



**CONTROLS & INSTRUMENTATION (FB)  
PRE-QUALIFICATION REQUIREMENT (PQR)**

**CI:PE:PQR:025**

**Rev. No: 00**

**Dt. : 21-04-2021**

**96AJB - ITEM CODE**

<b>S.No.</b>	<b>Specification</b>	<b>Bid Requirements (Allowed Values)</b>	<b>Vendor's Confirmation</b>
1.	<b>Type of Vendor</b>	Manufacturer.	
2.	<b>Country of Origin</b>	Preferably India.	
3.	<b>Offloading / Outsourcing allowed</b>	All machineries and facilities that are required for the complete manufacture of Junction Boxes & Switch Box shall be available in-house. Vendor to Self-Declare.	
4.	<b>Experience years</b>	Min. 5 years of Experience in field of Junction Box /Enclosure Manufacturing.	
5.	<b>Credentials in Power plant/ Heavy Industries</b>	Vendor should have supplied similar design & varieties of Junction Boxes & Switch Boxes to 500MW or higher power plant / industrial installations in India or abroad with satisfactory performance for minimum 3 years supported with credentials/Purchase Order references.	

**- End of document -**

GEM/2021/B/1796086 dt 24.12.2021			
Sl no	Terms	Conditions	Vendor confirmation
1	Delivery term	Vendor shall quote unit price on <b>FOR / BHEL Trichy stores basis inclusive of Packing &amp; Forwarding, Freight &amp; GST.</b>	Quoted /Not quoted
2	Insurance	BHEL scope	Noted
3	Evaluation	Offer evaluation will be on <b>Single Package</b> basis .	Accepted
4	Delivery days	<b>The indicated delivery days on GeM portal is from document approval.</b> Delivery days shall inclusive of all the activities like manufacturing, inspection, Packing & Forwarding and dispatch.	Accepted
5	Payment term	<b>100% direct payment within 60 days of issue of consignee receipt-cum-acceptance certificate (CRAC).</b> MSE vendor payment will be made as per MSME act 2006 Any deviation in the above Payment Terms, any other conditions in payment terms or any other payment term will not be accepted and offers are liable to be commercially rejected.	Accepted
6	LD clause	As per present GEM T&C	Accepted
7	Guarantee period	<b>18 months from the date of shipment (or) 12 months from the date of commissioning whichever is earlier</b>	Accepted
8	HSN CODE	Indicate HSN code for quoted items	
9	GST	Pl Mention in GST % for quoted items	%
Document submission along with bid			
10	Attachments 1	Whether vendor belongs to MSE & Have you submitted Udyam registration certificate ( To validate MSE status)	Yes / No
11	Attachments 2	Have you submitted filled ,sign & sealed point wise compliance for PQR with supporting documents . Please mention the corresponding page no also for each PQR point.	Yes / No
12	Attachments 3	Have you submitted Filled, signed & sealed “NIL Deviation Format ” .	Yes / No
13	Attachments 4	Have you submitted signed , sealed in the all pages of tender documents like “Technical Specification, Drawing /datasheet , testing procedure, Quality Plan & packing procedure” with respect to this tender along with offer.	Yes / No
14	Attachments 5	Have you Filled local content %, signed , sealed & submitted “Self declaration format for MII clause” as per BHEL format in your company letter head.	Yes / No
Note: vendor consents that the terms & conditions accepted, in GEM alone, shall be binding between BHEL and the Vendor; and no other terms mentioned, elsewhere in the un priced offer / Quotation will be considered / accepted by BHEL.			
VENDOR DETAILS			
1	Vendor Name		
2	Office Address		
3	Contact Person Name		
4	Mobile No		
5	E mail Id		
6	GSTN		

Vendor to fill & submit this Annexure with sign & seal along with offer .



# Bharat Heavy Electricals Limited

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI 620 014.



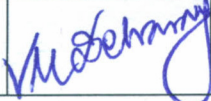
CONTROLS AND INSTRUMENTATION/FB

## Technical Specification for

### Burner Tilt Shear Pin Failure Indication System

**Specification Number - TCI:335, Rev. 03**

#### Revision History

Rev. No.	Date	Description	Prepared	Reviewed	Approved
			K Sudharsan	Aswini Kumar Panda	V M Selvaraaj
00	04-05-2017	Initial Release	-Sd-	-Sd-	-Sd-
01	05-07-2017	Contact rating of limit switch revised	-Sd-	-Sd-	-Sd-
02	23-07-2018	Limit switch models revised to suit application requirement	-Sd-	-Sd-	-Sd-
03	06-12-2019	Updated Name Plate Description			

## Technical Specification for Burner Tilt Shear Pin Failure Indication System

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TCI:335, Rev. 03

<b>Description :</b>			
<p>The Burner Tilt Shear Pin Failure Indication System shall comprise of 2 components namely, Item # 1 - Indication box and Item #2 - Heavy duty Limit switches.</p> <p>All the limit switches are connected to the Indication box for interlock and local indication, at field.</p> <p>This technical specification covers the technical requirements of the Indication box and the Heavy duty Limit switch.</p>			
<b>Item-1 : Indication box</b>			
1.	Site Conditions	Tropical, Dusty, Salty, and Corrosive & Highly polluted.	
2.	Reference Standard	IS-513, IS-60529/2001	
3.	Material of the box	14 SWG (2 mm), CRCA Sheet Steel as per IS-513, Grade-D	
4.	Pre-treatment	By 7 tank process.	
5.	Dimensions, other fabrication details and mounting accessories.	As per Drawing No. 1-95-091-10793, Rev. 07. However, the depth of the box shall be 200 mm.	
6.	Internal Wiring Scheme #  # - As per Enquiry Requirement	Indication box Variant	Wiring Scheme
		72-way	Sheet-7.
		48-way	Sheet-8.
		24-way	Sheet-9.
7.	Internal Wiring	<p>Internal wiring shall be carried out by using 1100 V Grade, PVC Insulated, 1 sq.mm. Annealed, Tinned, Stranded Copper conductor cable or better.</p> <p>Wiring shall be done by using proper Insulated copper tubular end sealing ferrules.</p>	
8.	Indication box Colour #	As per Purchase Enquiry.	
9.	Indicating lamp	Red colour, clustered LED type, 24 V DC rating. This lamp shall be mounted on the door.	

## Technical Specification for Burner Tilt Shear Pin Failure Indication System

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10.	Enclosure Protection	<p>Water and dust proof – IP 54 protection as per IS-60529.  Enclosure protection Type test certificate from any of the National Test House shall be submitted during the time of Inspection  (Typical Certificates produced shall not be earlier than 5 years from the date of Purchase Enquiry).</p>
11.	Name Plates #  # - As per Enquiry Requirement	<p>1 number Name Plate of SS-304, with dimensions, 75mm x 25mm and 0.5 mm thick shall be affixed on to the tag mounting plate of the box .  Name plate inscription :  “BURNER TILT SHEAR PIN FAILURE INDICATION BOX” #  <b>(or)</b>  “BOFA TILT SHEAR PIN FAILURE INDICATION BOX” #  as per the enquiry Specification requirement.</p> <p>1 number nameplate of above specification shall be affixed below the indication lamp, with inscription “SHEAR PIN FAILED”.</p> <p>Nameplates shall be affixed by using suitable adhesive.  Colour of Engraving shall be Black.</p>
12.	Inspection & Testing	As per Quality Plan QA:CI:STD:QP:03, Rev. 05.
13.	Packing	Packing shall be as per Packing Procedure QA:CI:STD:PR:02, Rev. 02
14.	Guarantee	<p>A Guarantee certificate for 18 months from the date of shipment <b>(or)</b>  12 months from the date of commissioning whichever is earlier shall be furnished.</p>
15.	Documents to be submitted along with offer.	<p>The “Sub-Delivery Enquiry Deviation format” has to be filled with “No Deviation” and shall be duly signed and submitted along with offer.</p> <p>The offer without the above document will be liable to be rejected.</p>

## Technical Specification for Burner Tilt Shear Pin Failure Indication System

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<b>Item-2 : Heavy duty Limit Switches</b>			
1.	Reference Standard	IS-60529/2001 for enclosure protection	
2.	Body Material	Cast Aluminium or better	
3.	Type	Heavy Duty, Side Roller-Lever operated	
4.	No. of Contacts and Contact Rating	2 NO + 2 NC (2 SPDT or 1 DPDT) (Single or Double break, Simultaneous) 3 A @ 240 V AC, 0.1 A @ 220 V DC	
5.	Electrical Cable Entry	Bottom Entry – with ¾” BSC (F). In case the limit switch does not have the above mentioned entry thread, vendor can supply suitable Aluminium/Brass/SS adapter with the above thread.  Terminals inside the limit switch Shall be suitable for 1 sq. mm. copper conductor cable.	
6.	Mounting Accessories	2 Sets of Stainless Steel mounting Screws/Bolts, Nuts, Plain & Spring Washers.	
7.	Paint/Finish of Limit switch body	Corrosion Resistant Enamel paint Finish or as per manufacturer’s standard.	
8.	Material and dimensions of Lever	Steel/Stainless Steel. Length of Lever : 38 mm ± 2 mm.	
9.	Material and dimensions of Roller	Stainless Steel. Diameter of Roller: 17 mm ± 2 mm Width of Roller : 6 ± 2 mm	
10.	Action of operating lever	Clock-wise (CC) or Counter clock-wise (CCW) Convertible by the user.	
11.	Maximum angle of Rotation of Lever	90 <sup>0</sup>	
12.	Make should be as per this clause. Suggested models are indicated. <b>Vendor can also offer other models conforming to the specification requirements in full.</b>	<b>Suggested Make</b>	<b>Switch &amp; Roller Lever Part Ref.</b>
		Omron	D4A-2501-N + D4A-A00
		Honeywell	LSA-2B + LSZ-51
		BCH	NLL1-22

## Technical Specification for Burner Tilt Shear Pin Failure Indication System

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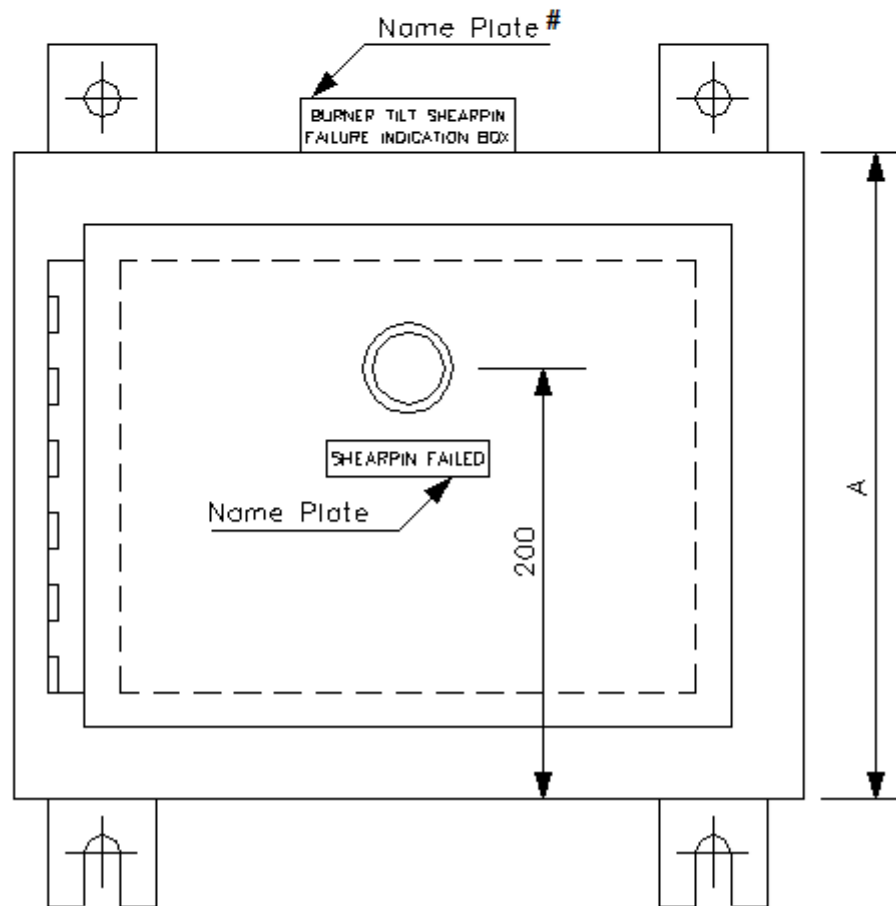
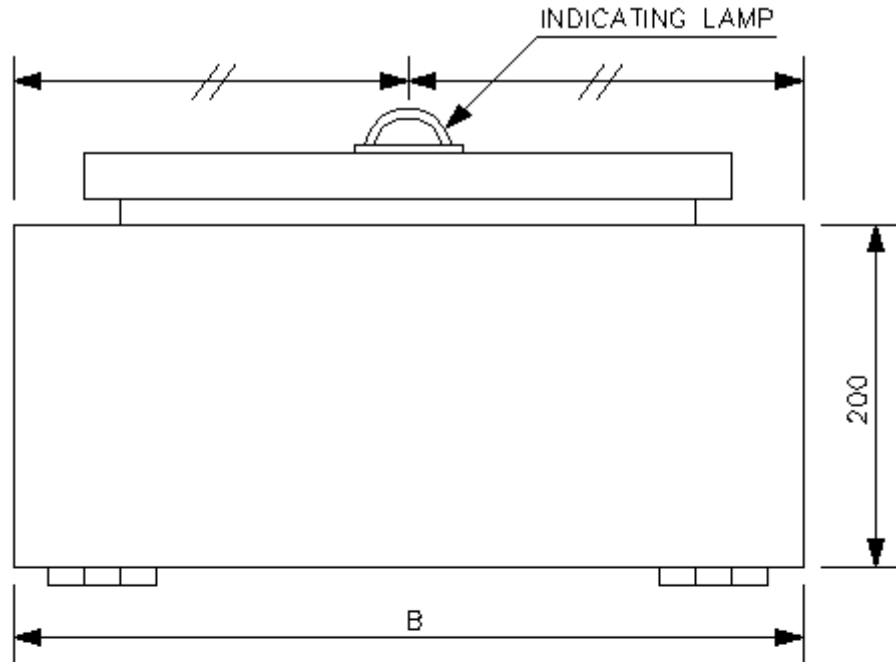
13.	Inspection & testing	As per quality plan QA:CI:STD:QP:05, Rev 04.
14.	Packing	Shall be adequately packed for safe delivery at BHEL stores. Roller Lever & Limit Switch shall be packed together during despatch.
15.	Documents to be submitted along with the offer	<ol style="list-style-type: none"><li>a. Copy of Type test certificate.</li><li>b. Catalogue of relevant model number.</li><li>c. The offered model number should conform to the technical specification, in full.</li><li>d. The "Sub-Delivery Enquiry Deviation format" has to be filled with "No Deviation" and shall be duly signed and submitted along with offer.</li></ol> <p>The offer without the above documents will be liable to be rejected.</p>

# Technical Specification for Burner Tilt Shear Pin Failure Indication System

Sheet 6 of 9

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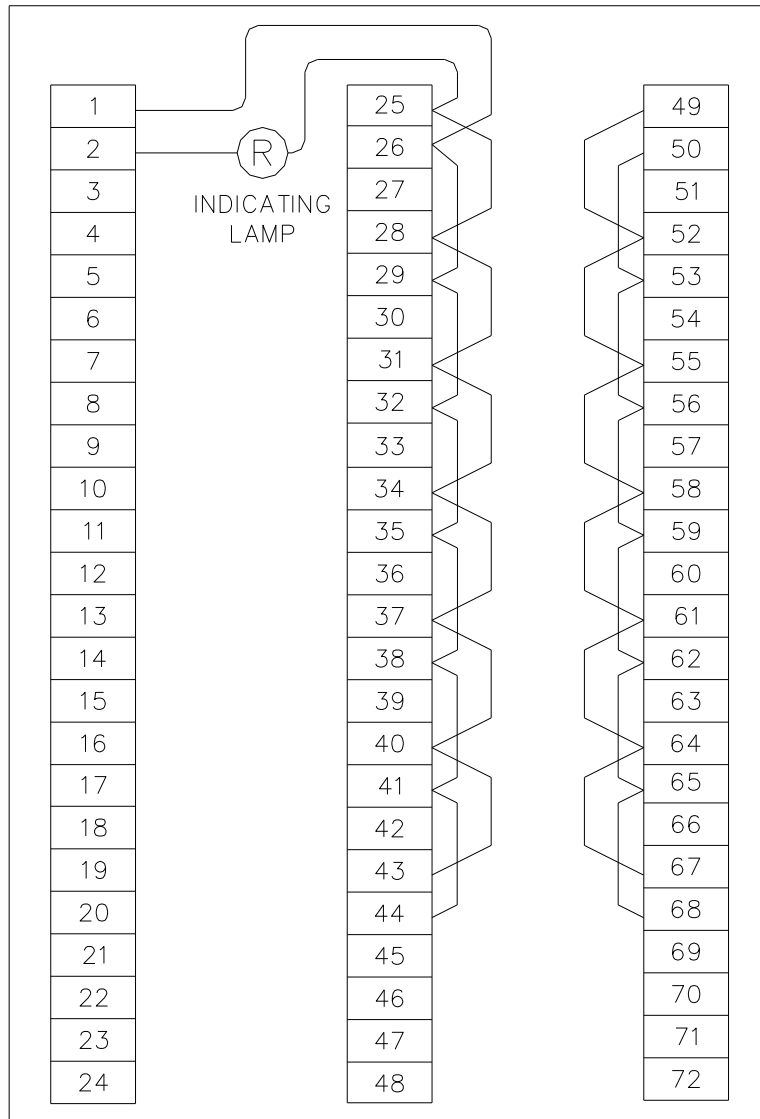
## General Arrangement of the box and Indicating lamp



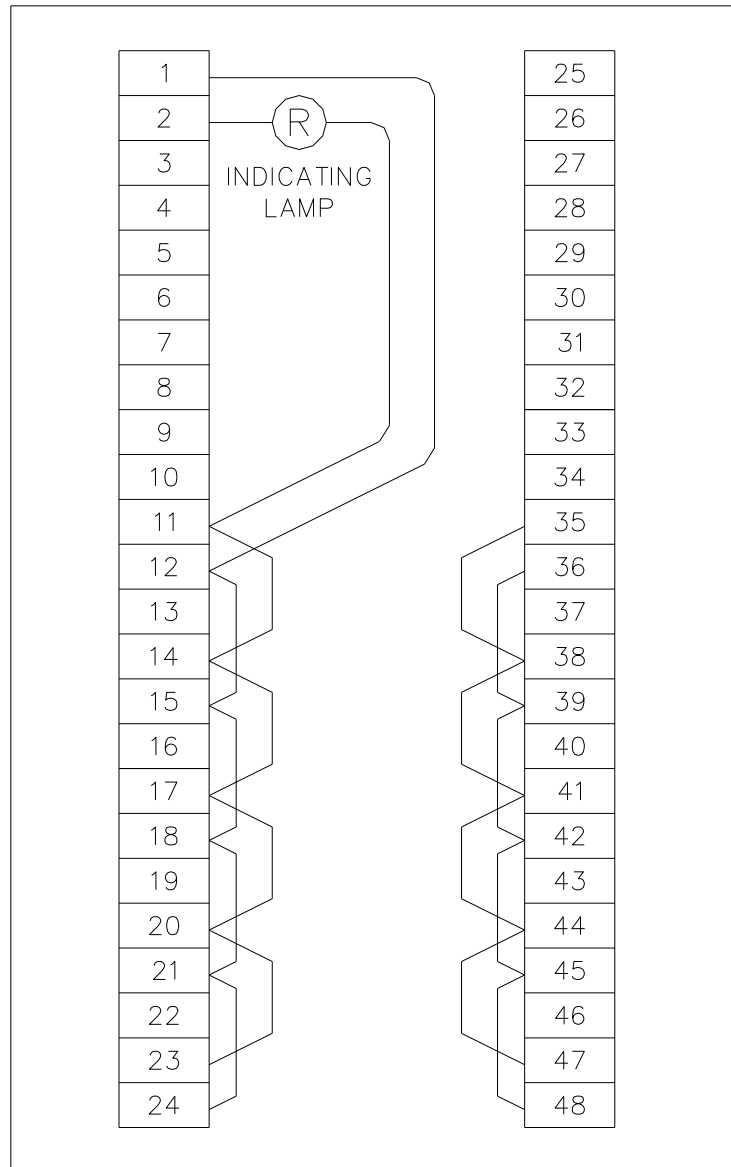
# As per Specification Clause: Item -1 S.no 11

For dimensions "A" and "B", the standard junction box drawing 1-95-091-10793, Rev. 07. shall be referred.

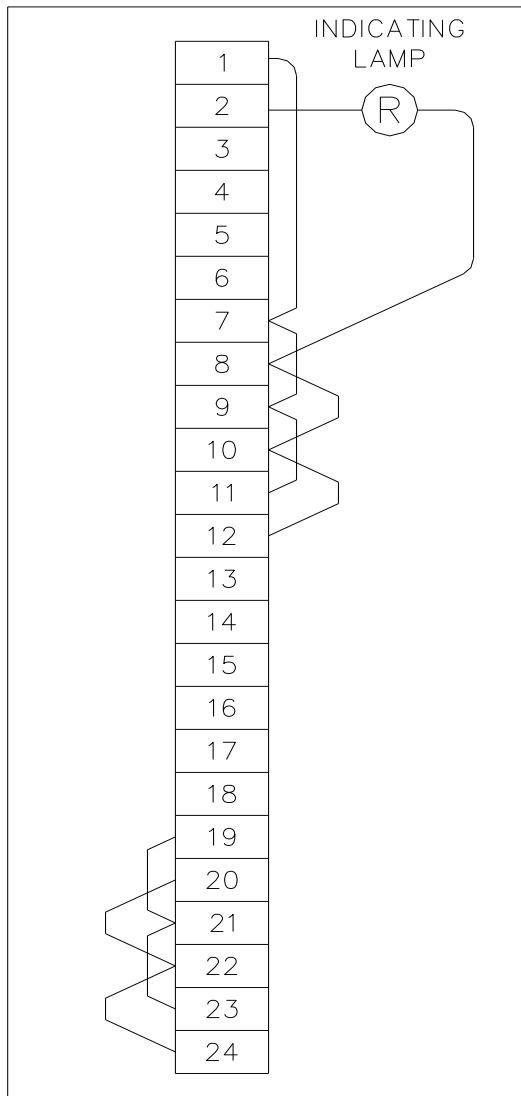
**Wiring Scheme for 72 Way Indication box**



**Wiring Scheme for 48 Way Indication box**

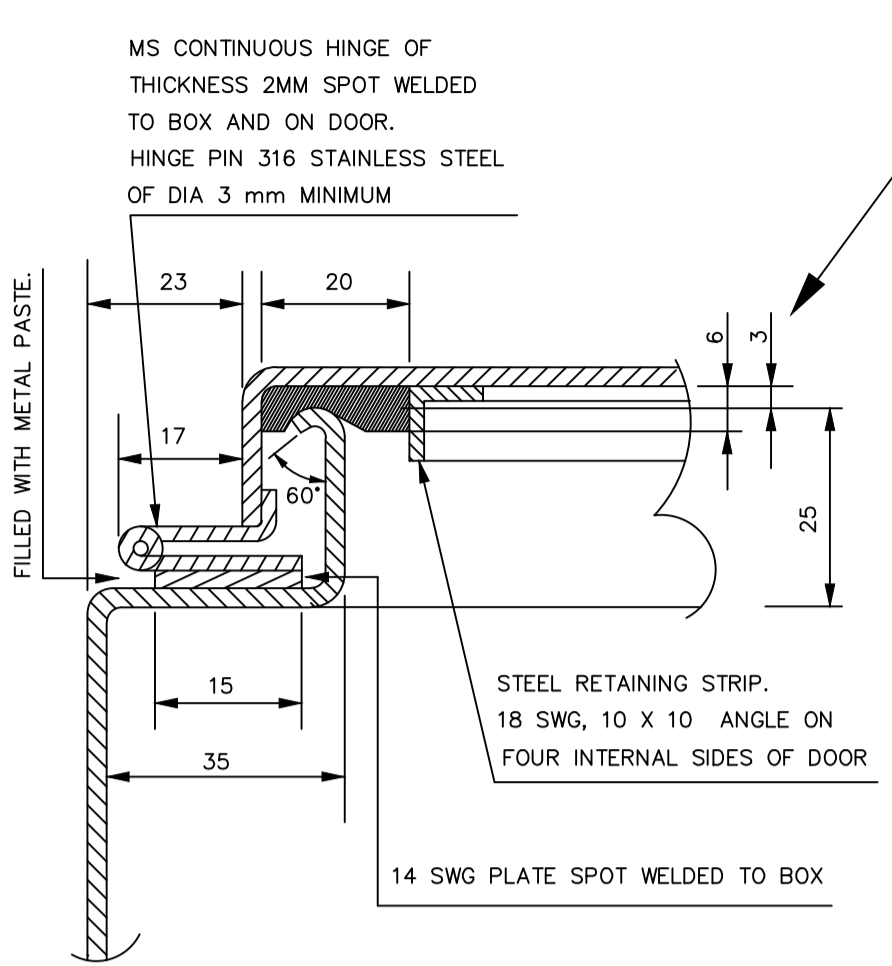


**Wiring Scheme for 24 Way Indication box**

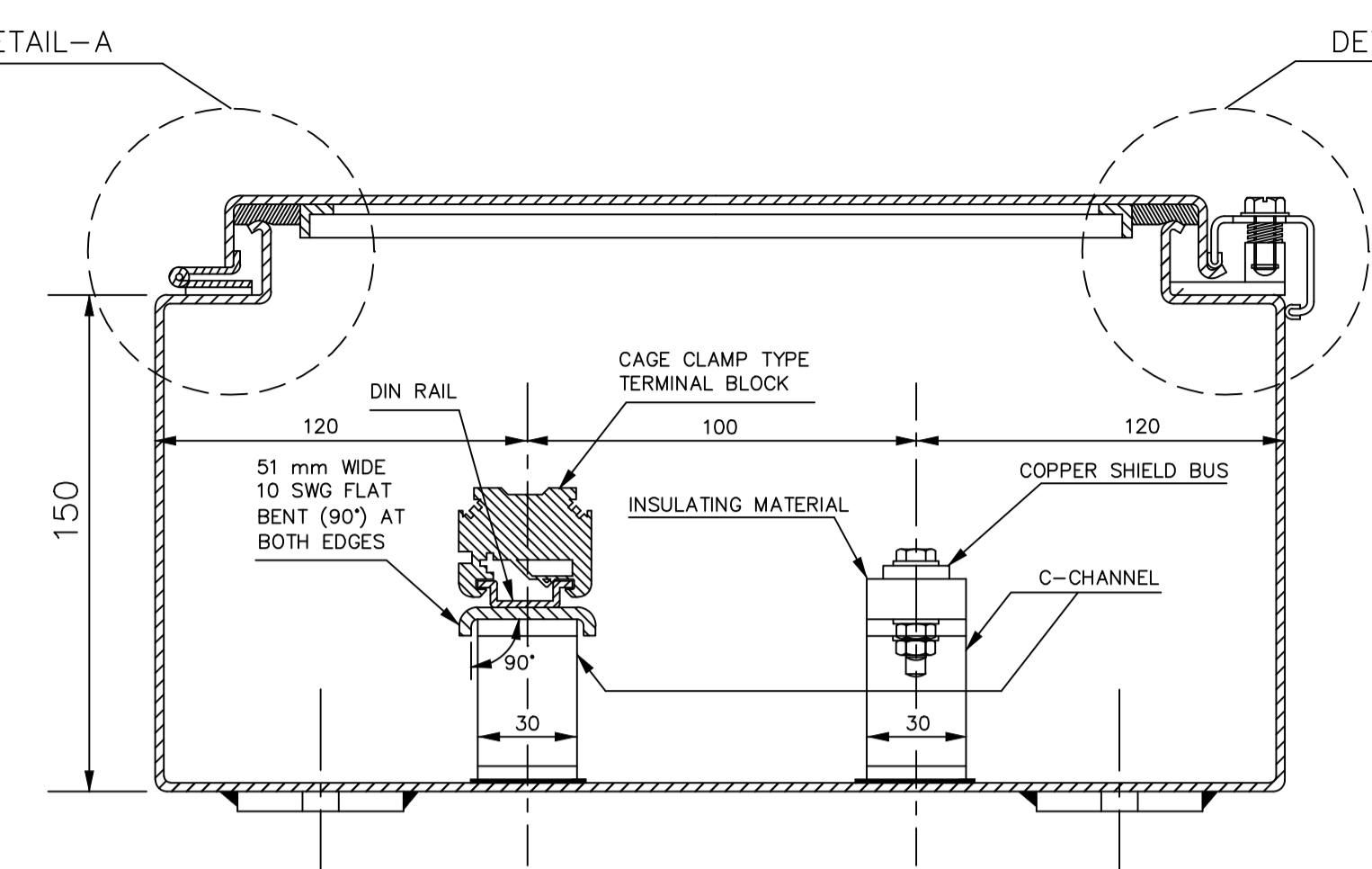


1-95-091-10793

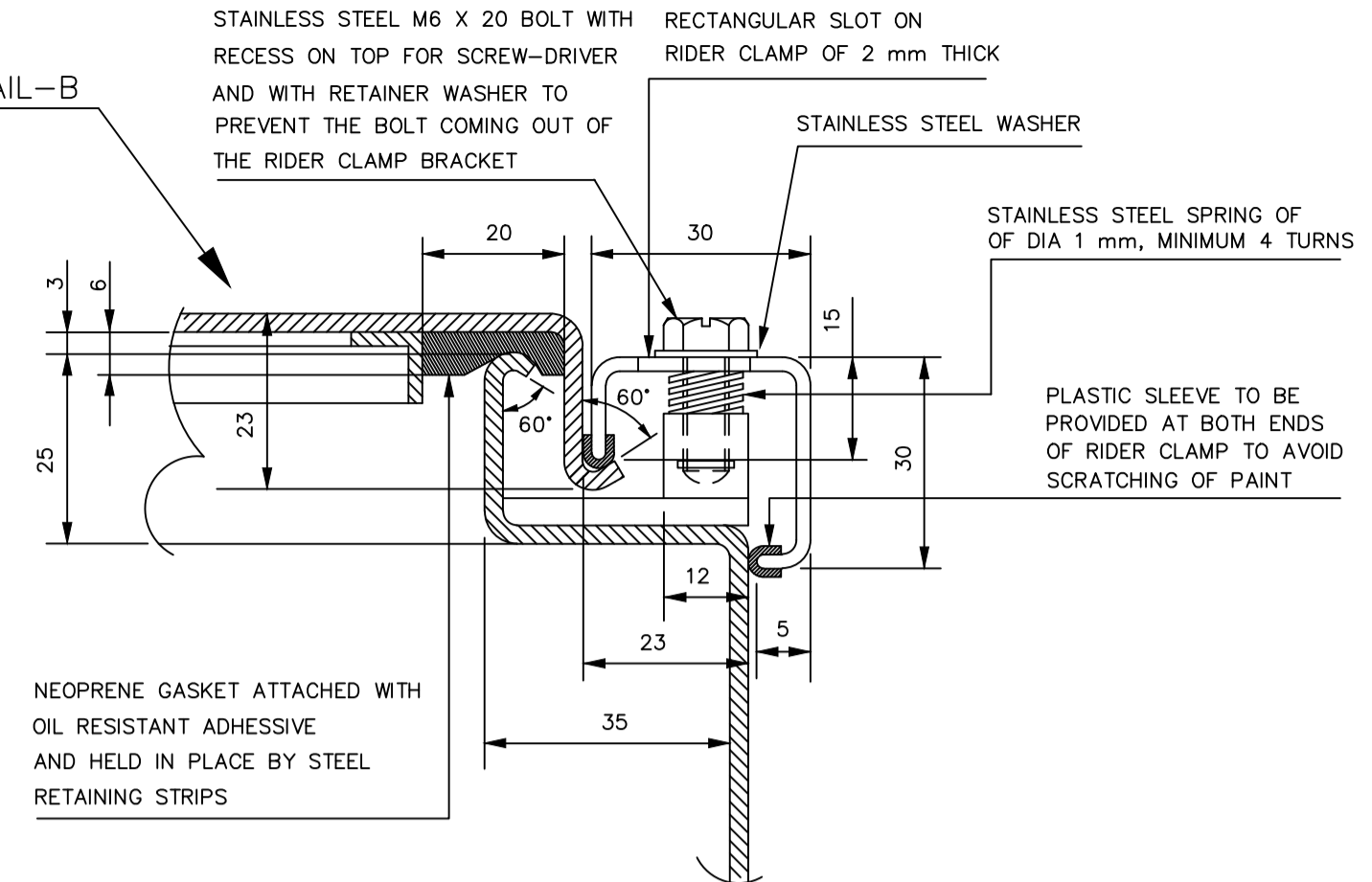
FOR UNTOLERANCED DIMENSIONS OF MANUFACTURING REFER RELEVANT QCP/QP.



**DETAIL-A**  
**DOOR HINGE ARRANGEMENT**



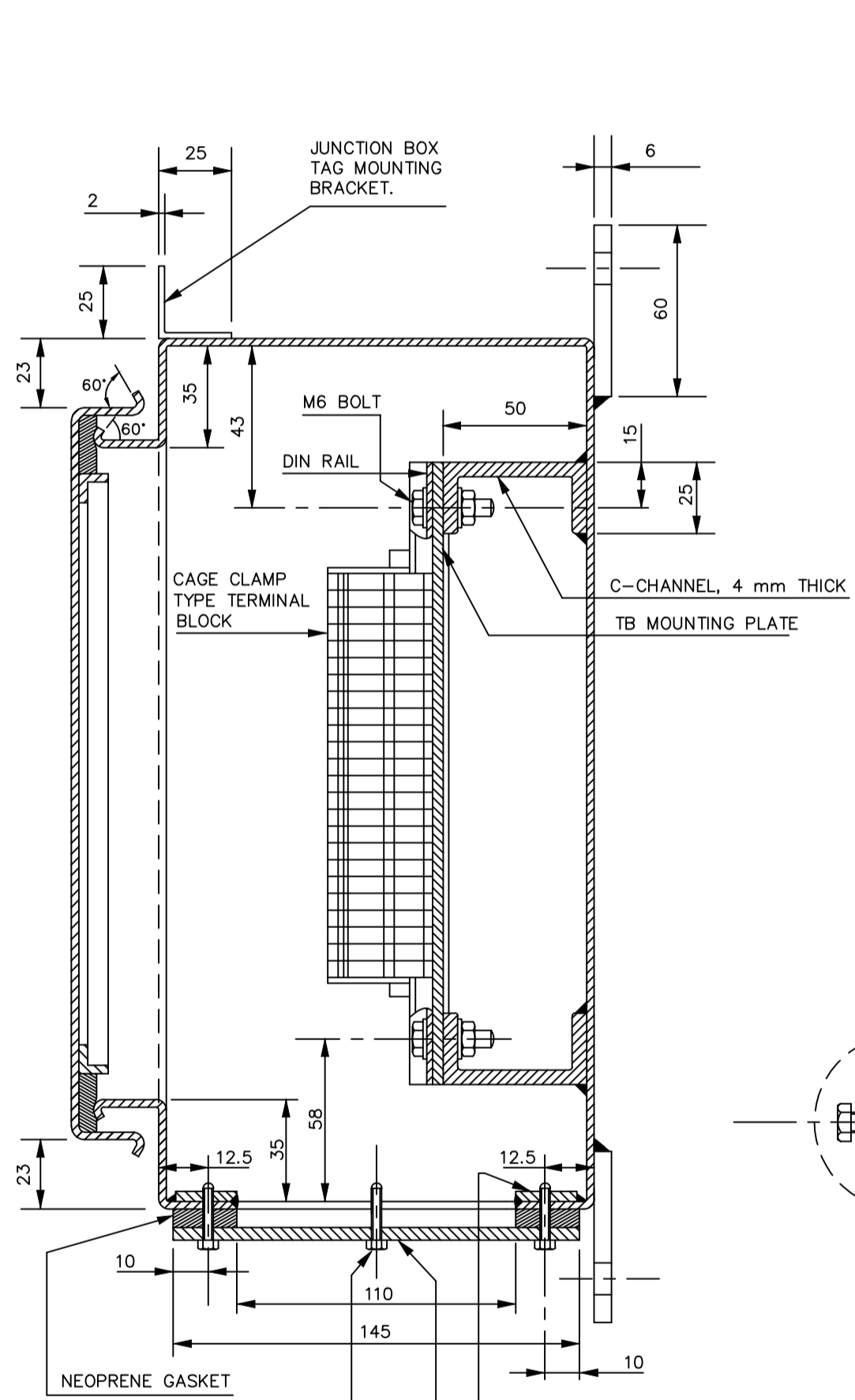
**SECTION - YY**



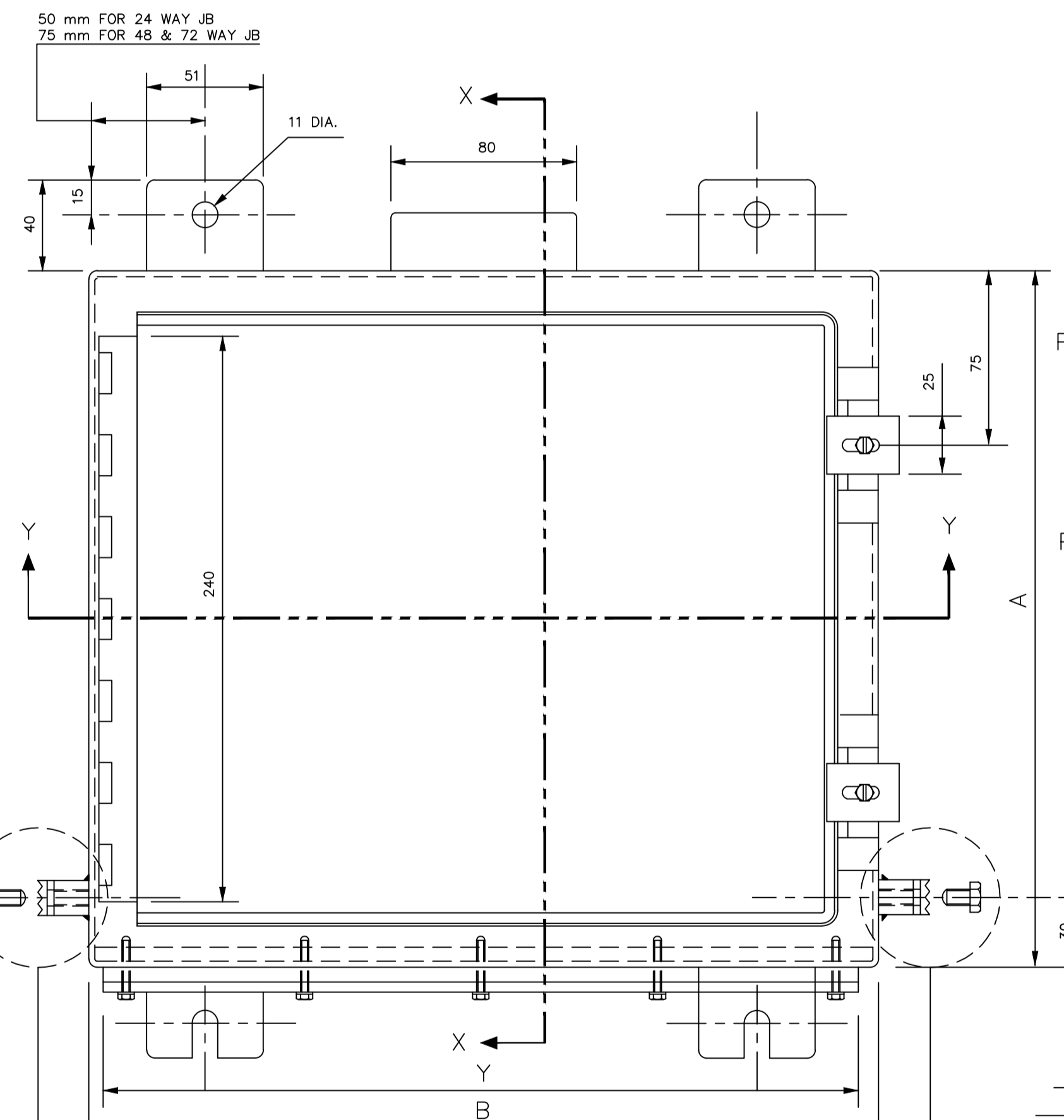
**DETAIL-B**  
**RIDER CLAMP ARRANGEMENT**

**NOTES :-**

- THE BOX SHALL BE MADE FROM 14 SWG COLD ROLLED SHEET STEEL.
- ALL SEAMS ARE TO BE CONTINUOUSLY WELDED. THERE SHALL BE NO HOLES OR SOCKETS ON TOP AND SIDES. THE BOX SHALL MEET HOSE PROOF AND WEATHER PROOF REQUIREMENTS. ALL BOXES SHALL BE SUBJECTED TO HOSE PROOF TEST TO IP-55 REQUIREMENTS DURING INSPECTION.
- THE BOX SHALL MEET IS-13947-1 REQUIREMENTS OF WATER TIGHT AND DUST TIGHT (IP-55).
- SINGLE PIECE NEOPRENE GASKET OF THICKNESS 6 MM, SHORE HARDNESS 20 AND DENSITY 0.4 gm/CC SHALL BE PROVIDED IN ALL THE MATING SURFACES OF DOOR TO ENSURE WATER TIGHT SEAL.
- SINGLE PIECE NEOPRENE GASKET OF THICKNESS 3 MM, SHORE HARDNESS 30 AND DENSITY 0.4 gm/CC SHALL BE PROVIDED FOR THE REMOVABLE GLAND PLATE OF 12 SWG THICK.
- ROLLED LIP (60°) IS TO BE PROVIDED AROUND THREE SIDES OF DOOR AND AROUND ALL SIDES OF ENCLOSURE OPENING. THIS LIP IS TO INCREASE STRENGTH AND TO KEEP DIRT AND LIQUID FROM DROPPING IN TO THE ENCLOSURE WHEN THE DOOR IS OPENED. THIS LIP ANGLE SHALL BE 60°.
- TERMINAL BLOCKS SHALL BE OF WAGO OR PHOENIX MAKE, CAGE CLAMP TYPE, SIDE ENTRY, MODEL NO. 281-101. TERMINAL BLOCK SHALL BE FIXED BY USING A SUITABLE DIN-RAIL WITH END PLATE & FIXING ARRANGEMENT. ALL TERMINAL BLOCKS SHALL BE NUMBERED AS PER NUMBERING SCHEME OF THE RESPECTIVE MAKE/MODEL. THE TERMINAL BLOCK & SHIELD BUS ARRANGEMENT SHOWN IN SECTION-YY IS FOR A TYPICAL 24 WAY JB.
- NICKEL PLATED COPPER SHIELD BUS OF SIZE - 10 mm x 3 mm & 190 mm LONG SHALL BE PROVIDED WITH A SUITABLE BUSBAR INSULATOR. 15 NUMBERS OF SLIDING TYPE EARTH LUG SHALL ALSO BE PROVIDED.
- DOOR SHALL BE SUITABLE FOR 180° OPENING.
- CONTINUOUS HINGE PIN, RIDER CLAMP, RIDER BOLT, RIDER SPRING, WASHERS etc. SHALL BE OF 316 STAINLESS STEEL.
- ALL THE JUNCTION BOXES MADE OUT OF SHEET STEEL SHALL BE PRE-TREATED TO REMOVE MILL SCALES AND RUST AND THEN APPLIED WITH TWO COATS OF ZINC CHROMATE PRIMER AND FINALLY FINISHED WITH TWO COATS OF BACKED ON SYNTHETIC ENAMEL PAINT AS PER DETAILS GIVEN.
- COLOUR (PAINTING OR POWDER COATING) - WILL BE INDICATED IN THE PURCHASE ORDER :-  
EXTERIOR : SYNTHETIC ENAMEL GREY AS PER IS-5, SHADE 631. PAINT THICKNESS : 100 MICRONS. FINISH : GLOSSY.  
INTERIOR : SYNTHETIC ENAMEL BRILLIANT WHITE. PAINT THICKNESS : 50 MICRONS. FINISH : GLOSSY.  
OR  
POWDER COATING : EXTERIOR & INTERIOR - GREY AS PER IS-5, SHADE 631. THICKNESS : 50 - 70 MICRONS
- EARTH STAB (BLACK LINES ON YELLOW BACK-GROUND) OF DIA 20 MM SHALL BE PROVIDED NEAR EACH EARTH TERMINAL WITH CO-ORDINATES AS 30 MM FROM REAR OF THE BOX AND 25 MM ABOVE CENTRE LINE OF EARTH TERMINAL.
- BOLTS AND NUTS REQUIRED FOR MOUNTING THE JUNCTION BOXES ARE TO BE CHROMIUM PLATED AND SUPPLIED BY THE VENDOR. CHROMIUM PLATING SHALL BE MINIMUM 25 MICRONS. NECESSARY SPRING WASHERS SHALL ALSO BE SUPPLIED.
- FOR FIXING THE GLAND PLATE, THE NUMBER OF BOLTS ALONG 'X' DIRECTION IS FIXED FOR ALL STYLES AS SHOWN. NUMBER OF BOLTS ALONG 'Y' DIRECTION IS SHOWN TYPICAL FOR A 24 WAY JUNCTION BOX. FOR OTHER STYLES, THE NUMBER OF BOLTS TO BE DISTRIBUTED KEEPING EQUAL DISTANCE BETWEEN THEM.

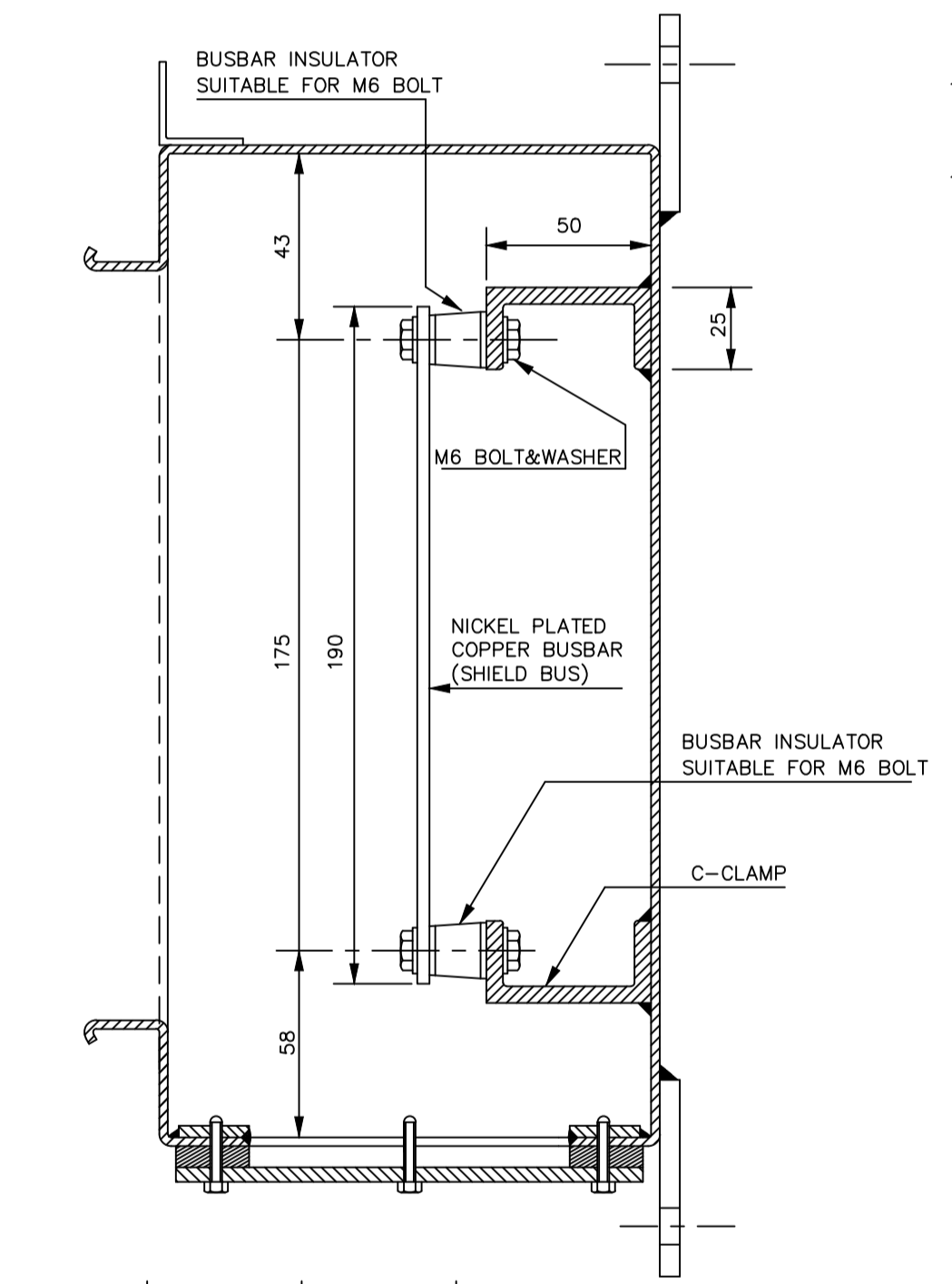


**SECTION - XX**

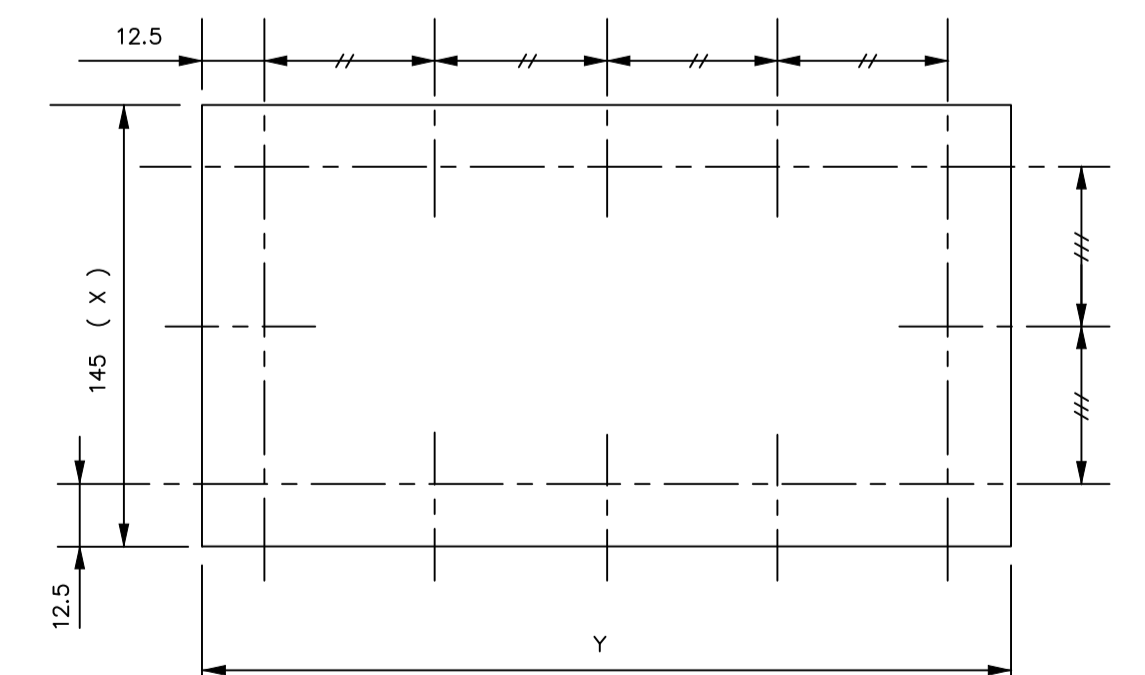


**FRONT VIEW**

**SHIELD BUS FIXING ARRANGEMENT**

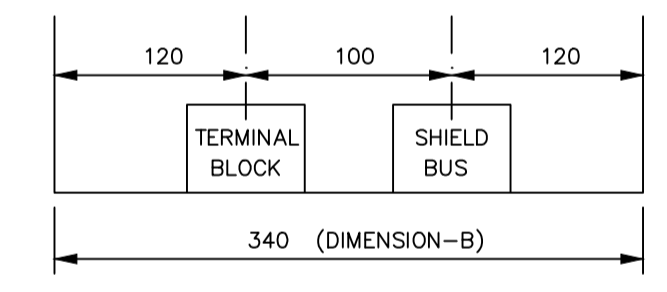


**GLAND PLATE**

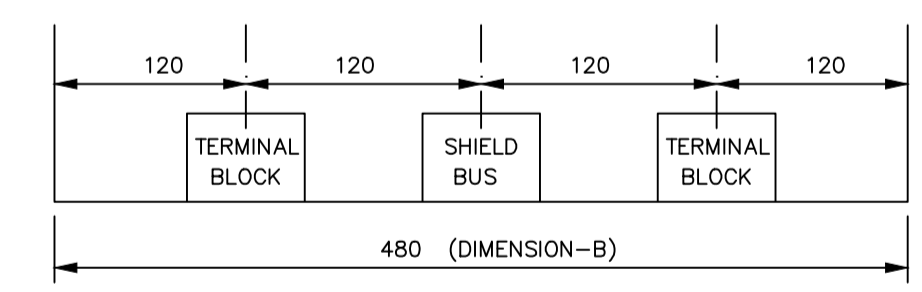


STYLE NO.	NO. OF WAYS	TERMINAL BLOCKS	DIMENSION IN MILLIMETRES * "N" GLAND PLATE				FIXING BOLTS
			A	B	X	Y	
1	24	1 X 24	280	340	145	335	12 NOS.
2	48	2 X 24	280	480	145	475	16 NOS.
3	72	3 X 24	280	600	145	595	20 NOS.

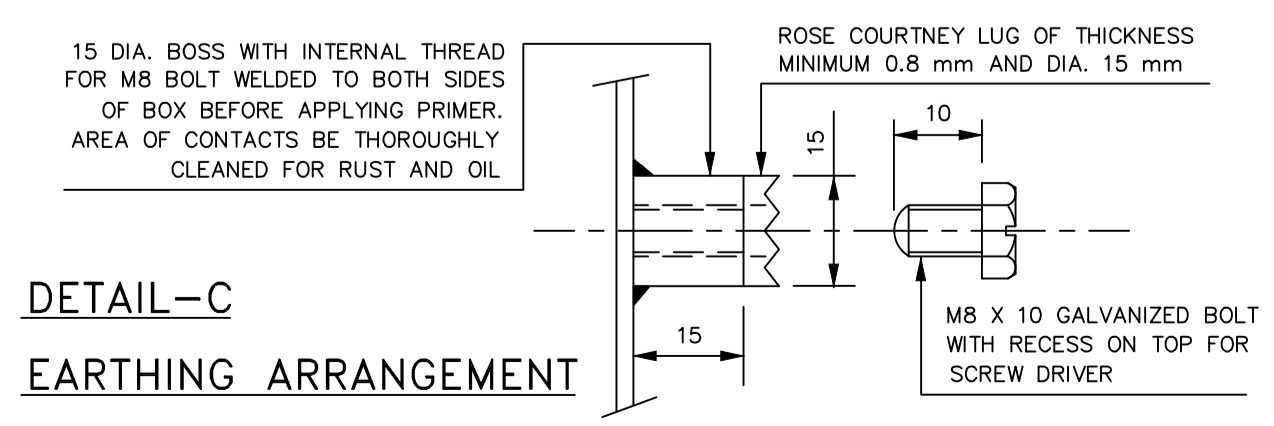
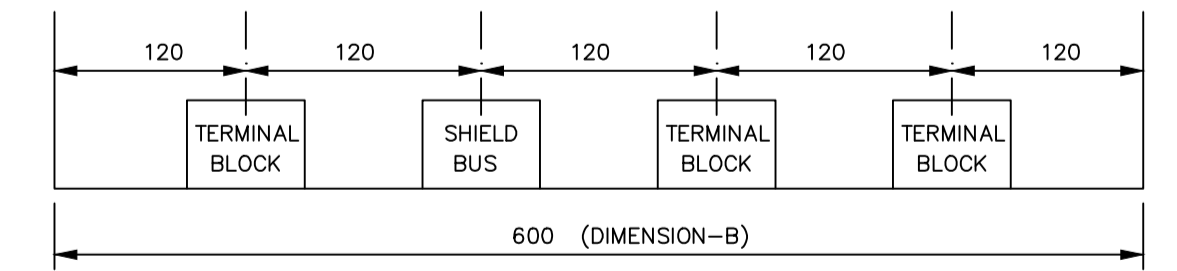
**TB & SHIELD BUS ARRANGEMENT FOR A 24 WAY JB**



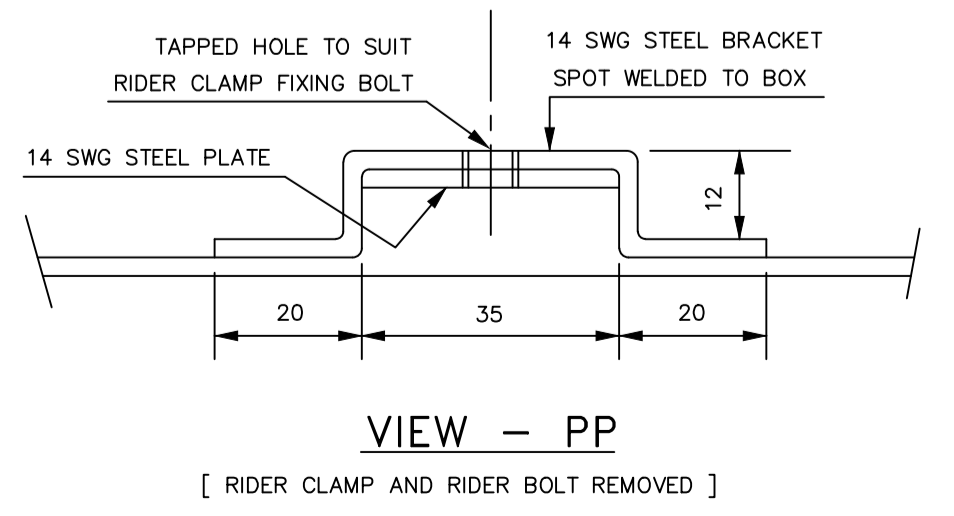
**TB & SHIELD BUS ARRANGEMENT FOR A 48 WAY JB**



**TB & SHIELD BUS ARRANGEMENT FOR A 72 WAY JB**



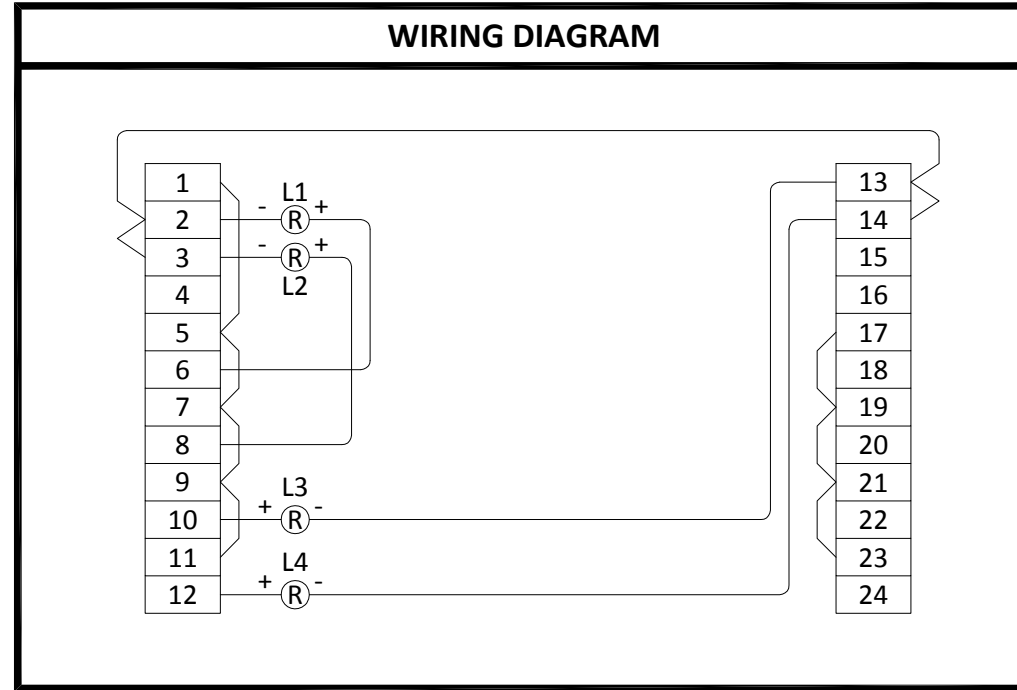
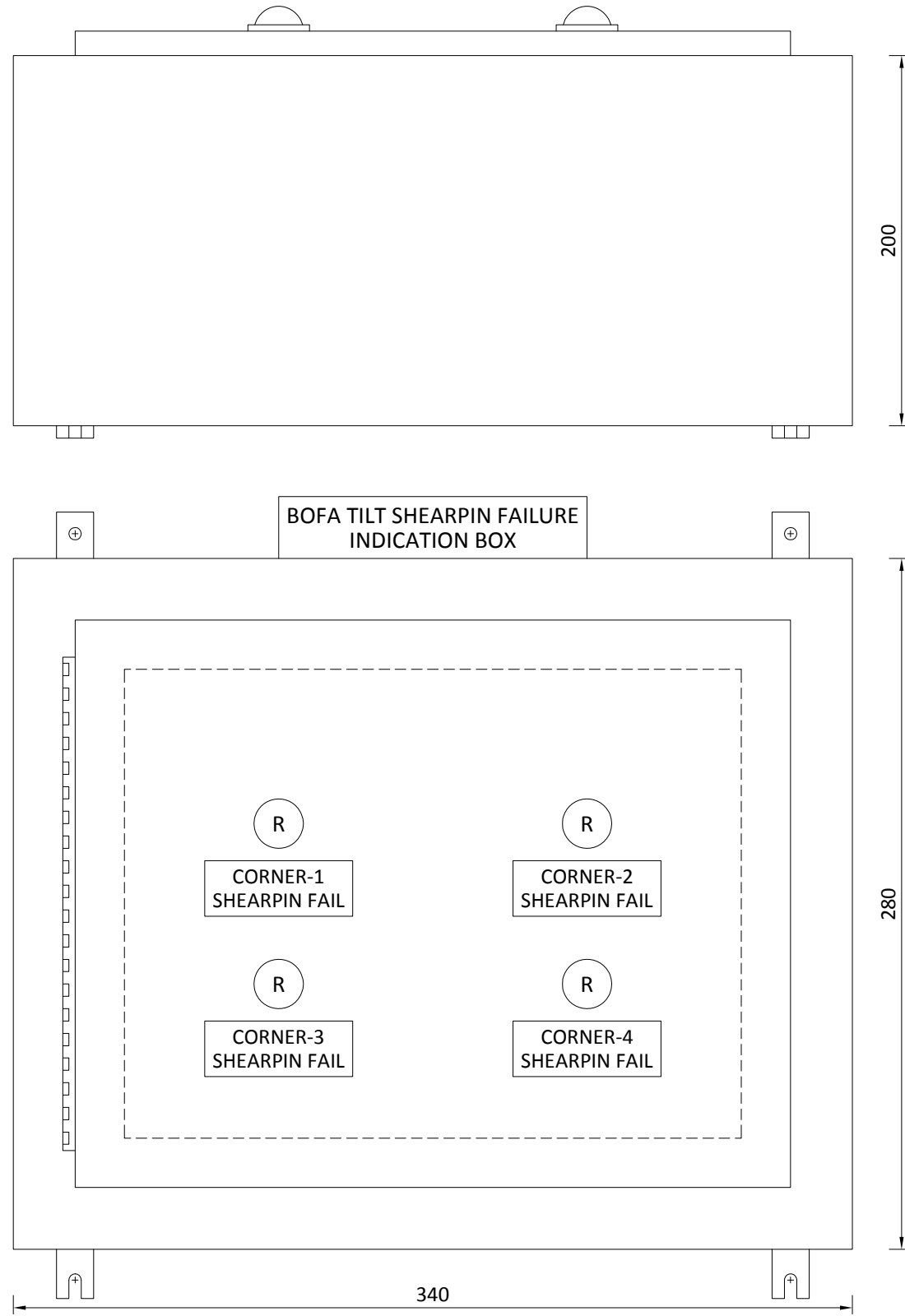
**DETAIL-C**  
**EARTHING ARRANGEMENT**



**VIEW - PP**  
[ RIDER CLAMP AND RIDER BOLT REMOVED ]

REV	DATE	ALTERED	SCL	BY	REASON	REV	DATE	ALTERED	VMS	BY	REASON	REV	DATE	ALTERED	VMS	BY	REASON
07	21/06/11	CHD./APPD.	VMS	-Sd-	REVISED TO CHANGE THE SHIELD BUS ARRANGEMENT WITH BUSBAR INSULATOR.	06	17/06/10	CHD./APPD.	SRC	-Sd-	C-CLAMP DIMENSIONS CHANGED BASED ON FEEDBACK FROM VENDOR.	05	03/10/09	CHD./APPD.	SRC	-Sd-	TYPOGRAPHICAL ERROR CORRECTED

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STANDARD	
Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPALLI - 620014		DRN	V.M. SELVARAJA
DEPT.: C & I		SCALE	WEIGHT (Kg)
CODE: 392		ALL DIMENSIONS ARE IN MM	N T S
TITLE		CARD CODE	DRAWING NO :
ELECTRICAL JUNCTION BOX		U 01	1-95-091-10793
REV		NO OF ITEMS	
07		07	



**NOTE**

- FOUR NUMBERS OF NAME PLATES BELOW EACH INDICATION LAMP TO BE PROVIDED.
- LED'S TO BE EQUIDISTANT FROM EACH OTHER TO MAINTAIN SYMMETRY.

REV	DATE	ALTERED :
		CHD./APPD. :
ZONE		

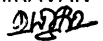
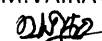

CAUTION : The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER / PROJECT		STANDARD				
	Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014	DRN	NAME	SIGNATURE	DATE	NO. OF VAR	
		CHD	K. Sudharsan		19-03-20	—	
		APPD	A.K.Panda		19-03-20	—	
DEPT. : C & I		ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg)	REF TO ASSY / OLD DWG	ITEM NO	No OF ITEMS
CODE : 392					—	—	—
TITLE				CARD CODE	DRAWING NO :		REV
BOFA TILT SHEAR PIN FAILURE INDICATION BOX GA DIAGRAM				U 01	3-97-591-24380		00
					Sheet 01 Of 01		



## CONTROLS AND INSTRUMENTATION/QA/FB

### STANDARD QUALITY PLAN FOR BOXES AND CABINETS

(JUNCTION BOX, PUSH BUTTON BOX, METAL TEMPERATURE MEASUREMENT JUNCTION BOX,  
BT SHEAR PIN FAILURE INDICATION BOX, MARSHALLING BOX.CABINET)

REV	DATE	PREPARED	REVIEWED	APPROVED	REVISION HISTORY
00	--	Sd/-	Sd/-	Sd/-	Initial release.
01	03/11/1996	Sd/-	Sd/-	Sd/-	General Revision
02	16/06/1997	Sd/-	Sd/-	Sd/-	Format revised
03	21/03/2002	Sd/-	Sd/-	Sd/-	Dept. name changed CTQ requirements added & General revision.
04	08/01/2004	Sd/-	Sd/-	Sd/-	Revised to include the comments / Feedback of internal discussion
05	01/12/2010	RM.VAIRAVAN 	RM.VAIRAVAN 	N.SRIDHAR 	Routine test modified. Quantum of check included. Format changed



Sl. No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of record	AGENCY			REMARKS
					M	B/C			M	B	C	
<b>A</b>	<b>FINISHED PRODUCT INSPECTION</b>											
01	Routine test	a. Material – Steel / Aluminium	Major	CHEM	Sample	Sample	PO spec, Appd. Drg. IS513,	TC	V	V	-	
		b. Overall dimension including sheet steel thickness, verticality, fixing arrangement	Major	MEAS VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	
		c. Weld slag removal, finish	Critical	MECH	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	Wherever applicable
		d. Painting: Shade, thickness, finish, adhesion by scratch test	Major	MEAS VISU	100%	10%	PO spec, Appd. Drg. IS, RAL	TR	P	W	-	7 tank process for pre-treatment of sheet metal
		e. Provision of gaskets at door and gland plate	Critical	VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	
		f. Door & door locking arrangement	Major	VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	
		g. Powder test for door matching	Major	VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	
		h. Functional check (if applicable)	Major	ELEC	100%	20%	PO spec, Appd. Drg.	TR	P	W	-	
		i. Rating & location of components	Major	VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	
		j. Ferruling, crimping, dressing of cables and wiring continuity	Major	VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	Applicable for Boxes having wiring
		k. Insulation resistance test (Before and after HV test)	Major	ELEC	100%	20%	PO spec, Appd. Drg.	TR	P	W	-	-Do-
		l. High voltage test - 2KV for 1 min.	Major	ELEC	100%	20%	There shall be no break down	TR	P	W	-	-Do-
		m. Provision of label with inscription, earth symbol, earth bolt.	Major	VISU	100%	10%	PO spec, Appd. Drg.	TR	P	W	-	
02	Type tests	a. Enclosure Protection	Critical	ENVI	One of Design	One of Design	Appd. Drg, IS60947	TC	V	V		
		b. Salt Test on painted plate.	Critical	CHEM	-Do-	-Do-	IS3618, IS6005	TC	V	V		

**M** - MANUFACTURER/ SUB-VENDOR; **B** - BHEL / TPI ; **C** - CUSTOMER / TPI  
**P** - PERFORM ; **W** - WITNESS **V** - VERIFICATION ;



**B.NOTES:**

1.LEGENDS:

ENVI	:	Environmental	MEAS	:	Measurement
MECH	:	Mechanical	VISU	:	Visual
CHEM	:	Chemical			
TC	:	Test certificate	TR	:	Test Report

- The vendor at their works shall arrange all testing facilities. Tests for which facilities are not available are to be carried out at recognized National Test Houses like ETDC/CIL/NPL/ERTL etc., at vendor cost.
- Through Log Book / any other documents available at the vendor's works, it shall be possible to correlate the finished product with inspection carried out.
- All Measuring and Testing Instruments shall be periodically calibrated from recognized test houses & certificates made available during inspection for verification.
- Test certificates for routine type tests are to be furnished by the vendor.
- Type test certificate shall not be earlier than 5 years from the date of Purchase enquiry.
- Vendor to give tentative inspection program in advance and confirm exact date two weeks in advance for arranging BHEL's inspection.
- Packing shall be as per "PACKING PROCEDURE" indicated in the specification.
- Salt spray test to be conducted on a sample plate, which has been subjected to the same pre-treatment and finish painting process as main box.
- Sample on every gasket lot to be tested for neoprene content as follows:  
Burn a small piece of gasket with a match stick. The fire should extinguish on removal of match stick immediately and the residual should be in the powder form.

**C. REFERENCE STANDARDS:**





(For Indicated Standards Refer the Latest Version)

IS513	:	Specification for cold rolled low carbon steel
IS6005	:	Code of practice for phosphate of iron and steel
IS60947	:	General rules for low voltage switchgear (Specification on degrees of protection offered by enclosures)
IS4905	:	Methods of random sampling

SQP03R5.doc

**CONTROLS & INSTRUMENTATION/QA/FB**

**STANDARD QUALITY PLAN FOR**  
**LIMIT SWITCHES**

REV	DATE	PREPARED	REVIEWED		APPROVED	REVISION HISTORY
00	17.01.1990	Sd/-	Sd/-	Sd/-	Sd/-	Initial release
01	16.06.1997	Sd/-	Sd/-	Sd/-	Sd/-	Format revised
02	21.03.2002	Sd/-	Sd/-	Sd/-	Sd/-	Department name changed, CTQ requirement added & general revision
03	14.03.2007	Sd/-	Sd/-	Sd/-	Sd/-	General revision, format changed
04	20.02.2018	 V AVINASH	 A SRIHARI RAO	 V M SELVARAJ	 R M VAIRAVAN	Standards updation and format changed

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> <b>TIRUCHIRAPPALLI-620014</b>	<b>STANDARD QUALITY PLAN FOR</b> <b>LIMIT SWITCHES</b>	<b>QA:CI:STD:QP:05</b>	
			<b>Rev: 04</b>	<b>Page: 2 of 3</b>

S.No	Component & Operation	Characteristics	Class	Type of Check	Quantum of check		Ref Doc. & Acceptance STD	Format of Record	Agency			Remarks
					M	B/C			M	B	C	
<b>A</b>	<b>FINISHED PRODUCT INSPECTION</b>											
<b>1</b>	<b>Routine Tests</b>	a) Verification of Make, Type & Model Number	Major	VISU	100%	10%	Purchase specification	IR	P	W	-	
		b) Dimension verification	Major	MEAS	100%	10%	Purchase specification	IR	P	W	-	
		c) Accessories verification	Major	VISU	100%	10%	Purchase specification	IR	P	W	-	
		d) Functional Test: Verification of contact change over	Major	ELEC	100%	10%	Manufacturer Standard	IR	P	W	-	
<b>2</b>	<b>Type Tests</b>	a) Degree of enclosure protection	Critical	ENVI	One of Design	One of Design	NEMA / IEC 60529	TC	V	V	-	
		b) Test for rated making & breaking capacity	Critical	MECH			IEC 60947	TC	V	V	-	
		c) Endurance Test	Critical	MECH			<b>No. of Cycles:6000</b> 6 – 10 cycles per minute of making and breaking at rated current.	TC	V	V	-	There shall be no damage at the end of test.

M- MANUFACTURER/ SUB-VENDOR; B - BHEL / TPI ; C - CUSTOMER / TPI  
P - PERFORM ; W - WITNESS V - VERIFICATION OF DOCUMENTS ;



**B.NOTES:**

**1.LEGENDS:**

ENVI : Environmental                      MEAS : Measurement  
MECH : Mechanical                      TC : Test certificate  
VISU : Visual                              IR : Inspection Report  
THER : Thermal

- 2) Vendor shall arrange all the required facilities for routine tests at their works .  
Tests for which facilities are not available are to be carried out at recognized National Test Houses like ETDC/CIL/NPL/ERTL etc., at vendor cost.
- 3) Through Log Book / any other documents available at the vendor's works, it shall be possible to correlate the finished product with inspection carried out.
- 4) All Measuring and Testing Instruments shall be periodically calibrated from recognized test houses & certificates made available during inspection for verification.
- 5) Type test certificate shall not be earlier than 5 years from the date of Purchase enquiry.

- 6) Vendor to give tentative inspection program in advance and confirm exact date two weeks in advance for arranging BHEL's inspection.
- 7) Packing shall be as per "PACKING PROCEDURE "indicated in the specification.
- 8) If non-conformity is observed even in one number of the sample lot in any characteristic, inspection shall be carried out on 100% of the offered lot.



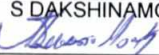
**C. REFERENCE STANDARDS:** (For Indicated Standards Refer the Latest Version)

IEC 60529 : Specification for Degree of protection provided by enclosure  
IEC 60947-1 : Low voltage switchgear & Controlgear- General Rules  
IEC 60947-5 : Low voltage switchgear & Controlgear- Switching elements

**BHARAT HEAVY ELECTRICALS LIMITED  
TIRUCHIRAPPALLI**

**CONTROLS AND INSTRUMENTATION / FB  
QUALITY ASSURANCE**

**STANDARD PACKING PROCEDURE  
FOR  
ELECTRICAL AND ELECTRONIC PANELS  
(INCLUDING BOXES, CABINETS, CUBICLES, SYSTEMS AND CHASSIS)**

Rev	Date	Prepared	Checked	Approved	Revision History
00	01.01.96	Sd/-	Sd/-	Sd/-	Initial History
01	28.03.02	A.J.OMPRAKASH Sd/-	R.VARADARAJAN Sd/-	G.MATHIYALAGAN Sd/-	Department name changed
02	26.02.07	RM.VAIRAVAN	N.SRIDHAR	S.SOMASUNDARAM	Revised after discussion with Shipping Dept.
03	07.02.2017	AVINASH V 	RM VAIRAVAN 	S DAKSHINAMOORTHY 	Type of wood for packing changed

**1.0 SCOPE**

- 1.1 This procedure gives minimum guidelines to be complied with for packing of Electrical, Electronics and Instrumentation panels. This packing shall be suitable for different handling operations and for the adverse conditions during transportation and during indoor / outdoor storage for periods more than one year.

**2.0 WOOD SPECIFICATION FOR PACKING**

- 2.1 Any seasoned wood or plywood as per relevant international standard  
2.2 Sea worthy packing is envisaged for international shipments.

**3.0 PACKING**

- 3.1 Any seasoned wood or plywood shall be used .It shall be free from knots, etc. and any kind of decay caused by insects and fungus.
- 3.2 The required wood case for the equipment to be packed shall be made out of individual planks of single length and no joint is permissible. Using such planks, the required wood case for the panel shall be made,
- 3.3 Sufficient number horizontal, vertical and diagonal planks (dimension depending upon case size) shall be used for binding and strengthening. Runners have to be provided with metallic sling plates for handling.
- 3.4 Support planks are to be provided such that, no force is acting on the parts of equipment or its parts.
- 3.5 Panels above 1.5 metre shall be bolted at the bottom.
- 3.6 The equipments covered with a polythene sheet shall be kept inside the box, followed by coir, wooden bottoms, thermo coal, etc to prevent vibration effect during loading, transportation, etc.
- 3.7 On all sides of the inner case, black polythene sheet shall be nailed.
- 3.8 Loose items of the equipment, if any, shall be packed separately.
- 3.9 Delicate components likely to be damaged, example PCB – Electronic modules, instrument, etc are to be covered individually in anti-static bags and packed in cartons and filled with fillers like thermo coal, paper cuttings, etc.
- 3.10 Such cartons shall be packed with overall polythene rapping and packed in wooden cases. Mark prominently as "ELECTRONIC COMPONENTS".

**4.0 MARKING**

- 4.1 After completing the packing, Stencil marking, as per dispatch instructions and symbol marking as per Annexure – I shall be made. Please ensure the box is stenciled with "FRAGILE ITEM", "HANDLE WITH CARE"

**5.0 PACKING SLIP**

- 5.1 A copy of the packing slip, kept in a polythene cover shall be kept inside the box. Another copy of the packing slip, kept in a polythene cover shall be kept out side the box and covered with a metallic plate to the case.

**6.0 CAUTION**

Do not pack any other Mechanical items with this case.

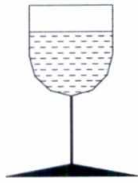
**7.0 GENERAL**

- 7.1 These packing procedures are the minimum requirements in addition to the standard instructions mentioned in the Purchase Order and Specification.

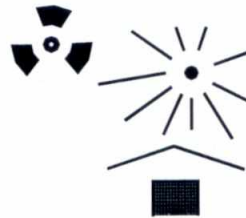
ANNEXURE - 1

TO

PROCEDURE NO:CI:QAC:PR:02/00 ; PR:03/00 ; PR:04/00



FRAGILE, HANDLE WITH CARE



PROTECT FROM HEAT AND RADIOACTIVE SOURCES



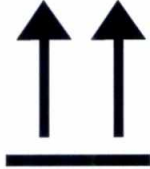
USE NO HOOKS

NOTE: The design of heavy goods packages cannot always resist top lifting by grabhooks.



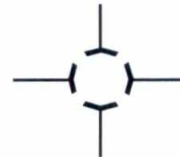
KEEP DRY

NOTE: Not all cases have waterproof internal liners: plywood used in the construction may not have a waterproof glueline.



THIS WAY UP

NOTE: Certain designs of small cases make it difficult to distinguish top from bottom.



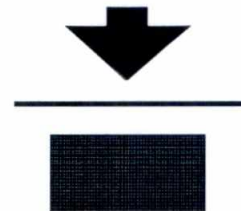
CENTRE OF GRAVITY

NOTE: This should be stencilled as a minimum on the two longest case sides (this information will normally be supplied by the manufacturer of the item(s) packed).



KEEP AWAY FROM HEAT

... kg max



STACKING LIMITATION

NOTE: The maximum load in kilograms should be marked above the arrow.



INTERNATIONAL "SLING HERE" SYMBOL

**/ On Bidder's office letter pad /**

**Self-Declaration**

<b>GEM bid Enquiry No.</b>	<b>GEM/2021/B/1796086</b>
<b>Enquiry Date</b>	<b>24.12.2021</b>

In line with Government public procurement order Number P-45021/2/2017-B.E-II dated 15.06.2017, and further modified order dt.04.06.2020 issued by DPIIT,

I / We hereby declare that I / We are a “Local Supplier” meeting the requirement of minimum local content (**.....%**) defined in the above government notification for the goods against above mentioned enquiry Number.

Details of location at which local value addition will be made is as follows:

Door No.	
Street / Address 1	
Street / Address 2	
District	
State	
Country	
PIN Code	

We also understand that the false declarations will be considered as breach of Integrity and liable for action.

**For Company Name:**

**Seal:**

**Signature:**

**Date:**

**Place:**

(Please fill all the yellow color field)



429-024

**MATERIALS MANAGEMENT / BOI**  
**SUB-DELIVERY ENQUIRY DEVIATION FORMAT**

Page : of

Schedule of deviation to Sub-delivery Enquiry No. : **GEM/2021/B/1796086 dt 24.12.2021**

Description : **Burner Tilt Shear Pin Failure Indication Box & Heavy Duty Limit Switch**

Documents : **Specification: TCI:335 / REV 03**

Drawing Nos. : **1-95-091-10793 Rev 07**  
**3-97-591-24380 Rev.00**

Quality Plan : **QA-CI-STD-QP-03-Rev05**  
**QA-CI-STD-QP-05-Rev04**

Packing Procedure : **QA:CI:STD:PR:02 Rev.03**

Document reference	BHEL called for	Firm's alternative offer

Certified that other than the above deviations, we are accepting all the other specifications and requirements in full to your Enquiry.

Station :

Date : Signature of firm's representative Firm seal

Note : 1. Deviations should be taken only in the extreme case  
2. If necessary, use additional sheets with page control number