



Government of India  
**Bhabha Atomic Research Centre**  
**Beam Technology Development Group**  
Accelerator and Pulse Power Division

Ref.: BARC/APPD/AR/2020/149

Date: 17-11-2020

**Sub:** Inviting quotations for the fabrication & supply of copper wedges, Aluminium wedges, SS 304L nuts, bolts and washers, high voltage feedthroughs, voltage divider and other parts as per specifications in annexure-1.

Dear Sir,

You are requested to quote for fabrication and installation of high voltage disc, perspex disc and other assembly as per specifications and details given in annexure I.

1) For details wiring, layout or any other clarifications the supplier can contact Smt. Rakhee Menon, SO/E, APPD on any working day (Monday to Friday) on telephone Nos. 255920174 or email: [aroy@barc.gov.in](mailto:aroy@barc.gov.in).

2) Since the goods to be supplied against this work order are meant for research purpose of a research institution under the department of Atomic Energy of Government of India, CGST and SGST at the rate of 2.5% each is payable as per notification number 47/2017 integrated Tax (Rate) dated 4.11.2017 issue by ministry of finance. The indenter shall make available the GST exemption certificate for it.

3) Payment for the above work will be made after satisfactory completion of job and on production of bill & advanced stamped receipt along with the copy of registration. No advance payment will be made for this work. Income-tax @2% & surcharge on Income-tax @15% will be deducted from the bill and a TDS (tax deducted at source) certificate will be issued as per Income-tax rules. Suppliers should submit their offers along with the following information.

(a) period of validity, terms & conditions of the offer, (b) Approximate period of completion of the task and (c) copy of the registration and income-tax clearance certificate.

Information:

Your sealed quotation (in **your letter head**) including all details, like taxes to be paid, transport charges etc., duly indicating our reference number mentioned above and due date may be sent by speed post to “ **Head, APPD, BARC, Hall 4, BARC, Trombay, Mumbai-400085**” on or before **26<sup>th</sup> November 2020**. The quotations received after the due date & by FAX/email will not be considered.

Your's faithfully,

(Dr. Amitava Roy)

Copy to: A.P.O., GSS Section, Central Complex, BARC.

## ANNEXURE-I

### FOLLOWING PARTS HAVE TO BE FABRICATED

S.no	Part description	Quantity	Drawing no.
1.	CNC machined OFHC Copper wedge	2	Part-1
2.	SS plate	2	Part -2
3.	HV feed through	3	Part-3
4.	CNC machined Aluminium wedges	4	Parts - 4,5,6,7
5.	Voltage divider	2	Part-15
6.	SS flange	1	Part- 35-19
8.	Graphite cathodes	4x4=16	Parts - 8,9,10,11
9.	SS plate 50 mm diameter, 15 mm thickness	1	Part - 16
10.	M5, M6, M8, M10, M12, M16 SS 304 nut, bolts and washer	24 each	As specified

All the parts should be fabricated as per drawings mentioned above and specifications given below. In case of doubt in understanding please ask for clarification.

#### 1. General:

- If any parts get damaged during the modification, those are to be fabricated as per bill of material attached along with drawings. No materials will be supplied by the indenter for fabrication.
- The fabricated parts should have super-finished surfaces as given in the drawings. The stainless steel plates/rods SS-304 L should be used in fabrication and then the surfaces are to be polished.
- The fabricators must submit their own fabrication drawings. The fabrication drawings should be got approved before starting the job.
- The indenter reserves the right to make modifications and alterations in the drawings as well as to inspection at every stage of fabrication, testing and assembly. The fabricators should carryout minor modifications without extra cost.

#### 2. Materials:

- All the stainless steel parts mentioned in the drawings are to be fabricated using the SS-304L stainless steel. The surfaces are to be polished by buffing after fabrication. The fabricated parts should have super-finished surfaces as given in the drawings.

- b) The perspex material should be of polycast fabricator.
- c) The sharp corners are to be rounded off before polishing.
- d) All Aluminium material has to be 6061 series.
- e) Part No: 1 has to be OFHC copper.

### **3. Fabrication:**

- a) The fabrication of components shall be in accordance with best quality shop practice and conform strictly to dimensions, tolerances and instruction given in the drawings & specifications. All the finished parts are true, flat, smooth, mirror polished, corners rounded off, free of weld spatter, etc. Exposed surface shall be protected from damage at all times.
- b) All the fabricated parts should have super-finished surfaces as given in the drawings to RMS 0.8 $\mu$ m by grinding, machining, lapping with abrasives and electro-polishing if necessary.
- c) A general tolerance of  $\pm 0.1\%$  on all fabricated parts and 0.05% on machined parts shall be provided unless otherwise specified. Similarly a general tolerance of  $\pm 0^{\circ}. 30'$  shall be provided on all angles. All gasket surfaces should be super-finished to RMS 0.8 $\mu$ m.
- d) Part No: 1,4,5,6 &7 have to be CNC machined.**

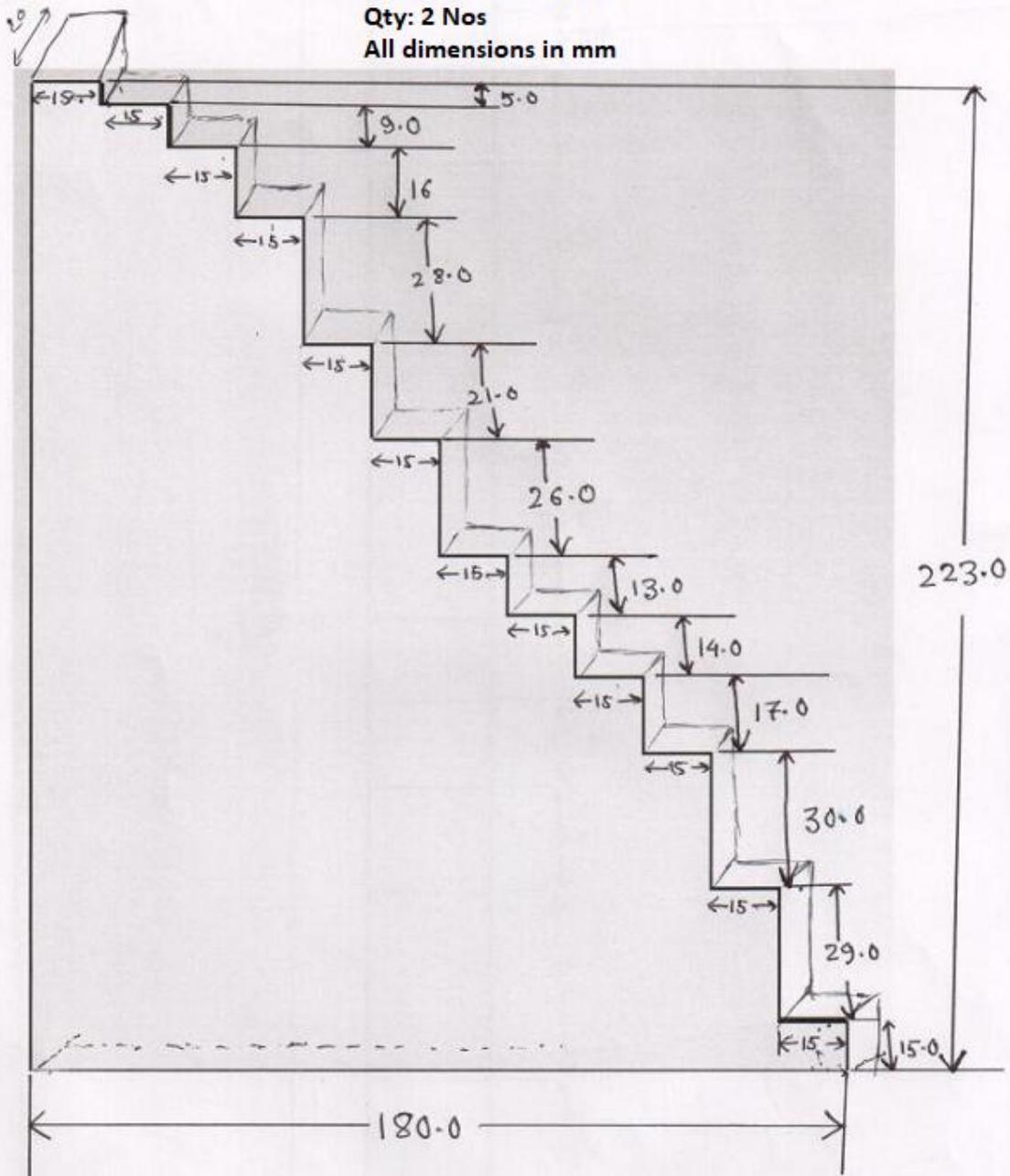
### **4. Welding:**

- a) All the welding shall be electric arc. The root pass of all welding shall be made using TIG welding with continuous inert gas like argon gas backing followed by shielded, metallic arc welding.
- b) The welding procedures shall be qualified and approved under section ix of ASME Boiler and Pressure Vessel code and shall also be submitted to and approved by Indenter before commencing fabrication.
- c) All the welds are to be inspected and shall be ground smooth. Completed welds shall be smooth and free from any drop-through spatter, cracks undercut or lack of penetration.

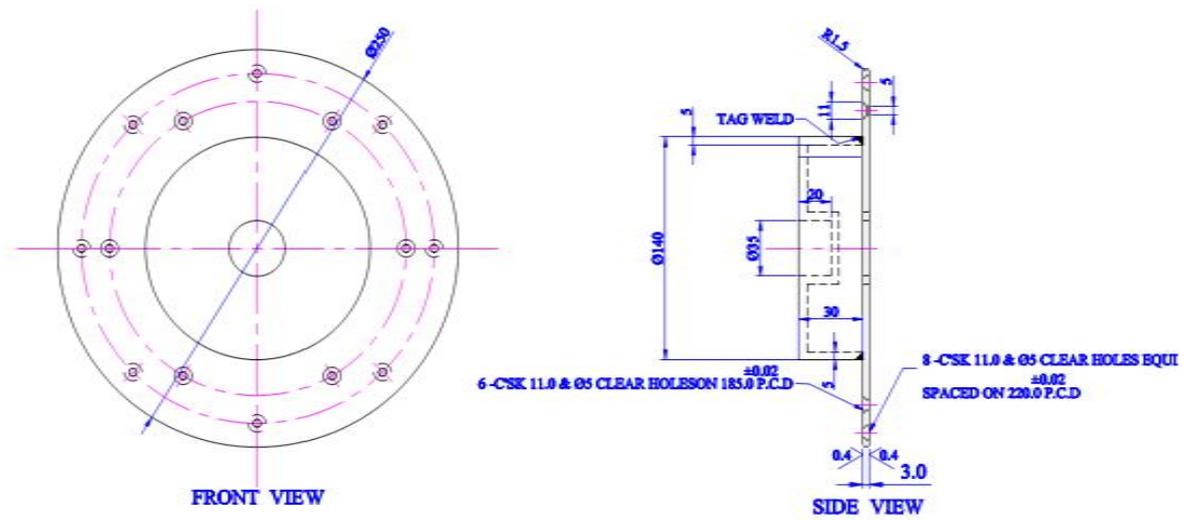
### **5. Cleaning:**

- a) All inside surfaces shall be degreased and then flushed with clean water. The degreasing agent shall not contain halogens. Final cleaning shall be performed with hot water wash using a commercial detergent followed by hot water rinse. Surfaces shall be completely cleaned and degreased.

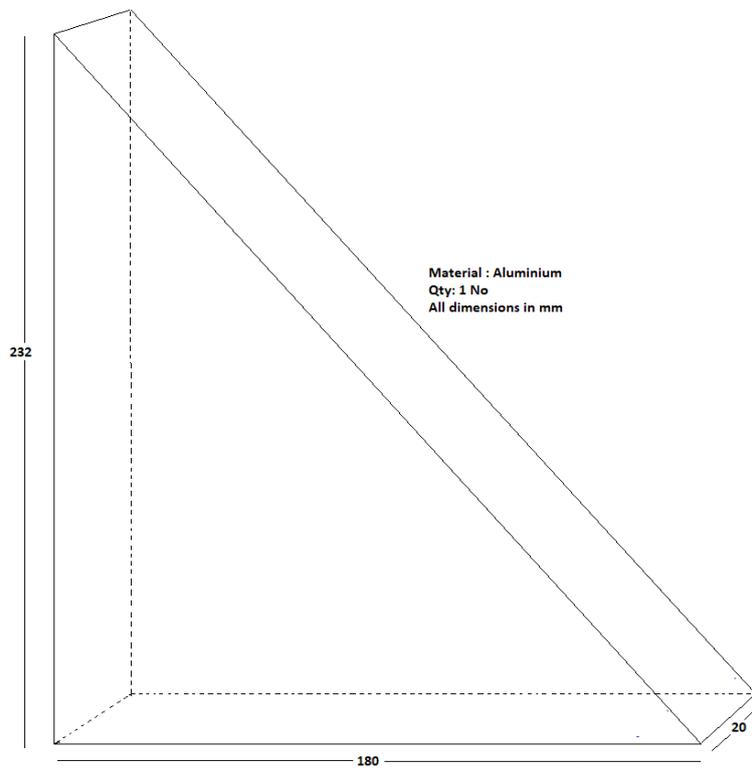
Material: OFHC copper  
Qty: 2 Nos  
All dimensions in mm



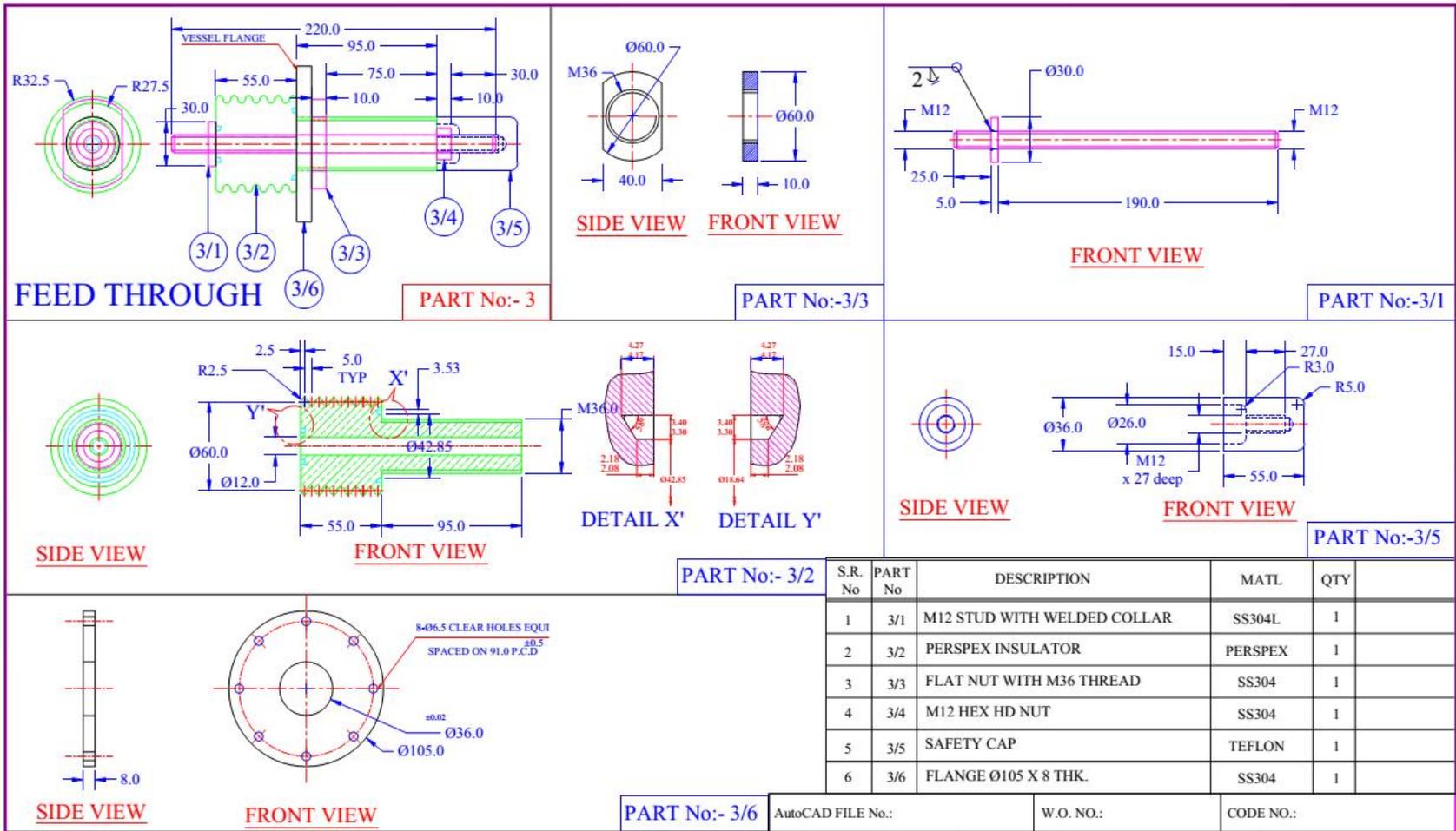
Part No: 1



Part No: 2

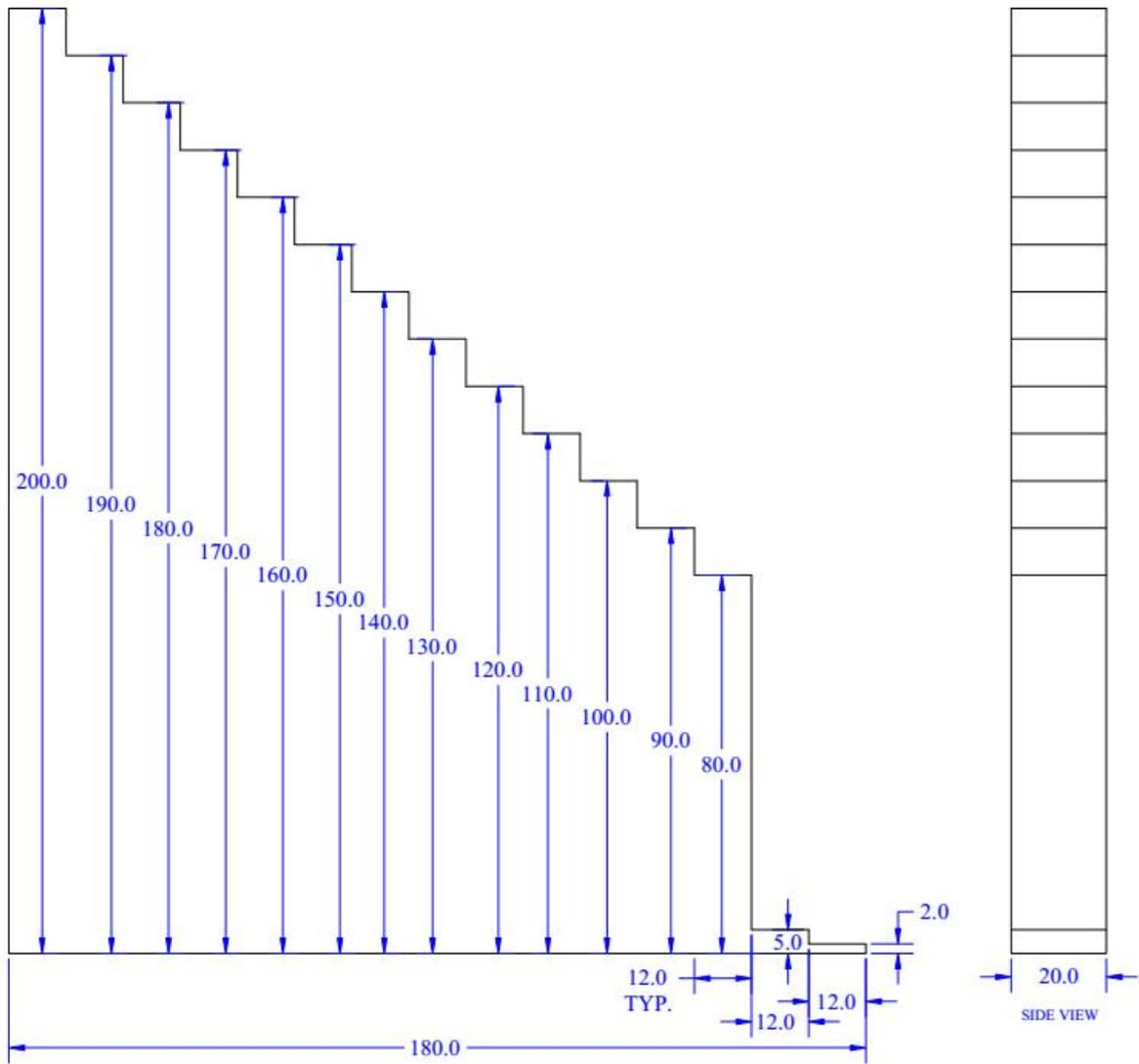


Part No: 4

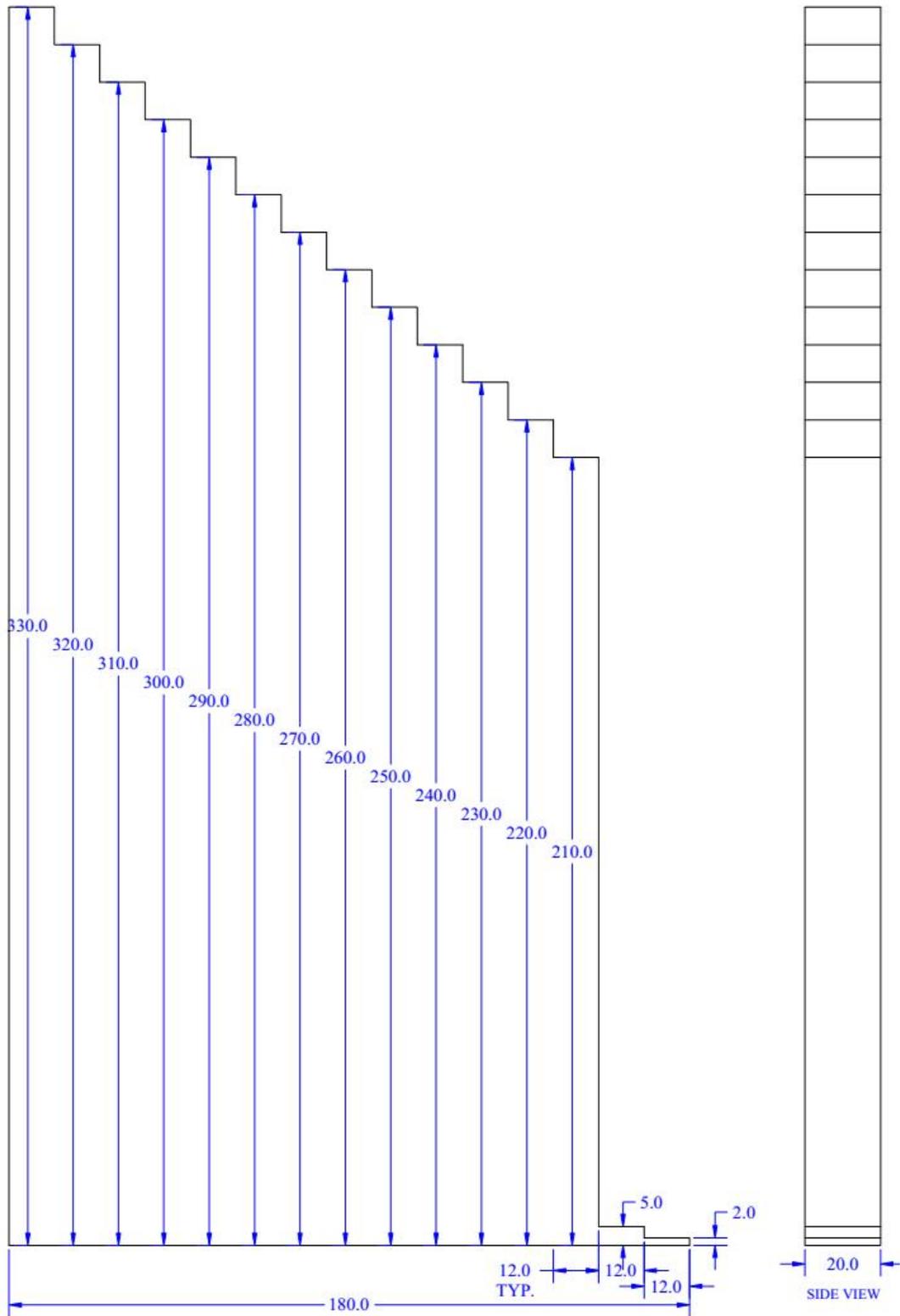


Part No: 3

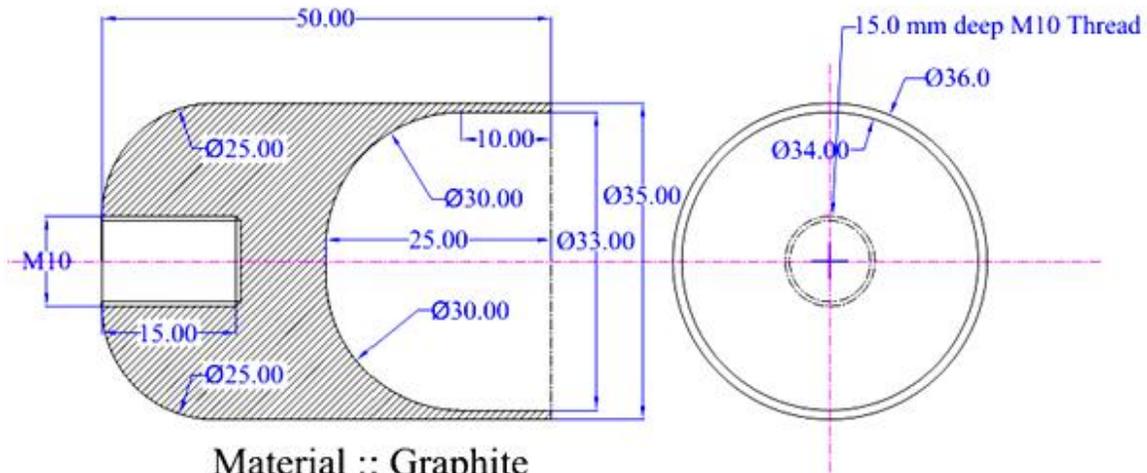




Part No: 6

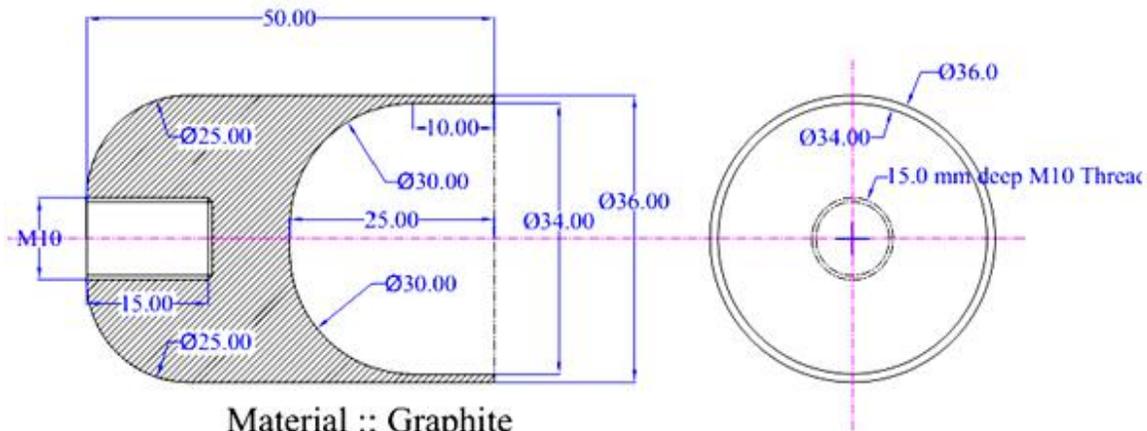


Part No: 7



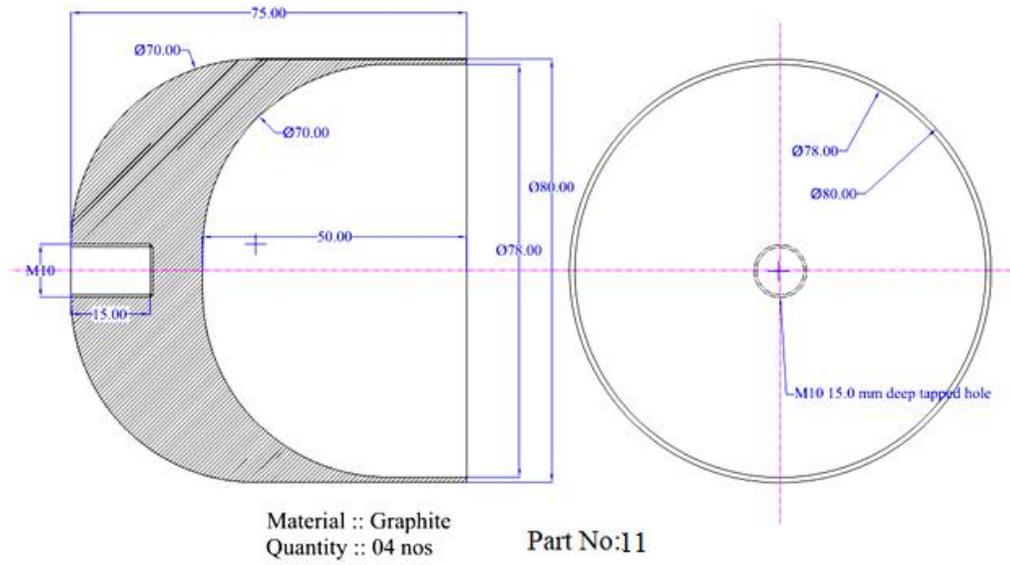
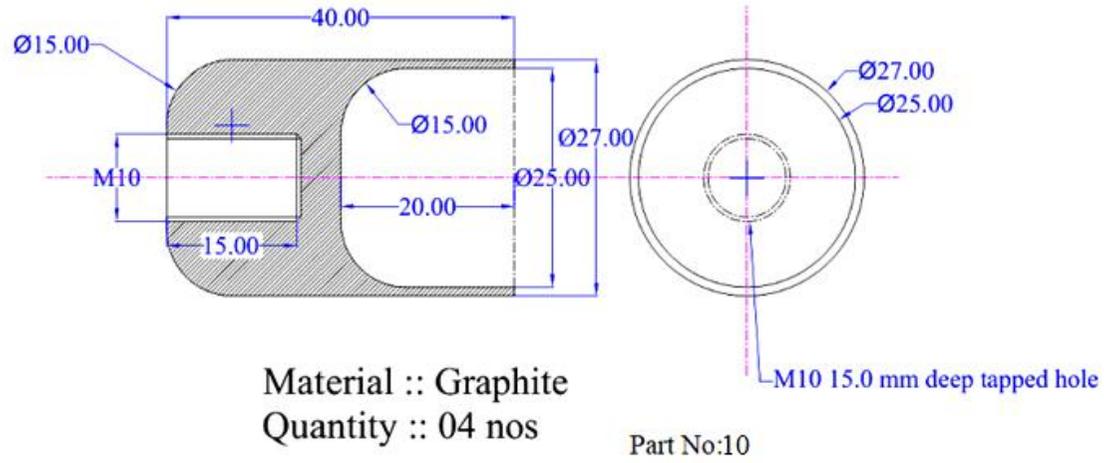
Material :: Graphite  
 Quantity :: 04 nos

Part No: 8

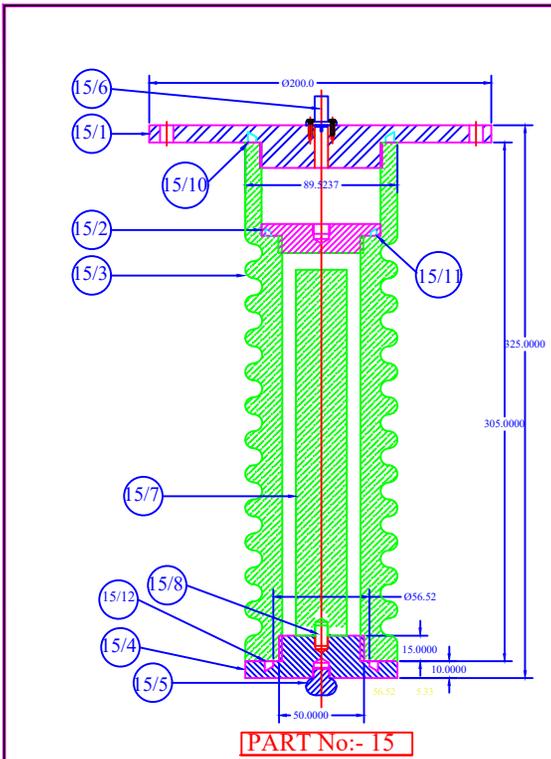


Material :: Graphite  
 Quantity :: 04 nos

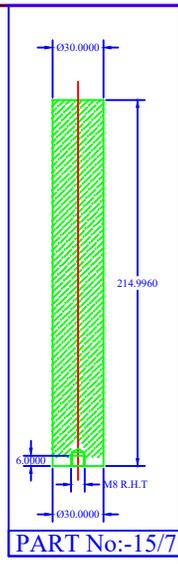
Part No: 9



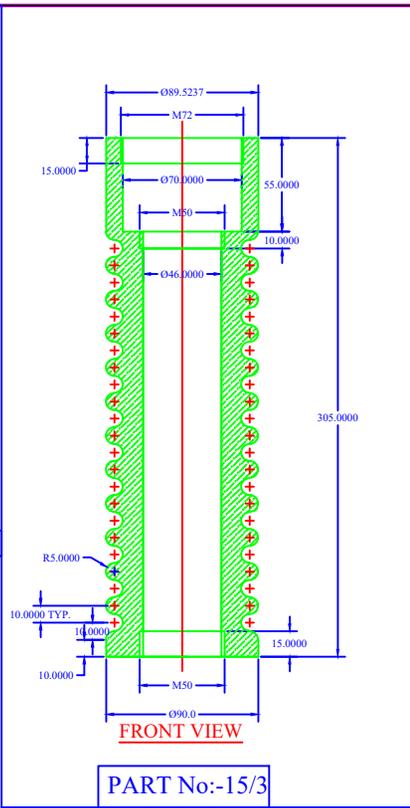
THIS DESIGN AND DRAWING IS THE PROPERTY OF BHABHA ATOMIC RESEARCH CENTRE. IT MUST BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER.



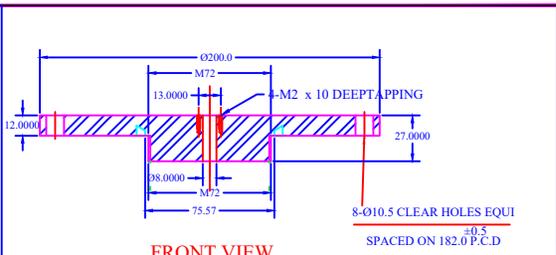
**PART No:- 15**



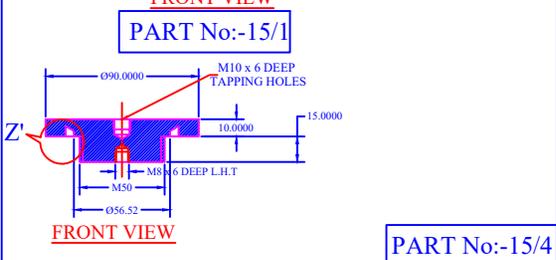
**PART No:- 15/7**



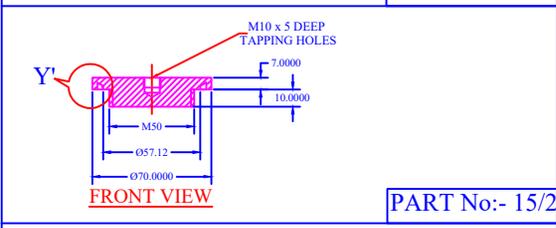
**PART No:- 15/3**



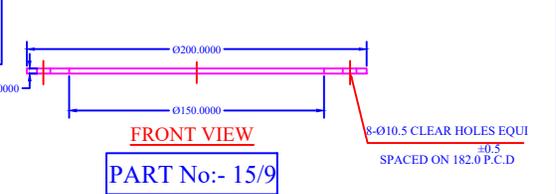
**PART No:- 15/1**



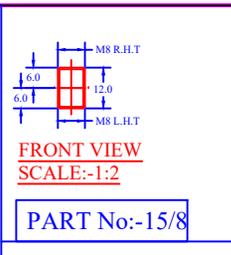
**PART No:- 15/4**



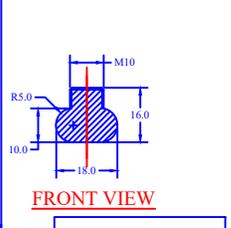
**PART No:- 15/2**



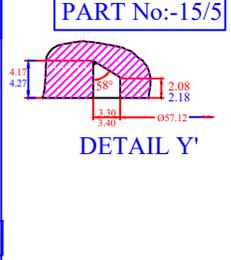
**PART No:- 15/9**



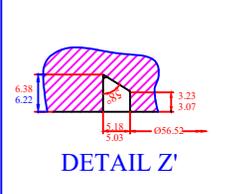
**PART No:- 15/8**



**PART No:- 15/5**



**DETAIL Y'**



**DETAIL Z'**

S.R. No	PART No	DESCRIPTION	MATL	QTY
1	15/1	TOP FLANGE WITH BNC CONNECTOR	SS304L	1
2	15/2	PLUG 1	COPPER	1
3	15/3	PERSPEX CYLINDER (DIVIDER)	PERSPEX	1
4	15/4	PLUG 2	COPPER	1
5	15/5	ELECTRODE	COPPER	1
6	15/6	BNC VACUUM FEED THROUGH	STD	1
7	15/7	Ø30 x 215 Lg ROD	PERSPEX	1
8	15/8	CONNECTOR (R.H.T. & L.H.T)	COPPER	1
9	15/9	GASKET RING Ø200 x 3 THK.	NEOPRENE	2
10	15/10	O' RING SEC Ø5.33 LD 75.57	NEOPRENE	1
11	15/11	O' RING SEC Ø3.53 LD 57.12	NEOPRENE	1
12	15/12	O' RING SEC Ø5.33 LD 56.52	NEOPRENE	1

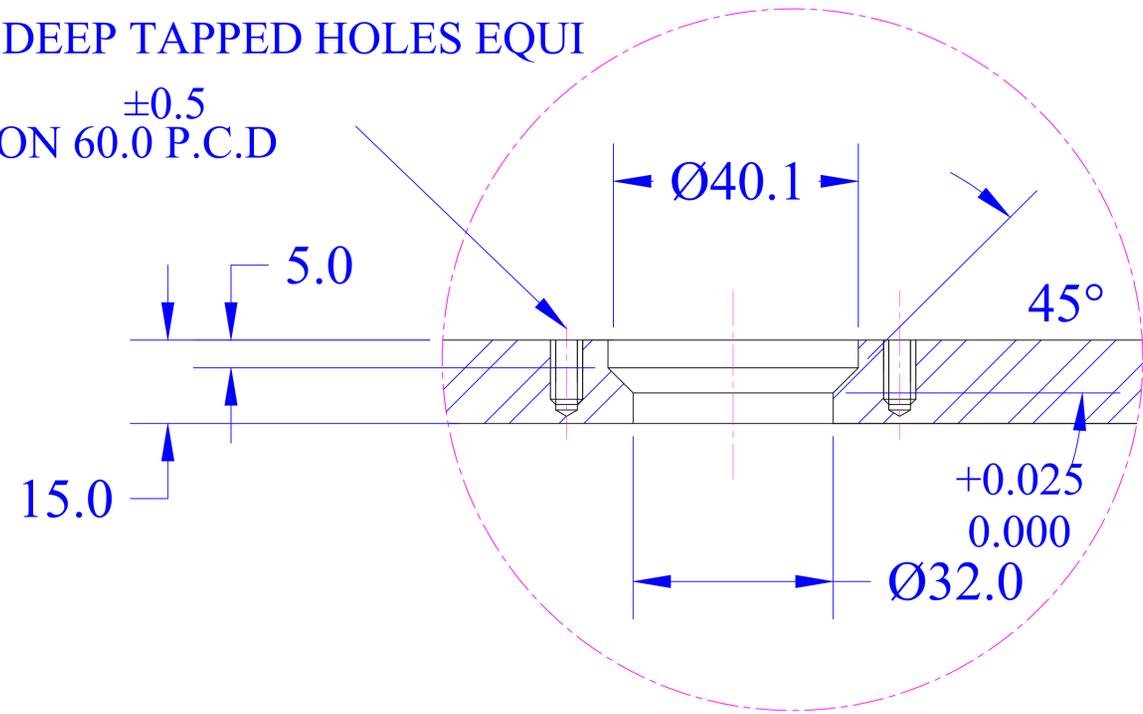
NOTE:- 1) ALL SHARP CORNER SHOULD BE ROUNDED OFF AT RADIUS 2mm / 1 mm.  
2) ALL INSIDE SURFACE SHOULD BE 0.2 TO 0.4 MICRON AS PER DRAWING.

NO.	LOC.	DESCRIPTION	DR'N DATE	APP'D. DATE
REVISIONS				

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED		
LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS $3.15\sqrt{CLA}$
UPTO 6 ± 0.1	1- 6 ± 1°	CHAMFER 1 x 45°
6 - 30 ± 0.2	6 - 30 ± 0° 30'	
30 - 120 ± 0.3	30 - 120 ± 0° 20'	
120 - 315 ± 0.5	120 - 400 ± 0° 10'	
315 - 1000 ± 0.8		
1000 - 2000 ± 1.2	1. ALL DIMENSIONS ARE IN MILLIMETERS.	
2000 - 4000 ± 2.0	2. REMOVE SHARP CORNERS AND BURRS.	

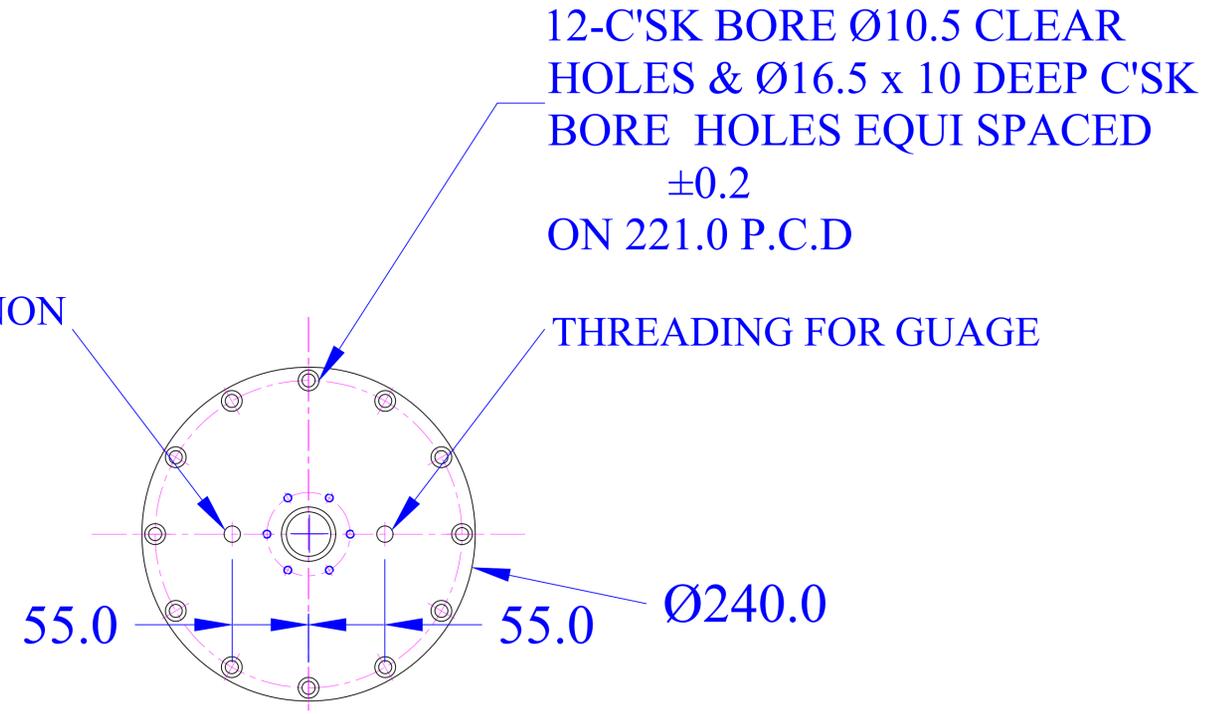
AutoCAD FILE No.:	W.O. NO.:	CODE NO.:
PROJECT OR SECTION <b>NEW MARX</b>	TITLE : <b>VOLTAGE DIVIDER ASSEMBLY</b>	APP'D: Dr.A SHARMA
DR'N/DATE: S.R.B	GOVERNMENT OF INDIA	SHEET NO. OF SHTS.
DRG. CHKD.: S.R.GHODKE	BHABHA ATOMIC RESEARCH CENTRE	SCALE: N.T.S
DES'D.: A PATEL	ACCELERATOR & PULSE POWER DIVISION	PROJN.
		DRG NO. <b>NMARX-A1-D15</b>
		REV.

6-M6 x10 DEEP TAPPED HOLES EQUI  
SPACED ON 60.0 P.C.D  
 $\pm 0.5$

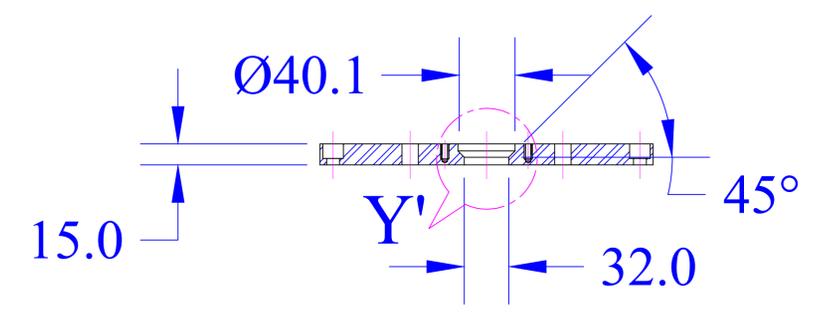


DETAIL AT Y'

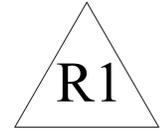
THREADING FOR NRV NON  
RETURN VALVE



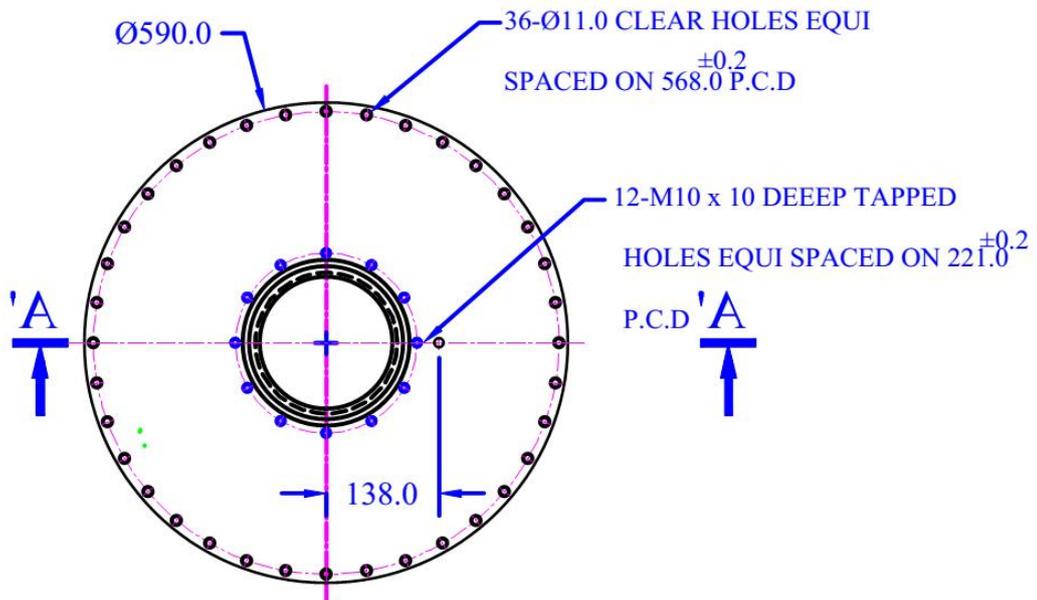
TOP VIEW



FRONT VIEW



**PART NO:-35/19**



**Part No: 16**  
**Matl : 304 L SS, quantity : 1 No**