



TURNING

HARDINGE  
GS-Series  
Performance Turning Centers

COLLET-READY  
SPINDLE



[www.hardinge.com](http://www.hardinge.com)



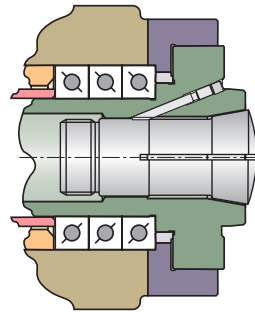
## The Hardinge Advantage

The Hardinge Group provides collets, step chucks with closers, dead-length systems, FlexC™ quick change, Sure-Grip® expanding systems, Sure-Grip® 3 jaw chucks and custom solutions to meet the flexible demands of manufacturing today.

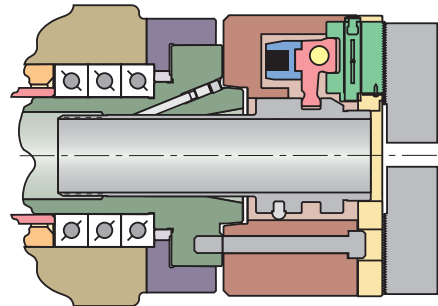
Advantages include:

- Collet seats directly in the Hardinge spindle
- Maximum rigidity and gripping power is transferred to the part
- Maximum utilization of RPM
- Minimum weight on spindle
- Minimum overhang from the spindle bearings assures that spindle accuracy is transferred directly to the workpiece
- Optimum T.I.R.
- Gripping force directly over the workpiece
- Superior tolerances and finishes
- Capable of using maximum machine stroke capacity
- Longer tool life
- Quick changeover
  - collet draw tube is easily and accurately adjusted from the back of the spindle
  - from bar work to chucking work

The Hardinge spindle design is both collet and jaw chuck-ready and does not require a spindle adapter

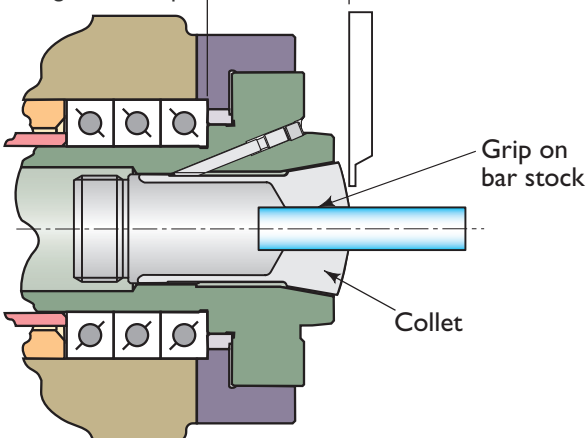


Hardinge Spindle shown with Collet



Hardinge Spindle shown with 3-Jaw Chuck

Minimal distance from spindle bearings to tool tip



## GS-Series Performance Turning Centers

Exceptional combination of features for speed, power, accuracy, and durability in a compact design and affordable price

GS-Series turning centers are rigid and reliable machines that feature a robust one-piece cast iron base, heavy-duty linear guideways and ballscrews, and many standard value-added features—heavy-duty dual-wound spindle motor, 40-psi through-tool and headwall coolant, foot switch, chip conveyor interface, air hose with air gun, a swing-out CNC control panel for ease of operation, and much more. Oi-TD CNC controls include many value-added features that are offered as options by other machine builders. Choose from the numerous productivity options and you'll have a truly versatile machine—and with the level of quality you would expect with any Hardinge product.



### GS 42

- A2-5, 16C spindle nose
- 11-kW (15-hp) spindle drive system
- 175Nm (126.5ft-lb) torque
- 6,000-rpm spindle speed
- 42mm (1.65") bar capacity

Small tooling package includes

- 1" Boring Tool Holder
- 1.25" Boring Tool Holder
- Square Tool Holder
- Nine pairs wedge clamps



### GS 51

- A2-6, 20C spindle nose
- 11-kW (15-hp) spindle drive system
- 210Nm (154ft-lb) torque
- 5,000-rpm spindle speed
- 51mm (2") bar capacity

Small tooling package includes

- 1" Boring Tool Holder
- 1.25" Boring Tool Holder
- Square Tool Holder
- Nine pairs wedge clamps



### GS 65

- A2-6, 25C spindle nose
- 18.5-kW (25-hp) spindle drive system
- 504Nm (371.4ft-lb) torque
- 4,200-rpm spindle speed
- 65mm (2.55")

Small tooling package includes

- 1.25" Boring Tool Holder
- 1.50" Boring Tool Holder
- Square Tool Holder
- Nine pairs wedge clamps



## GS 42 and GS 51

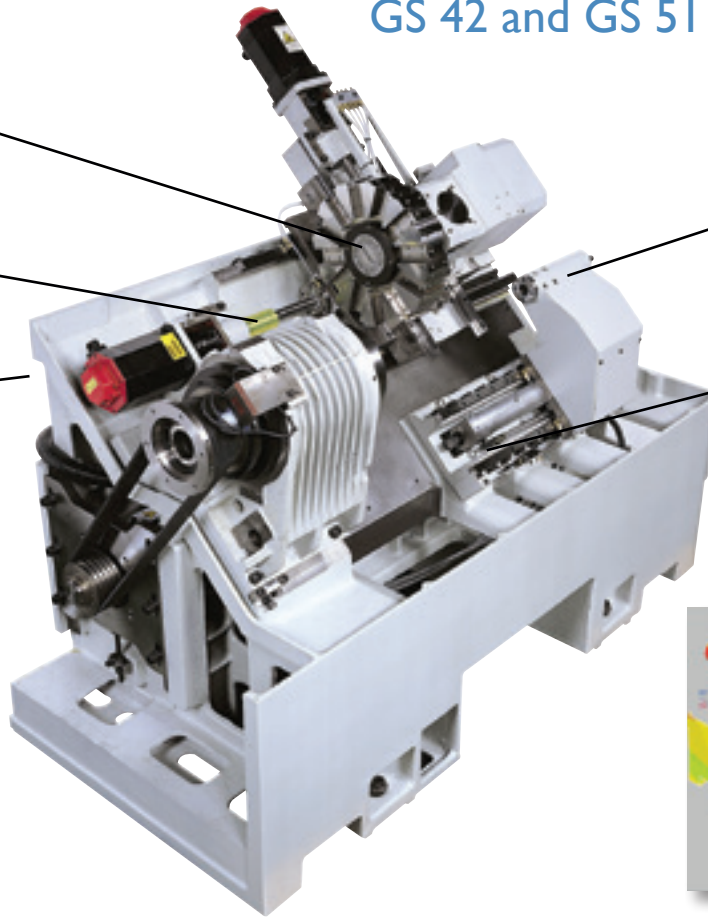
12-Station vertical block top plate standard—BMT top plate with live tooling is available as an option.

High class double-nut ball screws provide superior machine accuracy and repeatability.

Strategically ribbed 45-degree slant bed design of one piece construction.

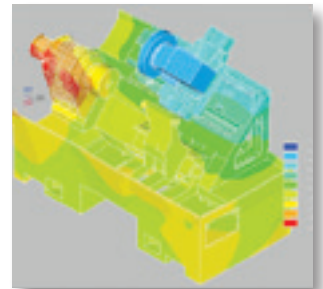
### Standard features include:

- One-degree spindle orient
- Spindle reference (servo lock)
- Rigid tapping
- Run time and parts counter
- Chuck/collet closer foot switch
- Chip conveyor Interface
- Swing-out CNC pendant
- Air hose with air gun
- Complete operator's, programmer's and maintenance documentation



Fully-programmable #4 MT hydraulic and servo driven tailstock option eliminates human intervention compared to competitive designs.

High quality linear roller guideways provide greater positioning accuracy, faster traverse rates, less machine wear, longer machine life and overall machining consistency.



## GS 65

Industry's most reliable motors and drives. Heavy-duty axis motors and drives provide superior machine capability.

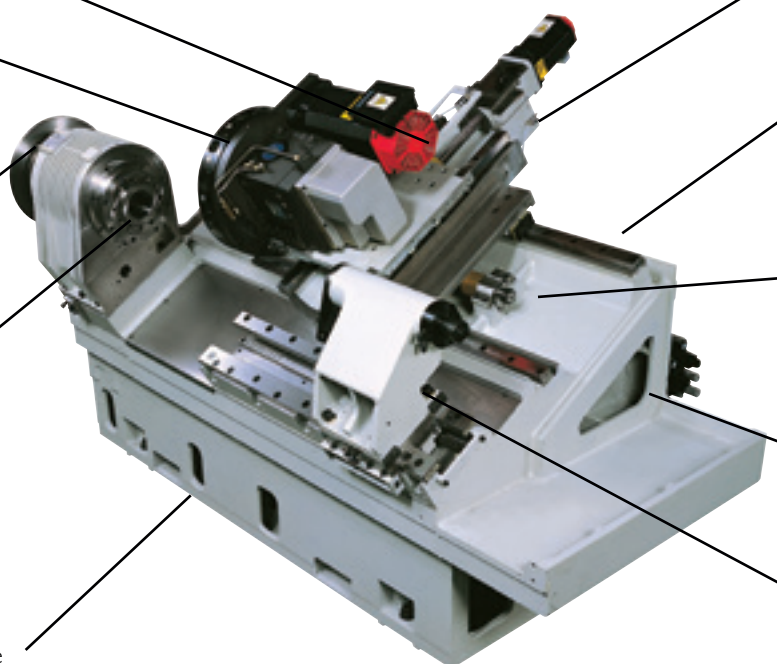
12-Station vertical block top plate standard—BMT top plate with or without live tooling is available as an option.

Non-contact magnetic spindle encoder eliminates the need for belted encoder; increasing overall reliability. One-degree spindle orient included.

Best-in-class spindle design incorporates a tri-set angular contact bearings in the front and a tapered roller bearing in the rear for superior rigidity, thermal stability and overall spindle life.

Dual-wound spindle motor provides heavy-duty cutting capabilities.

Machine base and all major castings are made with high quality grey cast iron for superior rigidity, durability, and thermal stability.



Environmentally friendly grease lubrication minimizes overall maintenance cost.

Heavy-duty linear roller guideways provide optimum stiffness and rigidity, resulting in heavier cutting capability and longer machine life.

Heavy-duty, fixed pre-tensioned double-nut C2-class ballscrews provide superior rigidity, machine accuracy and repeatability.

Strategically ribbed 30-degree slant bed design of one piece construction.

Fully-programmable #5 MT hydraulic tailstock option features robust boxway design for optimum tailstock rigidity.

**All machines are laser inspected to strict quality standards.**



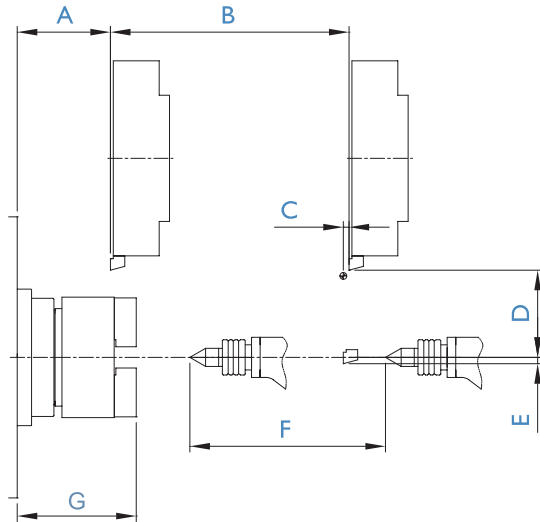
## Standard 12-station vertical block top plate

### Minimal tool interference

Bidirectional turret indexing allows shortest path indexing for reduced non-cut time. The non-lift turret indexing ensures contaminant-free operation indexing is by a brushless servomotor with positive hydraulic clamping on a 3-piece curvic coupling. The turret pivot (safety shear) feature helps prevent damage to the machine. Coolant is fed through round shank tool holders via turret ports, allowing coolant to be precisely directed to the machining operation. Live tooling is not available.

### Rigid tapping

Synchronization between the main spindle and the Z-axis motion provides precise and fast rigid tapping operations.



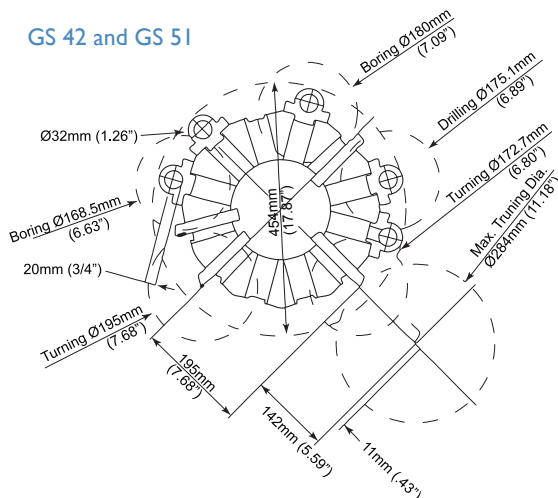
GS 42, GS 51 and GS 65 machining area

	GS42	GS51	GS65
A	4.429" (112.5mm)	4.429" (112.5mm)	8.567" (217.6mm)
B	17.952" (456mm)	17.952" (456mm)	23.622" (600mm)
C	0.394" (10mm)	0.394" (10mm)	0.551" (14mm)
D	5.984" (152mm)	5.984" (152mm)	11.043" (280.5mm)
E	0.433" (11mm)	0.433" (11mm)	0.827" (21mm)
F	13.425" (341mm)	13.425" (341mm)	29.330" (745mm)
G	4.618" (117.3mm)	4.618" (117.3mm)	4.370" (111mm)

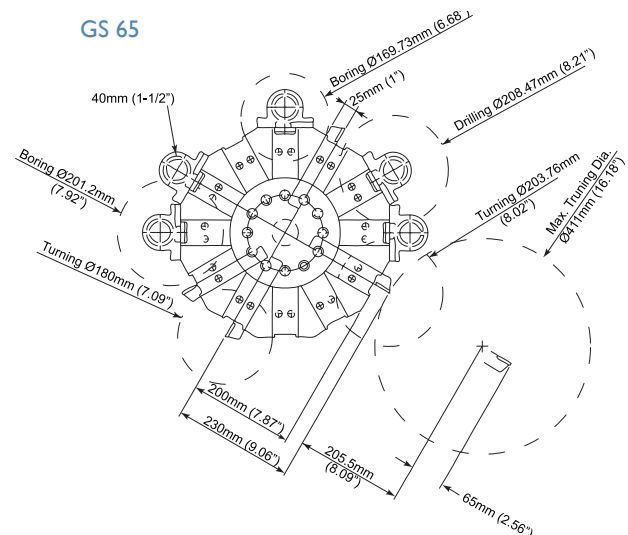
## Hardinge BMT-45 and BMT-65 turret top plate and tooling system

The Hardinge BMT-45 and BMT-65 Live Tooling Top Plate with Tenon tool drive system provides 12 live tooling stations

GS 42 and GS 51



GS 65



## Hardinge spindle tooling options

Hardinge manufactures a full line of collets, jaw chucks and quick-change spindle tooling for the most demanding workholding applications.

### Collet-Ready Spindle

5C, 16C, 20C and 25C  
Collets, Hardened and  
Ground and Emergency



5C, 16C, 20C and 25C  
Step Chucks and Closers



5C, 16C and 20C  
Dead Length



16C, 20C and 25C  
Master Collets and Pads



16C, 20C and 25C  
Spindle Collet and  
Step Chuck Adapters



5C, 16C Collet Style



A2-5, A2-6 and A2-8  
Spindle Mount



FlexC Collet Heads

3 Jaw Chucks



## Productivity options for enhanced machining performance

### Belted A2-5 sub-spindle

- Allows single set-up part completion
- Spindle speed/base speed – 6,000/900 rpm
- Power - 7.5kW (10.5 hp)
- Torque - 80 Nm (59 ft-lb)
- Flexible workholding solutions: Optional 5C, 16C, collet adaption chucks, B-type (dead-length) collet adaption chucks, ID expansion collets or 3-jaw chuck.
- Compact design minimizing overall floor space

### Live tooling/C-Axis contouring

The 5,000-rpm live tooling option eliminates the need for many secondary milling machine operations, reducing additional part handling and setup cost. All stations of the top plate are live-tool ready with only one station actively driven at one time. Separate servomotors are used for turret indexing and live tool operations. A disc-type hydraulic spindle brake provides positive locking during static machining operations. C-axis provides positioning in increments of .001 degree. Three-dimensional contouring, complex round and prismatic machining, square shoulder and lettering are accomplished by synchronizing the spindle with the X and Z axes. Rigid tapping can be done with both cross-and end-working functions.

### 20-Bar (280-psi) thru-tool coolant

This high capacity coolant option provides direct flow of coolant to the active tool cutting operation, providing enhanced chip management, higher permissible feeds and speeds, cooler machining conditions for longer tool life and optimum surface finishes.

### Parts catchers

The catcher option allow the operator to conveniently retrieve finished workpieces from outside the machining area during the machining cycle.



### Part probe

The part probe with macros allows in-process workpiece size verifications and automatic CNC adjustment of work offsets. The probe is capable of performing rapid first-off inspection, in-process reporting and allows "lights out" machining.

### Robust hydraulic or servo tailstocks

Our servo tailstock features fully programmable axis speed control, positioning and force, controlled through the part program, allowing fast approach/retract speed, multiple positioning capability and force control. This allows for precise part engagement and applied force. The result is reduced overall operating time when compared to hydraulic tailstock systems by over 20%, while increasing part quality.



### Automatic tool touch probe

The retractable probe arm provides quick setup and easy use, enabling automatic insertion of tool offsets. The four-direction probe makes it possible to touch off both internal and external working tools. The machine can also be programmed to automatically touch off tools and be used for in-cycle tool wear and breakage detection. The probe arm swings up to storage position on the headwall.

### Thermal Stabilization Package

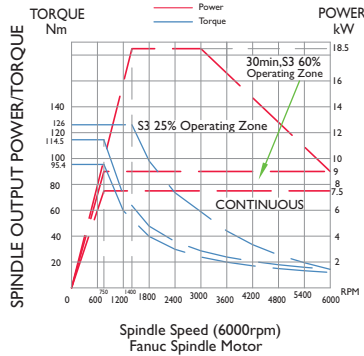
GS 42 and 51 includes a spindle chiller, circulation fan and, X & Z-axis scales. The X-axis scale can be installed as a factory fit option on the GS 65 machine. This option will improve the overall thermal stability and minimize the warm up period. This productivity option makes the machine more thermally stable, requiring less human intervention for offset changes during the warm up period.

### Other optional features:

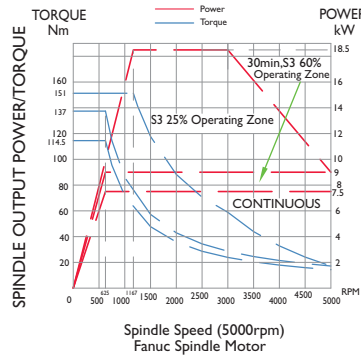
- Sub-spindle
- Chip conveyor
- BMT turret tooling
- Bar feed interface
- Power transformers
- Stack light
- Mist collector

### Hardinge/Fanuc High Winding

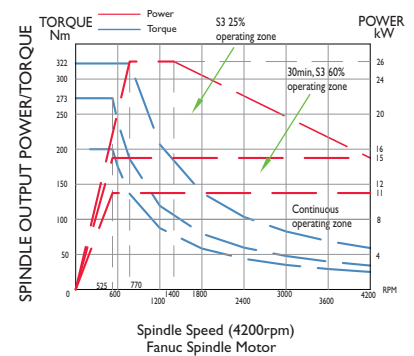
#### GS 42



#### GS 51

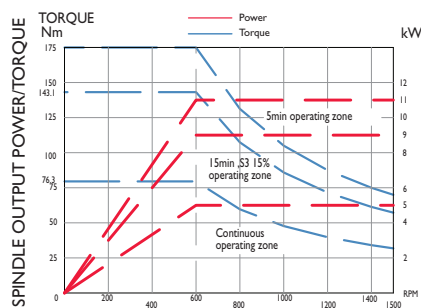


#### GS 65

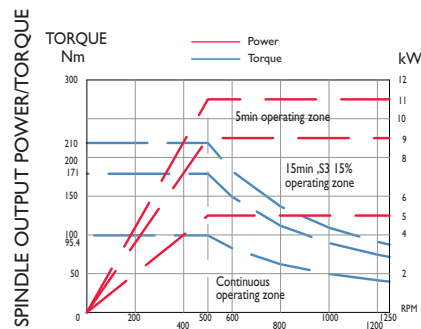


### Hardinge/Fanuc Low Winding

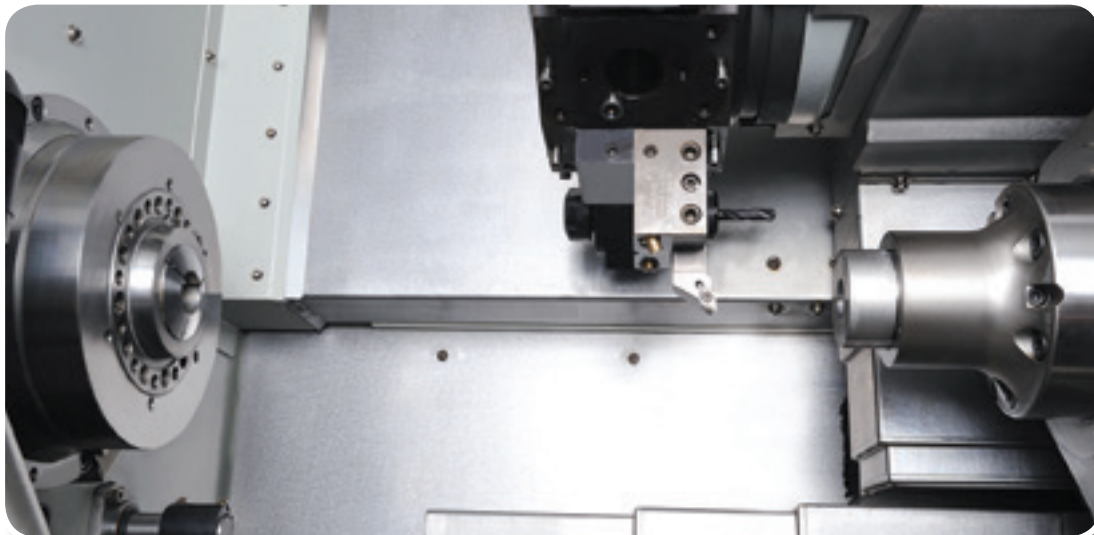
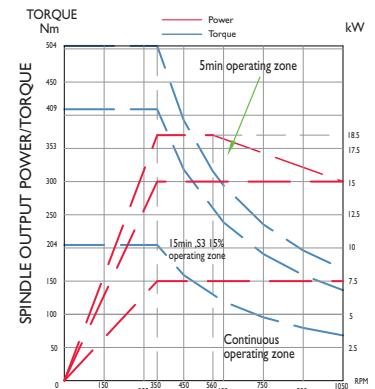
#### GS 42



#### GS 51



#### GS 65



Sub-spindle option is only available on the GS 42 and GS 51 machine specification.



General	
213mm (8.4")Color LCD Display	●
Two Interpolating Axes	●
Programmable Resolution— 0.001mm (0.0001")	●
Tool Offset Capability— 0.001mm (0.0001")	●
Tool Geometry and Tool Wear Offsets (64 pair each)	◆
Inch/Metric Data Selection by G-Code	●
1280 Meters (512 KB) Part Program Storage	◆
Flash Card Slot Capability (up to 128 MB)	◆
Data Input/Output	
MDI (Manual Data Input) Operation	●
Reader/Punch Interface Connection(RS-232 Software/Hardware)	●
DNC (Remote Buffer)	◆
Embedded Ethernet	●
Single USB Port	●
Programming Functions	
Absolute/Incremental Programming	●
Additional Tool Offsets (64 pair total)	◆
Additional Custom Macro Variables	◆
AI Contour Control	●
Background Editing	●
Blueprint Programming	◆
Canned Cycles (Drilling)	●
Chamfer/Corner Rounding	●
Constant Surface Speed Programming	●
Continual Thread Cutting	●
Coordinate System Setting (G50)	●
Custom Macro B	◆
Diameter/Radius Programming	●
Extended Part Program Edit (Copy/Replace)	◆
Graphic Display	◆
Hardinge Safe Start Format	●
Input of Offset Value by Programming (G10)	●
Interpolation (Linear and Circular)	●
Manual Guide (G-Code Assist)	◆
Multiple Repetitive Canned Cycles I (Turning)	◆
Multiple Repetitive Canned Cycles II (Pockets)	◆
Nano Interpolation	●
Registered Part Programs (200 total)	◆
Rigid Tapping	◆
Single Block Operation	●
Spare M-Codes (3)	◆
Thread, Synchronous Cutting	●
Tool Life Management	◆
Tool Nose Radius Compensation	●
Variable Lead Thread Cutting	◆

Operation	
BlockDelete	●
Clamp/Unclamp Indicator Light Switch	●
Coolant Control	●
Dry Run	●
Dwell Time	●
Emergency Stop	●
Feedhold	●
Feedrate Override (0 to 150%)	●
Incremental Jog	●
Jog Feed Override (0 to 1260 mm/min)	●
Machine Lock	●
Manual Pulse Generator (MPG Handwheel)	●
On-Screen Spindle & Axis Load Meters	●
Option Stop	●
Rapid Traverse Override (Low-25-50-100%)	●
Single Block	●
Spindle Speed and T-Code Displays on All Screens	●
Spindle Speed Override (50 to 120%)	●
Miscellaneous	
Alarm Display	●
English Color LCD Display with Full Keyboard	●
French/German, Italian or Spanish	○
On-Screen "HELP" Functions for Alarms	◆
Program Protect	●
Run Time and Parts Counter	◆
Self-Diagnosis Function	◆
Spindle Lock (Servo)	●
Spindle Orient—One-Degree	◆
Stored Pitch Error Compensation	●

- ◆ Standard value-added features that may be offered as options by other machine builders
- Standard
- Optional



## GS-Series Performance Turning Centers

	GS42	GS51	GS65
<b>Spindle</b>			
Collet Ready Spindle Config - ANSI	A2-5 / 16C	A2-6 / 20C	A2-6 / 25C
Draw Tube Type	Hydraulic	Hydraulic	Hydraulic
Through Draw Tube Capacity	1.65" (42mm)	2" (51mm)	2.63" (65mm)
Gripping Capacity with Step Chuck & Closer	5.90" (150mm)	5.90" (150mm)	7.87" (200mm)
Machining Diameter - Max.	11.18" (284mm)	11.18" (284mm)	13.31" (338mm)
Turning Length - Max	15.98" (406mm)	15.98" (406mm)	23.62" (600mm)
Hang Weight with Device & Component	74 lbs (34kg)	105 lbs (48kg)	154 lbs (70kg)
Spindle Centreline Height	39.37" (1000mm)	39.37" (1000mm)	40.98" (1041mm)
Operator's Reach to Spindle	11.02" (280mm)	11.02" (280mm)	17.01" (432mm)
<b>AC Digital Spindle Drive System</b>			
Fanuc Control (S3) - High Winding			
Peak Power Rating	14 HP (18.5kW)	14 HP (18.5kW)	34 HP (26kW)
Torque Rating	92 ft/lbs (126Nm)	111 ft/lbs (151Nm)	237 ft/lbs (322Nm)
Base Speed	1400 rpm	1167 rpm	770 rpm
Max. Speed 1 rpm Steps	6000 rpm	5000 rpm	4200 rpm
Fanuc Control (S) - Low Winding			
Peak Power Rating	14 HP (11kW)	14 HP (11kW)	14 HP (18.5kW)
Torque Rating	129 ft/lbs (175 Nm)	154 ft/lbs (210 Nm)	371 ft/lbs (504 Nm)
Base Speed	600 rpm	500 rpm	350 rpm
Max. Speed 1 rpm Steps	1500 rpm	1250 rpm	1050 rpm
<b>Carriage and Cross Slide</b>			
Swing Dia. Over Way Cover - Max.	17.99" (457mm)	17.99" (457mm)	23.43" (595mm)
X Axis Travel Max - Live Tooling (BMT / VDI)	5.75" (146mm)	5.75" (146mm)	8.84/10.69" (224.5/271.5mm)
Z Axis Travel Max	15.98" (406mm)	15.98" (406mm)	23.62" (600mm)
Traverse Rates - Max.			
X & Z Axes	30 m/min	30 m/min	30 m/min
Z-Axis Thrust - Max.			
With Fanuc Control	4025 lbs (17,907 N)	4025 lbs (17,907 N)	4943 lbs (21,991 N)
Ball Screw Diameter X - Axis	1.10" (28mm)	1.10" (28mm)	1.42" (36mm)
Ball Screw Diameter Z - Axis	1.10" (28mm)	1.10" (28mm)	1.57" (40mm)
Evaluation Standard	ISO 230-2	ISO 230-2	ISO 230-2
Repeatability - X & Z Axes (ISO)	0.0002" (0.005mm)	0.0002" (0.005mm)	0.0002" (0.005mm)

	GS42	GS51	GS65
<b>Turret Top Plate - Bi-Directional</b>			
BMT	BMT45	BMT45	BMT65
Vertical Block Type	●	●	●
Number of Stations	12	12	12
Square Shank Tool Size	0.79" (20mm)	0.79" (20mm)	0.98" (25mm)
Round Shank Tool Size	1.26" (32mm)	1.26" (32mm)	1.57" (40mm)
Index Time - Adjacent Station			
Vertical Block	0.46 second	0.46 second	0.30 second
BMT / VDI	0.25 second	0.25 second	0.78 second
<b>BMT / VDI Live Tooling / C Axis - (Option)</b>			
Round Shank Tool Holder Diameter	0.04-0.63" (1-16mm)	0.04-0.63" (1-16mm)	0.04-0.63" (1-16mm)
Power Rating at Tool Tip	4.96 HP (3.7 kW)	4.96 HP (3.7 kW)	10.72 HP (8.0 kW)
Torque Rating at Tool Tip	5.62 ft/lbs (25 Nm)	5.62 ft/lbs (25 Nm)	7.87 ft/lbs (35 Nm)
Maximum Speed - 1 rpm Steps	5000 rpm	5000 rpm	4000 rpm
C Axis Contouring Resolution	0.001 Degree	0.001 Degree	0.001 Degree
Positioning Accuracy	+/- 1 Arc Min	+/- 1 Arc Min	+/- 1 Arc Min
Repeatability	1.75 Arc/Min	1.75 Arc/Min	1.75 Arc/Min
<b>Tailstock - (Fully Programmable - (Option))</b>			
Positioning	Hyd / Servo	Hyd / Servo	Hydraulic
Morse Taper	MT No.4	MT No.4	MT No.5
Travel of Tailstock Base	15.98" (406mm)	15.98" (406mm)	24.61" (625mm)
Part Length - Max.	18.35" (466mm)	18.35" (466mm)	33.46" (850mm)
Part Length - Min.	2.36" (60mm)	2.36" (60mm)	7.09" (180mm)
Feed Rate - Max.	216.54 ipm (5.5 m/min)	216.54 ipm (5.5 m/min)	216.54 ipm (5.5 m/min)
Thrust - Max.	780 ft/lbs (3,470 N)	780 ft/lbs (3,470 N)	2102 ft/lbs (9,354 N)
Part Catcher - (Option)			
Workpiece Dia. x Length - Max.	2.01 x 3.94" (51 x 100mm)	2.01 x 3.94" (51 x 100mm)	2.56 x 6.30" (65 x 160mm)
<b>Miscellaneous</b>			
Power Supply Requirements			
Fanuc Control	220v/67FLA/3phase	220v/67FLA/3phase	220v/74FLA/3phase
Coolant Tank Capacity	33 gal (125 litre)	33 gal (125 litre)	76 gal (290 litre)
Coolant Pressure - Standard	40 psi (2.8 bar)	40 psi (2.8 bar)	40 psi (2.8 bar)
Through Tool Coolant - (Option)	290 psi (20 bar)	290 psi (20 bar)	290 psi (20 bar)
Machine Weight - Approx.	8465 lbs (3840 kg)	8465 lbs (3840 kg)	10,912 lbs (4950 kg)
Shipping Weight - Approx.	8884 lbs (4030 kg)	8884 lbs (4030 kg)	11,662 lbs (5290 kg)
<b>Machine Dimensions</b>			
Length	97.05" (2465mm)	97.05" (2465mm)	117.64" (2988mm)
Length w/Chip Conveyor Option	134.92" (3427mm)	134.92" (3427mm)	144.57" (3672mm)
Depth	62.24" (1581mm)	62.24" (1581mm)	84.33" (2142mm)
Depth w/Control Unit at Max. Swivel	94.72" (2406mm)	94.72" (2406mm)	96.57" (2453mm)
Height	70.20" (1783mm)	70.20" (1783mm)	71.34" (1812mm)
Floor Area - Approx.	41.98 sq ft (3.9 m2)	41.98 sq ft (3.9 m2)	68.89 sq ft (6.4 m2)

## HARDINGE COMPANIES WORLDWIDE

Over the years, The Hardinge Group™ steadily diversified both its product offerings and operations. Today, the company has grown into a globally diversified player with manufacturing operations in North America, Europe and Asia. In addition to designing and building turning centers, and collets, Hardinge is a world leader in grinding solutions with the addition of the Kellenberger, Jones & Shipman, Hauser, Tschudin, Usach and Voumard brands to the Hardinge family. The company also designs and manufactures Bridgeport machining centers and other industrial products for a wide range of material cutting, turnkey automation and workholding needs.

Expect more from your Hardinge products. Choose Hardinge precision and reliability for increased productivity and value!

Call us today, we've got your answer.



### North America

Hardinge Inc.

General Information: 607-734-2281

Sales Fax: 607.734.8819

Workholding Fax: 607.734.3886

Service: 800.424.2440

[www.hardinge.com](http://www.hardinge.com)

### Canada

Canadian Hardinge Machine Tools Ltd.

Tel: 800.468.5946

Fax: 607.734.8819

### China

Hardinge Machine (Shanghai) Co. Ltd.

Hardinge China Limited

Tel: 0086 21 38108686

Fax: 0086 21 38108681

Hardinge Precision Machinery (Jiaxing) Co., Ltd.

Economic and Technology Development Zone

Tel: 0573-82601088

Fax: 0573-82601988

### Germany

Hardinge GmbH

Tel: (49) 2151 496490

Fax: (49) 2151 4964999



### Taiwan

Hardinge Machine Tools B.V.

Tel: 886 49 2260536

Fax: 886 49 2252203

[cs@hardinge.com.tw](mailto:cs@hardinge.com.tw)

### Switzerland

L. Kellenberger & Co. AG

Tel: +41 (0) 71 242 91 11

Fax: +41 (0) 71 242 92 22

[info@kellenberger.com](mailto:info@kellenberger.com)

[www.kellenberger.net](http://www.kellenberger.net)

L. Kellenberger & Co. AG

Tel: +41 (0) 32 344 11 52

Fax: +41 (0) 32 341 13 93

[info@kellenberger.com](mailto:info@kellenberger.com)

[www.kellenberger.net](http://www.kellenberger.net)

### United Kingdom

Jones & Shipman Hardinge Limited

Tel: +44 (0) 116 2013000

Fax: +44 (0) 116 2013002

[info@jonesshipman.com](mailto:info@jonesshipman.com)

[www.jonesshipman.com](http://www.jonesshipman.com)

All specifications subject to change without notice.

All marks indicated by ® and ™ are trademarks of their respective owners. #1326J • Litho in USA • © Hardinge Inc.

2015 • September 2015