## Bearing Clearances and Press Fits

Unless otherwise specified, bearings are made with a running clearance and a press fit. Clearances and Press Fits vary with the bearing size, per the following tables. Wood bearings are provided extra clearance if they are to be used in a wet environment.

### Clearances

| Shaft Diameter Only | All Bearings Except Roll End Bearings | Roll End Bearings Only |
|---|---|---|
| < 1/2" | .002-.010 | .015-.030 |
| 1/2" - 1" | .004-.015 | .015-.030 |
| 1" - 1-1/2" | .004-.020 | .015-.030 |
| 1-1/2" - 3" | .010-.025 | |
| > 3" | .015-.030 | |

### Press Fits

| Bearing OD | Press Fit |
|---|---|
| < 1/2" | .003"-.006" |
| 1/2" - 1-1/2" | .004"-.008" |
| 1-1/2" - 3" | .005"-.010" |
| > 3" | .006"-.012" |

## Helpful Formulae

A useful guideline for determining suitability of a material for an application is the Pressure-Velocity (PV) Value. You can calculate the PV for your application using the formula to the right. Values for comparison are shown on the previous page in the engineering and design data for some common engineering materials.

$$PV = \frac{\text{Load/Bearing} \times \text{RPM}}{4 \times \text{Bearing Length}}$$

Bearing length is used to increase the load capacity of direct journal bearings. Longer bearings tend to have a longer life because they distribute load over a larger surface area than a shorter bearing with the same shaft size.

$$\text{Minimum Bearing Length} = \frac{\text{Load/Bearing} \times \text{RPM}}{4 \times \text{PV Capacity}}$$

## Application Maximization

Assist Slideways in providing the highest value solution for your application by considering how the specifics below will apply to the finished part.

**Application**

- What is the function of the part?
- What material characteristics are most important?
- Is this a new application? What material is being replaced?
- What are the implications of a part failure?
- Is there flexibility in the design?
- Are there special tolerances, press fits or clearances?

**Price/Performance**

- Can improved performance or longer life command a higher price?
- What is the order volume or annual usage?

**Mechanical/Environmental**

- What are the speed and load?
- Is the load constant? Is there any impact?
- What is the operating temperature range?
- Is there exposure to sunlight or chemicals?
- Is FDA compliance required?

**Cosmetic**

- Is color important?
- Are special surface finishes needed?