Use of incorrect coolant solutions will cause severe engine and cooling system damage. Use coolant containing corrosion inhibitors made specifically for aluminium engines and radiators in accordance with the instructions of the manufacturer.

Coolant chemicals are harmful to the human body. Follow coolant manufacturer warnings and coolant handing instructions.

Soft or distilled water must be used with the inhibitor chemicals and the antifreeze in the cooling system. If normal water is used in the system, it the cooling system tubes may become blocked.

If the lowest ambient temperature encountered falls below the freezing point of water, protect the cooling system against freezing. Use a permanent type of anti-freeze (soft water and ethylene glycol plus corrosion and rust inhibitor chemicals for aluminium engines and radiators) in the cooling system.

For the coolant mixture ratio under extreme conditions, choose the mixture ratio listed on the container for the lowest ambient temperature.

Permanent types of antifreeze on the market have anticorrosion and anti-rust properties. When diluted excessively these lose their antifreeze and anticorrosion properties. These must be diluted in accordance with the instructions of manufacturer.

Coolant Level

- Situate the motorcycle so that it is perpendicular to the ground.
- Remove the radiator cap in two stages. First turn the cap anti-clockwise and wait for a few seconds. Then push and turn it further in the same direction to remove the cap.

(A). Radiator Cap.
Changing the coolant

- The coolant should be changed periodically to ensure long engine life.
- Wait for the engine to cool completely.
- Situate the motorcycle so that it is perpendicular to the ground.
- Remove the radiator cap.
- Place a bowl under the water pump cover and remove all the liquid in the radiator and engine, unlock the drain screw (B). Immediately wipe or wash off any coolant that spills on the frame, engine, or wheels.

NOTE
Initially a permanent type of antifreeze is installed in the cooling system by the manufacturer. This is green in colour, containing 30% ethylene glycol with a freezing point of –18°C.

Recommended liquid

Permanent type of antifreeze (distilled water and ethylene glycol) with corrosion and rust inhibitor chemicals for aluminium engines and radiators.

NOTE
Check the level when the engine is cold.

If the coolant level is low, add the correct amount of coolant through the filler opening.

WARNING
If coolant gets on the tyres this will make them slippery and could result in an accident.
- Examine the used coolant. If white cotton-like patches appear in the liquid then this means that the aluminium elements of the cooling system are corroded. If the liquid is brown then this means that the steal or iron parts of the system are oxidized. In either case clean out the system.
- Check the cooling system for damage, loose joints, or leaks.
- Put the drain screw on the water pump cover and lock it with the indicated torque. Change the copper washer by a new one.

**Screw torque:**

**Drain screw on the water pump cover:** 9 Nm.

- Fill the radiator up to the edge and install the radiator cap.
- Check the cooling system for leaks.
- Start the engine, warm up the engine, and then stop it.
- Check the coolant level after the engine cools down. Add coolant up to the bottom of the radiator filler neck.

**SPARK PLUG**

The standard spark plug is indicated inside the table and the torque to lock it is 13 Nm.

**Standard spark plug**

**Standard spark plug Gap between electrodes:** 0.7-0.8 mm.

The spark plug should be taken out periodically to check the electrode gap. If the plug is oily or has carbon build up on it the clean it with a sand blaster. Following abrasive particle cleaning, the spark plug should be cleaned with a wire brush or similar. Measure the distance between electrodes using a gauge and adjust in case that it is not correct by bending the outer electrode. If the spark plug electrodes are oxidised, damaged or the insulation is broken then replace the plug.

**NOTE**

*Inspect every 30 hours. Replace every 60 hours.*

To find the correct heat grade spark plug is being used, take it out and examine the insulation around the electrode. If the ceramic is light brown, the spark plug is correctly matched to engine temperature. If the ceramic is white, the plug should be replaced with the next coldest plug. If the ceramic is black, the plug should be replaced with the next hottest plug.

**NOTE**

*If the engine output decreases, replace the spark plug to regain performance.*

**Spark plug maintenance**

**COMMENTS**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>If the standard spark plug is wet then replace it.</td>
<td></td>
</tr>
<tr>
<td>If the standard spark plug looks glassy or has a white colour, replace it</td>
<td></td>
</tr>
</tbody>
</table>
WARNING
An incorrectly fitted spark plug, or an incorrect temperature can lead to severe damage to the engine, and this damage is not covered by the warranty.

Always use the manufacturer’s recommended brand of spark plug. Check with your dealer or a qualified mechanic to determine the correct spark plug for your motorbike.

Removing the spark plug
To remove the spark plug, follow these steps:

1. Remove the bolt (A) and remove the seat (B).
2. Remove the bolts (C) (left and right).
3. Remove the tank securing bolt (E).
4. Close the fuel tap F and remove the fuel tub G.

**WARNING**

Becareful to the fuel loss when you remove the fuel tub, the fuel is highly flammable.
Stop the engine, before to remove the fuel tank. Take care to be inside a well-ventilated area that there is no sparks or flame anywhere near the working zone.

5. Remove the spark plug hood.

**NOTE**

A cap protects the spark plug.
Keep this clean and dry.

6. Take out the spark plug and clean carbon deposits from the spark plug with a small tip or a metallic brush.
Readjust the gap (A) in the plug between 0.7 and 0.8 mm. (0.028 – 0.031 in).
Before removing the carbon deposits, check its colour; this colour tells us whether the standard plug is the best for our use.
AIR FILTER

An obstructed air filter restricts the air intake of the engine, increasing the petrol consumption and reducing the engine power as well as the destruction of the spark plug.

**WARNING**

An obstructed air filter may allow dirt to enter into the injector blocking it open; this could lead to an accident.

**CAUTION**

An obstructed air filter will allow dirt to enter the engine causing excess wear and engine damage.

Inspect this without fault, before and after each race or session. Clean if necessary.

**Cleaning the air filter**

**WARNING**

Clean the filter in a well-ventilated zone and ensure that there are no sources of naked flame or sparks near the work area (including the focus of a powerful light). Do not use petrol to clean the filter as this could result in an explosion.

- Remove the seat.
- Remove the bracket (A) and remove the filter (B).

Stuff a clean, lint-free towel into the intake manifold so that no dirt is allowed to enter.

**CAUTION**

Do not spin the filter on its cage. It is possible to tear or damage the filter.

- Clean inside the filter housing using a damp cloth.

Remove the cage (B) from the air filter (A).
- Check the air filter for damage such as scraping, hardening, shrinkage. If it is damaged then replace otherwise dirt will enter the throttle body.
- Grease all of the connections and bolts of the air filter and inlets.

- Squeeze it and take it out with a clean cloth.

- Check that the throttle grip turns smoothly.
- Check that the throttle grip has 2-3 mm of play.
- If the clearance is incorrect, pull out the rubber protection from the tensioner (A), unlock the locknut (B) and adjust the tolerance with the tensioner. Lock after the locknut and push the rubber protection on it.

\[\text{(A). Adjustment.} \quad \text{(B). Lock nut.} \quad \text{(C). Throttle grip.} \quad \text{(D). Brake fluid reservoir.}\]

NOTES:
Before the cable adjustment, you must adjust the idle.

WARNING:
After the adjustment, start the engine and turn the handlebar left and right at the maximum, to check if the idle increase.
CLUTCH

Proper clutch lever play is 2-3 mm. Play increases with the clutch wear and thus requires adjustment.

When there is too much play, first try to adjust the level of the clutch lever. Tighten the adjustment bolt to obtain the optimal play.

(A). Clutch Lever.
(B). Clutch cylinder piston rod.
(C). Hydraulic fluid tank.

If the adjustment of the clutch lever has reached its limit, then play must be adjusted by the clutch cylinder piston rod.

THE EXHAUST SYSTEM

The exhaust and the silencer reduce noise and carry the gasses away from the driver.

If the exhaust is damaged, rusted, dented or split then change it. Change the silencer packing if the noise begins to be too loud or if the engine performance drops.

Changing the silencer
- Release the exhaust flange.

(A). Silencer.
(B). Silencer attachment bolts.
Changing the silencer packing

- Remove the cover rivets (A).
- Extract the silencer cover (B).
- Pull out the inner silencer.
- Change the silencer packing by wrapping around the inner tube.
- Refit the assembly.

CHAIN GUIDE

The drive chain must be checked, adjusted, and lubricated in accordance with the Periodic Maintenance table in order to prevent excessive wear. If the chain is worn or badly adjusted (too tight or loose) then it may jump off the sprockets or break.

WARNING

A chain that breaks or jumps off the sprockets could snag on the engine sprocket or lock the rear wheel, severely damaging the motorcycle and causing it to go out of control.

Checking tension

The space between the chain and the swing arm at the rear of the chain slider should be 30-50 mm. Rotate the rear wheel to find the place where the chain is tightest. Adjust the drive chain if it has too much or too little slack.

NOTE

In muddy or humid conditions, the mud gets inside the chain increasing tension and may cause the chain to break. To prevent this, adjust the chain to 30-50 mm of space between the chain and rocker arm whenever necessary.
In addition to checking the slack, rotate the rear wheel to inspect the drive chain and sprockets for damaged rollers, loose pins and links, unevenly or excessively worn and damaged teeth.

**TENSION ADJUSTMENT**

- Loosen the rear axle nut.
- Turn the nuts on the chain adjusting bolts evenly until there is 30-50 mm of space between the chain and the swing arm. To keep the chain and wheel aligned, the adjustment on the left of the chain should be equal to that on the right.

**NOTE**

*Wheel alignment can also be checked using the straightedge or string method.*

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Misalignment of the wheel will result in abnormal wear and may result in an unsafe riding condition.</td>
</tr>
</tbody>
</table>

- Tighten the chain adjustment nuts.
- Tighten the axle nut to 98 N·m.
- Rotate the wheel, measure the chain slack again at the tightest position, and readjust if necessary.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the axle nut is not securely tightened unsafe riding conditions may result.</td>
</tr>
</tbody>
</table>

**Drive chain, chain guide, chain slide, and rear sprocket**

When the chain has worn so much that it is more than 2% longer than when new, it is no longer safe for use and should be replaced. Whenever the chain is replaced, inspect both the engine pinion and rear sprocket, and replace them if necessary. Worn teeth will cause the chain to wear more quickly.
NOTE
For maximum resistance and safety, a genuine part must be used for replacement.
To minimize any chance of the master link coming apart, the master link clip must be installed with the closed end of the «U» points in the direction of chain rotation.

(A). Clip.
(B). Chain direction of rotation.

Chain Wear Guide
Visually inspect the drive chain wear guide (A); if the guide is worn excessively or damaged, replace it.

Pinion and sprocket teeth wear
Visually inspect the pinion and sprocket teeth. If they are worn or damaged, replace the pinion or sprocket.

Lubrication
Lubrication is necessary after riding through rain or in the mud, or any time that the chain appears dry. A heavy oil is preferred to a lighter oil because it will stay on the chain longer and provide better lubrication.

Chain guide slide
Visually inspect the upper and lower part of the chain slider on the swing arm. If this is worn then replace it.

(A). Chain guide slide.
(B). Rocker arm.
Apply oil to the side of the links so that it will penetrate better. Wipe off any excess oil.

HANDLEBARS

To suit various riding positions, the handlebar position can be adjusted front to rear.

Handlebar position adjustment

Loosen the handlebar holder bolts (B), of the handlebar holder (A) then rotate bars to desired position.

Tighten the bolts securely; first the forward bolts then the rear, to a torque of 25 Nm. If the handlebar is correctly installed, there will be a minimal gap at the front and rear of the clamp after tightening (A).

BRAKES

Disc and disc pad wear is automatically compensated for and has no effect on the brake lever or pedal action. So there are no parts that require adjustment on the brakes except brake lever play and the brake pedal position and play.
Front brake lever

Adjust brake lever to a comfortable position. To adjust, loosen the nut under the rubber protection (B). Tighten after adjustment. Ensure that the brake responds correctly.


Rear brake pedal

When the brake pedal is in rest position, there should be a play of 10 mm. If not, then adjust this. Ensure that the brake responds correctly and does not rub. To adjust the pedal play, loosen the locknut, rotate the bolt and retighten the locknut.

(A). Brake pedal. (B). 10 mm of play.

WARNING

If the brake lever or pedal feels mushy when it is applied, there might be air in the brake lines or the brake may be defective. Since it is dangerous to operate the motorcycle under such conditions, check the brakes immediately.

Brake fluid

Regularly check the brake fluid and periodically change it. It should also be changed if it is contaminated by water or dirt.
Recommended liquid

Use D.O.T 3 or D.O.T 4

Fluid level inspection

The front (A) and rear (B) reservoirs must be kept more than half full with brake fluid. If the amount of brake fluid is insufficient, add brake fluid.

CAUTION

Do not spill brake fluid onto any painted surface. Do not use fluid from a container that has been left open or that has been unsealed for a long time. Check for fluid leakage around the fittings. Check for brake line damage.

WARNING

Do not mix brands of fluid. Change the brake fluid in the brake line completely if the brake fluid must be refilled with a type other than the brake fluid already in the reservoirs.

Brake Wear Inspection

If the thickness of either pad is less than 1 mm, replace both pads in the calliper as a set. Pad replacement should be done by an authorized GAS GAS dealer.

STEERING

The steering should always be kept adjusted so that the handlebar will turn freely but without excessive play.
To check the steering adjustment, lift the bike off the ground using a stand underneath the chassis. Push the handlebar lightly to either side; if it continues moving under its own momentum, the steering is not too tight. Squatting in front of the motorcycle, grasp the lower ends of the front fork at the axle, and push and pull the bottom end of the front fork back and forth; if play is felt, the steering is too loose.

If the steering needs adjustment

- Using the stand under the frame, stabilize the motorcycle.
- Place a stand or block under the engine to raise the front wheel off the ground.
- Remove the foam protector.
- Remove the handlebar by loosening the handlebar clamp bolts (A).
- Loosen the steering stem bolt (B).
- Loosen the bolts for the upper suspension plate and remove it (C).
- Rotate the steering adjustment bolt using the special spanner in order to obtain the appropriate adjustment.
- Install the upper suspension plate (D).
- Tighten the steering stem nut (B), the washers and bolts on the front forks to the correct torque.

Steering head nut: 44 Nm (4.5 Kgm)
Suspension plate bolts: 15 Nm (1.5 Kgm)

- Recheck the steering and readjust if necessary.
- Refit all removed parts.

STEERING LOCK

This mechanism allows us to lock the steering. It is located on the steering tube.

The handlebars must be turned to the right completely, then insert the key, rotate left, press, rotate right and take the key out.

(A). Steering lock.
FRONT FORK

The front fork should always be adjusted for the rider’s weight and road conditions. The adjustments must be performed in 4 steps:

- Air pressure: Air pressure affects the fork travel. The air pressure increases as the fork heats up, in other words it varies as a function of time of operation. We do not recommend using air pressure, because the suspension has been designed to work without air pressure.

- Rebound and compression dampening adjustment: Turn the adjusting screws clockwise to increase damping, turn it counterclockwise to reduce damping.

- Oil level adjustment: The effects of higher or lower fork oil level are only felt during the final 100 mm of fork travel. A higher oil level will make the fork rebound faster. The lower the oil level is the fork rebound will be slower.

- Fork spring: Optional springs are available that are softer and stiffer than standard. There is also the possibility to adjust the spring preload.

Air Pressure

The standard air pressure in the fork is atmospheric air pressure. The air pressure increases as the fork heats up, because of this the fork action becomes harder.

- Using a stand under the frame, and stabilize the motorcycle.

- Place a support under the engine so that the front wheel is raised off the ground.
- Remove the purge screw (A) at the top of the front fork to bleed the air out.

Rebound dampening adjustment MARZOCCHI Ø48

- To adjust the rebound, turn the adjusting screw located at the bottom of the front fork.

CAUTION

Never leave the key in the latch. If the steering is turned to the left with the key inerted in the latch it will be severely damaged.

The left and right fork tubes must be at the same level and aligned with the top bridge.

- Adjust the rebound to suit the rider’s preference under determined conditions.
- Use the standard settings to adjust the rebound (turn it 20 positions counterclockwise ).
Compression dampening adjustment MARZOCCHI Ø48
- To adjust the compression, turn the adjusting screw located at the top of the front fork (B).
- Adjust the compression to suit the rider’s preference under determined conditions.
- Use the standard settings to adjust the compression (turn it 20 positions counterclockwise).

Suspension tube spring
Different springs are available in accordance with the rider’s weight or the road conditions.
- Harder springs make the fork stiffer, and rebound action quicker.
- Softer springs make the fork softer, and rebound action slower.
Preload: turn adjusting screw (C) counterclockwise as far as it will go. See page 33.
MZ 48: turn clockwise 1 turn.

Suspension top bridge position adjustment
Make sure the front tire does not rub against the fender when the fork tubes are compressed fully. Make this adjustment to a minimum of 5 mm.

REAR SUSPENSION
The rear suspension is composed of the shock absorber, swingarm, linkages and torque rod.

Generally speaking, the operating characteristics are similar to the front fork. But its unique characteristic is that it has, besides the shock absorber, an articulated quadrilateral composed of the linkages and torque rod.

To match various riding condition types, the shock absorber spring can be adjusted or replaced with an optional one. Also the dampening force can be easily adjusted, this feature makes it unnecessary to change oil viscosity.

Shock absorber extension adjustment
To adjust, turn the extension adjuster in the lower part of the shock absorber until a “CLICK” is heard.
Rebound adjustment standard measures: 16 “CLICKS”. (Counterclockwise from fully closed position).
High compression adjustment

To adjust, turn the extension adjuster in the top part of the shock absorber until a “CLICK” is heard.

As the control is closed the compression will be harder, on the other hand as it is opened it will be softer. Normally, the standard measurement would be 24 clicks from the completely closed position.

Spring adjustment

- Remove the seat and side covers.
- Loosen the air cleaner duct clamp screw.
- Remove the muffler.
- Remove the subframe with the air cleaner box.

Suspension spring

The standard spring is 5,2 N/mm.
Preload: 10 mm.

- Tighten the locknut securely.
- After adjustment, move the spring up and down to make sure that the spring is fully seated.
- Install the parts removed.

NOTE
Refer to the suspension adjustments on page 44.

Rear shock absorber spring replacement

Harder and softer springs are available. If the standard spring is not adequate for your purpose, select a proper one according to the rider’s weight and the road conditions.
- Using the harder spring:The rebound is quicker.
- Using the softer spring:The rebound is slower.
**WHEELS**

**Tyre**

- Tyre pressure affects traction, handling, and tyre life.
- Adjust the tire pressure to suit track conditions and rider preference, but do not deviate excessively from the recommended pressure.

**NOTE**

*Tyre pressure should be tested when the tyre is cold before driving.*

**Track conditions**

- When the track is wet, muddy, sandy or slippery, reduce the tyre pressure.
- When the track is stony or hard, increase the tyre pressure.

**Spokes and rims**

The spokes on both wheels must all be tightened securely and evenly and not be allowed to loosen. Unevenly tightened or loose spokes will cause the rim to warp, hasten nipple and overall spoke fatigue, and may result in spoke breakage.

**Centring the rim**

Put a quadrant gauge next to the rim and rotate the wheel to measure the axial centring.

Put the dial on the inside of the rim circumference, rotate the wheel and the difference between the largest and smallest measurement is the centring measurement.

If the wheel is slightly off-centre then this can be corrected by loosening certain spokes and tightening others in order to change the rim position. If the rim is bent or crooked then it must be replaced.

**NOTE**

*A soldered area on the rim may give an excessive reading. Ignore this while measuring the centring.*
CLEANING

1- Preparation for cleaning

Before cleaning the motorcycle must be prepared so that water does not penetrate certain areas of the bike.

The exhaust: Once this is cold, cover it with a plastic bag attached with rubber.

Clutch and brake levers, grips and stop button: cover with a plastic bag.

Air filter intake: cover this with insulation tape or a cloth.

2- Where to be careful

Avoid spraying water with any great force near the following places: Disc brake master cylinders and callipers; under the fuel tank (If water gets into the ignition coil or into the spark plug cap, the spark will jump through the water and be grounded out; the affected parts must be dried).
Front and rear hubs.
Steering pivots (steering tube).
Rear suspension system.
Swing arm pivots.

3- After cleaning

- Remove the plastic bags and clean the air filter intake.
- Lubricate the locations listed in the lubrication section.
- Start the engine and let it heat for 5 minutes.
- Check the brakes before driving the bike.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never wax or lubricate the brake disk, this could lead to brake failure and could provoke an accident. Clean the disk using trichloroethylene or acetone.</td>
</tr>
</tbody>
</table>
Every day before using the bike, rapidly ensure that all bolts and nuts are tightened. Also make certain that all of the other fastenings are in place and in good condition.

1- Front and rear wheels
2- Front forks
3- Handle bars
4- Clutch lever support bolt
5- Air filter housing bolts
6- Seat support bolts
7- Spokes
8- Disk plate screws
9- Front axle bolt
10- Brake attachment bolt
11- Sub chassis support bolt
12- Radiator support bolts
13- Nuts and bolts of the engine mounting
14- Shift pedal bolts
15- Chain guide bolts
16- Chain adjust bolt
17- Rear axle bolt
18- Silencer support bolts
19- Sub chassis bolts
20- Rear shock bolts
21- Exhaust flange bolt
22- Upper suspension plate bolts
23- Steering head nut
24- Brake lever support bolt
25- Rod support bolt
26- Rocker arm bolt
TIGHTENING TORQUE TABLE

Tighten all of the bolts and nuts using the correct spanners. If not correctly tightened then motorcycle damage or even an accident could occur.

<table>
<thead>
<tr>
<th>PART NAME</th>
<th>Nm</th>
<th>Kgm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENGINE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine drain plug</td>
<td>20</td>
<td>2,0</td>
</tr>
<tr>
<td>Kick pedal bolt</td>
<td>20</td>
<td>2,0</td>
</tr>
<tr>
<td>Kick pedal nut</td>
<td>25</td>
<td>2,5</td>
</tr>
<tr>
<td>Shift pedal bolt</td>
<td>10</td>
<td>1,0</td>
</tr>
<tr>
<td>Spark plug</td>
<td>11</td>
<td>1,0</td>
</tr>
<tr>
<td>Water pump cover drain plug</td>
<td>13</td>
<td>1,3</td>
</tr>
<tr>
<td><strong>CHASSIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calliper mounting bolts</td>
<td>25</td>
<td>2,5</td>
</tr>
<tr>
<td>Disc plate mounting screws</td>
<td>10</td>
<td>1,1</td>
</tr>
<tr>
<td>Engine mounting bolts</td>
<td>36</td>
<td>3,6</td>
</tr>
<tr>
<td>Front axle bolt</td>
<td>51</td>
<td>5,1</td>
</tr>
<tr>
<td>Front brake lever support bolt</td>
<td>6</td>
<td>0,6</td>
</tr>
<tr>
<td>Fork flange bolt</td>
<td>15</td>
<td>3,0</td>
</tr>
<tr>
<td>Steering nut</td>
<td>98</td>
<td>10,0</td>
</tr>
<tr>
<td>Rear axle nut</td>
<td>98</td>
<td>10,0</td>
</tr>
<tr>
<td>Rear brake pedal bolt</td>
<td>9</td>
<td>0,9</td>
</tr>
<tr>
<td>Sub frame support bolt</td>
<td>26</td>
<td>2,7</td>
</tr>
<tr>
<td>Rear shock absorber bolt</td>
<td>39</td>
<td>4,0</td>
</tr>
<tr>
<td>Rear disc wheel drive bolt</td>
<td>29</td>
<td>3,0</td>
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<tr>
<td>Spokes</td>
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<td>0,15</td>
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<tr>
<td>Steering axle bolt</td>
<td>4</td>
<td>4,5</td>
</tr>
<tr>
<td>Rocker arm bolt</td>
<td>81</td>
<td>8,3</td>
</tr>
<tr>
<td>Rod bolt</td>
<td>81</td>
<td>8,3</td>
</tr>
</tbody>
</table>
**LUBRICATION**

Lubricate the points shown here, with either motor oil or regular grease, periodically or whenever the vehicle is wet, and especially after using a high-pressure spray washer. Before lubricating each part, clean off any rusty spots with rust remover and wipe off any grease, oil, dirt, or grime.

**General lubrication**

- Clutch lever (A).
- Front brake lever (B).
- Rear brake pedal (C).
- Rear brake bearing (D).
- Shift pedal (E).

Use an aerosol with a pressure tube to lubricate:

- Use grease on the inner throttle cable.
Chain lubrication

Lubricate the chain after wet terrain or when the chain looks dry. A high viscosity oil rather than low viscosity oil is better because it will stay a long time in chain providing lubrication. Put oil on the sides of the chain rollers (A) so that it penetrates into these; remove excess oil.

The recommended viscosity is SAE 5 W-40. If it’s not possible, look at the lower table to find another viscosity.

Checking the oil level and making the changes periodically are two very important operations to keep the engine in perfect shape.

After 5 hours of running of a new bike, remove and change the oil and the oil filter. After that, you must change the oil every 10 hours or 500 kms.

NOTE
The engine oil expands and thus the level increases when it is hot. Check and adjust the level when the motor oil is not hot.

Changing the oil and filter

The oil should be changed when the engine is hot, since this helps the oil to go out through the drain located in the lowest part of the engine.

The engine oil and the exhaust manifold can be very hot and cause burns. Wait until the oil and the exhaust manifold are a little cooler.

ENGINE OIL

Use a premium 4-stroke engine oil to lengthen the life of your motorcycle. We recommend to use the type SG oil with the classification API.
NOTE
Put used motor oil in an appropriate container for recycling.

WARNING
Engine oil is a health risk. Avoid any contact with this given that this could provoke irritations and, in the worst cases, skin cancer.

- Keep new or used oil away from the reach of children and animals.
- Clean clothes sleeves and pants.
- Wash yourself with soap if oil has been in contact with your skin.

To change the oil, follow the following steps:

1. Place a recipient underneath the crankcase.

2. With the motorbike parked on a flat surface, empty the engine oil from the sump by removing the plug (B).

3. Pull out the filter cover screws (C).

WARNING
Always use original GAS GAS parts. If the filter is incorrectly positioned, the engine oil will not flow, provoking a malfunction in the engine.
. During the oil filter change, check the o-rings and change it if you find a problem (crack)

5. Replace the filter cover and put the screws that secure the cover, but without tightening them too hard (do not exceed the recommended torque).

6. Put the oil cap on the carter and lock it. By the flywheel carter hole, introduce 1.300 ml of oil. (H)

7. Unlock the pressure control screw 1
- Start the engine and stay at the idle to check if the oil is coming by this pressure control screw.
- After 1 min, if the oil is not coming, stop the engine.
- Check if the oil tub or the oil pump are not block and check the etancheyt.
- After the solving problem, check again the oil pressure.
- Lock the pressure control screw at 10 Nm.

8. Remove the oil level screw K, the oil must exit by this hole when the bike is straight.

11. If more oil is needed it can be topped up through the opening in the ignition cover (H).

WARNING

The engine may be damaged if the oil is not used properly or the specifications recommended by GAS GAS MOTOS are not followed. Use the type of oil specified in the section on Petrol and Oil recommendations.
TUNING THE SUSPENSION

No area of machine adjustment is more critical than proper suspension tuning; an incorrectly tuned suspension will keep even the best rider from attaining the full benefit of his machine’s ability. Check the suspension according to the pilot and the conditions of the terrain. When tuning the suspension don’t forget:

- If the machine is new, break-in the suspension with at least one hour of riding before making any setting evaluations or changes.
- The major factors which must be considered in suspension tuning are: rider weight, rider skill and the track conditions (as well as the rider’s style and positioning on the machine).
- If you have a problem, test by changing your riding posture or position so that the cause of the problem can be deduced.
- It is a wise practice to adjust suspension settings to suit the rider’s strong points. If you are fast through the corners, adjust the suspension to allow fast cornering.
- Make setting changes in small increments; a little bit goes a long way, and it is very easy to over adjust a setting.
- The front and rear suspension should be balanced; when one is changed, the other should be changed similarly.

When evaluating suspension performance the rider must make every effort to ride consciously and recognize the effects of his changes;
such things as changes in rider position and increasing fatigue may lead to incorrect judgments about required setting adjustments.
- When the proper settings have been determined for a particular track, they should be written down for reference when returning to that track.
- Lubricate the bearings of the swinging arm, rods, rocker and joints before making changes and every 5 refills to prevent excess friction affecting the operation of the suspension.

Front forks

The fork oil level is adjustable. A change in the oil level will not affect the lower part of the stroke, but it will affect the upper part.
- When the oil level is raised:
The spring effect becomes more progressive, and the front fork action feels ‘harder’ in the later stage of travel, near the bottom of the stroke.
- When the oil level is lowered:
The spring effect becomes less progressive, and the front fork action feels softer near the bottom of the stroke.

- Change the fork oil level correctly to make the forks work more at the end of fork travel.
- If fork bottoming is experienced, raise fork oil level in 10 mm increments. This increase will cause a change in the upper stroke of the spring.

Adjusting the oil level

Adjust the oil level of the front forks (see the maintenance chart).
Changing incorrect adjustments

Listed below are some symptoms of improper suspension settings and the most adequate means of correcting them.

The proper settings can be achieved by applying the information in this chapter in a scientific manner. Simply take time a think about the changes you believe necessary, check them against the symptoms and cures described here, make the changes in small increments, and take notes on the changes and their effects.

Front fork symptoms

- **The front forks are too stiff**
  - Rebound adjustment incorrect.
  - The springs are too strong.
  - Too much oil.
  - Oil too dense.

- **The front forks stiffen at the end of the stroke**
  - The fork oil level is too high.

- **The front forks operate but ride is too hard**
  - Oil too dense.
  - Fork oil degraded

- **Too soft**
  The front forks dive excessively during braking and deceleration
  1. Front fork oil level low.
  2. The springs are too soft.
  3. Oil too light.
  4. Fork oil degraded.
  5. Rebound compression incorrect.

Rear shock absorber symptoms

- **Too hard**
  1. Rigid suspension.
     - High compression.
     - Hard spring.
  2. Hard driving.
     - Imbalance between the spring and rebound (too low).
  3. The spring is hard or very preloaded

- **Too soft**
  On landing after a big jump, bottoming occurs.
  - Spring too soft or compression damping is too soft
  - Shock oil degraded.

Determining the Proper Settings

- **Standard adjustments**
  From the factory, the machine is set up for an intermediate-weight rider possessing intermediate riding ability. If the rider weigh or ability is greater or lower than average then some adjustments may be made to the suspension.

- **Readjusting the suspension**

<table>
<thead>
<tr>
<th>Type of surface</th>
<th>Soft spring</th>
<th>Hard spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rough</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Experience

Beginner: softer spring with more rebound damping. Experienced: Harder spring.

Weight
Heavy: harder spring.
Light: soft spring

Track type
- Many corners:
  Lower the front end slightly (increase the fork tube height 5mm). This increases agility.

- Fast course with many jumps:
  Lift the front (lower the fork tube height to 5mm). This increases stability.

- Deep pits or sandy ground:
  Lift the front for increased stability.

Following the preliminary adjustments, make a trial run on the ground to evaluate the changes.

Remember:
1. Always make changes in small increments.
2. Make sure the rider is logical in their evaluation.
3. A change in the front suspension requires a change in the rear suspension and vice-versa.

Front and rear compatibility

Use this procedure to determine if the suspension is balanced reasonably well: Situate the motorcycle so that it is perpendicular to the ground. While standing next to the machine, pull on the front brake and place one foot on the brake firmly. If the bike maintains its level attitude as the suspension is compressed, the suspensions are well balanced. Sit astride the bike and take up a riding posture the check to see if the bike is in a horizontal position. If one end drops noticeably more than the other, the front and rear are not compatible and must be readjusted to achieve a better balance.

This is one of the most effective adjustment procedures but suspension settings will vary depending on the conditions at the track and the rider's preferences.

Front end searching going downhill or accelerating out of a bend?
Front forks too soft.
1. Increase the compression damping or rebound damping.
2. Increase the oil level 10 mm.
3. Use alternate harder spring, or increase spring preload.

Front end knifes or over-steers in turns (front end tends to turn inward)?
Front forks too soft.
1. Increase the compression damping or rebound damping.
2. Increase the oil level 10 mm.

Front end pushes out or slides in turns
1. Decrease the compression damping or rebound damping.
2. Release air from the fork.
3. Reduce the oil level 10 - 20 mm.
4. Use a softer spring.
Front fork doesn’t respond to small potholes in wide turns
- Front fork hard:
  1. Decrease the compression damping or rebound damping.
  2. Reduce the oil level 10 mm.
  3. Use a soft spring.

Rear end kicks when braking on potholes
The shock probably has too little rebound damping.
- Increase the rebound damping.

Rear tire won't "hook up" out of corners
(A loss of traction coming out of turns).
- The shock is too stiff:
  1. Reduce rear shock absorber spring.
  2. Reduce compression.
  3. Use a softer spring.

Landing on front wheel in fast jumps
(could also be a rider position problem).
- Rebound too soft or spring too hard:
  1. Increase rebound.
  2. Reduce preload of the shock spring.
  3. Reduce compression.

Front and rear of the bike bottom off high speed jumps:
(If harsh bottoming occurs once or twice per lap of the race).
- Front and rear suspension system are too soft:
  1. **Front**: Increase oil level and/or use harder spring.
  2. **Rear**: Use a stronger spring and / or increase compression.

- Bottoms at low speed: Increase spring preload to maximum.
- Bottom after successive 3 or 4 successive jumps.

**NOTE**
The rear shock on this machine, due to its adjustment possibilities, could confuse some riders.

a) The rear shock does not bottom out when the spring and damping are correct for the total weight of the machine and rider (full stroke).

b) A bottoming sensation (even through the machine is not bottoming) may actually be the inability of rider and machine weight to overcome an overly stiff spring or excessive damping.

Observe the rear while jumping; if it does not approach the limit then attempt to lower the spring preload.

**Gears**

**Selecting the development. Preconditions.**
Track conditions: vary the transmission by changing the rear sprocket.
- Fast track: Sprocket with lower number of teeth.
- Bends or sandy/soft hills: sprocket with more teeth.

- If the time trial is long then the development may be longer for increased speed.

- When the time trial of the course has many curves, hills or is wet, the development is decreased so that gear shifting is possible at low speeds.

- As a result gears can be changed depending on the terrain on the day of the race. Ensure to correctly adjust the machine in order to run the entire race.

**NOTE**
*After any adjustment, check front and rear compatibility.*

*Adjustments depending on the bottoming of the suspension (rear shock).*
- If the straight portion of a course on which the machine can be run at maximum speed is longer, the machine should be set so that the maximum speed can be developed all the way to the end of the straight course, but care should be taken not to over-rev the engine.

- It is difficult to adapt the machine to the entire circuit, for this reason it is necessary to determine the sections that have more effect on time and to adapt the motorcycle to these parts. This strategy means that the machine will gain overall track performance.

Special care according to track conditions

1. In dry, dusty conditions (such as volcanic ash or fine powdery dust) special care must be given to keep the air cleaner element clean.

2. Wet heavy clay or mud sticking to the tyres and other parts of the vehicle. The mud can add significantly to the weight if the vehicle obstructing the radiator and therefore reduce performance. Take care not to overheat the engine. The same applies to deep sand.

3. In muddy or sandy conditions adjust the chain looser than in other conditions as the chain and sprockets will pack with mud/sand and reduce chain slack.

4. Check chain and pinion/sprocket wear frequently when riding in mud or sand since wear is increased in these conditions.

5. In dusty conditions as the air cleaner collects dust, the engine runs richer.

SPARE PARTS AVAILABLE
Your Gas Gas dealer will provide any information you may require about spare parts.

DURING COMPETITION

(1). Check

1. Tighten the front axle and disks
2. Tighten the front forks flange bolts
3. Tighten the handlebar clamp bolts
4. Tighten the throttle control bolts
5. Verify, grease the throttle control
6. Verify the front and rear brake lines
7. Front and rear brake fluid level
8. Front and rear brake disc and calliper installation
9. Front and rear brake operation
10. Fuel tank installation
11. Check cables
12. Engine mounting bolts
13. Engine pinion
14. Shift pedal bolt
15. Transmission oil level
16. Battery charge
17. Carburator
18. Rod mounting bolts
19. Rod bolts
20. Rear shock bolts
21. Tighten the swinging arm pivot nut
22. Tighten the rear axle nut
23. Tighten nut and bolt of rear sprocket
24. Operate rear brake pedal
25. Check seat
26. Tighten the spokes
27. Tyre air pressure
28. Tighten chain
29. Coolant Level
(2) Following a day of competition

1. Clean the air filter and change the oil filter and the engine oil.
2. Adjust the chain tension / slack
3. Tighten the bolts of the rear sprocket
4. Tighten spokes
5. Check the tyre pressure
6. Tighten the front and rear axle nuts
7. Tighten the swinging arm nut
8. Tighten the nuts and bolts of the exhaust and silencer
9. Tighten the nuts and bolts of the mudguard support
10. Tighten the nuts and bolts of the tank seat
11. Check the brakes
12. Check steering play
13. Fill the tank
14. Check the coolant level

(3) After racing on dusty terrain

If dirt or dust gets through into the engine, the crankshaft will wear excessively. After riding, inspect the crankshaft. If the crankshaft is worn past the service limit, replace the crankshaft with a new one.

(4) Maintenance notice for after riding in rain on muddy course

1. Apply grease to swing arm pivot and rear suspension system.
2. Inspect the drive chain and rear sprocket for wear.
3. Clean the pinion and rear sprocket.
4. Check the piston-cylinder and crankshaft bearing.
5. Grease the throttle control and cable.

(5) Suggested spare parts

Consult the parts manual.

STORAGE

When the motorcycle is to be stored for any length of time, it should be prepared for storage as follows:

- Clean the entire vehicle thoroughly.
- Start the engine 5 minutes to warm the engine oil and then after remove it.
- Change the oil by a new one.
- Empty the fuel from the fuel tank, and empty the carburettor float bowl. (If left in for a long time, the fuel will deteriorate).
- Disconnect the battery.
- Lubricate the drive chain and all the cables.
- Spray oil on all unpainted metal surfaces to prevent rusting. Avoid getting oil on rubber parts or in the brakes.
- Set the motorcycle on a box or stand so that both wheels are raised off the ground. (If this cannot be done, put boards under the front and rear wheels to keep dampness away from the tire rubber).
- Tie a plastic bag over the exhaust pipe to prevent moisture from entering.
- Put a cover over the motorcycle to keep dust and dirt from collecting on it.

To put the motorcycle back into use after storage.

- Remove plastic bag from exhaust.
- Make sure the spark plug is tight.
- Fill the fuel tank with fuel.
- Check all the points listed in the Daily Pre-ride Inspection Section.
- General lubrication
- Connect the battery.
MULTIFUNCTION GAUGE

The multifunction device is water resistant, has 3 buttons, 2 LEDs. And a brightly lit LCD.

1. Amber warning led
2. Red warning led
3. LCD screen
4. Left button
5. Middle button or MODE
6. Right button
7. Remote Switch

It provides information about the speed, average speed, maximum speed, covered distance, total covered distance, operation time, total operation time, environmental temperature, engine temperature, battery voltage, time and maintenance.

NOTE: Engine temperature and voltage sensor is optional and is not available in GAS GAS.

WARNING

The multifunction device is water resistant but not waterproof. Do not wash with pressure washer. Do not leave the device in direct sunlight when the motorcycle is stopped. Avoid contact with gasoline, degreasers or other cleaning chemical products that could be cause damages in the device. Always remeber to pay attention to the road when you’re driving.
QUICK GUIDE

NORMAL MODE

Enable the screen backlight for 3 seconds, if the icon LO is displayed on the screen or the temperature is below -5°C will not turn on.

Switch between screens in normal mode.

Start/Stop stopwatch.

CONFIGURATION MODE

Enter to configuration mode.

Switch between configuration parameters

Move through the current parameter

Move to the next digit of the current parameter

TEMPORAL DATA RESET

Resets temporal data (MS, TT, DST y RT)

TRIP ADJUST

Enter/exit the trip adjustment mode

Change distance value

RESET AND CHANGE OF BATTERY

When the device turns on the LO icon, indicates that the battery charge is low and should be changed.

To change the battery (2) you must access to the rear of device, dismount the front light.

Use of the back reset button will reset all data from the device except the configuration parameters, the odometer and total operating time.
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Function</th>
<th>Display</th>
<th>Range</th>
<th>Units</th>
<th>Increment</th>
<th>Precision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current speed</td>
<td>SPD</td>
<td>4-299.9 km/h or MPH</td>
<td>km/h or MPH</td>
<td>0.1 km/h or MPH</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Average speed</td>
<td>AS</td>
<td>4-299.9 km/h or MPH</td>
<td>km/h or MPH</td>
<td>0.1 km/h or MPH</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Maximum speed</td>
<td>MS</td>
<td>4-299.9 km/h or MPH</td>
<td>km/h or MPH</td>
<td>0.1 km/h or MPH</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Distance</td>
<td>DST</td>
<td>0.00-299999 KM or M</td>
<td>km or M</td>
<td>0.1 km or M</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Odometer</td>
<td>ODO</td>
<td>0.00-299999 KM or M</td>
<td>km or M</td>
<td>1 km or M</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Stopwatch</td>
<td>TT</td>
<td>0-9999 hours 59 minutes</td>
<td>Hours:Minutes</td>
<td>1 Minute</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Ride time</td>
<td>RT</td>
<td>0-9999 hours 59 minutes</td>
<td>Hours:Minutes</td>
<td>1 Minute</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Accumulated ride time</td>
<td>ART</td>
<td>0-9999 hours 59 minutes</td>
<td>Hours:Minutes</td>
<td>1 Minute</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C or °F</td>
<td>0-999°</td>
<td>°C or °F</td>
<td>1 Grado</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Clock (12h or 24h)</td>
<td>00:00:00</td>
<td>12:59:59 or 23:59:59</td>
<td>H:M:S</td>
<td>1 Second</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Low battery</td>
<td>LO</td>
<td>Less than 2.45V</td>
<td>Volts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheel size</td>
<td></td>
<td>0-3999 mm</td>
<td>mm</td>
<td>1 mm</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Oil reminder</td>
<td></td>
<td>0-9999 KM or M</td>
<td>km or M</td>
<td>1 km or M</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Maintenance reminder</td>
<td></td>
<td>0-9999 KM or M</td>
<td>km or M</td>
<td>1 km or M</td>
<td>±0.1%</td>
</tr>
</tbody>
</table>

Operating temperature: 0°C to 60°C (32°F to 140°F)
Storage temperature: -20°C to 80°C (-4°F to 176°F)
Battery: 3V CR2032 (About 1 year life)
To enter the configuration mode, press the 3 front buttons for 3 seconds, release them to continue.

**Set Speed Units**
To switch between Km/h and MPH use the left button.
To confirm press the button MODE

**Set Wheel Size**
The multifunction gauge needs to know the wheel circumference for the correct measurement of the distance and speed, makes this measure as precise as possible.

See the “Measure of the wheel circumference” section for more information.
Change the blinking digit with the left button
Change to next digit using the button
To confirm press the button

**Set Clock Format**
To switch between 12h and 24h format use the left button
To confirm press the button MODE

**Set Time**
Change the blinking digit with the left button
Change to next digit using the button
To confirm press the button MODE

**Set Temperature Units**
To switch between °C and °F use the left button
To confirm, press the button MODE
When programmed engine temperature is reached, the amber warning led will turn on. The warning will be disabled if the value is 0. Change the blinking digit with the left button. Change to next digit using the button. To confirm press the button.

NOTE: engine temperature sensor is optional and is not available in GAS GAS.

Set Maintenance Reminder

When programmed kilometers or miles are reached, the maintenance reminder icon will turn on. Change the blinking digit with the left button. Change to next digit using the button. To confirm press the button.

NOTE: the oil and maintenance reminders must be manually reset by entering them again in the configuration mode.
Measure the diameter of the front wheel in millimeters. Multiply the diameter by 3.14 and you will get the measure of the wheel circumference.

**Method 1**
Measure the diameter of the front wheel in millimeters. Multiply the diameter by 3.14 and you will get the measure of the wheel circumference.

**Method 2**
Find a totally flat surface. Make a mark on the flank of the tire and the ground. Advance with the motorcycle until the wheel complete one revolution. Make a mark on the ground at this point. Measure the distance between the marks of the ground and convert to millimeters. Use this number as a measure of the wheel circumference. For greater precision, the driver or an equivalent weight must remain at the motorcycle during this process.

The following information is displayed:
- Actual speed (SPD)
- Distance (DST)
- Engine Temperature (ºC)
- Ride time (RT)
- Voltage (V)
- Clock

The following informations is displayed:
- Medium speed (AS)
- Total Distance (DST)
- Ambient Temperature (ºC)
- Time (TT)
- Voltage (V)
- Clock
NOTE: Engine temperature and voltage sensor is optional and is not available in GAS GAS.

SCREENS IN NORMAL MODE

Screen 3
The following information is displayed:
- Maximum speed (MS)
- Odometer (ODO)
- Maximum Engine Temperature
- Accumulated ride time (ART)
- Maximum Voltage (MAX V) and Minimum Voltage (MIN V)
  Alternate displays min/max voltage and avg/max speed every 2 seconds.
- Clock

SLEEP MODE

If the device is not used for 5 minutes, it will be automatically into sleep mode to save battery. In this mode it will only show the clock on the display.
The device will automatically exit this mode when it receives any sensor data or when you press any button.
**FAULT DIAGNOSIS**

*NOTE*
*This is not an exhaustive list, it is meant simply as a rough guide to assist troubleshooting for some of the more common difficulties.*

<table>
<thead>
<tr>
<th>FAULT</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 The starter motor does not work</td>
<td>- The fuse for the starter relay is blown.</td>
<td>- Remove the seat and change the starting relay fuse</td>
</tr>
<tr>
<td></td>
<td>- Battery discharged.</td>
<td>- Charge the battery and if this one doesn't take it, go to a GasGas dealer</td>
</tr>
<tr>
<td></td>
<td>- Low temperature.</td>
<td>- Start the engine with the kick pedal</td>
</tr>
<tr>
<td>2 The engine does not rotate</td>
<td>- Crankshaft locked.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Cylinder/ piston/ crankpin journal seizure.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Transmission assembly seizure.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td>3 Engine rotates but does not start</td>
<td>- Fuel supply incorrect.</td>
<td>- Check the fuel tub, remove the fuel tap to clean it and reassemble it correctly</td>
</tr>
<tr>
<td></td>
<td>- The motorcycle has been out of operation for a longer period of time.</td>
<td>- Remove the old fuel and change it, the engine would start immediately</td>
</tr>
<tr>
<td></td>
<td>- Spark plug soiled or humid.</td>
<td>- Dry the spark plug or change it.</td>
</tr>
<tr>
<td></td>
<td>- Engine flooded.</td>
<td>- If the engine is drowned, you can press the hot starter and on the same time, press the Kick pedal 5 at 10 times or use the electric starter 2 times 5 seconds. When the engine is dry, you can start normally. If the engine don't start, dry the spark plug or change it.</td>
</tr>
<tr>
<td>FAULT</td>
<td>CAUSE</td>
<td>SOLUTION</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 3 Engine rotates but does not start | The CDI connector, the generator or the bobina are oxidised or disconnected.  
- Petrol / gas mixture incorrect (Trim Eeprom). | - Clean the connectors and use a electric contact spray  
- Clean the venting tub from the fuel tank  
- Check the inlet system |
| 4 The engine starts but does not stop | - Air supply incorrect.  
- Fuel insufficient. | - Pull-out the starters.  
- Clean the venting tub from the fuel tank  
- Check the inlet system, check the fuel level |
| 5 The engine overheats | - Insufficient coolant in the circuit.  
- The radiator is soiled or partially obstructed. | - Add coolant, verify the cooling system seal.  
- Clean the radiator fins or change it |
| 6 The engine does not run smoothly | - Dry spark plug  
- Bad contact from the spark plug coil or the cable  
- Wrong valves clearance | - Control of the spark plug, cleaning, adjustment or a new one  
- Check the spark plug cap or change it  
- Valve clearance adjustment, contact a GasGas dealer |
| 7 The engine is under powerful or accelerates badly. | - Fuel supply faulty.  
- Air filter obstruction.  
- Exhaust deteriorated with leaks.  
- Valve set too small.  
- Decompression maladjusted. | - Clean or change the air filter.  
- Check if the exhaust system is damaged, change the glass fibre in the silencer if necessary.  
- Adjust the valve play. Go to a specialist workshop.  
- Verify the operation of the system. |
<p>| 8 High oil consumption | - Piston-cylinder ring diameter tolerance excessive. | - Adjust the tolerance by changing the piston rings. |</p>
<table>
<thead>
<tr>
<th>FAULT</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 High oil consumption</td>
<td>- The quality or viscosity of the oil is insufficient.</td>
<td>- Correct the engine oil level. Drain oil as necessary from the engine.</td>
</tr>
<tr>
<td></td>
<td>- Ignition problems.</td>
<td>- Empty the engine oil and fill with oil of the recommended viscosity.</td>
</tr>
<tr>
<td></td>
<td>- Valve adjustment play.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Adjust the valve play. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- See chapter 5.</td>
</tr>
<tr>
<td>9 Abnormal engine noise</td>
<td>- Over heating.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td>10 Detonations in the exhaust</td>
<td>- Carbon in combustion chamber.</td>
<td>- Clean the combustion chamber.</td>
</tr>
<tr>
<td></td>
<td>- The carburator need to be adjusted</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Incorrect or poor gasoline or wrong octane rating.</td>
<td>- Drain the petrol and fill with fresh or higher octane petrol.</td>
</tr>
<tr>
<td></td>
<td>- Incorrect or non-specified spark plug.</td>
<td>- Change spark plug for a new one or recommended one.</td>
</tr>
<tr>
<td></td>
<td>- Exhaust system joints deteriorated.</td>
<td>- Check if the exhaust system is deteriorated. The seals must be in perfect condition, if not then they must be changed for new ones.</td>
</tr>
<tr>
<td>11 White fumes from the exhaust</td>
<td>- Cylinder head gasket leak (water leaking into cylinder).</td>
<td>- Change the cylinder head gasket. Go to a specialist workshop.</td>
</tr>
<tr>
<td>12 Brown fumes from the exhaust</td>
<td>- Air filter obstruction.</td>
<td>- Clean or change the air filter. Go to a specialist workshop.</td>
</tr>
<tr>
<td>13 The gears do not engage</td>
<td>- Clutch does not release.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Shift fork worn or locked.</td>
<td>- Change the gear fork.</td>
</tr>
<tr>
<td></td>
<td>- Gear locked in transmission.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Shift lever damaged.</td>
<td>- Change the gear lever.</td>
</tr>
<tr>
<td></td>
<td>- Selector position spring broken or loose.</td>
<td>- Adjust the selector position spring or change it.</td>
</tr>
<tr>
<td>FAULT</td>
<td>CAUSE</td>
<td>SOLUTION</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>13 Gears don’t engage</td>
<td>- The spring of the selector is broken.</td>
<td>- Replace the down selector mechanism spring.</td>
</tr>
<tr>
<td></td>
<td>- Cylinder change if broken.</td>
<td>- Replace the gear drum.</td>
</tr>
<tr>
<td></td>
<td>- Gear ratchet spring broken.</td>
<td>- Replace the ratchet spring of the selector.</td>
</tr>
<tr>
<td>14 Gears jump</td>
<td>- Gear change fork damaged in the gears.</td>
<td>- Change gear fork.</td>
</tr>
<tr>
<td></td>
<td>- Gear teeth worn.</td>
<td>- Change. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Gear nipple damaged.</td>
<td>- Change. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Groove gear drum worn.</td>
<td>- Change. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Gear change fork pivot worn.</td>
<td>- Change. Go to a specialist workshop.</td>
</tr>
<tr>
<td>15 Clutch slipping</td>
<td>- No play in the clutch handle.</td>
<td>- Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Clutch plate worn.</td>
<td>- Replace the clutch plate. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Clutch housing worn.</td>
<td>- Replace the clutch hub.</td>
</tr>
<tr>
<td></td>
<td>- Clutch spring broken or weak.</td>
<td>- Adjust the selector position spring or change it.</td>
</tr>
<tr>
<td></td>
<td>- Clutch plates worn.</td>
<td>- Change the clutch disks. Go to a specialist workshop.</td>
</tr>
<tr>
<td>16 Bike unstable</td>
<td>- Cable obstructs handlebars.</td>
<td>- Put the cable to one side and release it a little.</td>
</tr>
<tr>
<td></td>
<td>- Steering shaft nut too tight.</td>
<td>- Undo the steering shaft nut.</td>
</tr>
<tr>
<td></td>
<td>- Steering bearings damaged or worn.</td>
<td>- Replace the steering bearing.</td>
</tr>
<tr>
<td></td>
<td>- Steering shaft bent.</td>
<td>- Change the steering shaft. Go to a specialist workshop.</td>
</tr>
<tr>
<td>17 Shock absorption too hard</td>
<td>- Front forks excess oil.</td>
<td>- Eliminate the excess oil to an adequate level.</td>
</tr>
<tr>
<td></td>
<td>- Front fork oil viscosity too high.</td>
<td>- Empty the fork oil and fill with oil of the recommended viscosity.</td>
</tr>
<tr>
<td></td>
<td>- Front forks twisted.</td>
<td>- Change front fork. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Excessive tyre pressure.</td>
<td>- Verify tyre pressure.</td>
</tr>
<tr>
<td>FAULT</td>
<td>CAUSE</td>
<td>SOLUTION</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>17 Shock absorption too hard</td>
<td>- Rear shock badly adjusted</td>
<td>- Adjust the rear shock.</td>
</tr>
<tr>
<td>18 Shock absorption too soft</td>
<td>- Front forks low oil.</td>
<td>- Add oil to the forks as required.</td>
</tr>
<tr>
<td></td>
<td>- Front fork oil viscosity too low.</td>
<td>- Empty the fork oil and fill with oil of the recommended viscosity.</td>
</tr>
<tr>
<td></td>
<td>- Front forks twisted.</td>
<td>- Change front fork. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Low tyre pressure.</td>
<td>- Verify tyre pressure.</td>
</tr>
<tr>
<td></td>
<td>- Rear shock absorber maladjusted.</td>
<td>- Adjust the rear shock.</td>
</tr>
<tr>
<td>19 The bike makes unusual noise</td>
<td>- Drive chain incorrectly adjusted.</td>
<td>- Adjust the chain.</td>
</tr>
<tr>
<td></td>
<td>- Chain worn.</td>
<td>- Change the chain, rear sprocket and secondary transmission pinion.</td>
</tr>
<tr>
<td></td>
<td>- Rear sprocket worn.</td>
<td>- Change the rear sprocket.</td>
</tr>
<tr>
<td></td>
<td>- Chain lubrication insufficient.</td>
<td>- Lubricate using a correct chain lubricant.</td>
</tr>
<tr>
<td></td>
<td>- Rear wheel misaligned.</td>
<td>- Align the rear wheel. Go to a specialist workshop.</td>
</tr>
<tr>
<td></td>
<td>- Oil front fork insufficient.</td>
<td>- Add oil to the forks as required.</td>
</tr>
<tr>
<td></td>
<td>- Front fork spring weak or broken.</td>
<td>- Replace the front fork spring.</td>
</tr>
<tr>
<td></td>
<td>- Brake disk worn.</td>
<td>- Replace the brake disk.</td>
</tr>
<tr>
<td></td>
<td>- Brake pads incorrect position or crystallised.</td>
<td>- Refit the pads or change them.</td>
</tr>
<tr>
<td></td>
<td>- Cylinder damage.</td>
<td>- Replace the damaged cylinder.</td>
</tr>
<tr>
<td></td>
<td>- Brackets, nuts, bolts not properly tightened.</td>
<td>- Verify and adjust to the correct tightening torques.</td>
</tr>
<tr>
<td>20 Handlebar shakes or excessively vibrates</td>
<td>- Tyre worn, swing arm or needle bearing worn.</td>
<td>- Change worn parts.</td>
</tr>
<tr>
<td></td>
<td>- Rim off-centre.</td>
<td>- Centre the rim.</td>
</tr>
<tr>
<td></td>
<td>- Rear wheel misaligned.</td>
<td>- Verify the tension of the wheel spokes. Re-adjust if necessary.</td>
</tr>
<tr>
<td></td>
<td>- Steering shaft play.</td>
<td>- Check the distance between steering shafts and adjust if necessary.</td>
</tr>
<tr>
<td></td>
<td>- Handlebar bracket loose, steering shaft bolt loose.</td>
<td>- Tighten the handlebar bracket and the steering shaft bolt to the correct tightening torques.</td>
</tr>
<tr>
<td>FAULT</td>
<td>CAUSE</td>
<td>SOLUTION</td>
</tr>
<tr>
<td>-------</td>
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<td>----------</td>
</tr>
</tbody>
</table>
| 21 Motorcycle pulls to one side | - Chassis twisted.  
- Steering incorrectly adjusted.  
- Steering shaft bent.  
- Front forks twisted.  
- Rear wheel misaligned. | - Change the chassis. Go to a specialist workshop.  
- Adjust the steering. Go to a specialist workshop.  
- Change steering shaft. Go to a specialist workshop.  
- Change front fork.  
- Align the wheels. |
| 22 The brakes do not function correctly | - Disk worn.  
- Loss of brake fluid.  
- Brake fluid deteriorated.  
- Piston cylinder broken.  
- Brakes incorrectly adjusted. | - Change disk.  
- Check the brake circuits. Change those that are damaged or broken.  
- Drain the brake fluid and put a new product, recommended by the maker.  
- Replace the piston cylinder.  
- Adjust the brakes. |
| 23 The lights blow | - Voltage regulator faulty. | - -Remove the seat and the fuel tank and check the connectors and the regulator. |
| 24 The lighting system does not work | - The light cable connector is destroyed or disconnected | - Remove the back light cover. |
WARRANTY TERMS AND CONDITIONS

(According to Law decree 23/2003 on the 10th of July, covering Warranties on Consumer Goods Sold)

Warranty terms of the manufacturer GASGAS Motos, S.A.

The company GAS GAS MOTOS, S.A. (hereafter referred to as “GG”), with this present document guarantees the consumer, the purchaser of a vehicle manufactured by GG, that both the materials and the manufacturing are free of defects in accordance with the highest standards of quality. Consequently, GG with this document guarantees the consumer (hereafter referred to as the “purchaser”), in accordance with the conditions set out below, the repair, free of charge, of any defect in materials or that might result from faulty manufacture that is detected in a new motorcycle within the period covered by this Warranty and with no limit on the number of kilometres covered or hours of use.

Warranty Period

The period covered by this Warranty will begin on the day of delivery of the vehicle to the purchaser by a GG authorised dealer, or in the case of demonstration models, on the date in which the vehicle is used for the first time. The seller will be responsible for any unwarranted faults that become apparent within the period established in the Law decree 23/2003 on the 10th of July covering Warranties on Consumer Goods Sold from the time of delivery and in accordance with the Directive 1999/44/EC for other members of the European Community. For countries outside the European Community, the Warranty Period will be determined by the existing regulations in those countries. Nevertheless, should the fault appear during the first six months after the delivery of the motorcycle, it will be presumed that the said fault existed at the time of delivery; from the end of the sixth month onwards, the purchaser must demonstrate that the unwarranted fault existed at the moment of delivery. During the first six months subsequent to the delivery of the repaired vehicle, the seller will be responsible for any unwarranted faults arising out of the repair. Any defects detected in the product must be brought to the attention of a GG authorised dealer within the Warranty Period. If the last day of this period is a Sunday or an official holiday, the Warranty period will be extended such that the last day of the period covered will be the first working day after the Sunday or official holiday.

Those claims under Warranty for defects not brought to the attention of a GG authorised dealer before the end of the Warranty Period will be excluded.
Obligation of the purchaser

GG will have the right to reject any claims under Warranty in the event that:

a) The purchaser has failed to submit the vehicle to any of the inspections and/or maintenance work required in the Users’ Manual, or has exceeded the date set for such inspections or maintenance work. Also excluded from guarantee are those faults that appeared prior to the dates established for an inspection or maintenance work where the latter was not carried out, or was carried out later than the date established.
b) An inspection, maintenance or repair has been performed on the vehicle by third parties not recognised or authorised by GG.
c) Any maintenance or repair has been carried out on the vehicle that violates the technical requirements, specifications and/or instructions indicated by the manufacturer.
d) Spare parts whose use has not been authorised by GG have been used during the course of maintenance work or repairs to the vehicle, or in the event that the vehicle has been used with fuels, lubricants or other liquids (including, amongst others, cleaning products) that have not been expressly mentioned in the specifications set out in the User’s Manual.
e) The vehicle has been altered or modified in any way or fitted with components other than those expressly authorised by GG as accepted components of the vehicle.
f) The vehicle has been stored or transported in a way that is not in accordance to the corresponding technical requirements.
g) The vehicle has been used for special purposes other than ordinary use, such as competition, races or record breaking attempts.
h) The vehicle has been directly or indirectly damaged as a result of a fall or an accident.

Warranty exclusions
The following items are not covered by this Warranty:

a) Worn parts, including, without any limitation, spark plugs, batteries, petrol filters, oil filter elements, (secondary) chains, engine output pinions, rear sprockets, air filters, brake discs, brake pads, clutch plates and discs, bulbs, fuses, carbon brushes, footrest rubbers, tyres, inner tubes, cables and other rubber components
b) Lubricants (for example, oil, grease, etc.) and working fluids (for example, battery liquid, coolant, etc.)
c) Inspection, adjustments and other maintenance tasks, as well as all kinds of cleaning work
d) Damage to the paint-work and consequent corrosion due to external causes, such as stones, salt, industrial fumes and other environmental impact, or inadequate cleaning with inappropriate products
e) Any damages caused as a result of the defects, as well as any expenses incurred either directly or indirectly as a consequence of the defects (for example, communication costs, accommodation expenses, car hire costs, public transport costs, breakdown truck fees, courier costs, etc.), as well as other financial losses (for example, those caused by the loss of the use of the vehicle, loss of income, time lost, etc.)
f) Any acoustic or aesthetic phenomenon that does not significantly affect the condition or use of the motorcycle (for example, small or hidden imperfections, noise or vibrations that are normal in use, etc.)
g) Phenomena that are the result of the ageing of the vehicle (for example, discolouring of painted or metallic coated surfaces).

Various

1.- GG shall have the prerogative to decide, at its own discretion, whether to repair or replace defective parts. Where parts are replaced, ownership of the parts removed shall pass to GG without any other consideration. The GG authorised dealer, to whom the making good of the defects has been entrusted, is not authorised to make any declarations that are binding on GG.

2.- In case of doubt regarding the existence of a defect, or a visual or material inspection is required, GG reserves the right to demand the return of the parts which are the object of a claim under Warranty, or to arrange an inspection of the defect by an expert from GG. Any additional obligations arising out of guarantees on parts replaced free of charge, or any other service rendered free of charge, are excluded from the effects of this present warranty. The Warranty on parts replaced within the Warranty Period will end at the expiry date for the Warranty Period of the product concerned.

3.- Should it prove to be the case that a defect can not be repaired, the purchaser guaranteed shall have the right to the cancellation of the contract (payment of compensation) or a partial refund of the purchase price (discount), instead of repairing the motorcycle.

4.- Any claims against Warranty by the purchaser under the terms of the sale contract with the corresponding authorised dealer shall not be affected by the terms of this present Warranty. Neither will this present Warranty affect those additional contractual rights acquired by the purchaser under the general commercial terms and conditions of the authorised dealer. However, such additional rights may only be exercised through claims against the authorised dealer.

5.- Should the purchaser resell the product within the Warranty Period, the duration and conditions of the present Warranty will remain unaltered, in such a way as that the rights to make claims under the present Warranty in accordance with the terms and conditions set out in this present document shall be transferred to the new owner of the motorcycle.