

25594194

Government of India

**BHABHA ATOMIC RESEARCH CENTRE**

**Post Irradiation Examination Division.**

**RLG, Trombay, Mumbai: 400 085**

Ref.:

November 18, 2021

**Sub:** 'Fabrication, testing, inspection and supply of booting for master slave manipulator' as per the annexure.

Dear Sir,

We request you to submit your quotation in a **sealed envelope** for the above mentioned job. The specifications, terms and conditions are given in the enclosed annexure. You may send your offer in the sealed cover to, so as to reach the undersigned **on or before December 10, 2021, 15.00 hrs.**

Farman Ali,  
PIE Division, RLG Complex,  
Bhabha Atomic Research Centre,  
Trombay,  
Mumbai PIN: 400 085.

**Please note:**

- The rate shall be type written and hand written rate shall not be considered.
- The quotation shall be typed/ printed on an original letter head with GST registration number and rubber stamp of the firm. Quotation printed in computer generated printed letter head and/or without GST registration number will be rejected.
- The quotation should indicate clearly the reference no of inquiry and due date of the tender.
- The quotation shall be sent by speed post only.
- Fax quotation and quotation e-mail will not be accepted
- Your quotation shall be valid for 90 days.

Yours faithfully,

  
(Farman Ali)  
Scientific officer (D)

Encl.: as above.

## **ANNEXURE**

The polyurethane bootings are to be developed and used in the hot cell to protect the extended reach master slave manipulators from radioactive contamination. In the hot cell all equipments are handled with the help of manipulator. These booting are installed over the manipulators to save it from contamination. During break down maintenance manipulator will be taken out of the hot cell by keeping the booting in the hot cell which requires minimum decontamination. Hot cells have very high level of contamination and radiation.

The supplier who has not honored to our previous order will not consider for placing the order. In case required the factory evaluation may be carried out with the expert team to confirm the technical capability and capacity assessment.

**SCOPE OF SUPPLY:** Development, fabrication, testing and Supply

**QUANTITY:** 15 Nos. Extended Reach Model-8 Manipulators (ERM)

**SPECIFICATION:** Dimensions and details of the bootings are as per the enclosed drawing.

### **MATERIAL:**

The material and the thickness of the booting part is as given in the table

Sr. No.	Booting parts	Material	Thickness in mm
1.	Seal ring face	Polyurethane	0.40 ± 0.1
2.	Booting trunk	Nylon serim reinforced polyurethane or PVC	0.45mm ± 0.05
3.	Bellow expansion	Polyurethane	0.40 ± 0.1
4.	Gauntlet	Polyurethane	0.40 ± 0.1
5.	Seal ring gasket	neoprene	As per drawing

### **INSPECTION/TESTING**

The booting shall be free from any manufacturing defects. No pin holes opening or inclusion of the other material are allowed. The thickness of the booting shall be uniform throughout the specified length. The bellow part of the booting shall be soft and flexible.

The supplier should carry out the necessary inspection/tests as per supplier's check list and submit the test report to the indenting officer before actual inspection.

The inspection will be carried out in two stages

- (i) Inspection of the parts
- (ii) Inspection after assembly of the parts before dispatch.

The inspection procedure will involve

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- a) Visual inspection
- b) Thickness measurement at different location of the booting
- c) Gauntlet inspection by inserting the tong assembly inside the gauntlet
- d) Dimension measurement as given in the drawing
- e) Leak testing- Leak testing of the booting will be carried out by water immersion test by pressurizing the booting 300 mm of WC internally, The leak rate shall not be less than  $10^{-3}$  std cc/sec.

Supplier will have to submit the inspection report along with the tests certificate indicating the properties of raw material i.e. tensile strength, elongation at break, hardness, density/specific gravity, thermal aging resistance and radiation resistance at the time of delivery of the booting.

#### WARRANTY:

The booting supplied against this purchase order shall have the life of five years in normal atmosphere and two years life in radioactive hot cell atmosphere. The booting will have to with stand normal atmosphere during normal storage and ultraviolet & beta/gamma radiation in the hot cell. During this period if the booting goes bad due to radiation, selection of wrong raw material or any other manufacturing defects, the supplier will have to replace all defective booting with completely new booting without any cost. No repaired or reconditioned booting will be accepted. Supplier will have to submit the guarantee certificate for their product.

#### SUBMISSION OF SAMPLE:

The first booting of each type shall be submitted for testing as shown in the drawing; the supplier shall modify the next booting as required for hot cell use and test it. After approval from indenting officer the supplier shall take the remaining booting for manufacture and supply it for testing to BARC.

#### ENCLOSED:

The list of the enclosed drawing is as given below.

Part	Title of drawing	Drawing No.
A	Booting for Extended Reach Manipulator Booting	A1-NHF/M-51
B	Seal Ring Gasket	A1-NHF/M/2035

#### Scope of supply:

Fabrication, testing, inspection and supply

- On top left corner of the envelope please indicate "Fabrication, testing, inspection and supply of booting for extended reach manipulator".
- All taxes shall be mentioned clearly.
- Overwriting, scratching etc. must be avoided in the quotation. Any alteration in the figure shall be carried out by rewriting the whole figure. The authorised person from the firm shall countersign such figure.

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- The work completion period shall be mentioned in the quotation, from the receipt of work order. Any delay which is attributed to the contractor is liable for penalty @ ½ % per week (max 5%) shall be imposed and deducted from the bill. The extension to the delivery period may be granted to the contractor only after party's request with justified reason for the delay of delivery period.

**Inspection:**

The inspection will be carried out as per the approved QA document. Supplier shall submit the QA document for approval before fabrication.

**Place of delivery:**

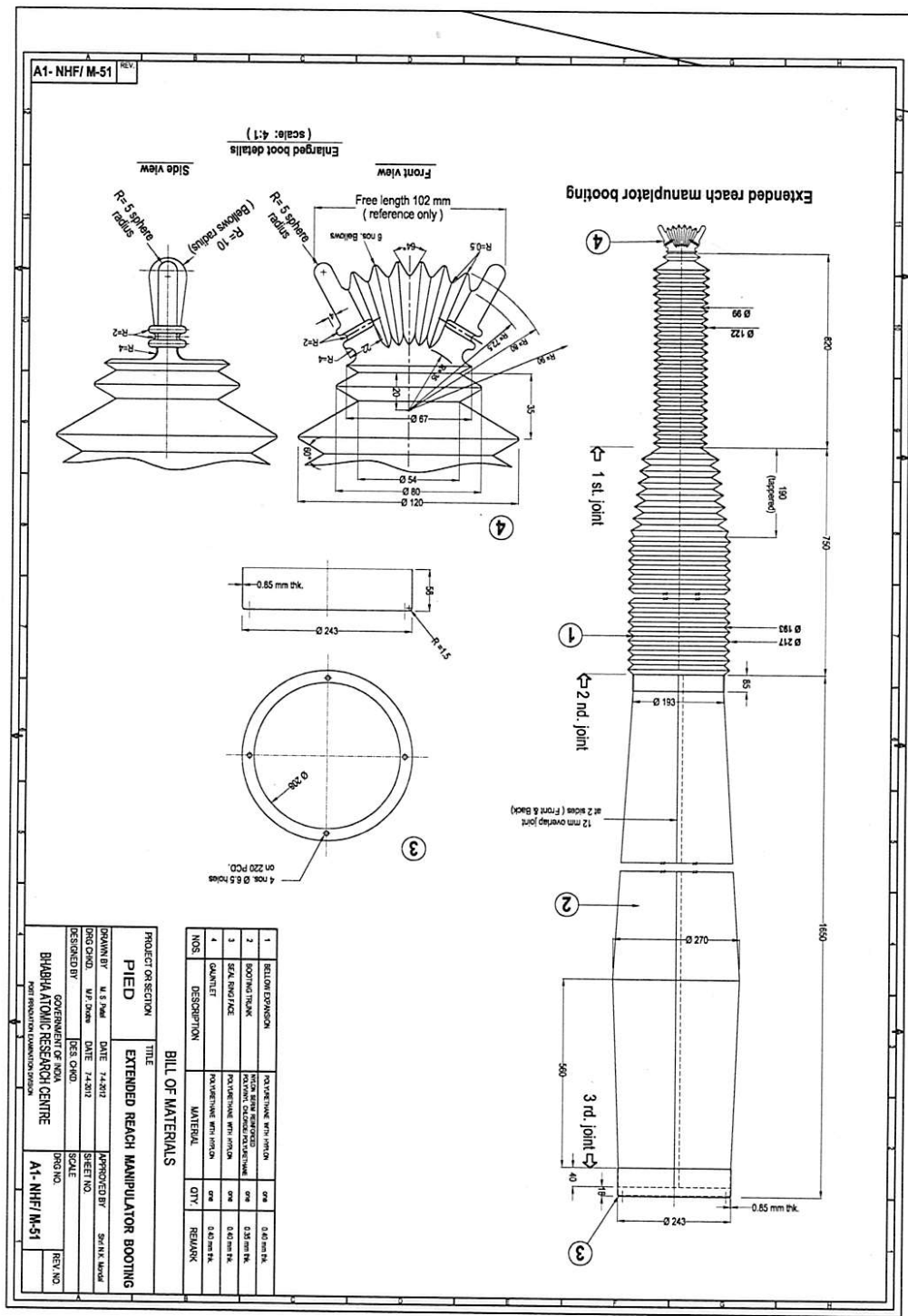
RLG Zonal Store, RLG,  
Bhabha Atomic research Centre  
MUMBAI- 400 085

**Payment terms and condition:**

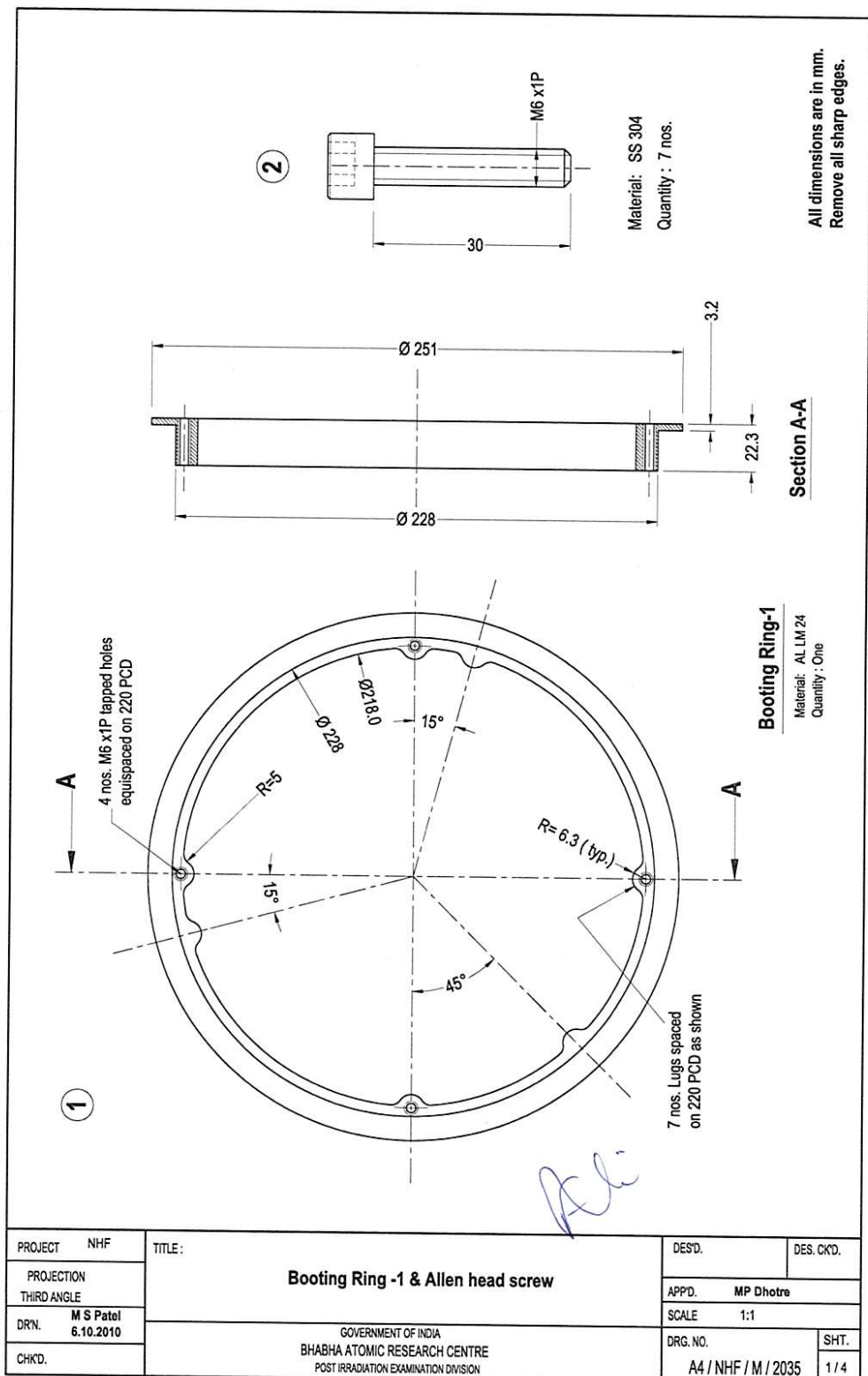
- A) No advance payment is admissible
- B) Income tax @ 2% shall be deducted at source from your bill.
- C) Payment will be released within 30 days of the completion of work at site i.e. Radiological labs., BARC, Mumbai – 400 085 as specified in this letter and acceptance of it after inspection from our authority, subject to the submission of the following documents:
  - (I) Delivery Challan
  - (II) Bill should be submitted in duplicate.
  - (iii) Option for electronic payment with pre-stamped receipt for payment.

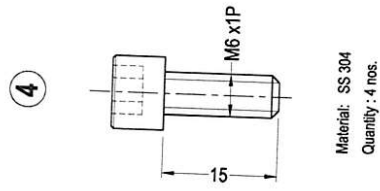
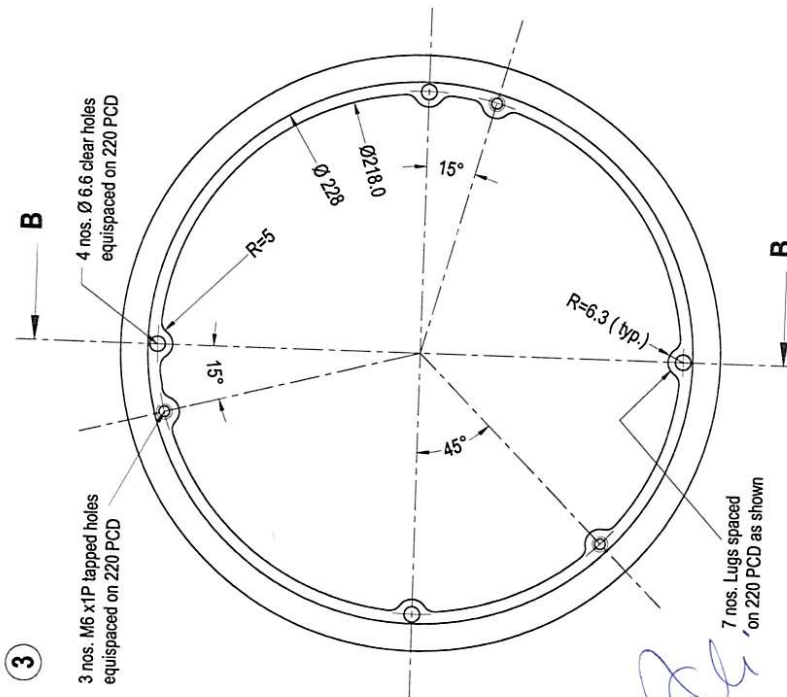
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# Extended reach manipulator booting





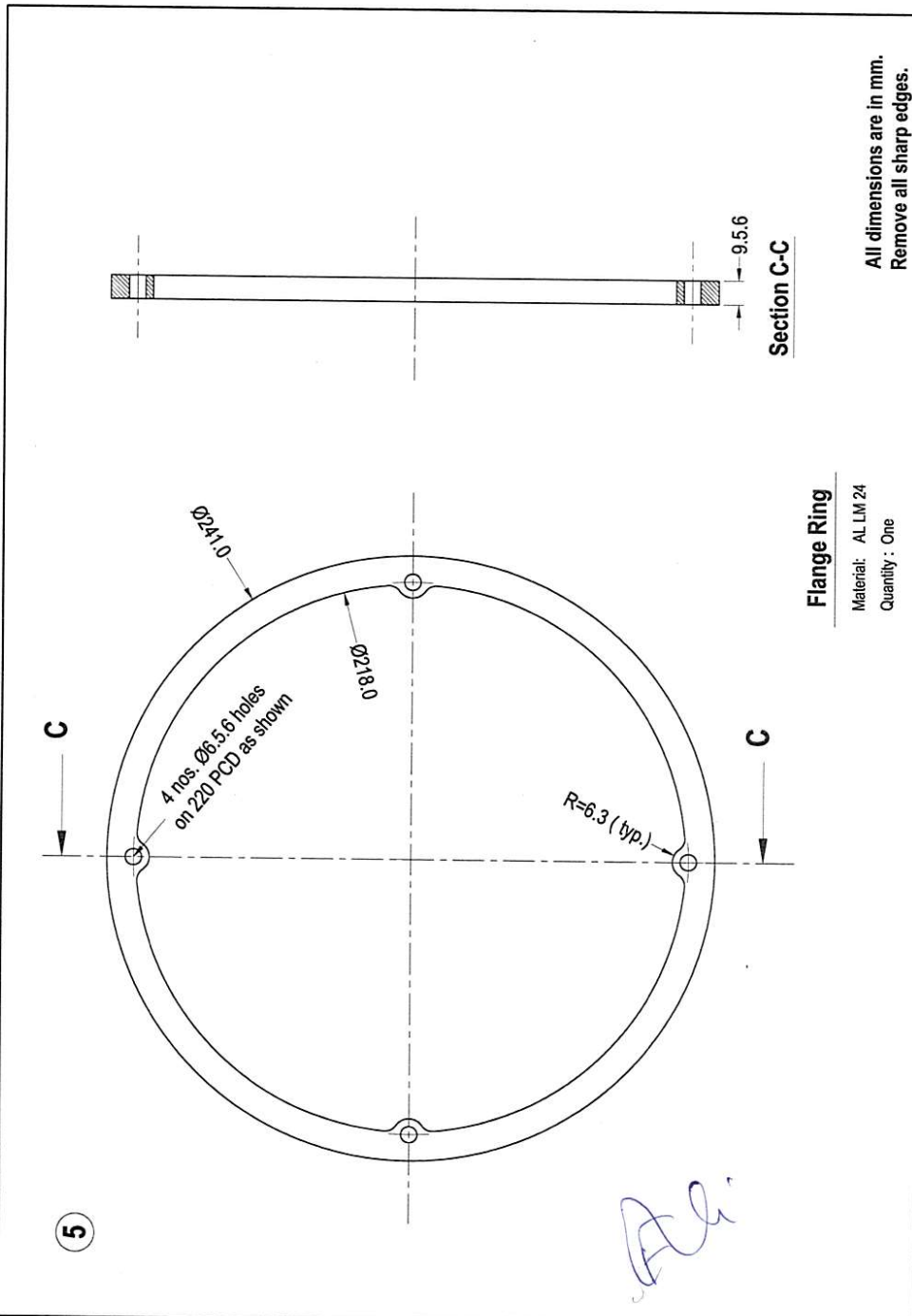




**Section B-B**

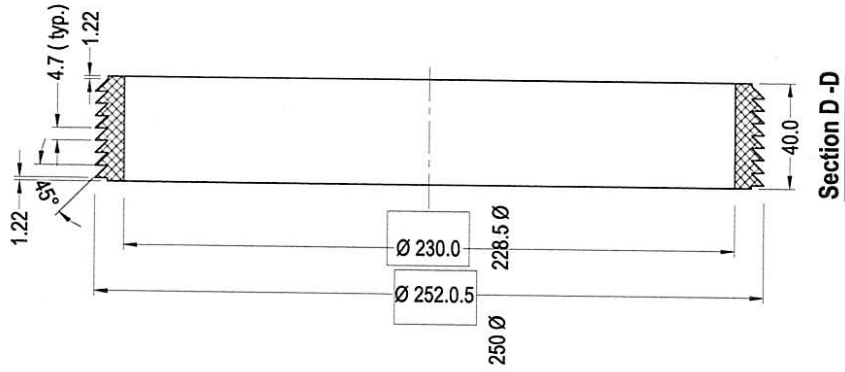
All dimensions are in mm.  
Remove all sharp edges.

PROJECT	NHF	TITLE:	DES'D.	DES. CK'D.
PROJECTION		<b>Booting Ring-2 &amp; Allen head screw</b>	APP'D.	MP Dhotre
THIRD ANGLE			SCALE	1:1
DRN.	M S Patel 6.10.2010	GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE POST IRRADIATION EXAMINATION DIVISION	DRG. NO.	SHT.
CHKD.			A4 / NHF / M / 2035	2 / 4

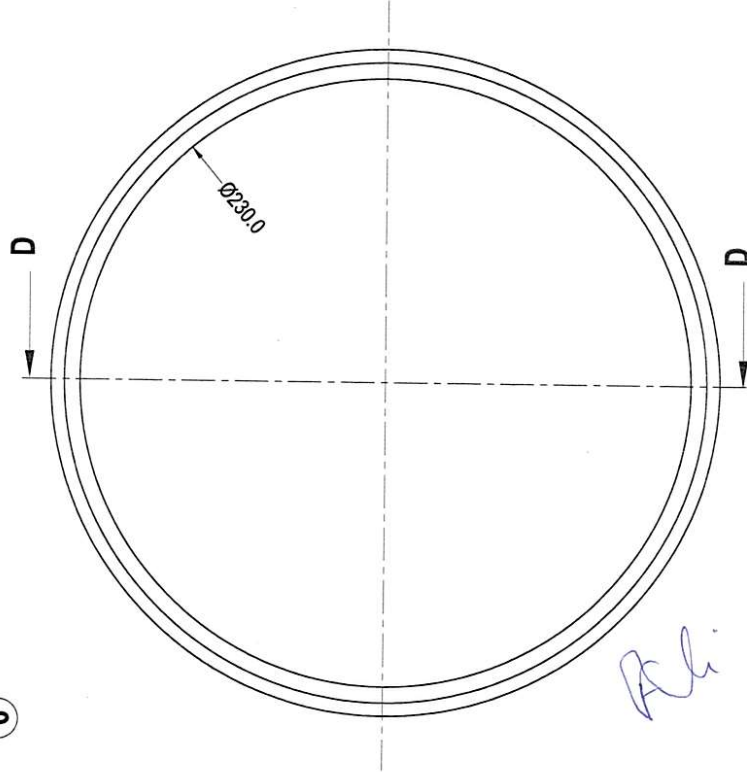


PROJECT	NHF	TITLE:	DES.D.	DES. CKD.
PROJECTION		<b>Flange for P.U. ring</b>	APPD.	MP Dhotre
THIRD ANGLE			SCALE	1:1
DRN.	M S Patel 6.10.2010	GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE POST IRRADIATION EXAMINATION DIVISION	DRG. NO.	SHT.
CHKD.			A4 / NHF / M / 2035	3 / 4





All dimensions are in mm.



### Gasket Ring

Material: Neoprene  
Quantity: One

6

PROJECT	NHF	TITLE:	DES'D.	DES. CK'D.
PROJECTION		Gasket ring	APPD.	MP Dhotre
THIRD ANGLE			SCALE	1:1
DRN.	M S Patel	GOVERNMENT OF INDIA	DRG. NO.	SHT.
6.10.2010		BHABHA ATOMIC RESEARCH CENTRE	A4 / NHF / M / 2035	4 / 4
CHKD.		POST IRRADIATION EXAMINATION DIVISION		