

**ANDHRA PRADESH STATE ROAD TRANSPORT CORPORATION**

**No.OP2/462(10)/99-MED**

**Office of the VC & MD,  
MSRD.HYDERABAD-20.  
Dated : 03.03.2000.**

**CIRCULAR NO.04/2000-MED Dated 03.03.2000**

**SUB: MAINTENANCE - Maintenance of Chassis frame use of correct size Spring Brackets, Shackles and Bracket Bolts - Certain instructions issued - Reg**

**REF: 1. Cir.No.17/97-MED Dt.28.07.1997.  
2. Cir.No.04/98-MED Dt.05.07.1998.  
3. Cir.No.20/98-MED Dt.03.08.1998.**

**Vide Circulars cited at reference 1 to 3, detailed instructions were issued about the maintenance practices to be followed to enhance the life of Chassis frame and coach.**

**On review of the reasons for failure of Chassis frames Prematurely due to cracks, it is observed that Chassis crack are prematurely occurring in the vicinity of holes of front & rear Spring Bed bolts. This critical observation necessitated in depth study to analyse the reasons causing these Chassis Cracks which are resultant of hammering actions in the area of Bed Bolts of Springs due to oblonged holes in the chassis long member.**

**A team of officers from MED and Service Engineers from OEM's have identified some serious lapses as mentioned here under which are the causes for Chassis cracks prematurely.**

- 1) It is observed that shackle pin is jammed on account of non greasing and the Depots are removing the spring hanger bracket to remove / replace the spring assembly. While refitting the spring assembly and spring hanger bracket, fitting M12 MS bolts instead of M14 steel bolts. On account of gap between hole in chassis long member and bolt, there will be horizontal hammering action in acceleration and deceleration leading to development of horizontal cracks and vertical cracks particularly on account of operation of Bus on roads having ditches.**
- 2) Inspection of New spring bracket, reveal that the diameter of hole in some instances is more and clearance between M14 bolt and hole is around 1.80 MM.**
- 3) The quality of coil spring washers between the M14 bolts and Nuts is poor and found giving away very prematurely thus causing looseness of Bolts frequently.**
- 4) Poor surface finish of spring bracket (i.e., cast surface finish instead of machined surface finish) at mating area with Chassis frame.**
- 5) 22 MM size spanner is not being used by the Mechanics to ensure tightness of Bed Bolt Nuts to required torque.**
- 6) The Body "U" Clamps are found loose and in some cases the balata packing is found missing between body cross bearers and Chassis frame and due to hammering action of body cross bearers on chassis long members, digging in is taking place and subsequently leading to chassis cracks and breakages.**
- 7) In Tata Vehicles (1210 model) due to looseness of Engine rear foundation bolts, the Engine cross member is found developing looseness at the' foundation bolts**

causing digging in the Chassis frame. It is observed that at such locations Chassis cracks are developing.

Therefore attention of the Depot Managers, garage in charges is invited to follow the instructions given below scrupulously on maintenance of Vehicles.

Availability of adequate stocks of M14 Bolts with nuts, Spring washers as per the Circular instructions at reference - 1 shall be ensured in all the Depots. 22 MM size spanners shall be made available in the Depots and availability of such spanners with the Mechanics shall be ensured.

To avoid shock loads at fastening area of Spring beds, ensure:

- A) Proper lubrication of shackle pins.
- B) Timely replacement of wornout Shackle beds, Shackle pins and Shackle Bushes.
- C) Proper tightness of Bolts and Nuts of Shackle beds.

Replacement of all 4 old Springs with properly cambered and assembled Springs in Sch-IV Maintenance.

Usage of correct size "I" Bolts & "U" Clamps and ensuring tightening of Nuts of "I" Bolts & "U" Clamps to the specified torque.

#### **SPECIFICATIONS FOR SPRING BRACKETS:**

##### **I. ASHOK LEYLAND:**

###### **TYPES OF BRACKETS:**

REAR SPRING SHACKLE	F-3230111/F-3236711/F-3210122
FRONT SPRING BRACKET	F-0434322
FRONT SPRING FRONT BRACKET	F-0435222 / F-0437922
MODIFIED REAR SPRING BRACKET	F-7101222

###### **SPECIFICATIONS:**

Bolt hole diameter in the bracket shall be from 14.00 MM to 14.027 MM and ream finished.

Surface finish of bracket at the mating face with chassis and at the bolt head seating area should have rough machining of 6.3 CLA grade.

##### **II. TATA:**

###### **TYPES OF SPRING BRACKETS AND SPECIFICATIONS:**

FRONT SPRING BRACKET PT.NO.	042 322 0401J
MOUNTING BOLT DIA	: 14.00 MM
HOLE DIA IN BRACKET	: 14.50 MM
REAR SPRING BRACKET <u>PT.NO.352</u>	325 0101
MOUNTING BOLT DIA	: 14.00 MM

<b>HOLE DIA IN BRACKET</b>	<b>: 14.50 MM</b>
<b>FRONT SPRING SHACKLE PT.NO.</b>	<b>352 320 0063</b>
<b>PIN HOLE DIA IN SHACKLE</b>	<b>: 25.00 MM</b>
<b>REAR SPRING SHACKLE PT.NO.</b>	<b>352 320.0163</b>
<b>PIN HOLE DIA IN SHACKLE</b>	<b>: 30.00 MM</b>

Works Manager shall ensure quality of spring hanger brackets particularly the size of hole dia and surface finish at mating area with chassis long member and part numbered M14 steel bolts.

#### **REPAIR AND RETRIEVAL PROCEDURE OF OBLONGED CHASSIS HOLES:**

The oblonged spring bracket holes in the chassis frame have to be brought to the original dimensions as mentioned below to avoid the chassis cracks.

The area around the oblonged chassis hole which needs repair and retrieval, should be thoroughly cleaned to ensure that it is free from oil, grease, rust etc.,

The oblonged hole should be filled up completely by using special electrode of OVER CORD S.E 6013 of Advani make or any other equivalent of L & T make.

While filling it up with special electrode, it should be ensured that no blow holes are formed.

To ensure specified dimensions between the holes of hanger bracket in the chassis frame a template shall be used at the time of punching the holes.

Punching shall be done in hot condition to the standard size of hole by using the punch made of special steel.

#### **REPAIR AND RETRIEVAL PROCEDURE OF CHASSIS CRACKS:**

Whenever the chassis crack identified, drilling the hole of 5 MM size has to be made at both the ends of crack to avoid further propagation of crack.

The area around the chassis crack which needs repair and retrieval, should be thoroughly cleaned to ensure that it is free from oil, grease, rust etc.,

By using special electrode i.e., grove rod / cut rod, grove should be formed along the crack on both sides of the chassis frame to ensure effective holding of the weld metal.

The grove should be filled up by using special electrode CGS-680 of L&T or E.106 of Advani make.

While filling the grove, it should be ensured that no blow holes are formed. If the length of vertical as well as horizontal cracks developed is more, it is preferred to reinforce the chassis long member from inside by providing box at the cracks developed area besides attention of the cracks as enumerated above.

**TRAINING OF WELDERS:**

As both the works i.e., welding of chassis cracks are to be carried out skillfully proper training has to be given to the welders working at the Depots, it shall be remembered that the improper welding may consequently damage the chassis long member after carrying out the welding.

Dy.CME's of the Regions are advised to arrange for required training to the, welders working in the Depots in consultation with the concerned Works Manager.

**IDENTIFICATION OF CHASSIS CRACKS AND OBLONGED HOLES:**

The Depot Managers are advised to report the chassis cracks and oblonged holes to the concerned Dy.CME when ever identified in the following format. They are also advised to make follow up action for immediate attention to avoid further damage of the chassis frame.

SL NO	VEHICLE NUMBER	CHASSIS NUMBER	O.E CHASSIS OR CO VEHICLE	POSITION OF CRACK/OBLONGED HOLES	KMS OPTD. SINCE COMSS.
1 _____	2 _____	3 _____	4 _____	5 _____	6 _____

Dy.CME's of Regions are advised to ensure the attention chassis cracks and oblonged holes in time duly collecting the information from the Depots of their Region to avoid further damage of chassis frame. Dy.CME's are also advised to send the consolidated information of chassis cracks and oblonged holes identified and action taken in the Depots in their control to CME(O) every month in the following format to take further necessary action.

SL NO	VEHICLE NUMBER	CHASSIS NUMBER	O.E CHASSIS OR CO VEHICLE	POSITION OF CRACK/OBLONGED HOLES	KMS OPTD. SINCE COMSS.
1 _____	2 _____	3 _____	4 _____	5 _____	6 _____

DATE OF REPORTING TO OEM IN CASE OF	ACTION TAKEN . EITHER AT DEPOT LEVEL OR	REMARKS
7 _____	8 _____	9 _____

Dy.CME's shall enlighten the Depot Managers, supervisors and maintenance staff on the usage of proper size of bolts and steel washers etc., to avoid premature damages of chassis frames.

All the Depot Managers are advised to implement the instructions issued with out deviation.

**All Dy.CMEs shall ensure stocking of correct size of Spring Bed Bolts in the Depots and ensure replacement in time to avoid damage of Chassis frames.**

**Sd/-  
(P.ARJUNA)  
Executive Director (Engg.)**

**// Attested by //  
Sd/-  
(T.SAIRAM)  
Dy.Chief Mechanical Engineer (O)**