

TENDER SPECIFICATION

NO. CLW/MS/3/089 Rev.1(April 2007)

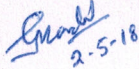
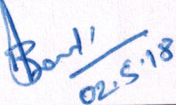
TOTAL NO. OF SHEET: 7

Alt. No.	Nil	1	2	3				
SHEETS	6	3&5	All	All				

TENDER SPECIFICATION
FOR F.S. ALL STEEL LOCK NUT FOR
3-PH ELECTRIC LOCOMOTIVES

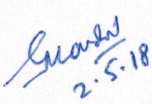
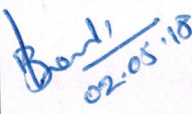
ISSUED BY:

DY. CHIEF ELECTRICAL ENGINEER/D-II
 CHITTARANJAN LOCOMOTIVE WORKS
 P.O. CHITTARANJAN – 713331
 DIST.BURDWAN, WEST BENTAL (INDIA)

Prepared by SSE(M)	Reviewed by SME/SEE(D)	Approved by Dy.CEE/D	Used for 3-Phase locos WAG-9, 9H, WAP-7 & WAP-5, WAG-9HC	CHITTARANJAN LOCOMOTIVE WORKS, CHITTARANJAN-713331 CLW/MS/3/089				
 2.5.18		 02.5.18	Specn. For F.S. all steel locknut 3-phase Electric Locomotives.	Alt. No.	1	2	3	

Technical specification for F.S. All Steel Lock Nut for use
on 3-Phase locos

1. SCOPE:
This specification covers the technical requirements, manufacturing, inspection and packing of F.S. All Steel Lock nut for use on 3-Phase Electric Locomotives.
2. SCOPE OF SUPPLY:
One set shall consist of all sizes of Lock nuts as indicated in Annexure –‘A’.
3. Climatic and environmental conditions:
 - 3.1 Maximum atmospheric temperatures:
 - a) Under sun : 70°C
 - b) In shade : 50°C
 - 3.2 Humidity : 100% saturation during rainy season.
 - 3.3 Reference site conditions:
 - a) Ambient temp. : 0°C min. 47°C max.
 - b) The contractor will indicate the expected temperature rise under reference site condition.
 - c) Humidity : 60 %
 - d) Altitude : 160m above mean sea level.
 - 3.4 Rain fall : Very heavy in certain areas.
 - 3.5 Atmosphere during hot weather extremely dusty and desert terrain in certain areas.
 - 3.6 Coastal area: F.S. All Steel Lock nuts will be designed to work in coastal areas in humid and salt laden atmosphere.

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			Specn. For F.S. all steel lock nut for 3- phase Electric Locomotives.	Alt. No.	1	2	3	

- 3.7 Vibration: The F.S. All Steel Lock nut will be designed to withstand vibration and shocks encountered in service as specified in corresponding IEC publications unless otherwise prescribed.
4. Standard:
DIN 980 or latest as applicable - All Metal Prevailing Torque type Hexagonal Nuts.
5. General and technical requirements:
- 5.1 F.S. All Steel Lock nuts are prevailing torque type Hex. Nuts in which increased friction in the thread prevents the nut loosening itself. This friction is produced by the design of the prevailing torque element in the nut, which results in axial and or radial clamping in the bolted connection.
- 5.2 The F.S. All Steel Lock nuts shall conform to the following technical requirements.
- Shall be re-usable for several times without a significant loss of its clamping force tenderers to submit a graph/chart indicating loss of clamping force with re-use up to a significant level, along with their OFFERS.
 - Shall offer double safety. The locking element shall work in both radial and axial direction so that clamping effect remains fully maintained.
 - The locking element, which is offset with respect to the standard thread, shall prevent the counter thread from being damaged.
 - The clamping force, from a manufacturing point of view, shall be adjustable within fine tolerances. This can be high or low, depending on the application.
 - Shall resist temperatures as expected during service in locomotive bogie assembly for locomotives (elect.) working in environmental and climatic condition indicated at Para-3 (sheet-2).
 - Shall be highly corrosion resistant.
 - The dimensions and technical delivery conditions shall be in accordance with specification No. DIN 980 or latest as applicable for M-type and V-type - All Metal Prevailing Torque type Hexagonal Nuts. Design for M-type lock nut shall be as per ABB's drg. no 182-00493. The dimension chart for different sizes of F.S. All Steel Lock nut as mentioned on the drawing no. 182-00493 alt .3 will not be followed.
 - A high degree of resistance against pulling off shall ensured by the load carrying threads.

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6. Inspection and acceptance:

Inspection shall be carried out by an authorized representative of purchaser at firm's premises and acceptance criteria is entirely based on the standards specified in this specification.

6 (A) Documents to be submitted along with supply:

- a) Certificate about standards, grade, property class material, zinc plating (passivated) as applicable. OEM Test certificates for chemical composition and metallurgical/mechanical properties.
- b) All test certificates as mentioned in the relevant standards/ drawings/specification.
- c) Suppliers other than OEM should deliver the material along with supporting documents of material being purchased from OEM.
- d) Indigenous manufacturers should have to submit QAP, Test Certificates, Prototype Inspection Certificate as the case may need.

7. Marking:

Each nut shall have legible and indelible marking as follows:

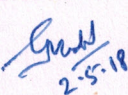
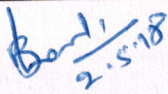
- a) Manufacture's name/Trade mark.
- b) Property class.

8. Quality assurance:
As per ISO-90009. 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.

10. Packing and delivery:

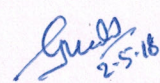
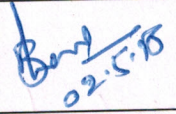
The nuts shall be prepared and packed in such a manner as will properly protect them from damage or deterioration during transit and storage prior to installation. A storage period of at least 24 months shall be considered.

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 2.5.18		 2.5.18	Specn. For F.S. all steel lock nut 3-phase Electric Locos	Alt. No.	1	2	3	

11. Reference:

- (i) DIN-980 or latest as applicable.
- (ii) The F.S. All Steel Lock nut used by M/s ABB Transportation for WAP-5 and WAG-9 class (COCO) electric locomotive supplied by

M/s Flaig & Hommel GmbH,
Verbindungselemente Heersten Bal,
78554 Aldingen, Germany

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SSE(M)	SME/SEE(D)	Dy.CEE/D		Alt. No.	1	2	3
			Specn. For F.S. all steel lock nut 3-phase Electric Locomotives.				

ANNEXURE – 'A'

TO CLW TENDER SPECIFICATION NO.CLW/MS/3/089 FOR ALL METAL PREVAILING
TORQUE TYPE HEXAGONAL NUTS

SN	Description	Standard	Material	Remarks
1	Lock nut Hex M-10	DIN 980 or Latest as applicable	All steel property class-8 or above as applicable	
2	Lock nut Hex M-12			
3	Lock nut Hex M-16			
4	Lock nut Hex M-20			
5	Lock nut Hex M-24			

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<i>Gudh</i> 25.18		<i>Bani</i> 02.15.18	Specn. For F.S. all steel lock nut 3-phase Electric Locomotives.	Alt. No.	1	2	3	

Alteration Record Sheet

SN	Date of Amendment	Page No.	Alt. No.	Reason	Authority
1.	29.07.2009	3 & 5	1	For easy procurement of materials.	SD Dtd 29.07.2009
2.	09.04.2012	All	2	Typographical errors corrected. Title for use on locos brought up to date.	SD dtd 11.07.09
3.	02.05.2018	All	3	i) The whole document has been reviewed and retyped. ii) DIN 980-V included along with 980-M iii) Para 6(a) shown under Para 6 iv) Para 6(b) of alt. 1 included in Para 5.1(g) alt. 3 v) WAG 9H and 9HC included in "used for loco" vi) Property class 8 or above as applicable included.	<i>Banti</i> <i>02/05/18</i>

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<i>Shankar</i> <i>2-5-18</i>		<i>Banti</i> <i>02-5-18</i>	Specn. For F.S. all steel lock nut 3-phase Electric Locomotives.	Alt. No.	1	2	3	