

Page 1 of 6	SPECIFICATION No. CLW/ES/3/0131	ALT. E
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TECHNICAL SPECIFICATION FOR SET OF CABLE TIE & SET OF BASE FOR CABLE TIES FOR WAG-9 (Co-Co), WAP-5 (Bo-Bo) ELECTRIC LOCOMOTIVE OF INDIAN RAILWAYS

SPECIFICATION No. CLW/ES/3/0131 ALT-E

ENCLOSURES:

1. ANNEXURES:
2. DRG.NOS.CLW/ES/3/SK-1/0131
3. DRG.NOS. CLW/ES/3/SK-1/0120

ISSUED BY:

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

PREPARED BY	CHECKED BY	REVIEWED BY	APPROVED BY
SSE/DRG	AEE/D/CONV.	SEE/D/CONV.	DY. CEE/D-III

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ALTERATION RECORD SHEET

Amend ment No.	ALT No.	DATE	REASON	AUTHORITY
01	A	16.12.1999	Add:- Cable Binder/ Cable Tie 203 x 7.6 PA at sheet No.3 CL.No.4 for WAP-5	
02	B	25.04.2003	Flammability test included in sheet no. 2 Test specified value included in sheet no. 4 Qty./Loco corrected as per category book.	
03	C	28.01.2014	Note added- Manufacture's name should be clearly embossed on the Cable tie.	
04	D	03.07.2015	1. Deletion of quantity per loco in clause.4 scope of supply 2. Note added in scope of supply as "Quantity per loco will be as per category book and the tender schedule".	
05	E		The specification no. CLW/ES/3/0120 of 'Set of base for cable ties' is merged with specification no. CLW/ES/3/0131 Alt-E for 'Set of cable tie'.	

Specification has been digitized and all alterations have been incorporated.

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TECHNICAL SPECIFICATION FOR SET OF CABLE TIE AND SET OF BASE FOR CABLE TIES FOR WAG-9(Co-Co), WAP-5(Bo-Bo) ELECTRIC LOCOMOTIVE OF INDIAN RAILWAYS

1. SCOPE:

This Specification covers the manufacture and supply of SET OF CABLE TIE & SET OF BASE FOR CABLETIES for WAG-9 (Co-Co), WAP-5 (Bo-Bo), 3-phase, 25 kv, 50Hz, AC Locomotive.

2. SERVICE CONDITION:

2.1 Climatic and environmental condition:

Maximum atmospheric temperature : +70°C (in Sun) & +50°C (in Shade)

Normal humidity : 60%

Maximum Humidity : 100% saturation during rainy season.

Altitude : 160 m above mean sea level.

Rain fall : Very heavy in certain areas. The equipment should be designed in such a way as to withstand its running at 10 Km/hr. in flood water Level of 102 mm above rail level.

Atmosphere during hot weather : Extremely dusty and desert terrain in certain areas

Coastal Area : Locomotive and equipment will be designed to work in coastal areas in humid and salt laden atmosphere.

Vibration : The equipment, sub-system and their mounting arrangement will be designed to withstand vibration and shocks encountered in service as specified in correspondence unless otherwise prescribed.

3. STANDARD: The relevant IEC, BS, DIN Standard & Indian standard specification shall apply with respect to all materials used in the manufacture of CABLE TIE & SET OF BASE FOR CABLE TIES.

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Flammability test as per IS: 11731(Part-1) class FH2-5 mm (Horizontal Specimen Method of test for solid insulating material) and class FVO as per IS: 11731 of (part-2) Vertical test method to be tested as a prototype test.

4. **SCOPE OF SUPPLY:**

A) CABLE TIE

SL. No	Description	ABB Ref. Ident. No.	Fig.No.	Material
1.	CABLE TIE 140 x 3.6 PA	NBT 402938P0002	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
2.	CABLE TIE 186 x 4.8 PA	NBT 402938P0003	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
3.	CABLE TIE 338 x 7.6 PA	NBT 402938P0005	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
4.	CABLE TIE 360 x 4.8 PA	NBT 402938P0004	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
5.	CABLE TIE 368 x 7.6 PLT NF	HZN 450706P0011	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
6.	CABLE TIE 762 x 7.6 PA	NBT 402938P0006	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
7.	CABLE TIE 92 x 2.4 PA	NBT 402938P0001	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
8.	CABLE TIE 203 x 7.6 PA	NBT 402938P0008	CLW/ES/3/SK- 1/0131	POLYAMIDE 66
9.	CABLE TIE 140 x 3.6 (PA-HT)	NBT 402938P0502	CLW/ES/3/SK- 1/0131	POLYAMIDE 66

DRAWING NO. CLW/ES/3/SK-1/0131

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B) SET OF BASE FOR CABLE TIES

FIG. NO.	Description	Ident. No.	DRG. NO.	Material
1.	Base for cable Ties	NBT402938P0014	CLW/ES/3/SK-1/0120	Polyamide 66
1.	-DO-	NBT402938P0011	-DO-	-DO-
1.	-DO-	NBT402938P0012	-DO-	-DO-
1.	-DO-	NBT402938P0013	-DO-	-DO-
2.	Base Multiple Base 3 CA Ties	GMN937124P0023	-DO-	Polyamide 66 Non Coloured
2.	-DO-	GMN937124P0041	-DO-	-DO-
3.	Spacer for cable ties	NBT402938P0031	-DO-	Polyamide 66 Res. to high temp.
4.	Base for cable ties	NBT402938P0101	-DO-	Polyamide 66
4.	-DO-	NBT402938P0102	-DO-	-DO-
2.	Multiply Base for Cable ties	GMN937124P0025	-DO-	

DRAWING NO. CLW/ES/3/SK-I/0120

5. SUBMISSION OF TENDER QUOTATION :

5.1 All tender documents including the quotation shall pre submitted in triplicate including any correspondence till a contract is finalized.

5.2 The tenderer shall give sufficient information to prove that his factory has adequate facilities and capacity to manufacture the CABLE TIE and SET OF BASE FOR CABLE TIES to meet fully the technical requirements of the specification, quality of materials and workmanship.

5.3 Quotation shall not be considered complete unless all information is furnished and are therefore liable to be rejected.

5.4 Detailed drawings of the CABLE TIE and SET OF BASE FOR CABLE TIES should be submitted for approval of purchaser.

6. The following drawings are attached with the specification Drg. no-1. CLW/ES/3/SK-1/0131 and Drg. no-2. CLW/ES/3/SK-I/0120

6.1 Technical documents and drawings to be furnished by the supplier as part of contract.

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7. TEST:

Type test and routine test shall be carried out according to the standard.

8. TECHNICAL DOCUMENTS TO BE SUPPLIED BY THE SUPPLIER:

- i) Type test reports : 3 copies.
- ii) Routine test report along with each set : 3 copies.
- iii) Maintenance manual : 3 copies.
- iv) Detailed drawings : 3 copies.

9. Test Specified Values –

9.1 Raw Material

- a) Polymer Identification Test
- b) Moisture Content : 0.00-0.20
- c) Melting Point : 255-265⁰C BS:2782 Pt – 1
- d) Specific Gravity : 1.13-1.15. BS:2782 Pt – 6

9.2 Finished Product

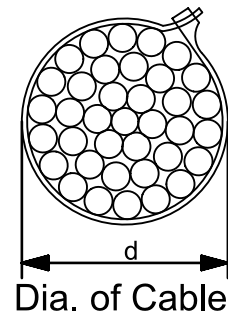
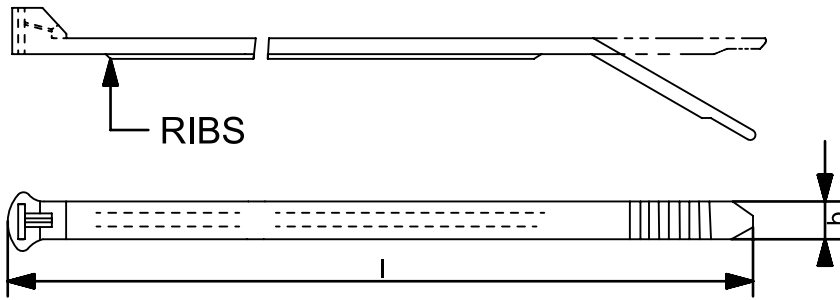
- a) Tensile Strength : 8 kgf (min) ASTM-D 638
- b) Elongation at Break : 40% ASTM-D 638
- c) Water absorption : 1.3 (min) ASTM-D 570
- d) Shore D Hardness : 75-90

10. PACKING OF MATERIALS: -Material to be packed in boxes of sufficient strength to prevent from damage and moisture in transport, handling and storage.

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Types:- Standard + High temperature
STRIP LOCK, steel tongue(SST), antimagnetic

Example of application

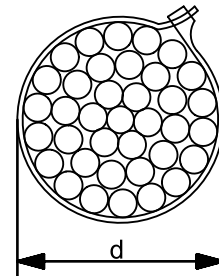
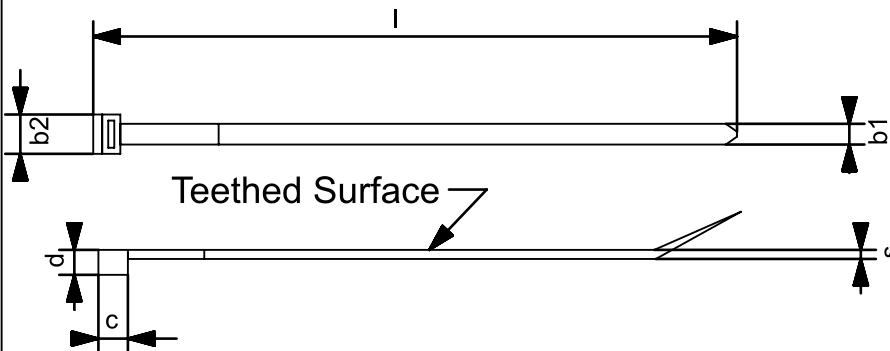


Dia. of Cable loom

Designation	Dimensions				Tensile strength (N)	Semiter designation
	b	l	d min	d max		
92 X 2.4	2.4	92	1.6	16	81	
140 X 3.6	3.6	140	1.6	29	180	130X3.6
186 X 4.8	4.8	186	1.6	45	225	175X4.8
360 X 4.8	4.8	360	1.6	102	225	300X4.8
338 X 7.6	7.6	338	4.8	90	544	325X7.6
762 X 7.6	7.6	762	4.8	229	544	552X7.6
203X 7.6	7.6	203	4.8	50	544	Alt-A
140 X 3.6	3.6	140	1.6	29	180	

Temperature: -40°C- - - - - +105°C








Example of application



Function:- Non-releaseable and therefore non-useable. Dia. of Cable loom

Text l x b1	Dimensions					Tensile strength(N)
	b2	a	c	s	dmax	
368 X 7.6	12.2	7.4	8.1	1.9	100	530

Note:- Manufacturer's Name should be clearly embossed on the cable tie.

अधिकृत DGN												 <p>चितरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA</p>					
जॉचा व.अ.अ. CHD SSE																	
परिवर्तन संख्या ALT.NO.	प्राधिकार AUTHY	वर्णन DESCRIPTION						दिनांकित बाह्य DATED INITIAL	समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE	पदार्थ MATL		प्रति भार कि. ग्रा. WT. EACH IN KG					
सतह - रूखाता का मान मा. मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302		अनिर्दिष्ट सद्य - सीमा मा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768						TOL. CLS.	अनुमोदित उ.पु.वि.अ. APPROVED DYCEE	वर्णन DESCRIPTION		SET OF CABLE TIES					
घातु-वेल्डन चिन्ह मा. मा. : 813 / अ. मा. सं. : 2553 WELDING SYMBOLS TO IS:813 / ISO:2553									दिनांक DATE	30/06/97							
पदांक GRADE NO.	सं1 N1	सं2 N2	सं3 N3	सं4 N4	सं5 N5	सं6 N6	सं7 N7	सं8 N8	सं9 N9	सं10 N10	सं11 N11	सं12 N12	रेखिक अनुपात SCALE	NTS	आरेखण संख्या DRAWING NO.	CLW/ES/3/SK-1/0131	
Rz	0.16-0.3	0.5-0.7	0.9-1.1	1.5-2.0	2.5-3.8	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100	160-250					
Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50					
चिन्ह SYMBOL													संदर्भ / REF. ALT.-		परिवर्तन संख्या ALTERATION. NO.	पृष्ठ SHEET	
														परिवर्तन संख्या ALTERATION. NO.	पृष्ठ SHEET	1 OF 1	A4

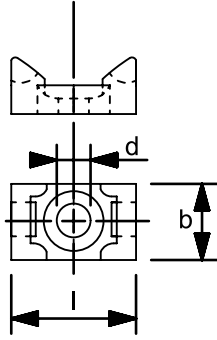


FIG.-1

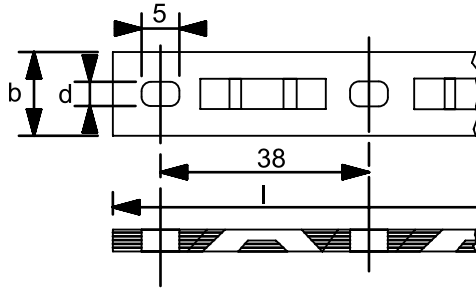


FIG.-2

FIG.	b	l	d	IDENT.NO.
1.	15.9	22.2	5.1	NBT402938P14
	8.3	12.8	3.8	NBT402938P11
	9.5	14.9	4.6	NBT402938P12
	15.9	22.2	6.6	NBT402938P13

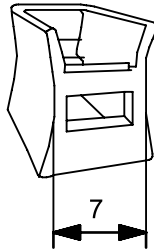


FIG.-3

FIG.	b	l	d	IDENT. NO.
2.	15.8	130	3.2	GMN937124P23
	15.8	243	3.2	GMN937124P41
	15.8	243	3.2	GMN937124P0025

FIG.	b	l	d	IDENT. NO.
3	-	-	-	NBT402938P31

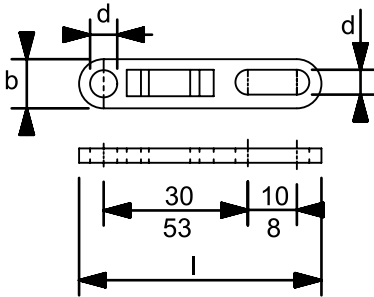







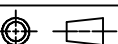


FIG.-4

FIG.	b	l	d	IDENT. NO.
4.	13	50	4.8	NBT402938P101
	16	78	7	NBT402938P102

													अभिकल्पित DGN		 चित्तरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA				
													जॉचा व.अ.अ. CHD SSE						
परिवर्तन संख्या ALT.NO.		प्राधिकार AUTHY		वर्णन DESCRIPTION						दिनांकित बाह्य DATED INITIAL		समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE		पदार्थ MATL		प्रति भार कि. ग्रा. WT. EACH IN KG			
सतह - रूखाता का मान मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302		अनिर्दिष्ट सद्य - सीमा मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768						घाटु-वेल्डन चिन्ह मा. : 813 / अ. मा. सं. : 2553 WELDING SYMBOLS TO IS:813 / ISO:2553		TOL. CLS.		अनुमोदित स.यु.वि.अ. APPROVED DYCEE		विशिष्ट SPECN		वर्णन DESCRIPTION			
पदांक GRADE NO.		सं1 N1	सं2 N2	सं3 N3	सं4 N4	सं5 N5	सं6 N6	सं7 N7	सं8 N8	सं9 N9	सं10 N10	सं11 N11	सं12 N12	रेखिक अनुपात SCALE		NTS		आरेखण संख्या DRAWING NO.	
Rz		0.16-0.3	0.5-0.7	0.9-1.1	1.5-2.0	2.5-3.8	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100	160-250					CLW/ES/3/SK-1/0120	
Ra μm		0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50			संदर्भ / REF.			
चिन्ह SYMBOL														ALT -				परिवर्तन संख्या ALTERATION. NO.	
																पृष्ठ SHEET		1 OF 1	
																		A4	