



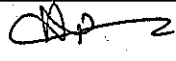
Document no.: EDML-070

**Document for procurement of Bogie mounted 4.5KW, 110VDC
Brushless alternator for MG Non AC coaches**

This document covers scope of supply for Bogie mounted 4.5 KW,110V DC Brushless alternator alongwith accessories for MG-NAC coaches for Senegal Railways.

- 1.0 The scope of supply including mounting accessories to be supplied with Bogie mounted 4.5 KW,110V DC Brushless Alternator as per RDSO specification no. RDSO/PE/SPEC/TL/0054-2003 (Rev.'0') , for MG Non-AC coaches are listed as under :-

Item No.	Description	Drawing No.	Qty/Set
1.	OGA of Bogie mounted 4.5 KW,110V DC Brushless Alternator with 3 groove, V-Belt type alternator pulley (PCD 120mm) on one side with securing nuts and locking arrangement and technical parameters as detailed at para 2.0(a)given under.	SKED-502, Alt. 'a'	01
2.	Regulator cum Rectifier unit with technical parameters as detailed in para 2.0(b) below	SKEL-2260/A	01
3.	3-groove Axle Pulley with hard rubber pads and fasteners etc. suitable for V-Belts	FJ71004	01
4.	Tensioning Gear assembly	ICF/SK-7-1-380	01
5.	Safety chain assembly	ICF/SK-7-1-381	02
6.	V-Belt for alternator	ELPS/SPEC/TL/04	03+1 spare

EDML-070	0	24.1.2006				1 of 4
Doc. No.	Rev.	Date	SE/CAD-IV	SSE/CAD	DYCEE-D&D	Sheet

7.	Pin	FJ71003, Item-1	01
8.	Pin	FJ71003 , Item-2	01
9.	Plain Washer	CC 05164	02
10.	Split Cotter	CC32119	02
11.	Distance piece	FJ71003 Item-3	02
12.	Distance piece	FJ71003, Item-4	02
13.	Earthing Strip	IS: 1897-62	02

Notes:-

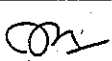

1.1 **N.B.** : Nylon Bushes provided in suspension boss of Bogie mounted 4.5 KW, 110V DC Brushless Alternator shall be as per RDSO specification no. RDSO/PE/SPEC/AC0006-99.

1.2. The mounting arrangement of 4.5KW, 110V DC Brushless Alternator on MG Non AC bogie shall be as per drawing no. **FJ71002, Alt. 'nil'**.

2.0. Tabulation of technical parameters for 4.5KW Alternator:

2.1 Technical parameters for Bogie mounted 4.5 KW,110V DC Brushless Alternator are as under –


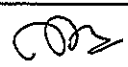
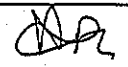
S. No.	Parameters	Desired values
1.	Rated Capacity	: 4.5KW
2.	Rated Voltage	: 120V DC +/-5 %
3.	Rated Output Current	: 37.5A (Full load)
4.	Mounting	: Bogie mounted
5.	Cut in speed	: 300 RPM : 11.8 KMPH
6.	MFO	: 385 RPM : 15 KMPH

EDML-070	0	24.1.2006				2 of 4
Doc. No.	Rev.	Date	SE/CAD-IV	SSE/CAD	DYCEE-D&D	Sheet

7.	Drive	: 3 groove pulley (PCD=120mm)
8.	Weight of Alternator with pulley suspension pin and safety chains etc.	: 210 Kg. (Approx.)
9.	Class of Insulation i) Stator ii) Field	: Class 'H' : Class 'H'
10.	Type of Bearing i) Drive end ii) Non-Drive End	: NU311 : 6309
11.	Type/ Length of Belt	: V-Belt : C-2032-42 (Pitch length 2068.5 approx) (the inter distance between axle and alternator pulley is 596mm)
12.	Efficiency of overall system	: 95%


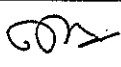

2.2 Technical parameters for **Regulator cum Rectifier unit (RRU)** (Magnetic Amplifier type) are as under -

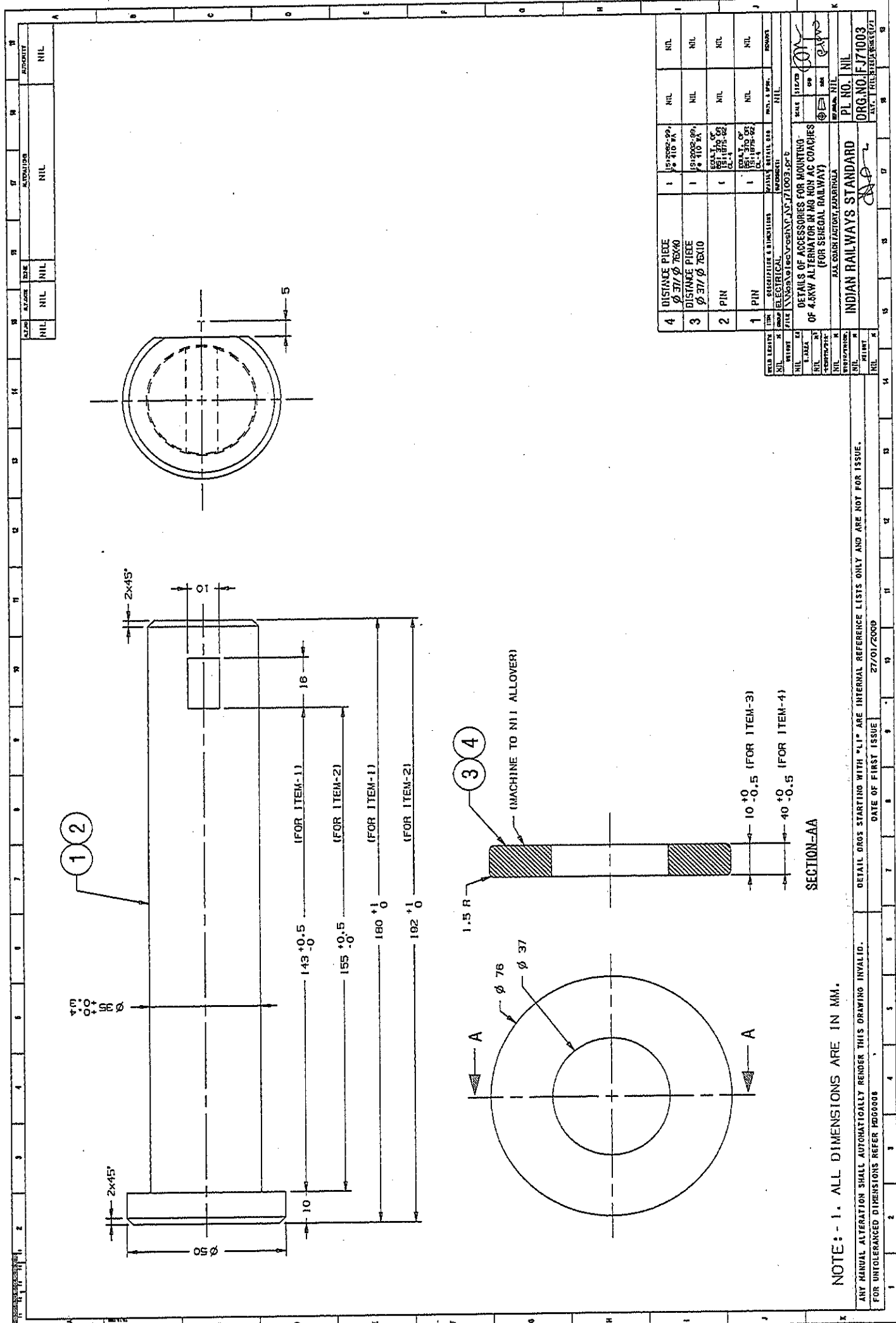
S. No.	Parameters	Desired values
1.	Voltage setting	124V +/- 0.5V at 19A at 1500 RPM
2.	Voltage regulation	+/- 5%
3.	Current limiting	43A at 1800 RPM
4.	Class of Insulation	'F'
5.	Weight of Regulator	52 kg.

EDML-070	0	24.1.2006				3 of 4
Doc. No.	Rev.	Date	SE/CAD-IV	SSE/CAD	DYCEE-D&D	Sheet

Approvals. :

1. The firm manufacturing for the first time will arrange in-stage inspection by the representative of the RCF at the following stages:
 - Manufacture/fabrication of the equipment.
 - Mounting/fixing of the equipment
 - Final inspection/testing of the equipment
2. Firm shall take prior approval of the OGA drawings for alternator , regulator cum rectifier unit and other accessories as detailed above from office of the CEE/RCF before start manufacturing.
3. Not with standing the above approvals, the firm shall be wholly responsible for reliable functioning of the equipment in field.

EDML-070	0	24.1.2006				4 of 4
Doc. No.	Rev.	Date	SE/CAD-IV	SSE/CAD	DYCEE-D&D	Sheet



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MATERIAL		ALTERNATION		REVISION		DATE		BY		CHECKED		APPROVED		AUTHORITY		MATERIAL		QUANTITY	
NIL		NIL		NIL		NIL		NIL		NIL		NIL		NIL		NIL		NIL	

4	DISTANCE PIECE Ø 57 / Ø 76x40	1	IS:2000-99 Ø 410 PA	NIL	NIL	NIL	NIL
3	DISTANCE PIECE Ø 57 / Ø 76x10	1	IS:2000-99 Ø 410 PA	NIL	NIL	NIL	NIL
2	PIN	1	IS:1175-62 Ø 37	NIL	NIL	NIL	NIL
1	PIN	1	IS:1175-62 Ø 37	NIL	NIL	NIL	NIL

NOTE:- 1. ALL DIMENSIONS ARE IN MM.

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.
FOR UNTOLERANCED DIMENSIONS REFER PG00000

DETAIL 0805 STARTING WITH *1* ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.

DATE OF FIRST ISSUE 27/01/2000

SECTION-AA

PL NO. NIL
ORG. NO. F/74003
MATERIAL FURNISHED BY

INDIAN RAILWAYS STANDARD
RAIL COACH FACTORY, RAJAPURHOLA

DETAILS OF ACCESSORIES FOR MOUNTING OF 4.5KW ALTERNATOR IN 400 V AC COACHES (FOR SEBERGAL RAILWAY)

IS:2000-99
Ø 410 PA

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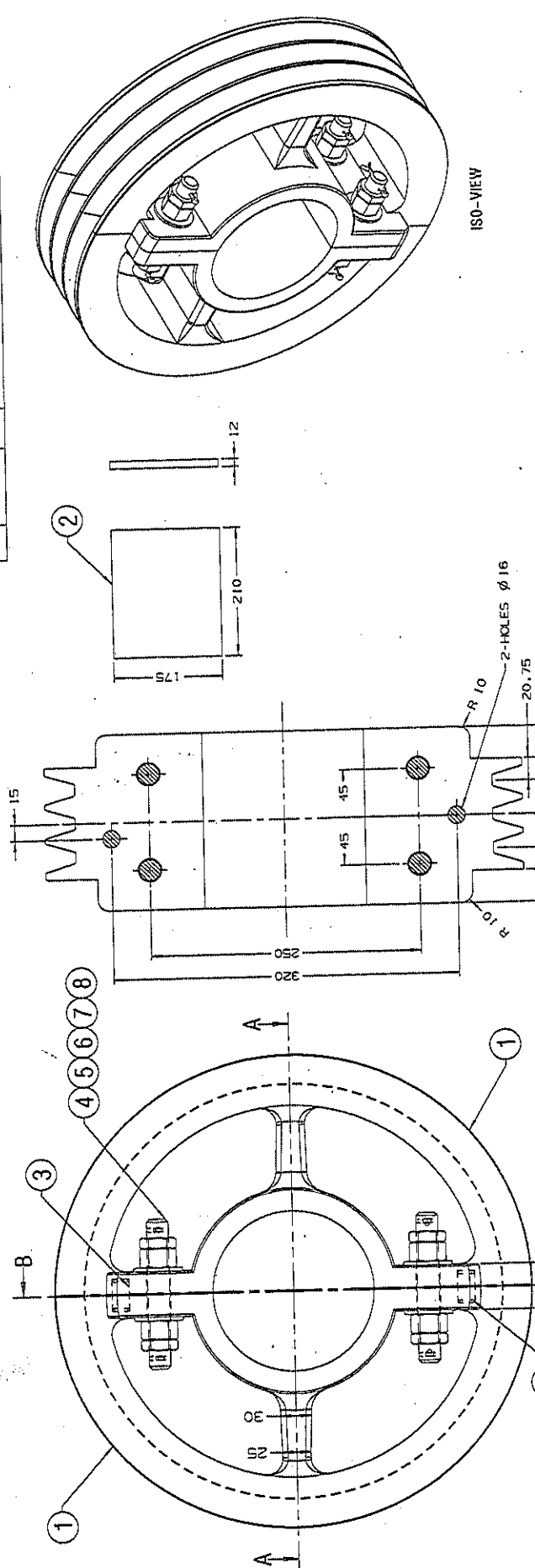
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13	12	11	10	9	8	7	6	5	4	3	2	1
ALTERNATIONS												
AUTHORITY: NIL												
ALTERNATIONS: NIL												
ZONE: NIL												
ALT. NO: NIL												



ITEM	GROUP	DESCRIPTION & DIMENSIONS	WELD LENGTH	WEIGHT	S. AREA	LENGTH / DIA	WIDTH / THICK	HEIGHT
8	08	SPLIT PIN ϕ 4x10 (GALVND)	NIL	NIL	NIL	NIL	NIL	NIL
7	08	FLAN WASHER ϕ 22	NIL	NIL	NIL	NIL	NIL	NIL
6	08	HEXAGONAL NUT ϕ 20x2.5 (GALVND)	NIL	NIL	NIL	NIL	NIL	NIL
5	08	HEXAGONAL LOCK NUT ϕ 20x2.5 (GALVND)	NIL	NIL	NIL	NIL	NIL	NIL
4	04	SPLIT ϕ 20x2.5x150 (GALVND)	NIL	NIL	NIL	NIL	NIL	NIL
3	02	DOWEL PIN	NIL	NIL	NIL	NIL	NIL	NIL
2	02	RUBBER PAD	NIL	NIL	NIL	NIL	NIL	NIL
1	01	AXLE PULLY-HALVES	NIL	NIL	NIL	NIL	NIL	NIL

IS: 549-74, TB-1	NIL	REMARKS
IS: 2016-67, T2, TYPE-A	NIL	BLACK COLOUR
IS: 1364-92, P4, TAB-3	IS: 2073-70, ST-C20	NEOPRENE RUBBER
IS: 1364-92, P4, TAB-3	IS: 2073-70, ST-C20	SHORE HARDNESS 65-75
IS: 1364-92, P4, TAB-3	IS: 2073-70, ST-C20	GREY PAINT
IS: 2073-70, ST-C20	NIL	
IS: 2383-80	NIL	
IS: 210-93	NIL	

ITEM	GROUP	DESCRIPTION & DIMENSIONS	WELD LENGTH	WEIGHT	S. AREA	LENGTH / DIA	WIDTH / THICK	HEIGHT
1	01	3 GROOVE AXLE PULLY FOR 4.5KW ALTERNATOR FOR MG NON AC COACHES (FOR SENEAL RAILWAYS)	NIL	NIL	NIL	NIL	NIL	NIL
2	02	INDIAN RAILWAYS STANDARD	NIL	NIL	NIL	NIL	NIL	NIL

SCALE	ISSUED	DATE
1:1	01	27/01/2008

PL NO.	DRG. NO.
NIL	FJ71004

3 GROOVE AXLE PULLY FOR 4.5KW ALTERNATOR FOR MG NON AC COACHES (FOR SENEAL RAILWAYS)

INDIAN RAILWAYS STANDARD

RAIL COACH FACTORY, KAPURTHALA

DRG. NO. FJ71004

DATE OF FIRST ISSUE: 27/01/2008

FOR UNTOLERANCED DIMENSIONS REFER MCG0008

5. TIGHTENING TORQUE 30KGM MAX. HOWEVER GAP BETWEEN PULLEY HALVES TO BE MAINTAINED.

4. CORNERS OF THE THREE GROOVES ARE TO BE ROUNDED TO 0.5R.

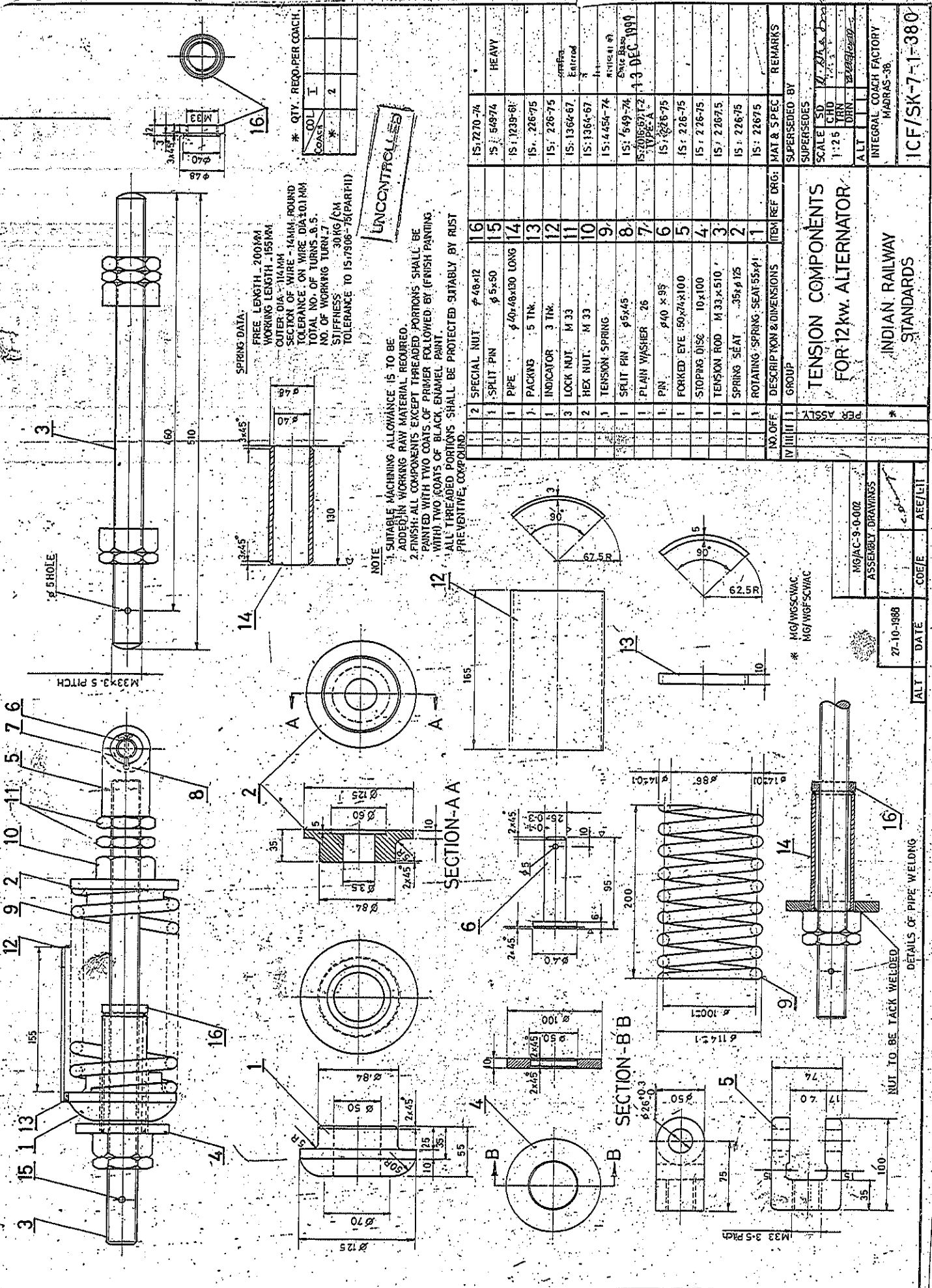
3. UNSPECIFIED TOLERANCES SHALL BE AS PER IS12102 (P-11-1993 (MEDIUM)).

2. DOWEL PIN IS TO BE PRESS FIT IN ONE PULLEY AND CLEARANCE FIT IN THE OTHER HALF.

NOTE:- 1. ALL DIMENSIONS ARE IN MM.

DETAIL DRGS STARTING WITH "LI" ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE

ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER THIS DRAWING INVALID.



SPRING DATA:
 FREE LENGTH - 200MM
 WORKING LENGTH - 155MM
 OUTER DIA - 114MM
 SECTION OF WIRE - 14MM, ROUND
 TOLERANCE ON WIRE DIA ±0.1MM
 TOTAL NO. OF TURNS - 8.5
 NO. OF WORKING TURN - 7
 STIFFNESS - 30 KG/CM
 TOLERANCE TO IS:7906-75(PART II)

UNCONTROLLED

NOTE:
 1. SUITABLE MACHINING ALLOWANCE IS TO BE ADDED IN WORKING RAW MATERIAL REQUIRED.
 2. FINISH: ALL COMPONENTS EXCEPT TREADED PORTIONS SHALL BE PAINTED WITH TWO COATS OF PRIMER FOLLOWED BY (FINISH PAINTING WITH) TWO COATS OF BLACK ENAMEL PAINT.
 3. ALL TREADED PORTIONS SHALL BE PROTECTED SUITABLY BY RUST PREVENTIVE COMPOUND.

NO. OF	DESCRIPTION & DIMENSIONS	ITEM REF DRG.	MAT & SPEC	REMARKS
IV	GROUP			
III				
II				
I				
2	SPECIAL NUT $\phi 48 \times 12$	16	IS: 7270-74	
1	SPLIT PIN $\phi 5 \times 50$	15	IS: 54974	HEAVY
1	PIPE $\phi 40 \times 40 \times 30$ LONG	14	IS: 1239-61	
1	PACKING 5 TKN.	13	IS: 226-75	
1	INDICATOR 3 TKN.	12	IS: 226-75	
3	LOCK NUT M 33	11	IS: 1364-67	Entered
2	HEX NUT M 33	10	IS: 1364-67	
1	TENSION SPRING	9	IS: 4454-74	Artificially
1	SPLIT PIN $\phi 5 \times 45$	8	IS: 549-74	Disc Basis
1	PLAIN WASHER 26	7	IS: 2016-67 T2	TYPE-A
1	PIN $\phi 40 \times 95$	6	IS: 226-75	
1	FORKED EYE $50 \times 14 \times 100$	5	IS: 226-75	
1	STOPPING DISC 10×100	4	IS: 226-75	
1	TENSION ROD M 33 $\times 510$	3	IS: 226-75	
1	SPRING SEAT $35 \times \phi 125$	2	IS: 226-75	
1	ROTATING SPRING SEAT $55 \times \phi 1$	1	IS: 22675	

TENSION COMPONENTS
 FOR 12kw. ALTERNATOR

INDIAN RAILWAY
 STANDARDS

ICF/SK-7-1-380

M/JAC-9-0-002
 ASSEMBLY DRAWINGS

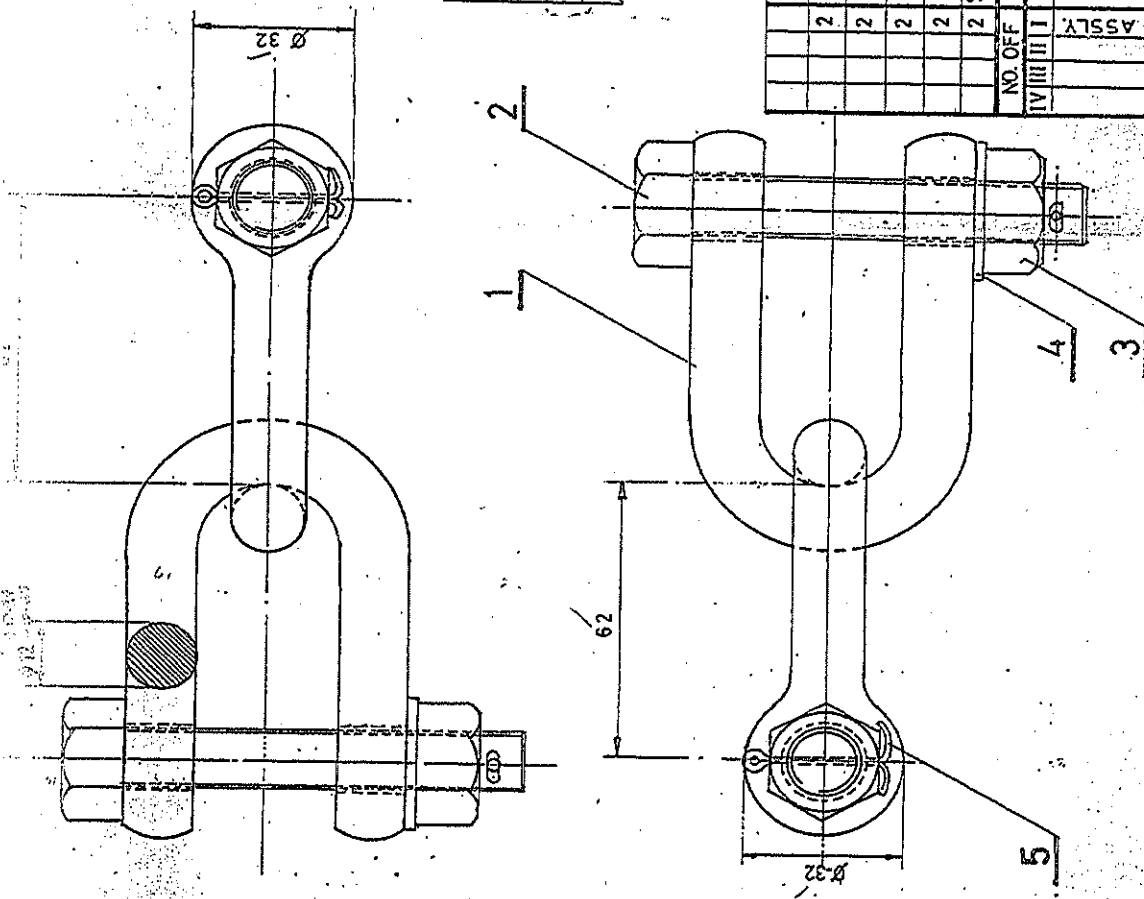
DATE: 27-10-1988
 CODE: AEE/LIT

* M/J/WSSC/WAC
 M/J/WGFS/WAC

DETAILS OF PIPE WELDING
 NUT TO BE TACK WELDED

ICF/SK-7-1-381

ALIGNED



- NOTE:-
1. THE CHAIN ASSLY. SHOULD BE TESTED FOR A PROOF LOAD OF 2500KGF.
 2. TOLERANCES - AS PER TABLE IS 2/23-70 PART-II.
 3. FINISH- SHACKLE TO BE HOT DIP GALVANISED.

*

COACH	▽
COL	4

▽1.MG/WGSCWAC
2.MG/WGFCWAC

NO. OF	DESCRIPTION & DIMENSIONS	ITEM	REF. DRG.	MAT & SPEC	REMARKS
IV	III	II	I	GROUP	SUPERSEDES
2	SPLIT PIN $\phi 3 \times 50$	5		IS: 549-74	GALVED
2	PLAIN WASHER 16	4		IS: 2016-57, T-2, TYPE-A,	GALVED
2	HEX. NUT M16	3		IS: 1967-67, P4, TAB 2	GALVED
2	HEX. HD. BOLT M16 $\times 80$	2		IS: 6132-71, PART-I	GALVED
2	SHACKLE	1		IS: 2/23-70 PART-1	SEE NOTE-3

SAFETY CHAIN
FOR 12 KW
ALTERNATOR

INDIAN RAILWAY
STANDARDS

MG AC-9-0-002
ASSEMBLY DRAWINGS

27-10-1968

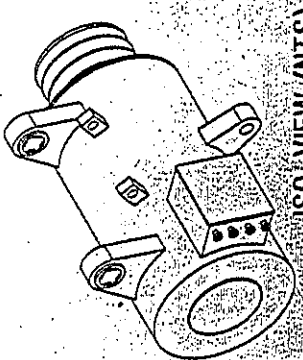
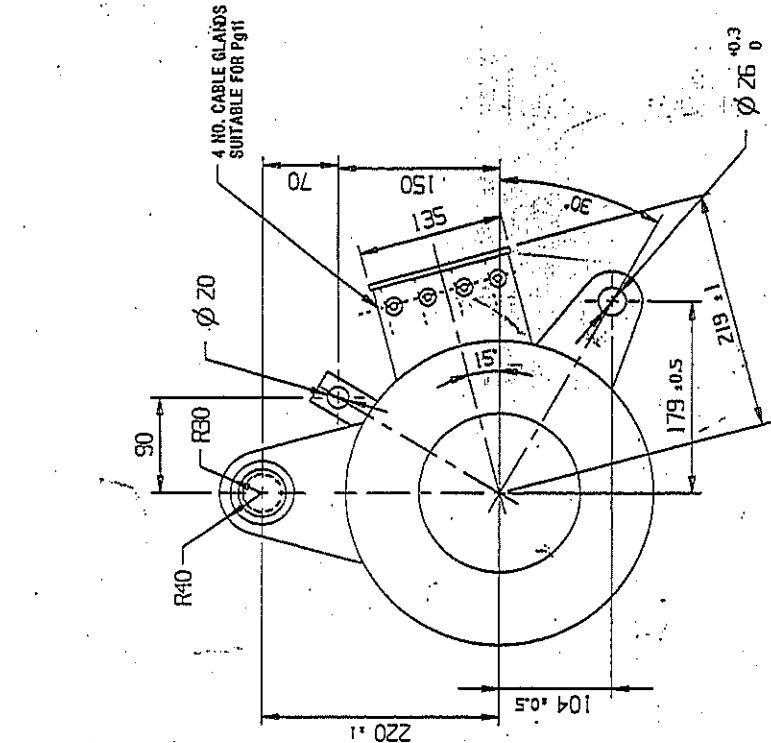
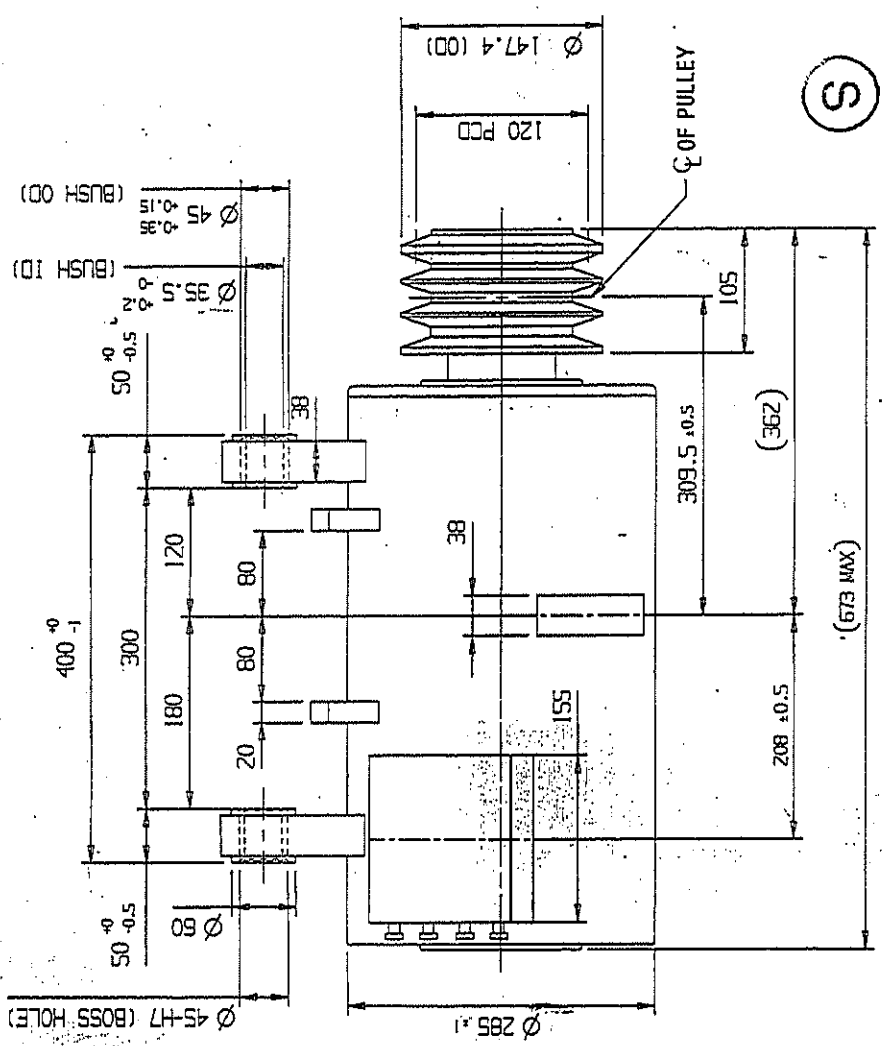
DATE

CD/EJE/EE/ET

INTEGRAL COACH FACTORY
MADRAS-98

ICF/SK-7-1-381

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M



ISO VIEW (NTS)

(S)

WELD LENGTH	ITEM	DESCRIPTION & DIMENSIONS	DETAIL DRG	MATL. & SPEC.	REMARKS
NIL	1	ELECTRICAL	REVISION: NIL		
WEIGHT	GROUP	FILE	NO	SCALE	DATE
NIL	01	Nos\elec\brush\sked\sked502a.dwg	100	1:1	07/01/2006
AREA	NO	DESCRIPTION	SCALE	DATE	BY
NIL	01	OGA OF BRUSHLESS BOGIE MOUNTED ALTERNATOR (FOR MG-VAC COACHES FOR SEREGAL RAILWAYS)	1:1	07/01/2006	SKED
LENGTH	NO	DESCRIPTION	SCALE	DATE	BY
NIL	01	INDIAN RAILWAYS STANDARD	1:1	07/01/2006	SKED
NO	NO	DESCRIPTION	SCALE	DATE	BY
NIL	01	INDIAN RAILWAYS STANDARD	1:1	07/01/2006	SKED
NO	NO	DESCRIPTION	SCALE	DATE	BY
NIL	01	INDIAN RAILWAYS STANDARD	1:1	07/01/2006	SKED



1. ALL DIMENSIONS ARE IN MM.
 2. DETAIL DRGS STARTING WITH 'L1' ARE INTERNAL REFERENCE LISTS ONLY AND ARE NOT FOR ISSUE.
 3. THIS IS A COMPUTER GENERATED DRAWING. ANY MANUAL ALTERATION SHALL AUTOMATICALLY RENDER IT INVALID.
 4. FOR UNTOLERANCED DIMENSIONS REFER TO ISIRI 1701/2006



Corrigendum-1 to document NO. EDML070 REV. '0' (Document for procurement of Bogie Mounted 4.5KW,110VDC Brushless Alternator for MG Non AC Coaches).

This corrigendum is issued to document no. EDML070 REV. '0' to modify the details on the basis of validation conducted on prototype unit. Following modifications shall be carried out:

1. Item no. 4 (Tensioning Gear Assly) of the Clause 1.0 shall be modified as under :
 - The OD of the item-9 (Stopping Disc) of the drawing no. ICF/SK-7-1-380 (Tensioning Gear Assly.) shall be **90mm** in place of **100mm**.
 - The length of the Item-10 (**Spring**) shall be 160mm in place of 200mm.
2. Item no. 12 (Distance Piece to drg. no. FJ71003, Item-4) of the clause 1.0 shall be modified as under :
 - The thickness of the Distance Piece to drg. no. FJ71003, Item-4 shall be 38.5mm in place of 40mm.
3. Item no. 11 (Type/Length of Belt) of the clause 2.0 shall be modified as under :
 - The codification of belt shall be revised as **C-81 (2113)** of M/S DUNLOP or equivalent FENNER make.

EDML070	0	1	21.09.06			1 of 1
Spec. no.	Rev.	COR	Date	(SSE/CAD-II)	(DYCEE/D&D)	Sheet