



**air**  
**turbine spindles™**  
*the tools of a new generation™*

## Constant High Speed and Torque 600 Series Spindles

**25,000RPM - 90,000RPM, <1HP / 1kW**

- *Patented governed high speed and torque motor - maintains high speed and torque under load.*
- *Direct drive with no vanes or gears, and no brushes to burn up.*
- *25,000 to 90,000 RPM up to 1.HP / 1.kW.*
- *Certified TIR 0.0002" [0.005mm].*
- *Ceramic bearings standard - double front bearings on 602/650.*
- *Totally oil-free, low friction motor - high reliability in continuous 24/7 operation. Cooled by turbine air - low thermal expansion.*
- *Efficient governed low air consumption.*
- *3/4" or 20mm Straight Shank or integrated CAT/BT/DIN/HSK.*
- *Autochange option for VMC's.*

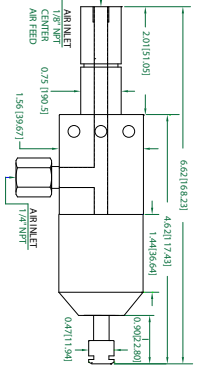


Milling, Profiling, Drilling, Engraving,  
Metal, Plastics, Wood, Ceramics.

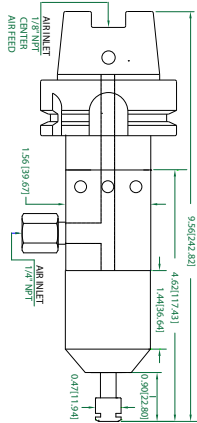
# 602 - Double Front Ceramic Bearings



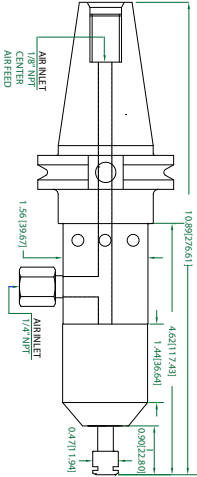
**602JS**



**602HSK**



**602CAT/BT/DIN**



General Specifications - 602 Models			
Governed Speed RPM	40,000 / 50,000 / 65,000 / 90,000	Inlet Air Pressure (clean dry air only)	90 PSI [6,2 Bar]
Power Rating HP [KW]	.15 [.11] / .2 [.15] / .2 [.15] / .2 [.15]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	4.5 [2.1] / 4.5 [2.1] / 4.5 [2.1] / 5 [2.4]	Sound Level	Less Than 67 dBa
Working Air Consumption CFM [L/S]	5 [2.36] - 6 [3.30]	Max Shank Capacity	1/8" [3mm]

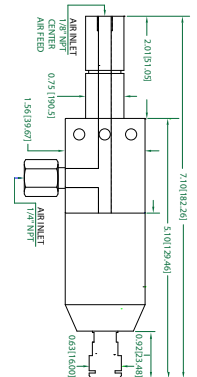
Spindle Weight
JS (Straight Shank)
23.2 oz [0.66 kg]
CAT/DIN/BT/HSK
46.4 oz [1.32 kg]

# 602X - Double Turbine: Extra Power

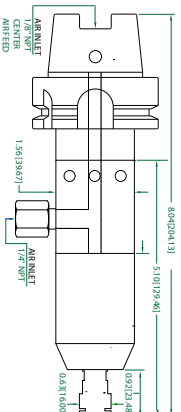
(For max power use side airfeed, except on HSK)



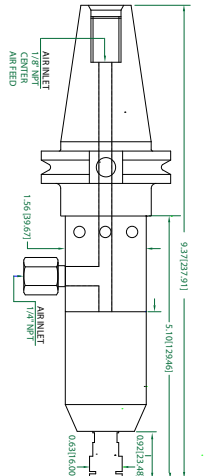
**602XJS**



**602XHSK**



**602XCAT/BT/DIN**



General Specifications - 602X Models			
Governed Speed RPM	40,000 / 50,000 / 65,000	Inlet Air Pressure (clean dry air only)	90 PSI [6,2 Bar]
Power Rating HP [KW]	0.30 [0.22] / 0.40 [.30] / 0.50 [0.37]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	4 [1.9] / 5 [2.4] / 6 [2.8]	Sound Level	Less Than 67 dBa
Working Air Consumption CFM [L/S]	5 [2.36] - 12 [5.66]	Max Shank Capacity	1/4" [6mm]

Spindle Weight
JS (Straight Shank)
26.4 oz [0.75 kg]
CAT/DIN/BT/HSK
63.2 oz [1.79 kg]

# Constant High Speed Precision Spindles

## Why are Air Turbine Spindles™ different?

- Governed Constant high speed and torque under load. 25,000 - 90,000 RPM, up to 1.4HP [1.04 kW]. TIR: 0.0002" [0.005mm].
- This unique powerful turbine motor has no vanes, no gears and no brushes to burn up. The only moving parts are the turbine and the bearing sets. The result is less friction, less heat, and long life with less repairs. Less thermal expansion means greater accuracy and 24/7 working with no burnout.
- Faster Surface Cutting Rates, Finer Finish Quality, Improved Accuracy and Cutting Action. High speed cutting extends cutting tool life.
- Ceramic bearings cooled by turbine air standard. Selectable twin airfeed inlets on JS units - side NTP or through shank (patent pending).
- Totally oil free - use 90 PSI [6.2 BAR] dry clean oil free air only. Use 3 micron filter/extractor included. Do not use hoses, fittings, or couplings less than 1/4" [6mm] internal diameter or 3/8" [7.5mm] internal diameter for 625X/650 units.
- Automatic Toolchanger system: TMA (patent pending). TMA includes manifold collar and block.

**\*\* Standard Equipment:** Combo filter extractor, spindle, collet, wrenches, plug (for alternate air inlet not in use) and carrying case. \*\*

### Straight Shank (JS)



3/4" or 20mm JS units mount direct to your mill or combine with a ER32 collet chuck for infinite compatibility.

### Integrated Toolholder (IT)



For toolholder mounting select from CAT40, BT40, SK40, HSK-A63, HSK-A80 (650 only) and many other integrated options to provide rigidity and 0.0002" [0.005mm] TIR.

### IT + Toolchanger Mounting Assembly



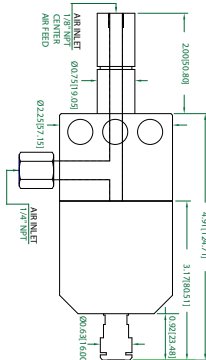
Toolchanger assembly and mounting block compatible with Haas, Fadal and many other CNC/VMC machines. Integrate for high speed in your program.

**625** - A certificate of T.I.R inside collet, at extension 3x collet I.D., and overall vertical alignment accompanies spindles

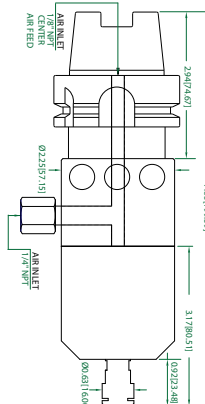


ER-11

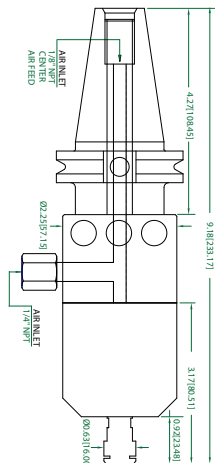
**625JS**



**625HSK**



**625CAT/BT/DIN**



### General Specifications - 625 Models

Governed Speed RPM	30,000 / 40,000 / 50,000	Inlet Air Pressure (clean dry air only)	90 PSI [6.2 Bar]
Power Rating HP [KW]	0.40 [0.30] / 0.45 [0.34] / 0.45 [0.34]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	10.5 [4.9] / 11 [5.2] / 11 [5.2]	Sound Level	Less Than 67 dBA
Working Air Consumption CFM [L/S]	11 [5.2] - 20 [9.4]	Max Shank Capacity	1/4" [6mm]

### Spindle Weight

<b>JS (Straight Shank)</b>	49.6 oz [1.41 kg]
<b>CAT/DIN/BT/HSK</b>	81.6 oz [2.31 kg]

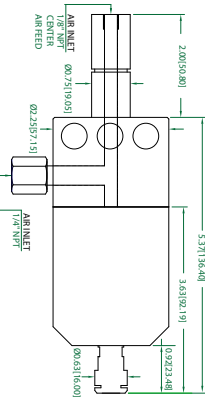
# 625X - Double Turbine: Extra Power

(For max power use side airfeed, except on HSK)

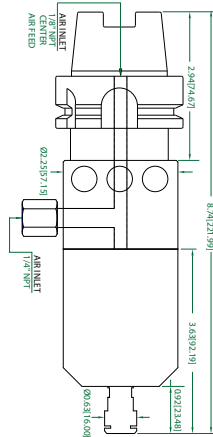


ER-11

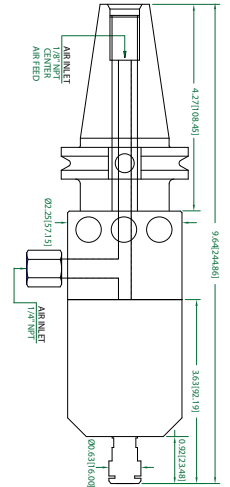
625XJS



625XHSK



625XCAT/BT/DIN



General Specifications - 625X Models			
Governed Speed RPM	30,000 / 40,000 / 50,000	Inlet Air Pressure (clean dry air only)	90 PSI [6.2 Bar]
Power Rating HP [KW]	0.8 [0.60] / 0.9 [0.67] / 0.95 [0.70]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	19 [8.97] / 20 [9.44] / 20 [9.44]	Sound Level	Less Than 67 dBA
Working Air Consumption CFM [L/S]	22 [10.38] - 30 [14.16]	Max Shank Capacity	1/4" [6mm]

Spindle Weight	
JS (Straight Shank)	64 oz [1.81 kg]
CAT/DIN/BT/HSK	96 oz [2.72 kg]

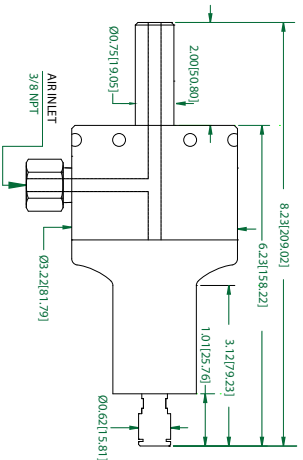
# 650 - Mill Steel at 1,500"/3,800cm per minute at governed constant 40,000RPM

(650JSL Extended Version Available)

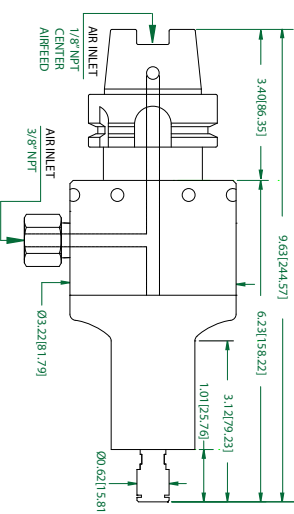


ER-11

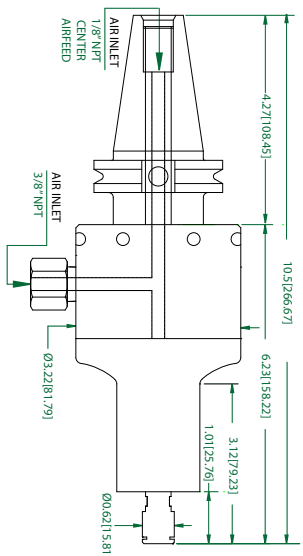
650JS



650HSK



650CAT/BT/DIN



General Specifications - 650 Models			
Governed Speed RPM	25,000 / 30,000 / 40,000	Inlet Air Pressure (clean dry air only)	90 PSI [6.2 Bar]
Power Rating HP [KW]	0.76 [0.57] / 0.83 [0.62] / 0.88 [0.66]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	13 [6.1] / 14 [6.6] / 14 [6.6]	Sound Level	Less Than 67 dBA
Working Air Consumption CFM [L/S]	14 [6.60] - 35 [16.5]	Max Shank Capacity	1/4" [6mm]

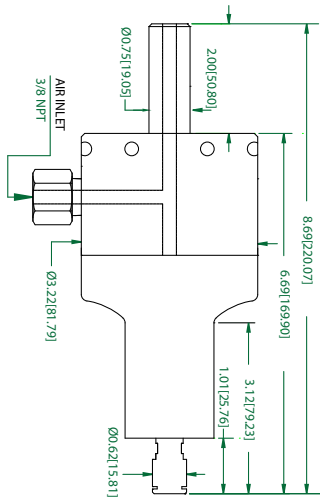
Spindle Weight	
JS (Straight Shank)	65.8 oz [1.95 kg]
CAT/DIN/BT/HSK	118.4 oz [3.36 kg]

# 650X - Double Turbine: 1.4HP [1.04kW]

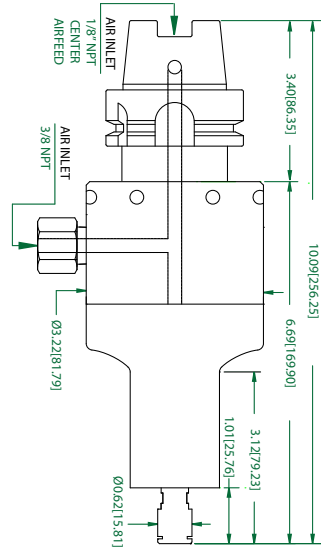
(for max power use side air feed except on HSK)



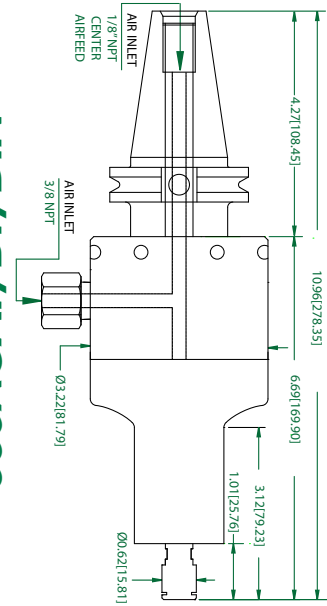
**650XJS**



**650XHSK**



**650XCAT/BT/DIN**



## General Specifications - 650X Models

Governed Speed RPM	25,000 / 30,000 / 40,000	Inlet Air Pressure (clean dry air only)	90 PSI [6.2 Bar]
Power Rating HP [KW]	1.2 [0.90] / 1.3 [.98] / 1.4 [1.04]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	16 [7.56] / 17 [8.02] / 18 [8.49]	Sound Level	Less Than 67 dBa
Working Air Consumption CFM [L/S]	19 [8.97] - 30 [14.16]	Max Shank Capacity	1/4" [6mm]

## Spindle Weight

JS (Straight Shank)	75.2oz/2.13kg
CAT/DIN/BT/HSK	118.4oz/3.34kg

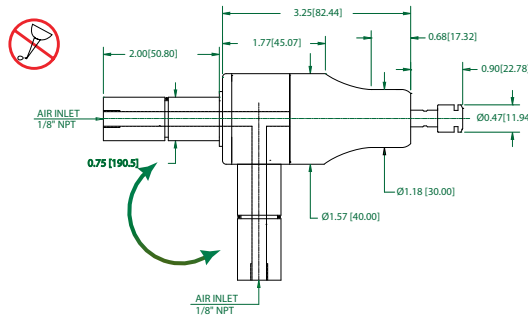
# 601XJS



40,000 - 65,000 RPM

0.50 hp (0.34 kW)

• 90° Head with Switchable 3/4" or 20mm Shank. Note: Head switch requires loctite.



601XISO20  
(Fits Haas Office Mill)

## General Specifications - 601X Models

Governed Speed RPM	40,000 / 50,000 / 65,000	Inlet Air Pressure (clean dry air only)	90 PSI [6.2 Bar]
Power Rating HP [KW]	.30 [.22] / .40 [.30] / .50 [.34]	TIR for JS, CAT, BT, HSK, DIN	Less than 0.0002" [0.005mm]
Idle Air Consumption CFM [L/S]	5 [2.4] / 6 [2.8] / 6 [2.8]	Sound Level	Less Than 67 dBa
Working Air Consumption CFM [L/S]	7 [3.30] - 10 [4.72]	Max Shank Capacity	1/8" [3mm]



Lathes



700MX

Lab Mills



701MX

Swiss Automatics



705MX

Finishing, Drilling



202HD

Routing



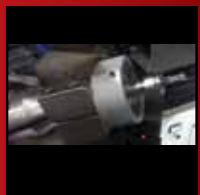
430HD

700 Series feature sealed motors with hose exhaust for mounted applications: Ideal for lathes, swiss automatics and robotics. Only two moving parts: governed turbine and ceramic bearings. 5 micron accuracy. Faster production - milling, drilling, finishing.

Finishing • Routing • Deburring

Drilling Plastic • Rubber • Grinding

Deburring • Aluminum • Steel • Brass





# Toolchanger Mounting Assembly

Autochange for constant high speed + torque. *Air Turbine Spindles™* wrap-around toolchanger mounting assembly (TMA), (patent pending) rotates to load into a proprietary mounting block screwed into your VMC or CNC. Mounting blocks compatible with Haas, Hurco, MAG Fadal, Mazak and other CNC manufacturers are available, or a universal block can be provided for drilling your CNC screw positions. Mill 1,500" [3,800cm] per minute.

Due to *Air Turbine Spindles™* center airfeed option, TMA is not required on VMC's where coolant channel can be used to supply sufficient CFM / L/M 90PSI/6.2BAR air flow. *Air Turbine Spindles™* center airfeed can be used if coolant channel has 1/4" [6mm] internal diameter for 601/602/625 models or 3/8" [7.5mm] internal diameter for 625X/650(X) models. Not suitable for 625X/650(X) CAT/DIN/BT models due to internal diameter requirements for airflow. All HSK spindles can be used with center airfeed. Coolant channel must be purged before air is induced. TMA Assembly includes spindle manifold collar and mounting block assembly with adjustable height plug.



TMA Block + Collar

Toolchanger Mounting Assembly	
Models	Part #
602/602X - Universal TMA (Block & Assembly)	36227
625/625X - Universal TMA	36228
650/650X - Universal TMA	36229
<b>Haas</b>	
602/602X - Haas TMA	36218
625/625X - Haas TMA	36219
650/650X - Haas TMA	36220
<b>MAG Fadal</b>	
602/602X - MAG Fadal TMA	36221
625/625X - MAG Fadal TMA	36222
650/650X - MAG Fadal TMA	36223
<b>Mazak</b>	
602/602X - Mazak TMA	36224
625/625X - Mazak TMA	36225
650/650X - Mazak TMA	36226
<b>Hurco</b>	
602/602X - Hurco TMA	36270
625/625X - Hurco TMA	36271
650/650X - Hurco TMA	36272

A certificate stating T.I.R. inside collet, at collet extension 3x collet I.D. and vertical alignment accompanies spindle.

Distributor:



## air turbine spindles™

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