



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
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MC/CTRB/Genl.

Date: 10.01.2019

प्रमुख मुख्य यांत्रिक अभियन्ता,

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई- 400 001.	11. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्प्लेक्स, चन्द्रशेखरपुरा, भुवनेश्वर, उड़ीसा- 751 016.
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता- 700 001.	12. उत्तर मध्य रेलवे, हारिंग रोड, इलाहाबाद-211 001.
3. उत्तर रेलवे, बड़ौदा हाउस, नईदिल्ली- 110 001.	13. उत्तर पश्चिम रेलवे, जयपुर- 302 006.
4. दक्षिण रेलवे, पार्कटाउन, चेन्नई- 600 003.	14. दक्षिण पश्चिम रेलवे, हुबली- 580 023.
5. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्द्राबाद -500 071.	15. पश्चिम मध्य रेलवे, जबलपुर- 482 001.
6. दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता- 700 043.	16. दक्षिण पूर्व मध्य रेलवे, आरई आफिस काम्प्लेक्स, बिलासपुर- 495 004.
7. पूर्वोत्तर रेलवे, गोरखपुर- 273 012.	17. आधुनिक रेल डिवा कारखाना, लालगंज रायबरेली-229 206
8. पूर्वोत्तर सीमान्त रेलवे, मालीगाँव, गुवाहाटी- 781 011.	18. इन्टीगरल कोच फैक्ट्री, चेन्नई- 600 038.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020.	19. रेल कोच फैक्ट्री, हुसैनपुर, कपूरथला- 144 602.
10. पूर्व मध्य रेलवे, हाजीपुर- 844 101.	20. कोंकण रेलवे कार्पोरेशन लि., कार्पोरेट आफिस, बेलापुर भवन, नवी मुम्बई- 400 614.

Sub: En-route detachment of LHB coaches due to Hot Axle.

Ref: (i). Southern Railway letter No. M/CW/274/18th CMG dated 03.01.2019.

(ii). Agenda Items of 18th CMG.

There have been 12 reported cases of hot axle in LHB coaches during 2018-19 till 04.01.2019, in comparison to 02 cases in 2017-18 & 03 cases in 2016-2017. The sudden increase in en-route failures of CTRBs in LHB design coaches has been observed. Preliminary investigations have brought out following observations:

1. In hot axle case of coach no. CR/14117/C LWACCN on dated 28.04.2018, LTT Coaching Depot of CR has informed that this failure happened due to missing and loosening of control arm fasteners.
2. In hot axle case of coach no. ECR/15062/C LWACCN on dated 24.07.2018, M/s Timken has highlighted the wheel shelling marks observed on wheel tread.
3. Southern Railway, vide letter mentioned under reference, has reported that the cases of non standard size bolts used by PUs in securing of slip ring disc is leading to working out of bolts from security disc and damaging the earthing device assembly, leading to Roller Bearing failure.
4. Southern Railway also mentioned intermixing of fasteners of earthing device & phonic wheel during maintenance.
5. During previous Audits by RDSO, in majority of cases, earthing cable was found missing. WSP system was also found not functional.
6. Few maintenance issues were raised by M/s SKF in their preliminary report for cases of hot axles dated 11.08.2018 (ET) & 13.08.2018 (ALD):
 - a) Handling of wheels & CTRBs - Slight damage on seal of other end bearing has been noticed in hot axle case dated 11.08.2018.
 - b) Pinching of outer cup by improper fitment of control arm has been noticed in hot axle case dated 13.08.2018.


For such alarming increase in cases of hot axles, it is requested to follow the RDSO instructions in this regard:

1. The control arm maintenance must be ensured in terms of RDSO letter no. SV.FIAT dated 03.04.2018 & 15.05.2018.
2. RDSO Instruction regarding tyre turning on account of wheel shelling issued to Railways vide letter no. MC/WA/Genl. dated 01.11.2017.
3. Quality of fasteners for Bearing assembly is to be ensured in terms of RDSO letter No. MC/CTRB/Genl. dated 06.07.2015.
4. RDSO instruction regarding protection of CTRB during tyre turning of LHB wheelsets fitted with CTRB vide letter no. MC/RB/Defects dated 05.09.2014.
5. Maintenance instructions for Cartridge Taper Roller Bearings (CTRB) for LHB Coaches issued vide letter no. MC/CTRB/Defects dated 10.01.2019.
6. Functional earthing device and WSP must be ensured.
7. Handling of CTRBs should be in such a way that any part of CTRB doesn't get damaged during handling.
8. LHB wheelsets with mounted CTRBs should also be handled properly in workshops/PUs, during transportation of wheelsets by wagons/coaches/trucks (fixture supporting wheels should be ensured) & during loading/unloading to/from coaches/trucks. While lowering bogie on wheelsets, due care should be taken to avoid any possibility of damage to any part of bearing. While handling/transporting wheels by overhead cranes, mobile cranes or fork lifter, multiple wheelsets should not be handled at a time.

A drive in this regard may be launched to ensure that instructions issued are being followed.

DA: As above.




(Shobhit Pratap Singh)
Dy. Director/VDG/Carriage
for Director General/Carriage

Copy to: for kind information please.

DME/Coaching, Railway Board, Rail Bhawan, New Delhi - 110 001



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No. SV. FIAT

Date: 15.05.2018

**Principal Chief Mechanical Engineer,
Eastern Railway, Fairly Place,
Kolkata- 700 001.**

Sub: Cases of failure of control arm of LHB coaches.

Ref: i. Railway Board's letter No. 2009/M(C)/137/1 Vol. (ii) dated 06.04.2018.
ii. This office letter of even nos. dated 03.04.2018 (copy enclosed).

In terms of the direction given by Railway Board vide reference (i), RDSO official was deputed to C&W Workshop, Liluah from 24.04.2018 to 25.04.2018 for study in one of the cases of coach no. ER 05067/C LWACCW, detached from Train No. 12368 DN on 18.03.2018 at KIUL Junction due to failure of control arms. During the investigation at C&W Workshop, Liluah, following observations have been made:

- 1) The primary damper was found defective during testing on Damper Testing Machine available in the shop.
- 2) The Damper Testing Machine available in the shop was not calibrated while the machine is overdue for calibration. The Damper Testing Machine needs to be calibrated.
- 3) Plain washers were being used despite repeated instructions for use of self-locking washers in the fastening systems of control arms.
- 4) Torque wrench tester was not found available in the shop so as to regularly test the torque wrench before it is taken in the field.
- 5) Torque wrench calibration certificates were not available.

As per records available with Workshop, the detached coach no. ER 05067/C LWACCW was manufactured during 2005 and the control arm was fitted in 2012. Thus, it has been in service for about 6 years. The bolt holes in control arm were found elongated (Figure 1 of Annexure- I) showing that the bolt loosening has taken place. This is likely as it was fitted with plain washers. The damper is fitted on lower control arm, hence load sharing with upper control arm is only through bolts. Once it is loosened, heavier impact will be caused due to 'On-loading' & 'Off-loading' on run. Heavy shear stresses generated at the collar would cause it to shear (Figure 2 of Annexure- I). Once this happened, the full load will come on lower control arm causing heavy bending stresses in lower control arm which have exceeded the yield point limits causing failure (Figure 3 of Annexure- I). This appears to be the mechanism of failure in the present case. However, it will be confirmed only once the M&C report is available.

The deficiencies noticed in the maintenance of this coach were already taken note of while formulating maintenance instructions issued vide reference (ii). A copy of these maintenance instructions is being enclosed herewith again as Annexure- II. It is requested that these instructions may be implemented in the right earnest to avoid such failures.

DA: As above.

(Samir Lohani)
Executive Director/Carriage

Copy to: (i) For kind information and similar necessary action please.

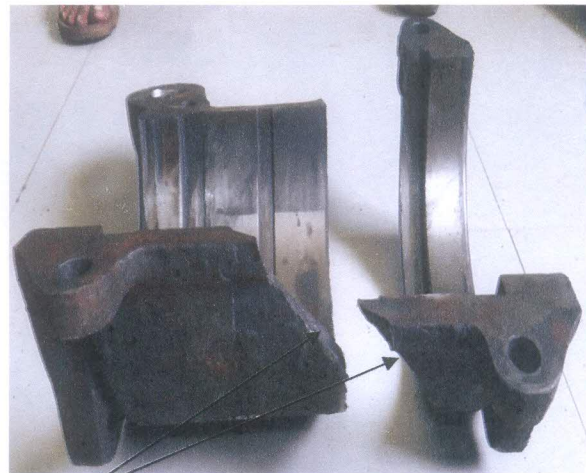
Principal Chief Mechanical Engineer,

1. Northern Railway, Baroda House, New Delhi-110 001.
2. Western Railway, Churchgate, Mumbai-400020.
3. Central Railway, CSTM, Mumbai - 400 001.
4. Southern Railway, Park Town, Chennai - 600 003
5. North East Frontier Railway, Maligaon, Guwahati- 781 011.
6. North Eastern Railway, Gorakhpur-273 001.
7. South Eastern Railway, Garden Reach, Kolkata-700 043.
8. South Central Railway, Secunderabad-500 071.
9. West Central Railway, Jabalpur- 482 001.
10. South East Central Railway, Bilaspur- 495 004.
11. South Western Railway, Hubli- 580023.
12. East Coast Railway, Railway Complex, Bhubaneshwar- 751 023.
13. East Central Railway, Hazipur-844 101.
14. North Western Railway, Jaipur-302 006.
15. North Central Railway, Allahabad-211 001.
16. Konkan Railway Corporation Ltd., Corporate office, Belapur Bhawan, Navi Mumbai – 400 614
17. Integral Coach Factory, Chennai- 600 .38.
18. Rail Coach Factory, Hussainpur, Kapurthala, Punjab – 144 602.
19. Modern Coach Factory, Rae Bareilly – 229120.

(ii) EDME (Coaching), Railway Board, New Delhi – 110 001 – For kind information please.



— Elongated hole in Lower C/Arm Part
(Figure: 1)



— Control Arm Lower Part fresh broken
(Figure: 2)



Control Arm Upper Part – Bolt mounting bracket fresh broken
(Figure: 3)



— Damper Testing on M/C
(Figure: 4)



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No. SV. FIAT

Date: 03.04.2018

Principal Chief Mechanical Engineer,

1. Northern Railway, Baroda House, New Delhi-110 001.
2. Western Railway, Churchgate, Mumbai-400020.
3. Central Railway, CSTM, Mumbai - 400 001.
4. Eastern Railway, Fairly Place, Kolkata- 700 001.
5. Southern Railway, Park Town, Chennai - 600 003
6. North East Frontier Railway, Maligaon, Guwahati- 781 011.
7. North Eastern Railway, Gorakhpur-273 001.
8. South Eastern Railway, Garden Reach, Kolkata-700 043.
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12. South Western Railway, Hubli- 580023.
13. East Coast Railway, Railway Complex, Bhubaneswar- 751 023.
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16. North Central Railway, Allahabad-211 001.
17. Konkan Railway Corporation Ltd., Corporate office, Belapur Bhawan, Navi Mumbai – 400 614
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19. Rail Coach Factory, Hussainpur, Kapurthala, Punjab – 144 602.
20. Modern Coach Factory, Rae Bareilly – 229120.

Sub: Preventive measures for failure of control arm in LHB coaches.

Ref: i. CRSE/WCR's letter No. WCR/M/C/02/404 Vol-V dated 27.03.2018.

ii. This office letter of even no. dated 17.11.2017.

Vide letter under reference (ii) detailed instructions on maintenance of control arm based on the investigations carried out in cases of Control arm bolt loosening were issued to Zonal Railways to overcome the problem of failure of control arm in LHB coaches. Recently, few cases of enroute detachment of LHB coaches due to control arm failure have been reported by WCR vide their letter under reference (i). The instructions on the prevention of such cases are being reiterated below for implementation in the field without any exception.

1. The fasteners used in the control arm shall be of property class 10.9 purchased from the RCF recommended sources only. (RCF letter no. MD44121 dated 21.06.2012).
2. Self locking washers shall be provided in these fastening systems. Plain washers should not be used. Railways shall switch over to Disc lock washers from self-locking washers in shortest possible time.
3. The fasteners should be tightened to a torque of 170 N-m with a calibrated torque wrench. After tightening, a paint mark (permanent marker may also be used) should be made for visual indication in case of loosening of the bolt. This paint marking should be examined in every schedule.
4. The fasteners shall be checked for proper torque in D3 schedule and after checking, a proper paint marking shall be made. In case the paint marking is lost before D3 schedule, the torque should be checked with a properly calibrated torque wrench and a fresh paint marking should be made.
5. The orientation and grouping of inner and outer primary springs should be ensured as per RDSO maintenance instructions CMI no. RDSO/2017/CG/CMI-01 issued in January 2017.
6. The dampers should be checked visually in D1/D2/D3 schedules and in case of any oil leakage, the same should be replaced.

7. All the dampers of the bogie should be tested during SS1 schedule and defective dampers should not be allowed in service. (Instructions for testing of dampers in SS1 were already issued vide this office letter No. SV.FIAT Springs dated 04.01.2017).
8. The control arm should be purchased and replaced as a set only.
9. All the depots should have torque wrench of appropriate capacities alongwith torque wrench tester. The torque wrench should be checked on the torque wrench tester by the concerned employee before it is taken for use in the field. The torque wrench and torque wrench testers should be calibrated as per the periodicities prescribed by OEM/calibrating agencies.
10. Staff should be extensively trained for proper maintenance of these assemblies and use of torque wrench.

In addition to above, maintenance of Control Arm as per Para 4.3.2.12.1 and fitment as per Para 4.6.7 of CAMTECH maintenance manual shall be ensured in workshops and also in depots whenever it is maintained in depots. It may also be ensured that damaged rubber bushes of control arm are not allowed in service.

The failure reports for control arm being received at RDSO do not contain all the relevant details so as to arrive at the root cause of failure. Specifically, failure reports do not provide details on fasteners in other control arms, tightening torque, type of washer etc. which may give a fairly accurate indication of whether proper maintenance was done in last D3 schedule. Accordingly, a standard format for control arm failure data is developed and enclosed herewith as Annexure- I. Zonal Railways are requested to provide the control arm failure data in this format whenever any failure is reported.

It is requested that these instructions may be implemented in the right earnest to avoid such cases of control arm failure in the field.

A drive may be immediately launched at Primary Maintenance depots of all Zonal Railways to comply with these instructions.

DA: As above.



(Samir Lohani)
Executive Director/Carriage

Copy to:

1. EDME (Coaching),
Railway Board, Rail Bhawan,
New Delhi – 110 001. } For kind information please.
2. Executive Director,
CAMTECH, Maharajpur,
Gwalior- 474 005. } For kind information and necessary action please.

PROFARMA FOR REPORTING CONTROL ARM BOLT FAILURES

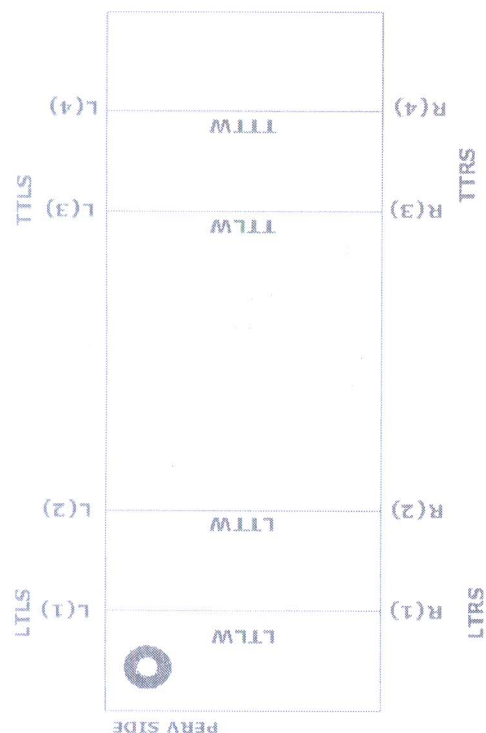
Date of Failure	Train No. & Coach No.	Type of Coach e.g. II AC/III AC etc.	Primary Depot	Location of Control Arm	Make & Class of bolts, Tightening Torque of bolts & type of washer at all locations of Control Arms										Condition of damper at the location of failure	Reason of failure	Remarks or any other information relevant to the failure
					1		2		3		4						
					Bolt	Washer	Torque	Bolt	Washer	Torque	Bolt	Washer	Torque				
				L1													
				L2													
				L3													
				L4													
				R1													
				R2													
				R3													
				R4													

Note: 1) Damper may be working, locked, leaky, free moving etc.

2) Each control arm has 4 nos. of control arm bolts therefore, values of tightening torques, type of washer and make & class of bolt should be indicated for all locations on control arm. Locations of control arms are shown in Figure 'A' & 'B' and locations of bolts are shown in Figure 'C'.

3) Washer may be a self-locking or disc lock washer etc.

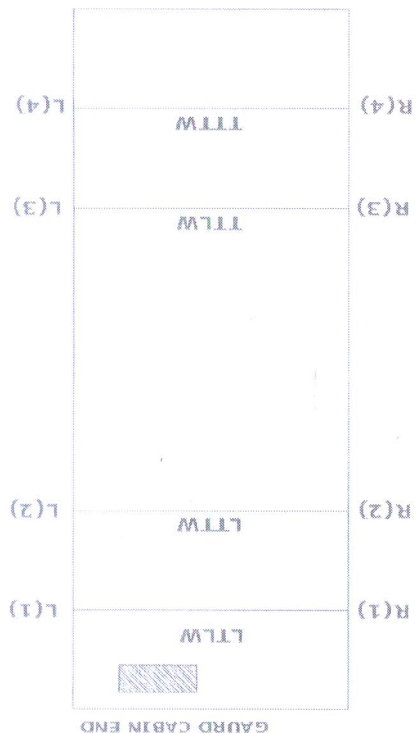
Convention for Locations of Control Arm Bolts



Note: LTLW(L) will always be counted from Passenger Emergency Relay Valve (PERV) fitment side.

Figure-A: For all type of LHB coaches other than power cars

- LTLS- Leading Trolley Left Side
- TTLS- Trailing Trolley Left Side
- LTLW-Leading Trolley Leading Wheel
- LTTW- Leading Trolley Trailing Wheel



Note: LTLW(L) will always be counted from Gaurd Compartment End & Looking towards generator cabin side.

Figure-B: For LHB power cars

- LTRS- Leading Trolley Right Side
- TTRS- Trailing Trolley Right Side
- TTLW- Trailing Trolley Leading Wheel
- TTTW- Trailing Trolley Trailing Wheel

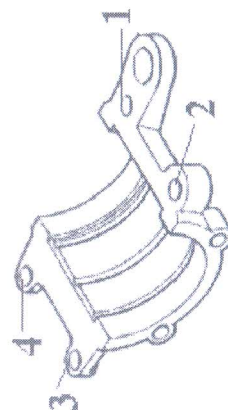


Figure – C: Locations of Control Arm Bolts



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No. MC/WA/GenI

Date: 01.11.2017

Principal Chief Mechanical Engineer,

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3. Northern Railway, Baroda House, New Delhi-110 001
4. Southern Railway, Park Town, Chennai - 600 003
5. South Central Railway, Secunderabad-500 071
6. South Eastern Railway, Garden Reach, Kolkata-700 043
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17. Integral Coach Factory, Chennai - 600 038
18. Rail Coach factory, Kapurthala- 144 602
19. B.E.M.L, Bangalore Complex, New Thippasandra, P.B. No. 5107, Bangalore- 75.
20. Konkan Railway Corporation Limited, Corporate Office, Belapur Bhawan, NaviMumbai-400614
21. Modern Coach factory, Lalganj, Raebareli- 229 206

Sub: Crack/Breakage of solid forged wheels for FIAT IR bogies (LHB).

Ref: (i) This office letter of even No. dated 03.11.2011.

(ii) This office letter No. MC/WH/SHL dated 23.09.2009.

Presently, Solid forged wheels for LHB coaches are being procured conforming to RCF drawing No.LW02103 (rough turned wheel) and RDSO specification No. IRS R-19/93 Part II (Rev.4) with corrigendum No.1 of August 2015. There have been 14 cases of wheel breakage in LHB coaches of Indian Railways since 2005. All LHB wheels have been failed due to fatigue at the same place i.e. rim-web transition area at the location where web thickness is 14^{+3} mm. Wheel shelling/skidding marks were also found on all the failed wheels.

The issue of wheel shelling was discussed in 4th WMSG and it was decided that to increase the wheel life, the turning of LHB wheels may be done as per following limits: These shelling limits have already been advised to Railways vide this office letter at reference (ii) above and the same are as under:

- i) Depth of shelling marks has reached to 1.5mm.
- ii) Length of shelling marks has reached to 40mm.
- iii) Depth of hollow tyre reached to 3mm. This limit of 3mm is kept to study the effect of wheel shelling and service life of wheels. The rejectable limit of

hollow tyre will continue as more than 5mm as specified in IRCA Part IV. During investigation, it has been noticed on many wheels that the formation of hollow tyre precedes the wheel shelling.

The turning of LHB wheels as per the above guidelines will increase the frequency of wheel turning but loss of diameter in turning will be less. So overall wheel life will increase. It is seen during the study that the average diameter reduction during the tyre turning at present is 11 mm whereas per above guidelines, diameter reduction was expected to be 6-7mm only.

In addition, it is also advised to carry out Dye penetration test (DPT) of all LHB wheels running over Indian Railways at Rim-web transition area during D3 schedule to detect cracks, as all 14 nos. of LHB wheels failed/cracked due to fatigue at rim-web transition area at the location where web thickness is 14⁺³ mm.

The above instructions are reiterated considering the recent three cases of LHB wheel crack reported.

Railways are advised to ensure the compliance of above instructions.

Encl.: As above


01-11-17
(Indrajit Singh)
Executive Director Stds. Carriage

Copy to:

EDME/Coaching, Railway Board,
Rail Bhawan, New Delhi-110 001: for kind information.



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सं. एम.सी./डब्ल्यू.ए./जनरल

दिनांक: 03-11-2011

महाप्रबन्धक(यांत्रिक)

1. पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020
2. पूर्व मध्य रेलवे, हाजीपुर- 844 101
3. उत्तर रेलवे, बड़ौदाहाउस, नईदिल्ली- 110 001
4. पूर्व रेलवे, फेयरलीप्लेस, कोलकाता- 700 001
5. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवेकाम्प्लेक्स, चन्द्रशेखरपुरा, भुवनेश्वर, उड़ीसा-751016.

विषय: Crack/Breakage of LHB – FIAT wheel disc.

संदर्भ: (i) This office letter of even No. dated 29-4-2011.

(ii) This office letter of even No. dated 12-10-2009.

(iii) This office letter of even No. dated 23-9-2009.

There are two types of problems on LHB coach wheels facing by Indian Railways.

1. Wheel shelling.
2. Cracking/Breakage at Rim-web transition area.

Railways are facing problems of wheel shelling on LHB coaches since introduction of these coaches. There have been six cases of cracking/breakage of LHB coach wheels occurred on Indian Railways. All failures were due to fatigue at Rim-web transition area of wheel. Wheel shelling/skidding marks were found on all the failed wheels. To overcome the problem of wheel shelling, RDSO has already issued the instructions to Railways vide references (i), (ii) and (iii) above.

The issue of wheel shelling was discussed in 4th WMSG and it was decided that to increase the wheel life, the turning of LHB wheels may be done as per following limits:

- i) Depth of shelling marks has reached to 1.5mm.
- ii) Length of shelling marks has reached to 40mm.
- iii) Depth of hollow tyre reached to 3mm. This limit of 3mm is kept to study the effect of wheel shelling and service life of wheels. The rejectable limit of hollow tyre will continue as more than 5mm as specified in IRCA Part IV. During investigation it has been noticed on many wheels that the formation of hollow tyre precedes the wheel shelling.

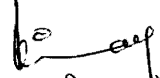
The turning of LHB wheels as per the above guidelines issued vide this office letter at reference (iii), will increase the frequency of wheel turning but loss of diameter in turning will be less. So overall wheel life will increase. It is seen during the study that the average diameter reduction during the tyre turning at present is 11mm whereas per above guidelines, diameter reduction was expected to be 6-7mm only.

In view of the above, it is important that checking of LHB wheels is intensified. To enable Railways to detect cracks and prevent failure of LHB wheels due to shelling, it is reiterated that Railways should follow the instructions circulated vide references (ii), (iii) & (iv) above for maintenance of LHB wheels in workshops/Coaching depots/Sick lines.

In view of the above, it requested to please confirm whether the above instructions are being followed by Railways. Copies of the instructions issued by RDSO are enclosed for ready reference. The status of implementation of the instructions as referred above may be advice to this office.

In addition, all LHB wheels running over Indian Railways should be subjected to Dye penetration test (DPT) at Rim-web transition area to detect cracks, during D3 schedule.

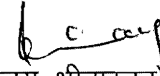
संलग्नक: यथोक्त।


(विनय श्रीवास्तव)

निदेशक(एस.एस.)/सवारी डिब्बा

प्रतिलिपि:

कार्यकारी निदेशक यांत्रिक इन्जीनियरिंग (कोचिंग), रेलवे बोर्ड, रेल भवन, नई दिल्ली-110 001


(विनय श्रीवास्तव)

निदेशक(एस.एस.)/सवारी डिब्बा

७/८

टेलीफोन/Tele : 0522-2450679
: 0522-2451200 (PBX)
: 0522-2450115 (DID)
फैक्स/FAX : 91-0522-2458500



भारत सरकार - रेल मंत्रालय
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लखनऊ - 226 011
Government of India - Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011

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CERTIFIED
ORGANISATION

सं. एम्.सी./डब्ल्यू.एच./एस.एच.एल.

दिनांक: 23-9-2009

महाप्रबन्धक (यांत्रिक)

25 SEP

1. पश्चिम रेलवे, चर्चगेट, मुम्बई - 400 020
2. पूर्व मध्य रेलवे, हाजीपुर - 844 101
3. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली - 110 001
4. पूर्व रेलवे, फेयरली प्लेस, कोलकाता - 700 001

विषय: Wheel shelling on LHB coaches.

Railways are facing the problem of wheel shelling on LHB coaches. RDSO has already taken measures to address the problem of wheel shelling. But it is observed that wheel shelling still continues on LHB coaches though kilometer earning has been improved. The issue was discussed in 4th WMSG and it was decided that to increase the wheel life, the turning of LHB wheels may be done as per following limits:

- i) Depth of shelling marks has reached to 1.5mm.
- ii) Length of shelling marks has reached to 40mm.
- iii) Depth of hollow tyre reached to 3mm. This limit of 3mm is kept to study the effect of wheel shelling and service life of wheels. The rejectable limit of hollow tyre will continue as more than 5mm as specified in IRCA Part IV. During investigation it has been noticed on many wheels that the formation of hollow tyre precedes the wheel shelling.

The turning of LHB wheels as per the above guidelines will increase the frequency of wheel turning but loss of diameter in turning will be less. So overall wheel life will increase. It is seen during the study that the average diameter reduction during the tyre turning at present is 11mm where as per new guidelines, diameter reduction is expected to be 6-7mm only.

Railways are requested to monitor the kilometer earning and diameter reduction during turning as per the above yard sticks to assess the enhanced wheel life. Railways are requested to immediately implement the above instructions.

संलग्नक: कुछ नहीं

(शैलेन्द्र सिंह)
कृते महा निदेशक/सवारी डिब्बा

प्रतिलिपि :-

का० निदेशक यांत्रिक अभियन्त्रण (कोचिंग), रेलवे बोर्ड, रेल भवन, नई दिल्ली - 110 001

(शैलेन्द्र सिंह)
कृते महा निदेशक/सवारी डिब्बा



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Fax (0522) 2458500

Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



MC/CTRB/Genl.

Date: 06.07.2015

The General Manager (Mech.),

1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai - 400 001
2. Eastern Railway, Fairlie Place, Kolkata - 700 001
3. Northern Railway, Baroda House, New Delhi - 110 001
4. Southern Railway, Park Town, Chennai - 600 003
5. South Central Railway, Rail Nilayam, Secunderabad - 500 071
6. South Eastern Railway, Garden Reach, Kolkata - 700 043
7. North Eastern Railway, Gorakhpur - 273 001
8. Northeast Frontier Railway, Maligaon, Guwahati - 781 011
9. Western Railway, Churchgate, Mumbai - 400 020
10. East Central Railway, Hajipur - 844 101
11. East Coast Railway, Chandrasekharpur, Bhubaneswar - 751 016
12. North Central Railway, Allahabad - 211 001
13. North Western Railway, Jaipur - 302 006
14. South Western Railway, Hubli - 580 023
15. West Central Railway, Jabalpur - 482 008
16. South East Central Railway, Bilaspur - 495 004
17. Integral Coach Factory, Chennai - 600 038
18. Rail Coach Factory, Hussainpur, Kapurthala, Punjab - 144 602
19. Rail Coach Factory, Lalganj, Raebareli - 229 120
20. Konkan Railway Corp. Ltd. Corporate office Belapur Bhawan Nawi Mumbai - 400 614

Sub: Hexagonal Head Screws/Bolt used for CTRB of FIAT bogies.

Ref: (i). ECoR's letter No. MCSW/IED/MM/M-14-1 (LHB)/1302 dated 27.05.2015.

(ii). WR's letter No. M 113/17/4 dated 20.04.2015.

(iii) This office letter no. MC/RB/Defect dated 06.06.2012.

In reference to above, RDSO have standardized the drawings of Hex. Head Screw for CTRB M20X60, Hex. Head Bolt for Phonic wheel of CTRB M8X35 and Hex. Head Screw for Earthing device of CTRB M8X25 by specifying tolerance on threads, property class and make. The following drawings of the fasteners are enclosed herewith.

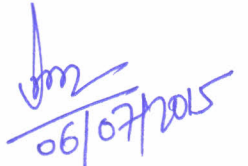
- i. Drawing No. of Hex. Head Screw for CTRB M20X60 (LHB Shell with FIAT Bogies) : CG-15067
- ii. Drawing No. of Hex. Head Bolt for Phonic wheel of CTRB M8X35 (LHB Shell with FIAT Bogies): CG-15071
- iii. Drawing No. of Hex. Head Screw for Earthing device of CTRB M8X25 (LHB Shell with FIAT Bogies): CG-15070

Railways are also advised to follow the procedure as below during locking/unlocking of the screws/bolt used for CTRB of FIAT bogies:

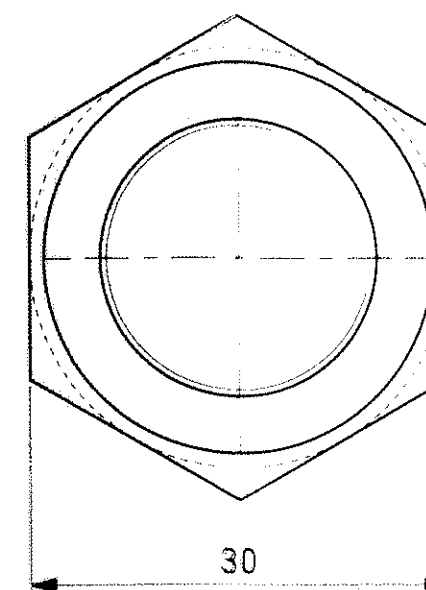
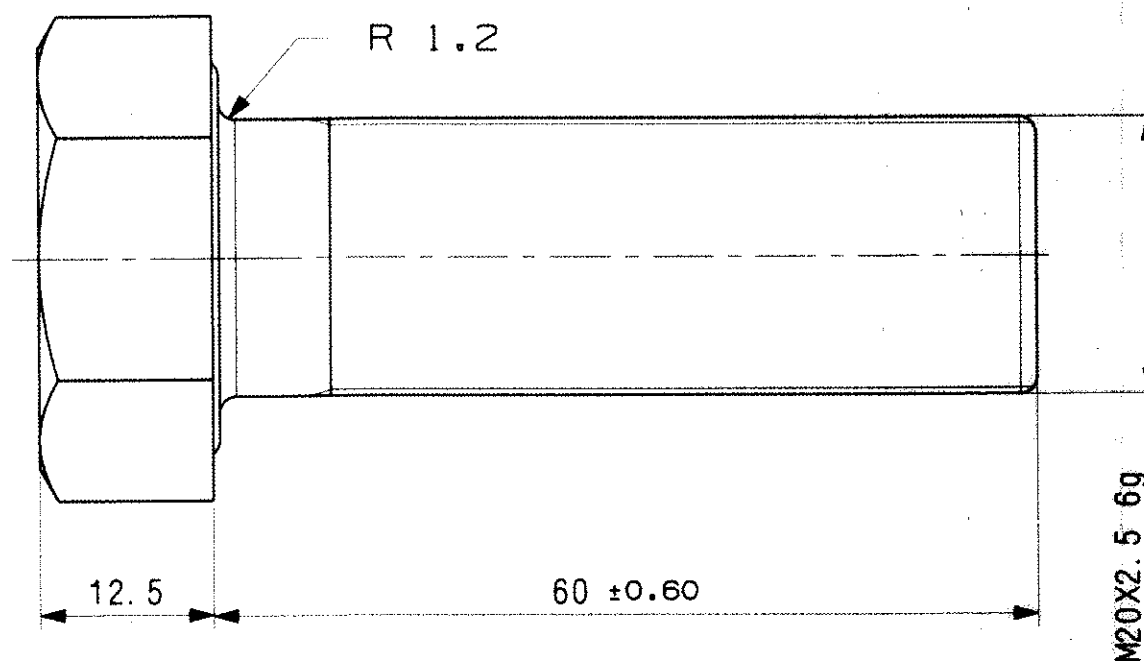
- i. The axle end holes should be checked with GO - NO GO thread plug gauge for correct size and thread condition. If any of the tapped hole is worn out, the axle shall be detained in workshop for thorough examination and repair as per maintenance manual for LHB Coaches.
- ii. End locking plates should be replaced every time its folds are opened to unscrew Hex. Head Screw for CTRB M20X60.

- iii. The locking screws/bolt should be of high tensile steel and of reputed brands as mentioned in the applicable drawings. The condition of their threads should be checked with GO - NO GO thread ring gauges and worn out bolts replaced.
- iv. The locking screws/bolt head should be free from any damages and should have proper spanner grip. The length of the bolt should be less than that of tapped axle end holes. The locking screws/bolt in service should not be reused unless they meet the above standards.
- v. The locking screws/bolt while fitting should have no radial or axial play.
- vi. Washers of M8X35 bolts of Phonic wheel of CTRB should be replaced in every unlocking of the bolts.

DA: As above


06/07/2015

(Deependra Kumar)
Director/Std./Carriage
For Director General/ Carriage



NOTE:-

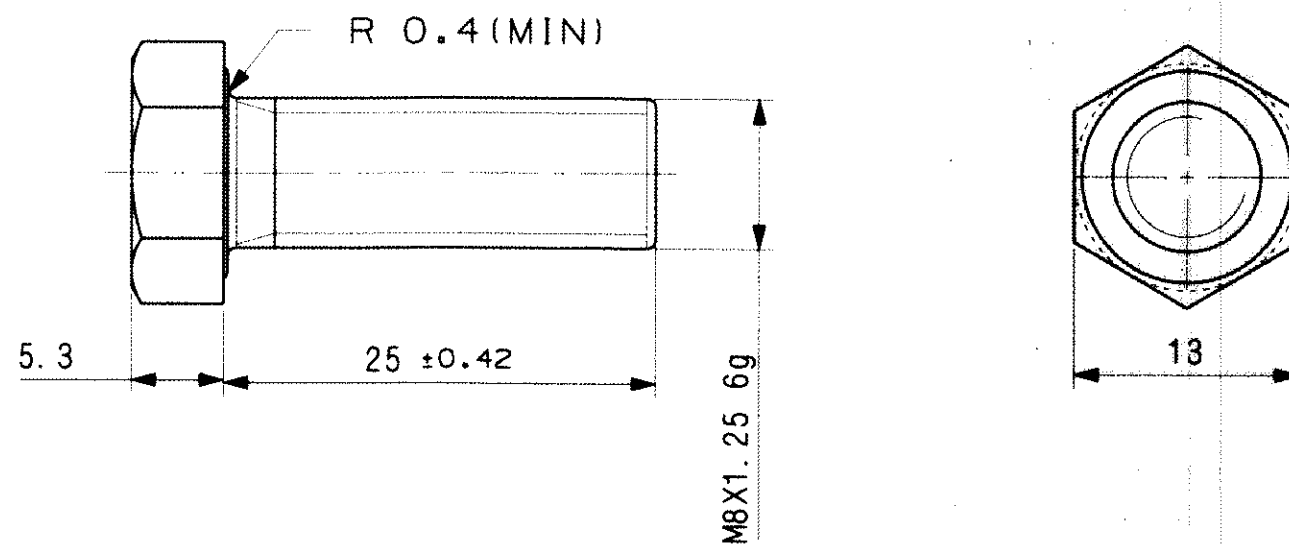
1. THE HEX. HEAD SCREW SHALL BE OF MAKE TVS OR UNBRAKO OR LPS ONLY.
2. FOR OTHER DIMENSIONS & GEOMETRY REFER IS: 1364 (PART-2) OR BSEN ISO 4017 (LATEST VERSION).
3. HEX. HEAD SCREW THREADS SHOULD BE FORMED BY COLD ROLLING PROCESS AND THREAD PROFILE SHALL CONFORM TO IS: 4218 PART-IV. HEX. HEAD SCREW THREADS TOLERANCE CLASS SHOULD BE 6g (IS: 1364 PART-2/ IS: 4218 PART-IV) AND TO WORK IN AXLE END THREADED HOLES TO A TOLERANCE CLASS OF 6H (IS: 4218 PART-IV).
4. THE THREAD PROFILE SHALL BE CHECKED / MEASURED BY TRAVELLING MICROSCOPE OR PROFILE PROJECTOR IN ADDITION TO CONVENTIONAL THREAD GAUGE.
5. MATERIAL OF HEX. HEAD SCREWS SHALL BE STEEL TO IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION) AND PROPERTY CLASS 8.8. THE MAXIMUM DEPTH OF COMPLETE DECARBURIZATION, SHALL BE 0.015MM.
6. MECHANICAL PROPERTIES OF STEEL SHALL BE IN ACCORDANCE WITH IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION).
7. THE SURFACE TREATMENT OF HEX. HEAD SCREW SHALL BE PHOSPHATE COATING HAVING COATING WEIGHT 4.3 TO 5.5 G/M² (PHOSPHATING PROCESS CLASS-B) TO IS: 3618.
8. SAMPLING SHALL BE IN ACCORDANCE WITH IS: 2614.
9. MARKING AND MODE OF DELIEVERY OF HEX. HEAD SCREWS SHALL BE IN ACCORDANCE TO IS: 1367 PART-18.
10. IN REGARD TO REQUIREMENT NOT COVERED ABOVE, HEX. HEAD SCREWS SHALL CONFORM TO IS: 1367 PART-1.

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ALT.	ITEM	AUTHY.	DESCRIPTION	CHKD.	DATE

ASSEMBLY DRGS.	SUPERSEDED BY:-	INDIAN RAILWAY STANDARDS
REFERENCE :-	SUPERSEDES:-	LHB SHELL WITH FIAT BOGIES
	SCALE: P	
	2:1	
	C	
	D	
	J.SSTD/13/15	
CDIC NO. :-	B.G.	R.D.S.O. (CG)
		CG-15067

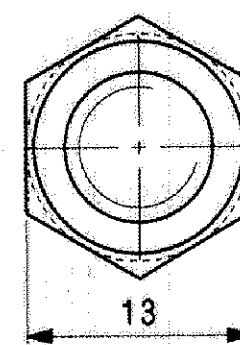
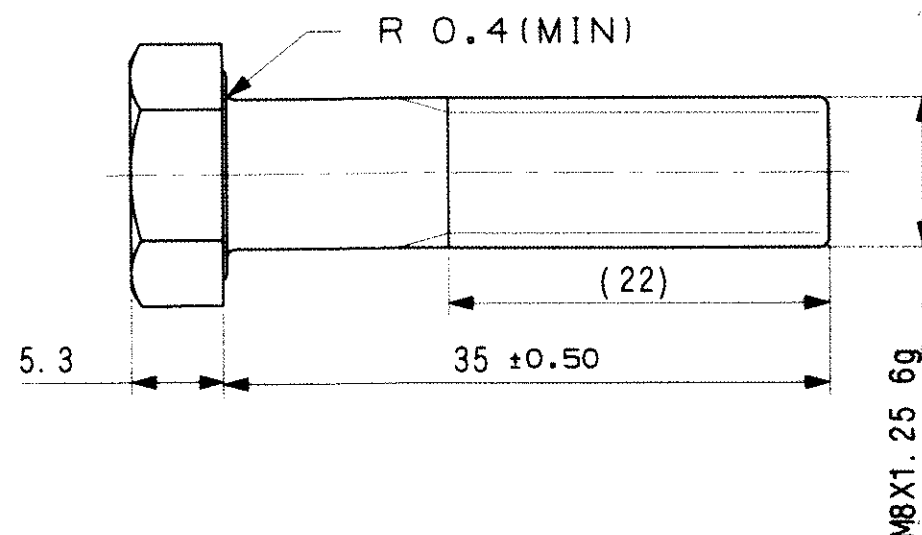


NOTE:-

1. THE HEX. HEAD SCREW SHALL BE OF MAKE TVS OR UNBRAKO OR LPS ONLY.
2. FOR OTHER DIMENSIONS & GEOMETRY REFER IS: 1364 (PART-2) OR BSEN ISO 4017 (LATEST VERSION).
3. HEX. HEAD SCREW THREADS SHOULD BE FORMED BY COLD ROLLING PROCESS AND THREAD PROFILE SHALL CONFORM TO IS: 4218 PART-IV. HEX. HEAD SCREW THREADS TOLERANCE CLASS SHOULD BE 6g (IS: 1364 PART-2/ IS: 4218 PART-IV) AND TO WORK IN SECURITY DISC THREADED HOLES TO A TOLERANCE CLASS OF 6H (IS: 4218 PART-IV).
4. THE THREAD PROFILE SHALL BE CHECKED / MEASURED BY TRAVELLING MICROSCOPE OR PROFILE PROJECTOR IN ADDITION TO CONVENTIONAL THREAD GAUGE.
5. MATERIAL OF HEX. HEAD SCREWS SHALL BE STEEL TO IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION) AND PROPERTY CLASS 10.9. THE MAXIMUM DEPTH OF COMPLETE DECARBURIZATION, SHALL BE 0.015MM.
6. MECHANICAL PROPERTIES OF STEEL SHALL BE IN ACCORDANCE WITH IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION).
7. THE SURFACE TREATMENT OF HEX. HEAD SCREW SHALL BE PHOSPHATE COATING HAVING COATING WEIGHT 4.3 TO 5.5 G/M² (PHOSPHATING PROCESS CLASS-B) TO IS: 3618.
8. SAMPLING SHALL BE IN ACCORDANCE WITH IS: 2614.
9. MARKING AND MODE OF DELIVERY OF HEX. HEAD SCREWS SHALL BE IN ACCORDANCE TO IS: 1367 PART-18.
10. IN REGARD TO REQUIREMENT NOT COVERED ABOVE, HEX. HEAD SCREWS SHALL CONFORM TO IS: 1367 PART-1.

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ASSEMBLY DRGS.		SUPERSEDED BY:-		INDIAN RAILWAY STANDARDS	
REFERENCE :-		SCALE P		LHB SHELL WITH FIAT BOGIES	
		2:1		HEX. HEAD SCREW FOR EARTHING	
		J.SSD/17/15		DEVICE OF CTRB M8X25	
		R.D.S.O.		(LHB SHELL WITH FIAT BOGIES)	
CDIC NO. :-		B.G.		CG-15070	
ALT. ITEM	AUTHY.	DESCRIPTION	CRD.	DATE	



NOTE:-

1. THE HEX. HEAD BOLT SHALL BE OF MAKE TVS OR UNBRAKO OR LPS ONLY.
2. FOR OTHER DIMENSIONS & GEOMETRY REFER IS: 1364 (PART-1) OR BSEN ISO 4014 (LATEST VERSION).
3. HEX. HEAD BOLT THREADS SHOULD BE FORMED BY COLD ROLLING PROCESS AND THREAD PROFILE SHALL CONFORM TO IS: 4218 PART-IV. HEX. HEAD BOLT THREADS TOLERANCE CLASS SHOULD BE 6g (IS: 1364 PART-1/IS: 4218 PART-IV) AND TO WORK IN SECURITY DISC THREADED HOLES TO A TOLERANCE CLASS OF 6H (IS: 4218 PART-IV).
4. THE THREAD PROFILE SHALL BE CHECKED / MEASURED BY TRAVELLING MICROSCOPE OR PROFILE PROJECTOR IN ADDITION TO CONVENTIONAL THREAD GAUGE.
5. MATERIAL OF HEX. HEAD BOLT SHALL BE STEEL TO IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION) AND PROPERTY CLASS 10.9. THE MAXIMUM DEPTH OF COMPLETE DECARBURIZATION, SHALL BE 0.015MM.
6. MECHANICAL PROPERTIES OF STEEL SHALL BE IN ACCORDANCE WITH IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION).
7. THE SURFACE TREATMENT OF HEX. HEAD BOLT SHALL BE PHOSPHATE COATING HAVING COATING WEIGHT 4.3 TO 5.5 G/M² (PHOSPHATING PROCESS CLASS-B) TO IS: 3618.
8. SAMPLING SHALL BE IN ACCORDANCE WITH IS: 2614.
9. MARKING AND MODE OF DELIVERY OF HEX. HEAD BOLT SHALL BE IN ACCORDANCE TO IS: 1367 PART-18.
10. IN REGARD TO REQUIREMENT NOT COVERED ABOVE, HEX. HEAD BOLT SHALL CONFORM TO IS: 1367 PART-1.

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ALT. ITEM	AUTHY.	DESCRIPTION	CHKD.	DATE

ASSEMBLY DRGS.	SUPERSEDED BY:-	INDIAN RAILWAY STANDARDS
REFERENCE :-	SCALE P	LHB SHELL WITH FIAT BOGIES
	2:1	HEX. HEAD BOLT FOR PHONIC
	C	WHEEL OF CTRB M8X35
	D	(LHB SHELL WITH FIAT BOGIES)
	J.SSD/18/15	
CDIC NO. :-	B.G.	R.O.S.O. (CG)
		CG-15071



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Fax (0522) 2458500

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Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



पत्रांक: एमसी/आरबी/डिफेक्ट

दिनांक : 05.09.2014

महाप्रबन्धक (यांत्रिक)

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई- 400 001.
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता - 700 001.
3. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली - 110 001.
4. दक्षिण रेलवे, पार्क टाउन, चेन्नई - 600 003.
5. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद - 500 071.
6. दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता - 700 043.
7. पूर्वोत्तर रेलवे, गोरखपुर - 273 012.
8. पूर्वोत्तर सीमान्त रेलवे, मालीगौव, गुवाहाटी - 781 011.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई - 400 020.
10. पूर्व मध्य रेलवे, हाजीपुर - 844 101.
11. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्प्लेक्स, चन्द्रशेखरपुरा, भुवनेश्वर, उड़ीसा - 751 016.
12. उत्तर मध्य रेलवे, हास्टिंग रोड, इलाहाबाद - 211 001.
13. उत्तर पश्चिम रेलवे, जयपुर - 302 006.
14. दक्षिण पश्चिम रेलवे, हुबली - 580 023.
15. पश्चिम मध्य रेलवे, जबलपुर - 482 001.
16. दक्षिण पूर्व मध्य रेलवे, आर ई आफिस काम्प्लेक्स, बिलासपुर - 495 004.
17. कोंकण रेलवे कारपोरेशन लि., कारपोरेट ऑफिस, बेलापुर भवन, नवी मुम्बई - 400 614
18. इन्टीगरल कोच फैक्ट्री, चेन्नई - 600 038.
19. रेल कोच फैक्ट्री, हुसैनपुर, कपूरथला - 144 602.

विषय: Protection of CTRB during tyre turning of LHB wheelsets fitted with CTRB.

In reference to above, it is advised that during tyre turning of LHB wheelsets fitted with CTRB, some burnt chips/coils/swarfs of the removed material of wheel tread likely to fall on the CTRBs. These chips/coils/swarfs of the wheel material are having high temperature and sharp edges/points and may cause damage to the grease seals of CTRB.

Hence, it is advised to provide adequate protection/covers to CTRBs during tyre turning of LHB wheelsets fitted with CTRB, to prevent the damage of the grease seals of CTRB. Further, it is also advised that unprotected tyre turned wheels and due tyre turned LHB wheelsets fitted with CTRB shall not be parked in the vicinity of Wheel Lathe as burnt chips/coils/swarfs are often found flying in the working space.

संलग्नक: कुछ नहीं

(Handwritten Signature)
05/09/2014
(दीपेन्द्र कुमार)

निदेशक /मानक/सवारीडिब्बा

Copy to:

EDME (Coaching), Rail Bhawan, Railway Board, New Delhi- For kind information.



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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



MC/CTRB/Defects

Date: 10.01.2019

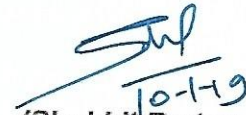
प्रमुख मुख्य यांत्रिक अभियन्ता,

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई- 400 001.	11. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्प्लेक्स, चन्द्रशेखरपुरा, भुवनेश्वर, उड़ीसा- 751 016.
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता- 700 001.	12. उत्तर मध्य रेलवे, हारिंग रोड, इलाहाबाद-211 001.
3. उत्तर रेलवे, बडौदा हाउस, नई दिल्ली- 110 001.	13. उत्तर पश्चिम रेलवे, जयपुर- 302 006.
4. दक्षिण रेलवे, पार्कटाउन, चेन्नई- 600 003.	14. दक्षिण पश्चिम रेलवे, हुबली- 580 023.
5. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद -500 071.	15. पश्चिम मध्य रेलवे, जबलपुर- 482 001.
6. दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता- 700 043.	16. दक्षिण पूर्व मध्य रेलवे, आरई आफिस काम्प्लेक्स, बिलासपुर- 495 004.
7. पूर्वोत्तर रेलवे, गोरखपुर- 273 012.	17. आधुनिक रेल डिबा कारखाना, लालगंज रायबरेली-229 206
8. पूर्वोत्तर सीमान्त रेलवे, मालीगाँव, गुवाहाटी- 781 011.	18. इन्टीगरल कोच फैक्ट्री, चेन्नई- 600 038.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020.	19. रेल कोच फैक्ट्री, हुसैनपुर, कपूरथला- 144 602.
10. पूर्व मध्य रेलवे, हाजीपुर- 844 101.	20. कोंकण रेलवे कार्पोरेशन लि., कार्पोरेट आफिस, बेलापुर भवन, नवी मुम्बई- 400 614.

Sub: Maintenance instructions for Cartridge Taper Roller Bearings (CTRB) for LHB design Coaches.

Please find attached herewith the copy of Do's and Don'ts for Cartridge Taper Roller Bearings (CTRB) for LHB design Coaches for Railway Workshops/Pus and Coaching Depots.

DA: As above.


(Shobhit Pratap Singh)
Dy. Director/VDG/Carriage
for Director General/Carriage

Copy to :-

ED/CAMTECH, Gwalior - 474005 - for kind information please.

DO's and DONT's for CTRB Maintenance Practices

S.No.	DO's	DON'T's
A.	Instructions for CTRB Mounting on Wheelset in Workshops/PUs.	
1.	Before mounting, Inspect axle journal in a clean and well lit area.	
2.	Bearings should be stored in a clean and well lit area.	Do not remover packing & wrapping of bearings until just ready for mounting.
3.	Bearings should be used on FIFO system. Handling of CTRBs should be in such a way that any part of CTRB doesn't get damaged during handling.	Do not use such bearings, which are stored for more than 24 months without mounting on wheelsets.
4.	Axle journal & shoulder must be cleaned with lint free cloth before mounting of CTRB.	Waste must not be used to clean axle journal & shoulder.
5.	Measure axle journal allowable dia. (i.e. 130.043mm - 130.068mm) and axle shoulder allowable dia. (i.e. 160.134mm - 160.174mm).	Protective wrapping should not be removed until just ready for installation.
6.	Ensure that the bearing cones and backing ring have got an interference fit with the axle journal & axle shoulder.	Heat must not be applied to the bearing cone assemblies to facilitate installation. Do not mount bearing by shrink fit process.
7.	Wheel press or Bearing press along with pilot sleeve assembly should be used to mount the CTRB on LHB wheelsets.	Do not use without calibrated Bearing press or Wheel press for bearing mounting.
8.	Coat the bearing seats of the axle with castor oil, heavy mineral oil, or a molybdenum-disulphide and oil mixture before mounting of CTRB.	DO NOT USE WHITE LEAD. Lead compounds may be detrimental to lubricating greases by acting as an oxidation catalyst.
9.	Final mounting force (value to observe) should be 37-42 tonnes (for Timken make) and 28-32 tonnes (for SKF make) on bearing installation.	Oversize bearing cones should not be used.
10.	Apply a sealant to the backing ring/axle interface to minimize the risk of ingress of water through the backing ring contact area with the axle.	Do not apply sealant before mounting of bearings.
11.	A thin coating of a quick-drying rust preventative (lead free) must also be applied to the portion of the axle between the wheel hub and the bearing.	Do not mount security disc without checking & cleaning of threaded holes of axle end.
12.	After mounting of CTRB, mounting end play of bearing should be checked and it should be in limit. (i.e. 0.025mm-0.330mm for new bearings & 0.025mm-0.500mm for old/refurbished bearings).	Do not send wheelset for assembly in bogie without checking Mounted End Play of bearings.
13.	At last mount the phonic wheel with M8 bolts (refer RDSO letter no. MC/CTRB/Genl. dated 06.07.2015) on one side of wheelset (on security disc). Tightening torque of M-8 bolts should be 21 N-m.	
14.	LHB wheelsets with mounted CTRBs should also be handled properly during transportation & during loading/unloading to/from coaches/trucks.	Do not transport more than one wheelsets with mounted CTRBs on fork lifter or by overhead cranes.

15.	While lowering bogie on LHB wheelsets, due care should be taken to avoid any possibility of damage to any part of bearing.	
B.	Instructions for Wheel Turning	
1.	It is not necessary to remove the bearing assembly during wheel turning, but the bearing assembly must be suitably protected (refer RDSO letter no. MC/RB/Defects dated 05.09.2014) to prevent any steel chips from damaging or entering the bearing. Heavy grease must be used to lubricate the lathe centers.	Do not use white lead to lubricate the lathe centers.
2.	After the wheel turning operation has been completed, clean the end faces and centre holes and bolt holes of the axle. Reapply the end caps, using new locking plates, and torque tighten the bolts in accordance with installation instructions.	Do not mount security (end cap) with once used locking plate.
C.	Instructions for CTRB Dismounting from Wheelsets in Workshops.	
1.	Check the condition of bearing before removing from the axle. Check for bearing cup, seals, cap screws and end caps. If any damage is observed, record the same and also check the condition of mate/other end bearing and record the findings.	
2.	Pressure must only be applied to the backing ring to remove the bearing.	
3.	Ensure that the withdrawal plate and pulling ring adapter is of the correct size for the bearing to be removed. Proper contact with the backing ring and puller alignment is necessary for efficient bearing removal.	
4.	After the bearing assembly is removed from the pilot sleeve, a cardboard insert or a similar device should be inserted in the bore of the bearing assembly to hold the internal bearing parts in place and it should be stored in covered & dry place.	Do not drop the bearing assembly when removing it from the pilot sleeve.
D.	Maintenance instructions of CTRB for Coaching Depots.	
1.	Check the physical condition of phonic wheel, WSP sensor, Carbon bars, spring assembly and oiler ring of earthing device in D2 & D3 schedule.	
2.	Check M-20 (security disc), M-8 bolts (phonic wheel) & M8 screws (earthing device) for loosening and came out from holes in D2 & D3 schedule.	
3.	Check grease oozing and abnormal sound from bearings in D2 & D3 schedule.	
4.	Check M-16 screws of Control arm for loosening and came out from holes in trip schedule.	
5.	Check drain holes of lower control arm for blocked/open in trip schedule. Please ensure holes are open.	
6.	Check Axle box housing out of position in trip, D2 and D3 schedule.	Don't ignore control arm out of position, it may cause a load concentration on the bearing and if continued in service for any length of time may result in serious bearing damage.

E.	Instructions for C&W running staff:	
1.	Check bearings for abnormal temperature rise in an axle box in service at halting stations by the non contact type thermometer (laser gun). If axle box temperature found 65 ⁰ C or above but below 80 ⁰ C, Recheck the temperature to next halting station.	Don't try to check bearings temperature, if train is in motion.
2.	If axle box temperature found 80 ⁰ C or above, Coach should be withdrawn from service.	
3.	If the difference between two bearings is more than 20 ⁰ C, the warmer bearing should be removed.	





भारत सरकार - रेल मंत्रालय
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Fax (0522) 2458500

Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



MC/CTRB/Genl.

Date: 06.07.2015

The General Manager (Mech.),

1. Central Railway, Chhatrapati Shivaji Terminus, Mumbai - 400 001
2. Eastern Railway, Fairlie Place, Kolkata - 700 001
3. Northern Railway, Baroda House, New Delhi - 110 001
4. Southern Railway, Park Town, Chennai - 600 003
5. South Central Railway, Rail Nilayam, Secunderabad - 500 071
6. South Eastern Railway, Garden Reach, Kolkata - 700 043
7. North Eastern Railway, Gorakhpur - 273 001
8. Northeast Frontier Railway, Maligaon, Guwahati - 781 011
9. Western Railway, Churchgate, Mumbai - 400 020
10. East Central Railway, Hajipur - 844 101
11. East Coast Railway, Chandrasekharpur, Bhubaneswar - 751 016
12. North Central Railway, Allahabad - 211 001
13. North Western Railway, Jaipur - 302 006
14. South Western Railway, Hubli - 580 023
15. West Central Railway, Jabalpur - 482 008
16. South East Central Railway, Bilaspur - 495 004
17. Integral Coach Factory, Chennai - 600 038
18. Rail Coach Factory, Hussainpur, Kapurthala, Punjab - 144 602
19. Rail Coach Factory, Lalganj, Raebareli - 229 120
20. Konkan Railway Corp. Ltd. Corporate office Belapur Bhawan Nawi Mumbai - 400 614

Sub: Hexagonal Head Screws/Bolt used for CTRB of FIAT bogies.

Ref: (i). ECoR's letter No. MCSW/IED/MM/M-14-1 (LHB)/1302 dated 27.05.2015.

(ii). WR's letter No. M 113/17/4 dated 20.04.2015.

(iii) This office letter no. MC/RB/Defect dated 06.06.2012.

In reference to above, RDSO have standardized the drawings of Hex. Head Screw for CTRB M20X60, Hex. Head Bolt for Phonic wheel of CTRB M8X35 and Hex. Head Screw for Earthing device of CTRB M8X25 by specifying tolerance on threads, property class and make. The following drawings of the fasteners are enclosed herewith.

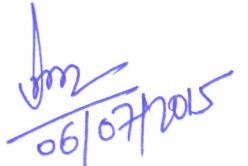
- i. Drawing No. of Hex. Head Screw for CTRB M20X60 (LHB Shell with FIAT Bogies) : CG-15067
- ii. Drawing No. of Hex. Head Bolt for Phonic wheel of CTRB M8X35 (LHB Shell with FIAT Bogies): CG-15071
- iii. Drawing No. of Hex. Head Screw for Earthing device of CTRB M8X25 (LHB Shell with FIAT Bogies): CG-15070

Railways are also advised to follow the procedure as below during locking/unlocking of the screws/bolt used for CTRB of FIAT bogies:

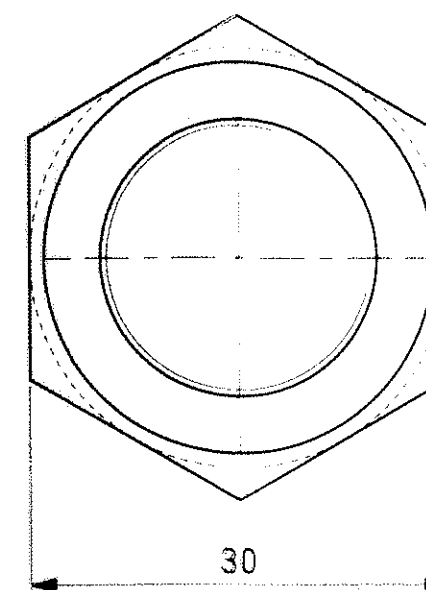
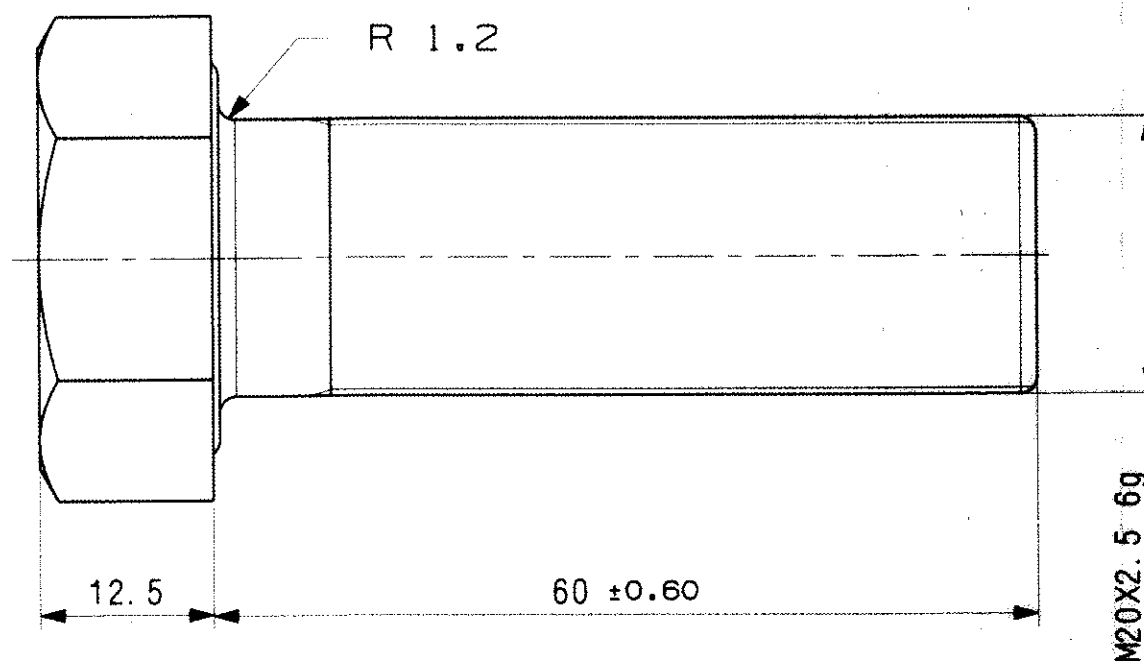
- i. The axle end holes should be checked with GO – NO GO thread plug gauge for correct size and thread condition. If any of the tapped hole is worn out, the axle shall be detained in workshop for thorough examination and repair as per maintenance manual for LHB Coaches.
- ii. End locking plates should be replaced every time its folds are opened to unscrew Hex. Head Screw for CTRB M20X60.

- iii. The locking screws/bolt should be of high tensile steel and of reputed brands as mentioned in the applicable drawings. The condition of their threads should be checked with GO - NO GO thread ring gauges and worn out bolts replaced.
- iv. The locking screws/bolt head should be free from any damages and should have proper spanner grip. The length of the bolt should be less than that of tapped axle end holes. The locking screws/bolt in service should not be reused unless they meet the above standards.
- v. The locking screws/bolt while fitting should have no radial or axial play.
- vi. Washers of M8X35 bolts of Phonic wheel of CTRB should be replaced in every unlocking of the bolts.

DA: As above


06/07/2015

(Deependra Kumar)
Director/Std./Carriage
For Director General/ Carriage



NOTE:-

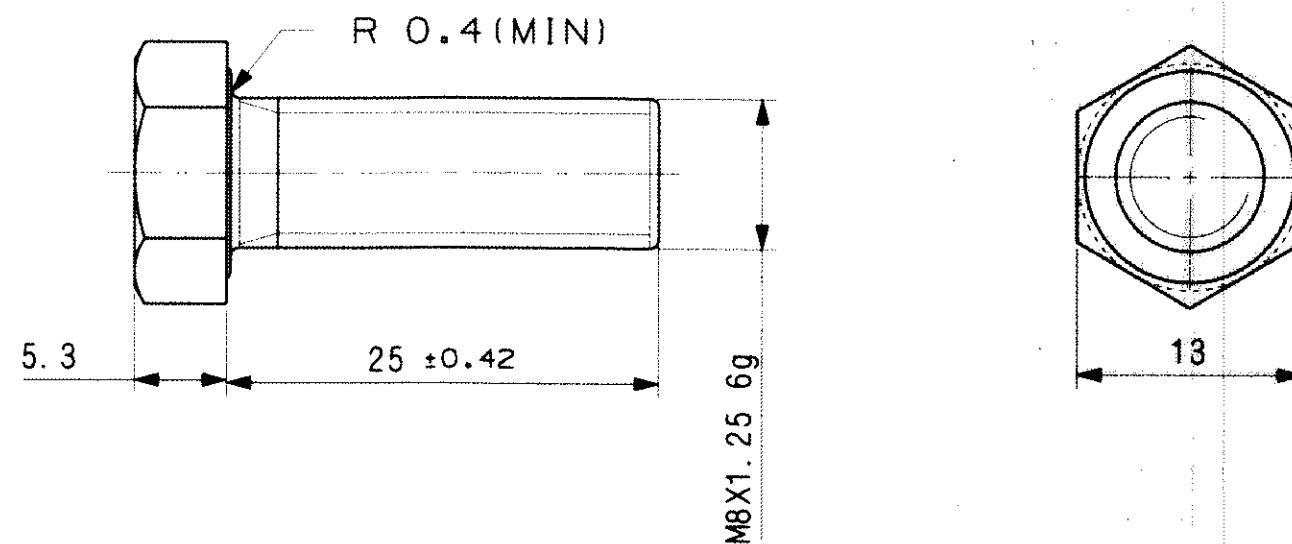
1. THE HEX. HEAD SCREW SHALL BE OF MAKE TVS OR UNBRAKO OR LPS ONLY.
2. FOR OTHER DIMENSIONS & GEOMETRY REFER IS: 1364 (PART-2) OR BSEN ISO 4017 (LATEST VERSION).
3. HEX. HEAD SCREW THREADS SHOULD BE FORMED BY COLD ROLLING PROCESS AND THREAD PROFILE SHALL CONFORM TO IS: 4218 PART-IV. HEX. HEAD SCREW THREADS TOLERANCE CLASS SHOULD BE 6g (IS: 1364 PART-2/ IS: 4218 PART-IV) AND TO WORK IN AXLE END THREADED HOLES TO A TOLERANCE CLASS OF 6H (IS: 4218 PART-IV).
4. THE THREAD PROFILE SHALL BE CHECKED / MEASURED BY TRAVELLING MICROSCOPE OR PROFILE PROJECTOR IN ADDITION TO CONVENTIONAL THREAD GAUGE.
5. MATERIAL OF HEX. HEAD SCREWS SHALL BE STEEL TO IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION) AND PROPERTY CLASS 8.8. THE MAXIMUM DEPTH OF COMPLETE DECARBURIZATION, SHALL BE 0.015MM.
6. MECHANICAL PROPERTIES OF STEEL SHALL BE IN ACCORDANCE WITH IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION).
7. THE SURFACE TREATMENT OF HEX. HEAD SCREW SHALL BE PHOSPHATE COATING HAVING COATING WEIGHT 4.3 TO 5.5 G/M² (PHOSPHATING PROCESS CLASS-B) TO IS: 3618.
8. SAMPLING SHALL BE IN ACCORDANCE WITH IS: 2614.
9. MARKING AND MODE OF DELIEVERY OF HEX. HEAD SCREWS SHALL BE IN ACCORDANCE TO IS: 1367 PART-18.
10. IN REGARD TO REQUIREMENT NOT COVERED ABOVE, HEX. HEAD SCREWS SHALL CONFORM TO IS: 1367 PART-1.

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ALT. ITEM	AUTHY.	DESCRIPTION	CHKD.	DATE

ASSEMBLY DRGS.	SUPERSEDED BY:-	INDIAN RAILWAY STANDARDS
REFERENCE :-	SUPERSEDES:-	LHB SHELL WITH FIAT BOGIES
	SCALE: P	HEX. HEAD SCREW FOR CTRB M20X60
	2:1	(LHB SHELL WITH FIAT BOGIES)
	C	
	D	
	J.SSTD/13/15	
CDIC NO. :-	B.G.	R.D.S.O. (CG)
		CG-15067

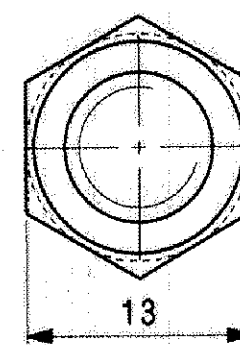
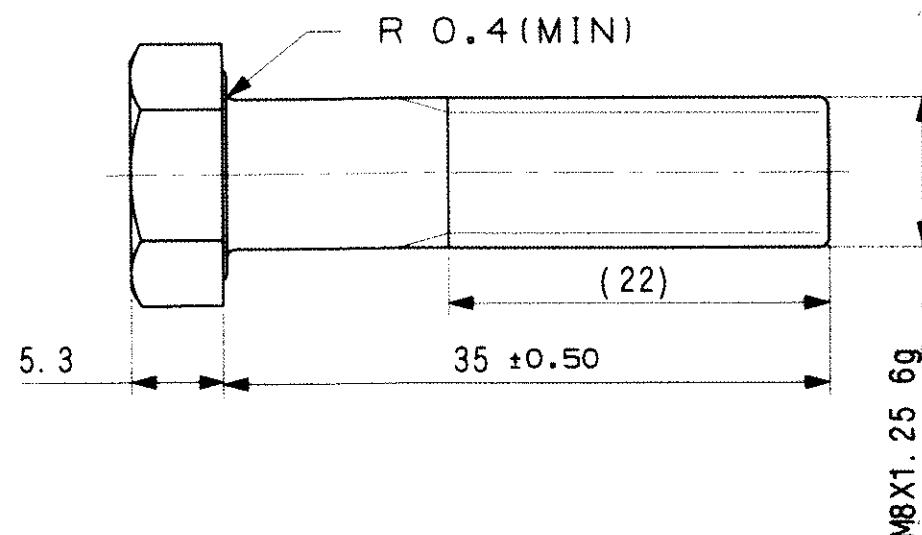


NOTE:-

1. THE HEX. HEAD SCREW SHALL BE OF MAKE TVS OR UNBRAKO OR LPS ONLY.
2. FOR OTHER DIMENSIONS & GEOMETRY REFER IS: 1364 (PART-2) OR BSEN ISO 4017 (LATEST VERSION).
3. HEX. HEAD SCREW THREADS SHOULD BE FORMED BY COLD ROLLING PROCESS AND THREAD PROFILE SHALL CONFORM TO IS: 4218 PART-IV. HEX. HEAD SCREW THREADS TOLERANCE CLASS SHOULD BE 6g (IS: 1364 PART-2/ IS: 4218 PART-IV) AND TO WORK IN SECURITY DISC THREADED HOLES TO A TOLERANCE CLASS OF 6H (IS: 4218 PART-IV).
4. THE THREAD PROFILE SHALL BE CHECKED / MEASURED BY TRAVELLING MICROSCOPE OR PROFILE PROJECTOR IN ADDITION TO CONVENTIONAL THREAD GAUGE.
5. MATERIAL OF HEX. HEAD SCREWS SHALL BE STEEL TO IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION) AND PROPERTY CLASS 10.9. THE MAXIMUM DEPTH OF COMPLETE DECARBURIZATION, SHALL BE 0.015MM.
6. MECHANICAL PROPERTIES OF STEEL SHALL BE IN ACCORDANCE WITH IS: 1367 PART-3 OR BSEN ISO 898-1 (LATEST VERSION).
7. THE SURFACE TREATMENT OF HEX. HEAD SCREW SHALL BE PHOSPHATE COATING HAVING COATING WEIGHT 4.3 TO 5.5 G/M² (PHOSPHATING PROCESS CLASS-B) TO IS: 3618.
8. SAMPLING SHALL BE IN ACCORDANCE WITH IS: 2614.
9. MARKING AND MODE OF DELIVERY OF HEX. HEAD SCREWS SHALL BE IN ACCORDANCE TO IS: 1367 PART-18.
10. IN REGARD TO REQUIREMENT NOT COVERED ABOVE, HEX. HEAD SCREWS SHALL CONFORM TO IS: 1367 PART-1.

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ASSEMBLY DRGS.		SUPERSEDED BY:-		INDIAN RAILWAY STANDARDS	
REFERENCE :-		SCALE P		LHB SHELL WITH FIAT BOGIES	
		2:1		HEX. HEAD SCREW FOR EARTHING	
		J.SSD/17/15		DEVICE OF CTRB M8X25	
		R.D.S.O.		(LHB SHELL WITH FIAT BOGIES)	
CDIC NO. :-		B.G.		CG-15070	
ALT. ITEM	AUTHY.	DESCRIPTION	CRD.	DATE	



NOTE:-

1. THE HEX. HEAD BOLT SHALL BE OF MAKE TVS OR UNBRAKO OR LPS ONLY.
2. FOR OTHER DIMENSIONS & GEOMETRY REFER IS: 1364 (PART-1) OR BSEN ISO 4014(LATEST VERSION).
3. HEX. HEAD BOLT THREADS SHOULD BE FORMED BY COLD ROLLING PROCESS AND THREAD PROFILE SHALL CONFORM TO IS: 4218 PART-IV. HEX. HEAD BOLT THREADS TOLERANCE CLASS SHOULD BE 6g(IS: 1364 PART-1/ IS: 4218 PART-IV) AND TO WORK IN SECURITY DISC THREADED HOLES TO A TOLERANCE CLASS OF 6H(IS: 4218 PART-IV).
4. THE THREAD PROFILE SHALL BE CHECKED /MEASURED BY TRAVELLING MICROSCOPE OR PROFILE PROJECTOR IN ADDITION TO CONVENTIONAL THREAD GAUGE.
5. MATERIAL OF HEX. HEAD BOLT SHALL BE STEEL TO IS: 1367 PART-3 OR BSEN ISO 898-I(LATEST VERSION) AND PROPERTY CLASS 10.9. THE MAXIMUM DEPTH OF COMPLETE DECARBURIZATION, SHALL BE 0.015MM.
6. MECHANICAL PROPERTIES OF STEEL SHALL BE IN ACCORDANCE WITH IS: 1367 PART-3 OR BSEN ISO 898-I (LATEST VERSION).
7. THE SURFACE TREATMENT OF HEX. HEAD BOLT SHALL BE PHOSPHATE COATING HAVING COATING WEIGHT 4.3 TO 5.5 G/M² (PHOSPHATING PROCESS CLASS-B) TO IS: 3618.
8. SAMPLING SHALL BE IN ACCORDANCE WITH IS: 2614.
9. MARKING AND MODE OF DELIEVERY OF HEX. HEAD BOLT SHALL BE IN ACCORDANCE TO IS: 1367 PART-18.
10. IN REGARD TO REQUIREMENT NOT COVERED ABOVE, HEX. HEAD BOLT SHALL CONFORM TO IS: 1367 PART-1.

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ALT. ITEM	AUTHY.	DESCRIPTION	CHKD.	DATE

ASSEMBLY DRGS.	SUPERSEDED BY:-	INDIAN RAILWAY STANDARDS
REFERENCE :-	SCALE P 2:1 C D J.SSD/18/15	LHB SHELL WITH FIAT BOGIES
CDIC NO. :-	B.G.	HEX. HEAD BOLT FOR PHONIC WHEEL OF CTRB M8X35 (LHB SHELL WITH FIAT BOGIES)
	R.O.S.O. ICG	CG-15071



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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



पत्रांक: एमसी/आरबी/डिफेक्ट

दिनांक : 05.09.2014

महाप्रबन्धक (यांत्रिक)

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई- 400 001.
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता - 700 001.
3. उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली - 110 001.
4. दक्षिण रेलवे, पार्क टाउन, चेन्नई - 600 003.
5. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद - 500 071.
6. दक्षिण पूर्व रेलवे, गार्डेन रीच, कोलकाता - 700 043.
7. पूर्वोत्तर रेलवे, गोरखपुर - 273 012.
8. पूर्वोत्तर सीमान्त रेलवे, मालीगौव, गुवाहाटी - 781 011.
9. पश्चिम रेलवे, चर्चगेट, मुम्बई - 400 020.
10. पूर्व मध्य रेलवे, हाजीपुर - 844 101.
11. पूर्व तटीय रेलवे, बीडीए रेंटल कालोनी, रेलवे काम्प्लेक्स, चन्द्रशेखरपुरा, भुवनेश्वर, उड़ीसा - 751 016.
12. उत्तर मध्य रेलवे, हार्लिंग रोड, इलाहाबाद - 211 001.
13. उत्तर पश्चिम रेलवे, जयपुर - 302 006.
14. दक्षिण पश्चिम रेलवे, हुबली - 580 023.
15. पश्चिम मध्य रेलवे, जबलपुर - 482 001.
16. दक्षिण पूर्व मध्य रेलवे, आर ई आफिस काम्प्लेक्स, बिलासपुर - 495 004.
17. कोंकण रेलवे कारपोरेशन लि., कारपोरेट ऑफिस, बेलापुर भवन, नवी मुम्बई - 400 614
18. इन्टीगरल कोच फैक्ट्री, चेन्नई - 600 038.
19. रेल कोच फैक्ट्री, हुसैनपुर, कपूरथला - 144 602.

विषय: Protection of CTRB during tyre turning of LHB wheelsets fitted with CTRB.

In reference to above, it is advised that during tyre turning of LHB wheelsets fitted with CTRB, some burnt chips/coils/swarfs of the removed material of wheel tread likely to fall on the CTRBs. These chips/coils/swarfs of the wheel material are having high temperature and sharp edges/points and may cause damage to the grease seals of CTRB.

Hence, it is advised to provide adequate protection/covers to CTRBs during tyre turning of LHB wheelsets fitted with CTRB, to prevent the damage of the grease seals of CTRB. Further, it is also advised that unprotected tyre turned wheels and due tyre turned LHB wheelsets fitted with CTRB shall not be parked in the vicinity of Wheel Lathe as burnt chips/coils/swarfs are often found flying in the working space.

संलग्नक: कुछ नहीं

(Signature)
05/09/2014
(दीपेन्द्र कुमार)

निदेशक /मानक/सवारीडिब्बा

Copy to:

EDME (Coaching), Rail Bhawan, Railway Board, New Delhi- For kind information.