

FS series

Swiss-Turn Gang Type CNC Lathe

FS series

PRECISION SWISS-TURN GANG TYPE CNC LATHE

Independent and simultaneous machining of main spindle side / back spindle side



Mechanical Features

Modular Tooling Configuration

- The front (T11, T13) and back tool spindles feature a cartridge-type interchangeable design, allowing free combination of different tool holders and spindles to meet diverse machining requirements.

Independent Dual-Spindle Simultaneous Machining

- Equipped with a separate back tool post and a cross-traveling back spindle (S2), exactly simultaneous machining at the main spindle side and back spindle side can be achieved without the need to wait for each other, drastically reducing cycle time.

Back Tool Post with Y-axis

- Includes 4 live tools and 4 fixed tools.
- It can be flexibly expanded with 2 back cross tool spindles to support back slitting, off-center drilling, and tapping.

Direct Motor-Drive Rotary Guide Bushing

- Driven directly by a motor (Max. speed: 12,000 min⁻¹, Max. machining length: 210 mm) for high-speed, high-precision, and low-noise operations, significantly improving geometry accuracy, dimension accuracy, and surface roughness.

Flexible Dual Machining Modes

- Guide bushing type or guide bushing-less type is selectable according to the length of the parts to be produced. The guide bushing-less type does not require ground bar stocks and is suitable for cold-drawn bar machining, greatly reducing the remaining bar length.

Powerful Machining Extensibility

- Deep Hole Machining: An additional face deep hole drilling post is attached beside the back spindle, achieving a maximum drilling depth of up to 100 mm.
- ID Machining: A single-face or double-face drill collet holder can be mounted at the $\Phi 22$ -bore 5-position fixed ID tool post, making it available for face or both face/back machining.

- Special Machining: Supports a thread whirling head (mountable at T11) specifically designed for processing bone screws or long threads.

High-Efficiency Direct C-axis Indexing

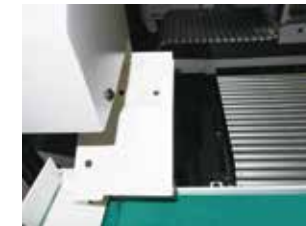
- When spindle indexing is done from the spindle rotating state, it stops at the indexed position directly without the need to return to the reference point, reducing spindle indexing time.

FEM High-Rigidity Machine Bed

- The machine bed design was supported by FEM (Finite Element Method) analysis to produce a high-rigidity machine, assuring stability during high-speed and high-accuracy machining.

Automated Work Catcher

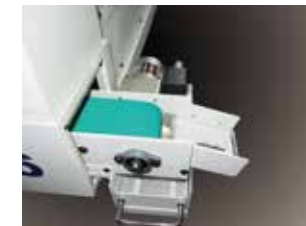
- Equipped with a work catcher and conveyor; work discharged from the back spindle is conveyed through the chute to the work conveyor, then automatically collected into the work container.



Work catcher



Motor direct-drive rotary guide bushing holder



Work conveyor

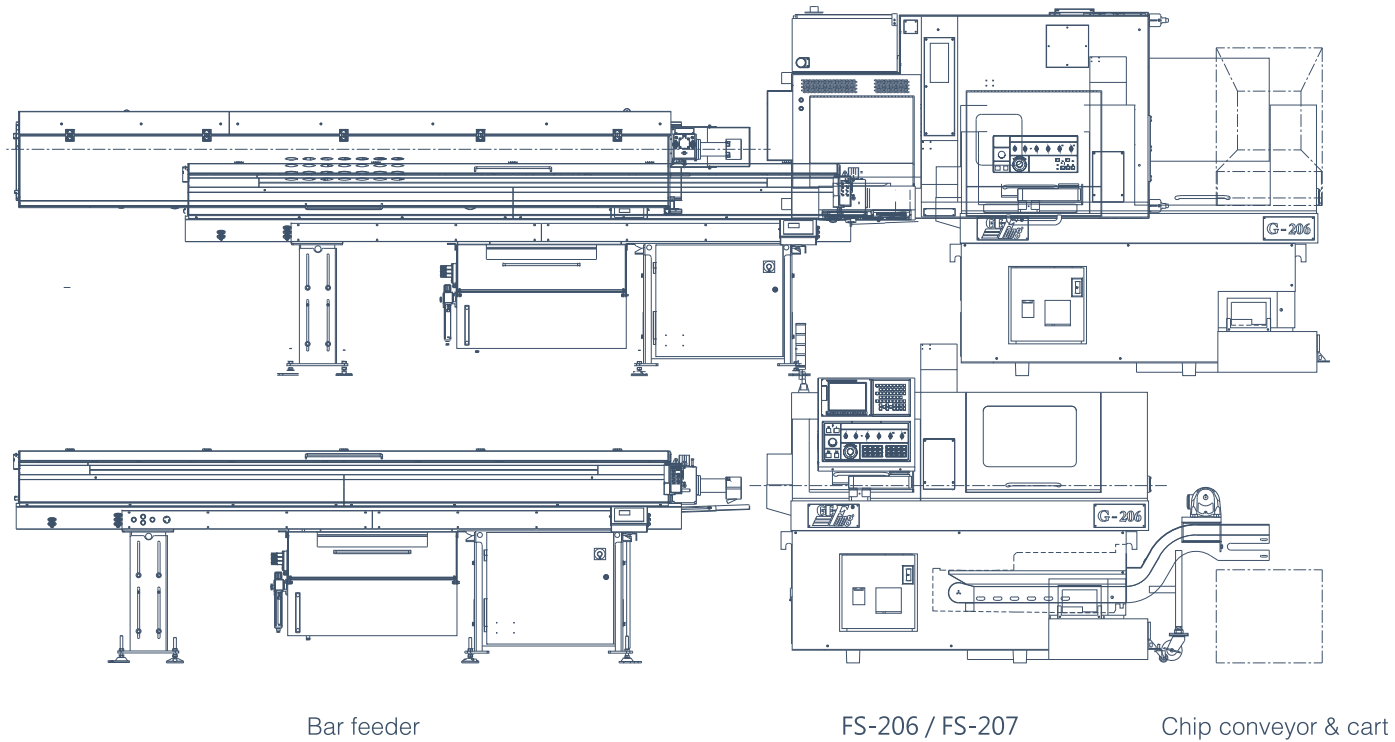
Tool Capacity

MODEL	FS-206	FS-207
No. of tool positions	28	31
Max. No. of mountable tools	39	35
OD tool (T04 - T08, T21 - T23)	8	8
Face fixed ID tool (T15 - T19)	5	4
Face deep-hole drilling tool (T91 - T92)	2	2
Back fixed ID tool (T35 - T38, T45 - T29)	4 (OPT. : 9)	4 (OPT. : 8)
Left cross live tool (T01 - T03)	3	3
Right cross live tool (T11 & T13)	2	3 (B-axis)
Face live tool (T11&T13)	0 (OPT. : 4)	3 (B-axis)
Back live tool (T31- T34, T11&T13)	4 (OPT. : 8)	4+3 (B-axis)

Sample



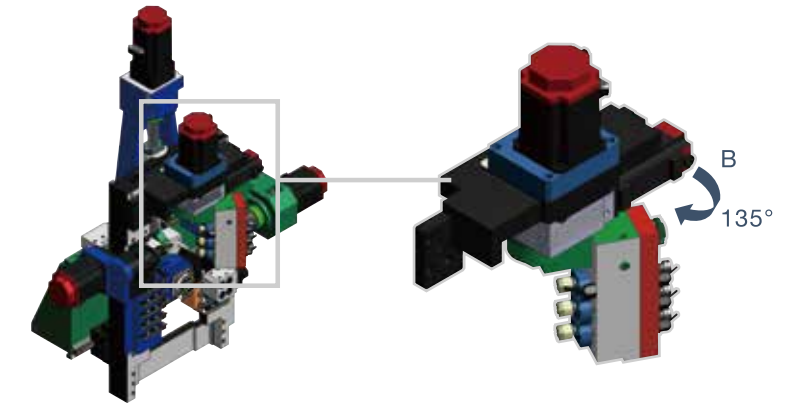
External View



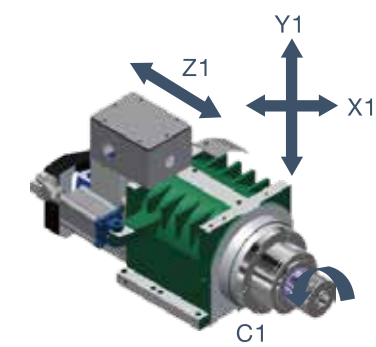
FS-207

B-axis swiveling tool spindles

	Front	Back
Live	ER16 X 3	ER11 X 3
	Max. speed: 5000 RPM	
	Swiveling angle: 135°	



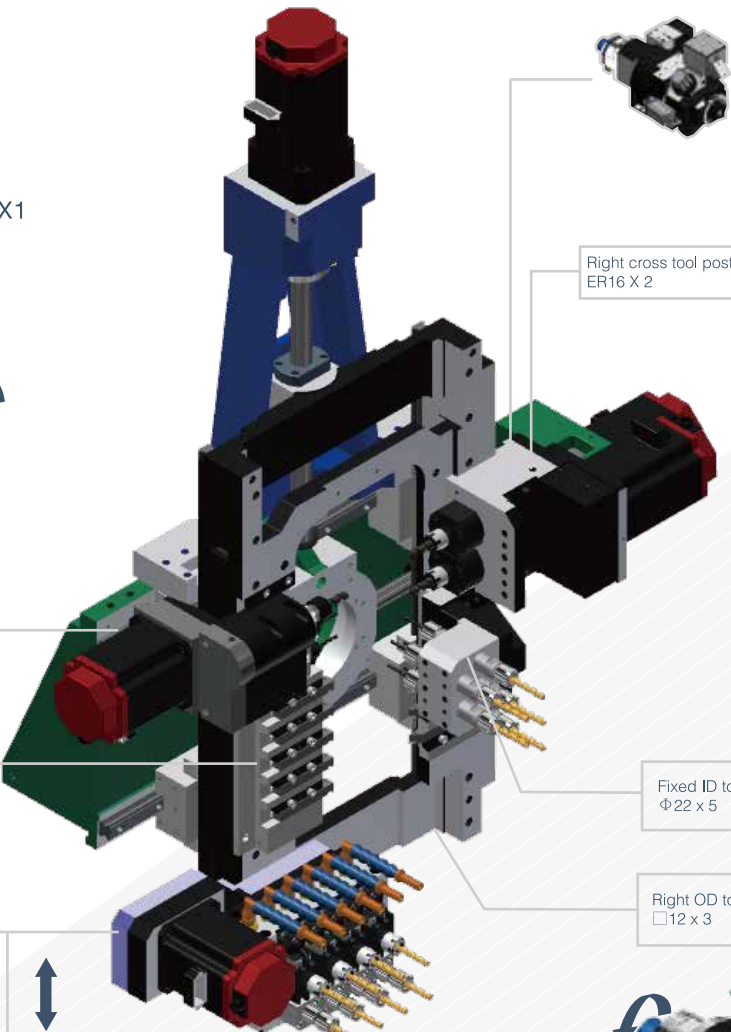
FS-206



Left cross tool post
ER16 x 1
ER11x2

Left OD tool post
□12 x 5

Back tool post
Live (Upper)
T31~T34 (Φ35-ER16)
Fixed (Lower)
T35~T38 (Φ20)



Right cross tool post
ER16 X 2

Fixed ID tool post
Φ22 x 5

Right OD tool post
□12 x 3

Tool spindle

2-position 2-face bevel
drilling head

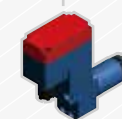
Thread whirling
attachment

2-position 2-face
end-working tool spindle

Deep hole drilling
tool post
Φ20 x 2



Tool spindle



Back cross tool
spindle



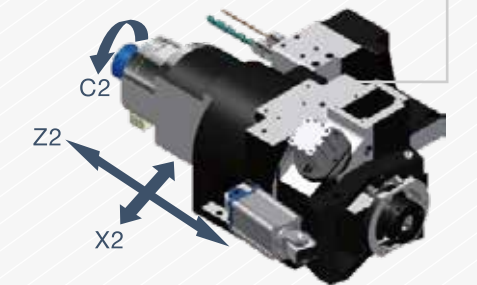
Back OD tool
adaptor



Back deep hole
drilling tool adaptor



Fixed ID tool adaptor

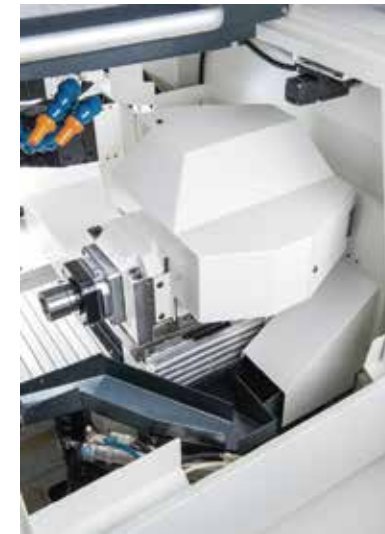


Independent and simultaneous machining of main spindle side / back spindle side

With separate back tool post, and back spindle cross traveling (X2, Z2), tooling at back spindle side (S2) can be performed at the same time while tooling at main spindle side is under way, without need to wait for each other, reducing cycle time greatly.



Mechanical Features



FS-125 is suitable for small parts machining, accuracy is more stable, and machining efficiency is greatly enhanced.

Built-in main and back spindle motors increase tooling accuracy.

High Precision & StabilityBuilt-in Main & Back Spindle Motors:

- Synchronized spindles (up to 10,000 rpm) offer superior speed and phase angle accuracy. Z1/Z2 axis synchronization enables advanced operations like R cut-off.
- Direct-Drive Rotary Guide Bushing: Driven directly by the motor to dramatically improve surface finish, dimensional accuracy, and reduce high-speed noise.
- Thermal Displacement Control: Main/back headstocks and X-axes (X1, X2) are horizontally arranged based on thermal physics principles to minimize heat-induced deformation.
- Rigid Structure: The high-rigidity cast bed absorbs vibrations during rapid traverse. Enhanced tool post and slide guide rigidity ensure cutting load variations do not affect accuracy.

Note: Not suitable for water-soluble cutting coolants.

Back spindle

Flexible Machining & Tooling Versatility

- Selectable Machining Modes:
 - Guide Bushing Type: Max. machining length of 170 mm.
 - Guide Bushing-less Type: Eliminates the need for ground bars; compatible with cold-drawn bars to minimize material waste (remnant length).
- Complex Multi-Axis Tooling:
 - 4-Spindle Cross Tool Attachment: Supports Y-axis complex machining (cross-drilling, tapping, up-down milling).
 - ID Tool Post (20mm bore): Accommodates single or double-headed drill collet holders for front and back ID working.
 - Independent X2-Axis Back Tool Post: Enables simultaneous, overlapped machining on both main and back spindles.

Reduced Idle Time & High-Speed Cycles

- Ultra-Fast Positioning: Rapid traverse up to 32 m/min (X-axis: 24 m/min) and a tight 28 mm tool span drastically minimize tool change and idle time.
- Dual-System Control: Simultaneous reading and processing of independent main/back spindle programs. M, T, and axis feed codes can be executed within a single block.
- Efficient C-Axis & Threading: Direct C-axis indexing stops precisely at the target position without returning to the reference point. Features high-speed thread cutting to shorten cycle times.
- High-Capacity Chip Pan: Large volume capacity designed for extended, uninterrupted operations.

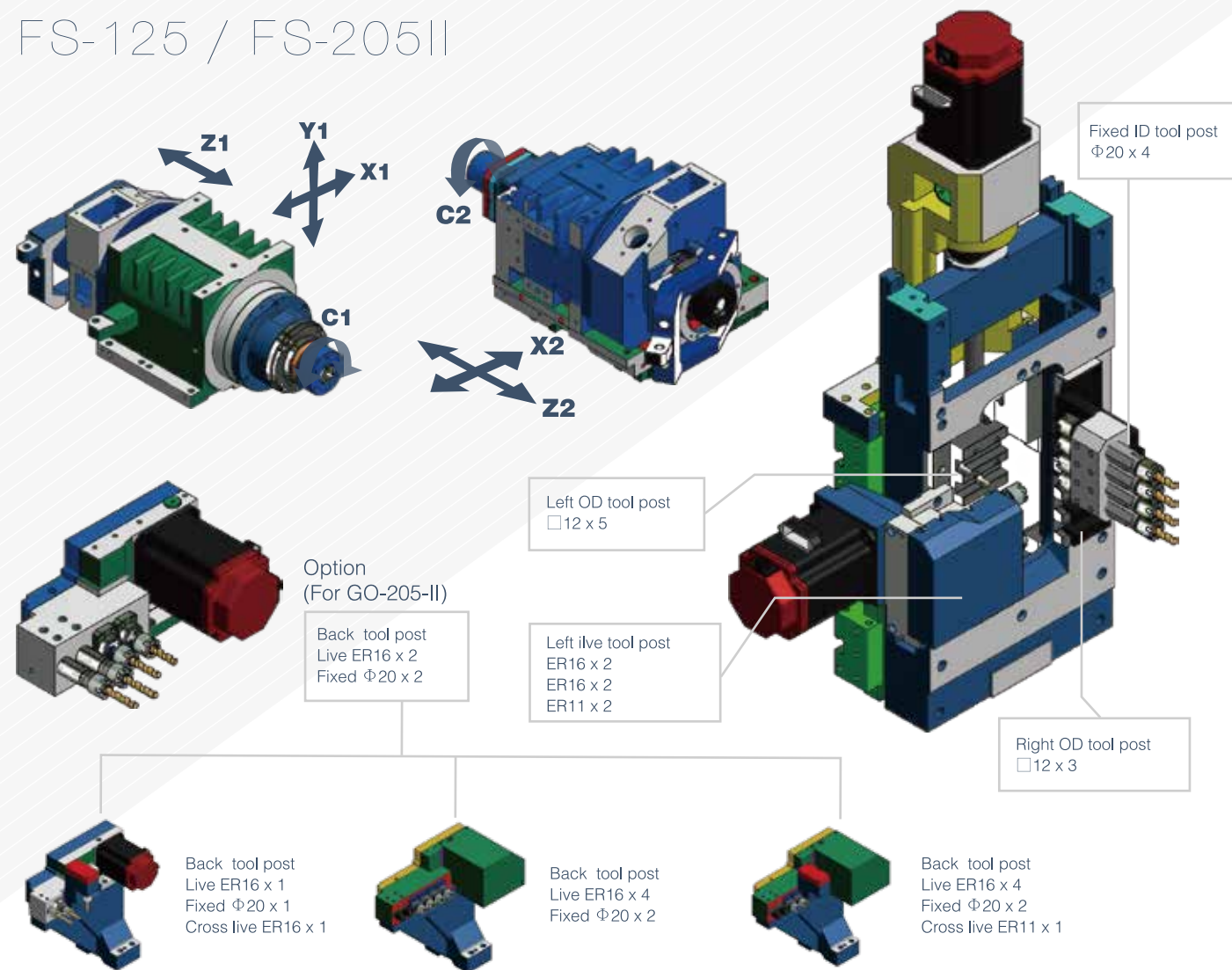
User-Friendly & Ergonomic Operation

- Optimized Workspace: The rotatable operation panel is positioned close to the cutting zone for easy monitoring. A lift-to-full-open safety door ensures effortless tool setup.
- Easy Maintenance: Features an easy-to-rake chip discharge port and a convenient chip box installed at the coolant inlet for quick cleaning.
- Proprietary Smart Software: Standard factory software includes tool life management, tool interference checks, and option toggles (e.g: work conveyor).
- Crash-Proof Programming: Built-in opposed tool calling software automatically applies the mirror image function (G68). Operators do not need to manually input G68/G69, preventing tool collisions caused by programming oversight.

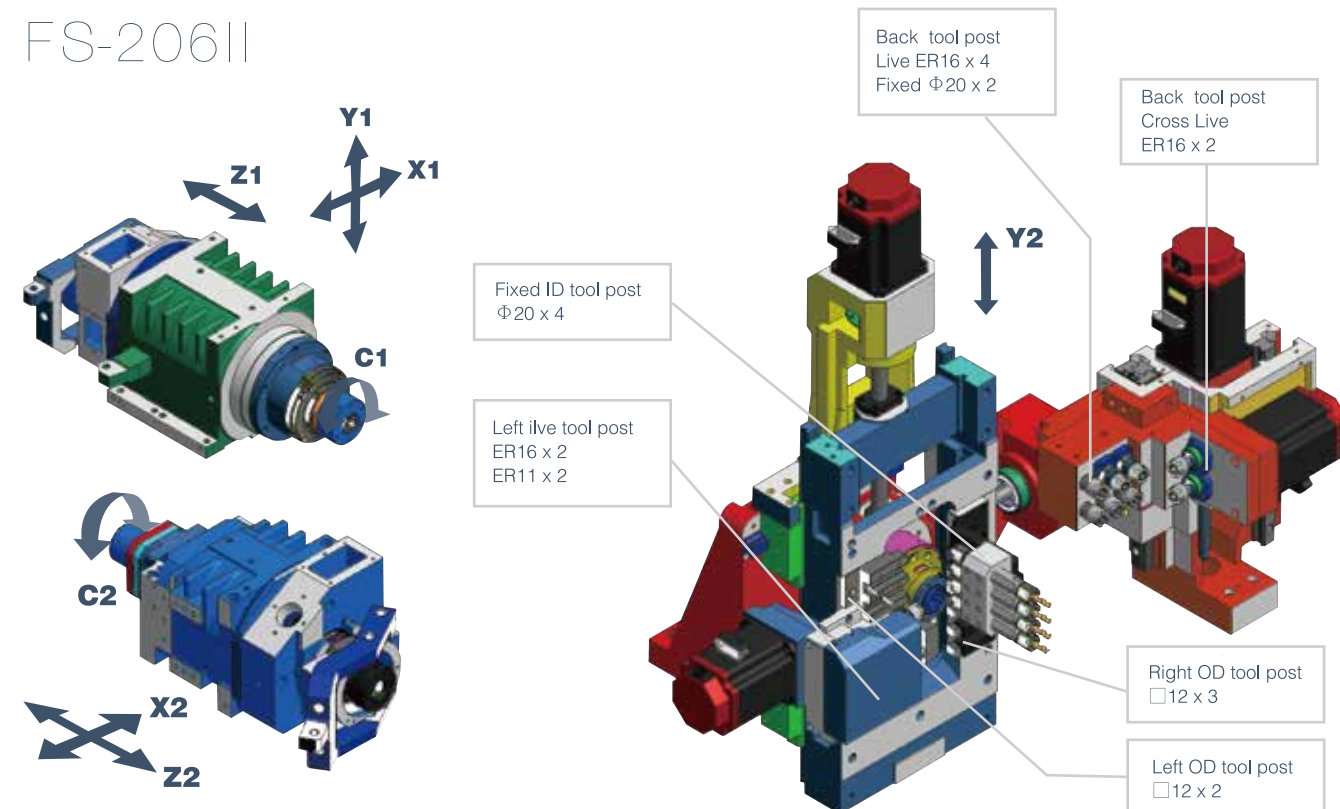
Tool Capacity

MODEL	FS-125	FS-205-II	FS-206-II
No. of tool positions	17		21
Max. No. of mountable tools	23		25
OD tool	5		5
Face fixed ID tool	4		4
Back fixed ID tool	2(OPT :6)		4(OPT:8)
Left cross live tool	4		4
Back face live tool	2(OPT :4)		2
Back cross live tool	0(OPT :1)		2

FS-125 / FS-205II



FS-20611

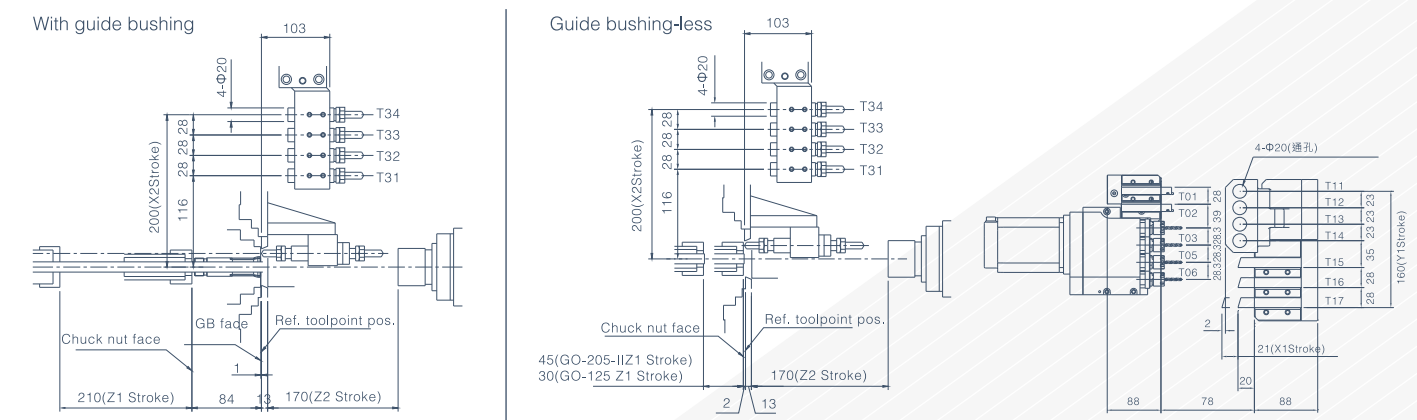


Standard NC function (Standard)

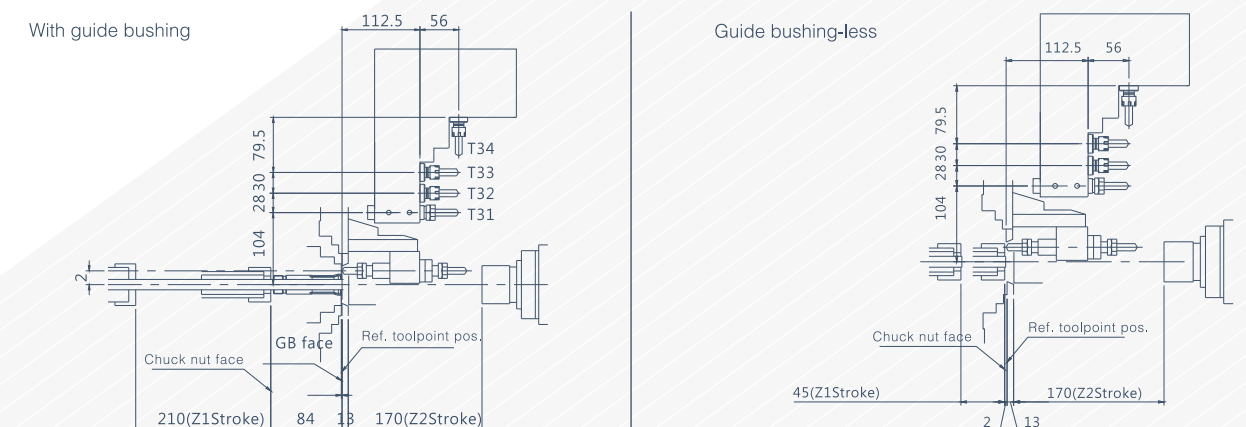
MODEL	FS-125 FS-205-II FS-206-II	MODEL	FS-125 FS-205-II FS-206-II
Main spindle C axis	○	Axis synchronous control	○
Sub spindle C axis	○	Tool geometry / wear offset	○
Cross tool spindle rigid tapping	○	Programmable data input	○
Treading, synchronous cutting	○	R Chamfering / corner R	○
Continuous thread cutting	○	Tool nose radius compensation	○
Manual handle feed	○	Multiple repetitive cycle	○
Memory card 1/0 interface	○	Extended part program editing	○
USB interface	○	Inch / metric conversion	○
Background editing	○	Canned cycles for drilling	○
Run time and parts count display	○	Rigid tapping (Main / back spindle)	○
Custom macro	○	Manual handle retrace	○
Spindle synchronous control	○	Polygon turning	○

DIMENSIONAL DRAWINGS

FS-125 / FS-205-II



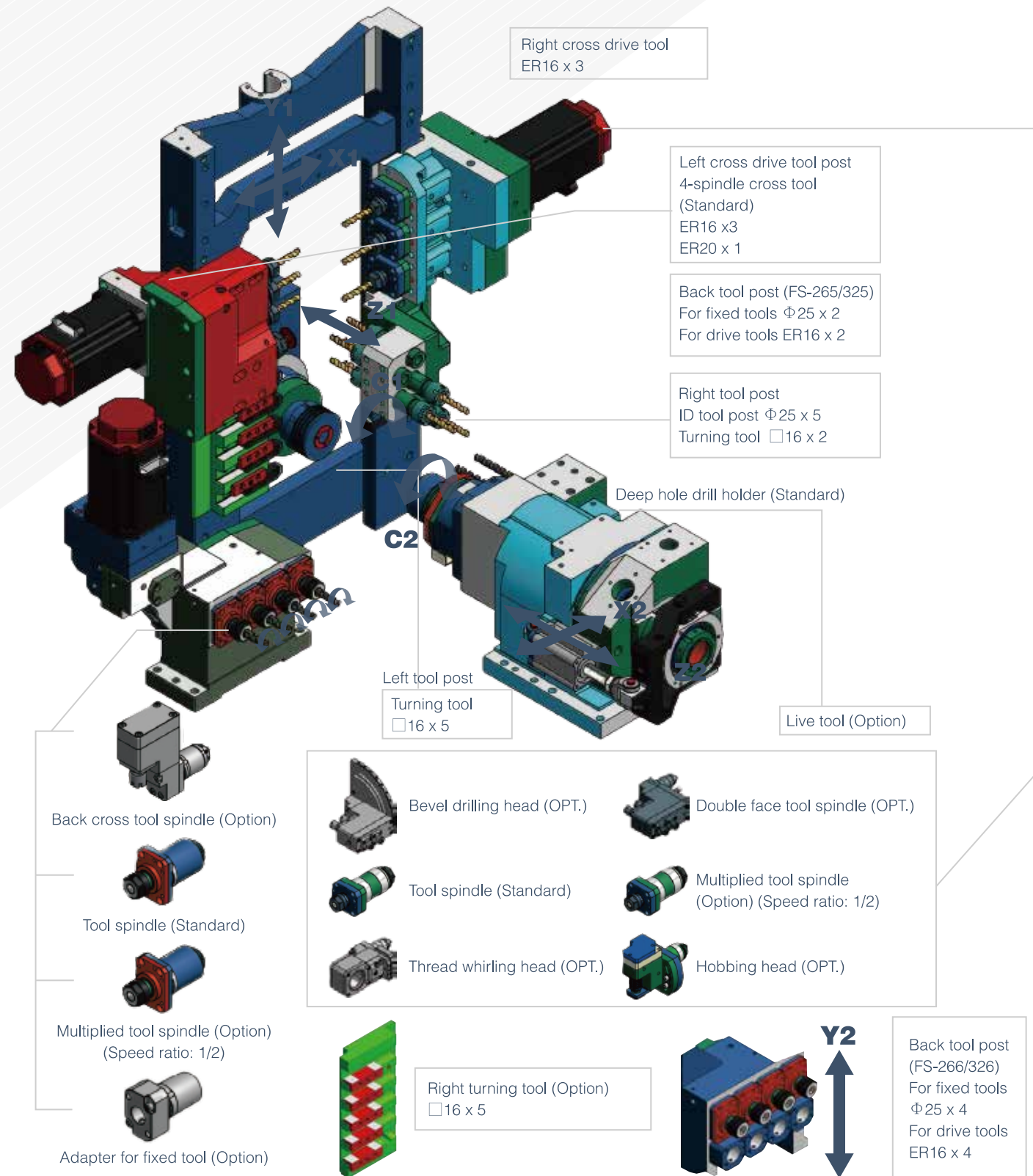
FS-206-11



FS-265 / 325 FS-266 / 326

Simultaneous complex machining with main and back spindles!

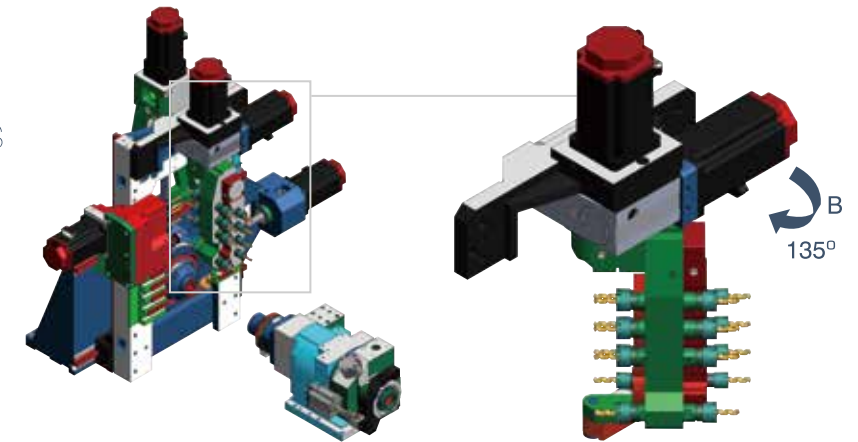
- More cross tools (7 in total)
- Cartridge type design for tool spindle (Right cross tool and back tool)
- Available to be equipped with other different tool spindle or fixed tool adaptor
- Wider choices for tooling layout



FS-267 / 327

B-axis swiveling tool spindles

	Front	Back
Live tools	ER 16 X 4	ER 16 X 4
	Max. speed: 5000 RPM	
	Swiveling angle: 135°	
Fixed tools	Φ25 x 4	



Features

- Built-in main/back spindle motors increase tooling accuracy and the accuracies of the synchronized spindles speed/phase angle.
- Geometrical accuracy, dimensional accuracy and surface roughness are greatly improved with low noise even at high speed if with motor direct-drive rotary guide bushing.
- With separate back tool and X2 axis, machining at the main and back spindle can be performed independently without waiting for each other.
- Upon request for machining and choose suitable guide bush modes. Fixed guide bushing / Rotary guide bushing / Guide bush-less kit Ground bar is not required if guide bush-less mode and reducing remaining bar length.
- Direct C-axis indexing can reduce spindle indexing time and avoid returning to reference point when indexing is done.
- Thread whirling head or hobbing head can be mounted on right cross tool post for processing bone screw or gear .etc.
- Large chip tray.
- FS-325/FS-326 /FS-327main spindle uses hydraulic cylinder for bar clamping for avoiding bar shrinkage during processing.



Work conveyor



Motor direct-drive rotary guide bushing holder



Back sander

Suitable for various metal material parts processing.

Medical



Measuring instrument



Automotive&Electronics



Tool



Higher Rigidity

- Increase rigidity of main spindle's tool posts and feed axis sliding guide without affecting tooling accuracy, even for variable load cutting.
- Based on thermal physics, the main and back headstocks on X axes (X1, X2) are all mounted horizontally, reducing the heat-induced deformation to a minimum.

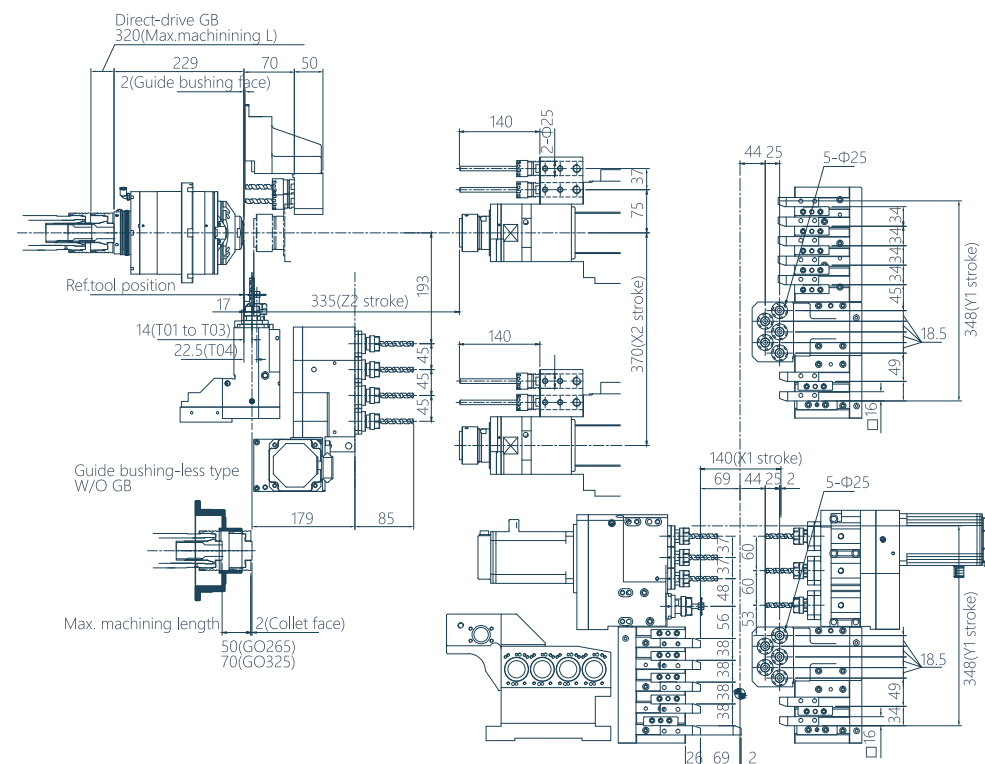


Hydraulic cylinder for main collet chuck
(For FS-325/FS-326/FS-327)

Standard NC specification

MODEL	FS-206	FS-207	FS-125	FS-205-II	FS-206-II	FS-265 FS-266	FS-325 FS-326
Controller	FANUC Oi-TF	FANUC 32i-B	FANUC Oi-TF		FANUC Oi-TF		
No. of controlled axes	8 (X1,Z1,Y1,C1,X2,Z2,Y2,C2)	9 (X1,Z1,Y1,C1,X2,Z2,Y2,C2)	5 (X1,Z1,Y1,X2,Z2)	6 (X1,Z1,Y1,X2,Z2,Y2)	7 (X1,Z1,Y1,C1,X2,Z2,C2) /		
Spindle synchronous control (speed & phase angle)	S1- S1(Main spindle-Back spindle)		S1- S1(Main spindle-Back spindle)		8 (X1,Z1,Y1,C1,X2,Z2,Y2,C2)		
Axis synchronous control	Z1-Z2,C1-C2		Z1-Z2		S1- S1(Main spindle-Back spindle)		
Axes simultaneously controlled	Max. 4 axes/ each path		Max. 4 axes/ each path		Z1-Z2		
Axis composite control	X1-X2,Z1-Z2		Z1-Z2		Max. 4 axes/ each path		
Max. programmable dimension	±8 digits		±8 digits		±8 digits		
Rapid traverse rate	32m / min (X1,Y1, Y2:24m/min)		30m / min (X1: 24m/min)		30m / min(X1,Y1,Y2:24m / min)		
Spindle / Feed rate override	0~150%,10%,10% increments		0~150%,10% increments		0~150%,10% increments		
Tool offset pairs	±6 digits 200 pairs(S1+S2)		±6 digits 128 pairs		±6 digits 200 pairs		
Display unit	10.4"color LCD		10.4"color LCD		10.4"color LCD		
Part program storage length	2 megabytes(S1+S2)		1 megabytes / 400 path		2 (S1+S2)		
Programs stored	1,000						
Absolute / Incremental command			X,Z,Y:Absolute/ U,W,V:Incremental		X,Z,Y / U,V		

WORKING RANGE



SPECIFICATIONS

MODEL		FS-206	FS-207
Machining capacity			
Main spindle	Bar stock diameter	ø3 ~ 20 mm	
	Max.machining length	210 mm (Motor direct - drive guide bushing)	
		250 mm (Fixed type guide bushing)	
		80 mm (Mechanical-drive guide bushing)	
		45 mm (Guide bushing-less)	
	Drilling	ø10 mm	
Tapping	M8		
Deep hole drilling	ø8 mm		
Back	Max.work chucking diameter	ø20 mm	
	Drilling	ø8 mm	
	Tapping	M6	
Live tool spindle	Drilling/tapping(Left cross tool)	ø6 mm / M5	
	Drilling/tapping (Right cross tool)	ø8 mm / M6	ø6 mm / M5
	Drilling/tapping (Back tool)	ø6 mm / M5	
	Max.sitting saw/soting cutter dia.	ø30m (T01)	
	Speed		
Main spindle		200~12,000 min 1	
Back spindle		200~12,000 min 1	
Rotary guide bushing		30m / min (X : 24m/min)	
Tool spindle		200 ~ 8,000 min ¹	200 ~ 8,000 min ¹ (B-axis 5000min ¹)
Controllable axes(including Cs axes)		8 axes	9 axes
Rapid traverse(m/min)		30m / min (X : 24m/min)	
OD tool shank		12 x 12 x 100 mm	
Tool positions / Max. mountable tools		28/39	31/35
Motors			
Main spindle		2.2 / 3.7 KW (Cont. 15min)	
Back spindle		1.5 / 2.2 KW (Cont. / 15min)	
Tool spindle	Left cross tool	0.75 KW	
	Right cross tool	1.0 KW	0.75 KW
	Back tool	0.75 / 1 KW (Cont. / 15min)	
Rotary guide bushing			
X1·X2·Z1·Z2·Y2 axes		0.5 KW	
Y1 axis		0.75 KW	
Baxis		No	0.5 KW
Coolant pump		0.75 KW	
Lubricating pump		0.011 KW	
Axis trave			
X1		124 mm	
Y1		280 mm	
Z1(Fixed guide bushing)		290 mm	
X2		340 mm	
Y2		60 mm	
Z2		300 mm	
Power, etc			
Weight		3,700 Kg	
Power source requirement		14.3 KVA	
Compressed air requirement		24 Kg / cm2	
Air consumption		40 NL / min	
Width x depth x height		2,300 x 1,400 x 2,000 mm	

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.

SPECIFICATIONS

MODEL		FS-265/266		FS-267		FS-325/326		FS-327	
Machining capacity									
Main spindle	Bar stock diameter		ø8~26 mm				ø8~32 mm		
	Machining length	320 mm (Motor direct-drive rotary guide bushing) 115 mm (Mechanical-drive rotary guide bushing)							
		50 mm (Guide bush-less)				50 mm (Guide bush-less)			
	Drilling		ø12 mm						
	Tapping		M10						
Back spindle	Deep hole drilling		ø10mm						
	Working chuck diarneter		ø26 mm				ø32 mm		
	Drilling		ø10mm						
Tool spindle	Tapping		M8						
	Drilling/tapping (Left cross tool)		ø8mm /M6						
	Drilling/tapping (Right cross tool)		ø8 mm / M6						
	Driling/tapping(Back tool)		ø8 mm / M6						
	Slitting saw		ø45mm (Right cross tool T04)						
Max.speed									
Main spindle		10,000 rpm				8,000 rpm			
Back spindle		10,000 rpm				8,000 rpm			
Direct-drive guide bushing		10,000 rpm				8,000 rpm			
Tool spindle		6,000 rpm							
Tool size									
OD tool shank		16 x 16 x 100 mm							
Boring tool shank (For face/back ID tool or back tool post)		ø25 mm							
Chuck for left cross tool		ER16 X 3 : ER20 x 1							
Chuck for right cross tool		ER16							
Chuck for back live tool		ER16							
Chuck for back fixed tool		ER16							
Chuck for deep hole drill		ER16							
Standard tool position No.		30 (FS-205 / FS-325) 34 (FS-266 / FS-326) 38 (FS-267 / FS-327)							
Left OD turn tool post		5							
Right OD turn tool post		2		3		2		3	
Front/back ID tool post (One body)		5		8(B axis)		5		8(B axis)	
Back tool post		4 (FS-265) 8 (FS-266)		8		4 (FS-325) 8 (FS-326)		8	
Left cross drive tool post		4							
Right cross drive tool post		3		4(B axis)		3		4(B axis)	
Deep face drill									
Motor		2							
Main spindle									
Back spindle		3.7/7.5KW(Rated/10 min.)							
Left cross drive tool		2.2/3.7KW(Rated/10 min.)							
Right cross drive tool		1.0 KW							
Back tool		1.0 KW							
Direct-drive guide bushing		1.0 KW							
X1,Y1,Z1,X2, Z2 axes		2.2/3.7kW(Rated/10 min.)							
Y2 axis		0.75 KW							
Coolant pump		0.5 KW							
Lubricating pump		0.75 KW							
1 Hydraulic pump		0.011 KW							
Axis travel		No(無)				0.75 KW			
X1		142mm							
Y1		348 mm							
Z1		320 mm (Motor direct-drive rotary guide bushing)							
X2		370 mm							
Z2		335 mm							
Y2		68 mm							
B		No		135°		No		135°	
Others									
Weight		3,600 kg							
2 Rated power (Capacity)		15.36 kW (21.4 KVA)		16.11 KW(22.5 kVA)		16.11 KW(22.5 kVA)		16.86 KW(23.5 KVA)	
Compressed air requirement		≥4kg/cm2							
Air consumption		≥100 NL / min							
Coolant tank capacity		180 L							
Machine dimensions (W x D x H)		2,150 X 1,280 x 1,930 mm							

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MODEL			FS-125	FS-205-II	FS-206-II
Machining capacity					
Max.material bar diameter at main spindle			12 mm	20 mm	
Max.work chucking diamneter at back spindle			12 mm	20 mm	
Max.machining length			170 mm (Direct motor - driven guide bushing) 80 mm (Mechanical-drive guide bushing) 250 mm (Fixed guide bushing) 30 mm (FS-125) / 45 mm (FS-205-II , FS-206-II) (Guide bushing-less)		
Max.main spindle drilling / tapping diameter			ø8 mm / M6	ø10 mm / M8	
Max.back spindle drilling / tapping diameter			ø8 mm / M6		
Max.drilling /tapping dia. of cross tool spindle			ø6 mm / M5		
Max.mountable slitting saw dia. / Nos. at cross tool post			ø30 mm X 2		
Max.dilling / tapping diameter of back tool spindle			ø8 mm / M6		
Max.drilling / tapping diameter of back cross tool spindle			No		ø6 mm / M5
Machineacity			M6		
Max. speed	Main spindle		12,000rpm	10,000rpm	
	Back spindle		12,000rpm	10,000rpm	
	Rotary guide bushing	Motor direct-drive	12,000 rpm	10,000rpm	
		Mechanical-drive	8,000 rpm	8,000 rpm	
	Cross tool spindle		5,000 rpm		
Back tool spindle		5,000 rpm			
Tool size					
OD turn tool shank			12 x 12 x 85 mm		
Boring tool shank (for face / back, back tool post)			ø20 mm		
Chuck for cross live tools			ER11 x2/ER16x2		
Chuck for back live tools			ER16x2		ER16x4
Rapid traverse			30 m / min (X: 24 m / min)		
Rapid traverse			5(X1・Y1・Z1・X2・72)		6(X1 - Y1・X2 X2・72)
Motor					
Main spindle motor			1.5/2.2KW(Rated/15min.)	2.2/3.7KW(Rated/15min.)	
Back spindle motor			1.5/2.2KW(Rated/15min.)		
Rotary guide bushing			0.75/1.1KW(Rated/15min.)		
X1・Y1・Z1・X2・Z2 Axis motor			0.5 KW		
Y2 axis motor			無NO		0.5 KW
Cross tool spindle motor			0.5 KW		
Back tool spindle motor			0.5 KW		
Coolant pump motor			0.75 KW		
Lubrication pump motor			0.011 KW		
Spindle cooling oil pump motor			0.019 KW		
Axis travel					
X1			84 mm		
Y1			160 mm		
Z1(fixed guide bushing)			250 mm		
X2			400 mm		335 mm
Z2			170 mm		
Y2			NO		60 mm
Others					
Net weight			1,700 Kg		
Equipment capacity			11 KVA		
Power source required			≥9 KVA		
Air pressure			≥0.4 MPa (4Kg / cm2)		
Air flow			230 NL / min		
Cutting coolant tank capacity			115L		
Machine size:LxWxH			1,640 x 1,080 x 1,700 mm		

Standard Accessories

- Main spindle sleeve (for round bar machining)

- Back spindle sleeve (for round bar machining)

- Door interlock (Tooling zone side door / Main spindle side door)

- Coolant flow switch

- Spindle cooling unit
- Standard tools

- Slide fixing blocks (for transit)

- Automatic power shut-off

- Back spindle air purge

- Cross live drill air purge

- Coolant pump(1HP)

- Internal work light

- Manual pulse generator
- 3-tiered warning lamp set

- Work catcher

- Work conveyor

- Bar feeder interface

- RS232 interface

- Fixed guide bushing

- Motor direct- drive rotary guide bushing

Optional Accessories

- Guide bushing system
- Mechanical-drive rotary guide bushing

Options for right cross tools(T11,T13)

- 2-position 2 - face end-working tool spindle (collet : ER16 for S1, ER11 for S2)
- 2-position 2- face bevel drilling head (angle adjustable, collet: ER16 for S1 , ER11 for S2)
- Thread whirling attachment

Options for back live tools

- Back OD tool adaptor
- Back cross tool spindle
- Fixed ID tool adaptor
- Back deep hole drilling tool adaptor

Options for fixed ID tool post (through-hole)

- Drill collet holder
- Double-face drill collet holder
- Adjustable double-face drill collet holder

High pressure coolant system

- 70 bar
- 40 bar

Oil mist collect system

- Oil mist collector

Others

- Main spindle sleeve(for non-rounded bar machining) (Mechanical-drive guide bushing)
- Main spindle sleeve (for non-rounded bar machining) (Guide bushing-less type)
- Back spindle sleeve (for non-rounded bar machining)
- Small- bore spindle sleeve for reducing bar vibration(96~17,1 mm increment)
- Bar feeder
- Chip conveyor and chips cart
- Transformer