Government of India
Bhabha Atomic Research Centre
Beam Technology Development Group
Mumbai - 400085

REF: BTDG/ATLAF/Works/AKT/2021/228 23/11/2021

Sub: Design, fabrication, assembly, testing and supply of vacuum compatible optics mount and adaptor assembly

Invitation of Quotations

DUE DATE: **13th December, 2021 up to 16:30 hrs.**

Dear Sir,

1. Quotations are invited for the fabrication, testing and supply job as per the enclosed job details. Taxes and duties shall be quoted separately.
2. The quotations must be submitted on the printed letter head of the company and should contain PAN and GST numbers; else the quotation shall be rejected.
3. The quotations must reach **Director, *BTDG, BARC, Trombay, Mumbai-400085*** through **Indian Post** by **due date mentioned above** and must be sent in a sealed envelope ***superscribed*** with the above reference number and due date given above.
4. The address on the envelope should read

   (Attn. A K Tiwari)

   To,
   Director, BTDG
   BARC, Mumbai - 400 085
5. Director, BTDG, BARC reserves the right to accept or reject any or all quotations without assigning any reason.
6. For any further clarification Shri A. K. Tiwari, SO/F, ATLAF, BTDG (Phone: 022-25595697) may be contacted.

Yours faithfully,

Archana
23-11-2021

Director, BTDG

डॉ. (श्रीमती) अर्चना शर्मा / ARCHANA SHARMA
निदेशक / Director
किरणपुंज प्रौद्योगिकी विकास वर्ग
Beam Technology Development Group
भारत सरकार / Government of India,
भा.प.अ. केंद्र / B. A. R.C.
ट्रॉम्बे, मुंबई / Trombay, Mumbai - 400 085.

Encl: One (Job details-Annexure 1)

Technical Specifications

1. Scope of supply

Detailed design, fabrication, assembly, testing and supply of following is required.

Sr.	Item	Quantity
1.	**Vacuum compatible optics mount and adaptor assembly set** (as per drawing sheet 1,2,3)	2 sets
2.	Set of spare orings, retainers and gaskets	3 sets
3.	Set of spare nut - blots	1 set
4.	CF 16 blinds	10 nos
5.	high reflectivity mirrors	6 nos

2. Each of **'Vacuum compatible optics mount and adaptor assembly set'** includes following

Sr.	Component	Quantity
1.	**Oblong flange** (as per sheet 4 and 5)	1 no
	Description: Material of flange is SS304 or 304L. Suitable trapezoidal oring groove or oring retainer is to be made to adapt mirror mount adaptor assembly. 6 layers of heat shields (0.5mm SS sheets with insulators) are to be provided.	
2.	**Mirror mount adaptor assembly** (as per sheet 6,7 and 8)	1 no
	Description: It is compatible with port A of oblong port. Base material of mount adaptor assembly is SS304 or SS304L. 3 windows of 10mm thick glass with clamps are to be provided. Window sealing can be either using trapezoidal groove or retainer. Port B has position guides for mirror mount. Backside gaskets for windows are to be provided.	
3.	**Vacuum compatible kinematic mirror mount assembly** (as per sheet 9, 10 and 11, 12)	1 no

	Description: It is compatible with port B of mirror mount adaptor assembly. Flange material is SS304 or SS304L. Mirror holder plate is of black anodized aluminium.	
4.	**Adaptor for rectangular mirror and circular mirror** (as per sheet no 12)	1 each
	Description: Black anodized aluminium adaptors are required for 50.8mmX50.8mmX8mm rectangular mirror and 50.8mm dia 8mm thick circular mirror	

3. Specifications of mirrors

Sr.	Parameter	Value
1.	Shape	Plano mirror
2.	First surface (reflecting surface) flatness	Lambda/10 @ 633nm
3.	First surface quality	20-10 s/d
4.	Back surface	Commercial polish
5.	Clear aperture	≥85%
6.	Wedge	<3minutes
7.	Reflectivity	>99%@550 – 650nm, AOI = 0
8.	Material	BK7
9.	Damage threshold	1J/cm2, 8nsec, 1064nm
10.	Size	2"X2", Thickness: 6-8mm

4. Design considerations for 'Mirror mount adaptor assembly'

It should be compatible with oblong flange. It should have a rotary shutter operated using CF16 based UHV compatible rotary feedthroughs. Additional rotary feedthroughs feedthrough on bottom side is also to be provided. Rotary feedthroughs should have position locking mechanism.

5. **Design considerations for 'Vacuum compatible kinematic mirror mount assembly'**

Kinematic mirror mount is to be designed for holding 50.8mmX50.8mmX8mm rectangular mirror and 50.8mm dia 8mm thick circular mirror. At least 20mm high clear aperture below and above the mirror should be available Mirror rotation requirement is +/- 5 degree rotation about vertical and horizontal axes passing through pivot point. CF 16 based UHV compatible bellow sealed linear feedthroughs are to be used for mirror rotation. Feedthrough should have position locking arrangement. In extreme positions, load on feedthrough shaft should not exceed 3 kg. Feedthrough should be micrometre driven and should provide milli-radian resolution in mirror rotation. Mount should have clear aperture behind mirror as shown in drawing sheet 9, 10 and 11. Vacuum boundary window should be at 10 degree from vertical. Feedthroughs and mount should be deigned to be serviceable.

6. Functional dimensions and schematic is mentioned in the attached drawings. Fabricator needs to make detailed CAD drawings and get the approval of purchaser's representative before initiating fabrication. Compatible Viton/silicon orings are to be fabricated and provided. Fitting for shutter assembly need to be designed and fabricated.
7. Work shall be started after submission of the fabrication planning and its approval by purchaser's representative. The fabricator shall submit the complete fabrication drawing with QA/QC program for purchaser's approval.
8. All materials required for the job are to be arranged by the fabricator.
9. FIM: There is no free issue material from purchaser.
10. The job dimensions, verticality and horizontal alignment must be maintained carefully. Wherever required, suitable jigs and fixtures should be used.
11. Suitable fabrication and machining processes may be used for different parts. However, the same has to be mentioned in the drawings for reference.
12. All the welding shall be done by GTA W/SMA W process. The filler material to be used should be of 308L type.
13. All weld joints should be full/partial penetration welds as per the approved configurations. The surfaces are to be prepared properly prior to welding.
14. Weld joints are to be cleaned and ground flush with the structure surfaces wherever mentioned in approved drawings. The weld preparation, welding joints and finished ground welds will be checked visually.
15. All the weld joints will be checked by LPT technique, required material (approved) for LPT is to be supplied by fabricator.

16. 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°
6-30 mm	±0.2 mm	10-60 mm	± 0° 30'
30-120 mm	±0.3 mm	60-120 mm	± 0° 20'
120-400 mm	±0.6 mm	120-400 mm	± 0° 10'
400-1000 mm	±0.9 mm	> 400 mm	± 0° 5'
1000-2000 mm	±1.2 mm		

17. Inspection and Testing

17.1 ***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.

17.2 ***LPT test:*** 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".

17.3 Fabricator should have or should arrange for certified leak detector for testing vacuum components. Assembled components are to be tested for leak rate $5X10^{-9}$ mbar.l/sec. prior to leak testing, sealing surfaces should be cleaned so that they are free of any grease/dust. No sealant liquid/grease should be used.

17.4 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.

18. DOCUMENTATION: Following documents are required to be furnished along with supply:

18.1 Dimensional inspection report

18.2 LPT test report

18.3 Leak test report

18.4 Warranty certificate and Material certificate

19. General Terms & Conditions

19.1 The supplier shall workout a detailed design to meet fabrication requirements and work description, quantity. He shall submit the dimensional drawing giving all the salient features and assembly view of the fixtures. The schematics along with bill of materials including connectors shall be submitted in PDF format.

19.2 All the items shall be covered under a standard warranty of 1 year (minimum)

19.3 Test certificates, warranty certificates, user and service manuals in English shall be provided.

19.4 ***Compliance for Section 206AB & 206CCA of Income Tax Act, 1961:*** Vendor has to submit a declaration in the attached proforma (Annexure III) along with necessary acknowledgements in support of the declaration along with the invoice on completion of the work. In case the aforesaid declaration is not submitted, Accounts section shall be deducting the TDS at the higher rates as instructed under the provisions of the Income Tax Act.

19.5 ***GST exemption Certificate:*** ***Since the goods are to be supplied against the work order meant for research purpose of a research organization under DAE, the necessary GST will be exempted to the party.*** Interstate transaction for R&D will attract IGST only @ 5% as per notification No. 47/17-Integrated Tax (Rate) dated 14.11.2017. Transaction within the state will attract Central Goods and Service Tax (CGST) @ 2.5% as per notification no. 45/2017-Central Tax (Rate) dated 14.11.2017 and State Goods Service Tax (SGST) @2.5% as per notification no. 45/2017-State Tax (Rate) dated. 14.11.2017 of the State of Maharashtra. No claim for reimbursement of GST above the stipulated rate as per notification would be entertained later.

20. **Delivery Schedule:** The complete job is expected to the completed in a duration of 02 Months maximum from the date of release of work order.

21. **CONFIDENTIALITY CLAUSE**

21.1 No party shall disclose any information to any third party concerning the matters under this Contract generally. In particular, any information identified as "Proprietary" in nature by 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. This clause shall apply to sub-contractors, consultants, advisors or the employees engaged by a party with equal force.

21.2 "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 employees of the contractor will invite penal consequences under the aforesaid legislation.

21.3 Prohibition against the use of BARC's name without permission for publicity purpose. The contractor or sub-contractors, consultants, advisors or the employees engaged by a party shall not use BARC's name for publicity purpose through any public media like: press, radio, TV or Internet without any prior approval of BARC.

Annexure - II

UNDERTAKING

(Goods & Service Tax)

The Following certificates should be submitted by the suppliers/contractors to the paying authority on the bills itself when Goods & Servant Tax (GST) is claimed as extra by the contractors/suppliers.

1. **Certified that** the goods and packing on which Goods & Service Tax (GST) has been charged have not been exempted under the Goods & Service Tax (GST) or the rules made there under.

2. **Certified further that** we have actually paid Goods & Service Tax (GST) and are being assessed to Goods & Service Tax (GST) and also that where there are statutory exemptions under the GST act concerned we have availed of the same and certify non-availability of such provisions for Goods & Service Tax (GST).

3. **Certified that** in respect of the amount claimed in the bill, no claim is pending for refund/ or is admissible. Certified that in the event of our getting refund in whole or in part of the element of Goods & Service Tax (GST), we shall pass on the benefit of the amount of refund obtained by us.

4. **Certified further that** we (our branch or agent) _____

   _____

   (Address)_____

   _____

   are registered as dealer in the State of_____ under the Central Registration No._____ for the purpose of Goods & Service Tax (GST)

Signature & Stamp

Annexure III

TO WHOMSOEVER IT MAY CONCERN

Undertaking pursuant to Section 206 AB of the Income Tax Act 1961
Declaration confirming filing of Income Tax Return from immediate two preceding years.

I, _____ [Name], in the capacity of Individual/ Proprietor/ Partner/ Director/Authorized signatory of _____ [Entity Name] with PAN _____ , do hereby make the following declaration as required under the relevant provisions of the Income Act, 1961 (hereinafter referred as 'the Act'):

1. That I/We am/are authorized to make this declaration in the capacity as Individual/ Proprietor/Partner/Director.
2. I/We hereby declare and confirm that I/We do not fall under the definition of 'specified person' as provided in section 206AB of the IT Act.
3. I/We have duly filed return of income for FY 18-19 & FY 19-20 within due date as per Section 139(1) of the Income-tax Act, 1961 - **Yes / No (strike out whichever is not applicable).**
4. If return has been filed the details are as follows:

I/We, _____ having PAN _____, hereby confirm that the provision of Section 206 AB is not applicable in my/our case as I/we am/are regular in filing of Income Tax Return. The details (along with proof of documents) of acknowledgement numbers and date of filing of Income Tax Returns for last two financial years are furnished below:

S.No.	Financial Year / (Assessment Year)	Date of Filing Income Tax Return	ITR Acknowledgement Number
1	2018-19 / (2019-20)		
2	2019-20 / (2020-21)		

5. I/We hereby take responsibility for any loss/liability fully including any Tax, interest, penalty, etc. that may arise due to incorrect reporting of above information.

All the aforesaid representations are true and correct, and we/I agree to furnish any evidence required at any time in support thereof.

On behalf of _____

<< Name of the authorised signatory>>

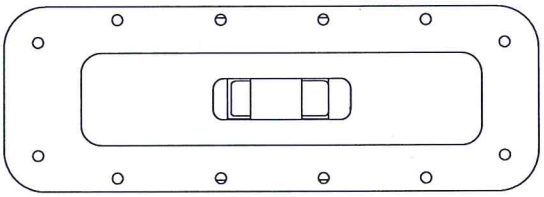
<<Designation>>

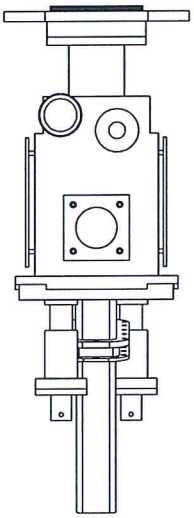
Name of the Entity:

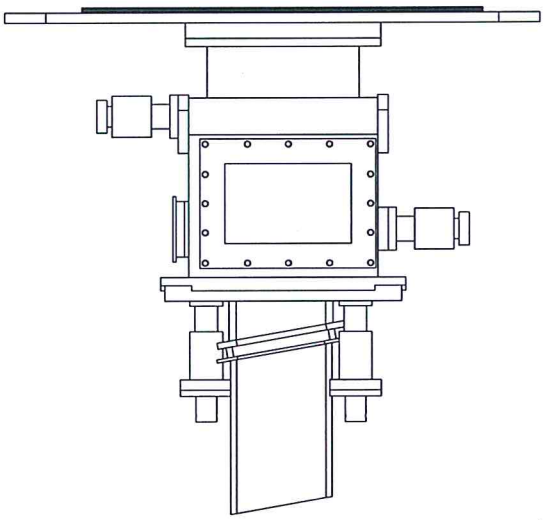
Seal :

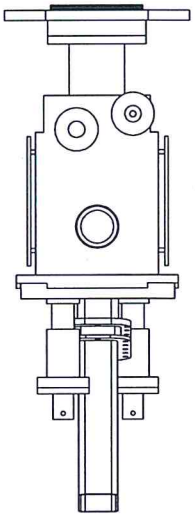
Date :

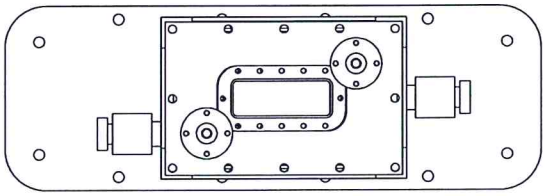
1

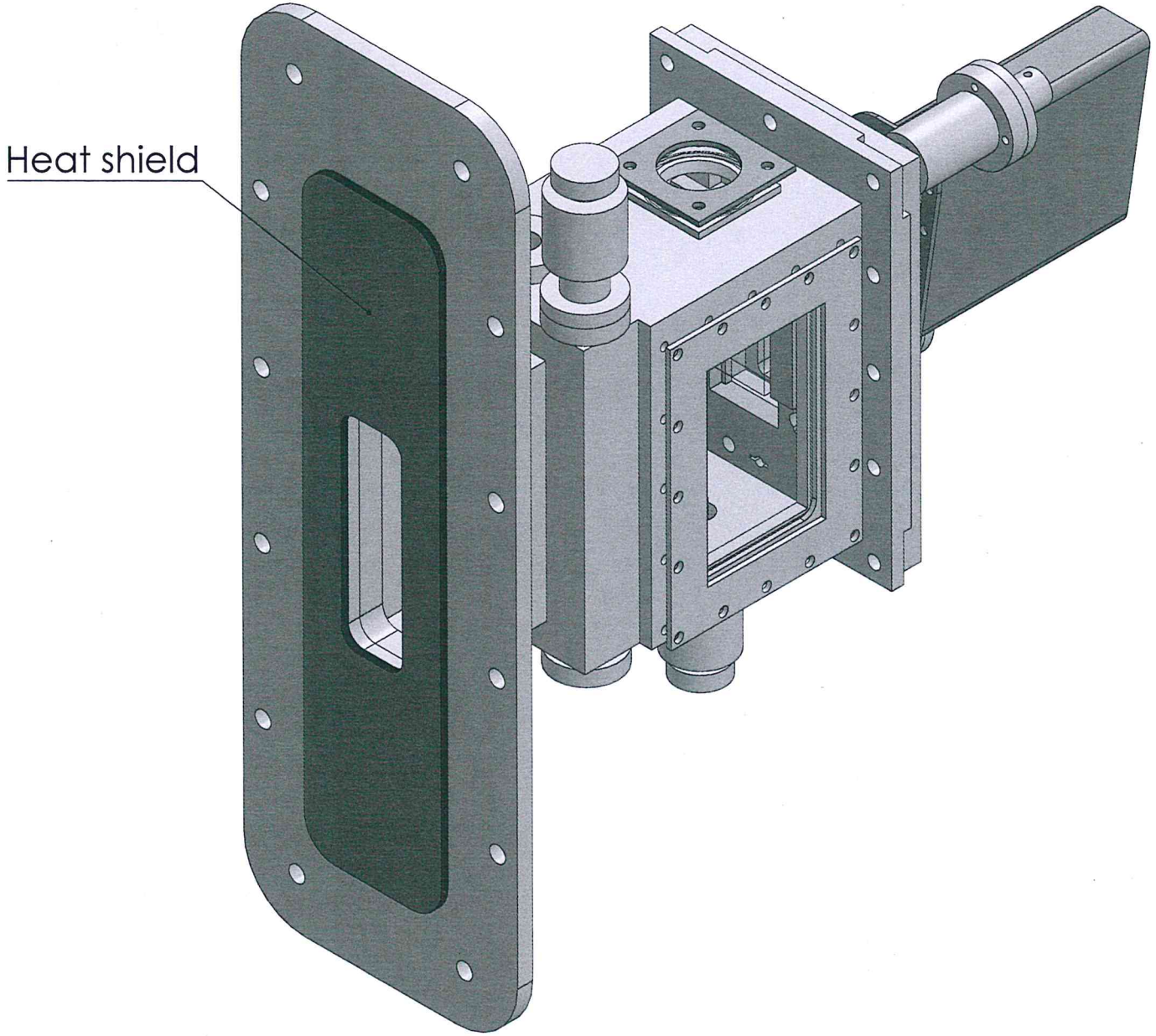


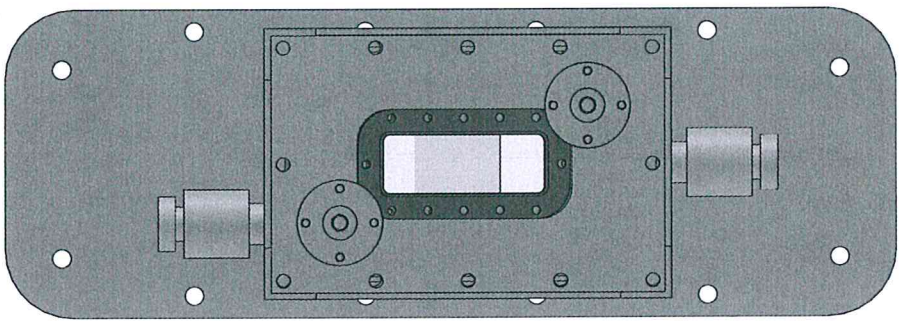


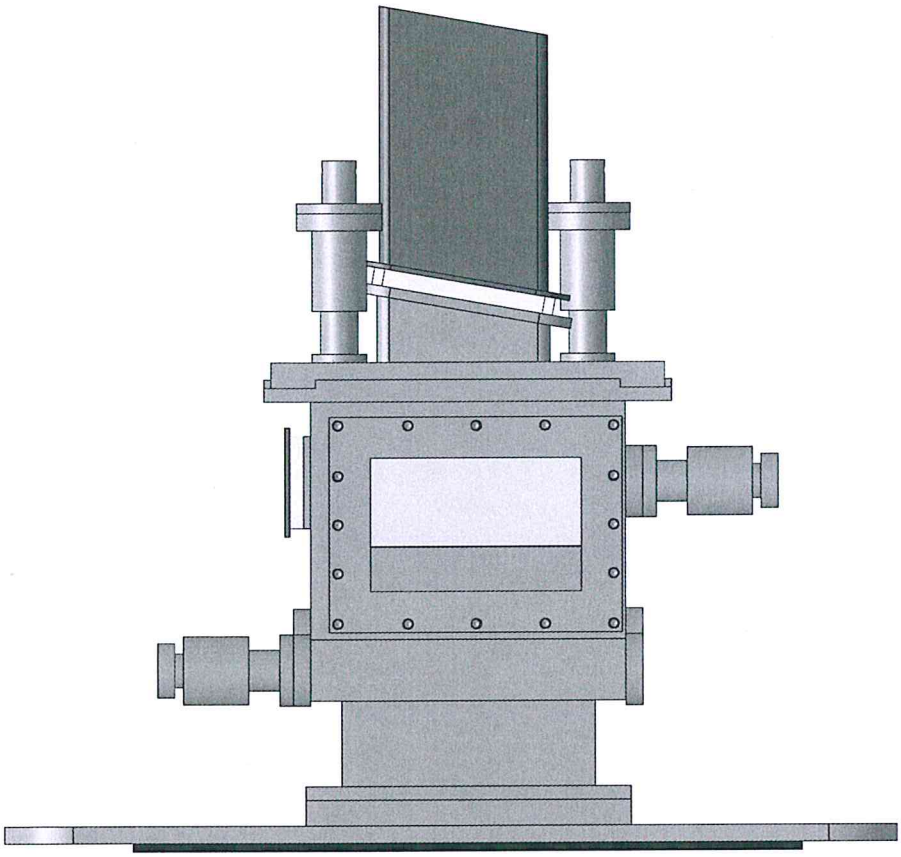


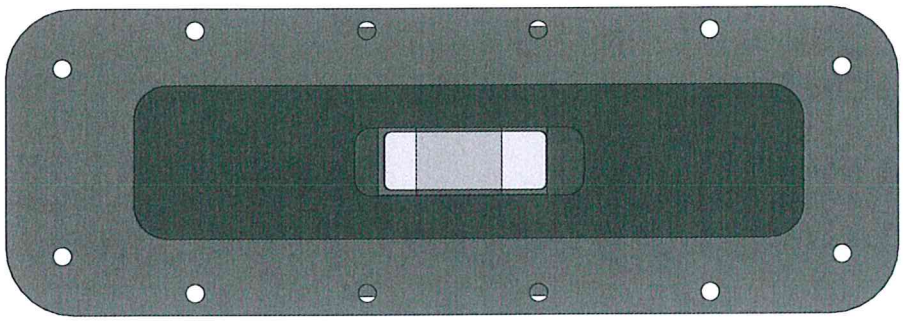


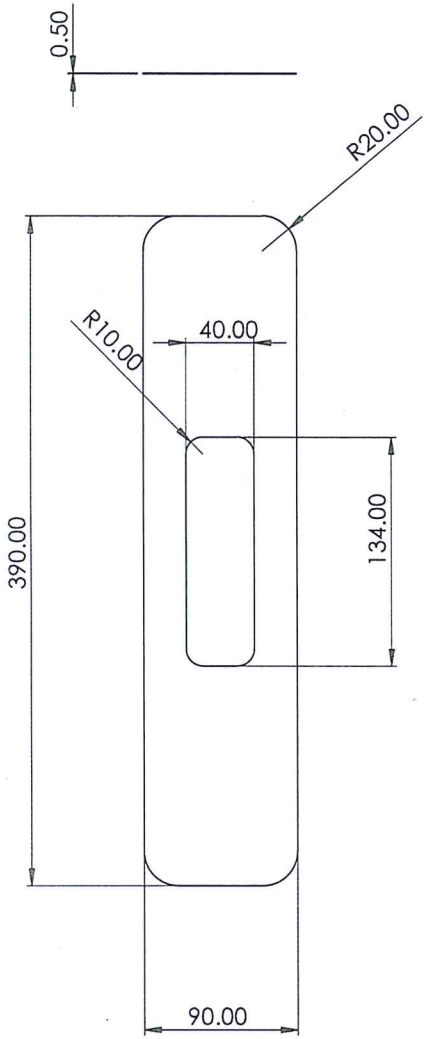



Heat shield

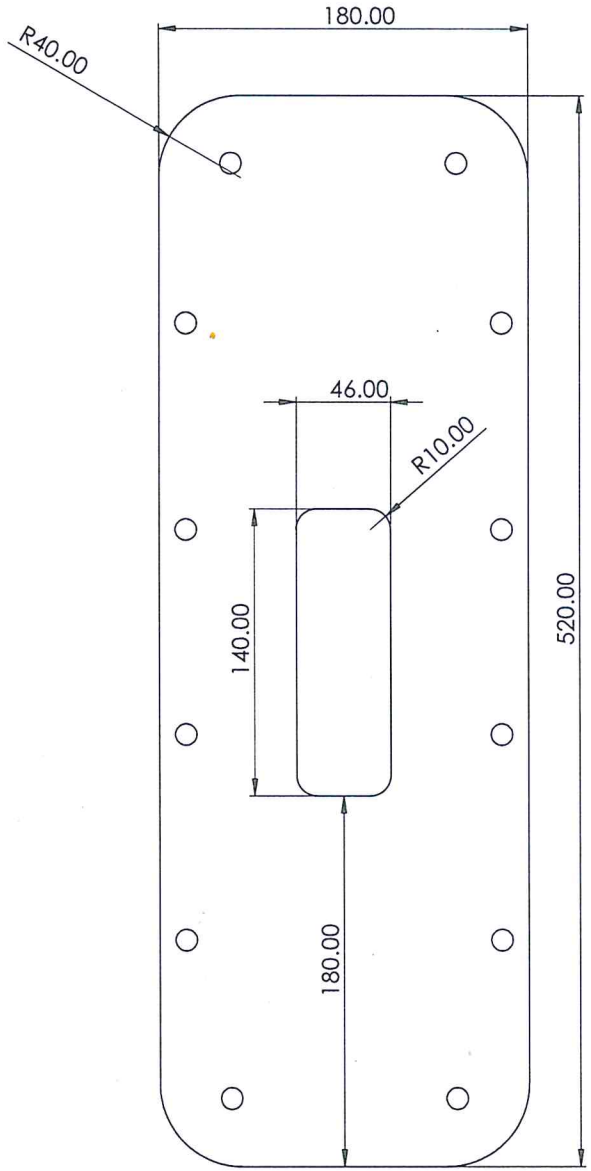


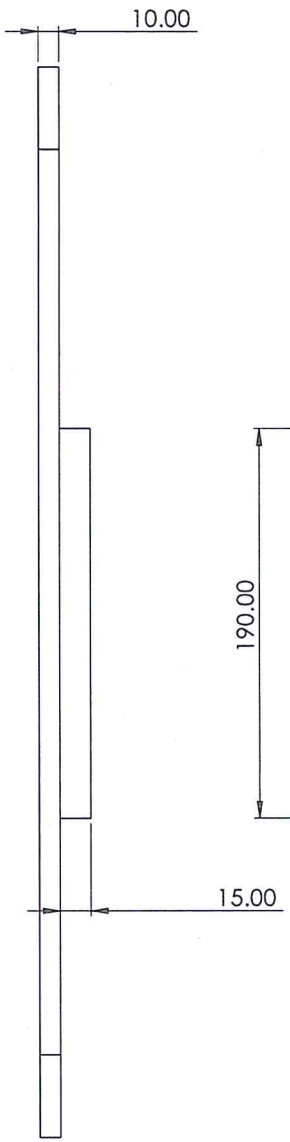


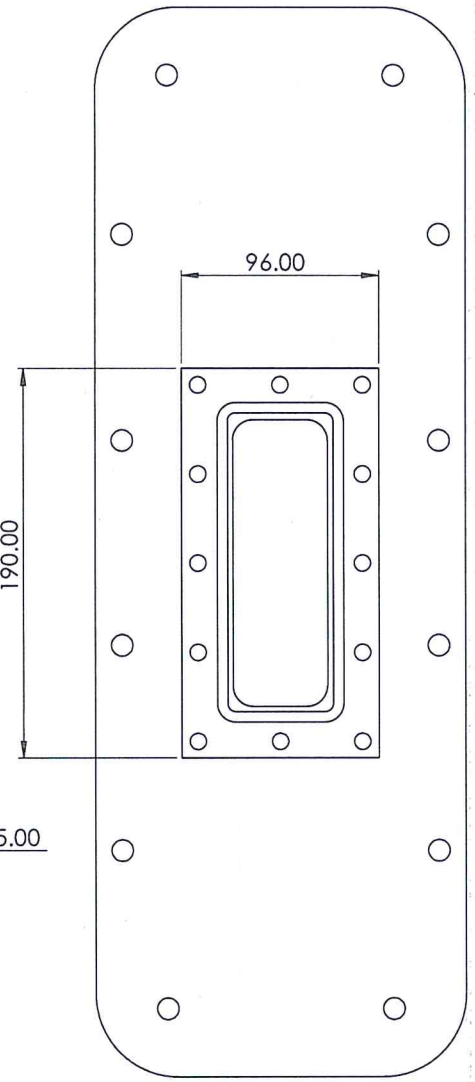




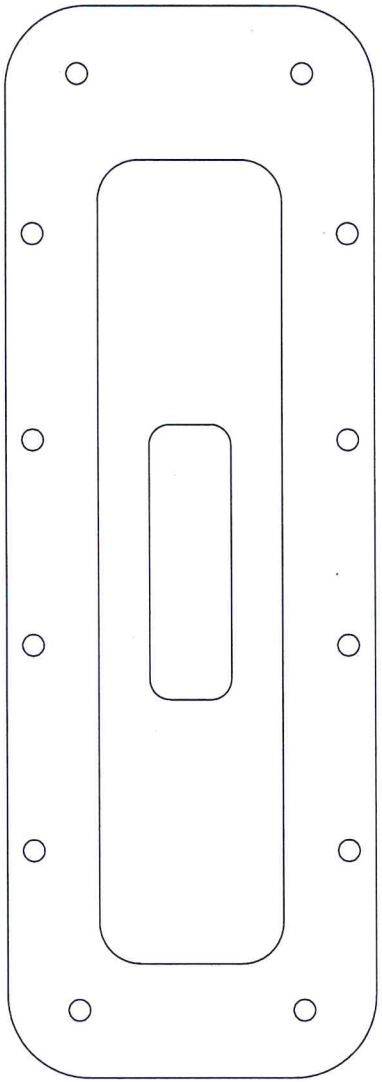
Heat shield

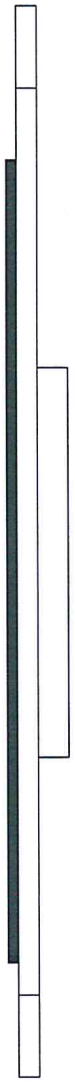


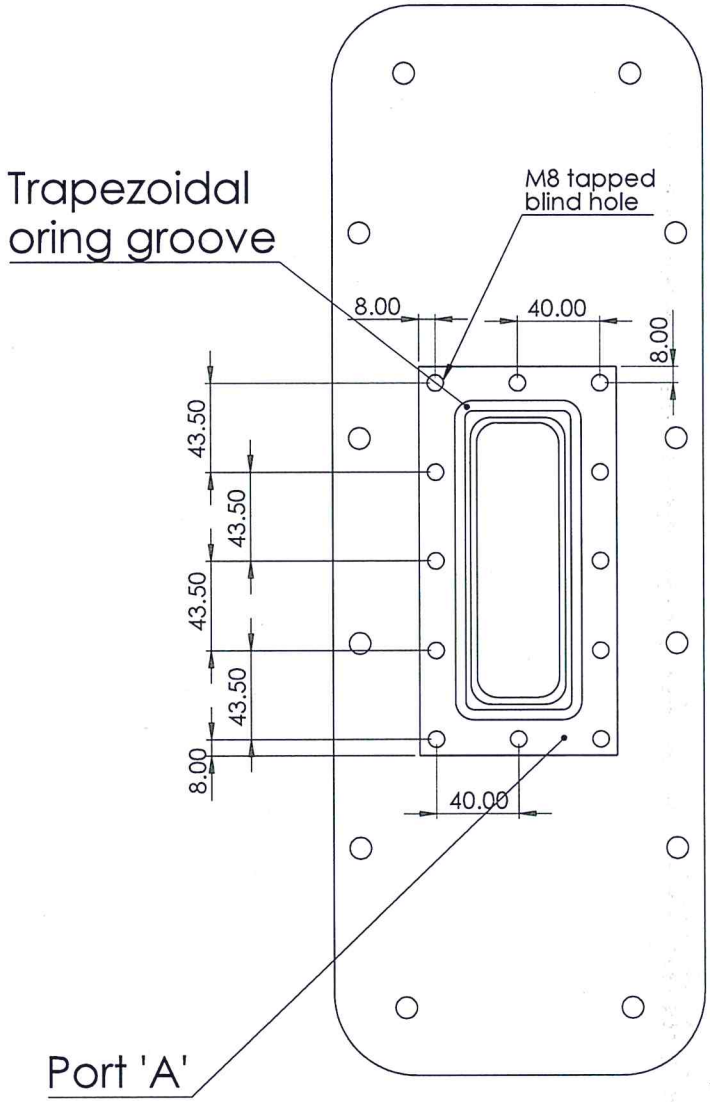




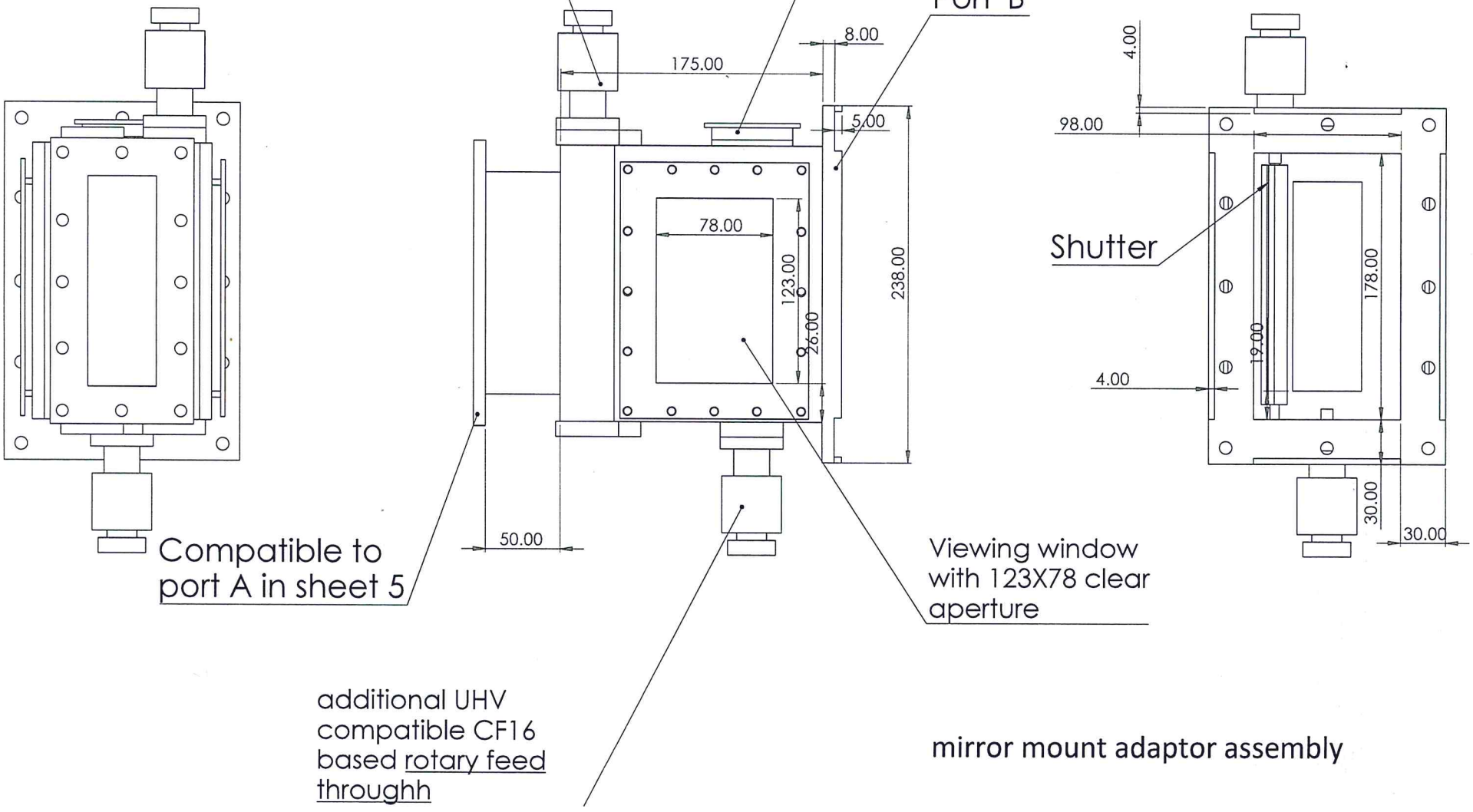
Oblong Flange



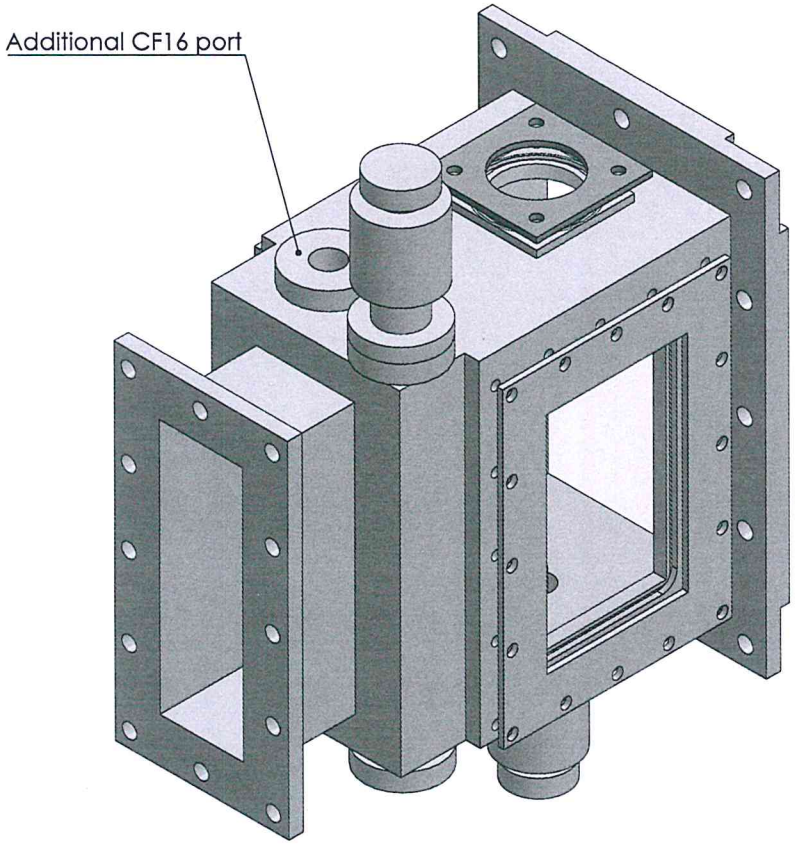




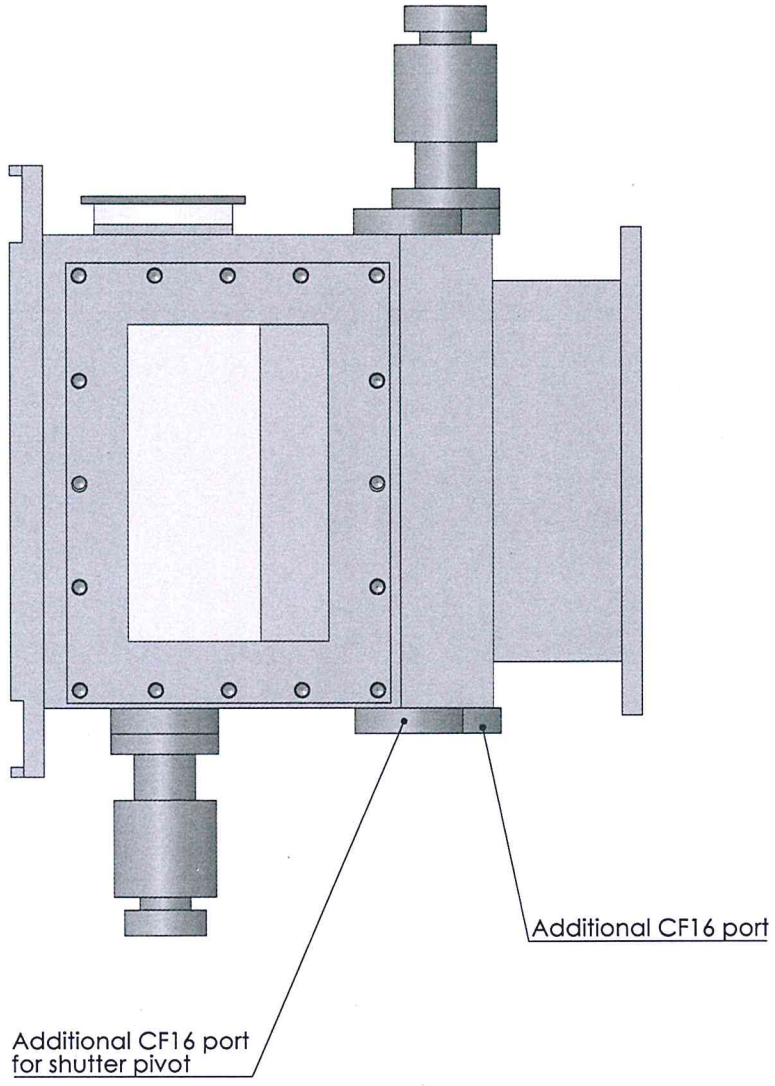
Oblong Flange

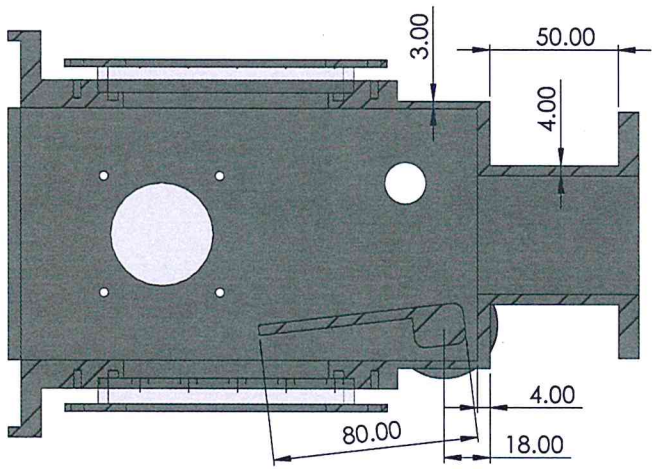


mirror mount adaptor assembly



mirror mount adaptor assembly





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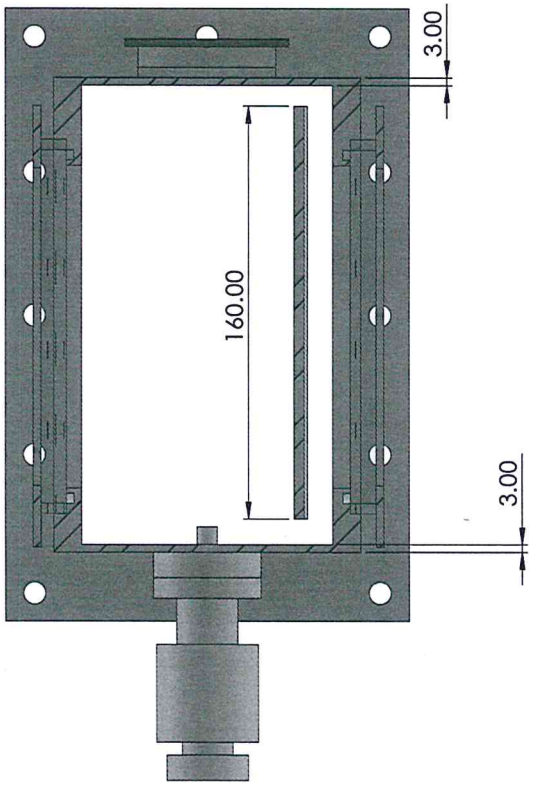

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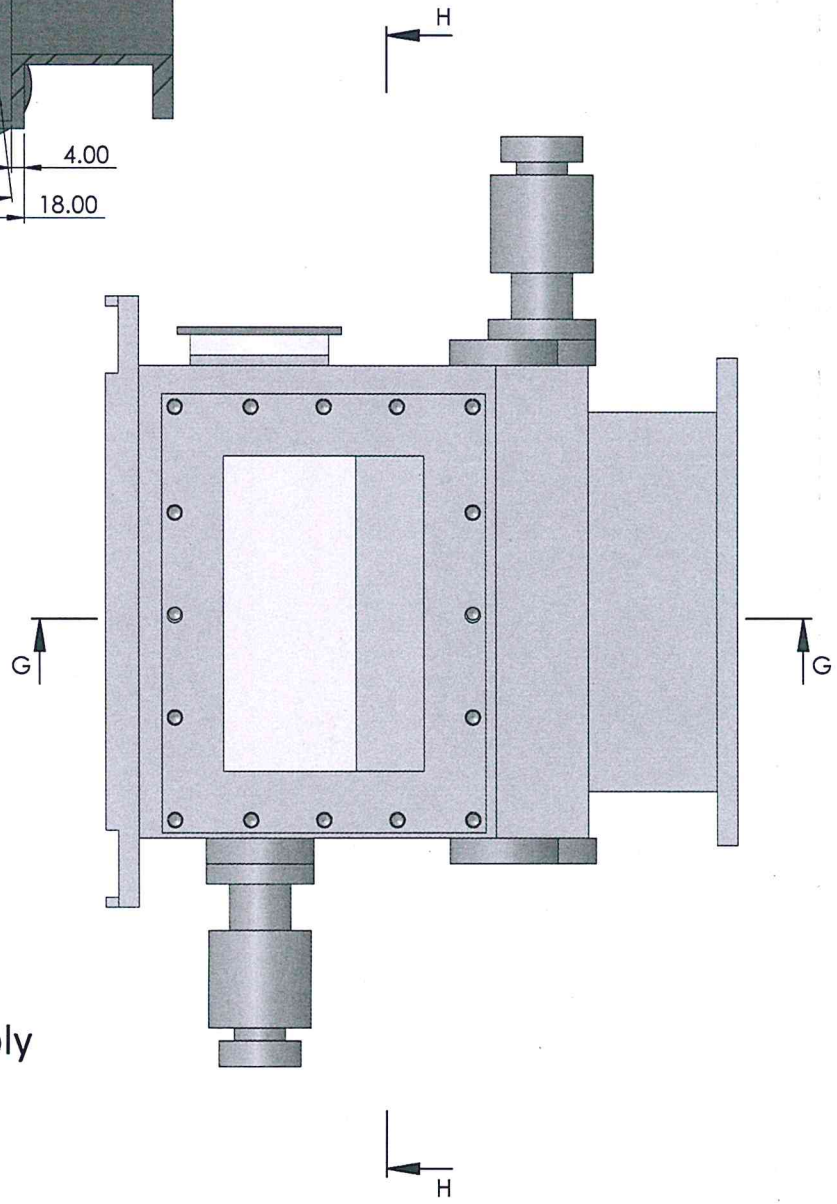
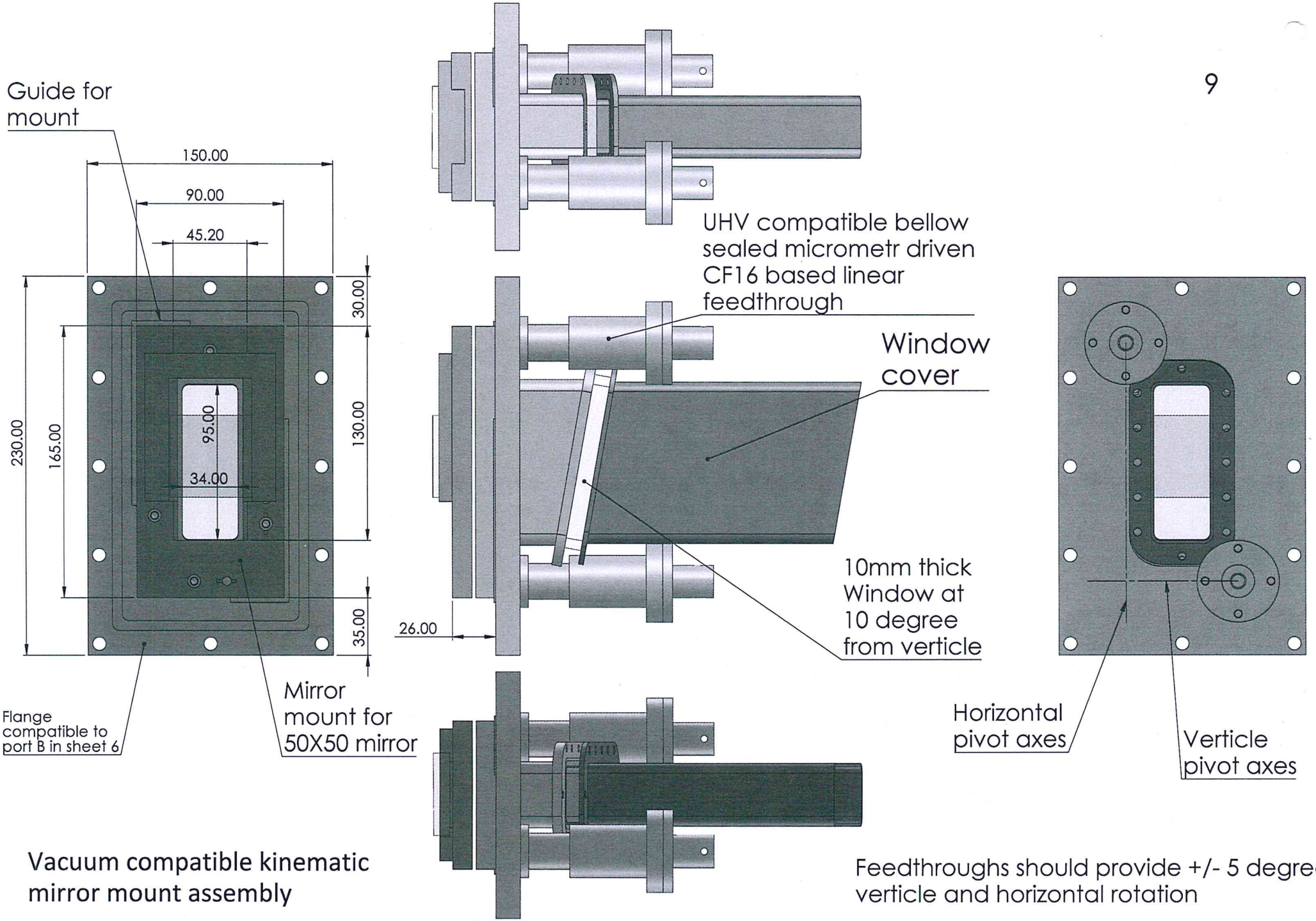
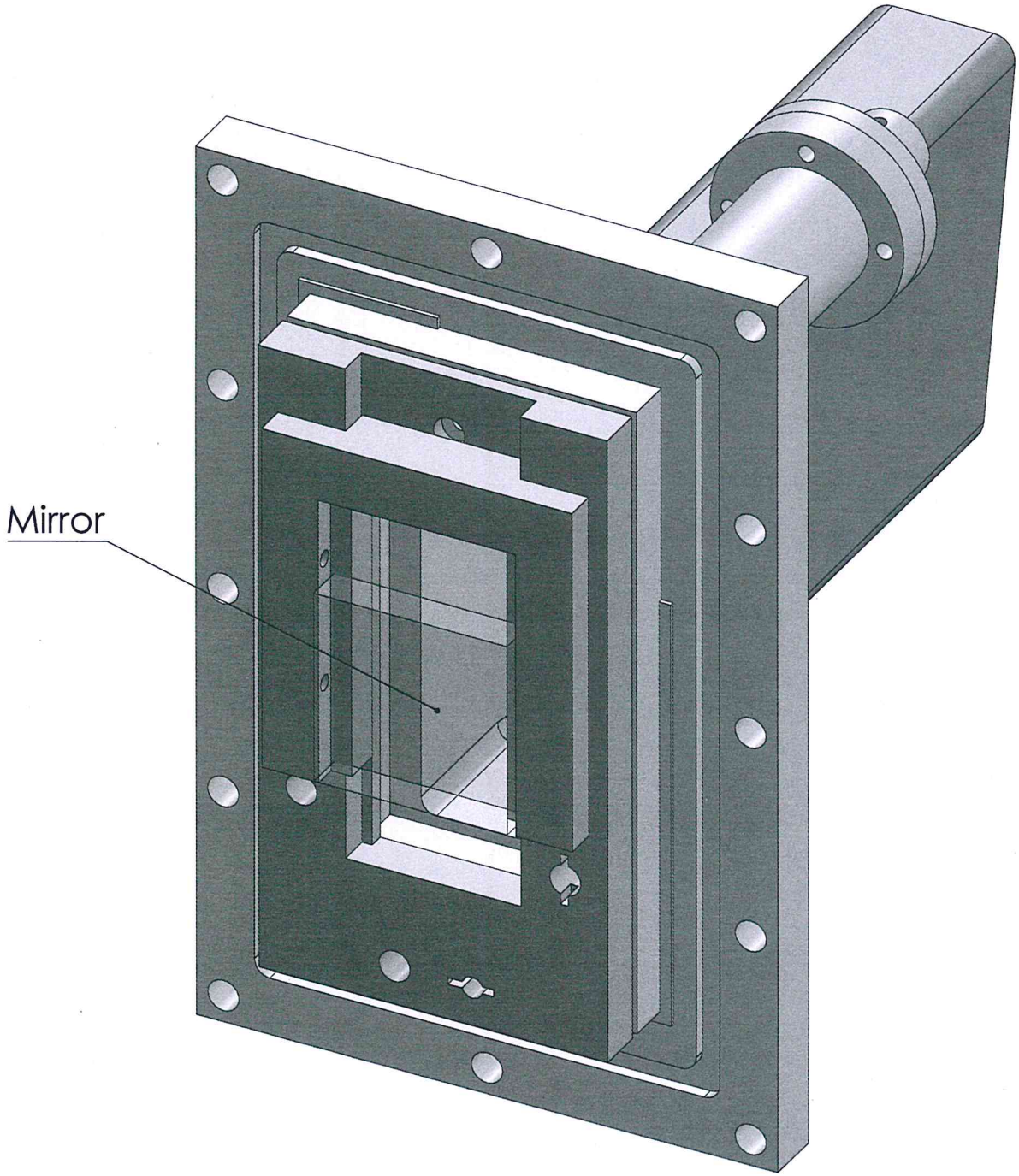


mirror mount adaptor assembly

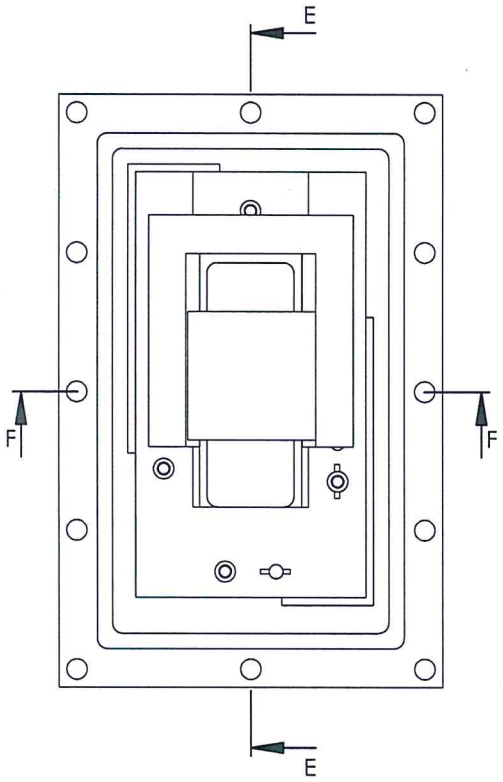


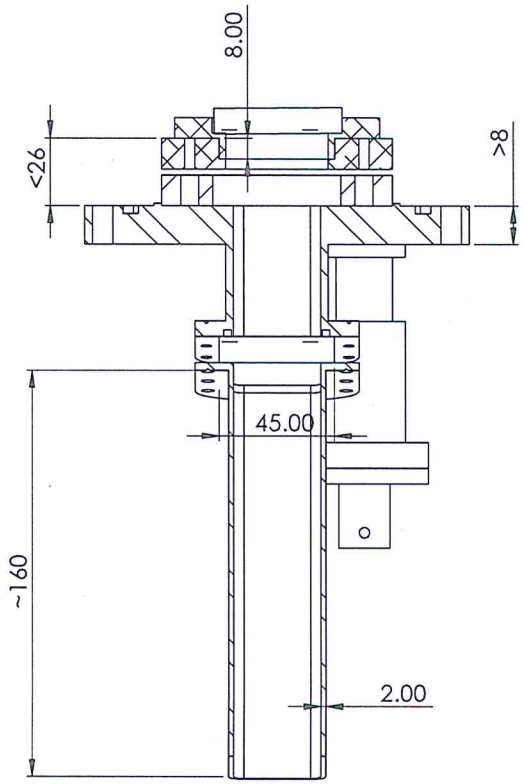
Vacuum compatible kinematic mirror mount assembly

Feedthroughs should provide +/- 5 degree verticle and horizontal rotation



Vacuum compatible kinematic mirror mount assembly





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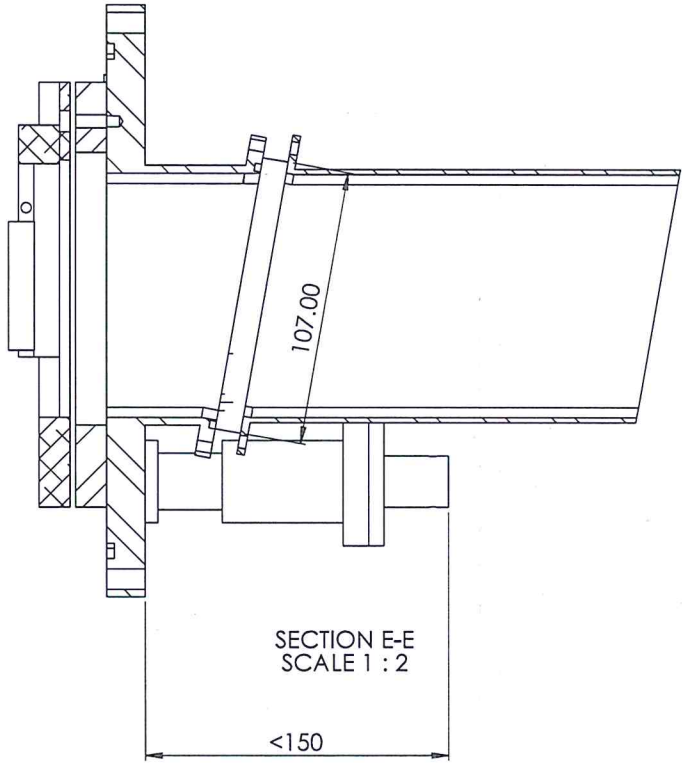

SECTION E-E
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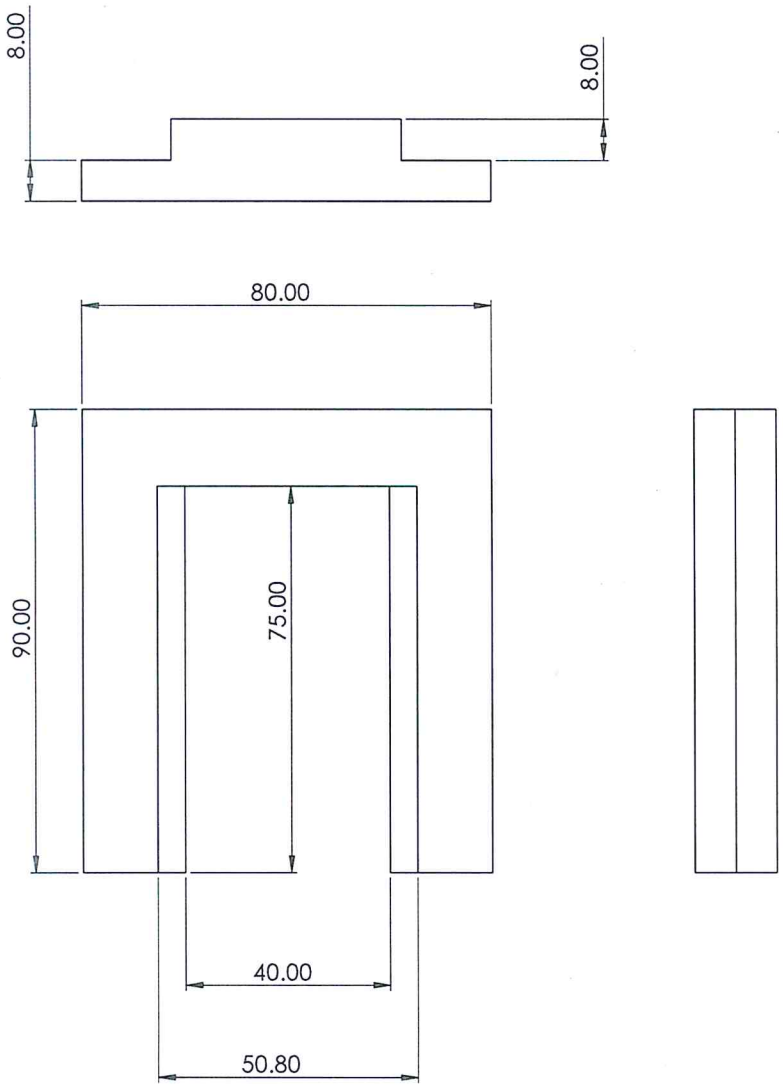
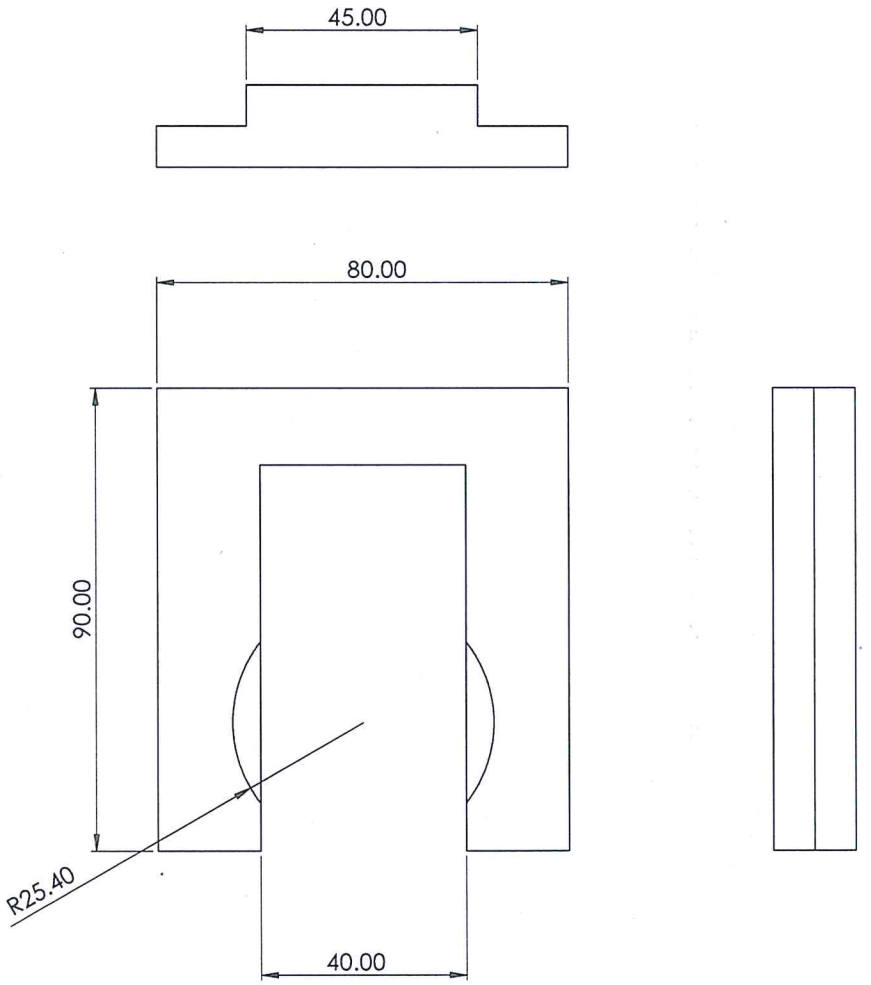
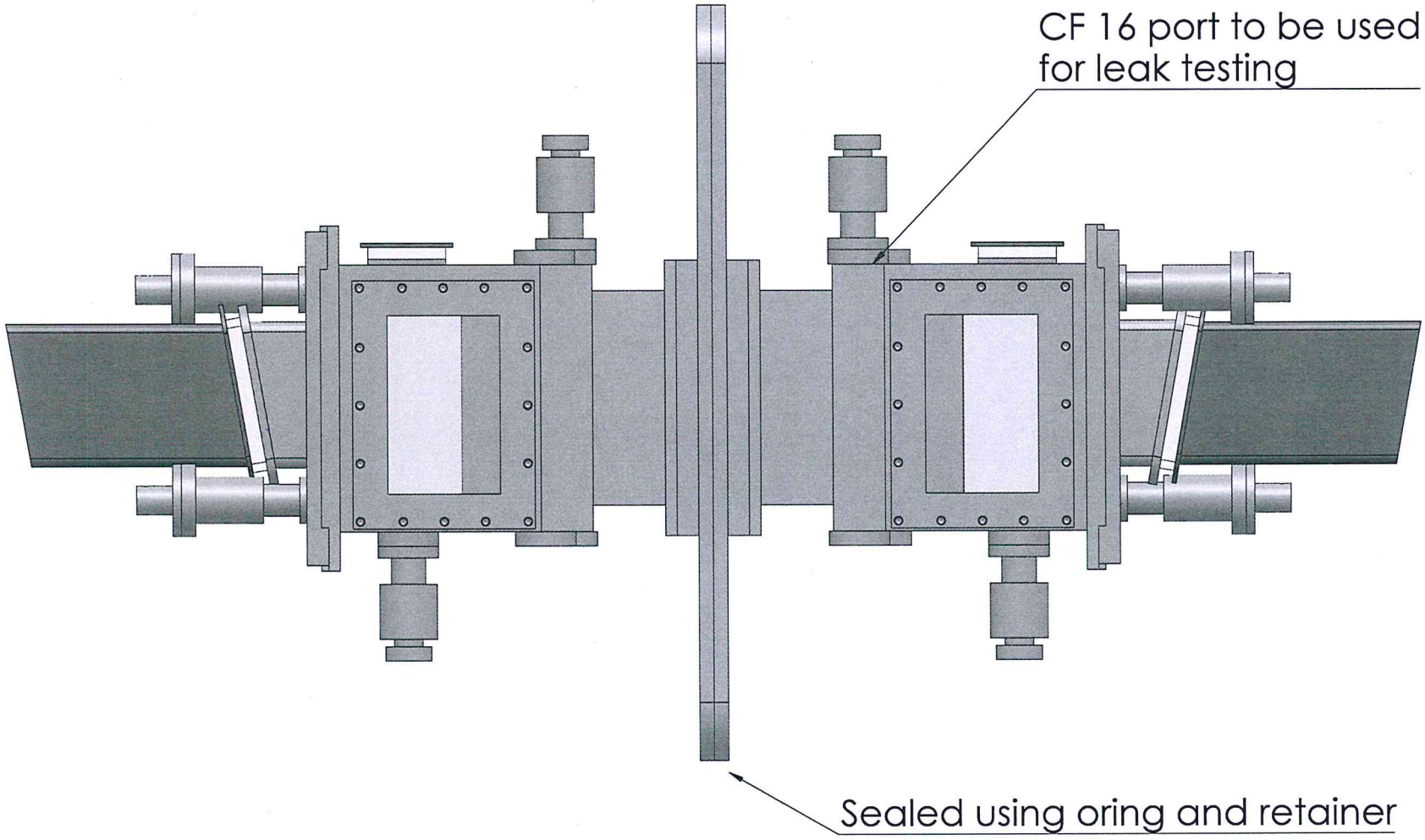
Vacuum compatible kinematic mirror mount assembly



Adaptor for rectangular mirror



Adaptor for Circular mirror mirror



Setup for leak testing