

ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION

**Office of the VC & MD,
MSRD:HYDERABAD-20.
Dated :24.06.2000.**

No.OP2/462(3)/2000-MED

CIRCULAR NO.24/2000-MED, Dated 24.06.2000

SUB: MAINTENANCE - Revision of Maintenance Schedules - Revised instructions issued - Reg

**REF: 1)Cir No.OP2/232(1)/85-MED, DT.03.10.85.
2)Cir No.32/87-MED, DT.30.10.87.
3)Cir No.23/94-MED, Dt.23.07.94.**

The present Maintenance Schedules have been designed and introduced during the year 1985 and there are many technical improvements in the design of Vehicles, improvements in the skill levels of Mechanics and artisans. During the year 1994, Sch-III and Sch-IV maintenance schedules are modified on the basis of operated kilometers instead of on the period basis i.e., monthly i.e., Schedule-III and quarterly i.e., Schedules-IV. As result of modification of Schedules from period basis to kilometers operated basis, the Vehicles required to carry Schedule-III and Schedule-IV maintenance has come down by about 33%. From the inspection of Depots and the observations of Regional Dy.CMEs it is observed that we are overdoing preventive maintenance checks/ attentions on certain items and certain important maintenance activity is not covered on certain items. Some maintenance schedules are carried irrespective of the age of the Vehicle. For a night out service, Vehicle is detained for maintenance in the day time when traffic is available, which may not be desirable in this competitive environment and loosing productive time of the Vehicle.

The Vehicle manufactures and original equipment manufacturers have introduced the following product developments in their Vehicles and its accessories during the last 10 years.

HIGH PERFORMANCE WHEEL BEARING GREASE WITH LONGER CHANGE INTERVAL

MIL-L-C ENGINE OIL WITH LONGER DRAIN PERIOD

LONG LIFE ENGINE OIL FILTERS

HINO ENGINES BY ASHOK LEYLAND WHICH REQUIRE LESS MAINTENANCE.

CUMMINS ENGINES BY TELCO WHICH REQUIRE ALMOST NO MAINTENANCE EXCEPT FOR MINIMUM MAINTENANCE LIKE OIL CHANGES AND FUEL FILTER CHANGES ETC.,

DRY TYPE AIR CLEANERS ON TELCO VEHICLES

EXPANSION VOLUME RADIATORS AND DE-AERATION TANKS FOR THE RADIATORS REQUIRING ALMOST NO TOP UP OF RADIATOR COOLANT FOR BOTH ASHOK LEYLAND AND TELCO VEHICLES.

HIGH CAMBERED SPRING WITH EXTRA LEAVES.

AIR DRYERS ON TELCO CUMMINS VEHICLES REQUIRING NO DRAINING OF AIR TANKS.

FULL AIR BRAKES ON TATA VEHICLES

FITMENT OF POWER STEERING BOTH ON ASHOK LEYLAND AND TELCO VEHICLES.

In the recent inspection of Depots by the Service Engineers of OEM's and team of officers from MED it is observed that at certain Depots the quality of carrying of maintenance schedules is far from satisfactory .t is observed that the allocation of work is not uniform to the Mechanics particularly working in Sch-III/IV maintenance. In some cases the items to be attended in scheduled maintenance are not in existence because of absolute models.

The Service Engineers of Vehicle manufacturers and Dy.CMEs of the Regions were involved in designing the maintenance schedules. The following broad objectives were kept in view in formulating the revised Schedules. To avoid superfluous activities and overdoing of certain maintenance.

Maintenance staff must be able to carry out the work effectively in tune with the technological improvement effected on Vehicles.

To improve the Vehicle productivity i.e., making more Vehicles available for traffic in the day time.

To make Mechanics / Artisans specifically acceptable for certain critical works.

The revised list of maintenance items to be attended while carrying out schedule-I, II, III & IV maintenance has been prepared and enclosed for implementation.

Minimum 2 hours maintenance time is required for carrying Schedule-I and Schedule-II for night out Vehicles in the day time. Arrivals and departures of night out Vehicles shall be staggered to avoid / minimise rush of maintenance in the afternoon.

The Depot Managers and the Dy. Chief Mechanical Engineer of the Regions are advised to ensure the implementation of revised maintenance schedules immediately at the Depots duly reallocating the staff and works to be carried.

The Regional Managers are advised to review on the progress of implementation of revised maintenance schedules in the periodical review meetings and during depot inspections held at regional level and ensure effective implementation.

REVISED SCHEDULE I MAINTENANCE:

NOTE:

Schedule-I maintenance has to be carried for the Vehicles whose mileage is less than 5.00 Lakh KMs on alternate day. For the Vehicles whose mileage is more than 5.00 Lakh KMs Schedule-I maintenance has to be carried out daily.

1. Washing of Vehicles out side with soap water and all glasses to be cleaned. Sweeping of Bus and cleaning of seats. This work has to be carried daily for all Vehicles irrespective of Vehicle KMs.

2. Check leakages of water, fuel, oils, including ATF oil for power steering brake fluid for TATA and top up as per the need. The leakages found if any should be attended by RG mechanic.
3. Check and tighten if necessary all bolts and nuts of wheels, Axle shafts and PP shaft mounting etc.,
4. Check the condition of road springs and their mountings with the attention to " U " clamps and " I " bolts. Attend if necessary.
5. The daily log sheet complaints are to be thoroughly checked up by the shift Supervisor and allot the RGs to Mechanics and other artisans. Identification of RGs connected to Electrical, Coach, and Upholstery has to be done by the Schedule-I Mechanic, recording the RGs in RG register shall be done by shift Supervisor. The Shift Supervisor shall allot the RGs to the concerned artisans. The shift Supervisor shall ensure that the RGs are attended by the Mechanics and other artisans.
6. Checking of tyre pressure by tapping daily has to be done by Sch-I Mechanic. The Tyre pressures shall be checked with gauge twice in a week for all the Vehicles under gone for Schedule-I Maintenance. If necessary inflation has to be done. The tread depth of tyres shall be checked and replacement of tyres as per the need will be carried out by RG Mechanic.
7. Drain the condensate from the Air tank (Other than Cummins Vehicles in TATA).
8. Any other item of work entrusted by the Mechanical Supervisor.

REVISED SCHEDULE-II MAINTENANCE:

All items of Schedule-I maintenance and the following items.

1. Lubricate all points as per the lubrication chart.
2. Clean breathers of Engine, Gear Box, Rear Axle. Clean the feed pump stainer and refit. Check oil level in FIP (Tata 692/697 and Leyland 370/ 6.65 Engines), Gear Box, Rear Axle, Steering Box, Reservoir of Power Steering, Brake fluid in plastic container(Tata) and Hydraulic clutch fluid (Tata Cummins) and top up if necessary.

NOTE:

The FIPs with self lubricating system for the Engines of Hino in Leyland and Cummins in Tata no need to top up lubricating oil.

3. For 692/697 Non-lowered Engines clean the Air filter and replenish the oil. Replace the gaskets / seals if necessary. For 697 lowered Engines in Tata there is no need to carry out this work. For Cummins Engines to be carried on need basis as per the Circular instructions vide Cir.No.27/ 99-MED.
4. Carry out brake test and steering test. Attend to the defects, if any in the steering and brake system. For the Vehicles with duel air brakes, hand brake functioning has to be checked and attend if necessary.
5. Check road spring holding down bolts, spring brackets, shackles and shackle pins for proper tightness. Attend if necessary.

6. Check for excess play in front and rear hubs and attend if necessary. Check and adjust if necessary pedal free plays of clutch and brake.
7. Check the tightness of the steering foundation bolts and fuel tank mountings & attend if necessary.
8. All Mechanical irregularities causing rapid tyre wear such as mis-matching, brake binding, mis-alignment etc., as pointed out by the Tyre Mechanic shall be attended to.

NOTE:

It is decided to match both checking of Schedule-II items related to Tyre Mechanic and Mechanical irregularities by Schedule - II Mechanic and ensure the rectification of the same with Schedule-II Mechanic.

9. Identification and reporting all defects / damages in the electrical system and coach work with due attention to upholstery, seat frames, seat cushions, doors, glasses etc., to the Shift-in-charge.
10. Carry out battery maintenance.
11. Check proper functioning of all gauges in the instrument panel and attend if necessary.
12. Check water pump bearing play and attend if necessary. Check the condition of fan belt and attend if necessary (Other than Cummins Engine). Check and tighten alternator foundation bolts if necessary.
13. Any other items of work entrusted by the Mechanical Supervisor.

REVISED SCHEDULE-III MAINTENANCE:

MECHANIC-I

1. Check for leakages of water, fuel and lubricants and rectify if necessary.
2. Check oil level in Engine top up if necessary. Check the condition of fins of radiator, foundation of radiator & stay rods and attend if necessary. Top up radiator with coolant, examine the radiator cap and replace if necessary.
3. Remove alternator, self starter and re-fit after overhaul. Check fan belt tension and tightness of alternator foundation bolts and attend if necessary.
4. Check all road springs, spring holding down bolts, spring brackets and shackles change if necessary.
5. Check oil level in FIP, Gear Box, Steering Box, power Steering reservoir, differential and clutch fluid (Cummins Engine Vehicles) and top up if necessary.
6. Clean air cleaner and change the oil (other than Cummins Engine). For Cummins Engine Vehicles follow Circular instructions since it is dry type Air Cleaner. Check the condition of inlet hoses and FINOLEX pipe for HINO and attend if necessary.
7. Check and adjust the free play of clutch, brake and accelerator.
8. Lubricate all points as per chart.

9.

mounting pads.

10. Check water pump bearing play and attend if necessary (Other than Cummins Engines).
11. Check cylinder head tightness and adjust taps. Check fuel injection timing by spill cut of method (Other than Cummins Engines).
12. Check PP shaft center bearing and universal joints for play change if necessary. Replace all rubber dust covers (Only for Tata Vehicles). Ensure correct alignment. Check seals for Leyland Vehicles.
13. Check and attend if necessary compressor oil seal leakage and compressor performance.
14. Clean Air breathers of Engine, FIP, Gear Box and Rear Axle.
15. Remove and refit, front bumper after attending to damages if any.
16. Remove and refit spare wheel carrier with spare tyre after attending to damages if any.
17. Ensure proper clamping of all fuel lines and rubber ferrules / padding for injector pipes.
18. Check for black smoke and attend if necessary.
19. Any other item of work entrusted by Maintenance in charge.

MECHANIC-II:

1. Check for correct air pressure attend if necessary, remove brake drums, check for scoring and excessive wear of liners and drums change if necessary. Drain water from Air tank. Check level of brake fluid and top up if necessary (for Tata Vehicles).
2. Check steering foundation bolts and attend if necessary. Tightness of bolts of Engine cross members and brackets of metacon bushes (A/L) Engine mounting pads (Tata) to be checked and attend if necessary.
3. Check front and rear hub play and adjust if necessary. Check the condition of bearing grease.
4. Check ball joints of drag link and tie-rod ends for excess play and repair or replace if necessary.
5. Check wheel alignment and adjust if necessary.
6. Check king pins for excessive play and replace bushes if necessary, adjust king pin end play, clean through hole of king pin and top up oil in king pins (Leyland).
7. Check fuel tank holding brackets and clamps for proper padding and tightness.
8. Remove and refit the rear bumper after attending to the damages if any.

9.

9. Carry out brake test. Check proper functioning of gauges in the instrument panel and attend if necessary.

10. Check and attend if necessary cabin foundation bolts, Body "U" clamps and anti sag bar by coach builder.

11. Any other item of work entrusted by Mechanical Supervisor.

REVISED SCHEDULE-IV MAINTENANCE:

MECHANIC-I:

All items specified in Schedule-III maintenance for Mechanic-I.

1. Replace front two springs with re-conditioned springs. Check shackle pins, shackles, shackle beds of front two springs for wear and tear and replace if necessary. Check the chassis cracks particularly near spring beds area and inform to shift supervisor for attention. Ensure the fitment of correct size M14 bolts for spring brackets.

2. Dismantle water pump, repair and refit or replace if necessary (Other than Cummins Engine).

3. Replace crank oil seal if necessary.

4. Remove and check the injectors for correct pressure and change if necessary.

5. Flush out the radiator for 370 Engines of Leyland and Tata Engines other than Cummins Engines and 697 Engines fitted with expansion volume radiators.

6. Any other items of work entrusted by Mechanical Supervisor.

MECHANIC-II:

All items specified in Schedule-III maintenance for Mechanic-II

1. Carry out brake test. Overhaul Air brake system with due attention to the following.

Air filter element.

All brake pipes and pipe connections and ensure proper clamping.

All brake chambers, diaphragms, brake chamber clamp rings, bolts and nuts.

Hand brake system including all pipe connections.

Check the functioning of all brake valves.

2. Remove brake " S " cam shafts, slack adjuster, needle bearings/darlin Bushes replace if necessary duly ensuring full greasing to the brake components.

3. 3. Remove front and rear hubs, repack with grease and adjust for correct setting.
4. Check differential back lash and adjust if necessary.
5. Any other items of work entrusted by Mechanical Supervisor.

MECHANIC-III:

f
n
t
e
a
u
b
p
a
k
w
t
h
g
r
e
a
s
e
a
n
d
a
d
j
u
s

1. Remove strainer in the fuel tank and remove fuel tank complete for cleaning, attend leakages if any and refit after painting.
2. Remove clutch and Gear Box, check the condition of pressure plate and driven disc, replace if necessary. Check Gear Box oil leakages and attend if necessary, lubricate spigot bearing, replace fly wheel ring gear if teeth are found damaged. Check the Hydraulic clutch system for Cummins Engine Vehicles and attend if necessary. Overhaul hydraulic clutch system for Cummins Vehicles and replace master cylinder and slave cylinder kits on every alternate Schedule-IV maintenance.
3. Check the excess play for remote gear shift mechanism and attend if necessary. Check the selector mechanism of Gear Box top cover and ensure proper functioning.
4. Replace rear two springs with re-conditioned springs. Check shackle pins, shackles, shackle beds of rear two springs for wear and tear and replace if necessary. Check the chassis cracks particularly near spring beds area and inform to shift supervisor for attention. Ensure the fitment of correct size M14 bolts for spring brackets.
5. Any other items of work entrusted by Mechanical Supervisor.