

PIAGGIO 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.

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The instructions given in this manual are intended to provide a clear, simple guide to using your vehicle; this booklet also details routine maintenance procedures and regular checks that should be carried out on the vehicle at an **authorised 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 Dealer or Service Centres**.



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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Chap. 01
Vehicle

Dashboard (01_01)



01_01

A = Ignition switch

B = Bag hook

C = Saddle opening button

D = Horn button

E = Turn indicator switches

F = Headlight switch

G = Instrument panel

H = Throttle grip

I = Starter button

L = MODE key

Analogue instrument panel (01_02)



01_02

A = Speedometer

B = Engine control warning light

C = Turn indicator warning light

D = Low fuel warning light

E = Digital display

F = High-beam warning light on

Clock (01_03)

The clock, when the vehicle is on or with the key in «**ON**», shows the current hour and minutes in the format «hh:mm».

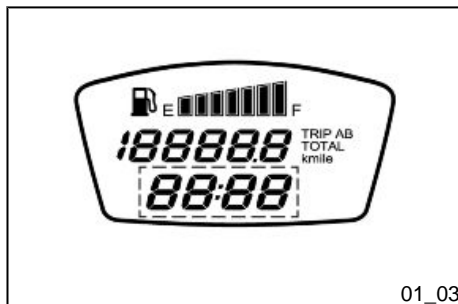
Set the correct time as described in the paragraph «Set functions hours/minutes».

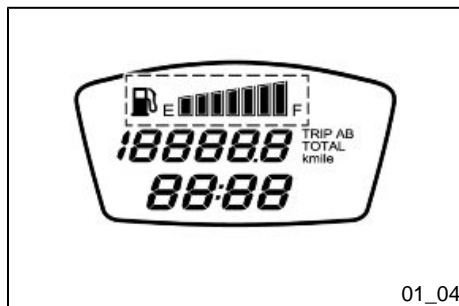
WARNING

FOR SAFETY REASONS THE TIME SETTING IS ONLY POSSIBLE WITH THE VEHICLE AT A STANDSTILL.

WARNING

DISCONNECTING THE BATTERY CABLES WILL RESULT IN A RESET OF THE CLOCK



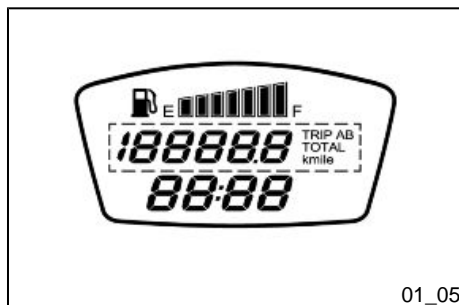


01_04

Digital lcd display (01_04, 01_05, 01_06, 01_07)

Turning the ignition switch to «ON», the digital display will show:

- the fuel level in the tank.



01_05

- Press the «**MODE**» key located on the handlebar for a couple of seconds to display the total and trip odometer (TRIP A and TRIP B). During the display of the trip odometer «**TRIP A**» or «**TRIP B**», with a long press of the «**MODE**» key, the trip values are reset.

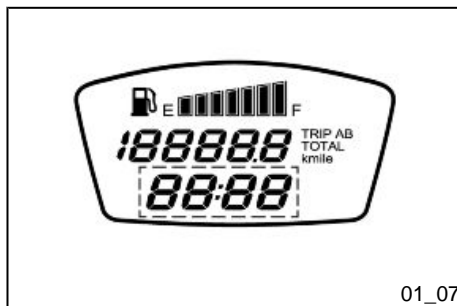
N.B.

THE FOLLOWING ARE DEFINED WHEN NAVIGATING THE DISPLAY:

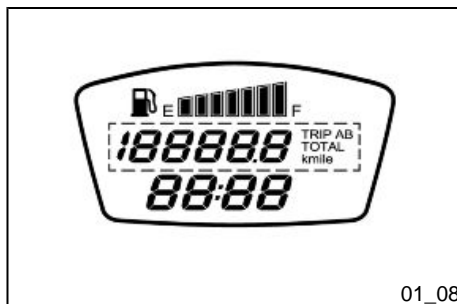
- «**BRIEF PRESS**»: PRESSING THE BUTTON INDICATED FOR LESS THAN HALF A SECOND;
- «**PROLONGED PRESS**»: PRESSING THE BUTTON INDICATED FOR MORE THAN THREE SECONDS.



01_06



01_07



01_08



01_09

- the current hour and minutes in format «hh:mm». Set the correct time as described in the paragraph «Set functions hours/minutes».

Setting the hour/minutes function (01_08, 01_09, 01_10)

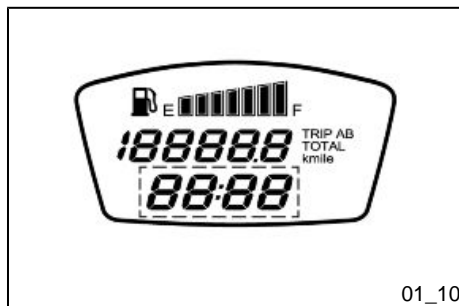
To set or adjust the time, with vehicle running or with ignition switch in «ON» position, proceed as follows:

- press the «**MODE**» key for a couple of seconds to display the total odometer;
- with a long press of the «**MODE**» key, the number of hours flashes in "hh" format;
- adjust the hour by short pressing the **MODE** key;
- with a long press, the set value is confirmed (or present value if not modified) and the minutes value, in format «mm» starts flashing.
- adjust the minutes by short pressing the **MODE** key;
- with a long press, the set value is confirmed (or present value if not modified) and the clock adjustment is exited.

If, during the adjustment procedure, the «**MODE**» key is not pressed for a time longer than ten seconds, the procedure is interrupted and clock value remains the same as before the adjustment; repeat the adjustment operations.

WARNING

FOR SAFETY REASONS THE TIME SETTING IS ONLY POSSIBLE WITH THE VEHICLE AT A STANDSTILL.



01_10

WARNING

DISCONNECTING THE BATTERY CABLES WILL RESULT IN A RESET OF THE CLOCK

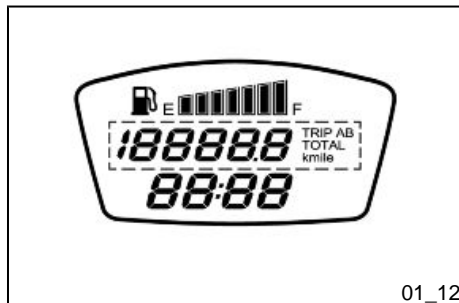


01_11

MODE button (01_11, 01_12)

The «MODE» key, located on the right side of the handlebar, allows to:

- alternate the display of the total or trip odometer with short pressures;
- alternate the trip odometer when shown, with a long pressure;
- access the time adjusting mode, when the total odometer is shown, with a long pressure;
- set the measuring unit of the odometer between kilometres «Km» or miles «mile»; to proceed with this setting, display the total odometer and put the ignition switch to «OFF». Keep the «MODE» key pressed and put the ignition switch to «ON», release within **2 seconds** the «MODE» key.



01_12



01_13

Keyswitch (01_13)

SWITCH POSITIONS

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

OFF «2»: Ignition disabled, non-extractable key, mechanical anti-theft device disabled. Saddle opening and case opening possible.

CLOSE «3»: Ignition disabled, extractable key, mechanical anti-theft device disabled. Saddle opening and case opening disabled.

LOCK «4»: Ignition disabled, extractable key, mechanical anti-theft device enabled. Saddle opening and case opening disabled.



01_14

Locking the steering wheel (01_14)

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.



01_15

Releasing the steering wheel (01_15)

Reinsert the key and turn it to «OFF».

CAUTION



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



01_16

Switch direction indicators (01_16)

Move the lever «A» of the turn signals switch to the left, to position «1» to turn the left turn signals on. the lever automatically goes back to «0».

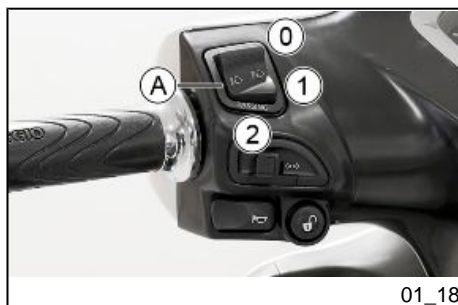
Move the lever «A» of the turn signals switch to the right, to position «2» to turn the right turn signals on. the lever automatically goes back to «0».

Press the lever «A» of the switch on «0» to turn the turn signals off.



Horn button (01_17)

Press the button to sound the horn.



Light switch (01_18)

Place the light switch «A» to «0» to turn the high beam lights on.

Place the light switch «A» to «1» to turn the low beam lights on.

The position «2» activates the high beam flashing; the switch automatically goes back to «1».

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.



01_19

Start-up button (01_19)

To start the engine, pull either one of the two brake levers and press the starter button.



01_20

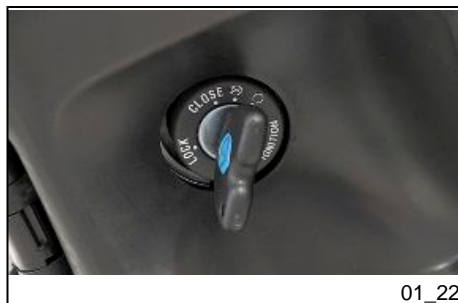
Opening the saddle (01_20, 01_21)

To open the saddle, place the ignition switch on «OFF» or «ON».



01_21

Press the saddle opening button and lift the saddle.



01_22

Opening the saddle to access the helmet compartment in an emergency (01_22, 01_23)

If there is no battery power supply, proceed as following:

- Put the ignition switch to «OFF» and press it to open the front case hatch.



01_23

- Pull the lever located inside the case to the top to open the saddle.



Keys (01_24)

The vehicle is supplied with two keys (one spare) which serve to start the engine and to open the front case hatch.

The keys are accompanied by a tag marked with the identification code to be quoted when ordering duplicates.

WARNING

WE RECOMMEND KEEPING THE DUPLICATE KEY TOGETHER WITH ITS CODE IN A SAFE PLACE AND NOT ON THE VEHICLE.

Identification (01_25, 01_26)

The identification numbers consist of a prefix stamped on the chassis and on the engine, followed by a number. They must be quoted when ordering spare parts. We recommend that you check that the prefix and chassis number stamped on the vehicle correspond with those in the vehicle documents.

CAUTION



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



01_25

FRAME IDENTIFICATION NUMBER:

The frame identification number is inside the front case under a snap-on cover.



01_26

ENGINE IDENTIFICATION NUMBER:

The engine identification number is stamped in the rear part of the engine near the shock absorber lower support.



01_27

Rear top box opening (01_27)

Put the ignition switch to «**OFF**» or «**ON**» and press it. With the ignition switch to «**CLOSE**» or «**LOCK**» the case stays locked.



Bag clip (01_28)

To use the bag hook mounted on the leg shield back plate it must be turned towards the saddle.

CAUTION



Maximum applicable load: 1.5 kg

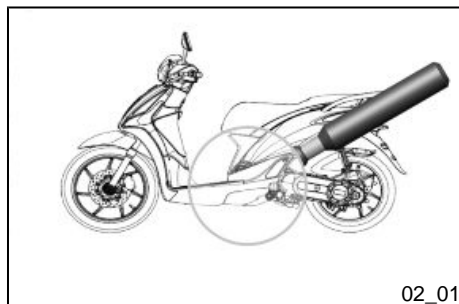
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Chap. 02
Use



Checks (02_01)

Before using the vehicle, check:

1. That there is enough fuel in the fuel tank.
2. Rear hub oil level.
3. Engine oil level (see the «Engine oil level» section).
4. That the tyres are correctly inflated.
5. The correct functioning of headlights, rear light and turn indicators.
6. The operation of the front and rear brakes.



Refuelling (02_02, 02_03, 02_04)

Top up the fuel tank «A» with unleaded petrol.

When the fuel reaches the low fuel level, the warning light on the instrument panel lights up.

CAUTION

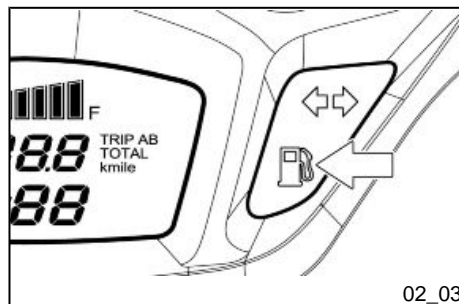


SHUT OFF THE ENGINE BEFORE REFUELLING WITH PETROL. PETROL IS HIGHLY INFLAMMABLE. DO NOT LET PETROL SPILL FROM THE TANK OR WHILE REFUELLING.

CAUTION



WHEN REFUELLING MAKE SURE THE NOZZLE IS FULLY INSERTED INTO THE TANK FILLER NECK TO AVOID FUEL LEAKAGE WHICH COULD DAMAGE THE



PLASTIC ELEMENTS AND COME INTO CONTACT WITH HOT PARTS ON THE VEHICLE.

CAUTION



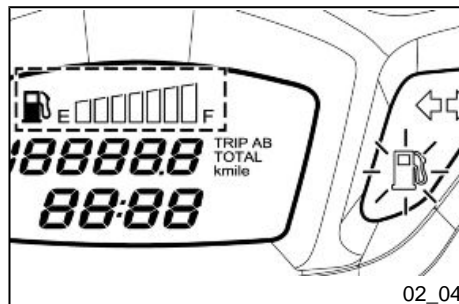
KEEP NAKED FLAMES OR LIT CIGARETTES AWAY FROM THE TANK FILLER NECK: FIRE HAZARD. ALSO AVOID INHALING HARMFUL VAPOURS.

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.

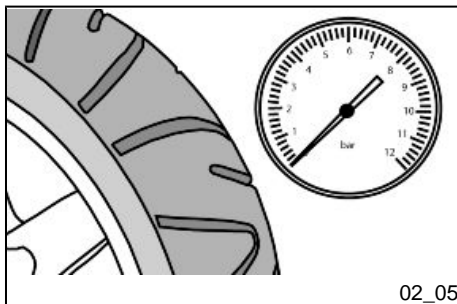


WARNING

THIS INDICATOR IS SWITCHED ON WHEN THE RESERVE FUEL LEVEL HAS BEEN REACHED, REFUEL AS SOON AS POSSIBLE.

FUEL TANK CAPACITY

Fuel tank capacity	6 ± 0.5 litres (1 l of which is reserve)
--------------------	--



Tyre pressure (02_05)

CAUTION



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

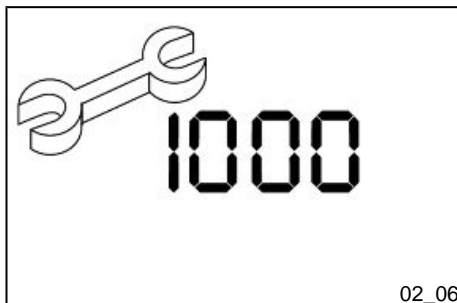
TYRES MUST BE REPLACED WHEN THE TREAD REACHES THE WEAR LIMITS SET FORTH BY LAW.

TYRE PRESSURE

Front tyre pressure	2 bar
Rear tyre pressure	2.2 bar

TYRES

Front tyre	Tubeless, 90/80 - 16" 51J
Rear tyre	Tubeless, 100/80 - 14" 54J



Running in (02_06)

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, 02_09)

The vehicle is equipped with automatic transmission with direct drive, so that starting is effected by turning the throttle grip to idle speed; to start-off from stationary position, progressively twist the throttle grip.

The vehicle is equipped with an electrical fuel pump that switches on automatically as soon as the engine is started.

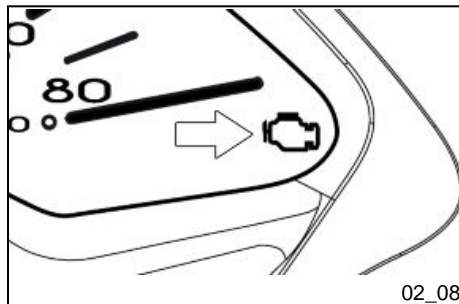
To start it up, it is necessary to:

- Rest the vehicle on its centre stand, ensuring the rear wheel is not touching the ground.
- Keep the throttle grip to idle speed.



02_07

- Insert the key into the ignition key and turn it to «**ON**».



02_08

- Wait for the engine control warning light to turn off.



02_09

- To start the engine, press the starter button, «**A**», after pulling either one of the two brake levers.

CAUTION



DO NOT CARRY OUT THESE OPERATIONS IN CLOSED AREAS SINCE EXHAUST GASES ARE POISONOUS.

CAUTION

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

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

In the rare case of engine flooding, to facilitate start-up, it is possible to try to put the vehicle into action with the gas hand grip partially or completely open. It is however

necessary, once the engine is started, to take your vehicle to an **Authorised Service Centre** to determine the cause of this problem and to re-establish the vehicle proper functioning.



02_10

Stopping the engine (02_10)

Stop acceleration, then turn the key switch to «OFF » to stop the engine (extractable key).

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.



02_11

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 fork while lifting the vehicle backward, using the handlebar.



02_12

Automatic transmission (02_13)

To ensure simple, pleasurable riding, the vehicle is equipped with automatic transmission with regulator and centrifugal clutch. The system is designed to give the best possible performance in terms of both acceleration and consumption, on level ground and uphill, thanks to the adjustments made to engine speed and transmitted torque. If you have to stop on an uphill slope (traffic lights, traffic jam, etc.) only use the brake to keep the vehicle still, leaving the motor running at idling speed. Using the motor to keep the vehicle still can cause the clutch to overheat. This problem is due to the friction of the clutch parts on the clutch bell. It is therefore recommended to avoid conditions of prolonged clutch slippage leading to clutch overheating (for example, as well as the situation described above, riding uphill fully laden on steep slopes or starting off on slopes greater than 25%, etc.):

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



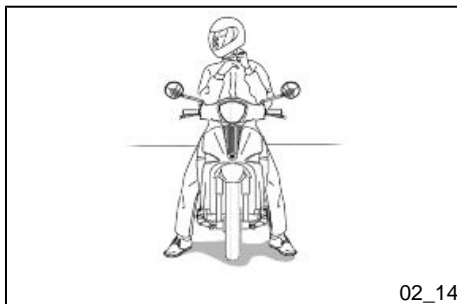
02_13

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. <



02_14

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

In four-stroke engines, the engine oil is used to lubricate the timing elements, the bench bearings and the head-engine block-piston assembly. **An insufficient quantity of oil can cause serious damage to 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 (e.g.: while riding, the use of the vehicle with the throttle grip mainly open implies higher oil consumption).

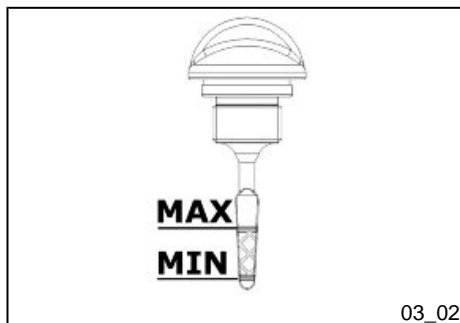
In order to avoid problems, it is advisable to control oil level every time the vehicle is used.



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.



ENGINE OIL CAPACITY

Engine oil

~ 850 cm³

Engine oil top-up

The oil should be topped up after having checked the level and in any case by adding oil **without ever exceeding the MAX. level**. Take your vehicle to an **Authorised Service Centre** to have the engine oil checked and if necessary, topped-up as indicated in the scheduled maintenance table.

Engine oil change

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

CAUTION

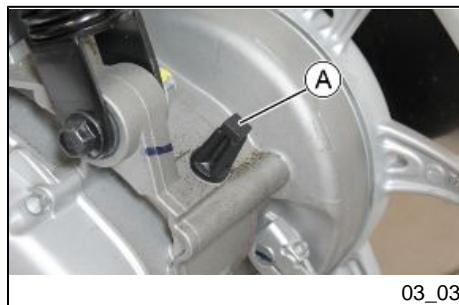
RUNNING THE ENGINE WITH INSUFFICIENT LUBRICATION OR WITH INADEQUATE LUBRICANTS ACCELERATES THE WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE IRREPARABLE DAMAGE.

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.

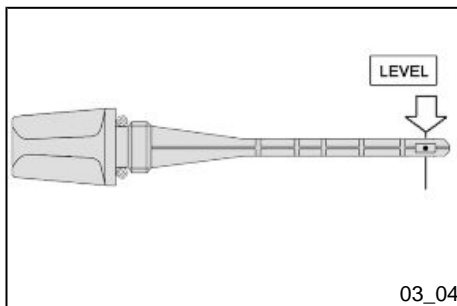


03_03

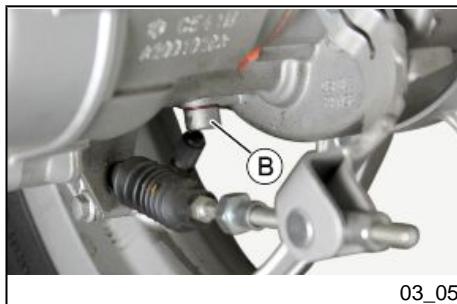
Hub oil level (03_03, 03_04, 03_05)

Make sure there is oil in the rear hub according to the intervals specified in the scheduled maintenance table. Do the following in order to check the hub oil level:

- 1) Stand the vehicle on its stand on flat ground.
- 2) Unscrew the hub oil dipstick «A», dry it with a clean cloth and then reinsert it, **and screw it right down.**
- 3) Remove the dipstick and check that hub oil reaches the level indicated by the arrow in the figure. This is the correct level and must remain constant at all times.
- 4) Screw back the dipstick, and make sure it is locked in place.



03_04



03_05

N.B.

THE NOTCHES ON THE HUB OIL LEVEL DIPSTICK, EXCEPT THE ONE INDICATING THE MAX LEVEL, REFER TO OTHER MODELS BY THE MANUFACTURER AND HAVE NO SPECIFIC FUNCTION FOR THIS MODEL.

CAUTION

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

CAUTION

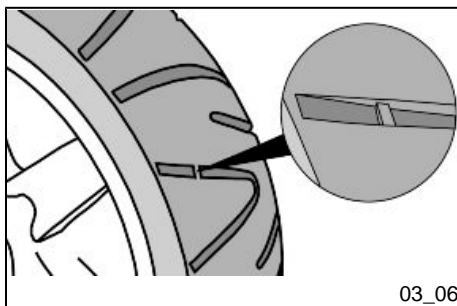
USED OIL IS HARMFUL TO THE ENVIRONMENT. COLLECTION AND DISPOSAL SHOULD BE CARRIED OUT IN COMPLIANCE WITH REGULATIONS IN FORCE.

CAUTION

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

CAUTION

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



Tyres (03_06)

Periodically check the inflation pressure of each tyre (when cold).

Tyres are fitted with wear indicators; tyres should be replaced 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 a workshop adequately equipped to remove and refit 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.

TYRES

Front tyre	Tubeless, 90/80 - 16" 51J
Rear tyre	Tubeless, 100/80 - 14" 54J

TYRE PRESSURE

Front tyre pressure	2 bar
Rear tyre pressure	2.2 bar



Spark plug dismantlement (03_07, 03_08, 03_09, 03_10, 03_11, 03_12, 03_13)

To remove the spark plug, proceed as follows:

- Lift the saddle and undo the cover upper fixing screw from both sides of the vehicle.



- Undo the spark plug access cover lower fixing screws from both sides of the vehicle.



- Remove the spark plug access cover.



03_10

- Remove the spark plug cap.



03_11

- Undo the spark plug with the specific spark plug spanner.



03_12

- Remove the spark plug from its housing. When refitting the plug, tighten it manually, being sure to insert it at the right angle. Use the wrench only to tighten it.

CAUTION

THE SPARK PLUG MUST BE REMOVED WHEN THE ENGINE IS COLD. THE USE OF SPARK PLUGS OF DIFFERENT THERMAL GRADE FROM THAT REQUIRED OR WITH INAPPROPRIATE THREADS MAY SERIOUSLY DAMAGE THE ENGINE.

CAUTION

FOLLOW THESE PROCEDURES VERY CAREFULLY TO AVOID ANY SEVERE DAMAGE THAT MAY BE CAUSED BY THE VERY POWERFUL IGNITION SYSTEM.

CAUTION

THE USE OF SPARK PLUGS OTHER THAN THOSE RECOMMENDED OR A SHIELDLESS SPARK PLUG CAP COULD CAUSE DISTURBANCES TO THE SYSTEM.

CAUTION

WHEN FITTING, ENSURE THAT THE SPARK PLUG CAP IS POSITIONED AS INDICATED IN THE FIGURE.



03_13



03_14

Removing the air filter (03_14)

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



03_15

Checking the brake oil level (03_15)

The brake fluid tank is placed on the right side of the handlebar. To control the brake fluid level, proceed as follows:

Rest the vehicle on its centre stand and with the handlebars perfectly horizontal. Control the level with the relative inspection sight glass «A», visible on the front side of the tank:

- if the sight glass is full, the brake fluid level is correct
- if the brake fluid level is certified to the reference «**MIN**», go to an **Authorised Service Centre** or carry out the top-up as indicated
- If the brake fluid level is lower than the reference «**MIN**», do not use the vehicle and contact an **Authorised Service Centre**.

Braking system fluid top up (03_16, 03_17, 03_18)

To top-up brake fluid, proceed as follows:

Rest the vehicle on its centre stand on a flat ground. Undo the rear screws fixing the handlebar front cover.



Undo the front screw fixing the handlebar front cover. Remove the front cover of the handlebar.



Undo the pump tank cover fixing screws. Insert the required quantity of recommended brake fluid so the sight glass is completely full.

Under standard climatic conditions, replace fluid as indicated in the scheduled maintenance table. This operation must be carried out by trained technicians, please contact your nearest **Authorised Service Centre**.

CAUTION



AVOID CONTACT OF BRAKE FLUID WITH EYES, SKIN, AND CLOTHING. IN CASE OF ACCIDENTAL CONTACT, RINSE WITH WATER. THE BRAKING CIR-

CUIT FLUID IS HYGROSCOPIC, THAT IS, IT ABSORBS HUMIDITY FROM THE SURROUNDING AIR. IF MOISTURE CONTAINED IN THE BRAKE FLUID EXCEEDS A CERTAIN VALUE, THIS WILL RESULT IN INEFFICIENT BRAKING. NEVER USE BRAKE LIQUID FROM OPEN OR PARTIALLY USED CONTAINERS.

WARNING



ONLY USE DOT 4-CLASSIFIED BRAKE FLUID. BRAKE CIRCUIT FLUID IS HIGHLY CORROSIVE: DO NOT LET IT COME INTO CONTACT WITH PAINTED PARTS.



Battery (03_19, 03_20)

To access the battery, proceed as follows:

- Lift the saddle. Undo the battery compartment cover fixing screws.



03_20

- Remove the battery compartment cover.

The battery is the electrical device requiring the closest monitoring and most diligent maintenance.

WARNING



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

CAUTION



ELECTROLYTE CONTAINS SULPHURIC ACID: AVOID CONTACT WITH EYES, SKIN AND CLOTHES. IN CASE OF ACCIDENTAL CONTACT, RINSE WITH ABUNDANT WATER AND CONSULT A DOCTOR.

CAUTION



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



03_21

Use of a new battery (03_21, 03_22, 03_23, 03_24)

To remove the empty battery, proceed as follows:

Place the scooter on its centre stand and lift the saddle. Remove the battery compartment cover and undo the negative pole screw «-».



03_22

Undo the positive pole screw «+».



03_23

Remove the battery from its housing. Place the new battery and proceed in reverse order of the removal.

CAUTION



IT IS IMPORTANT TO OBSERVE THE INDICATED CONNECTION SEQUENCE OF THE CABLES AT THE BATTERY TO AVOID SHORT-CIRCUITS. WHEN FITTING THE NEW BATTERY, FIRST CONNECT THE POSITIVE CABLE «+» AND THEN THE NEGATIVE CABLE «-».



03_24

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.



03_25

Long periods of inactivity (03_25)

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.



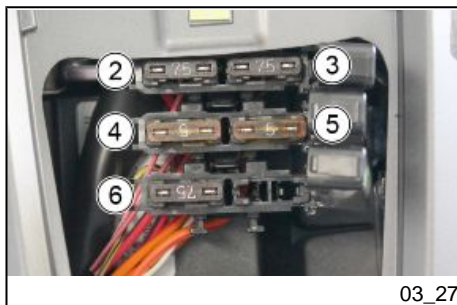
03_26

Fuses (03_26, 03_27, 03_28, 03_29, 03_30)**MAIN FUSE**

The electrical system is protected by a 20A main fuse «1» located near the battery. To reach it, the battery compartment cover must be removed as indicated in the «Battery» section.

MAIN FUSES TABLE

Fuse No. 1	Threshold of operation: 20A
	Protected circuits: recharge circuit, general vehicle.



03_27

SECONDARY FUSES

The five secondary fuses are located under the front grille.

SECONDARY FUSES TABLE

Fuse no. 2	Threshold of operation: 7.5 A
	Protected circuits: battery-powered: engine control unit.

Fuse no. 3	Threshold of operation: 7.5 A
	Protected circuits: battery-powered: accessories preparation,

instrument panel, saddle opening actuator.

Fuse 4

Threshold of operation: 5A

Protected circuits: key powered: anti-tipping sensor, engine control unit.

Fuse No. 5

Threshold of operation: 5A

Protected circuits: key powered: accessories preparation, turn indicator flasher, stop light, horn, starter relay coil, engine control unit.

Fuse No. 6

Threshold of operation: 7.5 A

Protected circuits: key powered: Instrument panel, high beam/low beam lights, rear daylight running lights, licence plate light.



To access the auxiliary fuses proceed as follows:

Remove the Piaggio clip-on badge using a flat screwdriver.



03_29

Unscrew the screw fixing the grille to the frame.



03_30

Remove the grille by slightly pulling it upwards and releasing the seat tongues.

CAUTION



BEFORE REPLACING THE FUSE IT IS NECESSARY TO FIND AND SOLVE THE FAILURE THAT CAUSED IT TO BLOW.

DO NOT REPLACE THE FUSE WITH ANY ALTERNATIVE FORM OF CONDUCTOR.

CAUTION



IN ORDER TO AVOID DAMAGING THE ELECTRIC SYSTEM, NEVER DISCONNECT THE WIRING WHILE THE ENGINE IS RUNNING. DO NOT TIP THE VEHICLE TOO MUCH IN ORDER TO AVOID DANGEROUS LEAKAGE OF THE BATTERY ELECTROLYTE.

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.

CAUTION

PROCEED WITH CAUTION.

DO NOT DAMAGE THE TABS AND/OR THEIR CORRESPONDING SLOTS. HANDLE THE PLASTIC AND PAINTED COMPONENTS WITH CARE, DO NOT SCRATCH OR IMPAIR THEM.

**Lamps (03_31)**

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

BULBS

High/low beam light bulb	Type: Halogen (HS1) Power: 12V - 35/35W Quantity: 1
Front indicator light bulb	Type: Amber spherical Power: 12V - 10W Quantity: 1 RH + 1 LH
Rear indicator light bulb	Type: Spherical Power: 12V - 10W Quantity: 1 RH + 1 LH
Rear tail light bulb	Type: Capless Power: 12V - 5W Quantity: 2
Stop light bulb	Type: Spherical Power: 12V - 10W Quantity: 1
Licence plate light	Type: Capless Power: 12V - 5W Quantity: 1



03_32

Front light group (03_32, 03_33, 03_34, 03_35, 03_36, 03_37)

To access the front light assembly, proceed as follows:

Rest the vehicle on its centre stand on a flat ground. Undo the rear screws fixing the handlebar front cover.



03_33

Undo the front screw fixing the handlebar front cover. Remove the front cover of the handlebar.



03_34

Disconnect the connector from the low beam/high beam lights bulb.

CAUTION



DO NOT PULL THE ELECTRICAL CABLES WHEN DISCONNECTING THE ELECTRICAL CONNECTOR.



03_35

Remove the protective cap.



03_36

Turn the fixing ring nut of the low beam/high beam lights bulb anticlockwise and remove it.



03_37

Remove the low beam/high beam lights bulb and replace it with a new bulb. Follow the process in reverse order to refit.

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.

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.

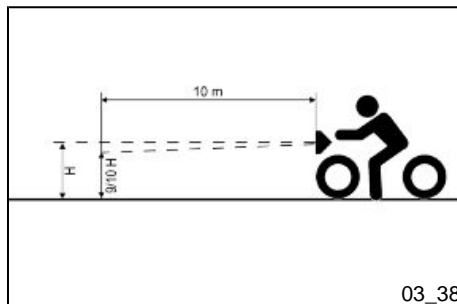
FRONT LIGHT ASSEMBLY BULB

High/low beam light bulb

Type: Halogen (HS1)

Power: 12V - 35/35W

Quantity: 1

**Head light adjustment (03_38, 03_39)**

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. If this is not the case, adjust the right headlight by operating the screw indicated.

N.B.

THE PROCEDURE DESCRIBED IS THAT ESTABLISHED BY EUROPEAN STANDARDS FOR THE MAXIMUM AND MINIMUM HEIGHT OF THE LIGHT BEAM. RE-



FER TO THE STATUTORY REGULATIONS IN FORCE IN EVERY COUNTRY WHERE THE VEHICLE IS USED.

Front direction indicators

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

FRONT TURN INDICATORS BULBS

Front indicator light bulb

Type: Amber spherical

Power: 12V - 10W

Quantity: 1 RH + 1 LH



03_40

Rear optical unit (03_40, 03_41, 03_42, 03_43, 03_44, 03_45, 03_46, 03_47, 03_48, 03_49, 03_50)

To replace the rear light assembly bulbs, proceed as follow:

Remove the luggage carrier cover.



03_41

Unscrew the upper fixing screw of the rear light assembly.



03_42

Use a screwdriver, remove the chromed covers from both sides of the vehicle. Be careful not to damage them.

CAUTION



PROCEED WITH CAUTION.

DO NOT DAMAGE THE TABS AND/OR THEIR CORRESPONDING SLOTS. HANDLE THE PLASTIC AND PAINTED COMPONENTS WITH CARE, DO NOT SCRATCH OR IMPAIR THEM.



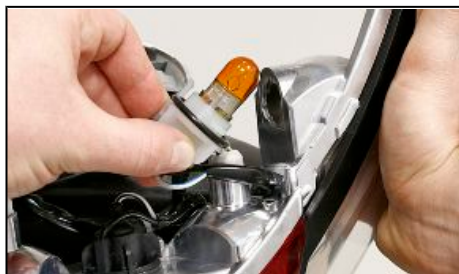
03_43

Unscrew the rear light assembly side fastening screw from both sides of the vehicle.



03_44

Remove the rear light assembly from its seat.



03_45

Turn the turn indicator lights bulb holder anticlockwise and remove it from its seat.



03_46

Lightly press the bulb, turn it anticlockwise and remove it from the bulb holder. To refit, proceed in reverse order.

REAR TURN INDICATOR BULBS

Rear indicator light bulb

Type: Spherical

Power: 12V - 10W

Quantity: 1 RH + 1 LH



03_47

Remove the bulb holder from its seats.

CAUTION

DO NOT PULL THE ELECTRICAL CABLES WHEN TAKING OUT THE BULB HOLDER.



03_48

Remove the daylight running lights bulb and replace it.

REAR DAYLIGHT BULBS

Rear tail light bulb

Type: Capless

Power: 12V - 5W

Quantity: 2



03_49

Turn the stop light bulb holder anticlockwise and remove it from its seat.



03_50

Slightly press the stop light bulb, turn it anticlockwise and remove it from the bulb holder. To refit, proceed in reverse order.

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.

STOP LIGHT BULB

Stop light bulb

Type: Spherical

Power: 12V - 10W

Quantity: 1



03_51

Number plate light (03_51, 03_52)

To access the licence plate light, proceed as follows:

From the inside of the licence plate holder extract the bulb holder from the licence plate light.

CAUTION

DO NOT PULL THE ELECTRICAL CABLES WHEN TAKING OUT THE BULB HOLDER.



03_52

Remove the bulb of the licence plate light and replace it.

LICENCE PLATE LIGHT BULB

Licence plate light

Type: Capless

Power: 12V - 5W

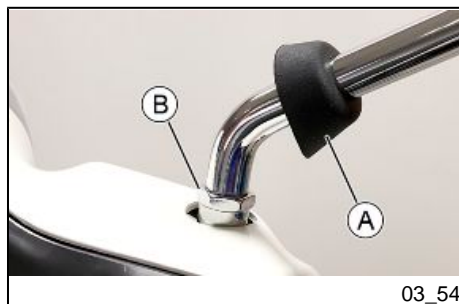
Quantity: 1



03_53

Rear-view mirrors (03_53, 03_54)

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



03_54

To remove the rear view mirror, lift the rubber protection «A», unscrew the nut «B» slightly to unlock the stem. Slide off the complete mirror.

CAUTION



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



03_55

Front disc brake (03_55)

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 an irregular brake operation. In this case, particularly considering the importance of the brakes in terms of safety, it is strongly recommended that you take the vehicle to an **Authorised Service Centre** as soon as possible for the appropriate checks.

WARNING



CHECK BRAKE PADS FOR WEAR ON A REGULAR BASIS (AS INDICATED IN THE SCHEDULED MAINTENANCE TABLES). IF THE THICKNESS OF ONE OR BOTH PADS IS IN THE REGION OF 1.5 MM, BOTH PADS MUST BE CHANGED. IT IS RECOMMENDED TO CARRY OUT THIS OPERATION AT AN AUTHORISED SERVICE CENTRE AS SOON AS POSSIBLE.

AFTER FITTING NEW BRAKE PADS DO NOT USE THE VEHICLE UNTIL YOU HAVE ACTIVATED THE BRAKE LEVER REPEATEDLY TO POSITION THE PADS AND RESTORE THE LEVER STROKE TO ITS CORRECT POSITION.

CAUTION

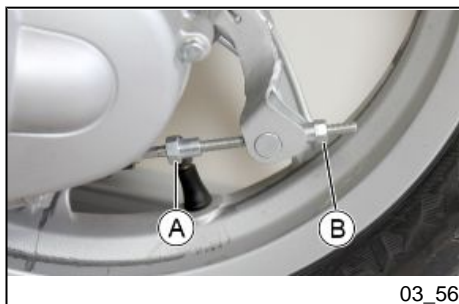
BRAKING SHOULD BEGIN AFTER ABOUT 1/3 OF THE BRAKE LEVER STROKE.

Rear drum brake (03_56)

Operate adjusting nut «**B**» and loosen lock nut «**A**» shown in the figure. Note that when the throttle is in idle **the wheel should rotate free**. After the adjustment, screw lock nut «**A**».

CAUTION

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



03_56

Puncture (03_57)

The vehicle is equipped with Tubeless tyres. When there is a puncture, Tubeless tyres - unlike tyres with inner tubes - go flat very slowly. This offers greater riding safety. A tyre that goes flat very slowly can be repaired with an "Inflate and Repair" spray. Tyres should be later fully repaired or replaced at an **Authorised Service Centre**.



03_57



Inactivity of the vehicle (03_58)

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 to 2 of oil through the spark plug hole (larger quantities will cause engine damage). Operate the starter button 1-2 times for roughly 1 second to turn the engine over slowly, then insert the spark plug again;
3. Drain all the fuel from the vehicle; 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_59)

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. For the engine exterior, use petrol, a brush and clean cloths. Petrol can damage paintwork. Remember that any polishing with silicone wax must always be preceded by washing.

WARNING



To avoid the appearance of oxidations, wash the vehicle every time it is used in certain areas or in special conditions of:

- **Environmental / seasonal conditions:** use of salt, de-icer chemical products on the road in winter.
- **Air pollution:** city and/or industrial areas.

- Salinity and humidity of the atmosphere: marine areas, hot and wet weather.

WARNING

· Prevent deposits from remaining on the bodywork, industrial and pollutant residual dust, tar spots, dead insects, bird droppings, etc.

· Do not park the vehicle under the trees. During some seasons, resins, fruits or leaves containing aggressive chemical substances that may damage the paintwork may fall from trees.

CAUTION

DETERGENTS POLLUTE WATER. THEREFORE THE VEHICLE SHOULD BE WASHED IN AN AREA EQUIPPED FOR THE COLLECTION AND PURIFICATION OF THE LIQUIDS USED.

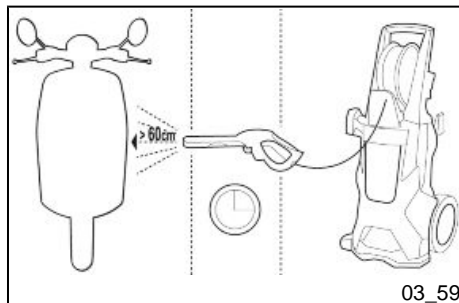
WARNING

NEVER WASH THE VEHICLE UNDER DIRECT SUNLIGHT, ESPECIALLY IN SUMMER WHEN THE BODYWORK IS STILL HOT, AS THE CAR SHAMPOO MAY DRY BEFORE BEING RINSED OFF, AND COULD DAMAGE THE PAINTWORK. NEVER USE RAGS SOAKED IN PETROL OR DIESEL OIL TO CLEAN THE PAINTED OR PLASTIC SURFACES, IN ORDER TO PREVENT THEM LOSING THEIR SHINE AND MECHANICAL CHARACTERISTICS.

WARNING

WHEN WASHING THE ENGINE WITH A HIGH-PRESSURE WATER JET:

- ONLY USE FAN SPRAY JETS.
- DO NOT PLACE THE WATER JET NOZZLE CLOSER THAN 60 CM.
- DO NOT USE WATER AT TEMPERATURES OVER 40°C.
- DO NOT DIRECT THE JET AT THE THROTTLE BODY, THE ELECTRIC CABLES, THE COOLING SLITS IN THE TRANSMISSION COVER AND THE SPIRAL COVER, THE FUEL TANK CAP.

**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**START-UP PROBLEMS**

No fuel in tank

Refuel

Injection system fault	Contact an Authorised Service Centre .
Insufficient battery charge	Recharge the battery
Fuel pump fault	Contact an Authorised Service Centre .

IGNITION PROBLEMS

No spark from spark plug. Due to the presence of high voltage, this check should only be carried out by an expert	Check that the electrodes are properly adjusted (0.7÷ 0.8 mm). Check that the electrodes are clean. Check the spark plug insulator: replace the spark plug if the insulator is cracked or broken. If the spark plug is in good conditions, contact an Authorised Service Centre .
Ignition/ injection control unit defective.	Contact an Authorised Service Centre .

LACK OF COMPRESSION

Spark plug adapter "worn", valve clearance not adequate; worn piston gas rings	Contact an Authorised Service Centre .
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HIGH FUEL CONSUMPTION AND BAD PERFORMANCE

Air filter blocked or dirty

Contact an **Authorised Service Centre**.

INEFFICIENT BRAKING

Oil on drum or disc. Worn Pads/Shoes

Contact an **Authorised Service Centre**.

incorrect rear brake adjustment

Adjust

INEFFICIENT SUSPENSION

Inefficient shock absorbers, oil leakage, deteriorated end of stroke buffers.

Contact an **Authorised Service Centre**.

AUTOMATIC TRANSMISSION PROBLEMS

Deteriorated CVT rollers and/or drive belt and/or clutch

Contact an **Authorised Service Centre**.

STAND DOES NOT RETURN TO POSITION

Presence of dirt

Clean and grease

Liberty

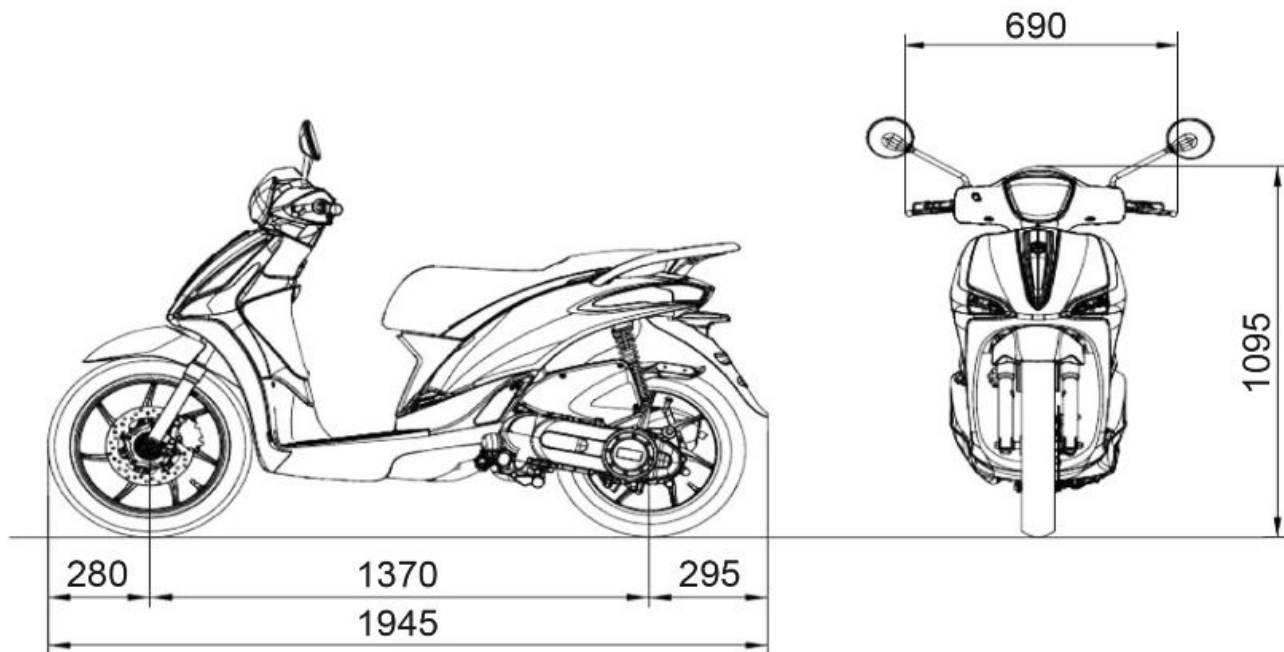


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Chap. 04
Technical data

Data (04_01)



04_01

VEHICLE TECHNICAL DATA

Frame	Tubular steel frame
Front suspension	Straight hydraulic telescopic fork. Stroke: 76 mm
Rear suspension	Single-chamber shock absorber.
Front brake	Ø 240 mm disc brake with dual piston floating calliper.
Rear brake	Ø 140 mm mechanically operated drum brake controlled from LH handlebar lever.
Wheel rim type	Light alloy.
Front wheel	16" x 2.15
Rear wheel	14 x 2.50"
Front tyre	Tubeless, 90/80 - 16" 51J
Rear tyre	Tubeless, 100/80 - 14" 54J
Front tyre pressure	2 bar
Rear tyre pressure	2.2 bar
Kerb weight	106 kg
Maximum weight limit	290 kg
Battery	Sealed, 12 V / 6 Ah

ENGINE TECHNICAL DATA

Engine	Single-cylinder, 4-stroke Piaggio i-get
Bore	39 mm
Stroke	41.8 mm
Engine capacity	50 cm ³
Max. power	2.4 kW at 7,500 rpm
MAX torque	3.1 Nm at 7,250 rpm
Max Power (version with limited speed of 25 km/h)	1.7 kW at 6500 rpm
Max torque (version with limited speed of 25 km/h)	2.6 kW at 5500 rpm
Compression ratio	12 ± 0.5: 1
Timing system	3 valves (2 inlet, 1 exhaust), single overhead camshaft, chain-driven.
Idle speed	1900 ± 100 rpm
Lubrication	Wet crankcase. Lobe pump controlled by chain with intake filtering.
Fuel supply	Electronic injection with Ø22 throttle body with separated control unit, two-jet injector.
Valve clearance (cold engine)	Intake: 0.10 mm Exhaust: 0.15 mm
Cooling	Forced air circulation cooling
Start-up	Electric

Gearbox	Continuously variable transmission with torque server
Clutch	Automatic centrifugal dry with pad support stopper.
Fuel	Unleaded petrol max E10 (95 RON)
Spark plug	NGK CR8EB
Exhaust silencer	Absorption-type exhaust muffler with catalytic converter.
Emissions compliance	EURO 3

CAPACITY

Engine oil	~ 850 cm ³
Transmission oil	100 cm ³
Fuel tank capacity	6 ± 0.5 litres (1 l of which is reserve)

Liberty



PIAGGIO™



Chap. 05
Spare parts and
accessories



Warnings (05_01)

WARNING



IT IS RECOMMENDED THAT "ORIGINAL PIAGGIO SPARE PARTS" BE USED, AS THESE ARE THE ONLY ONES OFFERING YOU THE SAME QUALITY ASSURANCE 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.

Liberty



PIAGGIO™



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	5	10	15	20	25	30	EVERY 12 MONTH S	EVERY 24 MONTH S
Safety fasteners	I		I		I		I		
Spark plug			R		R		R		
Centre stand			I		I		I	L	L
Drive belt			R		R		R		
Throttle control	I		I		I		I	I	I
Rollers housing			I		I		I		
Diagnosis by tool	I	I	I	I	I	I	I	I	I

Km x 1,000	1	5	10	15	20	25	30	EVERY 12 MONTH S	EVERY 24 MONTH S
Air filter			R		R		R		
Oil filter (mesh)	C		C		C		C		
Valve clearance	A		A		A		A		
Clutch assembly					I				
Electrical system and battery	I	I	I	I	I	I	I		
Braking system	I		I		I		I	I	I
Cylinder cooling system						I		I	I
Brake fluid	I	I	I	I	I	I	I	I	R
Engine oil *	R	I	R	I	R	I	R	R	R
Hub oil			I		I		I	I	I
Headlight direction adjustment			I		I		I		
Brake pads		I	I	I	I	I	I	I	I
Sliding shoes / CVT rollers			I		R		I		
Tyre pressure and wear	I	I	I	I	I	I	I	I	I
Vehicle road test	I		I		I		I	I	I
Driven pulley - roller casings			I		L		I		
Suspensions			I		I		I	I	I
Steering	I		I		I		I	I	I
Front wheel bearing seal ring			L		L		L		
Pin_Rear drum brake set screw			L		L		L		

Km x 1,000	1	5	10	15	20	25	30	EVERY 12 MONTH S	EVERY 24 MONTH S
Transmission			L		L		L	I	I

I: INSPECT AND CLEAN, ADJUST, LUBRICATE OR REPLACE IF NECESSARY

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

* Check level every 2,500 km



Recommended products (06_02)

Piaggio Group recommends the products of its "Castrol Official Partner" for the scheduled maintenance of its vehicles. Use lubricants and liquids having specifications that are equivalent, or superior, to the recommended products. These indications also apply when topping up fluid levels.

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
Brake fluid DOT 4	Synthetic brake fluid.	SAE J 1703; FMVSS 116; ISO 4925; CUNA NC 956 DOT4

Product	Description	Specifications
Lithium-based grease	Lithium-based grease, suitable for various uses.	Yellow grease ISO L-X-BCHA 3 - DIN 51 825 K3K -20
Water repellent spray grease	Water repellent pouring calcium spray grease.	R.I.D./A.D.R. 2 10°b) 2 R.I.Na. 2.42 - I.A.T.A. 2 - I.M.D.G. class 2 UN 1950 Page 9022 EM 25-89

**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 (in³)	16.4 Cubic centimetres (cm³)
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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