
TATA PUNCH iCNG

TWIN CYLINDER

SUPPLEMENT

(Supplement to the PUNCH BSVI Owner's Manual)

Applicable only for CNG vehicle

Part no. 5445 5840 9906

TATA MOTORS
REV00 / JUNE-23

iCNG SUPPLEMENT

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1. INTRODUCTION TO CNG

CNG (compressed natural gas) is principally constituted of methane. CNG is a colorless, odourless and non-toxic gas. But, it is inflammable and lighter than air. Due to its low density, CNG is compressed to up to around 200 bar to increase storage capacity. CNG has the following benefits.

Benefits of CNG

- CNG is a clean burning fuel and has lesser tail pipe emissions than compared to gasoline.
- CNG offers lower running and maintenance costs compared to gasoline.
- CNG does not contaminate and dilute the crankcase oil during combustion and hence oil in the engine does not lose its properties which can lead to early wear and tear of engine parts.

WARNING

- In case of any symptom of CNG leakage, releasing noise, or external damage to CNG pipe/components during an accident, do not panic.
- Stop the vehicle, switch off the engine and open all doors. Close the CNG cylinder manual shut off knob located on the cylinder valve.
- Do not run the vehicle even in petrol mode.
- Contact the nearest TATA MOTORS authorized service centre immediately for further assistance.

2. SAFETY PRECAUTIONS

To get the best out of CNG fuel, the vehicle must be serviced as per the service interval given in this manual.

Do's

- Always get the car repaired / serviced at TATA MOTORS authorized service centre only.

NOTE

- *In case of gas leakage in the low pressure circuit (Regulator to CNG Rail), ECU will automatically switch the fuel mode from CNG to petrol. The ECU will not allow you to switch to CNG mode until the leakage is rectified.*
- *Leakage in high-pressure line from CNG Tank to High-pressure regulator will not be monitored/ detected.*
- Remove the CNG tank during any welding / brazing work on the car. This has to be done by TATA MOTORS authorized service centre only.

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- Keep the car away from any fire source.
- Switch off engine while fuel filling CNG or petrol.

NOTE

Ensure that your car has sufficient petrol in tank to keep both the systems in healthy condition.

NOTE

After refilling CNG, ensure that the fuel lid is properly shut (Otherwise vehicle will not start).

- If the vehicle doesn't change over to CNG mode when the changeover switch is pressed,
 - a. Ensure that the manual valve on CNG cylinder is open.
 - b. Check CNG level on instrument cluster.

If both conditions are ok and the car is still not changing over to CNG, have your vehicle checked by TATA MOTORS authorized service centre.

- Test the cylinder every three years (or as specified by the government) from the last date of testing/retesting of the cylinder by authorized cylinder testing agency (Refer CNG VIN plate).

Dont's

- Do not install an LPG, propane or any other cylinder in place of CNG cylinder. It is illegal and unsafe.
- Never fill CNG cylinder with air, LPG or any fuel except CNG.
- Never alter CNG system configuration. Do not adjust / tamper CNG system settings.
- Never place inflammable explosive, corrosive material or sharp objects near CNG cylinder.
- Don't smoke inside or near the CNG vehicle
- Do not over fill the CNG tank beyond its capacity. Over filling the CNG cylinder can cause safety issues like gas leakage.

- Do not use high pressure washer fluid / water jets at electrical devices & their connectors during washing.
- Do not start/drive your vehicle in case of CNG leakage. CNG is inflammable and highly explosive. This may lead to serious injury.
- The CNG cylinder assembly should not be repaired, under any circumstance. In case of any problem contact nearest TATA MOTORS authorized service centre.
- Do not change the colour of the CNG cylinder.
- Do not park your CNG vehicle on grass /saplings / over flammable material this may tent to catch fire.
- No flammable material should be stored in the close vicinity of the CNG cylinder.
- Never use naked flame / fire for checking gas leakage.
- Do not press the accelerator pedal while changing over from petrol to CNG mode.

- Do not turn 'OFF' cylinder valves when vehicle is running on CNG mode.
- Do not switch off any CNG cylinder valves while re-filling the CNG gas and during running of the car excluding the emergency situation like gas leakage/during service repair etc.
- Do not overtighten cylinder valves knob while closing or opening.
- Never attempt to carry out any repair work or tamper with the CNG components on your own or by any unauthorized personnel.

3. STARTING THE ENGINE

NOTE

Vehicle will start by default in CNG mode except when there is a manual intervention by fuel mode switch. During default CNG start If set conditions are not met vehicle will start in petrol mode and then switch over to CNG mode once set condition are met.

- To start, turn the ignition key to "IGN" position. Ensure that all the tell tales should glow for initial 3 seconds.
- Select the desired fuel operating mode by pressing the fuel selector switch.
- Keep the clutch pedal fully pressed and crank the engine. DO not press the accelerator pedal.
- If the engine cranks but fails to start then repeat the above procedure. Release the key as soon as the engine starts. Ensure that the "MIL" and 'SIL' lamps are "OFF". The CNG

indicator lamp will be ON, if the car is running on CNG mode.

NOTE

- Irrespective of the position of the fuel selector switch (Petrol or CNG), your car's engine will start using petrol based on the programmed warming up condition and later switch over automatically to CNG (if CNG mode is selected).
- Ensure that your car has sufficient petrol in the tank as petrol is used for starting until the engine warms up.
- Ensure that you run your car in "PETROL" mode for at least 10kms for every 300kms covered in "CNG" mode to ensure proper working of petrol fuel supply system.

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4. FUEL MODES

There are two fuel modes in the vehicle, one for petrol and the other for CNG. Desired fuel to operate can be selected using the selector switch which is located on the dashboard.



A. Petrol to CNG mode

You can shift to CNG fuel mode by pressing the fuel selector switch. The 'CNG' lamp on the instrument cluster starts flashing during the changeover to CNG mode and glows permanently after changing to CNG mode indicating that the car is running on CNG.

B. CNG to Petrol mode

Similarly you can switch to PETROL fuel mode by pressing the fuel selector switch. After successful transition to PETROL mode, the green 'CNG' lamp goes OFF. This indicates that the car is running on petrol.



Important Points

- Fast flashing of the 'CNG' lamp on instrument cluster indicates the fault in CNG system. Car will automatically switch to petrol mode. Get the car checked / repaired at the nearest TATA MOTORS authorized service centre.
- Very slow flashing of the 'CNG' lamp indicates the empty tank / NO CNG supply (loss of pressure). Get the CNG tank refilled.

5. INSTRUMENT CLUSTER



NOTE: All indicators shown may not be applicable to the vehicle. Above image is only for reference.

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CNG Fuel Gauge



When the ignition switch is in "ON" position,

the CNG fuel LED  gives an approximate indication of the amount of CNG fuel in the CNG cylinder. "F" stands for full and "E" stands for empty.

When CNG fuel in the CNG cylinder is near to empty position, CNG low fuel text warning and chime turns ON for 4 Seconds. Refill the CNG cylinder as soon as possible.

If CNG fuel is not filled even after CNG low fuel text warning and chime, then first bar in CNG fuel gauge will start blinking to indicate more severe CNG low fuel warning.

NOTE

When the ignition switch is in the "ON" position, this gauge gives an approximate indication of the amount of CNG fuel in the CNG cylinder and it takes few seconds to stabilize after the ignition is turned ON.

WARNING

- When running the CNG fuel tank too low or empty can cause engine to stall and could endanger user and passengers. User must stop and obtain additional CNG fuel as soon as possible after CNG low fuel text warning and chime turns ON.
- CNG Indicator symbol shall blink if there is any fault in the CNG system. Take vehicle to the TATA MOTORS authorized service station if the symbol starts blinking.

6. AUDIO REMINDER

CNG Low Fuel Chime

CNG low fuel chime will turn ON for 4 seconds to alert user about CNG low fuel in CNG cylinder under following condition,

- When CNG fuel bar state changes from 2nd bar to 1st bar (empty) OR 1st bar to 1st bar blink.
- When engine fuel mode is change from CNG to petrol during 1st bar blinking in CNG fuel gauge.
- During IGN ON, 1st bar blinking in CNG fuel gauge.

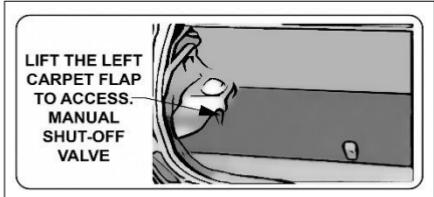
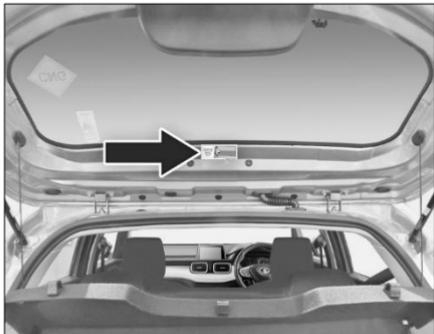
7. DRIVER INFORMATION SYSTEM

Driver Information	System Image	Description
CNG mode active	CNG MODE ACTIVE	“CNG MODE ACTIVE” text warning comes ‘ON’ for 4 seconds when CNG fuel mode is selected.
Close fuel lid	CLOSE FUEL LID	“CLOSE FUEL LID” text warning comes ‘ON’ when fuel lid is open.
CNG low fuel	CNG LOW FUEL	“CNG LOW FUEL” text warning comes ‘ON’ for 4 seconds when CNG fuel level is low.

iCNG SUPPLEMENT

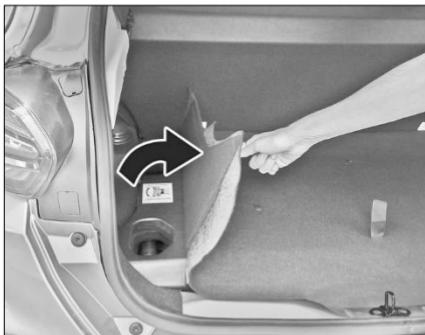
8. CYLINDER MANUAL SHUT OFF KNOB

Instructions for how to access to manual shut-off valve are given on the sticker.



Manual shut-off valve sticker.

Lift the left carpet flap to access. Manual shut-off valve.

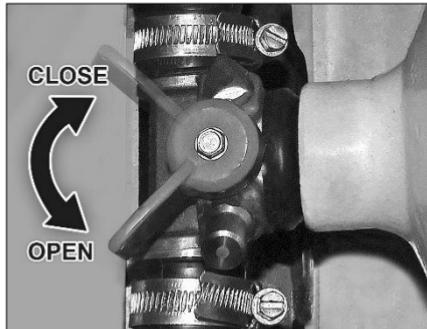


A manual shut OFF knobs are fitted on valves and mounted on CNG cylinder.



Manual Shut OFF Knob Operation

CNG supply can be cut OFF by closing the manual shut OFF knobs.

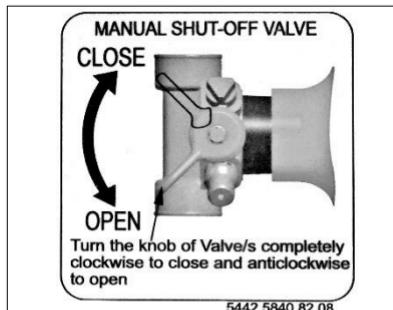
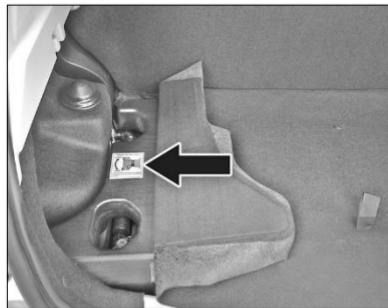


Valve Closing: Turn the both cylinder knobs completely in clockwise direction to close CNG supply to engine. Do not overtighten cylinder knobs while closing.

Valve Opening: Turn the both cylinder knobs completely in anti-clockwise direction to open CNG supply to engine. Do not overtighten cylinder knobs while opening.

Instructions for knobs operation are given on the sticker.

Sticker for CNG on/off valves is affixed on the cover of CNG cylinder.



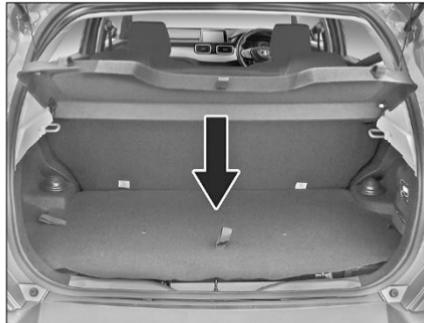
WARNING

- Never remove the cylinder valves from the cylinder assembly, for any assistance, contact TATA MOTORS authorized service centre.
- If removed ensure that it should not be reused.
- Even if the CNG from cylinder is consumed till the engine stops, some amount of CNG will be left out in the tank under pressure.
- Always keep the manual valves in closed position when the vehicle is parked in confined and / or closed parking space like a basement parking.

NOTE

- If the manual shut OFF knobs are in closed condition, it is not possible to fill CNG into the cylinder.
- If the manual shut OFF knobs are not opened fully, then the engine may not run properly.

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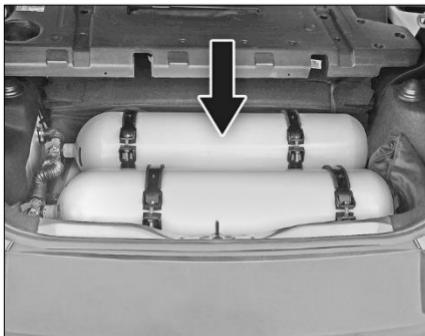


WARNING

Do not carry weight more than 50 Kgs in luggage compartment.

9. CNG CYLINDER

The CNG cylinders are located in luggage compartment. CNG is stored at a high pressure of 200 bar.



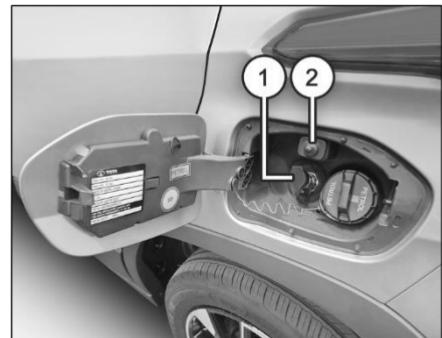
CNG cylinder testing station

Refer below link for the list of approved CNG cylinder testing station.

<https://peso.gov.in/web/approved-cng-cylinders-testing-station>

10. CNG CYLINDER FILLER VALVE

CNG filler valve is used to fill CNG in the cylinder. It is fitted near petrol filling location. CNG should be filled by CNG filling gun at filling station. Fillings automatically cuts off when the cylinder pressure reaches the CNG filling station dispenser pressure.



1. CNG filler cap

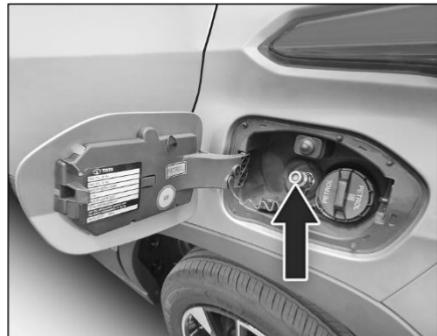
2. Fuel flap switch

NOTE

- Keep the Ignition switch in "OFF" condition during CNG refilling.
- Do not use your mobile phones when you are at a filling station.

CNG Filling Procedure

- Open the fuel lid.
- Remove the CNG receptacle dust cap by pulling it off before filling and ensure to refit dust cap after refilling

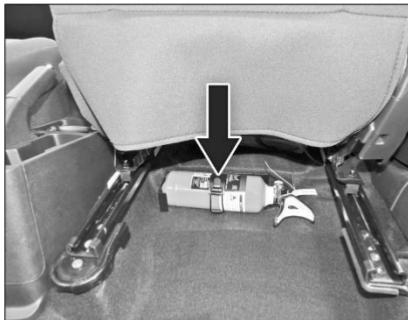


- CNG filling gun to be docked on to the receptacle.

NOTE

- Fascia switch CNG function green LED blinks when fuel lid is open, vehicle will not start until lid is closed properly.
- Green LED will continuously blink along with a text message "close the fuel lid" on cluster until fuel lid is closed.

11. SAFETY REGULATION: FIRE EXTINGUISHER



Below driver seat

Method of Operation:

- Driver seat to be moved in forward direction completely (in extreme condition).
- Open the rear door from the right-hand side, access the fire extinguisher from below the driver seat.
- Fire extinguisher is mounted below driver seat with the help of toggle clamp bracket.

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- Pull the clamp operating clip. Hold the fire extinguisher lever and pull from the bracket.
- Check the pressure gauge needle is in green zone.
- Hold the fire extinguisher upright and break the plastic seal.
- Pull the pin and remove the safe guard block from lever.
- Position the nozzle towards the flames.
- Press the lever and direct discharge at base of flames with rapid sweeping motion.

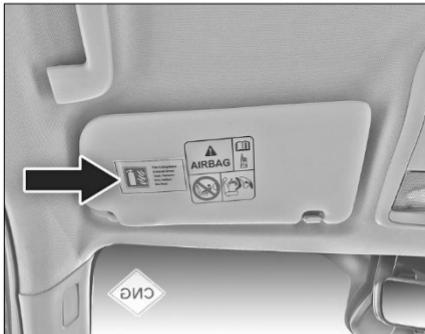
Maintenance

Check pressure on the gauge every week, needle should remain in green zone. If it comes to red zone, please refill it.

The fire extinguisher should be refilled every three years even if it is not used.

Fire Extinguisher Sticker

Instructions for how to access fire extinguisher are given on the sticker.



On co-driver side sun-visor



Near driver door (on B pillar)

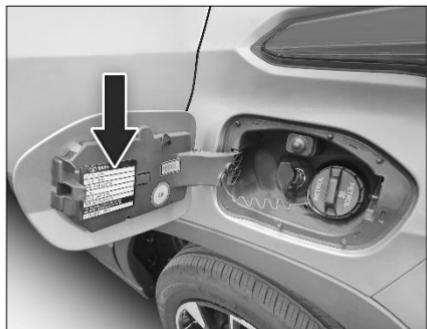


Fire Extinguisher
is below Driver
Seat. Remove
from behind
the Seat.

Fire extinguisher sticker

12. CNG COMPLIANCE PLATE

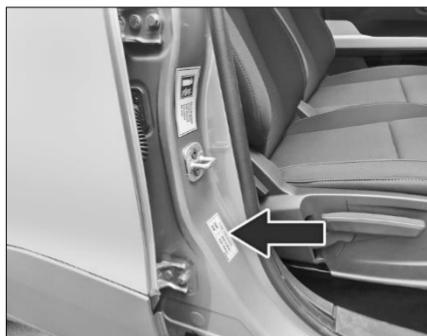
Compliance plate is fitted in fuel flap with CNG kit identification and installation details.



Compliance plate

CNG cylinder needs to be recertified every three years (or as per latest government notification). Please ensure that it is done by TATA MOTORS authorized service centre and the new date is engrave on the plate.

13. RECOMMENDED TYRE PRESSURE



TYRE PRESSURE		
TYRE SIZE	FRONT	REAR
195/60 R16	32 ± 2 psi	32 ± 2 psi
185/70 R15	32 ± 2 psi	32 ± 2 psi

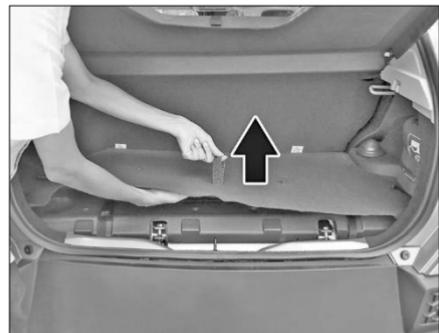
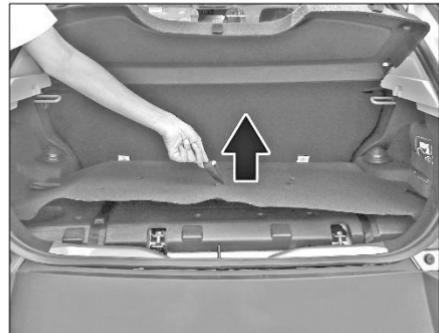
NOTE

- Maintain tyre inflation pressure as per the specific mentioned in tyre pressure sticker.
- Regular tyre and spare tyre to be checked for correct tyre inflation pressure at least once a month.

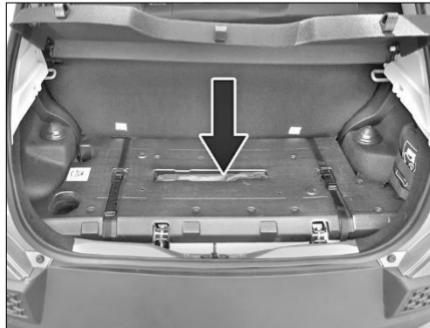
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14. SPARE WHEEL REMOVAL

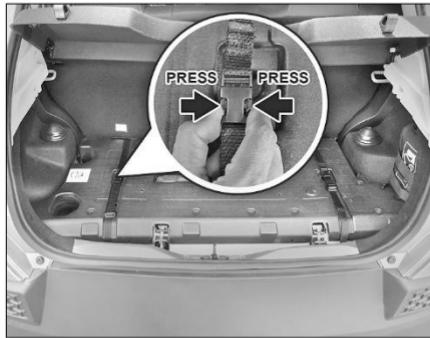
- Open the tail gate.
- Lift the luggage cover



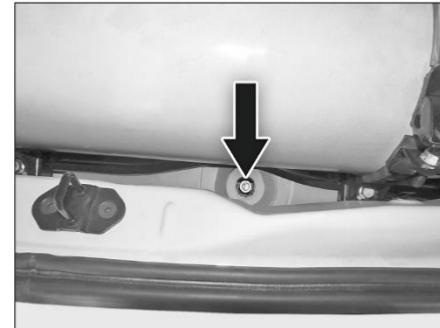
- Take out spare wheel removal tool.



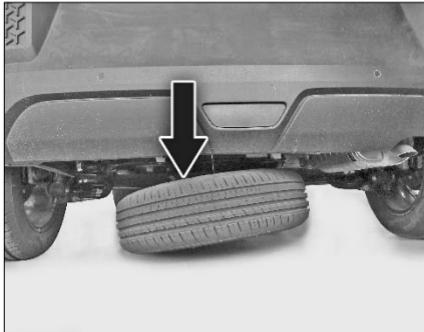
- Open the black color stripes and remove the cylinder cover.



- Access the spare wheel winch nut.



- Insert the spare wheel removal tool. Rotate anticlockwise to unscrew the retaining bolt till spare wheel rests on the ground.
- As the retaining bolt gets loosened, the spare wheel lowers down as shown.
- Remove the holding bracket from the spare wheel and get the spare wheel separated.



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Spare Wheel Fitment Process

- Engage the holding brackets in spare wheel.
- Insert the spare wheel removal tool and rotate clockwise to lift the spare wheel.

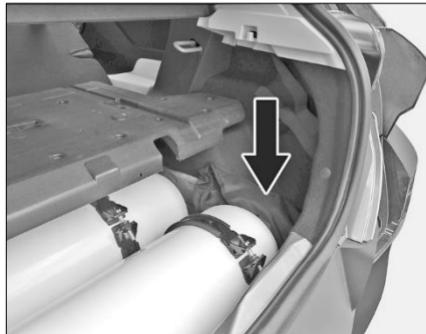


- Rotate the drive nut till the tyre rests on chassis & continue to rotate in the same direction until the winch trips at override torque three times min with “clack” noise.

NOTE

- Always use only the recommended size of wheel rims & tyres. Use of non-recommended rims and tyres may have an adverse effect on car safety.

15. TOOL KIT



Near CNG Cylinder

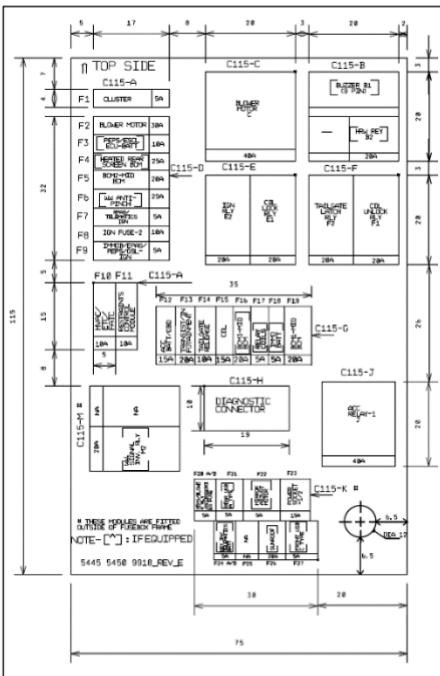
16. PUNCTURE REPAIR KIT LOCATION



In luggage compartment

17. FUSE BOX

i. Cabin Compartment



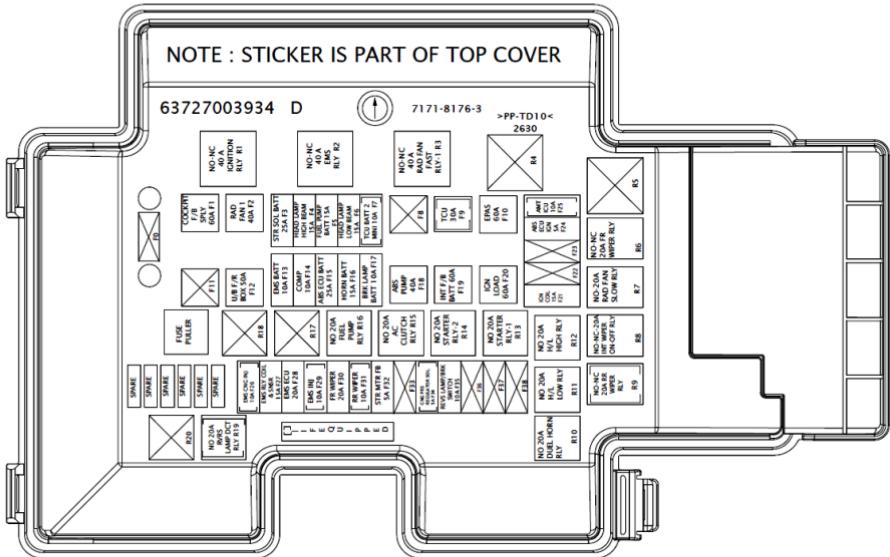
SN	Function	Fuse Rating
F1	CLUSTER	5A
F2	BLOWER MOTOR	30A
F3	PEPS/ESCL ECU-BATT	10A
F4	NA	NA
F5	BCM2- MID BCM	20A
F6	NA	NA
F7	RPAS	5A
F8	IGN FUSE-2	10A
F9	IMMOB/EPAS/PEPS	5A
F10	HVAC	10A
F11	RESTRAINTS CONTROL MODULE	10A
F12	ACC BATT/OBD	15A
F13	TRANSIST/INFOTAINMENT	20A
F14	TAILGATE RELEASE	10A
F15	CDL	15A
F16	BCM3-MID BCM	20A
F17	RELAY COILS	5A
F18	IMMO BATT	5A

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SN	Function	Fuse Rating
F19	BCM1-MID BCM	20A
F20 A	PEPS/BLOWER RLY	5A
F20 B	ACCESSORIES FUSE	5A
F21	REAR USB A -TYPE	5A
F22	MIRROR ADJUST MOTOR	5A
F23	POWER SOCKET-1	15A
F24	KEY IN/TELL BATT	5A
F25	NA	NA
F26	SUNROOF	20A
F27	FRONT USB C TYPE	5A
F28	NA	NA
F29	NA	NA
F30	NA	NA

SN	Function	Relay Rating
C115-B1	BUZZER	NA
C115-B2	NA	NA
C115-B2	NA	NA
C115-C	BLOWER MOTOR	40A
C115-E	CDL LOCK RLY	20A
C115-E	IGN RLY	20A
C115-F	CDL UNLOCK RLY	20A
C115-F	TAILGATE LATCH RLY	20A
C115-J	ACC RELAY-1	40A
C115-M	WW. SIGNAL INV. RLY	20A

ii. Engine Compartment (Under bonnet)



SN	Function	Fuse Rating
F26	EMS CNG INJECTOR	10A
F34	CNG PRESSURE REGULATOR SOL	5A

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18. TECHNICAL SPECIFICATIONS

PARAMETER	PETROL
Engine (Bi-Fuel :Petrol +CNG)	
Model	1.2L NGNA Gen1+ Bifuel CNG Engine
Type	Bifuel CNG , 4 stroke MPFI, inline 3 cylinder with 4 valves per cylinder
No. of cylinders	3
Capacity	1198 cc
Max. Engine output CNG Mode	54 kW @ 6000 rpm
Max. Torque CNG Mode	103 Nm @ 3500 rpm
Firing order	1-2-3
Oil capacity	3.5L
Emission compliance	Bharat stage VI phase 2
Cooling system capacity	4.1 L (Water + Coolant)
Fuel Capacity	
CNG	60 litres of water capacity (30 + 30 Litres)

19. PRELIMINARY TROUBLE SHOOTING

These tips are given for your guidance. These preliminary checks can be carried out in case of emergency. In normal cases the problems should be attended by TATA MOTORS authorized service centre.

SN	PROBLEM OBSERVED	PROBLEM CAUSE	ACTION TO BE TAKEN
1	Engine does not start	Fuel lid open	Close fuel lid
2	Engine cranks but does not start - CNG Mode	No CNG	Refill CNG
		Fuel lid open	Close fuel lid
		CNG filter / fuel lines choked	Get CNG filter replaced at TATA MOTORS authorized service centre
		CNG regulator solenoid not operating	Contact TATA MOTORS authorized service centre
		Error logged in ECU	Contact TATA MOTORS authorized service centre
3	MIL / SIL are ON / blinking continuous, even after start.	Fault(s) are detected by ECU	Get the vehicle checked and rectified at TATA MOTORS authorized service centre.

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SN	PROBLEM OBSERVED	PROBLEM CAUSE	ACTION TO BE TAKEN
4	Vehicle doesn't change over to CNG mode when change over switch is pressed	Manual shut off valves on cylinder closed	Open manual shut off valves
		Check CNG level on instrument cluster.	Refill CNG if level shows empty.
		Both conditions are ok, and the car is still not changing over to CNG	Have your vehicle checked by TATA MOTORS authorized service centre.

20. SERVICE SCHEDULE

SN	OPERATION	Frequency	PDI	1500	7500	15000	22500	30000	37500	45000	52500	60000	67500	75000	82500	90000	97500	105000	112500	120000	127500	135000	142500	150000	
				Month	0	2	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114
1	Check all joints in low pressure & high pressure line, CNG rail and hoses for leakage	15K/12M					•		•		•		•		•		•		•		•		•		•
2	Check solenoid valves check operation of pressure regulator and ensure regulator vacuum port is not blocked.	15K/12M					•		•		•		•		•		•		•		•		•		•
3	Check mountings of filler valves, sensor, regulator assembly, cylinder cradle.	15K/12M					•		•		•		•		•		•		•		•		•		•
4	Replace the filter cartridge and O ring, drain oil from the filter body	30K/36M							•				•				•				•				•
5	Replace the filler valves/receptacle O-ring	150K/24M																							•

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SN	OPERATION	Frequency	PDI	1500	7500	15000	22500	30000	37500	45000	52500	60000	67500	75000	82500	90000	97500	105000	112500	120000	127500	135000	142500	150000
		Month	0	2	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
6	Recertification of tank / cylinder. (As per latest government norms from the date of initial testing by govt. approved testing agency.)	Every 3 years								•						•						•		

Note: This service schedule is in addition to existing main schedule of respective vehicle.

Frequency is marked in kms

Kms or months whichever occurs earlier.