

ITEM: SUPPLY OF CORONA RINGS FOR INSULATORS AS PER ANNEXURE No. A/12303648/29.08.2023

TECHNICAL PQR, DRAWING, QAP: AS ATTACHED

ITEM & QUANTITY: As follows

Sr. No.	BHEL Item Code	Description of Item/Specification	Quantity	UOM	Technical Specification/ Drawings/QAP
1	128182	FLANGE (G)-3 983 13 05122/01	230	EA	AS ATTACHED
2	128162	Bottom Flange-G-3 983 13 05223/01	367	EA	

- Bidder to provide signed & Sealed GEM BID, drawings, QAP & Annexure No. **A/12303648/29.08.2023** with their offer.
- To get MSE preference, bidder to choose MSE purchase preference on GEM portal otherwise purchase preference shall not be applicable.
- To get MII preference, bidder to choose MII purchase preference on GEM portal and bidder to submit signed local content declaration otherwise purchase preference shall not be applicable.
- Item shall be manufactured as per attached drawing.
- Delivery Schedule: **Material shall be supplied to BHEL SBD MP Stores, Bangalore within 45 days from the date of PO.**
- Delivery location: BHEL SBD MP Stores Bangalore-560012 as per GeM consignee.
- Price basis: **Price shall be firm till completion of the contract. No PVC is applicable.**
- Payment terms: Hundred Percent (100%) of basic price of the material supplied as per PO, along with 100% taxes & duties (as applicable) shall be payable on pro-rata as per following manner
 - 45 days for Micro & Small Enterprises (MSEs)
 - 60 days for Medium Enterprises
 - 90 days for Non-MSME
 from the date of receipt of goods at BHEL SBD and receipt of complete documents at BHEL SBD as specified in Clause No. 9 below subject to acceptance of materials. [i.e. date of acceptance of material or date of submission of complete set of documents (whichever is later) shall be considered for reckoning the due date of payment.]
- Documents to be Submitted by Vendor for payment:
 - Original GST compliant invoice. (Original for Buyer copy)
 - Copy of LR/ Delivery Challan for local supplier in place of LR
- Invoice to be made as per the prevailing GST format only. TDS Deductions applicable as per GST Law & TDS certificate shall be issued by BHEL in line with the latest amendment in GST Law.
- LD/Penalty: As per GeM general T&C.
- Guarantee period: Material supplied should be durable and vendor should guarantee for its durability for minimum three years in use.
- Technical PQR- requirement i.e. Years of Past Experience of 01 year as per technical PQR
- Past Experience shall be supply of 50% of bid quantity.
- Minimum Average Annual Turnover of the Bidders: shall be 2 lakhs for last three FY.
- Inspection and Quality Clearance: As per attached QAP

BOQ FOR 12303648							
Item Number	Item Code	Item Description	Quantity	UOM	Unit Price (Inclusive of TAX) [QUOTED/NOT QUOTED]	Applicable GST %	HSN Code
1	128182	FLANGE (G)-3 983 13 05122/01	230	EA			
2	128162	Bottom Flange-G-3 983 13 05223/01	367	EA			

REV

3 983 13 05122

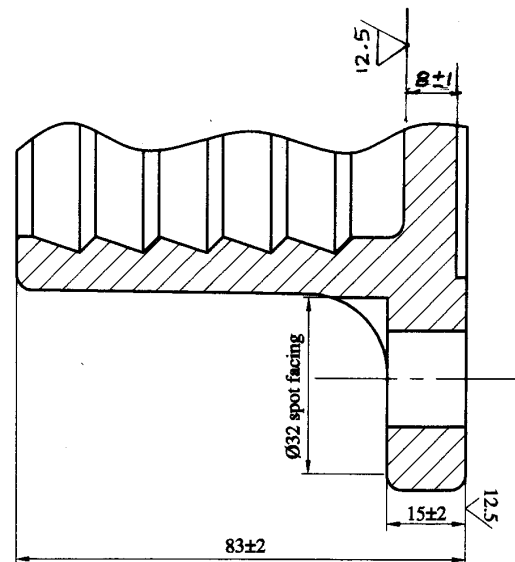
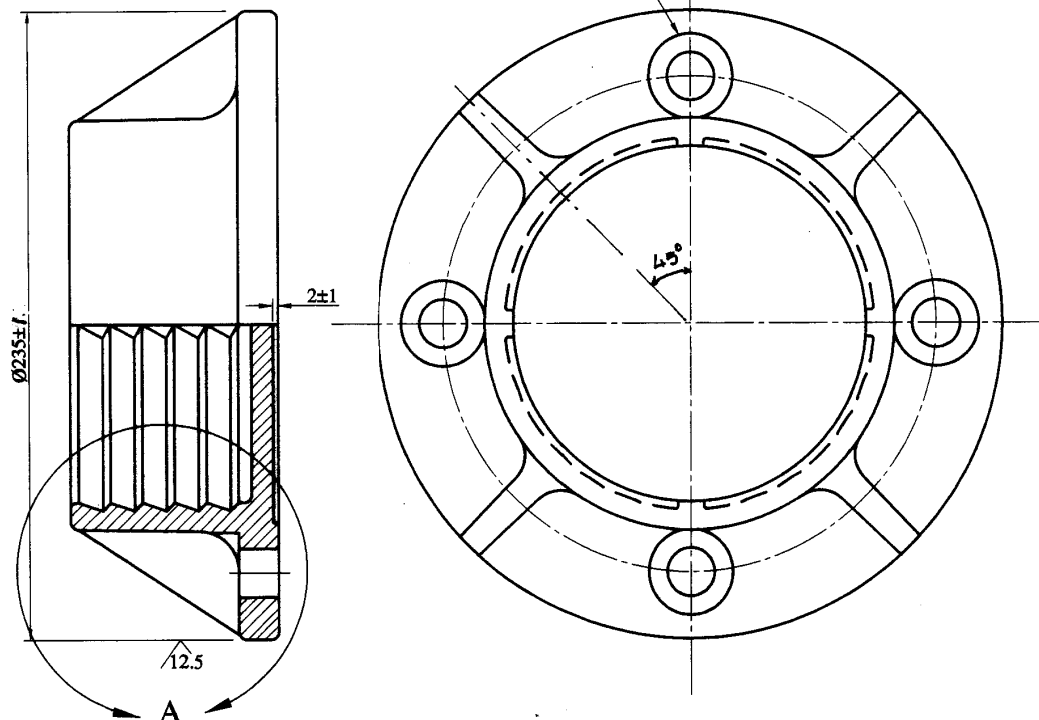
DRG No.

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REF. DRG. No.

SIGN AND DATE

INVENTORY No.



DETAILS AT 'A'

NOTES:


1. ALL DIMENSIONS ARE AFTER HOT-DIP GALVANISING
2. GALVANISE AFTER ALL MACHINING AND DRILLING
3. DRILLED HOLE SIZE BEFORE GALVANISING SHOULD BE Ø18.3 mm
4. DIAMETER 235±0.1 SHOULD BE ACHIEVED BY MACHINING WITH REFERENCE TO AS CAST INSIDE SURFACE OF THE CASTING
5. DIA 18, HOLES SHOULD BE DRILLED WITH REFERENCE TO DIA 235±0.1
6. SPOT FACING DIA SHOULD BE CONCENTRIC WITH DRILLED HOLE DIA
7. MPI TEST TO BE CARRIED OUT ON ALL CASTINGS
8. NO SHARP EDGES/CORNER/PROJECTIONS/UNEVENNESS ON INTERNAL PORTIONS OF METAL PARTS

FERROUS PARTS ARE HOT-DIP GALVANIZED (EXCEPT FEMALE THREADS) AND TEST CONFORM TO IS:2633/IEC-383/BS 729 PORCELAIN BROWN GLAZED



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ELECTROPORCELAINS DIVISION
BANGALORE - 560 012

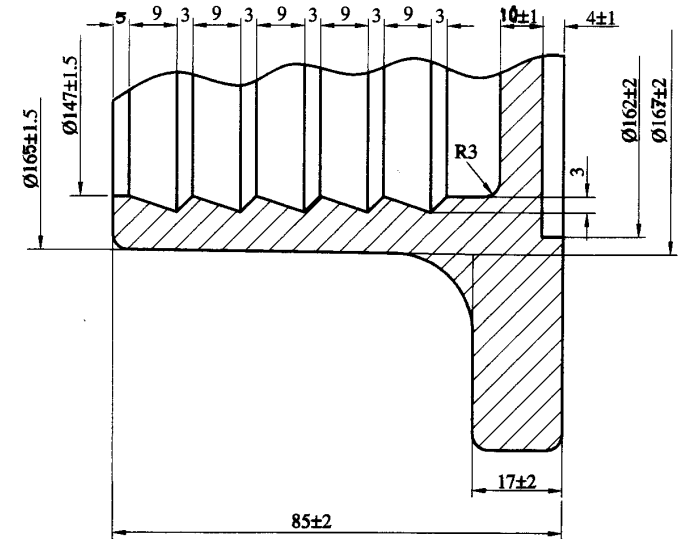
NAME	SIGN	DATE
DRN	MSR	16.04.04
CHD	SSP	16.04.04
APPD	SSP	16.04.04

DEPT	GRADE OF TOL DIM		SCALE	WEIGHT (kg)	REF TO CASTING DRG	ITEM No.	No. OF ITEMS
CODE	C/M/F		N.T.S	6.5 (Approx)	3 983 13 05132		
TITLE				CARD CODE	DRAWING No.		REV.
FLANGE (MACHINED)					3 983 13 05122		01
					No. OF SHEETS		

REV 01 13.2.23 CHECKED
DIM 8±1 ADDED
ROUGHNESS SURFACE 12.5 ADDED.
ANGULAR DIM 45° ADDED
NOTE No 8 ADDED
PH No 6096.

DRG No.

INVENTORY No.



NOTES:

1. MATERIAL = REFER TABLE
2. CASTING SHOULD BE FREE FROM SURFACE DEFECTS SUCH AS BURRS, SAND INCLUSIONS ETC.
3. TOLERANCE ON WALL THICKNESS IS ± 1.0 mm
4. LETTERS 'BHEL' IN 6 mm HEIGHT SHOULD BE EMBOSSED IN PROJECTED FORM AT THE PLACE SHOWN AS 'X'
5. MANUFACTURER'S IDENTIFICATION MARK IS TO BE EMBOSSED IN THE CASTING IN PROJECTED FORM IN THE PLACE SHOWN AS 'Y'
6. ALL SHARP CORNERS TO BE ROUNDED OFF BY R2
7. PERMISSIBLE ECCENTRICITY IN CASTING = 1 mm
8. MPI TEST TO BE CARRIED OUT ON ALL CASTINGS.
9. NUMBER " 3 13 05122 " TO BE EMBOSSED IN PROJECTED FORM AT THE PLACE SHOWN AS 'Z'.


ITEM NO.	* MATERIAL	TOLERANCES ON UNTOLERANCED DIMENSION	MARKING 'A'
1	MCI Gr. BM 320 IS:14329-1996	AS PER IS:8349-1977	EPD 1
2	SGI Gr. 450/10 OF IS 1865-1991	AS PER IS:8350-1977	EPD 2



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	NAME	SIGN	DATE
DRN	MSR	Reynolds M.S.	8.04.04
CHD	SSP	<i>[Signature]</i>	16.04.04
APPD	SSP	<i>[Signature]</i>	16.04.04
WT (kg)	REF TO ASSY.DRG		ITEM No. No. OF ITEMS
7 (prox)			
CARD CODE	DRAWING No. 3 983 13 05132		REV 01
	No. OF SHEETS		

REV	DATE	ALTERED	REV	DATE	ALTERED
		CHECKED			CHECKED

DEPT	GRADE OF TOL DIM		SCALE N.T.S	WEIGHT (kg) 7 (Approx)
CODE	C/M/F			
TITLE FLANGE (CASTING)				CARD CODE

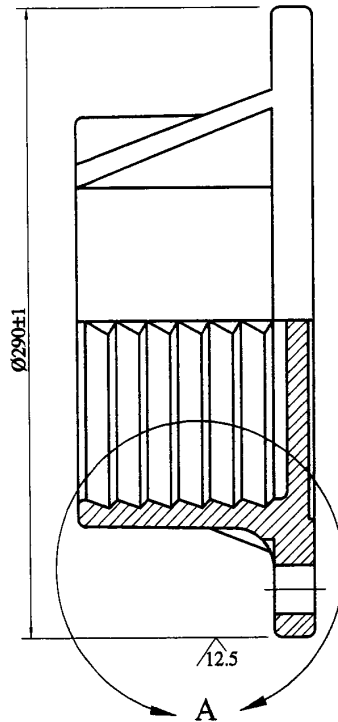
REV 01 3 983 13 05223 DRG No.

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REF. DRG. No.

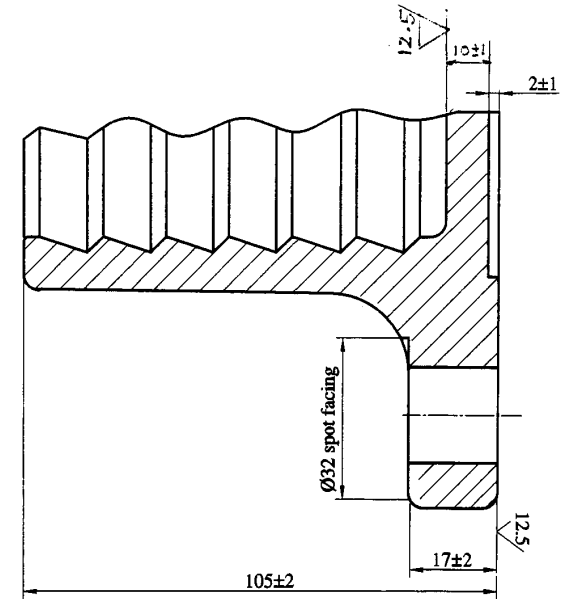
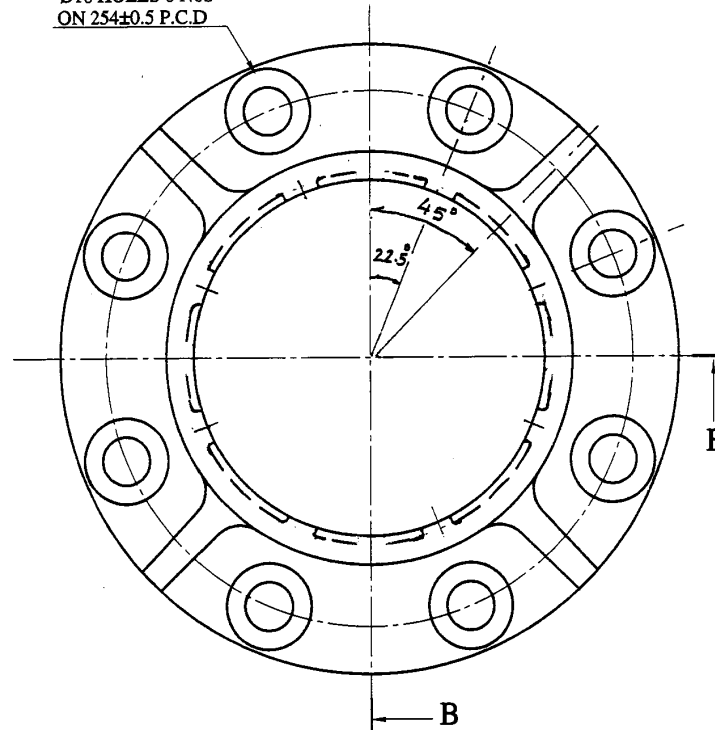
SIGN AND DATE

INVENTORY No.



SECTION 'B-B'

Ø18 HOLES 8 Nos
ON 254±0.5 P.C.D



DETAILS AT 'A'

NOTES:

1. ALL DIMENSIONS ARE AFTER HOT-DIP GALVANISING
2. GALVANISE AFTER ALL MACHINING AND DRILLING
3. DRILLED HOLE SIZE BEFORE GALVANISING SHOULD BE Ø18.3 mm
4. DIAMETER 290±0.1 SHOULD BE ACHIEVED BY MACHINING WITH REFERENCE TO AS CAST INSIDE SURFACE OF THE CASTING
5. DIA 18, HOLES SHOULD BE DRILLED WITH REFERENCE TO DIA 260±0.1
6. SPOT FACING DIA SHOULD BE CONCENTRIC WITH DRILLED HOLE DIA
7. MPI TEST TO BE CARRIED OUT ON ALL CASTINGS
8. No SHARP EDGES/CORNERS/PROJECTIONS/
UNEVENNESS ON INTERNAL PORTIONS OF METAL PARTS

FERROUS PARTS ARE HOT-DIP GALVANIZED (EXCEPT FEMALE THREADS) AND TEST CONFORM TO IS:2633/IEC-383/BS 729 PORCELAIN BROWN GLAZED



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NAME	SIGN	DATE
DRN	M.S.R	06.04.04
CHD	S.S.P	16.04.04
APPD	S.S.P	16.04.04
REF TO CASTING DRG.	ITEM No.	No. OF ITEMS
3 983 13 05233		
DRAWING No.	REV.	
3 983 13 05223	01	
No. OF SHEETS		

DEPT GRADE OF TOL DIM C/M/F SCALE WEIGHT (kg) 9 (Approx) CARD CODE
TITLE
BOTTOM FLANGE (MACHINED)
FOR 245 kV SOLID CORE INSULATOR

CODE



SCALE
N.T.S

WEIGHT (kg)
9
(Approx)

REF TO CASTING DRG.
3 983 13 05233

ITEM No.
No. OF ITEMS

DRAWING No.
3 983 13 05223
REV.
01

No. OF SHEETS

REV 01 13.2.23
INTERNAL RIB WAS 4
ANGULAR DIM ADDED
DIM 10±1 & ROUGHNESS
SURFACE 12.5 ADDED
NOTE: AS ADDED
PH No. 6074

REV	DATE	ALTERED	REV	DATE	ALTERED
		CHECKED			CHECKED

3 983 13 05233

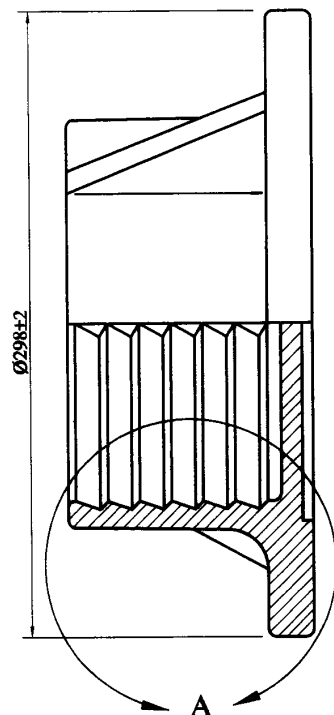
DRG No.

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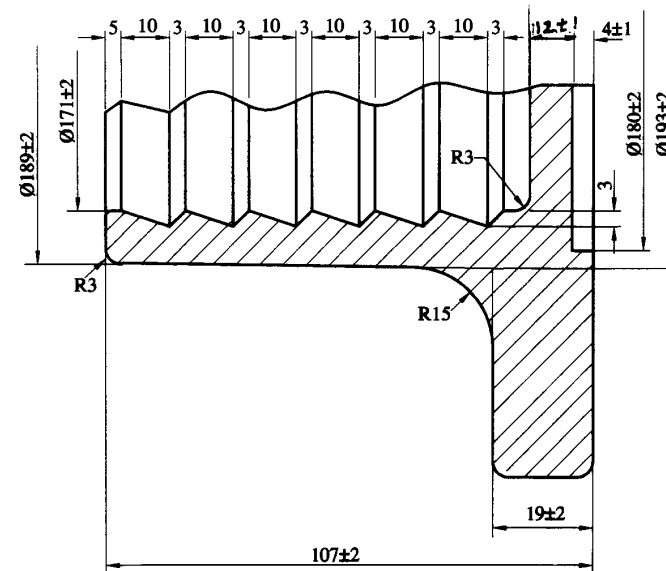
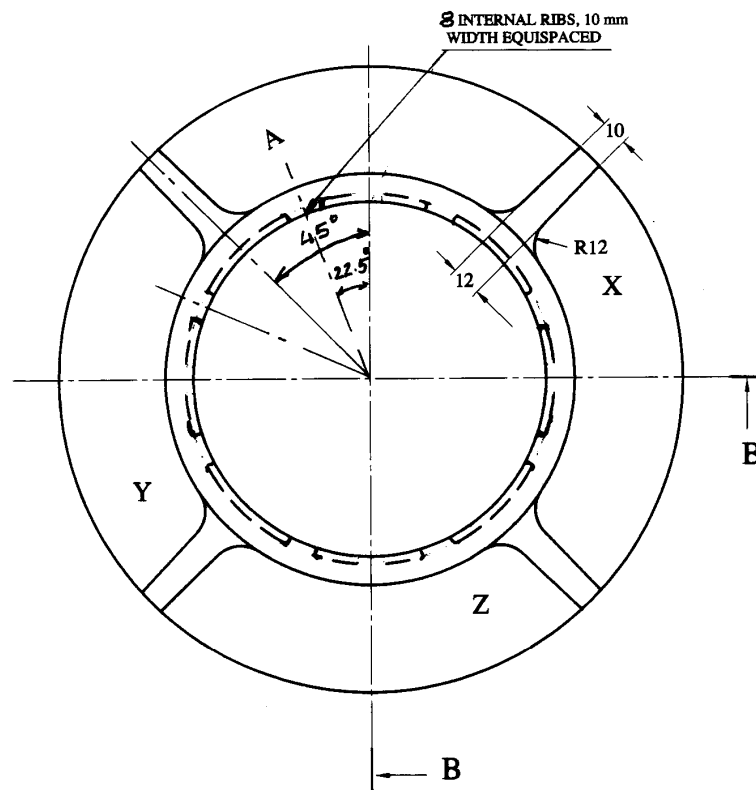
REF. DRG. No.

SIGN AND DATE

INVENTORY No.



SECTION 'B-B'



DETAILS AT 'A'

NOTES:

1. MATERIAL = REFER TABLE
2. CASTING SHOULD BE FREE FROM SURFACE DEFECTS SUCH AS BURRS, SAND INCLUSIONS ETC.
3. TOLERANCE ON WALL THICKNESS IS ± 1.0 mm
4. LETTERS 'BHEL' IN 6 mm HEIGHT SHOULD BE EMBOSSED IN PROJECTED FORM AT THE PLACE SHOWN AS 'X'
5. MANUFACTURER'S IDENTIFICATION MARK IS TO BE EMBOSSED IN THE CASTING IN PROJECTED FORM IN THE PLACE SHOWN AS 'Y'
6. ALL SHARP CORNERS TO BE ROUNDED OFF BY R2
7. PERMISSIBLE ECCENTRICITY IN CASTING = 1 mm
8. MPI TEST TO BE CARRIED OUT ON ALL CASTINGS.
9. NUMBER " 3 13 05223 " TO BE EMBOSSED IN PROJECTED FORM AT THE PLACE SHOWN AS 'Z'.


ITEM NO.	* MATERIAL	TOLERANCES ON UNTOLERANCED DIMENSION	MARKING 'A'
1	MCI Gr. BM 320 IS:14329-1996	AS PER IS:8349-1977	EPD 1
2	SGI Gr. 450/10 OF IS 1865-1991	AS PER IS:8350-1977	EPD 2

FERROUS PARTS ARE HOT-DIP GALVANIZED (EXCEPT FEMALE THREADS) AND TEST CONFORM TO IS:2633/IEC-383/BS 729 PORCELAIN BROWN GLAZED



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BANGALORE - 560 012

	NAME	SIGN	DATE
DRN	MSR	<i>Reece</i> m.s	06.04.04
CHD	SSP	<i>Hope</i>	03/14/04
APPD	S.S.P	<i>Hope</i>	05/14/04

REV	DATE	ALTERED	REV	DATE	ALTERED	DEPT	GRADE OF		SCALE	WEIGHT (kg)	REF TO ASSY.DRG	ITEM	No.OF
		CHECKED			CHECKED	01	13-2-23	CHECKED	N.T.S	9.5		No.	ITEMS
						CODE	TOL DIM			(Approx)			
						TITLE					CARD	DRAWING No.	REV.
						BOTTOM FLANGE (CASTING)					CODE	3 983 13 05233	01
						FOR 245 kV SOLID CORE INSULATOR						No.OF SHEETS	



PRE-QUALIFICATION REQUIREMENTS

Ref. No. : SBD/Ins. Prodn /PQR-MP

Dt : 19/08/23

ITEM : Metal Parts (SGI Flange) for Porcelain Insulators

P.R.No. 12303648

P.R. Total Qty. : 597 Nos.


S. No.	BHEL qualification requirement	Documents Required
	I. PRE-QUALIFICATION CRITERIA	
1	Vendor must be a manufacturer/doing business of supplying Metal parts (SGI Castings)	Submitted / Not submitted (vendor should provide documentary evidence by way of list of manufacturing/Casting & furnace, Capacity etc.)
2	Vendor should have supplied 300 Nos. of similar metal parts to Insulator Manufacturer(s) during the last 12 months.	Submitted / Not submitted (Vendor should provide documentary evidence by way of list of P.O/Invoice/Material acceptance etc.)
3	Material supplied should be durable and vendor should guarantee for its durability for minimum three years in use.	Acceptable / Not acceptable
4	Vendor should accept for pre-despatch inspection of material as per BHEL drawings.	Vendor to confirm Acceptable / Not acceptable

Note :

i) This PQR requirement of Sl. No. 1 & 2 is not applicable to PMD vendors under SGI castings. category of BHEL-SBD.

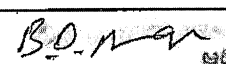
ii) Vendors to indicate clearly for acceptance or non-acceptance against each point. Technical bid can be processed further only when points mentioned above are responded and required documents are submitted.


MANOJKUMAR
DGM/Ins.Production

 BHARAT HEAVY ELECTRICALS LIMITED SOLAR BUSINESS DIVISION PROF.C.N.R RAO CIRCLE, IISc POST MALLESHWARAM, BENGALURU-560012		STANDARD QUALITY ASSURANCE PLAN		QP NO.: EPD_QP_IP_2020-21_0006 REV. NO.: 00 DATE: 22.01.2021 PAGE 2 OF 3								
		ITEM: SGI CASTINGS FOR PORCELAINS INSULATOR (FLANGES, TOP CAP, BOTTOM CAP ETC.)										
SL. NO	ITEM/ COMPONENT	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY		REMARKS	
									D*	M** B		
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	**	11.	
B INSPECTION AT BHEL WORKS												
B.1	SGI Castings (Flanges, Top Cap, Bottom Cap etc.)	Visual	Major	Physical	IS:2500 Ptl AQL 0.25%	BHEL Drg./BHEL Spec	BHEL Drg./BHEL Spec	Inspection Report	-	-	P	
B.2		Gauge Inspection	Major	Physical	IS:2500 Ptl AQL 0.65%		BHEL Drg./BHEL Spec	Inspection Report	-	-	P	
B.3		Dimensions & Markings	Major	Physical	2 per 1000 & part thereof		BHEL Drg./ BHEL Spec	Inspection Report	-	-	P	
B.4		Soundness	Major	Physical	IS:2500 Ptl AQL 0.25%	WI-QY/2302/10	Clear ringing sound on striking with light hammer	Inspection Report	-	-	P	
B.5		Tensile Test, % Elongation, Hardness on Test Bar	Major	Mechanical	1/heat	IS 1865:1991 /BHEL Drg.	IS 1865:1991 /BHEL Drg.	Inspection Report	-	-	P	Vendor to provide test bar per heat per lot
B.6		Microstructure on Test bar	Major	Metallurgical	1 per lot			Inspection Report	-	-	P	
B.7		Mass/ Thickness of Zinc coating	Major	Physical	Min 3 per 1000 & part thereof	BHEL Spec./ BHEL Drg.	BHEL Drg./ BHEL Spec	Inspection Report	-	-	P	
B.8		Uniformity of Zinc coating for castings weight less than 4 Kg	Major	Chemical	Min 3 per 1000 & part thereof	IS 2633/ BHEL Spec	No permanent deposit of copper for 1 min each after 6 dips	Inspection Report	-	-	P	

Notes:

- For first time supply of any new item by the vendor, vendor should take sample approval before bulk manufacturing from Quality/Engg.
- The SQAP shall be read in conjunction with BHEL Specification mentioned in Purchase Order and shall deem to include any additional tests as per the specification/Standard.
- Material supplied shall be in line with BHEL Purchase Order, Technical Specification, Approved Drawings, applicable Standard References, or any other document/references.

LEGEND: *D: RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY VENDOR IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-VENDOR, B: BHEL/BHEL NOMINATED INSPECTION AGENCY P: PERFORM W: WITNESS AND V: VERIFICATION.	FOR BHEL USE		
			
	PREPARED BY: B D RANGAPPA	APPROVED BY: ADITYA KUMAR MOURYA	QUALITY ASSURANCE



BHARAT HEAVY ELECTRICALS LIMITED
SOLAR BUSINESS DIVISION
PROF.C.N.R RAO CIRCLE, IISc POST
MALLESHWARAM, BENGALURU-560012

STANDARD QUALITY ASSURANCE PLAN

ITEM: SGI CASTINGS FOR PORCELAINS
INSULATOR (FLANGES, TOP CAP, BOTTOM CAP
ETC.)

QP NO.: EPD_QP_IP_2020-21_0006

REV. NO.: 00

DATE: 22.01.2021

PAGE 1 OF 3

SL. NO	ITEM/ COMPONENT	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY		REMARKS
										M	B	
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	**	10.	11.
A	INSPECTION BY SUPPLIER AT THEIR WORKS											
A.1	SGI Castings (Flanges, Top Cap, Bottom Cap etc.)	Visual	Major	Physical	100%	BHEL Drg./BHEL Spec	BHEL Drg./BHEL Spec	Inspection Report	✓	P	V	
A.2		Gauge Inspection (as applicable)	Major	Physical	100%			Inspection Report	✓	P	V	
A.3		Dimensions & Markings	Major	Physical	10 per 1000 & part thereof			Inspection Report	✓	P	V	
A.4		Soundness	Major	Physical	100%	Casting Supplier Standard	Clear ringing sound on striking with light hammer	Inspection Report	✓	P	V	
A.5		Magnetic Particle Inspection (MPI)	Major	NDT	100%	IS 3703	No Crack	Inspection Report	✓	P	V	
A.6		Tensile Strength	Major	Mechanical	1/heat	IS 1865:1991/BHEL Drg.	As per Grade in drawing	Inspection Report	✓	P	V	
A.7		% Elongation	Major	Mechanical	1/heat			Inspection Report	✓	P	V	
A.8		Hardness	Major	Mechanical	1/heat			Inspection Report	✓	P	V	
A.9		Microstructure	Major	Metallurgical	1/heat			Inspection Report	✓	P	V	
A.10		Chemical Composition	Major	Chemical	1/heat			Casting Supplier Standard	Inspection Report	✓	P	V
A.11		Mass/ Thickness of Zinc coating	Major	Physical	Min 3 per 1000 & part thereof	BHEL Spec./ BHEL Drg.	BHEL Drg./ BHEL Spec	Inspection Report	✓	P	V	
A.12		Uniformity of Zinc coating for castings weight less than 4 Kg	Major	Chemical	Min 3 per 1000 & part thereof	IS 2633/ BHEL Spec	No permanent deposit of copper for 1 min each after 6 dips	Inspection Report	✓	P	V	
A.13		Purity of Zinc Ingot used for Galvanizing	Major	Chemical	One sample per Ingot Lot	IS 209:1992	% Zinc ≥ 99.5	Manufacturer Test Certificate & Third party Lab Test report	✓	V	V	Vendor to give COC for Manufacturer TC for usage in BHEL PO

LEGEND: *D: RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY VENDOR IN QA DOCUMENTATION.

** M: MANUFACTURER/SUB-VENDOR, B: BHEL/BHEL NOMINATED INSPECTION AGENCY
P: PERFORM W: WITNESS AND V: VERIFICATION.

FOR BHEL USE


PREPARED BY: B D RANGAPPA

APPROVED BY:

ADITYA

QUALITY ASSURANCE

BHEL-EPD Bengaluru-560012

 BHBL-SBD		BHARAT HEAVY ELECTRICALS LIMITED SOLAR BUSINESS DIVISION PROF.C.N.R RAO CIRCLE, IISc POST MALLESHWARAM, BENGALURU-560012		STANDARD QUALITY ASSURANCE PLAN			QP NO.: EPD_QP_IP_2020-21_0006 REV. NO.: 00 DATE: 22.01.2021 PAGE 3 OF 3					
				ITEM: SGI CASTINGS FOR PORCELAINS INSULATOR (FLANGES, TOP CAP, BOTTOM CAP ETC.)								
SL. NO	ITEM/ COMPONENT	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY		REMARKS
										M	B	
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	**	10.	11.

4. In case of any contradiction between this SQAP, BHEL Specifications the following precedence shall be followed:
 1st: BHEL Purchase Order Specification;
 2nd: This STANDARD QUALITY ASSURANCE PLAN & Applicable standard;
 3rd: Manufacturers plant standards
5. Packing shall be as per BHEL purchase order.
6. BHEL reserves the right for pre-dispatch inspection at vendor works by BHEL or BHEL nominated agency.
7. In case of pre-dispatch inspection, Supplier shall raise the inspection call in the CQIR with inspection agency as BHEL SBD URL: www.cqir.bhel.in and shall upload Test Certificates, Internal Tests Report as per this SQAP in CQIR Portal. TC to be verified w.r.t to inspected item during inspection and to be signed by the inspector.
8. Original Test Certificates, Internal Tests Report (Duly Sealed & signed), test bar per heat per lot as per this SQAP shall be sent along with lot for review.
9. Magnetic Particle Inspection will be done randomly for supplies received. If any discrepancy is found, corresponding lot will be rejected.

LEGEND: *D: RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY VENDOR IN QA DOCUMENTATION. ** M: MANUFACTURER/SUB-VENDOR, B: BHEL/BHEL NOMINATED INSPECTION AGENCY P: PERFORM W: WITNESS AND V: VERIFICATION.	FOR BHEL USE	
	PREPARED BY: B D RANGAPPA	APPROVED BY: ADITYA KUMAR MOURYA Sr Engineer, Quality Assurance

BHEL-EPD, Bengaluru-560012