

## 2 OPERATION

Gradually open and close the throttle, to avoid spinning or skidding the rear wheel. On rough road surfaces, slow down and ride with particular care.

Avoid wide open throttle accelerations, unless they are necessary for passing.

Remember that excessively aggressive cornering can cause your motorscooter's tires to lose traction, which can result in an upset and serious injury or even death.

Always observe posted and statutory speed limits, but do not assume that you can ride as fast as the speed limit allows under all road conditions. Slowing down a little can greatly increase your safety under all road conditions.

Do not ride your motorscooter off road.

Do not tamper with the muffler system or the emissions control system of your motorscooter. This is not only bad for the environment, it can subject you to serious penalties.

### CLOTHING

Before riding your motorscooter, ensure that your riding gear is in good condition.

Your helmet must fit properly, and the visor or other eye protection must be clean.

Both research and experience have shown that drivers of other motorvehicles often do not see motorcycles riders. In order to make yourself more conspicuous to these drivers, wear bright reflective clothing, such as a reflective vest, or clothing with reflective sections sewn into the jacket, pants and gloves. Be particularly

aware of approaching automobiles and trucks that might be trying to turn left in front of you. Many motorcycle accidents are caused by an opposing automobile driver making a left turn without warning in front of the motorscooter.

Inevitably, the driver will look right at you, and yet swear that they did not see you before they turned directly into your path. Stay alert!

Wear protective clothing, preferably in light and/or reflecting colors. In this way you will make yourself more visible to the other drivers, thus notably reducing the risk of being hit, and you will be more protected in case of such an incident.

Always wear your helmet. Many accidents are fatal because of injuries to the head.

## BASIC SAFETY RULES 2.5

An open-face helmet offers some protection, but a full-face helmet offers more. Regardless of the style, look for a DOT (Department of Transportation) sticker in any helmet you buy (USA only), and always wear a face shield or goggles to protect your eyes and help your vision.

### ADDITIONAL RIDING GEAR

In addition to a helmet and eye protection, we also recommend:

- Sturdy boots with non-slip soles to help protect your feet and ankles.
- Leather gloves to keep your hands warm and help prevent blisters, cuts, burns and bruises.
- A motorscooter riding suit or jacket for comfort as well as protection. Bright-colored and reflective clothing can help make you more noticeable in traffic. Be sure to avoid loose clothes that could get caught on any part of your motorscooter.

Clothing should be very tight-fitting and fastened at the wrists and ankles. Strings, belts and ties should not be hanging loose; prevent these and other objects from interfering with driving by getting entangled with moving parts or driving mechanisms.

Do not carry sharp objects in your pockets that could be dangerous in case of an upset. For example, pens or mechanical pencils, etc. Also, make sure that your passengers follow this recommendation.

## 2 OPERATION

### ACCESSORIES

The owner of the motorscooter is responsible for the choice, installation and use of any accessory.

The installation of inappropriate accessories or the overloading of the motorscooter may result in the instability of the motorscooter itself and cause accidents with consequent risk of serious injuries or even death. Windshields, in particular, can be dangerous, as they can break and injure the rider or passenger in case of an accident. If you have any doubt with regard to any accessory you would like to install, or any load you would like to carry, consult your local Vespa Dealer beforehand. Avoid installing accessories that cover horns or lights, or that could impair their functions. Don't install accessories that limit the suspension stroke or the steering angle, that interfere with the opera-

tions of the controls, or that reduce the scooter's lean angle in turns. Also, don't install accessories that could hamper your access to the various controls, since this could prolong reaction time during an emergency.

Fairings and windshields, or any other accessory that presents a considerable cross section, may produce aerodynamic forces that will affect the stability of the motorscooter, particularly at high speeds or in cross winds.

Make sure that anything carried on your motorscooter is securely attached, and cannot come loose and jam the wheels, forks, etc.

Do not install any electrical accessories, and do not modify the electrical system of your motorscooter. Anything that could cause an electrical overload or other fault could cause the motorscooter to suddenly stop,

the lights to dim or fail, or the horn and other safety accessories not to work. Use only Piaggio genuine accessories.

### LOAD

Do not overload your motorscooter. Attach luggage or packages as closely as possible to the center of your motorscooter and distribute the load from side to side as evenly as possible, to keep imbalance to a minimum. Remember that loads tend to loosen with riding, so frequently check the security of your load.

Do not hang anything from your motorscooter handlebar, fenders, or forks, because this will upset the handling of your motorscooter, and could prevent you from avoiding an accident.

## BASIC SAFETY RULES 2.5

Failure to heed this warning can lead to an upset with subsequent serious injury or even death. Do not ride with your crash helmet hung from the strap because it could easily become entangled with the wheels, fenders, or forks, causing an upset and subsequent serious injury or even death. When carrying a passenger, remember that your motorscooter's handling is degraded, that the brakes are less efficient, and the center of gravity is higher and further to the rear.

This makes it more likely that the front wheel will come up off the ground, especially on acceleration. Therefore, you should avoid hard acceleration and hard braking. Many accidents are caused by inexperienced riders carrying passengers.

Remember that allowance must be made for the extra weight of the pas-

senger for all driving maneuvers.

Avoid abrupt and excessive acceleration.

Always slow down in time and calculate longer stopping and maneuvering distances. Non-compliance with these instructions may lead to the overturning of the motorscooter or to other accidents with consequent serious injuries or even death. Never carry loosely packaged items and make sure that everything that you carry on your motorscooter is carefully secured.

Do not carry packages which protrude from the luggage rack or which cover any of the signal lights, the headlight, or the horn.

Children or animals must not be carried anywhere on your motorscooter. Overloading your motorscooter seriously reduces its stability and maneuverability and can lead to an upset with subsequent serious injury or death.

## 3 MAINTENANCE

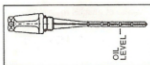


Fig. 1

The rear hub oil content is 5 oz. with the motorscooter perfectly upright on its stand.

The rear hub oil checking shall be performed as follows:

- 1) Place the vehicle on its stand on a level surface.
- 2) Unscrew the dipstick, dry it with a clean rag and then rescrew it completely.
- 3) Unscrew the dipstick and check that the oil level reaches the notch as indicated in Fig. 1.
- 4) Rescrew the dipstick completely.

The notches on the hub oil dipstick other than those shown in Fig. 1 refer

to different vehicle models, so they are not significant on this vehicle.

Oil type:  
**TUTELA ZC 90.**

### CAUTION

Running your motorscooter with insufficient or unsuitable oil in the rear hub causes rapid wear of the moving parts, and can result in irreparable damage. It can also result in a seizure, which can lead to an upset, with subsequent serious accident, injury, or even death.

Used oil is harmful for the environment. We recommend taking the scooter to an **Authorized Piaggio/Vespa Service Center** for oil changes. Our service centers are properly equipped for the disposal of used oil respecting the environment and in compliance with the law.

## REAR HUB OIL LEVEL 3.1



Fig. 1

### TIRE PRESSURE

**FRONT: 1.3 bar (18.9 psi)**

**REAR: 1.8 bar (26.1 psi)**

**with passenger**

**FRONT: 1.6 bar (23.2 psi)**

**REAR: 2.0 bar (29 psi)**

## 3 MAINTENANCE

Periodically check the inflation pressure of the front and rear tires.

The tires have tread wear indicators and must be replaced as soon as the indicators are visible on the tread (see Fig. 1). Check also for cuts on the tire walls and uneven tread wear. Piaggio recommend you have tires changed by your local Vespa Dealer or by an Authorized Vespa/Piaggio Service Center.

### TIRE REPAIR

If a tire is punctured or damaged, you should replace it not repair it. As discussed below, a tire that is repaired, either temporarily or permanently, will have lower speed and performance limits than a new tire.

A temporary repair, such as an external tubeless tire plug, may not be safe for normal speeds and riding conditions. If a temporary or emergency

repair is made to a tire, you should ride slowly and cautiously to a Service Center and have the tire replaced.

If possible, you should not carry a passenger or cargo until a new tire is installed.

Even when a tire is professionally repaired with a permanent internal patch plug, it will not be as good as a new tire. In addition, you may not be able to safely carry as much weight as with a new tire. Therefore, we strongly recommend that you replace a damaged tire. If you choose to have a tire repaired, be sure the wheel is balanced before you ride.

### WARNING

Using tires that are excessively worn or improperly inflated can cause an accident in which you can be seriously hurt or killed. Follow all instructions in this owner's manual regarding tire

inflation and maintenance. Piaggio recommends you to always use original tires as replacement.

### WARNING

Incorrect tire inflation pressure causes uneven tread wear and will make your scooter unstable and potentially dangerous. You must never ride a scooter on a tire with a tread depth of less than 0.1 in (2 mm). Do not use the scooter if the tire wear indicators show that the tire is worn out.

There are several kinds of treadwear indicators. For information on how to check the wear, see your Piaggio dealer. However, if the tires appear to you to be worn out, they certainly are, and should be changed.

## TIRES 3.2

## 3 MAINTENANCE



Fig. 1

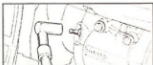


Fig. 2

### SPARK PLUG

Remove cover «A» by unscrewing the relevant screw. Remove the plug lead and unscrew the plug with the supplied spark plug wrench (fig. 2).

When refitting the plug it should be hand-tightened initially. Be sure to engage the threads properly by holding the plug at the correct angle. Use the spark plug wrench to tighten the plug fully.

Refit the shielded plug cap carefully.

If you need to access the spark plug when the engine is hot, to avoid the risk of burning the hands work from above by tipping open the saddle and removing the helmet compartment.

Refit the cover, taking care to engage the interlocking tabs in the lower part of the body panel, and secure with the screw.



### CAUTION

The spark plug should be removed only when the engine is cold and wearing protective gloves.

The use of spark plugs with a heat range other than the prescribed type or with incorrect thread size can result in serious damage to the engine.



### CAUTION

Replacement or removal of the spark plug can result in faults if the plug is incorrectly tightened in the cylinder head. You should always check tightening torque and/or refer to an Authorized Piaggio/Vespa Service Center to avoid the risk of seizure.

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## REMOVING THE SPARK PLUG AND AIR FILTER 3.3



Fig. 3

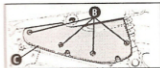


Fig. 4

### AIR FILTER

Disassemble left hand lower side panel (fig. 3), unscrew the 4 fixing screws «A» (fig. 4) and the 2 knobs (accessible by tipping the saddle and removing the helmet compartment), remove air cleaner plug «C» and withdraw the filter element. Remove the filter, wash it in water and detergent, and dry it with compressed air. Treat the filter with a proprietary air filter oil (see par. 7.2). After you have applied the oil, squeeze the filter to eliminate excess oil, and leave it to dry before refitting it to your motorscooter.



### CAUTION

Be sure to renew the cover O-ring and tighten the screws carefully to avoid the risk of seizure.

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## 3 MAINTENANCE

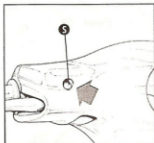


Fig. 1

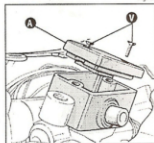


Fig. 2

The brake fluid reservoir is equipped with a sight glass «S» (located behind the aperture in the front right hand side of the handlebar fairing).

The sight glass shows the level in the reservoir.

With sight glass «S» completely covered with fluid, the level is above MIN. If the level drops, even slightly, the fluid level is considered MIN. If no fluid is visible through the sight glass, the fluid level is below MIN.

The brake fluid level may fall due to wear of the brake pads. We recommend to bring the scooter to an **Authorized Piaggio/Vespa Service Center** for a general check-up of the brakes.

If you need to top up the level, remove the handlebar fairing as described on pages 56, unscrew the two screws «V», remove the reservoir

cap «A» (fig. 2) and pour in the required quantity of fluid (the brake fluid level must be above minimum). Check the level with the handlebars straight and the motorscooter perfectly level.

When refitting, make sure to properly tighten the two screws «V» of the brake fluid reservoir cap.

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### BRAKE FLUID LEVEL 3.4

#### CAUTION

When topping up brake fluid use exclusively DOT 4 class products. Recommended brake fluid is **TUTELA TOP 4**.

#### CAUTION

Brake fluid is highly corrosive. If it comes into contact with painted parts of the motorscooter, wash off immediately with clean water.


#### CAUTION

In temperate climates, brake fluid should be changed every two years. Do not use fluid from previously opened or part-empty containers.

#### CAUTION

Brake fluid tends to absorb moisture from the air. If the brake fluid in the circuit contains excess moisture, braking efficiency will be impaired.

#### CAUTION

Always use synthetic brake fluid (identified by the marking  on the container). Mineral type brake fluid will damage the rubber seals on the brake circuit and must not be used on any account.

## 3 MAINTENANCE



### BRAKES WARNING

Do not ride your vehicle with worn or malfunctioning brakes! The brakes are the most important safety system of your vehicle. Using the motorscooter with brakes that are anything less than perfect is very likely to lead to a collision or upset, with consequent risk of serious injury or death.

Check the brake pad wear, as shown on p. 61 (CHECKING THE BRAKE PAD WEAR). Have your brakes serviced by your Local Vespa Dealer.

☉ Check the brake shoe wear, as shown on p. 63. Have your brakes serviced by your local Vespa Dealer or Authorized Piaggio/Vespa Service Center.



### WARNING

Wet conditions seriously degrade the performance of your brakes. When the road is wet from rain, you should plan to use double the normal stopping distances since both the brakes themselves and the traction of the tires on the road are reduced by the presence of water.

Water on the brakes from washing your vehicle, or splashed up from wet roads, or crossing puddles or ditches, can wet the brakes sufficiently to greatly reduce their effectiveness. Whenever the brakes have become wet, always dry them by gently applying the brakes, repeatedly, until the heat causes the brakes to dry, and full brake function is restored.

Failure to follow this procedure can lead to loss of brake effectiveness and a serious accident.

### NOTE

This vehicle is equipped with front disc and rear drum brakes.

The following information may refer to just one braking system but should be observed with regard to both brakes.



### WARNING

The brakes are extremely important for your safety. Do not use the vehicle if the brakes do not work perfectly. Always check the brake efficiency before riding.

## BRAKE FLUID LEVEL 3.4



### WARNING

If the "feel" or position of the brake lever changes, this may be due to some problem in the hydraulic brake system. If you have any doubt regarding the perfect functioning of your brake system, or if the normal pre-ride checks indicate any discrepancy we recommend to contact your local Vespa Dealer or Authorized Piaggio/Vespa Service Center before riding.



### WARNING

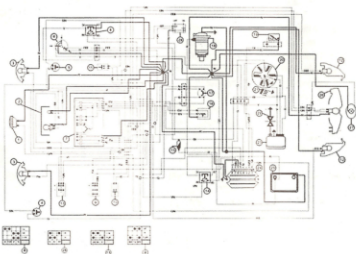
Pay special attention to the brake disc and friction material, making sure that they are neither dirty nor oily, especially after maintenance operations or inspections.

Check the brake line, make sure that it is not twisted or crimped, nor leaking.

KEEP AWAY FROM CHILDREN.

DISPOSE OF USED BRAKE FLUID PROPERLY. SEE THE GENERAL WARNINGS ON PAGE 7 (BRAKE FLUID).

## 3 MAINTENANCE



**WIRE COLOR CODING:** B=White - BI=Blue - G=Yellow - M=Brown - N=Black - BV=White-Green - GN=Yellow-Black - GR=Grey - Rs=Pink - R=Red - VI=Purple - V=Green - VN=Green-Black - BN=White-Black - BBI=White-Blue - GV=Yellow-Green - A=Orange - GRBI=Grey-Blue - GrN=Grey-Black - BR=White-Red - RN=Red-Black - GR=Yellow-Red - BIN=Blue-Black.

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## ELECTRICS 3.5

The vehicle is equipped with front and rear turn indicators and a starter motor. The starter motor, turn indicators, brake light and horn are powered by dc voltage (12V-4Ah battery). The headlight and rear light are powered by 12V ac.



### CAUTION

When working on the electrical system, **pay special attention** to the correct connection of wires leading to the electronic ignition unit and observe the polarity and connector color coding. Modification or unsuitable repairs of the electrical system can cause malfunctions and represent a serious fire hazard.

\* This version is equipped with a voltage regulator that incorporates the flasher unit and engine two stroke oil level check transmitter.

### ELECTRICAL SYSTEM COMPONENTS

1. Horn.
2. Headlight with one 12V-35/35W bulb (high/low beam) and one 12V-5W bulb (position light).
3. Front turn indicators, 12V-10W bulbs.
4. Brake light/engine start permissive button (rear brake).
5. Brake light/engine start permissive button (front brake).
6. Keyswitch.
7. Instrument panel: two 12V-1.2W bulbs and one 12V-2W bulb (instruments); four 12V-1.2W indicator bulbs (lights - main beam - fuel warning - mixer oil warning); two 12V-2W bulbs (turn signal indicators).
8. Engine stop.
9. Turn indicator selector.
10. Horn button.
11. Start button.
12. Rear turn indicators - 12V-10W bulbs.
13. High/low beam selector.
14. Starter motor contactor.
15. Fuse - 7.5 A
16. Fuel warning light transmitter.
17. Engine two stroke oil.
18. Starter motor.
19. Automatic choke
20. Magneto.
21. Pick-up.
22. Spark plug.
23. C.D.I. module.
24. Voltage regulator (with flasher unit and oil check device).
25. 12V-4Ah battery.
26. Rear light, 12V-5/21W bulb (side light and brake light).
27. Number plate light 12V-5W (depending on version).
28. Engine stop switch.

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## 3 MAINTENANCE

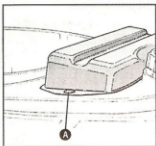
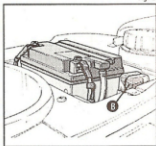


Fig. 1

Fig. 2



### BATTERY

To access the battery tip the saddle forwards (see page 22) and remove the battery compartment cover by unscrewing the phillips screw «A» as shown in figure 1.

The battery must be inspected and serviced regularly.

### Electrolyte level check

Check regularly that the electrolyte is at maximum level. Top up **only with distilled water**.

If the battery needs topping up too frequently, check the vehicle electrics (the battery is probably working in overload conditions which will lead to rapid deterioration).

### STORAGE

If the motorscooter is not to be used for prolonged periods, the battery must be charged periodically (when not in use, the battery will discharge over a period of about 3 months). If the battery is removed, when you re-install it make sure you connect the positive (+) and negative (-) leads to the correct terminals. Inverting battery polarity can damage electrical components.

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### CAUTION

Never open the caps of maintenance-free batteries (containing gel). This will destroy the battery.



### CAUTION

Risk of damage to electrical system. Never disconnect the battery when the engine is running.



### WARNING

Electrolyte contains sulphuric acid. Avoid contact with the skin, the eyes and clothing. In case of contact with the skin or the eyes rinse the affected area with plenty of water and consult a doctor. Do not lean the scooter over too far or electrolyte may spill from the battery. Keep open flames and sparks well away from the battery: explosion and fire hazard.



Batteries contain environmentally toxic substances. When you need to change the battery, we recommend to contact an **Authorized Piaggio/Vespa Service Center** to ensure your used battery is disposed of without harming the environment and in compliance with the law.

## BATTERY AND FUSE 3.6

### FUSES

The electrical equipment is protected by «B» (figure 2). The ignition system, the headlight and the rear light are not fuse-protected.

Before changing a burnt-out fuse, find and remedy the problem that caused it to blow. Do not substitute the fuse with any alternative form of conductor.



### CAUTION

Before replacing blown fuses, find and remedy the situation that caused the fuse to blow. Do not replace fuses with any alternative form of conductor.

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## 4 WHAT TO DO IF...



Fig. 1

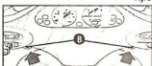


Fig. 2



Fig. 3



Fig. 4

### CHANGING THE HEADLIGHT BULBS

To access the headlight bulb (no. 1 bulb 12V-35/35W for high and low beam) and position lamp (no. 1 bulb 12V-5W) remove the front of the handlebar fairing as described below:

- 1) Remove the rear-view mirrors as described on page 59.
- 2) Remove the front grille panel by unscrewing screw «A» (fig. 1), after having removed the Piaggio shield (snap fitted) by means of a screwdriver. Be careful not to scratch paint finish.
- 3) Unscrew the three screws (one at the front «B», fig. 2 and two at the rear «C», fig. 3) that secure the handlebar fairing and then remove the fairing.

- 4) You will now be able to change the bulbs easily.

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## ...A BULB BURNS OUT 4.1

### CAUTION

Use a phillips screwdriver of the correct size. If you use alternative or makeshift tools you may damage the paintwork.

### CHANGING FRONT TURN INDICATOR BULBS

To change the front turn indicator bulbs, remove the rubber cover from inside the glove box and swivel the lamp-holder around in order to extract it.

### REPLACING THE REGISTRATION PLATE BULBS

Remove the bulb socket under the rear mudguard and then remove the bulb.

### CHANGING TAIL-LIGHT AND REAR TURN INDICATOR BULBS

To access the tail-light and turn indicator bulbs remove the 2 screws «D» (fig. 4).

To access the turn indicator bulbs remove screws «E» (fig. 4).

The bulbs have a bayonet coupling: press and twist counter-clockwise about 30° to remove.

Change the burnt out bulb or bulbs and reassemble the parts by performing the above operations in reverse order.

## 4 WHAT TO DO IF... THE HEADLIGHT REQUIRES ADJUSTMENT 4.2

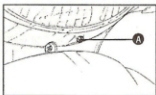
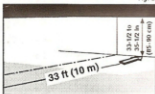


Fig. 1

Fig. 2



### ADJUSTING THE HEADLAMP

Set the unladen motorscooter on level, even ground at a distance of 33 ft (10 m) from a flat wall or screen that is sufficiently darkened to be able to see the beam (Fig. 2). Make sure that the vehicle axis is at right angles to the screen.

Mark the screen with a horizontal line 33-1/2 to 35-1/2 in (85 + 90 cm) from the ground.

Start the engine, switch on the headlight lower beam and position it so that the boundary between the brightly illuminated area and the surrounding area is no higher than the line you have drawn.

Headlight position is adjusted by means of screw «A» located immediately beneath the headlight as shown in figure 1.

Before adjusting the headlight angle, make sure the tires are inflated to the pressure specified on page 24.

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## 4 WHAT TO DO IF... THE REAR-VIEW MIRRORS REQUIRE ADJUSTMENT 4.3

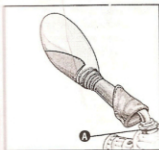
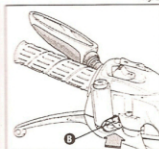


Fig. 1

Fig. 2



### ADJUSTING THE REAR-VIEW MIRRORS

To adjust the left hand rear-view mirror (figure 2) set the mirror stem at the required angle and tighten nut «B» using a 0.5 in (13 mm) wrench.

The mirror is attached to the stem on a ball and socket joint «A» so it can be positioned quickly and precisely.

Adjust the right hand rear-view mirror as shown in figure 1; when you have secured the stem at the required angle, position the mirror manually (by means of the ball and socket joint).

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## 4 WHAT TO DO IF... .. IDLE SPEED REQUIRES ADJUSTMENT 4.4

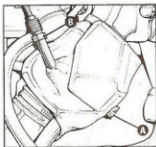


Fig. 1

Adjust idle speed by turning the adjuster screw «A» on the carburetor as shown in figure 1, after opening the saddle and removing the helmet compartment.

Adjust the slack from the throttle cable to 1/16 inch (1.5 mm) using the adjuster «B». Be sure to refit the rubber cover when you have completed the adjustments (see figure 1).

Adjust idle speed with the rear wheel off the ground (vehicle on stand) and with a warm engine. Rotate the screw in or out until the engine idles smoothly between 1800 and 2000 rpm.

This adjustment requires an engine revolution counter.

In case you are not able to carry out this adjustment please contact your local Vespa dealer or an **Authorized Piaggio/Vespa Service Center**.



### WARNING

Danger of burns. Take care not to touch hot engine parts while adjusting idle speed.

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## ...FRONT BRAKE REQUIRES ADJUSTMENT 4.5



Fig. 1

Fig. 2



### FRONT DISC BRAKE

Wear of the disc and brake pads is automatically corrected so there will be no effect on brake efficiency. The brakes therefore require no adjustment. A spongy feel when you pull the lever probably means you have air in the circuit or the brake is malfunctioning. In these cases, keep in mind the importance of your brakes in terms of road safety, we recommend to bring the scooter to an **Authorized Piaggio/Vespa Service Center**.

He will have the equipment and knowledge to ensure that the front brake is working perfectly.



### WARNING

Check the brake pads after the first 625 miles (1,000 km) and every 3,750 miles (6,000 km) thereafter. If the thickness of one or both pads is in the region of 0.06 in (1.5 mm) (see fig. 2), both pads must be changed.

This operation should be carried out by an **Authorized Piaggio/Vespa Service Center**.

Fit only genuine original Piaggio replacement pads.

Non genuine pads might not work perfectly resulting to brake failures and a serious risk of injuries or even death.

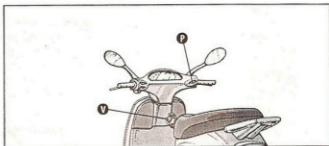


### WARNING

After fitting new brake pads do not use the motorscooter until you have activated the brake lever repeatedly to bed in the brakes and restore the lever to its correct position.

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## 4 WHAT TO DO IF...



- Move the engine stop switch «P» (fig. 1) to position "⊘" (OFF).
- Rotate the key and move the ignition switch «V» to position "⊘" (OFF).
- Place the vehicle on the center stand.

Fig. 2

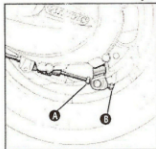


Fig. 1



### WARNING

After you have checked the brakes for function, it is necessary to ensure that there is adequate clearance between the brake shoes and the rear drum. Carry out this check with the engine at rest.

- Stop the vehicle, see p. 29 (STOPPING).



### WARNING

Be careful not to burn yourself while carrying out the following operations.

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## ...REAR BRAKE REQUIRES ADJUSTMENT 4.6

### REAR BRAKE

Adjust register nut «B» and slacken locknut «A» as shown in figure 1. When adjusting the rear brake remember that the rear wheel must turn freely when **the lever is in the rest position**.

When you have finished adjusting the brake, tighten locknut «A».

### ADJUSTING THE BRAKE

- Measure the distance covered by the lever before the brake starts its braking action. The idle stroke at the end of the brake lever must be likewise, about 3/8" (10 mm).

- Apply the brake repeatedly and make sure that the wheel turns freely after the lever has been released.
- Ride the vehicle, ensuring that the rear brake is working properly.

### NOTE

Heat that is generated during normal use of the brakes will change the clearance between the brake shoe and the drum. Because of this, you should check the clearance with the brakes at normal operating temperature.

- Test the brakes after any adjustment to ensure that they function properly.

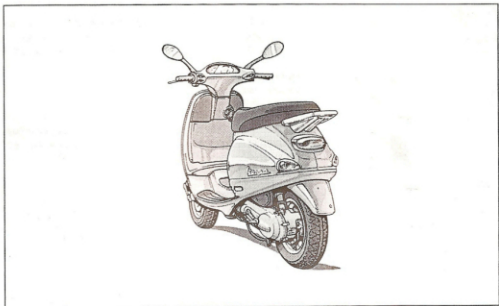


### REAR DRUM BRAKE ⊘ WARNING

The brakes are the parts that most ensure your safety and for this reason they must always be in perfect working order.

If in doubt regarding the perfect functioning of the braking system and in case you are not able to carry out the usual checking operations, contact your local Vespa Dealer.

## 4 WHAT TO DO IF...



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### ...REAR BRAKE REQUIRES ADJUSTMENT 4.6



Fig. 2

**⚠ WARNING**

If the adjuster can be screwed completely on to the rear brake rod, or the indicator pointer (1) points beyond the reference tooth (2), the brake shoes are worn out. In this case, please contact your Local Vespa Dealer.

**⚠ WARNING**

Riding with worn rear brake pads can lead to an upset, serious accident, and injury or even death.

**⚠ CAUTION**

After servicing the brakes, always check them for function. If the stroke of the lever is excessive, or if you detect that the effectiveness of the brakes is reduced in any way, have your vehicle serviced by your local Vespa Dealer.

He will have the equipment and knowledge to ensure that the rear brake is working perfectly.

**NOTE**

For optimal efficiency, the brakes should start to act after approx. 3/8" in (10 mm) of lever movement.

## 4 WHAT TO DO IF...

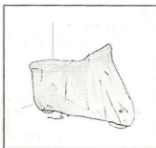


Fig. 1

Prepare the motorscooter as follows:

1. Wash the bodywork thoroughly
2. With the engine stopped, **remove the spark plug** and, with the piston at the bottom of its stroke, pour about  $\frac{1}{16}$  oz or 27 grains (1 - 2 cc) of **SELENIA HI SCOOTER 2 Tech** engine oil into the cylinder. Now turn over the engine a few times using the kick-starter and then refit the spark plug.
3. Drain the fuel tank and coat unpainted metal parts with protective grease; position the scooter so that the tires are not resting on the ground.
4. For the battery, follow the procedures described on page 54.

5. Drain the gasoline from the carburetor bowl through the drain tube.

### **TRANSPORT WARNING**

Before transporting your motorscooter, you must empty the fuel tank and drain the carburetor completely, ensuring that both are completely dry.

While your vehicle is being transported, it must be kept in a vertical position, firmly tied down, and with the wheels blocked.

Failure to heed this warning could cause serious damage to the transmission due to vibration of the transport truck.

## ...YOU NEED TO STORE THE VEHICLE 4.7

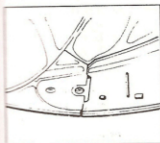


Fig. 2

### **WARNING**

Never attempt to tow your vehicle with another vehicle.

**DRAINING THE FUEL TANK**  
(Carefully read General Safety Rules page 4).

### **DISPOSE OF UNWANTED FUEL PROPERLY**

- Place the vehicle on the center stand.
- Stop the engine and wait until it has cooled down.
- Prepare a container with capacity exceeding the fuel quantity present in the tank and put it on the ground on the left side of the vehicle.
- Remove the filler cap.
- Empty the fuel tank by means of a manual pump or a similar system.

### **WARNING**

After draining the tank, replace the filler cap in correct position.

- Replace the filler cap.

To drain the carburetor completely, proceed as follows:

- Remove the lower side panel (as shown in fig. 2).
- Put the free end of the pipe into a receptacle.
- Open the carburetor outlet by loosening the drain screw positioned under the float chamber (as shown in fig. 3).

When all the fuel has flowed out of the carburetor:

- Tighten the drain screw completely.

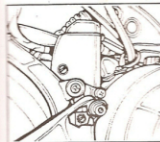


Fig. 3

## 4 WHAT TO DO IF...

## ...YOU NEED TO STORE THE VEHICLE 4.7



### WARNING

Risk of fire.

Wait until the engine and the exhaust silencer have completely cooled down. Fuel vapors are noxious and can effect your health.

Before proceeding, make sure that the room in which you are working is properly ventilated.

Do not inhale fuel vapors.

Do not smoke or allow open flames near the vehicle while you are draining the fuel.



### WARNING

Tighten the drain screw with care, to avoid fuel leakage from the carburetor during the refuelling.

Do not hesitate to contact your local Vespa Dealer or Authorized Piaggio /Vespa Service Center for help.

## 4 WHAT TO DO IF...

## ...THE VEHICLE NEEDS CLEANING 4.8

To soften up dirt and mud on the painted parts of the scooter, use only low pressure hose. You can now clean the bodywork with a car wash sponge, plenty of water and car shampoo (2 - 4% concentration in water). Rinse off with plenty of water and dry with a chamois leather. Clean the exterior of the engine with detergent, a brush and clean rags. Always wash the bodywork thoroughly before applying polish. Do not allow water to enter the exhaust pipe or the air vents on the transmission case.



Detergents can pollute rivers, streams and the soil. Do not wash the motorscooter in the road. Respect the environment (limit the amount of soap you use).



### CAUTION

Do not wash the motorscooter in the sun - especially in warm weather when the bodywork heats up. In these conditions the detergent will dry before the bodywork can be rinsed and can damage the paintwork. Do not use rags soaked in gasoline or diesel to clean painted surfaces or plastic parts of the scooter or damage to the finish may result.



### CAUTION

When washing the engine with a water cleaner:

- only use a fan-shaped jet
- keep the nozzle at a distance of at least 2 ft (60 cm)
- do not use water at temperature in excess of 100°F (40°C)



- do not direct the jet towards: the carburetor, electric cables, cooling slits of the transmission cover and the spiral casing.



### CAUTION

When cleaning the saddle only use water and detergent.



### WARNING

When cleaning the windshield (if installed):

- only use a soft cloth and warm water with a mild detergent
- do not allow any alkaline or strong acid cleaner, gasoline, brake fluid or any other solvent to contact the windshield.

Replace windshield if becomes scratched so as to interfere with view.

## 4 WHAT TO DO IF...

## ...YOU NEED TO PINPOINT A FAULT 4.9

SYMPTOM	POSSIBLE CAUSE	ACTION
Difficulty starting	Fuel tank empty	Refuel.
	Filters, jets or carburetor dirty	Contact an Authorized Piaggio/Vespa Service Center
	Dead battery	Kick-starter. Install new battery.
Irregular firing	No spark on spark plug  ⚠ Danger: high voltage. This inspection should be carried out by a skilled mechanic.	Contact an Authorized Piaggio/Vespa Service Center
Poor compression	Spark plug bore thread damaged; head bolts insufficiently torqued; worn piston rings.	Contact an Authorized Piaggio/Vespa Service Center
High fuel consumption and poor performance	Dirty air filter.	Clean with water and neutral detergent and lubricate as described on page 47.
	Excessive build-up of deposits in the exhaust system.	Contact an Authorized Piaggio/Vespa Service Center
Poor braking action	Oil on brake drum or disc. Worn brake pads/shoes	Contact an Authorized Piaggio/Vespa Service Center
	⚠ Rear brake incorrectly adjusted. Air in front brake circuit.	Adjust. Contact an Authorized Piaggio/Vespa Service Center
Poor suspension	Oil leak; worn stroke end bumpers; worn shock absorber attachment points	Contact an Authorized Piaggio/Vespa Service Center
Irregular operation of automatic transmission	Worn roller case or drive belt.	Contact an Authorized Piaggio/Vespa Service Center

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## 5 SPECIFICATIONS

## DIMENSIONS



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## 5 SPECIFICATIONS

VERSION	CARBURETOR
ENGINE	Single cylinder 2-stroke
BORE X STROKE	1.6 x 1.5 in (40 x 39.3 mm)
DISPLACEMENT	3 in <sup>3</sup> (49.4 cm <sup>3</sup> )
COMPRESSION RATIO	10.3 : 1
IGNITION ADVANCE (BEFORE T.D.C.)	17° fixed
CARBURETOR WEBER/DELLORTO	12 OM/PHVA 12
SPARK PLUG	CHAMPION RN3C
TOP SPEED	24.9 Mph (≈ 40 km/h)

### FUEL SYSTEM

Unleaded gasoline-oil mixture and carburetor. Automatic vacuum tap.

### FUEL INTAKE

Reed valve on crankcase.

### LUBRICATION

Separate lubrication of engine (piston, cylinder, crankshaft, main bearings) with oil supplied by mixer pump with variable flow rate in relation to engine speed and throttle position.

### COOLING

Forced air cooling with air duct and scroll-shaped fan cover with sound-proofing.

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## SPECIFICATIONS AND PERFORMANCE DATA 5.1

### TRANSMISSION

Expanding pulley type automatic speed variator with vee belt, centrifugal clutch, torque regulator and gear final drive.

### ENGINE TWO STROKE OIL

Plastic, capacity ~ 0.3 gal/1.35 l (including ~ 0.1 gal/0.400 l reserve).

### FUEL TANK

Plastic fuel tank; approx. capacity is 2.4 gal (9 l) (including 0.6 gal/2.3 l reserve capacity).

When the fuel light turns on (orange) fuel will be low and you should refill the tank as soon as possible.

The amount of fuel when fuel light turns on is approximately 0.6 gal (2.3 l). The relevant distance is approx 25 miles.

### STEERING AND SUSPENSION

Front: Steering tube with single fork arm; double acting shock absorber with coil spring.

Rear: Swing arm and single chamber double acting hydraulic shock absorber with coil spring.

### WHEELS

Front rims 2.5x10", rear rims 3x10" DOT-D light alloy.

### TIRES

Front: 100/80-10"; rear: 120/70-10". Tubeless Type.

### EXHAUST SYSTEM

Expansion chamber absorption type.

### ELECTRONIC IGNITION

Electronic ignition system with integrated H.T. coil.

### FRAME

Structural frame in pressed sheet steel.

### BRAKES

**Front** disc brake with hydraulic linkage (right hand lever).

**Rear** drum brake with mechanical linkage (left hand lever).

### TOOLKIT

Wrenches: one 0.6 in (16 mm) box wrench; one lever bar for 0.6 in (16 mm) wrench; one double screwdriver; one 0.2 in (6 mm) Allen key. The tools are located in a toolbox under the saddle.

### CURBSIDE WEIGHT

216 lbs (98 Kg).

### CARRYING CAPACITY

423 Lbs (192 Kg).

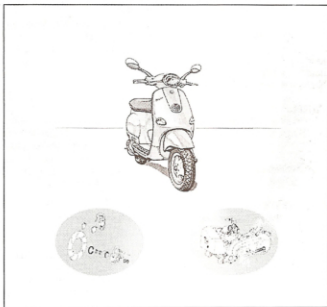
### MAX TECHNICALLY PERMISSIBLE MASS


**On front tire:** 220 Lbs (100 Kg).

**On rear tire:** 485 Lbs (220 Kg).

## 6 SPARE PARTS AND ACCESSORIES

### SPARE PARTS 6.1




 Use only "ORIGINAL PIAGGIO" spare parts. These are the only components that carry the same guarantee of high quality as the components on the new motorscooter.

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### ACCESSORIES 6.2



 You can choose accessories from the range offered by Piaggio. Only Piaggio accessories are recognized by the manufacturer and are warranted in relation to their use.

To choose any accessories you may require and ensure that they are correctly installed, consult your Local Vespa Dealer or **Piaggio/Vespa Authorized Service Center**.

The use of non-original accessories may affect the stability of your motorscooter and reduce safety levels with possible risks for the rider or passenger.

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## 7 SCHEDULED MAINTENANCE

Proper servicing of your motorscooter is necessary for it to achieve its normal lifetime, and to maintain its performance. Piaggio engineers have therefore developed a series of inspections and maintenance operations, as summarized in the service checksheets in the following pages. Any problem that you encounter should be immediately discussed with your local Vespa Dealer or an Authorized Piaggio/Vespa Service Center. Don't wait until the next scheduled service.

Although you may carry out some of the scheduled service operations yourself, for your warranty to remain valid, you must provide proof that these operations have been performed. Also, you must use only lubricants, consumables and components which are equivalent in every way to those specified by Piaggio.

Service the scooter at the prescribed times, even if you have not yet covered the specified mileage.

Warranty will not apply unless the Scheduled Services are carried out. Failure to carry out scheduled services automatically invalidates your warranty.

For more information regarding Warranty conditions and Scheduled Maintenance requirements, refer to the Warranty booklet.

The new design and the reorganization of the production process have improved the lubrication and cooling process.

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### SERVICE CHECKSHEETS 7.1

		x 625 miles (1,000 km)		1		5		10		15		20		25		30		35		40		45		50		55		60	
VESPA		Check ■	Replace ●	Months	4	12	24	36																					
Wash-oil lever			Check / Change		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Spark plug / Electrode gap			Change			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Air filter on carburetor			Clean			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Air speed / Fuel - air mixture			Adjust				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Cylinder cooling system			Check / Clean						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Oil mixer/throttle linkage			Adjust		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Valve roller/ Vee belt			Grease / Replace						●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Wash-oil mixer belt			Replace										●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Exhaust system	■		Check / Clean		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Speedometer cable			Grease			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Steering			Adjust		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Brake levers			Grease		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Brake pads/shoes			Check condition - wear		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Flexible brake lines			Replace																										
Brake fluid level			Check		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Brake fluid			Change																										
Transmissions			Lubricate																										
Nuts, bolts and fasteners			Check		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Suspension			Check																										
Electrical system and battery			Check		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Headlight			Check / Adjust																										
Tires - condition and wear			Check		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Tire pressure			Check		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Vehicle and brake test			Road test		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

■ If you become aware of impaired performance consult your Local Vespa Dealer or Piaggio/Vespa Authorized Service Center to check the level of deposits and clean if necessary.

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## 7 SCHEDULED MAINTENANCE *RECOMMENDED PRODUCTS 7.2*

### RECOMMENDED LUBRICANTS AND BRAKE FLUID (carburetor versions)

<i>USE</i>	<i>CHARACTERISTICS</i>	<i>RECOMMENDED PRODUCT</i>
Rear hub	SAE 80W/90 API GL3 specifications or higher	TUTELA ZC 90
Control cables (brakes, throttle and mixer, speedometer)	Two-stroke engine oil	SELENIA HI Scooter 2 Tech
Air filter	Mineral oil with specific tackifier additive ISO VG 150	SELENIA AIR FILTER OIL
Roller case	Lithium soap grease NLGI 3	JOTA 3 FS
Brake levers, throttle twistgrip	Calcium complex soap grease NLGI 1-2	SYSTEM TW 249 AREXONS
Fuel-oil mixer	Fully Synthetic oil, with API TC ++ specifications or higher	SELENIA HI Scooter 2 Tech CASTROL TTS 1-S (N.F.)
Speedometer transmission	Lithium soap grease NLGI 3	JOTA 3 FS
Brake fluid	Synthetic SAE J1703, NHTSA 116 DOT 4, ISO 4925	TUTELA TOP 4