ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION

No.OP3/462( )/2003-MED. Office of the VC & MD,
Mushirabad, Hyderabad.
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SUBJECT:- MAINTENANCE - Introduction of Aluminium Core Radiators on Tata vehicles - Repair Procedure - Reg.

REF :- Tata service information no. SI/2001/008 of June'03.

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M/s Telco has introduced Aluminium Core Radiators on 1510/697 CMVR 2000 vehicles, which are presently being purchased by corporation. These Aluminium core radiators are different in construction to the existing radiators used on the vehicles. The repair procedure of these Aluminium core radiators is different from the procedures presently being followed.

The details of advantages, parts, repair kits, procedure for servicing/repairing, mounting of the radiator and precautions to be taken during body building are furnished here under

Aluminium Core Radiator has following advantages -

- Higher heat transfer rate
- High durability against mechanical and thermal shocks.
- Higher corrosion resistance leading to longer life.
- Less coolant capacity of Radiator.
- Less clogging, longer trouble free performance.
- Environment friendly product (No lead)

1. PART DETAILS -

	PART DESCRIPTION	PART NUMBER
1.	Assy. Radiator(LP 1512 TC)	2786 5010 0263
2.	Assy. Radiator(LP 1510 CMVR)	2525 5010 0259

Repair Kit for Assy.Radiator(Cummins Vehicles)
Part No. 2786 5010 0263

Radiator Sub Assy.

1.	Top Tank Complete	2786 5010 0280
2.	Bottom Tank complete	2786 5010 0281
3.	Tank Packing	2786 5010 9906
4.	Sealing Gasket	2786 5010 9907
5.	Drain Cock	2786 5010 9908

Reserve Tank Assy.

1.	Reserve Tank	2786 5010 0282
2.	Pressure Cap	2786 5010 9909
3.	Vent Tube	2786 5010 9910
4.	Hose Clip	2786 5010 9911
5.	OverFlow Tube	2786 5010 9912

Repair Kit for Assy.Radiator (1510 CMVR Vehicles)
Part No. 2525 5010 0259

Radiator Sub Assy.

1.	Top Tank Complete	2786 5010 0280
2.	Bottom Tank complete	2786 5010 0269
3.	Tank Packing	2786 5010 9906
4.	Drain Cock	2786 5010 9908

Reserve Tank Assy.

1.	Reserve Tank	2786 5010 9903
2.	Pressure Cap	2786 5010 9909
3.	Vent Tube	2786 5010 9910

4.	Hose Clip	2786 5010 9911
5.	OverFlow Tube	2786 5010 9912

2.0 DETAILS OF RADIATOR -

A typical radiator is illustrated below in fig.1

Fig.1

3.0 REPAIR TOOLS KIT -

The radiator repair kit consists of following items -

- Ring spanner (12 / 13)
- 36 mm Open End Spanner
- Monkey Plier
- Screw Driver
- Mallet
- Rapid Setting Araldite
- Alumaseal / Holts Radweld Solution
- proper brush (soft brush) for cleaning radiator core

4.0 PROCEDURE FOR SERVICING -

4.1 Removal of radiator from vehicle -

- Allow the coolant in the radiator to reach to the room temperature.
- Drain the coolant from radiator completely.
- Remove all the mounting fasteners, attachments like shroud, pipe etc.

- Take out the radiator from the vehicle carefully to avoid damage to any part.

CAUTION : Radiator core and plastic tanks are susceptible to cracking due to impact and deformation.

4.2 Detection of Leakage Spot -

- Connect the inlet of the radiator to air supply at the gauge pressure of 1.5 bar.
- Seal all other outlet points.
- Dip the radiator completely in a clean water tank.
- Tilt the radiator and shake it vigorously to let the air bubbles trapped at the clinching area to escape.

- Observe carefully for one minute and locate the source of air leakage on the radiator from the direction of air bubbles that are coming out of the radiator.

  CAUTION : Do not use the water tank that is used for copper radiators.

4.3 Sealing the Leakage Spot -

Following procedure shall be adopted for leakage at different locations of the radiator.

4.3.1 Plastic Tank -

- Take out the member support using 12/13 ring spanner.
- Remove the tabs of the Header Plate using screw driver. Start removing from those tabs which are half open (e.g those at the inlet and outlet of plastic tanks of the radiator). Thereafter proceed sequentially removing the adjacent tab only. Use deformation of the previous tab to loosen the next tab.
- After making all the clinching projections up, take out the tank from its seat in header plate while grasping the outlet.
- In case, it takes more effort, pat the tank with rubber or plastic hammer lightly as illustrated in fig.2

Fig.2 Photo I

- Take off the tank packing.
- Clean the area of the header plate where the tank sits, thoroughly.
- Insert new tank packing in the place without twisting.
- Insert new tank (top or bottom) as applicable.

Note - If the source of leakage is at the base of the tank, i.e. area between header plate and tank there is no need to replace the tank.

CAUTION: Tank packing shall be replaced, every time, the tank is taken off for servicing.

- While assembling, clinch the middle and extreme tabs first, using the monkey pliers and thereafter proceed for the remaining tabs.

- If gap is found between the clinching projections of header plate and tank, softly hammer the projections as shown in fig.3 & Photo II.

Fig.3 Photo II

- Clinch the header plate projections with monkey plier as shown in Photo III.
- After clinching, confirm the dimension as shown in fig.4

Fig.4 Photo III

CAUTION : If any of the clinching projections is broken during the clinching or releasing process, disconnect the servicing and replace the entire radiator by a new one.

- Fix the member supports and tighten the bolts properly.

4.3.2 Pipe Component, Drain Cock and Pressure Cap -

4.3.2.1 Pipe Component

- Take out the pipe component using 36 mm open end spanner.
- Remove the O-ring.
- Clean the seat of pipe component and the O-ring groove.
- Insert a new O-ring.
- Fit the pipe component back, ensuring proper tightness of the nut of the pipe component.

4.3.2.2 Drain Cock -

- Unscrew the drain cock.
- Remove the O-ring.
- Clean the O-ring.
- Insert a new O-ring.
- Screw the drain cock back.

4.3.2.3 Pressure Cap -

- Replace the pressure cap with a new one, if leakage is through after cleaning the filler back.

4.3.3 Radiator core -

Different procedure of sealing shall be followed for minor and major leaks in the radiator core.

Minor Leaks - Leak spots which are very minute, are to be sealed in following manner.

- Install the radiator onto the vehicle.
- Pour the contents of Alumaseal in the radiator.
- Fill proper quantity of coolant liquid.
- Run the engine in idling more for 20 minutes.

Major Leaks - Procedure of sealing major leaks in the radiator is as follows:

- Wash the core with clean water and brush provided in the kit to remove dirt, dust etc.
- To remove the greasy spot on the core, apply thinner with cotton swab and take off the grease.
- Dry the core using a dryer.

CAUTION : Drying by heating must be avoided.

- Mix adequate quantity of Araldite resin and hardener in the ratio of 1:1 in the container and stir it thoroughly.
- Apply the mixture immediately at the leakage spot with the stirrer or the Araldite applicator as per convenience.
- If required, apply the mixture again after 1 - 1.5 hour.
- Allow the mixture to dry and harden under the shade at room temperature for time as prescribed by Araldite manufacture.

Note :- Araldite Rapid of M/s Ciba Geigy dries and hardens within one hour and hence users may use it to minimize the down time.

- Silver colour paint may be used for touching up the araldite spots and impart the aluminium type appearance.

CAUTION :

- Do not damage the fins during the process.
- Confirm that fins are set properly, if disturbed during th process.
- As the Araldite is inflammable, do not dry it by heating.
- Proper cleaning of radiator core is must for proper setting of Araldite or else it will come off.

4.4 Confirmation of Proper Sealing

- After the sealing work is over, assemble the radiator properly.
- Subject the assembled radiator to leakage test as illustrat-

ed above.

Note : If the problem of leakage persists, it is advisable to replace the radiator with new one.

5 RADIATOR INSTALLATION

- Ensure that all the openings of the radiator are closed properly except the inlet.
- Fill the radiator with proper quantity of fresh coolant as recommended.
- Fit the fan shroud.
- Install the radiator on the vehicle ensuring proper alignment, damping etc. as applicable.
- Connect the inlet and outlet pipes and clamp them.

Certain precautions as listed below are to be undertaken during body building and its operations -

- Protect the Aluminium radiator from weld spatters and external mechanical hitting, which might damage cores of the radiator.
- Use only recommended coolant in 50:50 ratio.
- Protect auxiliary tank from weld spatters and mechanical damage. Use proper cover to protect radiator and auxiliary tank during welding in the vicinity of radiator.

- Dust accumulated in the fins should be cleaned by blowing compressed air at low pressure from inner side of radiator. Please do not clean with pressurized water jet it will deform the fins.

All the Depot Managers of Tata area are instructed to ensure that the above instructions are passed on to the supervisors and mechanical staff working in garages and implemented.

The COSs of Zones of Tata area are advised to procure and supply repairs kits, Rapid setting Araldite, Alumaseal/Holts Radweld required for repairing of above radiators to the Depots and Zonal Workshops.

The DY.CMEs of Tata area are instructed to workout the Depot wise requirement and take necessary action for procurement through Zonal Stores. They are advised to organise training programmes in radiator repair for Depots in consultation with Service Engineers of M/s Telco.

The WMs of Tata area are instructed to ensure that the above instructions are passed on to the Supervisors & Mechanical Staff working in ZWS and implemented, workout requirement and take necessary action for procurement through Zonal Stores.

VICE CHAIRMAN & MANAGING DIRECTOR