Bridgeport

V320 5F

800-843-8801
WWW.HARDINGE.COM

The new 4+1 axis vertical machining centers are high quality machine tools designed to achieve maximum capacity and performance ideal for for medical, aerospace, power-generation, automotive and allied industries including mold making and complex 4-axis components.

The Bridgeport V320 5F is manufactured to the highest industry standards to exceed the requirements of the demanding metal-cutting market. 4+1 machining allows the part to be machined on 5 faces in a single set up drastically reducing setup time, reducing part handling, while improving overall part accuracy.

Bridgeport's innovative technology provides superior accuracy, repeatability, a large load rating, stable accuracy, high rigidity and low friction optimum for small to medium parts. All of the robust features are designed into a small cost-effective footprint machine. The machines come packed with standard features including a BIG-PLUS® spindle, oil chiller, chip conveyor, coolant flush system, preparation for through spindle coolant (with rotary union), coolant wash down gun, tri-color stack light and many standard control features.

FEATURES & BENEFITS

- 12.60" (320mm) diameter trunnion table with 4+1 – 4 axis simultaneous operation.
- Stable & rigid structure - FEA techniques were used to analyze the structure for static and dynamic rigidity to ensure stiffness, minimal vibration, excellent geometrical accuracy and cutting performance.
- Standard 10,000 rpm DDS with hollow shaft provides excellent performance low noise, low vibration, and high accuracy for a wide range of materials from heavy cutting of steel to high speed cutting of nonferrous materials.
- Mitsubishi M80 Control features a 10.4" touchscreen display with functions that are commonly used in smart-phones and tablets, allowing for intuitive and easy operation.

FORGING DIE

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

BRIDGEPORT V320 5F

The Bridgeport V320 5F vertical 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.

X-AXIS 20" (510MM)

Y-AXIS 24" (610MM)

Z-AXIS 20" (510MM)

A-AXIS +30°~ -120°

MACHINE TRAVEL

C-AXIS 360° (CONT.)

FEATURES

- 4+1 machining center with simultaneous 4-axis operation
- Stable & rigid structure
- Mitsubishi M80 control
- 10K, 12K, 15K RPM direct drive spindle
- BIG-PLUS® spindle
- 30 tool servo driven ATC
- 2 axis trunnion table diameter: 12.60" (320 mm)
- Axis (Tilt)+30° ~ -120°; C-axis (Rotary) 360°
- Table max. swing diameter: 16.02" (407mm)
- Auto power off
- 1000 PSI TSC prep
- Manual chip wash gun
- Circular flushing
- Coolant chip flush system
- Air blast
- Central grease lube (manual)
- Probe prewiring
- LED status lamp

MACHINE OPTIONS

- 12,000 RPM - air/oil lube, direct coupled, BIG PLUS® spindle, hollow shaft motor, spindle chiller *
- 15,000 RPM - air/oil lube, direct coupled, BIG PLUS® spindle, hollow shaft motor, spindle chiller *
- Spindle chiller (optional for 10,000 RPM spindle, standard for 12,000 and 15,000
- 280 PSI coolant through spindle
- Chip conveyor hinge type (interface included as standard equipment) *
- Chip conveyor scraper type (interface included as standard equipment) *
- Additional spare M codes (8 set)
- External high voltage transformer, 25KVA, 380-440V, 50/60HZ *
- X/Y/Z axis auto greased lubrication in lieu of manual greased lubrication *
- Air thru spindle 87 P.S.I (6 bar) *
- Heidenhain optical linear scales X/Y/Z *
- Sliding door for 30-tool ATC (magazine, auto door) *
- A/C axis rotary encoder *
- Probing package – Renishaw wireless probe combo
- Servo driven auto door with light curtain *

** Factory order only*

V320 5F MACHINE CONSTRUCTION

MACHINE STRUCTURE

- Strategically ribbed base, column, and spindle carrier for increased rigidity and stiffness during demanding machining applications.

- Double-nut ball-screws are featured in the X, Y and Z-axis. The fixed, pre-tensioned ball-screw design minimizes thermal growth, enhances rigidity, stability, and precision of the machine.
  X & Y: 45 x 16mm pitch
  Z: 45 x 12mm pitch

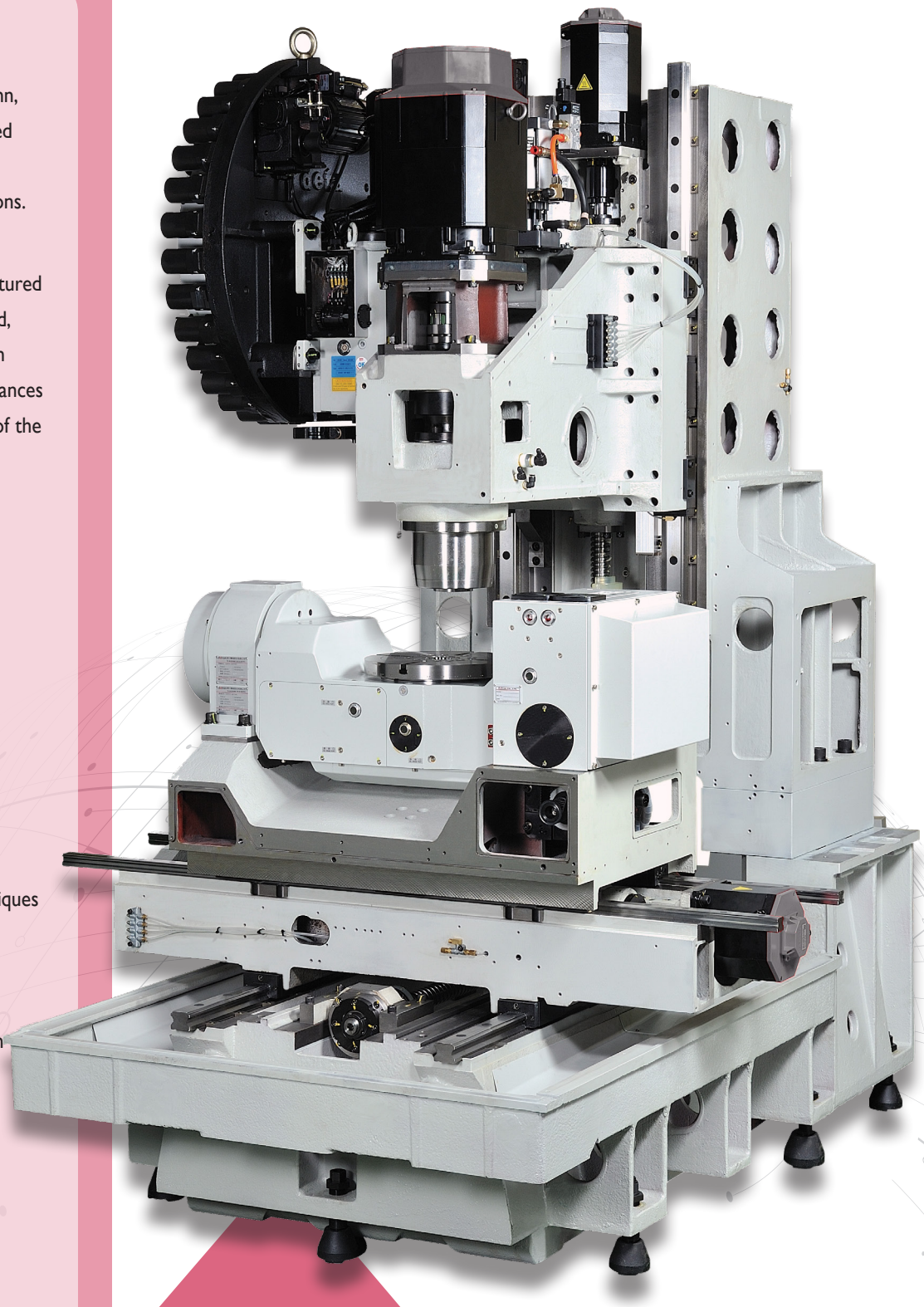
- Machine structure features 19 precision hand scraped joints for maximum stiffness

MACHINE BASE

- Designed using FEA (Finite Element Analysis) techniques to provide superior machining performance

- Highly-rigid base with optimum dynamic stability

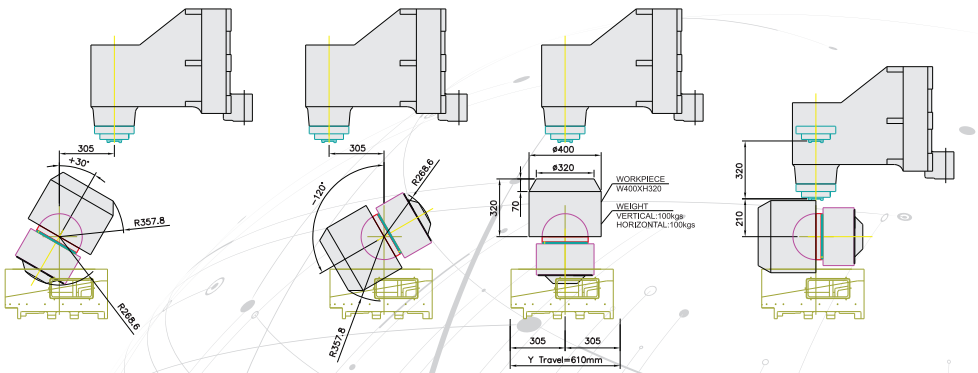
- The iron structure weighs 10,498lbs (4,762kg)



KEY FEATURES V320 5F

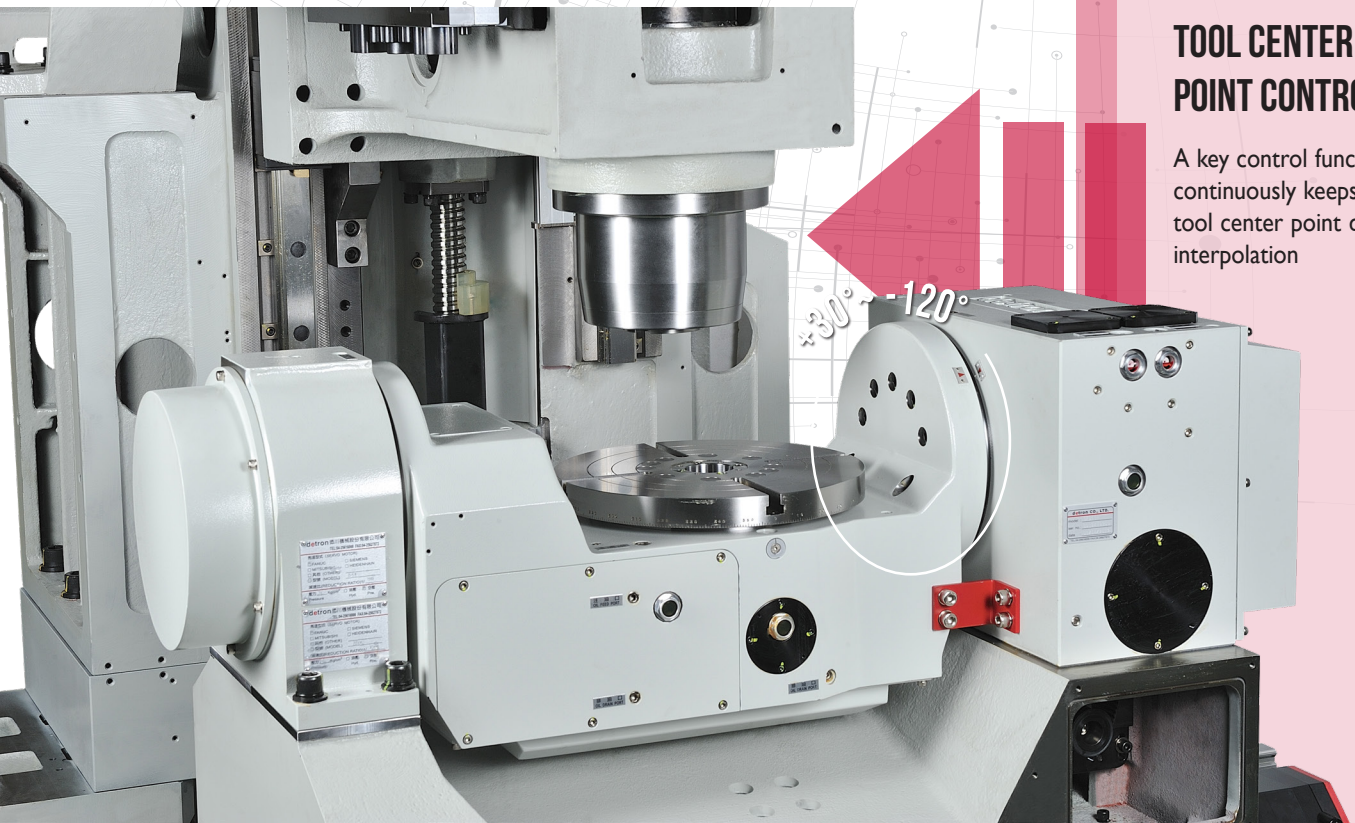
One key feature is the integrated 2-axis trunnion rotary table with 4-axis simultaneous motion and one positioning axis giving you the ability to machine a part on five different faces. This configuration greatly reduces cycle time and eliminates multiple set-ups when compared to a 3-axis machine. The machining methods are similar to 3-axis machining but with the addition of a 2-axis trunnion rotary table you can simply machine up to five different sides (or faces) in one set-up making this machines efficiency much higher than a 3-axis machine.

TILT AXIS SPECIFICATION



TILT ROTARY TABLE

- 4-axis simultaneous motion, one positioning
- Table diameter size: 12.60" (320mm)
- Max. work piece diameter 15.75" x 12.60" (400mm x 320mm)
- Tilting degree (A degree): +30°~ -120°
- C-axis rotation: 360°
- Load capacity:
  Vertical – 220.46lbs (100kg)
  Horizontal – 441lbs (200kg)
- Clamping torque:
  A-axis: 153 kg-m (1106 lbs ft.)
  C-axis: 76 kg-m (550 lbs ft.)
- T slots-0.47" (12mm) x 4



TOOL CENTER POINT CONTROL

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

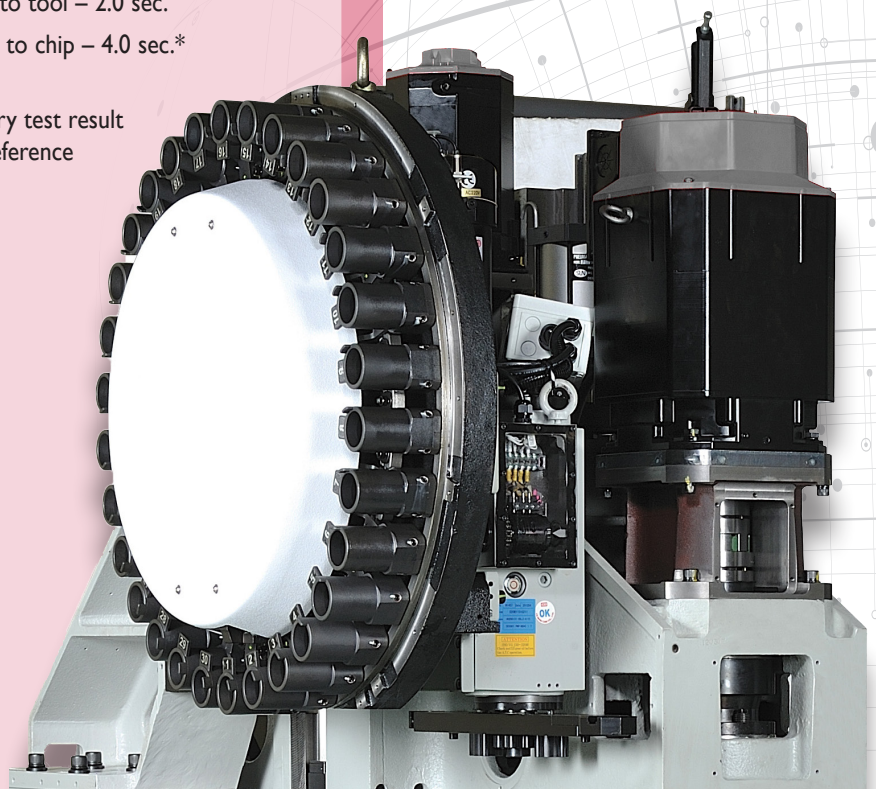
V320 5F KEY FEATURES

LARGE CAPACITY, FAST PERFORMANCE AUTOMATIC TOOL CHANGERS (AIS)

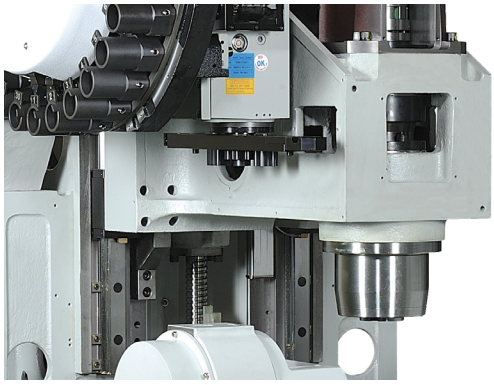
The 30 tool servo driven ATC provides 2.0 seconds (tool to tool) change time. The servo driven ATC also allows fast recovery after an interrupted tool change cycle.

- Max. tool diameter
  Full drum: 2.95" (75mm)
- Max. tool diameter
  (Adj. pockets empty)
  5.91" (150mm)
- Max. tool length
  11.81" (300mm)
- Max. tool weight
  15.43lbs. (7kg)
- Standard ATC is 30 tool (max.)
- Tool change time:
  Tool to tool – 2.0 sec.
  Chip to chip – 4.0 sec.*

* factory test result for reference



DIRECT DRIVE SPINDLE



The standard 40 taper, 10,000-rpm grease lubricated spindle is a performance enhancement over belted spindles.

- Direct drive spindles provide faster Acc/Dec over belted spindles.
  - 0 to 12,000 rpm is 2.6 sec*
  - 12,000 to 0 rpm is 3.1 sec*
- The standard hollow shaft spindle motor allows easy installation of the CTS
- Continuous torque rating at 1400-rpm: 55 ft-lb (75.2 Nm); 75 ft-lb (102Nm)
- Optional spindle chiller on 10,000 rpm
- Optional 12,000 rpm air/oil spindle
- Optional 15,000 rpm air/oil spindle

* factory test result for reference

STANDARD ISO-40 DUAL CONTACT TAPER SPINDLE

BIG-PLUS® Dual Contact Spindle Provides a stiffer interface between the spindle and the tool holder providing higher rigidity, stiffness, and accuracy when performing high-speed and difficult to machine applications. Tool retention force is 1,984-lbf/8,820N/900kgf for aggressive cutting applications.

CONTROLS

MITSUBISHI M80 TYPE A

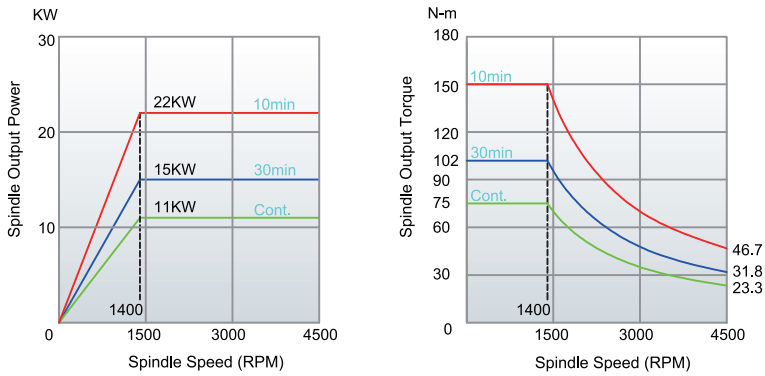
- 10.4" Color LCD Display with Full Keyboard
- Inch/Metric Data Selection by G-Code
- 1280 Meters Part Program Storage
- (2) SD card (32G part storage)
- Data Input/output - USB or SD card
- MDI (Manual Data Input) Operation
- Reader/Punch Interface RS232
- Ethernet interface (Data Transfer Capability)

MITSUBISHI ELECTRIC

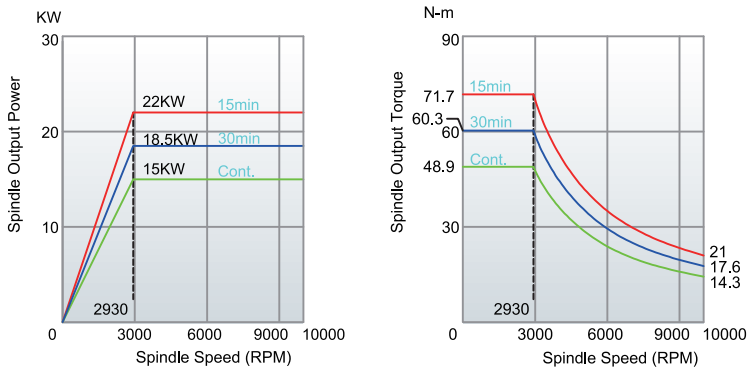
BRIDGEPORT V320 5F

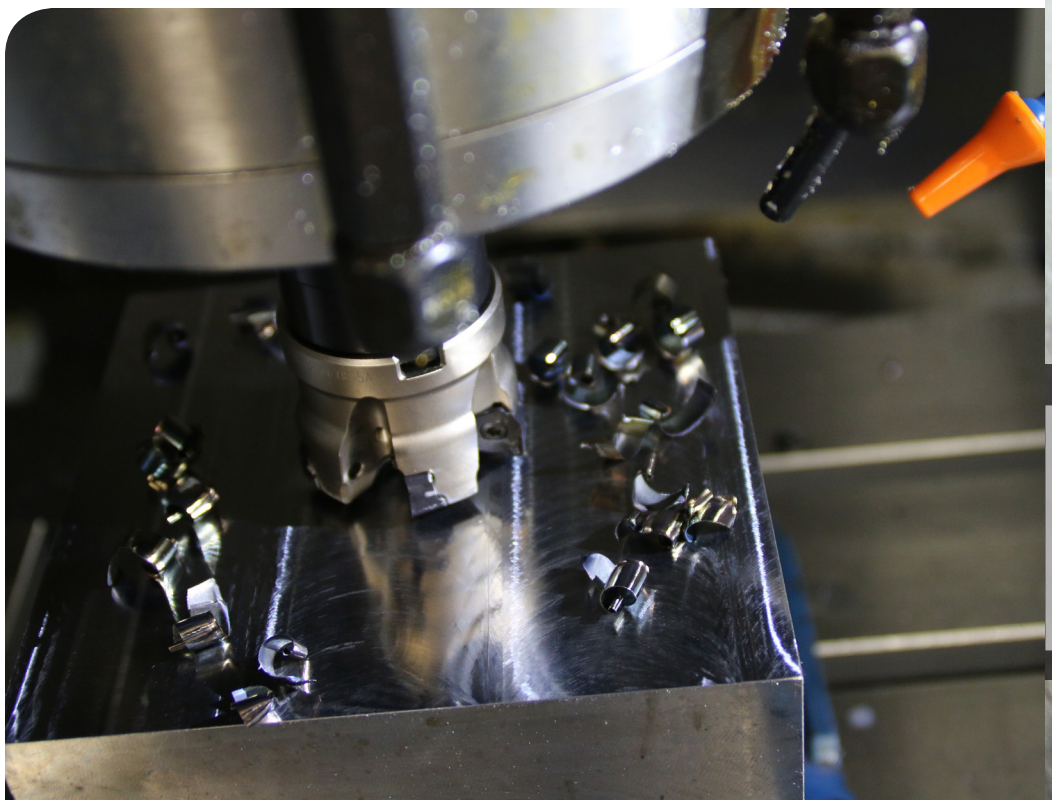
Mitsubishi Spindle Motor–10,000 RPM
Power & Torque Characteristic Curve

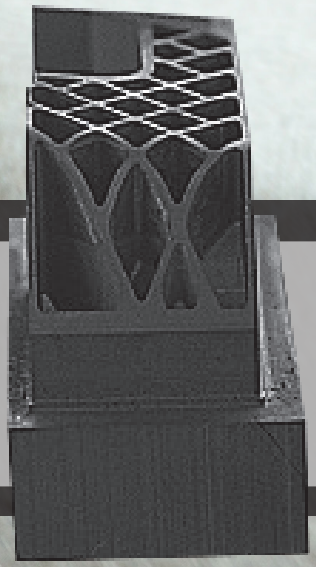
Low-Speed winding



High-Speed winding







GRAPHIC ELECTRODE

SIZE	80MM X 55MM X 40MM
DIAMETER RATIO	18:1
FEED RATE	2000MM/MIN

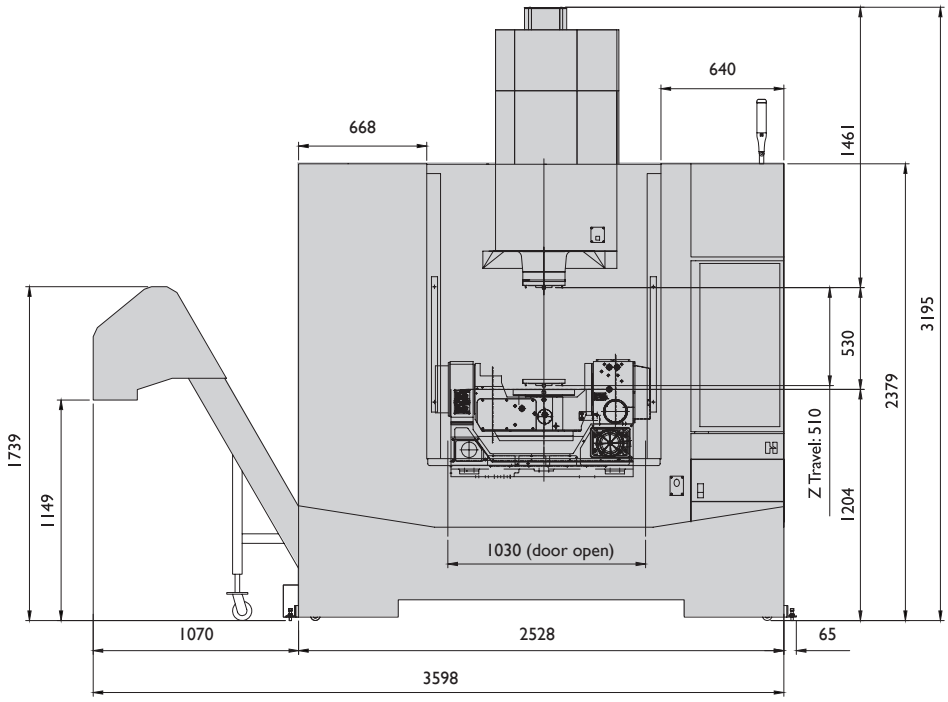
SPECIFICATIONS V320 5F

AXIS TRAVEL	
Table (X-axis)	20.08" (510mm)
Saddle (Y-axis)	24.01" (610mm) +/- 305mm
Head (Z-axis)	20.08" (510mm)
A-Axis (tilt)	+30°~-120°
C-Axis (rotary)	360° (continuous)
Max Swing diameter	16.02" (407mm)
POSITIONING	
X, Y, Z-Axis Positioning, Full Travel (ISO 230-2) (with scale)	.00019 in (0.005mm)
X, Y, Z-Axis Repeatability (ISO 230-2) (with scale)	.00012 in (0.003mm)
X, Y, Z-Axis Positioning, Full Travel (ISO 230-2) (w/o scale)	.00031 in (0.008mm)
X, Y, Z-Axis Repeatability (ISO 230-2) (w/o scale)	.00015 in (0.004mm)
A-Axis Positioning (Arc sec) with scale	30
A-Axis Positioning (Arc sec) w/o scale	60
C-Axis Positioning (Arc sec) with scale	20
C-Axis Positioning (Arc sec) w/o scale	20
A-Axis Repeatability (Arc sec) with scale	4
A-Axis Repeatability (Arc sec) w/o scale	8
C-Axis Repeatability (Arc sec) with scale	4
C-Axis Repeatability (Arc sec) w/o scale	6
SPINDLE	
Spindle Speed Range Direct Coupled	10,000 RPM standard 12,000 RPM optional 15,000 RPM optional
Spindle Motor HP Rating (S1-30 mins.) High speed winding	14/20, 20/24 (11/15 kW, 15/18.5 kW)
Max Torque at Motor Base Speed (S1-30 min.)	55/75/110 ft. lb 75/102/148 Nm
Spindle Taper	BIG-PLUS® No. 40
Tool Holder	ISO 40
WORKTABLE	
Rotary Table Diameter	12.6" (320mm)
Table load	Vertical 220.46lbs (100kg) Horizontal 441lbs. (200kg)
Number of T-Slots	4
T-Slot Size	0.47" (12mm)

AUTOMATIC TOOL CHANGER	
Taper	NO.40
Type	Swing Arm
Tool Type	CAT 40
Tool Selection	Bi-directional
Tool Capacity	30 Tools
Max. Tool Diameter (Full Drum)	2.95" (75mm)
Max. Tool Diameter (Adj. Pockets Empty)	5.91" (150mm)
Max. Tool Length	11.8" (300mm)
Max. Tool Weight	15.43 lbs (7kg)
Tool Change Time (T-T/C-C)	2/4 sec
COOLANT	
Coolant tank capacity	99 US gallons (375L)
Wash down	Standard
Wash gun	Standard
Stainless chip pan	Standard
MACHINE SIZE	
Length	144" (3663mm)
Height	125.8" (3195mm)
Depth	108.7" (2760mm)
Machine weight	16,324 lbs (7405kg)
SERVICE REQUIREMENTS	
Power Requirements* (FLA/Volts/Phase)	86/220/3
Air Requirements (L/min)	6 kg/cm2

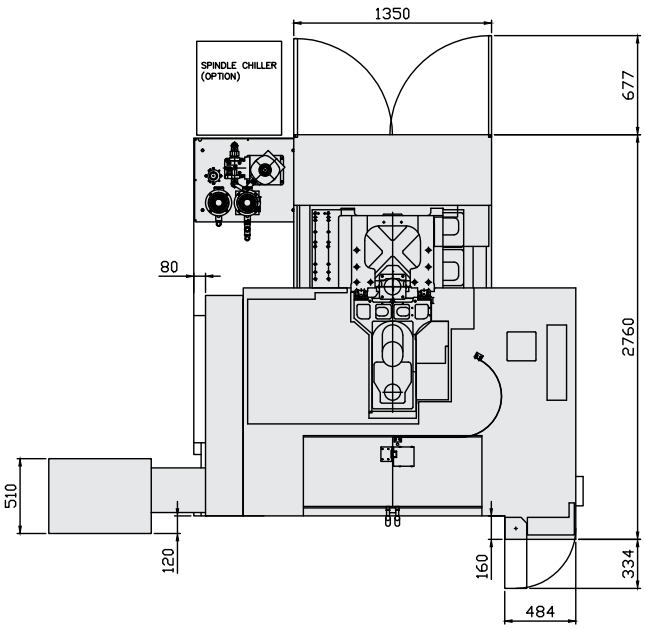
** Other voltages require an external transformer*

V320 5F FLOOR PLAN



FRONT VIEW

TOP VIEW



HARDINGE COMPANIES 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 workholding 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.

AMERICAS

Pennsylvania
Hardinge Corporate
1235 Westlakes Drive
Suite 410
Berwyn, PA 19312

New York
Hardinge
One Hardinge Drive
Elmira, NY 14903
P. 800-843-8801
E. info@hardinge.com
www.hardinge.com

Illiniois
Hardinge
1524 Davis Road
Elgin, IL 60123
P. 800.843.8801

ASIA

China
Hardinge Machine
(Shanghai)Co. Ltd.
1388 East Kangqiao Road
Pudong , Shanghai 201319
P. 0086 21 3810 8686

Taiwan
Hardinge Taiwan Precision
Machinery Limited
4 Tzu Chiang 3rd Road
Nan Tou City 540
Taiwan
P. 886 49 2260 536
E. cs@hardinge.com.tw

EUROPE

France
Jones & Shipman SARL
8 Allee des Ginkgos
BP 112-69672
Bron Cedex, France

Germany
Hardinge GmbH
Fichtenhain A 13c
47807 Krefeld
P. 49 2151 49649 10
E. info@hardinge-gmbh.de

Switzerland
L. Kellenberger & Co. AG
Heiligkreuzstrasse 28
CH 9008 St. Gallen
Switzerland
P. 41 71 2429111
E. info@kellenberger.net

United Kingdom
Jones & Shipman
Hardinge Ltd.
Murray Field Road
Leicester LE3 1UW
P. 44 116 201 3000
E. info@jonesshipman.com

HARDINGE

800-843-8801 • info@hardinge.com • parts@hardinge.com • service@hardinge.com

WWW.HARDINGE.COM • WWW.SHOPHARDINGE.COM