



ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION
Mechanical Engineering Department

No. OP4/462(12)/2021-MED

Office of the VC&MD,
RTC House, VJA-13.

CIRCULAR No. 12 /2021-MED Dt.10.11.2021

Sub: MAINTENANCE: Special drive from 12.11.2021 to 18.11.2021 on Proper fitment and tightening of wheel nuts & bolts and proper setting of wheel hub play - Instructions issued- Reg.

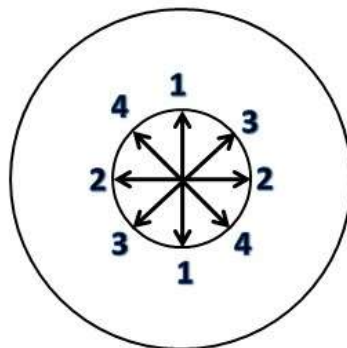
Ref:- 1.Cir no.16/2018-MED, dated 24.10.2018.
2. Lr.no.OP4/462(10)/2021-MED, dated 13.09.2021.

- I. Providing safe and reliable bus transport service being the role of APSRTC and also the strength of the organization, strong maintenance systems have been established to ensure the same. Further instructions on strengthening of maintenance are being issued from time to time based on the modifications in the vehicle models.
- II. Even then, many instances of breakdowns are occurring tarnishing the image of the Corporation for minute errors neglected during regular maintenance of vehicles. In the recent times, failure of buses due to tyres detaching from hub due to wheel nuts loose/damaged are noticed. These are all clearly avoidable failures and occurred due to fault of the maintenance staff or drivers.
- III. The failure of wheel nuts and bolts are analyzed and concluded that improper tightening of wheel nuts without cleaning is leading to failure en-route and detachment of tyres from hubs in some cases.
- IV. Instructions vide references cited were clearly given to educate the drivers and maintenance staff on the precautions to be taken while tightening of wheel nuts and the action to be taken at garages. But, the failures are continuing subsequently also as furnished below.

DATE	VEHICLE No.	DEPOT/ RGN	REASON
02-10-21	03Z0396	MGLM (CTR)	RNS tyres detached from axle due to improper tightening of wheel nuts in depot
15-10-21	16Z0726	GDV (KRI)	RNSO tyre detached from axle due to improper tightening of wheel nuts by drivers after tyre change en-route
19-10-21	02Z0551	ATP (ATP)	RNS tyres detached from axle due to improper tightening of wheel nuts by drivers after tyre change en-route
22-10-21	21Z0469	PTK (KRNL)	ROSO tyre detached from axle due to improper tightening of wheel nuts in depot
06-11-21	04Z0029	JRG (WG)	RNSO tyre detached from axle due to improper tightening of wheel nuts in depot

Most of these incidents happened on or after following day of tyre changes due to negligence on the part of shift supervisors.

- V. Further it was noticed that wheel hub play is also not being set properly as specified by the OEM for that particular model. This is leading to grease liquefying and thus damaging the hub bearing and in some cases hub check nut also damaged resulting in tyres coming out of the hubs.
- VI. In this context, it is opined to take special drive on setting of wheel hub play and tightening of wheel nuts to have a better focus. It is proposed to attend the following items as special drive from 12.11.2021 to 18.11.2021.
- a). Before taking up fitment of Tyres on to the bus, care shall be taken to thoroughly clean the accumulated dirt and dust on the following surfaces, as it may cause loosening of wheel nuts in case these surfaces are wetted due to rain or water splash when passed through shallow surfaces filled with water etc.
 - i. Wheel nuts and wheel bolts
 - ii. Wheel nut seating area on the wheel disc
 - iii. Mating surface between the wheel disc and brake brake drum
 - iv. Mating surface in between the wheel discs of rear dual tyres
 - b). The wheel discs must be thoroughly inspected for oblonged and cracked holes and replace if necessary.
 - c). The wheel bolts and nuts shall be thoroughly inspected for damaged threads/ broken wheel bolts/missing wheel nuts and replace them if necessary.
 - d). The wheel bolt seating area on the hub and the shank of the wheel bolt shall be examined thoroughly during Sch. III/IV maintenance, to avoid rotation of wheel bolt while tightening the wheel nut.
 - e). Never apply hand brakes while tightening the wheel nuts. If the brakes are applied, brake shoes prevent the wheel disc and brake drum from inward movement while tightening, thereby the wheel nuts may get loosened after releasing the brakes.
 - f). After tyre is mounted onto the hub, all the wheel nuts must be tightened fully in wheel jacked up position only, by providing support to the wheel disc in opposite direction of tightening, to prevent its rotation and to ensure full tightening.
 - g). Wheel nuts should be tightened in pairs i.e., "opposite to each other" as shown in the figure.



- h). Whenever tyres are replaced on the bus due to issue of new tyres, replacement of punctured tyres, tyre rotation etc.,, the same shall be recorded in shift RG register and given as BF for next day also, to tighten the wheel nuts as is done in case of tightening the spring assembly U-clamp nuts.

- i). Tightening on the second day shall be ensured by the shift supervisors and certify the same in a separate register maintained with bus numbers, dates of fitment and tightening.
- j). Whenever tyres are replaced en-route by drivers, they shall get the wheel nuts tightened once again through mechanics immediately when they reach the nearest en-route depot without fail.
- k). Ensure tightening of wheel bolts in every Schedule of maintenance.
- l). Dry hub setting shall be done during grease change of wheel hubs.
- m). Check quality of grease in the hubs during Schedule-2 and Schedule-3.
- n). Ensure to keep the hub play within the specified limits preferably to the lower limit as per the OEM recommendations, furnished here under:

Sl. No	Model	Front	Rear	Wheel nut tightening torque
1.	TATA BS-2	0.01 to 0.14		
2.	TATA 1512 TC BS-3	Preferably 0.01 to 0.08 mm	0.02 to 0.04 mm	50 to 60 mkg
3.	TATA 1613 BS-4			
4.	AL BS-2 & BS-3	0.025 – 0.10 mm	0.025 – 0.10 mm	66 – 72 mkg
5.	AL BS-3 Metro Express			
6.	AL 12 Mtrs Indra BS-4			
7.	AL 210 WB Ghat BS-4			
8.	AL 222 WB BS-4			
9.	AL, BS-3 Jan Bus	0.025-0.10 mm	0.025-0.10 mm	(Front) 65-72 & (Rear) 56 to 61 mkg
10.	Eicher BS-3	0.04- 0.10 mm	0.025 – 0.10 mm	50 to 60 mkg

All Depot Managers and Maintenance In-charges are advised to ensure that the above instructions are followed scrupulously and take up attending the hub setting as advised above. All the maintenance staff and drivers must be educated regarding the above precautions for implementation.

RMs, Dy.CMEs and DVMs are advised to have a close monitoring on implementation of the above guidelines and cross check the buses during their inspection/visits to Depots.


 Executive Director (E)

To

Copy to: ED(O), ED(A), FA&CAO, All EDs(Zone) for information.

Copy to: All RMs for information and necessary action.

Copy to: All Dy.CMEs & DVMs for information and necessary action

Copy to: All Depot Managers & Maintenance In-charges for strict implementation.

Copy to: OSD to VC & MD for information.