

**Twinhorn**

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CE

# FG SERIES

CNC Bridge Type Machining Center



<http://www.twinhorn.com.tw>

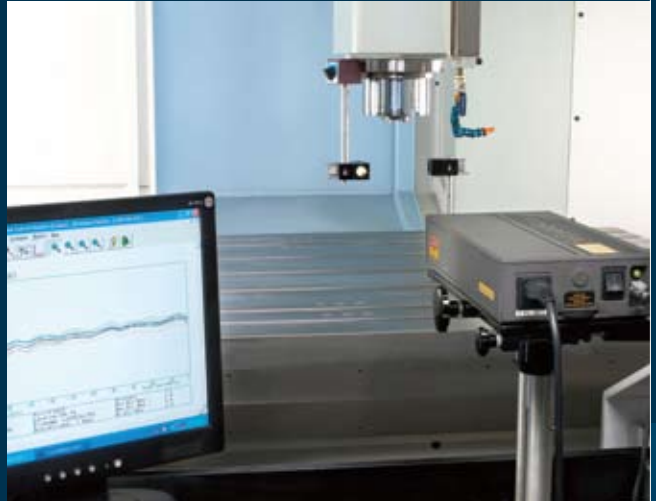
# Dedicated Design

FG Series CNC bridge type machining center is designed and produced based on intensive machining experiences of Chi-Fa, and concept of user-friendly. With high standard accuracy, superior rigidity and best flexibility application design, FG series is excellent for large-scale parts, mold, mold base as well as aerospace components machining.



# 100% Quality control

All FG series are inspected with precise laser test and dynamic trellis coder during assemble processes to assure quality and accuracy. All machines were required to pass an intensive cutting test for total performance check at final QC process is our standard.

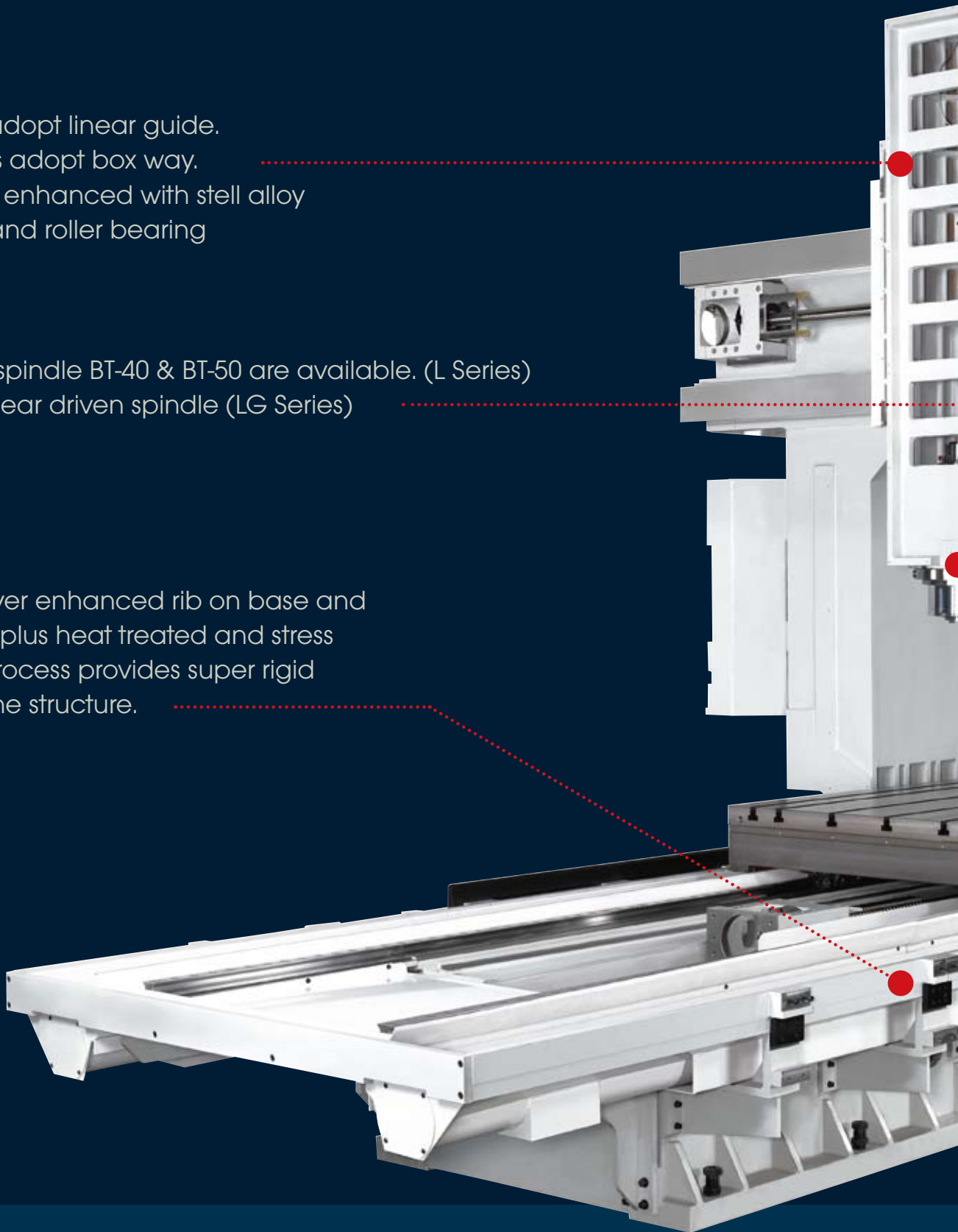


# Excellent for large-scale part and aerospace components m

X axis adopt linear guide.  
Y, Z axis adopt box way.  
\* Y axis enhanced with stell alloy  
way and roller bearing

Built-in spindle BT-40 & BT-50 are available. (L Series)  
BT-50 Gear driven spindle (LG Series)

Multilayer enhanced rib on base and  
bridge plus heat treated and stress  
relief process provides super rigid  
machine structure.



# s, molds, mold base, machining



One piece bridge.

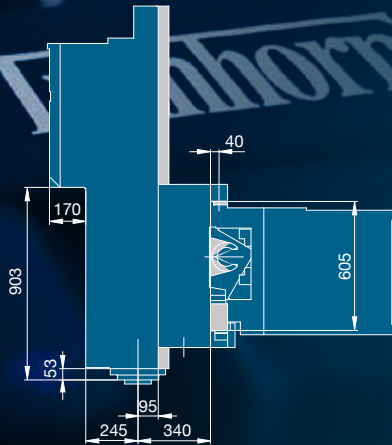
## Linear way blocks

MODEL	Block amount
FG-2215L/LG	6
FG-2715L/LG	8
FG-3215L/LG	8
FG-4215L/LG	10

# Super Rigid Design (LG)

Extended head stock design provides better clearance and wider range of cutting capacity.

Best for huge deep mold and heavy duty machining. High/low gear provides greater cutting rigidity and machining efficiency.



## Gear head (LG)

- Distances between guide ways of Y axis: 605mm.
- Distance from spindle center to Y axis: front 340mm.
- Spindle center to Z axis: guide way front 95mm.



## Alloy steel guide way & roller

Special designed alloy steel guide way, with HRC 60 harden processed, plus steel double roller were used on Y axis to provide a maintenance free guide way structure to ensure smooth movement, stable accuracy and extended machine precision life cycle.

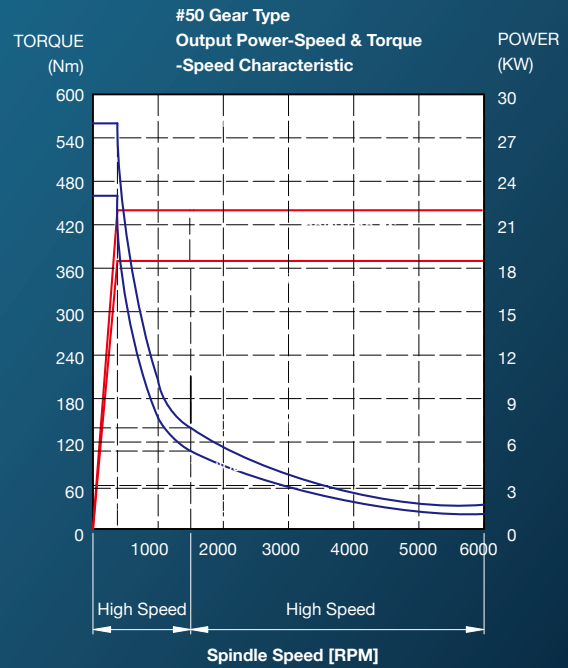
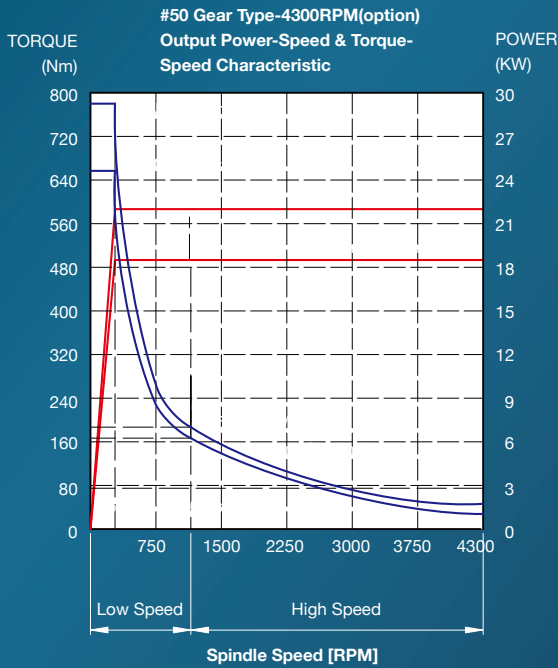


## Built-in high speed spindle (L)

- Built-in type spindle: 12000rpm / 16000rpm(Opt.) / 20000rpm(Opt.)
- Equipped with high rigidity precise ceramic bearing.
- Oil mist for bearing lubrication.
- Oil-cooler system for spindle.
- High accuracy, high rigidity, high efficiency
- No noise, low vibration.

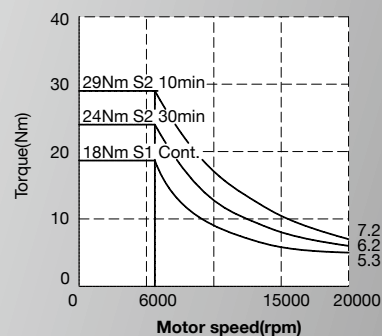
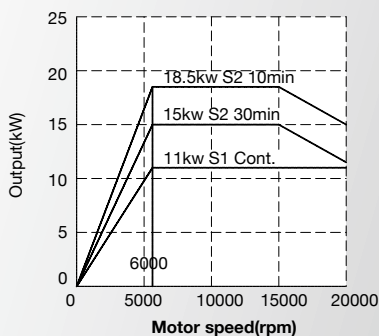
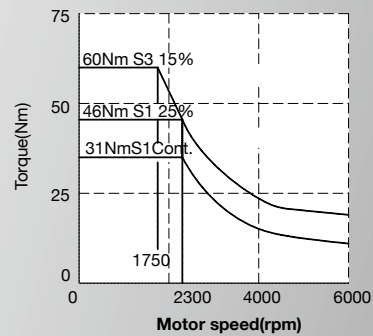
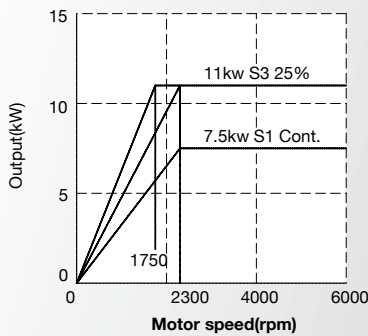


# Spindle Motor Torque Chart- LG Series Gear head BT-50



# Spindle Motor Torque Chart- L Series Built-in(BT-40)

Motor Type : FANUC αB112S/20000i

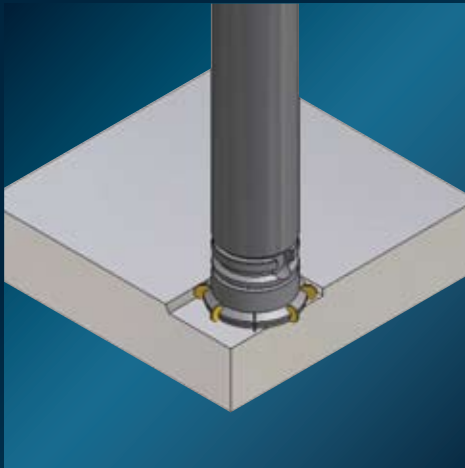






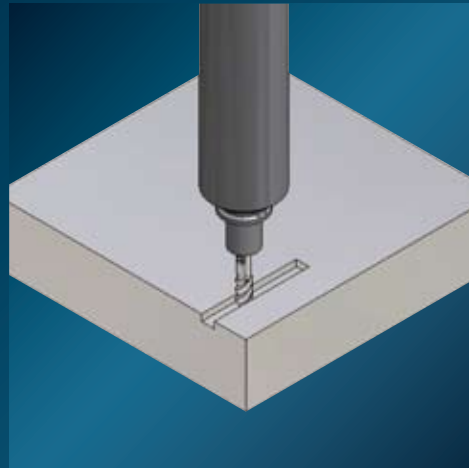
# Cutting Ability (LG Series)

Face milling



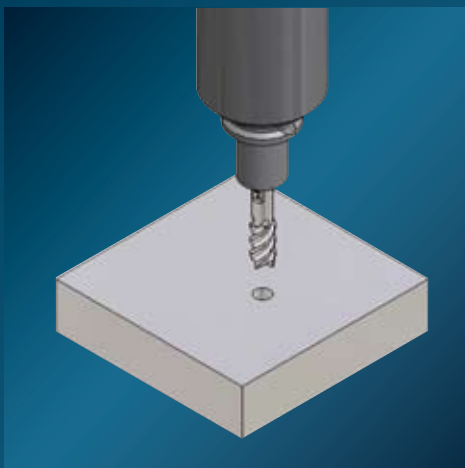
Work piece material	S50C
Spindle speed	420 RPM
Feedrate	1,000 mm/min
Cutting width	120 mm
Cutting depth	6 mm
Material elimination rate	720 cc/min

End milling



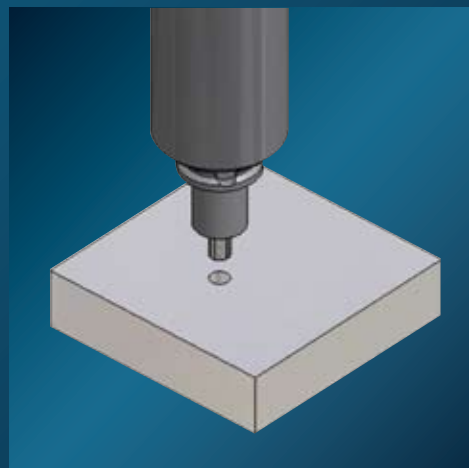
Work piece material	S50C
Spindle speed	1,500 RPM
Feedrate	1,000 mm/min
Cutting width	25 mm
Cutting depth	15 mm
Material elimination rate	375 cc/min

Drilling



Work piece material	S50C
Spindle speed	1,300 RPM
Feedrate	182 mm/min
Drilling diameter	50 mm
Material elimination rate	375 cc/min

Tapping



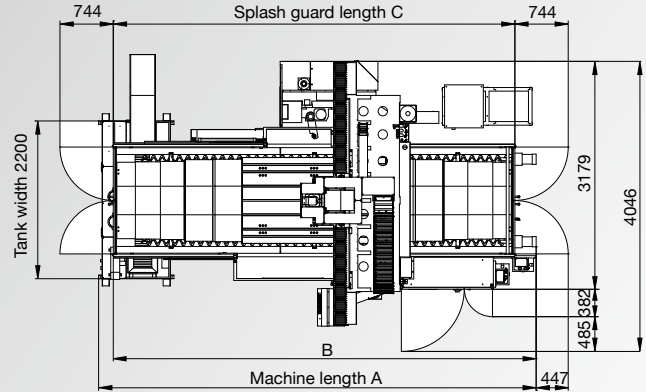
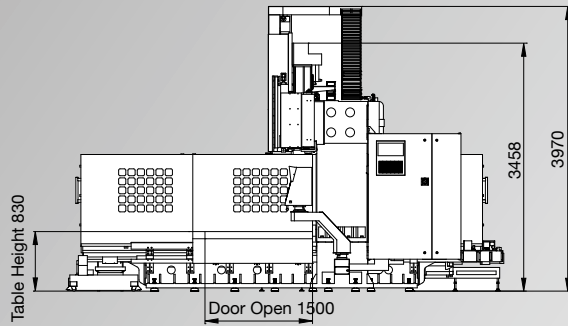
Work piece material	S50C
Spindle speed	70 RPM
Feedrate	315 mm/min
Tap	M45x4.5P

# Machine Dimension

Unit : mm

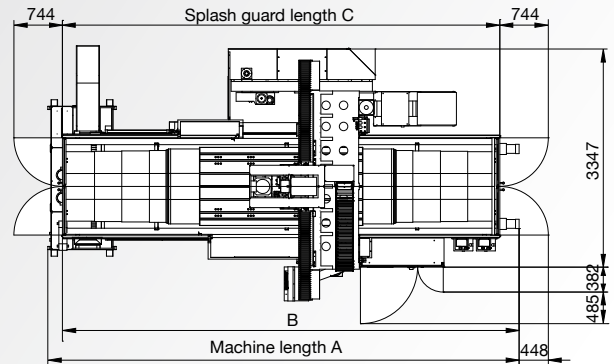
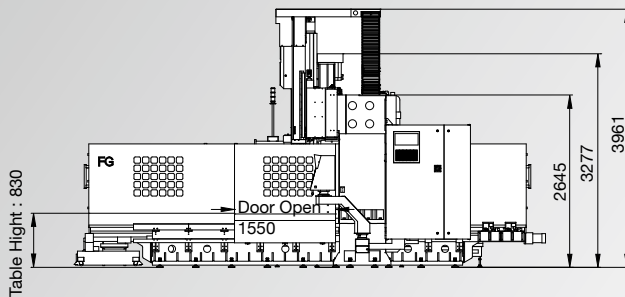
FG-2215L / 2715L / 3215L / 4215L

MODEL	A	B	C
FG-2215L	6100	5898	5601
FG-2715L	7100	6898	6601
FG-3215L	8000	7800	7500
FG-4215L	10080	9900	9600



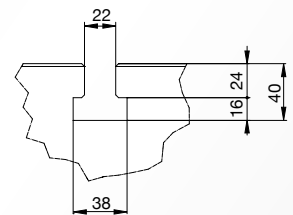
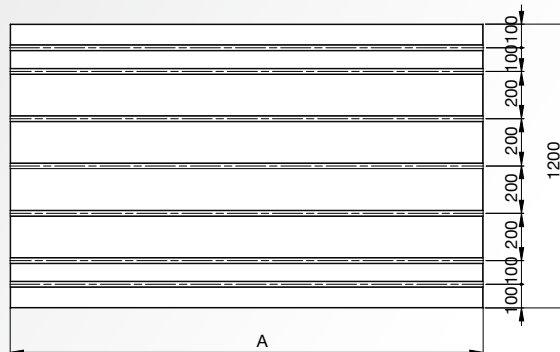
FG-2215LG / 2715LG / 3215LG / 4215LG

MODEL	A	B	C
FG-2215LG	6232	6008	5712
FG-2715LG	7232	7008	6712
FG-3215LG	8232	8008	7712
FG-4215LG	10260	10008	9712



# Table Dimension

MODEL	A
FG-2215L / LG	2000
FG-2715L / LG	2500
FG-3215L / LG	3200
FG-4215L / LG	4200



# Specification

MODLE	FG-2215L	FG-2715L	FG-3215L	FG-4215L
<b>TABLE</b>				
Table size	2000 x 1200mm	2500 x 1200mm	3200 x 1200mm	4200 x 1200mm
T-SLOT (No. x W x pitch)	5 x 22mm x 200mm + 2 x 22mm x 100mm			
Max. loading	4000kg	5000kg	6000kg	8000kg
<b>TRAVEL</b>				
X axis travel	2200mm	2700mm	3200mm	4200mm
Y axis travel	1500mm			
Z axis travel	760mm			
Spindle nose to table	BT40 : 200 - 960 mm, BT50 & FANUC Built in 105 - 865 mm			
Spindle center to column	340mm			
Distance between columns	1500 mm			
<b>SPINDLE</b>				
Spindle taper	BT40 (Opt. HSK A63 , BT50)			
Spindle speed	Built-in BT-40 12000rpm Opt. (16000rpm), HSK A63 : (FANUC 20000rpm),BT50 : (10000rpm)			
Spindle diameter	BT40 & HSK A63 : 70mm, BT50 : 100 mm			
<b>RAPID FEED RATE</b>				
X axis rapid feed rate	20m/min	15m/min		
Y/Z axis rapid feed rate	20 / 15m/min			
Cutting speed(X/Y)	10m/min			
Ball screw diameter & pitch	X/Y/Z : 50/45/45, P16/10/10mm	63/45/45, P20/10/10mm		63/45/45, P30/10/10mm
Ball screw driven way	X/Y/Z: direct /direct/belt		X/Y/Z: belt/direct/belt	
<b>ATC</b>				
Tool number	32			
Max. tool diameter / adjacent	BT40 : 75/125mm, BT50 : 125 / 215mm			
Max. tool length	BT40 : 300mm, BT50 : 350mm			
Max. tool weight	BT40 : 7kg, BT50 : 15kg			
Pull stud	BT40 : MAS403 P40T-1, BT50 : MAS403 P50T-1			
<b>MOTOR</b>				
Spindle motor	BT40 & HSK A63 : 11/18.5kW (Cont. / 10min) ( FANUC αB112S) BT50 : 18.5/22kW(Cont. / 25%)			
Max. spindle torque	BT40 & HSK A63 : 60 Nm (15%), BT50 : 118Nm (25%)			
Axial motor X/Y/Z (FANUC)	A30/A22/A22B			A40/A22/A22B
Coolant pump motor	0.75kW			
<b>ACCURACY</b>				
Positioning	± 0.005 / 300mm			
Repeatablity	± 0.003mm			
<b>GENERAL INFORMATION</b>				
Power capacity	50kVA, 220V, 3 phase 50/60			
Air pressure capacity	5kg/cm <sup>2</sup>			
Axial slide guide way	X linear way + Y&Z Turcite box way			
Machine dimension (L)	6100mm	7100mm	8000mm	10080mm
Machine dimension (WxH)	BT40 : 3787 x 3970, BT50 : 4300 x 3970			
Machine weight	13000kg	15000kg	18000kg	22000kg

STANDARD	OPTION
<ul style="list-style-type: none"> <li>● Spindle oil cooler</li> <li>● Semi splash guard</li> <li>● Auto lubrication system</li> <li>● Coolant system</li> <li>● Double screw chip conveyor + Chain type chip conveyor with cart</li> <li>● Arm type 32T ATC</li> <li>● Rigid tapping</li> <li>● Working lamp</li> <li>● Warning lamp for program end</li> <li>● Footswitch for clamp/unclamp</li> </ul>	<ul style="list-style-type: none"> <li>● RS-232 interface</li> <li>● Leveling bolts &amp; pads</li> <li>● Portable MPG</li> <li>● Heat exchanger for electrical cabinet</li> <li>● Auto power off M30</li> <li>● Tool box with tools</li> <li>● Operational manual</li> <li>● Fanuc 18i-MB</li> <li>● Built-in BT-40 12000R.P.M.spindle</li> <li>● Fully enclosed splash guard</li> <li>● 3-axis linear scale</li> <li>● NC rotary table</li> <li>● Auto tool length measurement</li> <li>● Auto work piece length measurement</li> <li>● Transformer</li> <li>● 500mm Z axis travel</li> <li>● Oil skimmer</li> <li>● Built-in BT-40 16000R.P.M.spindle</li> <li>● Built-in HSK A63 20000R.P.M.spindle</li> <li>● Built-in BT-50 10000R.P.M.spindle</li> </ul>

<b>MODLE</b>	<b>FG-2215LG</b>	<b>FG-2715LG</b>	<b>FG-3215LG</b>	<b>FG-4215LG</b>
<b>TABLE</b>				
Table size	2000 x 1200mm	2500 x 1200mm	3200 x 1200mm	4200 x 1200mm
T-SLOT (No. x W x pitch)	5 x 22mm x 200mm + 2 x 22mm x 100mm			
Max. loading	4000kg	5000kg	6000kg	8000kg
<b>TRAVEL</b>				
X axis travel	2200mm	2700mm	3200mm	4200mm
X axis travel	1500mm			
X axis travel	760mm			
Spindle nose to table	225 - 985 mm			
Spindle center to column	340mm			
Distance between columns	1500 mm			
<b>SPINDLE</b>				
Spindle taper	BT50			
Spindle speed	Two speed (high-low) gear head : 10 - 6000 (standard), (10 - 4300 option)			
Spindle diameter	100 mm			
<b>RAPID FEED RATE</b>				
X axis rapid feed rate	20 m/min	15 m/min		
Y/Z axis rapid feed rate	20 / 15 m/min			
Cutting speed(X/Y)	10m/min			
Ball screw diameter & pitch	X/Y/Z : 50/45/45, P12/P10/P10mm		X/Y/Z : 63/45/45, P30/P10/P10mm	
Ball screw driven way	X/Y/Z : direct /direct/belt		X/Y/Z : belt/direct/belt	
<b>ATC</b>				
Tool number	32			
Max. tool diameter / adjacent	125 / 215mm			
Max. tool length	350mm			
Max. tool weight	15kg			
Pull stud	MAS403 P50T-1			
<b>MOTOR</b>				
Spindle motor	22kW (S3-60%) ( FANUC A18/7000i)			
Max. spindle torque	6000rpm : 560 Nm , (Opt. 4300rpm : 780 Nm)			
Axial motor X/Y/Z (FANUC)	A22/A22/A22B	A30/A22/A22B		A40/A22/A22B
Coolant pump motor	0.75kW			
<b>ACCURACY</b>				
Positioning	±0.005 / 300mm			
Repeatability	±0.003mm			
<b>GENERAL INFORMATION</b>				
Power capacity	50 kVA, 220V, 3 phase 50/60			
Air pressure capacity	5kg/cm <sup>2</sup>			
Axial slide guide way	X linear way + Y&Z Turcite box way			
Machine dimension (L)	6232mm	7232mm	8232mm	10260m
Machine dimension (WxH)	3913mm x 3961mm			
Machine weight	13000kg	15000kg	18000kg	22000kg

### STANDARD FEATURES

- Spindle oil cooler
- Semi splash guard
- Auto lubrication system
- Coolant system
- Double screw chip conveyor + Chain type chip conveyor with cart
- Arm type 32T ATC
- Rigid tapping
- Working lamp
- Warning lamp for program end

### OPTIONAL FEATURES

- Footswitch for clamp/unclamp
- RS-232 interface
- Leveling bolt & pads
- Portable MPG
- Heat exchanger for electrical cabinet
- Tool box with tools
- Operationl manual
- Fanuc 0i-MC
- Fully enclosed splash guard
- 3-axis linear scale
- NC rotary table
- Auto tool length measurement
- Auto work piece length measurement
- Coolant through tool holder device
- Fanuc 18i-MB
- Transformer
- 4300 R.P.M. spindle
- Oil skimmer



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