

SD/SW SERIES

Maximum Performance SWISS Turning Centers

GOODWAY MACHINE CORP.

MAXIMUM PERFORMANCE SWISS TURNING CENTERS

With leading technology and high quality components. Goodway Swiss Type machine provides the best solution for those work pieces smaller than 32mm. Additional, SD & SW series are not only with super rigid body, faster moving, and variety tooling selection but also available with sub-spindle, live tooling and bar-feeder to accomplish today and tomorrow's most demand.

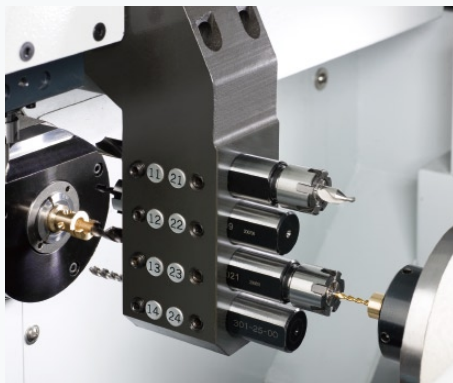


(SD-16 series model shown.)

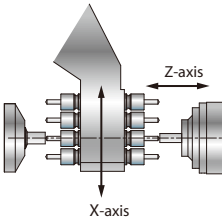
- ▶ Fully enclosed splashguards keep chips and coolant contained for a safe clean working environment.
- ▶ All spindle and servo motors, are FANUC alpha *i* series components to ensure peak machining performance and accuracy.
- ▶ C3 class hardened and precision ground ball screws ensure the highest accuracy and durability possible. Plus, pretension on all axes minimizes thermal distortion.
- ▶ The auto lubrication system delivers metered amounts of lubrication to the slide ways, ball screws, and vital components. Distribution is automatically shut off during idling to prevent waste.
- ▶ Optional high efficient heat exchanger for the electrical cabinet minimizes heat effects and extends the life of the electrical components.

MACHINING VARIATIONS

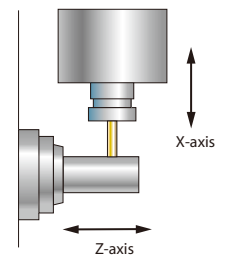
SD-16



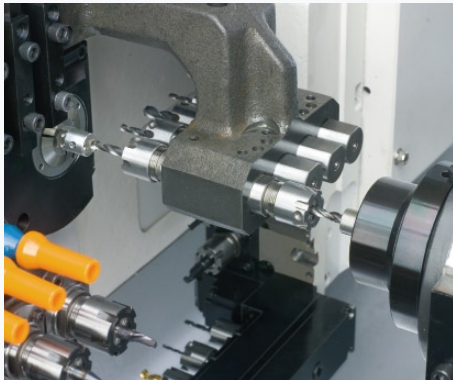
▶ Main & Sub-spindle simultaneous drilling and tapping



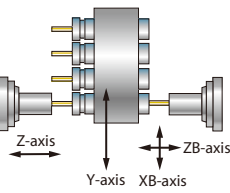
▶ Side milling & tapping



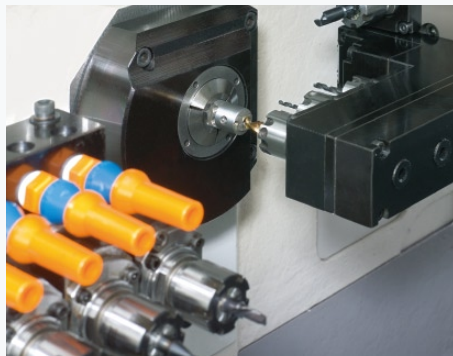
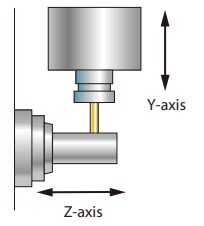
SW-20



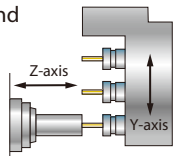
▶ Main & Sub-spindle simultaneous drilling and tapping



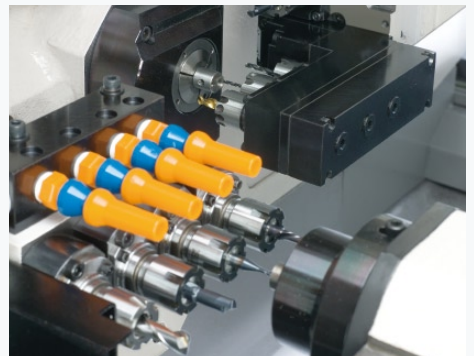
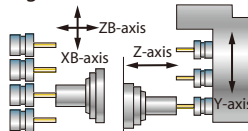
▶ Side milling & tapping



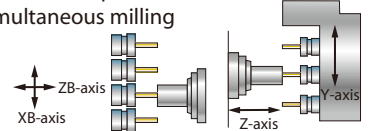
▶ Front offset drilling and tapping



▶ Rear offset drilling and tapping



▶ Main & Sub-spindle simultaneous milling



SD-16

SW-20

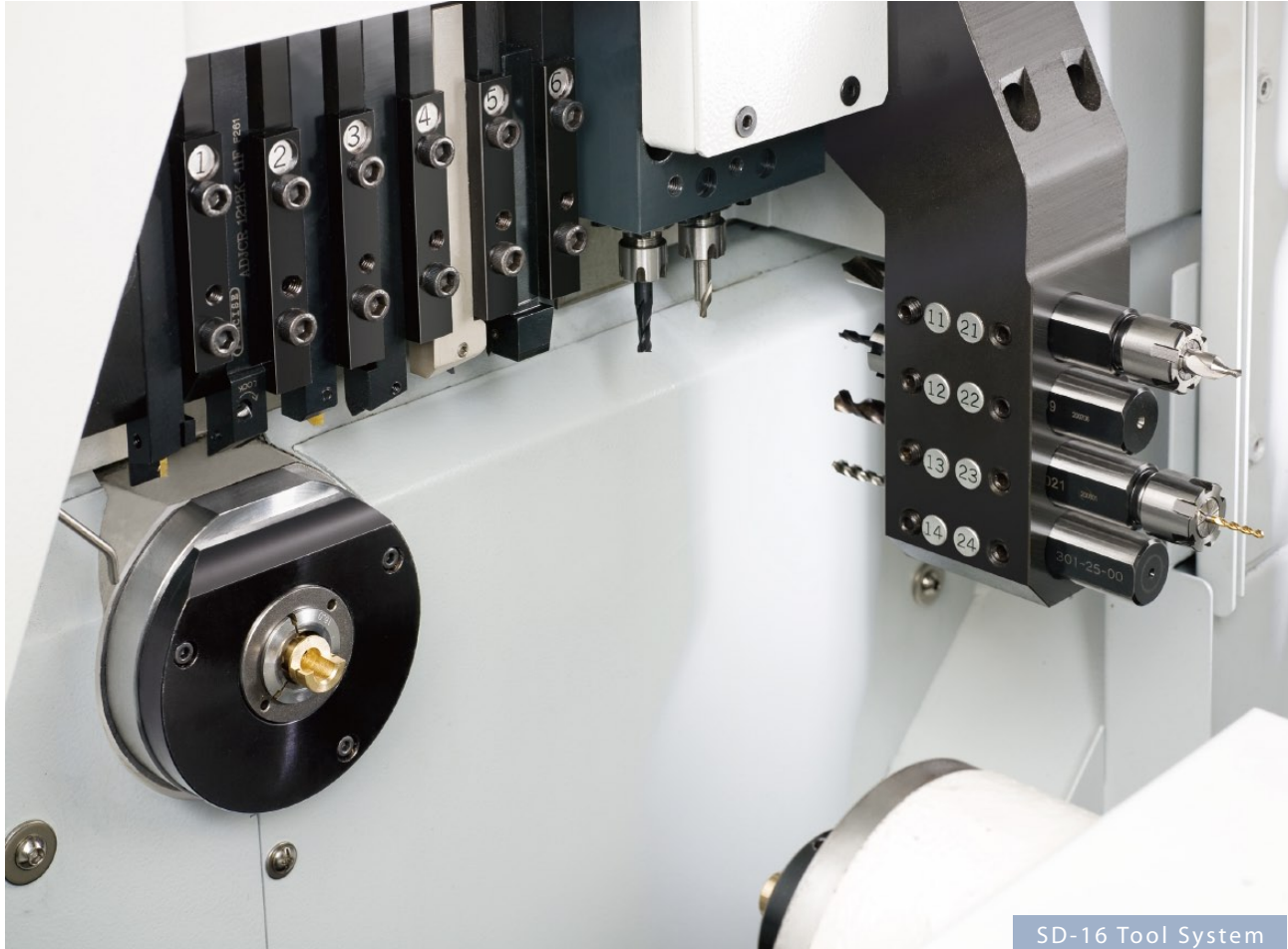
SW-32

Sub-spindle	O	O	O
Main & Sub-spindle simultaneous machining	O	O	O
Side live tool attachment	S	S	S
Rear-end tool attachment	O	O	O
Spindle C-axis control	S	S	S
Module spindle design	-	-	O
U-drill device	-	-	S

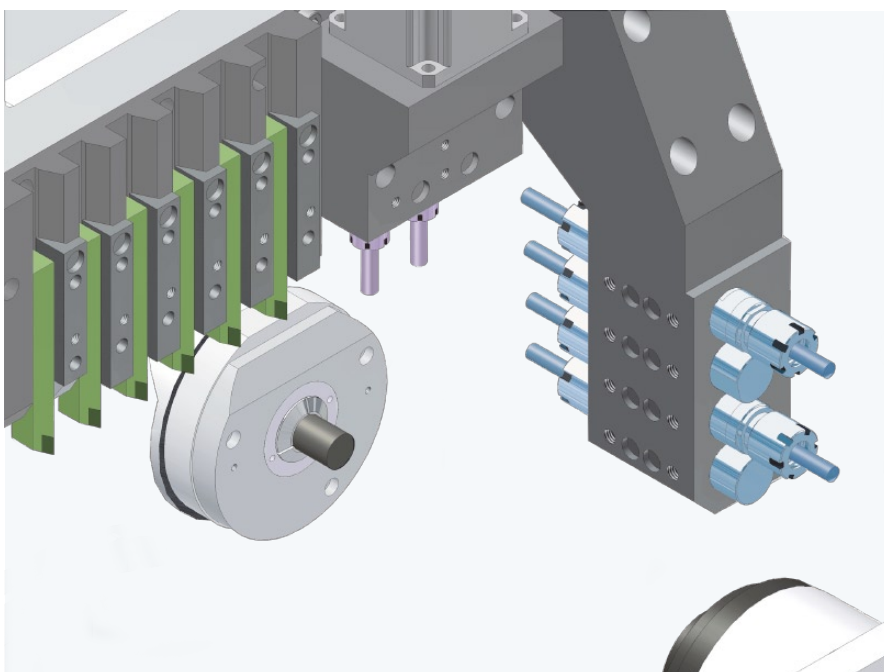
S: Standard O: Option -: Not Available

SD SERIES TOOL SYSTEM

► SD series is designed with maximum performance, minimum floor space and easy to operation. Also available with live tooling, sub-spindle and C-axis to provide the mostly friendly working condition.



SD-16 Tool System



- O.D. Tool
- I.D. Tool
- Side Live Tool

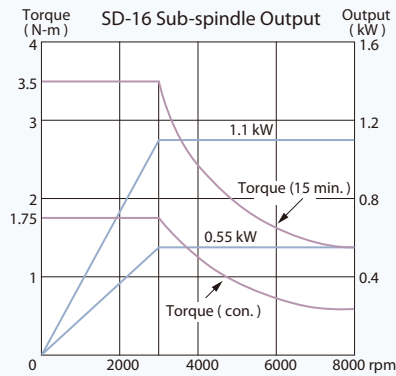
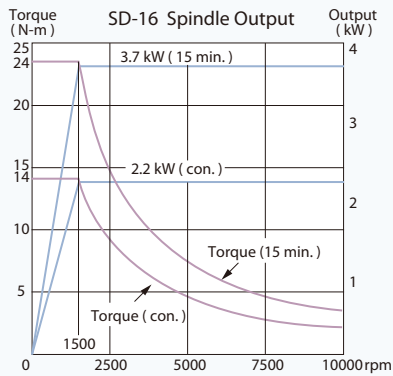
TOOL POST

Standard Tooling System

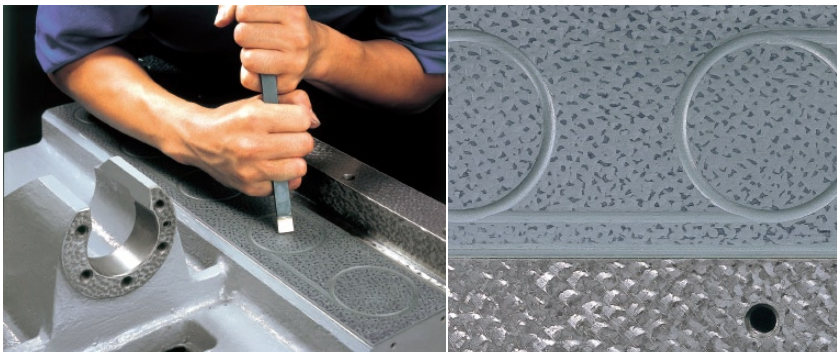
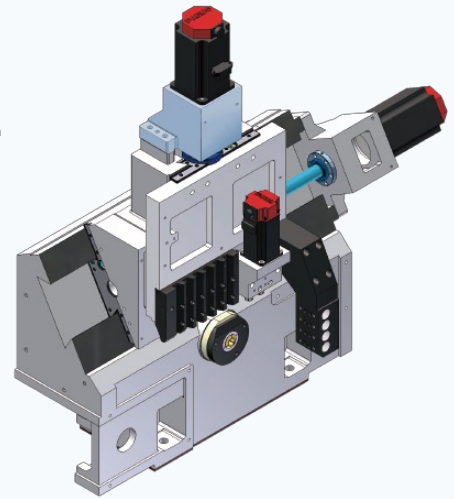
O.D. Tool	6
Front-end working tool	4
Rear-end working tool	4 (Max.)
Radial live tool	2

Option Tooling System

O.D. Tool	5
Front-end working tool	4
Rear-end working tool	4 (Max.)
Radial live tool	3

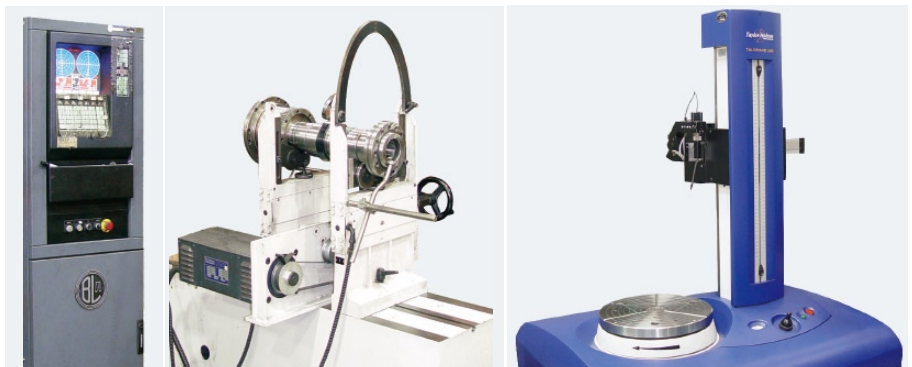


- ▶ SD series is design with pneumatic system instead of hydraulic system to achieve our goal that with environment friendly, safety and easy to maintenance.
- ▶ Z-axis is using Japan made high precision linear guide way. It provides high accuracy positioning no matter it is in high or low speed.
- ▶ Except Z-axis, all the guide ways are dovetail box way that made under heat treatment and super high precision grinding. All the slide ways are bonded with Turcite B to eliminate stick-slip, minimize wear and maintain long term accuracy.



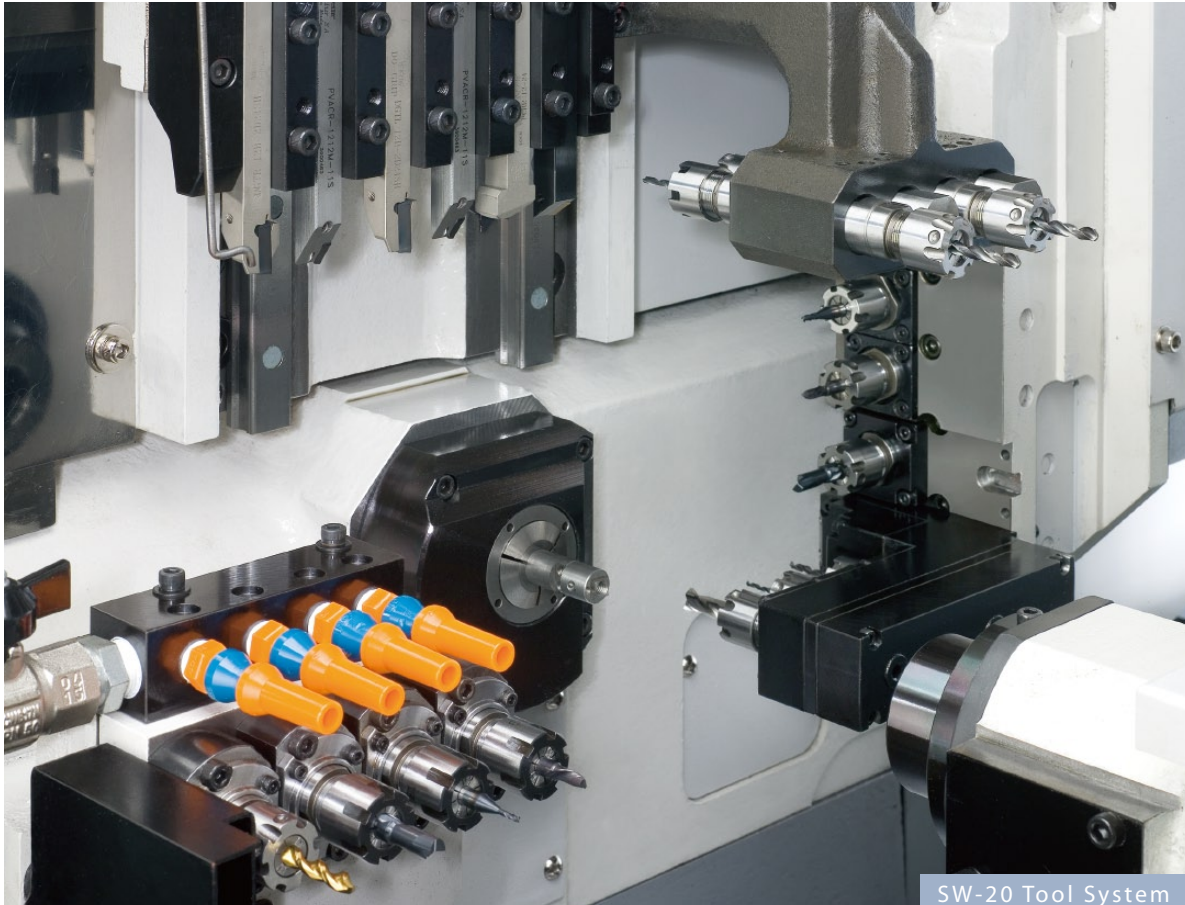
- ▶ Contact surfaces of all slides, headstock, turret, tailstock, and ball screw bearing housings with the machine bed are hand scraped to provide maximum assembly precision, structural rigidity, and load distribution.

- ▶ For top component precision, Goodway utilizes top-end measuring and balancing equipment such as; ZEISS 3D measuring system, Taylor Hobson roundness measuring system, BL high precision dynamic balancer and many more.

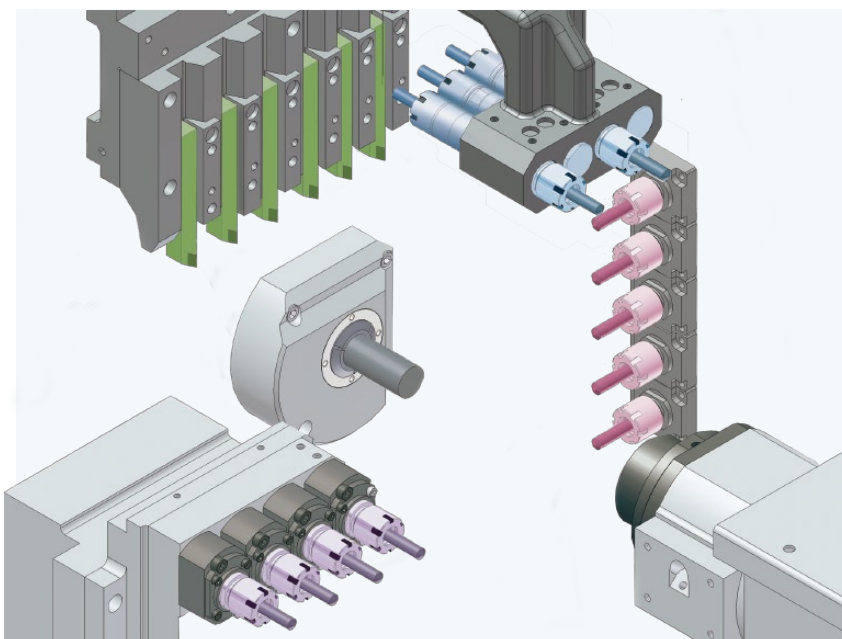


SW SERIES TOOL SYSTEM

- ▶ SW series offers more flexible operations such as turning, milling and cross drilling. From a different combination of power systems, main-spindle, sub-spindle, front-end tool, rear-end tool, C-axis and live tools which means the workpiece can be finished at one time and also allows two operators to be machined simultaneously.



SW-20 Tool System



- O.D. Tool
- I.D. Tool
- Side Live Tool
- Rear Live Tool

TOOL POST

Front-end Tooling System	
O.D. Tool	6
Front-end working tool	4
Rear-end working tool	4
Radial live tool	5 (Max.) ^{*1}
Axial live tool	5 (Max.) ^{*2}
Rear-end Tooling System	
Rear-end working tool	4 (Max.) ^{*3}

^{*1} The upper 3 positions are a fixed unit for milling and drilling and the bottom 2 positions allow variations to be fitted.

^{*2} The bottom 2 positions can be increased up to 5 front-end and 2 rear-end live tools.

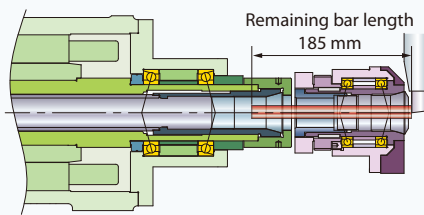
^{*3} Live tools are available.

MODULE SPINDLE CONSTRUCTION

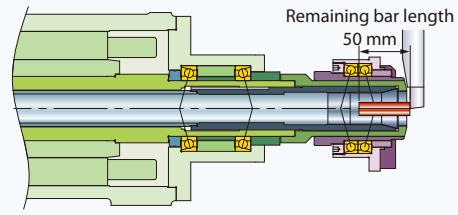
- ▶ Spindle can be exchange to be bush type or bushless type which is depend on different work requirements.
- ▶ The bushless design which is suitable for machining cold forge bar and the remain bar can be less than 50mm to save material cost.
- ▶ The bush type is with guide bush which is direct drive by servo motor and this kind direct drive system can be rotate with high speed which can less surface damage and efficient increase working performance.

(SW-32 only)

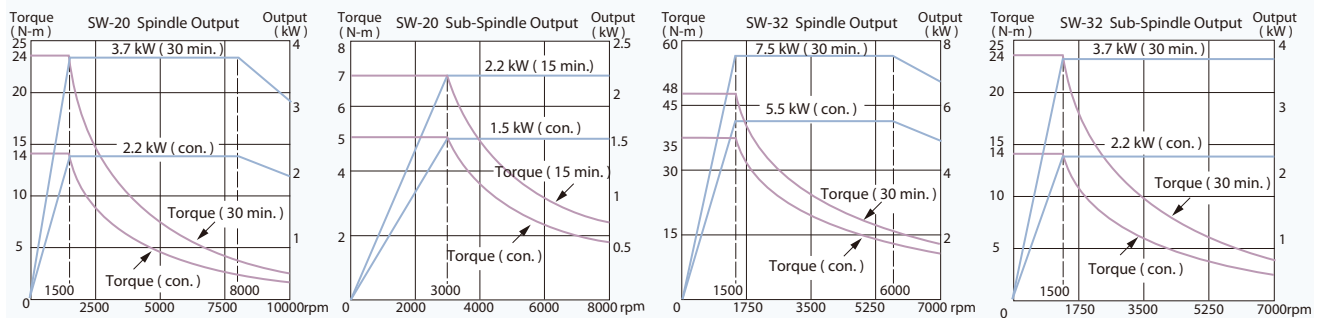
Bush type spindle configuration



Bushless type spindle configuration



Spindle Output

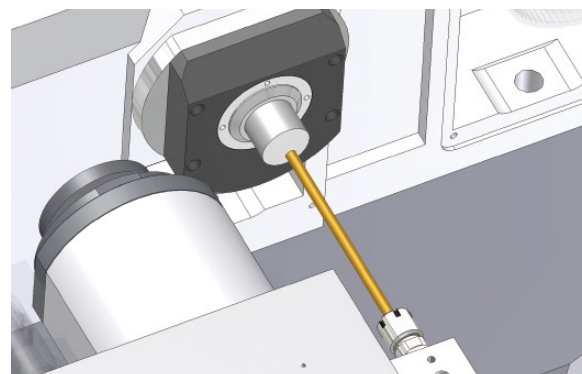


- ▶ SW series machine is standard with Fanuc built-in spindle and C-axis control, which can increase machine stability and increase machining accuracy.
- ▶ The Sub-spindle is also with Fanuc built-in motor and C-axis control, which can be simultaneous with main spindle perfectly to maximum machining accuracy. (SW-32 only)



U-Drill Device

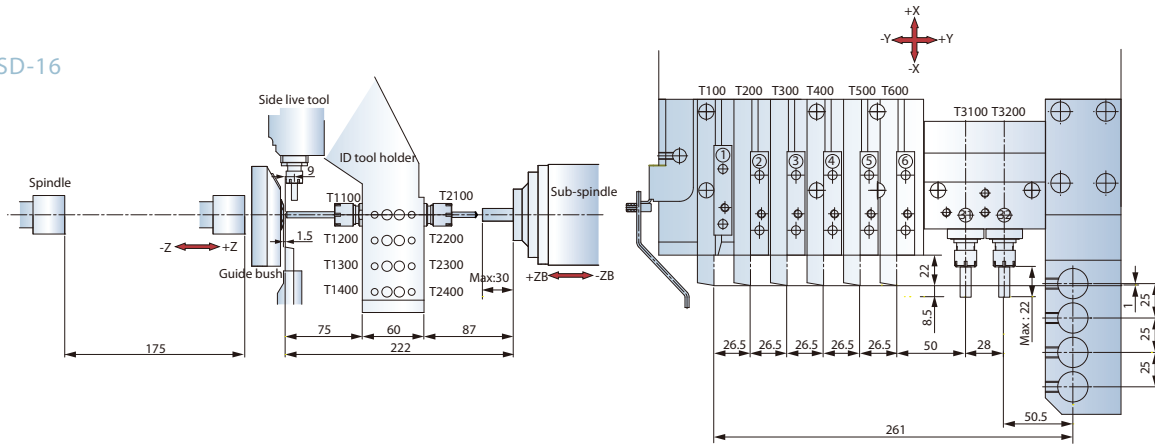
- ▶ Sub-spindle applied 2 U-Drill devices which can increase tool number and make tool selection more flexible (SW-32 only)
- ▶ Based on different application, the side rotary toolholder can select different live tool attachment, such as for OD grooving, polygon machining or standard rotary toolholder.



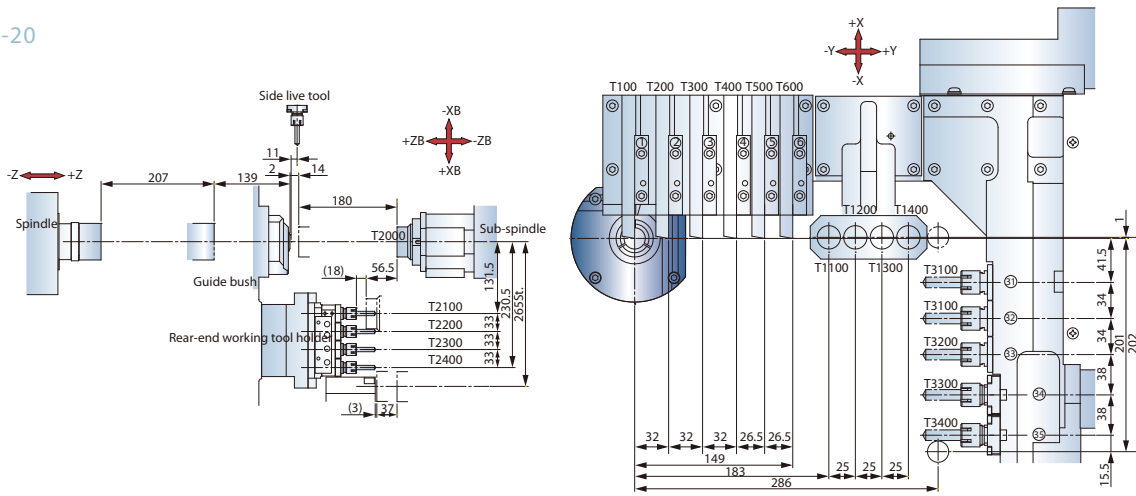
- ▶ All axes are using Japan made high accuracy linear guide way to ensure the most stabilize and provide ultra high performance in moving and positioning. Beside, guide way are pre-load to eliminate any backlash occurs during high speed moving.

DRAWINGS

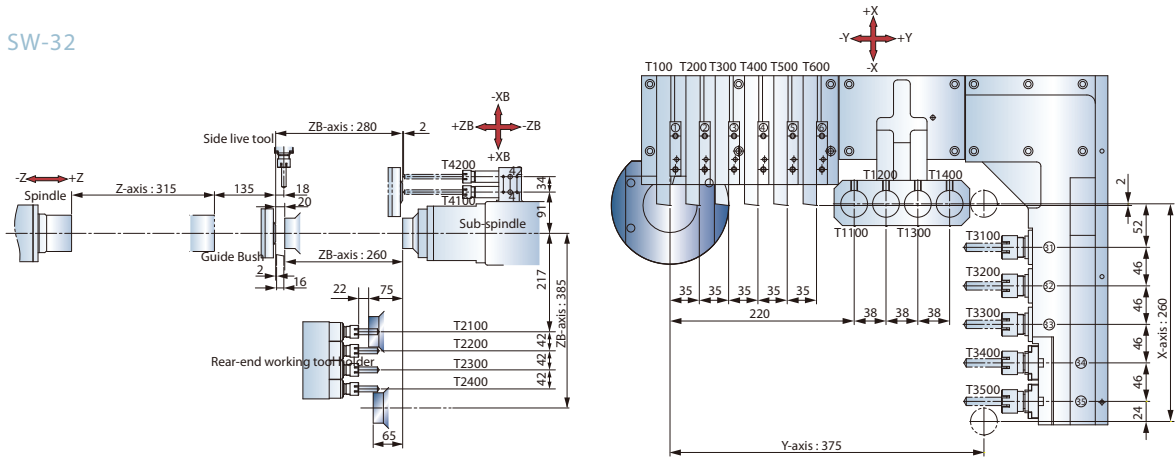
SD-16



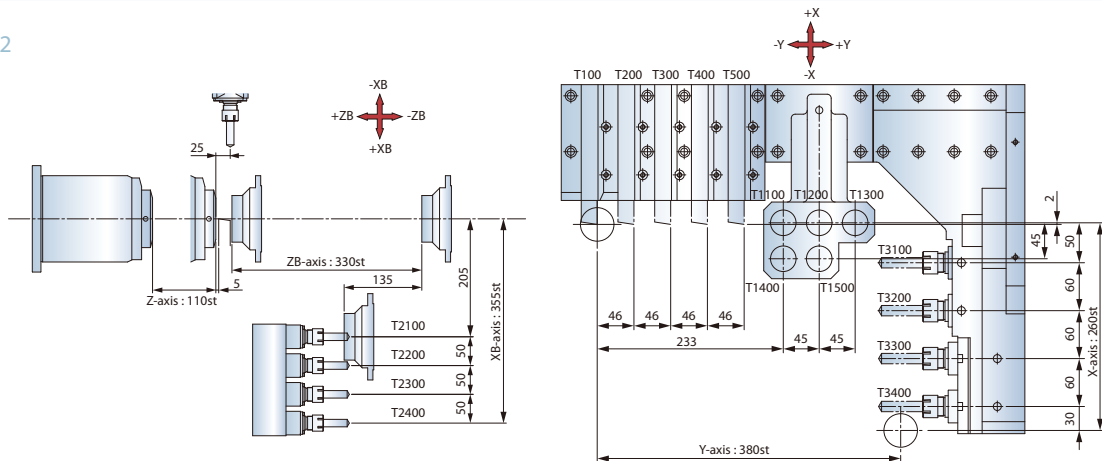
SW-20



SW-32

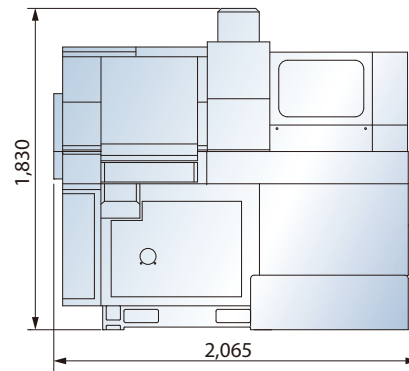
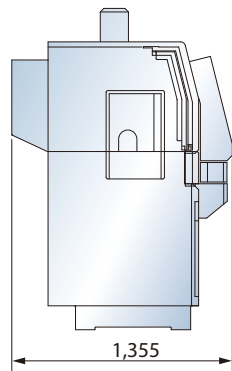


SW-42

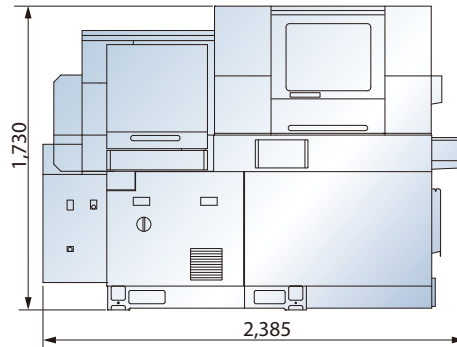
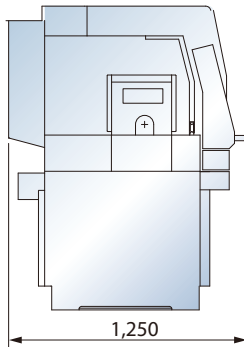


MACHINE LAYOUT

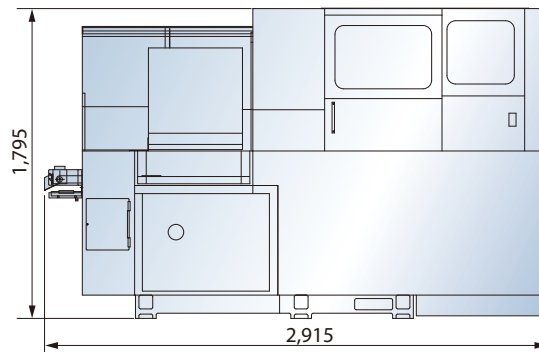
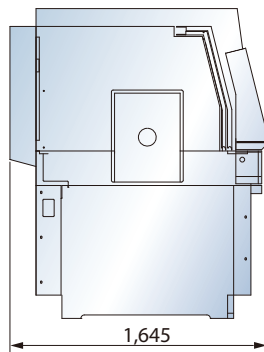
SD-16



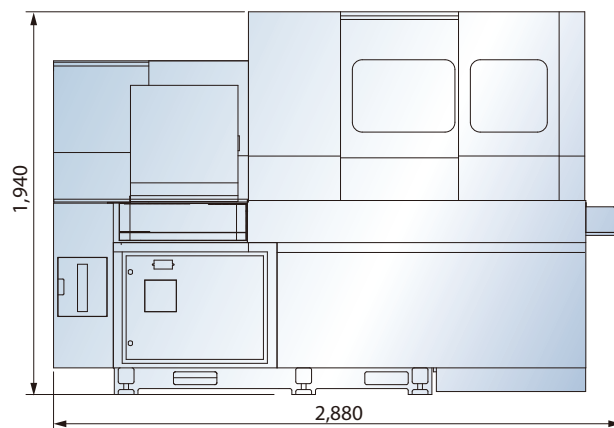
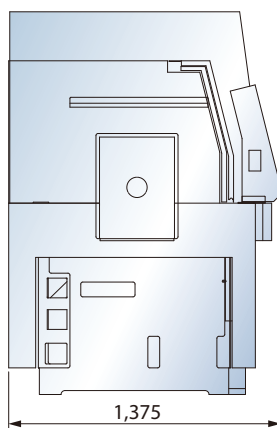
SW-20



SW-32



SW-42



STANDARD & OPTIONAL FEATURES

S: Standard O: Option
 -: Not Available C: Contact Goodway

		SD-16	SW-20	SW-32
SPINDLE				
Main spindle motor configuration		S	S	S
Rigid tapping		S	S	S
C-axis		S	S	S
Spindle brake		S	S	S
WORK HOLDING				
Spindle hardness collect	1 set	S	S	S
Spindle tungsten collect		O	O	O
Sub-spindle hardness collect	1 set	S	S	S
Sub-spindle tungsten collect		O	O	O
Special work holding chuck		O	O	O
GUIDE BUSH				
Stationary guide bush		O	O	O
Revolving guide bush		S	S	S
Rotary Magic guide bush		O	O	O
Tungsten guide bush	1 set	S	S	S
COOLANT				
Coolant pump		S	S	S
High-pressure coolant system 1.5 MPA		O	O	O
Roll-out coolant tank		S	S	S
Oil skimmer		O	O	O
Coolant flow switch		S	S	S
Coolant level switch		S	S	S
CHIP DISPOSAL				
Chip conveyor with auto timer		O	O	O
Chip cart with coolant drain		O	O	O
Oil mist collector		O	O	O
POWER-DRIVE TOOL				
Milling unit		-	O	O
3-spindle front drilling unit		-	O	O
2-spindle front drilling unit		-	O	O
Thread whirling unit for outer		-	O	O
Polygon machining unit		-	O	O
Live tool for back		-	O	O
AUTOMATIC OPERATION SUPPORT				
Bar feeder		O	O	O
Bar feeder interface		S	S	S
Parts catcher		S	S	S
Work piece transport conveyor		S	S	S
Long parts ejector		O	O	O
SAFETY				
Fully enclosed guarding		S	S	S
Door interlock (incl. Mechanical lock)		S	S	S
Impact resistant viewing window		S	S	S
Low hydraulic pressure detection switch		-	S	S
Over travel (soft limit)		S	S	S
Load monitoring function		O	O	O
Cut off detector		S	S	S

OTHERS

		SD-16	SW-20	SW-32
Tri-color operation status light tower		S	S	S
Florescent work light		S	S	S
Electrical cabinet	A/C cooling system	O	O	O
Complete hydraulic system		-	S	S
Complete pneumatic system		S	S	S
Advanced auto lubrication system		S	S	S
Maintenance tool kit		S	S	S
Operation & maintenance manuals		S	S	S

S: Standard O: Option
 -: Not Available C: Contact Goodway

FANUC CONTROL FUNCTIONS

		Oi-TD	31i
PMC	25n sec/step	S	S
Display	8.4" color LCD	-	-
	10.4" color LCD	S	S
Graphic function		S	S
Full keypad	Large - 56 keys	S	S
	320 K	-	-
	512 K	S	-
	1,024 K	-	S
Part program storage length Oi - TD : each path 31i - : total	2 M	-	O
	4 M	-	O
	8 M	-	O
	Registerable programs Oi - TD : each path 31i - : total	400	S
Tool offset pairs Oi - TD : each path 31i - : total	1,000	-	S
	64	S	-
	99	O	S
Servo control	HRV2 (3)	S	S
	Run hour & parts counter	S	S
Auto power off function		S	S
Custom macro B		S	S
RS-232 port		S	S
Memory card input/output		S	S
Embedded ethernet (10 BASE)		S	S
Fast ethernet (100 BASE)		O	O

Specifications are subject to change without notice.

MACHINE SPECIFICATIONS

Model		SD-16	SW-20	SW-32	SW-42
Working range	Max. machining diameter	Ø 16 mm	Ø 20 mm	Ø 32 mm	Ø 42 mm
	Max. turning length per chuck	175 mm	207 mm	315 mm	110 mm
O.D. tools	Number of tools	6 / 5 (Opt.)	6	6	5
	Size	□ 12 mm	□ 12 mm	□ 16 mm	□ 20 mm
I.D. tools	Number of tools	4	4	4	5
	Sleeve size	ER 16	ER16	ER 20	ER 20
	Max. drilling capacity	Ø 10 mm	Ø 10 mm	Ø 13 mm	Ø 13 mm
	Max. tapping capacity	M8 x P1.25	M8 x P1.25	M12 x P1.75	M12 x P1.75
Side live tool	Number of tools	2 / 3 (Opt.)	5 ~10	5 ~10	4 ~6
	Max. speed	8,000 rpm	8,000 rpm	6,000 rpm	6,000 rpm
	Servo motor output	0.4 kW	1.2 kW	1.4 kW	1.4 kW
	Sleeve size	ER 11	ER 16	ER 20	ER 20
	Max. drilling capacity	Ø 6 mm	Ø 8 mm	Ø 10 mm	Ø 10 mm
	Max. tapping capacity	M5 x P0.8	M6 x P1.0	M8 x P1.25	M8 x P1.25
	Max. end Mill capacity	Ø 7 mm	Ø 10 mm	Ø 13 mm	Ø 13 mm
Main spindle	Max. speed	10,000 rpm	10,000 rpm	7,000 rpm	6,000 rpm
	Spindle motor output	2.2 / 3.7 kW	2.2 / 3.7 kW	5.5 / 7.5 kW	5.5 / 7.5 kW
	Min. indexing increment	0.088°	0.001°	0.001°	0.01°
Axes rapids	24 m/min	24 m/min	24 m/min	24 m/min	
NC control	FANUC Oi-TD	FANUC Oi-TD	FANUC 31i	FANUC Oi-TD	
Spindle height	1,075 mm	1,060 mm	1,060 mm	1,080 mm	
Coolant tank capacity	140 L	150 L	170 L	170 L	
Machine dimenions	2,065 x 1,355 x 1,830 mm	2,385 x 1,250 x 1,730 mm	2,915 x 1,645 x 1,795 mm	2,700 x 1,520 x 1,940 mm	
Machine weight	2,000 Kg	2,300 Kg	3,200 Kg	3,300 Kg	

Rear-end Machining

Model		SD-16	SW-20	SW-32	SW-42
Rack-end machining capability	Max. chucking diameter	Ø 16 mm	Ø 20 mm	Ø 32 mm	Ø 42 mm
	Max. length for front ejection	80 mm	80 mm	130 mm	110 mm
	Max. parts projection length	30 mm	30 mm	50 mm	50 mm
Back working tooling	Number of tools	4	4	4	4
	Max. speed	–	8,000 rpm	5,000 rpm	5,000 rpm
	Servo motor output	–	0.4 kW	0.75 kW	0.75 kW
	Drilling capacity (Dead)	Ø 8 mm	Ø 8 mm	Ø 13 mm	Ø 13 mm
	Drilling capacity (Live)	–	Ø 5 mm	Ø 6 mm	Ø 6 mm
	Tapping capacity (Dead)	M6 x P1.0	M8 x P1.25	M10 x P1.25	M10 x P1.25
	Tapping capacity (Live)	–	M4 x P0.7	M5 x P0.8	M5 x P0.8
Sub-spindle	Max. speed	8,000 rpm	8,000 rpm	7,000 rpm	6,000 rpm
	Sub-spindle motor output	0.55 / 1.1 kW	1.5 / 2.2 kW	2.2 / 3.7 kW	3.7 / 5.5 kW
	Min. indexing increment	–	0.001°	0.001°	0.01°

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