Government of India
Bhabha Atomic Research Centre
Physics Group
Electromagnetic Application & Instrumentation Division

Dated: 06 – 05 – 2022.

Sub : Minor Fabrication - Invitation for Quotation.

Fabrication and Supply of Stator / Rotor Assembly with retainer ring for Turbomolecular pump as per drawings and specifications.

Quantity: 1 set.

Dear Sirs,

1. Quotations are invited for the minor fabrication job as per the enclosed specifications and drawings.

2. GST shall be quoted separately.

3. **Please mention PAN and GST Reg. Nos., SSI certificate if available and affix company seal.**

4. The quotations must be sent by **Normal Post or Speed Post**, to **The Head, Electromag. Applns & Instr. Division**, so as to reach by 3:00 p.m, **26 – 05 – 2022** and must be sent in a sealed **envelope superscribed with the above Reference Number and due date** given above. The quotations will be opened on **27 – 05 – 2022.**

5. The address on the envelope should read :

   The Head,
   Electromag. Applns & Instr. Division, Mod Labs.,
   Bhabha Atomic Research Centre, Trombay,
   Mumbai – 400 085. **Attn : N K Prasad**

6. The fabrication work shall be subject to inspection by our engineers at bidder's works. Necessary inspection facilities should be provided to our engineers during fabrication at bidder's premises.

7. The bidder shall deliver the finished components after approval by our engineer within **60 days** from the date the firm purchase order is issued to the bidder. The finished components shall be delivered by the bidder at **North Gate, B. A. R. C, Trombay, Mumbai - 85**.

8. Head, EmA&ID, B.A.R.C., reserves the right to accept /reject any or all quotations without assigning any reason.

Encl : Drawings / Specifications Sheets.

Nanda Kisor Prasad 05/05/2022

Head, MFS
Electromag. Applns & Instr. Division

Government of India
Bhabha Atomic Research Centre
Physics Group
Electromagnetic Application & Instrumentation Division

Ref : EmAID / NKP / 2022 / P- 43184 **Dated : 06 – 05 - 2022**

SUB Fabrication and Supply of Stator / Rotor Assembly with retainer ring for Turbomolecular pump as per drawings and specifications

Quantity : 1 SET.

JOB DESCRIPTION

Rotor / Stator Assembly for Turbomolecular pump is a critical requirement for effective pumping of gases to produce ultrahigh vacuum condition in sealed vacuum chambers. The job involves precision CNC machining techniques together with high quality Jigs and fixtures. **(Note : 1 set consists of 12 nos of Rotors, 12 nos of Stators and 12 nos of Stator housing)**

VENDOR QUALIFICATION

[1] Vendors shall be well versed in high precision fabrication techniques especially involving CNC milling processes, fabrication of Jigs and fixtures, etc. Similar jobs delivered to BARC or other DAE organizations may be mentioned.

[2] Materials shall be checked for quality and purity as per description provided in the drawings. Chemical purity certificate shall be produced for the materials under fabrication.

[3] Rotor / Stator assembly consists of three sets of 4 nos. each Rotor / Stators with Vanes at 40^{o}, 60^{o} and 80^{o}. The Vanes of Stator is mirror image of Rotor. The stator is kept in precision fabricated housing, which is split into two after fabrication by wire-cut process. Total 12 nos of Rotors, 12 nos of Stators and 12 nos of Stator housing shall be fabricated as per provided drawings with tolerances on all dimensions as $\pm$ 0.020 mm or better.

[4] Samples of Rotor / Stator assembly if needed will be provided to the Vendor at the time of placing Work order.

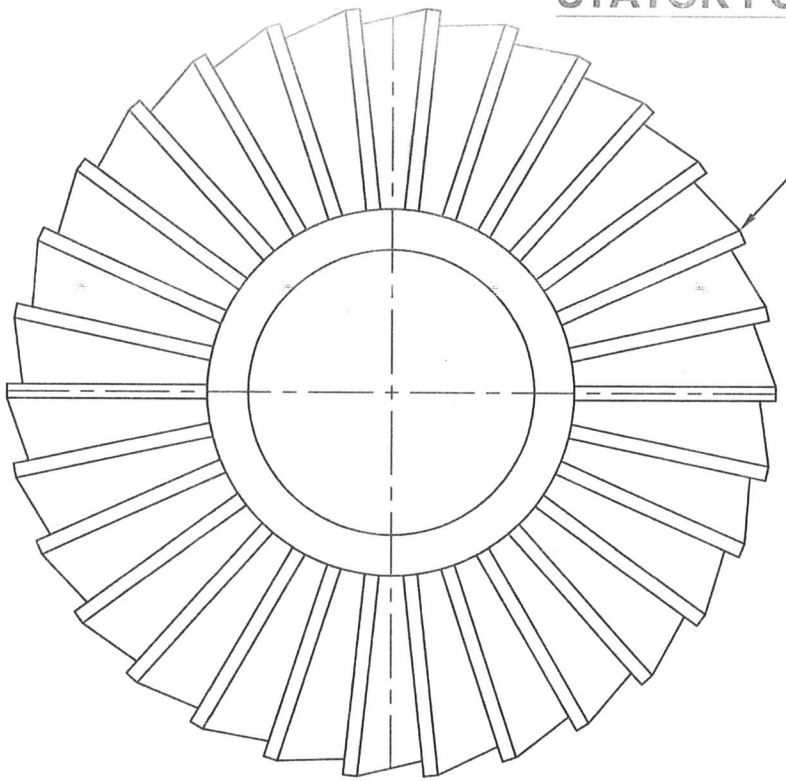
[5] Surface finish shall be bright Electropolish or Nitric acid etch depending on the finished product from the wire cutting procedure

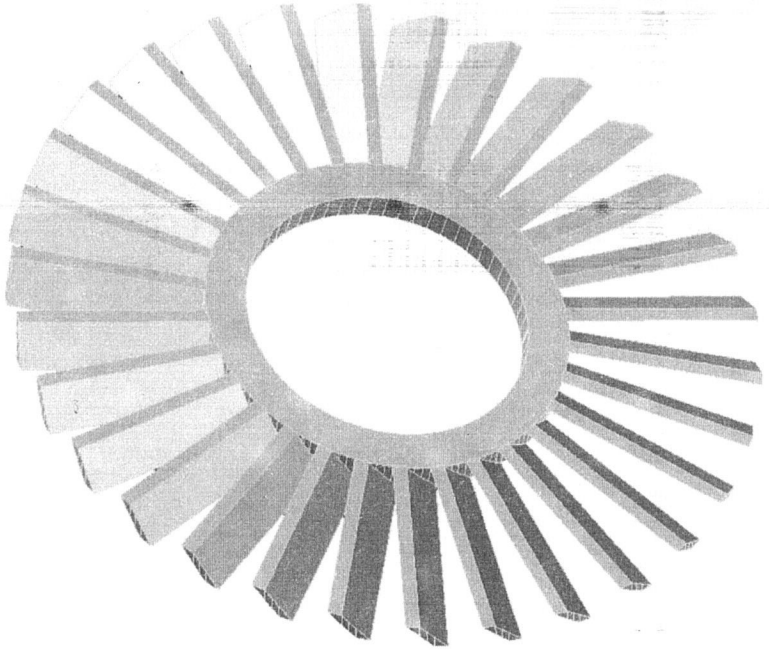
[6] Vendor shall provide dimensioning tools such as Co-ordinate measuring machines, Digital Verniers, thickness monitors, etc., as required at the time of inspection

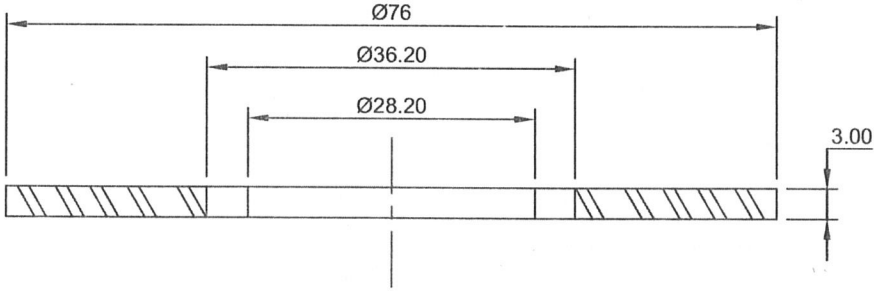
ACCEPTANCE CRITERIA :

a) The fabricated items will be checked for dimensions $\pm$ 0.020 mm at the vendors factory
b) Surface finish as required shall be adhered
c) Material purity chemical certificate shall be produced at the time of inspection.
d) All ID of the rotor + 0.00 & - 0.020 and stator OD $\pm$ 0.020 to be maintained
e) Stator Housing and stator is to be push fit
f) After fabricating stator, it is to be cut in two halves by EDM wire cut process

STATOR FOR TURBOMOLECULAR PUMP







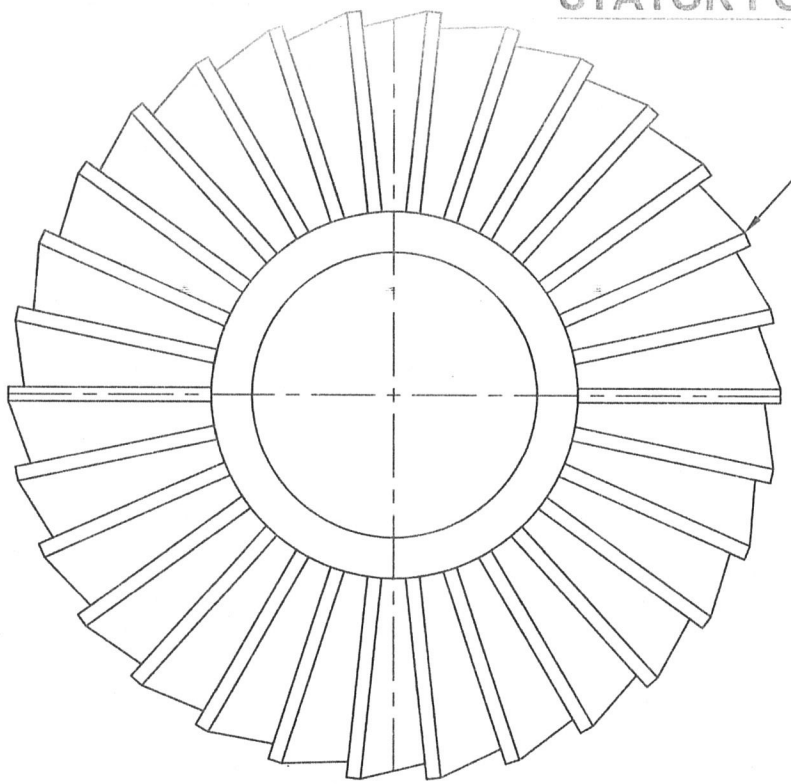
NOTES :

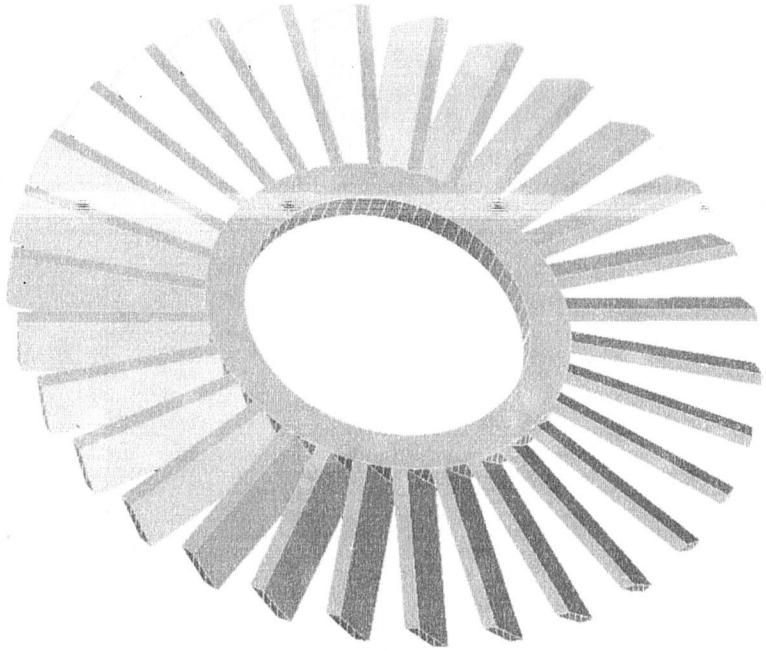
1. TO BE FABRICATED FROM CNC ~~WIRE CUT~~ PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

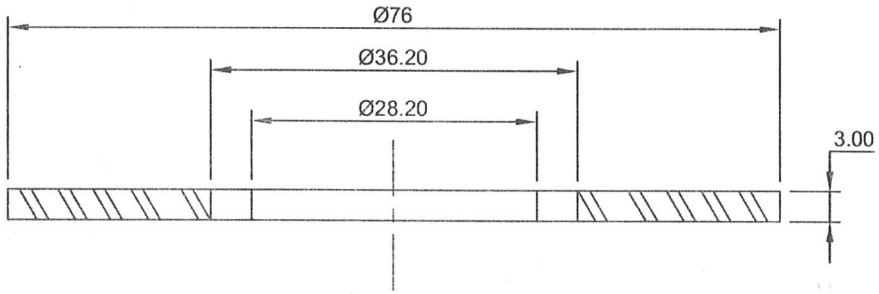
MATERIAL : AL 6061 - T6
QUANTITY : 4 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE

STATOR FOR TURBOMOLECULAR PUMP







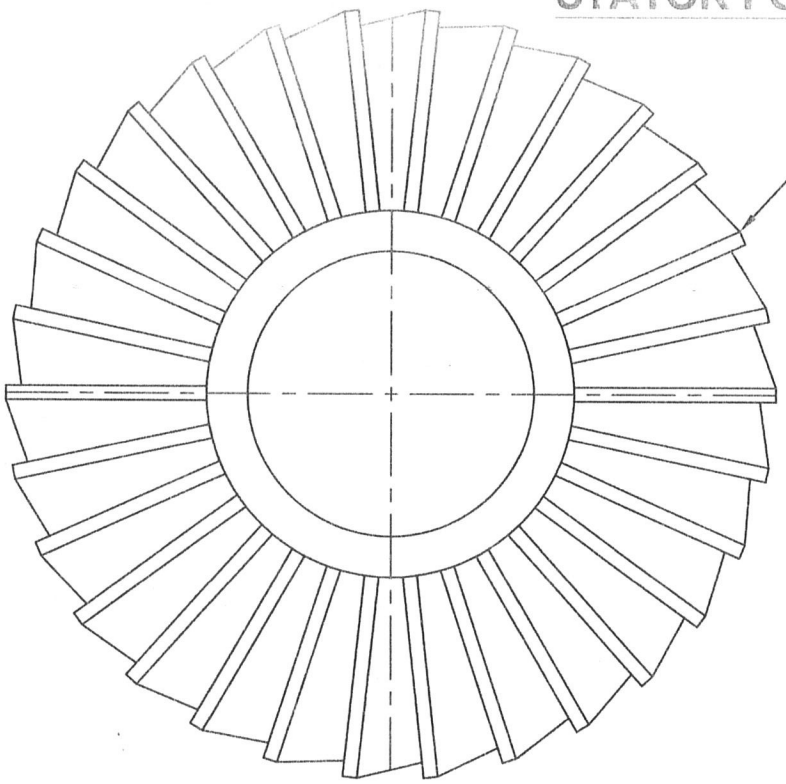
NOTES :

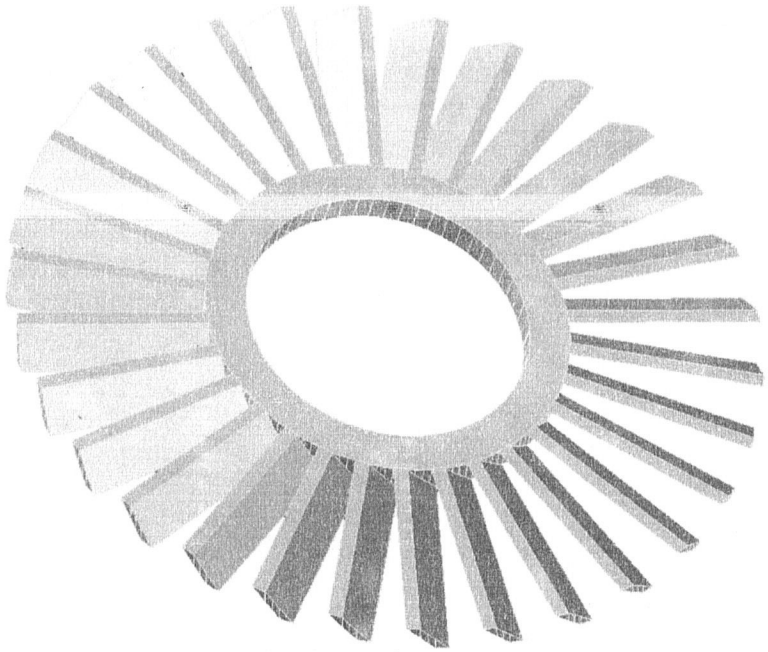
1. TO BE FABRICATED FROM CNC ~~WIRE CUT~~ PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

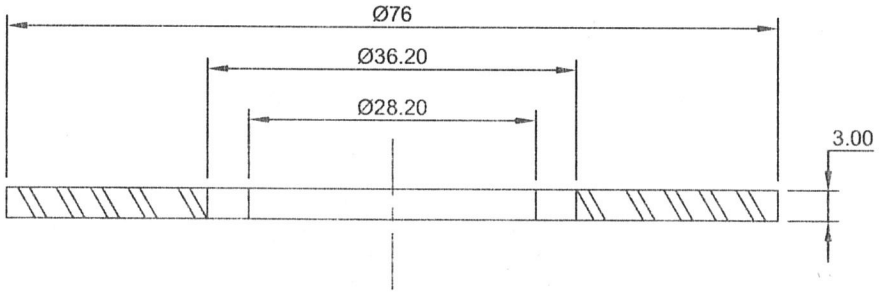
MATERIAL : AL 6061 - T6
QUANTITY : 4 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE

STATOR FOR TURBOMOLECULAR PUMP







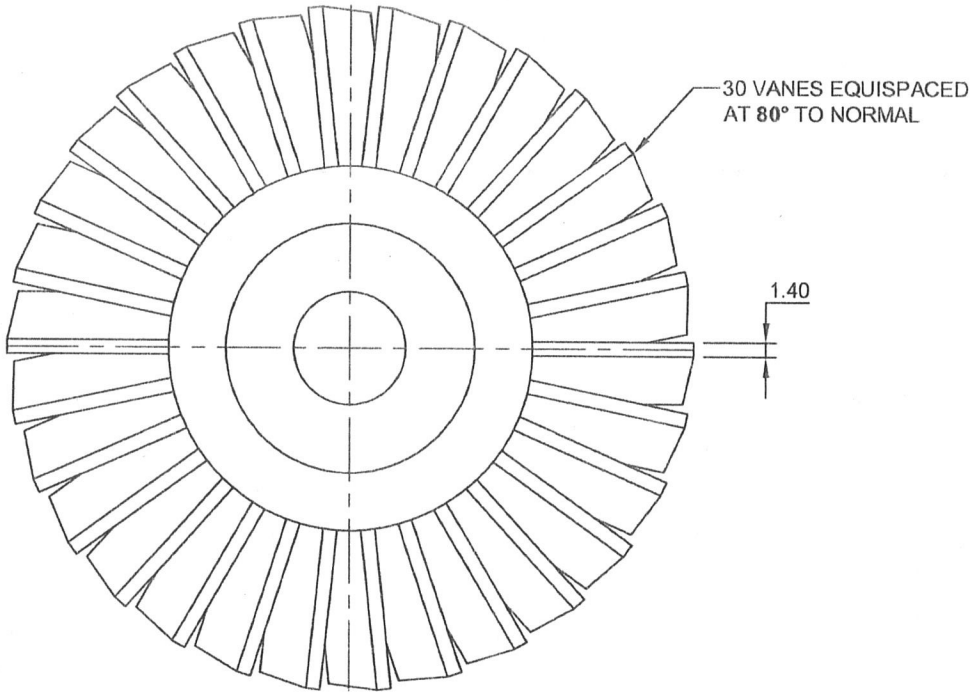
NOTES :

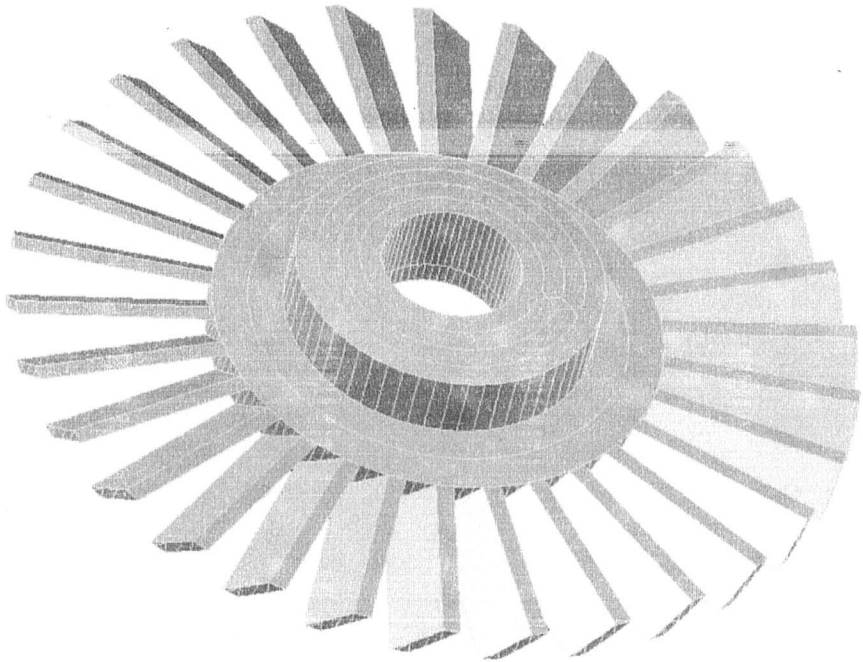
1. TO BE FABRICATED FROM CNC ~~WIRE CUT~~ PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

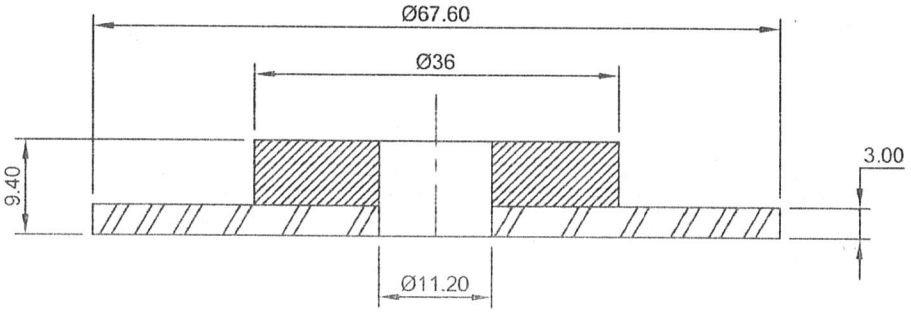
MATERIAL : AL 6061 - T6
QUANTITY : 4 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE

ROTOR FOR TURBOMOLECULAR PUMP







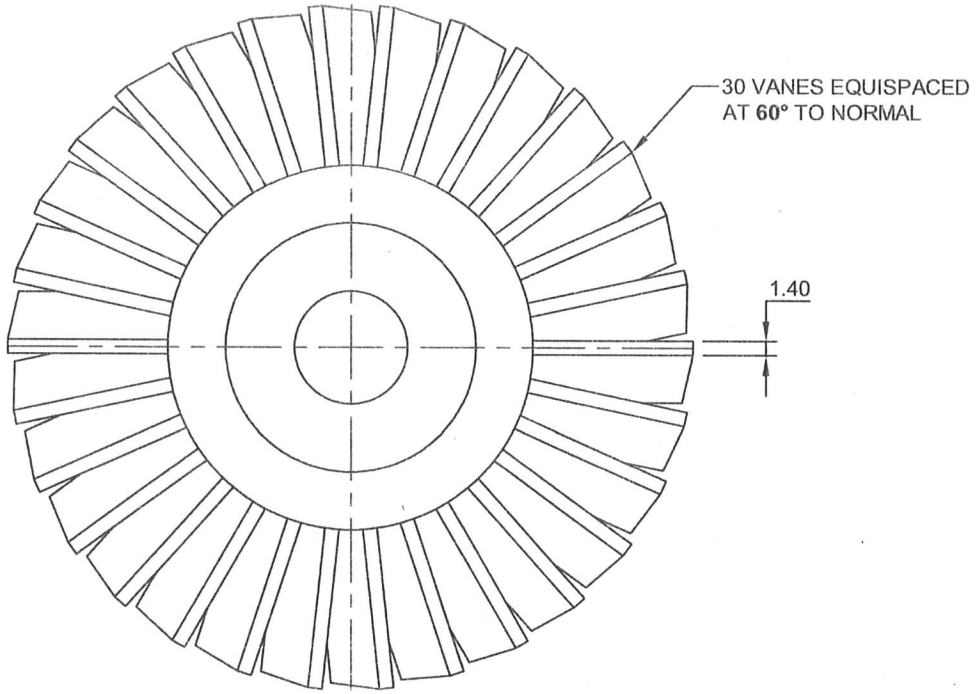
NOTES :

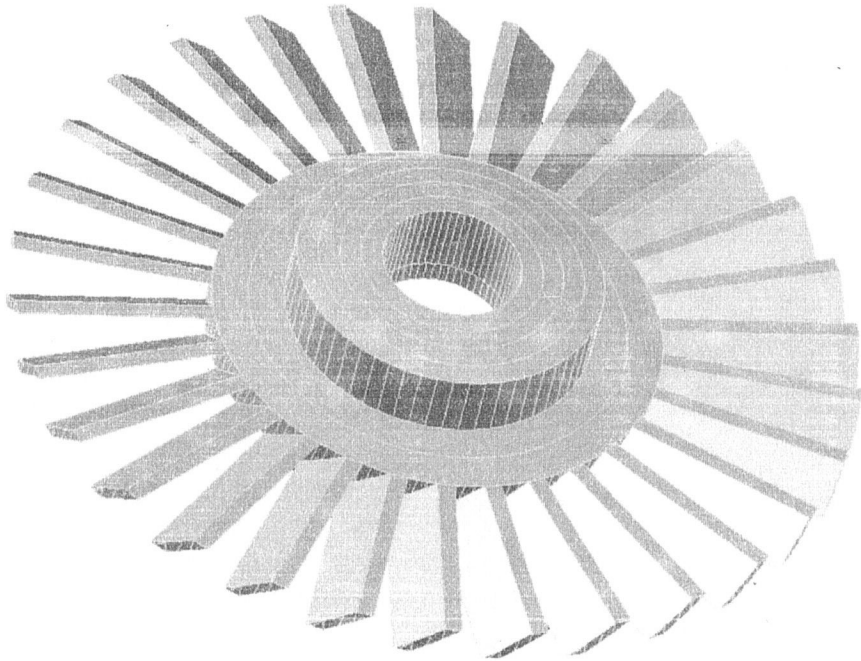
1. TO BE FABRICATED FROM CNC [redacted] PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

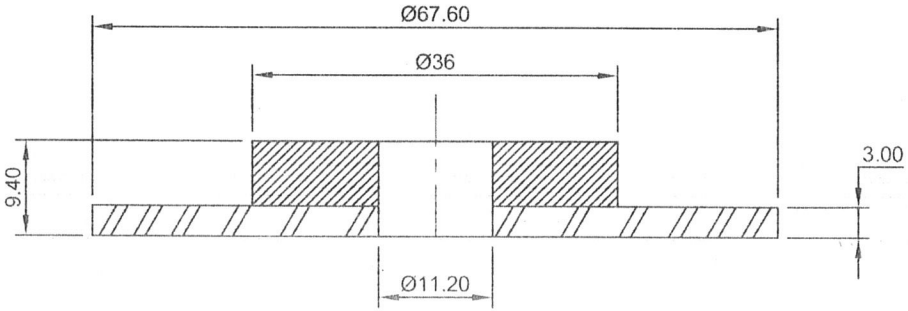
MATERIAL : AL 6061 - T6
QUANTITY : 4 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE

ROTOR FOR TURBOMOLECULAR PUMP







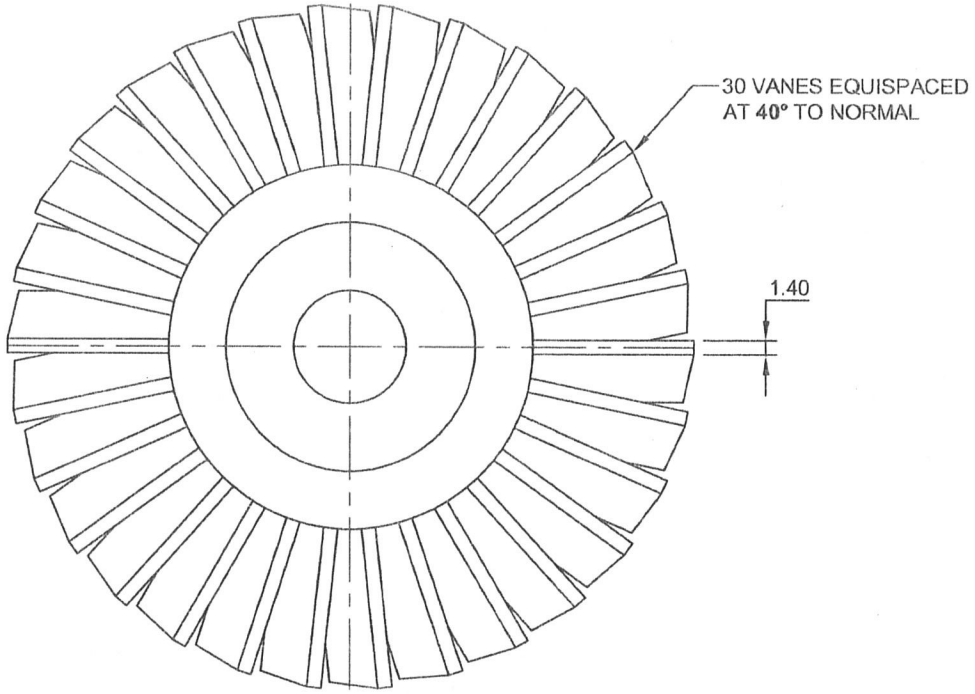
NOTES :

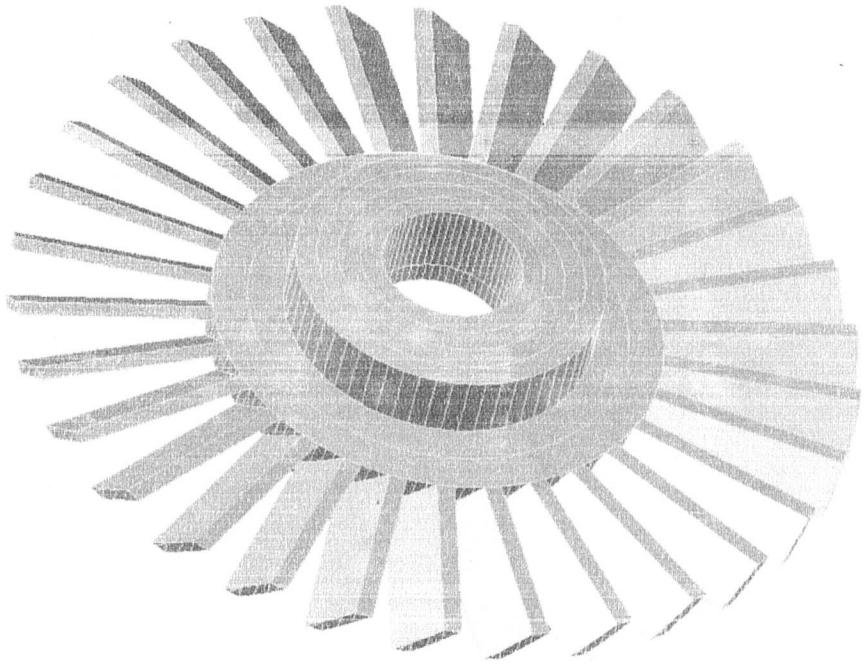
1. TO BE FABRICATED FROM CNC ~~WIRE CUT~~ PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

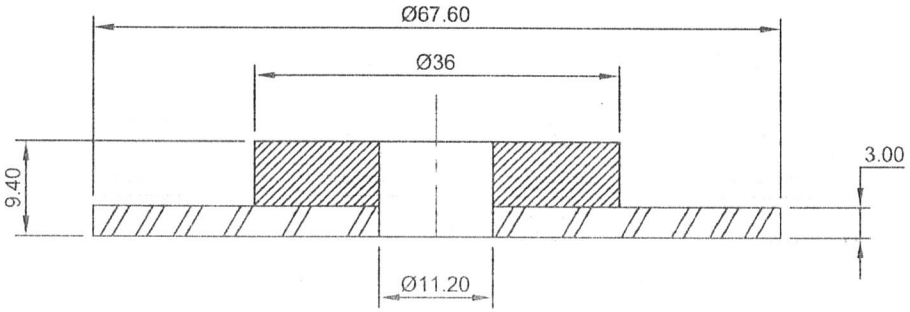
MATERIAL : AL 6061 - T6
QUANTITY : 4 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE

ROTOR FOR TURBOMOLECULAR PUMP







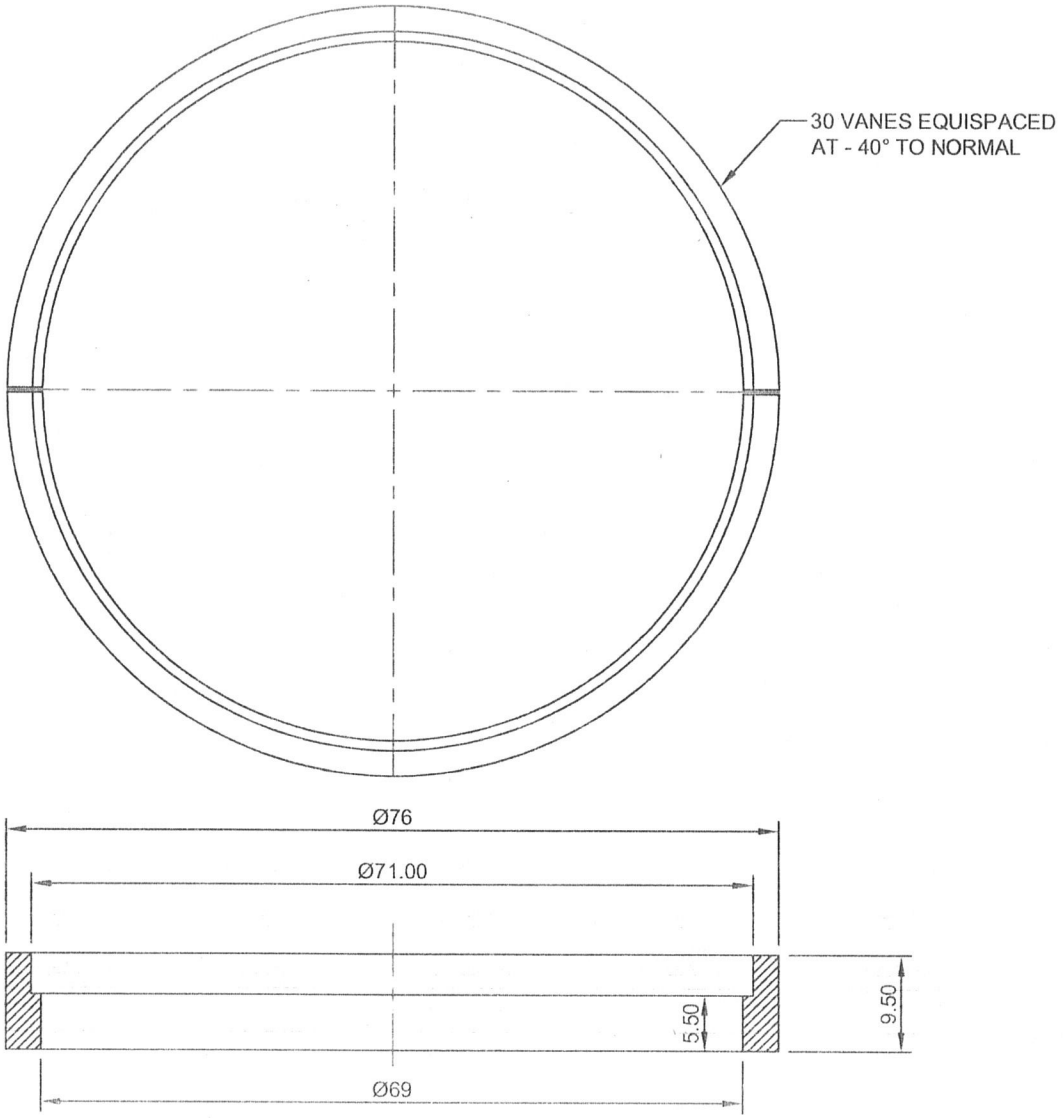
NOTES :

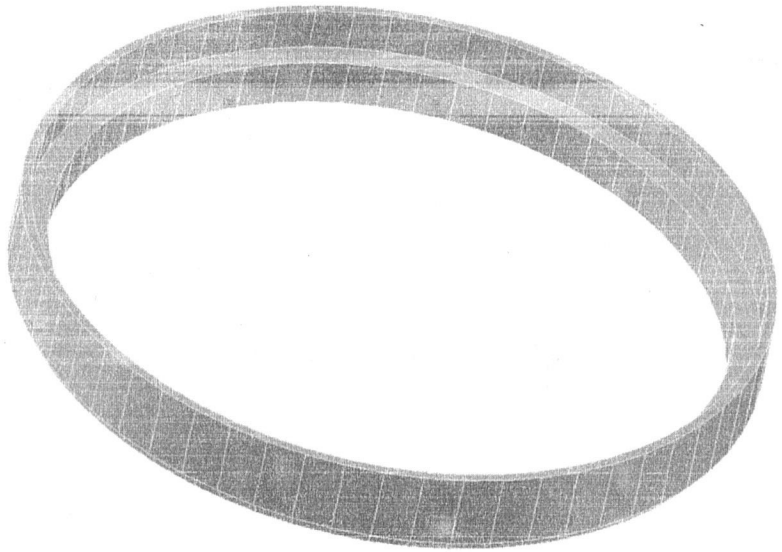
1. TO BE FABRICATED FROM CNC ~~WIRE CUT~~ PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

MATERIAL : AL 6061 - T6
QUANTITY : 4 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE

STATOR HOUSING FOR TURBOMOLECULAR PUMP





NOTES :

1. TO BE FABRICATED FROM CNC ~~WIRE CUT~~ PROCESS
2. SUITABLE FIXTURES SHALL MADE BY THE VENDOR
3. ANGLE ACCURACY SHALL BE MAINTAINED
4. A SAMPLE MAY BE PROVIDED AT THE TIME OF ACTUAL FABRICATION
5. SHARP EDGES TO BE ROUNDED OFF BY DE-BURRING OR ELECTROPOLISHING

MATERIAL : AL 6061 - T6
QUANTITY : 12 NOS

Dr K G BHUSHAN
BHABHA ATOMIC RESEARCH CENTRE