

PIAGGIO WOULD LIKE TO THANK YOU

for having chosen one of its products. We have drawn up this manual to show you all features of this product. Please read it carefully before riding the vehicle for the first time. It includes information, recommendations and warnings regarding your vehicle. You will also be informed of features, details and devices that will prove the excellence of your choice. We believe that if you follow our suggestions, you will soon tune in with your new vehicle and use it for a long time at full satisfaction. This booklet is an integral part of the vehicle, and upon sale, it should be transferred to the new owner.

# Typhoon 50



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



### **Personal safety**

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



### **Safeguarding the environment**

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



### **Vehicle intactness**

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

*The signs that you see on this page are very important. They are used to highlight those parts of the booklet that should be read with particular care. As it can be seen, each sign consists of a graphic symbol that helps visualise each topic and facilitates reading through the entire manual.*



# Typhoon 50



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**INDEX**

## INDEX

Chap. 01 .....	Vehicle
Chap. 02 .....	Use
Chap. 03 .....	Maintenance
Chap. 04 .....	Technical data
Chap. 05 .....	Spare parts and accessories
Chap. 06 .....	Programmed maintenance

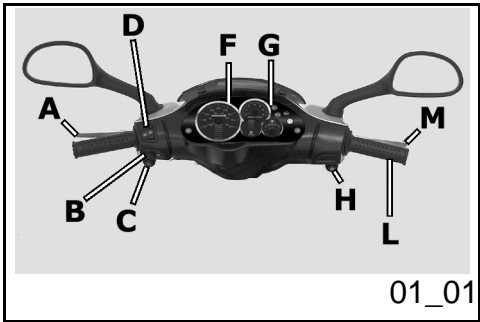
# Typhoon 50



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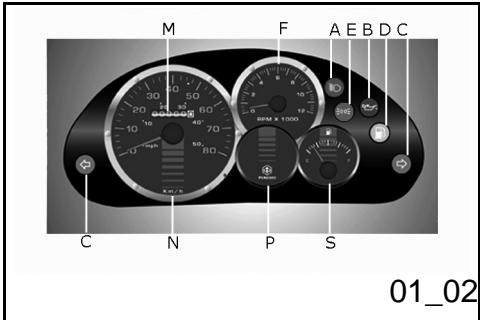
**Chap. 01  
Vehicle**



01\_01

## Dashboard (01\_01)

- A = Rear brake control;
- B = Turn indicator switch;
- C = Horn button;
- D = Headlight switch ;
- F = Analogue instrument panel;
- G = Warning light unit;
- H = Starter button;
- L = Throttle control;
- M = Front brake control;

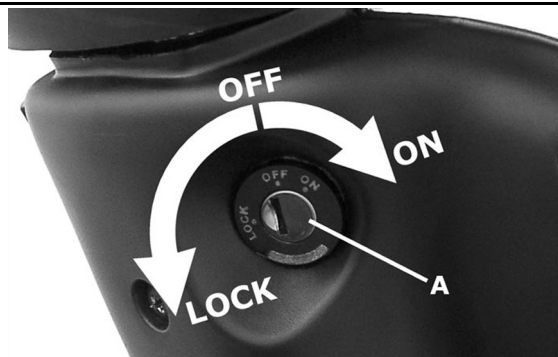


01\_02

## Instruments (01\_02)

- A= High beam warning light;
- B= Mixer oil reserve warning light;
- C= Turn indicator warning light;
- D= Low fuel warning light;
- E= Headlight warning lights;
- F= Rev counter;
- M= Odometer
- N= Speedometer;
- P= Coolant temperature indicator (not available on this model);
- S= Fuel level indicator;





01\_03

### Key switch (01\_03)

**LOCK**= Ignition blocked, key can be extracted, steering lock installed.

**OFF** = Ignition blocked, key can be extracted, steering lock not on.

**ON** = Starter position, steering lock not on, key cannot be extracted.

### Locking the steering wheel

Turn the steering wheel to the left (to the limit switch), turn the key to «**LOCK**» and remove it.



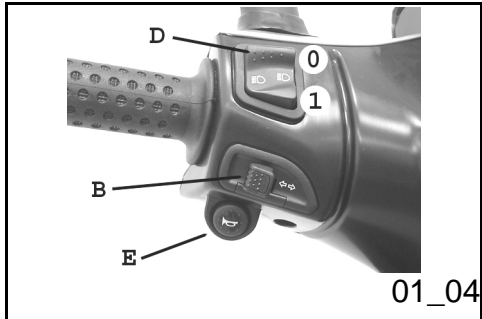
**DO NOT TURN THE KEY TO «LOCK» OR «OFF» WHILE RIDING.**

## Releasing the steering wheel

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

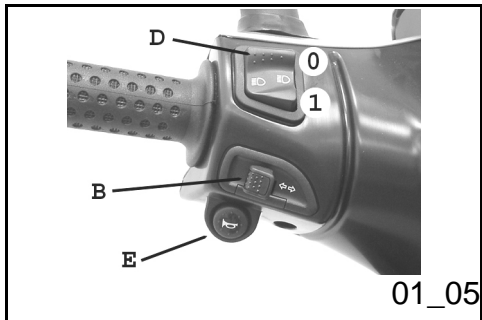


**DO NOT TURN THE KEY TO «LOCK» OR «OFF» WHILE RIDING.**



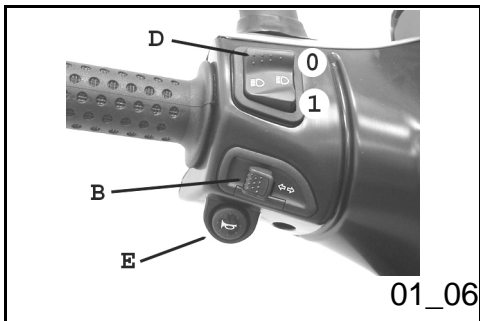
## Switch direction indicators (01\_04)

To start the left indicators, move the lever «B» to the left; to start the right indicators, move the lever rightwards. 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\_05)

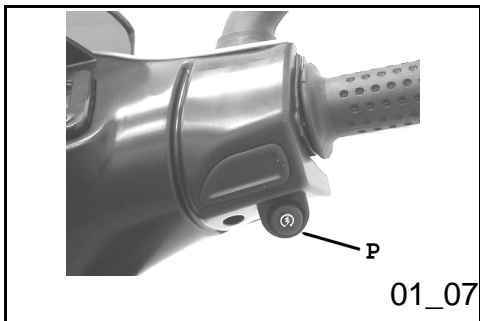
Horn button «E»



### Light switch (01\_06)

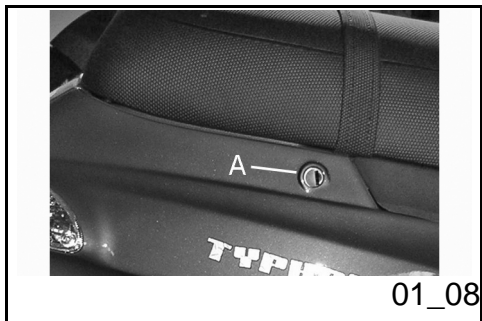
0 = Low beam and side light

1 = High beam and side light



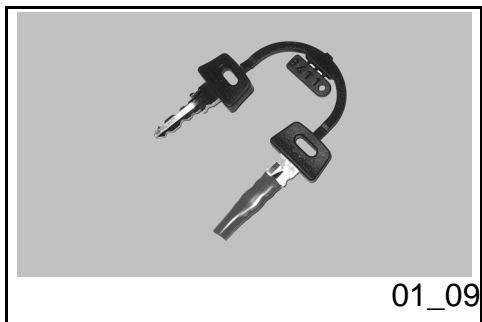
### Start-up button (01\_07)

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



## Opening the saddle (01\_08)

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



## Keys (01\_09)

The scooter is supplied with two keys (one spare) that 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 SCOOTER**



01\_10



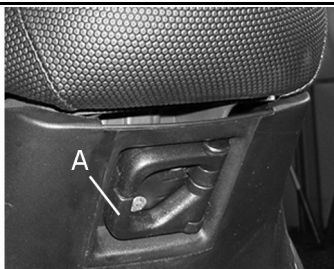
01\_11

## Identification (01\_10, 01\_11)

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



**NOTE THAT ALTERING IDENTIFICATION REGISTRATION NUMBERS MAY LEAD TO SERIOUS PENAL SANCTIONS (IMPOUNDING OF THE SCOOTER, ETC.).**



01\_12

## Bag clip (01\_12)

To use the bag hook mounted under the front of the saddle, part "A" needs to be pulled slightly forward.



# Typhoon 50



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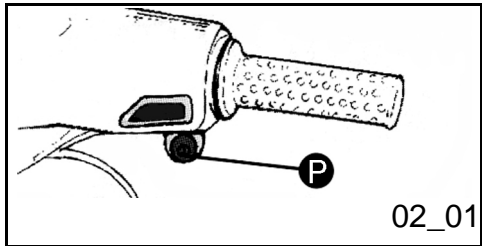


**Chap. 02**  
**Use**

## Checks

Before using the scooter for the first time check:

1. That the petrol and oil tanks are full.
2. The oil level in the rear hub.
3. That the tyres are correctly inflated.
4. That the headlight, rear light and turn indicators are in working order.
5. That the front and rear brakes are in working order.
6. The fluid level in the brake pump tank



## Refuelling (02\_01)

Fill the fuel tank «**A**» as shown in the diagram, with unleaded petrol with minimum octane rating of 95.

The rider is informed when fuel is low by the fuel warning light on the instrument panel; see the "Control Panel" section.

Top up the oil tank «**B**» using the recommended oil.

The minimum oil level is shown by the oil warning light on the instrument panel; see the "Control Panel" section.

Should this warning light come on, then the next time you are filling up with fuel, and in any case before travelling another 150 km, you should top up the oil tank.

Each time the engine is switched on (electrical start up), the mixer oil reserve warning light should come on, and should go off when the starter button is released «**P**». If the warning light fails to come on, it is faulty. Should this happen, contact an **Authorised Piaggio Service Centre**.

Should the 'mixer' device be removed and refitted, it needs to be bled. However, the ducts can remain without oil. After these operations, refill the fuel tank with 3 lit. of a mixture with 2% of the recommended oil

Subsequent refuelling must be performed using fuel only.





SWITCH OFF THE ENGINE BEFORE REFUELLING WITH PETROL. PETROL IS HIGHLY INFLAMMABLE. AVOID DROPPING PETROL DURING THE REFUELLING PROCEDURE.



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



THE USE OF OILS AND SPARK PLUGS DIFFERENT FROM THOSE RECOMMENDED COULD HAVE A NEGATIVE EFFECT ON THE LIFE OF THE MOTOR.

### **Recommended products**

#### **SELENIA HI Scooter 2 Tech**

##### *Mixer Oil*

Synthetic oil that passes API TC ++ specifications

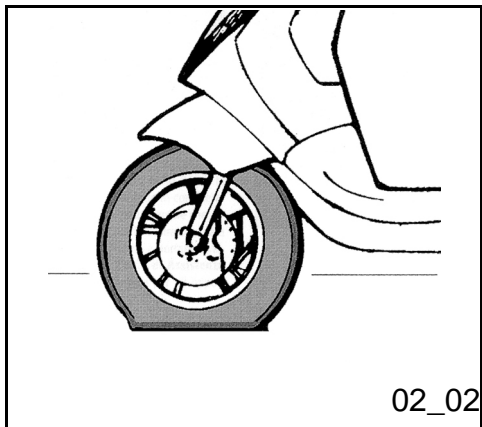
### **Characteristic**

#### **Topping up mixer oil tank**

with at least  $0.5 \div 1$  lit.

#### **Oil mixer tank**

In plastic, with a capacity of 1.5 lit. (including reserve ~0.500 lit).



## Tyre pressure (02\_02)



TYRE PRESSURE SHOULD BE CHECKED WHEN THE TYRES ARE COLD. INCORRECT TYRE PRESSURE CAUSES ABNORMAL TYRE WEAR AND MAKES DRIVING DANGEROUS. TYRES MUST BE REPLACED WHEN THE TREAD REACHES THE WEAR LIMITS SET FORTH BY LAW.

### Characteristic

Front tyre pressure

1.2 bar

Rear tyre pressure

1.7 bar

Rear tyre pressure (with rider and luggage)

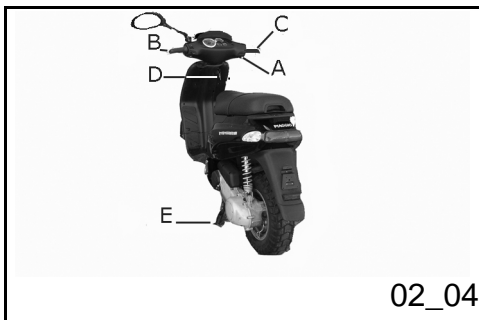
1.9 bar



## Running in (02\_03)



DURING THE FIRST 1000 KM DO NOT RIDE THE VEHICLE OVER 80% OF ITS MAXIMUM SPEED. AVOID TWISTING THE ACCELERATOR KNOB COMPLETELY OR KEEPING A CONSTANT SPEED ALONG LONG SECTIONS OF ROAD. AFTER THE FIRST 1,000 KM PROGRESSIVELY INCREASE SPEED UNTIL REACHING THE MAXIMUM PERFORMANCE.



02\_04

## Starting up the engine (02\_04)

The scooter is fitted with automatic transmission with a regulator and centrifugal clutch. Therefore always start the engine with the throttle at a minimum; Gradually accelerate to pull away.

This scooter has a fuel line tap and a choke which are automatically controlled when the start button is pressed.

To start the engine, before pressing the starter button «A», the rear brake lever «B» or front brake lever «C» need to be pulled to permit start-up.

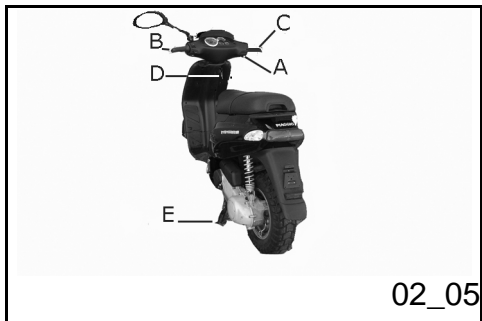
- 1: Put the motorscooter on its stand "E"; check that the rear tire is off the ground.
- 2: Keep the throttle closed.
- 3: Put the key in the ignition switch «D» and turn it to the «ON» position.
- 4: Push the starter button «A» after pulling the rear brake lever «B» or the front brake lever «C».



**DO NOT CARRY OUT THESE OPERATIONS IN CLOSED AREAS BECAUSE THE EXHAUST GASES ARE TOXIC.**



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



## Difficult start up (02\_05)

Possible causes for engine starting difficulties and suggested actions:

**1. Carburettor flooded.** Place the vehicle on the centre stand and check that the rear tyre is off the ground. Open the throttle fully and press the starter button for five seconds and then stop for five seconds. If the engine does not start after a few attempts, let the engine sit for a few minutes and then repeat the above operations. Do not keep the button pressed for more than 20 seconds when attempting to start the engine.

**2. In the case of battery inefficiency.** Put the motorscooter on its stand "E"; make sure that the rear wheel is off the ground, turn the ignition key «D» to the «ON» position and use the kick-starter.

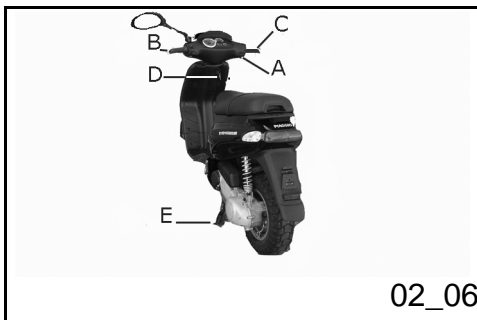
**3. Fuel tank empty.** After refuelling the scooter, start the engine by pressing the starter button «A» with the throttle at a minimum to provide maximum aspiration for the tap. If the scooter fails to start even after taking the steps described above, contact an **Authorised Piaggio Service Centre**.



**ALWAYS PUT THE VEHICLE ON ITS STAND BEFORE KICK STARTING.**



**TAMPERING MAY CAUSE SERIOUS ENGINE MALFUNCTION.**



## Stopping the engine (02\_06)

Stop acceleration, then turn the key in switch «D» to the «OFF» engine off position (key can be extracted).



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

## Catalytic silencer



**TAMPERING WITH THE CATALYTIC MUFFLER MAY CAUSE SEVERE DAMAGE TO THE ENGINE**



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



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

## Automatic transmission

To ensure simple, pleasurable riding, the scooter 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, driving 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



**SOME SIMPLE TIPS ARE PROVIDED BELOW THAT WILL ENABLE YOU TO USE YOUR SCOOTER ON A DAILY BASIS IN GREATER SAFETY AND WITH MORE PEACE OF MIND.**

<

Your riding skill and knowledge of your vehicle are essential to guarantee safe riding conditions. We recommend trying out the vehicle in traffic-free zones to get to know your vehicle completely.

**ALWAYS RIDE WITHIN THE LIMITS OF YOUR ABILITY.**

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 driving on a long stretch of wet road without using the brakes, the

braking effect is initially lower. In these conditions, it is a good idea to apply the brakes from time to time.

4. Do not brake hard on a wet surface, on dirt tracks or on any slippery road surface.
5. Should you really need to brake, apply both brakes in order to distribute the braking effect on both wheels.
6. Avoid riding off by mounting the vehicle when resting on the support. In any case, the rear wheel should not be turning when it comes into contact with the ground, in order to avoid abrupt departures.
7. If the vehicle is used on roads covered with sand, mud, snow mixed with salt, etc., clean 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 no longer conforming to the approved type and dangerous for driving safety.



**RIDING WHILE DRUNK OR UNDER THE EFFECT OF DRUGS OR CERTAIN MEDICINES IS EXTREMELY DANGEROUS.**



**ANY ELABORATION THAT MODIFIES THE VEHICLE'S PERFORMANCES, SUCH AS TAMPERING WITH ORIGINAL STRUCTURAL PARTS IS STRICTLY FORBIDDEN BY LAW, AND RENDERS THE VEHICLE NO LONGER CONFORMING TO THE APPROVED TYPE AND DANGEROUS FOR DRIVING SAFETY.**





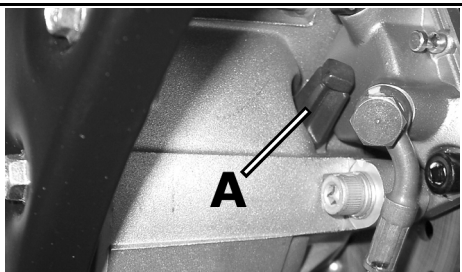
# Typhoon 50



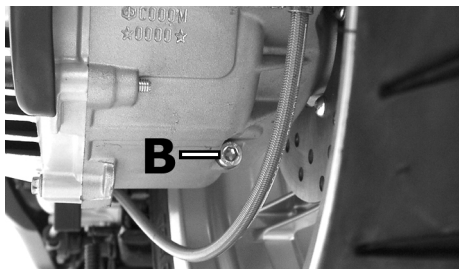
**PIAGGIO®**



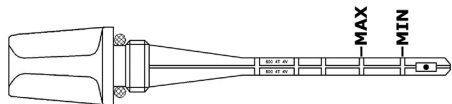
**Chap. 03  
Maintenance**



03\_01



03\_02



03\_03

## Hub oil level (03\_01, 03\_02, 03\_03)

To check the hub oil level, proceed as follows:

1. Place the scooter on its stand on a level surface;
2. Unscrew the dipstick «A», dry it with a clean rag and then reinsert it, **screwing it tightly into place**;
3. Unscrew the dipstick again and check that the oil level is up to the **2nd notch from the bottom**;
4. Screw the dipstick back into place completely.

The screw «B» is the hub oil drainage tap.



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



**USED OIL CONTAINS ENVIRONMENTALLY HARMFUL SUBSTANCES. FOR HUB OIL CHANGES CONTACT AN AUTHORISED PIAGGIO SERVICE CENTRE, WHICH CAN CARRY OUT ENVIRONMENTALLY-FRIENDLY DISPOSAL OF USED OIL IN COMPLIANCE WITH STATUTORY REGULATIONS.**

**N.B.**

**THE NOTCHES ON THE HUB OIL LEVEL DIPSTICK, APART FROM THOSE INDICATING THE MAXIMUM AND MINIMUM LEVELS, REFER TO OTHER MODELS BY THE MANUFACTURER, AND FOR THIS MODEL HAVE NO SPECIFIC FUNCTION.**

### Recommended products

**TUTELA MATRYX MOTO RIDER**

*Rear hub oil*

SAE 75W/85 API GL4 synthetic multigrade oil

### Characteristic

**Rear hub oil**  
Quantity: ~80cc

## Tyres (03\_04)

Periodically check the inflation pressure of each tyre. The tyres have tread wear indicators and must be replaced as soon as the indicators are visible on the tread. Also check that the tyres do not show signs of splitting at the side or irregular tread wear; tyres must be replaced by an authorised service centre, or by a centre equipped to change tyres.



**TYRE PRESSURE SHOULD BE CHECKED WHEN THE TYRES ARE COLD. INCORRECT TYRE PRESSURE CAUSES ABNORMAL TYRE WEAR AND MAKES DRIVING DANGEROUS. TYRES MUST BE REPLACED WHEN THE TREAD REACHES THE WEAR LIMITS SET FORTH BY LAW.**

### Characteristic

#### Front tyre pressure

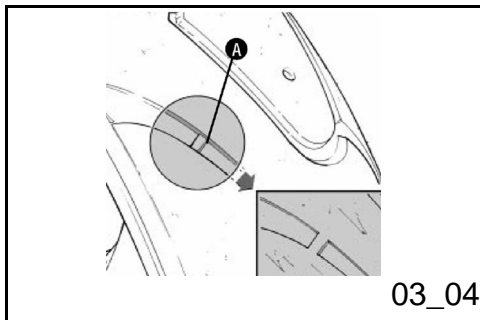
1.2 bar

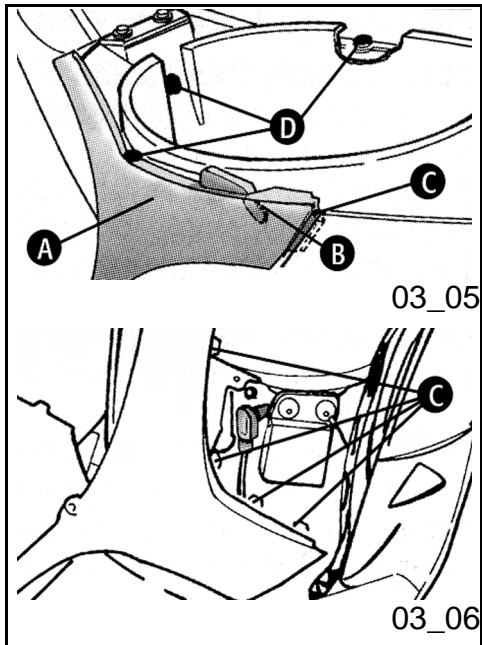
#### Rear tyre pressure

1.7 bar

#### Rear tyre pressure (with rider and luggage)

1.9 bar





## Spark plug dismantlement (03\_05, 03\_06)

Remove the central cover «A» by unscrewing the screws «D» on the inside of the helmet compartment. Then remove the two pins «B» pulling the rear of the cover upwards. Unfasten the spark plug HV wire and remove the plug using the box-spanner provided.

When refitting the plug, tighten it by hand, being sure to insert it at the right angle; Use the spark plug wrench only to fully tighten the plug.

When refitting the cover, perform the steps in reverse order, being sure to insert the pins «C» in the correct holes on the side covers and on the foot board.



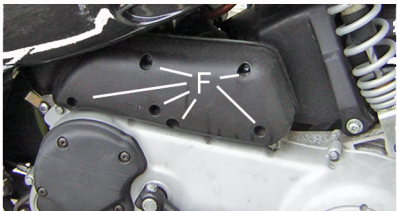
**THE SPARK PLUG MUST BE REMOVED WHEN THE MOTOR IS COLD. THE USE OF SPARK PLUGS WITH A HEAT RATING DIFFERENT FROM THAT RECOMMENDED (SEE "TECHNICAL DATA" SECTION) OR WITH INAPPROPRIATE THREADING COULD SERIOUSLY DAMAGE THE ENGINE. THE SPARK PLUG SHOULD BE REPLACED EVERY 5000 KM.**

### Characteristic

spark plug  
CHAMPION RN2C

### Electric characteristic

Electrode gap  
0.6 to 0.7 mm.



03\_07

## Removing the air filter (03\_07)

Remove the filter cap by removing the 6 fastening screws «F» and take out the filter element.

Clean it by washing with water and neutral detergent; and then dry it with a clean rag and short blasts of compressed air.

At this point, immerse the filter element in a solution of petrol and oil, in the ratio of 50-50, then squeeze it in your hands without wringing it, then allow it to dry and refit it.

## Recommended products

### SELENIA Air Filter Oil

*Oil for air filter sponge*

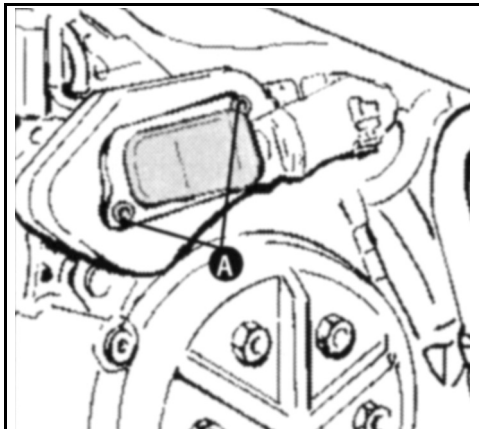
Mineral oil with specific additives for increasing the ISO VG 150 viscosity.

## Secondary air system (03\_08)

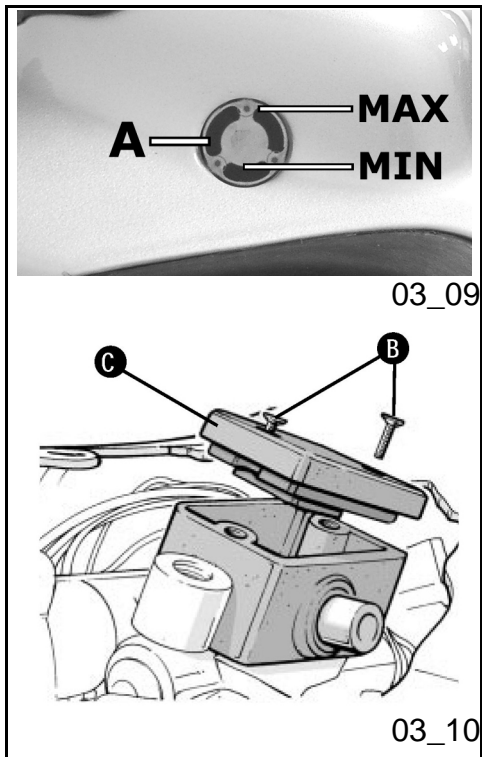
Remove the two screws «A» from the aluminium SAS cover. Release the metal tube from the rubber housing on the cover without extracting the tube from the cover/sleeve. Remove the tab and plastic cover, extract the sponge and wash it in water and detergent. Dry it with compressed air before refitting it, making sure to correctly fit the tab in the housing on the two plastic and aluminium covers. Every time you disassemble the filter, replace the O-ring seal in the cover.



**FOR THIS OPERATION, PLEASE CONTACT AN AUTHORISED PIAGGIO SERVICE CENTRE**



03\_08



## Checking the brake oil level (03\_09, 03\_10)

The brake fluid reservoir is equipped with a sight glass "A". the quantity of liquid contained in the sight glass indicates the level of liquid in the tank.

When sight glass "A" is completely full 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 Minimum.

The brake fluid level may fall due to wear on the brake pads. Should the level be below the minimum, the Customer is advised to contact an **Authorised Piaggio Service Centre** for a thorough check of the braking system. If you need to top up the level, follow the steps listed below. Unscrew the 2 screws "B", remove the tank cap "C" and pour in the required quantity of fluid (the brake fluid level must be above minimum). Check the level with the tank in a horizontal position, i.e. with the handlebars straight and the scooter perfectly level.



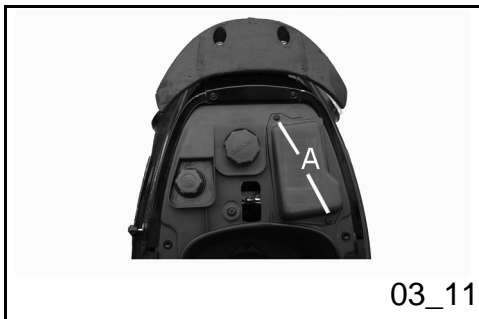
**TOP UPS SHOULD ONLY BE CARRIED OUT WITH DOT 4 CLASSIFIED BRAKE FLUID.**



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



**BRAKE FLUID IS HIGHLY CORROSIVE; IT IS THEREFORE VERY IMPORTANT TO AVOID CONTACT WITH PAINTED PARTS DURING TOP-UP PROCEDURES. THE BRAKING CIRCUIT FLUID IS HYGROSCOPIC, IN OTHER WORDS, IT ABSORBS HUMIDITY FROM THE SURROUNDING AIR. IF THE CONTENT OF MOISTURE IN THE BRAKING FLUID EXCEEDS A CERTAIN VALUE, IT WILL LEAD TO INEFFICIENT BRAKING.**



## Battery (03\_11)

To access the battery, tip the saddle forwards, then remove the battery compartment cover by unscrewing the Philips screws as shown in the diagram.

The battery is the electrical device requiring the most attention and most thorough maintenance.



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



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



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

## Checking the electrolyte level

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



**ELECTROLYTE CONTAINS SULPHURIC ACID: AVOID CONTACT WITH EYES, SKIN AND CLOTHES. IN THE CASE OF ACCIDENTAL CONTACT, RINSE WITH PLENTY OF**

**WATER AND CONSULT A DOCTOR.**



## Long periods of inactivity (03\_12)

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

- Start up the engine **at least once a month** and keep it running slightly above idle for 10 -15 minutes. This allows the battery as well as all the engine components to run efficiently.
- 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**.

### CAUTION

**THE BATTERY MUST BE RECHARGED WITH A CURRENT LOAD EQUAL TO 1/10 OF THE BATTERY RATED CAPACITY AND FOR A PERIOD NOT LONGER THAN 10 HOURS. CONTACT AN AUTHORISED PIAGGIO SERVICE CENTRE TO CARRY OUT THIS OPERATION SAFELY. WHEN REFITTING A REMOVED BATTERY, MAKE SURE THAT ALL TERMINALS ARE PROPERLY CONNECTED.**

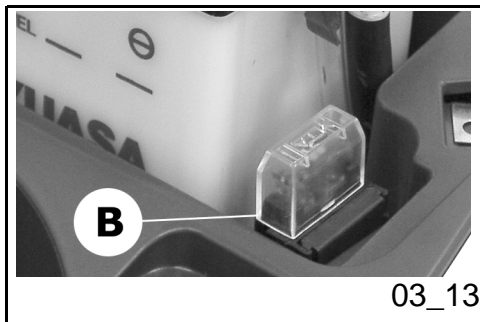


**DO NOT DISCONNECT THE BATTERY CABLES WITH THE ENGINE RUNNING, THIS CAN CAUSE IRREPARABLE DAMAGE TO THE SCOOTER'S ELECTRONIC CONTROL UNIT.**



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





## Fuses (03\_13)

The electrical system is protected by a valve fuse «B» located to the left of the battery compartment. The ignition system, headlight and the rear light are not fuse-protected.

If after replacing a fuse, the new fuse also blows, the scooter needs to be taken to an **Authorised Piaggio Service Centre** to identify the cause of the fault. Do not substitute the fuse with any alternative form of conductor



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

### Electric characteristic

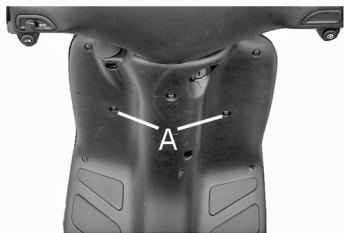
#### Fuse

Fuse valve: 7.5A

## BULBS

Specification	Desc./Quantity
High beam/low beam bulb	<p><b>Type:</b> Twin-filament halogen</p> <p><b>Power:</b> 12V - 35/35W</p> <p><b>Quantity:</b> 1</p>
Front side light bulb	<p><b>Type:</b> ALL GLASS</p>

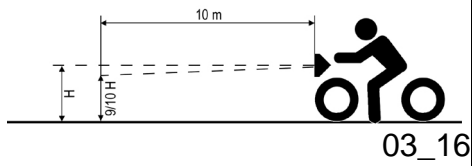
	<b>Power:</b> 12V - 5W <b>Quantity:</b> 1
Front turn indicator bulb	<b>Type:</b> Amber spherical <b>Power:</b> 12V - 10W <b>Quantity:</b> 1 RIGHT + 1 LEFT
Rear turn indicator bulb	<b>Type:</b> Amber spherical <b>Power:</b> 12V - 10W <b>Quantity:</b> 1 RIGHT + 1 LEFT
Stop/position light bulb	<b>Type:</b> Twin-filament <b>Power:</b> 12V - 21/5W <b>Quantity:</b> 1
Warning light bulbs 12V - 1.2W	<b>Type:</b> ALL GLASS <b>Function:</b> 1 Headlight warning light - 1 high beam warning light - 1 mix oil warning light - 1 low fuel warning light - 4 instrument illumination warning lights <b>Quantity:</b> 8



03\_14



03\_15



03\_16

## Front light group (03\_14)

To gain access to the headlight bulbs, you need to remove the two screws «A» at the rear of the shield.

Take out the connector and the cap. Remove the bulb socket by turning it anticlockwise. The position light bulb is removed from the bulb socket after removing it from the rear light assembly.

### Electric characteristic

#### Headlight bulb

1 high beam/low beam twin-filament bulb

1 position light bulb

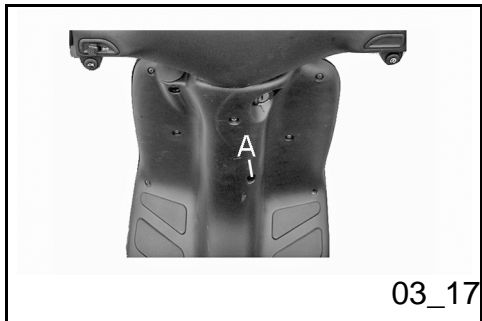
## Headlight adjustment (03\_15, 03\_16, 03\_17)

Proceed as follows: .

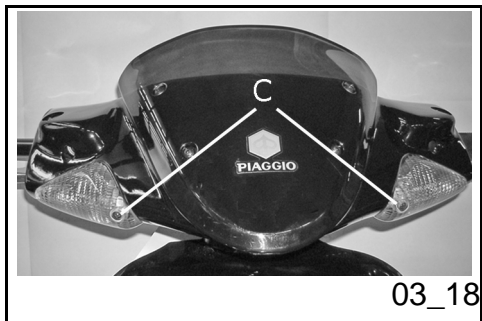
1. Place the vehicle, in riding condition, with the tyres correctly inflated, on a flat piece of ground at a distance of 10 m from a white screen situated in a shaded area, making sure that the scooter is perpendicular to the screen;
2. Turn on the headlight and check that the edge of the beam projected on the screen is not more than 9/10 of the height of the centre of the headlight from the ground, and not less than 7/10;
3. If this is not the case, adjust the headlight by turning screw «A», which can be reached through the hole in the counter-shield, as shown in the diagram.

### **WARNING**

**THE ABOVE PROCEDURE COMPLIES WITH THE EUROPEAN STANDARDS REGARDING MAXIMUM AND MINIMUM HEIGHT OF LIGHT BEAMS. REFER TO THE STATUTORY REGULATIONS IN FORCE IN EVERY COUNTRY WHERE THE VEHICLE IS USED.**



03\_17



03\_18

### Front direction indicators (03\_18)

To replace the front turn indicator bulbs, unscrew the screws from the relative glass covers "C". The bulbs have a bayonet fitting, so to remove them simply press down slightly, turn the bulb anticlockwise by about 30°, and remove them.

### Rear optical unit

#### WARNING

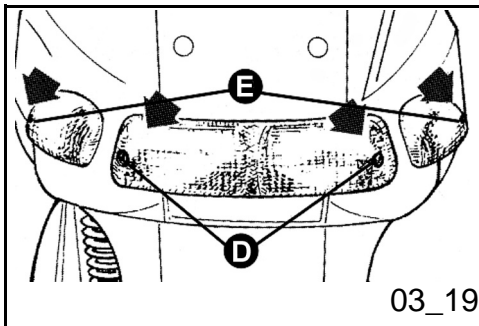
SHOULD MIST BE SEEN TO HAVE FORMED ON THE INSIDE SURFACE OF THE LIGHT, THIS DOES NOT MEAN THERE IS A FAULT, BUT RATHER IS A RESULT OF THE LEVEL OF HUMIDITY AND/OR LOW TEMPERATURE.

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

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

#### WARNING

THE MALFUNCTION OF ONLY ONE LED DOES NOT CHANGE THE HOMOLOGATION VALUES OR PERFORMANCE OF THE REAR LIGHT ASSEMBLY. IN THE EVENT OF THE BREAKAGE OR MALFUNCTION OF TWO OR MORE LEDs, THE REAR LIGHT ASSEMBLY SHOULD BE REPLACED.



### Rear turn indicators (03\_19)

To gain access to the turn indicator bulbs, remove the fastening screws «E».

The bulbs have a bayonet coupling, to remove them press gently and twist anticlockwise about 30°. To reassemble the parts follow the above steps on the opposite order.

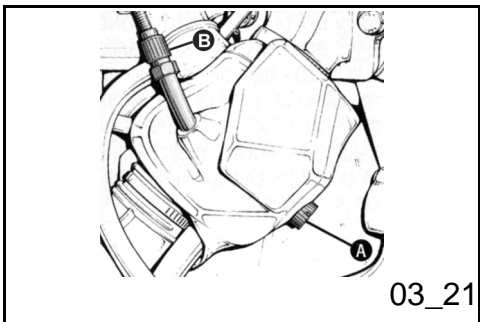


### Rear-view mirrors (03\_20)

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

The mirrors must be adjusted so that the shafts are perpendicular to the vehicle's direction axis.

To adjust the mirror opening angle loosen the screw fitted at the end of the shaft and fasten it once the desired position is reached.



### Idle adjustment (03\_21)

The idle speed is adjusted by means of the idle speed adjuster screw «A» located on the carburettor.

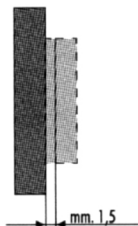
To do this, proceed as shown in the diagram. Turn the register for adjusting the clearance of the throttle control transmission «B», then replace the rubber protection cap.

Adjust the idle speed with the rear wheel off the ground (vehicle on stand) and with a warm engine. Turn the knob-type head screw in or out until the engine idles smoothly (around 1700÷1900 rpm.), i.e. **without the rear wheel being moved by the engine**.

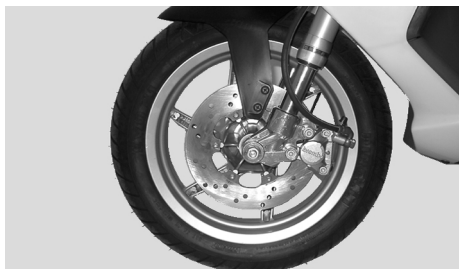
If adjustment still proves difficult, contact an **Authorised Piaggio Service Centre** to have the level of **CO when idling fixed** (carbon monoxide emissions).



**WHEN ADJUSTING THE IDLING SPEED, BE CAREFUL NOT TO TOUCH HOT PARTS OF THE ENGINE TO AVOID BURNS.**



03\_22



03\_23

## Front disc brake (03\_22, 03\_23)

Wear on the discs and pads is automatically compensated for, so it does not have any effect on brake functions. This means that it is never necessary to adjust the brakes. If there is excessive elasticity when activating the brake lever, this is due, in all probability, to the presence of air in the circuit or to the irregular functioning of the brake itself. In this case, particularly considering the fundamental of the brakes in terms of safety, it is strongly recommended that you take the scooter to an **Authorised Piaggio Service Centre** for the appropriate checks.

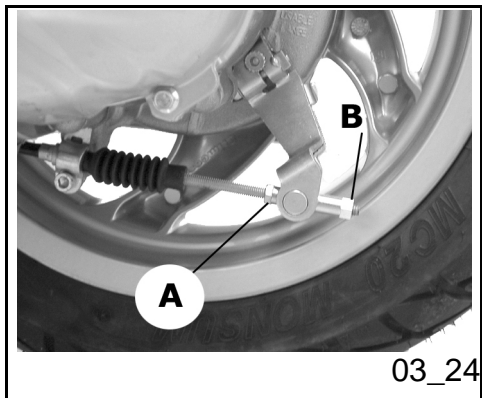


**CHECK THE BRAKE PADS REGULARLY (EVERY 5000 KM). IF THE THICKNESS OF ONE OR BOTH PADS IS IN THE REGION OF 1.5 MM, BOTH PADS MUST BE CHANGED. THIS OPERATION SHOULD BE CARRIED OUT AT AN AUTHORISED PIAGGIO SERVICE CENTRE.**

**AFTER FITTING NEW BRAKE PADS DO NOT USE THE SCOOTER UNTIL YOU HAVE ACTIVATED THE BRAKE REPEATEDLY TO BED IN THE BRAKES AND RESTORE THE LEVER TO ITS CORRECT POSITION.**



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



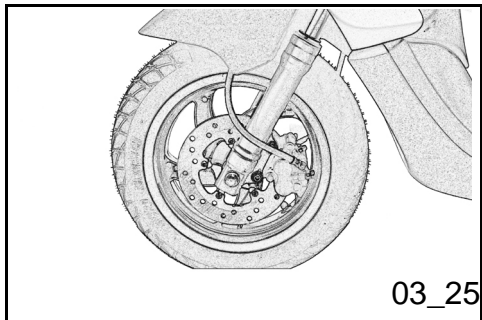
03\_24

### Rear drum brake (03\_24)

Turn the adjustment pin «B» and tighten the lock nut «A» as shown in the diagram, bearing in mind that with the control lever in the rest position, **the wheel should spin freely**. After completing the adjustment, tighten the lock nut «A».



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



03\_25

### Puncture (03\_25)

The vehicle has Tubeless tyres. In the event of a puncture, contrary to what happens with a tyre with an inner tube, deflation is very slow. This offers greater riding safety. Slower deflation also enables you to intervene, in the event of an emergency, using to "INFLATE AND REPAIR" cans. However we recommend having the tyre definitively repaired or replaced at a **Piaggio Service Centre**.





03\_26

## Periods of inactivity (03\_26)

We recommend carrying out the following operations:

1. General cleaning of the vehicle.
2. With the engine off and the piston in the bottom dead centre position, remove the spark plug, and pour into its **hole** 1 ÷ 2 cc. of the recommended oil. Press the engine start pedal 3 or 4 times letting the engine perform a few revolutions, then replace the spark plug.
3. Remove the fuel from the vehicle: coat the unpainted metal parts with antirust grease: keep the wheels off the ground, by resting the chassis on two wooden supports.
4. For the battery, follow the procedures described in the «Battery» section.
5. Drain the petrol from the carburettor tank through the bleed tap.

## Recommended products

### **SELENIA HI Scooter 2 Tech**

*Oil for flexible transmission lubrication (acceleration control, mixer and odometer*

*Oil for two-stroke motors*

## Cleaning the vehicle

In order to soften the dirt and mud deposited on the painted surfaces, use a low pressure jet of water. Once softened, mud and dirt must be removed with a soft sponge for bodywork soaked in lots of water and "shampoo" (2-4% of car shampoo in water). Then rinse abundantly with water, and dry with a shammy cloth. For the motor exterior use petroleum, a brush and clean rags. Petroleum can damage paintwork. Remember that any polishing with silicon wax must always be preceded by washing



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



NEVER WASH THE SCOOTER IN THE SUN, ESPECIALLY DURING THE SUMMER WHEN THE BODYWORK IS STILL HOT, AS THE SHAMPOO MAY DRY BEFORE BEING RINSED OFF, AND COULD DAMAGE THE PAINTWORK. NEVER USE CLOTHS SOAKED IN ALCOHOL, PETROL, DIESEL OIL OR KEROSENE FOR CLEANING THE PAINTED OR PLASTIC SURFACES IN ORDER NOT TO DAMAGE THE LUSTRE FINISH OR ALTER THE MECHANICAL PROPERTIES OF COMPONENTS.



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

- ONLY USE THE FAN JET.
- DO NOT PLACE THE WATER JET NOZZLE WITHIN 60 CM FROM THE ENGINE.
- NOT USE WATER AT A TEMPERATURE OF OVER 40°C.
- DO NOT DIRECT THE WATER JET DIRECTLY TOWARDS: THE CARBURETTOR, THE WIRING, THE SLOT DIFFUSER ON THE TRANSMISSION OR SCROLL COVERS.

#### WARNING

USE AN ANTISTATIC CLOTH TO CLEAN THE DISPLAY AREA ON THE CONTROL PANEL. IF AN ANTISTATIC CLOTH IS NOT USED, BLACK LINES MAY APPEAR ON THE DISPLAY, BUT THESE SHOULD DISAPPEAR QUICKLY AFTER THE ENGINE IS SWITCHED ON AND OFF A FEW TIMES IN NORMAL USE.

### DIFFICULTY STARTING UP

Possible Cause	Operation
----------------	-----------

Lack of fuel in tank.	Refuelling.
Filters, jets or carburettor dirty or clogged.	Contact an <b>Authorised Piaggio Service Centre</b>
Insufficient battery charge	Kick-start. Recharge the battery.

### **IGNITION PROBLEM**

<b>Possible Cause</b>	<b>Operation</b>
No spark on spark plug. Due to the presence of high voltage, this element should only be checked by an expert.	Check that the electrodes are correctly adjusted (0.6-0.7 mm) Check that the electrodes are clean (clean with pure petrol and metal brush or with emery cloth). Check the spark plug insulator: if there are any cracks or breakage, replace the spark plug. If the spark plug is in good condition, contact an <b>Authorised Piaggio Service Centre</b> .

### **LACK OF COMPRESSION**

<b>Possible Cause</b>	<b>Operation</b>
Spark plug loose. Cylinder head loose, piston gas rings worn.	Contact an <b>Authorised Piaggio Service Centre</b>

## **HIGH CONSUMPTION AND LOW PERFORMANCE**

<b>Possible Cause</b>	<b>Operation</b>
Air filter blocked or dirty.	Clean with water and shampoo and impregnate with petrol and specific oil (section «Removing the air filter»)

## **INEFFICIENT BRAKING**

<b>Possible Cause</b>	<b>Operation</b>
Oil on drum or disc. Worn brake pads/shoes.	Contact an <b>Authorised Piaggio Service Centre</b>
rear brake incorrectly adjusted.	Adjustment

## **INEFFICIENT SUSPENSIONS**

<b>Possible Cause</b>	<b>Operation</b>
Oil leak; worn limit switch bumpers; worn shock absorber attachment points	Turn to an <b>Authorised Piaggio Service Centre</b>

## **IRREGULAR AUTOMATIC TRANSMISSION**

<b>Possible Cause</b>	<b>Operation</b>
-----------------------	------------------

Deteriorated roller container or belt.	Turn to an <b>Authorised Piaggio Service Centre.</b>
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### **INCREASED EXHAUST NOISE**

<b>Possible Cause</b>	<b>Operation</b>
Deterioration of the SAS system sealing and/or the reed.	Turn to an <b>Authorised Piaggio Service Centre.</b>

### **STAND DOES NOT RETURN TO CORRECT POSITION**

<b>Possible Cause</b>	<b>Operation</b>
Presence of dirt	Clean and grease

### **STARTER LEVER DOES NOT RETURN TO POSITION**

<b>Possible Cause</b>	<b>Operation</b>
Presence of dirt	Clean and grease



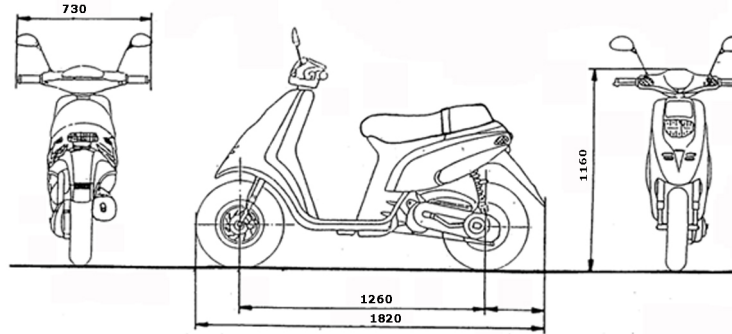
# Typhoon 50



**PIAGGIO®**



**Chap. 04**  
**Technical data**



04\_01

### TECHNICAL DATA

Specification	Desc./Quantity
Electronic ignition	A capacitor discharge microprocessor device, with built-in H.V. coil.
Supply.	With high-octane, 95 N.O.R. lead-free petrol mix - oil via carburettor, automatic mixer (with variable capacity depending on



	the engine speed and opening of throttle valve) petrol pump.
Intake	By means of a compression valve on the casing
Lubrication	Engine lubrication (piston, cylinder, crankshaft, main bearings) with mixer oil.
Cooling	Forced air.
Transmission	With automatic expandable pulley variator, torque server, V belt, automatic clutch, gear reducer.
Rear hub oil	Quantity: ~80cc
Petrol tank	In plastic, with a capacity of 5.5 lit. (approximate value) including reserve ~ 2 lit.
Oil mixer tank	In plastic, with a capacity of 1.5 lit. (including reserve ~0.500 lit).
Topping up mixer oil tank	with at least 0.5 ÷ 1 lit.
Front suspension	upside-down hydraulic telescopic fork.
Rear suspension	Fitted with spring and coaxial hydraulic shock absorber. Chassis engine support with swinging arm.
Wheels	with 3.50 x 10" wheel rims in light alloy.
Front tyre	120/90-10"

Rear tyre	120/90-10"
Chassis	In steel tubes soldered with reinforcements in pressed sheet metal.
Front brake	Disc D=190 / 200 mm with hydraulic control, operated by right brake lever on the handlebars.
Rear brake	Drum D=110 mm with expansion brake shoes, mechanically controlled by the left brake lever on the handlebars.
Exhaust silencer	Expanding, absorption type with double catalytic converter.
Maximum length	1820
Maximum width	730
Wheel base	1260
Capacity	Driver only.
Kerb weight	84 Kg

### **ENGINE SPECIFICATIONS**

<b>Specification</b>	<b>Desc./Quantity</b>
Engine	Single cylinder 2-stroke
Bore by stroke	40 X 39.3 mm

Engine capacity	49 cm <sup>3</sup>
Compression ratio .	10.3 : 1 (±0.8)
Dellorto Carburettor	PHVA 17.5
Ignition advance (before TDC)	17° ± 1° at 4000 rpm
spark plug	CHAMPION RN2C
Max speed	According to current legislation

## Kit equipment

The tools are located under the saddle. To free the tools from their housing, release the lever and then remove the clamp.

The tool bag contains: a double-headed screwdriver and a 13-21 mm box spanner.



# Typhoon 50



**PIAGGIO®**



**Chap. 05**  
**Spare parts and**  
**accessories**



## Warnings (05\_01)



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

**IT SHOULD BE REMEMBERED THAT THE USE OF NON ORIGINAL SPARE PARTS CAUSES YOUR GUARANTEE RIGHTS TO EXPIRE.**



**PIAGGIO MARKETS ITS OWN LINE OF ACCESSORIES THAT ARE RECOGNISED AND GUARANTEED FOR USE. IT IS THEREFORE ESSENTIAL, IN ORDER TO CHOOSE AND MOUNT THE ACCESSORIES CORRECTLY, TO CONTACT A PIAGGIO DEALERSHIP OR AUTHORISED SERVICE CENTRE. THE USE OF NON-ORIGINAL ACCESSORIES MAY AFFECT THE STABILITY AND OPERATION OF YOUR MOTORSCOOTER AND REDUCE SAFETY LEVELS WITH POSSIBLE RISKS FOR THE DRIVER.**

# Typhoon 50



**PIAGGIO®**



**Chap. 06  
Programmed  
maintenance**

## Scheduled maintenance table

Adequate maintenance is fundamental to ensure long-lasting, optimal operating conditions and performance of your scooter.

For this purpose, PIAGGIO offers a set of checks and maintenance services (for payment), which are included in the summary table shown on the following page. Any minor faults should be reported without delay to a **PIAGGIO Dealer or Authorised Service Centre** without waiting until the next scheduled service.

All scheduled maintenance services must be carried out at the specified times, even if the stated mileage has not yet been reached. Carrying out scheduled services on time is necessary to ensure your warranty remains valid. For all other information concerning Warranty procedures and "Scheduled Maintenance", please refer to the "Warranty Booklet".

### **EVERY 2 YEARS**

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#### **Action**

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Brake fluid - change

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### **AFTER 1000 KM**

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#### **Action**

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Hub oil - change

Mixer/gas transmission- adjustment

Odometer cable - greasing

Steering - adjustment

Brake control levers - greasing

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Brake oil level - check
-------------------------

Safety blocks - check
-----------------------

Electrical system and battery check
-------------------------------------

Tyre pressure and wear - check up
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Vehicle and braking system test- Road test
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### **AFTER 5000 KM, 25000 KM, 35000 KM, 55000 KM**

<b>Action</b>
---------------

Hub oil level - check
-----------------------

Spark plug/electrode gap - change
-----------------------------------

Air filter - cleaning
-----------------------

Mixer/gas transmission- adjustment
------------------------------------

Brake control levers - greasing
---------------------------------

Brake pads - condition and wear check
---------------------------------------

Brake oil level - check
-------------------------

Electrical system and battery check
-------------------------------------

Tyre pressure and wear - check up
-----------------------------------

Vehicle and braking system test- Road test
--

## **AFTER 10000 KM, 50000 KM**

### **Action**

Hub oil - change

Spark plug/electrode gap - replacement

Air filter - cleaning

Idling speed (\*) - adjustment

Mixer/gas transmission- adjustment

Variable speed rollers - replacement

Odometer cable - greasing

Transmission belt - check

Steering - adjustment

Brake control levers - greasing

Brake pads - condition and wear check

Brake oil level - check

Transmission elements- lubrication

Safety blocks - check

Suspensions - check

Electrical system and battery check

Headlamp - adjustment

Tyre pressure and wear - check up

Vehicle and braking system test- Road test

(\*) See regulations in the «Adjusting the idle speed» section

### **AFTER 15000 KM AND 45000 KM**

#### **Action**

Hub oil level - check

Spark plug/electrode gap - replacement

Air filter - cleaning

Mixer/gas transmission- adjustment

Transmission belt - replacement

Brake control levers - greasing

Brake pads - condition and wear check

Brake oil level - check

Electrical system and battery check

Tyre pressure and wear - check up

SAS box (sponge) (\*\*) - cleaning

Vehicle and braking system test- Road test

(\*\*) See the regulations of the "Secondary air system" section

## **AFTER 20000 KM AND 40000 KM**

### **Action**

Hub oil - change

Spark plug/electrode gap - change

Air filter - cleaning

Idling speed (\*) - adjustment

Cylinder cooling system - check/clean

Mixer/gas transmission- adjustment

Transmission belt - check

Variable speed rollers - replacement

Fuel-oil mixer belt - replacement

Odometer cable - greasing

Steering - adjustment

Brake control levers - greasing

Brake pads - condition and wear check

Brake oil level - check

Transmission elements- lubrication

Safety blocks - check

Suspensions - check

Electrical system and battery check

Headlamp - adjustment

Tyre pressure and wear - check up

Vehicle and braking system test- Road test

(\*) See section «Adjusting the idle speed»

### **AFTER 30000 KM**

#### **Action**

Hub oil - change

Spark plug/electrode gap - replacement

Air filter - cleaning

Idling speed (\*) - adjustment

Mixer/gas transmission- adjustment

Transmission belt - replacement

Variable speed rollers - replacement

Odometer cable - greasing

Steering - adjustment

Brake control levers - greasing

Brake pads - condition and wear check

Flexible brake tubes - replacement

Brake oil level - check

Transmission elements- lubrication

---

Safety blocks - check

Suspensions - check

Electrical system and battery check

Headlamp - adjustment

Tyre pressure and wear - check up

SAS box (sponge) (\*\*) - cleaning

Vehicle and braking system test- Road test

*(\*) See regulations in the «Adjusting the idle speed» section (\*\*) See the regulations of the "Secondary air system" section*

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### **AFTER 60000 KM**

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#### **Action**

Hub oil - change

Spark plug/electrode gap - replacement

Air filter - cleaning

Idling speed (\*) - adjustment

Cylinder cooling system - check/clean

Mixer/gas transmission- adjustment

Transmission belt - replacement

Variable speed rollers - replacement

Fuel-oil mixer belt - replacement

---

Odometer cable - greasing
Steering - adjustment
Brake control levers - greasing
Brake pads - condition and wear check
Flexible brake tubes - replacement
Brake oil level - check
Transmission elements- lubrication
Safety blocks - check
Suspensions - check
Electrical system and battery check
Headlamp - adjustment
Tyre pressure and wear - check up
SAS box (sponge) (**) - cleaning
Vehicle and braking system test- Road test

(\*) See regulations in the «Adjusting the idle speed» section (\*\*) See the regulations of the "Secondary air system" section

### **RECOMMENDED PRODUCTS TABLE**

<b>Product</b>	<b>Description</b>	<b>Specifications</b>
TUTELA MATRYX MOTO RIDER	Rear hub oil	SAE 75W/85 API GL4 synthetic multigrade oil
SELENIA HI Scooter 2 Tech	Oil for flexible transmission lubrication	Oil for two-stroke motors

	(acceleration control, mixer and odometer	
SELENIA Air Filter Oil	Oil for air filter sponge	Mineral oil with specific additive for increasing its ISO VG 150 adhesive quality
SELENIA HI Scooter 2 Tech	Mixer Oil	Synthetic oil that passes API TC ++ specifications
TUTELA TP1	Grease for brake levers, throttle, stand	NLGI 1-2 complex calcium soap base white grease spray
TUTELA MRM 2	Grease for the rotating ring of the tone wheel	Molybdenum disulphide grease and lithium soap
TUTELA TOP 4	Brake fluid	SAE J1703, NHTSA 116 DOT 4, ISO 4925 synthetic fluid
MONTBLANC MOLYBDENUM GREASE	Grease for driven pulley shaft adjusting ring and moving driven pulley housing	Molybdenum disulphide grease
TUTELA ZETA 2	Grease for steering bearings, pin and swinging arm seats.	Lithium soap and zinc oxide grease NLG12





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

Not all versions shown in this publication are available in all countries. The availability of individual versions should be checked by consulting the official Piaggio sales network.

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PIAGGIO & C. S.p.A. - Q.C.S./After-Sales Service

V.le rinaldo Piaggio, 23 - 56025 PONTEDERA (Pi)