Dirt Track 650
Owners Manual

Important Information

Please read the user's manual carefully before going on the first riding. This manual contains a large amount of information of operation and cautions, which will help you to handle and control of the motorcycle. For your safety, please pay a great importance to the cautions as follows:

⚠ **Warning**

——Any ignorance of the mentioned-below information may lead to safety problems.

⚠ **Caution**

——Any ignorance of the mentioned-below information may cause the damage of motorcycle parts or it may compromise the driving safety of the motorcycle itself.

Please fill in the blank with the serial Nos. of the motorcycle,

Frame No.：	
Engine No.：	
Distributor：	

Index

I. Technical Data of Main Performance

	Item	Data
Dimension & Weight	Length*Width*Height	2080mm*890mm*1170mm
	Wheelbase	1420mm
	Minimum ground clearance	180mm
	Complete vehicle weight	Non-loaded weight: 169kg Dry weight: 180kg, Curb weight: 150kg,
Vehicle body	Front suspension device	Spring & hydraulic composite damping
	Rear suspension device	Spring & hydraulic composite damping
	Front Tire size	120/80-18
	Rear Tire size	130/80-18
	Front wheel pressure	Normally loaded: 225 kPa,
	Rear wheel pressure	Normally loaded: 225 kPa,
	Front brake	Single disc type Diameter Φ320mm
	Rear brake	Single disc type Diameter Φ240mm
	Fuel tank volume	13.0L

Engine	Mode	Single-cylinder Oil –cooling 4-stroke engine
	Cylinder bore	100.0mm
	Cylinder stroke	82.0mm
	Displacement	643.7cc
	Compression ratio	8.3:1
	Max. power	29.5 kw / 6000 rpm
	Max. torque	49.8 N.m/4500rpm
	Valve clearance (cold)	Intake: 0.07-0.10 mm ； Exhaust: 0.08-0.12 mm
	Air Filter	Oilpaper filte
	Cooling method	Oil-cooling
	Lubrication method	Pressure / Splash
	Engine oil grade	SJ15W/40 / MA2 engine oil in warm weather and SJ10W/30 / MA2 in cold weather climates
	Engine oil charge volume	2.2L
	Engine oil filter element	Oil paper filter
	Electric motor starting	Electric
	Idle speed	1500±150r/min

Driving system	Clutch	Wet clutch, coil clutch, paper friction wafer
	Clutch operating system	Manual mechanical
	Primary reduction ratio	2.029
	Transmission gear ratio	**Ⅰ 2.667；Ⅱ 1.647；Ⅲ 1.250 Ⅳ 1.000；V .0.840；**
	Final reduction ratio	3.000
	Gear shifting mode	Left foot operated to and back type
		Sequence: **I—N—Ⅱ—Ⅲ—Ⅳ—V**
Electrical system	Accumulator capacity	12V11.2A.h
	Power supply system	DC power supply, and the electric generator is only used to recharge the accumulator
	Fusible cutout	15A /10A
	Spark plug	DPR8EA-9
	Spark plug gap	0.6～0.7mm
	Ignition coil type	Open magnetic circuit
	Fuel supply mode	Electronically injection, ECU control
	Ignition mode	EMS
	Front lamp/ Front -position lamp	12V55W/5W
	Turn lamp	4×12V10W
	Stop / Rear-position lamp	12V1.5W/0.5W

II. User Instructions

Important safety information

Your safety is very important. Your motorcycle can provide many years of service and pleasure, if you take responsibility for your own safety and understand the challenges while riding. There is much you can do to protect yourself when you ride.

Please read through the following instructions before riding your bike the first time.

• Be sure you read this owner's manual completely and understand all operating features.

• Take sufficient time training with safe and proper riding technique.

• Practice until you are knowledgeable and comfortable with your motorcycle, and knowledgeable with all road signs.

• Failure to follow any safety instructions could cause severe injury or even death to the motorcycle operator, passenger or bystander.

Before riding each time, make sure of the following:

Wear protective gear

Wearing appropriate protective wear can prevent or reduce injuries from accidents.

• Helmet – The majority of serious motorcycle injuries and deaths are the direct result of a head injury. Drivers and passengers should always wear a helmet to prevent or reduce the chance of head injury.

• Eye and Face Protection – A plastic face shield can help prevent accidents by guarding the face and eyes from debris, allowing the rider to devote full attention to the road. Goggles or glasses can protect the eyes in the same manner.

• Clothing – Bright clothing should be worn by the driver so as to be seen easily by other motorists. Avoid loose clothing that could catch on the levers, chain or wheels which could result in an accident. Gloves give you a better grip and help protect your hands from the elements.

⚠ **Caution**

·Failure to wear a helmet will significantly increase the likelihood of injury or death if an accident occurs.

·Make sure passengers always wear a helmet to protect eyes, and wear protective clothing.

Do not ride while under the influence

Before getting on your bike, make sure:

- You have not consumed alcohol or taken drugs.
- You are in good physical and mental condition.
- You have done the recommended pre-ride inspection.
- Start the engine in a well-ventilated area.
- The exhaust emits toxic and poisonous carbon monoxide.

⚠ **Caution**

Operating this motorcycle after consuming alcohol or drugs could seriously affect your judgment, could cause you to react more slowly, could affect your balance and perception and could result in an accident.

Safe riding principles

- Keep enough distance with the other vehicles around you as this gives you time to react.
- Always observe the rules of the road. Observe the posted speed limit, and signal your turns well in advance.
- Know your limits. Do not travel faster than you are able to safely control the vehicle. Always travel at a speed that is proper for the operating conditions, your ability and experience.
- Always inspect your motorcycle each time you use it to make sure it is in safe operating condition.
- Always follow the inspection and scheduled maintenance procedures described in this manual.
- Test your brakes after operating in wet conditions.
- Never attempt wheelies, jumps and other stunts, as these could cause damage to the motorcycle and cause loss of control.
- Always keep both hands on the handlebar and feet on the foot pegs during operation.
- Never consume alcohol or drugs before or while riding your motorcycle.
- Be aware that long travel distances can cause fatigue that can affect performance and awareness.
- Do not touch the engine or exhaust after riding as they will be extremely hot right after the engine has been turned off.
- Park the motorcycle away from fuel or flammable materials.

Being seen

Many motorcycle accidents are caused by car drivers who do not see motorcycle riders on the road. To reduce the chance of an accident, follow these guidelines:

• Wear bright clothing to increase visibility. Bright orange, yellow or green jackets or vests and a brightly colored helmet can help others see you.

• Always use turn signals when you are planning to turn or merge to main roads, and turn off signal after completing turns.

• Flash brake lights whenever you are going to slow down quickly or where others may not expect you are going to slow down.

• Stay out of blind spots of other motorists.

• When you come to an intersection, move to the portion of your lane that will bring you into another driver's field of sight at the earliest possible moment.

Know Your Motorcycle

• Get training if you are inexperienced.

• Beginners should get training from a certified instructor.

• Become familiar with the motorcycle at slow speeds first. Even if you are an experienced rider, do not attempt to operate at maximum performance until you are very familiar with the vehicle.

• The equilibrium and stability of your motorcycle are affected by the manner in which you load it. It is very important that you do not install accessories that compromise the design and concept of the motorcycle. Doing so could alter the safety of your motorcycle.

Loading & Carrying passengers

You should avoid carrying passengers or large loads until you have gained sufficient experience riding alone. Extra weight changes handling, stability, braking performance, turns,
Acceleration and deceleration. The load you carry on the motorcycle has an important effect on your safety, as well as the life of the motorcycle; therefore, apart from driver and passenger, it is advised to keep load to a minimum. If you decide to carry any load, take the following into account:

- Make sure the load is as light and as small as possible.
- Make sure the load does not interfere with any moving parts.
- Make sure the load does not interfere with your ability to move around in order to maintain proper equilibrium.
- Put the load as close as possible to the center of the motorcycle.
- Put only light load on rear rack, if installed.
- Do not attach load to handlebars, headlight or front forks.
- Properly secure all items.
- Inflate tires properly.

⚠ **Caution**

The design of the motorcycle requires even distribution of all loads. Be aware that improper loading of goods will adversely affect the performance and stability of the vehicle.

Keep the load low and distribute the load evenly. An uneven load can cause the motorcycle to drift to one side. Carrying excess load on your motorcycle can cause an accident or crash resulting in severe injury or even death to the motorcycle operator, passenger or bystanders. To carry passengers safely, you must instruct the passenger before you start to:

- Wear a helmet.
- Get on the motorcycle after you have started the engine.
- Sit as far forward as possible without crowding the driver.
- Hold firmly to your waist, hips, belt or passenger handles.
- Keep both feet on the pegs at all time, even when the motorcycle is stopped.
- Keep legs away from hot and moving parts.
- Stay directly behind you, leaning as you lean.
- Avoid any unnecessary motion.

To drive with a passenger safely, you must:

- Go slower.
- Start slowing earlier as you approach a stop.
- Maintain a larger cushion of space ahead and to the sides.
- Wait for larger gaps when you want to cross, enter or merge into traffic.

Gasoline and exhaust fumes

• Gasoline is highly flammable and exhaust fumes are poisonous:

• Turn off engine before refueling.

• Do not overfill fuel tank!! Fill fuel level to 1/2 inch below the neck of the fuel tank fill opening.

• Do not spill any gasoline on the engine, exhaust system or plastic parts.

• Do not refuel while smoking or near any open flame.

• If you swallow gasoline, inhale gasoline vapor or spill gasoline in your eyes, seek medical help immediately.

• If you spill gasoline on your clothes, change and wash the affected area immediately with soap.

• Do not operate your motorcycle in a closed area as the exhaust fumes may cause loss of consciousness or death within a short time.

⚠ **Caution**

To avoid scalding by muffler, do not park the vehicle near walkways.

Passenger should pay special attention to avoid exhaust burns.

Hay or other flammable items will create fire if too close to the exhaust system.

Modifications

Any modifications to this motorcycle, removal of original equipment or use of unapproved accessories, may cause it to be unsafe for use and may trigger severe accidents. Some modifications may also make your motorcycle illegal to use on public roadways, and will void all warranty coverage.

Your genuine dealer is familiar with all recommended accessories for your motorcycle, and should be your primary source for purchasing and installing any accessories. The owner of the motorcycle is responsible for the safety, installation and usage of any accessories not approved by Genuine.

Before installing new accessories, make sure they do not interfere with moving parts, reduce ground clearance, and do not interfere with the operating controls.

Fuel-Saving tips

The way you drive your motorcycle will have a direct impact on your fuel consumption.

- Drive at appropriate speed and avoiding sudden acceleration or braking. Fluent motorcycle operation is not only important for your safety and fuel economy, but also extends the usable life of your motorcycle.
- Driving within allowed speed limits will yield optimum fuel economy.
- Always maintain tires at recommended pressure. Check pressure prior to each ride.
- Have your motorcycle inspected and serviced according to the periodic service and maintenance table.
- Check that brakes are not dragging and preventing the wheels from turning freely. Avoid riding with the rear brake pedal pressed.
- Turn off the engine if waiting for more than a few minutes.
- Do not fill up fuel tank above cap neck.

This instruction book illustrates the notes for the standard and safe operation method, and basic maintenance.

To ensure a comfortable and safe riding experience, please read this instruction book carefully.

·The pictures and illustrations in this book may be different from the actual vehicle, due to cosmetic differences between models.

·The vehicle is specifically designed for a maximum of two people (Including the rider himself)

⚠ **Caution**

Do not use contaminated fuel：

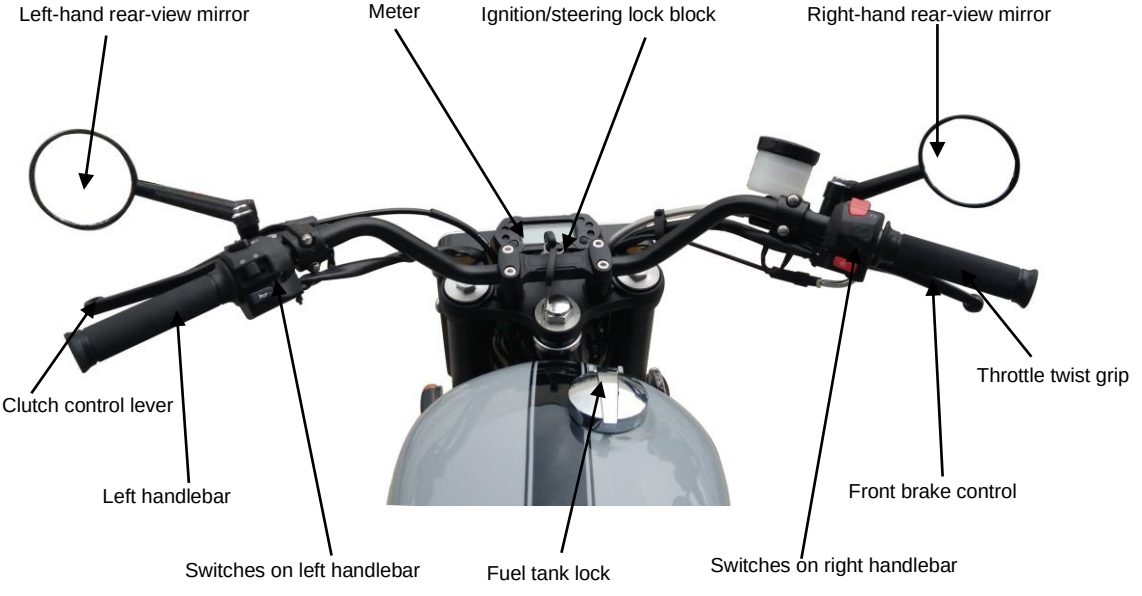
Using contaminated fuel may possibly cause rust inside the fuel tank, which in turn can block fuel lines causing failure to the EFI system, or even cause severe damage to the engine.

Do not use sub-standard or polluted engine oil

Always use the specified grade of engine oil, so the engine's performance and longevity can be ensured.

Any failures as a result of the use of inappropriate fluids are not covered under warranty.

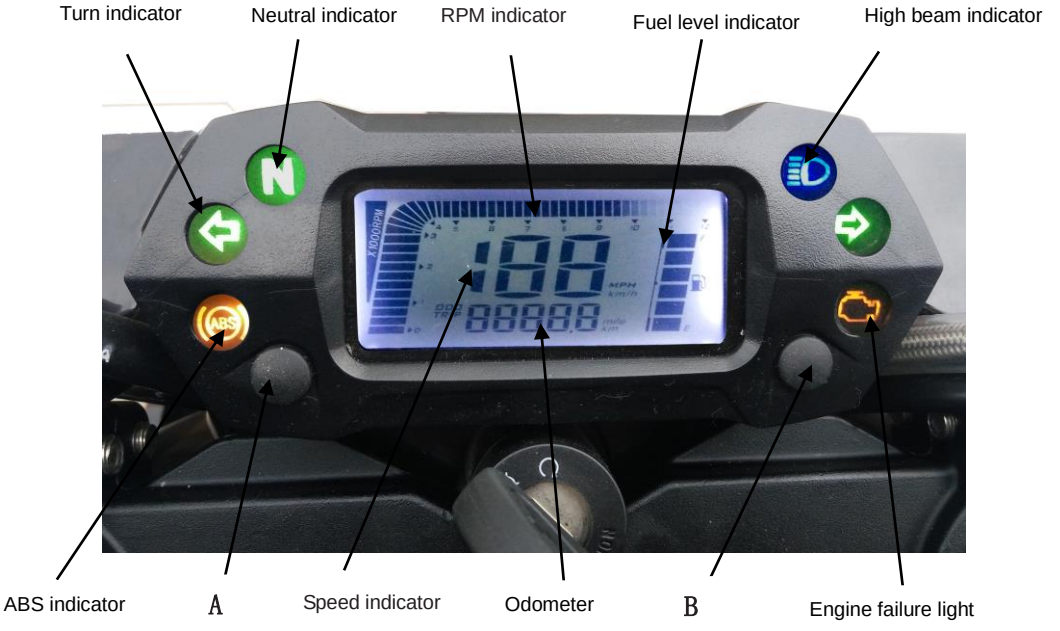
III. Vehicle Layout




Rear shock absorber
Saddle
Front shock absorber
MASH
ABS rear sensor ring
Muffler
Pedal, rear brake
Front wheel


Front turn light
Rear turn light
MASH
ABS front sensor ring
Gearshift pedal
Rear wheel

Instrument Gauges



Gauge Check

1) Speed indicator

The meter speed display with digital display, display range (0 - 199Km/h).When the speed is higher than 199Km/h, speed display value is 199Km/h.

2) Single mileage and total mileage display

This instrument is single mileage and total mileage display with digital display. Single mileage range 0 - 999.9Km, total mileage range 0 - 999.9Km 0—9999.9Km。When the mileage value exceeds the value, the amount will automatically reset and save Single mileage and the total mileage of precise 0.1Km。

3) Turning indicator light (green light)

The light flashes when activating the left- or right hand turning indicator using the control lever on the left-hand switch。

4) High-beam light（blue light）

The light comes on when activating the high-beam light using the control on the left-hand switch.

5) Neutral warning light .

Using the shift lever, shift the motorcycle into neutral. The green "N" indicator light will illuminate. If light does not illuminate, check the neutral switch or indicator bulb for malfunctions.

6) RPM indicator

The instrument RPM instructions with stepper motor indicator. The indicated span 0-12000RPM

Turn the ignition switch to the "on" position. The tachometer will sweep to the Redline and back indicating that the tachometer needle is functioning properly.

7) Fuel quantity display

The instrument of oil quantity display using bar code display, the display range 1-6 lattice, When the fuel level indicator pointer is close to the last scale, (low oil level indicator and the first oil quantity indicator is blinking) ， there is less fuel left in the tank. Replenish unleaded gasoline.

Turn the ignition switch to the "on" position. The yellow "low fuel" indicator will illuminate for 1 second and then turn off. If the fuel light remains on, check the fuel level. If light does not illuminate, or remains illuminated when tank is full, check the fuel sender or indicator bulb for malfunctions.

8) Engine failure light

When the ignition switch is in the "on" position, and all other start conditions have been satisfied (see "Start Conditions" for more information), the Diagnostic Trouble Code light (red "check engine" light) will illuminate and stay lit until the engine has been started. This is a "Lamp Test" to allow you to check the function of the

indicator bulb.

Once the engine has been started, the light will turn off unless the ECU has detected a fault. If the light remains illuminated or flashes when the engine is running, a fault condition exists. Contact an authorized genuine dealer for service.

If the indicator light does not come on at all, check the indicator bulb and replace if necessary.

9) ABS Lamp 

After ignition, ABS warning lamp is lit up, and then goes out after a short period of time. If the ABS lamp is always on after the ignition, or suddenly light up in the process of driving, these mean that there are faults in the ABS, the ABS is disabled. But the braking system itself is still working, only the ABS control system is failed.

Instrument button operation instructions

Press the left build "A"：

Switching between big and small mileage。

Press the right build "B"：

Press the right button before power up. Switching between metric and British system。

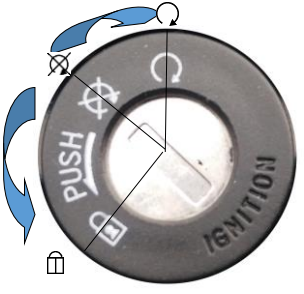
Under the TRIP display interface, long press right and left to build the trip odometer to zero。

IV. CONTROLS

1. Ignition Switch

Main Switch used to Start or switch off the engine.

Position	Function	Remarks
○	To stop the vehicle (switching off all circuits)	Can
⊗	For starting or driving the vehicle(making all the main circuits)	Can not
🔒	To lock the steering handle	Can



⚠ **Caution**

Do not change the ignition key position when riding.

If the key is moved to the ⊗ position during riding, all electrical systems will be off. While riding, do not remove the main switch key in order to avoid an accident. If necessary, stop the motorcycle prior to removing the key.

Before removing the key, make sure the handle bar is locked.

If the engine is not started after turning the key to the ○ position, the battery will discharge over time.

Do not use sharp metal keys or key fobs to avoid scratching the upper triple clamp. Use a cloth or leather key fob.

2. Switches on right handlebar

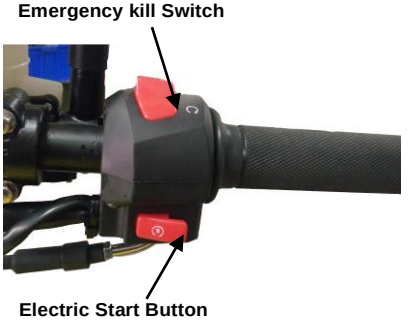
The right-hand switch features the following controls

✧ **Electric start button**

With key on and motorcycle in neutral, push this button to turn the engine on.

✧ **Emergency Kill Switch**

The emergency kill switch is used to turn off the motorcycle if an emergency occurs while riding or if the vehicle falls over with the engine running.



⚠ **Caution**

· *The Kill switch should only be used in emergency situations.*

· *During riding, turning the switch from ⟲ to ⊠ can be dangerous and cause damage to the engine.*

· *Use the kill switch to stop the engine only if necessary. Make sure that the main switch is in the off ⊠ position; if it is in the run ⟲ position and the engine is powered off with the kill switch, the battery is discharged.*

· *If the switch is in the off ⊠ position, the engine cannot be started.*

3. Switches on Left Handlebar

The left-hand switch features the following controls:

✧ **Hi and Low beam Operation**

: At this position, the headlight comes on and the light is beaming at a short distance. (The headlight will not come on if the ignition switch is not turned on.)

: At this position, the headlight comes on and the light is beaming at a far distance. (The headlight will not come on if the ignition switch is not turned on.)

✧ **Directional Indicator**

Use the direction indication switch when turning left or right. If the main switch is in the run position, the direction indicator will flash when slid to the left or right. Pressing the center of the direction indicator will stop the turn signal from flashing.

⚠ **Caution**

·when finished turning, the direction indicator switch will not be back to original position automatically, please switch it manually.

·Driving with light on will obstruct traffic.

✧ **Horn button**

When the main switch is in the "on" position, if you press the horn button, it will emit a loud sound.

✧ **Overtaking lamp switch**

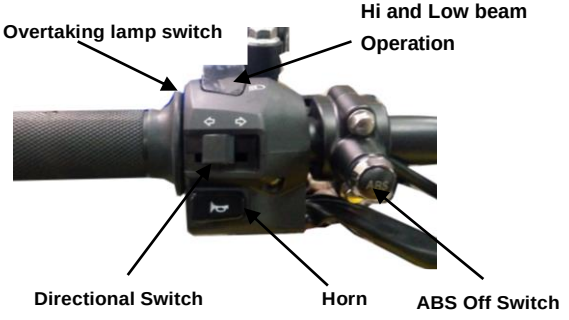
Pull the yellow button inward to light both headlights indicating to the vehicle in front of you, your intent to overtake.

✧ **ABS off switch**

The mode of ABS state switching is cyclic switching, and the order of cyclic switching is:

Front and rear ABS are fully opened - front ABS is opened,

Rear wheel is closed -ABS before and after full opening - ABS before and after.



4. Fuel filling

To fuel the motorcycle, place the motorcycle on the side-stand. Open the fuel tank lock cover and using the key, turn the fuel cap and remove the fuel cap from the fuel tank. Add fuel to1/2" below the fuel neck through the fuel tank opening. Replace the fuel cap and remove the key.

-Fuel tank capacity is approximately 13L.

-92III octane unleaded fuel or above is required.

⚠ **Caution**

- *NEVER OVERFILL FUEL TANK! Fill fuel tank to 1/2 inch below the fill neck to prevent fuel spillage.*

5. Gear Shift Lever

Gears are selected using the shift lever. This motorcycle is equipped with a sequential transmission.

When in neutral "**N**", pull in the clutch and press down on the lever to select 1st gear. Press up on the lever to select 2nd - 5th gears. Downshift by pressing down on the lever. Always use the clutch when up shifting or downshifting and release the clutch in a controlled manner to make sure the gears engage smoothly to prevent damage to the transmission.

Shifting forward

Shifting backward

6. Mirrors

Blind spot collisions are one of the principal causes of accidents in high density traffic. Always adjust your mirrors prior to each ride and use them regularly to monitor traffic behind you and whenever you are making a turn or lane change.

7. Clutch lever

The clutch lever located on the left side is used to disengage the transmission when vehicle is not moving, and for shifting gears. Pull lever in completely before shifting. Once the gear has been engaged, slowly release the lever.

8. Throttle twist grip

The throttle controls engine rpm (speed). To increase engine rpm, rotate the grip toward you. To reduce engine rpm, rotate the grip away from you. The throttle will automatically return to the closed position (engine idle) when you remove your hand.

9. Brake usage

·Use front and rear brake simultaneously.

·Avoid unnecessary sudden brake.

⚠ **Caution**

-When riding in wet conditions, avoid braking suddenly as *accidents are more likely to occur.*

-Avoid repeat use or dragging of the brakes. Brakes can overheat which will cause the brake to lose effect.

Front brake lever

The front brake lever is located on the right hand side of the handlebar. Pull toward the grip to slow down or stop the vehicle.

Front brake

Rear brake pedal

The rear brake pedal is located near the right foot-peg. Press down on the rear brake lever to slow down or stop the vehicle.

Rear brake pedal

10. Anti-Lock Braking System（ABS）

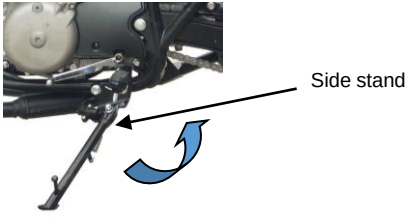
The ABS unit, installed in the middle of the frame, is composed of the hydraulic control unit, ECU control unit and the motor. The wheel speed sensors are respectively equipped on the front and rear wheels.

ABS

11. Side stand

The side stand is used to support your motorcycle when parked. To operate the side stand, use your foot to lower the stand until it is fully extended. Make sure the motorcycle is parked on firm level ground. Parking on uneven, soft or sloped surfaces may cause the motorcycle to fall.

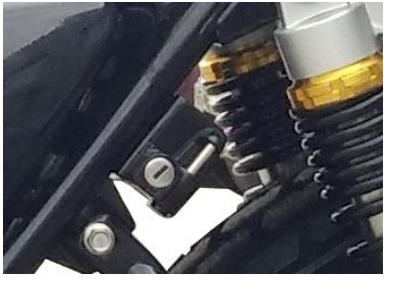
Raise the side stand before riding.



12. Helmet holder

The helmet holder is located on the left-hand side of the motorcycle. To hook on the helmet, insert the ignition key and turn it so that the pin lowers, then hook the helmet strap on the pin and turn the key clockwise to remove it.

Raise the pin with a finger until it locks into place.



⚠ **WARNING**

The helmet holder is to be used only when the motorcycle is parked. It is prohibited to ride with the helmet hooked on the helmet holder, as it may interfere with the rear wheel and shock absorber causing accidents and the possibility of serious injury or death.

V. Proper Operation

Engine Start Conditions

The engine can only be started **when** both the ignition switch and the kill switch are in the run " " position **and either** the following two conditions exists:

1) The motorcycle is in neutral.

2) The motorcycle is in gear with the clutch disengaged (clutch lever in), **and** the side stand is up.

Engine Start:

1) Place the motorcycle into neutral. Verify the neutral condition by checking the neutral indicator light.

2) Start the engine by pushing the start button. Stop pushing the starter button when the engine is running.

If the engine is not firing after pressing the button for 3 seconds, stop pushing the start button, wait for 5 seconds before trying again.

Slightly turn the throttle twist grip about 1/8 turn but never over 1/4 turn if the vehicle has trouble starting.

If the engine starts then stalls during idle, restart the engine and keep the engine running at a slightly higher speed by lightly applying throttle until engine warm-up is complete.

Do not rev the engine during the warm up phase as this can damage the Oxygen sensor.

Engine Stop:

Stop the engine by turning ignition key to the "" position to stop the engine and all electrical power. Do not use the kill switch to turn off the engine under normal circumstances. Only use the kill switch in emergency situations.

If the engine fails to start

·Ensure all start conditions have been met.

·Ensure there is fuel in the tank.

·Check fuses

·Check if the engine start button is working properly

·If the battery voltage is too low, the vehicle will not start with the engine start button. Use the kick start mechanism to start the engine.

Engine break-in period

The initial break-in period of the engine is very important. Failure to follow the break-in procedure (or other improper operation) will cause vehicle malfunction or damage.

1) An engine that has been operated per the break-in procedure can result in a lifetime improvement in engine performance.

2) A properly run-in engine will result in longer lifespan of engine parts, and extend the service life of the engine.

3) Requirements

- Never operate at full throttle during the first 800 km of operation.
- Operate the motorcycle at less than 6000rpm in all gears for the first 800 km.
- Do not overload the engine with excessive weight during the first 800 km.

Engine Maintenance

When the engine has been run-in for 500 miles, a mandatory first service and inspection is required to be performed by an authorized Genuine Service Center to maintain the limited warranty that may apply.

1) Replace the engine oil
2) Valve gap inspection and adjustment
3) Inspect the spark plug, adjust the gap and clean any carbon deposits.
4) Tighten all fasteners
5) Clean the air filter or replace if necessary
6) Adjust chain tension
7) Check tire pressure. Add air if necessary.
8) Check free-play on vehicle controls. Adjust and lubricate levers / cables as necessary.
9) Complete any other routine maintenance or repair any observed trouble condition that may exist.

Pre-ride Inspection

In order to ensure safety, the motorcycle must be checked before each ride and properly maintained.

Please make sure a thorough inspection of your motorcycle is completed each time before you ride.

1) Engine oil level check: Insufficient engine oil will cause premature engine wear and damage.
2) Fuel level check: secure the fuel tank cap and inspect the fuel hoses for cracks / leaks.
3) Drive chain inspection: a loose chain can fall off of the sprocket. A severely worn chain may break, insufficient lubrication can cause chain and sprocket wear, and if the chain is too tight, then the transmission system will incur extra burden, which can in turn wear or break the chain.
4) Tire check: Tires with abnormal cuts or deep grooves should be replaced. The tire tread′s depth should be above the wear indicator marks. Tire pressure inspection is also crucial. Improper pressures can lead to tire wear / blow out.
5) Brake system check: Check the brake system for normal function. Check the condition of the brake fluid level, pad/shoe wear and brake lines/cables prior to operating the vehicle. If the level of the brake fluid is lower than the minimum level line, inspect brake lines for leaks or cracks. If a fluid leak is found, please do not ride the vehicle and contact your authorized Genuine dealer for inspection and repair.
6) Cable check: Check if the cable for control is correctly installed and moves smoothly.
7) Throttle check: Check the throttle grip and throttle cable to see if there is proper free-play. Determine if the throttle turns smoothly both opening and closing the throttle.
8) Clutch check: Check the clutch cable free-play and ease of movement.
9) Lights and horn check: Check if the lights and the horn are working properly.
10) Rear view mirror check: Sit on the motorcycle and keep your body vertical to the ground, see if you get a clear view behind you from the rear view mirrors.
11) Handle bar adjust: Sit vertically on the seat, determine if the handle bar is at the best position for safe and comfortable operation. Make sure no cables are tangled.

⚠**Caution**

Make sure you are familiar with and follow the safety rules and comply with all laws.

- The exhaust contains harmful gas, like CO, so please make sure when you are performing checks with the engine running, you are in a well-ventilated location.

- The pre-ride checklist should be performed on a flat, hard surface with stable support.

- Watch for fire when you switch the engine off, because the engine and muffler are still hot.

- Before you perform any repairs, the engine should be switched off and the key should be removed.

- If problems still exist after adjustment, please immediately contact your authorized Genuine dealer.

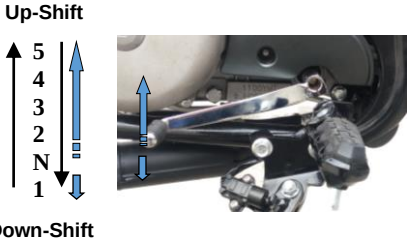
Vehicle Operation

- Before you prepare to embark on your ride, please make sure the side stand is in the up position. If you try to shift from neutral into first gear with the side-stand down, the engine will turn off for your safety. Do not bypass or disable the side stand safety switch.
- Shift gears in accordance with the engine speed
- In order to maximize fuel consumption and to ensure engine longevity, please do not accelerate or decelerate drastically.

Launch and Shifting Gears

1) While sitting on the motorcycle with the engine running at idle in neutral, raise the side-stand and place both feet firmly on the ground. Pull the clutch lever to the handlebar and push the gear shift pedal down with your left foot to change the gear from neutral to 1st gear.
2) Gradually turn the throttle twist grip to increase the speed of the engine to about 3000 r/min, and **SLOWLY** release the clutch lever until the motorcycle starts to move. **DO NOT** release the clutch lever suddenly once movement begins. **CAREFULLY** modulate both throttle and clutch to ensure a smooth start as your vehicle accelerates.
3) When the motorcycle reaches a balanced state of operation and the engine rpm rises, close the throttle, pull in the clutch lever, and then lift up the shifting pedal to shift from 1st to 2nd gear.
4) Use the same up-shift procedure for 3rd-5th gear.
5) Engage the clutch and the shift pedal downward to down-shift the motorcycle. Release clutch slowly.

Down shifting for more power if you want to accelerate quickly, for example, when passing another vehicle, down-shifting can often provide more power and faster acceleration.



⚠**Caution**

- *Always start the vehicle from 1st gear, and make the starting process as slow and smooth as possible.*

- *Shift gears prior to reaching the engine redline RPM.*

- *Do not downshift gears too quickly into the redline RPM range as this may cause damage to the engine by over- revving the engine.*

Operate at speeds under the legal limit

Brake Usage

- Use the front and rear brake simultaneously for maximum braking power.

- Avoid unnecessary sudden braking.

⚠ **Caution**

·If you only use the front or rear brake, the motorcycle may become upset and a crash could result.

·When riding in rain or on wet road avoid sudden braking. Accidents can occur, slow down and brake cautiously.

·Avoid repeated braking / dragging the brake as this can overheat the brake system causing the brake to fade and lose braking power.

Engine Brake

The engine can work as a brake as you decelerate using the throttle. Additionally, downshifting can further slow the motorcycle. Be careful not to over- rev the engine during downshifts. Engine braking in conjunction with conventional braking will deliver the maximum braking force possible.

⚠ **Caution**

- *When the motorcycle is running near the redline RPM, do not downshift to a lower gear, this will cause damage to the engine and transmission system; and even cause shaking of the rear section of the motorcycle.*

Park

·Shift the motorcycle to neutral and switch off the motorcycle.

·Close the throttle.

·Please use the main stand to keep the motorcycle steady, and park the motorcycle on horizontal ground or the motorcycle may fall over.

⚠ **Caution**

- *Park the motorcycle in a safe / traffic free location.*
- *After driving, the muffler will be very hot. Park the motorcycle away from pedestrians, children, animals, flammable materials etc.*

Park with side stand

Place the motorcycle on horizontal ground, lower the side stand, and move the handle bar to the left. If the motorcycle is placed on uneven terrain, the motorcycle may possibly fall down.

- If the handle bar is moved to the right side, or the motorcycle's side-stand is on a slope, sandy, rough or soft ground, the motorcycle is prone to fall down.

In unavoidable situations, necessary steps must be taken to ensure vehicle stability.

Rear view mirror

Before driving, adjust the rearview mirrors to see clearly behind either side of your motorcycle.

⚠ **Warning**

Do not put any large objects on the back seat that may interfere with your vision in the rear view mirror. Don't adjust the mirror while you are riding.

⚠**Caution**

Use soft paper or cloth to clean the mirror. You can use detergent, but do not spray detergent directly on the mirror.

VI. Inspection and adjustment

This section introduces the technical requirements for proper inspection, maintenance and adjustment of various parts of the G400C motorcycle.

Unless stated or indicated in the maintenance period table, you should check and adjust all parts of the G400C motorcycle prior to use.

Periodic maintenance is a combination of verification and service operations performed through the Genuine Motorcycles dealer network. To properly maintain your motorcycle, it is normal during these operations that some parts may be replaced; components are inspected for adjustment variations from their original settings as a result of normal wear and tear of the parts and usage of the motorcycle. These interventions do not constitute flaws in the motorcycle; on the contrary, their purpose is to prevent any problems for your motorcycle to continue operating properly.

It is mandatory to replace parts and lubricants according to the maintenance table.

To maintain your warranty, you are required to have your vehicle inspected by a Genuine dealer after the initial 800Km of use. Your dealer will inspect your vehicle and perform any maintenance and adjustments that may be necessary after the initial break-in period.

Maintenance Period Table

Maintenance period / Items	Odometer in Miles (see note 2 on next page)						
	500	3000	5500	8000	10,500	13,000	User Inspect Daily
* Engine Oil	R	R	R	R	R	R	I
* Spark Plug		I	R	I	R	I	
** Valve Gap		A	A	A	A	A	
* Idle Speed		I	I	I	I	I	
* Engine Bolts		I	I	I	I	I	
* Oil Filter	R	R	R	R	R	R	
* Air Filter		I	R	I	R	I	
* Fuel Filter		I	I	I	I	I	
* Air Cleaner Body	C	C	C	C	C	C	
* Drive Chain / Chain Tension	I\L	I\L	I\L	I\L	I\L	I\L	I

Maintenance Period Table Continued on next page

For optimum performance, the motorcycle should be checked and maintained at periodic intervals. The meanings of capitalized letters in the table below are as follows:

I: Inspection - inspect, then clean, lubricate, adjust, refill, repair or replace if necessary.

A: Inspect, then adjust if necessary **C:** Clean **R:** Mandatory Replacement **L:** Lubricate

Maintenance Period Table continued

Maintenance period / Items	Odometer in Miles (see note 2 below)						
	500	3000	5500	8000	10,500	13,000	User Inspect Daily
Throttle Operation	I	I	I	I	I	I	I
Brake Shoes / Pad Wear	I	I	I	I	I	I	I
* Brake System	I	I	I	I	I	I	I
Brake Light Switch	I	I	I	I	I	I	I
* Brake Fluid	I	I	I	I	I	I	I
** Clutch	I	I	I	I	I	I	I
Suspension	I	I	I	I	I	I	I
Nuts, Bolts, Fasteners	I	I	I	I	I	I	I
Wheel / Tire / Tire Pressure	I	I	I	I	I	I	I

* Inspection by user is expected. Maintenance is suggested to be performed by authorized genuine dealer.

** Inspection by user is expected. Maintenance is required to be performed by authorized Genuine Service personnel.

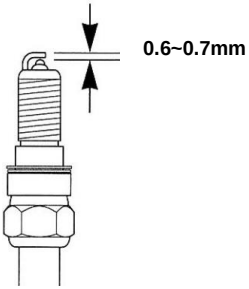
a) While operating the vehicle in a dusty area, the service interval will need to be more frequent.

b) When the odometer reads more than the given maximum value, repeat the maintenance period as per the mile interval stipulated in the table.

c) To ensure safety, the adjustment of these items should only be carried out by an authorized genuine dealer.

1. Spark Plug

Remove the spark plug cap, then remove the spark plug with a socket wrench. Visually check whether there is damage to the spark plug insulator or electrodes. If damage has occurred, replace the spark plug. Check the spark plug electrode gap with a plug gauge. Spark plug electrode gap 0.6 -0.7mm. Carefully adjust the electrode gap.



Carefully remove any accumulated carbon and contaminants with a spark plug cleaner or soft wire brush. Ensure the spark plug washer is in good condition.

Insert the spark plug, hand-tighten the spark plug first, and then tighten it with a socket wrench. Replace the spark plug cap.

Upon completion of inspection, mount the cam phase sensor, eyehole cover and upper eyehole cover in turn.

2. Engine Oil

Use SJ 15W40 in the summer or 10W30 in the winter in order to ensure maximum engine performance. Using a high-quality engine oil designed and tested for use in your vehicle will also extend the life of the engine. Using lighter weight engine oil in cooler climates is acceptable.

⚠ **Caution**

Insufficient quantity or poor quality engine oil will lead to premature engine wear, damage or engine failure.

Engine oil plays a very important role in the normal operation of the engine. Your motorcycle relies upon the oil to aid in cooling. As such, it is extremely important to use quality oil and it is necessary to check the motorcycle engine oil level regularly and replace the oil at 800km, at 2000Km, then every 4000Km thereafter.

Engine oil replacement

Drain the oil while the engine is warm. A warm engine will ensure quick and complete discharge of the engine oil inside the crankcase.

To replace the oil:

Unscrew the oil drain plug and completely discharge the waste engine oil.

Clean the oil drain plug, engine oil strainer / filter, etc.

Re-insert the oil drain plug. Unscrew the oil fill plug and slowly refill engine with 1.8L oil per specification into the crankcase. Re- insert the oil fill plug.

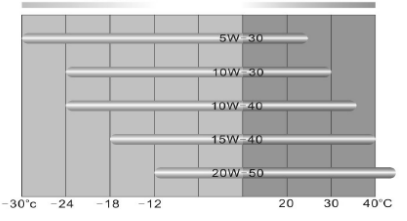
Oil drain plug

⚠Caution

When the engine is at an operating temperature, the engine oil may be very hot, so be careful not to burn yourself.

Place the motorcycle on a flat surface. Remove the drain plug, then drain engine oil. Once all oil has been removed, clean the gasket and drain plug thoroughly, tighten plug to 28N.m.

Oil dipstick must be reinstalled properly, or the oil dipstick will provide false readings level can cause damage to the engine.



Oil level check

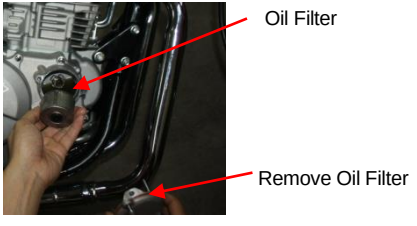
Run the engine for 2-3 minutes. Check whether or not the engine oil level is in the middle of the range on the engine oil dipstick. Add oil if necessary.

Cleaning the oil sump

- Drain the engine oil thoroughly.
- Disassemble each part.
- Clean each part.
- Refill with the proper engine oil.
- Clean the sump.
- Work should be performed by an Authorized Genuine Motorcycle dealer.

Cleaning the Oil Filter

- Remove the engine oil filter cover and remove the engine oil filter element.
- Clean the filter cover and filter element with cleaning agent, and then re-install the clean engine oil filter.
- Replace oil filter as required.
- Inspect for damage of the engine oil filter cover and its 0-ring seal; replace 0-ring as required.
- Re-install the engine oil filter cover and tighten bolts to the specified torque.



Notice

Before the crankcase is refilled with fresh engine oil, the engine oil filter must be cleaned.

3. Valve clearance

- The valve clearance should be inspected and adjusted on a cold engine by the following procedures:
- Remove the caps of the central port and the ignition timing observation port on the left crankcase cover.
- Remove the caps of the valves on the cylinder head.
- Turn the nut of the flywheel clockwise until the engraved "T" mark on the flywheel aligns with the engraved line on the top of the crankcase cover, and both intake and exhaust rocker arms do not move but stop at their loosest position. This indicates that the piston is in its top dead center position of the compressing stroke. If the "T" mark is near the proper position but the rocker arms will move when the flywheel rotates within a small angle, the flywheel is not on the compression stroke but exhaust/intake stroke. In this case, continue to turn the flywheel clockwise 360 degrees to reach top dead center position of the compressing stroke, where the valve clearance can be adjusted.
- Check the valve clearance by inserting a clearance gage into the gap between adjusting screw and the end of the valve.

Valve Adjustment

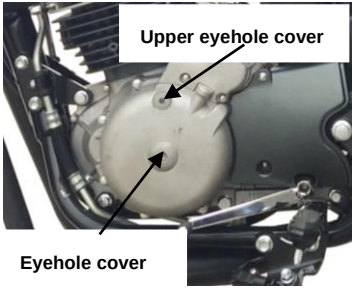
Specified valve clearance:

Intake: 0.07-0.10mm Exhaust: 0.08-0.12mm

If valve clearance adjustment is needed, loosen the locking nut on the rocker arm, insert the proper clearance gauge and turn the adjusting nut until a slight resistance is felt on the inserted clearance gage.

After adjustment, tighten the locking nut to prevent loosening and re-insert the valve gauge to re-check the valve clearance.

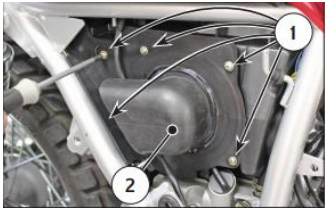
Reinstall the valve covers once final adjustment has been made.



4. Cleaning and replacement of air filter

Remove the air filter and check for contamination.

Open the right side cover. Remove the 4 right side filter cover screws ①and, open the right cover② and remove the air filter③.



Cleaning

Clean the filter element by gently applying compressed air to dislodge dust and other debris.

Replace the filter if there are perforations or an excess build-up of debris that cannot be easily removed

⚠Caution

The air filter must be installed or the engine will ingest dust and dirt, and an unbalanced air / fuel ratio resulting in a shorter engine life.

Water should never enter into the filter area if possible. Take special care when washing the motorcycle.

- Never clean the air filter with gasoline or any other solvents with a low flash point.

5. Idle speed

⚠ **Caution**

Do not adjust idle speed without consulting your genuine dealer.

The XY650-A idle speed is controlled by the ECU. The idle speed has been properly adjusted upon delivery. Do not adjust the idle speed. In the event the idle speed is unsteady, zero or too high, bring the vehicle to a qualified genuine dealer to determine the possible causes via troubleshooting the EMS system. Your dealer will check whether the ignition advance angle is between 0°-15°. If the ignition advance angle is more than 15°, it indicates the throttle valve's intake flow at idle speed is insufficient, and at this point, the idle speed is unstable or null; if the ignition advance angle is less than 0°, it indicates the intake flow at idle speed is too high, and at this point, the idle speed is often as high as 1800 r/min or more. Only under the above two cases will the technician adjust the idle speed adjusting screw to let the intake flow reach the specified flow.

Adjusting screw

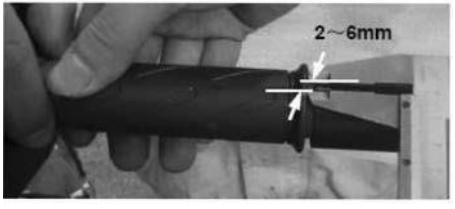
Maintaining & diagnostic instrument

6. Throttle

Inspect the throttle cable for deformed, twisted or damaged locations along the cable length.

Measure the throttle free-play. Tum the throttle against one side of the free stroke, and draw a straight line between the bar and the balance weight. Then turn the bar to lean it against the other side of the free stroke; measure the distance of the straight line, i.e. the throttle bar free stroke.

Free-play: 2-6mm.

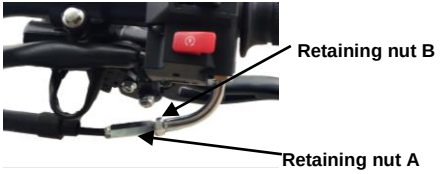


If the throttle free-play is insufficient or too large, make adjustments as necessary.

Fine adjustment:

Move the rubber lagging to expose the adjuster. Unscrew the retaining Nut A, and turn the adjuster until free-play is within specification. Tighten the retaining Nut A and re-install the protective rubber lagging.

Adjusting methods:



Coarse adjustment:

If the fine adjustment is not sufficient, remove the throttle cable from the throttle body and unscrew the retaining Nut B to increase the free-play. Tighten the retaining Nut B after the adjustment.

After all adjustments, verify the throttle can turn smoothly from full open to full close at any handlebar position. If there is any impediment to turning the throttle smoothly, adjust or replace the throttle or cable.

⚠ **Warning**

Too much or too little throttle free-play or operating the motorcycle with throttle impediments is very dangerous and can result in sudden acceleration and/or loss of control of the vehicle.

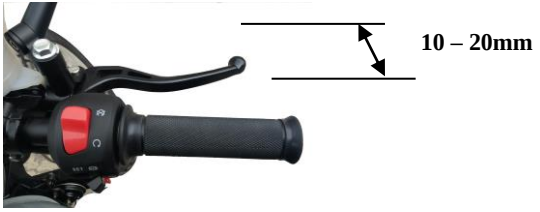
7. Brake system

The front brake and the rear brake is hydraulic disk type, Inspect the brake system prior to each ride. Properly functioning brake systems are vitally important to your personal safety. Check for fluid leaks, fluid level, brake shoe wear, and rotor and drum condition. Also check lever free play frequently.

Front Brake

Pull the brake lever lightly until you feel tension, then check the lever free-play. If the brake lever has no free-play or is too loose, there is a potential brake system fault. Inspect brake system thoroughly.

Brake lever free-play：10 – 20mm



Rear Brake

Push the brake pedal downward by hand, check the brake pedal free-play. The rear brake pedal free-play should be at least 18mm but no more than 25 mm.

If the free-play is outside this range, the pedal can be adjusted by adjusting the rear brake adjustment nut near the rear wheel. To make adjustment, turn the rear brake adjusting nut clockwise to reduce and counter clockwise to increase the free operating stroke of the brake pedal.

Twirl the adjustment nut to change the pedal stroke. Validate that the pedal free stroke meets specification.

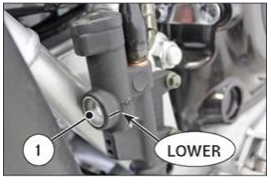
⚠ **Caution**

Brake pedal free-play is important. If the brake pedal free- play is too little or zero, the brakes may drag leading to brake failure. If the free-play is too large, the brakes may not actuate when the lever is pressed. These are dangerous conditions that can lead to loss of control of the vehicle. Do not ride the vehicle if the brake free-play is out of range.

Brake Fluid Level

Be sure the motorcycle is on flat ground, Push the brake pedal downward by hand or turn the bar and check the brake fluid when the brake master cylinder cover is in a level position.

Check the brake fluid level through the master cylinder view port. The fluid level will drop over time as the brake pads wear. If the brake fluid level is too low (LOWER) ①, thoroughly inspect the brake system for leaks. If there are no leaks, add fluid as necessary. If leaks are found, do not operate the vehicle until the brake system has been repaired.



⚠ **Caution**

·Brake fluid is flammable. Avoid contact with skin and eyes. If you come in contact with brake fluid, immediately run under water and contact a doctor. If brake fluid comes in contact with your eyes, immediately seek medical attention.

⚠ **Caution**

.Brake fluid cannot exceed the upper limit.

.When adding brake fluid, use special care. Do not allow dust, water or other foreign material to contaminate the master cylinder. If brake fluid is low, this may be a sign of failure in the brake system. Do not ride the vehicle until the brake system has been inspected and repaired by a qualified technician.

Adding Brake Fluid

Turn the handle bar so that the brake master cylinder is horizontal with the ground.

Remove dust and foreign material from the exterior of the brake master cylinder. Loosen the brake master cylinder cover, then remove the rubber diaphragm.

Add DOT3 brake fluid into the master cylinder, then re-insert the diaphragm and cover. Tighten the cover. Make sure that no foreign materials enter into the brake system.

If the brake system is not firm, there may be brake contamination or the brakes might need to be bled of air. Contact your Genuine Motorcycles dealer for service.

⚠**Caution**

Brake fluid cannot exceed the upper limit.

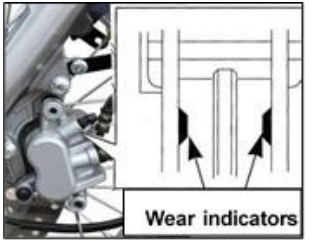
When adding brake fluid, use special care. Do not allow dust, water or other foreign material to contaminate the master cylinder. If brake fluid is low, this may be a sign of failure in the brake system. Do not ride the vehicle until the brake system has been inspected and repaired by a qualified technician.

⚠**Caution**

Do not mix brake fluid with other liquids; If brake fluid spills onto plastic or painted surfaces, wipe off immediately. In the event brake fluid splashes into the eyes or on the skin, immediately flush with large amounts of fresh water and immediately see a doctor.

Brake Pads

If the brake pad wear indicator gaps touch the side of the brake disc, the brake pads need replacement.



⚠**Caution**

-It is very important to keep the brake discs away from oil or any fatty materials.

After assembling the braking system, please always actuate the hand brake lever or foot brake pedal to check respectively whether or not the pads are properly installed and pressure point is established.

8. Wheels/Tires

Check the condition of the tires; they may not have any cracks, grazes, etc. Also check the state of wear of the tread by means of the indicators on the tire.

Check the tire pressure with a tire pressure gauge to which should be as indicated under TECHNICAL DATA.

Tires age even if they do not visibly appear worn; cracks in the sides or deformation of the tire body are a sign of ageing. Have the tires checked by a tire dealer before using the motorcycle.

⚠**Caution**

Tire pressure should be measured when the tire is at ambient temperature.

⚠**Caution**

The front and rear tire must be of the same brand and model. Using different types of tire for the front and rear will compromise motorcycle stability and handling.

Using the motorcycle with the tires inflated to an incorrect pressure or with worn or deteriorated tires may cause serious injury or death if losing control of the motorcycle.

9. Clutch

Check the clutch lever free-play.

Clutch lever free- play: 10-20mm

The clutch is adjusted by stretching the cable using the adjusting unit positioned on the handlebar.

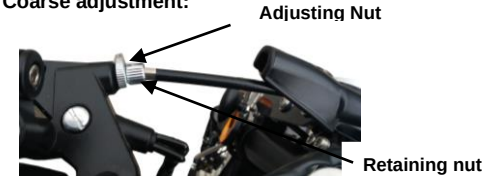
As a rule it is sufficient to operate on the handlebar register to restore the clearance due to the flexible transmission stretch.

Check the clutch operating handle free stroke. Clutch operating handle free stroke: 10-20mm.

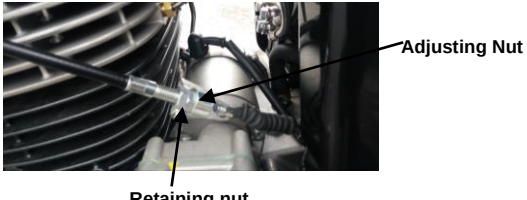
Adjusting methods:

Fine adjustment: Pull open the rubber lagging, unscrew the retaining nut, and turn the adjusting nut to adjust to a satisfied free stroke. And then screw up the retaining nut and mount the protective rubber lagging.

Coarse adjustment:



If a satisfactory free stroke can't be achieved by fine adjustment, remove the clutch control line on the handle end to adjust the engine end.



Remove the clutch control line on the handle end, and then remove the clutch operating arm on the engine end; turn the clutch operating arm by a proper angle and remount it, and then mount the clutch control line, finally adjust it to a satisfied free stroke according to the fine adjustment.

⚠Caution

Always ensure the clutch operating handle has the proper free- play! A loose clutch cable will prevent the clutch from disengaging. A tight clutch cable will cause poor clutch engagement and damage the clutch.

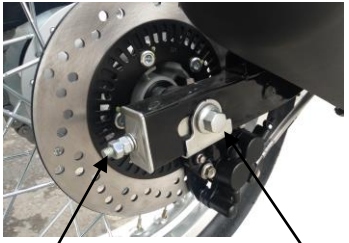
10. Drive Chain

Drive Chain Tension

Park the motorcycle on level ground with the main stand and shift the transmission to the neutral position. Check the driving chain tension. Press the chain by hand both up and down to check the range of movement of the lower chain.

Chain Adjustment

Loosen the rear wheel axle nut. Turn the adjusting bolts at the rear of the swing arm until the specified tension is achieved. Use the scale lines on the swing arm to ensure the wheel is straight. Retighten the rear wheel axle nut and check the rear wheel for free rotation and proper alignment between the front and rear wheels.



⚠**Caution**

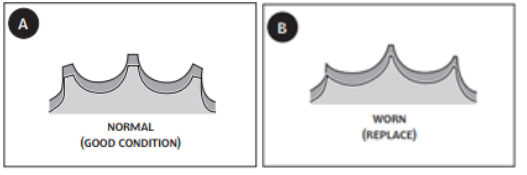
The chain adjuster has scale lines on both sides of the swing arm. Ensure the wheel is straight.

⚠ **Warning**

The rear wheel axle nut must be firmly secured to the tightening torque of 50N.m .

Chain/pinion/crown wear check

- Check the condition of the chain; there may not be any damaged rollers, loosened pins or missing O-rings.
- Check the condition of the pinion and crown teeth; if the teeth are as shown in Figure A, they are in good condition, while if they are as shown in Figure B, they are to be replaced



Note: If worn, the pinion, crown and chain have to be replaced; using a new chain with a worn pinion or crown, the chain will rapidly wear out*

11. Fork functionality check

To check proper functioning of the front fork, operate as follows:

- get on the motorcycle;
- pull the front brake lever and forcefully push the handlebar downwards a few times to check that the fork extends and compresses correctly.
- If you notice oil leaks and jamming, Contact your Genuine Motorcycles dealer for service.

Steering bearing check

Place the motorcycle on a stand in vertical position and secure it so that it cannot overturn.

- Stand in front of the motorcycle.
- Firmly hold the lower part of both fork legs and move the fork forward and backward checking that there is no play

⚠ **Warning**

If you feel any play during the movement, have proper tightening of the steering bearings checked by a Genuine Motorcycles dealer for service.

Removing the front wheel

Position the motorcycle in such a way that the front wheel is lifted from the ground.

- Loosen the bolts ① holding the wheel axle ② to the front fork mounts.

⚠**Caution**

Do not operate the front brake lever when the wheel has been removed; this causes the caliper pistons to move outwards. After removal, lay down the wheel with brake. disc on top

Removing the rear wheel

Position the motorcycle in such a way that the rear wheel is lifted from the ground.

Unscrew the nut (1) of the wheel pin (2) and remove the latter.

Extract the complete rear wheel, keeping the spacers located at the hub sides.

For refitting, operate in reverse order from removal fitting the brake disc in the caliper.

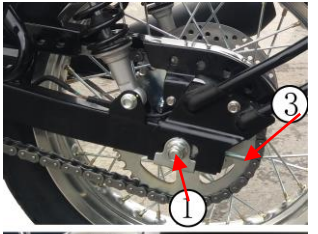
- Fit the wheel in the rear fork taking care to correctly fit the brake disc in the caliper.
- Fit the pin (2).
- Screw on the nut (1) without tightening it.
- Tension the chain using the tensioners (3) as described in the relative paragraph.
- Tighten the nut (1) and the nut of the tensioners (3).

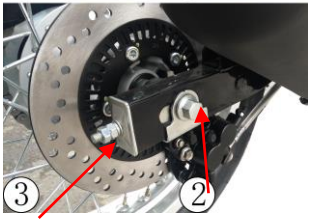
⚠Caution

Do not operate the rear brake pedal when the wheel has been removed; this causes the caliper pistons to move outwards.

After removal, lay down the wheel with brake disc on top.

After reassembly, depress the brake pedal until the pads are against the brake disc.

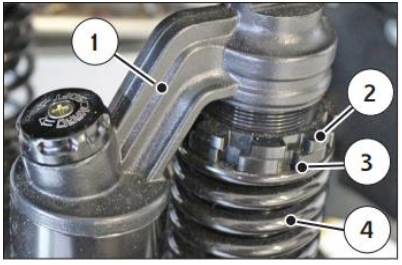




Rear shock absorber spring preload

The rear shock absorber (1) spring preload can adjusted; to make the adjustment, operate as follows：

1. Clean rennet and adjusting nut of the spring.
2. Either with a hook wrench or an aluminum punch, loosen the lock ring nut.
3. Turn the adjuster ring nut as required.
4. When the adjusting operation is over (according to your weight and riding style), tighten the lock ring nut. (Torque: 50 N.m).



⚠ **Warning**

Be careful not to touch hot exhaust pipe while adjusting the shock absorber.

⚠ **Caution**

Both rear shock absorbers have to be adjusted in the same way.

12. Brake System

The sealed battery does not require any maintenance. When electrolyte leaks, or other failure of the electrical system is detected, apply to the Genuine Motorcycles dealer for service.

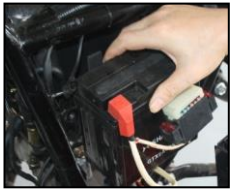
If the vehicle remains unused for long periods, it is recommended to disconnect the battery from the electrical system and store it in a dry place.

- After an intensive use of the battery, it is advisable to carry out a standard slow charging cycle.
- Quick charging is advised only in situations of extreme necessity since the life of lead elements is drastically reduced by such cycle.

BatteryCheck

To remove the left side panels, operate as follows:

- Detach the panel ① from the bottom attachment by pulling it outwards
- Lift out the panel ① by unhooking it from the top hooks.
- First remove the BLACK negative cable and then the RED positive cable (when refitting, first connect the RED positive cable and then the BLACK negative cable).
- Undo the two screws that fasten the fuse support bracket.
- remove the battery from its housing.



Measure the voltage of the battery with a voltmeter; if the battery voltage is less than 12V, recharge the battery with a slow charge power supply.

Battery installation is in the reverse order of removal. When reconnecting the battery terminals, connect the positive pole first, then the negative

Battery Charging

The battery will slowly lose power every day. If you plan to not ride your motorcycle for an extended period of time, disconnect the battery cables, and place your battery on a battery maintenance charger.

The charging amperage should not exceed the required standards. Charging your battery at high amperage will negatively impact the life of the battery.

If you find the battery is low when starting the motorcycle, Charge the battery as soon as possible. Your battery will be damaged if it remains unchanged for a long period of time.

Using a battery charger with a constant voltage, first connect the RED positive cable to the battery positive terminal then the BLACK negative cable to the battery negative terminal.

The voltage reaches a constant value only after a few hours, therefore it is suggested NOT to measure it immediately after having charged or discharged the battery.

Always check the battery charge before reinstalling it on the vehicle.

The battery should be kept clean and the terminals coated with grease.

⚠**Caution**

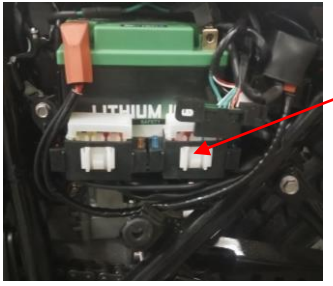
Both the engine electric start and EMS systems are powered by the battery. It is important to ensure sufficient battery voltage is maintained otherwise the electric start system and/or the EMS system may not function properly.

When washing the vehicle, take care not to soak the battery area with water.

13. Replacement of fuse

Turn the ignition switch to the “OFF” position. The main fuse is a 15A tube type fuse, and the fuel injection nozzle is a 10A tube type fuse.

Open the left side cover, remove the fuse holder to the left of the battery and replace the broken fuse.



If the new fuse tube is broken again as soon as it is fitted on, it means that somewhere of the electric parts is shorted unexpectedly.

⚠ **Caution**

Do not use any fuse over 15A.

14. Turn signal light

Remove the lamp lampshade

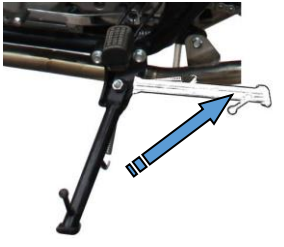
Lightly press bulb, rotate in counter-clockwise.

Install new bulb in opposite order as below.

Turn lamp bulb specifications:12V10W

15. Side stand

Secure the motorcycle in an upright position that allows the vehicle to stand without using the side stand. Inspect the side stand by moving it through its range. Determine whether the spring is sufficient to secure the side-stand upright, lubricate the pivot if necessary



16. Bolts, nuts and fasteners

Bolts, nuts and fasteners should be checked periodically and tightened to torque specifications outlined later in this manual. Check all cotter pins, straps, ties, locks, etc

17. Cleaning the Motorcycle

To keep the body and paint in good condition, wash your motorcycle often.

The best way to clean your motorcycle is to use warm water combined with detergent to remove the dirt.

Attention: Do not use high-pressure water to wash the motorcycle. Do not point water spray directly at electrical parts, plugs, cables, bearings, ECU, etc. High pressure water sources will cause water to enter into secure parts leading to functional failure and premature aging.

-Use ordinary detergent brands to clean your motorcycle. For the most difficult areas use a brush to clean.

-Plug the muffler before cleaning, to prevent water from getting inside the muffler.

-After washing, dry off the motorcycle. Ride for a distance until the engine has reached a working temperature; meanwhile apply the brake to evaporate the water left inside.

-Since the motorcycle cools down, please grease all the sliding parts, bearings and oil plug with lubricating oil.

-Protect your electric system to avoid any foreign materials entering. When washing the motorcycle, please remove the air cleaner cover and filter and use foam or cotton to protect the intake channel.

When washing, block the muffler to avoid water getting into the muffler and engine.

18. Maintenance Prior to Storage

If the motorcycle will be stored for a long period of time, pay attention to the prevention of moisture, sunshine and rain in order to protect it from unnecessary damage. Special check- ups should be carried out on those important parts and sub- assemblies before storage.

1) Change the oil
2) Grease the chain.
3) Remove the battery and place in a cool and well- ventilated area. The battery should be charged at least once a month to prevent it from becoming discharged and malfunction.
4) Clean the motorcycle and apply anti-corrosion to parts vulnerable to rust.
5) Drain the fuel if possible, use fuel stabilizer if draining fuel tank is not possible.
6) Remove the ignition key.
7) Cover the motorcycle.

19. Return to Service

1) Remove the cover and clean the motorcycle. Change the oil if the vehicle has not been used for over 4 months.
2) Charge the battery and re-install.
3) Fill the tank with fresh fuel.
4) Prior to driving, test the motorcycle at a low speed and in a safe place.

Special Torque Values

Item	Quantity	Thread diameter (mm)	Torque value (ft-lb)
Cylinder head nut	4	M10×1.25	21–24
Magneto flywheel fastening nut	1	M10×1.25	27–33
Spark Plug	1	M12×1.25	13–15
Front wheel axle	1	14	30–37
Real wheel axle nut	1	16	44–66
Swing arm shaft nut	1	14	44–52
Engine hanging bolt	3	10	29–36
Engine cover bolt	6	8	18–26
Steering handlebar clamp bolt	4	8	15–22
Front fork tube cap nut	1	21	44–52
Brake disc bolt	6	M8×25	15–22

Standard Torque Values

Name and dimensions	Torque value (ft-lb)
5mm bolt & nut	3.5 – 4.5
6mm bolt & nut	6 – 9
8mm bolt & nut	13 – 18
10mm bolt & nut	22 – 30
12mm bolt & nut	37 – 44
5mm Screw	2.5 – 3.5
6mm Screw	5 – 8
6mm spool bolt & nut	7 – 10
8mm spool bolt & nut	15 – 22
10mm spool bolt & nut	22 – 30

VII. Engine Management System

The Engine Management System (EMS) is comprised of the following components: Electronic control unit (ECU), throttle body, Idle speed control valve, fuel pump, fuel injector, ignition coil, O2 sensor, throttle position sensor, T-MAP sensor, cylinder head temperature sensor, etc.

The EMS uses sensors to collect parameters such as air flow, temperature of inlet air, cylinder head temperature, atmospheric pressure and the operational state of engine (rpm, load, acceleration and deceleration). All parameters are transferred to the ECU via electronic signal. The ECU outputs control signals after the input signals have been processed. Based on the air flow and engine speed, the fuel injector and ignition coil are controlled by ECU to get the optimal combustible mixture of fuel and air and Ignition timing which meet all engine operating conditions.

Through the engine and actuator components on the vehicle (ignition coil, fuel injector, idle speed control valve and so on), the fuel and spark are precisely controlled and corrected with closed loop.

System composition:

1. Sensors:

- Intake air pressure sensor (load information) intake air temperature and pressure sensors
- Throttle position sensor (load information, load range information, acceleration / deceleration information)
- Engine speed sensor (speed information, crankshaft position)
- Intake air temperature sensor (air density information)
- Oxygen sensor (information of the excess air coefficient is more than 1 or less than 1)

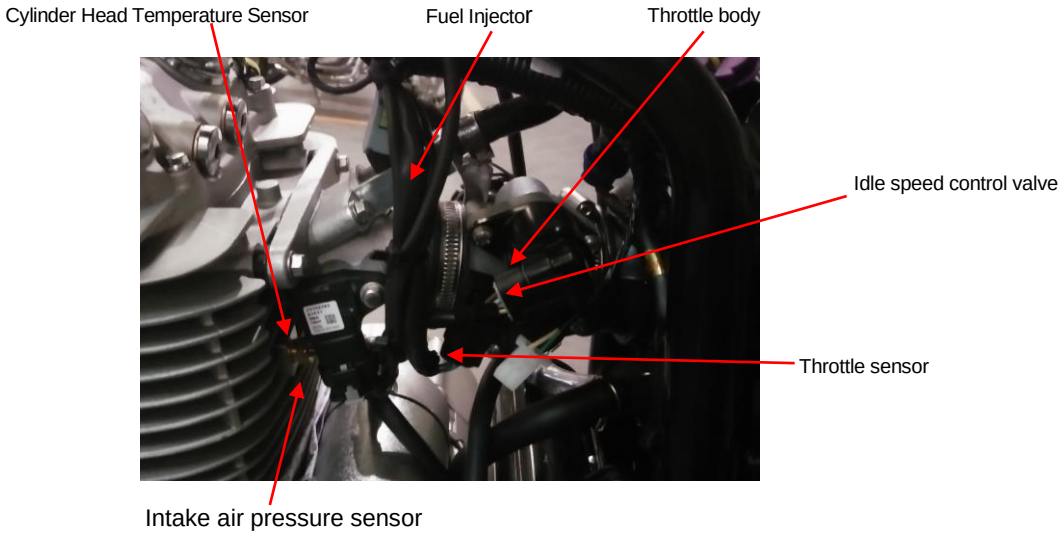
2. Actuators:

- Fuel pump relay,
- Fuel pump
- Fuel injector (fuel supply)
- Ignition coil
- High-tension cord
- Spark plug (ignition)
- Throttle, Idle speed control valve (air intake)

3. Electronic control unit

- ECU

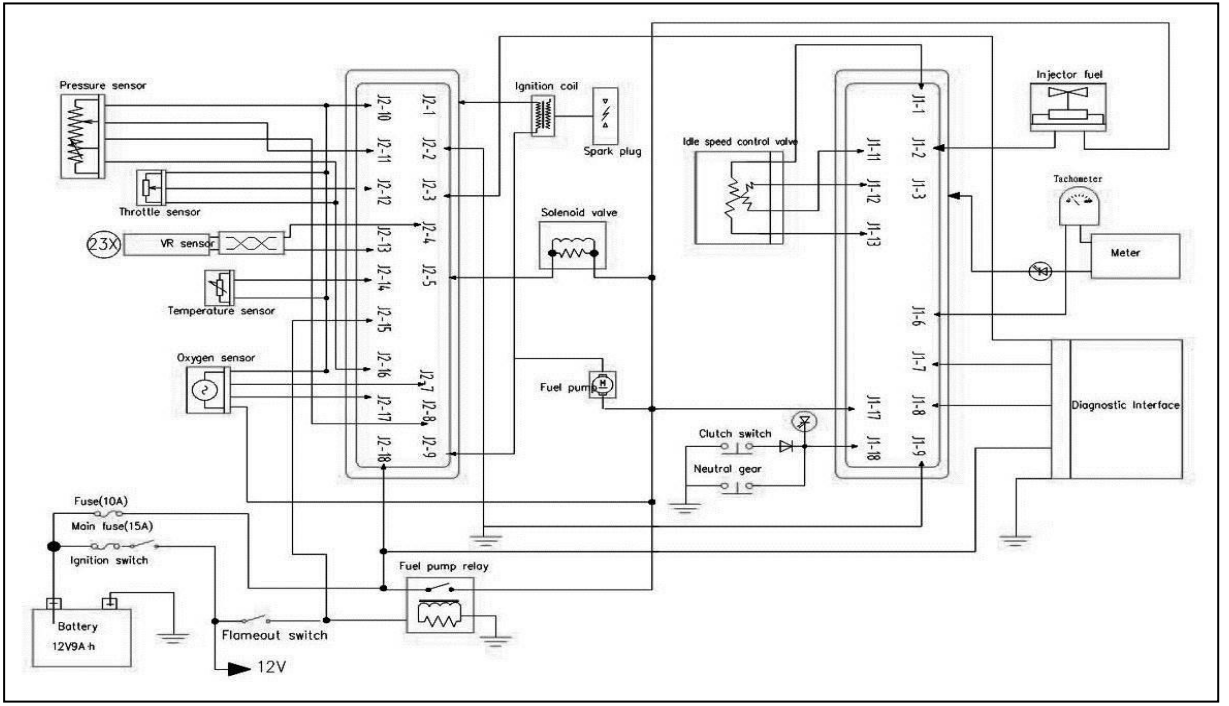
Major Components of EFI system



Electronic Control Unit (ECU)

Oxygen sensor

Circuit schematic drawing



Definition ECU pins

ITEM	PIN No.	DESCRIBE	ITEM	PIN No.	DESCRIBE
1	J1-1	IACAHi	1	J2-1	COILA
2	J1-2	MAGNETO CUT RELAY	2	J2-2	GND
3	J1-3	MIL	3	J2-3	KW2000
4	J1-4		4	J2-4	CRANK HI
5	J1-5		5	J2-5	INJA
6	J1-6	TACH	6	J2-6	
7	J1-7	CANLo	7	J2-7	O2AHTR
8	J1-8	CANHi	8	J2-8	IAT_MAT
9	J1-9	GND	9	J2-9	FUEL PUMP RELAY
10	J1-10		10	J2-10	5VRTN
11	J1-11	IACALo	11	J2-11	MAP
12	J1-12	IACBHi	12	J2-12	TPS
13	J1-13	IACBLo	13	J2-13	CRANK LO
14	J1-14		14	J2-14	CLT
15	J1-15		15	J2-15	IGN
16	J1-16	DIAG	16	J2-16	5VREF
17	J1-17	FUEL PUMP RECIRCULATION	17	J2-17	O2A
18	J1-18	PNSW	18	J2-18	VBATT

EMS failure diagnosis code list

OBD Service $01

PID	Description	PID	Description
00	Request supported PIDs from PID 0x01-0x20	0E	Ignition Timing Advance for #1 Cylinder
01	01 Monitor status since DTCs cleared	0F	Intake air temperature
03	Fuel system status	11	Absolute throttle position sensor
04	Calculated Load Value	13	Location of oxygen sensors
05	Engine coolant temperature	1C	OBD requirements to which vehicle or engine is certified
06	Short Term Fuel Trim Bank1	20	PIDs $21 to $40 which are supported by the Powertrain controller
07	Long term Fuel Trim-bank1	21	Distance Travelled with MIL Commanded On
08	Short Term Fuel Trim Bank2	40	Supported PIDs 41h - 60h
09	Long term Fuel Trim-bank2	4D	Engine run time while MIL is
0B	Intake Manifold Absolute Pressure	60	PID used to determine PID support for PIDs 0x61 – 0x80
0C	Engine speed	7F	Engine run time
0D	Vehicle speed		

OBD Service $02

PID	Description
00	Request supported PIDs from PID 0x01-0x20
02	DTC that caused required freeze frame data storage
03	Fuel system status
04	Calculated Load Value
05	Engine Coolant Temperature
07	Long term Fuel Trim-bank1
09	Long term Fuel Trim-bank2
0B	Intake manifold absolute pressure
0C	Engine RPM
0D	Vehicle speed
11	Throttle position
20	PIDs $21 to $40 which are supported by the Powertrain controller
60	PID used to determine PID support for PIDs 0x61 – 0x80
7F	Engine run time

OBD Service $03

System or	DTC Number	DTC Description	Related Calibration	HEX	DEC
Manifold Absolute Pressure Sensor (MAP)	P0107	MAP Circuit Low Voltage or Open	KsDGDM_MAP_ShortLow	107	#N/A
	P0108	MAP Circuit High Voltage	KsDGDM_MAP_ShortHigh	108	#N/A
Intake Air Temperature Sensor (IAT)	P0112	IAT Circuit Low Voltage	KsDGDM_IAT_ShortLow	112	#N/A
	P0113	IAT Circuit High Voltage or Open	KsDGDM_IAT_ShortHigh	113	#N/A
Coolant/Oil Sensor	P0117	Coolant/Oil Temperature Sensor Circuit Low	KsDGDM_CoolantShortLow	117	#N/A
	P0118	Coolant/Oil Temperature Sensor Circuit High	KsDGDM_CoolantShortHigh	118	#N/A
Throttle Position Sensor (TPS)	P0122	TPS Circuit Low Voltage or Open	KsDGDM_TPS_ShortLow	122	#N/A
	P0123	TPS Circuit High Voltage	KsDGDM_TPS_ShortHigh	123	#N/A
Oxygen Sensor	P0131	O2S 1 Circuit Low Voltage	KsDGDM_O2_1_ShortLow	131	#N/A
	P0132	O2S 1 Circuit High Voltage	KsDGDM_O2_1_ShortHigh	132	#N/A
Oxygen Sensor Heater	P0032	O2S Heater Circuit High Voltage	KsDGDM_O2_1_HeaterShortHigh	32	#N/A
	P0031	O2S Heater Circuit Low Voltage	KsDGDM_O2_1_HeaterShortLow	31	#N/A
Fuel Injector	P0201	Injector 1 Circuit Malfunction	KsDGDM_INJ_CYL_A_Fault	201	#N/A
	P0202	Injector 2 Circuit Malfunction	KsDGDM_INJ_CYL_B_Fault	202	#N/A
Fuel Pump Relay (FPR)	P0230	FPR Coil Circuit Low Voltage or Open FPR	KsDGDM_FPP_CircuitShortLow	230	#N/A
	P0232	FPR Coil Circuit High Voltage FPR	KsDGDM_FPP_CircuitShortHigh	232	#N/A
Crankshaft Position Sensor (CKP)	P0336	CKP Sensor Noisy Signal	KsDGDM_CrankNoisySignal	336	#N/A
	P0337	CKP Sensor No Signal	KsDGDM_CrankNoSignal	337	#N/A
Ignition Coil	P0351	Cylinder 1 Ignition Coil Malfunction	KsDGDM_EST_A_Fault	351	#N/A
	P0352	Cylinder 2 Ignition Coil Malfunction	KsDGDM_EST_B_Fault	352	#N/A
Idle Control System	P0505	Idle Speed Control Error	KsDGDM_IdleControl	505	#N/A

System Voltage	P0562	System Voltage Low	KsDGDM_SysVoltLow	562	#N/A
	P0563	System Voltage High	KsDGDM_SysVoltHigh	563	#N/A
MIL	P0650	MIL Circuit Malfunction	KsDGDM_MIL_Circuit	650	#N/A
Tachometer	P1693	Tachometer Circuit Low Voltage	KsDGDM_TAC_Circuit_Low	1693	#N/A
	P1694	Tachometer Circuit High Voltage	KsDGDM_TAC_Circuit_High	1694	#N/A
Oxygen Sensor 2	P0137	O2S 2 Circuit Low Voltage	KsDGDM_O2_2_ShortLow	137	#N/A
	P0138	O2S 2 Circuit High Voltage	KsDGDM_O2_2_ShortHigh	138	#N/A
Oxygen Sensor Heater 2 or AC clutch	P0038	O2S Heater 2 Circuit High Voltage	KsDGDM_O2_2_HeaterShortHigh	38	#N/A
	P0037	O2S Heater 2 Circuit Low Voltage	KsDGDM_O2_2_HeaterShortLow	37	#N/A
Vehicle Speed Sensor	P0500	VSS No Signal	KsDGDM_VSS_NoSignal	500	#N/A
Park Neutral Switch Diag	P0850	Park Neutral Switch Error	KsDGDM_ParkNeutralSwitch	850	#N/A
CCP	P0445	CCP short to high CCP	KsDGDM_CCP_CircuitShortHigh	445	#N/A
	P0444	CCP short to low/open CCP /CAN	KsDGDM_CCP_CircuitShortLow	444	#N/A
BLM MaxAdapt	P0171	BLM Max Adapt(Kohler Special) BLM	KsFDIAG_BLM_MaxAdapt	171	#N/A
BLM MinAdapt	P0172	BLM Min Adapt(Kohler Special) BLM	KsFDIAG_BLM_MinAdapt	172	#N/A
PE system Lean	P0174	PE syst Lean(Kohler Special) PE	KsFDIAG_PESystLean	174	#N/A
Evaporator temperature sensor	P0537	A/C Evaporator Temperature Sensor Circuit	KsDGDM_EvaporatorShortLow	537	#N/A
	P0538	A/C Evaporator Temperature Sensor Circuit	KsDGDM_EvaporatorShortHigh	538	#N/A
AC Clutch Relay	P0647	A/C clutch Relay Control Circuit High	KsDGDM_O2_2_HeaterShortHigh	647	#N/A
	P0646	A/C clutch Relay Control Circuit Low	KsDGDM_O2_2_HeaterShortLow	646	#N/A
ECU diagnostic	P0601	Calibration and software Checksum fail	KsDGDM_FileROM_Checksum	601	1537

OBD Service $04

Functional description
The purpose of this service is to provide a means for the external test equipment to command ECUs to clear all emission-related
• MIL and number of diagnostic trouble codes (can be read with Service $01, PID $01)
• Clear the I/M (Inspection/Maintenance) readiness bits (Service $01, PID $01)
• Confirmed diagnostic trouble codes (can be read with Service $03)
• Pending diagnostic trouble codes (can be read with Service $07)
• Diagnostic trouble code for freeze frame data (can be read with Service $02, PID $02)
• Freeze frame data (can be read with Service $02)
• Oxygen sensor test data (can be read with Service $05)
• Status of system monitoring tests (can be read with Service $01, PID $01)
• On-board monitoring test results (can be read with Service $06)
• Distance travelled while MIL is activated (can be read with Service $01, PID $21)
• Number of warm-ups since DTCs cleared (can be read with Service $01, PID $01)
• Distance travelled since DTCs cleared (can be read with Service $01, PID $01)
• Time run by the engine while MIL is activated (can be read with Service $01, PID $4D)
• Time since diagnostic trouble codes cleared (can be read with Service $01, PID $01)
Other manufacturer-specific “clearing/resetting” actions may also occur in response to this request message.
For safety and/or technical design reasons, some ECUs may not respond to this service under all conditions.
All ECUs shall respond to this service request with the ignition ON and with the engine not running.

OBD Service $07

Functional description for ISO 15765-4 or SAE J1979 May 2007
The purpose of this service is to enable the external test equipment to obtain “pending” diagnostic trouble codes detected during current or last completed driving cycle for emission-related components / systems that are tested or continuously monitored during normal driving conditions.
Service 07h is required for all DTCs and is independent of Service 03h.
The intended use of this data is to assist the service technician after a vehicle repair, and after clearing diagnostic information, by reporting test results after a single driving cycle. If the test failed during the driving cycle, the DTC associated with that test will be reported. Test results reported by this service do not necessarily indicate a faulty component / system. If test results indicate a failure after additional driving, then the MIL will be illuminated and a DTC will be set and reported with service 03h, indicating a faulty component / system. This service can always be used to request the results of the latest test, independent of the setting of a DTC.
Test results for these components / systems are reported in the same format as the DTCs in Service $03 - refer to the functional description for service $03.
If less than three (3) DTC values are reported for failed tests, the response messages used to report the test results shall be filled with $00 to fill seven (7) data bytes. This maintains the required fixed message length for all messages.

Service $09 (Request Vehicle Information) -PIDs supported

PID	Description
00	PIDs supported [01 - 20]
02	Vehicle Identification Number
04	Calibration Identifications
06	Calibration Verification Numbers
08	In use Performance tracking

Engine Management System Troubleshooting

EFI systems are complex. As such, there are many possible causes when a running issue is encountered. At times it can be confusing if an issue is caused by a mechanical problem or the EFI components.

Always contact your genuine dealer if you are having trouble with your vehicle's Engine Management System.

EFI System Maintenance Procedures

1) Do not disassemble components arbitrarily. It may damage the components.
2) Turn the ignition off prior to connecting or disconnecting any connector including diagnostic controller.
3) Make sure the temperature of the ECU is below 175° F
4) The fuel pressure is very high (about 36 psi), so please do not disassemble the fuel line arbitrarily. If the fuel line needs to be removed, please release the pressure first, and make service is completed in a ventilated area by genuine technicians.
5) When disassembling the fuel pump, make sure the power is off or it may cause fire.
6) The fuel pump cannot be contaminated with air or water, as it will shorten the useful life. The positive and negative poles of the fuel pump cannot be reversed.
7) The ignition system check should only be completed when it is necessary. When checking the spark plug out of the engine, make sure the throttle is closed. Excess unburned fuel coming into the catalyst may damage the catalyst.
8) The idle speed is adjusted by the ECU. The idle screw is not to be adjusted.
9) The Positive and Negative poles of the battery cannot be reversed. It may damage the EFI components.
10) Do not remove the battery when the engine is running.
11) Do not attempt to measure electrical signals by piercing the wire harness.

VIII. Electrical system diagram