BRIDGEPORT XT630 5AX

Superior Machine Accuracy and Repeatability

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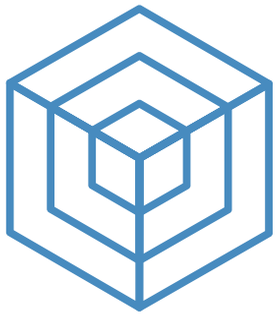
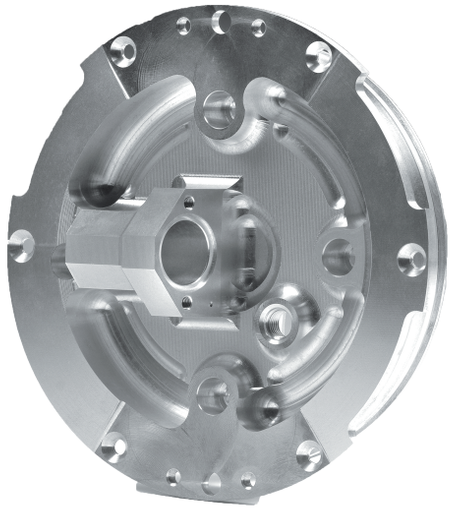
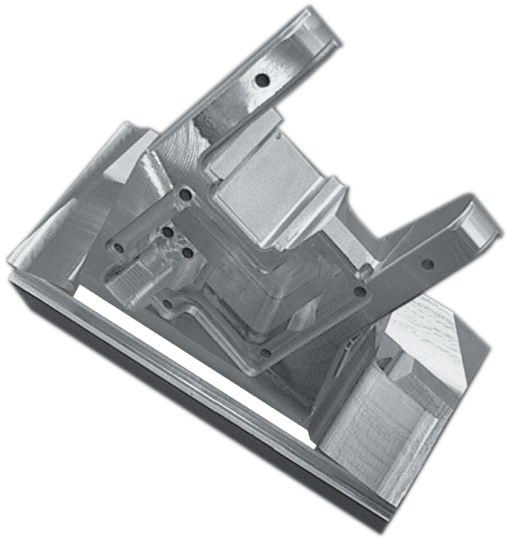
5-AXIS TECHNOLOGY





The Bridgeport XT630 5AX 5-Axis CNC machining centers are designed for accuracy, speed and productivity. They are built to provide years of dependable machining on parts requiring consistent tolerances, tough to machine materials and fine surface finishes.

The XT630 5AX features a robust traveling beam design on an extremely rigid cast iron base.



STANDARD FEATURES

The Bridgeport XT630 5AX has been designed to stand above all other machines in its class. With a wide range of options to choose from, this makes this 5-axis machine the best in class against competitive machining centers worldwide. Higher end features have been designed into the XT630 5AX machines, while streamlining overall cost to provide a very price competitive machine for the higher end market.

MACHINE OPTIONS

- C-Axis Rotary Encoder
- X/Y/Z Axis Linear Scale
- Chip Conveyor, Hinge Type (W=500)
- Coolant through Spindle (280PSI)
- Mist Collector (1.5Kw, Airflow 33.3m3/min)
- Renishaw Tool & Part Probe (OMP40-+OTS)
- Blum Tool & Part Probe (TC 52 + TC S4-20)
- Dynamic Collision Monitoring
- 48 Position 40 Taper Tool Magazine
- 60 Position 40 Taper Tool Magazine
- Siemens KinimaticAlignment Software

FEATURES

- 15,000 RPM Direct Coupled Spindle with Oil Chiller & Air/Oil Mist
- BIG-PLUS® BBT 40 Spindle
- 24-station Swing Arm ATC
- CNC Control – Heidenhain iTNC 640
- Coolant Chip Flush System
- Coolant Wash down Gun-Automatic
- Auto Central Grease Lubrication
- A-Axis Rotary Encoder
- Leveling Pad and Screw
- Retention Knobs
- CTS Preparation with Deublin Rotary Union
- Auto Door Magazine
- Spindle Circular Flushing
- Scraper Type Conveyor
- Auto Power Off
- Work Light
- Three Color Stack Light

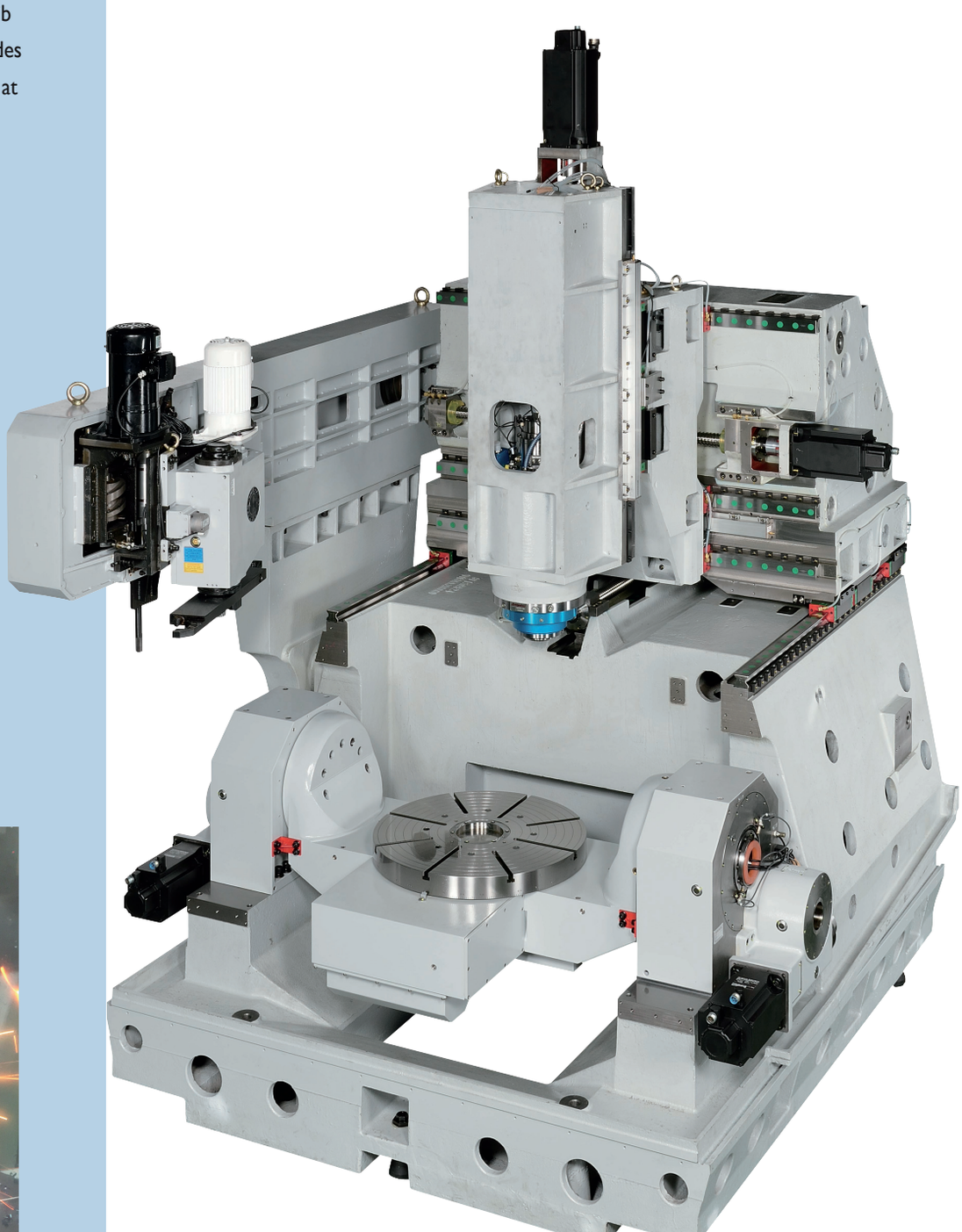
MACHINE CONSTRUCTION

MACHINE STRUCTURE

- The honey-comb like reinforced-rib radial and peripheral design provides optimum strength to weight ratio at minimum weight.

- The head casting is symmetrically designed about the X-axis and appropriate weight balance in the Z-axis and minimizes heat migration to the head structure.

- The machine design incorporates a twin drive system on the A-axis for higher overall stiffness with minimal for better distribution of cutting forces.



KEY FEATURES

The 4th and 5th axis trunnion table is anchored to the single piece base casting and also equipped with twin motors for the tilt axis. The motors operate in synchronized torque mode to minimize backlash and further enhance repeatable precision achieving to higher overall accuracy.

The table capacity of 350kg has a wide gap between the ends of the trunnion exhibiting a 930mm capacity of swing diameter. The tilt axis ranges from +30° to -120° has a fast rotational speeds up to 20 rpm and the C axis has continuous 360° rotation at 25rpm.

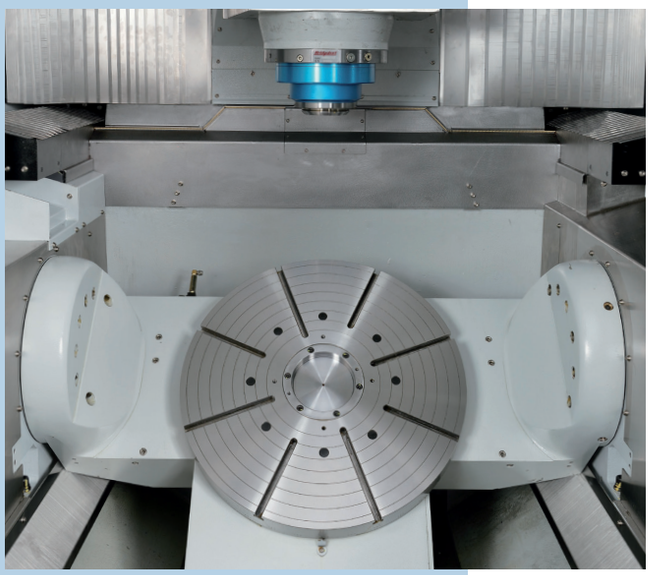
TILT ROTARY TABLE

- 5 Axis Simultaneous Motion
- Table Diameter Size:
  24.80" (630mm)
- Max. Work Piece Diameter:
  35.4" x 13.4" (900mm x 340mm)
- Tilting degree (A degree):
  +30°~ -120°
- C-axis Rotation: 360°
- Load Capacity: 771 lbs (350 kgs)
- Clamping Torque:
  C-axis: 2360 ft-lbs (3200 Nm
  A-axis: 3687 ft-lbs (5000 Nm)
- T slots: 0.551" (14mm) x 4

TOOL CENTER POINT

A key control function that continuously keeps track of the tool center point during all axis interpolation.

KEY FEATURES



This system provides a stiffer interface between the spindle and the tool holder along with minimizing run out on extended tool and better overall rigidity.

STANDARD ISO-40 DUAL CONTACT TAPER SPINDLE

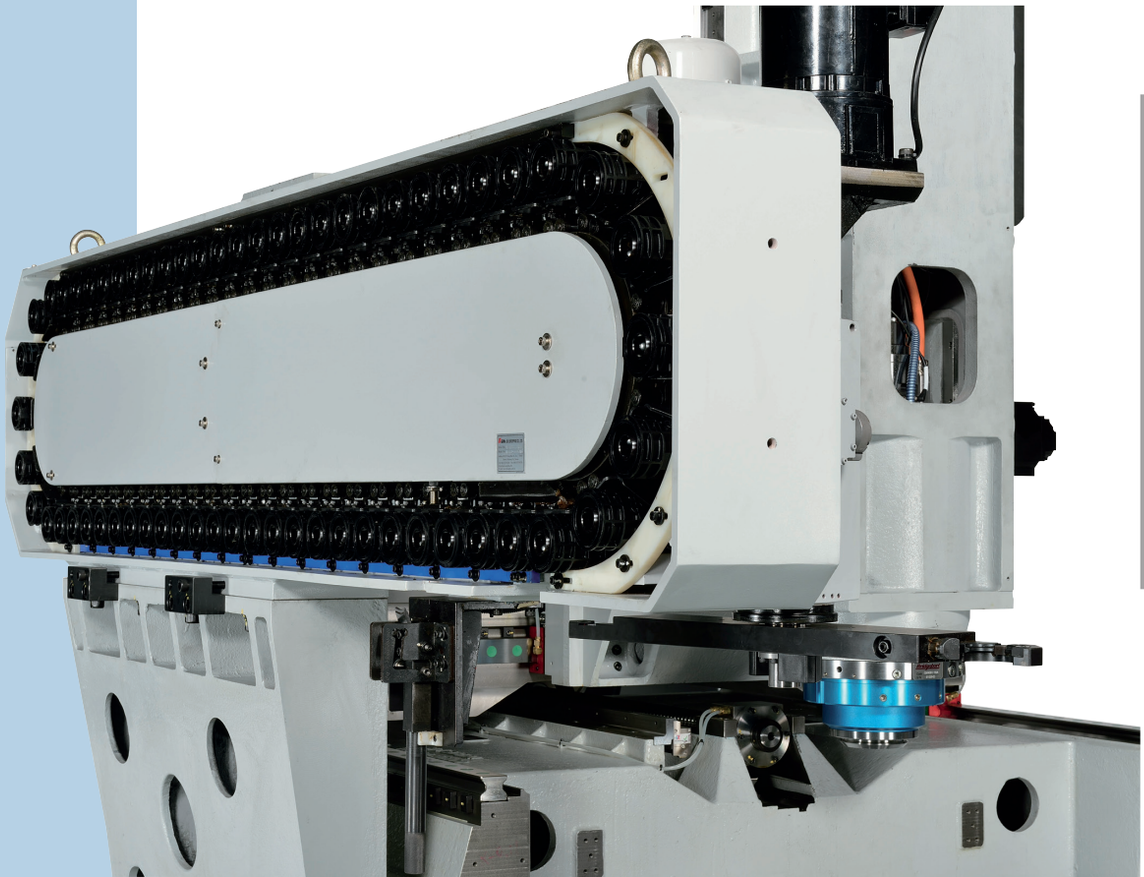
The ISO-40 "V" flange Dual Contact Taper spindle design is also known as BIG-PLUS®. The fully-enclosed hardened and precision ground, pre-loaded ball bearing design allows simultaneous face and taper contact when the tool is clamped in the spindle.

LARGE CAPACITY, FAST PERFORMANCE AUTOMATIC TOOL CHANGERS

The ATC is fully supported by the column, allowing fast, vibration-free operation to increase machine accuracy and surface Finish requirements

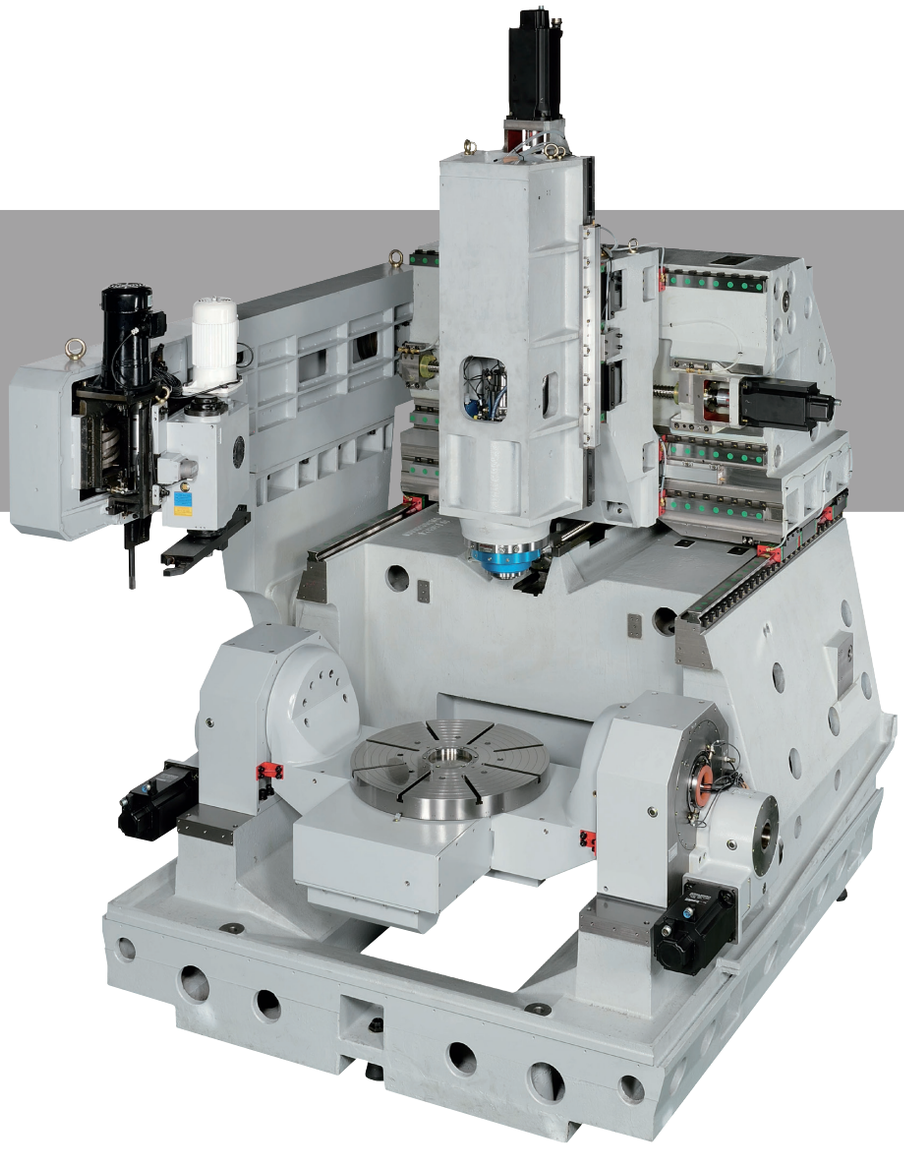
The ATC cam is driven by an inverter type motor allowing fast, easy tool change recovery in the event of a collision or fault.

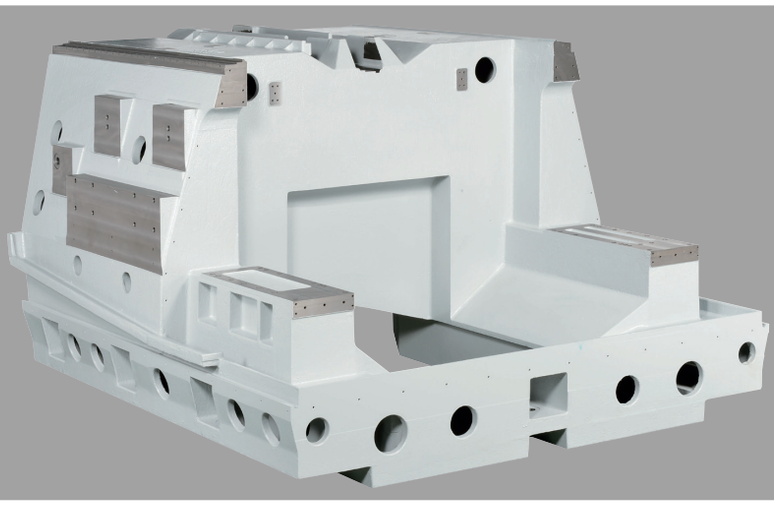
- Standard ATC is 24 tool (max)
- Max. Tool Diameter: Full Drum: 3.15" (80mm)
- Max. Tool Diameter (Adj. Pockets Empty): 4.9" (125mm)
- Max. Tool Length: 11.81" (300mm)
- Max. Tool Weight: 17.6 lbs. (8 kg)
- Tool Change Time: Tool to tool – < 2.0 sec Chip to chip – < 5.0 sec



DIRECT DRIVE SPINDLE

- 15,000 rpm DDS
- 18.7 hp (14 kW)
- 65.6 ft-lbs (89 Nm)
- BIG Plus 40 & HSK-A63

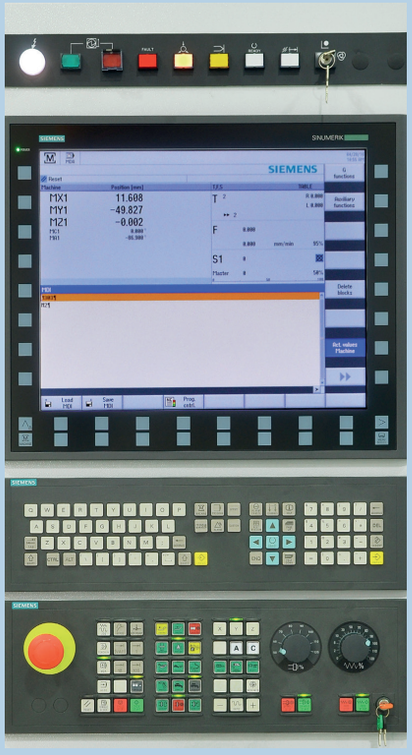




MACHINE BASE

- The base was designed using FEA (Finite Element Analysis) techniques to provide superior machining performance.
- Highly-rigid base with optimum dynamic stability.
- The one-piece cast iron base weighs 10,498lbs (4,762kg).

CONTROLS



SIEMENS 840D SL

- 19" TFT LCD display with Innovative capacitive sensor technology
- Programmable Resolution .0001"/.001mm
- Inch/Metric data selection by G-Code
- MDI (Manual Data Input) Operation
- ShopMill
- 3D Simulation
- SINUMERIK Operate
- Animated element operation
- Easy Tool Management
- Measurement cycles
- Transmit and peripheral surface transformation
- CYCLE800
- MDynamics
- Advanced Surface
- Ethernet interface
- (Data Transfer Capability)
- FTP
- Part Program Storage/ Data input/output on:
  - 10 MB CNC memory
  - 6 GB internal Compact Flash
  - USB 2.0
  - Network Drive

SIEMENS

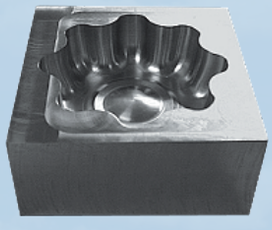
HEIDENHAIN ITNC 640 FS

- 19" TFT display with touchscreen for multi-touch operation
- Contouring control
- Axes: 20 control loops
- Uniformly digital with HSCI interface and EnDat interface
- Storage: HDR hard disk with 160GB or SSDR solid state disk with 32GB
- Programming in HEIDENHAIN conversational format or according to DIN/ ISO
- Comprehensive cycle package for milling and turning operations
- Constant surface speed for turning operations
- Tool-tip radius compensation
- Touch probe cycles
- Free contour programming (FK)
- Special function for fast 3-D machining
- Short block processing time (0.5 ms)

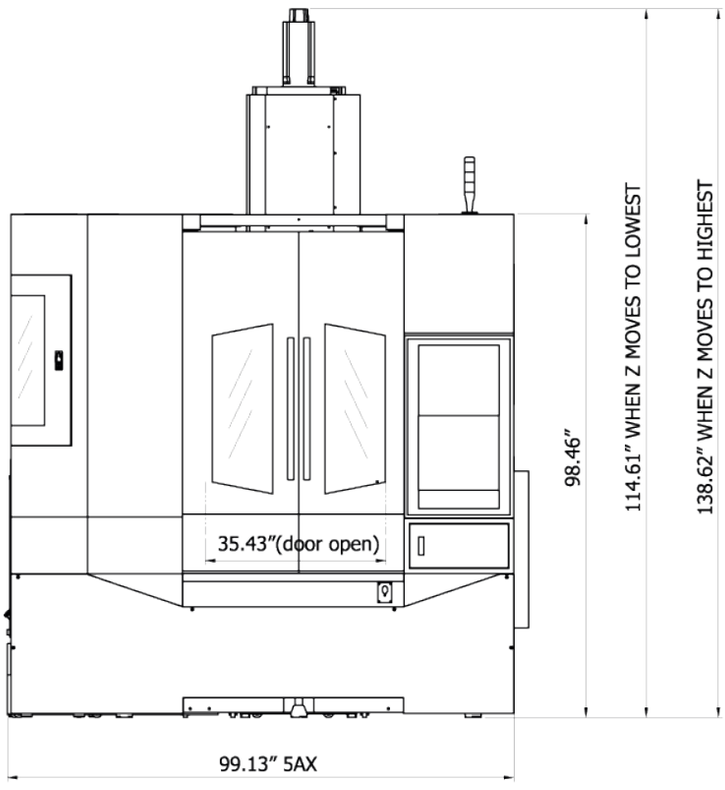
HEIDENHAIN

P20 CAVITY

SIZE_____300MM X 145MM
HARDNESS___51 HRC
FEED RATE___ 5000MM/MIN

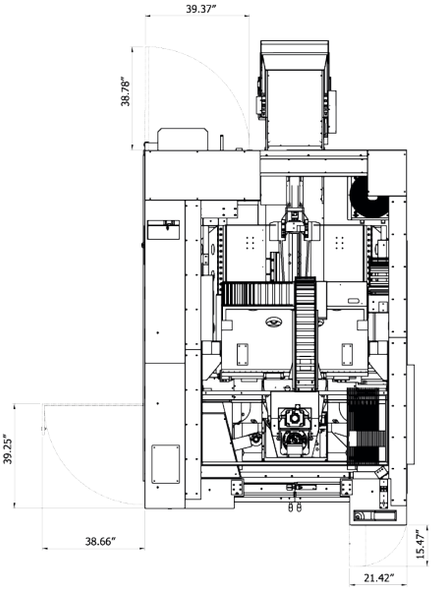


FLOOR PLANS

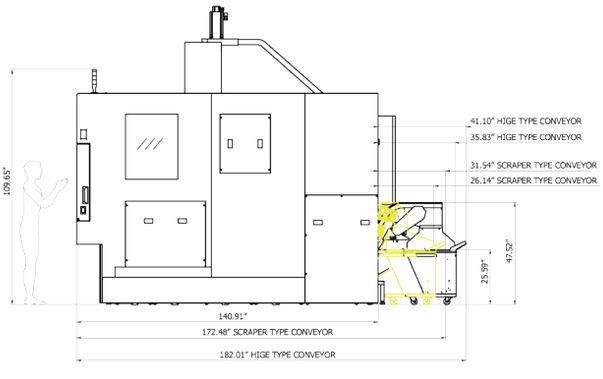


FRONT VIEW

TOP VIEW



SIDE VIEW



SPECIFICATIONS

Travels				
X-Axis		30" (762mm)		
Y-Axis		24.8" (630mm)		
Z-Axis		24" (610mm)		
A Axis (Tilt)		+30° ~ -120°		
C Axis (Rotary)		360° (Continuous)		
Max. Swing diameter		C axis Ø900 at faceplate surface		
Spindle Nose To Table @ 0 deg.		5.9"- 71.2" (150mm-760mm)		
Spindle Nose To tilting @ 90 deg.		5.9"- 71.2" (150mm-760mm		
5 Axis Rotary Table				
Table Diameter Size		Ø 24.8" (Ø 630mm)		
Max. Work Piece Range Diameter x Height		Ø 35.4" x 13.4" (Ø900 mm x 340mm)		
Load Capacity		771 lbs (350 kg)		
T-Slots (Size x Number of Slot)		.551" (14mm) x 8		
Table hole		Ø 5.51 H.28" (Ø140 H7)		
A axis CL to table		1.97" x 1.97" (50mm x 50mm)		
Clamping Torque in Rotary (C axis)		2360 ft-lbs (3200Nm)		
Clamping Torque in Tilt (A axis)		3687 ft-lbs (5000Nm)		
Working Torque in Rotary (C axis)		1843 ft-lbs (2500Nm)		
Working Torque in Tilt (A axis)		1843 ft-lbs (2500Nm)		
Spindle Transmission	**Heidenhain + Siemens**	**Heidenhain**	**Siemens**	**Siemens**
Taper	DIN 69893(HSK-A63)	BBT40 or HSK-A63	BBT40 or HSK-A63	NO.40 (BBT40)
Speed Range (Max. RPM)	30~18000 rpm	30~15000 rpm	30~15000 rpm	30~12000 rpm
Lubrication	Oil Air			
Cooling type	Oil spindle chiller			
Transmission	Motorized (GTW spindle)	DDS (GTW spindle)	DDS (GTW spindle)	DDS (HT spindle)
Motor	ATE	QAN200UH	1PH8107	1PH8107
Horsepower (S1 Continuous/ S6 40%)	40/50.9 hp (30kw/38kw)	13.4/18.7 hp (10kw/14kw)	17.4/26 hp (13kw/19.5kw)	17.4/26 hp (13kw/19.5kw)
Maximum Torque at Motor Base Speed (S6-40%)	91.3 ft-lbs (123.8Nm) @ 2930rpm	65.9 ft-lbs (89.4Nm) @ 1500rpm	65.2 ft-lbs (88.5Nm) @ 453rpm	65.2 ft-lbs (88.5Nm) @ 453rpm
Maximum Torque at Spindle Base Speed (S6-40%)	91.3 ft-lbs (123.8Nm) @ 2930rpm	65.9 ft-lbs (89.4Nm) @ 1500rpm	65.2 ft-lbs (88.5Nm) @ 453rpm	65.2 ft-lbs (88.5Nm) @ 453rpm
Automatic Tool Changer (ATC)				
Type		Swing Arm		
Tool Type		BT / CAT / ISO / HSK-A63		
Tool Selection		Bi-directional		
Tool Capacity		24 Tools / 48 Tools / 60 Tools		
Max. Tool Diameter (Full Drum)		3.15"(„80mm) 24 Tool Magazine 2.95" (75mm) 48 & 60 Tool Magazines		
Max. Tool Diameter (Adj. Pockets Empty)		4.9" (125 mm)		
Max. Tool Length		11.81" (300 mm)		
Max. Tool Weight		17.6 lbs (8 kg)		
Tool Change Time (T-T)		< 2 sec		
Tool Change Time (C-C) ISO 10791-9		< 5 sec		
Axes Drives-Positioning				
X, Y, Z-Axis Rapid Traverse Rate		1417 in/min (36m/min)		
X, Y, Z-Axis Maximum Feedrate		1417 in/min (36m/min)		
C Axis Rapid (Rotary)		25 rpm		
A Axis Rapid (Tilt)		20 rpm / 11.1 rpm		
X, Y, Z-Axis Acceleration		6 / 4 / 6 (m/s²)		
Accuracy				
X, Y, Z-Axis Positioning, Full Travel (ISO 230-2) (with scale)		.00024" (0.006mm)		
X, Y, Z-Axis Repeatability (ISO 230-2) (with scale)		.00012" (0.003mm)		
X, Y, Z-Axis Positioning, Full Travel (ISO 230-2) (without scale)		.00039" (0.01mm)		
X, Y, Z-Axis Repeatability (ISO 230-2) (without scale)		.00016" (0.004mm)		
A Axis Positioning (Arc sec) with Scale		10		
C Axis Positioning (Arc sec) with Scale		10		
A Axis Repeatability (Arc sec) with Scale		4		
C Axis Repeatability (Arc sec) with Scale		4		
C Axis Positioning (Arc sec) without Scale		15		
C Axis Repeatability (Arc sec) without Scale		6		
General Specifications				
Machine Weight		32,187 lbs (14600kg)		
Machine Overall Length		99.1" (2518mm) / 102" (2590mm)		
Machine Overall Depth		182" (4623mm)		
Machine Overall Height		138.6" (3521mm)		
Coolant Tank Capacity (Conveyor Tank + Clean Tank)		51.7 gal + 74 gal (196L + 281L)		
Coolant Flow Rate		58 gal/min (220 L/min)		
Air Requirements pressure & flow		6 kg/cm2 & 500L/min (estimated)		
Power Requirements (Fla/Volts/Phase)	83A/400V/50Hz	59A/400V/50Hz	57A/400V/50Hz	50A / 400W / 3 phase

Miscellaneous Standard Features

Remote MPG Hand Wheel; A Axis Rotary Encoder; Leveling Pad and Screw; Retention Knobs; Worklight; Auto Central Grease Lubricant; Coolant Chip Flush; Coolant Wash Gun; Automatic; Surround Tool Coolant Spidle Chiller; Ball Nut & End Bearing Chiller (Option on V 630 5F); Tri-Color Light Tower; Tool Magazine Auto Door32,187 lbs (14600kg)

Options

C Axis Rotary Encoder; X/Y/Z Axis Linear Scale; 500mm wide Chip Conveyor, Hinge Type & Scraper; Coolant Through Spindle (280 psi); CTS Preparation with Deublin Rotary Union; Mist Collector (1.5 Kw, Airflow 33.3 m/min); Front Door Light Curtain; Renishaw Tool & Part Probe (OMP40-2+OTS); Blum Tool & Part Probe (TC 52 + TC54-20); Heidenhain Tool & Part; Dynamic Collision Monitoring; Kinetic Alignmemt; Probe (TS460 + TT460)

Options-In Process

Front Door Auto Door; Top Cover Y Axis Ballows; Workpiece Clamping; 32,187 lbs (14600kg)

HARDINGE WORLDWIDE

Hardinge is a leading international provider of advanced metal-cutting solutions. We provide a full spectrum of highly reliable CNC turning, milling, and grinding machines as well as technologically advanced work-holding accessories.

The diverse products we offer enable us to support a variety of market applications in industries including aerospace, agricultural, automotive, construction, consumer products, defense, energy, medical, technology, transportation and more.

We've developed a strong global presence with manufacturing operations in North America, Europe, and Asia. Hardinge applies its engineering and applications expertise to provide your company with the right machine tool solution and support every time.

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