

Machining Vesconite (The Basics)

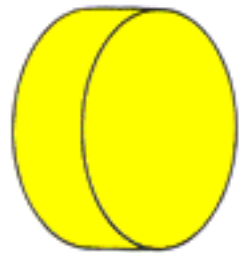
Vesconite bearings are easily machined on standard lathes if proper support is provided to prevent deformation and cracking.

When machining a large bearing, the machinist has many options, depending on the diameter and length of the bearing and the lathe or boring mill available.

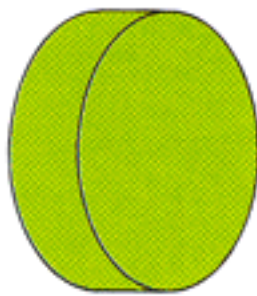
By taking the following important precaution, the machinist will find Vesconite bearings a pleasure to machine:

When chucking the bearing, always use an inside support disc machined size-for-size to the bearing inside diameter to prevent possible cracking.

Machine the support from a steel plate, disc or washer, 25 - 35 mm (1 - 1½") thick.



Support disc, machined to size.



Larger diameter support disc, machined size-to-size with final bearing inside diameter.

Do not clamp Vesconite like a metal, but clamp gently and with care to avoid distortion.



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1
Align and face one end of the bearing square. (A)
This helps with alignment later.
Use the internal support disc machined to size to prevent distortion and cracking.

2
Swop bearing around, align and face the other end. (B)
Again use the disc to support the inside diameter.

3
Machine the outside diameter of the bearing, again with the support disc in place.

4
Machine the inside diameter, again with the support disc in place.

5
Switch bearing around to part to length.
A new disc machined size-to-size with the final bearing inside diameter will be required for support.

- When taking rough cuts, measure wall thickness as a check on accuracy and ovality.
- If more than 15mm (¾") has to be removed from either the outside or inside diameters of the bearing, first semi-finish both the inside and the outside diameters to approximately 5mm (¼") oversize.
- When machining large bearings ensure that the free end of the bearing is suitably supported.

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Machining Grooves on Centre Lathes

Use a tool up to the width of the groove required in a boring bar. Lock the chuck into position.

Move the tool through the bearing using the hand wheel

or rapid advance taking a cut up to 1.5 mm (1/16") maximum at a time until the required groove depth is obtained.

Machining Tolerances

The following are acceptable tolerances for the bearing outside diameter and wall thickness:

Outside diameter tolerance
% of outside diameter

+0.2%

-0.0%

Wall thickness tolerance
% of wall thickness

+0.0%

-0.5%

Cutting Speeds

Up to 300m (1000') per minute

Cutting Feeds

Rough: 0.5 - 0.7mm (0.020 - 0.030") per revolution

Finish: 0.3 - 0.4mm (0.012 - 0.016") per revolution

Turning Speed Guidelines:

Bearing outside diameter	RPM
200 mm 8"	350
300 mm 12"	300
400 mm 16"	200
500 mm 20"	150
600 mm 24"	100
700 mm 28"	70

Cutting Tools

Use sharp high speed tools or tungsten carbide tips with high clearances and positive rake angles. Rough cuts up to 5 mm (1/4") deep may be taken, with a finishing cut of at least 1 mm (1/32").

Allow the bearing to cool before taking final cuts.

Tool Cutting Angles

