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No. CT/JW/3/Part 1

Date: 07.04.2025

**Principal Chief Engineers/CAO (Const.)**

of all Zonal Railways & All concerned  
(As per mailing list enclosed)

**Sub: Generic Specifications for Self Locking Nuts to be used in Bolts for track fittings**

**Ref:** i) Railway Board's letter no. 2024/CE-II/TSC/90th Srinagar dated 25.07.2024  
ii) Railway Board's letter no. 2021/Track-I/4/Specification/T-60 dt. 01.04.2025

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Following Recommendations of the Committee on Agenda Item No. 1436 (S.No.11) (Modification in Design of MS Bracket (RDSO/T-6906) in Improved SEJ (RDSO/T-6902) to eliminate elongation of holes of Bracket and further loosening of Bolts (RDSO/T-8604) of Check Rail (RDSO/T-6903) of 90th TSC was approved by Railway Board vide letter referred at (i) above.

1. RDSO should convey all the Zonal Railway to conduct trial of self-locking nuts at check rails of ISEJs and fish plated joints of CMS crossings.
2. Decision on regular adoption may be taken on the basis of results of the trial.

In compliance of Railway Board's approval on above mentioned item, SCR, WR & WCR were nominated for conducting the field trial of 10 sets of Self Locking Nuts on each location of Fish Bolts of fish plated joints of 1 in 12 CMS crossings and Check Rail Bolts of Check Rails of Improved SEJs. The trial was conducted by two Zonal Railways (WR & WCR) and performance report was found satisfactory.

On the basis of satisfactory performance report received from WR and WCR, a 'Generic Specifications (Provisional) for Self Locking Nuts to be used in Bolts for track fittings' was sent to Railway Board for approval. Railway Board has approved the above specification vide letter referred at (ii) above for adoption on Indian Railways.

In view of above, copy of the 'Generic Specifications (Provisional) for Self Locking Nuts to be used in Bolts for track fittings is being sent herewith for information & necessary action in this regard.

DA: As above

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(Pradip Kumar Singh)  
Director/Track-III  
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## **MAILING LIST**

### **I. The Principal Chief Engineer**

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12. North Central Railway, HQ Office, Subedarganj, Block - Bhagirathi, Prayagraj -211015
13. North Western Railway, Jaipur - 755001
14. South East Central Railway, Bilaspur - 495004
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### **II. The Chief Administrative Officer (Const.)**

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9. South Western Railway, 18, Millar Road, Bangalore - 560046
10. South Central Railway, Rail Nilayam, Secunderabad - 500371
11. South Eastern Railway, Garden Reach, Kolkata - 700043
12. East Coast Railway, Chandrashekharapur - 751023, Bhubaneshwar
13. Western Railway, Churchgate - 400020
14. CAO (North), East Central Railway, Mahendrugat, Patna - 800004
15. CAO (South), East Central Railway, Mahendrugat, Patna - 800004
16. North Western Railway, Near Railway Station, Jaipur - 302001
17. South East Central Railway, Bilaspur - 495004 (Chhattisgarh)
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### **III. Chairman-cum-Managing Directors**

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**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS**

**Generic Specifications (Provisional) for Self Locking Nuts  
to be used in Bolts for track fittings**

**Issued By**

**Track Design Directorate  
Research Designs and Standards Organization  
Lucknow - 226011**

## **Generic Specifications for Self Locking Nuts to be used in Bolts for track fittings**

### **1. SCOPE:**

This specification covers the generic specifications/ performance parameters and functional requirements for Self-Locking nuts to be used in Bolts for track fittings. The specification covers technical requirements, inspection and supply conditions of the nuts.

### **2. GENERAL PRINCIPLE OF FUNCTIONING:**

- 2.1 Self-locking nut shall have such type of mechanism that it is conveniently fastened and after fastening and tightening of the nut, it resists loosening under vibration through an inbuilt locking mechanism. The nut and locking mechanism should be strong enough to resist loosening of the nuts during service.

### **3. FUNCTIONAL REQUIREMENTS:**

- 3.1 The Self-Locking nut shall withstand vibration and shocks encountered in service with the passage of rolling stock and must have anti-loosening characteristics.
- 3.2 Fastening of self locking nut should be easy to install and open.
- 3.3 The nut can only be loosened with special spanner designed for the purpose but it can be tightened easily with normal spanner.
- 3.4 The tools to be used for untightening of the bolts should be handy & light weight.
- 3.5 The locking arrangement shall not get damaged in multiple tightening and loosening cycles in case of re-usages. The Self-Locking Steel nut shall be reusable for several times without damage to locking arrangement and without significant loss of its anti-loosening properties under vibration.
- 3.6 It should have anti-sabotage and anti-pilferage characteristic.
- 3.7 It should have anti-corrosive properties.

### **4. MATERIALS:**

#### **4.1 Nuts:**

Basic material of the nut shall be of steel conforming to chemical composition, mechanical and physical properties mentioned in IS-1367 Part-06 or equivalent standards ensuring the performance requirements of Indian Railways as mentioned in this document.

#### **4.2 Other Materials:**

Any other material used in the nut shall be as per relevant IS code or any equivalent standard ensuring the performance requirement of Indian Railways mentioned in this document.

### **5. TECHNICAL REQUIREMENTS:**

- 5.1 **Shape and Size:** Shape and Size of the self locking nut shall be matching with the dimensional requirement of the fittings where self-locking nut is to be provided.
- 5.2 **Visual Appearance:** The surface should be free from defects such as surface flaws, burrs and rust. The nuts to be completely free from any visible defects.

### 5.3 **Corrosion Resistance:**

Electro galvanizing or hot-dip galvanizing or nickel alloy coating etc. shall be done to provide the nut corrosion free service life. Test certificate for corrosion resistant properties shall be submitted, in this regard.

5.4 **Vibration Resistance:** The Self-locking nuts shall be tested as per DIN 65151-Dynamic testing of the locking characteristics of fasteners under transverse loading conditions (Vibration Test) or equivalent standards. This test shall be conducted on one nut for every 2,000 nuts or part thereof.

5.5 **Proof Load:** Proof load for nuts of different diameters shall be as under:

Type of Nuts	Minimum	Test Method
For Dia. 18mm	1,21,000 N	As per sub-clause 9.1 of IS 1367 Part-6
For Dia. 22mm	1,90,900 N	
For Dia. 25mm	2,43,500 N	
For Dia. 28mm	2,95,800 N	

5.6 **Hardness:** Brinell Hardness of the nut shall be 139-287 HBW (As per sub-clause 9.1 of IS 1367 Part-6)

5.7 **Dimensions:** Dimensional requirement of the nut shall be as under (As per IRS/T-23)

Size in (Nominal dia.)	Pitch in mm	Major Diameter (Min.)	Pitch Diameter (in mm)			Minor Diameter (in mm)		
			Max.	Tolerance	Min.	Max.	Tolerance	Min.
18 mm	2.5	18 mm	16.600	0.224	16.376	15.744	0.450	15.294
22 mm	2.5	22 mm	20.600	0.224	20.376	19.744	0.450	19.294
25 mm	3	25 mm	23.316	0.265	23.051	22.252	0.500	21.752
28 mm	3	28 mm	26.316	0.265	26.051	25.252	0.500	24.752

## 6. **INSPECTION AND ACCEPTANCE:**

6.1 **Sampling:** Following criteria is to be followed by the inspecting agency while taking samples except for vibration test given in clause 5.4 above–

Number of nuts	Sample quantity (Minimum Nos.)
1-150	3
151-1200	5
1200-10000	8
10000+	13

6.2 All the samples should fulfil all the requirements mentioned in Clause 3, 4 & 5 above.

6.3 In case of failure to comply with any of the tests under Clause 3, 4 & 5, twice the no. of samples shall be drawn and tested for that particular test. Further, in case of failure in retest, the whole lot will be rejected. The rejected nuts shall be cut into pieces and made un-usable.

## 7. **MARKING:**

Each nut shall have legible marking to trace back the manufacturer's name/ Trade Mark and Batch/ Grading System.

## **8. GUARANTEE:**

The manufacturer/Supplier shall guarantee the nuts for their satisfactory performance for the period of 05 (Five) years from putting into service or 06 (Six) years from supply whichever is earlier. All aspects of workmanship and material will be covered by this guarantee.

## **9. PACKING AND DELIVERY:**

9.1 The nuts shall be prepared and packed in such a manner as will properly protect them from damage or deterioration during transit and storage prior to installation.

9.2 Special spanner mentioned in clause 3.3 above shall be supplied as per requirement of purchaser.

## **10. TRAINING:**

After supply of material, the supplier will arrange training/illustration of tightening & untightening technique/methodology of Self-Locking nuts on site for proper understanding of the Railway officials.

## **11. PERFORMANCE MONITORING AND REVIEW:**

11.1 For this purpose, after full tightening of nuts to its final position, a paint line/ line by permanent marker shall be drawn in such a way that the single straight line is continued on nut as well as on bolt.

11.2 During service, any non-alignment between the line part drawn on nut and line part drawn on bolt represents loosening of nut.

11.3 This non-alignment can never be more than 180°.

11.4 In case the said non-alignment exceeds above values, the nut needs replacement. Although as an immediate safety measure re-tightening is recommended.

11.5 These specifications may be reviewed based upon inputs received from Zonal railways and Industry.

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