CUBIC

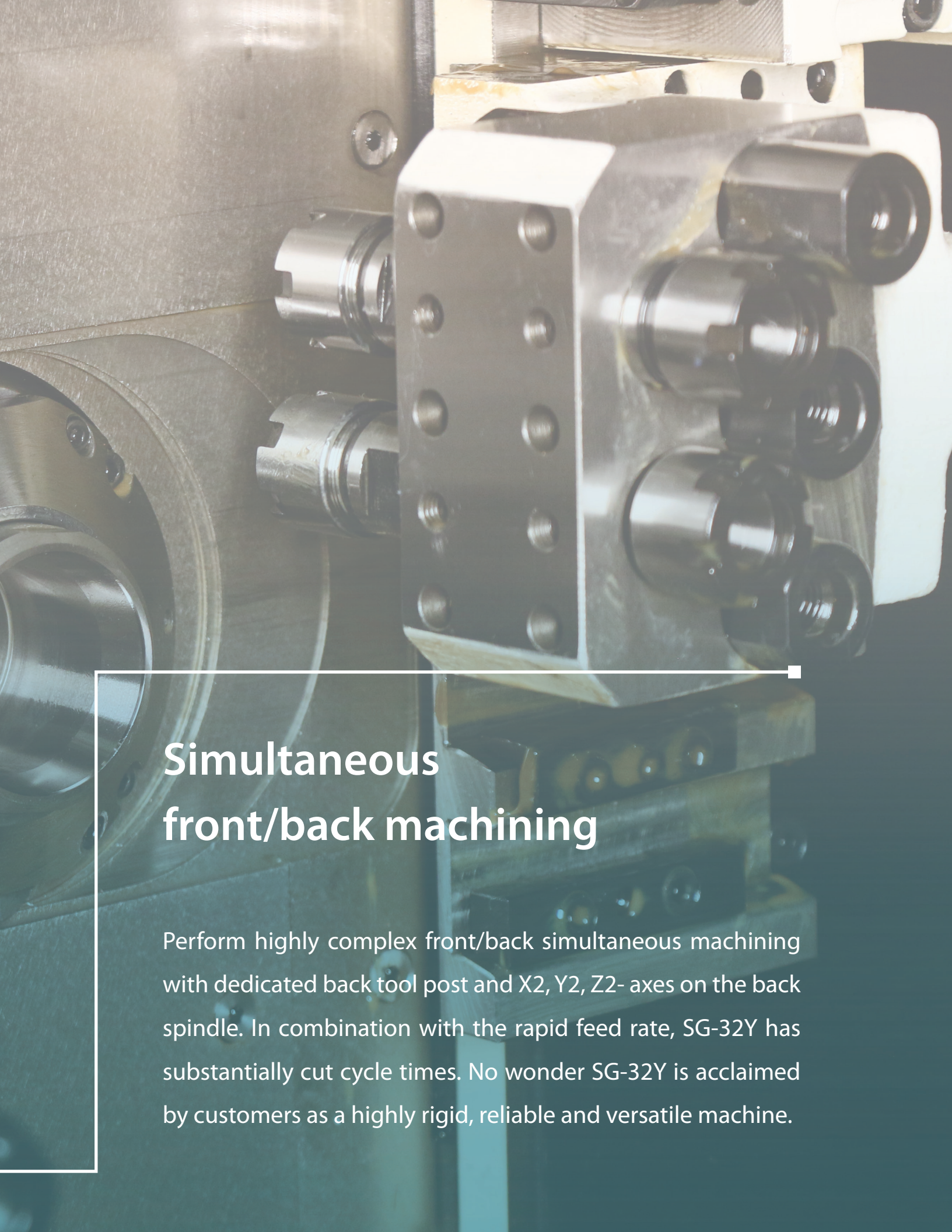
SG-20Y

SG-32Y

8-axis Swiss-type CNC Lathe

- *Convertible to chucker mode in minutes*
- *Simultaneous front / back machining*
- *Built-in motor rotary guide bushing*
- *32 mm bar stock capacity*
- *FANUC control*

Impact. Delivered.



Simultaneous front/back machining

Perform highly complex front/back simultaneous machining with dedicated back tool post and X2, Y2, Z2- axes on the back spindle. In combination with the rapid feed rate, SG-32Y has substantially cut cycle times. No wonder SG-32Y is acclaimed by customers as a highly rigid, reliable and versatile machine.

SG-20Y/SG-32Y

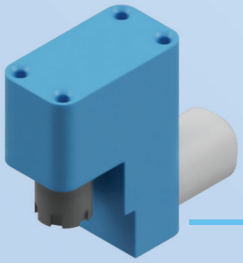
Simultaneous complex machining

with main and back spindles!

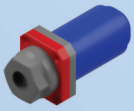
- 20 mm / 32 mm bar capacity
- Improved rigidity
- Modular tooling greatly expands machine capability
- Y2 axis

Cross tool post

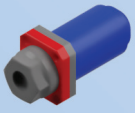
4-rotary cross tool (Standard)
ER16x3
ER20x1



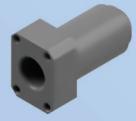
Back cross tool spindle (Option)



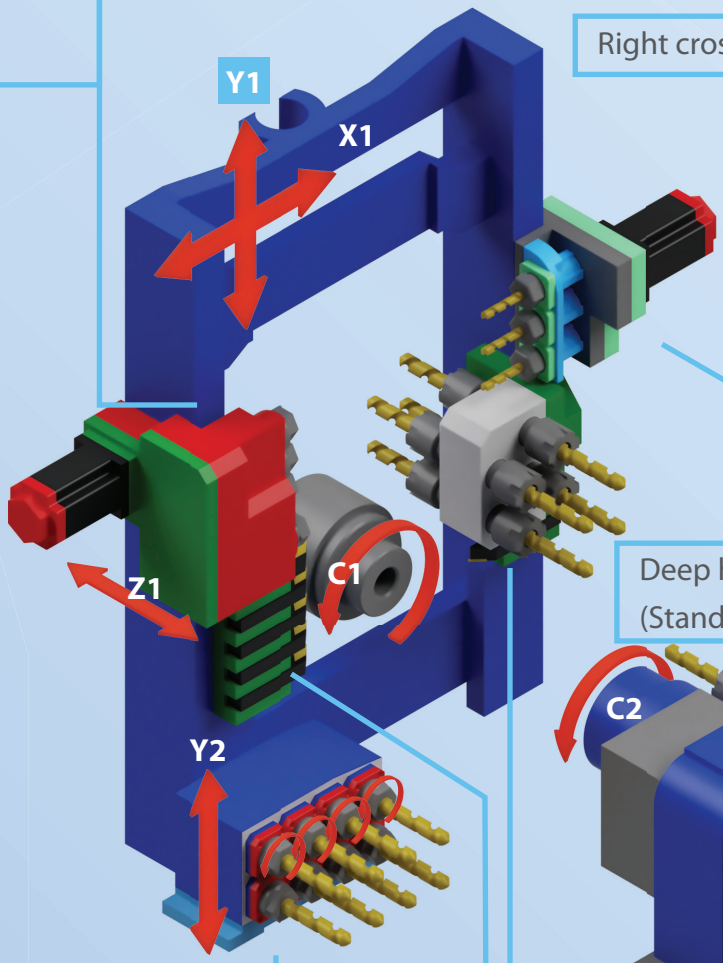
Tool spindle (Option)



Multiplied tool spindle (Option)
(Max 12,000 min^{-1})

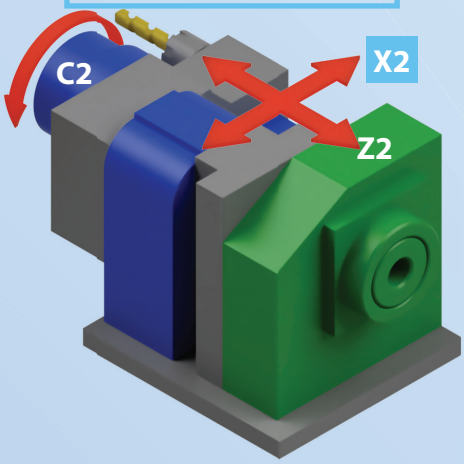


Adapter for fixed tool (Option)



Right cross tool drive

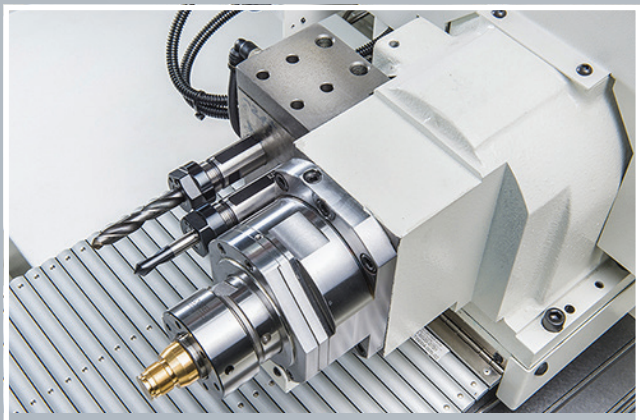
Deep hole drill holder (Standard)



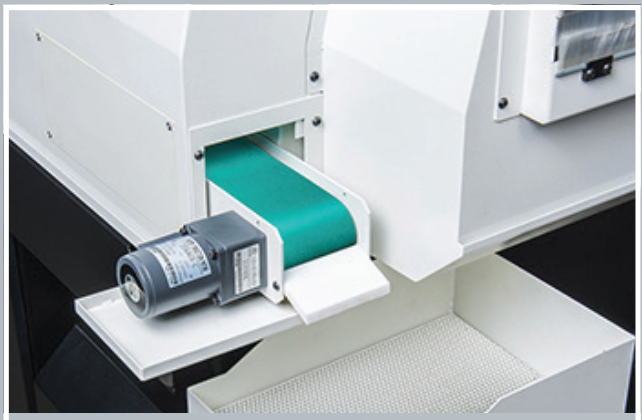
Back tool post

For fixed tool ø25x4
For live tools ER16x4

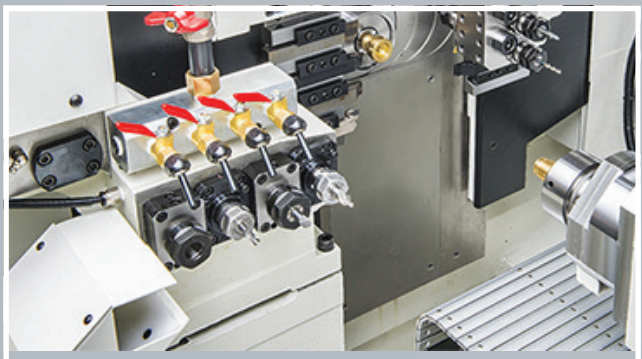
Turning tool
ø16x5



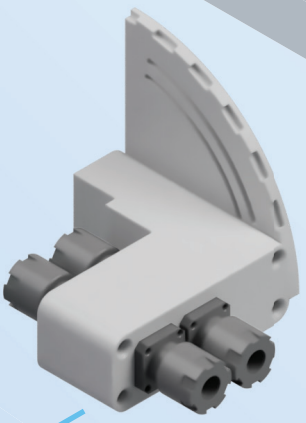
Back spindle and deep hole drilling tools



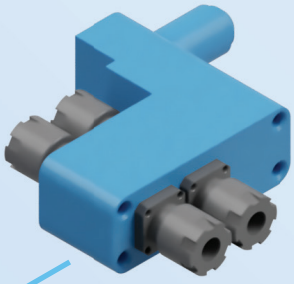
Parts conveyor



Parts catcher

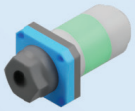


Angular drilling head (Option)

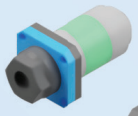


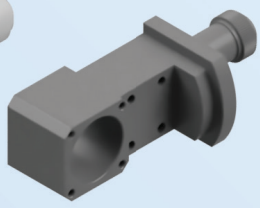
Double face tool spindle (Option)

Tool spindle (Option)



Multiplied tool spindle (Option)
(Max 12,000 min^{-1})

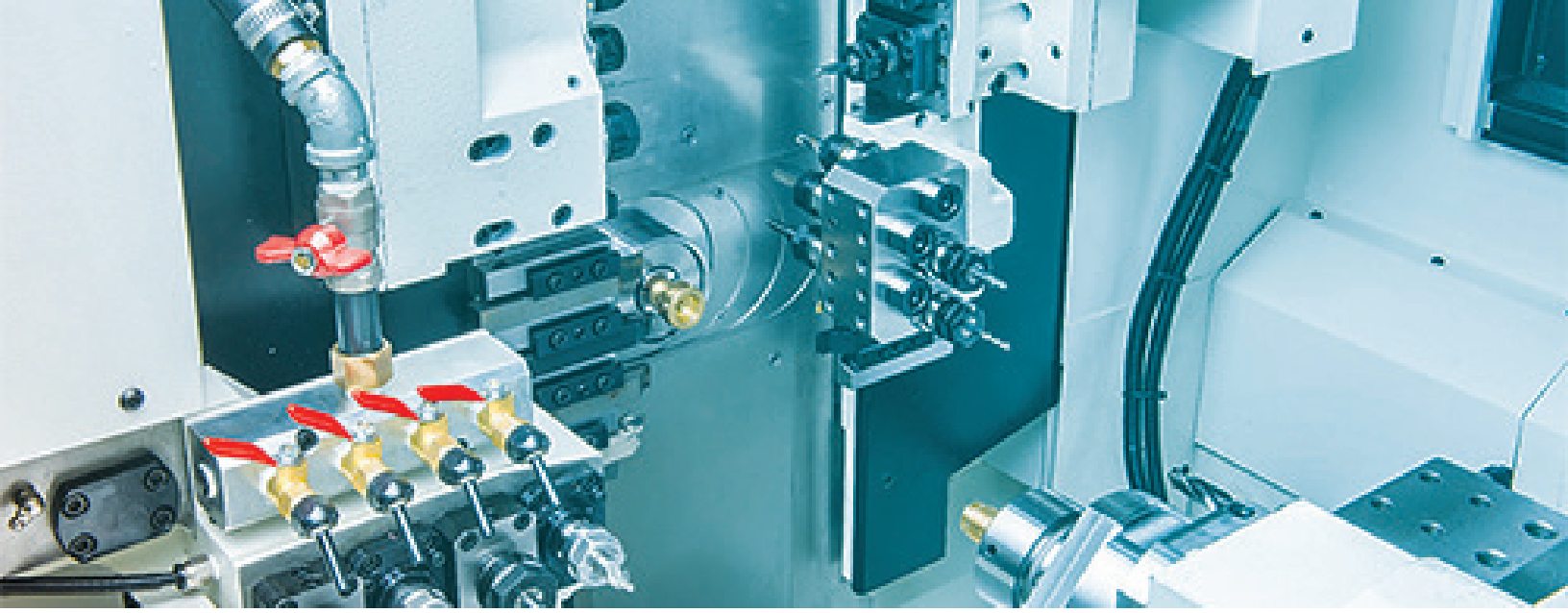




Hobbing head (Option)

Right tool post

ID tool holder ø25x5
Turning tools ø16x2



Higher precision

- The rigidity of horizontally opposed gang tool posts at the main spindle side and the headstock linear guides are increased so tooling accuracy is not influenced by cutting load variation.
- The main/sub headstocks, and X axes (X1, X2) are arranged in a thermal symmetric way, reducing the heat-induced deformation to a minimum. The small thermal displacement of the bed during long periods of operation promotes high accuracy.
- High rigid cast machine bed, absorbing the vibration caused by high-speed rotation and rapid traverse.

Reduced tooling idle time

- Rapid traverse: Max. 32 m/min (X1,Y1,Y2 : 24m/min).
- Close layout of tools reduces tool change time

Maximum high-speed control, reducing idle time.

- Two-path control. Programs can be specified at the main and back spindle side separately, and they are read and processed at the same time.
- With X2 axis and independent back tool post, simultaneous machining at the main and back spindle side can be done.
- M and T codes, axis feed can be specified at the same command block.
- High-speed thread cutting function, reducing thread cutting time.

Direct C-axis indexing

Unlike conventional machines, direct C-axis indexing enables deceleration to the chosen index position directly, without the need for a home return, reducing spindle indexing time.

Convert to chucker mode in minutes

With the increase in material cost in recent years, it's great that SG-32Y has chucker mode to reduce waste. In chucker mode, the machine doesn't require the space between the guide bushing and the collet so there is less bar remnant. Chucker mode does not require the use of ground bar stocks, so it is suitable for cold-drawn bar machining. In addition, the powerful chucking force enables heavy cutting, minimizes roughness and improves roundness. The user can choose between guide bushing mode or chucker mode according to the length of the part to be produced and be able to convert to chucker mode in minutes.

Deep hole drilling

Additional deep face drilling post (2 drills) is attached to the back spindle. Max. drilling depth is up to 100mm, besides these 2 drills can be adapted to driven drills as an option for off-center drilling and tapping.

Thread whirling

Thread whirling head or hobbing head can be mounted on the right cross tool post for processing bone screws or gear hobbing.

Parts conveyor

Workpieces conveyor is standard. the workpiece is discharged from the back spindle to the workpiece conveyor, moving them to the workpiece container

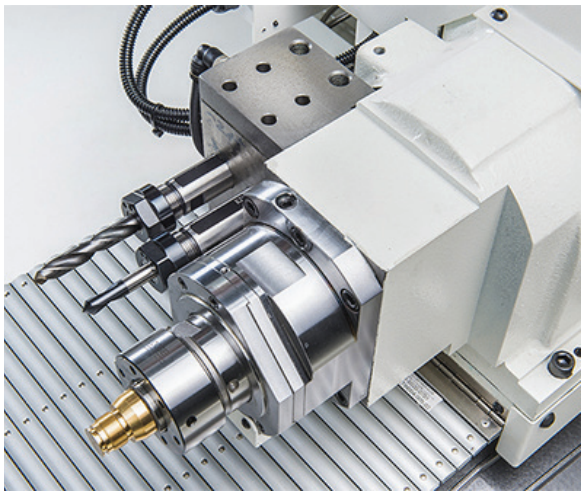
Easy access to tool zone

The operation panel is mounted close to the cutting zone. It can swivel for easy to monitor tool and part program while simultaneously viewing the machining process. The lift-to-full open safety door offers an expanded view of the cutting zone and is convenient for tool setup.

- The large capacity chip pan makes cleaning easy and extends the interval between cleanings. Chips pan is put on coolant circulation inlet, convenient for cleaning.
- There is a chip filter before the coolant flows into the tank, which makes it convenient for cleaning.

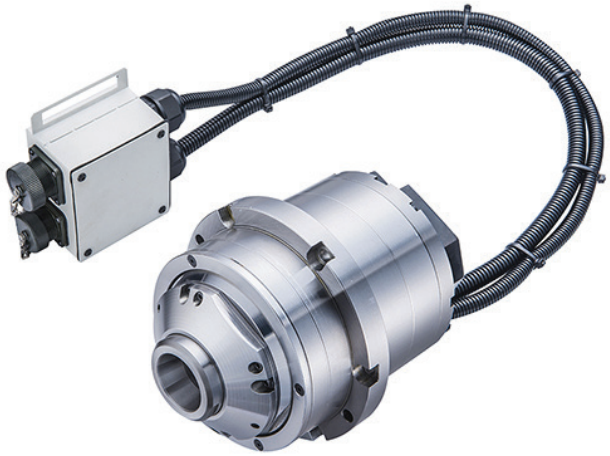
Through tool coolant

The high-pressure coolant system can be hooked up for through-tool coolant, producing great results even for small diameter drills.



Built-in motors are extremely compact and achieve maximum rigidity, a requirement for achieving maximum speeds and exact concentricity.

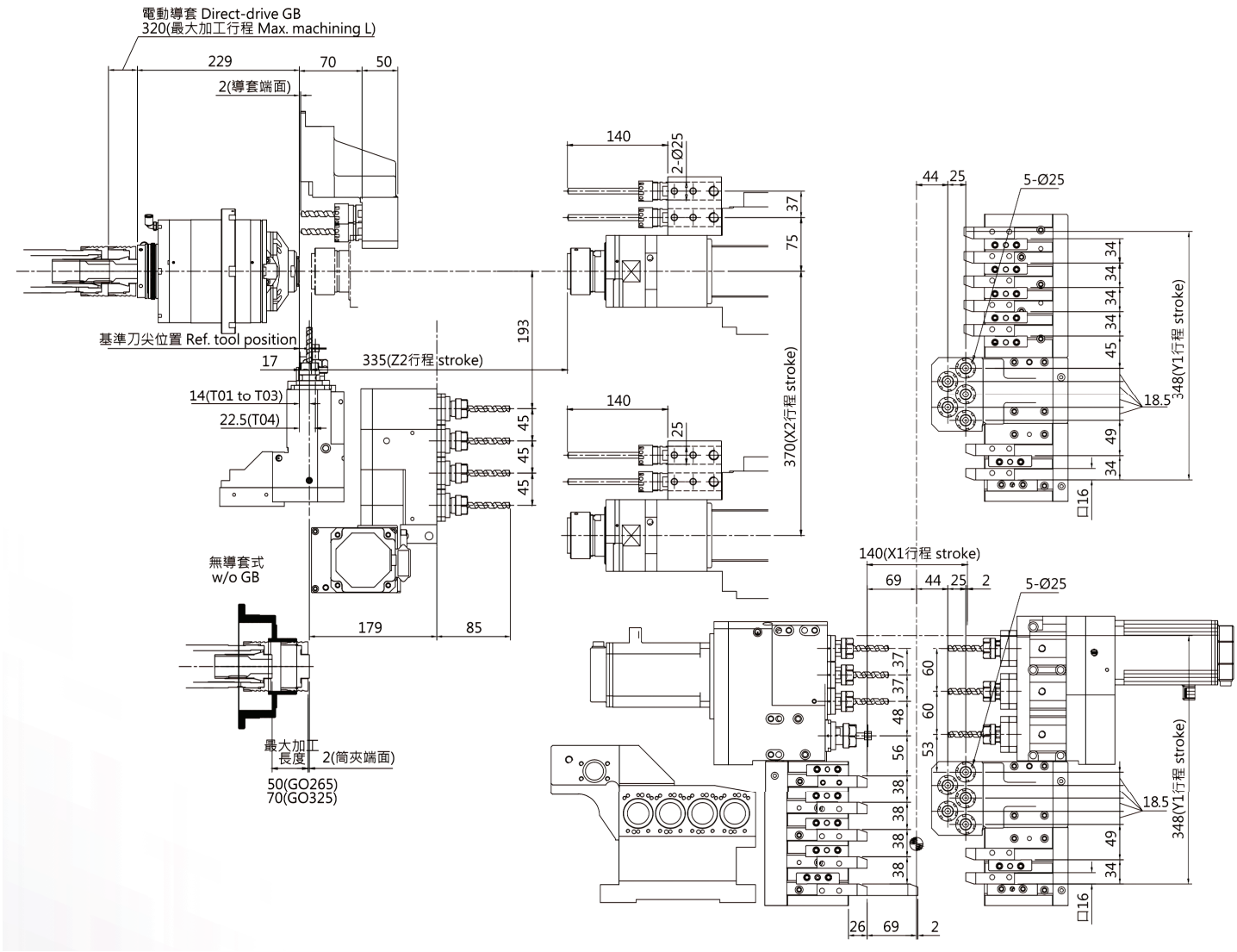
Built-in motor spindle on front and back spindles
They have high power up to high speed and maintain high precision and low vibration all in one simple mechanical structure.
Built-in main and back spindle motors increase tooling accuracy.



Built-in motor rotary guide bushing

Servo rotary guide bushing enables high-speed and accurate machining.

Tooling zone



Program Aid

- Mirror image function is convenient for programming for machines with opposed tool slide as SG-32Y. Also, “mirror image ON” (G68) is built in the Cubic-made opposed tool calling software, so without the need to specify G68 or G69 with the tool called, preventing tool crash due to mis-programming.
- Custom-made software is provided as a standard accessory for easier operation such as tool life management, tool interference check and on-screen operation of options such as work conveyor, etc.

Standard NC Specification

MODEL	SG-20 Y	SG-32 Y
Controller	Fanuc 0i-TF	FANUC 0i-TF
No. of controlled axes	6 (X1,Y1,Z1,X2,Y2,Z2)	8 (X1, Z1, Y1, X2, Y2, Z2, C1, C2)
Spindles synchronized (speed & phase angle)	S1- S2 (Main spindle -Back spindle)	S1 - S2 (Main spindle -Back spindle)
Axes synchronized	Z1-Z2	Z1 - Z2
Axis composite control	Z1-Z2	Z1 - Z2
Axes simultaneously controlled	Max. 4 axes / each path	Max. 4 axes / per path
Least input increment	0.001mm (Diametrical designation for X axes)	0.001mm(X in diameter)
Max. programmable dimension	± 8 digits	± 8 digits
Rapid traverse rate	30m / min (X1: 24 m / min)	32/m / min (X1,Y1, Y2 : 24 m/min)
Spindle / Feed rate override	0 150% / 10% increments	0 ~150%, 10% increments
Absolute / incremental command	X,Z,Y: Absolute / U,W,V: Incremental	X, Z, Y: Absolute / U, W, V, Incremental
Tool offset pairs	±6 digits / 64 pairs	±6 digits / 200 pairs
Display unit	10.4"color LCD	10.4" color LCD

Other NC function	SG-20Y	SG-32Y
C axis at main spindle	standard	standard
C axis at back spindle	standard	standard
Cross tool spindle rigid tapping	standard	standard
Threading, synchronous cutting	standard	standard
Manual handle feed	standard	standard
Memory card I/O interface	standard	standard
RS232C interface	standard	standard
Background editings	standard	standard
Runtime and parts count display	standard	standard
Custom macro	standard	standard
Constant surface speed control	standard	standard
Spindle synchronous control	standard	standard
Axis synchronous control	standard	standard
Tool geometry/wear offset	standard	standard
Programmable data input	standard	standard
R Chamfering/corner R	standard	standard
Tool nose radius compensation	standard	standard
HRV control	standard	standard
Multiple repetitive cycles	standard	standard
Extended part program editing	standard	standard
Inch / metric conversion	standard	standard
Direct drawing dimension programming	standard	standard
Canned cycles for drilling	standard	standard
Rigid tapping (Main/back spindle)	standard	standard
Manual handle retrace	standard	standard

SPECIFICATIONS

			SG-20Y	SG-32Y
MACHINING CAPACITY				
Max. material bar diameter at main psindle			20 mm	Ø8~32 mm
Max. work chucking diameter ar back spindle			20 mm 20 mm 20 mm	
Max. machining length			170 mm (Direct-drive guide bushing) 80 mm (Mechanical-drive guide bushing) 250 mm (Fixed guide bushing) 45 mm (GO-206-II) (Guide bushing-less)	320mm (Direct- drive guide bushing) 115mm (Mechanical-drive rotary guide bushing) 70mm (Guide bushing-less)
Max. main spindle drilling / tapping diameter			Ø10mm/M8	Ø12 mm/M10
Max. sub spindle drilling / tapping diameter			Ø8mm/M6	Ø10 mm/M8
Max. drilling / tapping dia. of cross tool spindle			Ø6mm/M5	Ø8mm/M6
Max. mountable slitting saw dia. / Nos. at cross tool post			Ø30mmx2	Ø45 mm (Right cross tool T04)
Max. drilling / tapping diameter of back tool spindle			Ø8mm/M6	Ø10 mm/M8
Max. drilling / tapping diameter of back cross tool spindle			Ø6mm/M5	Ø8mm/M6
MACHINE CAPACITY				
Max. speed	Main spindle		10,000 rpm (※1)	8,000 rpm
	Back spindle		10,000 rpm (※2)	8,000 rpm
	Rotary guide bushing	Motor direct-drive	10,000 rpm	8,000 rpm
		Mechanical-drive	8,000 rpm	
	Cross tool spindle		5,000 rpm	5,000 rpm
	Back tool spindle		5,000 rpm	5,000 rpm
TOOL SIZE				
OD turn tool shank			12x12x85mm	16×16×100 mm
Boring tool shank (for face/back & back tool post)			Ø20 mm	Ø25 mm
Chuck for left cross tools				ER16×3+ER20×1
Chuck for right cross tools				ER16
Chuck for cross live tools			ER11x2/ER16x2	
Chuck for back live tools			ER16x4	ER16
Chuck for back fixed tools				ER16
Chuck for deep hole drill				ER16
Rapid traverse			30 m/min (X: 24 m/min)	32m/min (X1, Y1, Y2: 24m/min)
Controlled axes			6 (X1, Y1, Z1, X2, Y2, Z2)	8 (X1, Y1, Z1, C1, X2, Y2, Z2, C2)
MOTORS				
Main spindle motor			2.2 / 3.7 KW (Rated/15min)	3.7 / 7.5 KW (Rated / 10%)
Back spindle motor			1.5 / 2.2 KW (Rated/15min)	2.2 / 3.7 KW (Rated / 10 min.)
Rotary guide bushing			0.75 / 1.1 KW (Rated/15min)	2.2 / 3.7 KW (Rated / 10 min.)
Axis motor			0.5 KW	0.75 KW
Y2 axis motor			0.5 KW	0.5 KW
Cross tool spindle motor			0.5 KW	1.0 KW
Back tool spindle motor			0.5 KW	1.0 KW
Coolant pump motor			0.75 KW	0.75 KW
Lubrication pump motor			0.011 KW	0.011 KW
Spindle cooling oil pump motor			0.19 KW	0.75 KW
AXIS TRAVEL				
X1			84 mm	142mm
Y1			160 mm	348mm
Z1 (fixed guide bushing)			250 mm	320mm (Direct-drive rotary guide bushing)
X2			335 mm	370mm
Z2			170 mm	335mm
Y2			60 mm	68mm
OTHERS				
Net weight			1,700 Kgs	3,500 KGS
Equipment capacity			11 KVA	16.11 KW (22.5 KVA)
Power source required			≥9 KVA	
Air pressure			≥0.4 MPa (4KG/cm2)	≥4 KG/cm2
Air flow			≥30 NL/min	≥100 NL/min
Cutting coolant tank capacity			115L	180L
Machine size LxWxH			1,640 x 1,080 x 1,700 cm	2,150 × 1,280 × 1,930 mm

Standard Accessories

- Built-in motor rotary guide bushing
- Kit for chucker mode
- High-pressure coolant system
- Spindle cooling unit
- Safety door interlock
- Coolant flow switch
- Work conveyor
- Parts catcher
- Chip conveyor and chips cart
- Standard tools
- Slide fixing blocks (for transit)
- Automatic power shut-off
- Cutting coolant nozzles
- 3-tiered warning lamp set
- LED work light
- Coolant pump (1 HP)
- Bar feeder interface
- RS232 interface
- Ethernet interface
- Software for tool-tip height compensation
- Tool life management
- Back spindle air purge
- Cross live drill air purge
- Main spindle brake for indexing
- Back spindle brake for indexing

Optional Accessories

- Oil cooler (for coolant temperature control)
- Oil mist separator
- Tool setting block gauge
- Small bar kit (06-17, 1mm increment)
- Bar feeder
- Tooling for right cross tool post
  - Tool spindle
  - Multiplied tool spindle
  - Double face too spindle
  - Angular drilling head
  - Thread whirling head
  - Hobbing head
- Tooling for back tool post
  - Tool spindle
  - Multiplied tool spindle
  - Adapter for fixed tool
- Collet holders for fixed ID tool post
  - Single-face collet holder
  - Double-face collet holder
- Rear part ejection
- Automatic fire extinguisher
- Coolant level switch
- Main spindle adapter (non-round bar)
- Back spindle adapter (non-round bar)

CUBIC

13401 Benson Ave., Chino, CA, 91710
Office: (909) 590-9995
Email: sales@cubicmachinery.com
Website: www.cubicmachinery.com