



PACIFIC MARINE & INDUSTRIAL®

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Composite Bearing Instruction: Machining and Fitting

Machining

As a general guide, methods used for brass, aluminum or lignum vitae will apply for PM&I composite bearings.

It is preferable to use tungsten carbide turning tools with cutting speeds of 20 feet (5 meters) per second.

Composite bearings materials must be machined dry without the use of coolant.

Fitting Methods - Bonding

The method of fixture will depend upon the design employed, however the key point to be emphasized is that in addition to traditional mechanical fixing, composite materials can be bonded to both itself and metallic substrates. Also of note is that if the assembly is to exceed 60-70°C in temperature then interference fitting should be replaced with adhesive fitting.

Numerous adhesives are compatible and have been tested within our laboratory facilities. Generally the most suitable adhesives are :

- * Epoxies
- * Acrylics
- * Cyanoacrylates
- * Polyurethanes

Fitting Methods - Press Fit

Fitting with Hydraulic Press or Centre Pull Jacks

If a bearing is to be press fitted, installers should ensure that they have equipment available to deliver adequate force to press the bearing fully into the housing. The ease of fitting will vary dependent on the finish of the housing and this should be considered when calculating the force required. When press fitting a bearing it is important that it is in line and square with the bore before the operation begins, an adequate chamfer on the housing will prevent shaving of the bush.

Fitting Methods - Freeze Fit

Freeze fitting using liquid nitrogen is a fast and efficient assembly method for a composite bearing. The thermal properties of the material allow a good clearance between the bearing and housing when frozen and the material does not become brittle at cryogenic temperatures.

Freeze fitting using dry ice and alcohol will only provide the required clearance when using very light interferences. As such it is rarely a viable method in its own right and will often require press fitting as well.