

ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION

No. OP2/462(14)/2002-MED

**Office of the VC & MD
Mushirabad, Hyderabad-
20.**

CIRCULAR No. 19/2002-MED, DT. 17-12-2002

- . SUB. :-- MAINTENANCE - Introduction of TATA LPO 1510 697 CMVR
Vehicles fitted with CMVR 2000 Engine - Instructions issued - Reg.**

M/s. Telco have introduced TATA LPO 1510 Vehicles fitted with 697 CMVR 2000 Engine which meets EURO-II norms for better fuel efficiency and reduced exhaust emission.

We have standardised procurement of 1510 Vehicles fitted with 697 CMVR 2000 Engine from Feb. 2002 onwards. As on date about 275 Vehicles are in operation at different Depots of Tata fleet area.

There are some modifications in LPO 1510 Vehicles fitted with 697 CMVR 2000 Engine in comparison with the earlier model of 1510 Vehicles fitted with 697 NA Engine. To create awareness among the Mechanical Supervisors and staff about the introduction of new features on LPO 1510 697 CMVR 2000 Vehicles and to maintain these vehicles property, the salient features of these New Vehicles system-wise are furnished below :

I. AIR INTAKE SYSTEM :

Dry type Air filter system is introduced with replaceable filter cartridges as against oil bath Air cleaner in 697 NA Engine Vehicles similar to Cummins Engines.

- 1) Air cleaner is provided with two different size filter cartridges of dry type i.e.. Primary filter and Secondary filter same as in the Cummins Engine. The filter cartridges are same as in the Cummins Engine and are interchangeable.**
- 2) Service indicator is provided to know the condition of air filter.**
- 3) The rubber hoses from Air Cleaner to inlet manifold are different to that of Cummins Engine because of change of position of fitment of Air Cleaner assembly.**

In view of above changes the part numbers of rubber hoses for the latest system are enclosed in the ANNEXURE. The maintenance schedule for the air intake system is same as in the existing Cummins Vehicles.

II. ENGINE SYSTEM :

- 1) To prevent Engine oil leakage through TGH (Timing Gear Housing) cover oil seal the following modifications have been done.**

Reinforced Cylinder block.

Introduction of aluminum TGH cover in place of sheet metal cover.

Introduction of oil slinger at TGH cover oil seal.

- 2) For better oil scavenging internally stepped molycoated compression ring for piston 2nd ring is provided. The part numbers of Piston Rings STD is 2525 0399 0129.**
- 3) To control bearing rotation 4 SP type connecting rod is introduced.**

- 4) To control crank shaft breakage hardened crank shaft main bearing for 4th shoulder is provided.
- 5) Pistons are changed with Re-entrant Toroidal Type piston cavity for better mixing of fuel & air. The part number of Pistons is 2525 0399 0126.
- 6) Compression ratio is 19:1 as against 17:1 in 697 NA engine.

III. ENGINE OIL :

Multi grade 15W/40 Engine oil is recommended as against the SAE-30 grade in the existing 697 NA Engine. The brands of oils of different companies is same as used in the existing Cummins engine.

- The capacity of Engine oil for total system is 16.5 ltrs.

The drain period is 18.000 KMs, same as that of existing 697 Engine.

Engine oil filter is provided with 30 microns pore size as against 90 microns in 697 NA engine. The part number of 30 microns Engine oil Filter is 2525 1813 0125. Hence the existing Engine oil filters of 697 NA Engines should not be used in these 697 CMVR 2000 Engine.

Replace the filter 'O' ring along with filter.

IV. AIR COMPRESSOR :

There is no change in Air Compressor with the existing 697 NA Engine.

V. ENGINE MOUNTING :

The mounting of Engine is same as in the existing 697 NA Engine.

VI. FUEL SYSTEM :

1. Fuel Filter :

There is no change in fuel filters including periodicity and are interchangeable with the existing 697 NA Engine Vehicles.

2. FIP/Feed Pump/Injectors :

In line A 3500 type FIP & 600 bar pressure is provided with self lubrication system like Cummins Engine.

P type Injectors are provided with operating pressure of 270 bar for better atomization of fuel. The part No. is F 002C8 Z851.

Timing procedure is same as in 697 NA engine.

Injectors are mounted directly on cylinder head as against the mounting through protective sleeve & "O" ring in 697 NA Engine.

- Injectors offset 10 MM from centre line of bore as against 12 MM from centre line of bore in 697 NA Engine.
- Injection timing - 10 deg BTDC.
- Flywheel marking 10 deg BTDC.

VII. COOLING SYSTEM :

Aluminum radiator is provided in 697 CMVR 2000 Engine instead of copper & brass radiator.

Radiator hoses required for 697 CMVR 2000 Vehicles are different with that of

697 Engine. The part numbers of hoses required for 697 CMVR 2000 Engine Vehicles are enclosed.

The thermostat fitted on 697 CMVR Engine is different that of 697 NA Engine and it is detachable from the casing.

- Fan belt is changed to 1280 MM as against 1325 MM. The part No. of new fan belt is 2525 2015 6305.**
- Use coolant mixture in the ratio 50:50 same as in the existing Cummins Engines.**

Coolant change period is 3.20 Lakh KMs or two years which ever is earlier.

VIII. POWER STEERING :

There is no change in the Power Steering System with belt drive same as in the existing 697 NA Engine. Belt is also same with 980 MM.

IX. CLUTCH SYSTEM :

The Clutch System is same as in the existing Cummins Engine Vehicle.

- Clutch release bearing is same as 1512 Cummins Engine Vehicles i.e., 92 MM diameter clutch release bearing is fitted as against 82 MM diameter and this is not interchangeable with 1510 697 NA Vehicles.**
- Pressure plate of 310 MM diaphragm type is provided which is same as in the 697 NA Engine.**

Clutch disc with organic lining is type provided and same is interchangeable with old 697 NA Engine clutch disc.

a) Master Cylinder :

Master Cylinder of 25.4 dia is provided.

b) Slave Cylinder :

The Slave Cylinder is same as that used 1512 Cummins Vehicles.

X. GEAR BOX :

GBS 40 Gear box of 1510 model is provided.

XI. FRONT AXLE :

342 type 1510 model Front axle is provided.

XII. REAR AXLE :

342 type Rear Axle similar to that of 1510 Vehicles is provided.

XIII. AIR DRYER :

Air Dryer is provided on the system for the LPO 1510 697 CMVR 2000 Vehicles as standard fitment same as in the Cummins Vehicles to improve the life of brake units and brake pipes. There is no need to drain the water daily from the reservoir tanks.

The consumable spares required for LPO 1510 697 CMVR 2000 Vehicles are identified for stocking at Depots and Workshops separately other than the common spares with the existing 1512 TC and 697 NA Vehicles to maintain these Vehicles effectively. The List of the same is enclosed at ANNEXURE.

Dy. CMEs of Tata area are advised to organise the training programmes and ensure the implementation of the Circular instructions on LPO 1510 697 CMVR 2000

Vehicles with out deviation. They are advised to cover this aspect during their Depot inspections & include the same in their inspection reports.

The Controller of Stores of Tata area are advised to arrange to procure the spares required as per the list enclosed and supply to the Depots immediately.

There are also advised to procure and ensure to supply Engine oil of recommended brands as per the requirement to the Depots along with the spares mentioned above.

The WMs of Tata are advised to co-ordinate with the COS of the concerned and ensure the stocking of spares required at the Workshops to carry out urgent repair works.

The Dy. CMEs are advised to co-ordinate with the COS of the Zonal Stores and ensure the stocking of spares to maintain these Vehicles effectively. They are advised to cover this aspect during their inspection of Depots.

Further the Dy. CMEs/WMs are advised to fix the limits for the spares required for Tata LPO 5101 697 CMVR 2000 Vehicles in the Limits Fixation Committee meeting after observing the consumption pattern for at least 3 months on Vehicles available in their jurisdiction.

All Depot Managers and garage Incharges of Tata area are advised to note the above changes on the Tata LPO 1510 697 CMVR 2000 as compared to the 1510 697 NA Engine Vehicles as well as Cummins Engine Vehicles and educate the staff about these changes to maintain the vehicles correctly.

All Regional Managers and Divisional Managers are advised to ensure implementation of this Circular in all he Depots of under their jurisdiction. They are advised to cover this aspect during the inspection of Depots.

All Executives Director (Zones) are advised to review the stocking of required spares in the PRC meetings and ensure supply of spares to Depots for effective maintenance of these Vehicles & to Workshops for overhauling & supply of sub assemblies to Depots.

Sd/-
(R. P. SINGH) Vice
Chairman & Managing Director.

ANNEXURE

**LIST OF SPARES TO BE STOCKED AT DEPOTS &
WORKSHOPS FOR LPO 1510/55 697 CMVR 2000
VEHICLES**

SI. No.	Description	Part Number
I. AT DEPOTS :		
Cooling System :		
1.	ASSEMBLY FILTER CAP	2525 5010 0183
2.	HEX BOLT M 16X75	1106 3896 529
3.	HEX BOLT M 10 X 130	1106 3896 677
4.	ASSEMBLY SPACER TUBE	2525 5000 0146
5.	RUBBER HOSE RADIATOR TO WATER PUMP	2525 5010 5837
6.	HOSE CLAMP TB 54	1428 0598 217
7.	HOSE CLAMP TB 34	1428 0599 264
8.	RUBBER HOSE "Z" SHAPE THERMOSTAT TO	2525 5010 5836
9.	HOSE CLAMP 50 D1A	2547 2012 4208
10.	HOSE CLAMP TB36	1428 0599 302
11.	VENT TUBE UPPER COOLING WATER LINE TO	2525 5010 6925
12.	VENTTUBE	2786 5010 5843
13.	HOSE CLAMP	1428 0500 161
14.	FAN BELT	2525 2015 6305
Air Intake System :		

1.	ASSEMBLY PIPE WITH FLANGE FROM HOSE , ON COWL	2525 0913 0342
2.	ASSEMBLY PIPE HOSE TO INLET ELBOW/TC	2525 0913 0378
3.	ELBOW AIR INLET ON CYLINDER HEAD COVER	25250115 3859
Sl. No.	Description	Part Number

Engine :

1. ENGINE OIL FILTER 2525 1813 0125
2. PISTON RINGS STD 2525 0399 0219

II. AT WORKSHOPS : Coolong System :

1. ASSEMBLY RADIATOR 2525 5010 0259
2. ASSEMBLY RADIATOR FRAME COMPLETE 2525 5000 0168
3. ASSEMBLY FAN SHROUD 2525 5050 6012
4. RESERVE TANK ASSEMBLY 2525 5010 0270

Air Intake System :

1. ASSEMBLY AIR FILTER 2786 0913 0197

Engine :

1. INJECTORS P TYPE INJECTORS 270 BAR f 002 c8 z851
2. PISTONS 2525 0399 0126