

CIRCULAR NO.13/2005

Sub : - Motor Vehicles Department - Conversion of in use vehicles to LPG - Mode
- Regulation and Control of Retro fitment Centers of LPG Conversion Kit in
Motor vehicles.

- Ref :-
1. GSR 284 (E) dated 24.04.2001
 2. GSR 569 (E) dated 01-08-2001
 3. Circular No.26/04 dated 25.08.04 of Transport Commissioner, Kerala.
 4. Circular No.37/04 dated 28.12.04 of Transport Commissioner, Kerala.

Attention is invited to the above Circulars. It has come to notice that various Registering Authorities in the State are adopting different procedures for endorsing retro fitment of LPG Kits on Motor Vehicles. This causes hardship to the vehicle owners and also gives scope for complaints against departmental officials. It is also learnt that there are so many unauthorized Retro fitment Centers carrying out gas conversion without any control, which causes threat to the public safety as well as heavy revenue loss to the Government. In the above circumstances, the following guidelines are issued for strict compliance.

1. Type Approval of the kit by ARAI/VRDE

- (a) The LPG Kits for retro fitment on vehicles are to be type approved for each variant and model of each make of vehicles, by the authorized (by Manufacturers or Suppliers) agencies like ARAI/VRDE, appointed by Government of India in compliance of Rule 126 of CMV rule 1989.
- (b) The type approval certificate will be forwarded to all the Registering Authorities from the Transport Commissionerate on receipt of the same from the Manufacturers/Suppliers.
- (c) Owners of authorized (by manufacturers or suppliers) Retro fitment Centers shall apply in plain paper affixing Court fee stamp for Rs.5/- for approval, to the Regional Transport Officer under whose jurisdiction the Retro fitment Centre is situated along with the authorization Certificate of the Manufacturer/Supplier.
- (d) On receipt of the application the Regional Transport Officer shall conduct an inspection of the premises of the Retro fitment Centre as per the Check List (Specimen attached as Annexure 1) and ensure that the Centre is having all the equipments and qualified mechanics as specified in the CMV Rules.
- (e) The RTO shall issue a certificate in the Performa attached as Annexure VII, approving the Retro fitment Centre, if all the requirements prescribed vide Annexure are fulfilled.

2. Retro fitment Centers.

- (a) The Retro fitment Centers are to be authorized by the manufacturer/supplier.
- (b) The Retro fitment Centers which are authorized by the manufacturer/suppliers shall obtain an approval from the Registering Authorities of the respective jurisdiction as mentioned in I (e) above.

3. Application for endorsement of conversion

- (a) Prior sanction from the RTO is not necessary for LPG conversion of vehicles. However an application for approval for the LPG conversion and endorsement shall be submitted by the registered owner within 15 days of the date of purchase of the Retro fitments.
- (b) The following documents are to be submitted before MVI/AMVI by the registered owner of the vehicle along with the application in plain paper requesting for endorsement of the LPG conversion of the vehicles, in the Registration Certificate.
 - (i) Registration Certificate in original.
 - (ii) Insurance Certificate in original.
 - (iii) PUC Certificate in LPG mode.
 - (iv) Permit and Fitness Certificate in the case of Transport vehicles.
 - (v) Sale invoice with value, mentioning the serial numbers of
 - (a) LPG tank
 - (b) Multifunction valve
 - (c) Vaporizer/Regulator
 - (vi) Copy of the Approval Certificate issued by the ARAI/VRDE forwarded by Transport Commissioner, Kerala.
 - (vii) Installation Certificate issued by the approved installer with SI.No. and date as per annexure VI of AIS 025 (Specimen attached as Annexure III).
 - (viii) Copy of checklist as per appendix A of AIS 026 (Specimen attached as Annexure IV).
 - (ix) Attested copy of the certificate issued by Director of Explosives for the LPG Tank mentioning the serial number of the particular Tank installed.
 - (x) Attested copy of the Certificate issued by Director of Explosives for the Multifunction Valve, mentioning the serial number of the particular multi function valve installed.
 - (xi) Attested copy of the certificate issued by Chief Controller of explosive of the LPG tank/Multi function Valve.

4. Inspection and Certification

The vehicle shall be inspected by AMVI/MVI for satisfying the genuineness of the kit installed, and a certificate shall be issued in the format attached as Annexure II.

5. Compliance Plate

There shall be installed near the filling connection and be clearly visible to the refueller a Compliance plate displaying the following information.

COMPLIANCE PLATE

The LPG installation complies with the safety requirements of AIS 027

Installed by

6. Identification labels

(i) Vehicles using a LPG system shall be labeled as follows:

Labels conforming with the specification given in clause 13 (ii) of this Standard shall be affixed in a vertical position as close to the vehicle number plate as practical or on left side of the front and rear safety glass and shall ensure visibility from the front and rear sides.

(ii) The label shall be in position at all times, shall be in good condition, and the shape colouring and lettering shall be easily identifiable.

(iii) Label shall be green in colour with size 80 mm x 80 mm square.

Label shall have a white border of 1 mm wide, 5 mm inside the outer edge and running parallel to it. The 80 mm dimension is measured from the outer edge.

7. Endorsement:

On receipt of the inspection Certificate from the Inspecting Officer the Registering authority shall endorse the details of the installation in the following format in the Registration Certificate and 'B' Register. "The vehicle bearing Registration No.....is retro fitted with LPG conversion kit with the following description and running on Bi-fuel system.

1. Name of the kit manufacturer.
2. Name and address of the installer.
3. Make and SI.No. of the LPG Tank.
4. Make and SI.No.of the multifunction valve
5. Make and SI.No. of the Vaporiser/Regulator
6. SI.No. & Date of installation certificate
7. Name and Designation of the inspecting Officer in the Registration certificate.

Signature, Name & Designation of the Registering Authority.

Necessary corrections shall be made in column 8 of the Certificate of Registration regarding the fuel.

The instruction in this Circular shall be adhered scrupulously
Receipt of the Circular shall be acknowledged.

s/d
Senior Deputy Transport Commissioner
(Taxation)
For Transport Commissioner

**ANNEXURE I
(CIRCULAR NO. 13/2005)**

Enquiry Cum Inspection Report of a L.P.G. Conversion kit installer/Retro fitment Centre
(See GSR 284 (E) Notification & A.I.S.024, 025,026 & 027)

1. Name
(In Capital Letters)
2. Permanent address of the Applicant with
Telephone Number:
3. Name of the Retro-Fitment Centre
4. Address of the Retro fitment Centre proposed
With telephone numbers (Building No. Ward No.
Name of Panchayat/Municipality/Corporation shall
also be specified)
5. Whether the premises of the workshop/Retro-Fitment Centre in owned by the
applicant or Leased.
 - a. Evidence for ownership/Lease and
Building tax receipt shall be attached
 - b. Land use certificate from appropriate
Authority shall be attached
6. Whether there is sufficient space for
 1. Workshop (minimum area to Park 4
Vehicles)
 2. Office Room
 3. Customers Lounge (Minimum facilities to
Accommodate 5 person)
 4. Space for parking the vehicles (area shall
be specified)
 5. Facilities for training to the owners/
Driver (Class Room and other items)

6. Store room with facilities for storage of Components of Kit.
7. Space for disposal of Waste/Garbage
8. Whether workshop provides proper Ventilation
7. Financial resources of the applicant
(Evidence and local enquiry report shall be furnished)
8. Details of Businesses Profile
9. Qualification of applicant
10. Experience of applicant in the field (evidence and local enquiry report shall be furnished)
11. Whether the installer displays/exhibit in the premises, authorization certificate and
Training certificate issued by the manufacturer
12. Whether the applicant/Installer maintains/
equipped with the following components and other requirements.
 1. Two post lift/ramp
 2. Electric hand drill machine and H.S.S.Drill bits
 3. Tube bender
 4. Tube cutter
5. Deburring tool for tube
 6. Set of 'D' ring and box Spanners
 7. Set of screw driver (both flat and star)
 8. Set of allen keys
 9. H.S.S.hand saw
 10. Crimping tool for Electrical cable Termination
 11. Soap bubble bottle
 12. Set letter and Number punch
 13. Infrared pollution meter
 14. Timing gun
 15. Filler gauge
 16. Measurement tape
 17. Air Compressor
 18. Flame proof Inspection light
 19. Vernier Callper
 20. Multimeter

21. Silicon seal/Sealant
22. Fully equipped first aid box
23. Other requirements.

13. Fire fighting equipments:

- i) Fire Fighting equipments
 - a) Dry chemical powder type fire Extinguisher - (minimum 2 Numbers 5kg each with ISI mark)
 - b) CO2 type fire extinguisher (minimum 1 number of 5kg with ISI mark)
 - c) Fire baskets (2 baskets)
- ii) Records of conversion/alteration of Vehicles carried out by the kit installer
- iii) Copies of Installation certificate issued
- iv) Copies of check list issued
- v) Copies of approval certificate issued by Approved testing agencies viz ARAI/VRDE as per CMVR 126 with annexure for all vehicles make model and year with full technical specifications and components used in LPG conversion kit as per Annexure III and approval of Transport Commissioner, Thiruvananthapuram.
- vi) Copies of code of practice for use of LPG fuels in internal combustion engine vehicles (AIS 026/AIS 027) for installation
- vii) Attendance Register of employees
- viii) Other registers as per labour act (Wage/salary register etc.)
- ix) Registration certificate issued by the Local authorities.

Details of technical Staff:-

1. Name
 2. Permanent Address
(proof should be attached)
 3. Qualification
(Proof should be attached)
 4. Experience
(Evidence and Local enquiry report
Shall be furnished)
 5. Conduct & Character of employee
 6. Details of driving license
 7. Details of training certificate issued by driving facilities.
14. No objection from adjacent shop/Building
Owners (copy of written statement should be Attached)
15. Recommendation

16. Remarks

Date:

Place:

Signature of Enquiry Officer with seal

**Annexure II
CERTIFICATE**

Certified that the motor vehicle bearing Registration No.

Chassis No. Engine No. Make

and year of manufacture is retrofitted satisfactorily with LPG conversion kit of the following description as per the installation certificate No. dated issued by M/s. and

is running on Bi-fuel system with effect from

1) Name of manufacturer

2) LPG Tank

Make

Sl.No.

3) Multifunction Valve

Make

Sl.No.

4) Vaporizer/Regulator

Make

Sl.No.

Signature of Inspecting Officer

ANNEXURE III

(See Annexure VI of AIS 025)

INSTALLATION CERTIFICATE FOR CONVERTED LPG VEHICLE

Sl.No.

Date:

A. Details of Installer Approval

1. Installation Certificate issued by

Name and address of installer

2. Approval of installer manufacturer/kilt

Name of vehicle

Manufacturer/kit supplier who has approved the installer

3. Type of vehicle converted

3-Wheeler/Car/LCV/HCV.etc.,

4. Approval of the LPG Kit

a) Name of the Test Agency

b) Approval certificate No. & Date

B. Details of Converted Vehicles

1. Registration No. & year of manufacture

2. Chassis and Engine No.

3. Type of Operation

Bi-fuel/dedicated fuel

C. Details of LPG Kit

1. Cylinders:
 - a) No. of Cylinder/s
 - b) Type of Cylinder/s
 - c) Cylinder No/s
 - d) Make
 - e) Water capacity (litre)
 - f) Working Pressure (kg/cm²)
 - g) Approval reference of DOE
 - h) Validity of DOE Certificate
2. Multi Function Valve
 - a) Make
 - b) Valve No.
 - c) Working Pressure kg/cm²)
 - d) Approval reference of DOE
3. Refilling Valve:
 - a) Make
 - b) Type
4. Fuel Line
 - a) High pressure pipe dia (ID/OD)
 - b) Low pressure pipe dia (ID/OD)
5. Shut Off Valve (Solenoid Valves)
 - a) Make
 - b) Type
 - c) Operation Voltage
6. Fuel selection switch
 - a) Make
 - b) type
7. Regulator/Vaporizer
 - a) Make
 - b) Type
 - c) Sr. No.
8. Gas - Air Mixer
 - a) Make
 - b) Type

Note:

- 1) This certificate shall be filled and provided to vehicle owner for all vehicles converted for LPG operation.
- 2) A copy of this certificate along with checklist as per Appendix A (other than heavy motor vehicles)/ Annexure VII of AIS 25 (for built-up LPG buses before registration) of safety document shall be forwarded to RTO and test agency from where the approval for LPG Kit is obtained.
- 3) A copy of this certificate along with other documents should be kept by the installer for further verification by RTA/RA.

The installation/conversion is done as per code of practice for use of LPG fuels in internal Combustion Engine four wheeled/Three wheeled/Two wheeled(strike out which is not necessary) (AIS 027)and I that under take periodical maintenance contract.

Name & Address of

The authorized installer
installer

Signature & seal of

I am satisfied with the trial given for my vehicle. The information provided above
by M/s

.....
.....has found to be correct. The vaporizer number, multi function valve number and the tank number has been shown to me and is found correct as mentioned above. The fitment is done as per specification.

Registered Owner's Name

Date:

Place:

Registered Owner's Signature

ANNEXURE IV

(See Appendix A)

CHECKLIST FOR INSTALLATION

A1

The checklist is a guide for installer when carrying out the inspection prior to issuing a installation Certificate. Reference to relevant clauses in this Standard and requirements of Government of India should be made where appropriate.

a) Auto LPG Tank

Approved by DOE

Validity of Certificate

- Free from corrosion
- Mounted securely and inside vehicle perimeter
- Mounting points free from corrosion and fractures
- Shielded and valves protected where necessary
- 5 mm clearance between auto LPG tanks to vehicle components provided
- Ground clearance correct.
- b) Valves/Multi-function valves
 - Valves/Multi-function valves operating correctly and identified
 - Safety valves protected against ingress of water and foreign material:
 - Excess flow valve to be tested.
- c) Content gauge:
 - Locked off when external to vehicle
- d) Filling connection
 - Refuelling connection made external to vehicle
 - Cap captive to connection
 - Meets proof loading of 50kgf in forward and reverse direction of vehicle
- e) Automatic fill limiter (AFL)
 - Notice "AFL" displayed at fill point
- f) Leak test
 - All valves and fittings leak free
- g) Vapour scaling:
 - Gas-tight
- h) Ducting:
 - Free from damage and secure to outlets
- i) Sub-compartment:
 - Hatch covers access operating correctly
 - Carries correct markings
- j) Fuel line and filler hose:
 - Free from damage and corrosion
 - Secured to vehicle
 - Protected and shielded where necessary
- k) Joints and connections
 - Leak free
- l) Filter:

- Mounting secure
- Leak free
- m) LPG shut off valve:
 - Mounting secure
 - No gas bypass after engine has stopped turning
 - Shielded where necessary
 - Leak free
- n) Gas air mixer
 - Securely mounted
 - Backfire deflector where applicable
- o) Bi-fuel shut-off device
 - Operation correct
 - Petrol lock-off where fitted is mounted securely
 - Petrol nose secure joints leak free and free from cracks
 - Sufficient flexibility for engine movement
 - Bypass device fitted where applicable
- p) Electrical wiring
 - Current limiting device fitted
 - Connections secure
 - Terminals insulated to prevent shorting
 - Wiring taped and clipped securely
- q) Compliance plate:
 - Installed and carries correct markings
- r) Identification labels
 - Located front and rear of vehicle

Note: The installer shall issue the installation certificate based on checks carried out as per the checklist duly authenticated

ANNEXURE V

(See Annexure VII of AIS 025)

CHECKLIST FOR THIRD PARTY CHECKING/INSPECTION BUILT UP LPG BUSES BEFORE REGISTRATION

This Checklist is for third party inspection of fully built LPG buses before registration by Regional Transport Officers Reference to relevant clauses of safety code of Practice AIS 026 and guidelines issued by Central Government from time to time should be made wherever appropriate

- A. Details of LPG Bus

1. Name and address of chassis
Manufacturer/retrofitter
2. Name of type approval agency
3. Details of type approval certificate
4. Name and address of bus body builder
5. Name and address of approved inspecting
agency at Regional Transport officer
6. Chassis and engine No.
7. Year of manufacture
- B. Detail of LPG System
 1. Checking of Cylinders as per DOE/Vehicle
testing agency approvals
 - * Validity of DOE certificate
 - * Safety checks
 - * Check for corrosion on any LPG
components/ mountings of gas circuit
 - * Ensure cylinder is securely mounted within
the vehicle and check tightness of nuts and bolts.
 - * Ensure minimum 5 mm clearance is kept
between cylinders and vehicle body structure.
 - * Distance between fuel line and exhaust heat
source shall not be less than 75 mm
 - * Distance between cylinder valve and bus
body extremities shall not be less 200 mm
 2. Cylinder multifunction Valve (s) Assembly
 - a) Approval from DOE
 - b) Check for Shield/Protection and
physical damage to valves
 - c) Leak test using non corrosions
foaming agent or LPG leak detector
 3. Refilling Valve
 - * Safety checks -
 - * Check for dust cap/plug
 - * Check that engine should not start
when dust cap/plug is removed or open
 - * Check leakage for non-return valve using
non corrosive foaming agent or LPG leak detector
 4. Fuel Line

- * Safety checks -
 - * Check for corrosion on LPG fuel line
 - * Ensure fuel line is securely mounted
 - * Check for deformation of U and Pigtail bends provided in high pressure piping for flexibility as per approved layout
 - * Leak test using non-corrosive foaming agent or LPG leak defector
5. Shut Off Valve (Solenoid Valve(s))
wherever separately provided
- * Safety checks
 - * Ensure shut off valve is securely mounted
 - * Check operation for Close & Open as required
 - * Leak test using non-corrosive foaming agent or LPG leak detector
6. Regulator / Vaporizer
- * Safety checks
 - * Ensure regulator is securely mounted
 - * Leak test using non-corrosive foaming agent or LPG leak detector
7. Gas-Air Mixer
- * Safety checks
 - * Ensure gas-air mixer is securely mounted
 - * Leak test using non-corrosive foaming agent or LPG leak detector
8. Electrical wiring
- * Safety checks
 - * Ensure that current limiting device (fuse) is fitted as per chassis manufacturer's specifications and make
 - * Check wiring harness layout under the floor and in the engine compartment to be in accordance with chassis manufacture's layout /specification/approval
 - * Check wiring harness in cabin and passenger compartment to be as per chassis manufacturer's guidelines or approval
 - * Terminals are insulated to prevent shorting

- * Wiring are taped and clipped with loom & mounted securely
 - * Cable harness has to be as per the recommendations of OE chassis /vehicle manufacturers
 - * Battery terminal has to have a positive locking
 - * Check installation of battery cut-off switch as per chassis manufacturer's recommendations
 - * Check routing of high tension cable to avoid accidental earthing and to be place away from any heat source - as per chassis manufacturer's recommendations/layout
 - * Check for proper make of high tension cable as per chassis manufacturer's recommendation as well as check for tight fitment of its terminal to the spark-plug
9. Excess flow valve:
- * Safety checks
 - * Check operation
 - * Leak test using non-corrosive foaming agent or LPG leak detector
10. LPG Filter
- * Ensure LPG filter is securely mounted
 - * Leak test using non-corrosive foaming agent or LPG leak detector
11. LPG content Gauge
- * Ensure LPG pressure indicator is securely mounted
 - * Leak test using non-corrosive foaming agent or LPG leak detector
12. Compliance Plate:
- * Installation Check
 - * Check for following
- Cylinder identification No:
Date of Installation
Water capacity (Itr) of total installation
Date of last reset
Vehicle registration/identification No.
(to be furnished after registration)
Seal of the checking/inspection agency

13. Identification label in front and rear:
Located on left side of the front and rear
safety glass and shall ensure visibility
from front and rear sides
14. Following additional points are to be complied at the time of registration of LPG vehicle for enhancement of safety of vehicle
- ☞ Fire retardant material shall be used for seat/upholstery/roof & side lining as per manufacture's and bus body builder's specification.
 - ☞ One number each of dry powder type fire extinguishers (2kg) shall be provided in driver's and passenger's compartment.
 - ☞ For servicing of LPG vehicle proper instructions, detail operational & service manual with Dos & Don't shall be provided by chassis manufacturer and body builder vehicle/ chassis manufacturer should devise training module and impart training to drivers and technicians for safe operation of LPG system
 - ☞ Check for fist-aid kit as per CMVR
 - ☞ Distance between the exhaust line - muffler and fuel line shall be a minimum of 75 mm. If not a radiant heat shield of 2 mm thickness shall be welded in between.
 - ☞ Safety plates/shield below the pipe joints shall be welded and proper inspection windows shall be provided near the cylinder joints.
 - ☞ Minimum two copies of safety instructions shall be displayed in passenger's compartment.
 - ☞ Check for proper venting provided by louvers/holes/mash on the side skirt so that in case of any leakage the entrapped gas under the floor escapes to the atmosphere.
 - ☞ The bus body builder to provided at least two (total minimum area of 550 sq.mm) vent pipes connecting the under floor of the bus to the rooftop for LPG gas to vent out in case of leakage. The vent pipes to be located close to the cylinder valves cluster as per recommendations of chassis manufacturer, Construction should be such that leakage into passenger compartment is avoided.
 - ☞ Any other safety recommendations provided or advised by the chassis manufacturers to be complied with.

Note: The instructions issued by OE manufacturer/retrofitter for third party evaluation in their instruction manual, shall contain all the necessary details on the methodology & the procedure for carrying out these checks.

Signature of seal with Date