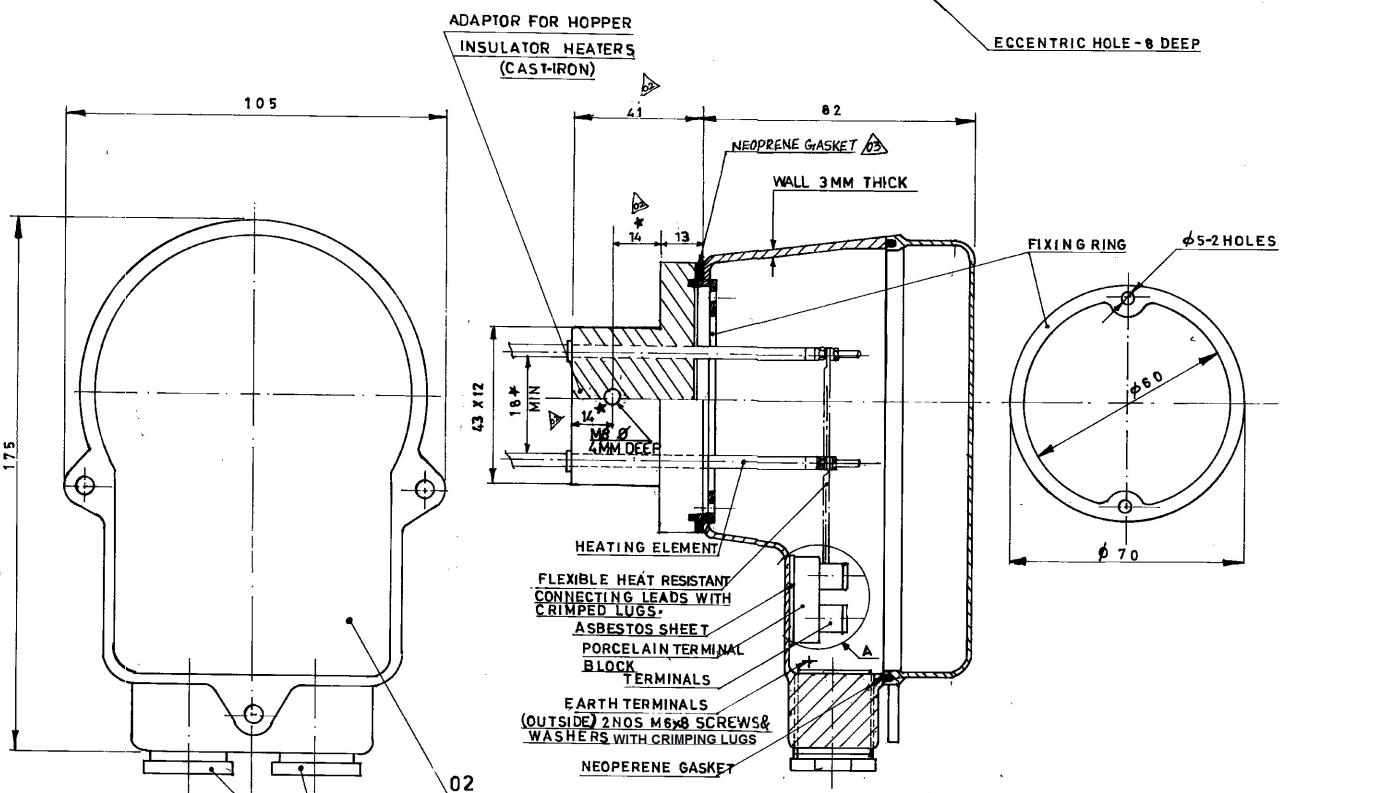
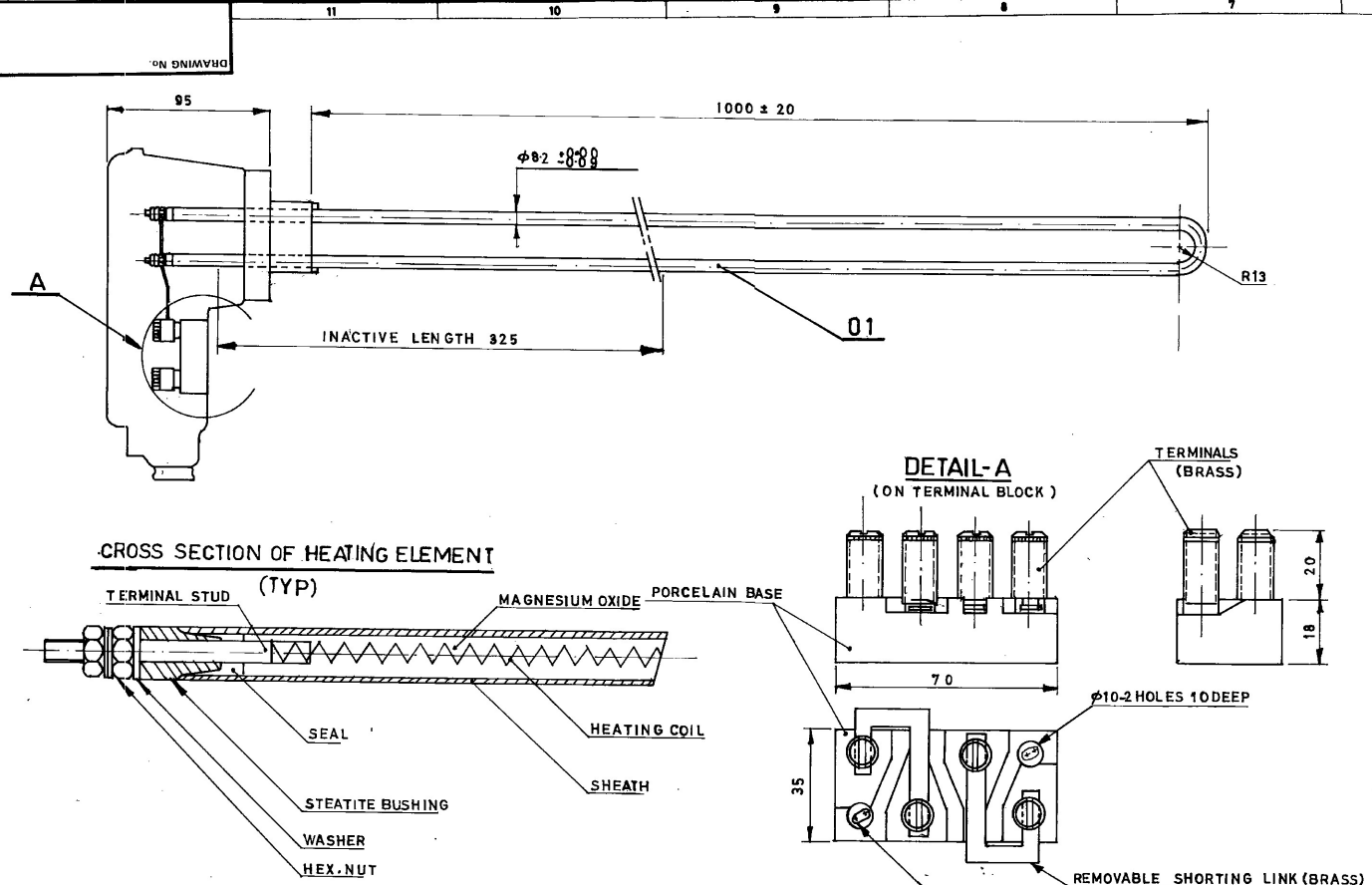


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DOUBLE COMPRESSION TYPE BRASS CABLE GLANDS SUITABLE FOR CABLES OF 2C-2.5 SQMM COPPER CONDUCTOR, UNARMOURD PVC CABLE

**NOTES:**

- 1 SHEATH MATERIAL: HEAT RESISTING STAINLESS STEEL 321
- 2 HEATING COIL MATERIAL: KANTHAL DSD (NICKEL CHROME)
- 3 TERMINAL BOX MATERIAL: PRESSURE DIE CAST OF ALUMINIUM ALLOY.
- 4 ALL FERROUS PARTS TO BE GALVANISED AND BRASS PARTS TO BE NICKEL PLATED
- 5 MATERL CODE: 96-150.435
- 6 MINIMUM CLEARANCE FROM THE TERMINAL BOX LID TO THE LIVE TERMINALS SHALL BE 15MM. OTHER ELECTRICAL CLEARANCES GREEPAGES SHALL BE AS PER RELEVANT STANDARDS.
- 7 CABLE GLANDS SHALL BE FIXED WITH DUMMY PLUGS
- 8 THE TERMINAL BOX SHALL MEET IP 55 DEGREE OF PROTECTION AS PER IS 2147.
- 9 CRIMPING TYPE CABLE LUGS (ATC) SHALL BE PROVIDED TO RECEIVE 2 RUNS OF 2C-2.5 SQMM COPPER CABLE, MAKE: DOWELLS OR EQUIVALANT (SUBJECT TO APPROVAL).
- 10 MANUFACTURING DRAWING SHALL BE SUBMITTED FOR APPROVAL.
- 11 DIMENSION MARKED \* THIS ARE CRITICAL. SUPPLIER MAY TAKE CARE OF.

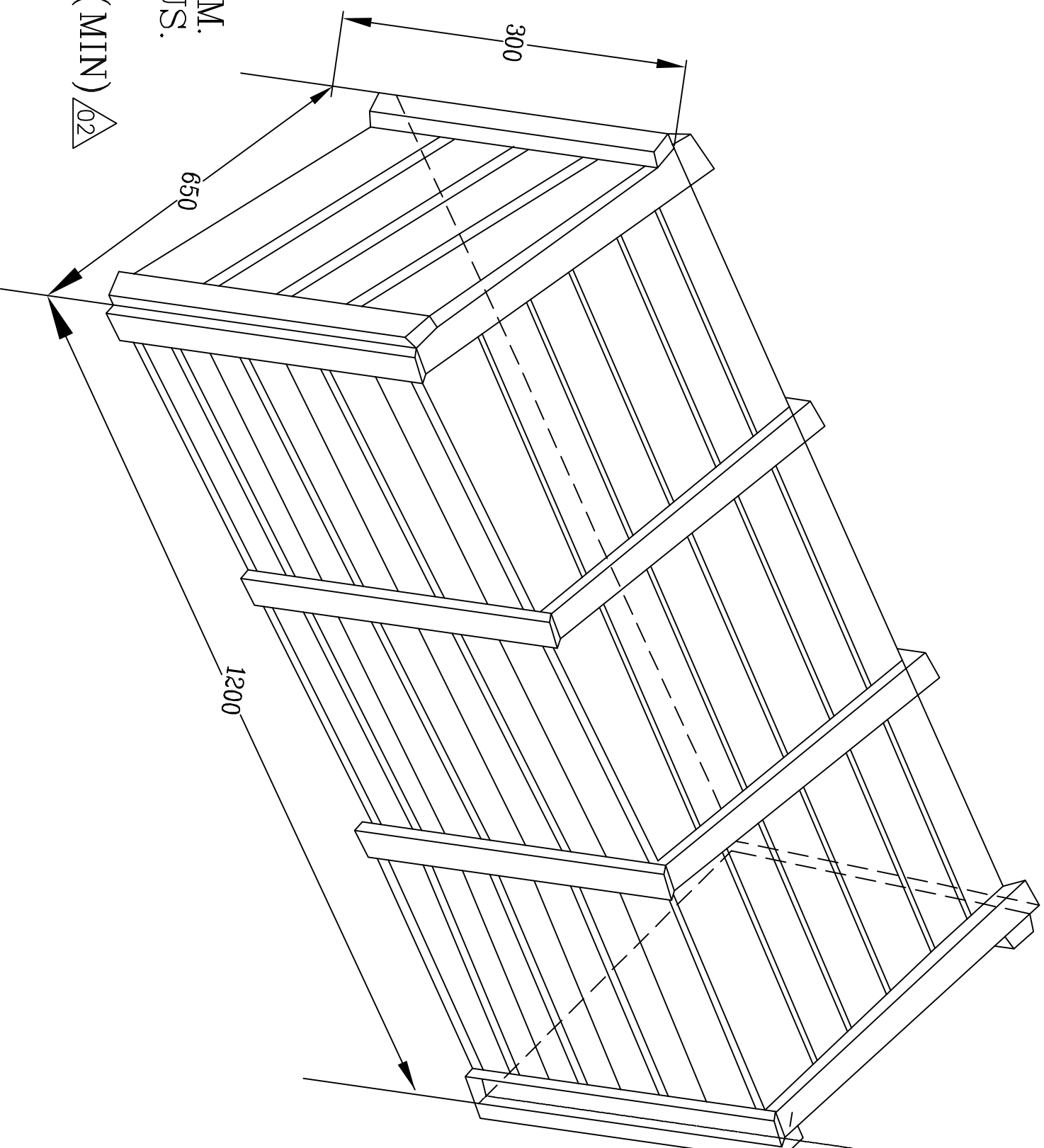
REF: HQA-500 FOR UNITING  
REF: HQA-500 FOR UNITING


VAR. No.	ITEM No.	DESCRIPTION	STD.	DRAWING No.	ITEM No.	MATL. CODE	A UNIT	UNIT WT.	CS	ZONE
	02	TERMINAL BOX				PRESSURE DIECAST		0.4		
	01	HEATING ELEMENT 1PH, 415V, 50HZ, 0.5KW						1.5		

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		<b>ELECTROSTATIC PRECIPITATOR</b>			
Bharat Heavy Electricals Ltd. BOILER AUXILIARIES PLANT RANIPET-632 406		DRN. No.	NAME	SIGN	DATE
		CHD.	S R		18-8-92
		APPD.	SJP		18-8-92
DEPT. CODE	GRADE OF UNTOOL DIM	SCALE	WEIGHT (kg)	REF. TO ASSY/OLD DRG.	ITEM No.
AGCS	CHAMP	1:1	1.9		
TITLE		CARD CODE	DRAWING No.	REV.	
HEATING ELEMENT FOR HOPPERS (0.5 KW, 415V AC)		U 01	1-79-090-00420	04	

REV	DATE	ALTERED	ZONE	REV	DATE	ALTERED	ZONE	REV	DATE	ALTERED	ZONE
04	21.07.11	CHANGED		03	22.03.98	GASKET INDICATED		02	15-04-92	CRITICAL DIMENSIONS ARE INCORPORATED	
01	1.7.92	Technical Specification No deleted.									





**NOTES** 

01. HEATING ELEMENTS SHALL BE WRAPPED IN POLYTHIN SHEET BEFORE WOODEN PACKING
02. PACKING SIZE : 1200MM X 650MM X 300MM.
03. MATERIAL - RUBBER WOOD OR EUCALYPTUS.
04. BOX CAPACITY 12 HEATER IN ONE BOX
05. EACH WOODEN PLANK SIZE: - 70MM WIDTH(MIN) X 15MM THK(MIN).
06. GAP BETWEEN TWO PLANKS: 50MM(MAX).
07. LENGTH OF EACH PLANK: TO SUIT BOX SIZE.
08. THE PACKING BOX SHALL BE SUITABLE FOR TRANSPORTATION AND STORAGE AT SITE.

 02

REV	DATE	ALTD	CHD	APPD
02	17.03.2016	S. PRAKASH	G.M.K	M.J.M
01	19.02.2014	V. REVATHI	G.M.K	M.J.M

REVISED TO INCREASE WOODEN PLANK THICKNESS

NOTES ALTERED AS MARKED.

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDICATED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.


**STANDARD DRAWING**

**BHARAT HEAVY ELECTRICALS LIMITED.,**  
 BOILER AUXILIARIES PLANT.  
 RANIPET - 632 406.

DRN.	CHD.	APPD.	NAME	SIGN	DATE	TITLE
			ANIL SINGH	ANIL	24.07.12	PACKING BOX FOR HOPPER HEATER (TUBLER TYPE)
			T. VENUGOPAL	T	24.07.12	
			T. VENUGOPAL	T	24.07.12	

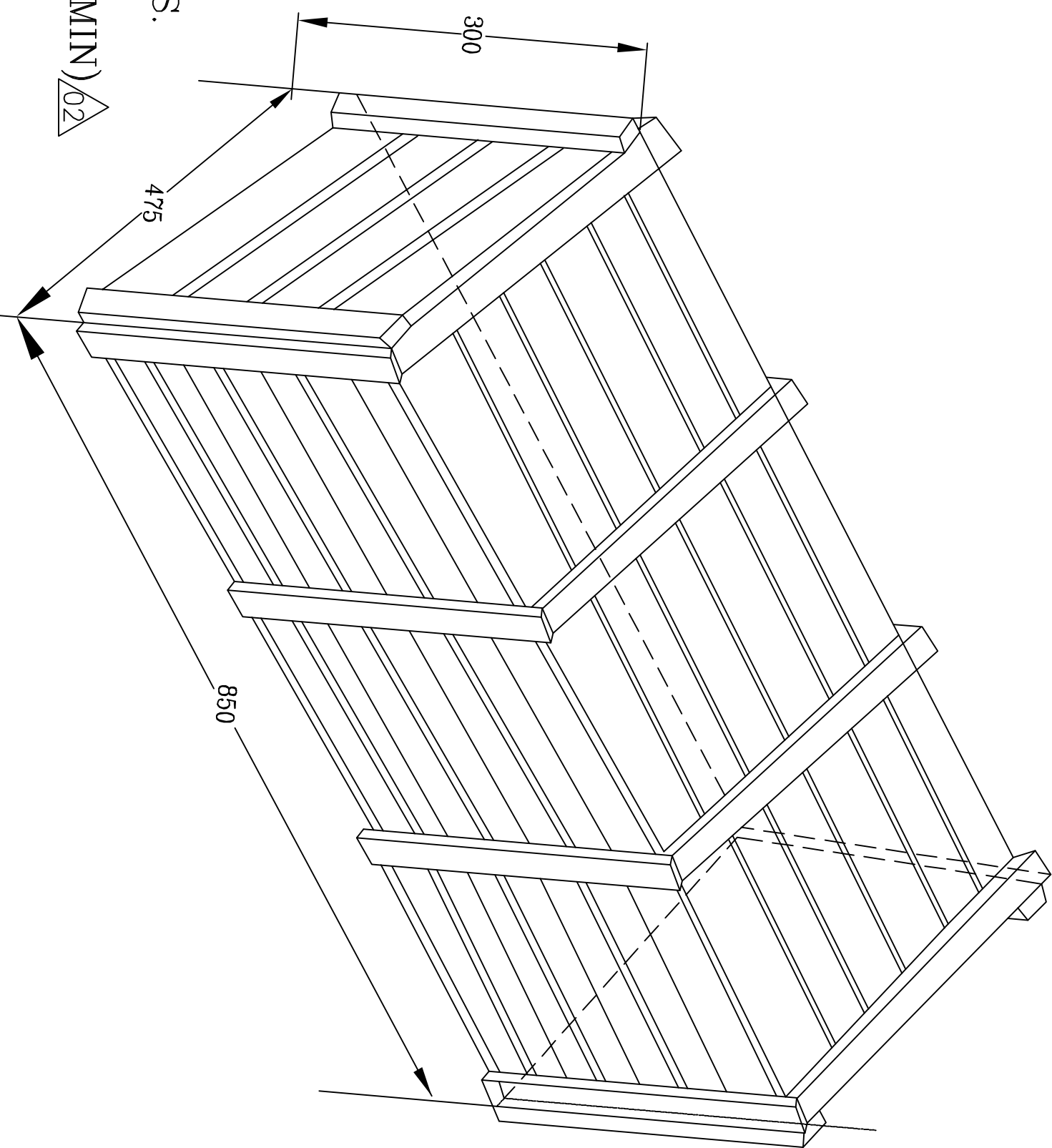
355-029

ALL DIMENSIONS IN MILLIMETER

PROJECTION  SCALE NTS

DRG. No. **3-00-114-37121**

REV. **02**



**NOTES** A

- 01. HEATING ELEMENTS SHALL BE WRAPPED IN POLYTHIN SHEET BEFORE WOODEN PACKING
- 02. PACKING SIZE : 850MM X 475MM X 300MM.
- 03. MATERIAL – RUBBER WOOD OR EUCALYPTUS.
- 04. BOX CAPACITY 3 HEATER IN ONE BOX.
- 05. EACH WOODEN PLANK SIZE: – 70MM WIDTH(MIN) X 15MM THK(MIN).
- 06. GAP BETWEEN TWO PLANKS: 50MM(MAX).
- 07. LENGTH OF EACH PLANK: TO SUIT BOX SIZE.
- 08. THE PACKING BOX SHALL BE SUITABLE FOR TRANSPORTATION AND STORAGE AT SITE.

A 02

REV	DATE	ALTD	CHD	APPD
02	17.03.2016	S.PRAKASH	G.M.K	M.J.M
01	19.02.2014	V.REVAITHI	G.M.K	M.J.M

REVISED TO INCREASE WOODEN PLANK THICKNESS

NOTES ALTERED AS MARKED.

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**STANDARD DRAWING**

**BHARAT HEAVY ELECTRICALS LIMITED.,**  
 BOILER AUXILIARIES PLANT,  
 RANIPET – 632 406.

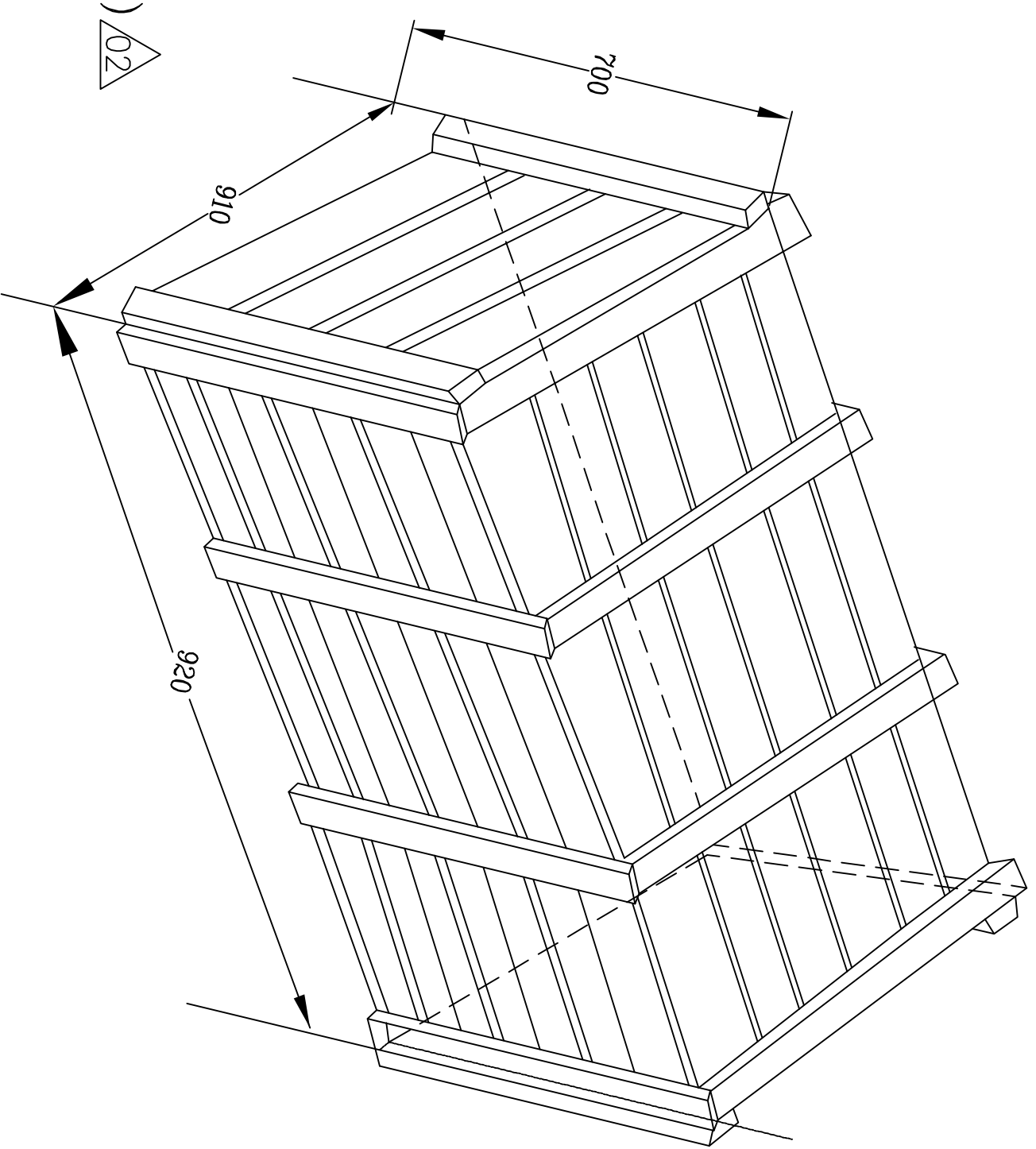
NAME	SIGN	DATE	TITLE
DRN. ANIL SINGH	ANIL	24.07.12	PACKING BOX FOR SHAFT INSULATOR HEATER (TUBLER TYPE)
CHD. T.VENUGOPAL	T.V	24.07.12	
APPD. T.VENUGOPAL	T.V	24.07.12	

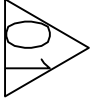
PROJECT: 355-029

ALL DIMENSIONS IN MILLIMETER

PROJECTION: SCALE: NTS

DRG. No. **3-00-114-37122** REV. **02**



**NOTES** 

01. HEATING ELEMENTS SHALL BE WRAPPED IN POLYTHIN SHEET BEFORE WOODEN PACKING
02. PACKING SIZE : 920MM X 910MM X 700MM.
03. MATERIAL – RUBBER WOOD OR FUCALYPTUS.
04. BOX CAPACITY 8 HEATER IN ONE BOX.
05. EACH WOODEN PLANK SIZE: – 70MM WIDTH(MIN) X 15MM THK(MIN).
06. GAP BETWEEN TWO PLANKS: 50MM(MAX).
07. LENGTH OF EACH PLANK: TO SUIT BOX SIZE.
08. THE PACKING BOX SHALL BE SUITABLE FOR TRANSPORTATION AND STORAGE AT SITE.



REV	DATE	ALTD	CHD	APPD
02	17.03.2016	S.PRAKASH	G.M.K	M.J.M
REVISED TO INCREASE WOODEN PLANK THICKNESS				
01	19.02.2014	V.REVATHI	G.M.K	M.J.M

NOTES ALTERED AS MARKED.

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**STANDARD DRAWING**

**BHARAT HEAVY ELECTRICALS LIMITED,**  
 BOILER AUXILIARIES PLANT,  
 RANIPET – 632 406.

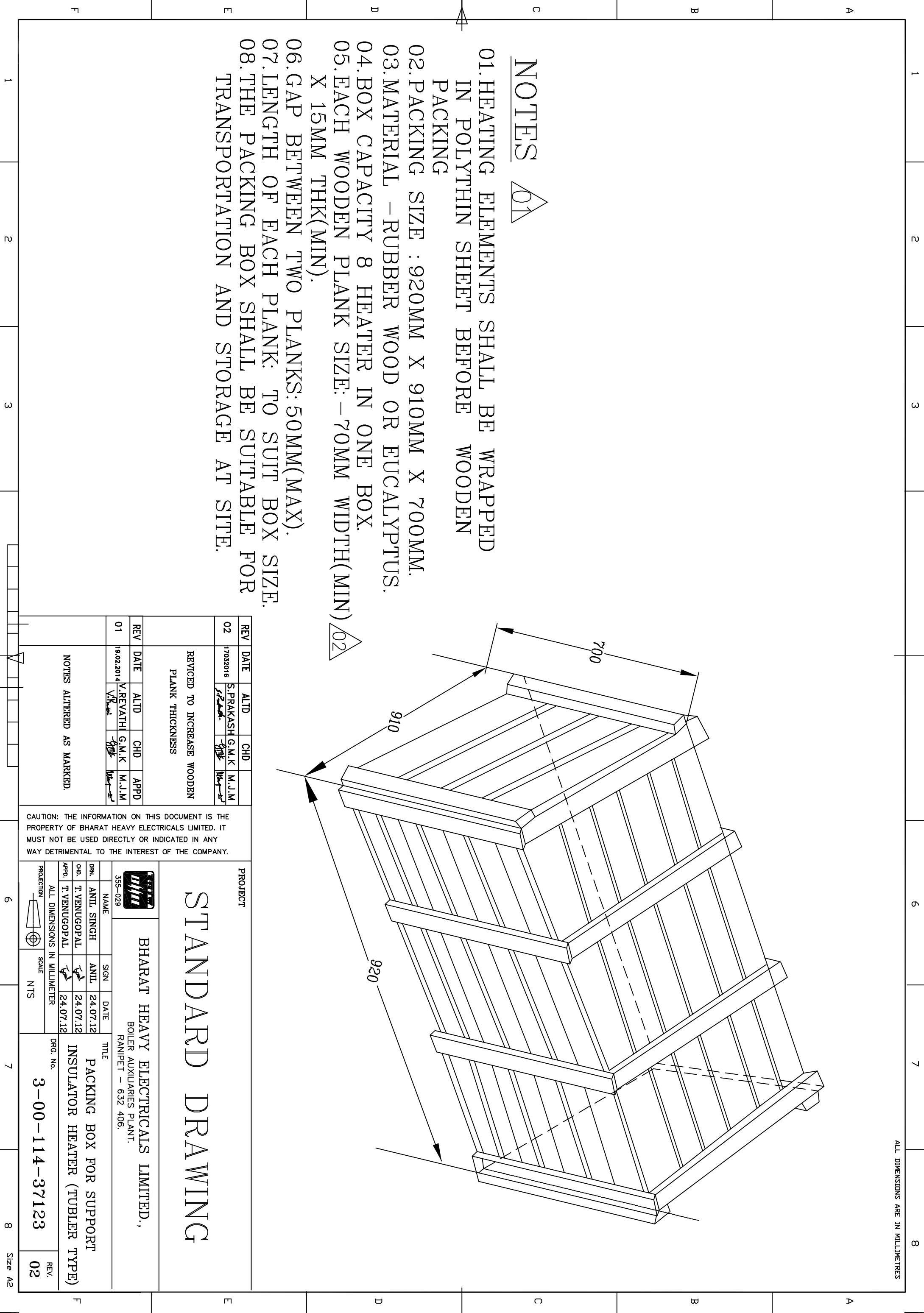
DRN.	NAME	SIGN	DATE	TITLE
DRN.	ANIL SINGH	ANIL	24.07.12	PACKING BOX FOR SUPPORT INSULATOR HEATER (TUBLER TYPE)
CHD.	T. VENUGOPAL	T.V	24.07.12	
APPD.	T. VENUGOPAL	T.V	24.07.12	

355-029

ALL DIMENSIONS IN MILLIMETER

PROJECTION  SCALE NTS

DRG. No. **3-00-114-37123** REV. **02**





Ranipet

**Standard Quality Plan for Heating Element (Hopper, Support and Shaft).**

REF. NO.	REVISION NO.	EFFECTIVE DATE
QP:E :837	00	15.11.2014

**TITLE :** Quality Plan for Heating Element (Hopper, Support and Shaft).

SIGNATURE

**PREPARED BY :** CH ANIL SINGH/AE/QA

**REVIEWED BY :** P YASODAKRISHNA / ENGG/QA

**APPROVED BY :** C SRINIVASAN/DGM/QA

**ISSUED & CONTROLLED BY :** QUALITY ASSURANCE  
BHEL, RANIPET - 632 406.

**DOCUMENT STATUS**  INFORMATION COPY

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**ISSUED TO:**

**CONTROL COPY NO :**



**Standard Quality Plan for Heating Element (Hopper, Support and Shaft).**

REF. NO.	REVISION NO.	EFFECTIVE DATE
QP:E :837	00	15.11.2014

**RECORD OF REVISION**

REV. NO	EFFECTIVE DATE	REMARKS
00	15 11 2014	Original Issue



Ranipet

**BHARAT HEAVY ELECTRICALS LTD**  
**BOILER AUXILIARIES PLANT,**  
**RANIPET - 632 406.**  
**QUALITY ASSURANCE**

**STANDARD QUALITY PLAN FOR**  
**HEATING ELEMENT**  
**(SUPPORT, SHAFT AND HOPPER)**

**QP Ref : QP:E:837**  
**REV. NO: 00**  
**DATE: 15 11 2014**  
**Page 3 of 4**

Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY	REMARKS
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
									M B	

1	RAW MATERIAL	Verification of Sheath material (SS 321) Heating coil (Kanthal-D) Verification of all BOM items Verification of Cable glands and lugs Verification of 2 no's earthing screw Dimensional check including tube length and tube diameter	Minor Minor Minor Minor Minor Major	Verification Verification Verification Verification Verification Dimension	- - 10% 100% 10% 10 per lot	SS 321 DRG/BOM DRG/BOM DRG/BOM BHEL APPD DRG BHEL APPD DRG	SS 321 DRG/BOM DRG/BOM DRG/BOM BHEL APPD DRG BHEL APPD DRG	Raw Material TC Raw Material TC IR IR TC	V V V V P P	V V V V V V	
		Verification of terminal stud fixing accessories (porcelain base and flexible heat resistance connecting cable etc) Measurement of creepage distance (clearance) from terminal box and live terminal HV TEST (1 KV AC)	Major Major	Verification Verification	10% 100%	BHEL APPD DRG BHEL APPD DRG	BHEL APPD DRG BHEL APPD DRG	TC TC	P P	W W	
			Major	Electrical	100%	BHEL Tech Specification	BHEL Tech Specification	TC	P	W	

Legends:  
 MQCD= Manufacture Quality Control Department : TC = Test Certificates : Drg = Drawing : IR = Insulation Resistance : BOM = Bill of Material : HV = High Voltage M= Manufacturer, B = Bharat Heavy Electricals limited Or BHEL authorized Inspection agency.



Ranipet

**BHARAT HEAVY ELECTRICALS LTD**  
**BOILER AUXILIARIES PLANT,**  
**RANIPET - 632 406.**  
**QUALITY ASSURANCE**

**STANDARD QUALITY PLAN FOR**  
**HEATING ELEMENT**  
**(SUPPORT, SHAFT AND HOPPER)**

**QP Ref : QP:E:837**  
**REV. NO: 00**  
**DATE: 15 11 2014**  
**Page 4 of 4**

Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY	REMARKS
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
									M	
									B	

Sl. No.	COMPONENT / ASSEMBLY / OPERATION/TESTS	CHARACTE - RISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE STANDARD	FORMAT OF REC	AGENCY	REMARKS
		IR TEST (500V DC Megger) before and after HV Measurement of resistance coil	Major	Electrical	100%	BHEL Tech Specification	BHEL Tech Specification	TC	P	W
		Measurement of power consumption with variable frequency at rated voltage	Major	Electrical	100%	BHEL Tech Specification	BHEL Tech Specification	TC	P	W
		Measurement of Leakage Current	Major	Electrical	10%	IS 302	Shall not be more than 10% of rated power	TC	P	W
		Verification of paint shade (For NTPC projects and Non NTPC projects)	Minor	Verification	10%	NTPC Appd specification for NTPC projects or BHEL Tech specification for Non NTPC projects	NTPC Appd specification for NTPC projects or BHEL Tech specification for Non NTPC projects	TC	V	V
		Verification paint shade thickness by Eleco meter	Minor	Electrical	10%	BHEL Tech Specification	60-120 microns	TC	P	W
		Adhesion test for painting	Minor	Electrical	10%		No peel off	TC	P	W
		Verification of Galvanization Thickness	Minor	Electrical	10%		More than 60 microns	TC	P	W

**Note : Supplier has to submit valid IP 55 degree protection certificate for heating element, the validity of Type test certificate is 10 years form the date of PO placement for identical model and same design.**

Legends:  
 MQCD= Manufacture Quality Control Department : TC = Test Certificates : Drg = Drawing : IR = Insulation Resistance : BOM = Bill of Material : HV = High Voltage M= Manufacturer, B = Bharat Heavy Electricals limited Or BHEL authorized Inspection agency.