



Government of India  
Department of Atomic Energy  
Bhabha Atomic Research Centre  
Beam Technology Development Group  
Pulsed Power & Electro-Magnetics Division  
Visakhapatnam



Dr. Archana Sharma  
Head, PP&EMD, BARC,

Ref. No.: BARC(V)/ PP&EMD/2019-20/R&D42.05/MF/BGS/12

Dated: 19/08/2019

**Subject: Fabrication and supply of Atomizer unit (2 Sets) and Vacuum chamber (1 Set) as per enclosed drawing.**

Dear Sir/Madam,

Sealed Quotations are invited for and on behalf of President of India for the "Fabrication and supply of Atomizer unit (2 Sets) and Vacuum chamber (1 Set) as per enclosed drawing." The detail specifications and drawings are attached.

The Sealed envelope for the quotation with the reference number of this enquiry shall be super scribed with "Fabrication and supply of Atomizer unit (2 Sets) and Vacuum chamber (1 Set) as per enclosed drawing." and should reach on or before 20/09/2019 to

Dr. Archana Sharma  
Head, PP&EMD, BARC,  
PEB-1, BARCF, Gandivanipalem Village,  
Dossuru Panchayat,  
Atchutapuram Mandal,  
Visakhapatnam – 531011

डॉ अर्चना शर्मा  
Dr. ARCHANA SHARMA  
अध्यक्ष, स्पंद शक्ति एवं विद्युत-चुंबकीय प्रभाग  
Head, Pulsed Power & Electro-Magnetics Division (PP&EMD)  
भाभा परमाणु अनुसंधान केंद्र (भारत सरकार)  
Bhabha Atomic Research Centre (Government of India)  
Head, PP&EMD, विशाखपट्टणम  
BARC, Visakhapatnam

Contact Person: B.Gowri Sankar, Ph: 0891-2832014

Enclosure: Annexure-I Specifications (general terms and conditions) and drawings of Atomizer assembly and vacuum chamber assembly.

CC. Assistant Accounts Officer, BARC, Visakhapatnam.

**Annexure-I specification**  
**General Terms and Conditions**

**1. Quality surveillance, inspection and inspection report**

- 1.0 All work covered by the inspections shall be subjected to quality surveillance by the purchaser or his authorized representatives for which purpose the fabricator shall allow access at all reasonable times during manufacture to.
- 1.1 The premises in which the work is being carried out.
- 1.2 The drawings and or tooling involved.
- 1.3 Gauges, instruments etc. required for inspecting the work.
- 1.4 Inspection and tests shall be carried out by the fabricator as per the requirements detailed in the drawings and these specifications.
- 1.5 The fabricator shall submit inspection reports to the purchaser for approval.
- 1.6 Components found unsatisfactory as to workmanship or material shall be removed by the fabricator and replaced by the components which are satisfactory.
- 1.7 The finished components shall not be dispatched prior to approval by our Engineer.

**2. Raw Material**

- 2.0 Raw Material for all the components and hardware will be provided by the supplier.

**3. Delivery**

- 3.0 The bidder shall deliver the finished components after approval by our Engineer within 18 weeks from the date of work order at BARC, Visakhapatnam.
- 3.1 In case any extension in delivery is to be granted to the contractor, party shall make a written request for extension justifying the reasons.

**4. Sub Contract**

- 4.0 The fabricator shall not sub-contract any or all the work without written consent from the purchaser. The fabricator shall be responsible to the purchaser for the entire sub contractor of the fabricator, if at all allowed by the purchaser.

**5. Taxes**

- 5.0 GST @ 5% as applicable against undertaking from the supplier.

**6. Payment**

- 6.0 Payment will be made within one month only after satisfactory completion of work and on production of invoice with details of location of supply, separate tax components along with PAN & GSTN, advance stamped receipt (Annexure-III), 4 nos. of One year Guarantee/ Warranty Certificates, Bank details & receipt and issue of material from store.
- 6.1 Advance / Part payment or against delivery cannot be made.
- 6.2 It may be noted that Income Tax at 2% will be deducted from the bill.
- 6.3 TDS is to be deducted at the rate of 1 percent on payments made to the supplier of taxable goods and/or services, where the total value of such supply, under an individual contract, exceeds two lakh fifty thousand rupees.
- 6.4 Any delay which is attributable to the contractor is liable for penalty @ 2% per week (max 5%) to be imposed on the contractor.

## **7. Confidentiality:**

7.0 No party shall disclose any information to third party concerning the matters under this contract generally. In particular, any information identified as "PROPRIETARY" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.

7.1 "RESTRICTED INFORMATION" categories under section 18 of the Atomic Energy Act, 1962 and "OFFICIAL SECRETS" under section 5 of the Official Secrets Act, 1923:-

Any contravention of the above mentioned provisions by any contractor, sub-contractor, consultant, advisor or the any employees of a contractor will invite penal consequences under the aforesaid legislation.

7.2 Prohibition against use of BARC's name without permission for publicity purpose:-

The contractor or sub-contractor, consultant, advisor or the employees engaged by the contractor shall not use BARC's name for publicity through any public media like press, radio, T.V., or internet without the prior written approval from BARC

(vide circular ref: 2/Misc-9/Lg1/2001/92 dated April 30, 2001)

## **8. Bidder Qualification:**

8.1 The bidder should have experience of fabrication and supply of Ultra High Vacuum chambers for ultimate vacuum of  $1 \times 10^{-9}$  mbar.

8.2 The bidder should have experience of fabrication and supply of welding of electric feed through with the flanges.

8.3 The bidder has to enclose these details with the tender.

## **9. Note to vendor**

Vendor is requested to go through the bill of materials given in the each drawing sheet and ensure the quantity is quoted as per the bill of materials. Where the bill of material table is not present in the drawing sheet, quantity specified against each item has to be ensured.

## **10. Detail Design drawing:**

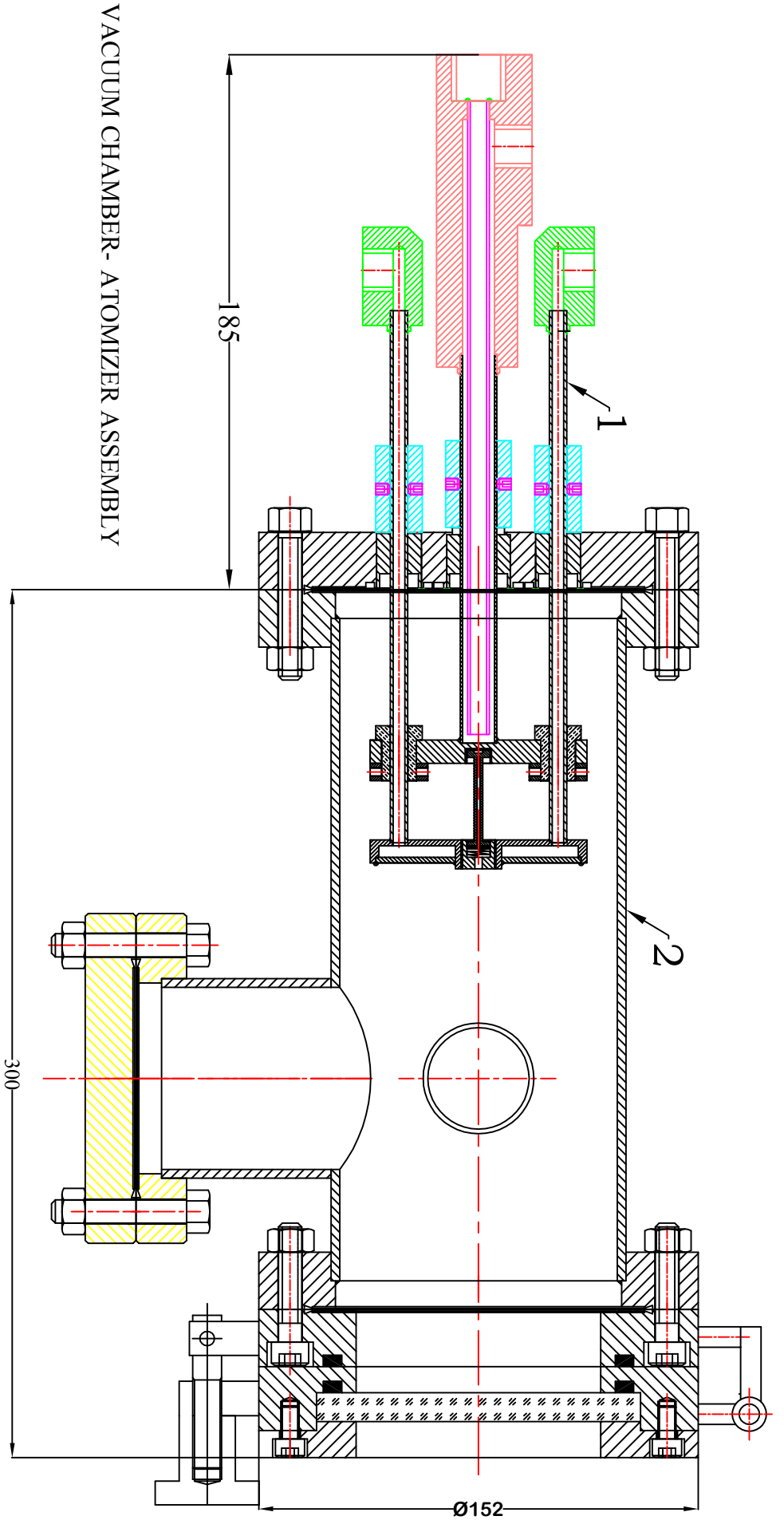
10.1 The supplier has to make detail design drawings for the vacuum chamber and should get the approval of the purchaser before fabrication.

10.2 The supplier has to make detail design drawings of different details of welding of Atomizer and should get the approval of the purchaser before fabrication.

10.3 The feed through dimensions given in the drawing are only for the guidance. Vendor has to procure nearest standard ceramic insulation feed through from reputed suppliers. Where the dimensions of the other parts depend upon the feed through dimensions, the details shall be modified accordingly and the vendor should get the approval of the purchaser.

## **11. Acceptance criteria:-**

- The Vacuum chamber and Atomizer assembly should be leak tested to  $1 \times 10^{-9}$  mbar.l/s.
- The Vacuum chamber and Atomizer assembly should be Ultra High Vacuum tested to  $1 \times 10^{-8}$  mbar.
- Vacuum chamber should be electro polished.
- Wherever surface finish is not specified, components of the Atomizer and Vacuum chamber should have machined finish.
- All dimensions and tolerances should be as per the drawing.



VACUUM CHAMBER- ATOMIZER ASSEMBLY

NOTES:

1. ATOMIZER ASSEMBLY SHOULD BE UHV TESTED TO 1E-8 mbar.
2. ATOMIZER ASSEMBLY SHOULD BE LEAK TESTED TO 1E-9 mbar-l/s.

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS
UPTO 6 ± 0.1	1- 6 ± 4°	3.15√CLA
6 - 30 ± 0.2	6- 30 ± 0° 30'	CHAMFER 1 x 45°
30 - 120 ± 0.3	30- 120 ± 0° 20'	
120 - 315 ± 0.5	120- 400 ± 0° 10'	
315 - 1000 ± 0.8		
1000 - 2000 ± 1.2		
2000 - 4000 ± 2.0		

1. ALL DIMENSIONS ARE IN MILLIMETERS.  
 2. REMOVE SHARP CORNERS AND BURRS.

PROJECT OR SECTION  
**PP&EMD**

DR N/DATE: BUAVA  
 DRG. CHKD.: BGS  
 DES'D.:

TITLE:  
**VACUUM CHAMBER-  
 ATOMIZER ASSEMBLY**

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 VISAKHAPATNAM

BILL OF MATERIAL		
SIR. NO.	ITEM DESCRIPTION	QTY.
1	ATOMIZER	1 Set
2	VACUUM CHAMBER	1 Set

APP'D: MVS

SHEET NO. 1 OF 9

SCALE: NTS

PROJN.

DRG NO.

BARC/PP&EMD/AT-01

REV.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D DATE

REVISIONS	DATE	DATE

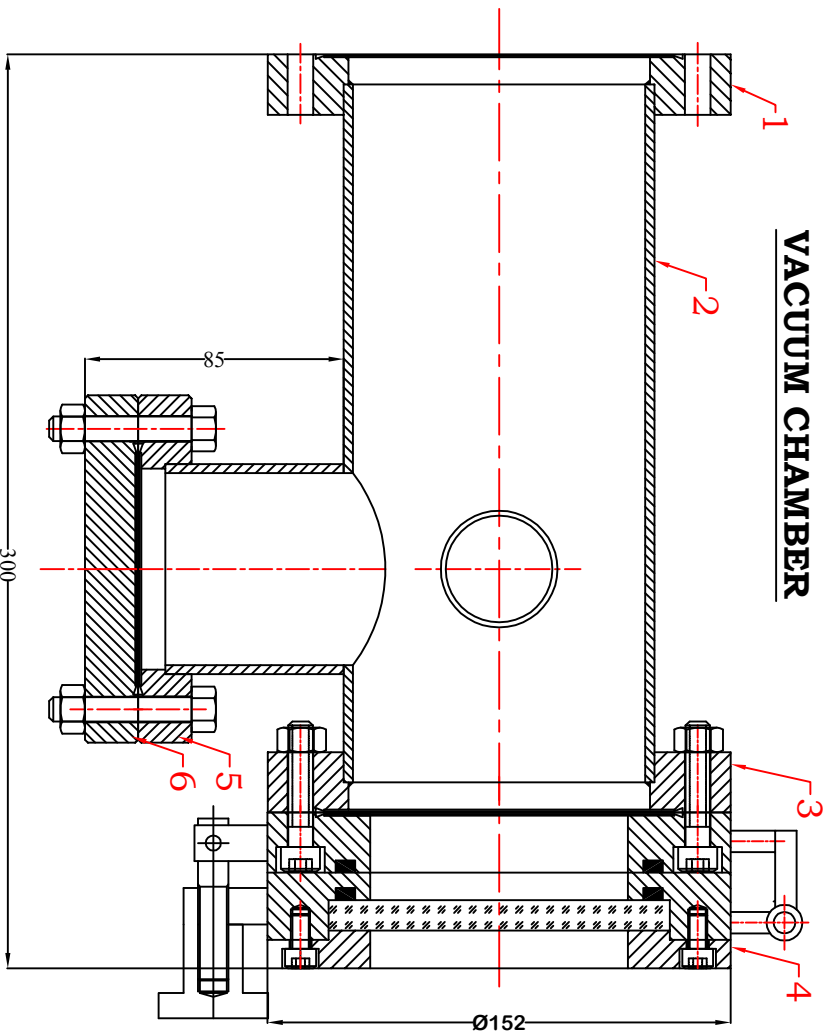
NO.	LOC.	DESCRIPTION	DRN DATE	APP'D DATE

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D DATE

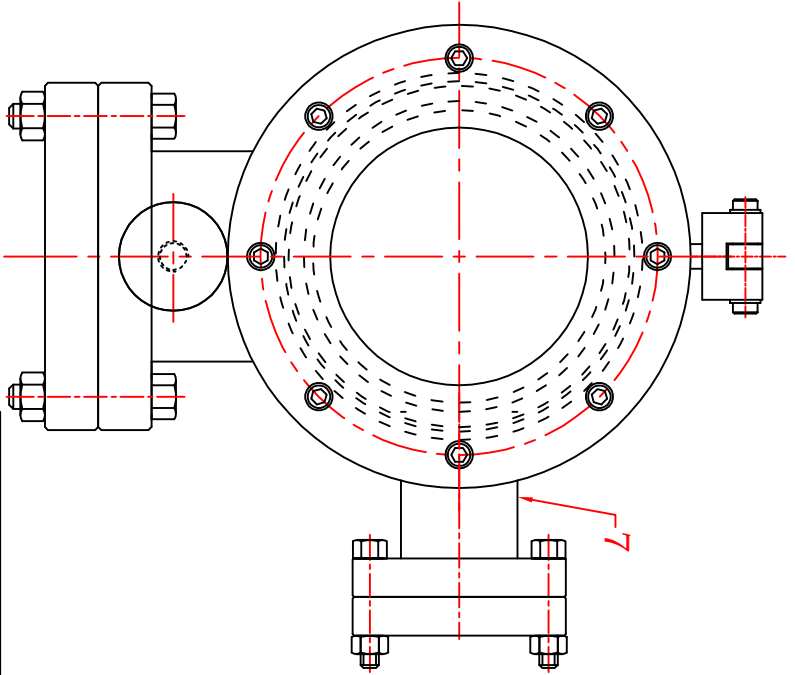
NO.	LOC.	DESCRIPTION	DRN DATE	APP'D DATE

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D DATE

# VACUUM CHAMBER



SECTIONAL FRONT VIEW



SIDE VIEW

- NOTES:
- VACUUM CHAMBER IS UHV COMPATIBLE.
  - LEAK RATE OF THE CHAMBER IS 1E-9mbar-l/s
  - OFC COPPER 3 SETS TO BE SUPPLIED ( FOR ALL PORTS )
  - ONE SET OF NUT-BOLT/FASTENERS TO BE SUPPLIED FOR ALL JOINTS

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS
UPTO 6 ± 0.1	6 - 6 ± 4°	3.15 $\sqrt{\text{CLA}}$
6 - 30 ± 0.2	30 - 120 ± 0.3	CHAMFER 1 x 45°
30 - 120 ± 0.3	120 - 315 ± 0.5	
120 - 315 ± 0.5	315 - 1000 ± 0.8	
315 - 1000 ± 0.8	1000 - 2000 ± 1.2	
1000 - 2000 ± 1.2	2000 - 4000 ± 2.0	
2000 - 4000 ± 2.0		

PROJECT OR SECTION

PP&EMD

DR N/DATE: BUAVA

DRG. CHKD.: BGS  
 DES'D.:

TITLE:

VACUUM CHAMBER

GOVERNMENT OF INDIA  
 BHABHA ATOMIC RESEARCH CENTRE  
 VISAKHAPATNAM

BILL OF MATERIAL

S.R. NO.	ITEM DESCRIPTION	MATERIAL	QTY.	REMARKS
1 & 3	CF 100	SS 304L	2	
2	STANDARD PIPE	SS 304L	1	
4	CF 100 VIEW PORT ASSEMBLY	SS 304+ TOUGHEN GLASS	1	SHEET NO. 3
5	CF 63 PORT	SS 304L	1	
6	CF 63 BLANK	SS 304	1	
7	CF 35 PORT +BLANK	SS 304	1 EACH	
8	GASKET	OFC COPPER	3 SETS	FOR ALL PORTS
9	NUT-BOLT/FASTENERS	S S 304	1 SET	

APP'D: MVS

SHEET NO. 2 OF 9

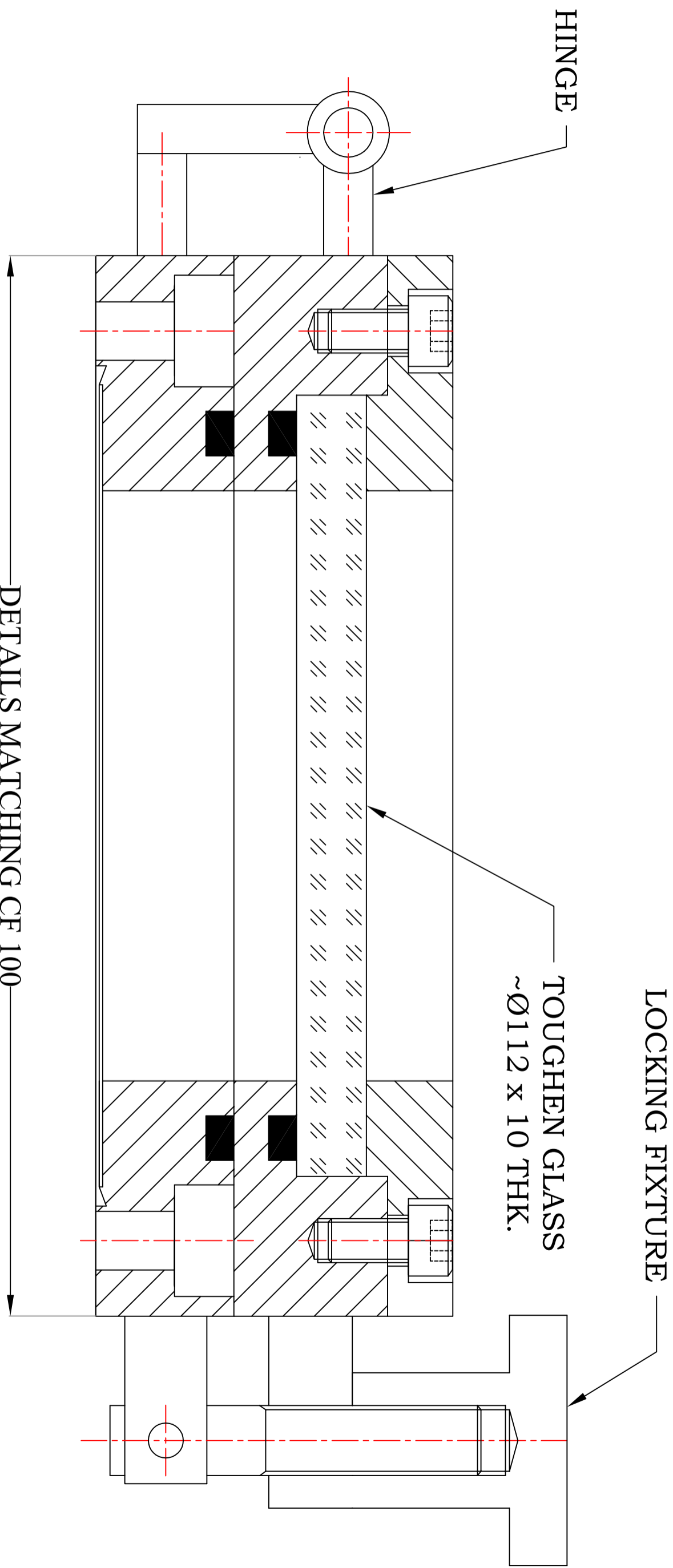
SCALE: NTS

PROJN.

DRG NO. BARC/PP&EMD/AT-01

B C D E F G H

# CF 100 VIEW PORT ASSEMBLY



GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS  
 UPTO 6 ± 0.1

6 - 30 ± 0.2  
 30 - 120 ± 0.3  
 120 - 315 ± 0.5  
 315 - 1000 ± 0.8

LENGTH OF SHORTER  
 SIDE OF ANGLE  
 1- 6 ± 1°  
 6- 30 ± 0° 30'  
 30- 120 ± 0° 20'  
 120- 400 ± 0° 10'

SURFACE FINISH  
 IN MICRONS 3.15√CLA  
 CHAMFER 1 x 45°

1. ALL DIMENSIONS ARE IN MILLIMETERS.  
 2. REMOVE SHARP CORNERS AND BURRS.

PROJECT OR SECTION

PP&EMD

TITLE:

VACUUM CHAMBER

App'D: MVS

SHEET NO: 3 OF 9

SCALE: NTS

PROJN.

DRG NO.

BARC/PPEMD/AT-01

DR.N/DATE: BIAYYA

DRG. CHKD.: BGS

GOVERNMENT OF INDIA

BHABHA ATOMIC RESEARCH CENTRE

VISAKHAPATNAM

DR.N/DATE: BIAYYA

DRG. CHKD.: BGS

DES'D.:

REV.

NO.

DRN DATE

APPD. DATE

2000 - 4000 ± 2.0

1000 - 2000 ± 1.2

315 - 1000 ± 0.8

B

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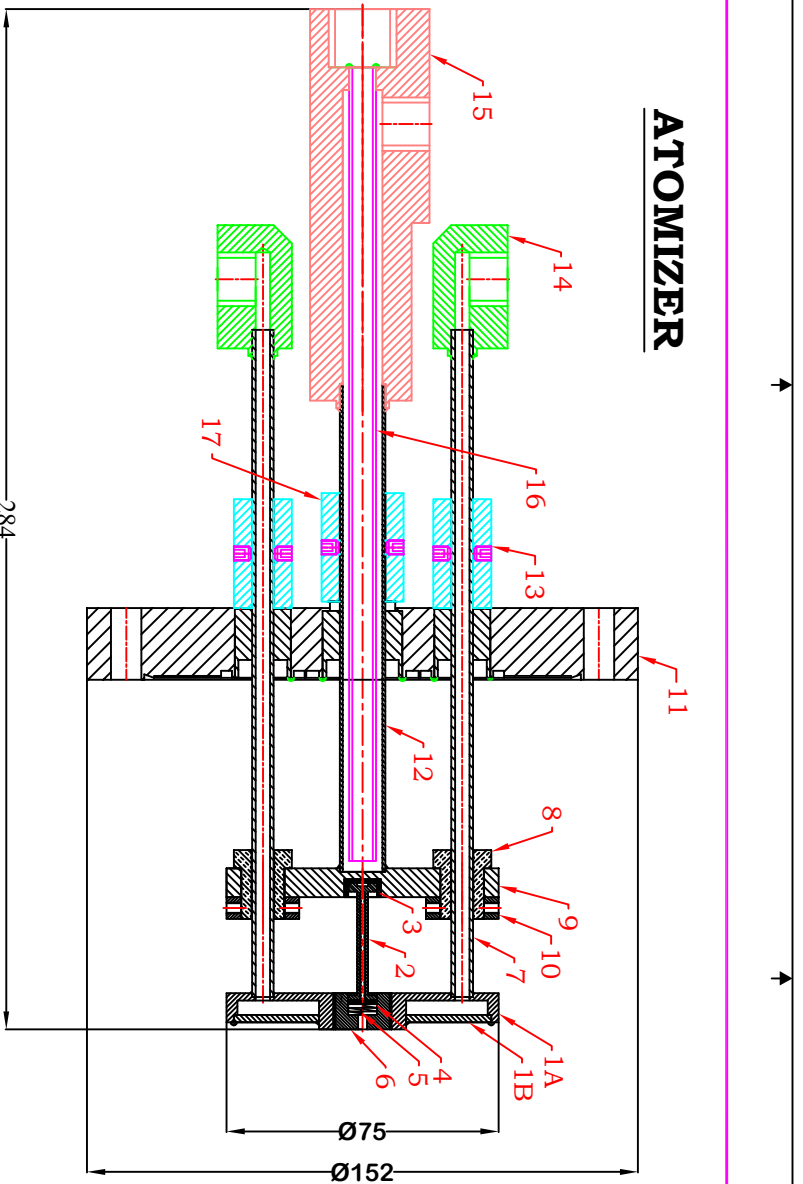
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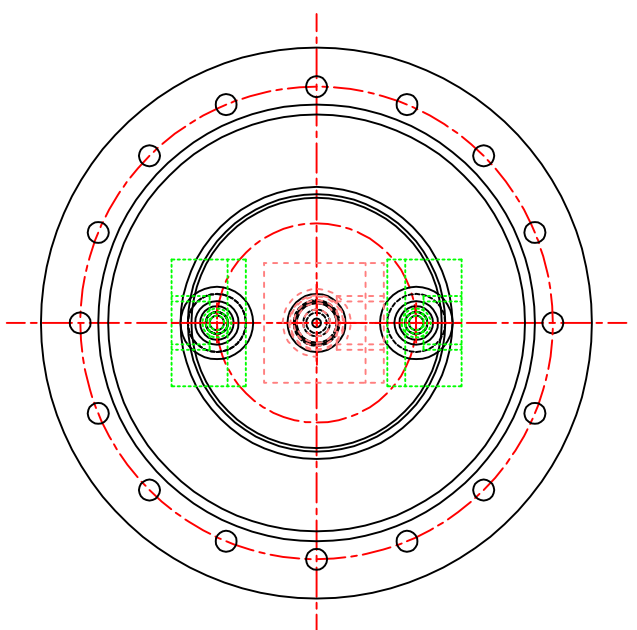
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# ATOMIZER



SECTIONAL FRONT VIEW



SIDE VIEW

BILL OF MATERIAL				BILL OF MATERIAL					
SR. NO.	ITEM DESCRIPTION	MATERIAL	QTY.	REMARKS	SR. NO.	ITEM DESCRIPTION	MATERIAL	QTY.	REMARKS
1A	TOP FLANGE	SS 304	1		11	CF 100	SS 304	1	
1B	WELDED FLANGE	SS 304	1		12	FEED THROUGH - 2	SS 304	1	
2	CRUCIBLE	GRAPHITE	3*		13	CONNECTOR - 1	SS 304	2	
3	TANTALUM CUP	TANTALUM	2*		14	ADAPTER - 1	SS 304	2	
4	WASHER	TANTALUM	2		15	ADAPTER - 2	SS 304	1	
5	METAL SPRING	TANTALUM	3		16	PIPE	SS 304	1	
6	END FIXTURE	TANTALUM	2*		17	CONNECTOR - 2	SS 304	1	
7	FEED THROUGH - 1	SS 304	2		18	M3 GRUB SCREW (L. - 4mm)	SS 304	16*	
8	CERAMIC BUSH	CERAMIC	2		19	M4 GRUB SCREW (L. - 5mm)	SS 304	16*	
9	BOTTOM FLANGE	SS 304	1		20	Ø 8 & Ø 3 QUICK COUPLING PUSH IN CONNECTOR	STANDARD	6* + 2*	PART NO. NOT SHOWN
10	RING	SS 304	2						

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS  
UMPTO 6 ± 0.1

6 - 30 ± 0.2  
30 - 120 ± 0.3  
120 - 315 ± 0.5  
315 - 1000 ± 0.8  
1000 - 2000 ± 1.2  
2000 - 4000 ± 2.0

LENGTH OF SHORTER SIDE OF ANGLE

1 - 6 ± 1°  
6 - 30 ± 0° 30'  
30 - 120 ± 0° 20'  
120 - 400 ± 0° 10'

SURFACE FINISH IN MICRONS

3.15  
CHAMFER 1 x 45°

PROJECT OR SECTION

PP&EMD

DR. N/DATE: BUAVA

DRG. CHKD.: BGS

DESIGN: BGS

TITLE:

ATOMIZER ASSEMBLY

GOVERNMENT OF INDIA

BHABHA ATOMIC RESEARCH CENTRE

VISAKHAPATNAM

APP'D: MVS

SHEET NO. 4 OF 9

SCALE: NTS

PROJN.

DRG NO. BARC/PP&EMD/AT-01

REV.

NO.

DRN DATE

APP'D DATE

2000 - 4000 ± 2.0

1. ALL DIMENSIONS ARE IN MILLIMETERS.  
2. REMOVE SHARP CORNERS AND BURRS.

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2. REMOVE SHARP CORNERS AND BURRS.

1. ALL DIMENSIONS ARE IN MILLIMETERS.  
2. REMOVE SHARP CORNERS AND BURRS.

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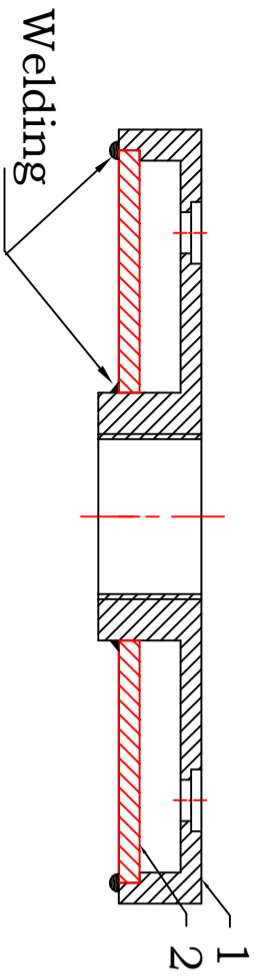
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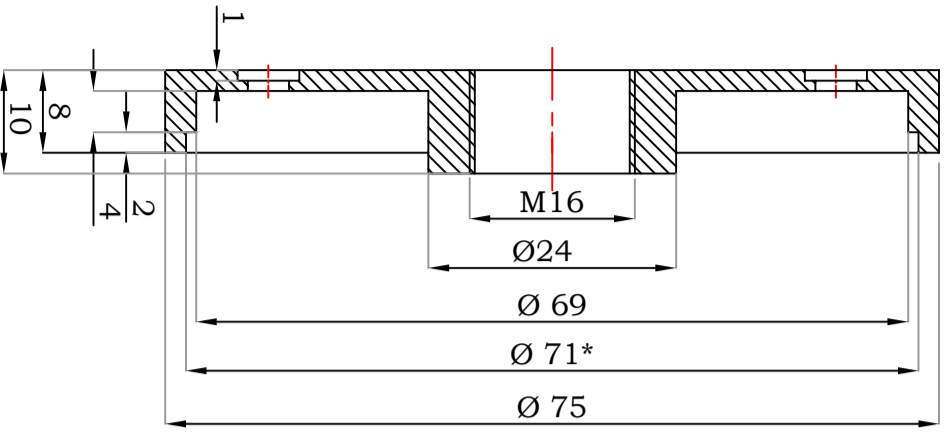
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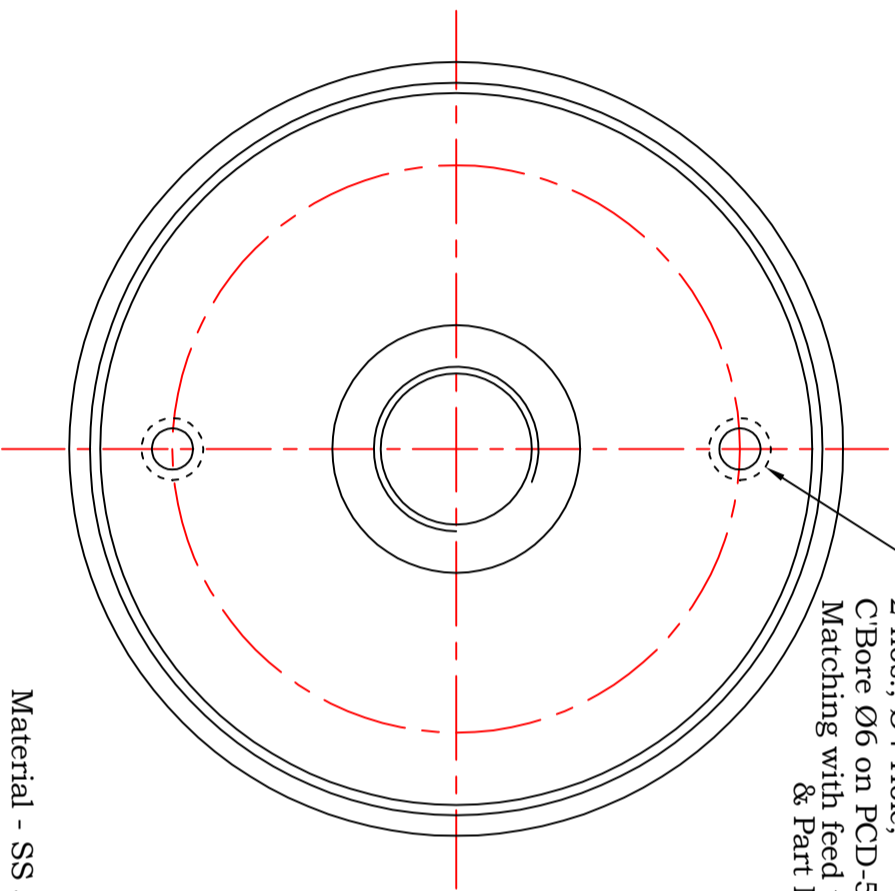
TOP FLANGE  
SUB-ASSEMBLY

PART - 1



FRONT VIEW

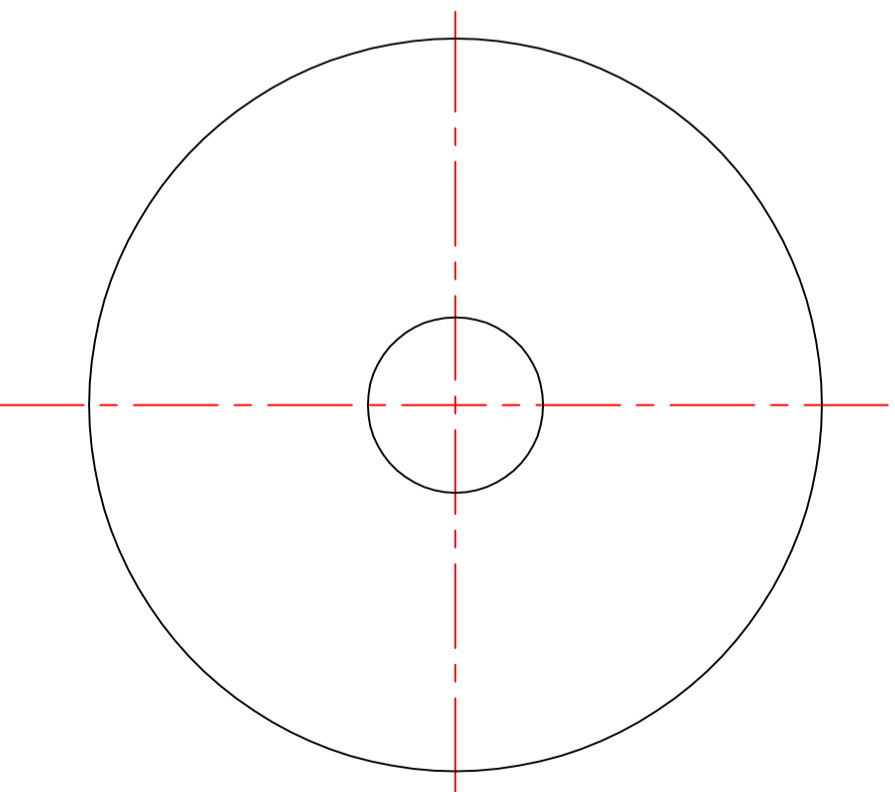
\*Match with Part-1B



SIDE VIEW

Material - SS 304  
Qty. - 1

PART - 1A

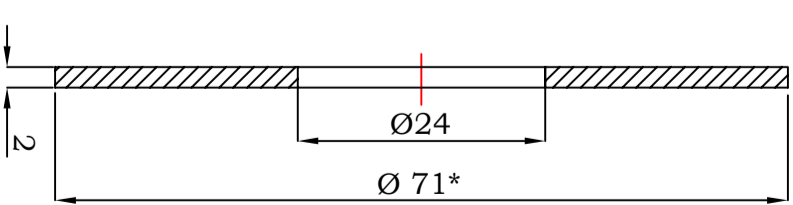


SIDE VIEW

Material - SS 304  
Qty. - 1

\*Match with Part-1A

PART - 1B



FRONT VIEW

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS
UP TO 6	1 - 6 ± 1°	3.15 √CLA
6 - 30 ± 0.1	6 - 30 ± 0° 30'	CHAMFER 1 x 45°
30 - 120 ± 0.3	30 - 120 ± 0° 20'	
120 - 315 ± 0.5	120 - 400 ± 0° 10'	
315 - 1000 ± 0.8		
1000 - 2000 ± 1.2		
2000 - 4000 ± 2.0		

1. ALL DIMENSIONS ARE IN MILLIMETERS.  
 2. REMOVE SHARP CORNERS AND BURRS.

PROJECT OR SECTION

PP&EMD

DR/N/DATE: BIAYVA

DRG. CHKD.: BGS

DES.D.:

TITLE:

ATOMIZER ASSEMBLY

GOVERNMENT OF INDIA

BHABHA ATOMIC RESEARCH CENTRE

VISAKHAPATNAM

APP'D: MVS

SHEET NO: 5 OF 9

SCALE: NTS

PROJN.

DRG NO. BARC/PPEMD/AT-01

REV.

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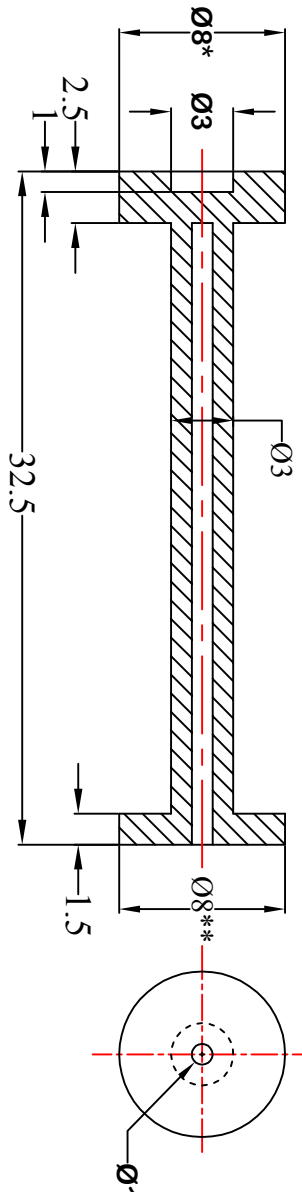
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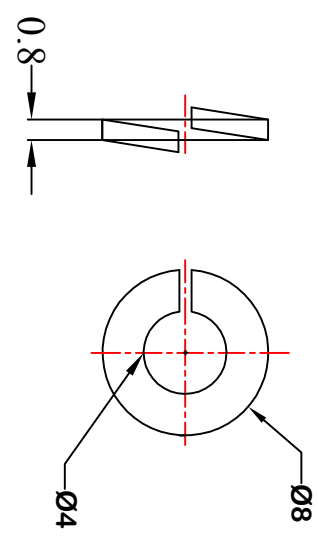




\*Matching with Part-3  
 \*\*Matching with Part-6

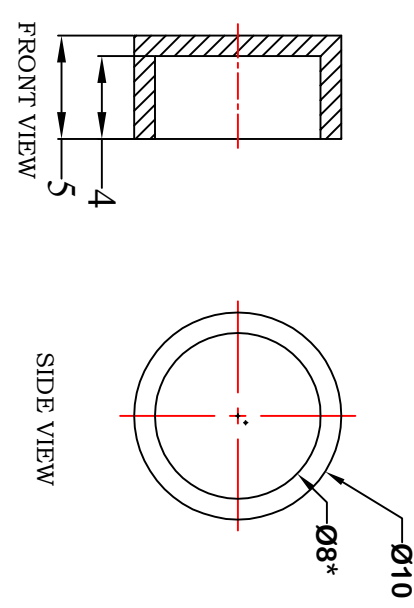
Material - GRAPHITE  
 Qty. - 3 NOS. (Inclusive of 2 spares)

PART - 2



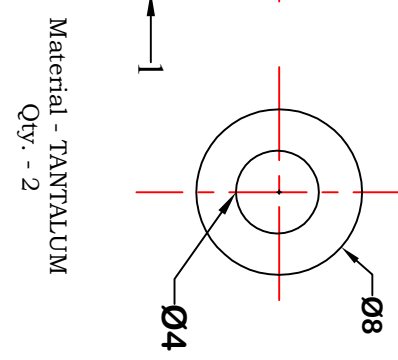
Material - TANTALUM  
 Qty. - 3 NOS. (Inclusive of 2 spares)

PART - 5



Material - TANTALUM  
 Qty. - 2Nos.  
 \*Matching with Part-2

PART - 3



Material - TANTALUM  
 Qty. - 2

PART - 4

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS
UPTO 6 ± 0.1	1- 6 ± 1°	3.15 √CIA
6 - 30 ± 0.2	6 - 30 ± 0° 30'	CHAMFER 1 x 45°
30 - 120 ± 0.3	30 - 120 ± 0° 20'	
120 - 315 ± 0.5		
315 - 1000 ± 0.8		
1000 - 2000 ± 1.2		
2000 - 4000 ± 2.0		

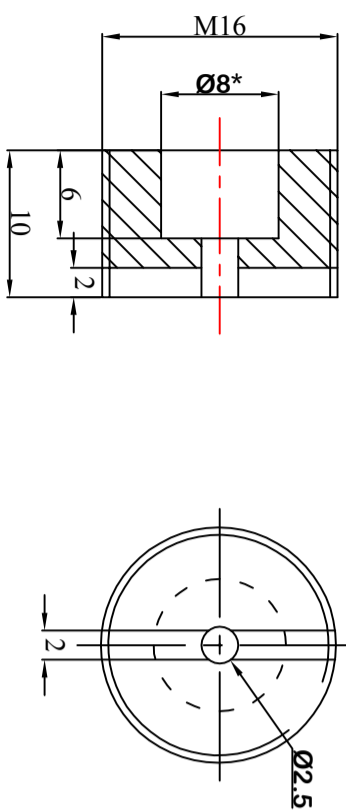
PROJECT OR SECTION	TITLE:
PP&EMD	ATOMIZER ASSEMBLY

DR N/DATE:	DRG. CHKD.:	DES'D.:
BUAVA	BGS	

GOVERNMENT OF INDIA	BHABHA ATOMIC RESEARCH CENTRE
VISAKHAPATNAM	

APP'D:	DRG NO.	REV.
MVS	BARC/PP&EMD/AT-01	

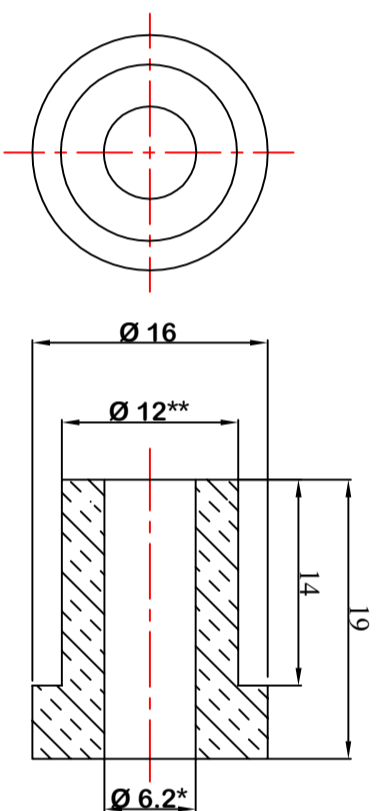
B C D E F G H



\*Matching with Part No-2.

Material - TANTALUM  
 Qty. - 2 (Inclusive of spare)

PART - 6

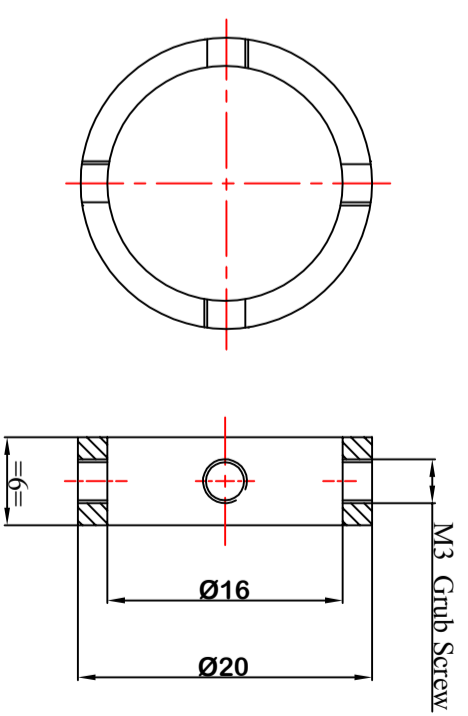


\*Depends on the size of feed thru.

\*\*Matching with Part No-9.

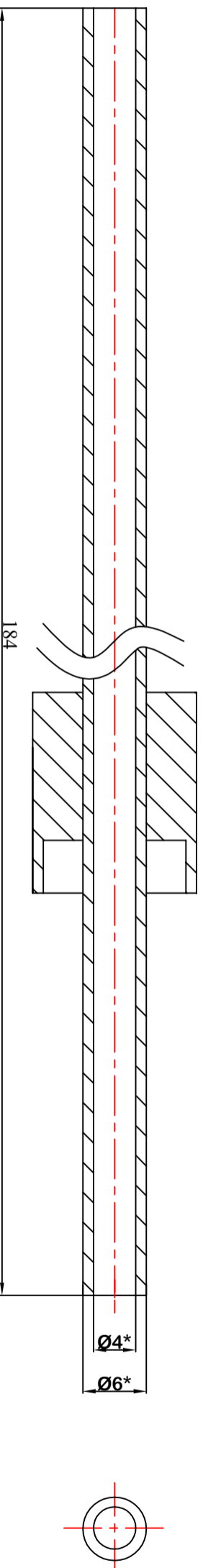
Material - CERAMIC  
 Qty. - 2

PART - 8



Material - SS 304  
 Qty. - 2

PART - 10



Feed Thru (Standard part)  
 Material - SS 304 (Ceramic insulation)  
 Qty. - 2  
 CURRENT AND VOLTAGE - 400Amp , 10Volts

\*As per the nearest standard  
 Notes: PART No. 8,9,10,11 &13 to be  
 decided as per the feed through.

PART - 7

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS
UP TO 6 ± 0.1	1- 6 ± 1°	3.15√CLA
6 - 30 ± 0.2	6- 30 ± 0° 30'	CHAMFER 1 x 45°
30 - 120 ± 0.3	30- 120 ± 0° 20'	
120 - 315 ± 0.5	120- 400 ± 0° 10'	
315 - 1000 ± 0.8		
1000 - 2000 ± 1.2		
2000 - 4000 ± 2.0		

PROJECT OR SECTION	TITLE:
PP&EMD	ATOMIZER ASSEMBLY
DR.N/DATE: BJAYYA	GOVERNMENT OF INDIA
DRG. CHKD.: BGS	BHABHA ATOMIC RESEARCH CENTRE
DES'D.:	VISAKHAPATNAM

DR.N/DATE: BJAYYA	GOVERNMENT OF INDIA
DRG. CHKD.: BGS	BHABHA ATOMIC RESEARCH CENTRE
DES'D.:	VISAKHAPATNAM

APP'D: MVS	SCALE: NTS
SHEET NO: 7 OF 9	PROJN.
DRG NO.	BARC/PPEMD/AT-01
REV.	

B

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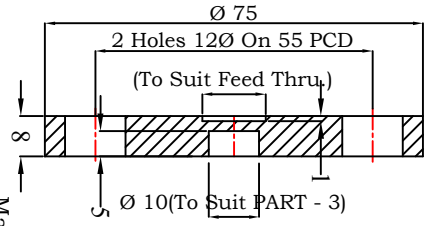
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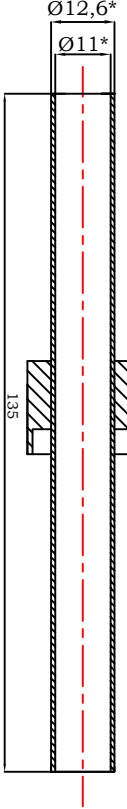
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Material - SS 304  
Qty. - 1

PART - 9

2 nos., Ø12 Holes,  
On 55 PCD  
(To Suit Ceramic  
Bush Part No-8)



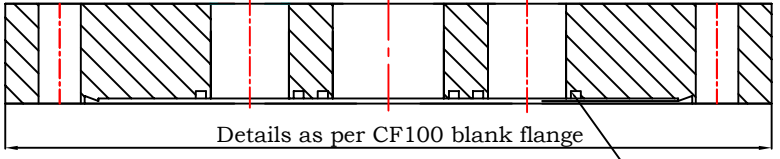
\* As per nearest standard

Feed Through  
Material - SS 304 (Ceramic insulation)  
Qty. - 1

Notes: PART No. 9,11 &17  
to be decided as per the  
feed through.

CURRENT AND VOLTAGE - 400Amp, 10Volts

PART - 12

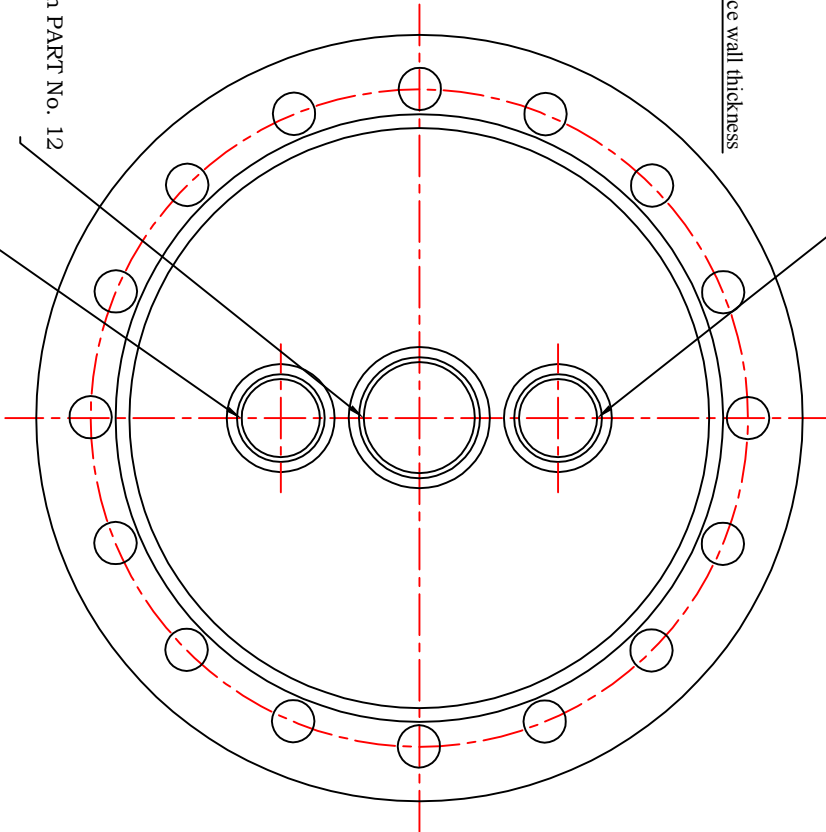


Groove to reduce wall thickness  
for welding

Match with PART No. 12

Match with PART No. 7

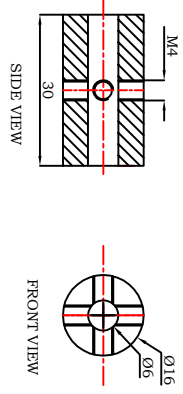
Material - SS 304  
Qty. - 1



Match with PART No. 7

PART - 13

Material - SS 304  
Qty. - 2



SIDE VIEW

FRONT VIEW

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS  
UMT0 6 ± 0.1

6 - 30 ± 0.2  
30 - 120 ± 0.3  
120 - 315 ± 0.5  
315 - 1000 ± 0.8  
1000 - 2000 ± 1.2  
2000 - 4000 ± 2.0

LENGTH OF SHORTER  
SIDE OF ANGLE

1- 6 ± 1°  
6- 30 ± 0° 30'  
30- 120 ± 0° 20'  
120- 400 ± 0° 10'

SURFACE FINISH  
IN MICRONS 3.15√CLA

CHAMFER 1 x 45°

PROJECT OR SECTION

PP&EMD

TITLE:

ATOMIZER ASSEMBLY

APP'D: MVS

SHEET NO. 8 OF 9

SCALE: NTS

PROJN:

PART - 11

DRG NO. BARC/PP&EMD/AT-01

REV.

DRG. CHKD.: BGS

DR N/DATE: BUAVA

DEST.D.:

BHABHA ATOMIC RESEARCH CENTRE  
GOVERNMENT OF INDIA  
VISAKHAPATNAM

DRG. CHKD.: BGS

DR N/DATE: BUAVA

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APP'D: MVS

SHEET NO. 8 OF 9

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SHEET NO. 8 OF 9

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SHEET NO. 8 OF 9

SCALE: NTS

PROJN:

PART - 11

DRG NO. BARC/PP&EMD/AT-01

DRG. CHKD.: BGS

DR N/DATE: BUAVA

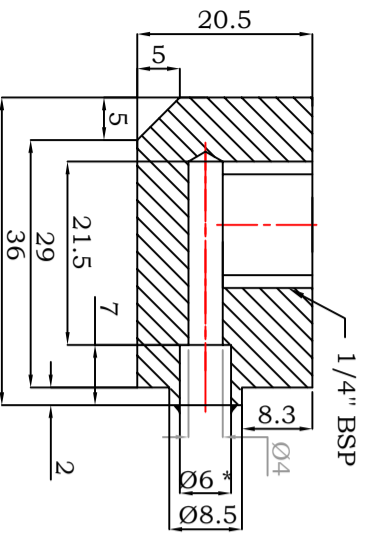
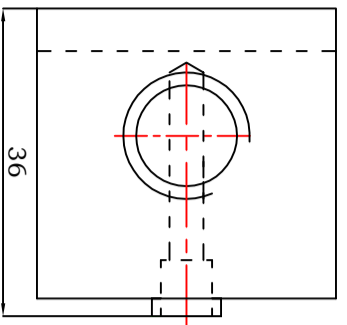
DEST.D.:

REV.

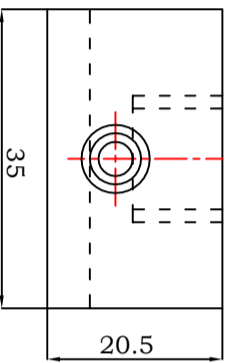
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DR N/DATE: BUAVA

DEST.D.:

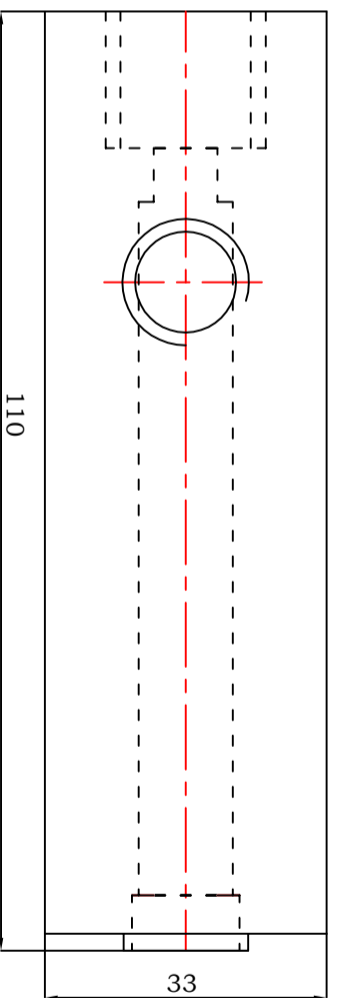


\*Match with Feed Thru.

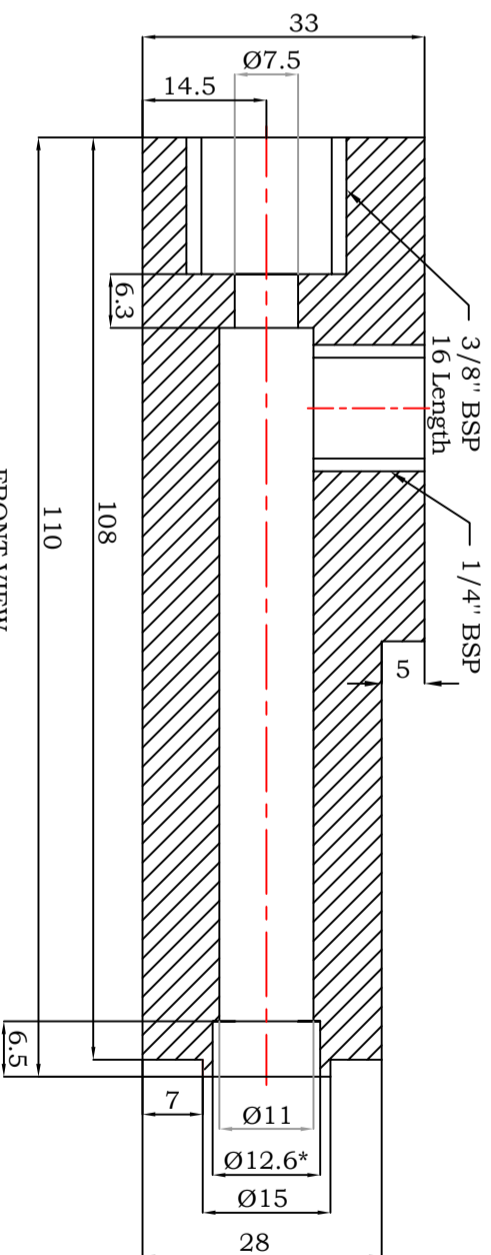


Material - SS 304  
Qty. - 2

PART - 14



TOP VIEW

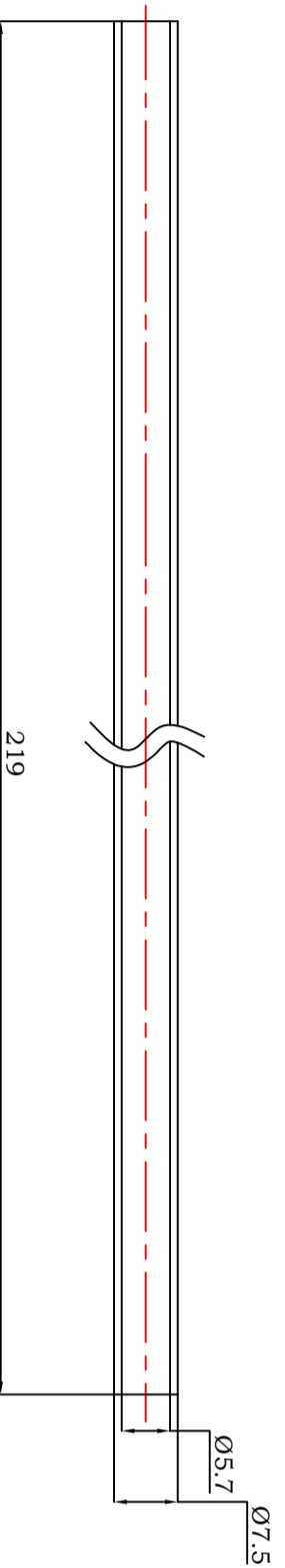


FRONT VIEW

\*Match with Feed Thru.

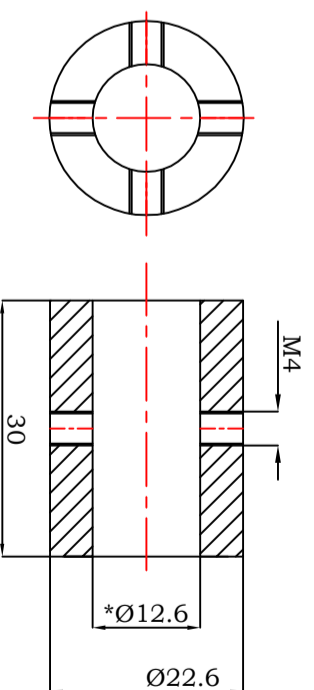
Material - SS 304  
Qty. - 1

PART - 15



Material - SS 304  
Qty. - 1

PART - 16



Material - SS 304  
Qty. - 1

PART - 17

GENERAL TOLERANCE UNLESS OTHERWISE SPECIFIED

LINEAR DIMENSIONS	LENGTH OF SHORTER SIDE OF ANGLE	SURFACE FINISH IN MICRONS
UP TO 6 ± 0.1	1- 6 ± 1°	3.15 √CLA
6 - 30 ± 0.2	6- 30 ± 0° 30'	CHAMFER 1 x 45°
30 - 120 ± 0.3	30- 120 ± 0° 20'	
120 - 315 ± 0.5	120-400 ± 0° 10'	
315 - 1000 ± 0.8		

PROJECT OR SECTION	TITLE:
PP&EMD	ATOMIZER ASSEMBLY
DR.N/DATE: BJAYYA	GOVERNMENT OF INDIA
DRG. CHKD.: BGS	BHABHA ATOMIC RESEARCH CENTRE
DES'D.:	VISAKHAPATNAM

APP'D: MVS	SCALE: NTS
SHEET NO: 9 OF 9	PROJN:
DRG NO. BARC/PP&EMD/AT-01	REV.

NO.	DRN DATE	APPD. DATE
	2000 - 4000 ± 2.0	1000 - 2000 ± 1.2
		315 - 1000 ± 0.8
		120 - 315 ± 0.5
		30 - 120 ± 0.3
		6 - 30 ± 0.2
		UP TO 6 ± 0.1

B

C

D

E

F

G

H