PIAGGIO WOULD LIKE TO THANK YOU

for choosing one of its products. We have prepared this booklet to help you to get the very best from your scooter. Please read it carefully before riding the scooter for the first time. It contains information, tips and precautions for using your scooter. 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 and it will serve you well for a long time to come. This booklet forms an integral part of the scooter; should the scooter be sold, it must be transferred to the new owner.

X9 Evolution 500

PIAGGIO

The instructions given in this manual are intended to provide a clear, simple guide to using your scooter; 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 manual require the use of special tools and/or particular technical knowledge: to carry out these operations refer to any **authorised Dealer of 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 those parts of the booklet that should be read with particular care. As you can see, each sign consists of a different graphic symbol, making it quick and easy to locate the various topics.

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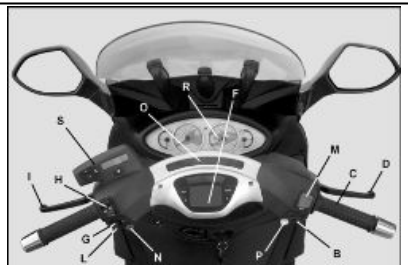
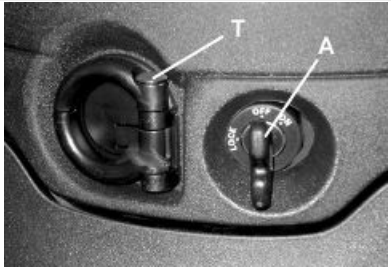
Chap. 01
Vehicle



01_01



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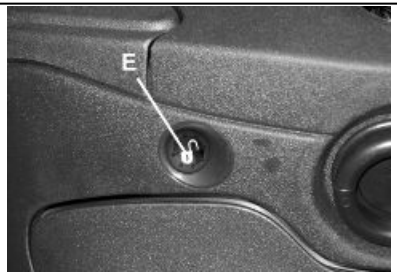


01_03

Dashboard (01_01, 01_02, 01_03)

A = Key switch

B = Start-up button

C = Accelerator control

D = Front brake control

E = Saddle electric opening button

F = Digital instrument panel

G = Direction indicator switch

H = Light switch

I = Combined braking control (front and rear)

L = Horn button

M = Engine lock RUN-OFF switch

N = Emergency flashing light start button (4 direction indicators)

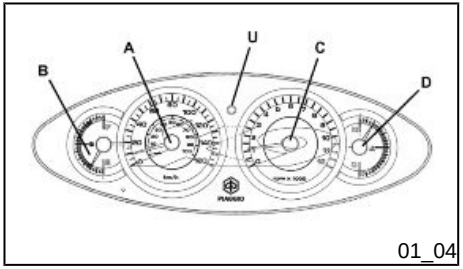
O = Indicator unir

P = Electro-hydraulic stand button

R = Analogue instrument unit

S = PICS (Piaggio Integrated Communication System)

T = Bag clip



01_04

Analogue instrument panel (01_04)

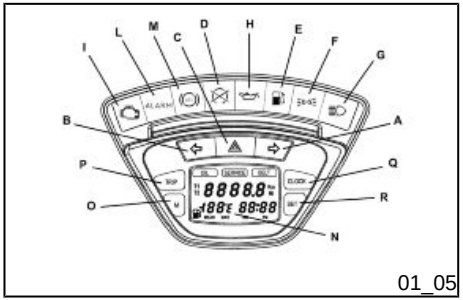
A = Double scale speedometer (km/h and mph)

B = Fuel level indicator

C = Rpm counter

D = Cooling fluid temperature indicator

U = Alarm led



01_05

Instruments (01_05)

A = RH direction indicator

B = LH direction indicator

C = Emergency flashing light indicator (4 direction indicators)

D = RUN-OFF light stop engine/side stand lowered

E = Fuel reverse indicator

F = Light indicator

G = Upper beam indicator

H = Low oil pressure indicator

I = Engine run light and injection fault indication*

L = Electro-hydraulic stand alarm light

M = ABS light (setup)

N = LCD display

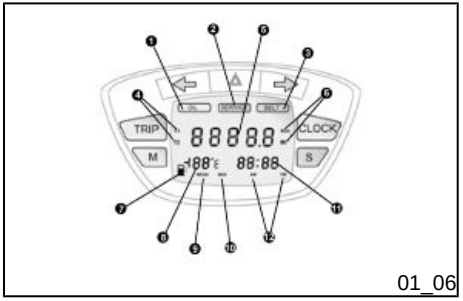
O = «**Mode**» button

P = «**Trip**» button

Q = «**Clock**» button

R = "**Set**" button

* See section "Engine stop button"



01_06

Digital lcd display (01_06)

1 = Maintenance icon «**OIL**»;

2 = Maintenance icon «**SERVICE**»;

3 = Maintenance icon «**BELT**»;

4 = Trip odometer display symbols «**T1**» or «**T2**»;

5 = Five-digit display for kilometres/miles covered;

6 = Display mode symbols «**Km**» or «**Mi**»;

7 = Kilometres/miles covered in reserve symbol;

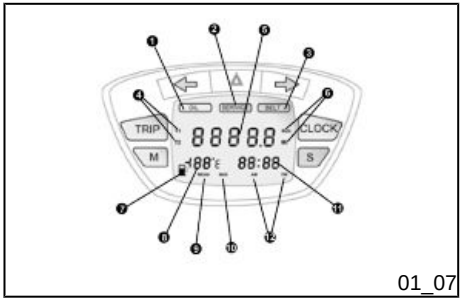
8 = 2-digit display with symbols **«-»** temperature display, mean speed, maximum speed; kilometres/mph covered in reserve;

9 = Mean speed mode display symbol «**MEAN**»;

10 = Maximum speed mode display symbol «**MAX**»;

11 = 4-digit display of clock, chronometer and date functions;

12 = Time indication symbols «**AM**» or «**PM**»



01_07

Maintenance icons (01_07)

The icons warn the user when the scheduled maintenance interventions are required.

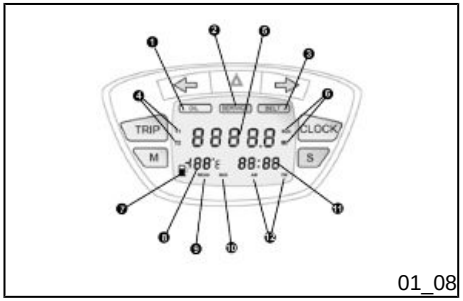
If the «**OIL**» icon flashes, the engine oil needs to be changed.

If the «**SERVICE**» icon flashes, scheduled servicing indicated on the coupons needs to be effected.

If the «**BELT**» icon flashes, the distribution belt needs to be changed.

WARNING

REFER TO THE «SCHEDULED MAINTENANCE TABLE» FOR FURTHER MAINTENANCE OPERATIONS

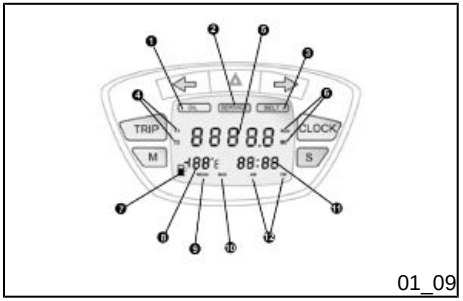


01_08

Setting the total and trip odometers (01_08)

The «**TRIP**» button displays partial distances «**T1**» and «**T2**» and the total distance, if pressed repeatedly for less than 1 second.

Press it for over 3 seconds to reset the trip odometer. Press «**TRIP**» again to return to the total odometer «**5**».



01_09

Setting the outside temperature display (01_09)

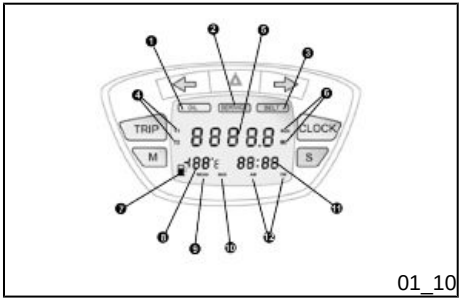
The temperature value «**8**» updates automatically at every variation of ± 1 °C. When the external temperature reaches +3 °C, the display flashes for 40 seconds; the same occurs at every decrease of temperature.

Press «**M**» to display the mean speed, identified by symbol «**MEAN**», which updates automatically every 30 seconds even if the key is set to «**OFF**». Press «**M**» to display the maximum speed reached by the vehicle and identified by the symbol «**MAX**», press again to display the kilometres traveled in reserve; the value is stored also with key set to «**OFF**». Press «**M**» again to return to the outside temperature display. Keep «**M**» pressed for more than 3 seconds to reset the selected function, except the temperature.

WARNING

WARNING

THE FLASHING FUNCTION WHEN A TEMPERATURE OF +3 °C AND LESS IS REACHED HAS PRIORITY ON THE MEAN AND MAX SPEED INDICATION, SO IT IS AUTOMATICALLY DISPLAYED. HOWEVER, YOU CAN PRESS BUTTON «M» TO DISPLAY THE SPEED AND DISTANCE COVERED IN RESERVE VALUES.



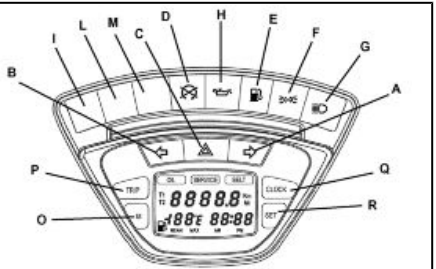
01_10

Kilometres/miles covered in reserve symbol (01_10, 01_11)

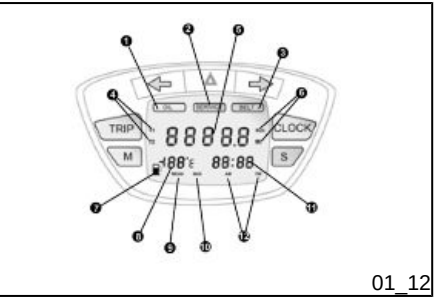
The symbol is automatically displayed when the fuel reserve light indicator «**E**» turns on, along with indicator «**8**» of the kilometres/mph covered in reserve. This function has the utmost priority over the previous three ones, so when the vehicle is in reserve, icon «**7**» is automatically displayed along with the kilometres being covered in reserve are displayed. Press «**M**» to return to the other information.

N.B.

N.B.: THE AVERAGE MILEAGE IS CALCULATED BASED ON EACH RESET AND IS AFFECTED BY THE VEHICLE'S ROUTE AND AMOUNT OF TIME.



01_11

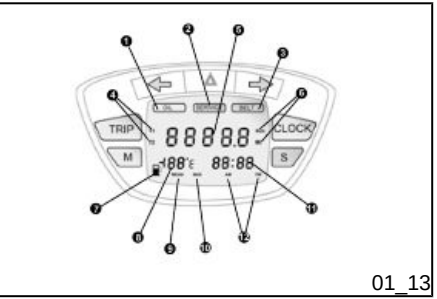


01_12

Clock/date display (01_12)

Press «**CLOCK**» to display the date (day/month). Press «**CLOCK**» to display the chronometer.

Press «**CLOCK**» to return to the clock display «**12**».



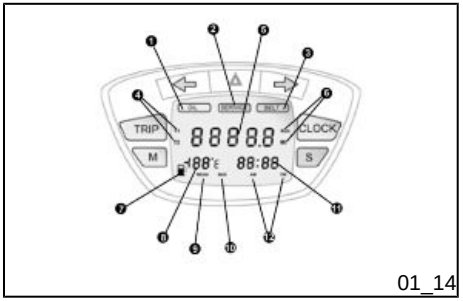
01_13

Setting the hour/minutes function (01_13)

Press «**CLOCK**» for more than 3 seconds and set the time by button «**S**».

Wait until the minutes begin flashing and set by button «**S**».

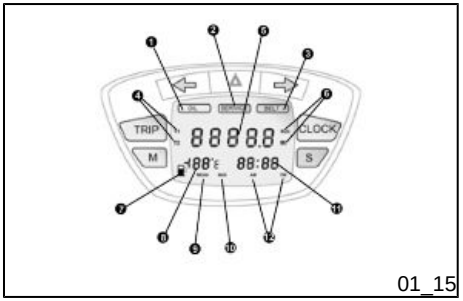
Wait approx. 8 seconds or press «**CLOCK**» to return to the updated hours/minutes function.



01_14

Setting the date function (01_14)

Press «**CLOCK**» for more than 3 seconds and set the day by button «**S**». Wait until the month begins flashing and set by button «**S**». Wait until the year begins flashing and set by button «**S**». Wait approx. 3 seconds or press «**CLOCK**» to return to the date function.



01_15

Setting the chronometer function (01_15)

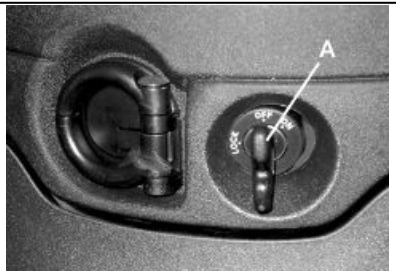
Press «**S**» to enable and stop the chronometer. Press «**CLOCK**» and «**S**» together to reset the chronometer.

WARNING

TO KEEP TRACK OF THE JOBS FOR «SERVICE», THE CLOCK MUST BE RESET EACH TIME THE BATTERY IS DISCONNECTED FROM THE VEHICLE SYSTEM.

CAUTION

IT IS STRONGLY ADVISED NOT TO USE THE FUNCTIONS OF THE DIGITAL DISPLAY PANEL WHILE THE VEHICLE IS MOVING.



01_16

Key switch (01_16)

LOCK= Ignition barred, key can be removed, mechanical antitheft device activated.

OFF= Ignition barred, key can be removed, mechanical antitheft device deactivated.

ON= Prestarting position, key cannot be removed, mechanical antitheft device deactivated.

Locking the steering wheel

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

CAUTION

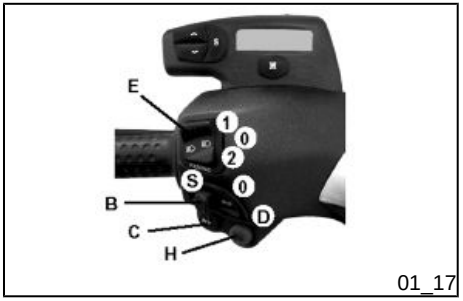
DO NOT TURN THE KEY TO «LOCK» OR «OFF» WHILE RIDING.

Releasing the steering wheel

Reinsert the key and turn it to «**OFF**».

CAUTION

DO NOT TURN THE KEY TO «LOCK» OR «OFF» WHILE RIDING.



01_17

Switch direction indicators (01_17)

Lever to «**S**» = left direction indicators on;

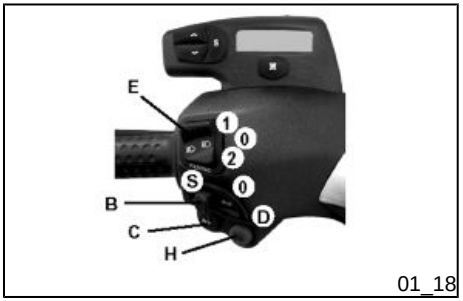
Lever to «**D**» = right direction indicators on;

The lever automatically returns to position «**0**» and the indicators «**B**» remain on; press the lever to turn them off.

WARNING

WARNING

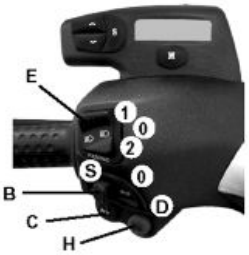
THE ONBOARD COMPUTER DISABLES THE FLASHING LIGHTS AFTER 1 KM.



01_18

Horn button (01_18)

Push the «**C**» button to sound the horn.



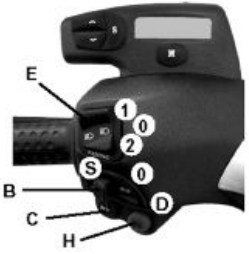
01_19

Light switch (01_19)

0 = Low-beam light

1 = High beam light

2 = Passing (flashing)



01_20

Emergency flashing light button (01_20)

It starts the 4 direction indicators at the same time. The control «**H**» can only be enabled with key set to «**ON**», but once it has been enabled it remains on with key set to «**OFF**» and «**LOCK**» as well.

This function can only be disabled with key switch set to «**ON**».

01_21

Start-up button (01_21)

Starter button "**G**"

01_22

Engine stop button (01_22, 01_23)

0 = OFF

1 = RUN

Use of the emergency stop switch causes the lights «**I**» and «**D**» to go on.

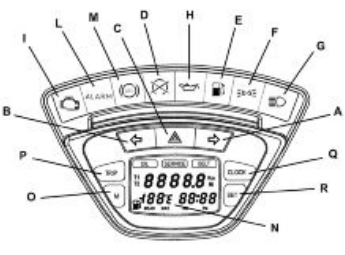
The «**I**» light which indicates the check of the injection system which, other than going on temporarily after switching from «**OFF**» to «**RUN**» of the emergency stop switch, goes on also in the following conditions:

- Moving the key switch from «**OFF**» to «**ON**»;

- Side stand from lowered to raised position;

- Emergency stop switch from «**OFF**» to «**RUN**»;

If the light remains on or goes on while normally using the vehicle, contact an **Authorized Piaggio Service Center** to solve the problem.



01_23

01_24

Electric kickstand operation button (01_24)

Electro-hydraulic stand button.

The immobilizer system

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

01_25

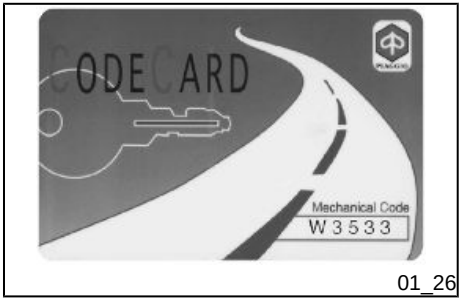
Keys (01_25, 01_26, 01_27)

Two types of keys come with the vehicle. The red-handgrip key "**A**" is 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. For this reason it is advised that it be used only in exceptional circumstances. The black key "**B**" (single copy supplied) is used for normal operations such as:

- engine start up

- glove-box opening

Together with the keys comes a CODE CARD which is imprinted with the mechanical code of the keys.



01_26

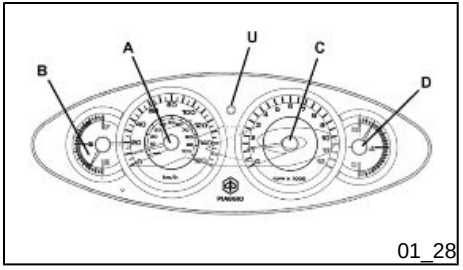

01_27

WARNING

LOSING THE RED KEY PREVENTS ANY REPAIRS OF THE 'PIAGGIO IMMOBILIZER' SYSTEM AND THE ENGINE CONTROL UNIT.

WARNING

KEEP THE 'CODE CARD' AND THE RED HANDGRIP KEY IN A SAFE PLACE (NOT ON YOUR VEHICLE).



01_28

Immobilizerdevice enabled indicator led (01_28)

The enabling of the «**PIAGGIO IMMOBILIZER**» system is indicated by the flashing of a special led «**U**», (see «Analogue instrument panel»).

To prevent discharging the battery, the led automatically turns off after about 48 hours of continuous operation.

In the event of system failure, the indicator led informs the **Authorised Piaggio Service Centre** of the nature of the failure, based on the type of flashes emitted.

Operation

Every time the starter 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 (red-coloured). If the engine cannot be started, contact an **authorised Piaggio service centre**, which is provided with the electronic equipment required to detect and repair the system. The immobiliser is activated even when the engine is switched off with the engine cut-off switch. This happens even if the starter key is in position "**ON**". When additional keys are required, please note that data storage (up to 7 keys max.) must be done on all keys, both new ones and existing ones. Take the key with the red grip and all the black keys supplied to an **authorised Piaggio service centre**. The codes of keys not submitted for the new storage 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 BY THE SYSTEM CONTROL UNIT.

VIOLENT SHOCKS MAY AFFECT THE ELECTRONIC COMPONENTS OF THE KEY.

IF OWNERSHIP OF THE VEHICLE IS TRANSFERRED, THE RED-HANDGRIP KEY (AS WELL AS THE OTHER KEYS) AND THE "CODE CARD" MUST ALSO BE TRANSFERRED TO THE NEW OWNER.

Programming the immobilizer system

The procedure for programming the «**PIAGGIO IMMOBILIZER**» system and/or for storing other key codes is described below.

Procedure start - red key

Insert the red-handgrip key in the switch key (in "**OFF**" position) and turn it to "**ON**". After 1 - 3 seconds, turn the key to "**OFF**" again and pull it out.

Intermediate step - black key

After pulling out the red key, insert the black 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 black keys can be programmed by repeating the above procedure keeping the indicated times.

Final step - red key

After pulling out the last black key, insert the red key again and turn it to "**ON**" (this operation should be performed within 10 seconds of pulling out the previous key). Leave it in this position for 1 to 3 seconds and return it to the «**OFF**» position.

Proper programming check

Insert the red key disabling the transponder (i.e., tilt the key cap by 90°) and turn the key to "**ON**". Perform the engine start-up operation. Ensure that the engine does not start. Insert the black key and repeat the start-up operation. Check that engine starts.

WARNING

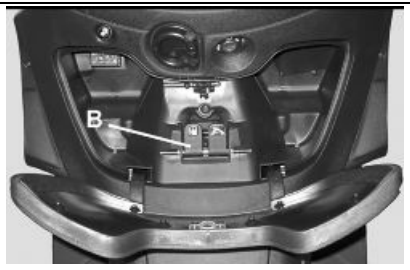
SHOULD THE ENGINE START WITH THE RED KEY (WITH TRANSPONDER OFF), OR IN THE EVENT OF WRONG OPERATION DURING PROGRAMMING, REPEAT THE PROCEDURE FROM THE BEGINNING.

01_29

01_30

Saddle opening remote control (01_29, 01_30)

The vehicle comes with a remote control for remote opening of the saddle. The saddle is supplied together with the keys and is matched to the opening device control unit in the factory. It is nevertheless possible to ask for a new one and reprogram it in the event the remote control is lost. This procedure can be performed at an **Authorised Piaggio Service Centre**. The remote control is a device powered by internal batteries, so it is subject to running down with use. If the green LED turns on when the button is pressed, it is operating properly. Battery replacement may become necessary when you notice the range of action is smaller or if it does not work.In this case you have to separate the remote control's two half-shells by inserting a blade or the very fine tip of a screwdriver in a point along the outside edge and then run it along the entire circumference. Now extract the two batteries from the contact plate on the printed circuit. Place the new batteries, type **CR1616**, with the positive pole turned towards the contact plate. Now put the board back on the rear half-shell with the button and LED turned outwards. Mount the pressure rubber on the button (the direction it is inserted is obligatory) and snap on the front half-shell. To open the saddle without using the remote control, it is possible to do so by following the directions given in section «Opening the saddle to access the helmet compartment» or «Opening the saddle to access the helmet compartment in an emergency».



01_31

Accessing the fuel tank (01_31, 01_32)

Insert the key into the switch and press down until the glove box opens. In the event that the key switch is in «**LOCK**», turn the key to «**OFF**» or «**ON**» before pressing down. Press lever «**B**» and open the cover over the fuel tank cap «**C**».

01_32

01_33

Power supply socket (01_33)

There is a plug socket "**D**" inside the helmet compartment.

The plug socket may be used for external consumers (mobile phone, inspection light, etc.).

CAUTION

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

Electric characteristic

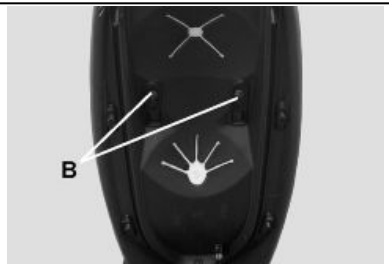
Plug socket

12 V - 180 W MAX

Maximum power

180 W

01_34



01_35

01_36

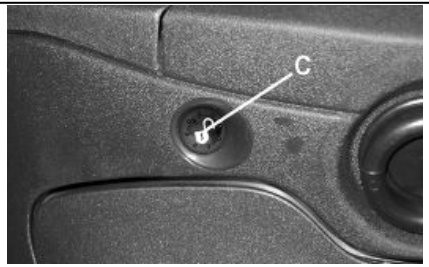
The saddle (01_34, 01_35, 01_36, 01_37, 01_38)

The saddle is provided with a back that can be moved forward or backward for your comfort. To move the back, raise the saddle by button «**C**», on the remote control or push lever «**A**», and adjust the position of screws «**B**».

The saddle is provided with a protective covering that may be used, for example, in case of rain. To use the covering, raise the saddle and pull it out. Fit it onto the saddle without pulling too much to prevent breakage, then close the saddle.

CAUTION

DO NOT USE THE VEHICLE WITHOUT THE PROTECTION COVER.



01_37

01_38

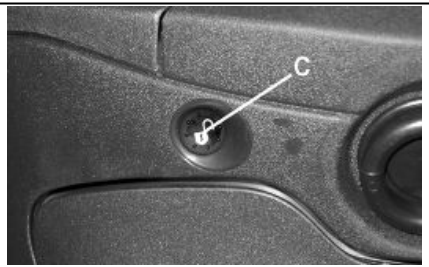
Opening the saddle to access the helmet compartment by remote control

With the key in «**LOCK**» or «**OFF**» position it is possible to open the saddle by remote control. It cannot be opened with the key in the «**ON**» position.

WARNING

THE REMOTE CONTROL OPERATES WITHIN A DISTANCE OF ABOUT 3/5 METRES WITH FULLY CHARGED BATTERIES. WHEN YOU ARE NEAR THE SCOOTER, HANDLE THE REMOTE CONTROL CAREFULLY SO AS TO AVOID

UNINTENTIONAL OPENING OF THE SADDLE. REFER TO THE «OPENING THE SADDLE WITH REMOTE CONTROL» SECTION TO REPLACE BATTERIES.



01_39

Opening the saddle (01_39)

With the key in the «**OFF**» or «**ON**» position or with the engine off, the saddle can be opened electrically by pressing button «**C**». If the electrical opening does not work, see paragraph «Opening the saddle to access the helmet compartment in an emergency». The key must be in the «**LOCK**» position to prevent the saddle from being opened with button «**C**».

01_40

Opening the saddle to access the helmet compartment in an emergency (01_40)

With the key in the «**OFF**» or «**ON**» position it is possible to open the front glove box by pressing on the key switch. Then use lever «**A**» to open the saddle.

N.B.

PAY SPECIAL ATTENTION WHEN PLACING OBJECTS ON THE SADDLE AS THE AUTOMATIC OPENING OF THE SADDLE CAN CAUSE THEM TO FALL.

WARNING

OBJECTS INAPPROPRIATELY PLACED INSIDE THE HELMET COMPARTMENT MAY DEFORM THE SADDLE AND PREVENT THE COURTESY LIGHT FROM TURNING OFF, WHICH MAY RESULT IN BATTERY DISCHARGE.

01_41

01_42

Identification (01_41, 01_42)

The identification registration numbers consist of a prefix stamped on the chassis and engine "**B**" respectively, followed by a number. These numbers must always be indicated on spare parts requests. To read the chassis number, remove the relevant port "**A**" in the helmet compartment placed under mat. We recommend checking that the chassis registration number stamped on the scooter corresponds with that on the scooter's documents.

CAUTION

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

01_43

Adjusting the windscreen (01_43)

The windscreen can be set in three positions depending on the driver's needs. Unscrew the 3 screws «**A**», remove the upper part of the windscreen and position it as desired. Retighten the 3 set screws.

WARNING

CARRY OUT THIS OPERATION WITH EXTREME CARE SO AS NOT TO SCRATCH THE WINDSHIELD. PREVENT WINDSHIELD DETACHMENT WHILE RIDING BY TIGHTENING THE FIXING SCREWS WELL.

1 Vehicle

X9 Evolution
500

PIAGGIO

Chap. 02
Use

Checks

Before using the vehicle, check:

1. That the petrol tank is full.

2. The level of the front and combined brake fluid.

3. That the tyres are correctly inflated.

4. That the sidelights, the headlight and the direction indicators are in good working order.

5. The operation of the front and combined brakes.

6. The oil level in the gearbox.

7. The engine oil level.

8. The cooling fluid level.

02_01

Refuelling (02_01, 02_02)

Fuel: open the port as described in section «Accessing the fuel tank» and open plug «**A**».

Recommended fuel:

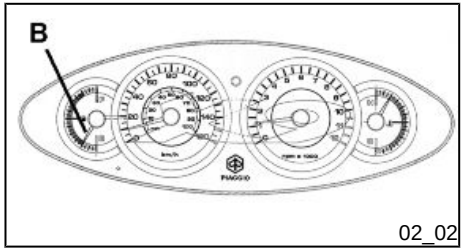
Lead-free fuel minimum 95 octanes.

The fuel level is indicated by the analogue instrument «**B**».

WARNING

SWITCH OFF THE ENGINE BEFORE REFUELLING WITH PETROL.

PETROL IS HIGHLY INFLAMMABLE.



02_02

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

DO NOT INHALE FUEL FUMES.

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

CAUTION

PETROL DAMAGES THE PLASTIC PARTS OF THE BODYWORK.

WARNING

DO NOT RIDE WITH THE FUEL TANK ALMOST EMPTY, LACK OF FUEL CAN DAMAGE THE CATALYTIC CONVERTER.

CAUTION

USING NON-RECOMMENDED PETROL REDUCES THE EFFICIENCY OF THE EXHAUST AND FUEL SUPPLY SYSTEMS.

CAUTION

DO NOT USE THE VEHICLE TO THE COMPLETE EXHAUSTION OF THE FUEL; IN THE EVENT THAT THIS SHOULD OCCUR, DO NOT ATTEMPT TO START THE ENGINE. TURN THE KEY SWITCH TO OFF AND TOP-UP THE TANK AS SOON AS POSSIBLE. FAILURE TO FOLLOW THESE GUIDELINES COULD DAMAGE THE FUEL PUMP AND/OR THE CATALYTIC CONVERTER.

WARNING

IT IS HIGHLY INADVISABLE TO REFUEL USING METHODS OTHER THAN NORMAL FUEL PUMPS. IF PETROL IS NOT COMPLETELY CLEAN, IT CAN DAMAGE THE FUEL SUPPLY SYSTEM FILTERS.

CAUTION

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

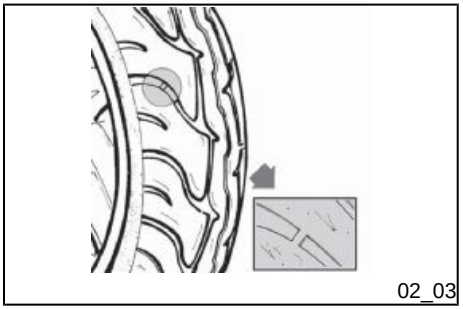
Characteristic

Fuel tank capacity

14,5 l (approx.)

Reserve

2.5 l



02_03

Tyre pressure (02_03)

Check the tyre pressure and wear periodically (around every 500 km). The tyres are equipped with a wear indicator and should be replaced as soon as these indicators become visible on the tread. Also check that there are no cuts on the sides of the tyres or irregular tread wear; in this case refer to authorized garages or those equipped to replace the 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.

Characteristic

Front tyre pressure

2.2 bar

Rear tyre pressure

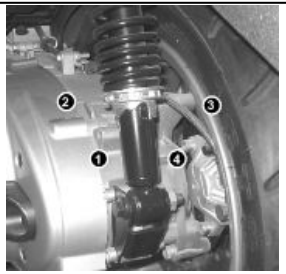
2.4 bar

Rear tyre pressure (rider and passenger):

2.6 bar

Attention

IF THE ACCESSORY TRUNK IS PRESENT, REGULATE THE FRONT WHEEL PRESSURE FROM 2,2 TO 2,4 BAR.



02_04

Shock absorbers adjustment (02_04)

The preloading of the springs can be adjusted in **4** positions by working on the ring nut located in the lower part of the shock absorbers, using the specific spanner supplied.

Minimum preloading

Position **1**: only the driver

Medium preloading

Position **2**: driver and baggage

Medium preloading

Position **3**: diver and passenger

Maximum preloading

Position **4**: driver, passenger and baggage

To make it easier it is possible to use the shock absorber wrench with the spark plug wrench.

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.

WARNING

WE STRONGLY RECOMMEND NOT TO ADJUST BOTH SHOCK ABSORBERS WITH DIFFERENT PRELOADING

Anti-overturning sensor

The vehicle is equipped with a special safety solution, based on the high performance car and motorcycle industry, which features an inclination sensor that interrupts fuel supply to the engine if the vehicle overturns.

WARNING

CAUTION

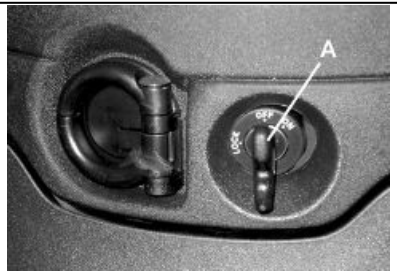
THIS DEVICE PREVENTS STARTING WITH STATIC INCLINATIONS OVER 45°.

02_05

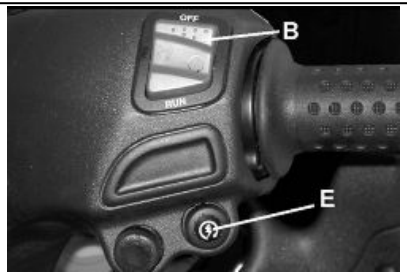
Running in (02_05)

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.



02_06



02_07

02_08

Starting up the engine (02_06, 02_07, 02_08, 02_09)

The vehicle is fitted with an ignition disabling system controlled by the side stand and the engine cut-off switch. The engine cannot start if the side stand is down or if the emergency cut-off switch is set to **«OFF»**. If the engine is on, it turns off when the side stand is lowered or the emergency cut-off switch is turned to **«OFF»**. The appropriate warning light on the digital instrument panel **«D»** signals this situation. The scooter 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 still, progressively twist the throttle grip. In order to start the engine and before pressing the starter button **«E»**, it is necessary to pull and hold pulled the front brake lever **«G»** or the combined brake lever **«D»** to actuate the safety switches. The fuel supply system can control ignition based on the engine condition (hot/cold) or the ambient temperature and pressure.

1. Put the scooter on the centre stand **"F"**, making sure the rear wheel is raised from the ground.

2. Keep the throttle grip **«C»** completely untwisted.

3. Insert the key into the ignition switch **"A"** and turn to position **"ON"**.

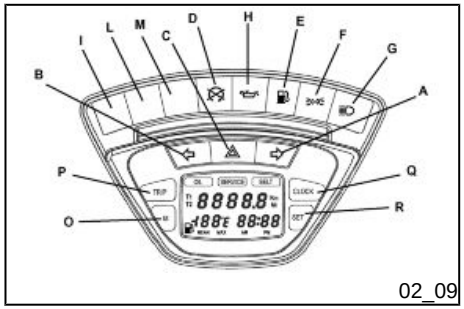
4. Make sure that switch **«B» «RUN OFF»** is set to **«RUN» position and that** the side stand **«L»** is raised.

5. Pull either the front **«G»** or the combined brake lever **«D»** while pressing the starter button **«E»**

WARNING

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

NEITHER PUSH THE START BUTTON WHEN THE TANK IS EMPTY NOR TURN THE KEY SWITCH TO «ON» TO AVOID DAMAGING THE INJECTION SYSTEM.



02_09

CAUTION

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

CAUTION

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

CAUTION

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

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 EX-

CESSIVE REVOLUTIONS, THE REVOLUTION LIMITER WILL BE ACTIVATED IF THE ENGINE SPEED EXCEEDS THE ESTABLISHED THRESHOLD.

WARNING

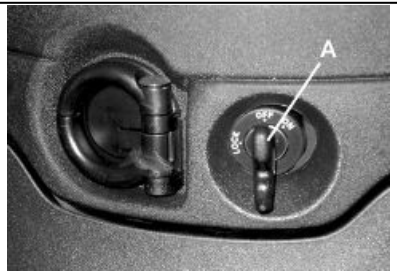
AFTER A LONG DISTANCE COVERED AT THE MAXIMUM SPEED, DO NOT STOP THE ENGINE IMMEDIATELY, BUT LET IT RUN AT IDLE FOR A FEW SECONDS.

WARNING

TAMPERING MAY CAUSE SERIOUS ENGINE MALFUNCTION.

Difficult start up

In the rare case of flooding the engine, 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)

Fully untwist the throttle grip, then rotate the key in the switch «**A** » to «**KEY OFF**» (extractable key).

02_11

Stand (02_11)

SIDE

Push with your foot on the stand's prong **«L»** until it releases into position, while lowering the vehicle onto the stand.

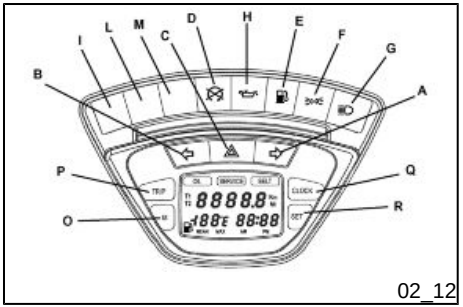
WARNING

THE SIDE STAND CAUSES THE ENGINE TO CUT OUT EVERY TIME THAT IT IS LOWERED; THIS CONDITION IS INDICATED BY THE RESPECTIVE WARNING LIGHT ON THE INSTRUMENT PANEL.

Electro-hydraulic stand

Correct operation of the electric stand is ensured by a control system which automatically checks the system operating conditions. Read the warnings below to avoid any faults that may be caused from incorrect use.

The electro-hydraulic central stand can be used like the traditionnal one (press on the with the feet and contemporarily raise back the vehicle acting on the side-grips)



02_12

02_13

Activation conditions (02_12, 02_13)

Check the stableness and slope of the ground. pay particular attention when parking the vehicle on uneven ground and on streets with grades over 10%, in the latter situation park the vehicle with the front part facing uphill. This is both for safety reasons and to make it easier to use the stand.

Straddle the vehicle and keeping it perpendicular to the ground, continuously press button «**I**» to activate the electro-hydraulic stand.

Once finished a buzzer indicates that the vehicle is completely parked on its stand. The electric stand can only be activated with the **VEHICLE STOPPED ENGINE ON**. The device **ONLY LIFTS THE VEHICLE**.

To avoid running the battery down, after **EACH COMPLETE ACTIVATION** of the stand it is necessary to wait **60 SECONDS** before another activation. During these 60 seconds a buzzer will sound each time the button is pressed, indicating that you must wait.

N.B.

IF THE BUTTON IS ACCIDENTALLY PUSHED WHILE RIDING (AT SPEEDS OVER 5 KM/H), THE STAND WILL NOT OPERATE AND THE BUZZER WILL GO OFF WARNING THAT YOU ARE ATTEMPTING TO DO SOMETHING THAT IS NOT CORRECT.

THIS SAFETY FUNCTION IS GUARANTEED BY CORRECT OPERATION OF THE SPEEDOMETER. IF THE SPEEDOMETER DOES NOT WORK, YOU NEED TO GO TO AN AUTHORIZED PIAGGIO SERVICE CENTER AS SOON AS POSSIBLE TO HAVE IT REPAIRED.

CORRECT OPERATION OF THE ELECTRIC PART OF THE STAND IS CONTINUOUSLY MONITORED BY THE RED LIGHT (ALARM) «L» ON THE INSTRUMENT

PANEL. IF THE LIGHT IS CONSTANTLY ON AND THE BUZZER GOES OFF CONTINUOUSLY, DO NOT USE THE ELECTROHYDRAULIC STAND AND GO TO AN AUTHORIZED PIAGGIO SERVICE CENTER AS QUICKLY AS POSSIBLE TO RESTORE CORRECT OPERATION.

THE ELECTRIC STAND MUST ONLY BE ACTIVATED WITH THE VEHICLE STOPPED AND ENGINE ON FOR SAFETY REASONS AND TO AVOID RUNNING THE BATTERY DOWN.

WARNING

WARNING: THE ELECTRO-HYDRAULIC STAND CANNOT BE ACTIVATED IF THE SIDE STAND IS LOWERED OR THE EMERGENCY STOP SWITCH IS ON «OFF».

TO AVOID INJURY, BE VERY CAREFUL NOT TO GET YOUR FEET IN THE WAY WHEN ACTIVATING THE ELECTRO-HYDRAULIC STAND.

IF THE VEHICLE IS OVERLOADED, THE STAND SAFETY SYSTEMS MAY OPERATE PREVENTING IT FROM WORKING.

DO NOT WORK ON THE COMPONENTS OF THE ELECTRO-HYDRAULIC STAND AND IN PARTICULAR ON THE CONSENSUS AND LIMIT SWITCHES. INCORRECT SETTING OF THESE SWITCHES MAY AFFECT THE MECHANICAL AND/OR ELECTRICAL STRUCTURE OF THE STAND.

02_14

Automatic transmission (02_14)

To ensure simple, pleasurable riding, the vehicle is equipped with automatic transmission with regulator and centrifugal clutch. The system is designed to provide the best performance (acceleration and consumption) while riding on both flat roads and uphill.

If you have to stop on an uphill slope (traffic lights, traffic jam, etc.) **use only the brake to keep the vehicle still, leaving the engine running at idle speed. Using the engine to keep the vehicle still can cause the clutch to overheat, due to the friction of the clutch mechanism itself against the clutch bell.**

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

Observe the following precautions if the clutch overheats:

1. Do not continue riding in such conditions.

2. Let the clutch cool down with the engine at idle speed for a few minutes.

Safe driving

Some simple tips are provided below that will enable you to use your scooter on a daily basis in greater safety and peace of mind. Your skill and your mechanical knowledge are the basis of a safe ride. We recommend trying out the vehicle in traffic - free zones, in order to acquire a good knowledge of the vehicle it self.

1. Before riding off, remember to put on your helmet and fasten it correctly.

2.Reduce speed on rough roads and ride with care.

3. After riding on a long stretch of wet road without using the brakes, the braking effect is initially lower. In these conditions, it is a good idea to apply the brakes from time to time.

4. Do not brake hard on wet, unsurfaced or slippery road surfaces.

5. Avoid riding off by mounting the scooter when resting on the support. In any case, the rear wheel should not be turning when in comes into contact with the ground, in order to avoid abrupt departures.

6. If riding over roads affected by sand, mud, snow mixed with salt, etc. We advise you to frequently clean the brake disc with a mild detergent to prevent the accumulation of abrasive elements inside the eyelets leading to premature wear on the brake pads.

CAUTION

ALWAYS RIDE WITHIN YOUR LIMITS RIDING UNDER THE INFLUENCE OF ALCOHOL OR OTHER DRUGS AND CERTAIN MEDICATIONS IS EXTREMELY DANGEROUS.

CAUTION

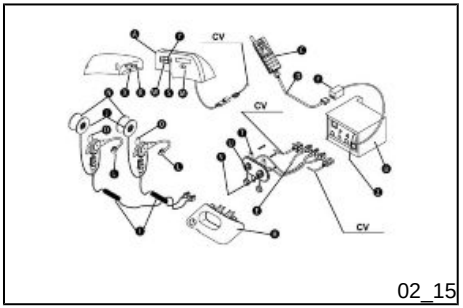
IN ORDER TO PREVENT ANY ACCIDENTS RIDE VERY CAREFULLY WHEN ADDING ACCESSORIES AND CARRYING LUGGAGE. THE ADDITION OF ACCESSORIES AND BAGGAGE CAN REDUCE THE STABILITY AND PERFORMANCE OF THE SCOOTER, AS WELL AS DECREASE THE LEVEL OF SAFETY DURING ITS USE. NEVER RIDE THE SCOOTER WITH ADDED ACCESSORIES FASTER THAN 130 km/h. WITHOUT THESE ACCESSORIES THE VEHICLE MAY BE DRIVEN AT A HIGHER SPEED WITHIN THE LEGAL LIMITS. IF THERE SHOULD BE NON-PIAGGO ACCESSORIES INSTALLED, OR AN ABNORMAL LOAD, OR IF THE SCOOTER IS NOT IN A GENERALLY GOOD CONDITION, OR WHENEVER WEATHER CONDITIONS DEMAND IT, SPEED SHOULD BE REDUCED FURTHER.

CAUTION

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

CAUTION

ANY CHANGES TO THE VEHICLE PERFORMANCE AS WELL AS ALTERATIONS TO ORIGINAL STRUCTURAL PARTS IS STRICTLY FORBIDDEN BY LAW, AND RENDERS THE VEHICLE NO LONGER CONFORMING TO THE APPROVED TYPE AND DANGEROUS FOR RIDING.



02_15

Introduction (02_15)

PICS (Piaggio Integrated Communication System) is an advanced communication system between the driver and passenger and between them and the external world: PICS combines the traditional function of an **intercom** for motorcyclists with **RDS radio** and **telephone communication** (Speakerphone Kit) via connection to a mobile phone. PICS has been designed for use with both **full helmets** and **open helmets (Jet)** and is composed of an electronic CPU integrated in the vehicle and a microphone/earphone kit for the driver and passenger: the **CPU** which regulates operation of the radio and intercom, is controlled by a digital device located on the handlebars (including a graphic display); the **earphone/microphone** kit is connected to the system by a wire which must be inserted in the socket on the vehicle. To make telephone communication possible it is necessary to connect **your mobile phone** to the CPU located in a specific compartment (see the instructions below) using the optional wire «**D**» available for the more popular brands of mobile phones (at **Piaggio Dealers**).

Legend (02_16)

A = Control Device

B = CPU

C = Mobile Phone

D = Mobile Phone Wire

E = Outlet for External Speakers (Optional)

H = Sparkplug Inspection Door

I = Headphone Twisted Wires

J = Loudspeaker

L = Microphone

M = Mode Key

N = Loudspeaker Velcro

O = Helmet Clip

R = Volume - Key

S = Selection Key

T = Wire Support Plate

U = Connection to Driver

V = Connection to Passenger

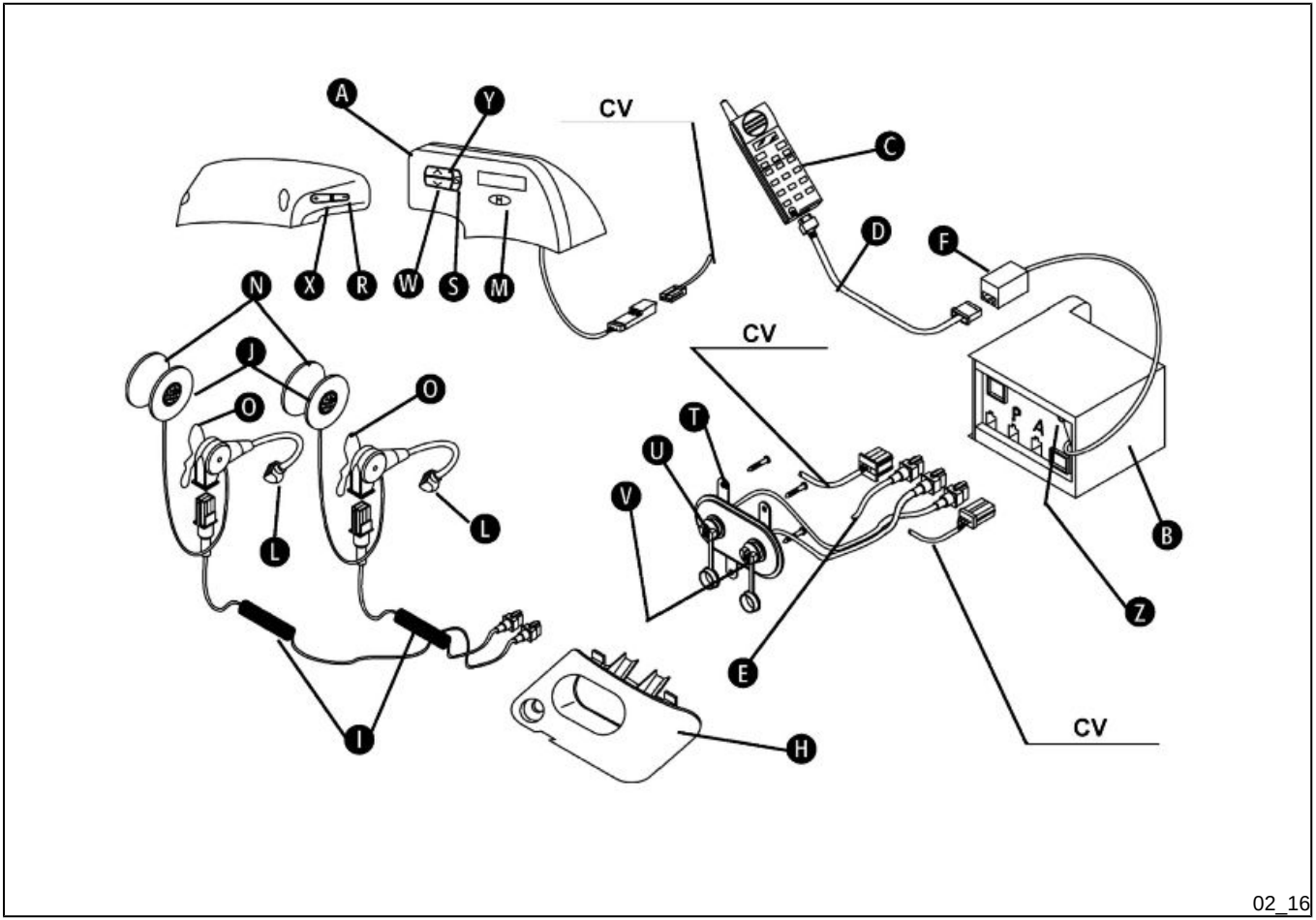
W= DOWN key

X = Volume + Key

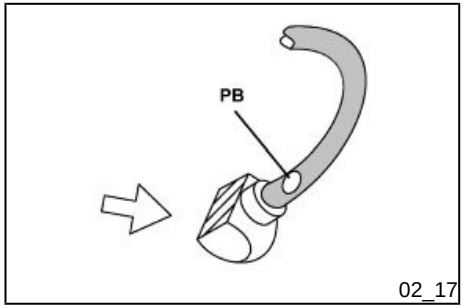
Y = UP key

Z = External Source Socket

CV = To vehicle wiring



02_16



02_17

Installing the microphone/earphone (02_17)

The **microphone** must be attached to the lower left edge of the helmet with the metal clip «**O**». The **ear phone** «**J**» must be positioned at the height of the left ear using velcro «**N**». For the best intercom quality:

- for **full helmets** bend the rod so that the microphone is completely inside the chin piece of the helmet with the white point (**PB**) turned towards your mouth;

- for **Jet helmets** bend the rod so that the microphone is as close as possible to your mouth, with the white point (**PB**) turned towards your mouth

WARNING

IMPORTANT: do not remove the foam rubber protection from the microphone. The wire that connects the microphone/earphone kit must be connected for the driver to the front connector on the vehicle and to the rear connector for the passenger.

N.B.

N.B.: The Piaggio helmet equipped for the PICS system integrates:

- a microphone through a larynx phone inserted in the fastening belt padding;

- an earphone inside the helmet near the left ear. To connect the system. insert the supplied wire into the jack on the lower edge of the helmet.

STARTING (USING THE VEHICLE KEY)

Specification= Condition - Displaying; Desc./Quantity= Available functions

No helmet inserted - Logo X9	Tuner - source - Speakerphone with external speakers

Driver headphone inserted - Driver/passenger helmet - passenger crossed out	Tuner - source - Speakerphone
Passenger headphone inserted - Driver/passenger helmet - driver crossed out	Tuner - source - Speakerphone
Driver and passenger headphones inserted - Driver and passenger helmets	Tuner - source - Speakerphone - Intercom

Use and general functions

When the ignition key is put in the «**ON**» position, the PICS effects a control cycle, and all the icons appear on the display in sequence. The system stops at the last active function when the vehicle was turned off. To turn on/off the PICS press key «**M**» for more than 4 seconds. The radio and intercom volume can be adjusted for the driver and passenger using the **+** and **-** keys located in the rear part of the control device. To adjust the volume of telephone call it is necessary to change the mobile phone volume based on driving conditions.

TURNING ON/OFF THE DEVICE (VEHICLE RUNNING)

Specification= Function - Keys; Desc./Quantity= Duration to press keys

Turn off - M	> 4 sec.
Turn on - M	> 4 sec.

Intercom operation

The intercom can be operated in two ways: automatic or manual. Entering the keys «**M**» and «**S**» in sequence makes it possible to select the type of operation: automatic low, automatic high, manual.

AUTOMATIC ACTIVATION:

Recommended for use with a **full helmet**.

Communication is activated by the voice of the driver or passenger. Two levels of activation are available:

- High = high sensitivity = a "normal" voice volume will activate intercom operation.
- Low = low sensitivity = a higher voice volume is required to activate intercom operation.

When turned on the device goes to the Low level. Enter the keys «**M**» and «**S**» in sequence to activate High level. The intercom mode remains active for a period of around 20 sec. at the end of the conversation.

MANUAL ACTIVATION:

Recommended for use with a **Jet helmet**. The intercom function can be set so for only manual activation by the driver: press the keys «**M**» and «**S**» in sequence from the High mode automatic activation position. To speak with the passenger press the key «**M**» twice.

CAUTION

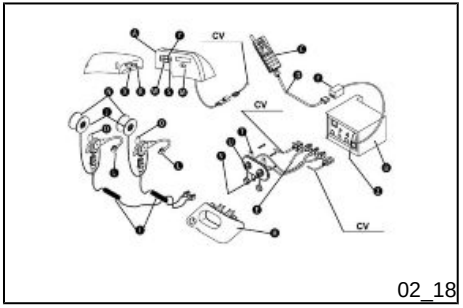
WARNING

If automatic activation is entered, the driver can start a conversation also via manual activation (pressing key «M» twice). At the end of the conversation Low level automatic operation is restored. During conversation in intercom mode, the audio from the radio remains in the background at a lower level.

MANUAL INTERCOM

Specification= Function - Keys; Desc./Quantity= Duration to press keys

Activation - M two times	Short
Deactivation - M two times	Short



02_18

Speakerphone kit for mobile phone operation (02_18)

A mobile phone can be connected to the PICS with wire «**D**».

When a telephone cal arrives a signal is generated which can be heard by both the passenger and driver: radio operation is temporarily deactivated. Telephone communication is transferred to the driver only, while the radio continues to operate for the passenger. The call signal can be accompanied by ringing of the mobile phone if the phone model is equipped with this function.

It is also possible to:

- temporarily interrupt the call with key «**W**» to pass to the intercom, to resume the call press the key again;

- transfer the call to the passenger with key «**Y**».

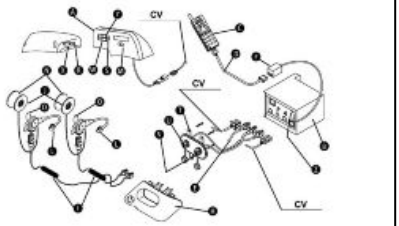
The automatic answering function needs to be set on your mobile phone to avoid having to use the phone keys to answer a call. For models which do not have this function, it is advisable to set the answer with any key function. The maximum volume should be set on the phone. If a call is underway, the PICS stays on until the call is finished even if the vehicle is turned off.

All communication phases (arrival of the call, conversation etc.) are shown on the display as seen in the icon legend.

SPEAKERPHONE TELEPHONE

Specification= Function - Keys; Desc./Quantity= Duration to press keys

Driver-passenger conversation passage - ^	Short
Intercom-telephone passage - v	Short



02_19

Radio/rds function (02_19)

The radio is activated with the key «**S**». Radio functions are shown in the **TUNER/ SOURCE** table. Station tuning can be manual or automatic. To manually tune in the stations press the key «**M**» and hold down key «**Y**» or «**W**» until you tune in the station you want. To automatically tune in a station press the key «**M**» and «**Y**» or «**W**» in sequence: the radio will tune in the previous station «**Y**» or next «**W**» in relation to the one being listened to. It is also possible to memorize up to 10 stations (see the **TUNER/ SOURCE** table for the procedure). The «**Y**» and «**W**» keys are used to memorize stations. The **AUTOSTORE** function - to select this function use press the «**Y**» key for at least 2 seconds - memorizes another stations with the strongest signal in the area being crossed in the memory from the 11th to 20th position.

The radio function includes the **RDS** system, used to track the selected station while riding. **RDS** has the following functions:

- AF (Alternative Frequencies), used to search for the best frequency for the station being listened to

- PTY (Program Type), used to identify different types of musical programs by subject: Sport, News, Info, etc.

- TA (Traffic Announcement Identification), used to interrupt broadcasting of the selected station to listen to traffic news.

The **RDS** functions are activated in the above order by pressing «**M**» - «**Y**» in sequence.

TUNER/SOURCE

Specification= Function - Keys; Desc./Quantity= Duration to press keys

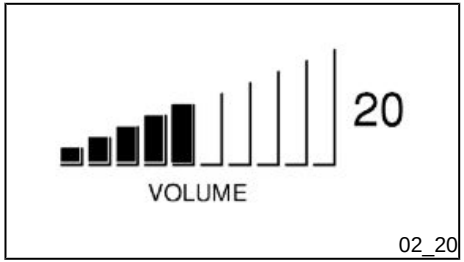
Radio on - S	Short
Radio off - S	Short
Source on - M go after S	Short, > 2 sec.
Source off	Short, > 2 sec.
Manual tuning UP - M go after ^	Short, Continuous
Manual tuning DOWN - M go after v	Short, Continuous
Automatic tuning UP - M go after ^	Short, Continuous
Automatic tuning DOWN- M go after v	Short, Short
Memory scanning UP - ^	Short
Memory scanning DOWN - v	Short
AUTOSTORE memorization - ^	> 2 sec.
RDS - M go after vol + (AF - TA - PTY)	Short, Short
PTY functions (can only be selected after enabling PTY) - Vol. -	Short
Manual station memorization - Select station* go after S** go after ^ o V (select station) and after S (to confirm)	> 4 sec., short, short

WARNING: *The outside source cable should be installed by a professional mechanic.*

Special functions

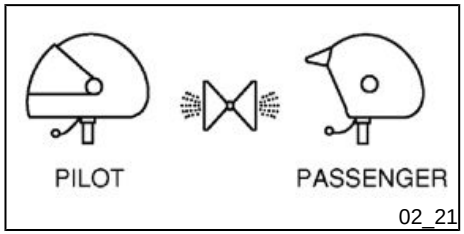
The CPU housed in the vehicle countershield is setup for connection to an external source: CD player or walkman (using a cable with 3.5 mm stereo jack - optional).

The volume is adjusted using the keys on the rear part of the control device, with the same procedure described for listening to the radio or communicating via intercom.



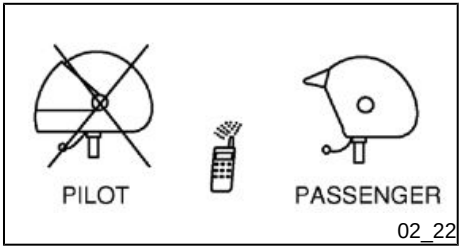
Icon description 1 (02_20)

Volume adjustment icon



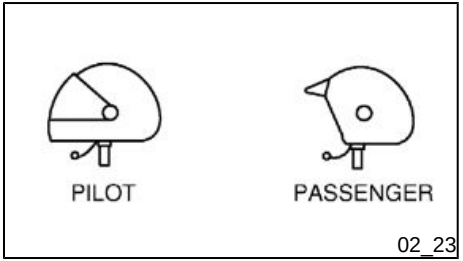
Icon description 2 (02_21)

Intercom on icon



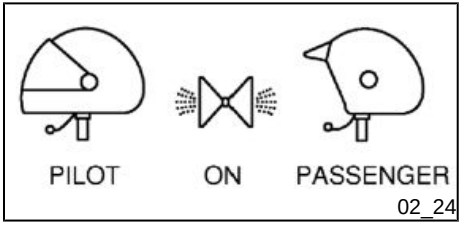
Icon description 3 (02_22)

Incoming call icon only with passenger headphone inserted.



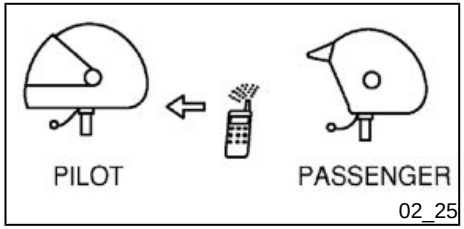
Icon description 4 (02_23)

Headphone inserted icon



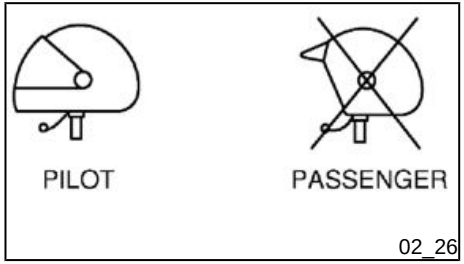
Icon description 5 (02_24)

Manual intercom icon



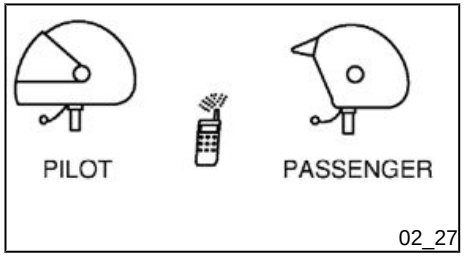
Icon description 6 (02_25)

Telephone call with driver icon



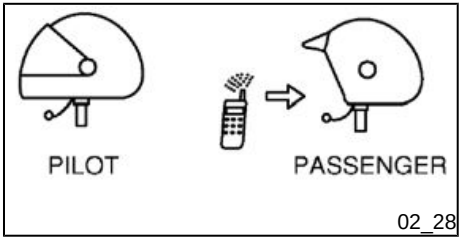
Icon description 7 (02_26)

Passenger headphone not inserted icon



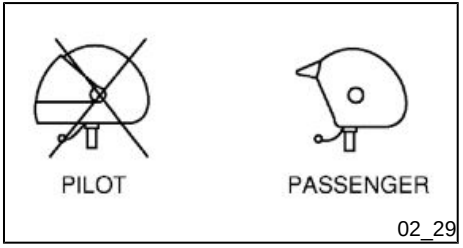
Icon description 8 (02_27)

Incoming call icon



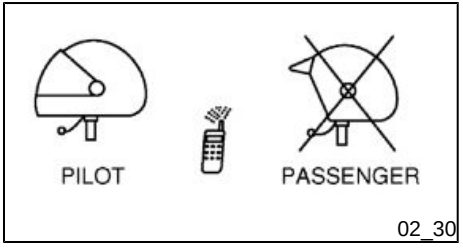
Icon description 9 (02_28)

Telephone call with passenger icon



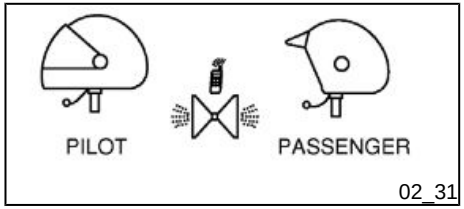
Icon description 10 (02_29)

Driver headphone not inserted icon



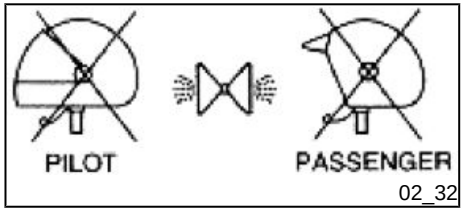
Icon description 11 (02_30)

Incoming call icon only with driver headphone inserted.



Icon description 12 (02_31)

Telephone conversation intercom icon



Icon description 13 (02_32)

Manual intercom icon

TECHNICAL SPECIFICATIONS

Power	10.5V ÷ 16V 1.4 A max
Key	10.5V ÷ 16V 1.5 mA max
Maximum output power	500 mW per channel
Power consumption	vehicle off ~0 mA in stand-by ~280 mA at maximum power ~500 mA

Frequency response	audio 200 Hz - 20 kHz ± 3 dB intercom 200 Hz - 5 kHz ± 3 dB
Microphones	-69 dB ± 3 dB one-way
Loudspeakers	8 Ω - 0.5 mΩ

X9 Evolution
500

PIAGGIO

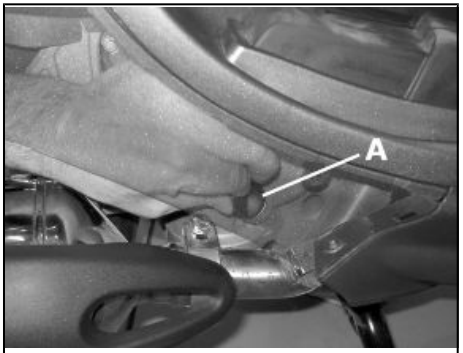
Chap. 03
Maintenance

Engine oil level

Engine oil is used in 4-stroke engines in order to lubricate the timing gears, the bench supports and the thermal group. **An insufficient quantity of oil can cause serious damage to the engine itself**.

In all 4T engines, the decay of the oil characteristics, as well as a certain evel of 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).

In order to prevent any problems, it is advisable to check the oil level more frequently than indicated in the Scheduled Maintenance Table or before undertaking a long trip. The vehicle is equipped with an oil pressure light on the instrument panel.



03_01

Engine oil level check (03_01, 03_02)

This operation must be effected **with the engine cold** and using your left hand from the rear of the vehicle without disassembling the lower panel and following the procedure below:

1) Place the vehicle on the central stand on level ground.

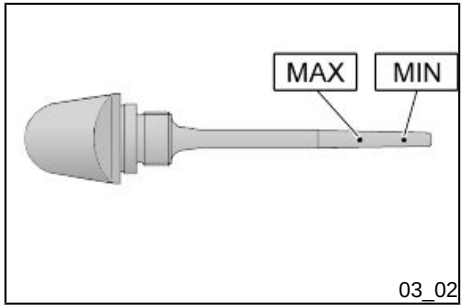
2) Unscrew the cap/dipstick, dry it with a clean rag and reinsert it, **completely screwing it in**.

3) Remove the cap/dipstick again and make sure the level is between MAX and MIN; top up of needed.

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

Characteristic

Engine oil (empty)

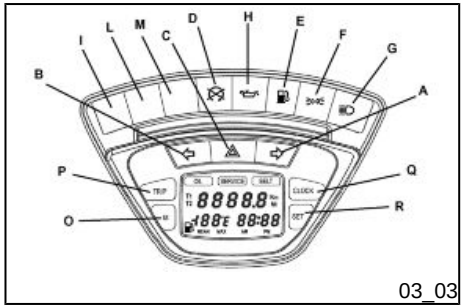


03_02

1.7 lt.

Engine oil top-up

Always check the oil level before carrying out top ups in order **to avoid exceeding the MAX. level.** Getting an oil level between the **MIN** and **MAX** index marks requires ~ 400 cc of oil. An oil check-up and top-up should be carried out every 3000 Km by authorised personnel at any **Authorised Piaggio-Gilera Service Centre**.



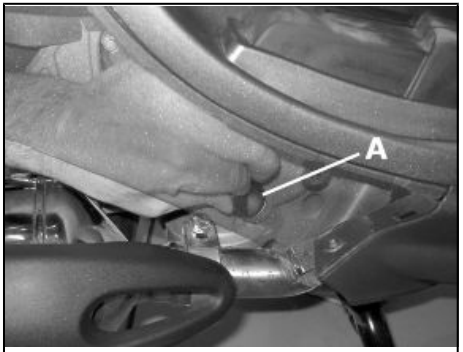
03_03

Warning light (insufficient oil pressure) (03_03)

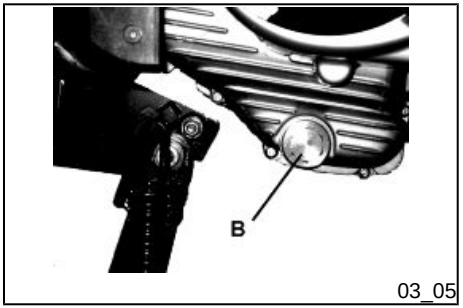
The scooter is equipped with a warning light «**H**» that lights up when the key is turned to «**ON**».

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 keeps on turning on while braking, at idling speed or while turning a corner, it will be necessary to take your vehicle to an Authorised Piaggio Service Centre.



03_04



03_05

Engine oil change (03_04, 03_05)

Changing the oil and filter must be done every 6,000 km at an **Authorized Piaggio Service Center**. The engine must be emptied by draining the oil from cap «**B**» on the mesh filter transmission side. Loosen cap/dipstick «**A**» to drain the oil. Unscrew the cartridge oil filter and remove it. Then fit a new oil filter, making sure to lubricate the filter o-ring with engine oil. Since a certain amount of oil remains in the circuit, should be poured in cap «**A**». Then start up the vehicle, leave it running for a few minutes and switch it off: after around 5 minutes, check the level and top up if necessary **without ever exceeding the MAX level**. The cartridge filter should be replaced every time the oil is changed. For top ups and replacements use new oil of the recommended type.

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.

Recommended products

AGIP CITY HI TEC 4T

Engine oil
SAE 5W-40, API SL, ACEA A3, JASO MA Synthetic oil

Characteristic

Engine oil (at oil and filter change)

1.5 lt.

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

Check that there is oil in the rear hub. Proceed as follows in order to check the hub oil level:

1) Place the vehicle on its central stand on a level surface.

2) Unscrew the oil bar «**A**», dry it with a clean cloth and reinsert it, **screwing it in completely**.

3) Remove the dipstick and make sure the oil level is between MIN and MAX. If the level is under MIN, the correct amount of oil needs to be added to the hub.

4) Screw the bar back in, checking that it is tightly in place.

N.B.

THE REFERENCE MARKS ON THE HUB OIL LEVEL DIPSTICK, EXCEPT FOR 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 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.

CAUTION

UPON REPLACING HUB OIL, AVOID THE OIL COMING INTO CONTACT WITH THE REAR BRAKE DISC.

Recommended products

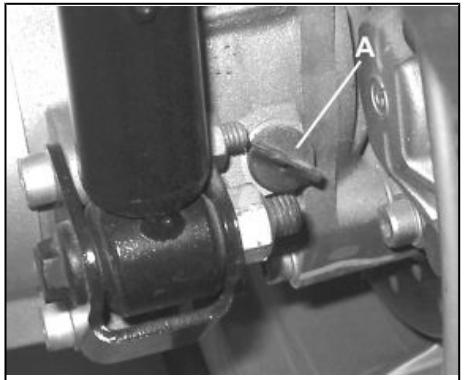
AGIP ROTRA 80W-90

Rear hub oil
SAE 80W/90 Oil that exceeds the requirements of API GL3 specifications

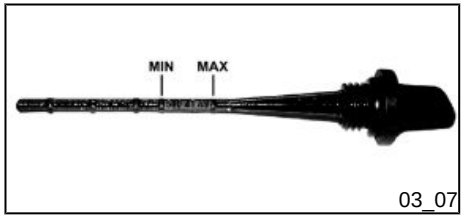
Characteristic

Rear hub oil

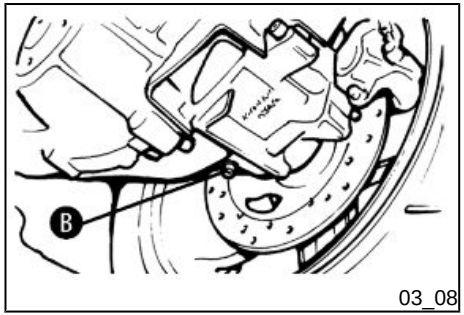
Capacity approximately 250 cc



03_06



03_07



03_08

REPLACEMENT

1) Remove the dipstick.

2) Unscrew the oil drainage screw «**B**» and drain out all the oil.

3) Screw back the drainage screw and refill the hub using the recommended oil quantity and type.

Tyres (03_09)

Check the tyre pressure and wear periodically (around every 500 km). The tyres are equipped with a wear indicator and should be replaced as soon as these indicators become visible on the tread. Also check that there are no cuts on the sides of the tyres or irregular tread wear; in this case turn to authorized garages or those equipped to replace the tyres.

CAUTION

THE USE OF TYRES OTHER THAN THOSE INDICATED MAY CAUSE INSTABILITY. IT IS HIGHLY ADVISABLE TO USE ORIGINAL PIAGGIO 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.

Characteristic

Front tyre pressure

2.2 bar

Rear tyre pressure

2.4 bar

Rear tyre pressure (rider and passenger):

2.6 bar

Attention

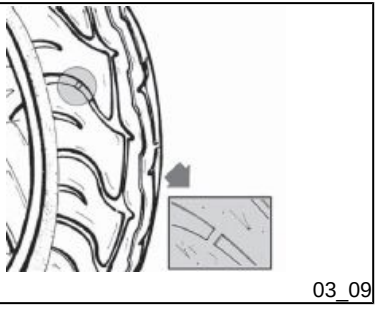
IF THE ACCESSORY TRUNK IS PRESENT, REGULATE THE FRONT WHEEL PRESSURE FROM 2,2 TO 2,4 BAR.

FRONT TYRE

Front tyre	Michelin 120/70 14" M/C REINF TL 55S GOLD STANDARD

REAR TYRE

Rear tyre	Michelin 150/70 14" M/C TL 66S GOLD STANDARD



03_09

03_10

Spark plug dismantlement (03_10)

Proceed as follows:

1. Remove the spark plug cover located on the left side of the vehicle and reach in to access the spark plug;

2. Disconnect the cap «**A**» of the spark plug HV wire;

3. Unscrew the spark plug, using the spanners supplied;

4. Upon re-assembly, insert the spark plug at the correct angle, screwing it in tightly by hand;

5. Only use the spanner supplied for the final tightening work;

6. Insert the cap «**A**» over the spark plug.

N.B.

THE USE OF SPARK PLUGS OTHER THAN THE INDICATED TYPE OR OF SHIELDLESS SPARK PLUG CAPS CAN CAUSE ELECTRICAL SYSTEM FAILURES.

WARNING

THE SPARK PLUG MUST BE REMOVED WHEN THE ENGINE IS COLD. THE SPARK PLUG SHOULD BE CHECKED EVERY 6,000 KM AND CHANGED EVERY 12,000 KM. THE USE OF ELECTRONIC CENTRAL UNITS OR ELECTRONIC IGNITIONS DIFFERING FROM THOSE RECOMMENDED CAN SERIOUSLY DAMAGE THE ENGINE. IF THE REMOVAL OF THE SPARK PLUG IS ATTEMPTED AFTER FLOODING THE ENGINE (EXPULSION OF EXCESS FUEL IN THE SECTION «SAFE RIDING»), IT IS RECOMMENDED THAT THE SMALL PIPE TO THE SPARK PLUG IS KEPT CONNECTED AND THE LATTER IS IN CONTACT WITH A GROUND FAR FROM THE SPARK PLUG HOLE ITSELF IN ORDER TO AVOID THE EXPELLED FUEL CATCHING ON FIRE.

Characteristic

Spark plug

- NGK CR7EKB
- Champion RG6YC

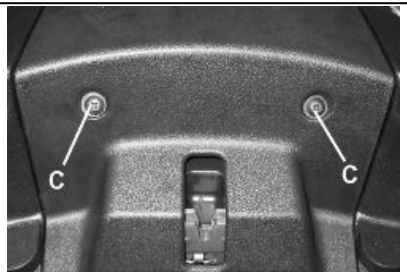
Electrode gap

0.7-0.8 mm

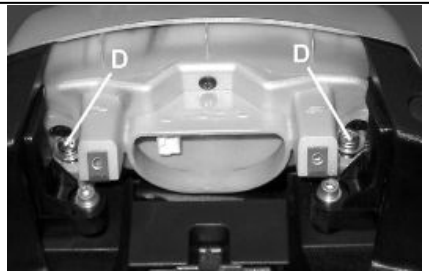
Locking torques (N*m)

spark plug

12 to 14 Nm



03_11



03_12

Removing the sides (03_11, 03_12, 03_13, 03_14, 03_15)

Proceed as follows:

1. Loosen the two fixing screws «**C**» and then remove the seat lock cap;

2. Loosen the two fixing screws «**D**» and then remove the stop light support;

3. Undo the two upper screws «**D**» and the two lower unions with the side fairings.

4. Undo the screw «**A**» on the fairing rear side;

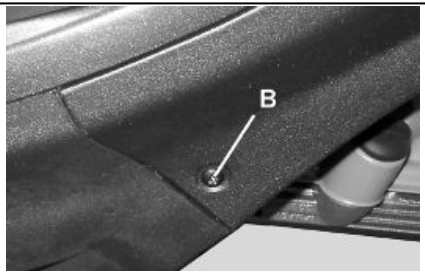
5. Remove the screw «**B**» on the fairing lower side;

6. To remove the fairing, slide it towards the vehicle rear part so as to release the fixing tongues.

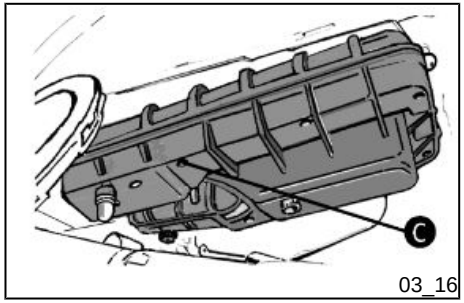
The figure shows the removal of the LHS fairing; the RHS can be removed following the same procedure.

03_13

03_14



03_15



03_16

Removing the air filter (03_16)

Proceed as follows:

1. remove the lower left side panel;

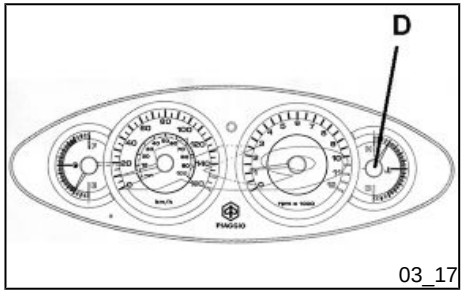
2. unscrew the 8 screws «**C**» (one with a knob) and remove the air filter cover;

3. replace the filter with a new one and refit all the components in the opposite order.

The air filter needs to be checked and possibly blown down every 6000 km at an **Authorized Piaggio Service Center**. Air blasts must directed from the inside towards the outside of the filter (i.e. the opposite direction of air flow during normal engine operation).

CAUTION

IF THE VEHICLE IS USED ON DUSTY ROADS, IT IS NECESSARY TO SERVICE THE AIR FILTER MORE OFTEN TO AVOID DAMAGING THE ENGINE.



03_17

Cooling fluid level (03_17, 03_18)

The engine cooling system is of the forced liquid circulation type. The coolant circuit contains approx. 1.8 litres of coolant consisting of a mixture of 50% demineralised water and glycol ethylene-based antifreeze solution with corrosion inhibitors.

The liquid supplied with the scooter is already mixed and ready for use.

For the engine to work properly, coolant temperature must range between a minimum value of 60 °C and a maximum value of 105 °C, as indicated by coloured references on the indicator «**D**» on the analogue instrument panel. If the needle of the gauge enters the red zone, switch off the engine, allow to cool down and check the coolant level; if the result is normal, turn to an **Authorised Piaggio Service Centre**.

The fluid inspection should be carried out every 6,000 km when the engine is cold, following the methods indicated below.

03_18

a) Place the scooter in a vertical position on the stand.

b) Remove the expansion tank cover "**A**", turning in anticlockwise direction.

c) Look inside the expansion tank; a mark on the plastic part indicates the maximum and minimum reference of the expansion tank.

d) Top up, if necessary, if the fluid level is below the MIN level on the scale inside the expansion tank.

The fluid level must always be between MIN and MAX level

If the fluid is near the minimum level, proceed with the top-up operation to be carried out when the engine is cold. If it is necessary to top up the coolant frequently, or if the expansion tank is completely dry, you should look for the cause in the cooling system. It is therefore indispensable to have the cooling system checked at an **Authorised Piaggio Service Centre**.

The coolant should be replaced every 2 years. For this operation, please contact an **Authorised Piaggio Service Centre.**

N.B.

IF DURING A NON-DEMANDING RIDE THE COOLANT WARNING LIGHT COMES ON, SHUT OFF THE ENGINE AND ALLOW IT TO COOL DOWN. THEN CHECK THE COOLANT LEVEL; IF THE LEVEL IS NOT CORRECT, CONTACT AN AUTHORISED SERVICE CENTRE.

WARNING

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

WARNING

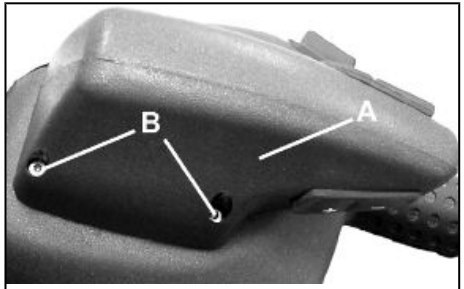
IN ORDER TO AVOID HARMFUL FLUID LEAKS WHILE RIDING, IT IS IMPORTANT TO MAKE SURE THAT THE LEVEL NEVER EXCEEDS THE MAXIMUM VALUE.

IN ORDER TO GUARANTEE THE PROPER FUNCTION OF THE ENGINE, IT IS NECESSARY TO KEEP THE RADIATOR GRILLE CLEAN.

Recommended products

AGIP PERMANENT SPEZIAL

coolant
Monoethylene glycol-based antifreeze fluid, CUNA NC 956-16



03_19

Checking the brake oil level (03_19, 03_20, 03_21)

The front and rear brake fluid tanks are located on the pumps under the small covers on the handlebar cover.

Proceed as follows:

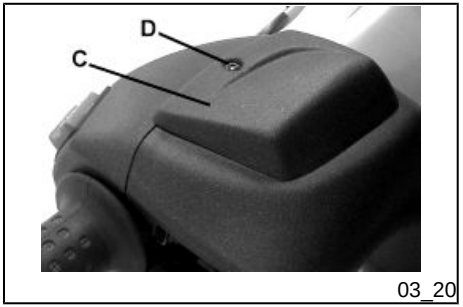
1. Rest the vehicle on the central support with the handlebars in a central position;

2. Remove the control/display unit for the PICS «**A**» (for the combined brake pump) by unscrewing the screws «**B**»;

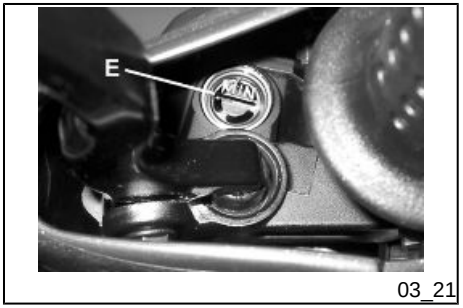
3. To check the oil level in the front brake pump, unscrew screw «**D**» and remove cover «**C**» on the right side of the handlebars.

4. Check the fluid level through the relative indication light «**E**».

The level will go down to a certain extent due to lining wear. If the level is below minimum, turn to an **Authorized Piaggio Service Centre** in order to carry out an accurate inspection of the braking system.



03_20



03_21

Braking system fluid top up

Proceed as follows:

Remove the reservoir cap and the intermediate rubber membrane by loosening the two screws and top up the level using the prescribed fluid without exceeding the maximum level.

In normal weather conditions, the fluid should be replaced every 20,000 km or in any case every 2 years. This operation requires the intervention of specialized personnel, it is therefore indispensable to turn to an **Authorized Piaggio Dealer or Service Centre**.

WARNING

ONLY USE DOT 4 CLASS BRAKE FLUIDS. COOLING SYSTEM FLUIDS ARE HIGHLY CORROSIVE. MAKE SURE THAT IT DOES NOT COME INTO CONTACT WITH THE PAINTWORK

.

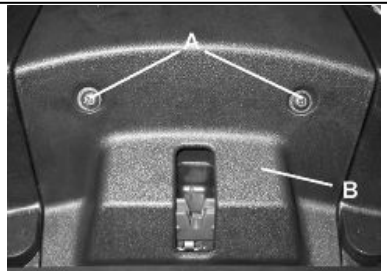
CAUTION

AVOID CONTACT OF BRAKE FLUID WITH EYES, SKIN, AND CLOTHING. IN CASE OF CONTACT, RINSE WITH WATER. THE BRAKING CIRCUIT FLUID IS HYGROSCOPIC, THAT IS, IT ABSORBS HUMIDITY FROM THE SURROUNDING AIR. IF THE HUMIDITY IN THE BRAKING FLUID EXCEEDS A CERTAIN VALUE, IT WILL LEAD TO INEFFICIENT BRAKING. NEVER USE BRAKING FLUID KEPT IN CONTAINERS THAT HAVE ALREADY BEEN OPENED, OR PARTIALLY USED.

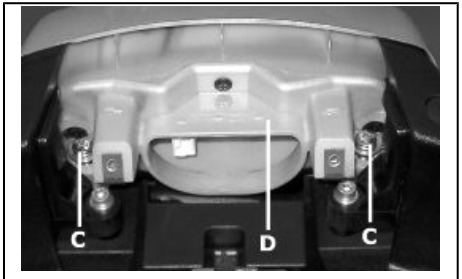
Recommended products

AGIP BRAKE 4

Brake fluid
FMVSS DOT 4 Synthetic fluid



03_22



03_23

03_24

Battery (03_22, 03_23, 03_24)

To access to the battery, proceed as follows:

1. Rest the vehicle on the central support;

2. Open the saddle as described above, see section «Opening the saddle to access the helmet compartment»;

3. Remove the fasteners «**A**» and the small cover «**B**». Remove screws «**C**», raise the stop light support «**D**».

4. Release the elastic band.

The battery is the electric device that requires the most assiduous surveillance and the most diligent maintenance. The main maintenance regulations to be carried out are as follows:

WARNING

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

Electric characteristic

Battery

12V - 14 Ah

Use of a new battery

Make sure that the terminals are connected correctly.

CAUTION

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

WARNING

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

Checking the electrolyte level

The electrolyte level, which should be checked regularly, must always be at the maximum level. To reach this level, use only distilled water. Should it become necessary to top up the battery with water too frequently, check the scooter's electrical system because the battery is being overloaded, causing it to lose power quickly.

CAUTION

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

Long periods of inactivity

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 plus residual absorption by vehicle components with constant power consumption. Poor battery performance may also be due to environmental conditions and the cleanness 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 the engine and run it slightly above idle speed for 10-15 minutes. This keeps all the engine components, as well as the battery, in good working order.

- 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 OPERATION 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 PERMANENT DAMAGE TO THE VEHICLE ELECTRONIC CONTROL UNIT.

WARNING

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

Fuses (03_25, 03_26, 03_27)

The electric system is equipped with:

1. four fuses «**A**» located in the fuse box under the saddle;

2. four fuses «**B**» located in the glove box;

3. four fuses «**C**» and a 70A fuse «**D**» located in the battery compartment on the left side of the vehicle.

4. a 30A fuse (main fuse), located next to the battery on the right side, a spare fuse is positioned below it.

The tables show the position and the characteristics of the fuses present in the vehicle.

CAUTION

BEFORE REPLACING A BLOWN FUSE, FIND AND SOLVE THE FAILURE THAT CAUSED IT TO BLOW. NEVER TRY TO REPLACE THE FUSE WITH ANY OTHER MATERIAL (E.G., A PIECE OF ELECTRIC WIRE).

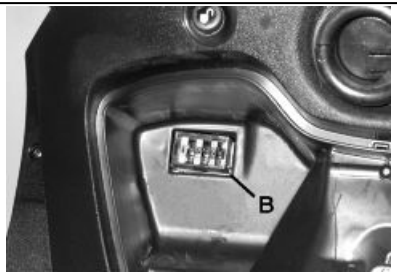
FUSES

Electro-hydraulic stand	**CAPACITY:** 5A **PROTECTED CIRCUITS:** Electro-hydraulic stand **LOCATION:** Battery compartment left side of vehicle
Immobilizer (CPU decoder)	**CAPACITY:** 3A **PROTECTED CIRCUITS:** Immobilizer (CPU decoder) **LOCATION:** Battery compartment left side of vehicle
Fuel pump - Injector - H.T. Coil	**CAPACITY:** 10A **PROTECTED CIRCUITS:** Fuel pump - Injector - H.T. Coil **LOCATION:** Battery compartment left side of vehicle
Consensus for electronic CPU Decoder	**CAPACITY:** 5A **PROTECTED CIRCUITS:** Consensus for electronic CPU Decoder **LOCATION:** Battery compartment left side of vehicle
12V socket for electrics - Helmet compartment light	**CAPACITY:** 15A

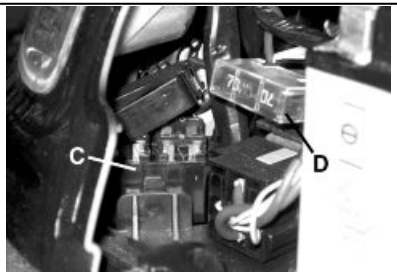
	PROTECTED CIRCUITS: 12V socket for electrics - Helmet compartment light **LOCATION:** Saddle compartment
Saddle opening by button	**CAPACITY:** 10A **PROTECTED CIRCUITS:** Saddle opening by button **LOCATION:** Saddle compartment
PICS device	**CAPACITY:** 10A **PROTECTED CIRCUITS:** PICS device **LOCATION:** Saddle compartment
High beam and dipped beam lamp	**CAPACITY:** 7,5A **PROTECTED CIRCUITS:** High beam and dipped beam lamp **LOCATION:** Saddle compartment
Horn - High beam lamp (passing) - Accessories	**CAPACITY:** 15A **PROTECTED CIRCUITS:** Horn - High beam lamp (passing) - Accessories **LOCATION:** Glove box
Start consensus - Stop lamp	**CAPACITY:** 7,5A **PROTECTED CIRCUITS:** Start consensus - Stop lamp

	LOCATION: Glove box
Front and rear position lamps and license plate light	**CAPACITY:** 7,5A **PROTECTED CIRCUITS:** Front and rear position lamps and license plate light **LOCATION:** Glove box
PICS - Saddle opening by remote control	**CAPACITY:** 7,5A **PROTECTED CIRCUITS:** PICS - Saddle opening by remote control **LOCATION:** Glove box
General - Main circuits	**CAPACITY:** 30A **PROTECTED CIRCUITS:** General - Main circuits **LOCATION:** Battery compartment right side of vehicle
Electro-hydraulic stand	**CAPACITY:** 70A **PROTECTED CIRCUITS:** Electro-hydraulic stand **LOCATION:** Battery compartment left side of vehicle

03_25



03_26



03_27

03_28

03_29

03_30

Front light group (03_28, 03_29, 03_30, 03_31, 03_32)

In order to remove the light unit proceed as follows:

1. Remove the rearview mirrors by removing the stoppers at the screws «A» and removing the 2 screws «A» on the right and left side and disconnect the electric connections of the direction indicators.

2. Remove the two screws «**B**».

3. Remove the two screws «**C**».

4. Remove the screw «**D**».

5. Pull the light unit out of its housing by removing the three screws «**E**».

Repeat the operations in reverse order for reassembly.

WARNING

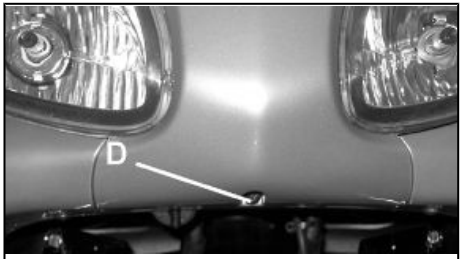
HIGH AND LOW BEAM LIGHT ARE OF THE HALOGEN TYPE: DO NOT TOUCH WITH YOUR FINGERS TO AVOID DAMAGING THEIR FUNCTION.

N.B.

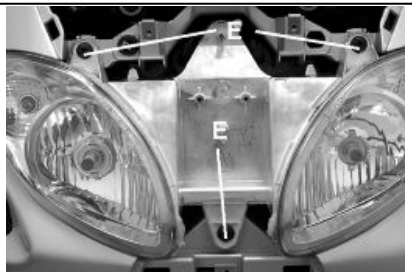
IF MISTING IS NOTICED ON THE INSIDE OF THE HEADLAMP GLASS, THIS DOES NOT INDICATE A FAULT AND IS RELATED TO THE HUMIDITY AND/OR TO LOW TEMPERATURES.

THE PHENOMENON SHOULD QUICKLY DISAPPEAR WHEN THE LIGHT IS SWITCHED ON.

THE PRESENCE OF DROPS OF WATER, ON THE OTHER HAND, COULD INDICATE THAT WATER IS INFILTRATING. CONTACT THE PIAGGIO AFTER-SALES SERVICE NETWORK.



03_31



03_32

03_33

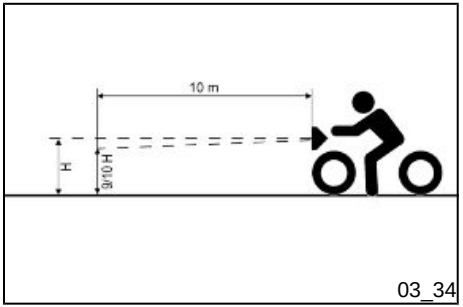
Headlight adjustment (03_33, 03_34)

Proceed as follows:

1. Position the unloaded scooter, in running order and with the tyres inflated to the prescribed pressure, on a flat surface 10 m away from a half-lit white screen; ensure that the longitudinal axis of the scooter is perpendicular to the screen;

2. Turn on the headlight and check that the borderline of the projected light beam should be lower than 9/10 of the distance from the ground to the centre of the vehicle's headlight, and higher than 7/10;

3. If not, adjust the projection by turning the central screw **«A»** set inside the glove box.



03_34

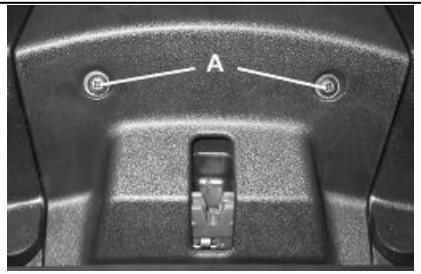
N.B.

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.

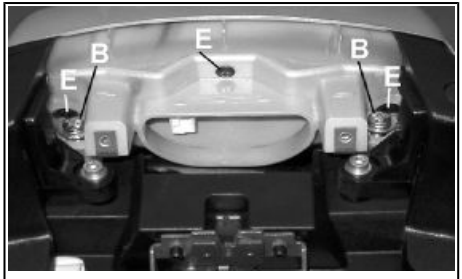
03_35

Front direction indicators (03_35)

To replace the burnt light bulb, remove screw «**F**» on the left and right side.



03_36



03_37

03_38

Rear optical unit (03_36, 03_37, 03_38)

To remove the rear light assembly, proceed as follows:

1. Open the saddle and remove the saddle lock cap by undoing the two screws «**A**»

2. Loosen the two fixing screws «**B**» and then remove the stop light support;

3. Remove the screw «**C**» of the light assembly being tested as shown in the figure. Now the tail headlight bulbs or the turn indicator bulbs can be reached. Release the fixing tongues to remove the assembly bulb holder.

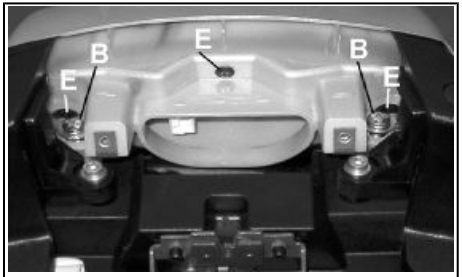
Number plate light

Remove the snap-on bulb holder by working from below the rear mudguard.

03_39

Helmet compartment lighting bulb (03_39)

Open the helmet compartment, take out the pressure mounted transparent cover "**D**" and replace the bulb.



03_40

Brake light (03_40)

In order to slide off the whole assembly, open the helmet compartment, remove the saddle lock cap as described above and remove the 3 screws «**E**» (one top and the other 2 side screws). Burnt out bulbs can be replaced by turning the bulb holder 30° anticlockwise.

03_41

Rear-view mirrors (03_41, 03_42)

Adjust the mirrors by applying slight pressure to the side of the mirror to move it to the desired position. The rear-view mirrors fold in when hit for enhanced safety. To set the mirror back to its position, operate manually as indicated.

03_42

03_43

Front and rear disc brake (03_43)

The brake disc and pad wear is automatically compensated, therefore it has no effect on the functioning of the front and rear brakes. For this reason it is not necessary to adjust the brakes. An excessively elastic brake lever stroke may indicate the presence of air in the braking circuit or a failure in the braking system. In this case, mainly due to the importance of brakes to guarantee safe riding conditions, the vehicle should be taken to an **Authorised Service Centre or Dealer.**

CAUTION

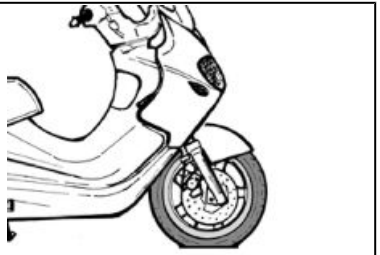
THE BRAKING ACTION SHOULD BEGIN AFTER ABOUT 1/3 OF THE BRAKE LEVER STROKE.

CAUTION

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

CAUTION

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



03_44

Puncture (03_44)

The vehicle is equipped with Tubeless tyres (without inner tube). In the event of a puncture, contrary to the situation with a tyre with inner tube, the tyre deflates more slowly, resulting in a greater steering safety. In the event of a puncture, it is admissible to make an emergency repair using an "inflate and repair" spray can. For a final repair, take your vehicle to an **Authorised Service Centre or Dealer.** The replacement of a tyre involves removing the wheel in question. Take your vehicle to an **Authorised Service Centre or Dealer** for these operations.

CAUTION

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

WARNING

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

03_45

Periods of inactivity (03_45)

We recommend carrying out the following operations:

1. Clean the scooter thoroughly and then cover it with a canvas;

2. With engine off and piston at the bottom dead centre, remove the spark plug, fill with 1÷2 cm^3 of oil (adding more than this quantity is dangerous for the engine). 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 scooter; spread antirust grease on the unpainted metal parts; keep the wheels lifted above the ground by resting the chassis on two wooden wedges;

4. As regards the battery, follow the instructions in the «Battery» section.

Recommended products

AGIP CITY HI TEC 4T

Oil to lubricate flexible transmissions (throttle control)
Oil for 4-stroke engines

Cleaning the vehicle

Use a low pressure water jet in order to soften the dirt and mud deposited on the painted surfaces. Once softened, mud and dirt should be removed with a soft sponge for bodywork soaked in a lot of water and shampoo (2-4% of shampoo in water). Then rinse with plenty of water, and dry with shammy leather. For the engine outside, use petroleum and clean cloths. Petroleum is harmful for the paint. Polishing with silicone wax should always be preceded by washing.

CAUTION

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

WARNING

THE USE OF A HIGH-PRESSURE WATER JET IS STRONGLY DISCOURAGED FOR ANY ENGINE CLEANING OPERATION; HOWEVER, IF NO OTHER MEANS ARE AVAILABLE, IT IS THEN NECESSARY TO:

• ONLY USE THE FAN JET.

• DO NOT PLACE THE NOZZLE CLOSER THAN 60 CM.

• DO NOT USE WATER AT TEMPERATURES OVER 40ºC.

• DO NOT USE HIGH-PRESSURE WATER JETS.

• DO NOT STEAM WASH.

• DO NOT DIRECT THE JET AT: THE CARBURETTOR, THE ELECTRIC CABLES, THE SLOT DIFFUSERS IN THE TRANSMISSION COVER AND THE SCROLL COVER.

CAUTION

NEVER WASH THE SCOOTER IN DIRECT SUNLIGHT, ESPECIALLY IN SUMMER WHEN THE BODYWORK IS STILL HOT AS THE SHAMPOO COULD DAMAGE THE PAINTWORK IF IT DRIES BEFORE BEING RINSED OFF. NEVER USE CLOTHS SOAKED IN ALCOHOL, PETROL, DIESEL OIL OR KEROSENE FOR CLEANING THE PAINTED OR PLASTIC SURFACES, IN ORDER NOT TO DAMAGE THE LUSTRE FINISH OR ALTER THE MECHANICAL PROPERTIES. USING SILICONE-BASED WAX CAN DAMAGE THE PAINTED SURFACES, DEPENDING

ON THE VEHICLE COLOUR (SATIN COLOURS). FOR FURTHER INFORMATION ON THIS MATTER, CONTACT AN AUTHORISED SERVICE CENTRE .

IN ORDER TO MAINTAIN PROPER CLEANING AND BRILLIANCE OF THE MUFFLER, WE RECOMMEND THE USE OF A PRODUCT SPECIFICALLY FOR CHROME-PLATED SURFACES

PIAGGIO RECOMMENDS AND DISTRIBUTES A PASTE SPECIALLY FOR THE GLOSS OF STAINLESS STEEL MUFFLERS; IT CAN BE ORDERED UNDER THE NUMBER 602683M FROM THE DEALER NETWORK.

STARTING FAILURE

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

STARTING DIFFICULTIES (SEE «START-UP PROBLEMS» SECTION)

Lack of fuel in tank.	Refuelling
Injection system fault	Contact an **Authorised Service Centre**

Faulty fuel pump	Contact an **Authorised Service Centre**
Battery flat	Recharge the battery.

**** IMPORTANT: DO NOT USE THE SCOOTER TO THE COMPLETE EXHAUSTION OF FUEL; SHOULD THIS OCCUR, DO NOT ATTEMPT TO START THE ENGINE. TURN THE KEY SWITCH TO «OFF» AND TOP-UP THE FUEL TANK AS SOON AS POSSIBLE. FAILURE TO FOLLOW THESE GUIDELINES COULD DAMAGE THE FUEL PUMP AND/OR THE CATALYTIC CONVERTER.***

IGNITION PROBLEMS

Faulty spark plug	Contact an **Authorised Service Centre.**
Faulty ignition / injection control unit. Due to the presence of high voltage, this check should only be carried out by an expert.	Contact an **Authorised Service Centre**

LACK OF COMPRESSION

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

HIGH CONSUMPTION AND LOW PERFORMANCE

Clogged or dirty air filter	Try to blow out with compressed air, otherwise replace the filter

INSUFFICIENT BRAKING

Greasy disc. Worn pads. Faulty braking system. Presence of air in the front and rear brake circuit.	Contact an **Authorised Service Centre.**

INEFFICIENT SUSPENSIONS

Shock absorber fault, oil leak, end buffer damaged; shock absorber preloading incorrectly set	Contact an **Authorised Service Centre.**

IRREGULAR AUTOMATIC TRANSMISSION

Variator rollers and/or driving belt damaged	Contact an **Authorised Service Centre.**

X9 Evolution
500

Chap. 04
Technical data

DATA

Version	500
Engine	Single cylinder, four stroke, four valves, cam mounted single crankshaft chain driven on magneto side.
Bore x stroke	92 X 69 mm
Cubic capacity	460 cm^3
Compression ratio	10.5: 1
Ignition advance (before TDC)	Variable advance controlled by the injection control unit
Fuel supply	38 Ø mm throttle body and single injector
Spark plug	• NGK CR7EKB • Champion RG6YC
Max. speed	160 km/h
Valve clearance	intake: 0.15 mm discharge (when cold): 0.15 mm (when cold)
RPM	1500 ± 50 revs/min

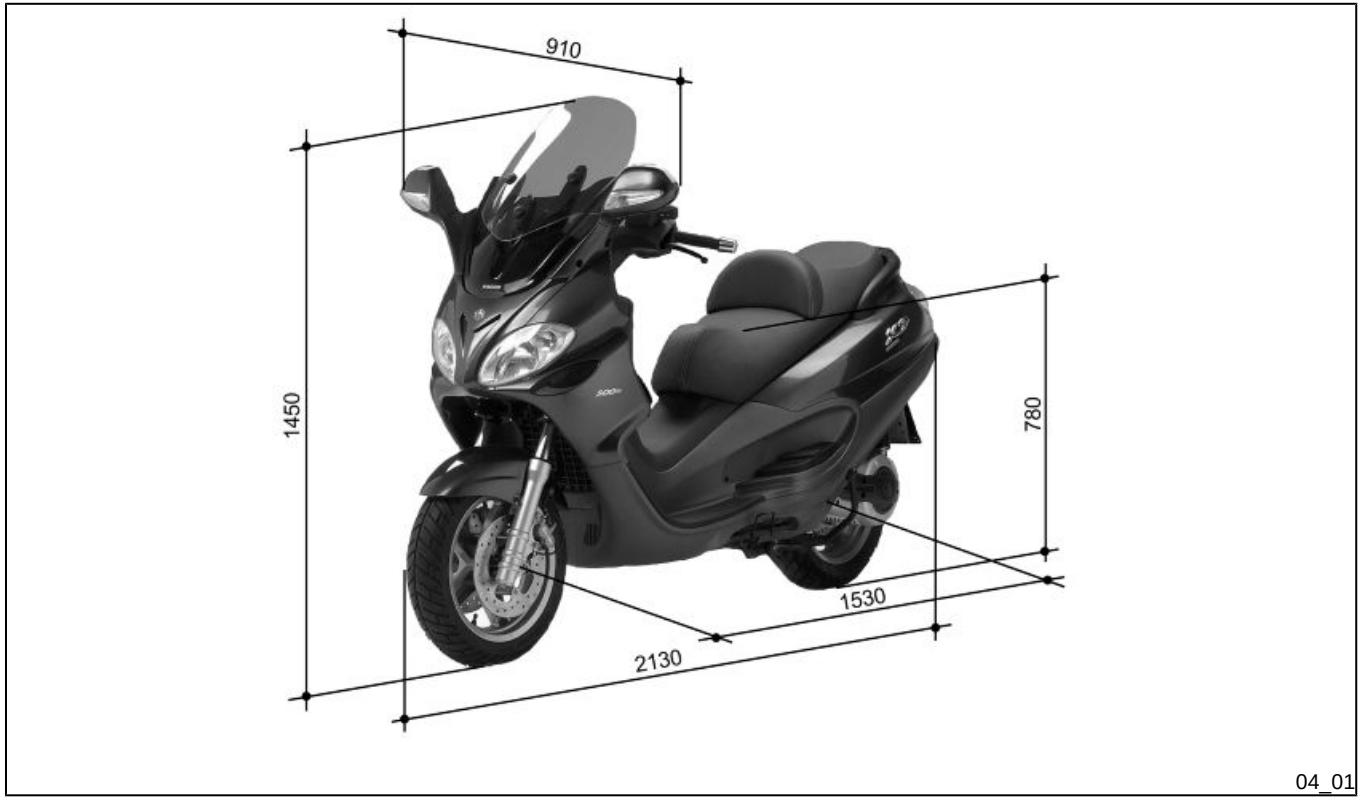
TECHNICAL DATA

Maximum width	910 mm

Maximum length	2130 mm
Maximum height	1450 mm
Saddle height	780 mm
Wheelbase	1530 mm
Fuel supply	Electronic injection with electric fuel pump.
Exhaust muffler	absorption-type exhaust muffler with catalytic converter.
Electronic ignition	inductive, high efficiency integrated with the injection system, with variable timing and separate HV coil.
Lubrication	Engine lubrication with trochoidal pump (inside the crankcase), oil filter and pressure adjustment by-pass.
Cooling	Forced fluid circulation, with engine driven pump; 3-way thermostat to pump intake.
Transmission	Automatic expandable pulley speed variator, V belt, dry self-ventilating automatic centrifugal clutch, gear reduction unit and transmission casing with forced air circulation cooling.
Front brake	disc brake Ø 260 (right side of the vehicle), with idraulic command activated from handlebars with right-hand lever.
Combined brake	with dual disc, front 260 diameter (left side of the vehicle) and rear

	240 diameter with hydraulic control with left hand lever. The system is equipped with a pressure distribution valve.
Front wheel	Alloy wheels 14"x 3.50
Rear wheel	Alloy wheels 14" x 4.50
Tyres	Without air chamber
Front tyre	Michelin 120/70 14" M/C REINF TL 55S GOLD STANDARD
Rear tyre	Michelin 150/70 14" M/C TL 66S GOLD STANDARD
Front suspension	hydraulic telescopic steering tube with 40-41 diameter rods, double acting and rear pin with coupling for dual brake calipers.
Rear suspension	engine based on swing arm connected to chassis by arm with degree of torque freedom, dual effect hydraulic shock absorbers and 4 position preload adjustment.
Chassis	Welded tubular steel structure, with asymmetrical frame structure, front beams and union elements in stamped sheets.
Kerb weight	206 kg
Maximum load	180 kg.
Petrol	Total capacity: ~ 14.5 lt. (indicative value).
Fuel reserve	approx. 2.5 litres (indicative value)

Engine oil (empty)	1.7 lt.
Engine oil (at oil and filter change)	1.5 lt.
Rear oil hub	Capacity: ~250 cc
Cooling system	Capacity: approx. 1.8 litres



04_01

Kit equipment

A socket wrench; a lever for socket wrench; a double screwdriver; a hexagonal wrench (6 mm); a special wrench for adjusting the rear shock absorbers. The tools are located in the helmet compartment.

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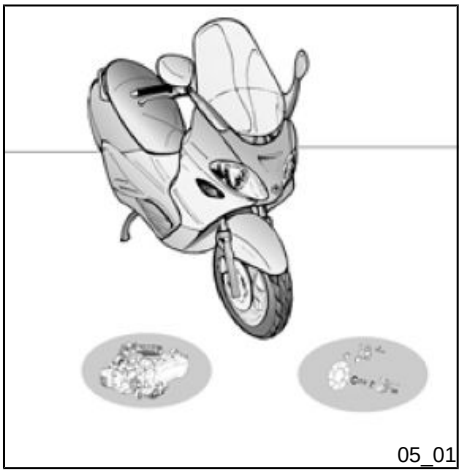
Chap. 05
Spare parts and accessories


05_01

Warnings (05_01)

WARNING

IT IS ALSO RECOMMENDED THAT "ORIGINAL PIAGGIO SPARE PARTS" BE USED, AS THESE ARE THE ONLY ONES OFFERING YOU THE SAME QUALITY GUARANTEE AS THOSE INITIALLY FITTED ON THE SCOOTER. THE USE OF NON-ORIGINAL SPARE PARTS RENDERS THE WARRANTY VOID.

WARNING

PIAGGIO MARKETS ITS OWN LINE OF ACCESSORIES THAT ARE RECOGNISED AND GUARANTEED FOR USE. IT IS THEREFORE ESSENTIAL, IN ORDER TO CHOOSE AND MOUNT THE ACCESSORIES CORRECTLY, TO CONTACT AN AUTHORISED DEALER OR SERVICE CENTRE. 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.

WARNING

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

NEVER DRIVE THE SCOOTER FITTED WITH ACCESSORIES (TRUNK AND/OR WINDSCREEN) AT A SPEED OF OVER 130 KM/ H. THE VEHICLE CAN BE DRIVEN AT A HIGHER SPEED WITHOUT THE AFOREMENTIONED ACCESSORIES

WITHIN THE LIMITS ESTABLISHED BY LAW. IF NON ORIGINAL PIAGGIO ACCESSORIES ARE INSTALLED ON THE SCOOTER, THERE IS AN ANOMALOUS LOAD. THE SCOOTER IS NOT IN OPTIMAL GENERAL CONDITIONS AND WHEN THE ATMOSPHERIC CONDITIONS DO NOT ALLOW IT, THE SPEED SHOULD BE FURTHER REDUCED.

IN ORDER TO MAINTAIN PROPER CLEANING AND BRILLIANCE OF THE MUFFLER, WE RECOMMEND THE USE OF A PRODUCT SPECIFICALLY FOR CHROME-PLATED SURFACES

PIAGGIO RECOMMENDS AND DISTRIBUTES A PASTE SPECIALLY FOR THE GLOSS OF STAINLESS STEEL MUFFLERS; IT CAN BE ORDERED UNDER THE NUMBER 602683M FROM THE DEALER NETWORK.

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PIAGGIO

Chap. 06
Programmed maintenance

Scheduled maintenance table

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

To this end, a series of checks and maintenance operations (at the owner's expense) have been suggested, which are included in the summary table on the following page. Any minor faults should be reported without delay to an **Authorised Service Centre or Dealer** without waiting until the next scheduled service to solve it.

All scheduled maintenance services must be carried out at the specified intervals, even if the stated mileage has not yet been reached. Punctual scooter servicing is essential to ensure your warranty remains valid. For any further information concerning Warranty procedures and "Scheduled Maintenance", please refer to the "Warranty Booklet".

EVERY 2 YEARS

Coolant - change
Brake fluid - change

EVERY 3,000 KM

Engine oil - level check/ top-up
Brake pads - check condition and wear

AFTER 1,000 KM OR 4 MONTHS

Engine oil - replacement
Hub oil - change
Carburetion - check/adjust
Seals/injection system hoses - visual check
Base vent - check
Steering - adjustment
Brake control levers - greasing
Brake fluid level - check
Safety locks - check
Electrical system and battery - check
Vehicle and brake test - road test

AT 6,000 KM OR 12 MONTHS

Engine oil - replacement
Hub oil - level check
Spark plug / electrode gap - check
Air filter - cleaning
Engine oil - change
Valve clearance - check
Base vent - check

Variable speed rollers - replacement
Driving belt - checking
Coolant level - check
Brake fluid level - check
Electrical system and battery - check
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Check
Stand roller - Check
Vehicle and brake test - road test

AT 12000 KM OR 24 MONTHS AND 60000 KM

Engine oil - replacement
Hub oil - level check
Spark plug / electrode gap - replacement
Air filter - cleaning
Engine oil - change
Carburetion - check/adjust
Seals/injection system hoses - visual check
Base vent - check
Variable speed rollers - replacement
Roller support sliding blocks - check/change

Driving belt - replacement
Coolant level - check
Steering - adjustment
Brake control levers - greasing
Brake fluid level - check
Safety locks - check
Suspensions - check
Electrical system and battery - check
Headlight - adjustment
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Grease
Stand control roller - replace
Vehicle and brake test - road test

AT 18,000 KM AND 54,000 KM

Engine oil - replacement
Hub oil - level check
Spark plug / electrode gap - check
Air filter - change
Engine oil - change
Valve clearance - check

Base vent - check
Variable speed rollers - replacement
Driving belt - checking
Coolant level - check
Radiator - external cleaning/ check
Brake fluid level - check
Electrical system and battery - check
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Grease
Stand roller - Check
Vehicle and brake test - road test

AT 24000 KM

Engine oil - replacement
Hub oil - change
Spark plug / electrode gap - replacement
Air filter - clean
Engine oil - change
Fuel filter - check
Carburetion - check/adjust
Seals/injection system hoses - visual check

Base vent - check
Variable speed rollers - replacement
Roller support sliding blocks - check/change
Driven pulley bushing - check / grease
Driving belt - replacement
Coolant level - check
Steering - adjustment
Brake control levers - greasing
Brake fluid level - check
Safety locks - check
Suspensions - check
Electrical system and battery - check
Headlight - adjustment
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Grease
Stand control roller - replace
Vehicle and brake test - road test

AT 30,000 KM, 42,000 KM AND 66,000 KM

Engine oil - replacement
Hub oil - level check

Spark plug / electrode gap - check
Air filter - cleaning
Engine oil - change
Base vent - check
Variable speed rollers - replacement
Driving belt - checking
Coolant level - check
Brake fluid level - check
Electrical system and battery - check
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Check
Stand roller - Check
Vehicle and brake test - road test

AT 36,000 KM

Engine oil - replacement
Hub oil - level check
Spark plug / electrode gap - replacement
Air filter - change
Engine oil - change
Valve clearance - check

Carburetion - check/adjust
Seals/injection system hoses - visual check
Base vent - check
Variable speed rollers - replacement
Roller support sliding blocks - check/change
Driving belt - replacement
Coolant level - check
Radiator - external cleaning/ check
Steering - adjustment
Brake control levers - greasing
Flexible brake tubes - replacement
Brake fluid level - check
Safety locks - check
Suspensions - check
Electrical system and battery - check
Headlight - adjustment
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Grease
Stand control roller - replace
Vehicle and brake test - road test

AT 48000 KM

Engine oil - replacement
Hub oil - level check
Spark plug / electrode gap - replacement
Air filter - clean
Engine oil - change
Fuel filter - replacement
Carburetion - check/adjust
Seals/injection system hoses - visual check
Base vent - check
Variable speed rollers - replacement
Roller support sliding blocks - check/change
Driven pulley bushing - check / grease
Driving belt - replacement
Coolant level - check
Steering - adjustment
Brake control levers - greasing
Brake fluid level - check
Safety locks - check
Suspensions - check
Electrical system and battery - check
Headlight - adjustment

Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Grease
Stand control roller - replace
Vehicle and brake test - road test

AT 72,000 KM

Engine oil - replacement
Hub oil - change
Spark plug / electrode gap - check / replacement
Air filter - change
Engine oil - change
Fuel filter - check
Valve clearance - check
Carburetion - check/adjust
Seals/injection system hoses - visual check
Base vent - check
Variable speed rollers - replacement
Roller support sliding blocks - check/change
Driven pulley bushing - check / grease
Driving belt - replacement
Coolant level - check

Radiator - external cleaning/ check
Steering - adjustment
Brake control levers - greasing
Flexible brake tubes - replacement
Brake fluid level - check
Safety locks - check
Suspensions - check
Electrical system and battery - check
Headlight - adjustment
Tyre inflation and wear - Check
Electro-hydraulic stand control joint - Grease
Stand control roller - replace
Vehicle and brake test - road test

TABLE OF RECOMMENDED PRODUCTS

Product	Description	Specifications
AGIP ROTRA 80W-90	rear oil hub	SAE 80W/90 Oil that exceeds the requirements of API GL3 specifications
AGIP CITY HI TEC 4T	Oil to lubricate flexible transmissions (throttle control)	Oil for 4-stroke engines
AGIP PERMANENT SPEZIAL	coolant	Monoethylene glycol-based antifreeze fluid, CUNA NC 956-16

Product	Description	Specifications
AGIP GP 330	Grease (brake control levers, throttle grip)	Calcium complex soap-based grease with NLGI 2; ISO-L-XBCIB2
AUTOSOL METAL POLISH	Muffler cleaning paste	Specific product for cleaning and polishing stainless steel mufflers.
AGIP CITY HI TEC 4T	Engine oil	SAE 5W-40, API SL, ACEA A3, JASO MA Synthetic oil
AGIP GREASE SM 2	Grease for the tone wheel revolving ring	Soap-based lithium grease containing NLGI 2 Molybdenum disulphide; ISO-L-XBCHB2, DIN KF2K-20
AGIP GREASE PV2	Grease for the steering bearings, pin seats and swinging arm	White anhydrous-calcium based grease to protect roller bearings; temperature range between -20 C and +120 C; NLGI 2; ISO-L-XBCIB2.
AGIP BRAKE 4	Brake fluid	FMVSS DOT 4 Synthetic fluid

TABLE OF CONTENTS

The descriptions and illustrations given in this publication are not binding. While the basic specifications as described and illustrated in this manual remain unchanged, PIAGGIO-GILERA reserves the right, at any time and without being required to update this publication beforehand, to make any changes to components, parts or accessories, which it considers necessary to improve the product or which are required for manufacturing or construction reasons.

Not all versions/models shown in this publication are available in all countries. The availability of single versions should be checked at the official Piaggio sales network.

PIAGGIO & C. S.p.A. - After-Sales

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