

TENDER SPECIFICATION

SHEET - 1

NO: CLW/MS/3/032

ALT	①	②	③					
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ENCLOSURES :

1 ANNEXURE NIL

2. DRG.NO. : 1209-01.411-020 ALT. ①

&

1209-01.411-021 ALT. ①

TOTAL NO. OF SHEETS : 5 + ALT. SHEET ① = 6

ALT	①	②	③				
SHEETS	1&2	5	4				


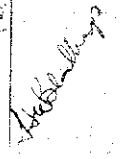


SPECIFICATION
FOR
SUSPENSION BEARING FOR USE ON
WAG-9 ELECTRIC LOCOMOTIVES

ISSUED BY :

DY CHIEF ELECTRICAL ENGINEER/CON/TU
CHITTARANJAN LOCOMOTIVE WORKS

P.O. : CHITTARANJAN - 713 331

DIST: BURDWAN WEST BENGAL (INDIA)

PREPD	CHKD.	REVIEWED	APPROVED BY	WAG-9 (CO-CO)	D&D CENTRE CHITTARANJAN LOCOMOTIVE WORKS. CHITTARANJAN PIN - 713331 (W.B.) NO: CLW/MS/3/032
				SPECIFICATION FOR SUSPENSION BEARING.	
CDM	SUI/D.T.	SME/D&D	DYCEE CON/TU		DATE 15-5-97 ALT. NO. ① ② ③

SHEET - 2

TECHNICAL SPECIFICATION FOR SUSPENSION BEARINGS FOR WAG-9 ELECTRIC LOCOS

1. **SCOPE:-** This specification covers the technical requirements, manufacture, inspection and packing of suspension bearings for use on WAG-9 electric locos
2. **SCOPE OF SUPPLY:-** Quantity per set (loco) to be fitted on WAG-9 locos shall be as follows:-

DESCRIPTION	DRG.NO.	QTY/LOCO
a) Suspension bearings (Drive end)	1209-01 411-020 ALT. ①	6
b) Suspension bearing (Non-drive end)	1209-01 411-021 ALT. ①	6

CLIMATIC AND ENVIRONMENTAL CONDITIONS

3.1 **Maximum Atmospheric Temperature s:**


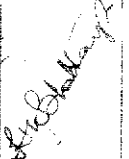

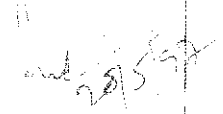
- a) Under Sun : 70 Deg. C
- b) In Shade : 50 Deg. C

3.2 **Humidity : 100% saturation during rainy season**

3.3 **Reference site conditions**

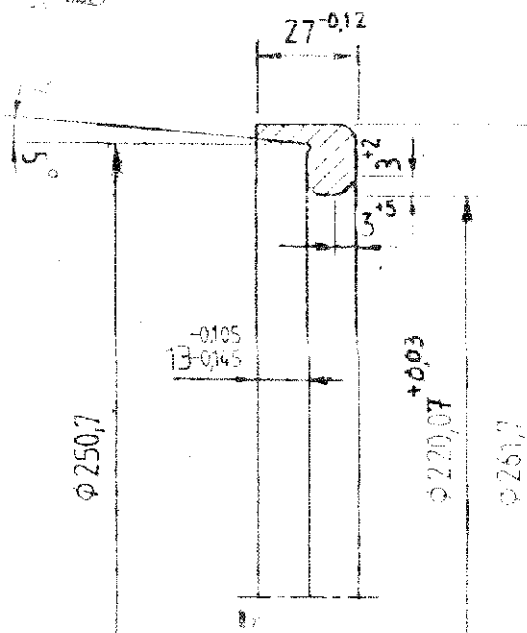
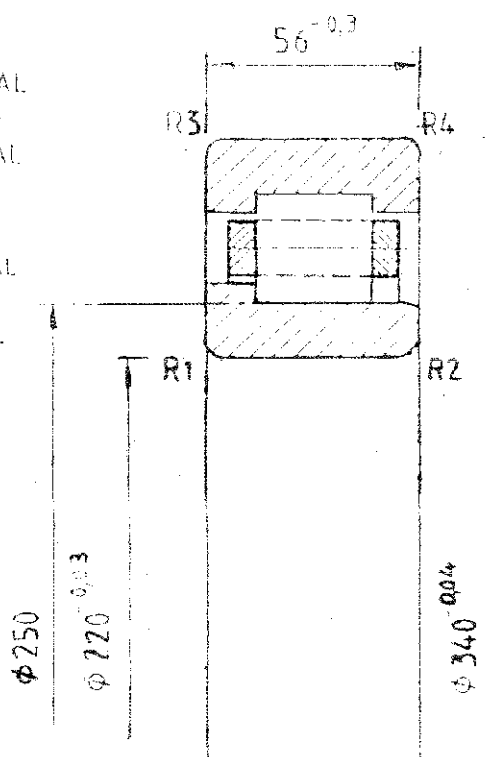
- a) Ambient Temp. 0 Deg. C min., 47 Deg. C max.
- b) The contractor will indicate the expected temperature rise under reference site condition.
- c) Humidity : 60 %
- d) Altitude : 100 m above mean sea level.

3.4 **RAIN FALL : Very heavy in certain areas**

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		 13-5-97	 20/5/97	SPECIFICATION FOR SUSPENSION BEARING.	CHITTARANJAN LOCOMOTIVE WORKS, CHITTARANJAN PIN - 713331 (W.B.) NO: CLW/MS/3/032
CDM	SUPDT.	SME/D&D	DYCEE/CON/1U		DATE: 15-5-97

ALT. NO. ① ② ③

R4=3.0 * 2,0 RADIAL
S, 0 AXIAL



OR, SIMILAR

CLEARANCE

TOLERANCES ACC. TO DIN. 620

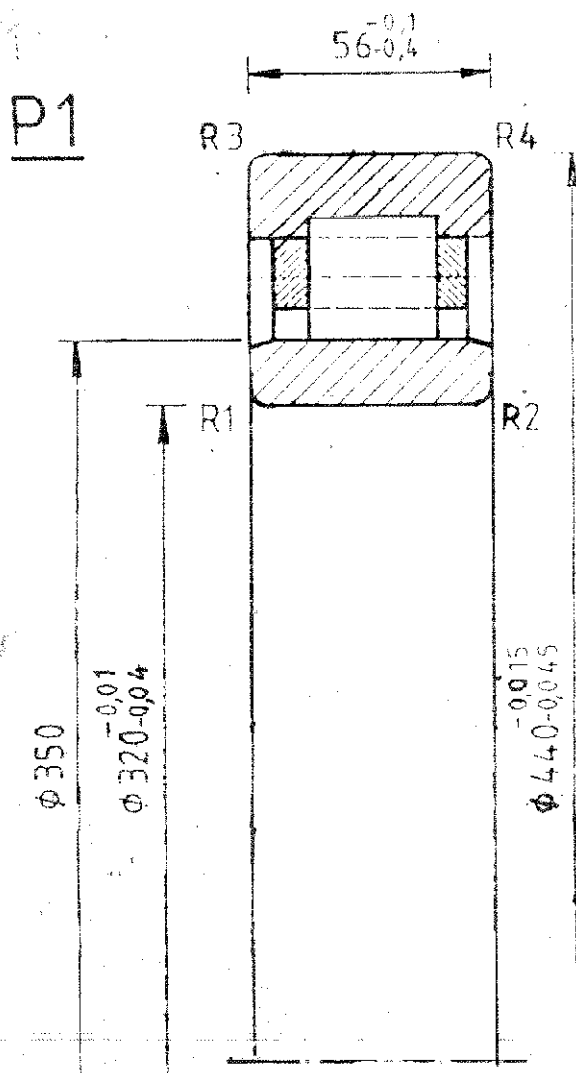
OR, SIMILAR

NOTE:-

THIS DRG. IS TO BE
WORKED IN CONJUNCTION
WITH SPECN. NO- CLW/MS/
3/032 ①

[illegible]

$R1 = 3,0 \begin{matrix} +2,5 \text{ RADIAL} \\ +5,0 \text{ AXIAL} \end{matrix}$
 $R3 = 3,0 \begin{matrix} +2,5 \text{ RADIAL} \\ +5,0 \text{ AXIAL} \end{matrix}$
 $R2 = 3,0 \begin{matrix} +2,5 \text{ RADIAL} \\ +5,0 \text{ AXIAL} \end{matrix}$
 $R4 = 3,0 \begin{matrix} +2,5 \text{ RADIAL} \\ +5,0 \text{ AXIAL} \end{matrix}$



Type

FAG NU 1964 M1A.C4

CAGE: MIA

RADIAL-
CLEARANCE=C4

TOLERANCES ACC TO DIN 620

NOTE :-

* THIS DRG IS TO BE WORKED

IN CONJUNCTION WITH (1)
PECN NO. CLW/MS/3/032

[illegible]

3.5 **ATMOSPHERE DURING HOT WEATHER** : Extremely dusty and desert terrain in certain areas.

3.6 **COASTAL AREA** : Suspension bearings will be designed to work in coastal areas in humid and salt laden atmosphere.

3.7 **VIBRATION** : The suspension bearings will be designed to withstand vibrations and shocks encountered in service as specified in corresponding IEC publications unless otherwise prescribed.

4. **STANDARDS** : IS:6453

5. **GENERAL** :

5.1 The roller bearings shall generally conform to the technical supply conditions for roller bearings as per IS:6453. Rollers and bearing races shall be manufactured from high quality bearing material. The material used for manufacture the rollers and races shall be furnished to purchaser along with the offer and got approved by him.

5.2 The bearings shall be designed to work under climatic and environmental conditions as laid down in para 3 of this specification.



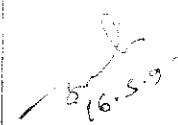

5.3 Full calculations in support of the design capacity (load rating) and life expectancy of the roller bearings shall be offered for approval of the purchaser.

The calculated life of the bearing shall be stated. The dynamic capacity of the bearing shall be nominated.

6. **INSPECTION AND ACCEPTANCE**

6.1 The inspecting authority of the purchaser shall have free access to the works of the manufacturer at all times during manufacture. He shall be free to inspect the manufacture at any stage, to reject any material which do not conform to the terms of this specification.

6.2 Each bearing shall be checked for dimensions, appearance and finishing. The running surface shall be free from tool marks, chatter waves, grinding scratches, pits, rust, discolourisation and other surface imperfections.

PREPD 	CHKD 	REVIEWED 	APPROVED BY 	WAG-9 (CO-CO) SPECIFICATION FOR SUSPENSION BEARING.	D&D CENTRE CHITTARANJAN LOCOMOTIVE WORKS, CHITTARANJAN PIN - 713331 (W.B.) NO: CLW/MS/3/032
CDM	SUPDT	SME/D&D	DYCEE/CON/II		DATE: 15-5-97 ALT. NO. ① ② ③

SHEET - 4


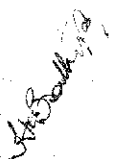
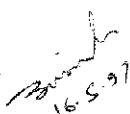
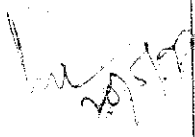
- 6.3 Bearings 4- 20% from the lot shall be selected for checking of its bore diameter, width, radial run out, hardness and magnetic particle testings duly approved by the purchaser.
- 6.4 Any deviation other than the specified values on the relevant drawings shall not be accepted. The rings and roller should not show any sign of cracks or harmful defects.
- 6.5 After inspection, the inspector shall affix his stamp/seal on each bearing as a token of the material passed by him.
7. **DOCUMENTS TO BE SUPPLIED** : Minimum ten copies of the maintenance manual shall be supplied incorporating the following informations :
- Mounting of the bearing.
 - Maintenance checks in service.
 - Procedure for bearing extraction, examination and assembly, special tools, if any for this purpose.

8. **MARKING** Each bearing shall have clear readable marking on one of its side face. The marking shall be as follows

- Manufacturer's Name/Trade Mark
- Complete designation of the bearing, defining type, dimensions, radial internal clearance etc.
- Year and Month of Manufacture.

9. **QUALITY ASSURANCE** : As per ISO - 9000.

- ③ 10. **GUARANTEE** The manufacturer/supplier ③ shall guarantee the bearings for their satisfactory performance for the period of 24 months from putting into service or 30 months ③ from supply whichever is earlier. All aspects of workmanship and material will be covered by this guarantee.

PREPD	CLKD	REVIEWED	APPROVED BY	WAG-9 (CO-CO)	D&D CENTRE CHITTARANJAN LOCOMOTIVE WORKS, CHITTARANJAN PIN - 713331 (W.B.) NO: CLW/MS/3/032
		 16.5.97	 20/5/97	SPECIFICATION FOR SUSPENSION BEARING.	DATE: 15-5-97
CDM	SUPDT.	SME/D&D	DYCEE/CON/TU		ALT. NO. ① ② ③

SHEET - 5

1. **PACKING AND DELIVERY :**

- 11.1 The bearings 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. The storage period of at least 24 months shall be considered.
- 11.2 The protective packing shall be suitable for transport and storage under tropical conditions of high temperature, high humidity, heavy rain fall and fungus - conducive and dusty environments.
- 11.3 The type protection against corrosion shall be decided by the manufacturer depending on the packing material used under proper storage conditions. The anticorrosive treatment shall be effective for atleast 24 months in order to ensure a satisfactory functioning of the bearings.

12. **REFERENCE :**



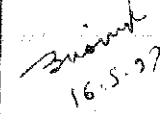

- 12.1 The bearings used by M/s. ABB Transportation for WAG-9 class (Co-Co) electric locomotives is supplied by :

SKF GMBH
D 97421 SCHWEINFURT
GERMANY
TEL + 499721 560
FAX + 499721 562654

FAG GMBH
KUGEL FIECHER
GEORGESCHENSAR & CO.
SCHWEINFURT
8720 SCHWEILHURT
P.B. 2829
PH NO. (09721) 8811; TELEX NO.
0673211
CABLE KUGELFIECHER
SCHWEINFURT.

- 12.2 **TYPE** ABB DRG. NO. IB012-00584
&
IB012-00752

- ② 13. The manufacturer(s) shall prepare a quality plan in conformity with ISO-9000-2000 and submit it to the Railway Adviser, sufficiently in advance of inspection. The inspection shall proceed only after acceptance of the QP by Railway Adviser.

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 CDM	 SUPDT.	 SME/D&D 16.5.97	 DYCEE/CON/TU		

ALT. NO. ① ② ③

FORMAT NO.—D & D/001

ALTERATION Sheet - 1

DETAILS OF ALTERATION

ALT. No.	DATE	DESCRIPTION	SIGNATURE	REMARKS
①	29-4-2002	DRG.No. ON SHEET No. 1 AGAINST ENCLOSURE AND ON SHEET No.2 AGAINST SCOPE OF SUPPLY WAS ALT. NIL. ALT. SHEET 1 ADDED.	<i>[Signature]</i>	DRGS. HAVE SINCE BEEN ALTERED UNDER ALT. 1.
②	13-5-2002	CLAUSE 13 ADDED.	<i>[Signature]</i> 13.5.02.	AS SUGGESTED BY RAILWAY BOARD VIDE THEIR LETTER No. 2002/M/L/466/1505 Dt. 10-4-2002.
③	12-5-2003	PERIOD OF GUARANTEE 24 months & 30 months IN CLAUSE 10 WAS FIVE YEARS & SIX YEARS RESPECTIVELY.	<i>[Signature]</i> 16/5/03	AS DEMANDED BY M/S FAG/KOLKATA VIDE LETTER No. CLW/02351/03DT. 23/4/2003 AND APPROVED BY CEE/LOCO ON 03-5-2003.

PREPD. BY	CHKD BY	REVIEWED BY	APPROVED BY	WAG-9 (CO CO) SPECIFICATION FOR SUSPENSION BEARING	CENTRE for D & D CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN-713331 NO. CLW/MS/3/032
CDM	SUPDT.	AME/D&D	DY. CME/ D&D		

ALT NO. ① ② ③