OAV AERODYNAMIC FOIL BEARINGS

OAV Advanced Aerodynamic Bearings

The development of foil-air-bearings began in the early 1970s to provide rotational guidance for gas turbine shafts. Foil bearings, also known as a foil air bearings, is a type of air bearing where the surface is supported by a compliant, spring-loaded foil journal lining. Once the surface is spinning fast enough, the air pushes the foil away from the surface so that no contact and no wear occurs. The surface and foil are separated by the high pressure from the air, generated by the rotation that pulls gas into the bearing via the viscosity effects. OAV Foil Air Bearings can operate under the most demanding systems without the requirement for external supply. OAV's advanced method makes the OAV foil-air bearings unmatchable. Contact OAV engineers for more details.



Advantages

Higher efficiency
Increased reliability
Higher speed capability
Quieter operation
Wider operating temprature range
High vibration and shock load capacity
No scheduled maintanence
Oil free

OAV Air Foil Journal Bearings

Part Number	Size	Lift Off Speed	Load Capacity	Shaft Size	Bearing Lenght	Rotation Direction	Allowable Temprature	Generation
FB-J8-L12	8 mm	5000 rpm	180 N	8 mm	12 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-J13-L20	13 mm	5000 rpm	160 N	13 mm	20 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-J20-L25	20 mm	5000 rpm	380 N	20 mm	25 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-J25-L28	25 mm	5000 rpm	520 N	25 mm	28 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-J40-L35	40 mm	5000 rpm	1150 N	40 mm	35 mm	CW	-40 °C to 650 °C	4th OAV Advanced



OAV Foil Bearings Are Suitable For Many High-Speed Applications

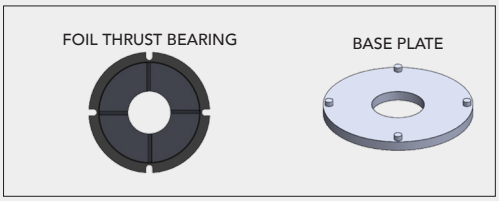
Turbomachinery
Aircraft
Microturbine generators
High-speed projects

OAV Air Foil Thrust Bearings

Part Number	Size	Lift Off Speed	Load Capacity	Shaft Size	Bearing Width	Bearing OD	Rotation Direction	Allowable Temprature	Generation
FB-T8-X47	8 mm	5000 rpm	120 N	8 mm	2.95 mm	47 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-T13-X57	13 mm	5000 rpm	195 N	13 mm	2.95 mm	57 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-T20-X65	20 mm	5000 rpm	380 N	20 mm	2.95 mm	65 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-T25-X75	25 mm	5000 rpm	630 N	25 mm	2.95 mm	75 mm	CW	-40 °C to 650 °C	4th OAV Advanced
FB-T40-X100	40 mm	5000 rpm	1350 N	40 mm	5.45 mm	120 mm	CW	-40 °C to 650 °C	4th OAV Advanced

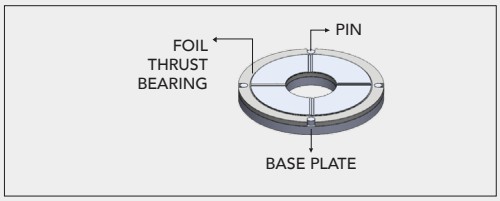
Foil Air Bearing Design and Installation Guide

1-OAV Foil Thrust Bearings have four pin-slots along the outer perimeter. The base plate of the bearing housing is where the OAV Foil Thrust Bearings will be mounted on with precision dowel pins.



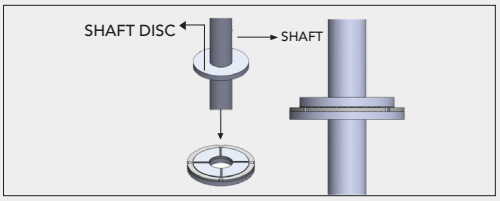
2-The base plate, bearing housing, OAV Foil Thrust Bearing, and all related components should be cleaned using only isopropyl alcohol to remove impurities and dust particles.

3-The OAV Foil Thrust Bearing is then light press-fitted on the dowel pins of the base plate to firmly mount the bearing at its position.

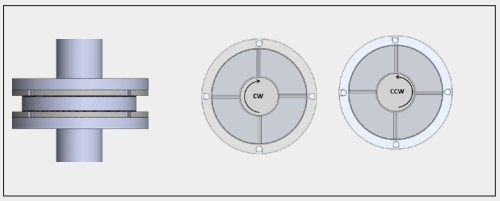


4-The shaft should easily pass through the inner diameter of the OAV Foil Thrust Bearing. However, there should be an axial clearance of 7.5-12.5 microns between the top foil of the thrust bearing and the Runner (thrust disc).

5-To avoid thrust reversal, it is recommended to use two thrust foil bearings (1 CW + 1 CCW) on each side of the Runner (thrust disc).

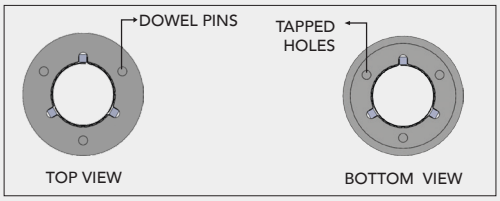


6-OAV Foil Journal Bearing CW and CCW directions as shown on the figure to the right.



Foil Journal Bearing Design and Installation Guide

1-OAV Foil Journal Bearings have precision OD and should be transition fitted into the housing as needed. If the base plate must be used, use either dowel pins, threaded screws, or both to secure the bearings with light press-fit.



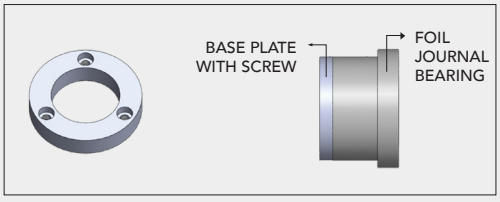
2-The base plate, bearing housing, OAV Foil Journal Bearing, and all related components should be cleaned using only isopropyl alcohol to remove impurities and dust particles.

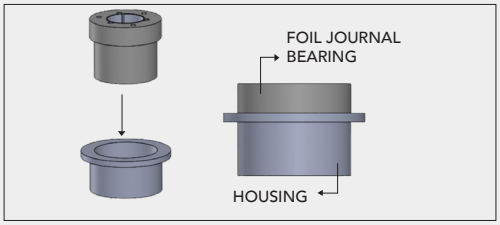
3-The OAV foil journal bearing is then light press-fitted on the dowel pins of the base plate to firmly mount the bearing at its position. Threaded screws may also be used to fix the bearing at its position inside the bearing housing. The OAV Foil Journal Bearing may also be mounted to the bearing housing maintaining a H7g6 transition fit between the two components.



4-The OAV Journal Foil Bearing should easily slide through the rotor. The recommended radial clearance to be maintained between the rotor and the top foil surface is between 7.5-12.5 µm.

5-OAV Foil Journal Bearing CW or CCW orientation as shown on the figure to the right.





CONTACT US

www.oavco.com - Princeton, USA
Email: support@oavco.com
Phone: +1 609 454 5340