

Government of India
Bhabha Atomic Research Centre
Beam Technology Development Group

Ref: BTDG/WORKS/SPD/2019/MF/246/91077

May 14, 2019

To,


Sub : Invitation of Quotations for fabrication and supply of custom made elbow and flanges for high vacuum system.

DUE DATE: 29/05/2019

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 29/05/2019 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 supplier 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 supplier's works. Necessary inspection facilities should be provided to our engineers during fabrication at supplier's premises.
8. The supplier shall deliver the finished components after approval by our engineer within 08 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
S. P. DEY
L & PTD

Technical specification for custom made elbow and flanges for high vacuum system

1. SCOPE OF THE WORK FOR SUPPLIER:

Under this proposed work the following items are to be fabricated and supplied.

Sl.	Item description	Qty
1.	Part-1, Jacketed stainless elbow (DN160-ISO-K) with customised end flange	01
2.	Part-2, Measurement flange	01
3.	Part-3, Customised blind flange with ISO-KF 40 adaptor	01
4.	Part-4, CF-160 Adaptor Port	01
5.	Part-5, CF-200 adaptor flange	02
6.	Part-6, DN 160-ISO K centering ring	02
7.	Part-7, OFHC Copper gasket for CF-200, CF100 and CF40 flange	05 each

The scope of the work for the supplier includes,

- 1.1 Preparation of the detail design and drawing of the elbow, flanges and the centering ring for approval.
- 1.2 Manufacturing of the elbow, measurement flange, blind & adaptor flange and centering rings as per approved drawings.
- 1.3 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 INTRODUCTION: The stainless elbow (DN160-ISO-K) with customised end flanges will be integrated to an existing vacuum system. The existing system dimensions are primary constraint and the elbow dimensions should match the dimensions provided in the drawing. A drawing of the elbow and other parts are attached with this specification.

2.2 DETAILS OF THE ELBOW :

2.2.1 Operating pressure: Nominal operating pressure is 1×10^{-6} mbar vacuum. However, the elbow may be subjected to 1.5 bar internal pressure for short duration.

2.2.2 Operating temperature: Nominal temp range 17-40 °C.

2.2.3 Material: Austenitic stainless steel of low carbon grade to be used for elbow, end flanges and jacket (SS 304/ 304L/ 316L). Elbow should be seamless type.

2.3 DETAILS OF THE ADAPTOR AND BLIND FLANGE:

2.3.1 Operating pressure: Nominal operating pressure is 1×10^{-6} mbar vacuum. However, the flanges may be subjected to 1.5 bar internal pressure for short duration.

2.3.2 Operating temperature: Nominal temperature range 21- 40 °C.

2.3.3 Material: Austenitic stainless steel of low carbon grade to be used for the measurement flange (SS 304/304L/ 316L).

2.3.4 No crevices should be present in the welded joints.

2.4 DETAILS OF THE CENTERING RING:

2.4.1 The centering rings are to be made as per standard dimension to fit with DN-160 ISO-F vacuum flange.

2.4.2 Operating pressure: Nominal operating pressure is 1×10^{-6} mbar vacuum. However, in assembly, the centering rings may be subjected to 1.5 bar internal pressure for short duration.

2.4.3 Operating temperature: Nominal temperature range 21- 40 °C.

2.4.4 Material: Austenitic stainless steel of low carbon grade to be used for the measurement flange (SS 304/304L/ 316L).

3. FABRICATION, INSPECTION AND TESTING:

3.1 The supplier shall submit the complete fabrication drawing with QA/QC program for Purchaser's approval.

3.2 Suitable fabrication and machining processes may be used for the system. However the same has to be mentioned in the drawings for reference.

3.3 The internal and external surfaces are to be clean and should have uniform finished appearance.

3.4 The sealing surfaces should have 0.4-0.8 micron surface finish with concentric lay.

- 3.5 The elbow and flanges will be used for high vacuum application and should clear the He-Leak test at 1×10^{-9} mbar.l/s sensitivity as an assembly. The assembly will be tested for 1.5 bar internal pressure.
- 3.6 Dimensional checking and functional testing of the elbow and measurement flange will be carried out at supplier's works before dispatch.

4. PACKING AND TRANSPORTATION:

- 4.1 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.

5. DOCUMENTATION:

- 5.1. *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.

6. DELIVERY SCHEDULE, GUARANTEE, GENERAL INSTRUCTIONS/NOTES:

6.1 *DELIVERY SCHEDULE:*

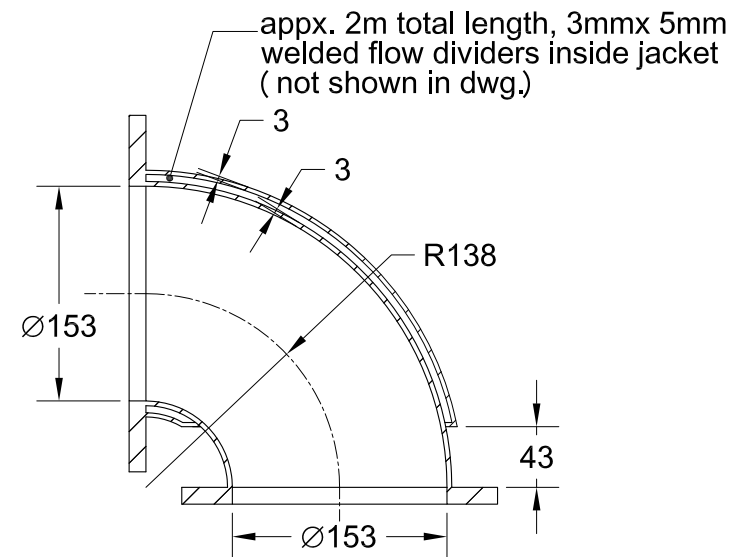
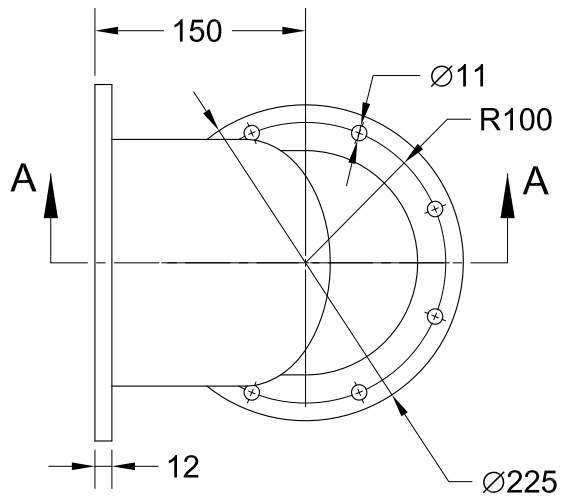
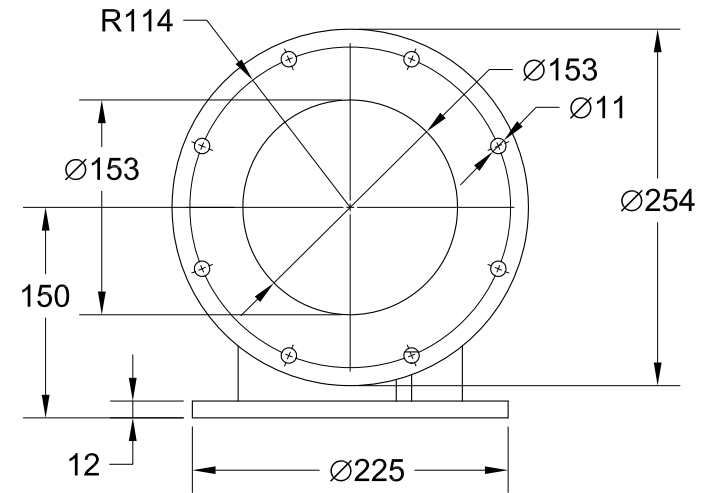
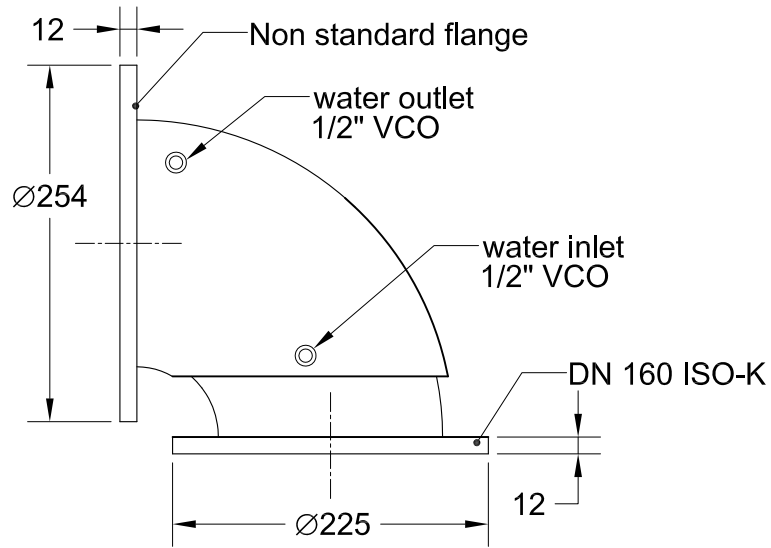
The complete systems are to be supplied within 8 weeks of placement of the order.

6.2 *GUARANTEE:*

The guarantee/warranty shall cover the equipments for a period of 12 months from the date of Delivery. 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.

6.3 *QUOTATION:*

The supplier shall provide the quotation on per item basis. Taxes and duties, if any, should be mentioned separately in the quotation.

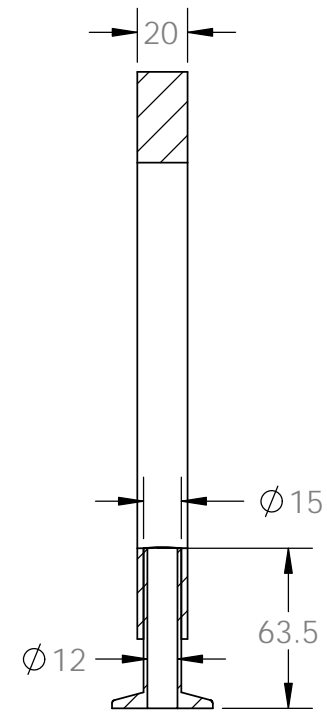
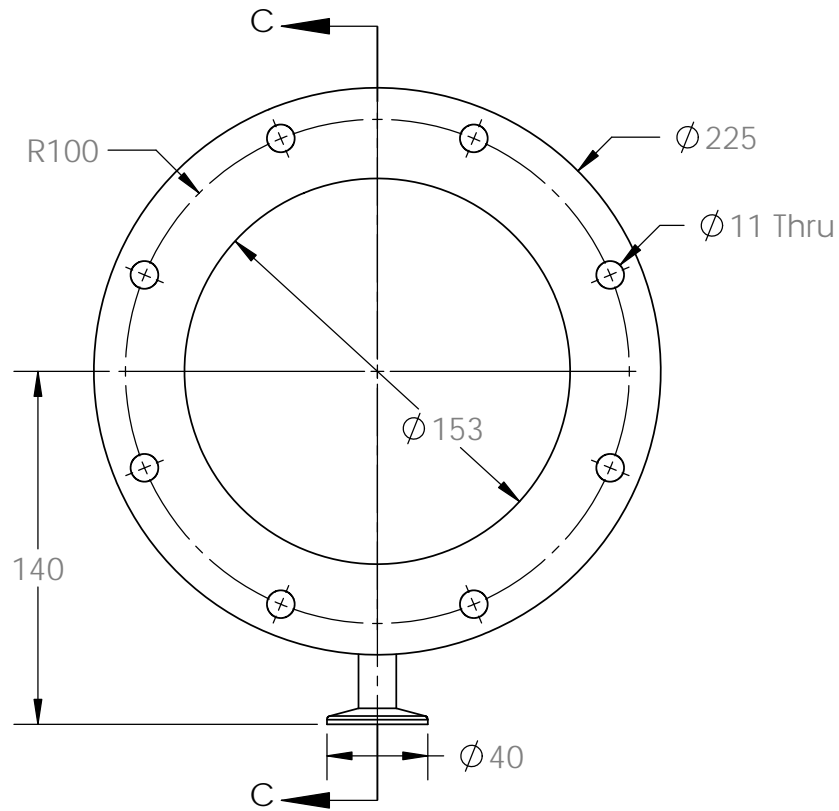


SECTION A-A
SCALE 1 : 5

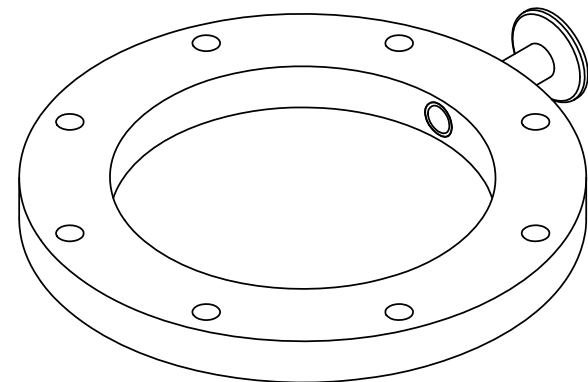
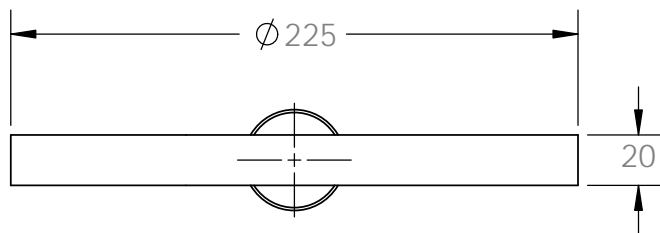
Part-1: Jacketed Elbow with non standard flange at one side

Qty: 01

MTL: SS 304L

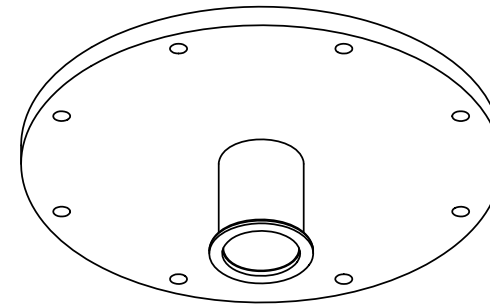
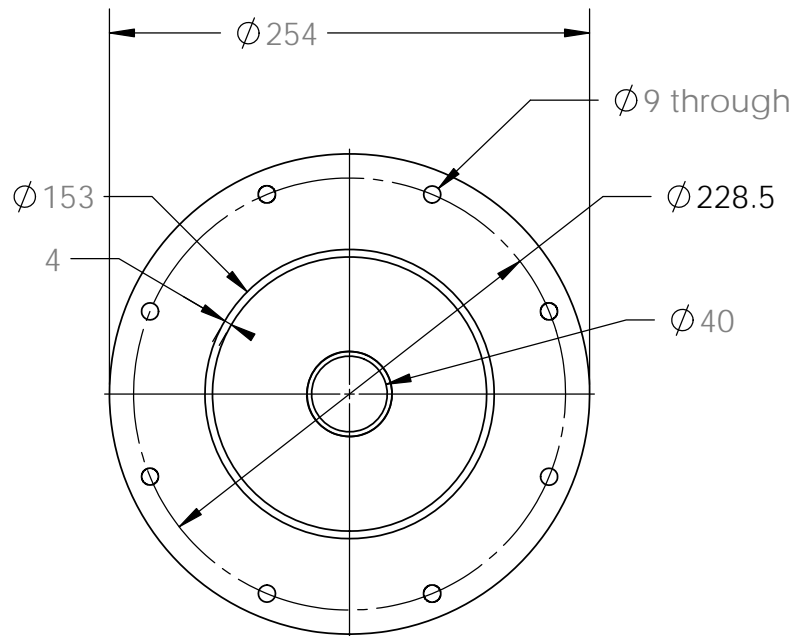
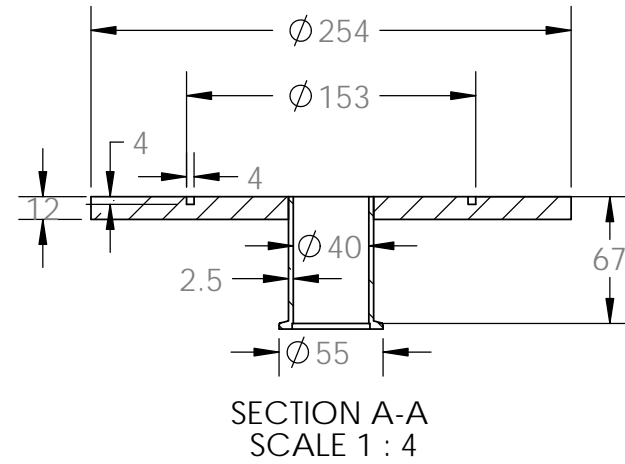
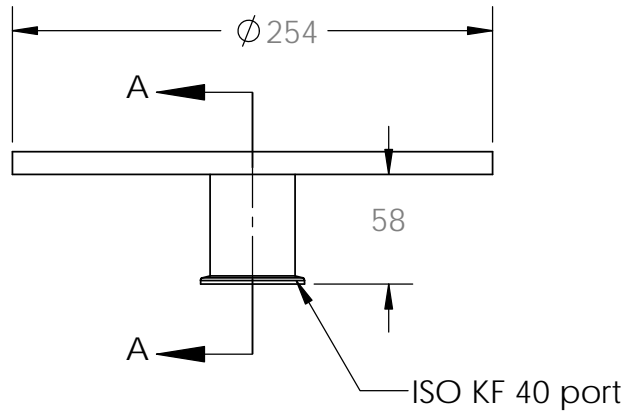


SECTION C-C
SCALE 1 : 3

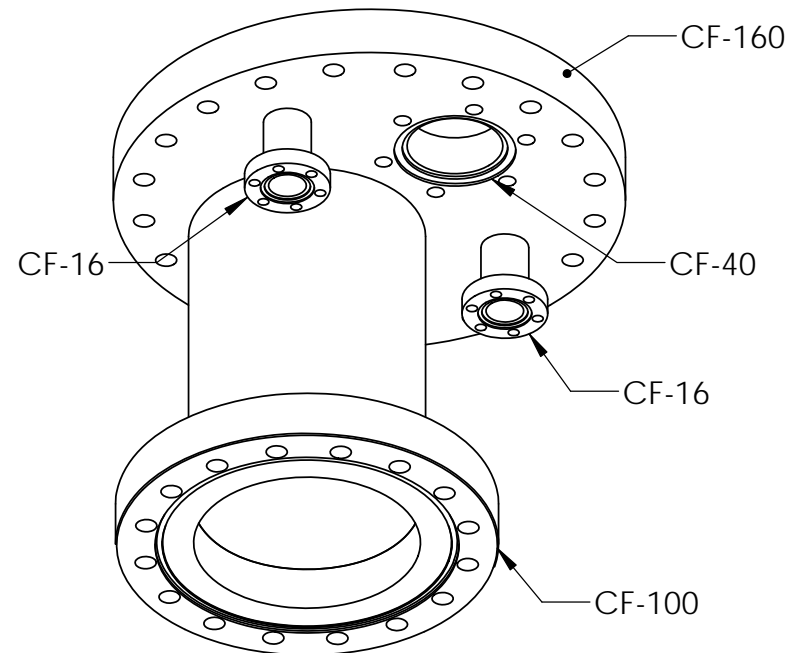
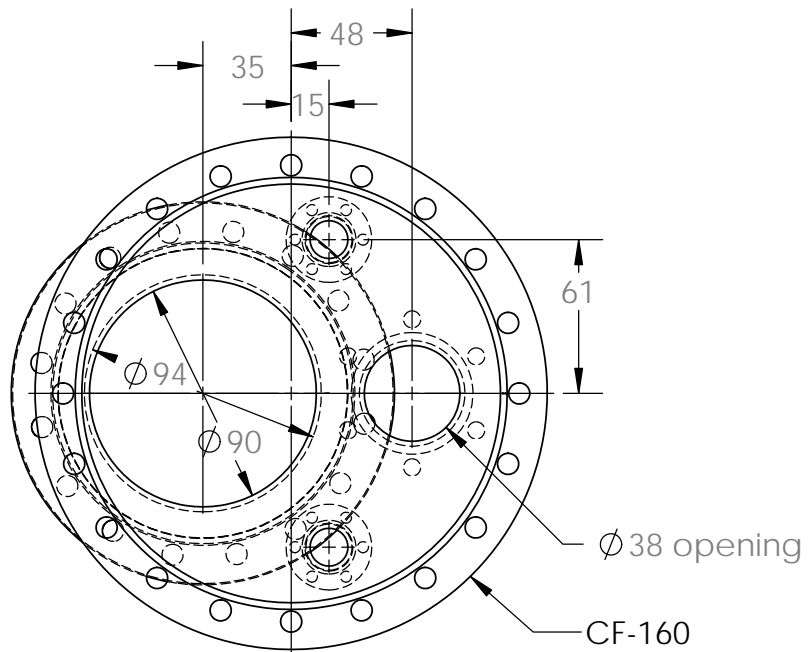
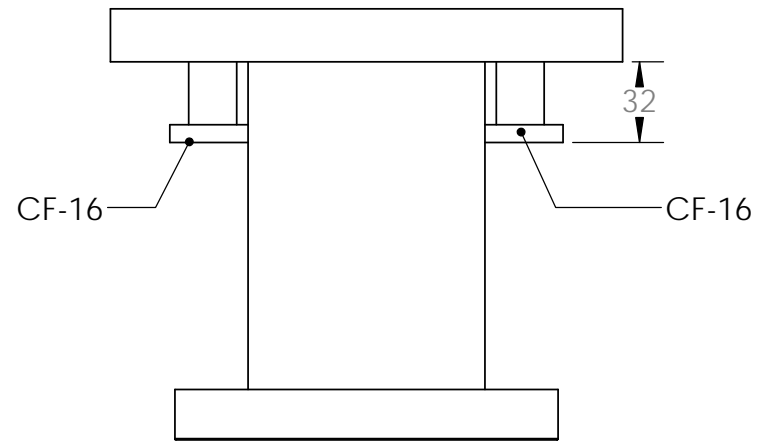
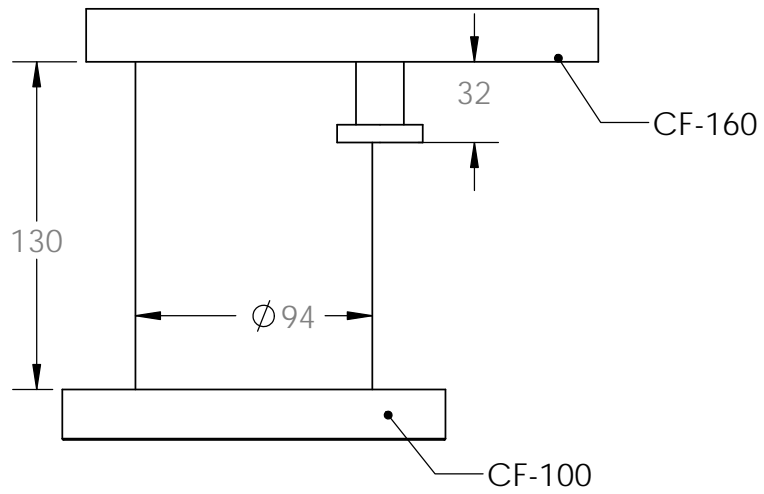


Part-2: Measurement flange

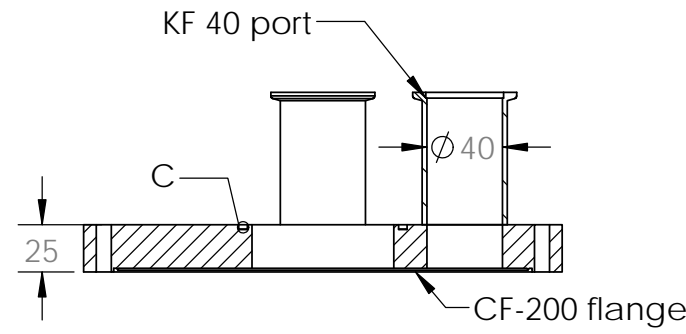
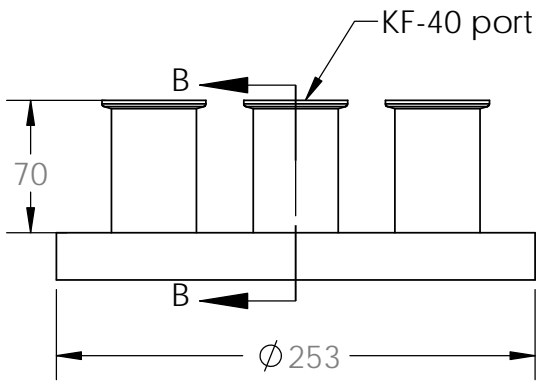
Qty: 01
 MTL: SS 304L



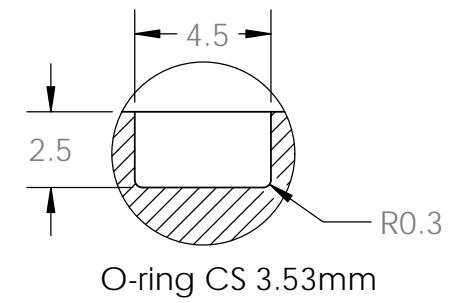
Part-3: Customised Blind flange with KF-40 adaptor
 Mtl: SS304/ 304L
 Qty: 01



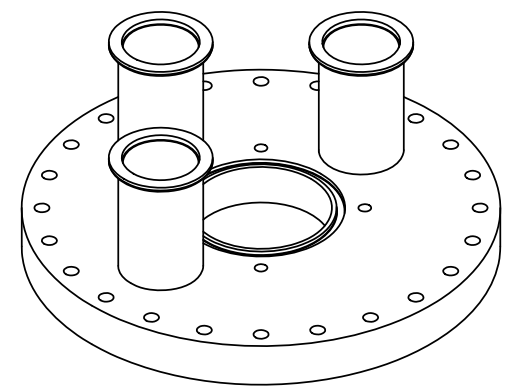
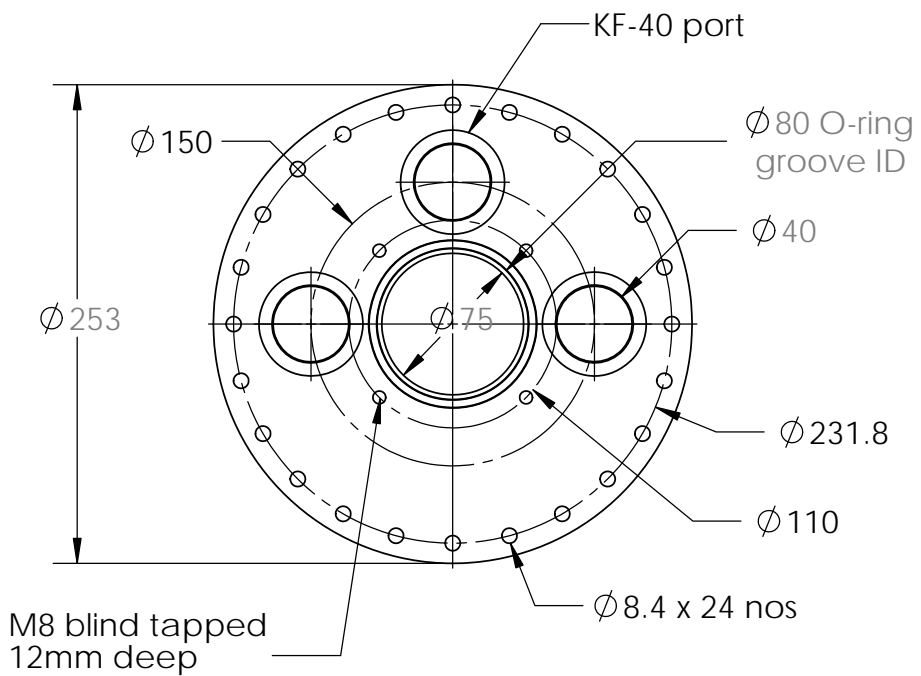
Part-4: CF -160 Adaptor
 Material-SS304/304L
 Qty-01



SECTION B-B
SCALE 1 : 4



DETAIL C
SCALE 4 : 1



Part-5: ISO CF-200 Adaptor flange
Material; SS 304/304L
Qty:02