TVS Apache RR 310

Euro IV

Owner's Manual

Part number:-

Revision :- Rev. 0, Dec 2018

FOREWORD

Dear Racer,

Thank you for choosing the TVS Apache RR 310. The most powerful and technologically advanced Apache yet.

The precision racer has been shaped in the wind tunnel, honed on the dyno and perfected over countless laps on the racetrack. The flagship racer is the culmination of 35 years of TVS Racing heritage, the racing prowess reflects in every straight and every corner of the track. The Apache RR 310 has been crafted to be the ultimate racer.

This manual explains the features and operations of your TVS Apache RR 310. Please read it carefully and follow the instructions to enjoy the racing experience.

To prolong your journey on the TVS Apache RR 310, we urge you to get your TVS Apache RR 310 services only at TVS Motor Company Authorized Distributor or Dealers.

Here's to breaking lap records on your Apache RR 310.

TVS Motor Company Limited

This Owner's Manual forms an integral part of motorcycle and must be handed over to the new owner if you ever sell your motorcycle.

TVS Motor Company Limited advices you to read this manual carefully in order to familiarise yourself with your motorcycle. In case of any clarification, please contact any of our Authorised Distributor or Dealer.

This manual contains important information about controls and operation, technical features, maintenance and care to be taken to keep your vehicle reliable and safe. We recommend that you strictly follow the instructions in this manual, especially those regarding the running-in period and periodic maintenance.

TVS Motor Company Limited declines any liability whatsoever for any mistakes incurred during the development of this manual. All the information in this manual is valid at the time of publication.

TVS Motor Company Limited reserves the right to make any modifications required due to the ongoing development of their products. In such events it is possible that the relevant part of this Owner's Manual does not apply to your vehicle.

This Owner's manual uses a set of symbols with special meanings. They are:

Warning Failure to comply with these instructions may put you at risk, and could lead to severe injury or deadly accidents.

Caution Follow these instructions to avoid risk of damage to the motorcycle and/or its components.

Note Provides additional information about the current operation.

INTRODUCTION

The terms 'LH' and 'RH' are referred to the motorcycle viewed from the riding position.

Accessories shown in the picture may not be the part of standard equipment.

For your safety, as well as to preserve warranty, reliability and road worthy of your motorcycle, use original TVS Motor Company Limited spare parts only.

In order to ensure the reliability of your product, you are strongly advised to refer our Authorised Distributor or Dealers for any service requiring particular technical expertise.

Skilled personnel of our Dealer have the tools required to perform any servicing job to the highest professional standards to ensure smooth running and long life of your motorcycle.

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Running-in Recommendations

Running-in is essential to preserve engine life and performance over time. Twisty roads and gradients are ideal to run in the engine, brakes and suspension effectively. The first 1000 km is a running-in period for your motorcycle.

Maximum engine speed during running-in

0 to 1000 km - below 7000 rpm

During the first 1000 km, avoid the full throttle starts and rapid acceleration, which could expose the engine parts to excessive stress. It is advisable to run the engine at varying load and rpm, though still within recommended rpm limit. Avoid riding at constant engine rpm for prolonged periods.

During initial running, use brakes gently. Do not brake hard or keep brake applied for too long to enable a correct break-in of brake pad friction material against the brake discs.

To allow all the mechanical parts of motorcycle to adapt each another, and to avoid reduction of engine components life, it is advisable to avoid sudden acceleration and running the engine at high rpm for too long, especially uphill.

Check the drive chain frequently and if required adjust it. Also ensure that the chain is lubricated as required to increase its service life.

Caution On completion of running -in period, scheduled maintenance service should be observed carefully without fail. Failure to comply with this will result in damage to the engine parts and other key parts of the vehicle or shorten engine life.

Keeping to the running-in recommendations will ensures longer engine life and reduce the need for overhauls and re-tuning.

Safe Riding Recommendations

The following points are applicable for every day usage of your motorcycle and should be observed carefully for safe riding of your motorcycle.

Riding skills and your mechanical knowledge forms the foundation of safe riding practices. We suggest you to practice riding your TVS Apache RR 310 in a low-traffic condition until you are thoroughly familiar with your motorcycle and its controls.

Most of the accidents are the result of inexperience of rider. Always make sure you are carrying your driving license with you; you must have a valid license that enables you to ride a motorcycle of this kind. Avoid lending your motorcycle to the persons who are inexperienced and not holding a valid driving license.

A motorcycle is not designed to provide impact protection, so defensive riding in addition to wearing of protective apparel is very important. **Please do not let the protective apparels give you a false sense of security.**

Both the rider and the pillion should always wear an approved, comfortable and **good quality safety helmet** before riding the vehicle. Because, one of the most serious injury that can happen is an head injury.

You should also have a good quality goggles to protect your eyes and help your vision.

Avoid wearing loose clothes or accessories that could become tangled in the controls or limit your field of vision.

Riding at proper speed and avoiding sudden acceleration are not only important for safety and low fuel consumption. It is also important for longer life of vehicle and smoother operation.

Avoid use of mobile phones while riding as it could lead to fatal accident.

To prevent or minimise accident, **never consume alcohol or drugs** before or during the operation of your vehicle. Even minimal consumption of these will affect the rider's ability to control the vehicle.

Ride within the law and observe national and local rules. Always respect speed limits. However, adjust your speed according to the visibility, road and traffic conditions.

Be sure about your visibility and do not ride with the blind spot of vehicles or obstruction ahead you.

Take additional care at road junctions, exits of private land, car parks and on the service roads to highways.

Before changing the lanes or take a turn, look over your shoulder and make sure that your way is clear. Do not completely rely on the rear view mirrors; you may misjudge a vehicle's distance and speed, or you may not see is at all.

Always use turn signal lamps when you intend to change lanes or take a turn. Be sure to switch it off after changing the lane or negotiating the corner.

The rider should keep his/her foot on the footrests while riding the motorcycle.

Always hold the handlebars firmly with both hands in order to be ready for sudden changes of direction or in the road surface.

Under no circumstances should both the hands be removed from the handle bar, as it is very dangerous.

While riding in wet conditions, on loose gravels, the ability to maneuver the vehicle will be reduced. Ride smoothly on this conditions. Sudden acceleration, braking or turning may cause loss of control.

On the wet roads, rely more on the throttle to control vehicle speed and less on the front and rear brakes.

Use the throttle judiciously to avoid skidding the rear wheel from too rapid acceleration or deceleration.

On the rough roads, exercise caution, slow down and grip the fuel tank with your knees for better stability.

To get quick acceleration during overtakes, shift to a lower gear to obtain the necessary power.

Do not downshift the gear abruptly at high rpm to avoid damage to the engine due to overreving.

Avoid unnecessary weaving for the safety of both the rider and other motorists.

While riding on uphill, shift to a lower gears so that there is plenty of power to spare rather than overloading the engine.

Do not downshift the gears in the midst of cornering. Slow down to a safe speed before negotiating a corner.

Hold the vehicle upright as you apply the brake. Progressive application of brake is safer. Never depress the clutch lever while braking at higher speeds.

Riding down hills, while cornering, close throttle and down shift the gear to take advantage of gear box and engine which acts as additional brake. This will avoid loss of control over the vehicle due to over speed.

As the vehicle speed increases, the stopping distance also increases. Progressive application of brake is safer.

Fuel (petrol) is extremely flammable and is explosive under certain conditions. Refuel in a well ventilated area with engine stopped and ignition key turned off.

Do not smoke or use cell phones or allow open flame or sparks when re-fueling or servicing the fuel system.

While re-fueling, there may be a chance of fuel drops getting spilled on your skin or cloths. Wash your skin with soap or change your cloths immediately if you come in contact with the fuel.

Always take out the key when you leave your motorcycle unattended.

Do not park the vehicle on a uneven surface or a slope or a soft ground or else the vehicle may fall.

The exhaust system becomes hot after a run even if the engine is turned 'OFF'. Care should be taken not to touch the exhaust system with any part of your body. Park the vehicle in a place where pedestrians or children are not likely to touch the vehicle. Do not park the motorcycle near inflammable material like wood, dry leaves etc.

⚠ Warning This vehicle is designed for use only on streets and other smooth, paved surfaces. Do not use this motorcycle on unpaved surfaces. Such use could lead to skid or other accident.

Do not ride the motorcycle with helmets attached to the hook; the helmets could cause an accident by distracting the rider or interfering with normal vehicle operation.

Riding the Vehicle with Maximum Permissible Load

Your motorcycle is designed to travel safely over long distances with maximum permissible load. Even weight distribution of loads is critical for preserving the safety features of the vehicle and to avoid trouble when performing sudden maneuvers.

Information on Maximum Load

The total weight of the motorcycle during running including rider, pillion, luggage and additional accessories should not exceed:

299.5 kg.

Arrange your luggage and other accessories in the lowest possible portion (should not affect the ground clearance) and close to the centre of the motorcycle.

Secure your luggage firmly with the motorcycle. Improperly secured luggage may affect the stability. Never attach bulky or heavy objects to the steering head or front mudguard, as this can cause dangerous instability.

Do not insert any material into the gaps of the frame, where they could interfere with the moving parts.

Ensure that the tyres are inflated to the specified pressure (ref. page 82) and they are in good condition.

Use only TVS Motor Company Limited approved accessories.

Take extreme caution while selecting and installing the accessories for your motorcycle.

The addition of unsuitable accessories can lead to unsafe operating conditions. Your friendly distributor or dealer will assist you in selecting quality accessories and installing them correctly.

While selecting the accessories, make sure the accessories should not obstruct lighting, steering, suspension and ground clearance.

Caution This motorcycle was not intended to be equipped with a sidecar or to be used to tow any trailer or other vehicle.

TVS Motor Company Limited does not produce any of those things and not sure about the effects of those accessories on handling or stability. But we can warn that the effects will be adverse and any damage caused to motorcycle and its components by the use of such accessories will not be covered under warranty.

Additional electrical equipments and controls should not exceed the specified electrical system load of the vehicle (capacity of battery and magneto).

Do not change / add any lighting loads. Use only accessories listed by TVS Motor Company Limited.

Caution Care should taken not to damage the wiring harness of the vehicle to fit additional electrical accessories; which in-turn affects the 'CAN bus' system of the vehicle.

Anti-Lock Brake System (ABS)

Your motorcycle is fitted with an Anti-lock braking system (ABS) which is designed to prevent skidding and help riders to maintain steering control during emergency-stopping situation in dry or wet roads, loose gravels etc.

How does ABS work?

When a rider applies the brakes continuously as he detects a dangerous obstacle in dry or wet roads, loose gravels etc. thus transmitting excessive brake force to the wheel. This excessive force may cause the wheel to stop spinning and leads to loss of grip. With no firm contact between the tire's contact patch and the road surface, the bike becomes unstable and a crash is imminent.

The slipping wheels on a riding surface results in losing control of whole motorcycle which usually occurs in fraction of a second. Restoring traction while keeping the bike balanced is only a result of luck, or extreme training, as is the case of professional stunt riders who drift. Preventing the wheels from slipping due to excessive braking force compensates losing control and help the rider to maneuver the vehicle and to avoid accidents.

So what the ABS does is actually limiting the braking force exerted by the rider by regulating the brake pressure and keep the wheel spinning. Once the imminence of the locking (and therefore skidding) is avoided, the system re-applies the maximum braking force until the next skid is anticipated. By limiting the max force of the braking maneuver, the ABS systems practically allow riders to use the greatest stopping force possible without locking the wheels.

How does the ABS understands the wheel locking?

The ABS uses continuous wheel speed monitoring system; wheel speed sensors and toner rings (pulsar rings) and a Hydraulic Electronic Control Unit (HECU).

During normal operation the ABS works similar to a normal brake, but functions only when the wheel tends to lock up. The speed sensors fitted on both the wheels measures the rotational speed of the wheel, when the wheel speed reduces rapidly i.e. wheel tends to lock, the HECU modulates the pressure in the brake circuit and thereby prevents the wheel from locking.

How the irregular road surface affects the braking?

Humps and irregular surfaces of the road can cause the wheels to lose contact temporarily with the road surface; if this happens the braking force that can be transmitted to road surface is zero.

If the brakes are applied under these condition, the ABS has to reduce the braking force to ensure and maintain the directional stability when the wheels regains its contact with the road surface. At this instant the ABS must reduce the traction, so that the wheels will continue to rotate under all imaginable circumstances, because this is the precondition for ensuring directional stability. As soon as the actual circumstances arises, the system reacts instantly and adjusts braking force accordingly to achieve optimum braking.

Why does brake pedal / lever pulsate during brake application?

Vehicles fitted with ABS uses the conventional brake system during normal operation. But during hard stop the brake pedal / lever feels different, i.e., a rapid pulsation in the brake pedal / lever; This is absolutely normal.

It is not necessary to have this pulsation feel every time the brake is applied. Pulsations are felt only during wheel locking tendency, occurs due to the modulation of pressure in the brake circuit by HECU. Pulsation means that the vehicle is in limit. This pulsation feel also depends on the road condition.

Rear wheel lift

Under very severe and sudden deceleration, however, under certain circumstances it is possible that the ABS unit fitted in your vehicle will be unable to prevent the rear wheel from lifting clear of the ground and flip over.

Severe braking can cause the rear wheel to lift off the ground. When you brake, bear in mind that ABS control cannot always be relied on to prevent the rear wheel from lifting clear of the ground.

⚠ Warning The ABS can apply and release the pressure in the brake circuit much faster than that rider can do with brake pedal / lever to avoid wheel locking, so there is no need to pump the brake, it requires only continuous application.

EMS a Glance

Engine Management System (EMS) of your motorcycle is a self manipulative system that checks and regulates the proper functioning of all the operations carried out by the engine.

The EMS checks all the factors related to engine operations, i.e. speed of the engine, load, air temperature, crank angle, exhaust oxygen content, etc. There are two major function performed by the EMS, they are:-

1. Provide a spark at the right time
2. To meter fuel to the engine in the right quantity.

The EMS is comprised of several sensors and signals required for injection and ignition spark occurrence, and a sensor for information about the oxygen content in the exhaust. Further more, there is an idle speed motor for adjusting and stabilising the idle speed.

The Engine Control Unit or Electronic Control Unit (ECU) is a central part of the EMS, which is virtually the 'Brain' of an engine. It plays an important role of collecting, processing, analyzing and executing the data it receives from various sub-systems (sensors).

Furthermore, an ECU comprises of a computer which uses a microprocessor to process the inputs from various engine sensors in real-time.

Based on the data input, the ECU precisely calculates and delivers the ideal air-fuel mixture. It also regulates the idle speed of the engine and controls the correct delivery of both fuel and spark to the vehicle under various driving conditions.

Optimum functioning of the EMS assures maximum engine power, with lowest amount of exhaust emissions and the lowest fuel consumption. The EMS is also responsible for the smooth and efficient running of the motorcycle.

Emission Control

Source of Emissions

The combustion process of an engine produces carbon monoxide, nitrogen oxide and hydrocarbons. Control of hydrocarbons is very important because under certain conditions, they react to form photochemical smog when subjected to sunlight.

Carbon monoxide does not react in the same way, but is toxic. TVS Motor Company Limited used various components to reduce carbon monoxide and hydrocarbons.

Exhaust emission control system

All the TVS motorcycles are tested in the factory for optimum fuel efficiency and lowest possible CO levels.

While adequate care is exercised at the factory to ensure that the emissions are within the limits, it is essential for the owner to always maintain the motorcycle in good condition by getting it periodically checked and serviced by TVS Motor Company Authorised Distributor or Dealer so that the emission and fuel consumption levels are maintained as per norms.

Factors that may affect motorcycle emission

If the following symptoms are noticed in your motorcycle, have the vehicle inspected by TVS Motor Company Authorised Distributor or Dealers.

1. Abnormal jerk
2. Difficult to start or engine gets off after starting. Improper idling
3. Misfiring or backfiring during acceleration
4. After-burning (back firing)
5. Poor driveability and poor economy.
6. Noise due to sudden escape of gas during opening of fuel tank cap.

Crankcase emission control system

The engine of TVS Apache RR 310 is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere. Blow-by gas is returned to the combustion chamber through the air cleaner and the throttle body.

Evaporative Emission Control System

The TVS Apache RR 310 is equipped with an evaporative emission control system which consists of a canister and associated piping. This system prevents the escape of fuel vapors from the throttle body and fuel tank.

Vehicle Identification Number

All TVS motorcycles are provided with identification numbers for frame and engine. They are the only means of identifying your vehicle from others of the same model and type.

The frame identification number is engraved on the right of the steering head tube as shown (ref. Fig. 01).

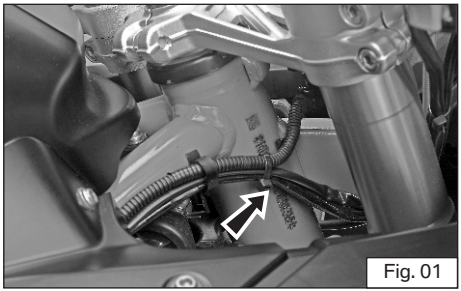


Fig. 01

The engine identification number is engraved on the right side of engine as shown (ref. Fig. 02).

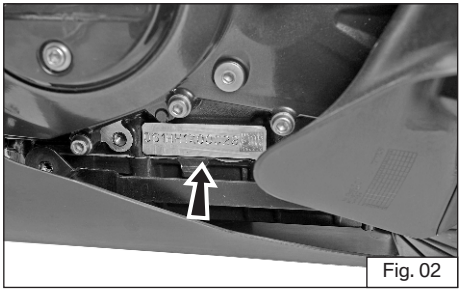


Fig. 02

Control Key

A pair of identical control keys are supplied with your motorcycle. These keys are to operate ignition cum steering lock, fuel tank cap and seat lock.

A sticker ID (1) attached with keys has the identification number of keys. Please note down the identification number below for future reference. (ref. Fig. 03)

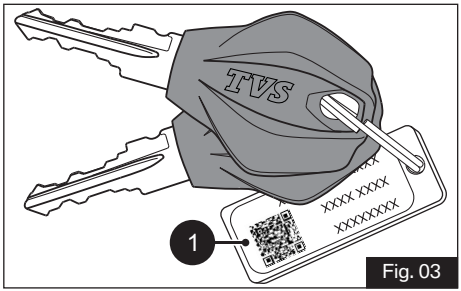


Fig. 03

Location of Parts - Vehicle RH Side View

Fig. 04

Location of Parts - Vehicle RH Side View (Ref. Fig. 04)

1) Front wheel axle
2) Turn signal lamp RH front
3) Reservoir, rear brake fluid (ref. page 79)
4) Rear brake pedal (ref. page 44)
5) Rider foot rest RH
6) Pillion foot rest assembly RH
7) Muffler assembly
8) Turn signal lamp RH rear
9) Pillion handle
10) Seat lock (ref. page 53)

Location of Parts - Vehicle LH Side View

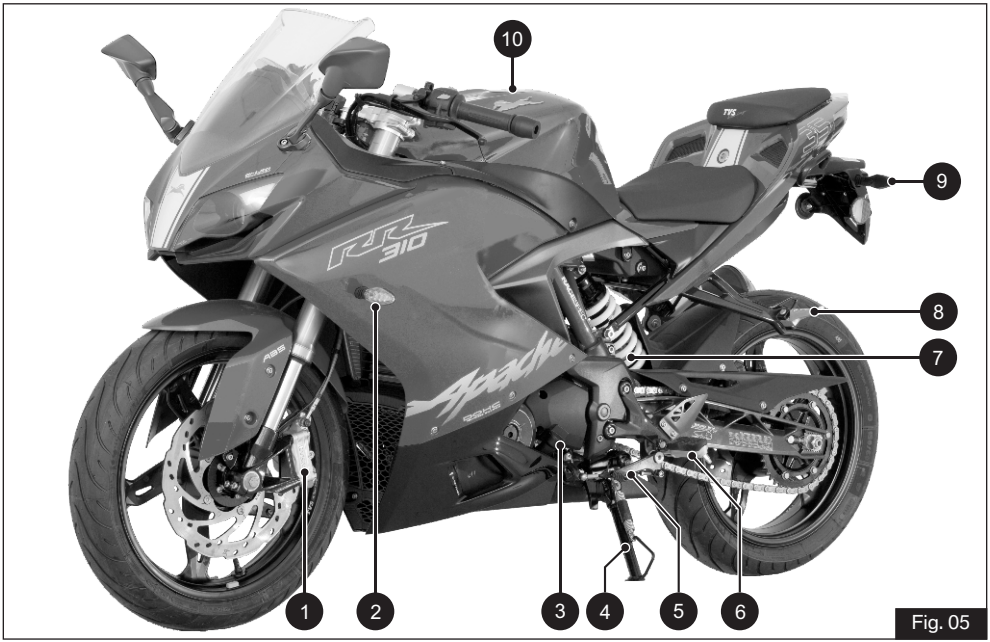


Fig. 05

Location of Parts - Vehicle LH Side View (Ref. Fig. 05)

1) Caliper assembly front
2) Turn signal lamp LH front
3) Gauge oil level (dipstick) (ref. page 74)
4) Side stand
5) Gear shift pedal (ref. page 43)
6) Rider foot rest LH
7) Rear shock absorber (ref. page 52)
8) Pillion foot rest assembly LH
9) Turn signal lamp LH rear
10) Fuel tank cap assembly (ref. page 49)

Instrument Cluster

Instrument cluster will be activated once the 'ignition lock' is turned ON.

All segments and tell-tale indicators glow for 2 seconds on activation of instrument cluster for checking and ensuring the proper working of segments and indicators.

Following are the features of instrument cluster:

A) Hazard switch (ref. Fig. 06)

- Press the button ' ⚠ ' (A) to turn ON / OFF the hazard lamps.

  - If the hazard indication is turned ON while the turn signal indicators are active, the turn signal indicators will be suspended temporarily.

  - Turn signal indication will resume automatically once the hazard lamps are turned OFF (if they were active before hazard lamp ON).

  - On activation of hazard lamps, both 'left' and 'right' turn signal indicators ' ⇦ ⇨ ' flashes.

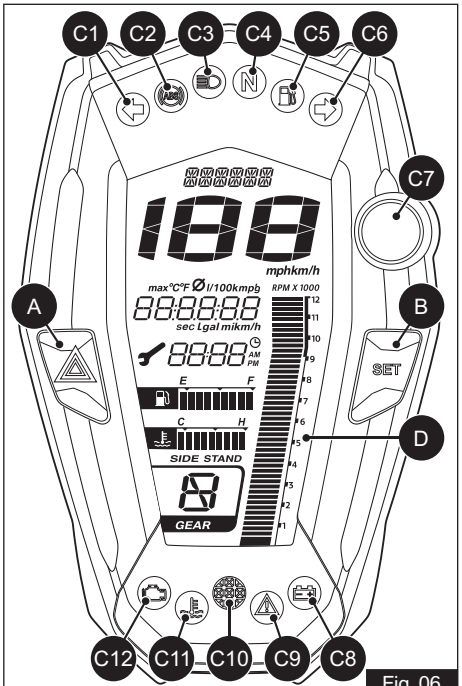


Fig. 06

Note Hazard lamps can be switched ON/OFF only by means of hazard switch.

Hazard switch works only when the ignition is turned ON and the lamps continue to work even if the ignition is turned OFF during its working.

Avoid using hazard lamps while the engine is turned OFF for prolonging time to avoid battery drain.

B) SET button (ref. Fig. 06)

- Press the button (B) for selecting the display mode.

  - Press (short press) the button repeatedly till the desired menu is displayed.

  Ex. ODO, Range, IMI, Mileage etc.

  - Press (long press) the button to store the values or to reset the stored values.

Warning Display setting to be done only when the motorcycle is stationary. Never operate the instrument panel controls while riding the motorcycle for safety.

C) Warning and indicator lights (ref. Fig. 06)

C1) Turn signal indicator LH
C2) ABS indicator
C3) High beam indicator
C4) Neutral indicator
C5) Fuel warning indicator
C6) Turn signal indicator RH
C7) Gear shift indicator / over speed warning
C8) Low battery indicator
C9) General warning indicator
C10) Photo sensor
C11) Engine temperature indicator
C12) Malfunction indicator

Warning and indicator lights (ref. Fig. 06)

Symbol	Lights	Meaning
	C1. Turn signal indicator LH	Flashes when the left side turn signal indication is activated
	C2. ABS indicator	Flashes when the ABS self-diagnostic not completed / not yet initiated - Ride the vehicle few kms. Glows continuously when the ABS has an error or malfunction* Goes OFF after few kms run - ABS is active and ready to use
	C3. High beam indicator	Glows when the head lamp high beam is activated
	C4. Neutral indicator	Glows when the vehicle is in neutral condition
	C5. Fuel warning indicator	Glows when the fuel level in the tank reaches to minimum safe level or any mal function in the fuel level sensor*
	C6. Turn signal indicator RH	Flashes when the right side turn signal indication is activated
	C7. Gear shift indicator	Glows when the rpm reaches high on the selected gear, which will in-turn consumes more fuel - shift to next gear. It is not enabled for neutral and 6th gear. It also works as a speed limit indicator (if the limit is set by the user ref. page 28).

* Contact TVS Motor Company Limited Authorised Distributor or Dealer

Warning and indicator lights

Symbol	Lights	Meaning
	C8. Low battery indicator	Glows when the battery voltage is low*
	C9. General warning indicator	Glows when a warning is active and for which no separate warning indicators are provided. Example: Side stand ON.
	C10. Photo sensor	Adjusts the LCD brightness and tell tale indicators brightness automatically as per day and night conditions.
	C11. Engine temperature	Flashes when the coolant temperature is very high or if any malfunction in the coolant temperature sensor **(stop the engine to avoid serious damage if this indicator is flashing).***
	C12. Malfunction indicator	Glows when any problem is detected in engine management system causing vehicle to exceed on-board diagnostic emission threshold.*

Note The instrument cluster monitors the battery voltage and if the voltage persists less than 11.5 volts for a period of 5 seconds, the cluster switches OFF itself.

The vehicle automatically goes to reduced performance mode if the engine temperature is very high.

* Contact TVS Motor Company Limited Authorised Distributor or Dealer

D) Multifunction display (ref. Fig. 07)

- D1) Alphanumeric display
- D2) ODO, Range, IMI, etc.
- D3) Service reminder
- D4) Fuel level indicator
- D5) Coolant temperature indicator
- D6) Side stand warning indicator
- D7) Gear position indicator
- D8) Speedometer
- D9) Engine RPM indicator
- D10) Clock

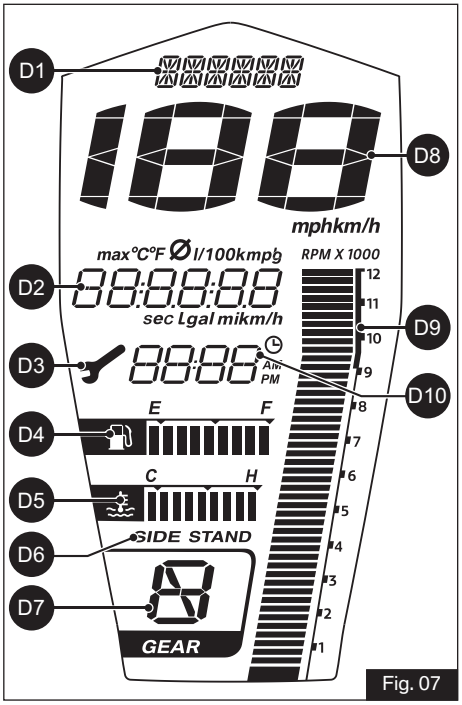


Fig. 07

D1. Alpha numeric display (ref. Fig. 07)

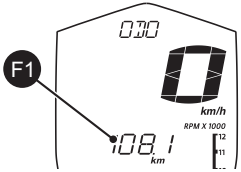
- Displays the menu selected by the user.

To set the menu:

- Keep the vehicle stationary and switch ON the ignition. The on-board computer displays the reading after the pre-check.
- Short-press the 'SET' button (E, Fig. 08), repeatedly until the desired menu is displayed (ref. Fig. 08 for possible menu display)

D2. ODO, Range, IMI, etc. (ref. Fig. 07)

ODO (F1)



- This menu (Odo meter) displays the total distance covered by the vehicle.

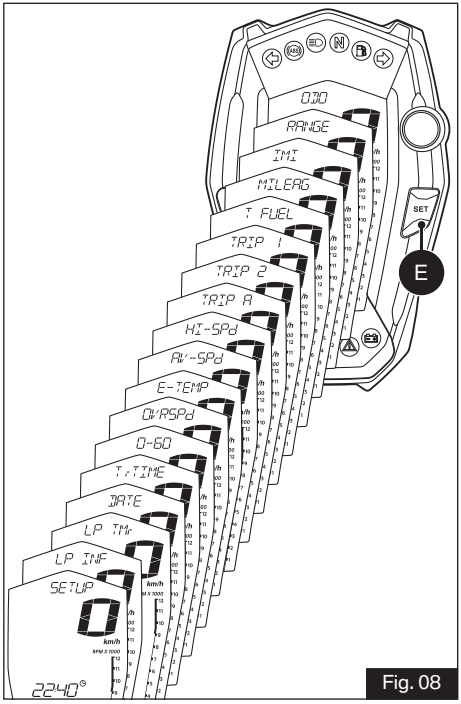
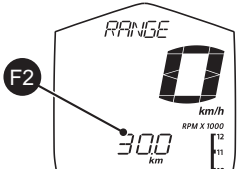


Fig. 08

- The reading is saved permanently and cannot be reset under any circumstances.
- If the travelled distance exceeds 999999 km, the value '999999' will be displayed permanently.

RANGE (F2)



- Indicates the approximate distance that can be covered by the vehicle with the available fuel in the tank.

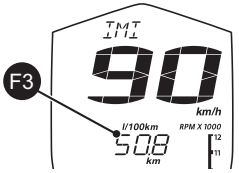
  - If there is any error or fuel is less than minimum sense-able volume it displays '_ _'.

  - The default value '_ _' will be displayed incase of battery disconnection.

Note If the fuel in the tank reaches to minimum safe level, the display switches over to 'Range' mode automatically instead of any other mode set by the user.

The 'Range' reading may not be accurate when the vehicles is propped on side stand and should be calculated only when the side stand is folded.

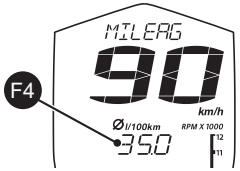
IMI (F3)



- Indicates the instantaneous mileage (fuel economy) of the vehicle at that particular driving condition.

  - The value will not be shown if the vehicle speed is less than 10 km/h.

MILEAG (F4)



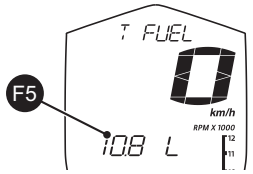
- Indicates the average mileage (fuel economy) of the vehicle.

  - User can reset the value.

  - This value gets updated only after the vehicle speed increases more 10 km/h for the first time after ignition ON and continue to update till the engine switch OFF.

  - Long press the 'SET' button (E, Fig. 08) to reset the value when the menu is in 'Mileage' mode.

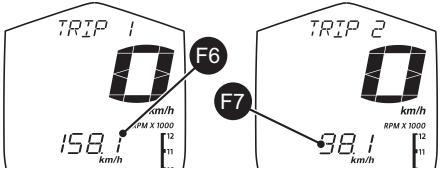
T FUEL (F5)



- Displays the total fuel consumed by the vehicle over a period of time (until reset by the user).

  - Long press the 'SET' button (E, Fig. 08) to reset the value when the menu is in 'T Fuel' mode.

TRIP 1 & TRIP 2 (F6 & F7)



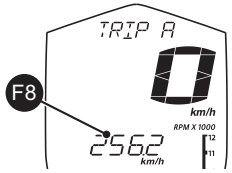
- Trip meter displays the trip distance travelled in kilometer since last reset.

- Two independent trip meters (Trip 1 & 2) with the range upto 9999.9 km is provided to measure different trips.

- The trip distance will be initialized to '0 km' automatically once reached 9999.9 km.

- Long press the '**SET**' button (**E**, Fig. 08) to reset the value when the menu is in particular trip mode.

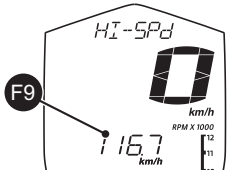
TRIP A (F8)



- Auto trip meter (Trip A) indicates the distance travelled in particular day with the following conditions

  - Once the ignition is turned ON, if the date is changed and the ignition OFF time is greater than 6 hours, the meter resets automatically.

HI-SPd (F9)



- Displays the top speed achieved by any user so far.

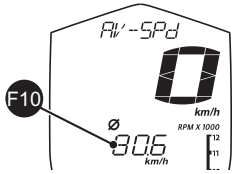
  - If the vehicle's current speed is greater than the recorded speed, the new value will get updated automatically.

  - Toggle to 'HI-Spd' menu to know the earlier achieved top speed.

  - User can reset and record a new speed data if required.

  - Press the '**SET**' button (**E**, Fig. 08) to reset the value when the menu is in 'HI-Spd' mode.

AV-SPd (F10)



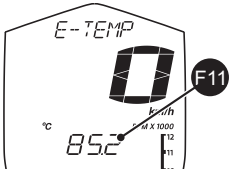
- Displays the average speed of the vehicle based on total distance covered since last reset / by the total time when the engine rpm is greater than 500 rpm.

  - Long press the 'SET' button (E, Fig. 08) to reset the value when the menu is in 'AV-Spd' mode.

  - After reset, the value will not get updated for the first 2 seconds and vehicle speed raises above 10 kmph at least once.

Caution Stop riding the vehicle if the temperature reaches to maximum limit, else it might result in engine damage.

E - TEMP (F11)



- Indicates the engine temperature in degree Celsius.

  - If the engine temperature raises more than the limit, the warning indicator ' ' flashes.

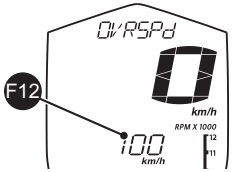
  - Take the vehicle to the TVS Motor Company Authorised Distributor or Dealer for further diagnosis if this indicator starts flashing.

  - Similarly, if the coolant temperature indicator ' C H ' shows more than seven bars (warning indicator also flashes during this time), take the vehicle to the TVS Motor Company Authorised Distributor or Dealer for further diagnosis.

Caution In case of coolant temperature sensor fault or cooling fan fault or throttle position sensor fault, the vehicle will go to reduced performance mode (limp-home) in order to safe guard the bike from any damage and also to protect the rider.

The high temperature tell-tale will be ON also in the case of coolant temperature sensor error, in addition to high temperature warning functionality (the digital value displayed in the cluster will be last recorded correct value of the vehicle's ECU).

OVRSPd (F12)



- This function lets you to set 'over speed limit' if required or to turn OFF the limit set earlier.

  - The limit can be set from 30 km/h to 195 km/h with the increment of 5 km/h.

  To set the limit or to turn OFF,

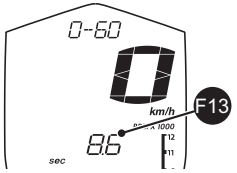
  - Toggle to 'OVRSPd' mode and long press the 'SET' button (E, Fig. 08) until the speed limit digits are flashing.

  - Release and short press the 'SET' button (E, Fig. 08) again till the desired speed limit is displayed or OFF condition is obtained.

  - Long press the 'SET' button (E, Fig. 08) to set the speed or to switch OFF.

  - If the current vehicle speed crosses the speed limit set by the user, then the gear shift indicator '  ' flashes and warns.

0 - 60 (F13)



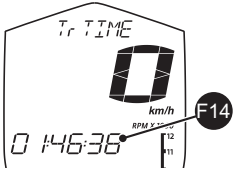
- This function lets you to measure the time to reach 0 to 60 km/h speed from rest and to view the best time taken so far (0 to 60 time is recorded even if the menu is not in '0-60' mode).

  - Toggle the display to '0 - 60' mode to know the best time taken so far and to measure the new time.

  - If the current time is lesser than the stored value, the new value will get updated automatically.

  - User can reset and record the new time if required by long pressing the 'SET' button (E, Fig. 08) when the menu is in '0-60' mode.

TrTIME (F14)



- Trip timer displays the time taken to complete the trip until the ignition key is turned OFF and ON.

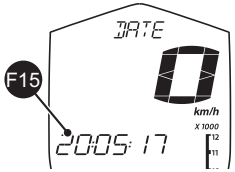
  - Displays in the format hh:mm:ss if the trip time is lesser than 100 hours otherwise in hhh:mm format.

  - Starts automatically once the engine rpm goes above 500 rpm.

  - The maximum time that can be recorded is 999:59 hrs.

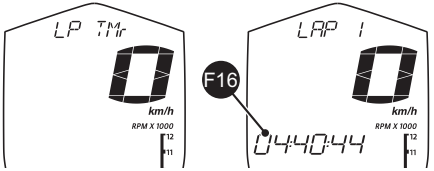
  - User can reset and record the new trip time if required. Long press the 'SET' button (E, Fig. 08) to reset the value when the menu is in 'Tr Time' mode.

DATE (F15)



- Displays the current date. Has a inbuilt leap year calculation.
  - Toggle to 'Date' mode to know the date.
  - User can reset the date if required as described in 'Setup' menu (ref. page 32).

LP TMr (F16)



- Lap timer lets you to display the lap times.
  - User can record up to 9 laps.
  - Minimum 10 secs and maximum 50 min lap time (in a single lap) can be recorded.
  - Toggle to lap timer mode and long press the 'SET' button (E, Fig. 08) to enter lap timer.
  - Either press pass-by switch or short press the 'SET' button (E, Fig. 08) to start and stop the lap timer.
  - When the lap timer is active, each time either the pass-by switch or the 'SET' button (E, Fig. 08) is pressed, the display will show the present lap time for 3 seconds and moves to next lap automatically.
  - Long press the 'SET' button (E, Fig. 08) again to come out of lap timer function.

Note If the lap timer is continued even after completing 9 laps, the control moves to first lap automatically (first lap starts again) and will keep running until the function is disabled. The earlier recorded values will be overridden automatically.

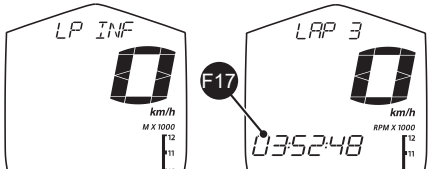
If a particular lap time reaches 50 minutes, the next lap starts automatically without activating any switch.

The 'lap' function is disabled automatically if the 'ignition lock' or 'switch engine cut off' is turned OFF while it is active and the current lap time will not get stored even though the lap timer had been active before the turning OFF the 'lock / switch'.

If the lap timer function is switched ON when only fewer laps have been completed earlier (eg. 4 laps completed), it starts from the next lap only (5th lap) and not from the first.

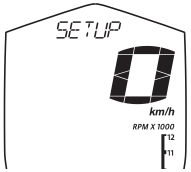
Lap times can't be reset and it will be overridden automatically when the lap is active next time.

LP INF (F17)

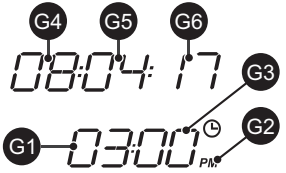


- This function lets the user to view the laps information (time recorded earlier).
  - Toggle to 'LP INF' mode and long press the 'SET' button (E, Fig. 08). The last achieved lap time will be shown.
  - Short press the 'SET' button (E, Fig. 08) to view the other laps.
  - Long press the 'SET' button (E, Fig. 08) again to come out this function.

SETUP (F18)



- ‘Setup’ is the function which allows the user to set the time and date.
  - Toggle to ‘setup’ mode and long press the ‘SET’ button (E, Fig. 08). The ‘hours digits’ (G1) of the clock starts flashing.
  - Short press the ‘SET’ button (E, Fig. 08) to increase the hours (by 1 hour).
  - to change the mode from ‘AM’ to ‘PM’ (G2) or vice versa increase the hours by another 12 hours.



- After setting the hours, long press the ‘SET’ button (E, Fig. 08) again so that the ‘minutes digits’ (G3) starts flashing.
- Short press the ‘SET’ button (E, Fig. 08) to increase the minutes (by 1 minute).
- After setting the minutes, long press the ‘SET’ button (E, Fig. 08) so that the ‘date digits’ (G4) starts flashing.
- Short press the ‘SET’ button (E, Fig. 08) to increase the date (by 1 day).
- After setting the date, long press the ‘SET’ button (E, Fig. 08) so that the ‘month digits’ (G5) starts flashing.
- Short press the ‘SET’ button (E, Fig. 08) to increase the month (by 1 month).
- After setting the month, long press the ‘SET’ button (E, Fig. 08) so that the ‘year digits’ (G6) starts flashing.
- Short press the ‘SET’ button (E, Fig. 08) to increase the year (by 1 year).
- After setting the year, long press the ‘SET’ button (E, Fig. 08) to come out of ‘setup’ function.

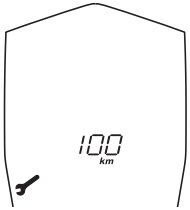
Note During clock setting, if there is a delay in input (more than 3 seconds) the system will come out of the setting procedure automatically.

Whenever the instrument cluster is disconnected from the battery supply, the time and the date set earlier will get reset and need to be set again.

D3. Service reminder (ref. Fig. 07)

- Service reminder indicates the user that the vehicle is due for service.
  - It works based on the distance until service is due or service due date.

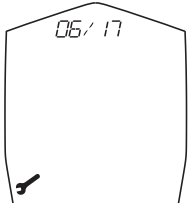
  Distance based (km):



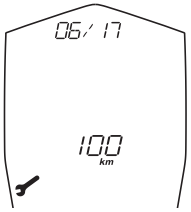
- When the distance remaining for next service reaches below 100 km, above message will be displayed for few seconds after completion of pre-ride check.
- If the distance becomes overdue (equal or less than zero) then the service reminder '🔧' appears and stays permanently till the vehicle is serviced and the reminder is reset.

Time based (months):

- If the date for next service falls within a month, below message will be displayed for few seconds after completion of pre-ride check.
- If the service date is overdue (if the service date is crossed) then the service reminder symbol '🔧' appears.



- If both distance and the service due date is exceeded (if the vehicle is not serviced in both the conditions) then the display appears as given below.

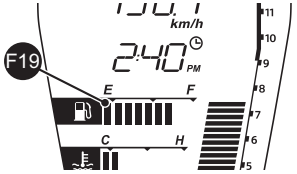


Note Service reminder ' ' appeared will stays ON until it is reset at TVS Motor Company Authorised Distributor or Dealer as a part of service procedure.

Service reminder date set earlier gets erased incase of battery disconnection or by any other mode. The service indication symbol ' ' will be displayed permanently until the service date is fed again and the reminder is reset.

D4. Fuel level indicator (ref. Fig. 07)

- Digital bars (F19) indicates the approximate quantity of fuel available in the tank.



- There are nine bars to indicate the quantity fuel.
- All the nine bars will be displayed when the fuel level in the tank reaches approximately 9 liters.

- When the fuel level reduces to 5 liters (approx.) the indicator displays only five bars.

- If the fuel level is less than 2.2 liters, the low fuel indicator ' ' starts glowing.

- If the fuel level reaches to minimum safe level ie. lesser than 2 liter approximately, fuel level indicator displays a flashing single bar.

- Fill fuel (ref. page 49) immediately.

Note If the fuel level reaches to minimum safe level, the display switches over to 'Range' mode automatically.

Please ensure that the fuel bar indication in cluster is greater than 1 bar always. It is dangerous to ride with 1 bar or less.

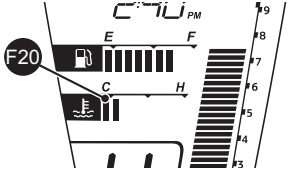
Incase of any error in input system, all the bars of fuel level indicator flashes and fuel warning indicator turns ON. In addition to that, reading '_ _ ' will be displayed in the 'Range' mode. Contact nearest TVS Motor Company Authorised Distributor or Dealer incase any of these problems are noticed.

Warning If the vehicle is run with very less fuel it will result in improper engine operation or shutdown due to lack of fuel which may result in accident.

Caution Do not run the fuel tank dry to avoid failure of fuel pump and other consequential damages if any.

D5. Coolant temperature indicator (ref. Fig. 07)

- Digital bars (F20) indicates the engine coolant temperature.

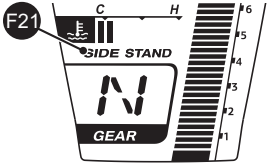


- The coolant temperature indicator displays more than seven bars if there is any problem in the cooling system.

- The warning indicator ‘ ’ also flashes during this condition of the vehicle.
- Take the vehicle to TVS Motor Company Authorised Distributor or Dealer for further diagnosis.

Note The vehicle automatically goes to reduced performance mode if the engine temperature is very high.

D6. Side stand warning indicator (ref. Fig. 07)



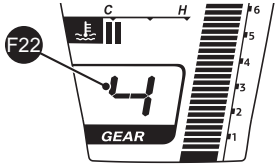
- If the side stand is ON, the text message (F21) will be displayed as shown and the general warning indicator ‘ ’ glows along with it.

Note The vehicle will start in side stand in neutral gear but it will not in other gears. The vehicle will also ‘switch off’ if the side stand is ON and gear is changed from neutral to gear.

Incase of any errors in side stand switch - side stand indication will be always ON in the instrument cluster immaterial of side stand status.

In the event of any unfortunate accident, if the side stand / side stand switch has been damaged, the signal can be bypassed by disconnecting the side stand switch coupler.

D7. Gear position indicator (ref. Fig. 07)



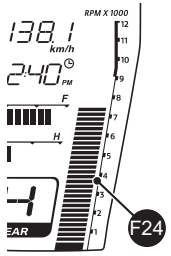
- Gear position indicator (F22) indicates vehicle's present gear position and neutral condition. Gear position indication displays "--" if there is any problem in the system. Take the vehicle to TVS Motor Company Authorised Distributor / Dealer.

D8. Speedometer (ref. Fig. 07)

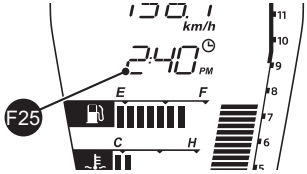
- Displays the road speed in km/h (F23) (in India).

D9. Engine rpm indicator (ref. Fig. 07)

- Digital bars (F24) indicates the engine rpm in multiples of 250 rpm.



D10. Clock (ref. Fig. 07)



- Digital clock (F25) displays time in 12 hours format.

Note Reset the clock timing incase of battery disconnection (ref. page 32).

Warning This section shows the position and function of the controls used to ride your motorcycle. Read this section carefully before riding the motorcycle.

Controls (ref. Fig. 9)

1) Instrument cluster (ref. page 18)
2) Ignition cum steering lock (ref. page 39)
3) Clutch lever (ref. page 40)
4) Switch assembly LH (ref. page 41)
5) Gear shift pedal (ref. page 43)
6) Rear brake pedal (ref. page 44)
7) Switch assembly RH (ref. page 44)
8) Throttle twist grip (ref. page 46)
9) Front brake lever (ref. page 46)

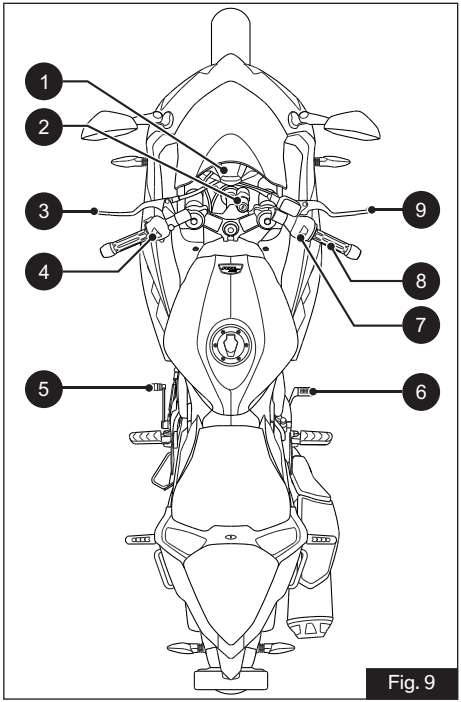


Fig. 9

Ignition cum Steering Lock

Ignition cum steering lock is located in front of fuel tank and has three positions (ref. Fig. 10) :

- OFF (A): Disables lights and engine operation.
- ON (B): Enables lights and engine operation (with engine cut off switch is in run mode ' ⟳ ').
- LOCK (C): Steering is locked
  - To lock the steering, turn the handle bar all the way towards 'left' or 'right', push the key in and turn it to LOCK position.
  - Push and turn the key to OFF or ON position to unlock.

Note Control key can't be taken out from the lock at position (B).

The head lamp, tail lamp and license plate lamp will glow automatically when the ignition is turned ON without operating any other switches.

The instrument cluster performs pre-check once the 'ignition lock' is turned ON. Wait till the completion of pre-check.

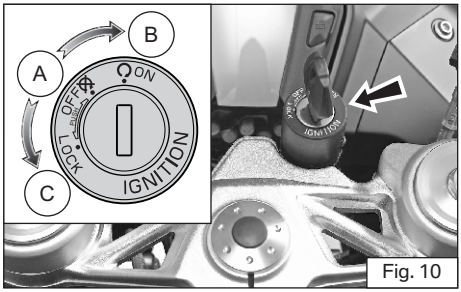


Fig. 10

Caution On level ground, always turn the handle bar towards left while locking the steering when the vehicle is propped with side stand. Else the vehicle may fall and may get damaged. Otherwise the angle of the ground determines the steering position ('left' or 'right').

Always lock the steering while parking for safety.

Ensure that, you do not keep the ignition 'ON' without starting the engine for a long time as battery might get drained because of AHO.

Clutch Lever (ref. Fig. 11)

Clutch lever (A) is located in the handle bar at LH side.

- Clutch lever is used to disengage clutch.

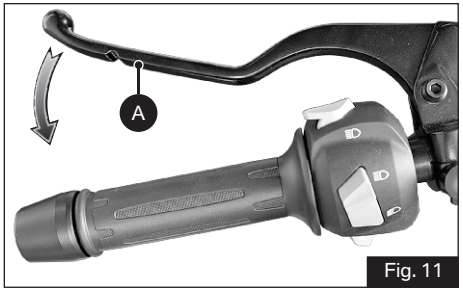


Fig. 11

- When the clutch is pressed, drive from the engine to the gearbox and the rear wheel is disengaged.

Caution Proper usage of clutch increases the life of engine component and prevent any damage to the transmission components of engine.

- Proper use of clutch lever is essential in all riding situations, especially while moving the vehicle from rest.

Note Apply the clutch when starting the vehicle with gear engaged.

Increase in engine rpm during acceleration, without increase in road speed indicates the clutch slip. A slipping clutch causes high fuel consumption and engine overheating. Refer page 76 for clutch adjustment procedure.

Switch Assembly LH

Switch assembly LH is located in the handle bar at LH side and has the following switches in it.

A) Switch beam control (ref. Fig. 12)

Head lamp glows automatically when the ignition turned ON. Depending on the selection of High/Low beam switch position, head lamp will operate in corresponding beam.

- Press the switch towards you ' ' to illuminate low beam
- Press the switch away from you ' ' to illuminate high beam.

  - When the head lamp is illuminated in high beam, the high beam indicator ' ' glows along with it.

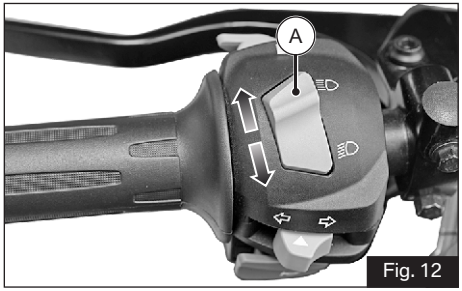


Fig. 12

Warning Use appropriate head lamp beam 'high / low' as per the traffic and road conditions for your safety and avoid inconvenience to other riders.

B) Switch turn signal (ref. Fig. 13)

- Push the switch towards ' ' to flash LH side turn signal lamps and towards ' ' to flash RH side turn signal lamps.
- Push the switch 'IN' to cancel.

Auto - Turn signal cut off

For your safety, if the turn signal lamps are ON for more than 30 secs. or for 300 meters, the turn signal will get switched OFF automatically.

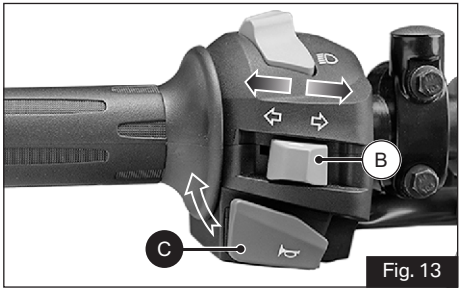


Fig. 13

- When the 'left' or 'right' side turn signal lamps are activated, respective turn signal indicator ' ' flashes along with it in the instrument cluster.

Warning Even though there is auto cut-off system provided for turn signal lamps, it is the responsibility of the rider to switch the turn signal lamp ON or OFF at the right time to avoid an accident.

C) Switch horn (ref. Fig. 13)

- Press the switch ' ' to blow horn.

D) Pass-by switch (ref. Fig. 14)

- Press the switch intermittently to flash the head lamp.

  - Flashing the head lamp high beam provides signal to the vehicles coming from opposite direction during overtakes.

  - If the high beam is flashed, the high beam indicator ' ' also flashes along with it in the instrument cluster..

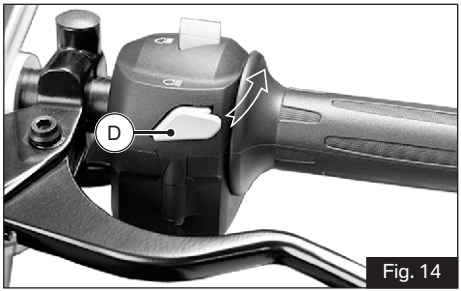


Fig. 14

Note Pass by works only when the beam control switch is in low beam position.

Gear Shift Pedal (ref. Fig. 15)

This motorcycle is equipped with a 6 speed constant mesh transmission.

- To select the required gear or to bring the vehicle to neutral, a gear shift lever (A) is provided and it is located on the LH side of the vehicle.
- To engage the 1st gear and to down shift the gear press the pedal down.
- To engage 2nd, 3rd, 4th, 5th and 6th gear, lift the pedal upwards.

  - Each time you move the pedal you will be engaging the next gear.

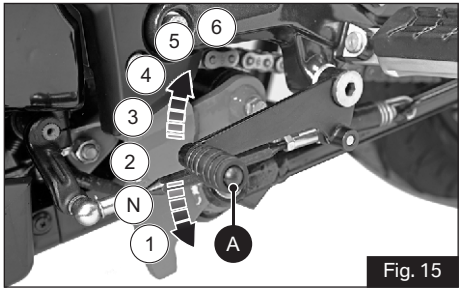


Fig. 15

  - Gear shift pedal returns to its position (centre position) automatically when released after shifting.
  - Once the transmission is brought to neutral position, the neutral indicator ' N ' illuminates.

Note Apply the clutch when starting the vehicle with gear engaged.

Gear shift pedal position can be adjusted as per the convenience of the rider. Refer page 64 for adjusting procedure.

Rear Brake Pedal (ref. Fig. 16)

Rear brake lever (A) is located on the RH side of the vehicle.

- Push down the rear brake pedal with your right foot to operate the rear brake.
  - The system is operated by hydraulic and just need to push the lever gently.

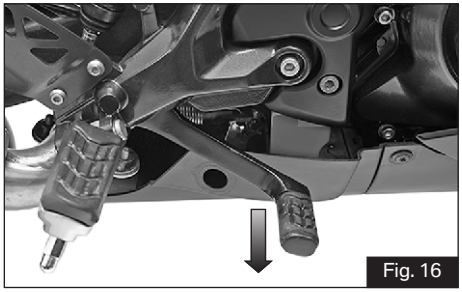


Fig. 16

Note Front brake lever and rear brake pedal pulsates during the hard application of brake which is normal. This pulsation occurs because of ABS working.

Switch Assembly RH

Switch assembly RH is located in the handle bar at RH side and has the following switches in it.

A) Switch engine cut-off (ref. Fig. 17)

- Press the switch towards you ' ' to turn ON (engine runs).
- Press the switch away from you ' ' to turn OFF (engine shuts).
  - When turned OFF, only engine shuts down but other DC systems will be active.

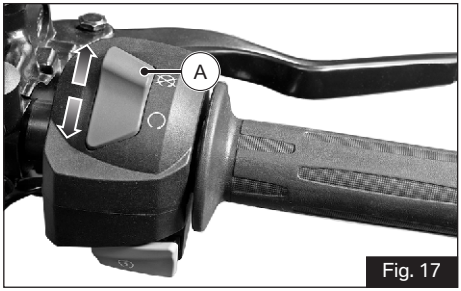


Fig. 17

Note Before starting, ensure to turn ON the switch engine cut off.

Warning Do not operate the kill switch when riding else you may fall due to rear wheel locking.

This switch is mainly intended for use in emergencies when you need to stop the engine quickly.

B) Switch electric starter (ref. Fig. 18)

- Press the switch '' to start engine.
  - Ensure the transmission is in neutral or else press the clutch lever before engaging the starter switch.

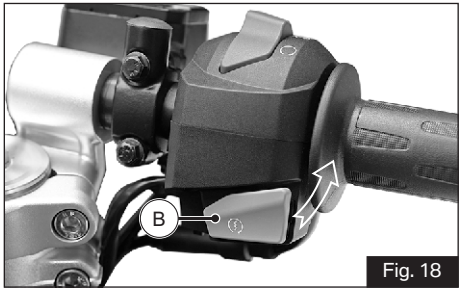


Fig. 18

Note If the electric starter switch is pressed more than 3 seconds continuously, the starter motor gets disabled automatically and will not crank the engine. The motor cranks the engine only after 1 second or if the switch is released and repressed again.

Please remember that the electric starter function will work only when the throttle opening is less than 30%.

Release the electric starter switch immediately after engine starts.

Starter switch will not work if it is pressed when the engine is running.

It is possible to start the vehicle with the side stand ON and gear box in neutral. When starting the bike with the gear engaged, apply the clutch (the side stand must be up in this case. If the side stand is in ON position, after vehicle start engine stops while changing the gear from neutral).

Throttle Twist Grip (ref. Fig. 19)

Throttle twist grip (A) is located in the handle bar at RH side.

- Twisting the grip opens the throttle.
  - Throttle grip spring back to the initial position (idling speed) when released.

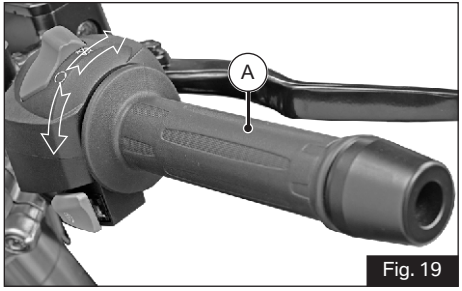


Fig. 19

Front Brake Lever (ref. Fig. 20)

Front brake lever (A) is located in the handle bar at RH side.

- Pull the lever towards the throttle twist grip to operate the front brake.
  - The system is operated by hydraulic and just need to press the lever gently.

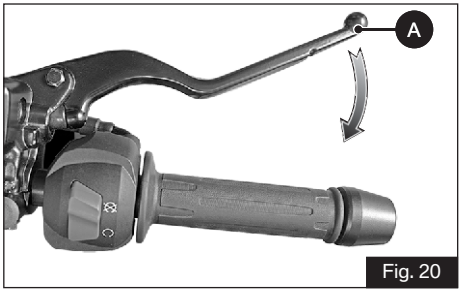


Fig. 20

Note This section shows the position and operation of the major components of your motorcycle.

Major Components (ref. Fig. 21)

1) Rear view mirrors (ref. page 64)
2) Cooling system (radiator) (ref. page 48)
3) Fuel tank cap (ref. page 49)
4) Side stand (ref. page 51)
5) Seat lock (ref. page 53)
6) Adjustable rear shock absorber (ref. page 52)
7) Coolant reservoir (ref. page 48)

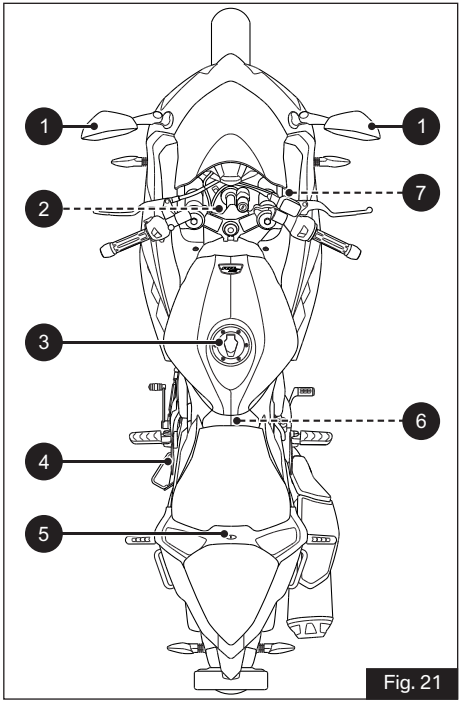


Fig. 21

* Hidden items are marked with dotted lines

Cooling System (Radiator) (ref. Fig. 22)

A coolant is used in the motorcycle cools the hot engine and ensures that operating the vehicle at specified temperature which in-turn avoids the risk of malfunctions.

- A radiator and cooling fan fitted in the cooling system does job of cooling the coolant used in the motorcycle by air stream.
- Dirty cooling foils of radiator reduces the cooling effect. Do the visual check and ensure the cooling foils of the radiator are not clogged with any dirt or mud. If so contact TVS Motor Company Authorised Distributor or Dealer.

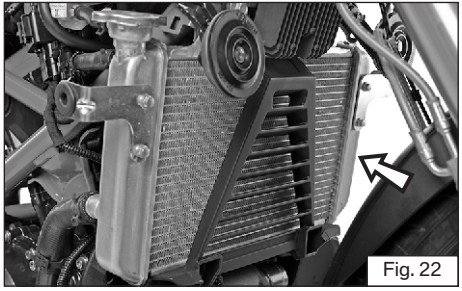


Fig. 22

A coolant reservoir tank (A) is fitted on the right side of the motorcycle below the side panels (ref. Fig. 23).

- Visually inspect the coolant level in the tank (use a torch if required).
- The coolant level should be between minimum and maximum level (1 & 2) on the tank (ref. Fig. 24).

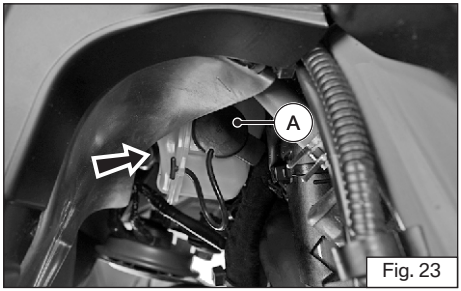


Fig. 23

Note The cooling fan may switch ON after the ignition is turned OFF to reduce the heat and to protect the engine which is normal. Need not panic.

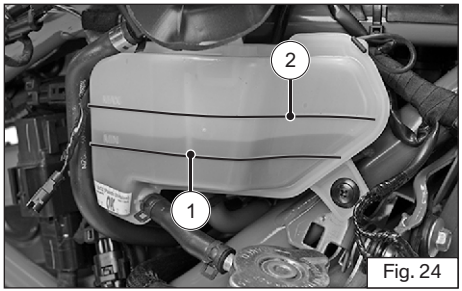


Fig. 24

- Contact TVS Motor Company Authorised Distributor / Dealer for topping-up if the level in the tank is lower than the minimum level.

Caution Use only recommended coolant (**Glycentine G48, Coolant + Water; @ 50:50 ratio; total filling 1 litre**). Use of improper coolant may cause damage, such as corrosion in the engine parts, blockage of the cooling passage or radiator and premature wear of the water pump seal.

Do not use tap water, or mineral water while topping-up the coolant.

Warning Coolant is poisonous and health hazard. Avoid contact between coolant and body or clothing incase if you are handling it.

Fuel Tank Cap (ref. Fig. 25)

This motorcycle is equipped with a lockable fuel tank cap (A).

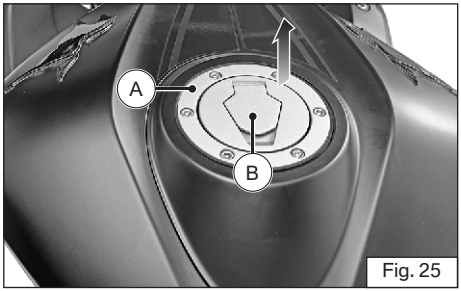


Fig. 25

To open:

- Lift the protection lid (B).
- Insert the control key into the lock. Rotate the key a 1/4 turn clockwise and lift the cap.

To close:

- Push the cap down into its seat until hearing a click sound.
- Turn the key anticlockwise to the initial position and remove it.
- Close the protection lid.

Refueling (ref. Fig. 26)

- Never overfill the tank when refueling. The fuel level always be below the brim of the fuel tank neck (A).

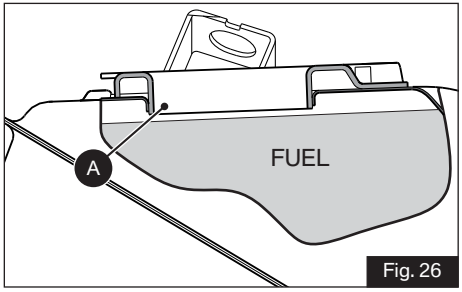


Fig. 26

* The fuel tank is not a measuring instrument and the capacity of the fuel tank may slightly vary from the indicated capacity.

Warning Do not smoke while refueling. Do not use cell phones while refueling. Avoid spilling of fuel on hot engine.

Refill petrol in well ventilated area. Switch OFF the engine and ignition key while refueling as petrol is highly inflammable.

Be sure there is no fuel trapped in the filler recess.

To avoid evaporation of petrol and deterioration of paint gloss due to ultra violet rays and heat of sunlight, always park your motorcycle in a covered parking.

Caution Check for abnormal jerk / noise while opening the cap / leak. If found any, contact TVS Motor Company Authorised Distributor or Dealer.

Note Always make sure to close the cap properly after every refilling to avoid leak / evaporation.

Side Stand (ref. Fig. 27)

Side stand (A) can be operated with your foot. To support your motorcycle on side stand:

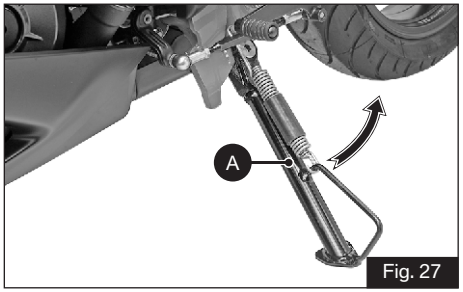


Fig. 27

- Hold the motorcycle handle bars with both the hands and push down the stand with your foot until the stand is fully extended.
- Lean the motorcycle to the left until the stand contact the ground.
- To move back the side stand to its original position (horizontal position), tilt the motorcycle to the right and, at the same time, lift the stand with your foot.

Caution Before supporting the motorcycle on side stand, make sure that the supporting surface is hard and flat. Do not park the motorcycle on soft ground, gravel etc., else the bike may fall down.

While parking the motorcycle in downhill tracks, always park the bike in such a way that the rear wheel of the bike facing downhill.

Ensure not to disturb the side stand switch setting.

Warning Do not sit on the motorcycle when it is supported on side stand.

Note It is possible to start the vehicle with the side stand ON and gear box in neutral. When starting the bike with the gear engaged, apply the clutch (the side stand must be up in this case. If the side stand is in ON position, after vehicle start engine stops while changing the gear from neutral).

Rear shock absorber (ref. Fig. 28)

Your motor cycle is fitted with 10 step adjustable gas filled rear shock absorber (A) to meet different load and driving conditions.

- The pre-load of the shock absorber can be adjusted to suit your requirements. Refer page 65 for pre-load adjustment procedure.
- Inspect the shock absorber for any dirt or mud accumulation on it or any fluid leak.

  - If found any, clean them properly using a soft cloth and brush.

  - If any leak is found contact TVS Motor Company Authorised Distributor or Dealer.

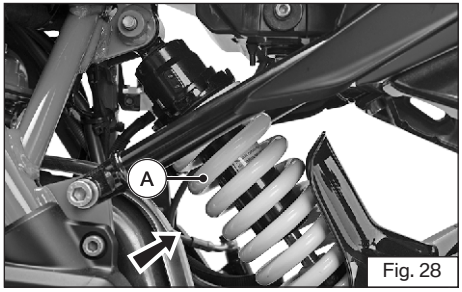


Fig. 28

Note During time of delivery of the motorcycle, the rear shock absorber is adjusted to the standard configuration.

Seat Lock (Rider and Pillion Seat)

This motorcycle is equipped with a lockable rider and pillion seats. The seat lock (A) is located between the rider and pillion seat as shown (ref. Fig. 29)

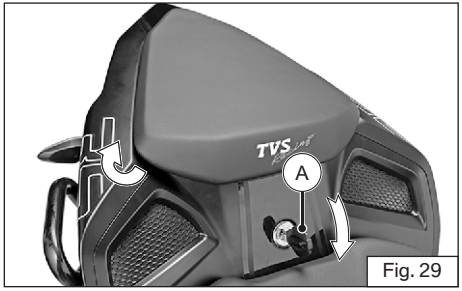


Fig. 29

To open pillion seat:

- Insert the control key into the seat lock. Rotate the key in clockwise until the lock is released.
- Pull and release the front section of the seat first, slide the seat towards vehicle front direction.
- Ensure the hook underneath got released from frame and take out the seat.

To close pillion seat:

- Slide the rear end of the seat bottom underneath the frame hook.
- Locate the seat lock pin into seat lock latch and gently press (at the front end).

  - Finally ensure that the seat is fastened securely to the frame.

To open the rider seat:

- Remove the pillion seat as explained earlier and take out the control key from the seat lock without fail.
- Take off the tool kit from the storage (ref. Fig. 30)


Fig. 30

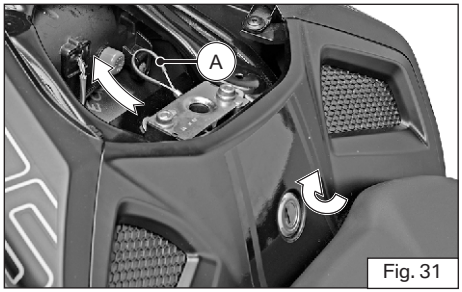


Fig. 31

- Pull the seat release cable (A) to release the seat lock (ref. Fig. 31).
- Keeping seat release cable pulled, lift the seat from rear and slide it backward.

To close the rider seat:

- Slide the front end of the seat bottom underneath the frame hook.
- Locate the lock pin of the seat into seat lock latch and gently press at the rear end.

  - Finally ensure that the seat is fastened securely to the frame.

Caution Take the control key out from the seatlock without fail during the removal of rider seat, to avoid damage to the seat / lock.

Make sure that the seats are locked securely in position after reassembly.

Caution Running-in is essential to preserve engine life and performance over time. Keeping to the running-in recommendations will ensure longer engine life and reduce the need for overhauls and re-tuning. Refer page 01 for running-in information.

Before Riding

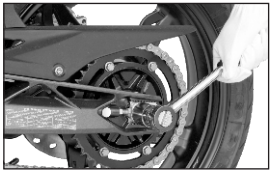
- Ensure that tyre pressure is as per specification. Lower or higher tyre pressures are likely to cause instabilities in motorcycle behaviour.

- Check operation of throttle, clutch, and brakes as well as free play on front and rear brakes. Pump in the brake lever and pedal a few times to ensure proper bleeding.

- Check both tyres for any wear or abnormalities. Ensure that wear is not below 'Tread wear indicator' mark.

- Check steering freeness, front and rear wheel freeness and alignment.

- Check tightening of wheel axle nuts, swing arm nut and steering nut.



- Also check tightening of front fork and shock absorber mounts.

Warning Failure to carry out these checks before riding may result in damage to the motorcycle and injury to the rider.

- Check for chain slackness as per specification.

- Adjust mirror position to have optimum rear visibility. If you prefer track riding sans rear view mirrors, please remove and preserve them carefully.

- Check engine oil, brake oil and coolant oil levels.

While Riding

- Wear all necessary safety gears (Helmet, Jacket, Knee guards, Shoes and Gloves) before riding.

- Riding Posture - While riding, sit slightly behind the fuel tank. Body position should be relaxed such that back is very comfortable. Shoulders and arms should also be relaxed with slight bend in the arm as shown. Hold the handle bar with a good grip. Fuel tank should be firmly held by the thighs while riding. This will help maintain stability of the bike at all speeds.

- While riding, have a relaxed posture with wide vision.
- Ensure smooth operation of throttle, do not abruptly open the throttle especially in the corners
- Don't throttle while entering a turn. You may accelerate progressively while exiting a turn.
- Do not shift gears in a turn.

- Avoid abrupt hard braking, If hard braking is inevitable, release throttle and apply front and rear brakes in a progressive manner.
- Don't brake too hard while the vehicle is leaning, as vehicle may skid easily.
- Tyre grip reduces in cold conditions. It will take about 5 kms of riding for tyres to reach optimal temperatures.
- New tyres require running in for 20 kms before you can get the maximum grip.

Starting the Engine

Warning Before starting the engine, familiarise your self with the controls which you need to use while riding (ref. page 38).

- Turn-on the ignition key (ref. page 39). Ensure that the neutral indicator 'N' (C4, ref. page 20) is ON.
- Check that the engine cut-off switch is positioned at run mode ' ' and press the starter button ' ' (ref. page 45).

Note It is possible to start the vehicle with the side stand ON and gear box in neutral. When starting the bike with the gear engaged, apply the clutch (the side stand must be up in this case).

If the battery voltage is too low, the system automatically disables the self-start function.

Caution Do not rev the engine when it is cold. Allow some time for the oil to warm up and to reach all points that needs lubrication.

Moving the Vehicle

- Disengage the clutch by pressing the control lever.
- Press the gear shift pedal downwards with the tip of your foot to engage the first gear.
- Increase the engine speed by turning the throttle twist grip while gradually releasing the clutch lever; the motor cycle start moving forward.
- Release the clutch lever and increase the engine speed (increase the throttle).
- To up shift the gear, close the throttle to slow down the engine speed, disengage the clutch, lift the gear shift pedal up and release the clutch lever.

  - To down shift the gear, proceed as follows: release the throttle twist grip, pull the clutch lever, increase the engine speed for a moment to allow the gears to synchronise, down shift the gear and release the clutch lever.

  - Use controls wisely and promptly: when riding uphill do not hesitate to down shift the gears as soon as the vehicle tends to slow down. This will avoid stressing the vehicle and the engine abnormally.

Caution Avoid sudden acceleration, as this may lead to misfiring, improper engagement of transmission (snatching).

Do not pull the clutch lever longer than necessary after engaging the gear. Otherwise the friction plates in clutch may get overheat and wears out quickly.

Braking

- Slow down the speed in right time, shift down the gear to use the engine brake, then apply both the brakes.
- Pull the clutch lever before stopping the motorcycle to avoid sudden stoppage of engine.

Warning Use both front and rear brake for effective braking.

When riding in the rain or on slippery surfaces, braking capacity is significantly reduced. Always use the brakes very gently and carefully when riding under these conditions.

When riding downhill, shift down to the lower gears to use engine as a brake.

Caution Keeping the brake applied continuously causes the brake pads (friction materials) to overheat and reduces the braking effectiveness which is dangerous.

Stopping the motorcycle

- Reduce speed, close the throttle and down shift the gears. Bring the transmission to neutral position just before the vehicle stops.
- Apply the brakes and bring down the motorcycle to complete stop.
- Turn OFF the ignition.

Parking

- Stop the motorcycle. Place it on the side stand on a flat firm surface (ref. page 51).
- Turn the steering all the way to 'left' or 'right' and lock as explained in page 39. Take out the control key from the ignition lock.
- If the vehicle is parked in a garage or other indoor area, make sure that there is a proper ventilation and the motorcycle is not nearer to a source of heat.

Note You may switch ON the hazard lamps if the vehicle is parked in hazardous location. Refer page 18 for hazard lamps function.

Warning The engine and the exhaust system might be very hot even after switching OFF the engine. Care should be taken not to touch the exhaust system with any part of your body.

Park the vehicle in a place where the pedestrians or children are not likely to touch the hot surface.

Do not park the vehicle near dry grass or any other flammable resources which might catch fire.

Using padlocks or other locks like brake disc locks, rear sprocket locks etc. to prevent the movement of the motorcycle is very dangerous and may affect the motorcycle operation and safety of the users.

Fuel Recommendation

- Use Euro IV / Unleaded petrol only. The petrol should be minimum 91 research octane number.
  - Unleaded petrol with upto 14% ethanol will have no impact on the engine components. No other composition or fuel should be used. Contact TVS Motor Company Authorised Distributor or Dealer for usage.
  - Refer page 49 for fuel filling procedure.

Caution Never mix oil in the petrol. Always fill fuel from reputed and reliable fuel stations.

Note Use fuel additives in petrol (as recommended by additive manufacturer) for low carbon deposition.

Checks and Tips for Better Fuel Economy

- Carry out the periodic maintenance checks as specified in this manual (ref. page 69).

  - Regular maintenance checks will save fuel while ensuring trouble-free, enjoyable and safe riding besides keeping the environment clean.

- A dirty defective spark plug leads to wastage of fuel due to incomplete combustion.

  - Replace the spark plug every 20000 km. **Use recommended plug only.**

- A dirty air cleaner element restricts airflow and reduces fuel economy.

  - Replace the air cleaner element every 10000 km.

- Increase in engine rpm during acceleration, without increase in road speed indicates the clutch slip. A slipping clutch causes high fuel consumption and engine overheating.

  - Adjust the clutch play as explained in page 76 if the above malfunction is observed.

  - If the condition persists even after adjusting the clutch play contact TVS Motor Company Authorised Distributor or Dealer.

- Dirty or less engine cum transmission oil increases the friction between various parts of the engine and reduces engine life, and increases fuel consumption.

  - Inspect the engine cum transmission oil level as explained in page 74 and top-up if necessary.

  - Engine cum transmission oil should be replaced as per the maintenance schedule without fail.

  - **Always use recommended engine oil only (ref. page 119).**

- Low tyre pressure has adverse effects on the vehicle. The drag on the vehicle increases resulting in decreased fuel economy. Further more handling may be affected adversely.

  - Check tyre pressure regularly and inflate them to recommended pressure. Refer page 82.

  - Never use tyre which are worn-out beyond the permissible limit.

- Check and ensure the drive chain slackness. Excess slackness lead to higher fuel consumption (ref. page 85).

- Check and ensure the free movement of wheels by rotating them to avoid wastage of fuel.
- A racing start from rest at full throttle will waste fuel and damage the engine. It is also creates potentially hazard traffic situation.
- Fuel is wasted whenever the rider suddenly accelerate or apply brake.
- While waiting for someone or stopping in signals for long time, if the engine is kept running at idle speed, leads to unnecessary wastage of fuel.
- Anticipate corners and slopes as well as the traffic conditions. Unnecessary and frequent braking reduces the fuel economy.

Rear View Mirrors LH & RH (ref. Fig. 32)

Adjustable rear view mirrors (LH & RH) are provided with your bike. These mirrors can be adjusted to your convenience by following the procedure given below:

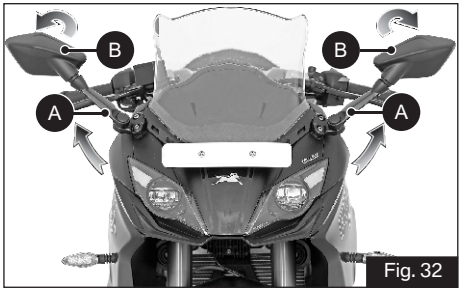


Fig. 32

- Move the rear view mirror stem (A) to the desired position (forward or backward).
- Tilt the mirror portion (B) till the clear vision is obtained (up or down).

Caution Never try to adjust the position by moving the whole mirror assembly, as this could break the mirror.

Gear Shift Pedal Position Adjustment (ref. Fig. 33)

The position of the gear shift pedal (A) in relation to the foot rest can be adjusted to suit the rider's requirement.

To adjust the gear shift pedal position:

- Using an open end spanner hold the gear shift pedal link rod (1) on the flat surface of the rod.
- Using another open end spanner completely loosen the lock nuts (2 & 3).
- Now, turn the gear shift pedal link rod (1) 'in' or 'out' until the desired pedal position is set.

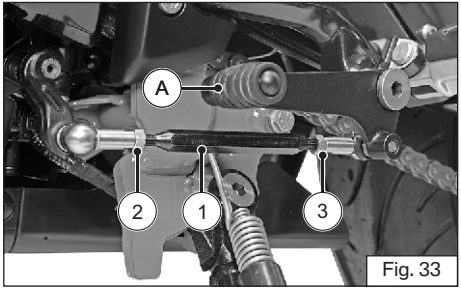


Fig. 33

- After obtaining the desired position, re-tighten the lock nuts (2 & 3) holding the link rod (1) in position.
- Ride the vehicle and ensure the gear shift is easy and convenient.

Note Lock nut (2) has a left-hand thread and should be loosened or tightened in opposite direction.

Caution Do not loosen the link rod to the maximum position (till the last thread). Else, it may come out from the shifting mechanism during ride.

Rear shock absorber's Pre-Load Adjustment (ref. Fig. 34)

The pre-load of rear shock absorber can be adjusted as per rider's convenience and the load (weight of rider, passenger and luggage) on the vehicle.

There are 10 notches (1) for adjusting the pre-load of the shock absorber. Normally, the shock absorber's pre-load adjuster (2) will be positioned at 3rd notch (standard setting).

Increase the spring pre-load (shift to higher notches) for heavier rides.

Decrease the spring pre-load (shift to lower notches) for lighter rides.

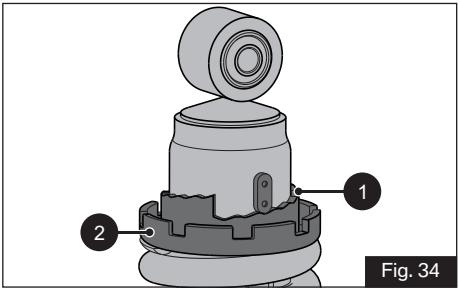


Fig. 34

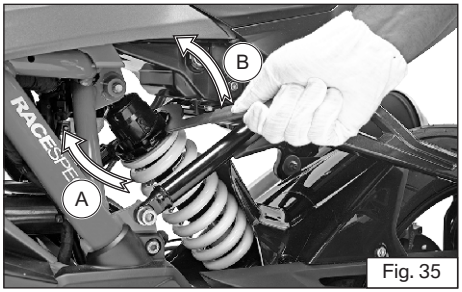


Fig. 35

To adjust the shock absorber's pre-load:

- Place the motorcycle on its stand on a firm and flat surface.
- Locate the adjuster shock absorber rear and handle ring spanner of tool kit (ref. page 103) properly into the notches of pre-load adjuster (ref. Fig. 35).
- Carefully rotate the adjuster clockwise (A) to increase the pre-load (hard suspension).
- Else, rotate the adjuster in anti-clockwise (B) to decrease the pre-load (soft suspension).

Warning The rear shock absorber contains highly compressed gas. Do not try to open or disassemble it in any way.

Take a special care while turning the pre-load adjuster because, your hand may be striking against the other parts of the motorcycle if the adjuster spanner slips out of the pre-load adjuster notch.

Caution Rear shock absorber to be adjusted only on the left side of the vehicle.

Adjust step by step (3rd to 4th notch and so on). Do not go at a stretch as it will damage the adjuster.

Head Lamp Aiming

To check and adjust the head lamp focus:

- Place the motorcycle upright in a uniform flat surface while ensuring the head lamp center (A) is 5 meter away from a vertical wall or screen (B). (ref. Fig. 36)
- Inflate the tyres to the correct pressure.
- Keeping the motorcycle at right angles to its longitudinal axis switch on the 'Low beam' of head lamp.

Two projector lamps need to be adjusted independently as mentioned below:

a. RH side projector adjustment:

- Mask the LH side projector lamp using a black color cloth.
- Adjust the RH side projector lamp adjuster (C) clockwise (Downward) or in anti-clockwise (Upward) and match the low beam cut-off line to the marking line (D) (500 mm) on a vertical wall or screen. (ref. Fig. 36 & 37)

b. LH side projector adjustment:

- Remove the cloth from LH side projector and mask RH projector lamp.

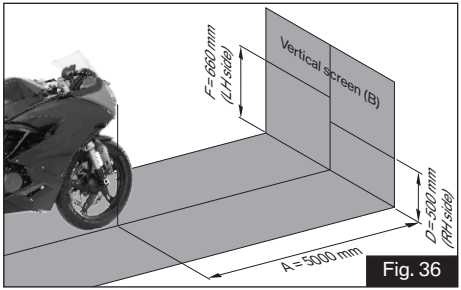


Fig. 36

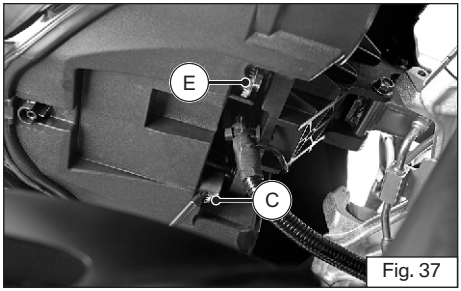


Fig. 37

* The specification for head lamp beam adjustment is applicable only for India. Owner's of other countries are advised to adopt the local rules and regulations.

- Adjust the LH side projector lamp adjuster (E) clockwise (Downward) or in anti-clockwise (Upward) and match the low beam cut-off line to the marking line (F) (660 mm) on a vertical wall or screen. (ref. Fig. 36 & 37)
- Both the projectors low beam cut-off line should match with the marked line on the screen or wall.

Note Head lamp aiming to be done with the unloaded vehicle only.

Both the projector lamps should be adjusted independently.

The adjustment levels mentioned is for solo riding condition. For dual riding condition, the head lamp beam may be adjusted as per need for better visibility.

Warning Do not stare at LED head lamp beam to avoid damage to the eyes.

Maintenance Schedule

Maintenance schedule indicates the intervals between periodic services. At the end of each interval, be sure to inspect, check, replace, adjust, lubricate and service as instructed.

If the maintenance service is not done periodically, it will result in rapid wear and severe damage to the vehicle.

If the vehicle is used under high stress conditions such as continuous full throttle operation or rain, is operated in wet or dusty areas, certain jobs should be performed more often to ensure reliability of the vehicle.

Cylinder head, steering components, suspension, chain and wheel components etc. are key items and require very special and careful servicing.

We recommends that the jobs as per the maintenance schedule be performed by your TVS Motor Company Authorised Distributor or Dealer.

Periodic inspections may reveal one or more parts that may need replacement. Whenever replacing any such parts we recommend to use only TVS Motor Company Genuine parts.

Perform pre-ride inspection (ref. page 55) before every scheduled maintenance.

I - Inspect	R - Replace	T - Top-up
C - Clean	A - Adjust	L - Lubricate
TI - Tighten		

Caution Proper running-in (ref. page 01) and maintenance is mandatory for making certain that your vehicle is reliable and gives optimum performance at all times. make sure that the periodic maintenance is performed thoroughly in accordance with the instruction given in this owner's manual.

Use of non-genuine spares will affects the performance of the vehicle and failure to comply the warranty claims.

Check for any abnormal jerk during ride / any abnormal noise while opening the fuel tank cap / any leak in the fuel system. If found any, contact TVS Motor Company Authorised Distributor or Dealer.

Planned Maintenance Schedule - To be performed by the Distributor / Dealer

List of operations and type of intervals (km or month whichever of the two occurs early)	Service	1st	2nd	3rd	4th	5th
	Km x 1000	1	5	10	15	20
	Months	2	6	12	18	24
Engine oil filter along with drain bolt washer		R	-	R	-	R
Engine oil		R	T	R	T	R
Air cleaner element		-	-	R	-	R
Spark plug		-	-	-	-	R
Tappet clearance (valve clearance)*		-	-	I & A	-	I & A
Clutch operations (adjust if required)		I & A	I & A	I & A	I & A	I & A
Throttle cable / grip / system (replace parts if required)		-	-	I	-	I
Steering play		I & A	-	I & A	-	I & A
Front and rear suspension		-	-	I	-	I
Wheel bearing freeness (replace if required)		-	-	I	-	I
Air suction system / engine breather		-	-	I	-	I
Front fork oil replacement		-	-	-	-	R
All fasteners		I & TI	-	I & TI	-	I & TI
Drive chain slackness / lubrication		Inspect, adjust and lubricate every 1000 km				

* Adjust if necessary

Planned Maintenance Schedule - To be performed by the Distributor / Dealer

List of operations and type of intervals (km or month whichever of the two occurs early)	Service	1st	2nd	3rd	4th	5th
	Km x 1000	1	5	10	15	20
	Months	2	6	12	18	24
Drive chain wear (replace if required)		-	-	I	-	I
All lamps and horn		-	I	I	I	I
Head lamp beam (focus)		I & A	I & A	I & A	I & A	I & A
Battery voltage (recharge if required)		I	I	I	I	I
Brake light switch operation		I	I	I	I	I
Front and rear brake fluid level*		I	I	R	I	R
Front and rear brake pad wear (replace if required)		-	I	I	I	I
Disc plates (replace if required)		-	-	I	-	I
Brake hose / rubber parts of master cylinder and Caliper front and rear (replace if required)		-	-	I	-	I
Master cylinder cups		-	-	-	-	I & R
Tyre air pressure (at cold condition)		I & A	I & A	I & A	I & A	I & A
Steering stem bearing (Inspect & lubricate with Grease if required)		I & L	-	I & L	-	I & L
Speed sensor (free from any mud / clogging with dirt)		I	I	I	I	I

* Replace brake fluid first at 10000 kms and every 20000 kms or 2 years thereafter.

Planned Maintenance Schedule - To be performed by the Distributor / Dealer

List of operations and type of intervals (km or month whichever of the two occurs early)	Service	1st	2nd	3rd	4th	5th
	Km x 1000	1	5	10	15	20
	Months	2	6	12	18	24
Coolant level, water hoses and O-rings (replace if required)*		I	I	I	I	I
Fuel hose / system		I	-	I	-	I
Fuel filter		-	-	-	-	R
Swing arm bearing (replace if required)		I	I	I	I	I
Side stand		C, I & L	C, I & L	C, I & L	C, I & L	C, I & L
Side stand switch function and physical damage		I	I	I	I	I
Drive chain guide wear (replace if required)		-	-	I	-	I
Instrument cluster MIL lamp function		I	I	I	I	I
Radiator fan / fins and deflector (clean if required)		I	I	I	I	I
Reading fault codes using diagnostic tool		I	I	I	I	I
Availability of fuse puller and fuse condition		I	I	I	I	I
Brake pedal / gear shift lever mounting pin (lubricate using grease)		I	I	I	I	I
Ignition cum steering lock (lubricate using oil)		I	I	I	I	I

* Coolant, hoses and O-rings must be replaced every 30000 kms or every 3 years.

At higher odometer readings, the above service intervals to be followed.

Safety Precautions

Before you are starting any maintenance repairs,

- Make sure that engine is in OFF condition. This will help in eliminating several potential hazards like:

  - Poisoning from engine exhaust Carbon Monoxide (be sure there is proper ventilation whenever engine is operated in indoor).

  - Let the engine and exhaust to cool before working on the motorcycle to avoid burns from hot parts.

  - Do not run the engine without instruction for doing the same to avoid injury from moving parts.
- Carefully read the instruction before starting, and ensure that you have tools and skill required for doing the maintenance service.
- Park the vehicle on a flat firm surface with the side stand, centre stand (if available) or the auxiliary stand (paddock stand refer page 105) to prevent the motorcycle from falling while doing the maintenance service.
- While working on batteries or fuel related items care must be taken to avoid fire or explosion. Use non-flammable solvent only. Keep away the fire (like cigarettes, sparks and flames etc.) from the battery and fuel related items.
- Ensure to remove the head lamp fuse, to avoid battery discharge during working.

Note We recommend that the maintenance jobs as per the planned maintenance schedule be performed by your TVS Motor Company Authorised Distributor or Dealer. Trained service personals of the Distributor or Dealer can provide quality, reliable and economical service to your vehicle.

Use only TVS Motor Company Limited Genuine parts for long and reliable life of your motorcycle.

Engine Oil Level

Ensure the safety precautions listed in the page 73 are followed properly.

Check the engine oil level before riding the motorcycle. Insufficient engine oil or too much engine oil affects the engine adversely.

To check the engine oil level, a gauge oil level (dip stick) (A) given on the left side of the crankcase (ref. Fig. 38).

- Wipe off the surroundings of the gauge oil level. Start the engine and let it idle for 3 to 5 minutes.
- Switch OFF of the ignition. Hold the vehicle in upright condition with both the wheels on ground, on a flat and firm surface.
- After 2 to 3 minutes, remove the gauge oil level (A) and wipe it cleanly.
- Re-fix the gauge again. Slowly and steadily remove the gauge and inspect the oil level.
- The level should be between minimum (1) and maximum level (2) mark on the gauge (ref. Fig. 39).
- If the level is below the minimum level (1), slowly add recommended engine oil till the level reaches to maximum level (2).

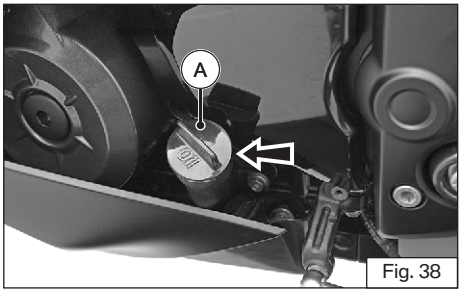


Fig. 38

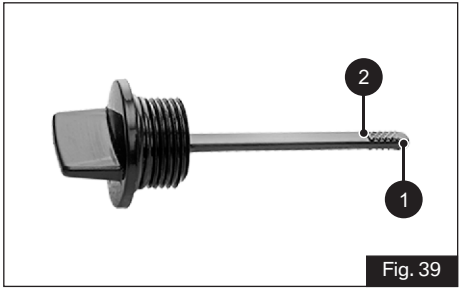


Fig. 39

- Re-fix gauge after ensuring correct oil level.
- Wipe out the oil traces with a clean cloth to prevent dust accumulation.

Caution Running the engine with insufficient or excess engine oil may cause serious damage to the engine.

For topping-up, always use TVS Motor Company recommended engine oil only.

Hold the vehicle in upright condition with both wheels on ground, on a flat and firm surface while checking the oil level to avoid wrong indication.

Engine oil and oil filter must be replaced by a TVS Motor Company Authorised Distributor or Dealer at the intervals specified in the planned maintenance schedule without fail. Failing which disqualifies for warranty.

Warning Correctly recycle or dispose the used engine oil in order to avoid environment pollution.

Clutch Free Play

Ensure the safety precautions listed in the page 73 are followed properly.

Clutch free play adjustment may be required if the motorcycle gets OFF while shifting from neutral to gear or tends to creep; or if the clutch slips (vehicle acceleration lags behind the engine rpm).

Minor clutch free play adjustment can be done by means of clutch cable adjuster at the clutch lever end.

- Measure the clutch free play (A) at the lever end as shown (ref. Fig 40).
  - If the measured free play is 'more' or 'less' than the standard limit given below:

Clutch lever free play	8 to 12 mm

- Remove the cable clamp (1). Pull back the dust cover (2) of clutch lever (ref. Fig. 41).
- Loosen the lock nut (3) and turn the adjuster (4) 'in' or 'out' till the specified play is obtained (ref. Fig. 41).
  - After the adjustment, once again check the free play and confirm.

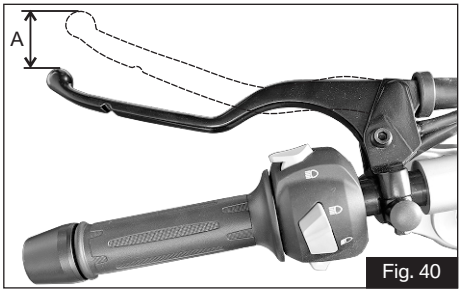


Fig. 40

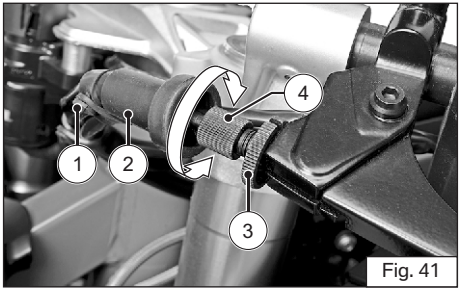


Fig. 41

- Lock the lock nut (3) again.
  - If the adjuster is threaded out to its maximum limit or if the correct free play cannot be obtained using the cable adjuster, loosen the lock nut and completely turn-in the clutch cable adjuster.
- Re-fix the dust cover (2) and cable clamp (1).
- Loosen the lock nut (5) at the bottom end of the clutch cable (ref. Fig. 41).
- Turn the adjuster in (6) 'in' or 'out' until the specified play is obtained and then tighten the lock nut and check the adjustment once again (ref. Fig. 42).
  - After adjusting the clutch play, start the engine and engage the gear. Ensure that the engine is not stalling and not creeping.
  - Gradually release the clutch lever while slowly applying the throttle. The vehicle should begin to move slowly and accelerate smoothly. Else contact TVS Motor Company Authorised Distributor or Dealer.

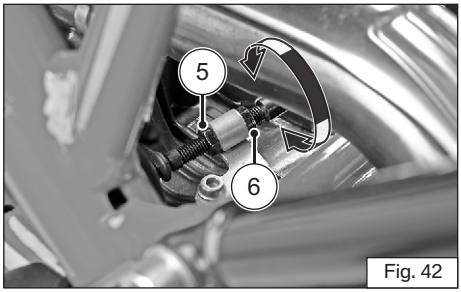


Fig. 42

Caution Clutch play free play should be checked and adjusted only when the engine is cold.

During clutch play checking and adjustment, check the clutch cable for kinks or sign of wear that could cause stickiness or failure.

Lubricate the clutch cable using a cable lubricant available in the market to prevent premature failure and corrosion.

Throttle Cable Play

Ensure the safety precautions listed in the page 73 are followed properly.

- Check and ensure the smooth rotation of throttle grip from fully open to fully closed condition at both extreme steering positions (left and right).
- Check for the proper routing of cable and it is not fouling with any part during steering operation.
- Ensure that the engine is in cold condition.
- Measure the throttle cable play at the throttle grip end as shown in the figure at various position of the steering (ref. Fig. 43).

Throttle cable play	3 to 7 mm

If the play is not within the specification,

- Slide the boot throttle adjuster (1) and then loosen the lock nut (2) (ref. Fig. 44).
- Turn the throttle cable adjuster (3) 'in' or 'out' until the specified play is obtained (ref. Fig. 44).

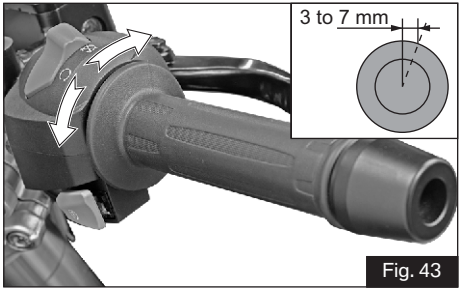


Fig. 43

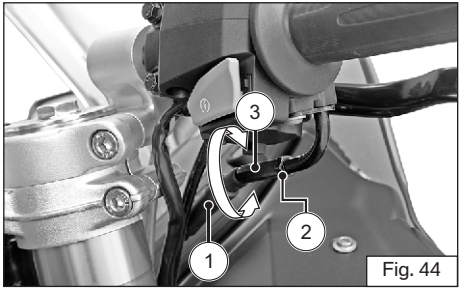


Fig. 44

- After the adjustment, once again re-check and ensure the right play.
- Tighten the locknut and re-locate the throttle adjuster boot carefully.

Caution Do not lubricate the throttle cable, replace if found sticky or damaged.

Note Replace the throttle cable if the adjuster has reached its limit or if you observe any sticky operation or damage.

Brake Fluid Level

Brake fluid level should not fall below the MIN level mark on both front and rear brake fluid reservoir. If the level drops below the limit, air can get into the circuit and make the system ineffective.

Brake fluid must be topped up and changed at the intervals specified in planned maintenance schedule without fail for the proper working and to ensure the safety of the rider.

- Switch OFF and place the vehicle upright on a flat and firm surface using centre stand (if available) or on a auxiliary stand (paddock stand ref. page 105).

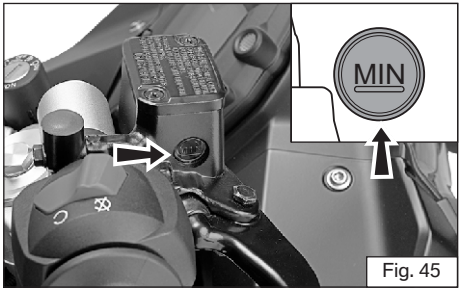


Fig. 45

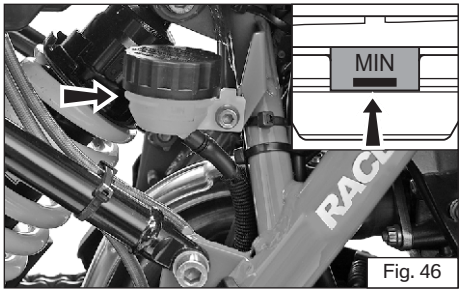


Fig. 46

- Keep the handle bar straight.
- Inspect the oil level of both front and rear brake fluid reservoirs (ref. Fig. 45 & Fig. 46).
- If the brake fluid level is lower than the MIN level mark in any of the reservoir, contact TVS Motor Company Authorised Distributor or Dealer for topping up.
- If you find excessive play (sponginess) in the front brake lever or in the rear brake pedal, but both the brake pads are still in good condition, contact TVS Motor Company Authorised Distributor or Dealer for the inspection of system and to do the air bleeding.

Note Check the brake fluid level only when the handle bar and vehicle is in straight condition.

Warning Lack of maintenance of the brake system increases the risk of accident. If you notice any malfunction in the brake system contact nearest TVS Motor Company Authorised Distributor or Dealer for further diagnosis.

Caution Inspect for any leakage of fluid in the brake circuit.

Cover the body parts with a protective cover before topping up the brake fluid to prevent the painted parts from getting damaged. Incase of any fluid dripping on body panels, it is recommended to be cleaned immediately.

Use only BASF (DOT 4) brake fluid from a sealed container or drain the existing brake fluid completely from the circuit and use another brand (DOT 4) brake fluid to avoid mix up with existing old and different brand fluid.

Brake Pad Wear

- Visually inspect both front brake pads wear and rear brake pads wear.

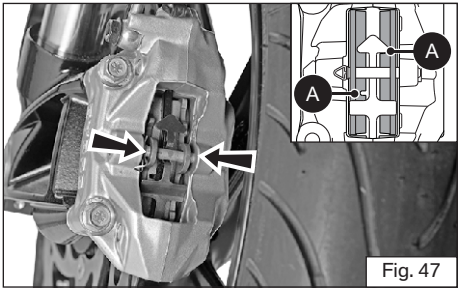


Fig. 47

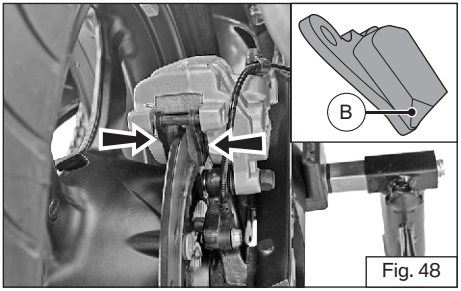


Fig. 48

- If the wear is found beyond the wear indicator (A & B) groove as shown in the figure in any one of the pad, replace brake pads as a set with a new one. (ref. Fig. 47 & 48)

Warning If the brake pads are used beyond this groove, leads to metal support contact with the brake disc and affects the braking efficiency, disc integrity and leads to unsafe riding conditions to the rider.

Caution Replace the brake pads as a set, if the wear indicator shows beyond the wear limit.

Rims and Tubeless Tyres

Ensure the safety precautions listed in the page 73 are followed properly.

Rims

- Visually inspect the front and rear wheel rims for any defects. If found any, have the rims inspected at TVS Motor Company Authorised Distributor or Dealer and get it replaced if necessary.

Tyre pressure

Check the tyre pressures atleast once in a week if not more frequently. Insufficient tyre pressure not only hasten tyre wear, but also seriously affects the stability of the vehicle.

- Under-inflated tyres make smooth cornering difficult and over-inflated tyres decreases the contact with the ground which can lead to skidding and loss of control.
- As the tyre pressure is affected by changes in the temperature and altitude, check and adjust the pressure more frequently whenever your vehicle is used on such conditions.
- Be sure that the tyre pressures are within the specified limit at all times.

	Solo / Pillion
Front	2.25 kg/cm² (32 PSI)
Rear	

Warning The tyre inflation pressure in cold condition is extremely important for the performance and the safety of the rider. Improper tyre pressure may result in: stability and handling issues, wobbling, hard steering, bumpy ride, uneven tyre wear etc.

When minor puncture occurs, tubeless tyres take a long time to deflate, as they tend to hold the air inside. If the tyres is found with low pressure, check the tyres for puncture.

Check and adjust the tyres pressure only when the tyres are cold.

Be sure to tighten the valve dust caps securely to prevent leaks while riding.

Tyre tread condition

Whenever the tyre pressure is checked, ensure to check the tyre treads and side walls for wear, damage and foreign objects.

The tyres also to be checked for:

- Bumps or bulges in the sides of the tyre or in the tread.
- Cuts, splits or cracks in the tyre (replace the tyre without fail if found any of the above issues to ensure the safety of the rider).
- Replace the tyre when the tyre wears off to the tyre wear indicator level (1) which is indicated by the arrow mark (2) on the side surface of the tyre (ref. Fig. 49).

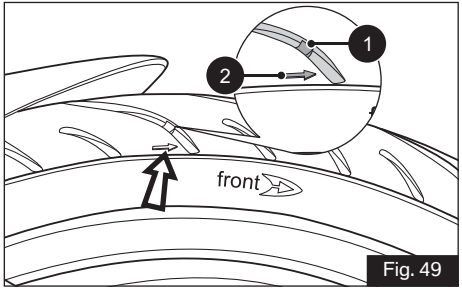


Fig. 49

- Tread depth of the tyre should be minimum 2 mm if the vehicle speed is higher than 100 kmph, and it shall be minimum 1 mm if the vehicle speed is lesser than 100 kmph.

Tread depth (min):	2 mm (> 100 kmph)
	1 mm (< 100 kmph)

Warning Visually inspect the tyres at regular intervals for cracks and cuts, especially on the side walls, and bulges or large stains that indicate internal damage. Replace them if damaged.

Remove any stones or other foreign bodies stuck in the tread.

Note Tread wear marks are integrated into the main grooves on every tyre. If the tyre tread has worn down to the level of the marks, the tyre is completely worn. The location of the tread wear marks are indicated by an aero mark on the edge of the tyre (ref. Fig. 49). Replace the tyre when the minimum tread depth is reached.

Tyre replacement

- The tyres fitted on your motorcycle were designed to match the performance capabilities of your motorcycle and provide the best combination of handling, braking durability and comfort. The recommended tyres for your motorcycle are:

Front	110/70 - R17-MICHELIN M/C 54 H - PILOT STREET RADIAL
Rear	150/60 - R17-MICHELIN M/C 66H - PILOT STREET RADIAL A

- While re-assembling the tyre, ensure that the arrow mark (1) provided on the side walls of the tyre faces the direction of wheel rotation (ref. Fig. 50).

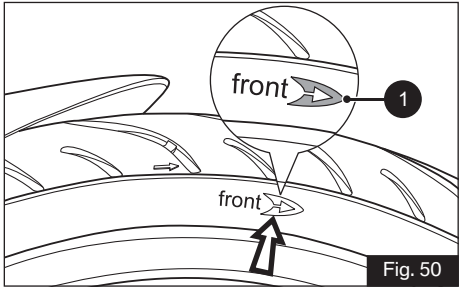


Fig. 50

Warning Have the tyres replaced at only TVS Motor Company Authorised Distributor or Dealer. Proper removal and reassembly of wheels and the tyres are essential.

Use only the recommended tyre. Use of a tyre other than the standard will cause instability. Be sure the wheel is balanced after the new tyre is installed.

Caution Side walls of the tubeless tyres which are in contact with the wheel rim are only seals the air inside the wheel assembly. Hence, care should be taken not to damage the side walls of the wheel rim during removal and reassembly of the tyres.

Note Wheel balancing to be done every 1 year or every 10000 km. In addition, after every tyre puncture repair or replacement, wheel balancing to be done without fail. Do not remove or alter the position of wheel balancing weights after the completion of wheel balancing.

Tyre repair

- Do not repair the punctured tyre and it should be only replaced. If it is necessary to ride on a repaired tyre, never exceed the vehicle speed above 100 kmph until the tyre is replaced.

Warning Do not repair the punctured tyre. It should not be replaced. If it is necessary to run the vehicle on a repaired tyre, never exceed 100 kmph speed until the tyre is replaced.

Never install a tube inside a tubeless tyre on this motorcycle. The tube may get burst during ride due to excessive heat buildup which will result in serious consequences.

Since the rims of this motorcycle is designed for tubeless tyres, use tubeless tyres only. During hard acceleration or braking, a tube tyre could slip on the rim and deflate rapidly.

Drive Chain

Ensure the safety precautions listed in the page 73 are followed properly.

The drive chain's service life is purely depended upon the proper lubrication and adjustment. Poor maintenance of drive chain can cause premature wear or damage to the drive chain and sprockets.

The drive chain must be inspected, cleaned, adjusted and lubricated as per the planned maintenance schedule. Under severe usage, or when the motorcycle is used more dusty or muddy areas, more frequent maintenance is necessary.

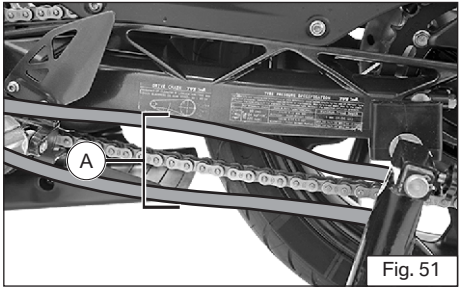


Fig. 51

Slackness inspection

- Ensure the engine is turned OFF and the vehicle is in neutral.
- Place the motorcycle on its centre stand (if available) or side stand or in auxiliary stand (paddock stand ref. page 105).
- Using the fingers, check the slackness of the chain at the lower portion, midway (A) between the sprockets (ref. Fig. 51).
- The slackness (A) should be between 30 to 40 mm at the various points of the chain.

Drive chain slackness	30 to 40 mm

- The chain should be adjusted at the point of least deflection.

Adjustment

- Place the vehicle on centre stand (if applicable) or side stand or auxiliary stand (paddock stand) on a flat firm surface.
- Loosen the rear axle nut (1) using a proper spanner from the tool kit (ref. Fig. 52).
- Release the lock nuts (2 & 3) (ref. Fig. 52 & 53) using proper spanner from the tool kit (ref. page 103).

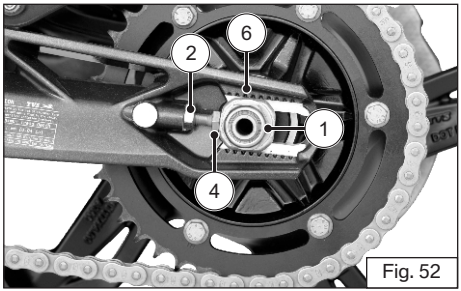


Fig. 52

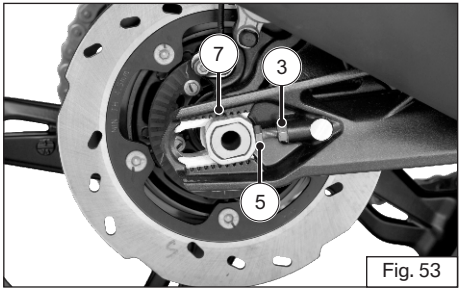


Fig. 53

- Turn the adjuster screws (4 & 5) 'in' or 'out' to obtain the specified slackness in the chain (ref. Fig. 52 & 53).
- While ensuring that the notch in the chain adjuster (6 & 7) is adjusted to the same scale value on both left and right sides, tighten the locknuts to the specified torque.
- Similarly, tighten the rear axle nut and lock nut to the specified torque, and check and ensure the chain slackness (ref. Fig. 52 & 53).

Axle nut tightening torque	100 ± 15 Nm
Lock nut tightening torque	19 ± 3 Nm

Caution Chain can be adjusted when vehicle is supported by centre stand (if applicable) or side stand or auxiliary stand (paddock stand) in no load condition.

Always have these tightening torques to be checked at TVS Motor Company Authorised Distributor or Dealer after assembly for safety.

Cleaning

- Slowly rotate the rear wheel in driving direction or wheel rotation direction and spray the recommended cleaning spray.
- Leave the cleaning solvent to soak for few minutes. Wipe off the solvent on the chain with a dry, clean cloth thoroughly. Use a soft brush if the chain is dirty.

Lubrication

- Ensure the chain is cleaned thoroughly and the solvent is wiped off completely.
- Slowly rotate the rear wheel in driving direction or wheel rotation direction. Apply recommended spray liberally as shown to the drive chain inner lower runs (ref. Fig. 54).

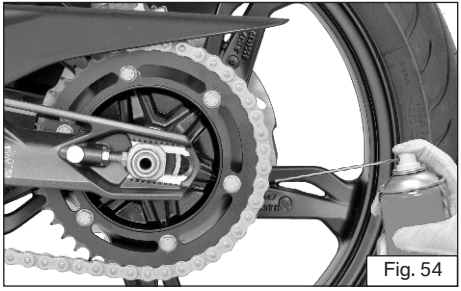


Fig. 54

- Ensure both the row links are lubricated.

Warning Avoid getting lubricant on the brakes or tyres. Avoid applying excess chain lubricant to prevent spray onto your clothes and the motorcycle.

Caution The chain fitted on your motorcycle has X-Rings to protect the moving parts of chain from dirt, and to hold the lubricant inside. If the chain is cleaned using any solvent other than those specific for X-ring chains or washed using steam or water cleaners or a wire brush or an abrasive cleaner, the X-ring seals might be damaged irreparably.

Use only MOTUL C2 spray to lubricate the chain. Using non-specific lubricants may cause severe damage to the chain and the front and rear sprocket.

Front Wheel

Ensure the safety precautions listed in the page 73 are followed properly.

Removal

- Carefully place the motorcycle in auxiliary stand (paddock stand ref. page 104).
- Loosen the left side clamping screws (1) and (2) (ref. Fig. 55).

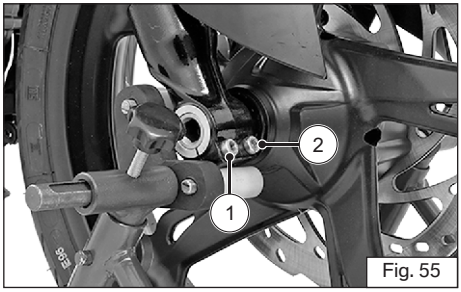


Fig. 55

- Remove the locking screw (3) (ref. Fig. 56).
- Loosen the right side clamping screws (4) and (5).
- Slightly press the quick-release axle (6) inward for a better grip on the right side.

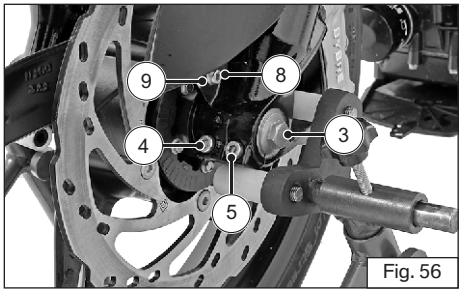


Fig. 56

- Support the front wheel and slowly pull out the quick-release axle (6) from the left side (ref. Fig. 57).

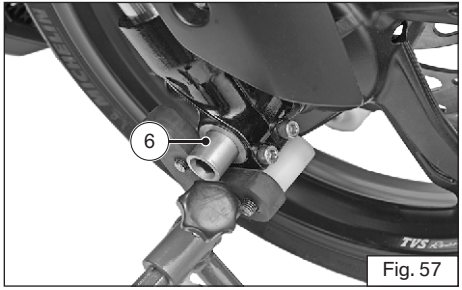


Fig. 57

- Place the front wheel down and roll it forward out of front suspension. Ensure not to damage the wheel speed sensor during the removal process.
- Take out the spacer bush (7) from the left side of the wheel hub (ref. Fig. 58).

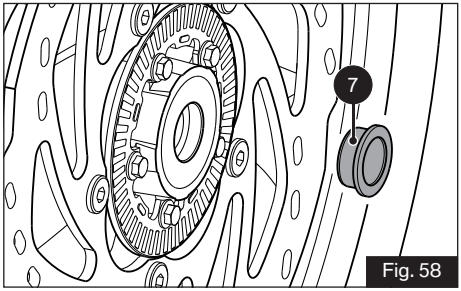


Fig. 58

Caution Ensure not to damage the brake caliper during wheel removal.

Do not actuate the brake lever after the wheel is removed. Unintentional press of brake lever leads to brake pads binding.

Note During the wheel removal, take additional care to prevent the wheel rims from scratches.

Reassembly

- Push the brake pads of front caliper away from together to ease the front wheel entry in to front suspension.
- Loosen the mounting screw (8) and take out the speed sensor (9) from front suspension.
- Fix the spacer bush (7) on the left side of wheel hub (ref. Fig. 58).
- With the care, roll the front wheel into the front suspension so that there is no damage to the wheel speed sensor.
- Lift the front wheel. While ensuring the proper seating of brake disc into the caliper assembly, insert the quick release axle.
- Remove the front wheel stand and stroke the front fork several times without applying the brake.
- Mount the front wheel stand again and install the locking screw (3) with specified torque (ref. Fig. 56).

Tightening torque	50 ± 7 Nm

- Install the clamping screws (1,2,4 & 5) and tighten to the specified torque (ref. Fig. 55 & 56).

Tightening torque	19 Nm

- Assemble the speed sensor (9) and mounting screw (8) in front suspension.

Caution Always have these tightening torques to be checked at TVS Motor Company Authorised Distributor or Dealer after assembly for safety.

Rear Wheel

Ensure the safety precautions listed in the page 73 are followed properly.

Removal

- Carefully place the motorcycle in auxiliary stand (paddock stand ref. page 105) or centre stand (if available).
- Place a support below the rear wheel to avoid falling of wheel after removing the quick release axle.
- Remove the mounting screw (1) from the speed sensor mounting and carefully take out the speed sensor (2).

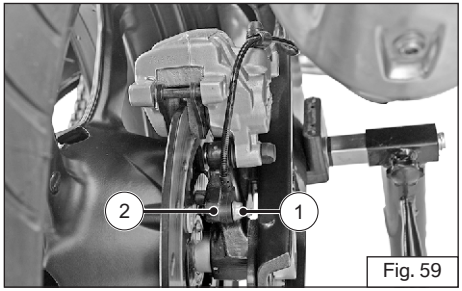


Fig. 59

- Remove the axle mounting nut (3, ref. Fig 60) using the proper tool from the tool kit (ref. page 103).

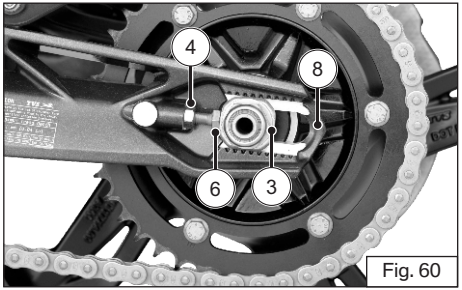


Fig. 60

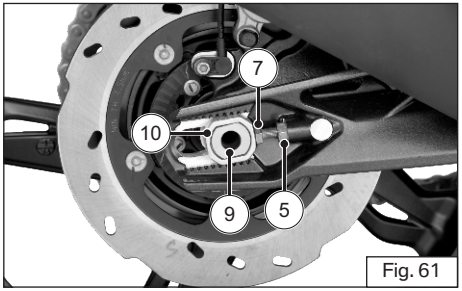


Fig. 61

- Release the lock nuts (4 & 5) and screw-in the adjuster bolts (6 & 7) (ref. Fig. 60 & 61).
- Remove the chain tensioner (8) and push the quick-release axle to the right as much as possible (ref. Fig 60).
- Carefully pull out the quick release axle (9) from the left side and take out the chain tensioner (10) (ref. Fig. 61).
- Roll the rear wheel forward as far as possible and disengage the chain (11) from the sprocket (ref. Fig. 62).
- Care should be taken not to damage the wheel speed sensor during this process.

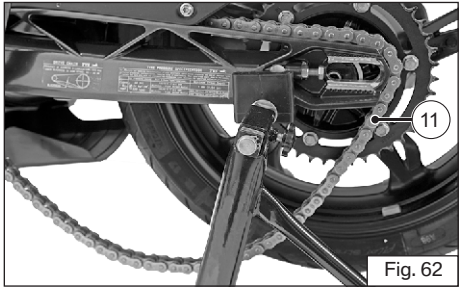


Fig. 62

- Carefully roll the rear wheel out from the swing arm while pulling the brake-caliper assembly back far enough to allow the rear wheel to come out.

Caution Care should be taken not to damage speed sensor during its removal and reassembly. Ensure that the speed sensor is free from any mud / clogging with dirt.

Ensure not to damage the brake caliper during wheel removal.

Do not actuate the brake pedal after the wheel is removed. Unintentional press of brake pedal leads to brake pads binding.

Note Sprocket assembly, spacer axle rear LH & RH are loose fits in the wheel. Make sure that no parts are damaged or mislaid during removal and reassembly of the wheel.

During wheel removal, take additional care to prevent the wheel rims from scratches.

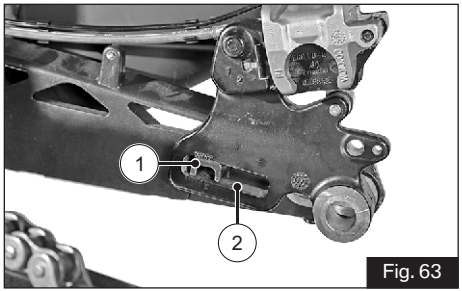


Fig. 63

Reassembly

- Carefully roll the rear wheel on the support into the swing arm, along with LH & RH spacers and sprocket, as far as necessary to allow the brake-caliper to be inserted while taking care of wheel speed sensor.
- Push the brake pads away from together to ease the rear wheel entry into swing arm.
- Place the brake-caliper (1) on the guide (2) of the swing arm as shown (ref. Fig. 63)
- Roll the rear wheel further into the swing arm, while pushing the brake-caliper assembly forward at the same time.
- Roll the rear wheel as far forward as possible and loop the chain over the sprocket.
- Insert the quick-release axle along with the chain tensioner from left side of the swing arm while ensuring that the axle is seated properly into all the components.
- Assemble the left side chain tensioner.
- Assemble the axle nut along with the washer and hand tighten it.
- Adjust the chain slackness and tighten the lock nuts, and the axle nut to the specified torque (ref. page 128).
- After tightening the axle nut, once again check and confirm the chain slackness.
  Assemble the speed sensor (2) and mounting screw (1) in rear caliper (ref. Fig. 59).

Caution Chain can be adjusted when vehicle is supported by centre stand (if applicable) or side stand or auxiliary stand (paddock stand) in no load condition.

Always have these tightening torques to be checked at TVS Motor Company Authorised Distributor / Dealer after assembly for safety.

Battery

Ensure the safety precautions listed in the page 73 are followed properly.

Since the maintenance free battery is used in your motorcycle, it is not necessary to check the battery electrolyte level or add distilled water.

If your battery seems weak ie. if you are facing starting issues or other electrical issues, contact TVS Motor Company Authorised Distributor or Dealer.

Removal

- Turn OFF the ignition.
- Remove the pillion and rider seats as explained in page no. 53 to access battery.
- Remove the mounting bolt and take the battery holder (A) (ref. Fig. 64)
- Disconnect the negative terminal (1) first followed by the positive terminal (2) (ref. Fig. 65). Carefully take out the battery.

Re-fitment

- Reinstall the battery in the reverse order of removal.
- Connect the positive terminal first and then the negative firmly to avoid any damages to electrical system / battery. Make sure the rubber boot is intact with positive terminal.

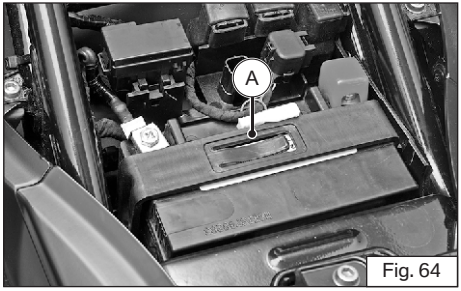


Fig. 64

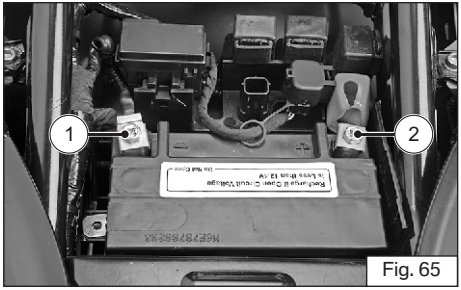


Fig. 65

Warning Battery develop explosive gases. Keep it away from heat sources. If charging is required, the battery must charged in well ventilated area.

Unusable battery must be disposed in environment friendly manner. Do not discard it with household trash. Handover the battery to the battery Dealers or to a recycling centre that accepts used batteries.

Caution Never operate the motorcycle with discharged battery as it may damage electrical components.

Do not push start the vehicle, use a good battery or jump cable to start the vehicle incase of battery drain.

Note If the motorcycle is to remain unused for a long time (a month or longer), it is advisable to disconnect the battery terminals or have the battery removed by a skilled personnel.

Fuses

The electrical components of your motorcycle are protected by six fuses housed inside a fuse box and located below the rider seat.

To access the fuses, park the motorcycle on a flat and firm surface and remove the pillion and rider seats as explained in page no. 53.

A 'fuse puller' (A) is placed on the battery holder can be used to pull out the fuse from the fuse box during replacement.

Removal and replacement

- Turn OFF the ignition.
- Press the lock and open the fuse box cover (1) (ref. Fig. 66).

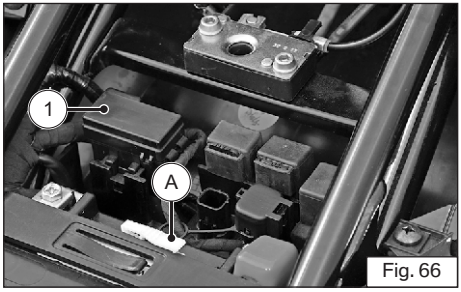


Fig. 66

- Pull out the defective fuse and re-fix the new one with same rating.
- Close the fuse box cover and ensure the proper locking.

You can identify a blown fuse by the interrupted centre link (1) (ref. Fig. 67).

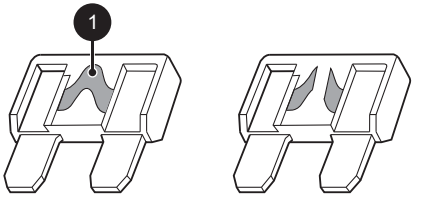


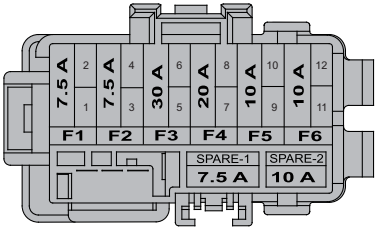
Fig. 67

Fuse assignments

- Each fuse inside the fuse box are assigned for different electrical load and it is listed the table given below. Never change the fuse rating to protect your electrical system and to avoid severe damages.

Fuse	Colour	Electrical load
F1 - 7.5A	Brown	Lambda / starter relay / purge / SAS / relay fuel pump module / injector / relay EFI / ignition coil
F2 - 7.5A	Brown	Speedometer / diagnostic / HECU / ECU / cooling fan
F3 - 30A	Green	Main fuse
F4 - 20A	Yellow	HECU
F5 - 10A	Red	All lights / horn LH & RH
F6 - 10A	Red	EFI / speedometer

Fuse arrangement



FUSE BOX

Fig. 68

- Fuses are arranged inside fuse box as given in the figure (Fig. 68). Ensure to fix the right rating fuse at right location.

Caution Do not use the motorcycle by shorting the wires without a fuse. Never use a fuse with a rating other than that specified . Failure to observe above rules may damage the electric system or even cause fire.

Note A sticker with fuse colour codes and rating is pasted inside the fuse box cover which can be referred during fuse replacement.

Ensure to replace the 'fuse puller' in the same place for future usage.

Care should be taken not to spray water on electrical components.

Fuse location

- Spare fuse for the each of the fuse is located inside the fuse box (A) and as well as in the wiring harness (B) below the seat latch of pillion seat (ref. Fig. 69).

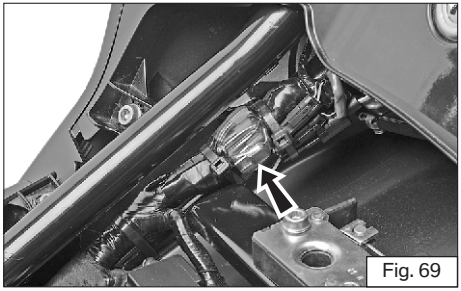


Fig. 69

Diagnostic Connector

The diagnostic connector is located below the rider seat. Follow the procedure given below to access the connector.

Removal

- Park the motorcycle on a flat and firm surface and remove the pillion and rider seats as explained in page no. 53.
- Turn OFF the ignition.
- Gently pull out connector along with its cap from its location by releasing the lock (1) (ref. Fig. 70).
- Release the lock of the cap and take out the cap carefully.

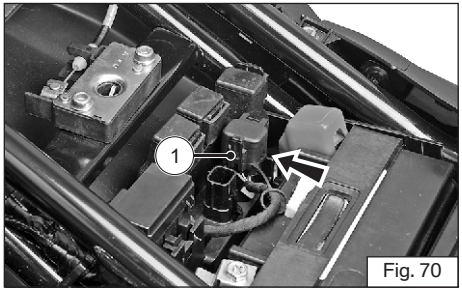


Fig. 70

Re-fixing

- Re-fix the cap of the connector and ensure the proper locking.
- Re-fix the connector to its location and lock it properly.

Caution Diagnostic connector to be accessed and used by the trained personals of TVS Motor Company Authorised Distributor or Dealer or by the other authorised persons of TVS Motor Company Limited during service. Do not fiddle with system at unauthorised service location.

Ensure to re-fix the diagnostic coupler cap after the usage to avoid damages to the electric system due to water entry. Secure the connector in it's location without fail to avoid getting damaged.

Cleaning your Motorcycle

For maintaining the original shine on metal parts surface and painted parts surface, wash and clean your motorcycle at regular intervals depending on usage and particular road conditions.

- Use only specific products. Avoid aggressive detergents and solvents.
- Use only water and natural soap to clean glass and the seat.
- To prevent stains, do not wash the vehicle immediately after it has been exposed to strong sunlight and do not wash it in the sun.
- If the parts of the engine are unusually dirty or greasy, use a de-greasing agent while taking care of transmission components (like chain, front and rear sprockets, etc.).

Caution Never clean the motorcycle using hot or high pressure water jets. Cleaning the motorcycle with high pressure water jet may lead to serious problems in front fork, wheel assemblies, brakes, electrical systems, inlet and exhaust systems which will result in reduced safety.

- Transmission components can be rinsed with warm water and dried with clean dry cloth.
- Clean the radiator regularly. Use a hose with low water pressure to clean the radiator fins blockage. This prevents the engine from overheating due to insufficient cooling. Care should be taken not to damage the radiator fins during cleaning.

Warning There may be a loss of braking efficiency immediately after washing the motorcycle. Greasing or lubricating the brake discs leads of loss of braking. Oil-free solvent to be used for cleaning the brake discs.

The head lamp may be get fogged up after washing, rain or moisture. Switch ON the head lamp for a short period of time to dry any condensation.

Maintain minimum distance of 60cm between the water jet nozzle and the vehicle. Do not direct the jet onto electrical component and connectors.

Storage Procedures

For storing your motorcycle for longer periods of over a month and above, we recommend to carry out the following steps:

- Clean the motorcycle. Park the vehicle on centre stand (if applicable) or in auxiliary stand (refer page 105).
- Warm-up the engine and drain the engine oil.
- Empty the fuel tank.
- Remove the spark plug and feed in several drop of engine oil through the spark plug hole. Crank the engine few times and reinstall the spark plug.
- Disconnect and remove the battery. Store it away from direct sunlight and freezing temperatures.

  Place a suitable support at the bottom of the frame so that both the tyres are off the ground. This will ensure the better tyre life.
- Protect the vehicle with the suitable cover and store the vehicle inside a garage or similar area to avoid damage due to dust and rain.
- Make sure that the storage area is well ventilated and free from any source of flame or spark.

Caution Do not park the vehicle on a slope or soft ground or else it may fall.

During storage the battery must be checked and if required recharged atleast once in a month.

Restoring the Motorcycle to use

- Take the motorcycle out of garage and clean the motorcycle thoroughly (ref. page 99).
- Remount the battery after bench charging if required.
- Fill the engine oil and check the oil level using the gauge.
- Lubricate the necessary parts.
- Fill up fresh fuel in the fuel tank (ref. page 49).
- Check and inflate the tyre pressure to the specified limit.
- Check and correct the points mentioned in pre-ride check (ref. page 55).

Note Turn on the ignition and start the engine. Allow the to run in idle mode for few minutes and ride out.

Taking Long Trips

When taking the motorcycle a long trip more than 500 km follow the instructions given below:

A) Keep the following items for use incase of emergency
- Complete tool kit and first aid kit.
- Recommended spark plug one number.
- Throttle and clutch cable each one.

B) Precautions to be taken for the journey:
- Ensure engine oil and brake fluid level are upto the mark.
- Ensure the coolant level.
- Adequate fuel in the tank.

C) Check the motorcycle for the following:
- Tightness of all fasteners for the correct torque value.
- Fitness of tyres and tyre pressure.
- Working of all the lamps and horn.
- Balancing of wheel.
- Smooth functioning of all cable and their free plays.
- Smoothness of steering operation.
- Slackness and lubrication of chain.
- Front and rear brake functioning and rear brake switch working.
- Front fork for any abnormality.
- Spark plug cleanliness and condition.
- Air filter element cleanliness.
- Lubrication of all necessary parts.
- Any other jobs as necessary.

Caution Long journey are to be taken only after the running-in (ref. page 01).

Have your vehicle checked for the above mentioned items at TVS Motor Company Authorised Distributor or Dealer.

Note Ensure the first aid equipments are changed periodically based on the expiry.

Tool Kit

To assist you in performing certain aspects of periodic maintenance and emergency repairs, a tool kit is supplied along with the vehicle.

- The tool kit (A, ref. Fig. 71) is located below the pillion seat (ref. page 53 for seat removal procedure).
- The tool kit consists of one number each of the following:
  1. Tool bag
  2. Double ended open jaw spanner 12x13
  3. Double ended open jaw spanner 10x16
  4. Bit +/-
  5. Grip driver
  6. Adjuster shock absorber rear
  7. Handle ring spanner
  8. Hexagonal key 5 mm
  9. Ring spanner

Fig. 71

Note It is recommended to use the tool kit incase of any emergency only. It is always advisable to take your vehicle to TVS Motor Company Authorised Distributor or Dealer.

Auxiliary Stand (Paddock Stand)

Front wheel stand (ref. Fig. 72, 73 & 74)

Place the motorcycle on its centre stand (if applicable) or on rear wheel stand (ref. page 105) on a flat firm surface.

Use the auxiliary stand supplied for lifting the front wheel (the stand is an accessory and it is available with the TVS Motor Company Authorised Distributor or Dealer).

- Loosen the clamping screws (1) of the stand adopters.
- Move away the adopters (2 & 3) in such way that the front forks fit between them.
- Centre the stand relative to the front wheel and push it against the front axle.

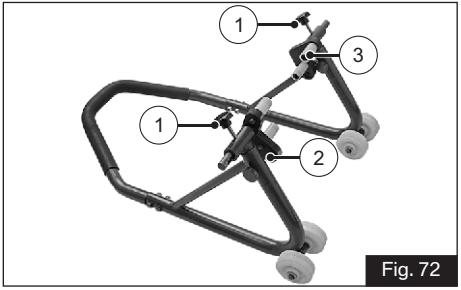


Fig. 72

- Align the two adapters (2a & 3a) so that the front forks are securely seated.

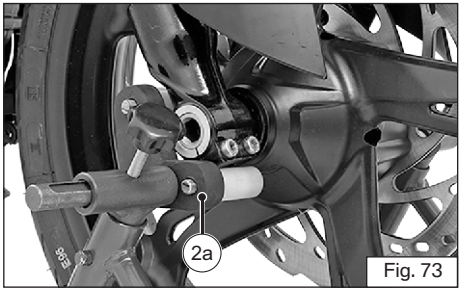


Fig. 73

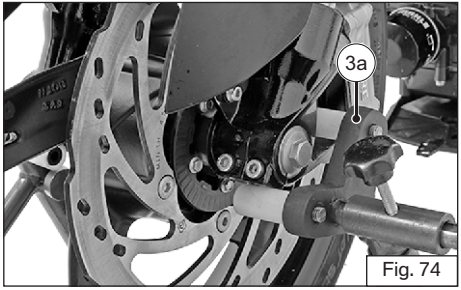


Fig. 74

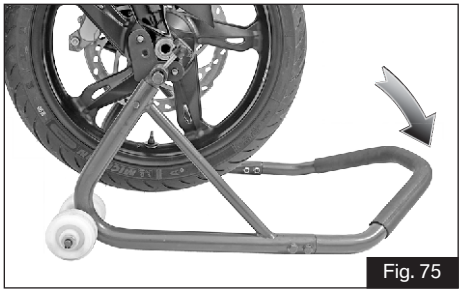


Fig. 75

- Apply uniform pressure to push the stand down and raise the motorcycle. (ref. Fig. 75)
- Tighten the clamping screws (1).

Caution Centre stand (if available in the vehicle and parked using it) retracts if the motorcycle is lifted too high.

When raising the motorcycle, make sure that the centre stand (if available in the vehicle and parked using it) remains on the ground. Else the motorcycle is supported by the rear wheel stand to avoid falling of the motorcycle.

Rear wheel stand

Use the rear wheel stand (the rear wheel stand is an accessory and it is available with the TVS Motor Company Authorised Distributor or Dealer).

- Ensure that the motorcycle is parked on a flat and firm surface.
- Loosen the clamping screws (1) of the stand adopters.
- Move away the adopters (2 & 3) in such way that the swing arm fits between them (ref. Fig. 76).
- Ensure that the axle is not covered.
- Position the stand (ref. Fig. 77).

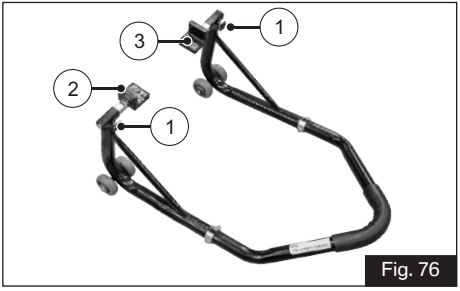


Fig. 76

- Make sure that the vehicle is secured so that it cannot topple sideways.
- Push the stand down until the motorcycle is standing upright and the handle of auxiliary stand is resting on the floor properly.

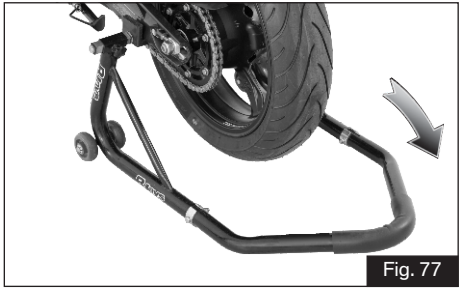


Fig. 77

Caution When raising the motorcycle, make sure that the vehicle is secured so that it cannot topple sideways.

Service Schedule (kms or month whichever of the two occurs early)*

Sl.No.	Service	Kms	Months	Remarks
1	1st Service	1000	2	
2	2nd Service	5000	6	
3	3rd Service	10000	12	
4	4th Service	15000	18	
5	5th Service	20000	24	

* Please remember that, after the above schedule, periodic servicing of your vehicle at appropriate intervals, depending upon its extent of use, will keep your vehicle at its best level of performance.

Service Record

Service	Completed on	Next service due on	Dealer's stamp & sign
1st	Date .....&	Date .....or	
	Km	Km	
2nd	Date .....&	Date .....or	
	Km	Km	
3rd	Date .....&	Date .....or	
	Km	Km	
4th	Date .....&	Date .....or	
	Km	Km	
5th	Date .....&	Date .....or	
	Km	Km	

Service Record

Service	Completed on	Next service due on	Dealer's stamp & sign
6th	Date .....&	Date .....or	
	Km	Km	
7th	Date .....&	Date .....or	
	Km	Km	
8th	Date .....&	Date .....or	
	Km	Km	
9th	Date .....&	Date .....or	
	Km	Km	
10th	Date .....&	Date .....or	
	Km	Km	

Recommended Fuel and Lubricants

Fuel

Recommended fuel grade	:	Euro IV / Unleaded petrol (91% octane rating by research method)
Fuel capacity (usable)	:	Approx. 11 ± 0.5 litre
Minimum required quantity of fuel	:	2 litre

Engine Oil

Recommended manufacturer	:	TVS / MOTUL
Recommended grade	:	TVSM TRU4 SAE 15W50 Synthetic oil / MOTUL 15W50 3000 4T Plus MA2 oil
Recommended quantity	:	1700 ml (fresh assembly / full drain along with filter change)

Coolant

Recommended manufacturer	:	Glysantine
Recommended grade	:	G48
Recommended quantity	:	1 litre (coolant and distilled water ratio 50:50)

Cone set grease

Recommended manufacturer	:	As recommended by TVS Motor Company
Recommended grade	:	BEM 34-132
Recommended quantity	:	15 gm (in sachet)

Recommended Fuel and Lubricants

Front fork oil

Recommended manufacturer	:	Kayaba
Recommended grade	:	KHL 15-10
Recommended quantity	:	440 ml / leg

Chain cleaner

Recommended manufacturer	:	MOTUL
Recommended grade	:	C1

Chain lubricant

Recommended manufacturer	:	MOTUL
Recommended grade	:	C2

Brake Fluid

Recommended manufacturer	:	BASF HYDRAULAN 404
Recommended grade	:	DOT 4

Engine

Bore	:	80 mm
Stroke	:	62.1 mm
Displacement	:	312.2 cc
Compression ratio	:	10.9 ± 0.5 : 1
No. of valves	:	4
Maximum power	:	33.5 bhp (25 kW) @ 9700 rpm
Maximum torque	:	27.5 Nm @ 7700 rpm
Maximum speed	:	160 km/h
Engine idling rpm	:	1700 ± 200 rpm
Idling CO%	:	CO < 1%
Idling HC ppm	:	HC < 500 ppm
Camshaft	:	Double over head camshaft
Fuel feed	:	Closed loop EFI system
Cooling system	:	Liquid cooling
Air filter	:	Dry paper type
Oil filter	:	Wire mesh and Micronic paper filter
Lubrication system	:	Wet sump lubrication
Starting system	:	Electric starter

Transmission

Clutch system	:	Wet multi plate type
Gear shift pattern	:	One down five up
Number of gears	:	Six speed, toe shift
Primary transmission	:	Spur gears
Secondary transmission	:	Chain and sprockets
First gear ratio	:	3.000
Second gear ratio	:	2.063
Third gear ratio	:	1.588
Fourth gear ratio	:	1.286
Fifth gear ratio	:	1.095
Sixth gear ratio	:	0.955
Primary reduction	:	3.083
Secondary reduction	:	2.470

Dimension

Overall length	:	2001 ± 20 mm
Overall width	:	786 ± 5 mm
Overall height	:	1135 ± 10 mm
Saddle height	:	811 ± 10 mm
Ground clearance	:	180 ± 5 mm
Wheel base	:	1365 ± 12 mm
Kerb weight	:	169.5 kg
Pay load	:	130 kg
Gross vehicle weight	:	299.5 kg

Frame and Suspension

Frame type	:	Trellis type frame
Front suspension	:	USD fork 41 mm diameter
Rear suspension	:	Solid Die cast Aluminium swing arm directly hinged monoshox, pre-load adjustable.
Fork stroke length	:	140 mm
Rear suspension travel	:	119 mm
First gear ratio	:	3.000
Steering angle	:	34° ± 2°
Caster angle	:	25° ± 1°
Turning radius	:	2542 ± 145 mm
Gradability	:	≥ 10°
Banking angle	:	49° ± 1°

Wheels and Brakes

Brakes

Brakes type	:	Disc brake with ABS
Front brake size	:	Hand operated 300 mm disc
Rear brake size	:	Foot operated 240 mm disc

Wheel

Front tyre make and model	:	MICHELIN M/C 54 H - PILOT STREET RADIAL
Rear tyre make and model	:	MICHELIN M/C 66 H - PILOT STREET RADIAL A
Front tyre size	:	110/70-R17
Rear tyre size	:	150/60-R17
Front tyre pressure	:	2.24 kgf/cm^2 (32 PSI) for both solo and dual
Rear tyre pressure	:	2.24 kgf/cm^2 (32 PSI) for both solo and dual

Free Plays

Free plays

Clutch free play	:	8 - 12 mm
Throttle free play	:	5 ± 2 mm
Drive chain free play	:	30 - 40 mm

Electricals

Type	:	Three phase AC generator
Ignition system	:	Dynamically controlled - high energy integrated ignition system
Spark plug	:	NGK(LMAR9D - J)
Spark plug gap	:	0.8 ± 0.1 mm
Battery type	:	12V / 8 Ah MF lead acid battery
Body earthing	:	Two grounds are mounted on engine body (1. Engine ground and 2. Ignition ground) and one ground mounted on fuel tank
Generator	:	12V, 290W @ 6000 rpm
Head lamp	:	12V, LED
Position lamp	:	12V, LED
Tail / brake lamp	:	12V, LED (2W / 2W approx.)
Turn signal lamp	:	12V, LED (2W each)
Number plate lamp	:	12V LED
Instrument panel	:	LCD / LED indicators
Horn type	:	12V DC two numbers
Fuse	:	Mini fuse - 7.5A x 2, 10A x 2, 20A x 1 and 30A x 1
Voltage regulator	:	Three phase shunt full DC RR unit

Important Torque Details

Front wheel

Quick release axle locking screw	:	50 ± 7 Nm
Axle holder clamping screws	:	19 ± 3 Nm
Caliper assembly mounting bolts	:	28 ± 4.2 Nm

Rear wheel

Drive chain adjuster screw lock nuts	:	19 ± 3 Nm
Rear wheel quick release nut	:	100 ± 15 Nm

Swing arm

Swing arm axle mounting nut	:	135 ± 20.5 Nm
Rear shock absorber top mounting bolt	:	56 ± 8.4 Nm
Rear shock absorber bottom mounting bolt	:	56 ± 8.4 Nm

Basic Troubleshooting

Difficulty in starting the engine or engine not starting

Possible cause	Rectification
Side stand is in ON and gear engaged	Release the side stand
Engine kill switch is ON	Turn off the engine kill switch (ref. page 44)
Gear applied and clutch not disengaged	Either apply the clutch or bring the transmission to neutral position.
No fuel in the fuel tank	Refuel (ref. page 49)
Battery discharged	Recharge the battery or fix a new battery if the old battery is not getting charged.