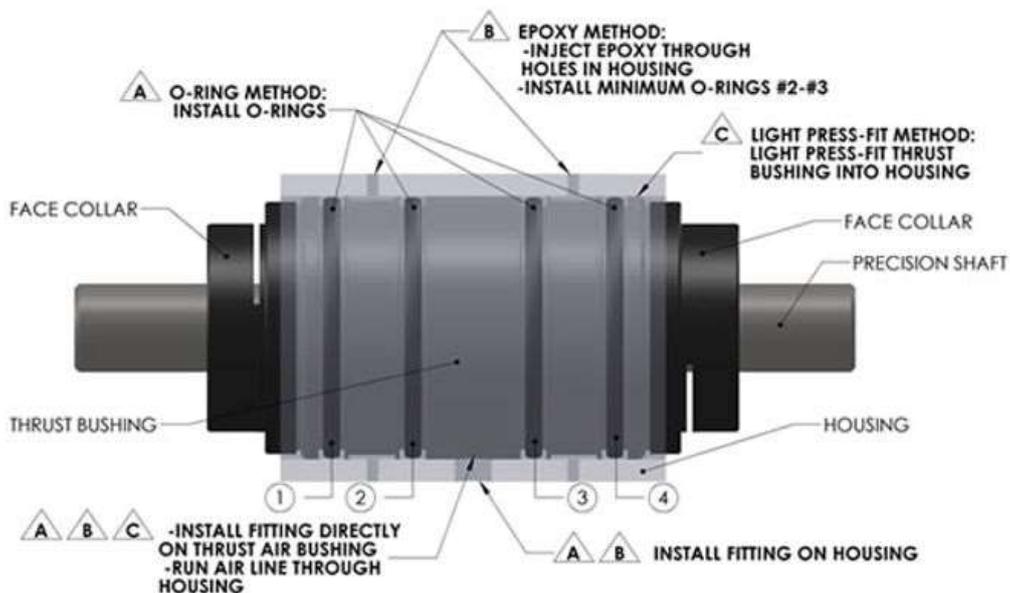


Thrust Air Bearing Design and installation guide

Typical configuration: Thrust air bushings slide over the shaft just like air bushings. The only difference is that thrust air bushings have face collars clamped to the shaft on both sides in order to keep the thrust air bushings from moving linearly. OAV Mounting Blocks can be used to hold the thrust air bushings. If a customer-designed housing is used, make sure to follow the same guidelines as shown below for air bushings.



If the shaft is rotated with a drive-belt, it is best to use two thrust bearings per shaft to counteract the torque. The drive belt should always be placed between the thrust air bushings. If this is not possible, then keep the belt as close to the first thrust air bushing as possible. Statistical equations can be used to determine the load requirement on each thrust bushing.

The diagrams below show two common examples where F_1 is the tension from the drive-belt, F_2 & F_3 are the forces acting on the bushings, and d_1 and d_2 are the distances from the center of the belt and thrust air bushings:

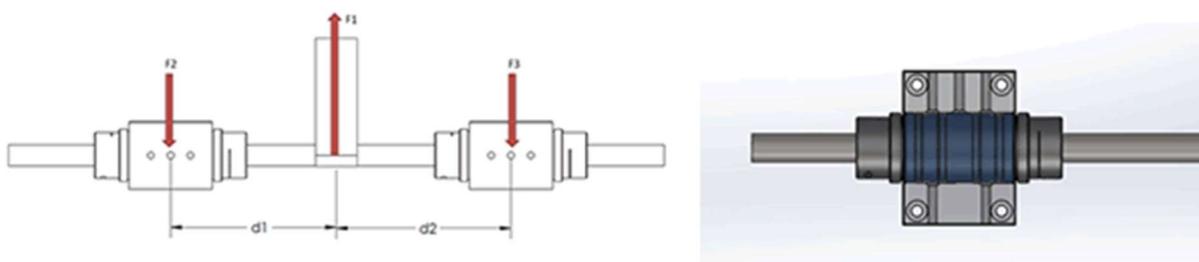


Figure 1. The drive belt in between both thrust air bushings. This is recommended, as the tension on the belt will be distributed amongst both thrust air bushings as shown in the equations below.

$$F3 = F1 * d1 / (d1 + d2)$$

$$F2 = F1 * d2 / (d1 + d2)$$

Assuming: $d1 = d2$:

$$F2 = F3 = .5 * F1$$

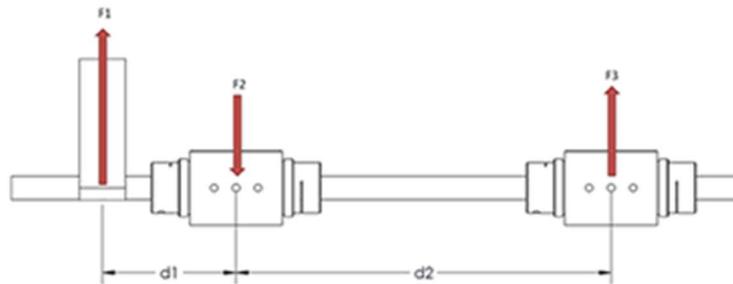


Figure 2. The drive belt outside the two thrust air bushings. This configuration works best with a small distance d1 and long distance d2. The corresponding load equations are below.

$$F2 = F1 * (d1 / d2 + 1)$$

$$F3 = F1 * d1 / d2$$

Consider the gap between the bushing and the face collar as negligible. The face collar will be placed up against the frictionless surface of the thrust bushing. Once the air supply is turned on, a small gap will be created. Therefore, the total length of the thrust bushing system can be determined by the following formula:

length of the left face collar + length of thrust air bushing + length of right face collar