

Fax : 91-0622 2452581 & 2465716
Telephone : 2465716 & 2492225



भारत सरकार - रेल मंत्रालय
अनुसंधान, अभिकल्प और मानक संगठन
लखनऊ - 226011
Government of India - Ministry of Railways
Research, Designs & Standards
Organization, Lucknow - 226011

EL/1.3.10/3

Date: 26.10.2016

Chief Electrical Engineer,

- Chittaranjan Locomotives Works, Chittaranjan-713 331
- Central railway, Mumbai CST-400 001
- Eastern Railway, Fairlie Place, Kolkata-700 001
- Western Railway, Church Gate, Mumbai-400 020

Chief Works Manager,

- Eastern Railway Workshop, Kancharapara Workshop, 24-North Parganas, (W.B)
- Central Railway, Electric Loco Workshop, Bhusawal
- Western railway Dahod workshop, Dahod

Sub.: Measurement of 'C' Clearance of MSU assembly of 6FRA-6068 TM

1. During the Technical Audit for maintenance practices of 3-phase MSU assembly carried out at CLW, ELW/BSL and KPA workshop, it has been observed that 'C' clearance is not coming within limits. Range of 'C' Clearance is specified as 0.1 to 0.7 mm in ABB maintenance Manual document No. 3EHW 411416, Chapter 2.06, page no. 27/36 and TOT document 'Wheel set Assembly Manual', page no. 20 of 54. Observed value of 'C' clearances is found less than 0.05 mm in most of the cases.

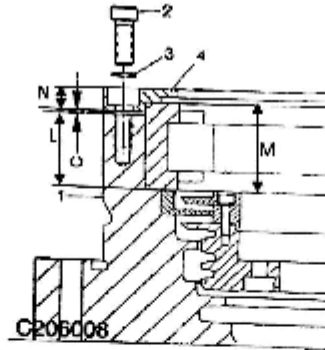


Fig. 1: Relevant Portion of Drawing No. 1209-01.011-018

Distance between item1 (Suspension tube) and item 4 (Supporting ring) is defined as 'C' clearance.

2. 'C' clearance is effected by depth of DE bearing seating portion in MSU, width of DE bearing (Outer race) and step in supporting ring.
3. From drawings of Suspension tube, Suspension tube bearing and Supporting ring, range of 'C' clearance is found from -0.15 to +0.85 mm as detailed below:

Dimension	Description	Range Specified	Range Actual
L	Depth of DE bearing seating portion in MSU (Drg. No. 1209-01.011-018)	$(97 \pm 0.1 \text{ mm}) - (49 \pm 0.1 \text{ mm})$	48.2 to 47.8 mm
M	The width of DE bearing (Outer racer) (Drg. No. 1209-01.411-020)	$(56-0.1) \text{ to } (56-0.4) \text{ mm}$	55.9 to 55.6 mm
N	The depth of step available in Supporting ring (Drawing No. 1209-01.21-036)	$7.55-0.1 \text{ mm}$	7.45 to 7.65
M - (L+N)	C clearance is defined as M - (L+N) The possible range of 'C' clearance based on the various tolerance given above are as given below:		
Calculation of 'C' clearance	Max to max	$55.9-(48.2+7.55)$	0.15
	Min to min	$55.6-(47.8+7.45)$	0.35
	Max to min	$55.9-(47.8+7.45)$	0.85
	Min to max	$55.6-(48.2+7.55)$	-0.15

4. If C clearance is zero or negative, it indicates that supporting ring is not touching/pressing the outer racer (DE) which is not desirable.
5. To find out the root cause of not achieving the 'C' clearance, CLW and Workshops (BSL, KPA & Dahod) are requested to actually measure & record following dimensions for minimum 12 MSUs (Two Loco sets) while assembling the MSUs:

SN	Depth of DE bearing seating portion in MSU (L) (mm)	Width of DE bearing outer racer (M) (mm)	Depth of step in Supporting ring (N) (mm)	Measured value of 'C' clearance (mm)
1.				
2.				

6. It is observed that depth of bearing seating portion is not explicitly specified in the CLW Drg. No. 1209-01.011-018 and hence it is not measured at the time of inspection also. CLW is requested to incorporate this dimension in the drawing for better appreciation and measurement.

7. Positive C clearance can be assured if depth of step available in Supporting ring which is shown as dimension 'N' in above table is modified from existing $7.55_{-0.1}^{+0.1}$ to $7.30_{-0.1}^{+0.1}$ in Drawing No. 1209-01.21-036. In this case range of C clearance will be from 0.1 to 0.9 mm.

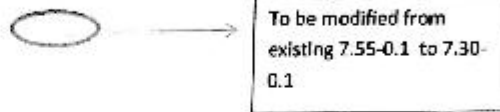


Fig. 2: Relevant Portion of Drawing No. 1209-01.21-036

8. CLW & Workshops (BSL, KPA & Dahod) are requested to send the data mentioned in paragraph 5 above and their comments on the proposal to modify the depth of step available in Supporting ring in Drawing No. 1209-01.21-036 from existing $7.55_{-0.1}^{+0.1}$ to $7.30_{-0.1}^{+0.1}$ mm within one month time to RDSO.


(P.K. Saraswat)
for Director General/Electrical

Copy to :

1. M/s Kharagpur Metal & Reforming Industries Pvt. Ltd, Andul Road, Howrah-711 108
2. M/s Kay Pee Equipments Pvt. Ltd, 46/6/2, Chatterjee Para Lane, Kadamtala, Howrah-711 108
3. M/s Kalyani Engineering Works, 109,110, Anand Industrial Estate, Mohan Nagar, Ghaziabad,

For information and submitting their comments on the above proposal to modify the depth of step available in Supporting ring in Drawing No. 1209-01.21-036 from existing $7.55_{-0.1}^{+0.1}$ to $7.30_{-0.1}^{+0.1}$ mm.


(P.K. Saraswat)
for Director General/Electrical