


High Speed Spindles Series

Constant High Speed and Torque • 25,000 - 90,000 rpm, <1.4 hp / 1.04 kW

- 
- **Significantly Reduced Cycle Times.**
 - **Patented governed high speed and torque motor - maintains constant high speed and high torque under load.**
 - **Direct drive with only two moving parts. No vanes, gears or brushes to wear, burn up or thermally expand.**
 - **No duty cycle. Ultra low heat and vibration.**
 - **Totally oil-free, low friction powerful motor. Reliable in continuous 24/7 operation. Cooled by turbine air.**
 - **VMC Autochange option for full integration in CNC programs.**

Why are Air Turbine Spindles® different?

- Governed constant high speed and torque under load are maintained by patented governor.
- 25,000 - 90,000 rpm, with power to 1.4 hp / 1.04 kW direct drives.
- This unique powerful turbine motor has no vanes, no gears and no brushes to wear or thermally expand. The only moving parts are the turbine and the bearing sets. The result is less friction, less heat, and long life.
- Allows 24/7 running while substantially reducing cycle times.
- Ideal for Trochoidal milling programs. High speed is maintained under load with continuous angle engagement.
- Higher finish quality and optimized end mill performance.
- Air Turbine's constant high spindle rpm's allow correct surface feeds for small tools, which extend tool life and further reduce costs.
- Profiling, drilling, finishing, engraving and milling with small cutting tools.
- **No duty cycle.** Ceramic bearings cooled by turbine air standard.
- Selectable twin airfeed inlets on 602/625JS and all HSK units - connect to side NPT or through shank rear air inlet.
- Totally oil free - use 90 PSI/6.2 Bar dry clean oil free air only. Use 0.3 micron filter/extractor included. Do not use hoses, fittings, or couplings less than 1/4" / 6mm ID for 602/625 units, less than 3/8" / 9.5mm ID for 625X/650 units, or less than 0.40" / 10mm ID for 650X units.

Ultra Precision (UP) collet option available.

Standard Equipment: Combo filter extractor, spindle, collet*, ER-8 or 11 collet nut, wrenches, plug and carrying case.

*Collet is supplied with each spindle based on part number (i.e. 1/8", 1/4", 3mm, or 6mm). See Price List for part numbers. Optional collets available.

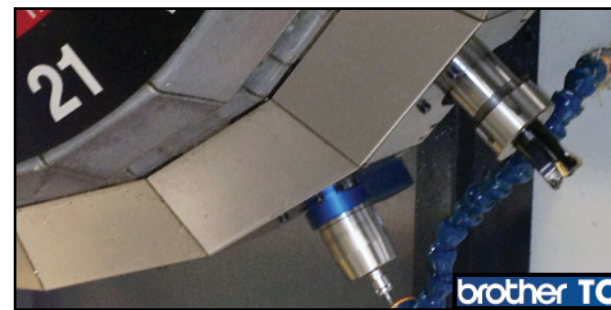
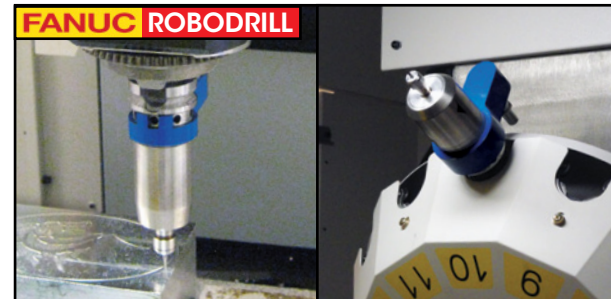
Drill Tap Series | For RoboDrill, Brother TC, and other Drill-Tap Machines

Retrofit your **Drill Tap** machine with the double turbine **602XDT Series** for governed constant high speeds at 40,000, 50,000, 65,000 or 75,000 rpm up to 0.47 hp (0.35 kW) or the **625XDT Series** at 30,000, 40,000, or 50,000 rpm up to 0.90 hp (0.67 kW). Ideal for milling, drilling, engraving, marking, slotting and finishing with small tools.

Patented *Air Turbine Spindles®* maintain high speed and torque while cutting with no gears, vanes or brushes to burn up. The Drill Tap Series require no lubrication and emits no oil mist. With just 2 moving parts, low friction and low heat, the direct drive **602XDT Series** and **625XDT Series**, with automatic loading TMA option, are a powerful, precise and reliable solution to reduce cycle times and increase tool life. **No Duty Cycle.**

For automatic loading from the **Drill Tap** machine, connect the spindle mounted manifold block to a clean, dry (90 PSI / 6.2 Bar) air supply. Contaminated air will damage the Air Turbine spindle. A High Flow Filter Regulator/Extractor (0.3 micron) is included in the spindle price. For manual loading installation of the spindle the side NPT adaptor simply connects to a 1/4" / 6mm ID clean airline.

Automatic tool change adaptor kits are available for most brands of Drill Tap machines, including the Fanuc RoboDrill and Brother TC. Please refer to the Installation Guide at www.airturbinetools.com during installation.

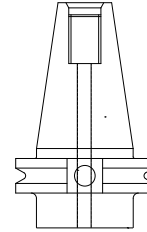
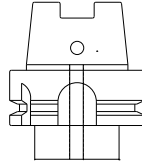
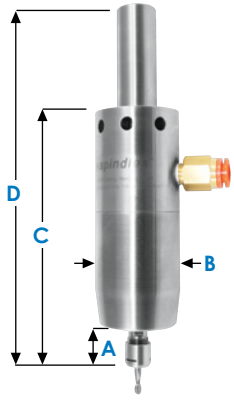


General Specifications	602XDT Models	625XDT Models
Governed Speed rpm	40,000 / 50,000 / 65,000 / 75,000	30,000 / 40,000 / 50,000
Power Rating hp (kW)	0.30 (0.22) / 0.40 (0.30) / 0.45 (0.34) / 0.47 (0.35)	0.8 (0.60) / 0.9 (0.67) / 0.9 (0.67)
Inlet Air Pressure (clean dry air only)	90 PSI (6.2 Bar)	90 PSI (6.2 Bar)
Air Consumption Idle cfm (l/s)	6 (2.8) / 6 (2.8) / 6.14 (2.9) / 6.14 (2.9)	19 (8.97) / 20 (9.44) / 20 (9.44)
Air Consumption Working Flow cfm (l/s)	7 (3.30) - 10 (4.27)	22 (10.38) - 30 (14.16)
Sound Level	Less Than 67 dBA	Less Than 67 dBA
Max Shank Capacity	ER11 - 1/4" (6mm)	ER11 - 1/4" (6mm)
Spindle Weight	66.4 oz (1.88 kg)	96 oz (2.72 kg)

View installation information and installation kits at www.airturbinetools.com

602 Series | General Information

- Increased machine feed rates maintained by governed turbine.
- **Only 2 moving parts** (powerful turbine + ceramic bearings).
- Selectable center or side air feed on JS and HSK units.
- High constant surface feed for small tools.



602 Series Dimensions - Other integrated shank dimensions and specifications available at www.airturbinetools.com

	JS	HSK-A63	BT40
A	0.75" (19mm)	0.75" (19mm)	0.75" (19mm)
B	1.57" (40mm)	1.57" (40mm)	1.57" (40mm)
C	4.69" (119mm)	5.55" (141mm)	6.42" (163mm)
D	6.65" (169mm)	6.69" (170mm)	8.90" (226mm)



90° Head - 601XJS

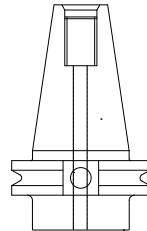
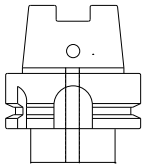
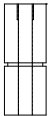
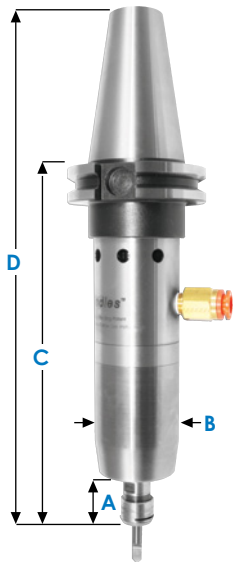
Integrated shank. 3/4", 20mm, or 1/2" shank options available.
Air feed from rear position.



602JS Milling Brass

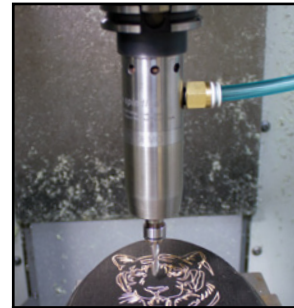
602X Series | General Information

- **X=Double turbine: Extra power maintaining speed and feed rate in corners**
(For max power use side airfeed, except on HSK).
- CAT40, BT30/40, DIN30/40, HSK-A63 and other integrated shank options available.
- Direct Drive - Low Heat - No Duty Cycle. 40,000, 50,000, 65,000 rpm.
- Brass, aluminum, ceramics, glass, graphite, wood, plastics, alloys, precious materials, composites.



602X Series Dimensions - Other integrated shank dimensions and specifications available at www.airturbinetools.com

	JS	HSK-A63	BT40
A	0.98" (25mm)	0.98" (25mm)	0.98" (25mm)
B	1.57" (40mm)	1.57" (40mm)	1.57" (40mm)
C	5.31" (135mm)	6.22" (158mm)	7.01" (178mm)
D	7.28" (185mm)	7.36" (187mm)	9.57" (243mm)



602XCAT40



602XISO20

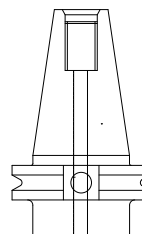
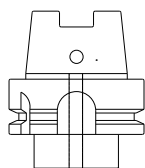
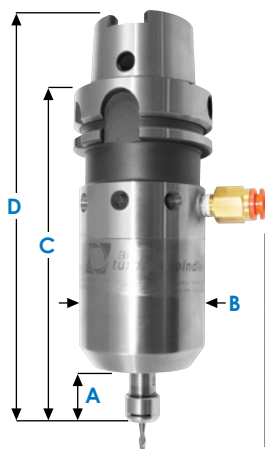
(Fits Haas Office Mill)

General Specifications	602 Models	602X Models
Governed Speed rpm	40,000 / 50,000 / 65,000 / *90,0000	40,000 / 50,000 / 65,000
Power Rating hp (kW)	0.15 (0.11) / 0.2 (0.15) / 0.2 (0.15) / 0.2 (0.15)	0.30 (0.22) / 0.40 (0.30) / 0.45 (0.34)
Inlet Air Pressure (clean dry air only)	90 PSI (6.2 Bar)	90 PSI (6.2 Bar)
Air Consumption Idle cfm (l/s)	4.5 (2.1) / 4.5 (2.1) / 4.5 (2.1) / 5 (2.4)	4 (1.9) / 5 (2.4) / 6 (2.8)
Air Consumption Working Flow cfm (l/s)	5 (2.36) - 6 (3.30)	5 (2.36) - 12 (5.66)
Sound Level	Less Than 67 dBA	Less Than 67 dBA
Max Shank Capacity	ER8 - 1/8" (3mm)	ER11 - 1/4" (6mm)
Spindle Weight	JS: 23.2 oz (0.66 kg) CAT/DIN/BT/HSK: 46.4 oz (1.32 kg)	JS: 26.4 oz (0.75 kg) CAT/DIN/BT/HSK: 63.2 oz (1.79 kg)

*90,000 rpm 602 version is recommended for only special applications with micro end mills. Please call +1.561.994.0500 for more information

625 Series | General Information

- CAT40, BT30/40, DIN30/40, HSK-A63 and other integrated shank options available.
- Selectable center or side air inlet or Automatic Toolchanger.
- Optimize end mill performance with governed high speeds.
- Constant 30,000, 40,000, 50,000 rpm. Direct drive reliability.



625 Series Dimensions - Other integrated shank dimensions and specifications available at www.airturbinetools.com			
	JS	HSK-A63	BT40
A	0.87" (22mm)	0.87" (22mm)	0.87" (22mm)
B	2.24" (57mm)	2.24" (57mm)	2.24" (57mm)
C	5.12" (130mm)	6.06" (154mm)	6.81" (173mm)
D	7.09" (180mm)	7.13" (181mm)	9.37" (238mm)



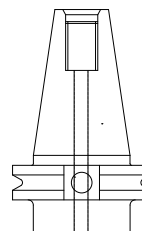
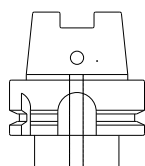
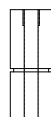
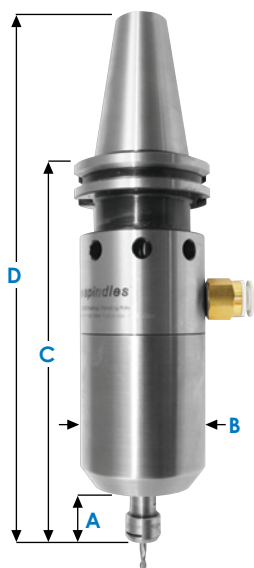
625CAT40TMA



Mold Making

625X Series | General Information

- **X=Double turbine: Extra power maintaining speed and feed rate in corners**
(For max power use side airfeed, except on HSK).
- CAT40, BT30/40, DIN30/40, HSK-A63 and other integrated shank options available.
- Ultra low vibration and heat = durability and precision.
- Reduced cycle times and continuous angle engagement.

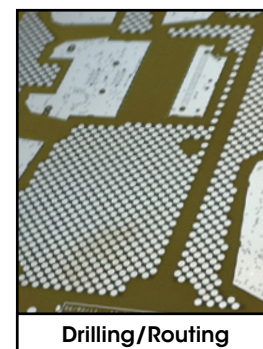


625X Series Dimensions - Other integrated shank dimensions and specifications available at www.airturbinetools.com			
	JS	HSK-A63	BT40
A	0.87" (22mm)	0.87" (22mm)	0.87" (22mm)
B	2.24" (57mm)	2.24" (57mm)	2.24" (57mm)
C	5.55" (141mm)	6.50" (165mm)	7.24" (184mm)
D	7.52" (191mm)	7.56" (192mm)	9.80" (249mm)



NEW - 90° 625X90

90° head for accessing multiple sides of a workpiece without manual rotation.



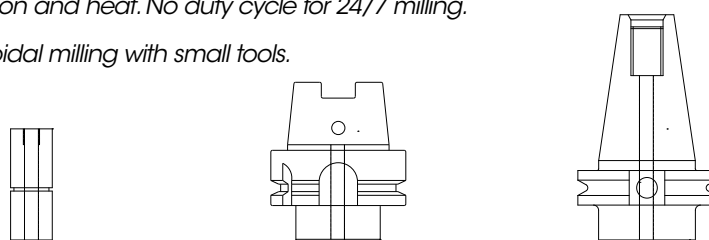
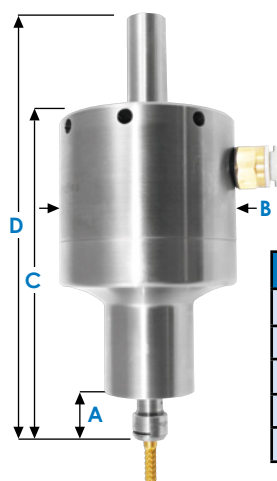
Drilling/Routing

General Specifications	625 Models	625X Models
Governed Speed rpm	30,000 / 40,000 / 50,000	30,000 / 40,000 / 50,000
Power Rating hp (kW)	0.40 (0.30) / 0.45 (0.34) / 0.50 (0.37)	0.8 (0.60) / 0.9 (0.67) / 0.9 (0.67)
Inlet Air Pressure (clean dry air only)	90 PSI (6.2 Bar)	90 PSI (6.2 Bar)
Air Consumption Idle cfm (l/s)	10.5 (4.9) / 11 (5.2) / 11 (5.2)	19 (8.97) / 20 (9.44) / 20 (9.44)
Air Consumption Working Flow cfm (l/s)	11 (5.2) - 20 (9.4)	22 (10.38) - 30 (14.16)
Sound Level	Less Than 67 dBA	Less Than 67 dBA
Max Shank Capacity	ER11 - 1/4" (6mm)	ER11 - 1/4" (6mm)
Spindle Weight	JS: 49.6 oz (1.41 kg) CAT/DIN/BT/HSK: 81.6 oz (2.31 kg)	JS: 64 oz (1.81 kg) CAT/DIN/BT/HSK: 96 oz (2.72 kg)

View installation information and installation kits at www.airturbinetools.com

650 Series | General Information

- Mill at super high feed rates at governed constant 25,000, 30,000, 40,000 rpm.
- CAT40/50, BT40/50, DIN40, HSK-A63/A80 Integrated Tool Holder Options Available.
- Our workhorse with double front ceramic bearings standard.
- Ultra low vibration and heat. No duty cycle for 24/7 milling.
- Ideal for Trochoidal milling with small tools.



650 Series Dimensions - Other integrated shank dimensions and specifications available at www.airturbinetools.com			
	JS	HSK-A63	BT40
A	0.87" (22mm)	0.87" (22mm)	0.87" (22mm)
B	3.23" (82mm)	3.23" (82mm)	3.23" (82mm)
C	5.79" (147mm)	7.76" (197mm)	7.44" (189mm)
D	7.76" (197mm)	8.66" (220mm)	10.0" (255mm)



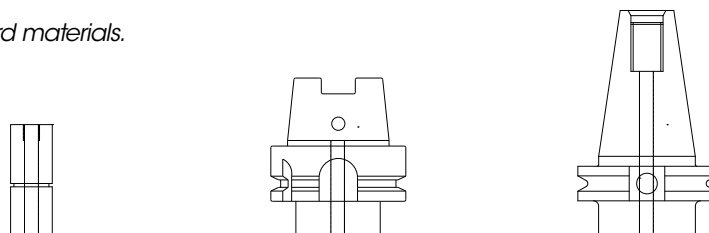
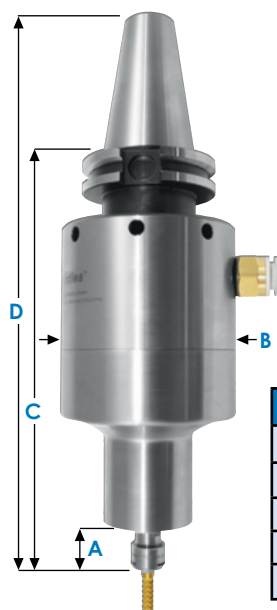
650CAT40TMA



650JSL
Extended Version

650X Series | General Information

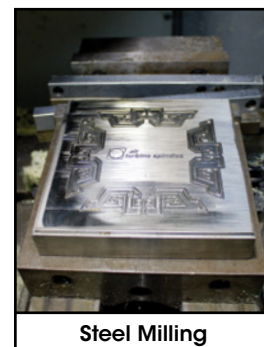
- **Powerful double turbine: 1.4 hp / 1.04 kW with low heat and low vibration**
(For max power use side airfeed, except on HSK).
- Maintains high torque under load for high feed rates. Optimizes end mill performance.
- Continuous toolpath engagement with constant feed rate.
- Suitable for hard materials.



650X Series Dimensions - Other integrated shank dimensions and specifications available at www.airturbinetools.com			
	JS	HSK-A63	BT40
A	0.87" (22mm)	0.87" (22mm)	0.87" (22mm)
B	3.23" (82mm)	3.23" (82mm)	3.23" (82mm)
C	6.26" (159mm)	8.23" (209mm)	7.91" (201mm)
D	8.23" (209mm)	9.13" (232mm)	10.5" (267mm)



650XCAT40



Steel Milling

General Specifications	650 Models	650X Models
Governed Speed rpm	25,000 / 30,000 / 40,000	25,000 / 30,000 / 40,000
Power Rating hp (kW)	0.76 (0.57) / 0.83 (0.62) / 0.88 (0.66)	1.2 (0.90) / 1.3 (0.98) / 1.4 (1.04)
Inlet Air Pressure (clean dry air only)	90 PSI (6.2 Bar)	90 PSI (6.2 Bar)
Air Consumption Idle cfm (l/s)	13 (6.1) / 14 (6.6) / 14 (6.6)	16 (7.56) / 17 (8.02) / 18 (8.49)
Air Consumption Working Flow cfm (l/s)	14 (6.60) - 35 (16.5)	19 (8.97) - 40 (18.89)
Sound Level	Less Than 67 dBA	Less Than 67 dBA
Max Shank Capacity	ER11 - 1/4" (6mm)	ER11 - 1/4" (6mm)
Spindle Weight	JS: 65.8 oz (1.95 kg) CAT/DIN/BT/HSK: 112.8 oz (3.20 kg)	JS: 75.2 oz (2.13 kg) CAT/DIN/BT/HSK: 118.4 oz (3.34 kg)

View installation information and installation kits at www.airturbinetools.com

Mounting Options

Straight Shank (JS)



3/4" or 20mm JS units combine with ER32 or other toolholders for infinite compatibility.

Integrated Shank



For integrated shank mounting options select from CAT30/40/50, BT30/40/50, DIN30/40, HSK-A63/A80 (650 only) and many other integrated options to provide rigidity.

Toolchanger Mounting Assembly



Toolchanger assembly and mounting block compatible with Haas, Fanuc Robodrive, Brother, Mazak, and most popular CNC/VMC machines. Integrate high speed in your production.

Toolchanger Mounting Assembly

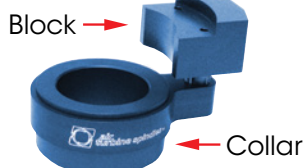
Automatically load *Air Turbine Spindles*® in CNC machines with our wrap-around Toolchanger Mounting Assembly (TMA) (patent pending). This option allows CNC tool-changers to automatically load/unload our family of high speed precision spindles using a proprietary collar system and mounting block integrated to the right side of the CNC spindle in minutes. The mounting block connects to a clean airline and solenoid. Filter extractor included with spindle.

Pre-machined spindle mounting blocks designed for popular CNC machines are available. A Universal block is available for custom mounting applications. The TMA block remains on the CNC spindle for normal tool changes, even if not using the *Air Turbine Spindles*® as it will not interfere when using the main spindle. View Set Up videos and full installation Guide and Kits at http://www.airturbinetools.com/set_up.html.

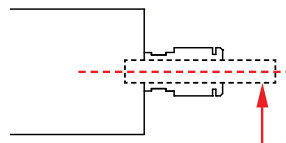
Due to *Air Turbine Spindles*® center airfeed option, the TMA option is not required for automatic spindle changes on VMC's where coolant channel can be used to supply sufficient CFM / L/S air flow. *Air Turbine Spindles*® Center Airfeed can be used if coolant channel has 1/4" / 6mm internal diameter for 601/602/625 models. Not suitable for 625X/650(X) models, except all HSK spindles, including 625X and 650 Series, can be used with center airfeed if coolant channel has sufficient internal diameter (3/8" / 9mm required for 625X and 650, 0.40" / 10mm required for 650X). Coolant channel and connector tube must be purged and cleaned before dry, clean 90 PSI / 6.2 Bar air is induced.



Toolchanger Mounting Assembly



T.I.R. Certificate



A certificate stating T.I.R. of spindle taper, 3x I.D. of collet, and vertical alignment accompanies every spindle.



Distributor



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www.airturbinetools.com



Direct Drive Reliability

Do not use couplings/hoses less than 1/4" / 6mm internal diameter. Use couplings / hoses with a minimum internal diameter of 3/8" / 9.5mm for 625X and 650 units, and 0.40" / 10mm for 650X units. Always use a 0.3 micron filter and/or extractor where required and check specified PSI or L/S air flow. Use 90 PSI / 6.2 Bar clean, dry, oil-free air only. Use eye protection and follow safety instructions. Supply is subject to Air Turbine Technology Inc. (ATT) distributor policies and upon terms contained in the ATT distributor agreement. Subject to availability, change of specifications, price and terms without notice. All specifications approximate.

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