

UNDER SPECIFICATION

NO. CLW/MS/10/003

ALT	①	②	③	④					
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ENCLOSURES :

DRG. NOS. :

ANNEXURE - 'A'

TOTAL NO. OF SHEETS: 8 + ALT. SHEET ①

ALT	①	②	③	④				
SHEETS	14	8	7	8				

**SPECIFICATION  
FOR**

DRIVE ASSEMBLY COMPONENTS FOR USE ON  
WAP-5, 3-PHASE ELECTRIC LOCOMOTIVES.

ISSUED BY :-

DY.CHIEF MECHANICAL ENGINEER/D&D  
CHITTARANJAN LOCOMOTIVE WORKS  
P.O.CHITTARANJAN - 713331  
DIST: BURDWAN, WEST BENGAL (INDIA)

P.L. 2925 0092

PREPD. & CHKD BY	REVIEWED BY	APPROVED BY	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	CENTRE for D & D CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN-713331
<p><i>[Signature]</i> 9/6/99</p> <p>SSE/D</p>	<p><i>[Signature]</i> 7/6/99</p> <p>WM/D</p>	<p><i>[Signature]</i> 9-6-99</p> <p>DY. CHE/ D&amp;D</p>		

CLW/MS/10/003 ALT-4

DETAILS OF ALTERATIONS

ALT. No.	DATE	DESCRIPTION	SIGNATURE	REMARKS
①	1-2-02	PARA 10 FOR HARDWARES ADDED IN SHEET 4. ALTERATION SHEET-1 ADDED.	<i>[Signature]</i> 04/02/02	THE NAME OF HARDWARE SUPPLIERS ADDED TO ACHIEVE THE PROPER QUALITY.
②	-6-2003	ITEM SL.No. 47 & 48 ADDED.	<i>[Signature]</i> 02/7/03	ITEMS ADDED IN ACCORDANCE WITH BOMBARDIER'S DRG.No. TAOM-00233, REV.1.
③	29-10-2009	CROSS SECTION SIZE OF O-RINGS WERE $\phi 5$ FOR ITEM No. 28, 29 & 31 to 35 AND FOR ITEM No. 30 IT WAS $\phi 9$ .	Sd/- A.K. MAHATA 29-10-09	SIZE OF O-RINGS INCREASED BY 1mm TO PREVENT LEAKAGE IN GEAR CASE VIDE DESIGN CHANGE SHEET No. ELDD/WAP-5/BOGIE/011 DT. 29-10-2009.
④	10-2-10	SHIM FOR GEAR CASE PINION FACE (0.1 & 0.05 mm TTK.) QTY/LOO 16 NOS. EACH UNDER SL.No. 49 & 50 INCLUDED.	<i>[Signature]</i> 18/2/10	SHIMS REQUIRED FOR MAINTAINING BACKLASH OF GEAR CASE VIDE APPROVAL NOTE No. ELDD/3754 DT. 05 <sup>02</sup> / <sub>10</sub> .

PREPD. BY <i>[Signature]</i>	CHKD BY <i>[Signature]</i> 04/2/02	REVIEWED BY <i>[Signature]</i> 04/02/02	APPROVED BY <i>[Signature]</i> DY. CME/ D&D	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	<p>CENTRE for D &amp; D CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN-713331</p> <p>NO. CLW/MS/10/003</p>
				ALT NO. ① ② ③ ④	

**TENDER SPECIFICATION FOR DRIVE ASSEMBLY  
COMPONENTS FOR USE IN WAP-5 ELECTRIC LOCOS**  
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1. **SCOPE :-**

This specification covers the technical requirements, manufacture, inspection and packaging of Drive Assly. Components for use on WAP-5 electric locos.

2. **SCOPE OF SUPPLY :-**

Quantity one set shall comprise of the quantity per loco for all the items as indicated at Annexure-'A' (Sheet 5 to 8).

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 : 160 m 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 : Components will be designed to work in coastal areas in humid and salt laden atmosphere.

3.7 Vibration : The components of the drive assembly will be designed to withstand vibrations and shocks encountered in service as specified in corresponding IEC publications unless otherwise prescribed.

DATE :- 9-6-99

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<i>[Signature]</i> 2/6/99	<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9.6.99	<i>[Signature]</i> 9.6.99	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	NO. CLW/MS/10/003
SSE/D	WM/D	DY. CME/ D&D			ALT NO. ① ② ③ ④

4. GENERAL :

The components of drive assembly shall generally conform to the material specifications and dimensions as specified on the relevant drawing mentioned against each item. Equivalent IS: or BS: standard for the material can also be used with prior approval of Purchaser. All the hardwares shall be supplied in Zinc plated condition unless otherwise specified.

5. INSPECTION & ACCEPTANCE :

- 5.1 The inspecting authority of the purchaser shall have free access to the works of manufacturer at all times during manufacture. He shall be free to inspect the component at any stage, to reject any material which do not conform to the terms of this specification.
- 5.2 Machined components from the lot shall be selected for checking of its bore diameter, width, dimensions and appearance. Components showing any sign of cracks or harmful defects shall not be accepted. Sample inspection plan shall be supplied by the Tenderer for approval of the Purchaser.
- 5.3 Any deviation in the dimensions nominated on the relevant drawing shall not be accepted.
- 5.4 Casting items shall be subjected to radiographic or other methods of non-destructive inspection with approval of the Purchaser.
- 5.5 After inspection, the Inspector shall affix his stamp/seal on the inspected material as a token of the items passed by him.

6. MARKING :

Each item except hardwares shall have clear readable marking on one of its side face. The following shall be as follows:

- a) Manufacturer's Name/Trade Mark.
- b) Year of Manufacture.
- c) Drg.No. & Specification No.

7. QUALITY ASSURANCE : As per ISO 9000.

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				SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	
<i>[Signature]</i> 2/6/99	<i>[Signature]</i> 3/6/99	<i>[Signature]</i> 3/6/99	<i>[Signature]</i> 3/6/99		NO. CLW/MS/10/003
BSE/D	WM/D	DY. CME/ D&D			ALT NO. (1) (2) (3) (4)

8. GUARANTEE :

The manufacturer/supplier shall have guarantee for all the items for their satisfactory performance for the period of five years from putting into revenue service or six years from supply which ever is earlier. All aspects of workmanship and material will be covered by this guarantee.

9. PACKAGING & DELIVERY :

9.1 The components 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 atleast 24 months shall be considered.

9.2 The protected packing shall be suitable for transport and storage under tropical conditions of high temperature, high humidity, heavy rain fall and fungus condusive and dusty environments.

9.3 The type of protection against corrosion shall be decided by the supplier depending on the packing material used under proper storage conditions. The anti-corrosive treatment shall be effective for atleast 6 (six) years in order to ensure a satisfactory functioning of the components.

① 10. HARDWARES COVERED IN THIS SPECIFICATION SHALL BE ANY OF FOLLOWING MAKE :

- a) UN-BRAKO (PRECISION FASTENERS)
- b) G.K.W.
- c) LAXMI PRECISION
- d) SUNDARAM FASTENERS (TVS)

DATE :- 9-6-99

PREPD. BY & CHKD BY	REVIEWED BY	APPROVED BY	WAP-5 (Bo-Bo)	CENTRE for D & D CHITTARANJAN LOCOMOTIVE WORKS CHITTARANJAN-713331  NO.CLW/MS/10/003
<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9-6-99	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	
SSE/D	WM/D	DY. CME/ D&D		ALT NO. ① ② ③ ④

ANNEXURE 'A' TO SPECN.NO. CLW/MS/10/003

DRIVE ASSEMBLY COMPONENTS

SN	DESCRIPTION	DRG.NO.	QTY/ LOCO	MATL	SPECN.	REF.ASSLY.DRG. NO.
1.	Bearing Cap piece complete.	IA011-00223	4	-	-	IA011-00233/12
2.	Labyrinth Ring Pinion complete	IA011-00221	4	-	-	IA011-00233/13
3.	Distance Ring Pinion-Machined	IA016-00347	4	-	-	IA011-00233/14
4.	Intermediate Gear shaft-complete.	IA011-00229	4	-	-	IA011-00233/23
5.	Cap piece inter- mediate shaft complete.	IA016-01111	4	-	-	IA011-00233/24
6.	Distance Ring Intermediate Gear - Machined.	IA016-01112	4	-	-	IA011-00233/25
7.	Oil Seal inter- mediate Gear - Machined.	IA016-01113	8	-	-	IA011-00233/26
8.	Cap piece of Main Gear-complete.	IA011-00228	4	-	-	IA011-00233/32
9.	Oil seal Main Gear - Machined	IA011-00226	8	-	-	IA011-00233/33
10.	Labyrinth Ring Main Gear - complete.	IA011-00227	8	-	-	IA011-00233/34
11.	Thrust Collar Main Gear - complete.	IA011-00224	8	-	-	IA011-00233/35
12.	Outer Labyrinth Ring Main Gear- complete.	IA011-00225	8	-	-	IA011-00233/36

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<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9.6.99	<i>[Signature]</i> 9.6.99	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	
SSE/D	WM/D	DY. CME/ D&D			NO. CLW/MS/10/003
				ALT NO.	① ② ③ ④

SN.	DESCRIPTION	DRG.NO.	QTY/ LOCO	MATL.	SPECN.	REF.ASSLY.DRG. NO.
13.	Cap peice of Main Gear - complete.	IA011-00228	4	-	-	IA011-00233/37
14.	Socket head cap screw M16x 2Px40 long - 12.9.	-	356	Alloy Steel	IS:2269	IA011-00233/50
15.	Socket head Cap Screw M12x1.75Px 60 lgx30 thd - 12.9.	-	96	Alloy Steel	IS:2269	IA011-00233/51
16.	Socket head cap Screw M12x1.75Px 35 lgx30 thd - 12.9.	-	128	-do-	IS:2269	IA011-00233/52
17.	Socket head cap Screw M10x25-8.8	-	64	-do-	DIN:7984	IA011-00233/53
18.	Locking Screw M6x16 - 10	182-000720	128	-	-	IA011-00233/56
19.	Cap Screw M6x 10-4.8(Galv)	-	8	Steel	DIN: 84	IA011-00233/57
20.	Lock Washer VS 16.	182-00361/ 005	356	-	-	IA011-00233/60
21.	Lock Washer VS 12.	182-00361/ 004	224	-	-	IA011-00233/61
22.	Lock Washer VS 10	182-00361/ 003	64	-	-	IA011-00233/62
23.	Machined Was- her-10.5 (Zn plated).	-	64	Steel	IS:2016	IA011-00233/63
24.	Machined Washer-13 (Zn plated).	-	224	Steel	IS:2016	IA011-00233/64

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<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9.6.99	<i>[Signature]</i> 9.6.99	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	NO. CLW/MS/10-003
SSE/D	NM/D	DY. CME/ D&D			ALT NO. ① ② ③ ④

SN.	DESCRIPTION	DRG.NO.	QTY/ LOCO	MATL.	SPECN.	REF.ASSLY.DRG. NO.
25.	Sealing Washer 60 dia x 68 dia x 2.5 thk.	-	12	Cu	DIN:7603	IA011-00233/65
26.	Sealing Washer 27 dia x 32 dia x 2 thk.	-	4	Cu	DIN:7603	IA011-00233/66
27.	Sealing Washer 12 dia x 16 dia x 1.5 thk.	-	12	Cu	DIN:7603	IA011-00233/67
28.	'O' Ring 1/D 205 x 6	-	4	NBR70	DIN:3771/ ISO:3601	IA011-00233/70
29.	'O' Ring I/D 240 x 6	-	4	-do-	-do-	IA011-0233/71
30.	'O' Ring I/D 135 x 9	-	4	-do-	-do-	IA011-00233/72
31.	'O' Ring I/D 143 x 6	-	4	-do-	-do-	IA011-00233/73
32.	'O' Ring I/D 440 x 6	-	8	-do-	-do-	IA011-00233/74
33.	'O' Ring I/D 390 x 6	-	8	NBR70	DIN3771/ ISO 3601	IA011-00233/75
34.	'O' Ring I/D 290 x 6	-	8	-do-	-do-	IA011-00233/76
35.	'O' Ring I/D 220 x 6	-	8	-do-	-do-	IA011-00233/77
36.	Breather Cap R 1/2"	IA012-00450	12	-	-	IA011-00233/80
37.	Oil Sight Glass R 2"	IA012-00449	4	-	-	IA011-00233/81
38.	Hex Head Sealing Plug G 2" (Galv.)	-	8	Steel	DIN: 910	IA011-00233/82

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<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9/6/99	<i>[Signature]</i> 9.6.99	SPECIFICATION FOR DRIVE ASSEMBLY COMPONENTS.	
SSE/D	WM/D	DY. CKE/ D&D	ALT NO. ① ② ③ ④	

SN.	DESCRIPTION	DRG.NO.	QTY/ LOCO	MATL.	SPECN.	REF.ASSLY.DRG. NO.
39.	Magnetic Seal- ing Plug R 3/4"	IA012-00448	4	-	-	IA011-00233/83
40.	Plug Screw M16 (Zn plated)	IB012-00753	8	-	-	IA011-00233/84
41.	Cap Screw M12x20-8.8 (Galv.)	-	12	Steel	DIN:7984	IA011-00233/85
42.	Oil Indica- tion Label RMO.	IA012-00457	4	-	-	IA011-00233/92
43.	Slotted head self tapping Screw 'B' M4x 6 (Galv.)	-	32	Steel	DIN:7513	IA011-00233/93
44.	Cover Cup for oil sight glass	IA012-00459	4	-	-	IA011-00233/2
45.	Socket Hd. Cap Screw M16x40x 2P- 12.9	-	60	Alloy Steel	DIN:6912	IA011-00233/54
46.	Spring Pin dia 4x28	-	8	Spring steel	ISO:8752	IA011-00233/58
47.	DISTANCE RING (SHIM) for PINION, 0.2 mm THICK.	IA012-00986	4	STEEL	-	IA011-00233/86
48.	DISTANCE RING (SHIM) for PINION, 0.1 mm THICK	IA012-00985	4	STEEL	-	IA011-00233/87
49.	SHIM FOR GEAR CASE PINION FACE (0.1 mm THK.)	1210-01. 413-016 ref. 1	16	BRASS		IA011-00233/88
50.	SHIM FOR GEAR CASE PINION FACE (0.05 mm THK.)	1210-01. 413-016 ref. 2.	16	BRASS		IA011-00233/89

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