosen the camshaft cap bolts in stages and in a criss-cross pattern, working from the outside in.

5. Remove:
   - Intake camshaft
   - Exhaust camshaft

TIP

To prevent the timing chain from falling into the crankcase, fasten it with a wire "1".



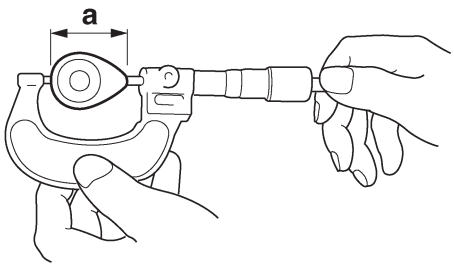
EAS31655
REMOVING THE ROCKER ARMS AND ROCKER ARM SHAFTS

1. Remove:
   - Rocker arm shaft bolt
   - Straight plug
   - Rocker arm shaft
   - Rocker arm

EAS30257
CHECKING THE CAMSHAFTS

1. Check:
   - Camshaft lobes
     Blue discoloration/pitting/scratches → Replace the camshaft.
2. Measure:
   - Camshaft lobe dimensions "a"
     Out of specification → Replace the camshaft.

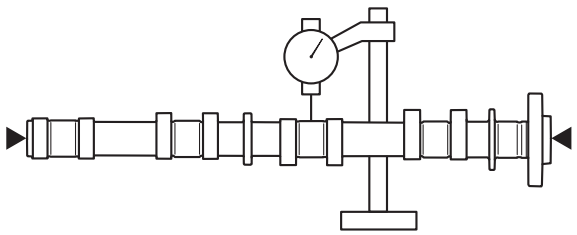
Camshaft lobe dimensions
Lobe height (Intake)
35.291–35.391 mm (1.3894–1.3933 in)
Limit
35.191 mm (1.3855 in)
Lobe height (Exhaust)
34.745–34.845 mm (1.3679–1.3718 in)
Limit
34.645 mm (1.3640 in)



G088946

3. Measure:
   - Camshaft runout
     Out of specification → Replace.

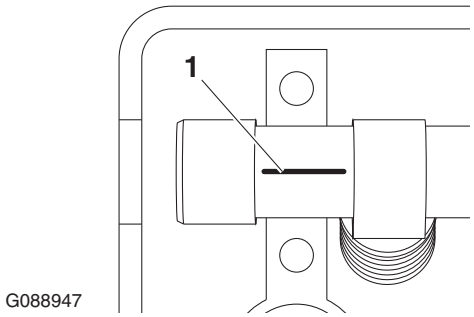
Camshaft runout limit
0.050 mm (0.0020 in)



4. Measure:
   • Camshaft-journal-to-camshaft-cap clearance
   Out of specification → Measure the camshaft journal diameter.

Camshaft-journal-to-camshaft-cap clearance
0.028–0.062 mm (0.0011–0.0024 in)
Limit
0.080 mm (0.0032 in)

   a. Install the camshaft into the cylinder head (without the camshaft caps).
   b. Position strip of Plastigauge® "1" onto the camshaft journal as shown.

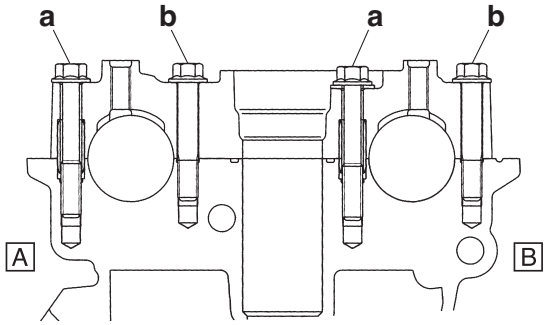


   c. Install the dowel pins and camshaft caps.

ECA23010

NOTICE

There are two kinds of camshaft cap bolts with different lengths. Be sure to install each bolt onto the correct position.



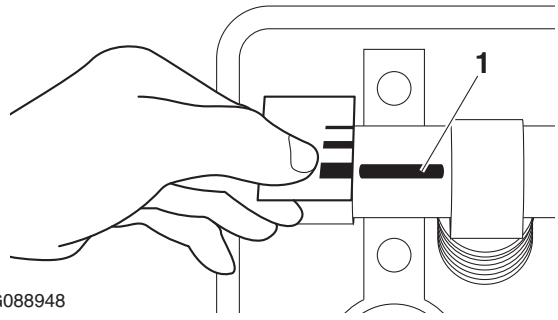
a. Camshaft cap bolt (black): 40 mm (1.57 in)
b. Camshaft cap bolt (silver): 35 mm (1.38 in)
A. Intake side
B. Exhaust side

TIP

- If the camshaft cap bolt is a new one, it is not necessary to apply engine oil onto the mating surface and threads of the bolt.
- If the camshaft cap bolt is a new one, tighten it to 10 N·m (1.0 kgf·m, 7.4 lb·ft).
- Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.
- Do not turn the camshaft when measuring the camshaft journal-to-camshaft-cap clearance with the Plastigauge®.

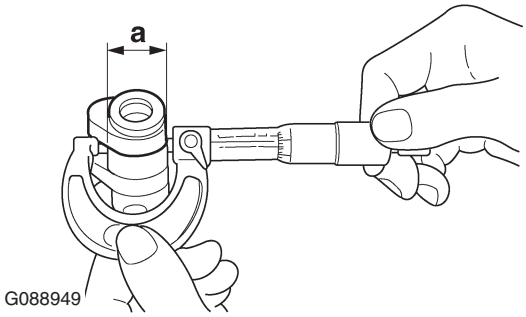
Camshaft cap bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)
Camshaft cap bolt (new)
10 N·m (1.0 kgf·m, 7.4 lb·ft)

   d. Remove the camshaft caps and then measure the width of the Plastigauge® "1".



5. Measure:
   • Camshaft journal diameter "a"
   Out of specification → Replace the camshaft.
   Within specification → Replace the cylinder head and the camshaft caps as a set.

Camshaft journal diameter
25.459–25.472 mm (1.0023–1.0028 in)

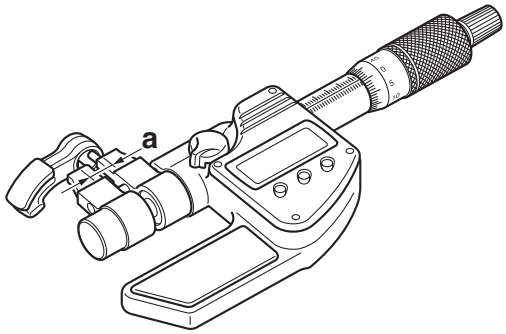


EAS30259
CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS

The following procedure applies to all of the rocker arms and rocker arm shafts.

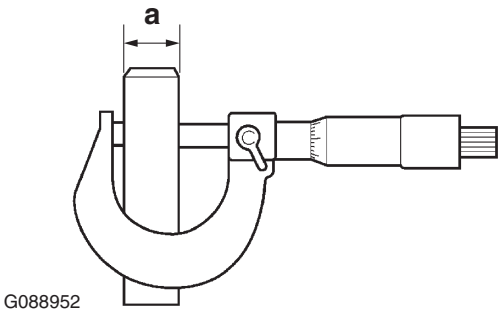
1. Check:
   - Rocker arm
     Damage/wear → Replace.
2. Check:
   - Rocker arm shaft
     Blue discoloration/excessive wear/pitting/scratches → Replace or check the lubrication system.
3. Measure:
   - Rocker arm inside diameter “a”
     Out of specification → Replace.

Rocker arm inside diameter
7.987–8.002 mm (0.3144–0.3150 in)
Limit
8.017 mm (0.3156 in)



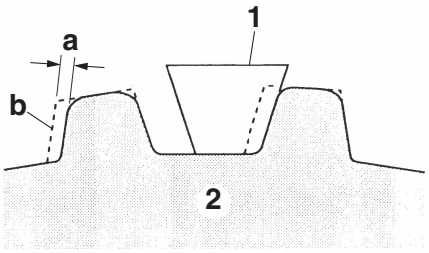
4. Measure:
   - Rocker arm shaft outside diameter “a”
     Out of specification → Replace.

Rocker arm shaft outside diameter
7.967–7.979 mm (0.3137–0.3141 in)
Limit
7.936 mm (0.3124 in)



EAS30258
CHECKING THE TIMING CHAIN AND CAMSHAFT SPROCKET

1. Check:
   - Timing chain
     Damage/stiffness → Replace the timing chain and camshaft and camshaft sprocket as a set.
2. Check:
   - Camshaft sprocket
     More than 1/4 tooth wear “a” → Replace the camshaft sprockets and the timing chain as a set.



a. 1/4 tooth
b. Correct
1. Timing chain
2. Camshaft sprocket

EAS30265
CHECKING THE TIMING CHAIN GUIDES

The following procedure applies to all of the camshaft sprockets and timing chain guides.

1. Check:
   - Timing chain guide (exhaust side)
   - Timing chain guide (intake side)

• Timing chain guide (top side)
Damage/wear → Replace the defective part(s).

EAS30266
CHECKING THE TIMING CHAIN TENSIONER

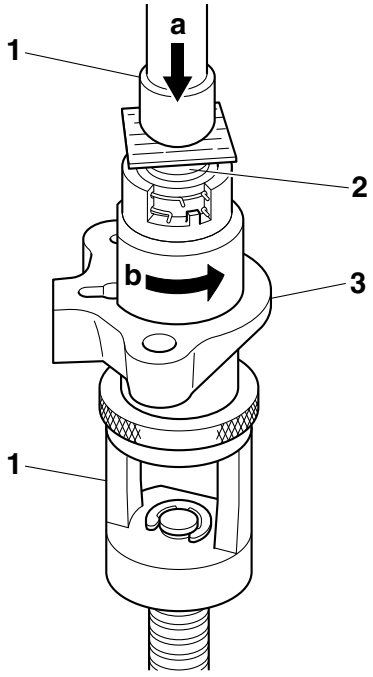
1. Check:
• Timing chain tensioner
Cracks/damage/rough movement → Replace.
a. Using the valve spring compressor "1", push and insert timing chain tensioner rod "2" into the timing chain tensioner housing.

TIP

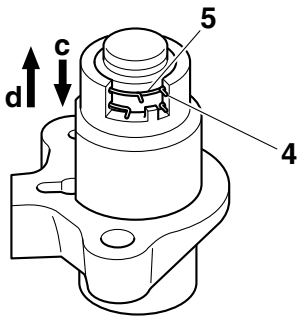
Push the timing chain tensioner rod in direction "a", and turn the timing chain tensioner body "3" in direction "b" until it stops.



Valve spring compressor
90890-04019
Valve spring compressor
YM-04019



b. Keep pressing the timing chain tensioner rod, mount clip "4" into groove "5", and lock the timing chain tensioner rod.
c. Push the timing chain tensioner rod in direction "c".
d. Make sure that the timing chain tensioner rod can smoothly move out from the timing chain tensioner housing in direction "d". If not smooth, replace the timing chain tensioner assembly.



EAS31744
ASSEMBLING THE TIMING CHAIN COVER

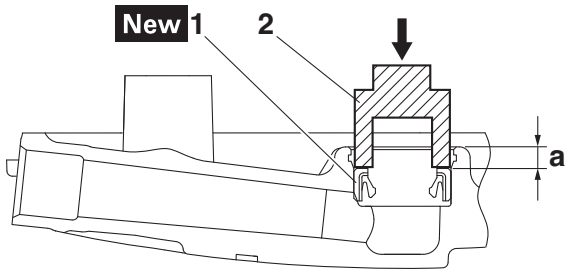
1. Install:
• Oil seal "1" New

TIP

Install the oil seal with a socket "2" that matches its outside diameter.



Installed depth "a"
4.0–4.5 mm (0.16–0.18 in)



2. Install:
• Washer
• Circlip New

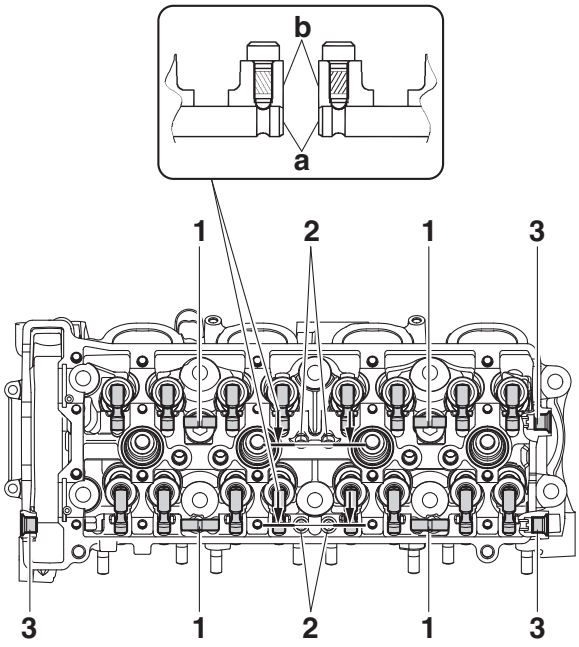
EAS31657
INSTALLING THE ROCKER ARMS AND ROCKER ARM SHAFTS

1. Install:
• Rocker arm
• Rocker arm shaft "1"
• Rocker arm shaft bolt "2"
• Straight plug "3"

TIP

• Align the end surface "a" of the rocker arm shaft with the surface "b" of the cylinder head.
• After installing the rocker arm shaft bolt, make sure that the rocker arm shaft turns smoothly.

Rocker arm shaft bolt
6 N·m (0.6 kgf·m, 4.4 lb·ft)
LOCTITE®
Straight plug (rocker arm shaft)
10 N·m (1.0 kgf·m, 7.4 lb·ft)
LOCTITE®



EAS31715
INSTALLING THE TIMING CHAIN COVER

1. Install:
   - Timing chain cover
   - Oil pipe 3
     a. Install new O-rings to the oil pipe.

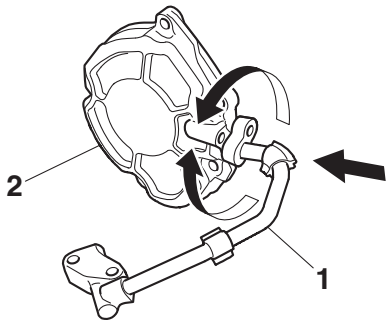
TIP

Apply lithium-soap-based grease evenly on new O-rings.

b. Install the oil pipe "1" to the timing chain cover "2".

TIP

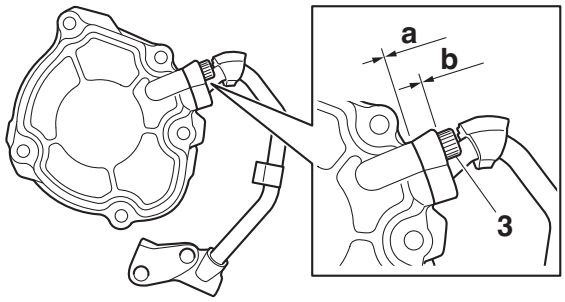
- While turning the oil pipe, install it to the timing chain cover so that the grease applied to the O-rings is distributed.
- If the oil pipe is not turned smoothly, the O-rings might be caught.



c. Install the oil pipe bolt "3" and tighten it temporarily until there is no clearance at "a" (timing chain cover to oil pipe) and "b" (oil pipe to oil pipe bolt).

TIP

Apply locking agent (LOCTITE®) onto the oil pipe bolt.



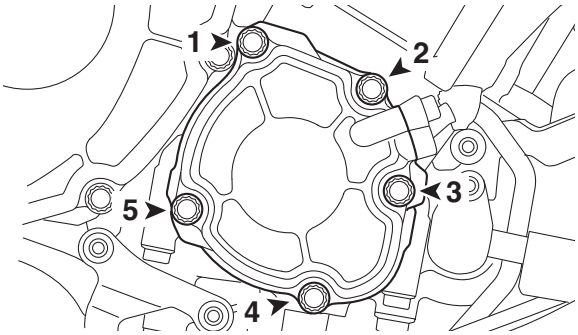
d. Install the timing chain cover assembly and a new timing chain cover gasket.
e. Install new timing chain cover bolts and tighten them.

Timing chain cover bolt
1st: 6 N·m (0.6 kgf·m, 4.4 lb·ft)
***2nd: 3.0 N·m (0.30 kgf·m, 2.2 lb·ft)**
Specified angle 90°

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque and the specific angle.

TIP

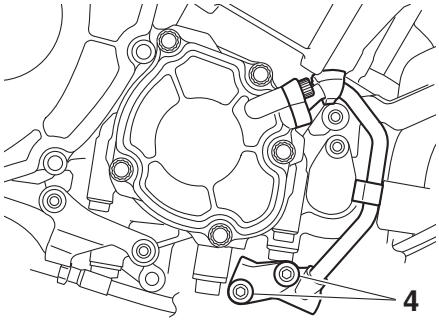
Tighten the timing chain cover bolts in the tightening sequence as shown.



f. Install the oil pipe bolts “4” and tighten them temporarily.

TIP

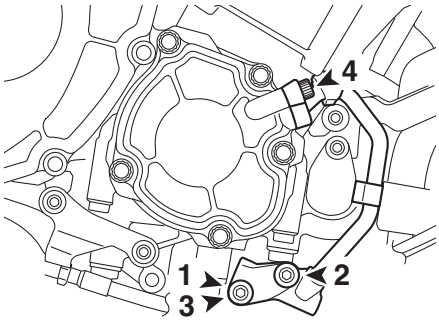
Apply locking agent (LOCTITE®) onto the oil pipe bolts.



g. Tighten the oil pipe bolts to the specified torque following the tightening order shown in the illustration.

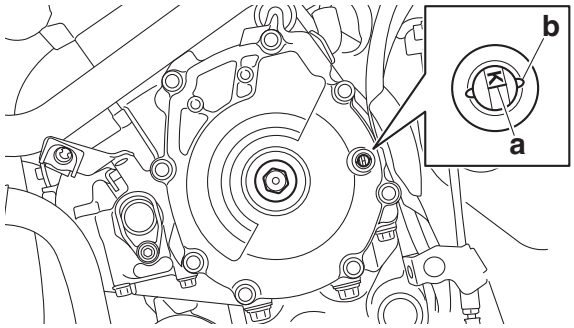


Oil pipe 3 bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)
LOCTITE®



EAS30269
INSTALLING THE CAMSHAFTS

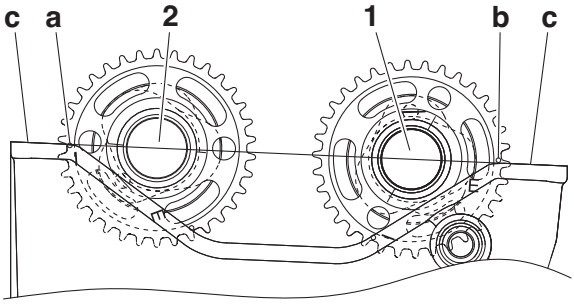
1. Remove:
   - Timing mark accessing bolt
   - Crankshaft end cover
   Refer to “GENERATOR” on page 5-44.
2. Align:
   - Mark “a” on the generator rotor (with the generator rotor cover slot “b”)
   a. Turn the crankshaft counterclockwise.
   b. When piston #1 is at BTDC105°, align the BTDC105° mark “a” on the generator rotor with the generator rotor cover slot “b”.



3. Install:
   - Exhaust camshaft “1”
   - Intake camshaft “2”

TIP

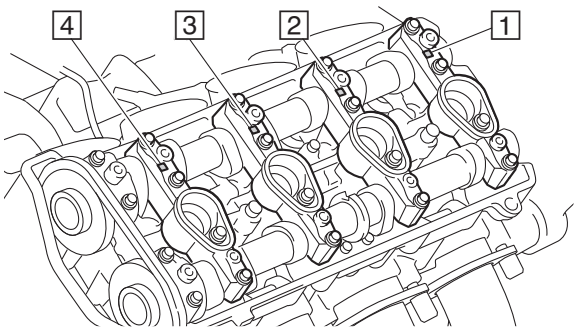
- Hang the timing chain on the sprocket from the exhaust camshaft to the intake camshaft.
- The intake camshaft sprocket timing mark “a” and exhaust camshaft sprocket timing mark “b” should align with the cylinder head surface “c”.
- Check the timing mark position of the camshaft sprocket using a mirror.
- The timing chain (exhaust side) should be stretched and the timing chain (intake side) should be sagged.



4. Install:
   - Camshaft cap

TIP

Make sure each camshaft cap is installed in its original place. Refer to the identification marks as follows:
“1”: camshaft cap mark for cylinder #1
“2”: camshaft cap mark for cylinder #2
“3”: camshaft cap mark for cylinder #3
“4”: camshaft cap mark for cylinder #4



5. Tighten:
   • Camshaft cap bolts

Camshaft cap bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)
Camshaft cap bolt (new)
10 N·m (1.0 kgf·m, 7.4 lb·ft)

TIP

- If the camshaft cap bolt is a new one, it is not necessary to apply engine oil onto the mating surface and threads of the bolt.
- If the camshaft cap bolt is a new one, tighten it to 10 N·m (1.0 kgf·m, 7.4 lb·ft).
- Tighten the camshaft cap bolts in stages and in a crisscross pattern, working from the inner caps out.

ECA17430

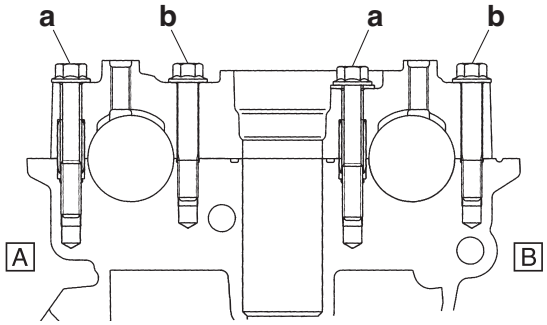
NOTICE

- **Lubricate the camshaft cap bolts with the engine oil.**
- **The camshaft cap bolts must be tightened evenly or damage to the cylinder head, camshaft caps, and camshafts will result.**
- **Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.**

ECA23010

NOTICE

There are two kinds of camshaft cap bolts with different lengths. Be sure to install each bolt onto the correct position.



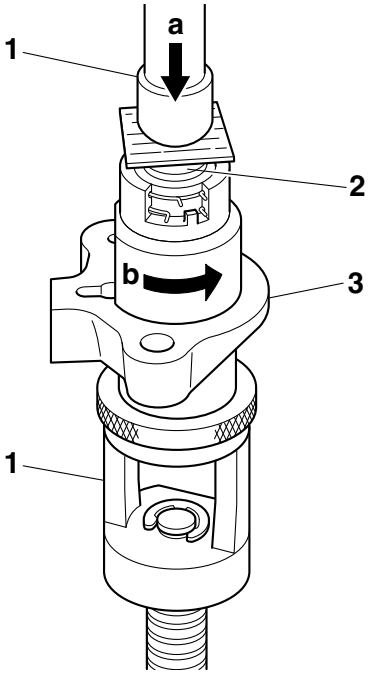
a. Camshaft cap bolt (black): 40 mm (1.57 in)
b. Camshaft cap bolt (silver): 35 mm (1.38 in)
A. Intake side
B. Exhaust side

6. Install:
   • Timing chain tensioner
   • Timing chain tensioner gasket New
     a. Using the valve spring compressor “1”, push and insert timing chain tensioner rod “2” into the timing chain tensioner housing.

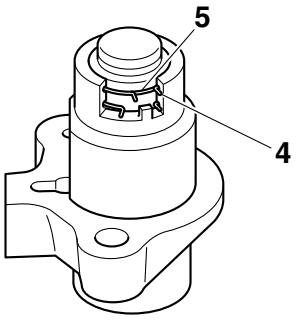
TIP

Push the timing chain tensioner rod in direction “a”, and turn the timing chain tensioner body “3” in direction “b” until it stops.

Valve spring compressor
90890-04019
Valve spring compressor
YM-04019



b. Keep pressing the timing chain tensioner rod, mount clip "4" into groove "5", and lock the timing chain tensioner rod.



c. In the status of step (b), install the rod assembly in the cylinder block.

TIP

Always use a new gasket.

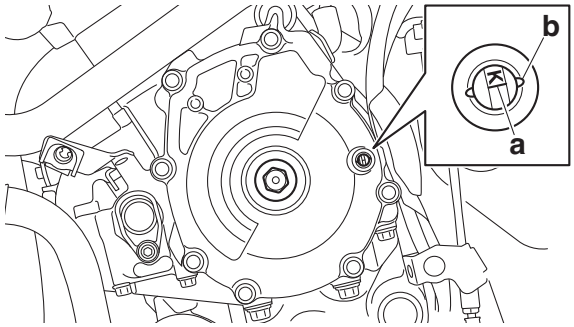
	Timing chain tensioner bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

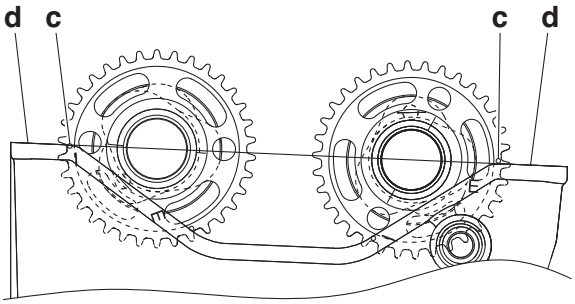
d. Unlock the timing chain tensioner by turning the crankshaft clockwise, and tension the timing chain.

7. Turn:
   - Crankshaft
     (several turns counterclockwise)
8. Check:
   - Mark "a"
     Make sure the mark "a" on the generator rotor is aligned with the generator rotor cover slot "b".
   - Camshaft sprocket timing mark "c"
     Make sure the camshaft sprocket timing mark "c" is aligned with the cylinder head mating surface "d".
     Out of alignment → Adjust.
     Refer to the installation steps above.

TIP

Check the timing mark position of the camshaft sprocket using a mirror.





9. Measure:
   - Valve clearance
     Out of specification → Adjust.
     Refer to "ADJUSTING THE VALVE CLEARANCE" on page 3-6.
10. Install:
    - Timing mark accessing bolt

	Timing mark accessing bolt **15 N·m (1.5 kgf·m, 11 lb·ft)**

    - Crankshaft end cover

	Crankshaft end cover **15 N·m (1.5 kgf·m, 11 lb·ft)**

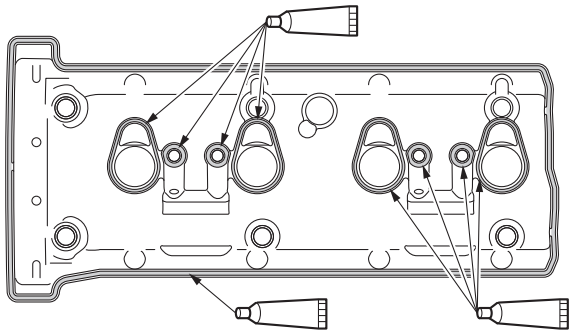
    Refer to "GENERATOR" on page 5-44.
11. Install:
    - Timing chain guide (top side)
    - Cylinder head cover gasket "1" New
    - Cylinder head cover gasket "2" New
    - Cylinder head cover

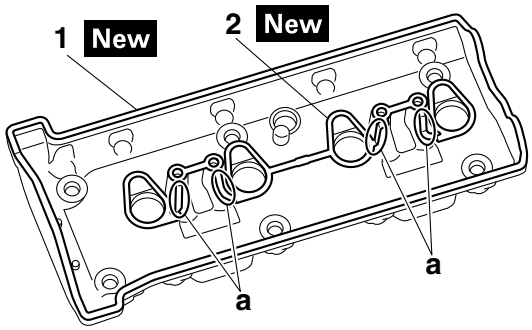
	Cylinder head cover bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

TIP

- Apply Three Bond No. 1541C® onto the mating surfaces of the cylinder head cover and cylinder head cover gasket.

• After installing the cylinder head cover gasket "2" to the cylinder head cover, cut off the "a" section.



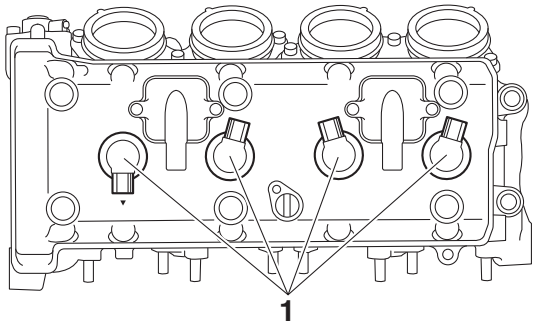


12.Install:
• Spark plugs
• Ignition coils "1"

	Spark plug **13 N·m (1.3 kgf·m, 9.6 lb·ft)** **Spark plug (new)** **18 N·m (1.8 kgf·m, 13 lb·ft)**

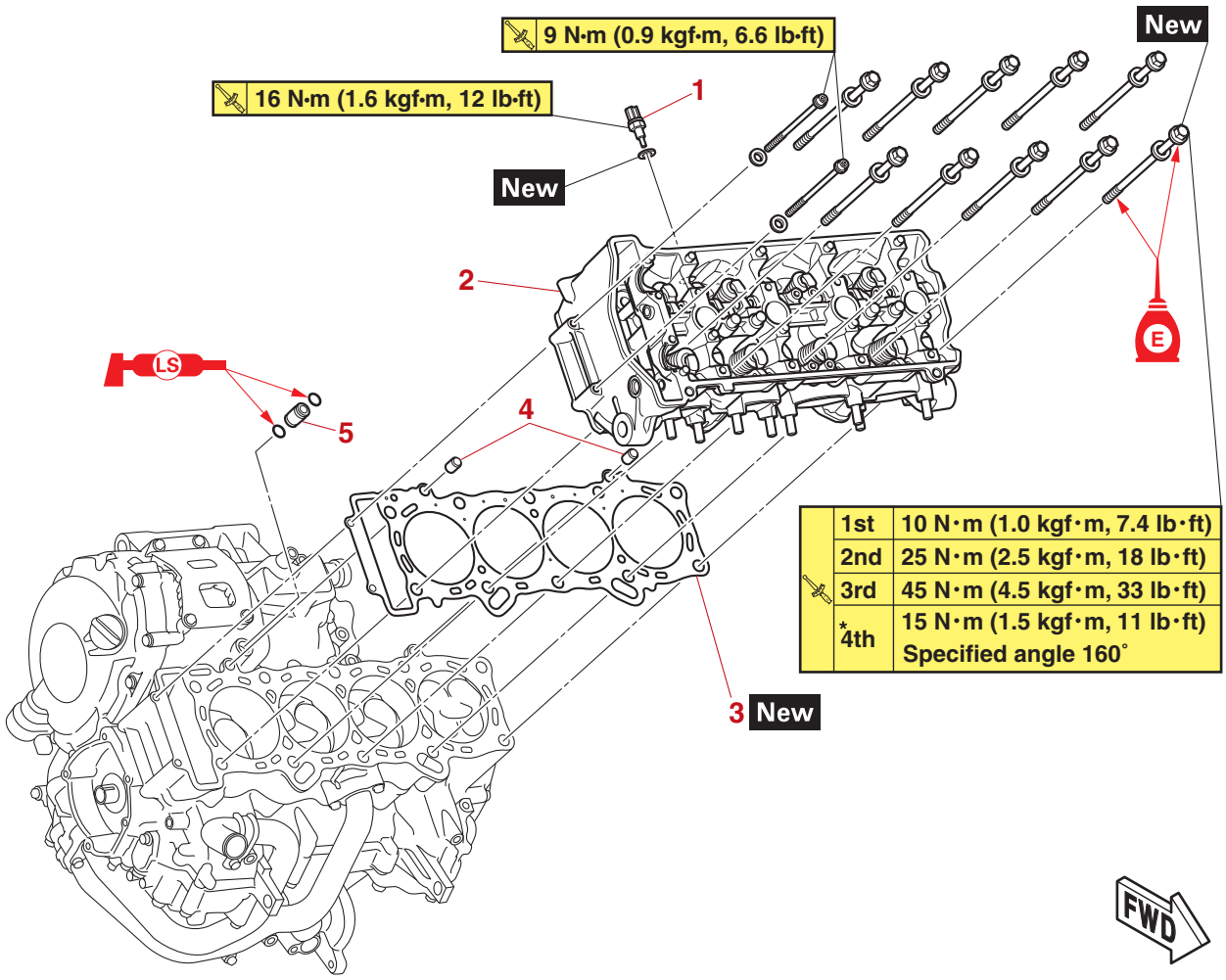
TIP

• Before installing the spark plug, clean the spark plug and gasket surface.
• If the spark plug is a new one, tighten it to 18 N·m (1.8 kgf·m, 13 lb·ft).
• Install the ignition coils "1" in the direction shown in the illustration.



EAS20044
CYLINDER HEAD

Removing the cylinder head



*** Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.**

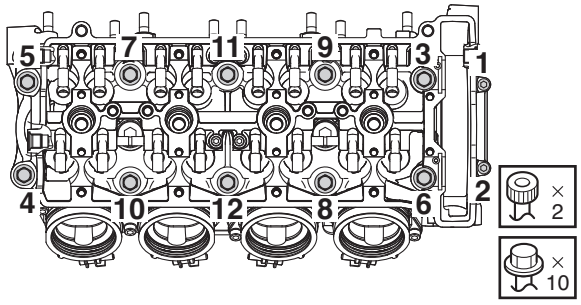
Order	Job/Parts to remove	Q'ty	Remarks
	Engine		Refer to "ENGINE REMOVAL" on page 5-11.
	Intake camshaft/Exhaust camshaft		Refer to "CAMSHAFTS" on page 5-18.
1	Coolant temperature sensor	1	
2	Cylinder head	1	
3	Cylinder head gasket	1	
4	Dowel pin	2	
5	Oil delivery pipe	1	

EAS30276
REMOVING THE CYLINDER HEAD

1. Remove:
   - Intake camshaft
   - Exhaust camshaft
   Refer to "REMOVING THE CAMSHAFTS" on page 5-24.
2. Remove:
   - Cylinder head bolt (M6) (× 2)
   - Cylinder head bolt (M9) (× 10)

TIP

- Loosen the bolts in the proper sequence as shown.
- Loosen each bolt 1/2 of a turn at a time. After all of the bolts are fully loosened, remove them.



EAS30277
CHECKING THE CYLINDER HEAD

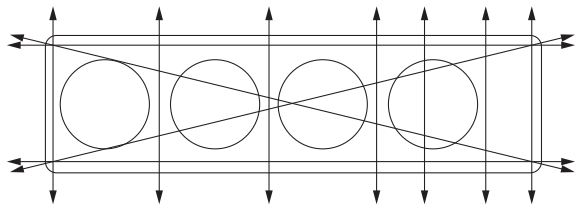
1. Eliminate:
   - Combustion chamber carbon deposits (with a rounded scraper)

TIP

Do not use a sharp instrument to avoid damaging or scratching:
- Spark plug bore threads
- Valve seats

2. Check:
   - Cylinder head
     Damage/scratches → Replace.
   - Cylinder head water jacket
     Mineral deposits/rust → Eliminate.
3. Measure:
   - Cylinder head warpage
     Out of specification → Resurface the cylinder head.

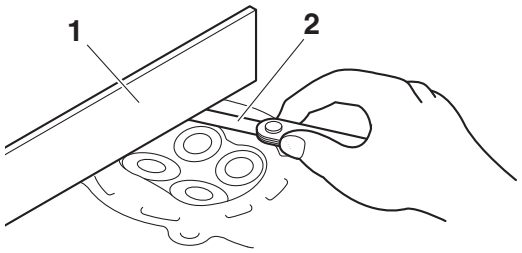
Warpage limit
0.10 mm (0.0039 in)



G088956

a. Place a straightedge "1" and a thickness gauge "2" across the cylinder head.

Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9



G088957

b. Measure the warpage.
c. If the limit is exceeded, resurface the cylinder head as follows.
d. Place a 400–600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

TIP

To ensure an even surface, rotate the cylinder head several times.

EAS30282
INSTALLING THE CYLINDER HEAD

1. Install:
   - Cylinder head gasket **New**
   - Dowel pins
2. Install:
   - Cylinder head
   - Cylinder head bolt (M6) (× 2)
   - Cylinder head bolt (M9) (× 10) **New**

TIP

- Pass the timing chain through the timing chain cavity.

• Lubricate the cylinder head bolt (M9) thread and mating surface with engine oil.

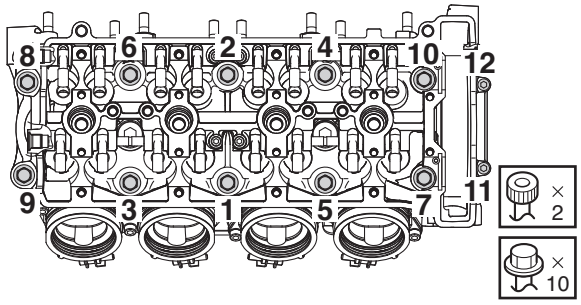
3. Tighten:
   • Cylinder head bolt “1”–“10”
   • Cylinder head bolt “11”, “12”

Cylinder head bolt “1”–“10”
1st: 10 N·m (1.0 kgf·m, 7.4 lb·ft)
2nd: 25 N·m (2.5 kgf·m, 18 lb·ft)
3rd: 45 N·m (4.5 kgf·m, 33 lb·ft)
***4th: 15 N·m (1.5 kgf·m, 11 lb·ft)**
Specified angle 160°
Cylinder head bolt “11”, “12”
9 N·m (0.9 kgf·m, 6.6 lb·ft)

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque and the specific angle.

TIP

Tighten the cylinder head bolts in the tightening sequence as shown and torque them in 4 stages.

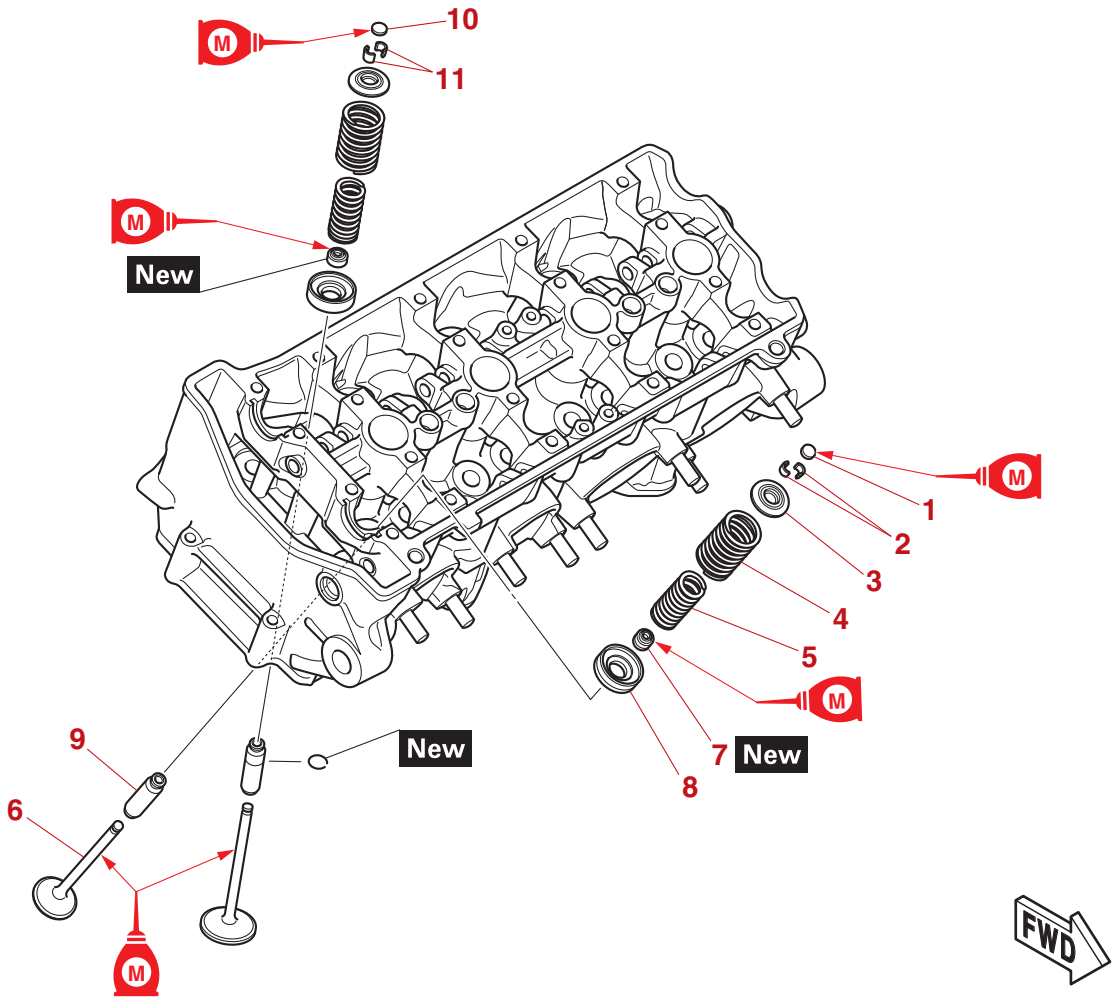


4. Install:
   • Exhaust camshaft
   • Intake camshaft
   Refer to “INSTALLING THE CAMSHAFTS” on page 5-29.

EAS20045

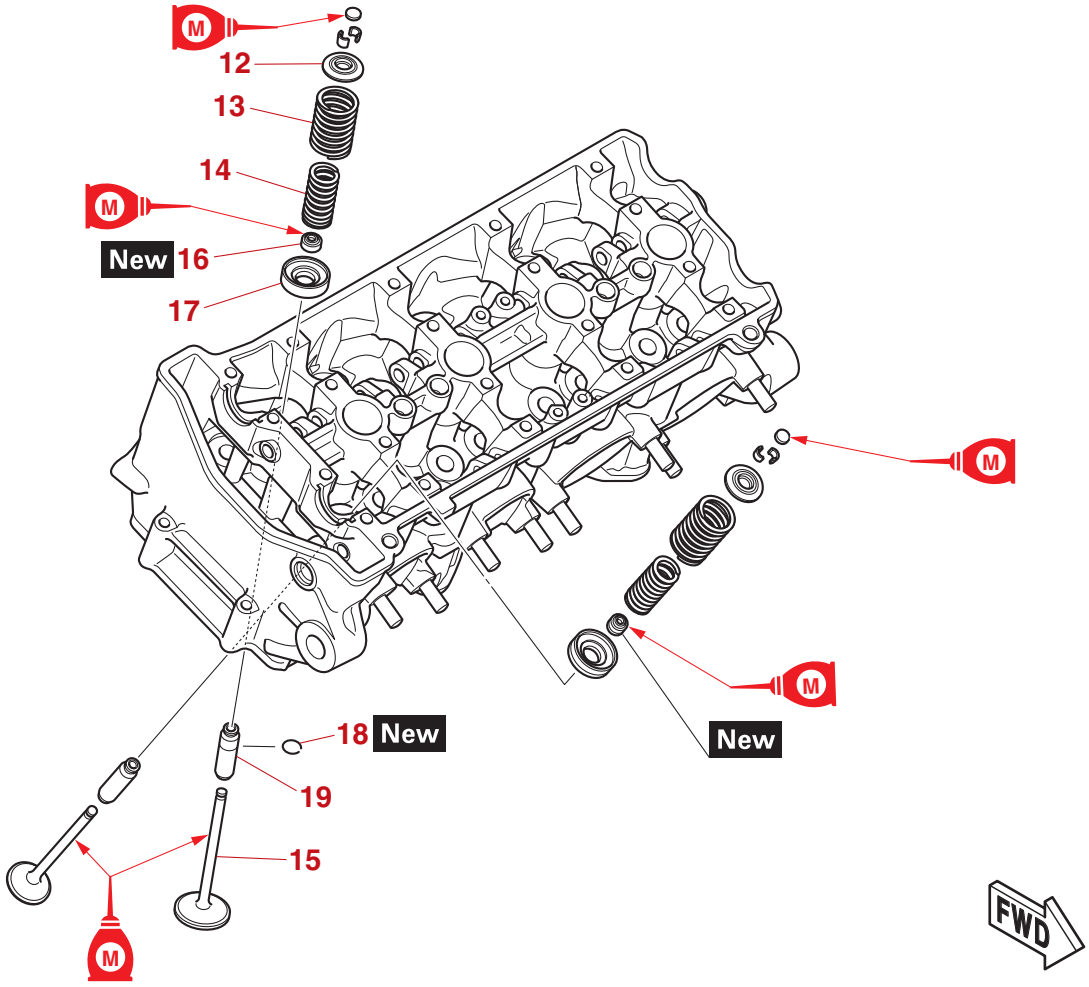
VALVES AND VALVE SPRINGS

Removing the valves and valve springs



Order	Job/Parts to remove	Q'ty	Remarks
	Cylinder head		Refer to "CYLINDER HEAD" on page 5-33.
1	Exhaust valve pad	8	
2	Exhaust valve cotter	16	
3	Exhaust valve spring retainer	8	
4	Exhaust valve spring (outer)	8	
5	Exhaust valve spring (inner)	8	
6	Exhaust valve	8	
7	Exhaust valve stem seal	8	
8	Exhaust valve spring seat	8	
9	Exhaust valve guide	8	
10	Intake valve pad	8	
11	Intake valve cotter	16	

Removing the valves and valve springs



Order	Job/Parts to remove	Q'ty	Remarks
12	Intake valve spring retainer	8	
13	Intake valve spring (outer)	8	
14	Intake valve spring (inner)	8	
15	Intake valve	8	
16	Intake valve stem seal	8	
17	Intake valve spring seat	8	
18	Circlip	8	
19	Intake valve guide	8	

EAS30283
REMOVING THE VALVES

The following procedure applies to all of the valves and related components.

TIP

Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure the valves properly seal.

1. Remove:
   - Valve pad

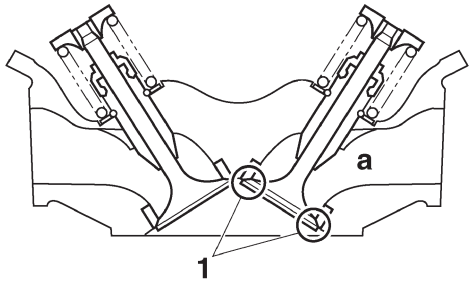
TIP

Make a note of the position of each valve pad so that they can be reinstalled in their original place.

2. Check:
   - Valve sealing
     Leakage at the valve seat → Check the valve face, valve seat, and valve seat width.
     Refer to "CHECKING THE VALVE SEATS" on page 5-40.
     a. Pour a clean solvent "a" into the intake and exhaust ports.
     b. Check that the valves properly seal.

TIP

There should be no leakage at the valve seat "1".



G088958

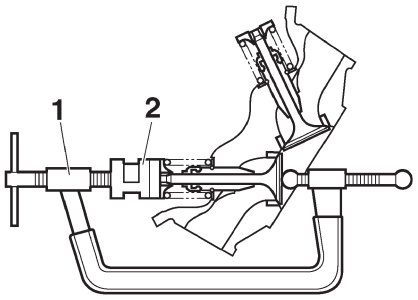
3. Remove:
   - Valve cotters

TIP

Remove the valve cotters by compressing the valve spring with the valve spring compressor "1" and the valve spring compressor attachment "2".



Valve spring compressor
90890-04019
Valve spring compressor
YM-04019
Valve spring compressor attachment (ø26)
90890-01243
Valve spring compressor attachment (ø26)
YM-01253-1



G088959

4. Remove:
   - Valve spring retainer
   - Valve spring (outer)
   - Valve spring (inner)
   - Valve
   - Valve stem seal
   - Valve spring seat

TIP

Identify the position of each part very carefully so that it can be reinstalled in its original place.

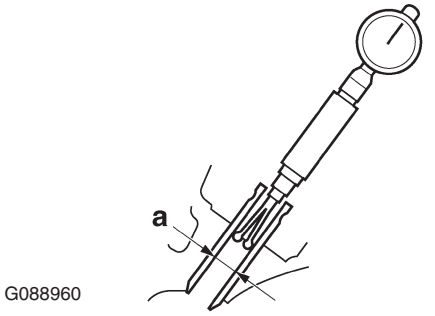
EAS30284
CHECKING THE VALVES AND VALVE GUIDES

The following procedure applies to all of the valves and valve guides.

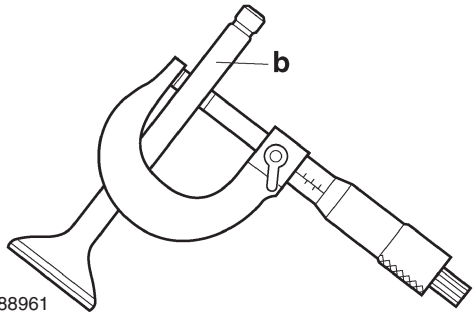
1. Measure:
   - Valve-stem-to-valve-guide clearance
     Out of specification → Replace the valve guide.

- Valve-stem-to-valve-guide clearance = Valve guide inside diameter "a" - Valve stem diameter "b"

Valve-stem-to-valve-guide clearance (intake)
0.010–0.037 mm (0.0004–0.0015 in)
Limit
0.080 mm (0.0032 in)
Valve-stem-to-valve-guide clearance (exhaust)
0.025–0.052 mm (0.0010–0.0020 in)
Limit
0.100 mm (0.0039 in)



G088960



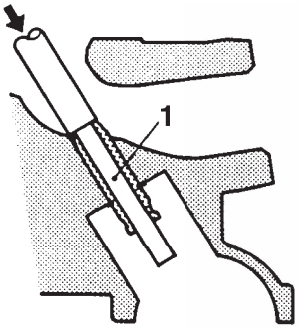
G088961

2. Replace:
   - Valve guide

TIP

To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100 °C (212 °F) in an oven.

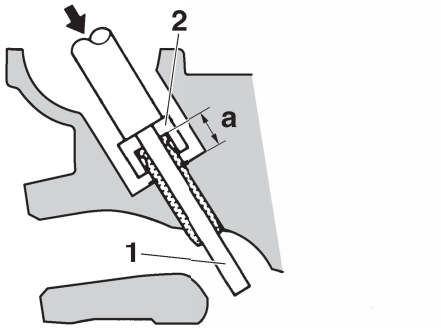
a. Remove the valve guide with the valve guide remover “1”.



G088962

b. Install the new valve guide with the valve guide installer “2” and valve guide remover “1”.

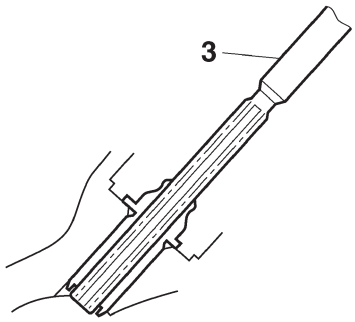
Valve guide position (intake)
12.0–12.4 mm (0.47–0.49 in)
Valve guide position (exhaust)
17.5–17.9 mm (0.69–0.70 in)



G088963

a. Valve guide position

c. After installing the valve guide, bore the valve guide with the valve guide reamer “3” to obtain the proper valve-stem-to-valve-guide clearance.



G088964

TIP

After replacing the valve guide, reface the valve seat.

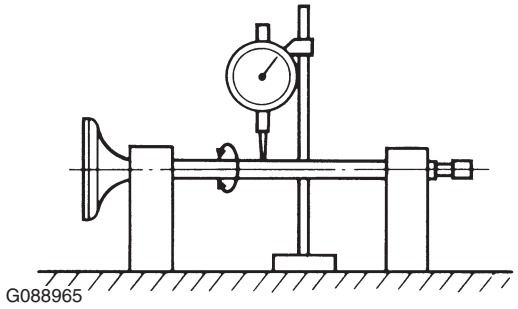
Valve guide remover (ø4.5)
90890-04116
Valve guide remover (4.5 mm)
YM-04116
Valve guide remover (ø5)
90890-04097
Valve guide remover (5.0 mm)
YM-04097
Valve guide installer (ø4.5)
90890-04117
Valve guide installer (4.5 mm)
YM-04117
Valve guide installer (ø5)
90890-04098
Valve guide installer (5.0 mm)
YM-04098
Valve guide reamer (ø4.5)
90890-04118
Valve guide reamer (4.5 mm)
YM-04118
Valve guide reamer (ø5)
90890-04099
Valve guide reamer (5.0 mm)
YM-04099

3. Eliminate:
   • Carbon deposits
   (from the valve face and valve seat)
4. Check:
   • Valve face
   Pitting/wear → Grind the valve face.
   • Valve stem end
   Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.
5. Measure:
   • Valve stem runout
   Out of specification → Replace the valve.

TIP

- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the valve stem seal.

Valve stem runout
0.010 mm (0.0004 in)

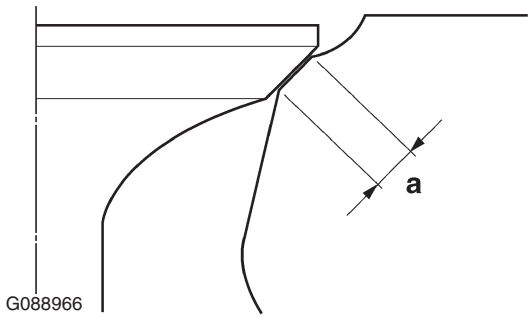


EAS30285
CHECKING THE VALVE SEATS

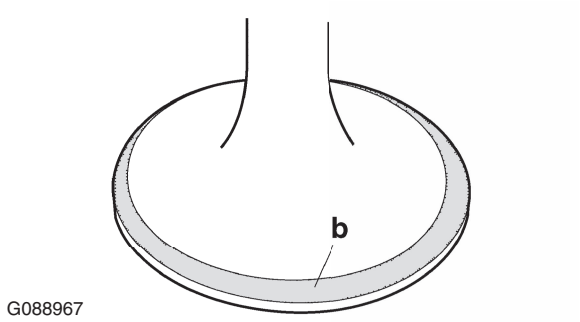
The following procedure applies to all of the valves and valve seats.

1. Eliminate:
   • Carbon deposits
   (from the valve face and valve seat)
2. Check:
   • Valve seat
   Pitting/wear → Replace the cylinder head.
3. Measure:
   • Valve seat contact width “a”
   Out of specification → Replace the cylinder head.

Valve seat contact width (intake)
0.90–1.10 mm (0.0354–0.0433 in)
Limit
1.6 mm (0.06 in)
Valve seat contact width (exhaust)
1.10–1.30 mm (0.0433–0.0512 in)
Limit
1.8 mm (0.07 in)



a. Apply blue layout fluid “b” onto the valve face.



G088967

b. Install the valve into the cylinder head.
c. Press the valve through the valve guide and onto the valve seat to make a clear impression.
d. Measure the valve seat contact width.

TIP

Where the valve seat and valve face contacted one another, the blue layout fluid will have been removed.

4. Lap:
   - Valve face
   - Valve seat

TIP

After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.

ECA22580

NOTICE

This model uses titanium intake valves. Titanium valves that have been used to lap the valve seats must not be used. Always replace lapped valves with new valves.

TIP

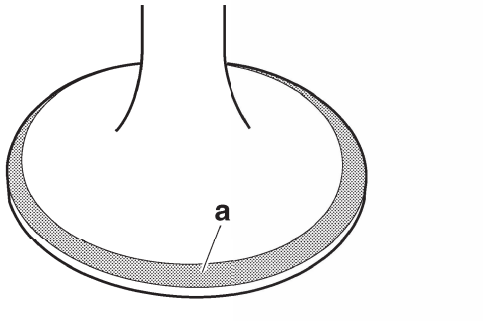
- When replacing the intake valves, replace the intake valves without lapping the valve seats and valve faces.
- When replacing the cylinder head or intake valve guides, use new valves to lap the valve seats, and then replace them with new intake valves.

a. Apply a coarse lapping compound “a” to the valve face.

ECA13790

NOTICE

Do not let the lapping compound enter the gap between the valve stem and the valve guide.

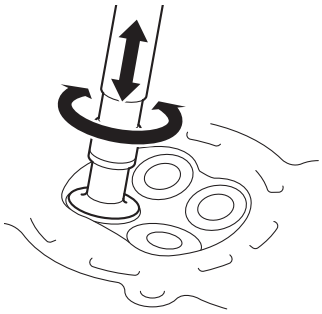


G088968

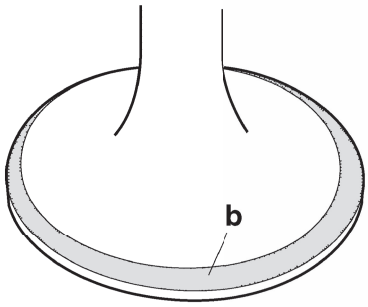
b. Apply molybdenum disulfide oil onto the valve stem.
c. Install the valve into the cylinder head.
d. Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

TIP

For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.


G088969

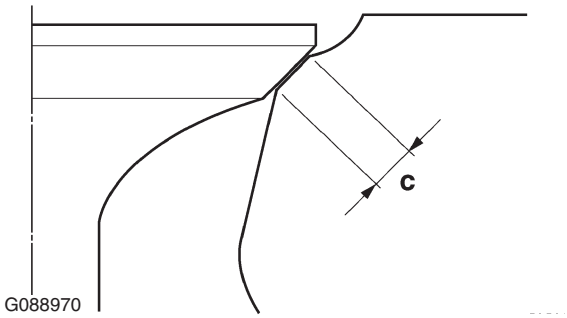
e. Apply a fine lapping compound to the valve face and repeat the above steps.
f. After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
g. Apply blue layout fluid “b” onto the valve face.



G088967

h. Install the valve into the cylinder head.
i. Press the valve through the valve guide and onto the valve seat to make a clear impression.

j. Measure the valve seat contact width “c” again. If the valve seat width is out of specification, reface and lap the valve seat.

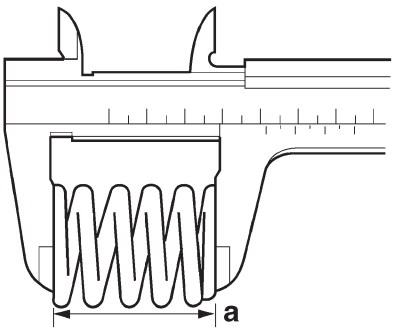


EAS30286
CHECKING THE VALVE SPRINGS

The following procedure applies to all of the valve springs.

1. Measure:
   • Valve spring free length “a”
   Out of specification → Replace the valve spring.

Inner spring
Free length (intake)
34.52 mm (1.36 in)
Limit
32.79 mm (1.29 in)
Free length (exhaust)
36.94 mm (1.45 in)
Limit
35.09 mm (1.38 in)
Outer spring
Free length (intake)
35.72 mm (1.41 in)
Limit
33.93 mm (1.34 in)
Free length (exhaust)
36.85 mm (1.45 in)
Limit
35.01 mm (1.38 in)



EAS31716
CHECKING THE VALVE SPRING SEAT

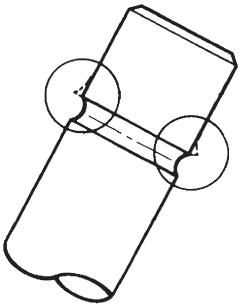
The following procedure applies to all of the valve lifters.

1. Check:
   • Valve spring seat
   Damage/scratches → Replace the valve spring seat.

EAS30288
INSTALLING THE VALVES

The following procedure applies to all of the valves and related components.

1. Deburr:
   • Valve stem end
   (with an oil stone)



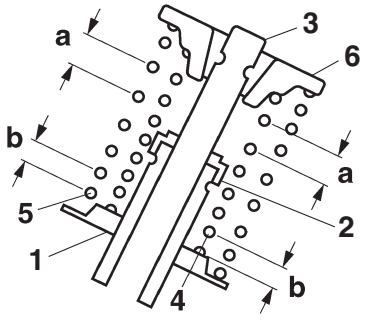
2. Lubricate:
   • Valve stem
   • Valve stem seal
   (with the recommended lubricant)

Recommended lubricant
Molybdenum disulfide oil

3. Install:
   • Valve spring seat “1”
   • Valve stem seal “2” New
   • Valve “3”
   • Valve spring (inner) “4”
   • Valve spring (outer) “5”
   • Valve spring retainer “6”
   (into the cylinder head)

TIP

- Make sure each valve is installed in its original place.
- Install the valve springs with the larger pitch “a” facing up.



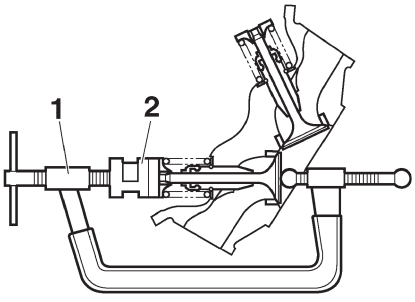
b. Smaller pitch

4. Install:
   • Valve cotters

TIP

Install the valve cotters by compressing the valve spring with the valve spring compressor "1" and the valve spring compressor attachment "2".

Valve spring compressor
90890-04019
Valve spring compressor
YM-04019
Valve spring compressor attachment (ø26)
90890-01243
Valve spring compressor attachment (ø26)
YM-01253-1



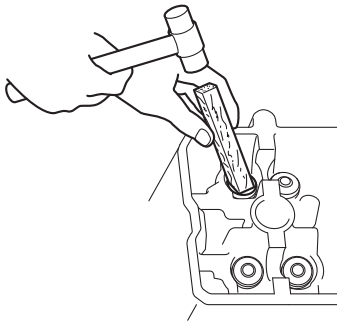
G088959

5. To secure the valve cotters onto the valve stem, lightly tap the valve tip with a soft-face hammer.

ECA13800

NOTICE

Hitting the valve tip with excessive force could damage the valve.



G088975

6. Lubricate:
   • Valve pad
   (with the recommended lubricant)

Recommended lubricant
Molybdenum disulfide oil

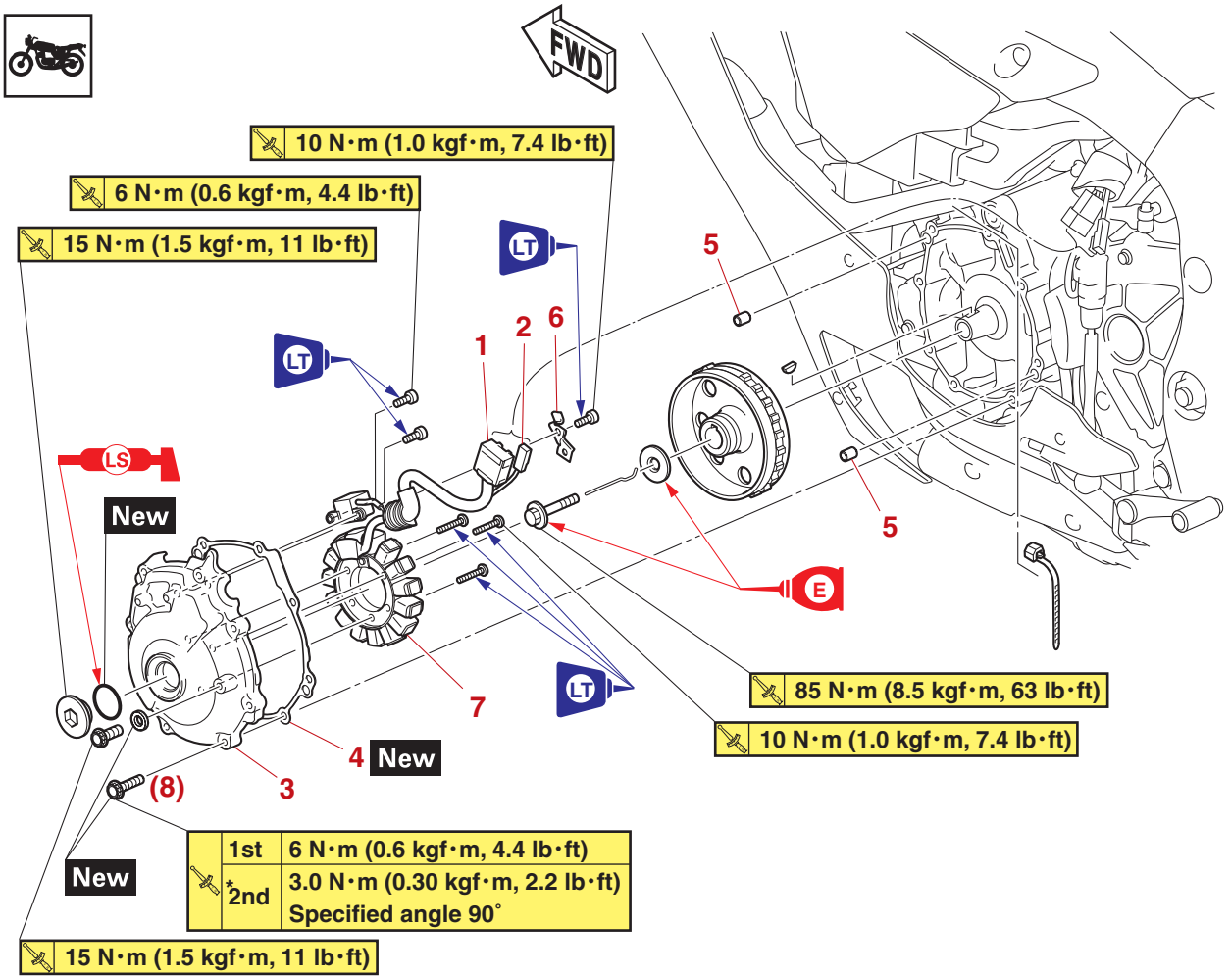
7. Install:
   • Valve pad

TIP

Each valve pad must be reinstalled in its original position.

EAS20134
GENERATOR

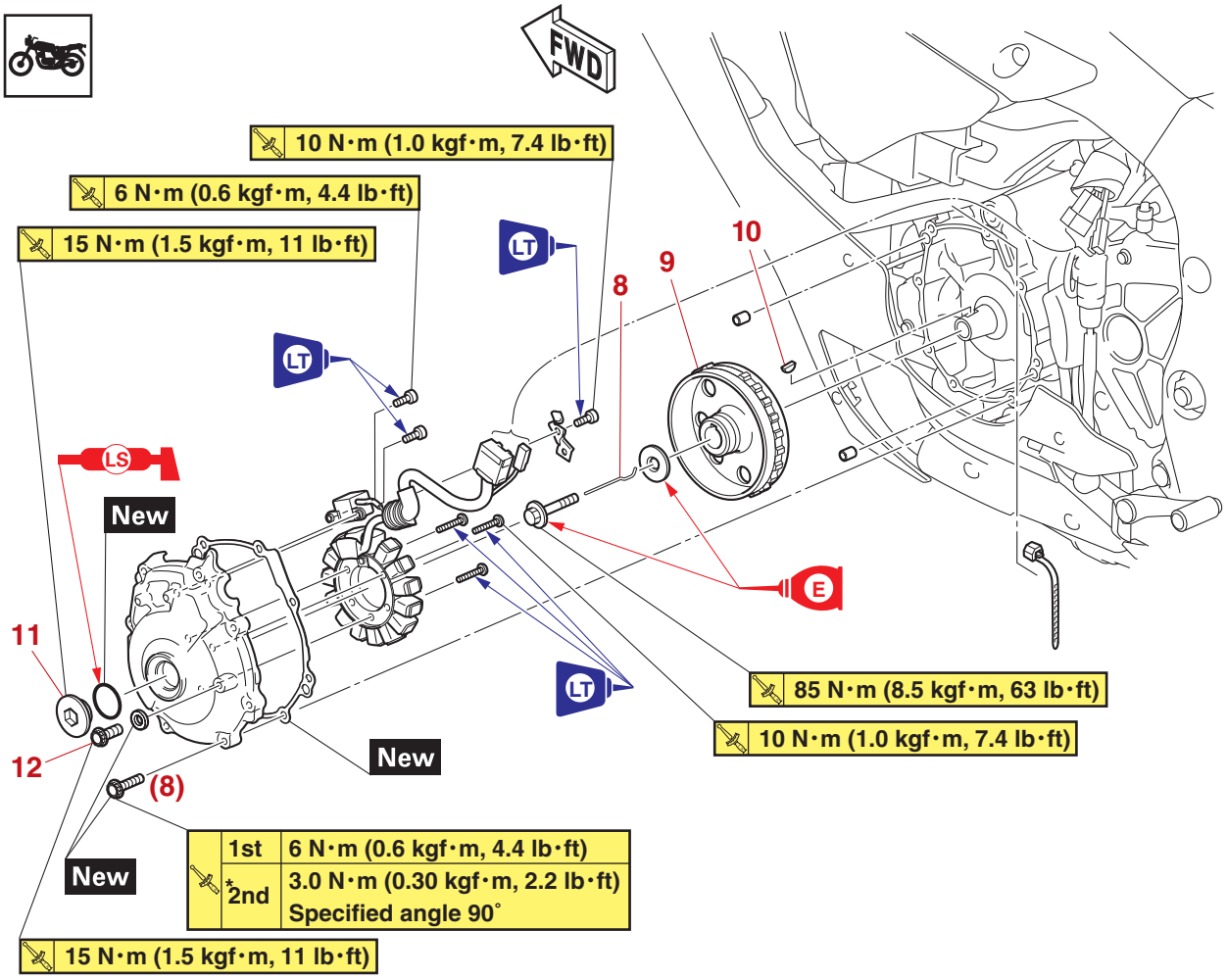
Removing the stator coil and generator rotor



*** Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.**

Order	Job/Parts to remove	Q'ty	Remarks
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" on page 3-29.
1	Stator coil coupler	1	Disconnect.
2	Crankshaft position sensor coupler	1	Disconnect.
3	Generator cover	1	
4	Generator cover gasket	1	
5	Dowel pin	2	
6	Stator coil lead holder	1	
7	Stator coil assembly (stator coil/crankshaft position sensor)	1	

Removing the stator coil and generator rotor



* Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.

Order	Job/Parts to remove	Q'ty	Remarks
8	Shaft	1	
9	Generator rotor	1	
10	Woodruff key	1	
11	Crankshaft end cover	1	
12	Timing mark accessing bolt	1	

EAS30829
REMOVING THE GENERATOR

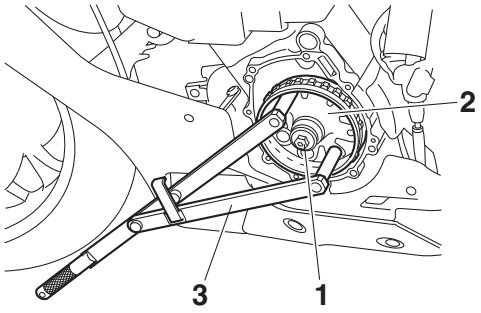
1. Remove:
   - Generator rotor bolt “1”
   - Washer

TIP

While holding the generator rotor “2” with the 15mm pin type rotor holding tool “3”, loosen the generator rotor bolt.



15mm pin type rotor holding tool
90890-04171
YM-04171



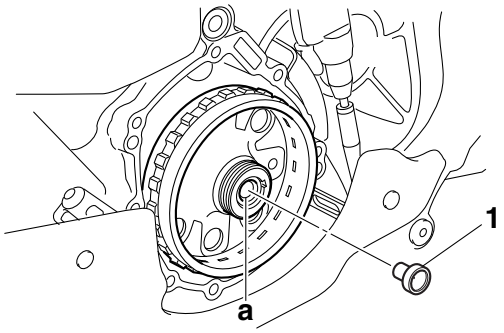
2. Install:
   - Crankshaft protector “1”

TIP

Install the crankshaft protector to the hole “a” of the crankshaft.



Crankshaft protector
90890-01382
Crankshaft protector
YM-01382



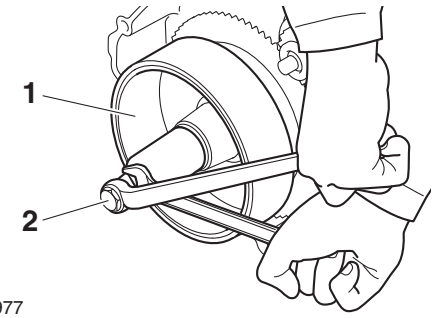
3. Remove:
   - Generator rotor “1”
     (with the flywheel puller “2”)
   - Woodruff key

TIP

Install the flywheel puller to the generator rotor.



Flywheel puller
90890-01404
Flywheel puller
YM-01404



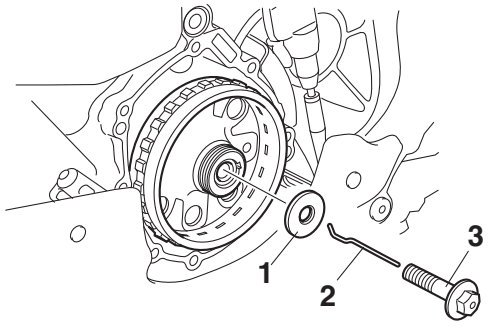
G088977

EAS30830
INSTALLING THE GENERATOR

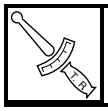
1. Install:
   - Woodruff key
   - Generator rotor
   - Washer “1”
   - Shaft “2”
   - Generator rotor bolt “3”

TIP

- Clean the tapered portion of the crankshaft and the generator rotor hub.
- When installing the generator rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.
- Lubricate the washer with engine oil.
- Install the shaft to the hole of the generator rotor bolt.
- Lubricate the generator rotor bolt threads and washer mating surfaces with engine oil.



2. Tighten:
   - Generator rotor bolt “1”

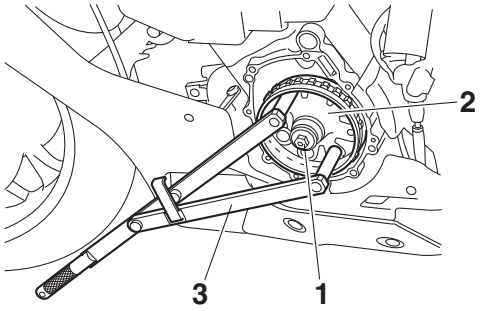


Generator rotor bolt
85 N·m (8.5 kgf·m, 63 lb·ft)

TIP

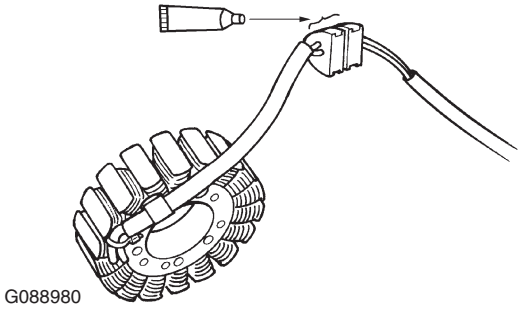
While holding the generator rotor "2" with the 15mm pin type rotor holding tool "3", tighten the generator rotor bolt.

15mm pin type rotor holding tool
90890-04171
YM-04171



3. Apply:
   • Sealant
   (onto the stator coil assembly lead grommet)

Yamaha bond No. 1215
90890-85505
Three bond No. 1215®



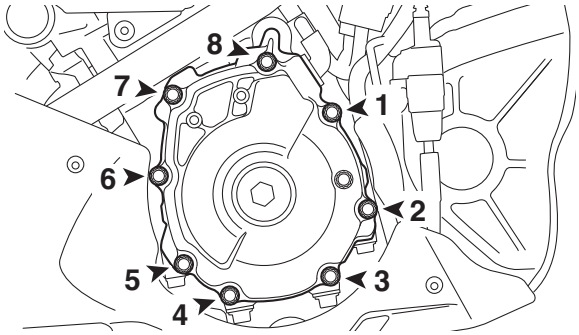
4. Install:
   • Generator cover gasket New
   • Generator cover
   • Generator cover bolt New

Generator cover bolt
1st: 6 N·m (0.6 kgf·m, 4.4 lb·ft)
***2nd: 3.0 N·m (0.30 kgf·m, 2.2 lb·ft)**
Specified angle 90°

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque and the specific angle.

TIP

Tighten the generator cover bolts in the tightening sequence as shown.



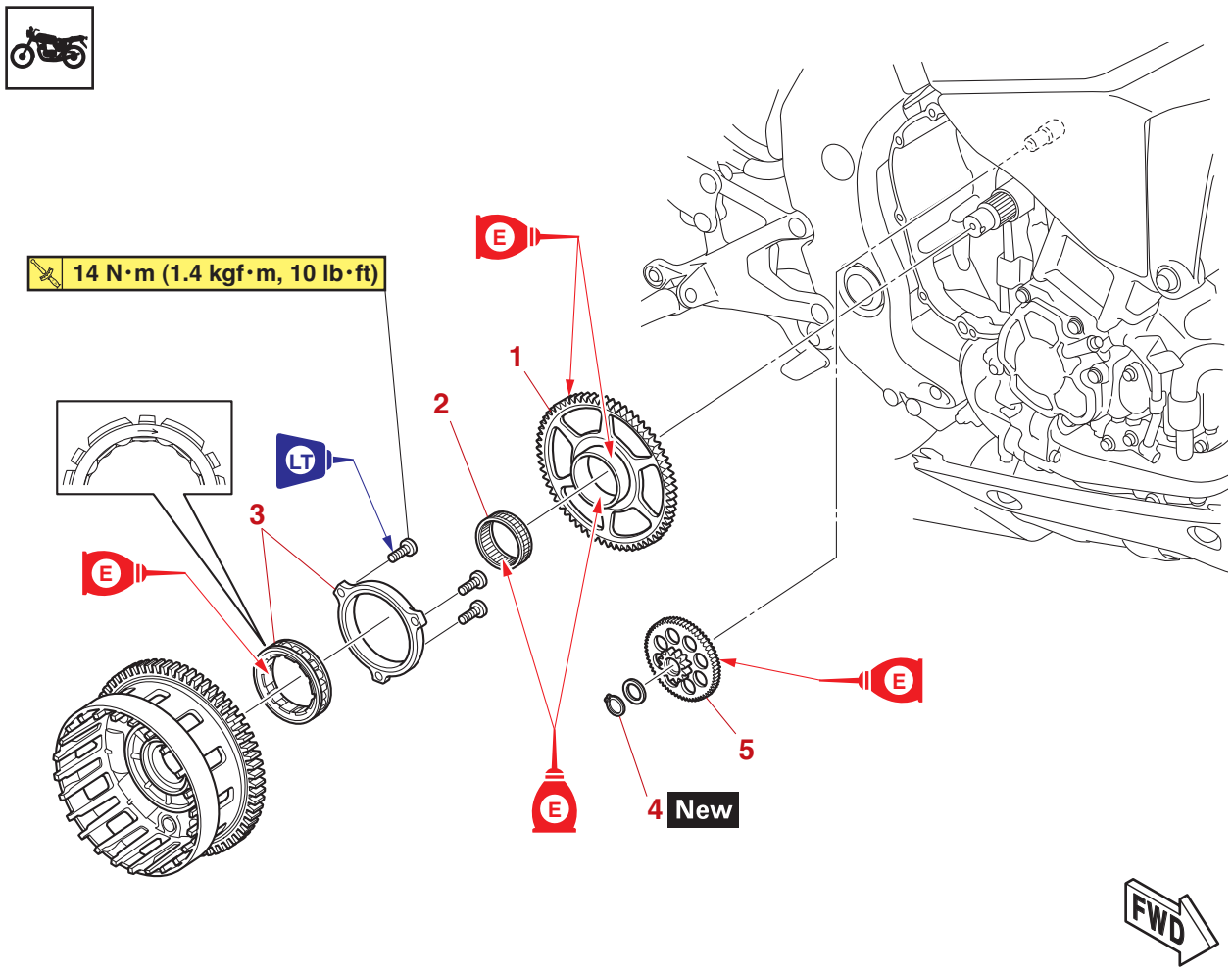
5. Connect:
   • Stator coil coupler
   • Crankshaft position sensor coupler

TIP

To route the stator coil lead, refer to "CABLE ROUTING" on page 2-17.

EAS20049
STARTER CLUTCH

Removing the starter clutch



Order	Job/Parts to remove	Q'ty	Remarks
	Clutch housing assembly		Refer to "CLUTCH" on page 5-60.
1	Starter clutch gear	1	
2	Bearing	1	
3	Starter clutch assembly	1	
4	Circlip	1	
5	Starter clutch idle gear	1	

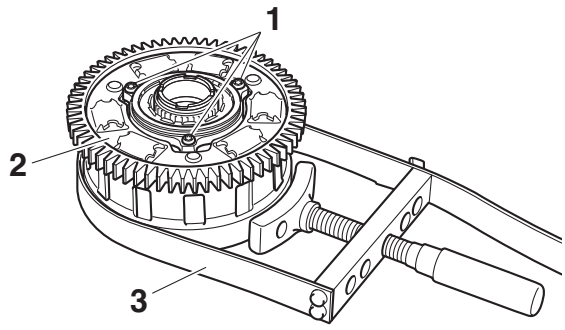
EAS30305
REMOVING THE STARTER CLUTCH
1. Remove:
   • Starter clutch bolt “1”

TIP

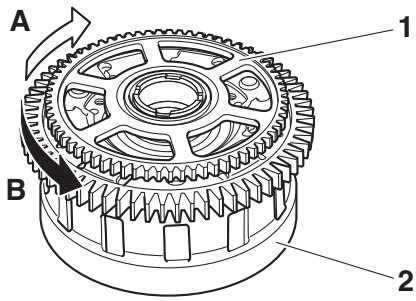
• While holding the clutch housing assembly “2” with the sheave holder “3”, remove the starter clutch bolt.
• Fix the flat surface of the clutch housing assembly with the sheave holder.



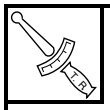
Sheave holder
90890-01701
Primary clutch holder
YS-01880-A



EAS30306
CHECKING THE STARTER CLUTCH
1. Check:
   • Starter clutch rollers
   Damage/wear → Replace.
2. Check:
   • Starter clutch gear
   • Starter clutch idle gear
   Burrs/chips/roughness/wear → Replace the defective part(s).
3. Check:
   • Starter clutch gear’s contacting surfaces
   Damage/pitting/wear → Replace the starter clutch gear.
4. Check:
   • Starter clutch operation
   a. Install the starter clutch gear “1” onto the clutch housing assembly “2” and hold the clutch housing assembly.
   b. When turning the starter clutch gear clockwise “A”, the starter clutch and the starter clutch gear should engage, otherwise the starter clutch is faulty and must be replaced.
   c. When turning the starter clutch gear counterclockwise “B”, it should turn freely, otherwise the starter clutch is faulty and must be replaced.



EAS30309
INSTALLING THE STARTER CLUTCH
1. Install:
   • Starter clutch



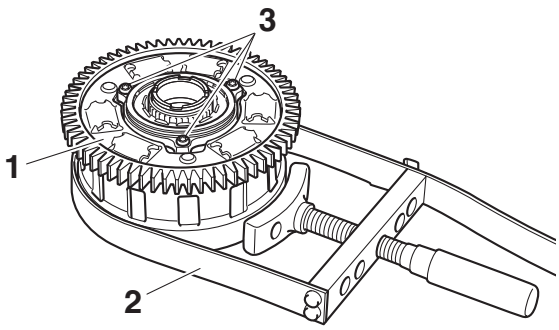
Starter clutch holder bolt
14 N·m (1.4 kgf·m, 10 lb·ft)
LOCTITE®

TIP

• Install the starter clutch so that the side of the starter clutch roller assembly with the arrow mark is toward the clutch housing.
• While holding the clutch housing assembly “1” with the sheave holder “2”, tighten the starter clutch holder bolt “3”.
• Fix the flat surface of the clutch housing assembly with the sheave holder.

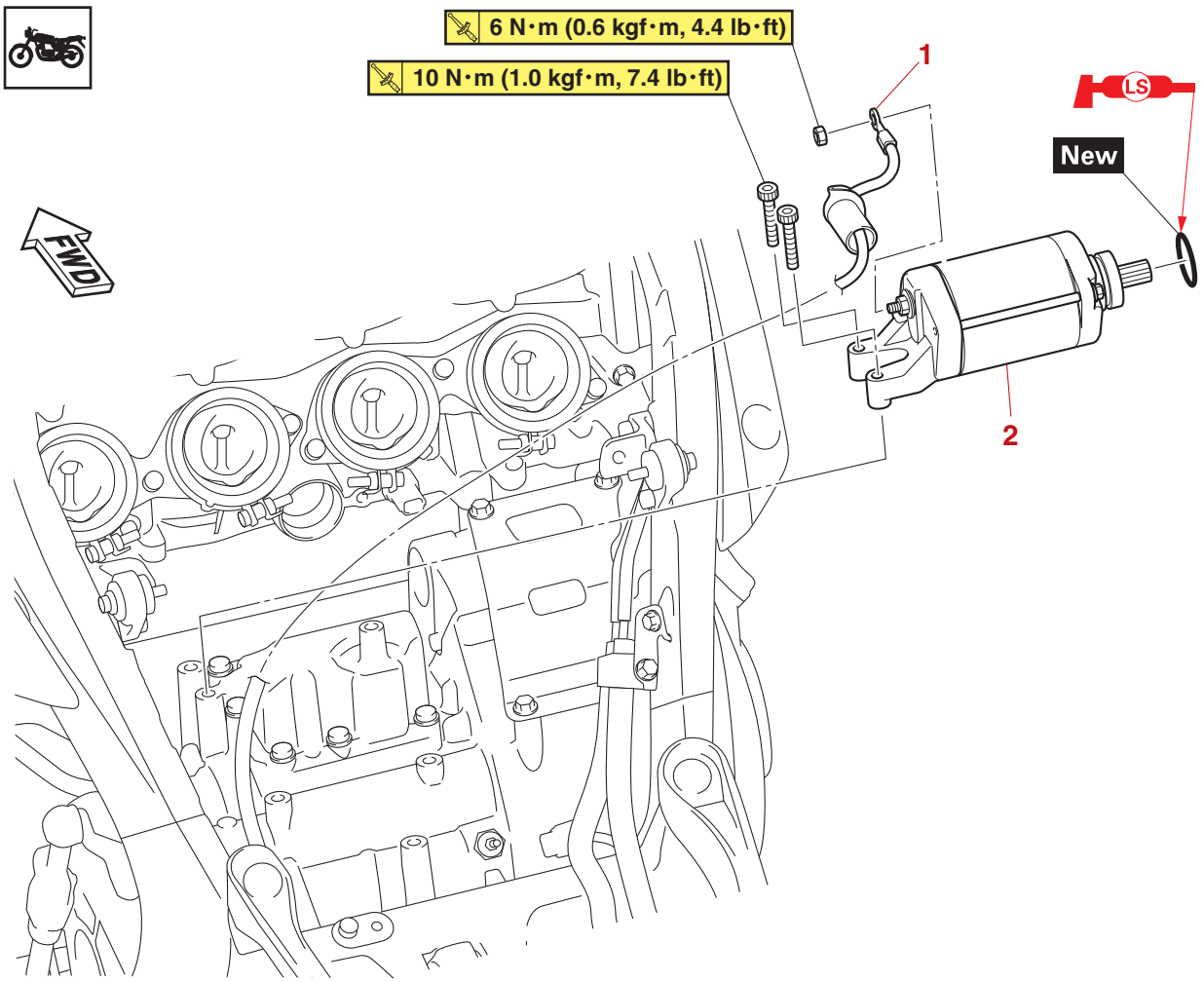


Sheave holder
90890-01701
Primary clutch holder
YS-01880-A



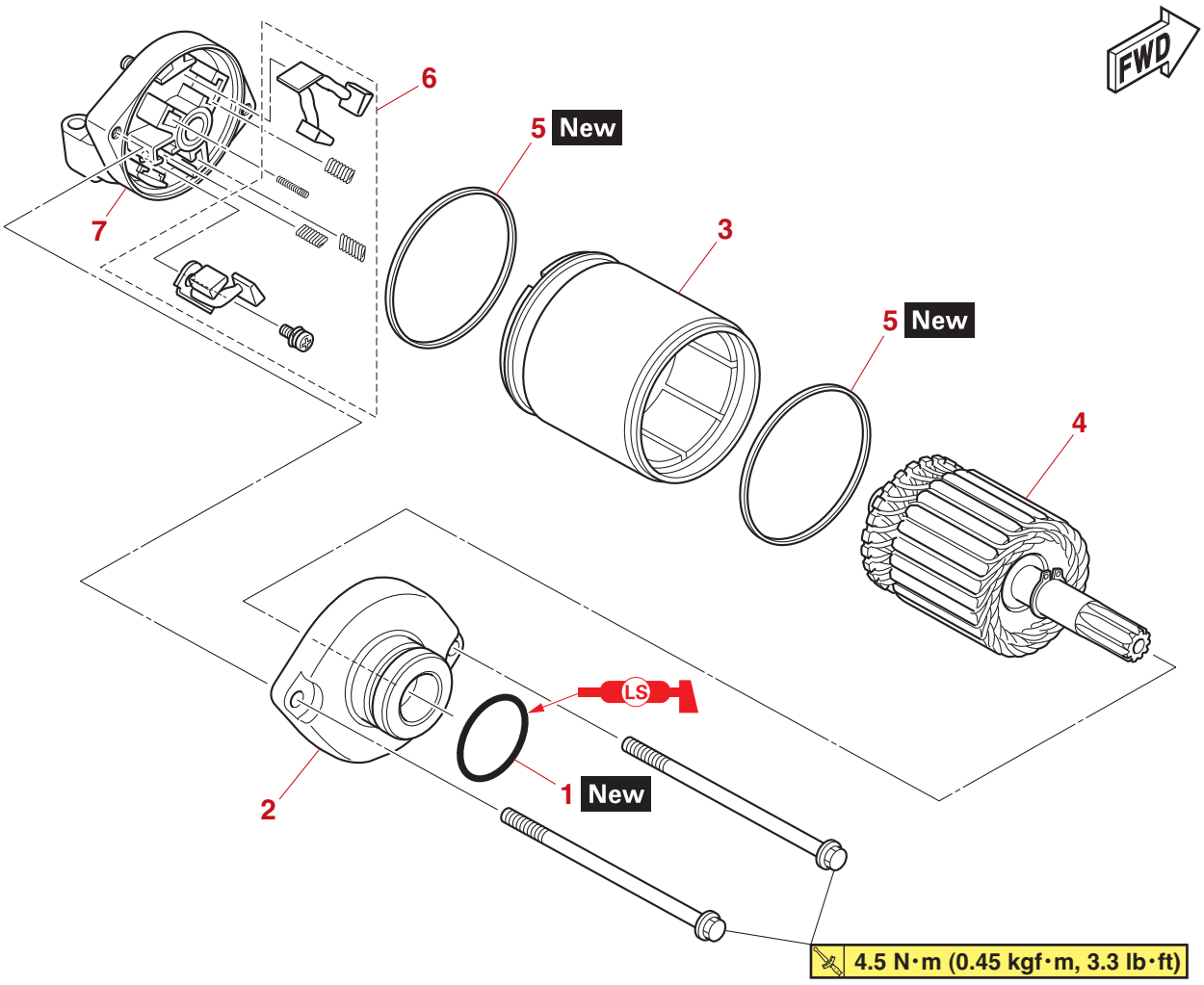
EAS20052
ELECTRIC STARTER

Removing the starter motor



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
	Canister		Refer to "FUEL TANK" on page 7-1. For California only.
	Throttle bodies		Refer to "THROTTLE BODIES" on page 7-11.
1	Starter motor lead	1	Disconnect.
2	Starter motor	1	

Disassembling the starter motor



Order	Job/Parts to remove	Q'ty	Remarks
1	O-ring	1	
2	Starter motor front cover	1	
3	Starter motor yoke	1	
4	Armature assembly	1	
5	Gasket	2	
6	Brush holder set	1	
7	Starter motor rear cover	1	

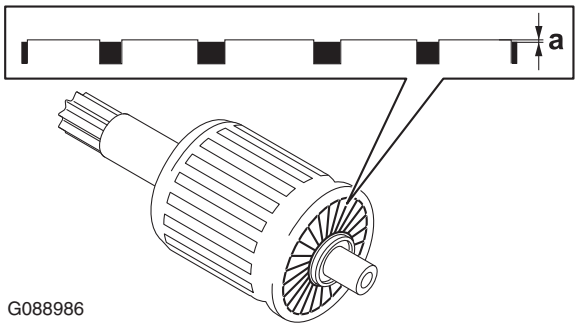
EAS30325
CHECKING THE STARTER MOTOR

1. Check:
   • Commutator
   Dirt → Clean with 600 grit sandpaper.
2. Measure:
   • Mica undercut “a”
   Out of specification → Scrape the mica to the proper measurement with a hacksaw blade that has been grounded to fit the commutator.

Mica undercut (depth)
2.40 mm (0.09 in)

TIP

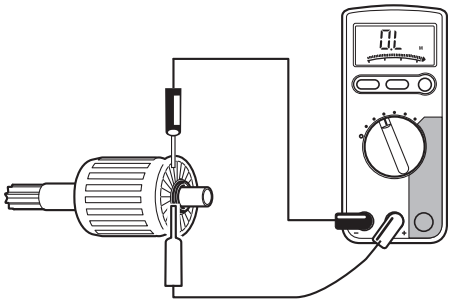
The mica of the commutator must be undercut to ensure proper operation of the commutator.



3. Check:
   • Armature assembly
   a. Connect the digital circuit tester and check the continuity.

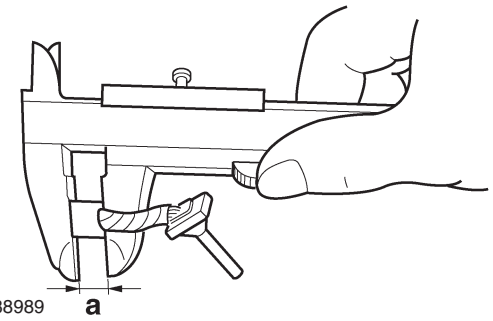
Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

   b. If there is no continuity, replace the starter motor.



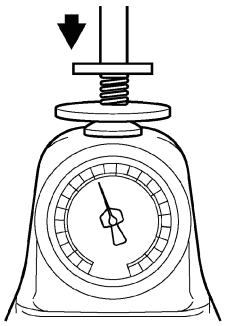
4. Measure:
   • Brush length “a”
   Out of specification → Replace the brush holder set.

Brush overall length limit
5.5 mm (0.22 in)



5. Measure:
   • Brush spring force
   Out of specification → Replace the brush holder set.

Brush spring force
4.80–7.20 N (489–734 gf, 17.28–25.92 oz)



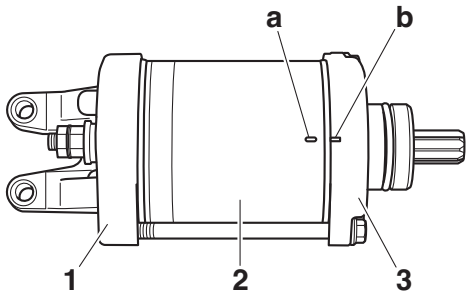
6. Check:
   • Gear teeth
   Damage/wear → Replace the starter motor.
7. Check:
   • Bearing
   • Oil seal
   Damage/wear → Replace the starter motor front cover.

EAS30326
ASSEMBLING THE STARTER MOTOR

1. Install:
   • Starter motor rear cover “1”
   • Starter motor yoke “2”
   • Starter motor front cover “3”

TIP

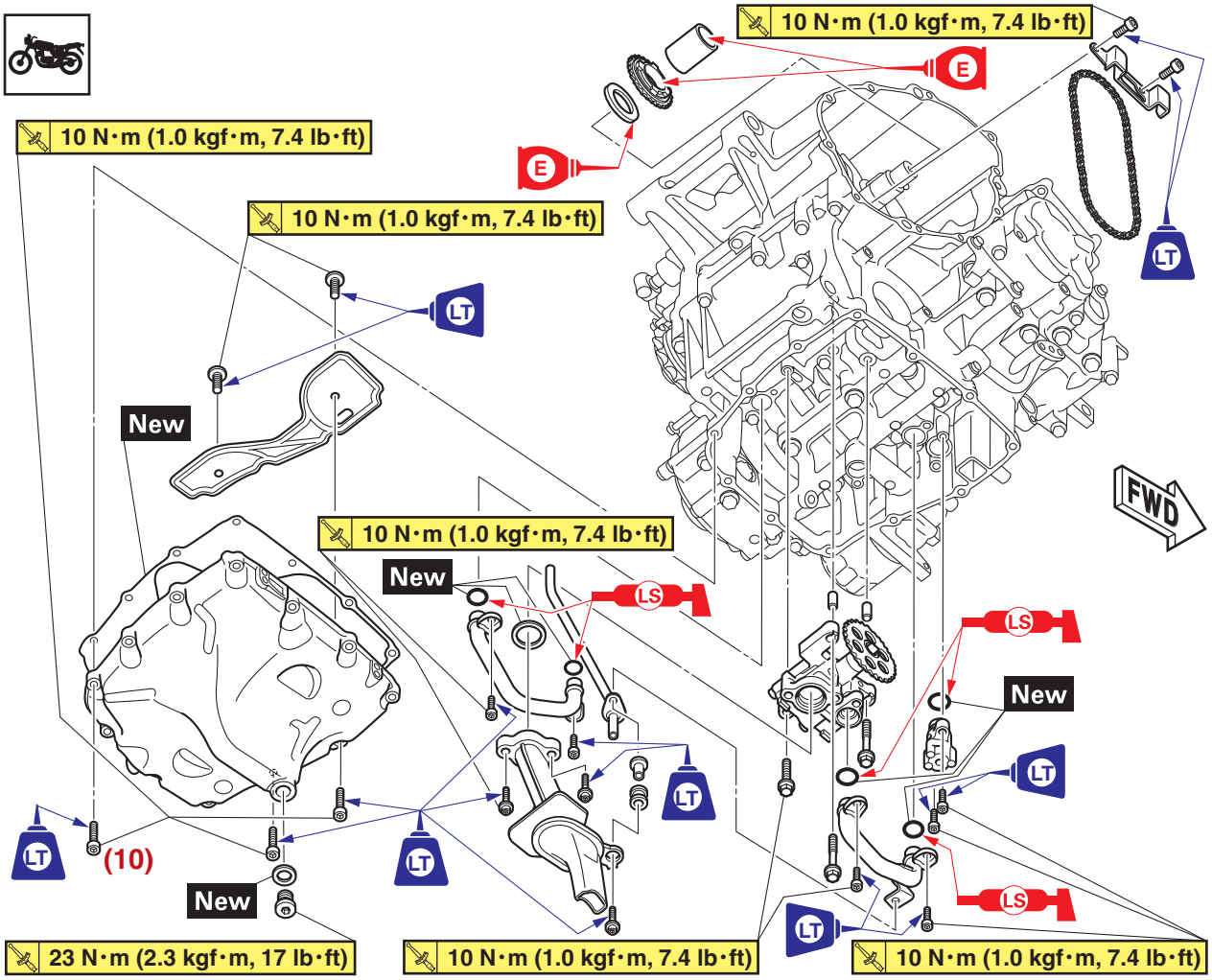
Align the match mark “a” on the starter motor yoke with the match mark “b” on the starter motor front cover.


a
b
1
2
3

EAS20054

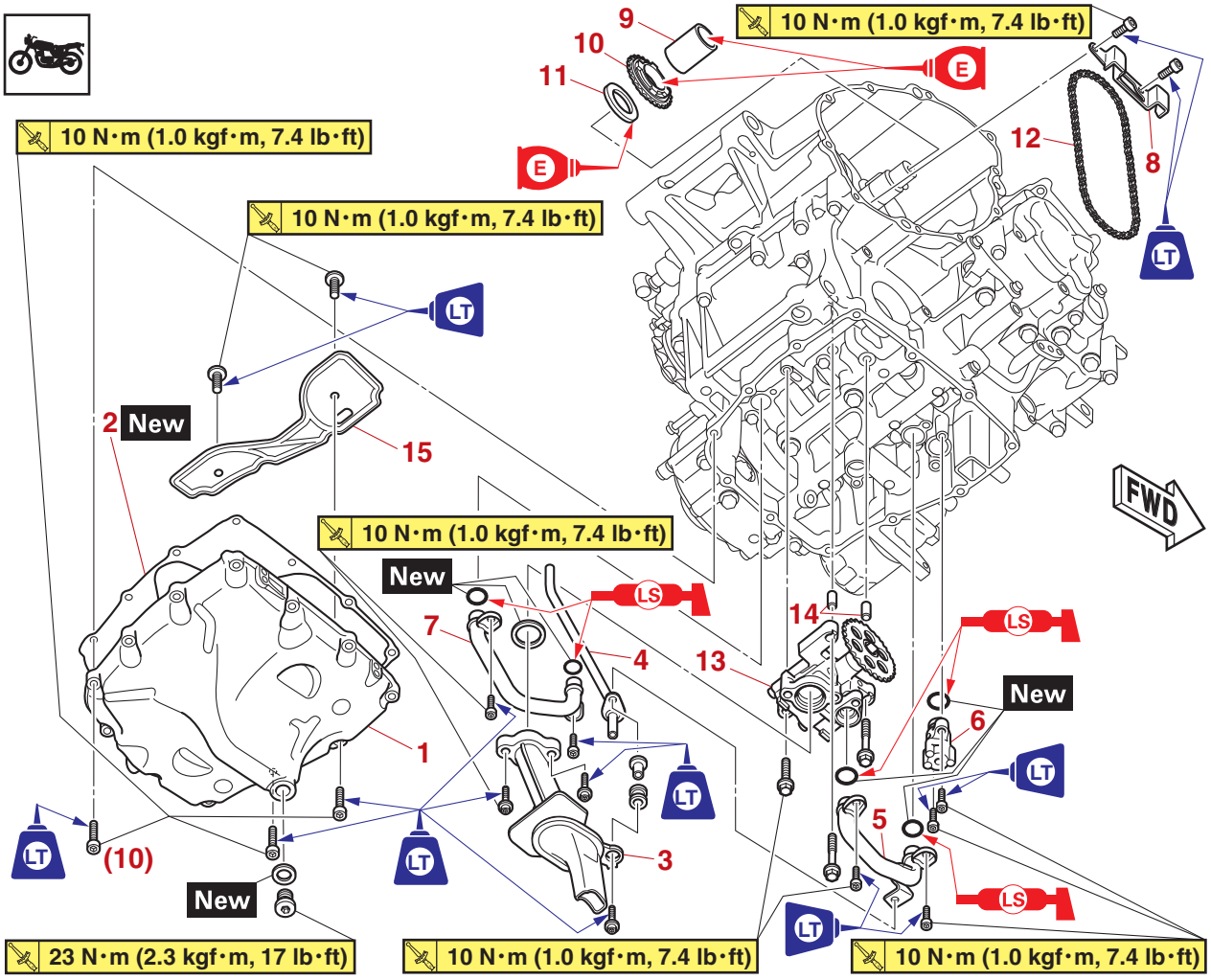
OIL PUMP

Removing the oil pan and oil pump



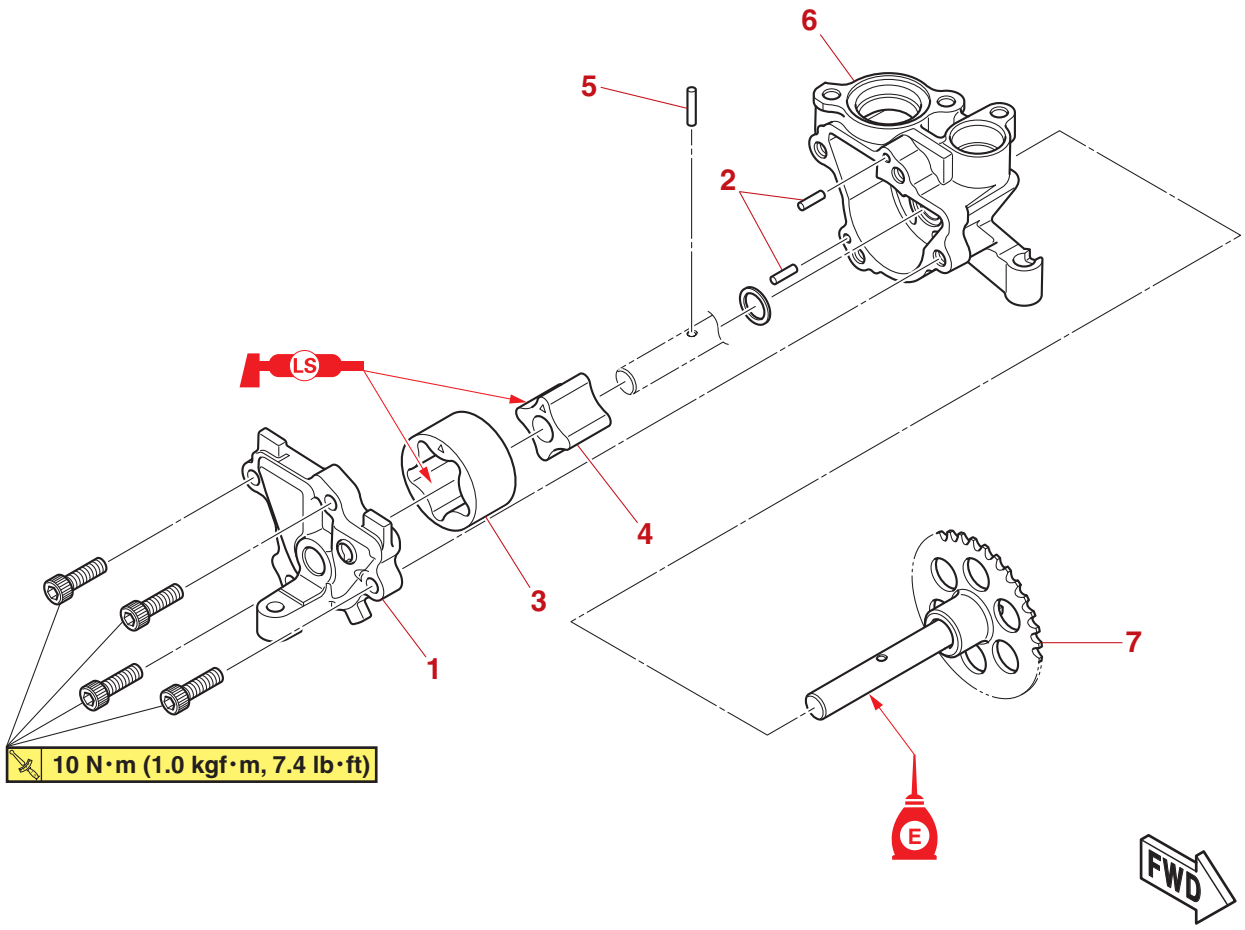
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front panel		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling/Front muffler protector		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front side cowling inner panel		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Electrical components tray		Refer to "GENERAL CHASSIS (9)" on page 4-34.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" on page 3-29.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Radiator		Refer to "RADIATOR" on page 6-3.
	Oil cooler		Refer to "OIL COOLER" on page 6-7.
	Exhaust pipe/Muffler		Refer to "ENGINE REMOVAL" on page 5-11.

Removing the oil pan and oil pump



Order	Job/Parts to remove	Q'ty	Remarks
1	Oil pan	1	
2	Oil pan gasket	1	
3	Oil strainer	1	
4	Oil delivery pipe 1	1	
5	Oil pipe 1	1	
6	Relief valve assembly	1	
7	Oil delivery pipe 2	1	
8	Oil pump drive chain guide	1	
9	Collar	1	
10	Oil pump drive sprocket	1	
11	Washer	1	
12	Oil pump drive chain	1	
13	Oil pump	1	
14	Dowel pin	2	
15	Baffle plate	1	

Disassembling the oil pump



Order	Job/Parts to remove	Q'ty	Remarks
1	Oil pump cover	1	
2	Dowel pin	2	
3	Oil pump outer rotor	1	
4	Oil pump inner rotor	1	
5	Pin	1	
6	Oil pump housing	1	
7	Oil pump driven sprocket	1	

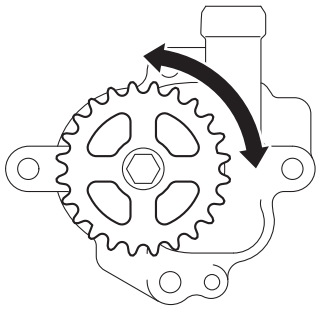
EAS30333
REMOVING THE OIL PAN
1. Remove:
   - Oil pan
   - Gasket
   - Dowel pins

TIP

Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

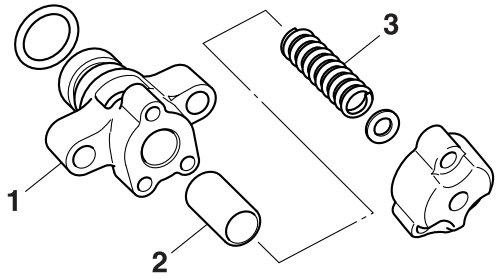
EAS30336
CHECKING THE SPROCKET AND CHAIN
1. Check:
   - Oil pump drive sprocket
     Cracks/damage/wear → Replace.
2. Check:
   - Oil pump drive chain
     Damage/stiffness → Replace the oil pump drive chain and oil pump drive sprocket as a set.

EAS30337
CHECKING THE OIL PUMP
1. Check:
   - Oil pump driven sprocket
   - Oil pump housing
   - Oil pump inner rotor
   - Oil pump outer rotor
   - Oil pump cover
     Cracks/damage/wear → Replace the oil pump assembly.
2. Check:
   - Oil pump operation
     Rough movement → Repeat steps (1) and (2) or replace the oil pump assembly.



G088997

EAS30338
CHECKING THE RELIEF VALVE
1. Check:
   - Relief valve body “1”
   - Relief valve “2”
   - Spring “3”
   - Damage/wear → Replace the defective part(s).



EAS30339
CHECKING THE OIL DELIVERY PIPES
The following procedure applies to all of the oil delivery pipes.
1. Check:
   - Oil delivery pipe 1
   - Oil delivery pipe 2
   - Oil pipe 1
     Damage → Replace.
     Obstruction → Wash and blow out with compressed air.

EAS30340
CHECKING THE OIL STRAINER
1. Check:
   - Oil strainer
     Damage → Replace.
     Contaminants → Clean with solvent.

EAS30342
ASSEMBLING THE OIL PUMP
1. Lubricate:
   - Inner rotor
   - Outer rotor
   - Oil pump shaft
     (with the recommended lubricant)

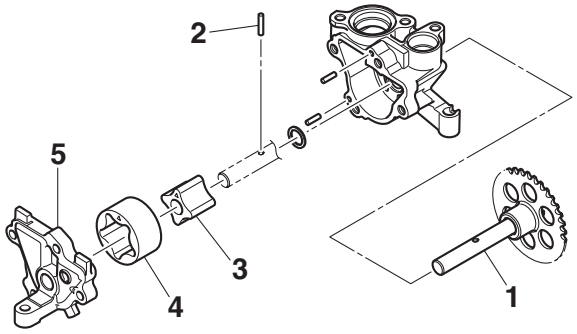
	Recommended lubricant **Engine oil**

2. Install:
   - Oil pump driven sprocket “1”
   - Pin “2”
   - Inner rotor “3”
   - Outer rotor “4”
   - Oil pump cover “5”
   - Oil pump housing bolt

	Oil pump housing bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

TIP

When installing the inner rotor, align the pin "2" in the oil pump shaft with the groove in the inner rotor "3".



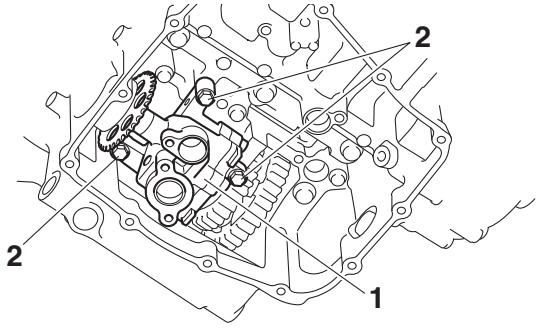
3. Check:
   • Oil pump operation
   Refer to "CHECKING THE OIL PUMP" on page 5-57.

EAS30343

INSTALLING THE OIL PUMP

1. Install:
   • Dowel pin
   • Oil pump "1"
   • Oil pump bolt "2"

	Oil pump bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)**



2. Install:
   • Washer
   • Oil pump drive chain "1"
   • Oil pump drive sprocket "2"
   • Collar

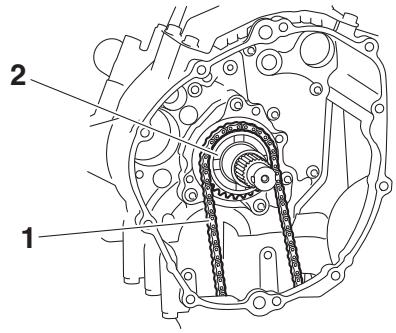
TIP

Install the oil pump drive chain "1" onto the oil pump drive sprocket "2".

ECA22830

NOTICE

After installing the oil pump drive chain and drive sprocket, make sure the oil pump turns smoothly.



3. Install:
   • Oil pump drive chain guide

	Oil pump drive chain guide bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

4. Install:
   • O-ring New
   • Oil pipe 1

	Oil pipe 1 bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

   • O-ring New
   • Oil delivery pipe 1
   • Oil strainer

	Oil strainer bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

   • O-ring New
   • Relief valve assembly

	Relief valve assembly bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

5. Install:
   • O-ring New
   • Oil delivery pipe 2

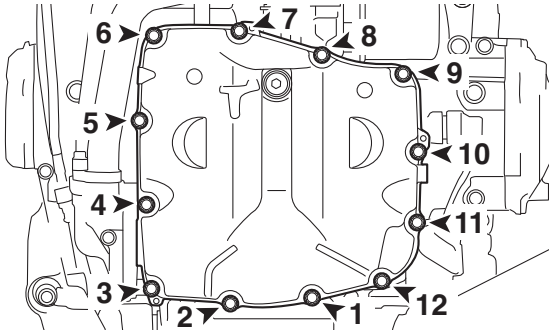
	Oil delivery pipe 2 bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

EAS30345

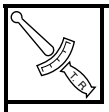
INSTALLING THE OIL PAN

1. Install:
   • Oil pan gasket New
   • Oil pan
   • Oil pan bolt (× 12)

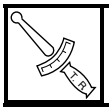
- M6 × 25 mm (0.98 in) bolts: “1”–“6”, “9”–“12”
- M6 × 30 mm (1.18 in) bolts: “7”, “8”



2. Tighten:
   - Oil pan bolt

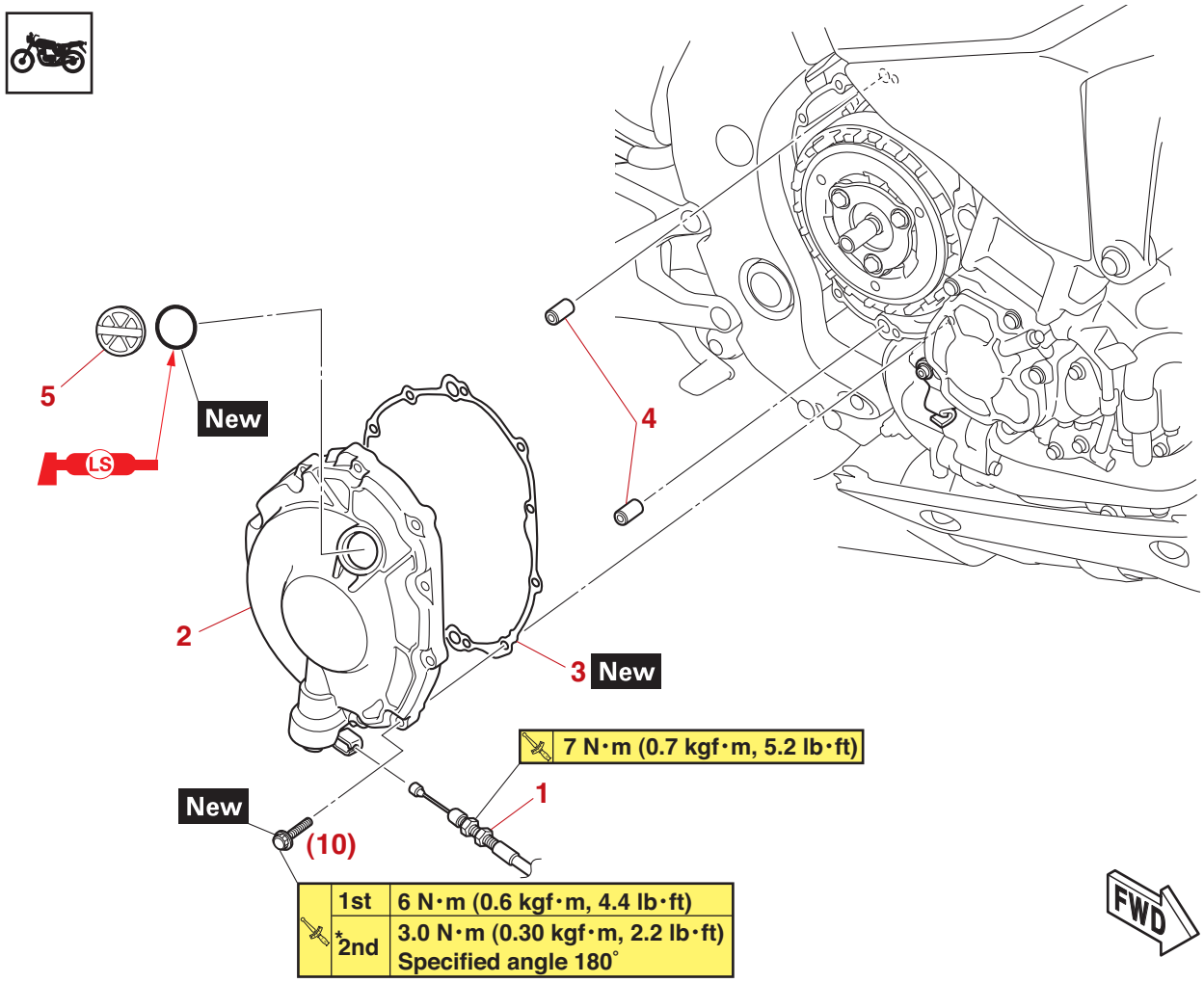
	**Oil pan bolt** **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

3. Install:
   - Engine oil drain bolt
   - Gasket New

	**Engine oil drain bolt** **23 N·m (2.3 kgf·m, 17 lb·ft)**

EAS20055
CLUTCH

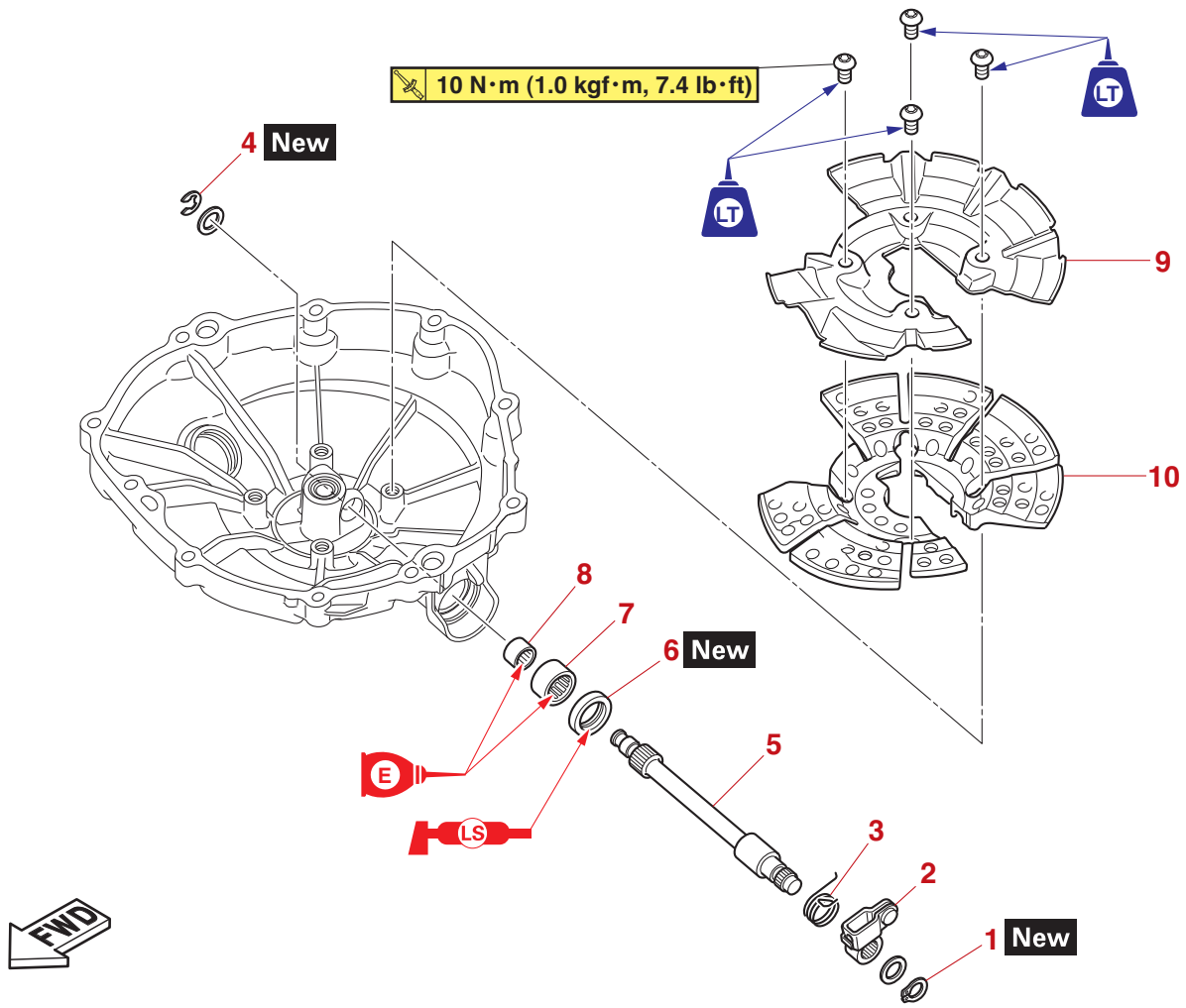
Removing the clutch cover



*** Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.**

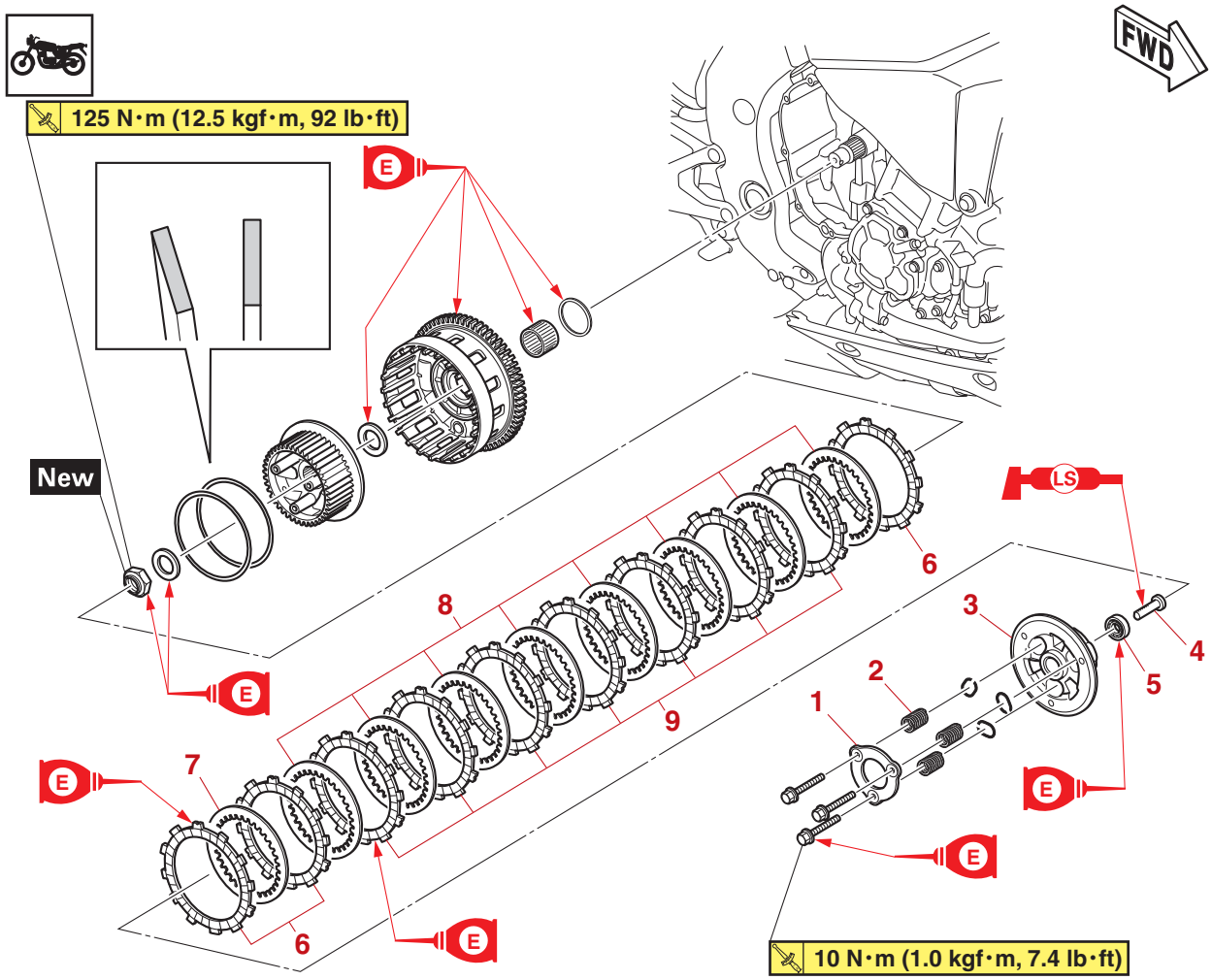
Order	Job/Parts to remove	Q'ty	Remarks
	Front side cowling (right)		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" on page 3-29.
1	Clutch cable	1	Disconnect.
2	Clutch cover	1	
3	Clutch cover gasket	1	
4	Dowel pin	2	
5	Oil filler cap	1	

Removing the pull lever shaft



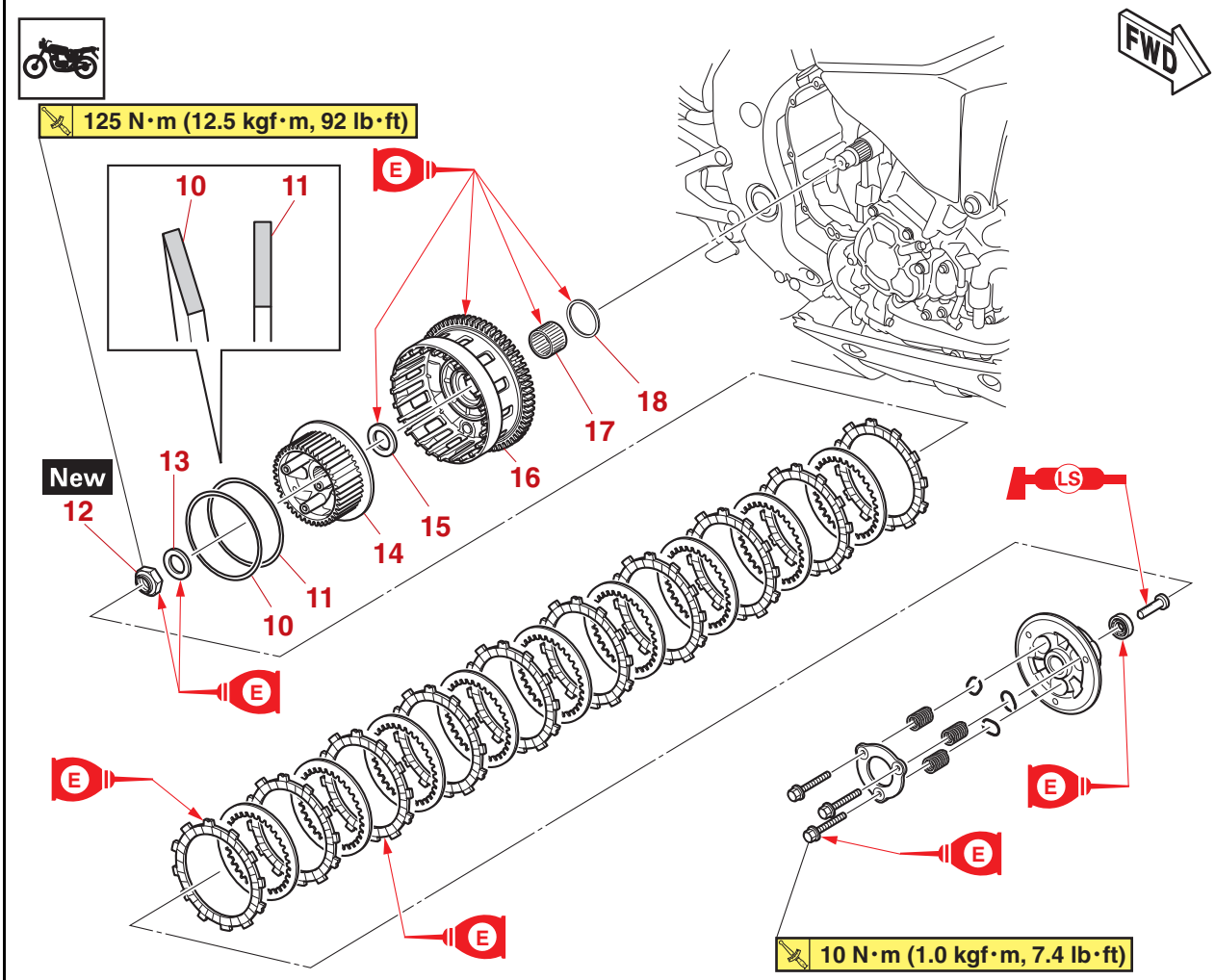
Order	Job/Parts to remove	Q'ty	Remarks
1	Circlip	1	
2	Pull lever	1	
3	Pull lever spring	1	
4	Circlip	1	
5	Pull lever shaft	1	
6	Oil seal	1	
7	Bearing	1	
8	Bearing	1	
9	Clutch cover damper plate	1	
10	Clutch cover damper	1	

Removing the clutch



Order	Job/Parts to remove	Q'ty	Remarks
1	Pressure plate 1	1	
2	Compression spring	3	
3	Pressure plate 2	1	
4	Pull rod	1	
5	Bearing	1	Press the bearing into pressure plate 2.
6	Friction plate 1	3	Blackish shoe
7	Clutch plate 1	1	Inside diameter: 110.2 mm (4.34 in)
8	Clutch plate 2	8	Inside diameter: 103.5 mm (4.07 in)
9	Friction plate 2	7	Whitish shoe

Removing the clutch



Order	Job/Parts to remove	Q'ty	Remarks
10	Clutch damper spring	1	
11	Clutch damper spring seat	1	
12	Clutch boss nut	1	
13	Conical spring washer	1	
14	Clutch boss	1	
15	Thrust plate	1	
16	Clutch housing assembly	1	
17	Bearing	1	
18	Washer	1	

EAS30346
REMOVING THE CLUTCH

1. Remove:
   - Clutch cover
   - Gasket

TIP

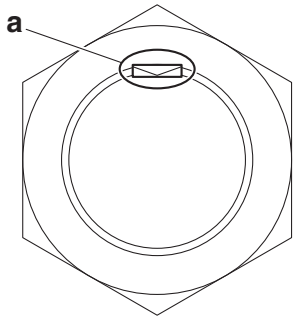
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern.
After all of the bolts are fully loosened, remove them.

2. Remove:
   - Compression spring bolts
   - Pressure plate 1
   - Compression springs
   - Pressure plate 2
   - Pull rod
3. Remove:
   - Friction plates 1
   - Clutch plate 1
   - Clutch plates 2
   - Friction plates 2
   - Clutch damper spring
   - Clutch damper spring seat

TIP

Be sure to mark the friction plates and clutch plates or note the position of each part so that they are installed in their original positions.

4. Straighten the clutch boss nut rib “a”.



G088991

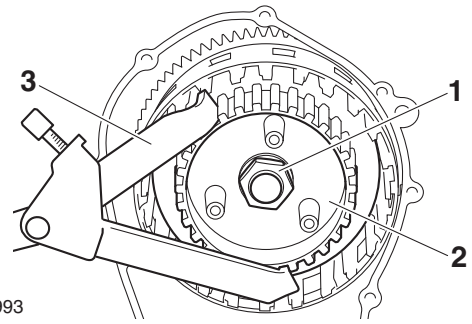
5. Loosen:
   - Clutch boss nut “1”

TIP

- While holding the clutch boss “2” with the universal clutch holder “3”, loosen the clutch boss nut.
- Do not use an impact wrench for removing the clutch boss nut.



Universal clutch holder
90890-04086
Universal clutch holder
YM-91042



G088993

6. Remove:
   - Clutch boss nut
   - Conical spring washer
   - Clutch boss
   - Thrust plate
   - Clutch housing assembly
   - Bearing
   - Washer

EAS30348
CHECKING THE FRICTION PLATES

The following procedure applies to all of the friction plates.

1. Check:
   - Friction plate 1 (blackish shoe)
   - Friction plate 2 (whitish shoe)
     Damage/wear → Replace the friction plates as a set.
2. Measure:
   - Friction plate 1, 2 thickness
     Out of specification → Replace the friction plates as a set.

TIP

Measure the friction plate at four places.



Friction plate 1 thickness
2.72–2.88 mm (0.107–0.113 in)
Wear limit
2.62 mm (0.103 in)
Friction plate 2 thickness
2.72–2.88 mm (0.107–0.113 in)
Wear limit
2.62 mm (0.103 in)

EAS30349
CHECKING THE CLUTCH PLATES

The following procedure applies to all of the clutch plates.

1. Check:
   - Clutch plate 1, 2
     Damage → Replace the clutch plates as a set.

2. Measure:
   • Clutch plate 1, 2 warpage
   (with a surface plate and thickness gauge)
   Out of specification → Replace the clutch plates as a set.



Thickness gauge
90890-03268
Feeler gauge set
YU-26900-9



Clutch plate 1 thickness
2.46–2.74 mm (0.097–0.108 in)
Warpage limit
0.10 mm (0.004 in)
Clutch plate 2 thickness
2.18–2.42 mm (0.086–0.095 in)
Warpage limit
0.10 mm (0.004 in)

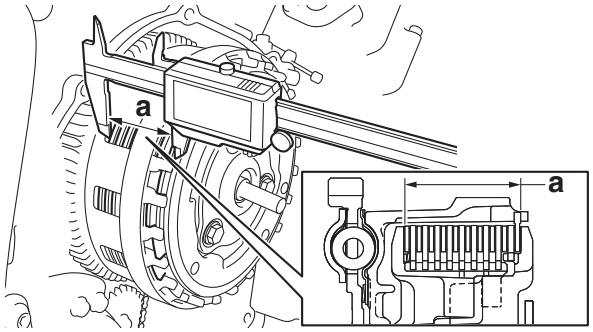
3. Measure:
   • Assembly width “a” of the friction plates and clutch plates
   Out of specification → Adjust.



Assembly width
48.3–49.3 mm (1.90–1.94 in)

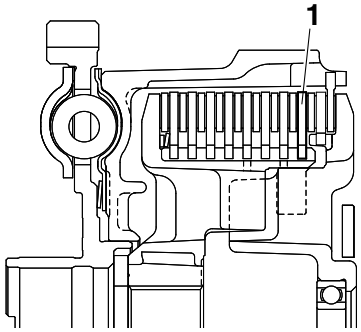
TIP

- Perform the thickness measurement without applying the oil.
- This step should be performed only if the friction plates and clutch plates were replaced.
- To measure the total width of the friction plates and clutch plates, combine 10 friction plates and 9 clutch plates as shown.



a. Assembly width adjusted by clutch plate “1”.
b. Select the clutch plate from the following table.

Clutch plate “1”		
Part No.	**Thickness**	
2CR-16325-10	2.0 mm (0.079 in)	
2CR-16325-00	2.3 mm (0.091 in)	STD
2CR-16325-20	2.6 mm (0.102 in)	



EAS30351
CHECKING THE CLUTCH SPRINGS

The following procedure applies to all of the clutch springs.

1. Check:
   • Clutch spring
   Damage → Replace the clutch springs as a set.
2. Measure:
   • Clutch spring free length
   Out of specification → Replace the clutch springs as a set.



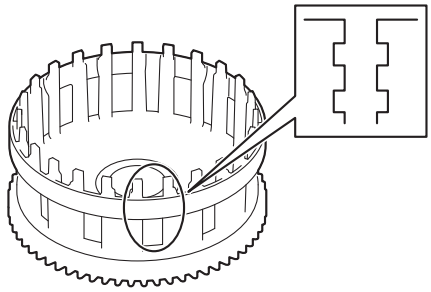
Clutch spring free length
47.36 mm (1.86 in)
Limit
44.99 mm (1.77 in)

EAS30352
CHECKING THE CLUTCH HOUSING

1. Check:
   • Clutch housing dogs
   Damage/pitting/wear → Deburr the clutch housing dogs or replace the clutch housing.

TIP

Pitting on the clutch housing dogs will cause erratic clutch operation.



G088994

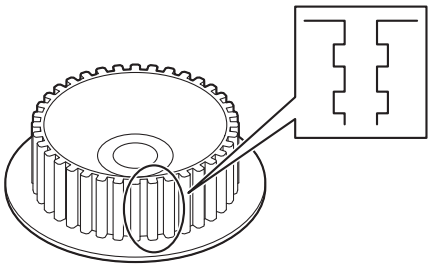
2. Check:
   • Bearing
   Damage/wear → Replace the bearing and clutch housing.

EAS30353
CHECKING THE CLUTCH BOSS

1. Check:
   • Clutch boss splines
   Damage/pitting/wear → Replace the clutch boss.

TIP

Pitting on the clutch boss splines will cause erratic clutch operation.



G088995

EAS30354
CHECKING THE PRESSURE PLATE

1. Check:
   • Pressure plate 1
   • Pressure plate 2
   Cracks/damage → Replace.
   • Bearing
   Damage/wear → Replace.

EAS30356
CHECKING THE PRIMARY DRIVE GEAR

1. Check:
   • Primary drive gear
   Damage/wear → Replace the crankshaft and clutch housing as a set.
   Excessive noise during operation → Replace the crankshaft and clutch housing as a set.

EAS30357
CHECKING THE PRIMARY DRIVEN GEAR

1. Check:
   • Primary driven gear
   Damage/wear → Replace the clutch housing and crankshaft as a set.
   Excessive noise during operation → Replace the clutch housing and crankshaft as a set.

EAS30358
CHECKING THE PULL LEVER SHAFT AND PULL ROD

1. Check:
   • Pull lever shaft pinion gear teeth
   • Pull rod teeth
   Damage/wear → Replace the pull rod and pull lever shaft as a set.
2. Check:
   • Pull rod bearing
   Damage/wear → Replace.

EAS30363
INSTALLING THE CLUTCH

TIP

After assembling the clutch assembly, the noise like a dry-type clutch might occur with the gear position in neutral and half clutch. This is due to the clutch dragging by engine oil when assembled. The pressure plate makes chattering by the clutch dragging and noise occurs between pressure plate cam and clutch boss cam. This noise will disappeared after riding few mileage as engine oil between clutch plate and friction plate will be reduced to optimum condition by clutch operation.

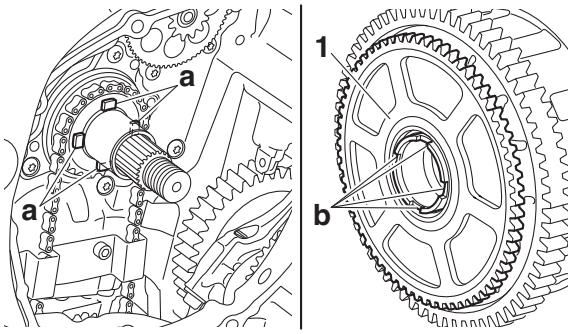
1. Install:
   • Washer
   • Bearing
   • Clutch housing assembly “1”

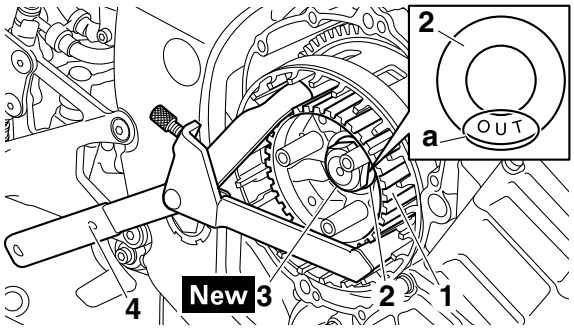
ECA22570
NOTICE

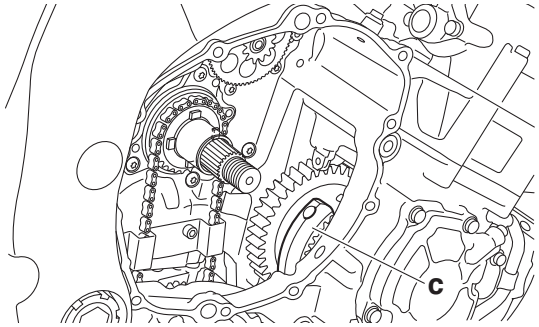
Make sure to fit the projections “a” of the oil pump drive sprocket to the concave “b” of the clutch housing assembly.

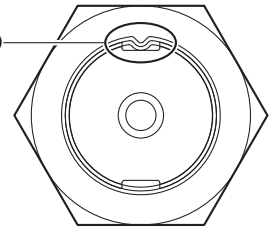
TIP

When installing the clutch housing assembly, turn the crankshaft so that the crankshaft web “c” cannot be seen.









2. Install:
   - Thrust plate
   - Clutch boss "1"
   - Conical spring washer "2"
   - Clutch boss nut "3" New

	Clutch boss nut **125 N·m (12.5 kgf·m, 92 lb·ft)**

TIP

- Install the conical spring washer on the main axle with the "OUT" mark "a" facing away from the vehicle.
- While holding the clutch boss "1" with the universal clutch holder "4", tighten the clutch boss nut.
- Do not use an impact wrench for installing the clutch boss nut.
- Stake the clutch boss nut at cutouts "b" in the main axle.

	Universal clutch holder **90890-04086** **Universal clutch holder** **YM-91042**

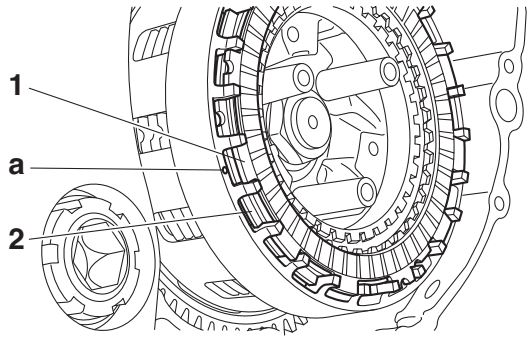
3. Lubricate:
   - Friction plates
   - Clutch plates
   (with the recommended lubricant)

	Recommended lubricant **Engine oil**

4. Install:
   - Clutch damper spring seat
   - Clutch damper spring
   - Friction plates 1
   - Clutch plates 2
   - Friction plates 2
   - Clutch plate 1

TIP

- First, install a friction plate and then alternate between a clutch plate and a friction plate.
- Install the last friction plate "1" offset from the other friction plates "2", making sure to align a projection on the friction plate with the punch mark "a" on the clutch housing.

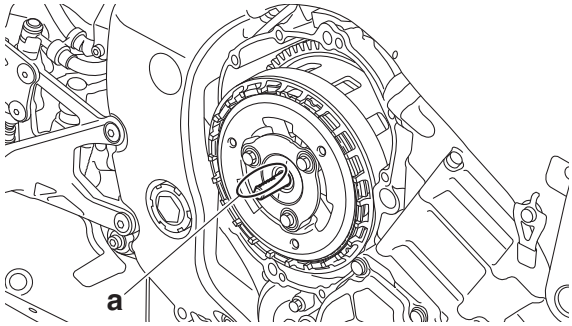


5. Install:
   - Pull rod
   - Pressure plate 2
   - Clutch springs
   - Pressure plate 1
   - Clutch spring bolts

	Clutch spring bolt **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

TIP

- Tighten the clutch spring bolts in stages and in a crisscross pattern.
- Apply lithium-soap-based grease onto the pull rod.
- Position the pull rod so that the teeth "a" face towards the rear of the vehicle. Then, install the clutch cover.



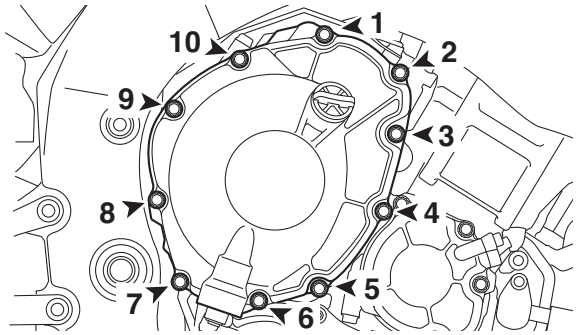
6. Install:
   - Dowel pins
   - Clutch cover gasket New
   - Clutch cover
   - Clutch cover bolt New
7. Tighten:
   - Clutch cover bolt

	Clutch cover bolt **1st: 6 N·m (0.6 kgf·m, 4.4 lb·ft)** ***2nd: 3.0 N·m (0.30 kgf·m, 2.2 lb·ft)** **Specified angle 180°**

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque and the specific angle.

TIP

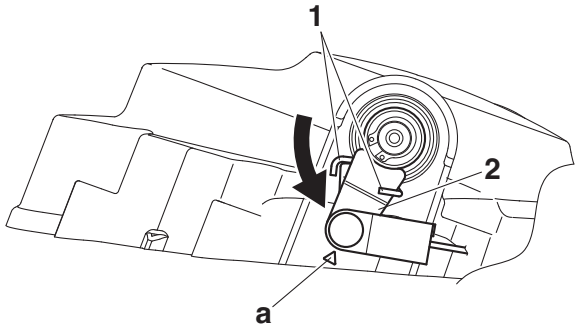
Tighten the clutch cover bolts in the tightening sequence as shown.



8. Install:
   - Pull lever spring "1"
   - Pull lever "2"
   - Washer
   - Circlip New

TIP

- The end of the pull lever should be closest to the clutch cover match mark "a" when there is no free play of the pull lever.
- Make sure that the pull rod teeth and pull lever shaft pinion gear are engaged.



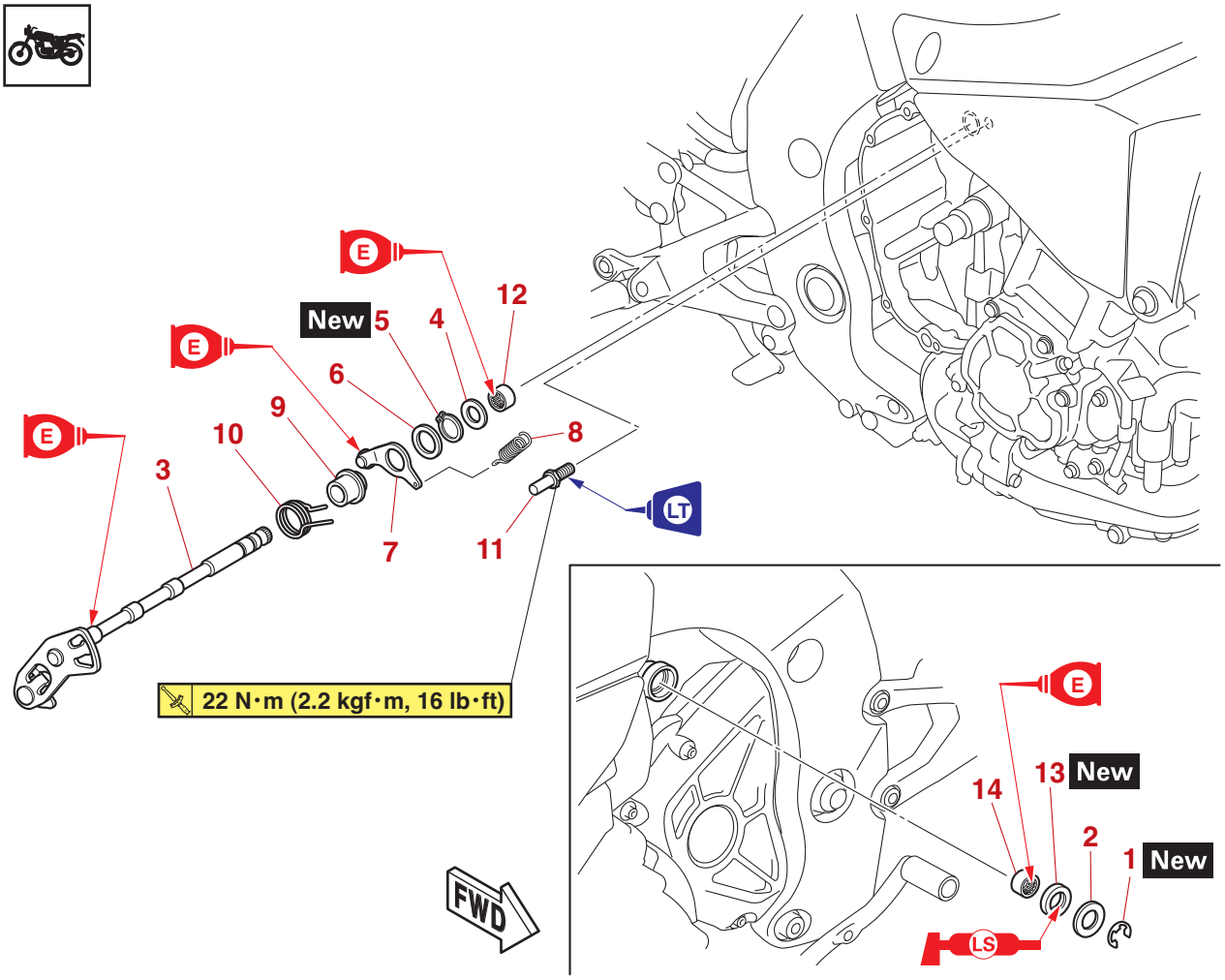
9. Adjust:
   - Clutch lever free play
     Refer to "ADJUSTING THE CLUTCH LEVER FREE PLAY" on page 3-12.

	Clutch lever free play **10.0–15.0 mm (0.39–0.59 in)**

EAS20057

SHIFT SHAFT

Removing the shift shaft and stopper lever

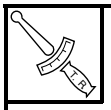


Order	Job/Parts to remove	Q'ty	Remarks
	Clutch assembly		Refer to "CLUTCH" on page 5-60.
	Shift arm		Refer to "CHAIN DRIVE" on page 4-125.
1	Circlip	1	
2	Washer	1	
3	Shift shaft	1	
4	Washer	1	
5	Circlip	1	
6	Washer	1	
7	Stopper lever	1	
8	Stopper lever spring	1	
9	Collar	1	
10	Shift shaft spring	1	
11	Shift shaft spring stopper	1	
12	Bearing	1	
13	Oil seal	1	
14	Bearing	1	

EAS30377
CHECKING THE SHIFT SHAFT
1. Check:
   - Shift shaft
     Bends/damage/wear → Replace.
   - Shift shaft spring
   - Collar
     Damage/wear → Replace.

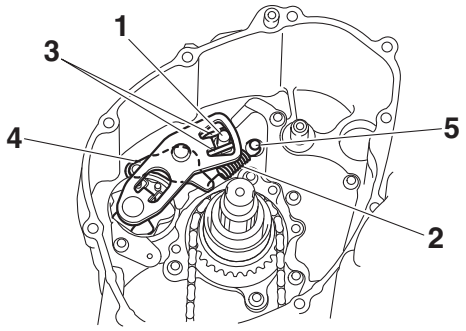
EAS30378
CHECKING THE STOPPER LEVER
1. Check:
   - Stopper lever
     Bends/damage → Replace.
     Roller turns roughly → Replace the stopper lever.

EAS30381
INSTALLING THE SHIFT SHAFT
1. Install:
   - Shift shaft spring stopper “1”
   - Shift shaft assembly
   - Stopper lever spring “2”

	**Shift shaft spring stopper** **22 N·m (2.2 kgf·m, 16 lb·ft)** **LOCTITE®**

TIP

- Hook the end of the shift shaft spring “3” onto the shift shaft spring stopper “1”.
- Hook the ends of the stopper lever spring “2” onto the stopper lever “4” and the crankcase boss “5”.
- Mesh the stopper lever with the shift drum segment assembly.



2. Install:
   - Bearing
   - Oil seal New
   - Washer
   - Circlip New

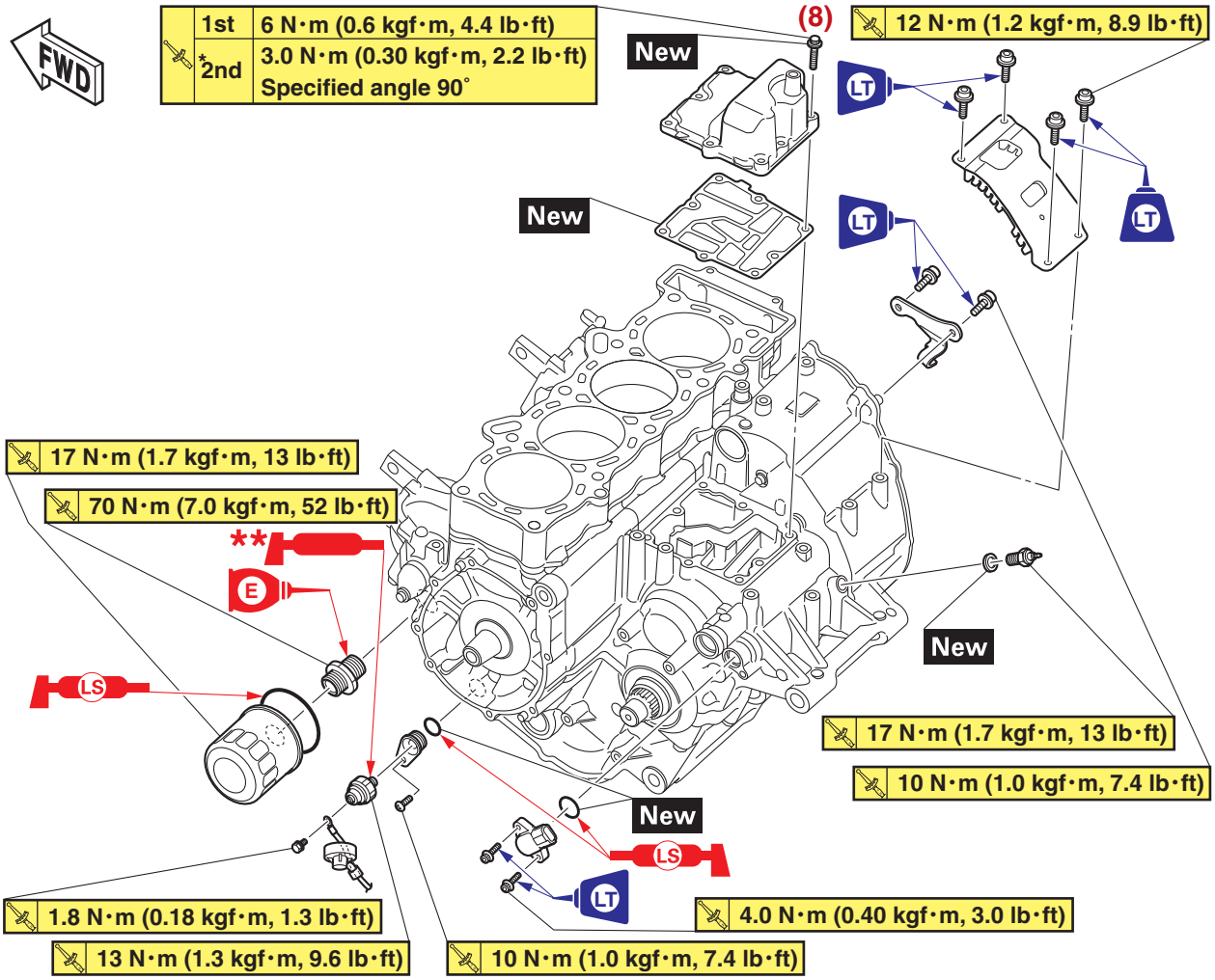
TIP

Lubricate the oil seal lips with lithium-soap-based grease.

EAS20059

CRANKCASE

Removing the crankcase breather cover and switches

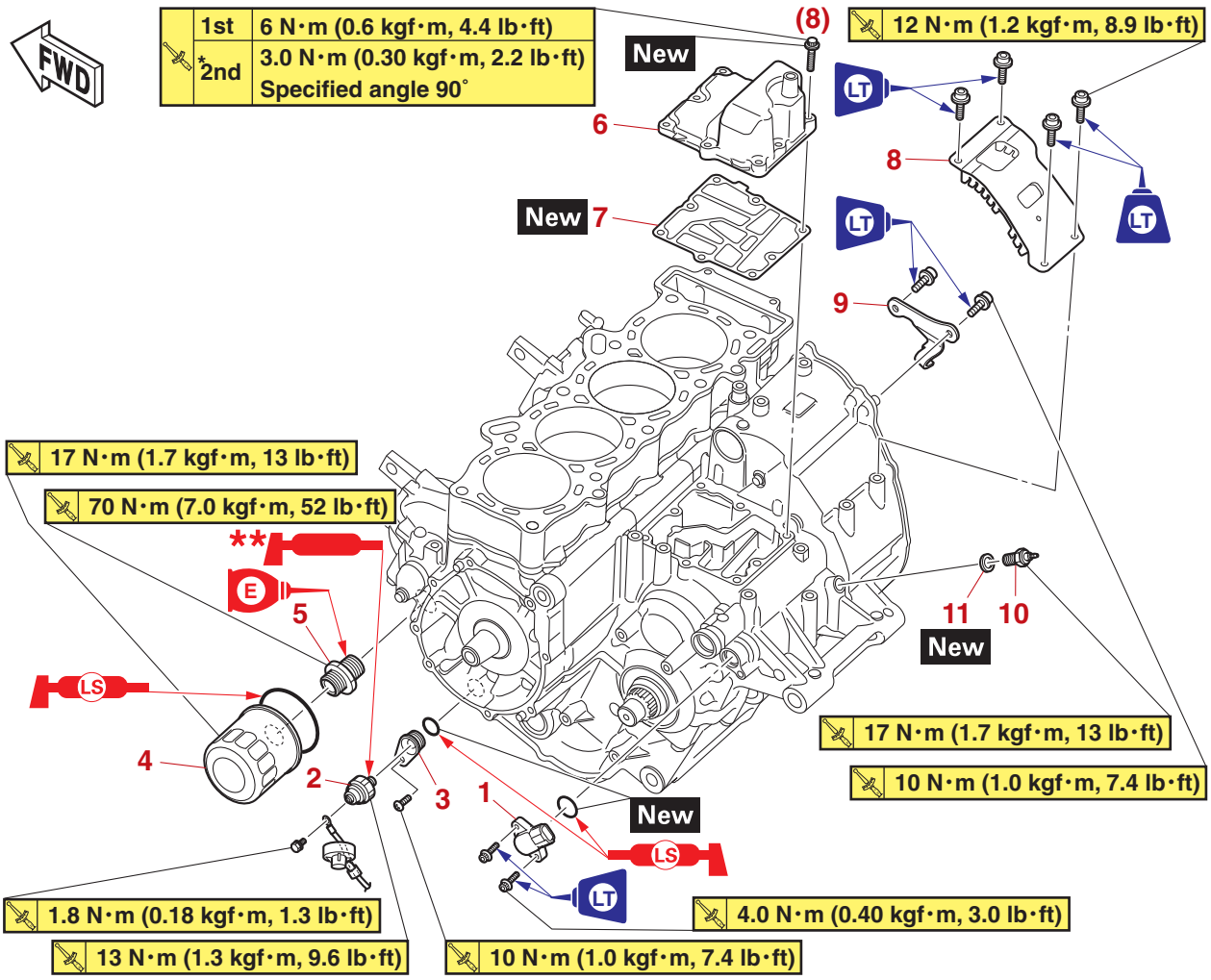


* **Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.**

** **Apply Three Bond No. 1215B®**

Order	Job/Parts to remove	Q'ty	Remarks
	Engine		Refer to "ENGINE REMOVAL" on page 5-11.
	Cylinder head cover/Intake camshaft/Exhaust camshaft		Refer to "CAMSHAFTS" on page 5-18.
	Cylinder head		Refer to "CYLINDER HEAD" on page 5-33.
	Generator rotor		Refer to "GENERATOR" on page 5-44.
	Starter motor		Refer to "ELECTRIC STARTER" on page 5-50.
	Water pump		Refer to "WATER PUMP" on page 6-13.
	Clutch housing assembly		Refer to "CLUTCH" on page 5-60.
	Oil strainer/Oil pump/Relief valve assembly		Refer to "OIL PUMP" on page 5-54.

Removing the crankcase breather cover and switches

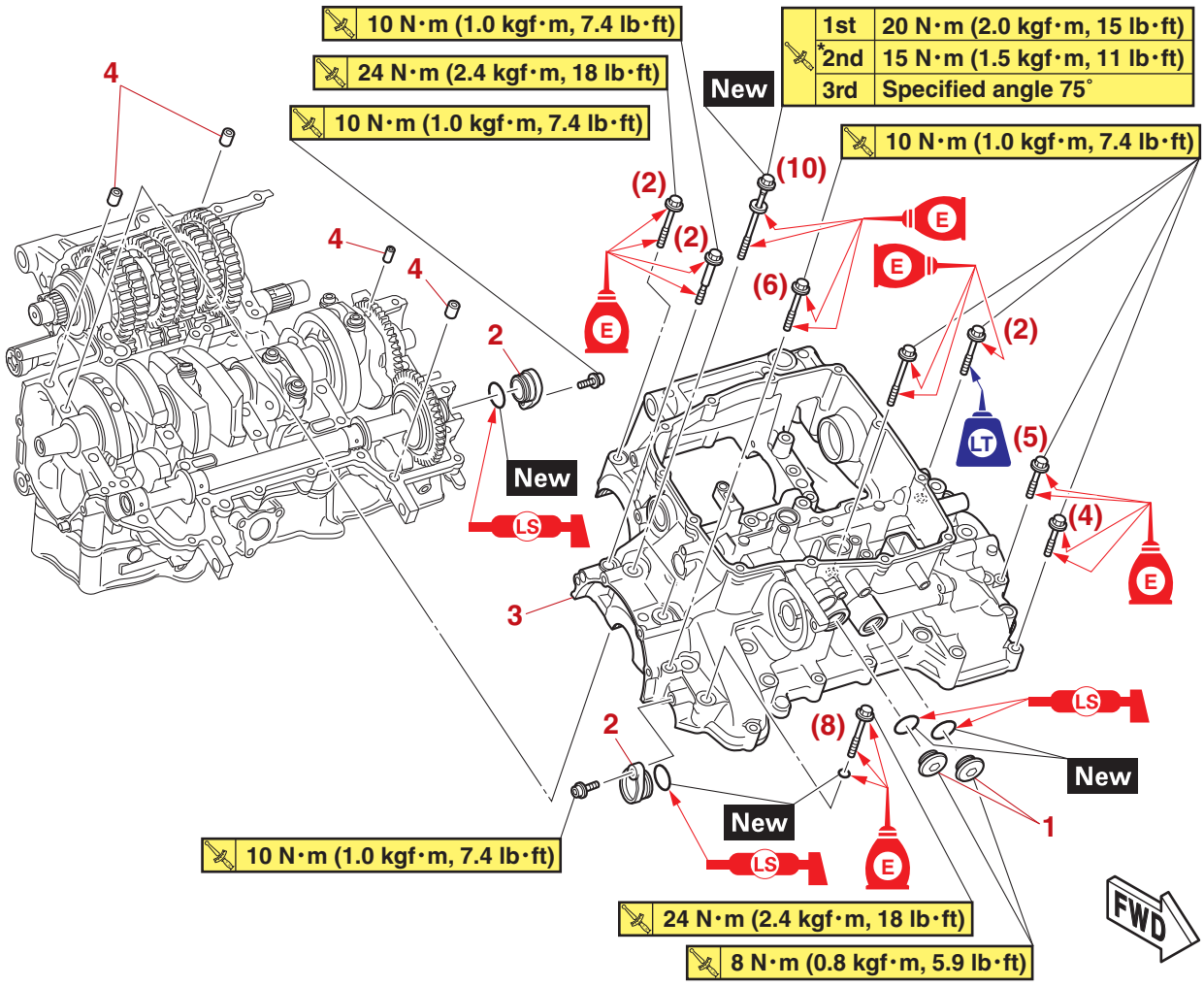


* Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.

** Apply Three Bond No. 1215B®

Order	Job/Parts to remove	Q'ty	Remarks
1	Gear position sensor	1	
2	Oil pressure switch	1	
3	Oil pressure switch joint	1	
4	Oil filter cartridge	1	
5	Oil filter cartridge union bolt	1	
6	Crankcase breather cover	1	
7	Crankcase breather cover gasket	1	
8	Damper plate (upper crankcase)	1	
9	Clutch cable holder	1	
10	Neutral switch	1	
11	Gasket	1	

Separating the crankcase



* Following the tightening order, loosen the bolt one by one, and then retighten it to the specific torque.

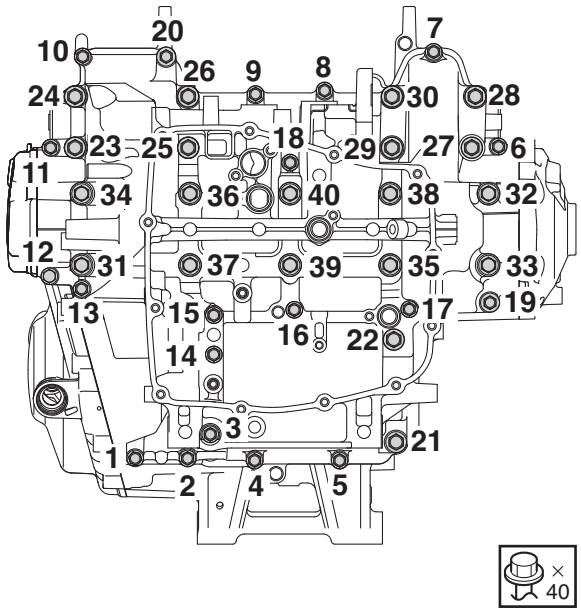
Order	Job/Parts to remove	Q'ty	Remarks
1	Plug (oil gallery)	2	
2	Plug (balancer shaft end)	2	
3	Lower crankcase	1	
4	Dowel pin	4	

EAS30389
DISASSEMBLING THE CRANKCASE

1. Place the engine upside down.
2. Remove:
   • Crankcase bolt (× 40)

TIP

- Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.
- Loosen the bolts in the proper sequence as shown.
- The numbers embossed on the crankcase indicate the crankcase tightening sequence.



3. Remove:
   • Lower crankcase

ECA13900

NOTICE

Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure the crankcase halves separate evenly.

4. Remove:
   • Dowel pins
5. Remove:
   • Crankshaft journal lower bearing
   • Balancer shaft journal bearing
   (from the lower crankcase)

TIP

Identify the position of each part very carefully so that it can be reinstalled in its original place.

EAS30390
CHECKING THE CRANKCASE

1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
   • Crankcase
   Cracks/damage → Replace.
   • Oil delivery passages
   Obstruction → Blow out with compressed air.

EAS30397
ASSEMBLING THE CRANKCASE

1. Lubricate:
   • Crankshaft journal bearing inner surface
   (with the recommended lubricant)

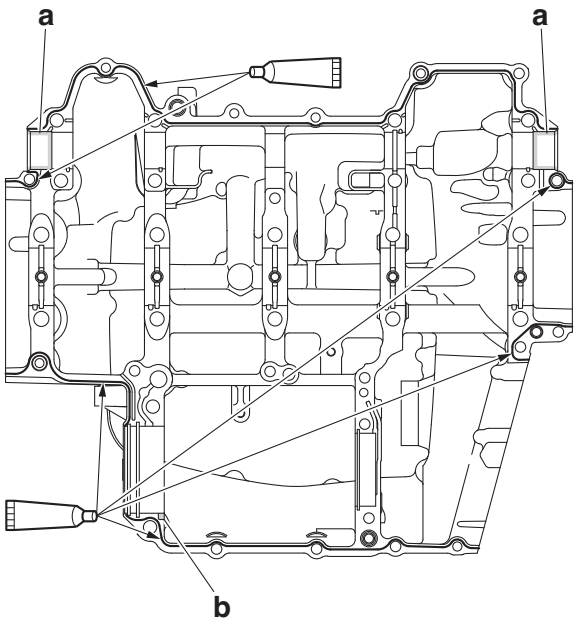
	Recommended lubricant **Engine oil**

2. Apply:
   • Sealant
   (onto the crankcase mating surfaces)

	Yamaha bond No. 1215 **90890-85505** **Three bond No. 1215®**

TIP

- Do not allow any sealant to come into contact with the oil gallery or crankshaft journal bearings, or balancer shaft journal bearings.
- Remove the sealant from the area “a” as shown in the illustration.
- Make sure that the sealant does not get into the groove “b” in the crankcase.

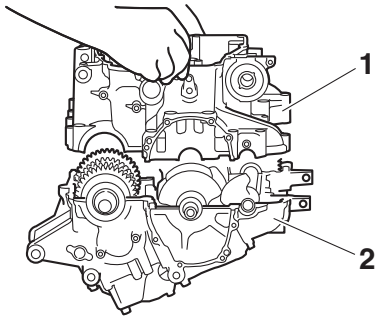


3. Install:
   • Dowel pins
4. Set the shift drum assembly and transmission gears in the neutral position.
5. Install:
   • Lower crankcase “1”
   (onto the upper crankcase “2”)

ECA13980

NOTICE

Before tightening the crankcase bolts, make sure the transmission gears shift correctly when the shift drum assembly is turned by hand.

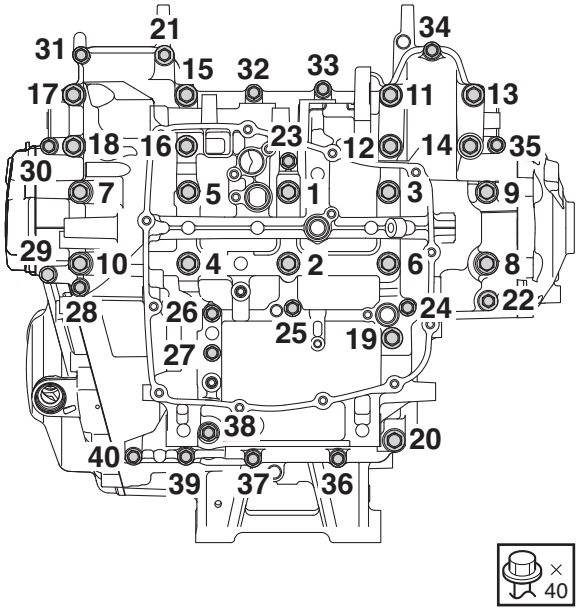


6. Install:
   • Crankcase bolt (× 40)

TIP

- Lubricate the bolts “1”–“10” thread, mating surfaces and washers with engine oil.
- Lubricate the bolts “11”–“18” thread, mating surfaces and O-rings with engine oil.
- Lubricate the bolts “19”–“27”, “29”–“39” thread and mating surfaces with engine oil.
- Lubricate the bolts “28”, “40” mating surfaces with engine oil.
- Apply the bolts “28”, “40” thread with LOCTITE®.

- M9 × 100 mm (3.94 in) bolts with washers: “1”–“10” New
- M8 × 58 mm (2.28 in) bolts with new O-rings: “11”–“18”
- M8 × 60 mm (2.36 in) bolts: “19”, “20”
- M6 × 65 mm (2.56 in) bolts: “21”, “22”
- M6 × 70 mm (2.76 in) bolt: “23”
- M6 × 60 mm (2.36 in) bolts: “24”–“27”, “35”, “38”
- M6 × 50 mm (1.97 in) bolts: “31”–“34”
- M6 × 50 mm (1.97 in) bolts (LOCTITE®): “28”, “40”
- M6 × 40 mm (1.57 in) bolts: “29”, “30”, “36”, “37”, “39”



7. Tighten:
   • Crankcase bolts “1”–“10”

Crankcase bolts “1”–“10”
1st: 20 N·m (2.0 kgf·m, 15 lb·ft)
***2nd: 15 N·m (1.5 kgf·m, 11 lb·ft)**
3rd: Specified angle 75°

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque.

EWA16610

⚠ WARNING

If the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it. Instead, replace the bolt with a new one and perform the procedure again.

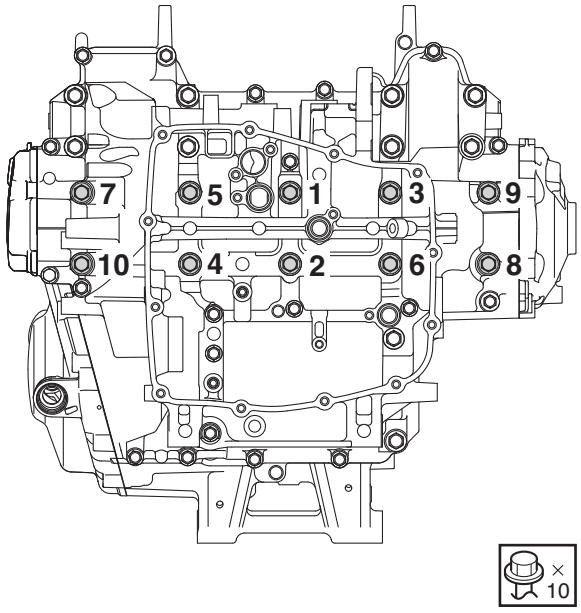
ECA20890

NOTICE

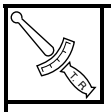
Do not use a torque wrench to tighten the bolt to the specified angle.

TIP

Tighten the bolts in the tightening sequence cast on the crankcase.

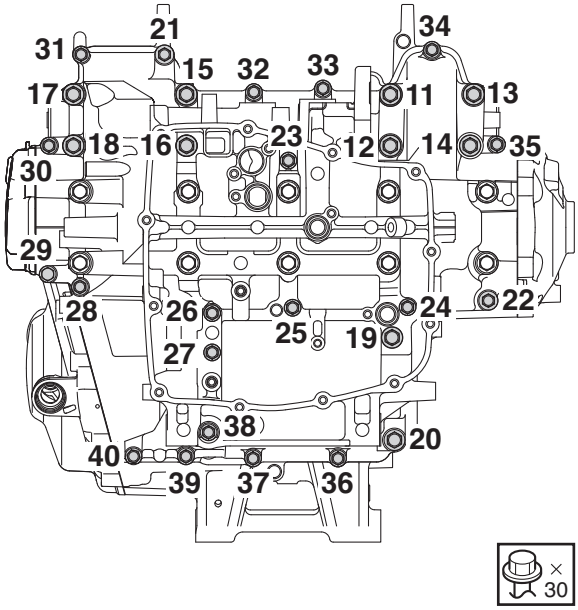


8. Tighten:
   - Crankcase bolts “11”–“40”

	**Crankcase bolts “11”–“20”** **24 N·m (2.4 kgf·m, 18 lb·ft)** **Crankcase bolts “21”–“40”** **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

TIP

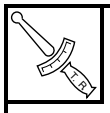
Tighten the bolts “11”–“18” in the tightening sequence cast on the crankcase.



EAS31718

INSTALLING THE CRANKCASE BREATHER COVER

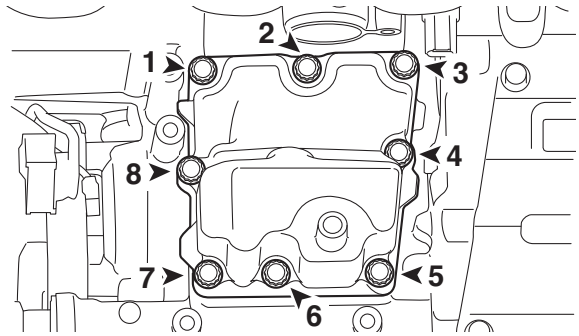
1. Install:
   - Crankcase breather cover
   - Crankcase breather cover bolt New
2. Tighten:
   - Crankcase breather cover bolt

	**Crankcase breather cover bolt** **1st: 6 N·m (0.6 kgf·m, 4.4 lb·ft)** ***2nd: 3.0 N·m (0.30 kgf·m, 2.2 lb·ft)** **Specified angle 90°**

* Following the tightening order, loosen the bolt one by one and then retighten it to the specific torque and the specific angle.

TIP

Tighten the crankcase breather cover bolts in the tightening sequence as shown.



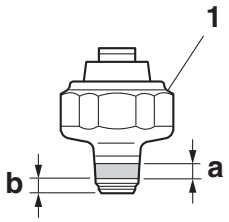
EAS31071
INSTALLING THE OIL PRESSURE SWITCH

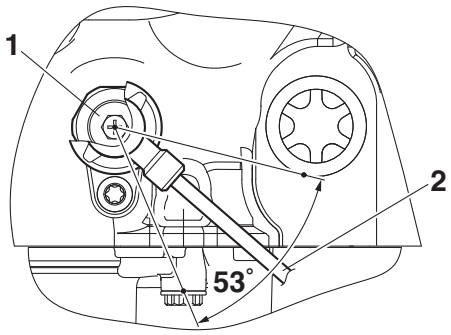
1. Install:
   - Oil pressure switch “1”
   - Oil pressure switch lead “2”

Oil pressure switch
13 N·m (1.3 kgf·m, 9.6 lb·ft)
Oil pressure switch lead bolt
1.8 N·m (0.18 kgf·m, 1.3 lb·ft)

TIP

- Apply Three Bond No. 1215B® to the threads “a” of the oil pressure switch. However, do not apply Three Bond No. 1215B® to the portion “b” of the oil pressure switch.
- Install the oil pressure switch lead so that it is routed within the range shown in the illustration.





EAS31658
INSTALLING THE GEAR POSITION SENSOR

ECA22630
NOTICE

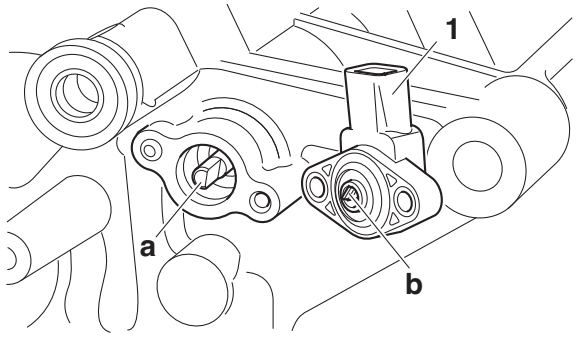
To prevent damage to the gear position sensor, keep magnets (including any pickup tool with a magnet, magnetized screwdrivers, etc.) away from the gear position sensor.

1. Install:
   - O-ring New
   - Gear position sensor “1”

Gear position sensor bolt
4.0 N·m (0.40 kgf·m, 3.0 lb·ft)
LOCTITE®

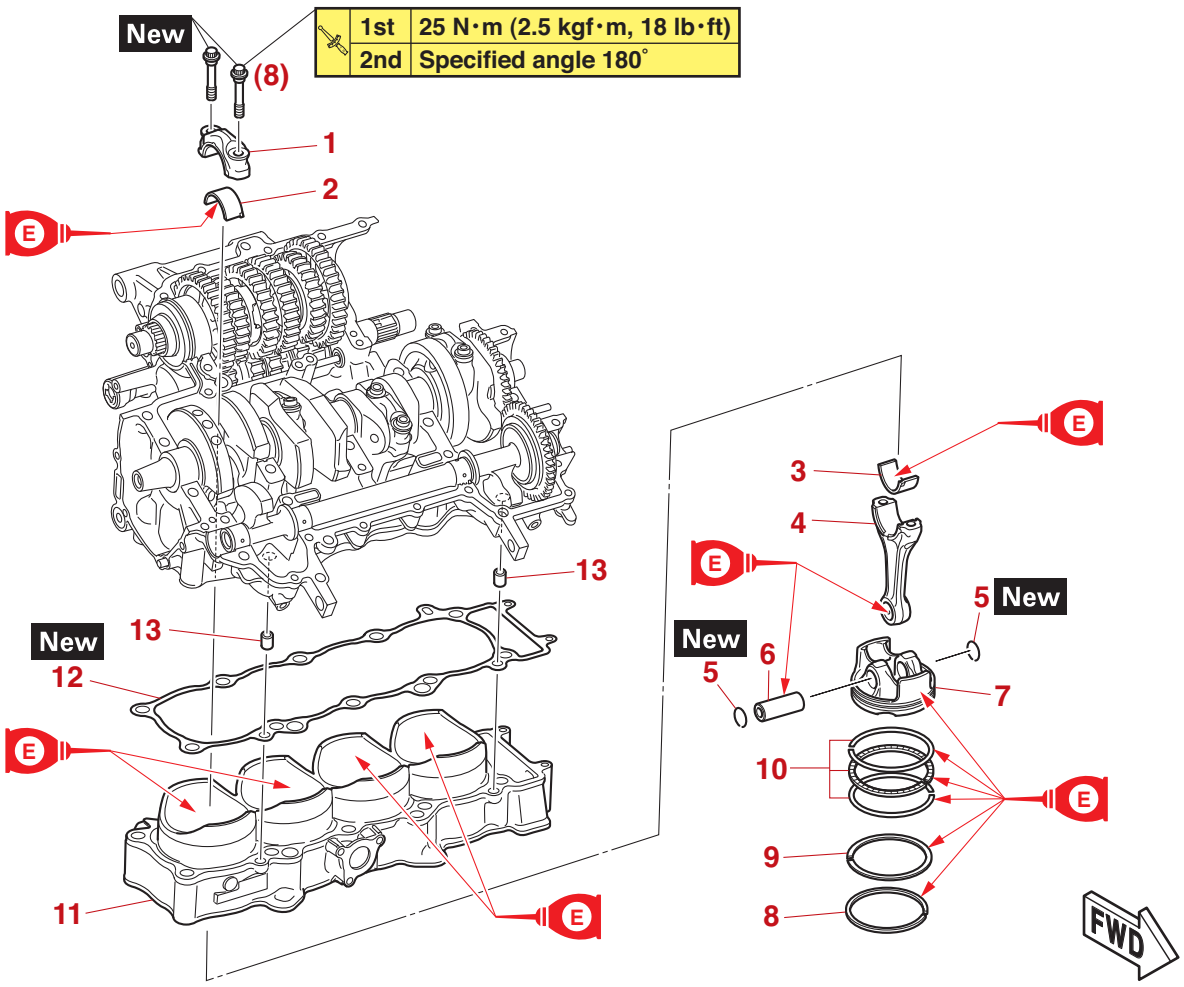
TIP

- Lubricate the O-ring with lithium-soap-based grease.
- Fit the end “a” of the shift drum assembly into the opening “b” in the gear position sensor “1”.



EAS20132
CONNECTING RODS AND PISTONS

Removing the connecting rods and pistons



Order	Job/Parts to remove	Q'ty	Remarks
	Lower crankcase		Refer to "CRANKCASE" on page 5-71.
1	Connecting rod cap	4	
2	Big end lower bearing	4	
3	Big end upper bearing	4	
4	Connecting rod	4	
5	Piston pin clip	8	
6	Piston pin	4	
7	Piston	4	
8	Top ring	4	
9	2nd ring	4	
10	Oil ring	4	
11	Cylinder	1	
12	Cylinder gasket	1	
13	Dowel pin	2	

EAS30745
REMOVING THE CONNECTING RODS AND PISTONS

The following procedure applies to all of the connecting rods and pistons.

1. Remove:
   - Connecting rod cap
   - Connecting rod
   - Big end bearings

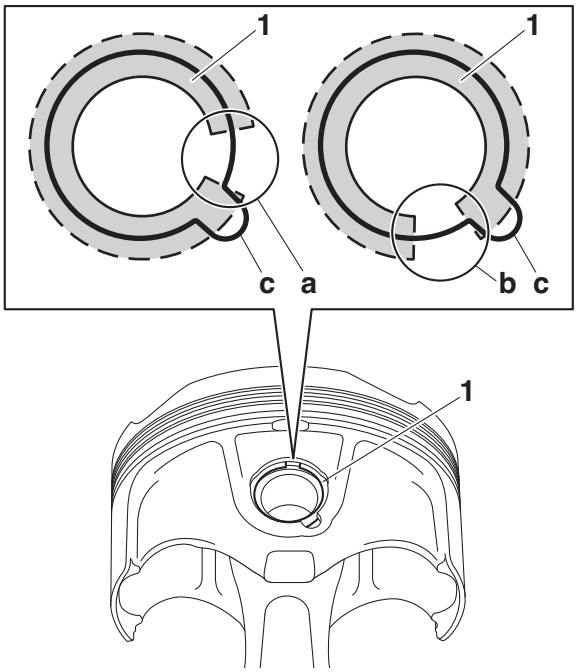
TIP

- Identify the position of each big end bearing so that it can be reinstalled in its original place.
- After removing the connecting rods and connecting rod caps, care should be taken not to damage the mating surfaces of the connecting rods and connecting rod caps.

2. Remove:
   - Piston pin clip "1"
     a. Make sure that the piston pin clip ends are in either the "a" or "b" position in relation to the cutout "c".

TIP

If the piston pin clip ends are not positioned at "a" or "b", adjust the piston pin clip ends position by following steps (b) to (c).



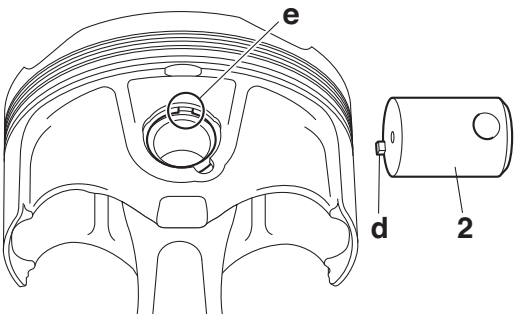
b. Install the piston pin clip rotation tool "2" to the piston pin clip.

TIP

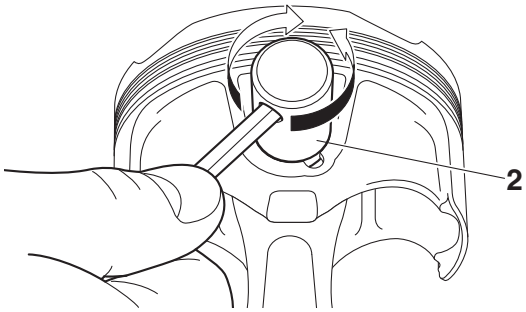
When installing the piston pin clip rotation tool, align the projection "d" on the piston pin clip rotation tool with the clip ends "e".

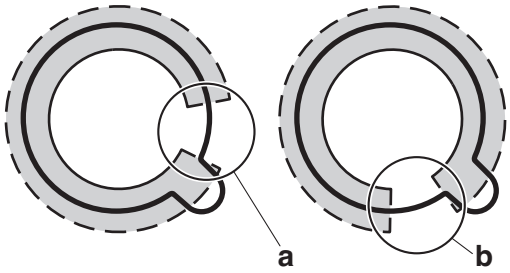


Piston pin clip rotation tool
90890-04175
YM-04175



c. Turn the piston pin clip rotation tool "2" so that the piston pin clip ends are positioned at "a" or "b".

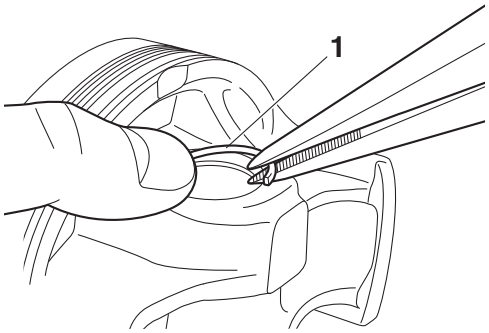




d. Remove the piston pin clip "1" using long-nose pliers or a similar tool.

TIP

When removing the piston pin clip, hold the piston pin clip in place with your fingers because it can easily spring.



3. Remove:
   • Piston pin “1”
   • Piston “2”

ECA13810

NOTICE

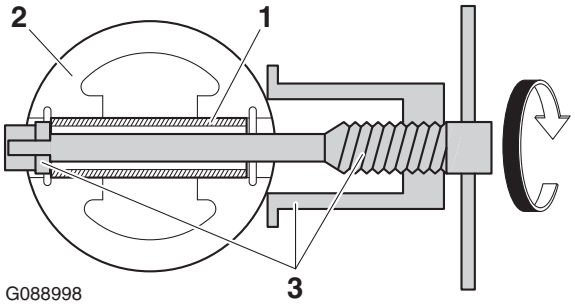
Do not use a hammer to drive the piston pin out.

TIP

- For reference during installation, put identification marks on the piston crown.
- Before removing the piston pin, deburr the piston pin clip groove and the piston pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller set “3”.



Piston pin puller set
90890-01304
Piston pin puller
YU-01304

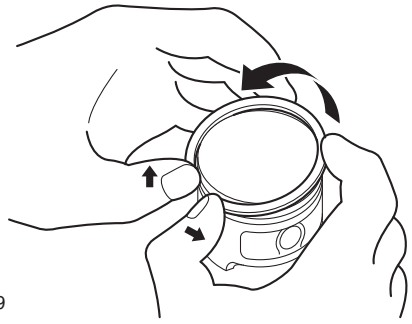


G088998

4. Remove:
   • Top ring
   • 2nd ring
   • Oil ring

TIP

When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.



G088999

EAS30747

CHECKING THE CYLINDER AND PISTON

1. Check:
   • Piston wall
   • Cylinder wall
   Vertical scratches → Replace the cylinder block, and replace the pistons and piston rings as a set.
2. Measure:
   • Piston-to-cylinder clearance
   a. Measure cylinder bore “C” with the cylinder bore gauge.

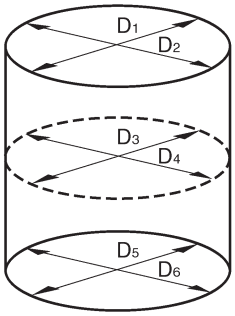
TIP

Measure cylinder bore “C” by taking side-to-side and front-to-back measurements of the cylinder.



Bore
79.000–79.010 mm (3.1102–3.1106 in)
Wear limit
79.060 mm (3.1126 in)

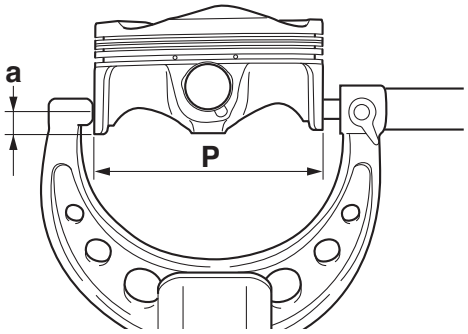
“C” = maximum of D_1, D_2, D_3, D_4, D_5, D_6



G089000

   b. If out of specification, replace the cylinder, and replace the piston and piston rings as a set.
   c. Measure piston skirt diameter “P” with the micrometer.

Piston
Diameter
78.961–78.994 mm (3.1087–3.1100 in)



a. 8.0 mm (0.31 in) from the bottom edge of the piston

d. If out of specification, replace the piston and piston rings as a set.
e. Calculate the piston-to-cylinder clearance with the following formula.

Piston-to-cylinder clearance = Cylinder bore “C” - Piston skirt diameter “P”

Piston-to-cylinder clearance
0.006–0.049 mm (0.0002–0.0019 in)

f. If out of specification, replace the cylinder, and replace the piston and piston rings as a set.

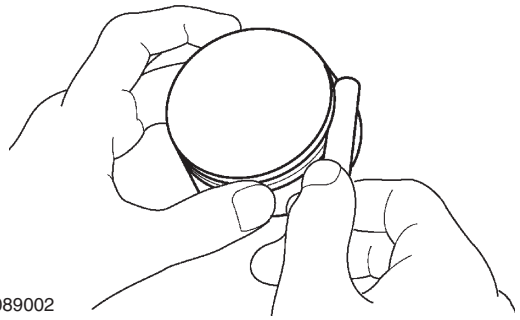
EAS30748
CHECKING THE PISTON RINGS

1. Measure:
   • Piston ring side clearance
   Out of specification → Replace the piston and piston rings as a set.

TIP

Before measuring the piston ring side clearance, eliminate any carbon deposits from the piston ring grooves and piston rings.

Piston ring
Top ring
Ring side clearance
0.030–0.065 mm (0.0012–0.0026 in)
Side clearance limit
0.115 mm (0.0045 in)
2nd ring
Ring side clearance
0.020–0.055 mm (0.0008–0.0022 in)
Side clearance limit
0.115 mm (0.0045 in)


G089002

2. Install:
   • Piston ring
   (into the cylinder)

TIP

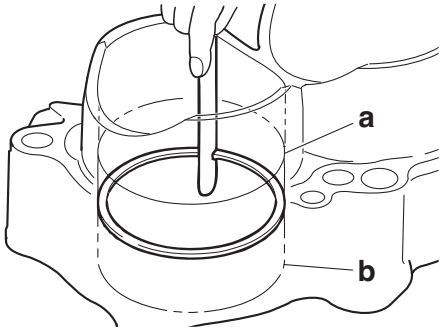
Use the piston crown to level the piston ring near bottom of cylinder “a”, where cylinder wear is lowest.

3. Measure:
   • Piston ring end gap
   Out of specification → Replace the piston ring.

TIP

The oil ring expander spacer’s end gap cannot be measured. If the oil ring rail’s gap is excessive, replace all three piston rings.

Top ring
End gap limit
0.50 mm (0.0197 in)
2nd ring
End gap limit
1.15 mm (0.0453 in)



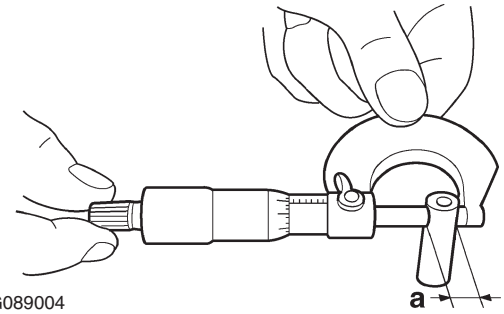
b. Upper of cylinder

EAS30749
CHECKING THE PISTON PIN

The following procedure applies to all of the piston pins.

1. Measure:
   - Piston pin outside diameter “a”
     Out of specification → Replace the piston pin.

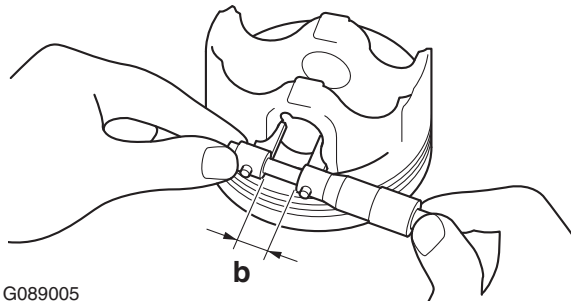
Piston pin outside diameter
16.991–17.000 mm (0.6689–0.6693 in)
Limit
16.971 mm (0.6681 in)



G089004

2. Measure:
   - Piston pin bore inside diameter “b”
     Out of specification → Replace the piston.

Piston pin bore inside diameter
17.002–17.013 mm (0.6694–0.6698 in)
Limit
17.043 mm (0.6710 in)



G089005

3. Calculate:
   - Piston-pin-to-piston-pin-bore clearance
     Out of specification → Replace the piston pin and piston as a set.

Piston-pin-to-piston-pin-bore clearance = Piston pin bore inside diameter “b” - Piston pin outside diameter “a”

Piston-pin-to-piston-pin-bore clearance
0.002–0.022 mm (0.0001–0.0009 in)

EAS30750
CHECKING THE CONNECTING RODS

1. Measure:
   - Crankshaft-pin-to-big-end-bearing clearance
     Out of specification → Replace the big end bearings.

Oil clearance
0.033–0.057 mm (0.0013–0.0022 in)

The following procedure applies to all of the connecting rods.

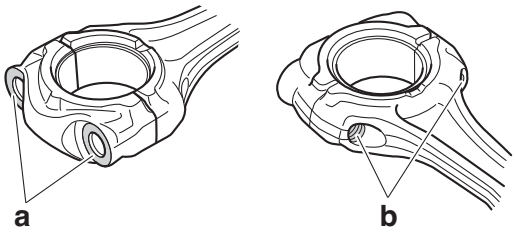
ECA13930
NOTICE

Do not interchange the big end bearings and connecting rods. To obtain the correct crankshaft-pin-to-big-end-bearing clearance and prevent engine damage, the big end bearings must be installed in their original positions.

a. Clean the big end bearings, crankshaft pins, and the connecting rods with oil cleaner.

TIP

When cleaning the connecting rod, clean the bearing surface “a” of the connecting rod bolt and threads “b”.



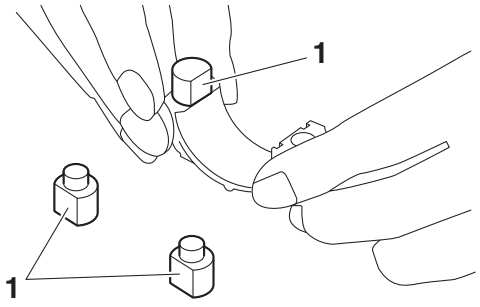
b. Wait five minutes to dry the remaining oil cleaner component.
c. Install the big end upper bearing into the connecting rod and the big end lower bearing into the connecting rod cap with the connecting rod big end metal installer "1".

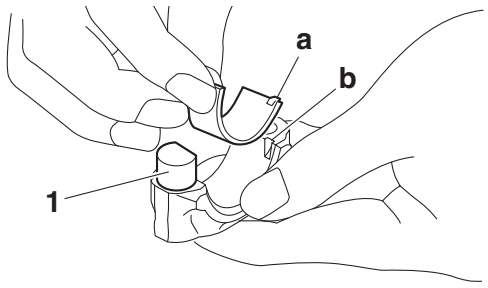
TIP

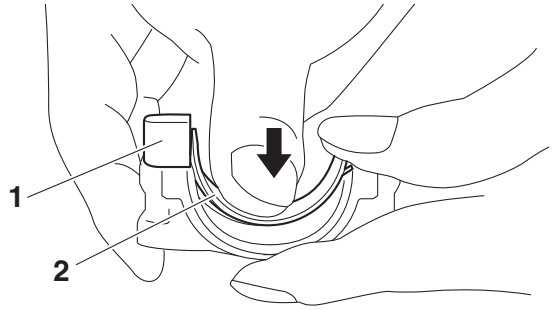
- From the 3 types, choose the connecting rod big end metal installer "1" that fits exactly, and install it to the connecting rod and connecting rod cap as shown in the illustration.
- Align the projections "a" on the big end bearings with the notches "b" in the connecting rod and connecting rod cap.
- Push the big end bearing "2" down and install it to the connecting rod and connecting rod cap.



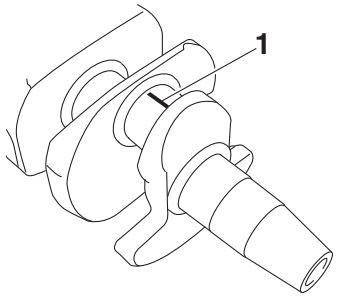
Connecting rod big end bearing installer
90890-04193
Connecting rod big end bearing installer
YM-04193







d. Put a piece of Plastigauge® "1" on the crankshaft pin.



G089008

e. Assemble the connecting rod halves.

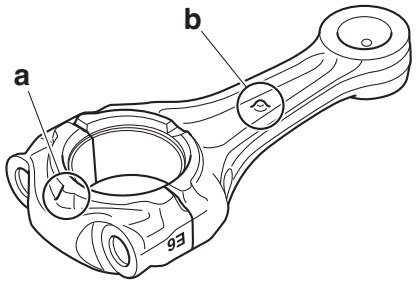
ECA18390

NOTICE

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts.

TIP

- Install the new connecting rod bolt without cleaning and without any oil.
- Make sure that the projection "a" on the connecting rod cap faces the same direction as the "○" mark "b" on the connecting rod.
- After installing the big end bearing, assemble the connecting rod and connecting rod cap without installing them onto the crankshaft.



TIP

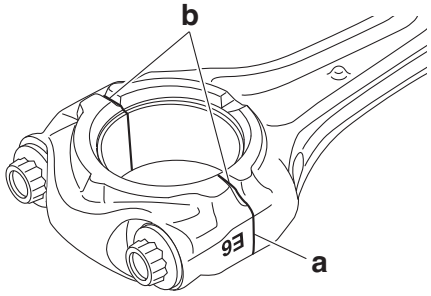
Install by carrying out the following procedures in order to assemble in the most suitable condition.

f. Tighten the connecting rod bolt while checking that the sections shown "a" and "b" are flush with each other by touching the surface.

	Connecting rod bolt **30 N·m (3.0 kgf·m, 22 lb·ft)**

TIP

To install the connecting rod cap, care should be taken not to install it at an angle and the position should not be out of alignment.

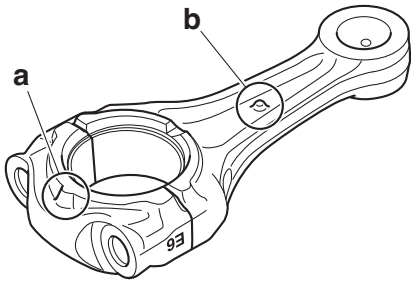


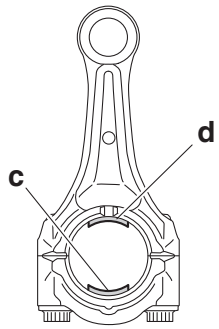
a. Side machined face
b. Thrusting faces

g. Loosen the connecting rod bolt, remove the connecting rod and connecting rod cap and install these parts to the crankshaft with the big end bearing kept in the current condition.

TIP

- Do not move the connecting rod or crankshaft until the clearance measurement has been completed.
- Make sure that the projection "a" on the connecting rod cap faces the same direction as the "○" mark "b" on the connecting rod.
- Make sure the "○" marks "b" on the connecting rods face towards the left side of the crankshaft.
- Install the connecting rod so that the Plastigauge® is in position "c" or "d".

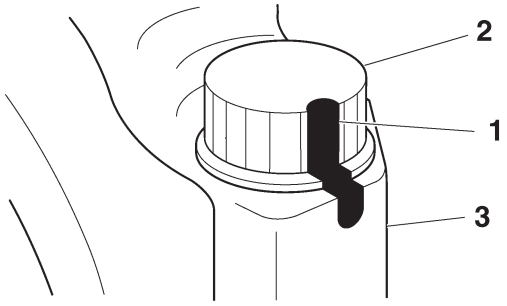




h. Tighten the connecting rod bolts with a torque wrench.

	Connecting rod bolt (1st) **25 N·m (2.5 kgf·m, 18 lb·ft)**

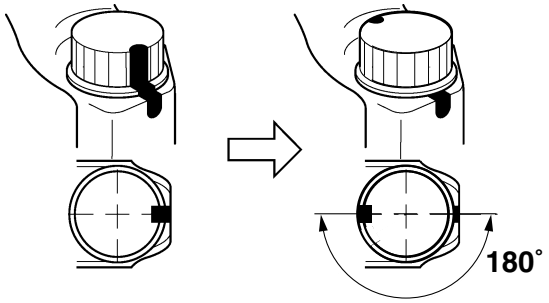
i. Put a mark "1" on the corner of the connecting rod bolt "2" and the connecting rod cap "3".



j. Tighten the connecting rod bolts further to reach the specified angle 175°–185° with torque wrench, and then confirm that the torque value is within the range of 40 N·m (4.0 kgf·m, 30 lb·ft) to 85 N·m (8.5 kgf·m, 63 lb·ft) with keeping the torque wrench

175°–185°. If torque is out of range, replace the connecting rod bolt to new one and repeat from step (h).

Connecting rod bolt (final)
Specified angle 175°–185°

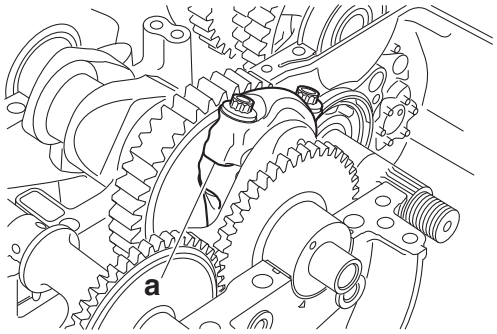


EWA16610

WARNING

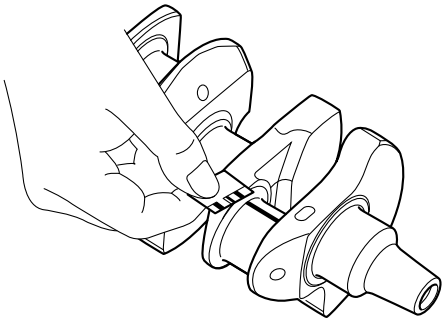
If the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it. Instead, replace the bolt with a new one and perform the procedure again.

k. After the installation, check that the section shown "a" is flush with each other by touching the surface.



l. Remove the connecting rod and big end bearings.

m. Measure the compressed Plastigauge® width on the crankshaft pin. If the crankshaft-pin-to-big-end-bearing clearance is out of specification, select replacement big end bearings.



2. Select:
   • Big end bearings (P_1–P_4)

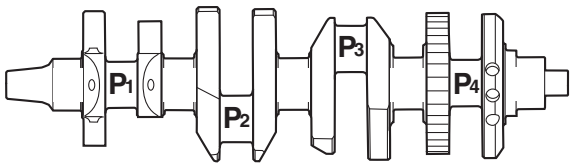
TIP

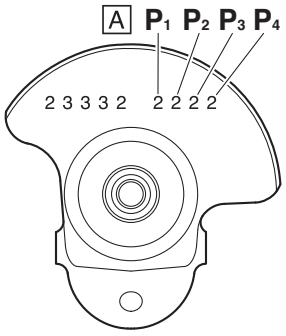
- The numbers "A" stamped into the crankshaft web and the numbers "1" on the connecting rods are used to determine the replacement big end bearings sizes.
- "P_1"–"P_4" refer to the bearings shown in the crankshaft illustration.

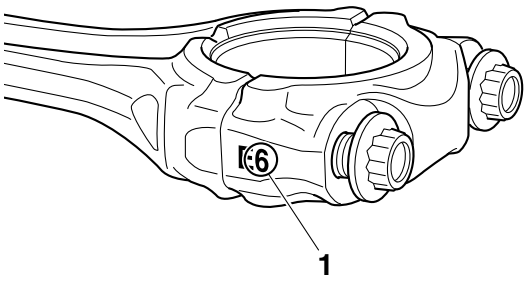
For example, if the connecting rod "P_1" and the crankshaft web "P_1" numbers are 6 and 2 respectively, then the bearing size for "P_1" is:

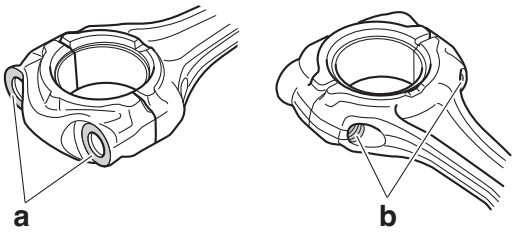
"P_1" (connecting rod) - "P_1" (crankshaft web)
= 6 - 2 = 4 (green)

Bearing color code
Code 1
Blue
Code 2
Black
Code 3
Brown
Code 4
Green
Code 5
Yellow
Code 6
Pink









EAS30751
INSTALLING THE CONNECTING ROD AND PISTON

The following procedure applies to all of the connecting rods and pistons.

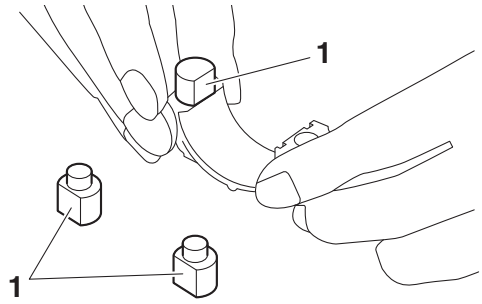
1. Install:
   - Big end bearings
   - Connecting rod cap
     (onto the connecting rod)

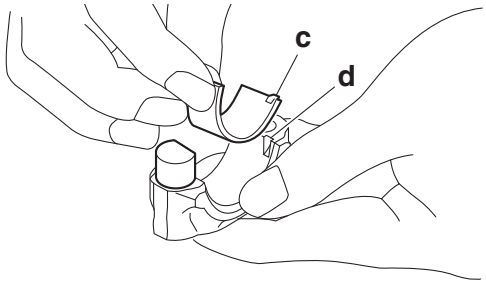
TIP

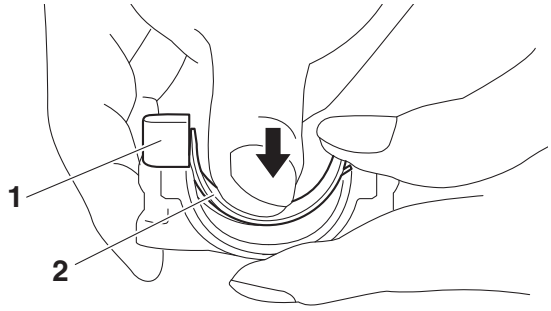
- Clean the big end bearings, crankshaft pins, and the connecting rods with oil cleaner, and then wait five minutes to dry the remaining oil cleaner component.
- When cleaning the connecting rod, clean the bearing surface “a” of the connecting rod bolt and threads “b”.
- Be sure to reinstall each big end bearing in its original place.
- From the 3 types, choose the connecting rod big end metal installer “1” that fits exactly, and install it to the connecting rod and connecting rod cap as shown in the illustration.
- Align the projections “c” on the big end bearings with the notches “d” in the connecting rods and connecting rod caps.
- Push the big end bearing “2” down and install it to the connecting rod and connecting rod cap.
- Make sure that the projection “e” on the connecting rod cap faces the same direction as the “o” mark “f” on the connecting rod.

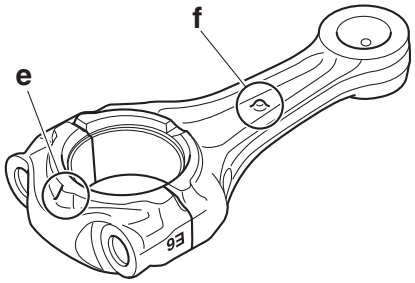


Connecting rod big end bearing installer
90890-04193
Connecting rod big end bearing installer
YM-04193









2. Tighten:
   • Connecting rod bolts New

ECA18390

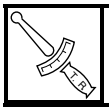
NOTICE

Tighten the connecting rod bolts using the plastic-region tightening angle method. Always install new bolts.

TIP

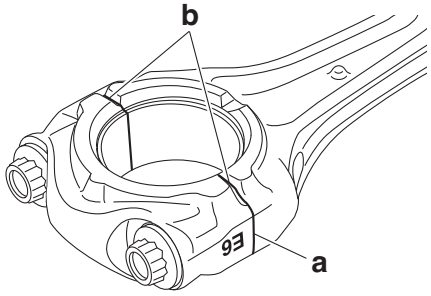
- Install by carrying out the following procedures in order to assemble in the most suitable condition.
- Install the new connecting rod bolt without cleaning and without any oil.

a. Replace the connecting rod bolts with new ones.
b. After installing the big end bearing, assemble the connecting rod and connecting rod cap without installing them onto the crankshaft.
c. Tighten the connecting rod bolt while checking that the sections shown “a” and “b” are flush with each other by touching the surface.

	**Connecting rod bolt** **30 N·m (3.0 kgf·m, 22 lb·ft)**

TIP

To install the connecting rod cap, care should be taken not to install it at an angle and the position should not be out of alignment.



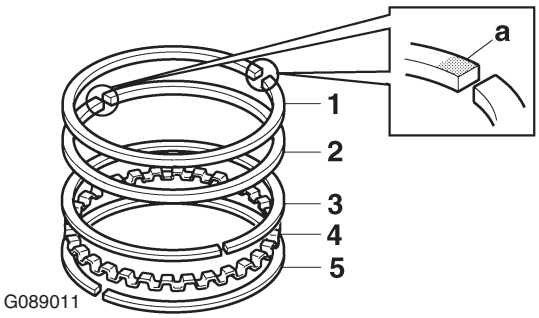
a. Side machined face
b. Thrusting faces

d. Loosen the connecting rod bolt, remove the connecting rod and connecting rod cap and install these parts to the crankshaft with the big end bearing kept in the current condition.

3. Install:
   • Top ring “1”
   (into the piston)
   • 2nd ring “2”
   • Upper oil ring rail “3”
   • Oil ring expander “4”
   • Lower oil ring rail “5”

TIP

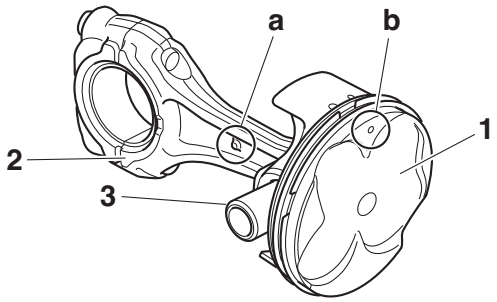
Be sure to install the piston rings so that the manufacturer’s marks or numbers “a” face up.



4. Install:
   • Piston “1”
   (onto the respective connecting rod “2”)
   • Piston pin “3”

TIP

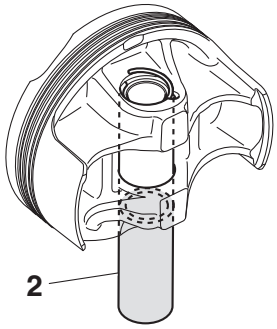
- Apply engine oil onto the piston pin.
- Make sure that the “o” mark “a” on the connecting rod faces left when the punch mark “b” on the piston is pointing up as shown.
- Reinstall each piston into its original cylinder.



5. Install:
   • Piston pin clip “1” New
   a. Install the piston pin clip “1” in the piston as shown in the illustration.

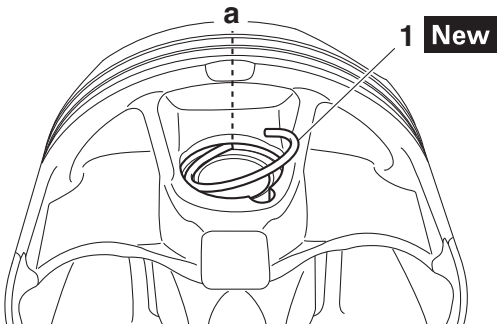
TIP

When installing the first piston pin clip, place other piston pin “2” under the piston pin as shown in the illustration.



TIP

Align the piston pin clip end with the position "a".



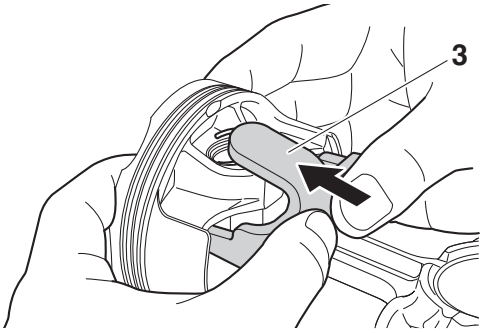
b. Push the piston pin clip insertion tool "3" in the direction as shown in the illustration and place the piston pin clip into the piston pin bore.

TIP

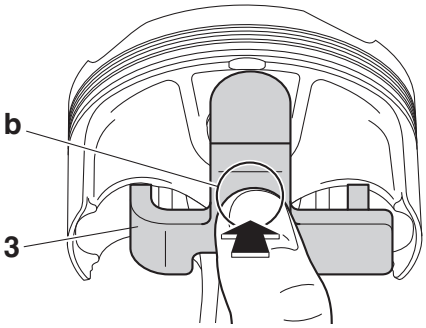
Push in the piston pin clip insertion tool while holding it parallel with the upper surface of the piston and rear surface of the piston pin clip insertion tool.



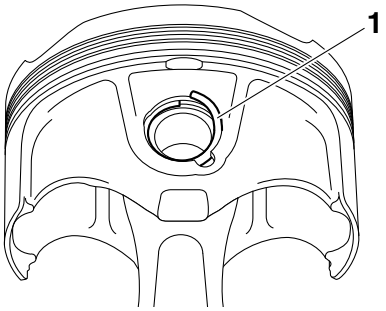
Piston pin clip insertion tool
90890-04173
YM-04173



c. Install the piston pin clip to the piston by pressing the portion "b" on the piston pin clip insertion tool "3" in the direction shown in the illustration.



d. Make sure the piston pin clip "1" is positioned as shown in the illustration.

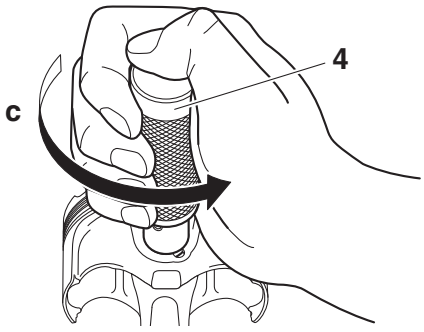


e. Install the piston pin clip installer tool "4" onto the piston.

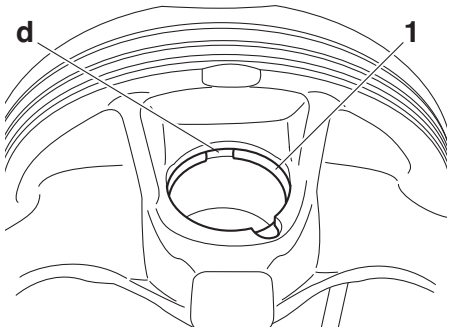


Piston pin clip installer tool
90890-04174
YM-04174

f. While holding the piston pin clip installer tool, turn it counterclockwise "c", to completely install the piston pin clip in the piston.



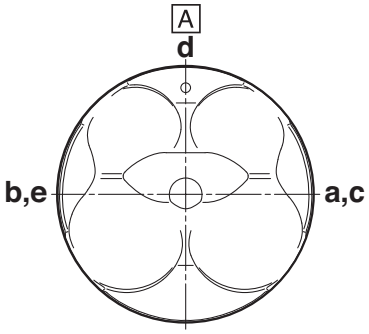
g. Make sure that the piston pin clip "1" is in the groove "d".



6. Lubricate:
   - Piston
   - Piston rings
   - Cylinder
   (with the recommended lubricant)

	Recommended lubricant **Engine oil**

7. Offset:
   - Piston ring end gaps



a. Top ring
b. 2nd ring
c. Upper oil ring rail
d. Oil ring expander
e. Lower oil ring rail
A. Exhaust side

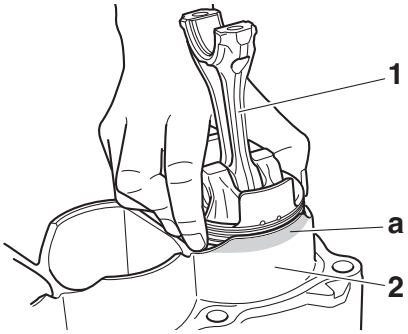
8. Lubricate:
   - Crankshaft pins
   - Connecting rod big end bearing inner surface and side surface
   (with the recommended lubricant)

	Recommended lubricant **Engine oil**

9. Install:
   - Piston assemblies “1”
   (into the cylinder “2”)

TIP

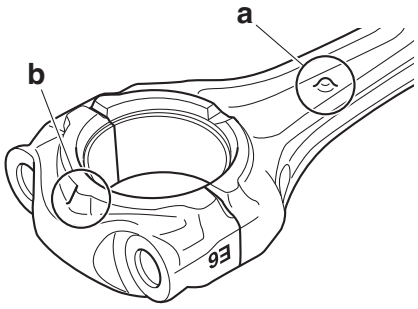
- While holding the piston rings with the hand, install the piston assembly into the cylinder from underneath.
- Install the piston assembly into the cylinder so that the piston ring end gap is aligned with the cylinder skirt “a”.



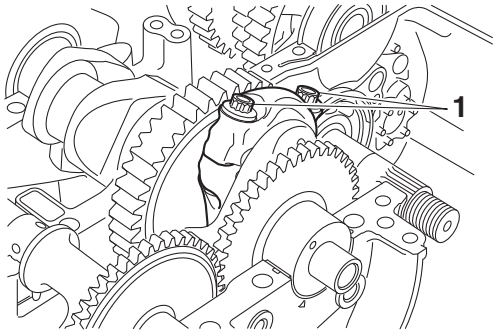
10. Install:
    - Cylinder gasket New
    - Dowel pins
    - Cylinder assembly
    - Connecting rod caps
    - Connecting rod bolts

TIP

- Make sure the “o” marks “a” on the connecting rods face towards the left side of the crankshaft.
- Make sure that the projection “b” on the connecting rod cap faces the same direction as the “o” mark “a” on the connecting rod.



11. Tighten:
    - Connecting rod bolts “1”



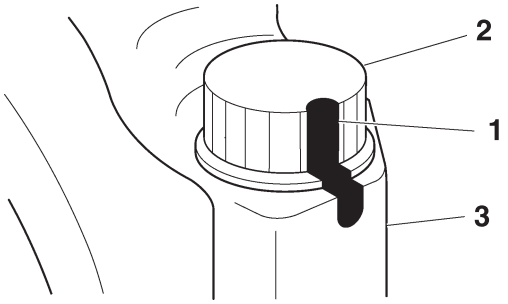
TIP

Tighten the connecting rod bolts using the following procedure.

a. Tighten the connecting rod bolts with a torque wrench.

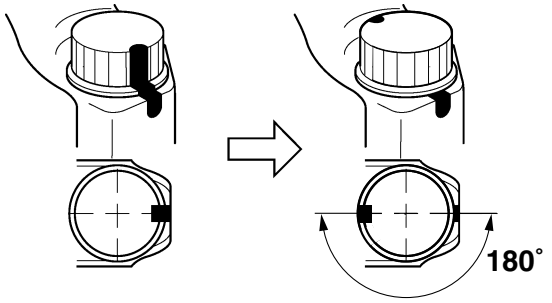
	Connecting rod bolt (1st) 25 N·m (2.5 kgf·m, 18 lb·ft)

b. Put a mark “1” on the corner of the connecting rod bolt “2” and the connecting rod cap “3”.



c. Tighten the connecting rod bolts further to reach the specified angle 175°–185° with torque wrench, and then confirm that the torque value is within the range of 40 N·m (4.0 kgf·m, 30 lb·ft) to 85 N·m (8.5 kgf·m, 63 lb·ft) with keeping the torque wrench 175°–185°. If torque is out of range, replace the connecting rod bolt to new one and repeat from step (a).

	Connecting rod bolt (final) Specified angle 175°–185°



EWA16610

WARNING

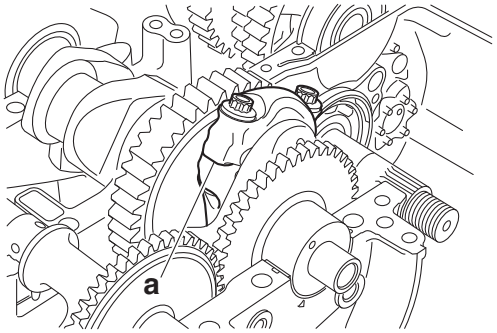
If the bolt is tightened more than the specified angle, do not loosen the bolt and then retighten it. Instead, replace the bolt with a new one and perform the procedure again.

d. After the installation, check that the section shown “a” is flush with each other by touching the surface.

EWA17120

WARNING

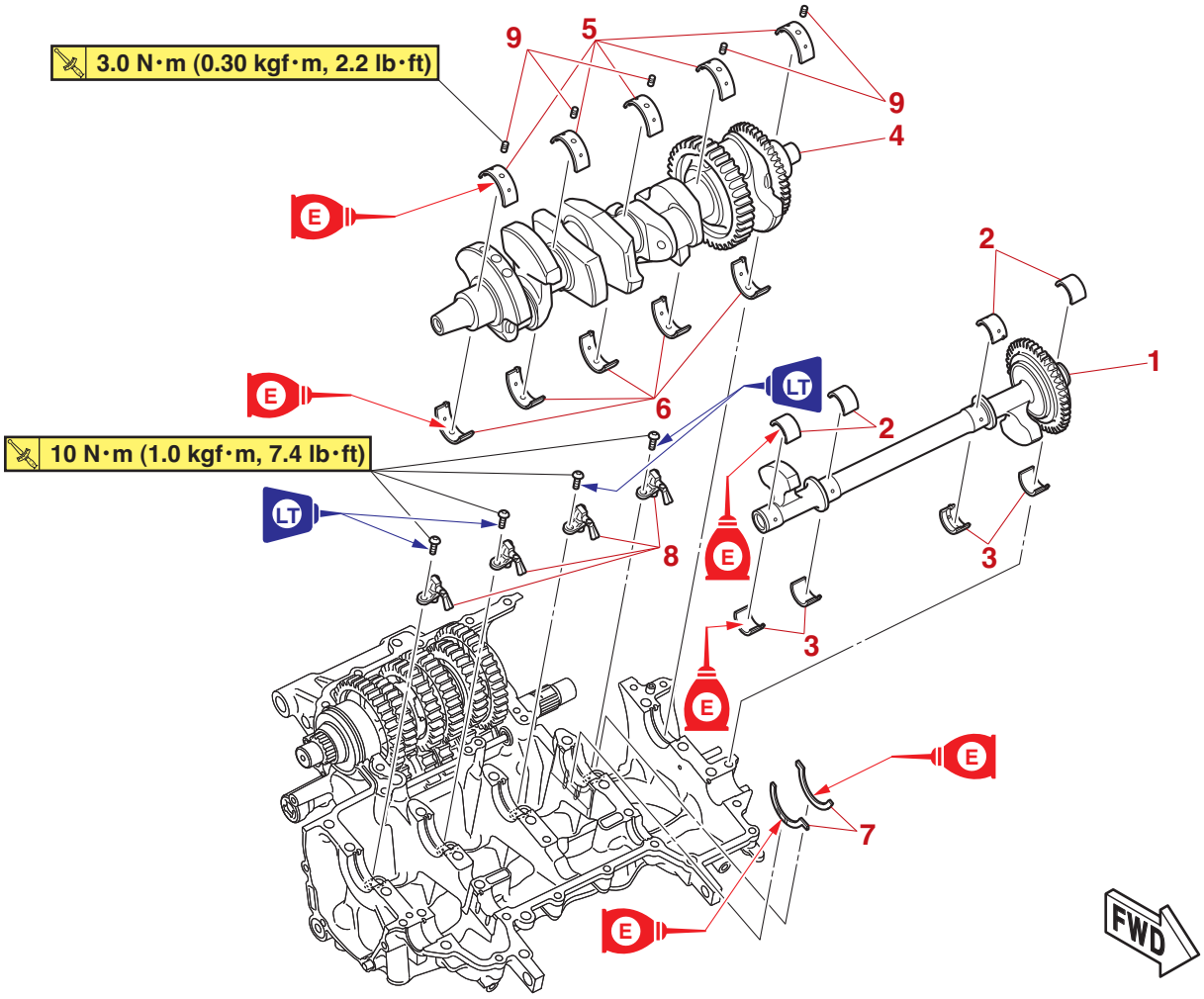
If the connecting rod and cap are not flush with each other, remove the connecting rod bolts and big end bearing and restart from step (1). In this case, make sure to replace the connecting rod bolts.



EAS20178

CRANKSHAFT AND BALANCER SHAFT

Removing the crankshaft and balancer shaft

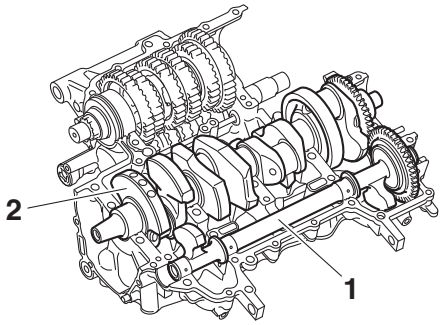


Order	Job/Parts to remove	Q'ty	Remarks
	Lower crankcase		Refer to "CRANKCASE" on page 5-71.
	Connecting rod		Refer to "REMOVING THE CONNECTING RODS AND PISTONS" on page 5-79.
1	Balancer shaft	1	
2	Balancer shaft journal lower bearing	4	
3	Balancer shaft journal upper bearing	4	
4	Crankshaft	1	
5	Crankshaft journal lower bearing	5	
6	Crankshaft journal upper bearing	5	
7	Thrust bearing	2	
8	Oil nozzle 1	4	
9	Oil nozzle 2	5	

EAS31171
REMOVING THE CRANKSHAFT AND BALANCER SHAFT
1. Remove:
   - Balancer shaft “1”
   - Balancer shaft journal bearing
   - Crankshaft assembly “2”
   - Crankshaft journal bearings

TIP

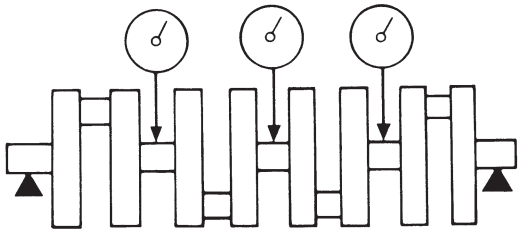
Identify the position of each balancer shaft journal bearings and crankshaft journal bearings so that it can be reinstalled in its original place.



EAS31174
CHECKING THE OIL NOZZLES
The following procedure applies to all of the oil nozzles.
1. Check:
   - Oil nozzle 1
   - Oil nozzle 2
     Damage/wear → Replace the oil nozzle.
   - Oil passage
     Obstruction → Blow out with compressed air.

EAS31075
CHECKING THE CRANKSHAFT
1. Measure:
   - Crankshaft runout
     Out of specification → Replace the crankshaft.

Runout limit
0.030 mm (0.0012 in)



G089018

2. Check:
   - Crankshaft journal surfaces
   - Crankshaft pin surfaces
     Scratches/wear → Replace the crankshaft.
   - Bearing surfaces
     Scratches/wear → Replace the crankshaft journal bearing.
3. Measure:
   - Crankshaft-journal-to-crankshaft-journal-bearing clearance
     Out of specification → Replace the crankshaft journal bearings.

Journal oil clearance
0.025–0.043 mm (0.0010–0.0017 in)

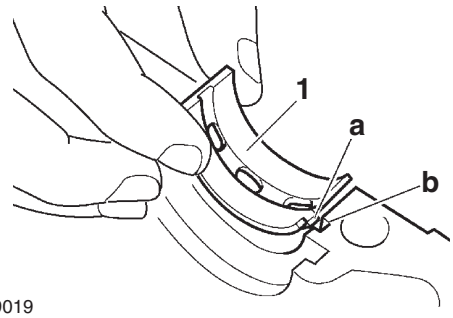
ECA13920
NOTICE

Do not interchange the crankshaft journal bearings. To obtain the correct crankshaft-journal-to-crankshaft-journal-bearing clearance and prevent engine damage, the crankshaft journal bearings must be installed in their original positions.

a. Clean the crankshaft journal bearings, crankshaft journals, and bearing portions of the crankcase.
b. Place the upper crankcase upside down on a bench.
c. Install the crankshaft journal upper bearings “1” and the crankshaft into the upper crankcase.

TIP

Align the projections “a” on the crankshaft journal upper bearings with the notches “b” in the upper crankcase.

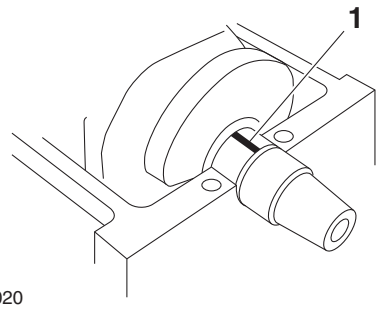


G089019

d. Put a piece of Plastigauge® “1” on each crankshaft journal.

TIP

Do not put the Plastigauge® over the oil hole in the crankshaft journal.

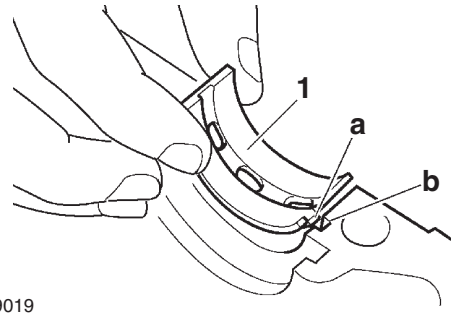


G089020

e. Install the crankshaft journal lower bearings "1" into the lower crankcase and assemble the crankcase halves.

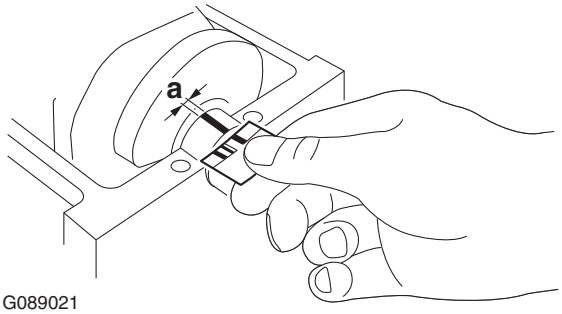
TIP

- Align the projections "a" of the crankshaft journal lower bearings with the notches "b" in the lower crankcase.
- Do not move the crankshaft until the clearance measurement has been completed.



G089019

f. Tighten the bolts to specification in the tightening sequence cast on the crankcase.
Refer to "CRANKCASE" on page 5-71.
g. Remove the lower crankcase and the crankshaft journal lower bearings.
h. Measure the compressed Plastigauge® width "a" on each crankshaft journal.
If the crankshaft-journal-to-crankshaft-journal-bearing clearance is out of specification, select replacement crankshaft journal bearings.



G089021

4. Select:
   - Crankshaft journal bearings (J_1–J_5)

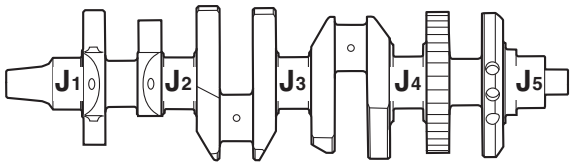
TIP

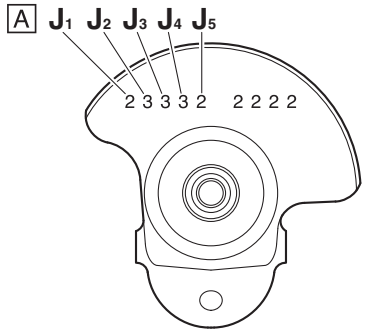
- The numbers "A" stamped into the crankshaft web and the numbers "B" stamped into the lower crankcase are used to determine the replacement crankshaft journal bearing sizes.
- "J_1"–"J_5" refer to the bearings shown in the crankshaft and lower crankcase illustration.

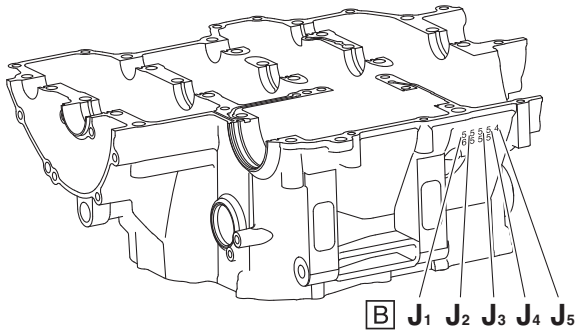
For example, if the crankcase "J_1" and crankshaft web "J_1" numbers are 5 and 2 respectively, then the bearing size for "J_1" is:

"J_1" (crankcase) - "J_1" (crankshaft web) + 3
= 5 - 2 + 3 = 6 (pink)

Bearing color code
Code 0
White
Code 1
Blue
Code 2
Black
Code 3
Brown
Code 4
Green
Code 5
Yellow
Code 6
Pink



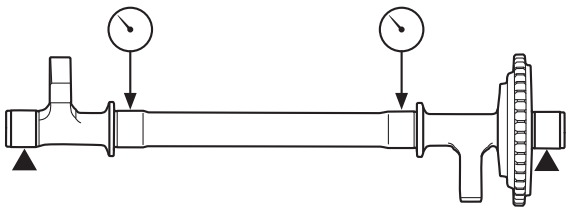




EAS31076
CHECKING THE BALANCER SHAFT

1. Measure:
   • Balancer shaft runout
   Out of specification → Replace the balancer shaft.

Balancer shaft runout limit
0.030 mm (0.0012 in)



2. Check:
   • Balancer shaft journal surfaces
   Scratches/wear → Replace the balancer shaft.
   • Bearing surfaces
   Scratches/wear → Replace the balancer shaft journal bearing.
3. Measure:
   • Balancer shaft journal-to-balancer shaft journal bearing clearance
   Out of specification → Replace the balancer shaft journal bearings.

Balancer shaft journal to balancer shaft bearing clearance
0.028–0.046 mm (0.0011–0.0018 in)

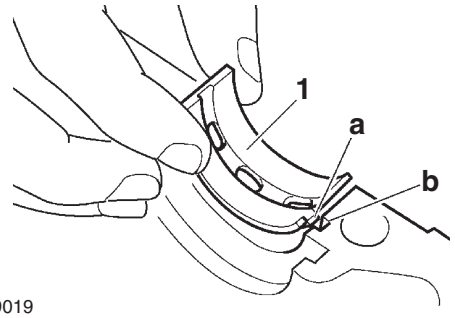
ECA18400
NOTICE

Do not interchange the balancer shaft journal bearings. To obtain the correct balancer shaft-journal-to-balancer shaft-journal-bearing clearance and prevent engine damage, the balancer shaft journal bearings must be installed in their original positions.

a. Clean the balancer shaft journal bearings, balancer shaft journals, and bearing portions of the crankcase.
b. Place the upper crankcase upside down on a bench.
c. Install the balancer shaft journal upper bearings “1” and the balancer shaft into the upper crankcase.

TIP

Align the projections “a” on the balancer shaft journal upper bearings with the notches “b” in the upper crankcase.

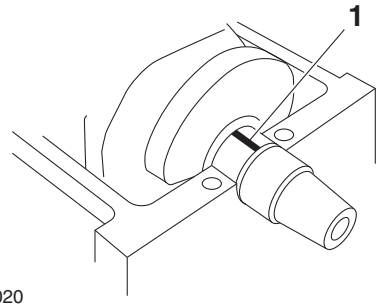


G089019

d. Put a piece of Plastigauge® “1” on each balancer shaft journal.

TIP

Do not put the Plastigauge® over the oil hole in the balancer shaft journal.

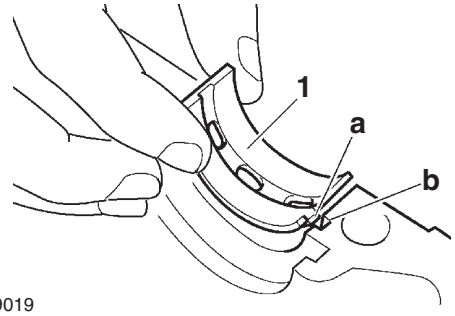


G089020

e. Install the balancer shaft journal lower bearings “1” into the lower crankcase and assemble the crankcase halves.

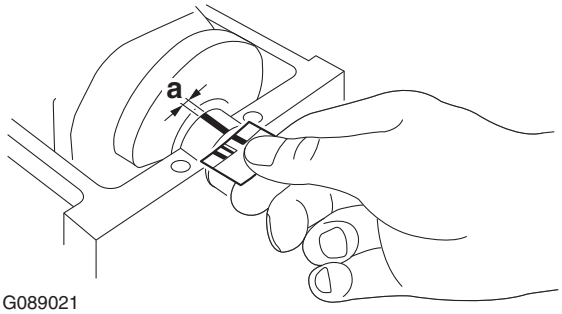
TIP

- Align the projections “a” of the balancer shaft journal lower bearings with the notches “b” in the crankcase.
- Do not move the balancer shaft until the clearance measurement has been completed.



G089019

f. Tighten the bolts to specification in the tightening sequence cast on the crankcase. Refer to "CRANKCASE" on page 5-71.
g. Remove the lower crankcase and the balancer shaft journal lower bearings.
h. Measure the compressed Plastigauge® width "a" on each balancer shaft journal. If the balancer shaft-journal-to-balancer shaft-journal-bearing clearance is out of specification, select replacement balancer shaft journal bearings.



G089021

4. Select:
   • Balancer shaft journal bearing (J_1–J_4)

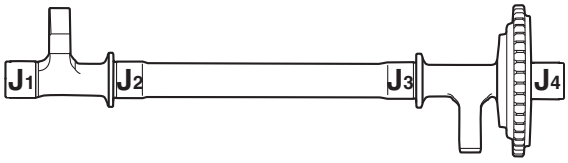
TIP

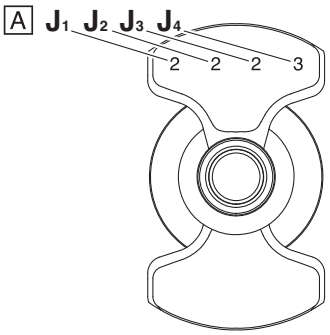
- The numbers "A" stamped into the balancer shaft web and the numbers "B" stamped into the lower crankcase are used to determine the replacement balancer shaft journal bearing sizes.
- "J_1"–"J_4" refer to the bearings shown in the balancer shaft and lower crankcase illustration.

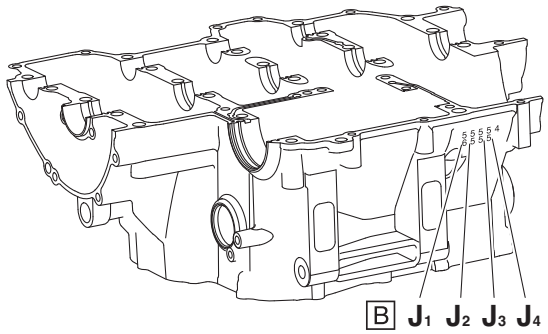
For example, if the crankcase "J_1" and balancer shaft web "J_1" numbers are 6 and 2 respectively, then the bearing size for "J_1" is:

"J_1" (crankcase) - "J_1" (balancer shaft web) - 1 = 6 - 2 - 1 = 3 (brown)

Bearing color code
Code 0
White
Code 1
Blue
Code 2
Black
Code 3
Brown
Code 4
Green
Code 5
Yellow
Code 6
Pink







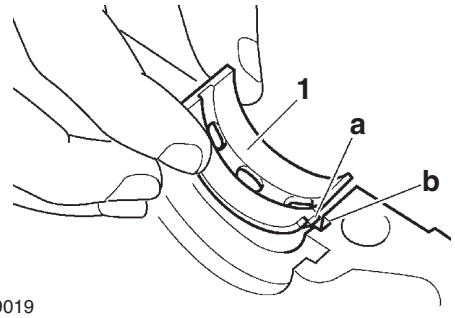
EAS31077
INSTALLING THE CRANKSHAFT

1. Install:
   • Crankshaft journal upper bearings (into the upper crankcase)

- Crankshaft journal lower bearings (into the lower crankcase)
- Crankshaft

TIP

- Align the projections “a” on the crankshaft journal bearings “1” with the notches “b” in the crankcase.
- Be sure to install each crankshaft journal bearings in its original place.



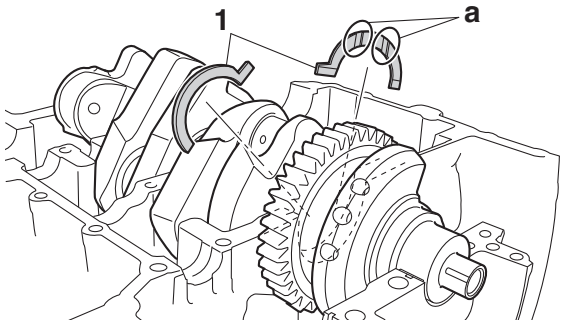
G089019

EAS31799
INSTALLING THE THRUST BEARING

1. Install:
   - Thrust bearing “1”

TIP

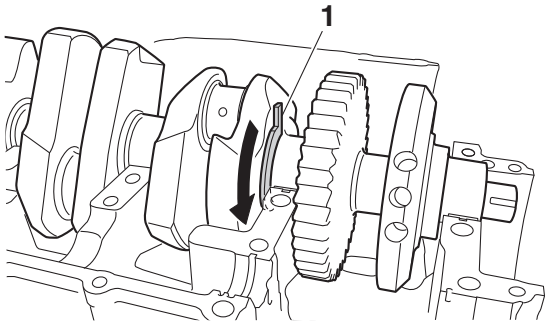
- Install the thrust bearings to the both side of the journal #4 of the upper crankcase.
- The thickness of the thrust bearing is only one. No need to adjust the clearance between the thrust bearing and the crankshaft.
- Install the thrust bearing with the grooves “a” side is facing the crankshaft.
- Apply engine oil on the grooves “a” side of the thrust bearing.



a. Insert the thrust bearing “1” into the slot of the upper crankcase as shown in the illustration and slide it in the direction of the arrow.

TIP

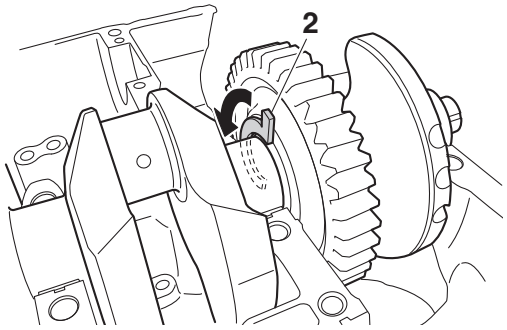
When installing the thrust bearing, shift the crankshaft to the left to widen the gap between the crankshaft and the crankcase.



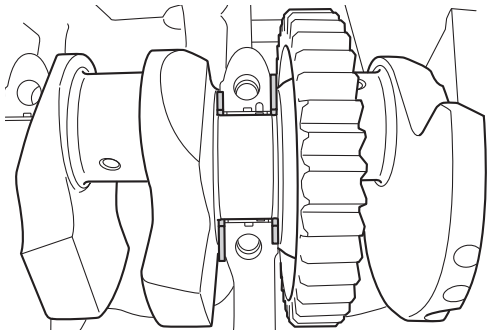
b. Insert the thrust bearing “2” into the slot of the upper crankcase as shown in the illustration and slide it in the direction of the arrow.

TIP

When installing thrust bearing “2”, shift the crankshaft to the right to widen the gap between the crankshaft and the crankcase.



c. Check that the thrust bearing is inserted properly into the groove of the crankcase.



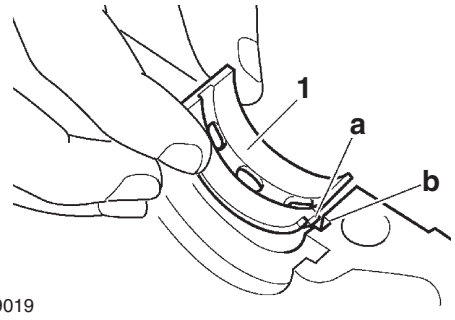
EAS31172
INSTALLING THE BALANCER ASSEMBLY

1. Install:
   - Balancer shaft journal upper bearings (into the upper crankcase)

• Balancer shaft journal lower bearings (into the lower crankcase)

TIP

- Align the projections “a” on the balancer shaft journal bearings “1” with the notches “b” in the crankcases.
- Be sure to install each balancer shaft journal bearing in its original place.

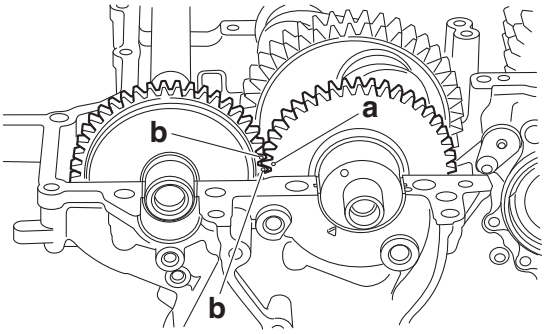


G089019

2. Install:
   • Balancer shaft

TIP

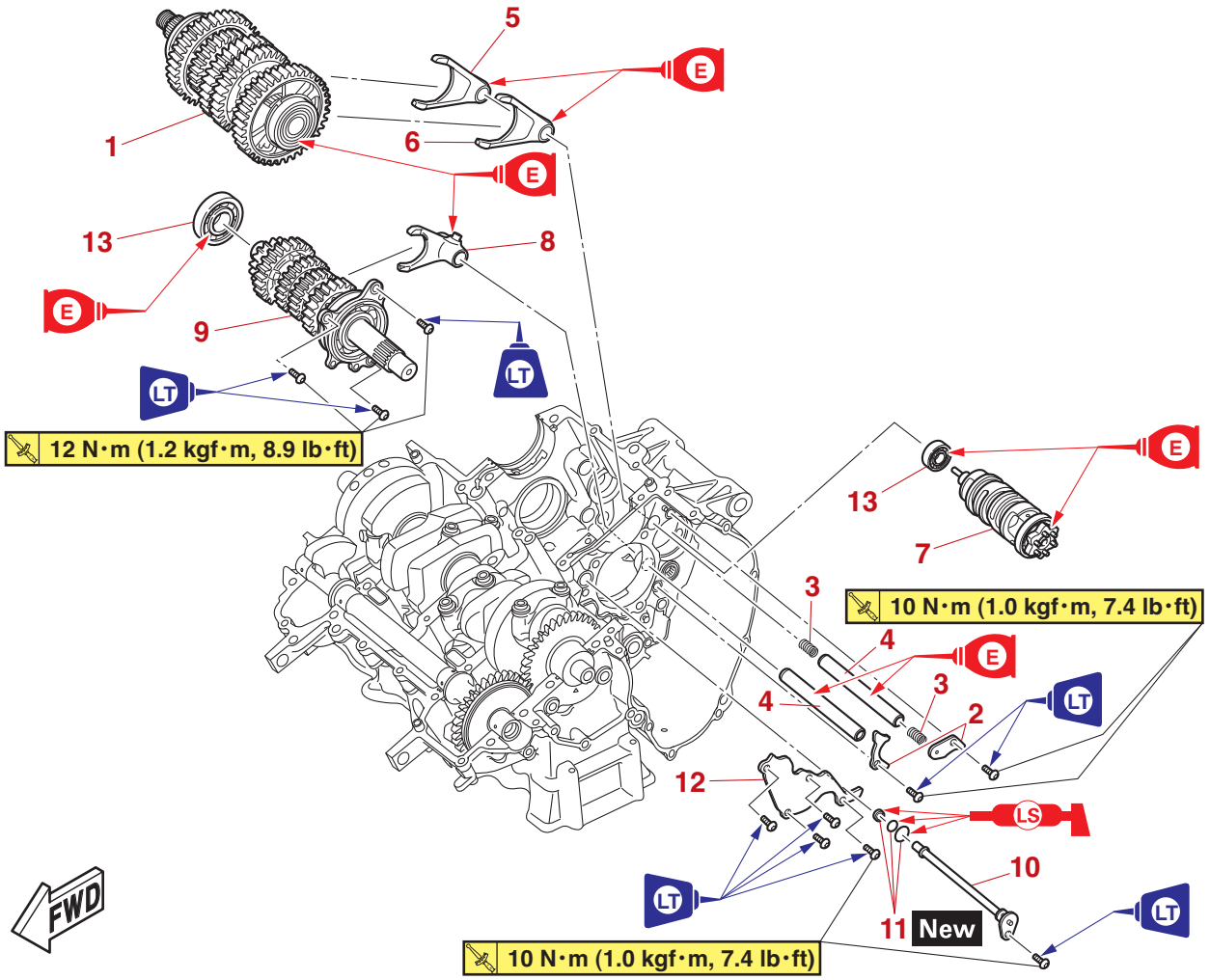
Install by aligning the crankshaft match mark “a” and the balancer shaft match marks “b”.



EAS20062

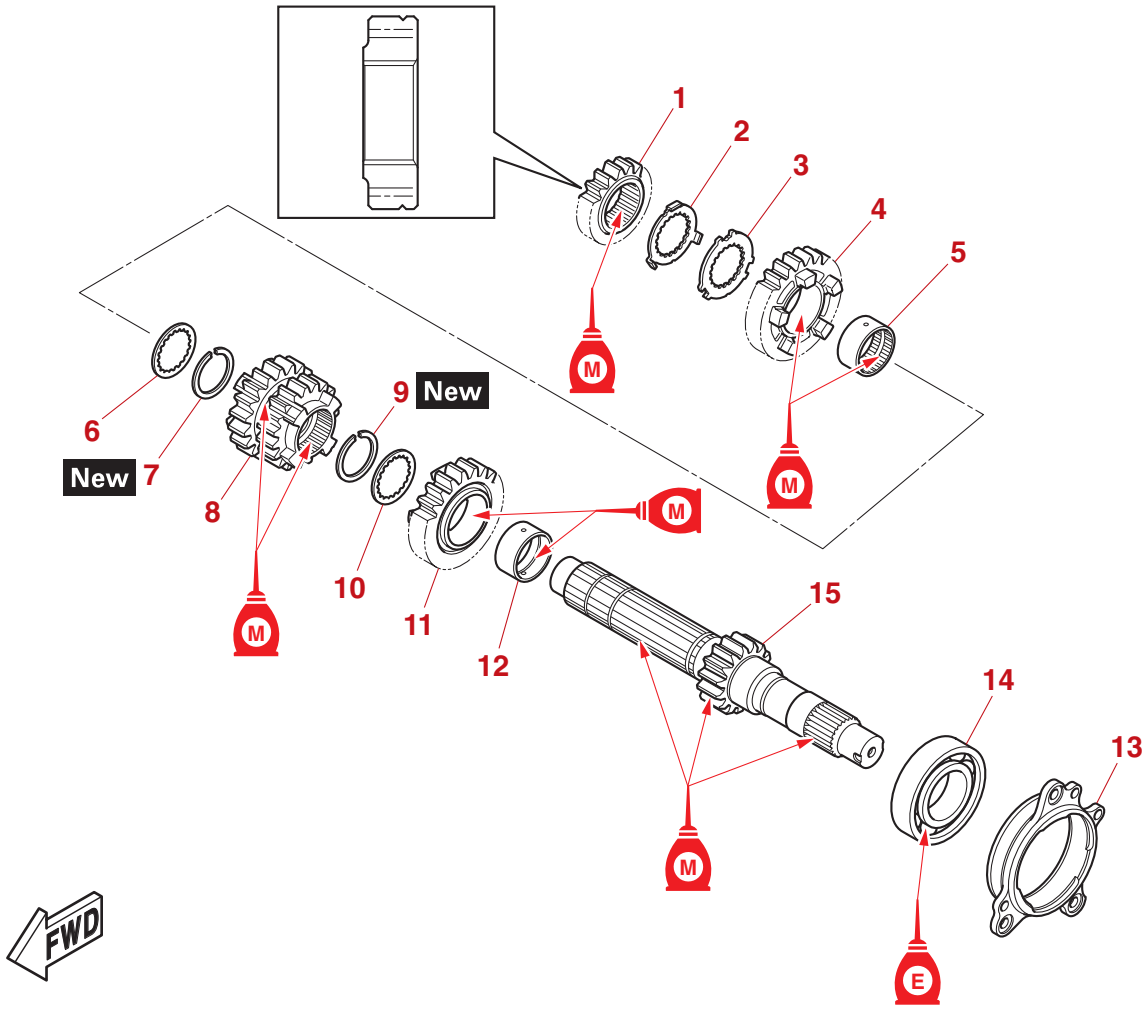
TRANSMISSION

Removing the transmission, shift drum assembly, and shift forks



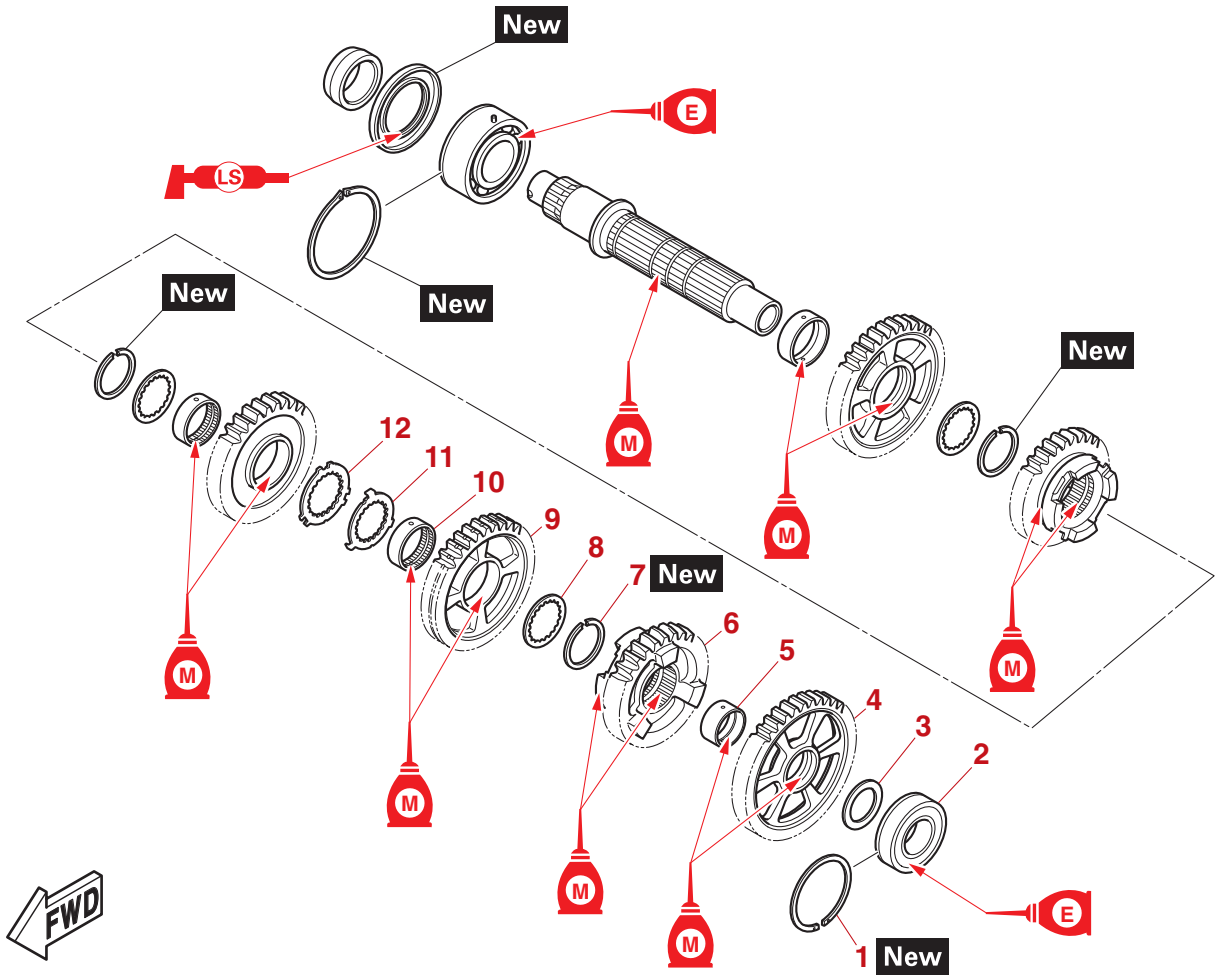
Order	Job/Parts to remove	Q'ty	Remarks
	Lower crankcase		Refer to "CRANKCASE" on page 5-71.
1	Drive axle assembly	1	
2	Shift drum retainer	2	
3	Spring	2	
4	Shift fork guide bar	2	
5	Shift fork-L	1	
6	Shift fork-R	1	
7	Shift drum assembly	1	
8	Shift fork-C	1	
9	Main axle assembly	1	
10	Oil delivery pipe 3	1	
11	O-ring	3	
12	Oil baffle plate	1	
13	Bearing	2	

Disassembling the main axle assembly



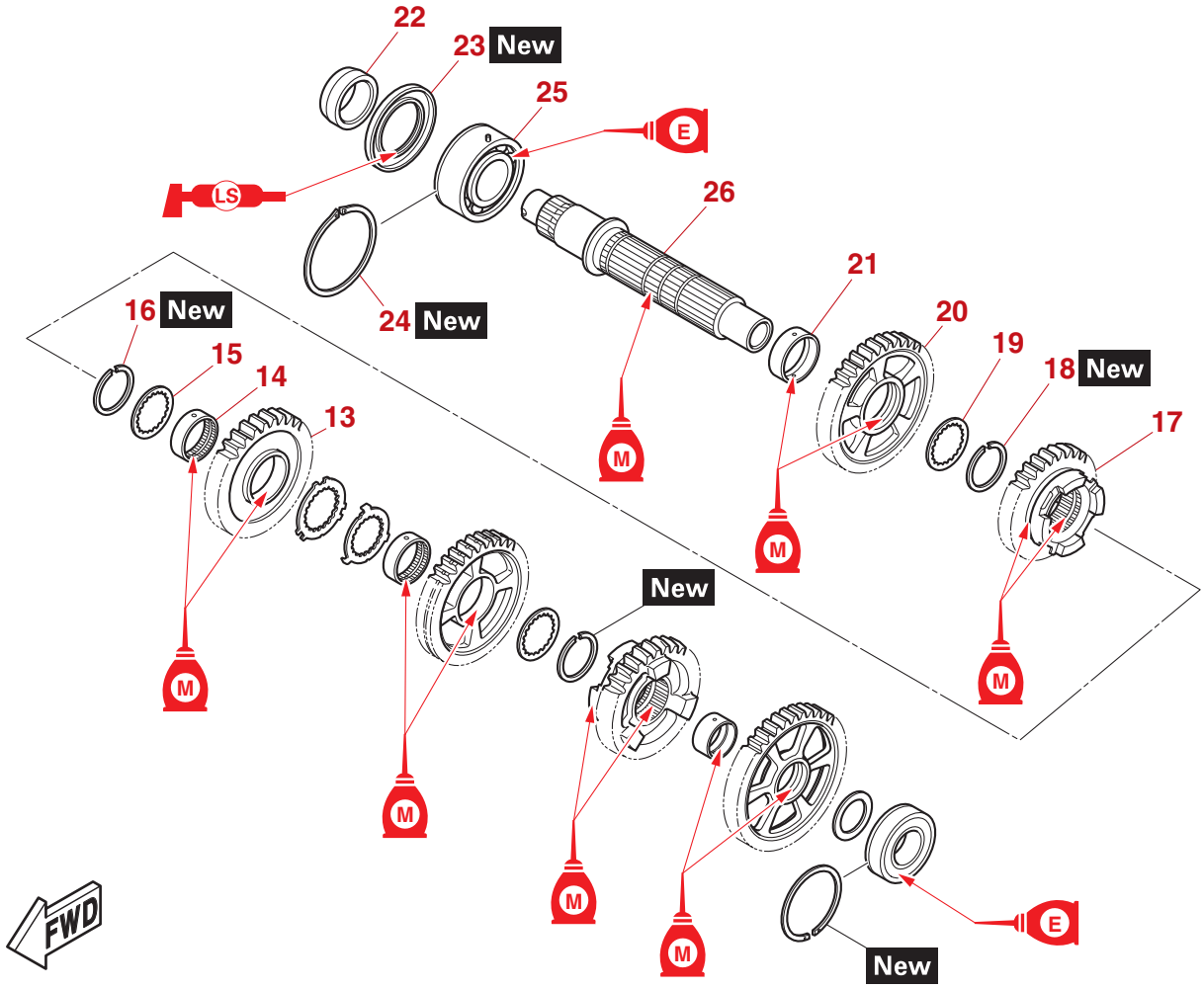
Order	Job/Parts to remove	Q'ty	Remarks
1	2nd pinion gear	1	Make sure the chamfered side of the pinion gear faces to the left.
2	Toothed lock washer	1	
3	Toothed lock washer retainer	1	
4	6th pinion gear	1	
5	Collar	1	
6	Washer	1	
7	Circlip	1	
8	3rd pinion gear	1	
9	Circlip	1	
10	Washer	1	
11	5th pinion gear	1	
12	Collar	1	
13	Bearing housing	1	
14	Bearing	1	
15	Main axle	1	

Disassembling the drive axle assembly



Order	Job/Parts to remove	Q'ty	Remarks
1	Circlip	1	
2	Bearing	1	
3	Washer	1	
4	1st wheel gear	1	
5	Collar	1	
6	5th wheel gear	1	
7	Circlip	1	
8	Washer	1	
9	3rd wheel gear	1	
10	Collar	1	
11	Toothed lock washer	1	
12	Toothed lock washer retainer	1	

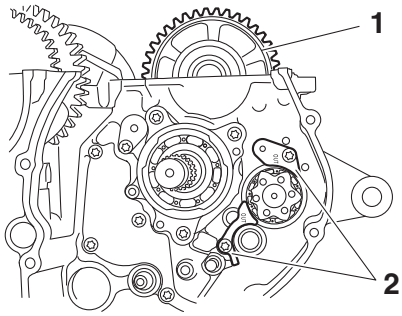
Disassembling the drive axle assembly



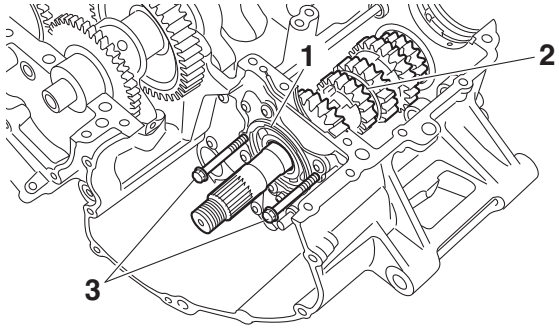
Order	Job/Parts to remove	Q'ty	Remarks
13	4th wheel gear	1	
14	Collar	1	
15	Washer	1	
16	Circlip	1	
17	6th wheel gear	1	
18	Circlip	1	
19	Washer	1	
20	2nd wheel gear	1	
21	Collar	1	
22	Collar	1	
23	Oil seal	1	
24	Circlip	1	
25	Bearing	1	
26	Drive axle	1	

EAS30430
REMOVING THE TRANSMISSION

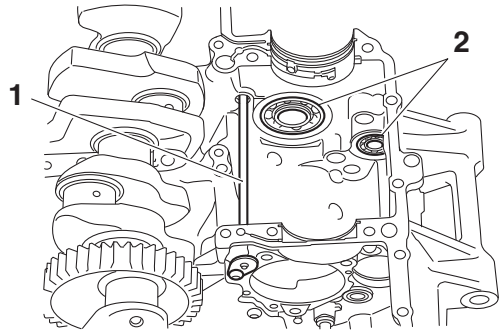
1. Remove:
   - Drive axle assembly “1”
   - Shift drum retainers “2”
   - Shift fork guide bars
   - Shift fork-L
   - Shift fork-R
   - Shift drum assembly
   - Shift fork-C



2. Remove:
   - Bearing housing “1”
   - Main axle assembly “2”
     a. Insert two bolts “3” of the proper size, as shown in the illustration, into the main axle assembly bearing housing.



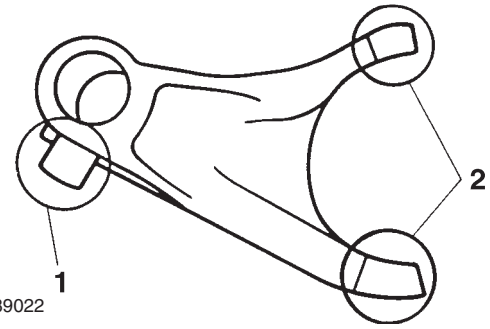
     b. Tighten the bolts until they contact the crankcase surface.
     c. Continue tightening the bolts until the main axle assembly comes free from the upper crankcase.
3. Remove:
   - Oil delivery pipe 3 “1”
   - Bearings “2”



EAS30431
CHECKING THE SHIFT FORKS

The following procedure applies to all of the shift forks.

1. Check:
   - Shift fork cam follower “1”
   - Shift fork pawl “2”
     Bends/damage/scoring/wear → Replace the shift fork.



G089022

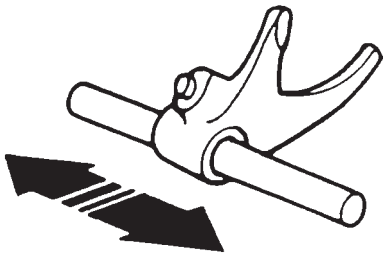
2. Check:
   - Shift fork guide bar
     Roll the shift fork guide bar on a flat surface.
     Bends → Replace.

EWA12840

⚠ WARNING

Do not attempt to straighten a bent shift fork guide bar.

3. Check:
   - Shift fork movement
     (along the shift fork guide bar)
     Rough movement → Replace the shift forks and shift fork guide bar as a set.

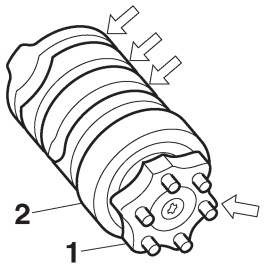

G089023

4. Check:
   - Shift fork guide bar (for the shift fork-C) oil passage
     Clogging/damage → Replace the shift fork guide bar (for the shift fork-C).

EAS30432
CHECKING THE SHIFT DRUM ASSEMBLY

1. Check:
   - Shift drum groove
     Damage/scratches/wear → Replace the shift drum assembly.

- Shift drum segment “1”
  Damage/wear → Replace the shift drum assembly.
- Shift drum bearing “2”
  Damage/pitting → Replace the shift drum assembly.

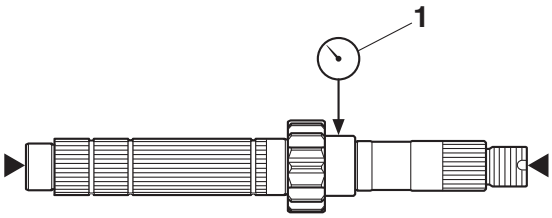


G089024

EAS30433
CHECKING THE TRANSMISSION

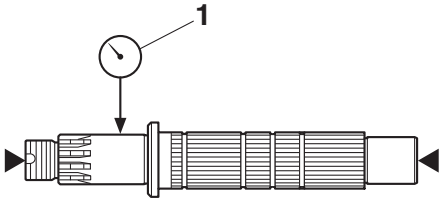
1. Measure:
   - Main axle runout
     (with a centering device and dial gauge “1”)
     Out of specification → Replace the main axle.

	Main axle runout limit **0.08 mm (0.0032 in)**

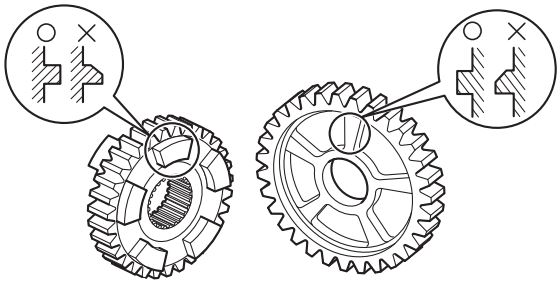


2. Measure:
   - Drive axle runout
     (with a centering device and dial gauge “1”)
     Out of specification → Replace the drive axle.

	Drive axle runout limit **0.08 mm (0.0032 in)**



3. Check:
   - Transmission gears
     Blue discoloration/pitting/wear → Replace the defective gear(s).
   - Transmission gear dogs
     Cracks/damage/rounded edges → Replace the defective gear(s).



G089025

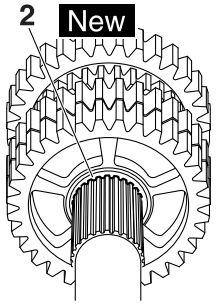
4. Check:
   - Transmission gear engagement
     (each pinion gear to its respective wheel gear)
     Incorrect → Reassemble the transmission axle assemblies.
5. Check:
   - Transmission gear movement
     Rough movement → Replace the defective part(s).
6. Check:
   - Circlips
     Bends/damage/looseness → Replace.

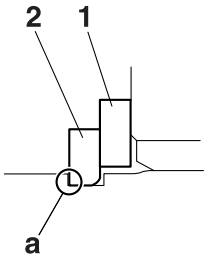
EAS30435
ASSEMBLING THE MAIN AXLE AND DRIVE AXLE

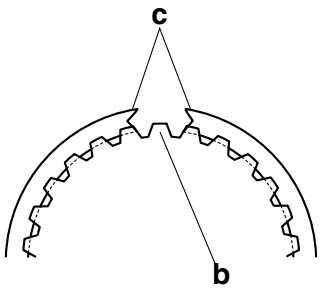
1. Install:
   - Toothed washer “1”
   - Circlip “2” New

TIP

- Be sure the circlip sharp-edged corner “a” is positioned opposite side to the toothed washer and gear.
- Install the circlip so that a spline “b” is in the center of the gap between the circlip ends “c” as shown.



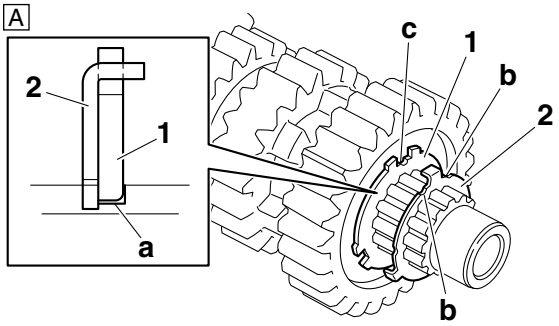


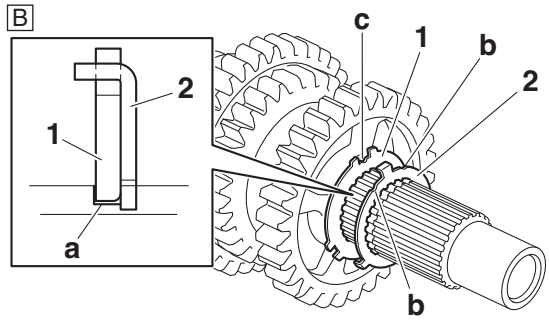


2. Install:
   - Toothed lock washer retainer “1”
   - Toothed lock washer “2”

TIP

- With the toothed lock washer retainer in the groove “a” in the axle, align the projection on the retainer with an axle spline, and then install the toothed lock washer.
- Be sure to align the projection on the toothed lock washer that is between the alignment marks “b” with the alignment mark “c” on the retainer.





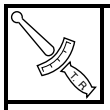
A. Main axle
B. Drive axle

EAS30438
INSTALLING THE TRANSMISSION

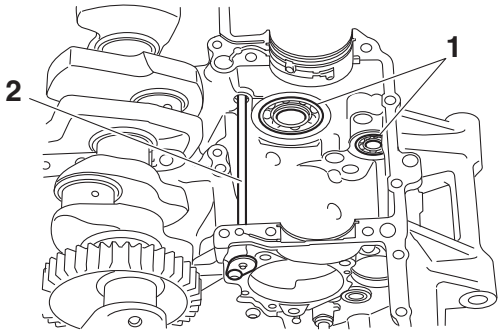
1. Install:
   - Bearings “1”
   - Oil delivery pipe 3 “2”

TIP

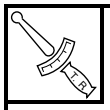
Face the seal side of bearing to the outside.



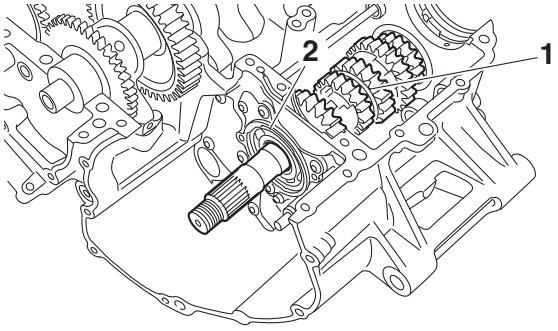
Oil delivery pipe 3 bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)
LOCTITE®



2. Install:
   - Main axle assembly “1”
   - Bearing housing “2”



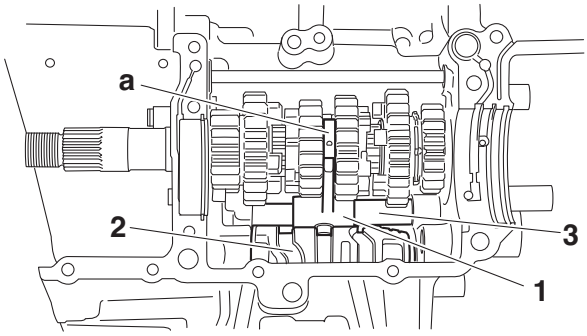
Main axle bearing housing bolt
12 N·m (1.2 kgf·m, 8.9 lb·ft)
LOCTITE®

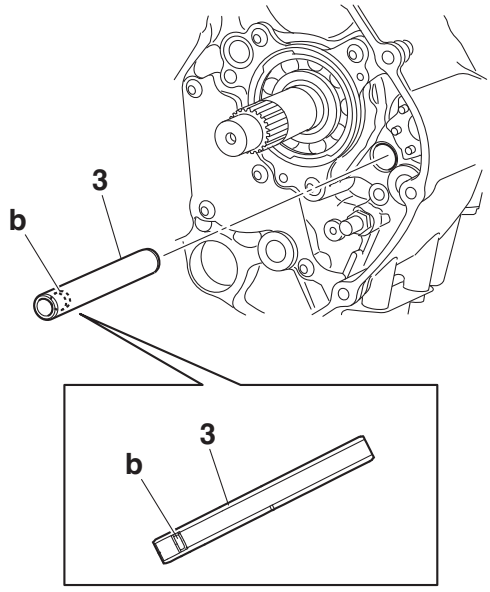


3. Install:
   • Shift fork-C “1”
   • Shift drum assembly “2”
   • Shift fork guide bar “3”

TIP

- The embossed marks on the shift forks should face towards the right side of the engine and be in the following sequence: “R”, “C”, “L”.
- Carefully position the shift forks so that they are installed correctly into the transmission gears.
- Install shift fork-C into the groove “a” in the 3rd pinion gear on the main axle.
- Install the shift fork guide bar “3” in the crankcase with the cap “b” facing toward the direction shown in the illustration.



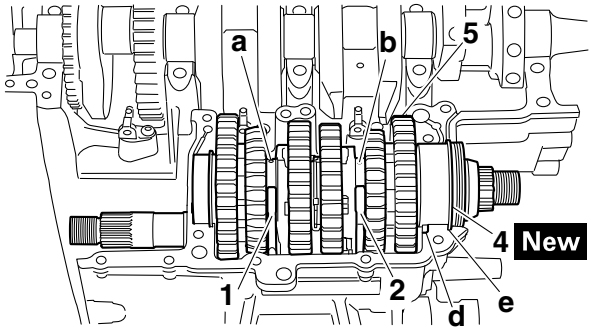


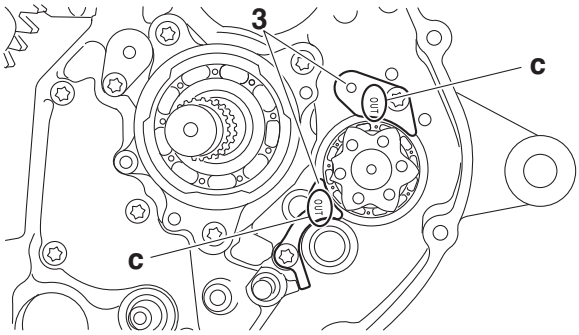
4. Install:
   • Shift fork-R “1”
   • Shift fork-L “2”
   • Shift fork guide bar
   • Shift drum retainers “3”
   • Bearing
   • Oil seal New
   • Circlip “4” New
   • Drive axle assembly “5”

Shift drum retainer bolt
10 N·m (1.0 kgf·m, 7.4 lb·ft)
LOCTITE®

TIP

- Install shift fork-R into the groove “a” in the 5th wheel gear and shift fork-L into the groove “b” in the 6th wheel gear on the drive axle.
- Install the shift drum retainer with its “OUT” mark “c” facing outward.
- Make sure that the projection “d” on the drive axle assembly is inserted into the slot in the crankcase.
- Make sure that the drive axle bearing circlip “4” is inserted into the groove “e” in the upper crankcase.





5. Check:
   • Transmission
     Rough movement → Repair.

TIP

Oil each gear, shaft, and bearing thoroughly.

COOLING SYSTEM

COOLING SYSTEM DIAGRAMS 6-1

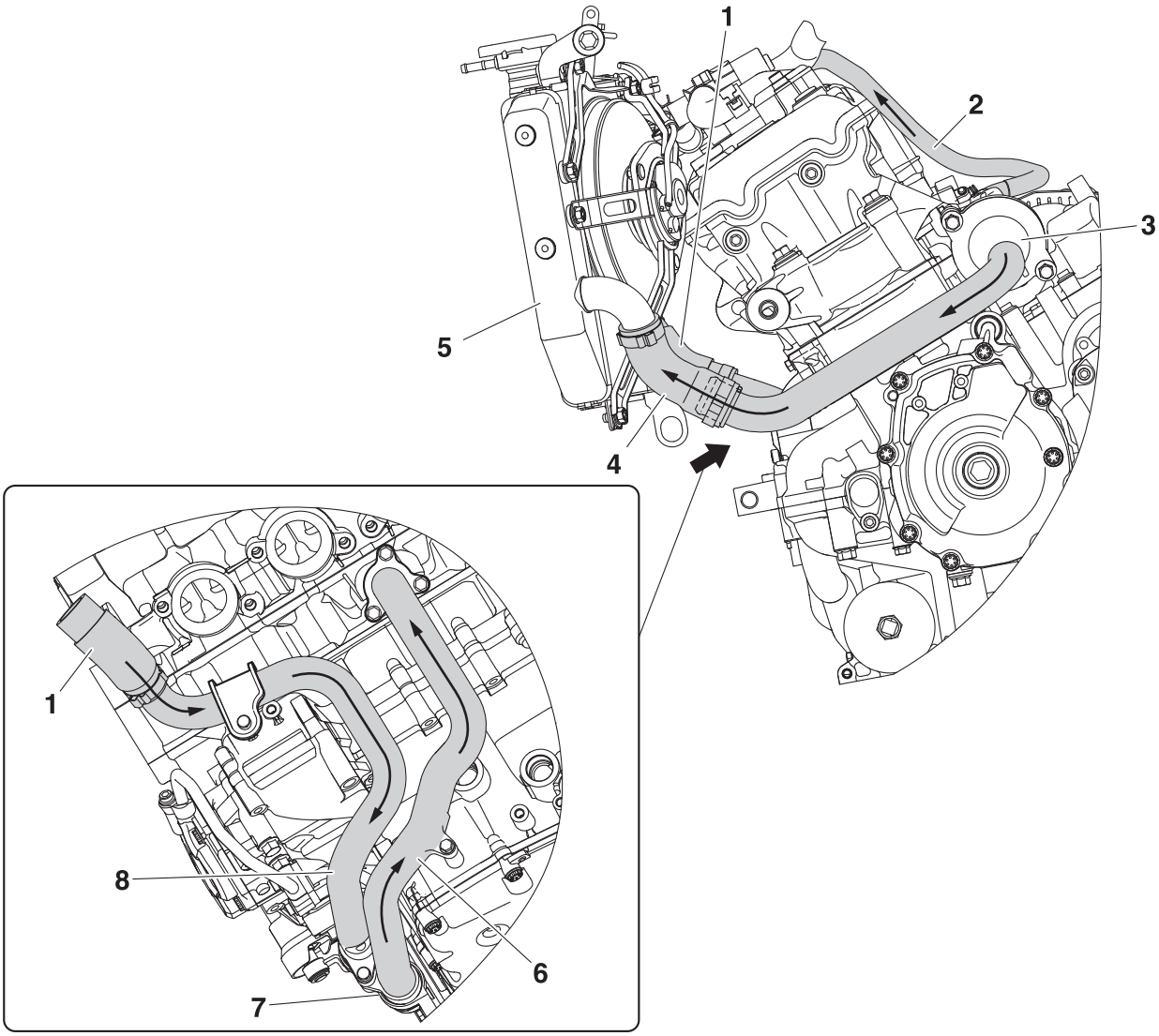
RADIATOR 6-3
- REMOVING THE RADIATOR 6-5
- CHECKING THE RADIATOR 6-5
- INSTALLING THE RADIATOR 6-5

OIL COOLER 6-7
- CHECKING THE OIL COOLER 6-8
- INSTALLING THE OIL COOLER 6-8

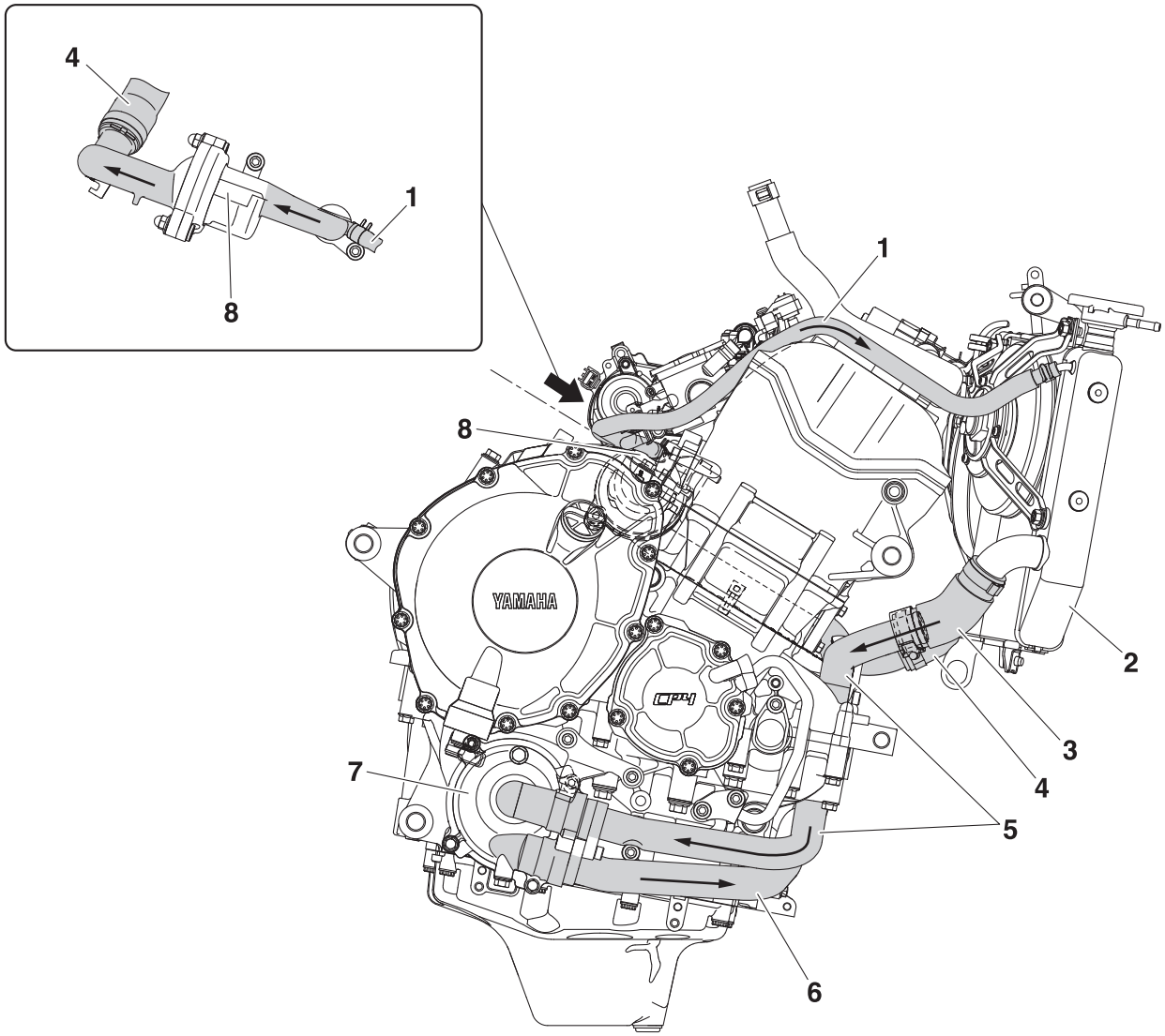
THERMOSTAT 6-9
- REMOVING THE THERMOSTAT ASSEMBLY 6-11
- CHECKING THE THERMOSTAT 6-11
- ASSEMBLING THE THERMOSTAT ASSEMBLY 6-11
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- INSTALLING THE WATER PUMP 6-16

EAS20299
COOLING SYSTEM DIAGRAMS



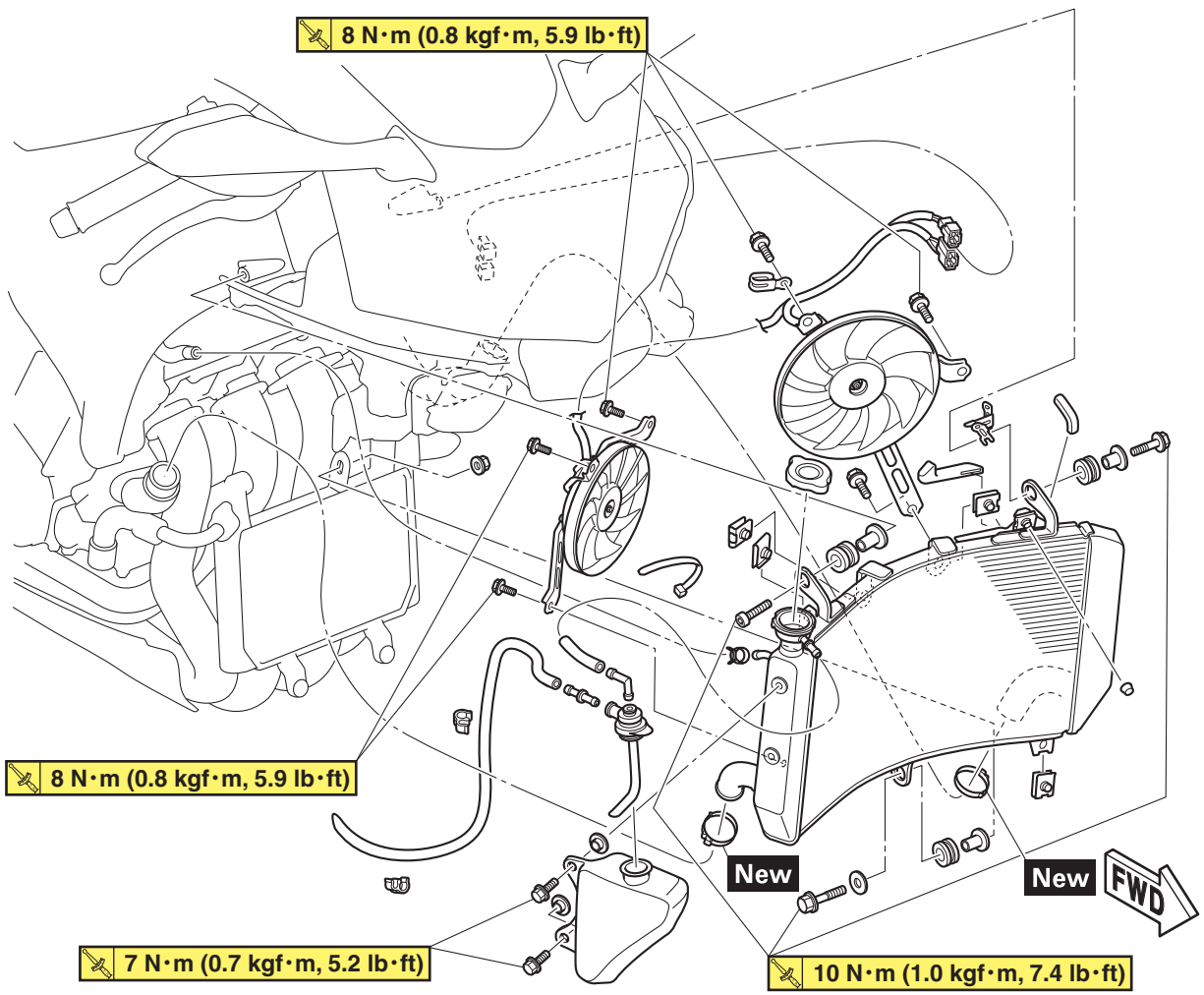
1. Radiator outlet hose
2. Cooling system air bleed hose
3. Thermostat assembly
4. Radiator inlet hose
5. Radiator
6. Water pump outlet pipe
7. Water pump
8. Water pump inlet pipe



1. Cooling system air bleed hose
2. Radiator
3. Radiator outlet hose
4. Radiator inlet hose
5. Water pump inlet pipe
6. Water pump outlet pipe
7. Water pump
8. Thermostat assembly

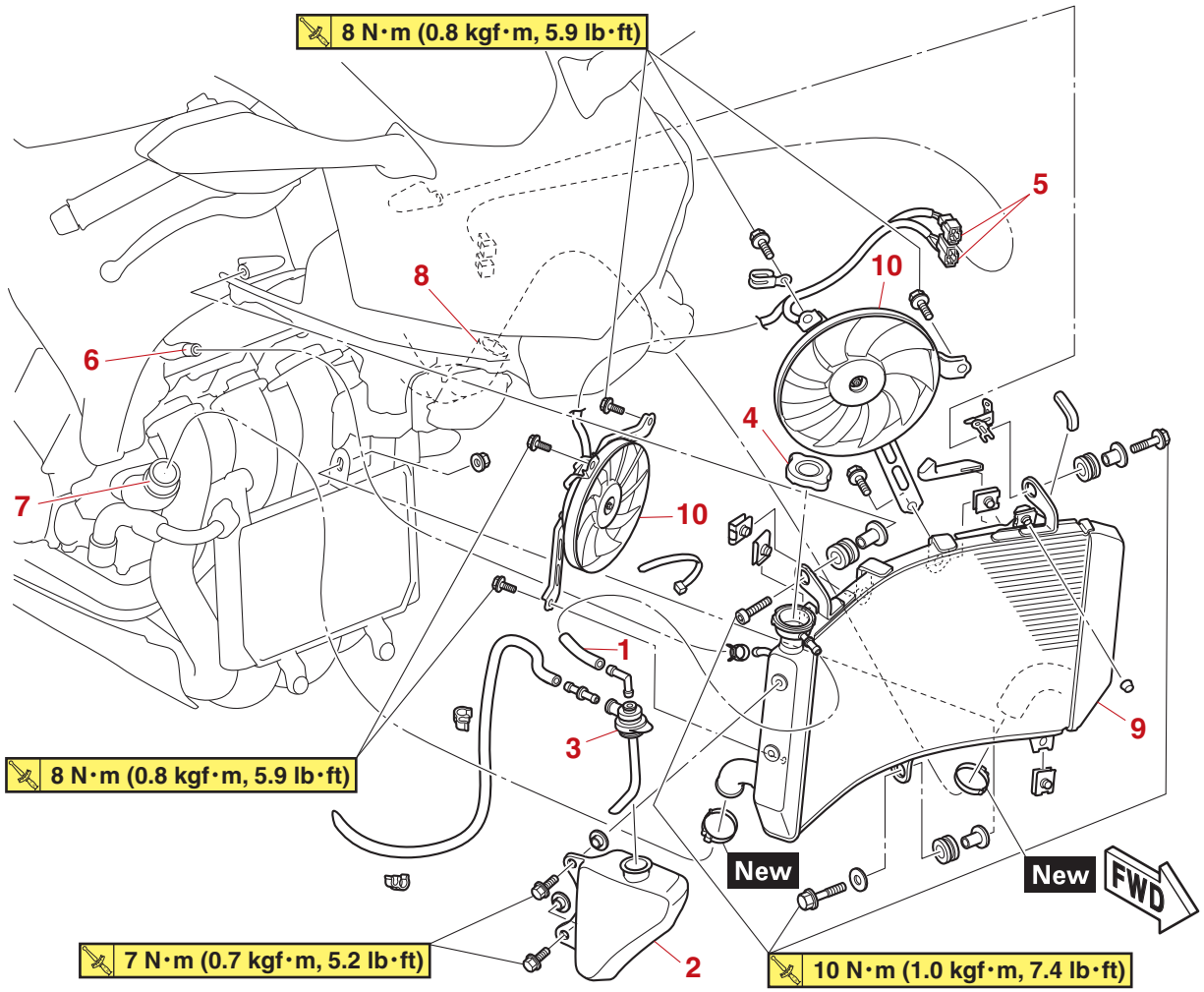
EAS20063
RADIATOR

Removing the radiator



Order	Job/Parts to remove	Q'ty	Remarks
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front side cowling inner panel		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Electrical components tray		Refer to "GENERAL CHASSIS (9)" on page 4-34.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" on page 3-32.

Removing the radiator



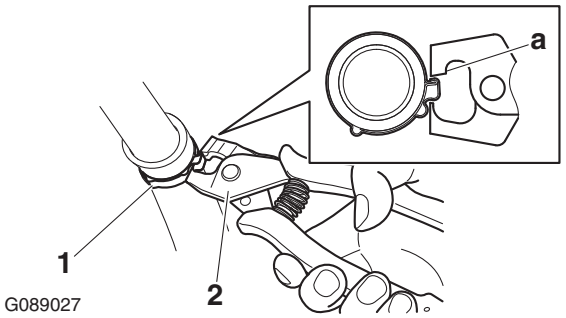
Order	Job/Parts to remove	Q'ty	Remarks
1	Coolant reservoir hose	1	Disconnect.
2	Coolant reservoir	1	
3	Coolant reservoir cap	1	
4	Radiator cap	1	
5	Radiator fan motor coupler	2	Disconnect.
6	Cooling system air bleed hose	1	Disconnect.
7	Radiator outlet hose	1	Disconnect.
8	Radiator inlet hose	1	Disconnect.
9	Radiator	1	
10	Radiator fan	2	

EAS31659
REMOVING THE RADIATOR

1. Remove:
   • Hose clamp (Clic-R) “1”

TIP

• Remove the hose clamp using the hose clamp pliers “2”.
• When removing the hose clamp, make sure that the thick tip “a” of the hose clamp pliers is directed as shown in the illustration.



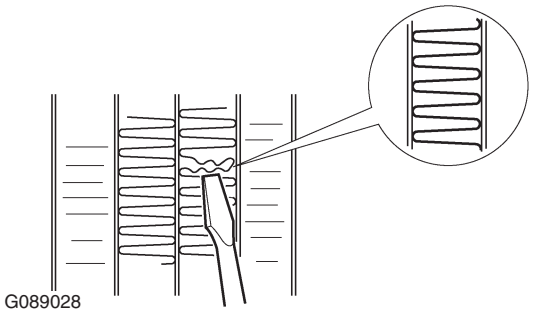
2. Disconnect:
   • Radiator inlet hose
   • Radiator outlet hose
3. Remove:
   • Radiator

EAS30439
CHECKING THE RADIATOR

1. Check:
   • Radiator fins
   Obstruction → Clean.
   Apply compressed air to the rear of the radiator.
   Damage → Repair or replace.

TIP

Straighten any flattened fins with a thin, flat-head screwdriver.

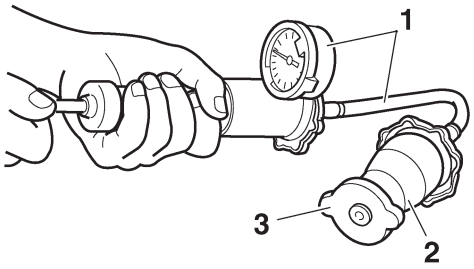


2. Check:
   • Radiator hoses
   Cracks/damage → Replace.
3. Measure:
   • Radiator cap valve opening pressure
   Below the specified pressure → Replace the radiator cap.

Radiator cap valve opening pressure
107.9–137.3 kPa (1.08–1.37 kgf/cm², 15.6–19.9 psi)

   a. Install the radiator cap tester “1” and radiator cap tester adapter “2” to the radiator cap “3”.

Radiator cap tester
90890-01325
Mityvac cooling system tester kit
YU-24460-A
Radiator cap tester adapter
90890-01352
Pressure tester adapter
YU-33984



   b. Apply the specified pressure for ten seconds and make sure there is no drop in pressure.
4. Check:
   • Radiator fan
   Damage → Replace.
   Malfunction → Check and repair.
   Refer to “COOLING SYSTEM” on page 8-27.

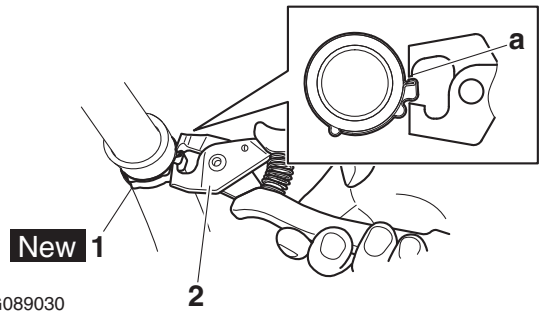
EAS30440
INSTALLING THE RADIATOR

1. Install:
   • Radiator
2. Connect:
   • Radiator inlet hose
   • Radiator outlet hose
3. Install:
   • Hose clamp (Clic-R) “1” New

TIP

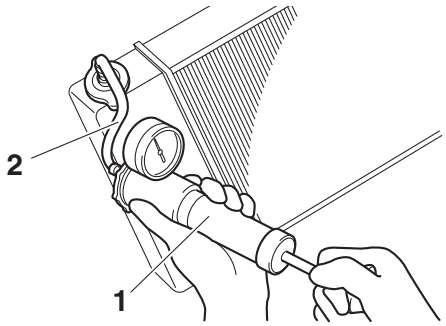
• Install the hose clamp using the hose clamp pliers “2”.

- When installing the hose clamp, make sure that the thin tip "a" of the hose clamp pliers is directed as shown in the illustration.
- For more information about installing the hose, refer to "CABLE ROUTING" on page 2-17.



4. Fill:
   - Cooling system
     (with the specified amount of the recommended coolant)
     Refer to "CHANGING THE COOLANT" on page 3-32.
5. Check:
   - Radiator
   - Radiator hose connections
     Coolant leaks → Correct or replace.
   - Radiator hoses
     Bulges → Replace.
   a. Attach the radiator cap tester "1" and radiator cap tester adapter "2" to the radiator.

Radiator cap tester
90890-01325
Mityvac cooling system tester kit
YU-24460-A
Radiator cap tester adapter
90890-01352
Pressure tester adapter
YU-33984



   b. Apply the specified pressure for 5–10 seconds and make sure there are no coolant leaks or bulging radiator hose.

Cooling system leak test pressure
137.3 kPa (1.37 kgf/cm², 19.9 psi)

ECA24270
NOTICE

- **Do not apply such a high pressure as exceeds the test pressure.**
- **Make sure that a checkup after the cylinder head gasket is replaced is made after 3 minutes of warm-up.**
- **Make sure that coolant is filled up to the upper level beforehand.**

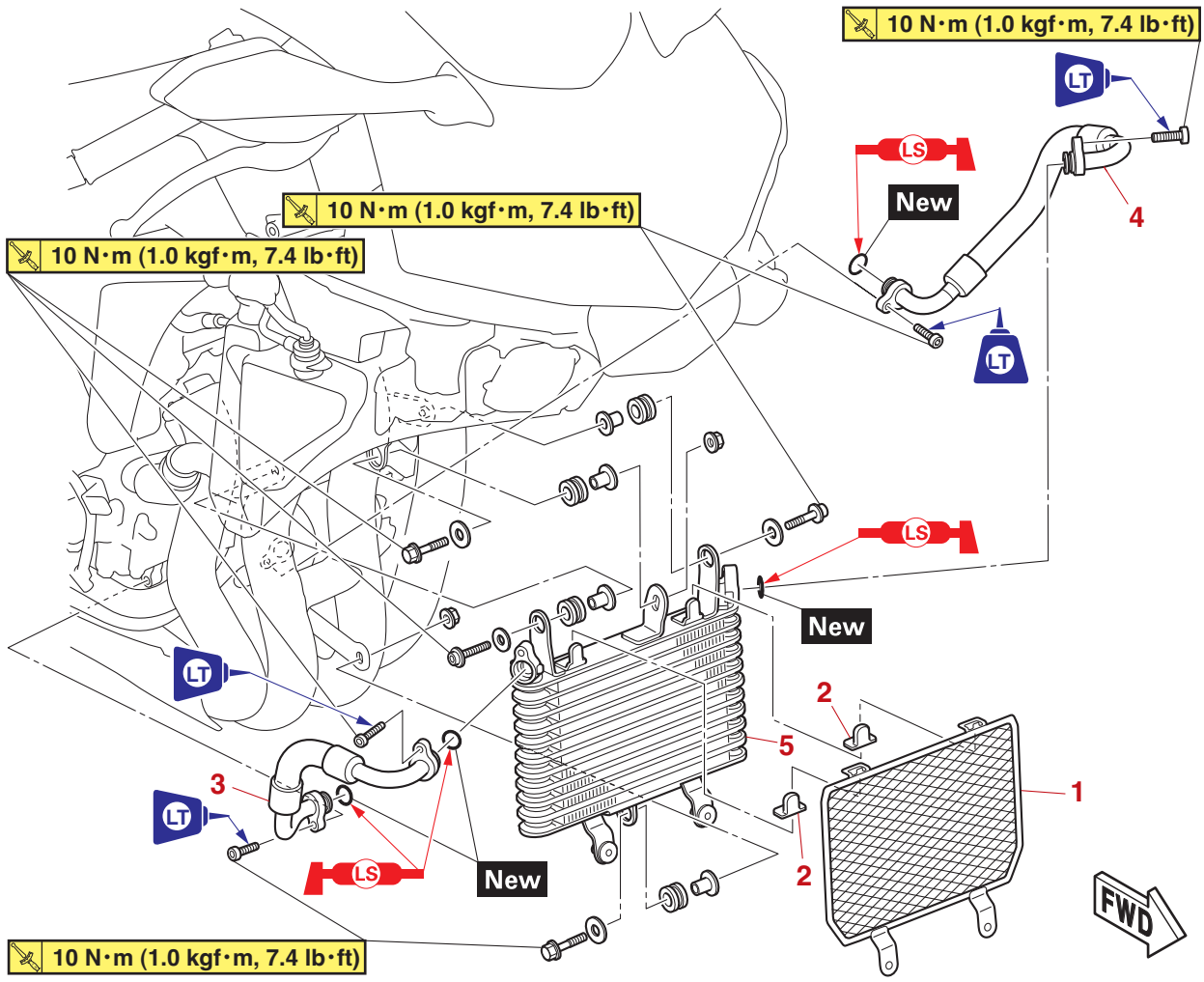
   c. Remove the radiator cap tester and radiator cap tester adapter.

EWA19090
⚠ WARNING

When the radiator cap tester is removed, coolant will spout; therefore, cover it with a cloth beforehand.

EAS20064
OIL COOLER

Removing the oil cooler



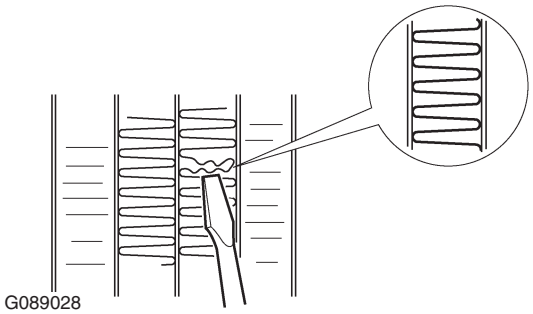
Order	Job/Parts to remove	Q'ty	Remarks
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Engine oil		Drain. Refer to "CHANGING THE ENGINE OIL" on page 3-29.
1	Oil cooler cover	1	
2	Damper	2	
3	Oil cooler inlet hose	1	Disconnect. When removing the oil cooler inlet hose, also remove the water pump inlet pipe. Refer to "WATER PUMP" on page 6-13.
4	Oil cooler outlet hose	1	
5	Oil cooler	1	

EAS30441
CHECKING THE OIL COOLER

1. Check:
   - Oil cooler
     Cracks/damage → Replace.
   - Oil cooler fins
     Obstruction → Clean.
     Apply compressed air to the rear of the oil cooler.
     Damage → Repair or replace.

TIP

Straighten any flattened fins with a thin, flat-head screwdriver.


G089028

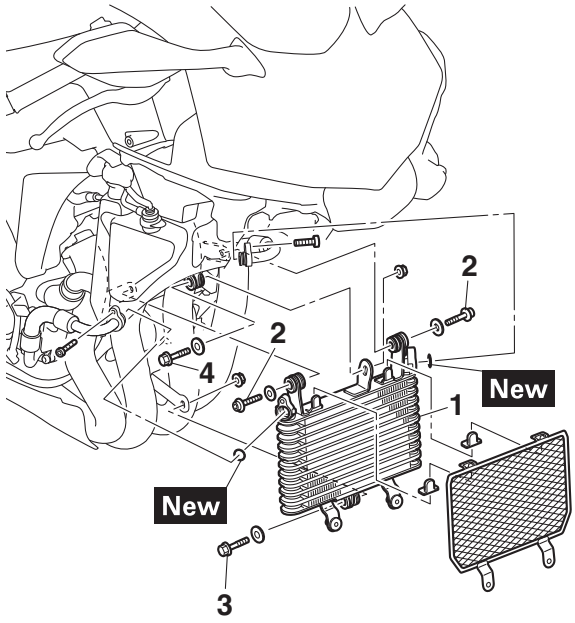
2. Check:
   - Oil cooler inlet hose
   - Oil cooler outlet hose
     Cracks/damage/wear → Replace.

EAS30442
INSTALLING THE OIL COOLER

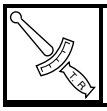
1. Install:
   - Oil cooler “1”
   - O-ring New
   - Oil cooler bolt (upper) “2”
   - Oil cooler bolt (lower) “3”
   - Radiator bolt “4”

TIP

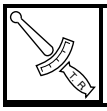
Apply lithium-soap-based grease to the O-ring.



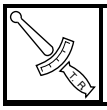
2. Tighten:
   - Oil cooler bolt (upper) “2”

	**Oil cooler bolt** **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

3. Tighten:
   - Oil cooler bolt (lower) “3”

	**Oil cooler bolt** **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

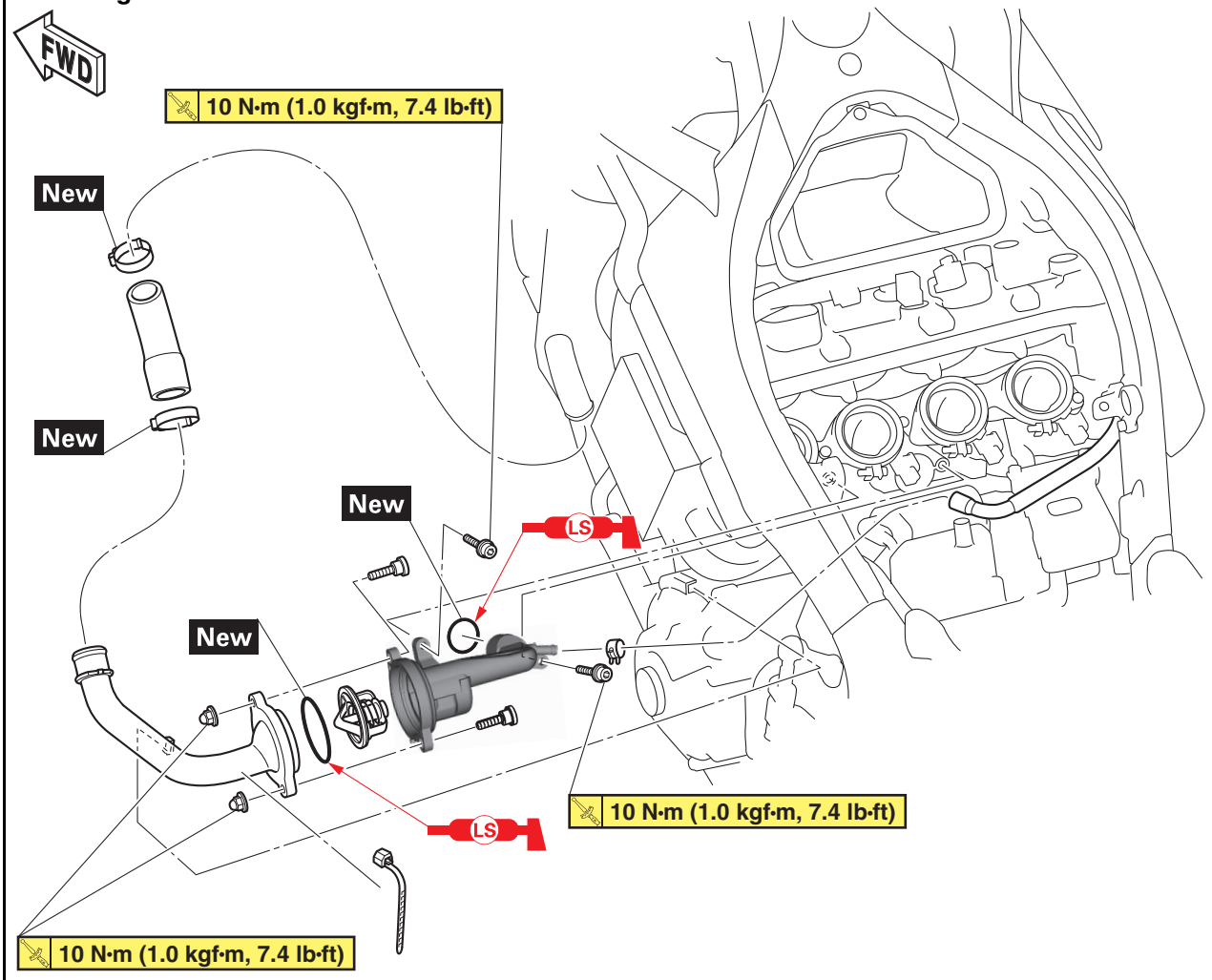
4. Tighten:
   - Radiator bolt “4”

	**Radiator bolt** **10 N·m (1.0 kgf·m, 7.4 lb·ft)**

5. Fill:
   - Crankcase
     (with the specified amount of the recommended engine oil)
     Refer to “CHANGING THE ENGINE OIL” on page 3-29.
6. Measure:
   - Engine oil pressure
     Refer to “MEASURING THE ENGINE OIL PRESSURE” on page 3-30.

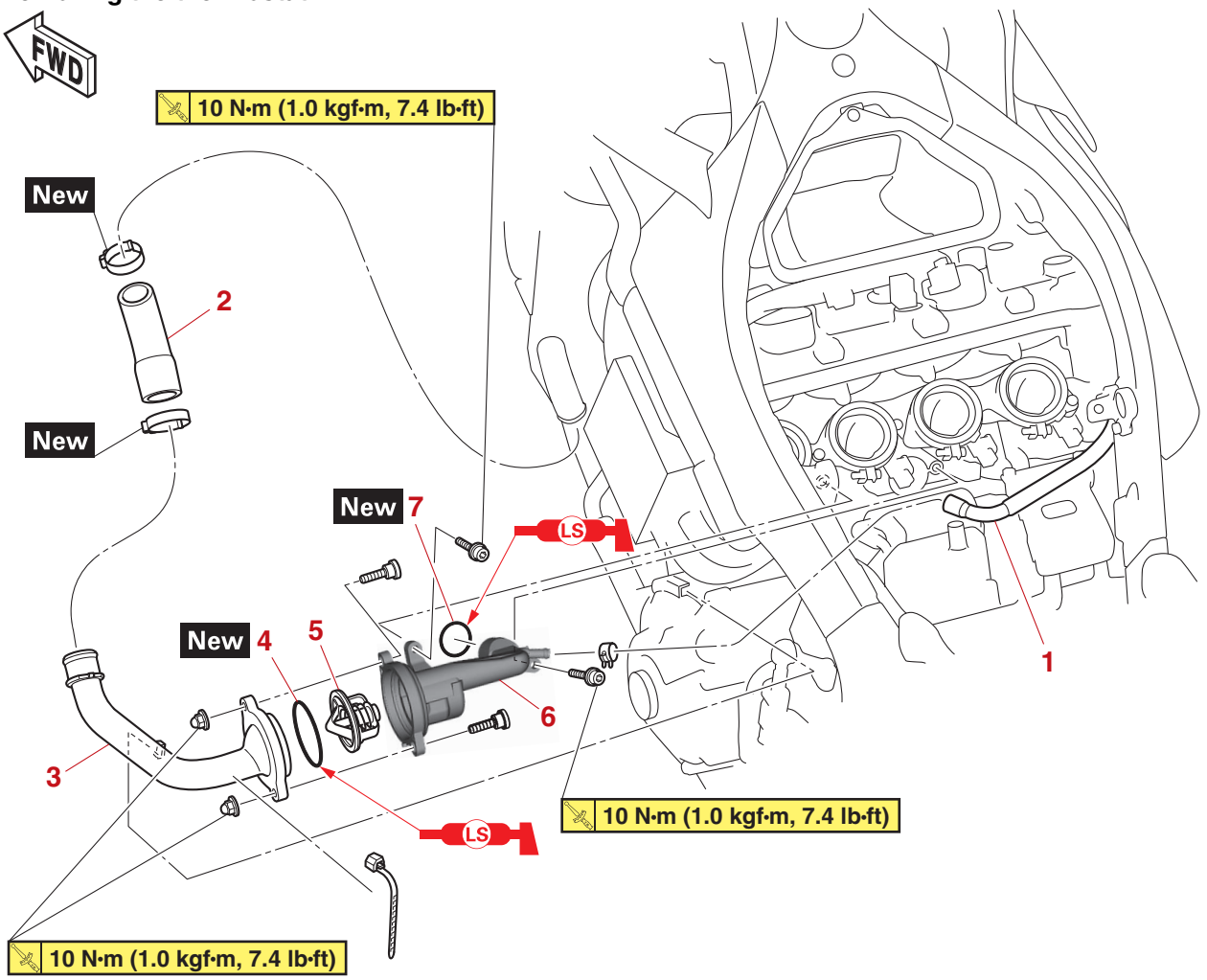
EAS20065
THERMOSTAT

Removing the thermostat



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front side cowling inner panel		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Canister		Refer to "FUEL TANK" on page 7-1. For California only.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
	Throttle bodies		Refer to "THROTTLE BODIES" on page 7-11.
	Coolant		Drain. Refer to "CHANGING THE COOLANT" on page 3-32.

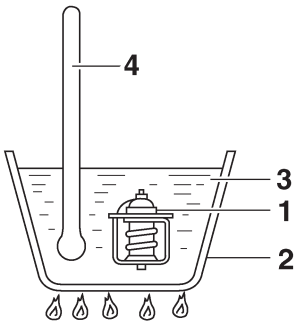
Removing the thermostat



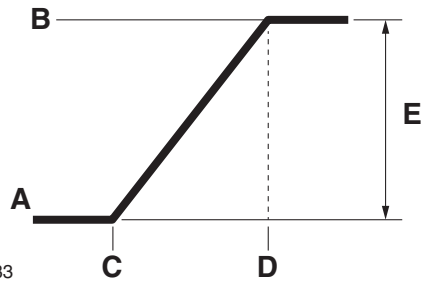
Order	Job/Parts to remove	Q'ty	Remarks
1	Cooling system air bleed hose	1	Disconnect.
2	Radiator inlet hose	1	
3	Thermostat housing cover	1	
4	O-ring	1	
5	Thermostat	1	
6	Thermostat housing	1	
7	O-ring	1	

EAS31660
REMOVING THE THERMOSTAT ASSEMBLY
1. Remove:
   - Hose clamp (Clic-R)
     Refer to "REMOVING THE RADIATOR" on page 6-5.
   - Radiator inlet hose
2. Remove:
   - Thermostat assembly

EAS30443
CHECKING THE THERMOSTAT
1. Check:
   - Thermostat
     Does not open at 69–73 °C (156–163 °F) → Replace.
     a. Suspend the thermostat "1" in a container "2" filled with water.
     b. Slowly heat the water "3".
     c. Place a thermometer "4" in the water.
     d. While stirring the water, observe the thermostat and thermometer's indicated temperature.



G089032



G089033

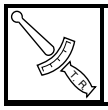
A. Fully closed
B. Fully open
C. 71 °C (159.8 °F)
D. 85 °C (185.0 °F)
E. 8 mm (0.31 in)

TIP

If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

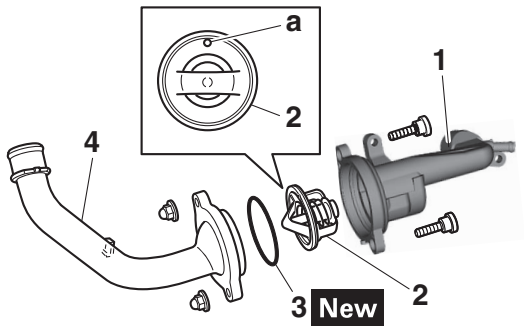
2. Check:
   - Thermostat housing
   - Thermostat housing cover
     Cracks/damage → Replace.

EAS30444
ASSEMBLING THE THERMOSTAT ASSEMBLY
1. Install:
   - Thermostat housing "1"
   - Thermostat "2"
   - O-ring "3" New
   - Thermostat housing cover "4"

	**Thermostat housing cover nut 10 N·m (1.0 kgf·m, 7.4 lb·ft)**

TIP

Install the thermostat with its breather hole "a" facing up.



EAS30445
INSTALLING THE THERMOSTAT ASSEMBLY
1. Install:
   - Thermostat assembly
2. Install:
   - Radiator inlet hose
   - Hose clamp (Clic-R) New
     Refer to "INSTALLING THE RADIATOR" on page 6-5.

TIP

For more information about installing the hose, refer to "CABLE ROUTING" on page 2-17.

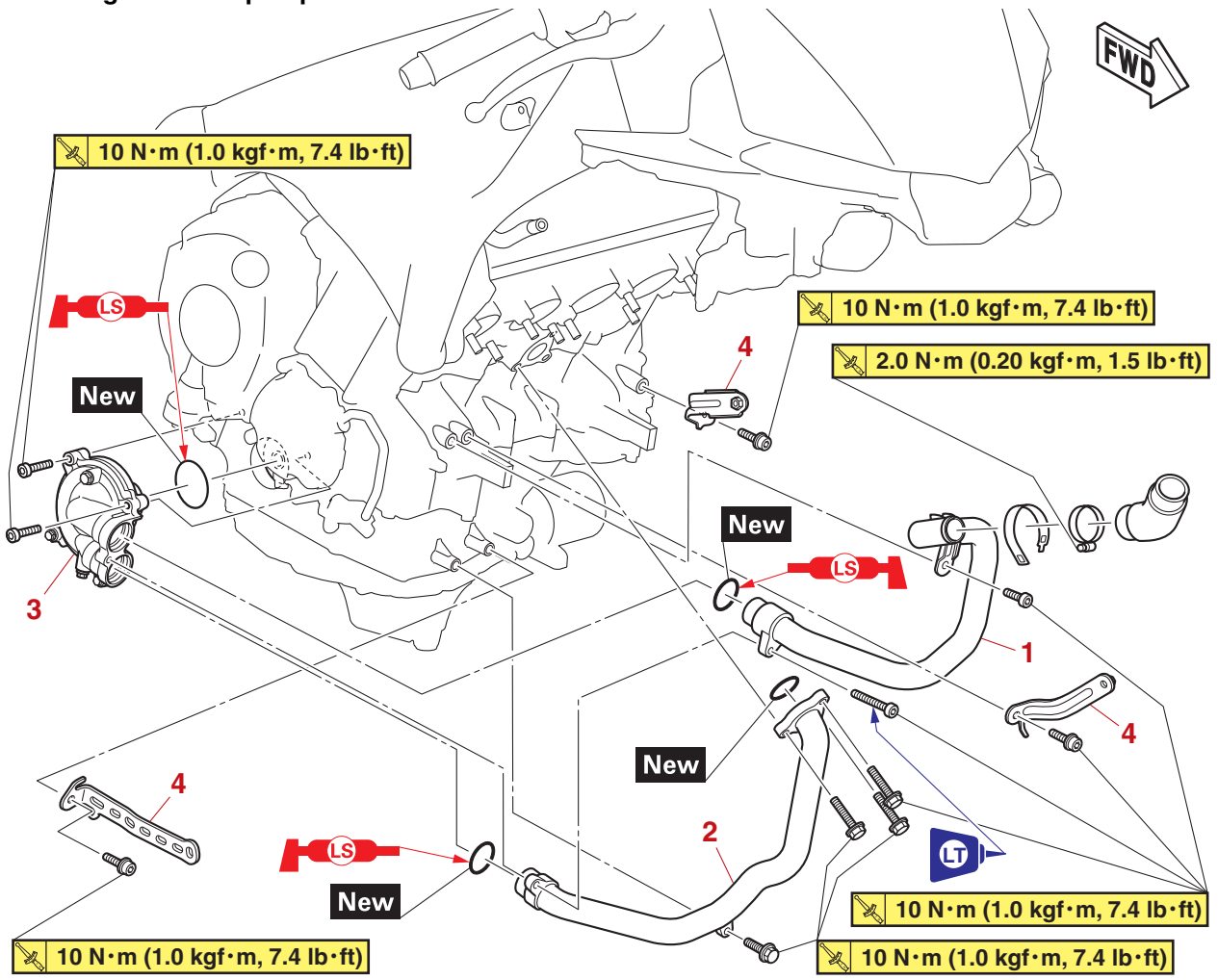
3. Fill:
   - Cooling system
     (with the specified amount of the recommended coolant)
     Refer to "CHANGING THE COOLANT" on page 3-32.
4. Check:
   - Cooling system
     Leaks → Repair or replace any faulty part.

Refer to “INSTALLING THE RADIATOR” on page 6-5.

5. Measure:
   - Radiator cap valve opening pressure
     Below the specified pressure → Replace the radiator cap.
     Refer to “CHECKING THE RADIATOR” on page 6-5.

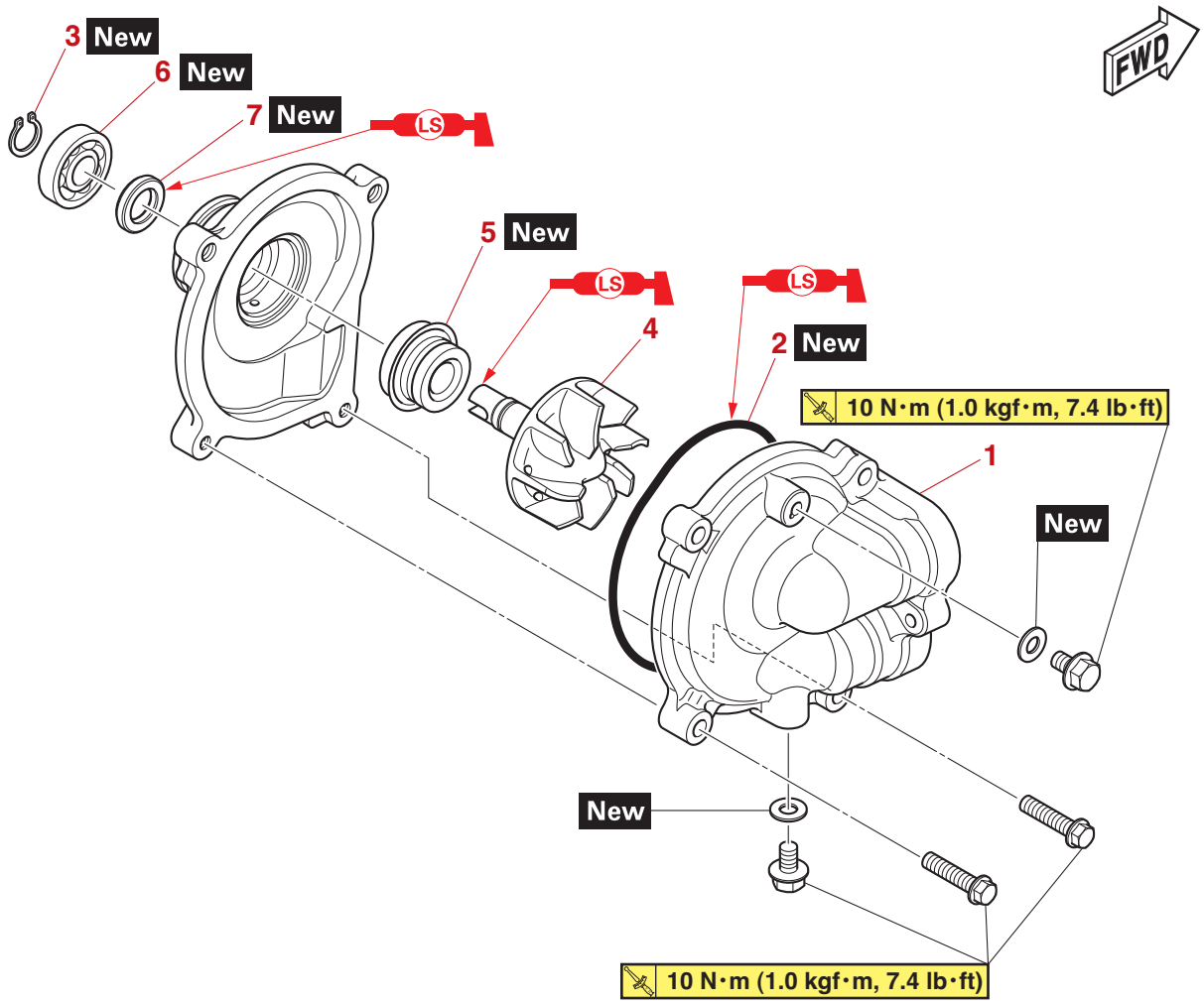
EAS20066
WATER PUMP

Removing the water pump



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front panel cover		Refer to "GENERAL CHASSIS (3)" on page 4-9.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover/Front side cowling inner panel		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Radiator		Refer to "RADIATOR" on page 6-3.
	Oil cooler		Refer to "OIL COOLER" on page 6-7.
	Muffler/Exhaust pipe		Refer to "ENGINE REMOVAL" on page 5-11.
1	Water pump inlet pipe	1	
2	Water pump outlet pipe	1	
3	Water pump assembly	1	
4	Oil cooler stay	3	

Disassembling the water pump



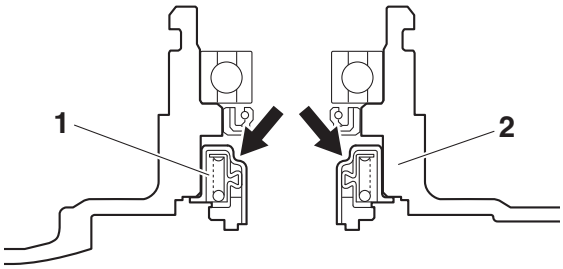
Order	Job/Parts to remove	Q'ty	Remarks
1	Water pump housing cover	1	
2	O-ring	1	
3	Circlip	1	
4	Impeller shaft	1	
5	Mechanical seal	1	
6	Bearing	1	
7	Oil seal	1	

EAS30446
DISASSEMBLING THE WATER PUMP

1. Remove:
   • Mechanical seal (housing side) “1”

TIP

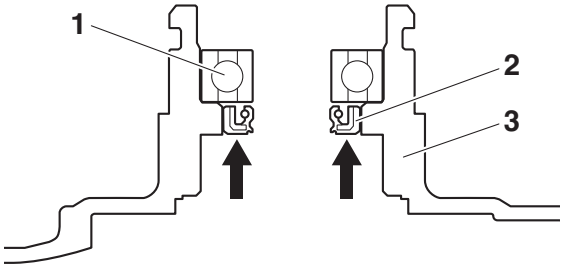
Remove the mechanical seal (housing side) from the inside of the water pump housing “2”.



2. Remove:
   • Bearing “1”
   • Oil seal “2”

TIP

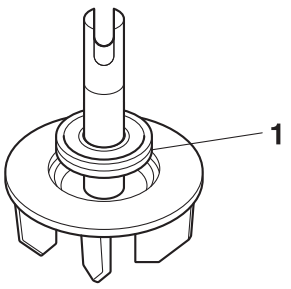
Remove the oil seal and bearing from the outside of the water pump housing “3”.



3. Remove:
   • Mechanical seal (impeller side) “1” (from the impeller, with a thin, flat-head screwdriver)

TIP

Do not scratch the impeller shaft.



G089034

EAS30447
CHECKING THE WATER PUMP

1. Check:
   • Water pump housing cover
   • Impeller shaft
   Cracks/damage/wear → Replace.
   • Water pump housing
   Cracks/damage/wear → Replace the water pump assembly.
2. Check:
   • Bearing
   Rough movement → Replace.
3. Check:
   • Water pump inlet pipe
   • Water pump outlet pipe
   Cracks/damage/wear → Replace.

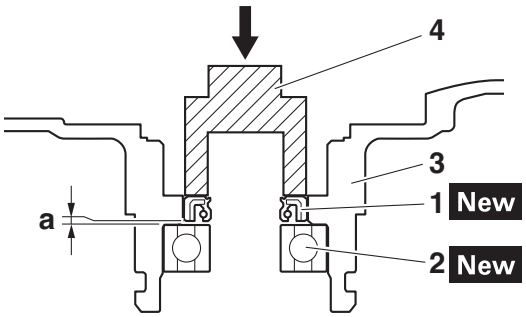
EAS30448
ASSEMBLING THE WATER PUMP

1. Install:
   • Oil seal “1” New
   • Bearing “2” New
   (into the water pump housing “3”)

Installed depth “a”
0.5–1.0 mm (0.02–0.04 in)

TIP

Install the oil seal with a socket “4” that matches its outside diameter.



2. Install:
   • Mechanical seal (housing side) “1” New

ECA20330

NOTICE

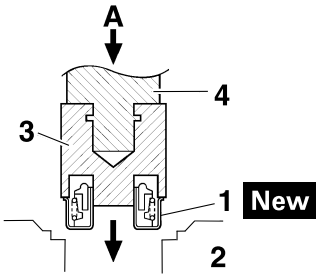
Never lubricate the mechanical seal (housing side) surface with oil or grease.

TIP

Use the special tools and a press to press the mechanical seal (housing side) straight in until it touches the water pump housing.



Mechanical seal installer (ø33)
90890-04132
Water pump seal installer (ø33)
YM-33221-A
Middle driven shaft bearing driver
90890-04058
Middle drive bearing installer 40 & 50 mm
YM-04058

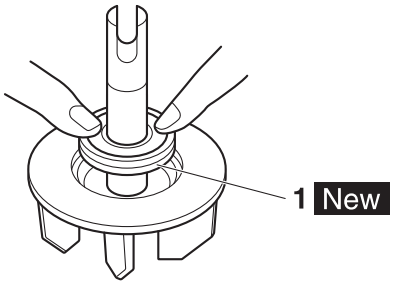


2. Water pump housing
3. Mechanical seal installer
4. Middle driven shaft bearing driver
A. Push down

3. Install:
   • Mechanical seal (impeller side) "1" New

TIP

- Before installing the mechanical seal (impeller side), apply tap water or coolant onto its outer surface.
- If the top of the mechanical seal is dirty, clean it.



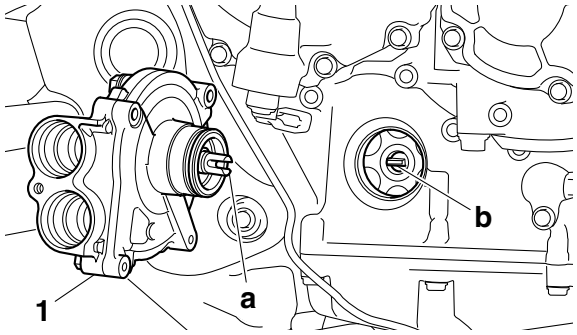
G089035

EAS30449
INSTALLING THE WATER PUMP

1. Install:
   • Water pump assembly "1"

TIP

Align the slit "a" on the impeller shaft with the projection "b" on the oil pump driven sprocket.



2. Fill:
   • Cooling system
   (with the specified amount of the recommended coolant)
   Refer to "CHANGING THE COOLANT" on page 3-32.
3. Check:
   • Cooling system
   Leaks → Repair or replace the faulty part.
4. Measure:
   • Radiator cap valve opening pressure
   Below the specified pressure → Replace the radiator cap.
   Refer to "CHECKING THE RADIATOR" on page 6-5.

FUEL SYSTEM

FUEL TANK 7-1
- REMOVING THE FUEL TANK 7-3
- REMOVING THE FUEL PUMP 7-3
- CHECKING THE FUEL PUMP BODY 7-3
- CHECKING THE FUEL PUMP OPERATION 7-3
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AIR FILTER CASE 7-5
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- REMOVING THE FUEL HOSE (PRIMARY INJECTOR JOINT SIDE AND SECONDARY INJECTOR JOINT SIDE) 7-7
- REMOVING THE SECONDARY INJECTORS 7-7
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- INSTALLING THE FUEL HOSE (PRIMARY INJECTOR JOINT SIDE AND SECONDARY INJECTOR JOINT SIDE) 7-10

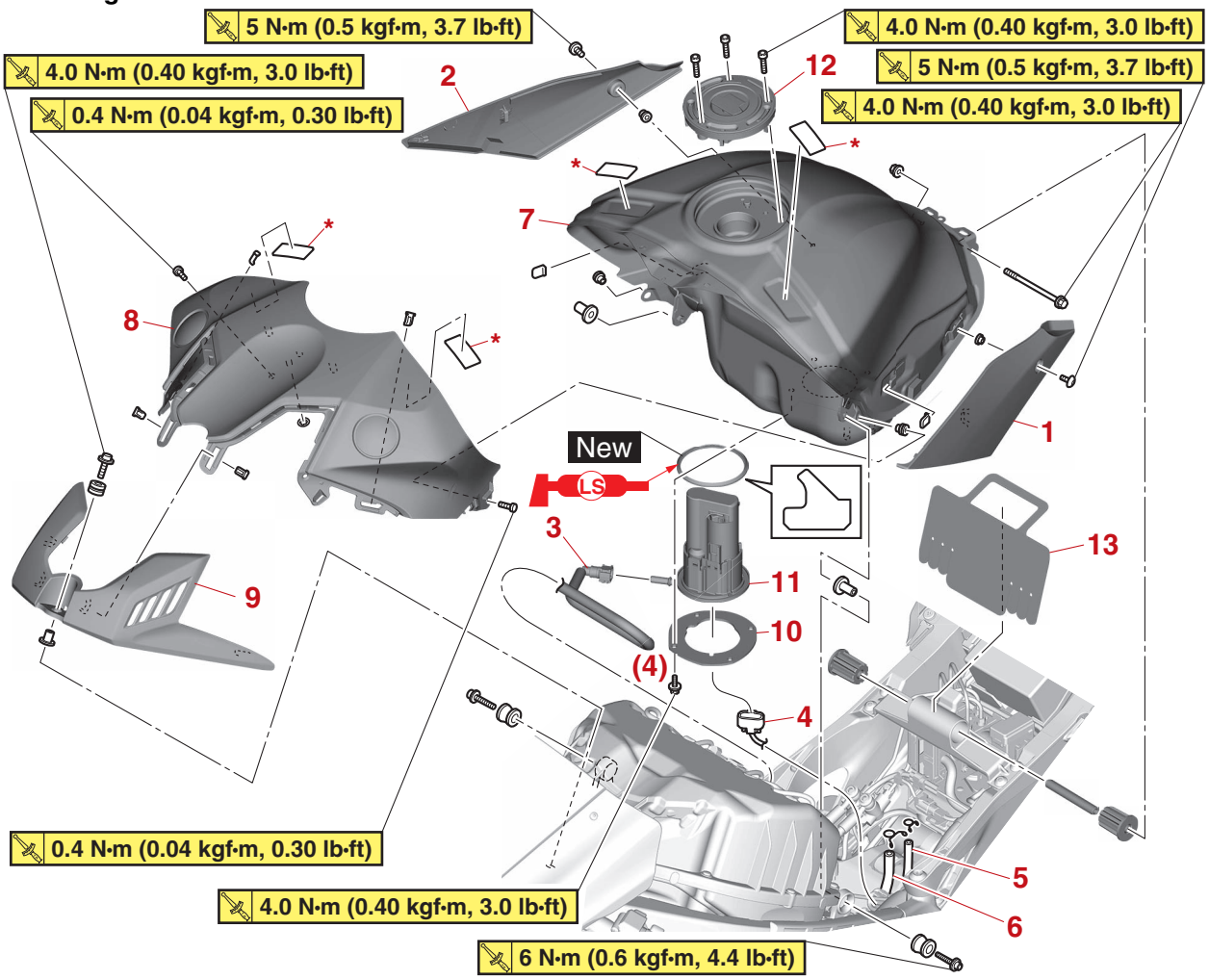
THROTTLE BODIES 7-11
- CHECKING THE PRIMARY INJECTORS (BEFORE REMOVING) 7-15
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- CHECKING THE PRIMARY INJECTORS 7-15
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EAS20067

FUEL TANK

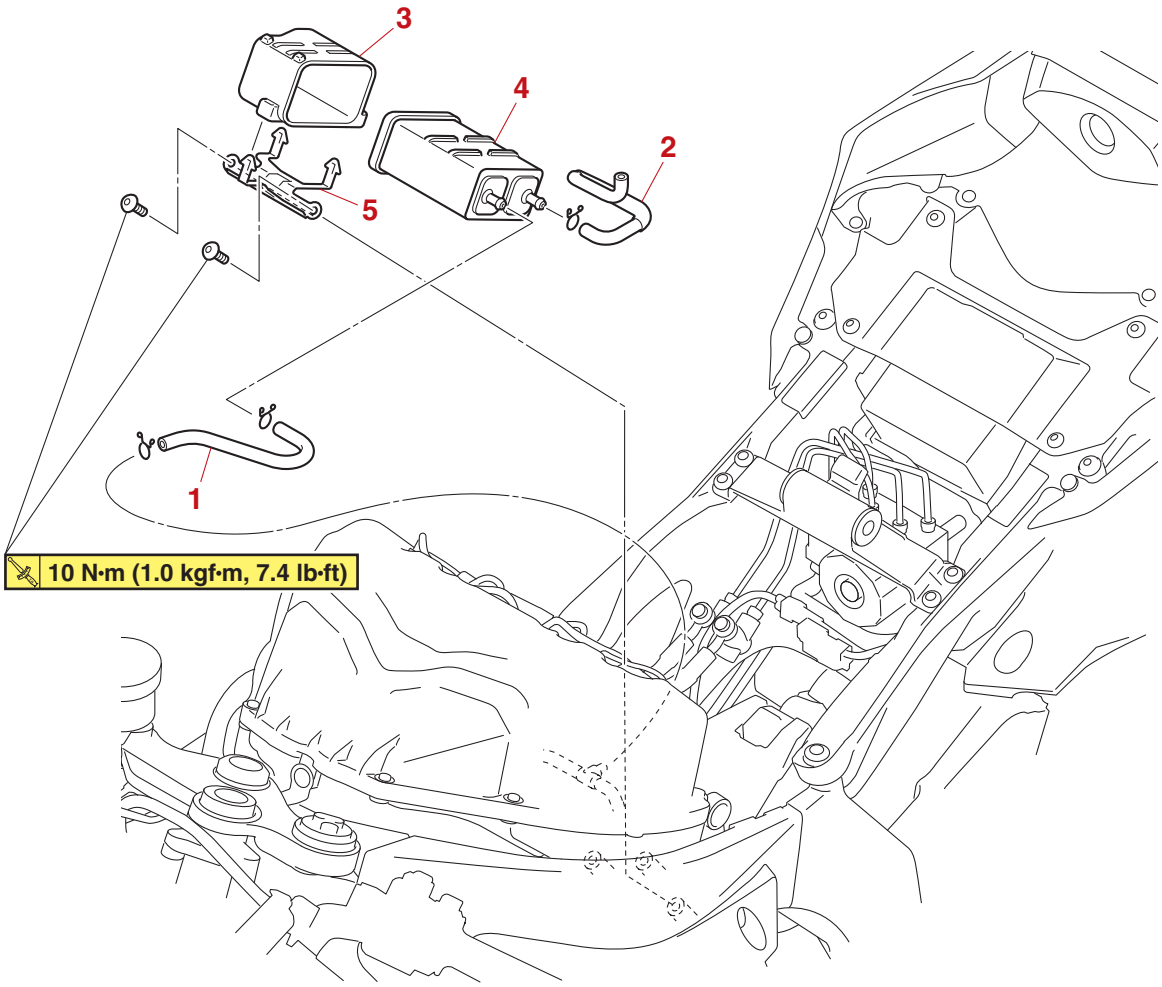
Removing the fuel tank



*** Hook-and-loop fastener**

Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
1	Fuel tank side cover (left)	1	
2	Fuel tank side cover (right)	1	
3	Fuel hose connector	1	Disconnect.
4	Fuel pump coupler	1	Disconnect.
5	Fuel tank breather hose	1	Disconnect.
6	Fuel tank drain hose	1	Disconnect.
7	Fuel tank	1	
8	Fuel tank top cover (rear)	1	
9	Fuel tank top cover (front)	1	
10	Fuel pump bracket	1	
11	Fuel pump	1	
12	Fuel tank cap	1	
13	Fuel tank protector	1	

Removing the rollover valve and canister (for California only)



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
1	Canister purge hose (hose joint to canister)	1	
2	Fuel tank breather hose (fuel tank to canister)	1	
3	Canister holder	1	
4	Canister	1	
5	Canister bracket	1	

EAS30450
REMOVING THE FUEL TANK

1. Extract the fuel in the fuel tank through the fuel tank cap with a pump.
2. Remove:
   - Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
3. Disconnect:
   - Fuel hose (fuel tank side)
   - Fuel pump coupler
   - Fuel tank drain hose
   - Fuel tank breather hose

EWA17320
⚠ WARNING

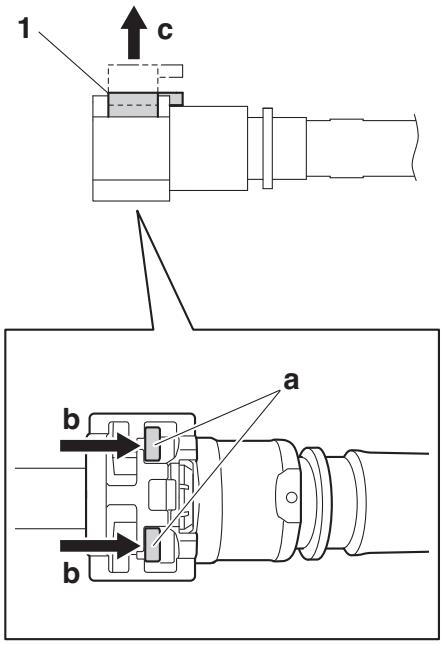
Cover fuel hose connections with a cloth when disconnecting them. Residual pressure in the fuel lines could cause fuel to spurt out when removing the hose.

ECA17490
NOTICE

Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.

TIP

- While pushing the ends "a" of the fuel hose connector cover "1" in direction "b", slide the fuel hose connector cover in direction "c", and then remove the hose from the fuel pump.
- Before removing the hose, place a few rags in the area under where it will be removed.
- It is prohibited to wear the cotton work gloves or equivalent coverings.



4. Remove:
   - Fuel tank

TIP

Do not set the fuel tank down so that the installation surface of the fuel pump is directly under the tank. Be sure to lean the fuel tank in an upright position.

EAS30451
REMOVING THE FUEL PUMP

1. Remove:
   - Fuel pump

ECA14721
NOTICE

- **Do not drop the fuel pump or give it a strong shock.**
- **Do not touch the base section of the fuel sender.**

EAS30454
CHECKING THE FUEL PUMP BODY

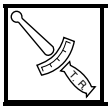
1. Check:
   - Fuel pump body
     Obstruction → Clean.
     Cracks/damage → Replace fuel pump assembly.

EAS30455
CHECKING THE FUEL PUMP OPERATION

1. Check:
   - Fuel pump operation
     Refer to "CHECKING THE FUEL PRESSURE" on page 7-18.

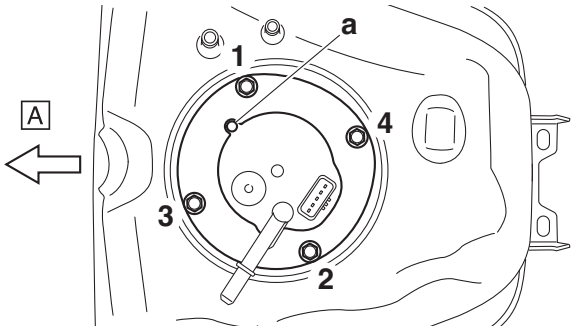
EAS30456
INSTALLING THE FUEL PUMP

1. Install:
   - Fuel pump gasket **New**
   - Fuel pump
   - Fuel pump bracket
   - Fuel pump bolts

	**Fuel pump bolt** **4.0 N·m (0.40 kgf·m, 3.0 lb·ft)**

TIP

- Do not damage the installation surfaces of the fuel tank when installing the fuel pump.
- Always use a new fuel pump gasket.
- Install the fuel pump gasket so that the lip side turns to the inside of the fuel tank.
- Install the fuel pump as shown in the illustration.
- Align the projection “a” on the fuel pump with the slot in the fuel pump bracket.
- Tighten the fuel pump bolts in the proper tightening sequence as shown.



A. Forward

EAS30457
INSTALLING THE FUEL TANK

1. Install:
   - Fuel tank
   - Rear fuel tank bolt
   - Fuel tank nut

TIP

Temporarily tighten the rear fuel tank bolt.

2. Connect:
   - Fuel hose (fuel tank side)

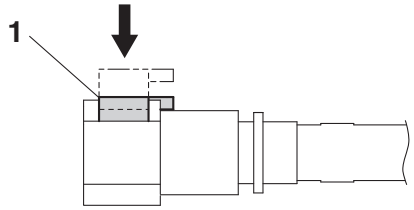
ECA17500

NOTICE

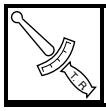
When installing the fuel hose, make sure that it is securely connected, and that the fuel hose connector cover on the fuel hose is in the correct position, otherwise the fuel hose will not be properly installed.

TIP

- Install the fuel hose onto the fuel pump securely, and slide the fuel hose connector cover “1” in the direction shown in the illustration.
- It is prohibited to wear the cotton work gloves or equivalent coverings.



3. Connect:
   - Fuel tank breather hose
   - Fuel tank drain hose
   - Fuel pump coupler
4. Tighten:
   - Front fuel tank bolt

	**Front fuel tank bolt** **6 N·m (0.6 kgf·m, 4.4 lb·ft)**

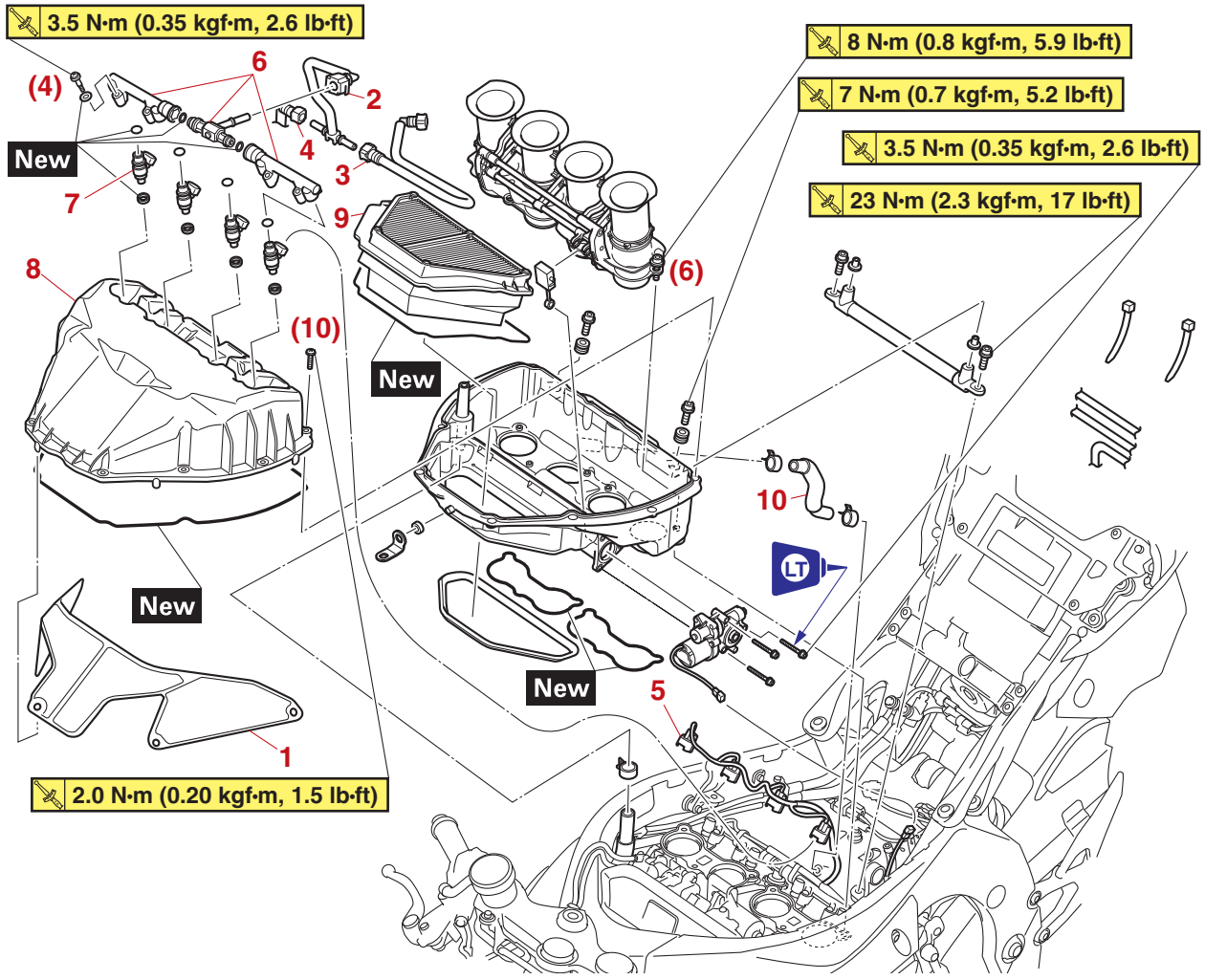
5. Tighten:
   - Rear fuel tank bolt

	**Rear fuel tank bolt** **4.0 N·m (0.40 kgf·m, 3.0 lb·ft)**

EAS20068

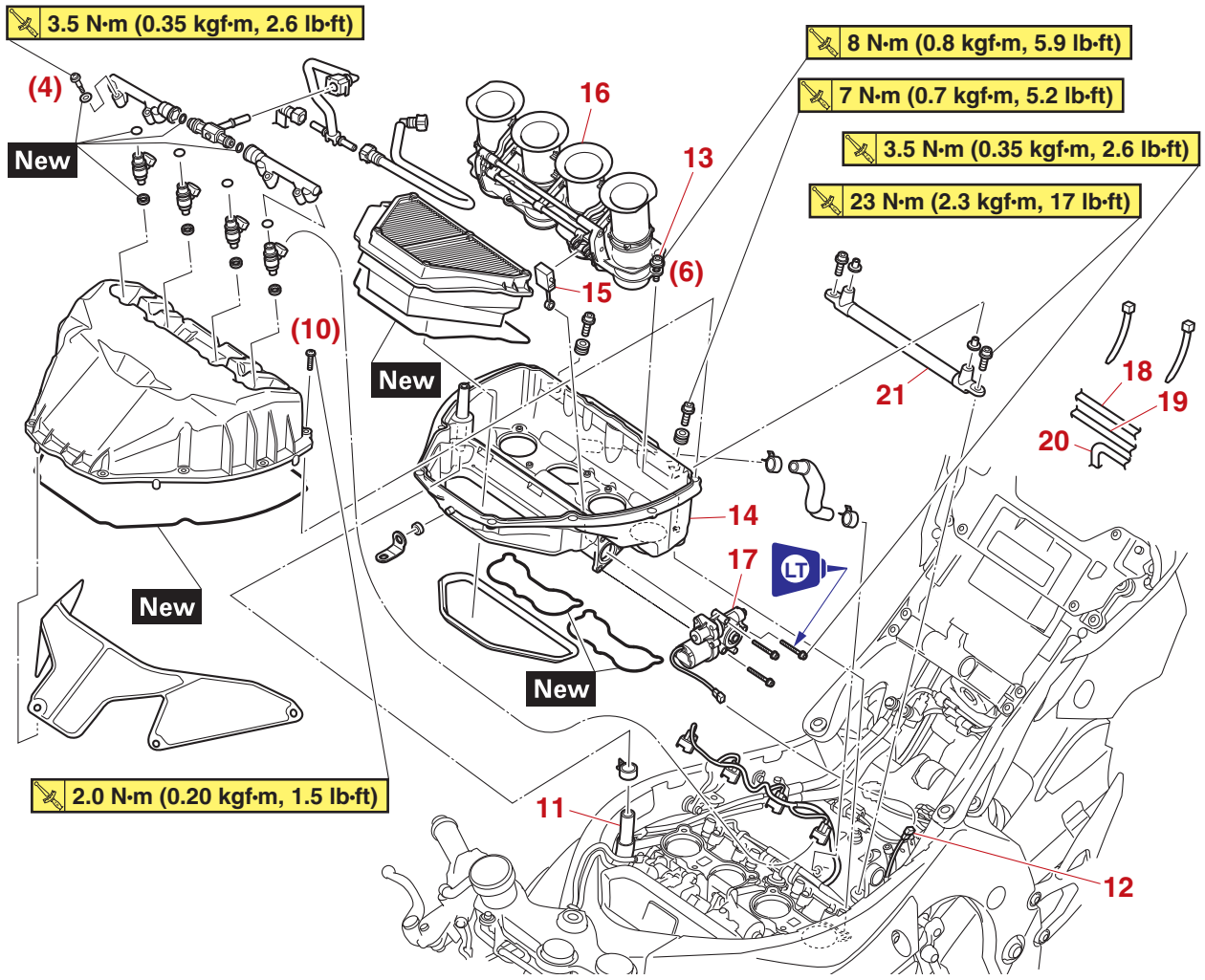
AIR FILTER CASE

Removing the air filter case and secondary injectors



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
1	Air filter case cover	1	
2	Fuel hose 2 (secondary injector fuel rail side)	1	
3	Fuel hose 1 (fuel tank to fuel hose 2)	1	
4	Fuel hose 3 (fuel hose 2 to throttle body)	1	Disconnect.
5	Secondary injector coupler	4	Disconnect.
6	Fuel rail/Secondary injector joint	2/1	
7	Secondary injector	4	
8	Upper air filter case	1	
9	Air filter element	1	
10	Crankcase breather hose	1	Disconnect.

Removing the air filter case and secondary injectors



Order	Job/Parts to remove	Q'ty	Remarks
11	Air induction system hose	1	Disconnect.
12	Intake funnel servo motor coupler	1	Disconnect.
13	Intake funnel assembly bolt	6	Loosen.
14	Air filter case	1	
15	Intake funnel servo motor rod assembly	1	
16	Intake funnel assembly	1	
17	Intake funnel servo motor	1	
18	Rear shock absorber assembly stepping motor lead	1	for YZF-R1M
19	Coolant temperature sensor lead	1	
20	Throttle servo motor lead	1	
21	Cross bar	1	

EAS30458
CHECKING THE SECONDARY INJECTORS (BEFORE REMOVING)
1. Check:
   • Injectors
   Use the diagnostic code numbers “40”–“43”. Refer to “SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE” on page 9-32.

EAS30459
REMOVING THE FUEL HOSE (PRIMARY INJECTOR JOINT SIDE AND SECONDARY INJECTOR JOINT SIDE)
1. Remove:
   • Fuel hose (primary injector joint side and secondary injector joint side)

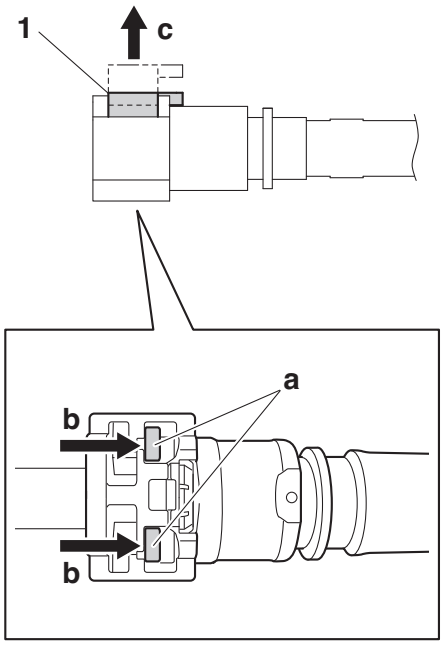
EWA17320
WARNING

Cover fuel hose connections with a cloth when disconnecting them. Residual pressure in the fuel lines could cause fuel to spurt out when removing the hose.

ECA17490
NOTICE

Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.

TIP
- While pushing the ends “a” of the fuel hose connector cover “1” in direction “b”, slide the fuel hose connector cover in direction “c”, and then remove the hose from the fuel pump.
- Before removing the hose, place a few rags in the area under where it will be removed.
- It is prohibited to wear the cotton work gloves or equivalent coverings.



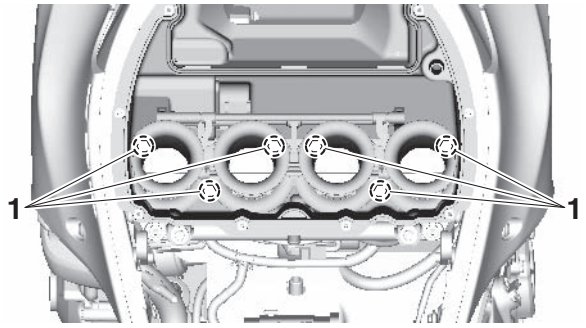
EAS30460
REMOVING THE SECONDARY INJECTORS
EWA17330
WARNING

- **Check the injectors in a well-ventilated area free of combustible materials. Make sure that there is no smoking or use of electric tools in the vicinity of the injectors.**
- **Be careful when disconnecting the fuel hose. Any remaining pressure in the fuel hose may cause the fuel to spray out. Place a container or rag under the hose to catch any fuel that spills. Always clean up any spilt fuel immediately.**
- **Turn the main switch to “OFF” and disconnect the negative battery lead from the battery terminal before removing the injectors.**

1. Remove:
   • Fuel tank
   • Fuel hose
   Refer to “REMOVING THE FUEL TANK” on page 7-3.
2. Remove:
   • Fuel rail screw
   • Fuel rail
   • Secondary injector joint
   • Secondary injector

EAS31663
REMOVING THE AIR FILTER CASE
1. Remove:
   • Upper air filter case

2. Loosen:
   • Intake funnel assembly bolt “1”



3. Disconnect:
   • Crankcase breather hose
   • Air induction system hose
   • Intake funnel servo motor coupler
4. Remove:
   • Air filter case

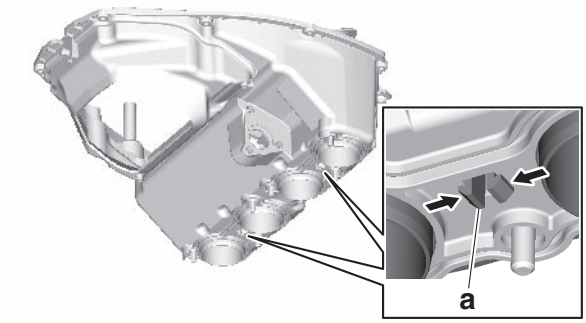
EAS30461
REMOVING THE INTAKE FUNNEL ASSEMBLY

1. Remove:
   • Intake funnel servo motor rod assembly
   • Intake funnel servo motor
2. Remove:
   • Intake funnel assembly

ECA26860
NOTICE

- **Do not disassemble the intake funnel assembly.**
- **Do not remove the intake funnel bolts from the intake funnel joint.**

a. Keep the two tabs “a” pushed in the direction shown in the illustration and separate the intake funnel assembly from air filter case.



EAS30462
CHECKING THE SECONDARY INJECTORS

1. Check:
   • Injectors
   Obstruction → Replace and check the fuel pump/fuel supply system.
   Deposit → Replace.
   Damage → Replace.
2. Check:
   • Injector resistance
   Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

EAS31664
CHECKING THE AIR FILTER CASE SEAL

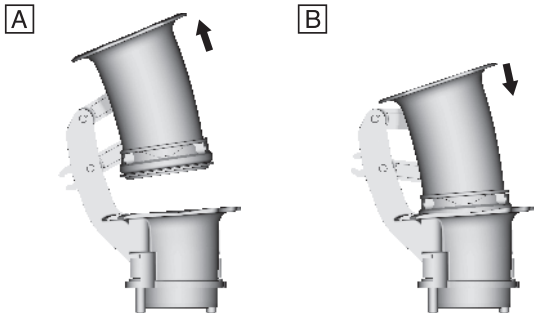
1. Check:
   • Air filter case seal
   Damage → Replace.

EAS30463
CHECKING THE INTAKE FUNNEL

1. Check:
   • Intake funnel servo motor rod assembly
   Damage/scratches → Replace.
   • Intake funnel assembly
   Cracks/damage → Replace.
2. Check:
   • Intake funnel movement
   Sticks → Replace the intake funnel assembly.

ECA17550
NOTICE

- **Make sure that the intake funnel smoothly moves to the contacting surface between upper stopper and lower seating position when it is moved by hand.**
- **Make sure that the intake funnel smoothly strokes from the upper position to the seating position by its own weight.**



A. Upper
B. Lower

EAS31665
INSTALLING THE INTAKE FUNNEL AND AIR FILTER CASE

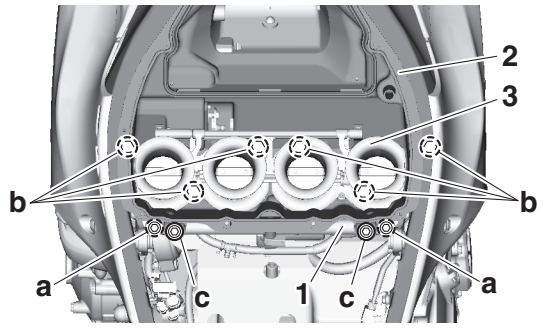
1. Install:
   • Cross bar “1”
   • Intake funnel servo motor
   • Intake funnel servo motor rod assembly
   • Air filter case “2”
   • Intake funnel assembly “3”
   a. Install the cross bar “1”.

b. Temporary tighten the cross bar bolts “a”.
c. Install the intake funnel assembly and air filter case.
d. Tighten the Intake funnel assembly bolt “b” and air filter case bolt “c”.

Intake funnel assembly bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)
Air filter case bolt
8 N·m (0.8 kgf·m, 5.9 lb·ft)

e. Tighten the cross bar bolt “a”.

Cross bar bolt
23 N·m (2.3 kgf·m, 17 lb·ft)

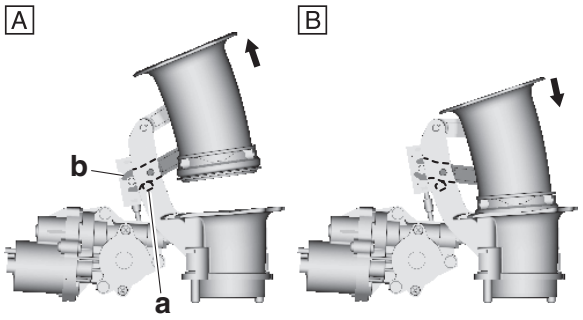


EAS30465
CHECKING THE INTAKE FUNNEL OPERATION

1. Check:
   • Intake funnel servo motor operation
   a. Activate the diagnostic mode and select the diagnostic code number “34”.
   Refer to “SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE” on page 9-32.
   b. Set the start/engine stop switch to “ ”.
   c. Check that the stopper lever “a” contacts the lever “b” (figure “A”).
   d. Check that the intake funnel seal mates with the fixed intake funnel (figure “B”).

TIP

The intake funnels should move smoothly and should not make any unusual sound.



A. Upper
B. Lower

EAS30466
INSTALLING THE SECONDARY INJECTORS

ECA21550

NOTICE

• Always use new O-rings.
• When installing the injectors, do not allow any foreign material to enter or adhere to the injectors, fuel rails, or O-rings.
• Be careful not to twist or pinch the O-rings when installing the injectors.
• When installing the injector, install it at the same position as the removed cylinder.
• If an injector is subject to strong shocks or excessive force, replace it.
• If installing the original fuel rail and bolts, remove the white paint marks using a cleaning solvent. Otherwise, paint chips on the bolt seats could prevent the bolts from being tightened to the specified torque.

1. Install a new seal onto the end of each injector.
2. Install the injectors to the fuel rails.
3. Install the secondary injector joint, making sure to install them in the correct direction.
4. Install the injector assemblies to the upper air filter case.

Fuel rail screw (secondary injector)
3.5 N·m (0.35 kgf·m, 2.6 lb·ft)

5. Check the injector pressure after the injectors are installed.
   Refer to “CHECKING THE INJECTOR PRESSURE” on page 7-17.

EAS30467
INSTALLING THE UPPER AIR FILTER CASE

1. Install:
   • Upper air filter case

	Upper air filter case screw **2.0 N·m (0.20 kgf·m, 1.5 lb·ft)**

EAS30468

INSTALLING THE FUEL HOSE (PRIMARY INJECTOR JOINT SIDE AND SECONDARY INJECTOR JOINT SIDE)

1. Connect:
   - Fuel hose (primary injector joint side and secondary injector joint side)

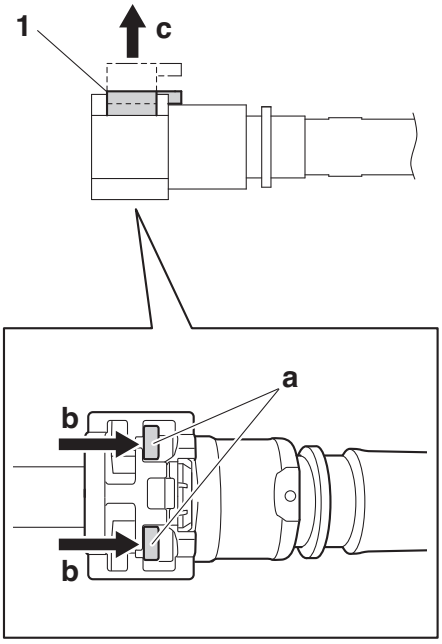
ECA17500

NOTICE

When installing the fuel hose, make sure that it is securely connected, and that the fuel hose connector cover on the fuel hose is in the correct position, otherwise the fuel hose will not be properly installed.

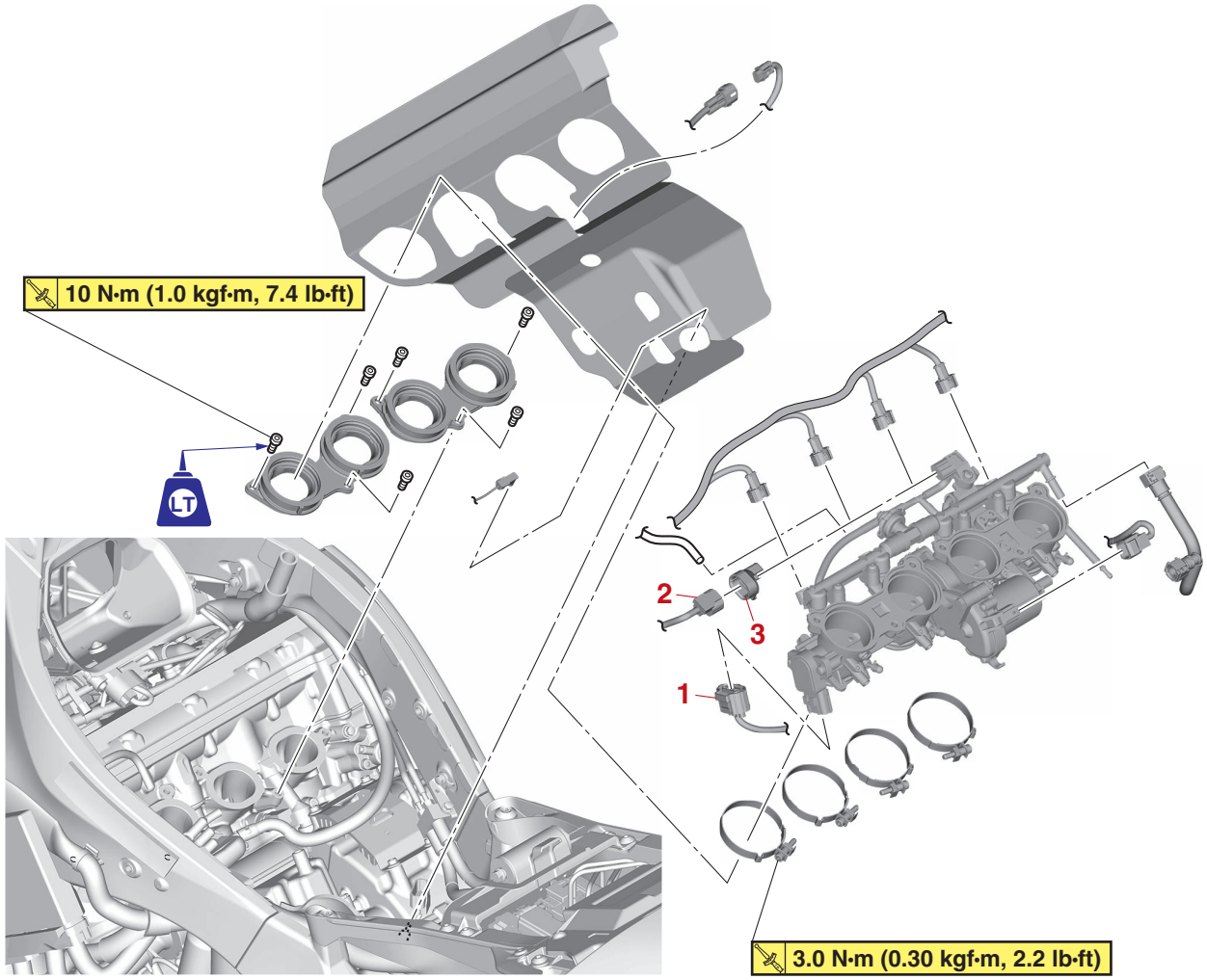
TIP

- While pushing the ends “a” of the fuel hose connector cover “1” in direction “b”, slide the fuel hose connector cover in direction “c”, and then remove the hose from the fuel pump.
- Before removing the hose, place a few rags in the area under where it will be removed.
- It is prohibited to wear the cotton work gloves or equivalent coverings.



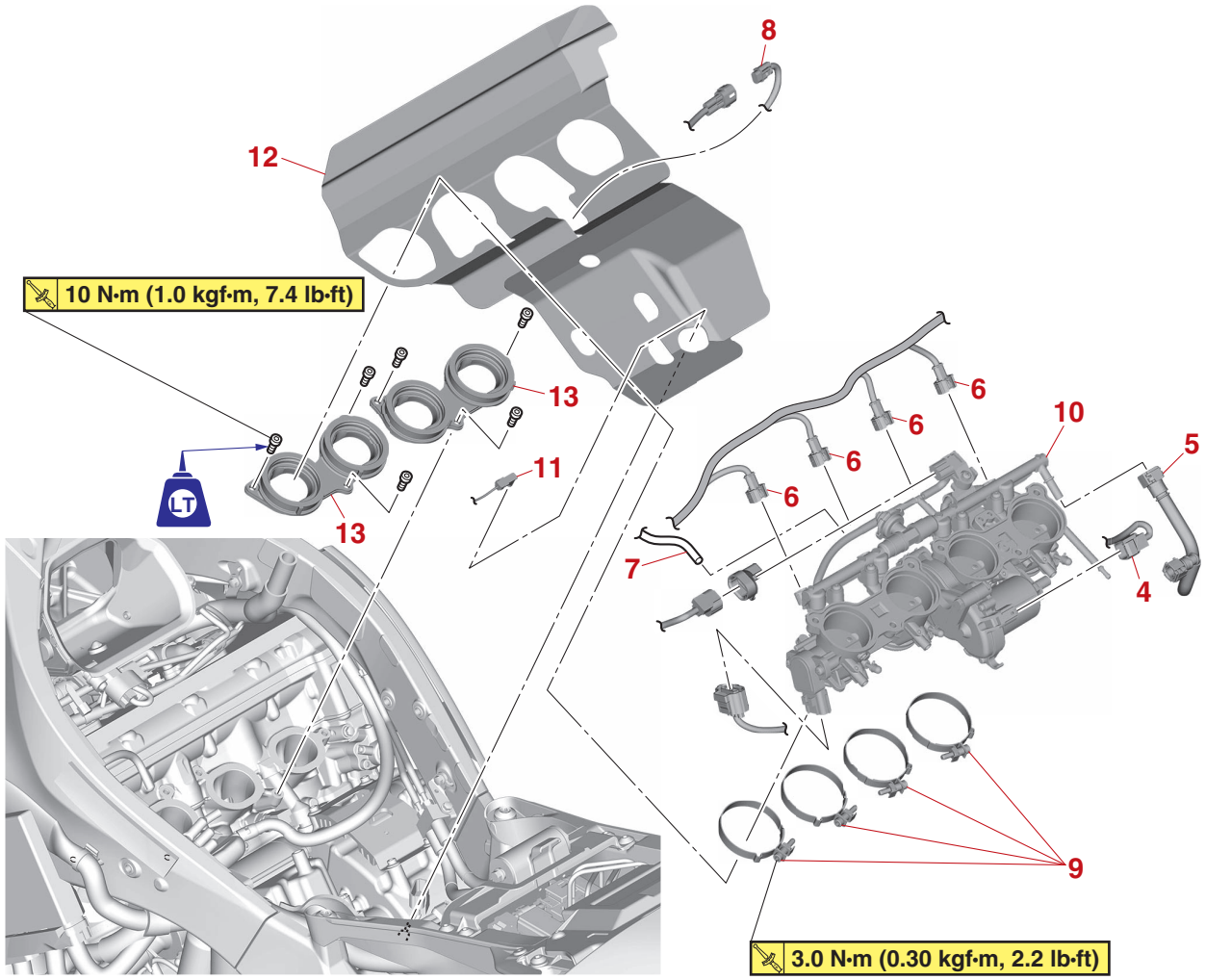
EAS20070
THROTTLE BODIES

Removing the throttle bodies



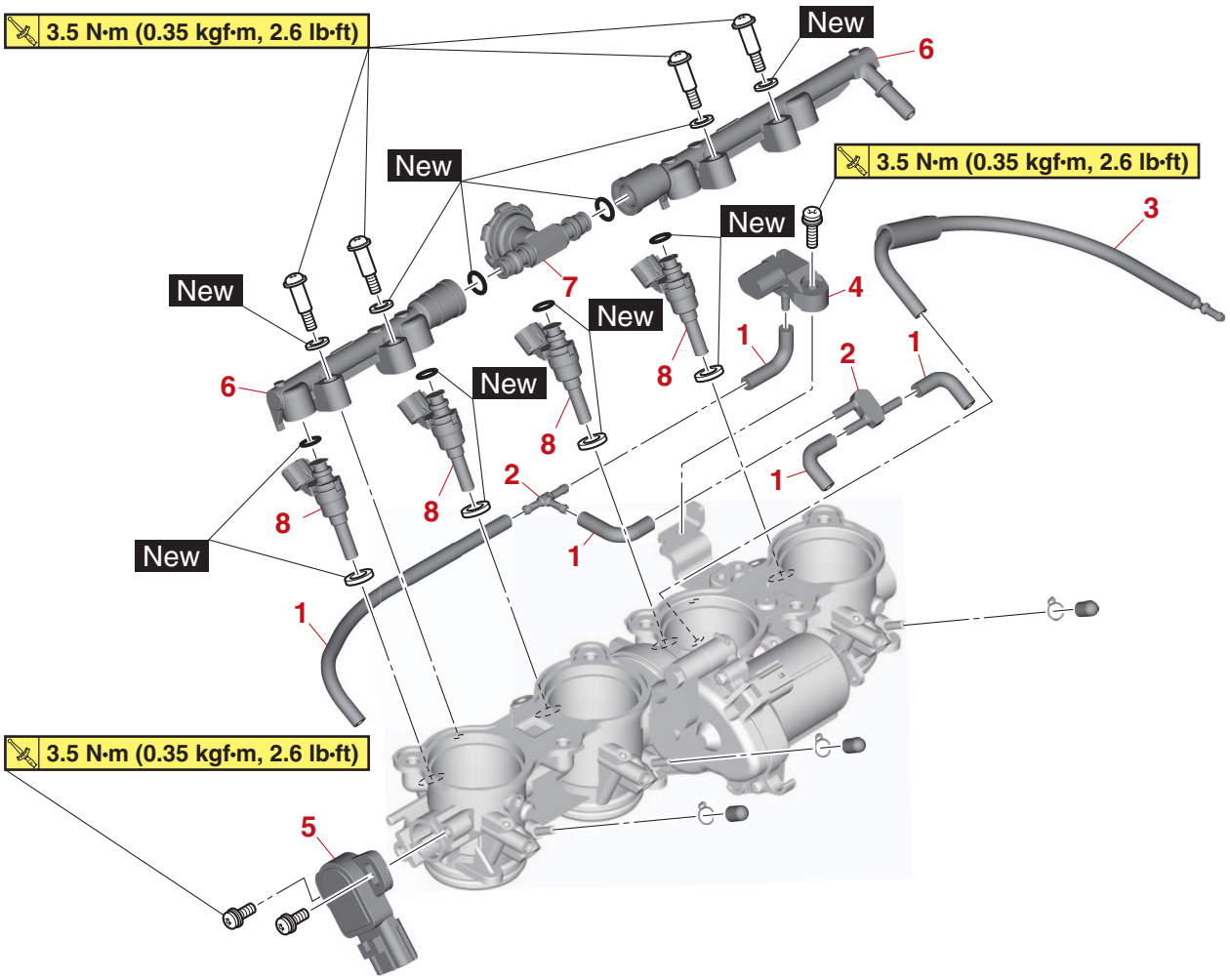
Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Front side cowling		Refer to "GENERAL CHASSIS (5)" on page 4-16.
	Side cover		Refer to "GENERAL CHASSIS (6)" on page 4-23.
	Side cover bracket		Refer to "GENERAL CHASSIS (8)" on page 4-32.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
	Canister		Refer to "FUEL TANK" on page 7-1. For California only.
1	Throttle position sensor coupler	1	Disconnect.
2	Intake air pressure sensor coupler	1	Disconnect.
3	Coupler holder	1	

Removing the throttle bodies



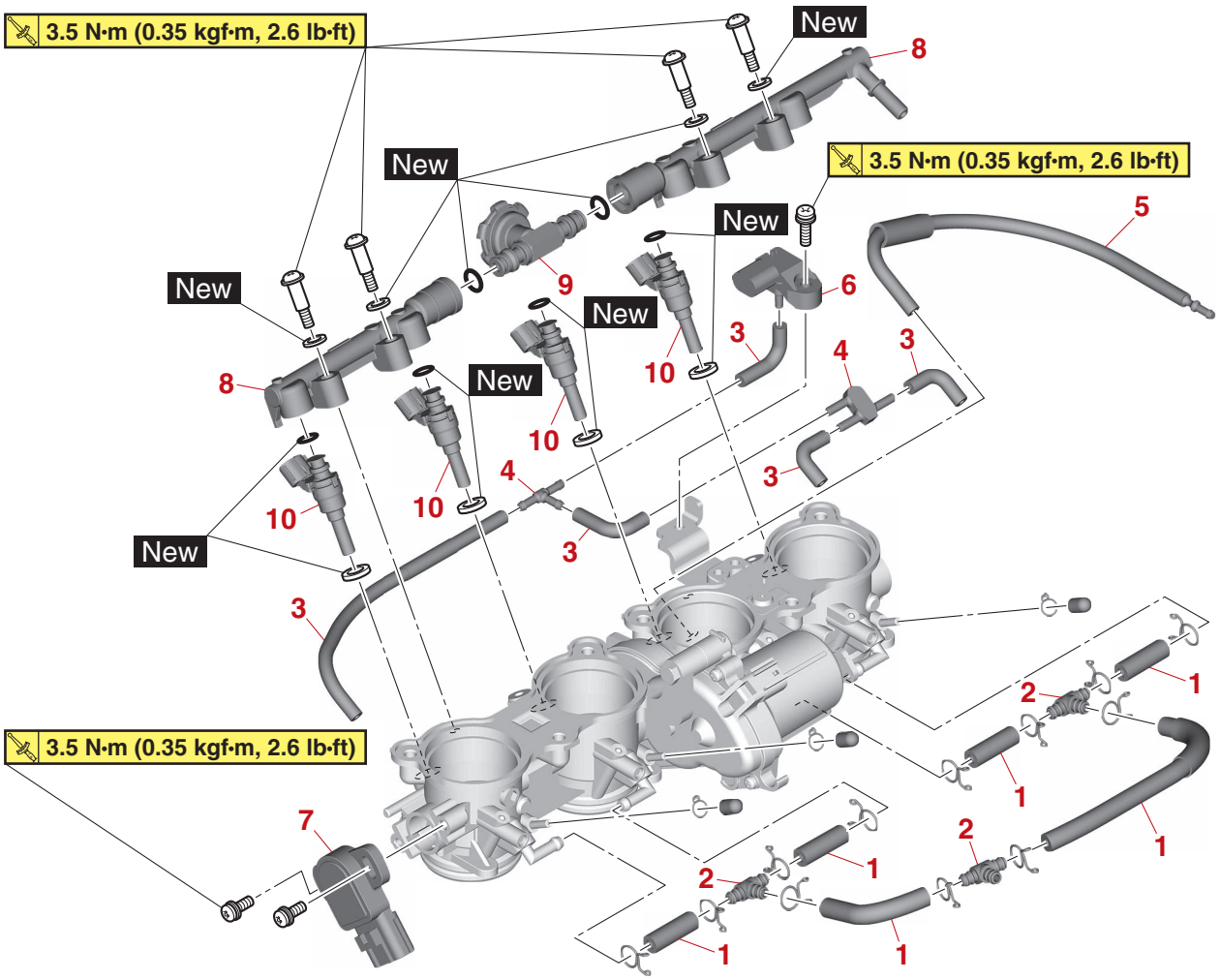
Order	Job/Parts to remove	Q'ty	Remarks
4	Throttle servo motor coupler	1	Disconnect.
5	Fuel hose 3 (fuel hose 2 to throttle body)	1	
6	Primary injector coupler	4	Disconnect.
7	Intake solenoid vacuum hose	1	Disconnect.
8	Coolant temperature sensor coupler (sub-wire harness)	1	Disconnect.
9	Throttle body joint clamp screw	4	Loosen.
10	Throttle body assembly	1	
11	Neutral switch connector	1	Disconnect.
12	Heat protector	1	
13	Throttle body joint	2	

Removing the primary injectors (except for California)



Order	Job/Parts to remove	Q'ty	Remarks
1	Negative pressure hose	5	
2	Hose joint	2	
3	Service hose	1	
4	Intake air pressure sensor	1	
5	Throttle position sensor	1	
6	Fuel rail	2	
7	Primary injector joint	1	
8	Primary injector	4	

Removing the primary injectors (for California)



Order	Job/Parts to remove	Q'ty	Remarks
1	Canister purge hose	6	
2	Hose joint	3	
3	Negative pressure hose	5	
4	Hose joint	2	
5	Service hose	1	
6	Intake air pressure sensor	1	
7	Throttle position sensor	1	
8	Fuel rail	2	
9	Primary injector joint	1	
10	Primary injector	4	

EAS31666
CHECKING THE PRIMARY INJECTORS (BEFORE REMOVING)

1. Check:
   • Injectors
   Use the diagnostic code numbers "36"–"39". Refer to "SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE" on page 9-32.

EAS31667
REMOVING THE PRIMARY INJECTORS

EWA17330
⚠ WARNING

• Check the injectors in a well-ventilated area free of combustible materials. Make sure that there is no smoking or use of electric tools in the vicinity of the injectors.
• Be careful when disconnecting the fuel hose. Any remaining pressure in the fuel hose may cause the fuel to spray out. Place a container or rag under the hose to catch any fuel that spills. Always clean up any spilt fuel immediately.
• Turn the main switch to "OFF" and disconnect the negative battery lead from the battery terminal before removing the injectors.

1. Remove:
   • Fuel rail
   a. Remove the fuel rail screws.

EAS31668
CHECKING THE PRIMARY INJECTORS

1. Check:
   • Injectors
   Obstruction → Replace and check the fuel pump/fuel supply system.
   Deposit → Replace.
   Damage → Replace.
2. Check:
   • Injector resistance
   Refer to "CHECKING THE FUEL INJECTORS" on page 8-51.

EAS30769
CHECKING AND CLEANING THE THROTTLE BODIES

TIP

Clean the throttle bodies only if they cannot be synchronized using the bypass air screws. Before cleaning the throttle bodies, check the following items:
• Valve clearance
• Spark plugs
• Air filter element
• Throttle body joints
• Fuel hoses
• Air induction system
• Exhaust system
• Crankcase breather hose
• Vacuum hose

EWA17340
⚠ WARNING

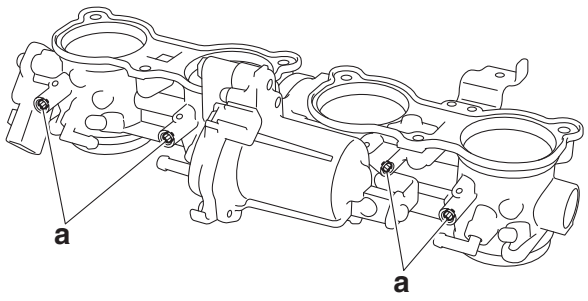
If the throttle bodies are subjected to strong shocks or dropped during cleaning, replace them as a set.

1. Check:
   • Throttle bodies
   Cracks/damage → Replace the throttle bodies as a set.
2. Clean:
   • Throttle bodies

ECA21540
NOTICE

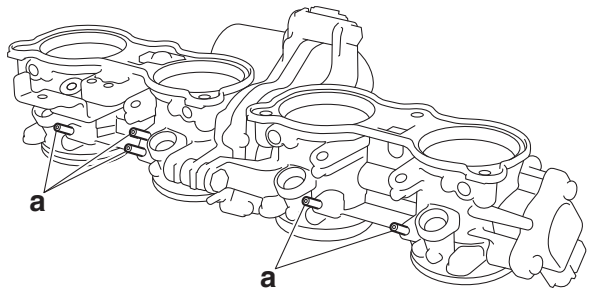
• Observe the following precautions; otherwise, the throttle bodies may not operate properly.
• Do not subject the throttle bodies to excessive force.
• Clean the throttle bodies in the recommended cleaning solvent.
• Do not use any caustic carburetor cleaning solution.
• Do not apply cleaning solvent directly to any plastic parts, sensors, or seals.
• Be careful not to remove the white paint mark that identifies the standard throttle body.
• Do not turn the bypass air screws "a"; otherwise, the throttle body synchronization will be affected.

	Recommended cleaning solvent **Yamaha Oil & Brake Cleaner**



a. Place the throttle bodies on a flat surface with the air filter case side facing up.

b. Install the caps (895-14169-00) onto the hose fittings “a”.



c. Hold the throttle valves in the open position.

EWA15940

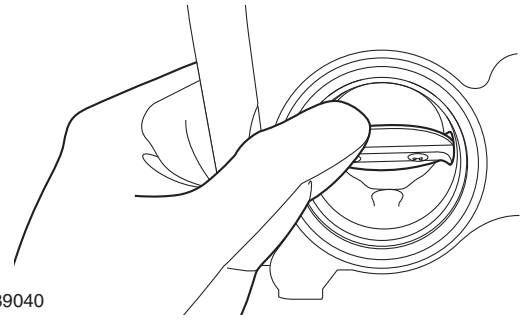
⚠ WARNING

When cleaning the throttle bodies, be careful not to injure yourself on the throttle valves or other components of the throttle bodies.

ECA20380

NOTICE

- **Do not open the throttle valves by supplying electrical power to the throttle bodies.**
- **Do not use tools to open the throttle valves or to keep them in the open position.**
- **Do not open the throttle valves quickly.**



d. Apply the recommended cleaning solvent to the throttle valves and the inside of the throttle bodies to remove any carbon deposits.

TIP

- Do not allow any cleaning solvent to enter the opening for the injectors.
- Do not apply any cleaning solvent to the portions of the throttle valve shafts between the throttle bodies.

e. Remove the carbon deposits from the inside of each throttle body in a downward direction, from the air filter case side of the throttle body to the engine side.

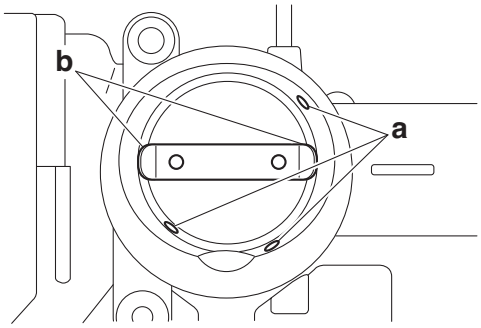
ECA17590

NOTICE

- **Do not use a tool, such as a wire brush, to remove the carbon deposits; otherwise, the inside of the throttle bodies may be damaged.**
- **Do not allow carbon deposits or other foreign materials to enter any of the passages in each throttle body or in the space between the throttle valve shaft and the throttle body.**

f. After removing the carbon deposits, clean the inside of the throttle bodies with the recommended cleaning solvent, and then dry the throttle bodies using compressed air.

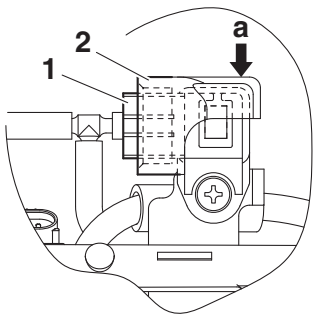
g. Make sure that there are no carbon deposits or other foreign materials in any of the passages “a” in each throttle body or in the space “b” between the throttle valve shaft and the throttle body.



3. Install the throttle bodies.
4. Connect the intake air pressure sensor coupler “1”.

TIP

After connecting intake air pressure sensor coupler “1”, press corner portion “a” of coupler cover “2”, then make sure that the intake air pressure sensor is not exposed.



5. Reset:
   - ISC (Idle Speed Control) learning values
     Use the diagnostic code number “67”.

Refer to “SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE” on page 9-32.
6. Reset:
   • A/F control learning value
   Use the DTC number “87”.
   Refer to “SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE” on page 9-32.
7. Adjust:
   • Throttle bodies synchronizing
   Out of specification → Replace the throttle bodies.
   Refer to “SYNCHRONIZING THE THROTTLE BODIES” on page 3-9.

EAS31160
REPLACING THE THROTTLE BODIES

1. Remove the throttle bodies from the vehicle.
2. Install a new throttle bodies to the vehicle.
3. Reset:
   • ISC (Idle Speed Control) learning values
   Use the diagnostic code number “67”.
   Refer to “SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE” on page 9-32.
4. Reset:
   • A/F control learning value
   Use the diagnostic code number “87”.
   Refer to “SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE” on page 9-32.
5. Adjust:
   • Throttle bodies synchronizing
   Refer to “SYNCHRONIZING THE THROTTLE BODIES” on page 3-9.
6. Place the vehicle on a maintenance stand so that the rear wheel is elevated.
7. Check:
   • Engine idling speed
   Start the engine, warm it up, and then measure the engine idling speed.

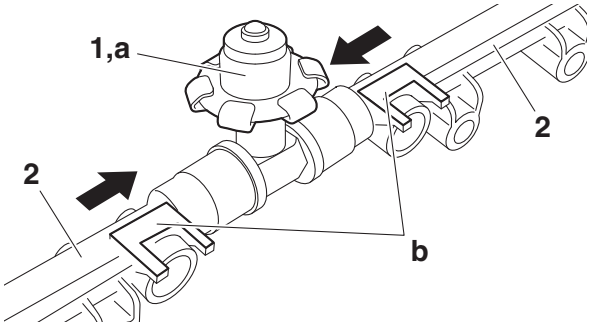
	Engine idling speed **1200–1400 r/min**

EAS31669
INSTALLING THE PRIMARY INJECTORS

ECA21550
NOTICE

- **Always use new O-rings.**
- **When installing the injectors, do not allow any foreign material to enter or adhere to the injectors, fuel rails, or O-rings.**
- **Be careful not to twist or pinch the O-rings when installing the injectors.**
- **When installing the injector, install it at the same position as the removed cylinder.**
- **If an injector is subject to strong shocks or excessive force, replace it.**
- **If installing the original fuel rail and bolts, remove the white paint marks using a cleaning solvent. Otherwise, paint chips on the bolt seats could prevent the bolts from being tightened to the specified torque.**

1. Install primary injector joint “1” so that damper part “a” faces the rib “b” side of fuel rail “2” as shown in the illustration.



2. Install a new seal onto the end of each injector.
3. Install the injectors to the fuel rails.
4. Install the primary injector joint, making sure to install them in the correct direction.
5. Install the injector assemblies to the throttle bodies.

	Fuel rail screw (throttle body) **3.5 N·m (0.35 kgf·m, 2.6 lb·ft)**

6. Check the injector pressure after the injectors are installed.
   Refer to “CHECKING THE INJECTOR PRESSURE” on page 7-17.

EAS30481
CHECKING THE INJECTOR PRESSURE

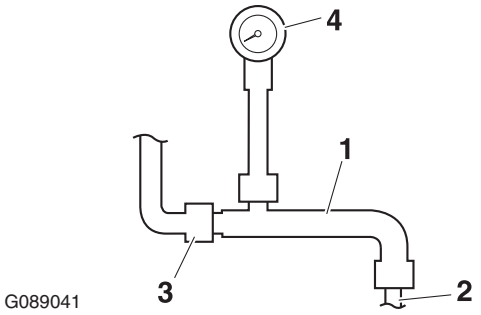
TIP

- After installing the injectors, perform the following steps to check the injector pressure.
- Do not allow any foreign materials to enter the fuel lines.

1. Check:
   • Injector pressure
   a. Connect the fuel injector pressure adapter “1” to the injector joint “2”, and then connect an air compressor “3” to the adapter.

b. Connect the pressure gauge "4" to the fuel injector pressure adapter "1".

Pressure gauge
90890-03153
Pressure gauge
YU-03153
Fuel injector pressure adapter
90890-03210
Fuel injector pressure adapter
YU-03210



c. Close the valve on the injector pressure adapter.
d. Apply air pressure with the air compressor.
e. Open the valve on the injector pressure adapter until the specified pressure is reached.

Specified air pressure
490 kPa (5.0 kgf/cm², 71.1 psi)

ECA17600
NOTICE
Never exceed the specified air pressure or damage could occur.

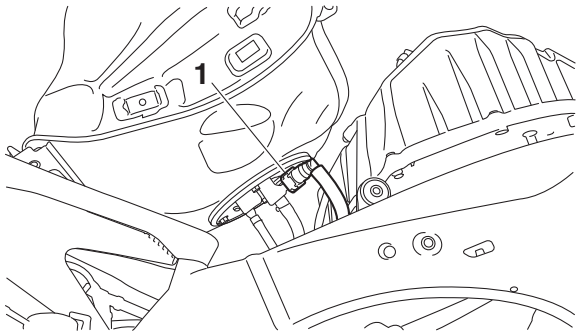
f. Close the valve on the injector pressure adapter.
g. Check that the specified air pressure is held at least one minute.
Pressure drops → Check the pressure gauge and adapter.
Check the seals and O-rings and then reinstall.
Out of specification → Replace the fuel injectors.

EAS30482
CHECKING THE FUEL PRESSURE

1. Remove:
• Rider seat
Refer to "GENERAL CHASSIS (1)" on page 4-1.
• Fuel tank cover
Refer to "FUEL TANK" on page 7-1.
2. Check:
• Fuel pressure
a. Remove the fuel tank bolts and hold up the fuel tank.
b. Disconnect the fuel hose "1" from the fuel pump.
Refer to "FUEL TANK" on page 7-1.

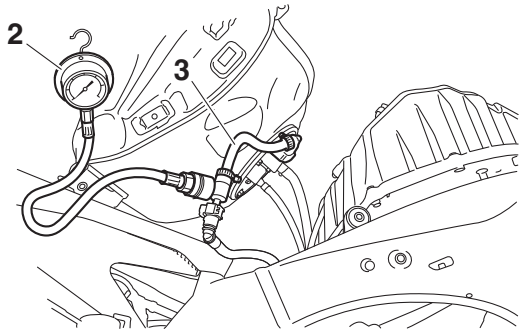
EWA17320
⚠ WARNING
Cover fuel hose connections with a cloth when disconnecting them. Residual pressure in the fuel lines could cause fuel to spurt out when removing the hose.

ECA17490
NOTICE
Be sure to disconnect the fuel hose by hand. Do not forcefully disconnect the hose with tools.



c. Connect the pressure gauge "2" and fuel pressure adapter "3" to the fuel hose.

Pressure gauge
90890-03153
Pressure gauge
YU-03153
Fuel pressure adapter
90890-03176
Fuel pressure adapter
YM-03176



d. Start the engine.

e. Measure the fuel line pressure.
Faulty → Replace the fuel pump.

Fuel line pressure (at idle)
300–390 kPa (3.0–3.9 kgf/cm², 43.5–56.6 psi)

3. Install:
- Fuel tank
- Fuel tank cover
Refer to "FUEL TANK" on page 7-1.
- Rider seat
Refer to "GENERAL CHASSIS (1)" on page 4-1.

EAS30485
ADJUSTING THE THROTTLE POSITION SENSOR

ECA17540
NOTICE

- **Handle the throttle position sensor with special care.**
- **Never subject the throttle position sensor to strong shocks. If the throttle position sensor is dropped, replace it.**

1. Check:
- Throttle position sensor
Refer to "DIAGNOSTIC CODE: SENSOR OPERATION TABLE" on page 9-59.
2. Adjust:
- Throttle position sensor angle

TIP

Before adjusting the throttle position sensor, the throttle bodies must be removed.

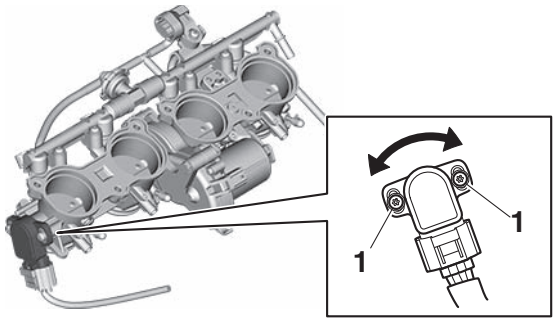
a. Temporary tighten the throttle position sensor screws.
b. Check that the throttle valves are fully closed.
c. Connect the throttle position sensor to the wire harness.
d. Remove the protective cap, and then connect the Yamaha diagnostic tool to coupler.

TIP

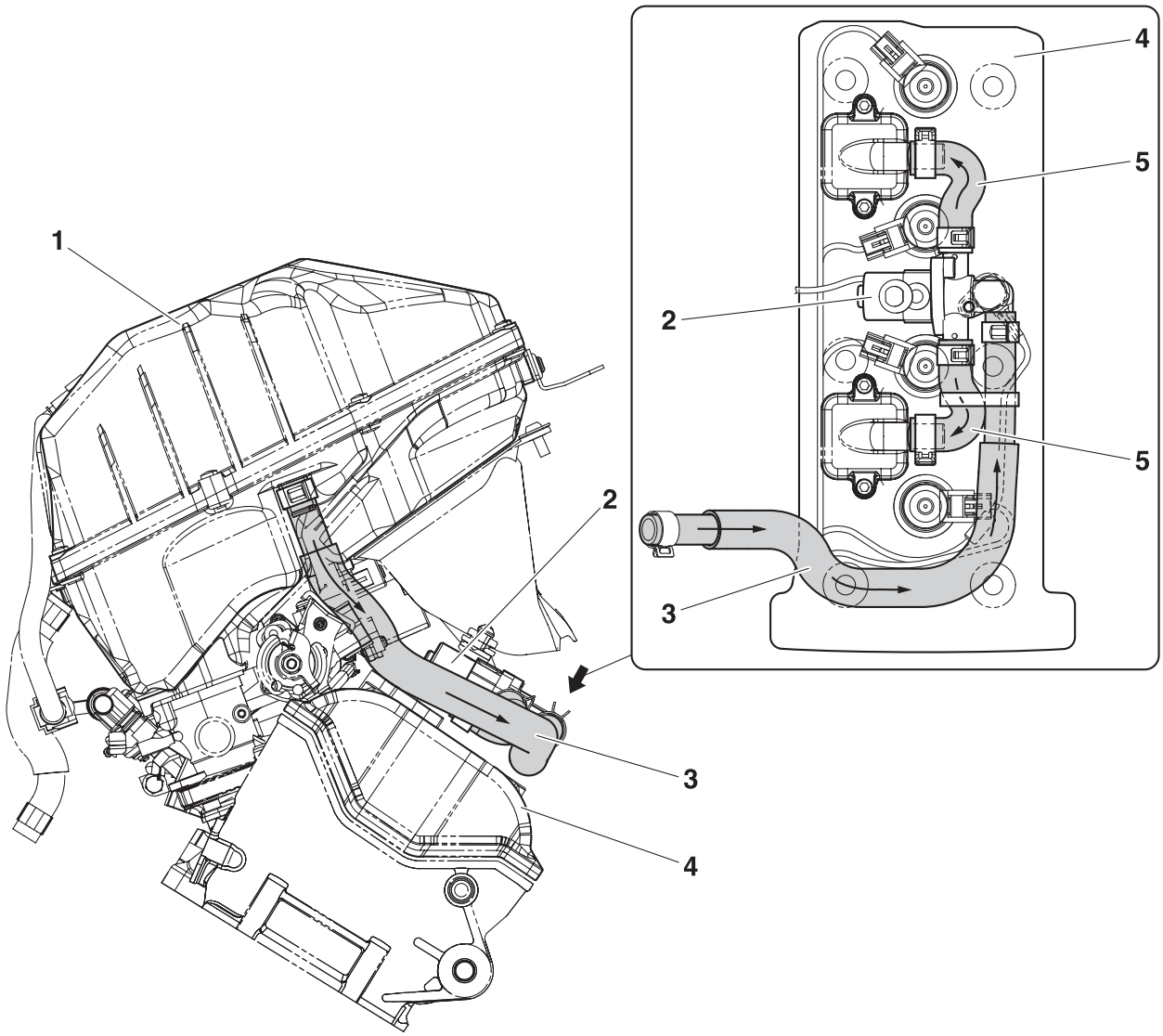
For information about using the Yamaha diagnostic tool, refer to the operation manual that is included with the tool.

Refer to "SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE" on page 9-32.
e. Diagnostic code number "01" is selected.
f. Adjust the position of the throttle position sensor angle so that 11–21 can appear in the Yamaha diagnostic tool screen.
g. After adjusting the throttle position sensor angle, tighten the throttle position sensor bolts "1".

Throttle position sensor bolt
3.5 N·m (0.35 kgf·m, 2.6 lb·ft)

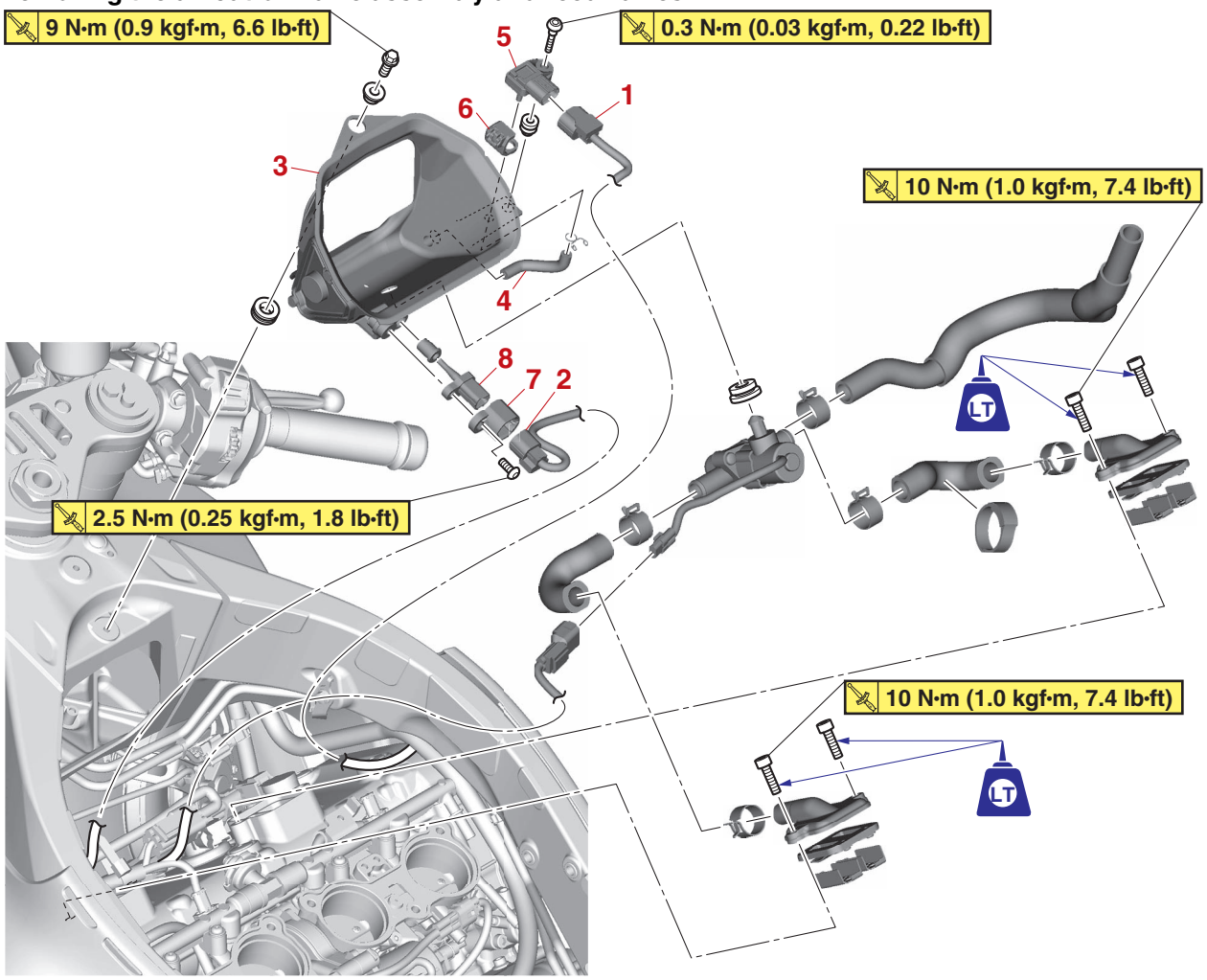


EAS20071
AIR INDUCTION SYSTEM



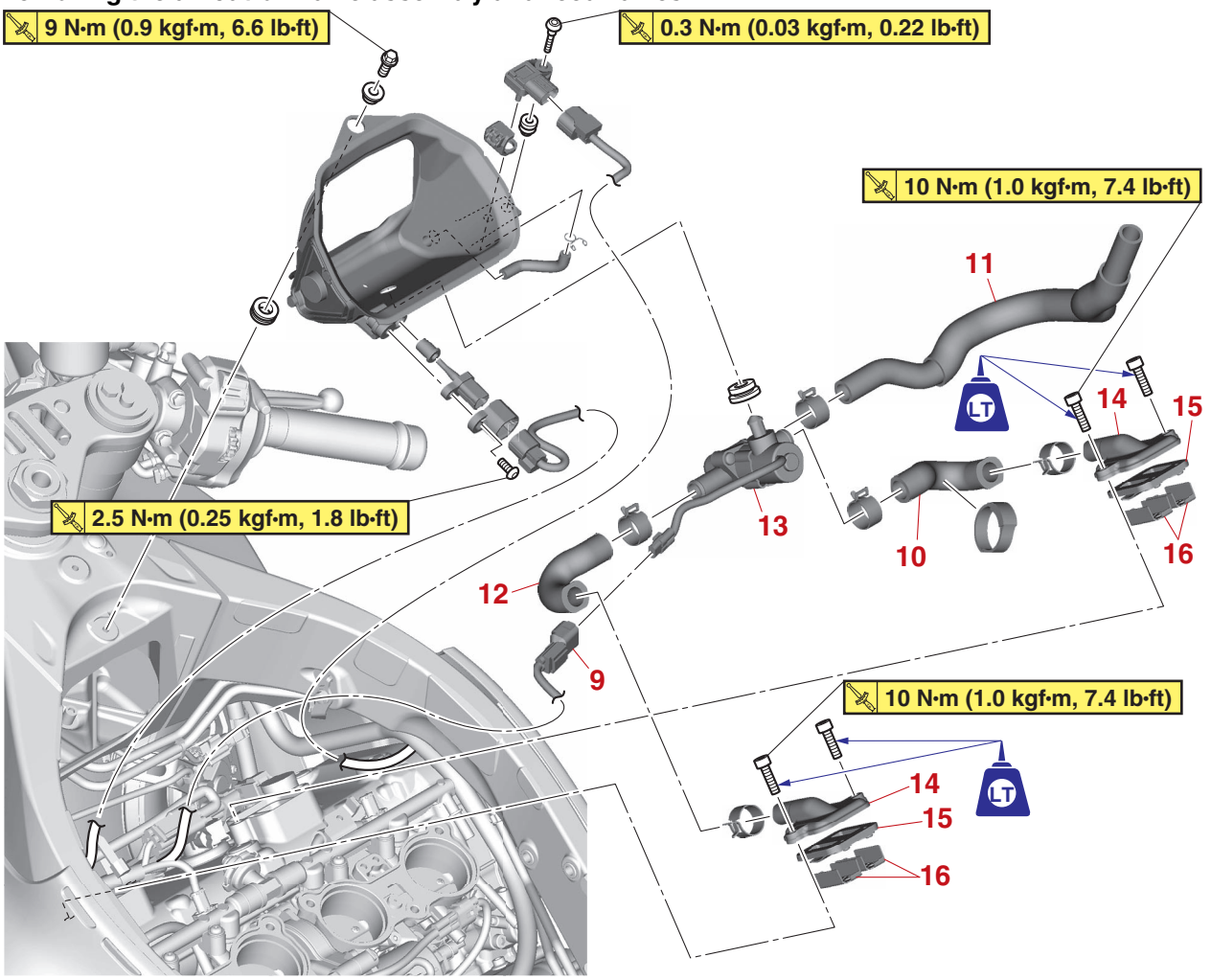
1. Air filter case
2. Air cut-off valve
3. Air induction system hose (air filter case to air cut-off valve)
4. Cylinder head cover
5. Air induction system hose (air cut-off valve to reed valve cover)

Removing the air cut-off valve assembly and reed valves



Order	Job/Parts to remove	Q'ty	Remarks
	Rider seat		Refer to "GENERAL CHASSIS (1)" on page 4-1.
	Fuel tank		Refer to "FUEL TANK" on page 7-1.
	Air filter case		Refer to "AIR FILTER CASE" on page 7-5.
1	Atmospheric pressure sensor coupler	1	Disconnect.
2	Intake air temperature sensor coupler	1	Disconnect.
3	Air filter case duct	1	
4	Atmospheric pressure sensor hose	1	
5	Atmospheric pressure sensor	1	
6	Damper	1	
7	Intake air temperature sensor holder	1	
8	Intake air temperature sensor	1	

Removing the air cut-off valve assembly and reed valves

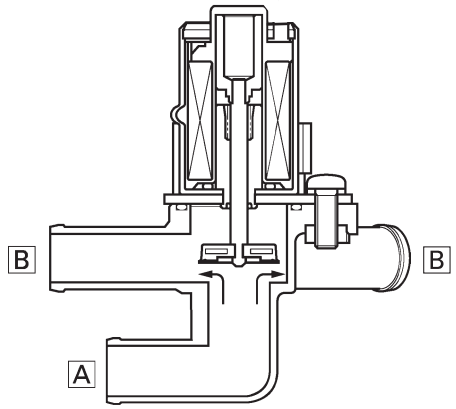


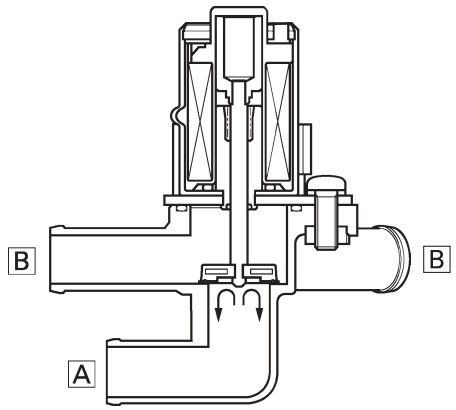
Order	Job/Parts to remove	Q'ty	Remarks
9	Air cut-off valve coupler	1	Disconnect.
10	Air induction system hose (air cut-off valve to reed valve cover)	1	
11	Air induction system hose (air filter case to air cut-off valve)	1	
12	Air induction system hose (air cut-off valve to reed valve cover)	1	
13	Air cut-off valve	1	
14	Reed valve cover	2	
15	Reed valve assembly	2	
16	Reed valve plate	4	

EAS30488
CHECKING THE AIR INDUCTION SYSTEM

Air injection
The air induction system burns unburned exhaust gases by injecting fresh air (secondary air) into the exhaust port, reducing the emission of hydrocarbons. When there is negative pressure at the exhaust port, the reed valve opens, allowing secondary air to flow into the exhaust port. The required temperature for burning the unburned exhaust gases is approximately 600 to 700 °C (1112 to 1292 °F).

Air cut-off valve
The air cut-off valve is controlled by the signals from the ECU in accordance with the combustion conditions. Ordinarily, the air cut-off valve opens to allow the air to flow during idle and closes to cut-off the flow when the vehicle is being driven. However, if the coolant temperature is below the specified value, the air cut-off valve remains open and allows the air to flow into the exhaust pipe until the temperature becomes higher than the specified value.

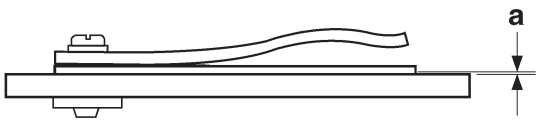




A. From the air filter case
B. To the cylinder head

1. Check:
   • Hoses
   Loose connections → Connect properly.
   Cracks/damage → Replace.
2. Check:
   • Reed valve
   • Reed valve stopper
   • Reed valve seat
   Cracks/damage → Replace the reed valve assembly.
3. Measure:
   • Reed valve bending limit “a”
   Out of specification → Replace the reed valve assembly.

	Reed valve bending limit **0.4 mm (0.02 in)**



G089044

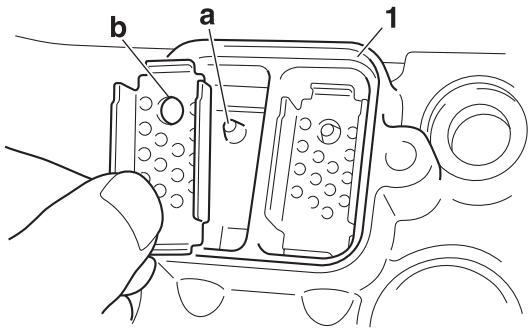
4. Check:
   • Air cut-off valve
   Cracks/damage → Replace.
5. Check:
   • Air induction system solenoid
   Refer to "CHECKING THE AIR INDUCTION SYSTEM SOLENOID" on page 8-49.

EAS30489
INSTALLING THE AIR INDUCTION SYSTEM

1. Install:
   • Reed valve plate

TIP

Align the projection "a" on the cylinder head cover "1" with the hole "b" in the reed valve plate.



2. Install:
   • Reed valve assembly

TIP

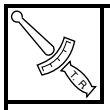
Install the reed valve assembly so that the open side turns to the exhaust side of the engine.



G089045

A. Exhaust side

3. Install:
   • Reed valve cover

	**Reed valve cover bolt** **10 N·m (1.0 kgf·m, 7.4 lb·ft)** **LOCTITE®**

ELECTRICAL SYSTEM

IGNITION SYSTEM 8-1
CIRCUIT DIAGRAM 8-1
ENGINE STOPPING DUE TO SIDESTAND OPERATION 8-3
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ELECTRIC STARTING SYSTEM 8-7
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CHARGING SYSTEM 8-12
CIRCUIT DIAGRAM 8-12
TROUBLESHOOTING 8-13

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CIRCUIT DIAGRAM 8-15
TROUBLESHOOTING 8-17

SIGNALING SYSTEM 8-19
CIRCUIT DIAGRAM 8-19
TROUBLESHOOTING 8-21

COOLING SYSTEM 8-27
CIRCUIT DIAGRAM 8-27
TROUBLESHOOTING 8-29

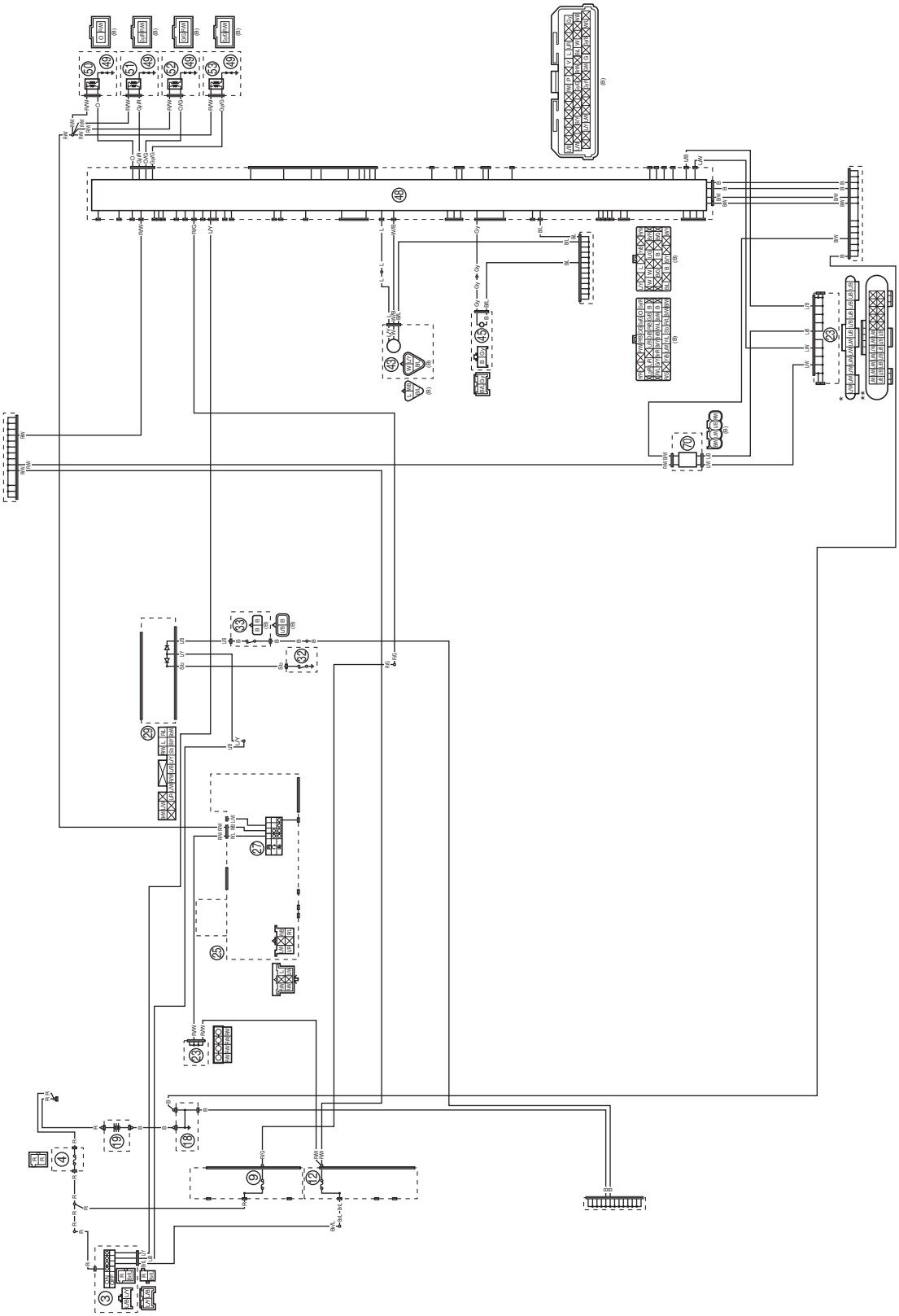
FUEL PUMP SYSTEM 8-31
CIRCUIT DIAGRAM 8-31
TROUBLESHOOTING 8-33

COMMUNICATION CONTROL SYSTEM (for YZF-R1M) 8-35
CIRCUIT DIAGRAM 8-35
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CHECKING THE STEERING DAMPER SOLENOID 8-51
CHECKING THE FUEL INJECTORS 8-51
CHECKING THE WHEEL SWITCH 8-52

EAS20072
IGNITION SYSTEM

EAS30490
CIRCUIT DIAGRAM



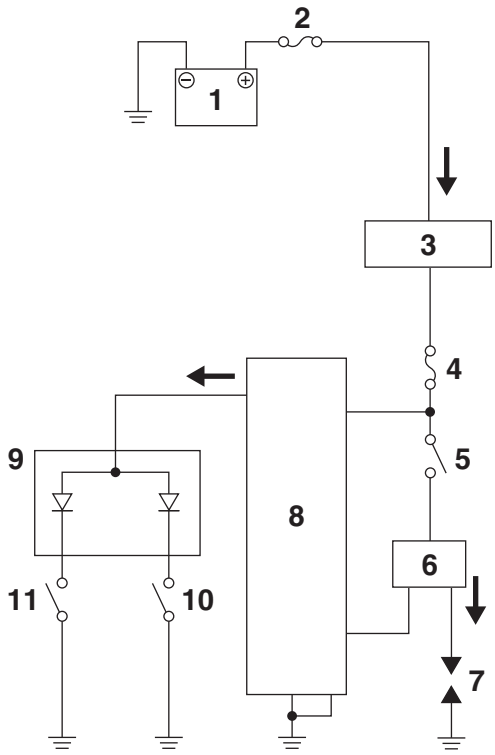
3. Main switch
4. Main fuse
9. Backup fuse
12. Ignition fuse
18. Engine ground
19. Battery
23. Joint coupler
25. Handlebar switch (right)
27. Start/engine stop switch
29. Relay unit
32. Neutral switch
33. Sidestand switch
43. Cylinder identification sensor
45. Crankshaft position sensor
48. ECU (Engine Control Unit)
49. Spark plug
50. Ignition coil #1
51. Ignition coil #2
52. Ignition coil #3
53. Ignition coil #4
70. IMU (Inertial Measurement Unit)

*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

EAS30491
ENGINE STOPPING DUE TO SIDESTAND OPERATION

When the engine is running and the transmission is in gear, the engine will stop if the sidestand is moved down. This is because the electric current from the ECU does not flow to the ignition coils or fuel injectors when the neutral switch or sidestand switch is open. However, the engine continues to run under the following conditions:

- The transmission is in gear (the neutral switch is open) and the sidestand is up (the sidestand switch circuit is closed).
- The transmission is in neutral (the neutral switch is closed) and the sidestand is down (the sidestand switch circuit is open).



1. Battery
2. Main fuse
3. Main switch
4. Ignition fuse
5. Start/engine stop switch
6. Ignition coil
7. Spark plug
8. ECU (Engine Control Unit)
9. Relay unit (diode)
10. Sidestand switch
11. Neutral switch

EAS30492
TROUBLESHOOTING

The ignition system fails to operate (no spark or intermittent spark).

TIP

• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel
2. Rider seat
3. Fuel tank cover
4. Fuel tank
5. Air filter case

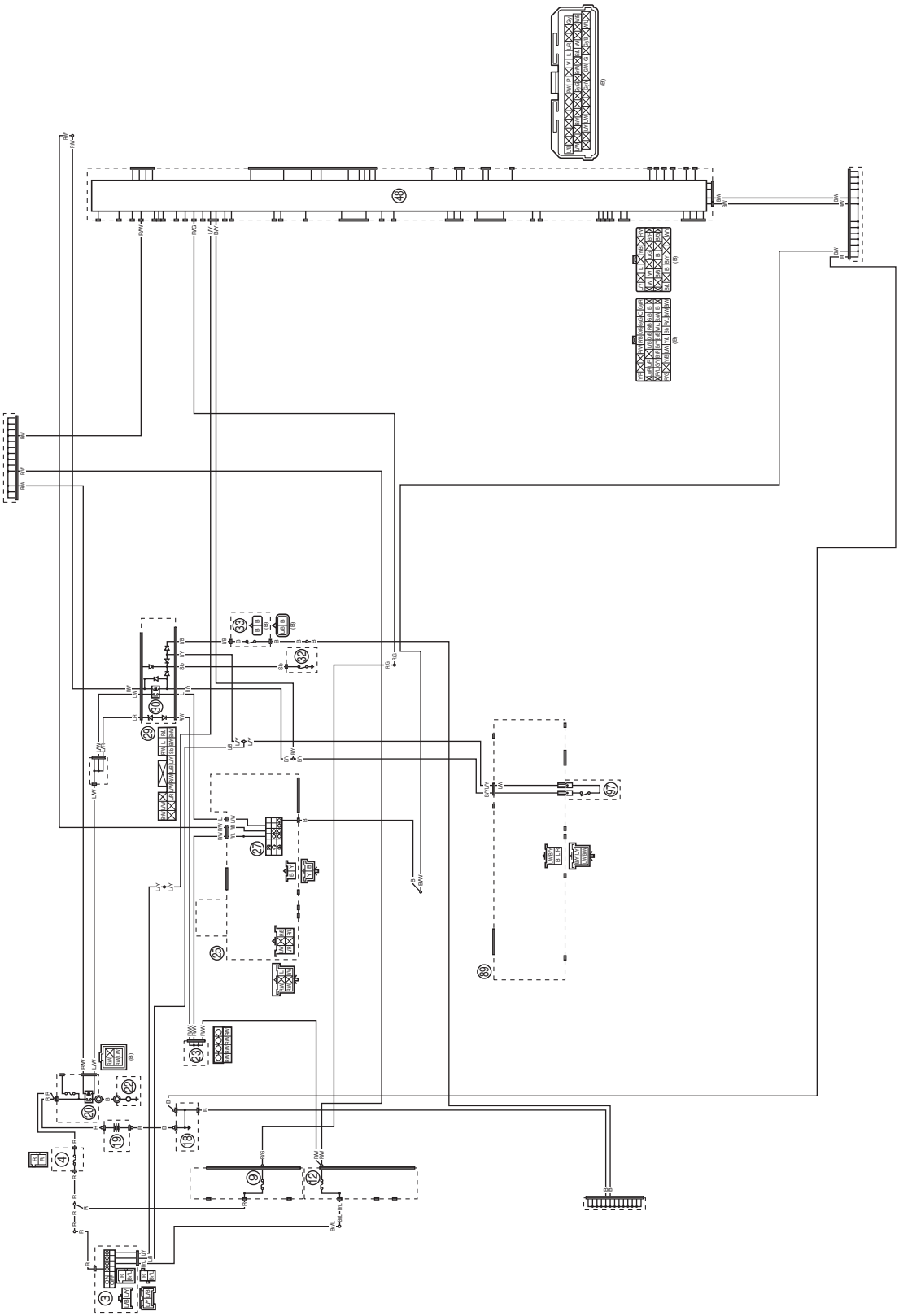
1. Check the fuses. (Main, ignition and backup) Refer to "CHECKING THE FUSES" on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to "CHECKING AND CHARGING THE BATTERY" on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the spark plugs. Refer to "CHECKING THE SPARK PLUGS" on page 3-5.	NG →	Re-gap or replace the spark plug(s).
OK ↓		
4. Check the ignition spark gap. Refer to "CHECKING THE SPARK PLUGS" on page 3-5.	OK →	Ignition system is OK.
NG ↓		
5. Check the ignition coils. Refer to "CHECKING THE IGNITION COILS" on page 8-44.	NG →	Replace the ignition coil(s).
OK ↓		
6. Check the crankshaft position sensor. Refer to "CHECKING THE CRANKSHAFT POSITION SENSOR" on page 8-45.	NG →	Replace the crankshaft position sensor.
OK ↓		
7. Check the cylinder identification sensor. Refer to "CHECKING THE CYLINDER IDENTIFICATION SENSOR" on page 8-50.	NG →	Replace the cylinder identification sensor.
OK ↓		

8. Check the main switch.
   Refer to “CHECKING THE SWITCHES” on page 8-40.
   NG → Replace the main switch.
   OK ↓
9. Check the start/engine stop switch.
   Refer to “CHECKING THE SWITCHES” on page 8-40.
   NG → Replace the handlebar switch (right).
   OK ↓
10. Check the neutral switch.
    Refer to “CHECKING THE SWITCHES” on page 8-40.
    NG → Replace the neutral switch.
    OK ↓
11. Check the sidestand switch.
    Refer to “CHECKING THE SWITCHES” on page 8-40.
    NG → Replace the sidestand switch.
    OK ↓
12. Check the relay unit (diode).
    Refer to “CHECKING THE RELAY UNIT (DIODE)” on page 8-43.
    NG → Replace the relay unit.
    OK ↓
13. Check the entire ignition system’s wiring.
    Refer to “CIRCUIT DIAGRAM” on page 8-1.
    NG → Properly connect or repair the ignition system’s wiring.
    OK ↓

Replace the ECU or IMU.
Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

EAS20073
ELECTRIC STARTING SYSTEM

EAS30493
CIRCUIT DIAGRAM



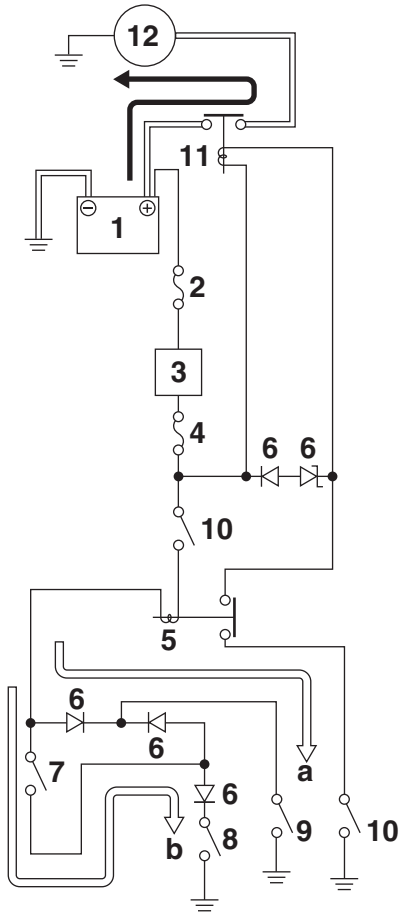
3. Main switch
4. Main fuse
9. Backup fuse
12. Ignition fuse
18. Engine ground
19. Battery
20. Starter relay
22. Starter motor
23. Joint coupler
25. Handlebar switch (right)
27. Start/engine stop switch
29. Relay unit
30. Starting circuit cut-off relay
32. Neutral switch
33. Sidestand switch
48. ECU (Engine Control Unit)
89. Handlebar switch (left)
97. Clutch switch

EAS30494
STARTING CIRCUIT CUT-OFF SYSTEM OPERATION

If the main switch is turned to "ON" and the "" side of the start/engine stop switch is pushed, the starter motor can only operate if at least one of the following conditions is met:

- The transmission is in neutral (the neutral switch is closed).
- The clutch lever is pulled to the handlebar (the clutch switch is closed) and the sidestand is up (the sidestand switch is closed).

The starting circuit cut-off relay prevents the starter motor from operating when neither of these conditions has been met. In this instance, the starting circuit cut-off relay is open so current cannot reach the starter motor. When at least one of the above conditions has been met, the starting circuit cut-off relay is closed and the engine can be started by pressing the "" side of the start/engine stop switch.



a. WHEN THE TRANSMISSION IS IN NEUTRAL
b. WHEN THE SIDESTAND IS UP AND THE CLUTCH LEVER IS PULLED TO THE HANDLEBAR
1. Battery
2. Main fuse
3. Main switch
4. Ignition fuse
5. Starting circuit cut-off relay
6. Relay unit (diode)
7. Clutch switch
8. Sidestand switch
9. Neutral switch
10. Start/engine stop switch
11. Starter relay
12. Starter motor

EAS30495
TROUBLESHOOTING
The starter motor fails to turn.

TIP
• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel/Side cover
2. Rider seat
3. Fuel tank cover
4. Fuel tank
5. Air filter case
6. Throttle bodies

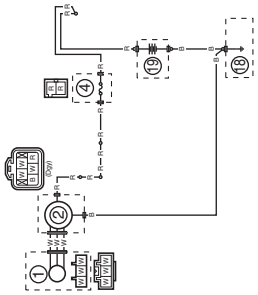
1. Check the fuses. (Main, ignition and backup) Refer to "CHECKING THE FUSES" on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to "CHECKING AND CHARGING THE BATTERY" on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the starter motor operation. Refer to "CHECKING THE STARTER MOTOR OPERATION" on page 8-46.	OK →	Starter motor is OK. Perform the electric starting system troubleshooting, starting with step (5).
NG ↓		
4. Check the starter motor. Refer to "CHECKING THE STARTER MOTOR" on page 5-52.	NG →	Repair or replace the starter motor.
OK ↓		
5. Check the relay unit (starting circuit cut-off relay). Refer to "CHECKING THE RELAYS" on page 8-42.	NG →	Replace the relay unit.
OK ↓		
6. Check the relay unit (diode). Refer to "CHECKING THE RELAY UNIT (DIODE)" on page 8-43.	NG →	Replace the relay unit.
OK ↓		
7. Check the starter relay. Refer to "CHECKING THE RELAYS" on page 8-42.	NG →	Replace the starter relay.
OK ↓		

8. Check the main switch.
   Refer to “CHECKING THE SWITCHES” on page 8-40.
   NG → Replace the main switch.
   OK ↓
9. Check the neutral switch.
   Refer to “CHECKING THE SWITCHES” on page 8-40.
   NG → Replace the neutral switch.
   OK ↓
10. Check the sidestand switch.
    Refer to “CHECKING THE SWITCHES” on page 8-40.
    NG → Replace the sidestand switch.
    OK ↓
11. Check the clutch switch.
    Refer to “CHECKING THE SWITCHES” on page 8-40.
    NG → Replace the clutch switch.
    OK ↓
12. Check the start/engine stop switch.
    Refer to “CHECKING THE SWITCHES” on page 8-40.
    NG → Replace the handlebar switch (right).
    OK ↓
13. Check the entire starting system’s wiring.
    Refer to “CIRCUIT DIAGRAM” on page 8-7.
    NG → Properly connect or repair the starting system’s wiring.
    OK ↓

Replace the ECU.
Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

EAS20074
CHARGING SYSTEM

EAS30496
CIRCUIT DIAGRAM



1. AC magneto
2. Rectifier/regulator
4. Main fuse
18. Engine ground
19. Battery

EAS30497
TROUBLESHOOTING

The battery is not being charged.

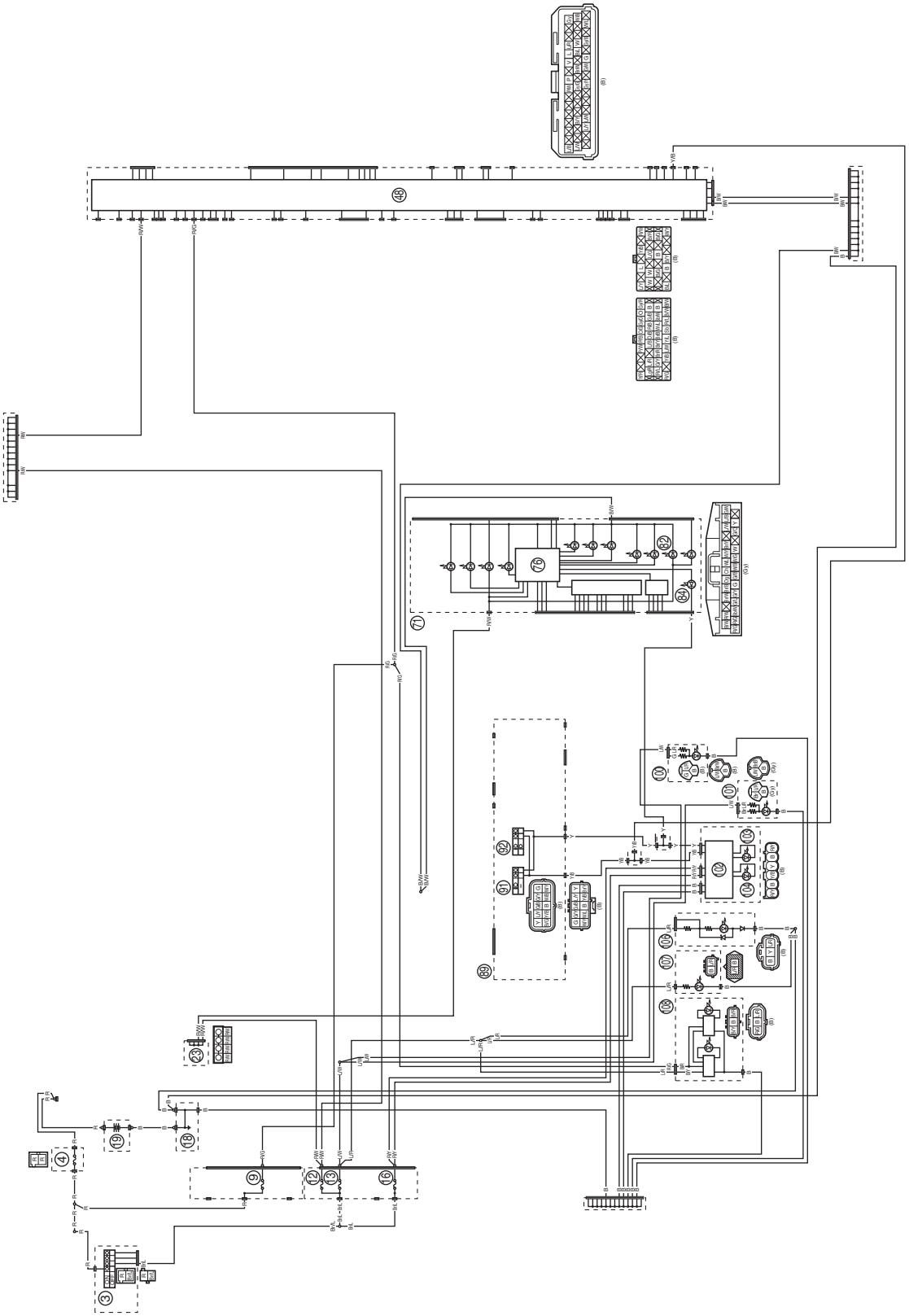
TIP

• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel/Side cover bracket/Electrical components tray
2. Rider seat

1. Check the fuse. (Main) Refer to “CHECKING THE FUSES” on page 8-41.	NG →	Replace the fuse.
OK ↓		
2. Check the battery. Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the stator coil. Refer to “CHECKING THE STATOR COIL” on page 8-46.	NG →	Replace the stator coil assembly.
OK ↓		
4. Check the rectifier/regulator. Refer to “CHECKING THE RECTIFIER/REGULATOR” on page 8-46.	NG →	Replace the rectifier/regulator.
OK ↓		
5. Check the entire charging system’s wiring. Refer to “CIRCUIT DIAGRAM” on page 8-12.	NG →	Properly connect or repair the charging system’s wiring.
OK ↓		
The charging system circuit is OK.		

EAS20075
LIGHTING SYSTEM

EAS30498
CIRCUIT DIAGRAM



3. Main switch
4. Main fuse
9. Backup fuse
12. Ignition fuse
13. Signaling system fuse
16. Headlight fuse
18. Engine ground
19. Battery
23. Joint coupler
48. ECU (Engine Control Unit)
71. Meter assembly
76. Multi-function meter
82. Meter light
84. High beam indicator light
89. Handlebar switch (left)
91. Pass/LAP switch
92. Dimmer switch
100. Front turn signal/position light (right)
101. Front turn signal/position light (left)
102. Headlight control unit
103. Headlight (high beam)
104. Headlight (low beam)
106. Tail/brake light
107. License plate light
108. Auxiliary light

EAS30499
TROUBLESHOOTING

Any of the following fail to light: headlight, auxiliary light, high beam indicator light, tail/brake light, license plate light or meter light.

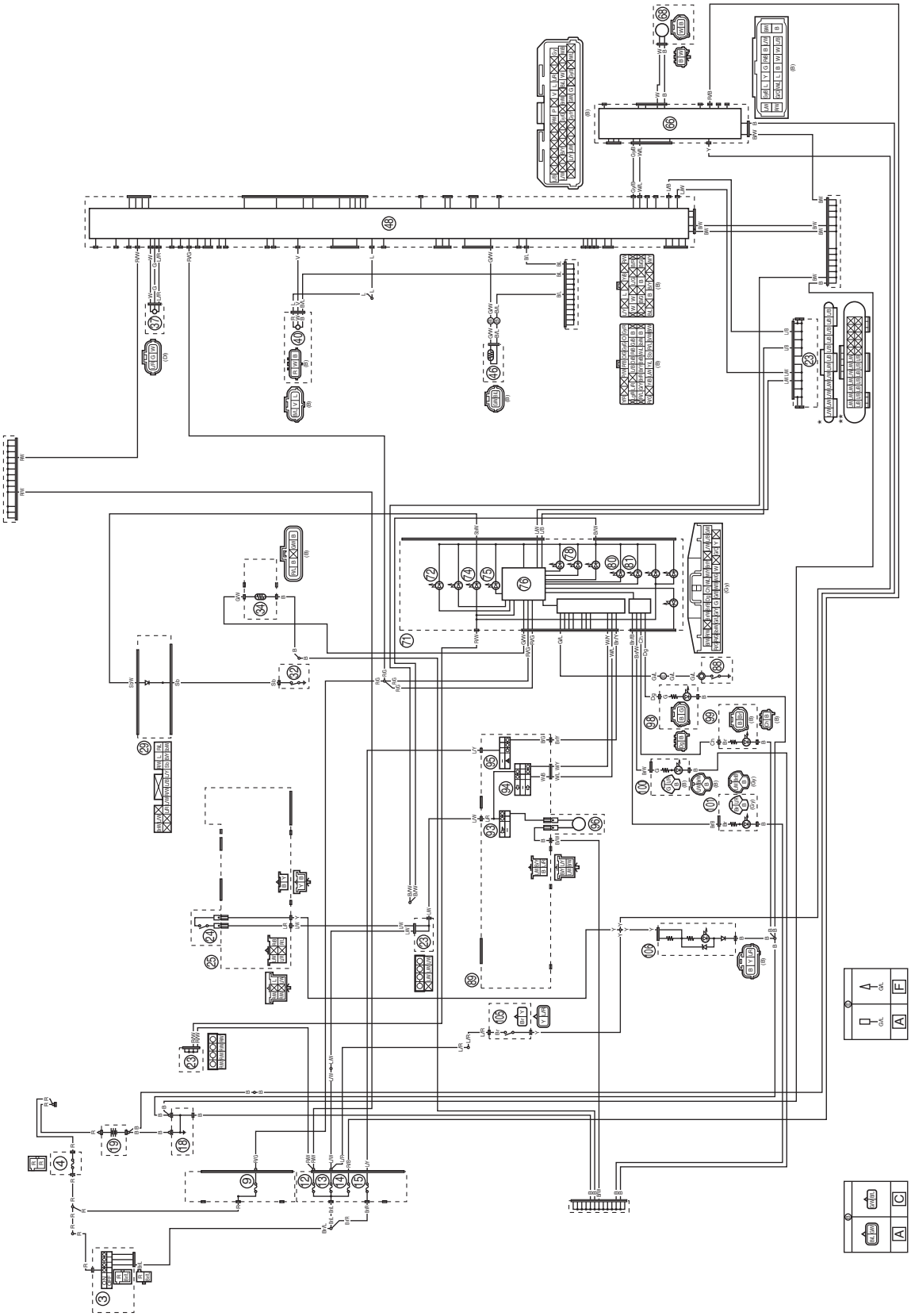
TIP

• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel/Side cover
2. Passenger seat/Rider seat/Tail cover/Rear side cover
3. Headlight assembly

1. Check the fuses. (Main, headlight, backup, ignition and signaling system) Refer to “CHECKING THE FUSES” on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the main switch.
OK ↓		
4. Check the dimmer switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	The dimmer switch is faulty. Replace the handlebar switch (left).
OK ↓		
5. Check the Pass/LAP switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	The Pass/LAP switch is faulty. Replace the handlebar switch (left).
OK ↓		
6. Check the entire lighting system’s wiring. Refer to “CIRCUIT DIAGRAM” on page 8-15.	NG →	Properly connect or repair the lighting system’s wiring.
OK ↓		
Replace the ECU, meter assembly, headlight assembly, front turn signal/position light, tail/brake light, license plate light or auxiliary light. Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.		

EAS20076
SIGNALING SYSTEM

EAS30500
CIRCUIT DIAGRAM



3. Main switch
4. Main fuse
9. Backup fuse
12. Ignition fuse
13. Signaling system fuse
14. ABS ECU fuse
15. Hazard lighting fuse
18. Engine ground
19. Battery
23. Joint coupler
24. Front brake light switch
25. Handlebar switch (right)
29. Relay unit
32. Neutral switch
34. Fuel sender
37. Gear position sensor
40. Shift sensor
46. Coolant temperature sensor
48. ECU (Engine Control Unit)
66. Hydraulic unit assembly (ABS ECU)
68. Rear wheel sensor
71. Meter assembly
72. Fuel level warning light
74. Neutral indicator light
75. Shift indicator light
76. Multi-function meter
78. Oil pressure and coolant temperature warning light
80. Turn signal indicator light (right)
81. Turn signal indicator light (left)
88. Oil pressure switch
89. Handlebar switch (left)
93. Horn switch
94. Turn signal switch
95. Hazard switch
96. Horn
98. Rear turn signal light (right)
99. Rear turn signal light (left)
100. Front turn signal/position light (right)
101. Front turn signal/position light (left)
105. Rear brake light switch
106. Tail/brake light
A. Wire harness
C. Sub-wire harness (coolant temperature sensor)
F. Sub-wire harness (oil pressure switch)
*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

EAS30501
TROUBLESHOOTING

- Any of the following fail to light: turn signal light, brake light or an indicator light.
- The horn fails to sound.
- The speedometer fails to operate.

TIP

- Before troubleshooting, remove the following part(s):

1. Front side cowling/Front panel/Side cover
2. Passenger seat/Rider seat/Tail cover/Rear side cover
3. Fuel tank cover
4. Fuel tank
5. Air filter case
6. Throttle bodies
7. Drive sprocket cover

1. Check the fuses. (Main, ignition, signaling system, backup, ABS ECU and hazard lighting) Refer to “CHECKING THE FUSES” on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the main switch.
OK ↓		
4. Check the entire signaling system’s wiring. Refer to “CIRCUIT DIAGRAM” on page 8-19.	NG →	Properly connect or repair the signaling system’s wiring.
OK ↓		
Check the condition of each of the signaling system circuits. Refer to “Checking the signaling system”.		

Checking the signaling system

The horn fails to sound.

1. Check the horn switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the handlebar switch (left).
OK ↓		

2. Check the horn. Refer to “CHECKING THE HORN” on page 8-47.	NG →	Replace the horn.
OK ↓		
3. Check the entire signaling system’s wiring. Refer to “CIRCUIT DIAGRAM” on page 8-19.	NG →	Properly connect or repair the signaling system’s wiring.
OK ↓		
This circuit is OK.		

The tail/brake light fails to come on.

1. Check the front brake light switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the front brake light switch.
OK ↓		
2. Check the rear brake light switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the rear brake light switch.
OK ↓		
3. Check the entire signaling system’s wiring. Refer to “CIRCUIT DIAGRAM” on page 8-19.	NG →	Properly connect or repair the signaling system’s wiring.
OK ↓		
Replace the tail/brake light.		

The turn signal light, turn signal indicator light or both fail to blink.

1. Check the turn signal switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the handlebar switch (left).
OK ↓		
2. Check the hazard switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the handlebar switch (left).
OK ↓		

3. Check the entire signaling system's wiring. Refer to "CIRCUIT DIAGRAM" on page 8-19.
NG → Properly connect or repair the signaling system's wiring.
OK ↓
Replace the meter assembly, front turn signal/position light or rear turn signal light.

The neutral indicator light fails to come on.

1. Check the neutral switch. Refer to "CHECKING THE SWITCHES" on page 8-40.
NG → Replace the neutral switch.
OK ↓
2. Check the relay unit (diode). Refer to "CHECKING THE RELAY UNIT (DIODE)" on page 8-43.
NG → Replace the relay unit.
OK ↓
3. Check the entire signaling system's wiring. Refer to "CIRCUIT DIAGRAM" on page 8-19.
NG → Properly connect or repair the signaling system's wiring.
OK ↓
Replace the meter assembly.

The oil pressure and coolant temperature warning light fails to come on, or the oil pressure warning icon flashes when the main switch is set to "ON".

1. Check the entire signaling system's wiring. Refer to "CIRCUIT DIAGRAM" on page 8-19.
NG → Properly connect or replace the wiring harness.
OK ↓
2. Disconnect the oil pressure switch lead from the oil pressure switch, and then check whether the oil pressure and coolant temperature warning light comes on when the lead is connected to the engine ground.
NG → Replace the meter assembly.
OK ↓
Replace the oil pressure switch.

The oil pressure and coolant temperature warning light remains on after the engine is started.

1. Check the entire signaling system's wiring.
   Refer to "CIRCUIT DIAGRAM" on page 8-19.

NG → Properly connect or replace the wiring harness.

OK ↓

2. Measure the engine oil pressure.
   Refer to "MEASURING THE ENGINE OIL PRESSURE" on page 3-30.

NG → Check the engine oil leakage, oil viscosity, oil seal, oil filter, or oil pump.

OK ↓

Replace the oil pressure switch.

The fuel level warning light fails to come on.

1. Check the fuel sender.
   Refer to "CHECKING THE FUEL SENDER" on page 8-47.

NG → Replace the fuel pump assembly.

OK ↓

2. Check the entire signaling system's wiring.
   Refer to "CIRCUIT DIAGRAM" on page 8-19.

NG → Properly connect or repair the signaling system's wiring.

OK ↓

Replace the meter assembly.

The oil pressure and coolant temperature warning light fails to come on.

1. Check the coolant temperature sensor.
   Refer to "CHECKING THE COOLANT TEMPERATURE SENSOR" on page 8-48.

NG → Replace the coolant temperature sensor.

OK ↓

2. Check the entire signaling system's wiring.
   Refer to "CIRCUIT DIAGRAM" on page 8-19.

NG → Properly connect or replace the wiring harness.

OK ↓

Replace the ECU or meter assembly.
Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.

QSS (Quick Shift System) does not operate.

1. Check that the auxiliary system warning does not come on.
   NG → Repair the faulty parts.
   OK ↓
2. Check that the QSS is working under normal QSS operating conditions.
   NG → Check the QSS operating conditions explained in the owner's manual and operate the QSS accordingly.
   OK ↓
3. Make sure that the QSS is effective. (Check whether the "QS ▲ ▼" icon is displayed at the top of the meter.)
   NG → Activate the QSS. (Set the QSS to a setting other than "OFF".)
   OK ↓
4. Are you operating while the "QS ▲ ▼" icon is lit?
   NG → Operate while the "QS ▲ ▼" icon is lit.
   OK ↓
5. Is the transmission gear display normal?
   NG → Repair the gear position sensor.
   OK ↓
6. Check the connection of the coupler between the gear position sensor and the ECU.
   NG → Connect the gear position sensor coupler.
   OK ↓
7. Are the clutch and neutral switches normal?
   NG → Repair the switch if it is not normal.
   OK ↓
8. Check the shift sensor value in the DIAG mode.
   2.5 V when the shift pedal is not being operated.
   4.5 V when the shift pedal is pressed fully in.
   0.5 V when the shift pedal is pushed fully up.
   NG → Replace the shift sensor.
   OK ↓
9. Check the entire signaling system's wiring.
   Refer to "CIRCUIT DIAGRAM" on page 8-19.
   NG → Properly connect or repair the signaling system's wiring.
   OK ↓

Replace the ECU.
Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.

The speedometer fails to operate.

1. Check the rear wheel sensor.
   Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

NG → Replace the rear wheel sensor.

OK ↓

2. Check the entire wheel sensor wiring.
   Refer to TIP.

NG → Properly connect or repair the wheel sensor wiring.

OK ↓

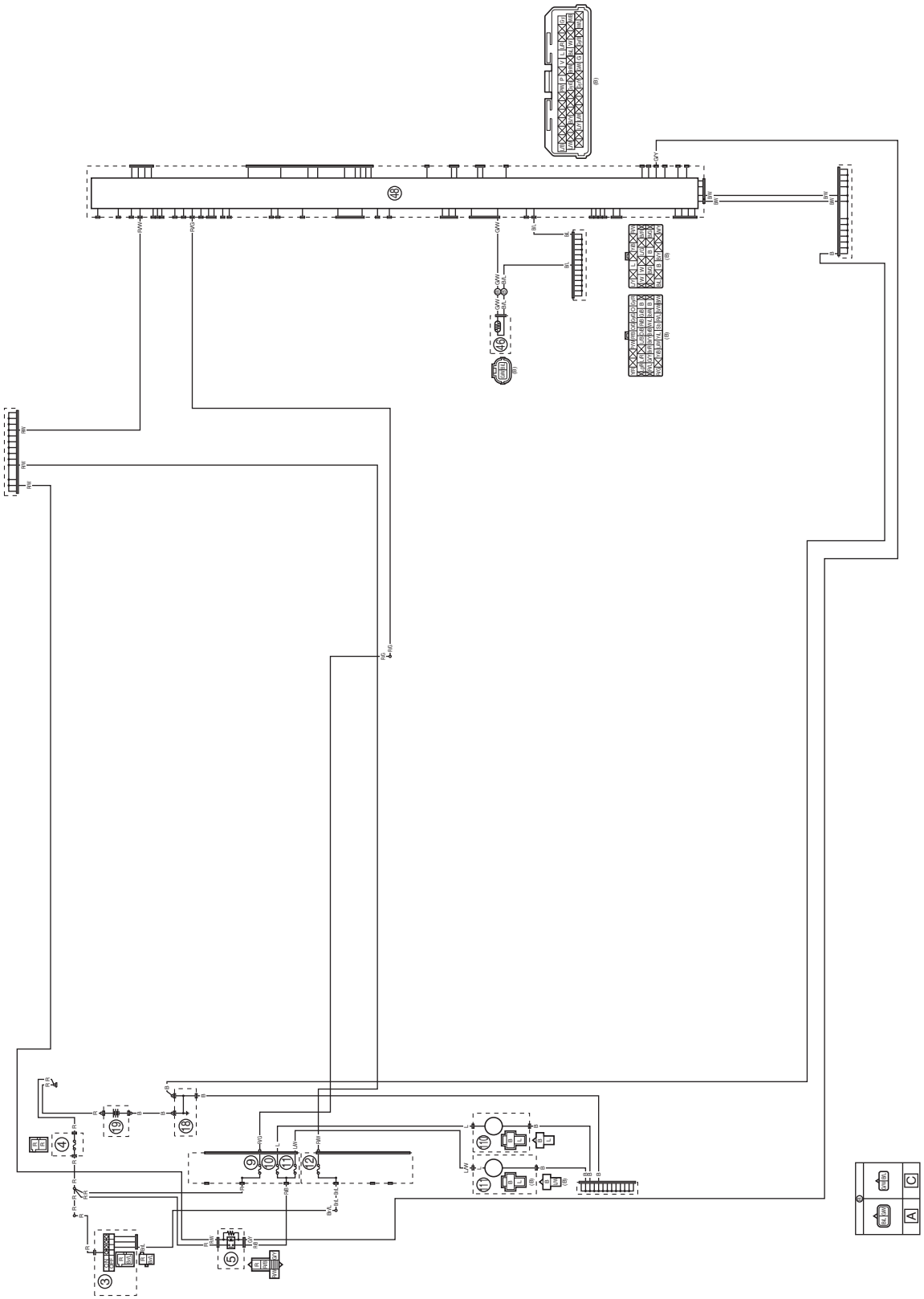
Replace the hydraulic unit assembly, ECU, meter assembly.
Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

TIP

Repair or replace if there is an open or short circuit.
- Between rear wheel sensor coupler and ABS ECU coupler.
  (white–white)
  (black–black)
- Between ABS ECU coupler and ECU coupler.
  (gray/black–gray/black)
  (white/blue–white/blue)
- Between joint coupler and ECU coupler.
  (blue/white–blue/white)
  (blue/black–blue/black)
- Between joint coupler and meter assembly coupler.
  (blue/white–blue/white)
  (blue/black–blue/black)

EAS20077
COOLING SYSTEM

EAS30502
CIRCUIT DIAGRAM



3. Main switch
4. Main fuse
5. Radiator fan motor relay
9. Backup fuse
10. Sub radiator fan motor fuse
11. Radiator fan motor fuse
12. Ignition fuse
18. Engine ground
19. Battery
46. Coolant temperature sensor
48. ECU (Engine Control Unit)
110. Sub radiator fan motor (right)
111. Radiator fan motor (left)
A. Wire harness
C. Sub-wire harness (coolant temperature sensor)

EAS30503
TROUBLESHOOTING

TIP

• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel/Side cover bracket/Electrical components tray
2. Rider seat
3. Fuel tank cover
4. Fuel tank
5. Air filter case
6. Throttle bodies

1. Check the fuses. (Main, ignition, backup, radiator fan motor and sub radiator fan motor) Refer to “CHECKING THE FUSES” on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the main switch.
OK ↓		
4. Check the radiator fan motor. Refer to “CHECKING THE RADIATOR FAN MOTORS” on page 8-48.	NG →	Replace the radiator fan motor.
OK ↓		
5. Check the radiator fan motor relay. Refer to “CHECKING THE RELAYS” on page 8-42.	NG →	Replace the radiator fan motor relay.
OK ↓		
6. Check the coolant temperature sensor. Refer to “CHECKING THE COOLANT TEMPERATURE SENSOR” on page 8-48.	NG →	Replace the coolant temperature sensor.
OK ↓		

7. Check the entire cooling system's wiring.
   Refer to "CIRCUIT DIAGRAM" on page 8-27.

NG →

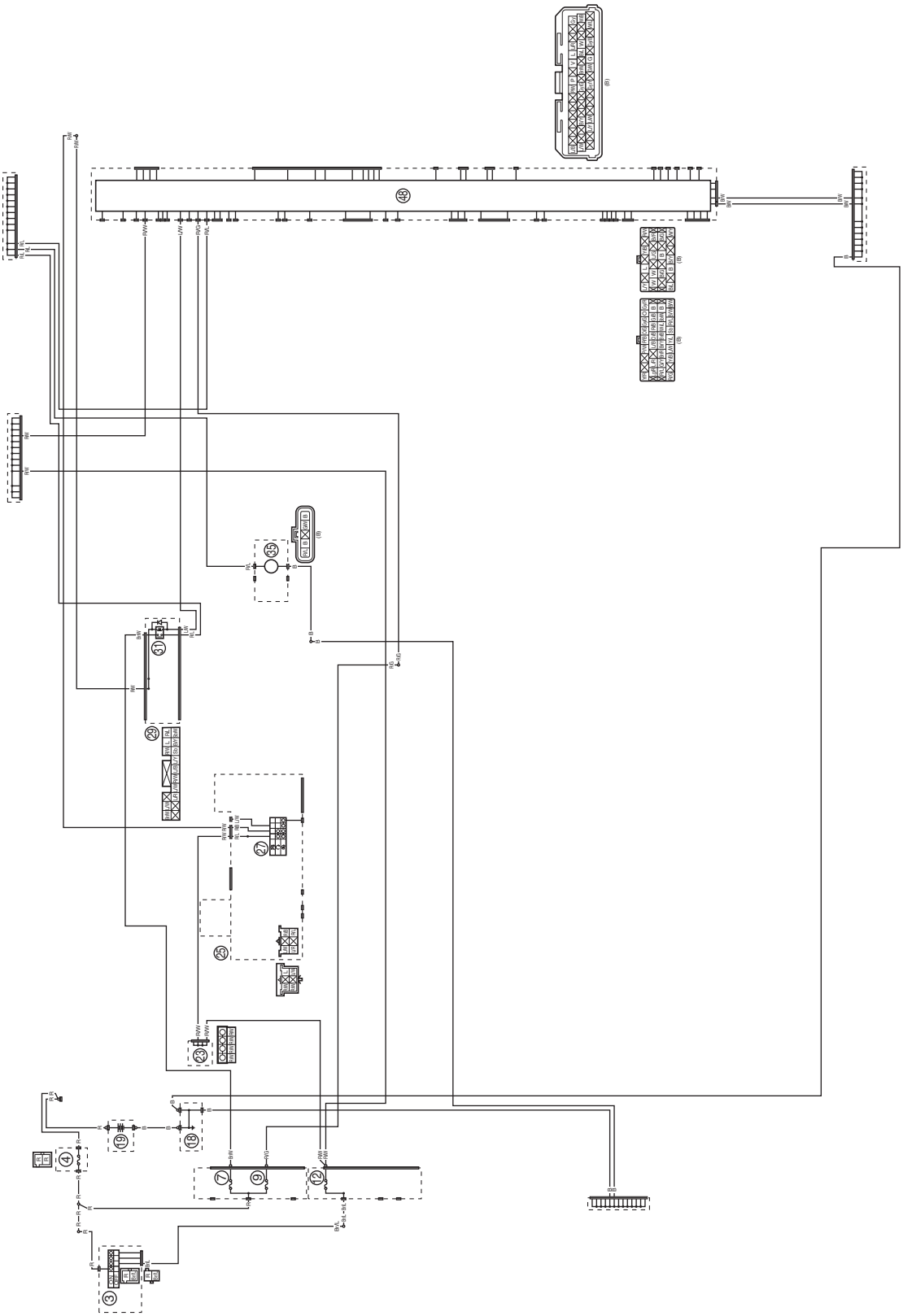
Properly connect or repair the cooling system's wiring.

OK ↓

Replace the ECU.
Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.

EAS20081
FUEL PUMP SYSTEM

EAS30513
CIRCUIT DIAGRAM



3. Main switch
4. Main fuse
7. Fuel injection system fuse
9. Backup fuse
12. Ignition fuse
18. Engine ground
19. Battery
23. Joint coupler
25. Handlebar switch (right)
27. Start/engine stop switch
29. Relay unit
31. Fuel pump relay
35. Fuel pump
48. ECU (Engine Control Unit)

EAS30514
TROUBLESHOOTING

If the fuel pump fails to operate.

TIP

• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel
2. Rider seat
3. Fuel tank cover
4. Fuel tank

1. Check the fuses. (Main, ignition, backup and fuel injection system) Refer to "CHECKING THE FUSES" on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to "CHECKING AND CHARGING THE BATTERY" on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to "CHECKING THE SWITCHES" on page 8-40.	NG →	Replace the main switch.
OK ↓		
4. Check the start/engine stop switch. Refer to "CHECKING THE SWITCHES" on page 8-40.	NG →	Replace the handlebar switch (right).
OK ↓		
5. Check the relay unit (fuel pump relay). Refer to "CHECKING THE RELAYS" on page 8-42.	NG →	Replace the relay unit.
OK ↓		
6. Check the fuel pump. Refer to "CHECKING THE FUEL PUMP OPERATION" on page 7-3.	NG →	Replace the fuel pump.
OK ↓		

7. Check the entire fuel pump system's wiring.
   Refer to "CIRCUIT DIAGRAM" on page 8-31.

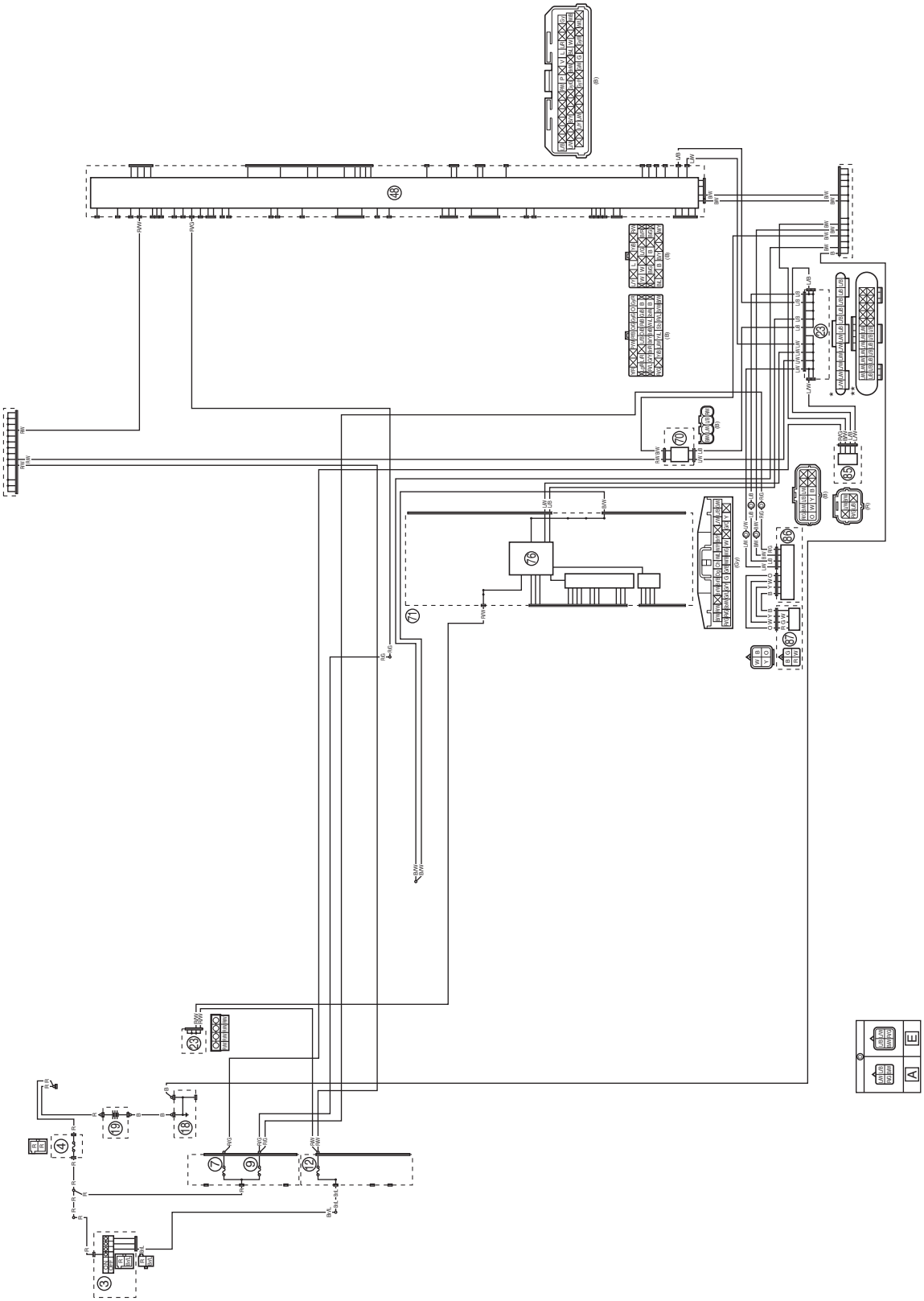
NG → Properly connect or repair the fuel pump system's wiring.

OK ↓

Replace the ECU.
Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.

EAS20212
COMMUNICATION CONTROL SYSTEM (for YZF-R1M)

EAS31671
CIRCUIT DIAGRAM



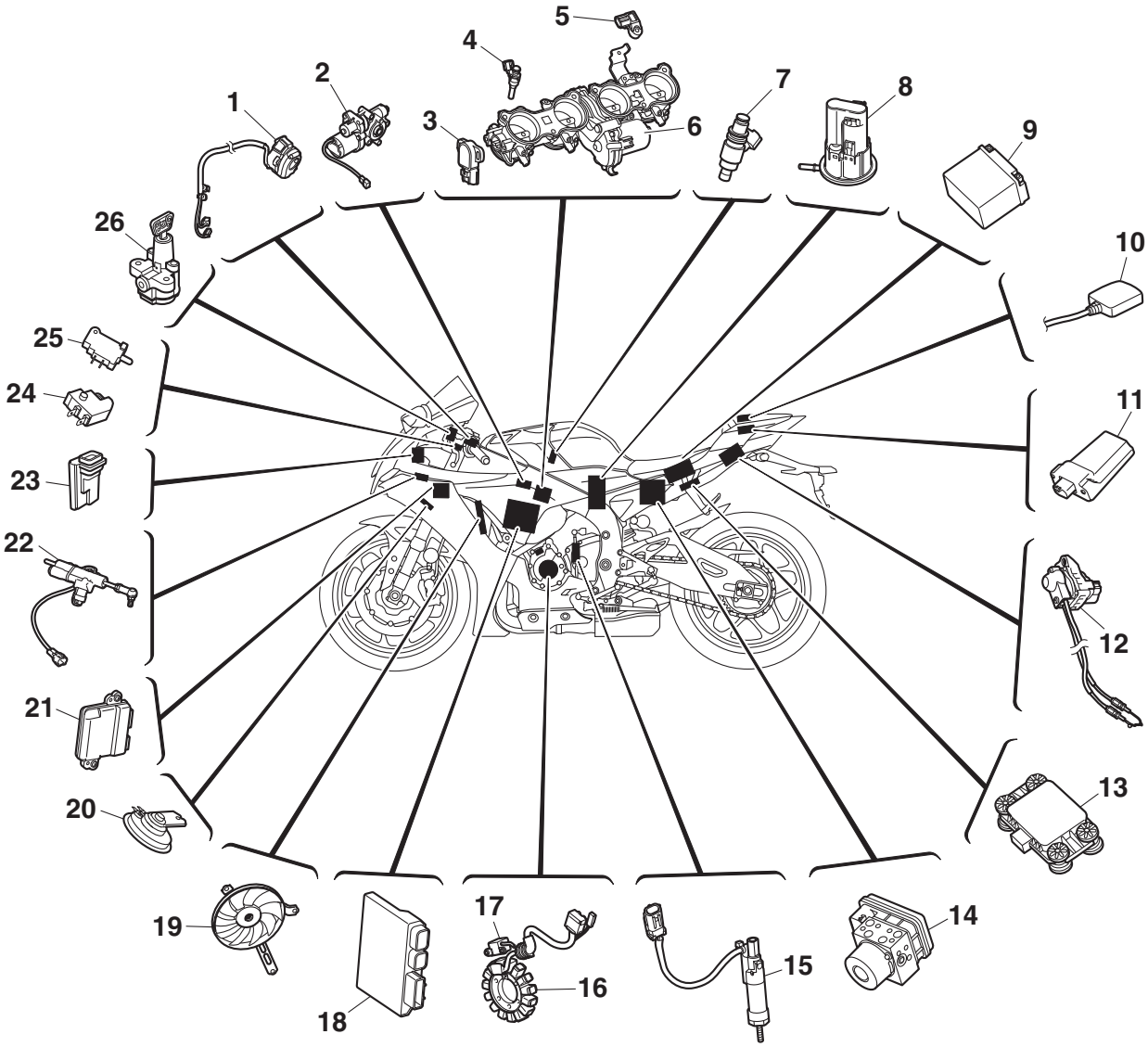
3. Main switch
4. Main fuse
7. Fuel injection system fuse
9. Backup fuse
12. Ignition fuse
18. Engine ground
19. Battery
23. Joint coupler
48. ECU (Engine Control Unit)
70. IMU (Inertial Measurement Unit)
71. Meter assembly
76. Multi-function meter
85. YDT coupler
86. CCU (Communication Control Unit)
87. GPS unit
A. Wire harness
E. Sub-wire harness (CCU (Communication Control Unit))

EAS31672
TROUBLESHOOTING
The communication control system failed to function.

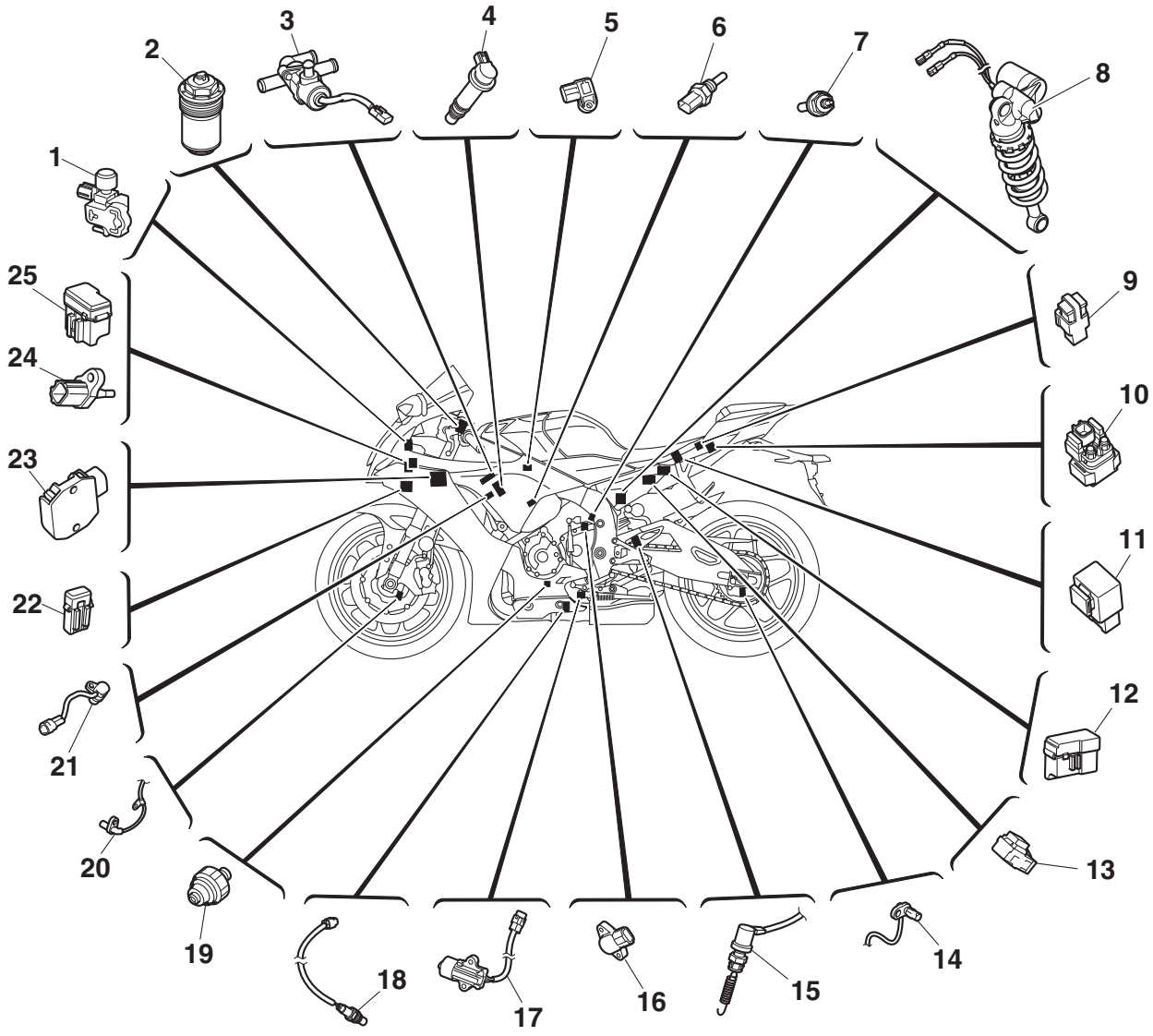
TIP
• Before troubleshooting, remove the following part(s):
1. Front side cowling/Front panel/Side cover
2. Rider seat/Passenger seat/Battery cover/Tail cover

1. Check the fuses. (Main, ignition and backup) Refer to “CHECKING THE FUSES” on page 8-41.	NG →	Replace the fuse(s).
OK ↓		
2. Check the battery. Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.	NG →	• Clean the battery terminals. • Recharge or replace the battery.
OK ↓		
3. Check the main switch. Refer to “CHECKING THE SWITCHES” on page 8-40.	NG →	Replace the main switch.
OK ↓		
4. Check the entire communication control system’s wiring. Refer to “CIRCUIT DIAGRAM” on page 8-35.	NG →	Properly connect or repair the communication control system’s wiring.
OK ↓		
Replace the ECU, CCU, GPS unit, IMU or meter assembly. Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.		

EAS20089
ELECTRICAL COMPONENTS

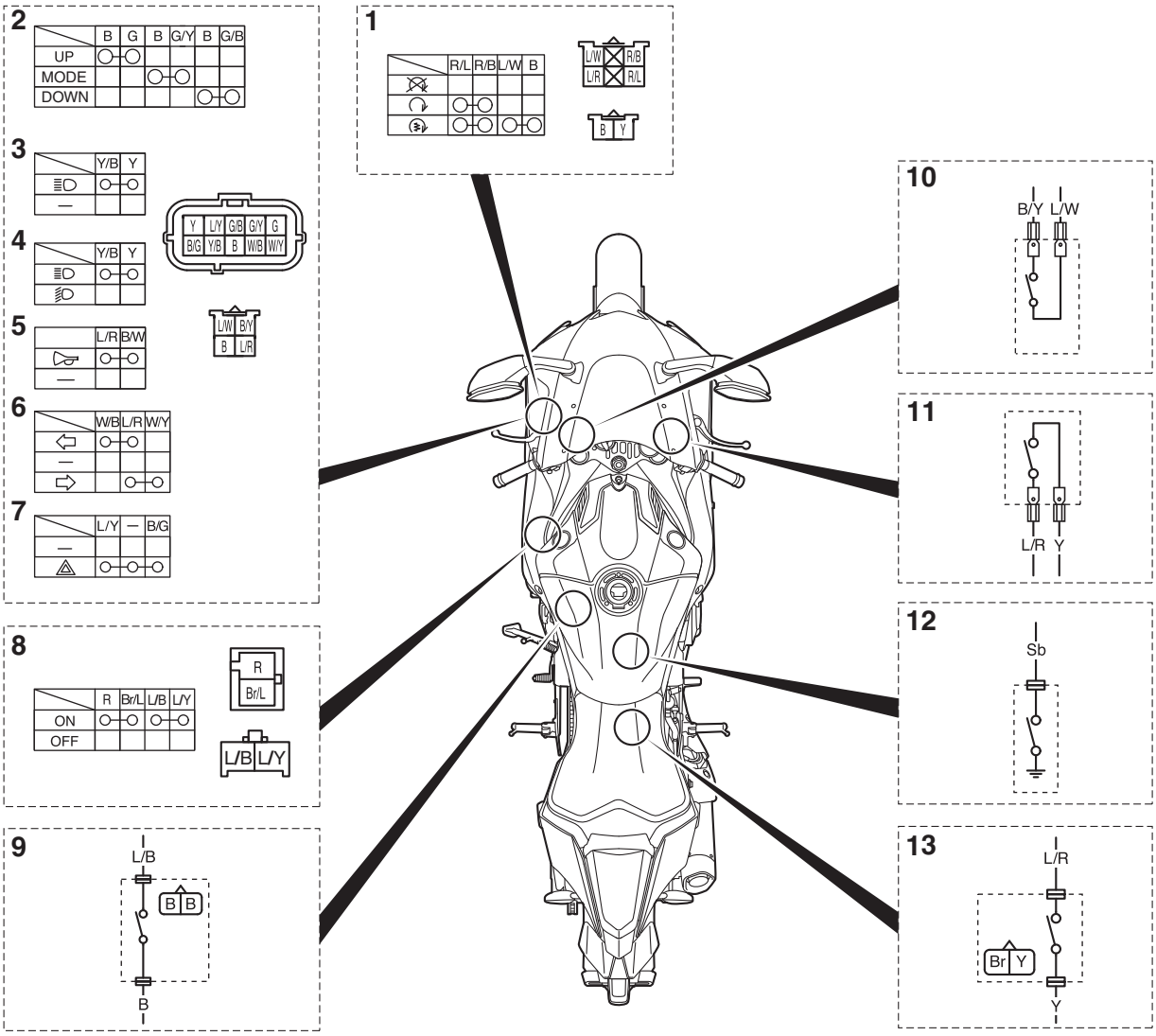


1. Accelerator position sensor
2. Intake funnel servo motor
3. Throttle position sensor
4. Primary injector
5. Intake air pressure sensor
6. Throttle servo motor
7. Secondary injector
8. Fuel pump
9. Battery
10. GPS unit (for YZF-R1M)
11. CCU (Communication Control Unit) (for YZF-R1M)
12. EXUP servo motor
13. IMU (Inertial Measurement Unit)
14. Hydraulic unit assembly (ABS ECU)
15. Shift sensor
16. Stator coil
17. Crankshaft position sensor
18. ECU (Engine Control Unit)
19. Radiator fan motor
20. Horn
21. Headlight control unit
22. Steering damper solenoid
23. SCU (Suspension Control Unit) (for YZF-R1M)
24. Front brake light switch
25. Clutch switch
26. Main switch



1. Intake solenoid
2. Front fork stepping motor (for YZF-R1M)
3. Air induction system solenoid
4. Ignition coil
5. Atmospheric pressure sensor
6. Coolant temperature sensor
7. Neutral switch
8. Rear shock absorber assembly stepping motor (for YZF-R1M)
9. Main fuse
10. Starter relay
11. Relay unit
12. Fuse box 1
13. Radiator fan motor relay
14. Rear wheel sensor
15. Rear brake light switch
16. Gear position sensor
17. Sidestand switch
18. O_2 sensor
19. Oil pressure switch
20. Front wheel sensor
21. Cylinder identification sensor
22. Fuse box 3 (SCU fuse) (for YZF-R1M)
23. Rectifier/regulator
24. Intake air temperature sensor
25. Fuse box 2

EAS30549
CHECKING THE SWITCHES
Check each switch for continuity with the digital circuit tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.



1. Start/engine stop switch
2. Mode switch
3. Pass/LAP switch
4. Dimmer switch
5. Horn switch
6. Turn signal switch
7. Hazard switch
8. Main switch
9. Sidestand switch
10. Clutch switch
11. Front brake light switch
12. Neutral switch
13. Rear brake light switch

EAS30551
CHECKING THE FUSES
The following procedure applies to all of the fuses.

ECA13680
NOTICE

To avoid a short circuit, always set the main switch to "OFF" when checking or replacing a fuse.

1. Remove:
   - Passenger seat/Rider seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Front panel (left)
     Refer to "GENERAL CHASSIS (3)" on page 4-9.
2. Check:
   - Fuse
     a. Connect the digital circuit tester to the fuse and check the continuity.

TIP

Set the digital circuit tester selector to " Ω ".



Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

   b. If the digital circuit tester indicates "O.L", replace the fuse.
3. Replace:
   - Blown fuse
     a. Set the main switch to "OFF".
     b. Install a new fuse of the correct amperage rating.
     c. Set on the switches to verify if the electrical circuit is operational.
     d. If the fuse immediately blows again, check the electrical circuit.

Fuses	Amperage rating	Q'ty
Main	50 A	1
Headlight	7.5 A	1
Signaling system	7.5 A	1
Ignition	15 A	1
Radiator fan motor	15 A	1
Sub radiator fan motor	10 A	1
Hazard	7.5 A	1
Fuel injection system	15 A	1
ABS motor	30 A	1
ABS ECU	7.5 A	1
ABS solenoid	15 A	1
Auxiliary	2 A	1
Backup	7.5 A	1
Electronic throttle valve	7.5 A	1
SCU (for YZF-R1M)	7.5 A	1
Spare	30 A	1
Spare	15 A	1
Spare	10 A	1
Spare	7.5 A	1
Spare	2 A	1

EWA13310
⚠ WARNING

Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.

4. Install:
   - Rider seat/Passenger seat
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
   - Front panel (left)
     Refer to "GENERAL CHASSIS (3)" on page 4-9.

EAS31006
REPLACING THE ECU (Engine Control Unit)
1. Turn the main switch to "OFF".
2. Replace the ECU (Engine Control Unit).
3. Clean the throttle bodies and reset the ISC (Idle Speed Control) learning value.
   Refer to "CHECKING AND CLEANING THE THROTTLE BODIES" on page 7-15.
4. Check:
   - Engine idling speed
     Start the engine, warm it up, and then measure the engine idling speed.



Engine idling speed
1200–1400 r/min

EAS30552
CHECKING AND CHARGING THE BATTERY

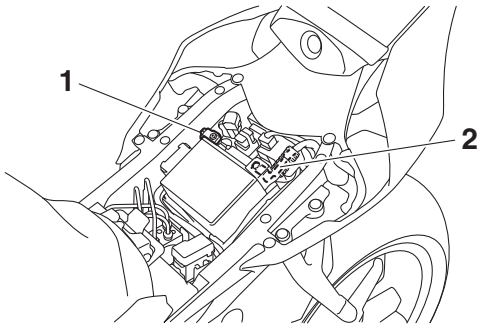
TIP

Refer to "CHECKING AND CHARGING THE BATTERY" in "BASIC INFORMATION" (separate volume).

1. Remove:
   - Rider seat/Battery cover
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
2. Disconnect:
   - Battery leads
     (from the battery terminals)

ECA13640
NOTICE

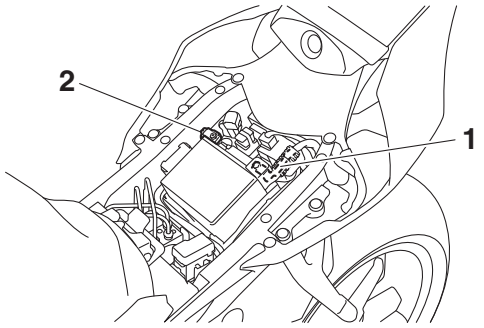
First, disconnect the negative battery lead "1", and then positive battery lead "2".



3. Remove:
   - Battery
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
4. Check:
   - Battery charge
5. Charge:
   - Battery
6. Install:
   - Battery
     Refer to "GENERAL CHASSIS (1)" on page 4-1.
7. Connect:
   - Battery leads
     (to the battery terminals)

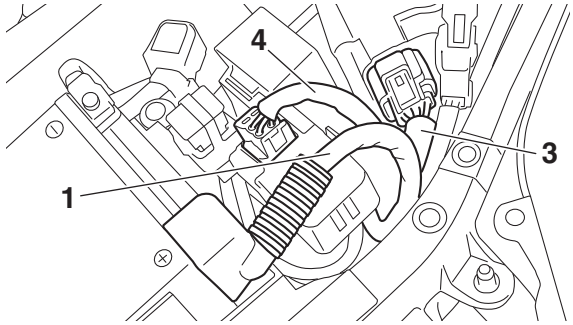
ECA13630
NOTICE

First, connect the positive battery lead "1", and then the negative battery lead "2".



TIP

Route the positive battery lead "1" to the outside of the EXUP servo motor lead "3" and starter relay lead "4".



8. Check:
   - Battery terminals
     Dirt → Clean with a wire brush.
     Loose connection → Connect properly.
9. Lubricate:
   - Battery terminals

	Recommended lubricant **Dielectric grease**

10. Install:
    - Battery cover/Rider seat
      Refer to "GENERAL CHASSIS (1)" on page 4-1.

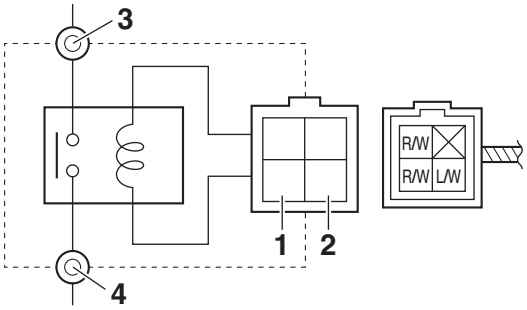
EAS30553
CHECKING THE RELAYS

Check each switch for continuity with the digital circuit tester. If the continuity reading is incorrect, replace the relay.

	Digital circuit tester (CD732) **90890-03243** **Model 88 Multimeter with tachometer** **YU-A1927**

1. Disconnect the relay from the wire harness.
2. Connect the digital circuit tester (Ω) and battery (12 V) to the relay terminal as shown.
   Check the relay operation.
   Out of specification → Replace.

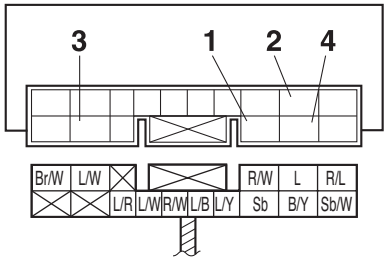
Starter relay



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Relay operation
Continuity
(between "3" and "4")

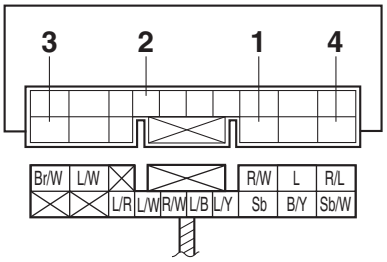
Relay unit (starting circuit cut-off relay)



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

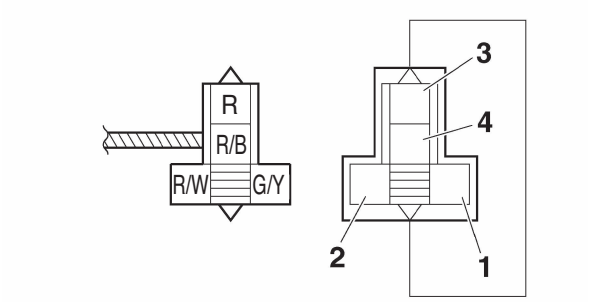
Relay unit (fuel pump relay)



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

Radiator fan motor relay



1. Positive battery terminal
2. Negative battery terminal
3. Positive tester probe
4. Negative tester probe

Result
Continuity
(between "3" and "4")

EAS30795
CHECKING THE RELAY UNIT (DIODE)

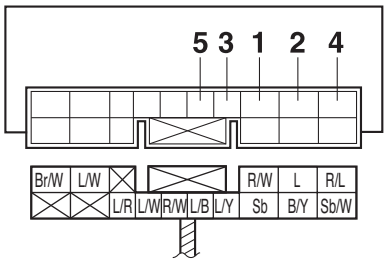
1. Check:
   • Relay unit (diode)
   Out of specification → Replace.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

TIP

The digital circuit tester readings are shown in the following table.

Continuity
Positive tester probe
sky blue "1"
Negative tester probe
black/yellow "2"
No continuity
Positive tester probe
black/yellow "2"
Negative tester probe
sky blue "1"
Continuity
Positive tester probe
sky blue "1"
Negative tester probe
blue/yellow "3"
No continuity
Positive tester probe
blue/yellow "3"
Negative tester probe
sky blue "1"
Continuity
Positive tester probe
sky blue "1"
Negative tester probe
sky blue/white "4"
No continuity
Positive tester probe
sky blue/white "4"
Negative tester probe
sky blue "1"
Continuity
Positive tester probe
blue/black "5"
Negative tester probe
blue/yellow "3"
No continuity
Positive tester probe
blue/yellow "3"
Negative tester probe
blue/black "5"



a. Disconnect the relay unit coupler from the wire harness.
b. Connect the digital circuit tester (Ω) to the relay unit terminal as shown.
c. Check the relay unit (diode) for continuity.
d. Check the relay unit (diode) for no continuity.

EAS30558
CHECKING THE IGNITION COILS

The following procedure applies to all of the ignition coils.

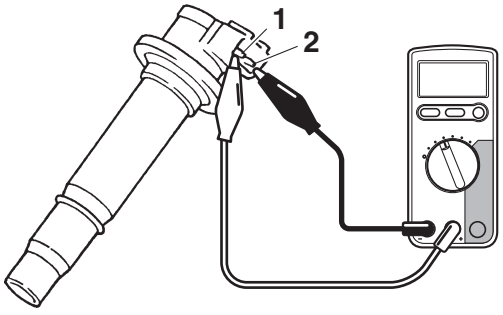
1. Check:
   • Primary coil resistance
   Out of specification → Replace.

Primary coil resistance
0.85–1.15 Ω

a. Disconnect the ignition coil coupler from the ignition coil.
b. Connect the digital circuit tester (Ω) to the ignition coil as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

• Positive tester probe
  Ignition coil terminal "1"
• Negative tester probe
  Ignition coil terminal "2"



c. Measure the primary coil resistance.

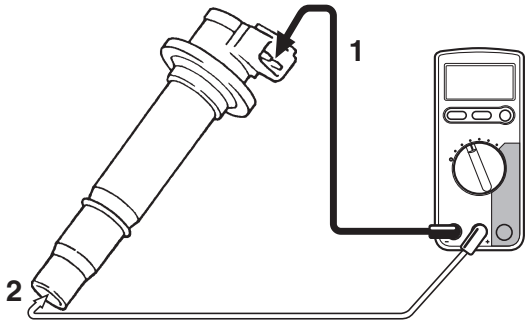
2. Check:
   • Secondary coil resistance
   Out of specification → Replace.

Secondary coil resistance
8.50–11.50 kΩ

a. Connect the digital circuit tester (Ω) to the ignition coil as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Negative tester probe
  Ignition coil terminal "1"
- Positive tester probe
  Spark plug terminal "2"



b. Measure the secondary coil resistance.

EAS30556
CHECKING THE IGNITION SPARK GAP

1. Check:
   - Ignition spark gap
     Out of specification → Perform the ignition system troubleshooting, starting with step (5). Refer to "TROUBLESHOOTING" on page 8-4.

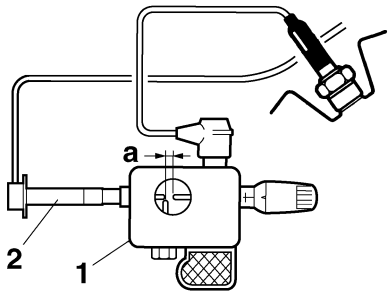
Minimum ignition spark gap
6.0 mm (0.24 in)

TIP

If the ignition spark gap is within specification, the ignition system circuit is operating normally.

a. Remove the ignition coil from the spark plug.
b. Connect the ignition checker "1" as shown.

Ignition checker
90890-06754
Oppama pet–4000 spark checker
YM-34487



2. Ignition coil

c. Turn the main switch to "ON".
d. Measure the ignition spark gap "a".
e. Crank the engine by pushing the "⏲" side of the start/engine stop switch and gradually increase the spark gap until a misfire occurs.

EAS30560
CHECKING THE CRANKSHAFT POSITION SENSOR

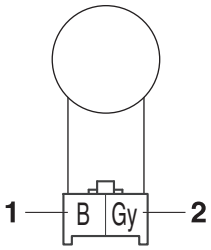
1. Disconnect:
   - Crankshaft position sensor coupler (from the wire harness)
2. Check:
   - Crankshaft position sensor resistance
     Out of specification → Replace the crankshaft position sensor.

Crankshaft position sensor resistance
189–231 Ω

a. Connect the digital circuit tester (Ω) to the crankshaft position sensor coupler as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  black "1"
- Negative tester probe
  gray "2"



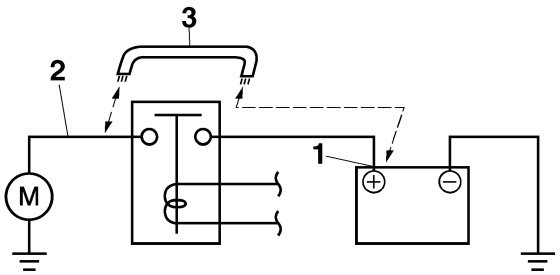
b. Measure the crankshaft position sensor resistance.

EAS30562
CHECKING THE STARTER MOTOR OPERATION

1. Check:
   - Starter motor operation
     Does not operate → Perform the electric starting system troubleshooting, starting with step (4).
     Refer to "TROUBLESHOOTING" on page 8-10.
     a. Connect the positive battery terminal "1" and starter motor lead "2" with a jumper lead "3".

EWA13810
⚠ WARNING

- **A wire that is used as a jumper lead must have at least the same capacity of the battery lead, otherwise the jumper lead may burn.**
- **This check is likely to produce sparks, therefore, make sure no flammable gas or fluid is in the vicinity.**



b. Check the starter motor operation.

EAS30566
CHECKING THE STATOR COIL

1. Disconnect:
   - Stator coil coupler
     (from the wire harness)
2. Check:
   - Stator coil resistance
     Out of specification → Replace the stator coil.

Stator coil resistance
0.112–0.168 Ω

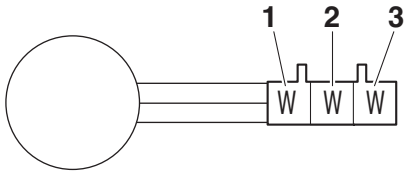
a. Connect the digital circuit tester to the stator coil coupler as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  white "1"
- Negative tester probe
  white "2"

- Positive tester probe
  white "1"
- Negative tester probe
  white "3"

- Positive tester probe
  white "2"
- Negative tester probe
  white "3"



b. Measure the stator coil resistance.

EAS30680
CHECKING THE RECTIFIER/REGULATOR

1. Check:
   - Rectifier/regulator input voltage
     Out of specification → Correct the stator coil condition.
     Refer to "CHECKING THE STATOR COIL" on page 8-46.

Rectifier/regulator input voltage
above 14 V at 5000 r/min

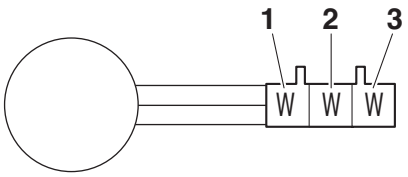
a. Connect the digital circuit tester (AC V) to the rectifier/regulator coupler as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  white “1”
- Negative tester probe
  white “2”

- Positive tester probe
  white “1”
- Negative tester probe
  white “3”

- Positive tester probe
  white “2”
- Negative tester probe
  white “3”



b. Start the engine and let it run at approximately 5000 r/min.
c. Measure the rectifier/regulator input voltage.

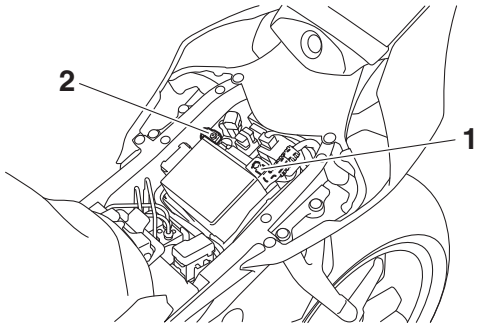
2. Check:
   - Rectifier/regulator output voltage
     Out of specification → Replace the rectifier/regulator.

Regulated voltage (DC)
14.3–14.7 V

a. Connect the digital circuit tester (DC V) to the battery as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  positive battery terminal “1”
- Negative tester probe
  negative battery terminal “2”



b. Start the engine and let it run at approximately 5000 r/min.
c. Measure the charging voltage.

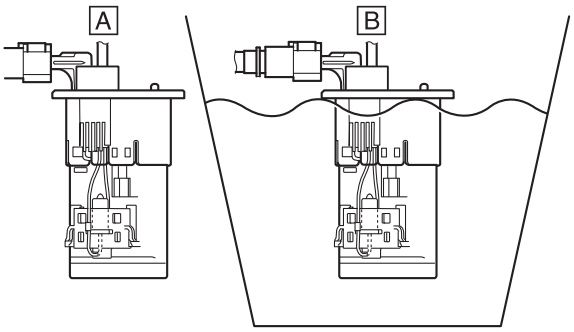
EAS30569
CHECKING THE HORN

1. Check:
   - Horn sound
     Faulty sound → Replace.

EAS30573
CHECKING THE FUEL SENDER

1. Disconnect:
   - Fuel pump coupler
     (from the wire harness)
   - Fuel hose
     (from the fuel tank)
2. Remove:
   - Fuel tank
     Refer to “FUEL TANK” on page 7-1.
3. Remove:
   - Fuel pump
     (from the fuel tank)
4. Connect:
   - Fuel pump coupler
   - Fuel hose
5. Turn the main switch to “ON”.
6. Check:
   - Fuel level warning light
     Out of specification → Replace the fuel pump.

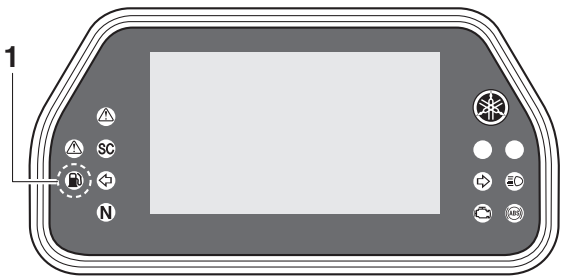
- Fuel pump is atmosphere “A”
  → Fuel level warning light is come on
- Fuel pump is soaked in fuel “B”
  → Fuel level warning light is goes off



EAS30574
CHECKING THE FUEL LEVEL WARNING LIGHT

This model is equipped with a self-diagnosis device for the fuel level detection circuit.

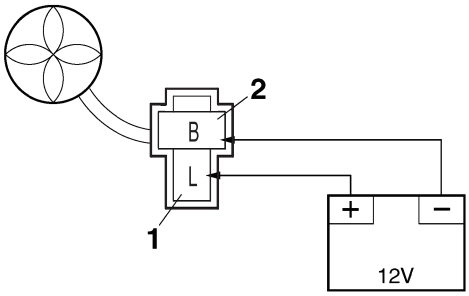
1. Check:
   - Fuel level warning light "1"
     (Turn the main switch to "ON".)
     Warning light comes on for a few seconds, then goes off → Warning light is OK.
     Warning light does not come on → Replace the meter assembly.
     Warning light flashes eight times, then goes off for 3 seconds in a repeated cycle (malfunction detected in fuel sender) → Replace the fuel pump assembly.



EAS30577
CHECKING THE RADIATOR FAN MOTORS

1. Check:
   - Radiator fan motor
     Faulty/rough movement → Replace.
     a. Disconnect the radiator fan motor coupler from the wire harness.
     b. Connect the battery (DC 12 V) as shown.

• Positive tester probe blue "1" • Negative tester probe black "2"



     c. Measure the radiator fan motor movement.

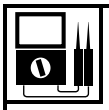
EAS30578
CHECKING THE COOLANT TEMPERATURE SENSOR

1. Remove:
   - Coolant temperature sensor
     Refer to "CYLINDER HEAD" on page 5-33.

EWA14130
⚠ WARNING

- **Handle the coolant temperature sensor with special care.**
- **Never subject the coolant temperature sensor to strong shocks. If the coolant temperature sensor is dropped, replace it.**

2. Check:
   - Coolant temperature sensor resistance
     Out of specification → Replace.

	**Coolant temperature sensor resistance** **2513–2777 Ω at 20 °C (2513–2777 Ω at 68 °F)** **Coolant temperature sensor resistance** **210–221 Ω at 100 °C (210–221 Ω at 212 °F)**

     a. Connect the digital circuit tester (Ω) to the coolant temperature sensor as shown.

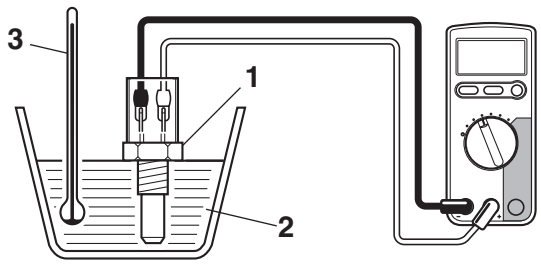
	**Digital circuit tester (CD732)** **90890-03243** **Model 88 Multimeter with tachometer** **YU-A1927**

     b. Immerse the coolant temperature sensor "1" in a container filled with coolant "2".

TIP

Make sure the coolant temperature sensor terminals do not get wet.

     c. Place a thermometer "3" in the coolant.



d. Heat the coolant or let it cool down to the specified temperatures.
e. Measure the coolant temperature sensor resistance.

3. Install:
   • Coolant temperature sensor

	Coolant temperature sensor 16 N·m (1.6 kgf·m, 12 lb·ft)

EAS30592
CHECKING THE THROTTLE SERVO MOTOR

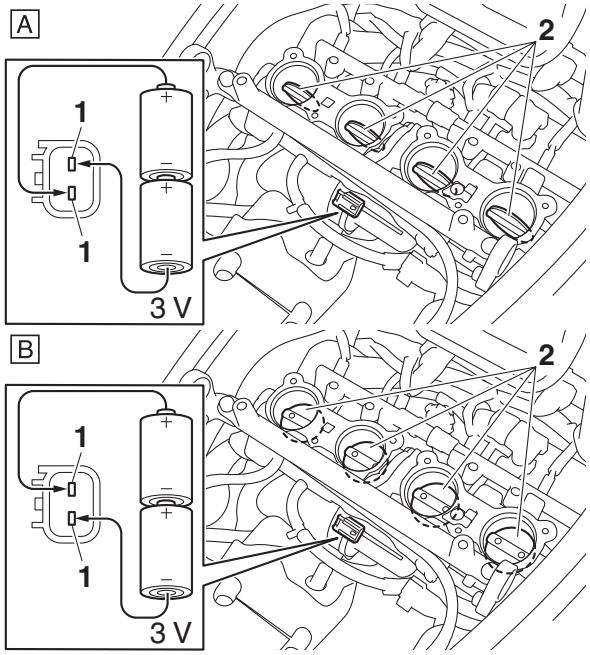
1. Remove:
   • Air filter case
   Refer to "AIR FILTER CASE" on page 7-5.
2. Check:
   • Throttle valve operation
   Throttle valves do not fully close → Replace the throttle bodies.
   a. Connect two C-size batteries to the throttle servo motor terminals "1" as shown.

ECA17660
NOTICE

Do not use a 12 V battery to operate the throttle servo motor.

TIP

Do not use old batteries to operate the throttle servo motor.



A. Check that the throttle valves "2" open.
B. Check that the throttle valves "2" fully close.

EAS30587
CHECKING THE AIR INDUCTION SYSTEM SOLENOID

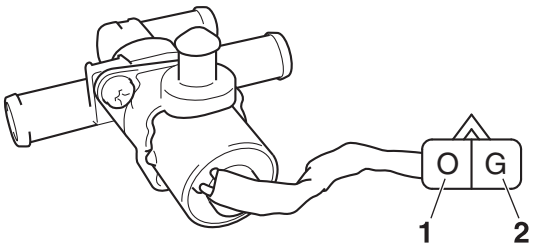
1. Check:
   • Air induction system solenoid resistance
   Out of specification → Replace.

	Solenoid resistance 18–22 Ω

   a. Remove the air induction system solenoid coupler from the air induction system solenoid.
   b. Connect the digital circuit tester (Ω) to the air induction system solenoid terminal as shown.

	Digital circuit tester (CD732) 90890-03243 **Model 88 Multimeter with tachometer YU-A1927**

• Positive tester probe orange "1" • Negative tester probe green "2"



c. Measure the air induction system solenoid resistance.

EAS30589
CHECKING THE CYLINDER IDENTIFICATION SENSOR

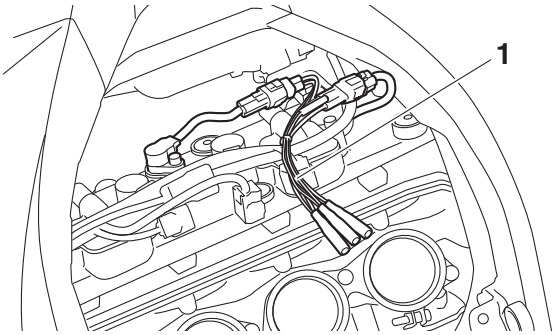
1. Remove:
   - Fuel tank
     Refer to "FUEL TANK" on page 7-1.
   - Air filter case
     Refer to "AIR FILTER CASE" on page 7-5.
   - Air filter case duct
     Air cut-off valve
     Refer to "AIR INDUCTION SYSTEM" on page 7-20.
2. Check:
   - Cylinder identification sensor output voltage
     Out of specification → Replace.

Cylinder identification sensor output voltage (ON)
4.8 V
Cylinder identification sensor output voltage (OFF)
0.8 V

a. Connect the test harness– speed sensor (3P) "1" to the rear speed sensor coupler and wire harness as shown.
b. Connect the digital circuit tester (DC V) to the test harness– speed sensor (3P).

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927
Test harness– speed sensor (3P)
90890-03208
Test harness– speed sensor (3P)
YU-03208

- Positive tester probe
  white/black (wire harness color)
- Negative tester probe
  black/blue (wire harness color)



c. Turn the main switch to "ON".
d. Rotate the crankshaft.
e. Measure the voltage. With each full rotation of the crankshaft, the voltage reading should cycle from 0.8 V to 4.8 V to 0.8 V to 4.8 V.

EAS30594
CHECKING THE INTAKE AIR TEMPERATURE SENSOR

1. Remove:
   - Intake air temperature sensor

EWA14110
WARNING

- **Handle the intake air temperature sensor with special care.**
- **Never subject the intake air temperature sensor to strong shocks. If the intake air temperature sensor is dropped, replace it.**

2. Check:
   - Intake air temperature sensor resistance
     Out of specification → Replace.

Intake air temperature sensor resistance
5400–6600 Ω at 0 °C (5400–6600 Ω at 32 °F)
Intake air temperature sensor resistance
289–391 Ω at 80 °C (289–391 Ω at 176 °F)

a. Connect the digital circuit tester (Ω) to the intake air temperature sensor terminal as shown.

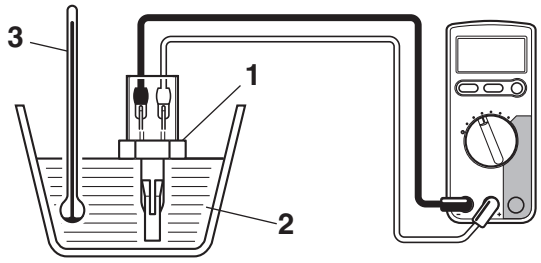
Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

b. Immerse the intake air temperature sensor "1" in a container filled with water "2".

TIP

Make sure that the intake air temperature sensor terminals do not get wet.

c. Place a thermometer "3" in the water.



d. Slowly heat the water, then let it cool down to the specified temperature.
e. Measure the intake air temperature sensor resistance.

3. Install:
   - Intake air temperature sensor

EAS30598

CHECKING THE STEERING DAMPER SOLENOID

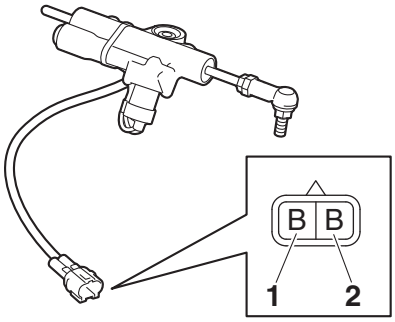
1. Remove:
   - Front upper cowling
     Refer to "GENERAL CHASSIS (4)" on page 4-13.
2. Check:
   - Steering damper solenoid resistance
     Out of specification → Replace the steering damper assembly.

Steering damper solenoid resistance
49.82–56.18 Ω

a. Disconnect the steering damper lead coupler from wire harness.
b. Connect the digital circuit tester (Ω) to the steering damper lead coupler.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  black "1"
- Negative tester probe
  black "2"



c. Measure the steering damper solenoid resistance.

EAS30681

CHECKING THE FUEL INJECTORS

The following procedure applies to all of the fuel injectors.

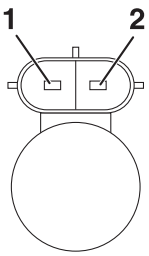
1. Remove:
   - Fuel injector
     Refer to "THROTTLE BODIES" on page 7-11 or "AIR FILTER CASE" on page 7-5.
2. Check:
   - Fuel injector resistance
     Out of specification → Replace the fuel injector.

Resistance
12.0 Ω

a. Disconnect the fuel injector coupler from the fuel injector.
b. Connect the digital circuit tester (Ω) to the fuel injector coupler as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  Injector terminal "1"
- Negative tester probe
  Injector terminal "2"



c. Measure the fuel injector resistance.

EAS31673
CHECKING THE WHEEL SWITCH

1. Check:
   - Wheel switch "1" output voltage
     Out of specification → Replace the handlebar switch (right).
     a. Connect the digital circuit tester (DC V) to the handlebar switch coupler (right) as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

- Positive tester probe
  white/green "2"
- Negative tester probe
  black/yellow "3"

b. Turn the main switch to "ON".
c. When turning the wheel switch in direction "a" and "b", check that the output voltage is within the specified values.

Output voltage reading cycle
More than 5 V to less than 0.5 V then back to more than 5 V to less than 0.5 V

d. Connect the digital circuit tester (DC V) to the handlebar switch coupler (right) as shown.

Digital circuit tester (CD732)
90890-03243
Model 88 Multimeter with tachometer
YU-A1927

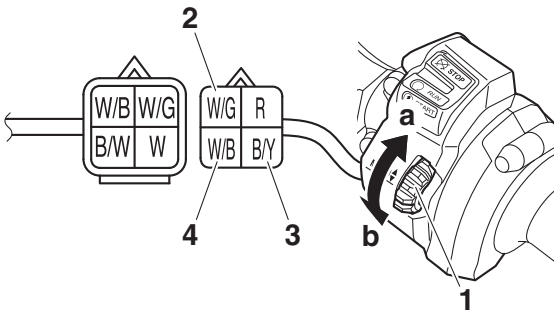
- Positive tester probe
  white/black "4"
- Negative tester probe
  black/yellow "3"

e. When turning the wheel switch in direction "a", check that the output voltage is within the specified values.

Output voltage
More than 5 V

f. When turning the wheel switch in direction "b", check that the output voltage is within the specified values.

Output voltage
Less than 0.5 V



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EAS20437
SELF-DIAGNOSTIC FUNCTION

EAS33142
GLOSSARY

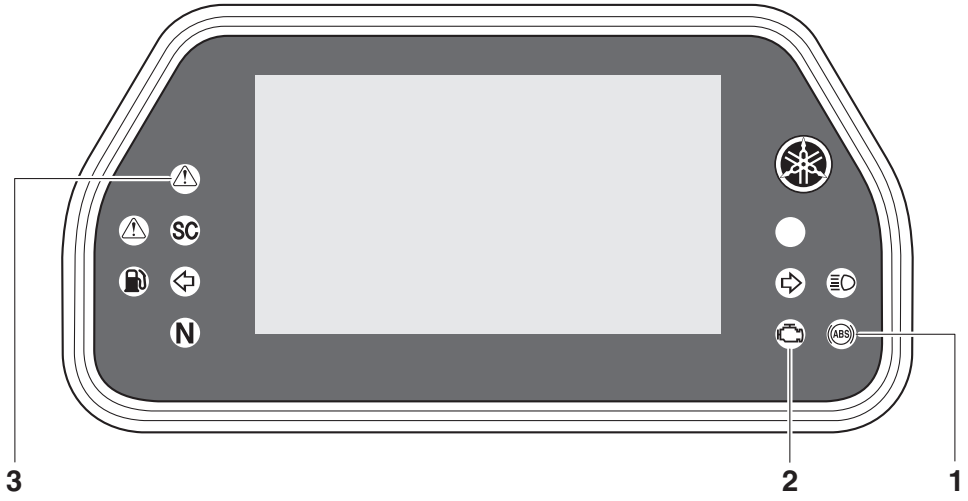
Word	Description
MIL (Malfunction indicator light)	MIL is an indicator light that comes on when a control unit determines a malfunction.
DTC (Diagnostic trouble code)	DTC is a code that is saved within a control unit's memory when the control unit determines a malfunction.
Current malfunction	A DTC for an unrecovered, current malfunction.
Recovered malfunction	A DTC for a previously determined but now recovered malfunction.
OBD (On-board diagnostics)	Self-diagnostic system is equipped in a control unit for the emission control system.
GST (Generic scan tool)	Generic diagnostic tool that complies with OBD standards.
YDT (Yamaha diagnostic tool)	Diagnostic tool developed especially for Yamaha vehicles.

EAS32858
OUTLINE
The control unit is equipped with a self-diagnostic function in order to ensure that the system is operating normally. If this function detects a malfunction in the system, it immediately operates the system under substitute characteristics and illuminates the warning light to alert the rider that a malfunction has occurred in the system. Once a malfunction has been detected, a DTC is stored in the memory of the control unit.

EAS32859
CHECKING THE WARNING LIGHT
The warning light comes on after the main switch has been set to "ON". Refer to the following table for lighting up time.
If the warning light still comes on, refer to a check item of a troubleshooting of each system, check and repair it. If the warning light does not come on, the warning light (LED) may be defective.

TIP

- This engine equips self-diagnostic function. It's controlled delicately for detecting defective and malfunction of the exhaust emission control system. Therefor, the vehicle modifying, poor maintenance, and improper using of the vehicle may also become the cause of the MIL come on. These events may cause the occurrence of the warning light coming on without malfunction.
- Reprogramming of the ECU software.
- Using the electrical accessory which may affect the ECU.
- Using the incorrect specification of spark plug and fuel injector. Using the third party accessories such as suspension and exhaust system.
- Change of specifications of drive chain, sprocket, wheel and tire.
- Removing or modifying the O_2 sensor, the air induction system, the exhaust system part (catalyst, EXUP, etc.).
- Poor maintenance of the drive chain and tire air pressure.
- Incorrect brake pedal height, rear brake dragging.
- Excessive opening and closing of the throttle grip, frequently used of burnout, wheelie and half clutch.
- Air mixture by fuel supply badness.



System	Lighting up warning light	Lighting time
FUEL INJECTION SYSTEM	MIL “2”	2.0 seconds
ABS (Anti-lock Brake System)	ABS warning light “1”	*
STEERING DAMPER SYSTEM	Auxiliary system warning light “3”	2.0 seconds
ELECTRONICALLY ADJUSTABLE SUSPENSION SYSTEM (for YZF-R1M)	Auxiliary system warning light “3”	2.0 seconds

TIP

*: The ABS warning light goes off when the vehicle is judged to normal with running.

EAS32806

YDT

This model uses the YDT to identify malfunctions.
For information about using the YDT, refer to the operation manual that is included with the tool.



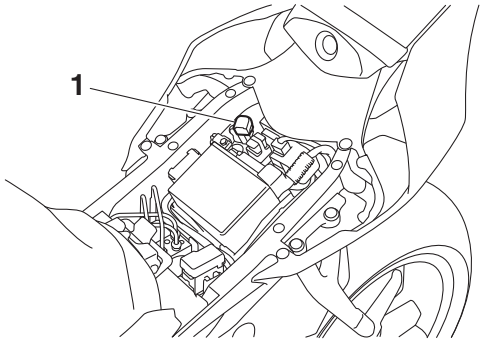
Yamaha diagnostic tool USB (US)
90890-03269
Yamaha diagnostic tool (A/I)
90890-03264

TIP

- Yamaha diagnostic tool (A/I) (90890-03264) includes YDT sub harness (6P) (90890-03266).
- If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.
- A GST can also be used to identify malfunctions.

Connecting the YDT

Remove the protective cap “1”, and then connect the YDT to the coupler.



EAS32864

PARTS CONNECTED TO THE ECU

The following parts are connected to the ECU.

When checking for a power short circuit, the couplers must be disconnected from all of the following parts beforehand.

- Crankshaft position sensor
- Primary injector #1
- Primary injector #2
- Primary injector #3
- Primary injector #4
- Secondary injector #1
- Secondary injector #2
- Secondary injector #3
- Secondary injector #4
- Ignition coil #1
- Ignition coil #2
- Ignition coil #3
- Ignition coil #4
- Throttle position sensor
- Accelerator position sensor
- Intake air pressure sensor
- Atmospheric pressure sensor
- Coolant temperature sensor
- Gear position sensor
- Shift sensor
- Intake air temperature sensor
- O_2 sensor 1 (left side)
- Fuel pump
- Auxiliary light
- O_2 sensor 2 (right side)
- Hydraulic unit assembly (ABS ECU)
- Air induction system solenoid
- Throttle servo motor
- Relay unit
- Starter relay
- Radiator fan motor relay
- Meter assembly
- Steering damper solenoid
- EXUP servo motor
- Cylinder identification sensor
- Intake funnel servo motor
- Intake solenoid
- Headlight control unit
- Handlebar switch (left and right)
- IMU (Inertial Measurement Unit)
- SCU (Suspension Control Unit) (YZF-R1M)
- CCU (Communication Control Unit) (YZF-R1M)

EAS32865

PARTS CONNECTED TO THE SCU (for YZF-R1M)

The following parts are connected to the SCU.

When checking for a power short circuit, the couplers must be disconnected from all of the following parts beforehand.

- Front fork stepping motor (left)
- Front fork stepping motor (right)
- Sub radiator fan motor
- Auxiliary DC connector

- Rear shock absorber assembly stepping motor (compression damping)
- Rear shock absorber assembly stepping motor (rebound damping)
- Steering damper solenoid (OPTION)
- ECU (Engine Control Unit)
- Hydraulic unit assembly (ABS ECU)
- Meter assembly
- IMU (Inertial Measurement Unit)
- CCU (Communication Control Unit)
- Radiator fan motor
- Sidestand switch
- Fuel sender
- Fuel pump
- Handlebar switch (left)
- Headlight control unit
- Auxiliary light
- Front turn signal/position light (right and left)
- Steering damper solenoid

EAS32918
PARTS CONNECTED TO THE ABS ECU
The following parts are connected to the hydraulic unit assembly (ABS ECU).
When checking for a power short circuit, the couplers must be disconnected from all of the following parts beforehand.

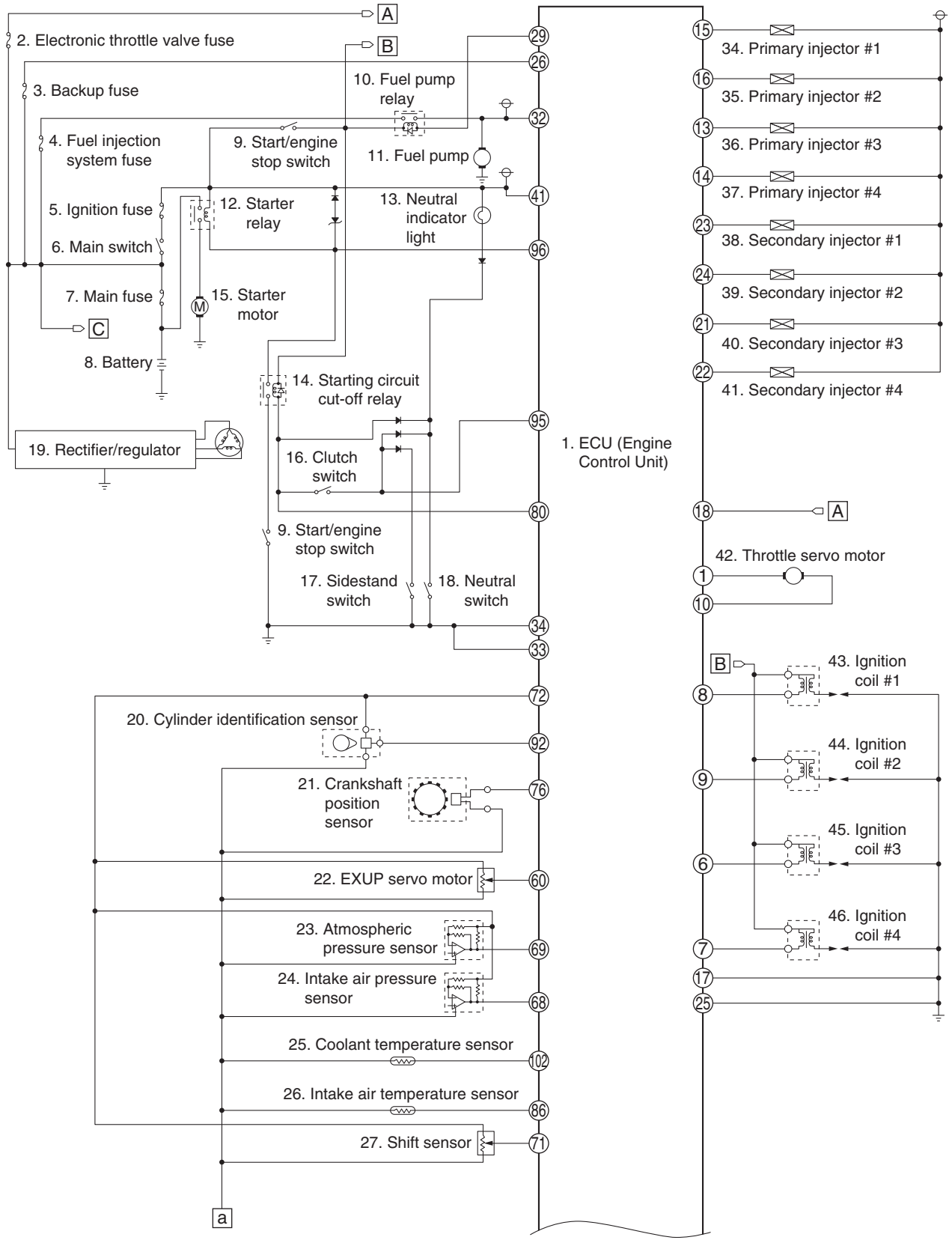
- SCU (Suspension Control Unit) (YZF-R1M)
- Meter assembly
- IMU (Inertial Measurement Unit)
- ECU (Engine Control Unit)
- CCU (Communication Control Unit) (YZF-R1M)
- Front wheel sensor
- Rear wheel sensor
- Handlebar switch (right and left)
- Rear brake light switch
- Tail/brake light

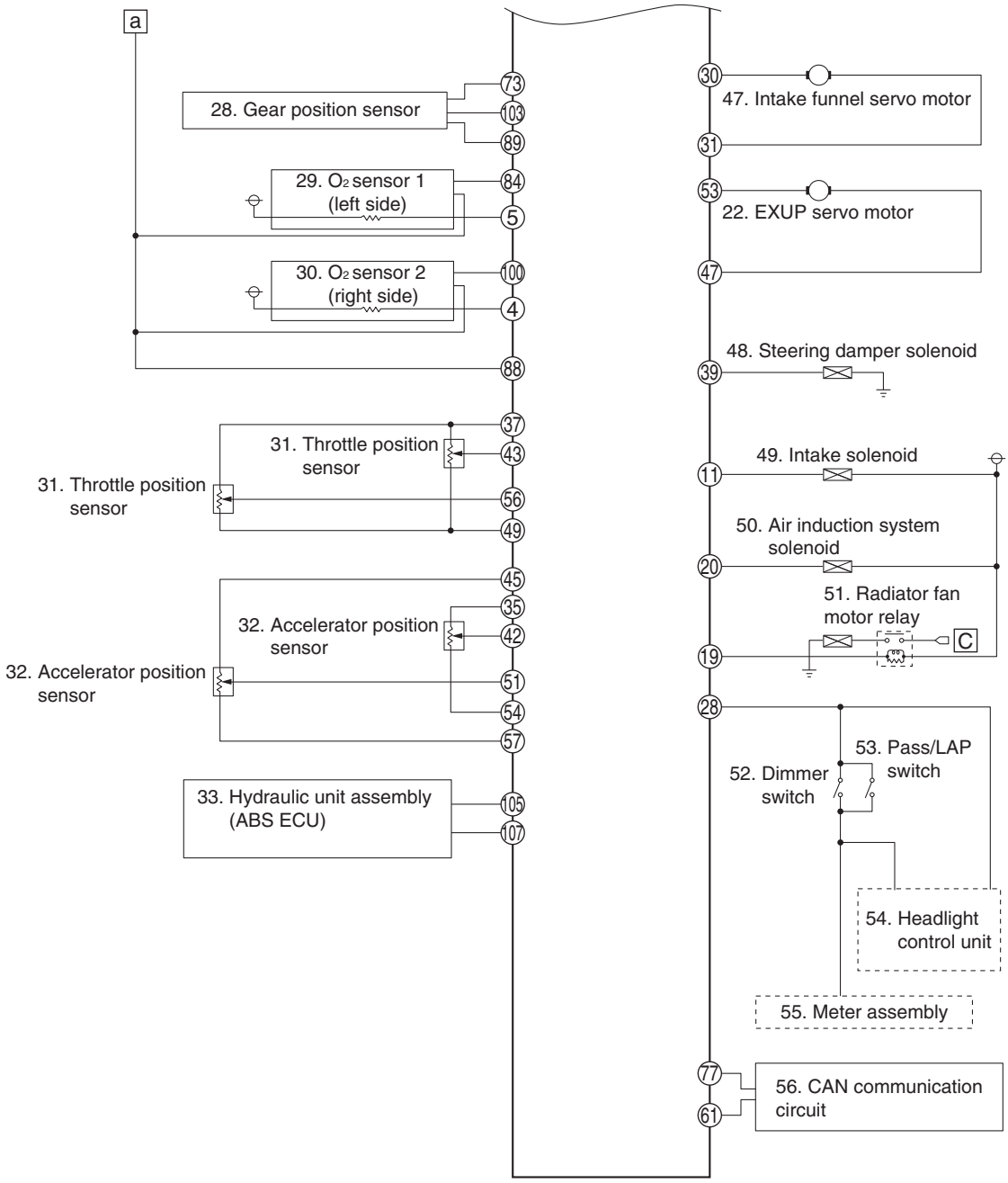
EAS33137
PRECAUTIONS FOR ROAD TEST
EWA20860
⚠ WARNING

When test riding the vehicle, always comply with local traffic regulations.

EAS20387
SYSTEM DIAGRAM

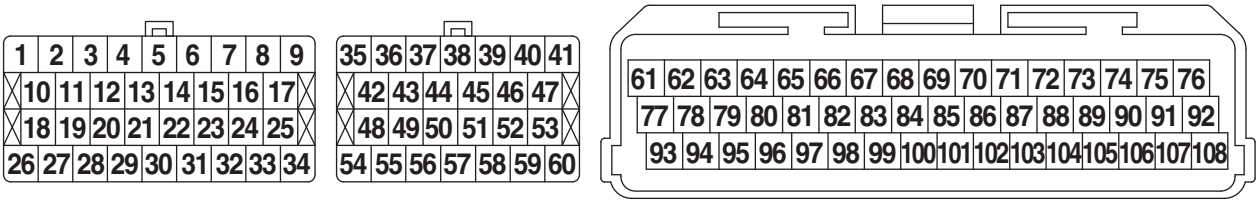
EAS32920
ECU CIRCUIT DIAGRAM




a
28. Gear position sensor
73
103
89
29. O2 sensor 1 (left side)
84
5
30. O2 sensor 2 (right side)
100
4
88
31. Throttle position sensor
37
43
56
49
31. Throttle position sensor
32. Accelerator position sensor
45
35
42
51
54
57
32. Accelerator position sensor
33. Hydraulic unit assembly (ABS ECU)
105
107
30
47. Intake funnel servo motor
31
53
22. EXUP servo motor
47
48. Steering damper solenoid
39
49. Intake solenoid
11
50. Air induction system solenoid
20
51. Radiator fan motor relay
C
19
28
53. Pass/LAP switch
52. Dimmer switch
54. Headlight control unit
55. Meter assembly
77
61
56. CAN communication circuit

1. ECU (Engine Control Unit)
2. Electronic throttle valve fuse
3. Backup fuse
4. Fuel injection system fuse
5. Ignition fuse
6. Main switch
7. Main fuse
8. Battery
9. Start/engine stop switch
10. Fuel pump relay
11. Fuel pump
12. Starter relay
13. Neutral indicator light
14. Starting circuit cut-off relay
15. Starter motor
16. Clutch switch
17. Sidestand switch
18. Neutral switch
19. Rectifier/regulator
20. Cylinder identification sensor
21. Crankshaft position sensor
22. EXUP servo motor
23. Atmospheric pressure sensor
24. Intake air pressure sensor
25. Coolant temperature sensor
26. Intake air temperature sensor
27. Shift sensor
28. Gear position sensor
29. O_2 sensor 1 (left side)
30. O_2 sensor 2 (right side)
31. Throttle position sensor
32. Accelerator position sensor
33. Hydraulic unit assembly (ABS ECU)
34. Primary injector #1
35. Primary injector #2
36. Primary injector #3
37. Primary injector #4
38. Secondary injector #1
39. Secondary injector #2
40. Secondary injector #3
41. Secondary injector #4
42. Throttle servo motor
43. Ignition coil #1
44. Ignition coil #2
45. Ignition coil #3
46. Ignition coil #4
47. Intake funnel servo motor
48. Steering damper solenoid
49. Intake solenoid
50. Air induction system solenoid
51. Radiator fan motor relay
52. Dimmer switch
53. Pass/LAP switch
54. Headlight control unit
55. Meter assembly
56. CAN communication circuit

EAS33369
ECU COUPLER LAYOUT



No.	Connected parts	Wire harness color
1	Throttle servo motor	Y/R
2	—	—
3	—	—
4	O_2 sensor 2 (right side)	P/W
5	O_2 sensor 1 (left side)	P/B
6	Ignition coil #3	O/G
7	Ignition coil #4	Gy/G
8	Ignition coil #1	O
9	Ignition coil #2	Gy/R
10	Throttle servo motor	Lg/R
11	Intake solenoid	L/R
12	—	—
13	Primary injector #3	L/B
14	Primary injector #4	O/B
15	Primary injector #1	R/B
16	Primary injector #2	G/B
17	Ground	B
18	Electronic throttle valve fuse	R/L
19	Radiator fan motor relay	G/Y
20	Air induction system solenoid	Br/R
21	Secondary injector #3	Br/Y
22	Secondary injector #4	Br/B
23	Secondary injector #1	W/L
24	Secondary injector #2	Sb/W
25	Ground	B
26	Backup fuse	R/G
27	—	—

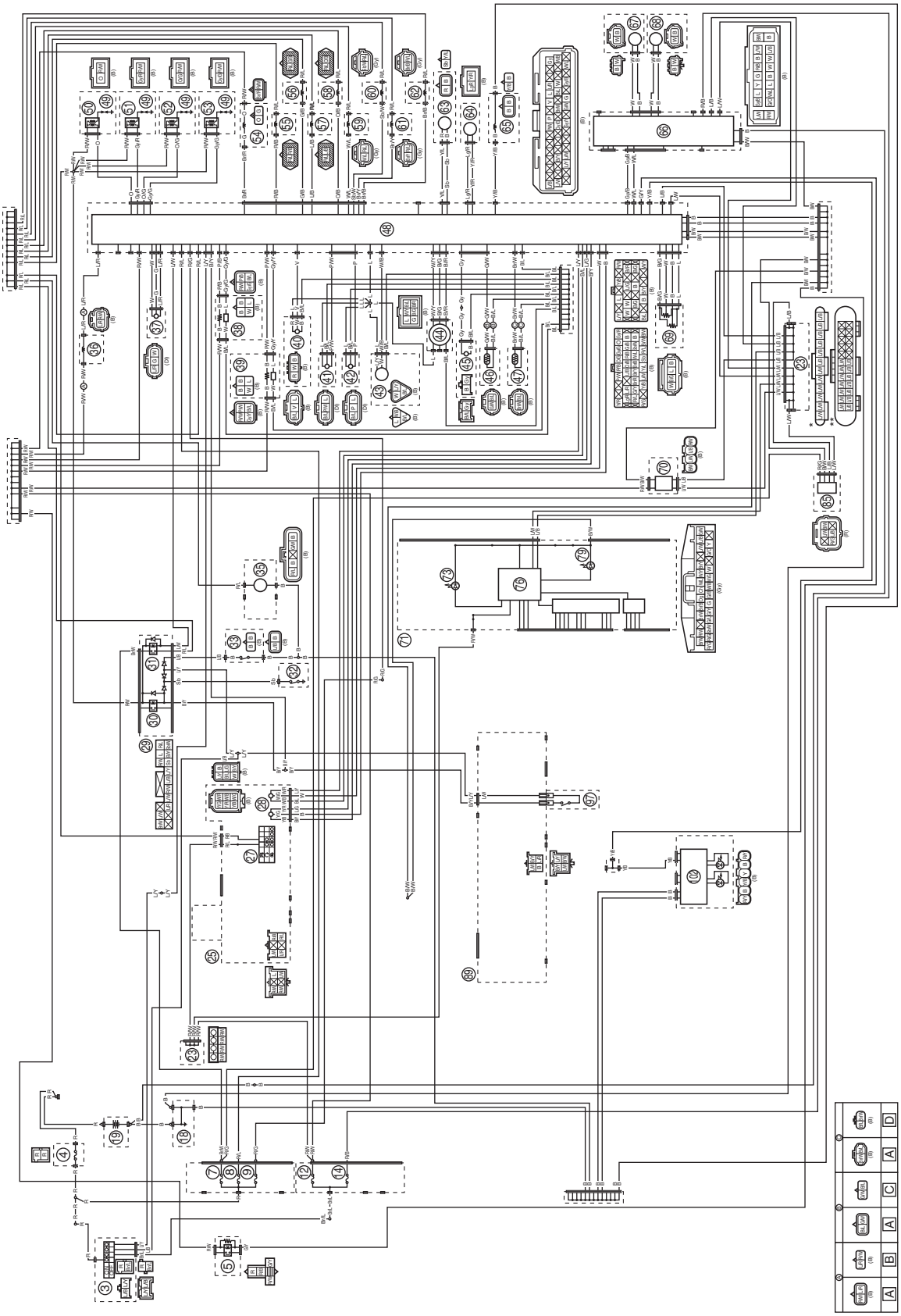
No.	Connected parts	Wire harness color
28	Pass/LAP switch, dimmer switch, headlight control unit	Y/B
29	Fuel pump relay	L/W
30	Intake funnel servo motor	Y/L
31	Intake funnel servo motor	Sb
32	Fuel pump relay	R/L
33	Ground	B/W
34	Ground	B/W
35	Accelerator position sensor	L/Y
36	—	—
37	Throttle position sensor	L
38	—	—
39	Steering damper solenoid	Y/B
40	—	—
41	Ignition fuse	R/W
42	Accelerator position sensor	W
43	Throttle position sensor	W
44	—	—
45	Accelerator position sensor	L/G
46	—	—
47	EXUP servo motor	B/R
48	—	—
49	Throttle position sensor	B/G
50	—	—
51	Accelerator position sensor	B

No.	Connected parts	Wire harness color
52	—	—
53	EXUP servo motor	B/G
54	Accelerator position sensor	B/L
55	—	—
56	Throttle position sensor	B
57	Accelerator position sensor	B/Y
58	—	—
59	—	—
60	EXUP servo motor	W/Y
61	CAN communication circuit	L/B
62	—	—
63	—	—
64	—	—
65	—	—
66	—	—
67	—	—
68	Intake air pressure sensor	P/W
69	Atmospheric pressure sensor	P
70	—	—
71	Shift sensor	V
72	Cylinder identification sensor, EXUP servo motor, atmospheric pressure sensor, intake air pressure sensor, shift sensor	L
73	Gear position sensor	L/R
74	—	—
75	—	—
76	Crankshaft position sensor	Gy
77	CAN communication circuit	L/W
78	—	—
79	—	—
80	Starting circuit cut-off relay, clutch switch	B/Y
81	—	—
82	—	—

No.	Connected parts	Wire harness color
83	—	—
84	O_2 sensor 1 (left side)	Gy/G
85	—	—
86	Intake air temperature sensor	Br/W
87	—	—
88	Cylinder identification sensor, crankshaft position sensor, EXUP servo motor, atmospheric pressure sensor, intake air pressure sensor, coolant temperature sensor, intake air temperature sensor, shift sensor, O_2 sensor 1 (left side), O_2 sensor 2 (right side)	B/L
89	Gear position sensor	W
90	—	—
91	—	—
92	Cylinder identification sensor	W/B
93	—	—
94	—	—
95	Clutch switch, relay unit	L/Y
96	Starter relay, relay unit	L/W
97	—	—
98	—	—
99	—	—
100	O_2 sensor 2 (right side)	Gy/Y
101	—	—
102	Coolant temperature sensor	G/W
103	Gear position sensor	G
104	—	—
105	Hydraulic unit assembly (ABS ECU)	Gy/B
106	—	—
107	Hydraulic unit assembly (ABS ECU)	W/L
108	—	—

EAS20440
FUEL INJECTION SYSTEM

EAS32871
CIRCUIT DIAGRAM



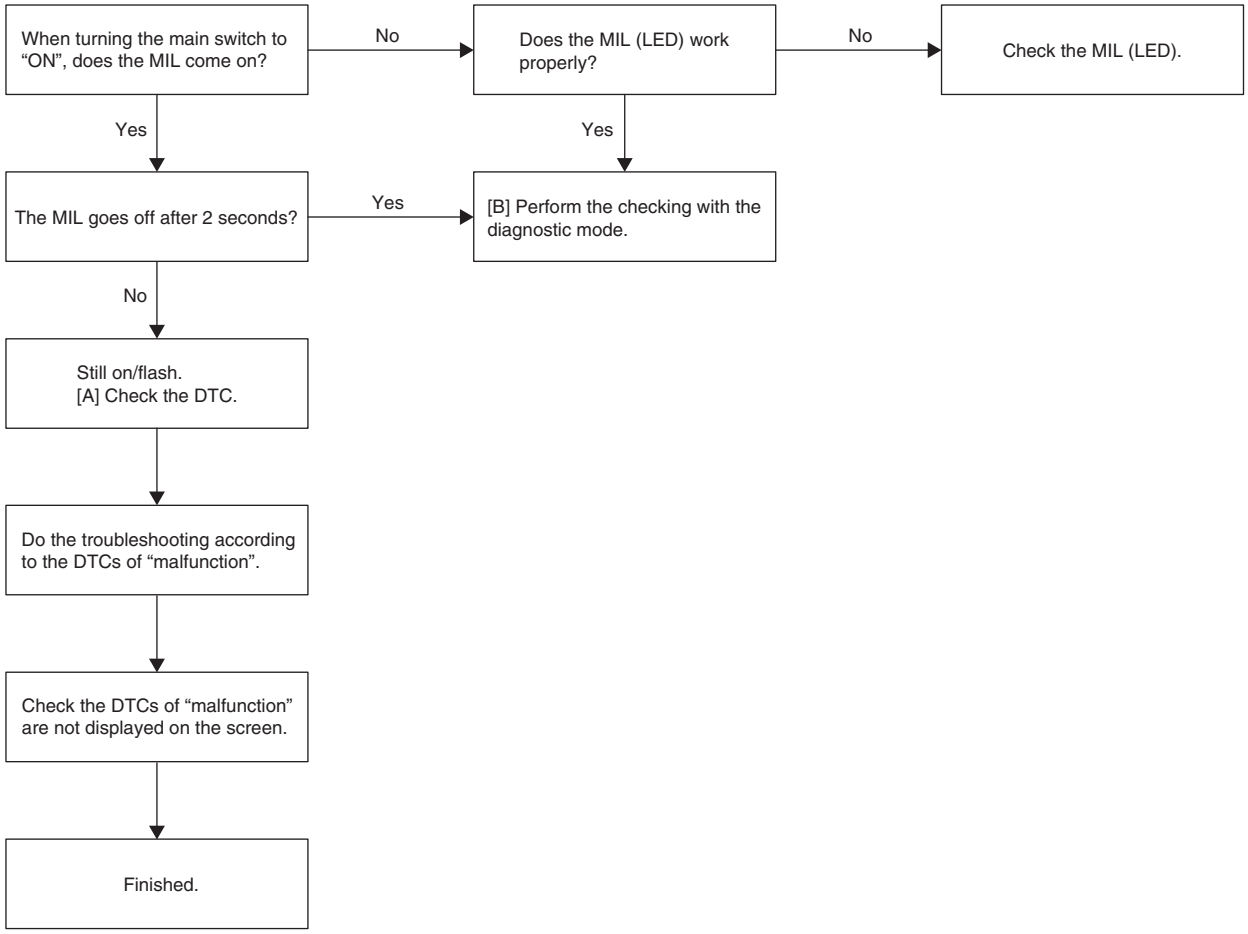
3. Main switch
4. Main fuse
5. Radiator fan motor relay
7. Fuel injection system fuse
8. Electronic throttle valve fuse
9. Backup fuse
12. Ignition fuse
14. ABS ECU fuse
18. Engine ground
19. Battery
23. Joint coupler
25. Handlebar switch (right)
27. Start/engine stop switch
28. Accelerator position sensor
29. Relay unit
30. Starting circuit cut-off relay
31. Fuel pump relay
32. Neutral switch
33. Sidestand switch
35. Fuel pump
36. Intake solenoid
37. Gear position sensor
38. O_2 sensor 1 (left side)
39. O_2 sensor 2 (right side)
40. Shift sensor
41. Intake air pressure sensor
42. Atmospheric pressure sensor
43. Cylinder identification sensor
44. EXUP servo motor
45. Crankshaft position sensor
46. Coolant temperature sensor
47. Intake air temperature sensor
48. ECU (Engine Control Unit)
49. Spark plug
50. Ignition coil #1
51. Ignition coil #2
52. Ignition coil #3
53. Ignition coil #4
54. Air induction system solenoid
55. Primary injector #1
56. Primary injector #2
57. Primary injector #3
58. Primary injector #4
59. Secondary injector #1
60. Secondary injector #2
61. Secondary injector #3
62. Secondary injector #4
63. Intake funnel servo motor
64. Throttle servo motor
65. Steering damper solenoid
66. Hydraulic unit assembly (ABS ECU)
67. Front wheel sensor
68. Rear wheel sensor
69. Throttle position sensor
70. IMU (Inertial Measurement Unit)
71. Meter assembly
73. MIL (Malfunction indicator light)
76. Multi-function meter
79. Auxiliary system warning light
85. YDT coupler
89. Handlebar switch (left)
97. Clutch switch
102. Headlight control unit

A. Wire harness
B. Sub-wire harness (Intake solenoid)
C. Sub-wire harness (Coolant temperature sensor)
D. Sub-wire harness (Intake air temperature sensor)
*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

EAS32917

BASIC PROCESS FOR TROUBLESHOOTING

This section describes the basic process about fuel injection system troubleshooting.
But because a work procedure varies depending to symptom and DTC, check and repair it according to applicable troubleshooting.



EAS33147
[A] THE MIL COMES ON/FLASHES AND ENGINE OPERATION IS NOT NORMAL

1. Check the DTC of “malfunction” using the YDT.
2. Delete the DTC using the YDT. (Only for *1)
3. Check and repair the malfunction according to applicable DTC troubleshooting.
4. Turn the main switch from “OFF” to “ON”, and then check the DTC of “malfunction” is not displayed.

TIP

- If another DTC is displayed, repeat steps (1) to (4) until no DTC is displayed.
- Turning the main switch to “OFF” will not erase the malfunction history.

EAS33148
[B] THE MIL DOES NOT COME ON, BUT THE ENGINE OPERATION IS NOT NORMAL

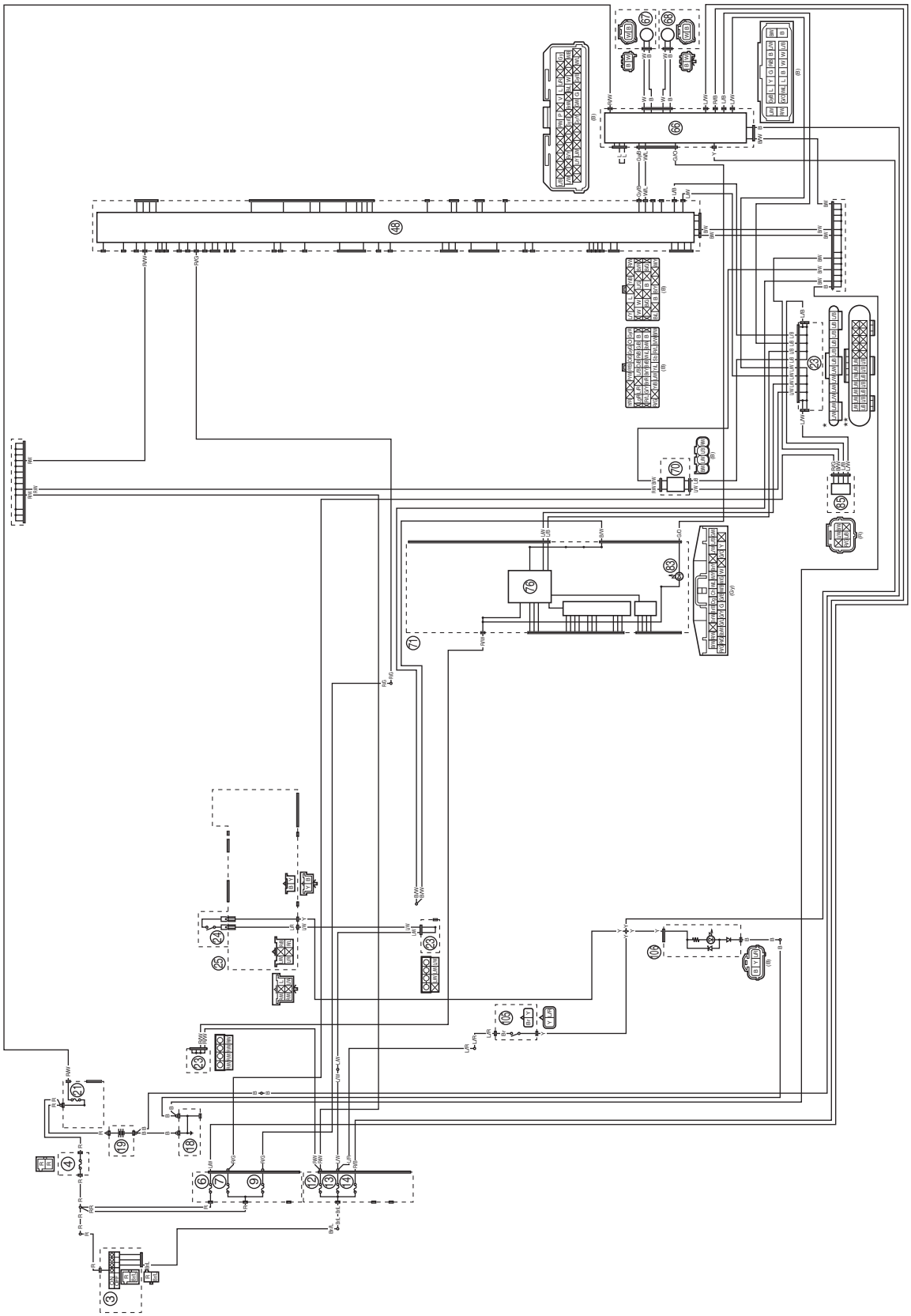
1. Monitor the operation of these sensors and actuators by using the YDT in the diagnostic mode.
   Refer to “DIAGNOSTIC CODE: SENSOR OPERATION TABLE” on page 9-59 and “DIAGNOSTIC CODE: ACTUATOR OPERATION TABLE” on page 9-62.

D01: Throttle position sensor signal 1 (throttle angle)
D13: Throttle position sensor signal 2 (throttle angle)
D14: Accelerator position sensor signal 1 (throttle angle)
D15: Accelerator position sensor signal 2 (throttle angle)
D30: Cylinder-#1 ignition coil
D31: Cylinder-#2 ignition coil
D32: Cylinder-#3 ignition coil
D33: Cylinder-#4 ignition coil
D36: Primary injector #1
D37: Primary injector #2
D38: Primary injector #3
D39: Primary injector #4
D40: Secondary injector #1
D41: Secondary injector #2
D42: Secondary injector #3
D43: Secondary injector #4
D48: Air induction system solenoid

   If a malfunction is detected in the sensors or actuators, repair or replace all faulty parts.
   If no malfunction is detected in the sensors and actuators, check and repair the inner parts of the engine.

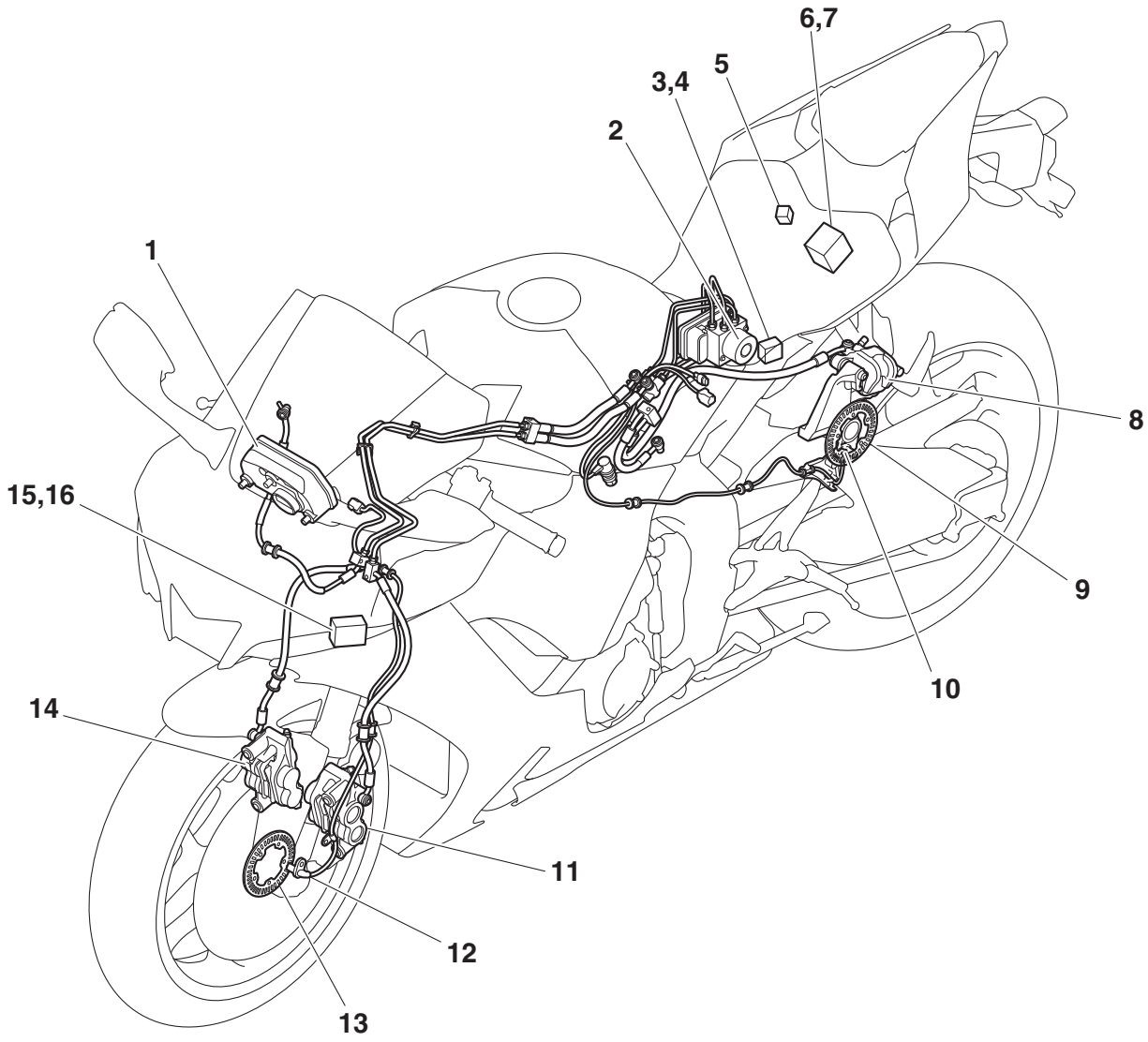
EAS20443
ABS (Anti-lock Brake System)

EAS32890
CIRCUIT DIAGRAM



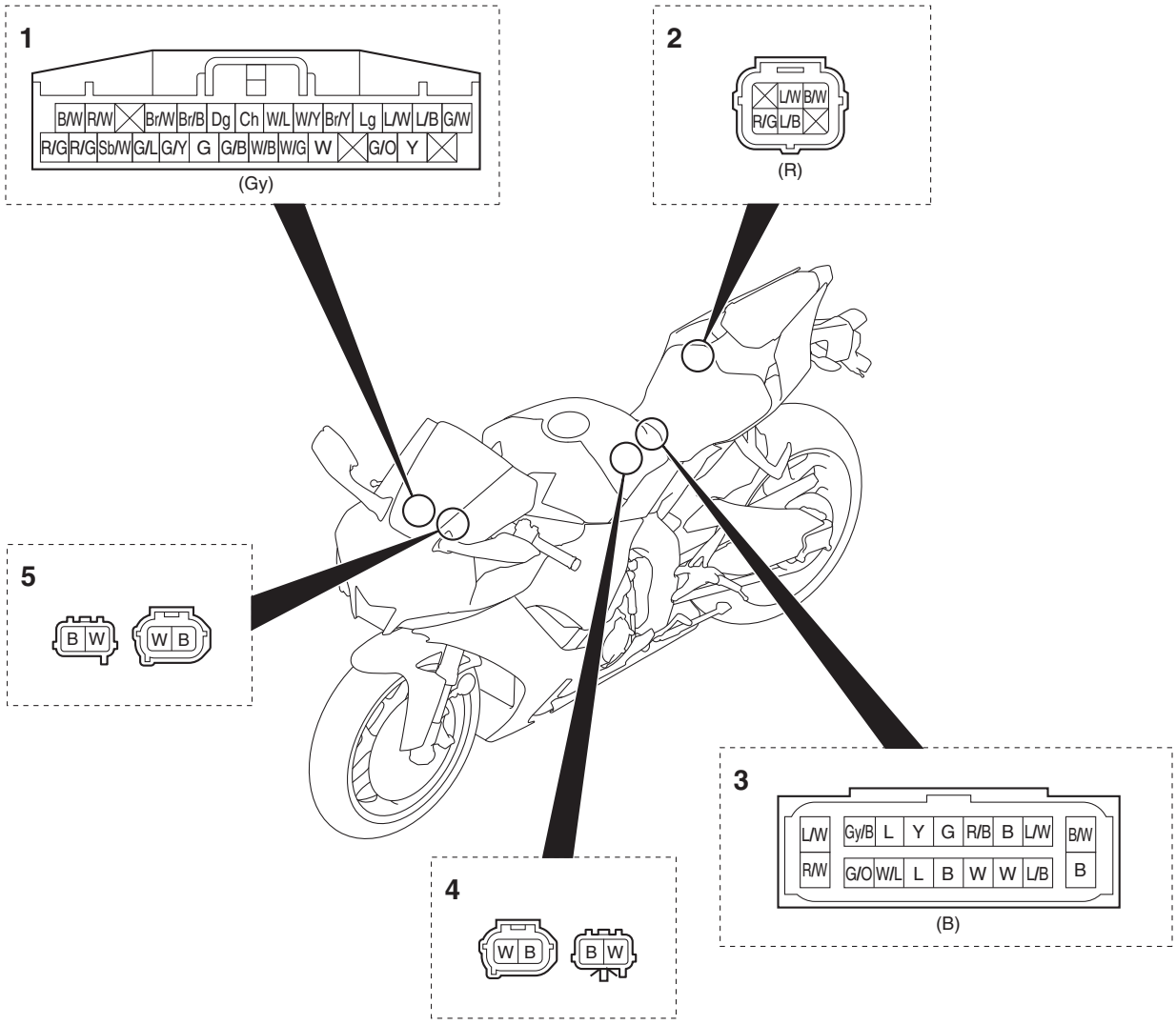
3. Main switch
4. Main fuse
6. ABS solenoid fuse
7. Fuel injection system fuse
9. Backup fuse
12. Ignition fuse
13. Signaling system fuse
14. ABS ECU fuse
18. Engine ground
19. Battery
21. ABS motor fuse
23. Joint coupler
24. Front brake light switch
25. Handlebar switch (right)
48. ECU (Engine Control Unit)
66. Hydraulic unit assembly (ABS ECU)
67. Front wheel sensor
68. Rear wheel sensor
70. IMU (Inertial Measurement Unit)
71. Meter assembly
76. Multi-function meter
83. ABS warning light
85. YDT coupler
105. Rear brake light switch
106. Tail/brake light
*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

EAS32891
ABS COMPONENTS CHART



1. Meter assembly
2. Hydraulic unit assembly (ABS ECU)
3. Fuse box 1
4. ABS solenoid fuse
5. YDT coupler
6. Starter relay
7. ABS motor fuse
8. Rear brake caliper
9. Rear wheel sensor rotor
10. Rear wheel sensor
11. Front brake caliper (left)
12. Front wheel sensor
13. Front wheel sensor rotor
14. Front brake caliper (right)
15. Fuse box 2
16. Signaling system fuse

EAS32892
ABS COUPLER LOCATION CHART



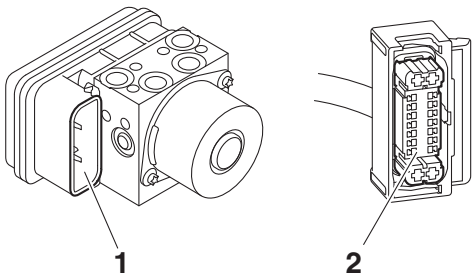
1. Meter assembly coupler
2. YDT coupler
3. ABS ECU coupler
4. Rear wheel sensor coupler
5. Front wheel sensor coupler

EAS32893
MAINTENANCE OF THE ABS ECU

Checking the ABS ECU
1. Check:
   - Terminals “1” of the hydraulic unit assembly (ABS ECU)
     Cracks/damages → Replace the hydraulic unit assembly, brake hoses, and brake pipes that are connected to the assembly as a set.
   - Terminals “2” of the ABS ECU coupler
     Connection defective, contaminated, come-off → Correct or clean.

TIP

If the ABS ECU coupler is clogged with mud or dirt, clean with compressed air.



EAS33284
ABS TROUBLESHOOTING OUTLINE

EWA16710

⚠ WARNING

When maintenance or checks have been performed on components related to the ABS, be sure to perform a final check before delivering the vehicle to the customer.

TIP

To final check, refer to “[C-1] FINAL CHECK” on page 9-24.

ABS operation when the ABS warning light comes on
1. The ABS warning light remains on → ABS operates as a normal brake system.
   - A malfunction was detected using the ABS self-diagnosis function.
   - The ABS self-diagnosis has not been completed.
     The ABS self-diagnosis starts when the main switch is turned to “ON” and finishes when the vehicle has traveled at a speed of approximately 10 km/h (6 mi/h).
2. The ABS warning light comes on after the engine starts, and then goes off when the vehicle starts moving (traveling at a speed of approximately 10 km/h (6 mi/h)). → ABS operation is normal.
3. The ABS warning light flashes → ABS operation is normal.
   - Refer to “BASIC INSTRUCTIONS FOR TROUBLESHOOTING” on page 9-31.

Self-diagnosis with the ABS ECU
The ABS ECU performs a static check of the entire system when the main switch is turned to “ON”. It also checks for malfunctions while the vehicle is ridden. Since all malfunctions are recorded after they are detected, it is possible to check the recorded malfunction data by utilizing the YDT when the ABS ECU has entered the self-diagnosis mode.

TIP

The ABS performs a self-diagnosis test for a few seconds each time the vehicle first starts off after the main switch was turned to “ON”. During this test, a “clicking” noise can be heard from under the seat, and if the brake lever or brake pedal are even slightly applied, a vibration can be felt at the lever and pedal, but these do not indicate a malfunction.

Special precautions for handling and servicing a vehicle equipped with ABS

ECA17620

NOTICE

Care should be taken not to damage components by subjecting them to shocks or pulling on them with too much force since the ABS components are precisely adjusted.

- The ABS ECU and hydraulic unit are united assemblies and cannot be disassembled.
- The malfunction history is stored in the memory of the ABS ECU. Delete the DTC when the service is finished. (This is because the past DTC will be displayed again if another malfunction occurs.)

EAS32895

BASIC INSTRUCTIONS FOR TROUBLESHOOTING

1. Check the DTC of “malfunction” using the YDT.
2. Check and repair the malfunction according to applicable DTC troubleshooting.
3. Turn the main switch from “OFF” to “ON”, and then check the DTC of “malfunction” is not displayed.

TIP

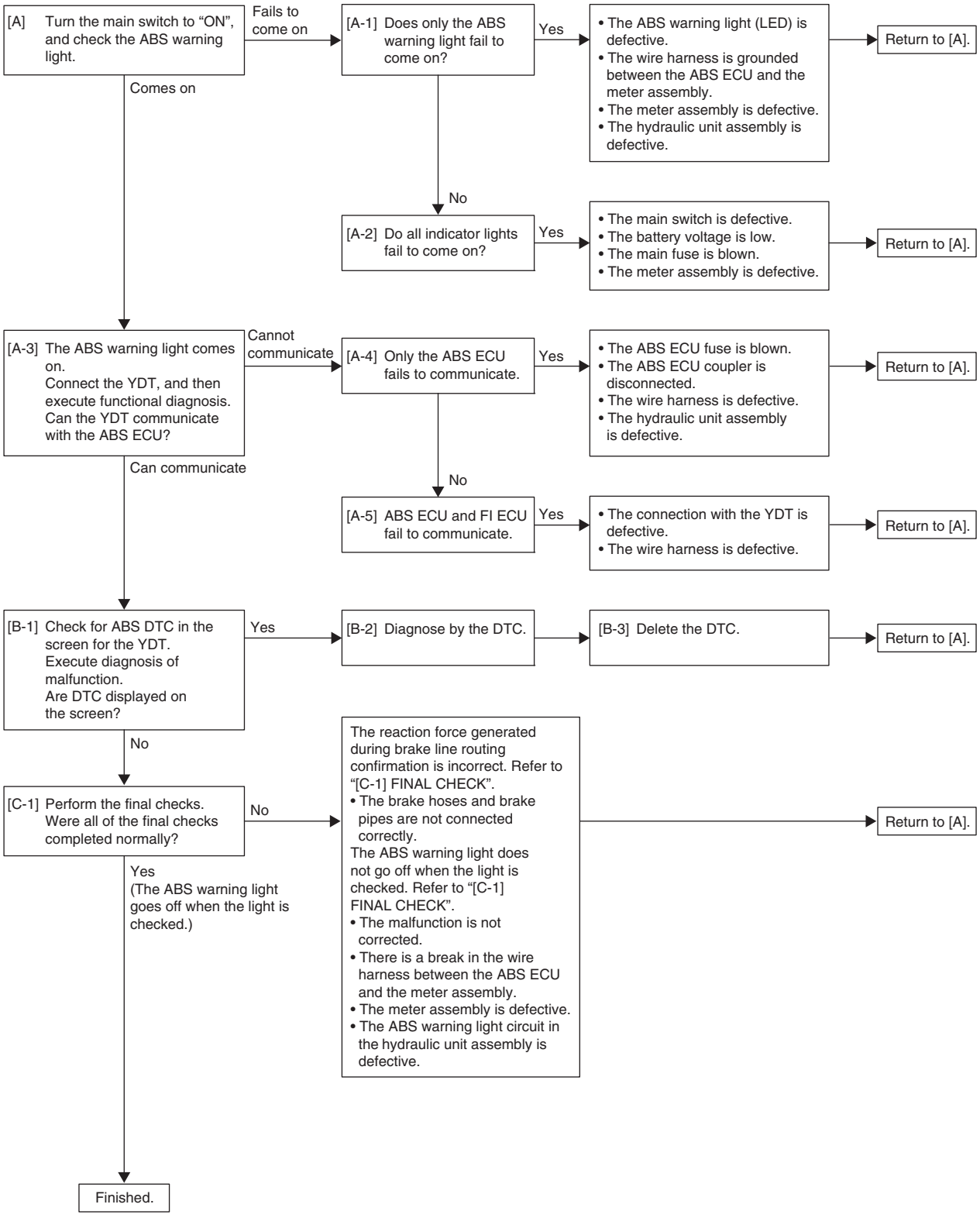
- If another DTC is displayed, repeat steps (1) to (3) until no DTC is displayed.
- Turning the main switch to “OFF” will not erase the malfunction history.

4. Do the final check.

EWA17420

⚠ WARNING

- **Perform the troubleshooting [A]→[B]→[C] in order. Be sure to follow the order since a wrong diagnosis could result if the steps are followed in a different order or omitted.**
- **Use sufficiently charged regular batteries only.**


[A] Turn the main switch to "ON", and check the ABS warning light.
Fails to come on
[A-1] Does only the ABS warning light fail to come on?
Yes
• The ABS warning light (LED) is defective.
• The wire harness is grounded between the ABS ECU and the meter assembly.
• The meter assembly is defective.
• The hydraulic unit assembly is defective.
Return to [A].
No
[A-2] Do all indicator lights fail to come on?
Yes
• The main switch is defective.
• The battery voltage is low.
• The main fuse is blown.
• The meter assembly is defective.
Return to [A].
Comes on
[A-3] The ABS warning light comes on.
Connect the YDT, and then execute functional diagnosis.
Can the YDT communicate with the ABS ECU?
Cannot communicate
[A-4] Only the ABS ECU fails to communicate.
Yes
• The ABS ECU fuse is blown.
• The ABS ECU coupler is disconnected.
• The wire harness is defective.
• The hydraulic unit assembly is defective.
Return to [A].
No
[A-5] ABS ECU and FI ECU fail to communicate.
Yes
• The connection with the YDT is defective.
• The wire harness is defective.
Return to [A].
Can communicate
[B-1] Check for ABS DTC in the screen for the YDT.
Execute diagnosis of malfunction.
Are DTC displayed on the screen?
Yes
[B-2] Diagnose by the DTC.
[B-3] Delete the DTC.
Return to [A].
No
[C-1] Perform the final checks.
Were all of the final checks completed normally?
No
The reaction force generated during brake line routing confirmation is incorrect. Refer to "[C-1] FINAL CHECK".
• The brake hoses and brake pipes are not connected correctly.
The ABS warning light does not go off when the light is checked. Refer to "[C-1] FINAL CHECK".
• The malfunction is not corrected.
• There is a break in the wire harness between the ABS ECU and the meter assembly.
• The meter assembly is defective.
• The ABS warning light circuit in the hydraulic unit assembly is defective.
Return to [A].
Yes
(The ABS warning light goes off when the light is checked.)
Finished.

EAS32897
[A] CHECKING THE ABS WARNING LIGHT
Turn the main switch to “ON”. (Do not start the engine.)
1. The ABS warning light does not come on.
   • Only the ABS warning light fails to come on. [A-1]
   • The ABS warning light and all other indicator lights fail to come on. [A-2]
2. The ABS warning light comes on. [A-3]

EAS32898
[A-1] ONLY THE ABS WARNING LIGHT FAILS TO COME ON
1. Check for a short circuit to the ground between the green/orange terminal of the ABS ECU coupler and green/orange terminal of the meter assembly.
   • If there is short circuit to the ground, the wire harness is defective. Replace the wire harness.
2. Disconnect the ABS ECU coupler and check that the ABS warning light comes on when the main switch is turned to “ON”.
   • If the ABS warning light does not come on, the meter assembly circuit (including the ABS warning light [LED]) is defective. Replace the meter assembly.
   • If the ABS warning light comes on, the ABS ECU is defective. Replace the hydraulic unit assembly.

EAS32899
[A-2] ALL INDICATOR LIGHTS FAIL TO COME ON
1. Main switch
   • Check the main switch for continuity.
   Refer to “CHECKING THE SWITCHES” on page 8-40.
   • If there is no continuity, replace the main switch unit.
2. Battery
   • Check the condition of the battery.
   Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.
   • If the battery is defective, clean the battery terminals and recharge it, or replace the battery.
3. Main fuse
   • Check the fuse for continuity.
   Refer to “CHECKING THE FUSES” on page 8-41.
   • If the main fuse is blown, replace the fuse.
4. Circuit
   • Check the meter assembly circuit.
   Refer to “CIRCUIT DIAGRAM” on page 9-15.
   • If the meter assembly circuit is open, replace the wire harness.

EAS32900
[A-3] THE ABS WARNING LIGHT COMES ON
Connect the YDT to the YDT coupler and execute functional diagnosis. (For information about how to execute functional diagnosis, refer to the operation manual that is included with the tool.)
Check that communication with the ABS ECU is possible.
• Only the ABS ECU fails to communicate. [A-4]
• ABS ECU and FI ECU fail to communicate. [A-5]
• Communication is possible with the ABS ECU. [B-1] (The ABS is displayed on the select unit screen.)

EAS32901
[A-4] ONLY THE ABS ECU FAILS TO COMMUNICATE
1. ABS ECU fuse
   • Check the ABS ECU fuse for continuity.
   Refer to “CHECKING THE FUSES” on page 8-41.
   • If the ABS ECU fuse is blown, replace the fuse.

2. ABS ECU coupler
   • Check that the ABS ECU coupler is connected properly.
   For information about connecting the ABS ECU coupler properly, refer to "INSTALLING THE HYDRAULIC UNIT ASSEMBLY" on page 4-78.
3. Wire harness
   • Open circuit between the main switch and the ABS ECU, or between the ABS ECU and the ground.
   Check for continuity between brown/blue terminal of the main switch coupler and red/black terminal of the ABS ECU coupler.
   Check for continuity between black terminal of the ABS ECU coupler and the ground.
   If there is no continuity, the wire harness is defective. Replace the wire harness.
   • Open circuit in the wire harness between the ABS ECU coupler and the YDT coupler.
   Check for continuity between blue/white terminal of the ABS ECU coupler and blue/white terminal of the YDT coupler. (CANH)
   Check for continuity between blue/black terminal of the ABS ECU coupler and blue/black terminal of the YDT coupler. (CANL)
4. ABS ECU malfunction
   Replace the hydraulic unit assembly.

EAS32902
[A-5] ABS ECU AND FI ECU FAIL TO COMMUNICATE
1. YDT
   Check that the YDT is properly connected.
2. Wire harness
   • Open circuit in the wire harness between the ABS ECU coupler and the YDT coupler.
   Check for continuity between blue/white terminal of the ABS ECU coupler and blue/white terminal of the YDT coupler. (CANH)
   Check for continuity between blue/black terminal of the ABS ECU coupler and blue/black terminal of the YDT coupler. (CANL)

EAS32903
[B-1] MALFUNCTION ARE CURRENTLY DETECTED
When the YDT is connected to the YDT coupler, the DTC will be displayed on the computer screen.
• A DTC is displayed. [B-2]
• A DTC is not displayed. [C-1]

EAS32904
[B-2] DIAGNOSIS USING THE DTC
This model uses the YDT to identify malfunctions.
For information about using the YDT, refer to the operation manual that is included with the tool.



Yamaha diagnostic tool USB (US)
90890-03269
Yamaha diagnostic tool (A/I)
90890-03264

TIP
• Yamaha diagnostic tool (A/I) (90890-03264) includes YDT sub harness (6P) (90890-03266).
• If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.

Details about the displayed DTCs are shown in the following chart. Refer to this chart and check the vehicle.
Once all the work is complete, delete the DTCs. [B-3]

TIP
Do the final check after terminating the connection with the YDT and turning the main switch off. [C-1]

EAS33339
[B-3] DELETING THE DTC
To delete the DTCs, use the YDT. For information about deleting the DTCs, refer to the operation manual of the YDT.
Check that all the displayed DTCs are deleted.



Yamaha diagnostic tool USB (US)
90890-03269
Yamaha diagnostic tool (A/I)
90890-03264

TIP
- Yamaha diagnostic tool (A/I) (90890-03264) includes YDT sub harness (6P) (90890-03266).
- If you already have Yamaha diagnostic tool (A/I) (90890-03262), YDT sub harness (6P) (90890-03266) is separately required.

EAS32905
[C-1] FINAL CHECK
EWA16710
⚠ WARNING

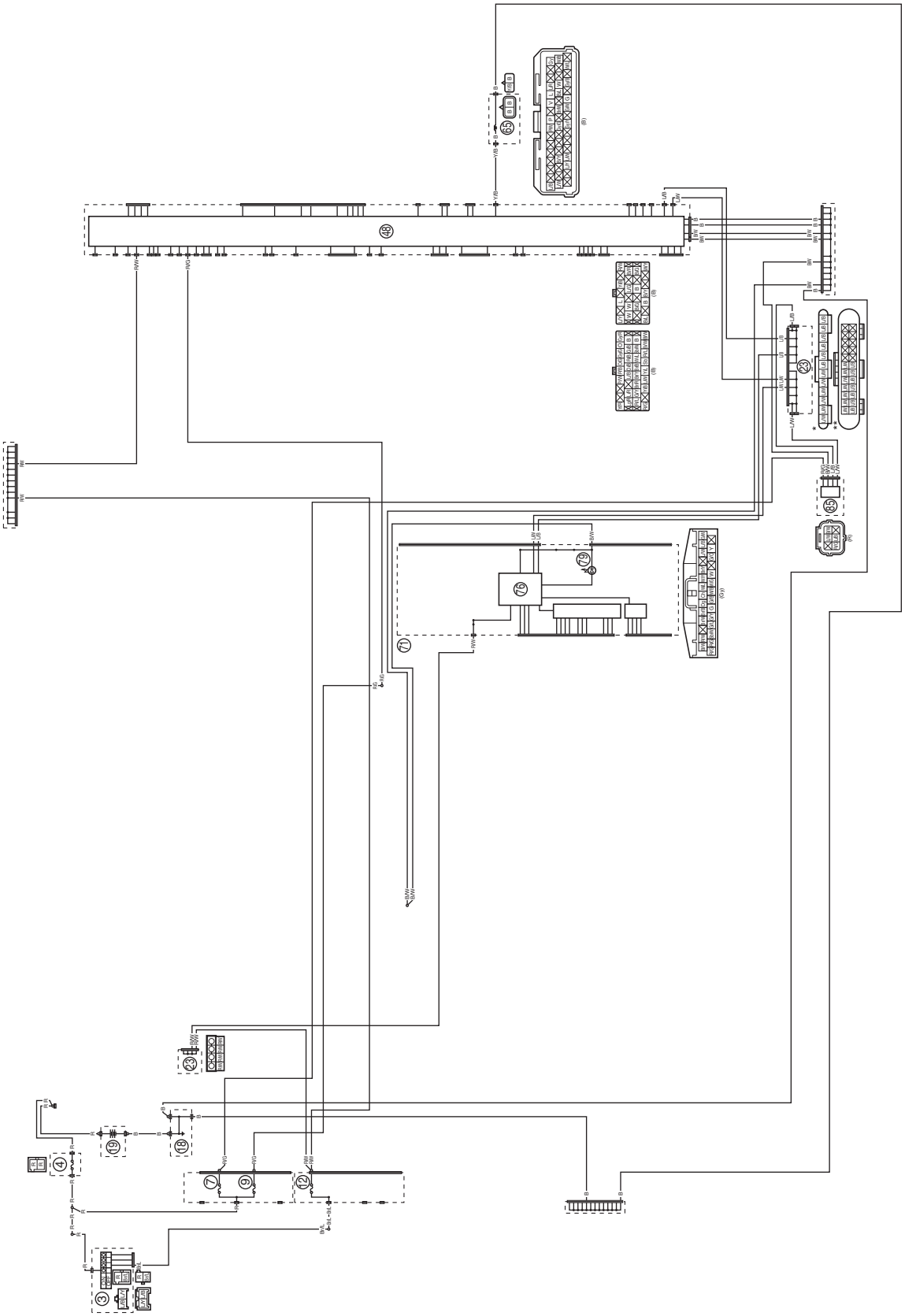
When maintenance or checks have been performed on components related to the ABS, be sure to perform a final check before delivering the vehicle to the customer.

Check all the following items to complete the inspection.
If the process is not completed properly, start again from the beginning.

Checking procedures
1. Check the brake fluid level in the front brake master cylinder reservoir and the rear brake master cylinder reservoir.
   Refer to “CHECKING THE BRAKE FLUID LEVEL” on page 3-13.
2. Check the wheel sensors for proper installation.
   Refer to “INSTALLING THE FRONT WHEEL (DISC BRAKE)” on page 4-40 and “INSTALLING THE REAR WHEEL (DISC BRAKE)” on page 4-49.
3. Perform brake line routing confirmation.
   Refer to “HYDRAULIC UNIT OPERATION TEST” on page 4-79.
   If it does not have reaction-force properly, the brake hose is not properly routed or connected.
4. Delete the DTCs.
   Refer to “[B-3] DELETING THE DTC” on page 9-24.
5. Checking the ABS warning light.
   Confirm the ABS warning light go off.
   If the ABS warning light does not come on or does not go off, refer to “[A] CHECKING THE ABS WARNING LIGHT” on page 9-22.
   If the ABS warning light does not turn off, the possible causes are following:
   - The problem is not solved.
   - Open circuit between the ABS ECU and the meter assembly.
     Check for continuity between green/orange terminal of the ABS ECU coupler and green/orange terminal of the meter assembly coupler.
   - Malfunction in the meter assembly circuit.
   - Malfunction in the ABS warning light circuit in the hydraulic unit assembly.

EAS20445
STEERING DAMPER SYSTEM

EAS32912
CIRCUIT DIAGRAM



3. Main switch
4. Main fuse
7. Fuel injection system fuse
9. Backup fuse
12. Ignition fuse
18. Engine ground
19. Battery
23. Joint coupler
48. ECU (Engine Control Unit)
65. Steering damper solenoid
71. Meter assembly
76. Multi-function meter
79. Auxiliary system warning light
85. YDT coupler
*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

EAS32913
BASIC INSTRUCTIONS FOR TROUBLESHOOTING

The auxiliary system warning light comes on.

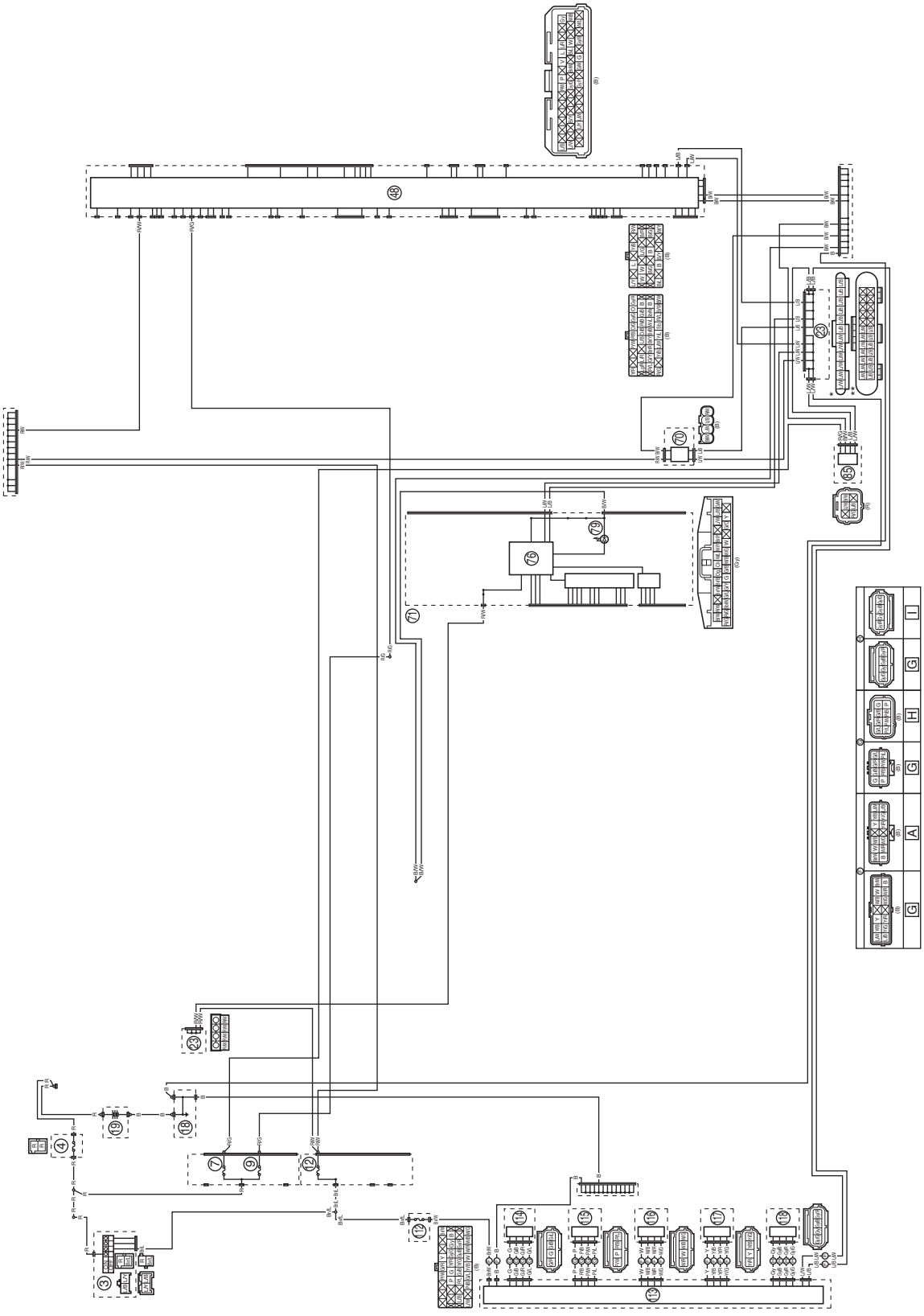
1. Check the DTC of “malfunction” using the YDT.
2. Check and repair the malfunction according to applicable DTC troubleshooting.
3. Turn the main switch from “OFF” to “ON”, and then check the DTC of “malfunction” is not displayed.

TIP

- If another DTC is displayed, repeat steps (1) to (3) until no DTC is displayed.
- Turning the main switch to “OFF” will not erase the malfunction history.

EAS20446
ELECTRONICALLY ADJUSTABLE SUSPENSION SYSTEM (for YZF-R1M)

EAS32914
CIRCUIT DIAGRAM



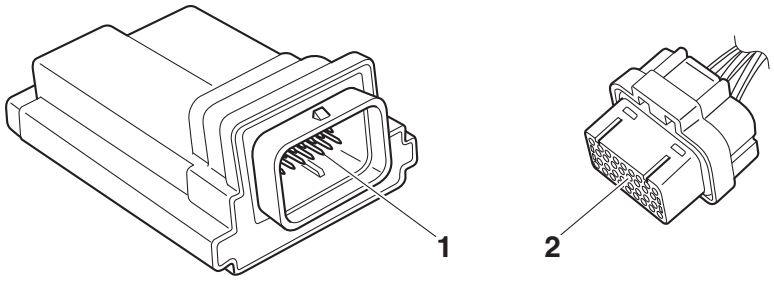
3. Main switch
4. Main fuse
7. Fuel injection system fuse
9. Backup fuse
12. Ignition fuse
18. Engine ground
19. Battery
23. Joint coupler
48. ECU (Engine Control Unit)
70. IMU (Inertial Measurement Unit)
71. Meter assembly
76. Multi-function meter
79. Auxiliary system warning light
85. YDT coupler
112. SCU fuse
113. SCU (Suspension Control Unit)
114. Front fork stepping motor (left)
115. Front fork stepping motor (right)
116. Rear shock absorber assembly stepping motor (compression damping)
117. Rear shock absorber assembly stepping motor (rebound damping)
118. Steering damper solenoid (OPTION)
A. Wire harness
G. Sub-wire harness (SCU, steering damper solenoid, sub-wire harness)
H. Sub-wire harness (front fork stepping motor)
I. Sub-wire harness (Steering damper solenoid), (OPTION)

EAS32915
MAINTENANCE OF THE SCU (suspension control unit)

Checking the SCU (suspension control unit)
1. Check:
   - Terminals “1” of the SCU
     Cracks/damages → Replace the SCU.
   - Terminals “2” of the SCU couplers
     Connection defective, contaminated, come-off → Replace or clean.

TIP

If the SCU couplers are clogged with mud or dirt, clean with compressed air.



EAS32916
BASIC INSTRUCTIONS FOR TROUBLESHOOTING
1. Check the DTC of “malfunction” using the YDT.
2. Check and repair the malfunction according to applicable DTC troubleshooting.
3. Turn the main switch from “OFF” to “ON”, and then check the DTC of “malfunction” is not displayed.

TIP

- If another DTC is displayed, repeat steps (1) to (3) until no DTC is displayed.
- Turning the main switch to “OFF” will not erase the malfunction history.

EAS20551
SELF-DIAGNOSTIC FUNCTION AND DIAGNOSTIC CODE TABLE

EAS33149
DTC TABLE

DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
“11_ABS”	Front wheel sensor (intermittent pulses or no pulses)	—	—	—
“12_ABS”	Rear wheel sensor (intermittent pulses or no pulses)	—	—	—
“13, 26_ABS”	Front wheel sensor (abnormal pulse period)	—	—	—
“14, 27_ABS”	Rear wheel sensor (abnormal pulse period)	—	—	—
“15_ABS”	Front wheel sensor (open or short circuit)	—	—	—
“16_ABS”	Rear wheel sensor (open or short circuit)	—	—	—
“21_ABS”	Hydraulic unit assembly (defective solenoid drive circuit)	—	—	—
“30_EVENT”	Latch up detected.	Unable	Unable	D17
“31_ABS”	Hydraulic unit assembly (defective ABS solenoid power circuit)	—	—	—
“33_ABS”	Hydraulic unit assembly (abnormal ABS motor power supply)	—	—	—
“34_ABS”	Hydraulic unit assembly (short circuit in ABS motor power supply circuit)	—	—	—
“41_ABS”	Front wheel ABS (intermittent wheel speed pulses or incorrect depressurization)	—	—	—
“42_ABS”	Rear wheel ABS (intermittent wheel speed pulses or incorrect depressurization)	—	—	—
“43, 45_ABS”	Front wheel sensor (missing pulses)	—	—	—
“44, 46_ABS”	Rear wheel sensor (missing pulses)	—	—	—
“51_ABS”	Vehicle system power supply (voltage of ABS ECU power supply is high)	—	—	—
“53_ABS”	Vehicle system power supply (voltage of ABS ECU power supply is low)	—	—	—
“55_ABS”	Hydraulic unit assembly (defective ABS ECU)	—	—	—
“56_ABS”	Hydraulic unit assembly (abnormal internal circuit)	—	—	—
“57_ABS”	Vehicle CAN communication line or power source of vehicle system	—	—	—
“62_ABS”	Power supply voltage failure in pressure sensor	—	—	—
“68_ABS”	Defective hydraulic unit assembly (defective front pressure sensor)	—	—	—
“70_EVENT”	Engine forcibly stops when the vehicle is left idling for a long period.	Unable	Unable	—

DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
“89_ABS”	CAN communication (between meter assembly and hydraulic unit assembly)	—	—	—
“90_ABS”	CAN communication (between ECU and hydraulic unit assembly)	—	—	—
“91_ABS”	CAN communication (between IMU and hydraulic unit assembly)	—	—	—
“C0044”	Abnormal ABS	Able	Able	—
“C0520 (FI)”	Abnormal IMU	Able/Unable	Able/Unable	—
“C0520 (SCU)”	Abnormal IMU	Unable	Able/Unable	—
“C1000”	Steering damper solenoid: open or short circuit detected.	Able	Able	D47
“C1002”	Abnormal SCU EEPROM	Able	Able	—
“C1003”	Stepping motor: open or short circuit detected.	Able	Able	—
“C1007”	Abnormality inside SCU	Able	Able	—
“P0030”	O_2 sensor 1 heater: defective heater controller detected.	Able	Able	—
“P0050”	O_2 sensor 2 heater: defective heater controller detected.	Able	Able	—
“P0069”	Intake air pressure sensor or atmospheric pressure sensor: when the main switch is turned to “ON”, the intake air pressure sensor voltage and atmospheric pressure sensor voltage differ greatly.	Able	Able	D02, D03
“P00D1, P2195”	[P00D1] O_2 sensor 1: heater performance deterioration [P2195] O_2 sensor 1: open circuit detected.	Able	Able	—
“P00D3, P2197”	[P00D3] O_2 sensor 2: heater performance deterioration [P2197] O_2 sensor 2: open circuit detected.	Able	Able	—
“P0107, P0108”	[P0107] Intake air pressure sensor: ground short circuit detected. [P0108] Intake air pressure sensor: open or power short circuit detected.	Able	Able	D03
“P0112, P0113”	[P0112] Intake air temperature sensor: ground short circuit detected. [P0113] Intake air temperature sensor: open or power short circuit detected.	Able	Able	D05
“P0117, P0118”	[P0117] Coolant temperature sensor: ground short circuit detected. [P0118] Coolant temperature sensor: open or power short circuit detected.	Able	Able	D06

DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
"P0122, P0123, P0222, P0223, P2135"	[P0122] Throttle position sensor: ground short circuit detected. [P0123] Throttle position sensor: open or power short circuit detected. [P0222] Throttle position sensor: open or ground short circuit detected. [P0223] Throttle position sensor: power short circuit detected. [P2135] Throttle position sensor: output voltage deviation error.	Able/Unable	Able/Unable	D01, D13
"P0132"	O_2 sensor 1: short circuit detected (power short circuit).	Able	Able	—
"P0152"	O_2 sensor 2: short circuit detected (power short circuit).	Able	Able	—
"P0201"	Primary injector #1: malfunction in primary injector #1.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D36
"P0202"	Primary injector #2: malfunction in primary injector #2.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D37
"P0203"	Primary injector #3: malfunction in primary injector #3.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D38
"P0204"	Primary injector #4: malfunction in primary injector #4.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D39
"P0335"	Crankshaft position sensor: no normal signals are received from the crankshaft position sensor.	Unable	Unable	—
"P0340"	Cylinder identification sensor: no normal signals are received from the cylinder identification sensor.	Unable	Able	—
"P0351"	Cylinder-#1 ignition coil: open or short circuit detected in the primary lead of the cylinder-#1 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D30
"P0352"	Cylinder-#2 ignition coil: open or short circuit detected in the primary lead of the cylinder-#2 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D31

DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
“P0353”	Cylinder-#3 ignition coil: open or short circuit detected in the primary lead of the cylinder-#3 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D32
“P0354”	Cylinder-#4 ignition coil: open or short circuit detected in the primary lead of the cylinder-#4 ignition coil.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D33
“P0475, P0476, P048B”	[P0475] EXUP servo motor: performance deterioration [P0476] EXUP servo motor: stuck EXUP servo motor is detected. [P048B] EXUP servo motor: signal stuck	Able	Able	D53
“P0480”	Radiator fan motor relay: open or short circuit detected.	Able	Able	D51
“P048D, P048E”	[P048D] EXUP servo motor: open or ground short circuit detected. [P048E] EXUP servo motor: power short circuit detected.	Able	Able	D53
“P0500 (FI), P1500”	[P0500 (FI)] Rear wheel sensor: no normal signals are received from the rear wheel sensor. [P1500] Neutral switch: open or short circuit is detected. Clutch switch: open or short circuit is detected.	Able	Able	D07, D21
“P0500 (SCU)”	Abnormal rear wheel sensor	Able	Able	—
“P0560 (FI), P0563”	[P0560 (FI)] Charging voltage is abnormal. [P0563] Vehicle system power voltage out of range	Able	Able	—
“P0560 (SCU)”	Abnormal SCU power supply voltage	Able	Able	D09
“P0601”	Internal malfunction in ECU. (When this malfunction is detected in the ECU, the DTC might not appear on the tool display.)	Unable	Unable	—
“P0606”	Internal malfunction in ECU. (When this malfunction is detected in the ECU, the DTC might not appear on the tool display.)	Able/Unable	Able/Unable	—
“P062F”	EEPROM DTC: an error is detected while reading or writing on EEPROM.	Able/Unable	Able/Unable	D60
“P0638”	YCC-T drive system: malfunction detected.	Able/Unable	Able/Unable	—
“P0657”	Fuel system voltage: incorrect voltage supplied to the fuel injector and fuel pump.	Able	Able	D09, D50
“P0916, P0917”	[P0916] Gear position sensor: open or ground short circuit detected. [P0917] Gear position sensor: power short circuit detected.	Able	Able	—

DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
“P1400”	Air induction system solenoid: open or short circuit detected.	Able	Able	D48
“P1600”	Lean angle sensor: open or short circuit detected.	Unable	Unable	D17
“P1601”	Sidestand switch: open or short circuit of the blue/yellow lead of the ECU is detected.	Unable	Unable	D20
“P1602”	Malfunction in ECU internal circuit (malfunction of ECU power cut-off function).	Able/Unable	Able/Unable	—
“P1806, P1807”	[P1806] Shift sensor: open or ground short circuit detected. [P1807] Shift sensor: power short circuit detected.	Able	Able	D95
“P2122, P2123, P2127, P2128, P2138”	[P2122] Accelerator position sensor: open or ground short circuit detected. [P2123] Accelerator position sensor: power short circuit detected. [P2127] Accelerator position sensor: open or ground short circuit detected. [P2128] Accelerator position sensor: power short circuit detected. [P2138] Deviation error	Able/Unable	Able/Unable	D14, D15
“P2158 (FI)”	Front wheel sensor: no normal signals are received from the front wheel sensor.	Able	Able	D16
“P2158 (SCU)”	Front wheel sensor: no normal signals are received from the front wheel sensor.	Able	Able	—
“P21CF”	Secondary injector #1: malfunction in secondary injector #1.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D40
“P21D0”	Secondary injector #2: malfunction in secondary injector #2.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D41
“P21D1”	Secondary injector #3: malfunction in secondary injector #3.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D42
“P21D2”	Secondary injector #4: malfunction in secondary injector #4.	Able (depending on the number of faulty cylinders)	Able (depending on the number of faulty cylinders)	D43
“P2228, P2229”	[P2228] Atmospheric pressure sensor: ground short circuit detected. [P2229] Atmospheric pressure sensor: open or power short circuit detected.	Able	Able	D02
“U0100”	Abnormal CAN communication (between ECU and SCU)	Able	Able	—

DTC	Symptom	Fail-safe system		Diagnostic code
		Starting the engine	Driving the vehicle	
“U0121”	Abnormal CAN communication (between ABS ECU and SCU)	Able	Able	—
“U0125 (FI)”	Signals cannot be transmitted between the ECU and the IMU.	Unable	Able/Unable	—
“U0125 (SCU)”	Abnormal CAN communication (between IMU and SCU)	Able	Able	—
“U0155 or Err (FI)”	Multi-function meter: signals cannot be transmitted between the ECU and the multi-function meter.	Able	Able	—
“U0155 or Err (SCU)”	Abnormal CAN communication (between meter assembly and SCU)	Able	Able	—

EAS33028

SELF-DIAGNOSTIC FUNCTION TABLE (FOR FUEL INJECTION SYSTEM)

TIP

For details of the DTC, refer to “BASIC PROCESS FOR TROUBLESHOOTING” on page 9-13.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
30_EVENT	Latch up detected.	• The vehicle has overturned. • Installed condition of IMU. • Defective IMU. • Malfunction in ECU.	–	–
70_EVENT	Engine forcibly stops when the vehicle is left idling for a long period.	• Allow to idle for a long period of time. • Malfunction in ECU.	–	–
C0520	Abnormal IMU	• Defective IMU coupler or ECU coupler. • Open or short circuit in wire harness between IMU and ECU. • Improperly installed IMU. • Malfunction in IMU. • Malfunction in ECU.	Engine cannot be started (depending on the circumstances).	Engine cannot be started (depending on the circumstances).
P0030	O_2 sensor 1 heater: defective heater controller detected.	• Open or short circuit in wire harness. • Disconnected coupler. • Defective O_2 sensor 1 heater controller (Malfunction in ECU). • Broken or disconnected lead in O_2 sensor 1 heater.	(When the O_2 sensor 1 does not operate because the exhaust temperature is low) Increased exhaust emissions. Fuel learning cannot be carried out.	Display only (If the O_2 sensor 1 does not operate, O_2 feedback is not carried out.)
P0050	O_2 sensor 2 heater: defective heater controller detected.	• Open or short circuit in wire harness. • Disconnected coupler. • Defective O_2 sensor 2 heater controller (Malfunction in ECU). • Broken or disconnected lead in O_2 sensor 2 heater.	(When the O_2 sensor 2 does not operate because the exhaust temperature is low) Increased exhaust emissions. Fuel learning cannot be carried out.	Display only (If the O_2 sensor 2 does not operate, O_2 feedback is not carried out.)

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0069	Intake air pressure sensor or atmospheric pressure sensor: when the main switch is turned to "ON", the intake air pressure sensor voltage and atmospheric pressure sensor voltage differ greatly.	• Malfunction in ECU. • Intake air pressure sensor hose is disconnected, clogged, kinked, or pinched. • Defective intake air pressure sensor or atmospheric pressure sensor.	Engine is difficult to start. Engine idling speed is unstable. Increased exhaust emissions. Loss of engine power.	Intake air pressure is fixed to 101.3 [kPa]. Intake air pressure difference is fixed to 0 [kPa]. Atmospheric pressure is fixed to 101.3 [kPa]. α–N is fixed. Fuel is not cut off due to the intake air pressure difference. Atmospheric pressure sensor output correction value is fixed to 0. O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.
P00D1	O_2 sensor 1: heater performance deterioration	• Improperly installed O_2 sensor 1. • Defective coupler between O_2 sensor 1 and ECU. • Open or short circuit in wire harness between O_2 sensor 1 and ECU. • Incorrect fuel pressure. • Defective O_2 sensor 1. • Malfunction in ECU.	Increased exhaust emissions.	O_2 feedback is not carried out. O_2 learning is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). QSS is not carried out.
P00D3	O_2 sensor 2: heater performance deterioration	• Improperly installed O_2 sensor 2. • Defective coupler between O_2 sensor 2 and ECU. • Open or short circuit in wire harness between O_2 sensor 2 and ECU. • Incorrect fuel pressure. • Defective O_2 sensor 2. • Malfunction in ECU.	Increased exhaust emissions.	O_2 feedback is not carried out. O_2 learning is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). QSS is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0107 P0108	[P0107] Intake air pressure sensor: ground short circuit detected. [P0108] Intake air pressure sensor: open or power short circuit detected.	[P0107] Low voltage of the intake air pressure sensor circuit (0.5 V or less) [P0108] High voltage of the intake air pressure sensor circuit (4.8 V or more) • Defective coupler between intake air pressure sensor and ECU. • Open or short circuit in wire harness between intake air pressure sensor and ECU. • Defective intake air pressure sensor. • Malfunction in ECU.	Engine idling speed is unstable. Engine response is poor. Loss of engine power. Increased exhaust emissions.	Intake air pressure difference is fixed to 0 [kPa]. α–N is fixed. Fuel is not cut off due to the intake air pressure difference. Atmospheric pressure sensor output correction value is fixed to 0. Intake air pressure is fixed to 101.3 [kPa]. O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.
P0112 P0113	[P0112] Intake air temperature sensor: ground short circuit detected. [P0113] Intake air temperature sensor: open or power short circuit detected.	[P0112] Low voltage of the intake air temperature sensor circuit (0.1 V or less) [P0113] High voltage of the intake air temperature sensor circuit (4.8 V or more) • Defective coupler between intake air temperature sensor and ECU. • Open or short circuit in wire harness between intake air temperature sensor and ECU. • Improperly installed intake air temperature sensor. • Defective intake air temperature sensor. • Malfunction in ECU.	Engine is difficult to start. Increased exhaust emissions. Engine idling speed is unstable.	The intake air temperature is fixed to 20 [°C]. O_2 sensor heater driving is not carried out. O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0117 P0118	[P0117] Coolant temperature sensor: ground short circuit detected. [P0118] Coolant temperature sensor: open or power short circuit detected.	[P0117] Low voltage of the coolant temperature sensor circuit (0.1 V or less) [P0118] High voltage of the coolant temperature sensor circuit (4.9 V or more) • Defective coupler between coolant temperature sensor and ECU. • Open or short circuit in wire harness between coolant temperature sensor and ECU. • Improperly installed coolant temperature sensor. • Defective coolant temperature sensor. • Malfunction in ECU.	Engine is difficult to start. Increased exhaust emissions. Engine idling speed is unstable.	The radiator fan motor relay is on only when the vehicle is traveling at low speeds. O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out. The coolant temperature is fixed to 60 [°C]. QSS is not carried out. Engine brake management: control value is fixed.
P0122 P0123 P0222 P0223 P2135	[P0122] Throttle position sensor: ground short circuit detected. [P0123] Throttle position sensor: open or power short circuit detected. [P0222] Throttle position sensor: open or ground short circuit detected. [P0223] Throttle position sensor: power short circuit detected. [P2135] Throttle position sensor: output voltage deviation error.	[P0122, P0222] Low voltage of the throttle position sensor circuit (0.25 V or less) [P0123, P0223] High voltage of the throttle position sensor circuit (4.75 V or more) [P2135] Difference in output voltage 1 and output voltage 2 of the throttle position sensor • Defective coupler between throttle position sensor and ECU. • Open or short circuit in wire harness between throttle position sensor and ECU. • Improperly installed throttle position sensor. • Defective throttle position sensor. • Malfunction in ECU.	Engine idling speed is high. Engine idling speed is unstable. Engine response is poor. Loss of engine power. Deceleration is poor. Increased exhaust emissions. Vehicle cannot be driven.	Change in the throttle opening is 0 (transient control is not carried out). D–j is fixed. Throttle opening is fixed to 125 [°]. O_2 feedback is not carried out. Fuel is not cut off due to the throttle opening. Output is restricted. Air induction system solenoid is turned on all the time (air induction system air cut off). ISC feedback is not carried out. ISC learning is not carried out. O_2 sensor heater driving is not carried out. QSS is not carried out. Engine brake management: control mode is fixed.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0132	O_2 sensor 1: short circuit detected (power short circuit).	[P0132] High voltage of the O_2 sensor 1 circuit (4.8 V or more) • Improperly installed O_2 sensor 1. • Defective coupler between O_2 sensor 1 and ECU. • Open or short circuit in wire harness between O_2 sensor 1 and ECU. • Incorrect fuel pressure. • Defective O_2 sensor 1. • Malfunction in ECU.	Increased exhaust emissions.	O_2 feedback is not carried out. O_2 feedback learning is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). QSS is not carried out.
P0152	O_2 sensor 2: short circuit detected (power short circuit).	[P0152] High voltage of the O_2 sensor 2 circuit (4.8 V or more) • Improperly installed O_2 sensor 2. • Defective coupler between O_2 sensor 2 and ECU. • Open or short circuit in wire harness between O_2 sensor 2 and ECU. • Incorrect fuel pressure. • Defective O_2 sensor 2. • Malfunction in ECU.	Increased exhaust emissions.	O_2 feedback is not carried out. O_2 feedback learning is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). QSS is not carried out.
P0201 P0202 P0203 P0204	[P0201] Primary injector #1: malfunction in primary injector #1. [P0202] Primary injector #2: malfunction in primary injector #2. [P0203] Primary injector #3: malfunction in primary injector #3. [P0204] Primary injector #4: malfunction in primary injector #4.	• Defective coupler between primary injector and ECU. • Open or short circuit in wire harness between primary injector and ECU. • Defective primary injector. • Malfunction in ECU. • Improperly installed primary injector.	Loss of engine power. Engine is difficult to start. Engine cannot be started. Engine stops. Engine idling speed is unstable. Increased exhaust emissions.	O_2 feedback is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). ISC feedback is not carried out. ISC learning is not carried out. Injection to the applicable cylinder group (cylinders #1 and #2 or cylinders #3 and #4) is cut off. QSS is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0335	Crankshaft position sensor: no normal signals are received from the crankshaft position sensor.	• Defective coupler between crankshaft position sensor and ECU. • Open or short circuit in wire harness between crankshaft position sensor and ECU. • Improperly installed crankshaft position sensor. • Malfunction in generator rotor. • Defective crankshaft position sensor. • Malfunction in ECU.	Engine cannot be started.	Does not operate. ISC feedback is not carried out. ISC learning is not carried out.
P0340	Cylinder identification sensor: no normal signals are received from the cylinder identification sensor.	• Defective coupler between cylinder identification sensor and ECU. • Open or short circuit in wire harness between cylinder identification sensor and ECU. • Improperly installed cylinder identification sensor. • Defective pickup rotor. • Defective cylinder identification sensor. • Malfunction in ECU.	Engine cannot be started.	The vehicle is operated using only the cylinder identification information stored during operation. ISC feedback is not carried out. ISC learning is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0351 P0352 P0353 P0354	[P0351] Cylinder-#1 ignition coil: open or short circuit detected in the primary lead of the cylinder-#1 ignition coil. [P0352] Cylinder-#2 ignition coil: open or short circuit detected in the primary lead of the cylinder-#2 ignition coil. [P0353] Cylinder-#3 ignition coil: open or short circuit detected in the primary lead of the cylinder-#3 ignition coil. [P0354] Cylinder-#4 ignition coil: open or short circuit detected in the primary lead of the cylinder-#4 ignition coil.	• Defective coupler between ignition coil and ECU. • Open or short circuit in wire harness between ignition coil and ECU. • Improperly installed ignition coil. • Defective ignition coil. • Malfunction in ECU.	Engine stops. Loss of engine power. Engine is difficult to start. Engine cannot be started. Engine idling speed is unstable. Increased exhaust emissions.	Injection to the applicable cylinder group (cylinders #1 and #4 or cylinders #2 and #3) is cut off. Air induction system solenoid is turned on all the time (air induction system air cut off). O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.
P0475	EXUP servo motor: performance deterioration	• Defective coupler between EXUP servo motor and ECU. • Open or short circuit in wire harness between EXUP servo motor and ECU. • Improperly installed EXUP servo motor and cables. • Defective EXUP servo motor. • Stuck EXUP servo motor (mechanism or motor). • Malfunction in ECU.	Loss of engine power.	Learning values for fully closed EXUP are fixed. Learning values for fully open EXUP are fixed. O_2 feedback is not carried out.
P0476	EXUP servo motor: stuck EXUP servo motor is detected.	• Defective coupler between EXUP servo motor and ECU. • Open or short circuit in wire harness between EXUP servo motor and ECU. • Improperly installed EXUP servo motor and cables. • Defective EXUP servo motor. • Stuck EXUP servo motor (mechanism or motor). • Malfunction in ECU.	Loss of engine power.	Learning values for fully closed EXUP are fixed. Learning values for fully open EXUP are fixed. O_2 feedback is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0480	Radiator fan motor relay: open or short circuit detected.	• Open or short circuit in wire harness. • Disconnected coupler. • Defective radiator fan motor relay. • Defective radiator fan motor relay controller (Malfunction in ECU).	Engine is difficult to start. Loss of engine power. Engine overheats. Increased exhaust emissions.	Radiator fan motor relay is off all the time. O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out.
P048B	EXUP servo motor: signal stuck	• Defective coupler between EXUP servo motor and ECU. • Open or short circuit in wire harness between EXUP servo motor and ECU. • Improperly installed EXUP servo motor and cables. • Defective EXUP servo motor. • Stuck EXUP servo motor (mechanism or motor). • Malfunction in ECU.	Loss of engine power.	Learning values for fully closed EXUP are fixed. Learning values for fully open EXUP are fixed. O_2 feedback is not carried out.
P048D P048E	[P048D] EXUP servo motor: open or ground short circuit detected. [P048E] EXUP servo motor: power short circuit detected.	• Defective coupler between EXUP position sensor and ECU. • Open or short circuit in wire harness between EXUP position sensor and ECU. • Defective EXUP position sensor. • Malfunction in ECU.	Loss of engine power.	Learning values for fully closed EXUP are fixed. Learning values for fully open EXUP are fixed. O_2 feedback is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0500 P1500	[P0500] Rear wheel sensor: no normal signals are received from the rear wheel sensor. [P1500] Neutral switch: open or short circuit is detected. [P1500] Clutch switch: open or short circuit is detected.	• Open or short circuit in wire harness between rear wheel sensor and ABS unit. • Open or short circuit in wire harness between ABS unit and ECU. • Open or short circuit in wire harness between neutral switch and ECU. • Open or short circuit in wire harness between clutch switch and ECU. • Defective rear wheel sensor. • Defective neutral switch. • Defective clutch switch. • Improper adjustment of clutch lever. • Malfunction in ECU.	Vehicle speed is not displayed on the meter. Indication of the neutral indicator light is incorrect. Engine idling speed is unstable. Traction control does not work.	Vehicle speed displayed on the meter = 0 [km/h] O_2 feedback is not carried out. Fuel cut-off control when the rear wheel sensor or neutral switch malfunctions is carried out. ISC feedback is not carried out. ISC learning is not carried out. Traction control does not work. QSS is not carried out.
P0560	Charging voltage is abnormal.	• Battery over-discharging (broken or disconnected lead in charging system). • Battery over-discharging (defective rectifier/regulator).	Engine is difficult to start. Increased exhaust emissions. Battery performance has deteriorated or battery is defective.	O_2 feedback is not carried out.
P0563	Vehicle system power voltage out of range	• Battery overcharging (defective rectifier/regulator). • Battery overcharging (broken or disconnected lead in rectifier/regulator wire harness).	Engine is difficult to start. Increased exhaust emissions. Battery performance has deteriorated or battery is defective.	O_2 feedback is not carried out.
P0601	Internal malfunction in ECU. (When this malfunction is detected in the ECU, the DTC might not appear on the tool display.)	• Malfunction in ECU.	Engine cannot be started.	Engine cannot be started.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0606	Internal malfunction in ECU. (When this malfunction is detected in the ECU, the DTC might not appear on the tool display.)	• Malfunction in ECU.	Engine cannot be started. Engine response is poor. Loss of engine power.	Engine cannot be started. Ignition and injection are not carried out. Judgment for other DTCs is not carried out. Load control is not carried out. (The relay unit, radiator fan motor relay, and other relays are all turned off.) The CO adjustment mode and diagnostic mode cannot be activated. Output is restricted.
P062F	EEPROM DTC: an error is detected while reading or writing on EEPROM.	• CO adjustment value is not properly written. • ISC learning value is not properly written. • O_2 feedback learning value is not properly written. • OBD memory value is not properly written. • Malfunction in ECU.	Increased exhaust emissions. Engine cannot be started or is difficult to start. Engine idling speed is unstable. OBD memory value is not correct.	CO adjustment value for the faulty cylinder = 0 (default value) ISC learning values = Default values. OBD memory value is initialized. Initialization of O_2 feedback learning value.
P0638	YCC-T drive system: malfunction detected.	• Defective coupler between throttle servo motor and ECU. • Open or short circuit in wire harness between throttle servo motor and ECU. • Defective throttle servo motor. • Throttle servo motor is stuck (mechanism or motor). • Malfunction in ECU. • Blown electric throttle valve fuse.	Engine response is poor. Loss of engine power. Engine idling speed is unstable.	O_2 feedback is not carried out. YCC-T evacuation is activated. Output is restricted. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.
P0657	Fuel system voltage: incorrect voltage supplied to the fuel injector and fuel pump.	• Open or short circuit in wire harness between relay unit and ECU. • Open circuit in wire harness between battery and ECU. • Defective relay unit. • Malfunction in ECU.	Engine is difficult to start. Increased exhaust emissions.	Monitor voltage = 12 [V] O_2 feedback is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P0916 P0917	[P0916] Gear position sensor: open or ground short circuit detected. [P0917] Gear position sensor: power short circuit detected.	[P0916] Low voltage of the gear position sensor circuit (0.2 V or less) [P0917] High voltage of the gear position sensor circuit (4.8 V or more) • Defective coupler between gear position sensor and ECU. • Open or power short circuit in wire harness between gear position sensor and ECU. • Improperly installed gear position sensor. • Defective gear position sensor. • Malfunction in ECU.	Improper display for position. Engine response is poor.	Maintains the gear position value at the previous value. QSS is not carried out. Engine brake management: control mode is fixed. Engine brake management: control value is fixed.
P1400	Air induction system solenoid: open or short circuit detected.	• Open or short circuit in wire harness. • Disconnected coupler. • Defective air induction system solenoid. • Defective air induction system solenoid controller. (malfunction in ECU)	Increased exhaust emissions.	Electric current in air induction system solenoid is prohibited (air induction system air in). O_2 feedback is not carried out.
P1600	Lean angle sensor: open or short circuit detected.	• Open or short circuit in wire harness. • Malfunction in IMU. • Malfunction in ECU.	Engine cannot be started.	Engine cannot be started.
P1601	Sidestand switch: open or short circuit of the blue/yellow lead of the ECU is detected.	• Defective coupler between relay unit and ECU. • Open or short circuit in wire harness between relay unit and ECU. • Defective coupler between sidestand switch and relay unit. • Open or short circuit in wire harness between sidestand switch and relay unit. • Defective sidestand switch. • Malfunction in ECU.	Engine cannot be started.	Engine is forcefully stopped (the injector output is stopped).

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P1602	Malfunction in ECU internal circuit (malfunction of ECU power cut-off function).	• Open or short circuit in wire harness between ECU and battery. • Open or short circuit in wire harness between ECU and main switch. • Blown backup fuse. • Malfunction in ECU.	Engine idling speed is unstable. Engine idling speed is high. Increased exhaust emissions. Engine is difficult to start.	O_2 feedback learning is not carried out. O_2 feedback learning value is not written.
P1806 P1807	[P1806] Shift sensor: open or ground short circuit detected. [P1807] Shift sensor: power short circuit detected.	• Defective coupler between shift sensor and ECU. • Open or power short circuit in wire harness between shift sensor and ECU. • Improperly installed shift sensor. • Defective shift sensor. • Malfunction in ECU.	Unable to carry out QSS. (If this abnormality occurs during actual shifting, the operation will be carried out until the process is completed.)	QSS is not carried out.
P2122 P2123 P2127 P2128 P2138	[P2122] Accelerator position sensor: open or ground short circuit detected. [P2123] Accelerator position sensor: power short circuit detected. [P2127] Accelerator position sensor: open or ground short circuit detected. [P2128] Accelerator position sensor: power short circuit detected. [P2138] Deviation error	[P2122, P2127] Low voltage of the accelerator position sensor circuit (0.25 V or less) [P2123, P2128] High voltage of the accelerator position sensor circuit (4.75 V or more) [P2138] Difference in output voltage 1 and output voltage 2 of the accelerator position sensor • Defective coupler between accelerator position sensor and ECU. • Open or short circuit in wire harness between accelerator position sensor and ECU. • Improperly installed accelerator position sensor. • Defective accelerator position sensor. • Malfunction in ECU.	Engine response is poor. Loss of engine power. Engine idling speed is unstable.	No change in accelerator opening (transient control is not carried out). Accelerator opening is fixed to 0[°]. O_2 feedback is not carried out. YCC-T evacuation is activated. Fuel cut is prohibited by accelerator opening. Output is restricted. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P2158	Front wheel sensor: no normal signals are received from the front wheel sensor.	• Open or short circuit in wire harness between front wheel sensor and ABS ECU. • Open or short circuit in wire harness between ABS ECU and ECU. • Defective front wheel sensor. • Malfunction in ABS ECU. • Malfunction in ECU.	Traction control does not work. Traction control system indicator on the meter comes on. Traction control system switch is disabled. (Traction control system indicator on the meter goes OFF.)	Traction control does not work.
P2195	O_2 sensor 1: open circuit detected.	• Signal voltage is 0.18–0.49 V. • Improperly installed O_2 sensor 1. • Defective coupler between O_2 sensor 1 and ECU. • Open or short circuit in wire harness between O_2 sensor 1 and ECU. • Incorrect fuel pressure. • Defective O_2 sensor 1. • Malfunction in ECU.	Increased exhaust emissions.	O_2 feedback is not carried out. O_2 feedback learning is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). QSS is not carried out.
P2197	O_2 sensor 2: open circuit detected.	• Signal voltage is 0.18–0.49 V. • Improperly installed O_2 sensor 2. • Defective coupler between O_2 sensor 2 and ECU. • Open or short circuit in wire harness between O_2 sensor 2 and ECU. • Incorrect fuel pressure. • Defective O_2 sensor 2. • Malfunction in ECU.	Increased exhaust emissions.	O_2 feedback is not carried out. O_2 feedback learning is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). QSS is not carried out.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
P21CF P21D0 P21D1 P21D2	[P21CF] Secondary injector #1: malfunction in secondary injector #1. [P21D0] Secondary injector #2: malfunction in secondary injector #2. [P21D1] Secondary injector #3: malfunction in secondary injector #3. [P21D2] Secondary injector #4: malfunction in secondary injector #4.	• Defective coupler between secondary injector and ECU. • Open or short circuit in wire harness between secondary injector and ECU. • Defective secondary injector. • Malfunction in ECU. • Improperly installed secondary injector.	Loss of engine power.	O_2 feedback is not carried out. Air induction system solenoid is turned on all the time (air induction system air cut off). ISC feedback is not carried out. ISC learning is not carried out. Injection to the applicable cylinder group (cylinders #1 and #2 or cylinders #3 and #4) is cut off. QSS is not carried out.
P2228 P2229	[P2228] Atmospheric pressure sensor: ground short circuit detected. [P2229] Atmospheric pressure sensor: open or power short circuit detected.	[P2228] Low voltage of the atmospheric pressure sensor circuit (0.5 V or less) [P2229] High voltage of the atmospheric pressure sensor circuit (4.8 V or more) • Defective coupler between atmospheric pressure sensor and ECU. • Open or short circuit in wire harness between atmospheric pressure sensor and ECU. • Improperly installed atmospheric pressure sensor. • Defective atmospheric pressure sensor. • Malfunction in ECU.	Engine is difficult to start. Increased exhaust emissions. Insufficient power at high altitudes. Engine idling speed is unstable.	α–N is fixed. Intake air pressure difference is fixed to 0 [kPa]. Atmospheric pressure is fixed to 101.3 [kPa]. Atmospheric pressure sensor output correction value is fixed to 0. Fuel is not cut off due to the intake air pressure difference. O_2 feedback is not carried out. ISC feedback is not carried out. ISC learning is not carried out. QSS is not carried out.
U0125	Signals cannot be transmitted between the ECU and the IMU.	• Defective IMU coupler or ECU coupler. • Open or short circuit in wire harness between IMU and ECU. • Malfunction in IMU. • Malfunction in ECU.	Engine cannot be started.	Engine cannot be started.

EAS33286
SELF-DIAGNOSTIC FUNCTION TABLE (FOR ABS (Anti-lock Brake System))

TIP

For details of the DTC, refer to “BASIC INSTRUCTIONS FOR TROUBLESHOOTING” on page 9-20.

DTC	Item	Symptom	Check point
11	Front wheel sensor (intermittent pulses or no pulses)	Front wheel sensor signal is not received properly. (Pulses are not received or are received intermittently while the vehicle is traveling.)	• Foreign material adhered around the front wheel sensor • Incorrect installation of the front wheel • Defective sensor rotor or incorrect installation of the rotor • Defective front wheel sensor or incorrect installation of the sensor
12	Rear wheel sensor (intermittent pulses or no pulses)	Rear wheel sensor signal is not received properly. (Pulses are not received or are received intermittently while the vehicle is traveling.)	• Foreign material adhered around the rear wheel sensor • Incorrect installation of the rear wheel • Defective sensor rotor or incorrect installation of the rotor • Defective rear wheel sensor or incorrect installation of the sensor
13* 26*	Front wheel sensor (abnormal pulse period)	Front wheel sensor signal is not received properly. (The pulse period is abnormal while the vehicle is traveling.)	• Foreign material adhered around the front wheel sensor • Incorrect installation of the front wheel • Defective sensor rotor or incorrect installation of the rotor • Defective front wheel sensor or incorrect installation of the sensor
14* 27*	Rear wheel sensor (abnormal pulse period)	Rear wheel sensor signal is not received properly. (The pulse period is abnormal while the vehicle is traveling.)	• Foreign material adhered around the rear wheel sensor • Incorrect installation of the rear wheel • Defective sensor rotor or incorrect installation of the rotor • Defective rear wheel sensor or incorrect installation of the sensor

DTC	Item	Symptom	Check point
15	Front wheel sensor (open or short circuit)	Open or short circuit is detected in the front wheel sensor.	• Defective coupler between the front wheel sensor and the hydraulic unit assembly • Open or short circuit in the wire harness between the front wheel sensor and the hydraulic unit assembly • Defective front wheel sensor or hydraulic unit assembly
16	Rear wheel sensor (open or short circuit)	Open or short circuit is detected in the rear wheel sensor.	• Defective coupler between the rear wheel sensor and the hydraulic unit assembly • Open or short circuit in the wire harness between the rear wheel sensor and the hydraulic unit assembly • Defective rear wheel sensor or hydraulic unit assembly
21	Hydraulic unit assembly (defective solenoid drive circuit)	Solenoid drive circuit in the hydraulic unit assembly is open or short-circuited.	• Defective hydraulic unit assembly
31	Hydraulic unit assembly (defective ABS solenoid power circuit)	Power is not supplied to the solenoid circuit in the hydraulic unit assembly.	• Blown ABS solenoid fuse • Defective coupler between the battery and the hydraulic unit assembly • Open or short circuit in the wire harness between the battery and the hydraulic unit assembly • Defective hydraulic unit assembly
33	Hydraulic unit assembly (abnormal ABS motor power supply)	Power is not supplied to the motor circuit in the hydraulic unit assembly.	• Blown ABS motor fuse • Defective coupler between the battery and the hydraulic unit assembly • Open or short circuit in the wire harness between the battery and the hydraulic unit assembly • Defective hydraulic unit assembly
34	Hydraulic unit assembly (short circuit in ABS motor power supply circuit)	Short circuit is detected in the motor power supply circuit in the hydraulic unit assembly.	• Defective hydraulic unit assembly
41	Front wheel ABS (intermittent wheel speed pulses or incorrect depressurization)	• Pulses from the front wheel sensor are received intermittently while the vehicle is traveling. • Front wheel will not recover from the locking tendency even though the signal is transmitted from the ABS ECU to reduce the hydraulic pressure.	• Incorrect installation of the front wheel sensor • Incorrect rotation of the front wheel • Front brake dragging • Defective hydraulic unit assembly

DTC	Item	Symptom	Check point
42	Rear wheel ABS (intermittent wheel speed pulses or incorrect depressurization)	• Pulses from the rear wheel sensor are received intermittently while the vehicle is traveling. • Rear wheel will not recover from the locking tendency even though the signal is transmitted from the ABS ECU to reduce the hydraulic pressure.	• Incorrect installation of the rear wheel sensor • Incorrect rotation of the rear wheel • Rear brake dragging • Defective hydraulic unit assembly
43* 45*	Front wheel sensor (missing pulses)	Front wheel sensor signal is not received properly. (Missing pulses are detected in the signal while the vehicle is traveling.)	• Foreign material adhered around the front wheel sensor • Incorrect installation of the front wheel • Defective sensor rotor or incorrect installation of the rotor • Defective front wheel sensor or incorrect installation of the sensor
44* 46*	Rear wheel sensor (missing pulses)	Rear wheel sensor signal is not received properly. (Missing pulses are detected in the signal while the vehicle is traveling.)	• Foreign material adhered around the rear wheel sensor • Incorrect installation of the rear wheel • Defective sensor rotor or incorrect installation of the rotor • Defective rear wheel sensor or incorrect installation of the sensor
51	Vehicle system power supply (voltage of ABS ECU power supply is high)	Power voltage supplied to the ABS ECU in the hydraulic unit assembly is too high.	• Defective battery • Disconnected battery terminal • Defective charging system
53	Vehicle system power supply (voltage of ABS ECU power supply is low)	Power voltage supplied to the ABS ECU in the hydraulic unit assembly is too low.	• Defective battery • Defective coupler between the battery and the hydraulic unit assembly • Open or short circuit in the wire harness between the battery and the hydraulic unit assembly • Defective charging system
55	Hydraulic unit assembly (defective ABS ECU)	Abnormal data is detected in the hydraulic unit assembly.	• Defective hydraulic unit assembly
56	Hydraulic unit assembly (abnormal internal circuit)	Abnormality detected in of hydraulic unit assembly.	• Defective hydraulic unit assembly

DTC	Item	Symptom	Check point
57	Vehicle CAN communication line or power source of vehicle system	Short-circuit in CAN communication line or the voltage that supplies the hydraulic unit assembly is too low.	• Short-circuit in CAN communication line • Defective battery • Defective coupler between battery and hydraulic unit assembly • Wire harness between battery and hydraulic unit is interrupted or has short-circuited • Defective charging system
62	Power supply voltage failure in pressure sensor	Abnormality detected in pressure sensor power supply circuit of hydraulic unit assembly.	• Defective hydraulic unit assembly
68	Defective hydraulic unit assembly (defective front pressure sensor)	Abnormality detected in pressure sensor circuit at front caliper side of hydraulic unit assembly.	In case of electrical interlocking brake • Defective front brake line • Defective hydraulic unit assembly
89	CAN communication (between meter assembly and hydraulic unit assembly)	Transmitted data from the meter cannot be normally received.	• Defective coupler between meter assembly and hydraulic unit assembly • Harness is broken or short-circuit between meter assembly and hydraulic unit assembly • Defective meter assembly • Defective hydraulic unit assembly
90	CAN communication (between ECU and hydraulic unit assembly)	Transmitted data from the FI ECU cannot be normally received.	• Defective coupler between FI ECU and hydraulic unit assembly • Harness is broken or short-circuit between FI ECU and hydraulic unit assembly • Defective FI ECU • Defective hydraulic unit assembly
91	CAN communication (between IMU and hydraulic unit assembly)	Transmitted data from the IMU cannot be normally received.	• Defective coupler between IMU and hydraulic unit assembly • Harness is broken or short-circuit between IMU and hydraulic unit assembly • Defective IMU • Defective hydraulic unit assembly

* The DTC number varies according to the vehicle conditions.

EAS33287
SELF-DIAGNOSTIC FUNCTION TABLE (FOR STEERING DAMPER SYSTEM)

TIP

For details of the DTC, refer to “BASIC INSTRUCTIONS FOR TROUBLESHOOTING” on page 9-27.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
C1000	Steering damper solenoid: open or short circuit detected.	• Defective coupler between steering damper solenoid and ECU. • Open or short circuit in wire harness between steering damper solenoid and ECU. • Defective steering damper solenoid. • Malfunction in ECU.	Steering damper does not work.	Solenoid fixed at OFF.

EAS33288
SELF-DIAGNOSTIC FUNCTION TABLE (FOR ELECTRONICALLY ADJUSTABLE SUSPENSION SYSTEM (for YZF-R1M))

TIP

For details of the DTC, refer to “BASIC INSTRUCTIONS FOR TROUBLESHOOTING” on page 9-31.

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
C0044	Abnormal ABS	• Defective front and rear brake line. • Defective hydraulic unit assembly.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
C0520	Abnormal IMU	• Defective IMU coupler or ECU coupler. • Open or short circuit in wire harness between IMU and ECU. • Improperly installed IMU. • Malfunction in IMU. • Malfunction in ECU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
C1002	Abnormal SCU EEPROM	• SCU abnormal data writing error. • Malfunction in SCU.	• ERS adjustments cannot be performed.	—

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
C1003	Stepping motor: open or short circuit detected.	• Defective connection of stepping motor and SCU couplers. • Defective connection of sub-wire harness coupler. • Short circuit in wire harness or wire harness continuity. • Defective stepping motor. • Malfunction in SCU.	• ERS adjustments cannot be performed. • The damping preset value is fixed on the defective side (front fork or RCU) at the current value (automatic setting modes).	—
C1007	Abnormality inside SCU	• Malfunction in SCU.	• ERS adjustments cannot be performed.	—
P0500	Abnormal rear wheel sensor	• Open or short circuit in wire harness between rear wheel sensor and ABS unit. • Open or short circuit in wire harness between ABS unit and ECU. • Defective rear wheel sensor. • Malfunction in ECU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
P0560	Abnormal SCU power supply voltage	• Battery overcharging (defective rectifier/regulator). • Battery overcharging (broken or disconnected lead in rectifier/regulator wire harness). • Battery over-discharging (broken or disconnected lead in charging system). • Battery over-discharging (defective rectifier/regulator).	• ERS adjustments cannot be performed.	—
P2158	Front wheel sensor: no normal signals are received from the front wheel sensor.	• Open or short circuit in wire harness between front wheel sensor and ECU. • Defective front wheel sensor. • Malfunction in ECU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
U0100	Abnormal CAN communication (between ECU and SCU)	• Defective connection of wire harness, ECU, and SCU couplers. • Wire harness continuity. • Malfunction in SCU. • Malfunction in ECU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
U0121	Abnormal CAN communication (between ABS ECU and SCU)	• Defective connection of wire harness, ABS ECU, and SCU couplers. • Wire harness continuity. • Malfunction in SCU. • Malfunction in ABS ECU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
U0125	Abnormal CAN communication (between IMU and SCU)	• Defective connection of wire harness, IMU, and SCU couplers. • Wire harness continuity. • Malfunction in SCU. • Malfunction in IMU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
U0155	Abnormal CAN communication (between meter assembly and SCU)	• Defective connection of wire harness, meter assembly, and SCU couplers. • Wire harness continuity. • Malfunction in SCU. • Malfunction in meter assembly.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the prescribed position (automatic setting modes).	—
—	Abnormality inside SCU	• Malfunction in SCU.	• ERS adjustments cannot be performed. • The “Err” and ERS icons are displayed on the meter display.	—
—	Steering damper stepping motor (manufactured by Öhlins: optional): open circuit or short-circuit detected.	• Defective connection of stepping motor and SCU couplers. • Defective connection of sub-wire harness coupler. • Short circuit in wire harness or wire harness continuity. • Defective stepping motor. • Malfunction in SCU.	• ERS adjustments cannot be performed. • The damping preset value is fixed at the current value. • The auxiliary system warning light comes on on the meter and the steering damper warning icon is displayed on the meter display.	—

EAS33030
COMMUNICATION ERROR WITH THE METER

DTC	Item	Probable cause of malfunction	Vehicle symptom	Fail-safe system operation
U0155 (YDT) Err (multi-function meter display)	[U0155 (FI)] Multi-function meter: signals cannot be transmitted between the ECU and the multi-function meter. [U0155 (SCU)] Abnormal CAN communication (between meter assembly and SCU)	Communication between the ECU and the meter is not possible • Defective meter coupler and ECU coupler • Open or short circuit in the wire harness between the meter and the ECU • Defective meter • Defective ECU	Defective meter display. Traction control does not work.	MAP changeover: State is fixed. Traction control does not work. Meter switch input: OFF is fixed. QSS is not carried out. Engine brake management: control mode is fixed.

EAS33031
DIAGNOSTIC CODE: SENSOR OPERATION TABLE

Diagnostic code No.	Item	Tool display	Procedure
D01	Throttle position sensor signal 1		
	• Fully closed position	11–21	Check with throttle valves fully closed.
	• Fully open position	96–107	Check with throttle valves fully open.
D02	Atmospheric pressure	Displays the atmospheric pressure.	Compare the actually measured atmospheric pressure with the tool display value.
D03	Intake air pressure	Displays the intake air pressure.	Operate the throttle while pushing the "⊜" side of the start/engine stop switch. (If the display value changes, the performance is OK.)
D05	Intake air temperature	Displays the intake air temperature.	Compare the actually measured air temperature with the tool display value.
D06	Coolant temperature	When engine is cold: Displays temperature closer to air temperature. When engine is hot: Displays current coolant temperature.	Compare the actually measured coolant temperature with the tool display value.
D07	Rear wheel vehicle speed pulses	Rear wheel speed pulse 0–999	Check that the number increases when the rear wheel is rotated. The number is cumulative and does not reset each time the wheel is stopped.
D09	Fuel system voltage (battery voltage)	Fuel system voltage Approximately 12.0	Set the start/engine stop switch to "◯", and then compare the actually measured battery voltage with the tool display value. (If the actually measured battery voltage is low, recharge the battery.)

Diagnostic code No.	Item	Tool display	Procedure
D13	Throttle position sensor signal 2		
	• Fully closed position	9–23	Check with throttle valves fully closed.
	• Fully open position	93–109	Check with throttle valves fully open.
D14	Accelerator position sensor signal 1		
	• Fully closed position	9–23	Check with throttle grip fully closed position.
	• Fully open position	71–87	Check with throttle grip fully open position.
D15	Accelerator position sensor signal 2		
	• Fully closed position	7–25	Check with throttle grip fully closed position.
	• Fully open position	69–89	Check with throttle grip fully open position.
D16	Front wheel vehicle speed pulses	Front wheel speed pulse 0–999	Check that the number increases when the front wheel is rotated. The number is cumulative and does not reset each time the wheel is stopped.
D17	Bank angle display	Displays the bank angle in increments of 5° • 0–5° (vehicle is vertical) • Less than 30° (when the sidestand is used)	Check that 0–5° is displayed when the vehicle is vertical and that the displayed value increases as the vehicle continues to incline.
D20	Sidestand switch		Extend and retract the sidestand (with the transmission in gear).
	• Sidestand retracted	ON	
	• Sidestand extended	OFF	
D21	Neutral switch and clutch switch		Operate the transmission, clutch lever, and sidestand.
	• Transmission is in neutral	ON	
	• Transmission is in gear or the clutch lever released	OFF	
	• Clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON	
	• Clutch lever is squeezed with the transmission in gear and when the sidestand is extended	OFF	

Diagnostic code No.	Item	Tool display	Procedure
D60	EEPROM DTC display • No history • History exists	00 • No malfunctions detected (If the DTC P062F is indicated, the ECU is defective.) 01–04 (CO adjustment value) • (If more than one cylinder is defective, the display alternates every two seconds to show all the detected cylinder numbers. When all cylinder numbers are shown, the display repeats the same process.) Except 00-04 (EEPROM data error for corresponding learning/memory values)	—
D67	ISC (Idle Speed Control) learning condition display ISC (Idle Speed Control) learning data erasure	00 ISC (Idle Speed Control) learning data has been erased. 01 It is not necessary to erase the ISC (Idle Speed Control) learning data. 02 It is necessary to erase the ISC (Idle Speed Control) learning data.	To erase the ISC (Idle Speed Control) learning data, push the “Operation” button 3 times in 5 seconds.
D70	Control number	0–254 [-]	—
D87	O_2 feedback learning data erasure	00 O_2 feedback learning data has been erased. 01 O_2 feedback learning data has not been erased.	To erase the O_2 feedback learning data, push the “Operation” button 3 times in 5 seconds.
D95	Shift sensor • Shift sensor output voltage display • With no shift weighting input • Shift up weighting • Shift down weighting	0.2–4.8 [V] Approx. 2.5 [V] Changes to the low side Changes to the high side	Check the sensor condition by operating the shift pedal.

EAS33032
DIAGNOSTIC CODE: ACTUATOR OPERATION TABLE

Diagnostic code No.	Item	Actuation	Procedure
D30	Cylinder-#1 ignition coil	Actuates the cylinder-#1 ignition coil five times at one-second intervals. The “check” indicator on the YDT screen come on each time the ignition coil is actuated.	Check that a spark is generated five times. • Connect an ignition checker.
D31	Cylinder-#2 ignition coil	Actuates the cylinder-#2 ignition coil five times at one-second intervals. The “check” indicator on the YDT screen come on each time the ignition coil is actuated.	Check that a spark is generated five times. • Connect an ignition checker.
D32	Cylinder-#3 ignition coil	Actuates the cylinder-#3 ignition coil five times at one-second intervals. The “check” indicator on the YDT screen come on each time the ignition coil is actuated.	Check that a spark is generated five times. • Connect an ignition checker.
D33	Cylinder-#4 ignition coil	Actuates the cylinder-#4 ignition coil five times at one-second intervals. The “check” indicator on the YDT screen come on each time the ignition coil is actuated.	Check that a spark is generated five times. • Connect an ignition checker.
D34	Intake funnel servo motor	Actuates the intake funnels (up position down, position for each six seconds). Illuminates the “check” indicator	Check the operating of the intake funnel servo motor.
D36	Primary injector #1	Actuates the primary injector #1 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that primary injector #1 is actuated five times by listening for the operating sound.
D37	Primary injector #2	Actuates the primary injector #2 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that primary injector #2 is actuated five times by listening for the operating sound.
D38	Primary injector #3	Actuates the primary injector #3 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that primary injector #3 is actuated five times by listening for the operating sound.

Diagnostic code No.	Item	Actuation	Procedure
D39	Primary injector #4	Actuates the primary injector #4 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that primary injector #4 is actuated five times by listening for the operating sound.
D40	Secondary injector #1	Actuates the secondary injector #1 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that secondary injector #1 is actuated five times by listening for the operating sound.
D41	Secondary injector #2	Actuates the secondary injector #2 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that secondary injector #2 is actuated five times by listening for the operating sound.
D42	Secondary injector #3	Actuates the secondary injector #3 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that secondary injector #3 is actuated five times by listening for the operating sound.
D43	Secondary injector #4	Actuates the secondary injector #4 five times at one-second intervals. The “check” indicator on the YDT screen come on each time the fuel injector is actuated.	Disconnect the fuel pump coupler before doing this procedure. Check that secondary injector #4 is actuated five times by listening for the operating sound.
D47	Steering damper solenoid	When the start/engine stop switch is “ON”, the steering damper solenoid is on. When the start/engine stop switch is “OFF”, the steering damper solenoid is off. The “check” indicator on the YDT screen come on each time the steering damper solenoid is actuated.	Check the operating of the steering damper.
D48	Air induction system solenoid	Actuates the air induction system solenoid five times at one-second intervals. The “check” indicator on the YDT screen come on each time the air induction system solenoid is actuated.	Check that the air induction system solenoid is actuated five times by listening for the operating sound.

Diagnostic code No.	Item	Actuation	Procedure
D49	Intake solenoid	Actuates the intake solenoid five times at one-second intervals. The “check” indicator on the YDT screen come on each time the intake solenoid is actuated.	Check that the intake solenoid is actuated five times by listening for the operating sound.
D50	Relay unit	Actuates the relay unit five times at one-second intervals. The “check” indicator on the YDT screen come on each time the relay is actuated.	Check that the relay unit is actuated five times by listening for the operating sound.
D51	Radiator fan motor relay	Actuates the radiator fan motor relay five times at five-seconds intervals. The “check” indicator on the YDT screen come on each time the relay is actuated.	Check that the radiator fan motor relay is actuated five times by listening for the operating sound.
D52	Headlight relay	Actuates the headlight five times at five-seconds intervals. The “check” indicator on the YDT screen come on each time the headlight is actuated.	Check that the headlight comes on five times.
D53	EXUP servo motor	After the EXUP is fully closed, it stops at the opening base position (intermediate position). This operation takes approximately 3 seconds during which the “check” indicator is displayed on the YDT.	Check the operating sound.

EAS33289
DIAGNOSTIC CODE TABLE (SCU) (for YZF-R1M)

Diagnostic code No.	Item	Tool display	Procedure
D09	Monitor voltage	Displays the SCU power supply voltage. Approximately 12.0 V	Check the displayed SCU power supply voltage.

EAS20707
EVENT CODE TABLE

TIP

The event code numbers listed below cannot be displayed on the meter. To display the event code numbers, use the YDT.

No.	Item	Symptom	Possible causes	Note
192	Intake air pressure sensor	Brief abnormality detected in the intake air pressure sensor	Same as for DTC number P0107 and P0108	Perform the inspection items listed for DTC number P0107 and P0108.
193	Throttle position sensor	Brief abnormality detected in the throttle position sensor	Same as for DTC number P0122, P0123, P0222 and P0223	Perform the inspection items listed for DTC number P0122, P0123, P0222 and P0223.
194	EXUP servo motor circuit	Brief abnormality detected in EXUP servo motor circuit	Same as for DTC number P048D and P048E	Perform the inspection items listed for DTC number P048D and P048E.
195	Sidestand switch	Brief abnormality detected in the ECU (blue/yellow) input line	Same as for DTC number P1601	Perform the inspection items listed for DTC number P1601.
196	Coolant temperature sensor	Brief abnormality detected a in the coolant temperature sensor	Same as for DTC number P0117 and P0118	Perform the inspection items listed for DTC number P0117 and P0118.
197	Intake air temperature sensor	Brief abnormality detected in the intake air temperature sensor	Same as for DTC number P0112 and P0113	Perform the inspection items listed for DTC number P0112 and P0113.
198	Atmospheric pressure sensor	Brief abnormality detected in atmospheric pressure sensor	Same as for DTC number P2228 and P2229	Perform the inspection items listed for DTC number P2228 and P2229.
207	Accelerator position sensor	Brief abnormality detected in the accelerator position sensor	Same as for DTC number P2122, P2123, P2127 and P2128	Perform the inspection items listed for DTC number P2122, P2123, P2127 and P2128.
220	Gear position sensor	Brief abnormality detected in the gear position sensor	Same as for DTC number P0916 and P0917	Perform the inspection items listed for DTC number P0916 and P0917.
240	O_2 sensor (Stuck at the upper limit for adjustment)	During O_2 feedback, the adjustment is maintained at the upper limit	• Open or short circuit in the wire harness between the sensor and ECU • Drop in fuel pressure • Clogged fuel injector • Fault in sensor • Malfunction in ECU • Malfunction in the fuel injection system	• If a DTC is occurring, respond to that first. * Rarely, Code 240 occurs even when the system is functioning properly.

No.	Item	Symptom	Possible causes	Note
241	O_2 sensor (Stuck at the lower limit for adjustment)	During O_2 feedback, the adjustment is maintained at the lower limit	• Open or short circuit in the wire harness between the sensor and ECU • Drop in fuel pressure • Clogged fuel injector • Fault in sensor • Malfunction in ECU • Malfunction in the fuel injection system	• If a DTC is occurring, respond to that first. * Rarely, Code 241 occurs even when the system is functioning properly.
242	ISC (Stuck at the upper limit for adjustment)	During idling, the adjustment is maintained at the upper limit	Idling engine speed is slow • Clogged throttle body • Poorly adjusted clutch cable • Malfunction in the fuel injection system • Dirty or worn spark plug • Malfunction in the battery • Malfunction in ECU	• Implement diagnosis mode D67, and check the ISC maintenance request. • If a DTC is occurring, respond to that first. * Rarely, Code 242 occurs even when the system is functioning properly.
243	ISC (Stuck at the lower limit for adjustment)	During idling, the adjustment is maintained at the lower limit	Idling engine speed is fast • Poorly adjusted clutch cable • Malfunction in the fuel injection system • Dirty or worn spark plug • Malfunction in the battery • Malfunction in ECU	• If a DTC is occurring, respond to that first. * Rarely, Code 243 occurs even when the system is functioning properly.
244	Poor starting/inability to start	Poor starting/inability to start detected	• No gasoline • Malfunction in the fuel injection system • Dirty or worn spark plug • Malfunction in the battery • Malfunction in ECU	• If a DTC is occurring, respond to that first. * Rarely, Code 244 occurs even when the system is functioning properly.
245	Engine stop	Engine stop detected	• No gasoline • Poorly adjusted clutch cable • Malfunction in the fuel injection system • Dirty or worn spark plug • Malfunction in the battery • Malfunction in ECU	• If a DTC is occurring, respond to that first. * Rarely, Code 245 occurs even when the system is functioning properly.
251	Shift sensor	Brief abnormality detected in the shift sensor	Same as for DTC number P1806 and P1807	Perform the inspection items listed for DTC number P1806 and P1807.

EAS20552
30_EVENT

EAS33033
TROUBLESHOOTING

Item

Latch up detected.

Fail-safe system

- Unable to start engine
- Unable to drive vehicle

Procedure

1. The vehicle has overturned.
   - Raise the overturned vehicle vertically and check again.
   - Turn the main switch to “ON”, then to “OFF”, and then back to “ON”.

   Is the MIL on?
   YES
   → Go to step 2.
   NO
   → Service is completed.

2. Installed condition of IMU.
   - Check the installed direction and condition of the sensor.
   - Check the grommet for cracks.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   a. Fix the IMU installation condition.
   b. Turn the main switch to “ON”, then to “OFF”, and then back to “ON”.

      Is the MIL on?
      YES
      → Go to step 3.
      NO
      → Service is completed.

3. Defective IMU.
   - Execute the diagnostic mode. (Code D17)
   - Check that 0°–5° is displayed when the vehicle is vertical and that the displayed value increases as the vehicle continues to incline.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   a. Replace the IMU.
      Refer to “GENERAL CHASSIS (1)” on page 4-1.
   b. Turn the main switch to “ON”, then to “OFF”, and then back to “ON”.

      Is the MIL on?
      YES
      → Go to step 4.

NO
→ Service is completed.

4. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

EAS20554
70_EVENT

EAS33034
TROUBLESHOOTING
Item
Engine forcibly stops when the vehicle is left idling for a long period.

Procedure
TIP

If another error code is displayed at the same time, check the other error code first and repair it.

1. Allow to idle for a long period.
   - Turn the main switch to “OFF”.
   - Check whether it is possible to start the engine.

   Can the engine starting?
   YES
   → Service is completed.
   NO
   → Go to step 2.
2. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

EAS20559
C0044

EAS33039
TROUBLESHOOTING

Item

Abnormal ABS

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Abnormal ABS
   - Check the items of DTCs 62 and 68 for the ABS.
     Refer to “[B-2] DIAGNOSIS USING THE DTC” on page 9-23.
   - Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Service is completed.

NO

→ Refer to the item corresponding to the DTC.

EAS20689
C0520 (FI)

EAS33319
TROUBLESHOOTING

Item

Abnormal IMU

Fail-safe system

- Able/Unable to start engine
- Able/Unable to drive vehicle

Procedure

1. Connection of IMU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

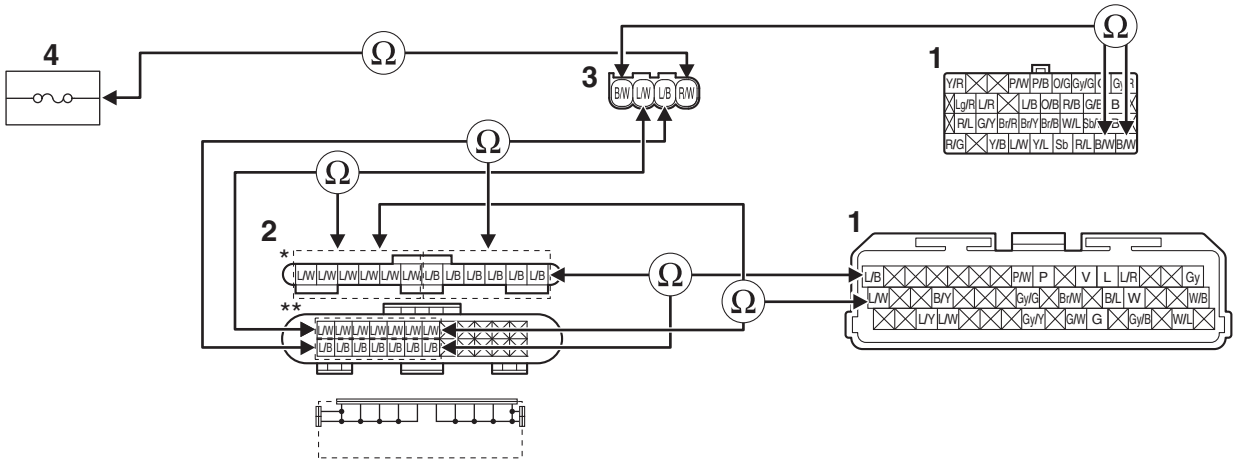
   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the ECU coupler “1”, joint coupler “2”, IMU coupler “3” and ignition fuse “4”.
   - Open circuit check

Between ECU coupler and joint coupler	blue/white–blue/white blue/black–blue/black

Between joint coupler and IMU coupler	blue/white–blue/white blue/black–blue/black
Between IMU coupler and ignition fuse holder	red/white–red/white
Between IMU coupler and ECU coupler	black/white–black/white



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

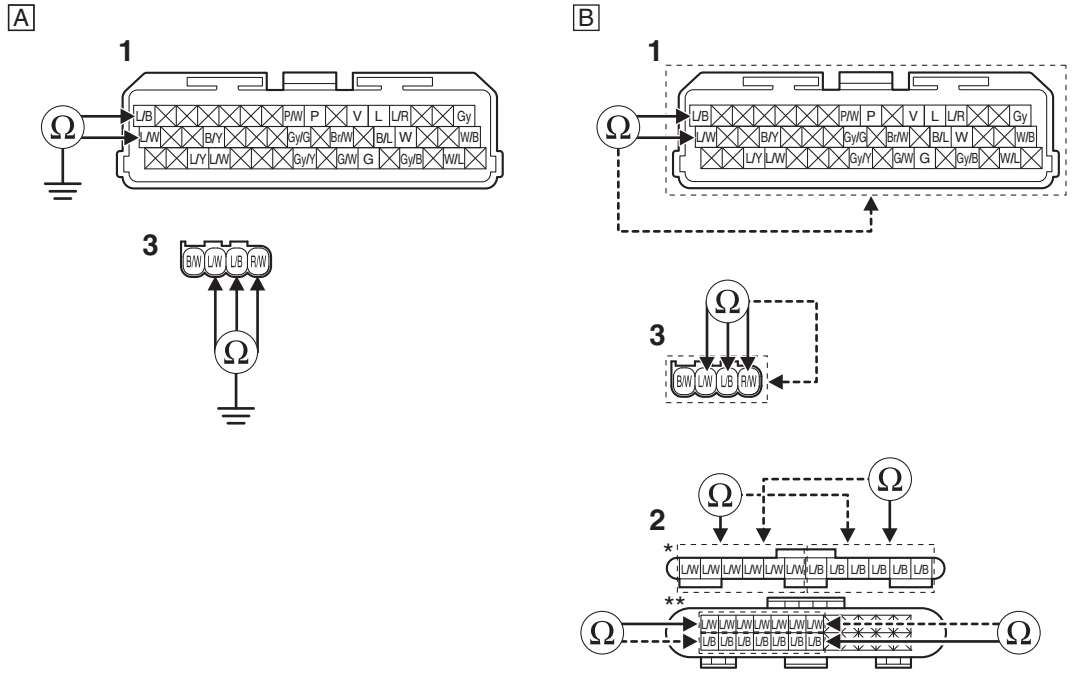
Ground short circuit check "A"

Between ECU coupler "1" and ground	blue/white–ground blue/black–ground
Between IMU coupler "3" and ground	blue/white–ground blue/black–ground red/white–ground

Lines short circuit check "B"

ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal

Joint coupler “2”	blue/white–any other coupler terminal blue/black–any other coupler terminal
IMU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal red/white–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 4.
NO
a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 4.

4. Installed condition of IMU.
- Check the installed direction and condition of the sensor.
- Check the grommet for cracks.

Is check result OK?
YES
→ Go to step 5.
NO

a. Fix the IMU installation condition.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 5.

5. Defective IMU.
   • Replace the IMU.
   Refer to “GENERAL CHASSIS (1)” on page 4-1.
   • Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20664
C0520 (SCU)

EAS33290
TROUBLESHOOTING

Item

Abnormal IMU

Fail-safe system

- Unable to start engine
- Able/Unable to drive vehicle

Procedure

1. Abnormal front wheel sensor
   - Check the item of DTC C0520 for the ECU.
     Refer to “SELF-DIAGNOSTIC FUNCTION TABLE (FOR FUEL INJECTION SYSTEM)” on page 9-38.
   - Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Service is completed.

NO

→ Refer to the item corresponding to DTC.

EAS20561
C1000

EAS33041
TROUBLESHOOTING
Item
Steering damper solenoid: open or short circuit detected.
Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
1. Connection of steering damper solenoid coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 2.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

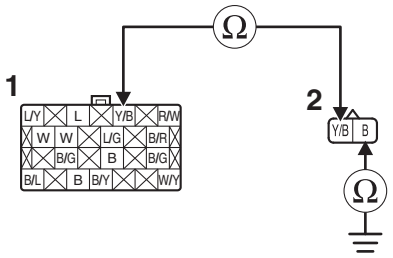
NO

→ Go to step 3.

3. Wire harness continuity.
   - Disconnect the ECU coupler “1 ” and steering damper solenoid coupler “2”.
   - Open circuit check

Between steering damper solenoid coupler and ECU coupler	yellow/black–yellow/black

Between steering damper solenoid coupler and engine ground	black–black



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

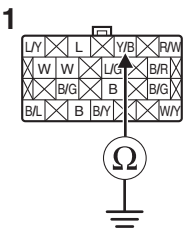
Ground short circuit check “A”

Between ECU coupler “1” and ground	yellow/black–ground

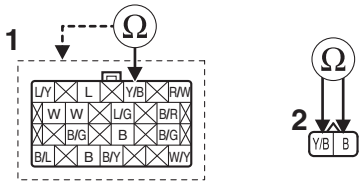
Lines short circuit check “B”

ECU coupler	yellow/black–any other coupler terminal
Steering damper solenoid coupler “2”	yellow/black–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

4. Defective steering damper solenoid.
   • Check the steering damper solenoid.
   Refer to “CHECKING THE STEERING DAMPER SOLENOID” on page 8-51.

Is check result OK?

YES

→ Go to step 5.

NO

a. Replace the steering damper solenoid.
   Refer to “STEERING HEAD” on page 4-108.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 5.

5. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20562
C1002

EAS33042
TROUBLESHOOTING

Item

Abnormal SCU EEPROM

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Confirmation after correction of abnormality.
   - Turn the main switch to “OFF” and back to “ON”.
   - Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Service is completed.

   NO

   → Go to step 2.

2. Malfunction in SCU.
   - Replace the SCU.
     Refer to “GENERAL CHASSIS (6)” on page 4-23.
   - Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.
   - Make sure confirm the “Recovered” condition, and complete the service.

EAS20563
C1003

EAS33043
TROUBLESHOOTING

Item

Stepping motor: open or short circuit detected.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of stepping motor coupler.
   - Check the locking condition of the coupler.
     - –Front fork stepping motor (left)
     - –Front fork stepping motor (right)
     - –Rear shock absorber assembly stepping motor (×2)
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Service is completed.

   NO

   → Go to step 2.

2. Connection of SCU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Service is completed.

   NO

   → Go to step 3.

3. Connection of stepping motor sub-wire harness coupler.
   - Check the locking condition of the coupler.

• Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

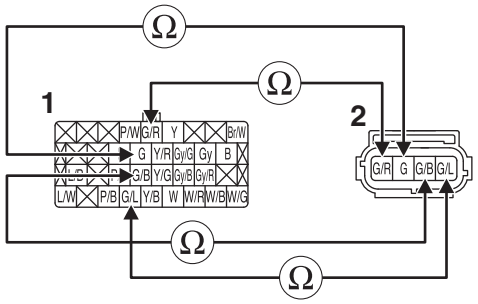
→ Service is completed.

NO

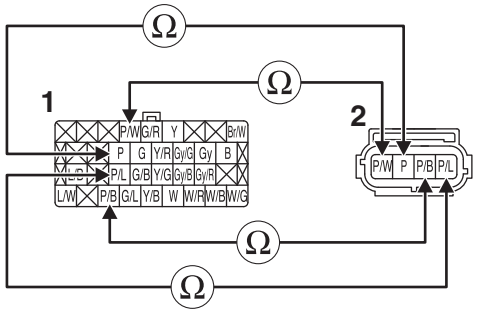
→ Go to step 4.

4. Wire harness continuity.
• Open circuit check

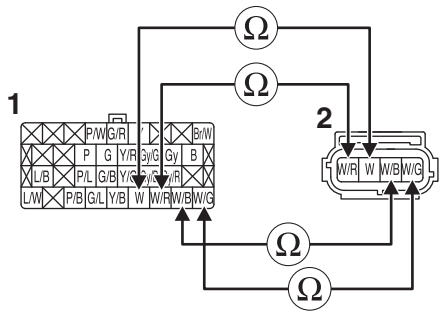
Between SCU coupler “1” and front fork stepping motor (left) “2”	green–green green/black–green/black green/red–green/red green/blue–green/blue



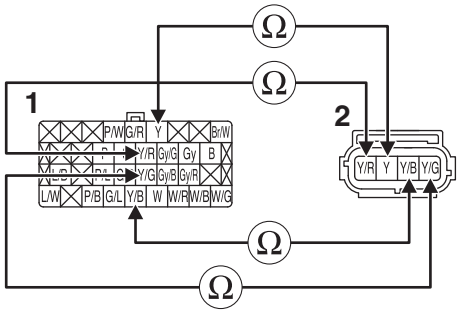
Between SCU coupler “1” and front fork stepping motor (right) “2”	pink–pink pink/black–pink/black pink/white–pink/white pink/blue–pink/blue



Between SCU coupler “1” and rear shock absorber assembly stepping motor (compression damping) “2”	white–white white/black–white/black white/red–white/red white/green–white/green



Between SCU coupler “1” and rear shock absorber assembly stepping motor (rebound damping) “2”	yellow–yellow yellow/black–yellow/black yellow/red–yellow/red yellow/green–yellow/green



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness and/or sub-wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Service is completed.

NO

→ Go to “Short circuit check”.

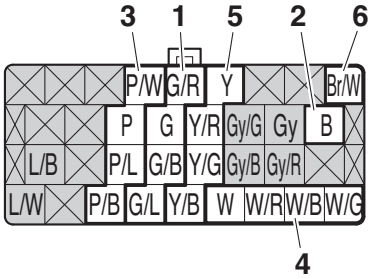
- Short circuit check

TIP

Disconnect the SCU related connectors before checking.
Refer to “PARTS CONNECTED TO THE SCU (for YZF-R1M)” on page 9-3.

Between front fork stepping motor (left) “1” and power ground “2”	green–black green/black–black green/red–black green/blue–black
Between front fork stepping motor (right) “3” and power ground “2”	pink–black pink/black–black pink/white–black pink/blue–black

Between rear shock absorber assembly stepping motor (compression damping) “4” and power ground “2”	white–black white/black–black white/red–black white/green–black
Between rear shock absorber assembly stepping motor (rebound damping) “5” and power ground “2”	yellow–black yellow/black–black yellow/red–black yellow/green–black
Between front fork stepping motor (left) “1” and power battery “6”	green–brown/white green/black–brown/white green/red–brown/white green/blue–brown/white
Between front fork stepping motor (right) “3” and power battery “6”	pink–brown/white pink/black–brown/white pink/white–brown/white pink/blue–brown/white
Between rear shock absorber assembly stepping motor (compression damping) “4” and power battery “6”	white–brown/white white/black–brown/white white/red–brown/white white/green–brown/white
Between rear shock absorber assembly stepping motor (rebound damping) “5” and power battery “6”	yellow–brown/white yellow/black–brown/white yellow/red–brown/white yellow/green–brown/white



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness and/or sub-wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

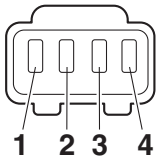
→ Service is completed.

NO

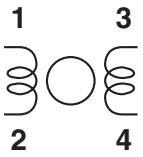
→ Go to step 5.

5. Malfunction in stepping motor.
   a. Connect the digital circuit tester (Ω) to the stepping motor.
   - Positive tester probe “1”
   - Negative tester probe “2”

A



B



A. Stepping motor coupler
B. Connection wiring diagram

b. Measure the resistance of the stepping motor between “1” and “2”.

14.8–18.2 Ω (When the motor is cold at 20 °C (68 °F))?
YES
→ Go to step c.
NO
a. Replace the front fork cap bolt and rear shock absorber assembly.
Refer to “FRONT FORK (for YZF-R1M)” on page 4-100 and “REAR SHOCK ABSORBER ASSEMBLY” on page 4-112.
b. Turn the main switch to “ON”. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Go to step c.

c. Connect the digital circuit tester (Ω) to the stepping motor.
• Positive tester probe “3”
• Negative tester probe “4”
d. Measure the resistance of the stepping motor between “3” and “4”.

14.8–18.2 Ω (When the motor is cold at 20 °C (68 °F))?
YES
→ Go to step 6.
NO
a. Replace the front fork cap bolt and rear shock absorber assembly.
Refer to “FRONT FORK (for YZF-R1M)” on page 4-100 and “REAR SHOCK ABSORBER ASSEMBLY” on page 4-112.
b. Turn the main switch to “ON”. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Go to step 6.

6. Malfunction in SCU.
• Replace the SCU.
Refer to “GENERAL CHASSIS (6)” on page 4-23.

- Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Service is completed.

NO

→ Refer to the item corresponding to DTC.

EAS20566
C1007

EAS33046
TROUBLESHOOTING

Item

Abnormality inside SCU

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Malfunction in SCU.
   - Replace the SCU.
     Refer to “GENERAL CHASSIS (6)” on page 4-23.
   - Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.
   - Make sure confirm the“Recovered”condition, and complete the service.

EAS20397
P0030

EAS33134
TROUBLESHOOTING

Item
O_2 sensor 1 heater: defective heater controller detected.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P0112, P0113, P0122, P0123, P0222, P0223, P2135

1. Connection of O_2 sensor 1 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 2.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine, and then check the condition of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 2.

TIP

For this check, also set the start/engine stop switch to "ON".

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine, and then check the condition of the DTC.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

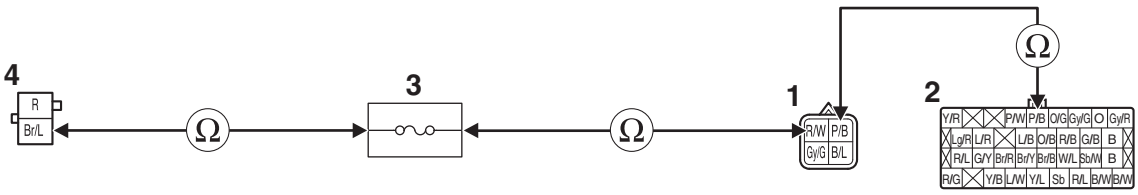
→ Go to step 3.

TIP

For this check, also set the start/engine stop switch to “ON”.

3. Wire harness continuity.
   - Disconnect the O_2 sensor 1 coupler “1”, ECU coupler “2”, ignition fuse “3” and main switch coupler “4”.
   - Open circuit check

Between O_2 sensor 1 coupler and ECU coupler	pink/black–pink/black
Between O_2 sensor 1 coupler and ignition fuse holder	red/white–red/white
Between main switch coupler and ignition fuse holder	brown/blue–brown/blue



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine, and then check the condition of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to "Short circuit check".

TIP

For this check, also set the start/engine stop switch to "ON".

- Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

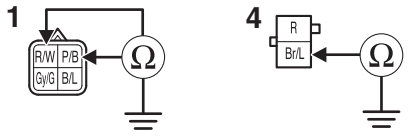
Ground short circuit check "A"

Between O_2 sensor 1 coupler "1" and ground	red/white–ground pink/black–ground
Between main switch coupler "4" and ground	brown/blue–ground

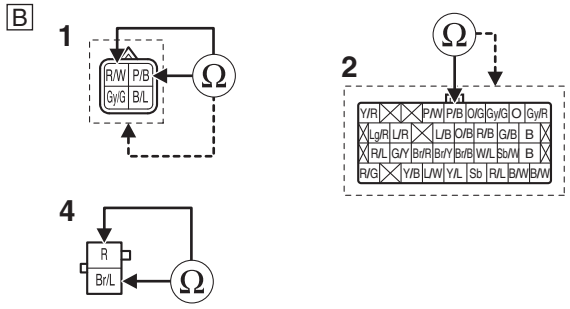
Lines short circuit check "B"

O_2 sensor 1 coupler	red/white–any other coupler terminal pink/black–any other coupler terminal
ECU coupler "2"	pink/black–any other coupler terminal
Main switch coupler	brown/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine, and then check the condition of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

TIP

For this check, also set the start/engine stop switch to “ON”.

4. Defective O_2 sensor 1.
   - Replace the O_2 sensor 1.
     Refer to “ENGINE REMOVAL” on page 5-11.
   - Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Start the engine, and then check the condition of the DTC.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 5.

TIP

For this check, also set the start/engine stop switch to “ON”.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20398
P0050

EAS33135
TROUBLESHOOTING

Item
O_2 sensor 2 heater: defective heater controller detected.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P0112, P0113, P0122, P0123, P0222, P0223, P2135

1. Connection of O_2 sensor 2 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 2.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine, and then check the condition of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 2.

TIP

For this check, also set the start/engine stop switch to "ON".

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Start the engine, and then check the condition of the DTC.

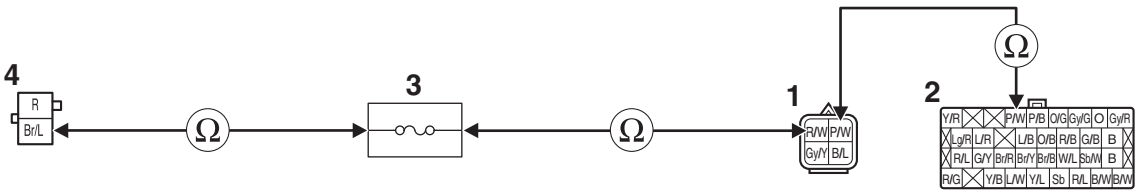
Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 3.

TIP

For this check, also set the start/engine stop switch to “ON”.

3. Wire harness continuity.
   • Disconnect the O_2 sensor 2 coupler “1”, ECU coupler “2”, ignition fuse “3” and main switch coupler “4”.
   • Open circuit check

Between O_2 sensor 2 coupler and ECU coupler	pink/white–pink/white
Between O_2 sensor 2 coupler and ignition fuse holder	red/white–red/white
Between main switch coupler and ignition fuse holder	brown/blue–brown/blue



Is resistance 0 Ω?
YES
→ Go to “Short circuit check”.
NO
a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Start the engine, and then check the condition of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to "Short circuit check".

TIP

For this check, also set the start/engine stop switch to "ON".

- Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between O_2 sensor 2 coupler "1" and ground	red/white–ground pink/white–ground
Between main switch coupler "4" and ground	brown/blue–ground

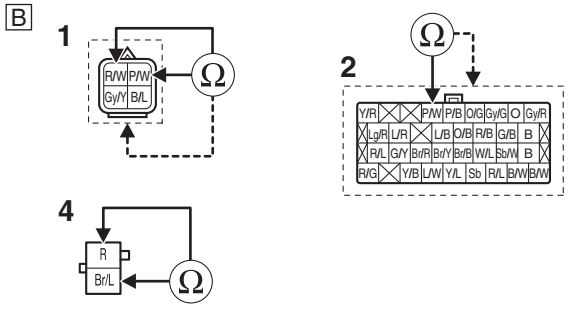
Lines short circuit check "B"

O_2 sensor 2 coupler	red/white–any other coupler terminal pink/white–any other coupler terminal
ECU coupler "2"	pink/white–any other coupler terminal
Main switch coupler	brown/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine, and then check the condition of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

TIP

For this check, also set the start/engine stop switch to “ON”.

4. Defective O_2 sensor 2.
   - Replace the O_2 sensor 2.
     Refer to “ENGINE REMOVAL” on page 5-11.
   - Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Start the engine, and then check the condition of the DTC.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 5.

TIP

For this check, also set the start/engine stop switch to “ON”.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20390
P0069

EAS33136
TROUBLESHOOTING

Item
Intake air pressure sensor or atmospheric pressure sensor: when the main switch is turned to “ON”, the intake air pressure sensor voltage and atmospheric pressure sensor voltage differ greatly.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P0107, P0108, P0335, P2228, P2229

1. Defective intake air pressure sensor.
   - Execute the diagnostic mode. (Code D03)
   - When engine is stopped: Atmospheric pressure at the current altitude and weather conditions is indicated.

0 m above sea level	Approx. 101 kPa (757.6 mmHg, 29.8 inHg)
3000 m (9800 ft) above sea level	Approx. 70 kPa (525.0 mmHg, 20.7 inHg)

Is check result OK?

YES

→ Go to step 2.

NO

a. Replace the intake air pressure sensor.
   Refer to “THROTTLE BODIES” on page 7-11.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 4, and complete the service.

NO

→ Go to step 2.

2. Defective atmospheric pressure sensor.
   - Execute the diagnostic mode. (Code D02)
   - When engine is stopped: Atmospheric pressure at the current altitude and weather conditions is indicated.

0 m above sea level	Approx. 101 kPa (757.6 mmHg, 29.8 inHg)
3000 m (9800 ft) above sea level	Approx. 70 kPa (525.0 mmHg, 20.7 inHg)

Is check result OK?

YES

→ Go to step 3.

NO

a. Replace the atmospheric pressure sensor.
Refer to “AIR INDUCTION SYSTEM” on page 7-20.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 4, and complete the service.

NO

→ Go to step 3.

3. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
4. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20660
P00D1, P2195

EAS33115
TROUBLESHOOTING

Item
- [P00D1] O_2 sensor 1: heater performance deterioration
- [P2195] O_2 sensor 1: open circuit detected.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P0030

1. Installed condition of O_2 sensor 1.
   - Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 2.

NO

a. Reinstall or replace the O_2 sensor 1.
   Refer to “ENGINE REMOVAL” on page 5-11.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 2.

2. Connection of O_2 sensor 1 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

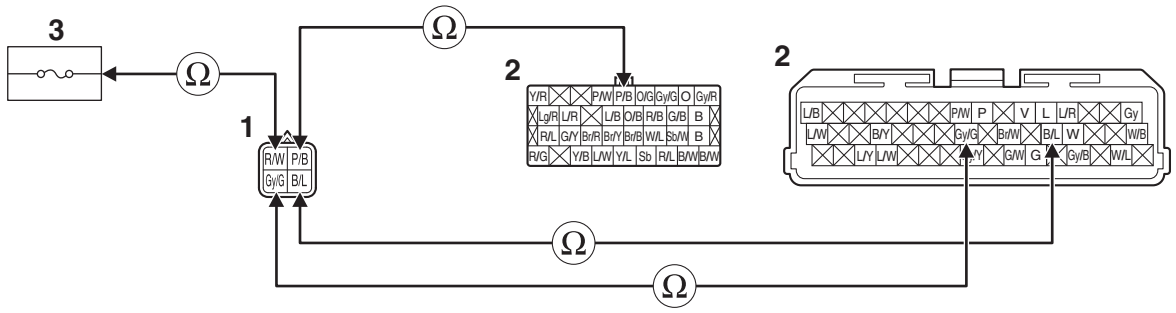
→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
   - Disconnect the O_2 sensor 1 coupler "1", ECU coupler "2" and ignition fuse "3".
   - Open circuit check

Between O_2 sensor 1 coupler and ECU coupler	gray/green–gray/green pink/black–pink/black black/blue–black/blue
Between O_2 sensor 1 coupler and ignition fuse holder	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to "Short circuit check".

- Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

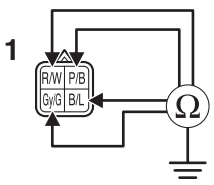
Ground short circuit check “A”

Between O_2 sensor 1 coupler “1” and ground	gray/green–ground pink/black–ground black/blue–ground red/white–ground

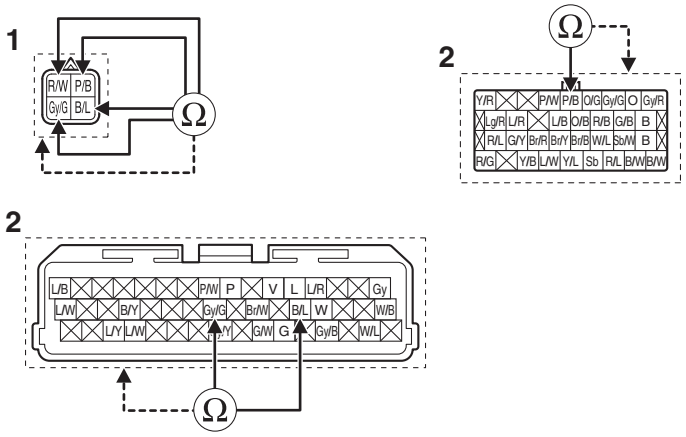
Lines short circuit check “B”

O_2 sensor 1 coupler	gray/green–any other coupler terminal pink/black–any other coupler terminal black/blue–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	gray/green–any other coupler terminal pink/black–any other coupler terminal black/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Check fuel pressure.
   • Check the fuel pressure.
   Refer to “CHECKING THE FUEL PRESSURE” on page 7-18.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the fuel pump.
   Refer to “REMOVING THE FUEL PUMP” on page 7-3.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 6.

6. Defective O_2 sensor 1.
   a. Replace the O_2 sensor 1.
      Refer to “ENGINE REMOVAL” on page 5-11.
   b. Start the engine and let it idle for approximately 1 minute.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 7.

7. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
8. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20661
P00D3, P2197

EAS33338
TROUBLESHOOTING

Item
- [P00D3] O_2 sensor 2: heater performance deterioration
- [P2197] O_2 sensor 2: open circuit detected.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P0050

1. Installed condition of O_2 sensor 2.
   - Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 2.

NO

a. Reinstall or replace the O_2 sensor 2.
   Refer to “ENGINE REMOVAL” on page 5-11.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 2.

2. Connection of O_2 sensor 2 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

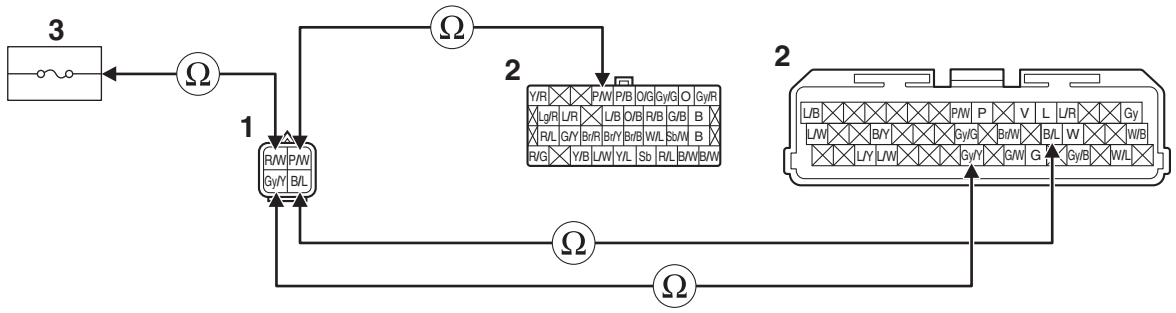
→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
   - Disconnect the O_2 sensor 2 coupler "1", ECU coupler "2" and ignition fuse "3".
   - Open circuit check

Between O_2 sensor 2 coupler and ECU coupler	gray/yellow–gray/yellow pink/white–pink/white black/blue–black/blue
Between O_2 sensor 2 coupler and ignition fuse holder	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to "Short circuit check".

- Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

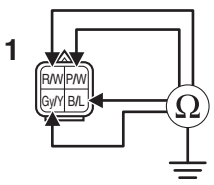
Ground short circuit check “A”

Between O_2 sensor 2 coupler “1” and ground	gray/yellow–ground pink/white–ground black/blue–ground red/white–ground

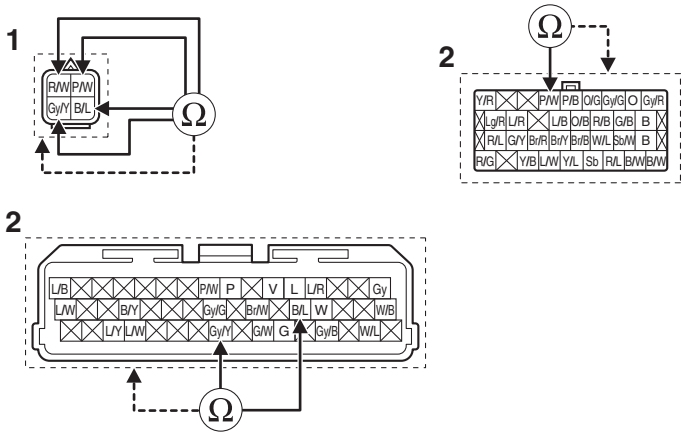
Lines short circuit check “B”

O_2 sensor 2 coupler	gray/yellow–any other coupler terminal pink/white–any other coupler terminal black/blue–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	gray/yellow–any other coupler terminal pink/white–any other coupler terminal black/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Check fuel pressure.
   • Check the fuel pressure.
   Refer to “CHECKING THE FUEL PRESSURE” on page 7-18.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the fuel pump.
   Refer to “REMOVING THE FUEL PUMP” on page 7-3.
b. Start the engine and let it idle for approximately 1 minute.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 6.

6. Defective O_2 sensor 2.
   a. Replace the O_2 sensor 2.
      Refer to “ENGINE REMOVAL” on page 5-11.
   b. Start the engine and let it idle for approximately 1 minute.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 7.

7. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
8. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20567
P0107, P0108

EAS33047
TROUBLESHOOTING

Item

• [P0107] Intake air pressure sensor: ground short circuit detected.
• [P0108] Intake air pressure sensor: open or power short circuit detected.

Fail-safe system

• Able to start engine
• Able to drive vehicle

Procedure

1. Connection of intake air pressure sensor coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

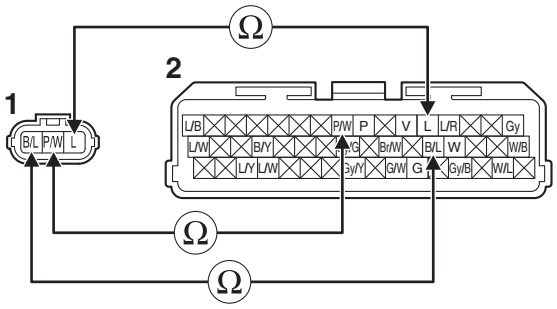
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   • Disconnect the intake air pressure sensor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between intake air pressure sensor coupler and ECU coupler	blue–blue pink/white–pink/white black/blue–black/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

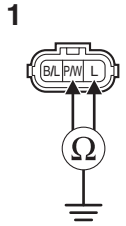
Ground short circuit check "A"

Between intake air pressure sensor coupler "1" and ground	blue–ground pink/white–ground

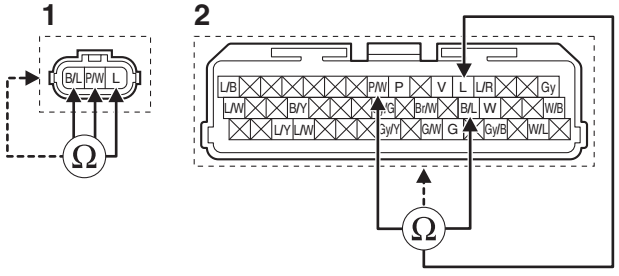
Lines short circuit check "B"

Intake air pressure sensor coupler	blue–any other coupler terminal pink/white–any other coupler terminal black/blue–any other coupler terminal
ECU coupler "2"	blue–any other coupler terminal pink/white–any other coupler terminal black/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of intake air pressure sensor.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the sensor.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective intake air pressure sensor.
   • Execute the diagnostic mode. (Code D03)
   • When engine is stopped: Atmospheric pressure at the current altitude and weather conditions is indicated.

At sea level	Approx. 101 kPa (757.6 mmHg, 29.8 inHg), approx. 3.64 V
1000 m (3300 ft) above sea level	Approx. 90 kPa (675.1 mmHg, 26.6 inHg), approx. 3.30 V
2000 m (6700 ft) above sea level	Approx. 80 kPa (600.0 mmHg, 23.6 inHg), approx. 3.00 V
3000 m (9800 ft) above sea level	Approx. 70 kPa (525.0 mmHg, 20.7 inHg), approx. 2.70 V

   • When engine is cranking: Make sure that the indication value changes.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the intake air pressure sensor.
   Refer to "THROTTLE BODIES" on page 7-11.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20568
P0112, P0113

EAS33048
TROUBLESHOOTING

Item
- [P0112] Intake air temperature sensor: ground short circuit detected.
- [P0113] Intake air temperature sensor: open or power short circuit detected.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

Perform this procedure when the engine is cold.

1. Connection of intake air temperature sensor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 2.

2. Connection of wire harness coupler and sub-wire harness coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.

• Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

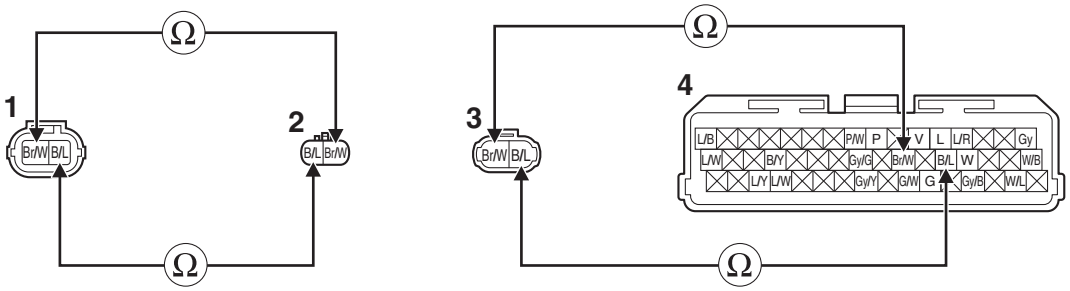
→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
• Disconnect the intake air temperature sensor coupler "1", sub-wire harness coupler (wire harness side) "2", wire harness coupler (sub-wire harness side) "3" and ECU coupler "4".
• Open circuit check

Between intake air temperature sensor coupler and sub-wire harness coupler (wire harness side)	brown/white–brown/white black/blue–black/blue
Between wire harness coupler (sub-wire harness side) and ECU coupler	brown/white–brown/white black/blue–black/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness and/or sub-wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.

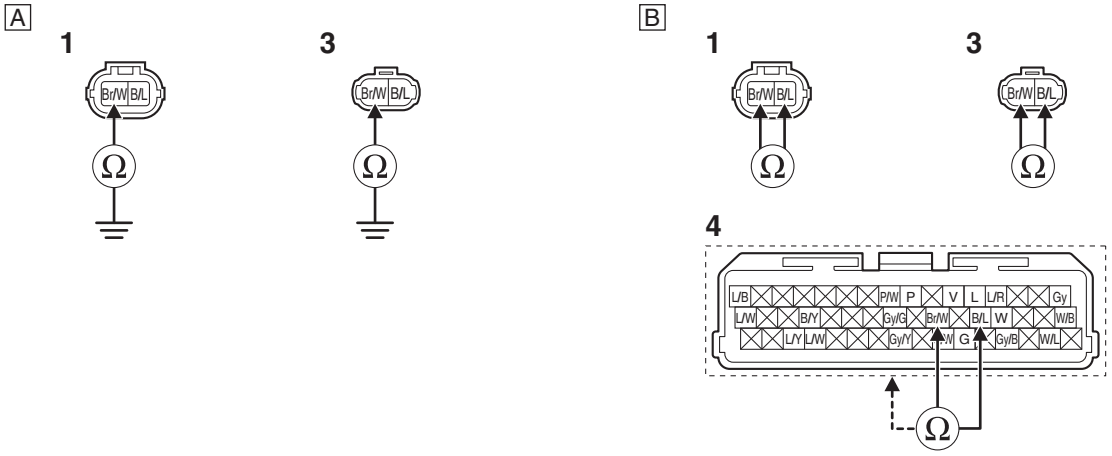
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

Between intake air temperature sensor coupler “1” and ground	brown/white–ground
Between wire harness coupler (sub-wire harness side) “3” and ground	brown/white–ground

Lines short circuit check “B”

Intake air temperature sensor coupler	brown/white–any other coupler terminal black/blue–any other coupler terminal
Wire harness coupler (sub-wire harness side)	brown/white–any other coupler terminal black/blue–any other coupler terminal
ECU coupler “4”	brown/white–any other coupler terminal black/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness and/or sub-wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Installed condition of intake air temperature sensor.
   • Check for looseness or pinching.
   Refer to “AIR INDUCTION SYSTEM” on page 7-20.

Is check result OK?

YES

→ Go to step 6.

NO

a. Reinstall the sensor.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 6.

6. Defective intake air temperature sensor.
   • Execute the diagnostic mode. (Code D05)
   • When engine is cold: Displayed temperature is close to the ambient temperature.
   • The displayed temperature is not close to the ambient temperature → Check the intake air temperature sensor.
   Refer to “CHECKING THE INTAKE AIR TEMPERATURE SENSOR” on page 8-50.

Is check result OK?
YES
→ Go to step 7.
NO
a. Replace the intake air temperature sensor.
   Refer to “AIR INDUCTION SYSTEM” on page 7-20.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 7.

7. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
8. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20569
P0117, P0118

EAS33049
TROUBLESHOOTING

Item
- [P0117] Coolant temperature sensor: ground short circuit detected.
- [P0118] Coolant temperature sensor: open or power short circuit detected.

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

Perform this procedure when the engine is cold.

1. Connection of coolant temperature sensor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 2.

2. Connection of wire harness coupler and sub-wire harness coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness and/or sub-wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 9, and complete the service.

   NO

   → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.

• Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

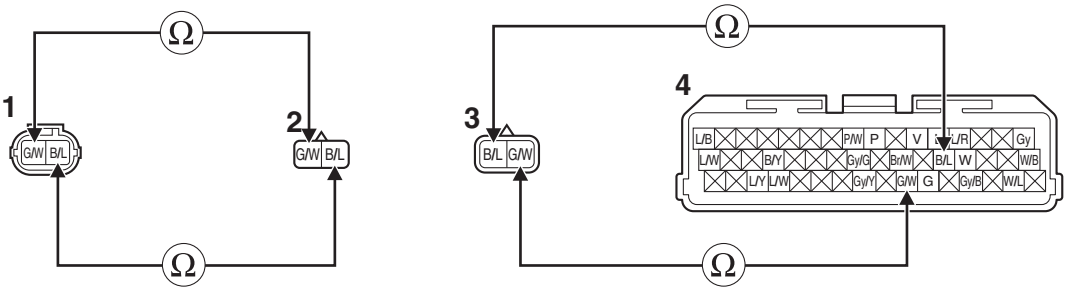
→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
• Disconnect the coolant temperature sensor coupler "1", sub-wire harness coupler (wire harness side) "2", wire harness coupler (sub-wire harness side) "3" and ECU coupler "4".
• Open circuit check

Between coolant temperature sensor coupler and sub-wire harness coupler (wire harness side)	green/white–green/white black/blue–black/blue
Between wire harness coupler (sub-wire harness side) and ECU coupler	green/white–green/white black/blue–black/blue



Is resistance 0 Ω?

YES

→ Go to step "Short circuit check".

NO

a. Replace the wire harness and/or sub-wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.

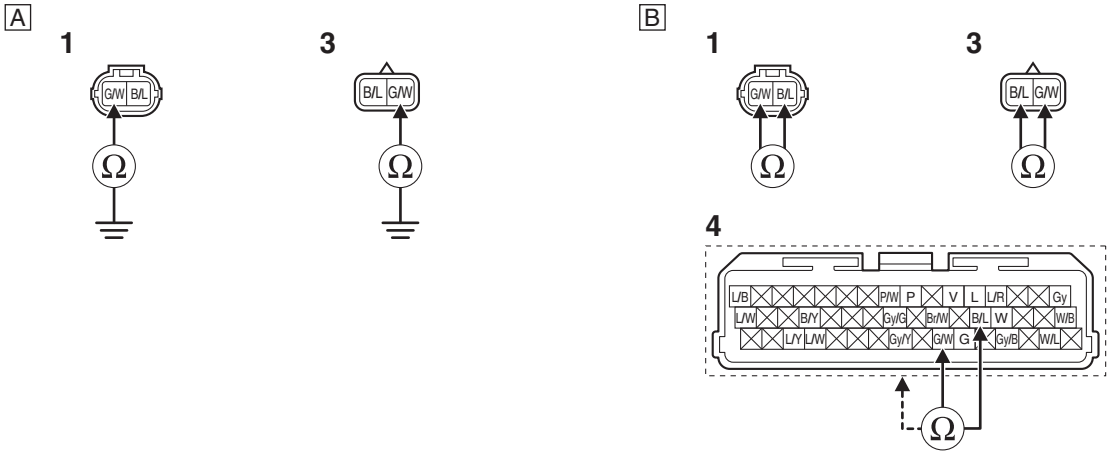
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

Between coolant temperature sensor coupler “1” and ground	green/white–ground
Between wire harness coupler (sub-wire harness side) “3” and ground	green/white–ground

Lines short circuit check “B”

Coolant temperature sensor coupler	green/white–any other coupler terminal black/blue–any other coupler terminal
Wire harness coupler (sub-wire harness side)	green/white–any other coupler terminal black/blue–any other coupler terminal
ECU coupler “4”	green/white–any other coupler terminal black/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness and/or sub-wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Installed condition of coolant temperature sensor.
   • Check for looseness or pinching.
   Refer to “CYLINDER HEAD” on page 5-33.

Is check result OK?

YES

→ Go to step 6.

NO

a. Reinstall the sensor.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 6.

6. Defective coolant temperature sensor.
   • Execute the diagnostic mode. (Code D06)
   • When engine is cold: Displayed temperature is close to the ambient temperature.
   • The displayed temperature is not close to the ambient temperature → Check the coolant temperature sensor.
   Refer to “CHECKING THE COOLANT TEMPERATURE SENSOR” on page 8-48.

Is check result OK?
YES
→ Go to step 7.
NO
a. Replace the coolant temperature sensor.
   Refer to “CYLINDER HEAD” on page 5-33.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 7.

7. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
8. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20570
P0122, P0123, P0222, P0223, P2135

EAS33050
TROUBLESHOOTING

Item

- [P0122] Throttle position sensor: ground short circuit detected.
- [P0123] Throttle position sensor: open or power short circuit detected.
- [P0222] Throttle position sensor: open or ground short circuit detected.
- [P0223] Throttle position sensor: power short circuit detected.
- [P2135] Throttle position sensor: output voltage deviation error.

Fail-safe system

- Able/Unable to start engine
- Able/Unable to drive vehicle

Procedure

TIP

If a DTC other than P2135 (P0122, P0123, P0222, P0223) is detected, perform troubleshooting first.

1. Connection of throttle position sensor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 2.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

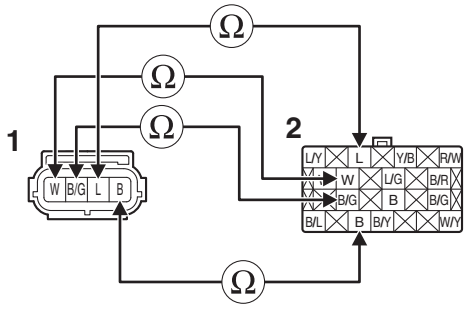
→ Go to step 8, and complete the service.

NO

→ Go to step 3.

3. Wire harness continuity.
   • Disconnect the throttle position sensor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between throttle position sensor coupler and ECU coupler	white–white black/green–black/green blue–blue black–black



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

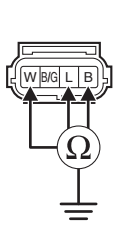
Ground short circuit check “A”

Between throttle position sensor coupler “1” and ground	white–ground blue–ground black–ground

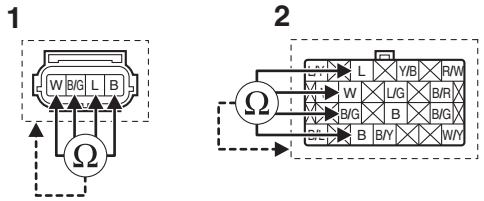
Lines short circuit check “B”

Throttle position sensor coupler	white–any other coupler terminal black/green–any other coupler terminal blue–any other coupler terminal black–any other coupler terminal
ECU coupler “2”	white–any other coupler terminal black/green–any other coupler terminal blue–any other coupler terminal black–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Installed condition of throttle position sensor.
   • Check for looseness or pinching.
   Refer to "ADJUSTING THE THROTTLE POSITION SENSOR" on page 7-19.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or adjust the sensor.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Defective throttle position sensor.
   • Check throttle position sensor signal 1.
   • Execute the diagnostic mode. (Code D01)

When the throttle valves are fully closed	11–21
When throttle valves are fully open	96–107

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the throttle position sensor.
Refer to “ADJUSTING THE THROTTLE POSITION SENSOR” on page 7-19.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 6.

6. Defective throttle position sensor.
• Check throttle position sensor signal 2.
• Execute the diagnostic mode. (Code D13)

When the throttle valves are fully closed	9–23
When throttle valves are fully open	93–109

Is check result OK?
YES
→ Go to step 7.
NO
a. Replace the throttle position sensor.
Refer to “ADJUSTING THE THROTTLE POSITION SENSOR” on page 7-19.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 7.

7. Malfunction in ECU.
• Replace the ECU, and complete the service.
Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
8. Delete the DTC and check that the MIL goes off.
• Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20571
P0132

EAS33051
TROUBLESHOOTING

Item

O_2 sensor 1: short circuit detected (power short circuit).

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Installed condition of O_2 sensor 1.
   - Check for looseness or pinching.
     Refer to “ENGINE REMOVAL” on page 5-11.

   Is check result OK?

   YES

   → Go to step 2.

   NO

   a. Reinstall or replace the sensor.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of O_2 sensor 1 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

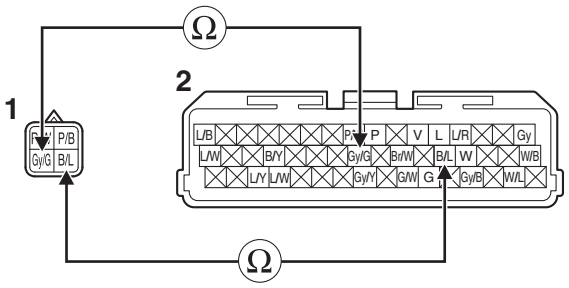
   Is the coupler condition normal?

YES
→ Go to step 4.
NO
a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 4.

4. Wire harness continuity.
• Disconnect the O_2 sensor 1 coupler "1" and ECU coupler "2".
• Open circuit check

Between O_2 sensor 1 coupler and ECU coupler	black/blue–black/blue gray/green–gray/green



Is resistance 0 Ω?
YES
→ Go to "Short circuit check".
NO
a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to "Short circuit check".

• Short circuit check

TIP
Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between O_2 sensor 1 coupler "1" and ground	gray/green–ground

Lines short circuit check "B"

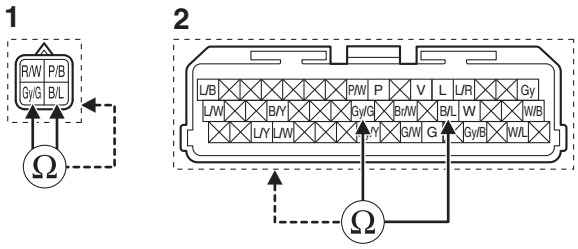
O_2 sensor 1 coupler	black/blue–any other coupler terminal gray/green–any other coupler terminal

ECU coupler “2”	black/blue–any other coupler terminal gray/green–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective O_2 sensor 1.
   a. Replace the O_2 sensor 1.
      Refer to “ENGINE REMOVAL” on page 5-11.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20572
P0152

EAS33052
TROUBLESHOOTING

Item

O_2 sensor 2: short circuit detected (power short circuit).

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Installed condition of O_2 sensor 2.
   - Check for looseness or pinching.
     Refer to “ENGINE REMOVAL” on page 5-11.

   Is check result OK?

   YES

   → Go to step 2.

   NO

   a. Reinstall or replace the sensor.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of O_2 sensor 2 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

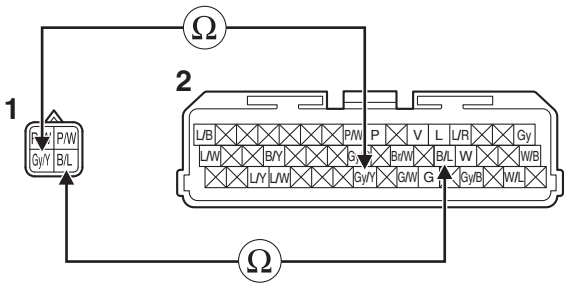
   Is the coupler condition normal?

YES
→ Go to step 4.
NO
a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 4.

4. Wire harness continuity.
• Disconnect the O_2 sensor 2 coupler "1" and ECU coupler "2".
• Open circuit check

Between O_2 sensor 2 coupler and ECU coupler	black/blue–black/blue gray/yellow–gray/yellow



Is resistance 0 Ω?
YES
→ Go to "Short circuit check".
NO
a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to "Short circuit check".

• Short circuit check

TIP
Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

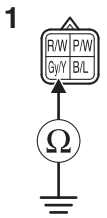
Between O_2 sensor 2 coupler "1" and ground	gray/yellow–ground

Lines short circuit check "B"

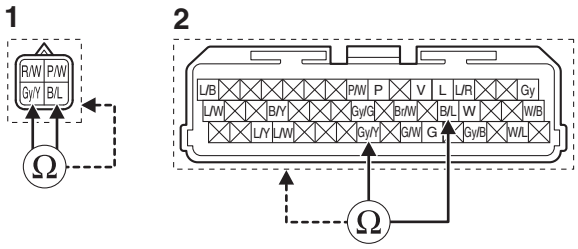
O_2 sensor 2 coupler	black/blue–any other coupler terminal gray/yellow–any other coupler terminal

ECU coupler “2”	black/blue–any other coupler terminal gray/yellow–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective O_2 sensor 2.
   a. Replace the O_2 sensor 2.
      Refer to “ENGINE REMOVAL” on page 5-11.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20574
P0201

EAS33054
TROUBLESHOOTING
Item
Primary injector #1: malfunction in primary injector #1.
Fail-safe system
- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure
1. Connection of primary injector #1 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 2.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D36)

      Is it hear operating sound?
      YES
      → Go to step 6.
      NO
      → Go to step 2.

2. Defective primary injector #1.
   - Measure the primary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   a. Replace the primary injector #1.
      Refer to “THROTTLE BODIES” on page 7-11.
   b. Execute the diagnostic mode. (Code D36)

      Is it hear operating sound?
      YES
      → Go to step 6.
      NO
      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D36)

Is it hear operating sound?

YES

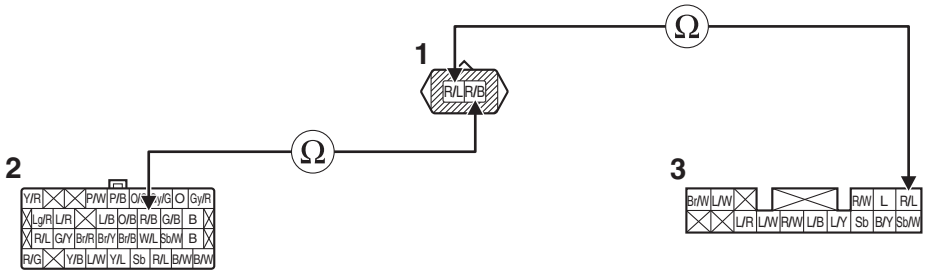
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the primary injector #1 coupler "1", ECU coupler "2" and relay unit coupler "3"
   • Open circuit check

Between primary injector #1 coupler and ECU coupler	red/black–red/black
Between primary injector #1 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D36)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

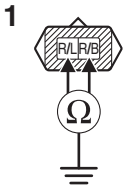
Between primary injector #1 coupler "1" and ground	red/black–ground red/blue–ground

Lines short circuit check "B"

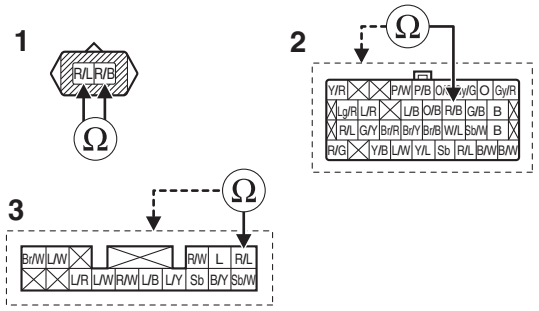
Primary injector #1 coupler	red/black–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	red/black–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D36)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20575
P0202

EAS33055
TROUBLESHOOTING

Item

Primary injector #2: malfunction in primary injector #2.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of primary injector #2 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D37)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 2.

2. Defective primary injector #2.
   - Measure the primary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?

   YES

   → Go to step 3.

   NO

   a. Replace the primary injector #2.
      Refer to “THROTTLE BODIES” on page 7-11.
   b. Execute the diagnostic mode. (Code D37)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D37)

Is it hear operating sound?

YES

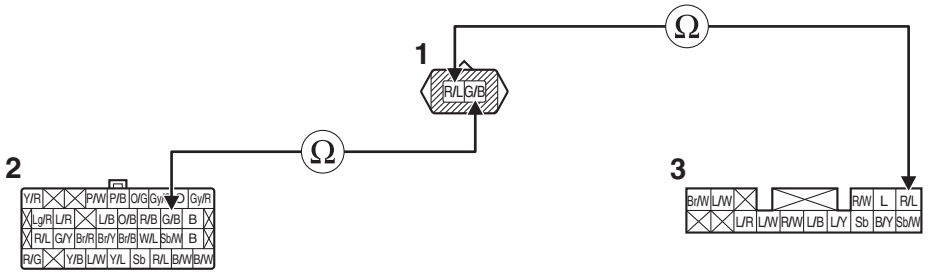
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the primary injector #2 coupler “1”, ECU coupler “2” and relay unit coupler “3”
   • Open circuit check

Between primary injector #2 coupler and ECU coupler	green/black–green/black
Between primary injector #2 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D37)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

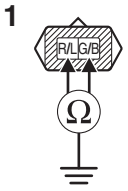
Between primary injector #2 coupler “1” and ground	green/black–ground red/blue–ground

Lines short circuit check “B”

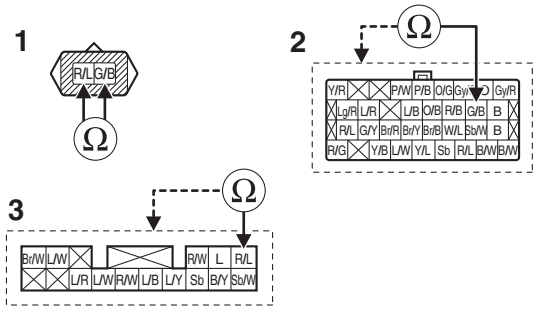
Primary injector #2 coupler	green/black–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	green/black–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D37)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20576
P0203

EAS33056
TROUBLESHOOTING
Item
Primary injector #3: malfunction in primary injector #3.
Fail-safe system
- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure
1. Connection of primary injector #3 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 2.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D38)

      Is it hear operating sound?
      YES
      → Go to step 6.
      NO
      → Go to step 2.

2. Defective primary injector #3.
   - Measure the primary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   a. Replace the primary injector #3.
      Refer to “THROTTLE BODIES” on page 7-11.
   b. Execute the diagnostic mode. (Code D38)

      Is it hear operating sound?
      YES
      → Go to step 6.
      NO
      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D38)

Is it hear operating sound?

YES

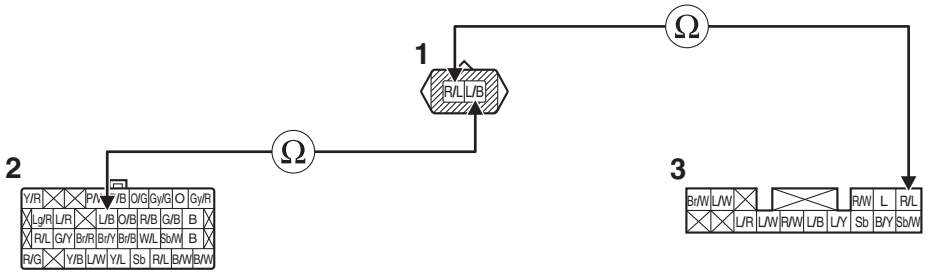
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the primary injector #3 coupler "1", ECU coupler "2" and relay unit coupler "3"
   • Open circuit check

Between primary injector #3 coupler and ECU coupler	blue/black–blue/black
Between primary injector #3 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D38)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

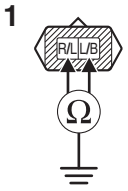
Between primary injector #3 coupler "1" and ground	blue/black–ground red/blue–ground

Lines short circuit check "B"

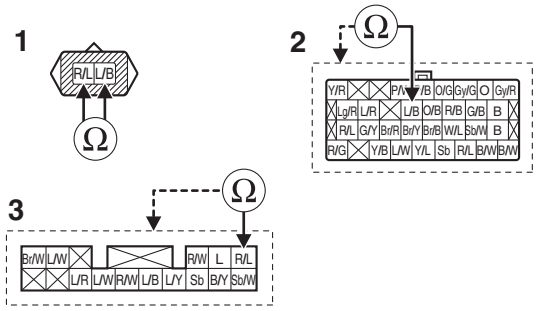
Primary injector #3 coupler	blue/black–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	blue/black–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D38)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20577
P0204

EAS33057
TROUBLESHOOTING

Item

Primary injector #4: malfunction in primary injector #4.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of primary injector #4 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D39)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 2.

2. Defective primary injector #4.
   - Measure the primary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?

   YES

   → Go to step 3.

   NO

   a. Replace the primary injector #4.
      Refer to “THROTTLE BODIES” on page 7-11.
   b. Execute the diagnostic mode. (Code D39)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D39)

Is it hear operating sound?

YES

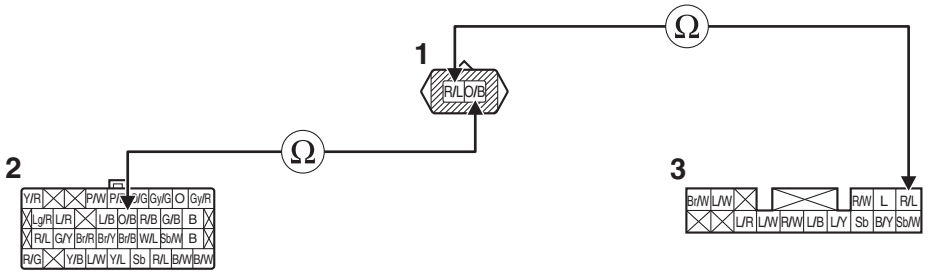
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the primary injector #4 coupler "1", ECU coupler "2" and relay unit coupler "3"
   • Open circuit check

Between primary injector #4 coupler and ECU coupler	orange/black–orange/black
Between primary injector #4 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D39)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

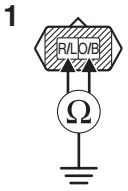
Between primary injector #4 coupler "1" and ground	orange/black–ground red/blue–ground

Lines short circuit check "B"

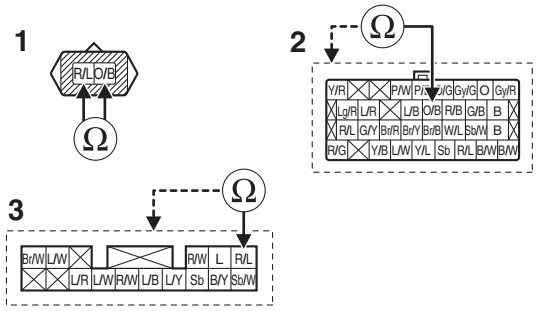
Primary injector #4 coupler	orange/black–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	orange/black–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D39)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20578
P0335

EAS33058
TROUBLESHOOTING

Item

Crankshaft position sensor: no normal signals are received from the crankshaft position sensor.

Fail-safe system

- Unable to start engine
- Unable to drive vehicle

Procedure

1. Connection of crankshaft position sensor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of wire harness ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

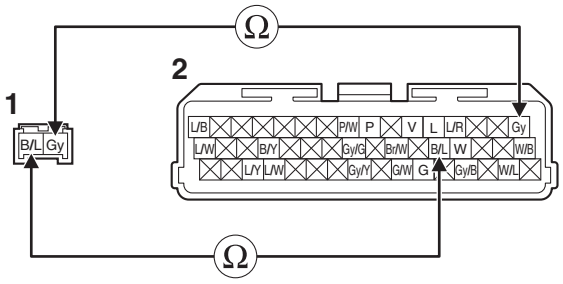
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the crankshaft position sensor coupler "1" and ECU coupler "2".
   - Open circuit check

Between crankshaft position sensor coupler and ECU coupler	black/blue–black/blue gray–gray



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

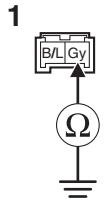
Ground short circuit check "A"

Between crankshaft position sensor coupler "1" and ground	gray–ground

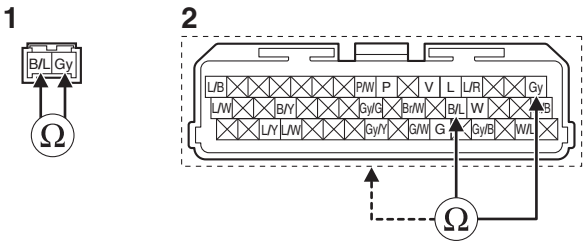
Lines short circuit check "B"

Crankshaft position sensor coupler	black/blue–any other coupler terminal gray–any other coupler terminal
ECU coupler "2"	black/blue–any other coupler terminal gray–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 4.

4. Installed condition of crankshaft position sensor.
   • Check for looseness or pinching.
   • Check the gap (0.75 mm (0.03 in)) between the crankshaft position sensor and the generator rotor.

Is check result OK?
YES
→ Go to step 5.
NO
a. Reinstall or replace the sensor.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 5.

5. Defective crankshaft position sensor.
   • Check the crankshaft position sensor.
   Refer to "CHECKING THE CRANKSHAFT POSITION SENSOR" on page 8-45.

Is check result OK?
YES
→ Go to step 6.
NO
a. Replace the crankshaft position sensor.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20579
P0340

EAS32839
TROUBLESHOOTING

Item

• Cylinder identification sensor: no normal signals are received from the cylinder identification sensor.

Fail-safe system

• Unable to start engine
• Able to drive vehicle

Procedure

TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
• P0335

1. Connection of cylinder identification sensor coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 2.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?
   YES
   → Go to step 7, and complete the service.
   NO
   → Go to step 2.

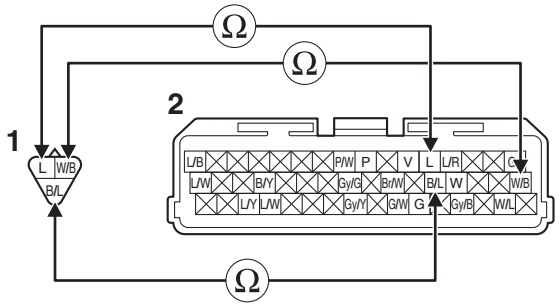
2. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 3.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?
   YES
   → Go to step 7, and complete the service.
   NO
   → Go to step 3.

3. Wire harness continuity.
   • Disconnect the cylinder identification sensor coupler "1" and ECU coupler "2".
   • Open circuit check

Between cylinder identification sensor coupler and ECU coupler	white/black–white/black blue–blue black/blue–black/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

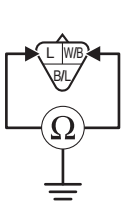
Ground short circuit check "A"

Between cylinder identification sensor coupler "1" and ground	white/black–ground blue–ground

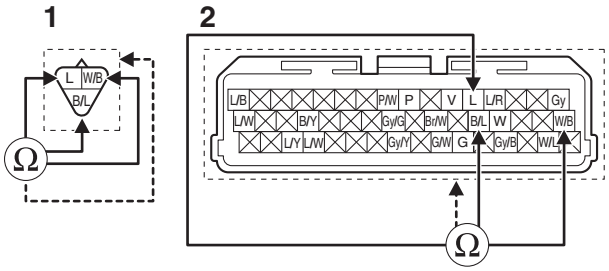
Lines short circuit check "B"

Cylinder identification sensor coupler	white/black–any other coupler terminal blue–any other coupler terminal black/blue–any other coupler terminal
ECU coupler "2"	white/black–any other coupler terminal blue–any other coupler terminal black/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of cylinder identification sensor.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Replace the cylinder identification sensor.
b. Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective cylinder identification sensor.
   • Replace the cylinder identification sensor.
   • Crank the engine, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20580
P0351

EAS33060
TROUBLESHOOTING

Item

Cylinder-#1 ignition coil: open or short circuit detected in the primary lead of the cylinder-#1 ignition coil.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of cylinder-#1 ignition coil coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

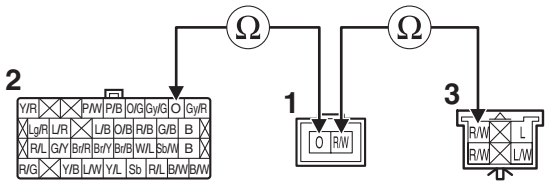
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the cylinder-#1 ignition coil coupler "1", ECU coupler "2" and handlebar switch (right) coupler "3".
   - Open circuit check

Between cylinder-#1 ignition coil coupler and ECU coupler	orange–orange
Between cylinder-#1 ignition coil coupler and handlebar switch (right) coupler “3”	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

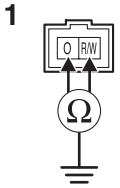
Ground short circuit check “A”

Between cylinder-#1 ignition coil coupler “1” and ground	orange–ground red/white–ground

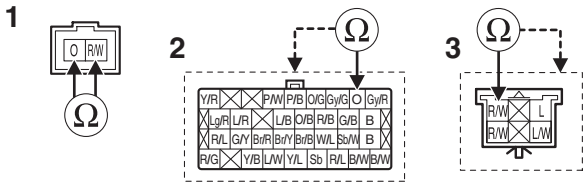
Lines short circuit check “B”

Cylinder-#1 ignition coil coupler	orange–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	orange–any other coupler terminal
Handlebar switch (right) coupler “3”	red/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of cylinder-#1 ignition coil.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the ignition coil.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective cylinder-#1 ignition coil.
   • Measure the primary coil resistance of the cylinder-#1 ignition coil.
   Refer to "CHECKING THE IGNITION COILS" on page 8-44.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the cylinder-#1 ignition coil.
   Refer to "CAMSHAFTS" on page 5-18.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Execute the diagnostic mode. (Code D30)
   • Confirm that spark plug does not sparking.

- Replace the ECU, and complete the service.
  Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20581
P0352

EAS33061
TROUBLESHOOTING

Item

Cylinder-#2 ignition coil: open or short circuit detected in the primary lead of the cylinder-#2 ignition coil.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of cylinder-#2 ignition coil coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

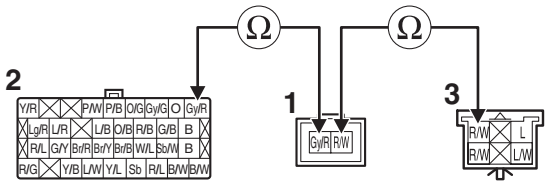
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the cylinder-#2 ignition coil coupler "1", ECU coupler "2" and handlebar switch (right) coupler "3".
   - Open circuit check

Between cylinder-#2 ignition coil coupler and ECU coupler	gray/red–gray/red
Between cylinder-#2 ignition coil coupler and handlebar switch (right) coupler	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

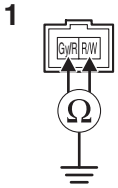
Ground short circuit check “A”

Between cylinder-#2 ignition coil coupler “1” and ground	gray/red–ground red/white–ground

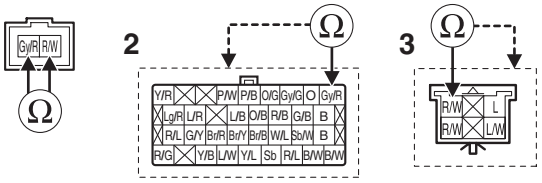
Lines short circuit check “B”

Cylinder-#2 ignition coil coupler	gray/red–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	gray/red–any other coupler terminal
Handlebar switch (right) coupler “3”	red/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of cylinder-#2 ignition coil.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the ignition coil.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective cylinder-#2 ignition coil.
   • Measure the primary coil resistance of the cylinder-#2 ignition coil.
   Refer to "CHECKING THE IGNITION COILS" on page 8-44.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the cylinder-#2 ignition coil.
   Refer to "CAMSHAFTS" on page 5-18.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Execute the diagnostic mode. (Code D31)
   • Confirm that spark plug does not sparking.

- Replace the ECU, and complete the service.
  Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20582
P0353

EAS33062
TROUBLESHOOTING

Item

Cylinder-#3 ignition coil: open or short circuit detected in the primary lead of the cylinder-#3 ignition coil.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of cylinder-#3 ignition coil coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

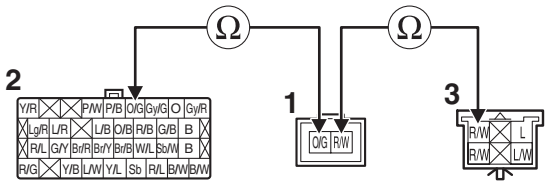
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the cylinder-#3 ignition coil coupler "1", ECU coupler "2" and handlebar switch (right) coupler "3".
   - Open circuit check

Between cylinder-#3 ignition coil coupler and ECU coupler	orange/green–orange/green
Between cylinder-#3 ignition coil coupler and handlebar switch (right) coupler	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

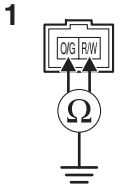
Ground short circuit check “A”

Between cylinder-#3 ignition coil coupler “1” and ground	orange/green–ground red/white–ground

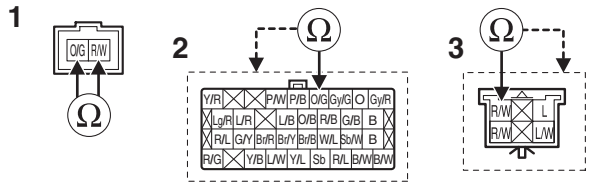
Lines short circuit check “B”

Cylinder-#3 ignition coil coupler	orange/green–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	orange/green–any other coupler terminal
Handlebar switch (right) coupler “3”	red/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of cylinder-#3 ignition coil.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the ignition coil.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective cylinder-#3 ignition coil.
   • Measure the primary coil resistance of the cylinder-#3 ignition coil.
   Refer to "CHECKING THE IGNITION COILS" on page 8-44.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the cylinder-#3 ignition coil.
   Refer to "CAMSHAFTS" on page 5-18.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Execute the diagnostic mode. (Code D32)
   • Confirm that spark plug does not sparking.

- Replace the ECU, and complete the service.
  Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20583
P0354

EAS33063
TROUBLESHOOTING

Item

Cylinder-#4 ignition coil: open or short circuit detected in the primary lead of the cylinder-#4 ignition coil.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of cylinder-#4 ignition coil coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

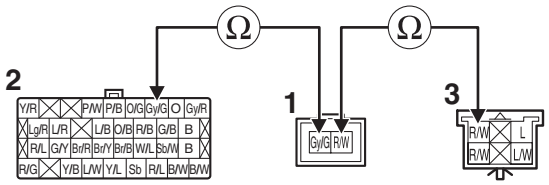
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the cylinder-#4 ignition coil coupler "1", ECU coupler "2" and handlebar switch (right) coupler "3".
   - Open circuit check

Between cylinder-#4 ignition coil coupler and ECU coupler	gray/green–gray/green
Between cylinder-#4 ignition coil coupler and handlebar switch (right) coupler	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

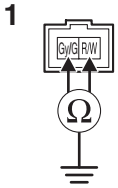
Ground short circuit check "A"

Between cylinder-#4 ignition coil coupler "1" and ground	gray/green–ground red/white–ground

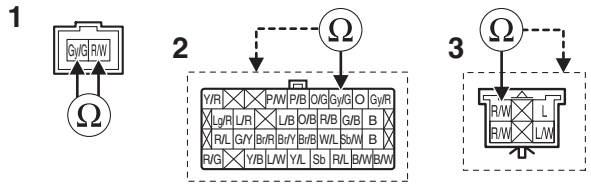
Lines short circuit check "B"

Cylinder-#4 ignition coil coupler	gray/green–any other coupler terminal red/white–any other coupler terminal
ECU coupler "2"	gray/green–any other coupler terminal
Handlebar switch (right) coupler "3"	red/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of cylinder-#4 ignition coil.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the ignition coil.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective cylinder-#4 ignition coil.
   • Measure the primary coil resistance of the cylinder-#4 ignition coil.
   Refer to "CHECKING THE IGNITION COILS" on page 8-44.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the cylinder-#4 ignition coil.
   Refer to "CAMSHAFTS" on page 5-18.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Execute the diagnostic mode. (Code D33)
   • Confirm that spark plug does not sparking.

- Replace the ECU, and complete the service.
  Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20672
P0475, P0476, P048B

EAS32841
TROUBLESHOOTING

Item
- [P0475] EXUP servo motor: performance deterioration
- [P0476] EXUP servo motor: stuck EXUP servo motor is detected.
- [P048B] EXUP servo motor: signal stuck

Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P048D, P048E

1. Connection of EXUP servo motor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

      Is it in the “Recovered” condition?

      YES

      → Go to step 7, and complete the service.

      NO

      → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

      Is it in the “Recovered” condition?

      YES

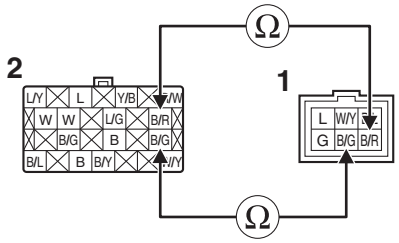
      → Go to step 7, and complete the service.

      NO

      → Go to step 3.

3. Wire harness continuity.
   • Disconnect the EXUP servo motor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between EXUP servo motor coupler and ECU coupler	black/green–black/green black/red–black/red



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

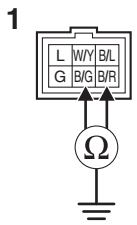
Ground short circuit check “A”

Between EXUP servo motor coupler “1” and ground	black/green–ground black/red–ground

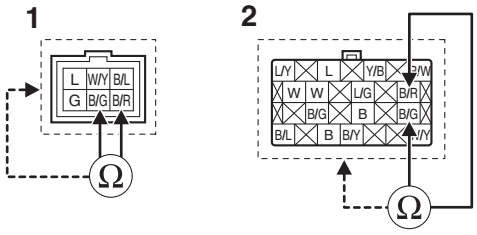
Lines short circuit check “B”

EXUP servo motor coupler	black/green–any other coupler terminal black/red–any other coupler terminal
ECU coupler “2”	black/green–any other coupler terminal black/red–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Defective EXUP servo motor.
   • Disconnect the cables and execute the diagnostic code. (Code D53)
   • Check the operating sound of the motor.

Is check result OK?

YES

→ Go to step 5.

NO

a. Replace the EXUP servo motor.
   Refer to "ENGINE REMOVAL" on page 5-11.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective EXUP valve, pulley, and EXUP cables.
   • Turn the EXUP valve manually with the EXUP cables disconnected.

Is check result OK?

YES

• Check the EXUP cables. (bends/damage/excessive wear)

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the cables.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

NO

a. Replace the exhaust chamber.
Refer to “ENGINE REMOVAL” on page 5-11.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20585
P0480

EAS33065
TROUBLESHOOTING

Item

Radiator fan motor relay: open or short circuit detected.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of radiator fan motor relay coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 6, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 6, and complete the service.

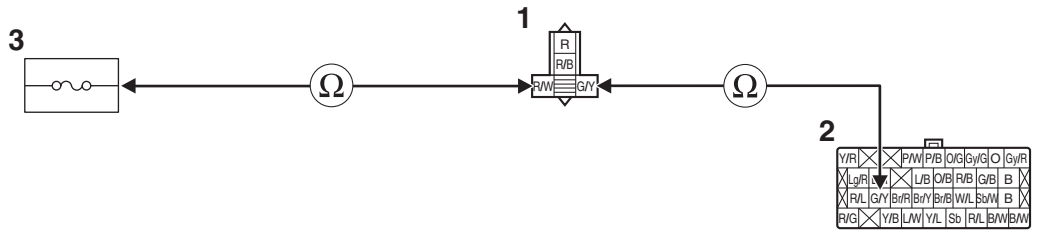
   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the radiator fan motor relay “1”, ECU coupler “2” and ignition fuse “3”.
   - Open circuit check

Between radiator fan motor relay and ignition fuse holder	red/white–red/white

Between radiator fan motor relay and ECU coupler	green/yellow–green/yellow



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

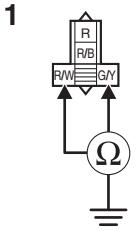
Ground short circuit check “A”

Between radiator fan motor relay “1” and ground	green/yellow–ground red/white–ground

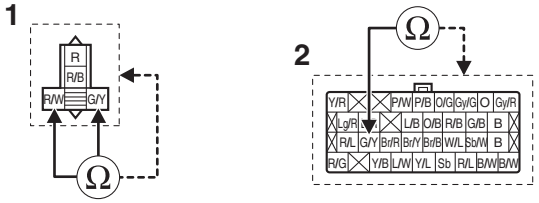
Lines short circuit check “B”

Radiator fan motor relay	green/yellow–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	green/yellow–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

4. Defective radiator fan motor relay.
   • Replace the radiator fan motor relay.
   • Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 5.

5. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20586
P048D, P048E

EAS33066
TROUBLESHOOTING

Item

- [P048D] EXUP servo motor: open or ground short circuit detected.
- [P048E] EXUP servo motor: power short circuit detected.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

TIP

If “P048D/P048E” and “P0476” are both indicated, take the actions specified for “P048D/P048E” first.

1. Connection of EXUP servo motor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 6, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 6, and complete the service.

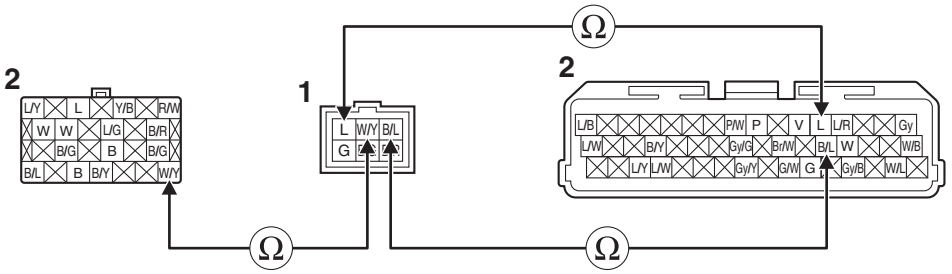
   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the EXUP servo motor coupler “1” and ECU coupler “2”.

• Open circuit check

Between EXUP servo motor coupler and ECU coupler	blue–blue white/yellow–white/yellow black/blue–black/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

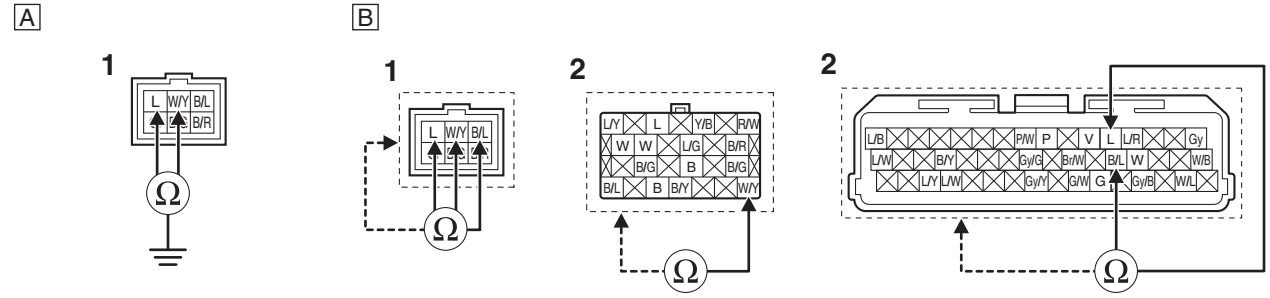
Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between EXUP servo motor coupler "1" and ground	white/yellow–ground blue–ground

Lines short circuit check "B"

EXUP servo motor coupler	white/yellow–any other coupler terminal blue–any other coupler terminal black/blue–any other coupler terminal
ECU coupler "2"	white/yellow–any other coupler terminal blue–any other coupler terminal black/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

4. Defective EXUP servo motor.
   - Replace the EXUP servo motor.
     Refer to "ENGINE REMOVAL" on page 5-11.
   - Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20674
P0500 (FI), P1500

EAS33303
TROUBLESHOOTING

Item

• Rear wheel sensor: no normal signals are received from the rear wheel sensor.
• Neutral switch: open or short circuit is detected.
• Clutch switch: open or short circuit is detected.

Fail-safe system

• Able to start engine
• Able to drive vehicle

Procedure

TIP

• In case P0500 is detected, or both P0500 and P1500 are detected, proceed from step 1.
• If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
• P0335

1. Locate the malfunction.
   • DTCs P0500 or P0500 and P1500 detected.
   a. Execute the diagnostic mode. (Code D07)
   b. Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 21.

NO

→ Go to step 2.

TIP

Perform the procedure from step 2 to step 7 and step 21.

• DTC P1500 detected.

a. Execute the diagnostic mode. (Code D21)

When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is check result OK?

YES

→ Go to step b.

NO

→ Go to step 8.

TIP

Perform the procedure from step 8 to step 14 and step 21.

b. Execute the diagnostic mode. (Code D21)

When the transmission is in gear with the clutch lever squeezed and the side-stand retracted	ON

Is check result OK?
YES
→ Go to step 21.
NO
→ Go to step 15.

TIP

Perform the procedure from step 15 to step 21.

2. Connection of rear wheel sensor coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES
→ Go to step 3.
NO
a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D07)
c. Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?
YES
→ Go to step 21.
NO
→ Go to step 3.

3. Connection of ABS ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES
→ Go to step 4.
NO
a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D07)
c. Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?
YES
→ Go to step 21.
NO
→ Go to step 4.

4. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES
→ Go to step 5.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D07)
c. Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?

YES

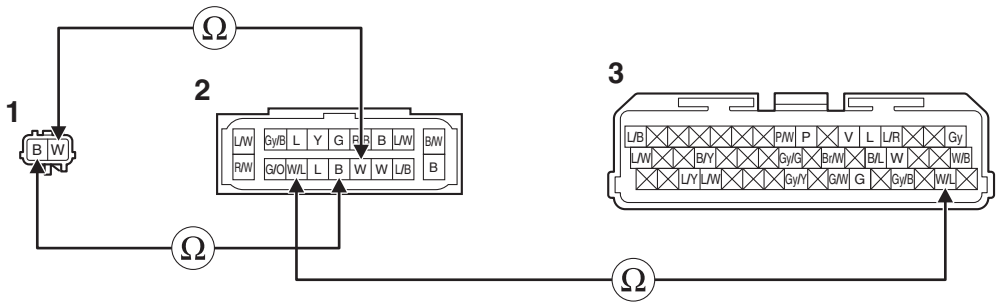
→ Go to step 21.

NO

→ Go to step 5.

5. Wire harness continuity.
   • Disconnect the rear wheel sensor coupler “1”, ABS ECU coupler “2” and ECU coupler “3”.
   • Open circuit check

Between rear wheel sensor coupler and ABS ECU coupler	black–black white–white
Between ABS ECU coupler and ECU coupler	white/blue–white/blue



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D07)
c. Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 21.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

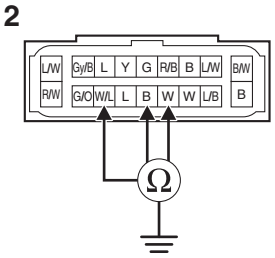
Ground short circuit check “A”

Between ABS ECU coupler “2” and ground	black–ground white–ground white/blue–ground

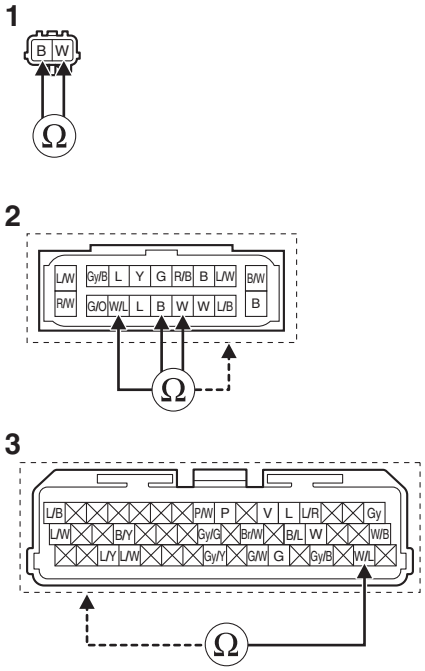
Lines short circuit check “B”

Rear wheel sensor coupler “1”	black–any other coupler terminal white–any other coupler terminal
ABS ECU coupler	black–any other coupler terminal white–any other coupler terminal white/blue–any other coupler terminal
ECU coupler “3”	white/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 6.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D07)
c. Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 21.

NO

→ Go to step 6.

6. Malfunction in ECU.
   - Replace the ECU.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
   - Execute the diagnostic mode. (Code D07)
   - Rotate the rear wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 21.
NO
→ Go to step 7.

7. Malfunction in ABS ECU.
   • Replace the ABS ECU and go to step 21.
8. Connection of neutral switch coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES
→ Go to step 9.
NO
a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is it correct indication?
YES
→ Go to step 21.
NO
→ Go to step 9.

9. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES
→ Go to step 10.
NO
a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

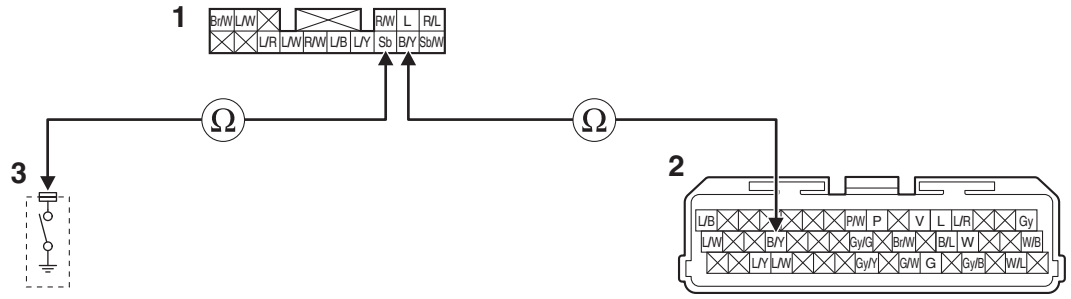
When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is it correct indication?
YES
→ Go to step 21.
NO
→ Go to step 10.

10. Wire harness continuity.
    • Disconnect the relay unit coupler “1”, ECU coupler “2” and neutral switch coupler “3”.
    • Open circuit check

Between relay unit coupler and ECU coupler	black/yellow–black/yellow

Between relay unit coupler and neutral switch coupler	sky blue–sky blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is it correct indication?

YES

→ Go to step 21.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

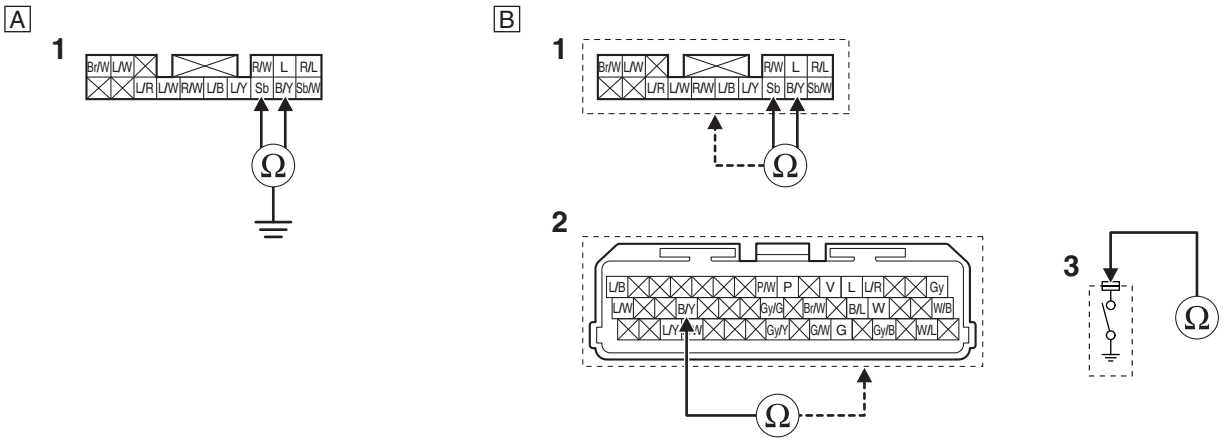
Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between relay unit coupler "1" and ground	black/yellow–ground sky blue–ground

Lines short circuit check "B"

Relay unit coupler	black/yellow–any other coupler terminal sky blue–any other coupler terminal
ECU coupler "2"	black/yellow–any other coupler terminal
Neutral switch coupler "3"	sky blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 11.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is it correct indication?

YES

→ Go to step 21.

NO

→ Go to step 11.

11.Defective relay unit.

• Check the relay unit.
Refer to “CHECKING THE RELAY UNIT (DIODE)” on page 8-43.

Is check result OK?

YES

→ Go to step 12.

NO

a. Replace the relay unit.
b. Execute the diagnostic mode. (Code D21)

When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is it correct indication?

YES

→ Go to step 21.

NO

→ Go to step 12.

12.Defective neutral switch.

• Check the neutral switch.

• Refer to “CHECKING THE SWITCHES” on page 8-40.

Is check result OK?
YES
→ Go to step 13.
NO
a. Replace the neutral switch.
Refer to “CRANKCASE” on page 5-71.
b. Execute the diagnostic mode. (Code D21)

When the transmission is in neutral	ON
When the transmission is in gear with the clutch lever released	OFF

Is it correct indication?
YES
→ Go to step 21.
NO
→ Go to step 13.

13.Faulty shift drum (neutral detection area).
• Check the shift drum.
Refer to “CHECKING THE SHIFT DRUM ASSEMBLY” on page 5-102.

Is check result OK?
YES
→ Go to step 14.
NO
→ Replace the shift drum and go to step 21.
Refer to “TRANSMISSION” on page 5-98.

14.Malfunction in ECU.
• Replace the ECU, and complete the service.
Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
15.Clutch lever adjustment.
• Refer to “ADJUSTING THE CLUTCH LEVER FREE PLAY” on page 3-12.
• Execute the diagnostic mode. (Code D21)

When the clutch lever is released with the transmission in gear and when the sidestand is retracted	OFF
When the clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON

Is it correct indication?
YES
→ Go to step 21.
NO
→ Go to step 16.

16.Connection of clutch switch coupler.
• Check the locking condition of the coupler.
• Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 17.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the clutch lever is released with the transmission in gear and when the sidestand is retracted	OFF
When the clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON

Is it correct indication?

YES

→ Go to step 21.

NO

→ Go to step 17.

17.Connection of ECU coupler.

- Check the locking condition of the coupler.
- Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 18.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the clutch lever is released with the transmission in gear and when the sidestand is retracted	OFF
When the clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON

Is it correct indication?

YES

→ Go to step 21.

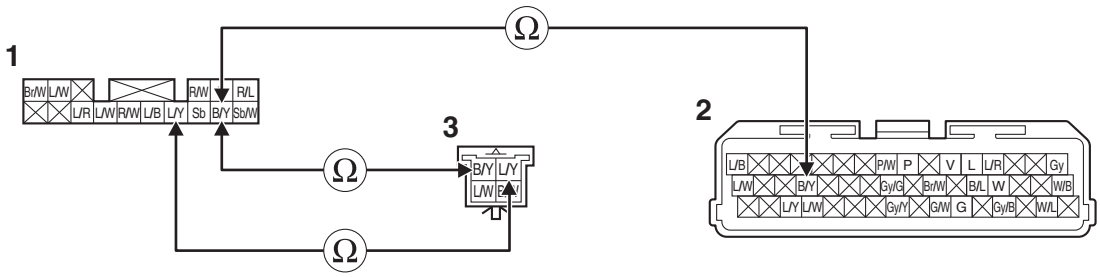
NO

→ Go to step 18.

18.Wire harness continuity.

- Disconnect the ECU coupler “2”, relay unit coupler “1” and clutch switch coupler “3”.
- Open circuit check

Between ECU coupler and relay unit coupler	black/yellow–black/yellow
Between clutch switch coupler and relay unit coupler	black/yellow–black/yellow blue/yellow–blue/yellow



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the clutch lever is released with the transmission in gear and when the sidestand is retracted	OFF
When the clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON

Is it correct indication?

YES

→ Go to step 21.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

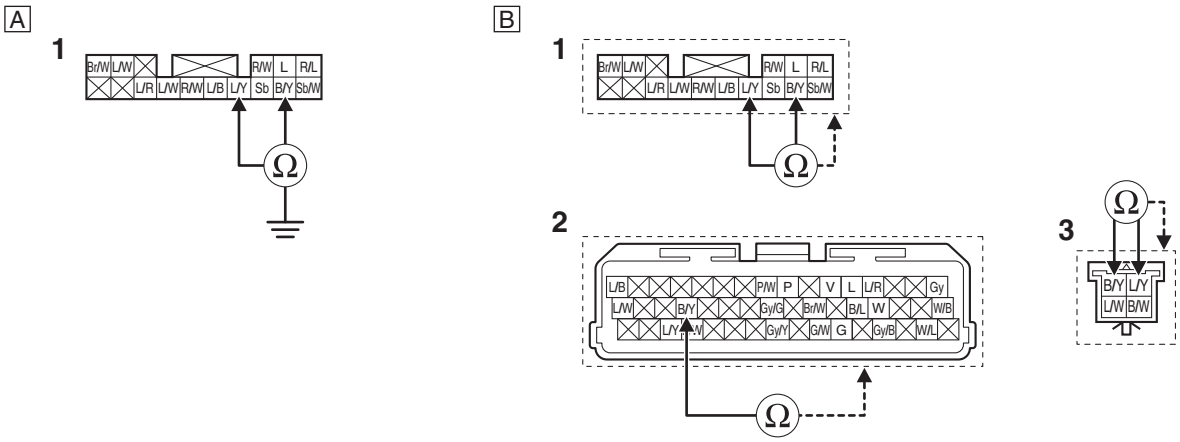
Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between relay unit coupler "1" and ground	black/yellow–ground blue/yellow–ground

Lines short circuit check "B"

Relay unit coupler	black/yellow–any other coupler terminal blue/yellow–any other coupler terminal
ECU coupler "2"	black/yellow–any other coupler terminal
Clutch switch coupler "3"	black/yellow–any other coupler terminal blue/yellow–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 19.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D21)

When the clutch lever is released with the transmission in gear and when the sidestand is retracted	OFF
When the clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON

Is it correct indication?

YES

→ Go to step 21.

NO

→ Go to step 19.

19. Defective clutch switch.
- Check the clutch switch.
  Refer to "CHECKING THE SWITCHES" on page 8-40.

Is check result OK?

YES

→ Go to step 20.

NO

a. Replace the clutch switch.
   Refer to "HANDLEBARS" on page 4-83.
b. Execute the diagnostic mode. (Code D21)

When the clutch lever is released with the transmission in gear and when the sidestand is retracted	OFF
When the clutch lever is squeezed with the transmission in gear and when the sidestand is retracted	ON

Is it correct indication?

YES

→ Go to step 21.

NO
→ Go to step 20.

20.Malfunction in ECU.
- Replace the ECU, and complete the service.
  Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

21.Delete the DTC and check that the MIL goes off.
- Turn the main switch to “ON”, and then rotate the rear wheel by hand.
- Start the engine, and input the vehicle speed signals by operating the vehicle at 20 to 30 km/h (12 to 19 mph).
- Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC. Delete this DTC even if it has a condition of “Detected”.

EAS20588
P0500 (SCU)

EAS33068
TROUBLESHOOTING
Item
Abnormal rear wheel sensor
Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
1. Abnormal rear wheel sensor
   - Check the item of DTC P0500 for the ECU.
     Refer to “SELF-DIAGNOSTIC FUNCTION TABLE (FOR FUEL INJECTION SYSTEM)” on page 9-38.
   - Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Refer to the item corresponding to DTC.

EAS20675
P0560 (FI), P0563

EAS33304
TROUBLESHOOTING

Item
• [P0560 (FI)] Charging voltage is abnormal.
• [P0563] Vehicle system power voltage out of range

Fail-safe system
• Able to start engine
• Able to drive vehicle

Procedure
TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
• P0335

1. Malfunction in charging system.
   • Check the charging system.
   Refer to "CHARGING SYSTEM" on page 8-12.

Is check result OK?

YES

→ Repeat step 1.

NO

a. Defective rectifier/regulator or AC magneto → Replace.
b. Defective connection in the charging system circuit → Properly connect or replace the wire harness.
c. Start the engine and let it idle for approximately 5 seconds.
d. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 2, and complete the service.

NO

→ Repeat step 1.

2. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20593
P0560 (SCU)

EAS33073
TROUBLESHOOTING
Item
Abnormal SCU power supply voltage
Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
1. Malfunction in charging system.
   - Check the charging system.
     Refer to “CHARGING SYSTEM” on page 8-12.

Is check result OK?
YES
→ Repeat step 1.
NO
a. Defective rectifier/regulator or AC magneto → Replace.
b. Defective connection in the charging system circuit → Properly connect or replace the wire harness.
c. Start the engine and let it idle for approximately 5 seconds.
d. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Repeat the maintenance job.

EAS20676
P0601

EAS33305
TROUBLESHOOTING

Item

Internal malfunction in ECU. (When this malfunction is detected in the ECU, the DTC might not appear on the tool display.)

Fail-safe system

- Unable to start engine
- Unable to drive vehicle

Procedure

1. Malfunction in ECU.
   - Replace the ECU.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
   - Turn the main switch to “ON”.
   - Check that the MIL does not come on.

EAS20677
P0606

EAS33306
TROUBLESHOOTING

Item

Internal malfunction in ECU. (When this malfunction is detected in the ECU, the DTC might not appear on the tool display.)

Fail-safe system

- Able/Unable to start engine
- Able/Unable to drive vehicle

Procedure

1. Check and repair for simultaneous malfunction.
   - Check the items of DTCs P0122, P0123, P0222, P0223 and P2135, if they are detected at the same time, correct the P0122, P0123, P0222, P0223 and P2135 first.
   - Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 3, and complete the service.

   NO

   → Go to step 2.

2. Malfunction in ECU.
   - Replace the ECU.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
   - Turn the main switch to “ON”.
   - Check that the MIL does not come on.
3. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20598
P062F

EAS33078
TROUBLESHOOTING

Item

EEPROM DTC: an error is detected while reading or writing on EEPROM.

Fail-safe system

- Able/Unable to start engine
- Able/Unable to drive vehicle

Procedure

1. Locate the malfunction.
   - Execute the diagnostic mode (Code D60)
2. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
3. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20599
P0638

EAS33079
TROUBLESHOOTING

Item

YCC-T drive system: malfunction detected.

Fail-safe system

- Able/Unable to start engine
- Able/Unable to drive vehicle

Procedure

1. Connection of throttle servo motor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 3.

3. Check the electronic throttle valve fuse.

   Is check result OK?

   YES

   → Go to step 4.

NO

a. Replace the electronic throttle valve fuse.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

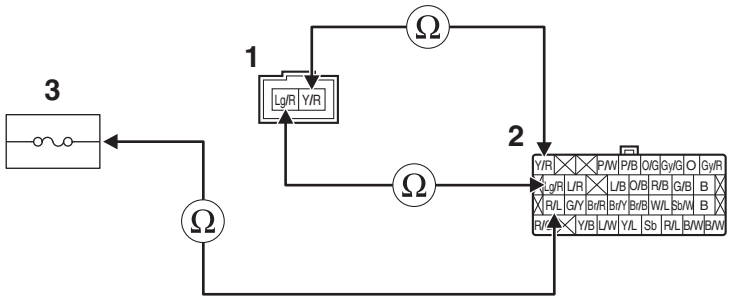
→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the throttle servo motor coupler "1", ECU coupler "2" and electronic throttle valve fuse "3".
   • Open circuit check

Between throttle servo motor coupler and ECU coupler	yellow/red–yellow/red light green/red–light green/red
Between ECU coupler and electronic throttle valve fuse holder	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between ECU coupler "2" and ground	yellow/red–ground light green/red–ground red/blue–ground

Lines short circuit check “B”

Throttle servo motor coupler “1”	yellow/red–any other coupler terminal light green/red–any other coupler terminal
ECU coupler	yellow/red–any other coupler terminal light green/red–any other coupler terminal red/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 5.

5. Defective throttle bodies.
   • Check the throttle bodies.
   Refer to “CHECKING THE THROTTLE SERVO MOTOR” on page 8-49.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the throttle bodies.
   Refer to “REPLACING THE THROTTLE BODIES” on page 7-17.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20601
P0657

EAS33081
TROUBLESHOOTING

Item

Fuel system voltage: incorrect voltage supplied to the fuel injector and fuel pump.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P0335

1. Connection of relay unit coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 2.

2. Connection of handlebar switch coupler (right).
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Refer to "HANDLEBARS" on page 4-83.

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Start the engine and let it idle for approximately 5 seconds.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the "Recovered" condition?

   YES

   → Go to step 8, and complete the service.

   NO

   → Go to step 3.

3. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

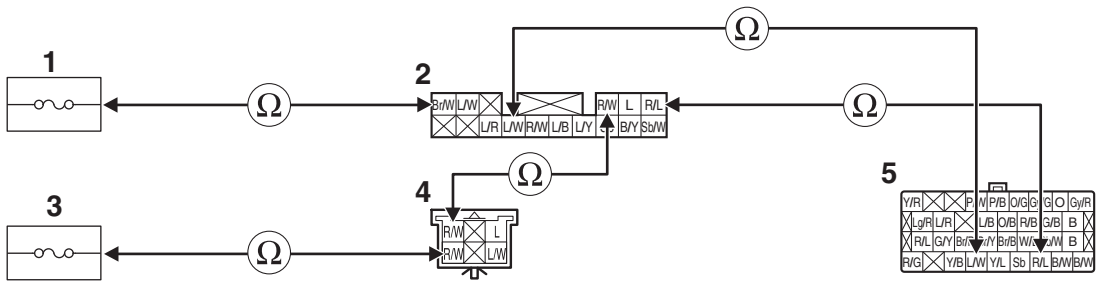
→ Go to step 8, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the fuel injection system fuse "1", relay unit coupler "2", ignition fuse "3", handlebar switch (right) coupler "4" and ECU coupler "5".
   • Open circuit check

Between fuel injection system fuse holder and relay unit coupler	brown/white–brown/white
Between ignition fuse holder and handlebar switch (right) coupler	red/white–red/white
Between handlebar switch (right) coupler and relay unit coupler	red/white–red/white
Between relay unit coupler and ECU coupler	red/blue–red/blue blue/white–blue/white



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO
→ Go to “Short circuit check”.

• Short circuit check

TIP

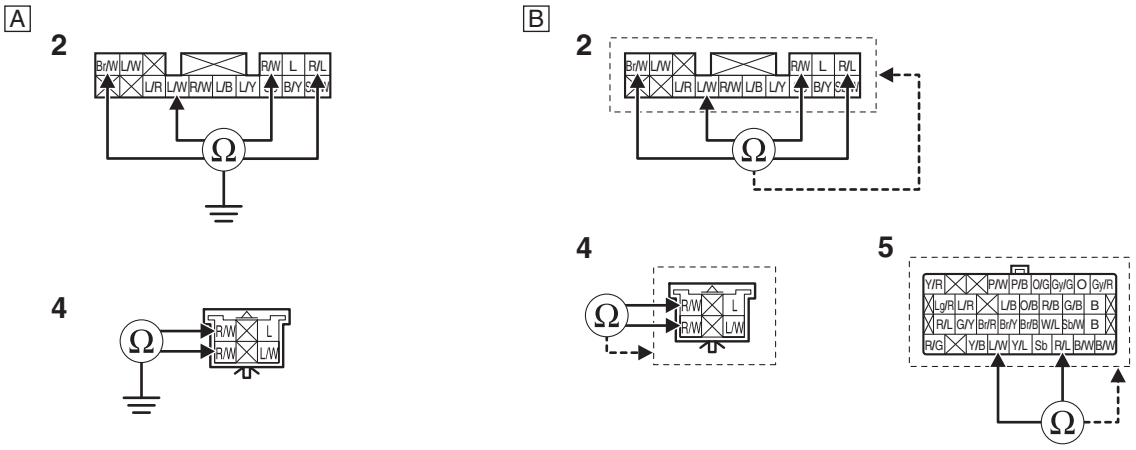
Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

Between relay unit coupler “2” and ground	brown/white–ground blue/white–ground red/white–ground red/blue–ground
Between handlebar switch (right) coupler “4” and ground	red/white–ground

Lines short circuit check “B”

Relay unit coupler	brown/white–any other coupler terminal blue/white–any other coupler terminal red/white–any other coupler terminal red/blue–any other coupler terminal
Handlebar switch (right) coupler	red/white–any other coupler terminal
ECU coupler “5”	red/blue–any other coupler terminal blue/white–any other coupler terminal



Is resistance ∞ Ω?
YES
→ Go to step 5.
NO
a. Replace the wire harness.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 8, and complete the service.
NO
→ Go to step 5.

5. Defective relay unit.
• Execute the diagnostic mode. (Code D50)

• Check the operating sound of the relay.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the relay unit.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 6.

6. Defective relay unit.
   • Execute the diagnostic mode. (Code D09)

Is the Fuel system voltage less than 3V?

YES

a. Replace the relay unit.
b. Start the engine and let it idle for approximately 5 seconds.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 8, and complete the service.

NO

→ Go to step 7.

NO

→ Go to step 7.

7. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
8. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20611
P0916, P0917

EAS33091
TROUBLESHOOTING

Item

• [P0916] Gear position sensor: open or ground short circuit detected.
• [P0917] Gear position sensor: power short circuit detected.

Fail-safe system

• Able to start engine
• Able to drive vehicle

Procedure

1. Connection of gear position sensor coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

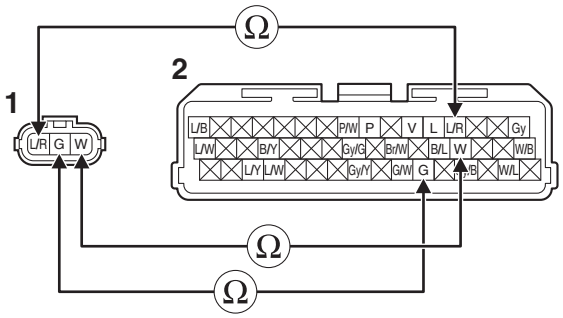
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity.
   • Disconnect the gear position sensor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between gear position sensor coupler and ECU coupler	white–white green–green blue/red–blue/red



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

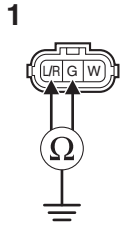
Ground short circuit check "A"

Between gear position sensor coupler "1" and ground	green–ground blue/red–ground

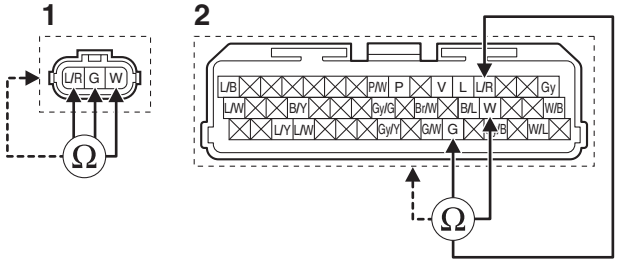
Lines short circuit check "B"

Gear position sensor coupler	white–any other coupler terminal green–any other coupler terminal blue/red–any other coupler terminal
ECU coupler "2"	white–any other coupler terminal green–any other coupler terminal blue/red–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of gear position sensor.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the sensor.
   Refer to “CRANKCASE” on page 5-71.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective gear position sensor.
   • Make sure that the position of each gear is correctly displayed on the meter.

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the gear position sensor.
   Refer to “CRANKCASE” on page 5-71.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20612
P1400

EAS33092
TROUBLESHOOTING

Item

Air induction system solenoid: open or short circuit detected.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of air induction system solenoid coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 2.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine and check the status of the DTC.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 2.

TIP

Check that the start/engine stop switch is turned to “ON” then.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 3.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

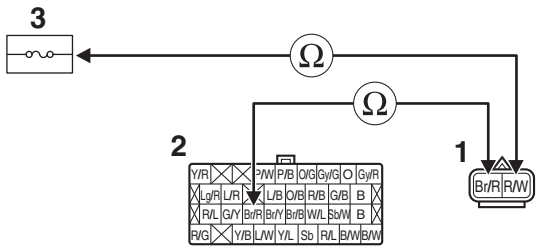
→ Go to step 6, and complete the service.
NO
→ Start the engine and check the status of the DTC.

Is it in the "Recovered" condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 3.

TIP
Check that the start/engine stop switch is turned to "ON" then.

3. Wire harness continuity.
   • Disconnect the air induction system solenoid coupler "1", ECU coupler "2" and ignition fuse "3".
   • Open circuit check

Between air induction system solenoid coupler and ECU coupler	brown/red–brown/red
Between air induction system solenoid coupler and ignition fuse holder	red/white–red/white



Is resistance 0 Ω?
YES
→ Go to "Short circuit check".
NO
a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 6, and complete the service.
NO
→ Start the engine and check the status of the DTC.

Is it in the "Recovered" condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to "Short circuit check".

TIP
Check that the start/engine stop switch is turned to "ON" then.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

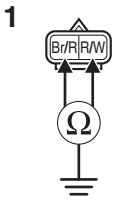
Ground short circuit check “A”

Between air induction system solenoid coupler “1” and ground	brown/red–ground red/white–ground

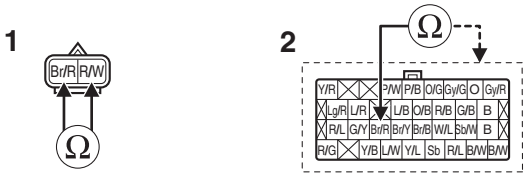
Lines short circuit check “B”

Air induction system solenoid coupler	brown/red–any other coupler terminal red/white–any other coupler terminal
ECU coupler “2”	brown/red–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine and check the status of the DTC.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

TIP

Check that the start/engine stop switch is turned to “ON” then.

4. Defective air induction system solenoid.
   • Check the air induction system solenoid.
   Refer to “CHECKING THE AIR INDUCTION SYSTEM SOLENOID” on page 8-49.
   • Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Start the engine and check the status of the DTC.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 5.

TIP

Check that the start/engine stop switch is turned to "ON" then.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20613
P1600

EAS33093
TROUBLESHOOTING

Item

Lean angle sensor: open or short circuit detected.

Fail-safe system

- Unable to start engine
- Unable to drive vehicle

Procedure

TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- U0125

1. Connection of IMU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, then to “OFF”, and back to “ON”.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, then to “OFF”, and back to “ON”.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

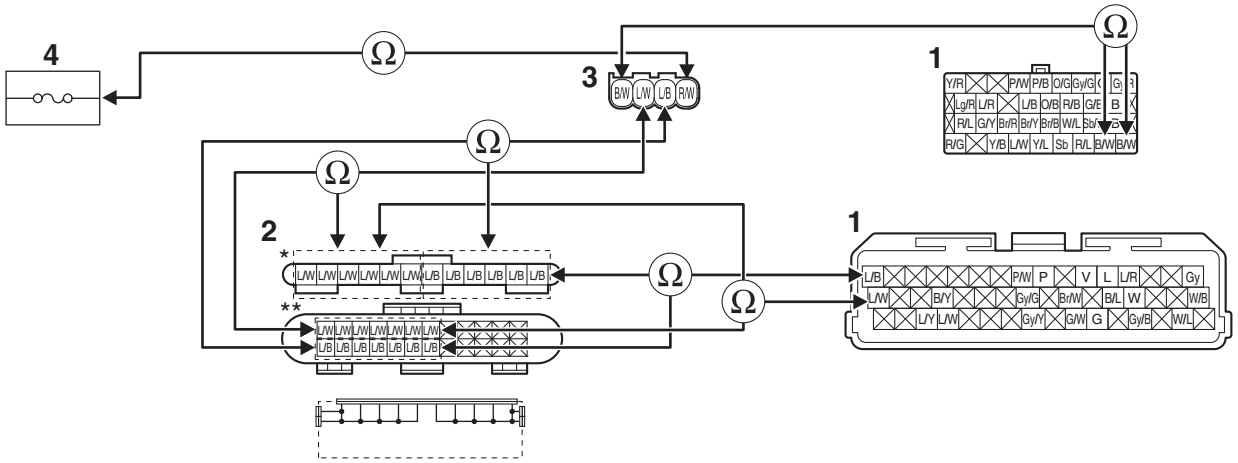
   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the ECU coupler “1”, joint coupler “2”, IMU coupler “3” and ignition fuse “4”.

• Open circuit check

Between ECU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between joint coupler and IMU coupler	blue/white–blue/white blue/black–blue/black
Between ECU coupler and IMU coupler	black/white–black/white
Between ignition fuse holder and IMU coupler	red/white–red/white



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, then to “OFF”, and back to “ON”.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

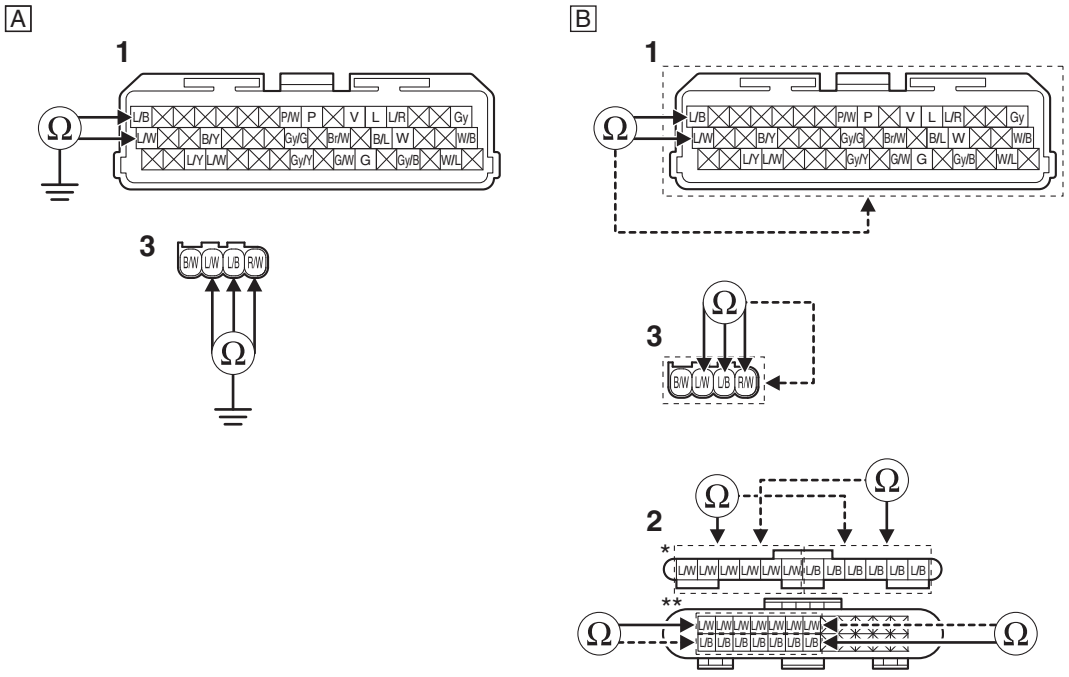
Disconnect the ECU and IMU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

Between ECU coupler “1” and ground	blue/white–ground blue/black–ground
Between IMU coupler “3” and ground	blue/white–ground blue/black–ground red/white–ground

Lines short circuit check “B”

ECU coupler	blue/white–any other coupler terminal black/black–any other coupler terminal
Joint coupler “2”	blue/white–any other coupler terminal black/black–any other coupler terminal
IMU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal red/white–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 4.
NO
a. Replace the wire harness.
b. Turn the main switch to “ON”, then to “OFF”, and back to “ON”.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 4.

4. Installed condition of IMU.
- Check the installed direction and condition of the sensor.
- Check the grommet for cracks.

Is check result OK?

YES
→ Go to step 5.
NO
a. Fix the IMU installation condition.
b. Turn the main switch to “ON”, then to “OFF”, and back to “ON”.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 5.

5. Defective IMU.
   • Replace the IMU.
   Refer to “GENERAL CHASSIS (1)” on page 4-1.
   • Turn the main switch to “ON”, then to “OFF”, and back to “ON”.
   • Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 7, and complete the service.
NO
→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20614
P1601

EAS33094
TROUBLESHOOTING

Item

Sidestand switch: open or short circuit of the blue/yellow lead of the ECU is detected.

Fail-safe system

- Unable to start engine
- Unable to drive vehicle

Procedure

1. Connection of sidestand switch coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then extend and retract the sidestand.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then extend and retract the sidestand.
   c. Check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Connection of relay unit coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to "ON", and then extend and retract the sidestand.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

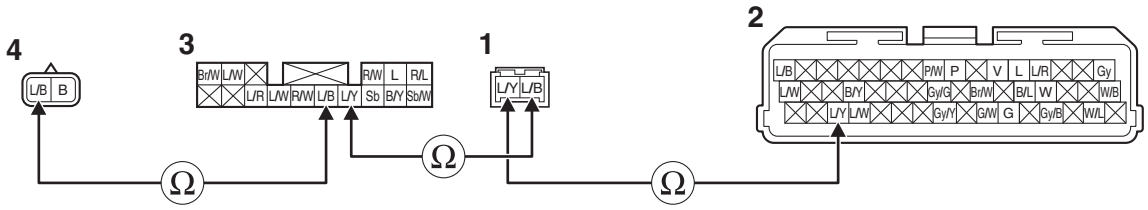
→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the main switch coupler "1", ECU coupler "2", relay unit coupler "3" and sidestand switch coupler "4".
   • Open circuit check

Between main switch coupler and ECU coupler	blue/yellow–blue/yellow
Between main switch coupler and relay unit coupler	blue/black–blue/yellow
Between relay unit coupler and sidestand switch coupler	blue/black–blue/black



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then extend and retract the sidestand.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

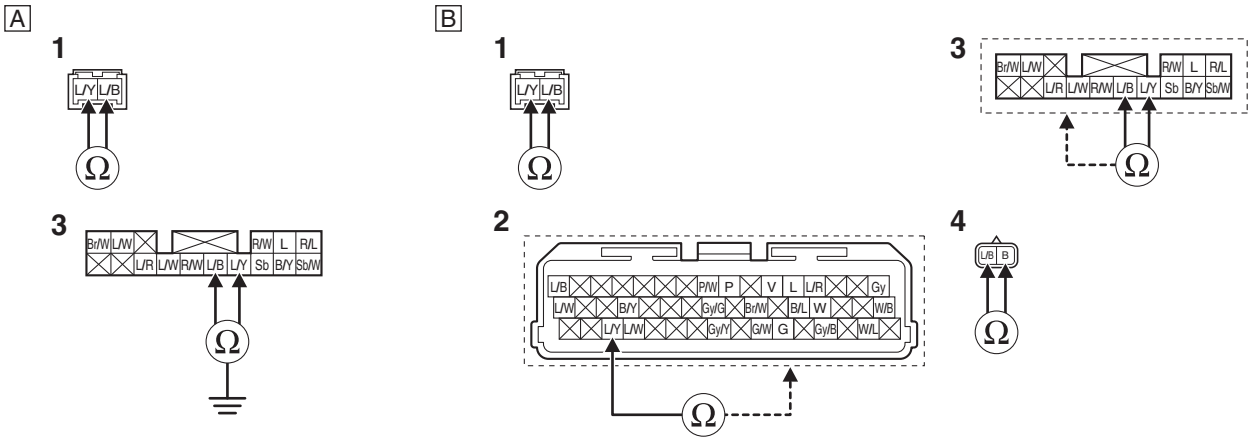
Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check “A”

Between main switch coupler “1” and ground	blue/yellow–ground blue/black–ground
Between relay unit coupler “3” and ground	blue/yellow–ground blue/black–ground

Lines short circuit check “B”

Main switch coupler “1”	blue/yellow–any other coupler terminal blue/black–any other coupler terminal
ECU coupler “2”	blue/yellow–any other coupler terminal
Relay unit coupler “3”	blue/yellow–any other coupler terminal blue/black–any other coupler terminal
Sidestand switch coupler “4”	blue/black–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then extend and retract the sidestand.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective sidestand switch.
   - Execute the diagnostic mode. (Code D20)
   - Shift the transmission into gear.

Sidestand retracted	ON
Sidestand extended	OFF

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the sidestand switch.
b. Turn the main switch to “ON”, and then extend and retract the sidestand.
c. Check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20615
P1602

EAS33095
TROUBLESHOOTING

Item

Malfunction in ECU internal circuit (malfunction of ECU power cut-off function).

Fail-safe system

- Able/Unable to start engine
- Able/Unable to drive vehicle

Procedure

1. Installed condition of battery leads.
   - Check the installed condition of the battery and battery leads (loose bolts).

   Is check result OK?

   YES

   → Go to step 2.

   NO

   a. Reinstall or replace the battery leads.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of starter relay coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Connection of main switch coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Check the backup fuse.

Is check result OK?

YES

→ Go to step 5.

NO

a. Replace the fuse.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

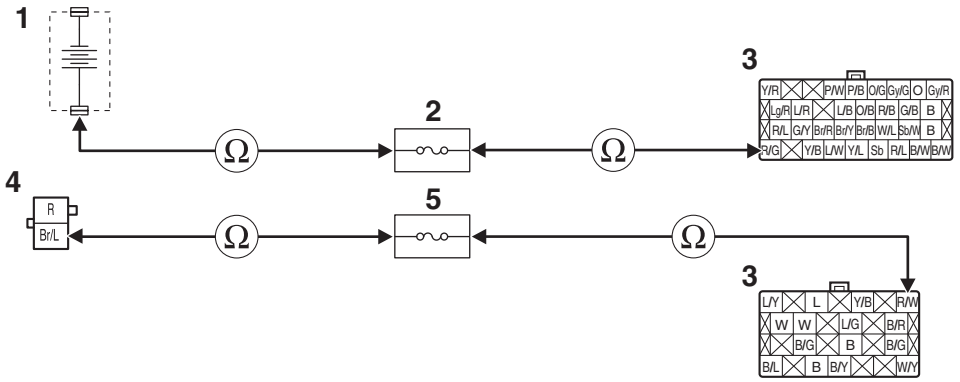
→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Wire harness continuity.
   - Disconnect the battery “1”, backup fuse “2”, ECU coupler “3”, main switch coupler “4” and ignition fuse “5”.
   - Open circuit check

Between battery and backup fuse holder	red–red
Between backup fuse holder and ECU coupler	red/green–red/green
Between main switch coupler and ignition fuse holder	brown/blue–brown/blue
Between ignition fuse holder and ECU coupler	red/white–red/white



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

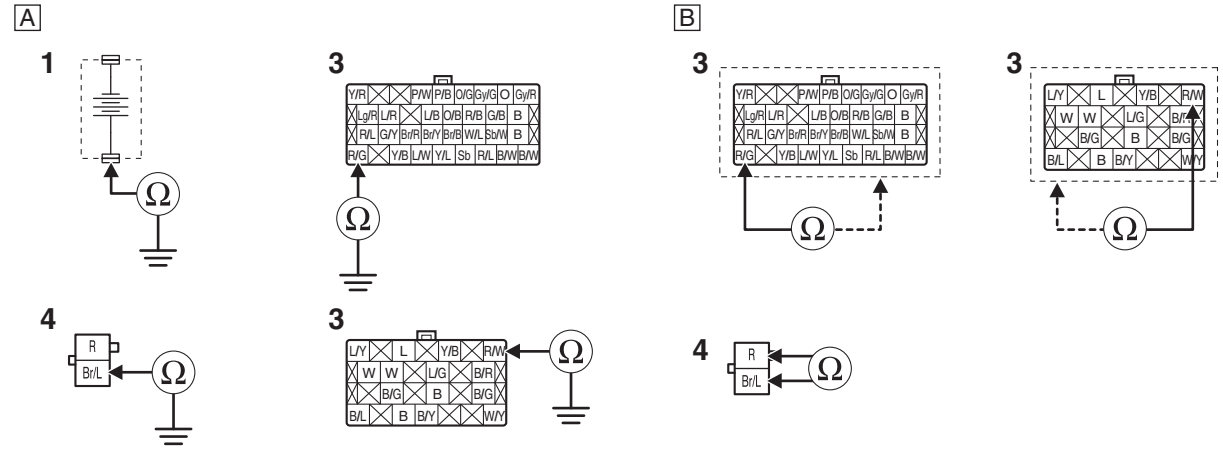
Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

Between battery “1” and ground	red–ground
Between ECU coupler “3” and ground	red/green–ground red/white–ground
Between main switch coupler “4” and ground	brown/blue–ground

Lines short circuit check “B”

ECU coupler	red/green–any other coupler terminal red/white–any other coupler terminal
Main switch coupler	brown/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 6.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20623
P1806, P1807

EAS33103
TROUBLESHOOTING

Item

• [P1806] Shift sensor: open or ground short circuit detected.
• [P1807] Shift sensor: power short circuit detected.

Fail-safe system

• Able to start engine
• Able to drive vehicle

Procedure

1. Connection of shift sensor coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 7, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

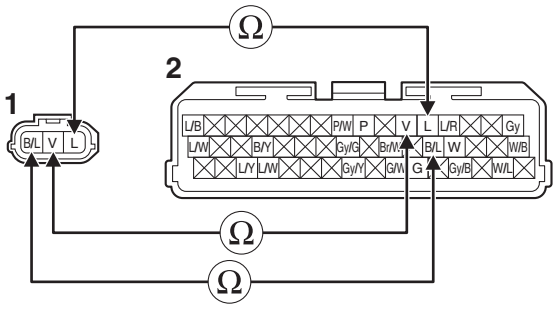
   → Go to step 7, and complete the service.

   NO

   → Go to step 3.

3. Wire harness continuity
   • Disconnect the shift sensor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between shift sensor coupler and ECU coupler	black/blue–black/blue violet–violet blue–blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

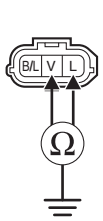
Ground short circuit check "A"

Between shift sensor coupler "1" and ground	violet–ground blue–ground

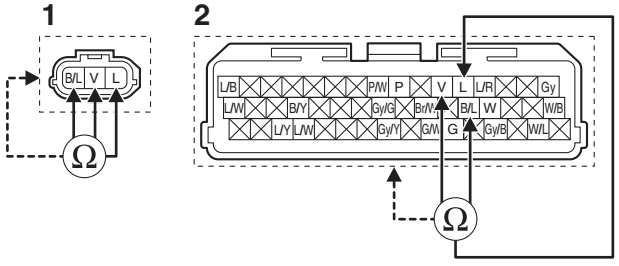
Lines short circuit check "B"

Shift sensor coupler	black/blue–any other coupler terminal violet–any other coupler terminal blue–any other coupler terminal
ECU coupler "2"	black/blue–any other coupler terminal violet–any other coupler terminal blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of shift sensor.
• Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall or replace the sensor.
Refer to “CHAIN DRIVE” on page 4-125.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective shift sensor.
• Execute the diagnostic mode. (Code D95)

Shift sensor output voltage display	0.2–4.8 [V]
With no shift weighting input	Approx. 2.5 [V]
Shift up weighting	Changes to the low side
Shift down weighting	Changes to the high side

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the shift sensor.
Refer to “CHAIN DRIVE” on page 4-125.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
7. Delete the DTC and check that the auxiliary system warning goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20632
P2122, P2123, P2127, P2128, P2138

EAS33112
TROUBLESHOOTING

Item

- [P2122] Accelerator position sensor: open or ground short circuit detected.
- [P2123] Accelerator position sensor: power short circuit detected.
- [P2127] Accelerator position sensor: open or ground short circuit detected.
- [P2128] Accelerator position sensor: power short circuit detected.
- [P2138] Deviation error

Fail-safe system

- Able/unable to start engine
- Able/unable to drive vehicle

Procedure

TIP

If a DTC other than P2138 (P2122, P2123, P2127, or P2128) is indicated, perform troubleshooting first.

1. Connection of accelerator position sensor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

      Is it in the “Recovered” condition?

      YES

      → Go to step 6, and complete the service.

      NO

      → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

      Is it in the “Recovered” condition?

      YES

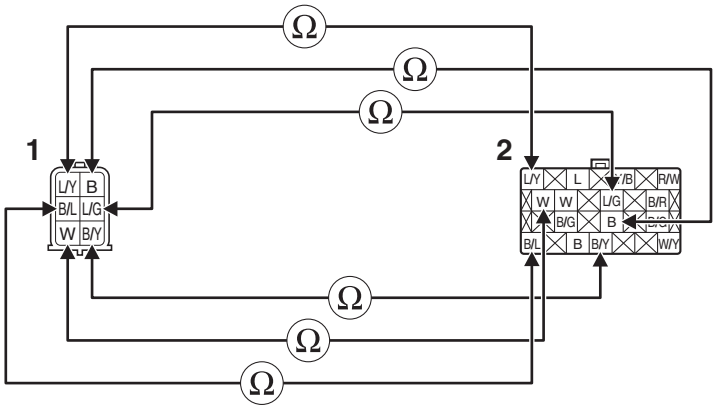
      → Go to step 6, and complete the service.

      NO

→ Go to step 3.

3. Wire harness continuity.
   • Disconnect the accelerator position sensor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between accelerator position sensor coupler and ECU coupler	blue/yellow–blue/yellow white–white black/blue–black/blue blue/green–blue/green black–black black/yellow–black/yellow



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

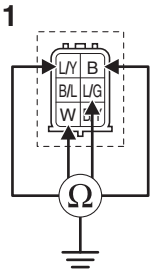
Ground short circuit check “A”

Between accelerator position sensor coupler “1” and ground	blue/yellow–blue/yellow white–white blue/green–blue/green black–black

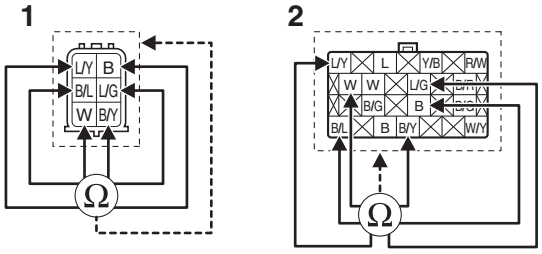
Lines short circuit check “B”

Accelerator position sensor coupler	blue/yellow–any other coupler terminal white–any other coupler terminal black/blue–any other coupler terminal blue/green–any other coupler terminal black–any other coupler terminal black/yellow–any other coupler terminal
ECU coupler “2”	blue/yellow–any other coupler terminal white–any other coupler terminal black/blue–any other coupler terminal blue/green–any other coupler terminal black–any other coupler terminal black/yellow–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 4.

4. Defective accelerator position sensor.

• Execute the diagnostic mode. (Code D14) (Accelerator position sensor signal 1.)

When the throttle valves are fully closed	9–23
When the throttle valves are fully open	71–87

• Execute the diagnostic mode. (Code D15) (Accelerator position sensor signal 2.)

When the throttle valves are fully closed	7–25
When the throttle valves are fully open	69–89

Is check result OK?

YES

→ Go to step 5.

NO

→ Replace the handlebar switch (right).
Refer to “HANDLEBARS” on page 4-83.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20633
P2158 (FI)

EAS33113
TROUBLESHOOTING
Item
Front wheel sensor: no normal signals are received from the front wheel sensor.
Fail-safe system
- Able to start engine
- Able to drive vehicle

Procedure
1. Locate the malfunction.
   - Check the ABS warning light.

   Is the ABS warning light on?
   YES
   → Refer to "BASIC INSTRUCTIONS FOR TROUBLESHOOTING" on page 9-20.
   NO
   → Go to step 2.

2. Execute the diagnostic mode.
   - Execute the diagnostic mode. (Code D16)
   - Rotate the front wheel by hand and check that the indicated value increases.

   Is that value increased?
   YES
   → Go to step 10, and complete the service.
   NO
   → Go to step 3.

3. Connection of front wheel sensor coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 4.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D16)
   c. Rotate the front wheel by hand and check that the indicated value increases.

      Is that value increased?
      YES
      → Go to step 10, and complete the service.
      NO
      → Go to step 4.

4. Connection of ABS ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 5.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D16)
c. Rotate the front wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 10, and complete the service.

NO

→ Go to step 5.

5. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 6.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D16)
c. Rotate the front wheel by hand and check that the indicated value increases.

Is that value increased?

YES

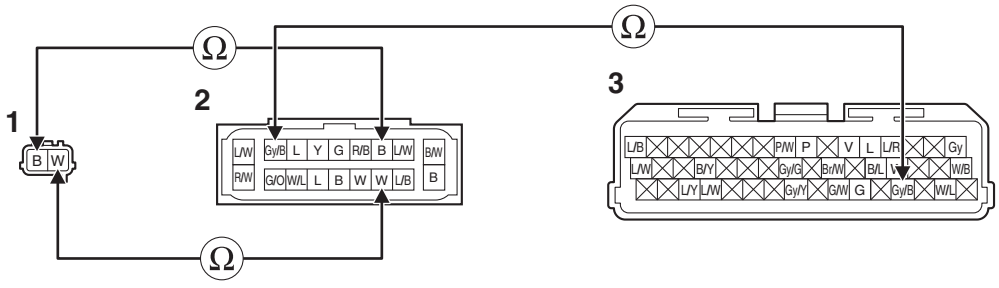
→ Go to step 10, and complete the service.

NO

→ Go to step 6.

6. Wire harness continuity.
   • Disconnect the front wheel sensor coupler “1”, ABS ECU coupler “2” and ECU coupler “3”.
   • Open circuit check

Between front wheel sensor coupler and ABS ECU coupler	black–black white–white
Between ABS ECU coupler and ECU coupler	gray/black–gray/black



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D16)
c. Rotate the front wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 10, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU and ABS ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3 and "PARTS CONNECTED TO THE ABS ECU" on page 9-4.

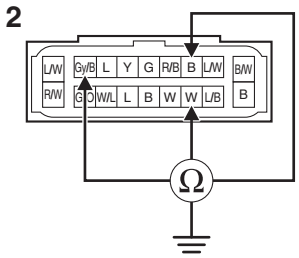
Ground short circuit check "A"

Between ABS ECU coupler "2" and ground	black–ground white–ground gray/black–ground

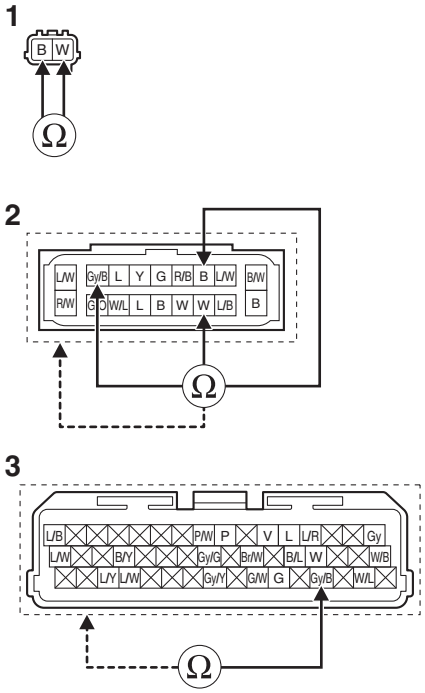
Lines short circuit check "B"

Front wheel sensor coupler "1"	black–any other coupler terminal white–any other coupler terminal
ABS ECU coupler	black–any other coupler terminal white–any other coupler terminal gray/black–any other coupler terminal
ECU coupler "3"	gray/black–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 7.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D16)
c. Rotate the front wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 10, and complete the service.

NO

→ Go to step 7.

7. Defective front wheel sensor.
   • Check the front wheel sensor.
   Refer to "MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR" on page 4-40.

Is check result OK?

YES

→ Go to step 8.

NO

a. Reinstall or replace the front wheel sensor.
   Refer to "FRONT WHEEL" on page 4-35.
b. Execute the diagnostic mode. (Code D16)
c. Rotate the front wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 10, and complete the service.

NO

→ Go to step 8.

8. Malfunction in ECU.
   • Replace the ECU.
   Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
   • Execute the diagnostic mode. (Code D16)
   • Rotate the front wheel by hand and check that the indicated value increases.

Is that value increased?

YES

→ Go to step 10, and complete the service.

NO

→ Go to step 9.

9. Malfunction in ABS ECU.
   • Replace the ABS ECU.
   Refer to "REMOVING THE HYDRAULIC UNIT ASSEMBLY" on page 4-77.
   • Go to step 10, and complete the service.
10. Delete the DTC and check that the MIL goes off.
   • Turn the main switch to "ON", and then rotate the front wheel by hand.
   • Start the engine, and input the vehicle speed signals by operating the vehicle at 20 to 30 km/h (12 to 19 mph).
   • Confirm that the DTC has a condition of "Recovered" using the malfunction mode of the YDT, and then delete the DTC.
   • Delete this DTC even if it has a condition of "Detected".

EAS20634
P2158 (SCU)

EAS33114
TROUBLESHOOTING

Item

Front wheel sensor: no normal signals are received from the front wheel sensor.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Abnormal front wheel sensor
   - Check the item of DTC P2158 for the ECU.
     Refer to “SELF-DIAGNOSTIC FUNCTION TABLE (FOR FUEL INJECTION SYSTEM)” on page 9-38.
   - Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Service is completed.

NO

→ Refer to the item corresponding to DTC.

EAS20637
P21CF

EAS33117
TROUBLESHOOTING
Item
Secondary injector #1: malfunction in secondary injector #1.
Fail-safe system
- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure
1. Connection of secondary injector #1 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES
→ Go to step 2.
NO
a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D40)

Is it hear operating sound?
YES
→ Go to step 6.
NO
→ Go to step 2.

2. Defective secondary injector #1.
   - Measure the secondary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

Is check result OK?
YES
→ Go to step 3.
NO
a. Replace the secondary injector #1.
   Refer to “AIR FILTER CASE” on page 7-5.
b. Execute the diagnostic mode. (Code D40)

Is it hear operating sound?
YES
→ Go to step 6.
NO
→ Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?
YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D40)

Is it hear operating sound?

YES

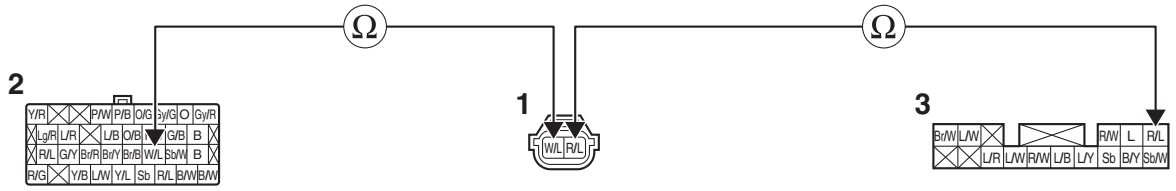
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the secondary injector #1 coupler “1”, ECU coupler “2” and relay unit coupler “3”.
   • Open circuit check

Between secondary injector #1 coupler and ECU coupler	white/blue–white/blue
Between secondary injector #1 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D40)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

Between secondary injector #1 coupler “1” and ground	white/blue–ground red/blue–ground

Lines short circuit check “B”

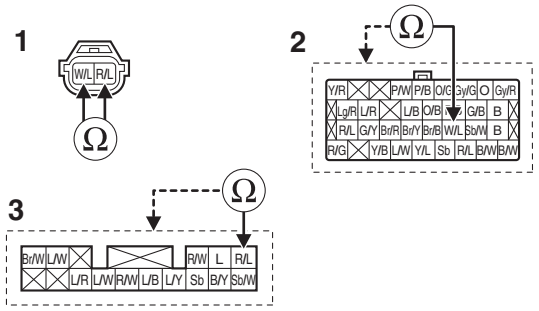
Secondary injector #1 coupler	white/blue–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	white/blue–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D40)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20638
P21D0

EAS33118
TROUBLESHOOTING
Item
Secondary injector #2: malfunction in secondary injector #2.
Fail-safe system
- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure
1. Connection of secondary injector #2 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 2.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D41)

   Is it hear operating sound?
   YES
   → Go to step 6.
   NO
   → Go to step 2.

2. Defective secondary injector #2.
   - Measure the secondary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   a. Replace the secondary injector #2.
      Refer to “AIR FILTER CASE” on page 7-5.
   b. Execute the diagnostic mode. (Code D41)

   Is it hear operating sound?
   YES
   → Go to step 6.
   NO
   → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D41)

Is it hear operating sound?

YES

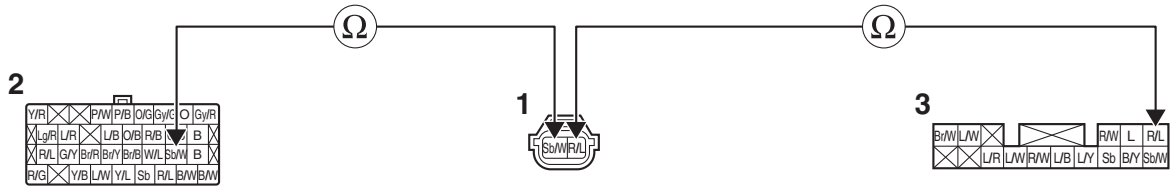
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the secondary injector #2 coupler “1”, ECU coupler “2” and relay unit coupler “3”.
   • Open circuit check

Between secondary injector #2 coupler and ECU coupler	sky blue/white–sky blue/white
Between secondary injector #2 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D41)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

Ground short circuit check “A”

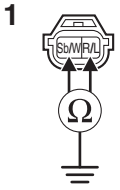
Between secondary injector #2 coupler “1” and ground	sky blue/white–ground red/blue–ground

Lines short circuit check “B”

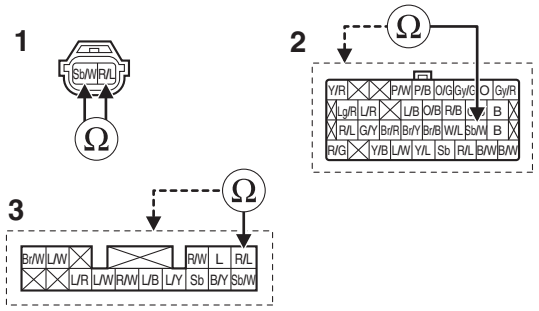
Secondary injector #2 coupler	sky blue/white–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	sky blue/white–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D41)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20639
P21D1

EAS33119
TROUBLESHOOTING
Item
Secondary injector #3: malfunction in secondary injector #3.
Fail-safe system
- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure
1. Connection of secondary injector #3 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 2.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D42)

      Is it hear operating sound?
      YES
      → Go to step 6.
      NO
      → Go to step 2.

2. Defective secondary injector #3.
   - Measure the secondary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   a. Replace the secondary injector #3.
      Refer to “AIR FILTER CASE” on page 7-5.
   b. Execute the diagnostic mode. (Code D42)

      Is it hear operating sound?
      YES
      → Go to step 6.
      NO
      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D42)

Is it hear operating sound?

YES

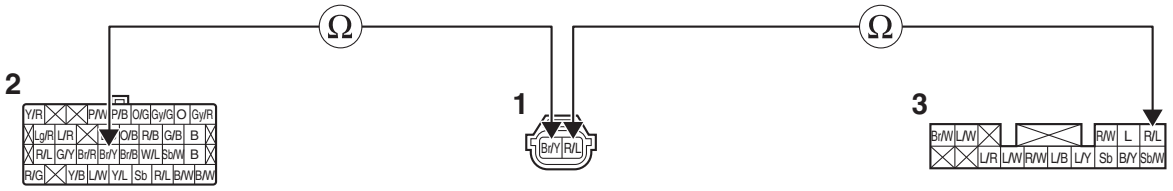
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the secondary injector #3 coupler "1", ECU coupler "2" and relay unit coupler "3".
   • Open circuit check

Between secondary injector #3 coupler and ECU coupler	brown/yellow–brown/yellow
Between secondary injector #3 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D42)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

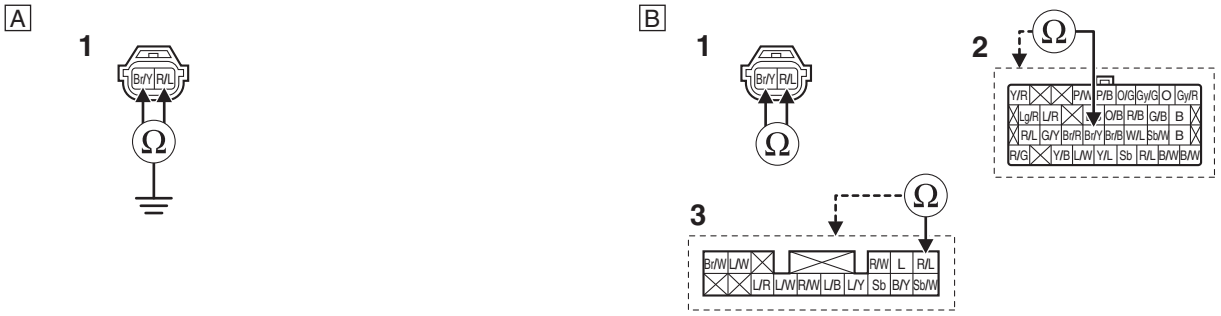
Ground short circuit check "A"

Between secondary injector #3 coupler "1" and ground	brown/yellow–ground red/blue–ground

Lines short circuit check "B"

Secondary injector #3 coupler	brown/yellow–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	brown/yellow–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D42)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20640
P21D2

EAS33120
TROUBLESHOOTING

Item

Secondary injector #4: malfunction in secondary injector #4.

Fail-safe system

- Able to start engine (depending on the number of faulty cylinders)
- Able to drive vehicle (depending on the number of faulty cylinders)

Procedure

1. Connection of secondary injector #4 coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Execute the diagnostic mode. (Code D43)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 2.

2. Defective secondary injector #4.
   - Measure the secondary injector resistance.
     Refer to “CHECKING THE FUEL INJECTORS” on page 8-51.

   Is check result OK?

   YES

   → Go to step 3.

   NO

   a. Replace the secondary injector #4.
      Refer to “AIR FILTER CASE” on page 7-5.
   b. Execute the diagnostic mode. (Code D43)

      Is it hear operating sound?

      YES

      → Go to step 6.

      NO

      → Go to step 3.

3. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

→ Go to step 4.

NO

a. Connect the coupler securely or replace the wire harness.
b. Execute the diagnostic mode. (Code D43)

Is it hear operating sound?

YES

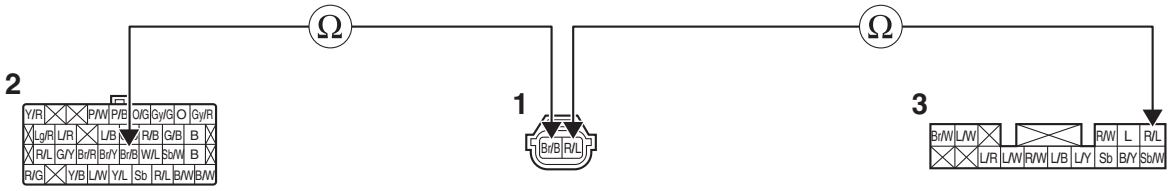
→ Go to step 6.

NO

→ Go to step 4.

4. Wire harness continuity.
   • Disconnect the secondary injector #4 coupler “1”, ECU coupler “2” and relay unit coupler “3”.
   • Open circuit check

Between secondary injector #4 coupler and ECU coupler	brown/black–brown/black
Between secondary injector #4 coupler and relay unit coupler	red/blue–red/blue



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D43)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to “Short circuit check”.

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3.

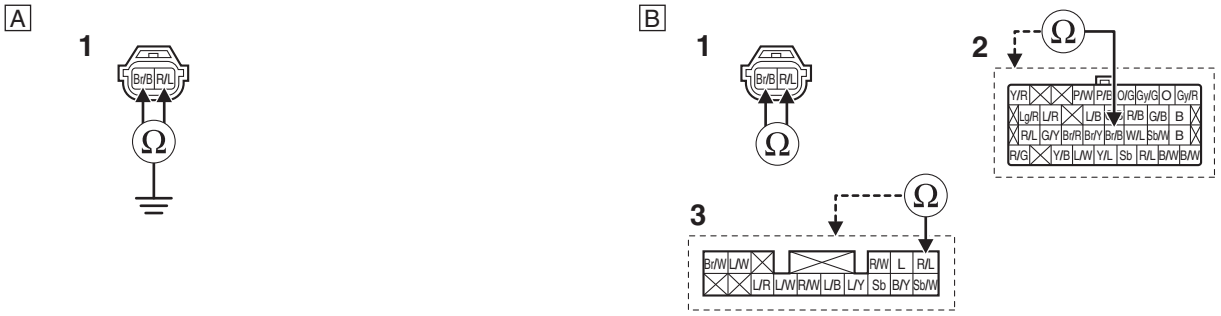
Ground short circuit check “A”

Between secondary injector #4 coupler “1” and ground	brown/black–ground red/blue–ground

Lines short circuit check “B”

Secondary injector #4 coupler	brown/black–any other coupler terminal red/blue–any other coupler terminal

ECU coupler “2”	brown/black–any other coupler terminal
Relay unit coupler “3”	red/blue–any other coupler terminal



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

a. Replace the wire harness.
b. Execute the diagnostic mode. (Code D43)

Is it hear operating sound?

YES

→ Go to step 6.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Start the engine and let it idle for approximately 5 seconds.
   - Confirm that the DTC has a condition of “Recovered” using the malfunction mode of the YDT, and then delete the DTC.

EAS20641
P2228, P2229

EAS33121
TROUBLESHOOTING

Item

• [P2228] Atmospheric pressure sensor: ground short circuit detected.
• [P2229] Atmospheric pressure sensor: open or power short circuit detected.

Fail-safe system

• Able to start engine
• Able to drive vehicle

Procedure

1. Connection of atmospheric pressure sensor coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 2.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?
   YES
   → Go to step 7, and complete the service.
   NO
   → Go to step 2.

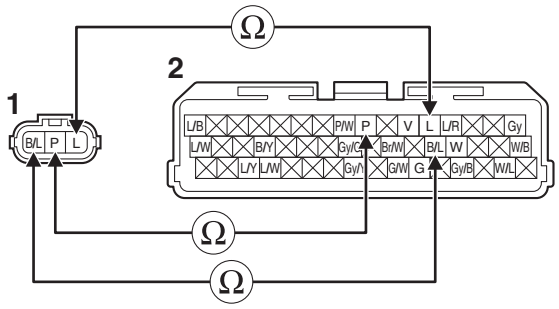
2. Connection of ECU coupler.
   • Check the locking condition of the coupler.
   • Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?
   YES
   → Go to step 3.
   NO
   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?
   YES
   → Go to step 7, and complete the service.
   NO
   → Go to step 3.

3. Wire harness continuity.
   • Disconnect the atmospheric pressure sensor coupler “1” and ECU coupler “2”.
   • Open circuit check

Between atmospheric pressure sensor coupler and ECU coupler	blue–blue pink–pink black/blue–black/blue



Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

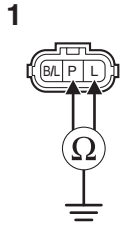
Ground short circuit check "A"

Between atmospheric pressure sensor coupler "1" and ground	blue–ground pink–ground

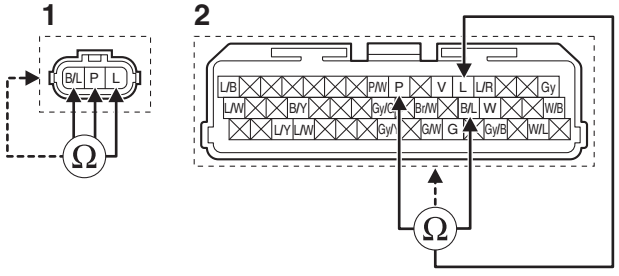
Lines short circuit check "B"

Atmospheric pressure sensor coupler	blue–any other coupler terminal pink–any other coupler terminal black/blue–any other coupler terminal
ECU coupler "2"	blue–any other coupler terminal pink–any other coupler terminal black/blue–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

a. Replace the wire harness.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 4.

4. Installed condition of atmospheric pressure sensor.
   • Check for looseness or pinching.

Is check result OK?

YES

→ Go to step 5.

NO

a. Reinstall the sensor.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 5.

5. Defective atmospheric pressure sensor.
   • Execute the diagnostic mode. (Code D02)
   • When engine is stopped: Atmospheric pressure at the current altitude and weather conditions is indicated.

At sea level	Approx. 101 kPa (757.6 mmHg, 29.8 inHg), approx. 3.64 V
1000 m (3300 ft) above sea level	Approx. 90 kPa (675.1 mmHg, 26.6 inHg), approx. 3.30 V
2000 m (6700 ft) above sea level	Approx. 80 kPa (600.0 mmHg, 23.6 inHg), approx. 3.00 V
3000 m (9800 ft) above sea level	Approx. 70 kPa (525.0 mmHg, 20.7 inHg), approx. 2.70 V

Is check result OK?

YES

→ Go to step 6.

NO

a. Replace the atmospheric pressure sensor.
   Refer to “AIR INDUCTION SYSTEM” on page 7-20.
b. Turn the main switch to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 7, and complete the service.

NO

→ Go to step 6.

6. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
7. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20644
U0100

EAS33124
TROUBLESHOOTING

Item

Abnormal CAN communication (between ECU and SCU)

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

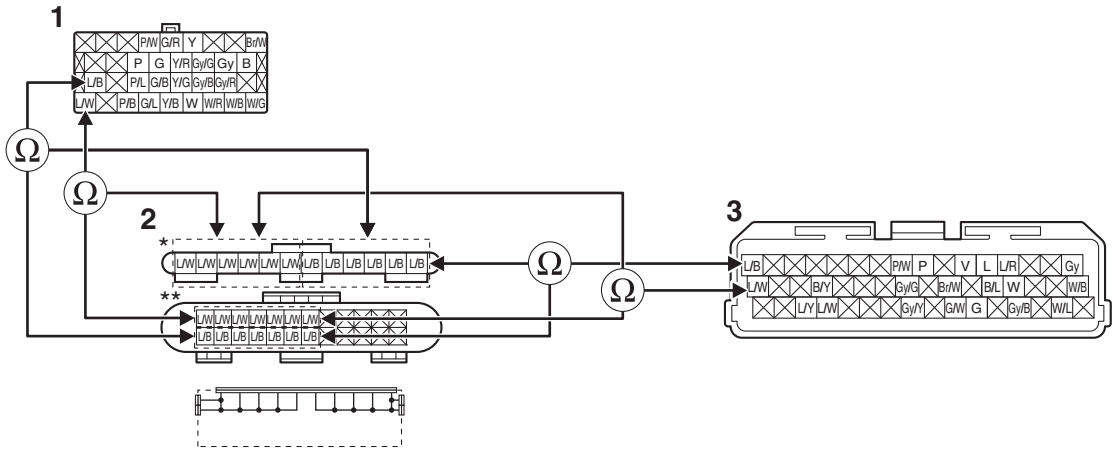
   → Service is completed.

   NO

   → Go to step 2.

2. Wire harness continuity.
   - Disconnect the SCU coupler “1”, joint coupler “2” and ECU coupler “3”.
   - Open circuit check

Between SCU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between the joint coupler and ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "OFF" and back to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Service is completed.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

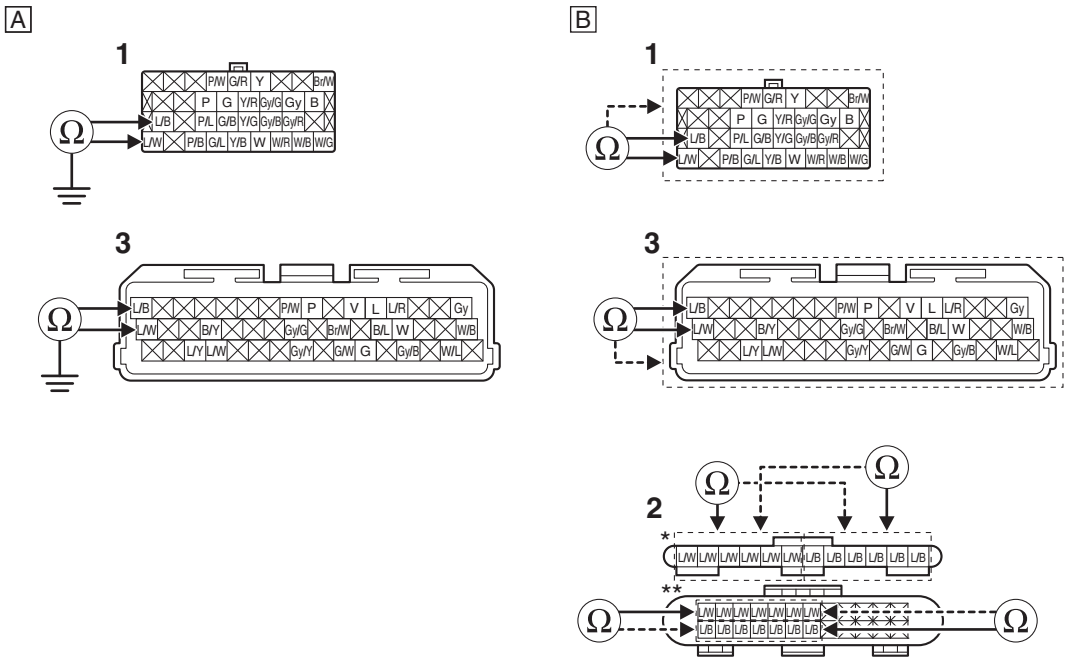
Disconnect the ECU and SCU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3 and "PARTS CONNECTED TO THE SCU (for YZF-R1M)" on page 9-3.

Ground short circuit check "A"

Between SCU coupler "1" and ground	blue/white–ground blue/black–ground
Between ECU coupler "3" and ground	blue/white–ground blue/black–ground

Lines short circuit check "B"

SCU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler "2"	blue/white–any other coupler terminal blue/black–any other coupler terminal
ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?

YES

→ Go to step 3.

NO

a. Replace the wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

→ Service is completed.

NO

→ Go to step 3.

3. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.

EAS20646
U0121

EAS33126
TROUBLESHOOTING

Item

Abnormal CAN communication (between ABS ECU and SCU)

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of ABS ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

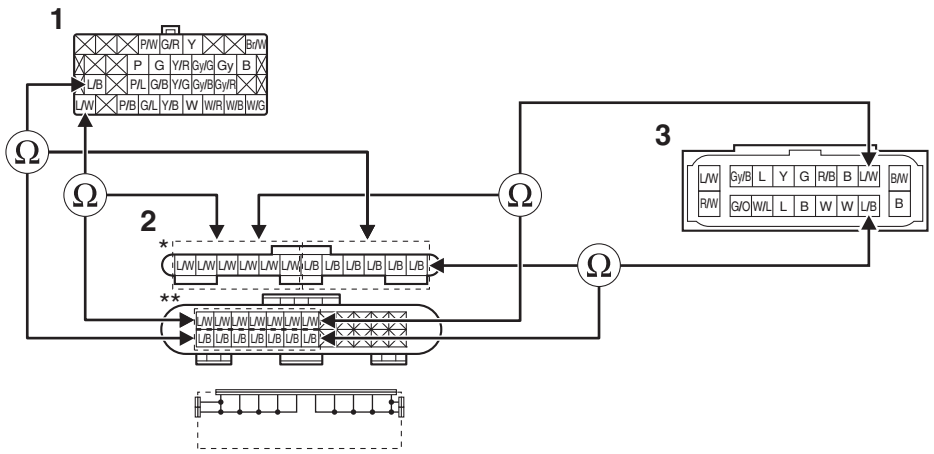
   → Service is completed.

   NO

   → Go to step 2.

2. Wire harness continuity.
   - Disconnect the SCU coupler “1”, joint coupler “2” and ABS ECU coupler “3”.
   - Open circuit check

Between SCU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between the joint coupler and ABS ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check"

NO

a. Replace the wire harness.
b. Turn the main switch to "OFF" and back to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Service is completed.

NO

→ Go to "Short circuit check"

• Short circuit check

TIP

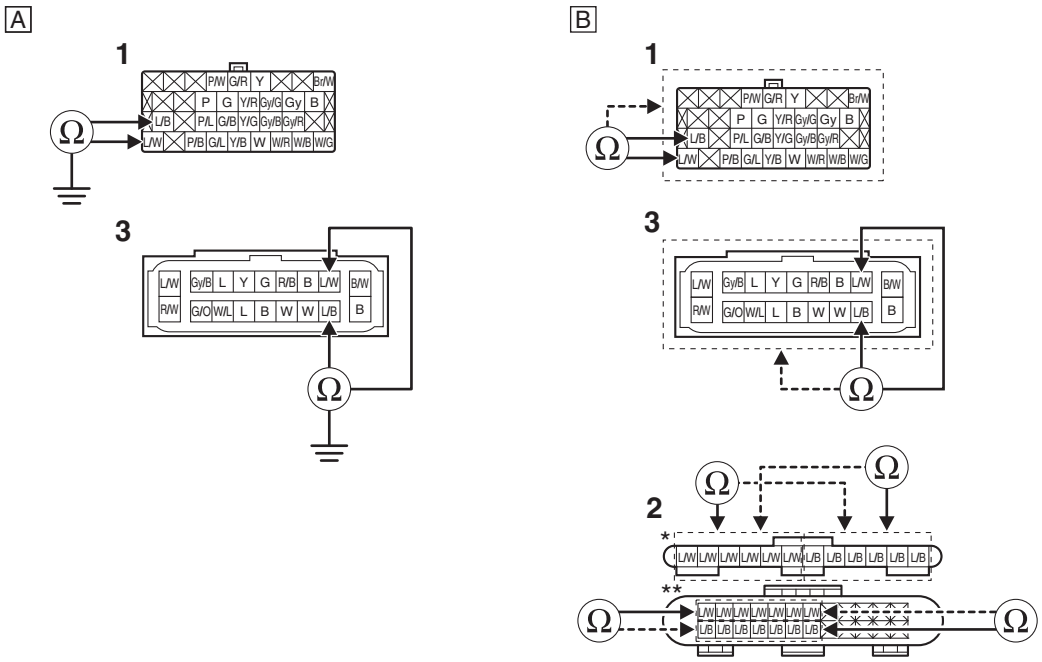
Disconnect the SCU and ABS ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE SCU (for YZF-R1M)" on page 9-3 and "PARTS CONNECTED TO THE ABS ECU" on page 9-4.

Ground short circuit check "A"

Between SCU coupler "1" and ground	blue/white–ground blue/black–ground
Between ABS ECU coupler "3" and ground	blue/white–ground blue/black–ground

Lines short circuit check "B"

SCU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler "2"	blue/white–any other coupler terminal blue/black–any other coupler terminal
ABS ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 3.
NO
a. Replace the wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Go to step 3.

3. Malfunction in ABS ECU.
• Replace the ABS ECU, and complete the service.
Refer to “REMOVING THE HYDRAULIC UNIT ASSEMBLY” on page 4-77.

EAS20647
U0125 (FI)

EAS33127
TROUBLESHOOTING

Item

Signals cannot be transmitted between the ECU and the IMU.

Fail-safe system

- Unable to start engine
- Able/Unable to drive vehicle

Procedure

TIP

If more than one DTC is detected at the same time, perform troubleshooting of DTC listed below first.
- P1600

1. Connection of IMU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 6, and complete the service.

   NO

   → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

   → Go to step 6, and complete the service.

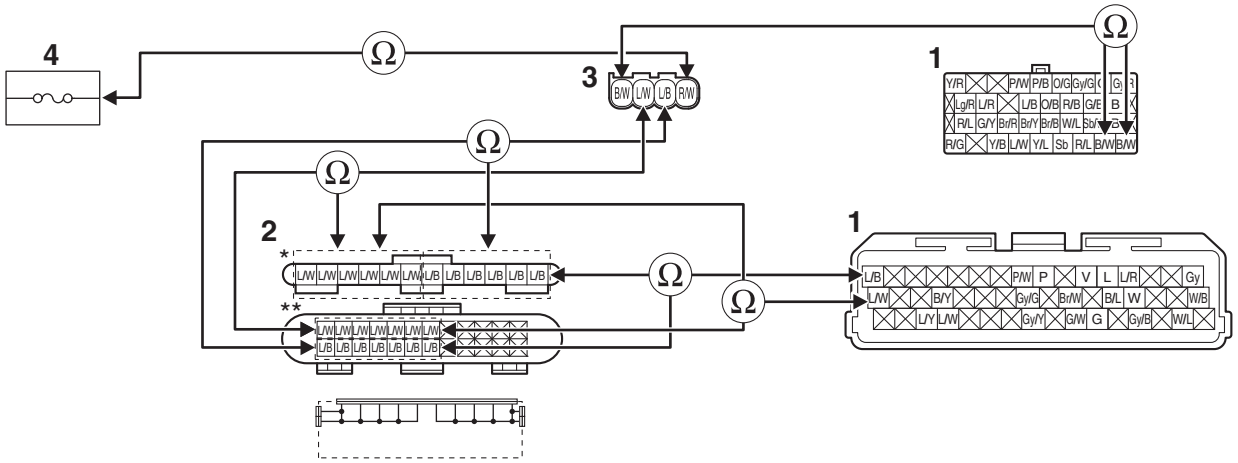
   NO

   → Go to step 3.

3. Wire harness continuity.
   - Disconnect the ECU coupler “1”, joint coupler “2”, IMU coupler “3” and ignition fuse “4”.

• Open circuit check

Between ECU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between joint coupler and IMU coupler	blue/white–blue/white blue/black–blue/black
Between IMU coupler and ignition fuse holder	red/white–red/white
Between IMU coupler and ECU coupler	black/white–black/white



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "OFF" and back to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

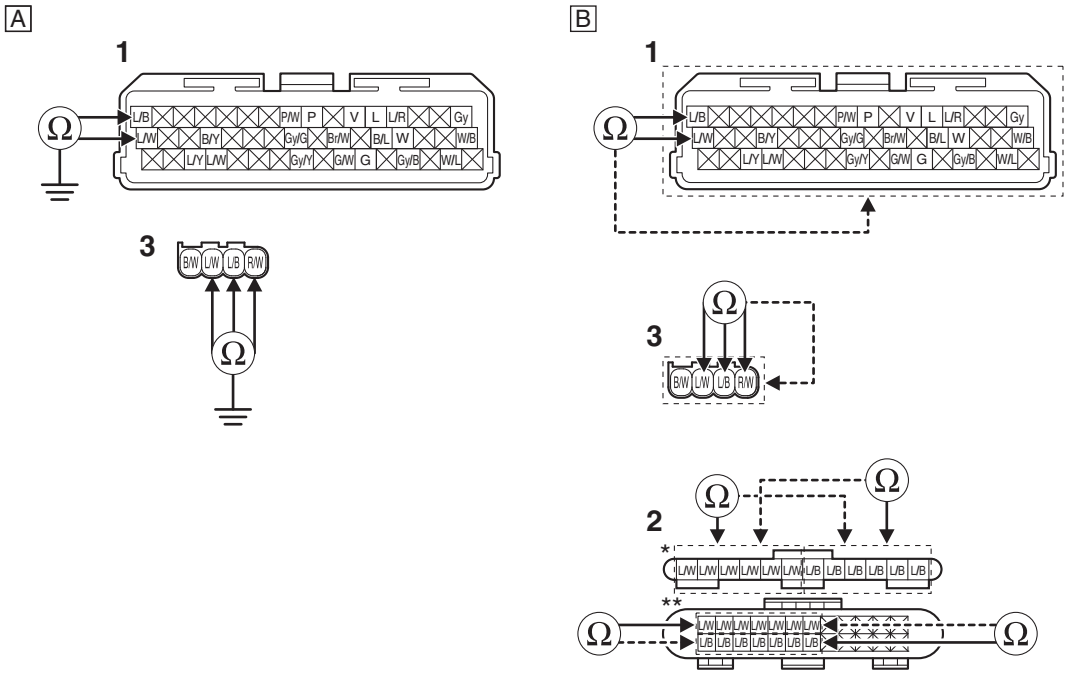
Disconnect the ECU and IMU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

Ground short circuit check "A"

Between ECU coupler "1" and ground	blue/white–ground blue/black–ground
Between IMU coupler "3" and ground	blue/white–ground blue/black–ground red/white–ground

Lines short circuit check “B”

ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler “2”	blue/white–any other coupler terminal blue/black–any other coupler terminal
IMU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal red/white–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 4.
NO
a. Replace the wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 4.

4. Malfunction in IMU.
- Replace the IMU.
  Refer to “GENERAL CHASSIS (1)” on page 4-1.
- Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to step 5.

5. Malfunction in ECU.
   - Replace the ECU, and complete the service.
     Refer to "REPLACING THE ECU (Engine Control Unit)" on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   - Confirm that the DTC has a condition of "Recovered" using the YDT, and then delete the DTC.

EAS20648
U0125 (SCU)

EAS33128
TROUBLESHOOTING

Item

Abnormal CAN communication (between IMU and SCU)

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of IMU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

   Is it in the “Recovered” condition?

   YES

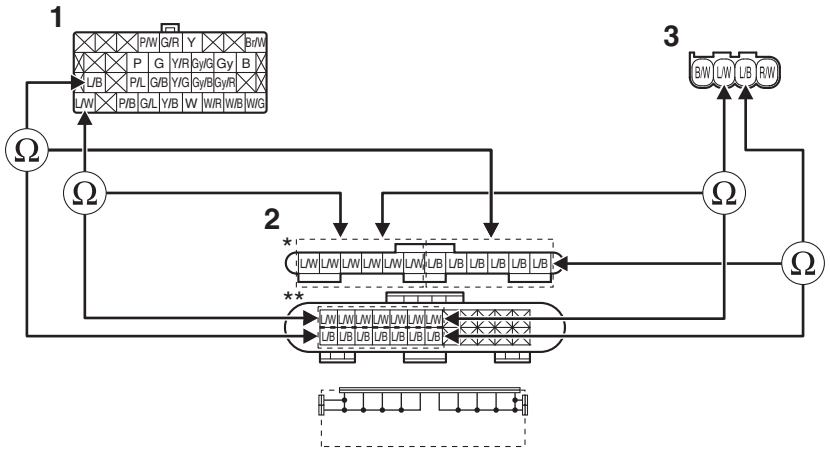
   → Service is completed.

   NO

   → Go to step 2.

2. Wire harness continuity.
   - Disconnect the SCU coupler “1”, joint coupler “2” and IMU coupler “3”.
   - Open circuit check

Between SCU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between the joint coupler and IMU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "OFF" and back to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Service is completed.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the SCU and IMU related connectors before checking.
Refer to "PARTS CONNECTED TO THE SCU (for YZF-R1M)" on page 9-3.

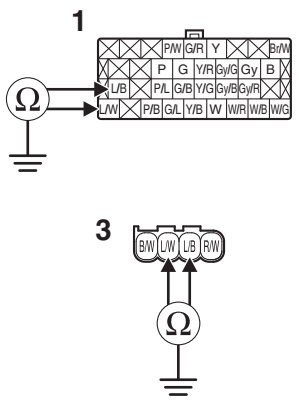
Ground short circuit check "A"

Between SCU coupler "1" and ground	blue/white–ground blue/black–ground
Between IMU coupler "3" and ground	blue/white–ground blue/black–ground

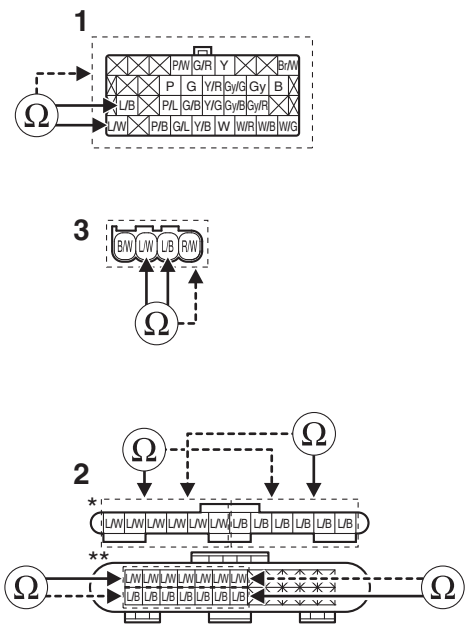
Lines short circuit check "B"

SCU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler "2"	blue/white–any other coupler terminal blue/black–any other coupler terminal
IMU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal

A



B



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 3.
NO
a. Replace the wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Go to step 3.

3. Replace the IMU.
• Replace the IMU, and complete the service.
Refer to “GENERAL CHASSIS (1)” on page 4-1.

EAS20649
U0155 or Err (FI)

EAS33129
TROUBLESHOOTING

Item

Multi-function meter: signals cannot be transmitted between the ECU and the multi-function meter.

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

TIP

"Err" is displayed on the clock display of the multi-function meter, but the MIL does not come on.

1. Connection of meter assembly coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 2.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

      Is it in the "Recovered" condition?

      YES

      → Go to step 6, and complete the service.

      NO

      → Go to step 2.

2. Connection of ECU coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

   Is the coupler condition normal?

   YES

   → Go to step 3.

   NO

   a. Connect the coupler securely or replace the wire harness.
   b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

      Is it in the "Recovered" condition?

      YES

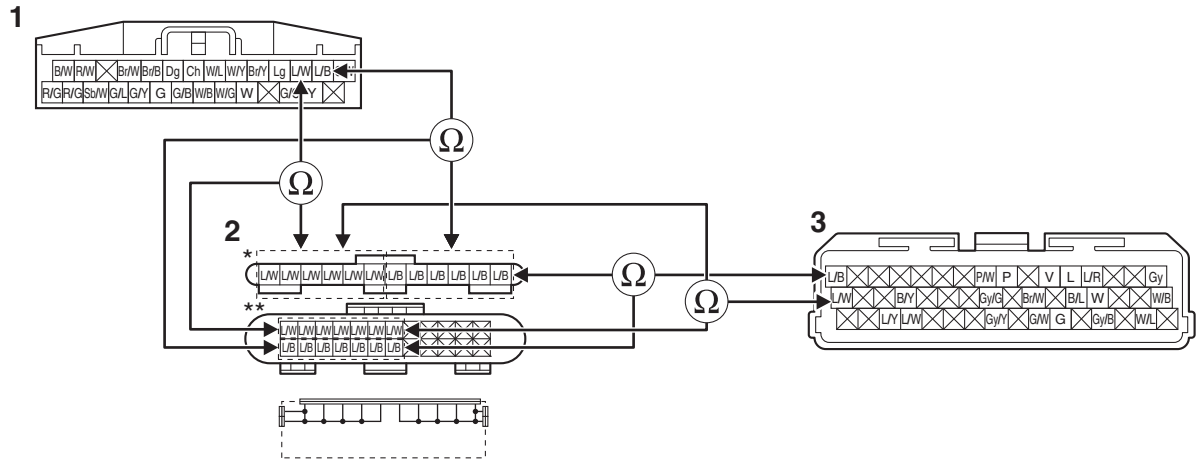
      → Go to step 6, and complete the service.

      NO

      → Go to step 3.

3. Wire harness continuity.
   - Disconnect the meter assembly coupler "1", joint coupler "2" and ECU coupler "3".
   - Open circuit check

Between meter assembly coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between joint coupler and ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Go to step 6, and complete the service.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

Disconnect the ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ECU" on page 9-3.

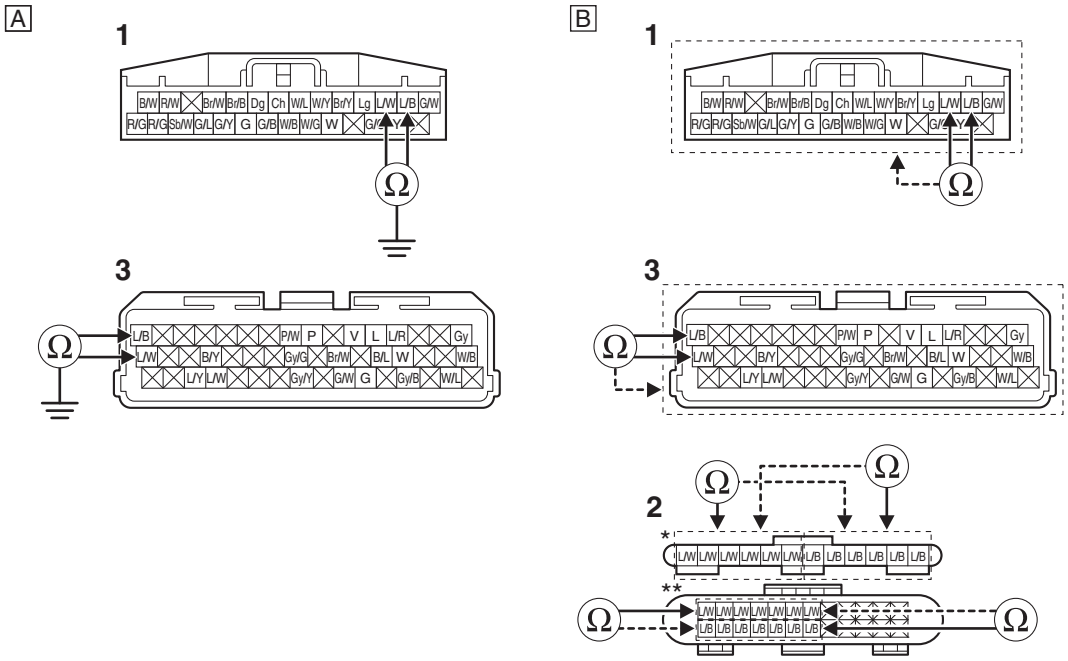
Ground short circuit check "A"

Between meter assembly coupler "1" and ground	blue/white–ground blue/black–ground
Between ECU coupler "3" and ground	blue/white–ground blue/black–ground

Lines short circuit check "B"

Meter assembly coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler "2"	blue/white–any other coupler terminal blue/black–any other coupler terminal

ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 4.
NO
a. Replace the wire harness.
b. Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 4.

4. Defective meter assembly.
- Replace the meter assembly.
  Refer to "GENERAL CHASSIS (6)" on page 4-23.
- Turn the main switch to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?
YES
→ Go to step 6, and complete the service.
NO
→ Go to step 5.

5. Malfunction in ECU.
   • Replace the ECU, and complete the service.
   Refer to “REPLACING THE ECU (Engine Control Unit)” on page 8-41.
6. Delete the DTC and check that the MIL goes off.
   • Confirm that the DTC has a condition of “Recovered” using the YDT, and then delete the DTC.

EAS20650
U0155 or Err (SCU)

EAS33130
TROUBLESHOOTING

Item

Abnormal CAN communication (between meter assembly and SCU)

Fail-safe system

- Able to start engine
- Able to drive vehicle

Procedure

1. Connection of meter assembly coupler.
   - Check the locking condition of the coupler.
   - Disconnect the coupler and check the pins (bent or broken terminals and locking condition of the pins).

Is the coupler condition normal?

YES

→ Go to step 2.

NO

a. Connect the coupler securely or replace the wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?

YES

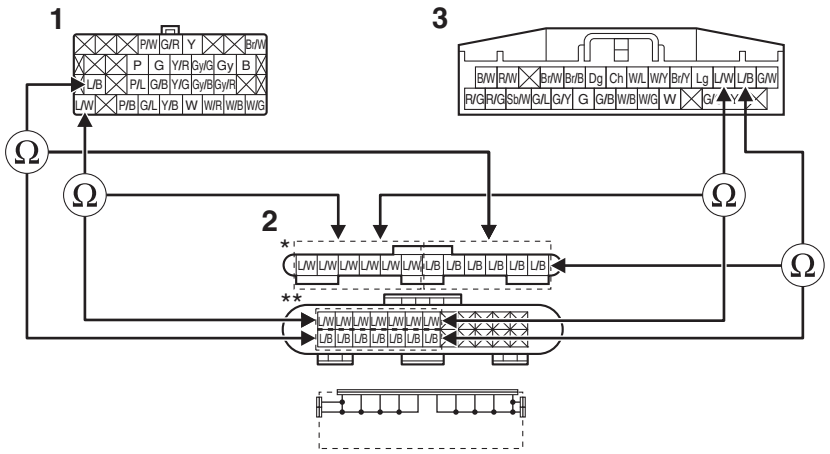
→ Service is completed.

NO

→ Go to step 2.

2. Wire harness continuity.
   - Disconnect the SCU coupler “1”, joint coupler “2” and meter assembly coupler “3”.
   - Open circuit check

Between SCU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between the joint coupler and meter assembly coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to "Short circuit check".

NO

a. Replace the wire harness.
b. Turn the main switch to "OFF" and back to "ON", and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the "Recovered" condition?

YES

→ Service is completed.

NO

→ Go to "Short circuit check".

• Short circuit check

TIP

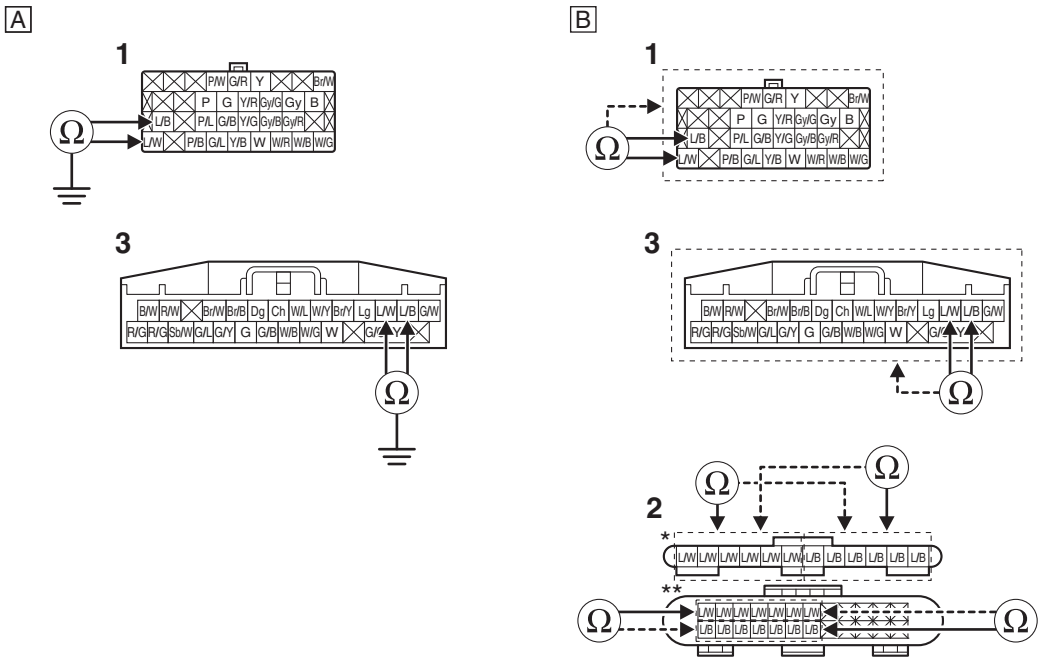
Disconnect the SCU related connectors before checking.
Refer to "PARTS CONNECTED TO THE SCU (for YZF-R1M)" on page 9-3.

Ground short circuit check "A"

Between SCU coupler "1" and ground	blue/white–ground blue/black–ground
Between meter assembly coupler "3" and ground	blue/white–ground blue/black–ground

Lines short circuit check "B"

SCU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler "2"	blue/white–any other coupler terminal blue/black–any other coupler terminal
Meter assembly coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 3.
NO
a. Replace the wire harness.
b. Turn the main switch to “OFF” and back to “ON”, and then check the condition of the DTC using the malfunction mode of the YDT.

Is it in the “Recovered” condition?
YES
→ Service is completed.
NO
→ Go to step 3.

3. Defective meter assembly.
• Replace the meter assembly, and complete the service.
Refer to “GENERAL CHASSIS (6)” on page 4-23.

EAS20685
11_ABS

EAS33314
TROUBLESHOOTING
Item
Front wheel sensor (intermittent pulses or no pulses)

Procedure
TIP

If the rear wheel continues to turn for more than 20 seconds after the front wheel has stopped, this will be recorded.

1. Foreign material adhered around the front wheel sensor
   • Check the surface of the sensor rotor and wheel sensor for foreign material, such as metal particles.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Clean the sensor rotor and wheel sensor.

2. Incorrect installation of the front wheel
   • Check the components for looseness, distortion, and bends.
   Refer to “CHECKING THE FRONT WHEEL” on page 4-38.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Replace the wheel axle, tire, front wheel, wheel bearings or oil seals.

3. Defective sensor rotor or incorrect installation of the rotor
   • Check the surface of the sensor rotor for damage.
   Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Replace the sensor rotor.

4. Defective front wheel sensor or incorrect installation of the sensor
   • Check the wheel sensor for damage and the installed condition of the sensor.
   Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Replace the hydraulic unit assembly (ABS ECU).
   NO
   → Repair or replace the wheel sensor.

EAS20686
12_ABS

EAS33315
TROUBLESHOOTING
Item
Rear wheel sensor (intermittent pulses or no pulses)

Procedure
1. Foreign material adhered around the rear wheel sensor
   • Check the surface of the sensor rotor and wheel sensor for foreign material, such as metal particles.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Clean the sensor rotor and wheel sensor.

2. Incorrect installation of the rear wheel
   • Check the components for looseness, distortion, and bends.
   Refer to “CHECKING THE REAR WHEEL” on page 4-47.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Replace the wheel axle, tire, rear wheel, wheel bearings or oil seals.

3. Defective sensor rotor or incorrect installation of the rotor
   • Check the surface of the sensor rotor for damage.
   Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Replace the sensor rotor.

4. Defective rear wheel sensor or incorrect installation of the sensor
   • Check the wheel sensor for damage and the installed condition of the sensor.
   Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Replace the hydraulic unit assembly (ABS ECU).
   NO
   → Repair or replace the wheel sensor.

EAS20687
13, 26_ABS

EAS33316
TROUBLESHOOTING

Item
Front wheel sensor (abnormal pulse period)

Procedure
TIP
- If the front brake ABS operates continuously for 20 seconds or more, DTC No. 26 will be recorded. If the front brake ABS operates continuously for 36 seconds or more, DTC No. 13 will be recorded.
- Vehicle possibly ridden on uneven roads.

1. Foreign material adhered around the front wheel sensor
   - Check the surface of the sensor rotor and wheel sensor for foreign material, such as metal particles.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Clean the sensor rotor and wheel sensor.

2. Incorrect installation of the front wheel
   - Check the components for looseness, distortion, and bends.
     Refer to “CHECKING THE FRONT WHEEL” on page 4-38.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Replace the wheel axle, tire, rear wheel, wheel bearings or oil seals.

3. Defective sensor rotor or incorrect installation of the rotor
   - Check the surface of the sensor rotor for damage.
     Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Replace the sensor rotor.

4. Defective front wheel sensor or incorrect installation of the sensor
   - Check the wheel sensor for damage and the installed condition of the sensor.
     Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Replace the hydraulic unit assembly (ABS ECU).
   NO
   → Repair or replace the wheel sensor.

EAS20688
14, 27_ABS

EAS33317
TROUBLESHOOTING
Item
Rear wheel sensor (abnormal pulse period)

Procedure
TIP
- If the rear brake ABS operates continuously for 20 seconds or more, DTC No. 27 will be recorded. If the rear brake ABS operates continuously for 36 seconds or more, DTC No. 14 will be recorded.
- Vehicle possibly ridden on uneven roads.

1. Foreign material adhered around the rear wheel sensor
   - Check the surface of the sensor rotor and wheel sensor for foreign material, such as metal particles.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Clean the sensor rotor and wheel sensor.

2. Incorrect installation of the rear wheel
   - Check the components for looseness, distortion, and bends.
     Refer to “CHECKING THE REAR WHEEL” on page 4-47.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Replace the wheel axle, tire, rear wheel, wheel bearings or oil seals.

3. Defective sensor rotor or incorrect installation of the rotor
   - Check the surface of the sensor rotor for damage.
     Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Replace the sensor rotor.

4. Defective rear wheel sensor or incorrect installation of the sensor
   - Check the wheel sensor for damage and the installed condition of the sensor.
     Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Replace the hydraulic unit assembly (ABS ECU).
   NO
   → Repair or replace the wheel sensor.

EAS20662
15_ABS

EAS33040
TROUBLESHOOTING
Item
Front wheel sensor (open or short circuit)

Procedure
1. Defective coupler between the front wheel sensor and the hydraulic unit assembly
   - Check the coupler for any pins that may be pulled out.
   - Check the locking condition of the coupler.

TIP

Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?

YES

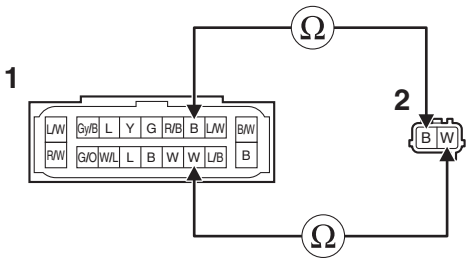
→ Go to step 2.

NO

→ If there is a malfunction, repair it and connect the coupler securely.

2. Wire harness continuity
   - Disconnect the ABS ECU coupler “1” and front wheel sensor coupler “2”.
   - Open circuit check

Between ABS ECU coupler and front wheel sensor coupler	white–white black–black



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

→ Replace the wire harness.

- Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

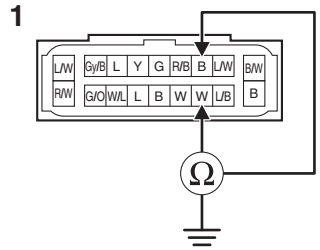
Ground short circuit check “A”

Between ABS ECU coupler “1” and ground	white–ground black–ground

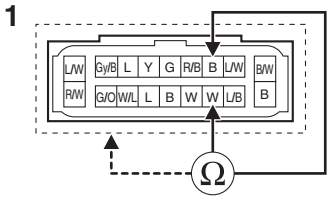
Lines short circuit check “B”

ABS ECU coupler	white–any other coupler terminal black–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 3.

NO

→ Replace the wire harness.

3. Defective front wheel sensor or hydraulic unit assembly
   - If the above items were performed and no malfunctions were found, the wheel sensor or hydraulic unit assembly is defective.
   - Replace the wheel sensor or hydraulic unit assembly.
     Refer to “FRONT WHEEL” on page 4-35 and “ABS (Anti-lock Brake System)” on page 4-74.

EAS20663
16_ABS

EAS33285
TROUBLESHOOTING

Item

Rear wheel sensor (open or short circuit)

Procedure

1. Defective coupler between the rear wheel sensor and the hydraulic unit assembly
   - Check the coupler for any pins that may be pulled out.
   - Check the locking condition of the coupler.

TIP

Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?

YES

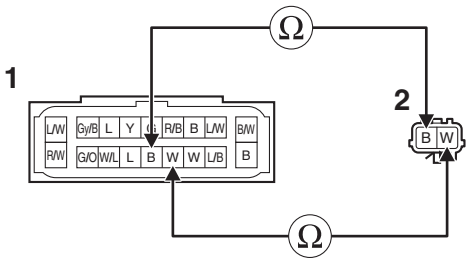
→ Go to step 2.

NO

→ If there is a malfunction, repair it and connect the coupler securely.

2. Wire harness continuity
   - Disconnect the ABS ECU coupler “1” and rear wheel sensor coupler “2”.
   - Open circuit check

Between ABS ECU coupler and rear wheel sensor coupler	white–white black–black



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

→ Replace the wire harness.

- Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

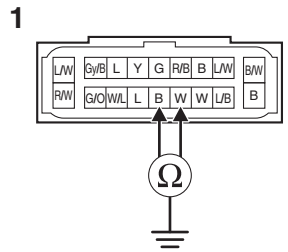
Ground short circuit check “A”

Between ABS ECU coupler “1” and ground	white–ground black–ground

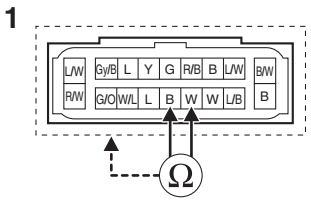
Lines short circuit check “B”

ABS ECU coupler	white–any other coupler terminal black–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 3.

NO

→ Replace the wire harness.

3. Defective rear wheel sensor or hydraulic unit assembly
   - If the above items were performed and no malfunctions were found, the wheel sensor or hydraulic unit assembly is defective.
   - Replace the wheel sensor or hydraulic unit assembly.
     Refer to “REAR WHEEL” on page 4-43 and “ABS (Anti-lock Brake System)” on page 4-74.

EAS20690
21_ABS

EAS33320
TROUBLESHOOTING
Item
Hydraulic unit assembly (defective solenoid drive circuit)

Procedure
1. Defective hydraulic unit assembly
   - Replace the hydraulic unit assembly.
     Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20691
31_ABS

EAS33321
TROUBLESHOOTING
Hydraulic unit assembly (defective ABS solenoid power circuit)

Procedure
1. Blown ABS solenoid fuse
   • Check the ABS solenoid fuse.
   Refer to “CHECKING THE FUSES” on page 8-41.

Is check result OK?
YES
→ Go to step 2.
NO
→ Replace the fuse and check the wire harness.

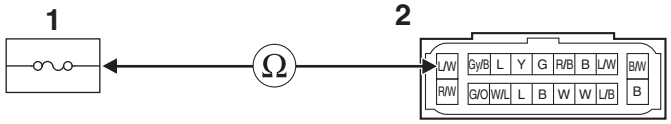
2. Defective coupler between the battery and the hydraulic unit assembly
   • Check the coupler for any pins that may be pulled out.
   • Check the locking condition of the coupler.

TIP
Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?
YES
→ Go to step 3.
NO
→ If there is a malfunction, repair it and connect the coupler securely.

3. Wire harness continuity
   • Disconnect the ABS solenoid fuse “1” and ABS ECU coupler “2”.
   • Open circuit check

Between ABS solenoid fuse holder and ABS ECU coupler	blue/white–blue/white



Is resistance 0 Ω?
YES
→ Go to “Short circuit check”.
NO
→ Replace the wire harness.

• Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

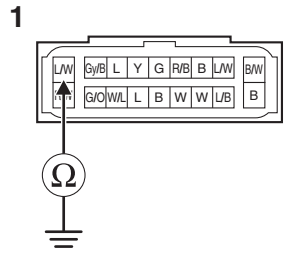
Ground short circuit check “A”

Between ABS ECU coupler “1” and ground	blue/white–ground

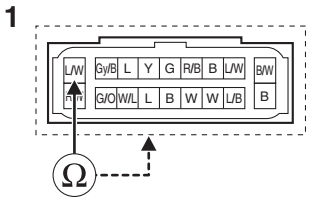
Lines short circuit check “B”

ABS ECU coupler	blue/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

→ Replace the wire harness.

4. Defective hydraulic unit assembly
   - Replace the hydraulic unit assembly.
     Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20692
33_ABS

EAS33322
TROUBLESHOOTING
Item
Hydraulic unit assembly (abnormal ABS motor power supply)

Procedure
1. Blown ABS motor fuse
   • Check the ABS motor fuse.
   Refer to “CHECKING THE FUSES” on page 8-41.

Is check result OK?
YES
→ Go to step 2.
NO
→ Replace the fuse and check the wire harness.

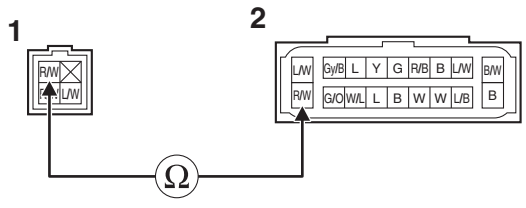
2. Defective coupler between the battery and the hydraulic unit assembly
   • Check the coupler for any pins that may be pulled out.
   • Check the locking condition of the coupler.

TIP
Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?
YES
→ Go to step 3.
NO
→ If there is a malfunction, repair it and connect the coupler securely.

3. Wire harness continuity
   • Disconnect the starter relay coupler (ABS motor fuse) “1” and ABS ECU coupler “2”.
   • Open circuit check

Between starter relay coupler (ABS motor fuse) and ABS ECU coupler	red/white–red/white



Is resistance 0 Ω?
YES
→ Go to “Short circuit check”.
NO
→ Replace the wire harness.

• Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

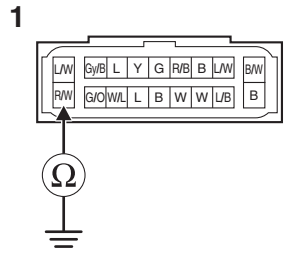
Ground short circuit check “A”

Between ABS ECU coupler “1” and ground	red/white–ground

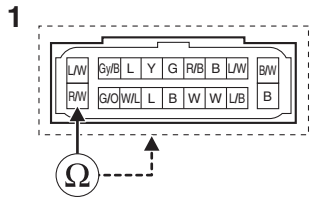
Lines short circuit check “B”

ABS ECU coupler	red/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

→ Replace the wire harness.

4. Defective hydraulic unit assembly
   - Replace the hydraulic unit assembly.
     Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20693
34_ABS

EAS33323
TROUBLESHOOTING
Item
Hydraulic unit assembly (short circuit in ABS motor power supply circuit)

Procedure
1. Defective hydraulic unit assembly
   - Replace the hydraulic unit assembly.
     Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20694
41_ABS

EAS33331
TROUBLESHOOTING

Item
Front wheel ABS (intermittent wheel speed pulses or incorrect depressurization)

Procedure
1. Incorrect installation of the front wheel sensor
   • Check the components for looseness, distortion, and bends.
   Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Repair or replace the defective part.

2. Incorrect rotation of the front wheel
   • Check that there is no brake disc drag on the wheel and make sure that it rotates smoothly.
   Refer to “CHECKING THE FRONT WHEEL” on page 4-38 and “CHECKING THE FRONT BRAKE DISCS” on page 4-57.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Repair or replace the defective part.

3. Front brake dragging
   • Check that the brake fluid pressure is correctly transmitted to the brake caliper when the brake lever is operated and that the pressure decreases when the lever is released.
   Refer to “CHECKING THE FRONT BRAKE DISCS” on page 4-57.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Repair or replace the defective part.

4. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.
   Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20695
42_ABS

EAS33324
TROUBLESHOOTING
Item
Rear wheel ABS (intermittent wheel speed pulses or incorrect depressurization)

Procedure
1. Incorrect installation of the rear wheel sensor
   • Check the components for looseness, distortion, and bends.
   Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Repair or replace the defective part.

2. Incorrect rotation of the rear wheel
   • Check that there is no brake disc drag on the wheel and make sure that it rotates smoothly.
   Refer to “CHECKING THE REAR WHEEL” on page 4-47 and “CHECKING THE REAR BRAKE DISC” on page 4-68.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Repair or replace the defective part.

3. Rear brake dragging
   • Check that the brake fluid pressure is correctly transmitted to the brake caliper when the brake pedal is operated and that the pressure decreases when the pedal is released.
   Refer to “CHECKING THE REAR BRAKE DISC” on page 4-68.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Repair or replace the defective part.

4. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.
   Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20696
43, 45_ABS

EAS33330
TROUBLESHOOTING
Item
Front wheel sensor (missing pulses)

Procedure
TIP

After the DTC 45 is recorded, DTC 43 will be recorded if a certain speed and time are exceeded.

1. Foreign material adhered around the front wheel sensor
   • Check the surface of the sensor rotor and wheel sensor for foreign material, such as metal particles.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Clean the sensor rotor and wheel sensor.

2. Incorrect installation of the front wheel
   • Check the components for looseness, distortion, and bends.
   Refer to “CHECKING THE FRONT WHEEL” on page 4-38.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Replace the wheel axle, tire, front wheel, wheel bearings or oil seals.

3. Defective sensor rotor or incorrect installation of the rotor
   • Check the surface of the sensor rotor for damage.
   Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Replace the sensor rotor.

4. Defective front wheel sensor or incorrect installation of the sensor
   • Check the wheel sensor for damage and the installed condition of the sensor.
   Refer to “MAINTENANCE OF THE FRONT WHEEL SENSOR AND SENSOR ROTOR” on page 4-40.

   Is check result OK?
   YES
   → Replace the hydraulic unit assembly (ABS ECU).
   NO
   → Repair or replace the wheel sensor.

EAS20697
44, 46_ABS

EAS33325
TROUBLESHOOTING
Item
Rear wheel sensor (missing pulses)

Procedure
TIP

After the DTC 46 is recorded, DTC 44 will be recorded if a certain speed and time are exceeded.

1. Foreign material adhered around the rear wheel sensor
   • Check the surface of the sensor rotor and wheel sensor for foreign material, such as metal particles.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → Clean the sensor rotor and wheel sensor.

2. Incorrect installation of the rear wheel
   • Check the components for looseness, distortion, and bends.
   Refer to “CHECKING THE REAR WHEEL” on page 4-47.

   Is check result OK?
   YES
   → Go to step 3.
   NO
   → Replace the wheel axle, tire, rear wheel, wheel bearings or oil seals.

3. Defective sensor rotor or incorrect installation of the rotor
   • Check the surface of the sensor rotor for damage.
   Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Go to step 4.
   NO
   → Replace the sensor rotor.

4. Defective rear wheel sensor or incorrect installation of the sensor
   • Check the wheel sensor for damage and the installed condition of the sensor.
   Refer to “MAINTENANCE OF THE REAR WHEEL SENSOR AND SENSOR ROTOR” on page 4-49.

   Is check result OK?
   YES
   → Replace the hydraulic unit assembly (ABS ECU).
   NO
   → Repair or replace the wheel sensor.

EAS20698
51_ABS

EAS33326
TROUBLESHOOTING
Item
Vehicle system power supply (voltage of ABS ECU power supply is high)

Procedure
1. Defective battery
   • Recharge or replace the battery, and check again.
   Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.
2. Disconnected battery terminal
   • Check the connection.

Is check result OK?
YES
→ Go to step 3.
NO
→ Replace or reconnect the terminal.

3. Defective charging system
   • Check the charging system.
   Refer to “CHARGING SYSTEM” on page 8-12.

Is check result OK?
YES
→ Replace the hydraulic unit assembly (ABS ECU).
NO
→ Confirm the cause of the problem and repair it, and check again.

EAS20699
53_ABS

EAS33327
TROUBLESHOOTING

Item

Vehicle system power supply (voltage of ABS ECU power supply is low)

Procedure

1. Defective battery
   - Recharge or replace the battery, and check again.
     Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.
2. Defective coupler between the battery and the hydraulic unit assembly
   - Check the coupler for any pins that may be pulled out.
   - Check the locking condition of the coupler.

TIP

Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?

YES

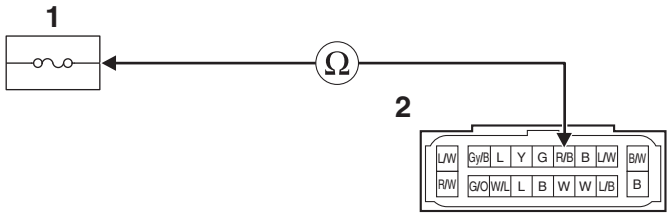
→ Go to step 3.

NO

→ If there is a malfunction, repair it and connect the coupler securely.

3. Wire harness continuity
   - Disconnect the ABS ECU fuse “1” and ABS ECU coupler “2”.
   - Open circuit check

Between ABS ECU fuse holder and ABS ECU coupler	red/black–red/black



Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

→ Replace the wire harness.

- Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

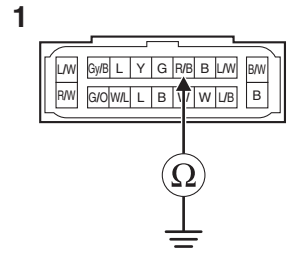
Ground short circuit check “A”

Between ABS ECU coupler “1” and ground	red/black–ground

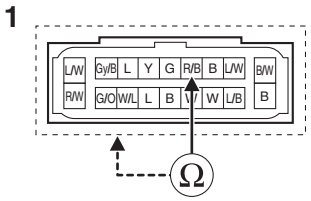
Lines short circuit check “B”

ABS ECU coupler	red/black–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 4.

NO

→ Replace the wire harness.

4. Defective charging system
   - Check the charging system.
     Refer to “CHARGING SYSTEM” on page 8-12.

Is check result OK?

YES

→ Replace the hydraulic unit assembly (ABS ECU).

NO

→ Confirm the cause of the problem and repair it, and check again.

EAS20700
55_ABS

EAS33328
TROUBLESHOOTING
Item
Hydraulic unit assembly (defective ABS ECU)

Procedure
1. Defective hydraulic unit assembly
   - Replace the hydraulic unit assembly.
     Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20701
56_ABS

EAS33329
TROUBLESHOOTING
Item
Hydraulic unit assembly (abnormal internal circuit)

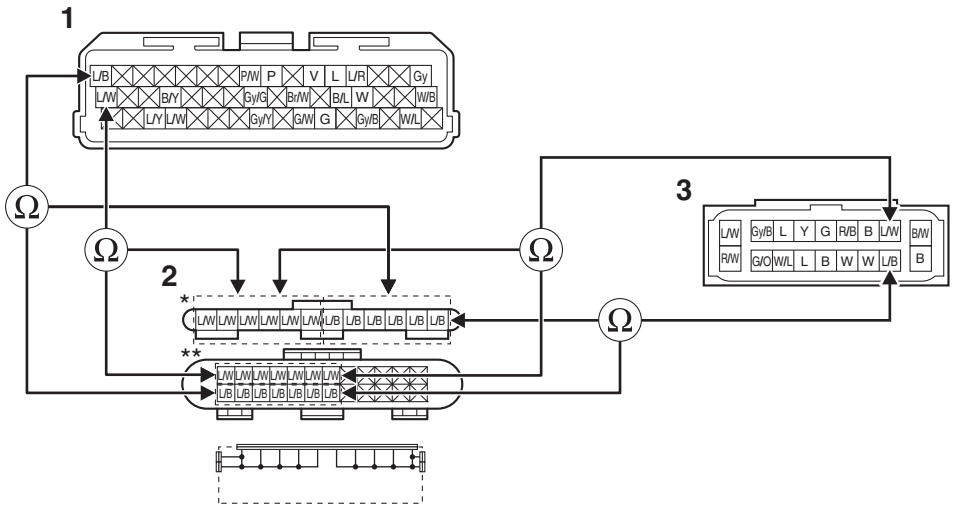
Procedure
1. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.
   Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20666
57_ABS

EAS33292
TROUBLESHOOTING
Item
Vehicle CAN communication line or power source of vehicle system

Procedure
1. Wire harness continuity.
   • Disconnect the ECU coupler “1”, joint coupler “2” and ABS ECU coupler “3”.
   • Open circuit check

Between ECU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between the joint coupler and ABS ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?
YES
→ Go to “Short circuit check”
NO
→ Replace the wire harness.

• Short circuit check

TIP
Disconnect the ECU and ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3 and “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

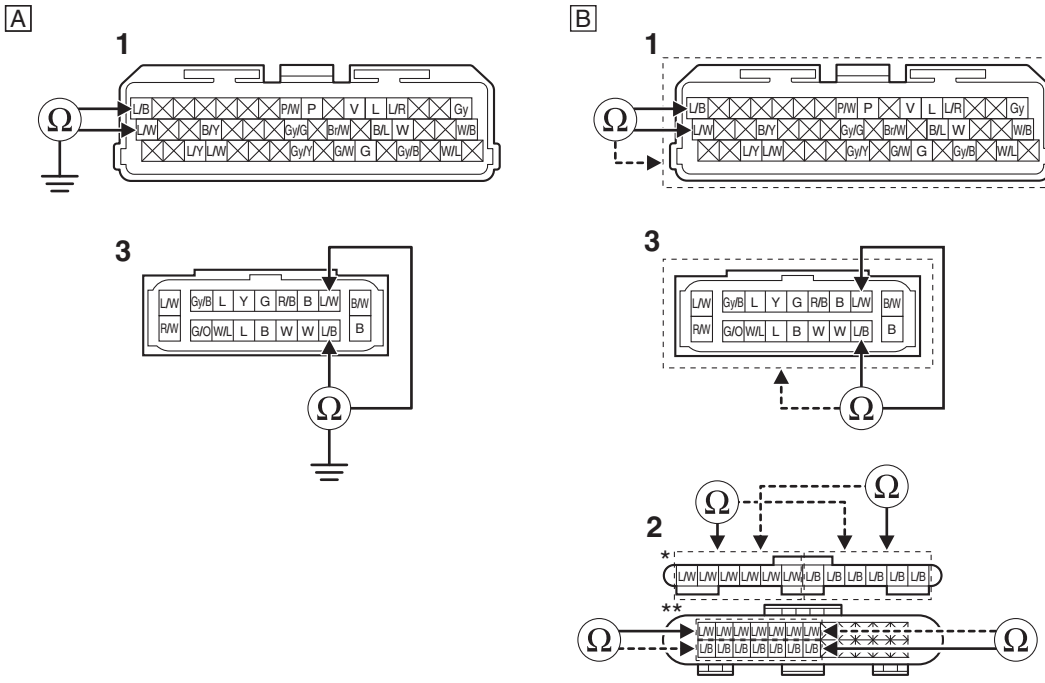
Ground short circuit check “A”

Between ECU coupler “1” and ground	blue/white–ground blue/black–ground

Between ABS ECU coupler “3” and ground	blue/white–ground blue/black–ground

Lines short circuit check “B”

ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler “2”	blue/white–any other coupler terminal blue/black–any other coupler terminal
ABS ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 2.
NO
→ Replace the wire harness.

2. Defective battery
   • Recharge or replace the battery, and check again.
   Refer to “CHECKING AND CHARGING THE BATTERY” on page 8-42.
3. Defective coupler between the battery and the hydraulic unit assembly
   • Check the coupler for any pins that may be pulled out.
   • Check the locking condition of the coupler.

TIP
Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?
YES

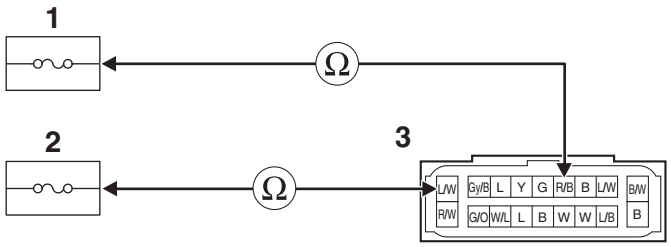
→ Go to step 4.

NO

→ If there is a malfunction, repair it and connect the coupler securely.

4. Wire harness continuity
   - Disconnect the ABS ECU fuse "1", ABS solenoid fuse "2" and ABS ECU coupler "3".
   - Open circuit check

Between ABS ECU fuse holder and ABS ECU coupler	red/black–red/black
Between ABS solenoid fuse holder and ABS ECU coupler	blue/white–blue/white



Is resistance 0 Ω?

YES

→ Go to "Short circuit check"

NO

→ Replace the wire harness.

- Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to "PARTS CONNECTED TO THE ABS ECU" on page 9-4.

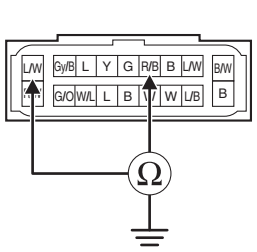
Ground short circuit check "A"

Between ABS ECU coupler "1" and ground	red/black–ground blue/white–ground

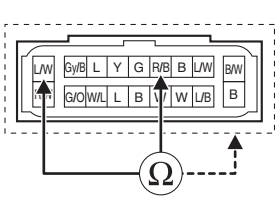
Lines short circuit check "B"

ABS ECU coupler	red/black–any other coupler terminal blue/white–any other coupler terminal

A



B



Is resistance ∞ Ω?

YES

→ Go to step 5.

NO

→ Replace the wire harness.

5. Defective charging system
   - Check the charging system.
     Refer to “CHARGING SYSTEM” on page 8-12.

Is resistance ∞ Ω?

YES

→ Replace the hydraulic unit assembly (ABS ECU).

NO

→ Confirm the cause of the problem and repair it, and check again.

EAS20702
62_ABS

EAS33333
TROUBLESHOOTING
Item
Power supply voltage failure in pressure sensor

Procedure
1. Defective hydraulic unit assembly
   - Replace the hydraulic unit assembly.
     Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20705
68_ABS

EAS33336
TROUBLESHOOTING
Item
Defective hydraulic unit assembly (defective front pressure sensor)

Procedure
1. Defective front brake line
   • Check the front brake line.

   Is check result OK?
   YES
   → Go to step 2.
   NO
   → If there is bending or blocking, replace the front brake line.

2. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.
   Refer to “ABS (Anti-lock Brake System)” on page 4-74.

EAS20669
89_ABS

EAS33299
TROUBLESHOOTING
Item
CAN communication (between meter assembly and hydraulic unit assembly)

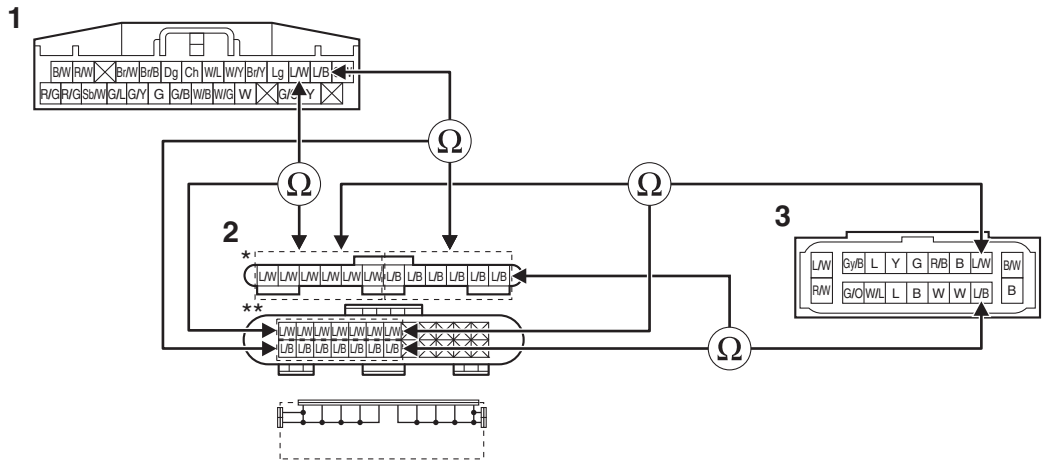
Procedure
1. Defective coupler between the meter assembly and the hydraulic unit assembly
   • Check the coupler for any pins that may be pulled out.
   • Check the locking condition of the coupler.

TIP
Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?
YES
→ Go to step 2.
NO
→ If there is a malfunction, repair it and connect the coupler securely.

2. Wire harness continuity.
   • Disconnect the meter assembly coupler “1”, joint coupler “2” and ABS ECU coupler “3”.
   • Open circuit check

Between meter assembly coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between joint coupler and ABS ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?
YES
→ Go to “Short circuit check”.
NO
→ Replace the wire harness.

• Short circuit check

TIP

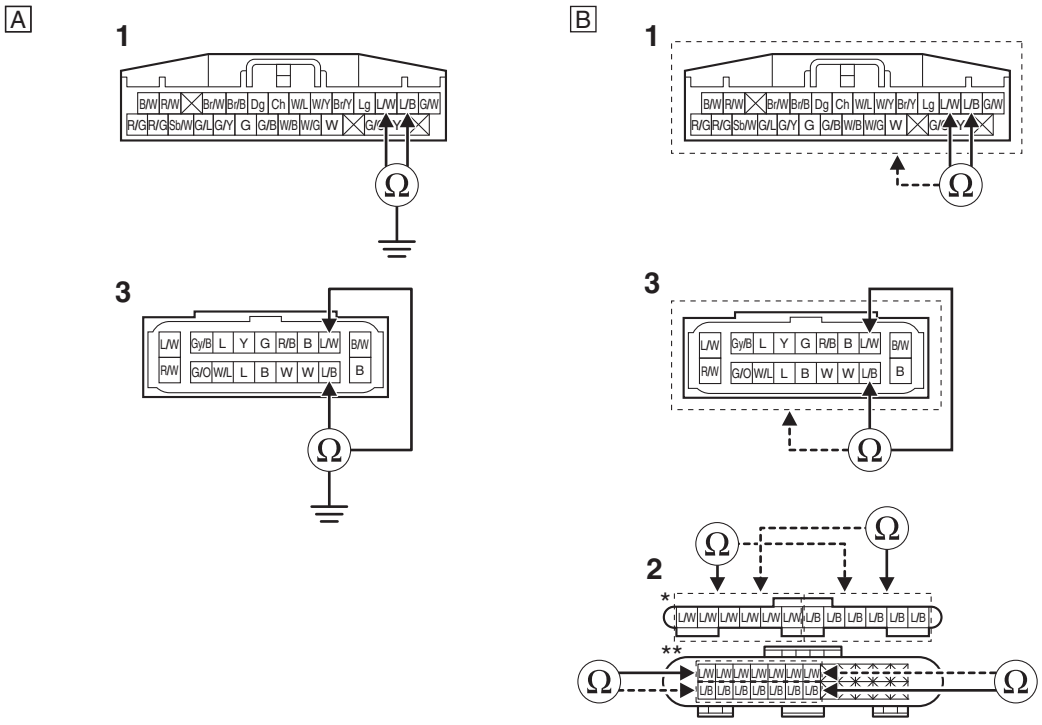
Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

Ground short circuit check “A”

Between meter assembly coupler “1” and ground	blue/white–ground blue/black–ground
Between ABS ECU coupler “3” and ground	blue/white–ground blue/black–ground

Lines short circuit check “B”

Meter assembly coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler “2”	blue/white–any other coupler terminal blue/black–any other coupler terminal
ABS ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?

YES

→ Go to step 3.

NO

→ Replace the wire harness.

3. Defective meter assembly
   • Replace the meter assembly, and check again.
4. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.

EAS20670
90_ABS

EAS33300
TROUBLESHOOTING
Item
CAN communication (between ECU and hydraulic unit assembly)

Procedure
1. Defective coupler between the ECU and the hydraulic unit assembly
   • Check the coupler for any pins that may be pulled out.
   • Check the locking condition of the coupler.

TIP

Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?

YES

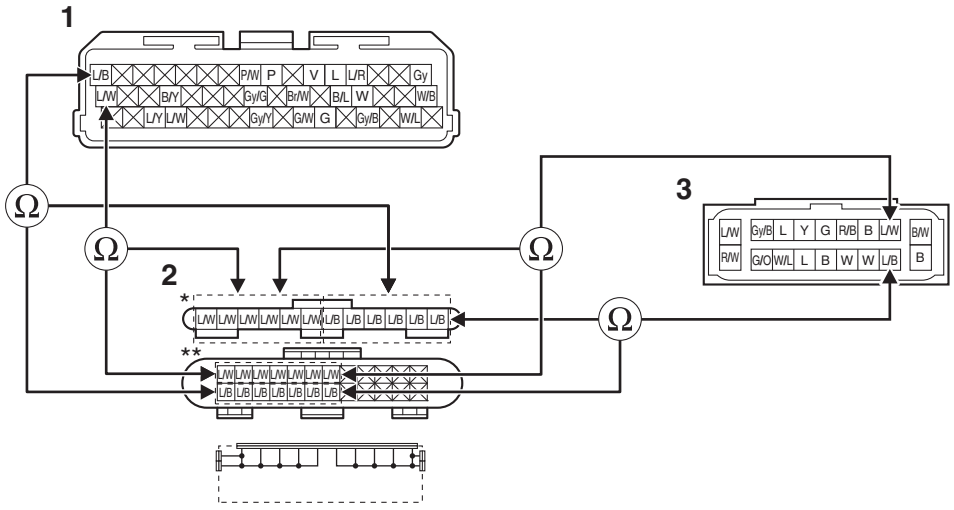
→ Go to step 2.

NO

→ If there is a malfunction, repair it and connect the coupler securely.

2. Wire harness continuity.
   • Disconnect the ECU coupler “1”, joint coupler “2” and ABS ECU coupler “3”.
   • Open circuit check

Between ECU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between joint coupler and ABS ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO
→ Replace the wire harness.

• Short circuit check

TIP

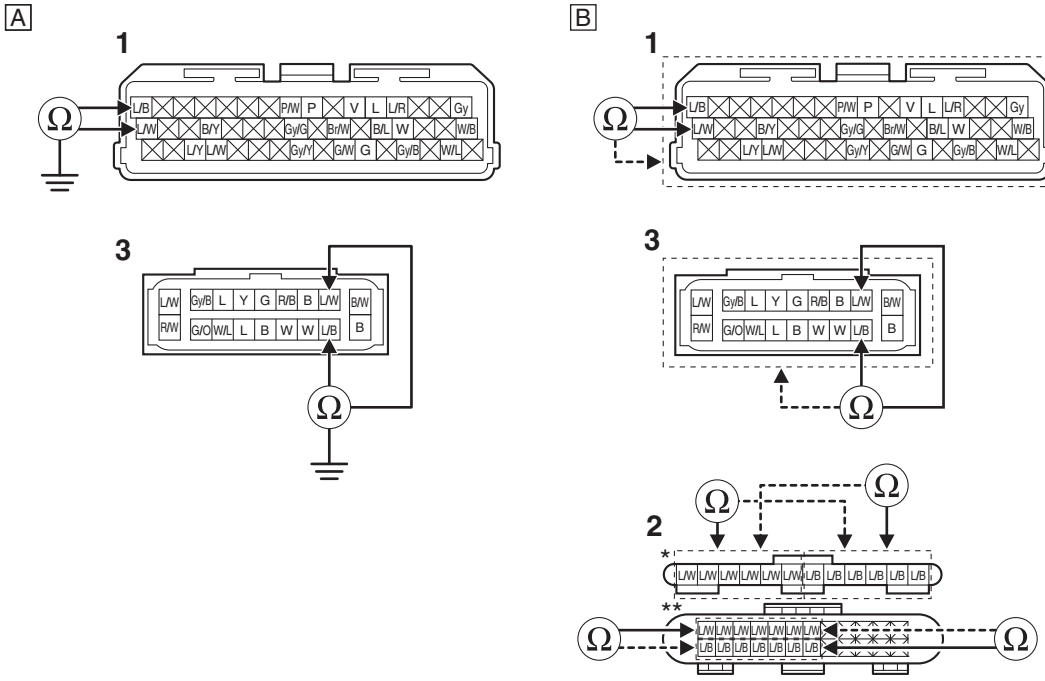
Disconnect the ECU and ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ECU” on page 9-3 and “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

Ground short circuit check “A”

Between ECU coupler “1” and ground	blue/white–ground blue/black–ground
Between ABS ECU coupler “3” and ground	blue/white–ground blue/black–ground

Lines short circuit check “B”

ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler “2”	blue/white–any other coupler terminal blue/black–any other coupler terminal
ABS ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 3.
NO
→ Replace the wire harness.

3. Defective ECU
   • Replace the ECU, and check again.
4. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.

EAS20671
91_ABS

EAS33301
TROUBLESHOOTING
Item
CAN communication (between IMU and hydraulic unit assembly)

Procedure
1. Defective coupler between the IMU and the hydraulic unit assembly
   • Check the coupler for any pins that may be pulled out.
   • Check the locking condition of the coupler.

TIP

Turn the main switch to “OFF” before disconnecting or connecting a coupler.

Is check result OK?

YES

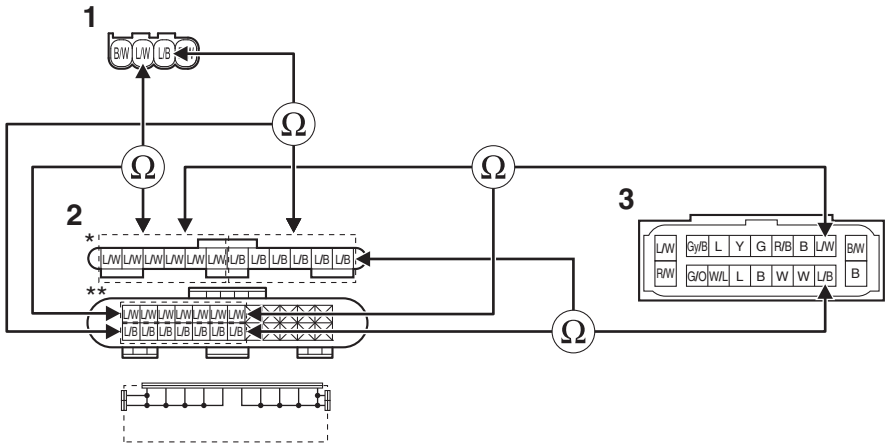
→ Go to step 2.

NO

→ If there is a malfunction, repair it and connect the coupler securely.

2. Wire harness continuity.
   • Disconnect the IMU coupler “1”, joint coupler “2” and ABS ECU coupler “3”.
   • Open circuit check

Between IMU coupler and joint coupler	blue/white–blue/white blue/black–blue/black
Between joint coupler and ABS ECU coupler	blue/white–blue/white blue/black–blue/black



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance 0 Ω?

YES

→ Go to “Short circuit check”.

NO

→ Replace the wire harness.

• Short circuit check

TIP

Disconnect the ABS ECU related connectors before checking.
Refer to “PARTS CONNECTED TO THE ABS ECU” on page 9-4.

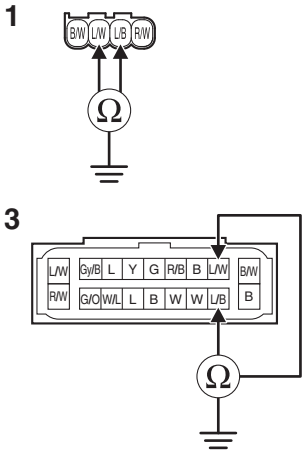
Ground short circuit check “A”

Between IMU coupler “1” and ground	blue/white–ground blue/black–ground
Between ABS ECU coupler “3” and ground	blue/white–ground blue/black–ground

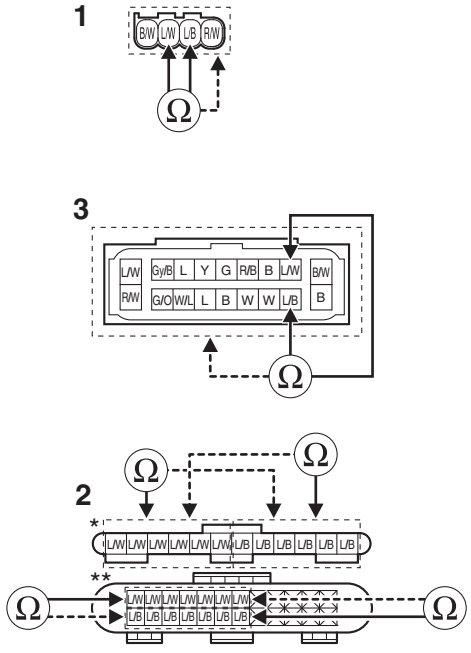
Lines short circuit check “B”

IMU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal
Joint coupler “2”	blue/white–any other coupler terminal blue/black–any other coupler terminal
ABS ECU coupler	blue/white–any other coupler terminal blue/black–any other coupler terminal

A



B



*. Joint coupler for YZF-R1
**. Joint coupler for YZF-R1M

Is resistance ∞ Ω?
YES
→ Go to step 3.
NO
→ Replace the wire harness.

3. Defective IMU
• Replace the IMU, and check again.

4. Defective hydraulic unit assembly
   • Replace the hydraulic unit assembly.

EAS20091

WIRING DIAGRAM

YZFR1L/YZFR1LC/YZFR1ML/ YZFR1MLC 2020

1. AC magneto
2. Rectifier/regulator
3. Main switch
4. Main fuse
5. Radiator fan motor relay
6. ABS solenoid fuse
7. Fuel injection system fuse
8. Electronic throttle valve fuse
9. Backup fuse
10. Sub radiator fan motor fuse
11. Radiator fan motor fuse
12. Ignition fuse
13. Signaling system fuse
14. ABS ECU fuse
15. Hazard lighting fuse
16. Headlight fuse
17. Auxiliary fuse
18. Engine ground
19. Battery
20. Starter relay
21. ABS motor fuse
22. Starter motor
23. Joint coupler
24. Front brake light switch
25. Handlebar switch (right)
26. Wheel switch
27. Start/engine stop switch
28. Accelerator position sensor
29. Relay unit
30. Starting circuit cut-off relay
31. Fuel pump relay
32. Neutral switch
33. Sidestand switch
34. Fuel sender
35. Fuel pump
36. Intake solenoid
37. Gear position sensor
38. O_2 sensor 1 (left side)
39. O_2 sensor 2 (right side)
40. Shift sensor
41. Intake air pressure sensor
42. Atmospheric pressure sensor
43. Cylinder identification sensor
44. EXUP servo motor
45. Crankshaft position sensor
46. Coolant temperature sensor
47. Intake air temperature sensor
48. ECU (Engine Control Unit)
49. Spark plug
50. Ignition coil #1
51. Ignition coil #2
52. Ignition coil #3
53. Ignition coil #4
54. Air induction system solenoid
55. Primary injector #1
56. Primary injector #2
57. Primary injector #3
58. Primary injector #4
59. Secondary injector #1
60. Secondary injector #2
61. Secondary injector #3
62. Secondary injector #4
63. Intake funnel servo motor
64. Throttle servo motor
65. Steering damper solenoid
66. Hydraulic unit assembly (ABS ECU)
67. Front wheel sensor
68. Rear wheel sensor
69. Throttle position sensor
70. IMU (Inertial Measurement Unit)
71. Meter assembly
72. Fuel level warning light
73. MIL (Malfunction indicator light)
74. Neutral indicator light
75. Shift indicator light
76. Multi-function meter
77. Stability control indicator light
78. Oil pressure and coolant temperature warning light
79. Auxiliary system warning light
80. Turn signal indicator light (right)
81. Turn signal indicator light (left)
82. Meter light
83. ABS warning light
84. High beam indicator light
85. YDT coupler
86. CCU (Communication Control Unit) (for YZF-R1M)
87. GPS unit (for YZF-R1M)
88. Oil pressure switch
89. Handlebar switch (left)
90. Mode switch
91. Pass/LAP switch
92. Dimmer switch
93. Horn switch
94. Turn signal switch
95. Hazard switch
96. Horn
97. Clutch switch
98. Rear turn signal light (right)
99. Rear turn signal light (left)
100. Front turn signal/position light (right)
101. Front turn signal/position light (left)
102. Headlight control unit
103. Headlight (high beam)
104. Headlight (low beam)
105. Rear brake light switch
106. Tail/brake light
107. License plate light
108. Auxiliary light
109. Auxiliary DC connector
110. Sub radiator fan motor (right)
111. Radiator fan motor (left)
112. SCU fuse (for YZF-R1M)
113. SCU (Suspension Control Unit) (for YZF-R1M)
114. Front fork stepping motor (left) (for YZF-R1M)
115. Front fork stepping motor (right) (for YZF-R1M)
116. Rear shock absorber assembly stepping motor (compression damping) (for YZF-R1M)
117. Rear shock absorber assembly stepping motor (rebound damping) (for YZF-R1M)
118. Steering damper solenoid (OPTION) (for YZF-R1M)

*. Joint coupler for YZF-R1

**. Joint coupler for YZF-R1M

A. Wire harness
B. Sub-wire harness (Intake solenoid)
C. Sub-wire harness (Coolant temperature sensor)
D. Sub-wire harness (Intake air temperature sensor)
E. Sub-wire harness (CCU (Communication Control Unit)) (for YZF-R1M)
F. Sub-wire harness (Oil pressure switch)
G. Sub-wire harness (SCU, steering damper solenoid, sub-wire harness) (for YZF-R1M)
H. Sub-wire harness (front fork stepping motor) (for YZF-R1M)
I. Sub-wire harness (Steering damper solenoid), (OPTION) (for YZF-R1M)

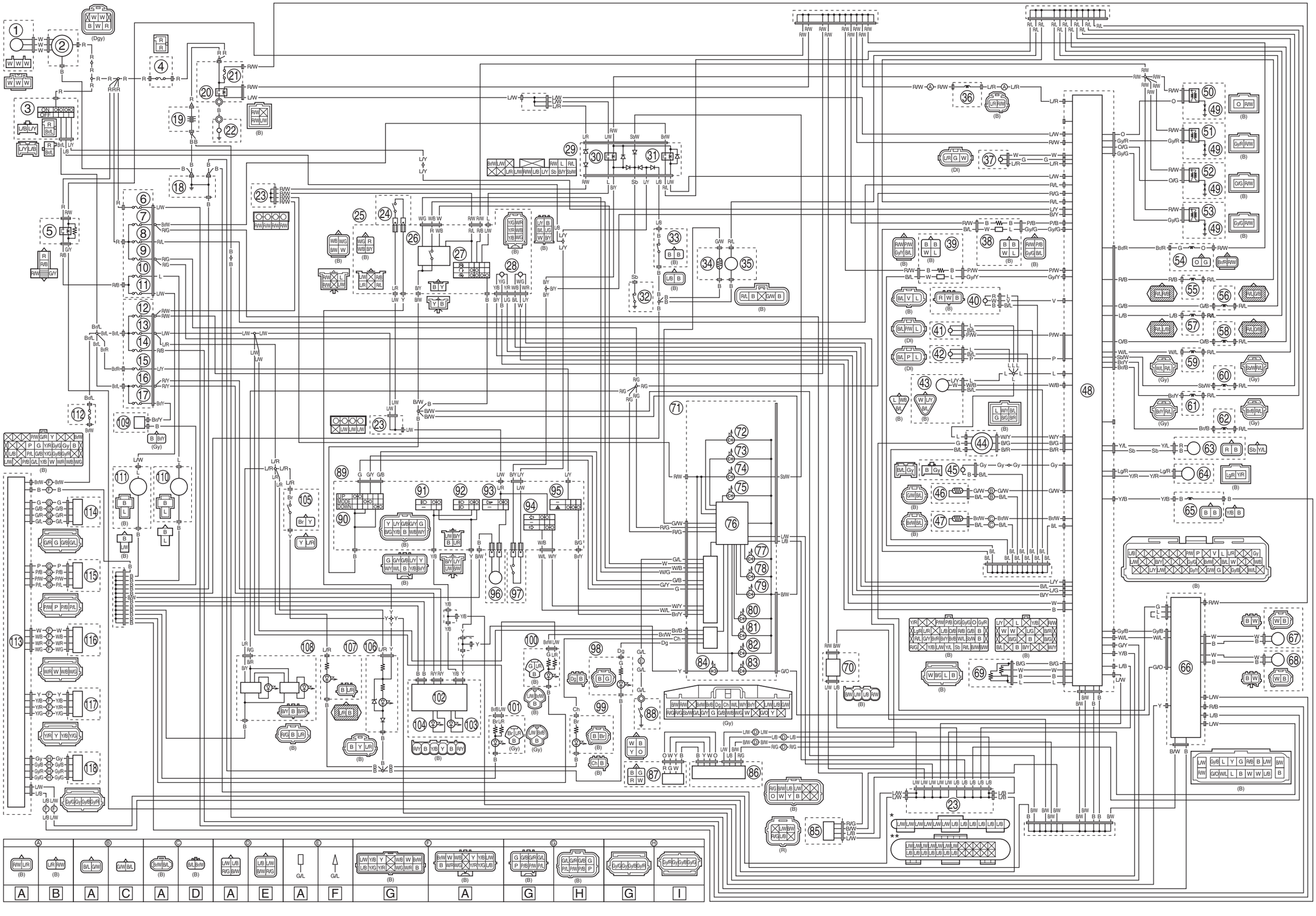
EAS30613

COLOR CODE

B	Black
Br	Brown
Ch	Chocolate
Dg	Dark green
Dl	Dark blue
G	Green
Gy	Gray
L	Blue
Lg	Light green
O	Orange
P	Pink
R	Red
Sb	Sky blue
V	Violet
W	White
Y	Yellow
B/G	Black/Green
B/L	Black/Blue
B/R	Black/Red
B/W	Black/White
B/Y	Black/Yellow
Br/B	Brown/Black
Br/L	Brown/Blue
Br/R	Brown/Red
Br/W	Brown/White
Br/Y	Brown/Yellow
G/B	Green/Black
G/L	Green/Blue
G/O	Green/Orange
G/R	Green/Red
G/W	Green/White
G/Y	Green/Yellow
Gy/B	Gray/Black
Gy/G	Gray/Green
Gy/R	Gray/Red
Gy/Y	Gray/Yellow
L/B	Blue/Black
L/G	Blue/Green
L/R	Blue/Red
L/W	Blue/White
L/Y	Blue/Yellow
Lg/R	Light green/Red
O/B	Orange/Black
O/G	Orange/Green
P/B	Pink/Black
P/L	Pink/Blue
P/W	Pink/White
R/B	Red/Black
R/G	Red/Green
R/L	Red/Blue
R/W	Red/White
R/Y	Red/Yellow
Sb/W	Sky blue/White
W/B	White/Black
W/G	White/Green
W/L	White/Blue
W/R	White/Red
W/Y	White/Yellow
Y/B	Yellow/Black
Y/G	Yellow/Green
Y/L	Yellow/Blue
Y/R	Yellow/Red



YZFR1L/YZFR1LC/YZFR1ML/YZFR1MLC 2020 WIRING DIAGRAM



YZFR1L/YZFR1LC/YZFR1ML/YZFR1MLC 2020 WIRING DIAGRAM

