SMEC
MCV 4300/5500
VERTICAL MACHINING CENTER

SMEC
SMEC CO.,LTD.

www.esmec.com | https://www.youtube.com/c/smecmachinetools

SMEC
Smart One,
Global One

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SMEC CO.,LTD.

SMEC
Smart One, Global One

- 1988 - Started as Samsung Heavy Industries Machine Tools Business
- 1989 - Horizontal and vertical machining center technology partnership with OKK Japan
- 1991 - Turning center and vertical machining center technology partnership with Mori Seiki
- 1996 - 5-sided processing center technology partnership with Toshiba
- 1999 - Spun out from Samsung Aerospace Industries and established SMEC Co., Ltd

S M E C

Company
Engineering
Machine Tools
Samsung

MCV 4300
MCV 5500

High Speed And Precision Vertical Machining Center!
High Rigidity Structure!

- Low centered one piece Bed with triangle Rib design
- Biggest X axis stroke(2,100mm) and table in its class
- Realizing high rigidity and precision with high rigidity Saddle and Column structure
- 2 raws Y axis linear guide way preventing overhang
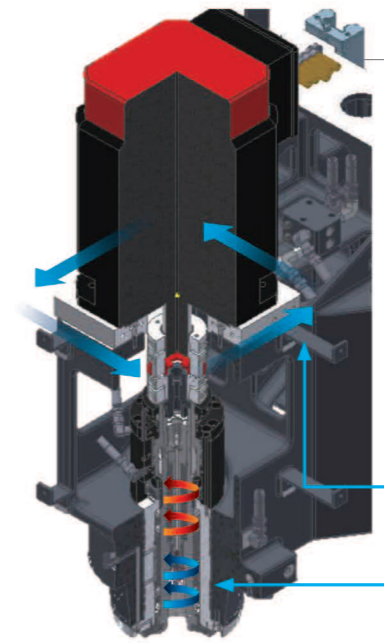- High speed and precision direct spindle

Direct drive

To provide powerful cutting and low vibration we adjust direct spindle with 12,000rpm is offered as an option.
Standard motor base cooling is provided as well as head spindle to realize high precision machining.

Spindle Speed
12,000 rpm

Spindle Motor
11/15/18.5 kW

Main spindle cooling method

Adopting semipermanent Grease lubrication system on bearing, minimize thermal displacement by Jacket circulation cooling through Fan Cooler on bearing housing, showing stable performance to take longer spindle life time.
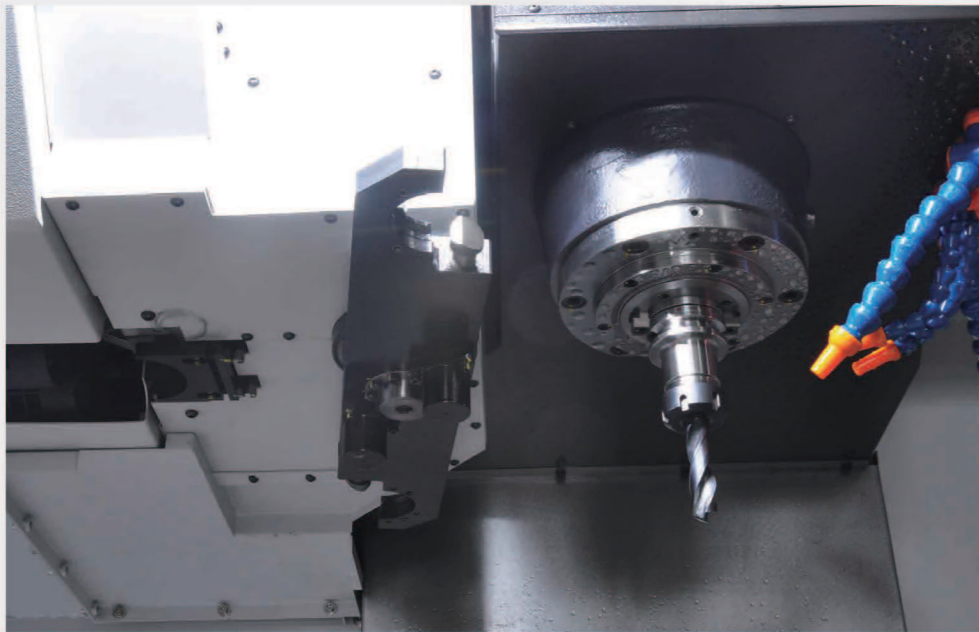Minimize thermal displacement by standard spindle motor base cooling system.
By adopting main and Z, W axis motor base cooling as standard minimize thermal displacement on Y/Z axis.

Spindle motor base cooling(Direct)

Spindle in&out circulation cooling structure

High-speed tool changer being driven by enhanced technologies
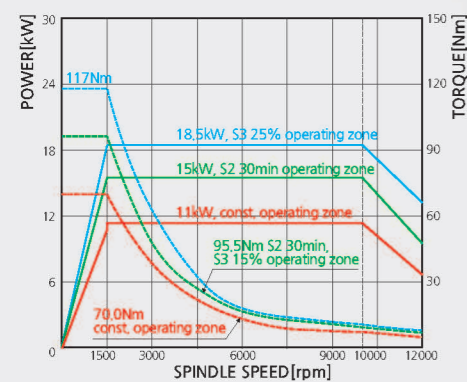
Double Swing arm type auto tool changer

It is Double swing arm swing type by memory random method and has no error during tool changing and minimize idle time.

Tool to Tool : **1.3(60Hz), 1.6(50Hz)**

Spindle Power & Torque Diagram

18.5kW, S3 25% operating zone
15kW, S2 30min operating zone
11kW, const. operating zone
95.5Nm S2 30min, S3 15% operating zone
70.0Nm const. operating zone
117Nm

POWER[kW] / TORQUE[Nm] / SPINDLE SPEED[rpm]

the most advanced mechanism of high-speed technology

HYD. UNIT

By using HAWE Hydraulic Unit from Germany have been realized, life time enhancement and lower power consumption with high reliability.

- Adopting accumulator
  Enhance durability and tool change time by friction down of each internal part through reducing pumping time
- Epoch-making power consumption down(90%) by using pump when actuator is working(In case of HYD. UNIT)
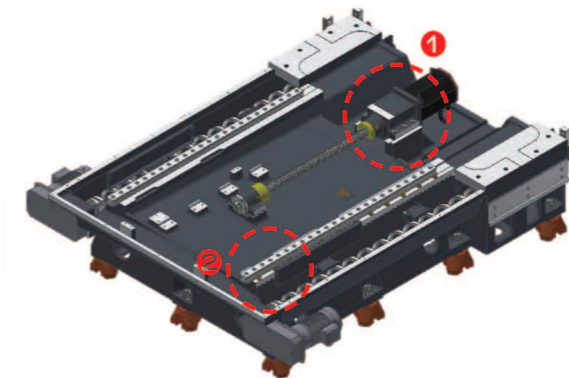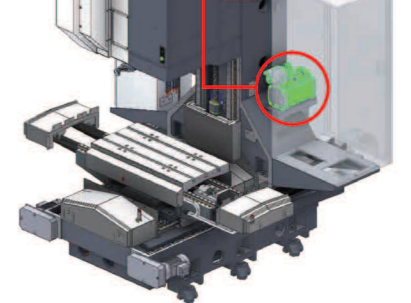
Servo Motor ❶

All axis are connected by servo motor directly in order to realize precision axis moving.
- There is no intermediate channel to transmit power but using coupling
- Minimize back lash during axis moving
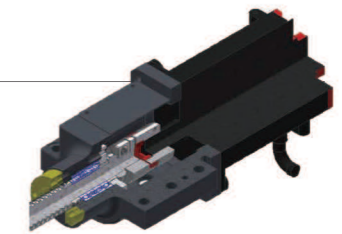
Roller type LM guide way ❷

The use of LM Guides with superb responsiveness has increased rapid traverse speeds and reduced non-cutting time while minimizing noise during travel.
- Strengthen speed, rigidity, and durability
- Much better durability compared with Ball LM Guide to realize precision moving and longer life time
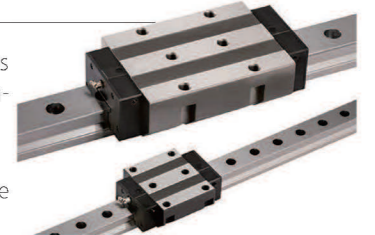
High rigidity Z axis arch column structure

By adopting arch column structure with optimal structural analysis realizing high rigidity and precision machining.
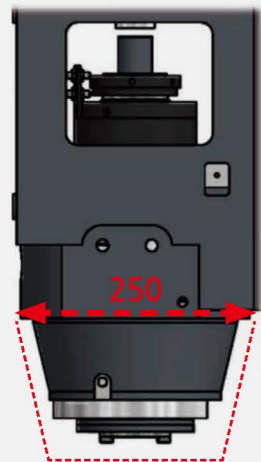
High rigidity Saddle without overhang on X axis

By maximum X axis stroke 1,050mm in its class and high rigidity saddle it is fit for various and stable as well as long work piece machining.

2 rows Guide way bed on Y axis

Bed has 2 rows sustaining method on Y axis and maximum span L/M Guide way structure in its class to minimize over hang.

High performed spindle

- High precision and efficient cooling system

- By adopting Quill type head realize high speed and precision cutting with high rigidity. Making standard thermal release structure to minimize thermal displacement.

250

120

Z-Axis

X-Axis

Y-Axis

X-Axis
770 mm (MCV 4300)
1,050 mm (MCV 5500)

Y-Axis
430 mm (MCV 4300)
550 mm (MCV 5500)

Z-Axis
510 mm (MCV 4300)
520 mm (MCV 5500)

Octagonal ATC/MG

Designed with a standard 30 tool magazine, offering the largest-in-class magazine capacity, with short travel distance to enable quick tool changes.

Magazine Capacity : **30ea**

Pendant arm / Operation panel

Pendant/panel design by considering user space and convenience improve working environment.

High efficiency Spindle Head Cooling System

For long-term continuous high-speed operation, a coolant system may be installed to maintain room temperature. The coolant system circulates coolant oil around the spindle bearings to prevent thermal expansion due to the spindle temperature, ensuring high precision machining.
(12K Direct : Standard)

Automatic Lubrication Dispenser

Automatic lubrication dispenser that reliably dispenses the required amount of lubrication to the required travel axes.
Lubrication is only dispensed when the travel axes is in operation, reducing the amount of lubrication that is consumed.
When there is problem on lubrication line it shows warning message on a screen and stop the machine for users safety operation.

Fully enclosed Splash Guard!

Secured a view of ATC Magazine

User friendly design

- When door opened crane can move in up to the middle of table so it provides excellent convenience when heavy work piece moving.
- Minimize distance from cover to table for user friend

Environment friendly chip disposal

By additional coil conveyor 2 sets coolant and chip disposal is improved, realizing perfect chip disposal through process in order

OPT. CHIP CONVEYOR (LIFT UP, HINGE)

STD. COIL CONVEYOR (BED INSIDE 2SET)
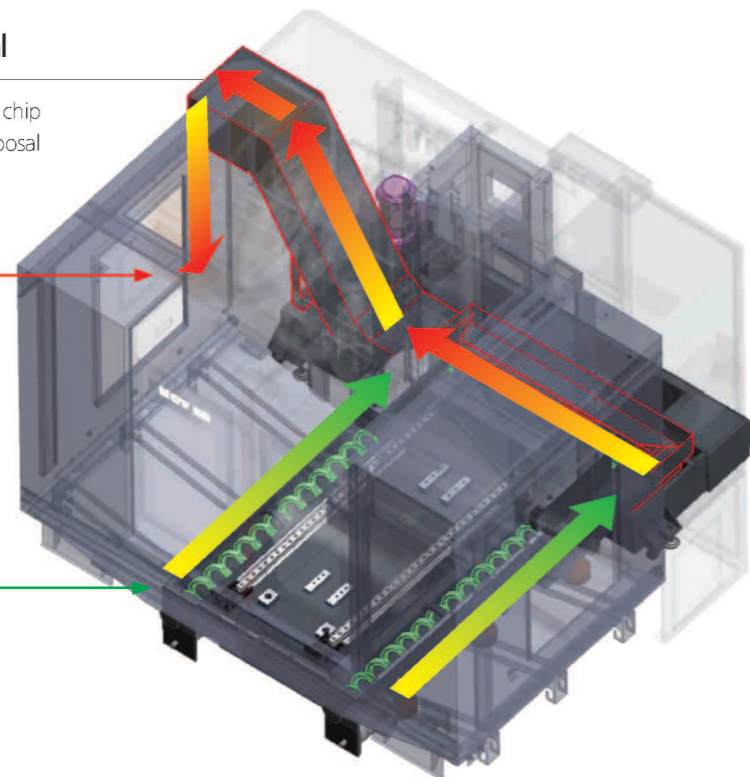
High rigidity & performance travel system

Travel type

Directly connecting with servo motor(Y/Z)
There is no intermediate channel to transmit power but using coupling and minimize back lash during axis moving

Roller type LM guide axis moving system

Best-in-class high performance guideways (for all axes)
Speed ➜ Reducing unnecessary time to move faster and stable
Rigidity ➜ Strengthen axis moving during heavy cutting
Durability ➜ Much better durability comparing with Roller LM Guide to realize precision moving and longer life time

Applied 4 rows bearing for all axis(X-Y-Z)

High rigidity with 4 times the lifetime
By sustaining 8 bearings on each axis realizing high rigidity and life time.
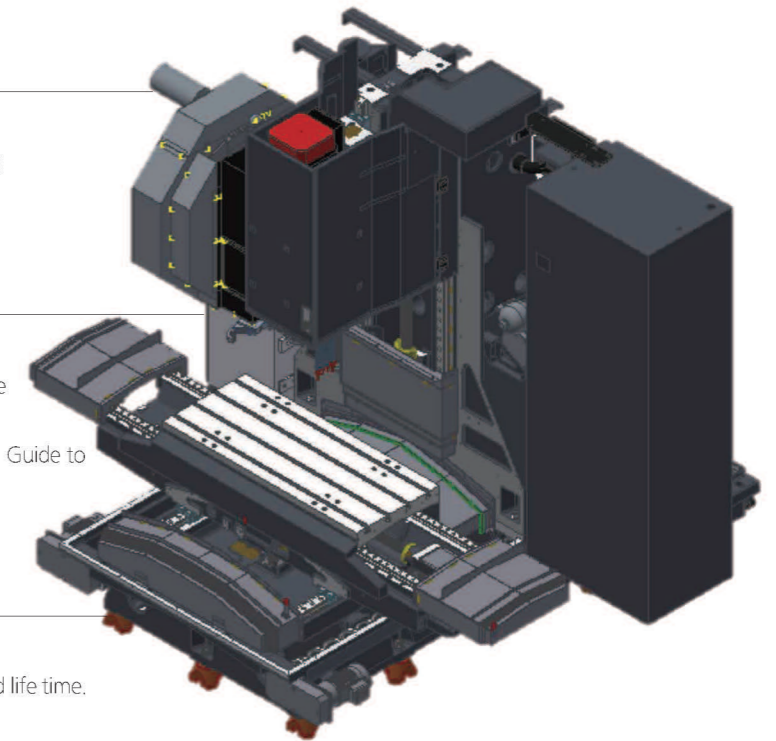
Chip Conveyor & Coolant Tank

Removable coolant tank
Put coolant tank on left side of the machine for easy coolant exchange and cleaning as well as pump maintenance.
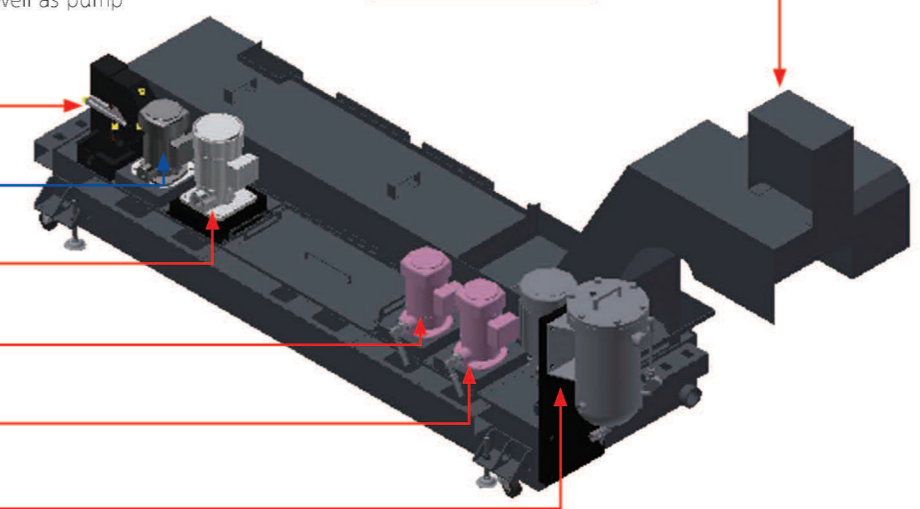
OPT. Chip Conveyor

OPT. Oil Skimmer(Belt)

STD. Coolant Pump

OPT. Coolant Pump

OPT. Bed Flushing Pump
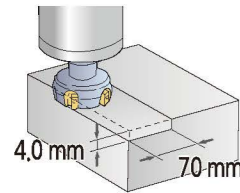
OPT. Coolant Gun Pump

OPT. T.S.COOLANT(20BAR)

Cutting Capacity (BBT40 11/18.5KW)
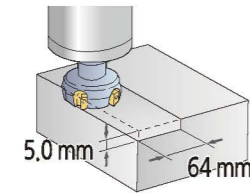
Face mill — Carbon Steel (SM45C)

Ø100mm Face mill (5Z)

Cutting amount	182 cm³/min
Spindle speed	600 r/min
Feedrate	650 mm/min

4.0 mm · 70 mm

Face mill — Alumium (AL6061)

Ø80mm Face mill (5Z)

Cutting amount	403 cm³/min
Spindle speed	1,500 r/min
Feedrate	1,260 mm/min

5.0 mm · 64 mm

End mill — Carbon Steel (SM45C)

Ø20mm End mill (6Z)
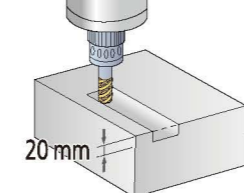
Cutting amount	54 cm³/min
Spindle speed	1,500 r/min
Feedrate	135 mm/min

20 mm

High Precision

Roughness
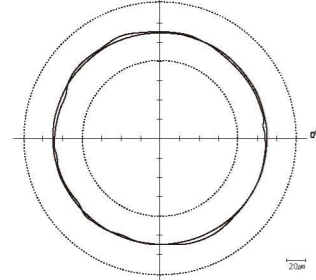
5.80 μm

Roundness	
Machine	MCV 4300/5500
Material	A 1050P
Tool	Ø25×4T
Spindle Speed	1,500RPM

Surface Roughness <O.D. cutting>

0.091 μm R y

12μm / 10μm / -10μm / -12μm

Optional Accessories

Auto Tool Length Measurement System

Gun Coolant

Through Spindle Coolant System
Center

Oil Mist System

CNC Rotary Table
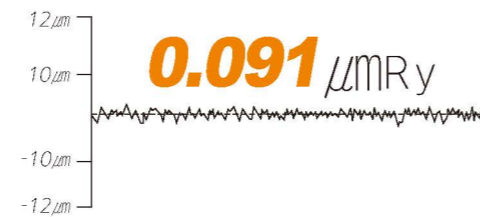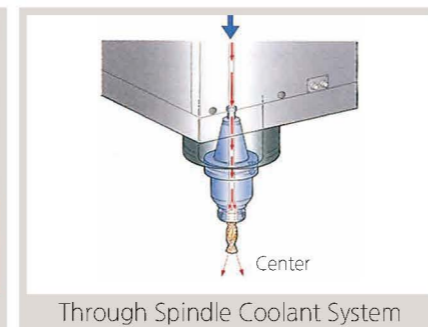
Chip Conveyor

Table & T-Slot

Unit : mm

MCV 4300

Detail T-Slot (S,3/1)

MCV 5500

Detail T-Slot (S,3/1)

Tool Shank

Unit : mm

BBT40

GAUGE LINE
테이퍼 7/24
M16

PULL STUD

Machine Dimensions

A (width)	B (with controller box)	C (max. width)	D (with chip conveyor)	E (length)	F (height)	G (shipping height)	H (discharge)
1,859	2,216	3,388	3,134	2,370	2,645	2,486	876
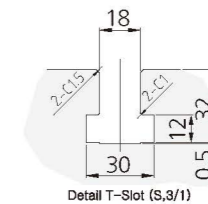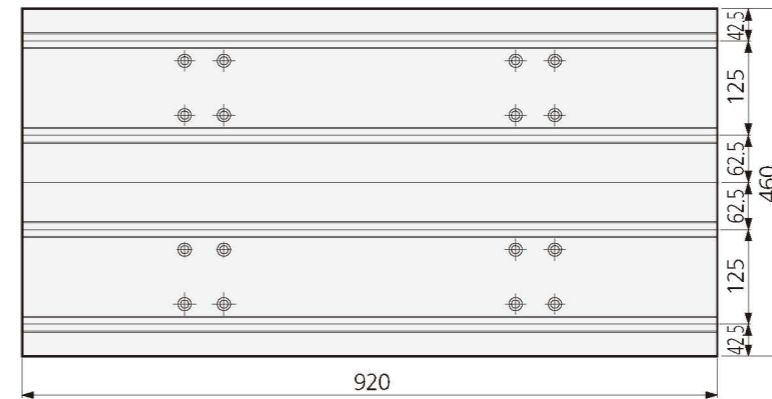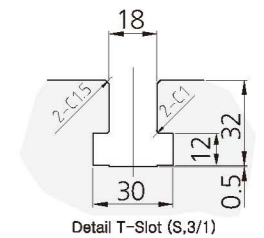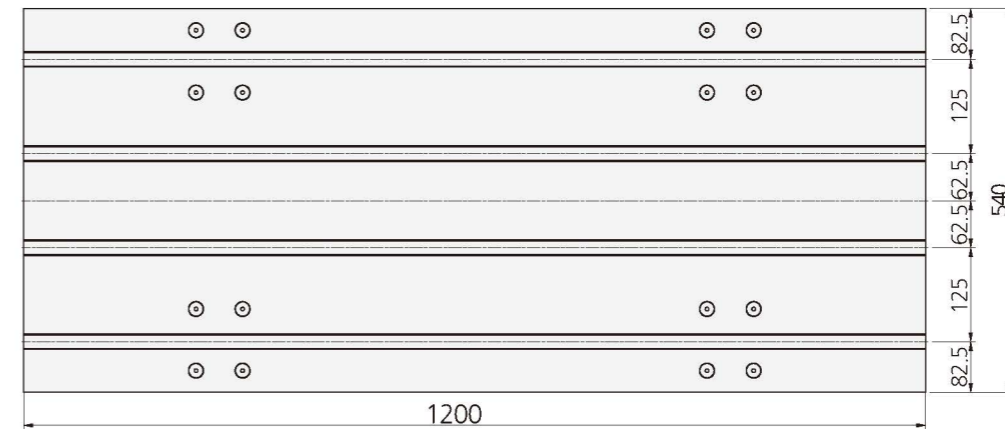
ATC Interference
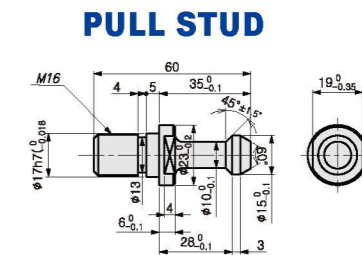
Unit : mm

MCV 4300

Machine Dimensions

Unit : mm

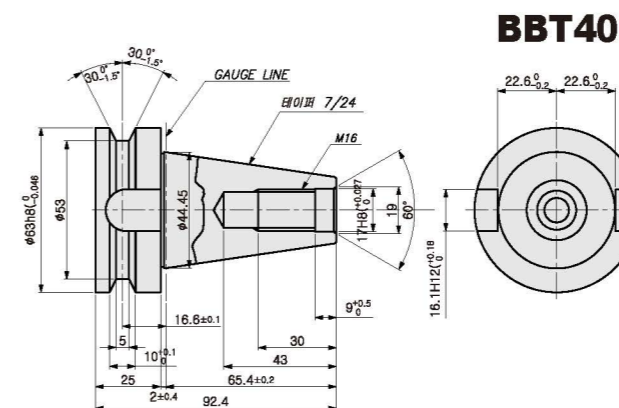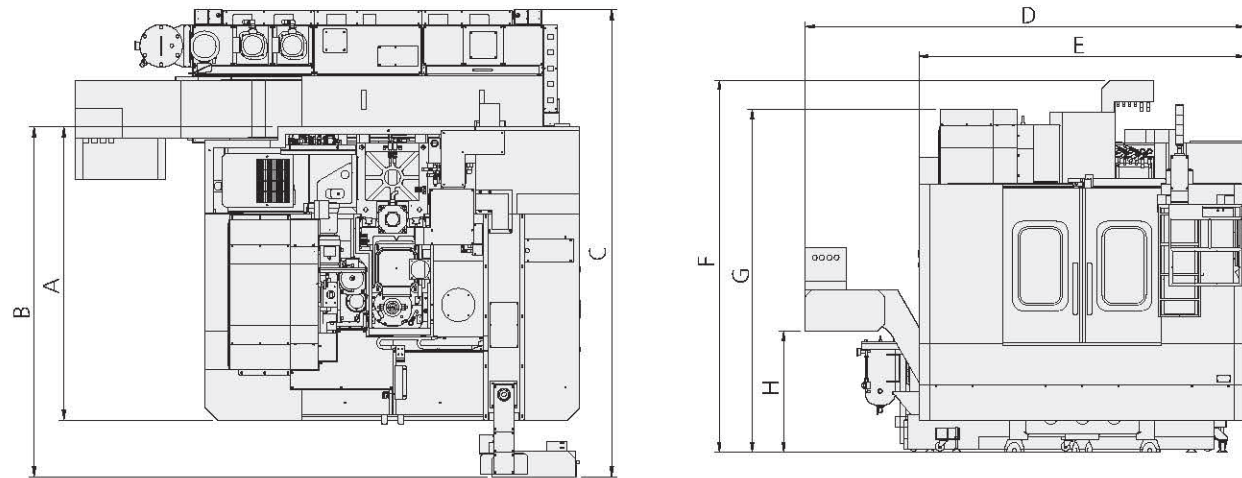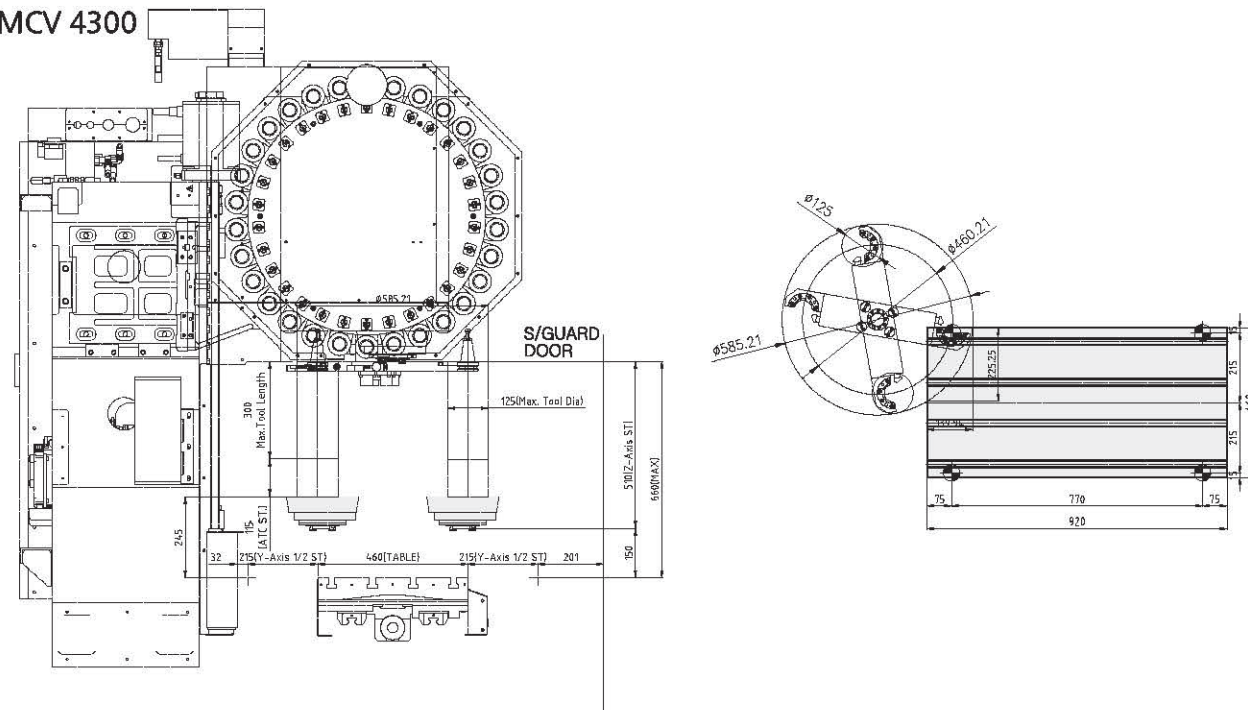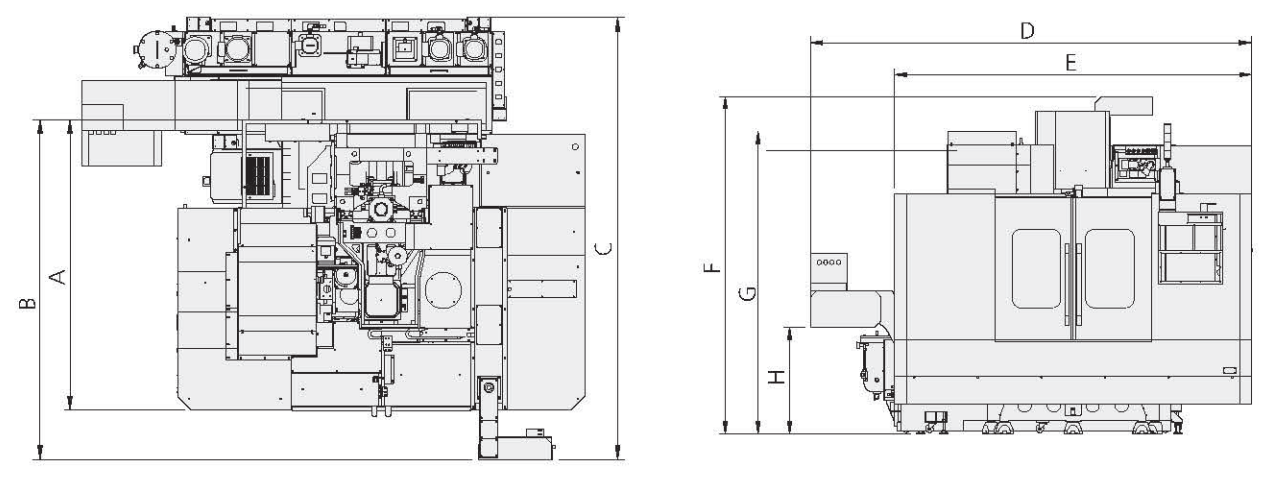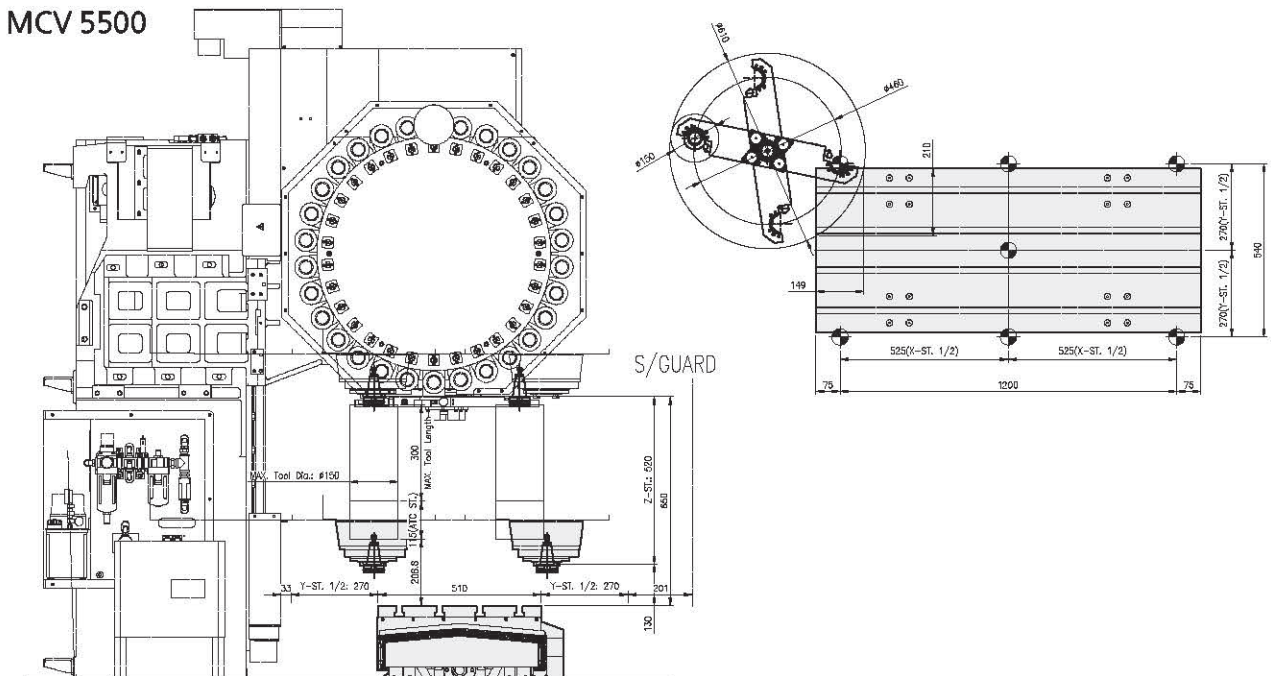| A (width)	B (with controller box)	C (max. width)	D (with chip conveyor)	E (length)	F (height)	G (shipping height)	H (discharge)
2,095	2,452	3,592	3,635	2,977	2,778	2,940	876

ATC Interference

Unit : mm

MCV 5500

Machine Specification

	DESCRIPTION		MCV 4300	MCV 5500
Travel	X-axis travel	mm	770	1,050
	Y-axis travel	mm	430	550
	Z-axis travel	mm	510	520
	Spindle to table surface	mm	150 ~ 660	130 ~ 650
Table	Table size	mm	920 x 460	1,200 x 540
	Max. Workpiece weight	kgf	600	800
	Table surface	mm	18H8 x p125 x 3ea	18H8 x p125 x 4ea
Spindle	Spindle speed	rpm	12,000	12,000
	Motor (Cont./Max)	kW	11/18.5	11/18.5
	Torque (Cont./Max)	N.m	70.1/117	70.1/117
Feedrate	X-axis Rapid traverse rate	m/min	36	36
	Y-axis Rapid traverse rate	m/min	36	36
	Z-axis Rapid traverse rate	m/min	30	30
ATC	Tool shank	-	BBT 40	BBT40
	Pull stud	-	MAS P40T-1	MAS P40T-1
	Tool storage capacity	ea	30	30
	Max. Tool diameter (adjacent empty)	mm	80(125)	80(125)
	Max. Tool length / weight	mm	300/8	300/8
	Tool-to-tool time	mm	1.3	1.3
	Tooling changing method	mm	Double Arm Swing	Double Arm Swing
	Tool select type	mm	Memory random	Memory random
Machine	Size (with Side Chip conveyor) L×W×H	mm	2,370(3,134) × 3,388 × 2,645	2,977(3,635) × 3,592 × 2,778
	Size (with Rear Chip conveyor) L×W×H	mm	-	-
	weight	kg	5,500	6,700
	Coolant tank capacity	Liter	325	365
Electric power supply		kVA/V	32/220	32/220
Controller			FANUC	

※ Design and specifications subject to change without notice.

Standard Accessories

- Coil conveyor (inside)
- Coolant system
- Door interlock
- Full splash guard with coolant tank
- Head nozzle
- Leveling parts (level plate, bolt, etc.)
- Lubrication system
- Manual/Part list (1set)
- Oil cooler
- Patrol lamp (3 colors)
- Portable MPG handle
- Rigid tapping
- Safety precaution name plate
- Spindle orientation
- Spindle override
- Standard tools and tool box
- Work light (LED lamp)

Optional Accessories

- Air blower
- Air gun
- Air conditioners (electric cabinet)
- Auto door
- Auto power off
- Bed flushing
- Bellows cover
- Chip bucket
- Chip conveyor
- Coolant blower
- Coolant chiller
- Coolant gun
- Coolant level switch
- Coolant pressure switch
- Counter (total, multi, tool, work)
- High column
- High pressure coolant
- Linear scale (X/Y/Z)
- M-code addition
- Oil mist collector
- Oil skimmer
- Robot interface
- Rotary table
- Through spindle coolant unit
- Tool measuring system
- Tool measuring tool
- Transformer
- Work light (addition)

NC Specifications / Fanuc Series

Item		Description
Controlled axes	Controlled axes	X, Y, Z, (A)
	Max. simultaneously controlled axes	Positioning (G00)/ Linear Interpolation (G01) Circular Interpolation (G02, G03)
	Least input increment	0.001 mm / 0.0001"
Spindle function	Spindle speed control	S5 (5 Digit)
	Spindle speed override	50~120%
	Spindle orientation	M19
Feed function	Feedrate override (10% increase)	0~200%
	Dwell	G04
	Reference position return	G27 / G28 / G29 / G30
	Manual pulse generator	0.001/0.01/0.1mm
	Cutting feed override	0 ~ 5,000 mm/min
	Rapid traverse override	F0(Fine Feed), 25/50/100%
Tool function	Tool number command	T2 (2 Digit)
	Tool nose radius compensation	G43 / G44
	Tool radius compensation	G41 / G42
	Tool offset pairs	400 EA
	Tool geometry / wear offset	G90 / G91
Programming function	Canned cycle	G70 ~ G72 / G74 ~ G76 / G80 / G83 ~ G88
	Decimal point input	Able to input up to decimal point
	R command circular interpolation	R radial programming without using I, J, K values
	SUB program	4 phase
	Work coordindate system	G54 ~ G59
	Local / machine coordinate	G52 / G53
	Max program dimension	±99999.999mm
Tape Functions	M function	M3 (3 digit)
	Input code	ISO/EIA auto recognition
	I/O interface	RS232C
	Program storage space	512 Kbyte
	Number of stored programs	400ea
Other features	Display unit / MDI	10.4" color LCD / Soft input type MDI
	Synchronized tapping	Rigid tapping function
	Background editing	Program saving / editing during automatic operation
	Backlash compensation	Pitch error offset compensation for each axis
	Search function	Sequence / program number search
	Safety function	Emergency stop / overtravel
	Program test function	Machine Lock / Single Block
	Control function	Memory / MDI / Manual
	Mirror image	M75 / M76
	Custom macro	#100 ~ #199, #500 ~ #999