

MANUFACTURER'S NAME AND ADDRESS:		REFERENCE QUALITY PLAN							TO BE FILLED IN BY BHEL			
AS PER PO/RC		ITEM/EQUIPMENT :	SQP NO.: CER/2020-21/02		SIGN. OF MFGR		PAGE: 1 OF 2		REVIEWED BY:	APPROVED BY:		
		METAL PART (CASING) FOR CERALIN LINED ITEMS	REV. NO.: 00 DATE : 07.09.20									
SL. NO	COMPONENT	CHARACTERISTICS & OPERATIONS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT#	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY		REMARKS
					M	C				M	C	
1.	2.	3.	4.	5.	6.		7.	8.	9.	10.		11.
1.0	Steel Plates for Casing & Rings	a) Chemical Composition b) Mechanical Properties	Maj. Maj.	Chemical Mechanical	1 sample/ lot -do-	1 sample/ lot -do-	IS:2062 (Gr.A) IS:2062 (Gr.A)	IS:2062 (Gr.A) IS:2062 (Gr.A)	MTC / Test Report MTC / Test Report	P P	V V	Correlated test certificate and inspection reports to be maintained by Vendor.  Mechanical test shall be witnessed by BHEL in case material purchased & used without correlated MTC.
2.0	Fabricated Casing	a) Suitability of welding procedure Specification	Maj.	Procedure qualification test	Once	Once	E&D:330 Section 04	E&D:330 Section 04	Welding procedure & Qualification record	P	W	Qualification test of welder done at BHEL's/ Vendor's work may be witnessed by BHEL.
		b) Capability of welder in adopting welding procedure	Maj.	Procedure qualification test	Periodically once in one year for each welder	Periodically once in one year for each welder	E&D:330 Section 04	E&D:330 Section 04	Qualification certificate	P	W	Records shall be maintained.

**LEGEND:**

M: MANUFACTURER C: BHEL, P: PERFORM W: WITNESS AND V: VERIFICATION (AS APPROPRIATE) CHP: BHEL SHALL IDENTIFY IN COLUMN "C" AS "W".

Note: # BHEL Inspection Engineer to check, approval date/ revision no. of reference documents at the time of Inspection



982952/2022/FSIP-IPQAX000

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					M	C				M	C	
1.	2.	3.	4.	5.	6.		7.	8.	9.	10.		11.
2.0	Fabricated Casing (Cont.)	c) Welding i) Fit up ii) Root run  d) Liquid penetrate inspection for weld joints i) Butt Joint ii) Fillet Joint  e) Welding Quality & Finished  f) Dimension  g) Painting	Maj.  Maj.  Maj.  Maj.  Maj.	Visual Visual  NDT  Visual  Physical  Physical	100% 100%    100% 100%  100% 100%	10% 10%    10%   10%	Drawing Drawing  E&D:331 Section 04  E&D:330 Section 04  Drawing  E&D:330 Section 05	Drawing Drawing  E&D:331 Section 04  E&D:330 Section 04  Drawing  E&D:330 Section 05	Inspection Report QAC 4301 & 4302  Inspection Report  Inspection Report  Inspection Report QAC 4306 Inspection Report QAC 4307	P P  P  P P  P	V V  W  W W  W	BHEL shall verify the record at sub-contractor works and carryout the check on min 10% of samples selected at random for the test. If any sample fails, 100% of the lot shall be checked.    The evaluation of LPI of welded joints is to be carried out by persons having min ASNT Level-II Qualification.  Welder's identification shall be recorded.
3.0	Documentation	Review & Record of Inspection Reports	Maj.	Review of document	100%	100%	As Above	-	As Above	P	V	
4.0	Quality Requirement	Complete quality requirement	Maj.	Review of document	100%	-	QR/20-21 Rev00	-	-	P	-	BHEL inspector may seek records for compliance of its quality requirement document.

**LEGEND:**

M: MANUFACTURER C: BHEL, P: PERFORM W: WITNESS AND V: VERIFICATION (AS APPROPRIATE) CHP: BHEL SHALL IDENTIFY IN COLUMN "C" AS "W".

Note: # BHEL Inspection Engineer to check, approval date/ revision no. of reference documents at the time of Inspection



## INSPECTION REPORT OF CASING FOR P.F. BEND/FIE/MOE

Format No. : QAC: 4301

FSIP - JAGDISHPUR

SUPPLIER

DRAWING NO.:

P.O.No.:

CONTRACT No.

ITEM:

DATE OF INSPECTION:

		DATE OF INSPECTION:																								
ANGLE	BEND NO.	I.D.		O.D.		AXIAL SHIFT										RADIAL SHIFT								OUT OF SQUARENESS		DP TEST
		AHS	TES	AHS	TES	1	2	INNER						OUTER						A		B				
								1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	1	2	

Dimension of Segment and bend						Type of Flange	
	as per drawing		Actual				
X =							
Y =							
OAL =							
IAL =							
C1 =							
C2 =							
C3 =							

Pattern No. :  
 Plate Thickness :  
 Welder Name :

Radius :

VAR No. :

Style No.:

ITEM No. :

Approved By:

Inspected By :

Inspection Remarks by BHEL Representative :





FORMAT NO. QAC :4302

P.O. NO.:  
DRAWING NO.:  
DATE OF INSPECTION :

INSPECTED BY:

REVIEWED BY:

INSPECTION REMARK BY BHEL REPRESENTATIVE

*Smith*

Shield

Nona



FSIP-JAGDISHPUR

# **CHECK SHEET FOR FINAL INSPECTION OF CASING FOR PF BEND/FIE/MOE**

Format No: QAC: 4306 Rev.00

ITEM:  
P.O. NO.:  
P.O. DATE:

DRAWING NO.:  
DATE OF INSPECTION:  
SUPPLIER:

Sl. No.	Pattern No.	Angle (°)	C2	OAL	IAL	Flange O.D.		Flange I.D.		Welding	Lug Position	Painting
						AHS	TES	AHS	TES			
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Remarks:

Inspected By:

Approved By:





FSIP-JAGDISHPUR

## PAINTING CERTIFICATE

FORMAT NO. QAC :4307

SUPPLIER :-

ITEM :-

DATE OF INSPECTION :-

P.O. NO.:-

DRAWING NO.:-

Painting reference No.:-

Sl. No.	PATTERN NO	PARTY IDENTIFICATION MARK	PROPER SURFACE PREPARATION	VISUAL PAINTING	Required Minimum DFT	OBSERVED DFT

This is certified that the above MS casing are painted as per related painting scheme / Zinc Chrome Red oxide Alkyl Primer confirming to IS – 2074 and as per CE -0265.20.

INSPECTED BY:

REVIEWED BY:

INSPECTION REMARK BY BHEL REPRESENTATIVE

QR/20-21 Rev.00

## QUALITY REQUIREMENTS

Following quality requirement is for the suppliers of M.S. Casings of BHEL FSIP, Jagdishpur. Each supplier participating in Rate Contract shall go through the Terms & Condition of this document thoroughly and participate in RC as per their facilities and 'Process Maturity' in line with this document. Supplier may has to submit documentary proof/present physically of all requirements as and when required by BHEL.

### **A. RAW Material**

#### **1. M.S.Sheet:-**

- As per BHEL Drawing
- Receipt and Issue of material used for BHEL supply shall be maintained as per enclosed Annex-A
- Correlated test certificate of material will be required along with each dispatch of M.S Casing.

#### **2. Welding Electrode:-**

- As per latest revision of document no. E&D 330 section 04.
- Photocopy of invoices of procurement of welding rod/flux core wire may be asked by BHEL against its PO to ensure type/make & quality of electrode used.

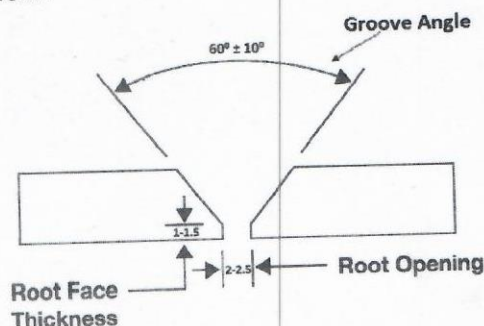
#### **3. Paint:-**

- As per latest revision of document no. E&D 330 section 05.
- Any other painting requirement will be indicated in drawing /painting scheme. It will be provided by BHEL separately with PO.
- Photocopy of invoices of procurement of paint may be asked by BHEL against their PO to ensure quality & make of paint used.

### **B. Fabrication/In-Process**

#### **1. Fabrication of M.S.Casing:**

- As per BHEL Document E&D 306 (Latest revision) and BHEL Drawing.
- Proper fit-up is to be maintained as below:



#### **2. Welder Qualification:**

- Once in every Year for each welder to be done strictly as per AWS D-1.1 by a third party NABL Accredited Lab. On lack of valid welder qualification certificate Casing manufacturing may be hold by BHEL until submission of the same. BHEL may witness welder qualification.

*[Signature]*

*[Signature]*  
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*[Signature]*



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**3. Welding/Hard facing: (Strictly as per E&D: 330)**

- Proper Penetration Required
- No Grinding on Weld bead allowed
- Grinding of all gas cut portion to be ensured (including lifting lug)

**4. Machining:**

- Surface roughness of 6.3 micron or as specified in drawing to be achieved at complete machining portion.
- **Grinding/welding is strictly prohibited on machined portion.**

**5. Painting: As per BHEL Document E&D: 330 (Latest revision) & BHEL Drawing**

- Power Tool cleaning (SSPC-SP3) or Abrasive Blast cleaning for removal of dust, rust, weld, slag, spatters, oil, grease etc. before painting is must.
- No thinner to be added in paint.
- Rusting of received material at BHEL FSIP will be treated as use of poor paint/process and the same will be out rightly rejected or Repainting will be done on the risk and Cost of supplier on the discretion of BHEL.
- Any other painting requirement will be indicated in drawing / painting scheme. It will be provided by BHEL separately.

**C. Instruments for Inspection**

1. Duly spirit leveled surface plate
2. One meter Right Angle (Tri square)
3. 01 meter height gauge
4. 02 nos. Vernier Caliper, Range (0-1000 mm & 0-300 mm)
5. 02 nos. Measuring Tape, Range (0-3000mm & 0-5000mm)
6. Ultrasonic wall thickness gauge (i.e. D' meter)
7. Digital Coating thickness gauge for checking thickness of paint
8. Feeler gauge, spirit level, 01 meter scale, Plumb Bob
9. Proper Materials Handling / movement, instrument like as overhead crane/ Hydra etc
10. Digital Surface roughness gauge for checking the roughness of machined parts.
11. Hardness tester for checking the hardness of hard facing
12. Any kind of other instrument as per requirement of BHEL shall be arranged by the supplier

**All above Instrument's Calibration should be traceable to NABL/BHEL approved Lab. BHEL reserves the right to stop inspection in case of unavailability of above instruments.**





**D. BHEL Inspection/Audit**

1. Inspection call shall be raised by the vendor at least 1-2 days in advance by email to BHEL QC with a copy to MM having specific call number & details of items offered for inspection i.e. name of item as per PO, drawings number, variant number, stage of inspection, PO number, quantity offered, proposed date of inspection etc.
2. Call will be raised along with its dimension report actually measured and fill by vendor's QC/production at the required format of inspection. Each inspection call will have following disclaimer in the email:  
"Material is ready for inspection as per above schedule. However, only positive variation in Quantity may be there. All the calibrated Measuring instruments are available with us for the above inspection. We have ensured that casing is fabricated as per BHEL specifications. [I.e. material conforms IS: 2062 Grade A (Latest Revision). Fabrication is done strictly as per E&D: 306 and welding is carried out as per E&D: 330]. The above lot offered to you is already checked at our end and found acceptable."
3. **No items shall be dispatched without clearance by BHEL.**
4. BHEL Authorized representative/ Inspectors will have right of inspection/Audit/Photography of BHEL product at any supplier's premises without prior notice. Documentary evidence of compliance of above quality requirement shall be maintained by vendor and may be verified by BHEL.
5. In case of violation of quality requirements, BHEL Reserves the right to out rightly reject/ Hold for Rectification/Rectify at risk and cost of Supplier. BHEL also reserves the right to cancel the Purchase order or perform Risk Purchase.
6. **PDI/inspection done by BHEL at vendor's does not absolve vendor of their responsibility to supply a quality product as per specification/drawings etc. Vendor has to rectify / replace the casing if the casing is not manufactured as per drawing & discrepancy observed later after receipt at BHEL's work or at BHEL's customer site.**



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Annexure-A

Vendor Name and address

Ref No.....

Date: \_/\_/\_

M/s. BHARAT HEAVY ELECTRICALS LIMITED  
FABRICATION, STAMPING & INSULATOR PLANT  
JAGDISHPUR INDUSTRIAL AREA, DISTT. AMETHI U.P.227817

Kind Attention-

Invoice No. -

Invoice Date -

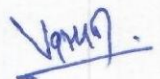
Sub: Material used against BHEL Purchase Order No. .... Dated.....

Dear Sir,

With reference to above order, we are submitting our material test certificate for following material  
used in manufacturing of M.S. casing.

Sl. No.	Plate Thickness	Test Certificate No.	Opening Balance	Material Consumption	Closing Balance

Authorised Signatory







भारत हेवी इलेक्ट्रिकल्स लिमिटेड  
Bharat Heavy Electricals Limited  
फैब्रिकेशन, स्टैम्पिंग ऐन्ड इंसुलेटर प्लांट, जगदीशपुर  
Fabrication, Stamping & Insulator Plant (FSIP), Jagdishpur

## MARKING ON CERALIN CASINGS

REF NO : CER : SPEC : 03

REV : 00

DATE : 27.07.2022

PAGE : 1 OF 1

1. **SCOPE:** Providing BHEL FSIP Marking on Ceralin Casing except Orifice

2. **METHOD** : By weld deposits of height 5 mm

3. **NOMENCLATURE**

"BHEL-FSIP-XXXXX"

XXXXX- Identification No. to be provided by PPC/MM

PREPARED BY:

*Gandh/27/07/22*  
Gaurav Pandey  
Sr. Engineer/Engineering

CHECKED BY:

*Gandh/27/07/22*  
Ghan Shyam  
Sr. Manager/Engineering

APPROVED BY:

*D.R. Chouhan*  
D.R. Chouhan  
Sr. DGM/Engineering &  
Technology