

## How do I Retrofit Air Turbine Spindles®?

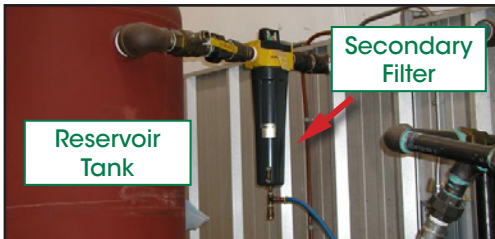
Program for the machine to advance without rotating main spindle (S=0). Read user notes, your CNC manual, and follow all safety precautions. Do not allow your main spindle to rotate with your Air Turbine Spindle™ in place.

Mount your Air Turbine Spindles™ in the main spindle or holder. Do not connect air supply until your setup is complete.

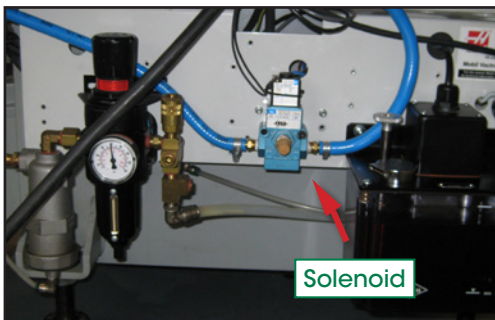
If you have a TMA Autochanger, mount the spindle in the carousel or umbrella.



If air is contaminated by water, mist, etc at compressor output, place an additional filter at that outlet, as shown below.



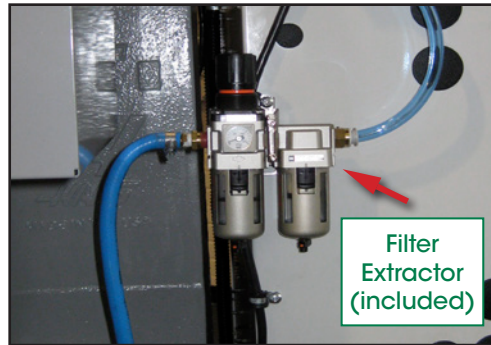
To switch between main spindle air supply and the clean air supply, a solenoid may be used, as pictured below. Contaminated air will damage your spindle so ensure the airflow is clean and dry.



Set up a line supplying dry clean 90PSI / 6.2Bar at the rated CFM / L/S feed rate specified for your spindle in the catalog.

For 650 units - all hoses, connectors and fittings must be greater than 3/8" / 9mm internal diameter. Restricted airflow causes underpowered performance and damages the spindle.

Air Turbine Spindles™ standard equipment includes a 3 micron filter extractor, as pictured below. A reservoir tank is recommended for constant air pressure / flow to maintain constant high speed (see left below)



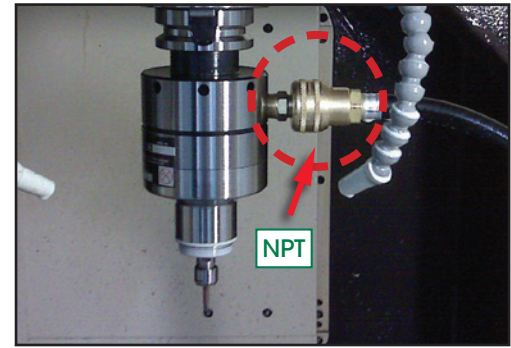
Ensure you have a balanced concentric speed rated end mill securely tightened in the ER collet using keys supplied. Always use eye protection and close the CNC doors before introducing air to your spindle. Ensure your main spindle is locked so it cannot rotate.

Milling techniques at high speed require reference to your endmill manufacturer's speeds and feeds recommendations. Take a light cut and gradually step down.

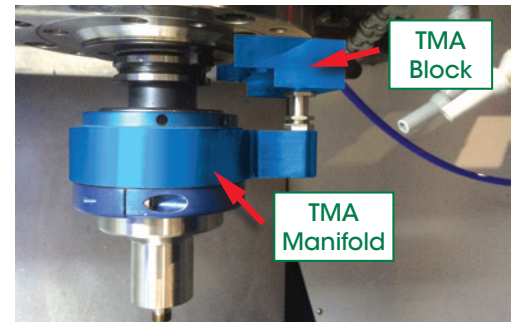
If you hear harmonics or see vibration marks, check you have an appropriate endmill and change the speed of advance or depth of cut.

Direct coolant at the cutting tip only. Do not spray your spindle with coolant, which can enter exhaust points. It is possible to use jets to remove dust/chips with a vacuum extractor pick-up.

**NPT Option** - Plug the hose into the connector of clean air supply to your spindle. Avoid restrictions on the airline.



**TMA Autochanger Spindle Option** - Attach the mounting block to the side of the main spindle using the pre-drilled screw holes in the Doosan mounting blocks.



Adjust the height of the air plug using the screw mechanism to fit your machines dimensions.