

Vespa would like to thank you

for choosing one of its products. We have prepared this manual to help you to get the very best from your vehicle. Please read it carefully before riding the vehicle for the first time. It contains information, tips and precautions for using your vehicle. It also describes features, details and devices to assure you that you have made the right choice. We believe that if you follow our suggestions, you will soon get to know your new vehicle well and that it will continue to give you satisfactory service for many years to come. This booklet forms an integral part of the vehicle; should the vehicle be sold, it must be transferred to the new owner.

Vespa GTS 300 hpe



The instructions given in this manual are intended to provide a clear, simple guide to using your vehicle; details are also given of routine maintenance procedures and regular checks that should be carried out on the vehicle at an **Authorised PIAGGIO Dealer or Service Centre**. The booklet also contains instructions for simple repairs. Any operations not specifically described in this booklet require the use of special tools and/or particular technical knowledge: to carry out these operations refer to any **authorised PIAGGIO Dealer or Service Centre**.



Personal safety

Failure to completely observe these instructions will result in serious risk of personal injury.



Safeguarding the environment

Sections marked with this symbol indicate the correct use of the vehicle to prevent damaging the environment.



Vehicle intactness

The incomplete or non-observance of these regulations leads to the risk of serious damage to the vehicle and sometimes even the invalidity of the guarantee.

The signs that you see on this page are very important. They are used to highlight parts of the booklet that should be read with particular care. The different symbols are used to make each topic in the manual simple and quick to locate.

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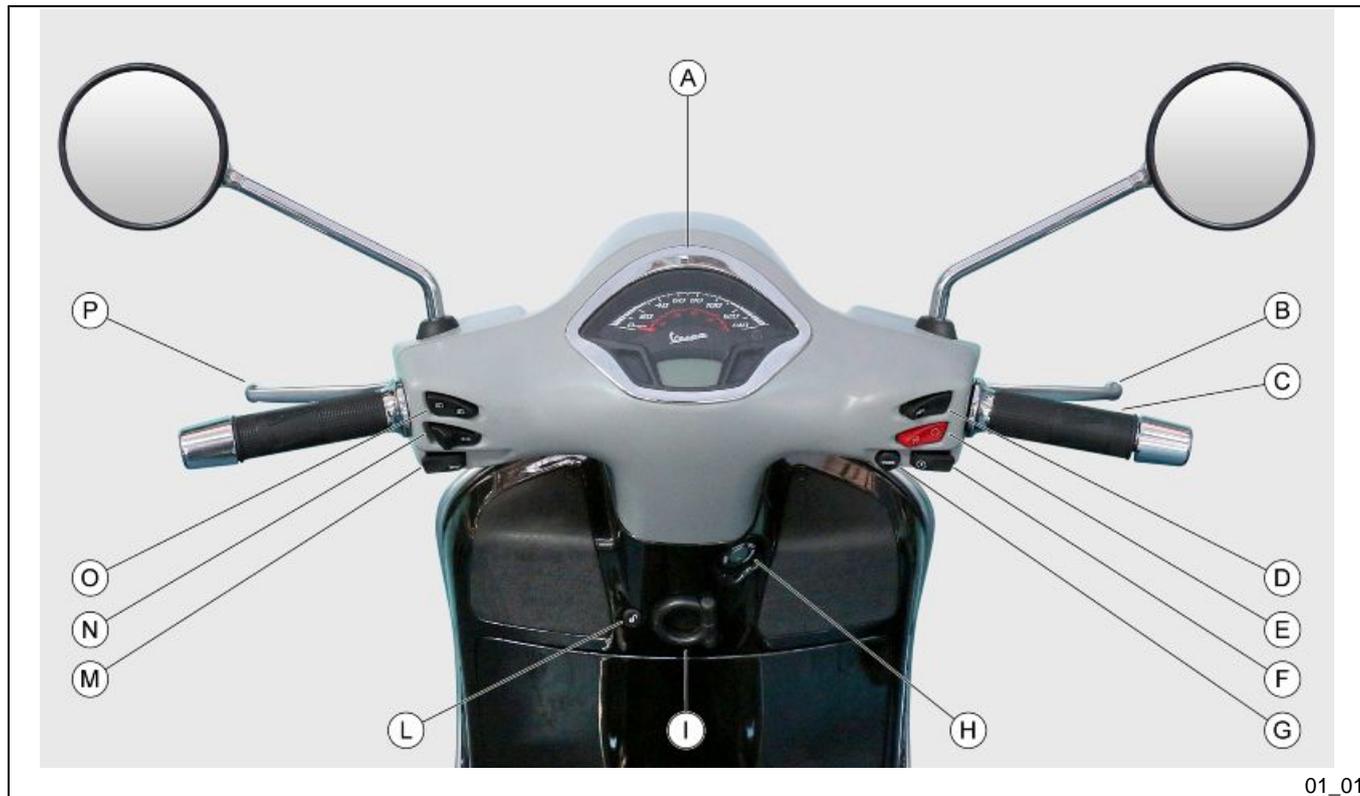
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Vespa GTS 300 hpe



**Chap. 01
Vehicle**

Dashboard (01_01)



01_01

A = Instrument panel

B = Front brake lever

C = Throttle grip

D = ASR button

E = Engine stop switch

F = Starter button

G = **MODE** button

H = Ignition switch

I = Bag hook

L = Saddle release button

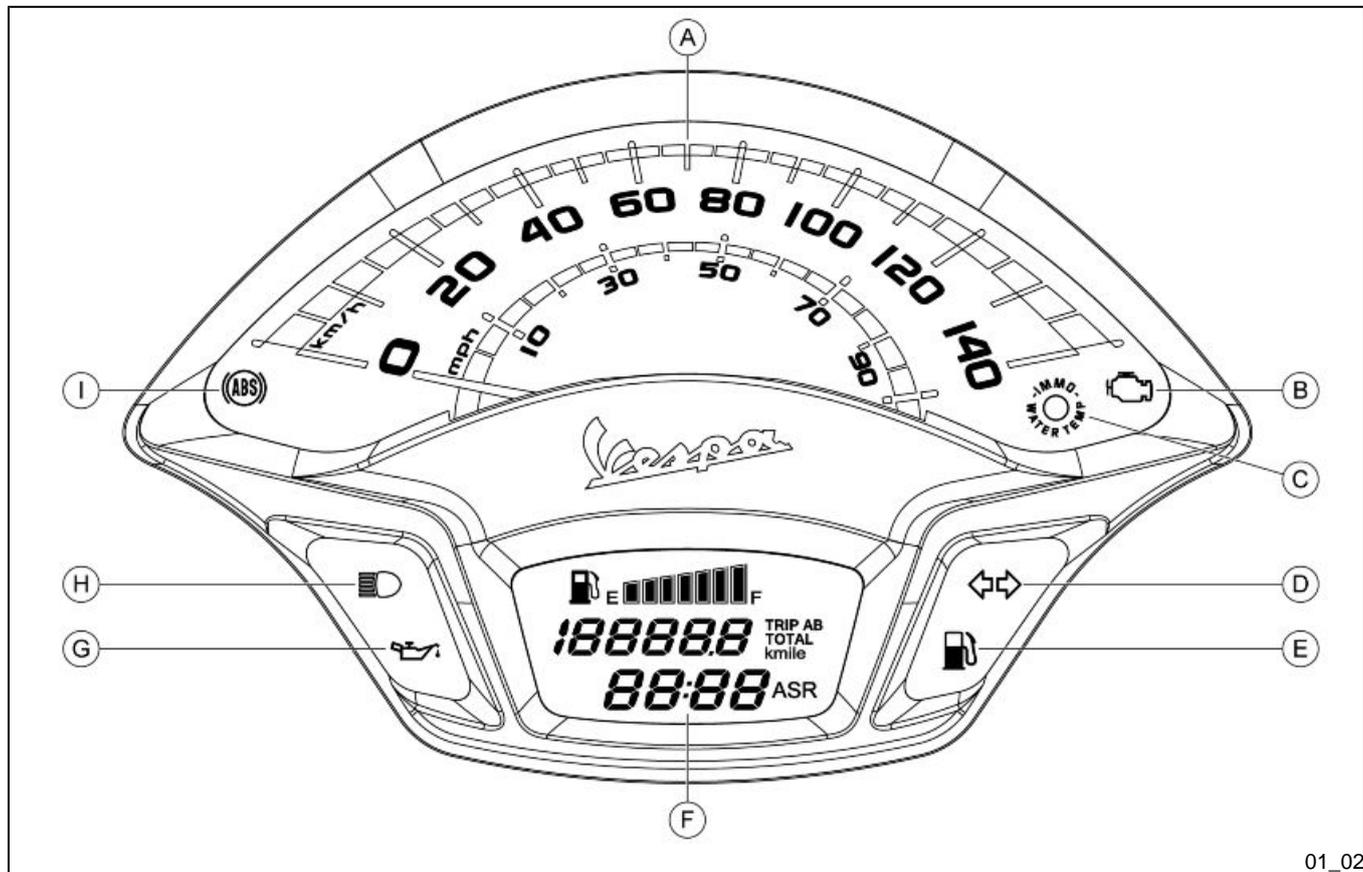
M = Horn button

N = Turn indicator control

O = Light switch

P = Rear brake lever

Analogue instrument panel (01_02)



01_02

A = Speedometer

- B** = Engine control warning light
- C** = Immobilizer / Engine temperature warning lamp
- D** = Turn indicator warning light
- E** = Low fuel warning light
- F** = Digital display
- G** = Low engine oil pressure warning light
- H** = High beam warning light
- I** = ABS warning light

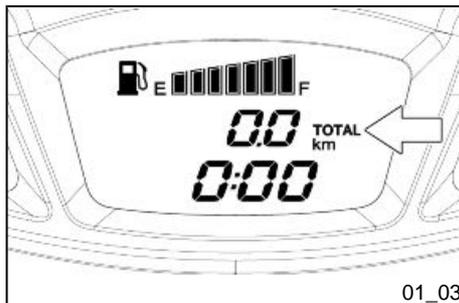
Clock (01_03, 01_04, 01_05)

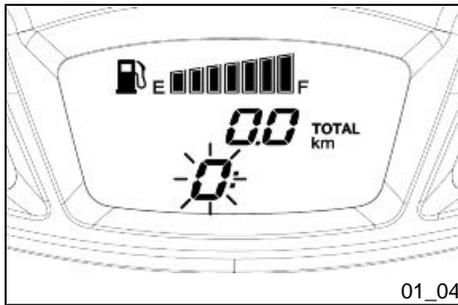
The digital display shows the current time when the ignition switch is turned to **ON**. Press the **MODE** button to cycle through the modes and select total odometer mode.

N.B.

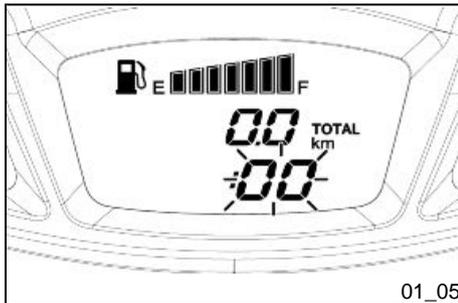
THE FOLLOWING ARE DEFINED WHEN NAVIGATING THE DISPLAY:

- «**BRIEF PRESS**»: A PRESS OF THE INDICATED BUTTON, FOR A PERIOD OF LESS THAN TWO SECONDS;
- «**PROLONGED PRESS**»: A PRESS OF THE INDICATED BUTTON, FOR A PERIOD OF MORE THAN TWO SECONDS.





Press and hold the **MODE** button to enter 'hours' setting mode. The values flash to confirm that the setting mode is active. Each time the **MODE** button is pressed briefly increases the hours value by one.



After setting the hours value, press and hold the **MODE** button to enter 'minutes' setting mode. The values flash to confirm that the setting mode is active. Each time the **MODE** button is pressed briefly increases the minutes value by one.

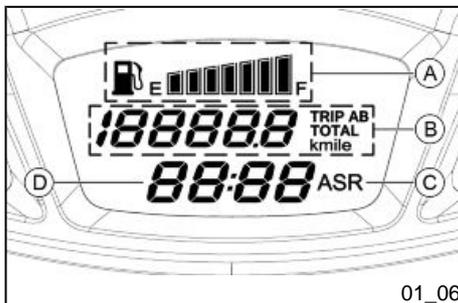
After setting the minutes value, press and hold the **MODE** button to exit clock setting mode.

If no buttons are pressed within 5 seconds, the clock setting mode is exited automatically.

CAUTION



FOR SAFETY, THE CLOCK SETTING FUNCTION IS ONLY AVAILABLE AT A VEHICLE SPEED OF 0 KM/H.



Digital lcd display (01_06, 01_07)

A = Fuel gauge with fuel pump symbol

B = Total and trip odometer/Km-miles

C = ASR system icon

D = Clock



When the ignition switch is turned to **ON**, all the functions of the digital display illuminate for a few seconds.

MULTIFUNCTION INDICATOR B

Press the **MODE** button briefly to cycle through the following indicator modes:

- Total Odometer (**TOTAL**)
- Trip odometer A (**TRIP A**)
- Trip odometer B (**TRIP B**)

To reset the trip odometers, select **TRIP A** or **TRIP B** then press and hold the **MODE** button. Press and hold the **MODE** button while in **TOTAL** odometer mode to access clock setting mode.

N.B.

THE FOLLOWING ARE DEFINED WHEN NAVIGATING THE DISPLAY:

- «**BRIEF PRESS**»: A PRESS OF THE INDICATED BUTTON, FOR A PERIOD OF LESS THAN TWO SECONDS;
- «**PROLONGED PRESS**»: A PRESS OF THE INDICATED BUTTON, FOR A PERIOD OF MORE THAN TWO SECONDS.

SELECTING KM OR MILES AS UNIT OF MEASUREMENT B

Press the **MODE** briefly to cycle through the modes and select **TOTAL** odometer mode, then turn the ignition switch to **OFF**.

Turn the ignition switch to **ON** while pressing and holding the **MODE** button.

Release the **MODE** button for 2 to 4 seconds.

WARNING

TO GO FROM «KM» TO «MILE» THE MULTIFUNCTION INDICATOR «C» MUST BE SET TO TOTAL ODOMETER (TOTAL).

CAUTION



FOR SAFETY, THIS SELECTION PROCEDURE IS ONLY PERMITTED AT A VEHICLE SPEED OF 0 KM/H.

MODE button (01_08)

Press the **MODE** button briefly and release to cycle through the following display functions:

- Total Odometer (**TOTAL**)
- Trip odometer A (**TRIP A**)
- Trip odometer B (**TRIP B**)

Press and hold the **MODE** button to:

- access the clock settings from the **TOTAL** odometer screen.
- reset the relative odometer reading in the **TRIP A** or **TRIP B** trip odometer screens.

N.B.

THE FOLLOWING ARE DEFINED WHEN NAVIGATING THE DISPLAY:

- **«BRIEF PRESS»**: A PRESS OF THE INDICATED BUTTON, FOR A PERIOD OF LESS THAN TWO SECONDS;



01_08

- «PROLONGED PRESS»: A PRESS OF THE INDICATED BUTTON, FOR A PERIOD OF MORE THAN TWO SECONDS.

Keyswitch (01_09)

The ignition switch is located on the front leg shield back plate near the bag hook.



SWITCH POSITIONS

ON «1»: Ready to start position, non-extractable key, mechanical anti-theft device disabled. Saddle opening and case opening possible.

OFF «2»: Starting disabled, key locked in barrel, mechanical antitheft device disabled. Saddle opening and case opening possible.

CLOSE «3»: Starting disabled, key removable from barrel, mechanical antitheft device disabled. Saddle opening and case opening disabled.

LOCK «4»: Starting disabled, key removable from barrel, mechanical antitheft device enabled. Saddle opening and case opening disabled.



Locking the steering wheel (01_10)

Turn the handlebar to the left (as far as it will go), turn the key to «**LOCK**» and remove the key.

CAUTION



NEVER TURN THE KEY TO «LOCK» OR «OFF» WHILE RIDING.



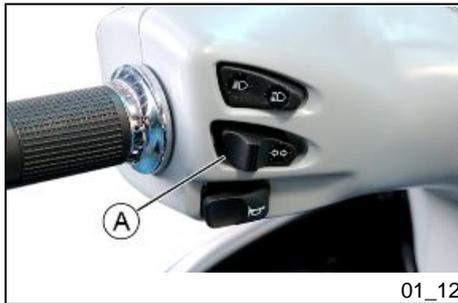
Releasing the steering wheel (01_11)

Reinsert the key and turn it to «OFF».

CAUTION

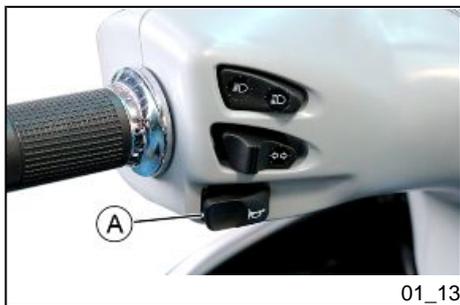


NEVER TURN THE KEY TO «LOCK» OR «OFF» WHILE RIDING.



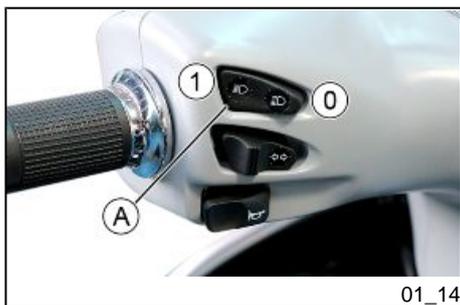
Switch direction indicators (01_12)

Move the switch «A» towards the left to indicate a left turn; move the switch «A» towards the right to indicate a right turn;. Push in the switch «A» in the centre to deactivate the turn signal indicators.



Horn button (01_13)

Press button «A» to operate the horn.



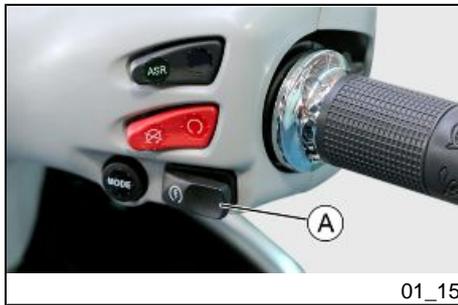
Light switch (01_14)

The low beam headlamp is lit when the light selector switch **A** is turned to **0**. Turning the switch to **1** turns on the high beam headlamp.

CAUTION

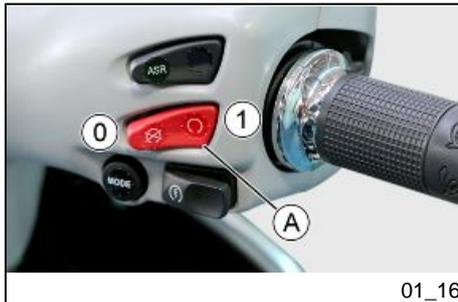


DO NOT REST OR TRANSPORT OBJECTS AND/OR CLOTHING ON TOP OF THE FRONT LIGHT ASSEMBLY WITH THE LIGHT ON OR JUST TURNED OFF. FAILURE TO OBSERVE THIS PRECAUTION MAY CAUSE THE GLASS TO OVERHEAT AND CONSEQUENTLY MELT.



Start-up button (01_15)

Starter button «A». To start the vehicle see the "starting the engine" section.



Engine stop button (01_16)

With the emergency stop switch «A» in position «1» **RUN** it is possible to start the engine; if the emergency stop switch «A» is in position «0» **OFF** it is not possible to start the engine, and if it is running, it will stop.

System ABS (01_17, 01_18, 01_19)

The vehicle is equipped with a locking ABS system on the wheels.

A: Tone wheel

B: Speed sensor

- **ABS:** It is a hydraulic - electronic device that limits the pressure within the braking circuit when a sensor, located on the wheel, detects its tendency to lock. This system prevents the wheels from locking to avoid the risk of falling.

In case of failure of the ABS system, immediately reported to the rider with ABS warning light on the instrument cluster, the vehicle retains the characteristics of a conventional braking system. In case of ABS warning light, reduce speed and go to an Authorised Service Centre for the appropriate checks. The safety provided by the ABS does not, in any case, justify risky manoeuvres. The stopping distance may be greater, compared to a conventional vehicle equipped with traditional braking in the following conditions:

- Riding on rough roads, with gravel or snow
- Riding on roads with holes or bumps

It is therefore recommended to reduce speed in these conditions.



AT VERY LOW SPEEDS (LESS THAN 5 KM/H) THE ABS SYSTEM IS DISABLED.

IT IS RECOMMENDED TO PAY ATTENTION THEREFORE IN CASES OF BRAKING IN LOW GRIP CONDITIONS AT LOW SPEED (FOR EXAMPLE BRAKING ON GARAGE FLOOR TILES AFTER HAVING RIDDEN ON WET ROADS OR SIMILAR SITUATIONS)

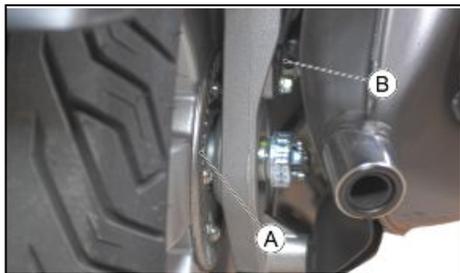
CAUTION



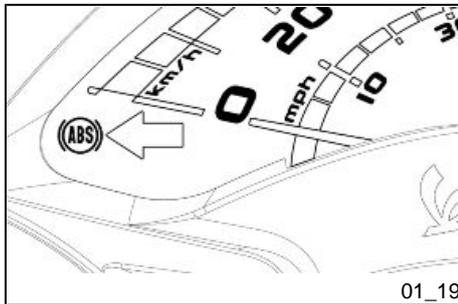
IN THE EVENT OF MALFUNCTION OF THE BATTERY, THE ABS - ASR SYSTEM TURNS OFF.



01_17



01_18



When switching the key to «ON», the ABS control unit performs a control of the system, during which the ABS warning light flashes. This phase ends when exceeding 5 Km/h of speed with the switching off of the warning light.

In case of error of the system, the ABS warning light remains fixed. The braking system keeps the characteristics of a traditional system.

In this case, reduce speed and go to an **Authorised Service Centre** for the appropriate checks.

WARNING



IF THE WARNING LIGHT IS FLASHING, THE ABS SYSTEM IS NOT ACTIVE.

System ASR (01_20, 01_21)

ASR SYSTEM

The ASR system is a driving aid that assists the driver in acceleration manoeuvres, particularly on low-grip surfaces or under conditions that can cause sudden back-wheel slippage. The ASR in these situations automatically intervenes by reducing engine output within the limit imposed by the grip conditions, contributing significantly to the maintenance of stability the vehicle.

WARNING



THE ASR SYSTEM IS BASED ON THE RECOGNITION OF SPEED DIFFERENCES BETWEEN FRONT AND REAR WHEEL. IN ORDER FOR THE SYSTEM TO MAINTAIN MAXIMUM EFFICIENCY IN ALL CONDITIONS, THE CALIBRATION PROCEDURE MUST BE PERFORMED EVERY TIME, EVEN IN CASE OF REPLACEMENT OF JUST ONE TIRE.

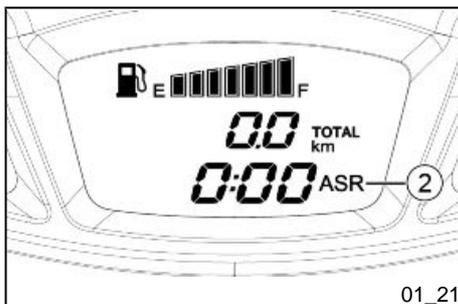
FOR THE CALIBRATION OF THE CONTROL UNIT PERFORM THE PROCEDURE BELOW.

ASR BUTTON 1: activation / deactivation.



01_20

ASR ICON 2: ASR status indicator icon.



01_21

ASR ICON FLASHING MODE:

- Frequency of 5 flashes per second (5Hz), with vehicle running: The system is functioning correctly and is active (poor grip conditions, engine power limiting in effect); ride with extreme care, as the grip limit has been exceeded; restore the vehicle safety conditions by gently reducing the throttle opening.

- Frequency of 1 flash per second (2 Hz), with the key in "ON" position and the vehicle at a standstill: The system is active and the calibration is performed. The specific icon will switch off as soon as the ABS system is operational.

- Frequency of 1 flash every 2 seconds (0.5 Hz), with the key in "ON" position and the vehicle at a standstill: the system calibration is in progress.

- Switched on steady can have three meanings:

1. calibration procedure performed incorrectly. Perform a new calibration;
 2. the ASR system is not operating and will not intervene in case of loss of grip;
 3. the ASR system has been willingly disabled.
- If the deactivation was voluntary (by pressing the appropriate button "1" for 1 second with the engine running) it is recommended to reactivate the system as soon as possible.
 - If the system was NOT deactivated voluntarily, this indicates a failure of the ASR system: in this case you must contact an **Authorised Service Centre** for the diagnosis and the reactivation of the system.

To ensure maximum safety of the vehicle it is advisable to keep the system active. Deactivation may be necessary only in case of starting with very low grip surfaces (mud, snow) on which the operation of the ASR could actually prevent the movement of the vehicle.

N.B.

WHEN THE KEY IS TURNED TO "ON", THE ABS ICON FLASHES AT THE SAME FREQUENCY AS THE ABS INDICATOR LAMP TO INDICATE THAT THE SYSTEM DIAGNOSIS IS IN PROGRESS. IF NO ERRORS ARE FOUND, THE ASR ICON AND THE ABS INDICATOR LAMP SWITCH OFF AT THE SAME TIME ONCE THE VEHICLE SPEED EXCEEDS 5 Km/h (3 mph).

IF THE ICON AND INDICATOR LAMP DO NOT FLASH WHEN THE ENGINE IS STARTED, THE SYSTEM MAY NOT BE WORKING. CONTACT AN AUTHORISED SERVICE CENTRE.

WARNING

THE ASR SYSTEM IS ACTIVATED AT EVERY "ON" POSITIONING OF THE IGNITION SWITCH.

IF DISABLED BY THE USER, THE ASR SYSTEM KEEPS THE STATE OF INACTIVITY ONLY IF THE VEHICLE IS OFF, BY USING THE ENGINE STOP SWITCH; AT THE NEXT KEY ON THE ASR SYSTEM IS ENABLED AUTOMATICALLY.

CAUTION

IT IS EMPHASISED THAT THE RIDING AUXILIARY SYSTEM CANNOT CHANGE THE PHYSICAL LIMITS OF GRIP AND IS NOT A SUBSTITUTE FOR PROPER MANAGEMENT OF POWER, BOTH ON STRAIGHT STRETCHES AND IN TURNS. THEREFORE, IT IS RECOMMENDED TO ALWAYS USE THE VEHICLE WITH THE UTMOST CARE AND IN ACCORDANCE WITH THE REGULATIONS IN FORCE.

CAUTION

AT LOW SPEED, LESS THAN 5 Km/h (3 mph), THE ASR SYSTEM IS NOT OPERATIONAL.

IT IS RECOMMENDED TO PAY PARTICULAR ATTENTION IN THE EVENT OF ACCELERATION FROM STANDSTILL IN CONDITIONS OF LOW GRIP, ESPECIALLY IN THE FIRST METRES.

N.B.

IN CASE OF ROAD DISCONNECTIONS THERE COULD BE SHORT ACTIVATIONS OF THE ASR SYSTEM. SUCH EVENT APPEARS UNDER NORMAL OPERATION CONDITIONS OF THE VEHICLE.

N.B.

THE DEVICE PREVENTS IMPRESSING ON THE REAR HIGH SPEED ROTATION WHEEL WITH THE VEHICLE ON THE CENTRE STAND. IT IS RECOMMENDED NOT TO INSIST WITH THE THROTTLE GRIP IN THIS PARTICULAR CONDITION.

CAUTION

A POOR STATE OF MAINTENANCE OF THE TYRES CAN RESULT IN ABNORMAL OPERATION OF THE ASR SYSTEM.

IN CASE OF REPEATED INTERVENTIONS OF THE ASR, EVEN ON ROAD SURFACES WITH GOOD GRIP OR SMALL THROTTLE OPENINGS, IT IS NECESSARY TO CHECK FOR WEAR AND/OR THE STATE OF INFLATION OF TYRES FIRST. IF THE PROBLEM PERSISTS, CONTACT AN AUTHORISED SERVICE CENTRE.

CAUTION

IN THE EVENT OF MALFUNCTION OF THE BATTERY, THE ABS - ASR SYSTEM TURNS OFF.

ASR SYSTEM CALIBRATION PROCEDURE

In order to maintain the efficiency of the ASR system when one or both tires are replaced, a calibration procedure of the system must be performed as follows on a straight flat stretch of road.

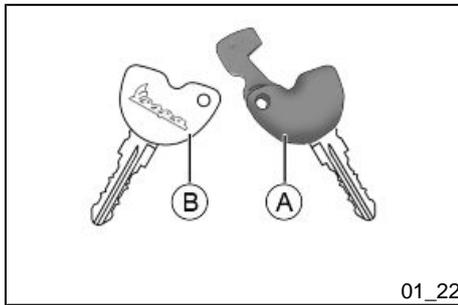
After turning the key to 'ON', the ABS indicator light and the ASR icon '2" flash at the same frequency (fast flashing).

1. Start the vehicle and ride a short distance above 5 km/h (3 mph) and wait for the flashing of the ABS warning light and ASR icon to stop.
2. Stop the vehicle and leave the engine running at idle speed for at least 3 seconds.

3. Turn the ASR system off by pressing the specific button "1" on the handlebar and check that the ASR disabling icon "2" stays on steady.
4. Press at the same time the engine starter button and the ASR on/off button "1" for at least 4 seconds (**pulling the LH brake lever has no effect**).
5. The activation of the procedure will be confirmed by the ASR icon "2" switching on with slow flashing (1 flash every 2 seconds).
6. Accelerate to a constant speed of 30 km/h (18.7 mph) and maintain it for at least to 10 seconds.
7. The end of the procedure will be indicated by the switched off ASR icon "2".
8. Once the procedure is complete, it is necessary to turn the ignition switch to "**OFF**" and wait at least 30 seconds for the next key "**ON**".
9. In case of failure to complete the procedure within 2 minutes the ASR symbol «2» will stay on steady and the ASR will remain off until the next key «**OFF**».
10. To restart the ASR, it is necessary to turn the key to "**ON**" and repeat the procedure until achieving positive result.

The immobilizer system

In order to enhance theft protection, the vehicle is equipped with a «**PIAGGIO IMMOBILIZER** » electronic engine locking device that is activated automatically when the ignition key is removed. Upon start-up, the «**PIAGGIO IMMOBILIZER**» system checks the starter key, and only if this key is recognised will the Immobiliser system allow the vehicle to be started.



Keys (01_22)

The vehicle is supplied with two types of keys. The «A» key with a brown grip and the "MASTER" key. Only a single copy of this key is supplied, which is necessary to program all the other keys and for the dealer to perform some maintenance operations. For this reason it is recommended that you use it only in exceptional circumstances. The blue key «B» (single copy supplied) is used for normal operations and for start-up.

WARNING



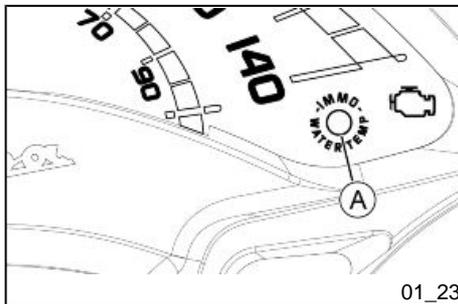
THE LOSS OF THE BROWN KEY PREVENTS LATER REPAIRS TO THE "PIAGGIO IMMOBILIZER" SYSTEM AND TO THE ENGINE CONTROL UNIT.

Immobilizer device enabled indicator led (01_23)

CAUTION



WITH THE ENGINE RUNNING, THE WARNING LIGHT «A» HAS THE FUNCTION TO SIGNAL THE ENGINE COOLANT TEMPERATURE. REFER TO THE SECTION «MAINTENANCE» / «COOLANT LEVEL».



Activation of the **"PIAGGIO IMMOBILIZER"** system is signalled by a flashing «**A**» indicator. In order to reduce battery discharge, the indicator LED turns off automatically after 48 hours of uninterrupted functioning. If there is a fault in the system, the indication led tells the **Authorised Service Centre** what the type of fault is through the type of flashing emitted.

Operation

Each time the ignition key is removed while in the **"CLOSE"** or **"LOCK"** position, the protection system engages the immobiliser. Turning the key to **"ON"** disables the engine lock, provided that the protection system recognises the code transmitted by the key. If the code is not recognised, turn the key first to **"OFF"** and then to **"ON"**; if the lock cannot be disabled, try with the other key supplied (brown). If the engine still cannot be started, an **Authorised Piaggio Service Centre** with the electronic equipment necessary to identify the problem and repair the system must be contacted.

When requesting additional keys, remember that the registration (up to a maximum of 3 keys) must be performed for all the keys, including the new ones and those already in your possession. Take the key with the brown grip and all the blue keys supplied to an **Authorised Piaggio Service Centre**. The codes of keys not submitted for the new programming procedure are deleted from the memory. Any lost keys will therefore not be enabled to start the engine.

WARNING



EACH KEY HAS ITS OWN AND UNIQUE CODE, WHICH MUST BE STORED IN THE SYSTEM CONTROL UNIT MEMORY.

VIOLENT SHOCKS MAY AFFECT THE ELECTRONIC COMPONENTS OF THE KEY.

SHOULD THE VEHICLE CHANGE OWNER, IT IS ABSOLUTELY NECESSARY THAT THE NEW OWNER GET POSSESSION OF THE KEY WITH THE BROWN GRIP (AS WELL AS ALL OTHER KEYS).

Programming the immobilizer system (01_24)

Below is described the procedure to follow for programming the **PIAGGIO IMMOBILIZER** system and/or for storing other key codes. The programming procedure should be carried out with the engine stop switch set to **"RUN"**.

PROCEDURE START

From the **"CLOSE"** position, insert the **"MASTER"** key and turn it to the **"ON"** position. Leave the key in this position for 1 to 3 seconds, then return it to the **"CLOSE"** position and remove the key.

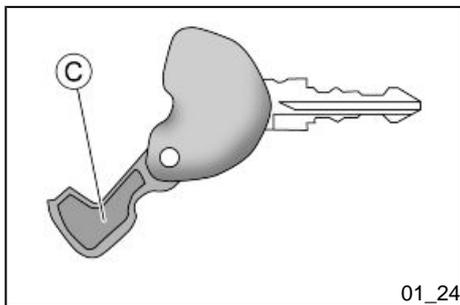
INTERMEDIATE PHASE

After having removed the **"MASTER"** key, insert the secondary key to be programmed within 10 seconds, and immediately turn it to the **"ON"** position. Leave the key in this position for 1 to 3 seconds, then turn it to the **"CLOSE"** position and remove it. In this way you can program up to 3 keys, by repeating the above operation and respecting the indicated times.

FINAL PHASE

After having removed the key to be programmed, insert the **"MASTER"** key again and turn it to the **"ON"** position (this operation must be completed within 10 seconds of

removing the previous key). Leave the key in this position for 1 to 3 seconds, then return it to the "CLOSE" position and remove the key.



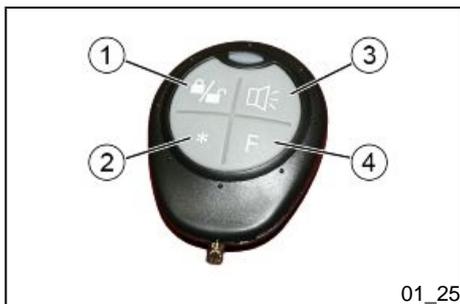
CORRECT PROGRAMMING CHECK PHASE

Insert the "MASTER" key, deactivating the transponder "C" (by tipping the key cap 90°), and turn the key to the "ON" position. Perform the engine starter operation. Ensure that the engine does not start. Insert a programmed key and repeat the start manoeuvre. Check that motor starts.

WARNING



SHOULD YOU START THE ENGINE WITH THE MASTER KEY (WITH TRANSPONDER OFF) OR IN THE EVENT OF WRONG OPERATION DURING PROGRAMMING, REPEAT THE PROCEDURE FROM THE BEGINNING.



Saddle opening remote control (01_25)

The vehicle is equipped with a remote control to open the saddle and for the recognition of the vehicle itself.

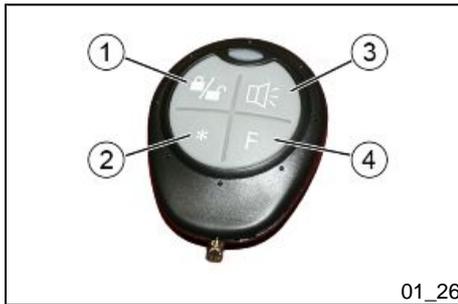
This remote control is supplied together with the keys and it has been programmed to control the opening device control unit at the manufacturing stage. If the remote control is lost, a new one can be requested and programmed.

- By pressing the buttons «1» or «2» of the remote control for about 3 seconds, the «Bike Finder» device will allow the opening at a distance of the saddle and the recognition of the vehicle with an optical signal by flashing the turn indicator. While holding one of the two buttons, the system will continue to repeat the operation described above until the button is released.
- By instead pressing the buttons «3» or «4» of the remote control, the «Bike Finder» device will be only activated for the recognition of the vehicle by emitting quick optical signals through the turn indicator.

The remote control is powered by internal batteries that get discharged after extended use; If the LED turns on when the button is pressed, the remote control is working properly.

You may need to replace the batteries if the remote control fails or if its range of operation is reduced. To separate the two halves of the remote control, insert the blade of a plain slot screwdriver at one point on the edge and slide it all around.

Once the remote control is open, remove the two batteries from the contact terminal. Install the two new **CR2016** batteries with the positive pole facing the contact terminal. Reassemble the remote control by pressing the two clip-on halves gently with your fingers.



Remote control programming (01_26)

To program the new radio commands, do the following:

1. disconnect the battery of the vehicle;
2. reconnect the battery of the vehicle;
3. within 5 seconds of reconnecting the battery, simultaneously press buttons "1" and "3" on the remote control twice. the «Bike Finder» device will confirm the process with an optical signal by the quick flashing of the turn indicator;
4. the programming of the new radio command generates the end of the procedure and the system is ready for use.

If it is necessary to erase a radio command from the memory of the device, it will be necessary to repeat the programming 4 times even with the same remote control, in order to recover the 4 provided memories.

CAUTION



TO STORE THE OTHER REMOTE CONTROLS TO MEMORY (4 MAXIMUM) YOU NEED TO REPEAT THE WHOLE PROCEDURE AGAIN. FAILURE TO CARRY OUT THESE OPERATIONS WITHIN THE INDICATED TIMES WILL RESULT IN THE REMOTE-CONTROL UNIT KEY PROGRAMMING PROCEDURE BEING ABAN-

DONED AUTOMATICALLY. STORING A FIFTH REMOTE CONTROL MAY LEAD TO CANCELLATION OF THE FIRST ONE.

WARNING



DO NOT KEEP THE REMOTE CONTROL IN PLACES WITH TEMPERATURES EXCEEDING 60° C THE BATTERY WILL RUN DOWN TOO QUICKLY.

CAUTION



TO AVOID BATTERY DISCHARGE, THE SADDLE OPENING REMOTE CONTROL RADIO RECEIVER DEACTIVATES 3 MINUTES AFTER THE LAST RECEIPT. TO RESTORE FUNCTIONS SIMPLY PRESS THE ACTIVATION BUTTON ON THE REMOTE CONTROL FOR ABOUT 3 SECONDS, AS DESCRIBED ABOVE.

USB socket (01_27)

On vehicles with this feature, a USB port **A** is situated inside the glove compartment, on the left hand side.

To use it, remove the protective cap. Refit the cap on the USB port to prevent damage caused by water or moisture.

CAUTION



THE SUPPLIED USB PORT IS SUITABLE FOR RECHARGING AND/OR POWERING MOST DEVICES CURRENTLY AVAILABLE ON THE MARKET.



01_27

The USB port is active once the key is turned to «ON».

CAUTION

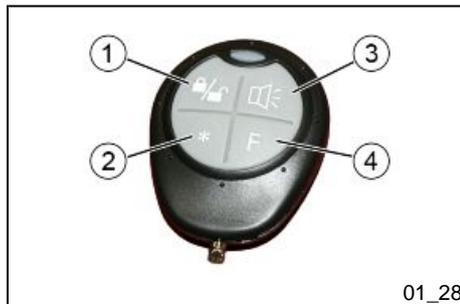


PROLONGED USE OF THE PLUG SOCKET MAY RESULT IN PARTIAL DISCHARGE OF THE BATTERY

USB PORT

USB port

Output voltage	(5.00±0.25) Vdc
Charging current	500mA max



Opening the saddle to access the helmet compartment by remote control (01_28)

The vehicle is equipped with a remote control to open the saddle and for the recognition of the vehicle itself.

- By pressing the buttons «1» or «2» of the remote control for about 3 seconds, the «Bike Finder» device will allow the opening at a distance of the saddle and the recognition of the vehicle with an optical signal by flashing the turn indicator. While holding one of the two buttons, the system will continue to repeat the operation described above until the button is released.

- By instead pressing the buttons «3» or «4» of the remote control, the «Bike Finder» device will be only activated for the recognition of the vehicle by emitting quick optical signals through the turn indicator.

Opening the saddle (01_29, 01_30)

With the key set to «OFF» or «ON», or with engine on, it is possible to electrically open the saddle by pressing button «C». If the electric opening does not work, use the emergency lever "A". When the key is set to «LOCK» the saddle cannot be opened.

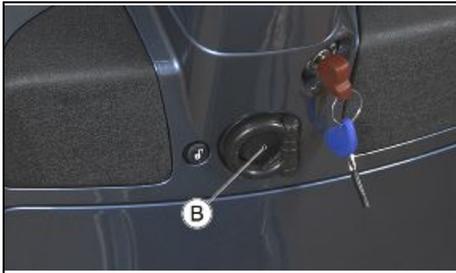




01_31

Rear top box opening (01_31)

Insert the key in the ignition switch and press down until the storage compartment opens. If the switch is set to "**LOCK**", turn the key to "**OFF**" or "**ON**" before pressing it down.



01_32

Bag clip (01_32)

To use the retractable bag hook «**B**» mounted on the leg shield back plate, pull it slightly towards the back of the vehicle.

Identification (01_33, 01_34, 01_35)

Identification registration numbers are made up of a prefix and a number, stamped on the frame and on the engine. The serial number must always be indicated when ordering spare parts. We recommend checking that the frame registration number stamped on the vehicle corresponds with that on the vehicle documentation.

CAUTION

PLEASE REMIND THAT ALTERING IDENTIFICATION REGISTRATION NUMBERS CAN LEAD TO SERIOUS PENAL SANCTIONS (IMPOUNDING OF THE VEHICLE, ETC.).

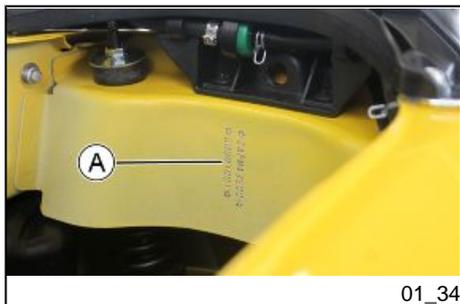
Frame number

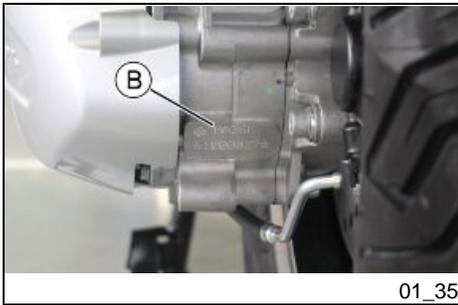
The chassis number «A» is stamped near the fuel tank.

To read it, proceed as follows:

- lift the saddle;

- lift the helmet compartment by removing it.





Engine number

The engine number «**B**» is stamped near the rear left shock absorber lower support.

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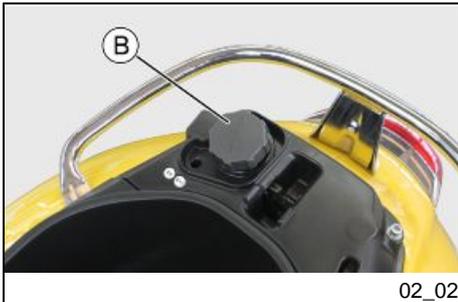
Chap. 02
Use



Checks (02_01)

Before using the vehicle, check:

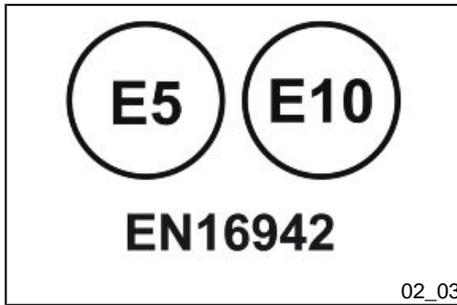
1. That there is enough fuel in the fuel tank.
2. The level of the front and rear brake fluid.
3. That the tyres are correctly inflated.
4. The correct functioning of side lights, headlamp, turn indicators, stop light and license plate light.
5. The operation of the front and rear brakes.
6. The oil level in the gearcase.
7. The engine oil level.
8. The cooling fluid level.



Refuelling (02_02, 02_03, 02_04)

Lift the saddle and unscrew the cap «**B**».

Prescribed fuel: Minimum 95 octane unleaded petrol.



The European standard **EN 16942** prescribes the identification of the vehicle compatibility with the fuel type, by means of a graphic symbol for consumer information. The symbols shown on the side make facilitate the recognition of the correct fuel type to be used on your vehicle. Before refuelling, check the symbols located near the filler neck and compare them with the symbol shown on the filling pump.

E5: unleaded petrol with maximum 5% ethanol.

E10: unleaded petrol with maximum 10% ethanol.

The label on each pump dispenser shows only one value; if for example it shows E5 it means that the petrol supplied is unleaded, with 5% ethanol.

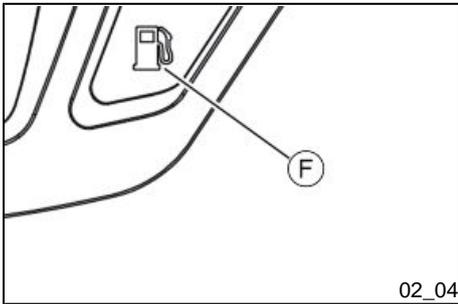
The label on the vehicle can instead show several values If, for example, it shows both E5 and E10 values, it means that the vehicle is compatible with petrol containing up to a maximum 10% ethanol, and thus it is possible to refuel the vehicle either from a E5 dispenser or from a E10 dispenser (but not from one showing E85).

CAUTION



ALWAYS USE PETROL WITH A MAXIMUM OF 10% BIOETHANOL CONTENT (E10).

DO NOT USE PETROL WITH AN ETHANOL CONTENT HIGHER THAN 10%; THIS USE COULD DAMAGE THE FUEL SYSTEM COMPONENTS AND/OR COMPROMISE ENGINE PERFORMANCE.



The reserve fuel level is indicated by the warning light «F».

WARNING



SHUT OFF THE ENGINE BEFORE REFUELLING WITH PETROL.

PETROL IS HIGHLY INFLAMMABLE.

DO NOT SMOKE AND KEEP NAKED FLAMES AT A DISTANCE: FIRE HAZARD.

DO NOT INHALE FUEL FUMES.

DO NOT ALLOW PETROL TO COME INTO CONTACT WITH HOT ENGINE OR ANY PLASTIC PARTS.

CAUTION



PETROL DAMAGES THE PLASTIC PARTS OF THE BODYWORK.

CAUTION



USING OILS OTHER THAN THOSE RECOMMENDED CAN SHORTEN THE LIFE OF THE ENGINE.

CAUTION



DO NOT USE THE MOTORCYCLE TO THE COMPLETE EXHAUSTION OF THE FUEL; IF THIS SHOULD HAPPEN, DO NOT CONTINUALLY TRY TO START THE MACHINE, MOVE THE IGNITION SWITCH TO «OFF» AND REFILL THE TANK

WITH GASOLINE AS SOON AS POSSIBLE. IF YOU DO NOT DO THIS, YOU COULD DAMAGE THE FUEL PUMP AND/OR THE CATALYTIC CONVERTER.

Shock absorbers adjustment (02_05, 02_06)

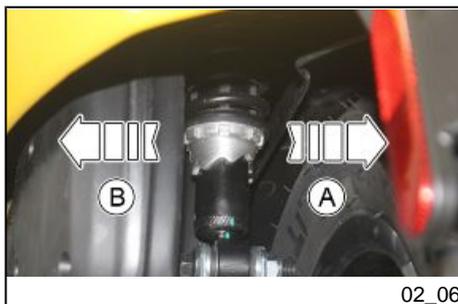
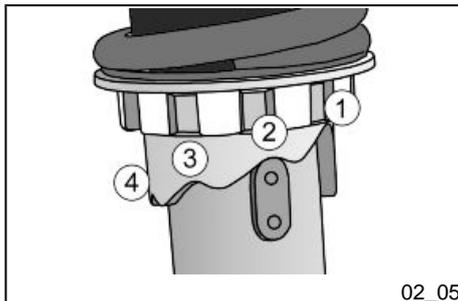
Spring pre-loading can be regulated on four positions using a special shock absorber wrench, turning the ring nut at the bottom of the shock absorbers.

Position 1: minimum pre-load: rider only

Position 2: medium pre-loading: rider only

Position 3: medium pre-loading: rider and passenger

Position 4: maximum pre-loading: rider, passenger and luggage.



Spring pre-loading increases by turning the ring nut towards «A», but decreases if the ring nut is turned towards «B».

CAUTION



RIDING THE VEHICLE WITH THE SPRING PRE-LOADING NOT CORRECTLY SET FOR THE RIDER AND POSSIBLE PASSENGER, COULD REDUCE THE COMFORT OF THE RIDE AND THE PRECISION OF THE STEERING.

WARNING



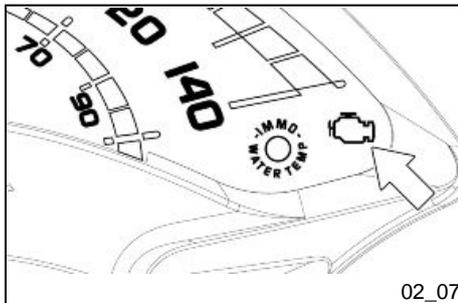
WE RECOMMEND WEARING GLOVES WHILE CARRYING OUT THIS OPERATION IN ORDER TO AVOID INJURIES.

WARNING

IT IS ABSOLUTELY FORBIDDEN TO ADJUST THE PRE-LOAD DIFFERENTLY ON THE TWO SHOCK ABSORBERS

Running in**WARNING**

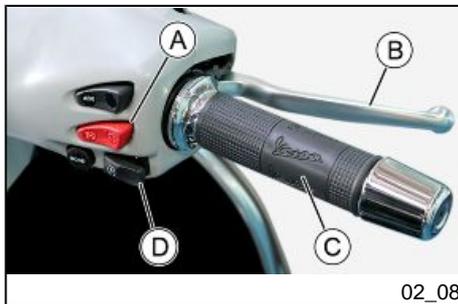
DURING THE FIRST 1,000 KM DO NOT RIDE THE VEHICLE OVER 80% OF ITS MAXIMUM SPEED. AVOID TWISTING THE ACCELERATOR KNOB COMPLETELY AND/OR KEEPING A CONSTANT SPEED FOR LONG PERIODS OF TIME. AFTER THE FIRST 1,000 KM, GRADUALLY INCREASE SPEED UNTIL REACHING THE MAXIMUM PERFORMANCE.

**Starting up the engine (02_07, 02_08)**

The vehicle is equipped with a system connected to the side stand which inhibits engine starting when the side stand is extended. The engine cannot be started if the side stand is extended, and stops if the side stand is extended while the engine itself is running.

To start the engine, place the vehicle on the centre stand, ensuring the rear wheel is not touching the ground.

Turn the ignition switch to "ON" the engine management indication light will switch on.



Ensure that the engine stop switch **A** is turned to **RUN** and that the side stand is raised.

Pull the front brake lever **B** or the rear brake lever while simultaneously leaving the throttle grip **C** in the fully closed position.

Press the starter button "**D**"; the engine management warning lamp will switch off.

WARNING



FOR SAFETY REASONS, ENGINE STARTING IS INHIBITED IF THE SIDE STAND IS EXTENDED.

WARNING



THE AUTOMATIC TRANSMISSION MAKES THE REAR WHEEL TURN EVEN WHEN THE THROTTLE IS SLIGHTLY TWISTED. RELEASE THE BRAKE CAREFULLY AFTER STARTING, AND THEN ACCELERATE GRADUALLY.

CAUTION



DO NOT START-UP THE ENGINE IN CLOSED AREAS BECAUSE EXHAUST GASES ARE TOXIC.

Precautions

CAUTION



NEVER STRESS THE ENGINE AT LOW TEMPERATURES IN ORDER TO AVOID POSSIBLE DAMAGE. BE CAREFUL NEVER TO EXCEED THE MAXIMUM SPEED WHILE RUNNING DOWNHILL, IN ORDER TO AVOID DAMAGING THE ENGINE. IN ANY CASE, IN ORDER TO PRESERVE THE ENGINE FROM PROLONGED OVER-REVVING, THE REVOLUTION LIMITER WILL BE ACTIVATED IF THE ENGINE SPEED EXCEEDS THE ESTABLISHED THRESHOLD.

WARNING



AFTER A LONG DISTANCE COVERED AT THE MAXIMUM SPEED, DO NOT STOP THE ENGINE IMMEDIATELY, BUT LET IT RUN AT IDLE FOR A FEW SECONDS.

Difficult start up

Strictly observe the procedure described in section «**Engine starter**».

WARNING



THE THROTTLE GRIP MUST REMAIN IN THE MINIMUM POSITION BECAUSE ANY OTHER POSITION INHIBITS THE VEHICLE STARTER.

CAUTION

IF NECESSARY, CONTACT AN AUTHORISED SERVICE CENTRE.

Stopping the engine (02_09, 02_10)

Close the throttle grip completely then turn the ignition switch **A** to **OFF** (key released and removable), or turn the engine stop switch **B** to **0**.

CAUTION

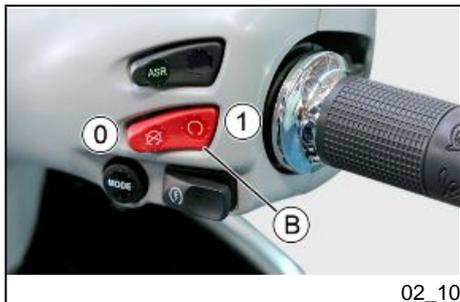
DUE TO THE HIGH TEMPERATURES THE CATALYTIC CONVERTER CAN REACH, ALWAYS TAKE CARE, WHEN PARKING THE VEHICLE, THAT THE SILENCER DOES NOT COME INTO CONTACT WITH FLAMMABLE MATERIALS, TO AVOID SERIOUS BURNS.

CAUTION

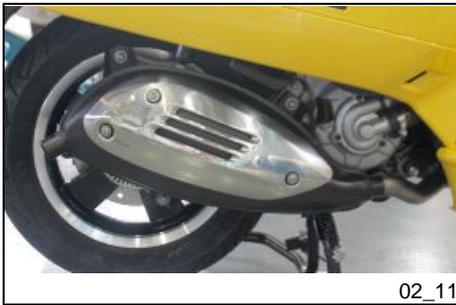
DO NOT SHUT OFF THE ENGINE WHILE THE VEHICLE IS MOVING. UNBURNED FUEL COULD ENTER THE CATALYTIC CONVERTER AND BURN, CAUSING THE CONVERTER TO OVERHEAT AND POSSIBLY DESTROYING IT.



02_09



02_10



Catalytic silencer (02_11)

CAUTION



TAMPERING WITH THE CATALYTIC SILENCER MAY CAUSE SEVERE DAMAGE TO THE ENGINE.

CAUTION



DUE TO THE HIGH TEMPERATURES THAT CAN BE REACHED IN THE CATALYTIC CONVERTER, WHEN PARKING THE VEHICLE, PAY ATTENTION TO THE MUFFLER: TO AVOID SERIOUS BURNS OR FIRE, THE MUFFLER SHOULD NEVER COME INTO CONTACT WITH FLAMMABLE MATERIALS.



Stand (02_12)

CENTRE STAND

Push with your foot on the centre stand's fork "F" while lifting the vehicle backward, holding onto the handlebar.

SIDE STAND

With your foot push the projection of the stand «L » in order to open it and at the same time lean the vehicle on you.

WARNING



FOR SAFETY REASONS, ENGINE STARTING IS INHIBITED IF THE SIDE STAND IS EXTENDED.

WARNING



THE SIDE STAND CAUSES THE ENGINE TO TURN ITSELF OFF WHENEVER IT IS LOWERED.

TAMPERING MAY CAUSE SERIOUS VEHICLE MALFUNCTION.

Automatic transmission (02_13)

To ensure simple, pleasurable riding, the vehicle is equipped with automatic transmission with regulator and centrifugal clutch. The system has been designed to provide the best performance possible (acceleration and fuel consumption) whether on the flat or travelling uphill.

If you stop on while travelling uphill (traffic lights, traffic tailback etc.), **only use the brake to keep the vehicle still and let the engine idle. Using the engine to keep the vehicle still can cause the clutch to overheat, due to the friction of the clutch mechanism itself against the capstan.**

It is therefore recommended to avoid conditions of prolonged clutch slippage (other than those previously indicated) such as driving uphill fully laden on steep slopes, or starting off with driver and passenger at slopes greater than 25%.

Take the following precautions if the clutch overheats:



02_13

1. Stop using this way.
2. If necessary, let the clutch cool down with the motor at idling speed for a few minutes.



Safe driving (02_14)

WARNING



SOME SIMPLE TIPS ARE PROVIDED BELOW WHICH WILL ENABLE YOU TO USE YOUR VEHICLE ON A DAILY BASIS MORE EASILY AND SAFELY. <

Your ability and your knowledge of the vehicle form the basis of safe riding. So try out the vehicle somewhere without traffic until you have gained a good familiarity of the vehicle itself.

ALWAYS RIDE WITHIN YOUR LIMITS

1. Before riding off, remember to put the helmet on and fasten it correctly.
2. Slow down and drive carefully over bumpy roads.
3. Remember that, after driving over a long stretch of wet road without using the brakes, braking will not be as efficient the first time/s you use them again. When driving under conditions like this, you should brake periodically.
4. Do not brake hard on wet, unmade or otherwise slippery road surfaces.
5. When you need to use the brakes, use them both so as to distribute the braking effort over both the wheels.

6. Do not start off by getting on the vehicle while it is standing on its stand. In any case, the rear wheel should not be turning when it comes into contact with the ground, in order to avoid abrupt departures.
7. If you are using the vehicle on roads covered with sand, mud, snow mixed with salt etc., you should frequently clean the brake disc with a non-aggressive cleaning compound so as to avoid the formation of abrasive agglomerates inside the slots with the consequent premature wear of the brake pads.
8. Any modification that changes the vehicle's performance, such as tampering with original structural parts, is strictly forbidden by law, and renders the vehicle non-conforming to the approved type and dangerous for driving safety.

CAUTION

RIDING UNDER THE INFLUENCE OF ALCOHOL, DRUGS OR CERTAIN MEDICINES CAN BE EXTREMELY DANGEROUS FOR ONESELF AND FOR OTHERS.

CAUTION

ANY ELABORATION THAT MODIFIES THE VEHICLE'S PERFORMANCES, SUCH AS TAMPERING WITH ORIGINAL STRUCTURAL PARTS IS STRICTLY FORBIDDEN BY LAW, AND RENDERS THE VEHICLE NO LONGER CONFORMING TO THE APPROVED TYPE AND DANGEROUS FOR RIDING.

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Chap. 03
Maintenance

Engine oil level

Four stroke engine oil is used in the engines in order to lubricate the timing bodies, the bench bearings and the head-engine block-piston assembly. **An insufficient quantity of oil can seriously damage the engine.** In all four-stroke engines, a loss of efficiency in oil performance and certain consumption should be considered normal. Consumption can particularly reflect the conditions of use (i.e: when driving at 'full acceleration' all the time, oil consumption increases). The replacement intervals provided for by the maintenance programme are defined depending on the total content of oil in the engine and the average consumption measured following standardised methods. **In order to prevent any problems, we recommend checking oil level more frequently than indicated in the Scheduled Maintenance table or before setting off on long journeys. The vehicle is, however, equipped with an oil pressure warning light on the instrument cluster.**

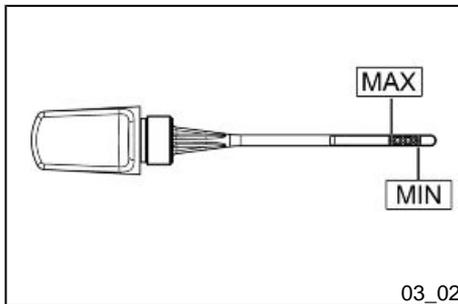


03_01

Engine oil level check (03_01, 03_02)

Every time the vehicle is used, visually inspect the level of the engine oil when the engine is cold (after **completely unscrewing** the oil cap/dipstick). The oil level should be somewhere between the MAX and MIN index marks on the level rod; «A»; while the oil is being checked, the vehicle must be resting on its centre stand on an even, horizontal surface.

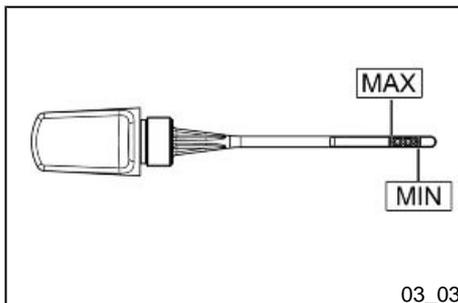
If the check is carried out after the vehicle has been used, and therefore with a hot engine, the level will be lower; in order to carry out a correct check, wait at least 10 minutes after the engine has been stopped so as to get the correct level.



03_02

Engine oil top-up (03_03)

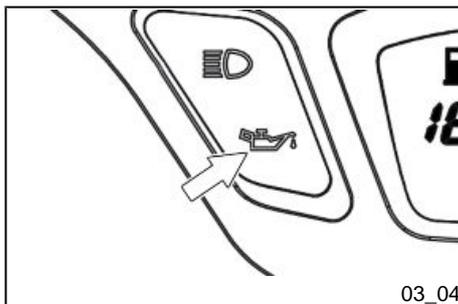
The oil should be topped up after having checked the level and in any case by adding oil **without ever exceeding the MAX. level**. Check and top up engine oil, if needed, according to the scheduled maintenance table at an **Authorised Service Centre**.



03_03

Warning light (insufficient oil pressure) (03_04)

The vehicle is equipped with a warning light that comes on when the key is turned to «ON». This warning light will turn off when the engine comes on. **If the light comes on while braking, at idle speed or while turning a corner, it is necessary to check the oil level and top it up if required. If after having topped-up the oil, the warning light still comes on while braking, at idle speed or while turning a corner, it will be necessary to take your vehicle to an Authorised Service Centre.**



03_04

Engine oil change

To have the engine and filter oil replaced in accordance with the scheduled maintenance table, contact an **Authorised Service Centre**.

CAUTION



RUNNING THE ENGINE WITH INSUFFICIENT LUBRICATION OR WITH INADEQUATE LUBRICANTS ACCELERATES THE WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE IRREPARABLE DAMAGE.

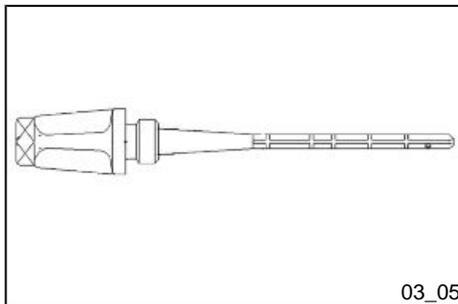
TOPPING UP THE ENGINE WITH AN EXCESSIVE AMOUNT OF OIL MAY CAUSE MALFUNCTION AND/OR A DROP IN PERFORMANCE OF THE VEHICLE.

USING OILS OTHER THAN THOSE RECOMMENDED CAN SHORTEN THE LIFE OF THE ENGINE.

CAUTION



USED OILS CONTAIN SUBSTANCES HARMFUL TO THE ENVIRONMENT. FOR OIL REPLACEMENT, CONTACT ANY AUTHORISED SERVICE CENTRE AS THEY ARE EQUIPPED TO DISPOSE OF USED OILS IN AN ENVIRONMENTALLY FRIENDLY AND LEGAL WAY.



Hub oil level (03_05, 03_06, 03_07, 03_08)

Check that the oil level in the hub is correct at the intervals specified in the scheduled maintenance table.

WARNING



THE PERIODIC HUB OIL LEVEL INSPECTIONS SPECIFIED IN THE SCHEDULED MAINTENANCE TABLE MUST BE CARRIED OUT BY AN AUTHORISED SERVICE CENTRE.

FOR THE CONTROLS OF THE HUB OIL LEVEL THAT ARE NOT PREDETERMINED BY THE SCHEDULED MAINTENANCE TABLE, OPERATE AS DESCRIBED.



LEVEL CHECK

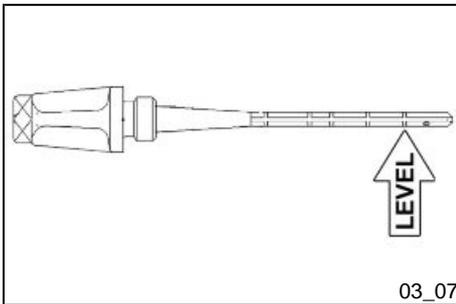
To check the hub oil level, proceed as follows:

- rest the vehicle on its centre stand on level ground;
- unscrew and remove the oil dipstick **A**, wipe it clean with a clean cloth and then fit it back into place, **tightening fully**;
- unscrew and remove the dipstick again and check that the oil level reaches the **1st notch on the dipstick from the bottom end**;
- refit the dipstick in its seat and tighten fully.

WARNING



THE FUNCTION OF THE HUB WITH INSUFFICIENT HUB LUBRICATION OR WITH CONTAMINATED OR IMPROPER LUBRICANTS ACCELERATES THE WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE SERIOUS DAMAGE.



N.B.

THE OTHER NOTCHES ON THE HUB OIL DIPSTICK ARE APPLICABLE FOR OTHER MODELS AND HAVE NO FUNCTION ON THIS VEHICLE.



TOP-UP

If necessary carry out the top-up, **DO NOT use the vehicle** and contact an **Authorised Service Centre**.

CAUTION



USED OILS CONTAIN SUBSTANCES HARMFUL TO THE ENVIRONMENT. FOR OIL REPLACEMENT, CONTACT ANY AUTHORISED SERVICE CENTRE AS THEY ARE EQUIPPED TO DISPOSE OF USED OILS IN AN ENVIRONMENTALLY FRIENDLY AND LEGAL WAY.

CAUTION



AN EXCESSIVE QUANTITY OF OIL CAN LEAD TO SPILL OVER, WHICH MAY CAUSE THE ENGINE AND THE WHEEL TO GET DIRTY.

CAUTION

WHEN REPLACING THE HUB OIL DO NOT LET THE OIL COME INTO CONTACT WITH THE REAR BRAKE DISC.

Tyres (03_09)

Check tyre pressure and wear periodically as indicated in the scheduled maintenance table. Tyres feature wear indicators; replace tyres as soon as these indicators become visible on the tyre tread. Also check that the tyres do not show signs of splitting at the sides or irregular tread wear; if this occurs, go to an authorised workshop or at least to a workshop equipped to replace tyres.

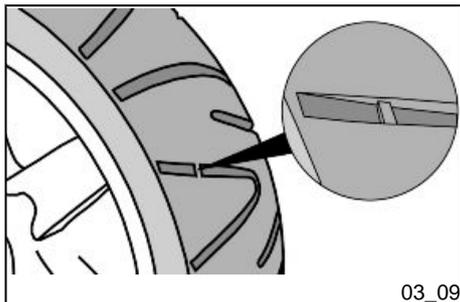
CAUTION

TYRE PRESSURE SHOULD BE CHECKED WHEN TYRES ARE COLD. INCORRECT TYRE PRESSURE CAUSES ABNORMAL TYRE WEAR AND MAKES RIDING DANGEROUS.

TYRES MUST BE REPLACED WHEN THE TREAD REACHES THE WEAR LIMITS SET FORTH BY LAW.

CAUTION

AS THE WHEELS ARE FITTED WITH ABS TONE WHEELS, TYRES MUST ONLY BE REPLACED BY AN AUTHORISED SERVICE NETWORK CENTRE.



WARNING



TO MAINTAIN THE EFFICIENCY OF THE ASR SYSTEM FOLLOWING THE REPLACEMENT OF ONE OR BOTH TYRES, THE CALIBRATION PROCEDURE OF THE SYSTEM MUST BE PERFORMED ACCORDING TO THE INDICATIONS IN THE SPECIFIC CHAPTER.

TYRES

Front tire	120/70 - 12" 51P Tubeless
Rear tire	Tubeless 130/70 - 12" 62P

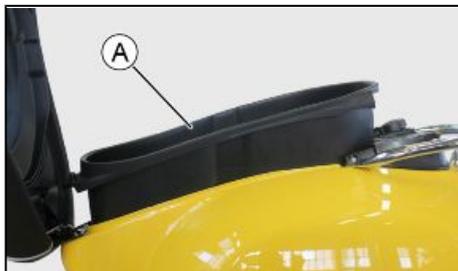
TYRE INFLATION PRESSURE

Front tire pressure (with passenger)	1.8 bar (1.8 bar)
Rear tire pressure (with passenger)	2.0 bar (2.2 bar)

Spark plug dismantlement (03_10, 03_11)

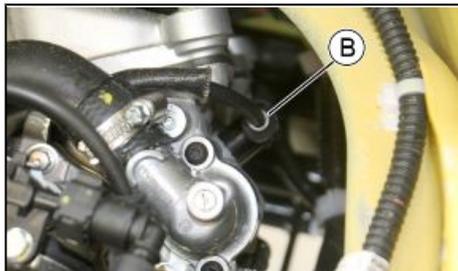
To remove the spark plug, proceed as follows:

- Lift the saddle and remove the helmet compartment "A" to gain access to the spark plug by inserting your hand.



03_10

- Disconnect the cap of the spark plug "B" H.V. cable.
- Undo the spark plug using the specific spark plug spanner.



03_11

- When reassembling, insert the spark plug at the proper inclination, hand tightening it until snug.
- Use the key only for locking.
- Fit the cap on the spark plug as far as it will go.

CAUTION



THE SPARK PLUGS MUST BE DISMANTLED WHEN THE ENGINE IS COLD. SPARK PLUG MAINTENANCE IS DESCRIBED IN THE SCHEDULED MAINTENANCE TABLE. THE USE OF NON-CONFORMING ELECTRONIC CONTROL

UNITS AND ELECTRONIC IGNITIONS AND SPARK PLUGS OTHER THAN THOSE RECOMMENDED MAY SERIOUSLY DAMAGE THE ENGINE.

N.B.

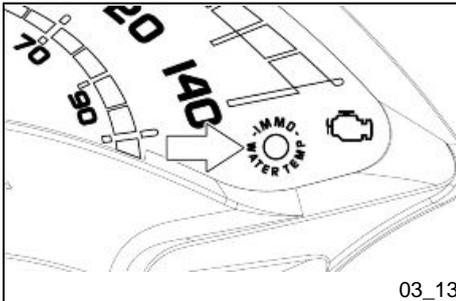
USING SPARK PLUGS OTHER THAN THE INDICATED TYPE OR SHIELD-LESS SPARK PLUG CAPS CAN CAUSE ELECTRICAL SYSTEM FAILURES.



03_12

Removing the air filter (03_12)

To remove and clean the air filter as instructed in the scheduled maintenance table, contact an **Authorised Service Centre**.



03_13

Cooling fluid level (03_13, 03_14, 03_15, 03_16)

The cooling of the engine operates by forced circulation of liquid. The cooling circuit contains a coolant, made up of a mixture of 50% purified water and 50% glycoethylene antifreeze with corrosion inhibitors. The liquid that is found in the container is already mixed and ready to use.

With engine on, in case of excessive engine temperature, the corresponding warning light on the instrument panel turns on; let the engine cool down and check the fluid level; if it is as it should be, go to an **Authorized Service Centre**.

N.B.

IF THE ENGINE COOLANT WARNING LAMP ILLUMINATES WHILE RIDING, TURN THE ENGINE OFF IMMEDIATELY AND LEAVE IT TO COOL. THEN CHECK THE COOLANT LEVEL; IF THE LEVEL IS INCORRECT, CONTACT AN AUTHORISED SERVICE CENTRE.



NEVER REMOVE THE EXPANSION TANK CAP WHILE THE ENGINE IS HOT.



03_14

Check coolant when the engine is cold as indicated in the scheduled maintenance table, following the steps below.

1. Rest the vehicle upright on the stand and remove the screw «A» of the expansion tank cap shown in the photograph.
2. Check the fluid level that should always be between the «MIN» and «MAX» level «B» on the tank.
4. If necessary, perform the top up, with the engine cold, in the case that you find the liquid is too close to the minimum level.

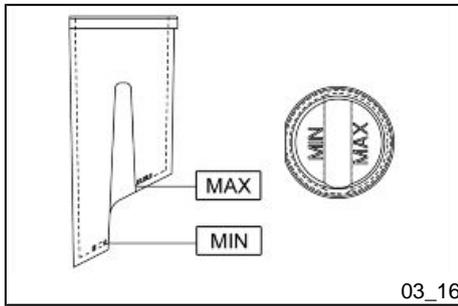
If the coolant needs to be topped up frequently or the expansion tank is completely dry, check the cooling system to find the cause of the problem. It is essential to have the cooling system checked at an **Authorized Service Center**. Replace coolant as indicated in the scheduled maintenance table. This operation must be carried out at an **Authorized Service Center**.

WARNING

TO AVOID THE RISK OF SCALDING, DO NOT UNSCREW THE EXPANSION TANK COVER WHILE THE ENGINE IS STILL HOT.

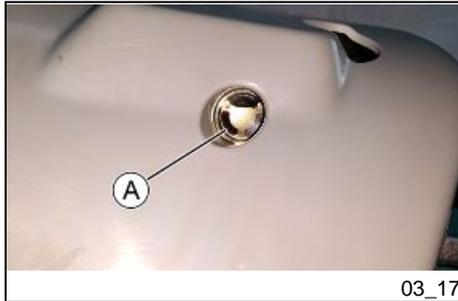


03_15

**WARNING**

TO PREVENT AVOID HARMFUL FLUID LEAKAGE WHILE RIDING, ENSURE THAT THE LEVEL NEVER EXCEEDS THE MAXIMUM VALUE.

TO ENSURE CORRECT ENGINE OPERATION, KEEP THE RADIATOR GRILLE CLEAN.

**Checking the brake oil level (03_17)**

The front and rear brake fluid reservoirs are both positioned on the handlebar. Proceed as follows:

- Rest the vehicle on its centre stand with the handlebars perfectly horizontal;
- Check the fluid level through the sight glass «A».

A certain lowering of the level is caused by wear on the pads. Should the level appear to be below the minimum mark, please contact an **Authorised Service Centre or Dealer** in order to have a thorough inspection of the braking system carried out.

Battery (03_18, 03_19)

To reach the battery «D», proceed as follows:

1. rest the scooter on its centre stand;
2. unscrew the 4 screws «A», remove the footrest «B».
3. remove the two battery fixing screws «C».

WARNING



IN ORDER TO AVOID DAMAGING THE ELECTRIC SYSTEM, NEVER DISCONNECT THE WIRING WHILE THE ENGINE IS RUNNING.

CAUTION

UPON CONNECTING THE BATTERY TERMINALS, AVOID CONTACT WITH THE METAL BODY

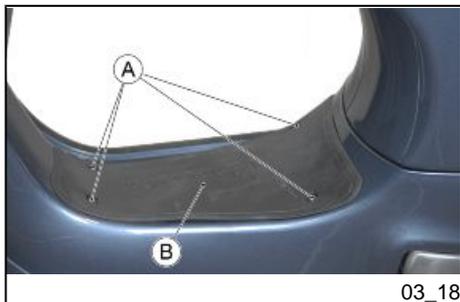
WARNING

DO NOT TRY TO REMOVE THE BATTERY SEAL. THE ELECTROLYTE IN THE BATTERY CONTAINS SULPHURIC ACID: AVOID CONTACT WITH EYES, SKIN AND CLOTHES. IN THE CASE OF ACCIDENTAL CONTACT, RINSE WITH ABUNDANT OF WATER AND CONSULT A DOCTOR.

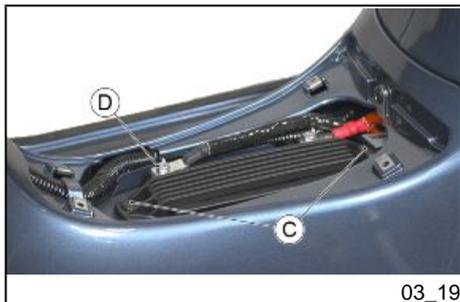
WARNING



USED BATTERIES ARE HARMFUL FOR THE ENVIRONMENT. COLLECTION AND DISPOSAL SHOULD BE CARRIED OUT IN COMPLIANCE WITH REGULATIONS IN FORCE.



03_18



03_19

Use of a new battery

Ensure that the terminals are connected correctly and check voltage.

CAUTION



DO NOT REVERSE THE POLARITY: RISK OF SHORT CIRCUIT AND DAMAGE TO THE ELECTRICAL SYSTEM.

WARNING



USED BATTERIES ARE HARMFUL FOR THE ENVIRONMENT. COLLECTION AND DISPOSAL SHOULD BE CARRIED OUT IN COMPLIANCE WITH REGULATIONS IN FORCE.



Long periods of inactivity (03_20)

If the vehicle is not used for a long time, the performance of the battery will deteriorate. This is the result of the natural phenomenon of battery discharging, and may be due to residual absorption by vehicle components with constant power consumption. The deterioration of the battery's performance is also the result of environmental conditions and how clean the terminals are. To avoid any starting difficulties and/or irreparable damage to the battery, you should do the following:

- **At least once a month** start up the engine and turn it over at a speed slightly above idling, for 10-15 minutes. This will enable you to keep all the parts of the engine in working order as well as the battery.
- Take your vehicle to a garage (as indicated in the «Vehicle not used for extended periods» section) to have the battery removed. The battery must be cleaned, fully

charged and kept in a dry, well aerated place. Charge the battery **again at least every two months**.

N.B.

THE BATTERY MUST BE CHARGED WITH A CURRENT EQUAL TO 1/10 OF THE RATED CAPACITY OF THE BATTERY AND FOR NOT LONGER THAN 10 HOURS. IN ANY CASE, IT IS PREFERABLE TO PERFORM THIS SERVICE AT AN AUTHORISED SERVICE CENTRE. WHEN REFITTING THE BATTERY MAKE SURE THE LEADS ARE CORRECTLY CONNECTED TO THE TERMINALS.

WARNING

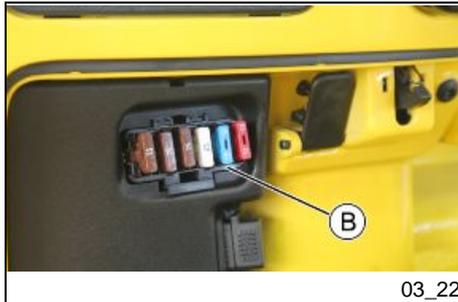
UNDER NO CIRCUMSTANCES MAY YOU DISCONNECT THE BATTERY LEADS WHILE THE ENGINE IS RUNNING; THIS CAN CAUSE IRREPARABLE DAMAGE TO THE VEHICLE'S ELECTRONIC CONTROL UNIT.

WARNING

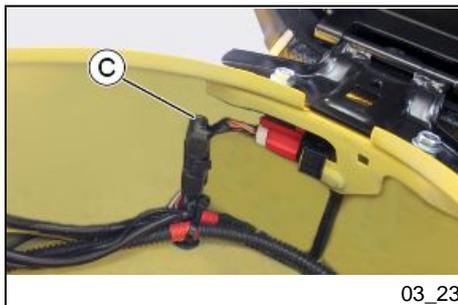
USED BATTERIES ARE HARMFUL FOR THE ENVIRONMENT. COLLECTION AND DISPOSAL SHOULD BE CARRIED OUT IN COMPLIANCE WITH REGULATIONS IN FORCE.



03_21



03_22



03_23

Fuses (03_21, 03_22, 03_23, 03_24, 03_25, 03_26)

The electrical system is equipped with:

1. one fuse «A», located in the battery compartment;
2. six protection fuses «B» located in the glove compartment to the left;

3. one fuse «C» located under the seat, accessible by extracting the helmet compartment.

The tables show the position and characteristics of the fuses on the vehicle.

CAUTION

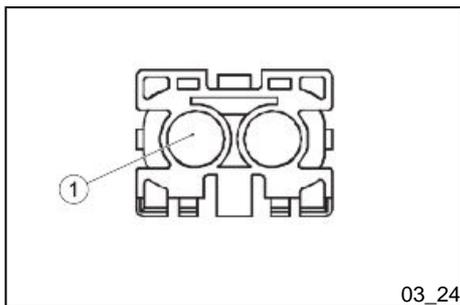


BEFORE REPLACING THE BLOWN FUSE, TRY TO ELIMINATE THE FAULT THAT HAS CAUSED IT TO BLOW. NEVER TRY TO REPLACE A FUSE USING DIFFERENT MATERIAL (FOR EXAMPLE A PIECE OF ELECTRIC WIRE).

CAUTION

MODIFICATIONS OR REPAIRS TO THE ELECTRICAL SYSTEM, PERFORMED INCORRECTLY OR WITHOUT STRICT ATTENTION TO THE TECHNICAL SPECIFICATIONS OF THE SYSTEM CAN CAUSE MALFUNCTIONING AND RISK OF FIRE.

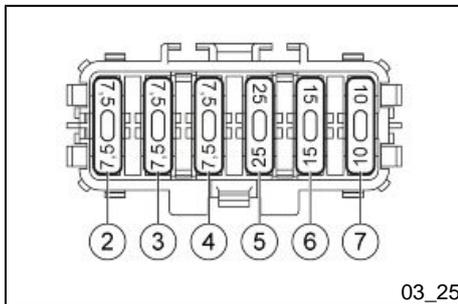
Fuse «A».

**FUSE «A»**

Fuse no. 1

Capacity: 30 A

Protected circuits: System general.



Fuse «B».

FUSES "B"

Fuse no. 2

Capacity: 7.5 A

Protected circuits: key power supply, position lights, instrument panel, taillight, diagnostics socket.

Fuse no. 3

Capacity: 7.5 A

Protected circuits: key power supply, horn, taillight, USB port, lights relay, flasher control device, accessory set-up, bike finder.

Fuse no. 4

Capacity: 7.5 A

Protected circuits: key power supply, immobilizer antenna, engine management ECU, tilting sensor, ABS control unit, injection load coil.

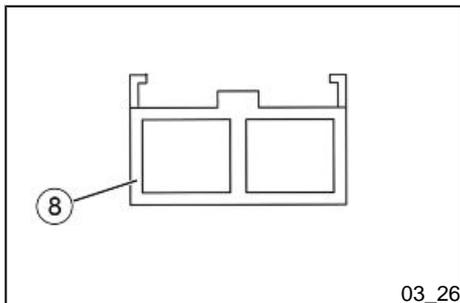
Fuse no. 5

Capacity: 25A**Protected circuits:** battery-powered, ABS control unit.

Fuse no. 6

Capacity: 15A**Protected circuits:** battery power supply, electric fan relay (contacts), 5A fuse. instrument panel, lights relay, accessory set-up, bike finder.**Key-powered:** Saddle opening actuator.

Fuse no. 7

Capacity: 10A**Protected circuits:** battery power supply, engine management ECU, injection load relay, heater.

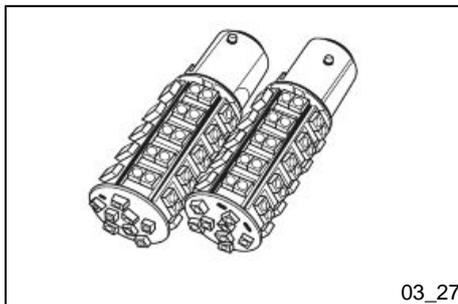
Fuse «C».

FUSE «C»

Fuse no. 8

Capacity: 5A

Protected circuits: 15A fuse powered, diagnostics socket.



Lamps (03_27)

In this section are listed the bulb types for the vehicle fitting.

BULBS

High beam / low beam bulb

Type: LED

Quantity: 2

Front side light bulb

Type: LED

Quantity: 2

Front and rear turn indicator bulbs

Type: Capless

Power: 12V - 6W**Quantity:** 4

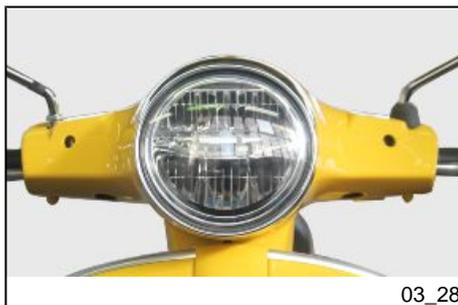
Rear tail light bulb

Type: LED**Quantity:** 2

Stop light bulb

Type: LED**Quantity:** 1

Licence plate light bulb

Type: LED**Quantity:** 2

03_28

Front light group (03_28)

The light assembly has «LED» lights. In the event of malfunction, we recommend contacting an **Authorised Service Centre** for replacement.

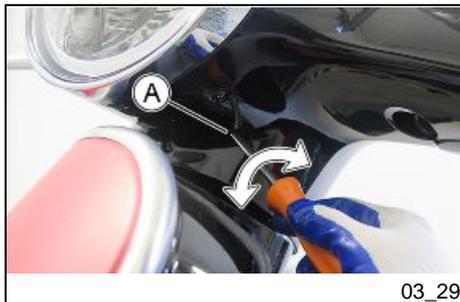
N.B.

IF MISTING IS NOTICED ON THE INSIDE OF THE TAIL LIGHT, CHECK THAT IT DISAPPEARS AFTER SOME MINUTES OF IGNITION OF THE TAIL LIGHT. IT IS A COMMON PHENOMENON AND IS ATTRIBUTABLE TO HUMIDITY AND/OR TO LOW TEMPERATURES; DOES NOT SHOW FAILURE.

THE PRESENCE OF DROPS OF WATER, ON THE OTHER HAND, COULD INDICATE THAT WATER IS INFILTRATING. CONTACT AN Authorised Service Centre.

CAUTION

DO NOT REST OR TRANSPORT OBJECTS AND/OR CLOTHING ON TOP OF THE FRONT LIGHT ASSEMBLY WITH THE LIGHT ON OR JUST TURNED OFF. FAILURE TO OBSERVE THIS PRECAUTION MAY CAUSE THE GLASS TO OVERHEAT AND CONSEQUENTLY MELT.



03_29

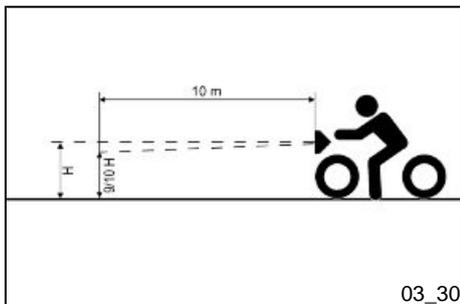
Head light adjustment (03_29, 03_30)

Proceed as follows:

1. Position the vehicle in running order and with the tyres inflated to the prescribed pressure, onto a flat surface 10 m away from a half-lit white screen; ensure that the longitudinal axis of the vehicle is perpendicular to the screen;
2. Turn on the headlight and check that the boundary of the light beam projected onto the screen is not higher than 9/10 or lower than 7/10 of the distance between the centre of the headlight and the ground;
3. Otherwise, adjust the right headlight with screw «A».

N.B.

THE PROCEDURE DESCRIBED IS THAT ESTABLISHED BY EUROPEAN STANDARDS FOR THE MAXIMUM AND MINIMUM HEIGHT OF THE LIGHT BEAM. REFER TO THE STATUTORY REGULATIONS IN FORCE IN EVERY COUNTRY WHERE THE VEHICLE IS USED.



03_30

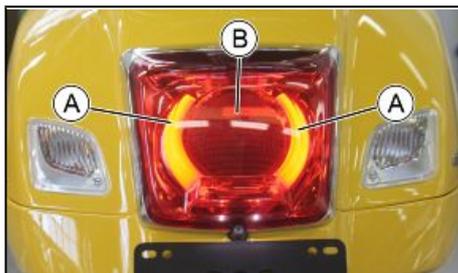


03_31

Front direction indicators (03_31)

To replace the front turn indicator bulbs, remove the tail light taking out the retaining screw "A", remove the bulb holder from its fitting; gently turn the bulb around 30° and remove it. Follow the process in reverse order to refit.

Integrated in the front turn indicators are the daylight running lights of «LED» type. In the event of malfunction, we recommend contacting an **Authorised Service Centre** for replacement.



03_32

Rear optical unit (03_32)

Both the parking light bulbs «A» and the brake lights «B» are «LED» type.

In the event of malfunction, we recommend contacting an **Authorised Service Centre** for replacement.

N.B.

IF MISTING IS NOTICED ON THE INSIDE OF THE HEADLAMP GLASS, THIS DOES NOT INDICATE AN ABNORMALITY AND IS RELATED TO HUMIDITY AND/OR LOW TEMPERATURES.

IT WILL DISAPPEAR QUICKLY WHEN THE HEADLIGHT IS TURNED ON.

IF HOWEVER THERE ARE DROPS OF WATER, IT MIGHT MEAN SEEPAGE AND YOU SHOULD SEE AN AUTHORIZED SERVICE CENTRE.



03_33

Rear turn indicators (03_33)

To gain access to the turn indicator bulbs, remove the fastening screws «E».

The bulbs have a bayonet coupling, to remove them press gently and twist anticlockwise about 30°. To refit follow the same steps but in reverse order.

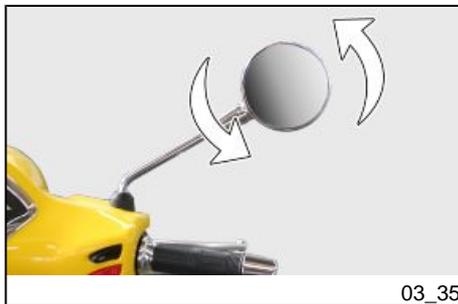


03_34

Number plate light (03_34)

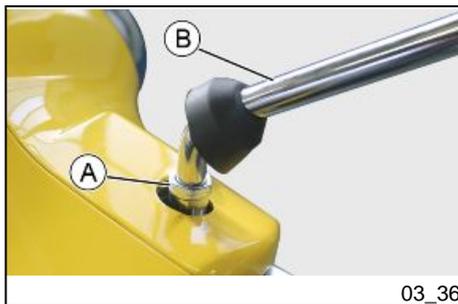
The licence plate lights are "LED" lights.

In the event of malfunction, we recommend contacting an **Authorised Service Centre** for replacement.



Rear-view mirrors (03_35, 03_36)

The mirrors can be set to the desired position by adjusting the mirror frame.



To remove the rear view mirror, lift the rubber protection, unscrew the lock nut «A» slightly to unlock the stem. unscrew the stem «b» to remove it.

CAUTION



DO NOT ADJUST THE MIRRORS WHILE DRIVING. THIS COULD CAUSE YOU TO LOOSE CONTROL OF THE VEHICLE.

CAUTION



PAY ATTENTION TO THE THREAD TYPE OF THE MIRRORS: THE RIGHT MIRROR HAS A CLOCKWISE THREAD, WHILE THE LEFT MIRROR HAS AN ANTI-CLOCKWISE THREAD.



03_37



03_38

Front and rear disc brake (03_37, 03_38)

The brake disc and pad wear is automatically compensated, therefore it has no effect on the functioning of the front and rear brakes. For this reason it is not necessary to adjust the brakes. An excessively elastic brake lever stroke may indicate the presence of air in the braking circuit or a failure in the braking system. In this case, especially considering the fundamental role brakes play in your driving safety, it is necessary to take the vehicle to an **Authorised Service Centre or Dealer**.

CAUTION



BRAKING SHOULD BEGIN AFTER ABOUT 1/3 OF THE BRAKE LEVER STROKE.

CAUTION



HAVE THE BRAKE PADS CHECKED BY THE DEALER ACCORDING TO THE CHECKS SPECIFIED IN THE SCHEDULED MAINTENANCE TABLE. HOWEVER, IN THE EVENT OF NOISES COMING FROM THE FRONT AND/OR REAR BRAKING SYSTEM DURING OPERATION, IT IS ADVISABLE TO HAVE THE BRAKING SYSTEM CHECKED BY AN AUTHORISED SERVICE CENTRE OR DEALER. AFTER REPLACING THE BRAKE PADS, DO NOT USE THE SCOOTER UNTIL YOU HAVE OPERATED THE BRAKE LEVER SEVERAL TIMES IN ORDER TO ALLOW THE PLUNGERS TO SETTLE AND THE LEVER STROKE TO BE SET TO THE CORRECT POSITION.

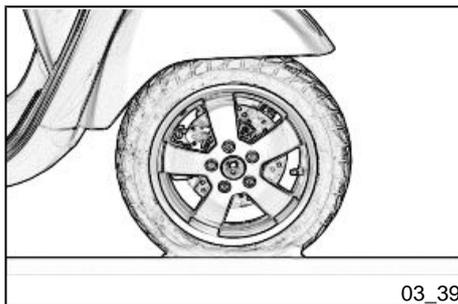
CAUTION



THE PRESENCE OF SAND, MUD, SNOW MIXED WITH SALT, ETC. ON THE ROAD, CAN DRASTICALLY REDUCE THE LIFE OF THE BRAKE PADS. IN ORDER TO AVOID THIS, WE RECOMMEND WASHING THE VEHICLE FREQUENTLY WHEN RIDING IN THESE ROAD CONDITIONS.

CAUTION

AS THE WHEELS ARE FITTED WITH ABS TONE WHEELS, TYRES MUST ONLY BE REPLACED BY AN AUTHORISED SERVICE NETWORK CENTRE.



03_39

Puncture (03_39)

The vehicle is equipped with Tubeless tyres (without inner tube). In the event of a puncture, Tubeless tyres - unlike tyres with inner tubes - go flat very slowly, resulting in a greater steering safety. In the case of puncture, you can make an emergency repair using an inflation canister. For permanent repairs contact an **Authorised Service Centre or Dealer**. Replacing a tyre means removing the wheel. For these operations, contact an **Authorised Service Centre or Dealer**.

CAUTION

TO USE THE "INFLATE AND REPAIR" SPRAY CAN PROPERLY, FOLLOW THE INSTRUCTIONS ON THE PACKAGING.

WARNING

THE WHEELS, COMPLETE WITH TYRES MUST ALWAYS BE BALANCED. RIDING THE VEHICLE WITH VERY LOW TYRE PRESSURE OR WITH INCORRECTLY BALANCED TYRES CAN LEAD TO DANGEROUS STEERING VIBRATIONS.



Inactivity of the vehicle (03_40)

The following operations are recommended:

1. Clean the vehicle thoroughly and then cover it with a canvas;
2. With the engine off, remove the spark plug and pour 1 - 2 cm³ of oil through its hole. Operate the starter button 1-2 times for roughly 1 second to turn the engine over slowly, then insert the spark plug again;
3. Make sure **you have at least half a tank of gasoline (in such a way to assure total immersion of the gasoline pump)**; spread anti-rust grease on the uncoated metal parts; keep the wheels off the ground resting the frame on two wooden blocks;
4. As far as regards the battery, follow the instructions in paragraph «Battery».

Cleaning the vehicle (03_41, 03_42)

Use a low pressure jet of water to soften the caked dirt and mud deposited on the painted surfaces. Once softened, sponge off mud and dirt using a car body sponge soaked in a car body shampoo and water solution (2-4% of car shampoo in water). Then rinse with abundant water, and dry with a chamois cloth.

WARNING



IN ORDER TO AVOID RISE OF OXIDATION, WASH THE VEHICLE EVERY TIME IT IS USED IN AREAS OR SPECIAL CONDITIONS OF:

- **ENVIRONMENTAL / SEASONAL CONDITIONS: USE OF SALT, ANTI-ICE CHEMICALS ON ROADS DURING WINTER.**
- **AIR POLLUTION: CITIES AND/OR INDUSTRIAL AREAS.**
- **SALINITY AND HUMIDITY: SEASHORE AREAS, HOT AND HUMID CLIMATE.**

WARNING

- PREVENT DEPOSITS FROM REMAINING ON THE BODYWORK, INDUSTRIAL AND POLLUTANT RESIDUAL DUST, TAR SPOTS, DEAD INSECTS, BIRD DROPPINGS, ETC.
- AVOID PARKING THE VEHICLE UNDER TREES. IN SOME SEASONS, IN FACT, RESIDUES, RESINS, FRUITS OR LEAVES MAY FALL FROM THE TREES, CONTAINING CHEMICALS THAT ARE HARMFUL TO THE PAINTWORK.

CAUTION

DETERGENTS CAN POLLUTE WATER. THE VEHICLE MUST BE WASHED AT A WASH STATION EQUIPPED WITH A SPECIAL WATER PURIFICATION SYSTEM.

CAUTION

DO NOT USE A HIGH-PRESSURE WATER JET MACHINE TO CLEAN THE ENGINE AND/OR VEHICLE; HOWEVER, IF NO OTHER MEANS ARE AVAILABLE, IT IS THEN NECESSARY TO:

- ONLY USE A FAN-LIKE SPRAY JET.
- DO NOT PLACE THE NOZZLE CLOSER THAN 60 CM.
- DO NOT USE WATER AT TEMPERATURES OVER 40°C.
- DO NOT USE HIGH-PRESSURE WATER JETS.
- DO NOT STEAM WASH.
- DO NOT AIM THE JET AT: THE ENGINE, THE WIRING, THE COOLING SLITS ON THE TRANSMISSION OR SCROLL COVERS.

CAUTION

NEVER WASH THE SCOOTER IN DIRECT SUNLIGHT, ESPECIALLY IN SUMMER WHEN THE BODYWORK IS STILL HOT AS THE SHAMPOO COULD DAMAGE THE PAINTWORK IF IT DRIES BEFORE BEING RINSED OFF. NEVER USE CLOTHS SOAKED IN ALCOHOL, PETROL, DIESEL OIL OR KEROSENE FOR CLEANING THE PAINTED OR PLASTIC SURFACES, IN ORDER NOT TO DAMAGE THE LUSTRE FINISH OR ALTER THEIR MECHANICAL PROPERTIES. USING SILICONE-BASED WAX CAN DAMAGE THE PAINTED SURFACES, DEPENDING ON THE VEHICLE COLOUR (SATIN COLOURS). FOR FURTHER INFORMATION ON THIS MATTER, CONTACT AN AUTHORISED SERVICE CENTRE.

WARNING

CLEAN YOUR SCOOTER FREQUENTLY SO AS TO AVOID POSSIBLE DIRT OR MUD DEPOSITS THAT COULD CAUSE MALFUNCTIONING IN THE THROTTLE GRIP TRANSMISSION AND/OR OTHER COMPONENTS.

CAUTION

DURING VEHICLE CLEANING, WITH WATER JET UNDER PRESSURE, KEEP THE SADDLE CLOSED, AVOIDING TO DIRECT THE JET IN THE HELMET COMPARTMENT.

In order to maintain the **satín-finish** characteristics, please follow these precautions:

CAUTION

AVOID ROLLS FROM CAR WASH AND PRESSURE WASHERS;

DO NOT USE GRINDING PASTE FOR THE REMOVAL OF SCRATCHES;

AVOID THE USE OF DRY CLOTHS FOR THE REMOVAL OF DUST OR FOR MANUAL DRYING AFTER CLEANING;

DO NOT USE SILICON WAX OR POLISHING AGENTS;

DO NOT USE ALCOHOL FOR CLEANING;

IT IS STRONGLY RECOMMENDED TO MANUALLY WASH WITH SPONGE AND NEUTRAL SHAMPOO, AVOIDING EXCESSIVE RUBBING THAT COULD AFFECT THE HAZE DEGREE OF THE PAINTING;

DO NOT USE ABRASIVE CLEANERS;

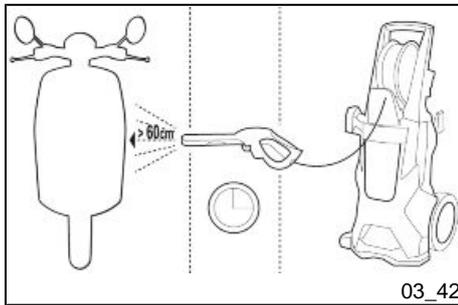
FAILURE TO FOLLOW THE ABOVE GIVEN ADVICE, COMPROMISES THE HAZE OF THE PAINTING;

DO NOT APPLY ADHESIVE ELEMENTS TO THE BODYWORK;

DO NOT POLISH OTHER VEHICLES CLOSE TO THE ONE WITH SATIN-FINISHING;

AVOID CONTACT AND/OR RUBBING OF CLOTHING WITH BUTTONS, BUCKLES, RINGS AND/OR NECKLACES ON SATIN-FINISHED SURFACES SINCE THIS MAY INDUCE DAMAGE AND/OR CHANGES IN HAZE OF SATIN-FINISHED PAINT;



**WARNING**

WHEN CLEANING THE VEHICLE WITH A PRESSURE CLEANER, DO NOT DIRECT THE WATER JET ON ANY PART OF THE ENGINE OR BODYWORK FOR PROLONGED PERIODS.

Troubleshooting**STARTING FAILURE**

Emergency switch in «OFF»	Set the switch back to «ON»
Fuse blown	Replace the damaged fuse and have the vehicle checked at an Authorised Service Centre

IGNITION PROBLEMS

Faulty spark plug	Contact an Authorised Service Centre.
Ignition/ injection control unit defective.	Contact an Authorised Service Centre.

Faulty coil. Due to the presence of high voltage, this check should only be carried out by an expert	Contact an Authorised Service Centre.
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LACK OF COMPRESSION

Loose spark plug	Screw in the spark plug tightly
Cylinder head loose, piston gas rings worn	Contact an Authorised Service Centre.
Valve stuck	Contact an Authorised Service Centre.

HIGH FUEL CONSUMPTION AND BAD PERFORMANCE

Air filter blocked or dirty	Contact an Authorised Service Centre.
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INSUFFICIENT BRAKING

Disc greasiness. Worn brake pads. Faulty braking system. Air in the front and rear brake circuits	Contact an Authorised Service Centre.
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INEFFICIENT SUSPENSION

Shock absorber fault, oil leak, end buffers damaged; shock absorbers badly regulated in the pre-loading stage	Contact an Authorised Service Centre .
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AUTOMATIC TRANSMISSION PROBLEMS

CVT rollers and/or drive belt damaged	Contact an Authorised Service Centre .
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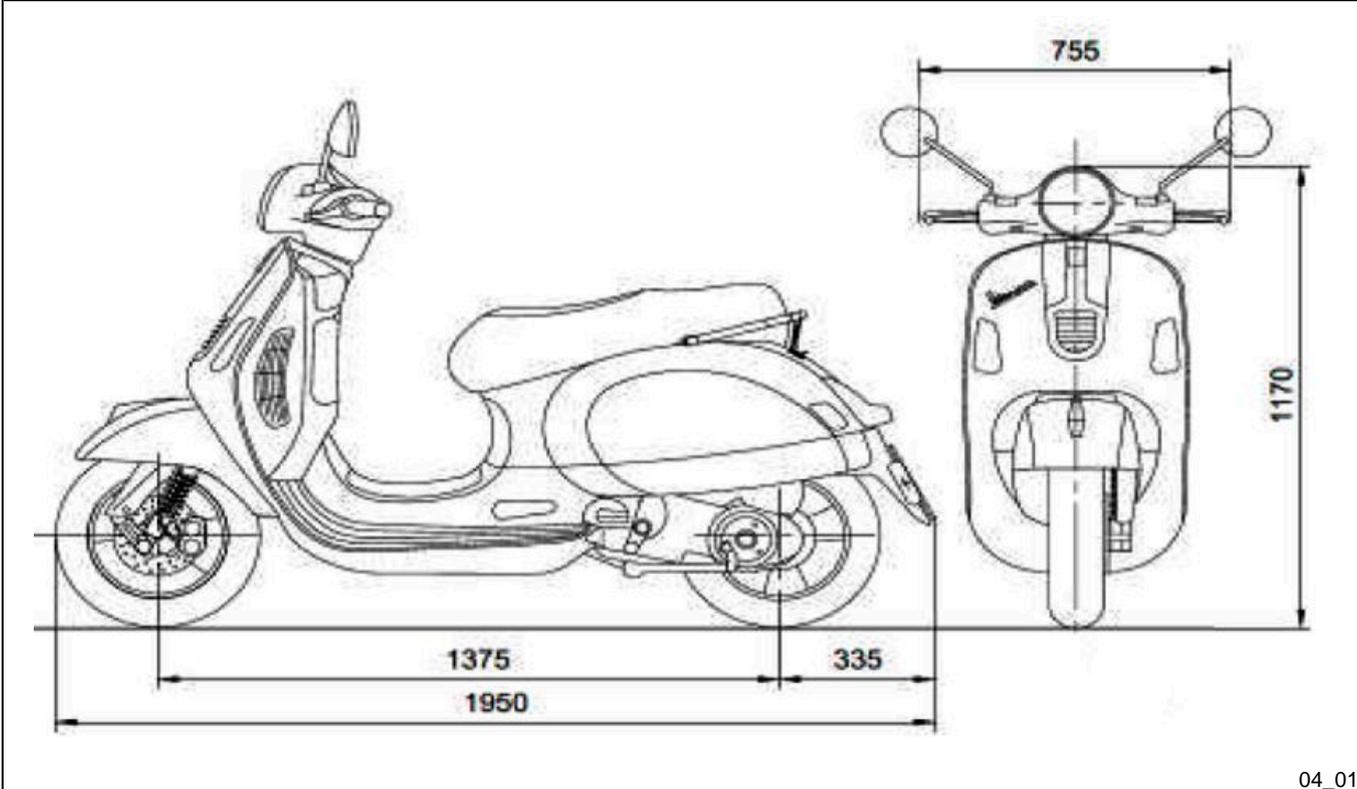
Vespa GTS 300 hpe

Vespa®



Chap. 04
Technical data

Data (04_01)



4 Technical data

04_01

VEHICLE TECHNICAL DATA

Chassis	Stamped plate supporting body.
Front suspension	Single arm suspension (cantilever wheel) fitted with a dual-chamber hydraulic shock absorber with coaxial spring.
Rear suspension	Two double-acting shock absorbers, adjustable to four positions at pre-loading.
Front brake	Ø 220 mm hydraulically operated disc brake controlled from RH handlebar lever; braking assisted by ABS system.
Rear brake	Ø 220 mm hydraulically operated disc brake controlled from LH handlebar lever; braking assisted by ABS system.
Wheel rim type	Light alloy.
Front rim	12" x 3.00
Rear rim	12" x 3.00
Front tire	120/70 - 12" 51P Tubeless
Rear tire	Tubeless 130/70 - 12" 62P
Front tire pressure (with passenger)	1.8 bar (1.8 bar)
Rear tire pressure (with passenger)	2.0 bar (2.2 bar)
Kerb mass	160 kg

Maximum technically permissible weight at full load	340 kg
Battery	12V-10Ah

ENGINE SPECIFICATIONS

Type	Single cylinder 4-stroke
Engine capacity	278 cm ³
Bore x Stroke	75x63 mm
Compression ratio	11 ± 0.5: 1
Idle engine speed	1,700 ± 100 rpm
Timing system	4 valves, single overhead camshaft, chain-driven.
Valve clearance (cold engine)	Intake: 0.10 mm Exhaust: 0.15 mm
Maximum power	17.5 kW at 8250 rpm
Maximum torque	26.0 Nm at 5250 rpm
Transmission	CVT expandable pulley variator with torque server, V-belt, self-ventilating dry automatic centrifugal clutch and transmission housing with forced-circulation air cooling.
Final drive reduction gear	Gear reduction unit in oil bath.
Lubrication	Engine lubrication with lobe pump (inside crankcase), chain-driven, with double filter: mesh and paper.

Cooling	Forced coolant circulation system.
Starting	Electric
Ignition	Electronic inductive discharge ignition, high efficiency, with separate HV coil.
Ignition advance	α/N three-dimensional map managed by control unit
Spark plug	NGK MR7BI-8
Power supply	Electronic injection with \varnothing 32-mm throttle body and electric fuel pump.
Fuel	Unleaded gasoline E10 (95 R.O.N.)
Exhaust silencer	Absorption-type exhaust silencer with a 3-way catalytic converter and lambda probe.
Emissions compliance	EURO 4

CAPACITY

Engine oil	1.3 l
Transmission oil	250 cm ³
Cooling system fluid	~ 2 l
Fuel tank	8.5 ± 0.5 litres

**UNIT OF MEASURE - CONVERSION - ENGLISH SYSTEM
TO INTERNATIONAL SYSTEM (IS).**

1 Inch (in)	25.4 Millimetres (mm)
1 Foot (ft)	0.305 Metre (m)
1 Mile (mi)	1.609 Kilometre (km)
1 US Gallon (US gal)	3.785 Litre (l)
1 Pound (lb)	0.454 Kilogramme (kg)
1 Cubic inch (in ³)	16.4 Cubic centimetres (cm ³)
1 Foot pound (lb ft)	1.356 Newton metre (Nm)
1 Miles per hour (mi/h)	1.602 kilometres per hour (Km/h)
1 Pound per square inch (PSI)	0.069 (bar)
1 Fahrenheit (°F)	32+(9/5) Celsius (°C)

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Chap. 05
Spare parts and
accessories



05_01



05_02

Warnings (05_01, 05_02)

WARNING



TO PREVENT ACCIDENTS AND TO GUARANTEE PROPER STABILITY, PERFORMANCE AND SAFETY, RIDE THE VEHICLE VERY CAREFULLY WHEN IT IS FITTED WITH ACCESSORIES OR WITH UNUSUAL LOADS.

WARNING



IT IS ALSO RECOMMENDED THAT ORIGINAL PIAGGIO SPARE PARTS BE USED, AS THESE ARE THE ONLY ONES OFFERING YOU THE SAME QUALITY GUARANTEE AS THOSE INITIALLY FITTED ON THE VEHICLE. IT SHOULD BE REMEMBERED THAT USING NON-ORIGINAL SPARE PARTS CAUSES YOUR WARRANTY RIGHTS TO EXPIRE.

WARNING



PIAGGIO MARKETS ITS OWN LINE OF ACCESSORIES THAT ARE RECOGNISED AND GUARANTEED FOR USE. IT IS THEREFORE ESSENTIAL TO CONTACT AN AUTHORISED SERVICE CENTRE IN ORDER TO CHOOSE AND FIT ACCESSORIES CORRECTLY. THE USE OF NON-ORIGINAL ACCESSORIES MAY AFFECT THE STABILITY AND OPERATION OF YOUR VEHICLE AND REDUCE SAFETY LEVELS WITH POSSIBLE RISKS FOR THE RIDER.

WARNING

NEVER RIDE THE SCOOTER EQUIPPED WITH ACCESSORIES (TOP BOX AND/OR WINDSCREEN) AT A SPEED HIGHER THAN 100 km/h.

THE VEHICLE CAN BE RIDDEN AT A HIGHER SPEED WITHOUT THE ACCESSORIES MENTIONED BEFORE WITHIN THE LIMITS ESTABLISHED BY LAW.

IF THERE ARE ANY NON-PIAGGIO ACCESSORIES INSTALLED, OR AN ABNORMAL LOAD, OR IF THE SCOOTER IS NOT IN A GENERALLY GOOD CONDITION, OR WHENEVER WEATHER CONDITIONS DEMAND IT, SPEED SHOULD BE FURTHER REDUCED.

WARNING

BE EXTREMELY CAREFUL WHEN INSTALLING AND REMOVING THE MECHANICAL ANTI-THEFT DEVICE ON THE VEHICLE (U-SHAPED PADLOCK, DISC BLOCK, ETC.).

MAINLY NEAR THE BRAKE PIPES, TRANSMISSIONS AND/OR ELECTRIC CABLES, AN INCORRECT INSTALLATION OR REMOVAL OF THE ANTI-THEFT DEVICE AS WELL AS LEAVING IT ON BEFORE STARTING THE VEHICLE CAN SERIOUSLY DAMAGE ITS COMPONENTS, COMPROMISE THE CORRECT FUNCTIONING OF THE VEHICLE AND USERS' SAFETY.

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Chap. 06
Scheduled
maintenance



Scheduled servicing table (06_01)

Adequate maintenance is fundamental to ensure long-lasting, optimum operation and performance of your vehicle.

For this reason a series of checks and maintenance services has been prepared, available for purchase separately, listed together in the chart on the following page. It is a good idea to report small performance anomalies right away to an **Authorised Service Centre**, without waiting for the next scheduled service, so they can be repaired immediately.

It is necessary to have your vehicle serviced to the prescribed intervals of time, even if you have not reached the predicted mileage. Services must be performed punctually at the correct intervals to maintain the validity of the warranty. For any additional information concerning Warranty procedures and 'Scheduled Maintenance', please consult the 'Warranty Conditions'.

SCHEDULED MAINTENANCE TABLE

km x 1,000	1	10	20	30	40	50	60	EVER Y 12 MONT HS	EVER Y 24 MONT HS
Safety blocks	I	I		I		I	I		
Spark plug			R		R		R		
Centre stand		L	L	L	L	L	L	L	L
Drive belt		R	R	R	R	R	R		
Throttle control	I	I	I	I	I	I	I	I	I
Entire roller housing		I	I	I	I	I	I		
Diagnosis by tool	I	I	I	I	I	I	I	I	I

km x 1,000	1	10	20	30	40	50	60	EVER Y 12 MONT HS	EVER Y 24 MONT HS
Air filter		R	R	R	R	R	R		
CVT Filter		I	I	I	I	I	I		
Engine oil filter	R	R	R	R	R	R	R	R	R
Valve clearance		A	A	A	A	A	A		
Electrical system and battery	I	I	I	I	I	I	I		
Braking system	I	I	I	I	I	I	I	I	I
Coolant	I	I	I	I	I	I	I	I	R
Brake Fluid	I	I	I	I	I	I	I	I	R
Engine oil	R	R	R	R	R	R	R	R	R
Hub oil	R	I	R	I	R	I	R	I	I
Headlight direction adjustment		I	I	I	I	I	I		
Brake pads		I	I	I	I	I	I	I	I
Sliding shoes / CVT rollers		R	R	R	R	R	R		
Tire pressure and wear	I	I	I	I	I	I	I	I	I
Vehicle road test	I	I	I	I	I	I	I	I	I
Suspensions		I	I	I	I	I	I	I	I
Steering	A	A	A	A	A	A	A	I	I

I: CHECK AND CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY.

C: CLEAN, R: REPLACE, A: ADJUST, L: LUBRICATE.



06_02

Recommended products (06_02)

Piaggio Group recommends the use of products from its Castrol official partner for the scheduled maintenance of its vehicles.

Only use lubricants and fluids which meet or exceed the performance characteristics specified. This also applies when topping up only.

TABLE OF RECOMMENDED PRODUCTS

Product	Description	Specifications
Engine oil 5W -40	Synthetic-based lubricant for four-stroke engines.	SAE 5W-40; JASO MA, MA2; API SL; ACEA A3
Transmission oil 80W-90	Lubricant for gearboxes and transmissions.	SAE 80W-90 API GL-4
Anti-freeze liquid, ready to use, colour red	Ethylene glycol antifreeze liquid with organic inhibition additives. Red, ready to use.	ASTM D 3306 - ASTM D 4656 - ASTM D 4985 - CUNA NC 956-16
Brake fluid DOT 4	Synthetic brake fluid.	SAE J 1703; FMVSS 116; ISO 4925; CUNA NC 956 DOT4
Water repellent spray grease	Water repellent pouring calcium spray grease.	White, soap base spray grease with NLGI 2 Calcium complex; ISO-L-XBCIB2

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Chap. 07
Special fittings



07_01

Luggage rack (07_01, 07_02, 07_03)

The "GTS Super" and "GTS SuperSport" versions are equipped with a grab handle "1", as shown in the photo.



07_02

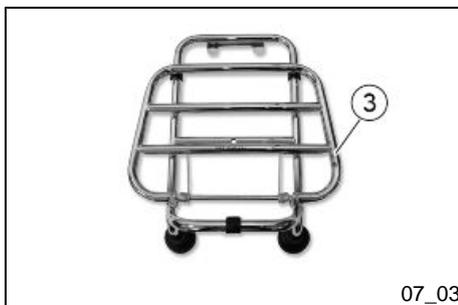
The "GTS" and "GTS Touring" versions are equipped with rear luggage carriers "2", as shown in the photo.

During use of the vehicle without a load on the rear luggage carriers, it is recommended to position the retainer hook «A» as shown in photo.

WARNING



Maximum admissible load: 6 kg



07_03

The "GTS Touring" version is equipped with front luggage carriers "3", as well as the rear luggage carriers "2" indicated above.

WARNING



Front luggage carrier maximum admissible load: 4 kg

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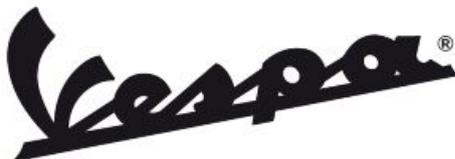
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