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RCnD COMPLEX,  
TROMBAY, MUMBAI - 400 085

GOVERNMENT OF INDIA  
BHABHA ATOMIC RESEARCH CENTRE  
ELECTRONICS & INSTRUMENTATION GROUP  
CONTROL INSTRUMENTATION DIVISION

Ref: CNID/RCMS/CPD/2021/MF/ENQ/P21816

Date: 29/12/2021

**Minor Fabrication- Invitation of quotations**

**Sub:** Manufacturing, Assembly, Calibration, Testing and Supply of Rotary Position Sensor (Encoder) as per Annexure-I and Annexure -II.

Dear Sir,

1. Quotations are invited for the minor fabrication job as per enclosed Annexure-I.
2. Supplier has to submit Insurance policy for the material issued as free issue material (FIM).
3. Taxes shall be quoted separately.
4. PAN and GST Nos. of suppliers are mandatory along with offer.
5. The quotations must reach Head, Control Instrumentation Division by **20/01/2022** and must be sent in a sealed envelope super-scribed with the above reference number and due date given above.
6. The address on the envelope should read:  
The Head,  
Control Instrumentation Division,  
Bhabha Atomic Research Centre,  
North Site, Trombay, Mumbai - 400085.
7. The fabrication work shall be subject to inspection by our engineer. The finished component shall not be dispatched prior to approval by our engineer at bidder's works. Necessary inspection facilities should be provided to our engineers during fabrication at bidder's premises.
8. The bidder shall deliver the finished components after approval by our engineer, within **6 months** from the date the firm purchase order issued to the bidder.
9. Head, Control Instrumentation Division, BARC reserve the right to accept/reject any or all quotations without assigning any reason.
10. Supplier should clearly indicate the delivery period.
11. Incomplete offer/ offer received after due date will not considered.
12. Quotations should be preferably neatly typed and corrections are not acceptable.
13. For detailed study, Annexure-I and Annexure-II may please be downloaded from the BARC site.
14. Drawings must be returned along with the offer.

Encl.: as above

# **Annexure- I**

## **General Specifications**

**(A) Scope of work:**

Manufacturing, Assembly, Calibration, Testing and Supply of Rotary Position Sensor (Encoder) as per Technical specification *and* sketches given in Appendix-I of Annexure-II.

**(B) Work quality**

All work shall be done with good workmanship. Our supervisor/engineer will witness the working and procedures on time to time.

**(C) Security permission**

All BARC security rules will be applicable.

**(D) General Specifications**

*1. Quality surveillance, inspection*

- 1.1 All work covered shall be subject to quality surveillance / inspection by the purchaser or his authorized representative.
- 1.2 Supplier has to submit Insurance policy for the material issued as free issue material (FIM).
- 1.3 Supplier shall issue the warranty certificate for the period of one year from date of delivery for material quality and workmanship.

*2. Delivery*

- 2.1 The bidder shall finish the work after approval by our engineer within 6 months from the date of firm Work Order is issued to the bidder.
- 2.2 Any delay which is attributable to contractor is liable to penalty @0.5% per week (Max 5%) to be imposed on the contractor.

*3. Sub-Contract*

- 3.1 The fabricator shall not sub-contract any or all the work without written consent from the purchaser. The fabricator shall be responsible to the purchaser for all work the sub-contracted by the fabricator, if allowed by the purchaser.

*4. Payment*

- 4.1 Payment will be made only after satisfactory completion of work and against submission of original bill in triplicate and advance stamped receipt.
- 4.2 Supplier is requested to fill up for the option for payment through ECS/RTGS with pre-stamp receipt at the time of payment.

*5. Tax*

- 5.1 Income Tax @ 2% and GST @2% will be deducted from your bill.
- 5.2 GST will not be exempted to the party.

*6. Confidentiality*

- 6.1 No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as "Proprietary" in nature by disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.

This clause shall apply to sub-contractors, consultants, advisors or the employees engaged by a party with equal force.

- 6.2 "Restricted information" categories under section 18 of the Atomic Energy Act,1962 and "Official Secrets" under section 5 of the Official Secrets Act, 1923:-

Any contravention of the above mentioned provisions by any contractor, sub-contractor, consultant, advisor or the employees of the contractor will invite penal consequences under the aforesaid legislation.

- 6.3 Publication against use of BARC's name without permission for publicity purpose: -

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

## **Annexure-II**

### **Technical Specification for Rotary Position Sensor**

## **Technical Specification for Rotary Position Sensor**

### **1.0 Scope of Work**

Manufacturing, Assembly, Calibration, Testing and Supply of Rotary Position Sensor (Encoder) as per sketches attached in Appendix-I. This work involved multi-disciplinary activities in the area of CNC machining, Electrical wiring, Cable brazing and functional testing. This product has to be qualified on special Test rigs, which require regular interaction with the purchaser. After satisfactory inspection, the items shall be packed and safely delivered to BARC.

General description and requirements of the Sensor are given in Para-2.0. Raw material requirement is given in Para-3.0. Detail of Free Issue material is given in Para-4.0. Deliverable items are listed in Para-5.0. List of Information/ Documents to be furnished along with the deliverable components are given in Para-6.0. Inspection, Testing and acceptance criteria are given in Para-7.0. Para-8.0 gives the description about Price & Para-9.0 gives the description about Manufacture and Workmanship. Para-10.0 gives the requirement of Tooling. Para-11.0 gives the detail of drawings. Para-12.0 gives the requirement of Functional Tests and Dimensional Inspection Reports. Para-13.0 gives the condition for subcontracting. Para-14.0 give the requirements for Quality Assurances. Para-15.0 gives the requirement of Packaging and Safe Delivery. Para-16.0 gives the criteria for vendor qualification. Para-17.0 gives the general specifications/ guidelines for Electrical Parts. General terms & conditions are listed in Para-18.0.

### **2.0 General Description and Requirements**

Rotary Position Sensor (Encoder) is a custom designed proximity sensor used for position sensing of moving rod inside the hermetically sealed housing. The sensor is externally clamped on the gearbox housing which is made of austenitic steel. This Encoder contains set of reed sensors at eight locations in series-parallel combination. Ceramic type permanent magnet mounted

inside the gearbox housing (on motor shaft extension) is used for actuating of the Reed sensor. Each sensor unit generates signal for specified definite angle with respect to magnet position. Calibration of the sensor unit will be done in such a way that signals from two sensor unit overlap for specified angle but three signals at a time is not acceptable. sensor terminals are protected using RTV compound. A 7-core pressure tight cable with metal braiding is used to take out connection through the water-tight SS cable gland. Surface treatment (painting /coating) to be carried out as specified in the drawings. Operating Environment of the sensor is given in Table-1. Technical datasheet of the sensor is attached as Table-2.

**3.0 Raw Material Requirement**

Details of the raw material required for the manufacturing is given as Bill of Material in Table-3.

**4.0 Free Issue Material (FIM)**

Details of FIM is given in Table-4. Supplier has to submit Insurance Policy of value Rs.3,50,000/-. Supplier shall maintain the proper accounting of material for the purpose of FIM regularisation.

**5.0 Deliverables**

Following items are included in the delivery:

<b>S.No.</b>	<b>Item Description</b>	<b>Qty</b>
1.	<i>Rotary Position Sensor (Encoder)</i>	<i>1 Set comprising of 10 Assemblies &amp; Spare parts as per BOM</i>

**6.0 Information/Documents to be Furnished Along with the Deliverables**

- 6.1 Dimensional inspection & test report.
- 6.2 Datasheet of all required component as applicable.
- 6.3 Test certificates and reports:
  - a) Material test certificate

- b) Delta ferrite test report of all parts of sensor housing made with SS321/SS304L
- c) Actuating AT & Release AT of all Reed Sensors & Reed cartridge
- c) Factory Acceptance Test Report in given format
- d) Compliance certificate.

6.4 Warranty certificate

6.5 Packing list.

**7.0 Inspection, Testing and acceptance criteria:**

Following tests will be carried out for the acceptance of the Encoder:

<b>Test No.</b>	<b>Name of the Test</b>	<b>Acceptance Criteria</b>	<b>Rejection Criteria</b>	<b>Test to be carried out at</b>
1.	Dimensional/ Aesthetic/ Lay-out/ Workmanship	As per the approved drawings/ documents	Not found as per approved drawings/ documents	Supplier's Premises
2.	Delta-Ferrite content components made with SS321/SS304L	<1.5%	≥1.5%	Supplier's Premises
3	Actuating AT & Release AT Test of all Reed sensor	Variation ±2AT	Short in performance	Supplier's Premises
4.	Functional Test	As per Technical Datasheet given in Table-2	Short in performance	Supplier's Premises

**8.0 Price**

The supplier shall give the lump sum price for full scope of work with its delivery schedule.

### **9.0 Manufacture and Workmanship**

The manufacturing process and workmanship shall be consistent with high grade industrial practice and shall be adequate to achieve the accuracies for intended requirements. Manufacturing process shall ensure the interchangeability of parts. If supplier wants to use any jigs and fixtures for the manufacture, same shall be approved by the Purchaser. Before commencement of production, supplier shall prepare quality control sheets for various stages of manufacturing and same shall be approved by the Purchaser and will be used by third party/ BARC QS. Mutually agreed functional testing procedure and acceptance criteria shall be worked out.

### **10.0 Tooling**

All tools like taps, dies, inspection gauges etc. required for manufacture and Oscilloscope with probes, Multimeter, LCR meter, IR meter required for the testing shall be arranged by the supplier.

### **11.0 Drawing**

General assembly drawings and part drawings for Rotary Position Sensor (Encoder) are attached in Appendix-I. Manufacturing drawing shall be prepared based on these drawings.

### **12.0 Functional Tests and Dimensional Inspection Reports**

12.1 A comprehensive test program shall be prepared for factory acceptance of the Encoder. Functional tests of the Encoder are performed with actuator and detection unit. Based on that, Factory Acceptance Test Certificate will be issued.

12.2 General: Supplier shall perform all necessary inspection and testing to the satisfaction of the purchaser. Supplier shall arrange and /or provide all testing and inspection facilities required during manufacture. Inspection shall be under the control of a competent chief Inspector whose primary responsibility is inspection.

12.3 Supplier shall carry out 100% dimensional inspection of all components. The inspection shall also include all dimensional details indicated in the approved manufacturing drawing.

12.4 A compliance certificate shall be issued by the supplier that it meets the technical specifications.

### **13.0 Subcontracting**

The supplier shall not sub-contract any or all the work without the written consent from the purchaser. All the electrical works shall be done within the supplier's premises only.

### **14.0 Quality Assurances:**

The components/ parts used by supplier for the manufacturing of the switches shall confirm to their applicable specifications and QA plan specified in drawings. Quality surveillance, relating to all the aspects of the contract will be carried out by the purchaser or his authorized representative. For this purpose, the supplier and his subcontractor shall:

- 14.1 Produce an inspection plan to the purchaser's satisfaction and notify when checkpoints on the plan are imminent so that the purchaser's representative may be present, if it is so desired.
- 14.2 Furnish the latest drawings and/or tooling, gauges, instruments, testing equipment etc. required for inspecting the jobs. Prints of all the latest required drawings and approved procedures shall be made available for inspection and retention, if so desired.
- 14.3 Allow access at all reasonable times during manufacture, assembly and testing to the premises in which the work is being carried out.
- 14.4 Supplier must offer best quality/IS certified material (wherever applicable).
- 14.5 All the items shall be brand new from reputed manufacturers procured from their authorized agents/principals.
- 14.6 Used materials/ recycled items/ repaired items will not be acceptable.
- 14.7 Obtain acceptance of the components in the form of a shipping release from the purchaser's representative before the shipment.
- 14.8 The supplier shall be responsible for the inspection of the components that is subcontracted by him.
- 14.9 Waiving of quality surveillance by the purchaser or acceptance of the items by the purchaser or his authorized agent, shall not relieve the



supplier from the responsibility for supplying the items in accordance with specification requirements of this document and purchase order.

- 14.10 The supplier must incorporate minor changes in the design as required at the time of execution of work at no extra cost.

**15.0 Packaging and Safe Delivery:**

- 15.1 **Identification Marks:** Each Sensor shall be marked with supplier's identification as well as the identification indicated in drawing in such a way that the markings can be conveniently read and cannot get destroyed during handling, cleaning, etc.
- 15.2 **Cleaning:** The finish part/assembly, before packing shall be properly cleaned.
- 15.3 **Protective Covers:** Supplier shall make necessary arrangements for all assemblies/components to protect using suitable cover. Proper care should be taken while handling the component during fabrication, inspection, testing and packing.
- 15.4 **Packaging:** After completion of all testing, the components shall be packed suitably for shipment, so that no damage occurs in transit. At least one copy of packing list shall be kept in the package for quick and easy verification.

**16.0 Requirement of Supplier qualification**

- 16.1 **Human resources:** The supplier must have human resources including Engineers, Quality control inspector, Draftsman, Electrician, Technician (for machining, welding, assembly etc.)
- 16.2 **Infrastructure:** The supplier must have infrastructure suitable for this job such as manufacturing machines, welding/brazing equipment, electrical testing equipment, clean assembly room, inspection facilities with essential tool & tackles etc.
- 16.3 **Past experience:** The supplier must have experience of executing similar type of activities for DAE/ other reputed organizations. Supplier should also submit the PO list of such jobs.

- 16.4 **Sub-contract:** Supplier should list the jobs, which they want to sub-contract. They should also produce the list of sub-contractors and their infrastructure & facilities.

**17.0 General Specifications/ Guidelines for Electrical Parts**

- 17.1 All assemblies will be given the serial number for identification.
- 17.2 Unless otherwise specified, all rubber parts shall be made from VITON.
- 17.3 Manufacturing date & S. No. of the switch shall be engraved on flat body part as specified.
- 17.4 All internal wiring of sensors shall be carried out with ETFE grade only.
- 17.5 All terminal screws shall be made of nickel-plated brass.
- 17.6 Insulation sheet shall be made of Nomex / Kapton / high temperature glass fibre tape only.
- 17.7 Anti-vibration tab-washer shall be installed with screws.
- 17.8 Holes on the nuts/ captive screws shall be provided for sealing.
- 17.9 All the captive screws/ nuts shall be tightened with torque screw driver only. Typical setting of torque is as below:  
Terminal Nut – 50cN-m  
Captive screw—70cN-m  
Mounting Screw—90cN-m
- 17.10 Performance of each Encoder shall be checked on individual test rig.
- 17.11 Only temperature-controlled soldering iron is allowed to use for soldering connection.
- 17.12 Manufacturing document shall be prepared and submitted for approval.
- 17.13 All fasteners shall be non-magnetic.

**18.0 General Terms & Conditions**

- 18.1 Supplier shall enclose the complete product sheet and user manual (for the applicable parts) along with offer.
- 18.2 The supplier shall submit compliance (piece wise agreement/deviation) against each part of technical specifications.

- 18.3 Quoted price should include all required items /components /accessories.
- 18.4 Supplier shall supply the items in proper packing.
- 18.5 No end use certificate will be provided by purchaser.
- 18.6 Supplier shall provide one year warranty against manufacturing defects.
- 18.7 All the standard components supplied will be the latest version available at the time of shipment.
- 18.8 All components must be compatible with each other.
- 18.9 Pre dispatch inspection will be conducted at supplier premises.
- 18.10 In case of conflict among applicable codes/technical specification, more stringent shall govern.

**Table-1**  
**Operating Environment**

<b>S. No.</b>	<b>Operating Condition</b>	<b>Range</b>
1	working temperature: a) Short Time b) Continuous	180°C_ max 80°C_ Ambient
2	Working Pressure (MPa)	Ambient
3	Radiation resistance of the Insulating material	> 10 <sup>8</sup> Rads
4	IP	65

**Table-2**

**Technical Datasheet of Encoder**

<b>Parameter</b>	<b>Value</b>	<b>Remark</b>
Power supply	12±2 VDC	
Max amplitude of current	100mA	
Nos. of reed element positions	8	
Angle between points	45°	
Linear travel of one rotation	7.619mm	
Nos of Signals / rotation	16 (A, AB, B, BC, C, CD, D, DA, A...)	
Actuation Angle	67±3°	
Over-lap angle	At least 14°	
Angle between 1st Off and 3rd on	At least 2°	
Termination	Hermitically Sealed Terminal Block	7-C Pressure tight cable & Cable gland
Insulation Resistance	>20MΩ @ 100VDC	@25±10°C, 45-80%RH
Magnet Type	Ba-Fe	Block Type
Nos. of Magnets	1	Mounted at 180° apart
Magnet Size (OD x ID x L x Angle)	72mm x 32mm x 36mm x 45 °	
Magnet Strength	12-15x 10 <sup>-5</sup> Wb	
Dimension	As per sketch	
Weight per unit	2 Kg	
Mounting	106 mm Φ pipe	
Body Material	Aluminum	
<b>Read Element specification</b>		
Contacts	SPST with NO type, Rhodium on Gold with contact resistance is 150mohm (max)	
Rating	10VA, 100V, 0.5A max	
Insulation Resistance	1011 ohms at 25°C	
Breakdown Voltage	250 VDC min	
Approx. Size (OD x Length)	2.5mm x 19mm	
Sensitivity - Operating AT	31-35 ± 2AT	
Release AT	40% of operating AT	
Operating time	0.56 msec max	
Release time	0.08 msec max	
Bounce time	0.18 msec max	
Service rating	30 X 10 <sup>6</sup> Operations (min) at 28 VDC, 10 mA	
Hermetic sealing	Glass-metal seal with inert gas filled in the glass tube. Helium leak rate is less than 10 <sup>-9</sup> cc/sec.	

**Table-3  
Bill of Material**

<b>Part No.</b>	<b>Part Name</b>	<b>Qty. / Assly</b>	<b>Material</b>	<b>Supply as spares</b>
PK-01	COVER	2	AL (HE30 6351)	--
PK-02	TERMINAL SCREW	10	Brass Ni-plated	25%
PK-03	TERMINAL HEX NUT M4	20	Brass Ni-plated	25%
PK-04	TERMINAL WASHER M4	30	Brass Ni-plated	25%
PK-05	TERMINAL PLATE	2	Glass Epoxy	25%
PK-06	SLOTTED CHEESE HD SCREW M6 x 15	2	SS431	25%
PK-07	SPRING WASHER M6	2	13-8 Mo	25%
PK-08	WASHER M6	2	13-8 Mo	25%
PK-09	STUD	2	SS347 <1.5%δ	25%
PK-10	POSITION SENSOR HOUSING-II	1	AL (HE30 6351)	--
PK-11	HEX SOC HD CAP SCREW M8 x 40	4	MDN Superfer 612/MDNXH35BT	25%
PK-12	HEX NUT M8	4	MDN Superfer 612/MDNXH35BT	25%
PK-13	TAB WASHER M8	4	13-8 Mo	25%
PK-14	POSITION SENSOR HOUSING-I	1	AL (HE30 6351)	--
PK-15	SLOTTED CHEESE HD SCREW M3 x 6	7	SS431	25%
PK-16	NUT 28 A/F x 17	3	MDN Superfer 612/MDNXH35BT	--
PK-17	WASHER	9	13-8 Mo	25%
PK-18	GLAND WASHER	6	VITON	25%
PK-19	BLANK PIECE	3	13-8 Mo	25%
PK-20	SECTOR COVER	2	SS347 <1.5%δ	25%
PK-21	SECTOR COVER GASKET	2	VITON	25%
PK-22	TOP REED PLUG	8	Glass Epoxy	25%
PK-23	SWITCH CARTRIDGE SLEEVE	8	Brass	25%
PK-24	BOTTOM REED PLUG	16	Glass Epoxy	25%
PK-25	SPRING WASHER M5	14	13-8 Mo	25%
PK-26	HELI COIL M5	14	SA 240 Gr 304	25%
PK-27	CAPTIVE SCREW	14	MDN Superfer 612/MDNXH35BT	25%

## Technical Specification for Rotary Position Sensor

PK-28	TERMINAL COVER GASKET	2	VITON	25%
PK-29	RTV COMPOUND	As reqd.	HIGH TEMP SILICON	--
PK-30	LINK CABLE WITH SHEATH	1	7-core cable with Tinned Copper sheath	--
PK-31	LEAD WIRE	As reqd.	Fibre-glass covered Teflon insulated copper conductor	--
PK-32	REED SWITCH	16	MDCG-4	25%
PK-33	LUGS (DOWEL RS7003)	15	COPPER	25%
PK-34	SECTOR MAGNET	3	Fe-Ba	--
PK-35	CABLE OUTLET HOLDER	3	13-8 Mo	25%
PK-36	SLOTTED WASHER	10	Glass Epoxy	25%
PK-37	NAME PLATE	1	ALUMINIUM	--
PK-38	GLASS FIBRE SLEEVE	As reqd.	TUBE 305 TB-40	25%
PK-39	HEAT SHRINKABLE SLEEVE D5.0, 690V	As reqd.	TUBE 203 TKP	25%

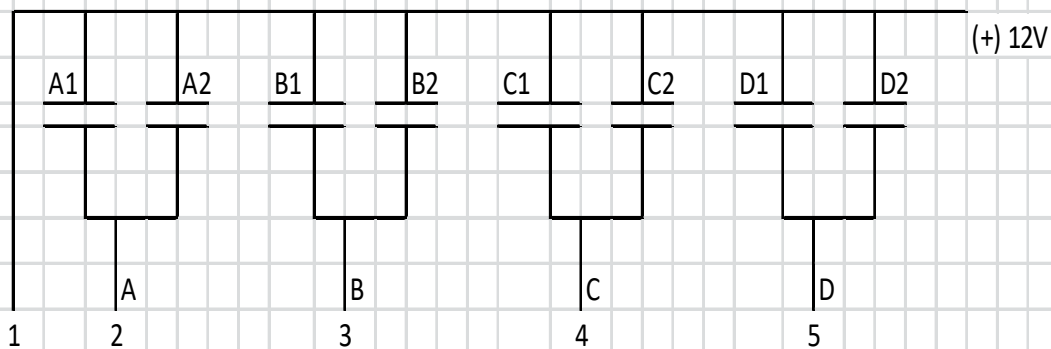
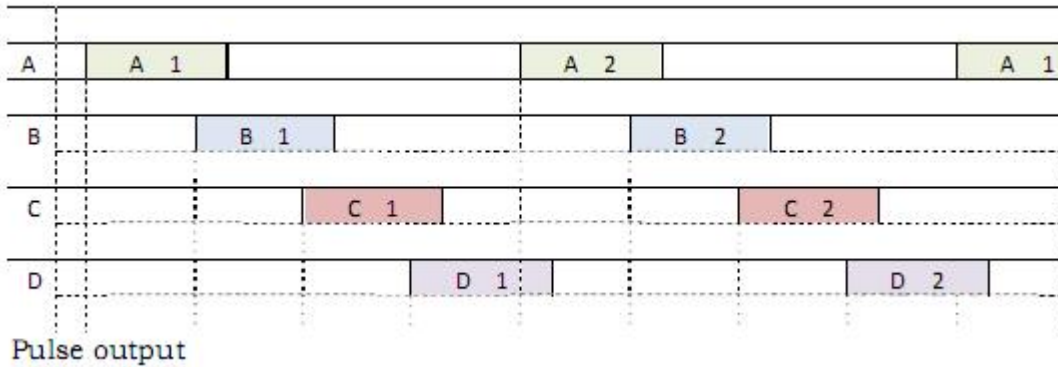
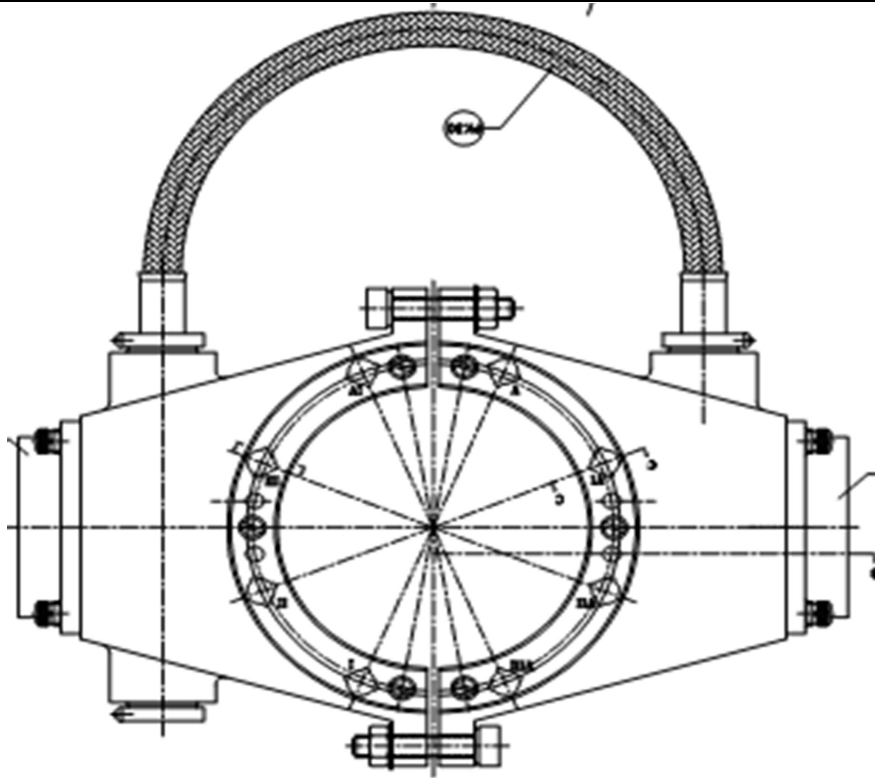
**Table-4**  
**List of Free Issue Material (FIM)**

Sr. No.	Material	Size of Material issued as FIM		Part to be manufactured	Remark
		Raw material size (OD x Length)	Quantity		
1	MDN Superfer 612	Ø40 X 1260	1 No.	HEX SOC HD CAP SCREW M8 x 40	Material will be received as finished form in assembled condition
		Ø40 X 1190	1 No.		
		Ø40 X1225	1 No.	HEX NUT M8	
		Ø40 X1175	1 No.	NUT 28 A/F x 17	
2	MDN Superfer 612	Ø10 X 1460	4 Nos.	CAPTIVE SCREW	
		Ø10 X 360	1 No		

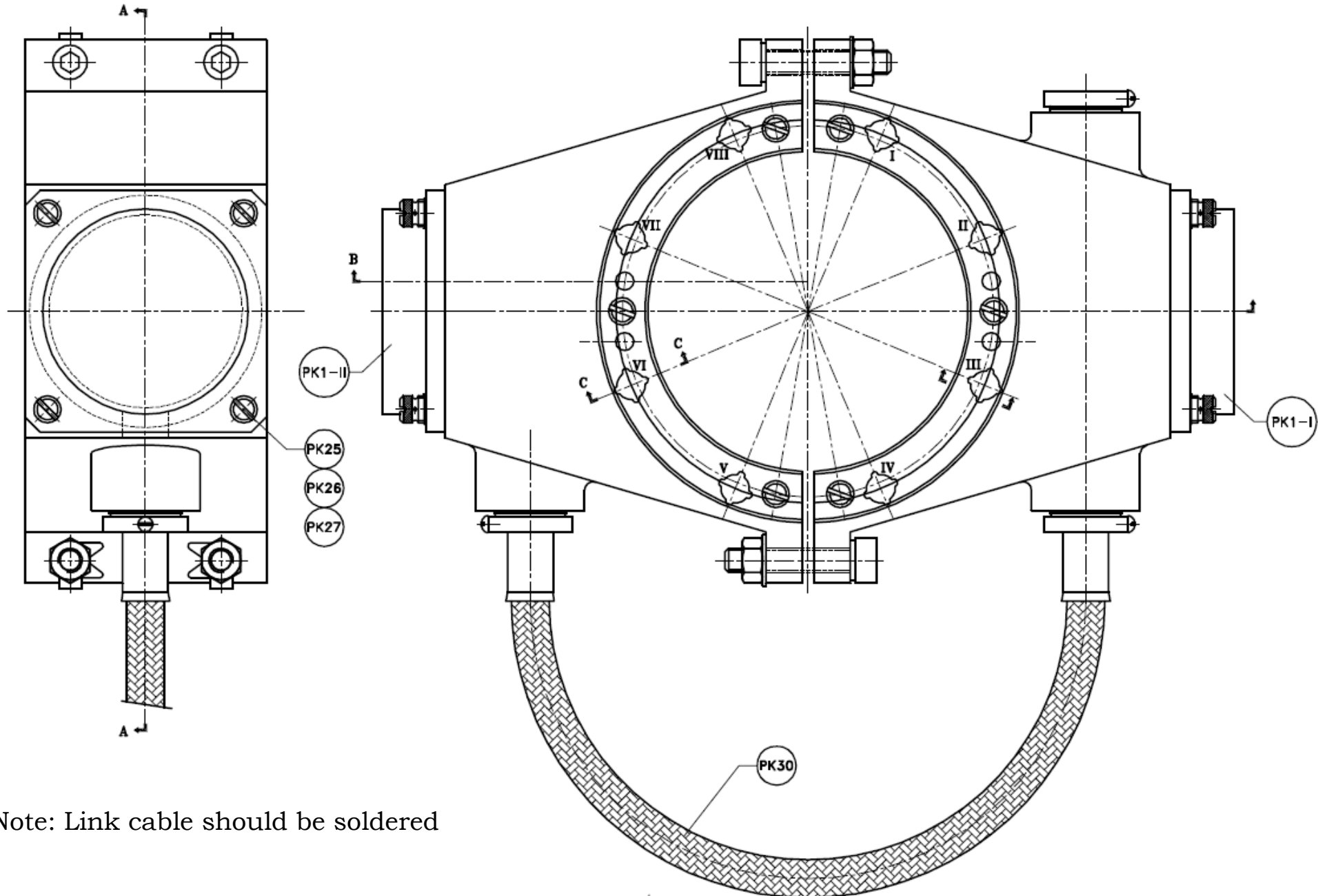
# APPENDIX-I

## Sketches of ENCODER

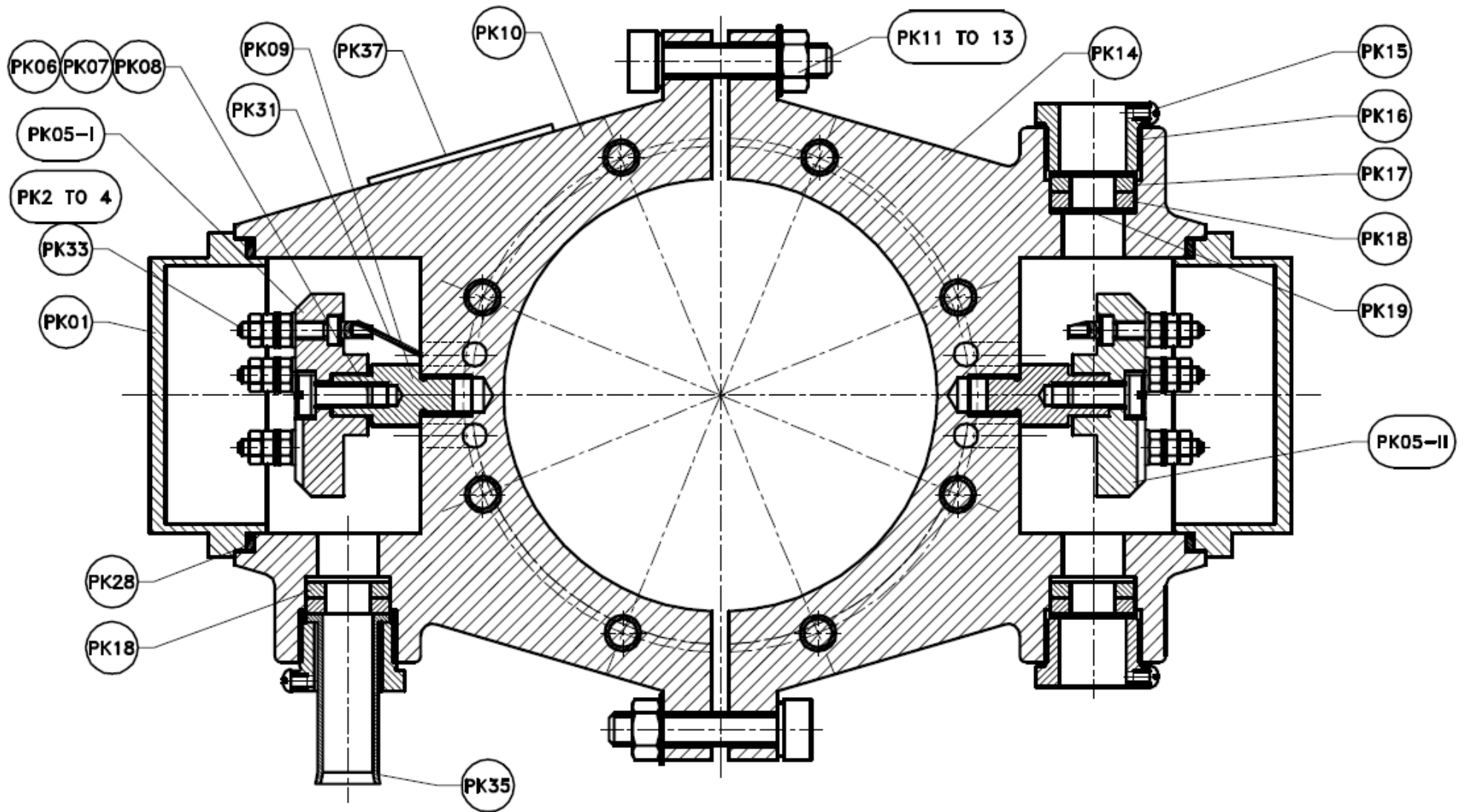




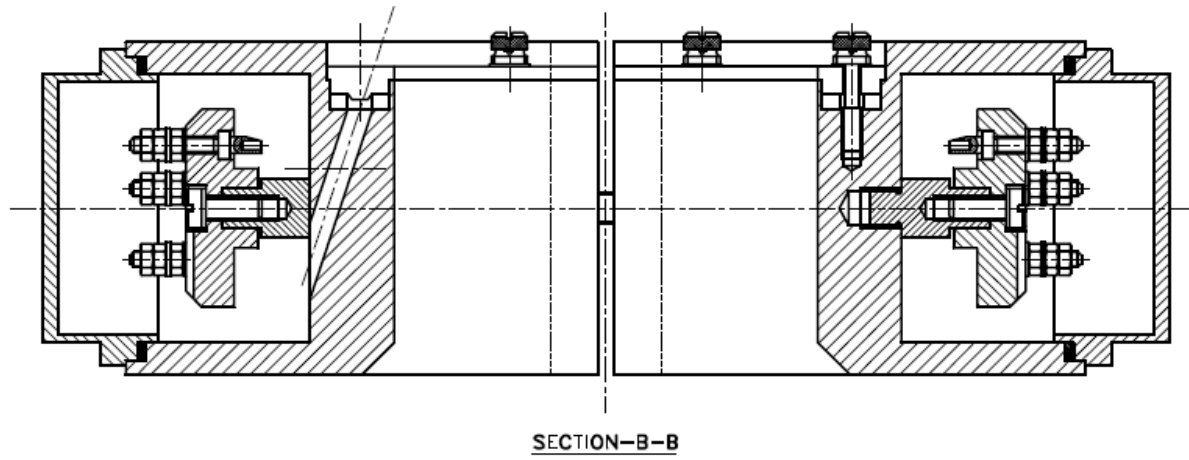
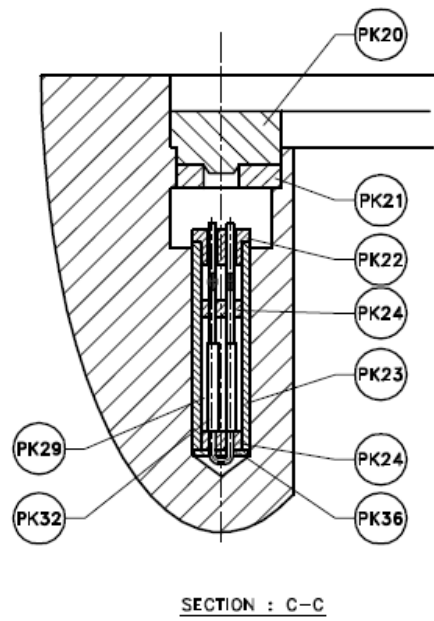
Connection Diagram



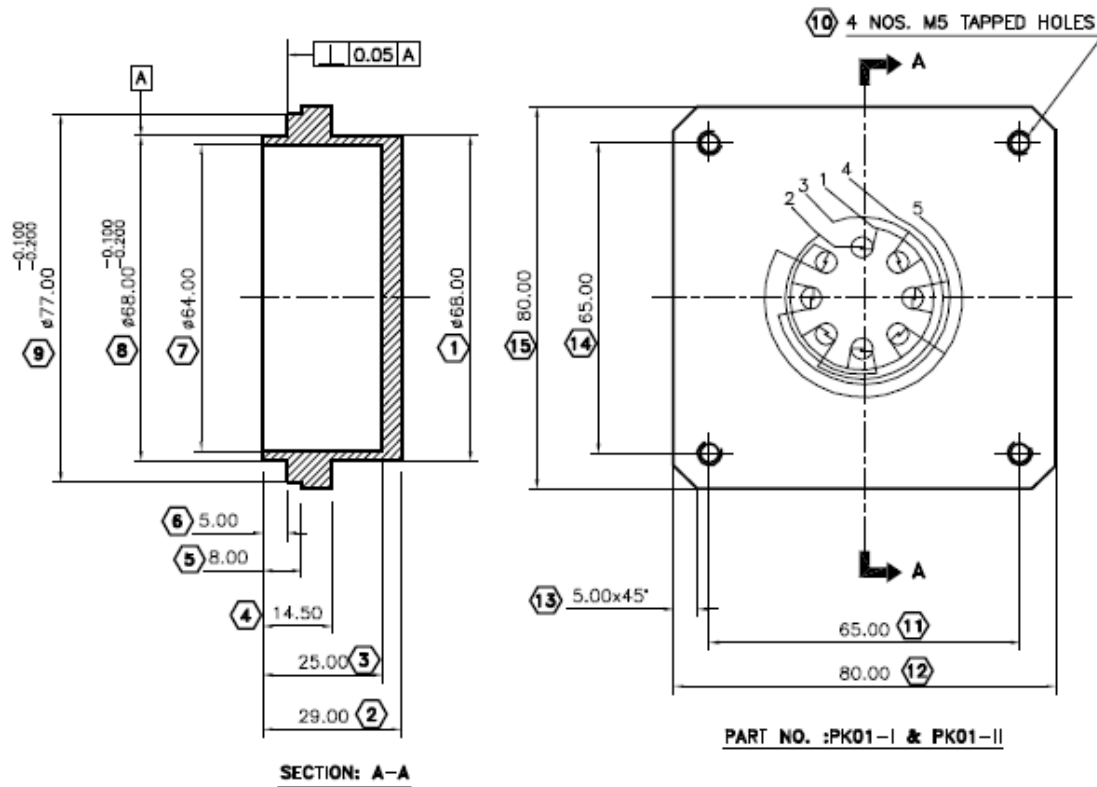
Note: Link cable should be soldered



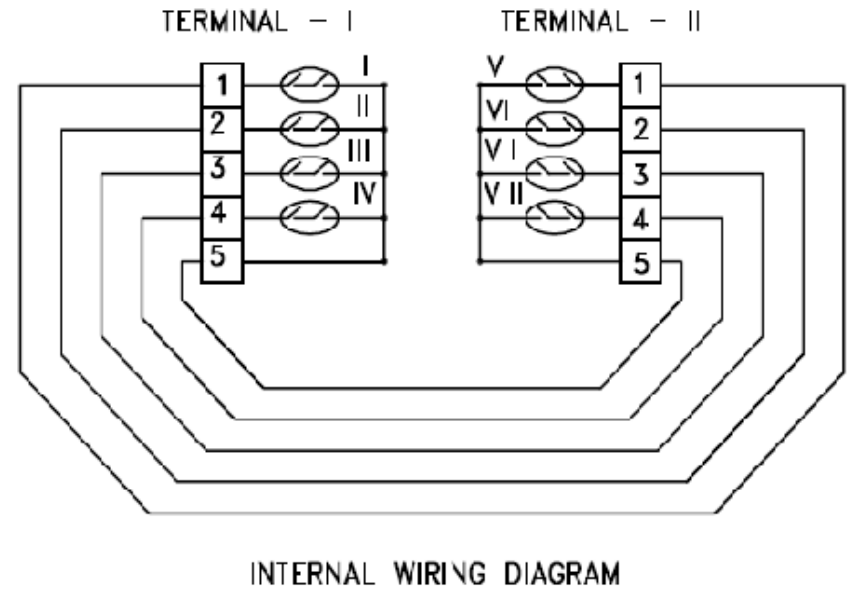
**SECTION -A-A**



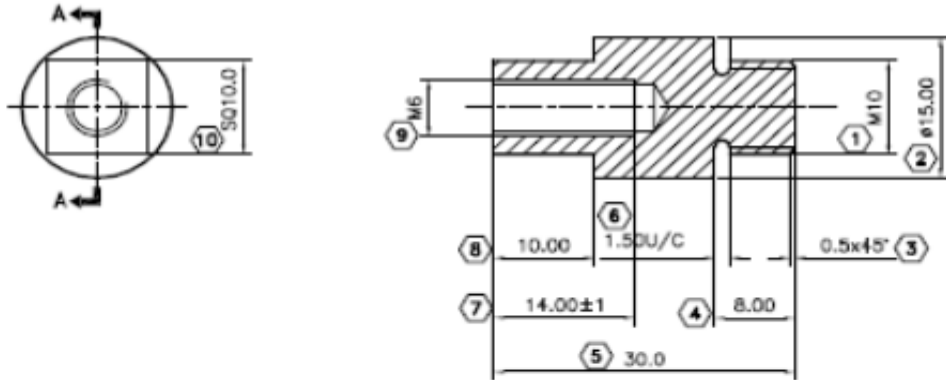
# Technical Specification for Rotary Position Sensor



NOTE: CIRCUIT SHALL BE ENGRAVED ONLY ON PART NO. PK01-1 AND BLACK PAINTED.

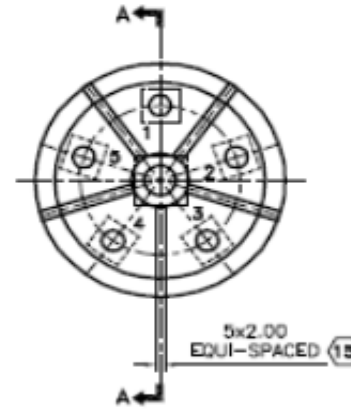


# Technical Specification for Rotary Position Sensor



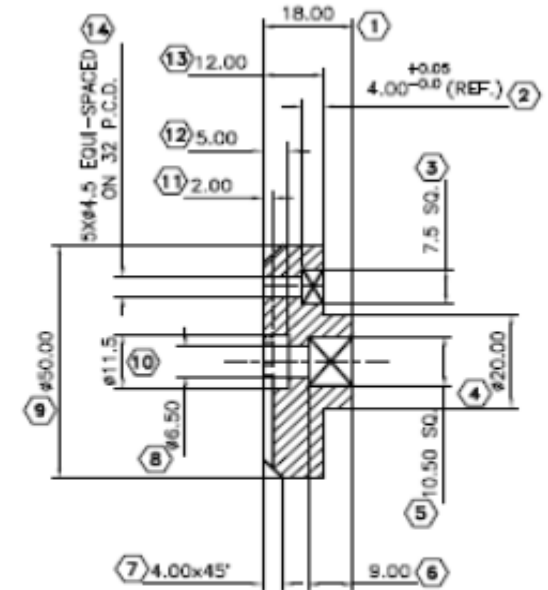
PART NO. : PK-09

SECTION : A-A



TERMINAL NOS. SHALL BE ENGRAVED AND BLACK PAINTED.

PART NO. : PK 05 - I & PK 05 - II

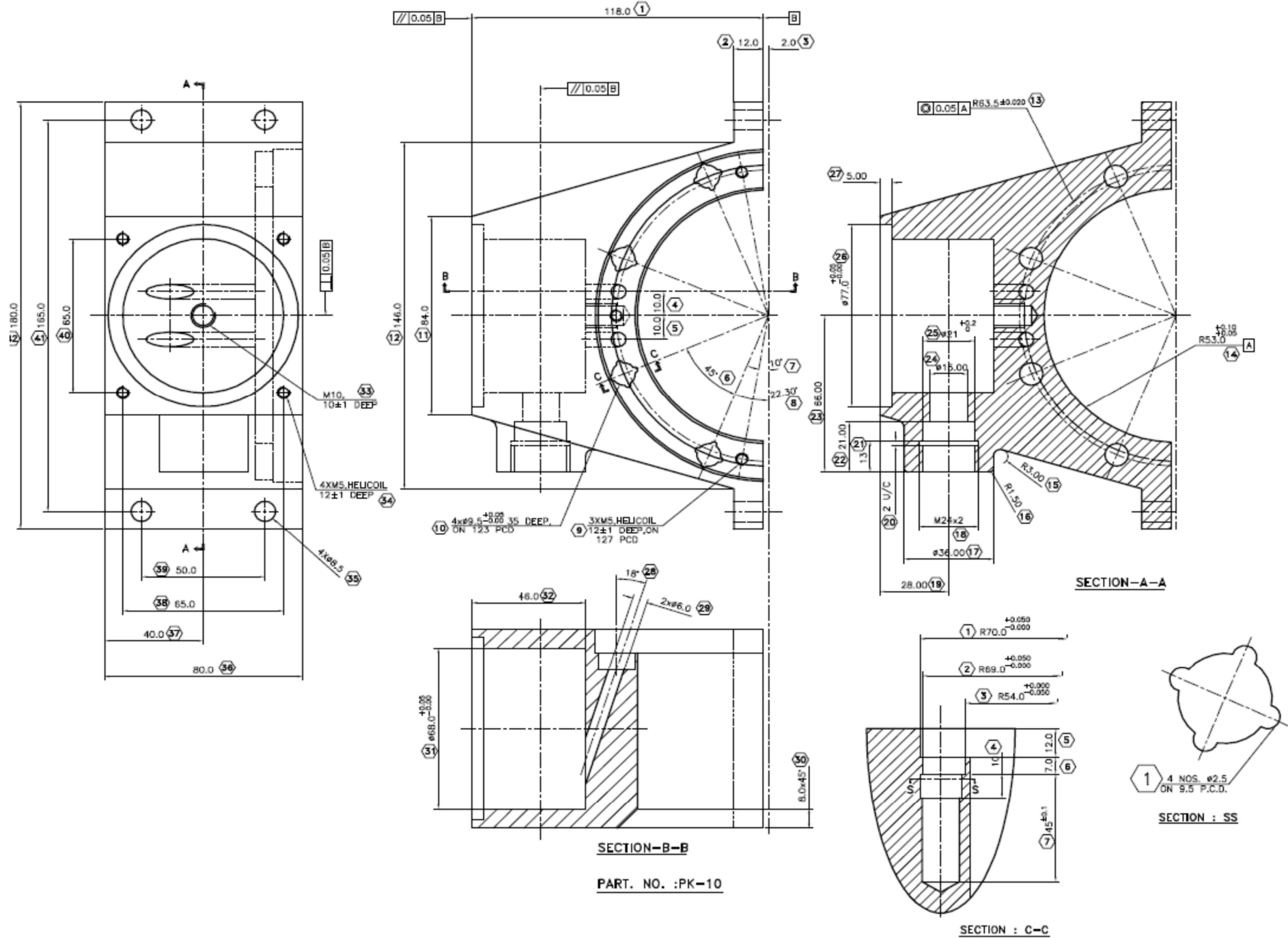


SECTION : A-A

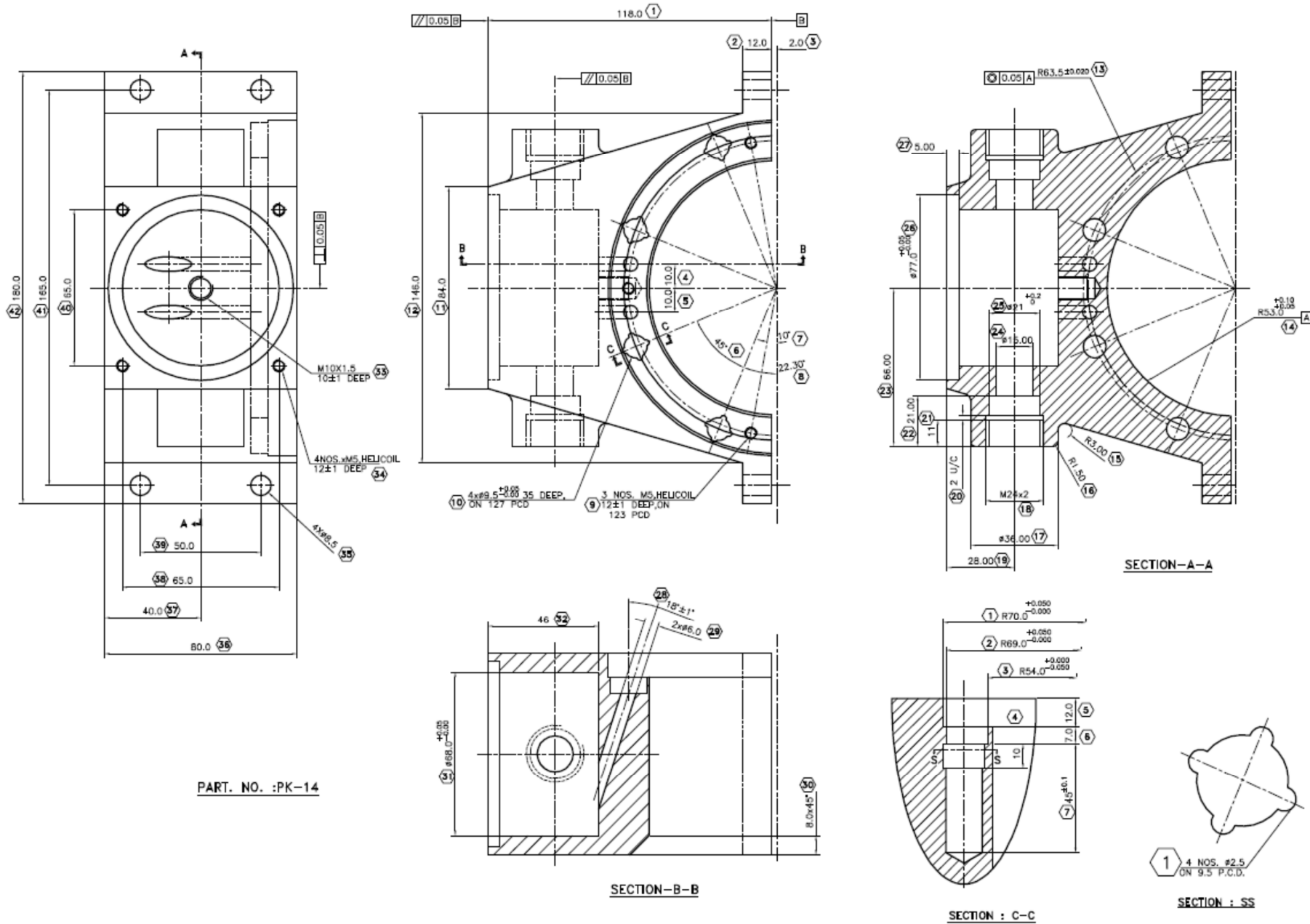
PART NO. : PK-02



# Technical Specification for Rotary Position Sensor



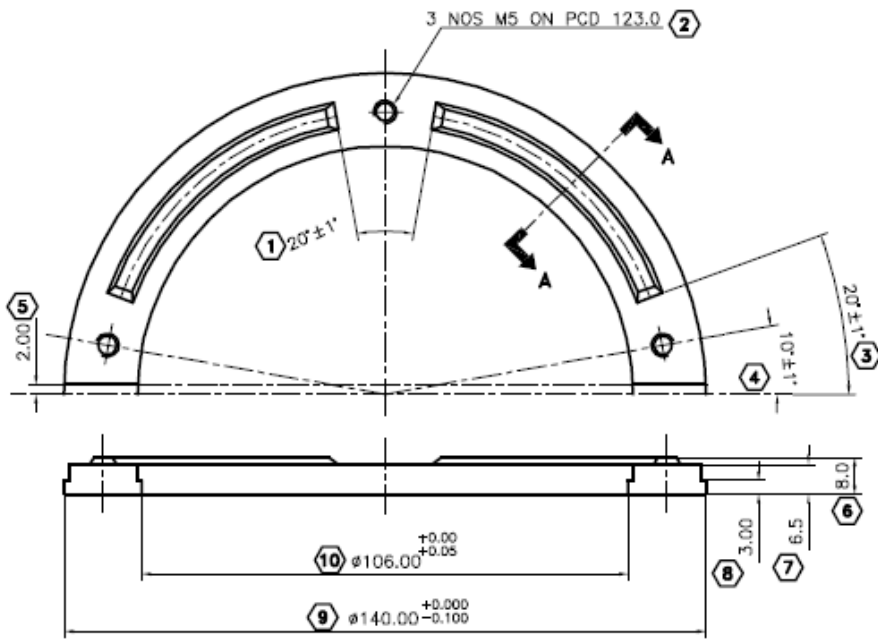
# Technical Specification for Rotary Position Sensor



PART. NO. :PK-14

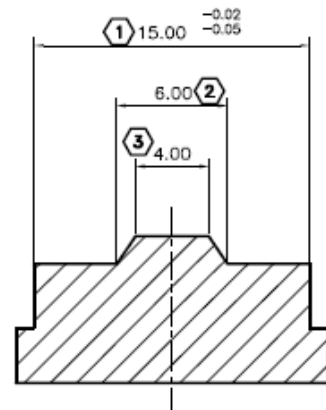


# Technical Specification for Rotary Position Sensor



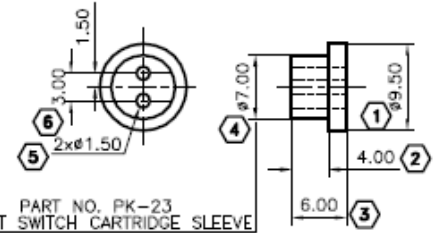
NOTE: EXTERNAL SURFACE TO BE POWDER COATED

**PART. NO. :PK-20**



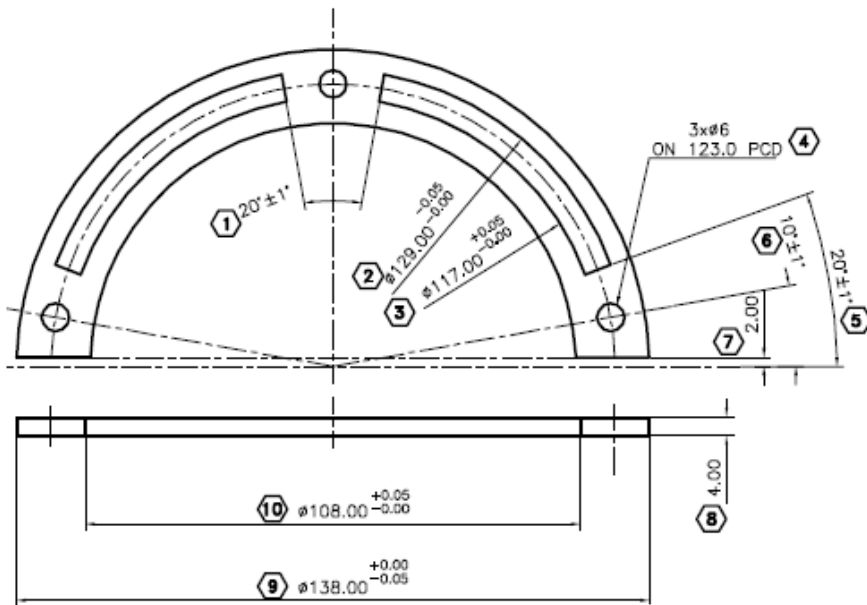
**SECTION : A-A**

**SCALE - 2:1**

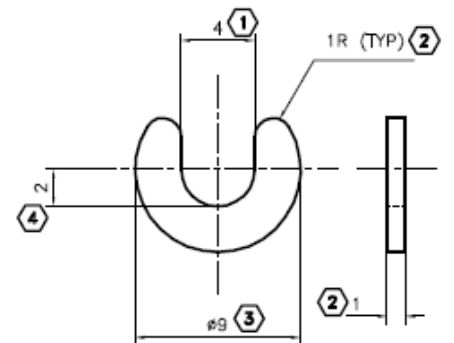


PART NO. PK-23  
TO SUIT SWITCH CARTRIDGE SLEEVE

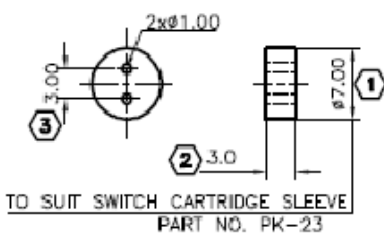
**PART NO : PK-22**



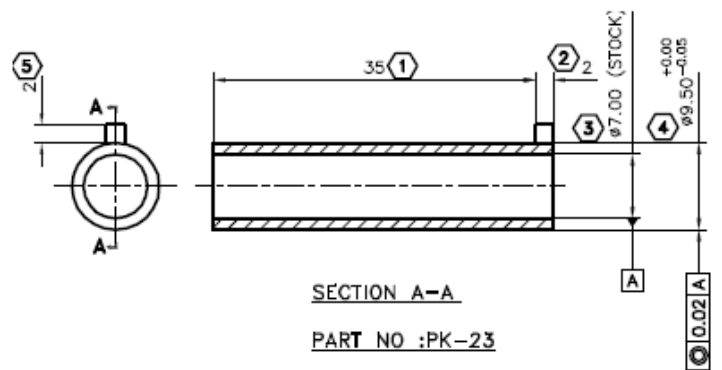
**PART. NO. :PK-21**

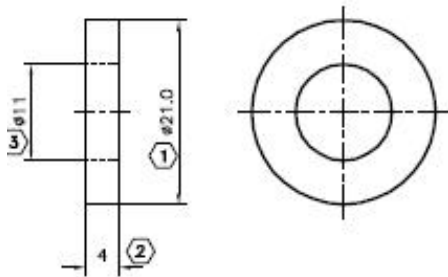


**PART. NO. :PK-36**

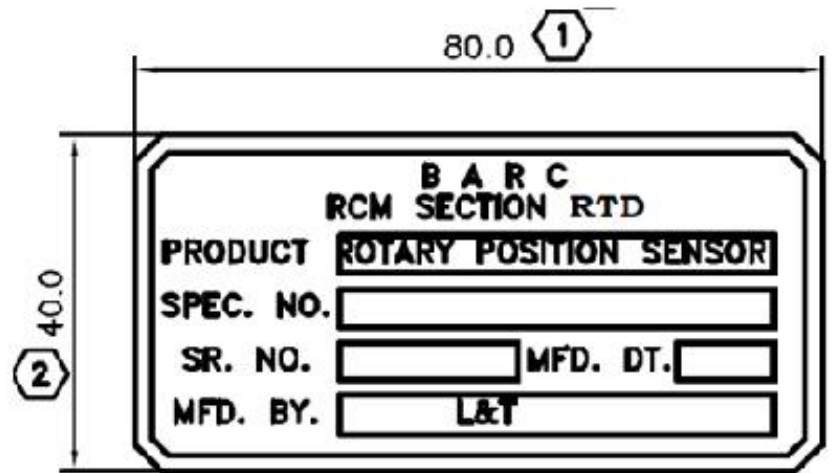


TO SUIT SWITCH CARTRIDGE SLEEVE  
PART NO. PK-23

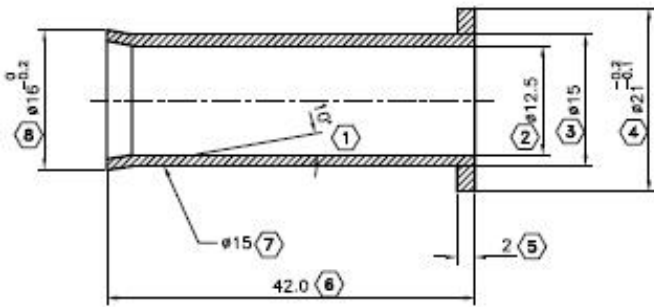




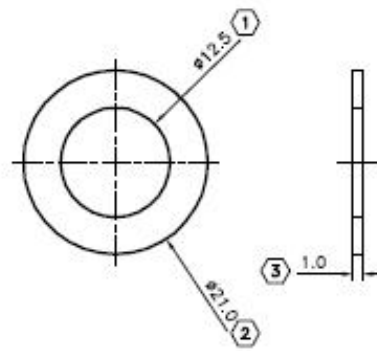
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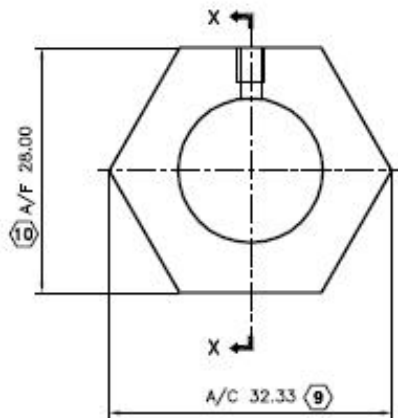
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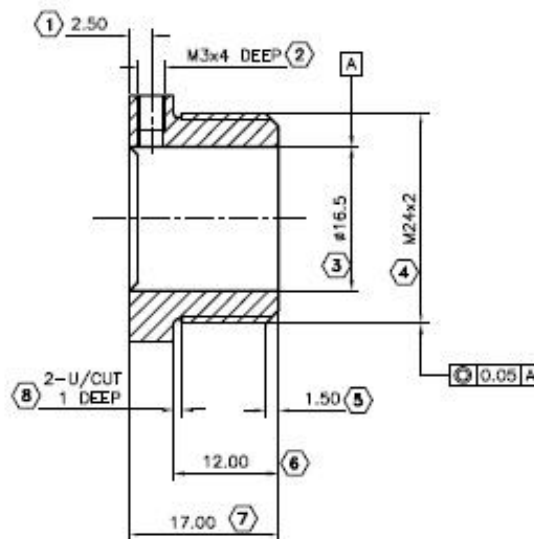
PART NO : PK-35



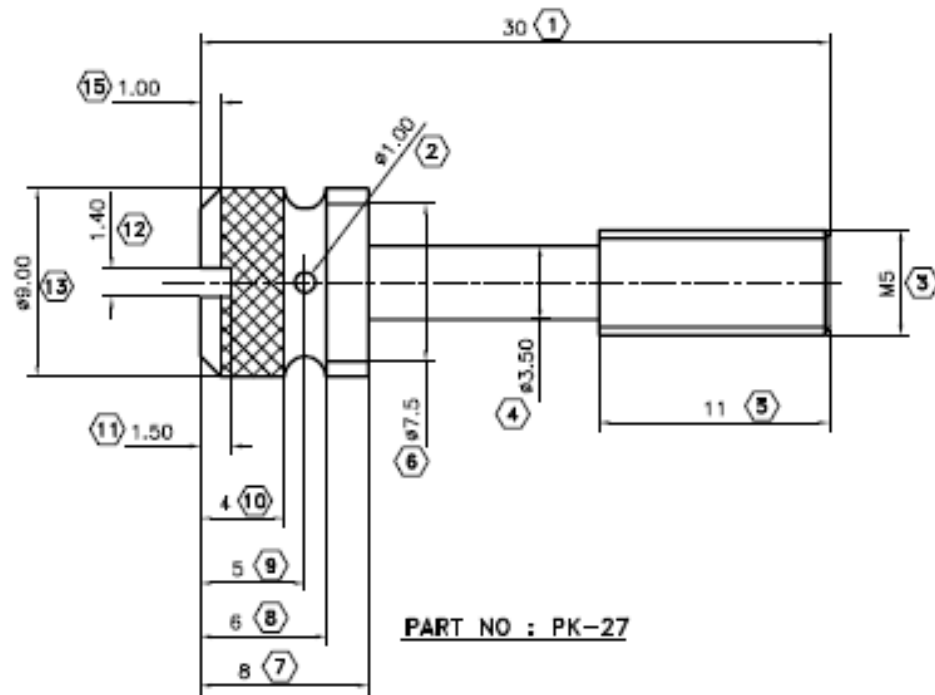
PART NO : PK-17



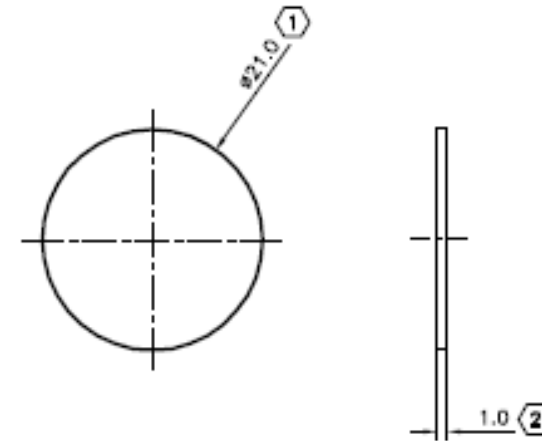
PART NO : PK-16



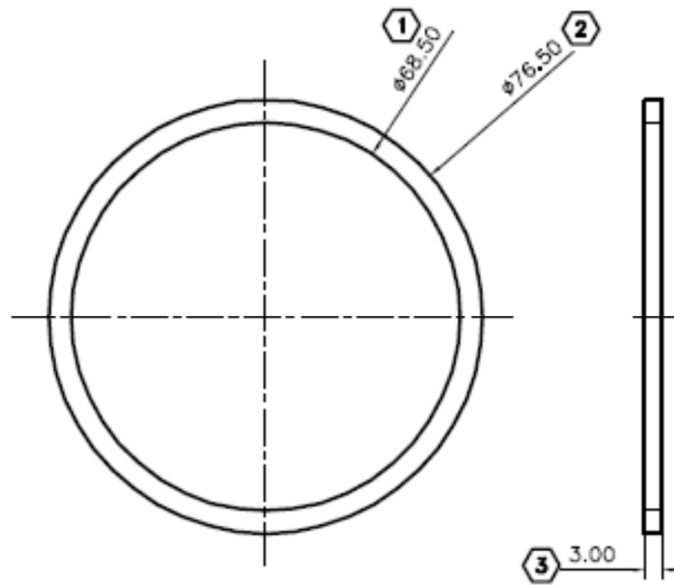
SECTION - X-X



PART NO : PK-27



PART NO : PK-19



**PART NO.:PK-28**

**General Notes:**

1. All sharp corners shall be removed by 0.5 x 450.
2. Cleanliness shall be maintained at all stages of machining, assembly, handling, storing, inspection, testing and dispatch.
3. All internal surface made of AL HE30 shall be chromic anodized.
4. Cutting of Reed Element Leads are not allowed.
5. Bending & soldering of Reed element terminals as per standard procedure.
6. Soldering area must be free from scales, fluxes and any other contamination.
7. Acid flux is not allowed during soldering.
8. Only temperature-controlled soldering workstation shall be used for the soldering with time  $\leq 3$  Sec.
9. Leads & solder joints of Reed elements are property insulated using fiberglass sleeve, then placed in center of Reed cartridge (Part PK-23) with glass epoxy support.
10. Fill the cavity of Reed cartridge with RTV compound.
11. Protrusion of RTV compound on end surfaces are not allowed.
12. Mark identification by tagging.
13. Reed Cartridge No. I, II, III & IV are connected to Terminal -I and housed in sensor housing-I.
14. Reed Cartridge No. V, VI, VII & VIII are connected to Terminal -II and housed in sensor housing-II.
15. Terminal I & II are interconnected by external Link cable.
16. External surface made of AL HE30 shall be painted with rust preventive high heat spray paint.