

INSTITUTE FOR PLASMA RESEARCH

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MINOR FABRICATION WORKS ENQUIRY

Office Copy

ENQUIRY NO :IPR/MFW/20-21/87

Date : 14-12-2020

Due Date : 29-12-2020 13:00 IST

Please send your offer in sealed envelope specifying Inquiry No, Date & Due Date, ALONG WITH your credentials for the following items:

Important Note:

Please note that e-mail quotations are not acceptable however you may send your queries (if any) to **ashok@ipr.res.in**

Please Ensure that your sealed quotation reaches this office not later than above mentioned due date and time.

Kindly go through the following document properly before Quoting which are available on the IPR web portal i.e., <http://www.ipr.res.in/documents/tenders.html/> attached here with.

1. Technical specification as enclosed.
2. Instruction to the bidders & terms and Condition (refer Form NO:**IPR-MFW-01-V1**)
3. Bidding format(refer Biddingformat MFW-Bid.pdf)

GST fro Goods and Services (IGST/CGST/SGST TAX BENEFITS): PLEASE REFER clause no:8 of Form No:**IPR-MFW-01-V1**

QUOTATION SHOULD BE ADDRESSED TO **ASHOK D. MANKANI** ONLY.

Sr.No.	Description	Quantity	Rate
1	Fabrication and Assembly of Full Wave Voltage Multiplier (FWVM) units	3	No.

Free Issue Material

Sr.No.	Description	Quantity	Unit	Value
1	40kV, 2nF HV Capacitors	600.00	No.	1500000.00
2	10kV, 1.5A HV Diode	300.00	No.	1050000.00
3	GFRP Components - 1 Lot (As per Clause	1.00	No.	500000.00

	3 of Technical Specification)			
4	Aluminium, MS, SS, and Nylon Components - 1 Lot (as per Clause - 3 of Technical Specifications)	1.00	No.	500000.00

Note : Please quote with complete technical details (Technical Compliance sheet and product data sheet)

Encl:As per attachment

Sd/-
ASHOK D. MANKANI
Scientific Officer-G



TECHNICAL SPECIFICATION

FOR

**FABRICATION AND ASSEMBLY OF FULL WAVE VOLTAGE
MULTIPLIER (FWVM) UNITS**



INSTITUTE FOR PLASMA RESEARCH

BHAT, GANDHINAGAR 6 382 428

GUJARAT, INDIA



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Fabrication and Assembly of Full Wave Voltage Multiplier (FWVM) Units

1. SCOPE OF SUPPLY

The scope of supply includes Fabrication, Assembly, Testing and Supply of 3 Nos. of Full wave Voltage Multiplier (FWVM) Units as per the detailed technical specification and drawings provided in this document.

2. SCOPE OF WORK

The scope of work includes, but not limited to, the following main tasks:

- Collection of Free issue Material (FIM) from IPR as per the items mentioned in section-3.
- Assembly of electronic components, GFRP components, Metallic (aluminium, SS & MS) components and Nylon components as per the requirements in section-4 & drawings in Annexure-1.
- Supply and Mounting of Gas Inlet valve, pressure relief valve (PRV) and pressure gauge on Top Cover of FWVM Units (3 Nos.)
- Perform the Factory Acceptance Tests (FAT) on 3 Nos. of Full wave Voltage Multiplier (FWVM) Units.
- Delivery of 3 Nos. of Full wave Voltage Multiplier (FWVM) Units at IPR upon receipt of dispatch clearance note.
- Unloading of 3 Nos. of Full wave Voltage Multiplier (FWVM) Units at IPR site.

3. FREE ISSUE MATERIAL

Following items to be used in Fabrication/Assembly of FWVM units shall be supplied as free issue items on returnable basis.

A. Electronic Components

Sr. No.	Item Name	Specifications	Quantity
1.	HV Capacitors	40kV, 2nF Ceramic Capacitors	600 Nos.
2.	HV Diodes	10 kV, 1.5 A fast recovery Diodes	300 Nos.

B. Aluminium Components

Sr. No.	Item Name	Specifications	Quantity
1.	Round sheets	Thickness: 8mm, Diameter: 360 mm	40 Nos.
2.	Anti-Corona Aluminum rings	OD: 1310mm and ID:90mm	05 Nos.
3.	End-bushes for Diode Tubes	60mm Length and 22mm Diameter	30 Nos.

C. Nylon Components

Sr. No.	Item Name	Specifications	Quantity
1.	Female Connector	150mm Length and 100mm Diameter	20 Nos.
2.	Male Capsules	265mm Length and 100mm Diameter	10 Nos.

D. MS & SS Components

Sr. No.	Item Name	Specifications	Quantity
1.	Top MS sheets	Diameter: 1100, thickness: 10mm	03 Nos.
2.	Bottom MS sheets	Diameter: 1100, thickness: 10 mm	03 Nos.
3.	MS Allen Key Bolts	Size-M12, Length-110 mm	150 Nos.
4.	SS Dome Nut	Size-M12	150 Nos.



Fabrication and Assembly of Full Wave Voltage Multiplier (FWVM) Units

5.	MS Rod	OD-50mm, Length-150mm	10 Nos.
6.	MS Pipe	OD-60mm, ID-50mm, Length-150mm	10 Nos.

E. GFRP Components

Sr. No.	Item Name	Specifications	Quantity (Nos.)
1.	Main Tube/Cylinder	Inner Diameter- 990mm, Outer Diameter- 1020mm, Top & bottom MS flange length-40mm, Outer top & bottom diameter with flange- 1100mm, Height-770 mm, Thickness of wall- 15mm	3
2.	Round Sheet for Base Support (RSBS)	Diameter -850mm , Thickness -25mm	3
3.	Pipe/Sleeve for Base Support Sheet (PBSS)	Height - 250mm, Diameter -75mm. Step in for 15 mm and threaded for 70mm at one end. 30 mm through hole throughout the rod. ID-30mm, OD-75 mm	10
4.	Rods for Vertical Assembly of Electronics Components (RVAEC)	Height-460mm, diameter -30 mm. Threaded at both ends for 50mm.	30
5.	Pipe/Sleeve for RVAEC Assembly	Height-70mm, ID-31mm, OD-45mm	60
6.	Round sheets for Capacitor Mounting	Thickness-8mm, Diameter-375 mm	40
7.	Round Sheets for Creep-age Enhancement of Capacitor-Stack (RSCEC-1)	Thickness-2 mm, Diameter-405 mm	20
8.	Round Sheets for Creep-age Enhancement of Connections (RSCEC-2)	Thickness-1.5 mm, Diameter-60 mm	30
9.	Check-Nuts for RVAEC	Height- 25 mm, ID-30mm, OD- 75mm	60
10	Check-Nuts for PBSS	Height-50 mm, ID-45mm, OD- 75mm	10
11	O-Rings of Main Cylinder	10mm Neoprene Cord	5
12	Tube for diodes	Width- 450mm, ID -17mm, OD- 22mm	30



4. TECHNICAL REQUIREMENTS

- a) All components of FWVM units shall be assembled as per the drawings provided in annexure-1.
- b) Electronics components shall be connected as per the electrical schematic provided in the annexure-1.
- c) HV Capacitor stacks shall be made using series/parallel combination of high voltage ceramic capacitors as shown in figure 2 and figure 3.
- d) HV Diodes shall be connected in series inside a leak proof in oil filled glass epoxy tube as shown in figure- 4, figure- 5 and figure- 6 or Epoxy Resin casted directly.
- e) All electrical connections between the components shall be connected either through high voltage insulated cable / bare conductors.
- f) Drawings in Anexure-1 can be modified in view of feasibility of assembly after mutual agreement with IPR representative and approval of as built drawings.
- g) Bidder shall ensure the assembly without any sharp metallic points or any sharp soldering joints or welding joints.
- h) 3 Nos. of FWVM units will be stacked one over the above as per the figure- 13, therefore due care in assembly shall be taken to ensure that FWVM units can be easily stackable over each other.
- i) MS top covers of each FWVM (3 Nos.) units shall be fabricated with Lifting hooks/ eyes with enough strength, through which the whole FWVM unit can be easily lifted. MS top and bottom cover shall be provided with stiffeners/cross bars to hold the stresses/ deformations occur during the filling of nitrogen gas at 2 bar pressure inside each FWVM (3 Nos.) units.
- j) Gas Inlet valve, pressure relief valve (PRV) and pressure gauge shall be mounted on top cover of each FWVM (3 Nos.) units.

5. ACCEPTANCE TESTS

5.1 Factory Acceptance Tests (FAT):

IPR representative shall witness the following FAT at manufacturer's works.

- a) Visual inspection of assembled 100kV FWVM unit (3 Nos.).
- b) Leak Test: - 100kV FWVM modules (3 Nos.) shall be filled with Nitrogen at 2 bar pressure and Leak test will be performed.
- c) Demonstration of voltage build-up from 0 to 100 kV from each FWVM units (3 Nos.) at No-load using a step-up transformer of typical rating 10 kVA, 400V/20kV-0-20kV, 50Hz.

5.2 Site Acceptance Tests (SAT):

IPR representative shall witness the following SAT at IPR.

- (a) Visual inspection of FWVM unit assembly.
- (b) Leak Test- Unit will be filled with Nitrogen gas (UHP grade) at 2 bar pressure and Leak test will be performed.



Annexure-1

Electrical Schematics & Assembly Drawings

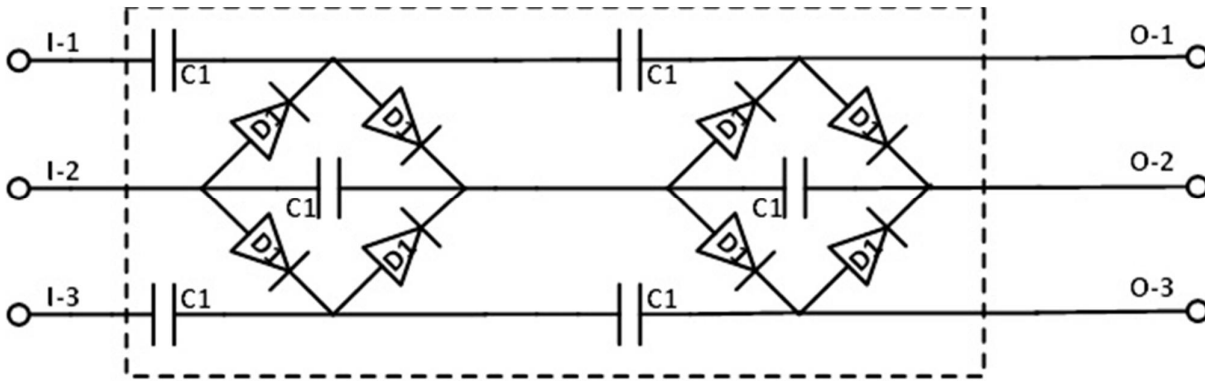


Figure-1: Electrical Schematic of FWVM Unit

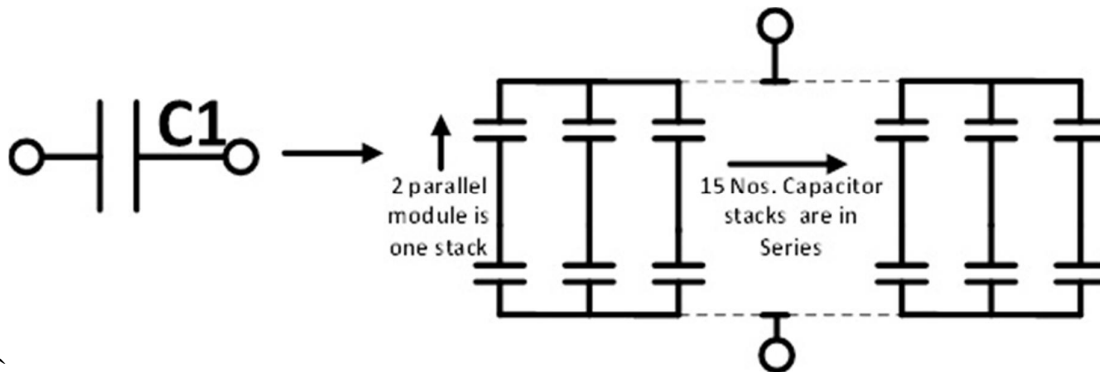


Figure-2: Electrical Schematic for HV Capacitor Stack.

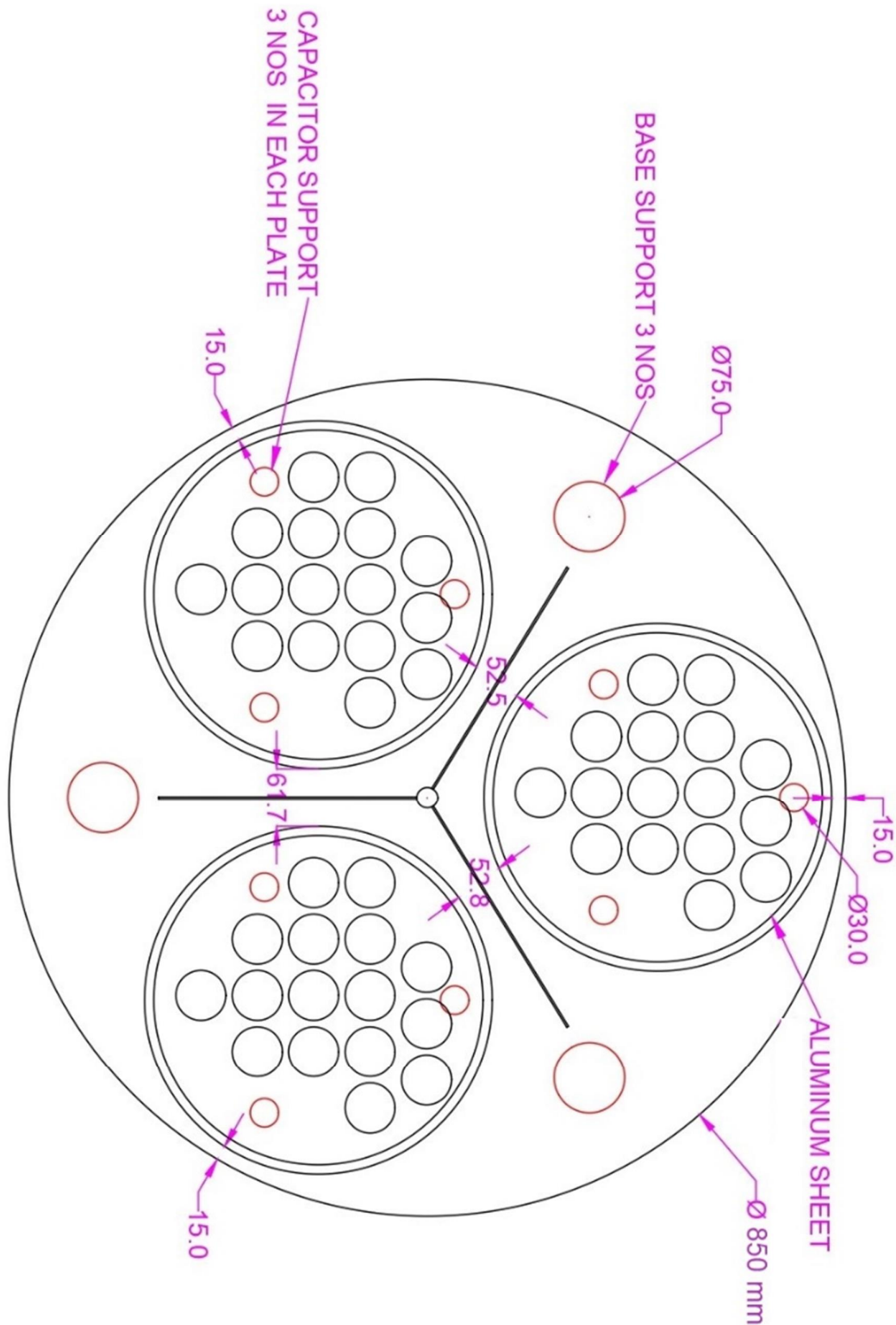


Figure-3: Mounting of HV Capacitor & other assembly on 850mm Sheet

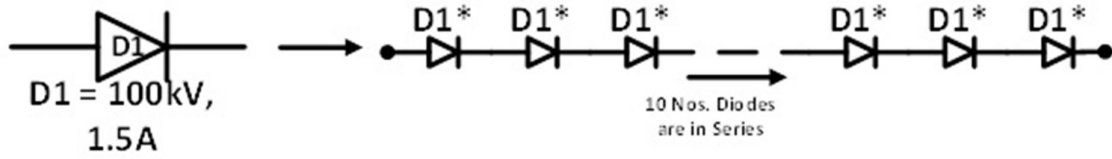


Figure-4: Electrical Schematic for HV Diodes

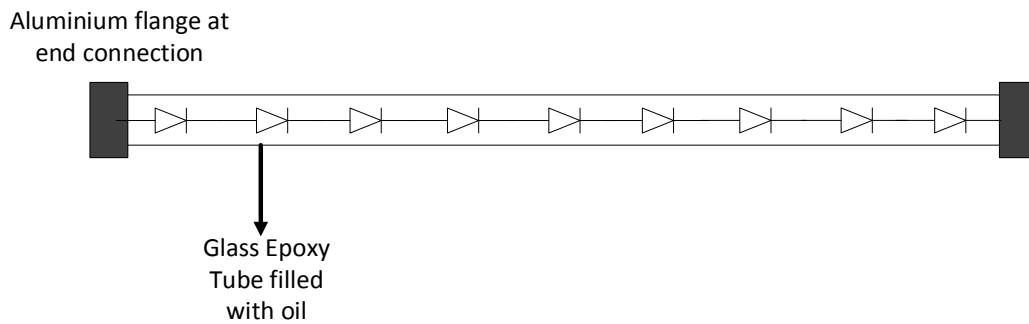


Figure-5: Mounting of Diodes in Glass Epoxy oil filled tube

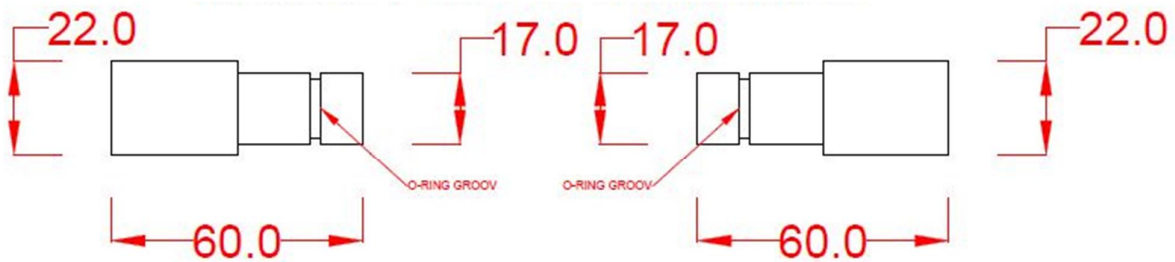


Figure- 6: End-bushes for Diode Tubes

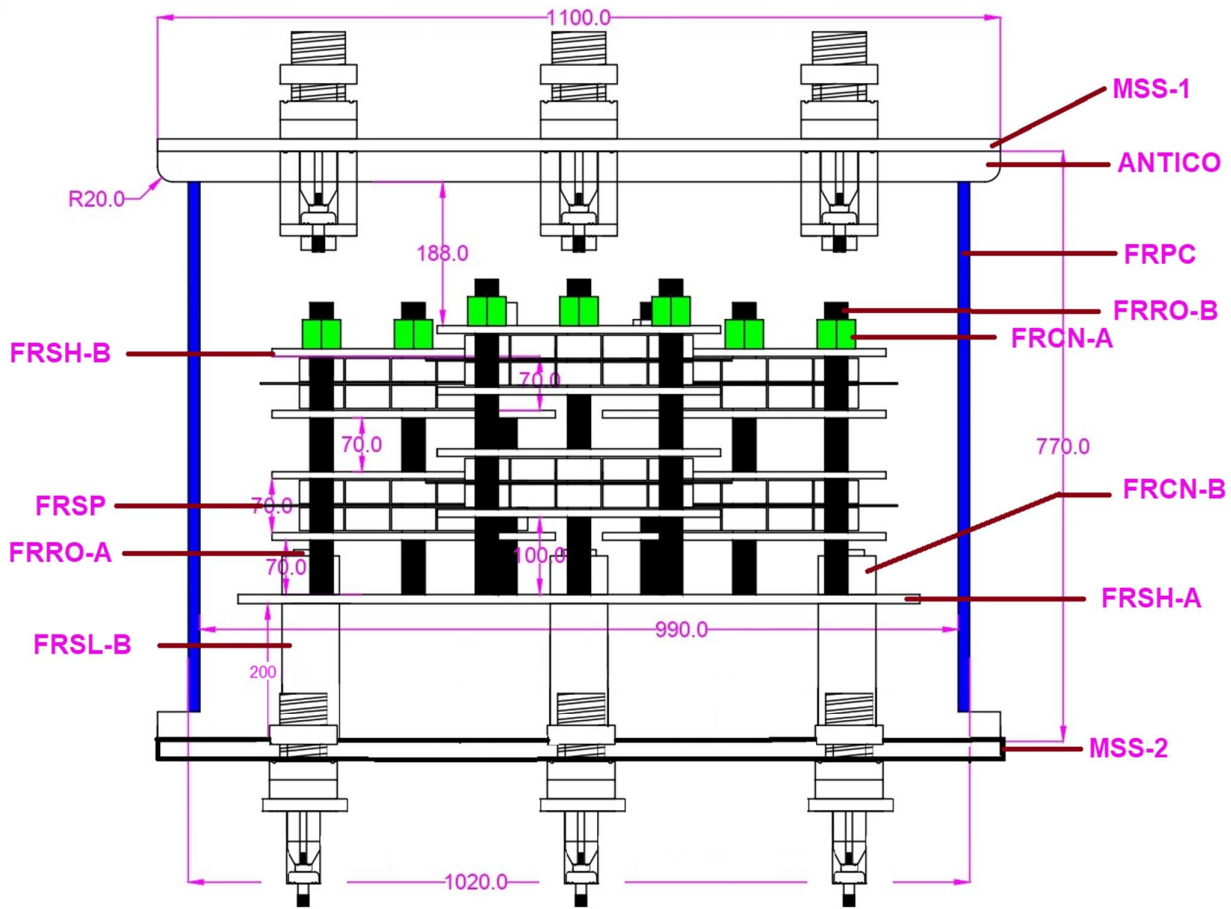


Figure-7: Front Cross sectional view of FWVM Unit Assembly



Fabrication and Assembly of Full Wave Voltage Multiplier (FWVM) Units

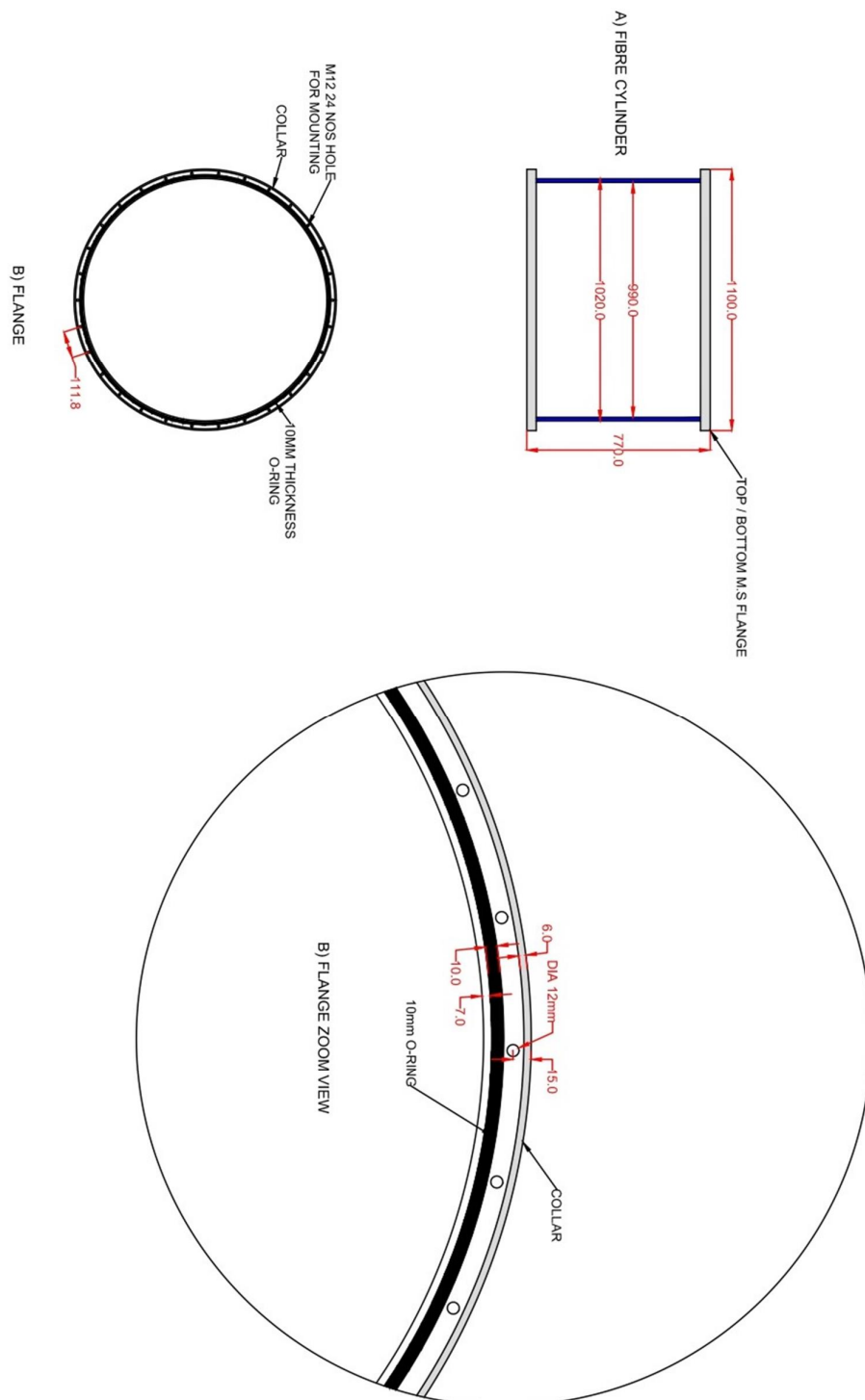


Figure-8: Drawings for Aluminum Top & Bottom Cover, flange and FRP tube

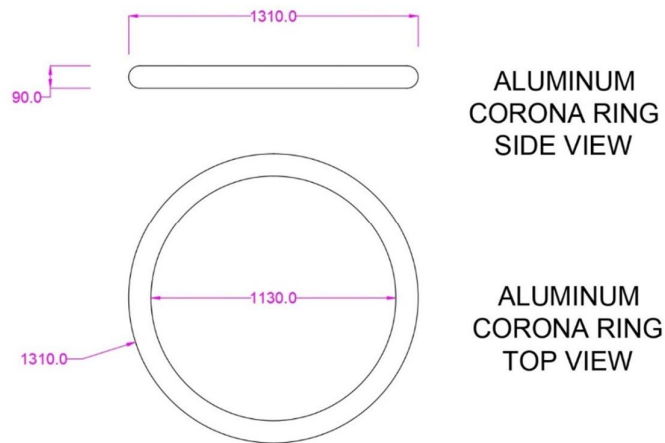


Figure-10: Drawings for Anti-Corona Ring

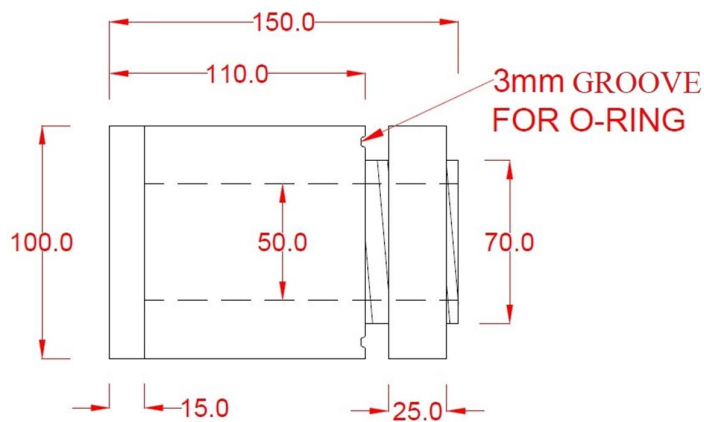


Figure - 11: Drawings for Female HV Connector

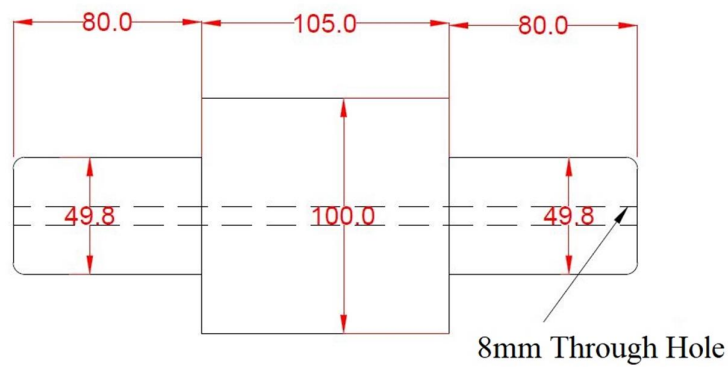


Figure - 12: Drawings for Male Capsules



Scope of Work

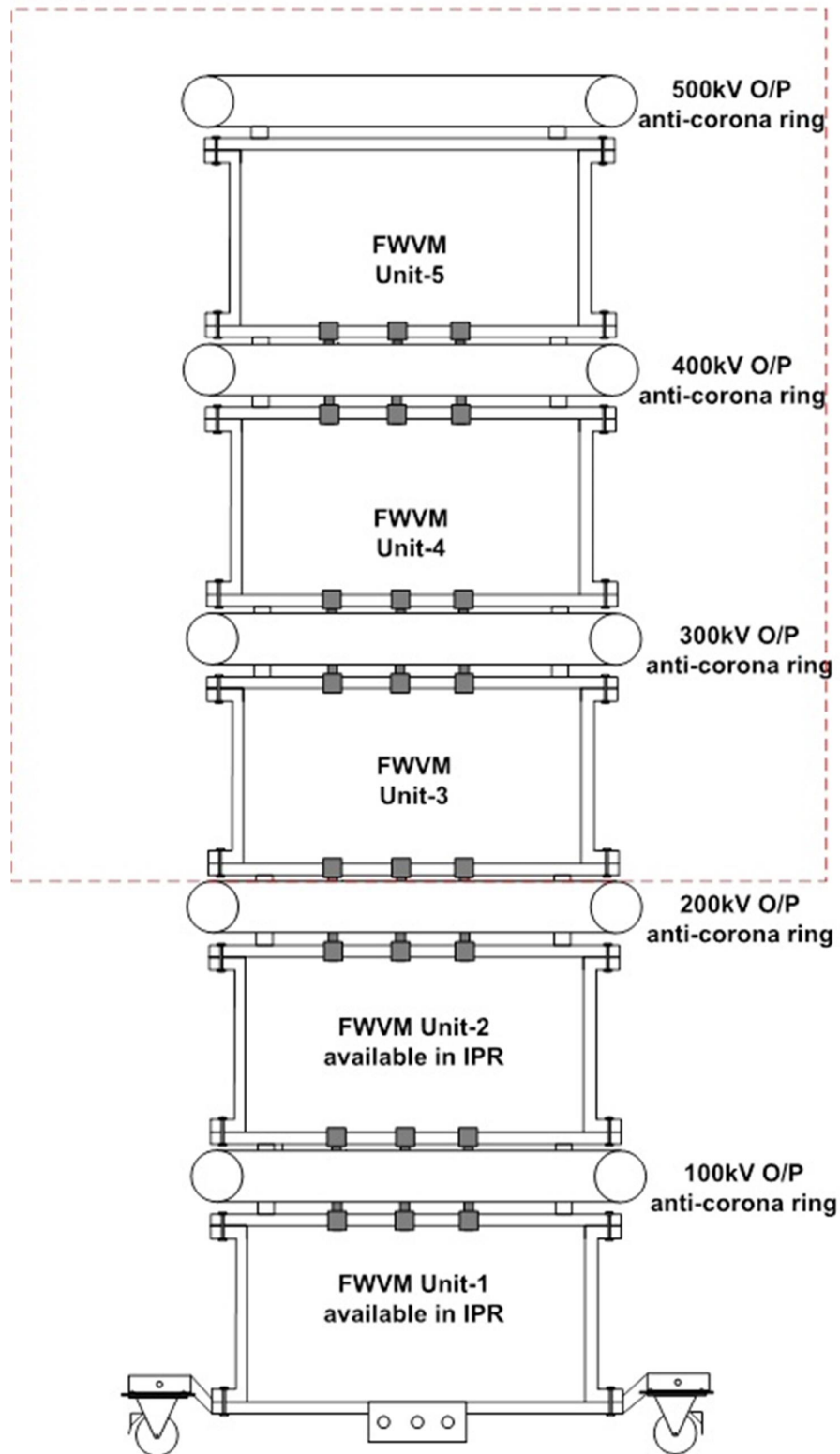


Figure-13: Stacking of FWVM Modules



INSTRUCTIONS TO BIDDERS AND TERMS AND CONDITIONS

1. The Quotation and any order resulting from this enquiry shall be governed by our Conditions of Work Order and Contractor quoting this enquiry shall be deemed to have read and understood the same completely.
 2. Where counter terms and conditions have been offered by the Tenderer, the same shall not be deemed to have been accepted by IPR unless our specific written acceptance thereof is obtained.
 3. **Quotation:** Quotation should be submitted in the prescribed QUOTATION FORMAT attached with this Enquiry and the same should be submitted in a sealed envelope super-scribing the same with our enquiry No., date, due date and brief description of item on or before the due date. Late/delayed/incomplete/unsigned quotations will not be considered. Envelopes received without Enquiry number, date, due date and brief description of item may be rejected. The quoted prices should be firm for a period of 90 days from due date for placing order. IPR is not bound to accept lowest rate/s. IPR reserves the right to place on one or more parties. The scope of supply includes insurance by the Contractor.
 4. **Specifications:** Goods should be offered strictly conforming to our specifications/drawings. Deviation, if any, should be clearly indicated by the contractor in their quotation. The Tenderer should also indicate the Make/Type number of the goods offered and catalogues, technical literature and samples, wherever necessary should accompany the quotation. Clarification/s on drawings should be obtained before submitting quotation.
 5. **Terms of Prices:** Quotation should be submitted on door delivery basis without extra charge wherever possible. For quotations on Ex-Works, Ex-godown basis the approximate packing and forwarding charges should be indicated by the contractor. In the case of local contractors, the goods are to be delivered at our stores free of charge.
 - 5.1 In respect of tenders on Ex-works basis, in case the tenderer has not mentioned in the offer packing, forwarding and transportation charges for safe delivery up to Purchaser's site, 2% of the price quoted towards packing (in respect of both local and outstation firms), 1% of the basic price quoted towards safe delivery charges in respect of local tenderer and 3% of the basic price quoted towards safe delivery charges in respect of outstation firm will be added for comparison of offers on safe door delivery at Purchaser's site.
 - 5.2 Prices are required to be quoted according to the units indicated in the tender form/Enquiry. When Quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished
 6. Tender should be free from Correction and Erasures. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail. Unsigned quotations will summarily be rejected. If there is a discrepancy between the unit price and total price, unit price shall prevail.
 7. IPR shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portion of the quantity offered and the tenderers shall supply the same at the rate quoted.
 8. **Goods & Services Tax (GST):** The details of Taxes/GST and other levies legally applicable and intended to be claimed should be clearly indicated in the tender. Where this is not done, no claim on these accounts would be admissible later.
 - a) **GST for Goods (IGST/CGST/SGST TAX BENEFITS):**

IPR is entitled to avail tax benefit as per the following notifications issued by Ministry of Finance, Department of Revenue, Government of India:
(1) No: 47/2017-INTEGRATED TAX (RATE) DATED 14/11/17 for IGST
(2) No: 45/2017-CENTRAL TAX (RATE) DATED 14/11/17 for CGST
And,
IPR is entitled to avail tax benefit as per the following notifications issued by Finance Department, Government of Gujarat:
(1) No. 45/2017-STATE TAX (RATE) DATED 15/11/17 for SGST
As per above notifications IPR will bear only 5% IGST for procurement of goods from outside Gujarat & 2.5% CGST and 2.5% SGST (total 5%) for procurement of goods within Gujarat. Vendors are required to charge tax as per these notifications while quoting/supplying the goods. Deviations, (if any) should be clearly mentioned in the quotation/offer.
- Please specify the HSN codes while quoting.**
- b) **GST for Services:**

As applicable. **Specify the SAC codes wherever services are involved.**
9. **Delivery Date:** Delivery period is essence of the Contract. Contractor must indicate the firm delivery date by which the goods will be dispatched or delivered by them from the date of our order. Delivery period shall be clearly indicated against each item separately.
10. **Price/ Purchase Preference:** Purchase/Price preference to industries will be given as per the policy of the Government of India in force at the time of evaluation provided their offer is in compliance with the conditions of the policy.



प्लाज़्मा अनुसंधान संस्थान

(भाट, इन्दिरा पुल के पास, गांधीनगर 382428 - , गुजरात) भारत

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11. **Liquidated Damages:** The successful Vendor/Bidder should pay liquidated damages @ ½% (half percent) of the total work order value for the delay of each week in the scheduled date of completion of the work envisaged in the Work Order subject to a maximum of 5% (Five percent) of the total Work Order value.
12. **Inspection:** Goods on its arrival at IPR will be inspected by Stores, and his decision in the matter will be final. However, where the items are required to be inspected at the Contractors Premises, Contractor has to give advance notice regarding readiness of the Goods to enable us to depute our representative for inspection.
13. **Payment:** Payment will be arranged for accepted goods only within 30 days from the date of receipt of goods at IPR and bills in our accounts section, completed in all respects.
14. No correspondence will be entertained within 30 days from the date of receipt of good and bills, whichever is later.
15. **Guarantee:** The Stores offered should be guaranteed for a minimum period of twelve months, from that date of acceptance, against defective Goods, design, workmanship, operation or manufacture. For defects noticed and communicated during the Guarantee period, replacement/rectification should be arranged free of cost within a reasonable period of such notifications. In case where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.
16. **Performance Bank Guarantee:** If demanded by IPR, the successful bidder will have to furnish Performance Bank Guarantee for 10% of the order value (basic price) from a Nationalized/Scheduled Bank/State Bank of India, valid throughout the Guarantee/Warranty period. The scheduled banks approved by IPR are Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank. Bank Guarantees submitted other than from banks approved by IPR will not be accepted.
17. **Security Deposit:** If demanded the successful Bidder will have to furnish to the Purchaser an interest free security deposit for 10% (Ten percent) of the order value in the form of Bank Guarantee of an equivalent amount from a nationalized/ scheduled Bank/State Bank of India within 15 days from the date of work order and the said Guarantee should be valid till the goods are accepted by IPR. The scheduled banks approved by IPR are Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank. Bank Guarantees submitted other than from banks approved by IPR will not be accepted. The Security deposit shall be forfeited in case the selected Bidder does not start the work within the time limit specified or fail to complete the work within the stipulated delivery period or fail to comply with any of the terms and conditions in the work order. On successful completion of scope of work and its acceptance by IPR, Contractor should send a letter requesting return of the original BG.
18. The Contractor shall at all times indemnify the purchase against all claims which may be made in respect of the stores for infringement of any right protected by Patent Registration of design or Trade Mark and shall take all risk of accidents or damage, which may cause failure of supply from whatever cause arising and the entire responsibility for sufficiency of all means used by him for the fulfilment of the contract.
19. **Free Issue Material (FIM):** Successful tenderer will have to arrange insurance showing beneficiary as "Institute for Plasma Research" at their risk and cost towards adequate security for the materials/property provided/issued by the Purchaser as Free Issue Material for the due execution of the contract.
20. The Director, IPR reserves the right to accept or reject any quotations fully or partly or to cancel the enquiry without assigning any reason.
21. **Jurisdiction:** The contract shall be governed by the Laws of India for the time being in force. The Courts of Gandhinagar only shall have jurisdiction to deal with and decide any legal or dispute arising out of this Contract.

(This need to be printed in Bidders letter head)

1. Please quote with complete technical details along with technical compliance sheet.
2. Quotation should be submitted in the format given below, else IPR shall not consider the offer by the vendor.

NAME OF PARTY : _____

ENQUIRY NO: _____

QUOTATION No. & DATE : _____

Currency of Quotation: **Indian Rupees**

Sr. No.	Item Description	HSN/SAC Code	Quantity	Unit Rate (Basic)	Packaging & forwarding (P&F)	Applicable GST	Rate (incl P&F and GST)	Total Value
			a	b	c	d	e = b + c + d	f = a * e
1								
2								
3								
4								
5								
6								

Sr. No.	Particular	Remarks
I.	Ex-works / FOR Destination	
II.	Freight	
III.	Insurance	
IV.	Delivery Period	
V.	Payment (IPR terms will apply)	
VI.	Guarantee / Warrantee	
VII.	Validity Period	
VIII.	Discount (if any)	
IX.	Remarks	

Place: Authority Signatory

Date: Company Seal

Note:

1. Bidder should submit the copy of GSTIN / ARN Certificate along with the offer
2. Bidder should specify the SUPPLY and SERVICE rates/ charges separately wherever applicable