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Government of India - Ministry of  
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Research, Designs & Standards  
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226011  
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No. EL/2.2.13

Date: As signed

To Principal Chief Electrical Engineers:

1.	Central Railway, Mumbai CST-400001	मध्य रेलवे, मुम्बई ,सीएसटी-400001
2.	East Central Railway, Hazipur-844101	पूर्व मध्य रेलवे, हाजीपुर- 844101
3.	East Coast Railway, Chandra Shekharpur, Bhubaneswar-751017	पूर्व तटीय रेलवे, चन्द्रशेखरपुर, भुवनेश्वर-751 017
4.	Eastern Railway, Fairlie Place, Kolkata -700 001.	पूर्व रेलवे, फेयर्ली प्लेस, कोलकाता-700 001
5.	North Central Railway, Block-A, Subedarganj, Allahabad- 211 033	उत्तर मध्य रेलवे, ब्लॉक— ए, सुबेदारगंज इलाहाबाद – 211 033
6.	Northern Railway, Baroda House, New Delhi- 110001	उत्तर रेलवे, बड़ोदा हाउस, नयी दिल्ली – 110001
7.	North Western Railway, Jaipur- 302 006	उत्तर पश्चिम रेलवे जयपुर- 302006
8.	North Eastern Railway, Gorakhpur-273001	उत्तर पूर्व रेलवे गोरखपुर- 273001
9.	North East Frontier Railway, Maligaon, Guwahati- 781011	उत्तर पूर्व फ्रन्टीयर रेलवे मालीगाँव गुवाहाटी-781011
10.	South Central Railway, Secunderabad -500371	दक्षिण मध्य रेलवे, रेल निलायम, सिकंदराबाद-500 371
11.	South East Central Railway, Bilaspur - 495004	दक्षिण पूर्व मध्य रेलवे, बिलासपुर – 495 004
12.	South Eastern Railway, Garden reach, Kolkata- 700043	दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता-700 043
13.	Southern Railway, Park Town, Chennai - 600003	दक्षिण रेलवे, पार्क टाउन, चेन्नई-600003
14.	South Western Railway, Hubli- 580020	दक्षिण पश्चिम रेलवे हुबली-580020
15.	West Central Railway, Jabalpur-482001	पश्चिम मध्य रेलवे, जबलपुर – 482001
16.	Western Railway, Churchgate, Mumbai-400 020	पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020
17.	Chittaranjan Locomotive Works, Chittaranjan-713331(WB)	चित्तरंजन रेल इंजन कारखाना, चित्तरंजन – 713331
18.	Banaras Locomotive Works, Varanasi -221 004	बनारस रेल इंजन कारखाना, वाराणसी-221004
19.	Patiala Locomotive Works, Patiala (Punjab)- 147003	पटियाला रेल इंजन कारखाना, पटियाला :पंजाब-147003

**Sub.:** Issue of Special Maintenance Instruction No. RDSO/2025/EL/SMI/0336 Rev.-0 for procedure of measuring free Radial clearance of Traction Motor Bearing using dial gauge in Electric locomotive.

**Ref:** RDSO's letter No. EL/2.2.13 dated 14.02.2025.

1. RDSO has circulated draft Special Maintenance Instruction to ZRs /PUs vide letter Ref. above, for Procedure of measuring free Radial clearance of Traction Motor bearing using dial gauge in Electric locomotives.

2. The comments /feedback received from ELS/CNB/NCR, ELS/TKD/WCR, ELS/NKJ/WCR and ELS/VTa/WR on draft SMI and found draft SMI in order and acceptable.
3. Final Special Maintenance Instruction No. RDSO/2025/EL/SMI/0336 Rev.'0' has been finalized in line with existing SMI No. RDSO/EL-RS/SMI/23 dated 07/05/1978 for measurement of free Clearance of bearing used in Auxiliary motors as decided in meeting held on dated 29.01.2025 at Railway Board for reliability improvement of Traction Motor bearing (NU2236 & NH320).
4. A Special Maintenance Instruction No. RDSO/2025/EL/SMI/0336 is being issued and enclosed herewith for kind information and action please.

**SANJAY  
KUMAR TIWARI**

(Sanjay Kumar Tiwari)  
Executive Director

Digitally signed by  
SANJAY KUMAR TIWARI  
Date: 2025.04.01  
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Copy to:

(i)	M/s Bharat Heavy Electrical limited, Piplani, Bhopal- 462 022.
(ii)	CG Power and Industrial Solutions Ltd, Plot No. 29, 30, 31& 32, New Industrial Area No.1 AKVN, District Raisen Industrial Area, Mandideep, Madhya Pradesh 462046.
(iii)	M/s Saini Electrical Engineering Pvt Ltd, E-7, MIDC, Ambarnath, Mumbai- 421506.
(iv)	M/s Medha Servo Drives Pvt Ltd, 2-3-2/A, behind mint compound, Cherrapalli, Hyderabad-500051
(v)	M/s CRRC Pioneer Electric India Private Limited, Plot Number 177-178, Sector 4, HSIIDC Growth Center Bawal, District, Rewari-123501, Haryana,
(vi)	Govik Industries Private Limited, 720, Tulsiani Chambers, Road 212, Free Press Journal Marg, Nariman Point, Mumbai, Maharashtra 400021
(vii)	M/s Siemens Limited, Birla Aurora, Level 21,Plot No. 1080,Dr. Annie Besant Road, Worli,Mumbai - 400030
(viii)	M/s Bharat Bijlee Limited, 2 MIDC Thane-Belapur Road,Airoli, Navi Mumbai 400 708

for information and necessary action please.



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No. EL/2.2.13

Date: As Signed

**SPECIAL MAINTENANCE INSTRUCTION NO. RDSO/2025/EL/SMI/0336, REV.- '0'  
APRIL-2025**

**1. Title:**

Procedure for measuring bearing clearance used in traction motor of Electric locomotive.

**2. Back Ground**

Presently free Radial internal Clearance measurement of bearing used in traction motor (type 6FRA6068, 6FXA7059, HS15250A and TAO-659) are getting done using feeler gauges which is very subjective method and measured value differ from person to person. The least count of free radial clearance measured by feeler gauge is 10 micron. It also generate scratches on rolling surface of bearing.

The instruction for measuring free clearance of bearing used in auxiliary motor already issued vide special maintenance instruction RDSO/EL-RS/SMI/23 dated 07-05-1978 using dial gauge of least count of 1 micron (0.001mm).

This issue was raised in meeting held on 29.01.2025 at Railway Board for reliability improvement of Traction Motor type 6FRA6068 and decided to update the existing SMI for measurement of free Radial Clearance of traction motor bearing using dial gauge of least count of 0.001mm (1micron) instead of feeler gauges.

**3. Object:**

To overcome the issue of dent marks on the rolling element surface / inner racer raceway while measuring of free Radial Clearance of bearing using feeler gauge and more accurate measurement with least count of one micron using dial gauge .

**4. Instructions**

- i. Take a standard type of cast iron surface base plate of diameter 400 mm size as shown in Figure-1 which can be easily bench mounted.
- ii. Clean the component completely by wiper before measurement.
- iii. First check the calibration status of measuring dial indicator gauge and use the dial gauge of least count of 0.001mm (1 micron)
- iv. Place the bearing on base plate as shown in Figure-2
- v. Clamp the inner race between the surface plate and a top locking plate (Fig-1) by means of a central bolt (Fig-5). The outer racer is not clamped but rests lightly on the surface plate so that it is free to move but is, at the same time, held parallel to the inner race. The thumb screw shown at the front is a pinch screw which permits the vertical spindle, on which the dial gauge is mounted, to be adjusted for height as shown in Figure-1.

- vi. Positioned the dial indicator against outer racer outside surface in the middle of the raceway (Fig-1.)
- vii. Now rotate the bearing clockwise and anti-clock wise to ensure free movement of bearing.
- viii. Push the bearing toward dial indicator and applied the hand pressure on bearing and adjust zero on dial indicator.
- ix. Pull the bearing outward from dial indicator by applying hand pressure and record the variation on dial indicator.
- x. Repeat above steps at three distinct location, 120 degree apart and record the reading of dial indicator.
- xi. Arithmetic mean of 03 recorded reading at different location 120 degree apart on same bearing will give free radial internal clearance of bearing.

#### **5. Application to class of Locomotive:**

Traction motor bearing of Electric locomotive

#### **6. Periodicity of implementation**

- i) During overhauling of TM
- ii) On new Bearing for acceptance tests.


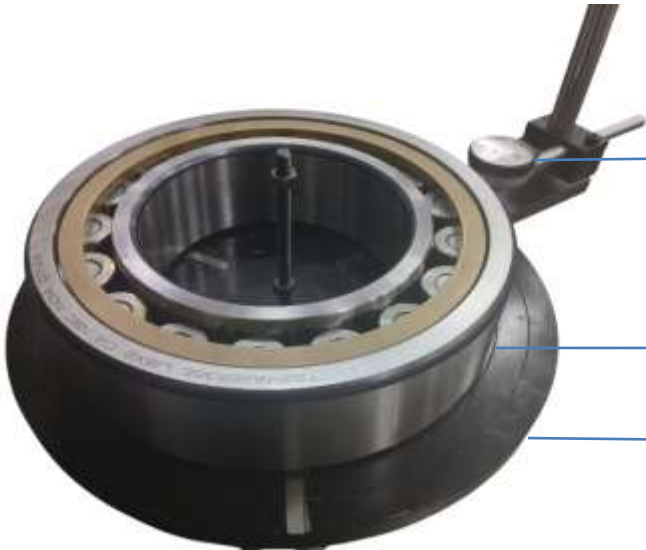
#### **7. Agency of implementation**



PUs, Electric Loco Shed, POH workshop of Railways and Rewinding shops of Railways.

Copy to: As per standard mailing list

**SANJAY  
KUMAR  
TIWARI**  
(Sanjay Kumar Tiwari)  
Executive Director / RS

Digitally signed  
by SANJAY  
KUMAR TIWARI  
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	<p>Locking plate</p> <p>Bearing</p> <p>Base Plate</p>
	<p>Dial indicator</p> <p>Bearing</p> <p>Base Plate</p>
	<p>Dial indicator with least count (0.001 mm)</p>

 <p>Fig-4</p>	<p>Locking Plate</p>
 <p>Fig-5</p>	<p>Central Bolt for Locking of Clamp Plate</p> <p>Locking Plate</p> <p>Bearing</p>

**Checking of free Radial Clearance of Cylindrical Roller Bearing used in Electric Locomotives**