

Enclosure :

- Drawing No: (i) CLW/ES/3/SK-3/0150/2/C
(ii) CLW/ES/3/SK-4/0150/2/C
(iii) CLW/ES/3/SK-5/0150/2/C
(iv) CLW/ES/3/SK-7a/0451/D
(v) CLW/ES/3/SK-7b/0451/D
(vi) CLW/ES/3/SK-8/0451/D

**TECHNICAL SPECIFICATION
FOR SET OF NON-METALLIC PLATES FOR 3-PHASE
ELECTRIC LOCOMOTIVES**

Specification No: CLW/ES/3/0451/D

ISSUE DATE: - 07.02.2000

ISSUED BY:

DY. CHIEF ELECTRICAL ENGINEER/D-II

CHITTARANJAN LOCOMOTIVE WORKS

P.O : CHITTARANJAN – 713331

DIST. BARDHMAN (WEST), WEST BENGAL (INDIA)

Prepared By	Checked By	Approved By
JE/SSE-DESIGN	AEE/SEE/DESIGN	Dy.CEE/ D-II

ALTERATION RECORD SHEET

Amendment No.	Date of Amend.	Page No.	Alteration	Reason	Authority
A	07.01.02	5, 11	A	1. Qty./Loco deleted. 2. BUR Input Snubber for Bur ½ - 3EHI06612P0001 Sketch No.CLW/ES/3/SK-7/0451 added in Sheet No.11. 3. Insulating plate (Type-21) is deleted as this item is coming with set of cover (Cat. No. P/0/022, Specn.. No. CLW/ES/3/139/B).	s/d
B	16.04.03	5, 12	B	Drg. No. CLW/ES/3/0451 for Capacitor Separator for Filter Cubicle incorporated and Sheet No. 12 added.	s/d
C	17.02.22	5, 7	C	Material description, Fig. No. and material of Sl. No. 1 & 2 deleted at Sheet No. No. 5 Drg. No. SK-1 and SK-2 (CLW/ES/3/SK-1/0150/2 & CLW/ES/3/SK-2/0150/2) has been deleted at Sheet No. 7.	s/d
D	-	12	D	Drawing no. CLW/ES/3/SK-8/0451/C modified to CLW/ES/3/SK-8/0451/D	

NOTE: "Specifications have been digitized and all alterations have been incorporated"

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SPECIFICATION FOR NON-METALLIC PLATES**1. SCOPE :**

This specification covers the manufacture and supply of Set of Non-Metallic Plates for 3-Phase, 25 KV, 50 Hz, AC Locomotive.

2. Climatic and environmental condition: -

- Maximum atmospheric temperature : +70°C (In Sun) &
: 50°C.(In Shade)
- Humidity : 100% Saturation during rainy season.

Reference site condition

- (i) Ambient Temperature : Max. 55°C, Min. 0°C
- (ii) Humidity : 60 %
- (iii) Altitude : 160 m above mean sea level
- (iv) Rainfall : Very heavy in certain areas. The locomotive will be designed in such a way as to permit 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 areas : Locomotive and equipment will be designed to work in coastal areas in humid and salt laden atmosphere.
- Vibration : The equipment, subsystem and their mounting arrangement will be designed to withstand vibrations and shocks encountered in service as specified in corresponding IEC publications unless otherwise prescribed.

3. STANDARD :

As per relevant IS/IEC.

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4. SCOPE OF SUPPLY :**NON-METALLIC PLATES:**

Sl. No.	Description	Ident. No.	Fig. No.	Material
1	BASE PLATE (Types 14)	3EHP 330155 P0001	SK-3	Glass Fibre Polyester Resin as per IS:11246.
2	INSULATING PLATE (Type-22)	3EHP 431629 P0001	SK-4	Glass Fibre Polyester Resin as per IS:11246.
3	BUR INPUT SNUBBER BUR-1/2	3EHI06612 P0001	SK-7	Hard Fibre (Equivalent of HM 35).
4	Capacitor Separator for filter cubicle(Fig.1 only)		SK-8	SRBGF, EP-3, IS:10192
5	DISTANCE PLATE (TYPE-16)	3EHP 431509 P0002	SK-5	PVC as per IS :6307

NOTE: 1) All materials should be fire retardant / self-extinguishing type as per IS: 11731 or any other relevant standard.

2) Firm identification mark, Type No. , Material identification No. , Month and Year of manufacturer of each item are required to be engraved.

5. DRAWINGS :

The following drawing is attached with the specification.

- (i) CLW/ES/3/SK-3/0150/2/C
- (ii) CLW/ES/3/SK-4/0150/2/C
- (iii) CLW/ES/3/SK-5/0150/2/C
- (iv) CLW/ES/3/SK-7a/0451/ D
- (v) CLW/ES/3/SK-7b/0451/ D
- (vi) CLW/ES/3/SK-8/0451/ D

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

6. TESTS :

Type test and Routine test shall be carried out according to relevant IS/IEC Standard.

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7. SUBMISSION OF TENDER QUOTATION :

- 7.1 The tenderer shall give sufficient information to prove that his factory has adequate facilities and capacity to manufacture the above materials to meet fully the technical requirements of the specification, quality of materials and workmanship.
- 7.2 Quotation shall not be considered complete unless all information is furnished and are therefore liable to be rejected.
- 7.3 Detailed drawings of the above materials should be submitted for approval of purchaser.
- 7.4 Past test reports (if any).

8. TECHNICAL DOCUMENTS TO BE SUPPLIED BY THE SUPPLIER :

- i) Type test reports
- ii) Routine test report along with each set
- iii) Detailed drawings

9. QUALITY ASSURANCE:

Quality assurance should be as per ISO: 9000.

NOTE: The tenderer must indicate the price of each items of the set separately.

Set of Plates Specn. No. CLW/ES/3/0150 Alt. 'C' break up into four specifications.

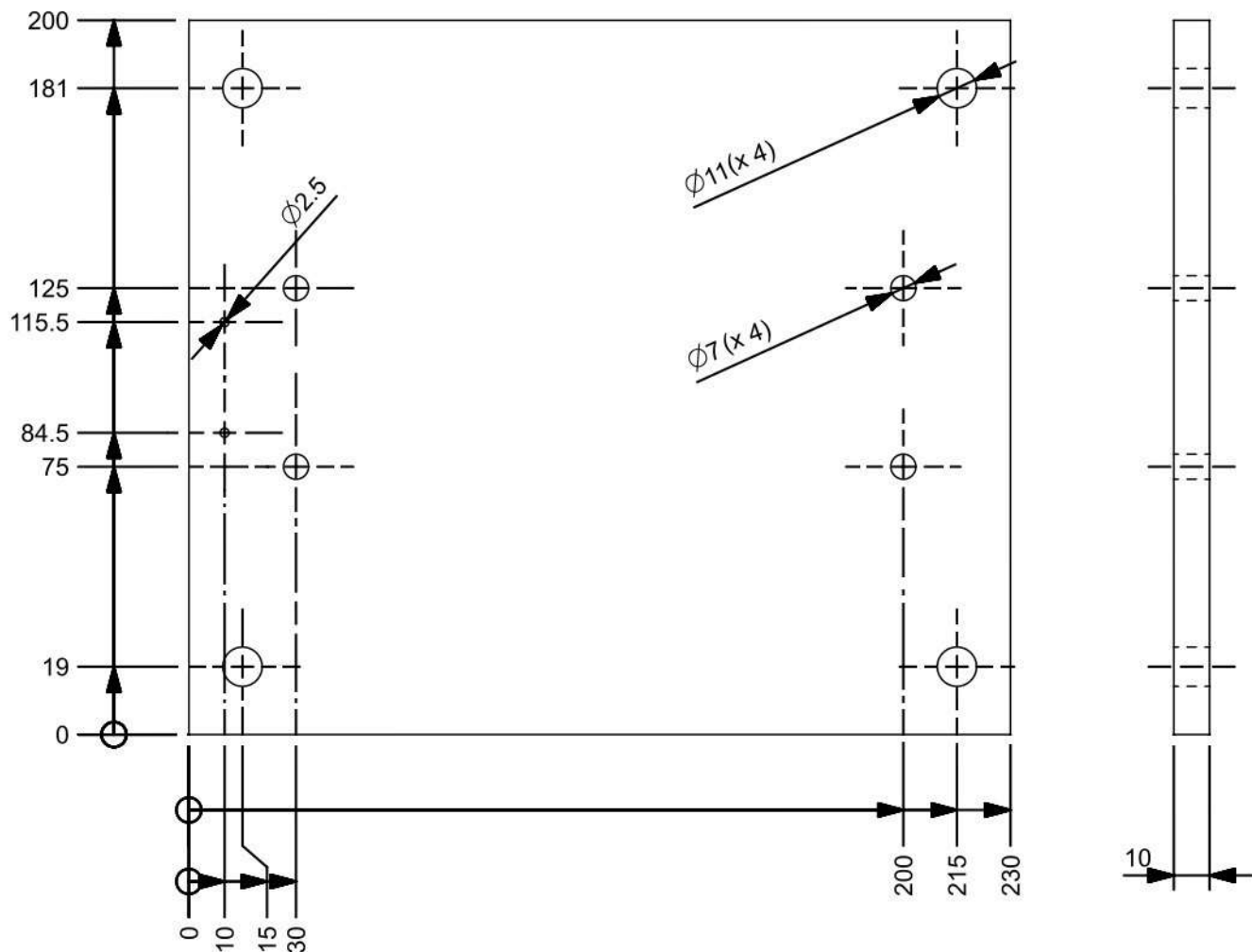
- (1) Set of Metallic Plates - CLW/ES/3/0450
- (2) Set of Non-Metallic Plates - CLW/ES/3/0451
- (3) Set of Copper Plates - CLW/ES/3/0452
- (4) Set of Panel Plates - CLW/ES/3/0453

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BASE PLATE[TYPE 14]

IDENT. No. 3EHP330155P0001

Location :- Pre Assly M/R Filter Block



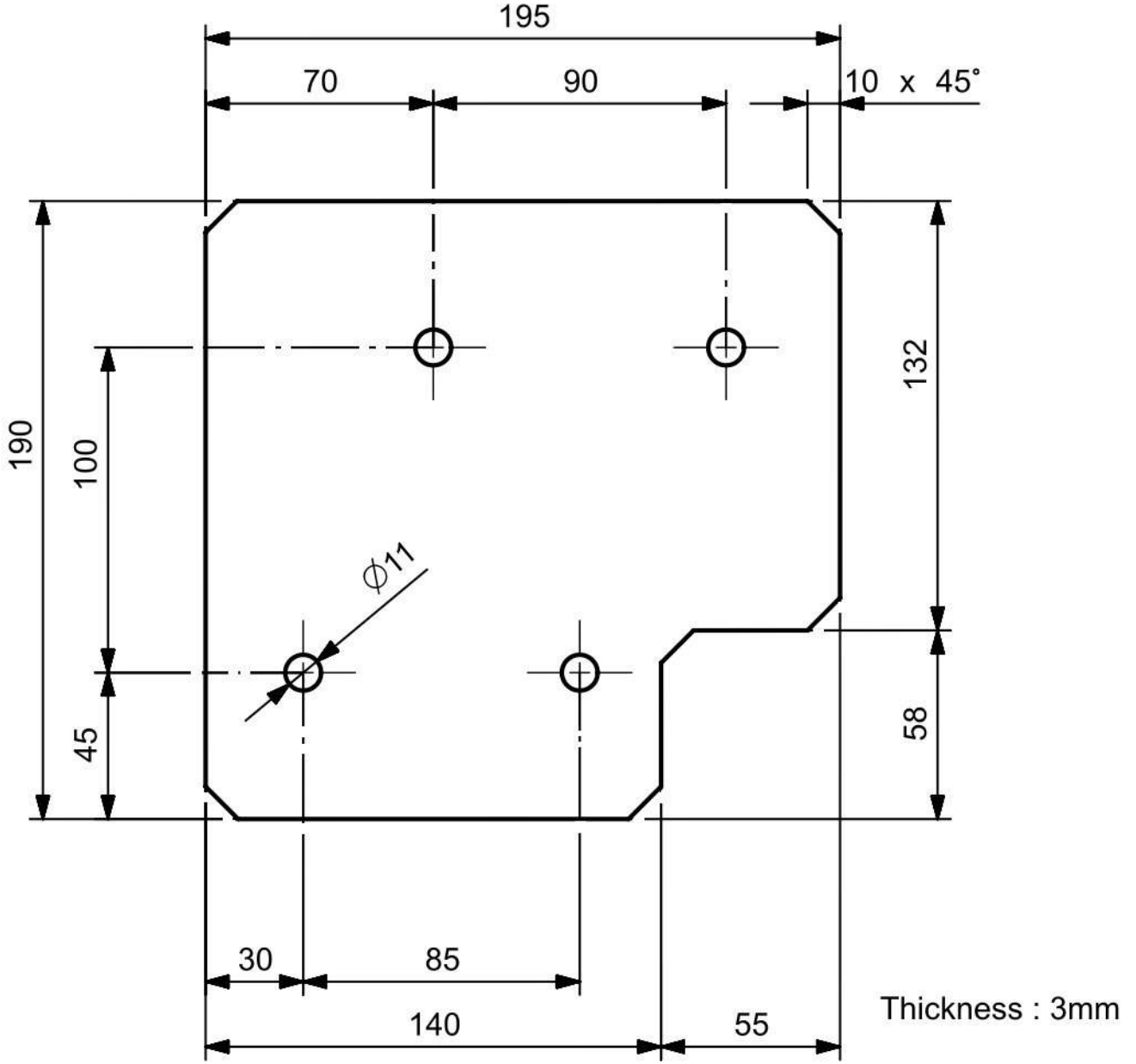
All dimensions are in mm

												अधिकल्पित DGN		 <div>चिततरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA</div>					
												जॉचा व.अ.अ. CHD SSE							
परिवर्तन संख्या ALT.NO.		प्राधिकार AUTHY		वर्णन DESCRIPTION						दिनांक बाबत INITIAL		समीक्षित स.वि.अ. / व.वि.अ. DATED REVIEWED AEE / SEE		पदार्थ MATL GLASS FIBRE POLYSTER RESIN AS PER IS : 11246		प्रति भार कि. ग्रा. WT. EACH IN KG			
सतह — ऊकता का मान वा. मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:8073 / ISO:3002		अनिर्दिष्ट सद्य — सीमा वा. मा. : 2102 / अ. मा. सं. : 2788 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768						TOL. CLS.		अनुमोदित उ.मु.वि.अ. APPROVED DYCEE		विशिष्ट SPECN		वर्णन SET OF NON METALLIC PLATES CLW/ES/3/0451/D DESCRIPTION					
		धातु-वेल्डन चिह्न वा. मा. : 813 / अ. मा. सं. : 2553 WELDING SYMBOLS TO IS:813 / ISO:2553								दिनांक DATE									
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-3/0150/2/C				
Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50			ALT. -				
चिह्न SYMBOL															 परिवर्तन संख्या ALTERATION. NO.				
												संदर्भ / REF.		पर्ण SHEET		1 OF 1		A4	



INSULATING PLATE (TYPE-22)

IDENT. NO 3EHP431629 P0001

Location:- Pre Assly M/R Filter Block



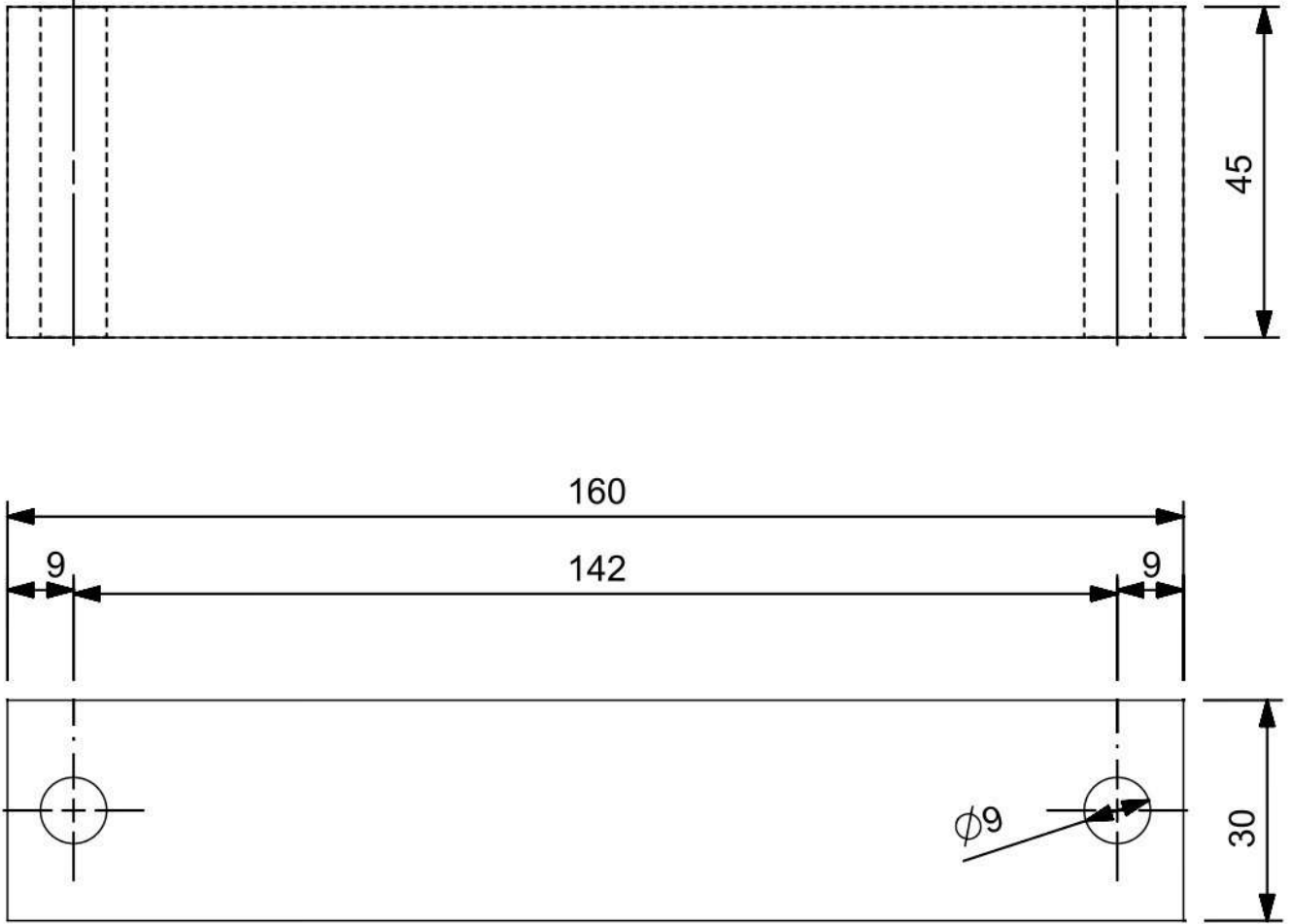
All dimensions are in mm

												अधिकृत DGN		 चितरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA										
												जॉचा व.अ.अ. CHD SSE												
परिवर्तन संख्या ALT.NO.	प्राधिकार AUTHY		वर्णन DESCRIPTION						दिनांकित बाबत DATED INITIAL	समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE	पदार्थ MAT'L		ग्लास फाइबर पॉलीस्टर RESIN AS PER IS : 11246		प्रति भार कि. ग्रा. WT. EACH IN KG									
सतह — चकता का मान वा. मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302												अनिर्दिष्ट सतह — सीमा वा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768						TOL. CLS.	अनुमोदित स.मु.वि.अ. APPROVED DYCEE		वर्णन DESCRIPTION		SET OF NON METALLIC PLATES CLW/ES/3/0451/ D	
वातु-वेल्डिंग चिह्न वा. मा. : 813 / अ. मा. सं. : 2563 WELDING SYMBOLS TO IS:813 / ISO:2553																		दिनांक DATE						
पदार्थ GRADE NO.	स1 N1	स2 N2	स3 N3	स4 N4	स5 N5	स6 N6	स7 N7	स8 N8	स9 N9	स10 N10	स11 N11	स12 N12	रेखिक अनुपात SCALE	NTS	आरेखण संख्या DRAWING NO.		CLW/ES/3/SK-4/0150/2/C							
Rz	0.16-0.3	0.5-0.7	0.9-1.1	1.5-2.0	2.5-3.0	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100	100-250												
Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50												
चिह्न SYMBOL																	परिवर्तन संख्या ALTERATION. NO.							
												संदर्भ / REF.		ALT.-				पृष्ठ SHEET		1 OF 1		A4		








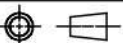
DISTANCE PLATE [TYPE 16]

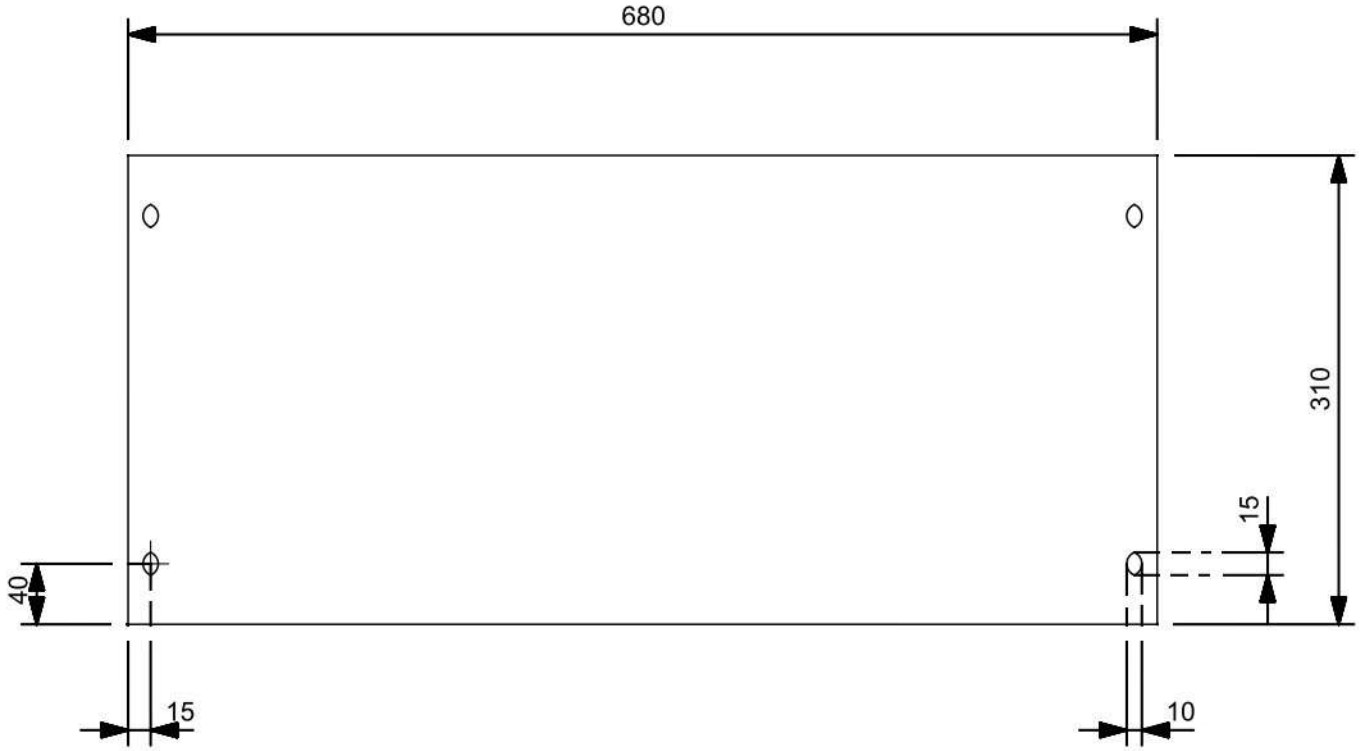
IDENT. No. 3EHP431509P0002

Location :- MR, HV Cable



All dimensions are in mm

												अधिकृत DGN		 चित्तरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA								
												जॉचा व.अ.अ. CHD SSE										
परिवर्तन संख्या ALT.NO.	प्राधिकार AUTHY		वर्णन DESCRIPTION						दिनांकित बाबत DATED INITIAL	समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE		पदार्थ MATL	PVC AS PER IS : 6307		प्रति भार कि. ग्रा. WT. EACH IN KG							
सतह - चकता का मान वा. मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:7073 / ISO:1302												अनिर्दिष्ट सद्य - सीमा वा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768						TOL. CLS.	अनुमोदित स.मु.वि.अ. APPROVED DYCEE		विशिष्ट SPECN	
												घातु-वेल्डन चिन्ह वा. मा. : 813 / अ. मा. सं. : 2563 WELDING SYMBOLS TO IS:813 / ISO:2553							दिनांक DATE		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	2.5-3.0	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.		परिवर्तन संख्या ALTERATION. NO.							
												ALT.-				पर्ण SHEET		1 OF 1	A4			

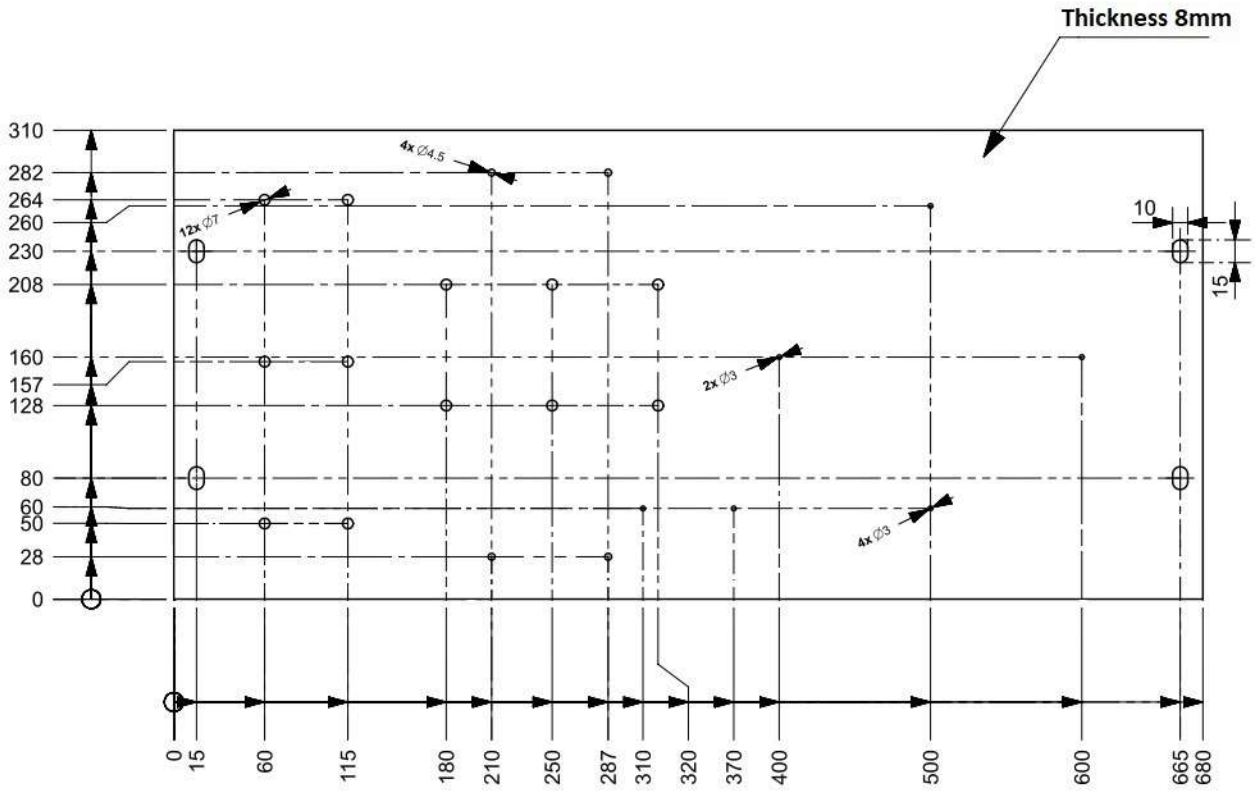


Trade Name :- Hylam

Thickness :- 8mm

All dimensions are in mm

												अभिकल्पित DGN		 चिततरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA							
												जॉचा व.अ.अ. CHD SSE									
परिवर्तन संख्या ALT.NO.	प्राधिकार AUTHY	वर्णन DESCRIPTION						दिनांकित बाबत DATED INITIAL	समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE	पदार्थ MATL		PHENOLIC LAMINATED SHEET AS PER IS : 2036-1995		प्रति भार कि. ग्रा. WT. EACH IN KG							
														विशिष्ट SPECN							
सतह - रूखाता का मान वा. मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302												अनिर्दिष्ट सद्य - सीमा वा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768						TOL. CLS.		अनुमोदित स.मु.वि.अ. APPROVED DYCEE	
												घातु-वेल्डन चिन्ह वा. मा. : 813 / अ. मा. सं. : 2553 WELDING SYMBOLS TO IS:813 / ISO:2553								दिनांक DATE	
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	2.5-3.0	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100	160-250			CLW/ES/3/SK-7a/0451/D						
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.		परिवर्तन संख्या ALTERATION. NO.						
												ALT.-				पर्ण SHEET		1 OF 1		A4	



Size- 680x310x8 mm

NOTE :-

1. This Drawing is used for preparation of BUR INPUT SNUBBER BUR 1/2(Drg. No.CLW/ES/3/SK-7a/0451/C.
2. This Drawing is used for internal purposes during manufacturing of Panel.
3. This material is not supplied by the vendor, only material as per drg. no.No.CLW/ES/3/SK-7a/0451/C to be supply
4. All dimensions are in mm.

													अभिलेखित DGN		 चितरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA										
													जॉचा व.अ.अ. CHD SSE												
परिवर्तन संख्या ALT.NO.	प्राधिकार AUTHY		वर्णन DESCRIPTION								दिनांकित बाबत DATED INITIAL	समीक्षित स.वि.अ. / व.वि.अ. REVIEWED AEE / SEE	पदार्थ MATL	Hard Fibre(Equivalent of Hm35)		प्रति भार कि. ग्रा. WT. EACH IN KG									
सतह — रूखाता का मान वा. मा. 3073 / अ. मा. सं. 1302 SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302													अनिर्दिष्ट सद्य — सीमा वा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLERANCE TO IS : 2102 / ISO : 2768								TOL. CLS.	अनुमोदित स.मु.वि.अ. APPROVED DYCEE		विशिष्ट SPECN	
धातु-वेल्डन चिह्न वा. मा. : 813 / अ. मा. सं. : 2553 WELDING SYMBOLS TO IS:813 / ISO:2553															दिनांक DATE		वर्णन DESCRIPTION		SET OF NON METALLIC PLATES						
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	2.5-3.0	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													
चिह्न SYMBOL														संदर्भ / REF.		परिवर्तन संख्या ALTERATION. NO.									
													ALT. -				पार्ण SHEET 1 OF 1		A4						

