

**TVS**  
**KING 225 LC**  
**DURAMAX**

**TVS**  
**KING 225 LC**  
**DURAMAX PLUS**

(4 Stroke LPG & CNG)

## CUSTOMER DATA

NAME : .....

Address : .....

.....

PIN Code :

Tel. No : ..... Mobile No : .....

Booklet No : ..... Date of sale : .....

Vehicle Chassis No : ..... Engine No : .....

## FOREWORD

Dear customer,

We at TVS Motor Company congratulate you for choosing TVS King. We wish you many miles of enjoyable riding and better earnings in the years ahead.

TVS King is manufactured at the world class manufacturing facility of TVS Motor Company with best quality of material and workmanship .We hope it will fulfill your dreams and ambitions.

This booklet is your guide to maintain and operate your TVS King. So please read and follow the manual carefully to enjoy years of pleasurable riding and increased earnings. As with any good machine, proper care and maintenance are essential for trouble free operation and optimum performance of your vehicle.

Our dealerships are well equipped with the required diagnostic equipment and a dedicated company trained service team for professional care of your vehicle so that you can be rest assured of our support in the unlikely event of any trouble with the vehicle's performance. Hence we urge you to get your vehicle serviced only at Authorized TVS Motor Company Distributor or Dealers / Service Centers.

For any problem or further clarification, you can contact our Help Line Number or write to TVS Motor Company quoting your Engine. No & Chassis .no .

You are requested to fill the user information coupon provided in this booklet.

Wishing you pleasant riding and increased earnings for years to come.

With warm regards,  
TVS Motor Company.

All information illustrations, photographs and specifications contained in this owner's manual are based on the latest product information available at the time of this publication. TVS Motor Company limited may however; incorporate modifications or improvements on its vehicles at any time without notice, and therefore, in such events it is possible that the relevant part of the owner's manual does not apply to your vehicle.

Prior permission of TVS Motor Company Limited is required for quoting, copying or reproducing any part of this owner's manual.

## NOTICE

### NOTE

Pictures illustrated in this manual are of TVS King Duramax and Duramax Plus

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

## ACCESSORIES DETAILS

Sl.No.	DESCRIPTION	Quantity
1	Tool kit	1 set 6 tools
2	Spare wheel	1 number
3	Keys	2 numbers

In case of critical problems during the course of product usage, servicing or any technical assistance you may contact us at

TVS MOTOR COMPANY **TVS** 

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Tamil Nadu, India. Tel: +91(4344) 276780.

Website: [www.tvsmotor.com/ib/home](http://www.tvsmotor.com/ib/home)

Your safety and safety of others is very important while operating this vehicle .

To help you make informed decision about safety, we have provided operating procedure and other information on labels in this manual. This information alerts you on potential hazards that could hurt you or others.

We are providing the following safety labels and safety messages in the manual

## SAFETY INFORMATION

<b>WARNING</b>	Disregarding this message might result in injury to the driver and passenger.
<b>CAUTION</b>	This message indicates special procedure or precaution to be followed to avoid damages to the vehicle
<b>NOTE</b>	This message provides further clarification for better understanding of any particular information

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## USEFUL INFORMATION

- Periodic maintenance helps good performance of an automobile and our services are planned to keep your vehicle performing good.
- Carry out the proper services and inspection of LPG/CNG kit and fire extinguisher at specified intervals.
- Always use choke for cold starting when the vehicle is running in petrol
- Don't change over suddenly from petrol to LPG/CNG and drive at optimum speeds of 35 to 40 kmph.
- Use clutch only while shifting gears. Do not engage and dis-engage the clutch suddenly.
- Do not run the vehicle at full throttle for long periods and in stationary condition.
- Check and top up engine oil every day and replace the differential and transmission oil at every 5000kms
- Always use recommended grade of lubricants and Genuine TVS Motor spare parts.
- Maintain recommended tyre pressure and rotate tyres at every 5000 kms.
- Reduce the speed while taking sharp turns. Do not apply the brakes while turning

## Running-in information

The first 2000 km is a crucial part of TVS King. Proper running in operation during this period helps in ensuring a longer life and smooth performance of your vehicle. During running in period do not exceed following speed limits .

Km.	1st Gear	2nd Gear	3rd Gear	4th Gear
0 - 750	10 km/h	15 km/h	25 km/h	40 km/h

Always keep within specified speed limit

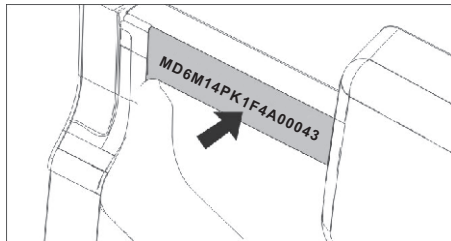
Do not operate the engine in a manner that could expose the engine to excessive stress.



### VEHICLE IDENTIFICATION NUMBER

Engine and chassis number of your vehicle are very important data. It is essential for vehicle registration. It is also required by TVSM dealer for warranty and in case of any legal procedures.

Know your vehicle



Chassis number can be located on the right side of 'B' pillar partition on the driver side as shown in the above figure.

Chassis number

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Engine number

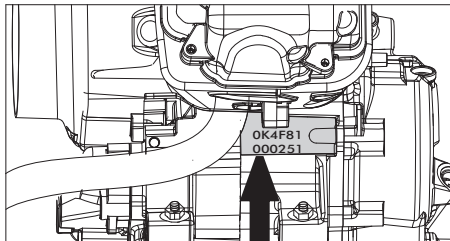
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

LPG / CNG tank identification number

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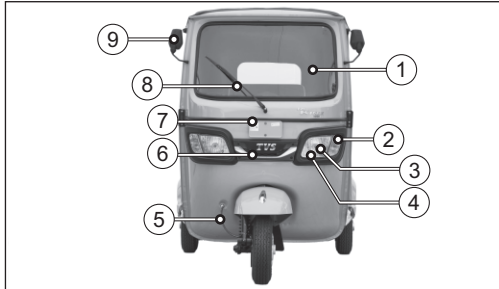
Control key number

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



Engine number can be located on crank case RH near the rear mounting as shown in the above figure.

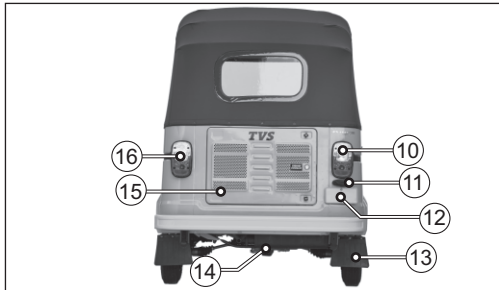
FRONT VIEW



FRONT VIEW

1. Wind shield glass
2. Turn signal lamp
3. Head lamp
4. Position lamp
5. Front brake fluid hose
6. Logo grill
7. Number plate front
8. Wiper blade
9. Rear view mirror

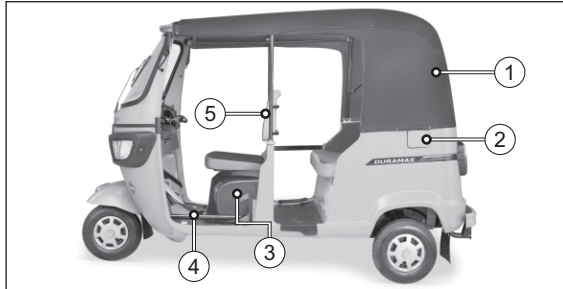
REAR VIEW



REAR VIEW

10. Rear combination lamp RH
11. Number plate lamp
12. Number plate
13. Mud flap
14. Muffler assembly
15. Tail door
16. Rear combination lamp LH

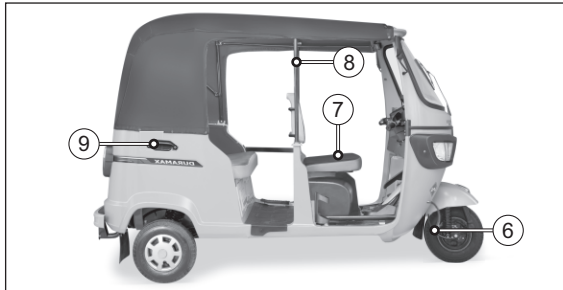
**LEFT SIDE VIEW - DURAMAX\*\***



**LEFT SIDE VIEW**

1. Soft top assembly
2. Fuel lid
3. Gas Cylinder CNG / LPG
4. Hand starter lever
5. Driver back rest

**RIGHT SIDE VIEW - DURAMAX\*\***



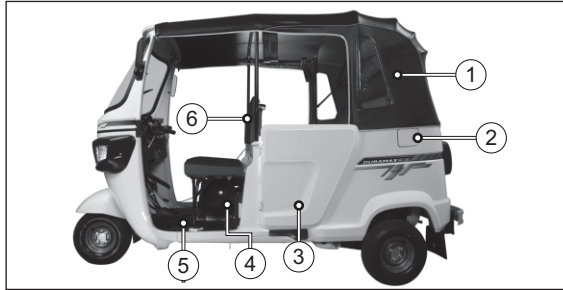
**RIGHT SIDE VIEW**

6. Speedo hub
7. Driver seat
8. 'B' Pillar assembly
9. Air intake

\*\* Please select respective model

\* Accessories shown may not be a part of standard equipment

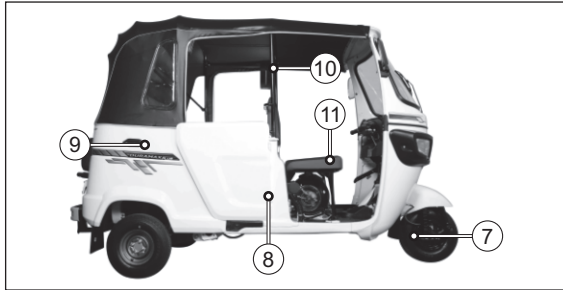
**LEFT SIDE VIEW - DURAMAX PLUS**



**LEFT SIDE VIEW**

1. Soft top assembly
2. Fuel lid
3. Side door L\*
4. Gas Cylinder CNG / LPG
5. Hand starter lever
6. Driver back rest

**RIGHT SIDE VIEW - DURAMAX PLUS**

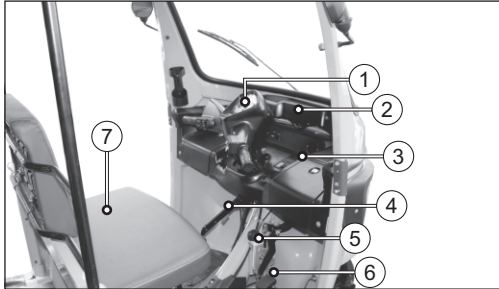


**RIGHT SIDE VIEW**

7. Speedo hub
8. Side door R\*
9. Air intake
10. 'B' Pillar assembly
11. Driver seat

\* Passenger side door only for accessory and applicable countries

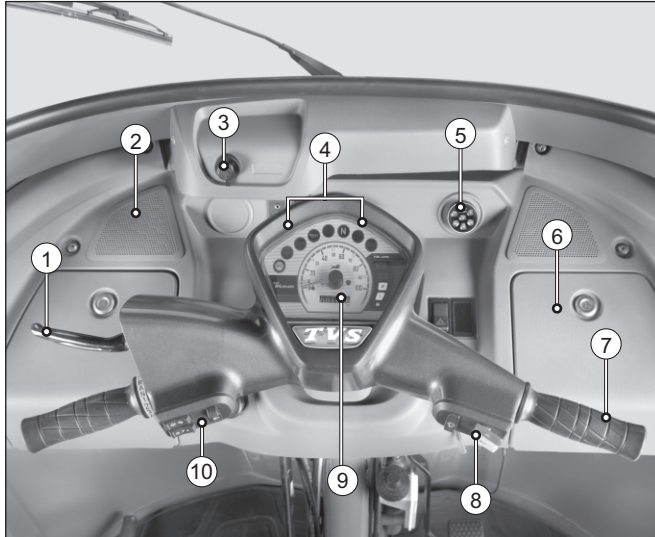
**DRIVER CABIN - RH**



**DRIVER CABIN - RH**

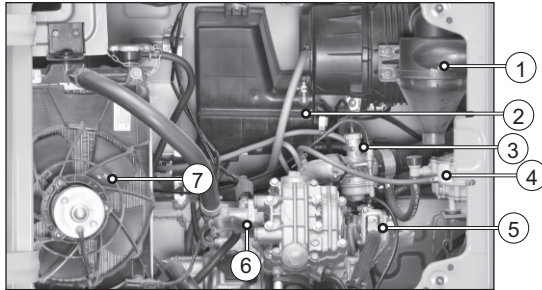
1. Handle bar
2. Wiper motor
3. Dash board
4. Hand brake control lever
5. Master cylinder
6. Brake pedal
7. Driver seat

**CONTROL PANEL**



1. Clutch operating lever
2. Speaker grill
3. Mobile charger unit
4. Cluster assembly tell tale lamp
5. Music System
6. Glove box
7. Throttle grip
8. Control switch assembly RH
9. Speedometer
10. Control switch assembly LH

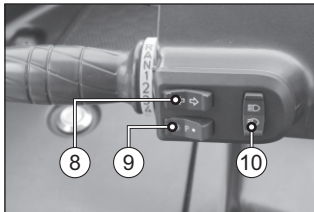
**LEFT SIDE VIEW - DURAMAX PLUS WITH SIDE DOOR\***



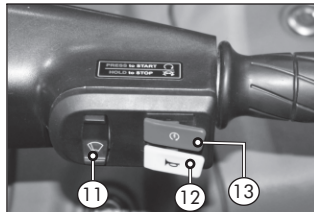
**VEHICLE - LH**

1. Air filter assembly
2. Cover TCI unit
3. Carburettor assembly
4. Low pressure reducer
5. Secondary air injection (SAI)
6. Spark plug
7. Radiator assembly

**CONTROL SWITCH - LH**



**CONTROL SWITCH - RH**



**CONTROL SWITCH - LH**

8. Turn signal lamp switch
9. Head lamp ON / PARK / OFF switch
10. Head lamp High / Low beam switch

**CONTROL SWITCH - RH**

11. Wiper switch
12. Horn switch
13. Electrical starter switch

Here you can familiarize yourself with operation of features provided in your vehicle.

1. Control Key operations

2. Safety Features

3. Operating Features

## **FEATURES IN YOUR VEHICLE**

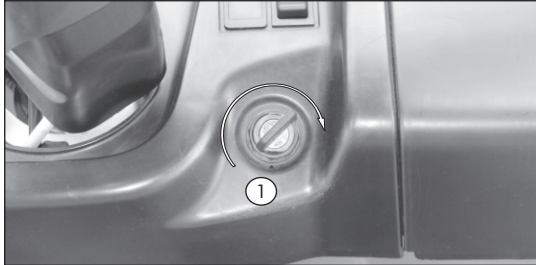
Accessories provided with the vehicle

1. Tool Kit

2. Owner's Manual



## Control key operations



**Ignition switch**

TVS King comes with a set of two control keys.

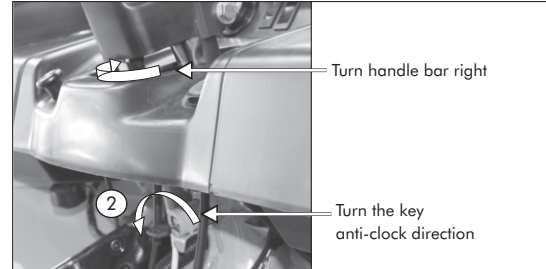
This key is used to operate ignition switch, steering lock, glove box, rear tail door and fuel lid.

### 1. Ignition switch

The ignition switch has two positions.

**OFF:** All electrical circuits are turned OFF in this position. Key can be taken out in this position

**ON:** In this position the engine can be started. Horn, turn signal wiper motor and tell tale lamp, can be operated. Key cannot be taken out in this position



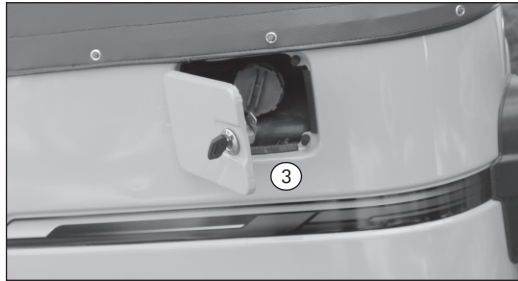
**Steering lock**

### 2. Steering lock.

To protect your vehicle from theft, steering lock is provided in your TVS King. It is positioned on the steering column, below the dash board.

To lock the steering,

- Turn the handle bar to extreme right.
- Turn the key in anti-clock direction
- Take out the key



**Fuel lid lock**

**3. Fuel lid lock**

Fuel lid is provided on the LH side of the vehicle.

To fill the fuel open the fuel lid by inserting key and turn it in anti-clock wise direction and pull outwards.

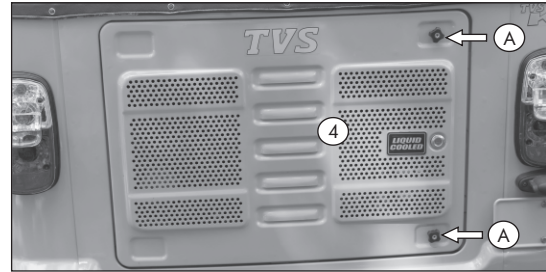
Key cannot be taken out in this position.

Open the petrol tank cap to fill the fuel.

To lock the lid close the lid and turn the key in clock wise direction

**CAUTION**

Use only unleaded petrol. Do not mix 2T oil with petrol.



**Rear tail door**

**4. Rear tail door**

To open the rear tail door insert the key and turn it in anti-clock wise direction.

Key cannot be taken out in this position.

Loosen the two knobs (A) and open the engine door

To lock the rear tail door close the door and turn the key in clock wise direction.

Tighten the door knobs.

**NOTE**

TVS LPG/CNG vehicle petrol tank capacity is 3 ltrs.



**Glove box**

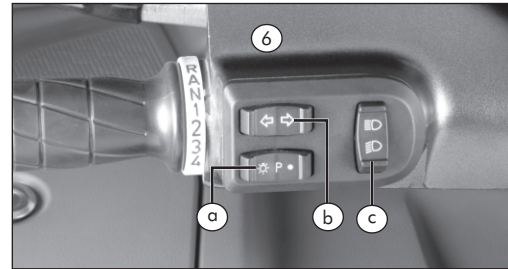
**5. Glove box**

It is provided on the left hand side and right hand side of the dash board

To open the glove box turn the key anti clockwise. Key cannot be taken out in this position. To lock the utility box close the lid, turn the key in clock wise direction and take out key.

**Safety features**

These features are provided to assist you in safe driving.



**Switch assembly LH**

**6. Switch assembly LH**


It is positioned on dashboard LH

**a) Head Lamp Switch**



It has three positions explained as follows

**●** : Head lamp, position lamps, speedometer lamp, tail lamp and number plate lamp will not glow with switch in this position though ignition switch may be in 'ON' position. and engine is in running condition.

**P** : Position Lamp, tail lamp and speedometer lamp and number plate lamp will glow when switch is in this position with ignition switch in 'ON' though engine is not running.

TVS King comes with DC headlamp. In this switch position, '  ' head lamp also will glow along with speedometer lamps, tail lamps, number plate lamp and position lamp when engine is in running condition.

**b) Turn signal lamp switch (Left & Right)**

On pushing the turn signal switch in left or right '   ' the respective indicator lamps will glow in both front and rear. It gives an indication in which direction you are turning.

To turn off turn signal lamp bring the switch to central position.

**WARNING**

Always use the appropriate turn signal lamps when you take a turn.

Switch off turn signal lamp after negotiating turn.

**c) Head Lamp high/low beam switch**

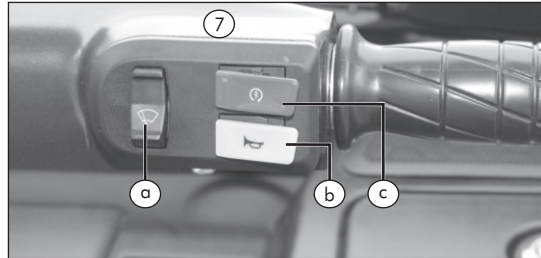
Press the knob towards '  ' to operate in high beam of the headlamp and towards '  ' to operate in low beam.

**WARNING**

Use appropriate beam (High / Low) as per the traffic and road condition for safety and comfortable riding.

**7. Switch assembly RH**

It is located on the handlebar RH



**a) Wiper motor Switch**

It has two positions


**ON** : Wiper motor operates in this position.

**OFF** : Wiper motor stops operating in this position.


**CAUTION**

Do not operate the wiper motor on the dry wind shield glass. During washing please ensure that the wiper motor is wrapped with polythene sheet to prevent water entry.

**b) Horn Switch:**

Press the button '  ' provided on the RH switch assembly to operate the horn.

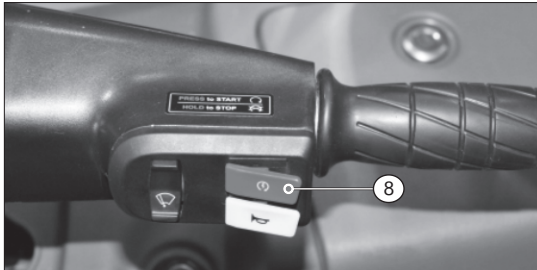
**c) Self Starter Switch**

Press the '  ' switch to start the engine electrically with ignition switch in 'ON' condition and transmission in neutral.

**CAUTION**

Do not operate the starter motor for more than 2 sec.

**8. SSS : Single Start Stop Switch\***



Switch assembly RH


\* **Applicable only for Duramax Plus with ISG variant**

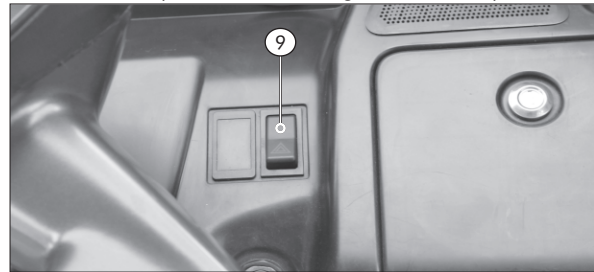
**SSS : Single Start Stop Switch\***

It is positioned on handle bar RH.

It is used to switch off the engine by giving Long Press (3 seconds) and engine rpm also less than 1500 rpm, also to keep other DC system active. The ignition circuit is disabled, preventing the engine from being restarted. Before restarting the engine, vehicle has to be in neutral condition, To restart the engine, again short Press the switch

**9. Hazard switch**

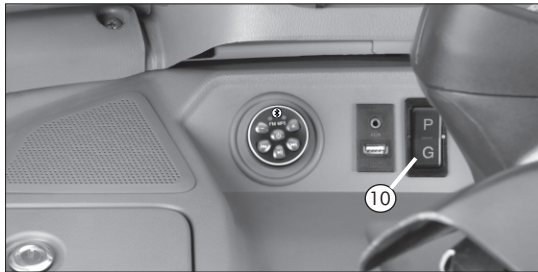
Press this switch '  ' to operate warning lamps in case of vehicle breakdown on road for repair or emergency. This switch can be operated even when ignition is in OFF position.



Switch assembly center

**10. Fuel change over switch**

Press the switch down 'G' to operate the vehicle in gas and press up 'P' to operate in petrol. In middle position '----' both gas and petrol solenoid will be closed. This position is used to drain the residual fuel in line before switching over to the gas.



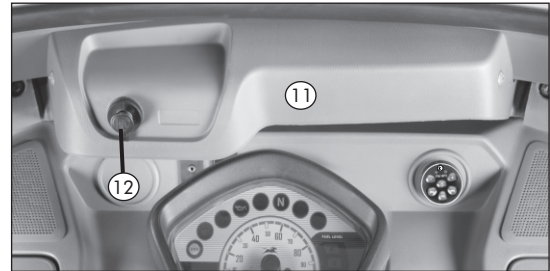
**Switch assembly center**

**11. Wiper motor.**

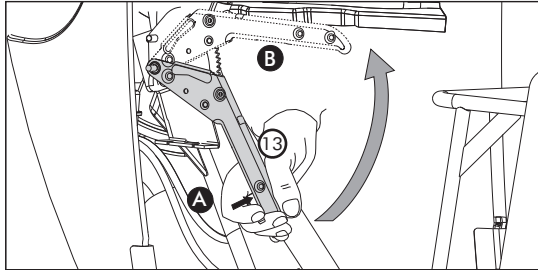
It is located on the wind shield frame above dash board.

**12. Mobile charger**

Your TVS King comes with mobile charger on idol stand as shown in the below fig.



**Wiper motor & Mobile charger**



**Parking brake lever**

**13. Parking brake lever.**

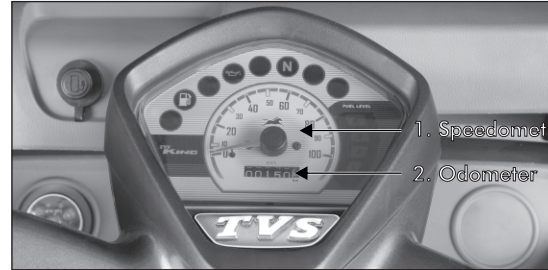
It is provided below the dash board. Use the parking brake while parking the vehicle especially on gradient to prevent vehicle rolling.

Press the lock button 'A' and pull the lever 'B' upward to apply the brake. To release brake again press the lock button and push the lever downwards.

**WARNING**

Ensure that hand brake is released before driving the vehicle

**Control features**



**Speedometer & Odometer**

**1. Speedometer**

Indicates the vehicle on- road speed in kilometer per hour.

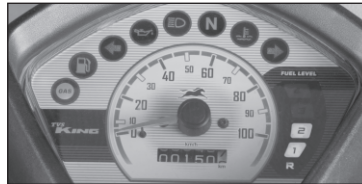
**2. Odometer**

It registers the total distance covered by the vehicle.

**NOTE**

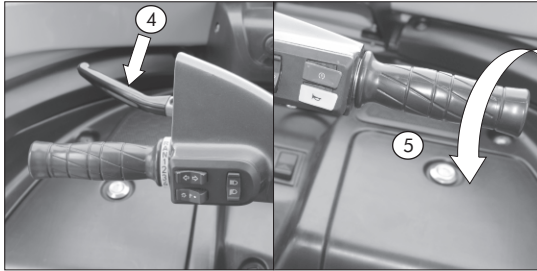
Check kilometer readings carefully to service your vehicle at the recommended kilometers mentioned in service coupons.

### 3. Tell tale lamps



Symbols	Description	Glow indication	Action to be taken	Colour
	Turn signal indicator lamp	Left or right indicator is in 'ON'	Switch off after taking turn	Green
	Neutral indicator lamp	Vehicle is in neutral gear condition	Safe to start the engine	Green
	High beam indicator lamp	Head lamp high beam is in 'ON'	An indication signal	Blue
	Engine oil pressure indicator	Low engine oil pressure	Take the vehicle to dealer	Red
	High temp warning lamp	Indicates high coolant temperature	To be reported at service center immediately	Orange
	Petrol indicator lamp	Shows vehicle is operating in petrol	An Indication signal	Orange
	Low LPG/CNG warning lamp	LPG/CNG level is below minimum level	Fill LPG/CNG	Red
	LPG/CNG level indicator lamp	Shows level of LPG/CNG in tank	Fill gas according to reqmt.	Green
<b>GAS</b>	Gas indicator lamp	Shows vehicle is operating in LPG/CNG	Take care about safety	Green





**Clutch lever & Tube complete throttle.**

**4. Clutch lever.**

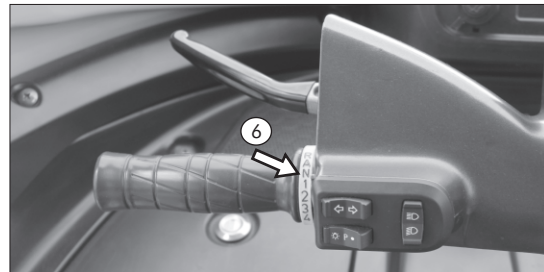
Use the clutch lever to disengage/engage the drive, from the engine to transmission while shifting gears. Depress the lever towards your side to dis-engage and release the lever to engage the clutch

**CAUTION**

Always use clutch lever while changing gears to ensure smoother gear shifting

**5. Tube complete throttle**

Engine rpm is controlled by the position of the throttle grip. Rotate it in anti-clockwise to increase the engine rpm. Rotate it clockwise or release it to decrease the engine speed.



**Tube complete gear shift**

**6. Tube complete gear shift**

To shift gears depress the clutch lever and rotate the gear shift twist grip downwards to engage forward and upwards to engage the reverse gear.

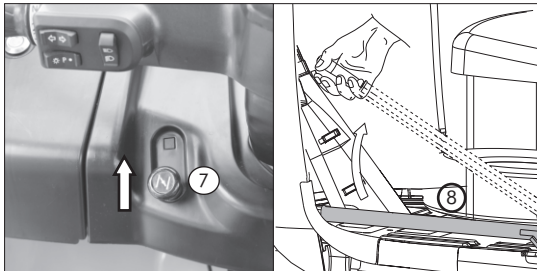
In between the neutral 'N' and reverse 'R' there is an alert 'A' position

### 7. Petrol Choke

Use the petrol choke lever when vehicle is starting in petrol mode, pull the lever up -wards to operate the choke

#### CAUTION

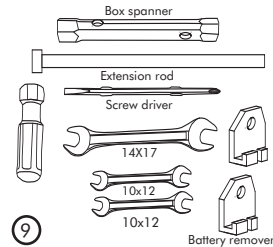
Remember to release the choke in petrol mode after starting.



Hand starter lever & choke knob

### 8. Hand starter lever

Pull the hand starter lever upward to start engine



### Tool kit

#### 9. Tool Kit

Tool kit is located in the lockable glove box on the right hand side of the dashboard

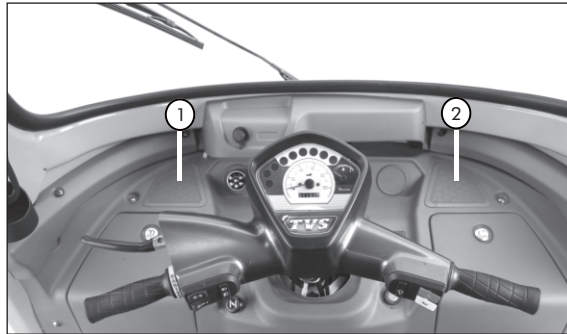
#### CAUTION

Always follow the procedures given in self maintenance section while using tools provided in the tool kit.

Please bring your vehicle to the Authorized distributor or dealers / Authorized service center in case of any major repairs.

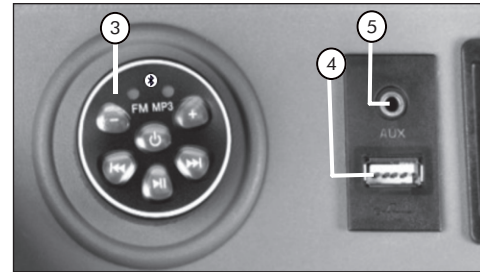
### INTEGRATED MUSIC SYSTEM

TVS King brings you most exciting distinct feature of "Music System" in its all models which accompany you all the way, gives you a joyful ride and always ensures your every trip is entertained. Factory fitted USB drive allows you to enjoy your favorite music. Set of Speakers not only gives you a pleasant journey but also entertains your passenger. Stay tuned to FM channels with TVS King FM stereo system.



### Description

1. Speaker LH
2. Speaker RH
3. Switch cluster
4. USB port
5. Aux Port



Music player	: Automotive qualified music player capable of playing from common flash drives in MP3 format and FM radio.
Power wattage	: 10 +10 Watts Stereo Amplifier - Class AB
Dimensions of Music Player	: 76mm x 120mm x 31.5mm
Weight of Music Player	: 196 grams
Operating Temperature	: 0 - 80° C
Recommended usefully charged battery	: Maximum 2 hours continuous run on vehicle with 'ON' stand condition (from fully charged battery)
Auto battery Cutoff	: Music player discontinues it self when battery voltage is less than 8.5 V DC in order to save power for subsequent normal operation of vehicle.

Aux Port	: 3.5 mm Stereo.
USB Socket	: 1 no. of USB socket for interface with common flash drives.
Speakers	: 2 nos. of 15+15 Watts speakers with water & dust protection.
FM Radio	: PLL based auto tuning capability in frequency range of 88-108 MHZ.
Volume Controls	: 8 steps digital "UP - DOWN" volume control.
Switch Cluster	: Water & dust proof switches with soft touch and ease convenience.
LED indicators	: FM and MP3 indication, brighter LED's for day time visibility.

The various switch cluster operations of music system are listed as follows:






**CAUTION**

Switch cluster has a waterproof sticker on its top, replace this sticker without fail whenever it peels off.


SYMBOLS	BUTTONS	OPERATIONS
	ON / OFF	To switch ON & OFF the system
	Volume Up	To increase volume
	Volume Down	To decrease volume
	Play / Pause	In Bluetooth mode and MP3 mode: To Play or Pause the tracks Not function in FM mode
	Forward	In Bluetooth mode and MP3 mode: To Play next track For fast forward press this switch continuously after reaching the last song use reverse to reach the first song  In FM mode: Tune to Next channel. Once highest frequency is reached use reverse button to reach lower frequency
	Reverse	In Bluetooth mode and MP3 mode: To Play previous track For fast reverse press this switch continuously after reaching the first song use forward to reach the last song  In FM mode: Tune to Previous channel. Once lowest frequency is reached use forward button to reach higher frequency

### Switching operations ( ):

Power on switch has 4 position toggle mode operations (refer drawn flow chart).

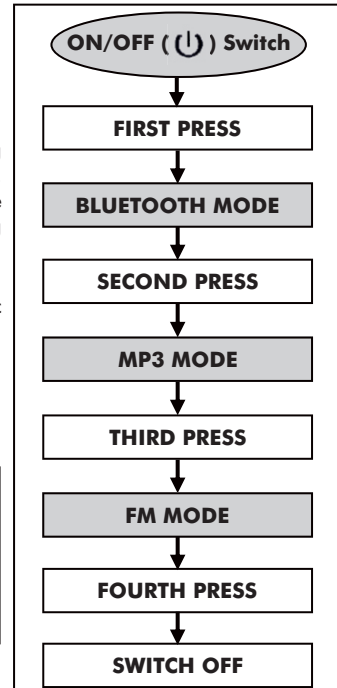
After switching on ignition key, press once '  ', music system starts automatically on Bluetooth mode. At this position indicator provided for Bluetooth will start glowing continuously. To change the mode from Bluetooth to MP3 press once the button '  '. At this position continuously glowing the same indicator. Then next to change the mode from Mp3 to FM press once the button '  '. At this position continuously glowing indicator also shifts towards FM indicator.

Flash drive with MP3 songs stored in it shall be inserted before switching 'ON' music system or after switching 'ON' ignition key and removal of flash drive can be done both in ignition 'ON' and 'OFF' condition.

To switch off music system press button '  ' once.

#### **NOTE**

This music system is designed to play only MP3 files stored in Flash drive. It searches MP3 files automatically and starts playing once the external source is connected.



### Volume Control

This system has 8 steps of volume control. To increase the volume by one step press ' + ' button once, keep pressing ' + ' to get required volume level.

To decrease volume use button ' — ' accordingly.

During switch 'ON' the system starts with default of 50% volume.

#### CAUTION

Always maintain pleasant sound level in public places in order to have healthy atmosphere with co riders.

### Forward / Reverse

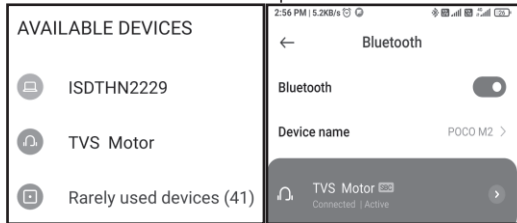
#### In Bluetooth Mode:

Press ( ) button to switch on the Music system.

Music system will enter into "Bluetooth" mode.

Mp3 LED will start blink and FM mode continuously on for Bluetooth mode.

Switch on the Bluetooth in smart phone and scan the device.



Select TVS MOTOR and pair the device.

After pairing, you can play the songs from smart phone.

Press (+) button to increase the volume and Press (-) button to decrease the volume

#### NOTE

In Bluetooth mode, song selection is through smart phone only.

### In Mp3 Mode:

To play next song press button ' ' once. To play previous song press button ' ' once. Keep pressing above buttons continuously to get desired songs.

To fast forward press and hold button ' ' continuously for more than 2 seconds.

To fast reverse press and hold button ' ' continuously for more than 2 seconds.

### In FM Mode:

To tune to next channel press button ' ' once. To tune to previous channel press button ' ' once.

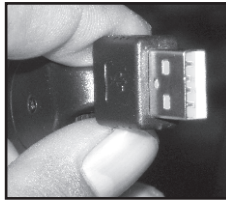
### Play / Pause:

It is a toggle mode switch. To pause song press button ' ' once. To resume press button ' ' once again.

This function will not work in FM mode.



**USB Drive :**



USB socket provided in the system which can directly interface with commonly available Flash drives.

Ensure the polarity of Flash drive while assembling by confirming the plastic base always at the bottom side.

Wrong forcible insertion may result in damaging the socket or drive or both.

This system has 70 mm length USB adapter cable which is part of factory fitment.

Any mobile with Flash disc emulation mode with suitable songs stored in it can be played back using suitable connecting cable.

**NOTE**

We recommend you to switch OFF music system while starting the vehicle using electric starter.

**Aux Port :**

TVS King music system is fitted with 3.5mm stereo aux port.

If you want to listen music from your music player or smart phone, use aux cable and connect your player to aux port.



**CAUTION**

We recommend not to use music system while it is raining, take care that no water is entering inside USB socket and headphone socket.

TVS King music system is designed to work with input battery voltage of minimum 8.5 V DC. If battery voltage is less than 8.5 V, music system will not function.

Any attention grabbing activity like listening to good music while driving a high powered machine like "TVS King" need to be done with adequate precautions for one's own safety and other road user's safety.

To avoid battery dropped when starting the engine using electric starter. Suggested only 30 minutes maximum for listening music when engine not in running condition.

**Importance**

Your safety and safety of others is very important. Operating this vehicle safely is a big responsibility .

**For safe driving**
**SAFE RIDING TIPS**

Always make a pre ride inspection before you start the vehicle. We suggest that you practice driving your vehicle in a non traffic situation until you are thoroughly familiar with your vehicle operations and its control. Always carry the fire extinguisher in LPG vehicle and care while parking the vehicle.

**Daily checks before riding**

Location	What to check for	Reference page
Engine oil & Differential oil	Check the availability up to required	42,43,44,45
LPG / CNG cylinder	Check gas level while parking and before riding for leakage	22
Brakes	Check for effectiveness, Brake pedal free play, dragging of brakes, brake sponginess.	
Tyres	Correct tyre pressure, Adequate tread depth, No crack or cut	47, 48
Battery	Ensure the working of Horn, Brake lamp, All indicator lamp etc	17,18,19,20, 50
Steering & suspension	Check for smoothness, any play or looseness.	
Controls (Clutch, Brake and Throttle etc.)	Check the free play, smooth operation, positive return to original position	50,51,52,53
Tell tale lamps	Inspect all the tell tale lamps for any warning	22
Propeller shaft, Flange, Slider block and pin.	Sufficient quantity of recommended grease	49
Differential & gearbox breather tube	Check if both gear box and differential breather tube is blocked with mud or any dirt	

## OPERATING YOUR VEHICLE

### Starting the vehicle

- Insert the ignition key in the ignition switch and turn it clockwise to ON position. (Ref page no.15, fig no. 1)
- Bring the transmission to neutral. Confirm by checking if the neutral indicator lamp on dash board is lit.
- Keep the fuel change over switch in 'G' to start in gas or 'P' to start in petrol. Use choke while cold starting
- Pull the hand starter lever up-wards or use electric start switch to start the engine. (Refer page no 24, fig no. 8)
- Wait for few minute and allow the engine to warm up before engaging the gears and moving on.

### For Cold starting

For 'Cold starting' i.e., in the morning after parking the vehicle overnight, start the engine in Petrol 'P' mode then switch over to gas 'G' mode as follows:

- Keep fuel changeover switch to petrol 'P' to start the vehicle in petrol
- Start the engine as described and then warm up the engine for a minute before driving.
- Put the fuel changeover switch to '---' position, when engine starts jerking switch over to gas 'G' mode.

### CAUTION

After parking the vehicle overnight always start the engine in petrol 'P' mode and use only hand starter. Do not open the throttle while the choke is applied, it will cause flooding of engine and difficulty in starting.

### Setting the vehicle in motion ( Ref fig.)

- When the engine has started release the parking brake.
- Dis-engage the clutch by depressing the clutch lever.
- Rotate the gear shift twist grip downward to engage the first gear.



Setting the vehicle in motion

- Open the throttle a little by rotating the throttle grip in the clock wise direction; simultaneously release the clutch lever gently and gradually.
- The vehicle will start moving forward. As the vehicle picks up speed shift to the next higher gear. Select the required gears in similar manner.

Km.	1st gear	2nd gear	3rd gear	4th gear
Speed	15 km/h	20 km/h	30 km/h	55 km/h

**CAUTION**

While shifting to each gear close the throttle fully and depress the clutch with out fail.  
Ensure that the hand brake is released before moving the vehicle after parking.

**Filling LPG**

- Take the vehicle to LPG bunk and stop the engine.
- Filler valve is inside the driver seat cover LPG tank.
- Pull the cover LPG tank from the B pillar partition and open the cover LPG tank.
- Loosen and remove the cap filler valve by rotating it in the anti-clockwise direction.
- Fill the required quantity of LPG.
- Refit and tighten cap filler valve in clockwise direction.

**WARNING**

After filling the gas always note down any leakage noise is coming from the filler valve area.  
If so open the gas tight housing from the multi valve and close the manual valve and switch off the ignition ( Ref. figure in page no.55)  
Don't try to fill LPG beyond 80% of the tank capacity.  
Don't adjust any of the Multi valve setting on your own.  
Test your cylinder as per safety requirements every 5 years  
To check leakage note gas level on the level gauge fitted on the LPG cylinder while parking over night. Check the level again before using the vehicle. If there is difference in level Take the vehicle to the authorised service station



**Filling CNG**

- Take the vehicle to CNG bunk and stop the engine.
- Filler valve is inside the driver seat cover CNG tank.
- Pull the cover CNG tank from the B pillar partition
- Pull out the dust plug from the refueling unit fitted on the first stage reduction unit on the CNG tank
- Fill the required quantity of CNG.
- Refit the dust plug

**NOTE**

The dust plug must be fitted back properly in the re-fuelling unit after filling the CNG, otherwise the vehicle will not start.

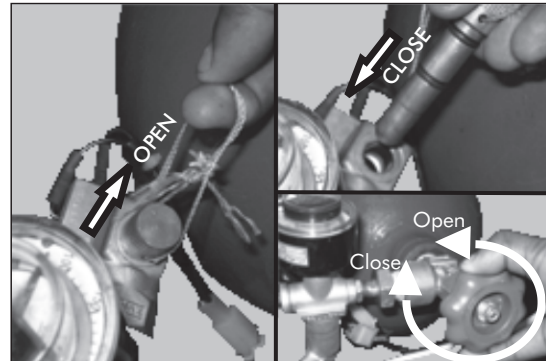
**CAUTION**

Ensure that the manual shut-off valve is in open condition before filling CNG and before starting the vehicle.

**WARNING**

After filling the gas always note if any leakage noise is coming from the re-fuelling unit.  
If so close the manual valve and switch off the ignition.  
Don't try to fill CNG beyond 200 bar pressure. Test your cylinder as per safety requirements every 5 years.

To check leakage note gas pressure level on the pressure gauge fitted on the CNG cylinder while parking over night. Check the pressure again before using the vehicle. If there is difference in level take the vehicle to the authorised service station



**FILLING CNG**

### SAFETY TIPS IN CNG

- Do not switch over to CNG mode while the vehicle is running in petrol mode.
- Do not open the pressure regulator and other CNG components at your own.
- In case of leakage, close the cylinder valve immediately, also switch off the ignition.
- During the leak test in the CNG system the line pressure should be 100 to 200 bar.
- Don't try to fill CNG cylinder beyond 200 bar pressure.
- Don't replace temperature & pressure relief device on the CNG cylinder valve by dummy disc in case of failure. Use genuine spares only.
- Always ensure that the venting connections are tight and the gas vents out to the atmosphere in case of leakage.
- Test your cylinder for strength as per safety requirements every five years from the date of previous testing by CCOE-approved agency.
- Don't carry out any welding & fabrication work near the CNG cylinder.
- Always work in good Ventilated workshop area.
- Don't take any flammable material near gas components.
- Never discharge CNG in public places or in prohibited and closed areas.
- Use the correct rated fuse in the electrical unit.
- Don't fix the Electronic control unit where water ingress is possible.
- Use genuine original spares and avoid duplicates.
- Always keep the earthing of the wiring harness intact at all the times.
- Avoid short-circuiting of electrical connections.

### Stopping and parking

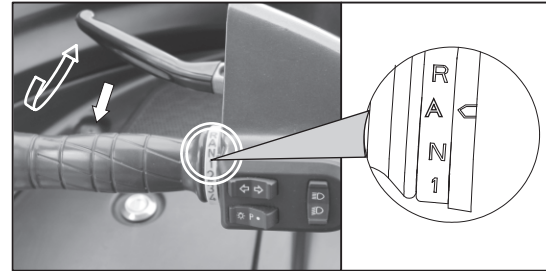
- Close the throttle completely and apply the brake.
- As the vehicle speed reduces depress the clutch lever and down shift the gears.
- Bring the transmission to neutral position just before vehicle stops.
- Turn ignition switch to OFF position and take out the key.
- Apply parking brake. Lock the steering by turning the handle bar to the right. (Refer page no.21&15 fig no. 2)

### WARNING

Do not press the clutch while braking at high speeds. Always apply the parking brake while parking on gradient.

### Reverse gear operation

- Bring the vehicle in neutral position
- Allow the vehicle to stop completely
- Press the clutch lever.
- Turn the gear change twist grip upwards to move to alert 'A' position, beeper sound can be hear. (Refer fig.)
- Turn the gear change twist grip upwards to reverse 'R' position to engage the reverse gear. (Refer fig.)
- Engage the clutch gradually to move the vehicle.



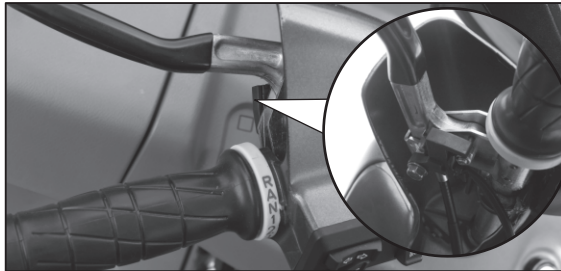
**Reverse gear operation**

### Fuel saving tips

- Carry out the periodic maintenance services regularly at TVS authorised service stations.
- Perform daily checks as specified in page no 31
- Avoid sudden and frequent braking.
- Switch OFF the engine if you have to idle the vehicle for more than 2 minutes.
- Clean, check and adjust the sparkplug gap periodically. For service procedure (See page no. 44)
- Clean air filter element as per schedule (See page 52)
- Lubricate propeller shaft, slider block, pin and flange as per lubrication schedule. (Page no.47)

**ALL GEAR START SWITCH \***

The clutch switch is integrated with the clutch lever in order to start the vehicle at any gear position engaged in the vehicle, while pressing the clutch.



**All Gear Start switch\***

Refer the table to start the vehicle in the following conditions

<b>Ignition Key</b>	<b>Clutch Input</b>	<b>Neutral Input</b>	<b>ES input</b>	<b>Vehicle Cranking</b>
ON	ON	OFF	ON	Cranking
ON	OFF	ON	ON	Cranking
ON	ON	ON	ON	Cranking
ON	OFF	OFF	ON	Not cranking
ON	X	X	OFF	Not cranking
OFF	X	X	X	Not cranking
X	X	X	X	Not cranking

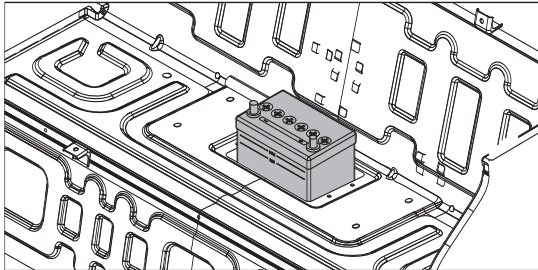
\* Applicable only for duramax plus with ISG variant



## Battery location

### Battery specification

- TVS LPG/CNG vehicle comes with lead acid type 12V, 32Ah maintenance free battery.
- Battery is located below the passenger seat on the chassis.



### Battery location in LPG/CNG vehicle.

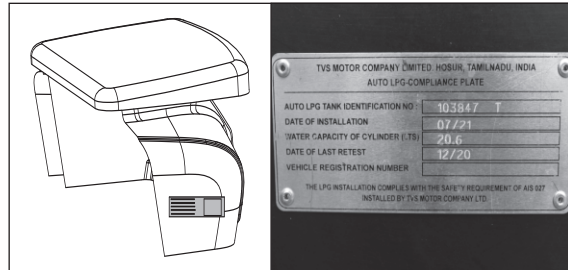
Battery provided with your vehicle is a maintenance - free battery. Do not top up with distilled water.

For maintenance of electrical system, it is recommended to approach our Distributor or Dealer / Authorized Service centers.

## LPG/CNG COMPLIANCE PLATE

- It is located on the right hand side of the cover LPG/CNG below the driver seat.
- It has the following contents.
  - Auto LPG/CNG tank identification no.
  - Date if installation
  - Water capacity of cylinder in litres.
  - Date of last retest.
  - Vehicle registration no.

LPG/CNG tank identification number is required while registering the LPG vehicle



S.no	Sub activity	Activities	750	5000	10000	15000	20000	25000	30000	35000	40000	45000	50000
1	Check & Top up	Engine oil	Check and top up every 5000 kms										
2		Brake fluid in brake fluid reservoir	•	•	•	•	•	•	•	•	•	•	•
3		Coolant level	•		•		•		•		•		•
4	Check & Adjust	Engine foundation bolt	•	•	•	•	•	•	•	•	•	•	•
5		Exhaust pipe, silencer mounting fasteners	•	•	•	•	•	•	•	•	•	•	•
6		Wheel nuts & brakes for effective working	•		•		•		•		•		•
7		Valve tappet clearance	•		•		•		•		•		•
8		Oil circulation at cylinder over head camshaft	•	•	•	•	•	•	•	•	•	•	•
9		Carburetor - idle speed, CO%, HC	•		•		•		•		•		•
10		Control cables free play and adjust If required	•	•	•	•	•	•	•	•	•	•	•
11		Tyre pressure	Once in a week / Every 1000 kms										
12		Radiator mounting screw adjustment	•		•		•		•		•		•
13	Clean & adjust	Spark plug	•	•	•	•	•	•	•	•	•	•	•
14		Decarbonize cylinder head and piston					•				•		
15	Replace	Engine Oil	•		•		•		•		•		•
16		Oil Filter	•		•		•		•		•		•
17		Differential oil	•		•		•		•		•		•
18		Spark plug and breather tubes			•		•		•		•		•
19		Coolant	50,000 km										

S.no	Sub activity	Activities	750	5000	10000	15000	20000	25000	30000	35000	40000	45000	50000	
20	Replace	Air filter element	40,000 km											
21	Clean	Vehicle	•	•	•	•	•	•	•	•	•	•	•	
22		Air filter element	•		•		•		•					
23		fuel tap (strainer only)			•		•		•		•		•	
24		Petrol tank	Only in a year											
25		Oil strainer ( Replace if damaged )	•	•	•	•	•	•	•	•	•	•	•	•
26	Inspect	Compression pressure			•		•		•		•		•	
27		Adjuster assembly chain tensioner spring		•	•	•	•	•	•	•	•	•	•	
28	Electrical	Check all lights, horn & switches functioning			•		•		•		•		•	
29	Greasing	Steering races & balls			•		•		•		•		•	
30		Speedo gear & pinion	•		•		•		•		•		•	
31		Speedo cable inner			•		•		•		•		•	
32		Muff cup ( Flange)			•		•		•		•		•	
33		Brake lever fulcrum point		•	•	•	•	•	•	•	•	•	•	•
34		Hand starter front & rear shaft			•		•		•		•		•	
35	Others	Tyre rotation		•	•	•	•	•	•	•	•	•	•	
36		Check battery voltage and charge if required	•		•		•		•		•		•	
37		Apply petroleum jelly on battery terminals			•		•		•		•		•	
38	LPG / CNG	All pipes & hoses joints for Gas leak if any	•	•	•	•	•	•	•	•	•	•		

S.no	Sub activity	Activities	750	5000	10000	15000	20000	25000	30000	35000	40000	45000	50000	
39	LPG / CNG	Replace flexible & Low Pressure hose	Once in an year											
40		Electrical connection checking	Only in case of complaint											
41		Ventilation hose installation	Only in case of complaint											
42		Petrol hose checking	Every weeks visual check											
43		Multi valve / vapor box checking	Only in case of complaint											
44		LPG reducer /CNG 1st & 2 stage regulator service	Only in case of complaint											
45		Check for LPG Vacuum Hose crack & Replace	Only in case of complaint											
46		Clean Gas air Mixture (LPG / CNG)	Only in case of complaint											
47		All Hydraulic Pressure Test (LPG Tank)	Every 5 years once											
48		All Hydraulic Pressure Test (CNG Tank)	Every 3 Years once											
49		Replace - 1st Stage & Gas Solenoid Filter						•				•		

**RECOMMENDED LUBRICANTS**

Product	Recommended grade	Brand	Quantity
Engine oil	SAE 20W50 API-SL, JASO MA2(or) SAE 20W40 API-SL, JASO MA2	TVS TRU4 DURALIFE oil	1750 ml
Differential	SAE 20W50 API-SL, JASO MA2 (or) SAE 20W40 API-SL, JASO MA2	TVS TRU4 DURALIFE oil	250 ml
Brake fluid	DOT 3 / DOT 4	TVS Girling	250ml
Grease (Muff cup)	IPOL IPLEX RR3	IPOL	120g
Grease (Steering)	BECHEM PREMIUM III	BECHEM	30g

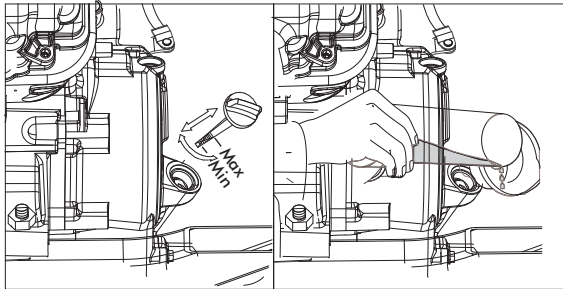
### SELF MAINTENANCE PROCEDURE

The following maintenance can be done by your self to ensuring good performance of your vehicle.

#### CAUTION

Attending major maintenance work and repairs yourself can affect the performance of your vehicle. Approach TVS authorised Dealer or service center in the case of any major problem.

### Engine oil level checking and topping up

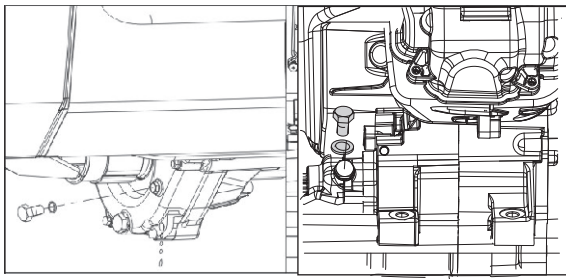


Transmission Oil level can be measured by means of dip stick provided on the cover crank case as shown in the fig.

- Park the vehicle on level ground
- Allow 5 to 10 min for the oil to settle down.
- Remove the dip stick from its location.
- Wipe it clean with dry cotton waste.
- Re-insert the dip stick
- Again take out the dipstick to note the oil level, it should be in-between the 'Min & Max' level or up to 'Max' level.
- In case the oil level is below the 'MIN' level mark top it up to 'Max' level.
- Insert and tighten the dip stick completely.

### Differential Oil level checking and topping up

- Differential oil level can be checked with the help of oil level checking bolt provided on cover differential.
- Park the vehicle on the level ground.
- Allow 5 to 10 min. for the oil to settle down.
- Unscrew the oil level check bolt using 10mm spanner
- The oil level is correct, if oil just starts flowing out when the plug is removed.
- If not, oil level is less, top up with recommended oil till the oil starts flowing out.
- To top up oil loosen filler bolt using 17mm spanner.
- Fill recommended oil and tighten filler bolt with washer.
- Tighten the level plug with washer with out fail.

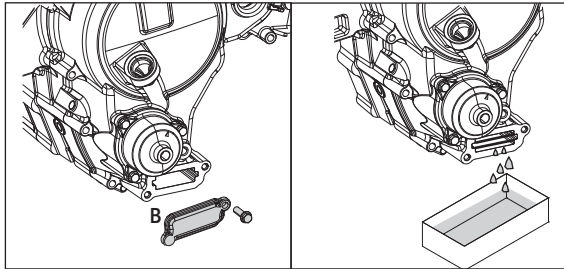


Differential oil level checking and topping up

Tool name	Tool size
Ring spanner, Socket spanner	10mm, 17mm

### Engine Oil Replacement

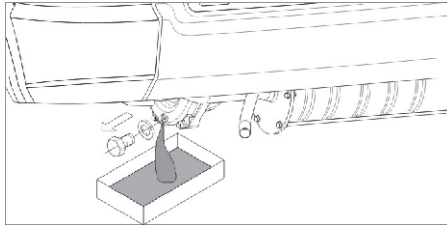
- Run the Engine for a few minutes to warm up the oil
- Park the vehicle on level ground
- Allow some time for the oil to settle down.
- Place a oil pan under the drain plug and un-screw hex. flange nuts (2nos.) and take out the cover oil strainer(B)  
Also Remove 17 mm Magnetic drain bolt provided on the crank case LH, and clean.



### Engine Oil Replacement

- Refit drain plug along with plain washer and tighten it.
- Remove the dip stick and pour the correct quantity of recommended oil.
- Check the oil level.
- Insert and tighten the dip stick completely.
- Replace engine oil at every 5000 kms.

Tool name	Tool size
Ring spanner	10 mm



**Differential Oil Replacement**

**Differential Oil Replacement**

- Run the Engine for a few minutes to warm up the oil
- Park the vehicle on level ground
- Allow some time for the oil to settle down.
- Place a pan under the drain plug and remove the oil drain plug with plain washer. Drain the oil completely.
- Refit drain plug along with plain washer and tighten it.
- Loosen and take out the filler bolt and fill correct quantity of recommended oil
- Tighten filler bolt. Check oil level
- Replace differential oil at every 10000 km

Tool name	Tool size
Ring spanner, Tubular spanner	17mm

**CAUTION**

Always use recommended transmission and differential oil. Two different grade and brand of oil should not be mixed.

**Low Engine Oil Pressure Indicator**

- It is located on cluster assembly tell tale lamp as shown in the figure.
- This indicator must glow in Ignition switch ON and before starting the engine.



Engine Oil Pressure Indicator



- It must switch off as soon as engine start i.e., engine rpm increases, or else bring the vehicle to authorised dealer or service centre

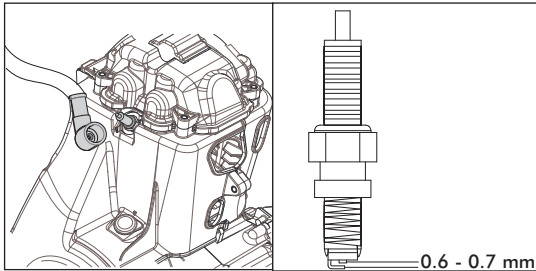
### CAUTION

Do not run the vehicle if the low engine oil pressure indicator continues to glow while driving

## SPARK PLUG

### Cleaning the spark plug

- Pull out the suppressor cap from the spark plug.
- Remove the spark plug by using plug spanner provided in the tool kit.



Spark plug cleaning

- Clean carbon from the electrodes and around the base with the help of spark plug cleaner.
- Adjust the gap to the specified limit if incorrect
- Spark plug should be replaced at every 10000km.

Tool name	16 mm plug spanner
Spark plug Gap	: 0.6 - 0.7 mm
Spark plug Type	: Bosch UR 6 DE
Spark plug cap	: Resistive

### CAUTION

To adjust spark plug gap or replacement approach our Dealer or Authorized service center.

Plug the spark plug hole when the spark plug is removed to avoid entry of foreign particles inside cylinder

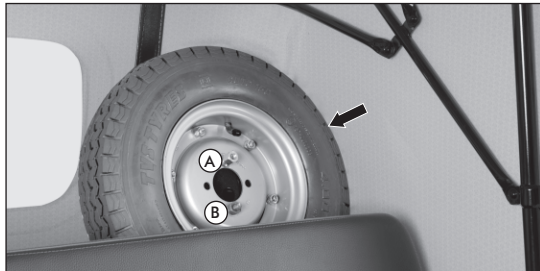
Always use recommended make and type of spark plug.

## Changing tyres and wheels

### 1. Spare wheel removal

Spare wheel is fitted inside the Passenger cabin LH side.

- Loosen the spare wheel mounting nuts along with spring washer using 17 mm tubular spanner. (2nos.) (A, B)
- Take out the spare wheel.



**Spare wheel removal**

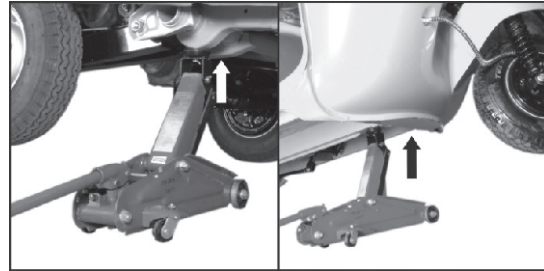
**NOTE**

Mount the spare wheel on the bracket properly and tighten the nuts thoroughly.

**Tyre and wheel changing procedure.**

**Removal**

- Apply parking brake
- Loosen the wheel retaining nuts diagonally. (4 nos.)
- Place the jack as shown in the fig. (For removing front wheel B. rear wheel A.)
- Lift up the vehicle until the wheel clears the ground.
- Remove the retaining nuts and take out the wheel.



Jack position rear - A

Jack position front - B

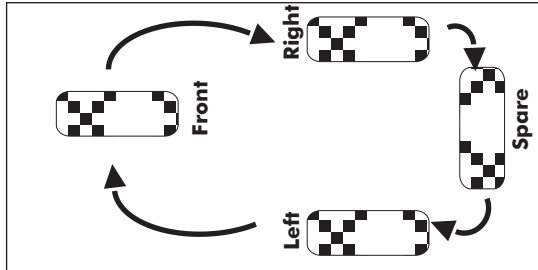
**Assembly**

- While assembling the spare wheel tighten the wheel nuts diagonally.
- Lower the vehicle slowly to the ground then tighten the nuts fully to the recommended torque.

Tool name	Tool size
Ring spanner, Socket spanner	17mm

**Tyre pressure**

	Un-laden	Laden
Front	30 psi	30 psi
Rear	30 psi	34 psi

**Tyre rotation**

**Tyre rotation**

Rotation of tyre is recommended for uniform tread wear on all the wheel positions to achieve optimum tyre life.

So it is advised that rotation of tyres be carried out after every 5000 kms.

**CAUTION**

The best tyres should always be fixed at the rear wheels which are driving wheels, thereafter follow the sequence of rotation as shown in the fig.

It is recommended to replace the tyre when the tyre wears off to the Tyre Wear Indicator level (indicated by TWI on the tyre)

**Tyre puncture\***

Your vehicle is fitted with a tubeless tyre on both front and rear wheel. In case of any puncture / tyre damage, it is advised to visit the nearest tyre manufacturer Dealer or the tyre repair shops who knows the repairing method of tubeless tyre.

It is not necessary to remove the tyre from wheel rim always to attend a puncture, Even though it there is need of tyre removal, it is strongly recommended to use a tyre removal / fitment machine. If at all, tyre levers needs to be used, the levers should be free from sharp edges. Care should be taken not to damage the tyres and rims.

**CAUTION**

*The side walls of the tubeless tyre which 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 tyres during removal / reassembly.*

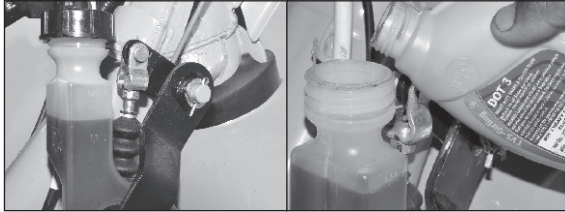
**BRAKES**
**Brake fluid level checking.**

Brake oil level can be checked on the brake fluid tank fitted on the left side under the dash board in the driver cabin.

The level should be in-between the 'Max & Min' level.

If it is below the 'Min' level top up using recommended brake fluid up to 'Max' level.

**\* Applicable only for Duramax Plus**



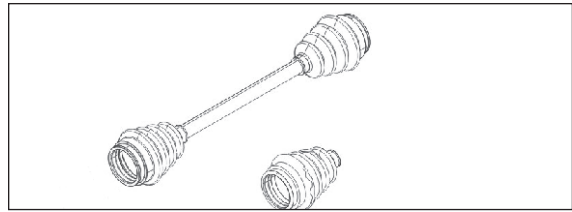
**Brake fluid level checking & topping up**

**WARNING**

In the case of changing brake fluid it is recommended to approach our Dealer or Authorized Service centers. Avoid dust entry to the fluid reservoir while topping up. Bellows should be kept in good condition and replace.

**Rubber bellows for propeller shaft**

Bellows should be kept in good condition and replaced immediately if torn or cracked by approaching our Authorized Distributor or Dealer or Authorized service centers. Torn or cracked bellows allow dust and water into the propeller shaft flanges which will cause damage to flange, slider block and pins. Inspect the bellows regularly.



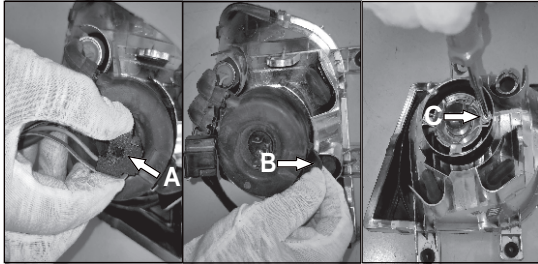
**Rubber bellows**

**ELECTRICAL**

**Head lamp bulb removal**

To replace bulb

- Remove the headlamp bulb holder ( A ) from reflector housing which is located under the dash board.
- Gently pull out the Rubber Boot (B) from reflector housing.
- Un-lock the clip ( C ) by loosening the star screw using star screw driver to take out the bulb assembly.
- Push the bulb in and turn it in anti-clockwise direction to remove the bulb from holder.
- Push the new bulb in and turn it in clockwise direction to fit new bulb.
- Put back the clip & tighten the start screw. Assemble Rubber boot & bulb Holder into reflector housing



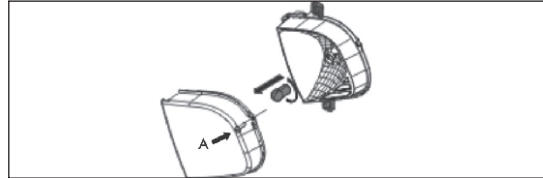
**Head lamp bulb removal**

**Tail/brake/ rear turn signal lamp bulb**

- Loosen and remove screws holding the lens.
- Remove lens. Push in and twist in anti clockwise direction to remove bulb. Replace bulb and assemble back in reverse order of disassembly.

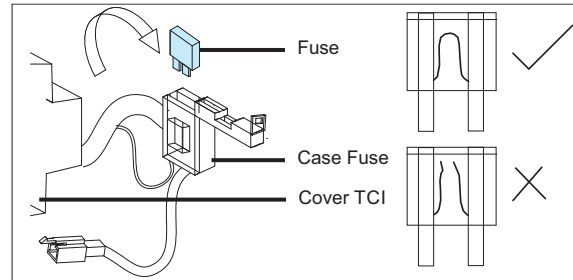
**Front turn signal bulb replacement**

- Loosen and remove screws ( 1 nos. ) ( A ) holding the lens.
- Remove lens. Push the bulb in and twist in anti clockwise direction to remove bulb.
- Replace bulb and assemble back in reverse order of removal.



**Battery fuse replacement**

The fuse case fitted on the cover TCI unit contains a 20 A fuse. If the fuse is blown off, turn the ignition switch to OFF position. Open the fuse case, take out the fuse from copper fuse holder and replace it with spare fuse provided. Show fig.



**Battery fuse removal**

**NOTE**

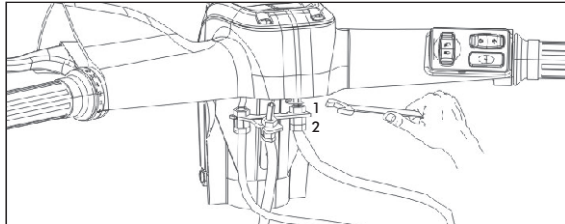
Battery provided with your vehicle is a maintenance - free battery. Do not top up with distilled water.

**Throttle cable adjustment**

Throttle cable free play can be measured by holding the adjuster and pulling the cable gently out. The gap between the adjuster and cable outer is the free play.

To adjust the throttle cable free play

- Loosen the lock nut 1 holding adjuster
- Adjust the cable slack by turning the adjuster 2 in or out to obtain the recommended free play.


**Throttle cable adjustments**

- After adjusting the free play, holding the adjuster, tighten the lock nut.

Throttle cable free play : 1 - 2 mm	
Tool name	Tool size
Double end spanner	10 mm (2)nos.

**Clutch cable adjustment**

Clutch free play is measured at the clutch lever end.

- Loosen lock nut ( A ).
- Adjust the play adjuster nut ( B ) in or out to get the specified play at the lever end.
- After adjusting the play holding the adjuster nut lock the lock nut.

Clutch free play: 15 - 20 mm
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**Clutch cable adjustment**

Tool name	Tool size
Double end spanner	10 & 12 mm

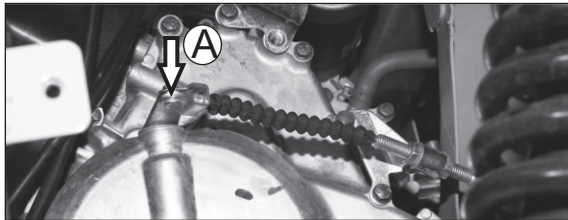
### CAUTION

Too much or too less clutch free play will damage the clutch plates affecting the performance of the vehicle.  
Clutch play should be adjusted only when the engine is cold.

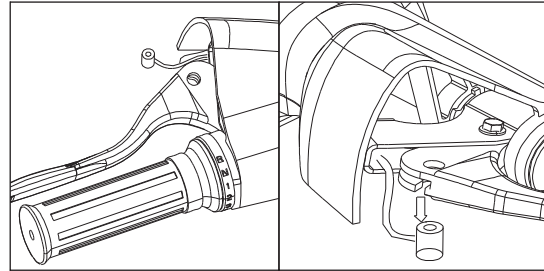
### Clutch cable inner replacement

#### Removal

- Loosen the stopper nut at rear
- Remove cable from release lever (A)
- Take out the cable from stopper
- Disconnect cable from lever end
- Pull out cable inner from lever end



Tool name	Tool size
Double end spanner	10 mm, 12mm



### Clutch cable assembly at pulley end

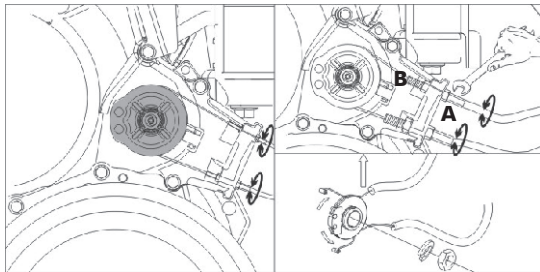
#### Assembly

- Connect cable to clutch lever
- Insert cable inner through cable outer
- Connect adjuster to stopper clutch cable at engine end
- Pull out clutch inner through clutch release lever and pinch bolt
- Tighten pinch bolt
- To adjust free play, loosen pinch bolt pull cable in or out and tighten pinch bolt.

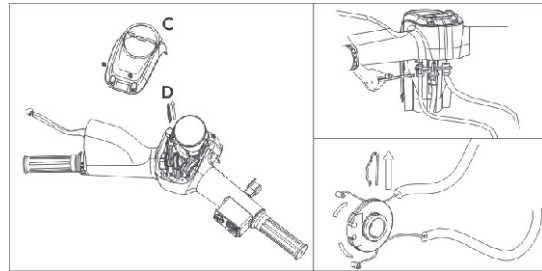
## Gear cable inner replacement

### Removal

- Loosen the lock nut (B) and adjuster nut (A) at engine end
- Remove cover handle bar (C) by loosening two screws
- Remove the lock clip (D)
- Remove the handle bar sleeve and take out pulley gear shift.
- Pull out cable inner gear shift
- Loosen pulley gear shift nut at engine end and take the pulley out



Gear cable assembly at engine end.



Gear cable assembly at handlebar end.

### Assembly

- Connect gear cable inner to pulley gear shifter at handle bar end.
- Insert cable inner through cable outer and adjuster
- Take out adjuster gearshift cable from stopper
- Loosen pulley nut and take out pulley
- Pull out cable inner and connect to pulley at engine end through pinge bolts
- Apply oil on inner and route it through outer and holes provided in the pulley gear shifter and tighten pinge bolts.

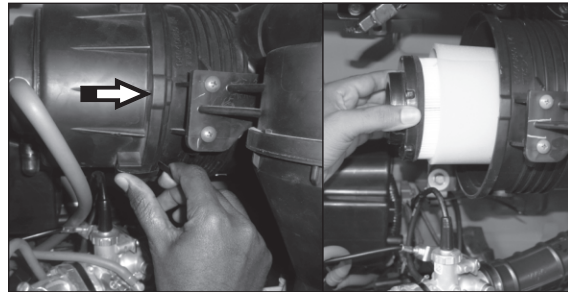


- Connect adjuster to stopper gear cable at engine end.
- Connect the pulley to shaft gear shifter and tighten nut.
- Connect pulley to handle bar end and insert sleeve in to handle bar
- Lock the pulley with clip
- Adjust cable free play by loosening lock nut and turning adjuster nut in or out.
- Refit cover handle bar and tighten screws.

**Air filter cleaning**

**Removal**

- Open the rear tail door.
- Clean the Outer Surface of the air filter throughly.
- Loosen the three lock clip provided o the cover air filter, and take out the cover air filter.
- Take out the paper filter cartridge.
- Blow the compressed air from inside out of the filter element to free the filter from dust particle.
- Replace the Paper filter element and foam filter every 40000 kms. or found damaged for better performance of the vehicle and engine life.



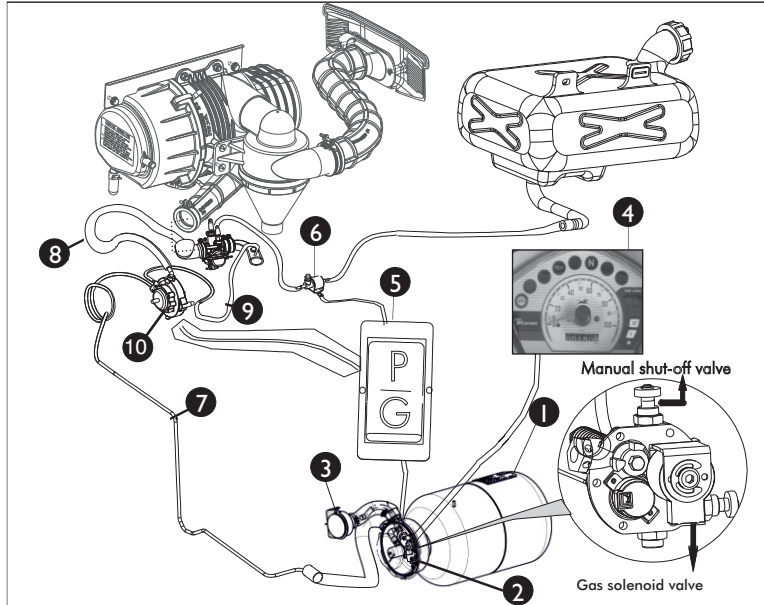
- Clean the cover air filter and case air filter.
- Re-assemble the air filter element in the reverse order of removal.

Cleaning the filter element	Every 10000 kms
Replacement of filter element	Every 40000 kms

**CAUTION**

While assembling the cover air filter locate the groove of cover air filter properly

**TVS King LPG System Layout**



1. **LPG cylinder:** It is mounted below driver's seat. It can be filled with up to 14.4 to 16.4 liters of LPG.
2. **Multifunction valve:** It is used for controlling the filling, and outflow of LPG from the tank.
3. **Refilling Valve:** To refill cylinder with LPG.
4. **Gas Level Indicator:** It shows the level of gas
5. **Fuel change over switch:** It helps to change the fuel from petrol to LPG
6. **Petrol Solenoid valve:** This valve is opened when the ignition switch is in ON position and fuel changeover switch in 'P' position.
7. **Flexible Hose:** It connects the multi valve out put to regulator input.
8. **Hose vapour:** Supplies vaporized LPG to gas air mixer.
9. **Vacuum pipe:** Connected to regulator and Intake manifolds.
10. **Regulator:** Reduces the pressure of LPG to atmospheric pressure.

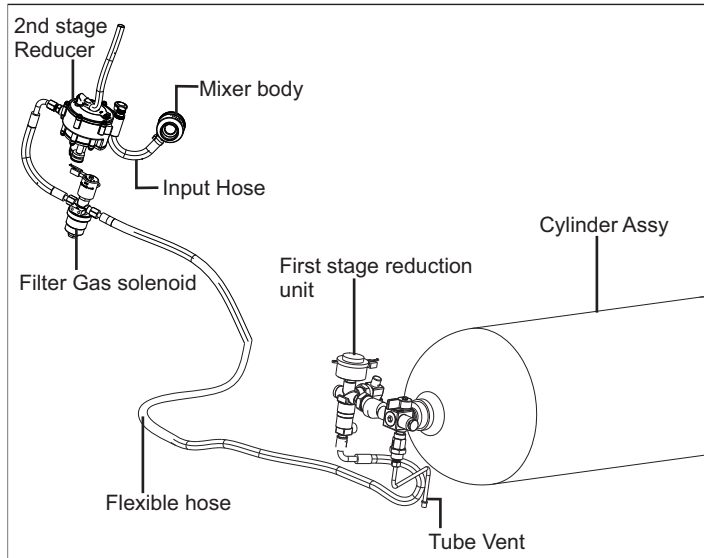
### Do's and Don'ts while using LPG vehicle

#### Do's

#### Don'ts

- When the vehicle is taken for body repairs (welding etc.) the LPG tank should be emptied
- Please check the position of the selector switch before starting the vehicle
- Always repair should be carried by trained person only
- If engine does not start in LPG mode, start in Petrol mode and then switch over to LPG then inspect vehicle
- Ensure that the Gas tank vapour box cover is always in closed position and not damaged. Replace the same as soon as damaged is noticed
- Ensure that conduit pipes are always in good condition and secured firmly. Replace in case damage is noticed
- Get the Auto LPG cylinder checked periodically (Refer to "Periodic maintenance schedule" of this manual)
- If any minor work or body repair is to be carried out, ensure to close manual shut off valve on the multi valve

- Never install any other cylinder in place of LPG Cylinder.
- Never adjust setting of the LPG system without any complaint from customers
- The Auto LPG cylinder should never be repaired under any circumstances, in case of any problem, consult with TVSM Service personnel.
- Never carry inflammable material near LPG cylinder.
- Never handle LPG system components. In case of replacement of any component, always trained technician should carry out jobs
- Avoid frequent change over from LPG mode to Petrol mode and petrol mode to LPG mode to avoid engine missing.
- Do not fill more than 80% capacity of the LPG cylinder
- Do not use domestic LPG in your vehicle
- Don't allow anybody to smoke while re-filling
- Don't open the reducer or any LPG components without correct knowledge
- Don't use accessories which are not original Vanaz components. All the components used in the Vanaz kit have been individually tested and approved by the authorised government testing agencies. Use only tested / approved LPG Tank and multi valve.

**TVS King CNG System Layout**


1. **CNG cylinder:** It is mounted below driver's seat. It can be filled with up to 4.5/5 kg of CNG.
2. **1st stage reduction unit:** It reduces the cylinder pressure of 200 BAR to 3-4 BAR
3. **Cylinder Valve:** It controls the supply of (ON-OFF) CNG gas
4. **Pressure gauge:** It shows the pressure of gas inside cylinder and gives input to CNG level indicator on dash board.
5. **Petrol Solenoid valve:** This valve is opened when the ignition switch is in ON position and fuel changeover switch in 'P' position.
6. **Flexible hose assy-1:** It used to connect the outlet of 1st stage reduction unit to inlet of gas solenoid valve.
7. **Flexible hose assy-2:** It used to connect the outlet of gas solenoid valve to inlet of two stage regulator.
8. **Gas solenoid valve:** It act as a shut - off valve, it opens only when we select gas mode.
9. **Two stage regulator:** Reduces the pressure of CNG to atmospheric pressure.
10. **Low pressure hose:** Supplies CNG from reducer to mixer unit
11. **Mixer assembly:** Supplies gas air mixture to engine in required proportion.

**Do's**
**Do's and Don'ts while using CNG vehicle**
**Don'ts**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>● Shut off the manual cylinder valve in case the vehicle is not in use for longer period.</li> <li>● In case of leakage immediately turn 'OFF ' the CNG cylinder valve &amp; check for leakage with neutral soap solution &amp; make the joints leak proof.</li> <li>● When the vehicle is taken for body repairs (welding etc.) the CNG cylinder should be emptied and removed.</li> <li>● Use only tested / approved CNG cylinder.</li> <li>● Use only tested / approved CNG cylinder valve.</li> <li>● Use only 5 Amp fuse for electronic controller.</li> <li>● If flexible hoses develop visible cracks immediately replace them.</li> </ul> | <ul style="list-style-type: none"> <li>● Don't keep any flammable items near the CNG system.</li> <li>● Don't use spares which are not original components.</li> <li>● Do not disturb the pressure gauge and LED indicator settings.</li> <li>● Do not switch over CNG mode while the vehicle is running in petrol mode.</li> <li>● Don't try to fill CNG cylinder beyond 200 bar pressure.</li> <li>● Don't carry out any welding &amp; fabrication work near the CNG cylinder.</li> <li>● Don't take any flammable material near gas components.</li> </ul> |
|--|---|

**SERVICE RECORD SHEET**

Sl.no	Description	Odometer reading	Job card number / date	Servicing dealers stamp & sign
1.	1st service			
2.	2 nd service			
3.	3 rd service			
4.	4 th service			
5.	5 th service			
6.	6 th service			
7.	7 th service			
8	8 th service			
9.	9 th service			
10.	10 th service			
11.	11 th service			
12.	12 th service			
13.	13 th service			
14.	14 th service			
15.	15 th service			
16.	16 th service			

**TECHNICAL SPECIFICATION**
**Engine**

- Type - 4 Stroke, Liquid Cooled, Single Cylinder SI Engine
- Cylinder Bore X Stroke - 66 mm X 66 mm
- Displacement - 225.8 cc
- Engine idling rpm (Petrol / gas)- 1200 ± 200 rpm
- Air Filter Type - Cylindrical- Paper filter with dry foam
- Starting System - Electric, i - Touch start \*\* & Hand Start

Description	Duramax		Duramax Plus	
	LPG	CNG	LPG	CNG
<b>Max. Power</b>	7.3 kw @5000rpm	6.7 kw @5000rpm	8.1 kw @5000rpm	7.4 kw @5000rpm
<b>Max. Torque</b>	17.5 Nm @3000rpm	15.5 Nm @3000rpm	17.3 Nm @3000rpm	15.5 Nm @3000rpm
<b>Max. Speed</b>	63±2 km/h	60±2 km/h	65±2 km/h	63±2 km/h
<b>Max. Gradeability 1st gear</b>	12°	12°	12°	12°

**Transmission**

- Clutch Wet - Wet, Multi plate type
- Gear - Manual, 4 Forward & 1 Reverse
- Differential - Integral with Engine

**Chassis & Dimensions**

- Frame - Semi Monocoque chassis - Pressed longitudinal & cross members
- Overall Length - 2647 mm
- Overall Width - 1329 mm
- Overall Height - 1740 mm
- Ground Clearance - 169 mm
- Wheel Base - 1990 mm
- Rear Wheel Track - 1150 mm

Description	Duramax		Duramax Plus	
	LPG	CNG	LPG	CNG
<b>Kerb Weight</b>	385 kg	414 kg	385 kg	414 kg
<b>Max. GVW</b>	715 kg	744 kg	715 kg	744 kg

**Suspension**

- Front - Trailing Arm with Hydraulic damper & Coil Spring
- Rear - Trailing Arm with Hydraulic damper & Coil Spring

\*\* i - Touch (ISG) System applicable only for DuramaxPlus with ISG variant

**Tyres**

Size Front / Rear	- 4.00-8, 76E 6PR / 4.00-8 76E 6 PR
Size Front / Rear (Tubeless)*	- 4.00-8, 76F 6PR / 4.00-8 76F 6 PR*
Tyre pressure front (laden)	- 30 psi / 2.11 kg/cm <sup>2</sup>
Tyre pressure rear (laden)	- 34 psi / 2.40 kg/cm <sup>2</sup>

**Brakes**

Front & Rear	- Drum & Foot Operated, Hydraulic, Internally Expanding Shoe with Auto Adjuster type
Parking	- Hand brake (mechanical)
Brake fluid grade	- DOT 3 / DOT 4

**Electrical**

Type	- 12V DC, Negative Earth
Ignition Battery	- 12V, 32 Ah
Ignition system	- DC TCI unit / ISG Control unit**
Generator	- Starter generator, 12V, 245Watt
Spark plug	- Bosch UR6DE
Head lamp	- 35/35W, DC Twin head lamp
Position lamp	- 12V, 5W x 2
Tail/Brake lamp	- 12V, 5/21W X 2

Revers lamp	- 12V, 21W x 1
Turn Signal Lamp	- 12V, 10W X 4
Speedometer lamp	- 12V, 2W x 1
All instrument panel lamp	- 12V, 2W x 4
Horn	- 12V, DC
Fuse	- 12V, 20A x1, 10A x 2, 5Ax1 & 2Ax1 - 12V, 60A x 1, 20A x 1 & 10A x 2, 5A x 1 & 2A x 1**

**Capacity**

Fuel tank	- 3 litre
CNG Cylinder capacity	- 30 litre (Water Equivalent Capacity)
LPG Cylinder capacity	- 20.6 litre (Water Equivalent Capacity)
Engine oil grade	- TRU4 oil (SAE 20W40 or 20W50)
Engine oil quantity	- 1750 ml & 1800 ml While Overhauling
Differential oil grade	- TRU4 oil (SAE 20W40 or 20W50)
Differential oil quantity	- 250 ml & 300 ml While Overhauling
Brake fluid quantity	- 250 ml
Brake fluid grade	- DOT 3 / DOT 4
Coolant quantity including reservoir	- 1400 ml Tru4 Duracool

\* Applicable only for Duramax Plus

\*\* Applicable only for Duramax Plus with ISG variant