SPECIFICATION FOR TURBOPUMP ASSEMBLY FIXTURE:

1. BRIEF DESCRIPTION AND CONFIGURATION OF TP ASSEMBLY FIXTURE:

This TP assembly fixture is a specialized device which will be used to hold and position components or hardwares during assembly operation. The primary purpose of this fixture to ensure accuracy & consistency of assembly activity as well as increase in reliability & efficiency in overall assembly operations.

The major elements of TP assembly fixture are L-arm, Column, Slew Bearing, Ball Screw, Worm Gear Box & Linear Guideway. In order to do smooth assembly operation, linear motion as well as rotational motion about defined axis is required in precise manner. For the linear motion (Z-axis), linear guideway & drive system with EM brake is provided. Similarly for the rotational motion (Y-axis) slew bearing with power transmission system is provided.

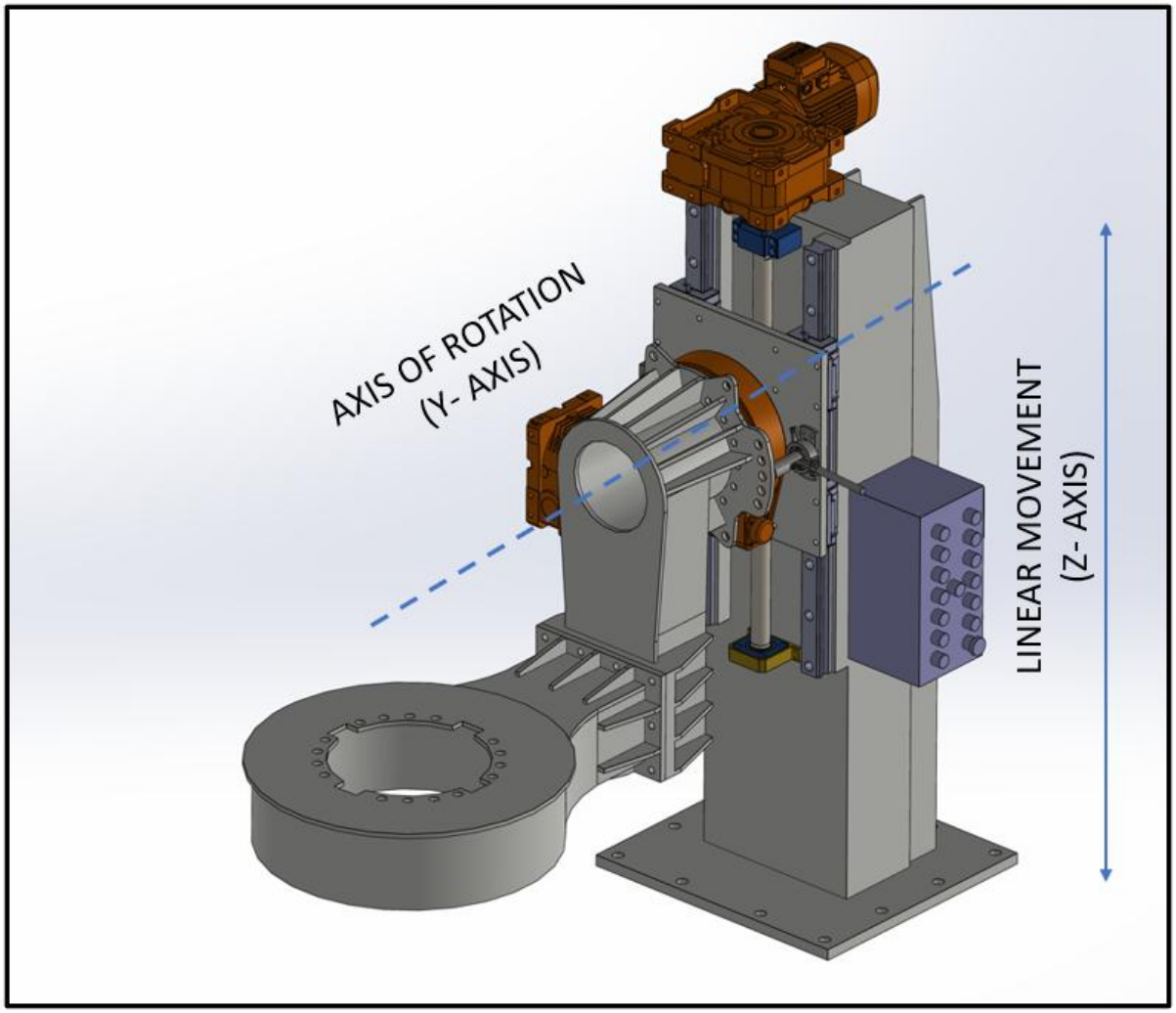


FIGURE-1: Basic configuration of TP assembly fixture

2. SCOPE OF WORK OF SUPPLIER:

I. The procurement of materials & parts, the fabrication and supply of TP assembly fixture as per the enclosed drawing (Drawing No: SEAD/FX/A0002/S00/P00).
II. The performance demonstration of TP assembly fixture with load simulator at supplier end as per given procedure.
III. Installation and commissioning of the fixture at IPRC, Mahendragiri.
IV. Training of personnel for the operation and maintenance of the fixture.

3. TECHNICAL SPECIFICATIONS:

The design of the TP assembly fixture was done by purchaser (IPRC) & the design drawings are attached for reference.

I. **Specifications for drive systems:**

a) Rotational axis (Y-axis): (Refer Figure:1)

SL.NO.	PARAMETER	VALUE
1	Speed of slew ring bearing	0 - 5 rpm
2	Minimum motor power	1.5 hp
3	Minimum braking torque of EM brake	15 Nm

b) Linear movement (Z-axis): (Refer Figure:1)

SL.NO.	PARAMETER	VALUE
1	Speed of linear guideway	Upto 5 mm/s
2	Minimum motor power	1.5 hp
3	Minimum braking torque of EM brake	15 Nm

II. The assembly and alignment of all standard parts such as ball screw, LM guides, worm driven slew ring bearing, geared motor etc. are to be performed as recommended in the manual/catalogue of the respective manufacturer.
III. All fasteners used for assembly of different parts should be of high tensile steel with min. grade/class 10.9 with suitable mating nut as per ISO 898 and washer as per ISO 7093.
IV. All the structural steel material mentioned in these documents and drawings shall be confirming to IS2062 or equivalent with compliance to following mechanical properties of minimum yield strength 230 MPa and minimum tensile strength 400 MPa.
V. Fixture & its components shall be compatible with normal environment conditions and free from rusting of components (i.e., suitable plating/coating is to be selected). The major component shall be painted as tabulated below.

SL.NO.	COMPONENT	COLOUR	MRF METAL COAT NO. (For Reference)
1	COLUMN	WHITE & OXFORD BLUE	SUPERIOR WHITE – 846 OXFORD BLUE – 112

2	DRIVES, MOTOR & GEAR BOX	ORANGE	DAWN GLOW - 511
3	L-ARM	WHITE & OXFORD BLUE	SUPERIOR WHITE – 846 OXFORD BLUE – 112

VI. The fixture shall have the display system which displays the following parameters
   a. Input Voltage to the motor
   b. Input Current to the motor
   c. Speed of motor
   d. Safety lock system telltale

VII. Interlock:
   a. When the mechanical lock is in enabled condition, the motor shall not rotate.
   b. If the speed of rotation or the lowering speed of the L arm is to have maximum limit. If the speed is more than the limit, the motor brake is to be engaged.
   c. The maximum and minimum height shall be limited by using the limit switch. If the arm is nearing 50mm to the limit switch, alarm is to be on. If it reaches the limit switch, the motor power shall be shut off.
   d. In case of power shut off, there shall be a provision for restoring the linear & rotational position to the safe position (L-arm at bottom and 0^0).

4. GENERAL TERMS AND CONDITIONS:

I. Any modification in the drawing (Column, L Arm assembly, Vertical flange & horizontal flange) and standard parts (LM Block, linear guideway, ball screw) for ease of fabrication shall be done with the prior approval of IPRC.

II. The final fabrication drawing is to be provided for the IPRC approval. The fabrication of the fixture shall be started after the approval of IPRC. Minor modifications (If any) shall be done without any additional cost.

III. The item is to be fixed to the ground by using chemical bonded anchoring bolts at IPRC site. The fixing and anchoring bolt is under the party's scope.

IV. **Load testing:**
   a. The supplier has to validate the fixture by carrying out the load test (With load simulator at specified maximum rotation speed) after fixing the TP fixture by using chemical bonded anchoring bolts. In case if at bidder site the provision for fixing the item with anchoring bolt is not feasible then suitable amenities shall be made in order to complete the load testing. The motor drive parameters shall be noted. The measured /calculated power transmission system parameters (On steady state) shall not be more than 75% of design rated parameters.
   b. The transmission system torque & speed shall be calculated from the drive parameters and the maximum overshoot during start-up & shut down shall not be more than 125% of steady state operation. In addition, the maximum overshoot shall not be more than 70% of selected transmission system's rated parameters.

c. Dye penetration test has to be done on all weld joints before and after the load test prior to the painting work.

V. **Pre-delivery inspection:**

a. Item can be dispatched at supplier end after successful performance and load testing of fixture in the presence of IPRC Team.
b. Party has to provide all the material test certificates, weld clearance certificate, motor and power transmission system test certificates at the time of pre-delivery inspection.
c. All the test certificates are to be provided along with the item.

VI. **Installation and Commissioning:**

a. The party has to install the fixture at IPRC Mahendragiri. As part of commissioning, the party has to do civil works (the column assembly base is to be fixed with ground by using 12 Nos. of chemical bonded anchoring bolts as mentioned in Dwg. No.- SEAD/FX/A0002/S01/P01) as well as the dynamic load test with load simulator. All the drive parameters (With load) shall be within the rated parameters.
b. Prior to dispatch, all the structures of TP assembly fixture shall be painted as mentioned in the table. Painting shall be done after fixture validation (load test along with DP test). In case of any touch up painting is required after transportation that shall be done at IPRC, Mahendragiri at the free of cost.
c. Party shall supply guarantee certificate for the VFD system, gears, motors, braking systems and bearings. In case of any failure within agreed guarantee period, the supplier has to take care all the cost of replacement.
d. Party shall supply 3 copies of documents consisting of all the drawings, Bill of Materials (With make and model No.), all test certificates (Chemical composition and material test certificates) and operation and maintenance procedure.
e. The fixture and load simulator shall be guaranteed minimum 12 months from the date of acceptance.

5. PRE-QULIFICATION CRITERIA (PQC) FOR FABRICATION & SUPPLY OF TURBOPUMP (TP) ASSEMBLY FIXTURE FOR SEMICRYOGENIC ENGINE:

- The Bidder's capability shall be evaluated based on the following PQC. The Bidders shall suitably fill-up the information solicited in "Bidder's Remarks" and submit as part of the Techno-Commercial Bid (TCB). Those Bidders who comply with the PQC only will be screened-in for opening and evaluation of Price bid. The information to be submitted in the TCB shall be complete in all respects substantiated by valid documents and there shall not be any further opportunity for the Bidders to submit any information or document unless the Department solicits so their own discretion. There shall not be mentioning of any kind of price or cost in TCB.
- **Any lack of information or incomplete /ambiguous information or false information or information non-compliant with the PQC shall be treated as sufficient cause to summarily reject such Bids.**

Terms & Condition	Bidder' s Remarks
Bidders shall have prior experience of fabrication and supply of similar works. "Similar works" shall primarily involve Procurement and Fabrication, assembly, Supply and installation of a fixture of minimum mass of 500 kg with Slew ring bearing with power transmission system and Linear Guideways with Ball Screw arrangement to any reputed parties in India. This is to verify the parties experience in machining matting part to the required GDT, proper assembly & alignment of slew ring bearing with power transmission system and linear motion guideways. Supply of fixtures (To evaluate the experience) with Slew ring bearing with power transmission system and linear guideways can be in single PO or in multiple PO. Bidder shall submit Purchase order/Work order along with work completion report/ acceptance from buyer/ Third party which must be done after 1 June 2015, as evidence of "Similar work" completed.	

6. INSPECTION PLAN:

I. PROCESS CUM INSPECTION PLAN

Party shall submit brief process cum inspection plan for review by IPRC, Mahendragiri after getting the fabrication drawing approval.

II. INSPECTION AND QUALITY ASSURANCE

1. The Contractor shall be responsible for total quality of the product by complying with quality requirements and carrying out inspection at various stages of material procurement fabrication, assembly and testing.
2. The Department personnel will cross check and oversee inspection procedures and ensure adherence to the quality control stipulations. Specifically identifies inspection stages will be indicated in the process sheets for which the contractors shall obtain inspection clearance from the Department personnel.
3. The Contractors shall make available to the department all inspection record and documentation such as laboratory tested reports, mechanical test reports, dimensional inspection reports and calibration records and other QC related reports in not less than three copies of each.
4. The Department personnel shall have access to the jobs at any time at any place in the contractor`s or any sub-contractor`s premises, where such work is carried out.

7. COMPLIANCE REPORT:

The party shall submit the compliance report as tabulated below:

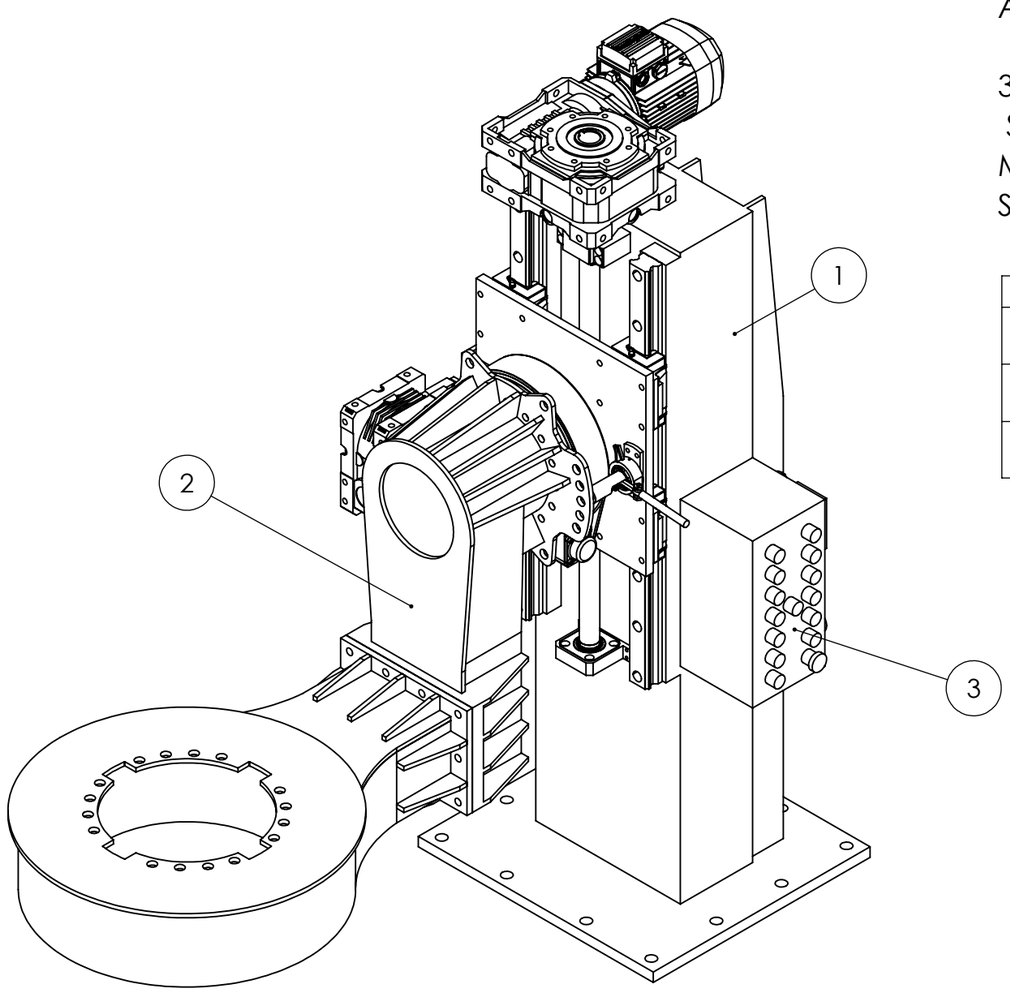
<table>
<tr><th>SI NO.</th><th>Terms & Condition</th><th>Bidder' s Remarks</th></tr>
<tr><td>01.</td><td>FABRICATION & SUPPLY OF TP ASSEMBLY FIXTURE as per following scope of work:
I. Procurement of raw materials & components as per given specification and terms and conditions stipulated in section 2 in Technical Specification.
II. Fabrication of TP ASSEMBLY FIXTURE with required dimensions & tolerances also the requirement of surface finish & surface treatment shall be taken care as per supplied drawings and terms & conditions.
III. Validation of TP ASSEMBLY FIXTURE with load simulator as per terms and condition provided in sub section III (load testing) in section 4 (General Terms & Condition) and Installation & Commissioning of the Fixture at IPRC, Mahendragiri as per sub section VI (Installation and Commissioning) in section 4.</td><td></td></tr>
<tr><td>02.</td><td>Bidder shall meet all the dimensions and tolerances given in the drawing and the any standard item like Slew ring Bearing, Gearbox with Motor assembly, Linear Guideway, Ball Bearing, Limit Switch Sensor & Ball Screw assembly shall be of reputed make as tabulated below. Deviation from specification due to any reason shall be mentioned or highlighted during Techno-Commercial Bid (TCB) itself.
<table>
<tr><th>Sl. No.</th><th>List of bought out items</th><th>Make/Model</th><th>Bidders Remarks</th></tr>
<tr><td>a.</td><td>Slew Ring Bearing</td><td>IMO Slew ring bearing: SIZE WD-L 0223/2-Row/1 Drive</td><td></td></tr>
<tr><td>b.</td><td>Linear Guideway</td><td>Hiwin Linear Guideway: HSR 55C</td><td></td></tr>
<tr><td>c.</td><td>Ball Screw</td><td>THK Ball Screw: BTK 4010-5.3</td><td></td></tr>
<tr><td>d.</td><td>Gear Box with Motor</td><td>BONFIGLIOLI W110_80 P90 BX90S4 & W86_15 P90 BX90S4</td><td></td></tr>
<tr><td>e.</td><td>Variable Frequency Drive (VFD)</td><td>Siemens or Schneider</td><td></td></tr>
<tr><td>f.</td><td>Anchoring Bolts</td><td>FHB dyn 20x170 (FISCHER – HIGH DYNAMIC ANCHORS)</td><td></td></tr>
</table></td><td></td></tr>
<tr><td>03.</td><td><u>Documents along with Quote:</u>
The party shall submit all the documents as stipulated in section 5 in PQC.</td><td></td></tr>
<tr><td>04.</td><td><u>Documents along with Supply of Fixture:</u>
The Party shall supply 3 copies of documents consisting of all the drawings, Bill of Materials (With make and model No.), all test certificates and operation and maintenance procedure.</td><td></td></tr>
</table>

8. DELIVERY SCHEDULE:

I. The party has to provide detailed fabrication drawing for approval within 6 weeks from the date of PO. The drawing approval will be provided within two weeks from the drawing submission.

II. The fabrication, inspection, load testing and installation is to be completed within 6 months from the date of drawing approval for first fixture.

III. The fabrication of second fixture is to be started after installation of first fixture. If any minor change in the drawing based on the first fixture realization, performance test and load test is to be incorporated in the second fixture, it shall be done at free of cost. The second fixture is to be supplied within 6 months from the date of intimation of drawing changes from IPRC (after first fixture supply).



NOTE:

1. THE ASSEMBLY AND ALIGNMENT OF ALL STANDARD PARTS SUCH AS BALL SCREW, LM GUIDES, WORM DRIVEN SLEWRING BEARING, GEARED MOTOR ETC. ARE TO BE PERFORMED AS RECOMMENDED IN THE MANUAL/CATALOGUE OF THE RESPECTIVE MANUFACTURER.

2. ALL FASTENERS USED FOR ASSEMBLY OF DIFFERENT PARTS SHOULD BE OF HIGH TENSILE STEEL WITH MIN. GRADE/CLASS 10.9 WITH SUITABLE MATING NUT AS PER ISO 898 AND WASHER AS PER ISO 7093.

3. ALL THE STRUCTURAL STEEL MATERIAL MENTIONED IN THIS DOCUMENTS AND DRAWINGS SHOULD BE CONFORMING TO IS2062 OR EQUIVALENT WITH COMPLIANCE TO FOLLOWING MECHANICAL PROPERTIES OF MINIMUM YIELD STRENGTH 230 MPa AND MINIMUM TENSILE STRENGTH 400 MPa.

SL.NO.	COMPONENT	COLOUR	MRF METAL COAT NO.
1	COLUMN	WHITE &OXFORD BLUE	SUPERIOR WHITE - 846 OXFORD BLUE - 112
2	DRIVES, MOTOR & GEAR BOX	ORANGE	DAWN GLOW - 511
3	L-ARM	WHITE &OXFORD BLUE	SUPERIOR WHITE - 846 OXFORD BLUE - 112

BOM:

PART NO.	DESCRIPTION	DRAWING NO.
1	COLUMN ASSEMBLY	SEAD/FX/A0002/S01/P00
2	L-ARM ASSEMBLY	SEAD/FX/A0002/S02/P00
3	ELECTRICAL CONTROL PANEL	SEAD/FX/A0002/S03/P00

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TURBO PUMP ASSEMBLY FIXTURE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: ---

DWG NO. SEAD/FX/A0002/S00/P00 | A3

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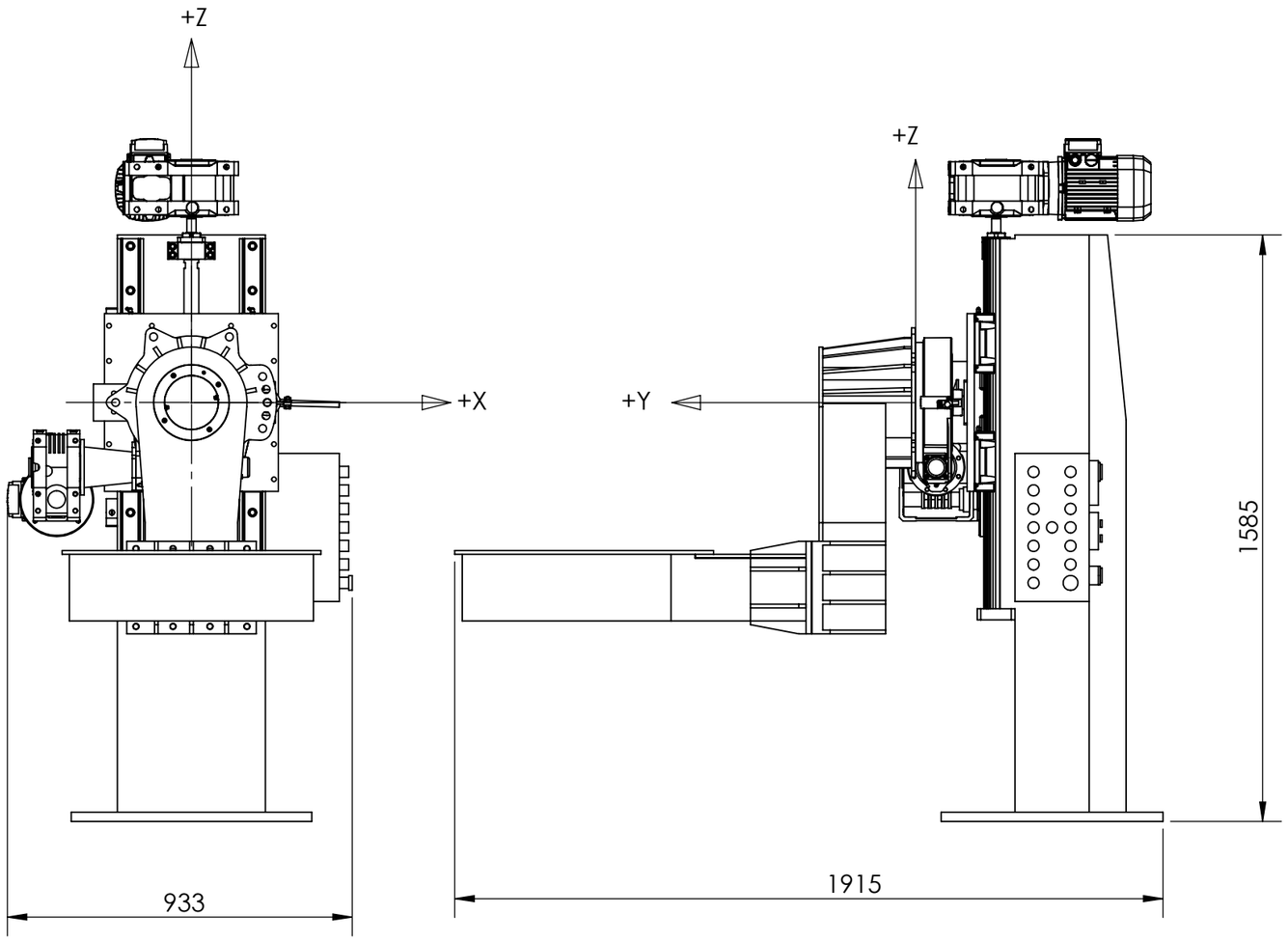

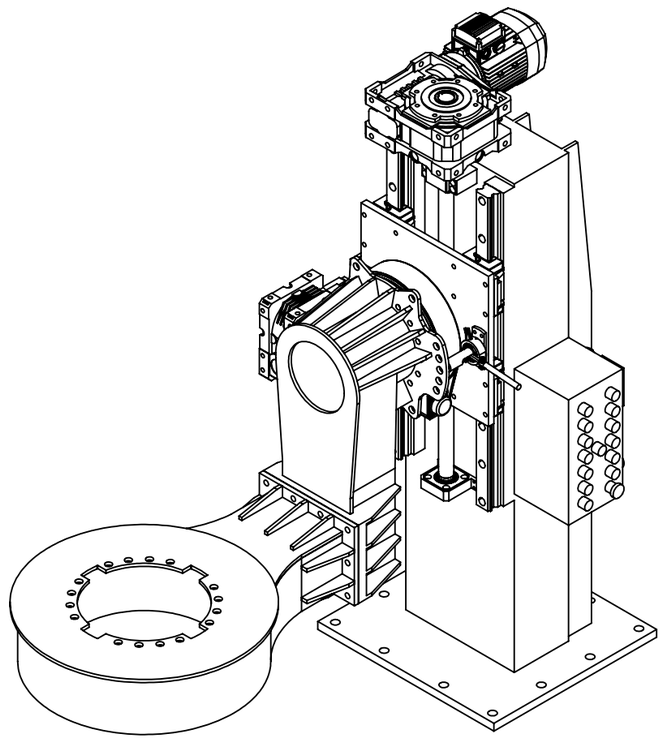

ISOMETRIC VIEW

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TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TURBO PUMP ASSEMBLY FIXTURE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

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MATERIAL: ---

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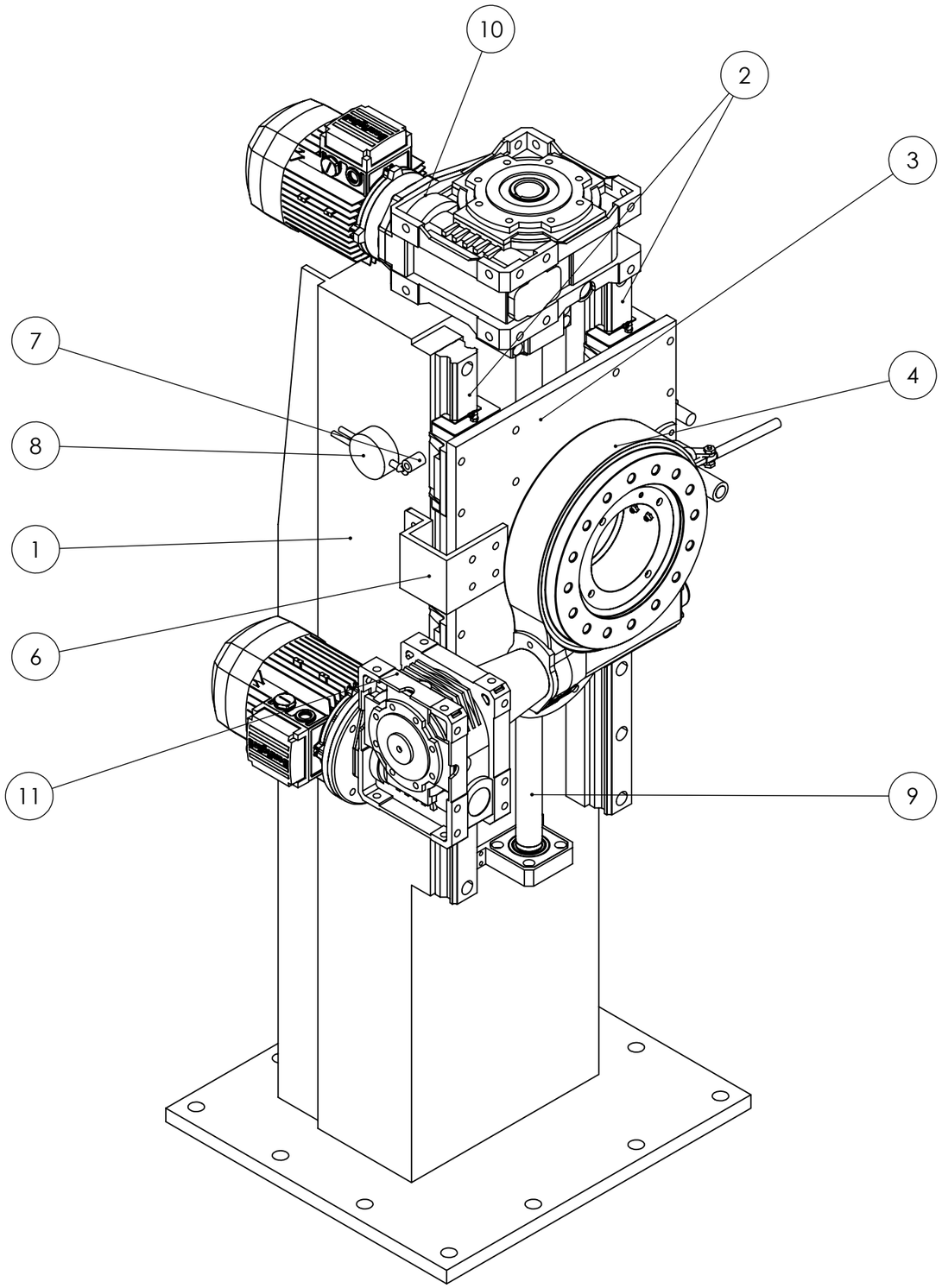

BOM:

PART NO.	DESCRIPTION	DRAWING NO.	QTY.
1	COLUMN	SEAD/FX/A0002/S01/P01	1
2	LINEAR GUIDEWAY	HIWIN HSR 55C	1
3	SLEW RING CONNECTING PLATE	SEAD/FX/A0002/S01/P02	1
4	SLEW RING BEARING	IMO-WD-L 0223	1
5	MANUAL LOCK(ROTATION)	SEAD/FX/A0002/S04/P00	1
6	LIMIT SENSING PLATE	SEAD/FX/A0002/S01/P03	1
7	LINEAR STOPPER	SEAD/FX/A0002/S01/P04	2
8	LIMIT SWITCH SENSOR	FCG_IJ 61110	2
9	BALL SCREW ASSEMBLY	SEAD/FX/A0002/S05/P00	1
10	GEARBOX WITH MOTOR	W110_80 P90 BX90S4	1
11	GEARBOX WITH MOTOR ASSEMBLY	SEAD/FX/A0002/S06/P00	1
12	PROXIMITY SENSOR (MANUAL LOCK Y-AXIS ROTATION)	STANDARD	1
13	ANCHOR BOLT	FHB dyn 20X170 (FISCHER-HIGH DYNAMIC ANCHORS)	12
14	BOLTS & NUTS	GRADE/CLASS 10.9	AS REQUIRED

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: COLUMN ASSEMBLY

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

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MAHENDRAGIRI-627 133

MATERIAL: -

DWG NO. SEAD/FX/A0002/S01/P00 | A3

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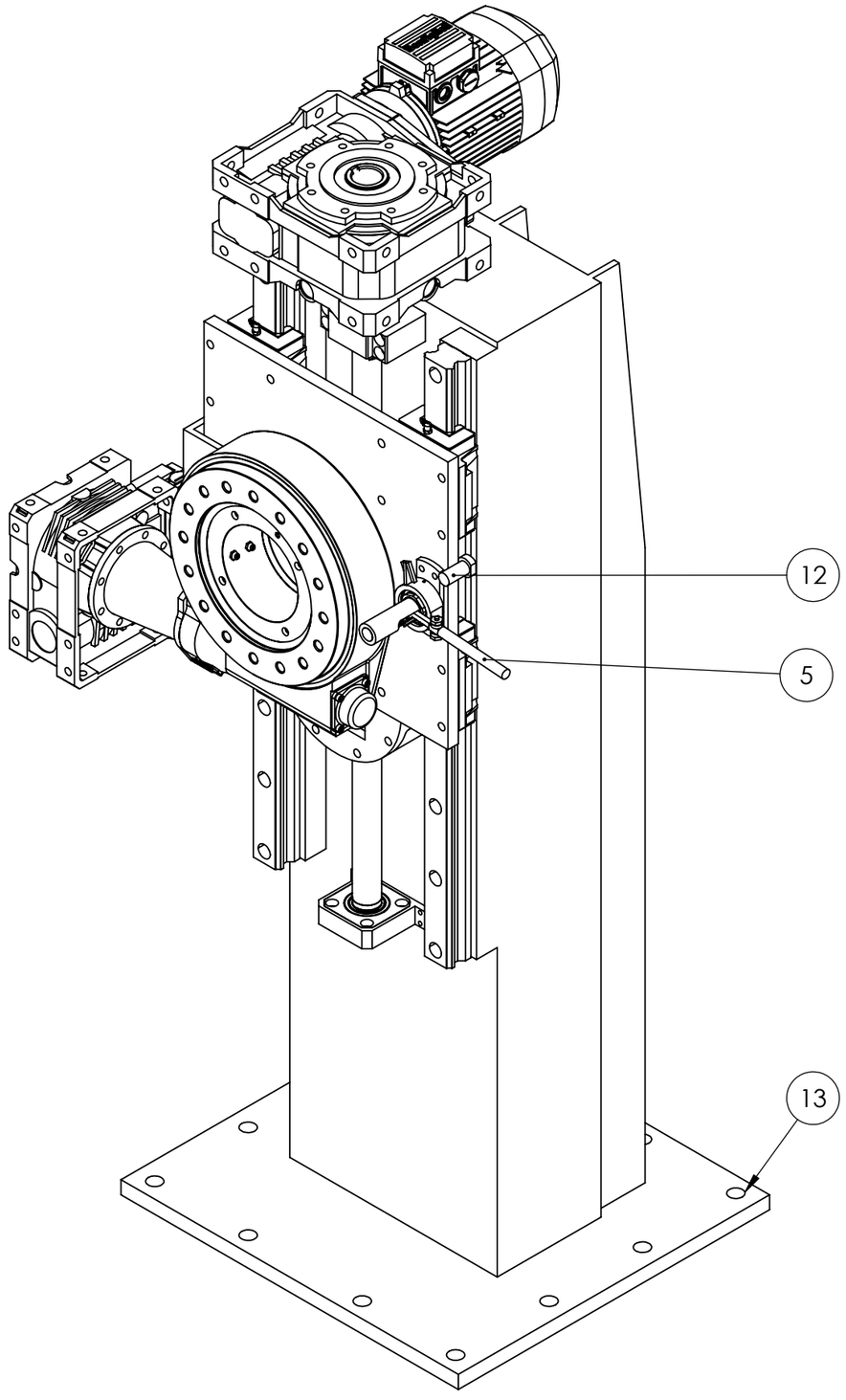

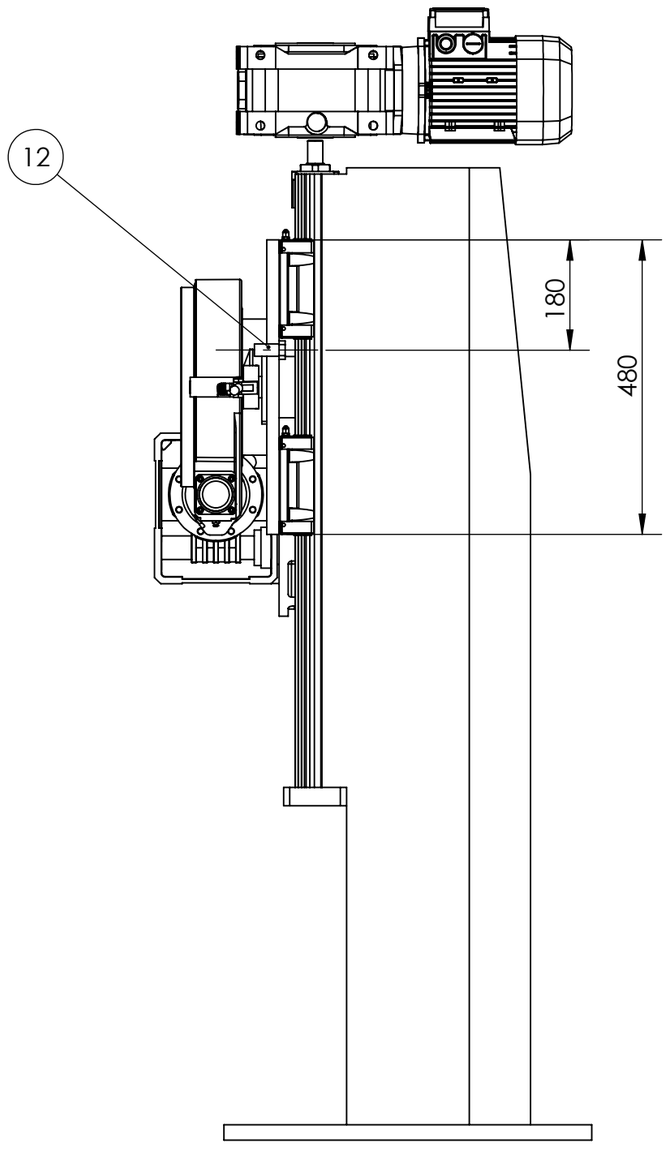

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TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: COLUMN ASSEMBLY

ENVELOP:	2024	NAME	DATE	SIGNATURE
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	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

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MATERIAL: -

DWG NO. SEAD/FX/A0002/S01/P00 | A3

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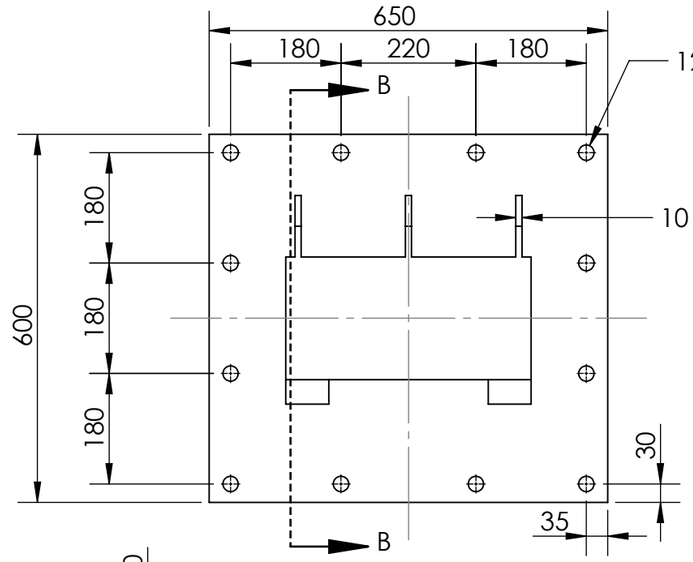
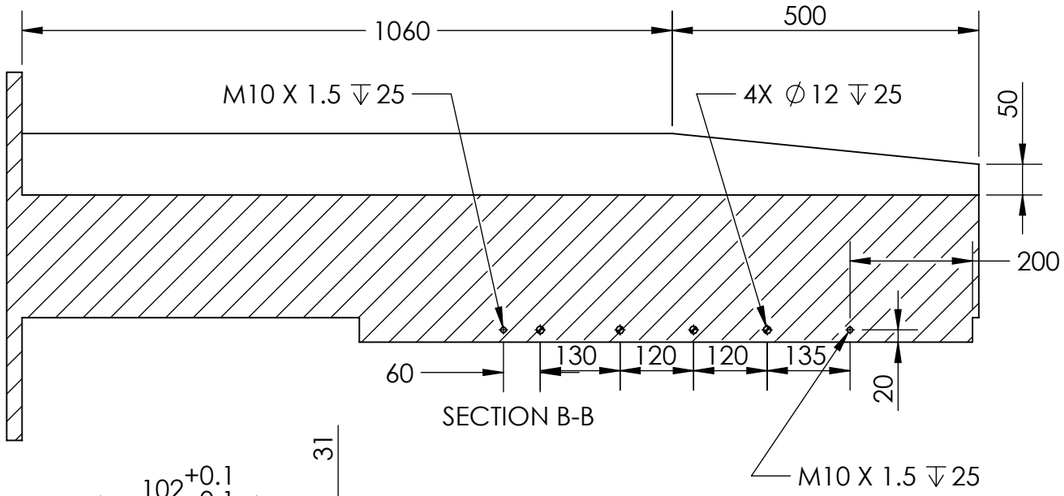
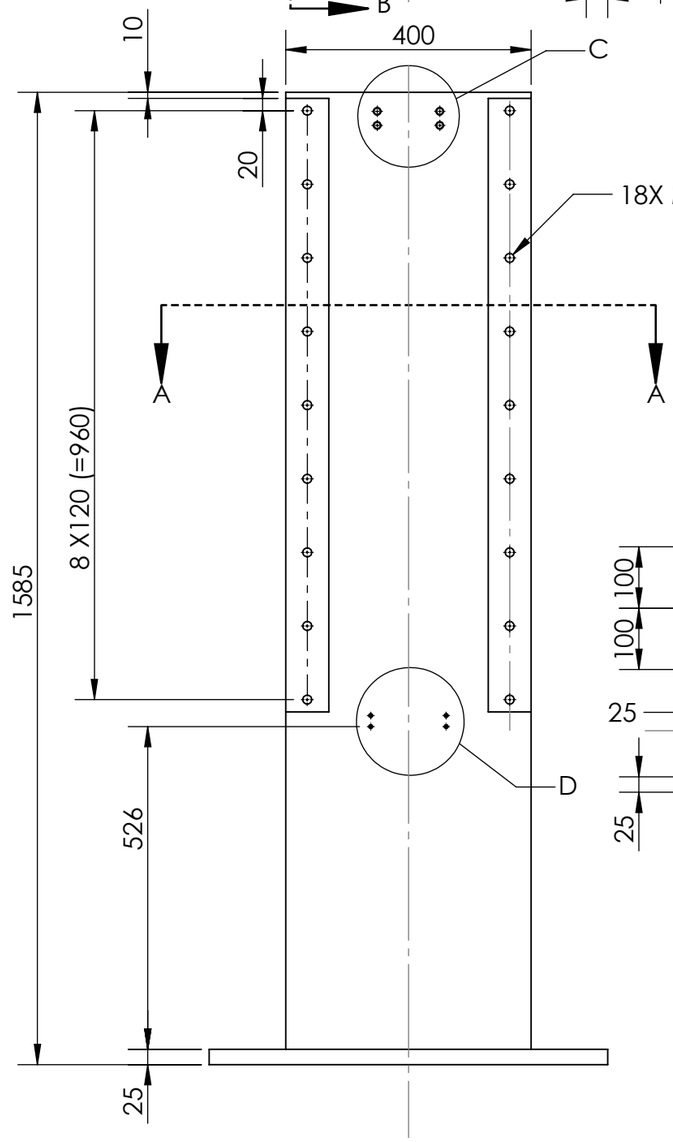
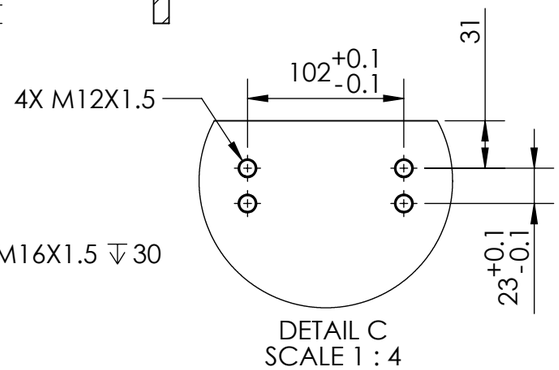




SECTION B-B





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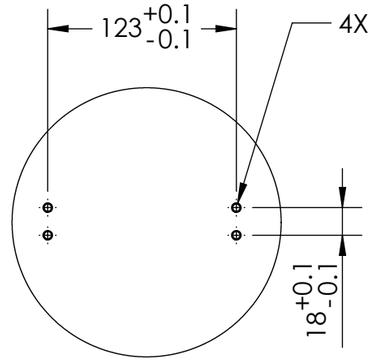

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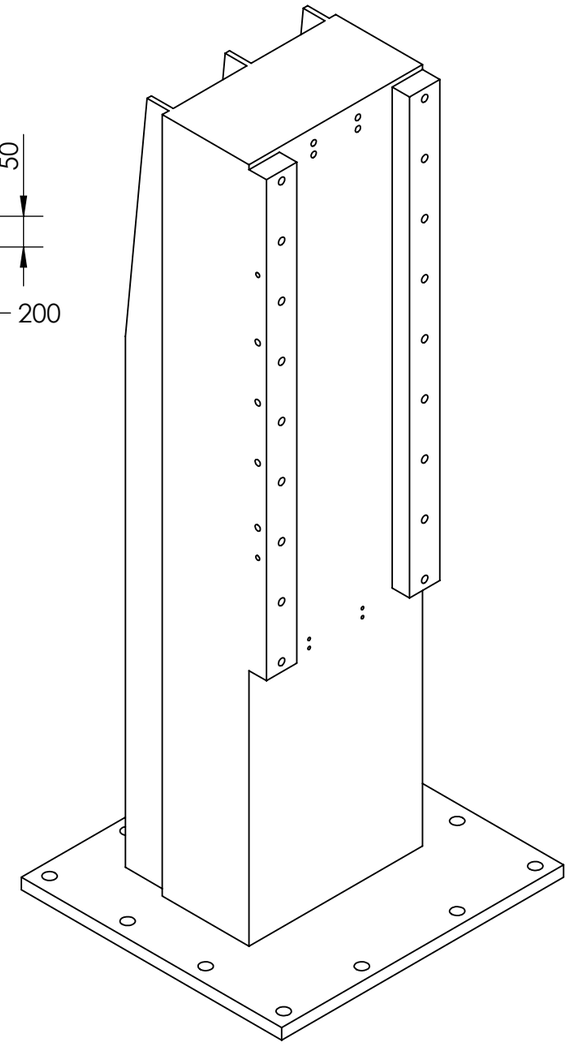
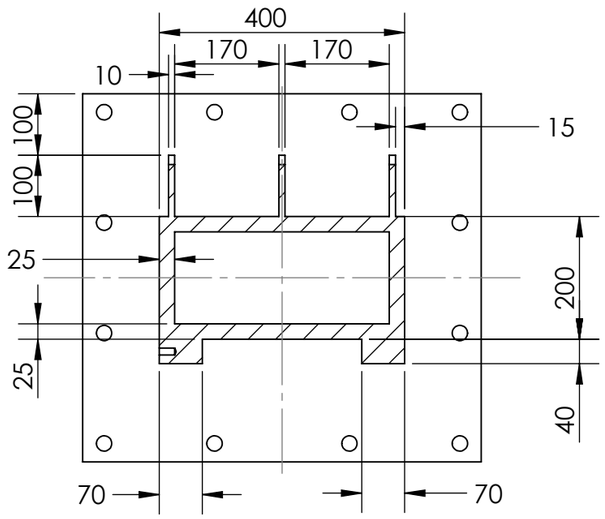


ISOMETRIC VIEW



SECTION A-A

NOTE:
1. ** HOLE DIAMETER IS BASED ON ANCHOR BOLT REQUIREMENT.
   MAKE: FISCHER, FHB dyn 20X170

2. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: COLUMN

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

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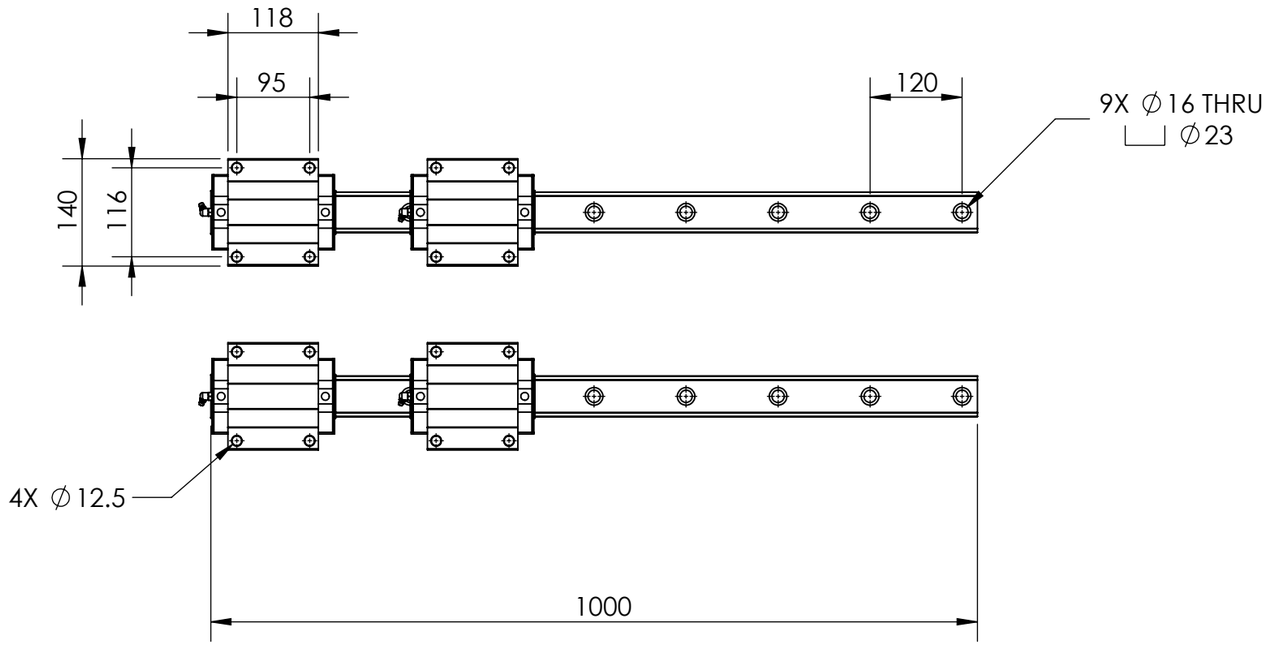
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S01/P01 | A3

CALCULATED MASS: | SCALE: 1:10 | SHEET 1 OF 1



SPECIFICATION FOR LINEAR GUIDEWAY:

RAIL LENGTH	: 1000 mm
STROKE LENGTH	: 800 mm
BASIC DYNAMIC LOAD RATING	: 121 kN
BASIC STATIC LOAD RATING	: 146 kN

LINEAR GUIDEWAY:

HIWIN LINEAR GUIDEWAYS : HSR 55C

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: LINEAR GUIDEWAY WITH SLIDER BLOCK

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

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MATERIAL: --

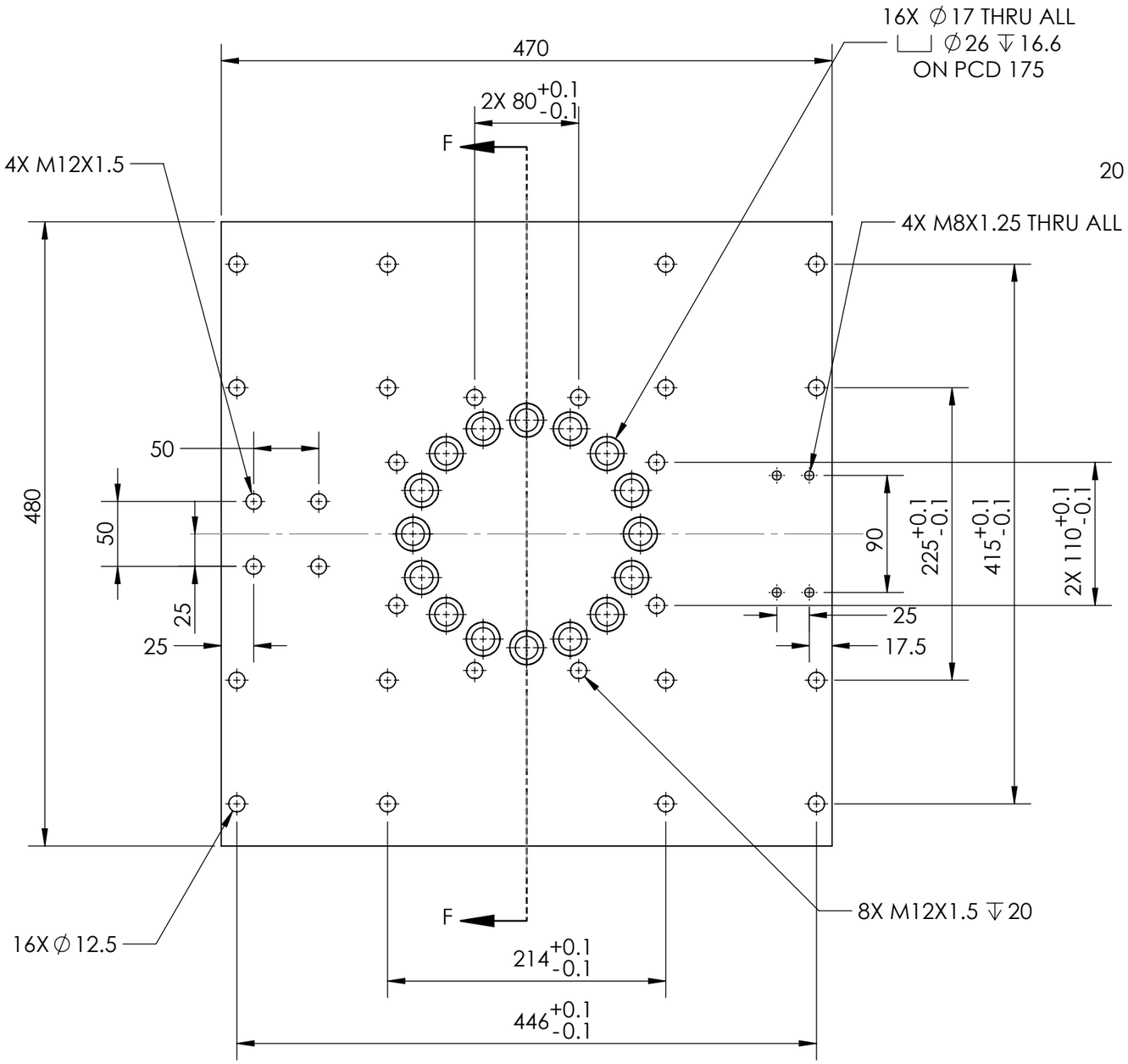
DWG NO. HIWIN HSR 55C

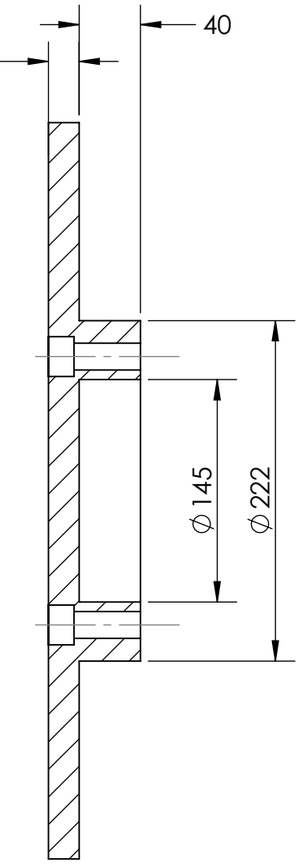
A3

CALCULATED MASS:

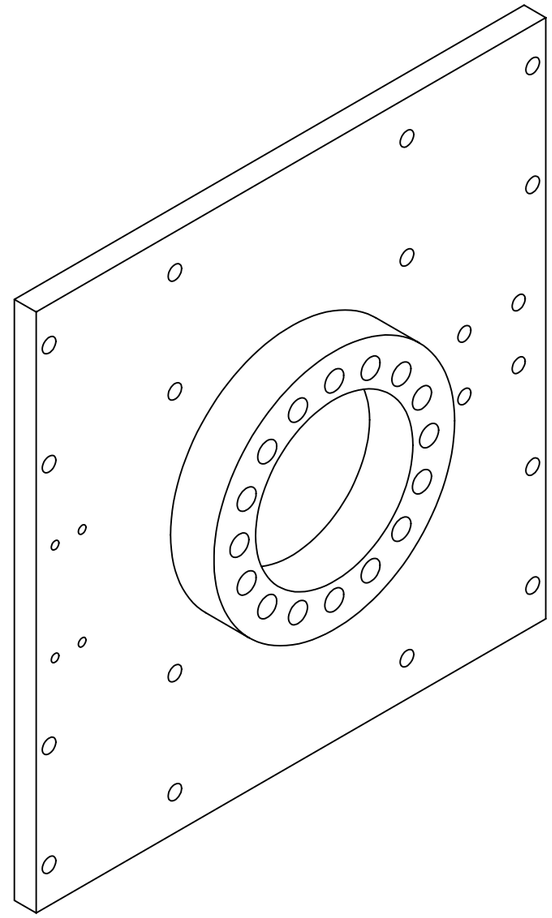
SCALE: 1:10

SHEET 1 OF 1





SECTION F-F



ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SLEW RING CONNECTING PLATE

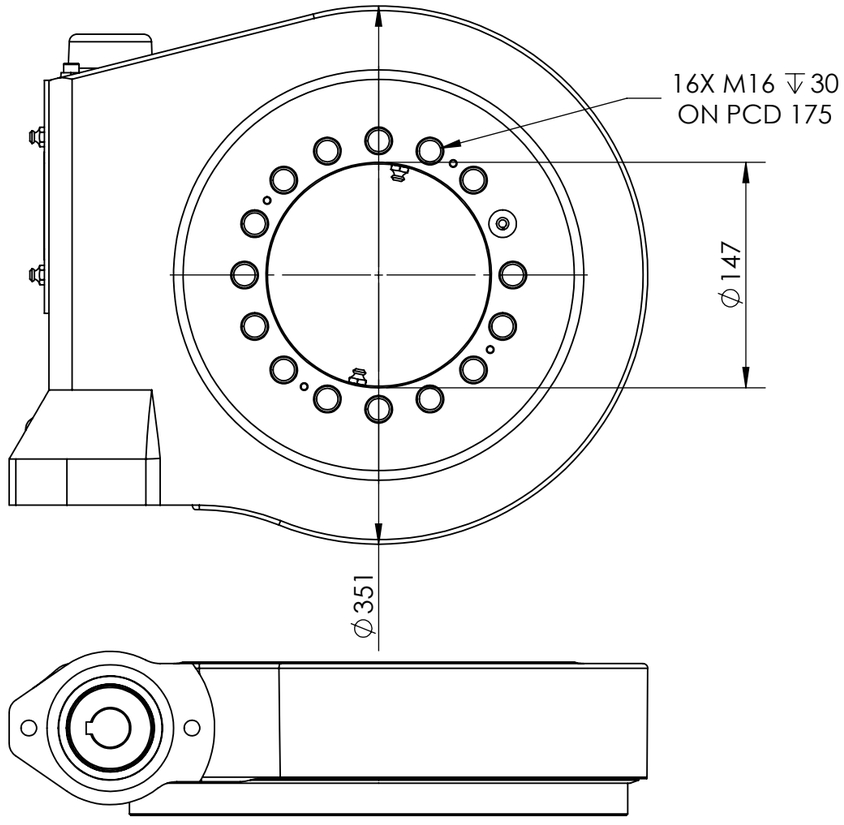
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

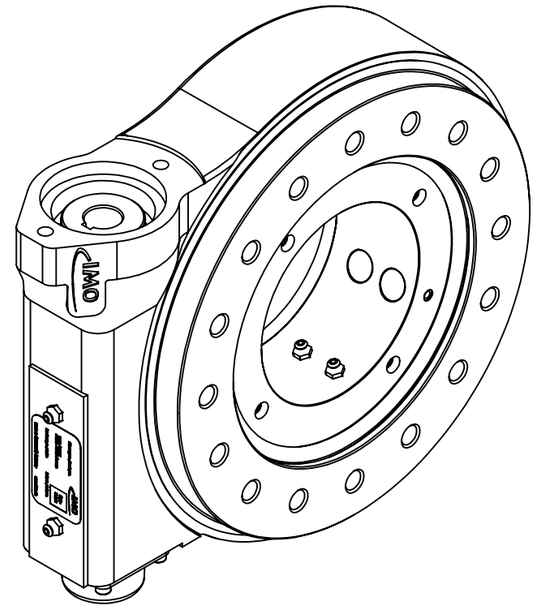
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

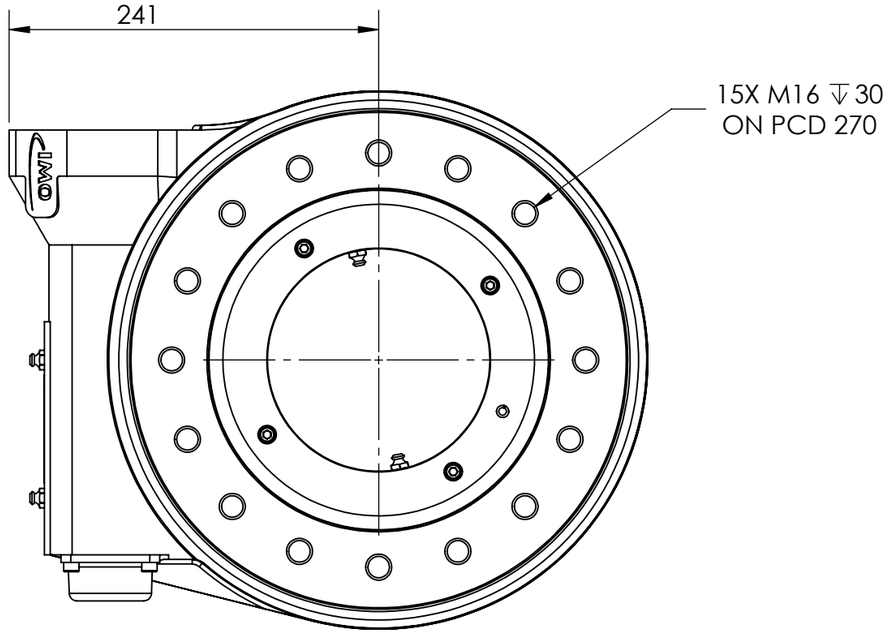
MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S01/P02 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1







SPECIFICATION FOR SLEW RING BEARING:

STATIC LOAD RATING (AXIAL)	: 984 kN
STATIC LOAD RATING (RADIAL)	: 367 kN
EQUIVALENT TILTING MOMENT	: 50 kN-m for axial load of 52.4 kN
OUTPUT SPEED	: 1rpm
MAX. TORQUE	: 9303 N-m
GEAR RATIO	: 62

SLEW RING BEARING:

IMO SLEW RING BEARING : SIZE WD-L 0223/2-ROW/1 DRIVE

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SLEW RING BEARING

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
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ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

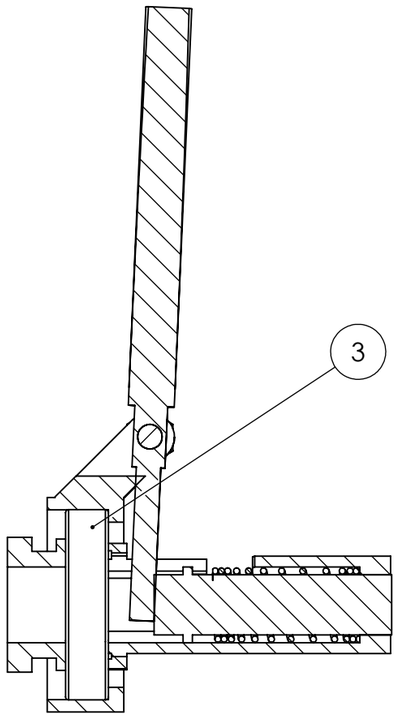
DWG NO. IMO-WD-L 0223

A3

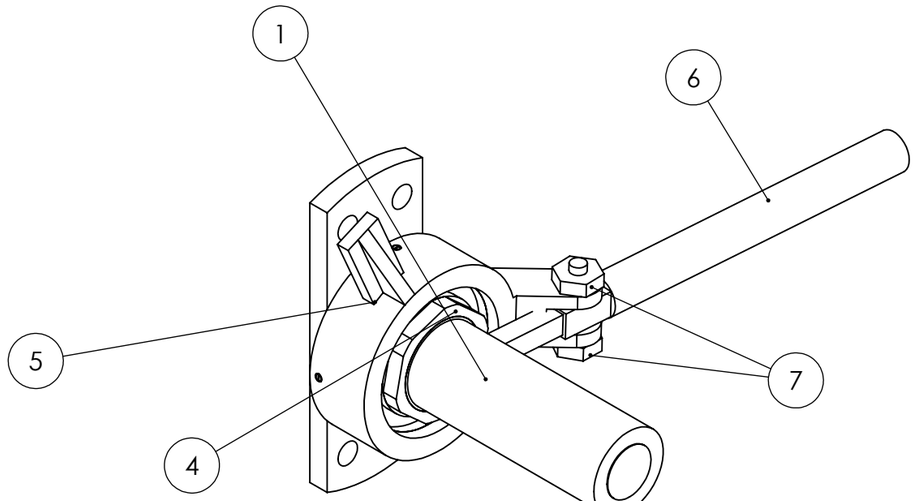
CALCULATED MASS:

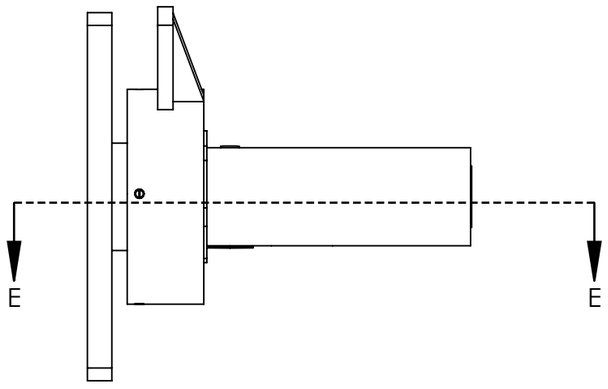
SCALE: 1:4

SHEET 1 OF 1



SECTION E-E





BOM:

PART NO.	DESCRIPTION	DRAWING NO.	QTY.
1	SHAFT HOUSING	SEAD/FX/A0002/S04/P01	1
2	SHAFT	SEAD/FX/A0002/S04/P02	1
3	RADIAL BALL BEARING	SKF-6007	1
4	BEARING ID LOCK	SEAD/FX/A0002/S04/P03	1
5	BEARING OD LOCK	SEAD/FX/A0002/S04/P04	1
6	LEVER	SEAD/FX/A0002/S04/P05	1
7	HELICAL SPRING	SEAD/FX/A0002/S04/P06	1
8	BOLT & NUT & SCREW	GRADE/CLASS 10.9	AS REQUIRED

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: MANUAL LOCK (ROTATION)

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

GOVERNMENT OF INDIA
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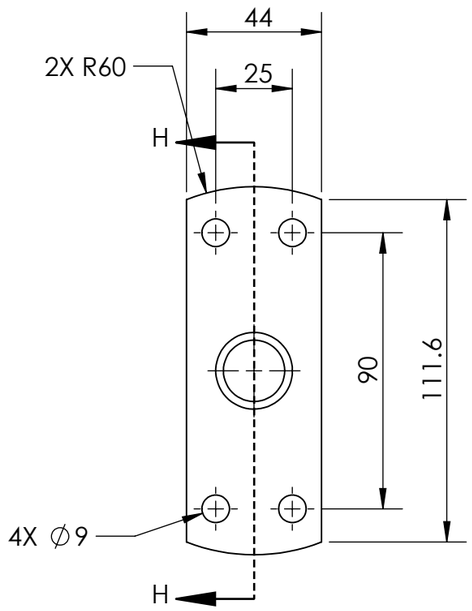
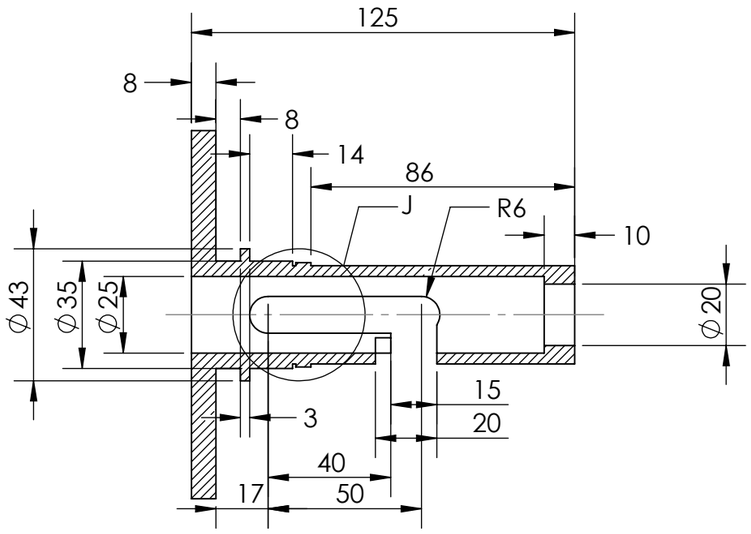
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

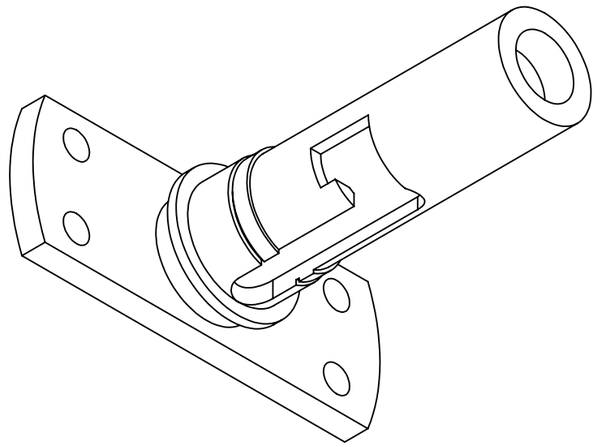
DWG NO. SEAD/FX/A0002/S04/P00 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1

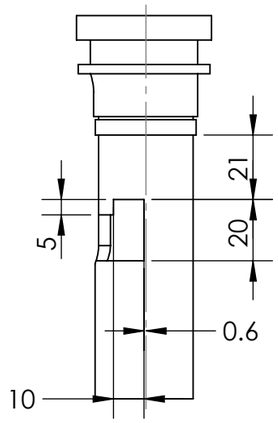


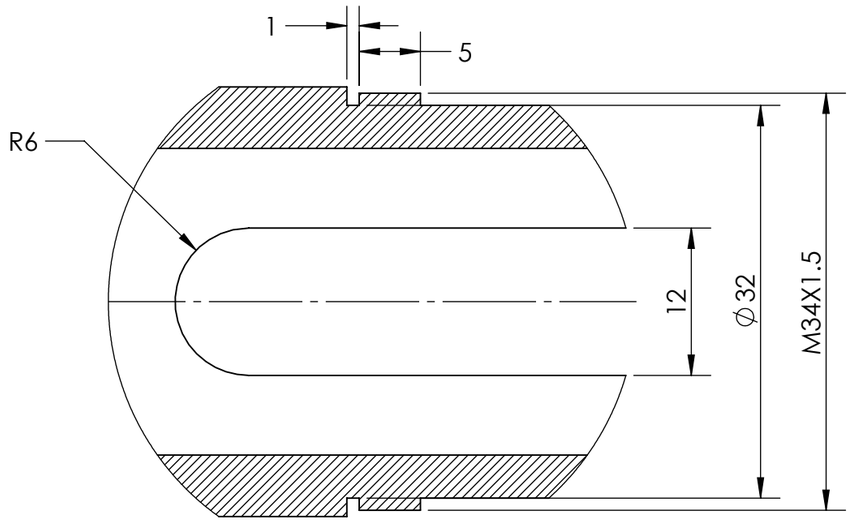


SECTION H-H



ISOMETRIC VIEW





DETAIL J
SCALE 2 : 1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SHAFT HOUSING

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

GOVERNMENT OF INDIA
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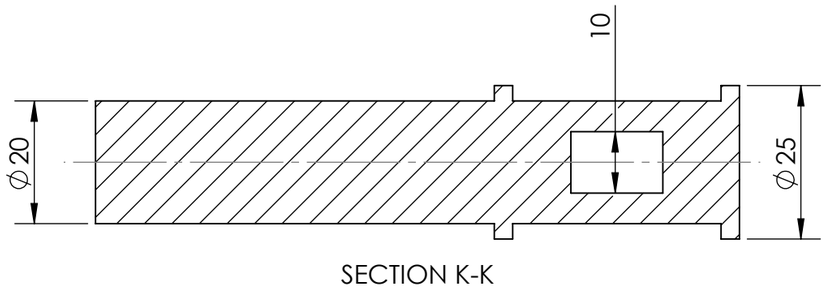
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

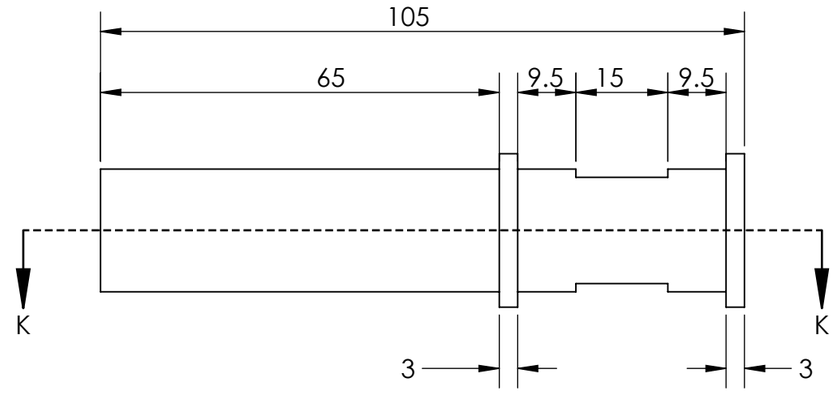
MATERIAL: SS 17-4 PH

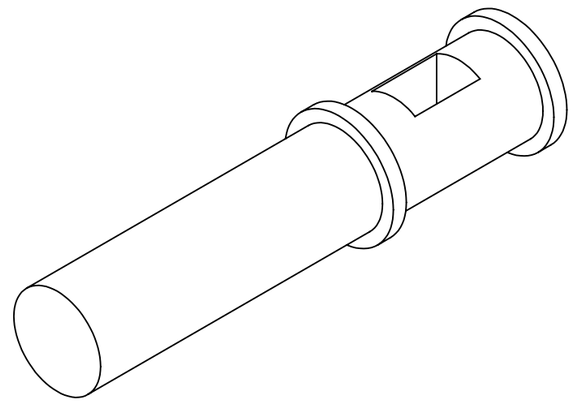
DWG NO. SEAD/FX/A0002/S04/P01 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1



SECTION K-K





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE:

SHAFT

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 17-4 PH

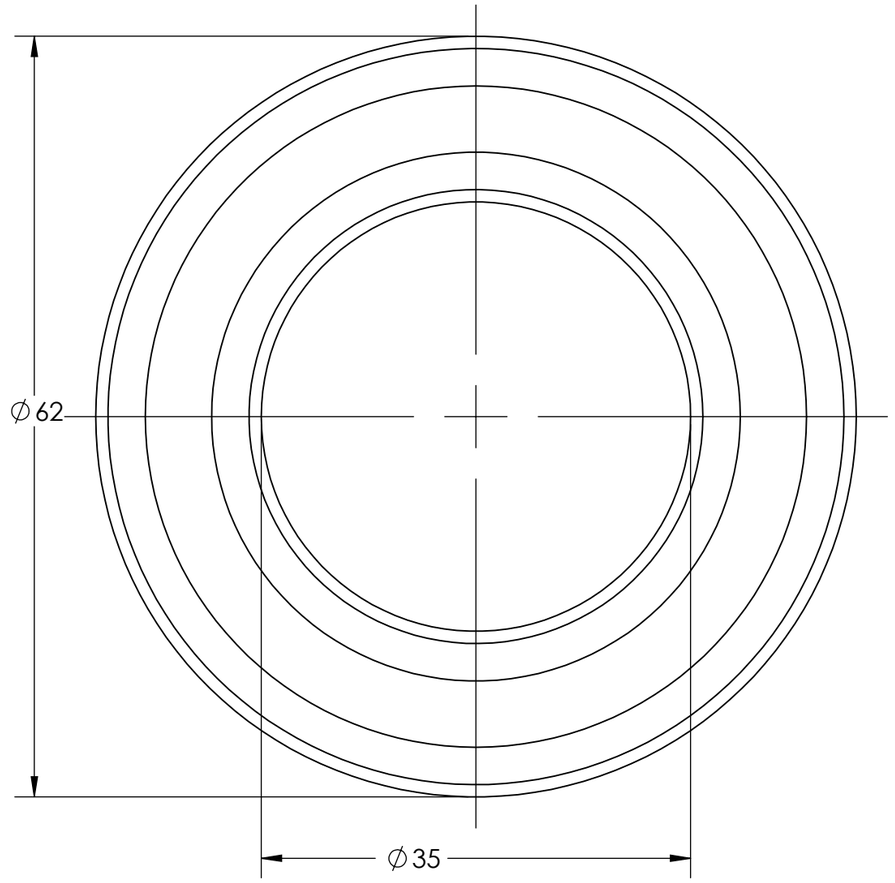
DWG NO. SEAD/FX/A0002/S04/P02

A3

CALCULATED MASS:

SCALE: 1:1

SHEET 1 OF 1



SPECIFICATION OF RADIAL BALL BEARING:

STATIC LOAD RATING : 10.2 kN

DYNAMIC LOAD RATING : 16.8 kN

RADIAL BALL BEARING:

RADIAL BALL BEARING SKF-6007

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BALL BEARING

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

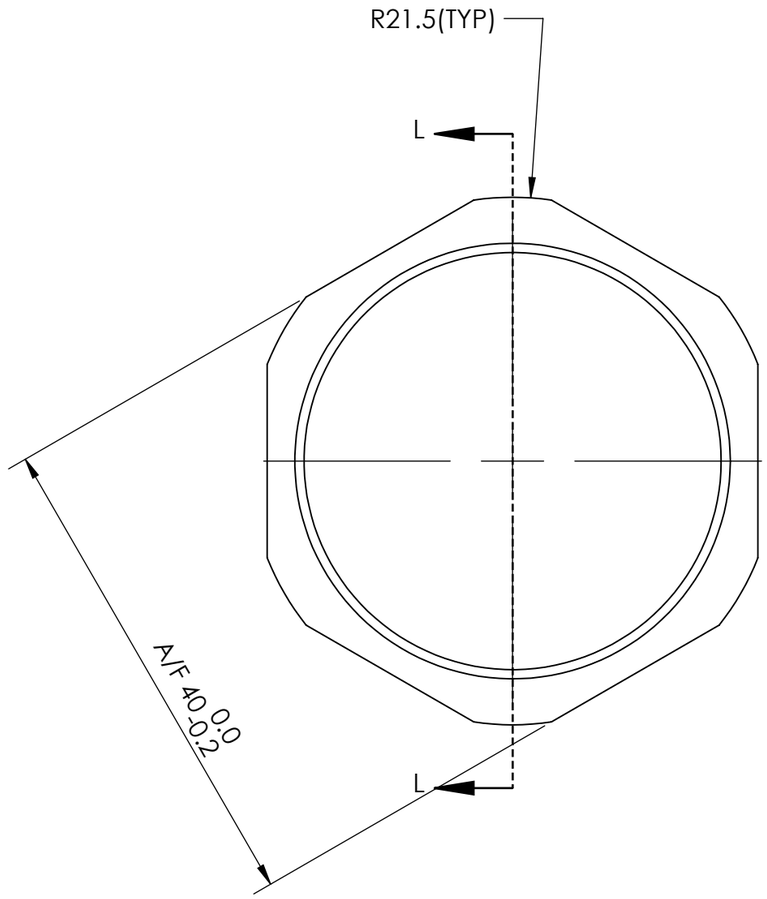
SEAD

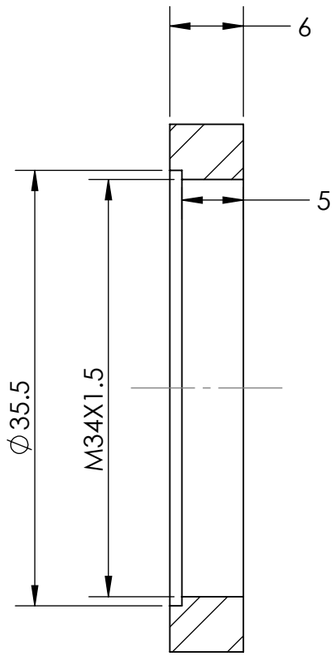
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

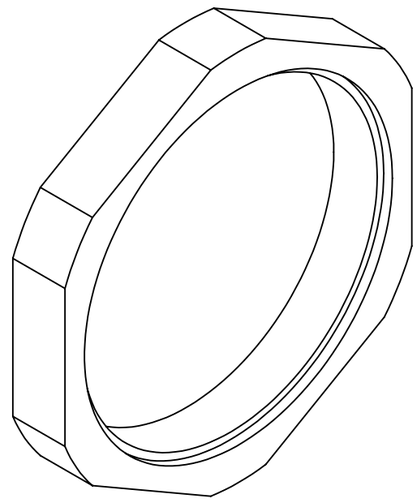
DWG NO. SKF-6007 | A3

CALCULATED MASS: | SCALE: 2:1 | SHEET 1 OF 1





SECTION L-L



ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BEARING ID LOCK

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

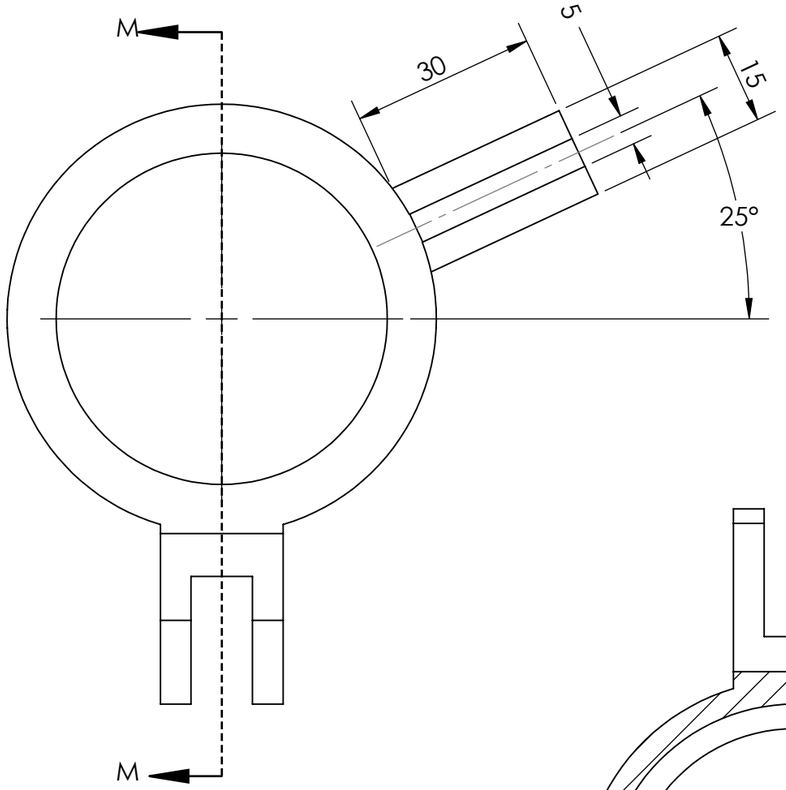
SEAD

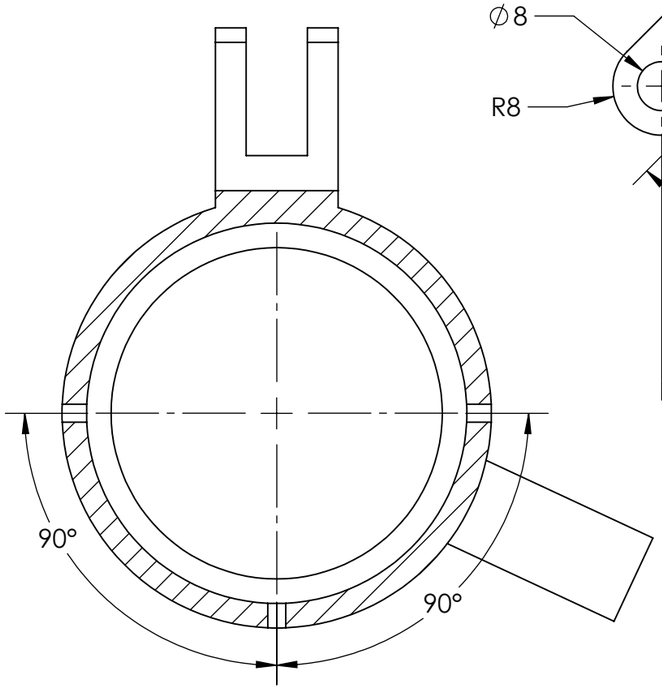
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 304 L

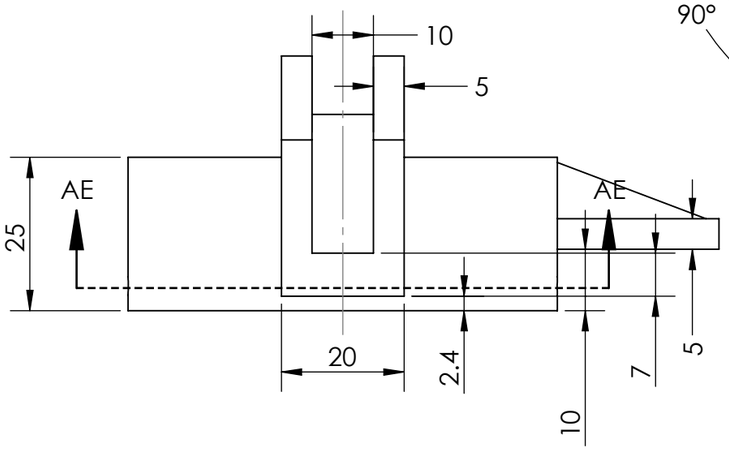
DWG NO. SEAD/FX/A0001/S04/P03 | A3

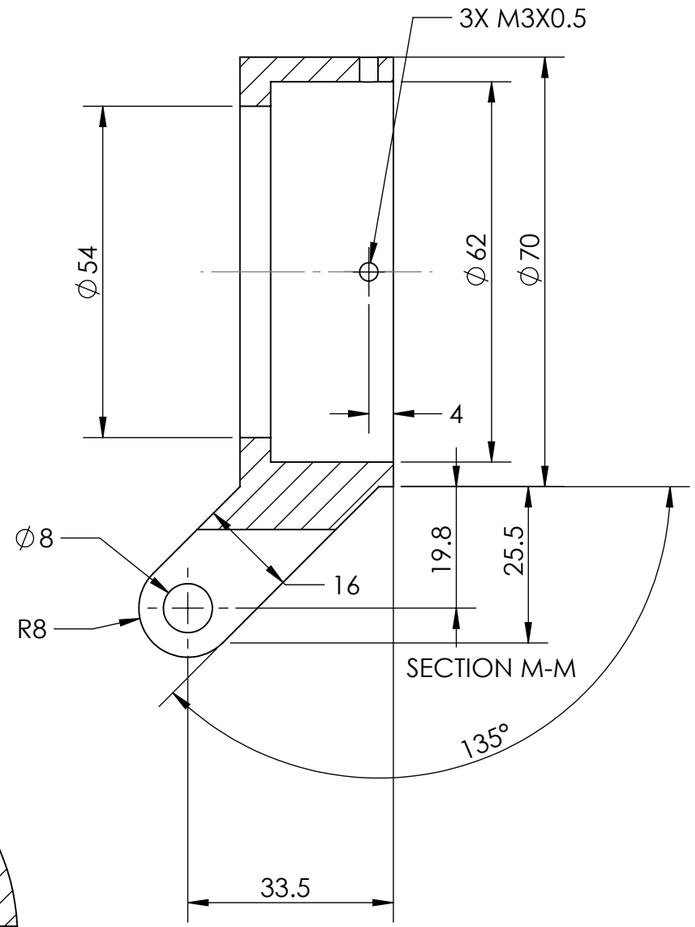
CALCULATED MASS: | SCALE: 2:1 | SHEET 1 OF 1



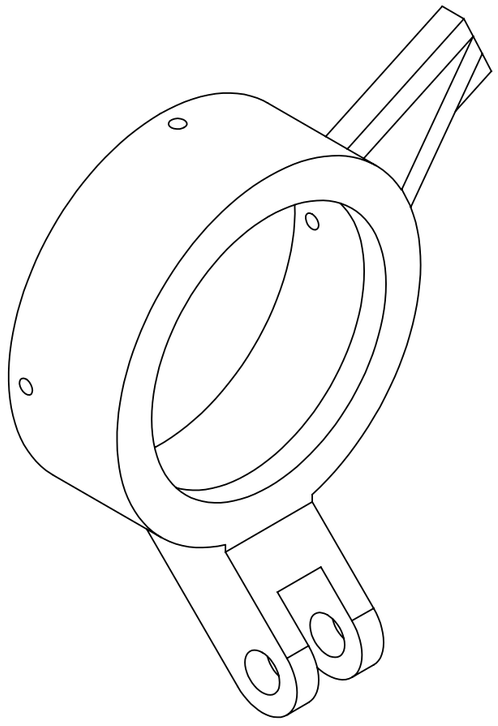


SECTION AE-AE





SECTION M-M



ISOMETRIC VIEW

DO NOT SCALE DRAWING | REVISION

TITLE: BEARING OD LOCK

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

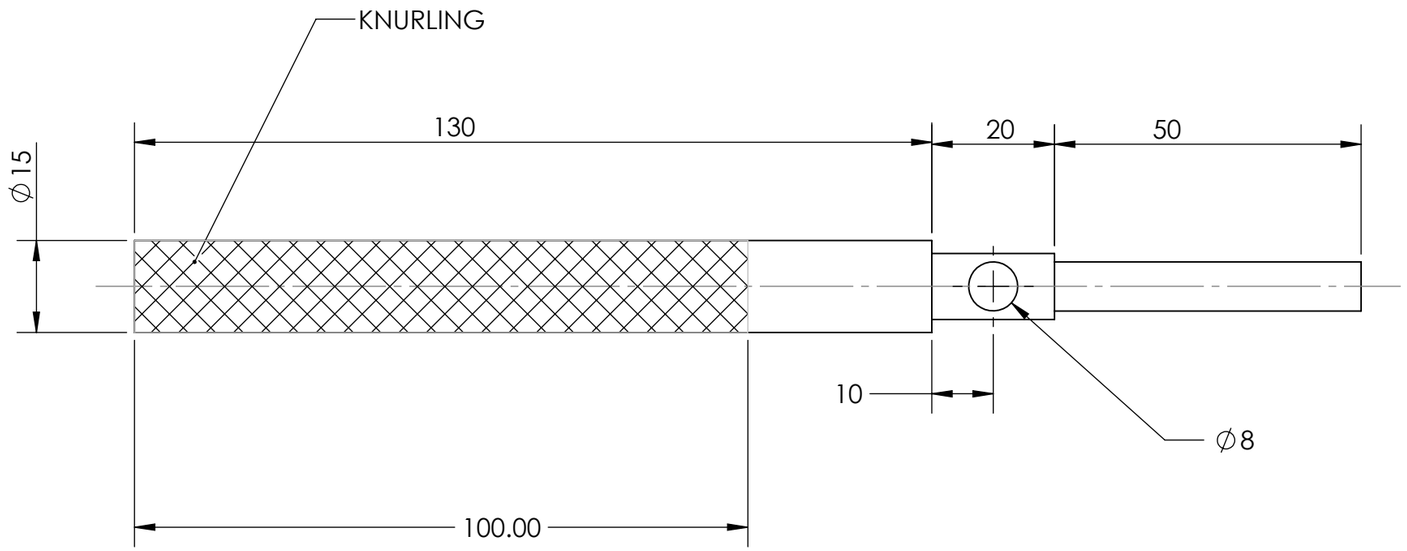
SEAD

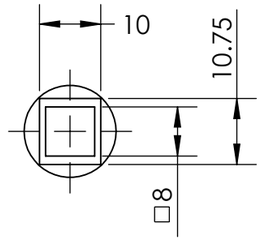
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

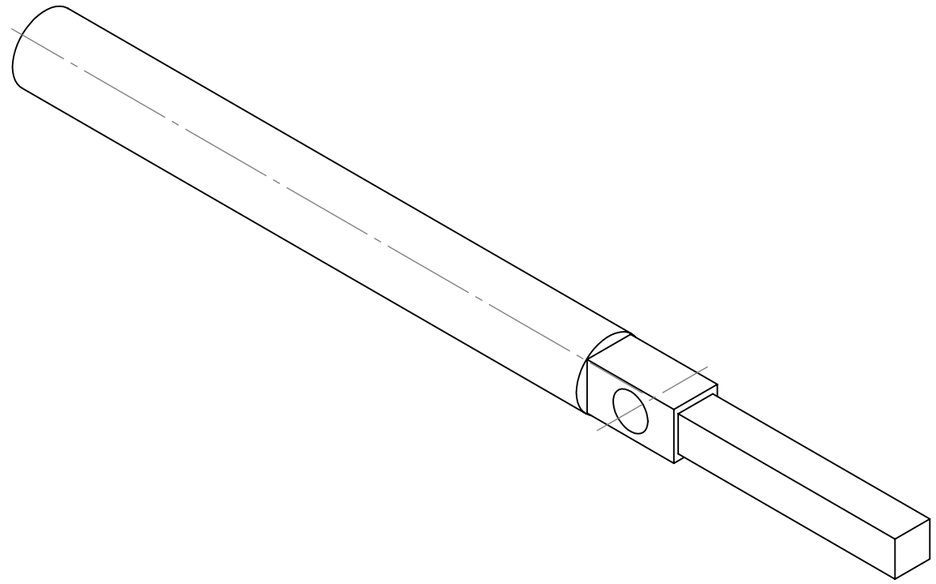
MATERIAL: SS 304 L

DWG NO. SEAD/FX/A0002/S04/P04 | A3

CALCULATED MASS: | SCALE: 1:1 | SHEET 1 OF 1







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: LEVER

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

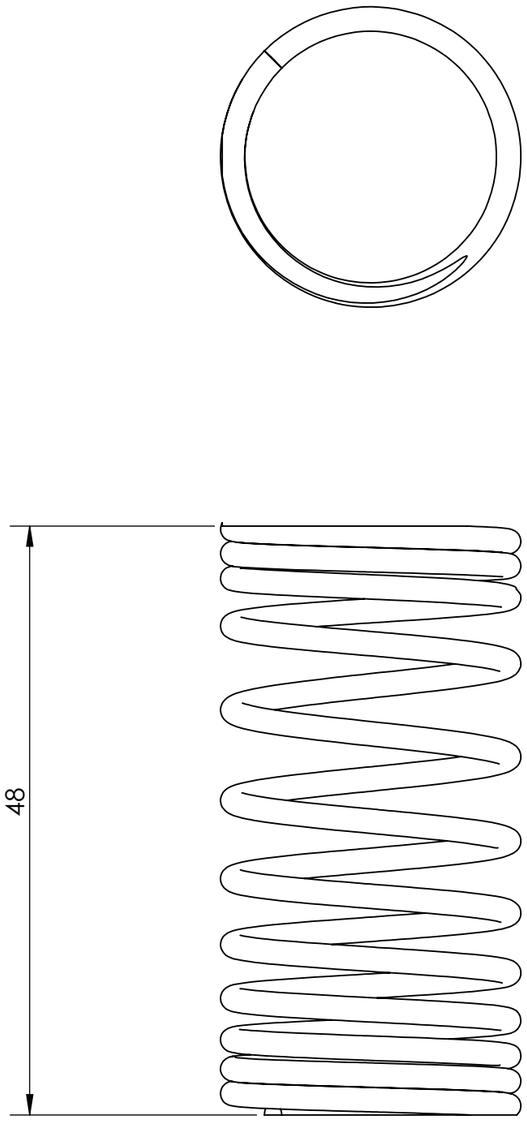
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 304 L

DWG NO. SEAD/FX/A0002/S04/P05 | A3

CALCULATED MASS: | SCALE: 1:1 | SHEET 1 OF 1



SPECIFICATION:

SL.NO.	DESCRIPTION	DIMENSION
1	SPRING WIRE DIAMETER	∅2 mm
2	MEAN COIL DIAMETER	∅22.5 mm
3	FREE LENGTH	48 mm
4	ACTIVE NUMBER OF COILS	6
5	SPRING STIFNESS	2.8 N/mm
6	END TYPE	SQUARED AND GROUND

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: HELICAL SPRING

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

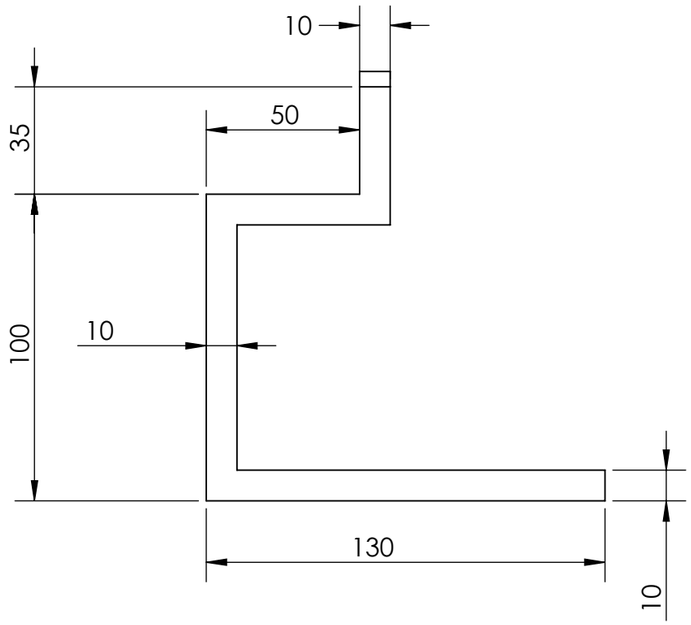
SEAD

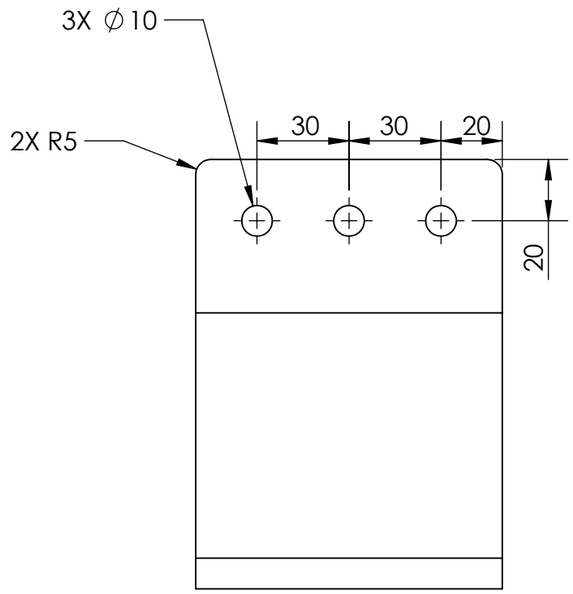
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

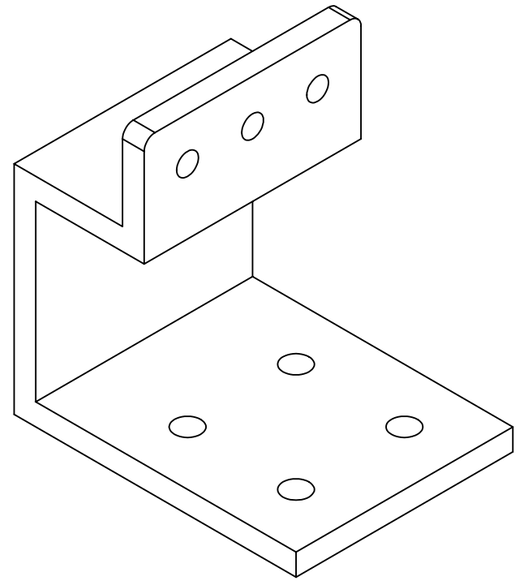
MATERIAL: SPRING STEEL

DWG NO. SEAD/FX/A0002/S04/P06 | A3

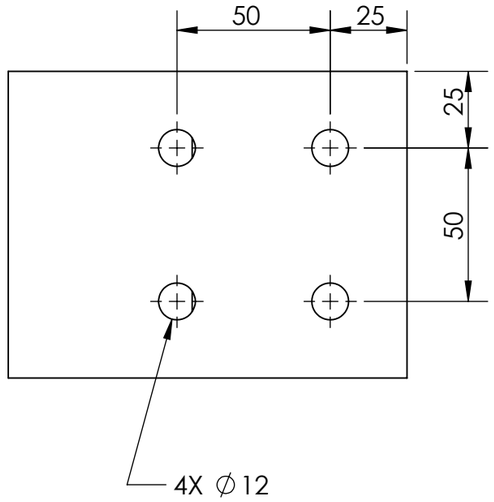
CALCULATED MASS: | SCALE: 2:1 | SHEET 1 OF 1







ISOMETRIC VIEW



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: LIMIT SENSING PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

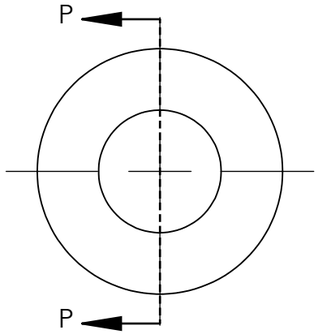
SEAD

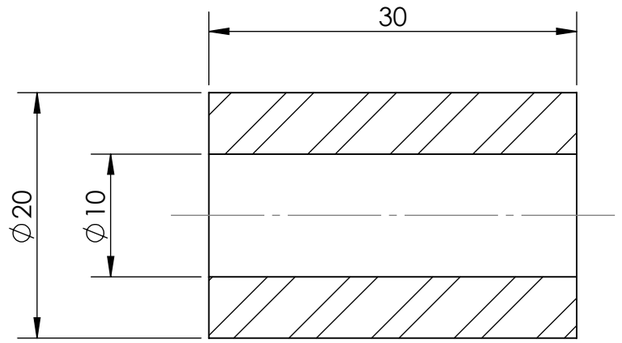
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 304 L

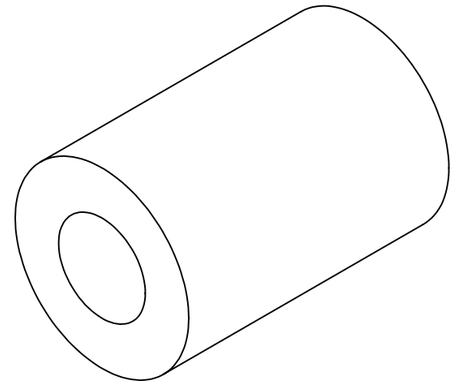
DWG NO. SEAD/FX/A0002/S01/P03 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1





SECTION P-P



ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: LINEAR STOPPER

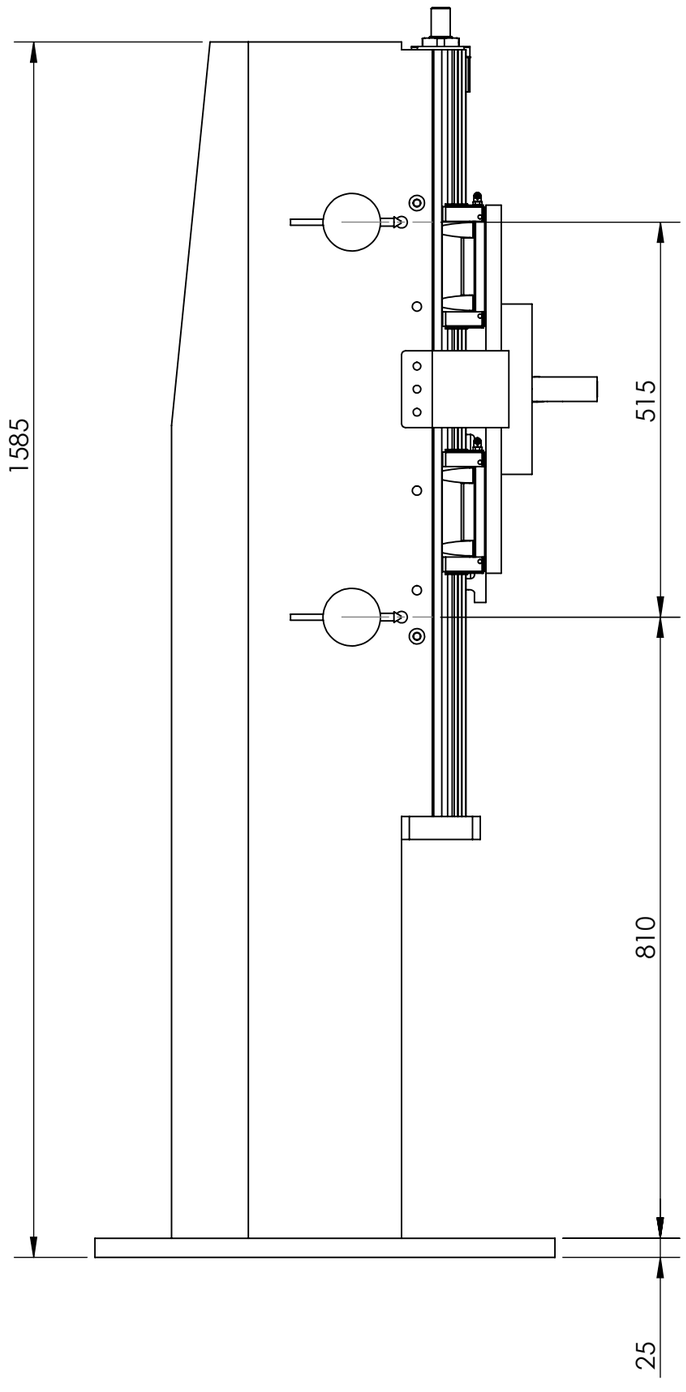
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APP'V'D	GOWTHAMAN P	19-NOV	GP

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 17-4 PH

DWG NO. SEAD/FX/A0002/S01/P04 | A3

CALCULATED MASS: | SCALE: 2:1 | SHEET 1 OF 1



SPECIFICATION OF LIMIT SWITCH SENSOR:
PREFERED MAKE:

FCG FLAME PROOF CONTROL GEARS PVT. LTD.,

EX-D 11A/11B T6 IP-66

TYPE NO : IJ 61110

RATING : 10A, 415V AC 50HZ

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: LIMIT SWITCH SENSOR

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

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ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

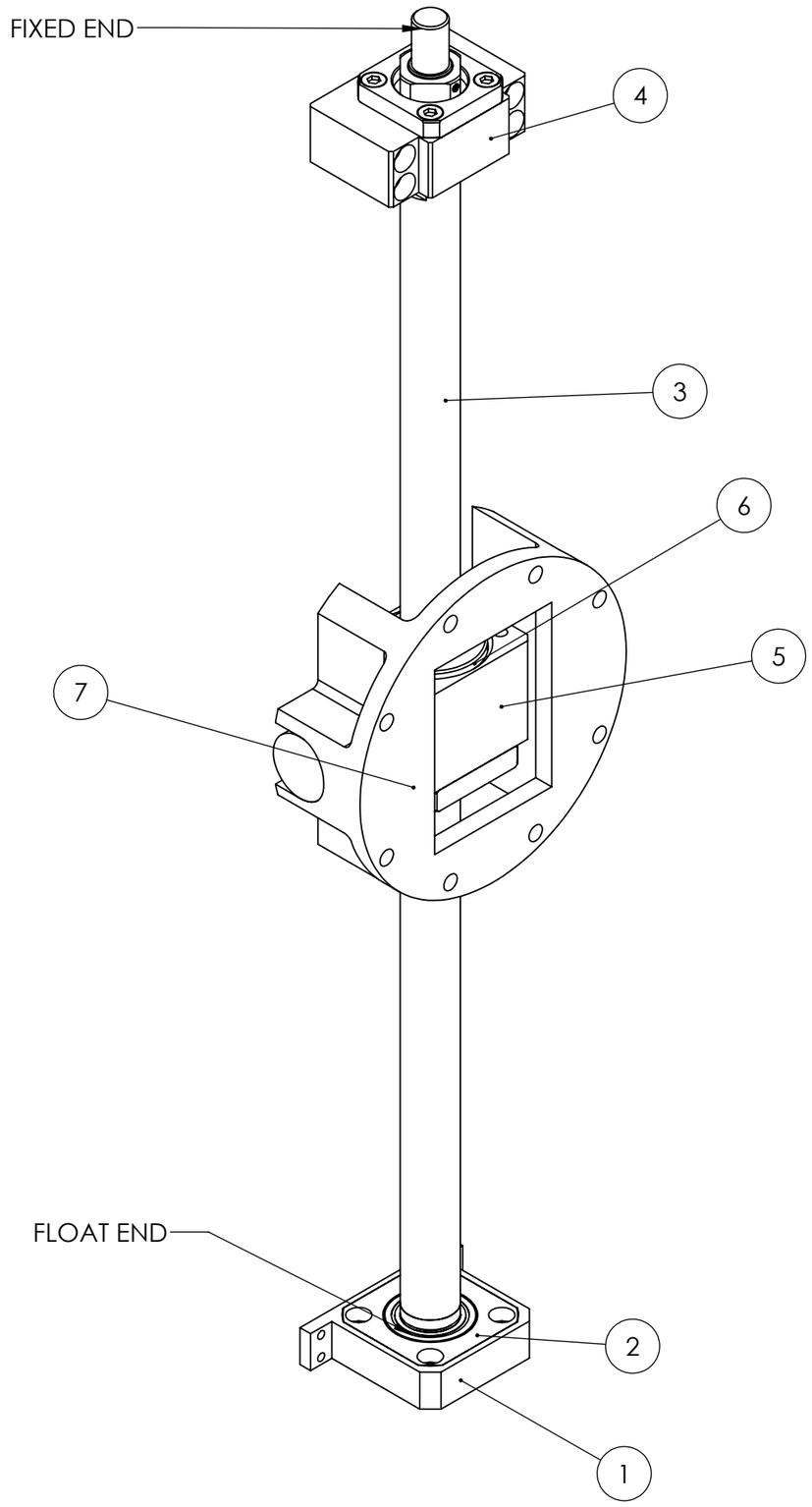
DWG NO. FCG-IJ 61110

A3

CALCULATED MASS:

SCALE: 1:8

SHEET 1 OF 1



BOM:

PART NO.	DESCRIPTION	DRAWING NO.	QTY.
1	BLOCK HOLDER	SEAD/FX/A0002/S05/P01	1
2	SUPPORT UNIT (FLOAT END)	THK-FF 30	1
3	BALL SCREW	BTK 4010-5.3	1
4	SUPPORT UNIT (FIXED END)	THK-BK 30	1
5	CARRIAGE BLOCK	SEAD/FX/A0002/S05/P02	1
6	BALL SCREW NUT	BTK 4010-5.3ZZ NUT	1
7	ACTUATE CLAMP	SEAD/FX/A0002/S05/P03	1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BALL SCREW ASSEMBLY

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

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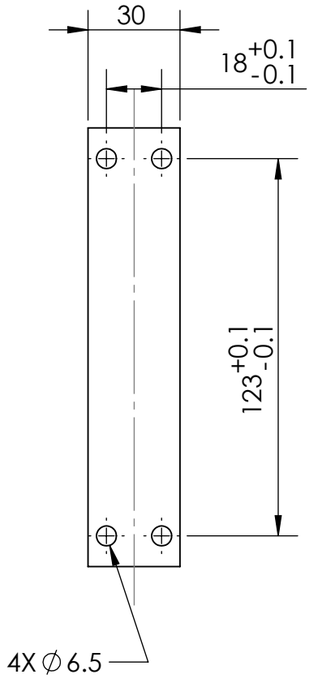
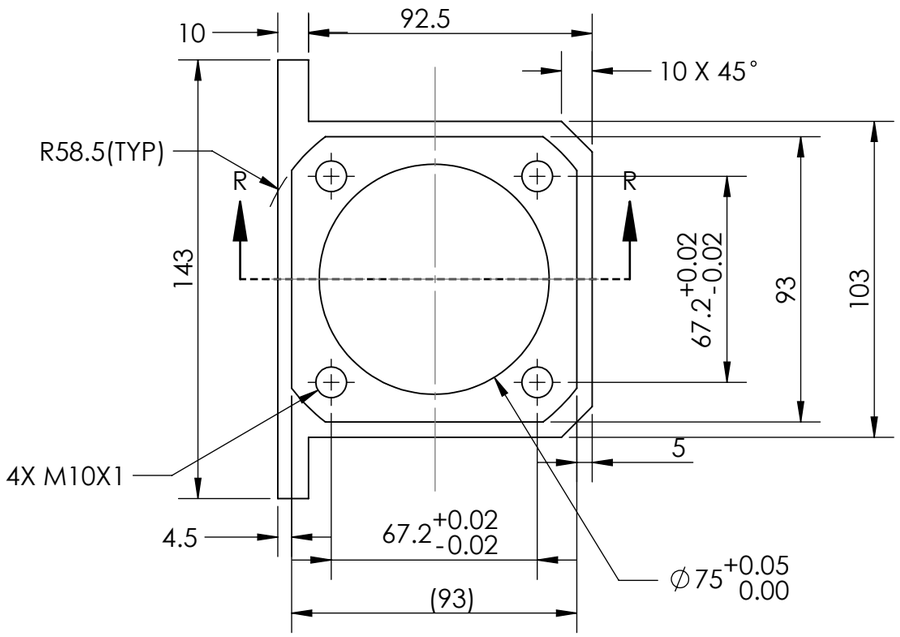
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

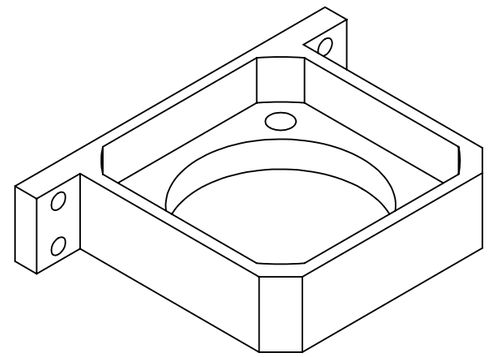
MATERIAL: --

DWG NO. SEAD/FX/A0002/S05/P00 | A3

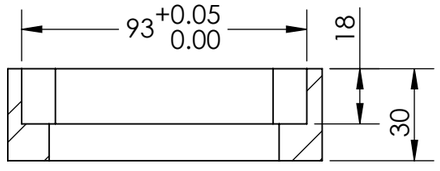
CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1







ISOMETRIC VIEW



SECTION R-R

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BLOCK HOLDER

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

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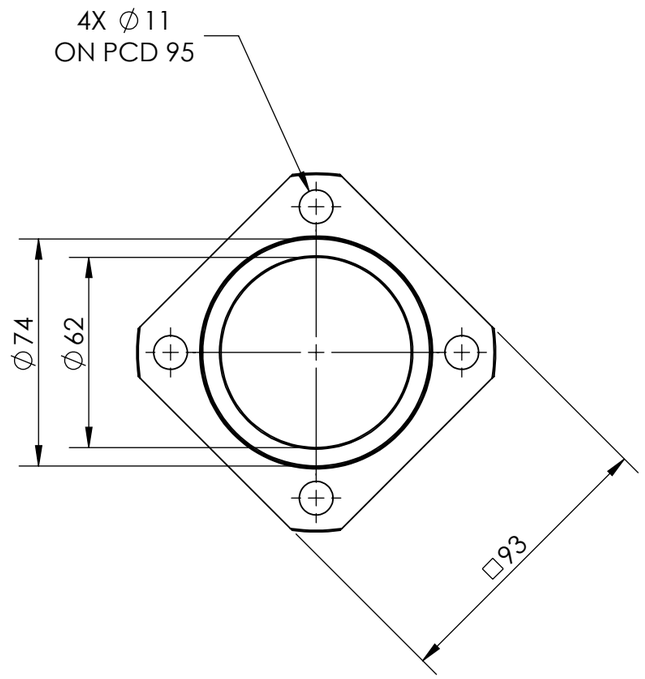
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 17-4 PH

DWG NO. SEAD/FX/A0002/S05/P01 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1



SPECIFICATION OF SUPPPORT UNIT(FLOAT END):

FLOAT TYPE SUPPORT UNIT

SHAFT OD OF THE BEARING: 30 mm

SUPPORT UNIT DEPEND ON THE BALL SCREW SHAFT DIMENSION

BALL SCREW:

THK SUPPORT UNIT: FF 30

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SUPPORT UNIT FLOAT END

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

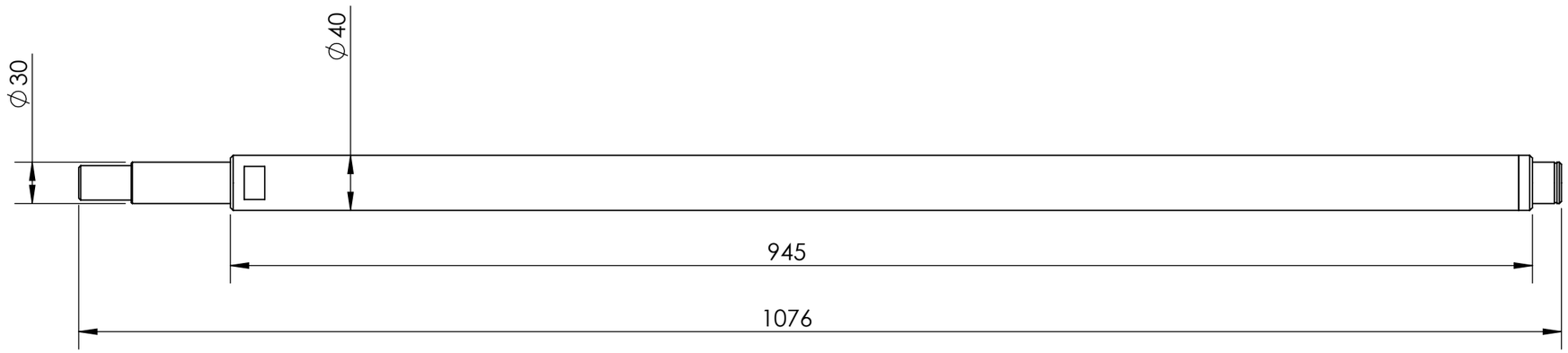
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

DWG NO. THK-FF 30 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1



SPECIFICATION OF BALL SCREW:

STATIC LOAD RATING	: 134.9 kN
DYNAMIC LOAD RATING	: 40 kN
ROTATING SPEED	: 80 RPM
AVERAGE LOAD	: 19468 N
DRIVING TORQUE	: 54.18 N-m
SHAFT LENGTH	: 945 mm
LEAD	: 10mm
SERVICE LIFE	: 20000 hrs

BALL SCREW:

THK BALL SCREW : BTK 4010-5.3

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BALL SCREW

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

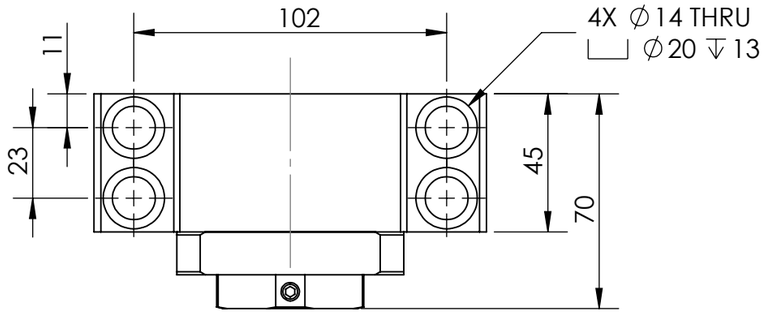
DWG NO. BTK 4010-5.3

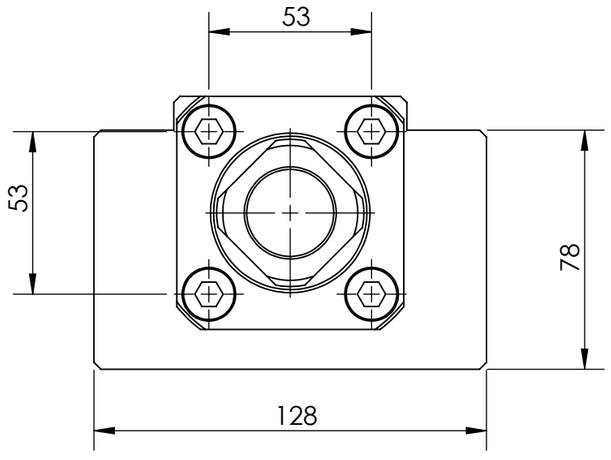
A3

CALCULATED MASS:

SCALE: 1:5

SHEET 1 OF 1





SPECIFICATION OF SUPPPORT UNIT(FIXED END):

SQUARE TYPE SUPPORT UNIT

SHAFT OD OF THE BEARING: 30 mm

SUPPORT UNIT DEPEND ON BALL SCREW SHAFT DIMENSION

BALL SCREW:

THK SUPPORT UNIT: BK 30

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SUPPORT UNIT FIXED END

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

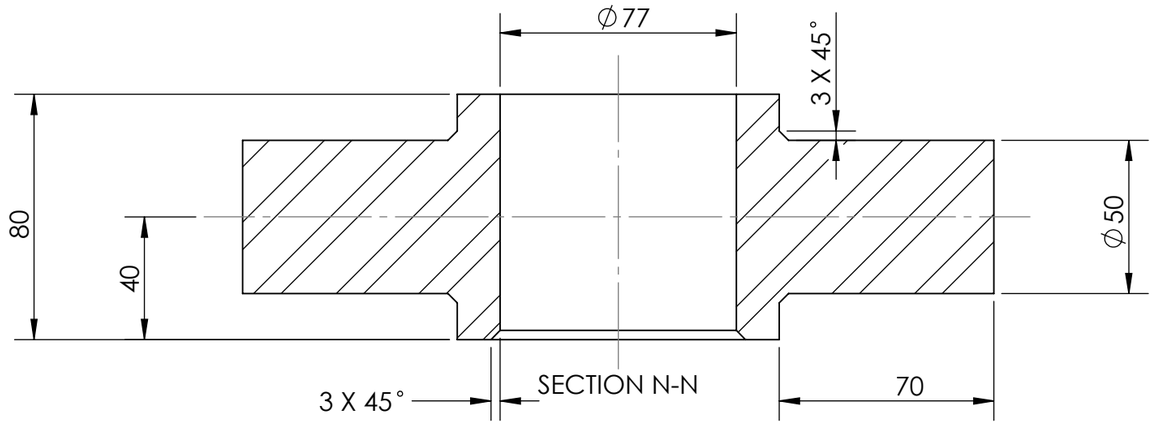
DWG NO. THK-BK 30

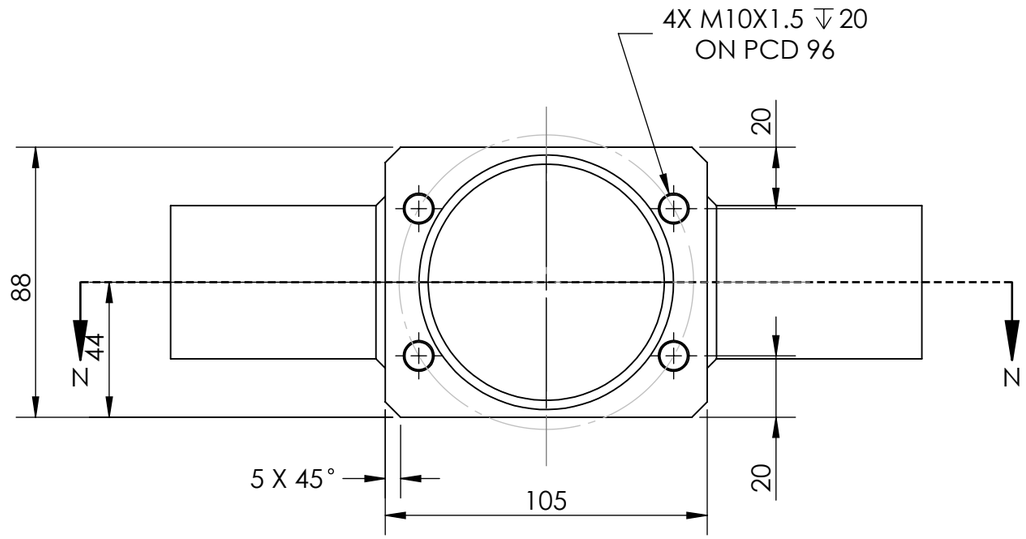
A3

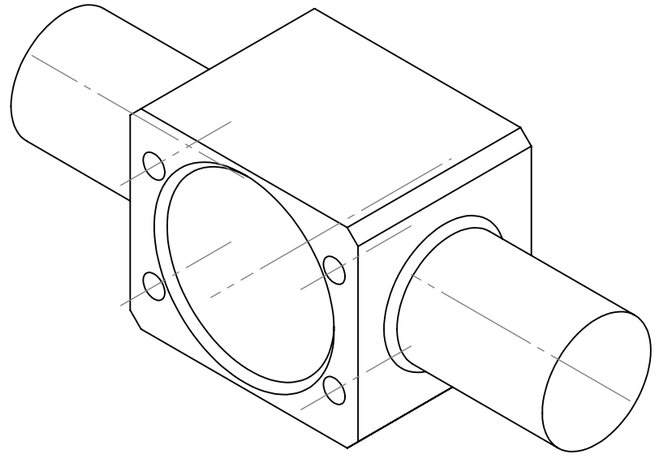
CALCULATED MASS:

SCALE: 1:2

SHEET 1 OF 1







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: CARRIAGE BLOCK

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

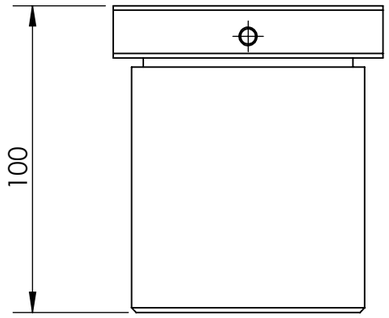
SEAD

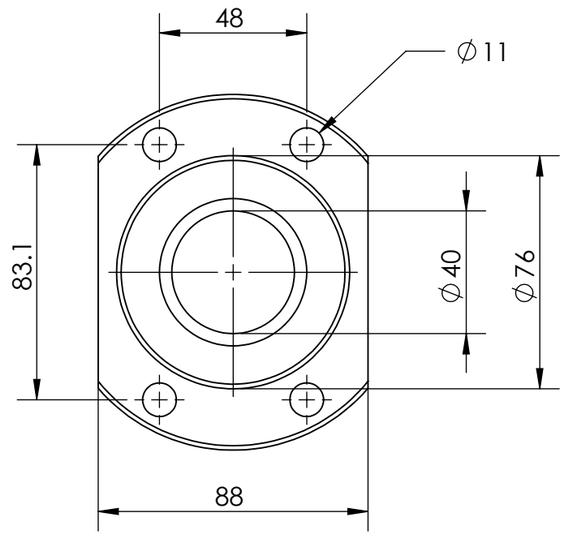
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 17-4 PH

DWG NO. SEAD/FX/A0002/S05/P02 | A3

CALCULATED MASS: | SCALE: 1:1 | SHEET 1 OF 1





SPECIFICATION OF BALL SCREW NUT:

OUTER DIAMETER : 76 mm

PCD : 90 mm

Tw : 88 mm

BALL SCREW NUT DEPEND ON BALL SCREW SHAFT DIMENSION

BALL SCREW:

THK NUT: BTK 4010V-5.3ZZ NUT

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BALL SCREW NUT

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

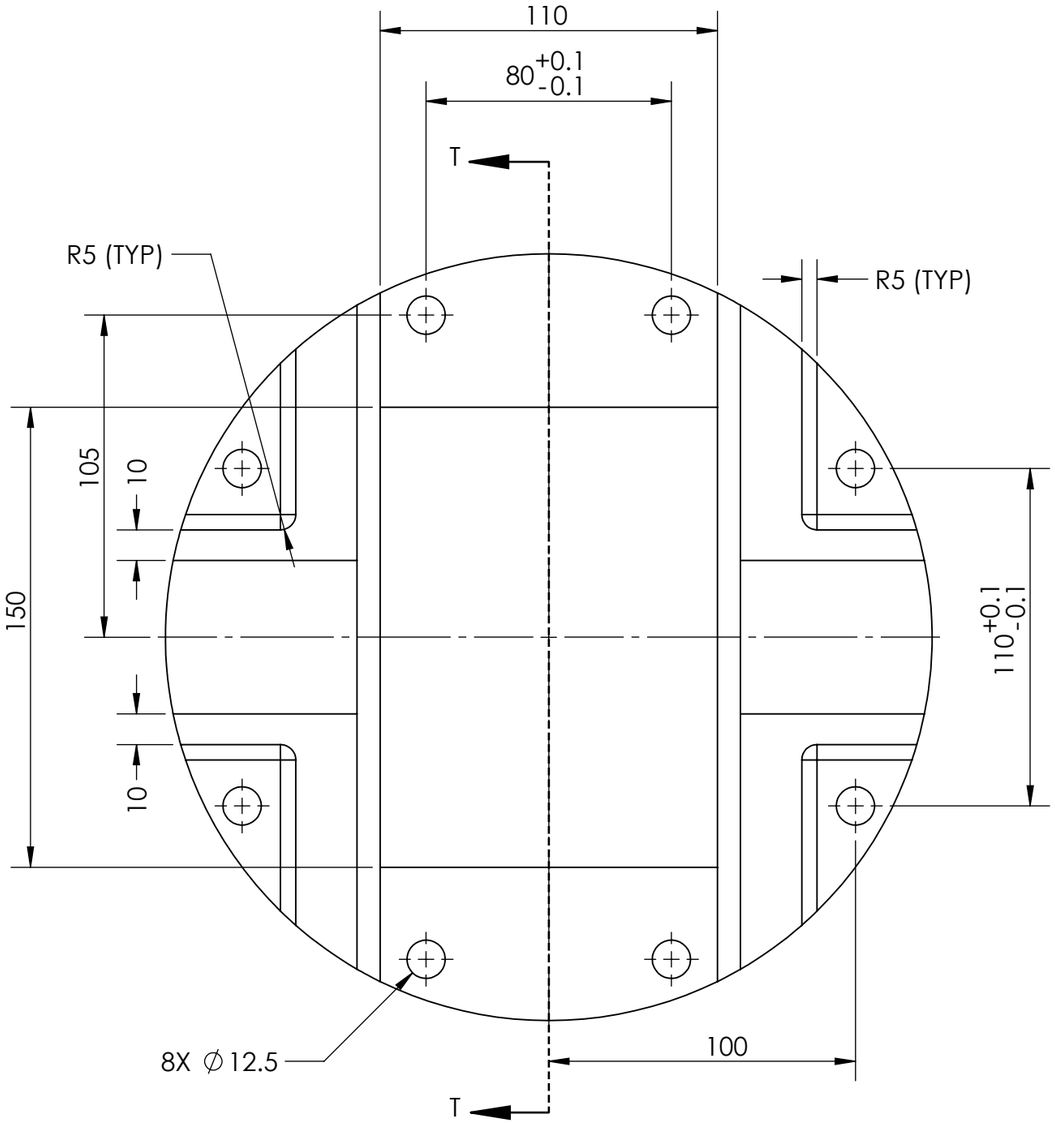
SEAD

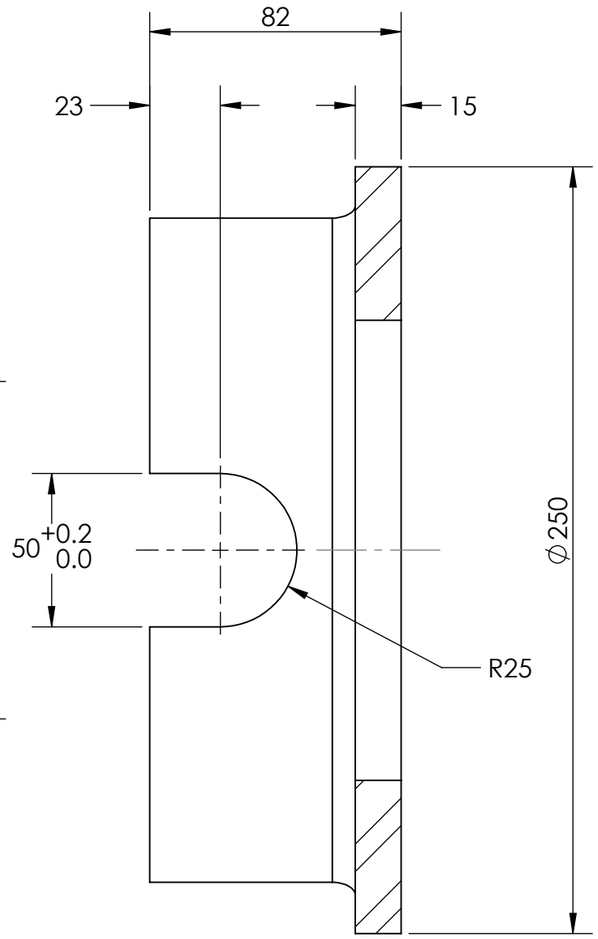
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

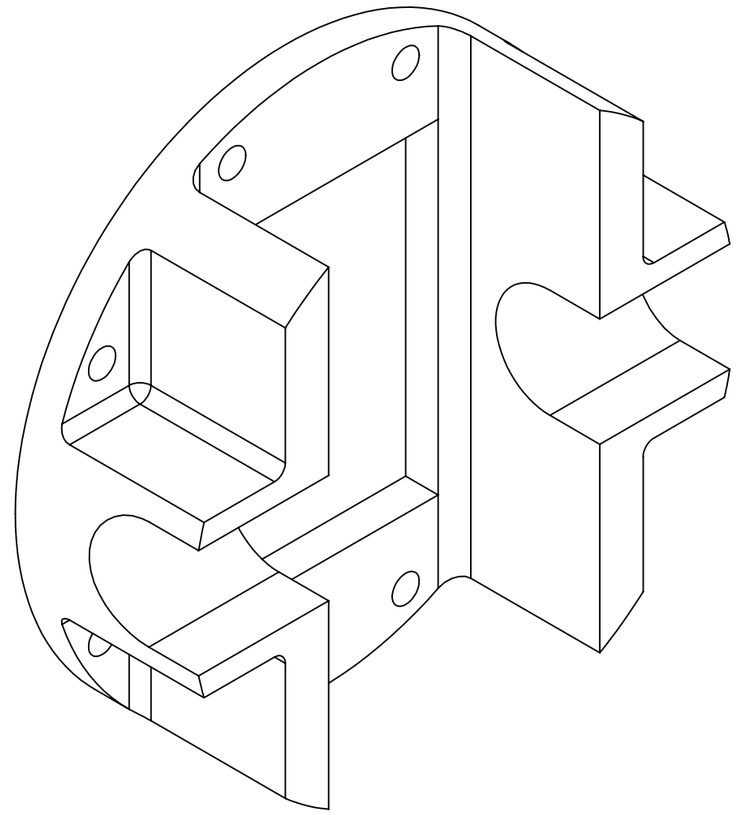
DWG NO. BTK 4010V-5.3ZZ NUT | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1

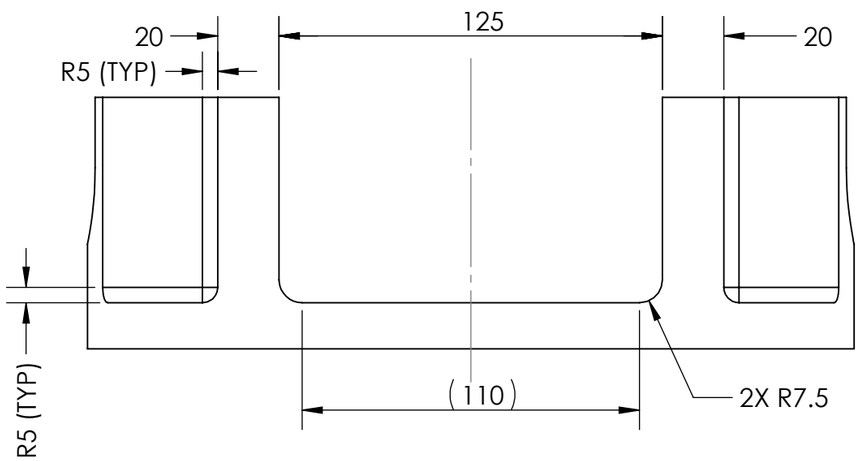




SECTION T-T



ISOMETRIC VIEW



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: ACTUATE CLAMP

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

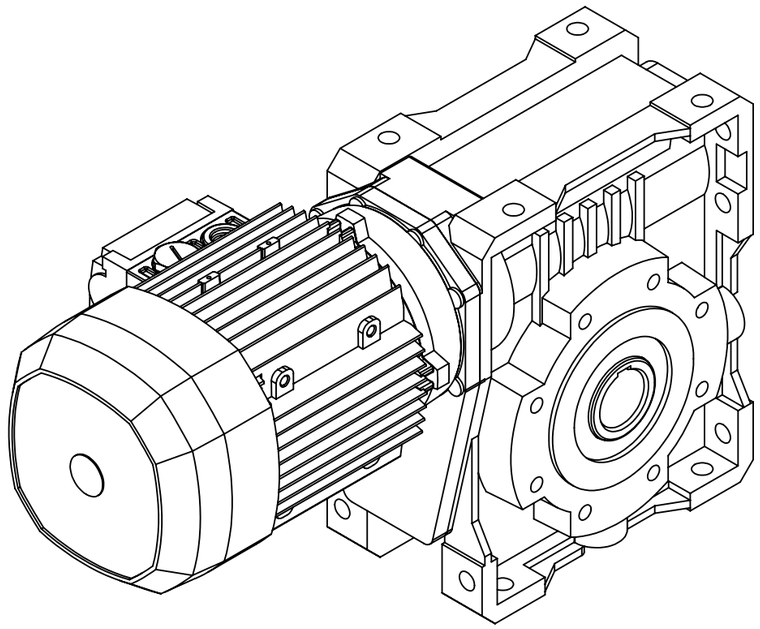
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 17-4 PH

DWG NO. SEAD/FX/A0002/S05/P03 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1



SPECIFICATION:

MOTOR(3 PHASE INDUCTION MOTOR WITH EM BRAKE):

POWER : 1.1 kW (1.5 HP)

SPEED : 1440 RPM

MIN. BRAKE TORQUE : 15 N-m

GEARBOX:

GEAR RATIO : 80

RATED TORQUE : 830 N-m

GEARBOX WITH MOTOR:

BONFIGLIOLI W110_80 P90 BX90S4

NOTE:

1. DESIGN/SELECTION OF COUPLER BETWEEN THE GEAR BOX OUTLET & BALL SCREW IS PARTIES SCOPE.
2. THE COUPLER DESIGN/SELECTION SHALL BE MADE TO TRANSMIT THE MAX. POWER OF MOTOR & TATED TORQUE OF GEAR BOX.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: GEARBOX WITH MOTOR

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

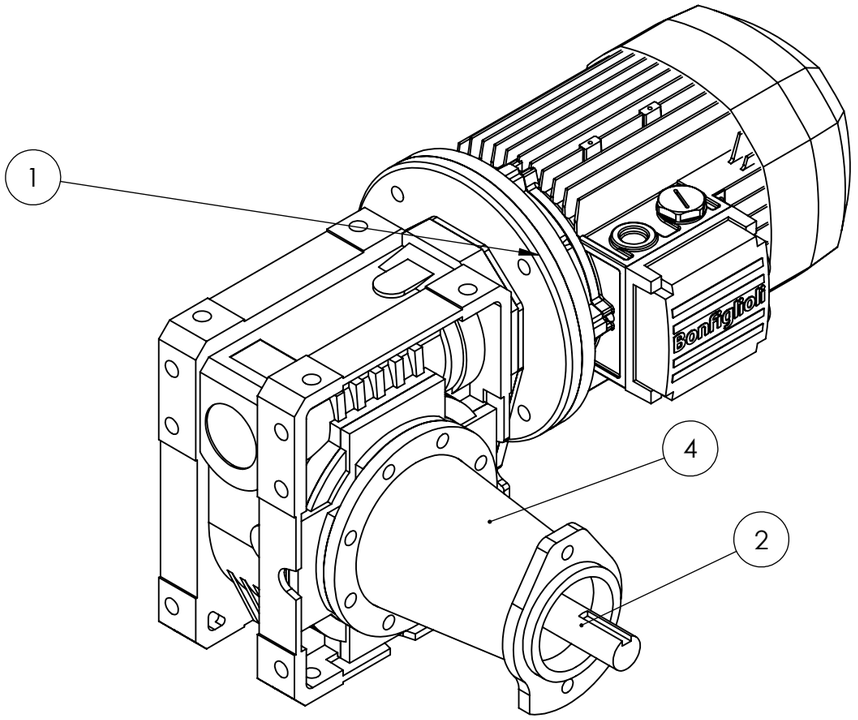
DWG NO. W110_80 P90 BX90S4

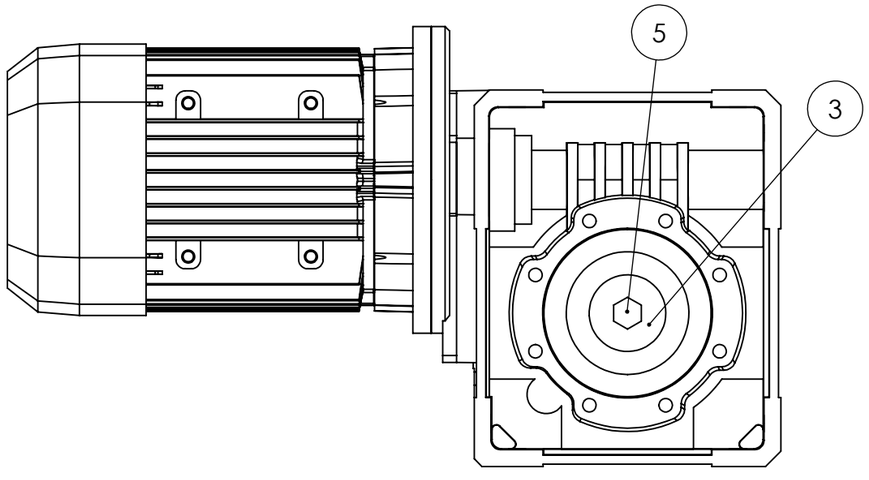
A3

CALCULATED MASS:

SCALE:1:4

SHEET 1 OF 1





BOM:

PART NO.	DESCRIPTION	DRAWING NO.	QTY.
1	GEARBOX WITH MOTOR	W86_15 P90 BX90S4	1
2	DRIVE SHAFT	SEAD/FX/A0002/S06/P01	1
3	SHAFT HOLDER	SEAD/FX/A0002/S06/P02	1
4	SHAFT HOUSING	SEAD/FX/A0002/S06/P03	1
5	BOLT	GRADE/CLASS 10.9	AS REQUIRED

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: GEARBOX WITH MOTOR ASSEMBLY

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

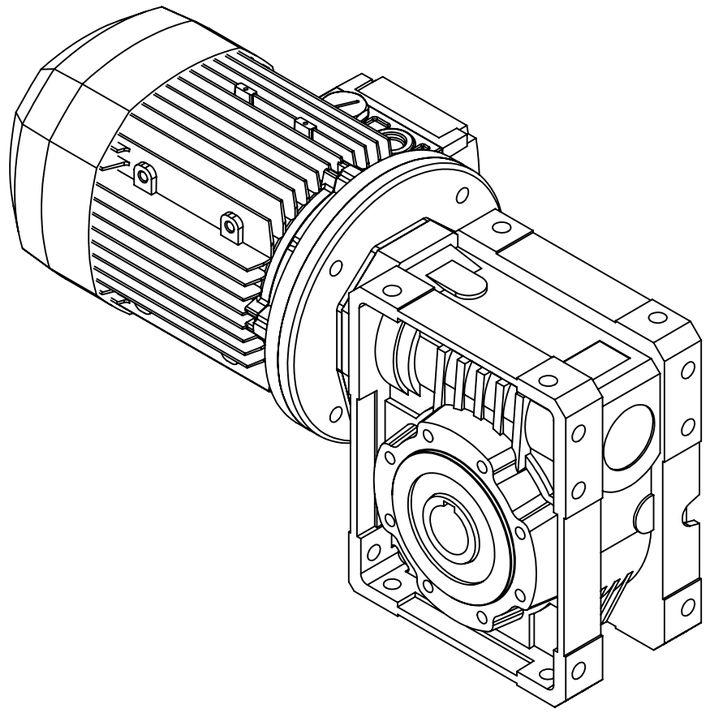
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

DWG NO. SEAD/FX/A0002/S06/P00 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1



SPECIFICATION:

MOTOR(3 PHASE INDUCTION MOTOR WITH EM BRAKE):

POWER : 1.1 kW (1.5 HP)

SPEED : 1440 RPM

MIN. BRAKE TORQUE : 15 N-m

GEARBOX:

GEAR RATIO : 15

RATED TORQUE : 440 N-m

GEARBOX WITH MOTOR:

BONFIGLIOLI W86_15 P90 BX90S4

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: GEARBOX WITH MOTOR

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

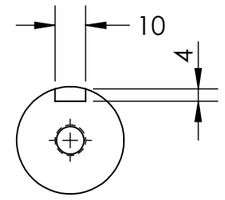
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

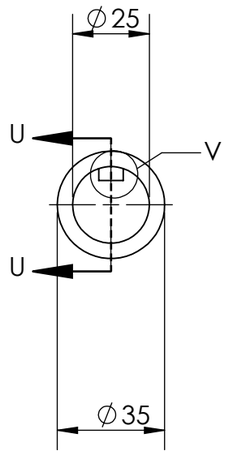
MATERIAL: --

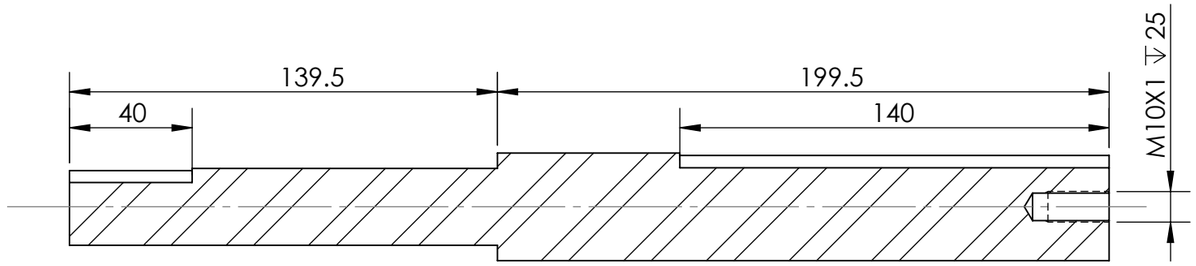
DWG NO. W86_15 P90 BX90S4 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1

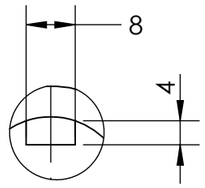


BACK VIEW

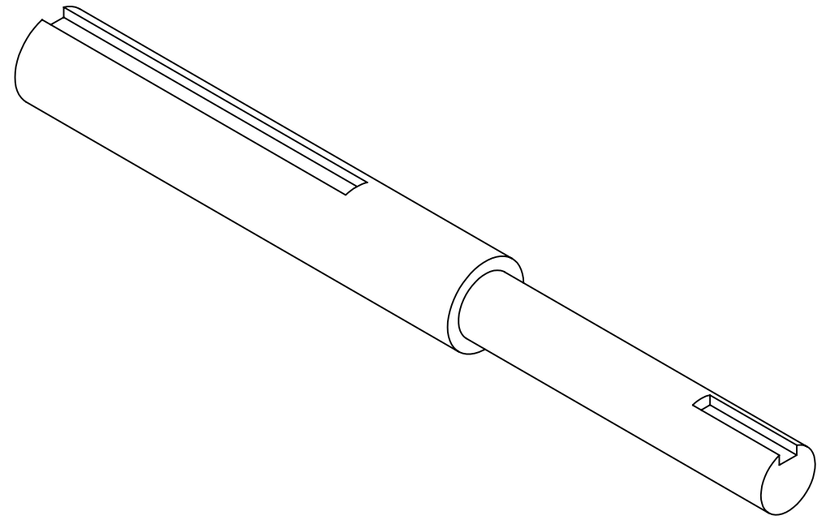




SECTION U-U
SCALE 1 : 2



DETAIL V
SCALE 1 : 1



ISOMETRIC VIEW

NOTE:

1. MATERIAL: 18CrNiMo7-6 OR EQUIVALENT WITH SUITABLE HEAT TREATMENT
   TO ASSURE THE CORE MATERIAL PROPERTIES OF MINIMUM
   YIELD STRENGTH OF 675 MPa, MINIMUM ULTIMATE TENSILE STRENGTH OF 950 MPa.
2. DRIVE SHAFT FOR THE GEARBOX DRAWING CAN BE MODIFIED
   AFTER THE PURCHASE OF STANDARD PART(IMO SLEW RING BEARING).
3. SHAFT KEY WAY SHALL BE MODIFIED ACCORDING TO STANDARD
   AVAILABILITY TO TRANSMIT TORQUE 440 N-m.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: DRIVE SHAFT

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

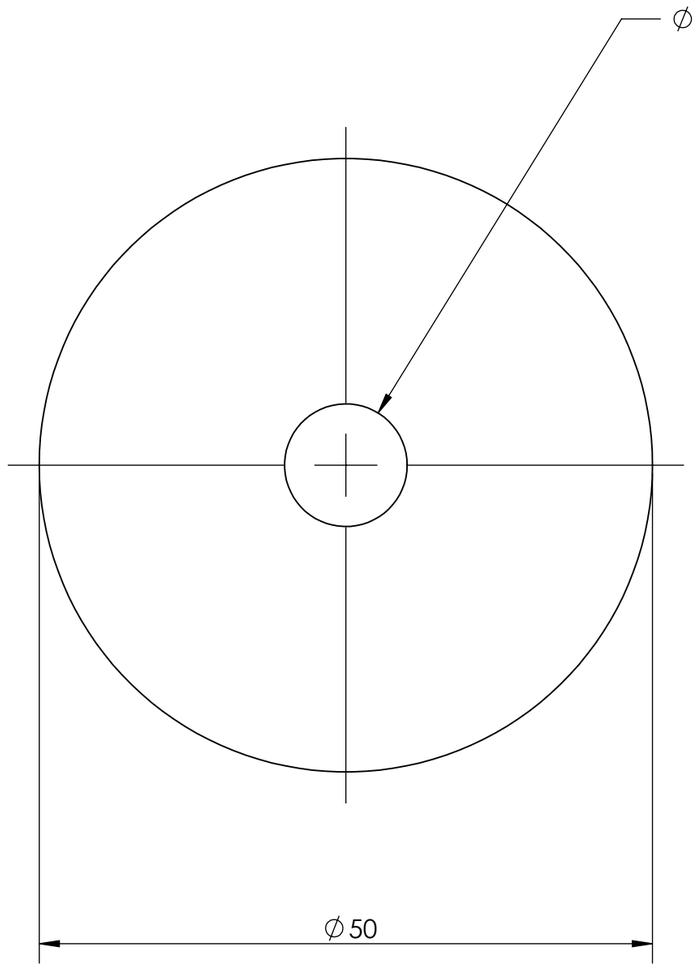
SEAD

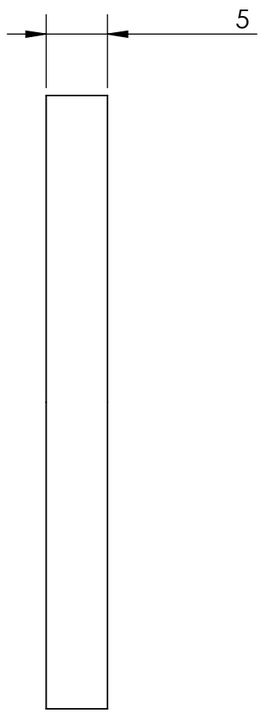
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

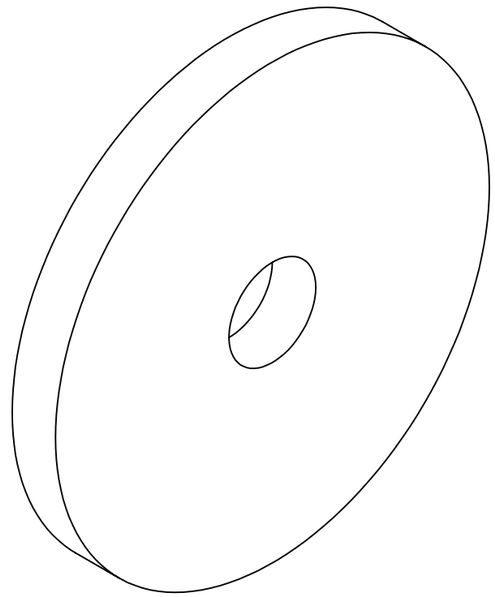
MATERIAL: 18CrNiMo7-6

DWG NO. SEAD/FX/A0002/S06/P01 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1







ISOMETRIC VIEW

NOTE:

1. SHAFT HOLDER SHALL BE MODIFIED ACCORDING TO THE DRIVE SHAFT.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SHAFT HOLDER

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

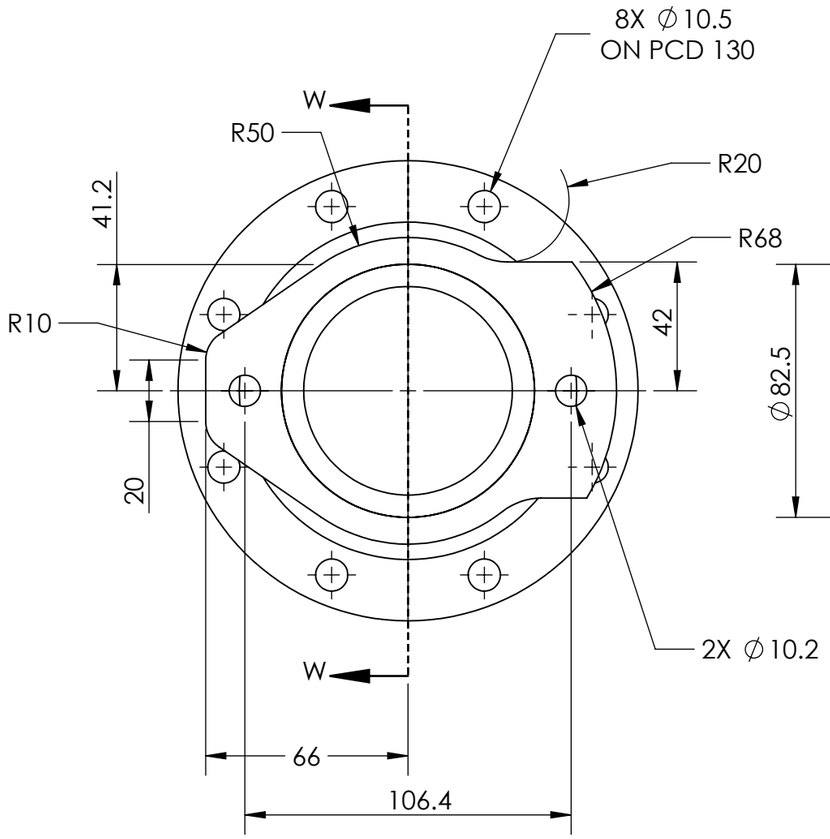
SEAD

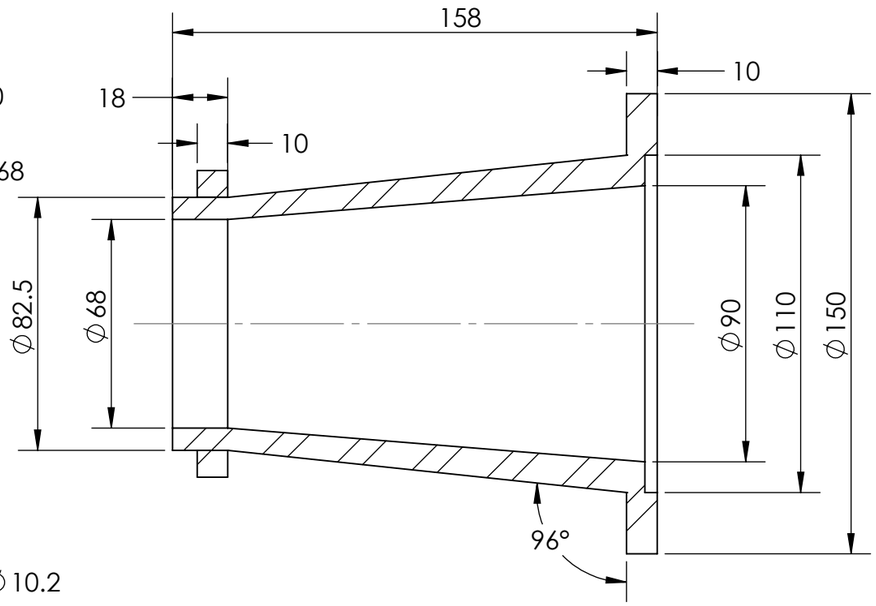
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL

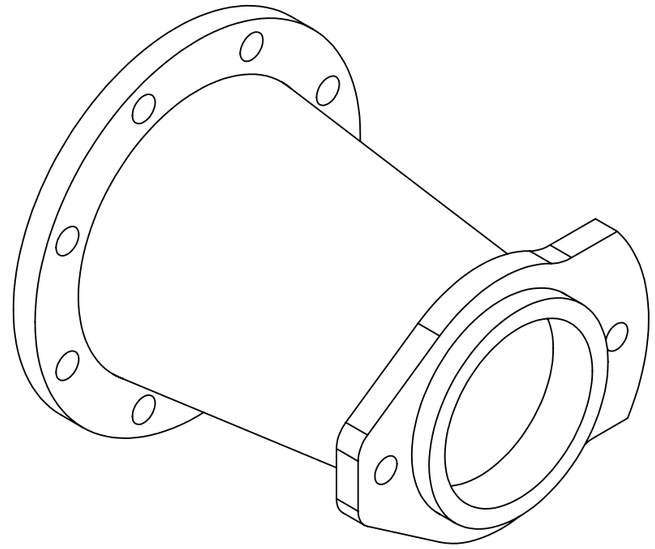
DWG NO. SEAD/FX/A0002/S06/P02 | A3

CALCULATED MASS: | SCALE: 2:1 | SHEET 1 OF 1





SECTION W-W



ISOMETRIC VIEW

NOTE:

1. HOUSING FOR THE DRIVE SHAFT OF GEARBOX AND WHICH HOLDS GEARBOX WITH MOTOR SHALL BE MODIFIED AFTER THE PURCHASE OF STANDARD PART(IMO SLEW BEARING) AND THE MOTOR SHALL BE MOUNTED ACCORDINGLY.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: SHAFT HOUSING

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

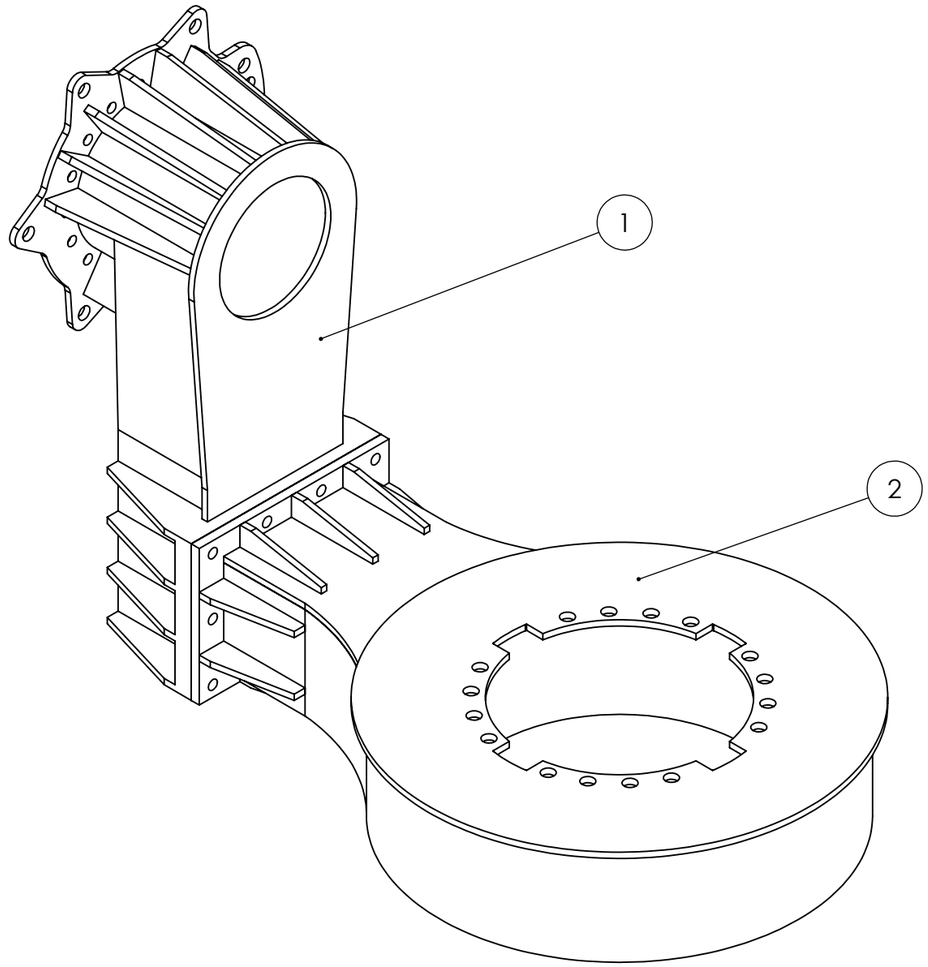
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S06/P03 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1



BOM:

PART NO.	DESCRIPTION	DRAWING NO.	QTY.
1	L-ARM TOP	SEAD/FX/A0002/S02/P01	1
2	L-ARM BOTTOM	SEAD/FX/A0002/S02/P02	1
3	MOP HOUSING PLATE	SEAD/FX/A0002/S02/P03	1
4	LPOT &MOP-V2 PLATE	SEAD/FX/A0002/S02/P04	1
5	LPFT PLATE	SEAD/FX/A0002/S02/P05	1
6	MFP HOLDING ADAPTOR 1	SEAD/FX/A0002/S02/P06	1
7	MFP HOLDING ADAPTOR 2	SEAD/FX/A0002/S02/P07	1
8	MFP HOLDING CLAMP	SEAD/FX/A0002/S02/P08	1
9	MFP SHAFT HOLDING PLATE	SEAD/FX/A0002/S02/P09	1
10	BOLT &NUT	GRADE/CLASS 10.9	AS REQUIRED

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: L-ARM ASSEMBLY

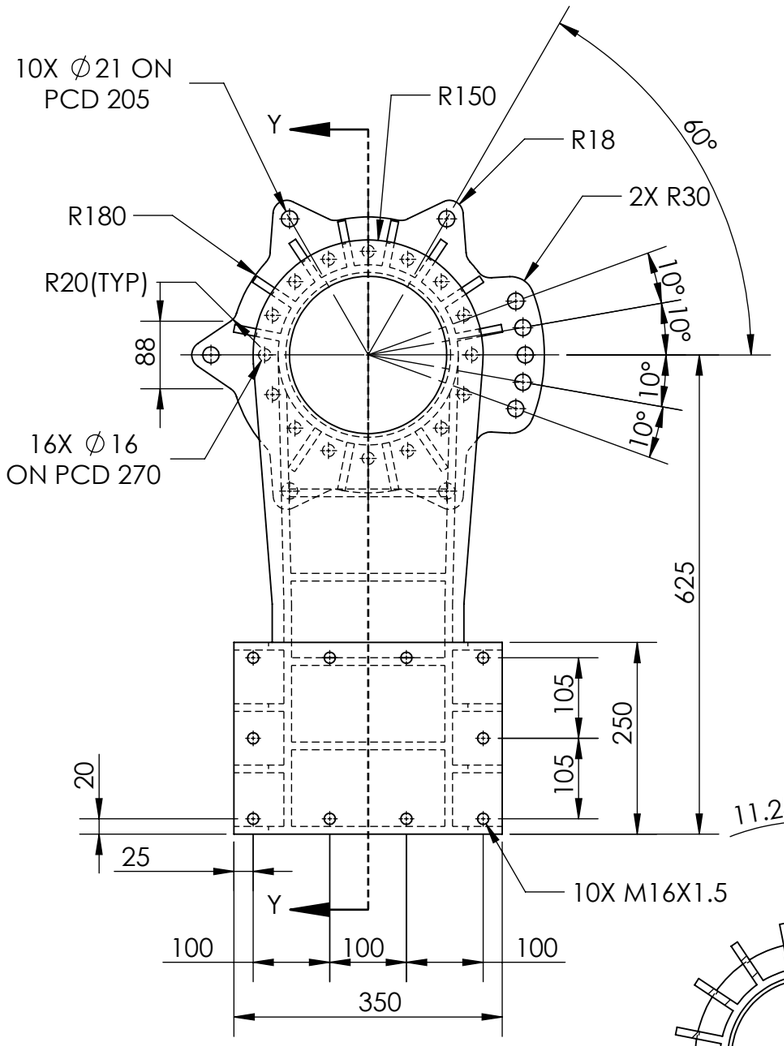
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

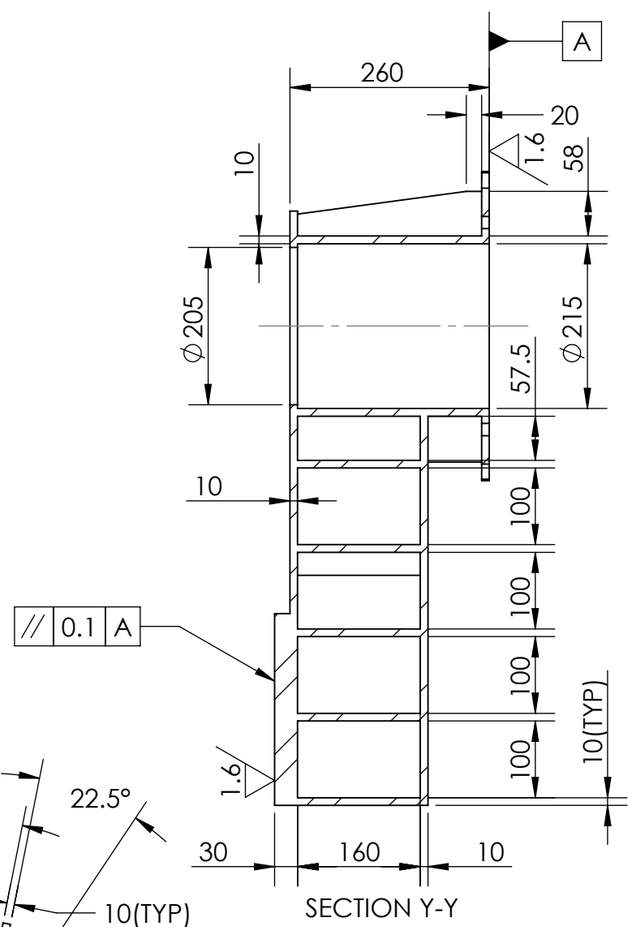
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: --

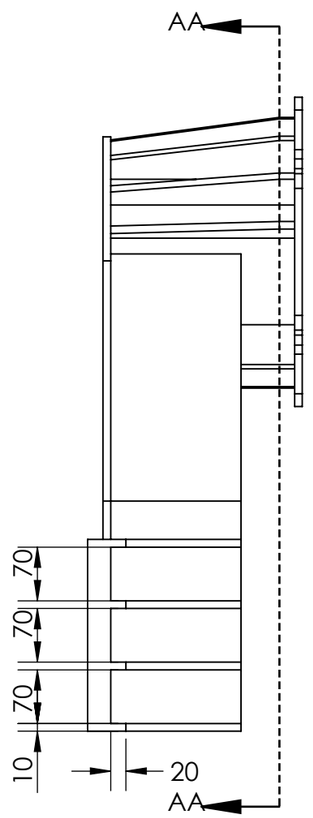
DWG NO. SEAD/FX/A0002/S02/P00 | A3

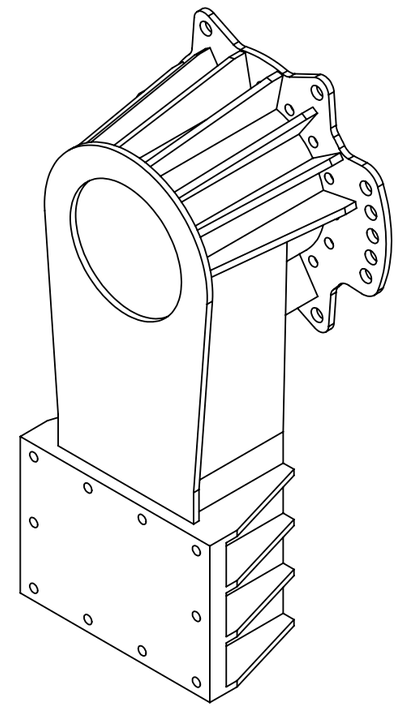
CALCULATED MASS: | SCALE: 1:8 | SHEET 1 OF 1



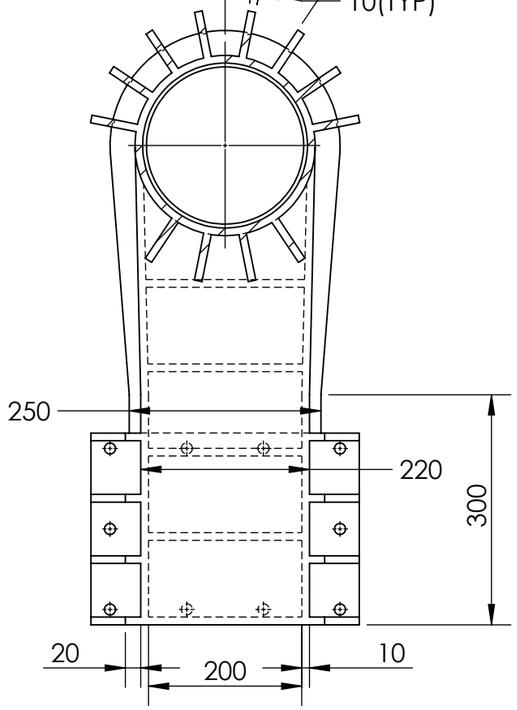


SECTION Y-Y





ISOMETRIC VIEW



SECTION AA-AA

NOTE:

1. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: L-ARM TOP

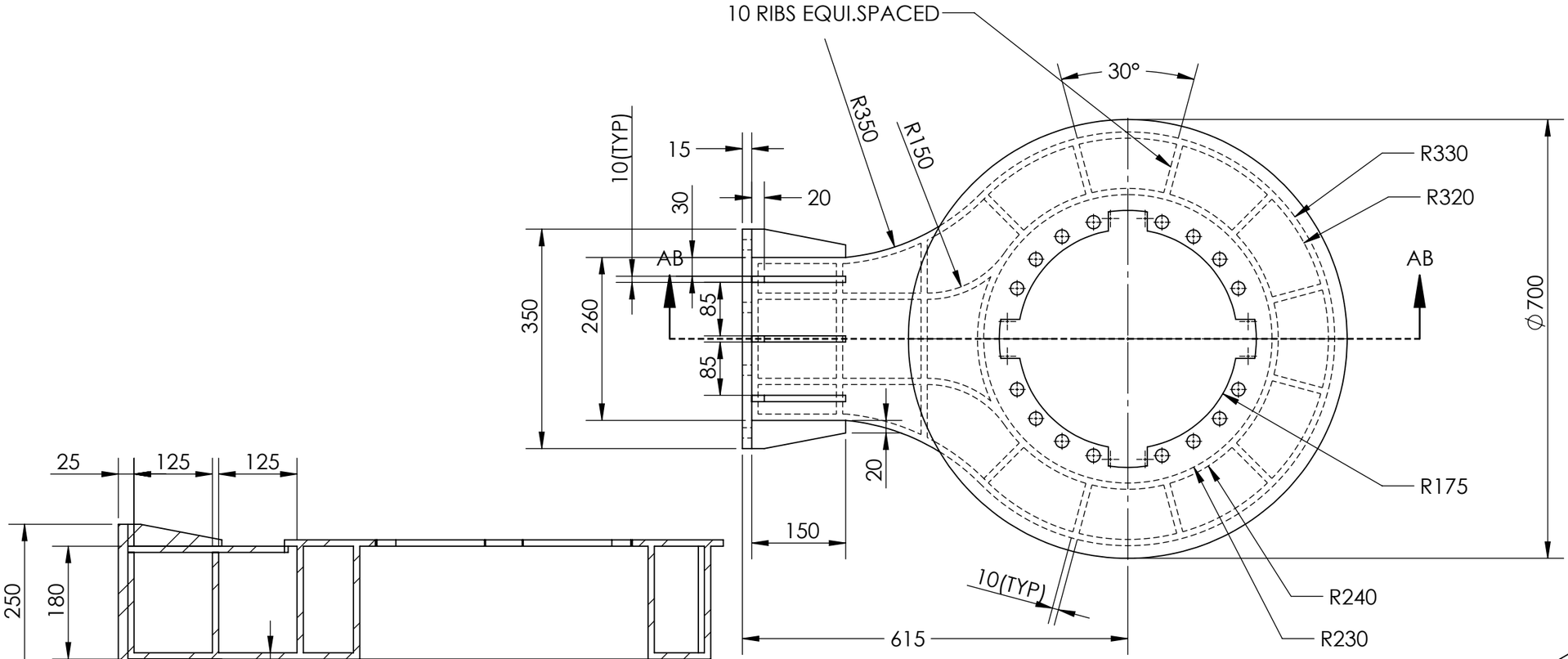
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

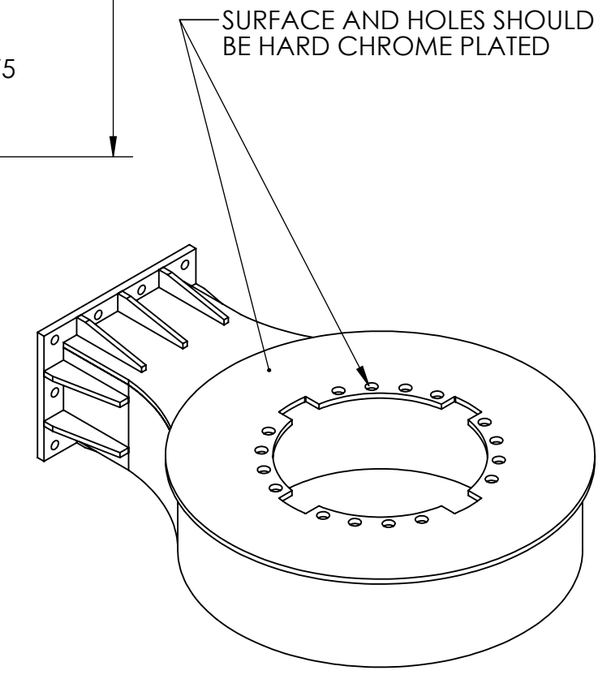
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

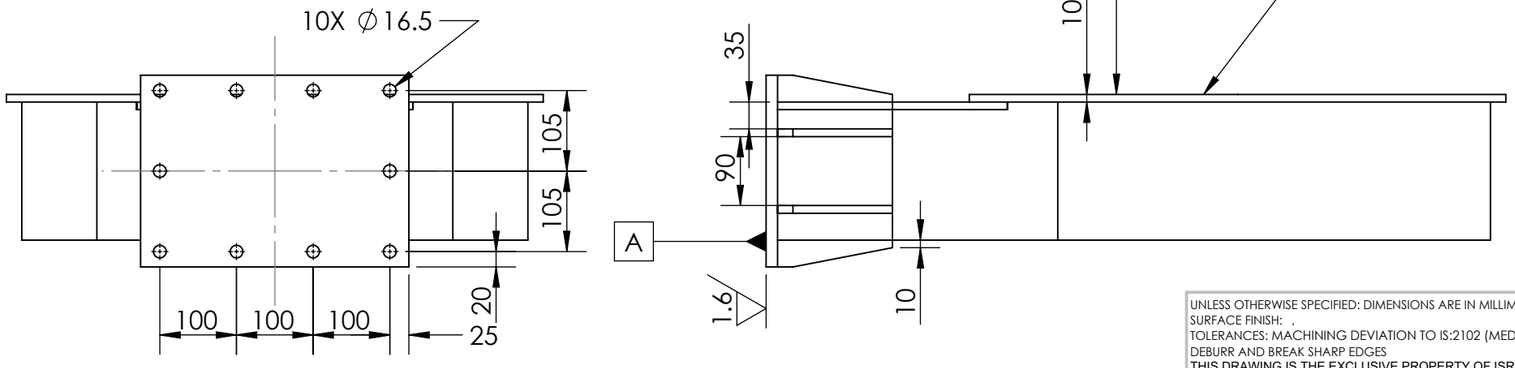
DWG NO. SEAD/FX/A0002/S02/P01 | A3

CALCULATED MASS: | SCALE: 1:8 | SHEET 1 OF 1





ISOMETRIC VIEW



NOTE:

1. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: L-ARM BOTTOM

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

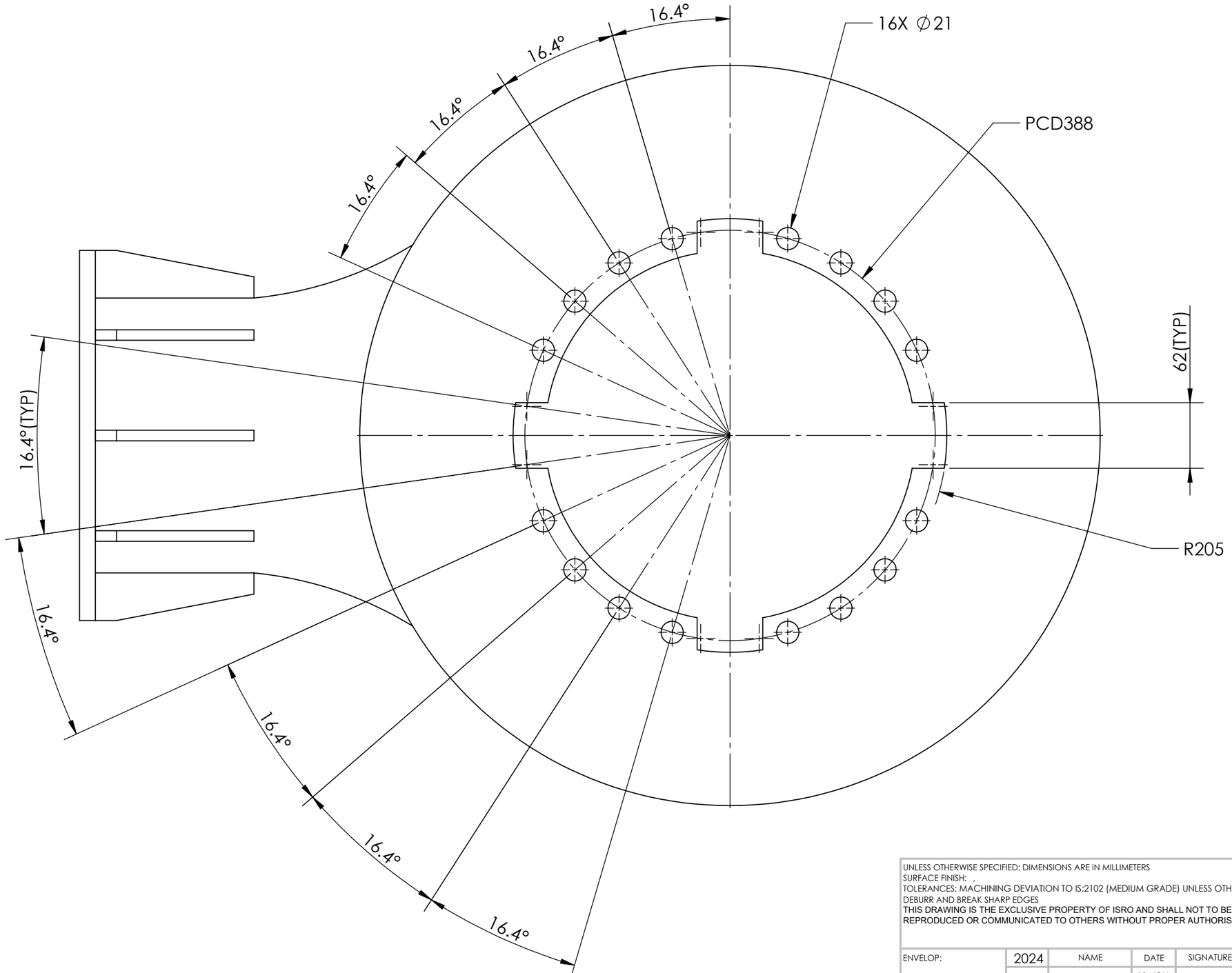
SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S02/P02 | A3

CALCULATED MASS: | SCALE: 1:8 | SHEET 1 OF 2



NOTE:

1. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: L-ARM BOTTOM

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

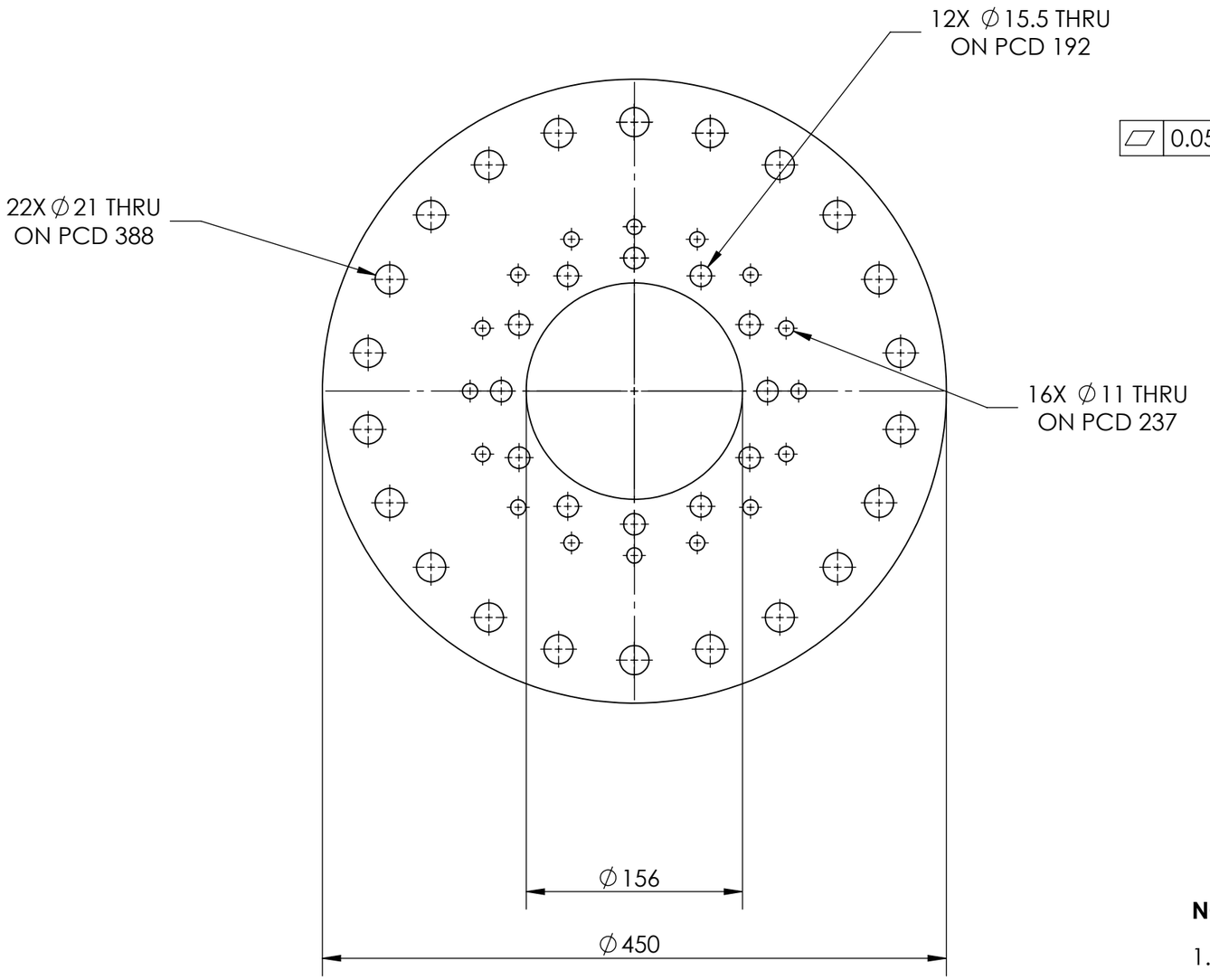
SEAD

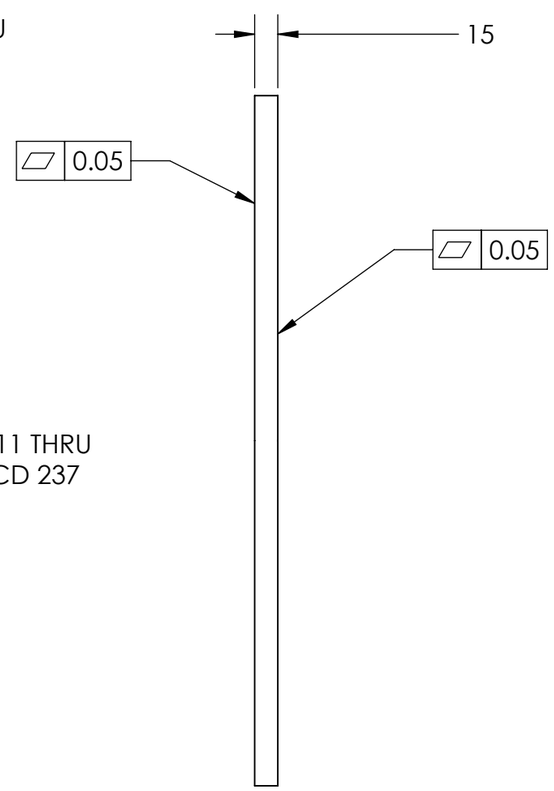
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

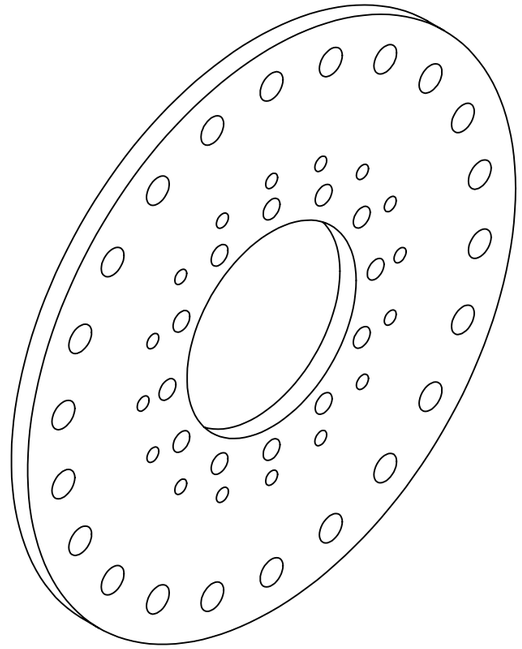
MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S02/P02 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 2 OF 2







ISOMETRIC VIEW

NOTE:

1. M20X1.5 - 45 (LENGTH) - 22 NOS. BOLT & NUT SHOULD BE PROVIDE.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: MOP HOUSING PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

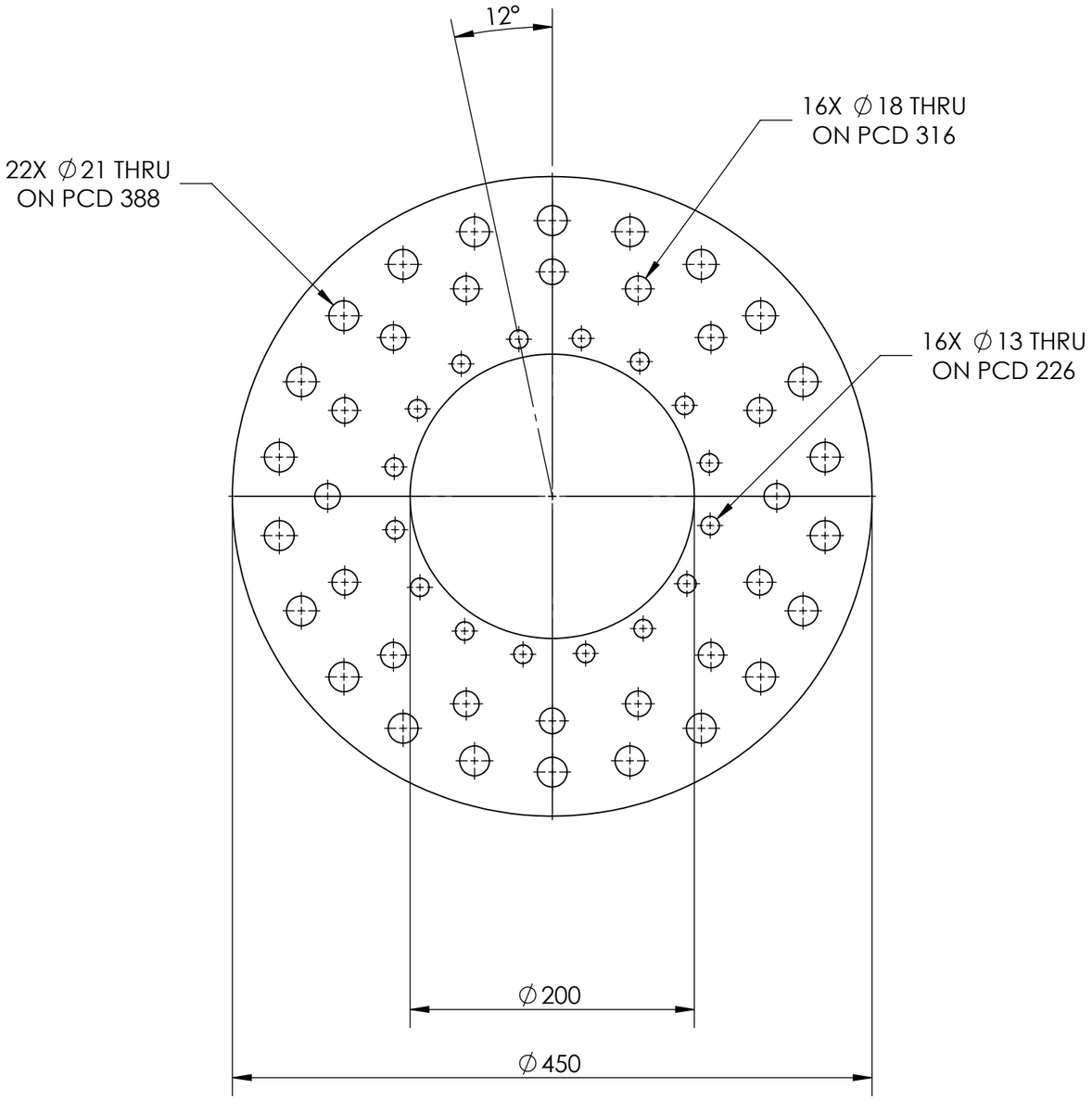
SEAD

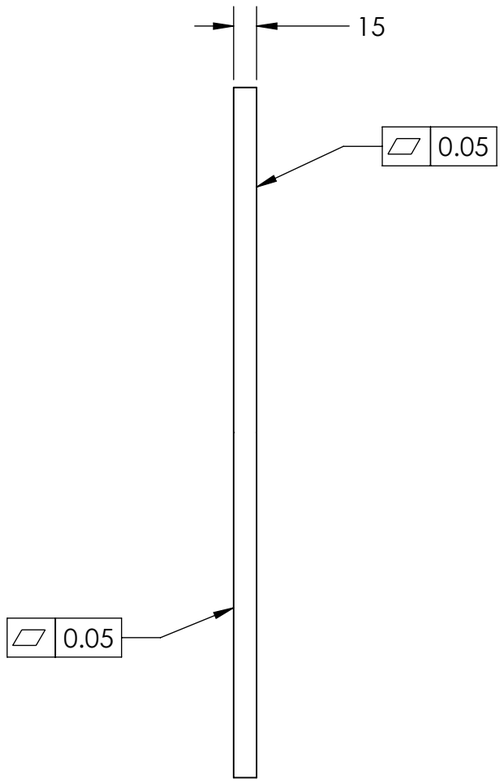
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

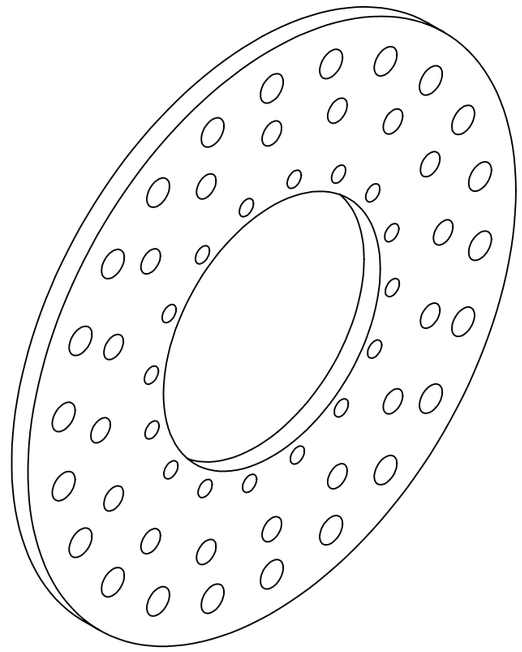
MATERIAL: SS 304 L

DWG NO. SEAD/FX/A0002/S02/P03 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE:

LPOT & MOP PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

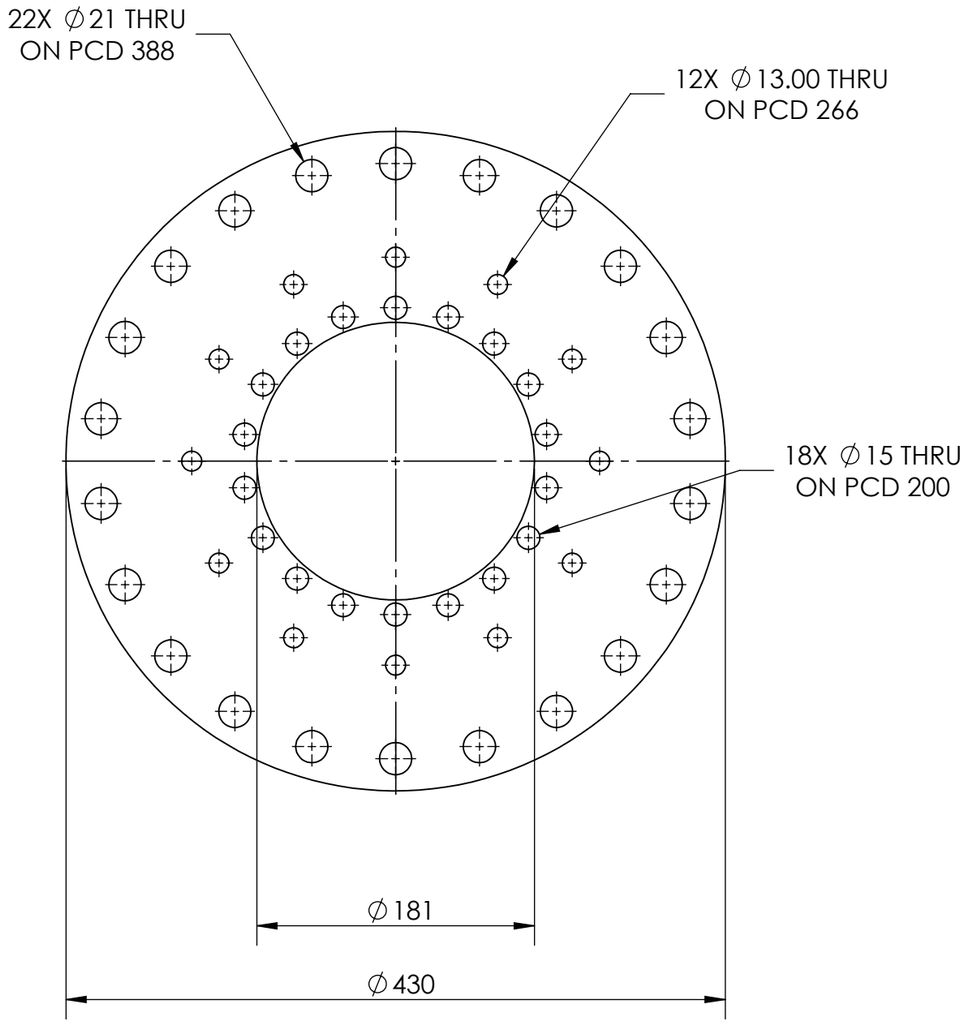
SEAD

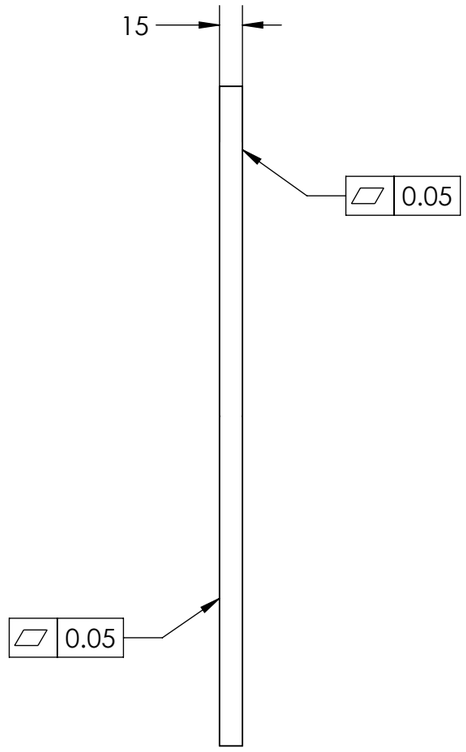
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

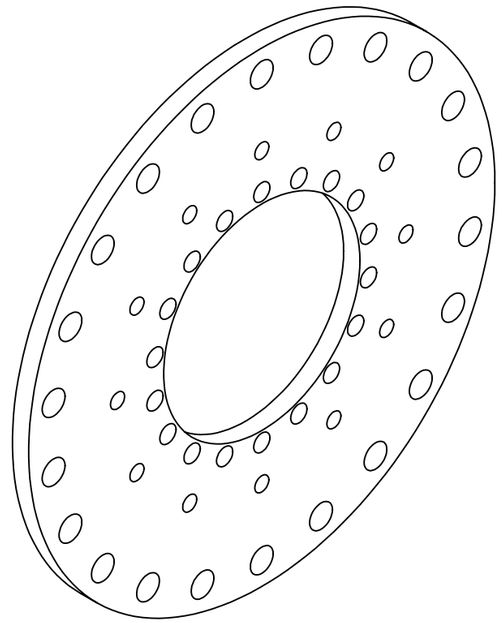
MATERIAL: SS 304 L

DWG NO. SEAD/FX/A0002/S02/P04 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1







ISOMETRIC VIEW

NOTE:

1. M16X1.5 - 80 (LENGTH) - 16 NOS. BOLT & NUT SHOULD BE PROVIDE.

DO NOT SCALE DRAWING | REVISION

TITLE: LPFT & MOP-V2 PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

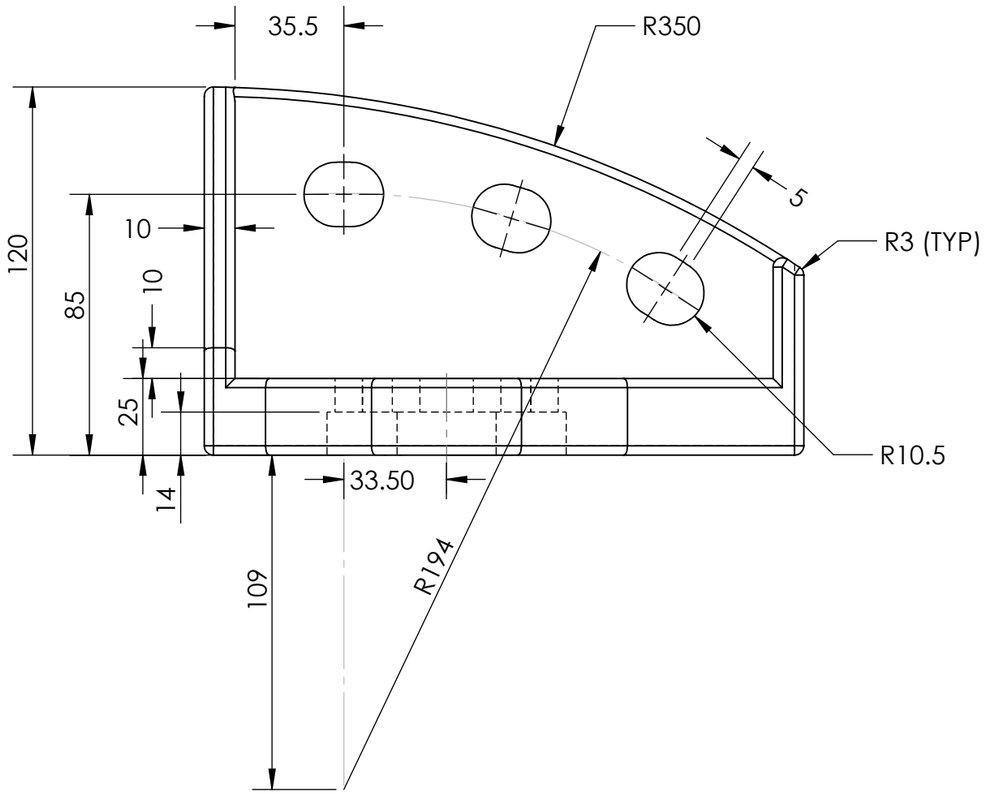
SEAD

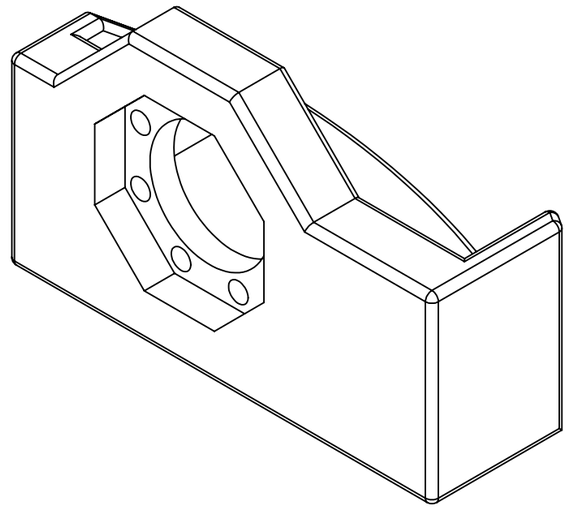
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 304 L

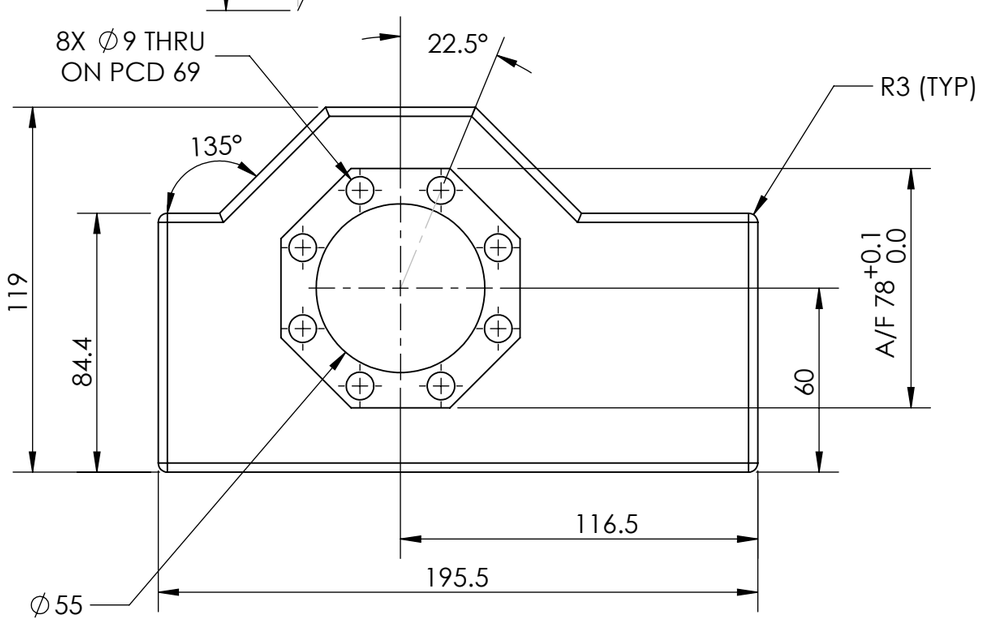
DWG NO. SEAD/FX/A0002/S02/P05 | A3

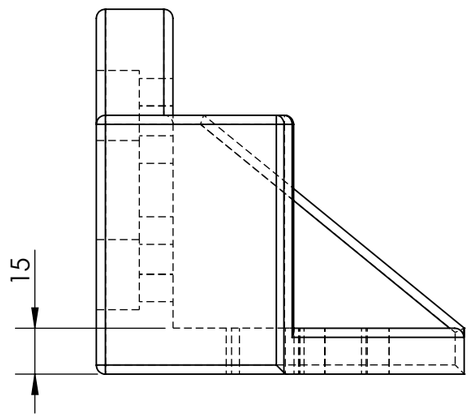
CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE:

MFP HOLDING ADAPTOR 1

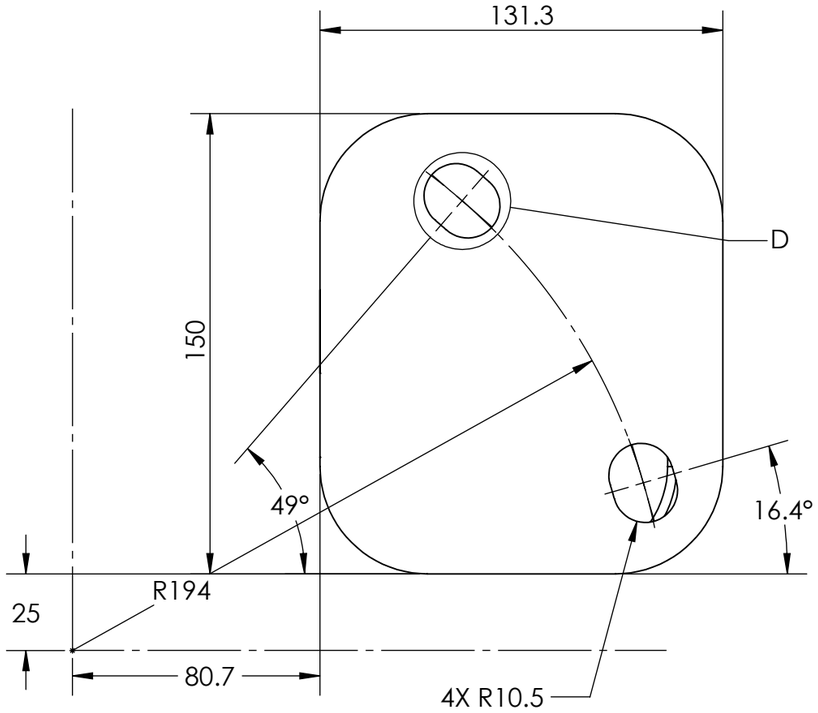
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

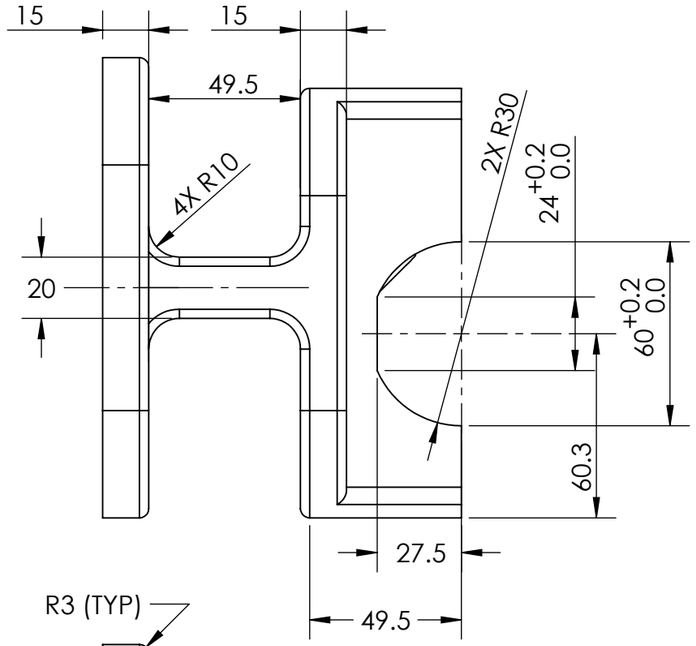
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

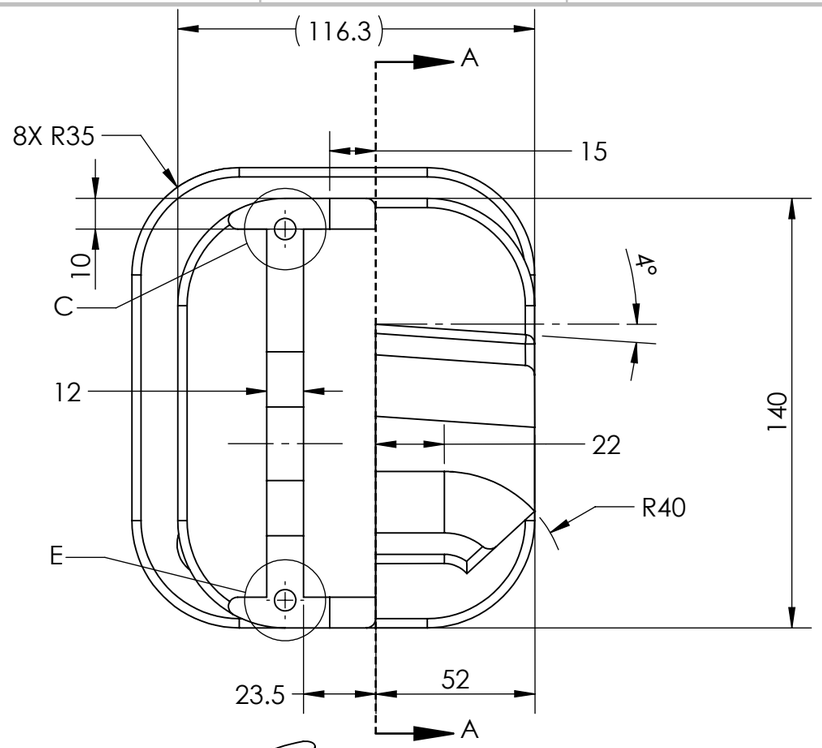
MATERIAL: SS-17-4 PH

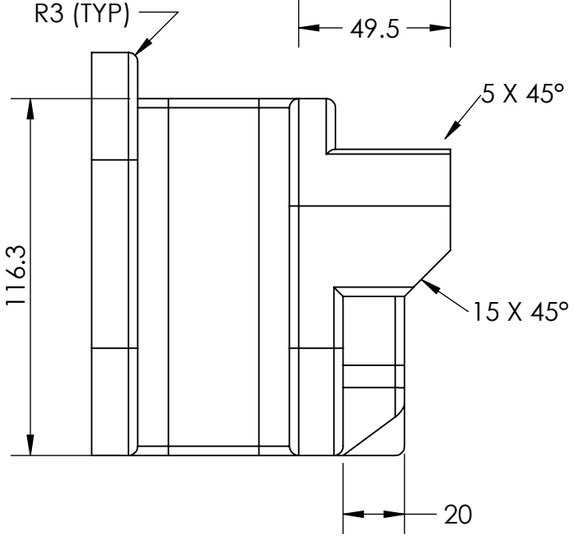
DWG NO. SEAD/FX/A0002/S02/P06 | A3

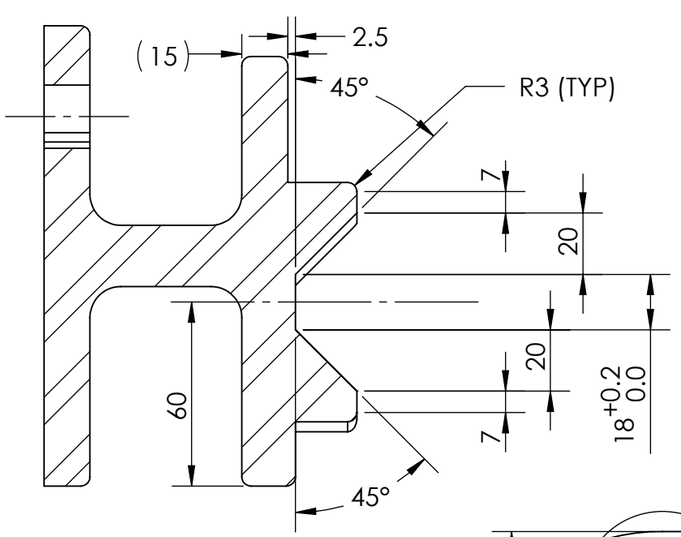
CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1





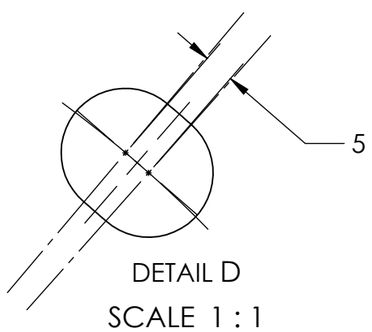




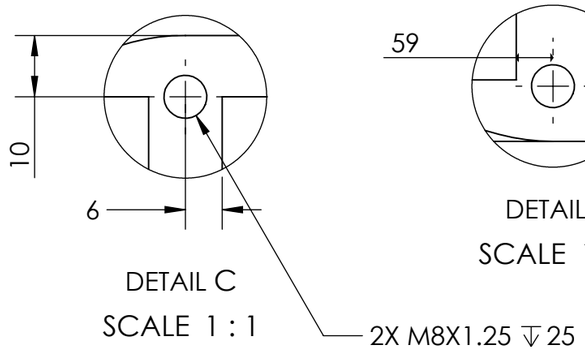


SECTION A-A

ISOMETRIC VIEW



DETAIL D
SCALE 1 : 1



DETAIL C
SCALE 1 : 1

DETAIL E
SCALE 1 : 1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: -
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: MFP HOLDING ADAPTOR 2

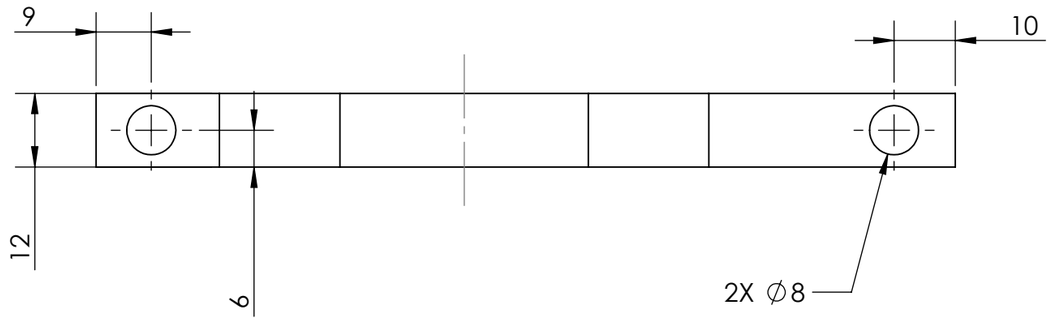
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

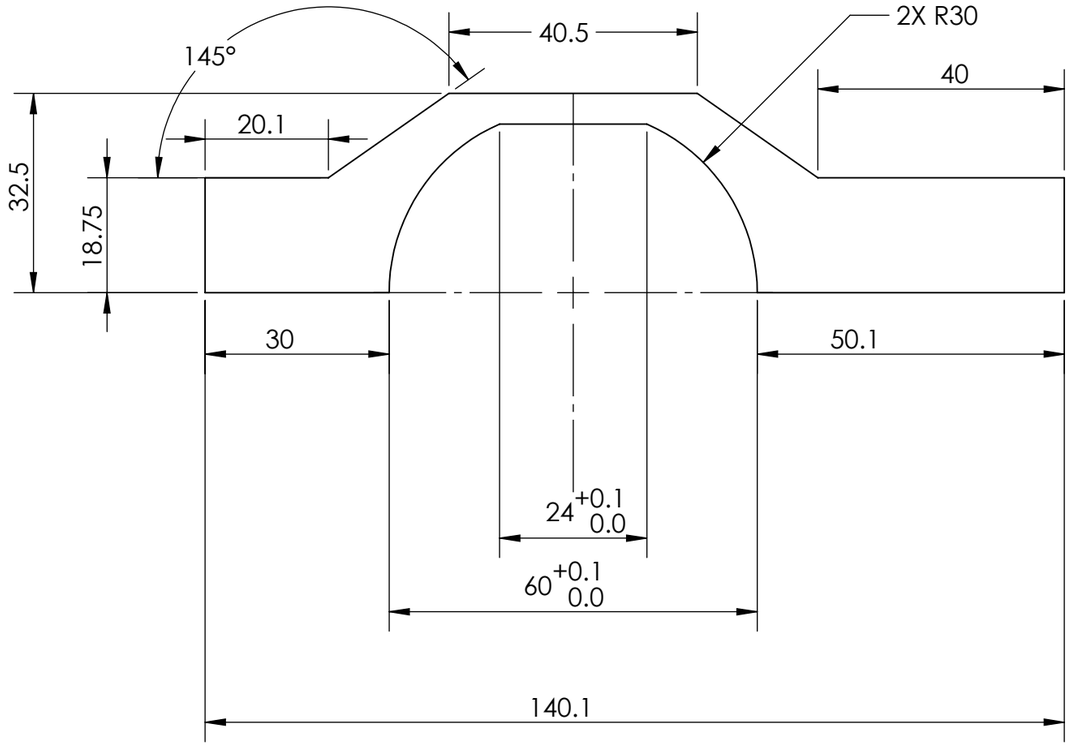
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

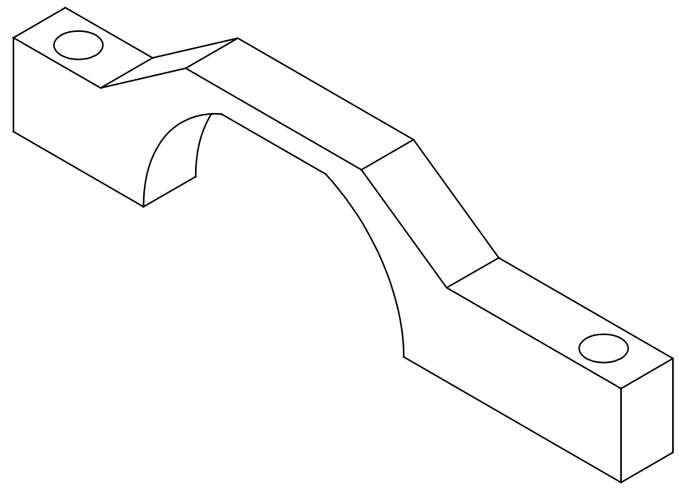
MATERIAL: SS 17-4 PH

DWG NO. SEAD/FX/A0002/S02/P07 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE:

MFP HOLDING CLAMP

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

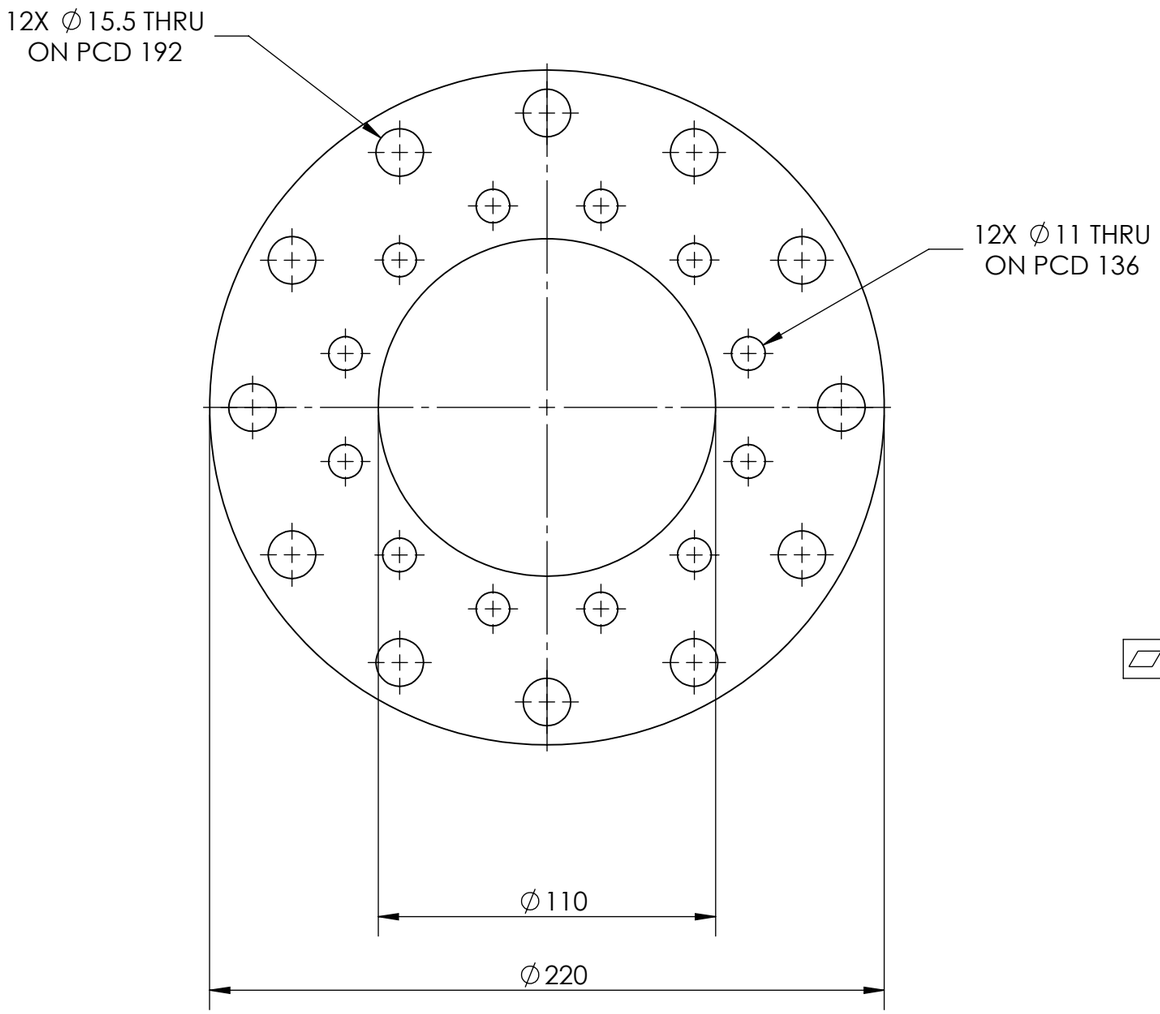
SEAD

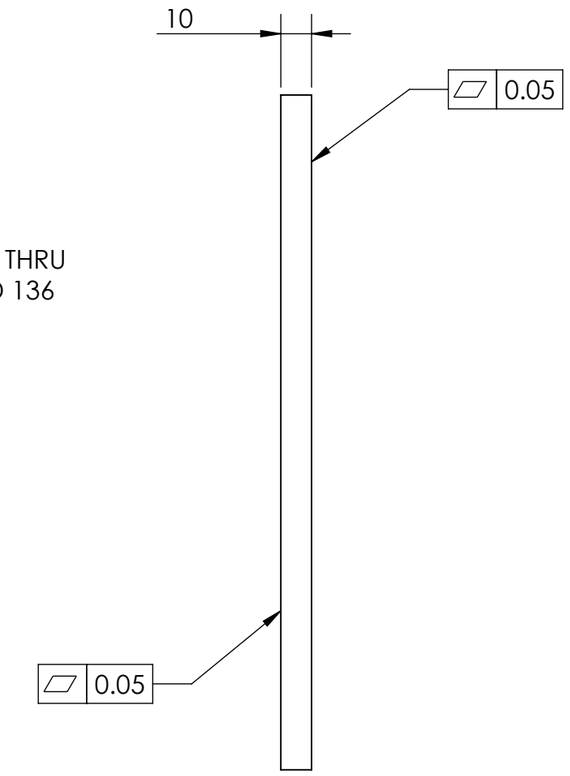
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

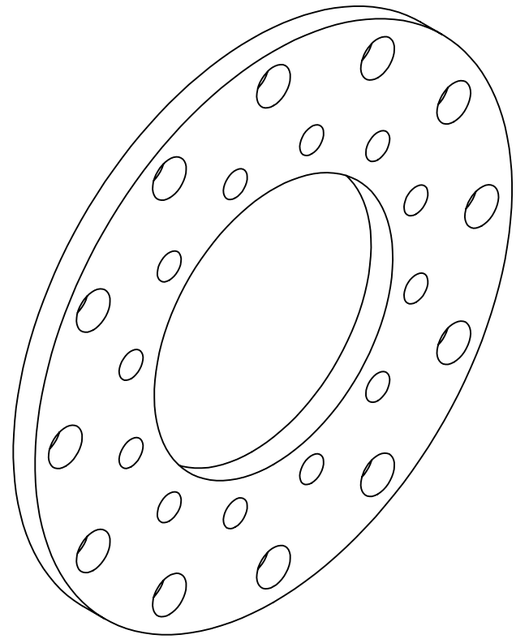
MATERIAL: SS 17-4 PH

DWG NO. SEAD/FX/A0002/S02/P08 | A3

CALCULATED MASS: | SCALE: 1:1 | SHEET 1 OF 1







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: MFP SHAFT HOLDING PLATE

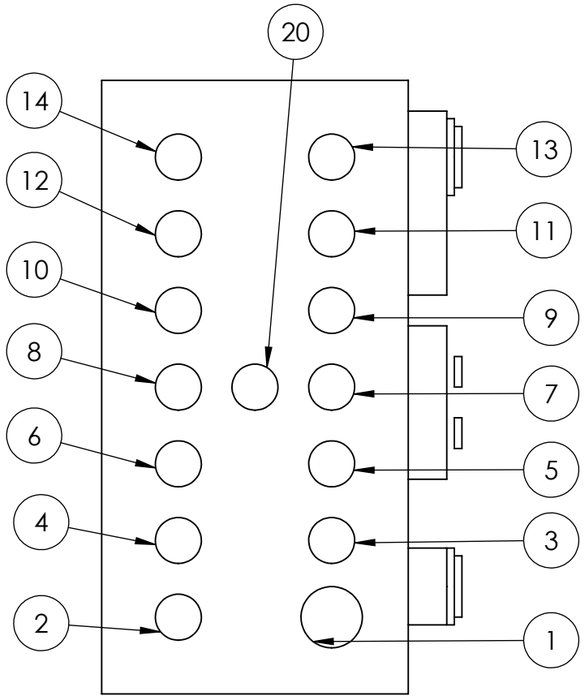
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

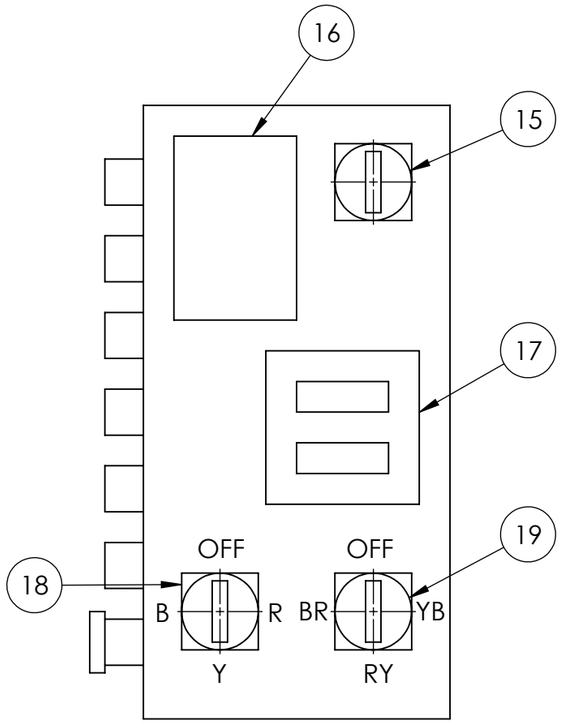
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: SS 304 L

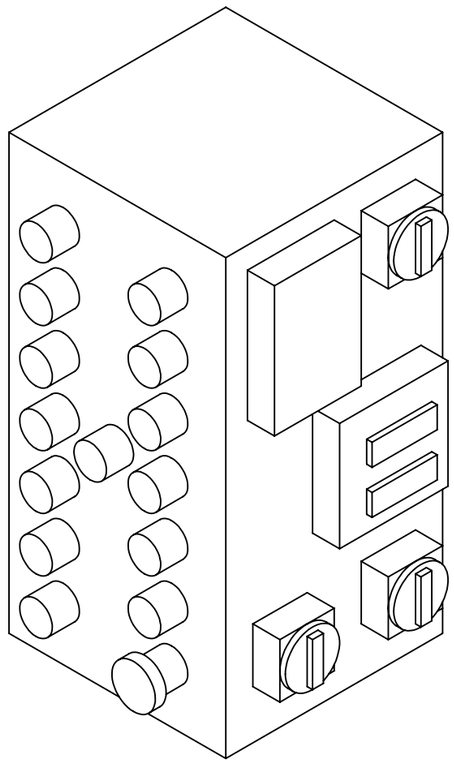
DWG NO. SEAD/FX/A0002/S02/P09 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1





PART NO.	DESCRIPTION
1	EMERGENCY STOP BUTTON
2	INPUT ON/OFF INDICATOR LIGHT
3	Z-AXIS LINEAR MOTION UPWARD INCATOR LIGHT
4	Z-AXIS LINEAR MOTION DOWNWARD INCATOR LIGHT
5	Z-AXIS LINEAR MOTION UPWARD BUTTON
6	Z-AXIS LINEAR MOTION DOWNWARD BUTTON
7	Y-AXIS ROTATION CLOCKWISE INDICATOR LIGHT
8	Y-AXIS ROTATION ANTI-CLOCKWISE INDICATOR LIGHT
9	Y-AXIS ROTATION CLOCKWISE BUTTON
10	Y-AXIS ROTATION ANTI-CLOCKWISE BUTTON
11	LIMIT SWITCH INDICATOR LIGHT
12	LIMIT SWITCH INDICATING BUZZER
13	MECHANICAL LOCK INDICATOR LIGHT
14	EM BRAKE INDICATOR LIGHT
15	POWER ON/OFF SWITCH
16	VFD PANEL INDICATOR (7 SEGMENT)
17	AMMETER & VOLTMETER
18	3-PHASE CURRENT SELECTOR(R,Y,B)
19	VOLTAGE SELECTOR (RY,YB,BR)
20	ROTATION LOCK INDICATOR LIGHT



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: ELECTRICAL CONTROL PANEL

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL

DWG NO. SEAD/FX/A0002/S03/P00 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 2

NOTE:

1. DIMENSION OF THE PANEL BOX OR LOCATION OF THE INDICATOR/BUTTON SHALL BE MODIFED IF REQUIRED.
2. VARIABLE FREQUENCY DRIVE (VFD) MAKE: SIEMENS OR SCHNEIDER.
3. THE VFDs, PLC, CONTROL SWITCHES & COMPONENTS ARE TO BE HOUSED INSIDE A COMPACT TAMPERPROOF CONTROL PANEL BOX WITH LOCKING FEATURES.
4. THE CABLE LENGTH BETWEEN THE POWER SOURCE SUPPLIES TO CONTROL PANEL IS 6 METERS.
5. INSTALLING VFD, LIMIT SWITCHES, PUSH BUTTONS, FUSES, WIRING ETC., TO OPERATE AS PER BELOW LOGICS.
    - WHEN THE BOTTOM LIMIT SWITCH IS ENGAGED, LINEAR MOVEMENT DOWNWARD SHOULD NOT OPERATE WHILE PRESSING THE Z-AXIS DOWNWARD PUSH BUTTON AND BUZZER SHOULD MAKE SOUND TO INDICATE OPERATOR.
    - WHEN THE TOP LIMIT SWITCH IS ENGAGED, LINEAR MOVEMENT UPWARD SHOULD NOT OPERATE WHILE PRESSING THE Z-AXIS UPWARD AND BUZZER SHOULD MAKE SOUND TO INDICATE OPERATOR.
    - WHEN THE MANUAL LOCK FOR ROTATION IS ENGAGED, WHILE PRESSING Y-AXIS ROTATION PUSH BUTTON (BOTH CW & CCW) SHOULD NOT OPERATE AND BUZZER SHOULD MAKE SOUND TO INDICATE OPERATOR.
6. THE VFD IS REQUIRED TO BE PROGRAMMED AND ENABLED FOR SOFT START AND SOFT STOP.
7. THE CONTROL LOGICS WORKING ALONG WITH LIMIT SWITCHES ARE TO BE MAINTAINED CONSIDERING THE SAFE OPERATIONS OF THE FIXTURE.
8. THE PROPOSED VFD SHALL HAVE INBUILT PROTECTION FOR PHASE FAIL AND SPP(SINGLE PHASE PREVENTER)PHASE SEQUENCE.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: ELECTRICAL CONTROL PANEL

ENVELOP:	2021	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

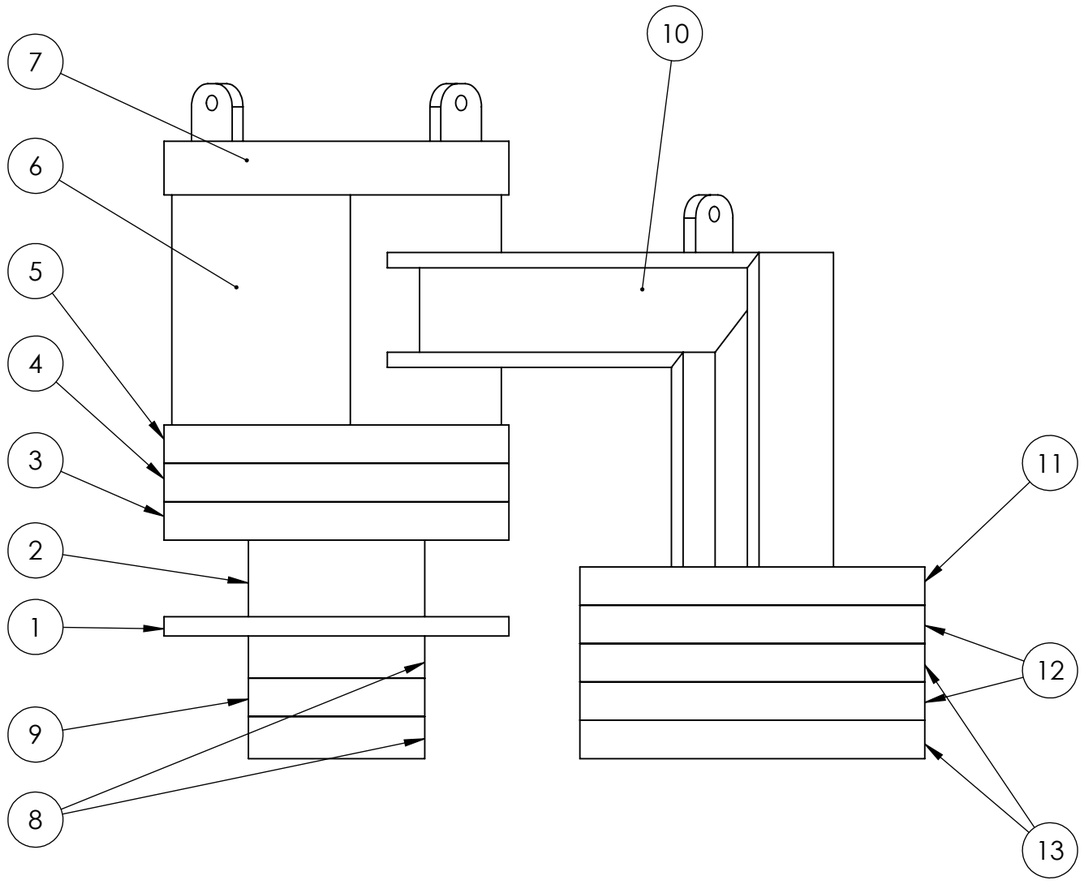
SEAD

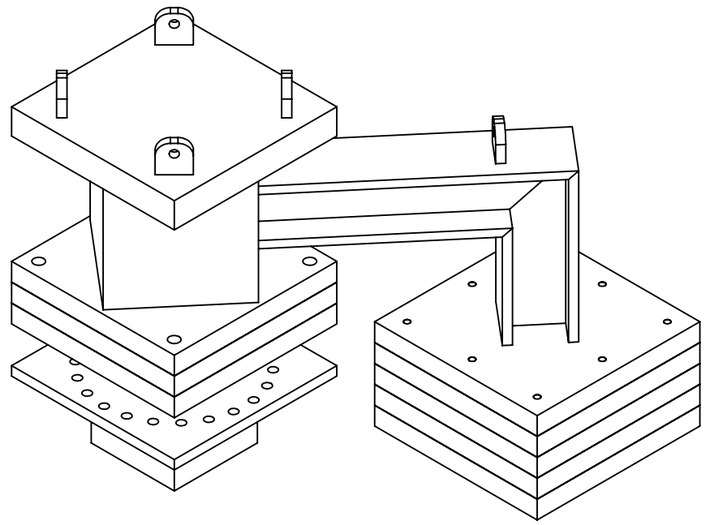
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S03/P00 | A3

CALCULATED MASS: | SCALE: 1:12 | SHEET 2 OF 2





ISOMETRIC VIEW

BOM:

PART NO.	DESCRIPTION	DRAWING NO.	QTY.
1	BASE PLATE	SEAD/FX/A0002/S07/P01	1
2	BASE CONNECTING PLATE	SEAD/FX/A0002/S07/P02	1
3	CONNECTING LOAD PLATE	SEAD/FX/A0002/S07/P03	1
4	CONNECTING LOAD PLATE 1	SEAD/FX/A0002/S07/P04	1
5	CONNECTING LOAD PLATE 2	SEAD/FX/A0002/S07/P05	1
6	TOP CONNECTING PLATE	SEAD/FX/A0002/S07/P06	1
7	TOP LOAD PLATE	SEAD/FX/A0002/S07/P07	1
8	BOTTOM LOAD PLATE	SEAD/FX/A0002/S07/P08	2
9	BOTTOM LOAD PLATE 1	SEAD/FX/A0002/S07/P09	1
10	TEST LOAD CONNECTOR	SEAD/FX/A0002/S07/P10	1
11	TEST LOAD CONNECTING PLATE	SEAD/FX/A0002/S07/P11	1
12	TEST LOAD PLATE 1	SEAD/FX/A0002/S07/P12	2
13	TEST LOAD PLATE 2	SEAD/FX/A0002/S07/P13	2
14	BOLT & NUT	MIN. GRADE/CLASS 10.9	AS REQUIRED

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: LOAD STIMULATOR ASSY.

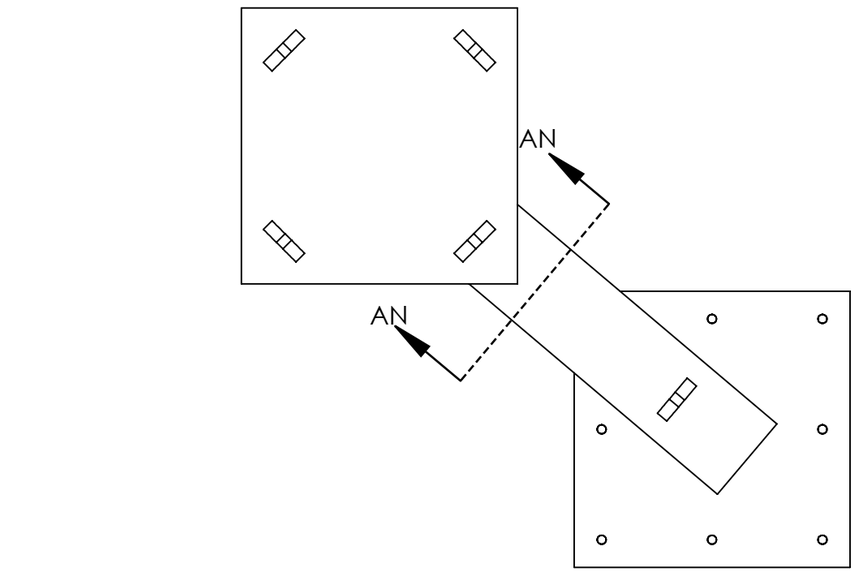
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

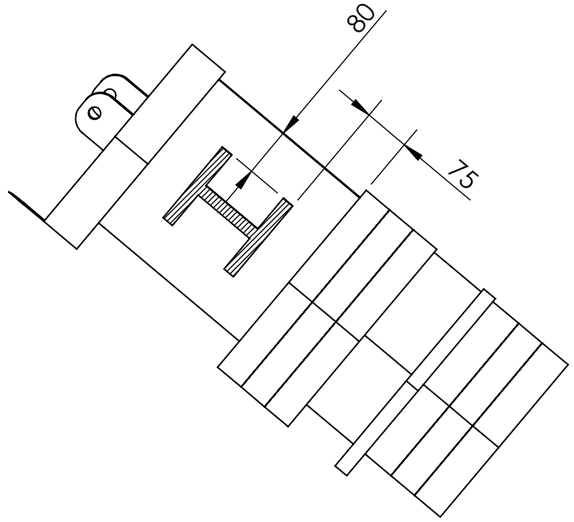
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

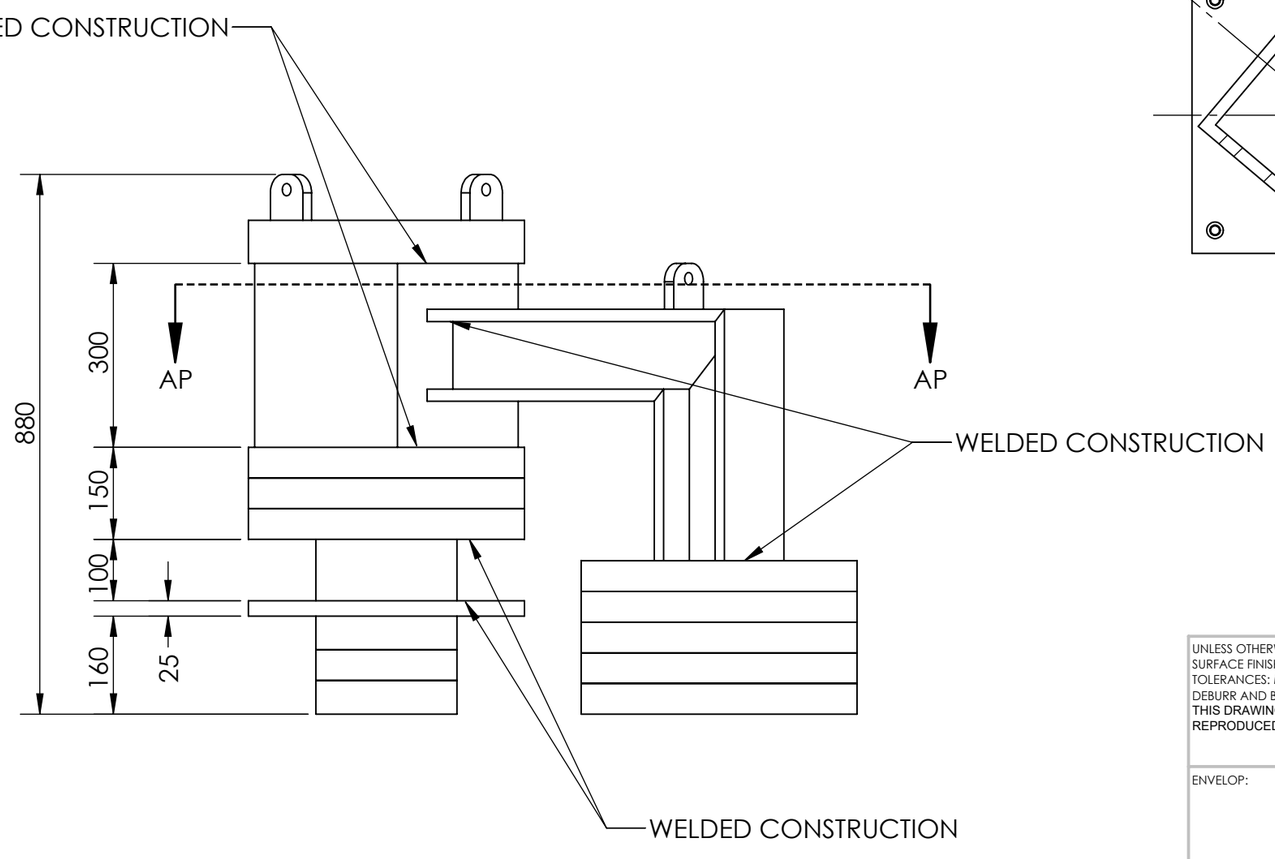
DWG NO. SEAD/FX/A0002/S07/P00 | A3

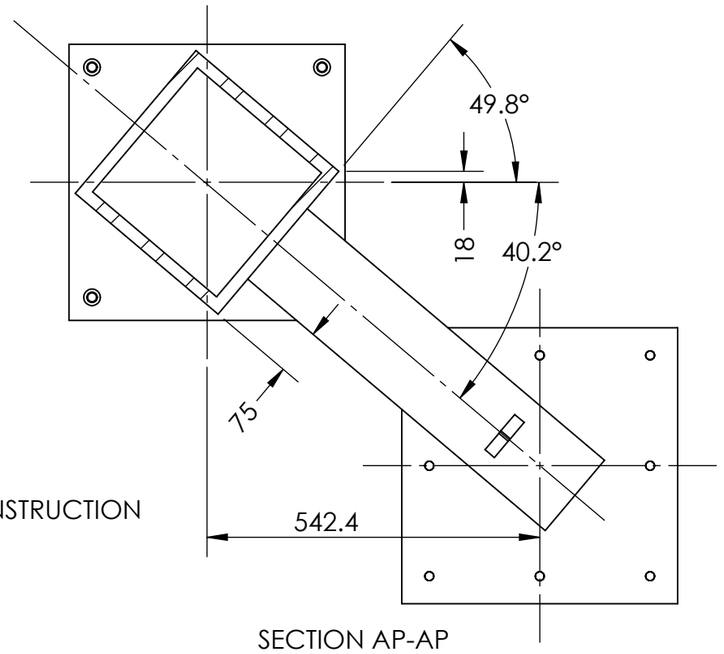
CALCULATED MASS: | SCALE: 1:8 | SHEET 1 OF 2





SECTION AN-AN





SECTION AP-AP

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE:
LOAD STIMULATOR ASSY.

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

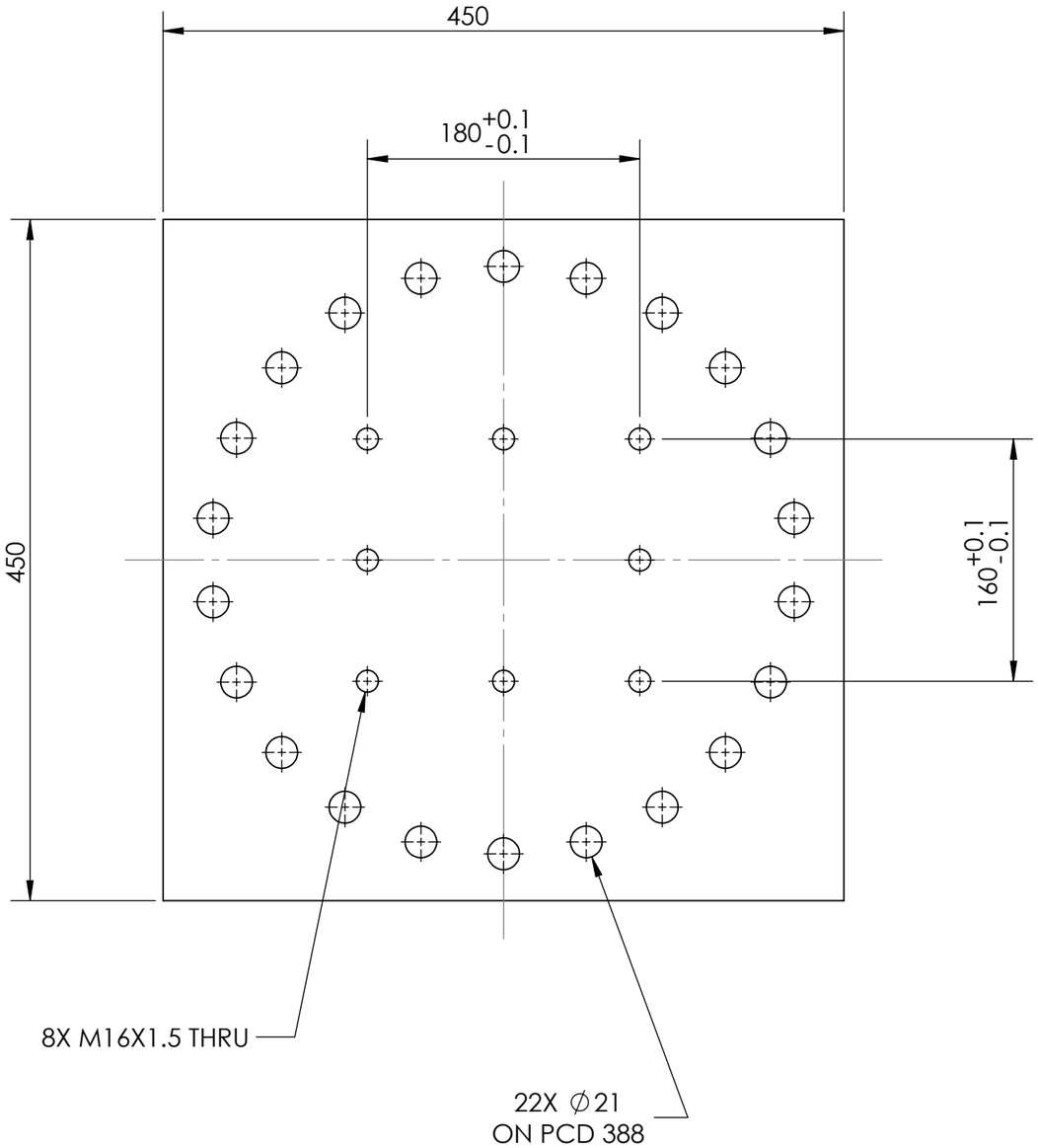
DWG NO. SEAD/FX/A0002/S07/P00

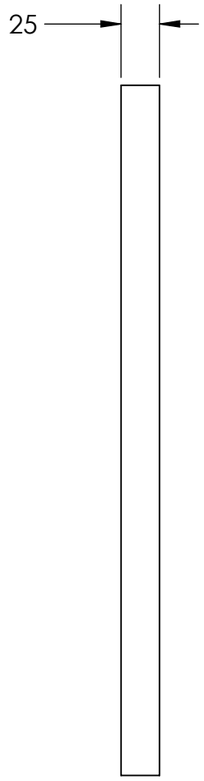
A3

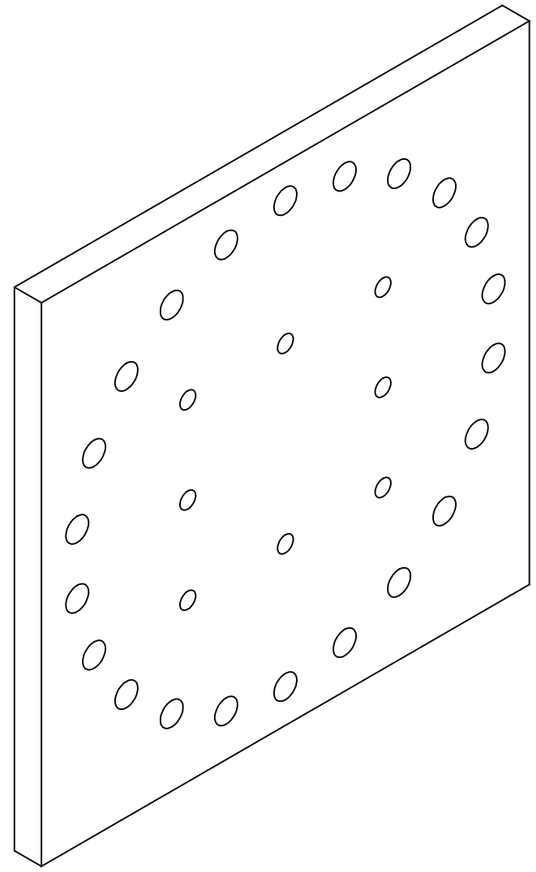
CALCULATED MASS:

SCALE: 1:10

SHEET 2 OF 2







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BASE PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

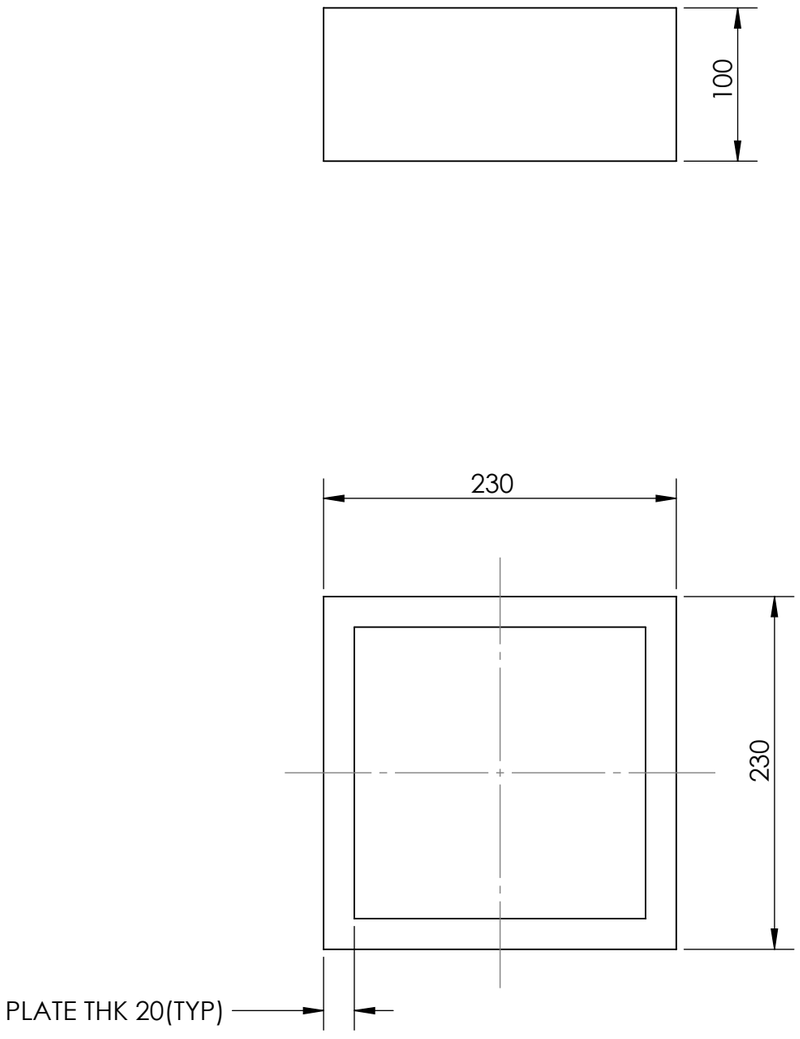
SEAD

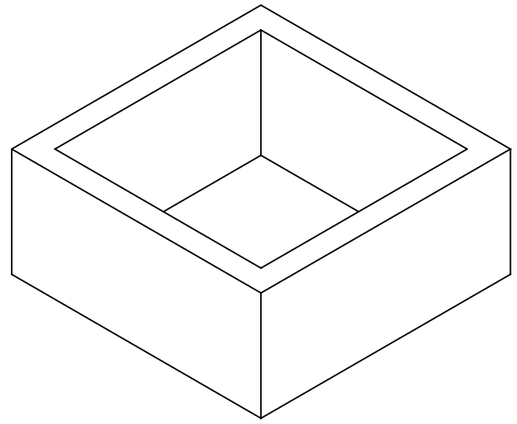
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P01 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW

NOTE:

1. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BASE CONNECTING PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

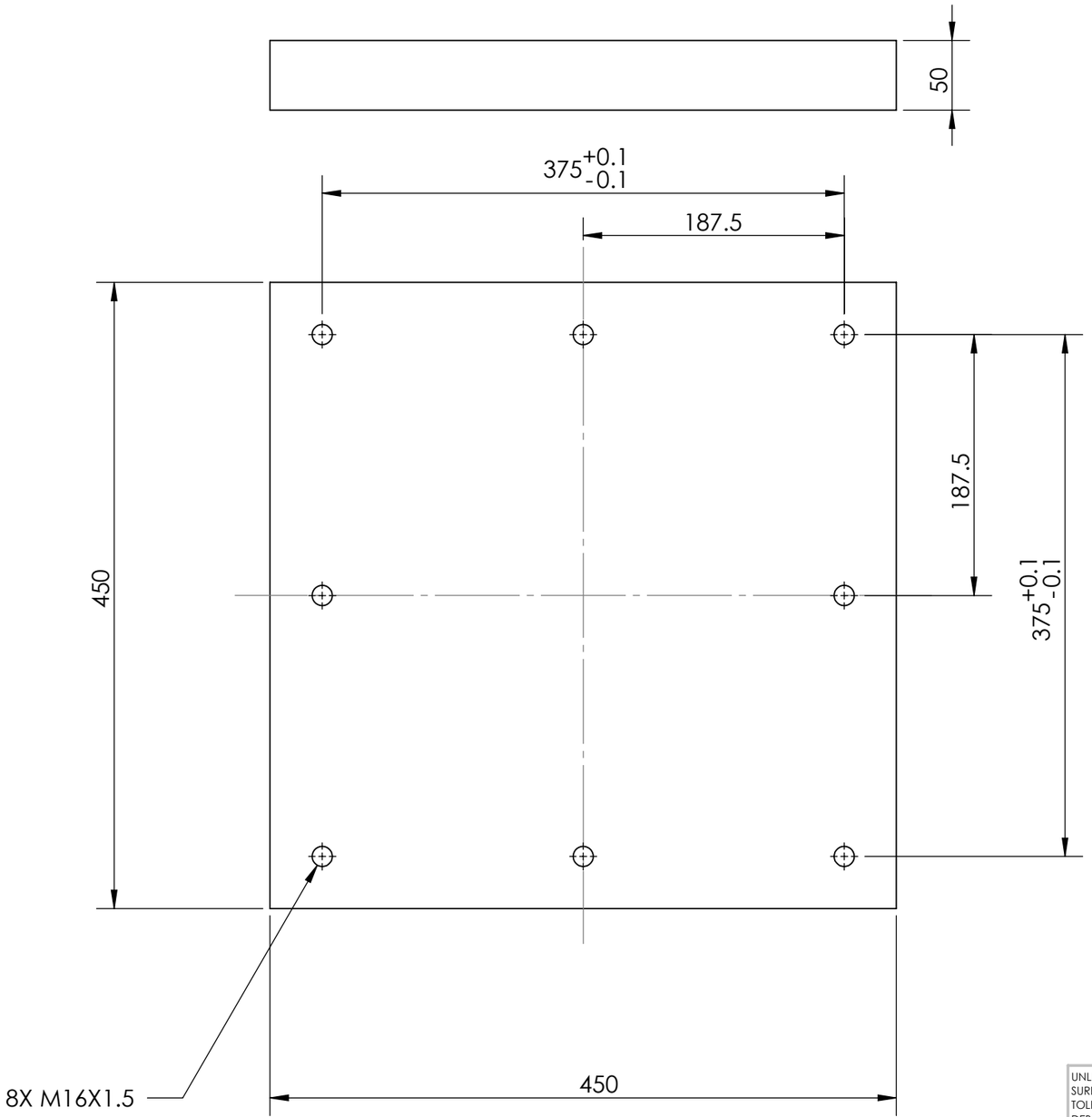
SEAD

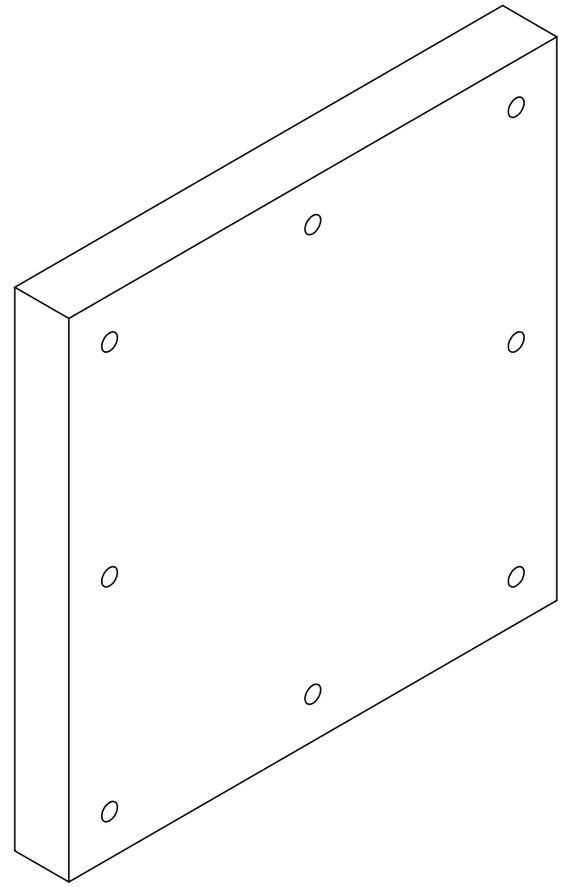
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P02 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: CONNECTING LOAD PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

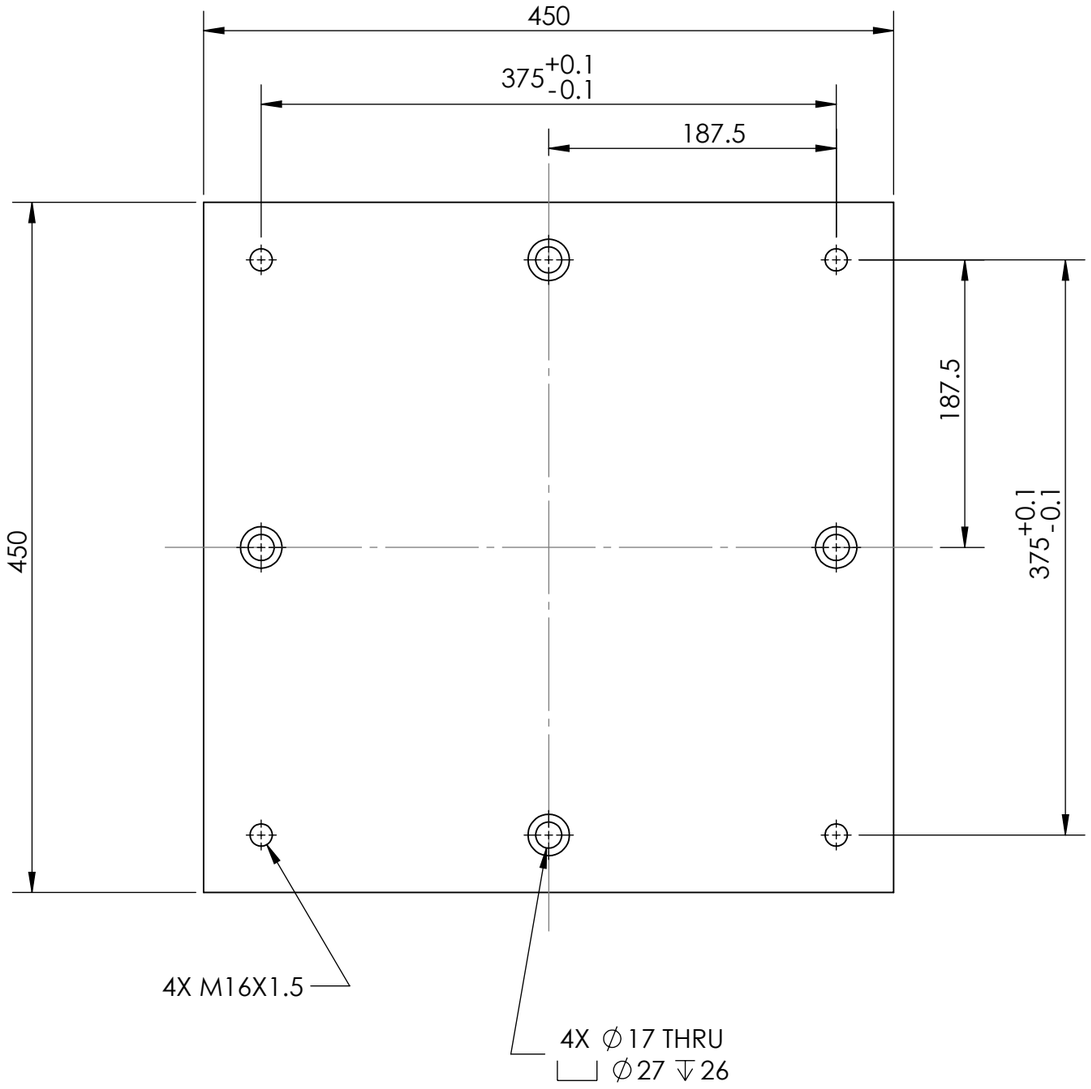
SEAD

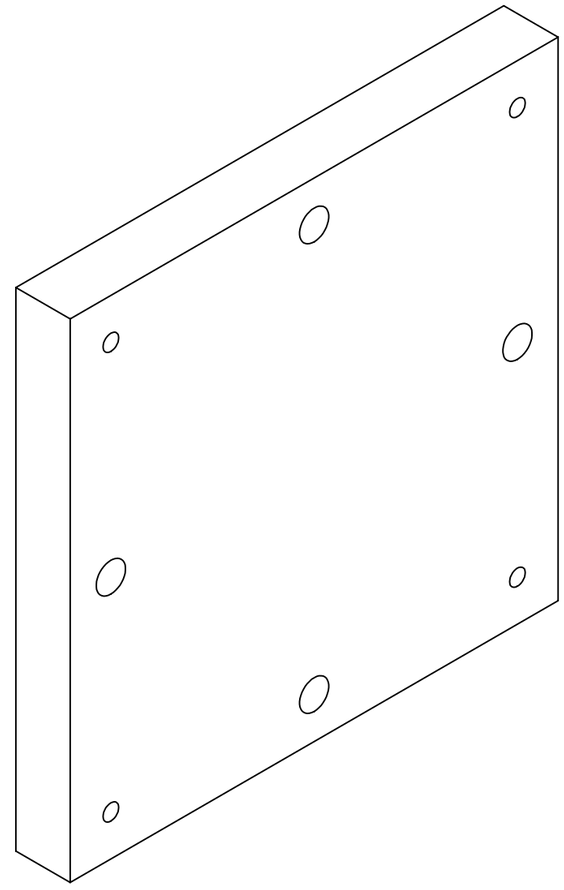
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P03 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: CONNECTING LOAD PLATE 1

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

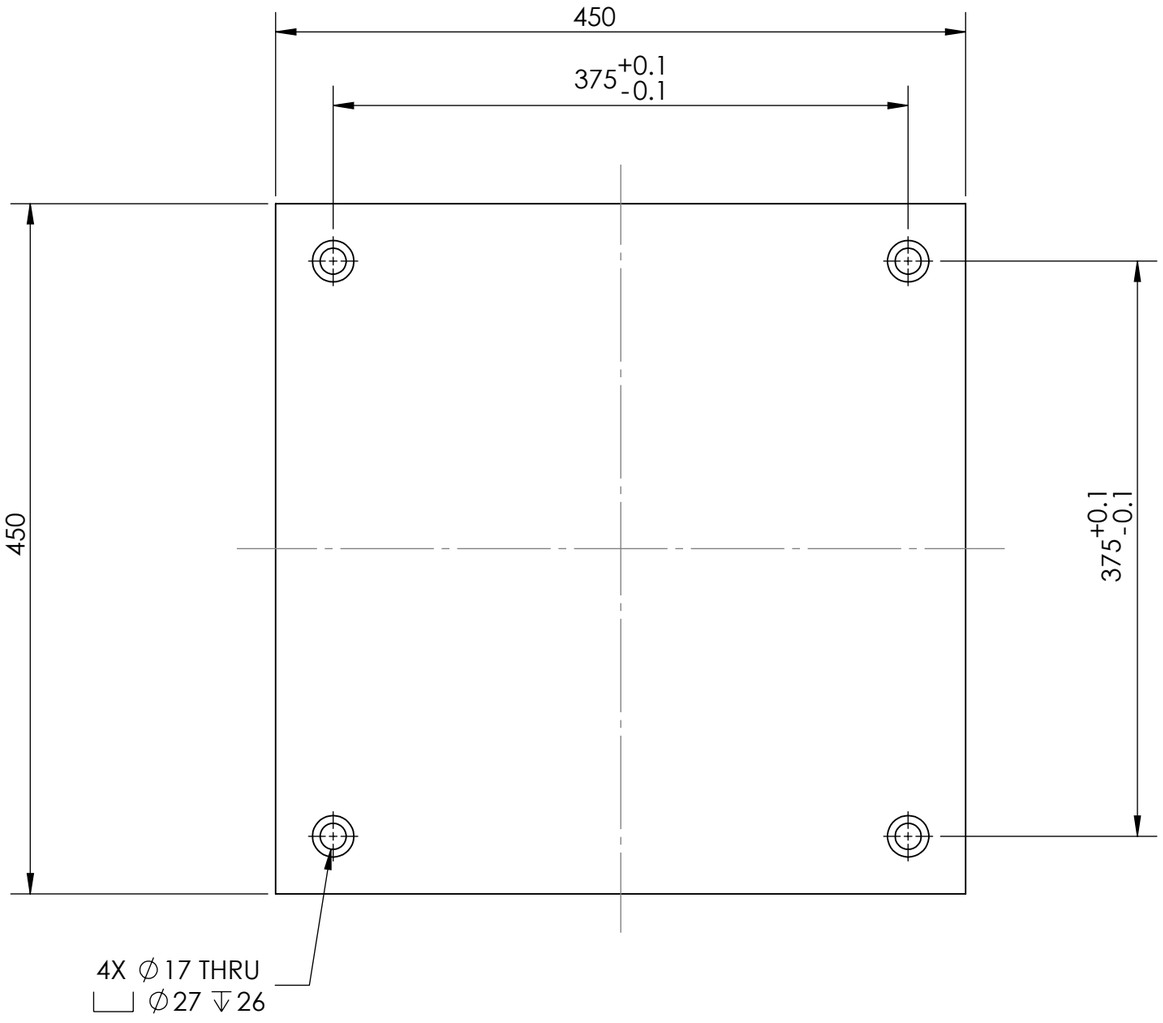
SEAD

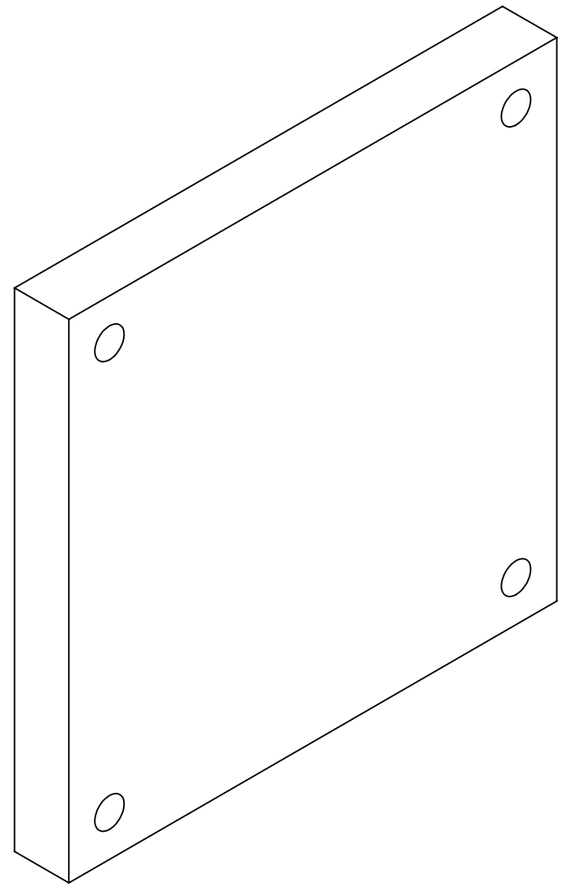
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

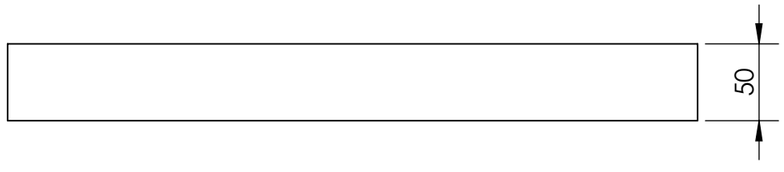
DWG NO. SEAD/FX/A0002/S07/P04 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: CONNECTING LOAD PLATE 2

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APP'V'D	GOWTHAMAN P	19-NOV	GP

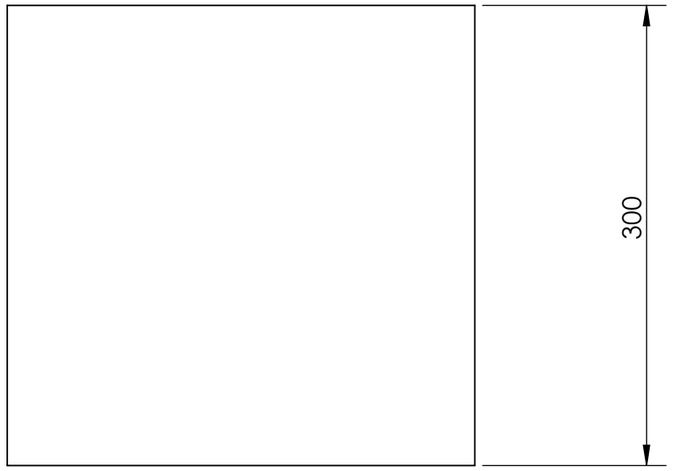
SEAD

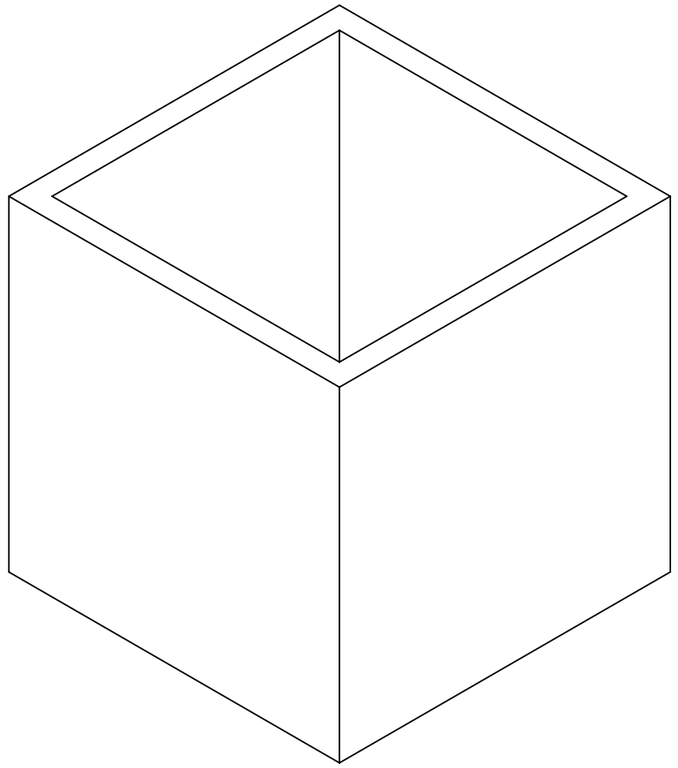
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P05 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW

NOTE:

1. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TOP CONNECTING PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

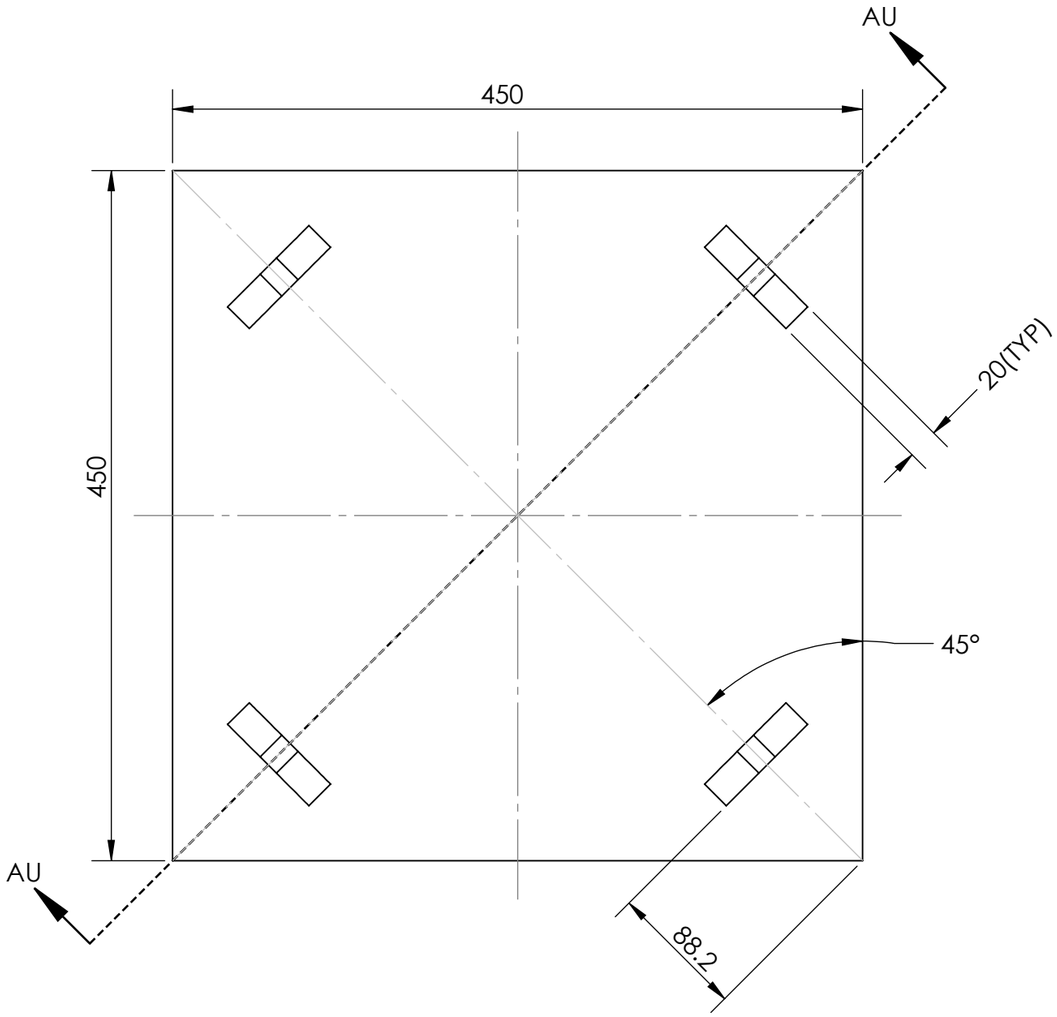
SEAD

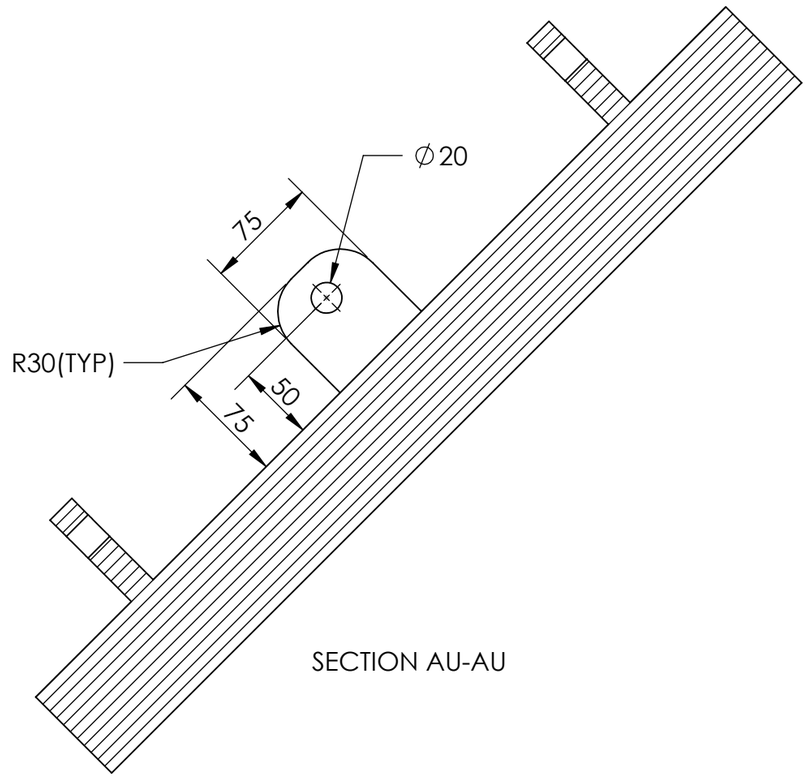
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

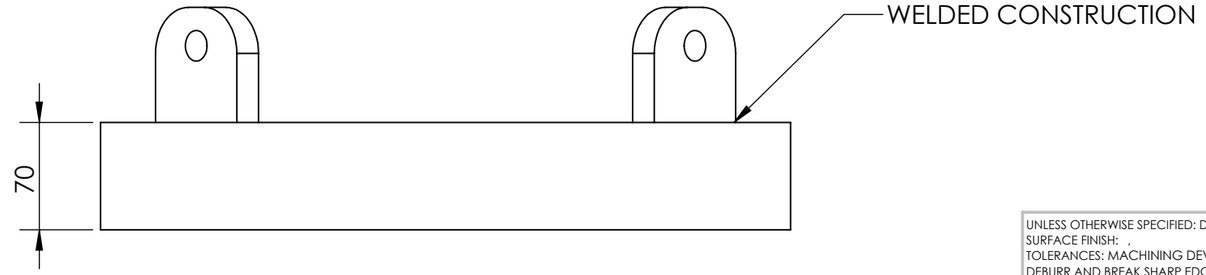
DWG NO. SEAD/FX/A0002/S07/P06 | A3

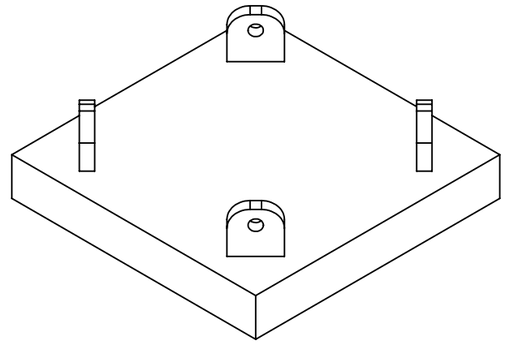
CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





SECTION AU-AU





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TOP LOAD PLATE

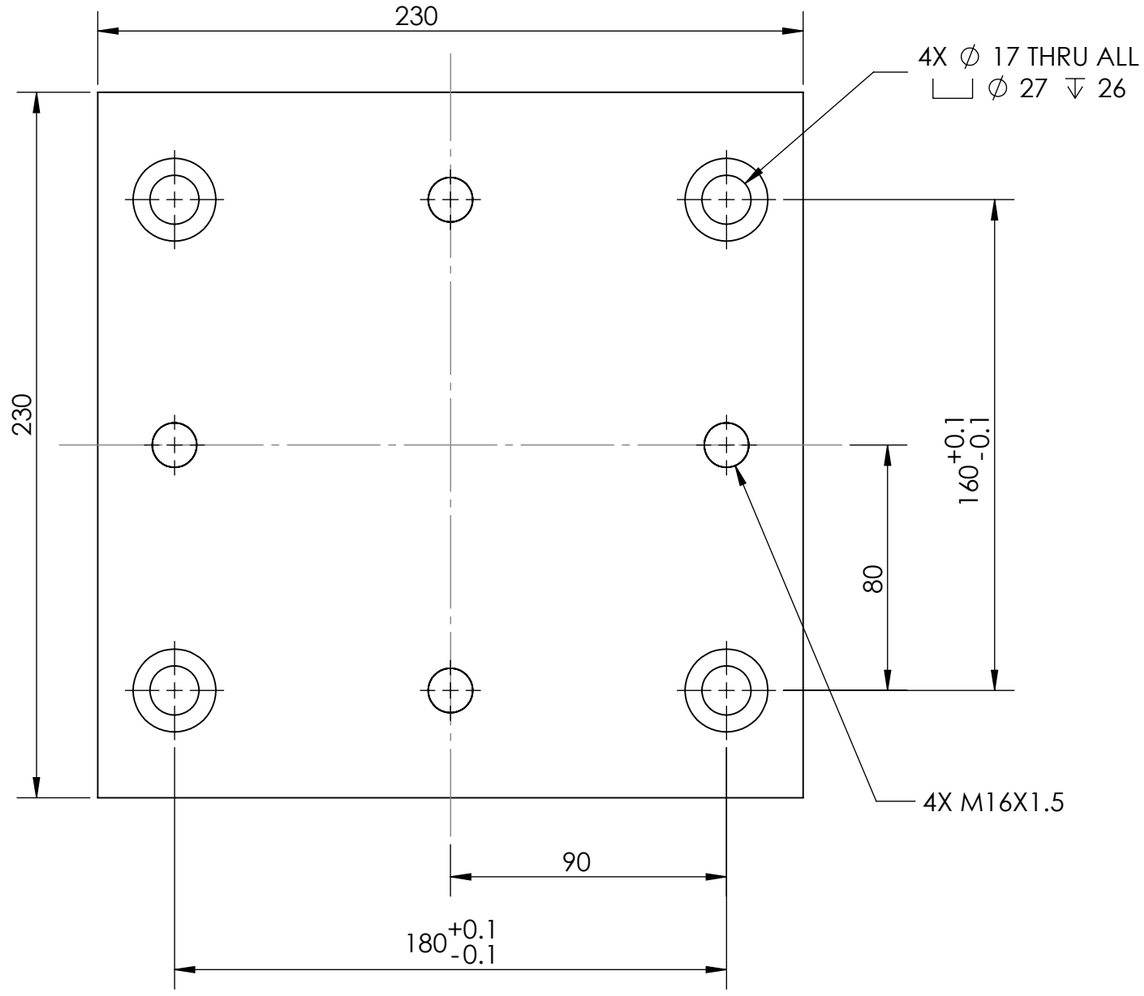
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

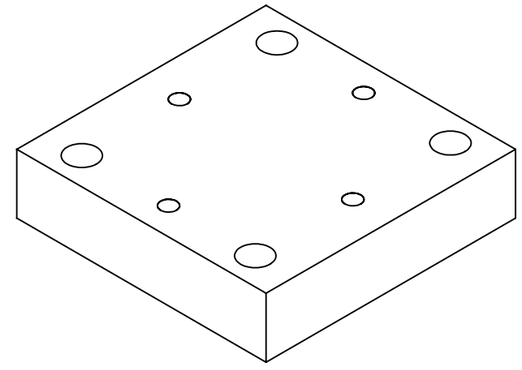
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

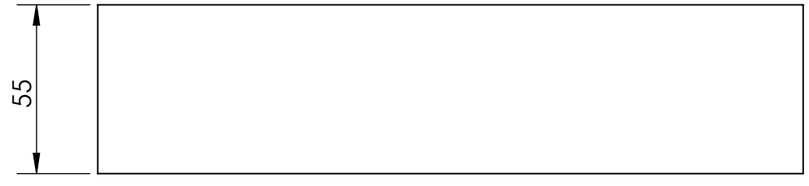
DWG NO. SEAD/FX/A0002/S07/P07 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BOTTOM LOAD PLATE

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

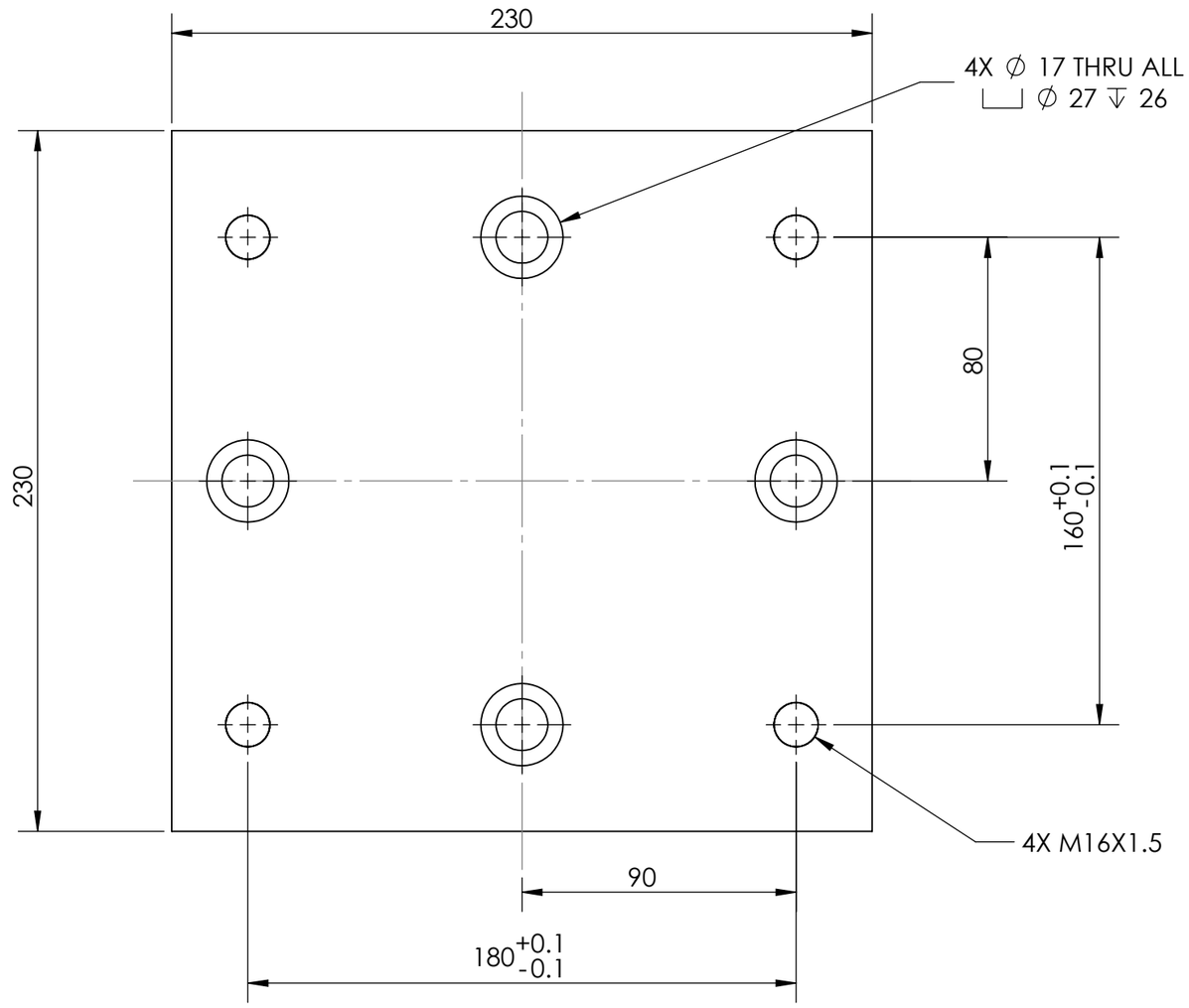
SEAD

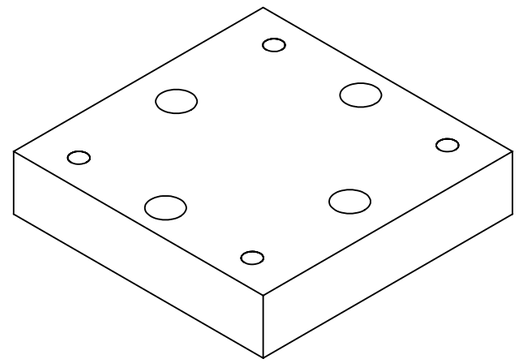
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P08 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: .
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: BOTTOM LOAD PLATE 1

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

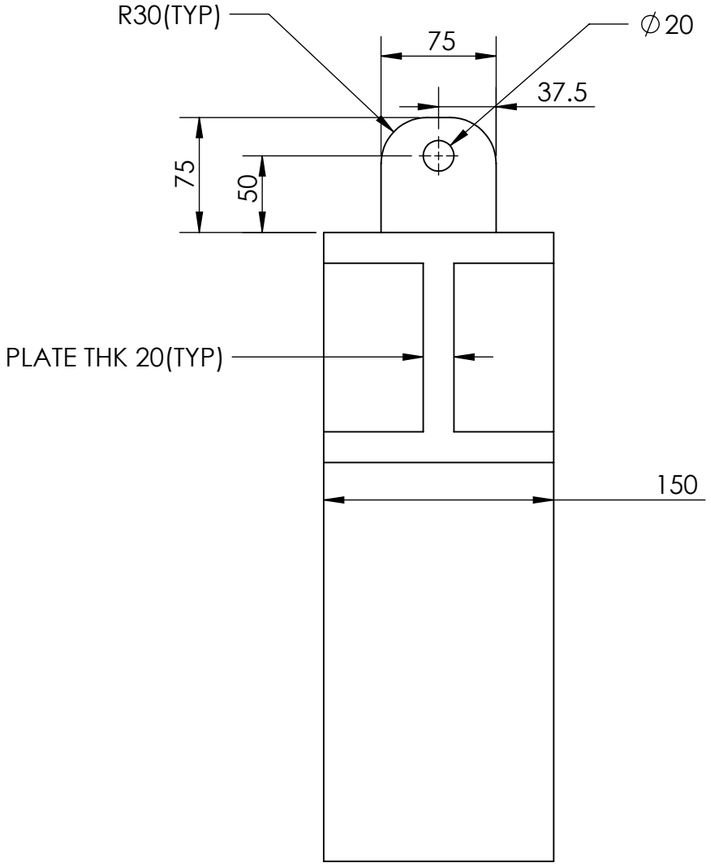
SEAD

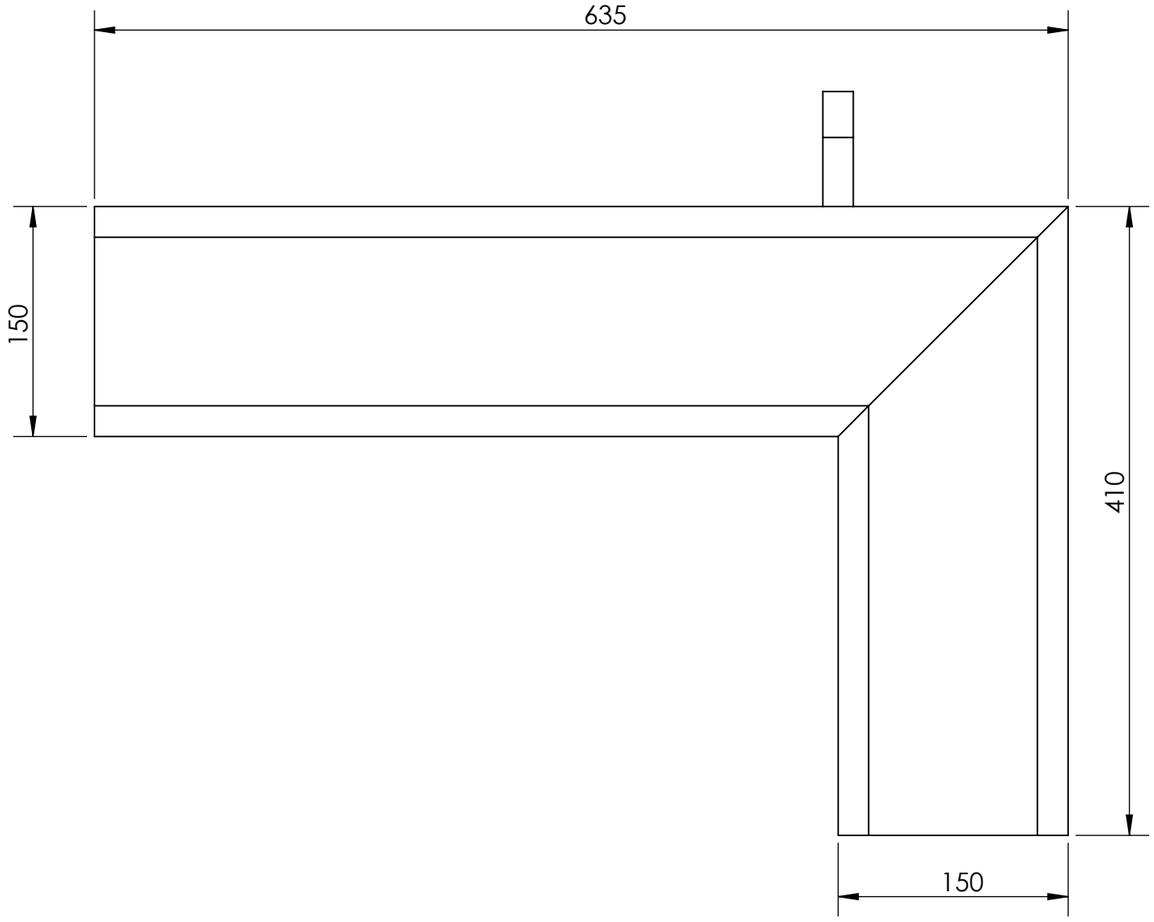
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

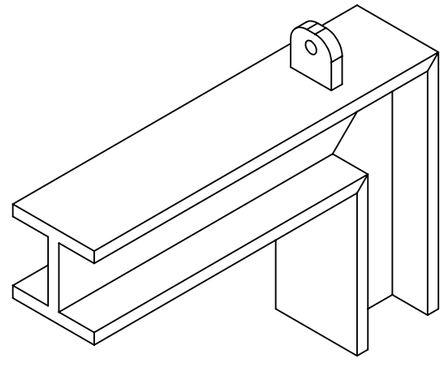
MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P09 | A3

CALCULATED MASS: | SCALE: 1:2 | SHEET 1 OF 1







ISOMETRIC VIEW

NOTE:

1. ALL WELDED CONSTRUCTION.

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TEST LOAD CONNECTOR

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

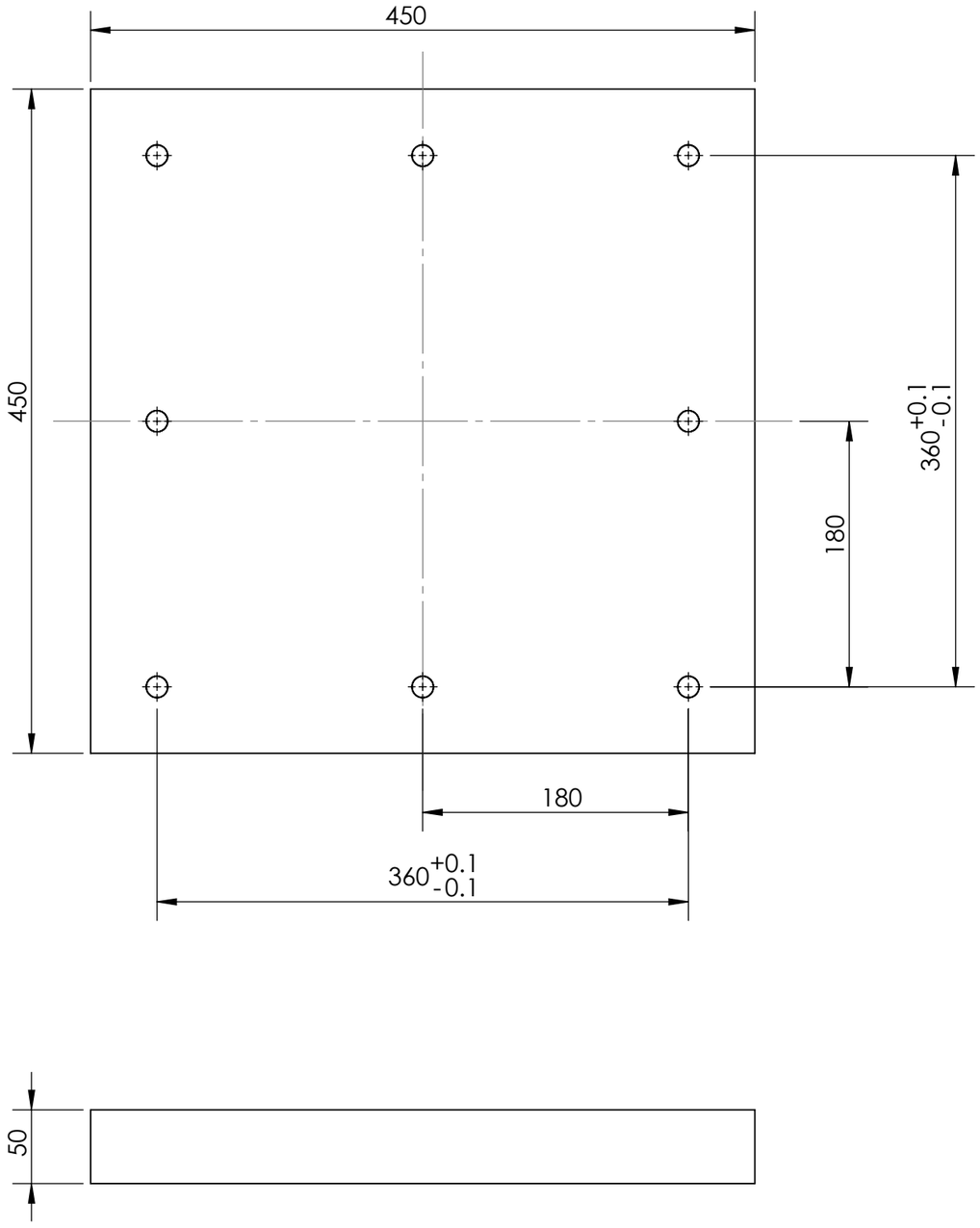
SEAD

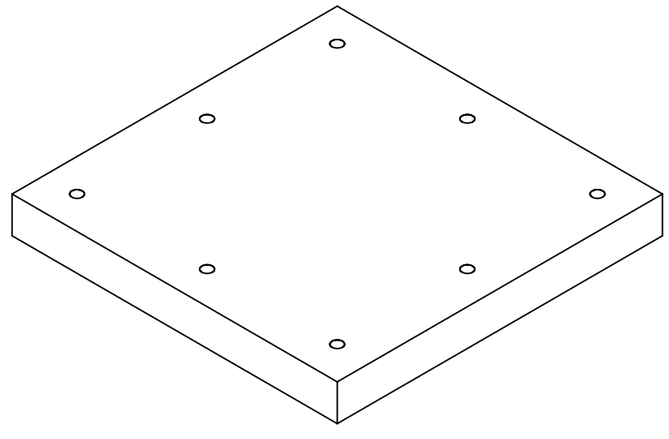
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P10 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TEST LOAD CONNECTING PLATE

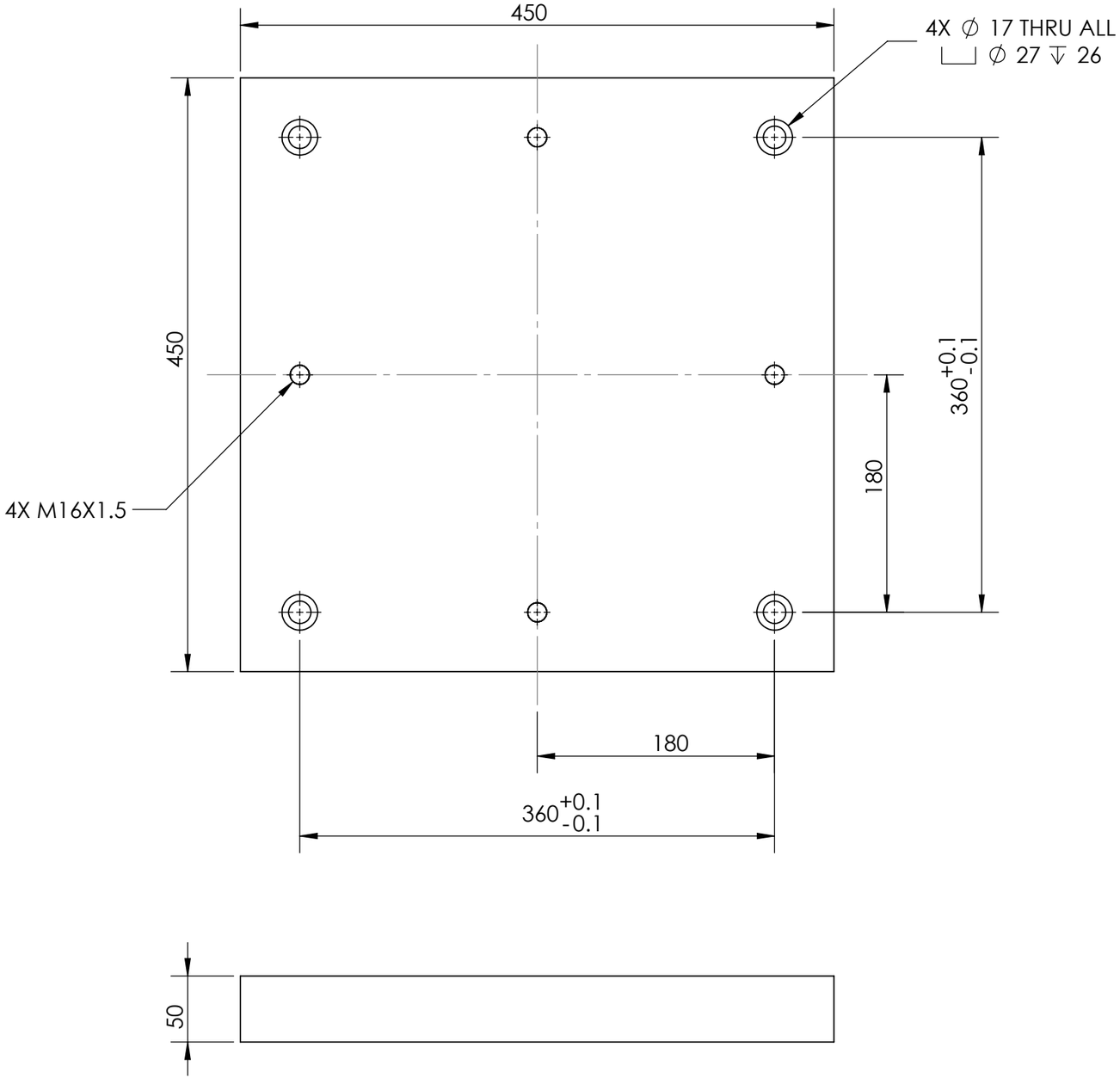
ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

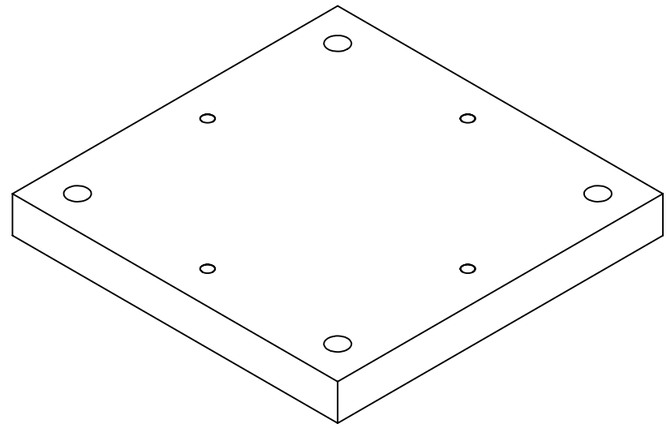
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P11 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1





ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TEST LOAD PLATE 1

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

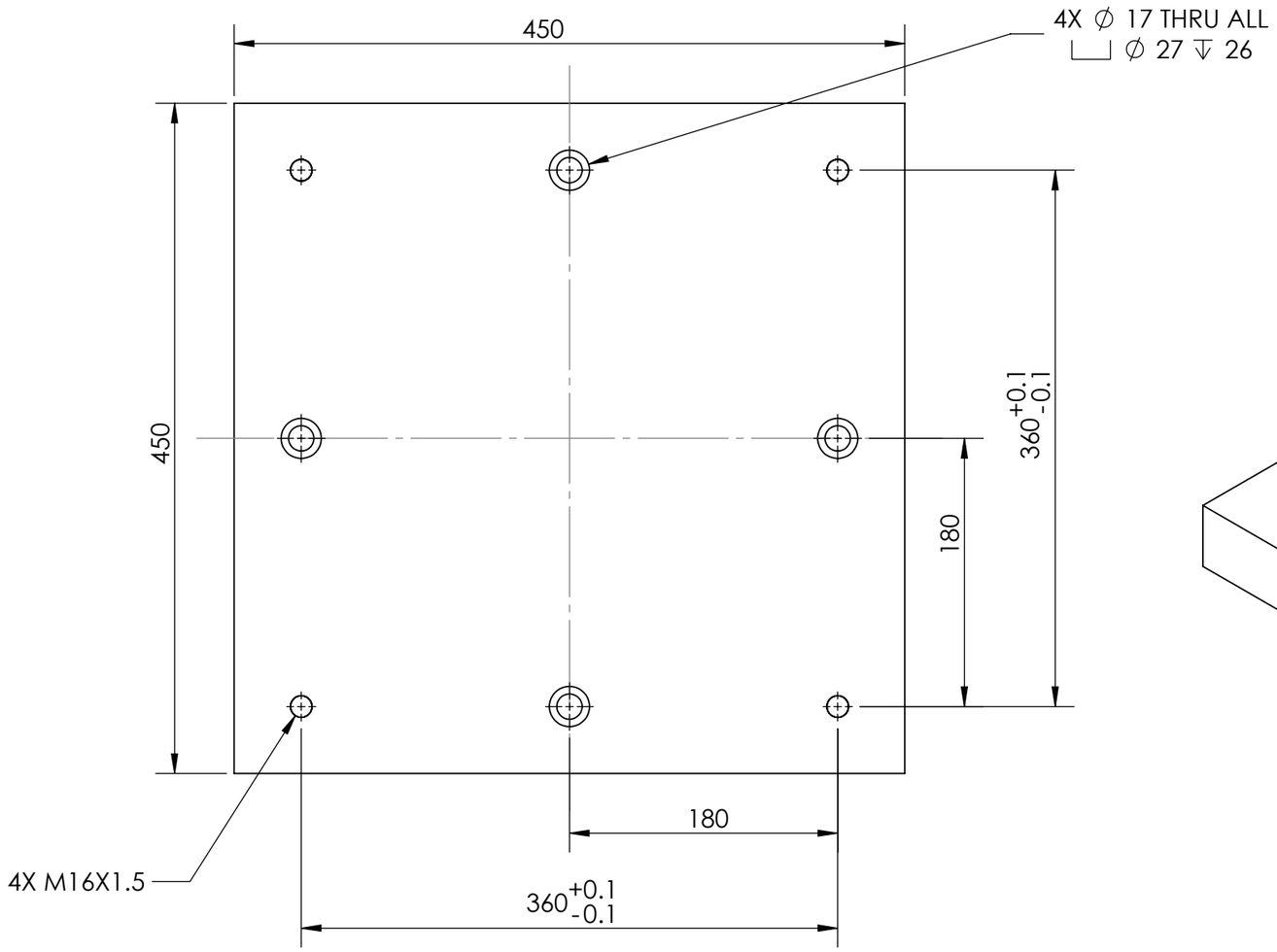
SEAD

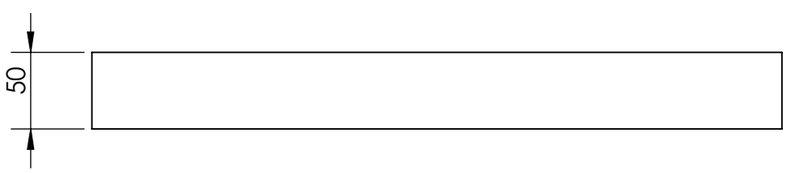
GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

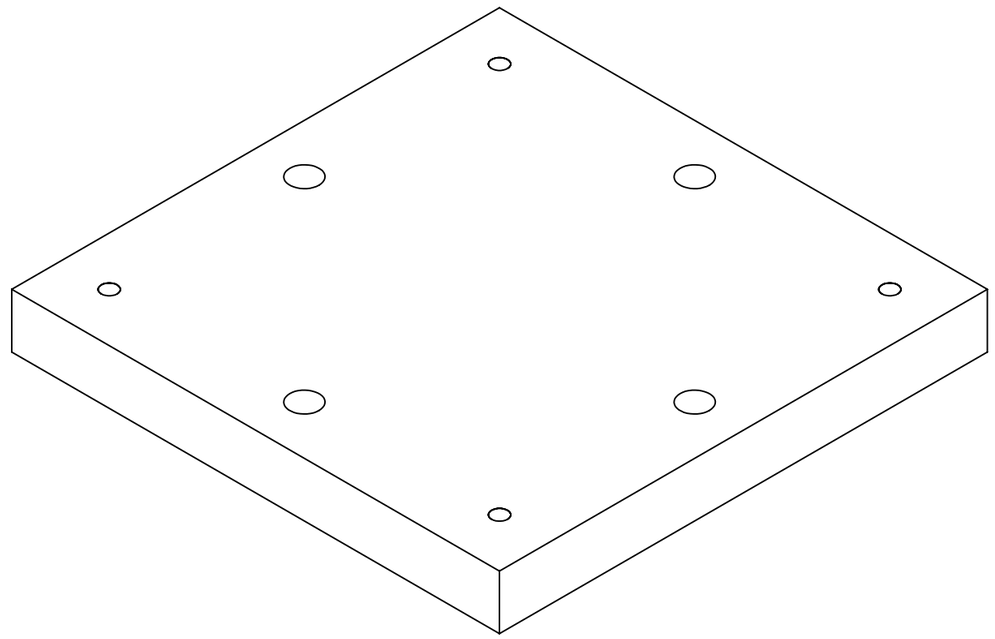
MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P12 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1







ISOMETRIC VIEW

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS
SURFACE FINISH: ,
TOLERANCES: MACHINING DEVIATION TO IS:2102 (MEDIUM GRADE) UNLESS OTHERWISE SPECIFIED
DEBURR AND BREAK SHARP EDGES

DO NOT SCALE DRAWING | REVISION

TITLE: TEST LOAD PLATE 2

ENVELOP:	2024	NAME	DATE	SIGNATURE
	DRAWN	SENTHILKUMAR R	19-NOV	RSK
	CHK'D	ANANTHA VELAN M	19-NOV	AVM
	APPV'D	GOWTHAMAN P	19-NOV	GP

SEAD

GOVERNMENT OF INDIA
(INDIAN SPACE RESEARCH ORGANISATION)
ISRO PROPULSION COMPLEX
MAHENDRAGIRI-627 133

MATERIAL: STRUCTURAL STEEL IS2062

DWG NO. SEAD/FX/A0002/S07/P13 | A3

CALCULATED MASS: | SCALE: 1:4 | SHEET 1 OF 1