

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.

Liberty ABS



PIAGGIO®

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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Liberty ABS



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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

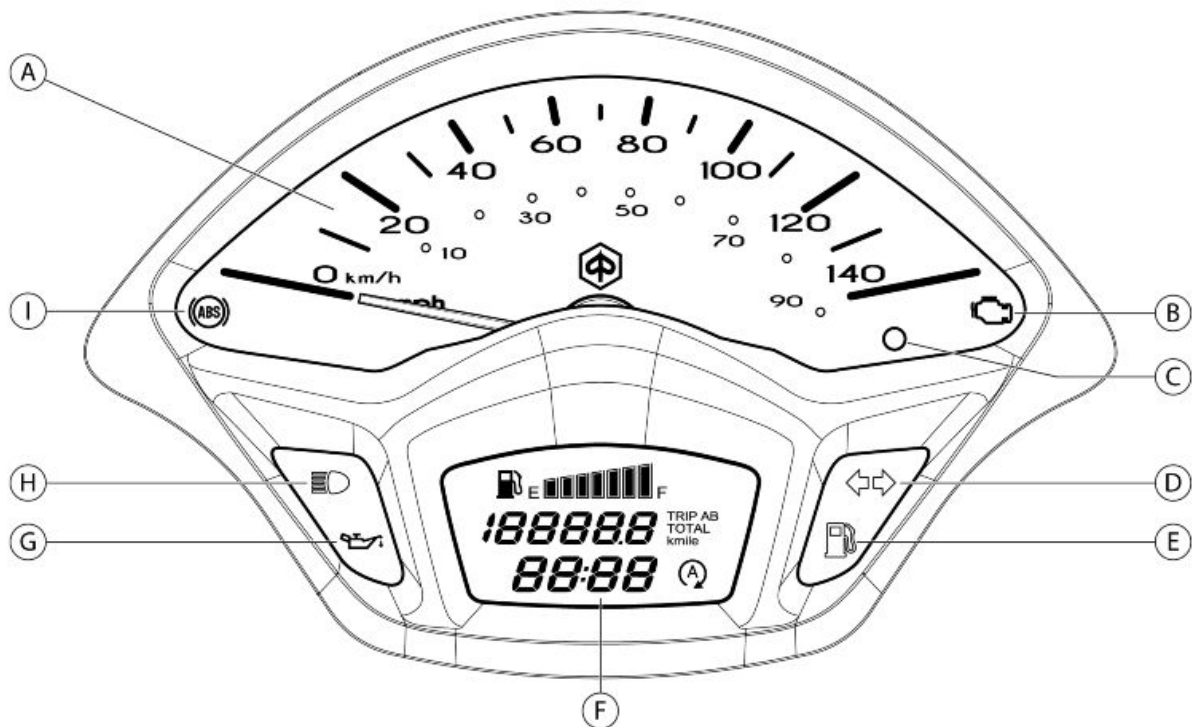
G = Instrument panel

H = Throttle grip

I = Starter button

L = MODE key

Analogue instrument panel (01_02)



01_02

A = Speedometer

B = Engine control warning light

C = Immobilizer warning light

- D** = Turn indicator warning light
- E** = Low fuel warning light
- F** = Digital display
- G** = Low oil pressure warning light
- H** = High-beam warning lights on
- I** = ABS warning light

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».

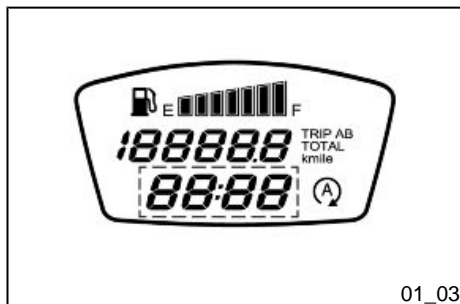
Set the correct hour as described in paragraph «Hour / minute setting».

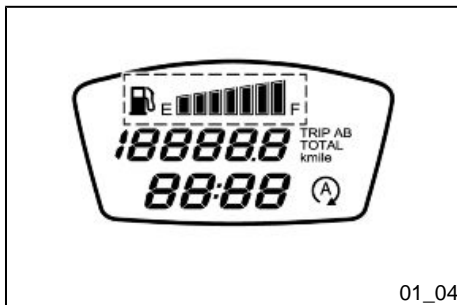
WARNING

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

WARNING

DISCONNECTING THE BATTERY CABLES WILL RESET THE CLOCK



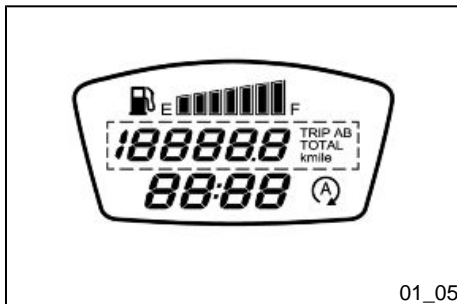


01_04

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.

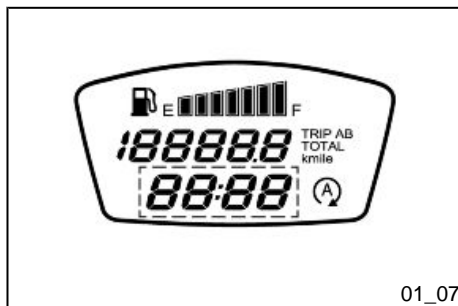
N.B.

IN THE NAVIGATION OF THE DISPLAY ARE DEFINED:

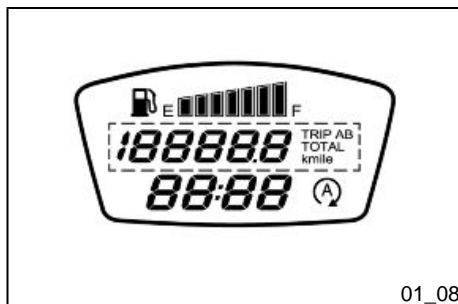
- «**SHORT PRESS**»: PRESSING THE BUTTON INDICATED FOR LESS THAN HALF A SECOND;
- «**LONG PRESS**»: PRESSING THE BUTTON INDICATED FOR MORE THAN THREE SECONDS.



01_06



01_07



01_08



01_09

- the current hour and minutes in format «hh:mm». Set the correct hour as described in paragraph «Hour / minute setting».

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

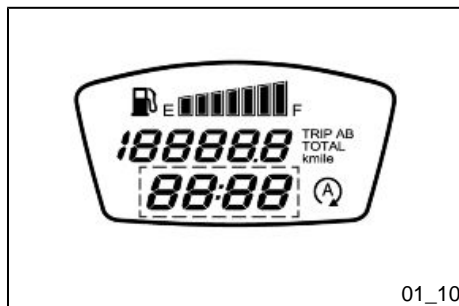
To set or adjust the time, with vehicle running or with key inserted in «ON» position, proceed as follows:

- 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 it causes the flashing of the minutes value in the format «mm».
- 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 it exits from the clock adjustment.

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 RESET THE CLOCK

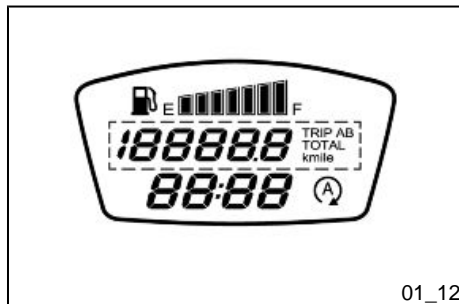


01_11

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 indicators switch to the left, to position «1» to turn the left turn indicators on. the lever automatically goes back to «0».

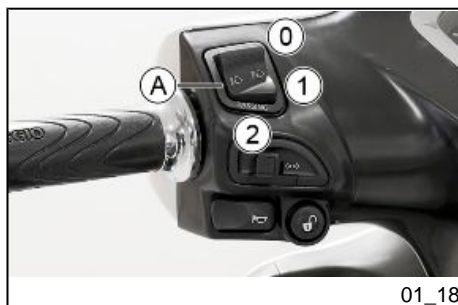
Move the lever «A» of the turn indicators switch to the right, to position «2» to turn the right turn indicators on. the lever automatically goes back to «0».

Press the lever «A» of the switch on «0» to turn the turn indicators 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

System ABS (01_20, 01_21)

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

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 front wheel from locking to avoid the risk of falling.

In case of failure of the ABS system, immediately reported to the rider with **fixed** ABS warning light on the instrument panel, 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:

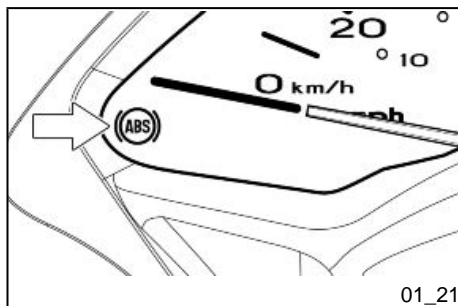
- Riding on rough roads, with gravel or snow
- Riding on roads with holes or bumps

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)



The warning light flashes in the following cases:

- with the panel «ON» and running until reaching 5 Km/h speed, then it turns off indicating the correct engagement of the system
- During deceleration to below 5 Km/h.

WARNING



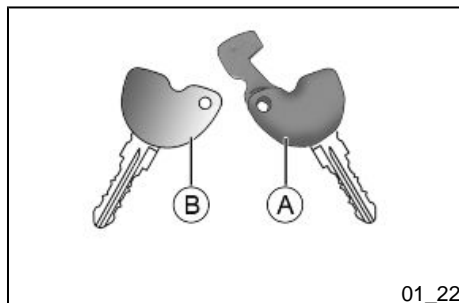
IF THE ABS WARNING LIGHT FLASHES WHEN RIDING OVER 5 KM/H, IT INDICATES A MALFUNCTION OF THE ABS SYSTEM AND CONSEQUENTLY THE REDUCTION OF THE EFFICIENCY OF THE BRAKING SYSTEM. IMMEDIATELY CONTACT AN AUTHORISED SERVICE CENTRE.

IT IS NORMAL THAT THE WARNING LIGHT FLASHES WITH THE VEHICLE AT STANDSTILL AND THE PANEL «ON».

THE ACTIVATION OF THE «CONTINUOUS» WARNING LIGHT INDICATES A SYSTEM FAILURE. IMMEDIATELY CONTACT AN AUTHORISED SERVICE CENTRE.

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.



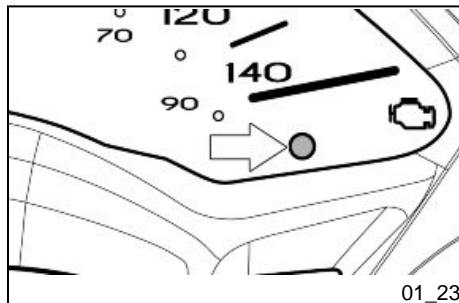
Keys (01_22)

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 your other keys and for your dealer to perform some maintenance operations. We therefore recommend that it be used only under 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)

Activation of the «**PIAGGIO IMMOBILIZER**» system is signalled by a flashing warning light (see the "Analogue instrument cluster" section).

In order to reduce battery discharge, the indicator LED turns off automatically after 48 hours of uninterrupted functioning.

Should the system fail, different LED flashing patterns will provide the **Authorised Service Centre** with information on the type of fault detected.

Operation

Every time the ignition key is removed in the "OFF" or "LOCK" position, the safety system activates the immobilizer system. Turning the key to "ON" disables the engine lock, provided that the safety 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 cannot be started, contact an **Authorised Service Centre**, which is provided with the electronic equipment required to detect and repair the system. When supplementary keys are required, remember that the programming (up to a maximum of three keys) must be performed on all the keys whether they are new or already in your possession. Take the key with the brown grip and all the keys supplied to an **Authorised 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)

Procedure start-brown key

Insert the brown key into the ignition switch (in the «OFF» position), turning it to the «ON» position. After 1 - 3 seconds, turn the key to «OFF » again and pull it out.

Intermediate step-blu key

After extracting the brown key, insert the blue key within 10 seconds and promptly turn it to «**ON**». After 1 - 3 seconds, turn the key to «**OFF**» again and pull it out.

In this way, a maximum of 3 blue keys can be programmed by repeating the above procedure and keeping the indicated times.

Final step-brown key

After extracting the last blue key, insert the brown key again and turn it to «**ON**» (carry out this operation within 10 seconds after extracting the previous key). Leave it in this position for 1 to 3 seconds and return it to «**OFF**».

Proper programming check

Insert the brown key, disabling the transponder (i.e., by tilting the key hood by 90°), and turn the key to the «**ON**» position. Perform the engine starter operation. Ensure that the engine does not start. Insert the blue key and repeat the start-up operation. Check that engine starts.

WARNING

IF THE ENGINE STARTS WITH THE BROWN KEY (AND WITH A DISABLED TRANSPONDER) OR IF DURING THE PROGRAMMING A WRONG STEP HAS BEEN CARRIED OUT, IT IS NECESSARY TO REPEAT THE PROCESS FROM THE BEGINNING.

Opening the saddle (01_24, 01_25)

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



01_24



01_25

Press the saddle opening button and lift the saddle.

Opening the saddle to access the helmet compartment in an emergency (01_26, 01_27)

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_26



01_27

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

Identification (01_28, 01_29)

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 frame 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_28

CHASSIS IDENTIFICATION NUMBER:

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



01_29

ENGINE IDENTIFICATION NUMBER:

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



01_30

Rear top box opening (01_30)

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_31)

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 the fuel tank is full.
2. Rear hub oil level.
3. Engine oil level (see the «Engine oil level» section).
4. That the tyres are properly inflated.
5. The correct functioning of headlights, rear light and turn indicators.
6. The correct functioning of 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

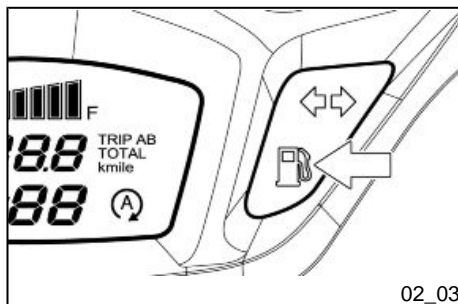


SHUT OFF THE ENGINE BEFORE REFUELLING WITH PETROL. PETROL IS HIGHLY FLAMMABLE. DO NOT LET PETROL SPILL FROM THE TANK OR WHILE REFUELLING.

CAUTION



UPON REFILLING MAKE SURE TO COMPLETELY ENTER THE GUN INTO THE TANK MOUTH TO AVOID ANY FUEL LEAKAGE WHICH COULD LEAD DAMAGES



TO PLASTIC ELEMENTS AND DANGEROUS CONTACTS WITH VEHICLE HOT PARTS.

CAUTION



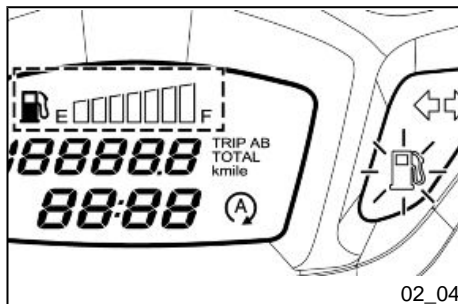
DO NOT BRING NAKED FLAMES OR CIGARETTES NEAR THE MOUTH OF THE FUEL TANK: FIRE HAZARD. ALSO AVOID INHALING HARMFUL VAPOURS.

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.

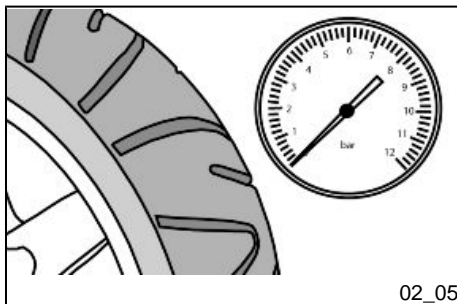


WARNING

THE WARNING LIGHT INDICATES THAT THE RESIDUAL QUANTITY OF FUEL REACHES ABOUT 1 LITRE, IMMEDIATELY REFILL THE TANK.

FUEL TANK CAPACITY

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



Tyre pressure (02_05)

CAUTION



TIRE PRESSURE SHOULD BE CHECKED WHEN TYRES ARE COLD. INCORRECT TIRE PRESSURE CAUSES ABNORMAL TIRE 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
Rear wheel tyre pressure (at full load)	2.5 bar

TYRES

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



Shock absorbers adjustment (02_06, 02_07)

The spring preload is adjustable into 5 different settings by turning the adjuster ring on the bottom of the shock absorbers with a specific wrench for shock absorbers.

Position 1: minimum pre-load: rider only

Position 2 medium preloading: rider only

Position 3 medium preloading: rider and passenger

Position 4 medium preloading: rider and passenger

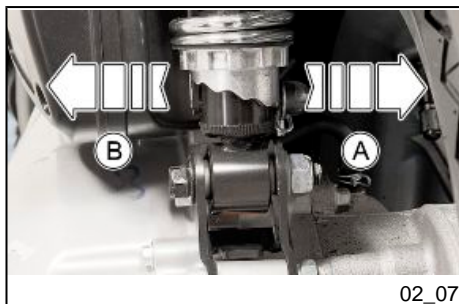
Position 5: maximum preloading: rider, passenger, and luggage.

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

CAUTION

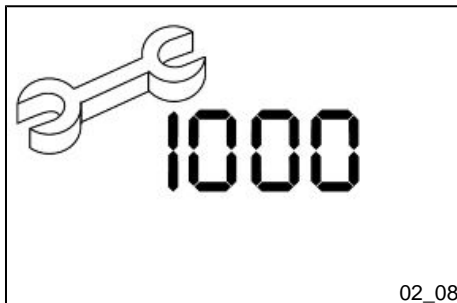


RIDING THE VEHICLE WITH THE SPRING PRELOADING NOT CORRECTLY SET FOR THE RIDER AND POSSIBLE PASSENGER, COULD REDUCE THE COMFORT OF THE RIDE AND THE PRECISION OF THE STEERING.



WARNING

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

**Running in (02_08)****WARNING**

DURING THE FIRST 1000 KM DO NOT RIDE THE VEHICLE OVER 80% OF ITS MAXIMUM SPEED. AVOID TWISTING THE THROTTLE GRIP FULLY OR KEEPING A CONSTANT SPEED ALONG LONG SECTIONS OF ROAD. AFTER THE FIRST 1000 KM, GRADUALLY INCREASE SPEED UNTIL REACHING THE MAXIMUM PERFORMANCE.

Starting up the engine (02_09, 02_10, 02_11)

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:

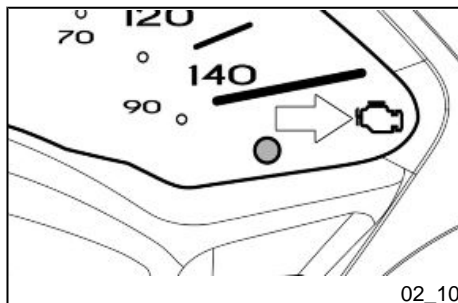
- Rest the vehicle on its centre stand, ensuring the rear wheel is not touching the ground.

- Keep the throttle grip to idle speed.

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



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





02_11

- 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.

Stopping the engine (02_12)

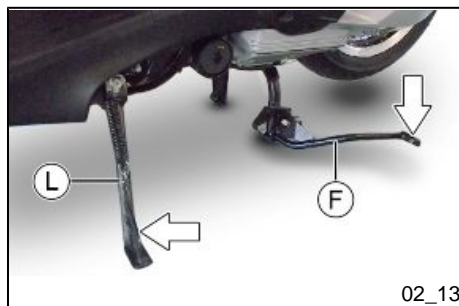
Stop acceleration, then turn the key switch to «**OFF** » to stop the engine (extractable key).

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_12



Stand (02_13, 02_14)

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. There is a switch that hinders the vehicle starter with lowered stand.

WARNING

USE THE SIDE STAND PREFERABLY ON STREET SURFACES WHICH ARE COMPACT AND ONLY SLIGHTLY SLOPING, PARTICULARLY IN CONDITIONS OF MAXIMUM ALLOWED LOAD.

WARNING



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

TAMPERING MAY CAUSE SERIOUS VEHICLE MALFUNCTION.



02_14

CAUTION

THE SIDE STAND IS DESIGNED TO SUPPORT THE VEHICLE WEIGHT, IT IS NOT SUITABLE TO ALSO SUPPORT THE RIDER OR PASSENGER WEIGHT.



02_15

Automatic transmission (02_15)

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.):

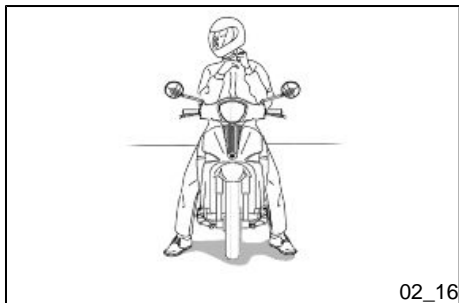
1. Do not continue riding in such conditions.
2. Let the clutch cool down with the motor at idling speed for a few minutes

Safe driving (02_16)

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. We recommend trying out the vehicle in traffic-free zones to get to know your vehicle completely.

ALWAYS RIDE WITHIN YOUR LIMITS

1. Before riding off, remember to put the helmet on and fasten it correctly.
- 2.Reduce speed on rough roads and ride with caution.
- 3.Remember that after riding on a long stretch of wet road without using the brakes, braking can be poor at the beginning. Under these conditions, it is a good idea to operate the brakes from time to time.
- 4.Do not brake hard on wet, unsurfaced or slippery roads.
- 5.If you have to brake, use both brakes in order to spread the braking action between both wheels.
- 6.Avoid riding off by mounting the scooter when it is resting on its support. 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 the vehicle is used on roads covered with sand, mud, snow mixed with salt, etc., clean brake discs frequently with a mild detergent in order to avoid the formation of abrasive substances in the holes, which could result in early wear of the brake pads.
- 8.Remember that any change that modifies the vehicle's performance, such as tampering with original structural parts, renders the vehicle not conforming to the approved type and therefore dangerous to ride.

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.

Liberty ABS



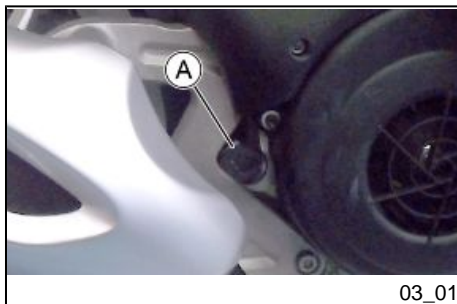
PIAGGIO™



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.

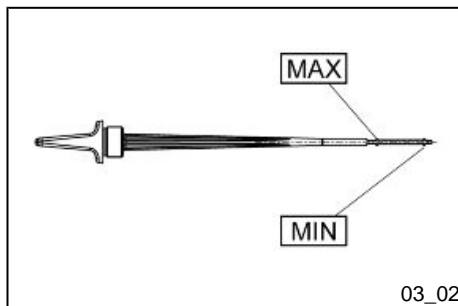
Recommended products

Engine oil

Synthetic-based lubricant for four stroke engines.
SAE 10W-40, JASO MA, MA2 - API SL - ACEA A3

Characteristic

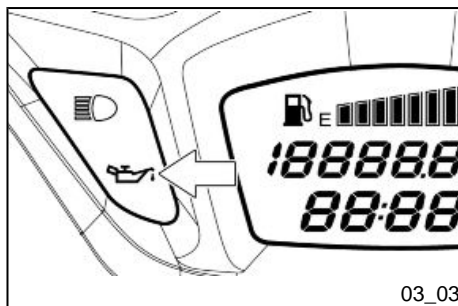
Engine oil quantity



1,340 cm³ (of which 120 cm³ in the filtering cartridge)

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.



Warning light (insufficient oil pressure) (03_03)

The vehicle is equipped with a warning light that comes on when the key is turned to «ON». However, this light should switch off once the engine has been started. **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.**

Engine oil change

To change the engine oil and the oil filter, as indicated in 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 IRRETRIEVABLE 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 AN AUTHORISED SERVICE CENTRE WHICH IS EQUIPPED TO DISPOSE OF USED OILS IN AN ENVIRONMENTALLY FRIENDLY AND LEGAL WAY.

Hub oil level (03_04)

Check the presence of oil in the hub, according to the regular controls shown in the table of the scheduled maintenance.

WARNING

FOR THE REGULAR CHECK OF THE HUB OIL LEVEL SHOWN IN THE SCHEDULED MAINTENANCE TABLE, CONTACT 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

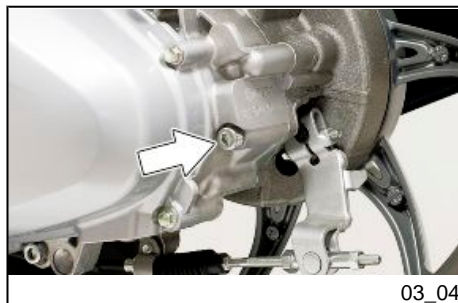
- Park the vehicle on level ground and centre stand.
- Undo the indicated screw and check for oil by inserting a shank/plug. The level should be just under the lower margin of the fill hole.
- With a cloth carefully clean the transmission crankcase.

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.

Characteristic**Hub oil quantity**

325 cm³

TOP-UP

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

CAUTION



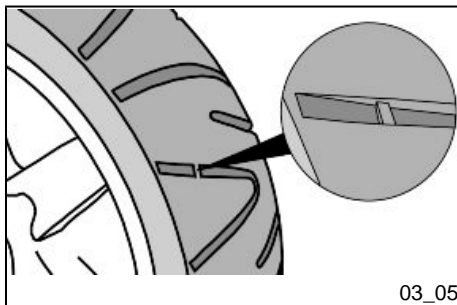
USED OILS CONTAIN SUBSTANCES HARMFUL TO THE ENVIRONMENT. FOR OIL REPLACEMENT, CONTACT AN AUTHORISED SERVICE CENTRE WHICH IS EQUIPPED TO DISPOSE OF USED OILS IN AN ENVIRONMENTALLY FRIENDLY AND LEGAL WAY.

Recommended products

Lubricant for gearboxes and transmissions

Lubricant for gearboxes and transmissions.

SAE 80W/90, API GL4



Tyres (03_05)

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



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

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

TYRES

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

TYRE PRESSURE

Front tyre pressure	2 bar
Rear tyre pressure	2.2 bar
Rear wheel tyre pressure (at full load)	2.5 bar



Spark plug dismantlement (03_06, 03_07, 03_08, 03_09, 03_10, 03_11)

To remove the spark plug, proceed as follows:

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



03_07

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



03_08

- Remove the spark plug access cover.



03_09

- Remove the spark plug cap.



03_10

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



03_11

- 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.

Characteristic**Spark plug**

NGK CR8EB



03_12

Removing the air filter (03_12)

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



03_13

Checking the brake oil level (03_13)

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**.



03_14

Braking system fluid top up (03_14, 03_15, 03_16)

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 FLUID IN THE BRAKING CIRCUIT IS HYGROSCOPIC, THAT IS, IT ABSORBS MOISTURE 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 VERY CORROSIVE; MAKE SURE THAT IT DOES NOT COME INTO CONTACT WITH THE PAINTWORK.

Recommended products

Brake fluid

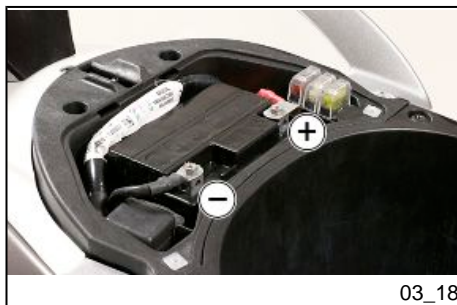
Brake fluid.

Synthetic fluid SAE J 1703 -FMVSS 116 - DOT 3/4 - ISO 4925 - CUNA NC 956 DOT 4

Battery (03_17, 03_18)

To access the battery, proceed as follows:

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



- Remove the battery compartment cover.

The battery is the electrical device that requires the most frequent attention and the most thorough 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_19

Use of a new battery (03_19, 03_20, 03_21, 03_22)

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_20

Undo the positive pole screw «+».



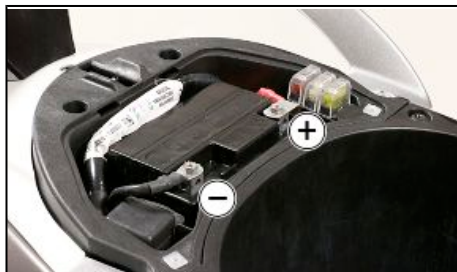
03_21

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_22

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.

Characteristic**Battery**

Sealed, 12 V / 6 Ah



03_23

Long periods of inactivity (03_23)

Battery performance will decrease if the vehicle is not used for a long time. 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. Poor battery performance may also be due to environmental conditions and the cleanliness of the poles. In order to avoid difficult starts and/or irreversible damage to the battery, follow any of these steps:

- **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. Have the battery cleaned, charged fully and stored in a dry, ventilated place. Recharge **at least once 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. CONTACT AN AUTHORISED SERVICE CENTRE TO CARRY OUT THIS OPERA-

TION SAFELY. WHEN REFITTING THE BATTERY MAKE SURE THE LEADS ARE CORRECTLY CONNECTED TO THE TERMINALS.

WARNING



DO NOT DISCONNECT THE BATTERY CABLES WITH THE ENGINE RUNNING, THIS CAN CAUSE IRREPARABLE DAMAGE TO THE VEHICLE'S ELECTRONIC CONTROL UNIT.

WARNING



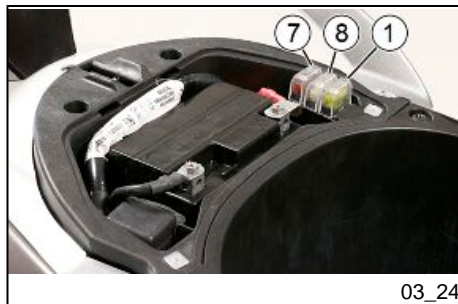
USED BATTERIES ARE HARMFUL FOR THE ENVIRONMENT. COLLECTION AND DISPOSAL SHOULD BE CARRIED OUT IN COMPLIANCE WITH REGULATIONS IN FORCE.

Fuses (03_24, 03_25, 03_26, 03_27, 03_28)

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.

In the same position are also two 10A «7» and 25A «8» fuses for the protection of the ABS control unit.



03_24

MAIN FUSES TABLE

Fuse No. 1	Threshold of operation: 20A Protected circuits: recharge circuit, general vehicle.
Fuse No. 7	Threshold of operation: 10A Protected circuits: battery-powered: ABS Control unit.
Fuse No. 8	Threshold of operation: 25A Protected circuits: battery-powered: ABS Control unit.



03_25

AUXILIARY FUSES

The five secondary fuses are located under the front grill.

SECONDARY FUSES TABLE

Fuse no. 2	Threshold of operation: 7.5 A
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	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 no. 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, ABS control unit.
Fuse No. 6	Threshold of operation: 5A Protected circuits: key powered: High beam/low beam lights, front and rear daylight running lights, license plate light.



03_26

To access the auxiliary fuses proceed as follows:

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



03_27

Unscrew the screw fixing the grille to the chassis.



03_28

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.

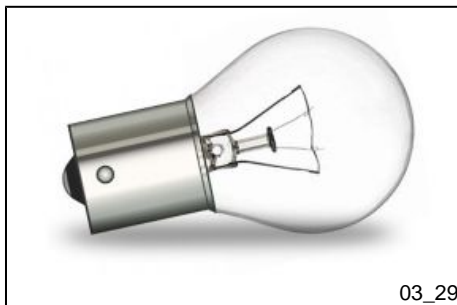
CAUTION

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.



03_29

Lamps (03_29)

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 parking light	Type: LED Quantity: 2
Front turn indicator light bulb	Type: Amber spherical Power: 12V - 10W Quantity: 1 RHS + 1 LHS
Rear turn indicator light bulb	Type: Spherical Power: 12V - 10W Quantity: 1 RHS + 1 LHS

Rear tail light bulb	Type: All glass Power: 12V 5W Quantity: 2
Stop light bulb	Type: Spherical Power: 12V 10W Quantity: 1
Licence plate light bulb	Type: Capless Power: 12V - 5W Quantity: 1



Front light group (03_30, 03_31, 03_32, 03_33, 03_34, 03_35)

To access the front headlight assembly, 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.



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

CAUTION



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



Remove the protective cap.



03_34

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



03_35

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 AUTHORISED ASSISTANCE CENTRE.

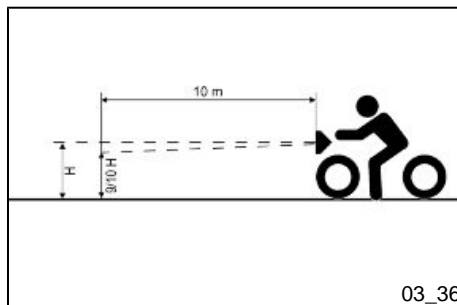
CAUTION



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 HEADLIGHT ASSEMBLY BULB

High/low beam light bulb	Type: Halogen (HS1) Power: 12V - 35/35W Quantity: 1
Front parking light	Type: LED Quantity: 2



Head light adjustment (03_36, 03_37)

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 ABOVE PROCEDURE COMPLIES WITH THE EUROPEAN STANDARDS REGARDING MAXIMUM AND MINIMUM HEIGHT OF LIGHT BEAMS. REFER 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 turn indicator light bulb

Type: Amber spherical

Power: 12V - 10W

Quantity: 1 RHS + 1 LHS



Rear optical unit (03_38, 03_39, 03_40, 03_41, 03_42, 03_43, 03_44, 03_45, 03_46, 03_47, 03_48)

To replace the taillight bulbs, proceed as follow:

Remove the luggage carrier cover.



03_39

Unscrew the upper fixing screw of the rear light unit.



03_40

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_41

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



Remove the rear light unit from its seat.



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



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

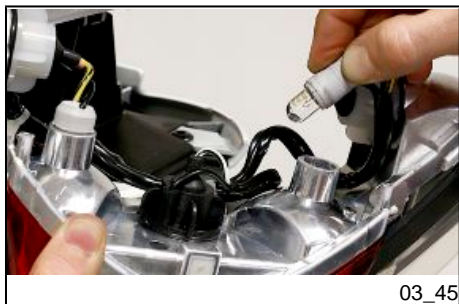
REAR TURN INDICATOR BULBS

Rear turn indicator light bulb

Type: Spherical

Power: 12V - 10W

Quantity: 1 RHS + 1 LHS



Remove the bulb holder from its seats.

CAUTION

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



Remove the daylight running lights bulb and replace it.

REAR DAYLIGHT BULBS

Rear tail light bulb

Type: All glass

Power: 12V 5W

Quantity: 2



03_47

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



03_48

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 AUTHORISED ASSISTANCE CENTRE.

STOP LIGHT BULB

Stop light bulb

Type: Spherical

Power: 12V 10W

Quantity: 1



03_49

Number plate light (03_49, 03_50)

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_50

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

LICENCE PLATE LIGHT BULB

Licence plate light bulb

Type: Capless

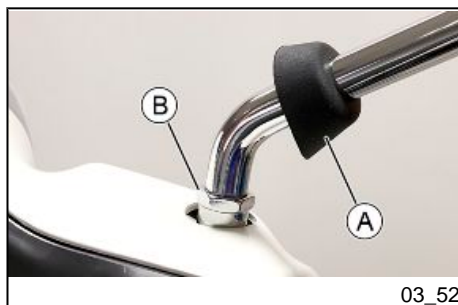
Power: 12V - 5W

Quantity: 1



Rear-view mirrors (03_51, 03_52)

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



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 RIDING. THIS COULD CAUSE YOU TO LOOSE CONTROL OF THE VEHICLE.



03_53

Front disc brake (03_53)

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



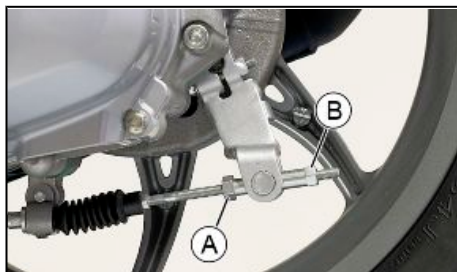
CHECK BRAKE PADS FOR WEAR ON A REGULAR BASIS (AS INDICATED IN THE SCHEDULE MAINTENANCE TABLES). IF THE THICKNESS OF ONE OR BOTH PADS IS IN THE REGION OF 1.5 MM, BOTH PADS MUST BE CHANGED. IT IS RECOMMENDED TO CARRY OUT THIS OPERATION AT AN AUTHORISED SERVICE CENTRE AS SOON AS POSSIBLE.

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.



03_54

Rear drum brake (03_54)

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_55

Puncture (03_55)

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_56

Inactivity of the vehicle (03_56)

The following operations are recommended:

- 1 - General cleaning of the vehicle.
- 2 - With the engine off and the piston at bottom dead centre position, remove the spark plug and pour 1-2 cm³ of motor oil through its hole. Operate the starter motor 3-4 times letting the engine perform a few revolutions, then remount the spark plug.
- 3 - Drain up all the vehicle's fuel; spread antirust grease on the uncoated metal parts; keep the wheels lifted above the ground.
- 4 - For the battery, follow the procedures described in the «Battery» section.
- 5 - Replace engine oil.

Recommended products

Engine oil

Synthetic-based lubricant for four stroke engines.

SAE 10W-40, JASO MA, MA2 - API SL - ACEA A3

Cleaning the vehicle (03_57)

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

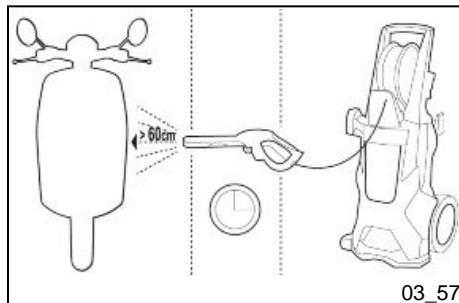
WARNING

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.
Faulty ignition / injection control unit.	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 .
--	---

HIGH CONSUMPTION AND LOW PERFORMANCE

Air filter blocked or dirty	Contact an Authorised Service Centre .
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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

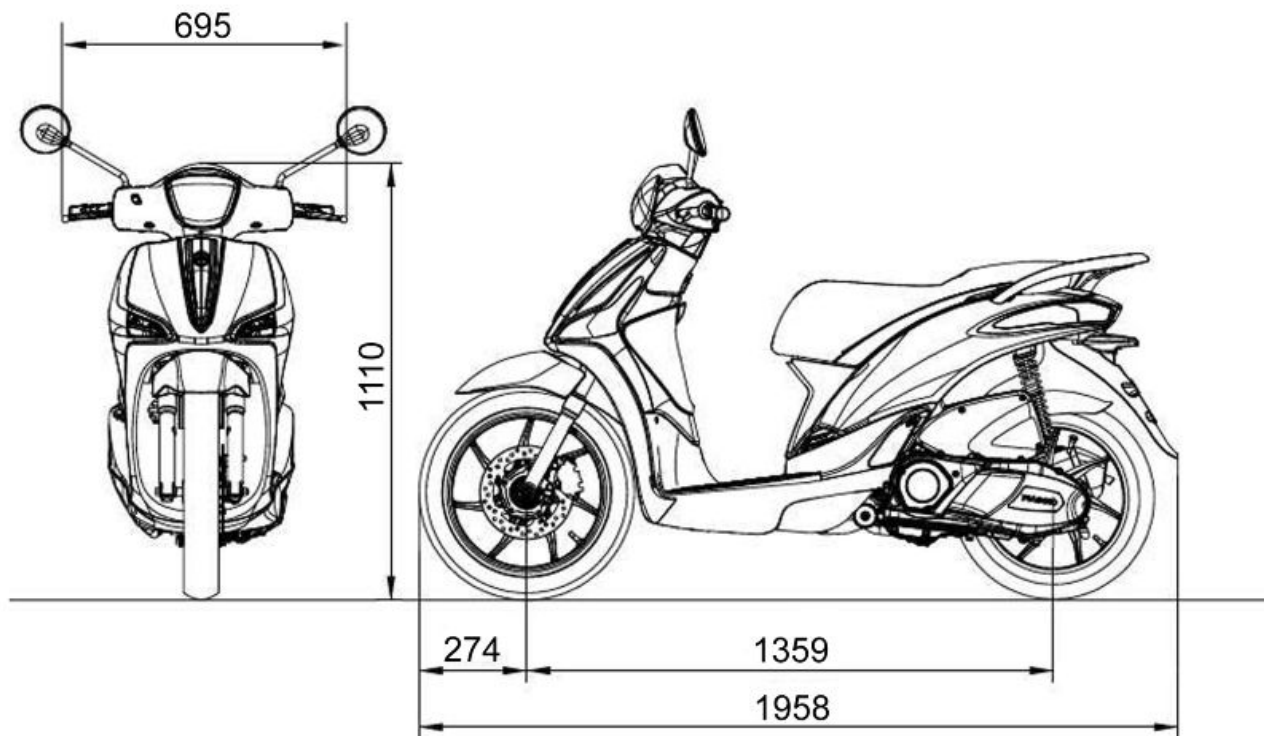
Liberty ABS



PIAGGIO™



Chap. 04
Technical data



VEHICLE SPECIFICATIONS

Chassis	Tubular steel frame
Front suspension	Hydraulic telescopic fork with Ø 30-mm stem.
Rear suspension	Double-acting shock absorber, adjustable to five positions at preloading.
Front brake	Ø 240mm disc brake with twin-plunger floating calliper; Braking assisted by single-channel ABS system.
Rear brake	Ø 140-mm drum brake with mechanical control activated by the handlebar left-side lever.
Wheel rim type	Light alloy.
Front wheel	16" x 2.15
Rear wheel	14 x 2.50"
Front tire	Tubeless, 90/80 - 16" 51J
Rear tire	Tubeless, 100/80 - 14" 54J
Front tyre pressure	2 bar
Rear tyre pressure	2.2 bar
Rear wheel tyre pressure (at full load)	2.5 bar
Kerb weight	114 kg
Maximum weight limit	270 kg
Battery	Sealed, 12 V / 6 Ah

ENGINE SPECIFICATIONS

Engine	Single-cylinder, 4-stroke Piaggio i-get
Engine capacity	124.5 cm ³
Bore x stroke	52 x 58.6 mm
Max. power	7.6 kW at 7,600 rpm
MAX torque	10.2 Nm at 6,000 rpm
Compression ratio	10 : 1
Timing system	3 valves, single overhead camshaft, chain-driven.
Valve clearance (cold engine)	Intake: 0.08 mm Exhaust: 0.08 mm
Spark plug	NGK CR8EB
Fuel system	Electronic injection with Ø 26 mm throttle body, single injector.
Water cooling,	Forced-air circulation cooling.
Lubrication	Wet crankcase
Starter	Electric starter
Gearbox	Continuously variable transmission with torque server
Clutch	Automatic centrifugal dry clutch
Fuel	Unleaded petrol max E10 (95 RON)
Exhaust silencer	Absorption-type exhaust muffler with catalytic converter.

Emissions compliance	EURO 2
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CAPACITY

Engine oil quantity	1,340 cm ³ (of which 120 cm ³ in the filtering cartridge)
Hub oil quantity	325 cm ³
Fuel tank capacity	6 ± 0.5 litres (1 l of which is reserve)

Liberty ABS



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 DEALER OR 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 POTENTIAL RISKS FOR THE RIDER.

Liberty ABS



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 Dealer or 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. Carrying out scheduled services on time is essential for the validity of your warranty. For any further information concerning Warranty procedures and 'Scheduled Maintenance', please refer to the 'Warranty Booklet'.

SCHEDULED MAINTENANCE TABLE

km x 1,000 or (months) maximum	1 (1)	5 (5)	10 (10)	15 (15)	20 (20)	25 (25)	30 (30)	35 (35)	40 (40)	45 (45)	50 (50)
Safety fasteners	I		I		I		I		I		I
Spark plug			I		R		I		R		I
Centre stand			I		I		I		I		I
Drive belt (125 cm ³)			I		R		I		R		I
Drive belt (150 cm ³)			R		R		R		R		R
Throttle control	I		I		I		I		I		I
Rollers housing			I		I		I		I		I
Diagnosis by tool	I	I	I	I	I	I	I	I	I	I	I
Air filter			R		R		R		R		R

km x 1,000 or (months) maximum	1 (1)	5 (5)	10 (10)	15 (15)	20 (20)	25 (25)	30 (30)	35 (35)	40 (40)	45 (45)	50 (50)
Engine oil filter	R		R		R		R		R		R
Valve clearance	A		A		A		A		A		A
Clutch assembly					I				I		
Electrical system and battery	I	I	I	I	I	I	I	I	I	I	I
Braking system	I		I		I		I		I		I
Cylinder cooling system						I					I
Brake fluid **	I	I	I	I	I	I	I	I	I	I	I
Engine oil*	R	I	R	I	R	I	R	I	R	I	R
Hub oil			I		I		I		I		I
Headlight direction adjustment			I		I		I		I		I
Brake pads		I	I	I	I	I	I	I	I	I	I
Sliding shoes / CVT rollers			I		R		I		R		I
Engine oil pre-filter	C		C		C		C		C		C
Tyre pressure and wear	I	I	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		L		I
Suspension			I		I		I		I		I
Steering	I		I		I		I		I		I
Front wheel bearing seal ring			L		L		L		L		L
Pin_Rear drum brake set screw			L		L		L		L		L
Transmission			L		L		L		L		L

km x 1,000 or (months) maximum	1 (1)	5 (5)	10 (10)	15 (15)	20 (20)	25 (25)	30 (30)	35 (35)	40 (40)	45 (45)	50 (50)
Labour time (minutes)	50	30	140	30	140	30	140	30	140	30	140

I: CHECK AND CLEAN, ADJUST, LUBRICATE OR REPLACE, IF NECESSARY C: CLEAN; R: REPLACE; A: ADJUST; L: LUBRICATE

** Check level every 2,500 km*

*** Replace every 2 years*

N.B.

AT EACH SCHEDULED MAINTENANCE MUST BE VERIFIED WITH THE DIAGNOSTIC TOOL IF THERE ARE ERRORS AND THE IF THE PARAMETERS ARE CORRECT.

ENSURE THAT THE VEHICLE CALIBRATION IS UP TO DATE AFTER UPDATING THE DIAGNOSTIC TOOL.

CAUTION

AFTER THE PROVIDED MAINTENANCE PROGRAM IS INDICATED TO PROCEED WITH THE MAINTENANCE OF THE VEHICLE STARTING FROM THE SERVICE OF 5,000 km (3,106 mi) OR 5 MONTHS.

Table of recommended products

RECOMMENDED PRODUCTS TABLE

Product	Description	Specifications
Lubricant for gearboxes and transmissions	Lubricant for gearboxes and transmissions.	SAE 80W/90, APIGL4

Product	Description	Specifications
Brake fluid	Brake fluid.	Synthetic fluid SAE J 1703 -FMVSS 116 - DOT 3/4 - ISO 4925 - CUNA NC 956 DOT 4
Engine oil	Synthetic-based lubricant for four stroke engines.	SAE 10W-40, JASO MA, MA2 - API SL - ACEA A3
Oil for air filter sponge	Special product for the treatment of foam filters.	-
Lubricant	Lithium and medium fibre yellow brown coloured grease suitable for various uses.	ISO L-X-BCHA 3 - DIN 51 825 K3K -20
Lubricant	Water repellent stringy 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 Pag. 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 Meter (m)
1 Mile (mi)	1.609 Kilometre (km)
1 US Gallon (US gal)	3.785 Litre (l)
1 Pound (lb)	0.454 Kilogram (kg)
1 Cubic inch (in³)	16.4 Cubic centimetres (cm³)
1 Foot pound (lb ft)	1,356 Newton meter (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)	$32 + (9/5) \text{ Celsius (°C)}$
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Not all versions/models shown in this publication are available in all countries. The availability of each model should be checked at the official Piaggio sales network.

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PIAGGIO VIỆT NAM- After Sales

LOT M - BINH XUYEN INDUSTRIAL ZONE - VINCH PHUC - VIET NAM

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