

Government of India
Bhabha Atomic Research Centre
Beam Technology Development Group

Ref: BTDG/UCUF/WORKS/SPD/2017/MF/216/168879

September 26, 2017

To,

Sub : Invitation of Quotations for fabrication and supply of air inrush protection covers for high vacuum system.

DUE DATE: 10/10/2017

Dear Sirs,

1. Quotations are invited for the minor fabrication job as per the specifications and drawings.
2. Bidder shall quote for fabrication of these components with material.
3. Taxes and duties shall be quoted separately.
4. The quotations must reach **Associate Director, Beam Technology Development Group** by 10/10/2017 and must be sent in a sealed envelope super scribed with the above reference number and due date given above. Quotations should be sent through Indian post only.
5. The address on the envelope should read
(Attn. Shri S.P.Dey)
To,
Associate Director,
Beam Technology Development Group.
Bhabha Atomic Research Centre,
Mumbai - 400 085.
6. The bidder shall have to take an insurance policy against any material issued to him by the purchaser.
7. The fabrication work shall be subjected to inspection by our engineer. The finished components shall not be dispatched prior to approval by our engineer at bidder's works. Necessary inspection facilities should be provided to our engineers during fabrication at bidder's premises.
8. The bidder shall deliver the finished components after approval by our engineer within 06 weeks from the date of issue of the purchase order to the bidder.
9. Associate Director, BTDG, BARC reserves the right to accept or reject any or all quotations without assigning any reason.
10. For any further clarification Shri S.P.Dey, L&PTD (Extn: -24352, email: spdey@barc.gov.in) may be contacted.

Yours faithfully.


Associate Director,
Beam Technology Development Group

Technical specification for air inrush protection covers for high vacuum system

1. SCOPE OF THE WORK FOR SUPPLIER:

Under this work, 02 sets of air inrush protection covers for high vacuum systems are to be fabricated and supplied. The scope of the work for the supplier includes,

- 1.1 Preparation of the detail fabrication drawing and QA plan for approval .
- 1.2 Manufacturing of the systems as per approved drawing. **Quantity -02 set**
- 1.3 Assembly, inspection, leak testing and functional testing at supplier's works.
- 1.4 Delivery at purchaser's site. Installation at purchaser's site is not in the scope of the supplier.
- 1.5 Offering a guarantee of the systems for a period of 12 months from the date of purchaser's acceptance.

2. TECHNICAL SPECIFICATIONS:

- 2.1 All other specifications and details are provided in the drawings.
- 2.2 The work should be started only after submitting the fabrication planning and getting it approved. The supplier shall submit the complete fabrication drawing with QA/QC program for Purchaser's approval.
- 2.3 All material required for the job is to be arranged by the fabricator. There is no free issue material from purchaser
- 2.4 A part of the work, regular use of The MSLD will be required. The bidder should be conversant with He leak detection method and also should have access to He MSLD system.
- 2.5 The job dimensions, verticality and horizontal alignment must be maintained carefully. Wherever required, suitable jigs and fixtures should be used.
- 2.6 Suitable fabrication and machining processes may be used for different parts. However the same has to be mentioned in the drawings for reference.
- 2.7 The sealing surfaces should have 0.4-0.8 micron surface finish with concentric lay.
- 2.8 All the welding shall be done by GTAW process. The electrodes to be used should be of 308L type.
- 2.9 All weld joints should be full/partial penetration welds as per the approved configurations. The surfaces are to be prepared properly prior to welding.
- 2.10 Weld joints are to be cleaned and ground flush with the structure surfaces. The weld preparation, welding joints and finished ground welds will be checked visually.
- 2.11 The internal and external surfaces are to be clean and should have uniform finished appearance. The finished structure has to be buffed with matte finish and are to be passivated with citric acid solution as per ASTM A 967.

2.12 Where dimensional accuracy or tolerance is not mentioned for linear or angular dimensions it is to be taken as Indian Standard medium grade tolerance (IS 2102). Tolerances on linear and angular dimensions according to IS 2102 medium grade are given below.

Dimension	Tolerance	Dimension	Tolerance
0.5-6mm	±0.1 mm	up to 10 mm	±1.0 ⁰
6-30 mm	±0.2 mm	10-60 mm	± 0 ⁰ 30'
30-120 mm	±0.3 mm	60-120 mm	± 0 ⁰ 20'
120-400 mm	±0.6 mm	120-400 mm	± 0 ⁰ 10'
400-1000 mm	±0.9 mm	> 400 mm	± 0 ⁰ 5'
1000-2000 mm	±1.2 mm		

2.13 *Testing and inspection:*

- i) *Liquid Penetration Examination:* All weld joints are to be tested by LPT. The Liquid Penetration Examination Procedure shall conform to ASTM standards E-165 "Methods of Liquid Penetrant Inspection". Acceptance standards shall be in accordance with par. UA-91 Appendix 8 of ASME Boiler and Pressure Vessel Code, Section VIII, Division-I.
- ii) *Dimensional inspection:* The part and assembly dimensions are critical and will be checked as per approved drawings. A complete dimension inspection report has to be prepared by the fabricator for review and retention by the purchaser.
- iii) *Functional testing:* The functional testing of the assembly will be carried out at the fabricator's works to ascertain minimum requirements are fulfilled. The system should clear the He-Leak test at 1x10e(-9) mbar.l/s sensitivity as standalone unit and as an assembly. The assembly will also be tested for 1.5 bar internal pressure.

The purchasers engineer shall have right to specify additional inspection/testing if considered necessary to ensure that the quality of the job is consistent with this specification. The contractor shall maintain proper records of all the inspection and testing carried out and copies of which shall be submitted to the engineer- in- charge for retention & records.

3. PACKING AND TRANSPORTATION:

3.1. After carrying out the tests at manufacturer's works as specified, all the parts shall be carefully packed to avoid any form of damage during transport, transit and open-air storage at site. The sealing surfaces need to be protected by suitable packing material.

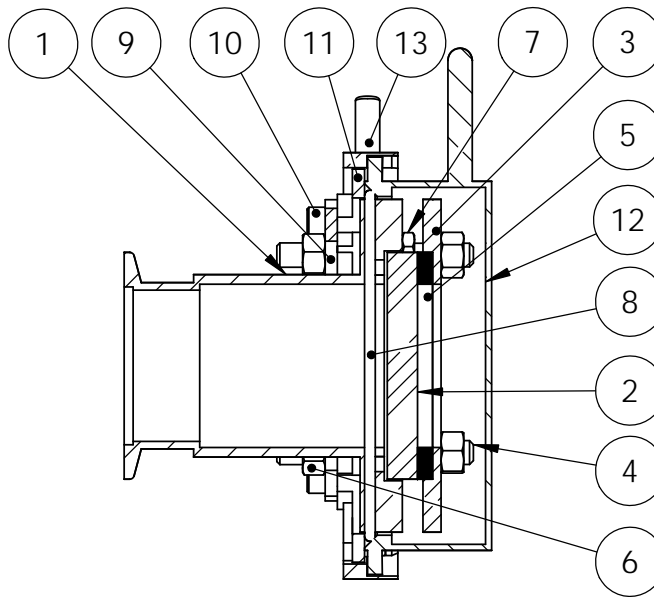
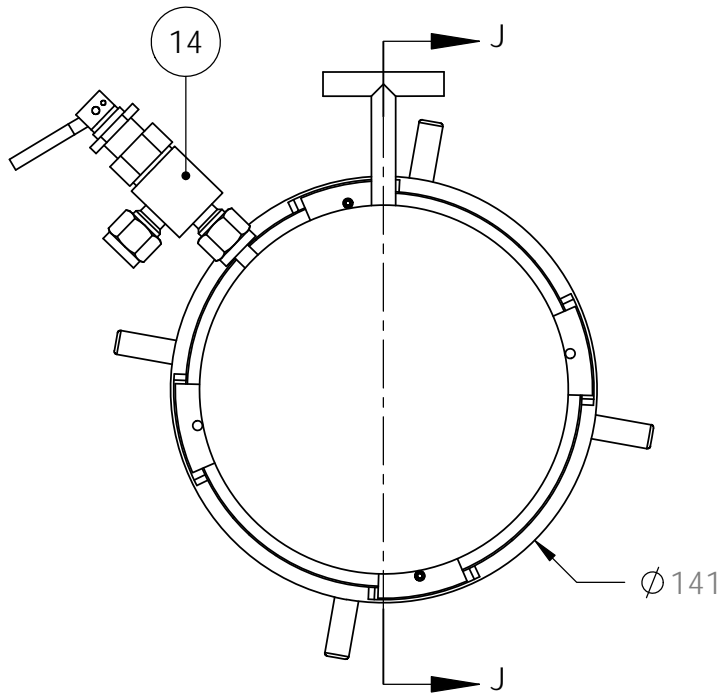
4. DOCUMENTATION:

4.1 *Documents required to be furnished along with the supply (in duplicate):*

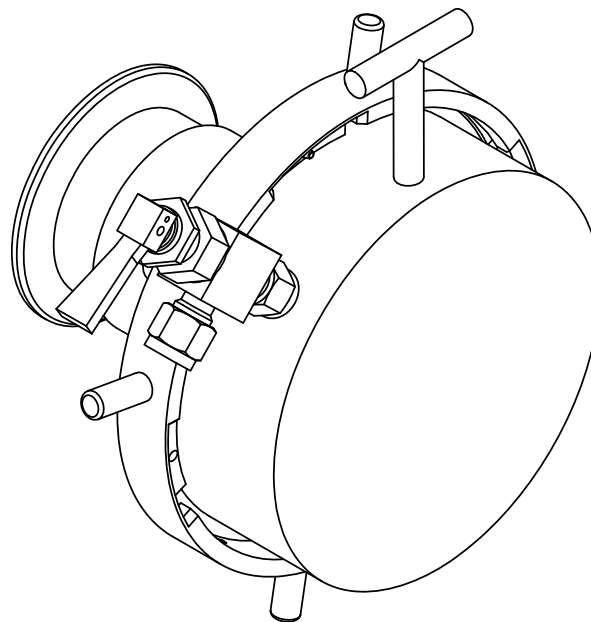
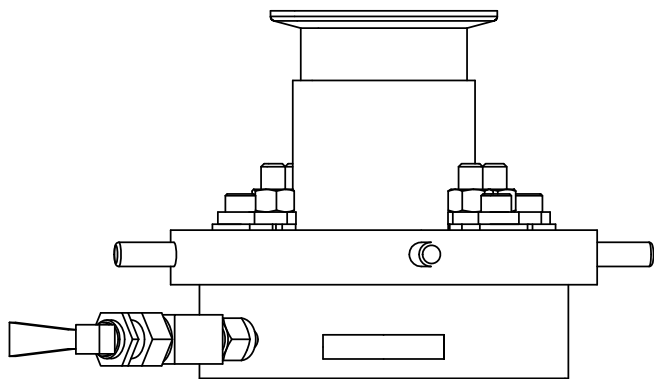
- a) Chemical, mechanical, He-MSLD , pressure test reports
- b) Dimensional inspection report.
- c) Packing list.

5. DELIVERY SCHEDULE, GUARANTEE, GENERAL TERMS AND CONDITIONS:

- 5.1** *Guarantee:* The contractor shall stand guarantee for the total fabrication work carried out by him for its workmanship and material for a period of at least one year from the date of acceptance of the work. This guarantee shall cover free repairs or replacement of parts, which have failed during normal operation within the guarantee period due to defective material of construction, workmanship etc.
- 5.2** *Period of completion:* The contractor shall complete the job within 06 weeks from issue of order.
- 5.3** *Installation:* Installation of the fabricated items are NOT in the scope of the supplier.
- 5.4** *Safety and security:* The contractor will strictly abide by rules and regulations set by Security Section of BARC for any work inside BARC. All the personnel employed by the contractor shall possess valid PVC as required by Security Section to work inside BARC.
- 5.5** *Quotation:* The supplier shall provide the quotation for each set of the items. Taxes and duties, if any, should be mentioned separately in the quotation.

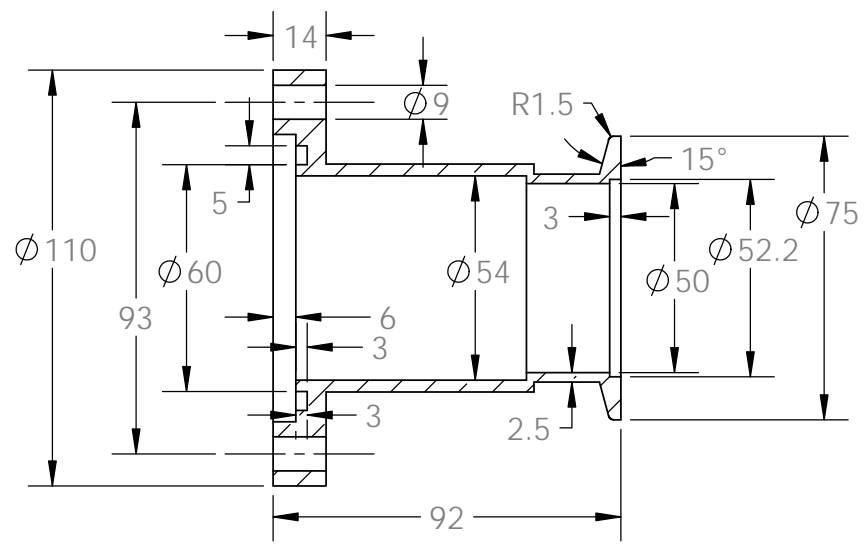
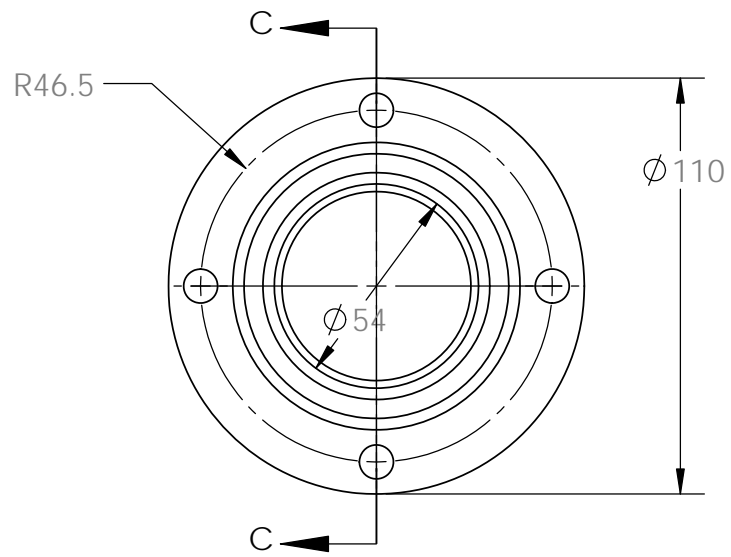


SECTION J-J
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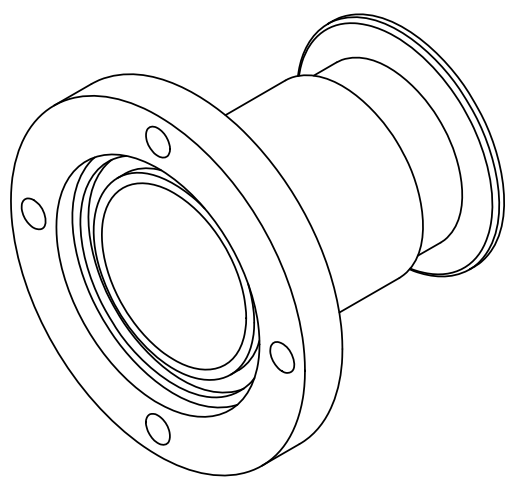
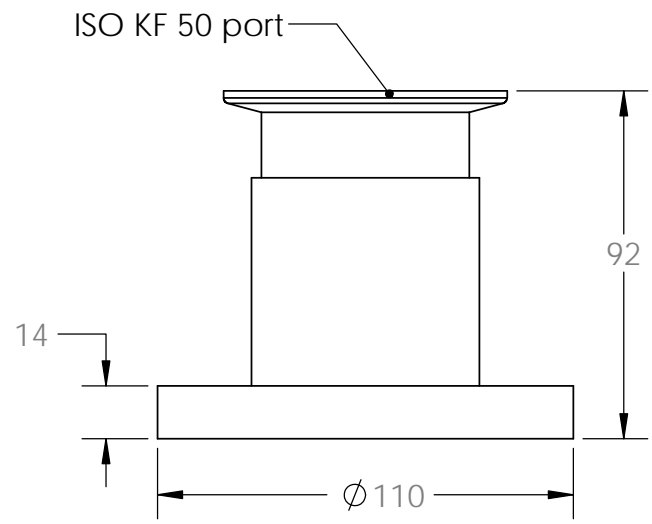


ITEM NO.	PART NUMBER	QTY. per set
1	Fixed port	1
2	Glass window	1
3	Clamping flange	1
4	Screw	4
5	Gasket for glass window	1
6	B18.2.4.2M - Hex nut, Style 2, M8 x 1.25 --D-N	8
7	Hex jam nut, M8 x 1.25	4
8	O-ring 109x3.55-A-ISO 3601-1	1
9	Connecting plate	4
10	B18.3.1M - 6 x 1.0 x 10 Hex SHCS -- 10NHX	4
11	Locking sector -with wedge lock	1
12	Protection cover	1
13	Wedge lock ring	1
14	SS-1GS6MM-Swagelok needle shutoff valve	1

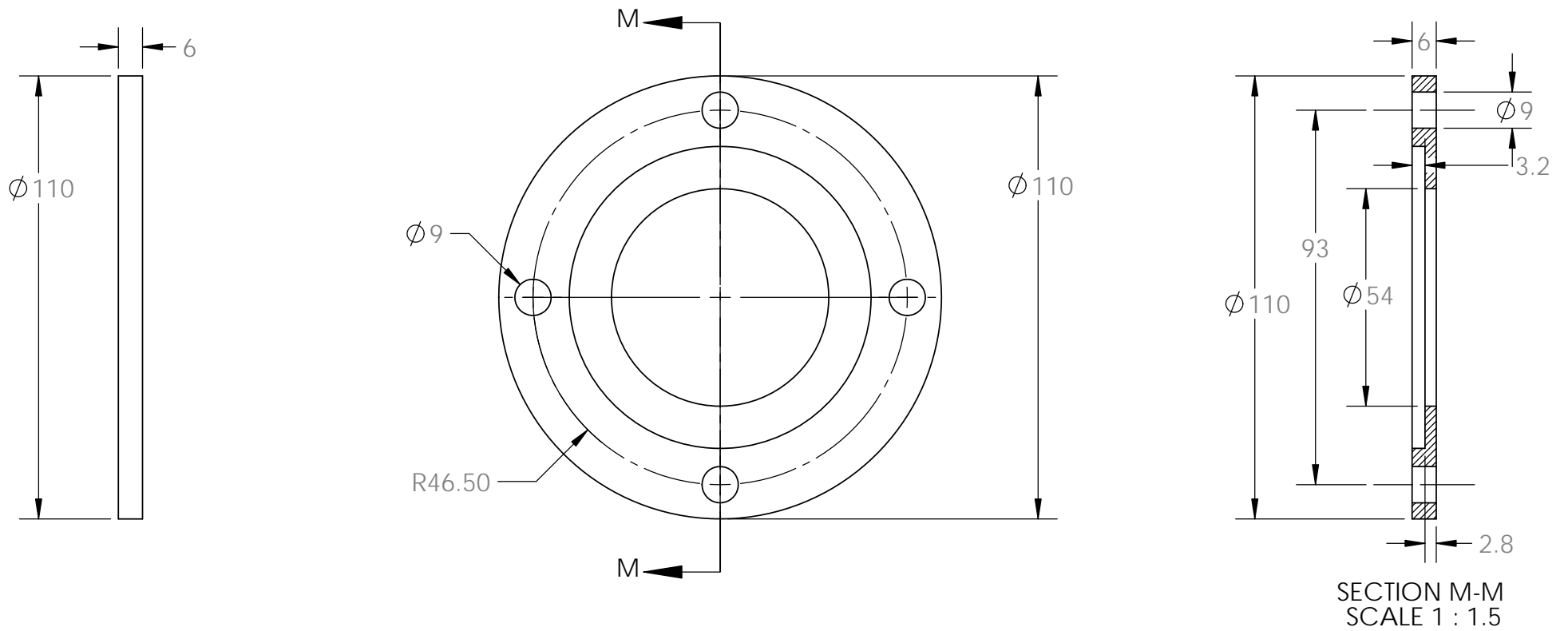
Except item-2, all parts are to be supplied by the manufacturer.



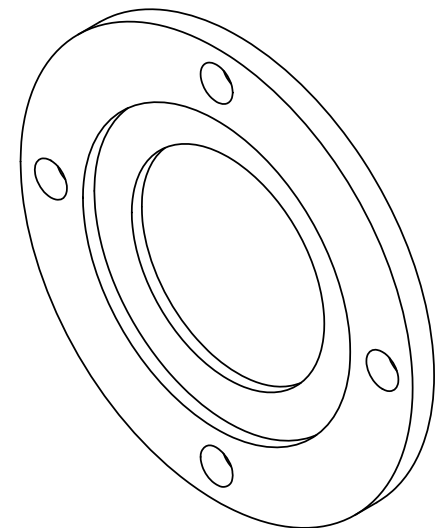
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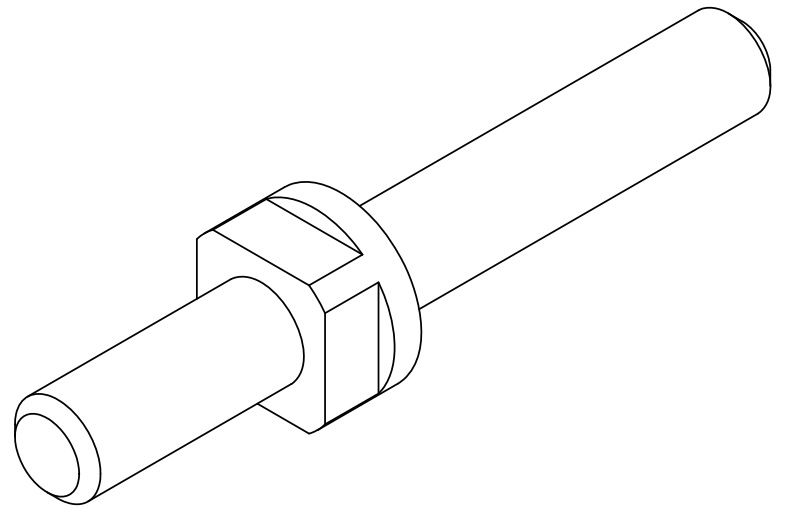
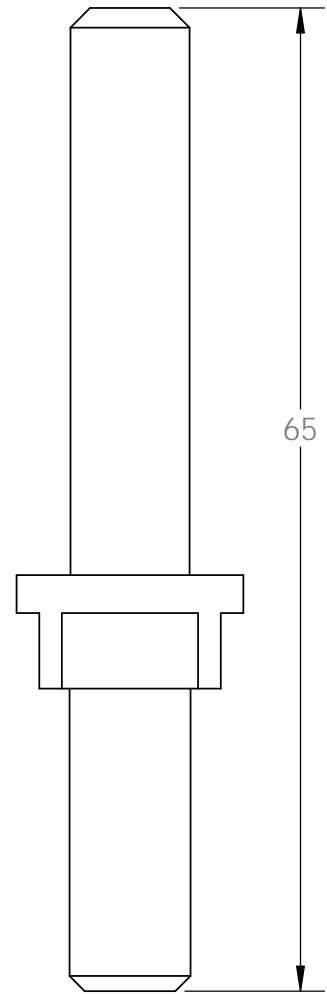
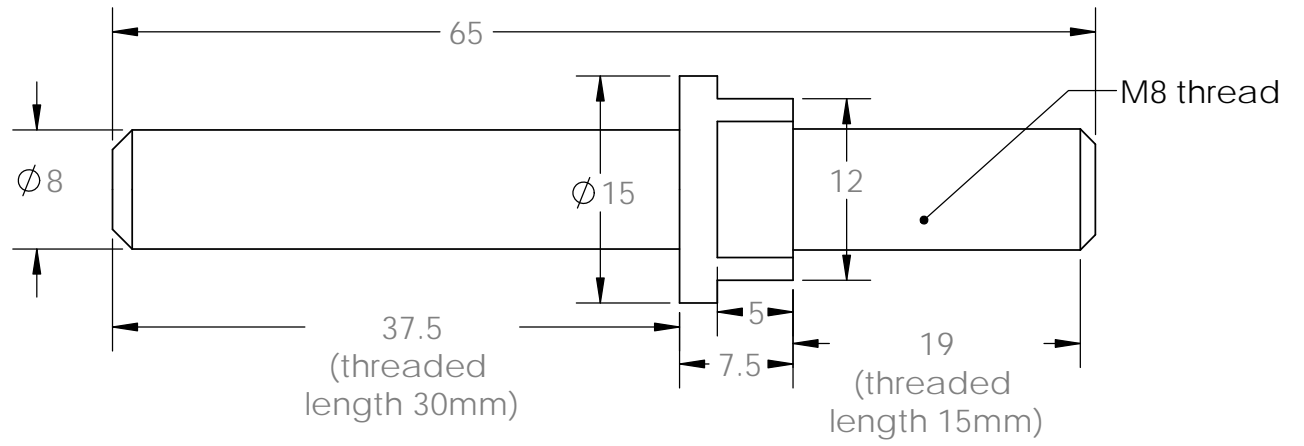
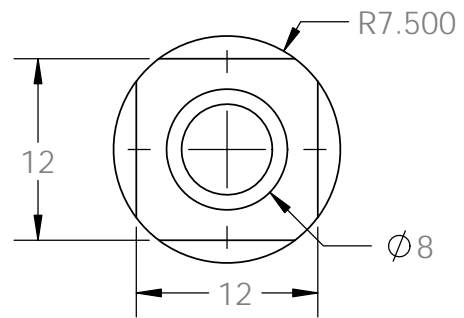


Part-1 : Fixed port
Material: SS304L

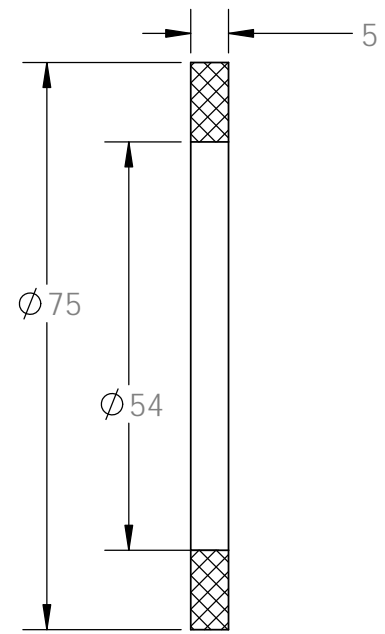
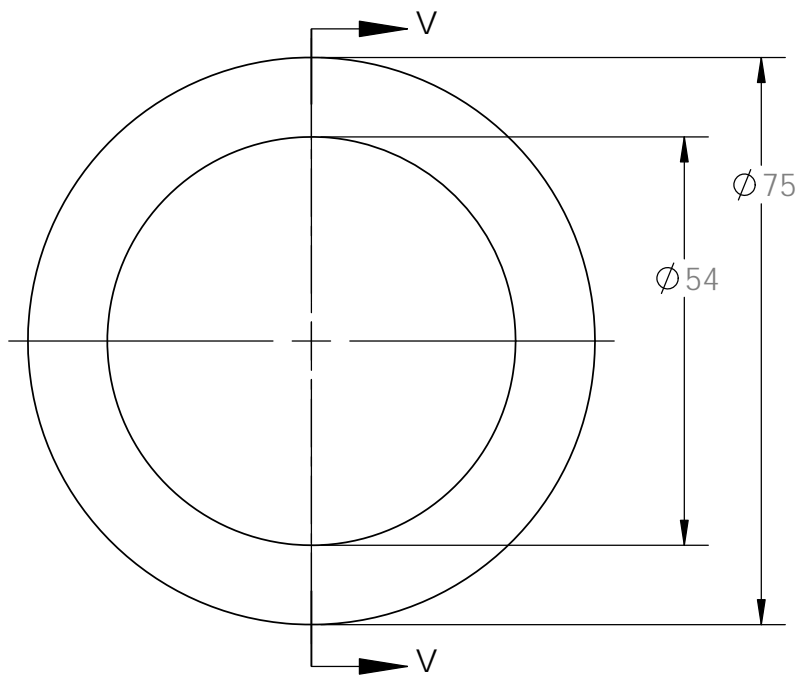


Part-3 : Clamping flange
Material: SS304L



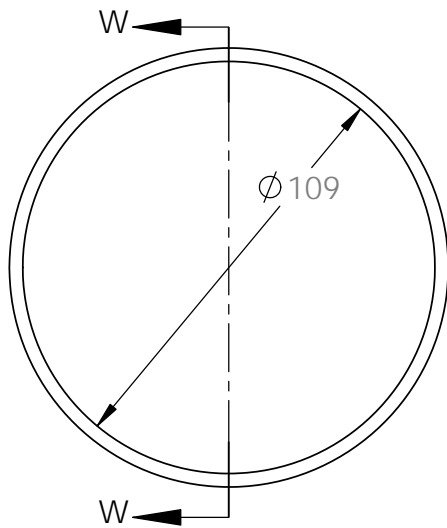


Part-4 : Screw
Maerial: SS 304

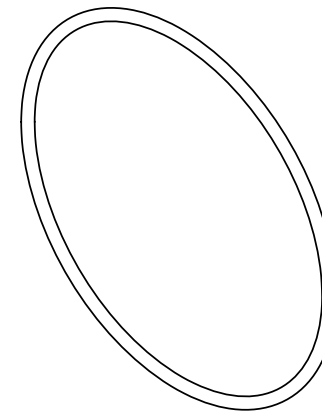


SECTION V-V

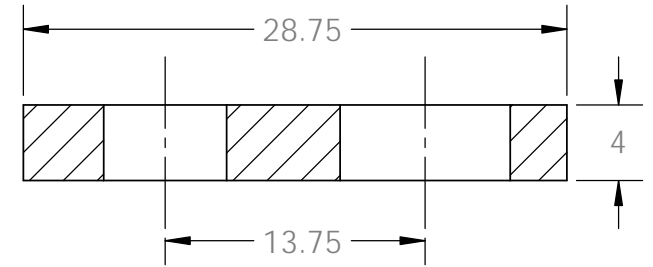
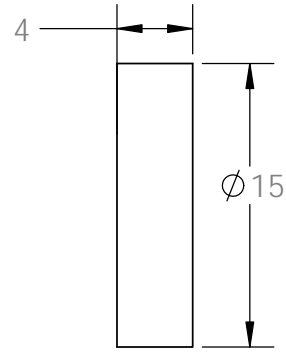
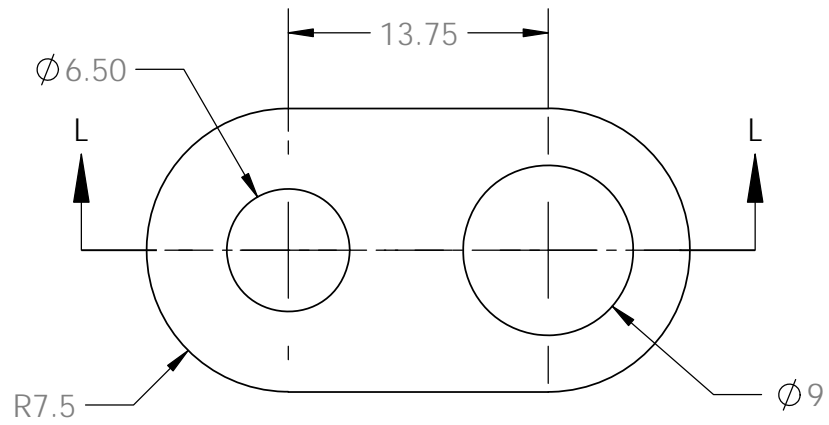
Part-5: Viton Gasket for glass window



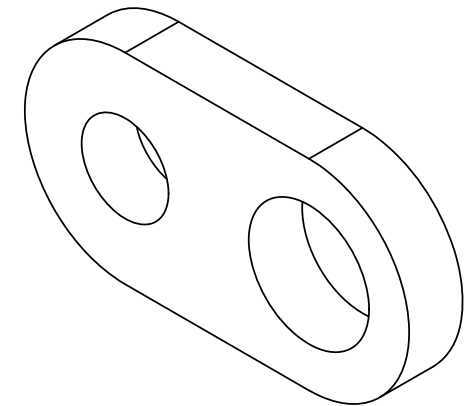
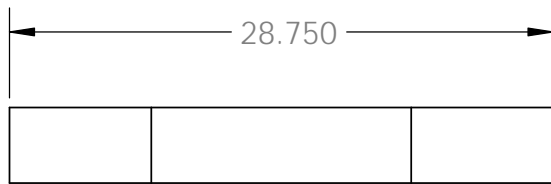
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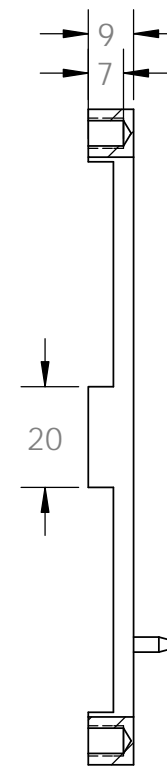
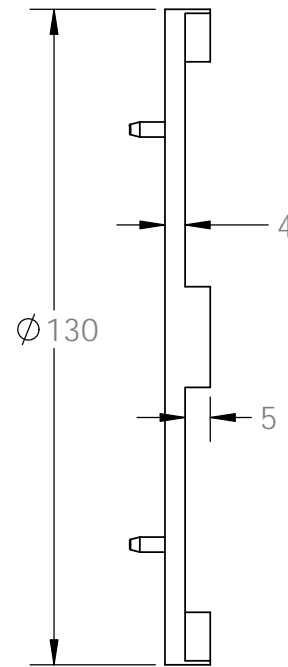
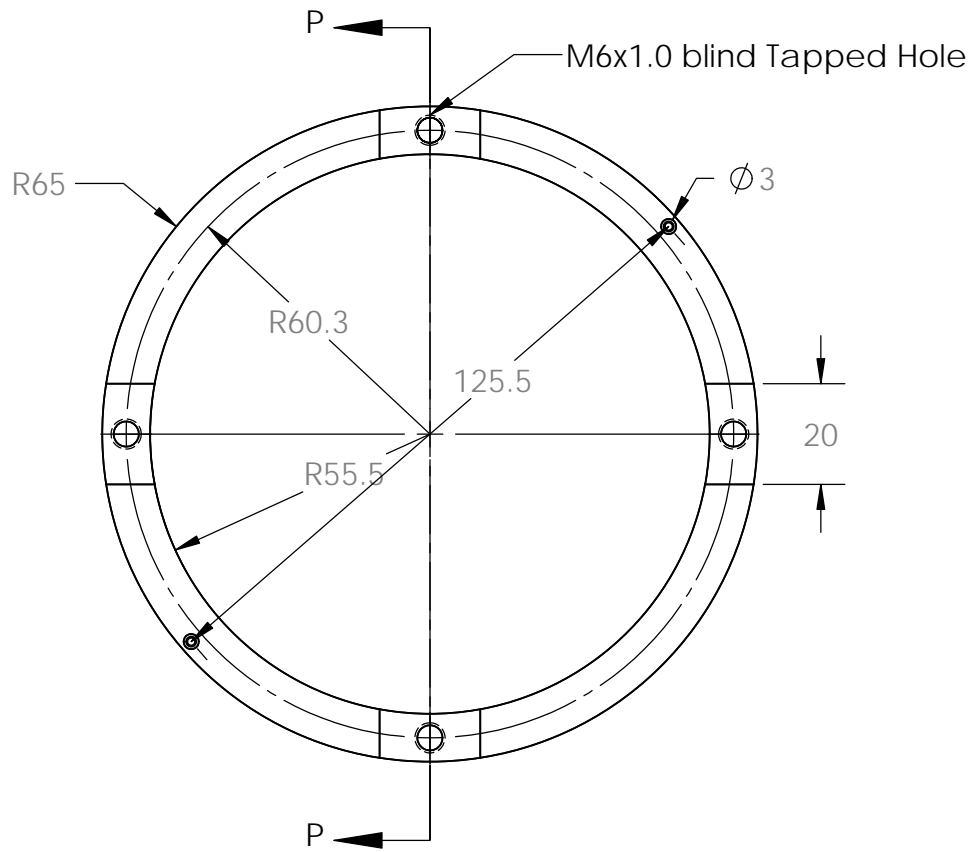
Part-8: Viton O-ring 109x3.55-A-ISO 3601-1



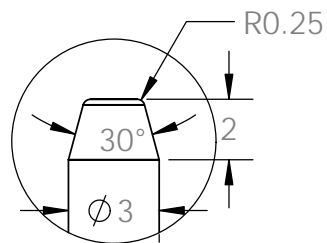
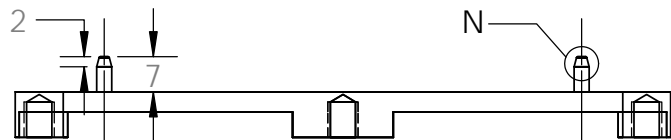
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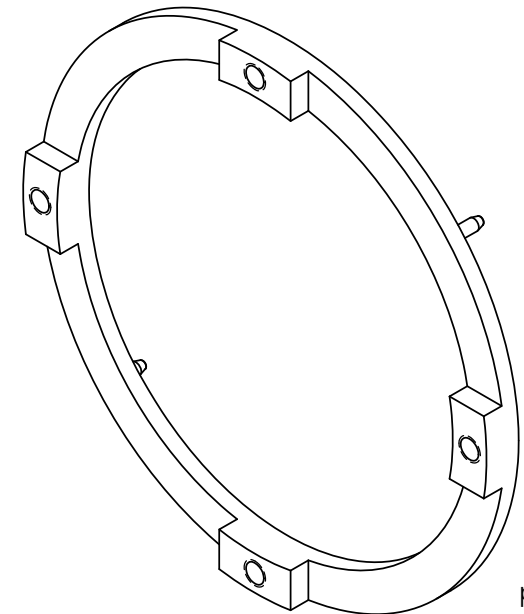
Part-9 : Connecting plate
Material: SS 304/304L



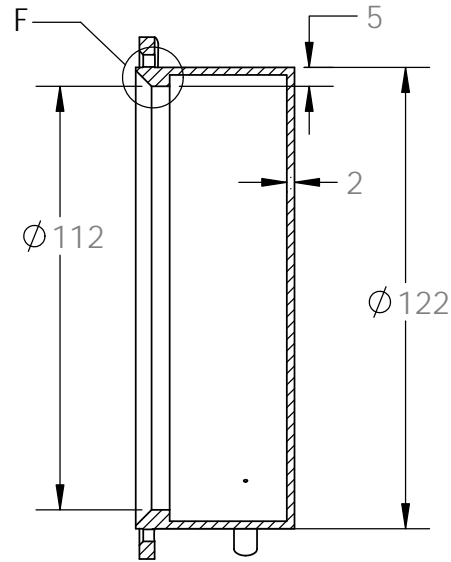
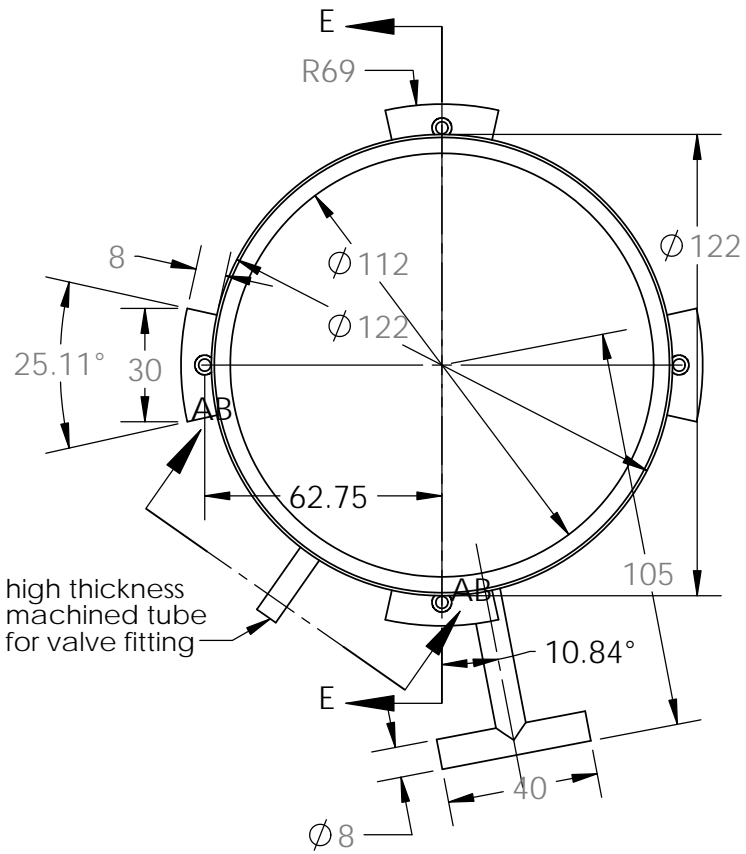
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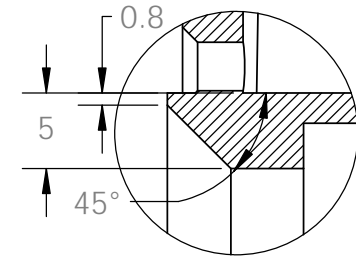
DETAIL N
SCALE 4 : 1



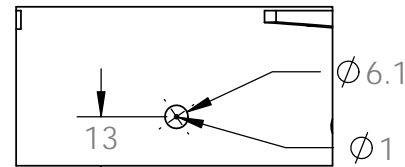
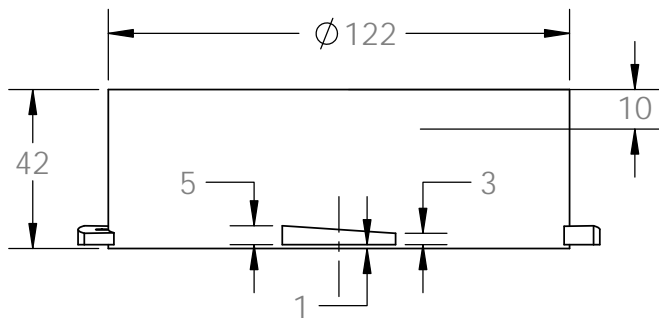
Part-11: Locking sector
Maerial: SS 304/ 304L



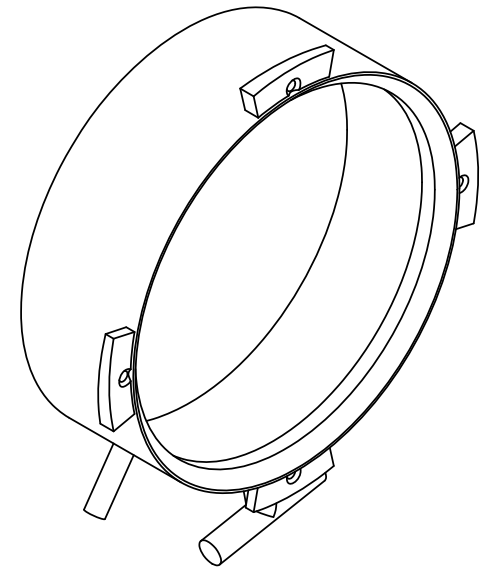
SECTION E-E
SCALE 1 : 2



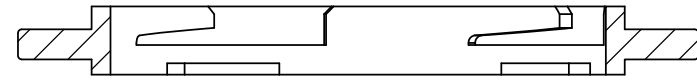
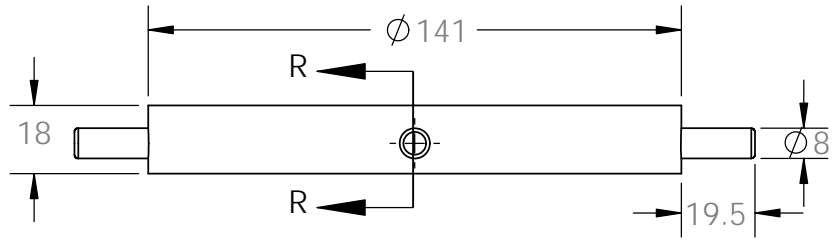
DETAIL F
SCALE 2 : 1



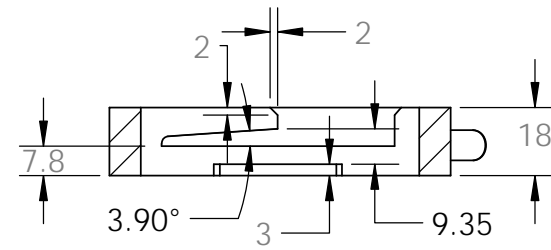
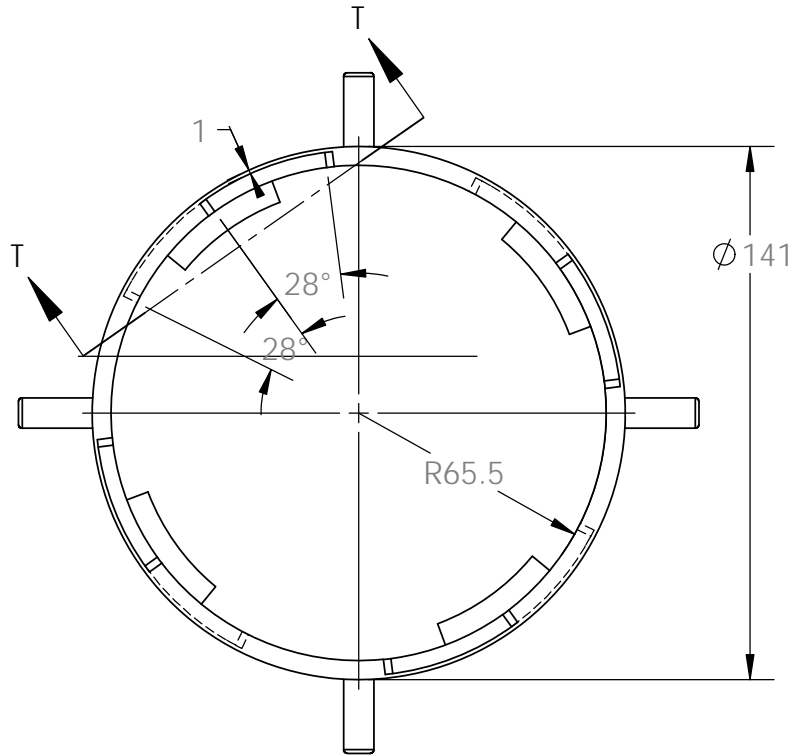
SECTION AB-AB
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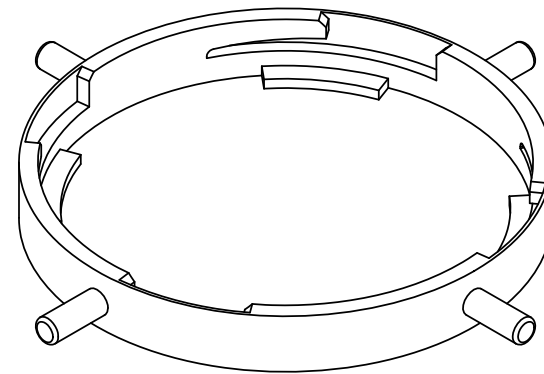
Part-12 : Protection cover
Maerial: SS 304/ 304L



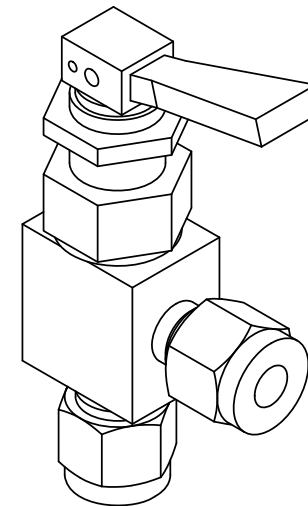
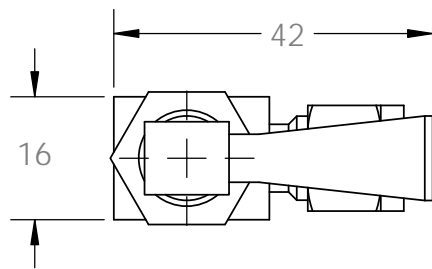
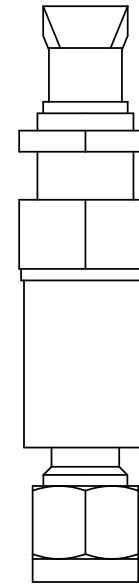
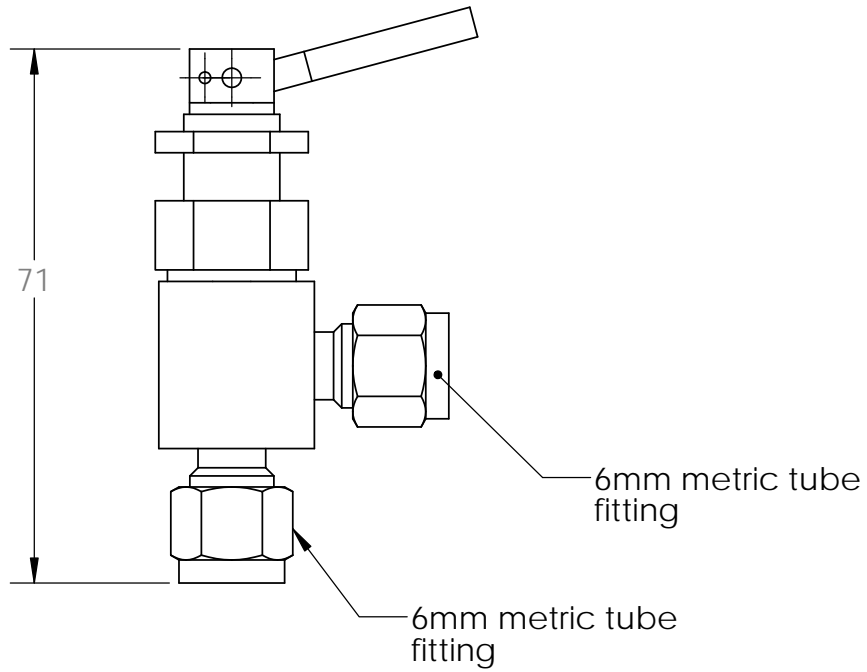
SECTION R-R
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SECTION T-T
SCALE 1 : 2



Part-13: Wedge lock ring
Material: SS 304/ 304L



Part-14: Toggle valve (equivalent to 'Swagelok' SS-1GS6MM-A)
Material: SS 304/ 316