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INSTITUTE FOR PLASMA RESEARCH

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MINOR FABRICATION WORKS ENQUIRY

Office Copy

ENQUIRY NO :IPR/MFW/22-23/155

Date : 13-10-2022

Due Date : 09-11-2022 13:00 IST

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

Important Note:

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

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

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

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

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

QUOTATION SHOULD BE ADDRESSED TO **KRISHAN KUMAR GOTEWAL** ONLY.

Sr.No.	Description	Quantity	Rate
1	FABRICATION AND ASSEMBLY OF ROBOTIC ARM SYSTEM (RAS)	1	No.

Free Issue Material

Sr.No.	Description	Quantity	Unit	Value
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Note : Please quote with complete technical details (Technical Compliance sheet and product data sheet)

Encl:As per attachment

Sd/-
KRISHAN KUMAR GOTEWAL
Scientific Officer-F



SPECIFICATIONS DOCUMENT FOR FABRICATION AND ASSEMBLY OF ROBOTIC ARM SYSTEM (RAS)

Signature and Stamp of Bidder with Date

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Signature and Stamp of Bidder with Date

1.0 INTRODUCTION:

This tender document gives the specifications for supply, fabrication and assembly of Joints and Links of Robotic Arm System (RAS) for hyper-redundant inspection system. RAS has 6 number of joints which collectively provide the 12 DOF to the system. The engineering CAD model of the RAS is as shown below for the purpose of introduction.

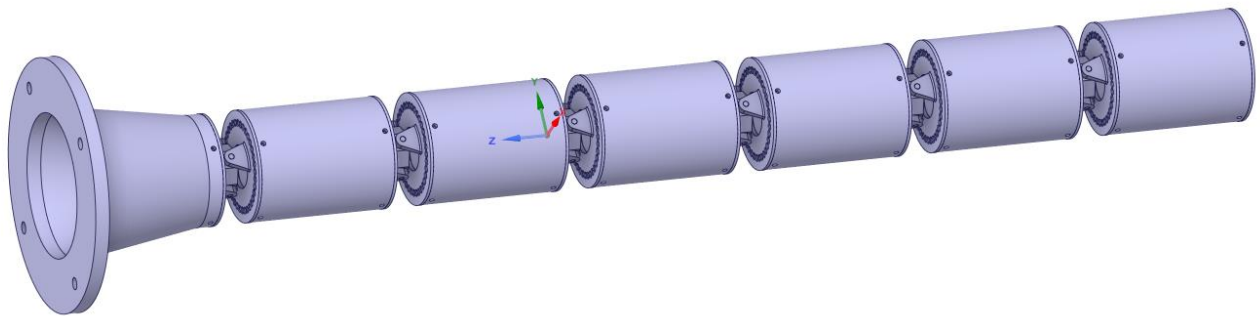


Fig.1: Assembled Robotic Arm

Note: Kindly refer to the drawings (annexure 1) and specifications annexure 2 for details of the components as well as the material of construction

SCOPE OF WORK

2.1 Scope of Work under the responsibility of the VENDOR/BIDDER

The scope of work for this tender document includes, but not limited to, the following activities:

Sr. No.	Scope of Work
1.	Dev Development of 3D CAD model along with fabrication drawings based on the engineering drawings supplied by IPR (in Annexure 1 of this tender) and seeking approval from IPR
2.	Vendor shall supply all necessary material test certificate from NABL accredited lab
3.	Vendor shall supply final bill of materials (BOM) for approval from IPR
4.	The vendor shall be responsible for material and COTS procurement, high precision fabrication, testing and supply of the complete assembled system as per

	drawings (Annexure1) & specifications (Annexure2) attached in this tender.
5.	Fabrication of all components in accordance with final drawings approved by IPR
6.	Surface preparation, primer, spray painting and nickel-chrome/black oxide/equivalent coating of all components are in vendor scope.
7.	Procurement and Supply of all integrated components, COTS and spares as per the BOM in Annexure 2
8.	Vendor may suggest any change required for ease of assembly and proper functioning of assembled system. Approval shall be taken from IPR for any deviation/change from provided specifications in drawings
9.	Any deviation from the specified material, dimensions and tolerances should be intimated to IPR for approval before proceeding with fabrication
10.	Design, development and manufacturing of tools, jigs, fixtures and other accessories required for manufacturing of components & assemblies and equipment required for FAT/SAT is in vendor scope
11.	Testing & Inspection of the materials, parts, components & sub-assembly at appropriate stages before the final assembly shall be done in presence of IPR representative.
12.	All materials and components should be cleaned thoroughly before assembly to ensure the proper alignment
13.	Vendor shall discuss the fabrication methodology, and shall share complete breakup of activities, facilities to be used and time schedule with IPR. Periodical review of work progress/status with IPR is mandatory
14.	Procurement of raw materials and other items should be from original equipment manufacturer (OEM) or authorized agents/dealers.
15.	Factory acceptance tests (as per section 9.1 of this tender) shall be carried out by vendor in presence of IPR personnel
16.	Packaging and delivery of components to IPR with appropriate unloading instructions at IPR site. Transit insurance has to be taken by vendor.

2.2 IPR Responsibilities

Sr. No.	Scope of Work
1.	Supply of engineering drawings (Annexure-1)
2.	Review of CAD model and Approval of fabrication drawings supplied by the vendors.
3.	Review and Approval on selection of materials
4.	Periodic review of work progress
5.	Review and Approval of any deviation from the specified material, dimensions and tolerances.

6.	Witness of FAT (as per section 9.1 of this tender)
7.	Site acceptance (as per section 9.2 of this tender) test will be done by IPR. Vendor may witness the tests.

TECHNICAL REQUIREMENTS

3.1 The following important points must have to be considered by vendor for smooth functioning of the system

Sr. No.	Scope of Work
1.	All parameters shall be taken into account by vendor before fabrication to ensure smooth functioning of the system at all stages, i.e. the functioning of Arm before and after final assembly of joints and link as well, should remain unchanged. The functioning of individual joints in all direction i.e. 360 Degree, wrist rotation shall be identical and load (frictional load) as well as play free.
2.	Vendor must ensure that defined tolerances shall avoid the any kind of frictional hindrances as well as play in joints pin. The tolerances shall be of as per ISO standard
3.	All manufacturing/mating tolerances (in assembly) shall be included in the fabrication drawings
4.	The vendor must ensure the parallelism and perpendicularity in the components as per the assembly and sub-assembly requirements.
5.	Vendor has to ensure that, the flange weight shall lower as possible (May provide the Cut holes in flanges to decrease the weights)

DELIVERABLES:

The deliverables and tentative phase timing are mentioned as below

Phase	Deliverable	Time
1.	Kick-Off Meeting (KOM)(Date of P.O)	T0
2.	Submission of fabrication drawings by vendor	T0 + 03 Weeks
3.	Approval on fabrication/assembly drawings by IPR	T0 + 04 Weeks
4.	Submission of material test certificates (MTC) by vendor	T0 + 05 Weeks
5.	Approvals of MTC by IPR	T0 + 06 Weeks
6.	Fabrication and Assembly of components	T0 + 12 Weeks
7.	FAT of the components/system and approval by IPR's personnel at vendor site	
8.	Delivery of system at IPR	T0 + 14 Weeks

9.	Site Acceptance Tests (SAT)	T0 + 15 Weeks
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INSURANCE, PACKING AND SUPPLY OF PRODUCT

- Vendor shall pack the system with the proper packing material to avoid damages during transportation.
- All components shall be cleaned and painted before packing and shipment.
- The transit insurance of fabricated components and shall be in the scope of vendor
- Vendor shall load the system at vendor’s works and unload at RH lab, IPR

WARRANTY

Vendor shall give warranty of one year (1 year) from the date of final acceptance for the performance of the fabricated components. During this period if any fault occurs, the vendor shall rectify at no extra cost. The faults may be due to poor workman ship/welding/fabrication, faulty material, malfunctioning COTS components procured from OEMS, electronics items etc. During this warranty period, if any fault occurs/detected in system, vendor shall rectify the same at no extra cost. In the event vendor fails to fulfil his guarantee obligations, IPR shall have the right to remedy or to have remedied the defect/fault, in both cases to vendor's account

LIST OF DRAWINGS

Refer Annexure 1

MATERIAL DESCRIPTION

Refer Annexure 2 for details of materials and quantity of the items.

FIM (FREE ISSUE MATERIAL)

No free issue material will be supplied by IPR.

ACCEPTANCE CRITERIA:

9.1 Factory Acceptance Tests (FAT)

- Physical dimensions check of individual components and their assembly compatibility.
- Functionality test for functioning of U-joint components and its assembly

9.2 Site Acceptance Test (SAT)

- Visual inspection of system for damages
- Dimensional and assembly compatibility check
- Alignment of the assembled system as per Drawings

- Functionality test for functioning of Joints and assembly

GENERAL TERMS AND CONDITIONS:

- Any deviation / discrepancy / change from the drawings shall be brought out in separate sheet by the vendor and approval should be sought from IPR
- Vendor shall adhere to the deliverable schedule as given in this tender document.
- Fabrication of all the components shall be as per final fabrication drawings approved by IPR.
- All components shall be checked for the compatibility of the assembly.
- Procurement of all the tools, fixtures, jigs, equipment's, material, temporary blanks etc.; required for the fabrication, inspection and testing shall be in the scope of VENDOR.
- All the fabrication and assembly including all the components shall be carried out in accordance with applicable code or approved equivalent.
- IPR authority / representative shall have access to all manufacturing facilities, inspection and testing facilities, tools, drawings etc.; during all stages of manufacturing process.
- All the components shall be delivered only after shipment clearance from IPR
- Delivery acceptance shall be issued by IPR authority / representative after acceptance tests and verification of dimensions, testing, etc.; to one's satisfaction of compliance with drawings, specifications and functional requirements

Signature and Stamp of Bidder with Date

Annexure 2

General specifications for all components & Raw materials

Sr.no.	Components (Part Name)		Reference in Annexure1 (Drawings Part no.)		Quantity in Nos.		Specifications and material details	Remarks	
1.	U-Joint Assy	A. U- Joint Flange	1	A	6	12	SS 304 material		
		B. Octa Block		B		6			Aluminium 6061 T6
		C. Joint Pin		C		24			SS 304 material
2.	Link00		2		1		Aluminium 6061 T6		
3.	1.Link 01_Len96		3		6		Aluminium 6061 T6		
	2.Link 01 Length 60mm				6				
	4.Link 03 Length 80mm				6				
4.	TCP Flange		4		2		Aluminium 6061 T6		

Note-

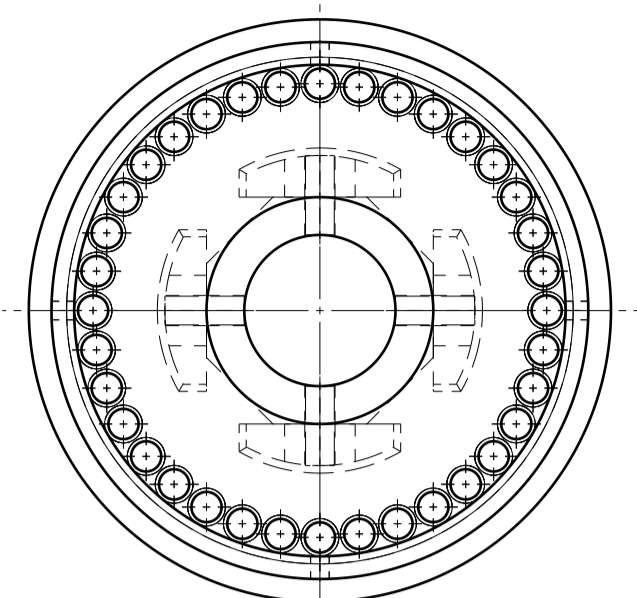
- The above BOM is just indicative. The vendor shall supply all the required items (and quantity) as per the scope of work/technical specifications in the tender.

VENDOR RESPONSE SHEET

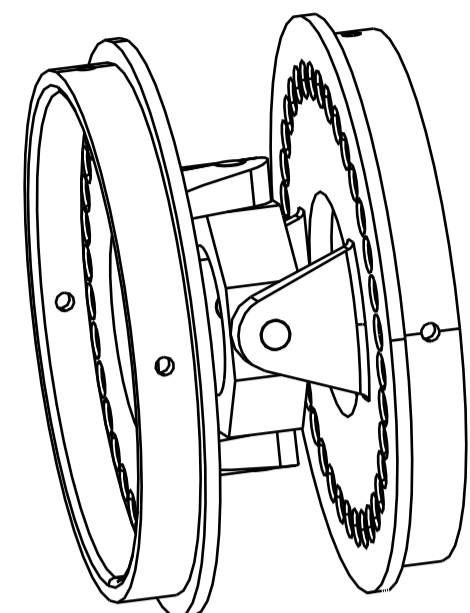
(MUST BE SUBMITTED ALONG WITH THE BID)

I/We have read the complete tender document and Annexures for the drawings and bill of materials	<input type="checkbox"/> Agreed / <input type="checkbox"/> Not-Agreed
I/We agree to the scope of work mentioned in the tender	<input type="checkbox"/> Agreed / <input type="checkbox"/> Not-Agreed
I/We agree to all terms and conditions mentioned in the tender	<input type="checkbox"/> Agreed / <input type="checkbox"/> Not-Agreed

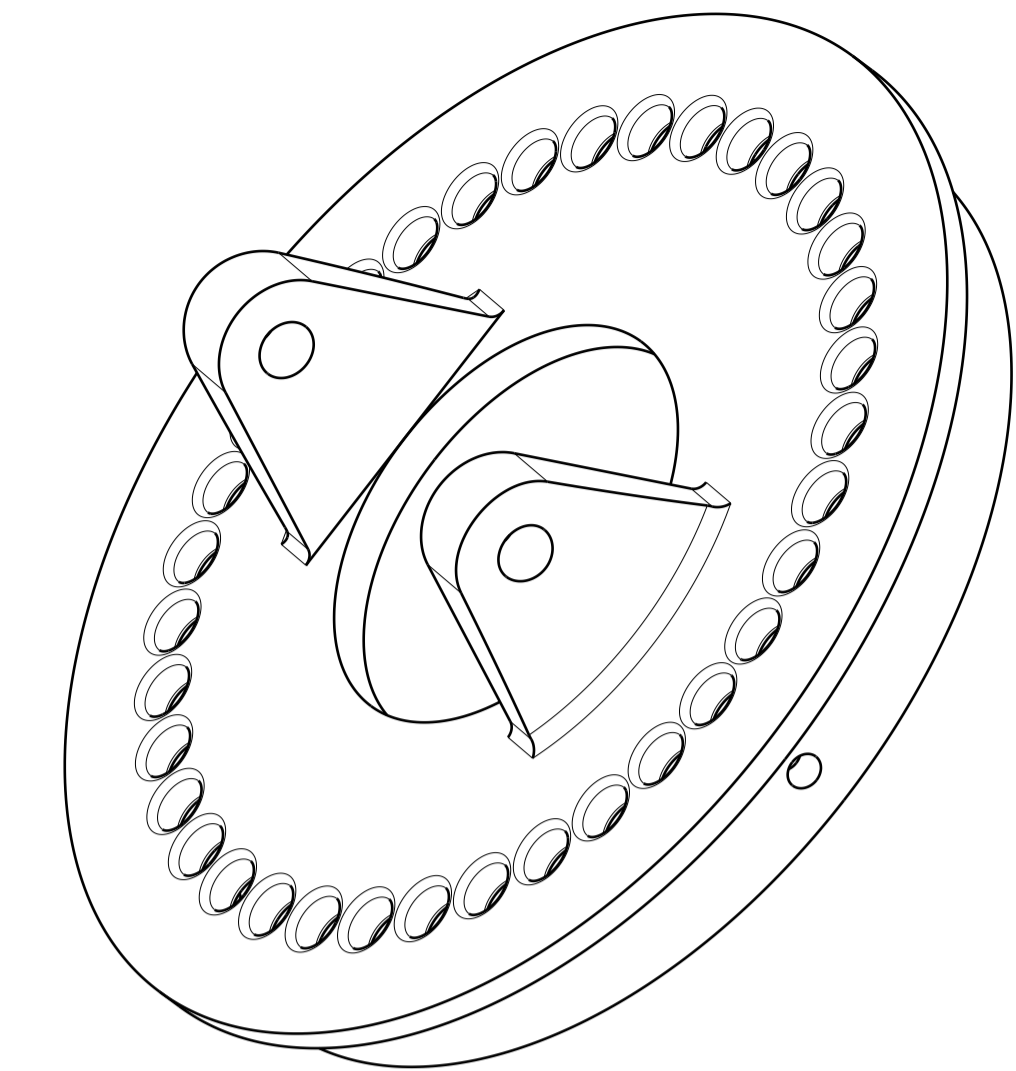
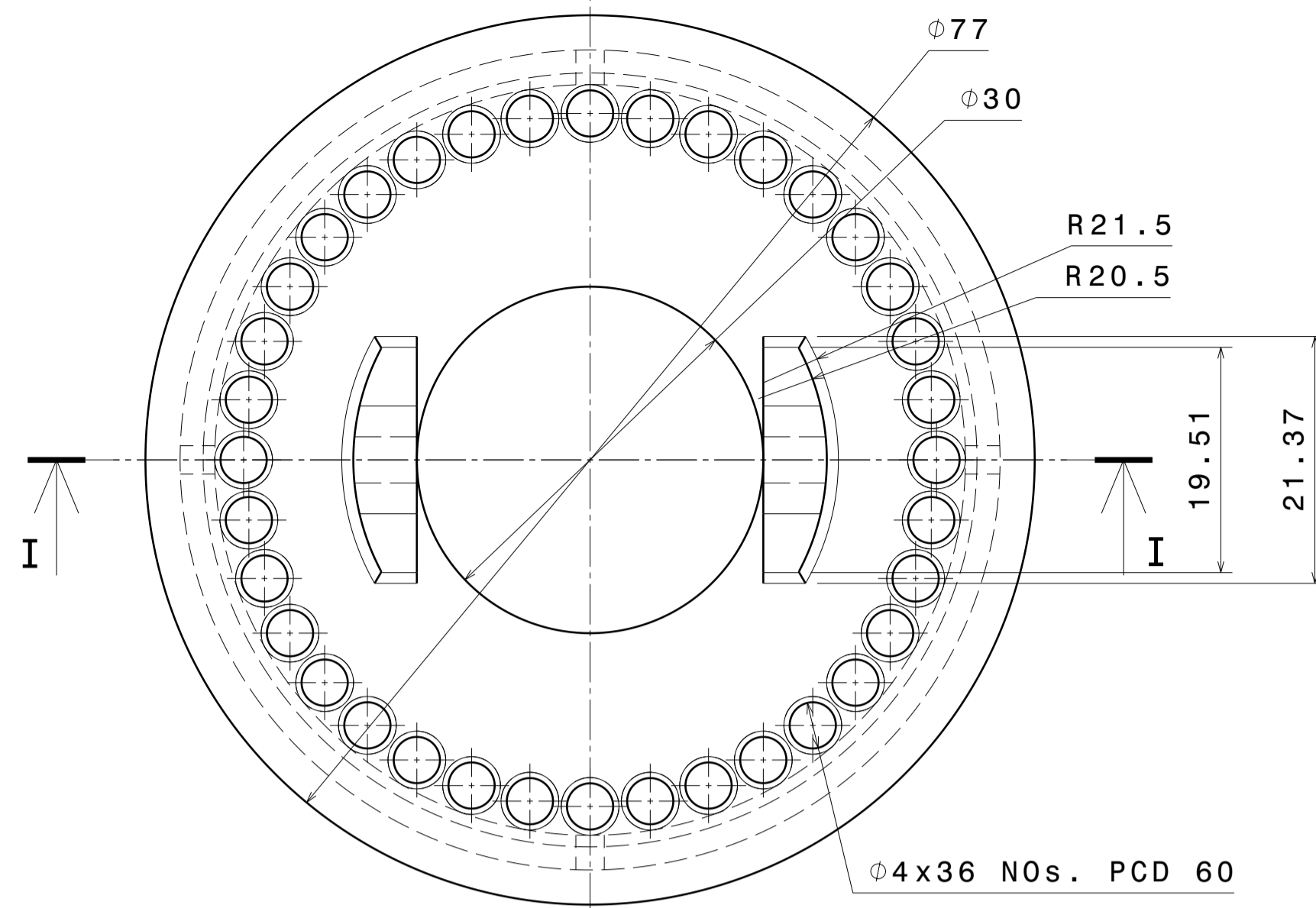
(Stamp and Sign of Bidder)



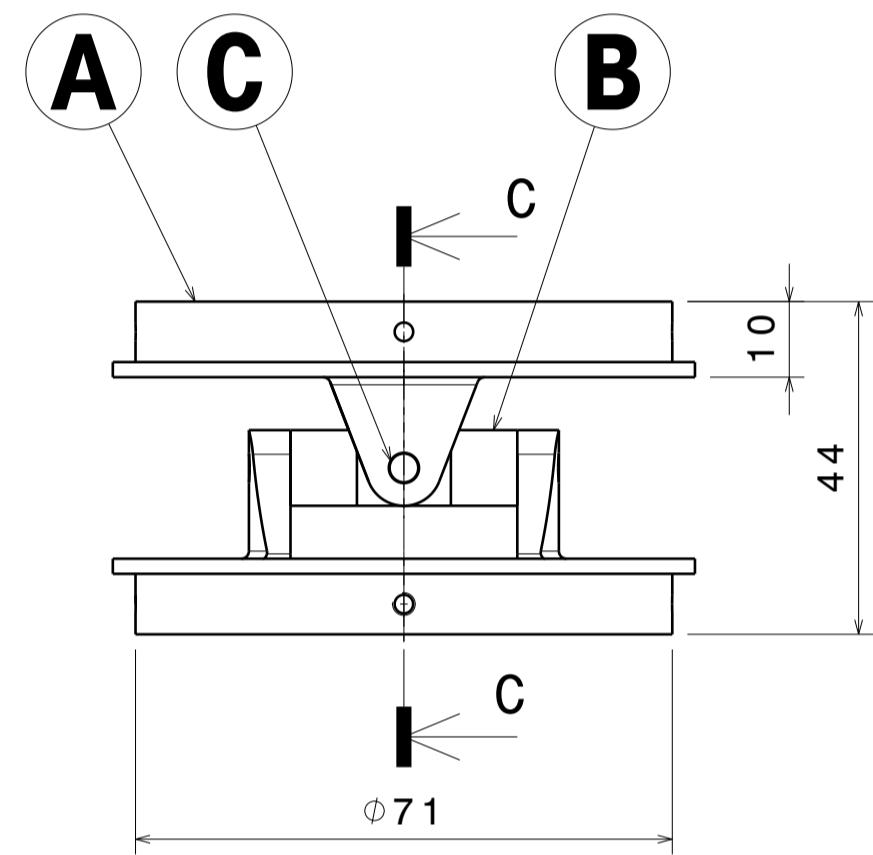
Top view
Scale: 1:1



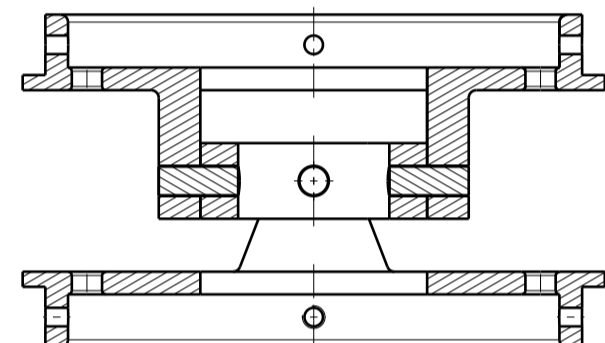
U-JOINT ASSY



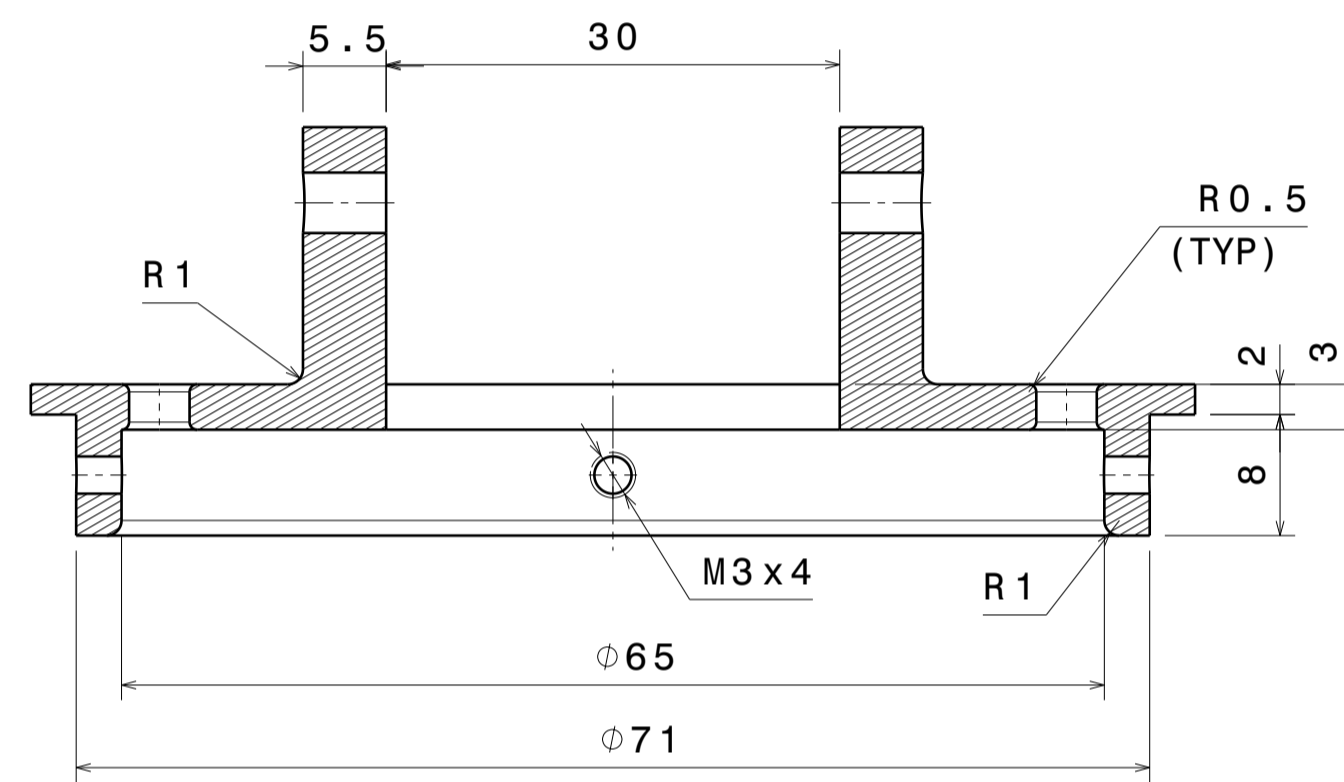
Isometric view
Scale: 2:1



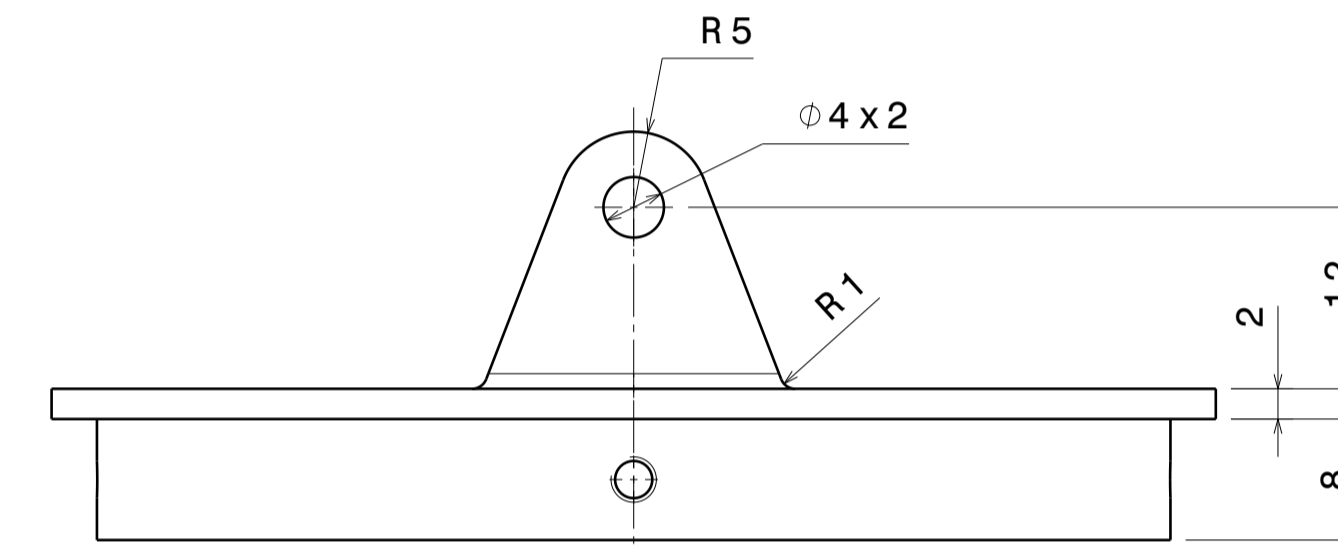
Front view
Scale: 1:1



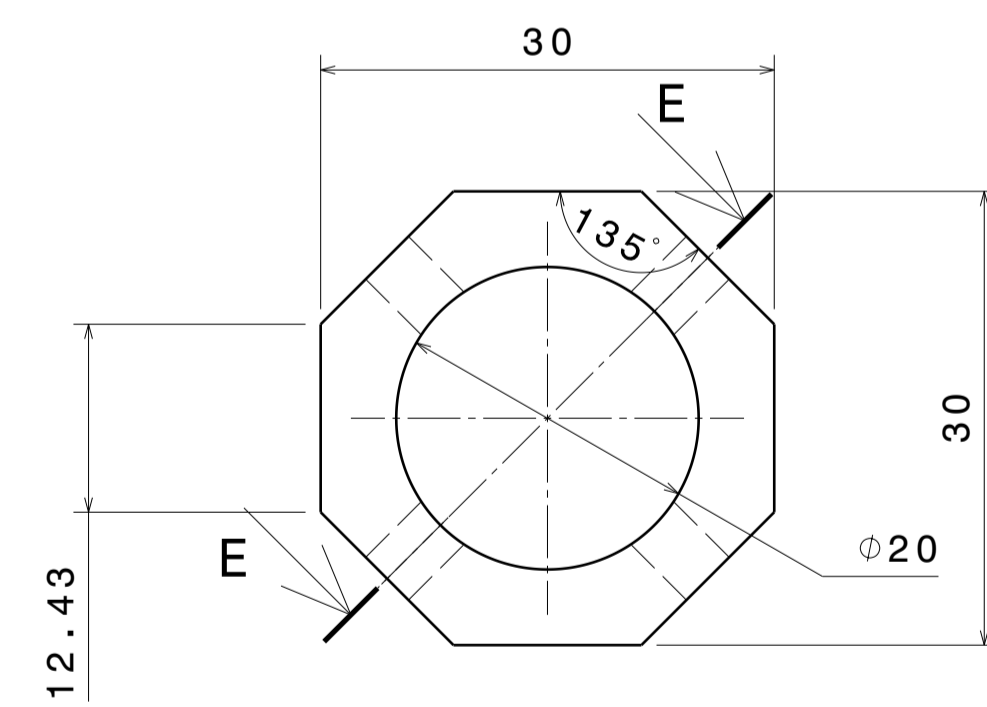
Section view C-C
Scale: 1:1



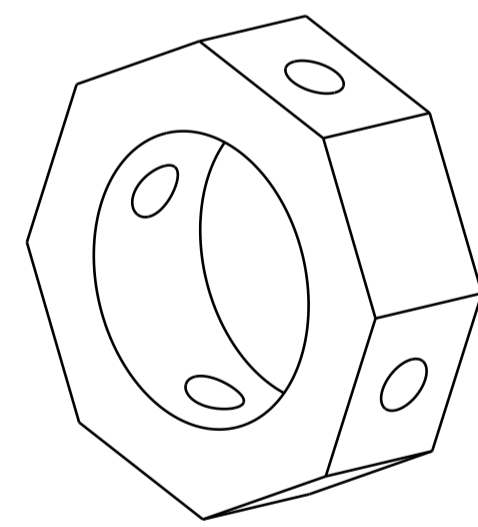
Section view I-I
Scale: 2:1



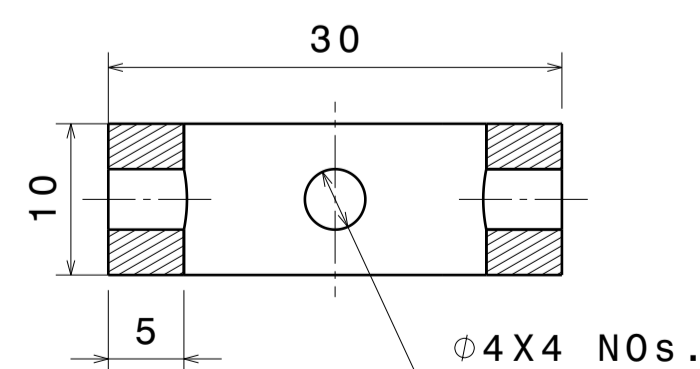
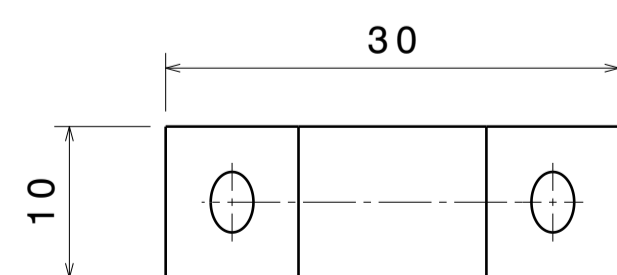
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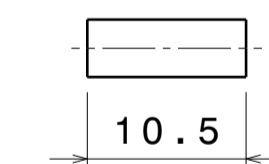
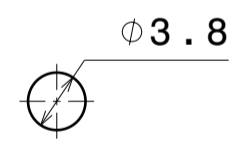
Bottom view
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Isometric view
Scale: 2:1



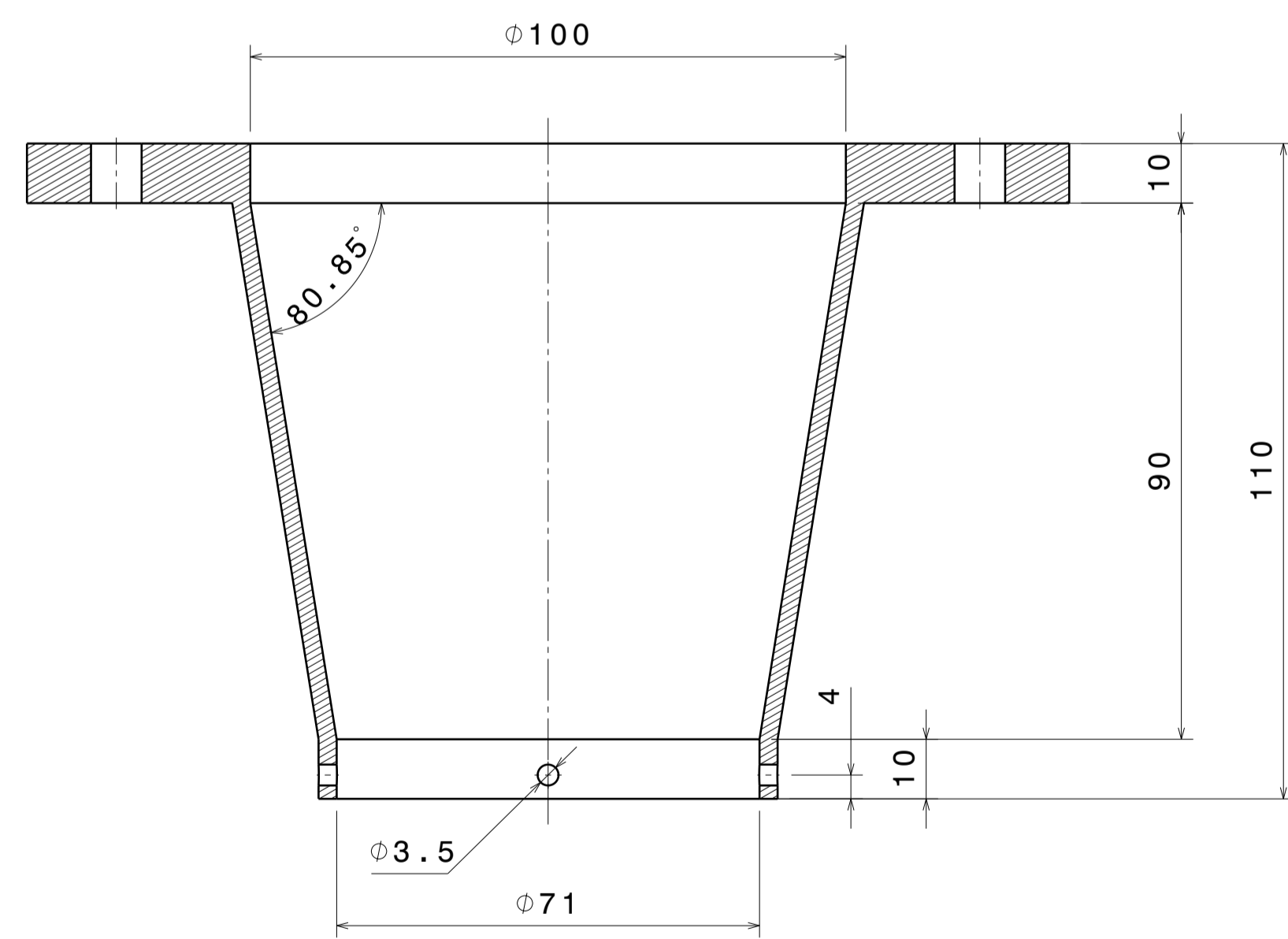
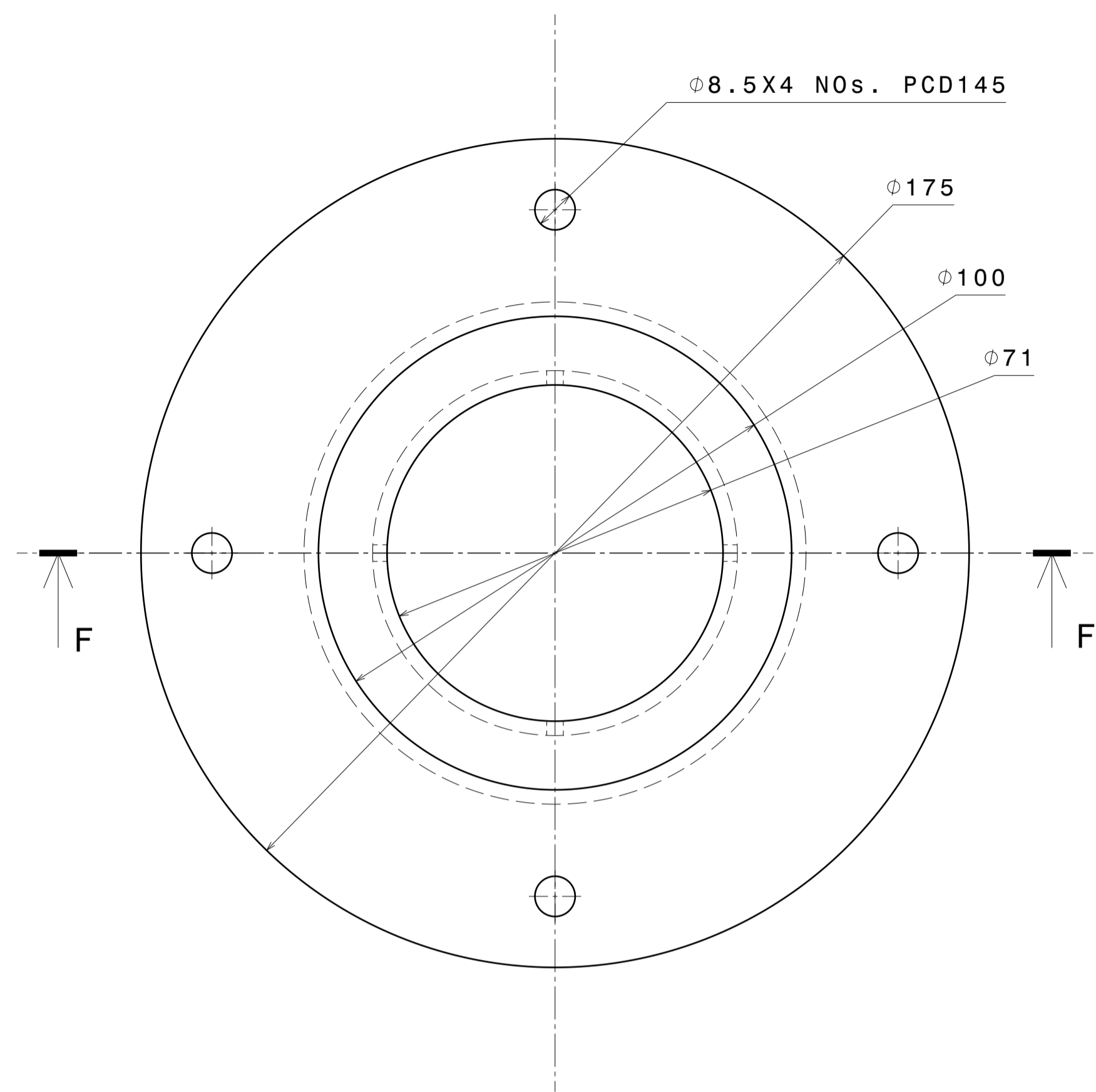
Section view E-E
Scale: 2:1



Right view
Scale: 2:1

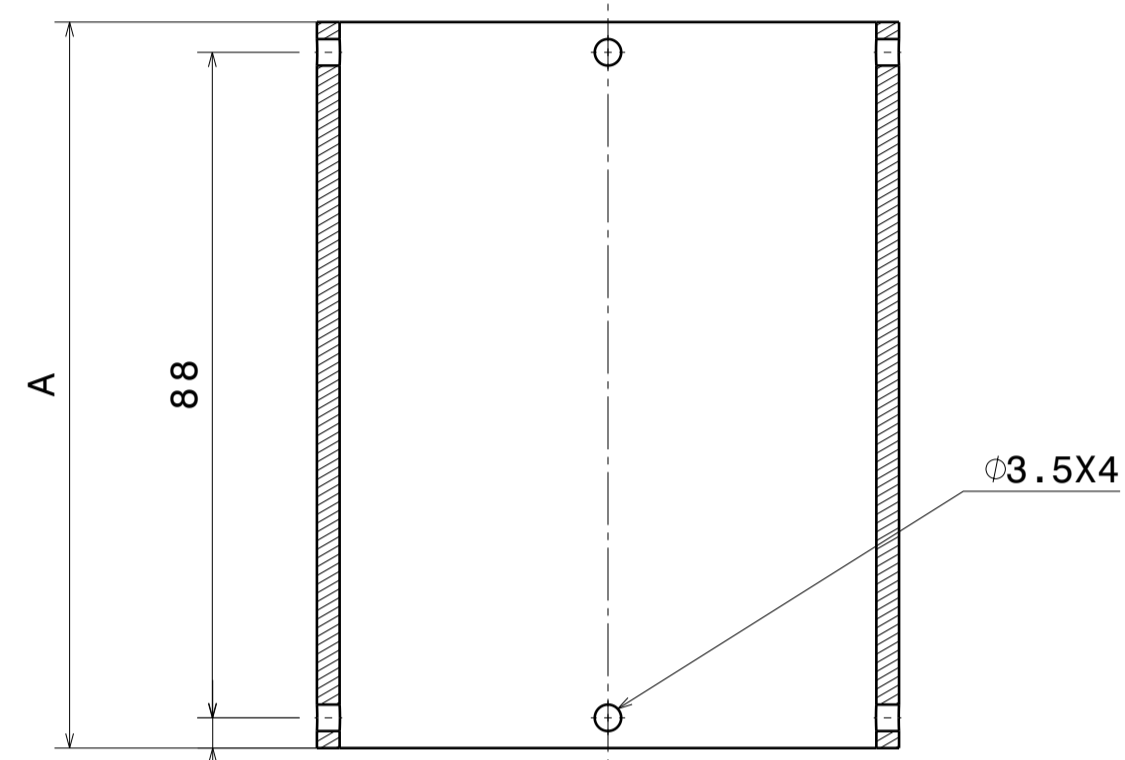
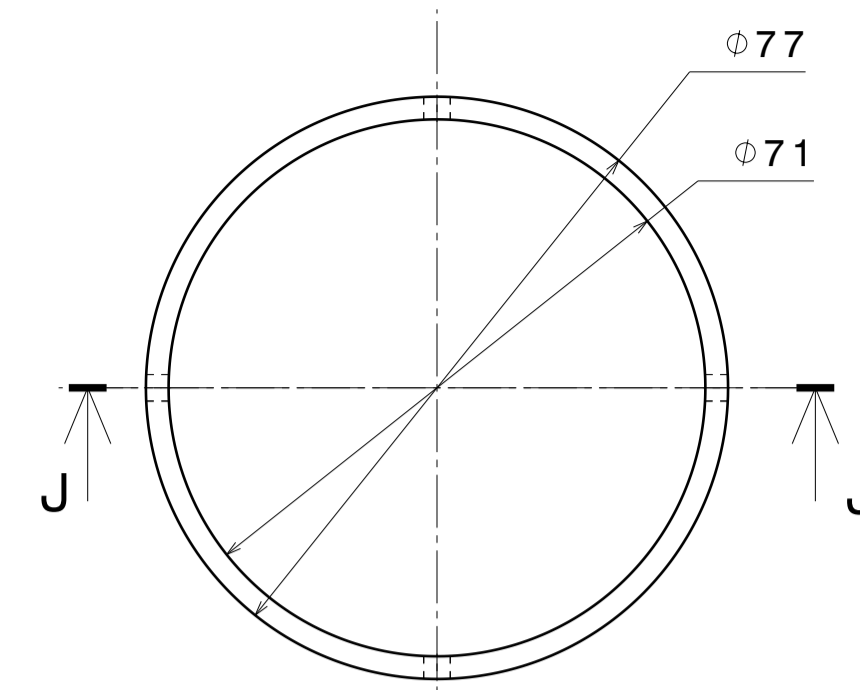
Item No.	Description	Quantity	Material	Revision
C	JOINT PIN	24	SS 304	
B	Octa Block	6	AL 6061 T6	
A	U-JOINT FLANGE	12	SS 304	
27.06.22				

DRG. NO	8-25	1.6-8	0.025-1.6	< 0.025	REVISION COLUMN				ASS'Y GROUP:	SIZE	INSTITUTE FOR PLASMA RESEARCH	
CO-ORDINATED BY					REV	ZONE	DESCRIPTION	DATE	REMARKS	APPROVED BY	ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED	BHAT, GANDHINAGAR-382 428.
MACHINING DEVIATIONS FOR NON-TOLERANCED DIMENSIONS												
LENGTH IN mm OF SHORTER SIDE OF ANGLES				LENGTH OR DIA	UPTO 6	6-30	30-120	120-315				
UPTO 10	10-50	50-120	OVER 120-400		±0.1	±0.2	±0.3	±0.5				
DRAWN: NNK											DATE: 28.06.2022	TITLE: HYRIS JOINT ONE LINK ASSEMBLY
DESIGNED: RR											REF DRG NO:	REV RD
APPROVED: --											DRG. NO: IPR/22/A1/HYRIS-UJOINT/9075	SHEET 02 OF 03



Section view F-F
Scale: 1:1

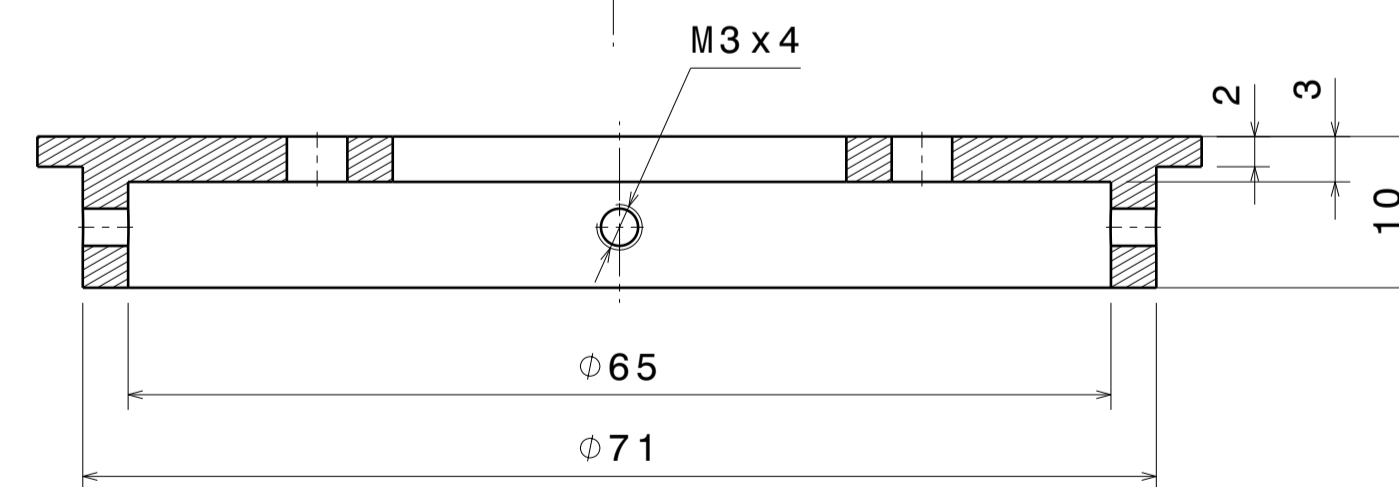
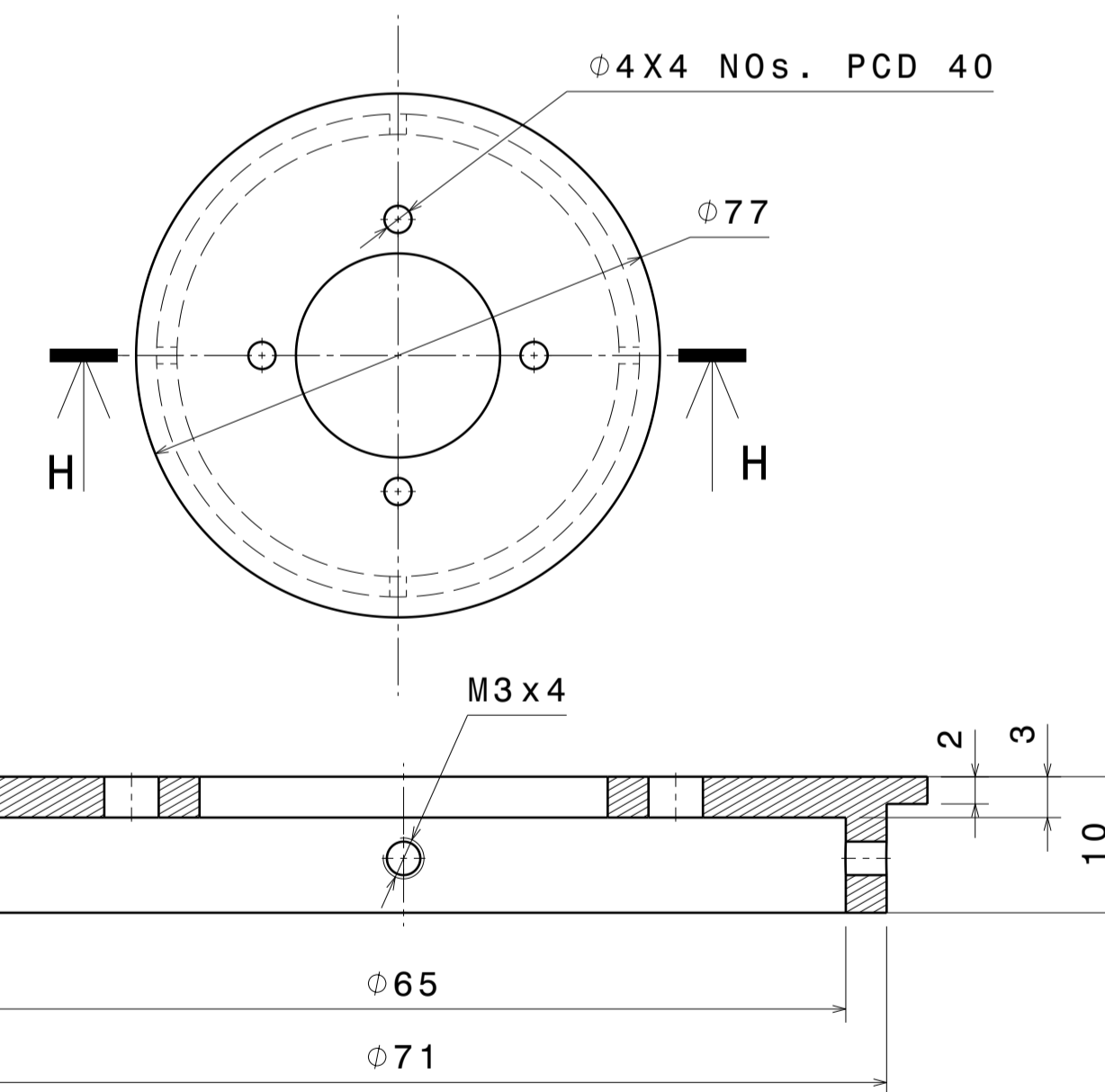
2



Section view J-J
Scale: 1:1

3

4	LINK 03	80
3	LINK 02	65
2	LINK 01	60
1	LINK 01_L96	96
NO.	DESCRIPTION	QTY LENGTH-A



Section view H-H
Scale: 2:1

4

DRG. NO	▽ 8-25	▽▽ 1.6-8	▽▽▽ 0.025-1.6	▽▽▽▽ < 0.025	REVISION COLUMN				ASS'Y GROUP:	SIZE	INSTITUTE FOR PLASMA RESEARCH										
CO-ORDINATED BY					REV	ZONE	DESCRIPTION	DATE	REMARKS	APPROVED BY	SCALE	NTS	DATE	TITLE	BHAT, GANDHINAGAR-382 428.						
MACHINING DEVIATIONS FOR NON-TOLERANCED DIMENSIONS														DRAWN		NNK		28.06.2022		HYRIS JOINT ONE LINK ASSEMBLY	
LENGTH IN mm OF SHORTER SIDE OF ANGLES				LENGTH OR DIA	UPTO 6	6-30	30-120	120-315							DESIGNED	RR	REF DRG NO:	REV RD			
UPTO 10	10-50	50-120	OVER 120-400		±0.1	±0.2	±0.3	±0.5						APPROVED	--	DRG. NO	IPR/22/A1/HYRIS-UJOINT/9075	SHEET 03 OF 03			

(This need to be printed in Bidders letter head)

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

NAME OF PARTY : _____

ENQUIRY NO: _____

QUOTATION No. & DATE : _____

Currency of Quotation: **Indian Rupees**

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

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

Place: Authority Signatory

Date: Company Seal

Note:

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