

Insert speed rated cutting tool in accordance with instructions when control is in 'off' position and tighten fully with wrenches provided.

Optional collet sizes are available up to 1/4" / 6mm max shank capacity.

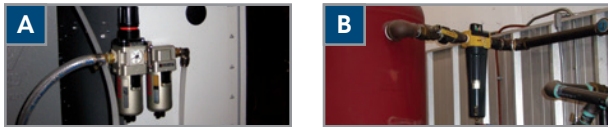
**Air Turbine Tools® must be run at least 10 minutes every 30 days from manufacture date to maintain optimal performance. Run at least 10 minutes before initial use.**

#### Always operate in compliance with:

- Safety code for portable air tools - ANSI 186.1 and all other applicable standards.
- Always use eye + face protection.
- General Industry Safety & Health Regulations, Part 1910 and 2206 OSHA, etc.
- Federal, State and local regulations and laws in your country.
- Cutting tool manufacturers operating instructions. Do not use cutting tools unless they are RPM rated equal to or more than the tool / motor / spindle rpm.
- Air pressure exceeding 100 psi (7 bar) must not be used. Avoid airleaks which reduce power.

Always check 6.2 bar (90 psi) max clean air pressure is unrestricted and supplies flow rate CFM (L/s) stated in specifications. Use flow meter to check air flow. Restrictions due to couplings, hose or filters less internal diameter than specified for your product will result in under-powered performance.

In addition to the to the filter extractor supplied with spindles (picture A), place a large filter on the air line at the compressor where heavy contamination is emitted by the compressor (picture B).



Do not oil or use inline oilers. Oil or contaminated air will damage the tool and void warranty.

**WARNING: FAILURE TO COMPLY WITH ALL SAFETY REGULATIONS COULD RESULT IN SERIOUS INJURY.**



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## User Notes - High Speed Spindles

### SPINDLE NOTES

- A dedicated clean airline is installed to supply air to the spindle. **Ensure Air Supply is turned off before installing your spindle and the Machine door is shut before switching on Air Supply.** Clean, unrestricted air flow is essential at the required 90 psi (6.2 bar) pressure and flow rate is required for full power performance. A filter extractor is supplied as Standard Equipment with 600 Series Spindles. Avoid using lubricant contaminated hoses which can result in oil in the motor.
- Ensure you have a concentric speed rated end mill by consulting manufacturer's speed and feeds / depth of cut recommendations. Securely tighten the end mill in the Spindle collet. High Speed milling results in optimal coating performance and extended life. Tool must evacuate chips at high speed.
- Program to turn off lubrication to main spindle, if recommended by your machine manufacturer. Remember to program for resumption of flow when main spindle resumes rotation. When an Air Turbine Spindle is mounted, ensure Machine Spindle is at "0" rotation at all times and for your machine spindle to advance without rotating.
- To automate the loading of your *Air Turbine Spindles®* use our patented Toolchanger Mounting Assembly (comprising a collar connecting to a mounting block for your brand of machine, or the universal mounting block). **The block must be screwed in to the holes in the main spindle.** Screw holes are pre-drilled for your machine's screw configuration or can be drilled by the CNC user in the required positions in the universal mounting block. **Check clearance of auto-loading cycle in to the magazine holding spindles.** The connector air plug from the TMA Spindle collar is adjustable for height so as to fit the dimension between the collar and the air connector block.
- Follow normal procedures to zero the offset for your spindle when mounted in your machine. *Air Turbine Spindles®* has an offsetting procedure available upon request. Certificate of conformity states offset.
- At governed high speed fast light passes achieve faster production and a finer finished surface. Frequent high speed passes result in precision and economical air usage.
- On Integrated Tool Holder models each machine manufacturer specifies the pull plug for CAT, BT or DIN (SK) configurations. *Air Turbine Spindles®* are available with metric and inch size screw threads compatible with most pull plug types.

- *Air Turbine Spindles®* load automatically either using air from the machine or an external dedicated line to our patented Toolchanger Assembly (TMA).
- If your machine has air in its spindle center air feed through the tool holder can be used on the 602 / 625 units if the coolant or air channel used is cleaned by a purge. The channel internal diameter for its full length must be greater than 6.5mm so that sufficient airflow CFM (L/s) will pass at the required pressure. Some pull plugs allow sufficient airflow to pass, or your plug can be drilled with a hole to permit airflow to reach your spindle without using TMA.
- Check airflow against specification with a flow meter.
- Your spindle has 2 air inlets (rear + side) as shown below. Ensure the inlet not in use is closed. If you hear a loud noise or have under power performance check to see the screw plug is in place in the second inlet.



- All HSK Spindles can receive center air feed from clean coolant channels if of sufficient internal diameter to allow sufficient airflow to pass and set up to auto change using a solenoid and the coolant channel connector tube. Again it is essential to purge the channel so clean airflow passes. Ensure no small couplings constrict airflow. Check airflow against specification with a flow meter.
- Coolant or air may be directed at the cutting tip of your end mill but coolant should not flood or ride up to the body of your spindle. Program to switch off coolant jets before the air flow.
- *Air Turbine Spindles®* must be run at least 10 minutes every 30 days from manufacture date to maintain optimal performance. Run at least 10 minutes before initial use.

Please see full installation notes, spindle quick set up guide and videos at [www.airturbinetools.com](http://www.airturbinetools.com).

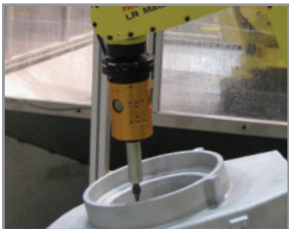
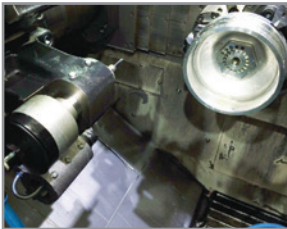
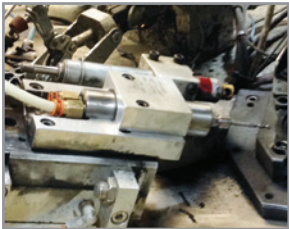


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### GENERAL NOTES

These are abbreviated extracts from user / safety regulations. Read and comply with the full regulations and notes available on-line.

- Prior to inserting any cutting tool, check the RPM with a tachometer to ensure that the actual speed does not exceed the rated speed. This check should be performed at least once every 20 hours of use, or once weekly, whichever occurs more frequently.
- Always use OSHA approved eye and face protection.
- Check to make sure the collet is fully tightened. Use wrenches provided.
- Air pressure must not exceed 100 psi (7.2 bar).
- Use only concentric speed rated cutting tools. If tool vibrates, do not use it.
- Only operate tool in a protected area.
- *Air Turbine Motors®* must be run at least 10 minutes every 30 days from manufacture date to maintain optimal performance. Run at least 10 minutes before initial use.



Use good judgment.  
Remember, this is a powerful tool. Use with caution.

### MOTOR NOTES

- Only use speed rated cutting tools and dry clean unrestricted air supply at 90 psi (6.2 bar) pressure at the specified CFM (L/s) flow rate. Turn off air before installing your motor or cutting tool. Select a small size, speed rated cutting tool capable of evacuating chips at high speed.
- Mount fixtures on indicated area (center of steel sleeve on aluminum 202, 210 and 400 motors) and not over bearings. Angular contact bearings available for drilling applications.
- If drilling rubber band stop the band completely before the motor descends to drill.
- Outside Diameter Tolerance on 700 Series is h7 tolerance (0 / -21µm). 700 Series units are sealed with hose exhaust and suitable for lathe use/swiss automatic fixturing.
- If you motor vibrates, is hot or makes a loud noise, disconnect and send for authorized distributor or factory service. Only use speed rated cutting tools and dry clean unrestricted air supply at 90 psi (6.2 bar) pressure.
- Attach exhaust hose(s) to 700 Series to avoid contamination and meet dBa specifications.

**We would like to have the opportunity to answer any questions you may have concerning the safe operation and efficient use of Air Turbine Tools, Inc. products.**

See specifications, fuller user notes and videos at  
[www.airturbinetools.com](http://www.airturbinetools.com)



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### DO NOT OIL OR LUBRICATE

DRY, CLEAN, OIL FREE 90 PSI / 6.2 BAR AIR SUPPLY ONLY

### IMPORTANT NOTE

**For Hand Tools:** Use couplings / hoses with a minimum ID of 3/16" for 200, 201, 0145 and 0190 units, minimum ID of 1/4" / 6mm for 202, 206X, 525, 2545 and 2590 units, minimum ID of 5/16" for 525X units, minimum ID of 3/8" / 9.5mm for 230 and 310R units and minimum ID of 10mm for 310RX units. **For Motors:** Use couplings / hoses with a minimum ID of 5mm for 720, 722, 730 and 732 units, minimum ID of 1/4" / 6mm for 202 units, minimum ID of 6.5mm for 740MX units, minimum ID of 8mm for 450 and 740XP units, minimum ID of 3/8" / 9.5mm for 210 units and minimum ID of 10mm for 450X units. **For Spindles:** Use couplings / hoses with a minimum ID of 6.5mm for 601, 602, 602X and 625 units, minimum ID of 8mm for 625X and 650 units and minimum ID of 10mm for 650X units. The required flow rate is in your catalog and on [www.airturbinetools.com](http://www.airturbinetools.com). **Pressure must be 90 psi (6.2 bar).** Air CFM (L/s) flow varies with load for maximum efficiency while maintaining high speed under load. Check flow as well as pressure with a flow meter. Use a Reservoir Tank to avoid drop in air flow or pressure at peak load, if required.

**"Speed does the cutting".** It is counterproductive to slow down your motor to stall point. **Fast frequent passes at high peripheral speed optimizes tool life and finish quality.**

### GENERAL NOTES

*Air Turbine Tools®* are governed turbine motors using variable air consumption to maintain high speed and torque under load. Therefore, your tool or spindle will run at less than stall flow unless at full load. **Optimal cutting action occurs with a small Depth of Cut** with the motor operating at constant high speed up and speed will stay in a range close to rated speed up to 80% of rated maximum rated power. It is essential the air supply not be constricted by hoses, pipes, fittings or couplings less than recommended diameters. **Avoid obstructions to airflow causing loss of power.** Use only a concentric speed rated cutting tool matching the capacity of your collet and do not allow the cutting tool to protrude excessively from the collet (3x collet diameter).

Hand Tool Slide valves must be fully opened or closed. Red indicates 'Off' position and green 'On' position.