

Everything you always wanted to know about MiTi[®] air bearings

Mohawk Innovative Technology, Inc.



Concept

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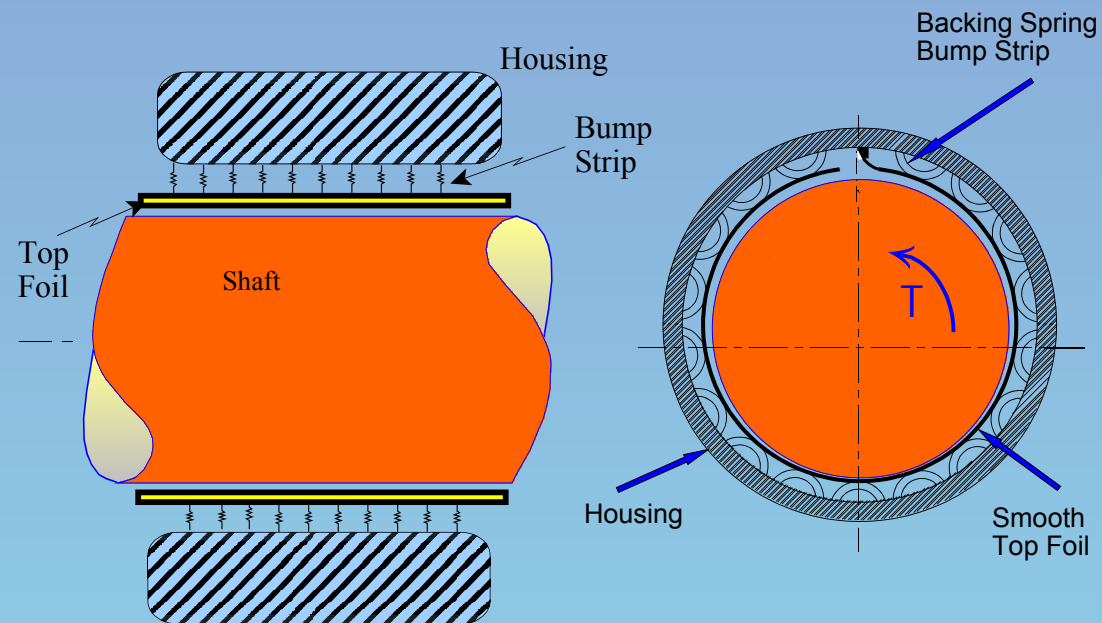
, Our bearings have a thin compliant foil surface on their inner diameter. When a shaft spins at high speed inside our bearing, a thin cushion of air is generated which lifts and supports the shaft during operation.

, Our bearings can support over 100 pounds per square inch.

Design

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Our bearing consists of a smooth inner top foil over a series of bump strips, within a housing.



Design

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- , The smooth top foil provides the surface for the hydrodynamic force to lift and support the spinning shaft.
- , The bump strips are custom designed to provide the correct amount of stiffness and damping.

Bearing Capabilities

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- , Speeds in excess of 250,000 RPM.
- , Temperatures from cryogenic to 1,200F.
- , Capable of operation using air or fluids.
- , Can support over 100 PSI in air. (Higher capacity in fluid.)
- , No lubrication required.
- , No moving parts.
- , Non-contact operation.

Frequently Asked Questions

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, Can the bearing operate at high altitude where the air is thin?

, Answer- Yes. Our bearings have sufficient margin to provide reliable operation at altitude. If more margin is required, a very small amount of compressor air can be supplied to the bearing to enhance operation.

Frequently Asked Questions

Mohawk Innovative Technology, Inc.

- , How does the bearing operate during start-up and shut down?
- , Answer- The inner foil has a coating that provides smooth operation prior to shaft lift-off and after shaft touchdown. This coating is capable of 30,000 starts and stops.
- , Special coatings are available to allow over 100,000 starts and stops.

Frequently Asked Questions

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- , What is a class 1, 2, 3 or 4 air bearing?
- , Answer-A class 1 bearing can support ~ 33 PSI.
A class 2 bearing can support ~ 50 PSI.
A class 3 or 4 bearing is capable of supporting over 100 PSI.
- , Class 4 bearings have enhanced stiffness.
- , Only MiTi is capable of producing Class 3 and 4 air bearings.

Frequently Asked Questions

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, What is the difference between a hydrostatic air bearing and a hydrodynamic air bearing?

, Answer - A hydrostatic air bearing requires air to be pumped into it from an outside pressure source to operate.

, MiTi's hydrodynamic air bearings generate their own cushion of air, and do not require an external pressure source.

Conclusions

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- , MiTi's compliant foil, hydrodynamic air bearings are the worlds most advanced design.
- , The very low power losses and unlimited speed capabilities of our bearings provide signifigant gains in operational efficiency to your high speed machinery.
- , MiTi has the engineering expertise to bring your project from concept to production.