

दूरभाष :  
TELEPHONE:  
तार : बार्क-मुंबई, चेम्बुर.  
TELEGRAMS: BARC-MUMBAI, CHEMBUR.  
टेलिक्स : ०११-६१०१७/०११-६१०२२ बार्क ईन  
TELEX: 011-61017/011-61022 BARC IN  
फेक्स संख्या : ११ - २२ - ५५०५१५१  
FAX NUMBER: 91-22-5505151



सत्यमेव जयते

भारत सरकार

GOVERNMENT OF INDIA

भाभा परमाणु अनुसंधान केन्द्र  
BHABHA ATOMIC RESEARCH CENTRE  
Reactor Operation Division  
Cirus

द्रॉम्बे,  
मुंबई-४०० ०८५.  
TROMBAY,  
MUMBAI-400 085.

Ref: ROD/CIR/G-7/ 326 /2022

01, March, 2022  
February 28, 2022

### TENDER NOTICE

**Sub: Procurement of raw materials & standard items, manufacture, inspection, assembly, shop-testing, packing, delivery, installation & commissioning of Rod Cutting Gadget at site**

- 1.0 Sealed quotation is invited, for and on behalf of the President of India, for the above job as per the description and scope of work given below.
- 1.1 Tender offer is to be submitted in two parts viz. **Part-A** (Techno-commercial Bid) and **Part-B** (Price Bid).

In **Part-A** (Technical Bid) bidder must attach following documents;

- PAN No, GST certificate / Number.
- List of available plant & machinery.
- List of technical manpower along with organizational structure.
- Proof of having satisfactorily completed similar works.
- The bidder shall answer the questionnaire given in **Annexure-1** attached to be qualified for opening of the **Part-B (price bid)**.

In **Part-B** (Price Bid), the quotation shall be in the format of attached schedule-B and shall show the basic cost and GST separately, if applicable.

- 1.2 Bidders are required to submit in separate sealed envelopes, containing and indicating the following on outside:

First Envelope	Tender no.	Part-A (Technical Bid)
Second Envelope	Tender no.	Part-B (Price Bid)

The technical bid and the financial bid should be sealed by the bidder in separate covers duly superscribed and both these sealed covers are to be put in a bigger cover which should be sealed and duly superscribed with the name of the work, name and address of bidder, tender notice no. and due date.

- 1.3 Sealed and superscribed Tenders as mentioned above in 1.1 shall be sent to and will be received up to **15.00 hrs. of 25<sup>th</sup> March 2022 only, at the address given below. The quotation shall be sent through Indian postal services only by registered post / speed post.** Quotation delivered by person or through courier will not be accepted and not considered for bidding process.

To,  
ROD Office, Dhruva  
Kind Attn: Shri M K Ojha, SO/F  
ROD/ CIRUS  
BARC, Trombay  
Mumbai-40085

- 1.4 After opening of Part-A of the tender, bidders shall be evaluated, for their techno-commercial capability to carry out the work based on;
- Technical capabilities in regard to tendered work
  - Organizational structure.
  - Available resources, skilled man power and previous experience of similar jobs.
  - Quality and safety consciousness.

e) Adherence to time schedule for the completed works.

Those who do not satisfy the conditions in **Part-A** shall not be considered for **Part-B**. Part-B (Price Bid) of tender will be opened at a later date only for the successful bidders who are qualified through technical evaluation.

- 1.5 The acceptance of tender will rest with Director, Reactor Group, BARC on behalf of The President of India who does not bind himself to accept the lowest tender and reserves to himself the authority to reject an or all of the tenders received, without assignment of any reason.
- 1.6 In the event of any conflict between or within the various sections of this specification or in case of any doubt, decision of the indenter shall be final.
- 1.7 The contractor is specifically requested to visit the site and familiarize himself with the location and facilities available for this work and obtain any other information which may influence or affect this tender, before submitting quotation.
- 1.8 The bidder shall quote clearly break up of basic price and taxes.
- 1.9 The quotation shall be given on vendor's letter head and properly signed in the format given in the Schedule of work. The vendor shall provide the PAN no. and GST no. along with quotation.
- 1.10 No advance or part payment is admissible.
- 1.11 The quality of workmanship shall conform to high standards and strictly as per specifications and drawings provided.
- 1.12 The contractor shall have experience in execution of similar jobs. Your quotation shall accompany suitable documents regarding this.

## **2.0 SCOPE OF WORK:**

- 2.1 The job includes procurement of all the raw materials and standard items in accordance with requirements given in the specification and drawings in the annexures. This includes procurement of carbon steel & stainless steel hollow rectangular sections, carbon steel & stainless steel raw materials (like plates, bars, pipes, forgings etc.), Aluminum plates & pipes, procurement of hydraulic cutter, water hydraulic power pack, electric motor, pneumatic motor, cable drag chain, hydraulic, pneumatic & electrical control components (like directional & flow control valves, relief valves, control panel, hoses, tubes, filters, limit switches etc.), submission of test certificates

of all raw materials and bought out components.

- 2.2 Packing and safe delivery at BARC along with the necessary inspection & testing reports and installation at site.
- 2.3 Manufacturing, assembly, shop testing, delivery and installation of the complete assembly of Rod Cutting Gadget at site as per list of drawings given in Annexure-3. The drawings are attached in the PDF file with this tender notice.
- 2.4 Preparation of inspection report of all the components at appropriate stage during manufacturing.
- 2.5 Obtain purchaser's approval for any deviation in design / material with necessary reason for the same.
- 2.6 Offering the component or assemblies for inspection to purchaser's representative.
- 2.7 Carry out necessary modification or improvements until satisfactory performance is achieved.
- 2.8 It is quite likely that certain modifications of minor nature may have to be done during the period of manufacture of these assemblies to suit the assembly and functional requirements. The Supplier shall accommodate such minor changes as and when required during the manufacture without any additional charge to the purchaser. Any modification required for fabrication, machining, assembly, handling, testing etc. shall be done only with prior approval of the purchaser.
- 2.9 The General Assembly (GA) and Detail Drawings (DDs) of the set-ups are supplied with this tender specification. The items are to be supplied by the supplier as per specifications and list of drawings provided in the **Annexure-2 & 3**.

### **3.0 WORK COMPLETION PERIOD:**

**Six months** from the date of work order.

### **4.0 MATERIALS AND WORKMANSHIP**

- 4.1 No material will be supplied by indenter.
- 4.2 Power supply, Compressed air and service water are available at work site.
- 4.3 **Workmanship:**

Workmanship shall be of first class, high grade quality and in accordance with the best approved method.

### **5.0 PENALTY:**

Any delay which is attributable to the contractor is liable for penalty @ ½% per week (max 10%) to be imposed on the contractor.

### **6.0 PAYMENT:**

- 6.1 Payment shall be made only on satisfactory completion of the work and on production of bill, advance stamped receipt and guaranty/warranty certificate. Advance/ part payment or against delivery cannot be made. Proposed payment terms by the tenderer cannot be accepted.
- 6.2 An undertaking shall be submitted that the GST has been promptly deposited with the authorities.
- 6.3 ITR undertaking and ITR acknowledgement receipt for the last two years shall be submitted.

### **7.0 DEDUCTION OF TAXES AND SURCHARGES:**

Income tax @2.0 % and GST TDS @2% will be deducted from the bill.

#### **8.0 Safety:**

- i. All the persons working at site during assembly and installation at site shall be physically and mentally fit.
- ii. All applicable industrial & safety precautions shall be taken by the contractor in respect of their personnel working at site.
- iii. Contractor personnel shall also abide by the radiation safety precautions as directed by the Health physicist of the site.
- iv. All workers, supervisors & engineers of the contractor shall wear necessary protective clothing, safety belts with harness, helmets & canvas/safety shoes properly laced & follow the safety requirements strictly, while working at site.
- v. The personal protective equipment to contract workers, supervisors & engineers shall be supplied by the contractor at his cost.
- vi. The contractor & his persons shall strictly observe all security and safety regulations prevailing at the site.
- vii. Safe industrial practices are to be followed for use of portable ladders & step ladders by Contractor & his team, wherever applicable.
- viii. All workers should be insured at the cost of the contractor for risk of working at BARC & no claim will be payable by BARC.
- ix. The contractor shall arrange medical certificates of their personnel from a registered medical practitioner certifying that the personnel are medically fit to work in a radiation area.
- x. Above work shall be carried out with strict adherence to safe work practice. BARC shall not be responsible for any damage, injury, death etc of any contractor's personnel under any circumstances. No compensation claim shall be admitted in this regard.

#### **9.0 Security:**

- a) Security instructions should be strictly adhered to.
- b) **The contractor shall arrange Police verification certificates for the group of persons engaged by him for the above work as per the existing procedure at BARC.**
- c) All the personnel employed by the contractor will follow strict instruction given by RHC of reactor complex.

#### **10.0 CONFIDENTIALITY CLAUSES.**

##### **(i) Confidentiality:**

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 the 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 the sub-contractors, consultants, advisers or the employees engaged by a party with equal force.

##### **(ii) “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, adviser or the employees of a contractor will invite penal consequences under the aforesaid legislation.

(iii) **Prohibition against use of BARC's name without permission for publicity purposes: -**

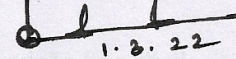
The contractor or sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC's name for any publicity purpose through any public media like Press, Radio, T.V. or Internet without the prior written approval of BARC.

**11.0 General:**

- i. The quotation shall be given on the vendors letter head and properly signed.
- ii. The vender shall provide PAN no. and GSTN no. along with the quotation.
- iii. **The desirous bidders may contact M K Ojha, Decommissioning Engr. on Tel no. 25596250 for any clarification.**
- iv. The bidder must visit the site to assess the job clearly and specifically before quoting their offer. He may contact one day in advance. The bidders who will quote without visiting the site are liable to be rejected.
- v. We reserve the right to terminate the contract at any stage of execution of the contract without assigning any reason.
- vi. Please indicate whether any of your relatives are employed in BARC or you or any of your employees were employed in BARC or any other units of DAE.

Encl:  
Schedule of work  
Annexure-1

Yours faithfully,



(C G Karhadkar)  
Director Reactor Group

For and on behalf of the President of India

सी.जी. कऱहाडकर / C G Karhadkar  
निदेशक, रिऱक्टर ग्रुप, भा.प.अ. केंद्र  
Director, Reactor Group, BARC

Cc:

1. AO (Works)
2. DS (Cirus & Apsara)
3. ROD Office

**Schedule-B**

**Schedule of Work**

**Name of work:**

**“Procurement of raw materials & standard items, manufacture, inspection, assembly, shop-testing, packing, delivery at site, installation & commissioning of Rod Cutting Gadget”**

1	2	3	4
Sl. No	Particulars	Qty	Cost of the assembly
1	Rod Cutting Gadget Assembly and installation and commissioning at site.	1(one)	
Total =			

GST : \_\_\_\_\_

Other charges (if any): \_\_\_\_\_

Total (including all of above): Rupees \_\_\_\_\_

(In figures & words)

**Date:**

**Authorised Signature & Seal of Vendor**

## Annexure-1

<b><u>Questionnaire to be filled and submitted for technical evaluation</u></b>		
	<b>Mention the following details about your selection of hydraulic shear cutter for cutting 50 mm OD hollow Aluminium tubes having cross-sectional area of about 660 mm<sup>2</sup></b>	
	Dimensions of cutter (L,W,H) in mm	
	Bore diameter of cylinder, mm	
	Can it cut ASTM-B-221 Type 1060 Aluminium pipes of OD 50 mm and cross-sectional area of about 660 mm <sup>2</sup> ?	
	Pressure required for cutting, bar	
	Make & Model no.	
	Vendor details	
2.	<b>Mention the following details about your selection of compact water hydraulic power pack for above cutter</b>	
	Overall dimensions (L,W,H)	
	Max. Pressure (bar)	
	Max. Flow (LPM)	
	Fitted with castor wheels to move on floor?	
	Make & Model no.	
	Vendor details	
3.	<b>Mention the following details about your selection of cutter swivel pneumatic motor</b>	
	Compatible to underwater operation at 8 m water head?	
	Speed (RPM)	
	Torque (N-m)	
	Equipped with "power-off activated" type brake?	
	Braking Torque (N-m)	
	Make & model no.	
	Vendor details	
4.	<b>Mention the following details about your selection of cable drag chain?</b>	

	Is the selected chain vertical standing type?	
	What is the maximum height to which chain loop can be raised vertically?	
	Size of chain element to accommodate 6 nos. of ¼ inch hoses (Length & Width of cross section)	
	Minimum loop diameter, mm	
	Chain material	
	Make & model no.	
	Vendor details	
5.	<b>Mention the following details about your experience in constructing telescopic mast?</b>	
	For a stainless steel square tube telescopic mast of 1 stationary and 3 moving booms having net stroke of 4m and weight to be handled about 50 kg, what minimum cross sectional dimensions of outer most mast tube will you choose?	
	Furnish details of past work orders for boom mast manufacturing	
	Vendor details for procuring hollow stainless steel mast tubes	



## **Annexure-2**

Government of India  
Bhabha Atomic Research Centre  
Reactor Operation Division

Specification for

**Procurement of raw materials & standard items, manufacture, inspection,  
assembly, shop-testing, packing, delivery at site, installation & commissioning**

**OF**

**Rod Cutting Gadget**

## 1.0 Introduction:

This tender document is for the supply of

S No.	Item (Drawing No.)	Quantity
1	Rod Cutting Gadget Assembly	1

The job includes procurement of raw materials, and standard components, manufacture, inspection, assembly, shop testing, packing, delivery at RO Zonal stores, BARC, Trombay, Mumbai – 400085 and installation of above items at site.

The General Assembly (GA) and Detail Drawings (DDs) of the set-ups are supplied with this tender specification. The items are to be supplied by the supplier as per specifications and drawings.

The specification covers requirements of different machined components, raw materials, standard items etc. In general, the components require skill in machining, fabrication, non-destructive examination, assembly of components, shop testing, installation & commissioning. It is desirable that supplier shall have past experience to execute such kind of jobs.

## 2.0 Scope of the work for Supplier:

The scope of the work for supplier includes procurement of raw materials, procurement of standard components, manufacturing, assembly, inspection, testing, packing and delivery at site of above-mentioned items in their respective quantity at RO Zonal stores, BARC, Trombay, Mumbai – 400085 as detailed below: -

1. Procurement of all the raw materials and standard items in accordance with requirements given in this specification and drawings. This includes procurement of carbon steel & stainless steel hollow rectangular sections, carbon steel & stainless steel raw materials (like plates, bars, pipes, forgings etc.), Aluminum plates & pipes, procurement of hydraulic cutter, water hydraulic power pack, electric motor, pneumatic motor, cable drag chain, hydraulic, pneumatic & electrical control components (like directional & flow control valves, relief valves, control panel, hoses, tubes, filters, limit switches etc.), submission of test certificates of all raw materials and bought out components.
2. Manufacturing, assembly, shop testing, delivery and installation of the complete assembly of Rod Cutting Gadget at site as per list of drawings given in **Annexure-3**. The drawings are attached in the PDF file with this tender notice.
3. Preparation of inspection report of all the components at appropriate stage during manufacturing.
4. Obtain purchaser's approval for any deviation in design / material with necessary reason for the same.

5. Offering the component or assemblies for inspection to purchaser's representative.
6. Carry out necessary modification or improvements until satisfactory performance is achieved.
7. It is quite likely that certain modifications of minor nature may have to be done during the period of manufacture of these assemblies to suit the assembly and functional requirements. The Supplier shall accommodate such minor changes as and when required during the manufacture without any additional charge to the purchaser. Any modification required for fabrication, machining, assembly, handling, testing etc. shall be done only with prior approval of the purchaser.
8. Packing and safe delivery at BARC along with the necessary inspection & testing reports and installation at site.

### **3.0 Free Issue Material**

No free issue material will be supplied.

### **4.0 Notes to bidder**

- i) Entire job including manufacturing, inspection, shop testing, packing & delivery shall be completed within **Six months** from the date of release of purchase order.
- ii) Drawings of seal test set-up are enclosed with the tender and a list of drawings is given in **Annexure-3**.
- iii) The bidder shall identify the source of supply of raw materials and standard items before sending the quotations. This shall be clearly indicated in the quotation along with details of make & cost of individual bought-out components. A detailed break-up of cost in regard to raw materials, standard items, manufacturing, testing, supply, installation & commissioning shall be included in the quotation.
- iv) Jobs to be subcontracted by the supplier, shall be clearly indicated in his quotation. The name of subcontractor along with its technical capability shall also be specified in quotation.
- v) The raw materials and standard / proprietary items shall meet requirements of relevant drawings. The supplier shall produce mill test certificates for all raw materials and get them approved by the purchaser.
- vi) As a proof of ability, the Bidder shall submit a list of similar works executed by him. Bidder shall also submit a list of machine tools and equipment including; precision machining, and inspection equipment / metrology available with him. The list shall also indicate accuracies achievable by them.
- vii) Any deviation from the requirements indicated in this specification, drawings, annexure etc. shall be brought out clearly by the Bidder in his quotation.

- viii) End user certificate for any bought-out item will not be provided by purchaser. Post supply inspection of items will not be allowed by purchaser.

**5.0 General supply conditions for supplier**

- i) All work covered by this Tender Document including the items procured by the supplier shall be subjected to the Quality Surveillance by the purchaser or his authorized representative. The supplier shall produce an inspection plan to purchaser’s satisfaction and notify him the imminent checkpoints.
- ii) The supplier shall submit various technical documents namely raw material mill test certificates, dimensional inspection reports, functional testing reports, design concession requests etc. These reports will be approved by the purchaser. A manufacturing history docket shall be submitted by the supplier in both hardcopy & softcopy format.
- iii) The checking and approval of the documents shall not relieve the supplier in any manner from full responsibility for ensuring correct interpretation of design drawings and specifications and for the completeness and accuracy of the shop drawings and manufacturing documents and relevant specifications.
- iv) Supplier is required to have infrastructure and practice for recording/documenting all inspection records, History Dockets, design deviations, test reports etc. in a systematic manner.

**6.0 Technical specifications**

6.1. Applicable specifications and drawings:

Latest issues of following specifications, drawings and bills of material in effect at the time of manufacture shall form a part of this specification to the extent specified herein. In the event that certain provisions of the specifications listed below conflict with the requirements of this specification, the requirements of this specification shall govern.

i) Specifications

ASTM-A-240	Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications
ASTM-A-276	Standard Specification for Stainless Steel Bars and Shapes
ASTM-A-500	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM-A-193	Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
ASTM-A-194	Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

ASTM-B-150	Standard Specification for Aluminum Bronze Rod, Bar, and Shapes
ASTM-B-209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM-B-221	Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
IS: 2062	Hot rolled medium and high tensile structural steel — specification

ii) Drawings

List of drawings for manufacturing of components and assembly of Rod Cutting Gadget are given in **Annexure-3**. Requirements specified on these drawings shall govern manufacture and supply of the equipment.

6.2. Materials, Process and Workmanship

i) Materials

All the raw materials required for the manufacturing of Rod Cutting Gadget shall be procured by the supplier. Mill test certificates shall be provided for all raw materials. Materials, proprietary components and fasteners required for jigs, fixtures, gauges, supports, hangers, clamps etc. to facilitate manufacture, inspection, shop testing, packaging etc. of assemblies shall be provided by the supplier.

ii) Process and Workmanship

The manufacturing process and workmanship shall be consistent with high grade industrial practice and shall be adequate to consistently achieve the accuracy and surface finish called up in the drawings and this specification.

Immediately after all machining operations, the components shall be thoroughly cleaned to remove all traces of cutting oils, tool materials etc. After cleaning, the components shall be applied with approved rust preventives (for carbon steel components) and stored in heat sealed polythene bags till they are taken up for inspection and assembly.

6.3. Manufacturing requirements

The above mentioned Rod Cutting Gadget shall be manufactured, tested, assembled and delivered by the supplier site strictly in accordance with the approved drawings and specification to the entire satisfaction of purchaser.

6.4. Inspection and Tests

i) Dimensional Inspection:

The Supplier shall inspect the following and keep a proper record of the same:

- a) Dimensions, surface finish, geometric features, fit and alignment of all components.

- b) Visual inspection of all the components to ensure absence of burrs, sharp corners, plating chip off etc., and for workmanship and cleanliness.
- c) Completeness and conformance of all components to the requirements specified in drawings and this specification.
- d) Inspection to ensure that no feature on the component other than those specified in the drawing is made.

ii) Shop Testing:

Supplier shall perform functional testing of complete Rod Cutting Gadget Assembly and demonstrate cutting & lifting operations on pipes in random orientations as specified by the purchaser.

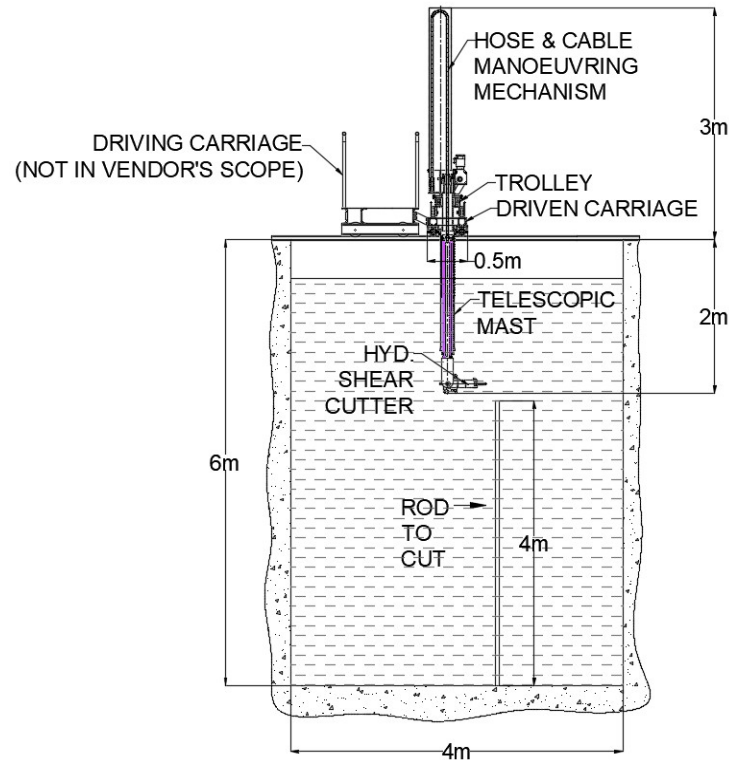
iii) Inspection and Test Failures

If any component fails to meet any inspection or functional requirement of this specification and if the Supplier intends to offer the equipment or the part for acceptance, either in failed, reworked or repaired condition, then, he shall notify the purchaser or his authorized representative of his intentions. For this purpose, the Supplier shall submit a 'Design Concession Request' (DCR) with full particulars and descriptions of the deviations and proposed method of rectification. The DCR shall be submitted to the purchaser for approval. The rectification or use of the component, by the Supplier shall be taken up only after the approval of the DCR by the purchaser. At the discretion of the purchaser, the failed equipment or part may be accepted, as deviated part or required to be reworked, repaired, re-inspected and / or re-tested or totally rejected.

6.5. Assembly of Rod Cutting Gadget

Rod cutting gadget assembly is required for cutting of aluminium rods inside a water filled bay & disposing the cut rods in storage bins. The bay has horizontal dimensions of 3m x 4m and a depth of 6m. The rods are in the form of coaxial aluminium tubes having outside diameter of outer-most tube as 50 mm. The rods are randomly oriented inside the bay. The cutting operation is to be accomplished by a water hydraulic operated shear cutter. Vertical travel of cutter, which is about 3.8 m, is performed by a telescopic mast and horizontal travel by a carriage-trolley system. The cutter can be swivelled in a vertical plane and rotated about a vertical axis. The cutter is required to be operated by water hydraulic pressure sufficient to cut hollow aluminium pipe of outer diameter 50 mm & cross-sectional area about 660 mm<sup>2</sup>. The mast operation and cutter vertical swivel are required to be motorised. Carriage-trolley motion and cutter rotation about vertical axis are manual. Hoses & cables traveling along with the cutter due to mast motion shall be manoeuvred by a suitable mechanism. Pressurizing system for water hydraulically operated shear cutter shall be mounted on a compact trolley with wheels so that it can be moved along with carriage on floor. The Motors and cutter shall be operated from a control panel traversing along with the carriage-trolley. The control panel should be equipped with suitable directional & flow control valves, PRVs, electrical switches & supplies to facilitate control of electric motor, hydraulic cutter & air motor from top of the

bay by the operator. Overrun of trolley and mast shall be prevented by limit switches. The complete system shall have minimum number of sub-assemblies for final integration at site so that the final assembly is simple and quick. A schematic of the system is shown in Fig.1.



**FIG. 1 – Schematic of Rod Cutting Gadget Assembly**

**6.6. Shop Testing of Rod Cutting Gadget**

After manufacturing, the system shall be assembled and functional testing of each subassembly shall be demonstrated. Thereafter cutting operations in actual working conditions shall be simulated on hollow aluminium tubes made from ASTM-B-221 Type 1060 material. The pipes shall have OD 50 mm & cross sectional area about 700 mm<sup>2</sup> (min.). During cutting pipes shall be laid in random orientations specified by purchaser. For shop testing the carriage should be rigidly fixed on a structure at a height of 6m from ground. Trolley with mast shall be assembled over the carriage. Cutting operation on pipes shall be demonstrated through sequential motions of trolley and mast. Pipes shall be placed in water filled drum and cutting shall be done by immersing the cutter in water. All operations shall be carried out from a platform near the carriage. The following is a provisional list of aspects to be checked:

- a) Carriage: It shall be rigidly fixed on a structure at a height of 6 m from floor. It shall be properly levelled to provide a horizontal rolling surface for trolley. Carriage need not be travelled during testing.

- b) Trolley: Horizontal movement of trolley over carriage shall be demonstrated with cutter in free condition as well as in the condition of cutter gripping & lifting a cut pipe. Locking of Trolley at any desired position on carriage shall be shown.
- c) Telescopic Mast: Vertical movement of telescopic mast (full advance & retract) and overrun protection shall be shown. Rotation of mast about vertical axis shall be shown. Manoeuvring of cables and hoses by drag chain shall be shown.
- d) Cutter: Rotation of cutter by swivel motor shall be shown. Cutting & gripping operation by cutter of 50 mm OD & 660 mm<sup>2</sup> (min.) cross sectional area ASTM-B-221 Type 1060 Aluminium pipes shall be shown with cutter immersed in water in a drum. Braking capacity of swivel motor shall be shown for cutter gripping 1m length of pipe.

#### 6.7. Acceptance criteria :

The following requirement shall be met for acceptance of the components.

1. Smooth motion of trolley on rails over carriage shall be demonstrated end to end
2. Smooth  $\pm 180^\circ$  rotation of mast about vertical axis shall be demonstrated
3. Smooth and vertical motion of telescopic mast in its full stroke shall be demonstrated.
4. Smooth  $\pm 90^\circ$  rotation of cutter on its axis shall be demonstrated
5. Under water cutting of pipes in vertical, horizontal and inclined orientations by hydraulic shear cutter shall be demonstrated
6. Lifting of cut pipes on floor by cutter and dropping them into storage bins shall be demonstrated.
7. During motion of the system no fouling of cables and hoses shall be observed.
8. No malfunction of hose/cable manoeuvring mechanism shall be observed.
9. No malfunction of cutter, motors, control valves, pressurizing system etc. shall be observed.
10. Cutter shall be able to rigidly hold and lift 1m length of pipe with swivel motor supply switched off and only braking line supply on.
11. No malfunction of limit switches to prevent over-travel of motorised systems shall be observed.
12. All components shall meet dimensional requirement as per drawing.
13. During pressurisation of fluid actuators, no leakage shall be observed.
14. After testing components shall be disassembled and visually inspected for any distortions/dents etc. These shall not be observed on components.



All of the above operations shall be demonstrated multiple times up to the satisfaction of the purchaser.

6.8 **Installation at Site:** After delivery of all components of the rod cutting gadget at ROZ stores, the same shall be assembled at work site. All components shall meet the acceptance criteria as listed below in item # 6.9.

6.9 **Acceptance criteria at work site:**

The following requirement shall be met for acceptance of the components.

1. Smooth motion of trolley on rails over carriage shall be demonstrated end to end
2. Smooth  $\pm 180^\circ$  rotation of mast about vertical axis shall be demonstrated
3. Smooth and vertical motion of telescopic mast in its full stroke shall be demonstrated.
4. Smooth  $\pm 90^\circ$  rotation of cutter on its axis shall be demonstrated
5. Under water cutting of pipes in vertical, horizontal and inclined orientations by hydraulic shear cutter shall be demonstrated
6. Lifting of cut pipes on floor by cutter and dropping them into storage bins shall be demonstrated.
7. During motion of the system no fouling of cables and hoses shall be observed.
8. No malfunction of hose/cable manoeuvring mechanism shall be observed.
9. No malfunction of cutter, motors, control valves, pressurizing system etc. shall be observed.
10. Cutter shall be able to rigidly hold and lift 1m length of pipe with swivel motor supply switched off and only braking line supply on.
11. No malfunction of limit switches to prevent over-travel of motorised systems shall be observed.
12. All components shall meet dimensional requirement as per drawing.
13. During pressurisation of fluid actuators, no leakage shall be observed.
14. After testing components shall be disassembled and visually inspected for any distortions/dents etc. These shall not be observed on components.

6.10 **Reports:**

The supplier has to submit following reports/ certificates along with the delivery of items

- i) Mill test certificates of all raw materials.
- ii) 100%-dimensional inspection report.
- iii) Shop testing & functional performance reports.

- iv) Certificate of Compliance.
- v) Complete history docket (1 copy) in hard copy as well as soft copy format.

## **7.0 PACKING AND SHIPMENT**

- **Packing**

After completion of all shop tests and acceptance by the purchaser, the assembly shall be thoroughly cleaned, dried, protected from dirt, corrosion and any other damage. Rod cutting gadget shall be supplied with minimum number of subassemblies for final integration at site. Pack the sub-assemblies in wooden boxes so that no damage may happen during transportation. Carbon steel components like frames, structures etc. shall be painted with primer and two coats of good quality enamel paint of color specified by purchaser. The Supplier shall be fully responsible for the proper care and handling of assembly during packing and shipment to ensure their arrival at destination without damage to any part. Items shall be crated suitably and shipped to purchaser's works, RO Zonal Stores, BARC, Mumbai.

- **Delivery:**

Delivery of items shall be made only after obtaining 'shipping release' from purchaser. The components of Rod cutting gadget shall be covered by a Supplier's Transit Insurance during transportation to the place of delivery indicated in the Purchase Order. The items shall be delivered on or before the stipulated delivery period mentioned in Purchase Order.

- **Guarantee / Warrantee**

Items shall be guaranteed for a period of 12 months.

## **8.0 Purchaser's Drawings, Specifications etc.**

- **Purpose**

All drawings, specifications etc. that may be furnished to supplier by the purchaser are property of purchaser and are intended to be complementary and to provide for and comprise everything necessary for the completion of works/supply. These are not to be used for any works or performance other than those for which these have been provided and shall be returned to purchaser immediately on completion of work/supply in good condition.

- **Property of purchaser**

If, during the process of execution of the contract, any improvement, refinement or technical changes and modifications are effected by Supplier, such changes shall not affect the title to the property of purchaser and all the information, specifications, drawings etc. including the improvement/ modifications effected by Supplier shall

continue to be the property of purchaser. Supplier shall not have any claim or rights whatsoever in respect of purchaser's drawings, specifications, prototypes etc. even where improvement, refinement, modifications etc. have been effected by Supplier.

- **Confidential Information**

The drawings, specifications, samples and such other information furnished to Supplier relating to the supply/works, sub-system/equipment etc. are to be treated as confidential which shall be held by Supplier in confidence and shall not be divulged, transferred, exchanged, gifted or communicated to any third party without the prior written consent of purchaser. Supplier therefore binds himself, his successors, heirs, executors, administrators, employees and the permitted assignees or such other persons or agents directly or indirectly concerned with the works/supply to the confidential nature of the drawings, specification, prototypes, samples etc.

### Annexure-3

#### List of drawings

(Note: '\*' refers to RTD/RCG)

PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.
1	CARRIAGE FRAME	ASTM-A-500 GR A	1	A3/*/101
2	TROLLEY FRAME	SS 304	1	A3/*/102
3	DRIVE HOUSING TUBE	SS 304	1	A3/*/103
4	ANGULAR CONTACT BALL BEARING: 200 I/D x 310 O/D x 51 W (SKF-7040 BGM OR EQV.)	-	2	-
5	BEARING COVER	SS 304	1	A3/*/104
6	BEARING SPACER MIDDLE	SS 304	1	A3/*/105
7	BEARING SPACER TOP	SS 304	1	A3/*/106
8	HEX. BOLT M12x1.5-45 LG: IS 1364 PART-1	ASTM-A-193 GR. B8	8	
9	HEX. NUT M12x1.5: IS 1364 PART-3	ASTM-A-194 GR. 8	20	
10	ROTARY TUBE	SS 304	1	A3/*/107
11	TROLLEY WHEEL	SS 304	4	A3/*/108
12	TROLLEY WHEEL AXLE	SS 304	4	A3/*/109
13	ANGULAR CONTACT BALL BEARING: 20 I/D x 42 O/D x 12 W (SKF-6004 OR EQV.)		4	-
14	WHEEL SPACER	SS 304	4	A3/*/110
15	HEX. NUT M16x1.5: IS 1364 PART-3	ASTM-A-194 GR. 8	18	-
16	TROLLEY BEARING COVER	SS 304	4	A3/*/111
17	3-Ø INDUCTION MOTOR WITH GEAR HEAD & EM BRAKE, 415V, 90W, GEAR RATIO 480, SUMITOMO HYPONIC MOTOR NO. RNFX-1340-TE-480	-	1	
18	CABLE DRAG CHAIN (VERTICAL STANDING TYPE)-28x54 (OUTER TO OUTER) x 5.5 m LONG: IGUS E4.42 OR EQV.	-	1	
19	DRIVE COVER	SS 304	1	A3/*/112
20	CHAIN COVER	ALUMINUM	1	A3/*/113
21	HEX. BOLT M8x1-20 LG: IS 1364 PART-1	ASTM-A-193 GR. B8	29	
22	HEX. NUT M8x1: IS 1364 PART-3	ASTM-A-194 GR. 8	29	
23	1/4 INCH HYDRAULIC HOSE-10 M LONG (WITH FITTINGS), PR. 400 BAR	-	2	
24	1/4 INCH PU TUBE-10 M LONG (WITH FITTINGS), PR. 6 BAR	-	4	
25	ROPE DRUM	SS 304	2	A3/*/114

PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.
26	DRUM SHAFT	SS 304	2	A3/*/115
27	ANGULAR CONTACT BALL BEARING: 40 I/D x 80 O/D x 18 W (SKF-7208 BE-2RZP OR EQV.)	-	2	
28	HEX. SOC. HD. CAP SCREW M8x1-16 LONG: IS 2269	ASTM-A-193 GR. B8	54	
29	BEVEL GEAR MODULE 2.5, TEETH 28, FACE WIDTH 10	SS 304	4	A3/*/116
30	GRUB SCREW M8x1-16 LONG IS 6094 PART 1	ASTM-A-193 GR. B8	4	
31	BEARING COVER	SS 304	4	A3/*/117
32	KEY 14x9-50 LONG: IS 2048	SS 410	2	A4/*/118
33	HEX. SOC. HD. CAP SCREW M12x1.5-50 LONG	ASTM-A-193 GR. B8	8	
34	SPACER	SS 304	8	A3/*/119
35	AIR MOTOR-DEPRAG 67X-423B, 300W, 7 RPM, 410 N-m	-	1	
36	HEX. SOC. HD. CAP SCREW M8x1-20 LONG: IS 2269	ASTM-A-193 GR. B8	6	
37	SPUR GEAR-MODULE 2, TEETH 25, FACE WIDTH 12	SS 304	1	A3/*/120
38	COMPOUND SPUR GEAR-1, MODULE 2 TEETH 40/25, FACE WIDTH 12	SS 304	1	A3/*/121
39	COMPOUND SPUR GEAR-2, MODULE 2 TEETH 50/25, FACE WIDTH 12	SS 304	1	A3/*/122
40	SPUR GEAR-MODULE 2, TEETH 50, FACE WIDTH 12	SS 304	1	A3/*/123
41	GRUB SCREW M8x1-10 LONG IS 6094 PART 1	ASTM-A-193 GR. B8	4	
42	SHAFT	SS 304	2	A3/*/124
43	SPACER	SS 304	2	A3/*/125
44	OIL HYDRAULIC CUTTER (LUKAS LSI 200), PR. 500 BAR, TIP OPENING 125, SIZE 670x190x163	-	1	
45	HEX. BOLT M12x1.5-50 LG IS 1364 PART-1	ASTM-A-193 GR. B8	8	
46	SPRING WASHER ID 12.2 x OD 21.2 x THK 2.5-IS 3063	SS 302	8	
47	HEX. BOLT M8x1-30 LG IS 1364 PART-1	ASTM-A-193 GR. B8	8	
48	CONVEX WASHER	SS 410	8	A3/*/126
49	CONCAVE WASHER	SS 410	8	A3/*/127
50	HEX. BOLT M16x2-70 LG IS 1364 PART-1	ASTM-A-193 GR. B8	12	
51	DRIVEN CARRIAGE WHEEL	C-65 OF IS 1570-	4	A3/*/128

PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.
		HARDNESS 350 BHN		
52	WHEEL UPPER CASING	IS 2062 GR-B	8	A3/*/129
53	WHEEL LOWER CASING	IS 2062 GR-B	8	A3/*/130
54	SHAFT	EN-24	4	A3/*/131
55	KEY-12x8x35-IS 2048	EN-8	4	
56	HEX. NUT M24x3 IS 1364 PART-3	ASTM-A-194 GR. 8	4	
57	ANGULAR CONTACT BALL BEARING 25 I/D x 52 O/D x 15 W ( SKF 7205 BE-2RZP OR EQV.)	-	8	
58	HEX. HD. BOLT M6 x 1P x 30 LG. (IS:1364)	ASTM A 193 Gr.B7	128	
59	HEX. NUT M6 x 1P (IS:1364)	ASTM A 194 Gr. 8M	128	
60	HEX. HD. BOLT M8 x 1.25P x 35 LG.	ASTM A 193 Gr.B7	16	
61	BEARING COVER: 85 O/D x 19.5 THK.	IS:2062 (GR. B)	8	A3/*/132
62	WHEEL SPACER: 75 O/D x 35 I/D x 6 THK.	IS:2062 (GR. B)	8	A3/*/133
63	DRIVE HOUSING BOTTOM FLANGE SQ. 250 x 74 HT.	SS 304	1	A3/*/134
64	MAST TUBE 1: SQ. 180 x 6 THK x 1550 HT.	SS 304	1	A3/*/135
65	MAST TUBE-2: SQ. 140 x 6 THK x 1550 HT.	SS 304	1	A3/*/136
66	MAST TUBE-3: SQ. 100 x 5 THK x 1550 HT.	SS 304	1	A3/*/137
67	MAST TUBE-4: SQ.60 x 5 THK. x 1500 HT.	SS 304	1	A3/*/138
68	PULLEY	SS 410	4	A3/*/139
69	SHAFT RETAIER PLATE-1	SS 304	4	A3/*/140
70	SHAFT RETAIER PLATE-2	SS 304	4	A3/*/141
71	PULLEY SHAFT	ASTM-A-564 GRADE 630	4	A3/*/142
72	HEX. SOC. HD. CAP SCREW M5x0.8-16 LONG: IS 2269	ASTM-A-193 GR. B8	16	
73	HEX. NUT M12x1.5: IS 1364 PART-3	ASTM-A-194 GR. 8	16	
74	ROLLER CASING	SS 304	80	A4/*/143
75	ROLLER	SS 410	480	A4/*/144
76	ROLLER SHAFT	ASTM-A-564 GRADE 630	480	A4/*/145
77	HEX. SOC. HD. CAP SCREW M5x0.8-10 LONG: IS 2269	ASTM-A-193 GR. B8	480	
78	GRUB SCREW M3x0.5-5 LONG IS 6094 PART 1	ASTM-A-193 GR. B8	960	
79	SPACER	SS 304	96	A4/*/146

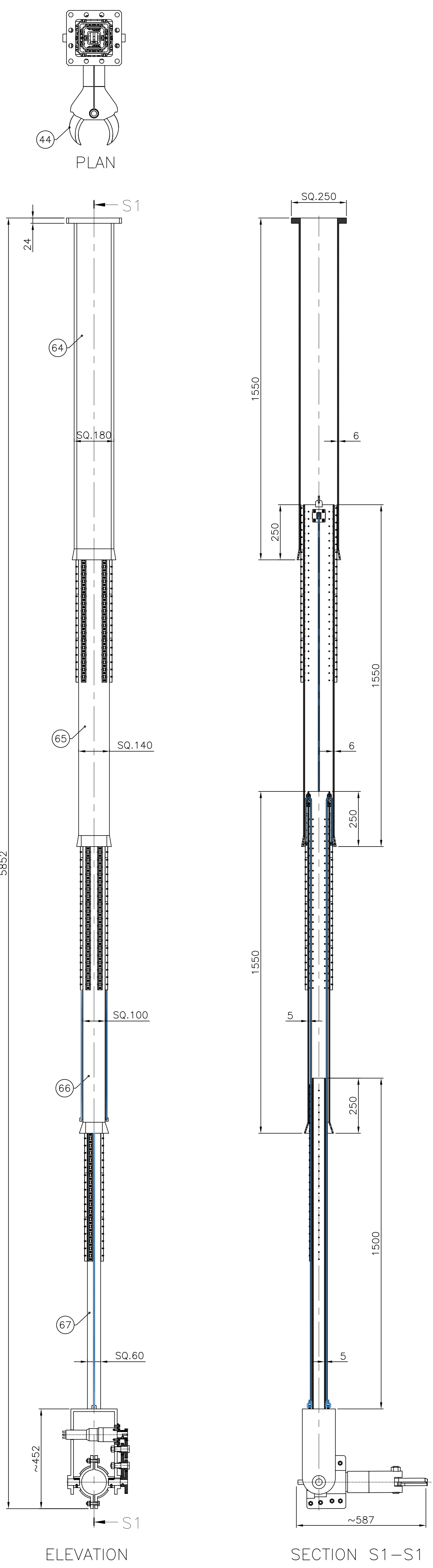
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.
80	WIRE ROPE DIA 6 mm - 6 m LG.	SS 304	2	
81	WIRE ROPE DIA mm - 3 m LG.	SS 304	4	
82	WATER HYDRAULIC POWER PACK (PORTABLE & TROLLEY MOUNTED)-PR. 1000 BAR, FLOW 0.4 LPM, SIZE 450 MM x 450 MM x 450 MM: GEM OR EQV.		1	
83	CONTROL PANEL FOR OPERATING CUTTER & MOTORS FROM DRIVING CARRIAGE	SS 304	1	
84	RAILING MADE FROM 20 NB SCH 40 PIPES	IS 2062 GR. B	2	
85	SPACER PLATE - 120x150x5 THK	IS 2062 GR. B	4	A4/*/147
86	COUPLER BRACKET	IS 2062 GR. B	3	A3/*/148
87	HEX. SOC. HD. CAP SCREW M16x2-25 LONG: IS 2269	ASTM-A-193 GR. B8	24	
88	MOTOR ATTACHMENT DISC	SS 304	1	A3/*/149
89	CUTTER SWIVEL SHAFT-A	SS 304	1	A3/*/150
90	CUTTER SWIVEL SHAFT-B	SS 304	1	A3/*/151
91	KEY-8x7x23-IS 2048	SS 410	2	A4/*/152
92	CUTTER FIXING BRACKET	SS 304	2	A3/*/153

**Annexure-4**  
**(LIST OF DELIVERABLES)**

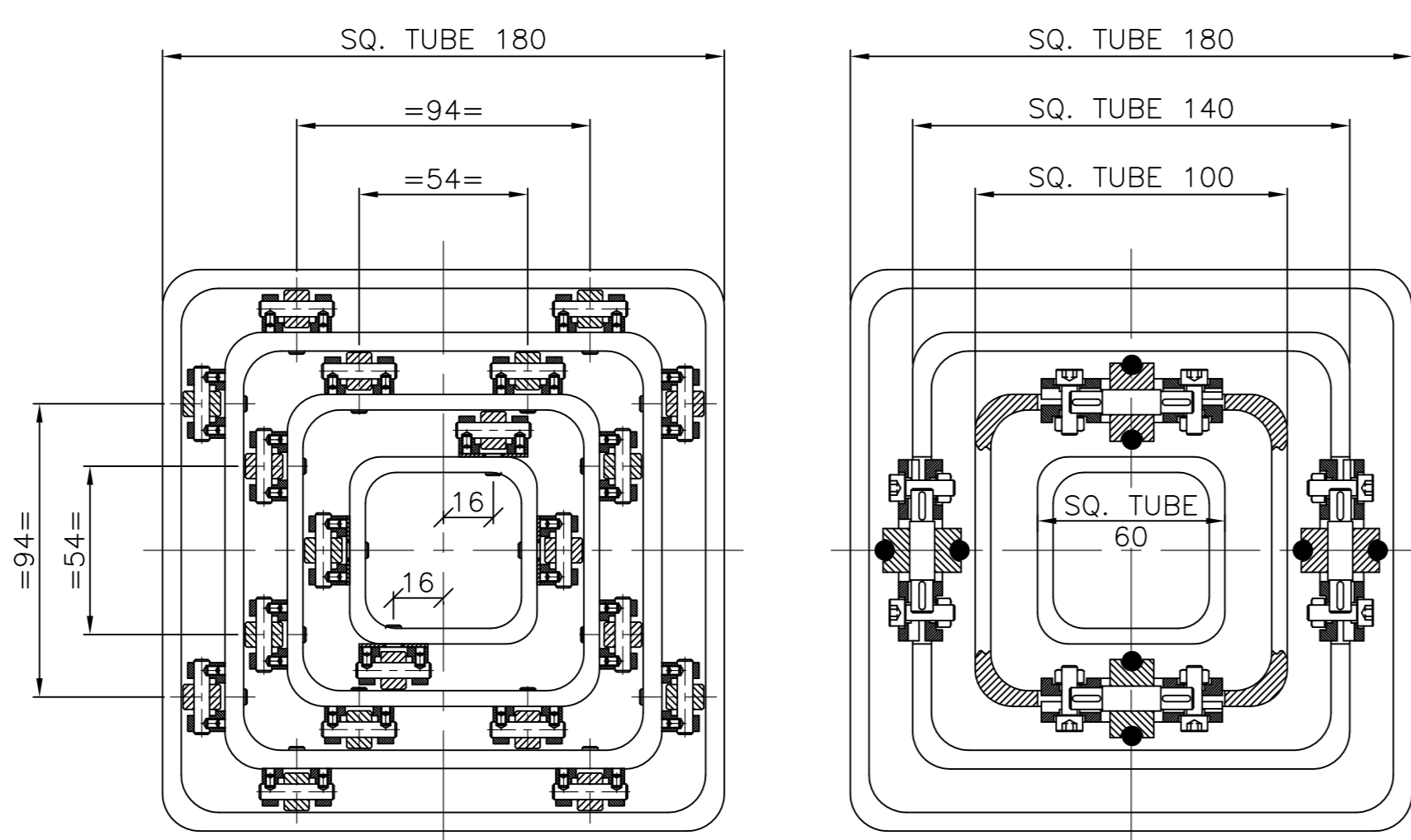
<b>Sl. No.</b>	<b>DELIVERABLES</b>	<b>QTY.</b>
<b>1.</b>	Rod cutting gadget assembly as per dwg. This includes Rod Cutting Gadget, Hydraulic cutter, water hydraulic Power pack, Electric motor, pneumatic motor, cable drag chain, compact control panel.	1 Assy.
<b>2.</b>	Fasteners used in assembly	50%
<b>3.</b>	Complete history docket in hard copy as well as soft copy format containing mill test certificates, LPT report of welds, 100% dimensional inspection report, drawing alterations, BOC specification & invoice	1 each in softcopy and hardcopy format



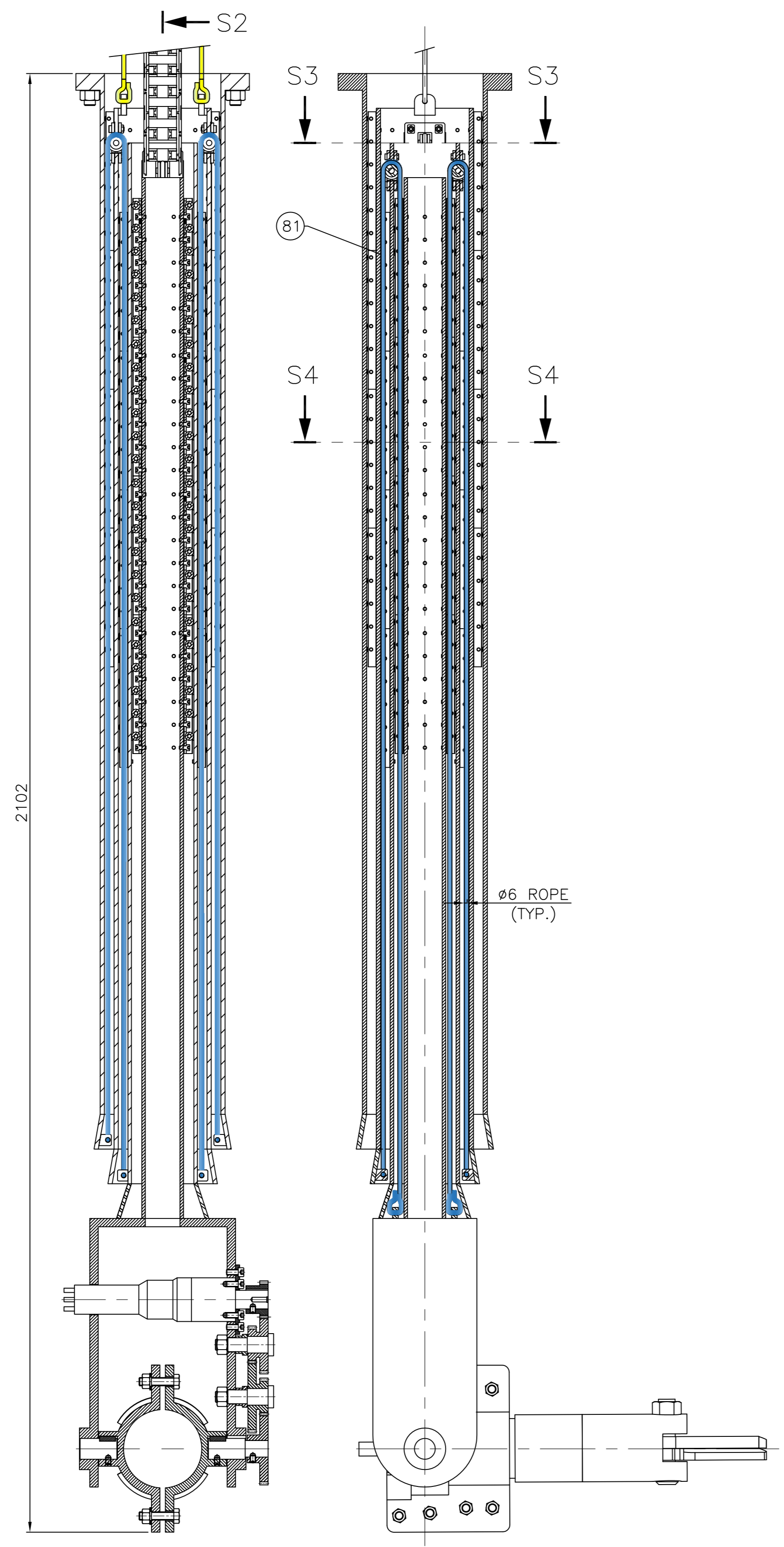




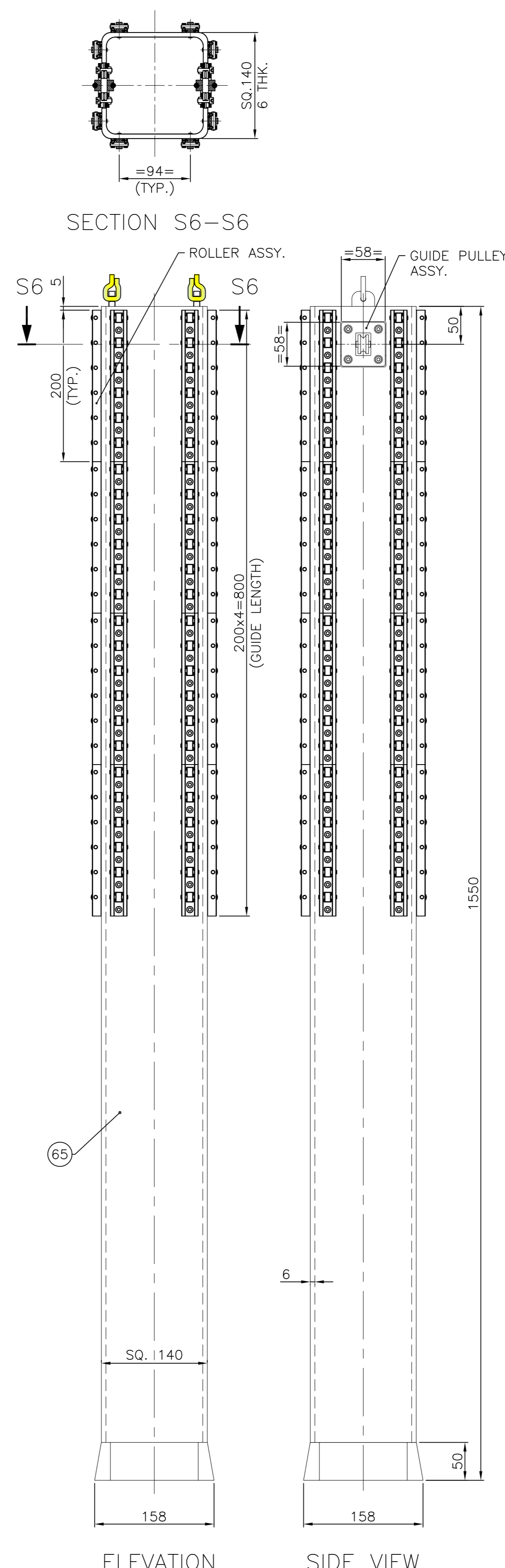
TELESCOPIC MAST ASSEMBLY (FULL ADVANCED)  
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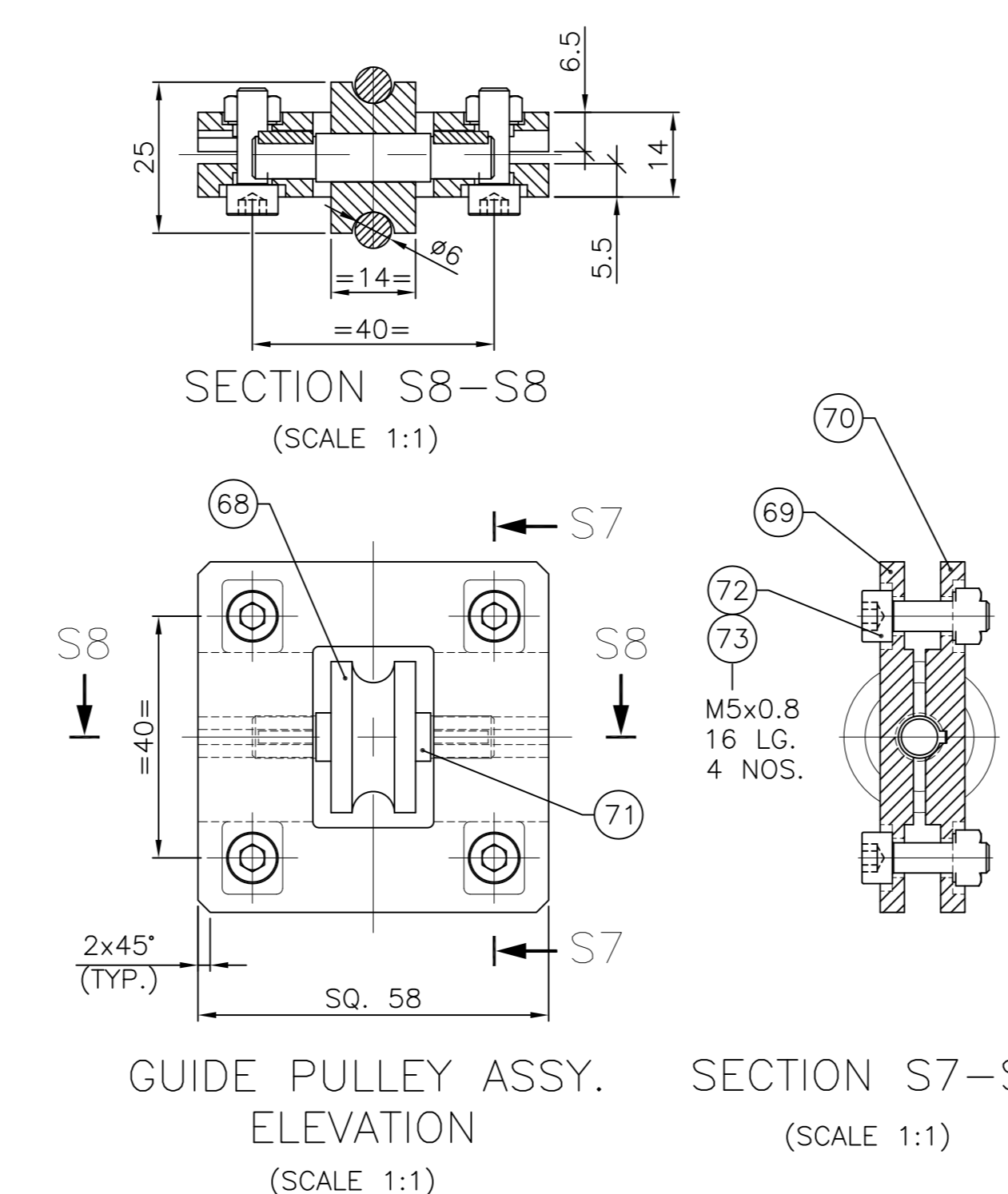
SECTION S4-S4 (SCALE 1:2)  
SECTION S3-S3 (SCALE 1:2)



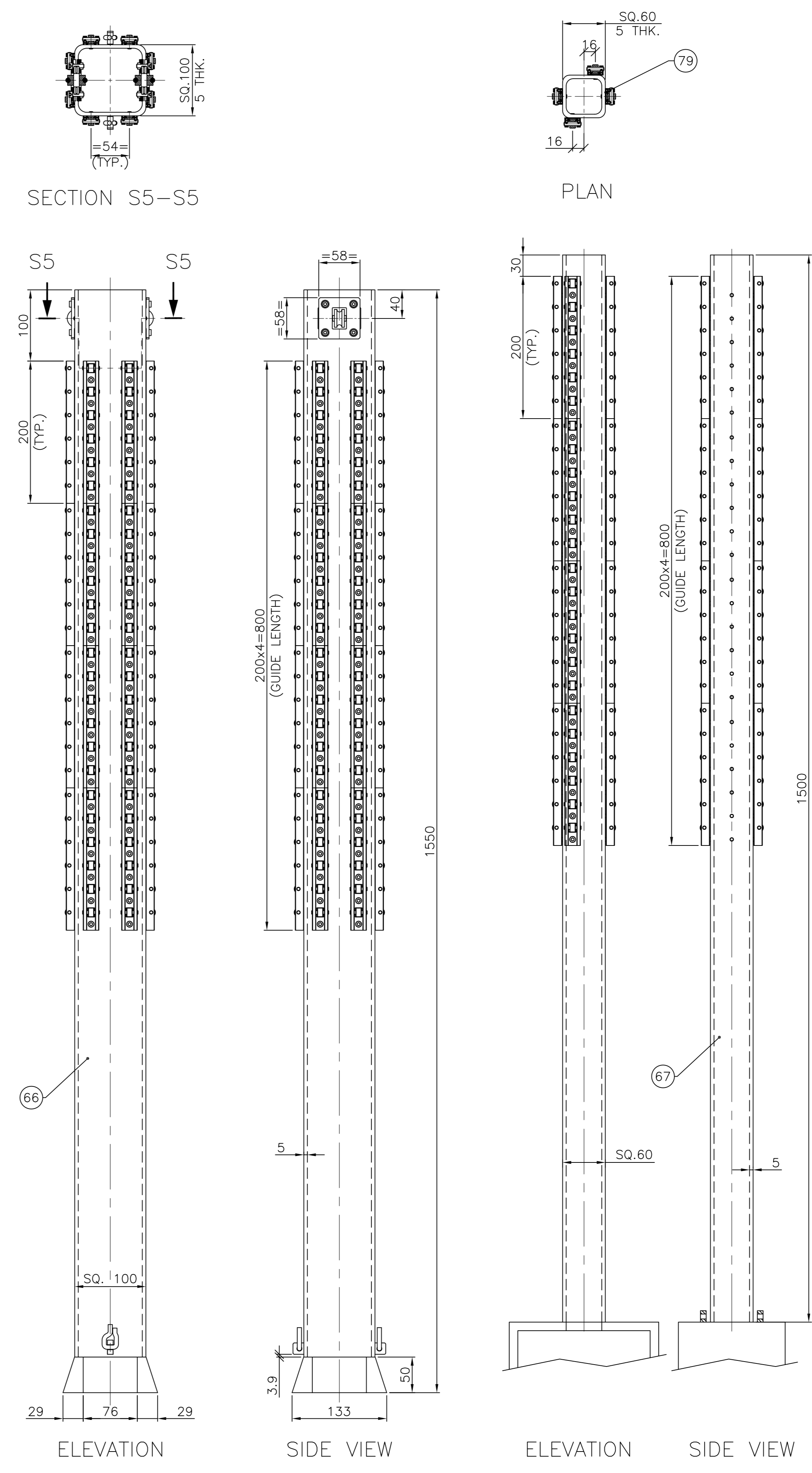
FRONT VIEW SECTION S2-S2  
TELESCOPIC MAST ASSEMBLY (FULL RETRACTED)  
(SCALE 1:5)



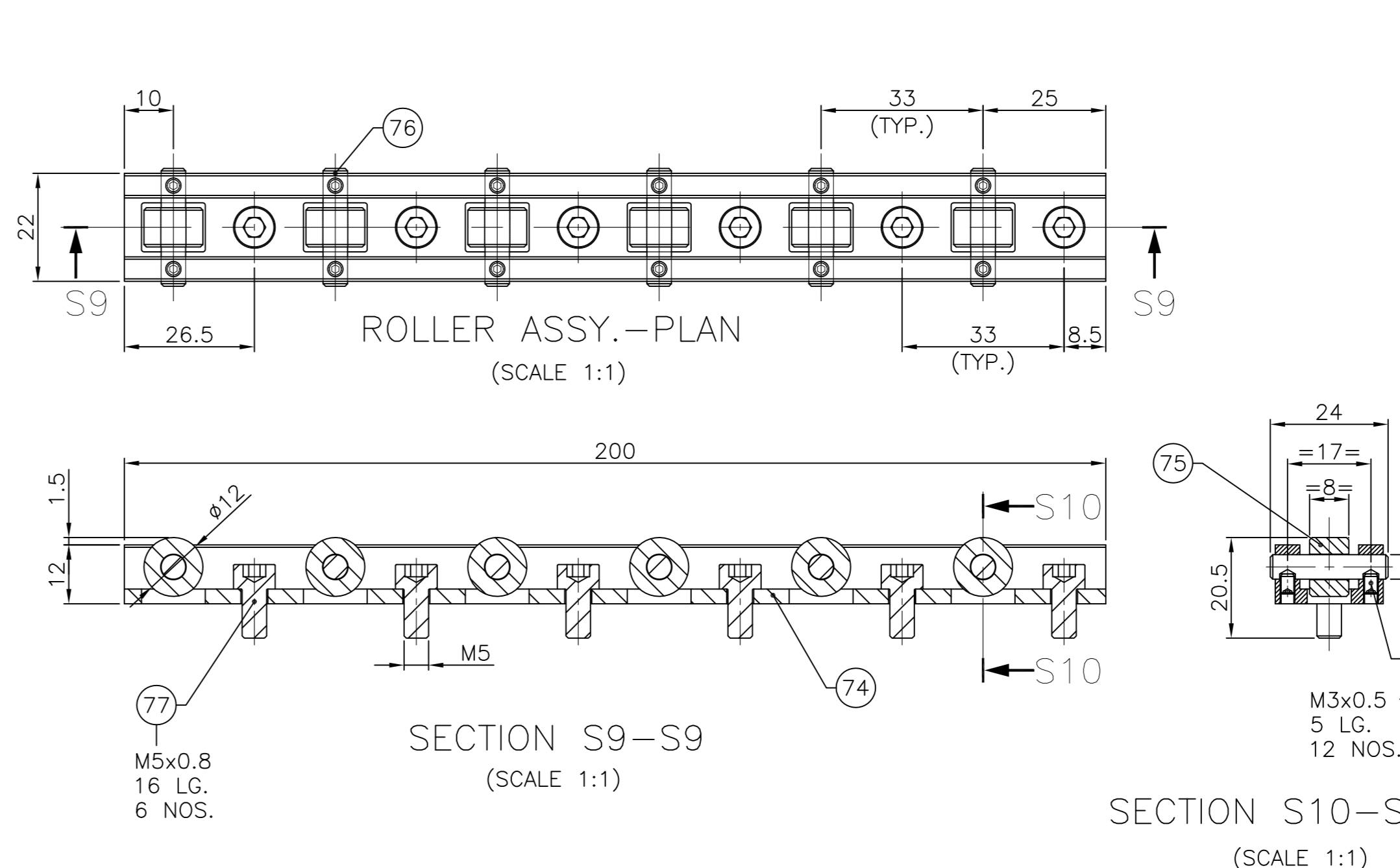
ELEVATION SIDE VIEW  
MAST TUBE-2 ASSEMBLY  
(SCALE 1:4)



SECTION S8-S8 (SCALE 1:1)  
SECTION S7-S7 (SCALE 1:1)  
GUIDE PULLEY ASSY. ELEVATION (SCALE 1:1)



ELEVATION SIDE VIEW  
MAST TUBE-3 ASSEMBLY (SCALE 1:4)  
ELEVATION SIDE VIEW  
MAST TUBE-4 ASSEMBLY (SCALE 1:4)



SECTION S9-S9 (SCALE 1:1)  
SECTION S10-S10 (SCALE 1:1)  
ROLLER ASSY.-PLAN (SCALE 1:1)

BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
45	HEX. BOLT M12x1.5-50 LG IS 1364 PART-1	ASTM-A-193 GR. B8	8		
46	SPRING WASHER ID 12.2 x OD 21.2 x THK 2.5-IS 3063	SS 302	8		
47	HEX. BOLT M8x1-30 LG IS 1364 PART-1	ASTM-A-193 GR. B8	8		
48	CONVEX WASHER	SS 410	8	A3/*/126	
49	CONCAVE WASHER	SS 410	8	A3/*/127	
50	HEX. BOLT M16x2-70 LG IS 1364 PART-1	ASTM-A-193 GR. B8	12		
51	DRIVEN CARRIAGE WHEEL	C-65 OF IS 1570-HARDNE SS 350 BHN	4	A3/*/128	
52	WHEEL UPPER CASING	IS 2062 GR-B	8	A3/*/129	
53	WHEEL LOWER CASING	IS 2062 GR-B	8	A3/*/130	
54	SHAFT	EN-24	4	A3/*/131	
55	KEY-12x8x35-IS 2048	EN-8	4		
56	HEX. NUT M24x3 IS 1364 PART-3	ASTM-A-194 GR. B	4		
57	ANGULAR CONTACT BALL BEARING 25 I/D x 52 O/D x 15 W ( SKF 7205 BE-2RZP OR EQV.)	-	8		
58	HEX. HD. BOLT M6 x 1P x 30 LG. (IS:1364)	ASTM A 193 Gr.B7	128		
59	HEX. NUT M6 x 1P (IS:1364)	ASTM A 194 Gr. 8M	128		
60	HEX. HD. BOLT M8 x 1.25P x 35 LG.	ASTM A 193 Gr.B7	16		
61	BEARING COVER 85 O/D x 35 I/D x 19.5 THK.	IS:2062 (GR. B)	8	A3/*/132	
62	WHEEL SPACER 75 O/D x 35 I/D x 6 THK.	IS:2062 (GR. B)	8	A3/*/133	
63	DRIVE HOUSING BOTTOM FLANGE SQ. 250 x 74 HT.	SS 304	1	A3/*/134	
64	MAST TUBE-1 SQ. 180 x 6 THK x 1550 HT.	SS 304	1	A3/*/135	
65	MAST TUBE-2 SQ. 140 x 6 THK x 1550 HT.	SS 304	1	A3/*/136	
66	MAST TUBE-3 SQ. 100 x 5 THK x 1550 HT.	SS 304	1	A3/*/137	
67	MAST TUBE-4 SQ. 60 x 5 THK. x 1500 HT.	SS 304	1	A3/*/138	
68	PULLEY	SS 410	4	A3/*/139	
69	SHAFT RETAIER PLATE-1	SS 304	4	A3/*/140	
70	SHAFT RETAIER PLATE-2	SS 304	4	A3/*/141	
71	PULLEY SHAFT	ASTM-A-564 GRADE 630	4	A3/*/142	
72	HEX. SOC. HD. CAP SCREW M5x0.8-16 LONG: IS 2269	ASTM-A-193 GR. B8	16		
73	HEX. NUT M12x1.5 IS 1364 PART-3	ASTM-A-194 GR. B	16		
74	ROLLER CASING	SS 304	80	A4/*/143	
75	ROLLER	SS 410	480	A4/*/144	
76	ROLLER SHAFT	ASTM-A-564 GRADE 630	480	A4/*/145	
77	HEX. SOC. HD. CAP SCREW M5x0.8-10 LONG: IS 2269	ASTM-A-193 GR. B8	480		
78	GRUB SCREW M3x0.5-5 LONG IS 6094 PART 1	ASTM-A-193 GR. B8	960		
79	SPACER	SS 304	96	A4/*/146	
80	WIRE ROPE 6 mm - 6 m LG.	SS 304	2		
81	WIRE ROPE 6 mm - 3 m LG.	SS 304	4		

NO.	DATE	DESCRIPTION	APP'D	NO.	DATE	DESCRIPTION	APP'D
17				16			
16				15			
15				14			
14				13			
13				12			
12				11			
11				10			
10				9			
9				8			
8				7			
7				6			
6				5			
5				4			
4				3			
3				2			
2				1			

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE: ROD CUTTING GADGET GENERAL ASSEMBLY

DES'D HC: DRN. T. BORKAR DATE 05.11.21 APP'D MD: DRG.CHK'D HC DATE 05.11.21 SCALE: AS NOTED

SECTION: RTD PROJECTION: DRG. NO. A0/RTD/RCG/GA/100

REVISIONS: REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX

TOLERANCES ON LINE DIMENSIONS: UNLESS OTHERWISE SPECIFIED DIMENSIONS TOLERANCE: ±0.2

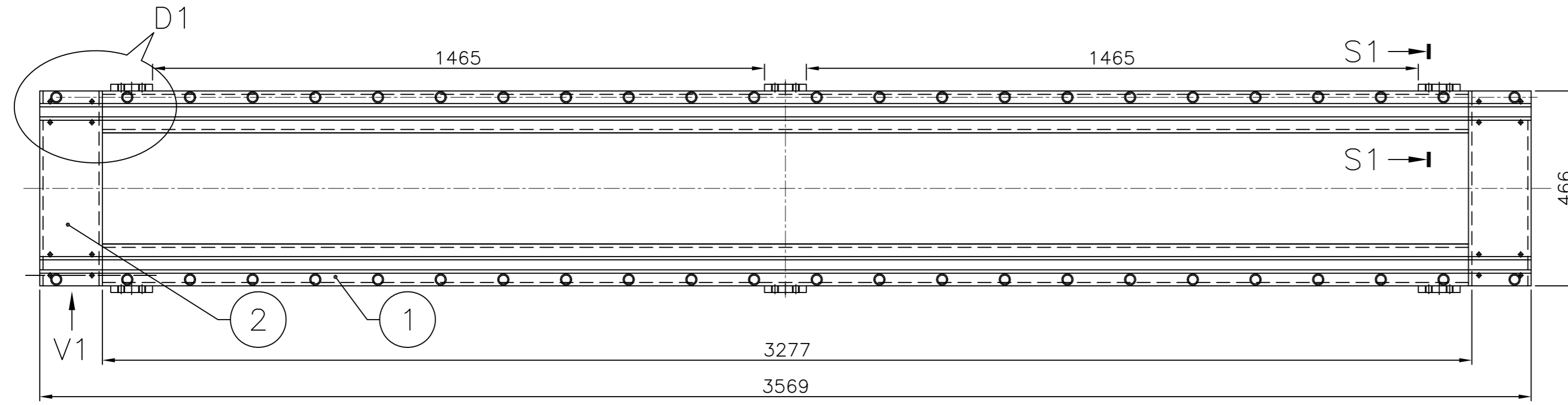
RAZD AND CHAMFERS: 0.5-3 3-6 6-30

TOLERANCE: ±0.2 ±0.5 ±1.0

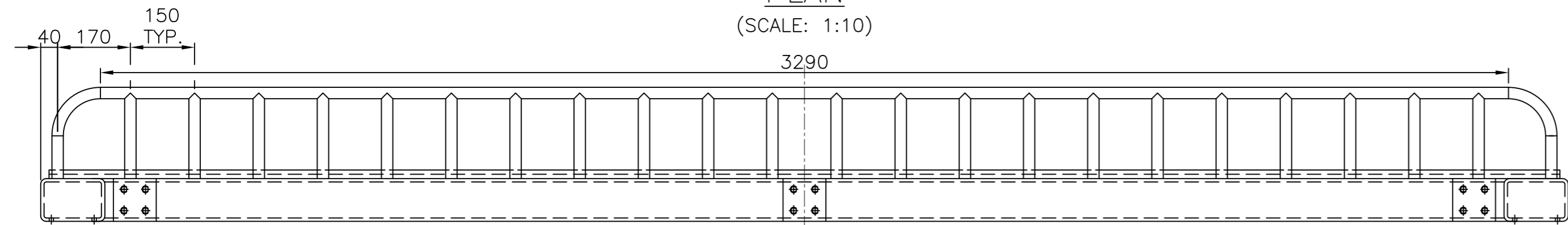
REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX

SHEET 2 OF 3

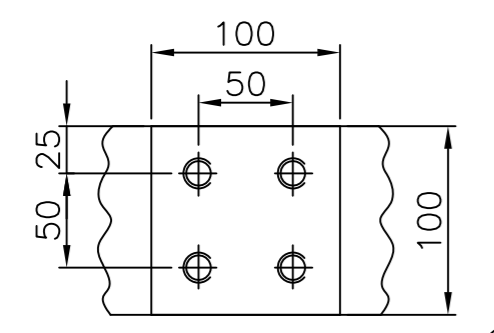




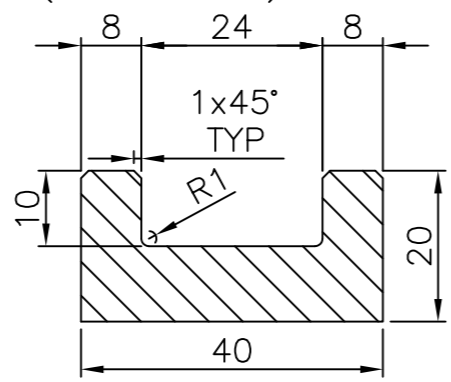
PLAN  
(SCALE: 1:10)



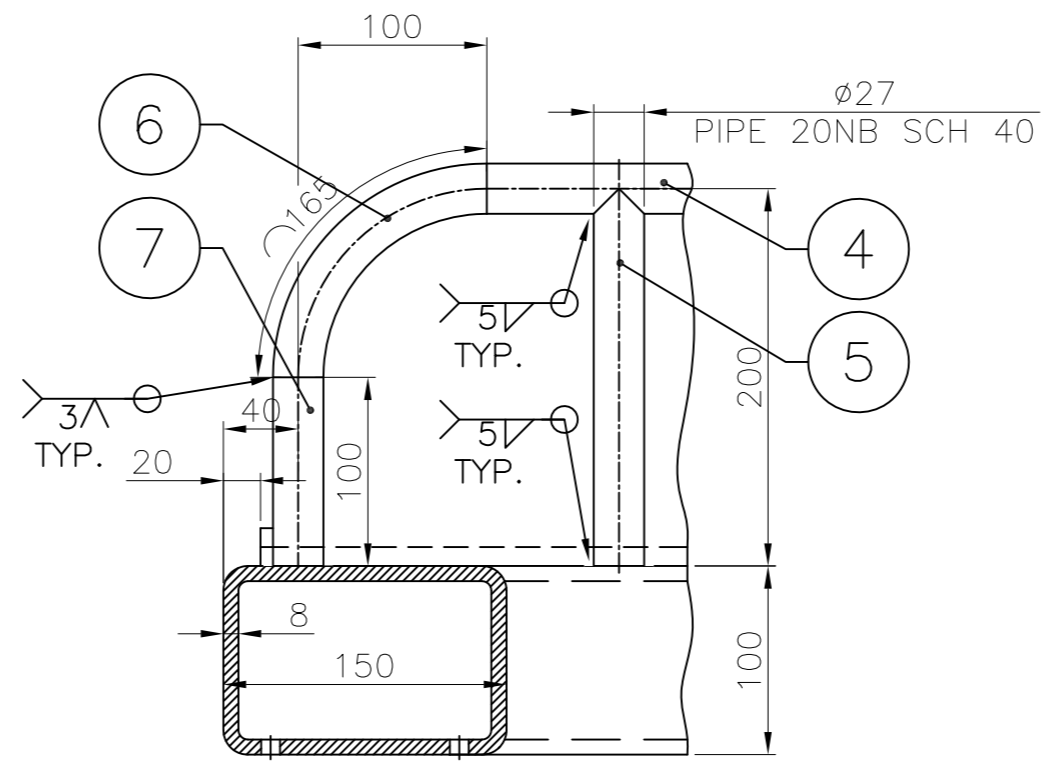
ELEVATION  
(SCALE: 1:10)



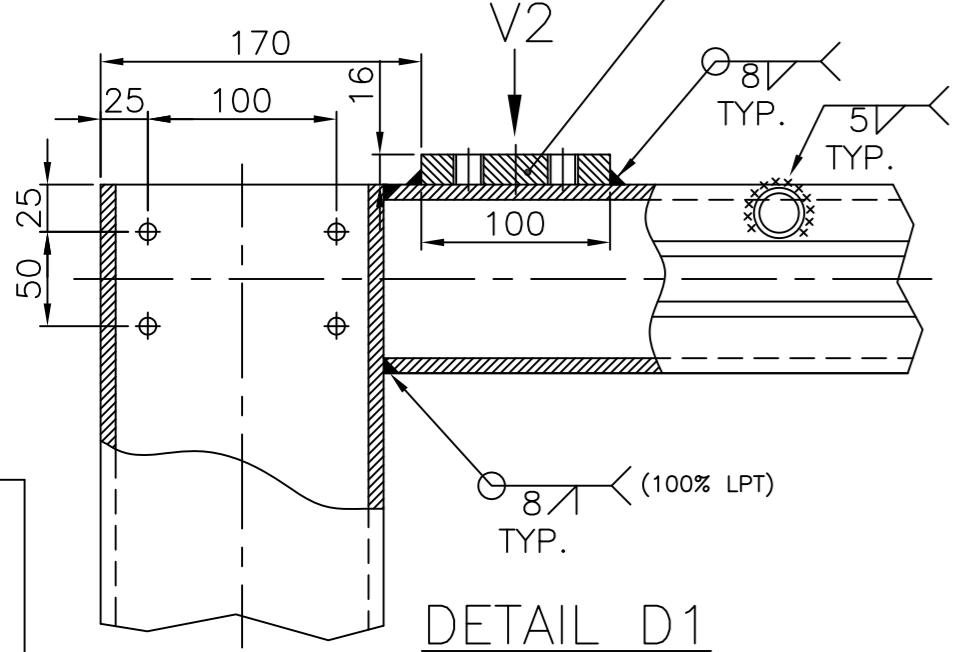
VIEW V2



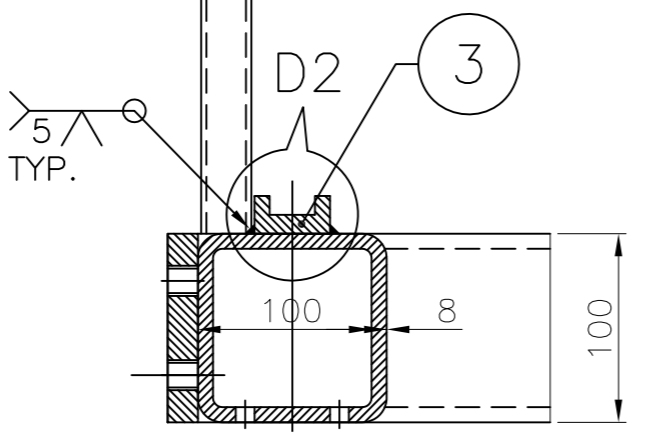
DETAIL D2  
(SCALE: 1:1)



VIEW V1  
(SCALE: 1:4)



DETAIL D1  
(SCALE: 1:4)



SECTION S1-S1  
(SCALE: 1:4)

BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QT Y.	REF. DWG. No.	REMARK
1	SQUARE HOLLOW SECTION: 100 x 100 x 8 THK - 3277 LONG	ASTM-A-500 GR. A	2		
2	RECTANGULAR HOLLOW SECTION: 150 x 100 x 8 THK - 466 LONG	ASTM-A-500 GR. A	2		
3	TROLLEY RAIL- 40 x 20 x 3569 LONG	EN8	2		
4	PIPE-1: 20 NB SCH. 40-3290 LONG	IS:2062 GR. B	2		
5	PIPE-1: 20 NB SCH. 40-200 LONG	IS:2062 GR. B	44		
6	PIPE-2: 20 NB SCH. 40-165 LONG CURVED TO RADIUS 100	IS:2062 GR. B	4		
7	PIPE-3: 20 NB SCH. 40-100 LONG	IS:2062 GR. B	4		
8	PLATE-100 x 100 x 16 THK	IS:2062 GR. B	6		

NOTES:

- PART No. 1 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - IS:2062 (GRADE B)
- QTY. = 1 No.
- ALL WELDS SHALL BE LPT INSPECTED
- HT. OF RAILING SHOWN IS PROVISIONAL. ACTUAL HEIGHT SHALL BE THE MAX. ACHIEVABLE HT. WITHOUT OBSTRUCTING MOTION OF MECHANISMS
- IF REQUIRED RAILING SHALL BE WELDED OVER SUPPORT PADS ATTACHED TO FRAME.
- THE BOX FRAME SHALL BE APPLIED WITH GOOD QUALITY INDUSTRIAL GRADE PRIMER & PAINT

DRG.NO. A2/RTD/RCG/DD/101

THIS DESIGN AND DRAWING IS THE PROPERTY OF BHABHA ATOMIC RESEARCH CENTRE AND SHALL BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER

REFERENCE DRAWINGS	DRAWING NOS.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

TOLERANCES ON LINEAR DIMENSIONS		
SPECIFIED DIMENSIONS	TOLERANCE	
XX	± 0.4	
XX.X	± 0.4	
XX.XX	± 0.25	

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101			
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER. REMOVE ALL BURRS. REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

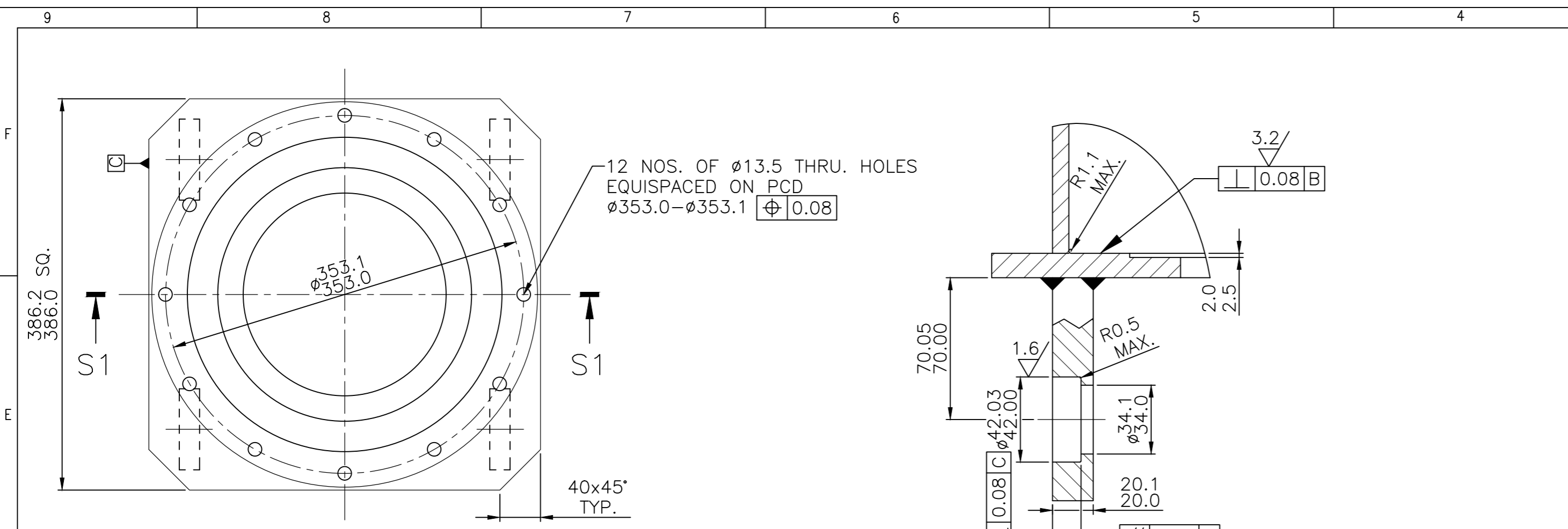
GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
ROD CUTTING GADGET  
CARRIAGE FRAME

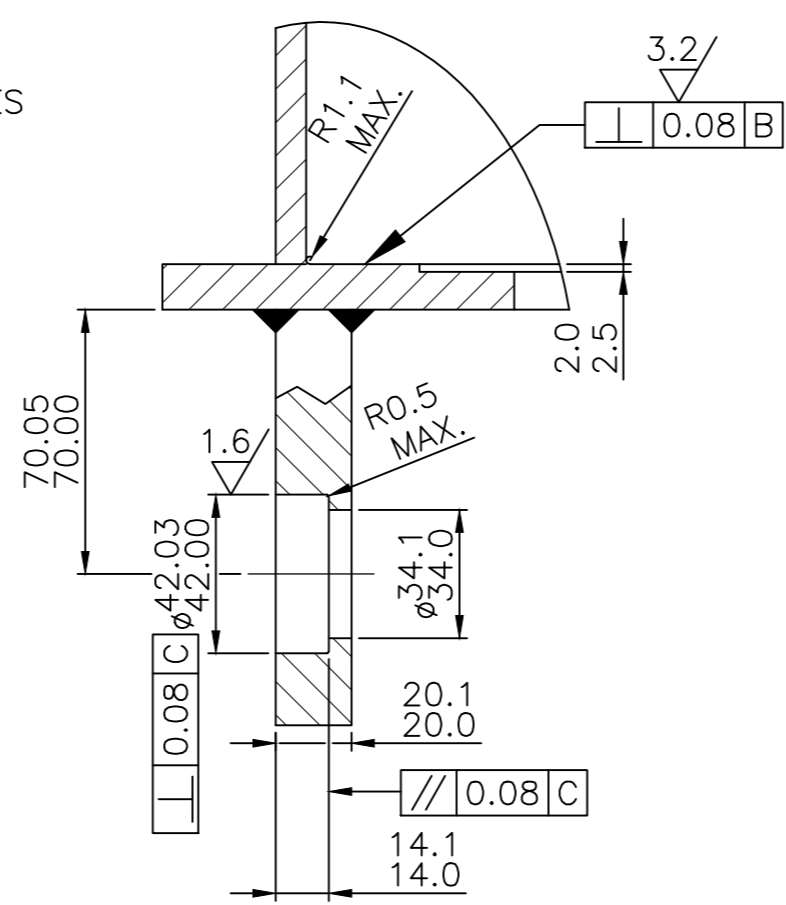
DES'D HC	DRN. TAFAZZUL	DATE 20.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 20.10.21	SCALE: 1:30
SECTION RTD	PROJECTION:		

DRG.NO. A2/RTD/RCG/DD/101

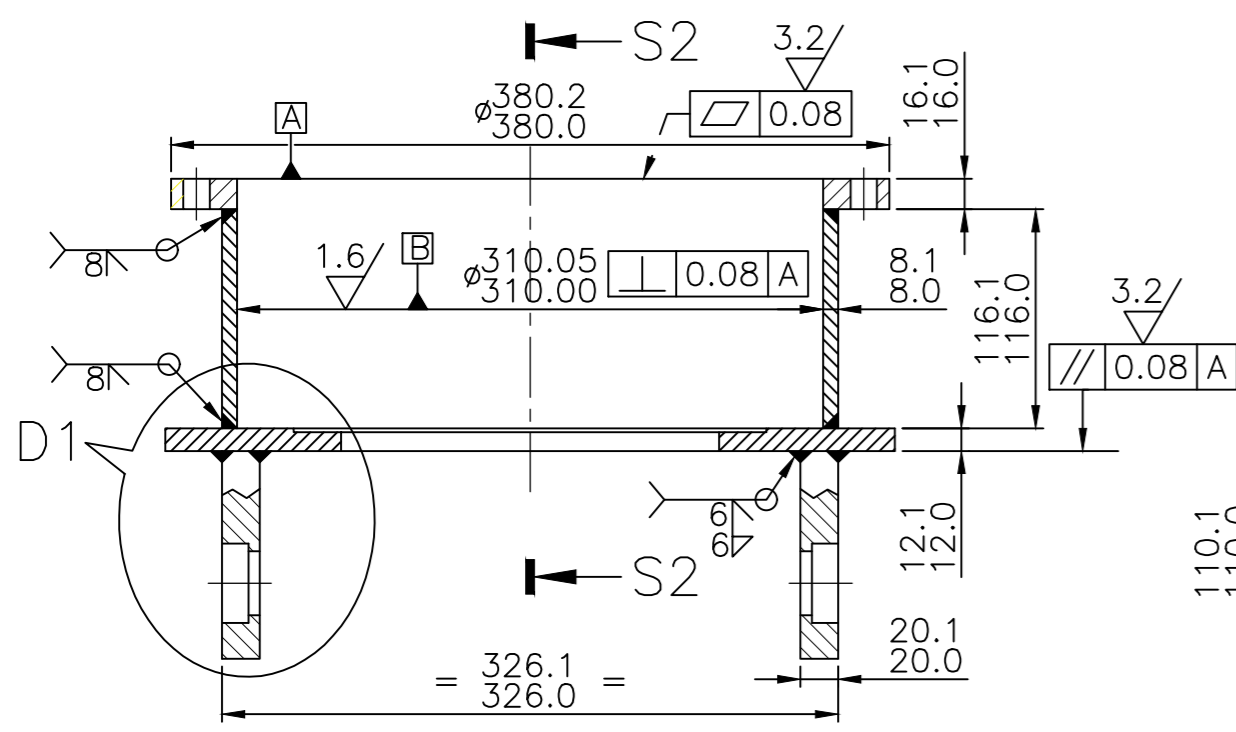
SHEET 1 OF 2  
REV. NO. -



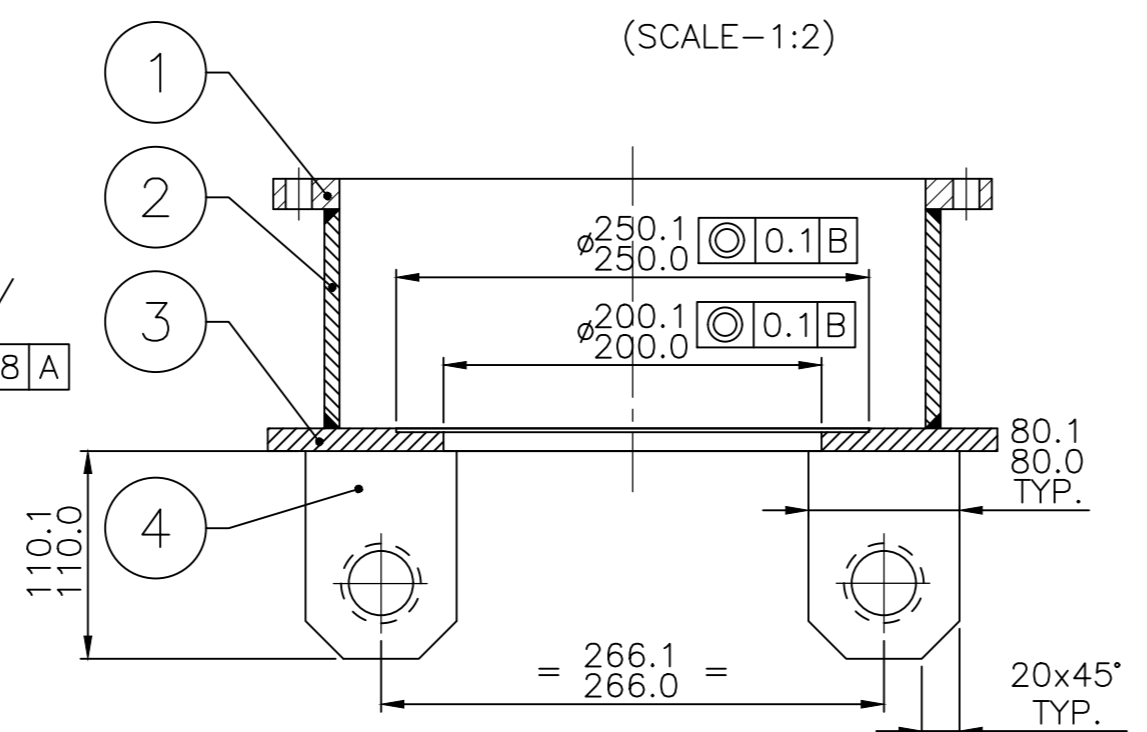
PLAN  
(SCALE-1:4)



DETAIL D1  
(SCALE-1:2)



SECTION S1-S1  
(SCALE-1:4)



SECTION S2-S2  
(SCALE-1:4)

BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
1	CIRCULAR PLATE: ID 310 x OD 380 x THK 16	SS 304	1		
2	CIRCULAR SHELL: ID 310 x THK 8 x HT 116	SS 304	1		
3	SQUARE PLATE: SIDE LENGTH 386 x THK 12	SS 304	1		
4	RECTANGULAR PLATE: 110 x 80 x 20 THK	SS 304	4		

- NOTES:
- PART No. 2 OF DWG. No. A0/RTD/RCG/GA/100
  - MATERIAL - SS 304
  - QTY. = 1 No.
  - FINAL MACHINING SHALL BE CARRIED OUT AFTER WELDING
  - ALL WELDS SHALL BE LPT QUALIFIED

DRG.NO. A2/RTD/RCG/DD/102

THIS DESIGN AND DRAWING IS THE PROPERTY OF BHABHA ATOMIC RESEARCH CENTRE AND SHALL BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER										
SPECIAL CLOSURE PLUG ASSEMBLY	A1-3018-M-686									
REFERENCE DRAWINGS	DRAWING NOS.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D				
				REVISIONS						

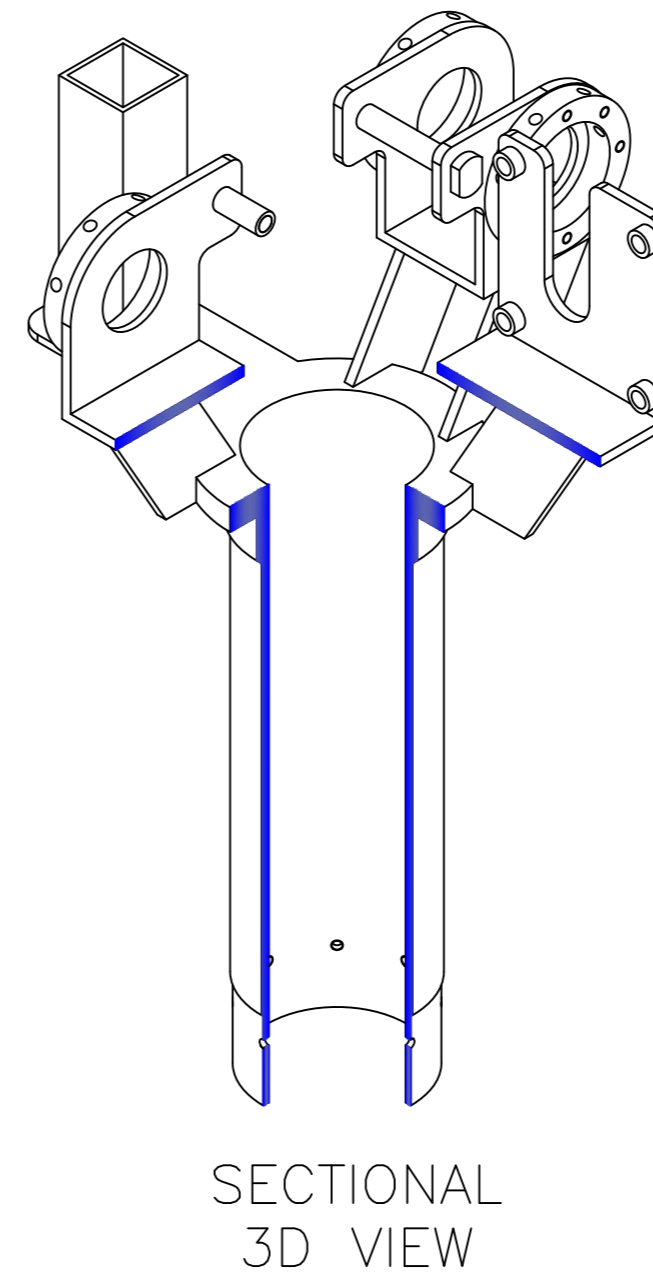
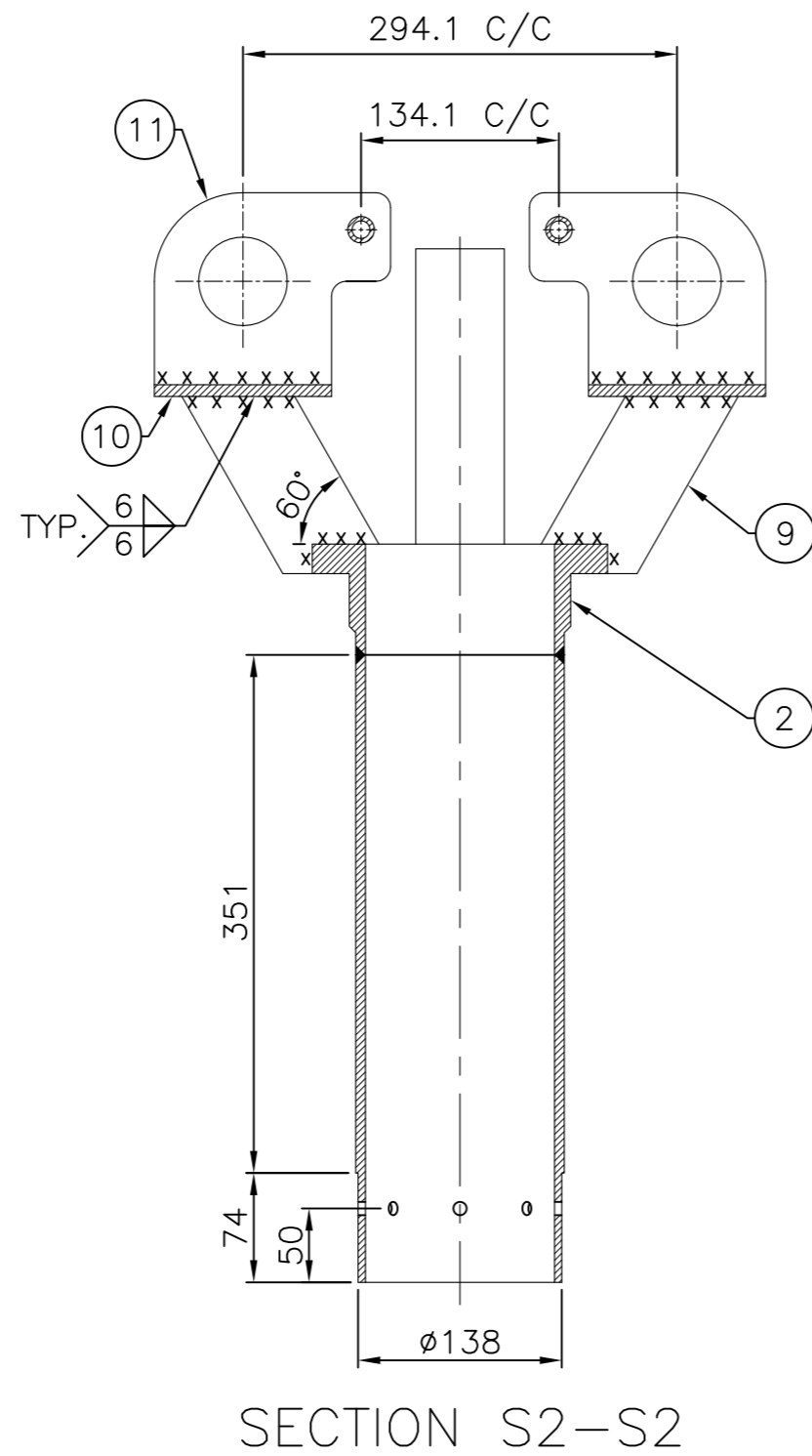
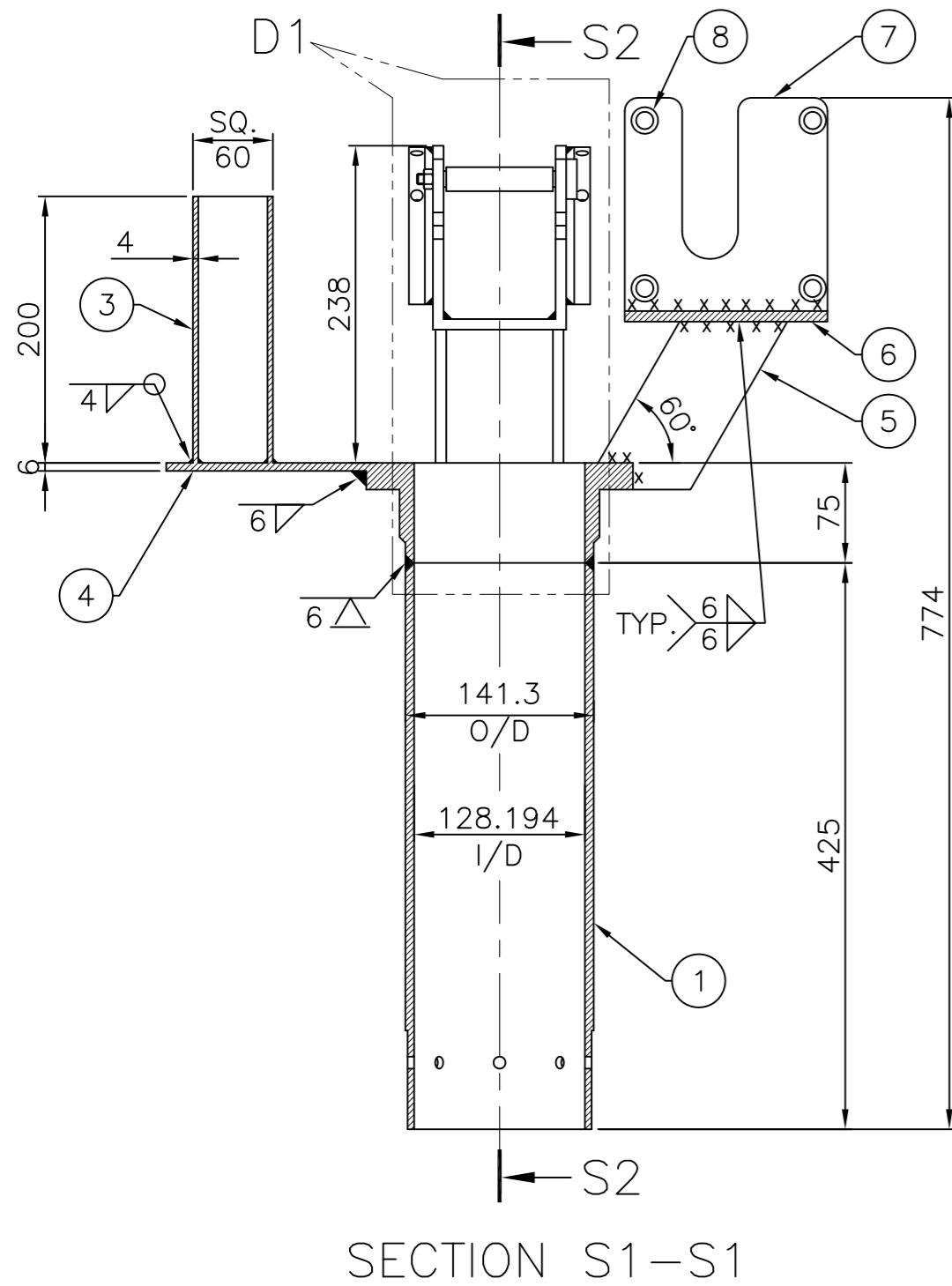
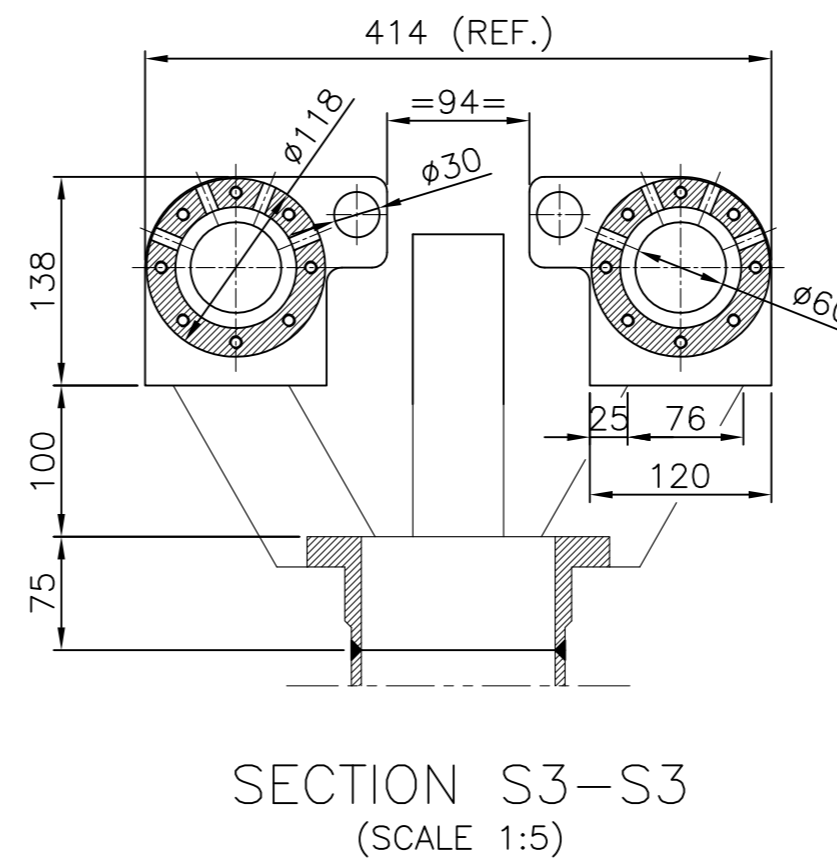
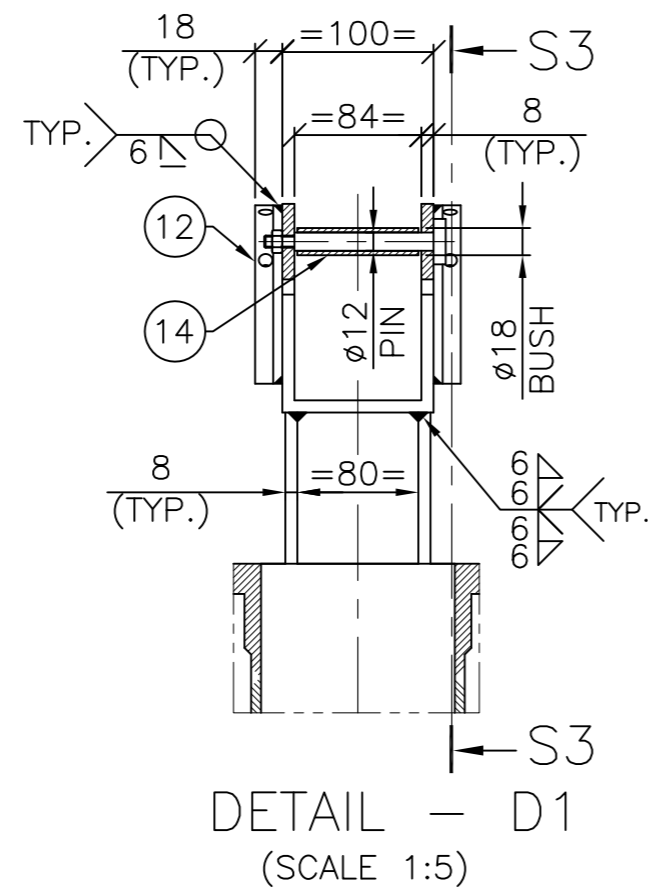
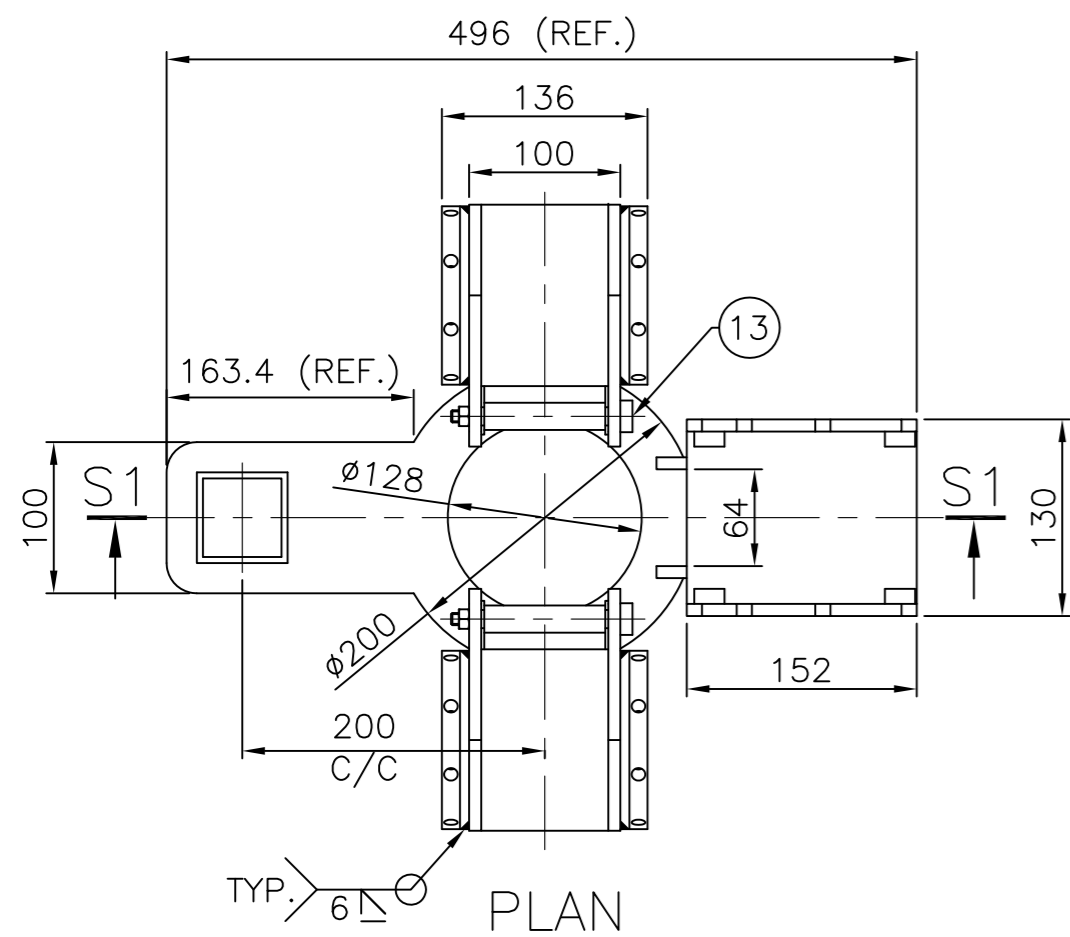
TOLERANCES ON LINEAR DIMENSIONS		
SPECIFIED DIMENSIONS	TOLERANCE	
XX	± 0.4	
XX.X	± 0.4	
XX.XX	± 0.25	

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101			
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER. REMOVE ALL BURRS. REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE REFUELLING TECHNOLOGY DIVISION			
TITLE ROD CUTTING GADGET TROLLEY FRAME			
DES'D HC	DRN. TAFAZZUL	DATE 29.09.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 29.09.21	SCALE: 1:4
SECTION RTD			PROJECTION:
DRG.NO. A2/RTD/RCG/DD/102			SHEET REV. NO.



BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
1	125NB PIPE x SCH. 40 x 425 LG.	ASME B36.10	1		
2	FLANGE 200 O/D x 128.194 I/D x 75 HT.	SS 304	1		
3	REC. TUBE SQ.60 x 4 THK. x 200 LG.	SS 304	1		
4	REC. TUBE BOTTOM PLATE 142 x 126 x 8 THK.	SS 304	1		
5	MOTOR GUSSET 142 x 126 x 8 THK.	SS 304	2		
6	MOTOR PLATE 152 x 130 x 8 THK.	SS 304	1		
7	MOTOR FIXING PLATE 160 x 152 x 8 THK.	SS 304	2		
8	SPACER 20 O/D X 13 I/D X 10 THK.	SS 304	8	A4/*/119	
9	ROPE DRUM GUSSET 134 X 120 X 8 THK.	SS 304	4		
10	ROPE DRUM PLATE 120 x 100 x 8 THK.	SS 304	1		
11	ROPE DRUM MOUNTING PLATE 160 X 130 X 8 THK.	SS 304	2L + 2R		
12	ROPE DRUM MOUNTING RING 118 O/D X 80 I/D X 18 THK.	SS 304	4		
13	ROPE SUPPORTING PIN Ø30 X 120 LG.	SS 304	2		
14	ROPE ROLLING BUSH 18 O/D X 12 I/D X 80 LG.	ASTM B 150	2		

- NOTES:
- PART No. 3 OF DWG. No. A0/RTD/RCG/GA/100
  - MATERIAL - SS 304
  - QTY. = 1 No.
  - ALL WELD SHALL BE DONE AS PER IS:813
  - REMOVED ALL SHARP CORNERS.
  - FOR PART No. 8 (SPACER) PLEASE REFER A4/RTD/SP/DD/119

DRG.NO. A2/RTD/RCG/DD/103

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REFERENCE DRAWINGS	DRAWING NOS.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

TOLERANCES ON LINEAR DIMENSIONS			
SPECIFIED DIMENSIONS	TOLERANCE		
XX	± 0.4		
XX.X	± 0.4		
XX.XX	± 0.25		
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101			
RADII AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

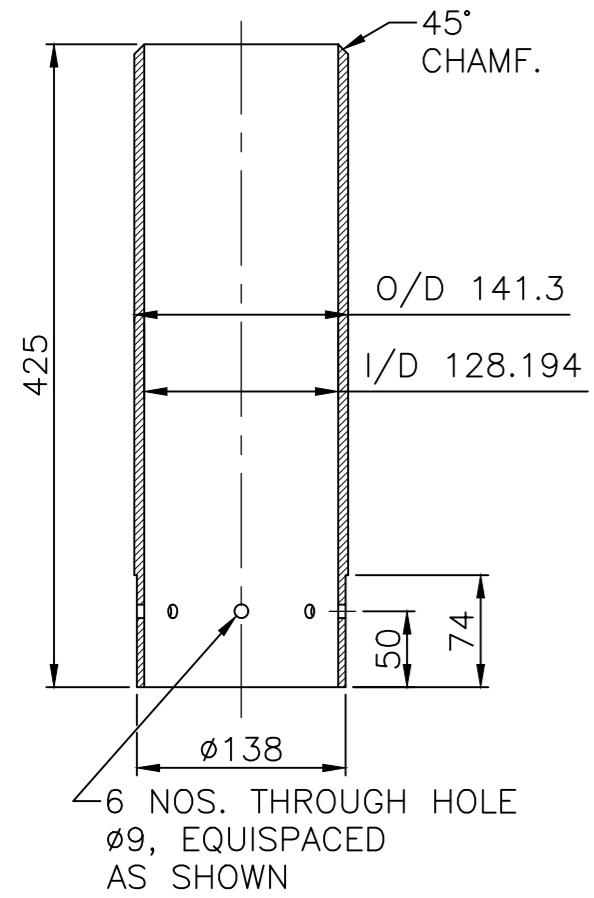
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER. REMOVE ALL BURRS. REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

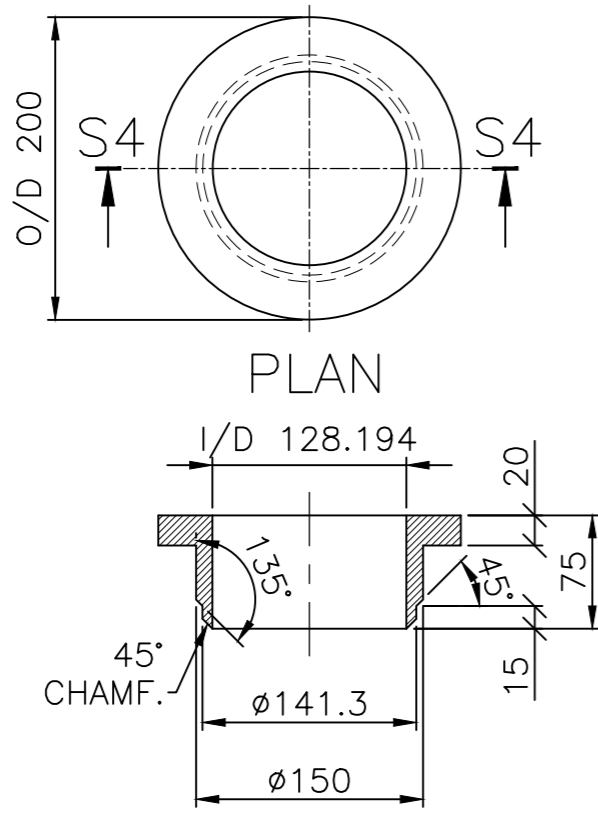
TITLE  
**ROD CUTTING GADGET  
DRIVE HOUSING TUBE**

DES'D HC	DRN. TAFAZZUL	DATE 12.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 12.10.21	SCALE: 1:5
SECTION RTD			PROJECTION:
DRG.NO. A2/RTD/RCG/DD/103			

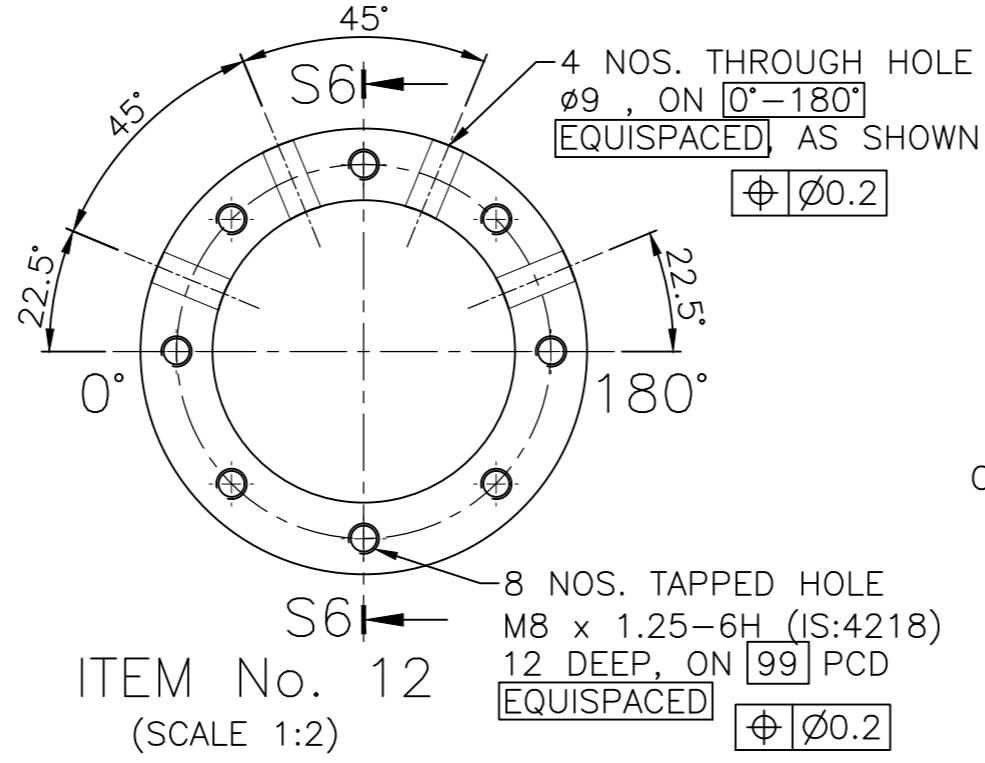
SHEET 1 OF 2      REV. NO. -



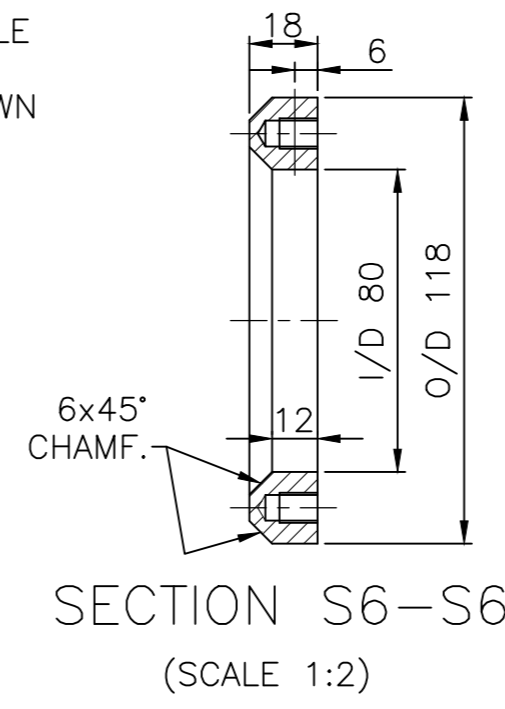
ITEM No. 1



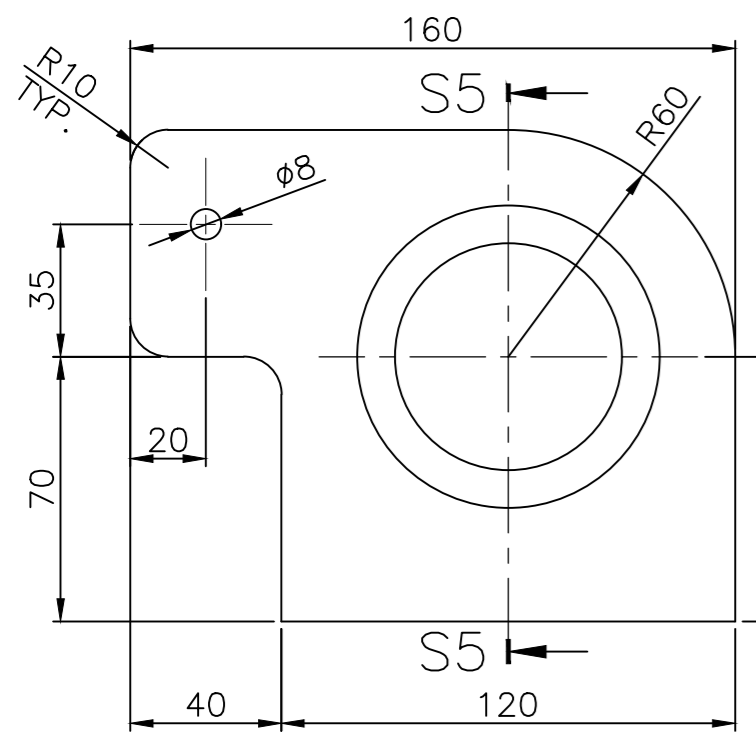
SECTION S4-S4  
ITEM No. 2



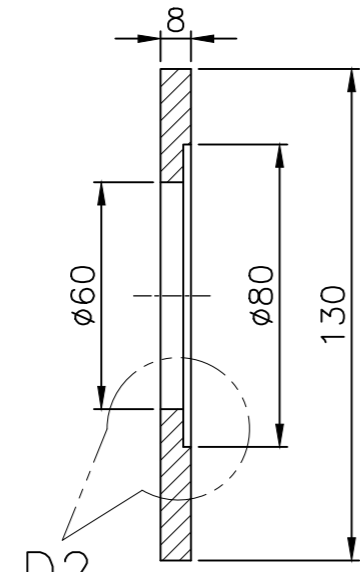
ITEM No. 12  
(SCALE 1:2)



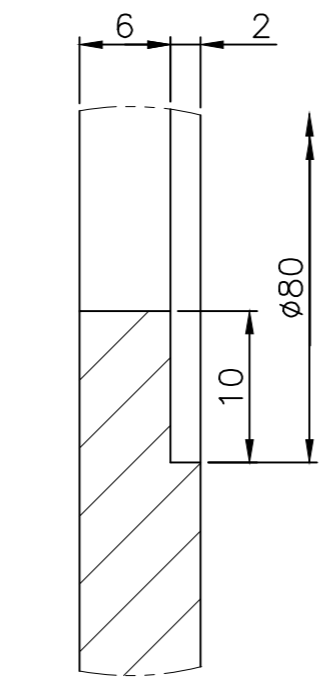
SECTION S6-S6  
(SCALE 1:2)



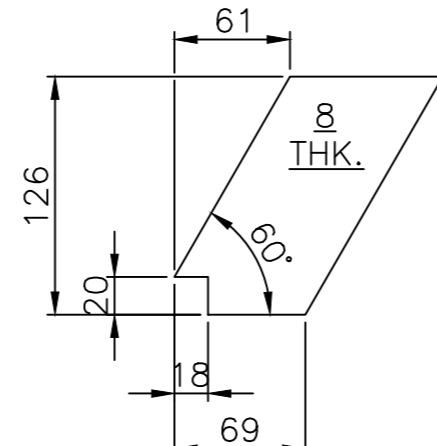
ITEM No. 11 (QTY. 2L+2R)  
(SCALE 1:2)



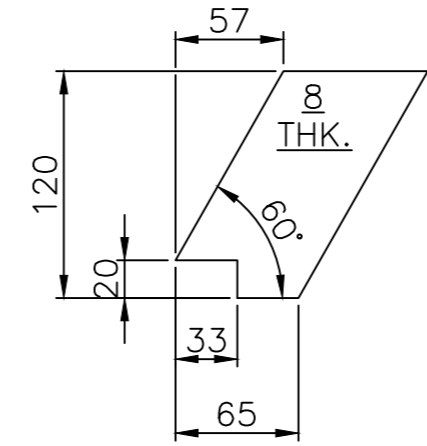
SECTION S5-S5  
(SCALE 1:2)



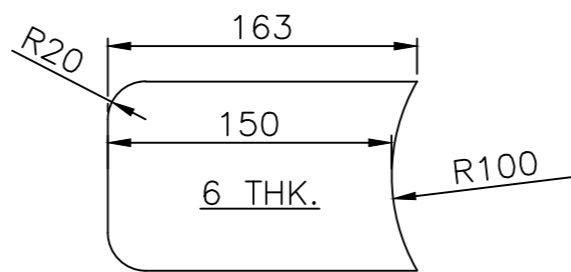
DETAIL-D2  
(SCALE 2:1)



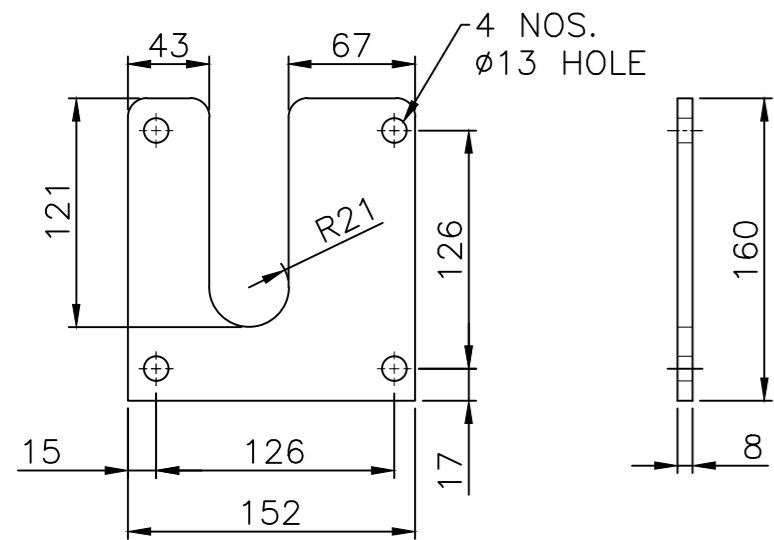
ITEM No. 5  
(SCALE 1:4)



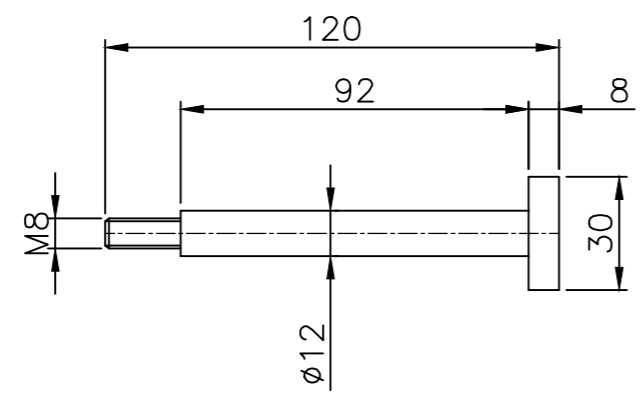
ITEM No. 9  
(SCALE 1:4)



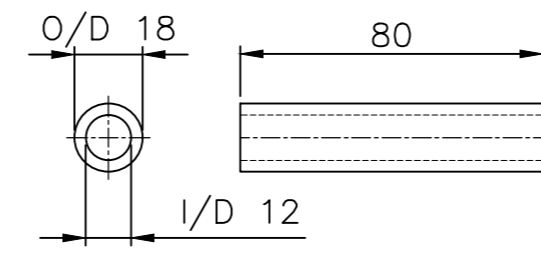
ITEM No. 4 (SCALE 1:4)



ITEM No. 7 (SCALE 1:4)



ITEM No. 13  
(SCALE 1:2)



ITEM No. 14  
(SCALE 1:2)

NOTES:

- PART No. 3 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 1 No.
- ALL WELD SHALL BE DONE AS PER IS:813
- REMOVED ALL SHARP CORNERS.

DRG.NO. A2/RTD/RCG/DD/103

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REFERENCE DRAWINGS	DRAWING NOS.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

TOLERANCES ON LINEAR DIMENSIONS			
SPECIFIED DIMENSIONS	TOLERANCE		
XX	± 0.4		
XX.X	± 0.4		
XX.XX	± 0.25		
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101			
RADII AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER. REMOVE ALL BURRS. REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
ROD CUTTING GADGET  
DRIVE HOUSING TUBE

DES'D HC	DRN. TAFAZZUL	DATE 12.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 12.10.21	SCALE: 1:5
SECTION RTD			PROJECTION:

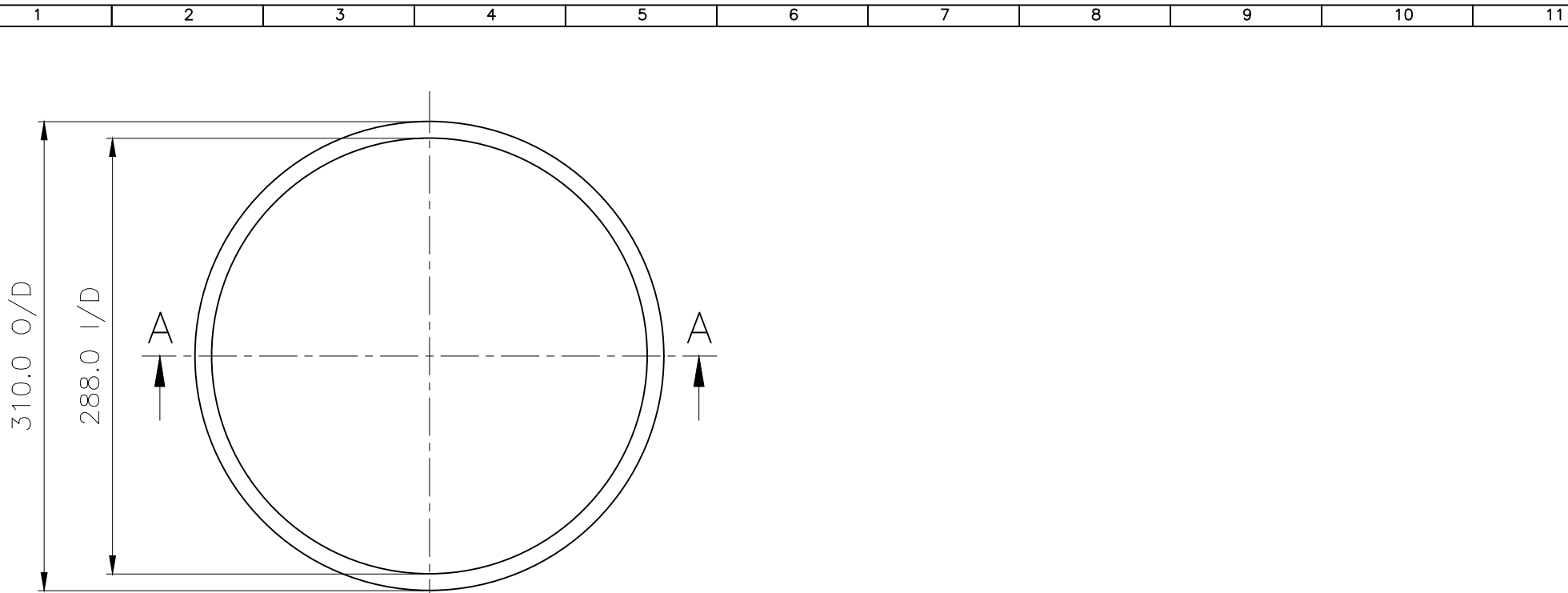
DRG.NO. A2/RTD/RCG/DD/103

SHEET 2 OF 2	REV. NO. -
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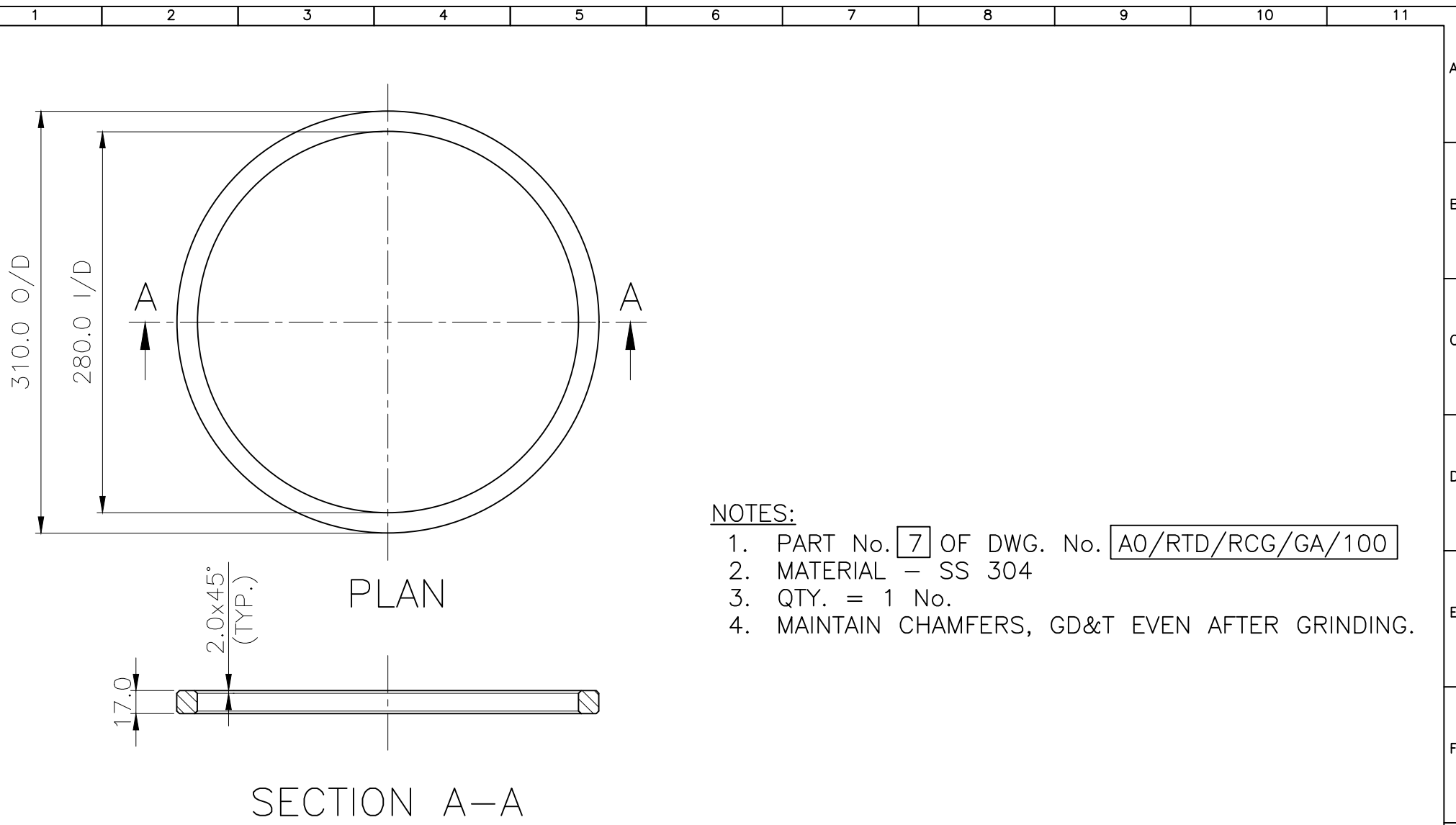
PLAN

SECTION A-A

**NOTES:**

1. PART No. 6 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 1 No.
4. MAINTAIN CHAMFERS, GD&T EVEN AFTER GRINDING.


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**NOTES:**

1. PART No. 7 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 1 No.
4. MAINTAIN CHAMFERS, GD&T EVEN AFTER GRINDING.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

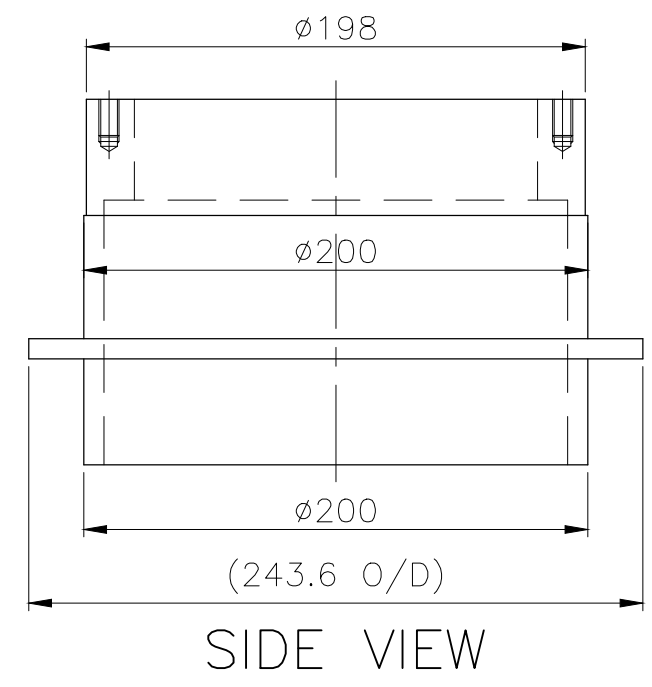
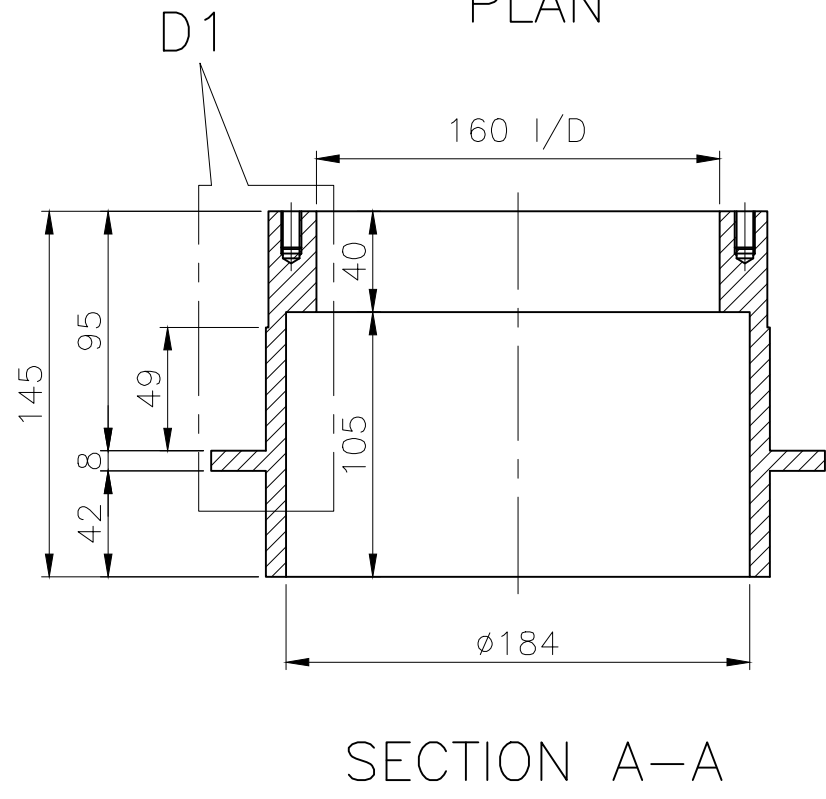
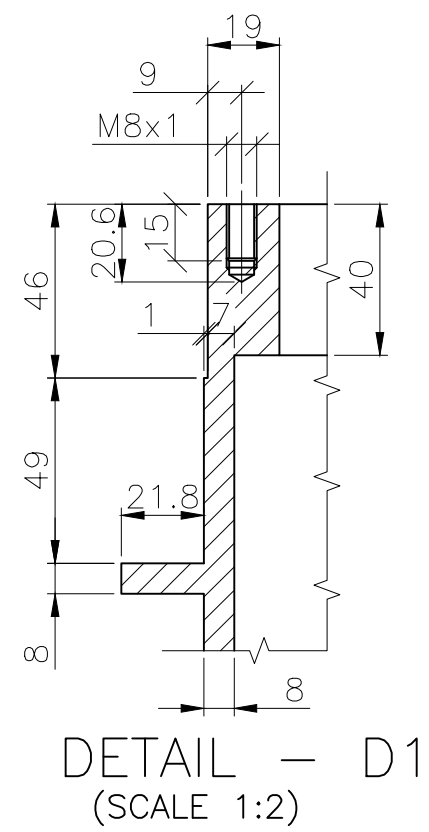
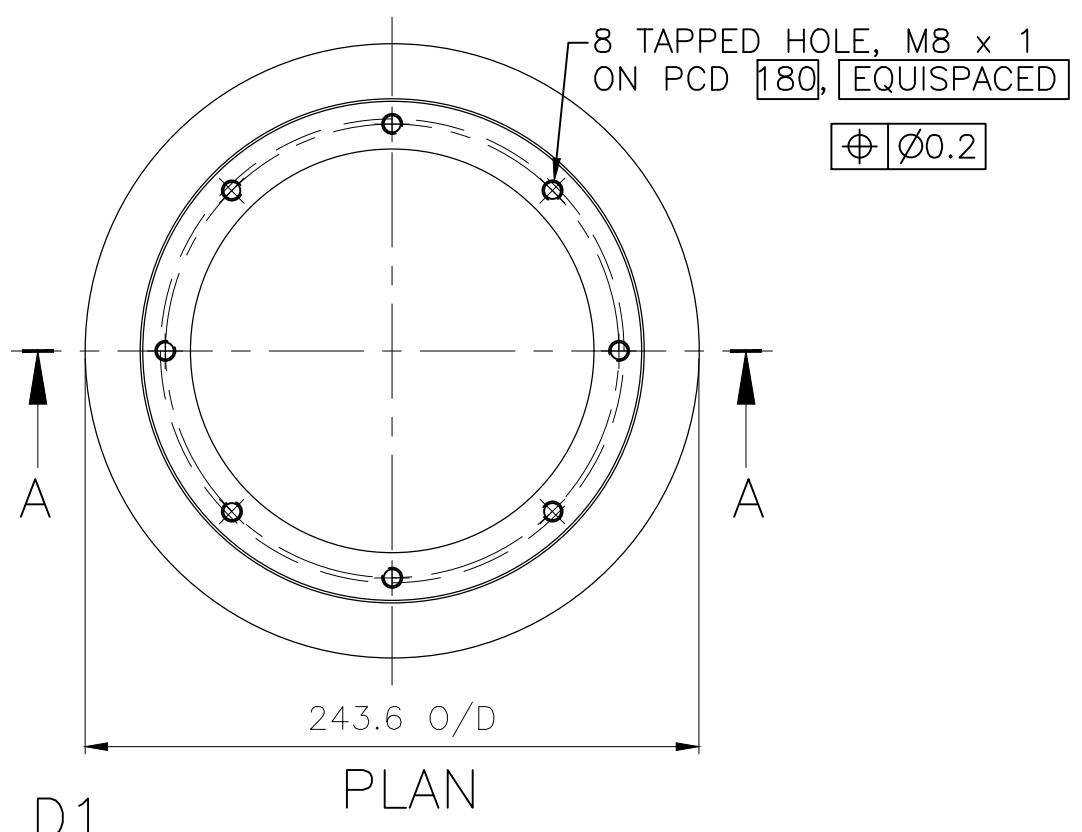
GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
<b>TITLE</b> <b>ROD CUTTING GADGET</b> <b>BEARING SPACER TOP</b>			
DES'D HC	DRN. TAFAZZUL	DATE 30.09.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 30.09.21	SCALE: 1:4
SECTION ATDS	PROJECTION:		

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS		TOLERANCE	
XX	± 0.4	RADI AND CHAMFERS	0.5-3    3-6    6-30
XX.X	± 0.4	TOLERANCE	+/-0.2    +/-0.5    +/-1.0
XX.XX	± 0.25	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER	
REMOVE ALL BURRS			
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.			

<b>DRG.NO. A4/RTD/RCG/DD/106</b>		SHEET -    -	REV. NO. -    -
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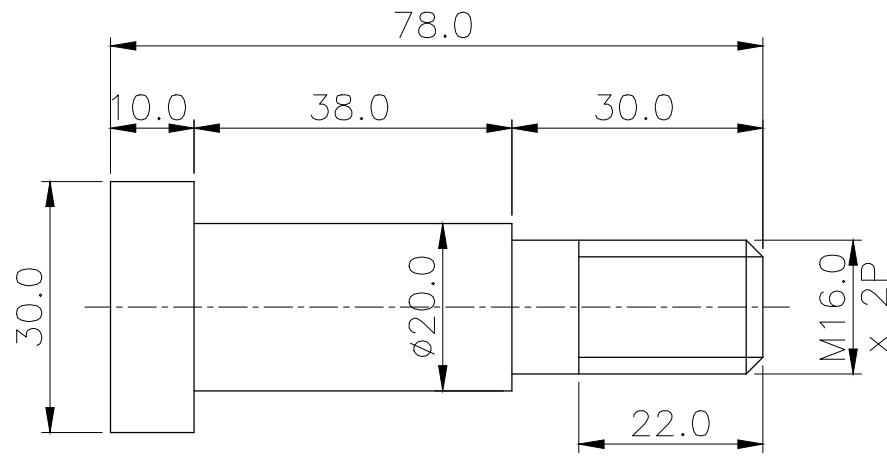


- NOTES:
- PART No. 10 OF DWG. No. AO/RTD/RCG/GA/100
  - MATERIAL - SS 304
  - QTY. = 1 No.

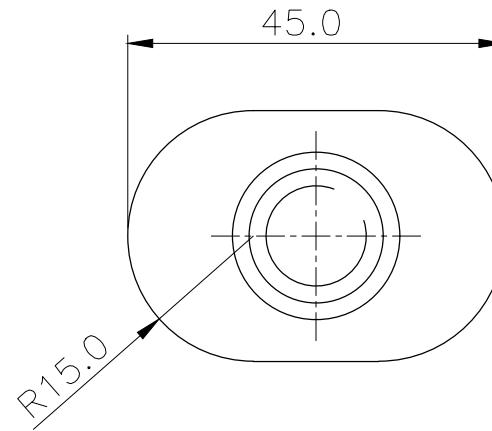
						GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE REFUELLING TECHNOLOGY DIVISION				
						TITLE ROD CUTTING GADGET ROTARY TABLE				
REFERENCE DRAWING		DRAWING NO.		NO.	LOC.	DESCRIPTION	DRN DATE	APP'D		
1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING						DES'D HC		DRN. TAFAZZUL	DATE 30.09.21	APP'D MD
TOLERANCES ON LINEAR DIMENSIONS						DESN CHK'D MD		DRG.CHK'D HC	DATE 30.09.21	SCALE: 1:3
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101						SECTION RTD		PROJECTION:		
SPECIFIED DIMENSIONS TOLERANCE						DRG.NO. A3/RTD/RCG/DD/107		SHEET	REV. NO.	FILE NAME
RADI AND CHAMFERS								-	-	
TOLERANCE										
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER										
REMOVE ALL BURRS										
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.										



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ELEVATION



SIDE VIEW

**NOTES:**

- PART No. 12 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- TOTAL QTY. = 4 Nos.
- MAINTAIN CHAMFERS, GD&T EVEN AFTER GRINDING.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

**TITLE**  
**ROD CUTTING GADGET**  
**TROLLEY WHEEL AXLE**

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 686, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

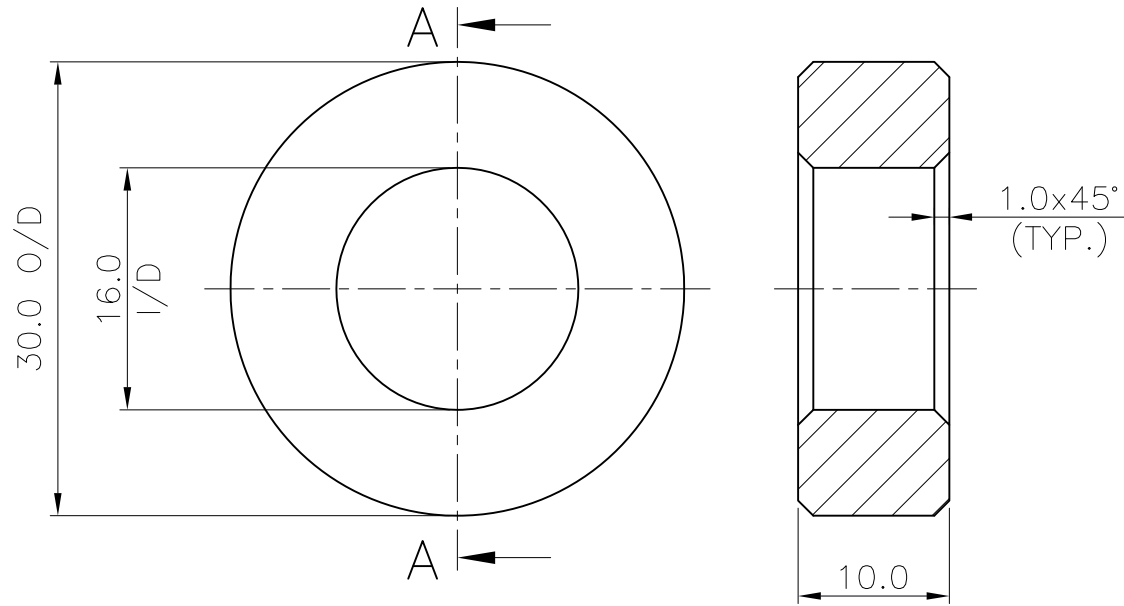
DES'D HC	DRN. TAFAZZUL	DATE 30.09.21	APP'D MD
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DESN CHK'D MD	DRG.CHK'D HC	DATE 30.09.21	SCALE: 1:1
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SECTION RTD	PROJECTION:	
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DRG.NO. <b>A4/RTD/RCG/DD/109</b>	SHEET	REV. NO.
	-	-

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ELEVATION

SECTION A-A

NOTES:

1. PART No. 14 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. TOTAL QTY. = 4 Nos.
4. MAINTAIN CHAMFERS, GD&T EVEN AFTER GRINDING.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
 WHEEL SPACER**

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	TOLERANCE	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
XX	± 0.4	0.5-3	± 0.2	
XX.X	± 0.4	3-6	± 0.5	
XX.XX	± 0.25	6-30	± 1.0	

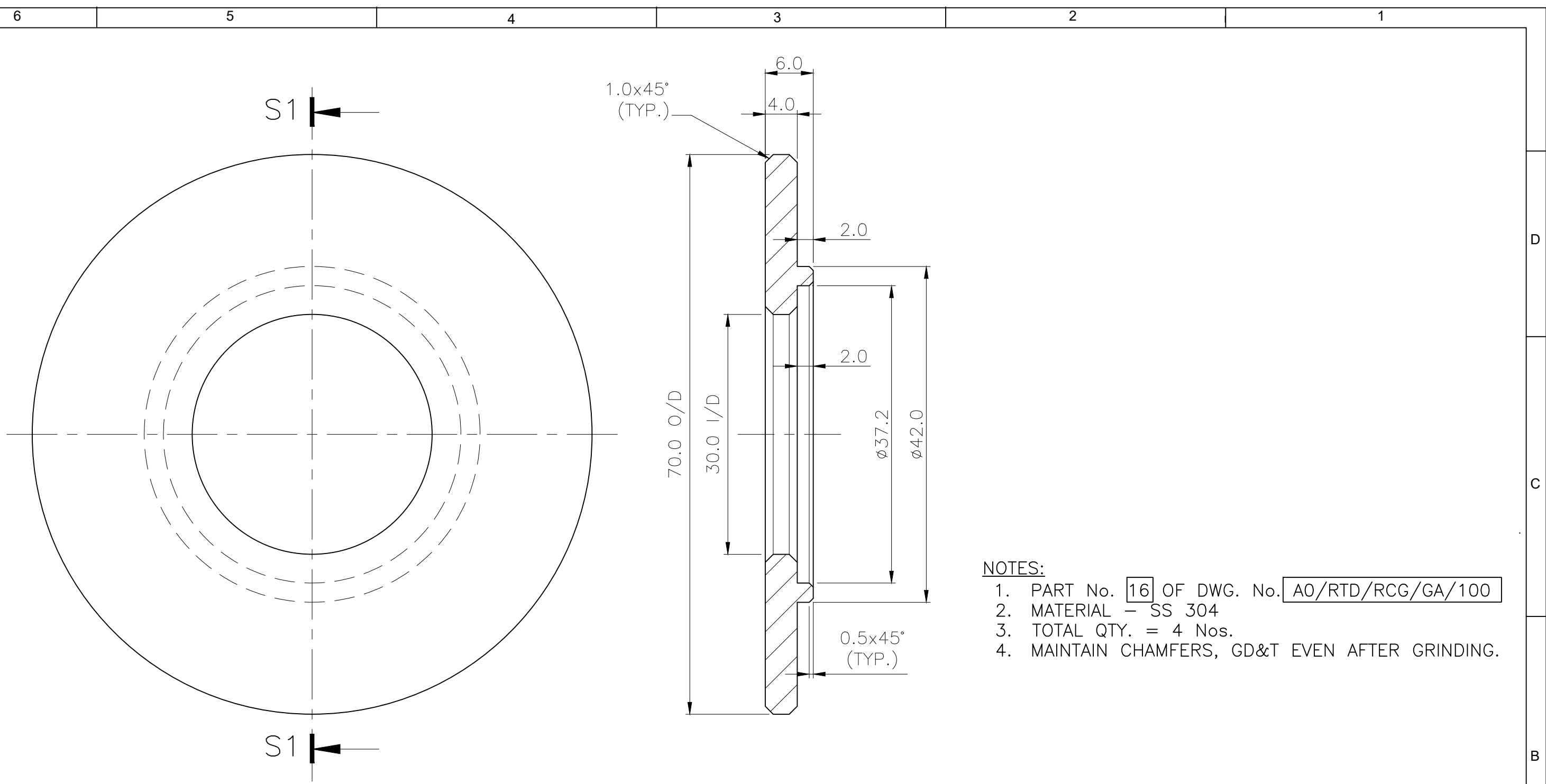
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 686, ISO : R1101

DES'D HC	DRN. TAFAZZUL	DATE 30.09.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 30.09.21	SCALE: 2:1
SECTION ATDS	PROJECTION:		

DRG.NO. A4/RTD/RCG/DD/110

SHEET	REV. NO.
-	-

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FRONT VIEW

SECTION S1-S1

- NOTES:**
- PART No. **16** OF DWG. No. **A0/RTD/RCG/GA/100**
  - MATERIAL - SS 304
  - TOTAL QTY. = 4 Nos.
  - MAINTAIN CHAMFERS, GD&T EVEN AFTER GRINDING.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

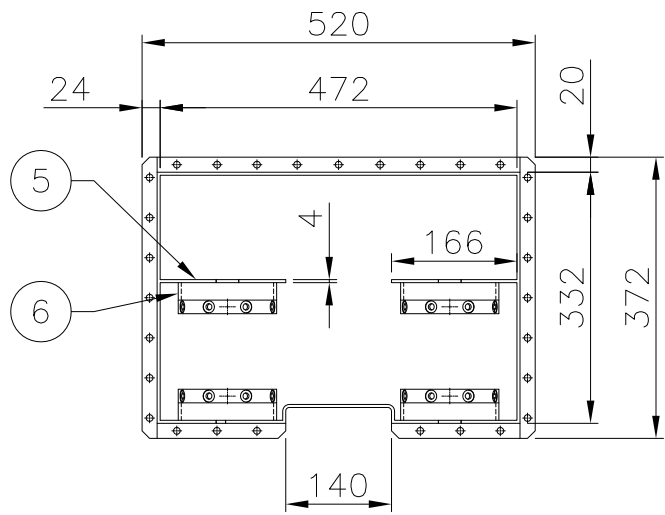
**TITLE**  
**ROD CUTTING GADGET**  
**TROLLEY BEARING COVER**

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

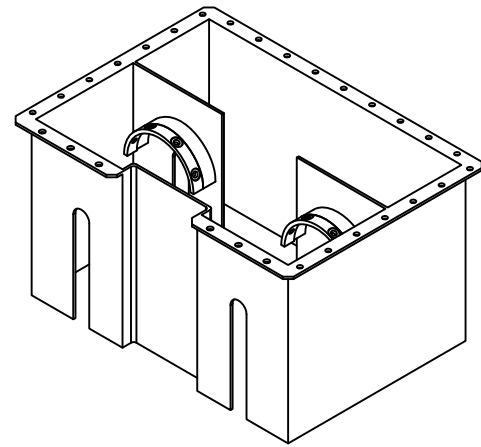
SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101	RADI AND CHAMFERS	0.5-3	3-6	6-30	
	TOLERANCE	+/-0.2	+/-0.5	+/-1.0	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

DES'D HC	DRN. TAFAZZUL	DATE 29.09.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 29.09.21	SCALE: 2:1
SECTION RTD			PROJECTION:
DRG.NO. <b>A3/RTD/RCG/DD/111</b>			SHEET <b>-</b> REV. NO. <b>-</b>

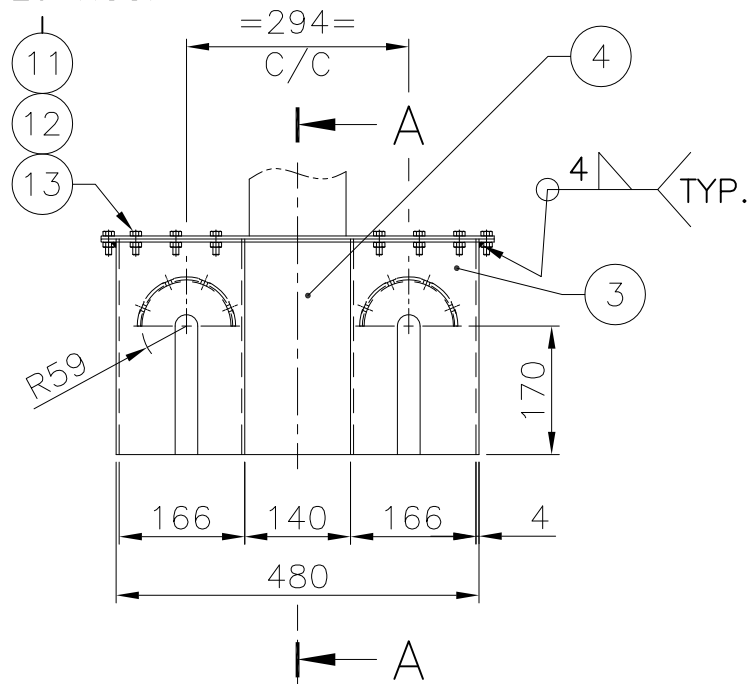


PLAN

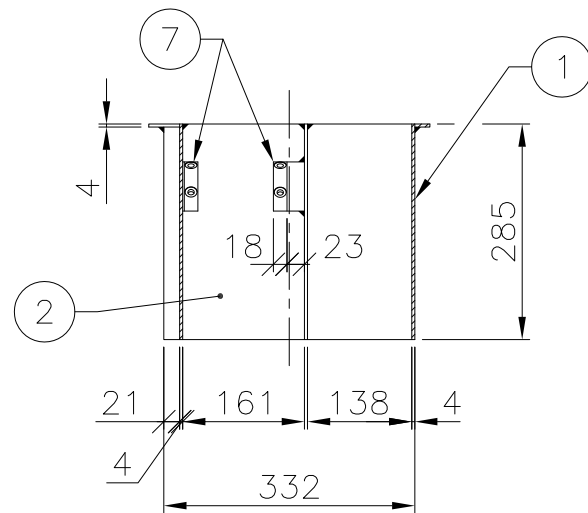


3D VIEW

M8x1  
25 LG.  
29 NOS.



ELEVATION



SECTION A-A

BILL OF MATERIAL

PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
1	PLATE 472 X 285 X 4 THK.	SS 304	1	-	
2	PLATE 332 X 285 X 4 THK.	SS 304	2	-	
3	PLATE 166 X 285 X 4 THK.	SS 304	2	-	SLOT CUT
4	PLATE 182 X 285 X 4 THK.	SS 304	1	-	BEND PLATE
5	PLATE 166 X 285 X 4 THK.	SS 304	2	-	
6	PLATE 204 X 23 X 4 THK.	SS 304	4	-	180° CIRCLE
7	PLATE 204 X 18 X 6 THK.	SS 304	4	-	180° CIRCLE
8	PLATE 480 X 20 X 4 THK.	SS 304	1	-	
9	PLATE 170 X 20 X 4 THK.	SS 304	2	-	
10	PLATE 372 X 20 X 4 THK.	SS 304	2	-	
11	HEX. BOLT M8 X 1 - 20 LG. IS:1364 PART-1	ASTM-A-193 GR. B8	29	-	
12	MACHINE WASHER ø9 IS:2016	C-45 OF IS:1570	29	-	
13	HEX. BOLT M8 X 1 IS:1364 PART-3	ASTM-A-194 GR. 8	29	-	

NOTES:

- PART No. 19 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 1 No.

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REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

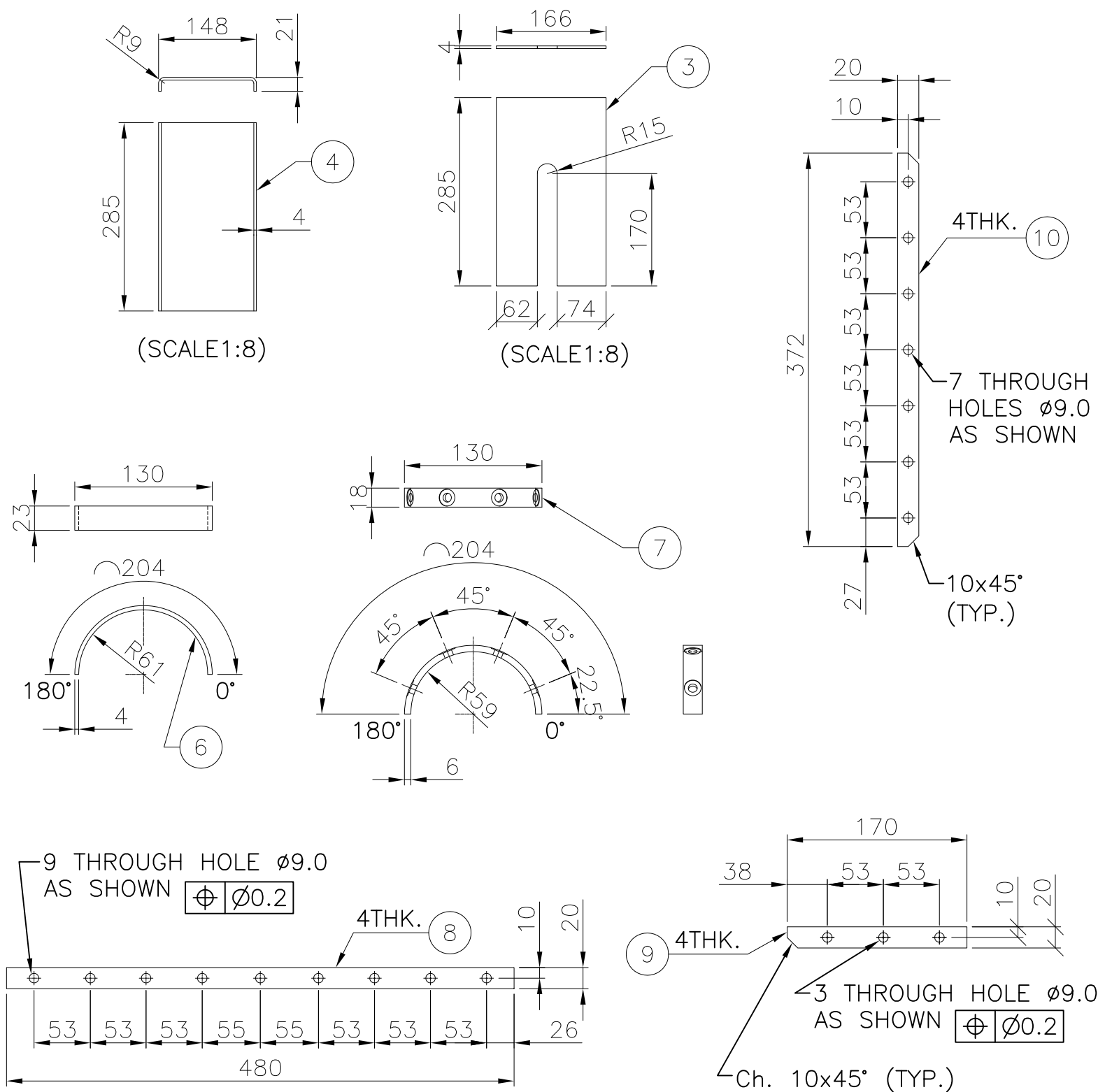
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE REFUELLING TECHNOLOGY DIVISION			
TITLE ROD CUTTING GADGET DRIVE COVER			
DES'D HC	DRN. TAFAZZUL	DATE 18.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 18.10.21	SCALE: 1:5
SECTION RTD	PROJECTION:		
DRG.NO. A3/RTD/RCG/DD/112			SHEET 1 OF 2
			REV. NO. -



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**NOTES:**

1. PART No. 19 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 1 No.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
 DRIVE COVER**

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

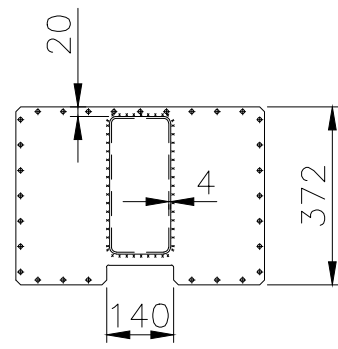
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

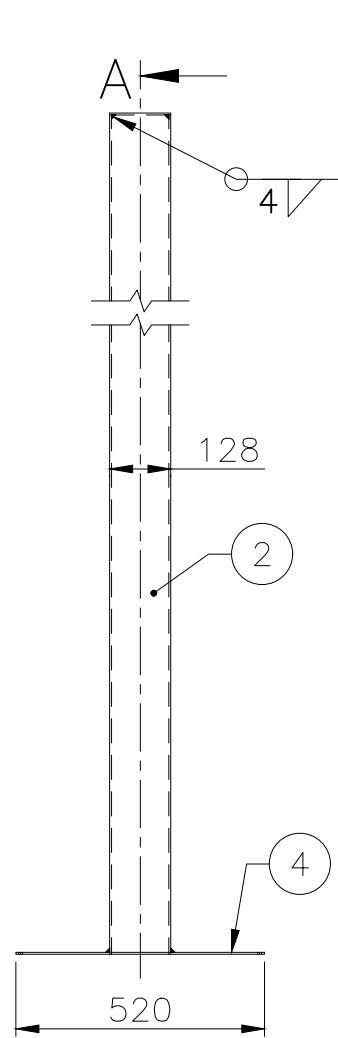
DES'D HC	DRN. TAFAZZUL	DATE 18.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE	SCALE: 1:5
SECTION RTD	PROJECTION:		
DRG.NO. A3/RTD/RCG/DD/112			SHEET 2 OF 2
			REV. NO. -

FILE NAME

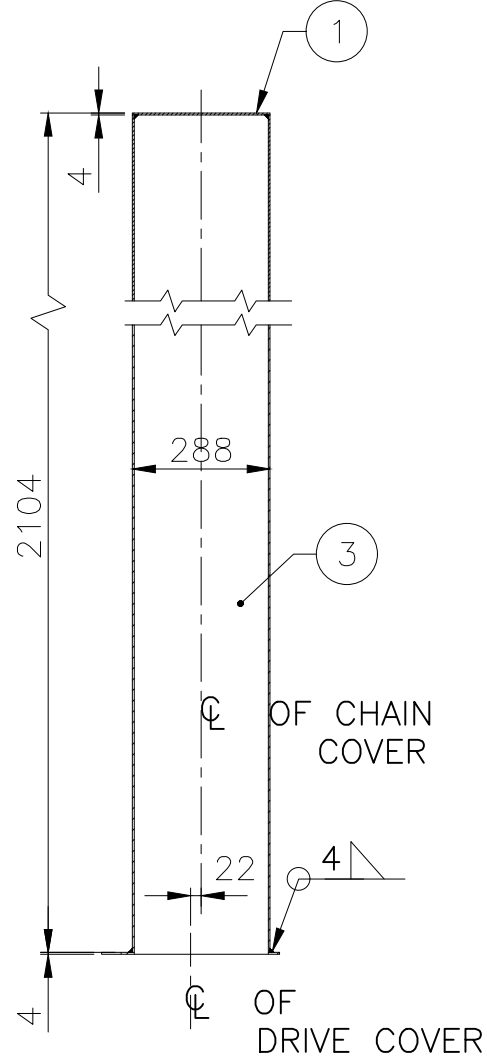
THIS DESIGN AND DRAWING IS THE PROPERTY OF THE BHABHA ATOMIC RESEARCH CENTRE AND MUST BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER.



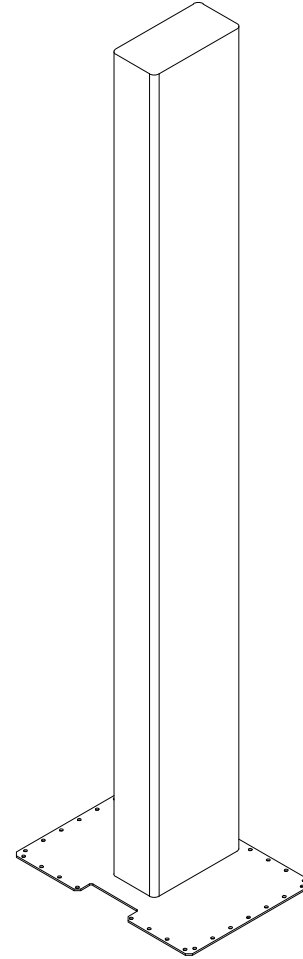
PLAN



ELEVATION



SIDE VIEW



3D VIEW

BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
1	PLATE 288 X 128 X 4 THK.	ALUMINIUM	1	-	
2	PLATE 2104 X 120 X 4 THK.	ALUMINIUM	2	-	
3	PLATE 2104 X 288 X 4 THK.	ALUMINIUM	2	-	
4	PLATE 520 X 372 X 4 THK.	ALUMINIUM	1	-	

NOTES:

- PART No. 20 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - ALUMINIUM
- QTY. = 1 No.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
<b>TITLE</b> ROD CUTTING GADGET CHAIN COVER			
DES'D HC	DRN. TAFAZZUL	DATE 18.10.21	APP'D MD
DESN CHK'D MD	DRG. CHK'D HC	DATE 18.10.21	SCALE: 1:16
SECTION RTD	PROJECTION:		
DRG. NO. A3/RTD/RCG/DD/113			SHEET 1 OF 2
			REV. NO. -

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

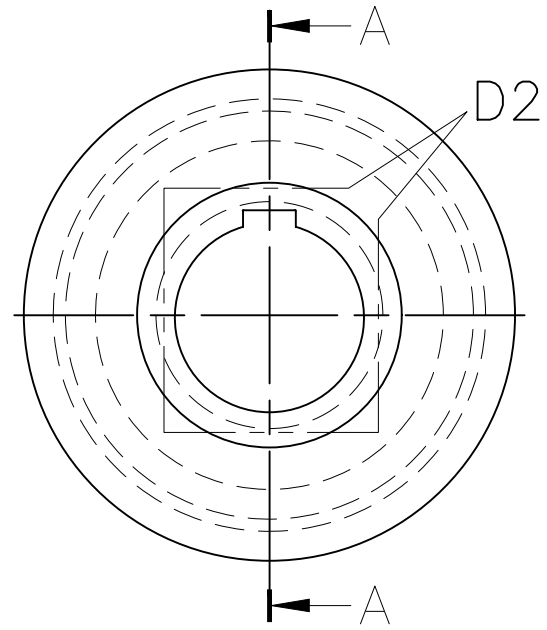
TOLERANCES ON LINEAR DIMENSIONS		RADI AND CHAMFERS			SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
SPECIFIED DIMENSIONS	TOLERANCE	0.5-3	3-6	6-30	
XX	± 0.4				
XX.X	± 0.4				
XX.XX	± 0.25				
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101		TOLERANCE	+/-0.2	+/-0.5	+/-1.0

6	5	4
DRG. NO. A3/RTD/RCG/DD/113		FILE NAME

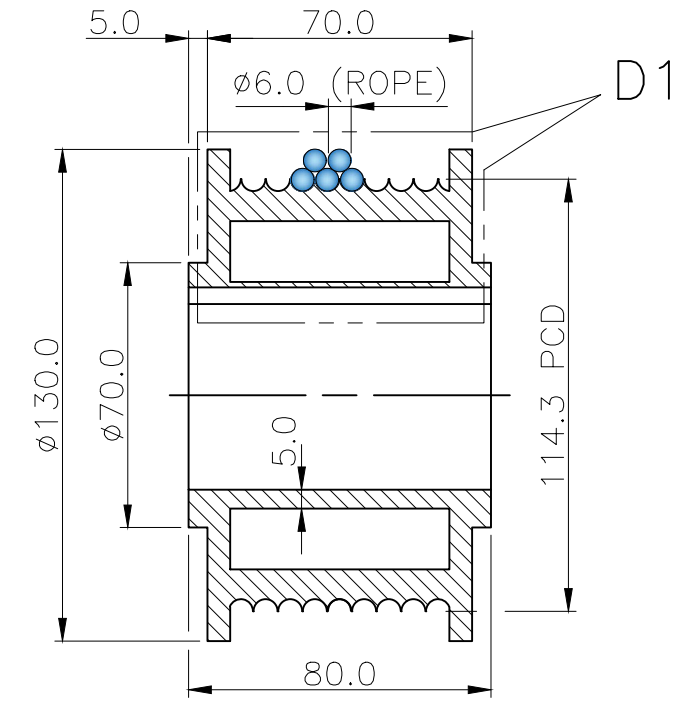


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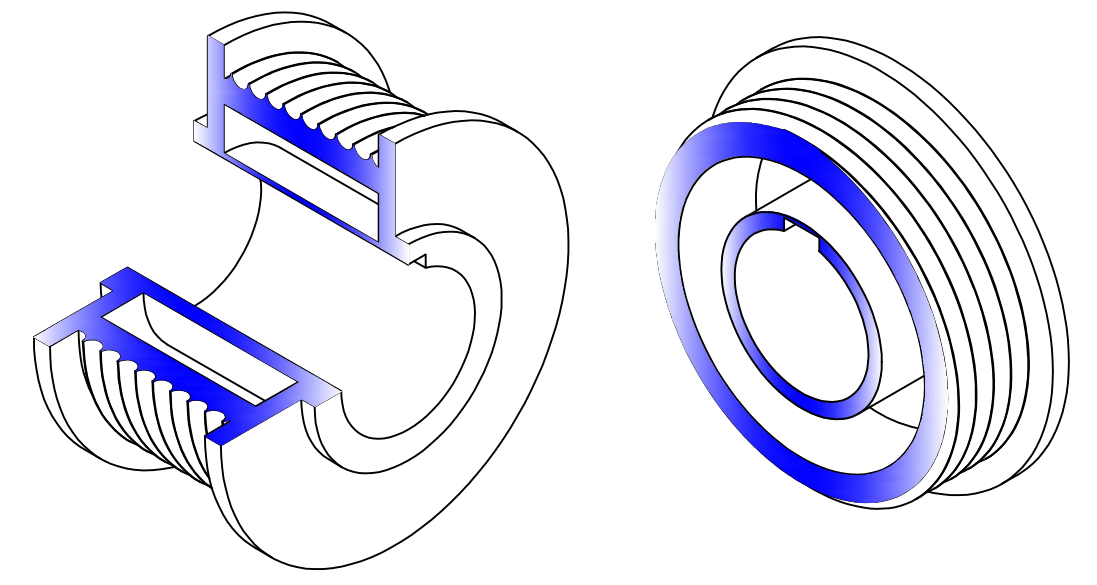
6 5 4 3 2 1



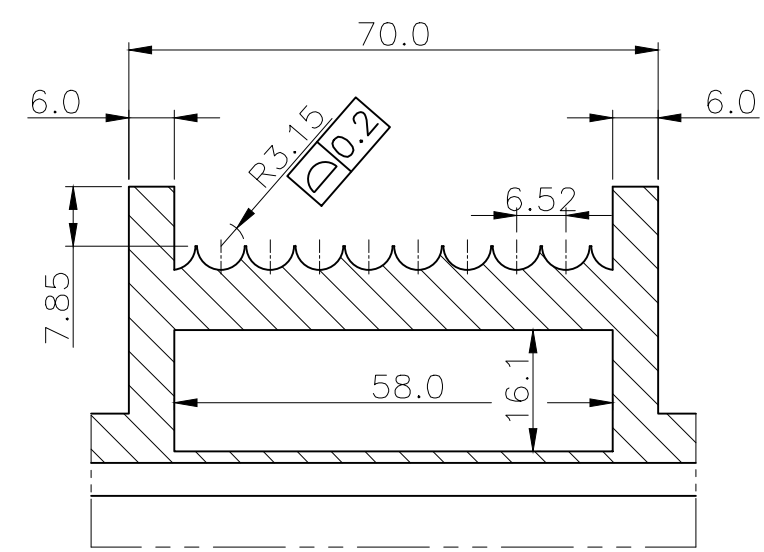
FRONT VIEW



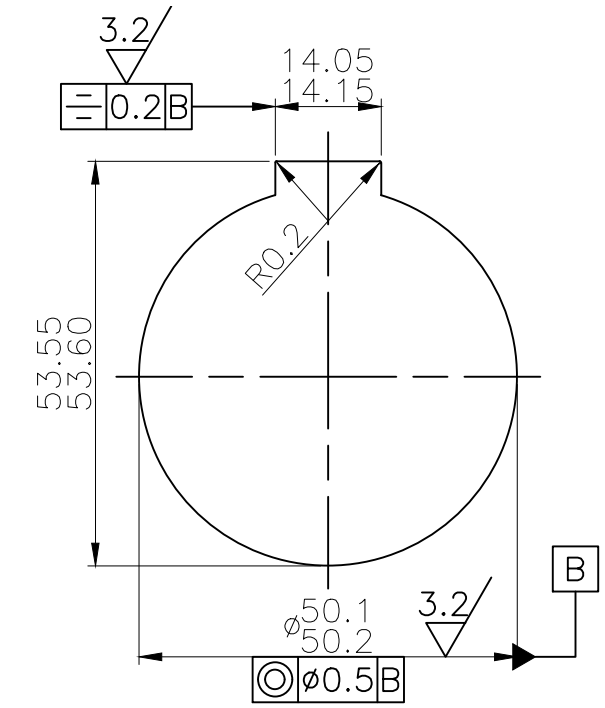
SECTION A-A



SECTIONAL 3D VIEW



DETAIL - D1  
(SCALE 1:1)



DETAIL - D2 (SCALE 1:1)

NOTES:

1. PART No. 25 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 2 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
<b>TITLE</b> ROD CUTTING GADGET ROPE DRUM			
DES'D HC	DRN. TAFAZZUL	DATE 13.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 13.10.21	SCALE: 1:2
SECTION RTD			PROJECTION:
DRG.NO. A3/RTD/RCG/DD/114			SHEET: -
			REV. NO.: -

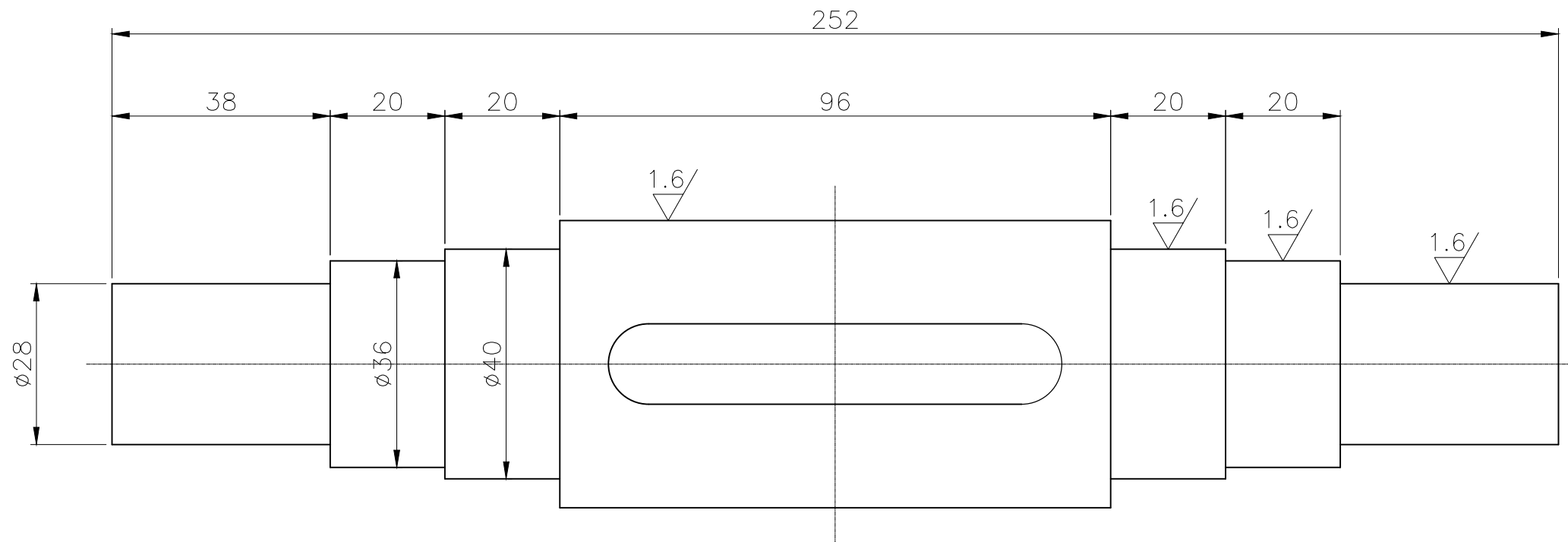
1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

TOLERANCES ON LINEAR DIMENSIONS			
SPECIFIED DIMENSIONS	TOLERANCE		
XX	± 0.4		
XX.X	± 0.4		
XX.XX	± 0.25		

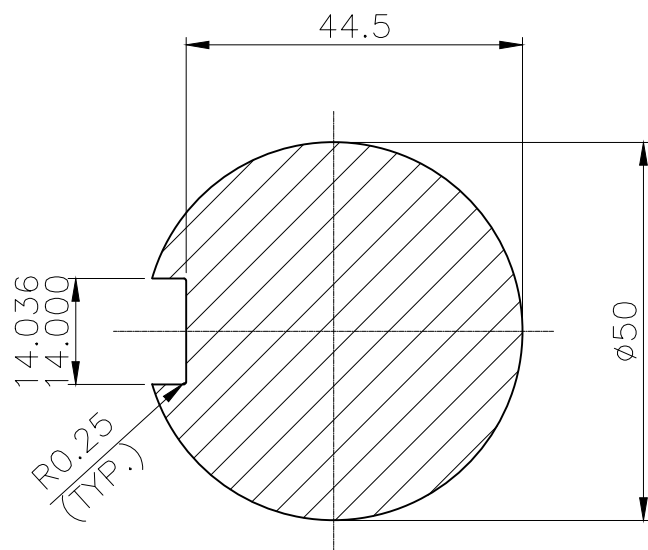
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101			
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

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ELEVATION



SECTION S1-S1

NOTES:

- PART No. 26 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 2 No.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
 DRUM SHAFT**

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS		TOLERANCE	
XX	± 0.4	0.5-3	± 0.4
XX.X	± 0.4	3-6	± 0.4
XX.XX	± 0.25	6-30	± 0.25

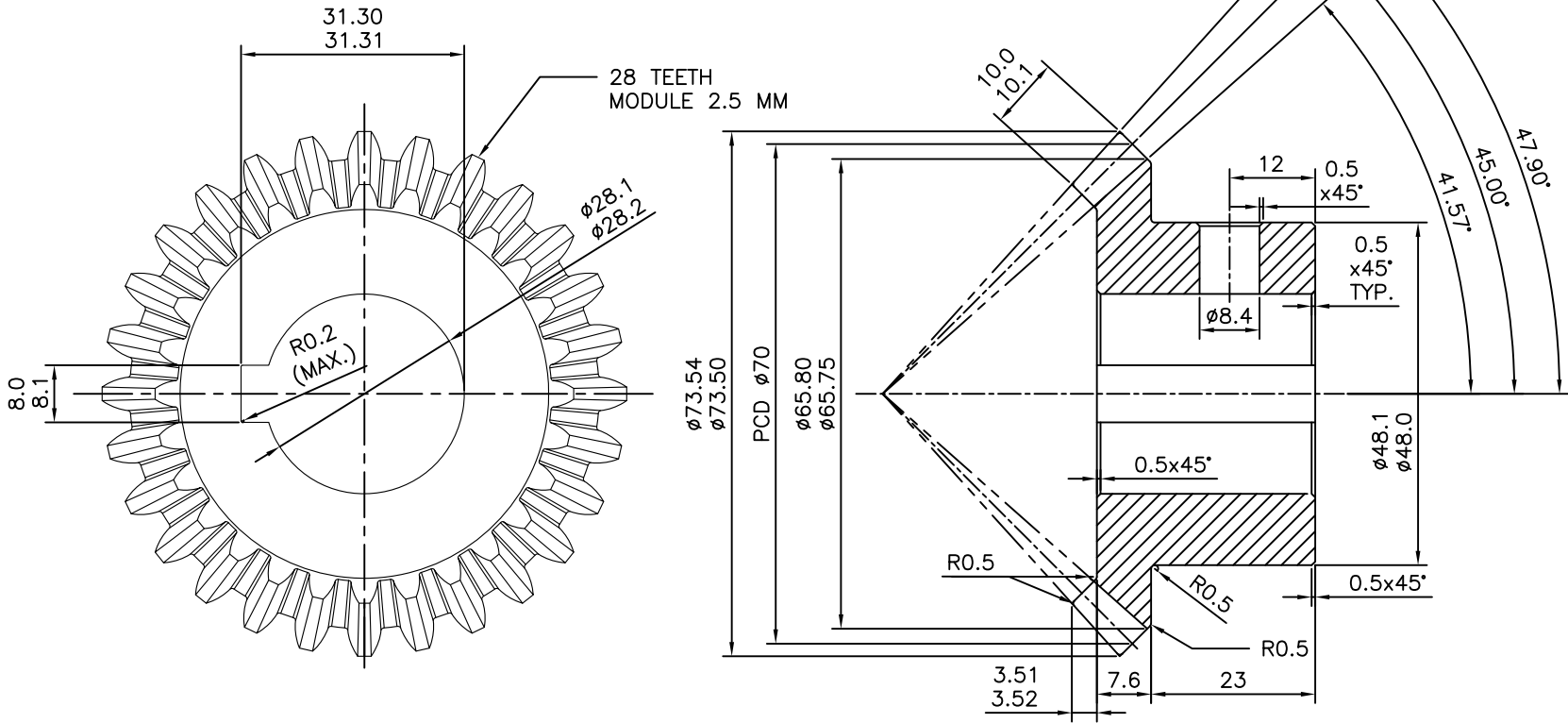
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

RADII AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

DES'D HC	DRN. TAFAZZUL	DATE 24.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 24.11.21	SCALE: 1:16
SECTION RTD	PROJECTION:		
DRG.NO. A3/RTD/RCG/DD/115			SHEET -
			REV. NO. -

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**NOTES:**

1. PART No. 29 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 4 Nos.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

**TITLE**  
**ROD CUTTING GADGET**  
**BEVEL GEAR**

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

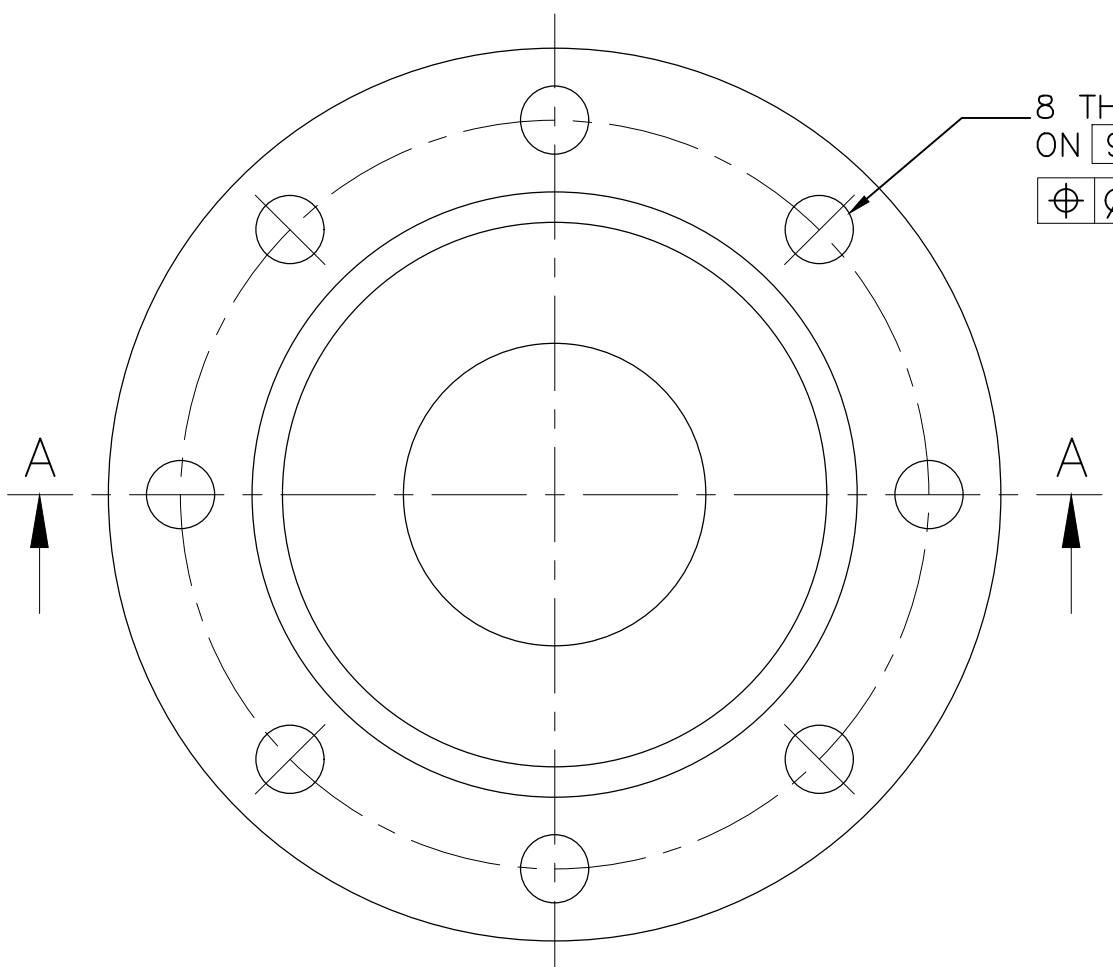
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

DES'D HC	DRN. HC	DATE 10.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 10.11.21	SCALE: 1:1
SECTION ATDS	PROJECTION:		
DRG.NO. A4/RTD/RCG/DD/116			SHEET -
			REV. NO. -

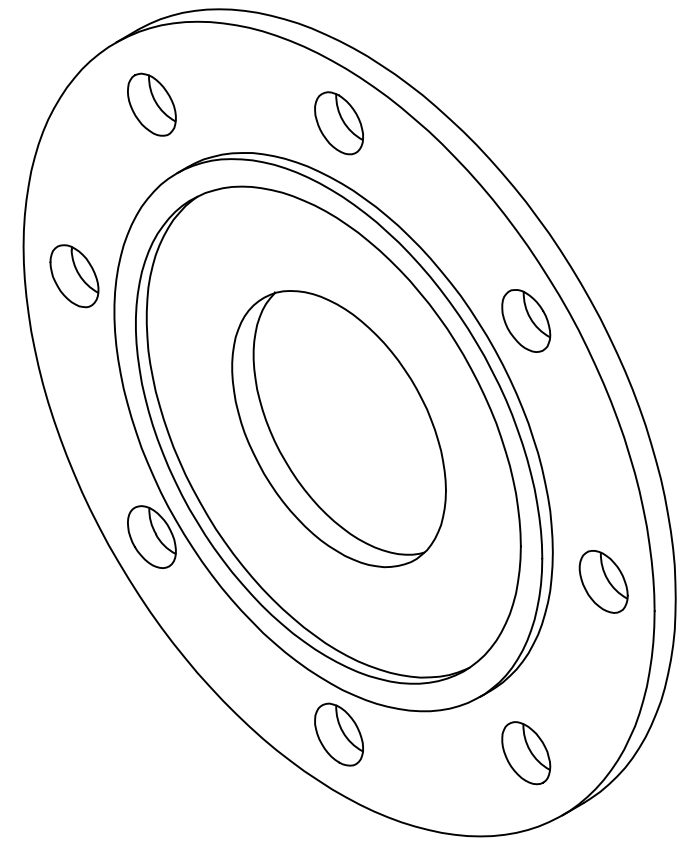
THIS DESIGN AND DRAWING IS THE PROPERTY OF THE BHABHA ATOMIC RESEARCH CENTRE AND MUST BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER.

6 5 4 3 2 1

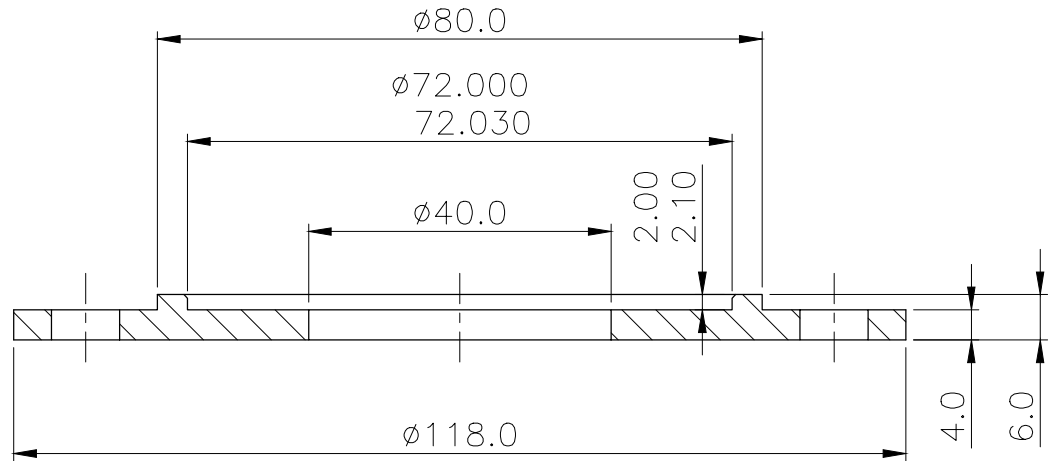


8 THROUGH HOLE  $\phi 9.0$   
ON 99 PCD, EQUISPACED  
 $\phi \phi 0.2$

PLAN



3D VIEW



SECTION A-A

NOTES:

- PART No. 31 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 4 Nos.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
BEARING COVER**

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS		TOLERANCE	
XX.X	± 0.4	RADII AND CHAMFERS	0.5-3 3-6 6-30
XX.XX	± 0.4	TOLERANCE	+/-0.2 +/-0.5 +/-1.0
XX.XXX	± 0.25		

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

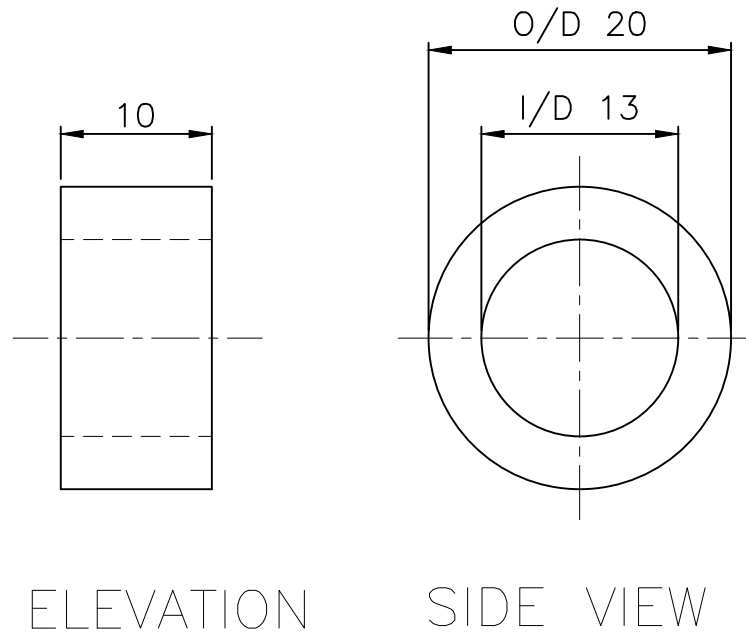
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

DES'D HC	DRN. TAFAZZUL	DATE 12.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 12.10.21	SCALE: 1:1
SECTION RTD	PROJECTION:		
DRG.NO. A3/RTD/RCG/DD/117			SHEET -
			REV. NO. -





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**NOTES:**

1. PART No. 34 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 8 Nos.

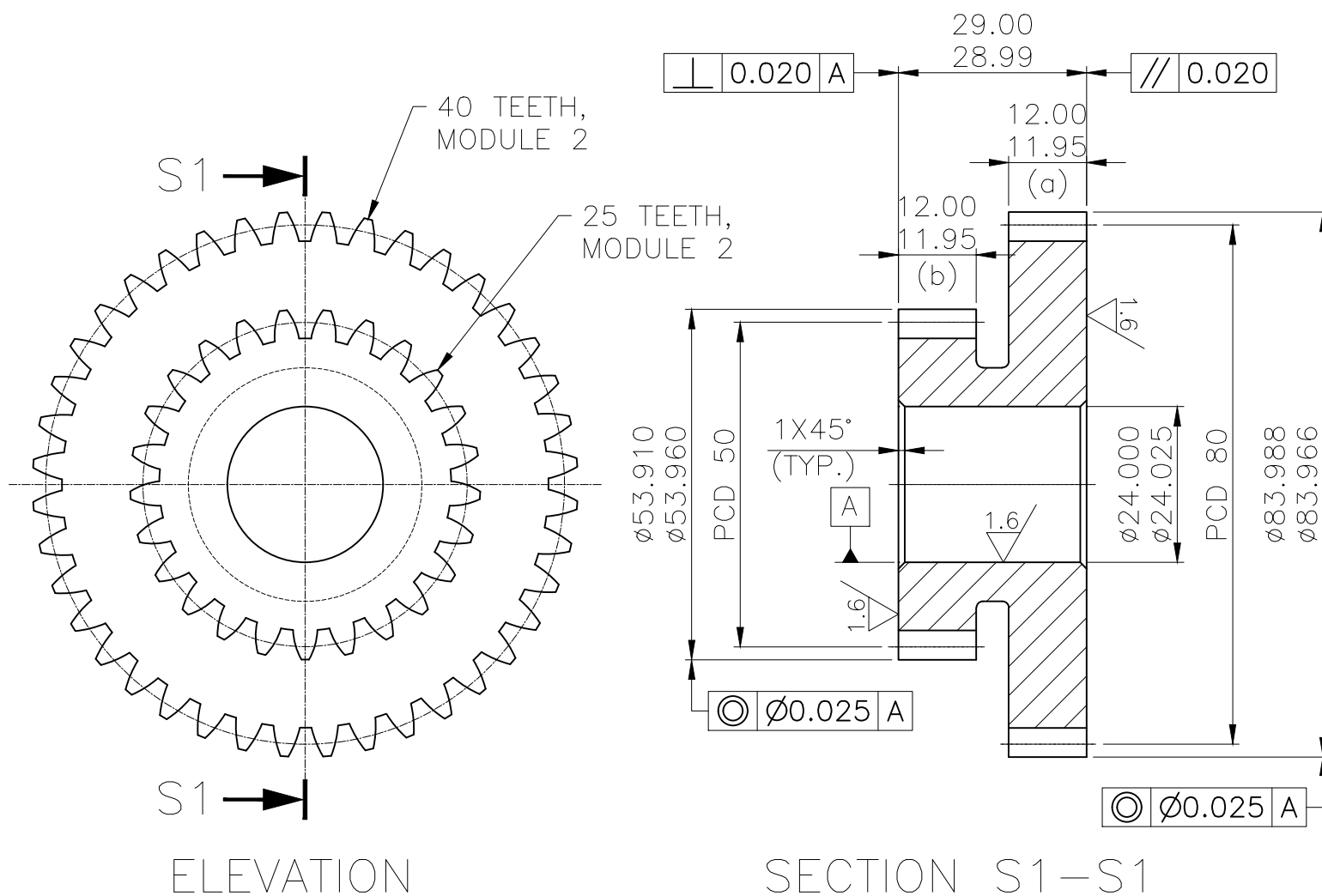
						GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION																	
						<b>TITLE</b> <b>ROD CUTTING GADGET</b> <b>SPACER</b>																	
		NO.	LOC.	DESCRIPTION	DRN DATE	APP'D																	
REFERENCE DRAWING		DRAWING NO.		REVISIONS																			
<small>UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING</small> <table border="1" style="font-size: 8px; width: 100%;"> <thead> <tr> <th colspan="2">SPECIFIED DIMENSIONS</th> <th>TOLERANCE</th> </tr> </thead> <tbody> <tr> <td>XX</td> <td></td> <td>± 0.4</td> </tr> <tr> <td>XX.X</td> <td></td> <td>± 0.4</td> </tr> <tr> <td>XX.XX</td> <td></td> <td>± 0.25</td> </tr> </tbody> </table>						SPECIFIED DIMENSIONS		TOLERANCE	XX		± 0.4	XX.X		± 0.4	XX.XX		± 0.25						
SPECIFIED DIMENSIONS		TOLERANCE																					
XX		± 0.4																					
XX.X		± 0.4																					
XX.XX		± 0.25																					
		RADII AND CHAMFERS	0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.																	
		TOLERANCE	+/-0.2	+/-0.5	+/-1.0																		
<table border="1" style="font-size: 8px; width: 100%;"> <thead> <tr> <th>DES'D HC</th> <th>DRN. TAFAZZUL</th> <th>DATE 15.11.21</th> <th>APP'D MD</th> </tr> </thead> <tbody> <tr> <td>DES'N CHK'D MD</td> <td>DRG.CHK'D HC</td> <td>DATE 15.11.21</td> <td>SCALE: 1:1</td> </tr> <tr> <td>SECTION RTD</td> <td colspan="2"></td> <td>PROJECTION: </td> </tr> </tbody> </table>						DES'D HC	DRN. TAFAZZUL	DATE 15.11.21	APP'D MD	DES'N CHK'D MD	DRG.CHK'D HC	DATE 15.11.21	SCALE: 1:1	SECTION RTD			PROJECTION:						
DES'D HC	DRN. TAFAZZUL	DATE 15.11.21	APP'D MD																				
DES'N CHK'D MD	DRG.CHK'D HC	DATE 15.11.21	SCALE: 1:1																				
SECTION RTD			PROJECTION:																				
<b>DRG.NO. A4/RTD/RCG/DD/119</b>						SHEET <span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span>		REV. NO. <span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span>															

A  
B  
C  
D  
E  
F  
G  
H

1 2 3 4 5 6 7 8 9 10 11



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NOTES:-

1. PART No. **38** OF DWG. No. **A0/RTD/RCG/GA/100**
2. MATERIAL: SS 304
3. SURFACE FINISH  $\sqrt{1.6}$  ALL OVER UNLESS OTHERWISE SPECIFIED.
4. QTY. 1 No.
5. APPLICABLE SPECIFICATIONS: IS:3681 QUALITY GRADE 7 OR DIN QUALITY 7 AND IS:7504.
6. GEAR TEETH TO BE GROUND AFTER HEAT TREATMENT, NITRIDING AND FINISH MACHINING.
7. ALL DIMENSIONS SHOWN IN THIS DRAWING ARE AFTER HEAT TREATMENT, NITRIDING AND FINISH MACHINING.
8. SPUR GEAR DATA : TOOTH BASIC RACK IS:2535  
 a) No. OF TEETH : 40                      b) No. OF TEETH : 25  
 MODULE : 2  
 PRESSURE ANGLE : 20°  
 REF. DIA : 80  
 BASIC CIRCLE DIA : XXX.XX
9. MATING GEAR DATA:  
 MATERIAL : SS 304  
 No. OF TEETH : 50
10. MACHINED ALL OVER.
11. GRIND FACE TO MEET THE REQUIREMENTS OF ASSEMBLY. MAINTAIN CHAMFERS AND GEOMETRICAL TOLERANCES EVEN AFTER GRINDING.
12. APPROXIMATE WEIGHT OF COMPONENT - X.X KGS.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET**  
**COMPOUND SPUR GEAR-1 OF TELESCOPIC MAST ASSLY.**

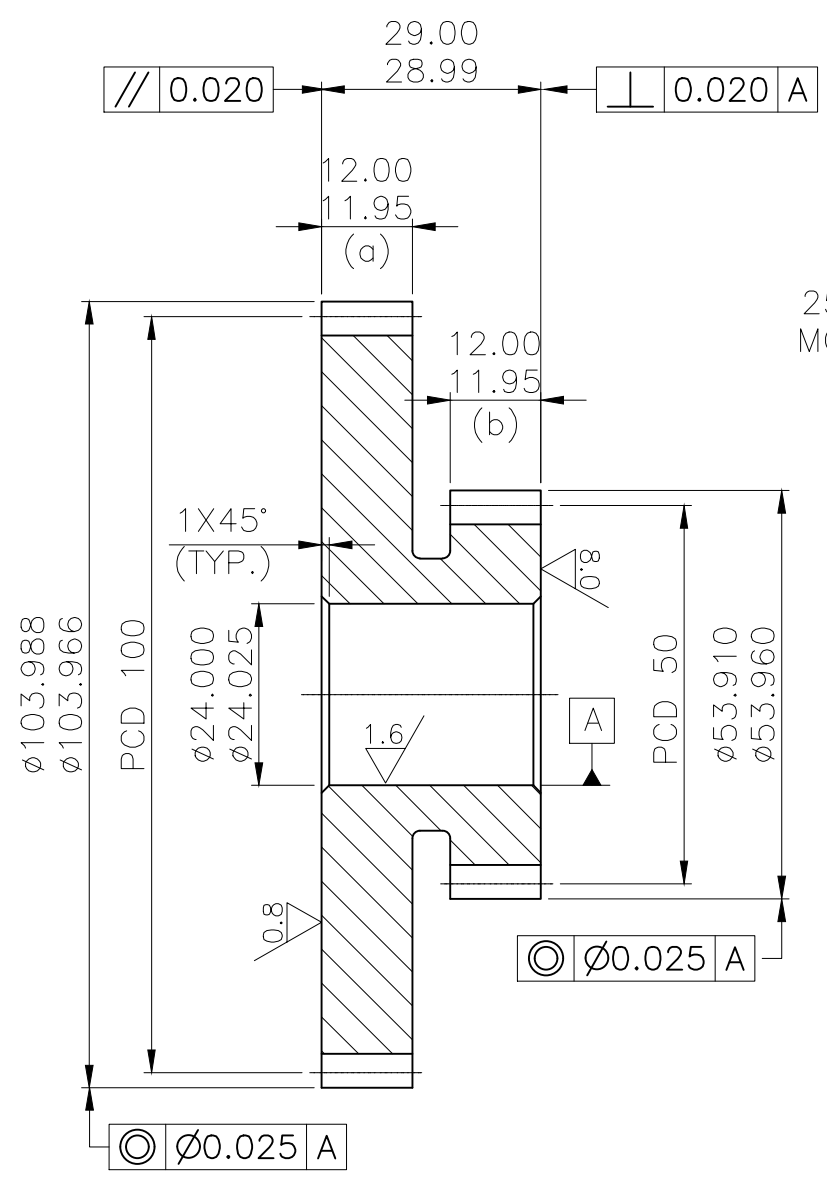
1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS		TOLERANCE	
XX	± 0.4	RADII AND CHAMFERS	0.5-3    3-6    6-30
XX.X	± 0.4	TOLERANCE	+/-0.2   +/-0.5   +/-1.0
XX.XX	± 0.25	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.	

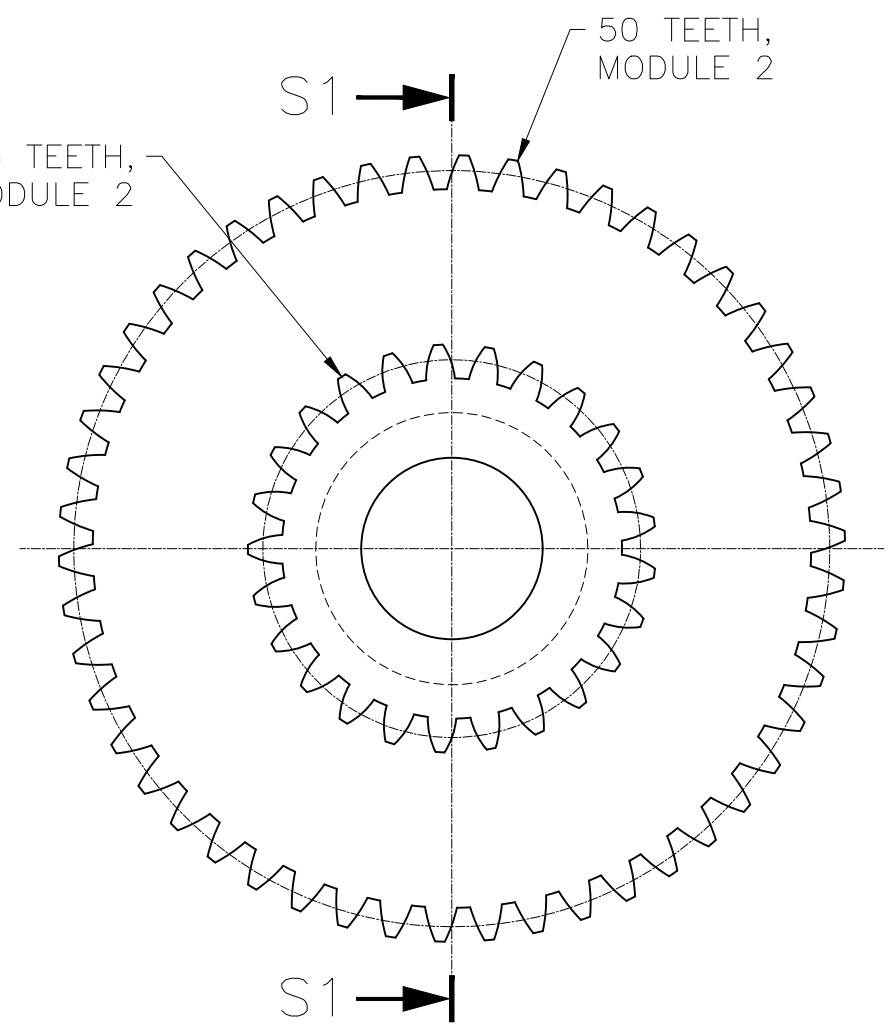
DES'D HC	DRN. TAFAZZUL	DATE 15.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 15.11.21	SCALE: 1:1
SECTION RTD	PROJECTION:		DRG.NO. <b>A3/RTD/RCG/DD/121</b>
SHEET		REV. NO.	
-		-	

FILE NAME

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SECTION S1-S1



ELEVATION

NOTES:-

1. PART No. 39 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL: SS 304
3. SURFACE FINISH 1.6 ALL OVER UNLESS OTHERWISE SPECIFIED.
4. QTY. 1 No.
5. APPLICABLE SPECIFICATIONS: IS:3681 QUALITY GRADE 7 OR DIN QUALITY 7 AND IS:7504.
6. GEAR TEETH TO BE GROUND AFTER HEAT TREATMENT, NITRIDING AND FINISH MACHINING.
7. ALL DIMENSIONS SHOWN IN THIS DRAWING ARE AFTER HEAT TREATMENT, NITRIDING AND FINISH MACHINING.
8. SPUR GEAR DATA : TOOTH BASIC RACK IS:2535
 

a) No. OF TEETH	: 50	b) No. OF TEETH	: 25
MODULE	: 2		
PRESSURE ANGLE	: 20°		
REF. DIA	: 100		
BASIC CIRCLE DIA	: XXX.XX		
9. MATING GEAR DATA:
 

MATERIAL	: SS 304
No. OF TEETH	: 50
10. MACHINED ALL OVER.
11. GRIND FACE TO MEET THE REQUIREMENTS OF ASSEMBLY. MAINTAIN CHAMFERS AND GEOMETRICAL TOLERANCES EVEN AFTER GRINDING.
12. APPROXIMATE WEIGHT OF COMPONENT - X.X KGS.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	TOLERANCE	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
XX	± 0.4	0.5-3	3-6	
XX.X	± 0.4			
XX.XX	± 0.25			
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101				

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET**

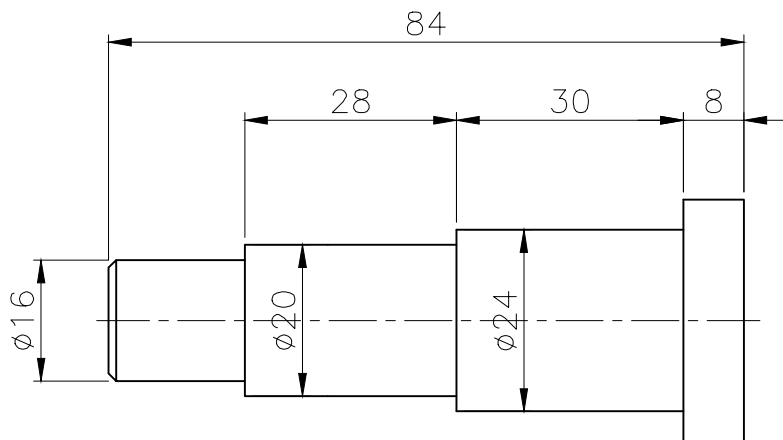
**COMPOUND SPUR GEAR-2 OF TELESCOPIC MAST ASSLY.**

DES'D HC	DRN. TAFAZZUL	DATE 15.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 15.11.21	SCALE: 1:1
SECTION RTD			PROJECTION:
DRG.NO. A3/RTD/RCG/DD/122			SHEET: -
			REV. NO.: -

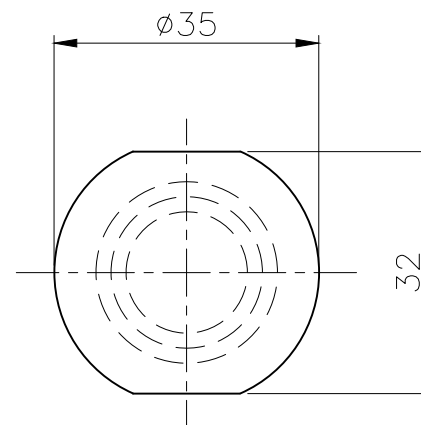
FILE NAME



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ELEVATION



SIDE VIEW

**NOTES:**

1. PART No. 42 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 2 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
 SHAFT**

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

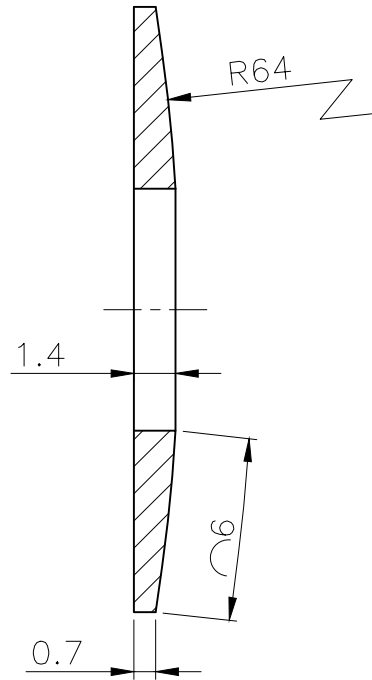
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 694, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
TOLERANCE	+/-0.2	+/-0.5	+/-1.0	

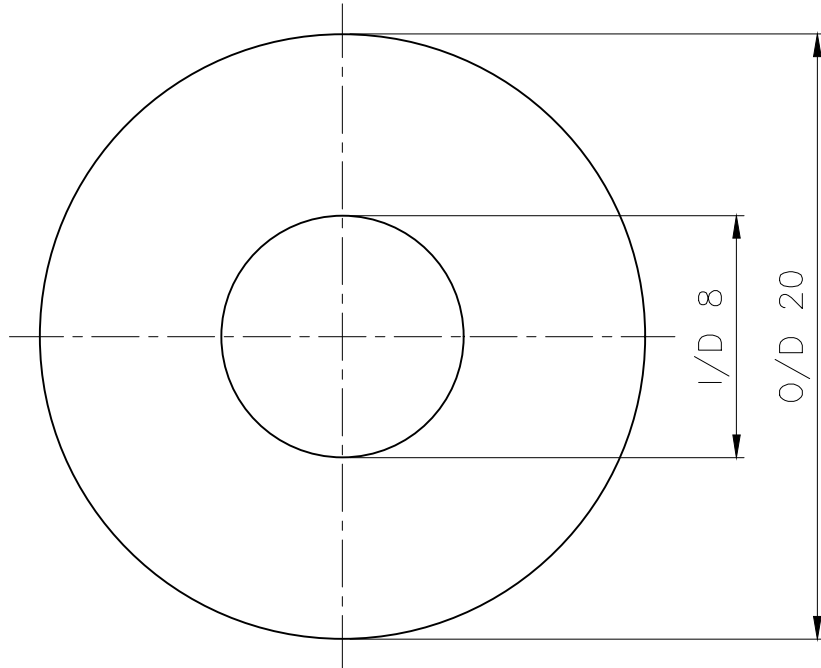
DES'D HC	DRN. TFAZZUL	DATE 15.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 15.11.21	SCALE: 1:1
SECTION ATDS			PROJECTION:
DRG.NO. A4/RTD/RCG/DD/124			SHEET <span style="float: right;">REV. NO.</span>



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SECTIONAL VIEW



ELEVATION

NOTES:

1. PART No. 48 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 410
3. QTY. = 8 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET**  
**CONVEX WASHER**

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XXL	± 0.4
XXLX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 606, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

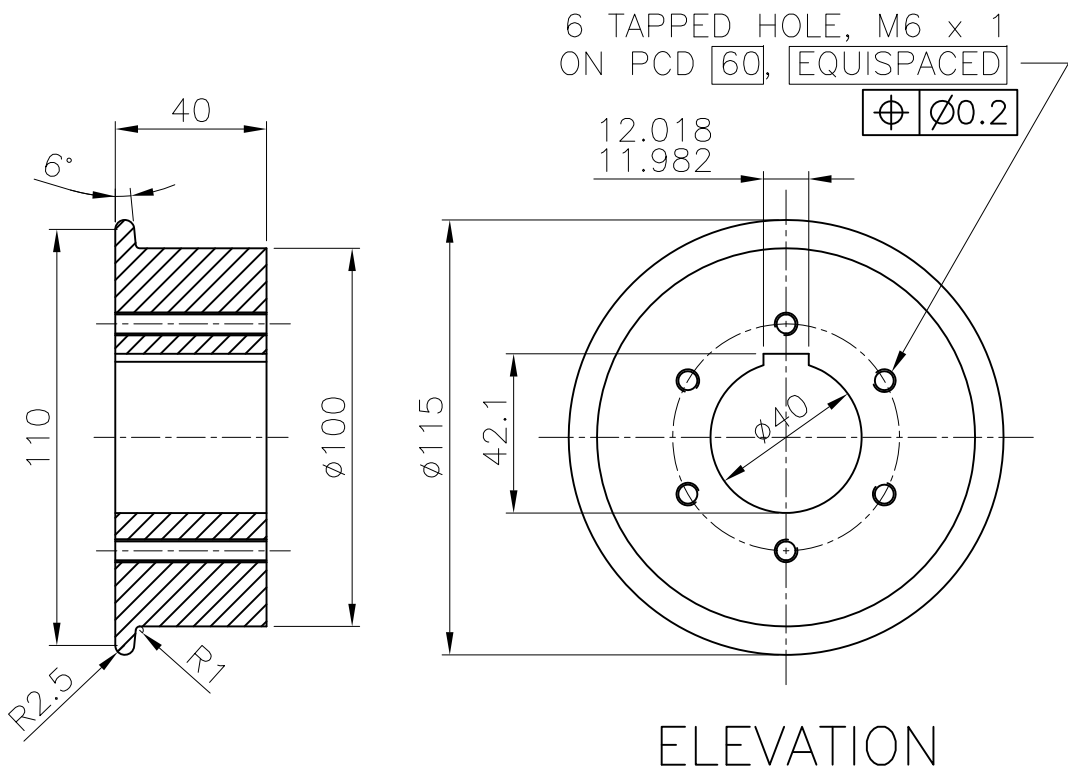
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

DES'D HC	DRN. TAFAZZUL	DATE 26.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 26.11.21	SCALE: 1:2
SECTION RTD			PROJECTION:
DRG.NO. <span style="border: 1px solid black; padding: 2px;">A4/RTD/RCG/DD/126</span>			SHEET -
			REV. NO. -





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SECTIONAL VIEW

ELEVATION

NOTES:

- PART No. **51** OF DWG. No. **A0/RTD/RCG/GA/100**
- MATERIAL - C-65 OF IS 1570-HARDNESS 350 BHN
- QTY. = 4 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 686, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
REFUELLING TECHNOLOGY DIVISION

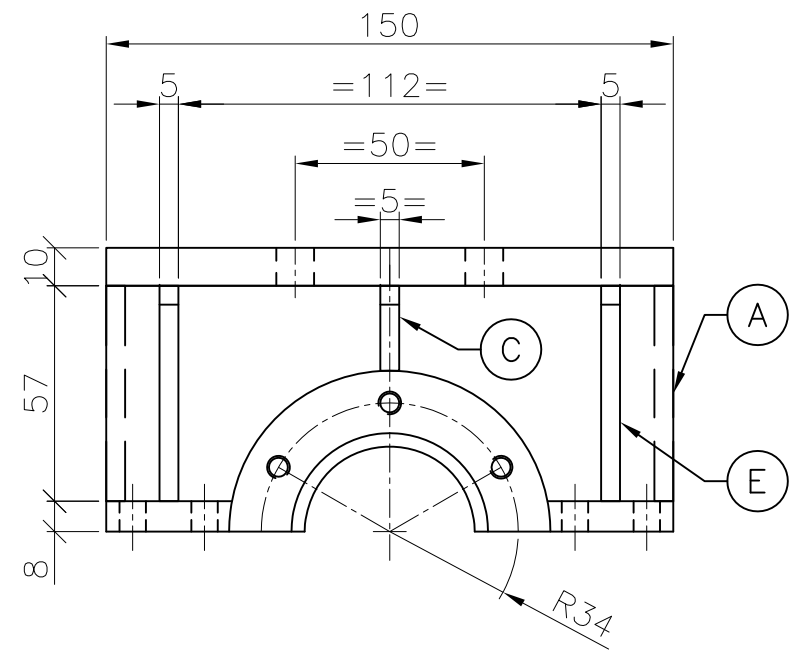
TITLE  
**ROD CUTTING GADGET**  
**DRIVEN CARRIAGE WHEEL**

DES'D HC	DRN. TAFAZZUL	DATE 20.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 20.10.21	SCALE: 1:2
SECTION RTD			PROJECTION:

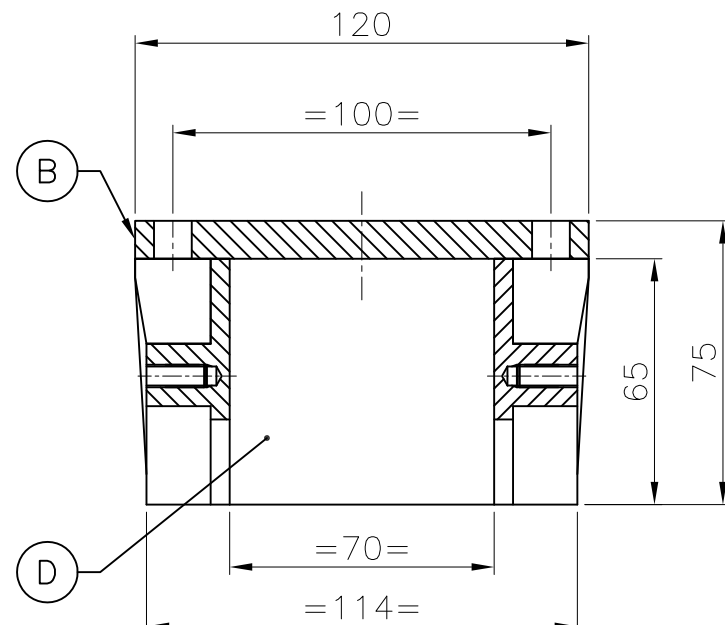
DRG.NO. **A4/RTD/RCG/DD/128**

SHEET	REV. NO.
-	-

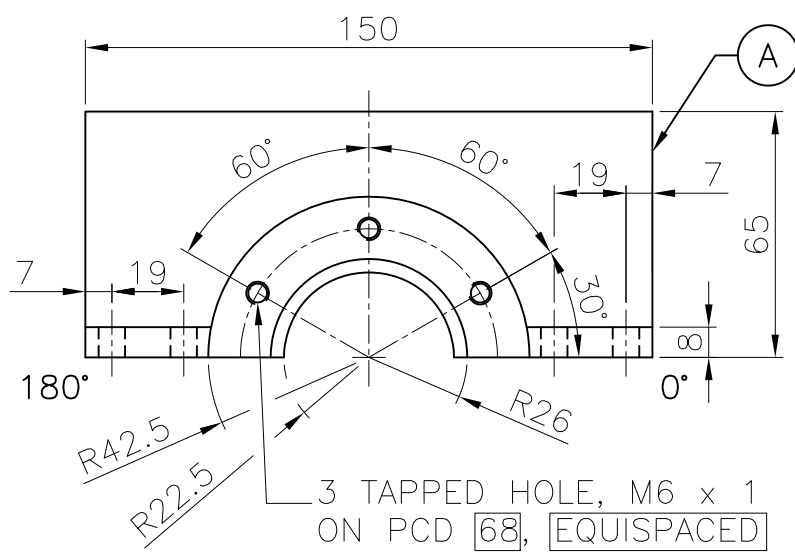
THIS DESIGN AND DRAWING IS THE PROPERTY OF THE BHABHA ATOMIC RESEARCH CENTRE AND MUST BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER.



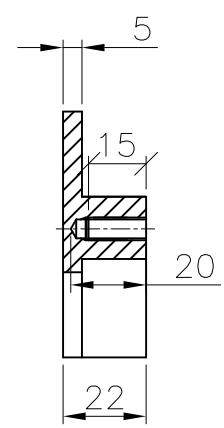
ELEVATION



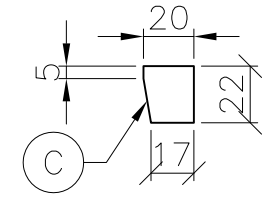
SECTIONAL SIDE VIEW



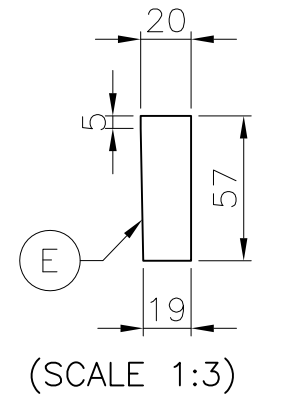
ELEVATION (SCALE 1:2)



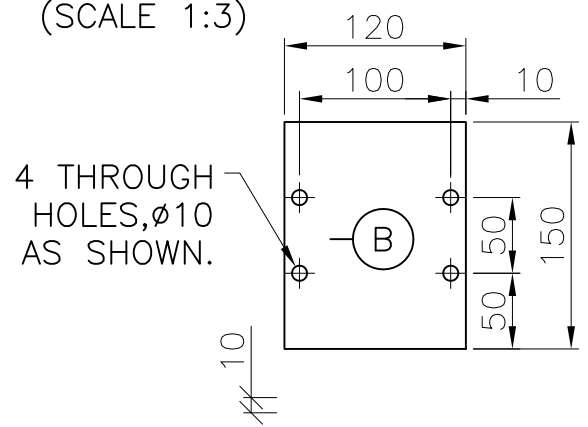
SECTIONAL VIEW (SCALE 1:2)



(SCALE 1:3)



(SCALE 1:3)



4 THROUGH HOLES,  $\phi 10$  AS SHOWN.

(SCALE 1:5)

BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
A	SIDE BRACKET 150 x 65 x 22 THK.	SS 304	4+4		4L+4R
B	TOP PLATE 150 x 120 x 10 THK.	SS 304	4		
C	MIDDLE GUSSET 22 x 20 X 5 THK.	SS 304	4		
D	COVER PLATE 70 x 65 x 5 THK.	SS 304	8		
E	SIDE GUSSET 57 x 20 X 5 THK.	SS 304	8		

NOTES:

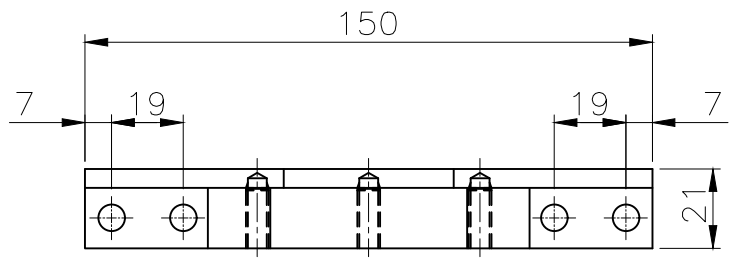
- PART No. 52 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - IS 2062 (GR-B)
- QTY. = 4 Nos.
- B.O.M. SHOWN FOR 4 QTY.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING						
TOLERANCES ON LINEAR DIMENSIONS						
SPECIFIED DIMENSIONS		TOLERANCE				
XX	± 0.4					
XX.X	± 0.4					
XX.XX	± 0.25					
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101						
RADI AND CHAMFERS		0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS	
TOLERANCE		+/-0.2	+/-0.5	+/-1.0	REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.	

GOVERNMENT OF INDIA			
BHABHA ATOMIC RESEARCH CENTRE			
REFUELLING TECHNOLOGY DIVISION			
TITLE			
ROD CUTTING GADGET			
WHEEL UPPER CASING			
DES'D HC	DRN. TAFAZZUL	DATE 20.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 20.10.21	SCALE: 1:2
SECTION RTD			PROJECTION:
DRG.NO. A3/RTD/RCG/DD/129			SHEET -
			REV. NO. R0
FILE NAME			

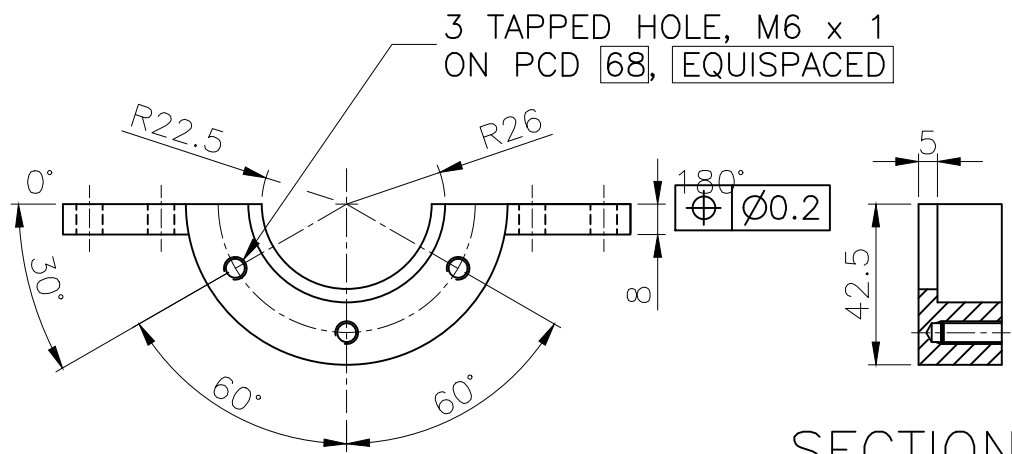
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PLAN

NOTES:

- PART No. **53** OF DWG. No. **A0/RTD/RCG/GA/100**
- MATERIAL - IS 2062 (GR-B)
- QTY. = 8 Nos.



ELEVATION

SECTIONAL VIEW

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE **ROD CUTTING GADGET**  
**WHEEL LOWER CASING**

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 1566, ISO : 111101	RADI AND CHAMFERS	0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
	TOLERANCE	+/-0.2	+/-0.5	+/-1.0	

DES'D MD DRN. TAFAZZUL DATE 20.10.21 APP'D MD

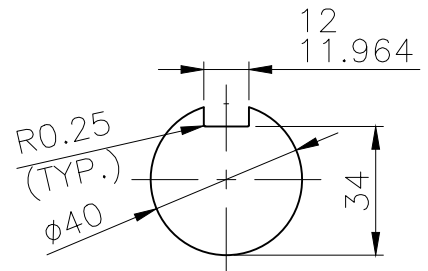
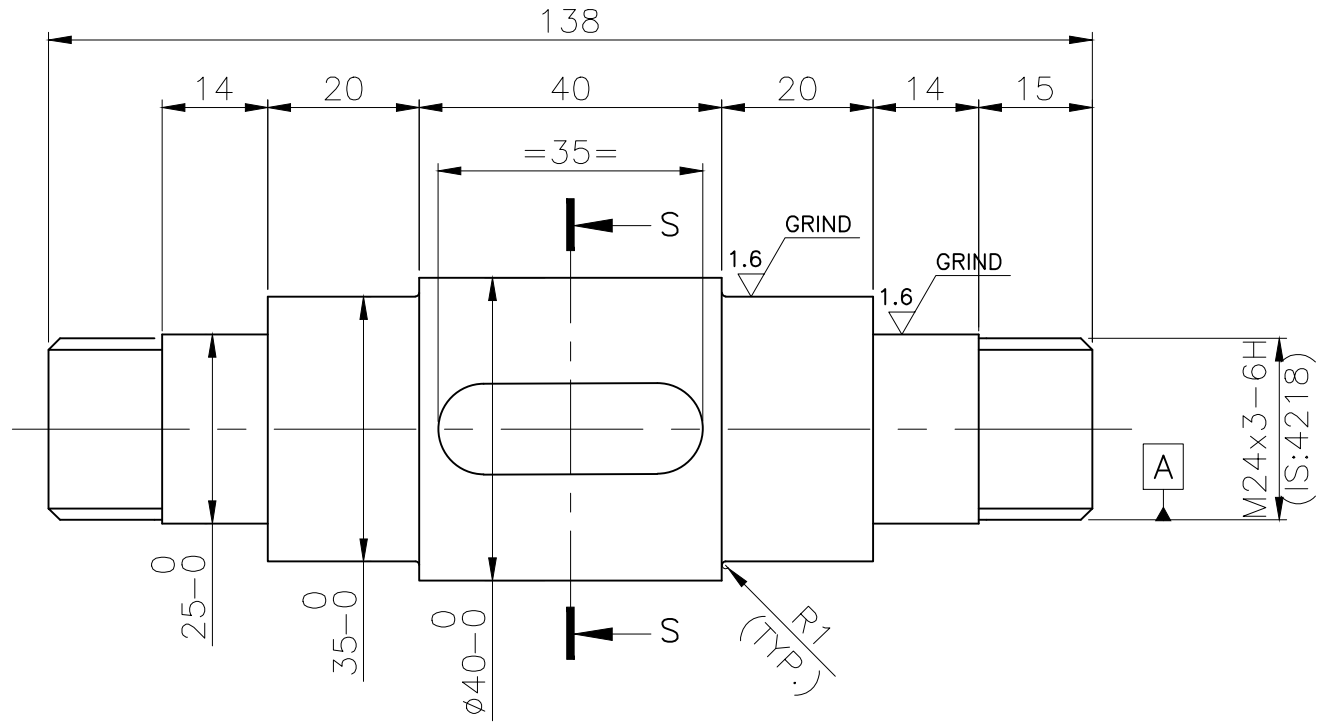
DESN CHK'D MD DRG.CHK'D HC DATE 20.10.21 SCALE: 1:2

SECTION RTD PROJECTION:

DRG.NO. **A4/RTD/RCG/DD/130** SHEET - REV. NO. -

A  
B  
C  
D  
E  
F  
G  
H

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SECTION S1-S1

**NOTES:**

1. PART No. 54 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - EN-24
3. QTY. = 4 Nos.
4. SURFACE FINISH  $\sqrt{1.6}$  ALL OVER UNLESS OTHERWISE SPECIFIED.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 896, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET**  
**SHAFT FOR DRIVEN CARRIAGE WHEEL ASSEMBLY**

DES'D HC	DRN. TAFAZZUL	DATE 20.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 20.10.21	SCALE: 1:1
SECTION RTD			PROJECTION:
DRG.NO. A4/RTD/RCG/DD/131			SHEET: -
			REV. NO.: -

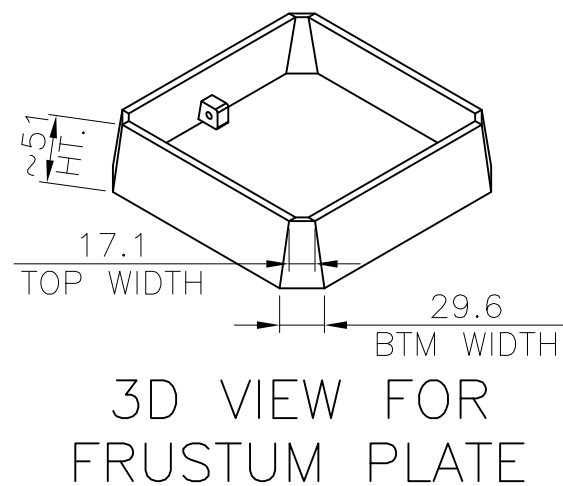
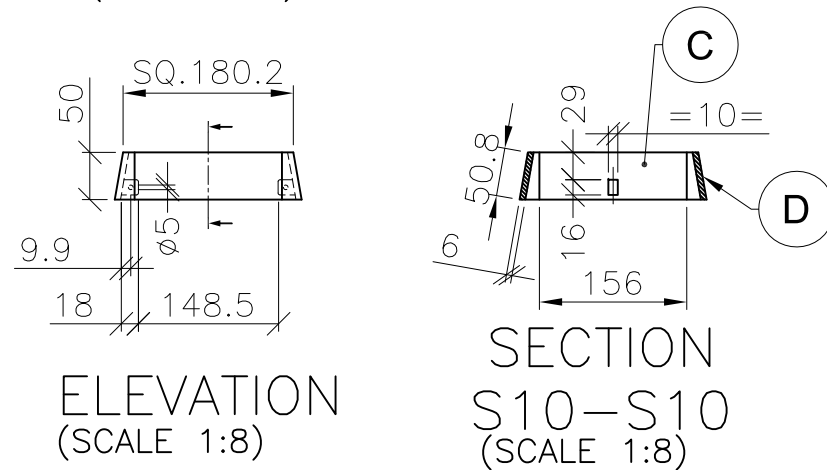
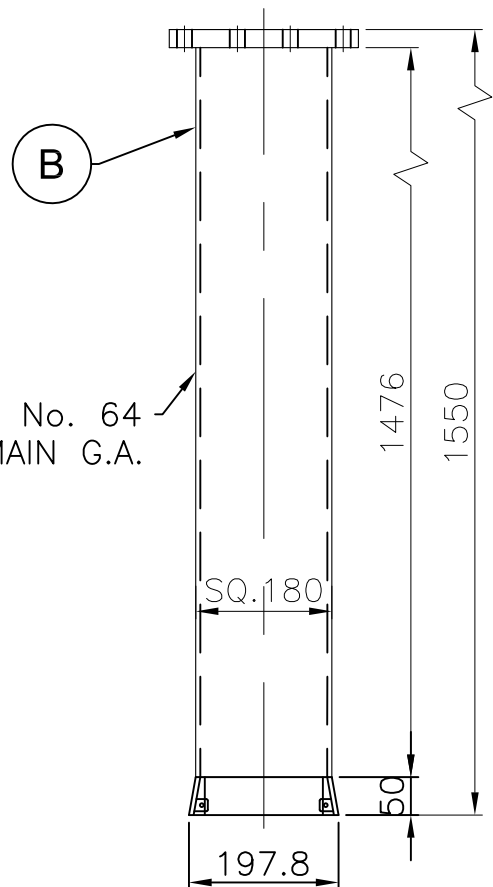
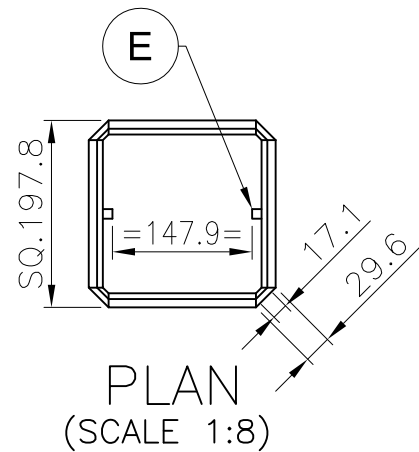
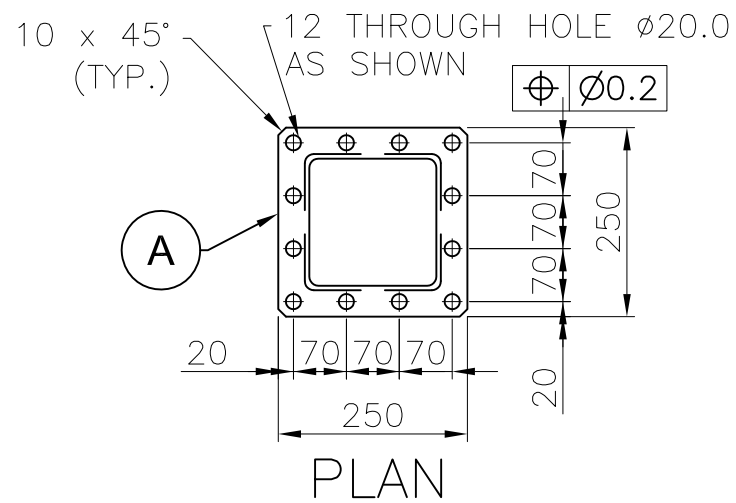








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BILL OF MATERIAL

PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
A	TOP FLANGE SQ. 250 x 24 THK.	SS 304	1		
B	FIXED REC. TUBE SQ. 180 x 6 THK. x 1476 LG.	SS 304	1		
C	CONE PLATE UPPER 156 x 51 x 6 THK.	SS 304	4		
D	FRUSTUM PLATE UPPER & MIDDLE - 17.1 TOP WIDTH @ 29.6 BTM WIDTH x 51 HT x 6 THK.	SS 304	4		
E	ROPE PASSING PLATE UPPER 18 x 16 x 8 THK.	SS 304	2		

NOTES:

- PART No. 64 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- TOTAL QTY. = 1 No.
- BOM SHOWN FOR 1 No. OF ASSEMBLY.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
ROD CUTTING GADGET  
MAST TUBE-1

DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:10
SECTION RTD	PROJECTION:		

DRG.NO. A3/RTD/RCG/DD/135

SHEET - REV. NO. R0

FILE NAME

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

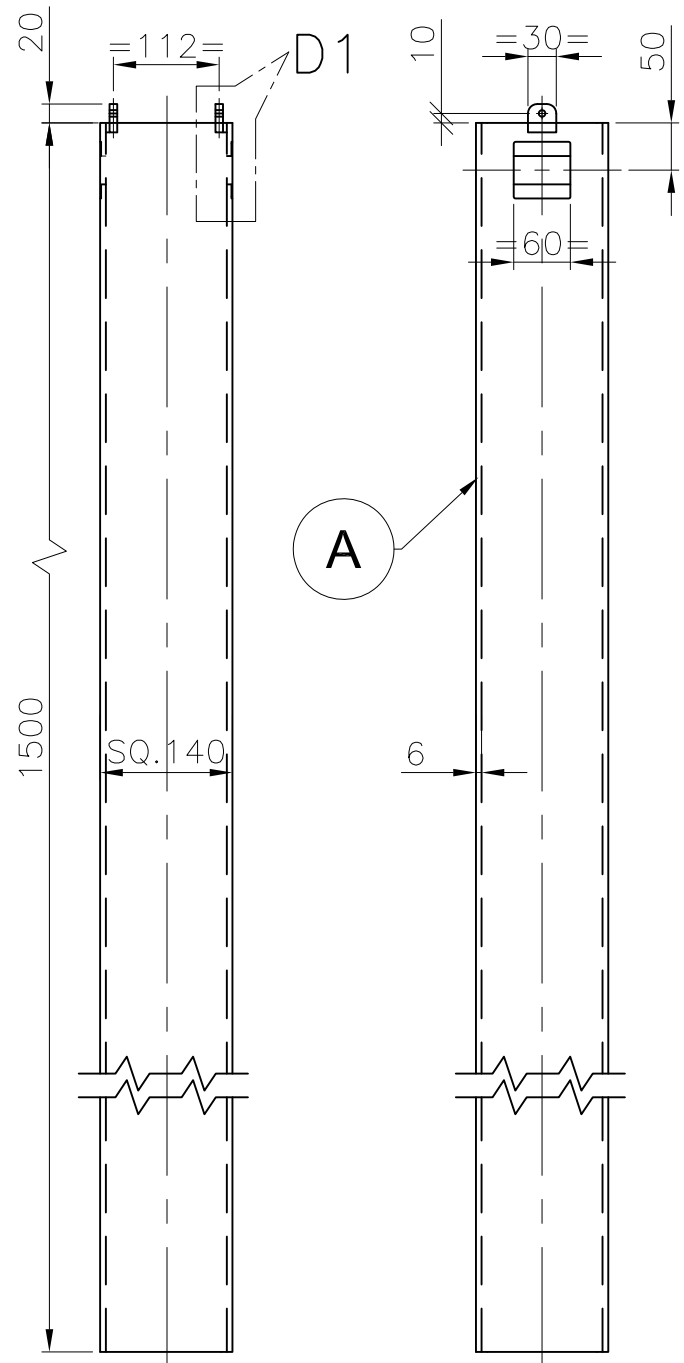
SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING  
STANDARD IS : 696, ISO : R1101

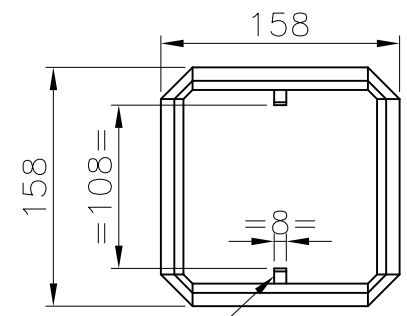
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

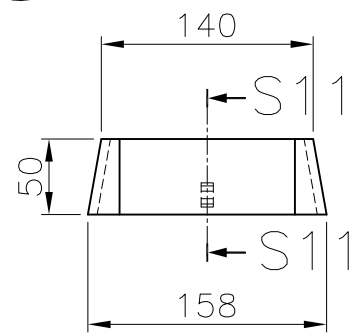
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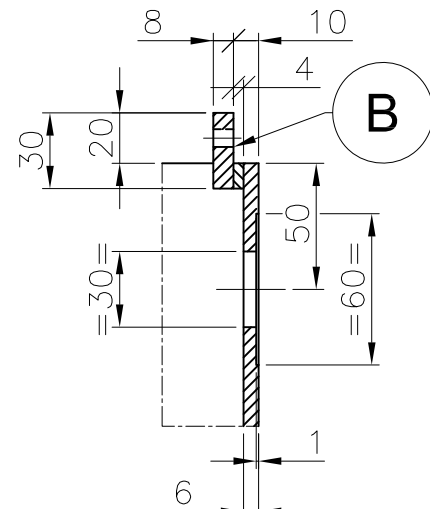
ELEVATION SIDE VIEW  
MID UPPER TUBE DETAIL



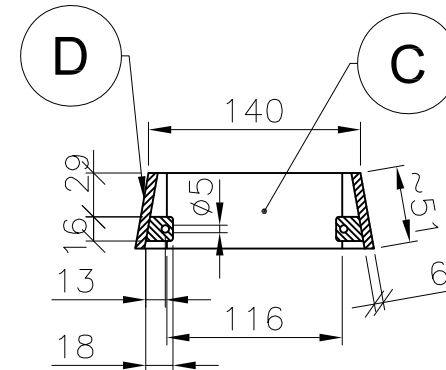
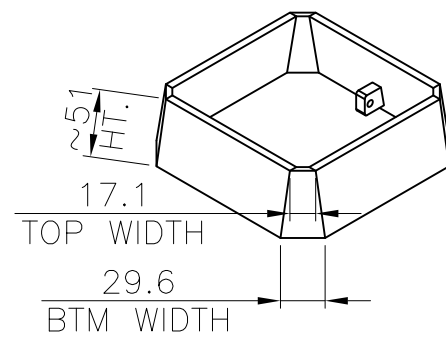
PLAN



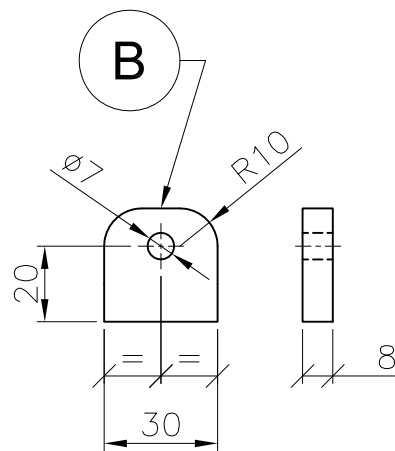
ELEVATION  
(SCALE 1:5)



DETAIL - D1  
(SCALE 1:3)



SECTION  
S11-S11



(SCALE 1:2)

BILL OF MATERIAL

PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
A	REC. TUBE SQ. 140 x 6 THK. x 1500 LG.	SS 304	1		
B	TOP HOOK 30 x 30 x 8 THK.	SS 304	2		
C	CONE PLATE UPPER 116 x 51 x 6 THK.	SS 304	4		
D	FRUSTUM PLATE UPPER & MIDDLE - 17.1 TOP WIDTH @ 29.6 BTM WIDTH x 51 HT x 6 THK.	SS 304	4		
E	ROPE PASSING PLATE UPPER 18 x 16 x 8 THK.	SS 304	2		

NOTES:

- PART No. 65 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- TOTAL QTY. = 1 No.
- BOM SHOWN FOR 1 No. OF ASSEMBLY.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE

ROD CUTTING GADGET  
MAST TUBE-2

DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:10
SECTION RTD			PROJECTION:

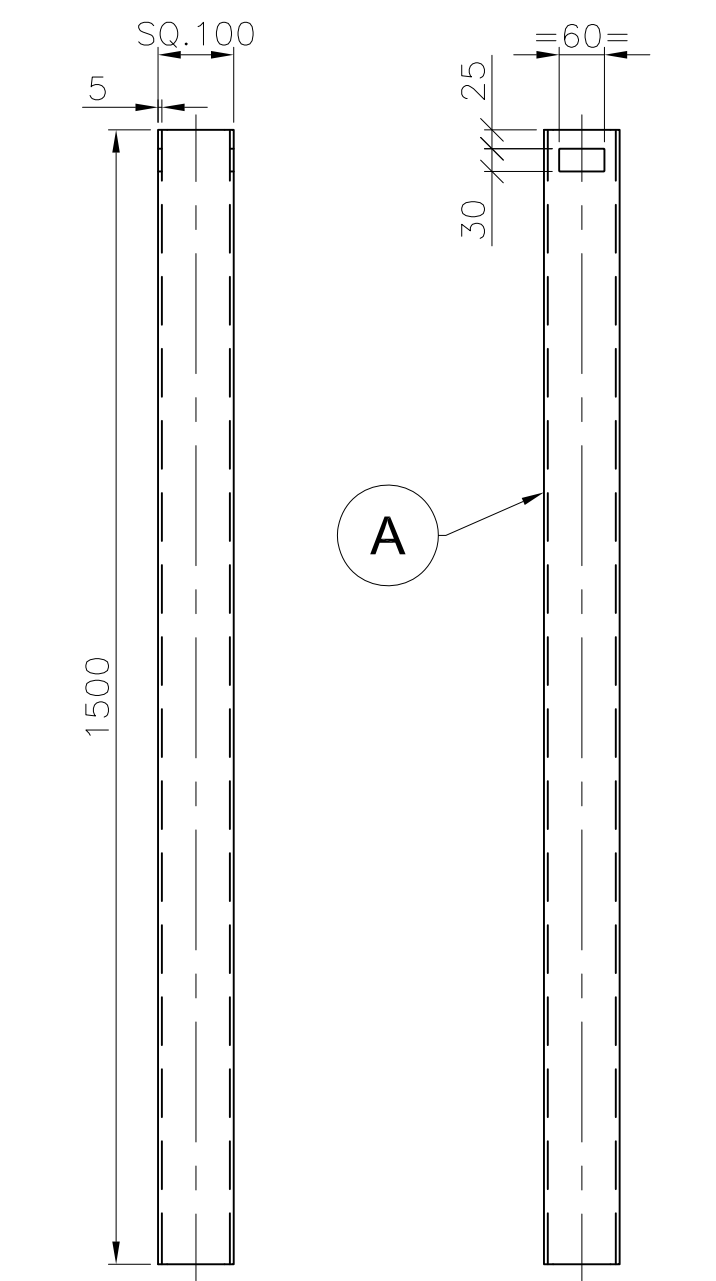
DRG.NO. A3/RTD/RCG/DD/136

SHEET	REV. NO.
-	R0

FILE NAME

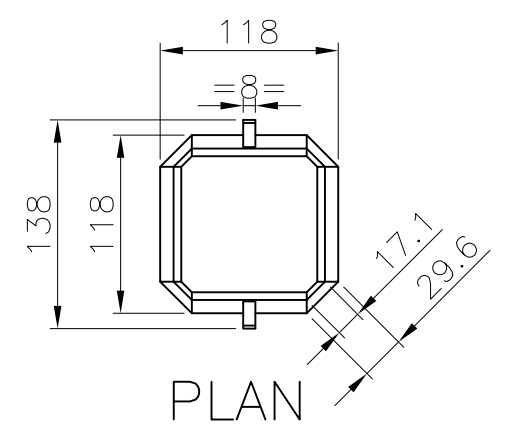
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6 5 4 3 2 1

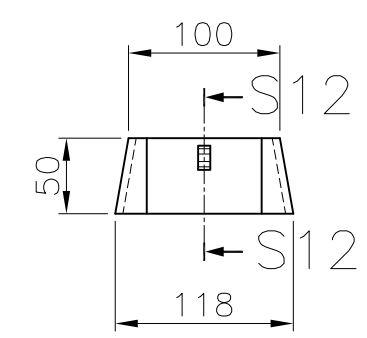


ELEVATION  
MID LOWER TUBE DETAIL

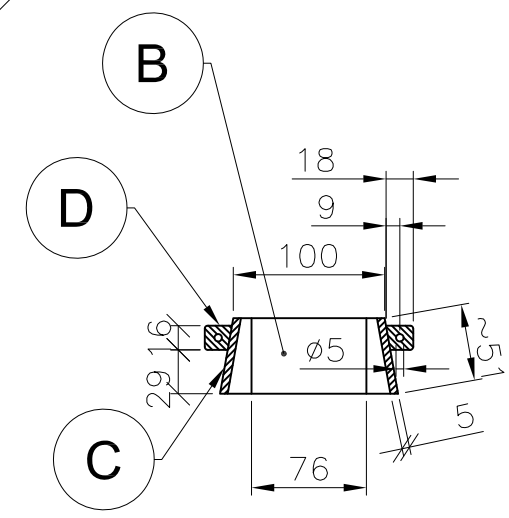
SIDE VIEW



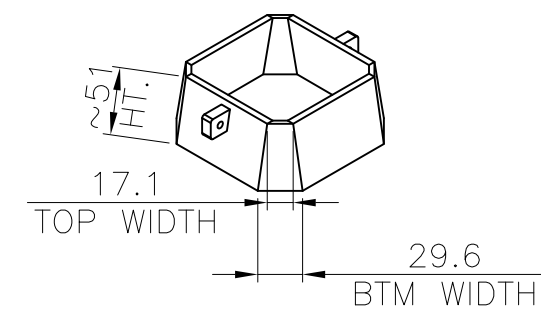
PLAN



ELEVATION



SECTION S12-S12



3D VIEW FOR FRUSTUM PLATE

BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
A	FIXED REC. TUBE SQ. 100 x 5 THK. x 1500 LG.	SS 304	1		
B	CONE PLATE UPPER 76 x 51 x 5 THK.	SS 304	4		
C	FRUSTUM PLATE UPPER & MIDDLE - 17.1 TOP WIDTH @ 29.6 BTM WIDTH x 51 HT x 5 THK.	SS 304	4		
D	ROPE PASSING PLATE UPPER 18 x 16 x 8 THK.	SS 304	2		

- NOTES:
- PART No. 66 OF DWG. No. A0/RTD/RCG/GA/100
  - MATERIAL - SS 304
  - TOTAL QTY. = 1 No.
  - BOM SHOWN FOR 1 No. OF ASSEMBLY.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

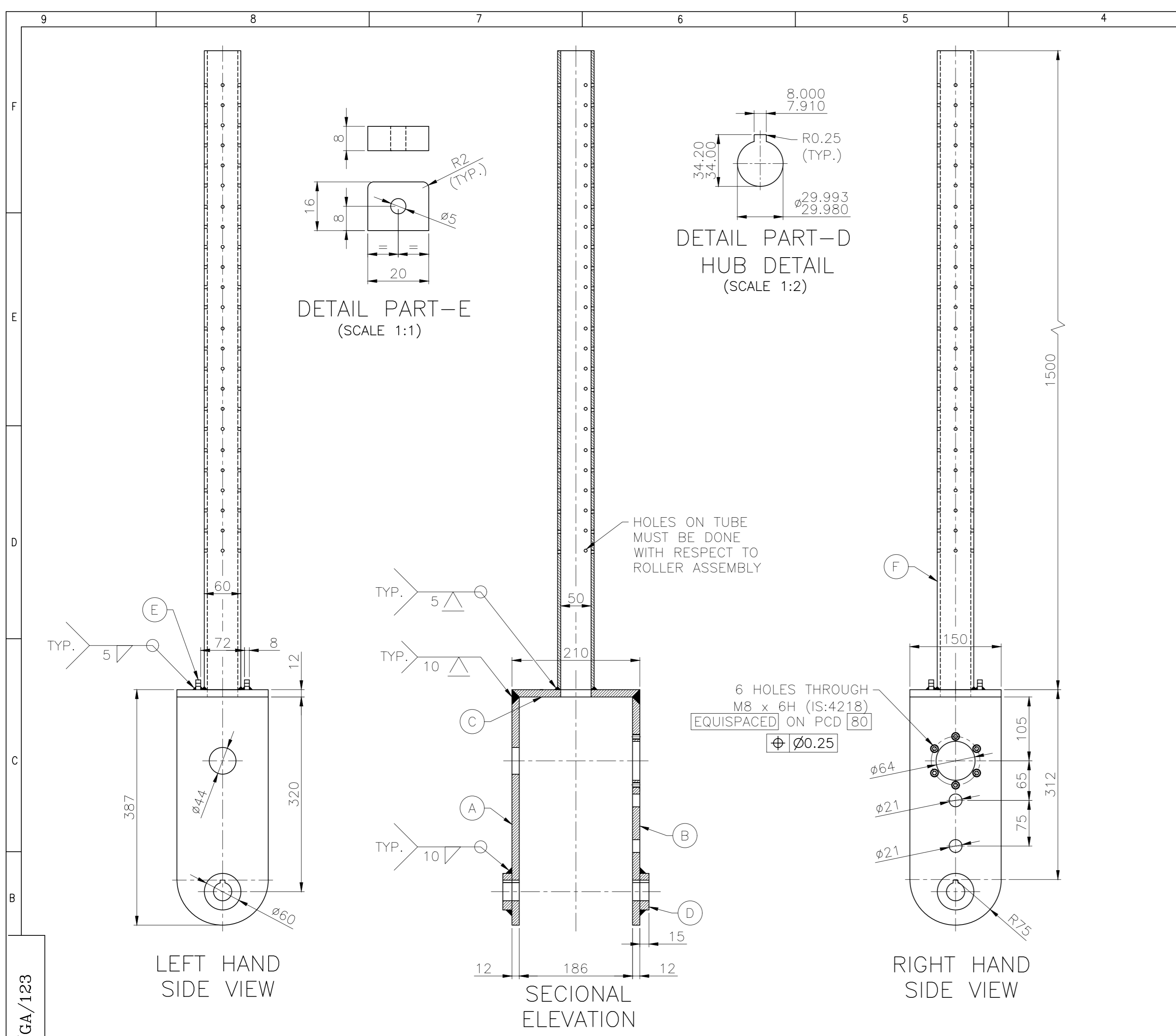
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
ROD CUTTING GADGET  
MAST TUBE-3

DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:10
SECTION RTD	PROJECTION:		
DRG.NO. A3/RTD/RCG/DD/137			SHEET -
			REV. NO. R0

FILE NAME



BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
A	LEFT PLATE 387 x 150 x 12 THK.	SS 304	1		
B	RIGHT PLATE 387 x 150 x 12 THK.	SS 304	1		
C	TOP PLATE 210 x 150 x 12 THK.	SS 304	1		
D	HUB O/D 60 x I/D 30 x 15 THK.	SS 304	2		
E	HOOK 20 x 16 x 8 THK.	SS 304	2		
F	SQ. TUBE 60 x 60 x 5 THK.	SS 304	1		

- NOTES:
- PART No. 68 OF DWG. No. A0/RTD/RCG/GA/100
  - MATERIAL - SS 304
  - QTY. = 1 No.
  - ALL WELD SHALL BE DONE AS PER IS:813
  - REMOVED ALL SHARP CORNERS.

DRG.NO. A2/RTD/A/GA/123

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SPECIAL CLOSURE PLUG ASSEMBLY	A1-3018-M-686								
REFERENCE DRAWINGS	DRAWING NOS.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D			
				REVISIONS					

TOLERANCES ON LINEAR DIMENSIONS			
SPECIFIED DIMENSIONS	TOLERANCE		
XX	± 0.4		
XX.X	± 0.4		
XX.XX	± 0.25		

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101			
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER. REMOVE ALL BURRS. REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
MAST TUBE-4**

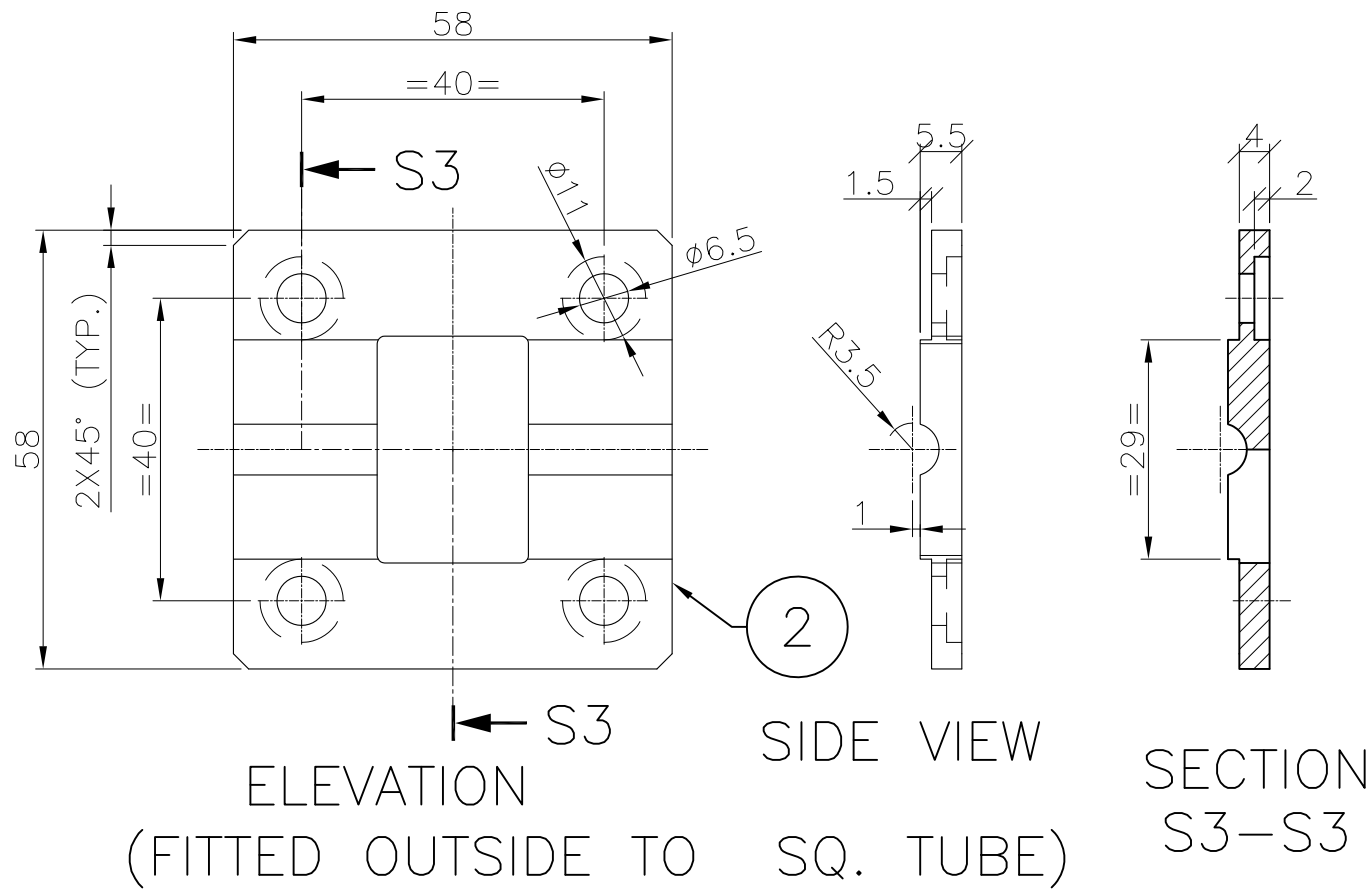
DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:5
SECTION RTD	PROJECTION:		

DRG.NO. A2/RTD/RCG/DD/138

SHEET	REV. NO.
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ELEVATION (FITTED OUTSIDE TO SQ. TUBE)      SIDE VIEW      SECTION S3-S3

**NOTES:**

1. PART No. 00 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 4 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

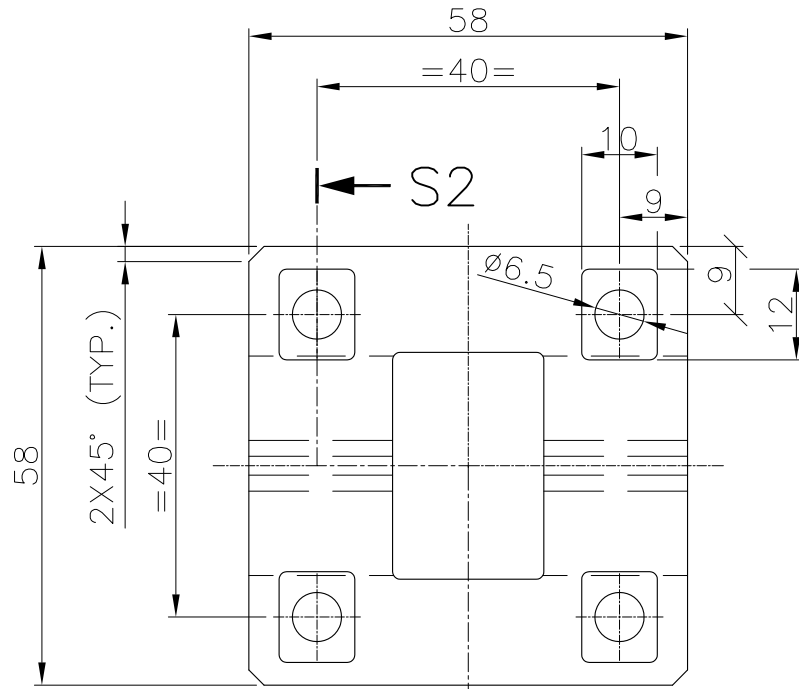
SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

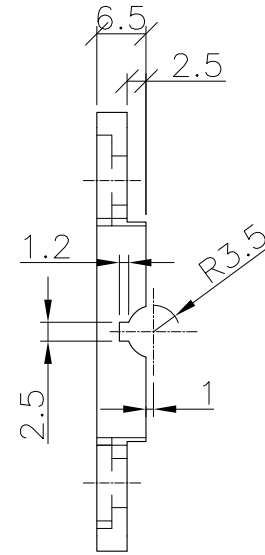
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
<b>TITLE</b> ROD CUTTING GADGET SHAFT RETAINER PLATE-1			
DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:1
SECTION RTD			PROJECTION:
<b>DRG.NO. A4/RTD/RCG/DD/140</b>			SHEET -
			REV. NO. RO

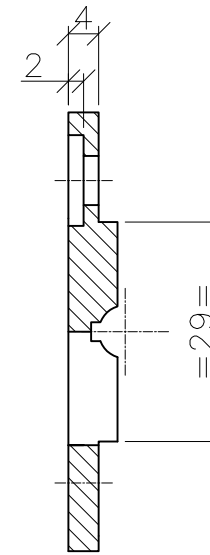
THIS DESIGN AND DRAWING IS THE PROPERTY OF THE BHABHA ATOMIC RESEARCH CENTRE AND MUST BE RETURNED WITH QUOTATION OR UPON DELIVERY OF MATERIAL AND EQUIPMENT AND MUST NOT BE USED EXCEPT BY PERMISSION OF THE OWNER.



← S2  
ELEVATION.  
(FITTED INSIDE TO SQ. TUBE)



SIDE VIEW



SECTION  
S2-S2

**NOTES:**

1. PART No. 00 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 4 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 896, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET**  
**SHAFT RETAINER PLATE-2**

DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
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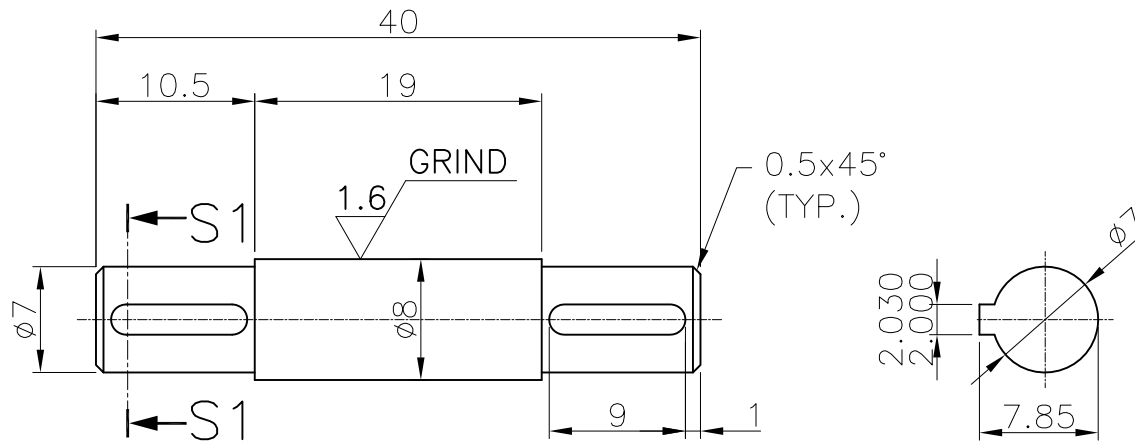
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:1
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SECTION RTD	PROJECTION:
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DRG.NO. A4/RTD/RCG/DD/141

SHEET	REV. NO.
-	RO

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ELEVATION

SECTION  
S1-S1

NOTES:

1. PART No. 00 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL: ASTM-A-564 GR. 630
3. QTY. = 4 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
TITLE <b>ROD CUTTING GADGET                  MAST PULLEY SHAFT</b>			
DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 2:1
SECTION RTD			PROJECTION:

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	TOLERANCE	TOLERANCE	TOLERANCE
XX	± 0.4	0.5-3	± 0.2	3-6	± 0.5
XX.X	± 0.4	6-30	± 0.5		± 1.0
XX.XX	± 0.25				

TOLERANCES ON ANGULAR DIMENSIONS ± 0' - 30' REF. DRAWING STANDARD IS : 896, ISO : R1101

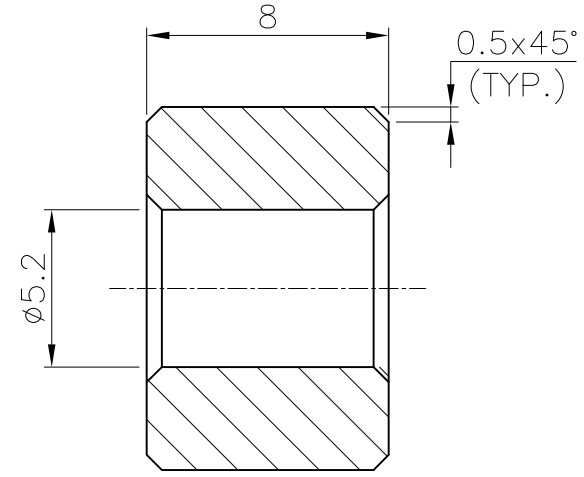
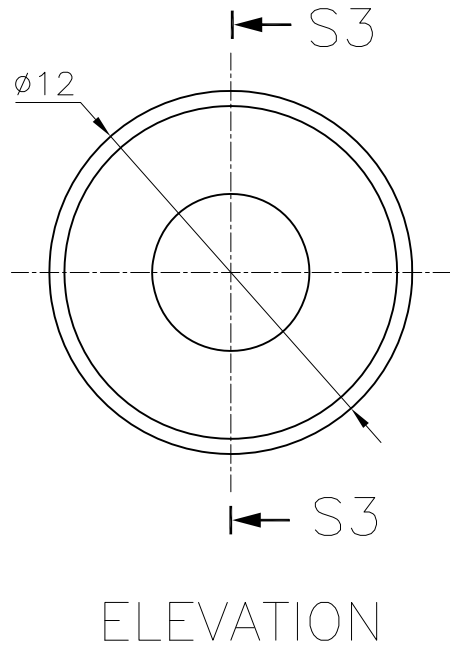
SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

DRG.NO. A4/RTD/RCG/DD/142		SHEET	REV. NO.
		-	RO





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SECTION  
S3-S3

NOTES:

1. PART No. 00 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 410
3. QTY. = 480 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
REFUELLING TECHNOLOGY DIVISION

**TITLE**  
**ROD CUTTING GADGET  
ROLLER**

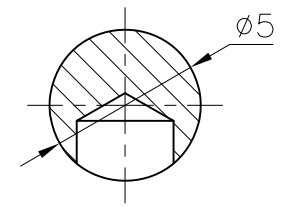
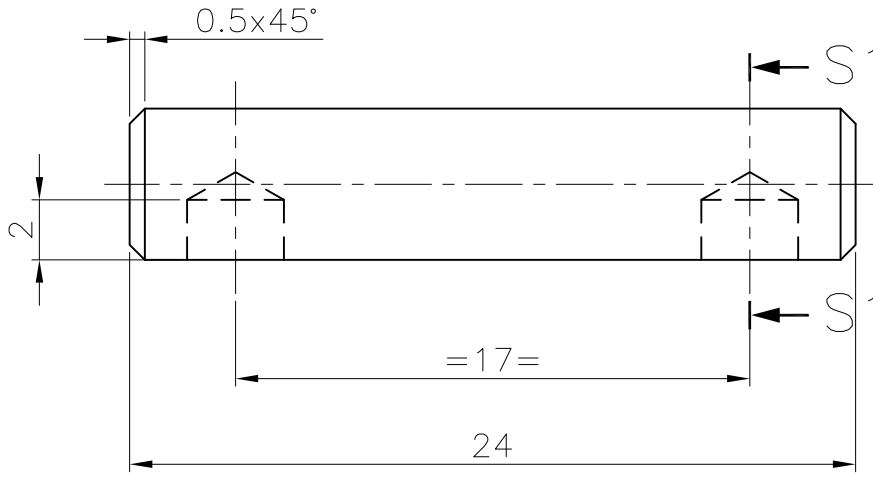
UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
XX XX.X XX.XX	± 0.4 ± 0.4 ± 0.25	TOLERANCE	+/-0.2	+/-0.5	+/-1.0	

TOLERANCES ON ANGULAR DIMENSIONS ± 0' - 30' REF. DRAWING STANDARD IS : 896, ISO : R1101

DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: X
SECTION RTD			PROJECTION:
DRG.NO. A4/RTD/RCG/DD/144			SHEET -
			REV. NO. RO

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SECTIONAL  
S1-S1

ELEVATION

**NOTES:**

1. PART No. 00 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL: ASTM-A-564 GR. 630
3. QTY. = 480 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
ROLLER SHAFT**

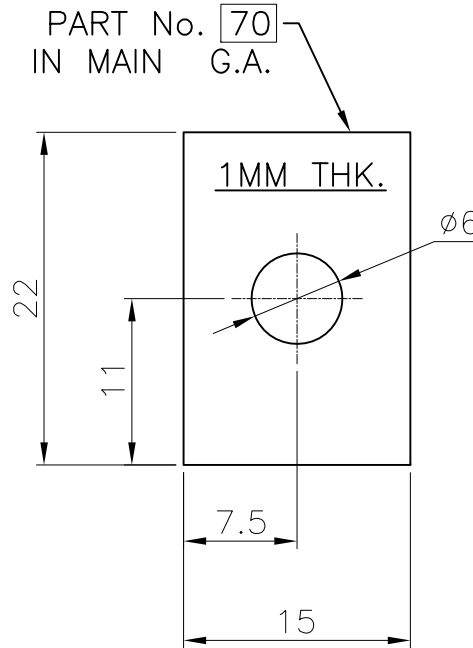
UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	TOLERANCE	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
XX	± 0.4	0.5-3	± 0.2	
XX.X	± 0.4	3-6	± 0.5	
XX.XX	± 0.25	6-30	± 1.0	

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 686, ISO : R1101

DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESIGN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: 1:1
SECTION RTD			PROJECTION:
DRG.NO. A4/RTD/RCG/DD/145			SHEET -
			REV. NO. RO

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**NOTES:**

1. PART No. 00 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. QTY. = 96 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

**TITLE**  
 ROD CUTTING GADGET  
 SPACER FOR MAST ROLLER ASSY.

UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

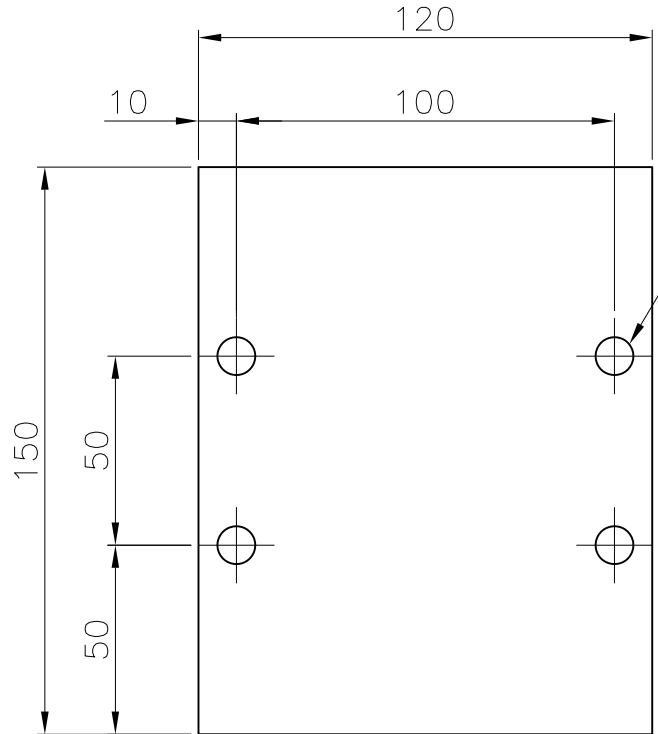
SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	TOLERANCE	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
XX XX.X XX.XX	± 0.4 ± 0.4 ± 0.25	0.5-3 3-6 6-30	+/-0.2 +/-0.5 +/-1.0	

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 686, ISO : R1101

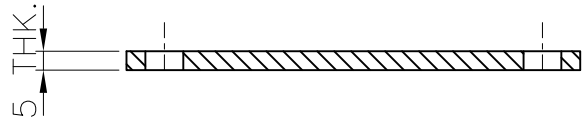
DES'D HC	DRN. TAFAZZUL	DATE 22.11.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 22.11.21	SCALE: X
SECTION RTD			PROJECTION:
DRG.NO. A4/RTD/RCG/DD/146			SHEET -
			REV. NO. RO

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1 2 3 4 5 6 7 8 9 10 11



4 THROUGH HOLES,  $\phi 10$  AS SHOWN.



**NOTES:**

1. PART No. 85 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - IS 2062 (GR-B)
3. QTY. = 4 Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA  
**BHABHA ATOMIC RESEARCH CENTRE**  
 REFUELLING TECHNOLOGY DIVISION

TITLE  
**ROD CUTTING GADGET  
 SPACER PLATE**

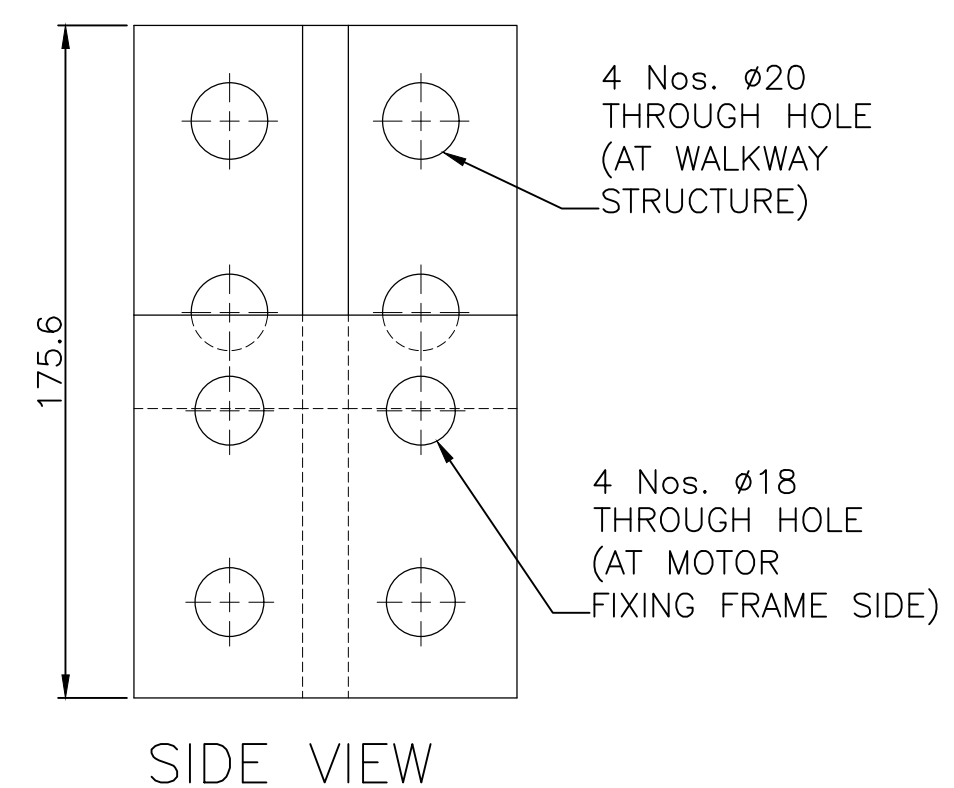
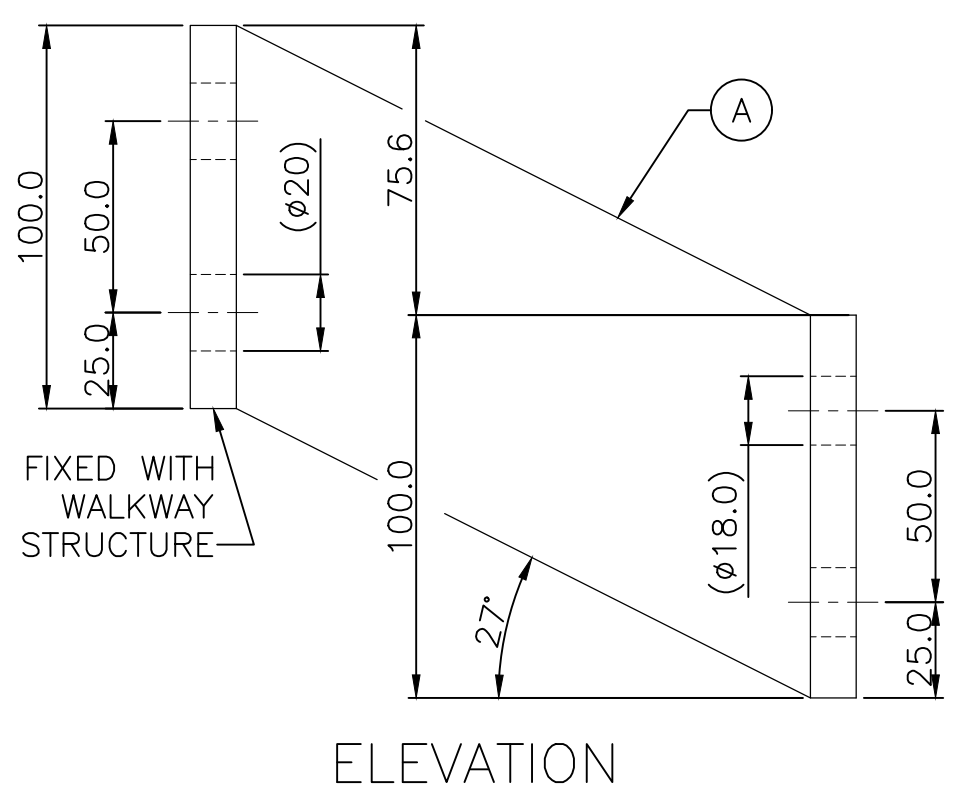
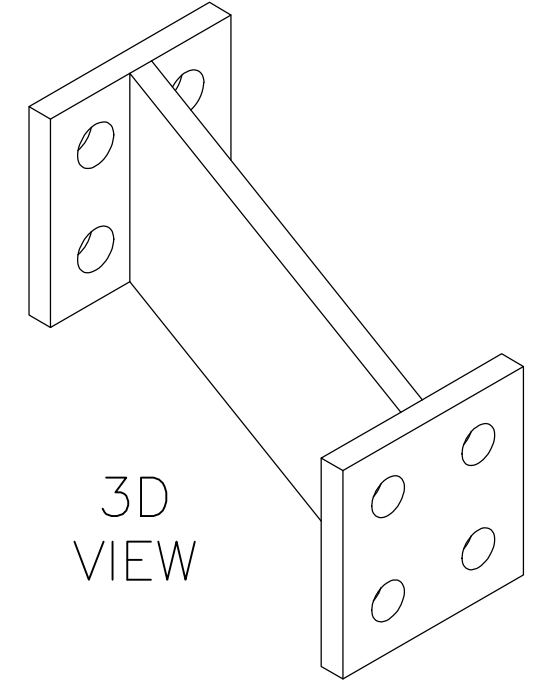
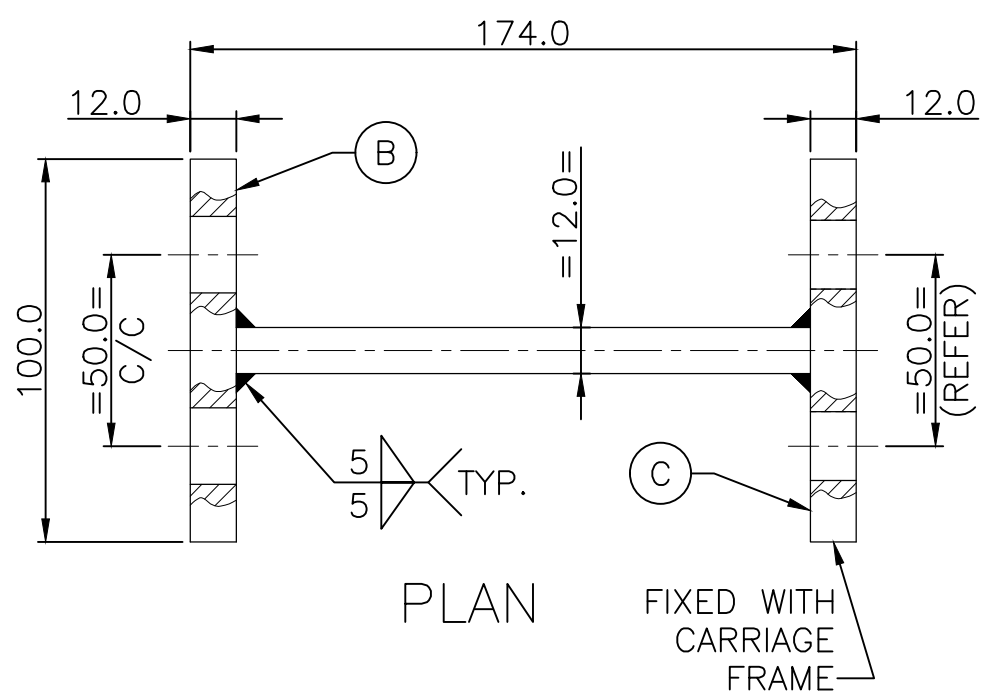
UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
 TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE	RADI AND CHAMFERS	TOLERANCE	TOLERANCE	TOLERANCE
XX	$\pm 0.4$	0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
XX.X	$\pm 0.4$				
XX.XX	$\pm 0.25$				
TOLERANCES ON ANGULAR DIMENSIONS $\pm 0^\circ - 30'$ REF. DRAWING STANDARD IS : 896, ISO : R1101					

DES'D HC	DRN. TAFAZZUL	DATE 20.10.21	APP'D MD
DES'N CHK'D MD	DRG.CHK'D HC	DATE 20.10.21	SCALE: 1:2
SECTION RTD	PROJECTION:		
DRG.NO. A4/RTD/RCG/DD/147			SHEET -
			REV. NO. -

A  
B  
C  
D  
E  
F  
G  
H

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BILL OF MATERIAL					
PART No.	DESCRIPTION	MATERIAL	QTY.	REF. DWG. No.	REMARK
A	PLATE - 1 175.6 x 150 x 12 THK.	IS:2062	1	-	
B	PLATE - 2 100 x 100 x 12 THK.	IS:2062	1	-	
C	PLATE - 3 100 x 100 x 12 THK.	IS:2062	1	-	

- NOTES:**
- PART No. **86** OF DWG. No. **A0/RTD/RCG/GA/100**
  - MATERIAL - IS:2062 (GR. B)
  - QTY. = 2 Nos.

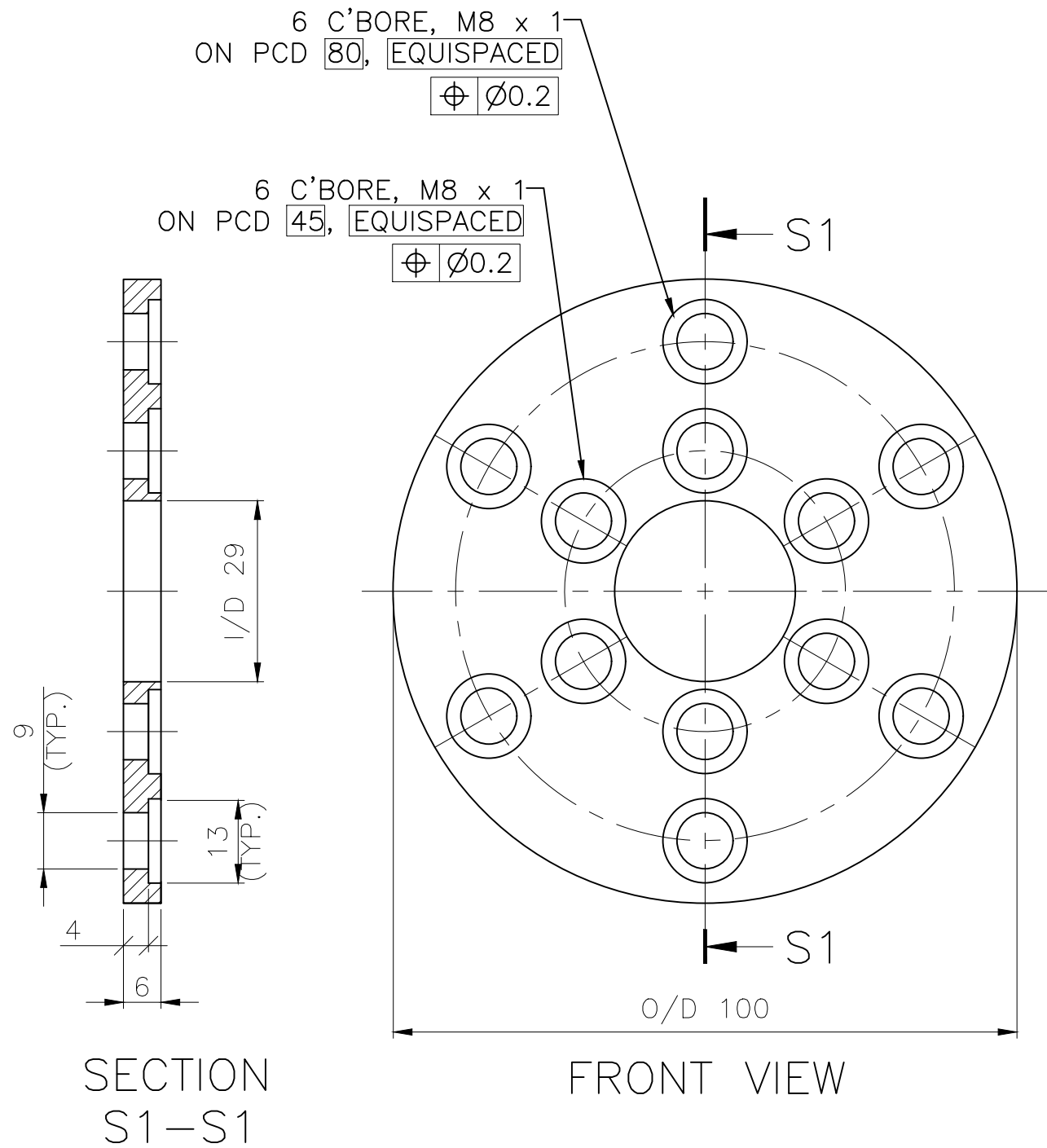
REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
<b>TITLE</b> ROD CUTTING GADGET COUPLER BRACKET			
DES'D HC	DRN. TAFAZZUL	DATE 01.10.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 01.10.21	SCALE: 1:2
SECTION RTD			PROJECTION:
DRG.NO. A3/RTD/RCG/DD/148			SHEET -
			REV. NO. -

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

TOLERANCES ON LINEAR DIMENSIONS		RADI AND CHAMFERS			SURFACE FINISH TO BE 3.2 MICRONS OR BETTER REMOVE ALL BURRS REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.
SPECIFIED DIMENSIONS	TOLERANCE	0.5-3	3-6	6-30	
XX	± 0.4				
XX.X	± 0.4				
XX.XX	± 0.25				
TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101		TOLERANCE	+/-0.2	+/-0.5	+/-1.0

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**NOTES:**

1. PART No. 88 OF DWG. No. A0/RTD/RCG/GA/100
2. MATERIAL - SS 304
3. TOTAL QTY. = 1 No.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D
REVISIONS						

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
<b>TITLE</b> ROD CUTTING GADGET MOTOR ATTACHMENT DISC			
DES'D HC	DRN. TAFAZZUL	DATE 24.21.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 24.21.21	SCALE: 2:1
SECTION RTD			PROJECTION:
DRG.NO. A3/RTD/RCG/DD/149			SHEET -
			REV. NO. -

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

TOLERANCES ON LINEAR DIMENSIONS

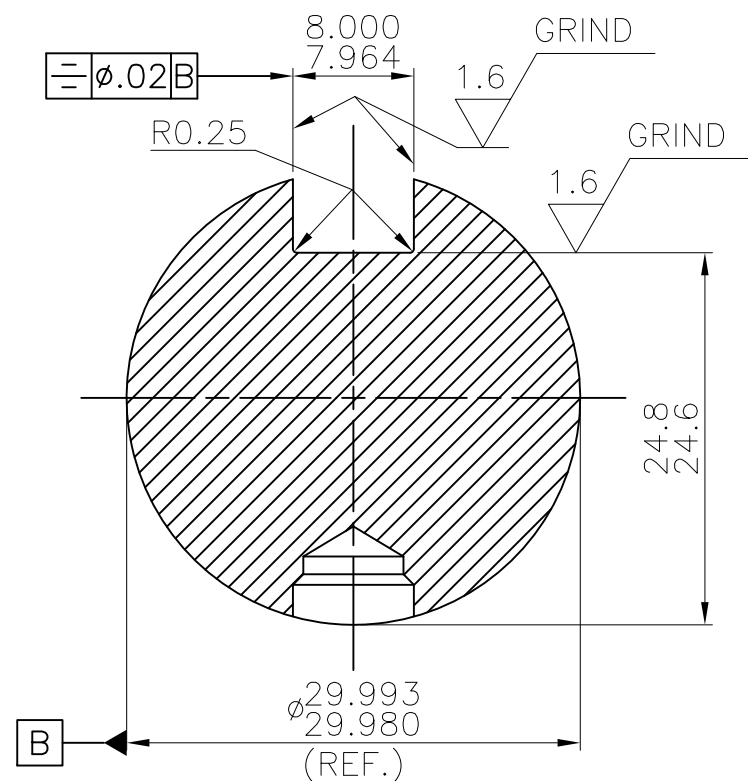
SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

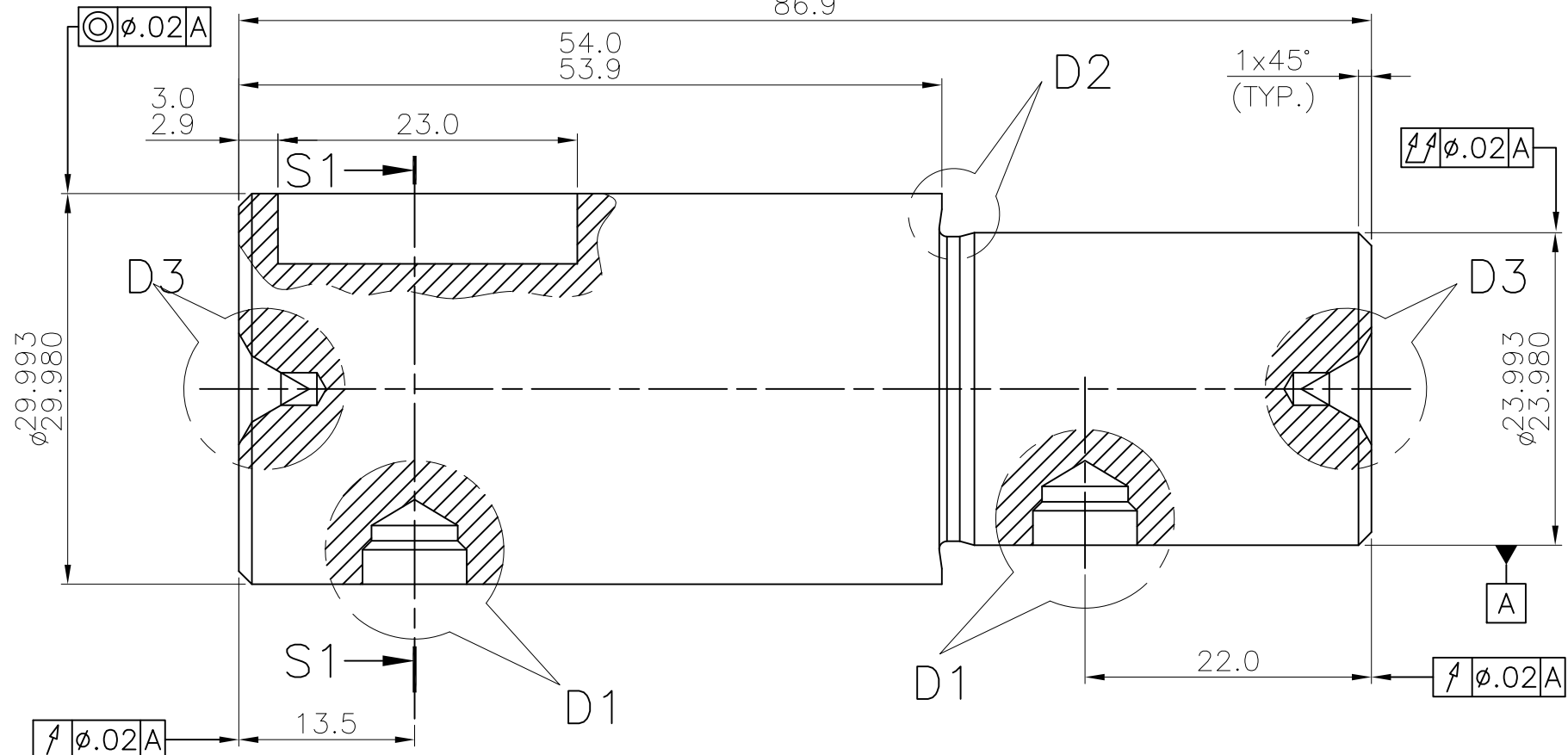
RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
 REMOVE ALL BURRS  
 REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

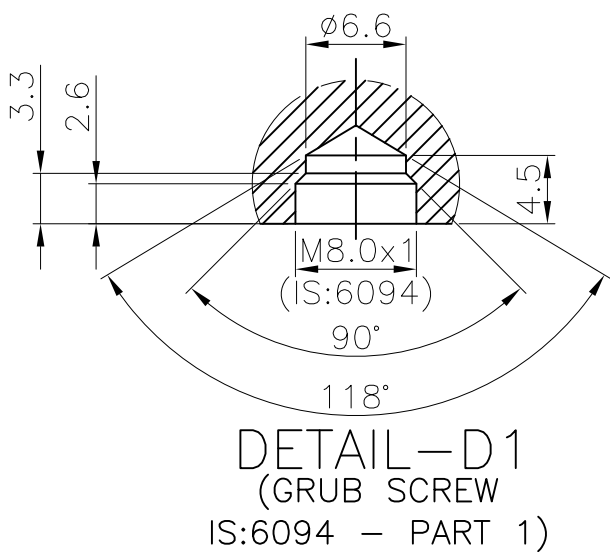
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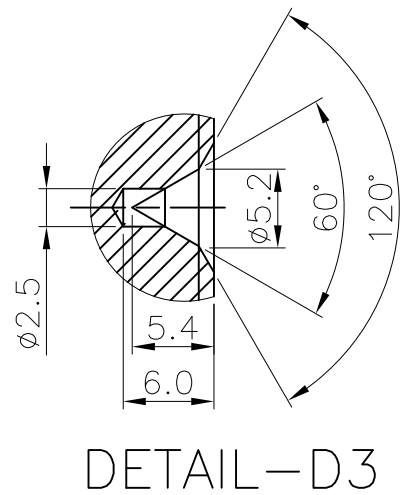
SECTION S1-S1  
(KEY & KEYWAYS DETAIL - IS:2048)  
(GRUB SCREW IS:6094 - PART 1)



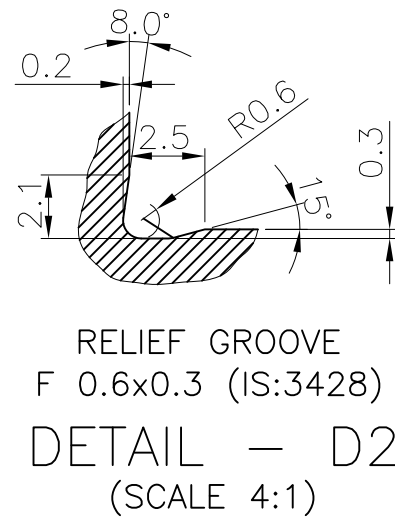
ELEVATION



DETAIL-D1  
(GRUB SCREW  
IS:6094 - PART 1)



DETAIL-D3



RELIEF GROOVE  
F 0.6x0.3 (IS:3428)  
DETAIL - D2  
(SCALE 4:1)

NOTES:

- PART No. 89 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 1 No.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING  
TOLERANCES ON LINEAR DIMENSIONS

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

RADII AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
ROD CUTTING GADGET  
CUTTER SWIVEL SHAFT-A

DES'D HC	DRN. TAFAZZUL	DATE 28.12.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 28.12.21	SCALE: 2:1
SECTION RTD			PROJECTION:

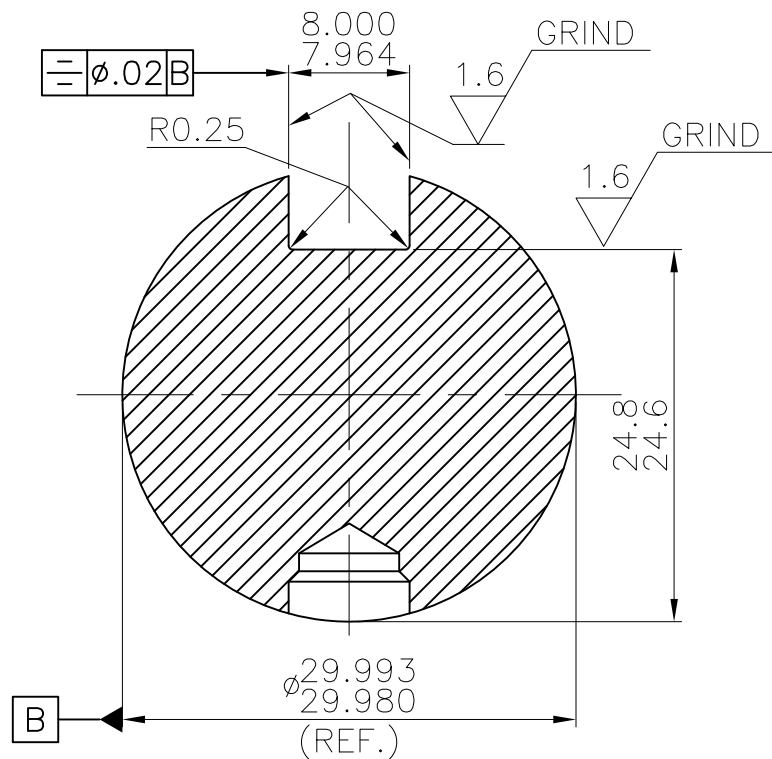
DRG.NO. A3/RTD/RCG/DD/150

SHEET	REV. NO.
-	-

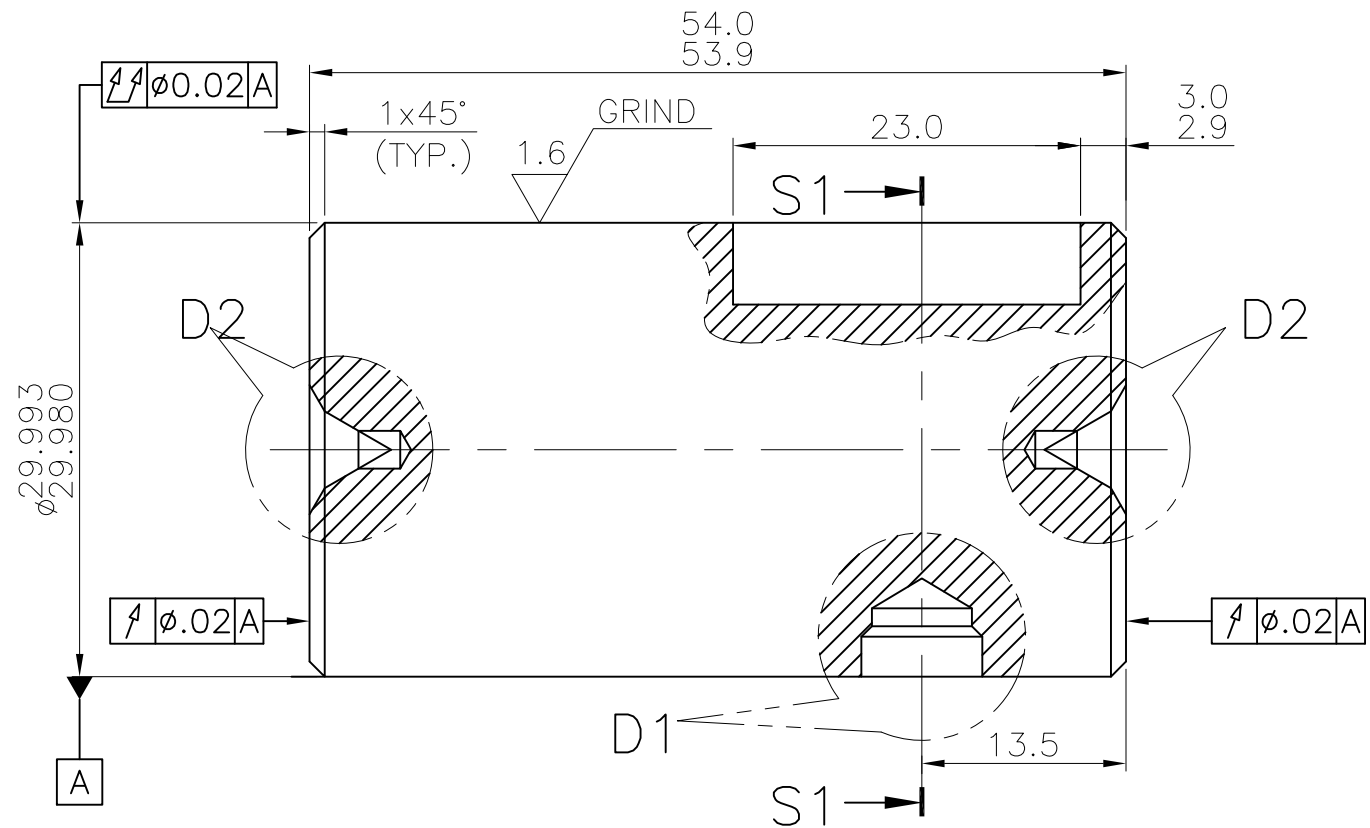
FILE NAME



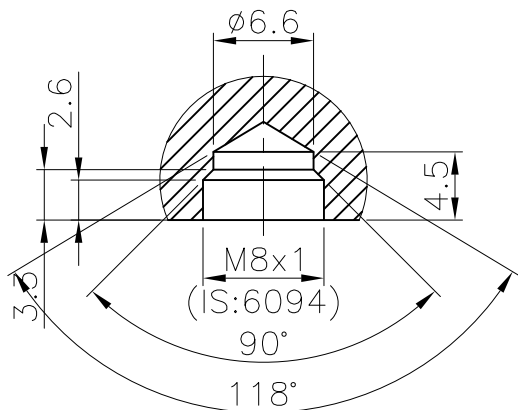
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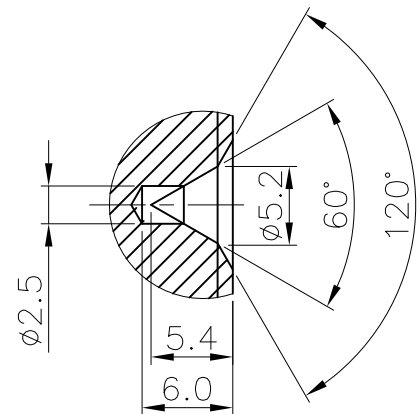
SECTION S1-S1  
(KEY & KEYWAYS DETAIL - IS:2048)



ELEVATION



DETAIL-D1  
(GRUB SCREW)  
(IS:6094 - PART 1)  
(SCALE 2:1)



DETAIL-D2 (TYP.)

NOTES:

- PART No. 90 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 1 No.

NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
REFUELLING TECHNOLOGY DIVISION

TITLE  
ROD CUTTING GADGET  
CUTTER SWIVEL SHAFT-B

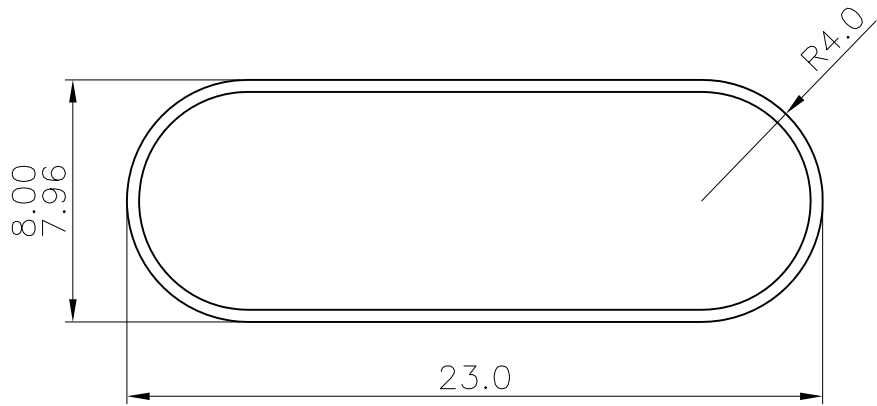
DES'D HC	DRN. TAFAZZUL	DATE 28.12.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 28.12.21	SCALE: 2:1
SECTION RTD	PROJECTION:		

DRG.NO. A3/RTD/RCG/DD/151

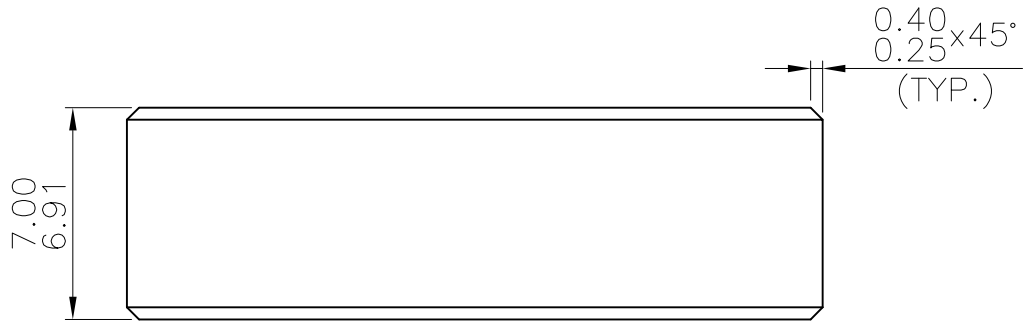
SHEET	REV. NO.
-	-

FILE NAME

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PLAN



ELEVATION

NOTES:

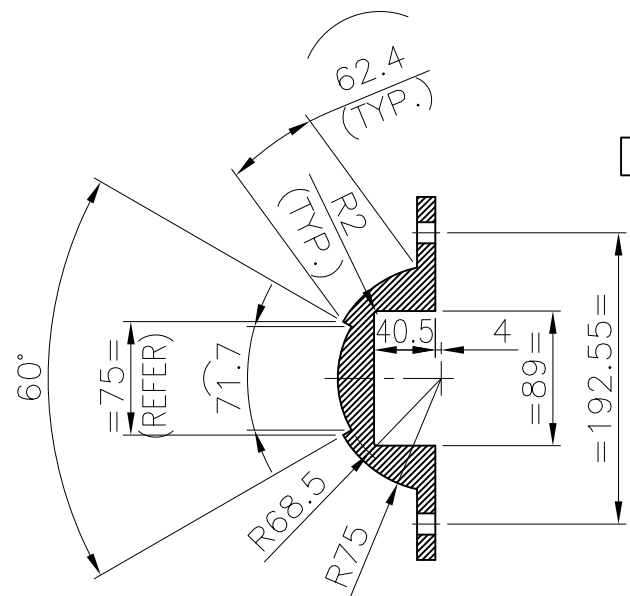
- PART No. 91 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 410
- QTY. = 2 Nos.
- SURFACE FINISHED  $\nabla_{3.2}$  ALL OVER, U.O.S.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

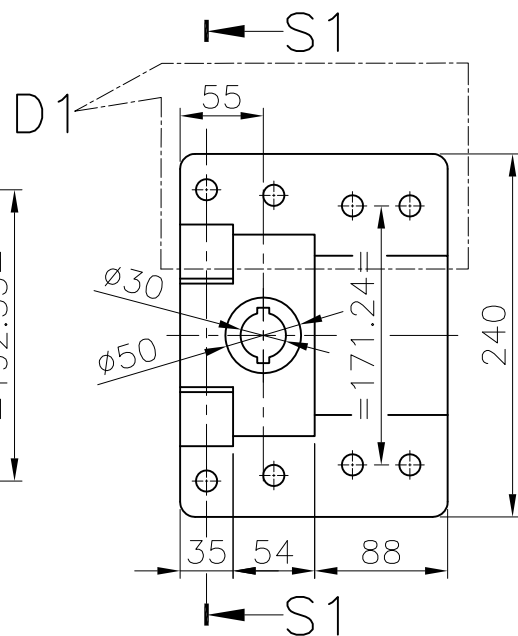
UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING						
TOLERANCES ON LINEAR DIMENSIONS						
<small>SPECIFIED DIMENSIONS</small>	<small>TOLERANCE</small>					
XX	± 0.4	0.5-3	3-6	6-30	SURFACE FINISH TO BE 3.2 MICRONS OR BETTER	
XX.X	± 0.4				REMOVE ALL BURRS	
XX.XX	± 0.25				REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.	
<small>TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 898, ISO : R1101</small>		TOLERANCE	±/-0.2	±/-0.5	±/-1.0	

GOVERNMENT OF INDIA <b>BHABHA ATOMIC RESEARCH CENTRE</b> REFUELLING TECHNOLOGY DIVISION			
TITLE <b>ROD CUTTING GADGET</b>  <b>KEY</b>			
DES'D HC	DRN. TAFAZZUL	DATE 28.12.21	APP'D MD
DESIN CHK'D MD	DRG.CHK'D HC	DATE 28.12.21	SCALE: 4:1
SECTION ATDS			PROJECTION:
DRG.NO. A4/RTD/RCG/DD/152			SHEET <span style="border: 1px solid black; padding: 2px;"> </span> / REV. NO. <span style="border: 1px solid black; padding: 2px;"> </span>

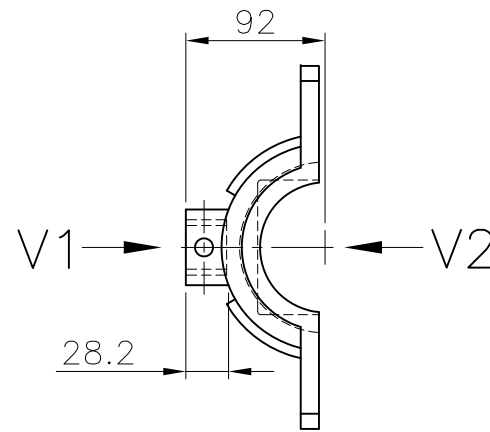
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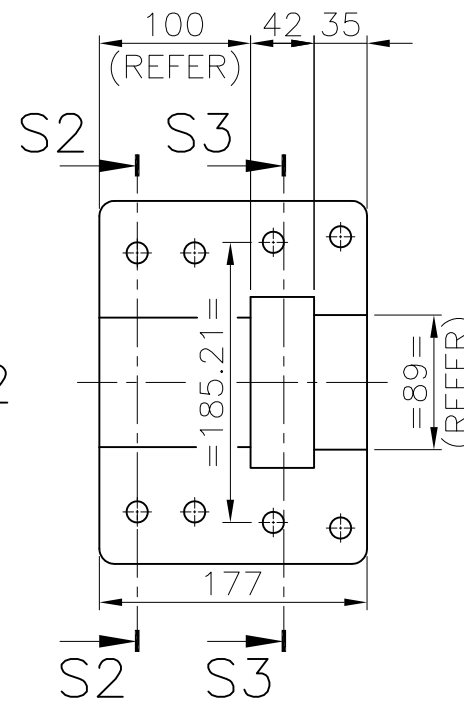
SECTION S1-S1



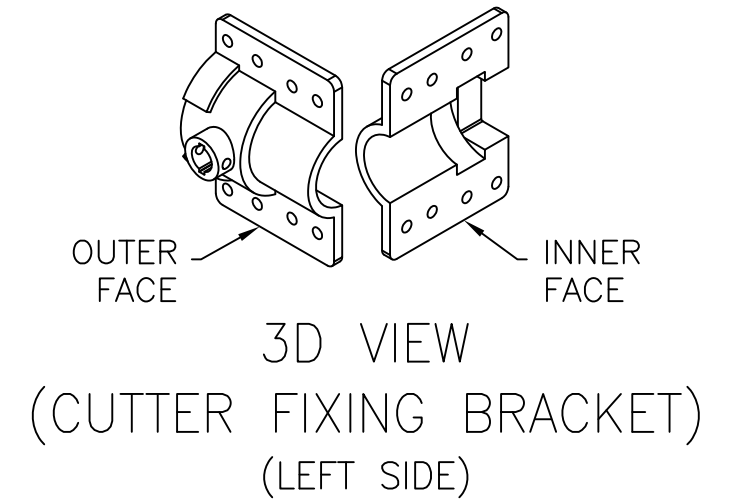
VIEW - V1  
(OUTER FACE)



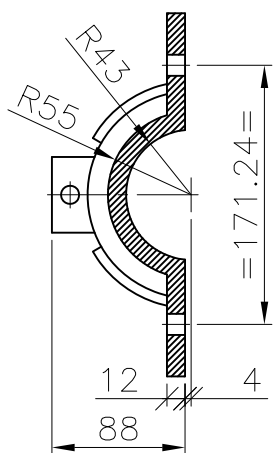
ELEVATION  
(CUTTER FIXING  
BRACKET)  
(LEFT SIDE)



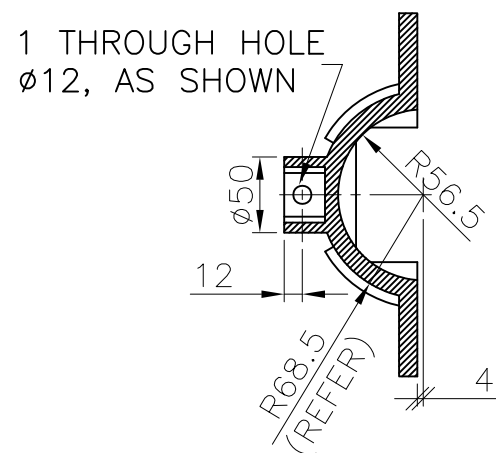
VIEW - V2  
(INNER FACE)



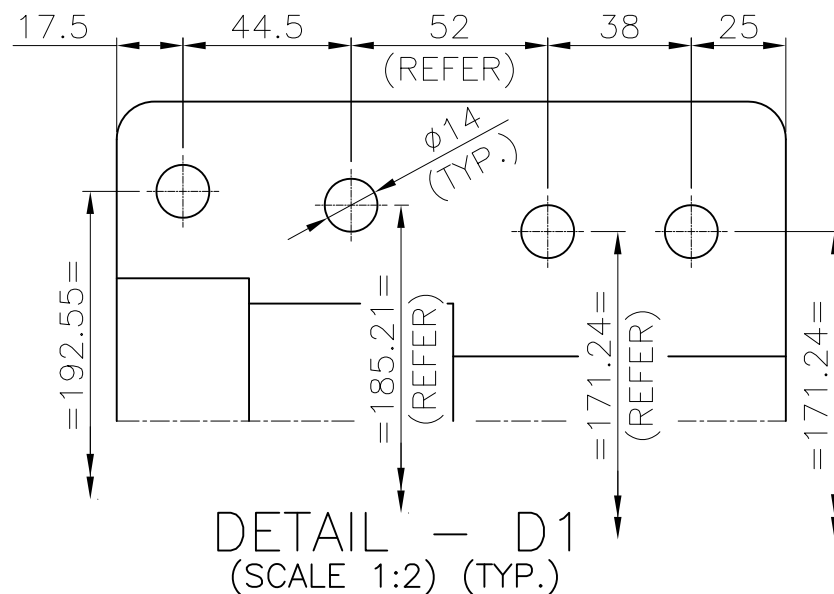
3D VIEW  
(CUTTER FIXING BRACKET)  
(LEFT SIDE)



SECTION S2-S2



SECTION S3-S3



DETAIL - D1  
(SCALE 1:2) (TYP.)

NOTES:

- PART No. 92 OF DWG. No. A0/RTD/RCG/GA/100
- MATERIAL - SS 304
- QTY. = 1L+1R Nos.

REFERENCE DRAWING	DRAWING NO.	NO.	LOC.	DESCRIPTION	DRN DATE	APP'D

1 UNLESS OTHERWISE SPECIFIED ELSE WHERE ON THIS DRAWING

SPECIFIED DIMENSIONS	TOLERANCE
XX	± 0.4
XX.X	± 0.4
XX.XX	± 0.25

TOLERANCES ON ANGULAR DIMENSIONS ± 0° - 30° REF. DRAWING STANDARD IS : 696, ISO : R1101

RADI AND CHAMFERS	0.5-3	3-6	6-30
TOLERANCE	+/-0.2	+/-0.5	+/-1.0

SURFACE FINISH TO BE 3.2 MICRONS OR BETTER  
REMOVE ALL BURRS  
REMOVE SHARP CORNERS & EDGES TO R=0.3 MAX.

GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE REFUELLING TECHNOLOGY DIVISION			
TITLE ROD CUTTING GADGET CUTTER FIXING BRACKET			
DES'D HC	DRN. TAFAZZUL	DATE 29.12.21	APP'D MD
DESN CHK'D MD	DRG.CHK'D HC	DATE 29.12.21	SCALE: 1:5
SECTION RTD	PROJECTION:		
DRG.NO. A3/RTD/RCG/GA/153			SHEET -
			REV. NO. -