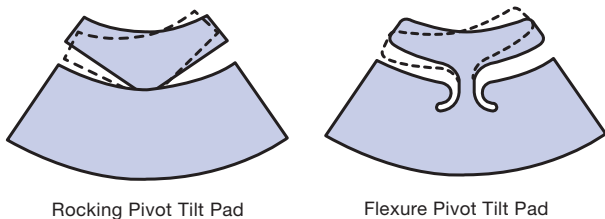


Flexure Pivot® Tilt Pad Bearing Technology –

FLEXURE PIVOT RADIAL BEARINGS

Standard tilt pad bearings achieve low cross-coupling through rocking or sliding motion. Flexure Pivot tilt pad radial bearings achieve the same low cross-coupling and high stability through flexure and rotation of the center post while eliminating any pivot wear and high contact stress.



FEATURES

- **Minimizes the manufacturing tolerance stack up –**

The integral pad-pivot-retainer design eliminates most of the manufacturing tolerance stack-up as shown in Figure 1. This feature is a critical design parameter that has a direct impact on the rotor's stability, critical speed, and synchronous response characteristics.

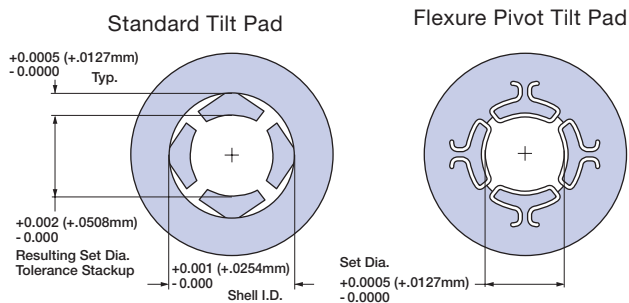


FIGURE 1

- **Eliminates pivot wear and contact stresses –**

The Flexure Pivot tilt pad design eliminates the pivot wear and brinelling associated with standard type tilt pad bearings. This prevents the degradation in performance with time, maintains the desired bearing preload, and provides a narrower spread in the stiffness and damping coefficients.



FIGURE 2

- **Requires small radial space –**

The Flexure Pivot tilt pad bearings can be manufactured with a very low profile. This feature allows the upgrade of sleeve bearings with “drop-in replacements” as shown in Figure 2 that provide the performance benefits of tilt pad bearings.

- **Eliminates pad flutter and spragging –**

The rotational stiffness increases the pad natural frequency and eliminates pad flutter and spragging that can be encountered on the unloaded pads in standard type tilt pad bearings.

- **Retro-fit small and miniature size bearings –**

The advanced techniques utilized in the manufacture of Flexure Pivot tilt pad bearings make them a good choice for retro-fitting small and miniature size fluid film and rolling element bearings.



10 mm, 150 krpm

- **Centering and minimum radial play capability –**

The Flexure Pivot design provides a means to hold the shaft centered in the bearing at low speeds, thus minimizing the radial play which is critical in some high-speed high performance turbomachinery.



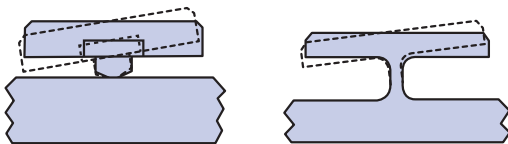
19 mm, 109 krpm

FIGURE 3



FLEXURE PIVOT® THRUST BEARINGS

Standard type thrust bearings form a converging wedge through the rocking motion of the pad pivot support. Flexure Pivot tilt pad thrust bearings form a wedge through flexure of the post support while eliminating the pivot wear and high contact stresses.



Rocking Pivot Tilt Pad

Flexure Pivot Tilt Pad

FEATURES

- **Custom design of the Flexure Pivot post support –**

The Flexure Pivot post support is designed to provide an optimum wedge ratio at design load conditions as shown in Figure 4. This results in an increase in the load capacity and a significant reduction in the horsepower loss.

Wedge Ratio Optimization

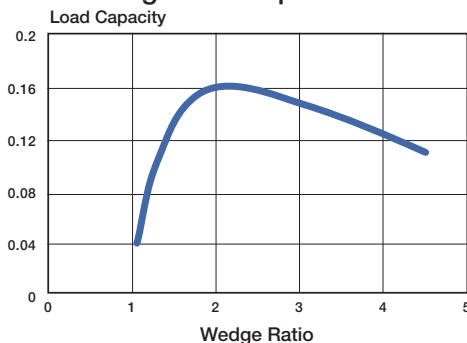


FIGURE 4

- **Retro-fit in small envelopes –**

The Flexure Pivot thrust pad design permits retro-fitting in a small envelope space where only taper land or flat thrust plates would fit. This is an advantageous design flexibility which allows space saving and load capacity upgrades for existing thrust bearings.

- **Simple construction and manufacturing –**

This construction of Flexure Pivot tilt pad thrust bearings is simple, and contains fewer parts than standard type tilt pad bearings. Manufacturing, assembly, maintenance, and inspection are much simpler than with other bearing types. The absence of moving parts eliminates wear and fretting in service.

- **Elimination of pad flutter –**

The rotational stiffness provided in the Flexure Pivot tilt pad bearing eliminates the pad flutter problem that can be experienced on the inactive side of standard tilt pad thrust bearings.

- **Easy implementation of hydrostatic feature –**

Offset Flexure Pivot tilt pad thrust bearings can carry higher load capacities in reverse rotation than standard type tilt pad bearings giving them an additional benefit in certain high load applications. The hydrostatic feature can be utilized through pivot post support as shown in the picture above.

- **Static and Dynamic misalignment capability –**

The Flexure Pivot design provides some amount of axial compliance to give forgiveness of static and dynamic misalignment.

- **Lower lubricant flow requirements –**

Special surface preparation and material selection allow Flexure Pivot tilt pad thrust bearings to carry higher loads at lower oil flows, which makes them the bearing of choice for applications where lubricant availability is low.

- **No limit material selection –**

Any material can be used for Flexure Pivot thrust bearings due to the lack of wear and fretting.

For more information about this and other products, please contact:

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