



PRODUCT STANDARD

SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 1 OF 3

ANNEXURE-A

ANNEXURE-A TO PURCHASE INDENT NO. 240922105

REV.NO. 00

BHEL | Technical Spec. of: PTs

Bhopal |

SWE | PI no. : 240922105

| Enq. No:

| PO No:

W.O. Nos. : 92005-A-476-02 PSTCL

FOR DETAILED TECHNICAL SPECIFICATION, REFER PRODUCT STANDARD SG12913 REV.04

TABLE: 1

CLAUSE NO.	DESCRIPTION	BHEL'S REQUIREMENT		BIDDERS CONFIRMATION /COMMENTS
1.0	TECHNICAL PARAMETERS			
1.1	System Voltage (3Phase, 50 Hz) kV	11		
1.2	Insulation level			
1.2.1	System highest voltage kV	12		
1.2.2	Power freq. withstand voltage (primary) kV	28/		
	Power freq. withstand voltage (secondary) kV	2.5		
1.2.3	Lightening Impulse withstand voltage kVp	75		
1.3	Insulation class kV/kVrms/kVp	12/28/75		
1.4	Continuous Over voltage factor	1.2 cont & 1.9 for 8 Hrs.		
1.5	Mounting	Inside swgr panel		
1.6	Insulation class of PTs	B or better		
1.7	Primary Neutral to be brought out for Earthing.	Yes		
1.8	Connection	Star-Star		

TABLE: 2

11kV, 3 Phase, 50 Hz.

IT. NO.	PT RATIO	1PH.1POLE/ 1PH.2POLE/3P(WIT H HT FUSE)	ACCURACY/BURDEN		Vendor's drg.ref.	REMARKS/ DEVIATION
			WDG.I	WDG.II		
001	11000/110 V	3P (WITH HT & LT FUSE)	30VA per phase, Class - 0.2	Not applicable		
Bidders confirmation/ Comments						

Bidder scope of supply: IT-001 consists of following:

1. Epoxy resin cast, Indoor, 3 phase 3 limb withdrawable PT with PT HV & LV Fuse; Generally as per our Drg No. **35219001047**
2. PT fixed Portion primary mounting terminals spout for connecting to Panel HT Bus.
3. Base plate with Tracks for smooth movement of PT, Spout with mounting plate, Suitable Shutter arrangement, Flexible connection, Locking arrangement. DRG.NO:- **15219001003**-Var.00-REV.
4. Safety shutter along with lifting arrangement.
Note - Refer Drg No. **35219001007**, Rev-00 for sample base plate drawing prepared for two existing vendors as a reference only.

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PRODUCT STANDARD

SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 2 OF 3

TABLE : 3

3.0	CLIMATIC CONDITIONS	VENDOR CONFIRMATION/ COMMENTS
3.1	Ambient Air Temp. - -5°C (min) & 50°C (max.)	
3.2	Relative humidity - 10%(min) & 95%(max)	
3.3	Height above MSL - ≤ 1000 meters (consider suitable Altitude correction factor in Impulse withstand for height more than 1000 mtrs)	
3.4	Pollution Severity - Heavily polluted (with coal dust & Fly ash) & Highly corrosive environment.	
3.5	Seismic Coefficient - 0.3g	
3.6	Design Ambient Temp.- 50°C	

TABLE : 4

4.0	PACKING AND SHIPPING	BHEL'S REQUIREMENT	VENDORS CONFIRMATION / COMMENTS
4.1	Identification marking on PTs	"PO NO. " "IT NO. " "PSPCL"	

5.0 SPECIAL REQUIREMENT (if any) -

SL. NO.	REQUIREMENT	BIDDERS CONFIRMATION/ COMMENTS
5.1	ALL TYPE TEST (IMPULSE VOLTAGE WITHSTAND TEST AND TEMPERATURE RISE TEST) REPORTS SHALL NOT BE MORE THAN 5 YRS OLD. REPEAT TYPE TEST DUE TO THIS SHALL NOT ATTRACT ANY SEPARATE CHARGE.	
5.2	Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary star point with earth bus in service position shall be confirmed.	
5.3	Connection of Primary neutral with main earth bus to be made with solid copper wire & minimum 10 mm diameter or equivalent copper flat.	
5.4	Contact tips of primary/secondary contacts shall be silver plated.	
5.5	Correct polarity shall be distinctly marked on primary and secondary terminal.	
5.6	Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads.	
a	The stud, nuts and washers shall be of brass, duly nickel plated.	
b	The minimum outside diameter of the studs shall be 6 mm. the length of at least 15 mm shall be available on the studs for inserting the leads.	
c	The space clearance between nuts on adjacent studs when fitted shall be at least 10 mm.	
5.7	Primary fuse replacement shall be possible with VT in withdrawn position	

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PRODUCT STANDARD

SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 3 OF 3

SL. NO.	REQUIREMENT	BIDDERS CONFIRMATION/ COMMENTS
5.8	It can be plugged into and withdraw from service by pulling or pushing the PT by the handle provided on the PT. This action traverses the PT along the rails and shall automatically operate the spout shutters.	
5.9	The shutter drive also forms a latch which holds the PT in the service position and this latch shall be required to be released before PT can be isolated.	
5.10	Sealing arrangement of the PT with the carriage and secondary fuses are to be provided.	
5.11	Each PT shall be provided with Vector diagram plate as per relevant provision of IS showing primary and secondary terminals.	

6.0 IMPORTANT NOTES

15.1	DEVIATION SHALL BE INDICATED ONLY IN ANNEXURE-D (SCHEDULE OF DEVIATIONS) . NO DEVIATION SHALL BE ACCEPTED IF WRITTEN ELSE WHERE. IF NO DEVIATION IS MENTIONED IN ANNEXURE-D THEN IT WILL BE CONSIDERED AS TOTAL COMPLIANCE TO OUR SPECIFICATION	
15.2	VENDORS TO ENCLOSE COPY OF SG12913 REV.04 DULY FILLED IN THE SPECIFIED FORMAT WITH EVERY ENQUIRY, FAILING WHICH THE OFFER MAY NOT BE CONSIDERED.	
15.3	ALL DRAWINGS / DOCUMENTS AS PER ANNEXURE-I CL.11.0 ENCLOSED.	

7.0 Name Plate of PT indelibly marked -

SL. NO.	REQUIREMENT	BIDDERS CONFIRMATION/ COMMENTS
15.1	<p>Name plate for the voltage transformer shall be provided with all the required details as per IEC 60044-2, IS 3156 Standards, including :-</p> <ol style="list-style-type: none"> 1. Manufacturer's name 2. Serial number and a type designation 3. Rated primary and secondary voltage 4. Rated frequency 5. Rated output and accuracy class 6. Highest voltage of the equipment 7. Rated Insulation level 8. Class of Insulation for the equipment 9. Rated voltage factor and corresponding rated time. 10. Property Label - "Property of PSTCL" 11. Order No., Date, Month & Year of supply 	

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PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 1 OF 10

Annexure-I

General Technical Specification & Format for Offers
3.3kV to 33kV Indoor Resin Cast Potential Transformers

GENERAL :

Resin cast PTs are used in indoor metal clad switchgears for metering and protection purposes. This product standard is intended to cover the general technical requirement common to all indoor resin cast current transformers.

GENERAL REQUIREMENT & GUIDELINES TO VENDORS:

SL. NO.	BHEL'S REQUIREMENT	BIDDERS CONFIRMATION/ COMMENTS
1	OFFERS SUBMITTED IN THIS SPECIFIED FORMAT (ANNEXURE-I) ONLY SHALL BE EVALUATED. OFFERS IN ANY OTHER FORMAT MAY NOT BE CONSIDERED FOR EVALUATION. SOFT COPY OF THE FORMAT SHALL BE MADE AVAILABLE TO SUPPLIERS ON DEMAND.	
2	Offers shall be opened in single bid only. Incomplete offers in any respect will be rejected without any correspondence/ clarification with/from the vendor.	
3	The specification 'Annexure-A' given alongwith the enquiry document will be overriding in case of difference.	
4	Mounting plate shall be rigidly fixed with PT using suitable inserts and shall be zinc plated.	
5	Clear space for fixing the mounting plate in switchgear with pneumatic tool shall be provided.	
6	10% each of extra primary fuse covers, fuse clamps & secondary terminal covers shall be provided with each order.	
7	1 complete set of loose rating plates shall be provided for all PTs.	

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CLAU E NO.	DESCRIPTION	BIDDERS CONFIRMATION/ COMMENTS
1.0	TECHNICAL PARAMETERS - AS PER ANNEXURE-A.	
2.0	PT RATIO, ACCURACY AND BURDEN - AS PER ANNEXURE-A.	
3.0	APPLICABLE STANDARDS :	
	IEC 185 - 1/IS 3156 - for PTs. IEC 44 - for Partial Discharge Test	
4.0	CLIMATIC CONDITIONS - AS PER ANNEXURE-A.	
5.0	DIMENSIONS	
	For PT dimensions, suppliers to follow the following BHEL drgs for various ratings & type of PTs -	
5.1	For SINGLE PHASE SINGLE POLE (upto 11kV) drg. no. 35210051218 Rev.07 (It-1 for VM12-820, It-2 for VM12-700)	Not Applicable
5.2	For SINGLE PHASE DOUBLE POLE (upto 11kV) drg. no. 35210051219 Rev.06.	Not Applicable
5.3	For THREE PHASE PT (upto 11kV) drg. no. 35210050951 Rev.03. (It-1 for VM12 Truck, It-2 for VN12 Kiosk)	Refer Ann-A for typical drawings
5.4	For SINGLE PHASE SINGLE POLE (20kV & 33kV) drg. no. 45226001512 Rev.02 (Item-003).	Not Applicable
6.0	DESIGN AND CONSTRUCTION	
6.1	The potential transformer cores shall be made of suitable grade non-ageing cold rolled grain oriented silicon steel of low hysteresis loss and permeability to ensure accuracy at both normal and over voltages of 120 percent of the rated voltage. There shall be no saturation under service conditions.	
6.2	The potential transformer shall be designed to withstand the indicated climatic conditions without temperature rise exceeding beyond permissible limits and PT shall be designed to withstand the thermal and mechanical stresses due to rated short circuit condition. Ambient temp. of 50°C shall be considered for design purpose.	
6.3	The primary conductor / secondary winding layer should be insulated with polyester film tape. Transparent cover shall be provided over secondary terminal.	



PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 3 OF 10

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6.4	The PTs shall be completely encapsulated and terminal marking shall be properly & legibly provided without any requirement to interfere with wiring connections.	
6.5	The resin to be used in construction shall be high grade, mixed under high vacuum and poured also in vacuum to prevent any void remaining in the casting.	
6.6	The PTs should be cured properly so that the final product is non hygroscopic.	
6.7	VI characteristic for each winding shall be in straight line upto 120% of rated voltage.	
6.8	Upto 11kV class, PTs shall be complete with GEC Alstom make HT fuses type VTF11-3A or equivalent, rated 3A and of 50KA rupturing capacity. In case any other make fuses are provided, the type test certificates and performance certificate shall be furnished on demand.	
6.9	For voltage class above 11kV and upto 33kV, PTs shall be supplied without fuses and loose HT fuses (qty. as per cl.6.11 below) of Anand Fuses type - AVT (Eswari Electrical Make or equivalent) shall be supplied against separate item of respective enquiry. Length = 500mm, Dia. = 23mm	Not applicable
6.10	2 nos. fuse mounting brackets & 1 no. L-clamp shall be supplied loose alongwith each PT of voltage class above 11kV and upto 33kV.	Not applicable
6.11	For voltage class above 11kV and upto 33kV, the quantities of fuses (to be supplied loose) shall be as below:- Single Pole PT - 1 No. with each PT. Double Pole PT - 2 Nos. with each PT. Three phase PT - 3 Nos. with each PT.	Not applicable
7.0	Q.A. PLAN	
	As per BHEL's standard Q.A. plan ref. QAQC/SCR/15/053 enclosed. Suppliers to specifically confirm adherence to this Q.A. plan in their offers.	
8.0	INSPECTION	
	PTs shall be tested & inspected at supplier's works by BHEL/BHEL's customer/BHEL's authorized representative in line with above Q.A. plan. Supplier shall give 2 weeks advance intimation.	
9.0	TESTS	
9.1	TYPE TESTS	
9.1.1	Preferably TYPE TESTED design of PTs shall be offered. Type test reports for Impulse and temperature rise shall be furnished for all varieties of PTs.	

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9.1.2	In case, type test report is not directly applicable to the offered PT(s) the applicability justification of Impulse test certificate & temperature rise for each variety of PTs shall be submitted in format as per Annexure-A, Table-5 .	
9.1.3	Wherever the type tests have not been carried out, the offer should indicate clearly such cases and the party should specifically mention in the offer itself to 'conduct and clear' the type tests required at a govt. approved independent test laboratory without any extra charges or delivery repercussions.	
9.1.4	It may be required to repeat the TYPE TESTS, if so desired by our customer. In such a case, separate charges shall be quoted for TYPE TEST.	
9.2	ROUTINE TESTS	
	As per enclosed QA plan.	
9.3	SPECIAL TESTS	
	Temperature rise test, shall be conducted free of cost on each type of PT against each order and report to be furnished to BHEL.	
10.0	PACKING AND SHIPPING	
10.1	Identification marking on PTs shall be as per Annexure-A	
10.2	The equipment is to be transported adequately sealed against water ingress. They shall be packed and security clamped against movement in robust, non returnable packing cases to ensure safe transit in rough terrain, cross country road conditions and in heavy rains from the manufacturer's works to the specified destinations.	
10.3	It shall be the responsibility of the supplier to make good the damage caused due to insufficient packing.	
10.4	Each packing case shall be indelibly marked with the following :- Individual serial number. Purchaser's name. P.O. number/date. Destination. Manufacturer's name. Customer/Project name	
10.5	Each crate or container shall be marked clearly on the outside of the case to show TOP and BOTTOM positions.	



PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 5 OF 10

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11.0	DOCUMENTS	
11.1	Documents to be furnished along with the offer -	
11.1.1	1 copy of offer in the format as per Annexure-I.	
11.1.2	1 copy of technical parameters of offered PTs as per Annexure-A, Table-1, 2, 3 & 4.	
11.1.3	3 copies of dimensional drawings for approval.	
11.1.4	VI characteristic for each winding(s).	
11.1.5	1 copy of impulse test certificates.	
11.1.6	1 copy of temperature rise test report.	
11.1.7	Applicability of type test certificates as per Annexure-A, Table-5.	
11.1.8	Signed copy of BHEL's standard Q.A. plan ref. QAQC/SCR/15/053, rev-00.	
11.1.9	Schedule of deviations, if any, as per Annexure-D duly filled.	
11.2	Documents to be furnished at the time of delivery	
11.2.1	2 copies of routine test certificates alongwith the consignment and 1 copy along with the dispatch document.	
12.0	PERFORMANCE GUARANTEE	
	- The supplier shall guarantee the satisfactory performance of the PTs for a period of 24 months from the date of receipt at BHEL Bhopal or 18 months from the date of commissioning, whichever is earlier.	
	- For suppliers, supplying these type of PTS to BHEL for the first time, guarantee for satisfactory performance shall be 5 ½ yrs from the date of receipt at BHEL Bhopal or 5 yrs from the date of commissioning, whichever is earlier.	
	- Alongwith offer, the supplier shall also submit the proof of supplying indoor PTs to BHEL for last 5 orders failing which performance guarantee will be changed to 5 years.	
13.0	ACCEPTANCE CRITERIA	
13.1	BHEL/BHEL's authorized representative's report for adhering to BHEL's standard QA Plan during manufacturing process.	
13.2	Visual checks for crack and surface finish.	
13.3	Rating plate as per specification parameters.	
13.4	Dimensions as per approved drawing.	
13.5	Availability of all routine test certificates.	
13.6	Availability of 10% extra fuse covers, 10% fuse clamps & 10% secondary terminal covers.	
13.7	1 complete set of loose rating plates for all PTs	
13.8	For voltage class above 11kV and upto 33kV, availability of fuse mtg brackets & L-clamp as per cl.6.11.	



PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 6 OF 10

TABLE-5

(FORMATS TO BE FILLED BY SUPPLIERS FOR EACH ITEM)

9.0	TYPE TESTS								
9.1	APPLICABILITY OF TYPE TESTS								
PART A FOR IMPULSE TEST CERTIFICATE JUSTIFICATION									
IT. NO.	IMPULS E TEST REPORT NO.	DATE OF TEST	DETAILS OF TESTED PT			DETAILS OF OFFERED PT			REMAR KS/ DEVI A TION
			IMPULSE TEST IN KV PEAK	CREEPA GE	DRG. NO.	IMPULSE TEST IN KV PEAK	CREEPA GE	DRG. NO.	
001									
002									

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PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 7 OF 10

TABLE-6

~~(FORMATS TO BE FILLED BY SUPPLIERS FOR EACH ITEM)~~

~~(TABLE-6 PART-A)~~

~~REFER SPEC.CLAUSE 5.1 FOR SINGLE PHASE SINGLE POLE PT (UPTO 11KV) DRG. NO. 35210051218 REV.07 (DEVIATIONS TO BE INDICATED AGAINST RESPECTIVE ITEM)~~

SL. NO.	REQUIREMENT	VENDOR TO CONFIRM DIMENSION					
		It. No.	It. No.				It. No.
1.	Mounting dimension of offered PT shall be 280±1 mm(along depth) X 160±1 mm(along width) for VM128 & 140±1 mm (along width) for VM127						
2.	Mounting plate dimension of offered PT shall be 355 mm max.(along depth) X 180 mm max.(along width) for VM128 & 160 mm max.(along width) for VM127						
3.	Overall height from bottom of mounting plate shall be 305 mm max.						
4.	Overall height of primary terminal from bottom of mounting plate shall be between 205 to 260 mm..						
5.	Width of PT shall be 180 mm max for VM128 & 160 mm max. for VM127						
6.	Mounting (plate) slot dimension shall be open slot dia.11 mm.						

~~(TABLE-6 PART-B)~~

~~REFER SPEC.CLAUSE 5.2 FOR FOR SINGLE PHASE DOUBLE POLE PT (UPTO 11KV) DRG. NO. 35210051219 REV.06. (DEVIATIONS TO BE INDICATED AGAINST RESPECTIVE ITEM)~~

SL. NO.	REQUIREMENT	VENDOR TO CONFIRM DIMENSION					
		It. No.	It. No.				It. No.
1.	Mounting dimension of offered PT shall be 280±1 mm (along depth) X 200±1 mm (along width)						
2.	Mounting plate dimension of offered PT shall be 355 mm max (along depth)X 250 mm max(along width)						
3.	Overall height from bottom of mounting plate shall be 305 mm max.						
4.	Overall height of primary terminal from bottom of mounting plate shall be between 210±5 mm.						
5.	Width of PT shall be 250 mm max						
6.	Mounting (plate) slot dimension shall be open slot dia.11 mm.						

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PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 8 OF 10

~~(TABLE-6 PART-C)~~

~~REFER SPEC.CLAUSE 5.3 FOR FOR THREE PHASE PT (UPTO 11KV) DRG. NO. 35210050951 REV.03. (IT-1 FOR VM12 TRUCK, IT-2 FOR VN12 KIOSK) (DEVIATIONS TO BE INDICATED AGAINST RESPECTIVE ITEM)~~

SL. NO.	REQUIREMENT	VENDOR TO CONFIRM DIMENSION					
		It. No.	It. No.				It. No.
1.	Mounting dimension of offered PT shall be (Exact multiple of 40)±1(along depth) X 280±2(along width) mm. Supplier to indicate exact dimension						
2.	Mounting plate dimension of offered PT shall be 580 mm max(along depth) X 355 mm max (along width).						
3.	Overall height from bottom of mounting plate shall be 305mm max.						
4.	Depth of PTs shall be 580mm max.						
5.	Mounting (plate) slot dimension shall be 11Wx25L mm.						

~~(TABLE-6 PART-D)~~

~~REFER SPEC.CLAUSE 5.4 FOR SINGLE PHASE SINGLE POLE PT (20KV & 33KV) DRG. NO. 45226001512 REV.02 ITEM-3. (DEVIATIONS TO BE INDICATED AGAINST RESPECTIVE ITEM)~~

SL. NO.	REQUIREMENT	VENDOR TO CONFIRM DIMENSION					
		It. No.	It. No.				It. No.
1.	Mounting dimension of offered PT shall be 270±1 mm (along depth)X 220±1 mm (along width).						
2.	Mounting plate dimension of offered PT shall be 300 mm max (along depth) X 250 mm max(along width).						
3.	Overall height from bottom of mounting plate shall be 408±2 mm max.						
4.	Width of PT shall be 250 mm max.						
5.	Depth of PTs shall be 300 mm max.						
6.	Mounting (plate) slot dimension shall be open slots dia.10 mm.						

ANNEXURE -D (SCHEDULE OF DEVIATIONS)

	Potential Transformers	Deviation in		
Item no.	PT Details	Technical Parameters	Dimensional Drawing	Type Test
1.				
2.				

NOTE: IF NO DEVIATION IS MENTIONED IN THIS ANNEXURE THEN IT WILL BE CONSIDERED AS TOTAL COMPLIANCE TO OUR SPECIFICATION

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PRODUCT STANDARD
SWITCHGEAR ENGINEERING DIVISION

SG12913 REV.04

PAGE 9 OF 10

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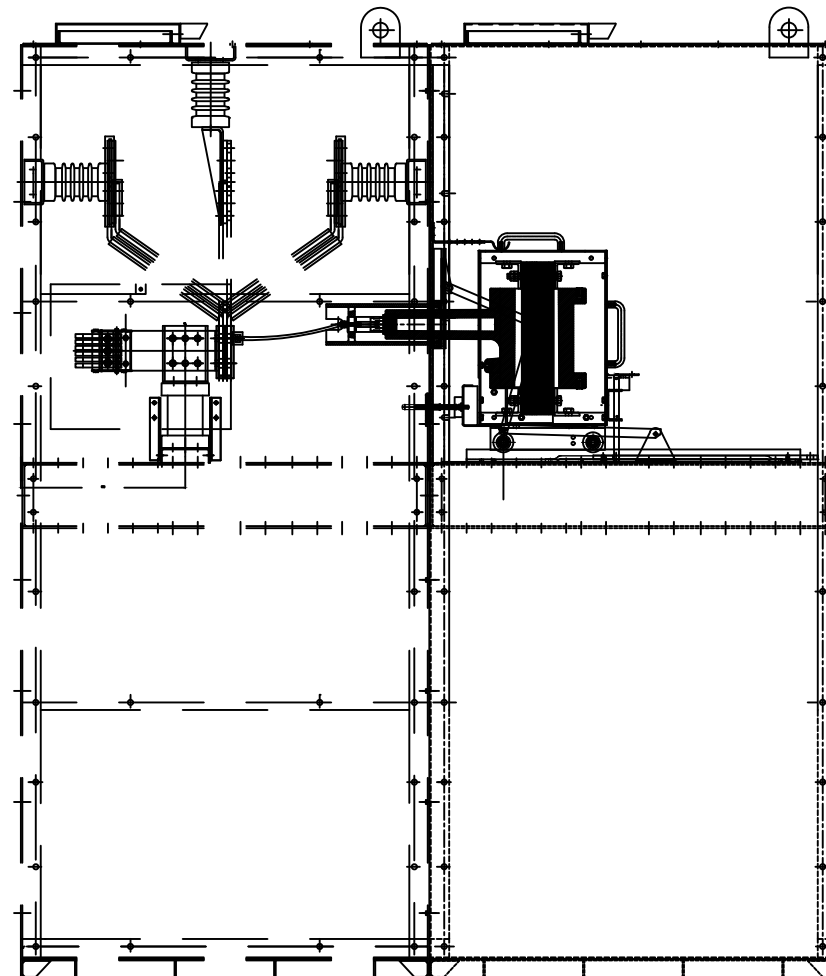
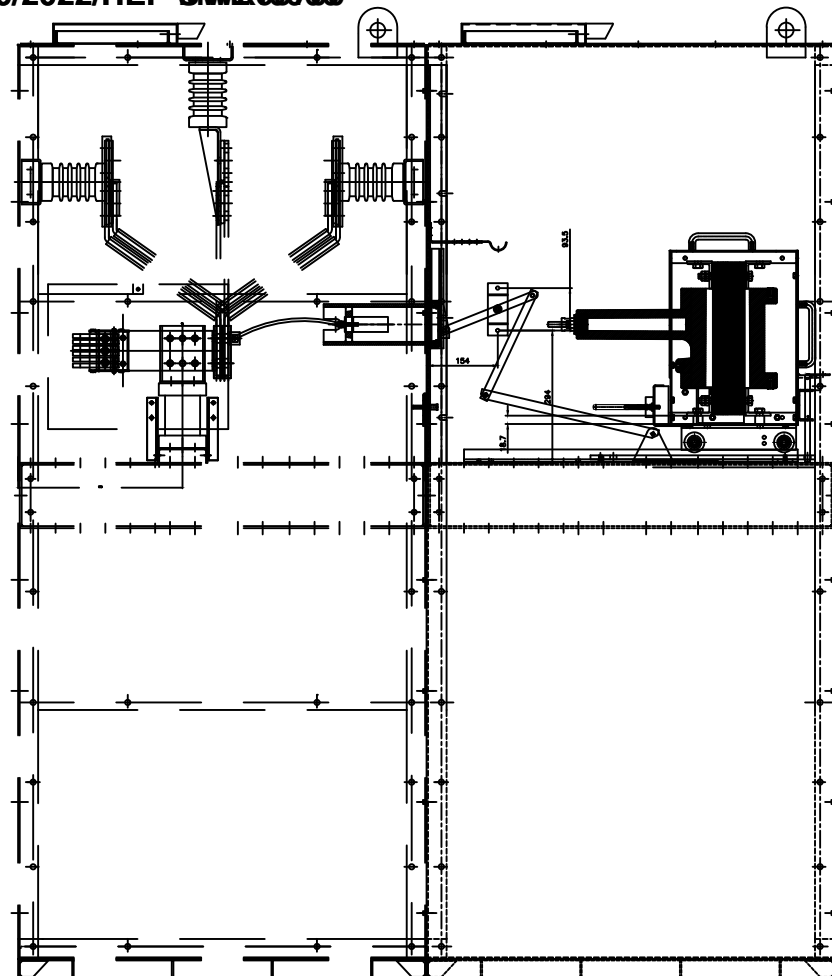
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<div></div> <div>QUALITY PLAN FOR INDOOR RESIN CAST POTENTIAL TRANSFORMERS (3.3 kV to 33 kV)</div>							<div>QP NO. : QAQC/SCR/15/053</div> <div>REV. : 00</div> <div>DATE: 10.02.04</div> <div>PAGE: 01 OF 02</div> <div>REVIEWED BY</div> <div>APPROVED BY</div>				
SL. NO.	COMPONENT & PROCESS	CHARACTERISTICS	CLASS	TYPE	QUANTUM	REFERENCE	FORMAT	AGENCY			REMARKS
				OF	OF	DOCUMENT	OF				
				CHECK	CHECK		RECORD	M	C	I	
1	2	3	4	5	6	7	8	9			11
A. RAW MATERIALS :											
1.00	LAMINATION	a) PHYSICAL	B	V	5%	SUPPLIER'S SPEC.+++	T.C	P	V	RR	
		b) ELECTRICAL	B	T	100%-M		T.C.	P	V	RR	
2.00	ENAMELLED COPPER	a) WIRE SIZE	C	M	10%	IS4800/IS 13730	T.R.	P	V	RR	
		b) ENAMEL COATING	B	T	10%		T.R.	P	V	RR	
		c) ELECTRICAL PROPERTY	A	T	10%		T.R.	P	V	RR	
3.00	H.T.FUSE	PHYSICAL	C	M	100%	SUPPLIER'S SPEC.+++	T.C./T.R.	P	V	RR	
4.00	RESIN & HARDENER	CHEMICAL	B	T	100%	SUPPLIER'S SPEC.+++	T.C.	P	V	RR	
5.00	POLYESTER FILM	a) DIMENSION	C	M	100%-M,10%-C	SUPPLIER'S SPEC.+++	T.C.	P	V	RR	
		b) ELECTRICAL PROPERTY	B	T	100%-M,10%-C		T.C.	P	V	RR	
B: MANUFACTURING PROCESS:											
1.00	MOULDING PROCESS	a) LEVEL OF VACUUM DURING POURING	A	M	FOR EACH BATCH	SUPPLIER'S SPEC.+++	P.R.	P	V	RR	
		b) CURING TEMPERATURE AND	A	M			P.R.	P	V	RR	
2.00	EPOXY CASTING	SHAPE & SURFACE FINI	B	V	100%	SHAPE: AS PER APPROVED DRG./FINISH: DEFECT FREE	O.S	V	RR		
LEGEND : A:CRITICAL,B:MAJOR,C:MINOR;M:MEASUREMENT,V:VISUAL,T:TEST,RR:RECORD REVIEW,P.R: PROCESS RECORD,T.C:TEST CERTIFICATE,T.R.:TEST REPORT,O.S:OBSERVATION SHEET; QA DOCUMENTATION ; M:MANUFACTURER/SUB CONTRACTOR, C: SUPPLIER,I:BHEL/INSPECTION AGENCY (P:PERFORM,W: WITNESS & V: VERIFICATION AS APPROPRIATE,CHP :CUSTOMER'S HOLD POINT;+++ SUPPLIER'S SPECIFICATION TO BE APPROVED BY BHEL, ***SP (SAMPLING PLAN) AS PER IS:2500,PART I,AQL : 0.65, GENERAL INSPECTION LEVEL -II,SINGLE SAMPLING PLAN (REDUCED INSPECTION;TABLE-2C)											

		<div><div><div>बीएचईएल</div><div></div></div></div>	<div>PRODUCT STANDARD</div> <div>SWITCHGEAR ENGINEERING DIVISION</div>					<div>SG12913 REV.04</div> <div>PAGE 10 OF 10</div>						
<div>COPYRIGHT AND CONFIDENTIAL</div> <div>The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in any way detrimental to interest of Co.</div>		<div><div><div>बीएचईएल</div><div></div></div></div>	<div>QUALITY PLAN</div> <div>FOR</div> <div>INDOOR RESIN CAST POTENTIAL TRANSFORMERS</div> <div>(3.3 kV to 33 kV)</div>					<div>QP NO. : QAQC/SCR/15/053</div> <div>REV. : 00</div> <div>REVIEWED BY</div> <div>APPROVED BY</div> <div>DATE: 09.08.04</div> <div>PAGE: 02 OF 02</div>						
			SL. NO.	COMPONENT & PROCESS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	FORMAT OF RECORD	AGENCY			REMARKS
			1	2	3	4	5	6	7	8	9	10	11	
			<div>C. ROUTINE TESTS:</div>											
			1.00	FINISHED PT	a) OGA DIMENSION	B	M	AS PER SAMPLING PLAN (SP)***	BHEL'S APPROVED DRAWING	O.S.	P	V		
					b) SIZE OF BASE PLATE	B	T			O.S.	P	V		
			2.00	ELECTRICAL TESTING	a) TERMINAL MARKINGS & POLARITY	A	T	100%-C, SP-I	S-3156/ IEC-18	T.R.	P	W	CHP	
					b) DETERMINATION OF ERROR	A	T	100%-C, SP-I		T.R.	P	W	CHP	
					c) HV TEST	A	T	100%-C, SP-I		T.R.	P	W	CHP	
					d) INDUCED VOLTAGE TEST ON PRIMARY WDG.	A	T	100%-C, SP-I		T.R.	P	W	CHP	
		e) PARTIAL DISCHARGE TEST	A	T	100%-C, SP-I	T.R.	P	W		CHP				
3.00	ADDITIONAL TESTS	AS PER BHEL'S P.O.	A	T	100%-C, SP-I		T.R.	P	W	CHP				
<div>D. TYPE TESTS(AS PER BHEL'S P.O.):</div>														
		a) IMPULSE	A	T		S3156 / IEC-18	T.R.	P	W	CHP				
		b) TEMPERATURE RISE	A	T			T.R.	P	W	CHP				
<div>LEGEND : A:CRITICAL,B:MAJOR,C:MINOR;M:MEASUREMENT,V:VISUAL,T:TEST,RR:RECORD REVIEW,P,R: PROCESS RECORD,T,C:TEST CERTIFICATE,T.R.:TEST REPORT,O.S:OBSERVATION SHEET; QA DOCUMENTATION ; M:MANUFACTURER/SUB CONTRACTOR, C: SUPPLIER,I:BHEL/INSPECTION AGENCY (P:PERFORM,W: WITNESS & V: VERIFICATION AS APPROPRIATE,CHP :CUSTOMER'S HOLD POINT;*** SUPPLIER'S SPECIFICATION TO BE APPROVED BY BHEL, ***SP (SAMPLING PLAN) AS PER IS:2500,PART I,AQL : 0.65, GENERAL INSPECTION LEVEL -II,SINGLE SAMPLING PLAN (REDUCED INSPECTION; TABLE-2C)</div>														

S0010061291 ON '0ND

1062539/2022/HEP-SW/435700

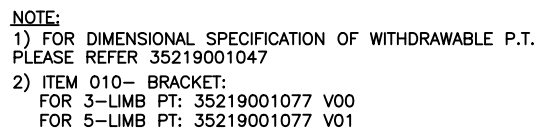


NOTE:

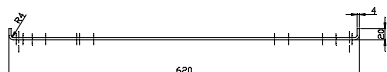
- 1) TRAVEL DISTANCE OF PT IS APPROXIMATELY 430MM.
- 2) PT DIMENSIONS MAY BE DIFFERENT BUT TRAY FIXING TO BE MAINTAINED.
- 3) OTHER DIMENSIONS MAY VARY. HOWEVER PROPER CONTACT OF SPOUT AND PT TERMINALS TO BE ENSURED.
- 4) FOR DIMENSIONAL SPECIFICATION OF WITHDRAWABLE PT, REFER 35219001047.

VAR. NO.	64	65	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REMARKS											DRAWING NO.																						
CARD TYPE-3										CARD TYPE-1										CARD TYPE-2													
ADDITIONAL INFORMATION STATUS OF DRAWING: B DISTRIBUTION OF PRINTS: O/C SWM TCK 1 3 1 REV. DATE ALTERED CHECKED MKH 01 07.03.13 CHECKED RG APPROVED MAK ITEM-025 TO 030 ADDED. (DCA NO31839)																																	
ITEM TITLE P.T. GA IN PANEL (DCA NO31743)																																	
REVISIONS REV. DATE ALTERED CHECKED MKH 01 07.03.13 CHECKED RG APPROVED MAK ITEM-025 TO 030 ADDED. (DCA NO31839)																																	
PROJECT INFORMATION NAME OF CUSTOMER/PROJECT: BHARAT HEAVY ELECTRICALS LTD. BHOPAL. NAME OF DESIGNER: S.D.M. NAME OF CHECKER: P.S. NAME OF APPROVER: HRP SCALE: 1:1 SHEET NO. 030 OF 030 DATE: 02.07.11 REV. TO REV. NO. 01																																	
PROJECT NO. 15219001003 DATE 02.07.11 REV. TO REV. NO. 01																																	

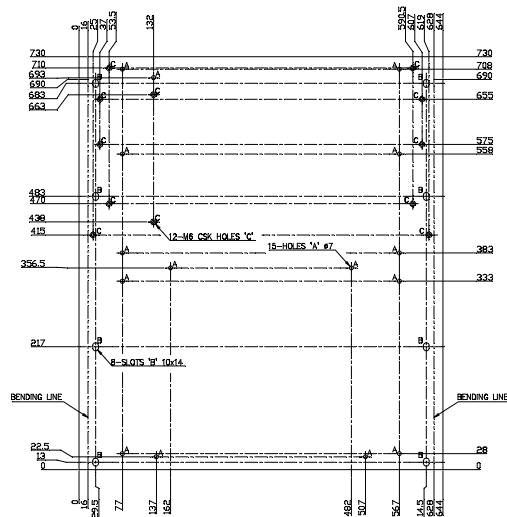
1060530/2022/HEP-SNWX43900

[illegible]

INVENTORY NO.



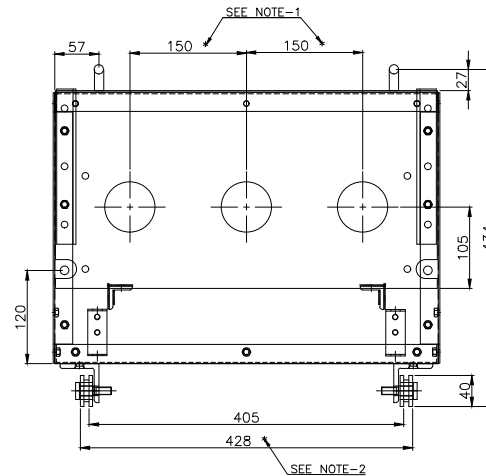
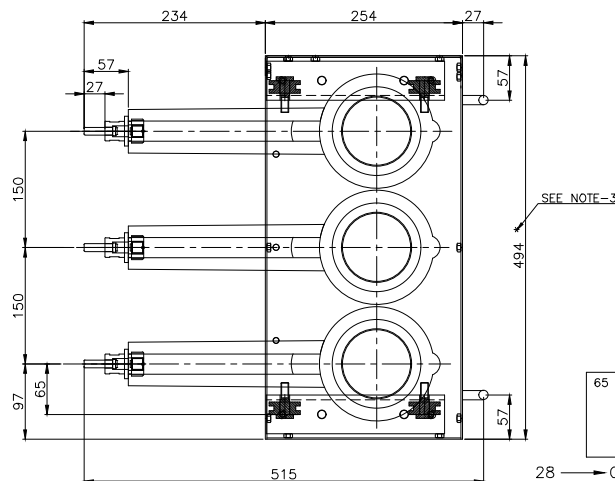
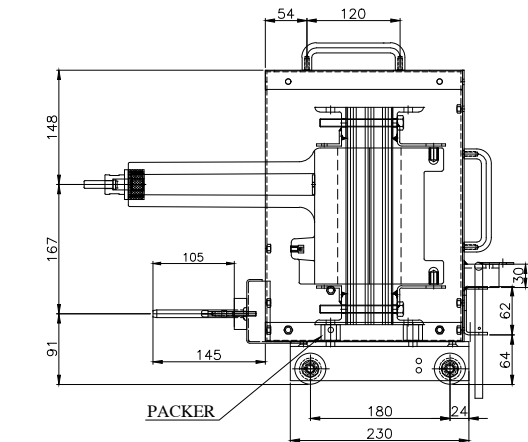
(002)



DEVELOPMENT OF ITEM-002

28 → CARD TYPE-3

A3



NOTE:-

- 1) PHASE-TO-PHASE CLEARANCE SHALL BE CLEARLY INDICATED. THE SAME CLEARANCES SHALL BE CALLED IN PT MOUNTING SHEET (DRG NO. 35219001003-001).
- 2) THE WHEEL BASE SHALL BE CLEARLY INDICATED. REFER BASE PLATE (DRG NO. 35219001007-001) FOR PERMISSIBLE WHEEL BASE. THE WHEEL RAILS MUST BE MOUNTED ON THE BASE PLATE.
- 3) THE MAXIMUM PERMISSIBLE WIDTH OF THE P.T. FRAME SHALL BE 600 mm.

NOTE:-

REFER WITHDRAWABLE P.T. ARRANGEMENT DRG. NO. 15219001003

65	75	78	79	25	27	29	58	59	60	77	29	31	34	45	55	56	58	65	72
REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION	STD	DRAWING NO.	IT.NO.	MATL. CODE	54	A C	UNIT	UNIT WT.	71	CS	ZONE					
						32 33 VAR.	46 MATL. SPCN.				68 QTY.								
→ CARD TYPE-3						28 → CARD TYPE-1						28 → CARD TYPE-2							

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

O.COPY-----1
SWM-----3
TCX-----1

उत्पाद का प्रकार या
ग्राहक/परियोजना का नाम
TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

VM-12 (700W)

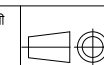


भारत हेवी इलेक्ट्रिकल्स लिमिटेड
भोपाल
BHARAT HEAVY ELECTRICALS LTD.
BHOPAL

क्रमांक DRN	नाम/ NAME	हस्ता/ SIGN	दिनांक/ DATE	वे. र. की संख्या NO. OF VAR
जै. चा CKD	MKN	Sd/-	07.03.13	-
अनुमोदित APPD	RG	Sd/-	07.03.13	
	MAK	Sd/-	07.03.13	

विभाग
DEPT SWE

उत्प. टल. माप की श्रेणी
UNTO.DIMS. GR.
M
AA0230208



अनुपात
SCALE
1:1

भार. वजन
WEIGHT (K.G.)
-

उत्प. ड्राईंग का संदर्भ
REF. TO ASSY. DRG.
-

मद. क.
ITEM NO.
-

मद. संख्या
NO. OF
ITEM
-

शीट/क/ TITLE

GENERAL ARRANGEMENT
OF WITHDRAWABLE P.T.

जारे ख. क/ DRAWING NO.

35219001047

पुन./ REV

00

पृष्ठ क/ SHT. No. 01

पृष्ठों की संख्या/ NO. OF SHT. 01

REF. DRG. NO.

SIGN. & DATE

INVENTORY NO.

PQR, Rev-00- (3-Phase Withdrawable PT)**Annexure-1****1. Past Performance**

The OEM should have supplied same or similar category product for atleast 10% of bid quantity, in any one of the three financial years before the bid opening due date to any of Central/State Gov./PSU/Public listed company.

Document required: Bidder to furnish unpriced P.O or Invoice copy or relevant documents in support of proof of quantity.

2. Experience Criteria

The bidder should be OEM. The OEM should have manufactured and supplied similar PT's to any Central / State Govt Organization / PSU / Public Listed Company for 2 Years before the bid opening date.

Document required: Bidder to furnish PO/ invoices/ MOM with customer/ Site or Customer email/ letter or any customer document for proof of supply

3. Organizational Capability:

The Bidder shall have after sales service support set-up for providing product repair/ rectification in India.

Bidder to furnish set-up details along with an undertaking in respect of above.

Arvind Kumar
Dy. Manager/SWE