PIAGGIO WOULD LIKE TO THANK YOU

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



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



Personal safety

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



Safeguarding the environment

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



Vehicle intactness

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

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

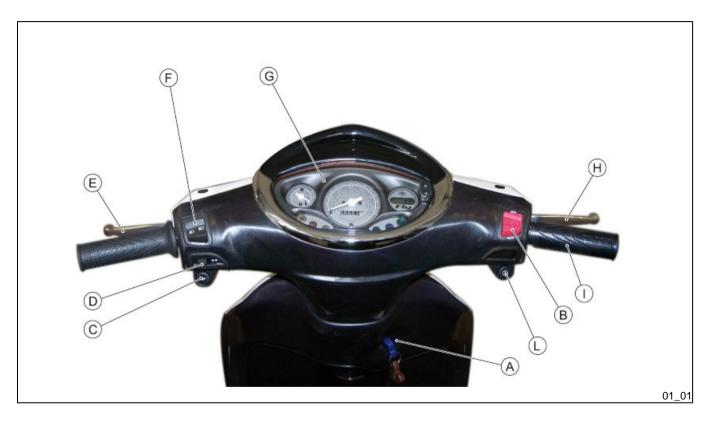
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Chap. 01 Vehicle

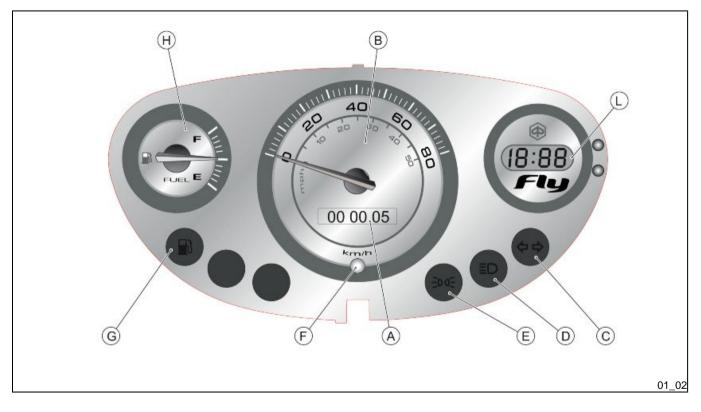


Dashboard (01_01)

A = Ignition switch

B = RUN/OFF emergency stop switch

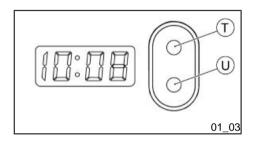
- **C** = Horn button
- **D** = Turn indicator switch
- E = Rear brake lever
- F = Headlight switch
- **G** = Analogue instrument panel
- H = Front brake lever
- I = Throttle grip
- L = Starter button



Analogue instrument panel (01_02)

- **A** = Trip counter
- $\mathbf{B} = Speedometer$
- **C** = Turn indicator warning light

- **D** = High-beam warning light
- E = Headlight warning light
- **C** = Immobilizer warning light (not connected)
- G = Low fuel warning light
- H = Fuel gauge
- L = Digital clock



Clock (01_03)

Hours and minutes are displayed in a 1 to 12, AM or PM, format on the instrument panel.

Operating the function selection switch (T) month, day and seconds can be seen besides hours and minutes. In order to adjust the above mentioned functions, operate button (U). The digital clock is powered by a battery (battery life is about 2 years); lift the whole instrument panel to replace the battery. It is advisable to take your vehicle to an **Authorised Service Centre** for this operation.

WARNING



DEAD BATTERIES ARE HARMFUL TO THE ENVIRONMENT. THEY MUST DISPOSED OF IN SUITABLE CONTAINERS AS PRESCRIBED BY THE REGULATIONS IN FORCE.



Key switch (01_04)

 $\ensuremath{\text{LOCK}}$ = Ignition disabled, extractable key, steering lock engaged front glove-box locked.

OFF = Ignition disabled, extractable key, steering lock disengaged, front glove-box unlocked.

 $\mathbf{ON}=\mathbf{Ready}$ to start position, anti-theft device disabled, non-extractable key, glovebox unlocked.

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 «KEY OFF» WHILE RIDING.

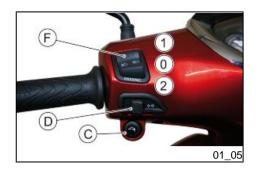
Releasing the steering wheel

Reinsert the key and turn it to «OFF».

CAUTION



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



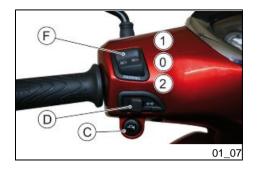
Switch direction indicators (01_05)

To set the left turn indicators flashing, move lever (\mathbf{D}) to the left; to set the right turn indicators flashing, move it to the right. The lever automatically returns to the central position and the indicators remain on. To turn the indicators off, press the lever towards the switch.



Horn button (01_06)

Horn button «C»



Light switch (01_07)

- 0 = Low-beam and taillight
- 1 = High-beam and taillight
- 2 = High-beam flash (passing)

WARNING

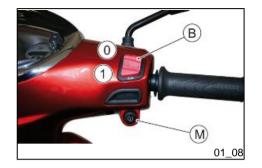


THE «PASSING» FUNCTION IS ACTIVE DEPENDING ON THE MARKET COUNTRIES.

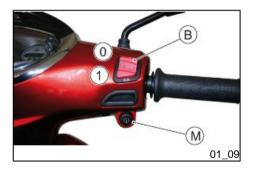
CAUTION



DO NOT PLACE, TRANSPORT OBJECTS AND/OR CLOTHES OVER THE FRONT HEADLIGHT ASSEMBLY, WHEN THE HEADLIGHT IS TURNED ON OR OFF. FAILURE TO FOLLOW THIS PRECAUTION MAY CAUSE OVERHEATING AND THE SUBSEQUENT FUSION OF THE GLASS.

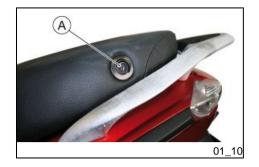


Start-up button (01_08)



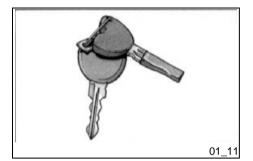
Engine stop button (01_09)

The engine can be started when the emergency stop switch **«B»** is in position **«1» RUN**; if the emergency stop switch **«B»** is in position **«0» OFF** it is not possible to start the engine or it will switch off if started.



Opening the saddle (01_10)

Insert the key into the saddle lock «A», turn it anticlockwise and tip the saddle forward.



Keys (01_11)

The vehicle is supplied with two keys (one spare) which serve to start the engine and unlock the saddle compartment. The keys are accompanied by a tag marked with the identification code to be quoted when ordering duplicates.

WARNING

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





Identification (01_12, 01_13)

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

CAUTION



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

Rear top box opening

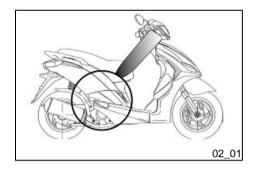
Turn the key to (\mathbf{OFF}) . Then press it. When the key is set to (\mathbf{LOCK}) , the glove-box is locked.



Bag clip (01_14)



Chap. 02 Use



Checks (02_01)

Before using the vehicle, check:

1. that the fuel tank is full.

- 2. The oil level in the rear hub.
- 3. engine oil level (see section «Engine oil level»).
- 4. That tyres are properly inflated.
- 5. correct functioning of headlights, rear taillight and turn indicators.
- 6. The correct functioning of the front and rear brakes.



Refuelling (02_02)

Fill fuel tank«A» with unleaded petrol (minimum octane rating = 95).

The fuel level is indicated by the specific instrument fitted on the instrument panel.

CAUTION



SHUT OFF THE ENGINE BEFORE REFUELING WITH PETROL. PETROL IS HIGH-LY FLAMMABLE. DO NOT LET PETROL SPILL FROM THE TANK OR WHILE REFUELING

CAUTION



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

CAUTION



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

Characteristic

Fuel tank capacity

approx. 7 litres (of which 1.5 l reserve)

Tyre pressure

CAUTION



TYRE PRESSURE SHOULD BE CHECKED WHEN TYRES ARE COLD.INCOR-RECT TYRE PRESSURE CAUSES ABNORMAL TYRE WEAR AND MAKES RID-ING DANGEROUS.

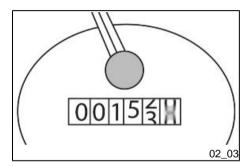
TYRES MUST BE REPLACED WHEN THE TREAD REACHES THE WEAR LIMITS SET FORTH BY LAW.

TΥ	RES	

Front tyre	120/70 - 12" Tubeless
Rear tyre	120/70 - 12" Tubeless

TYRE INFLATION PRESSURE

Front tyre pressure1.8 barRear tyre pressure (with
passenger)2.0 bar (2.3 bar)

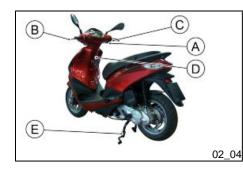


Running in (02_03)

WARNING



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



Starting up the engine (02_04)

The vehicle is equipped with automatic transmission and centrifugal clutch, thus it must be started with throttle grip to idle speed; to start accelerate in a progressive way. The vehicle is equipped with an electrical fuel pump that switches on automatically as soon as the engine is started.

To start it up, it is necessary to:

- Keep the throttle grip to idle speed.
- Insert the key into the ignition switch «D» and turn it to «ON».

- Push the starter button <code>«A»</code> after pulling the front brake lever <code>«C»</code> or the rear brake lever <code>«B»</code>.

CAUTION



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

CAUTION

Λ

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

WARNING



THE SYSTEM IS DESIGNED TO INHIBIT STARTING THE VEHICLE WHEN ONE ATTEMPTS TO START THE ENGINE WITH THE THROTTLE GRIP OPEN, THUS PREVENTING AN INCORRECT MANOEUVRE. THEREFORE KEEP THE THROT-TLE GRIP ON IDLE SPEED OR PARTIALLY OPEN IF NECESSARY.

Precautions

CAUTION

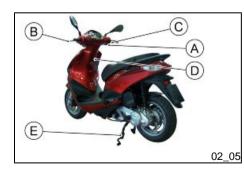
\mathbf{A}

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 OVERREVVING, THE REVOLUTION LIMITER WILL BE ACTIVATED IF THE EN-GINE SPEED EXCEEDS THE ESTABLISHED THRESHOLD.

WARNING

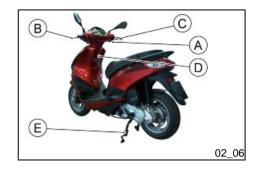


AFTER A LONG DISTANCE COVERED AT THE MAXIMUM SPEED, DO NOT STOP THE ENGINE IMMEDIATELY, BUT LET IT RUN AT IDLE FOR A FEW SECONDS.



Difficult start up (02_05)

In the rare case of a flooded engine, and in order to facilitate starting, try putting the vehicle into motion with the throttle slightly open. It is however necessary, once the engine is started, to take your vehicle to an **Authorised Service Centre** to determine the cause of this problem and to re-establish the vehicle proper functioning.



Stopping the engine (02_06)

Stop acceleration, then turn the key switch ${}^{\mbox{\scriptsize w}}D{}^{\mbox{\scriptsize w}}$ to ${}^{\mbox{\scriptsize w}}OFF$ ${}^{\mbox{\scriptsize w}}$ to stop the engine (extractable key).

CAUTION

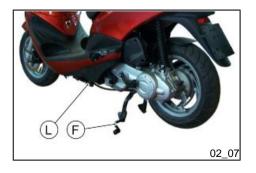


DUE TO THE HIGH TEMPERATURES THE CATALYTIC CONVERTER CAN REACH, ALWAYS TAKE CARE, WHEN PARKING THE VEHICLE, THAT THE EX-HAUST DOES NOT COME INTO CONTACT WITH FLAMMABLE MATERIALS, TO AVOID SERIOUS BURNS.

Stand (02_07)

CENTRE STAND

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



SIDE STAND:

With your foot push the projection of the stand <L » in order to open it and at the same time lean the vehicle on you. There is a switch that hinders the vehicle starter with lowered stand.

WARNING

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

Automatic transmission

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

1. Do not continue riding in such conditions.

2. Let the clutch cool down with the motor at idling speed for a few minutes

Safe driving

WARNING



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

<

Your ability and your knowledge of the vehicle form the basis of safe riding. We recommend trying out the vehicle in traffic-free zones to get to know your vehicle completely.

ALWAYS DRIVE WITHIN YOUR LIMITS

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

2. Reduce speed and ride cautiously on uneven roads.

3. Remember that after riding on a long stretch of wet road without using the brakes, the braking effect is initially lower. Under these conditions, it is a good idea to operate the brakes from time to time.

4. Do not brake hard on a wet surface, on dirt tracks or on any slippery road surface.

5. If you have to brake, use both brakes in order to divide the braking action between both wheels.

6. Avoid starting off by mounting the vehicle while it is still resting on its stand. In any case, the rear wheel should not be turning when it comes into contact with the ground, in order to avoid abrupt departures.

7. If the vehicle is used on roads covered with sand, mud, snow mixed with salt, etc., clean the brake disc frequently with mild detergent in order to prevent abrasive substances from building up within the holes, which can result in early wear of the brake pads.

8. Any elaboration that modifies the vehicle's performances, such as tampering with original structural parts is strictly forbidden by law, and renders the vehicle not conforming to the approved type and therefor dangerous to ride.

CAUTION



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

CAUTION



ANY ELABORATION THAT MODIFIES THE VEHICLE'S PERFORMANCES, SUCH AS TAMPERING WITH ORIGINAL STRUCTURAL PARTS IS STRICTLY FORBID-

DEN BY LAW, AND RENDERS THE VEHICLE NO LONGER CONFORMING TO THE APPROVED TYPE AND DANGEROUS FOR RIDING.



Chap. 03 Maintenance



Engine oil level (03_01)

In 4T engines, the engine oil is used to lubricate the distribution elements, the bench bearings and the thermal group. An insufficient quantity of oil can seriously damage the engine. In all 4T engines the decay of oil characteristics as well as some consumption is 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 avoid problems, it is advisable to control oil level every time the vehicle is used.



Engine oil level check (03_02)

Every time the vehicle is used, a visual check should be made on the level of the engine oil when the engine is cold. The oil level should be somewhere between the **MAX** and **MIN** index marks on the level bar; the check must be made with the vehicle upright, resting on the centre stand.

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

CAUTION



RUNNING THE ENGINE WITH INSUFFICIENT LUBRICATION OR WITH THE IN-ADEQUATE LUBRICANTS ACCELERATES WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE IRRETRIEVABLE DAMAGE.

Characteristic

Engine oil

~ 850 cm³

Engine oil top-up

Always check oil level before carrying out top-ups and add oil **without exceeding the MAX level**. An engine oil check-up and top-up should be carried out every 3,000 km at an **Authorised Piaggio Service Centre**.





Engine oil change (03_03, 03_04, 03_05)

Change oil and clean the filter after every 6,000 km at an **Authorised Service Centre**. Empty the engine by draining the oil through drainage cap **«C»** with a cold engine. First unscrew the cap-dipstick used to check engine oil level, then cap **«C»** and take out the mesh filter. After cleaning and mounting again the mesh filter, screw cap **«C»** and fill with oil the hole of the cap-dipstick used to check engine oil level. Then start the vehicle, leave it running for a few minutes and switch it off: 5 minutes later check oil level and, if necessary, add oil **without exceeding the MAX level**. Only use new oil of the recommend type for oil top-ups and change.

CAUTION



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

Recommended products

eni i-Ride PG 5W-40

Synthetic based lubricant for high-performance four-stroke engines. JASO MA, MA2 - API SL - ACEA A3





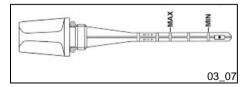
Hub oil level (03_06, 03_07)

Check that there is oil in the rear hub; the oil in an upright vehicle should barely reach the notch of the dipstick (A).

CAUTION



RUNNING THE ENGINE WITH INSUFFICIENT LUBRICATION OR WITH THE IN-ADEQUATE LUBRICANTS ACCELERATES WEAR AND TEAR OF THE MOVING PARTS AND CAN CAUSE IRRETRIEVABLE DAMAGE.



CAUTION



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

N.B.

THE NOTCHES ON THE HUB OIL LEVEL DIPSTICK, EXCEPT THE ONE INDI-CATING THE MAXIMUM AND MINIMUM LEVEL, REFER TO OTHER MODELS BY THE MANUFACTURER AND HAVE NO SPECIFIC FUNCTION FOR THIS MODEL.

Recommended products

Lubricant for gearboxes and transmissions

Lubricant for gearboxes and transmissions. SAE 80W/90, API GL4 - API GL5

Characteristic

Rear hub oil

approx. 85 cm³

Tyres (03_08)

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

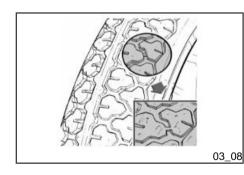
Tyres are fitted with wear indicators; tyres should be replaced as soon as these indicators become visible on the tyre tread. Also check that the tyres do not show signs of splitting at the sides or irregular tread wear; If this occurs, go to an authorised workshop or at least a workshop adequately equipped to remove and refit tyres.

CAUTION



TYRE PRESSURE SHOULD BE CHECKED WHEN TYRES ARE COLD.INCOR-RECT TYRE PRESSURE CAUSES ABNORMAL TYRE WEAR AND MAKES RID-ING DANGEROUS.

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



TYRES		
Front tyre	120/70 - 12" Tubeless	
Rear tyre	120/70 - 12" Tubeless	

TYRE INFLATION PRESSURE

Front tyre pressure	1.8 bar
Rear tyre pressure (with passenger)	2.0 bar (2.3 bar)



Spark plug dismantlement (03_09, 03_10)

In order to inspect the spark plug, follow the operation described when the engine is cold:

- 1. Remove cover «A» after unscrewing the corresponding screws
- 2. Detach the spark plug cap;
- 3. Remove the spark plug with the supplied spanner (with retaining rubber).

To refit, repeat the procedure in reverse order using the spanner to insert the spark plug or to tighten it in its seat. Care should be taken to installing and fixing it with correct inclination.

To reassemble the cover follow the steps in reverse order, making sure to insert the pins in the appropriate seats.



WARNING



THE SPARK PLUG MUST BE REMOVED WHEN THE ENGINE IS COLD. THE USE OF A SPARK PLUG WITH THERMAL GRADE OR THREAD OTHER THAN THE INDICATED TYPE (SEE «DATA» SECTION) CAN SERIOUSLY DAMAGE THE EN-GINE. REPLACE SPARK PLUGS AT THE INTERVALS INDICATED IN THE SCHEDULED MAINTENANCE TABLE.

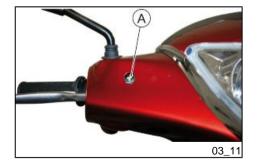
N.B.

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

Characteristic

Spark plug

NGK ER9EH-6N

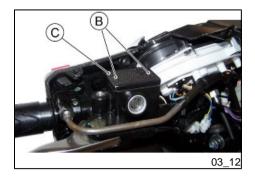


Checking the brake oil level (03_11, 03_12)

The brake fluid reservoir is equipped with a sight glass **«A»** made of transparent material; the quantity of liquid contained in the sight glass indicates the level of liquid in the reservoir.

When the sight glass **«A**» is full, the level inside the reservoir exceeds the MIN level; when it is partially full, the level drops to the MIN level; when it is fully empty, the level of fluid in the reservoir is below the MIN level.

The brake fluid level may fall due to wear on the brake pads. In case the pad wear is below the minimum mark, contact an **Authorised Service Centre** to have the braking system thoroughly checked. If you need to top up the level, follow the steps listed below. Unscrew the 2 screws **«B»**, remove the reservoir cap **«C »** and pour in the required quantity of fluid (the brake fluid level must be above minimum). Place the handlebar in the riding position and pay attention not to tilt the vehicle in order to keep the brake fluid reservoir in horizontal position when checking the fluid level.



CAUTION



THE SYSTEM MUST ONLY BE TOPPED UP WITH DOT4 TYPE BRAKE FLUID.

WARNING



IN NORMAL CLIMATIC CONDITIONS IT IS ADVISABLE TO REPLACE THE ABOVE-MENTIONED FLUID EVERY 2 YEAR. NEVER USE BRAKE FLUID CON-TAINED IN CONTAINERS WHICH ARE ALREADY OPEN OR PARTIALLY USED.

CAUTION



THE BRAKING CIRCUIT FLUID IS HIGHLY CORROSIVE. THEREFORE, WHEN TOPPING UP, AVOID LETTING IT COME INTO CONTACT WITH THE PAINTED PARTS OF THE VEHICLE. THE BRAKING CIRCUIT FLUID IS HYGROSCOPIC, THAT IS, IT ABSORBS HUMIDITY FROM THE SURROUNDING AIR. IF MOISTURE CONTAINED IN THE BRAKE FLUID EXCEEDS A CERTAIN VALUE, THIS WILL RESULT IN INEFFICIENT BRAKING.



Battery (03_13)

To have access to the battery it is necessary to open the front case and remove access door to the battery by unscrewing the two star-shaped screws as shown in the picture

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

WARNING



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

CAUTION



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

CAUTION



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

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 vehicle'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 CASE OF ACCIDENTAL CONTACT, RINSE WITH ABUNDANT WATER AND CONSULT A DOCTOR.

Long periods of inactivity

Battery performance will be poor if the vehicle is not used for a long time. This is the result of the natural phenomenon of battery discharging, and may be due to residual absorption by vehicle components with constant power consumption. Poor battery performance may also be due to environmental conditions and the cleanliness of the poles. In order to avoid difficult starts and/or irreversible damage to the battery, follow any of these steps:

- At least once a month start 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 OPERA-TION SAFELY. WHEN REFITTING THE BATTERY MAKE SURE THE LEADS ARE CORRECTLY CONNECTED TO THE TERMINALS. WARNING



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

WARNING



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



Fuses (03_14, 03_15, 03_16, 03_17)

The electrical system is protected by a 15A fuse **«1»** located next to the battery; from a 10A fuse and a 7.5 A fuse. The two above mentioned fuses are located under the front grill. To reach them:

- remove the PIAGGIO clip-on badge «A»;
- unscrew and remove the screw «B»;
- remove the grill **«C**».

CAUTION



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



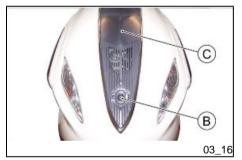
CAUTION



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

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

Fuse No. 1	Capacity: 15A Location:battery compartment.
	Protected circuits: general.
Fuse No. 2	Capacity: 10A
	Location: front part.
	Protected circuits: electronic ignition device.
Fuse No. 3	Capacity: 7.5 A
	Location:front part
	Protected circuits: fuel gauge, horn, stop light, starter button, instrument panel.

BULBS

High/low beam light bulb	Type : Halogen (H4)
	Power : 12V - 35/35W
	Quantity: 1
Front side light bulb	Type: All glass
	Power: 12V - 5W

Quantity: 1 RHS + 1 LHS

Front turn indicator light bulb	Type: Spherical
	Power: 12V - 10W
	Quantity: 1 RHS + 1 LHS
Rear turn indicator light bulb	Type: Spherical
	Power: 12V - 10W
	Quantity: 1 RHS + 1 LHS
Stop and tail light bulb	Type: Spherical
	Power: 12V 21/5W
	Quantity: 1
12V - 1.7W warning light bulbs	Type: All glass
	Function: turn indicators
	Quantity: 2
12V - 1.7W warning light bulbs	Type: All glass
	Function: Lights, high-beam, oil pressure, injection
	Quantity: 4
Instrument panel lighting bulbs	Type: All glass
	Power: 12V 1.7W
	Quantity: 2
License plate bulb	Type: ALL GLASS

Power: 12V - 5W

Quantity: 1





Front light group (03_18, 03_19, 03_20, 03_21, 03_22, 03_23, 03_24)

To access the headlight bulbs, remove the front of the handlebar cover, as follows:

1) Remove the rear-view mirrors; for this operation follow the instructions described and illustrated in the «Rear-view mirrors» section.

2) Unscrew the 3 screws holding the handlebar cover. The front central one (B^{a}) and the rear 2 (C^{a}) .

3) Remove the crankcase cover «D» and undo the two screws « E».

4) Remove the connector «F».

5) Remove the handlebar cover to reach the headlight and the bulbs.

Once this is done, the handlebar cover can be removed.

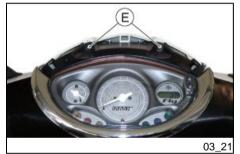
N.B.

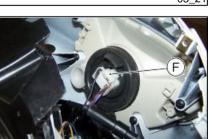
IF MISTING IS NOTICED ON THE INSIDE OF THE HEADLAMP GLASS, THIS DOES NOT INDICATE A FAULT AND IS ATTRIBUTABLE TO HUMIDITY AND/OR TO LOW TEMPERATURES.

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

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





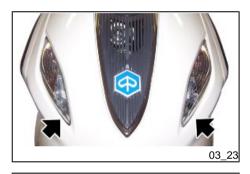


03_22

CAUTION



DO NOT PLACE, TRANSPORT OBJECTS AND/OR CLOTHES OVER THE FRONT HEADLIGHT ASSEMBLY, WHEN THE HEADLIGHT IS TURNED ON OR OFF. FAILURE TO FOLLOW THIS PRECAUTION MAY CAUSE OVERHEATING AND THE SUBSEQUENT FUSION OF THE GLASS.



Daylights

To replace the lamp position open the front case, remove the bulb holder from the seat; gently pull the lamp. To refit, proceed in reverse order.

Electric characteristic

Bulbs

n.1 bulb 12V-35/35W for high- and low beam light

n.2 bulbs 12V-5W for daylight running lights





Headlight adjustment (03_25, 03_26)

Proceed as follows:

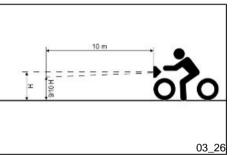
1. Place the vehicle in running order and with the tyres inflated to the prescribed pressure, on a flat surface 10 m away from a white screen situated in a shaded area, making sure that the longitudinal axis of the vehicle is perpendicular to the screen;

2. Turn on the headlight and check that the borderline of the projected light beam on the screen is no higher than 9/10 or lower than 7/10 of the distance from the ground to the centre of the vehicle's headlamp;

3. If otherwise, adjust the right headlight with screw «A».

N.B.

THE ABOVE PROCEDURE COMPLIES WITH THE EUROPEAN STANDARDS RE-GARDING MAXIMUM AND MINIMUM HEIGHT OF LIGHT BEAMS. REFER TO THE STATUTORY REGULATIONS IN FORCE IN EVERY COUNTRY WHERE THE VE-HICLE IS USED.





Front direction indicators (03_27, 03_28)

To replace the bulbs of the turn indicators, open the front case, remove the bulb holder from the seat; gently turn the bulb around 30° and remove it. Follow the process in reverse order to refit.







In order to reach the rear light bulb, remove the helmet compartment by loosening the 6 fixing screws. Gently push and turn the bulb about 30° and then remove it. To refit follow the same steps but in reverse order.

WARNING

FOR REPLACEMENT OF THE TURN INDICATOR BULBS PLEASE SEE AN AU-THORISED SERVICE CENTRE.

N.B.

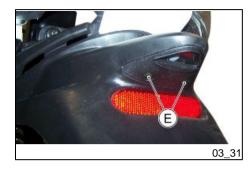
IF MISTING IS NOTICED ON THE INSIDE OF THE HEADLAMP GLASS, THIS DOES NOT INDICATE A FAULT AND IS ATTRIBUTABLE TO HUMIDITY AND/OR TO LOW TEMPERATURES.

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

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



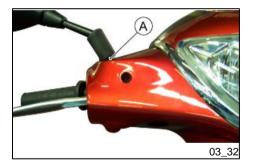




Number plate light (03_31)

Remove the tail light by operating on the fixing screws «E».

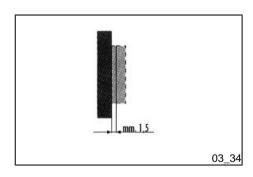
Remove the bulb holder from the seat; gently pull the lamp. To refit, proceed in reverse order.



Rear-view mirrors (03_32, 03_33)

To adjust mirrors, loosen lock nut **«A»**, place the mirror stem adequately and tighten the lock nut. The rear-view mirror is assembled on a stem with a ball 'joint'. The mirror can be adjusted manually to the desired position.





Front disc brake (03_34)

The brake disc and pad wear is automatically compensated, therefore it has no effect on the functioning of the front and rear brakes. For this reason it is not necessary to adjust the brakes. An excessively elastic brake lever stroke may indicate the presence of air in the braking circuit or an irregular brake operation. In this case, particularly considering the importance of the brakes in terms of safety, it is strongly recommended that you take the vehicle to an **Authorised Service Centre** as soon as possible for the appropriate checks.

WARNING



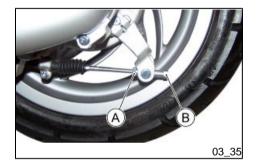
CHECK BRAKE PADS FOR WEAR ON A REGULAR BASIS (AS INDICATED IN THE SCHEDULE MAINTENANCE TABLES). IF THE THICKNESS OF ONE OR BOTH PADS IS IN THE REGION OF 1.5 MM, BOTH PADS MUST BE CHANGED. IT IS RECOMMENDED TO CARRY OUT THIS OPERATION AT AN AUTHORISED SERVICE CENTRE AS SOON AS POSSIBLE.

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

CAUTION



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



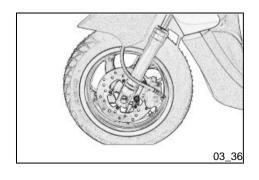
Rear drum brake (03_35)

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

CAUTION



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



Puncture (03_36)

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

Periods of inactivity

We recommend carrying out the following operations:

1. General cleaning of the vehicle.

2 - With the engine off and the piston at bottom dead centre position, remove the spark plug and pour $1\div 2$ cc of motor oil through its hole. Operate the starter motor 3-4 times letting the engine perform a few revolutions, then remount the spark plug.

3 - Drain up all the vehicle's fuel; spread antirust grease on the uncoated metal parts; keep the wheels lifted above the ground.

4 - For the battery, follow the procedures described in the «Battery» section.

5 - Replace engine oil.

Recommended products

Synthetic oil for 4-stroke engines

Synthetic-based lubricant for four stroke engines. SAE 5W-40, API SL, ACEA A3, JASO MA

Cleaning the vehicle

Use a low pressure jet of water to soften the caked dirt and mud deposited on the painted surfaces. Once softened, sponge off mud and dirt using a car body sponge soaked in a car body shampoo and water solution (2-4% of car shampoo in water). Then rinse with abundant water, and dry with a shammy cloth. For the engine exterior, use petrol, a brush and clean cloths. Petrol can damage paintwork. Remember that any polishing with silicone wax must always be preceded by washing.

WARNING



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

Environmental / seasonal conditions: use of salt, de-icer chemical products on the road in winter.

· Air pollution: city and/or industrial areas.

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

WARNING



. Avoid that deposits remain on the bodywork, industrial and pollutant residual dust, tar spots, dead insects, bird droppings, etc.

 \cdot Do not park the vehicle under the trees. In some seasons, as from the trees may fall residues, resins, fruits or leaves that contain chemicals which are harmful to the paintwork.

CAUTION



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



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

WARNING



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

• ONLY USE FAN SPRAY JETS.

• DO NOT PLACE THE WATER JET NOZZLE CLOSER THAN 60 CM.

• DO NOT USE WATER AT TEMPERATURES OVER 40°C.

• DO NOT DIRECT THE JET AT THE THROTTLE BODY, THE ELECTRIC CABLES, THE COOLING SLITS IN THE TRANSMISSION COVER AND THE SPIRAL COVER.

DIFFICULT STARTING

No fuel in tank	Refuel
Filters, jets or carburettor body dirty or clogged.	Contact an Authorised Service Centre.
Insufficient battery charge	Kick-start. Recharge the battery.

IGNITION PROBLEMS

the presence of high voltage, this pro- check should only be carried out by an expert.	ake sure the electrodes are operly adjusted. Check that they e (clean with pure petrol and a etal brush or with emery cloth). heck the spark plug insulator: eplace the spark plug if the sulator is cracked or broken. If e spark plug is in good inditions, contact an Authorised ervice Centre.
---	--

LACK OF COMPRESSION

Spark plug loose. Loose cylinder	Contact an Authorised Service
head, worn piston retaining rings.	Centre.

HIGH CONSUMPTION AND LOW PERFORMANCE

Air filter blocked or dirty.

Clean with water and shampoo and impregnate with petrol and specific oil («Air filter removal» section)

INEFFICIENT BRAKING

Oil on drum or disc. Worn Pads/	Contact an Authorised Service
Shoes	Centre
incorrect rear brake adjustment	Adjust

INEFFICIENT SUSPENSION

Inefficient shock absorbers, oil Contact an Authorised Service leakage, deteriorated end of stroke Centre buffers.

AUTOMATIC TRANSMISSION PROBLEMS

Deteriorated roller housing or belt. Contact an Authorised Service Centre.

STAND DOES NOT RETURN TO POSITION

Presence of dirt

Clean and grease

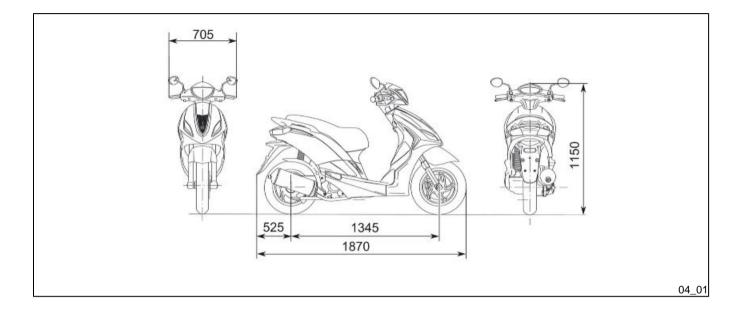
STARTER LEVER DOES NOT RETURN TO CORRECT POSITION

Presence of dirt

Clean and grease



Chap. 04 Technical data



ENGINE SPECIFICATIONS

Туре	single-cylinder, four-stroke and four-valve, air-cooled engine
Cubic capacity	49.93 cm ³
Bore	39 mm
Stroke	41.8 mm

Max. power	3.2 kW at 8250 rpm
MAX. torque	3.8 Nm at 7,750 rpm
Compression ratio	11.5 - 12.5 1
Timing system	single overhead camshaft, chain- driven, on the left-hand side, three- arm rocking levers set up with threaded set screw
Valve clearance	Intake: 0.10 mm Exhaust: 0.15 mm
Spark plug	NGK ER9EH-N
CARBURETTOR	depression type, KEIHIN NCV ø 20
Cooling	Forced-air circulation cooling.
Lubrication	Wet crankcase
Starter	Starter and kick starter
Gearbox	Continuously variable transmission with torque server
Clutch	Automatic centrifugal dry clutch
Fuel	Unleaded petrol

VEHICLE SPECIFICATIONS

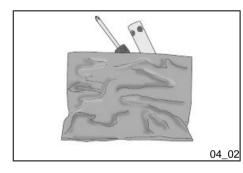
Chassis	Tubular steel frame
Front suspension	Hydraulic telescopic fork with Ø 32- mm stem, 76 mm travel.
Rear suspension	Hydraulic single shock absorber, 73 mm stroke.

Front brake	Disc brake (Ø 220 mm) with hydraulic control (lever on the far right of the handlebar) and floating calliper.
Rear brake	Ø 140-mm drum brake with mechanical control activated by the handlebar left-side lever.
Wheel rim type	Light alloy wheel rims.
Front wheel rim	12" x 3.00
Rear wheel rim	12" x 3.00
Front tyre	120/70 - 12" Tubeless
Rear tyre	120/70 - 12" Tubeless
Front tyre pressure (with passenger)	1.8 bar (- bar)
Rear tyre pressure (with passenger)	2 bar (2.3 bar)
Kerb weight	116 kg
Maximum weight allowed	305 kg
Battery	Sealed, 12 V / 6 Ah

CAPACITY

Engine oil	~ 850 cm ³
Transmission oil	approx. 85 cm ³

Fuel tank capacity



Toolkit (04_02)

The toolkit includes:

- 1. Box-spanner to extract the spark plug;
- 2. Twin screwdriver;
- 3. An open spanner (13 mm);
- 4. One torx wrench T30
- 5. One torx wrench T25

The toolkit plastic pouch is fastened to the saddle with a clamp. To take it out, just push the tabs at the same time you loosen the clamp.

4 Technical data



Chap. 05 Spare parts and accessories



Warnings (05_01)

WARNING



IT IS RECOMMENDED THAT "ORIGINAL PIAGGIO SPARE PARTS" BE USED, AS THESE ARE THE ONLY ONES OFFERING YOU THE SAME QUALITY AS-SURANCE AS THOSE INITIALLY FITTED ON THE VEHICLE.

IT SHOULD BE REMEMBERED THAT USING NON-ORIGINAL SPARE PARTS CAUSES YOUR WARRANTY RIGHTS TO EXPIRE.

WARNING

$\land \land$

PIAGGIO MARKETS ITS OWN LINE OF ACCESSORIES THAT ARE RECOG-NISED AND GUARANTEED FOR USE. IT IS THEREFORE ESSENTIAL TO CON-TACT AN AUTHORISED DEALER OR SERVICE CENTRE IN ORDER TO CHOOSE AND FIT ACCESSORIES CORRECTLY. THE USE OF NON-ORIGINAL ACCES-SORIES MAY AFFECT THE STABILITY AND OPERATION OF YOUR VEHICLE AND REDUCE SAFETY LEVELS WITH POTENTIAL RISKS FOR THE RIDER.



Chap. 06 Scheduled maintenance



Scheduled servicing table (06_01)

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.

It is indispensable to have your vehicle serviced to the prescribed intervals of time, even if you have not reached the predicted mileage. Punctual vehicle servicing is necessary for the correct use of the guarantee. For any further information concerning Warranty procedures and 'Scheduled Maintenance', please refer to the 'Warranty Booklet'.

Km x 1000	1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
Safety fasteners	I				I				I				I				Ι				I
Spark plug			R		R		R		R		R		R		R		R		R		R
Drive belt			I		R		I		R		I		R		I		R		Ι		R
Throttle control	A				A				A				А				А				A
Tyre condition and wear					I				I				I				I				I
Air filter					С				С				С				С				С
Oil filter (mesh)			С		С		С		С		С		С		С		С		С		С
Solenoid filter			С		С		С		С		С		С		С		С		С		С
Valve clearance	I				I				I				I				I				I

SCHEDULED MAINTENANCE TABLE

Km x 1000	1	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
Electrical system and battery	I		I		I		I		I		I		I		I		I		I		I
Cylinder ventilation system									I								I				
Brake levers	L				L				L				L				L				L
Brake oil level (*)	Ι		I		I		I		I		I		I		I		I		I		I
Hub oil level	R		I		R		I		R		I		R		I		R		I		R
Engine oil	R	Ι	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R
Brake Pads/Shoes	Ι		I		I		I		I		I		I		I		I		I		I
Tyre pressure	Ι		I		I		I		I		I		I		I		I		I		I
Headlight					А				Α				Α				Α				Α
Vehicle road test	Ι		I		I		I		I		I		I		I		I		I		I
Idle speed	А				А				Α				Α				Α				Α
Odometer gear					L				L				L				L				L
CVT rollers			I		R		I		R		I		R		I		R		I		R
Suspension					I				I				I				I				I
Steering	А				А				Α				Α				Α				Α
Transmission					L				L				L				L				L

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

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

* Replace every 2 years

RECOMMENDED PRODUCTS TABLE

Product	Description	Specifications
AGIP GEAR SAE 80W-90	Lubricant for gearboxes and transmissions.	API GL-4
AGIP BRAKE 4	Brake fluid.	Synthetic fluid SAE J 1703 -FMVSS 116 - DOT 3/4 - ISO 4925 - CUNA NC 956 DOT 4
eni i-Ride PG 5W-40	Synthetic based lubricant for high-performance four-stroke engines.	JASO MA, MA2 - API SL - ACEA A3
AGIP FILTER OIL	Special product for the treatment of foam filters.	-
AGIP GREASE MU3	Yellow-brown, lithium-base, medium-fibre multipurpose grease.	ISO L-X-BCHA 3 - DIN 51 825 K3K -20
AGIP GP 330	Water repellent stringy calcium spray grease.	R.I.D./A.D.R. 2 10°b) 2 R.I.Na. 2.42 - I.A.T.A. 2 - I.M.D.G. class 2 UN 1950 Page 9022 EM 25-89

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

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