



Government of India

Department of Atomic Energy

RAJA RAMANNA CENTRE FOR ADVANCED TECHNOLOGY

PO: RRCAT
Indore-452013(M.P.)

Ref: RRCAT/IOBDDD/BDS/AKK/ENQ/16/15

Date: 06/09/2016

Sub: Invitation of quotation for Fabrication and supply of parts of Actuator.

Dear Sirs,

The above-mentioned item is required to be fabricated as per our specification and drawings. All drawings should be returned along with quotation. Please note that quotations received without drawings are liable to be rejected. Kindly send your quotation in duplicate to the undersigned before 16:00 PM, **30/09/2016 (Friday)**. Taxes as applicable may be mentioned separately in the quotations. In case of exempted from Service tax, a declaration on the letterhead may be submitted along with the quotation.

Please indicate your TIN/MPST/CST No. on quotation.

Yours sincerely,

T. A. Puntambekar
6/9/2016

(T. A. Puntambekar)
Head, IOBDDD
F-1, BDS Building, RRCAT
Indore-452013

*Pl. upload on website
12/9/16
TO SECRET Dir*

Ref: RRCAT/ACBDD/BDS/AKK/ENQ/16/15
Due Date: 16:00 PM, 30/09/2016
To,
M/s Small Industries Service Institute
10, Industrial estate Polo-Ground
Indore -15

ए.सी.टी. विकास संस्थान, इन्दौर
विभाग..... ११०
आवक क्र..... १२-१-१०
दिनांक.....

Government of India
Department of Atomic Energy
Raja Ramanna Centre for Advanced Technology
INDORE-452013

Technical Specification for

FABRICATION AND SUPPLY OF PARTS OF ACTUATOR

1. **Scope of the tender:** Procurement of the material, testing, machining, inspection, packaging and supply of finished UHV compatible components including con-flat flanges according to the specifications. Acceptance test/inspection reports, supply of the test report and supply of test certificates for all the tests mentioned in this document. Safe packaging and transport to purchaser's site. **Welding is not in scope of work.**
2. **Qualification of Bidder:** Bidders will be evaluated on the basis of proven record of successfully manufacturing precision machining job.
The supplier shall be required to have a minimum experience of the last 1 years in the field of manufacturing the similar jobs including non-magnetic stainless steel material procurement i.e. ultra high vacuum (UHV) related jobs made of non-magnetic stainless steel (Relative Magnetic Permeability ≤ 1.08) with similar level of dimensional precision. The documents supporting the minimum experience like purchase order with specification shall be attached with the quotation.
3. **Drawing:** Drawing Sheets are attached. As per drawing no.
RRCAT/IOBDDD/BDS/IU/003/SA2/GA no. of sheets 1
RRCAT/IOBDDD/BDS/IU/003/SA2/DD no. of sheets 10
4. **Quantity:** 2 Sets.
Set Consist of components listed in BOM in assembly drawing (RRCAT/IOBDDD/BDS/IU/003/SA2/GA) including bearings, dowel pins, socket head cap-screws. **However Bellow and Ball-screws are not in scope of supply.**
5. **Technical requirement**
Note- Refer to assembly drawing RRCAT/IOBDDD/BDS/IU/003/SA2/GA for details of below mentioned item numbers.
- 5.1. Material:
- 5.1.1. Material for item no- 7 and 8 shall be SS 316L (C<.03%) conforming ASTM A240.
- 5.1.2. Finished part or components of Stainless Steel material shall be non-magnetic (**Relative Magnetic permeability ≤ 1.08**). The permeability shall be checked by permeability meter on the finished part or components.
- 5.1.3. Material of Guide rod for item no-6 shall be Chrome plated, case hardened carbon steel (EN8 or equivalent) or equivalent standard materials.
- 5.1.4. A single material source shall be used for all the similar items.
- 5.1.5. Material of plates for item no-1 to 5 & 9 to 10 should be as per ASTM B209M-02a & AA 7075 T62/ T651/ AA 7178 T6 or equivalent.

5.2. Process:

- 5.2.1. Prior to fabrication all surfaces of the material must be thoroughly examined for damage and free of pitting, cracks, scale and indentations.
- 5.2.2. Machining shall not cause contaminants to be embedded into the surface of the component. Therefore, the use of Grinding, polishing, abrasive resin/rubber bonded wheels and abrasive cloths of any kind are prohibited.
- 5.2.3. Ceramic bonded abrasives, tungsten carbide or diamond wheels/tools may be used. These tools shall be new or have been previously used on 300 series stainless steel only.
- 5.2.4. Heavy organic lubricants or coolants with sulfur or silicone based cutting fluids shall not be used since these can be retained to some extent by the component surface.
- 5.2.5. Only water soluble cutting fluids shall be used. The vendor must submit to RRCAT a specification of any other lubricant to be used and will not proceed until written permission has been obtained from RRCAT.
- 5.2.6. The finish of any surface exposed in vacuum shall be 0.8 μm (32 micro inches) or better. Higher quality surface finish gives great benefits in the subsequent cleaning procedures, reducing efforts to achieve the necessary out-gassing rate.
- 5.2.7. Burnishing and honing shall not be used.
- 5.2.8. For improving and cleaning of the vacuum surface appearance the use of harsh abrasives or files and bead, sand or shot blasting is prohibited.
- 5.2.9. Knife edge dimensions must be as per attached drawing.
- 5.2.10. All remarks/noting given in the drawing shall be clearly taken into consideration during the finalization of "operation sheet" and machining process. Even small dent or scratch on sealing area, knife, and edges may make the whole part unacceptable.

6. Inspection and testing:

- 6.1. Raw material samples shall be supplied along with the following test certificates issued by the Govt approved / reputed laboratory after getting purchase order
 - 6.1.1. Composition test: Raw material shall be examined for its chemical composition at suppliers end.
 - 6.1.2. Mechanical Property test: Material shall be examined for Ultimate Tensile Strength and Yield Strength at suppliers end.
 - 6.1.3. The chemical treatment (Electro-polishing) will be done by the RRCAT on the supplied raw material samples before executing the machining work. The samples shall show the proper finish without pits/color change etc after this chemical treatment.
 - 6.1.4. Dimensional Inspection: Each item shall be inspected and inspection report submitted before supply of material.
 - 6.1.5. Finished product will be tested for leak at purchasers end.

- 6.1.6. Finished product will be tested for ultimate pressure at purchasers end.
7. **Marking:** Each individual item shall be clearly identified with serial no. these identification mark shall be mentioned in inspection report clearly.
8. **Acceptance criteria :** The listed item will be accepted only when
- 8.1. The samples of raw materials with test certificates conforming magnetic permeability, mechanical properties and chemical composition requirements.
The condition of the samples is as follows:
- 8.1.1. As cut condition
- 8.1.2. Machined sample with N6 surface finish and a drilled hole of 6.6 mm Diameter
- 8.2. Inspection report should supplied before the material supply.
- 8.3. Detailed inspection report specifying the geometrical tolerance (Perpendicularity, parallelism and positioning of all mentioned features) should be within acceptable tolerance zone.
- 8.4. **Any deviation from specified tolerance zone will lead to rejection of finished product.**
- 8.5. Finished product must qualify for local leak rate of 2×10^{-10} mbar-l/sec with Copper gasket at purchaser's site.
- 8.6. Finished product must qualify for ultimate vacuum of the order of 8×10^{-10} mbar after flat top baking at 250°C for 24 hrs with 70 liters pump at purchaser's site.
- 8.7. Finished product shall qualify for the functional requirement at purchaser's site.
9. Further, proper care shall be taken during transportation and delivery of job in order to protect its features.
10. **The duly filled, stamped and signed mandatory technical questionnaire sheet must be returned by the party along with their quotation failing to which the quotation will not be considered at all.**
11. In case of partly acceptance of the specification. Clear details shall be given in the quotation and on this sheet itself.

-----** End of the Specification**-----