

WHS 180

Air Bearing Spindle

Ultra-Precision Work Holding Spindles

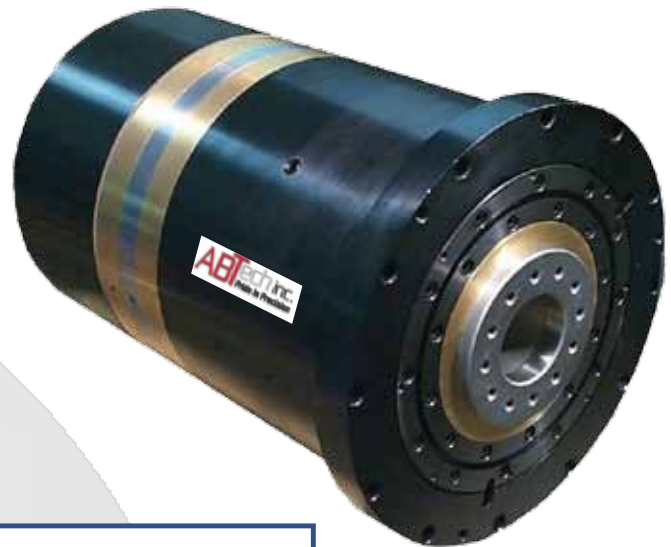
ABTech's air bearing spindles provide ultimate performance utilizing a low air supply of available filtered shop air.

High stiffness, large load capacities and very low error motion make WHS180 spindles ideal for precision machining applications. Examples include work holding, grinding, fly-cutting and single point diamond turning with requirements for ultra-high accuracy and ultra-smooth motion up to 5,000 rpm.

WHS180 air bearing spindles feature high torque brushless DC motors and high resolution rotary encoders. The motors are internally cooled using the air bearings own exhaust air. Liquid cooling options are readily adapted to the existing ported housing.

Optional motion controllers incorporate a digital amplifier with easy-to-use programmable controls and digital spindle speed readout, or integrate into CNC multi-axis motion controllers.

ABTech's modular design approach and complete engineering support capabilities allow for customization of mounting, thrust plate location and drives as customer applications require.



Shown with flange mount (upper right)
or foot mount (lower left)

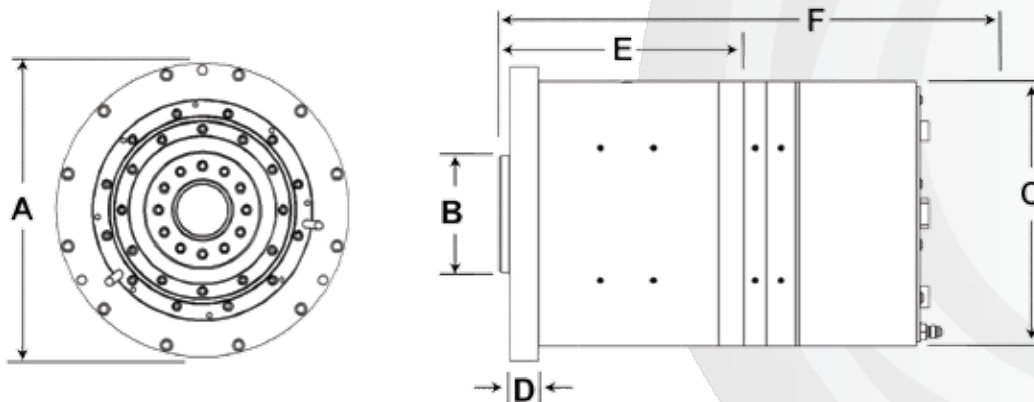
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Features:

- Ultra-smooth motion with "zero" static friction
- High load capacity and stiffness with low air consumption
- Dual plane balanced to G0.4 specifications
- Minimal radial asynchronous error motion
- Durable 440C stainless steel shaft with bronze journal design
- High resolution rotary encoder
- Non-contact, high torque brushless DC motor drives
- Integral air cooling with liquid cool option
- Operator control console with digital amplifier and speed readout
- Modular design – custom systems can be provided for O.E.M.
- Made in USA

WHS180 Work Holding Air Bearing Spindle



Flange mount option shown

| | |
|-----------------------------------------------------------------------------------------------------|-------------------------|
| Model Number: | WHS180 |
| Flange Diameter (A) | 10.0" (254 mm) |
| Spindle Nose Diameter (B) | 4.00" (101.6 mm) |
| Shaft Diameter (C) | 9.0" (228.6 mm) |
| Mounting Flange Depth (D) | 1.0" (25.4 mm) |
| Shaft Length (E) | 8.3" (210.82 mm) |
| Overall Length (F) <i>(includes 2.5" for minimum cable and air supply line clearance)</i> | 16.84" (427.74 mm) |
| Radial Load Capacity* | 200 lbs (90.72 Kg) |
| Axial Load Capacity* | 200 lbs (90.72 Kg) |
| Air Usage | 3.4 CFM |
| Operating Speed Range | 0-5,000 RPM |
| Radial Stiffness (at spindle nose) | 0.8 lbs/μ" (140 N/μm) |
| Axial Stiffness | 1.0 lbs/μ" (190 N/μm) |
| Radial Error Motion | +/-1.0 μ" (+/-0.025 μm) |
| Radial Asynchronous Error Motion | 0.5 μ" (0.016μm) |
| Axial Error Motion | +/-1.0 μ" (+/-0.025 μm) |

Options & Accessories:

- Flange and foot mounting options
- Vacuum chucks
- Precision collet tooling
- Liquid cooling
- Dual element filter/regulator
- Motion controller with programmable operator touch pad
- Custom HMI front ends

*Maximum load capacities - consult ABTech for recommendations on practical loads

~Load capacities are estimated at the front (nose)

~Performance can be affected by method of mounting the spindle and loading

~Radial test data is measured at 1" from spindle nose

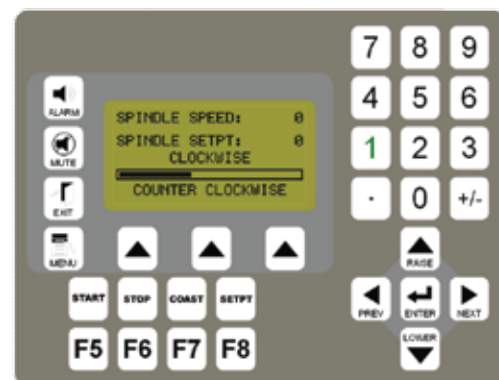
~Error motion accuracies were tested at 5,000 rpm

~Special accuracies can be supplied

~Consult ABTech's engineers for moment loading and stiffness considerations

~Specifications are at 80 psi (5.63 kgf/cm²)

~Specifications are subject to change without notification



Typical motion controller touch pad layout