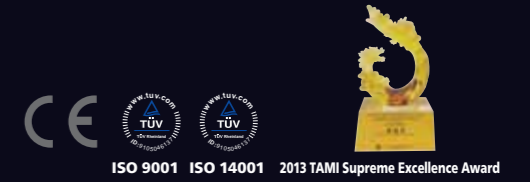




We lead the way by a new business model



WELE



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15052803 Macis TEL:0424753526

VTC SERIES



Vertical Turning Center



**WELE MECHATRONIC CO., LTD**

	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	AA65 Series	AA80 Series	AA90 Series	AQ Series	VQ Series	UG Series	UA Series	VTC Series	
VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48	RB Series	SB Series	LB Series	MB Series	HB Series	UB Series	MG Series	MVB Series	MT Series

## Rigid Construction and Design Concept

Every main casting or welding part is FEM analyzed to ensure the maximum rigidity.

Uses the twin servo motor to drive W axial moving cross rail. (GO: 20 m/min)

The clamping force has 18 tons in cross rail positioning. (two sets for each sides, 4500kg times 4 sets equal to 18000kg)

The hydro-static bearing is integrated with the bed and Turning Table also the oil tank, the temperature and pressure of oil is automatically controlled, so the thermal distortion is minimized and dynamic accuracy is ensured.

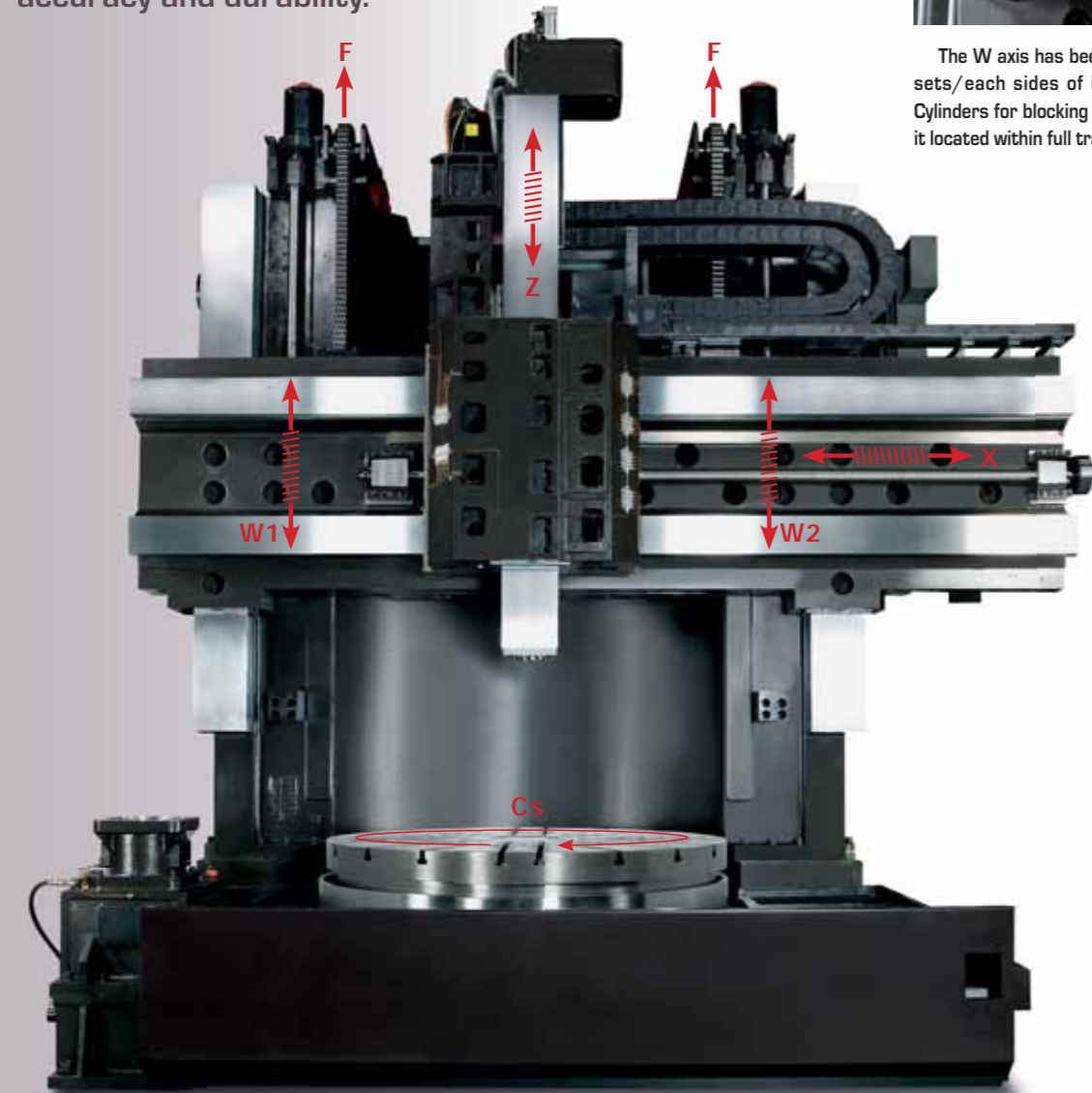
Every important contacting surface (total 66 surfaces) is manually scrapped to obtain the best flatness, geometric accuracy and durability.



The X, Z and W axes with twin driver have equipped with the torque limit mechanism which protect the servo motors.



The W axis has been equipped with two sets/each sides of Hydraulic Clamping Cylinders for blocking the W axis wherever it located within full travel.



Above figure shown as VTC1616's main structure without sheet metal.



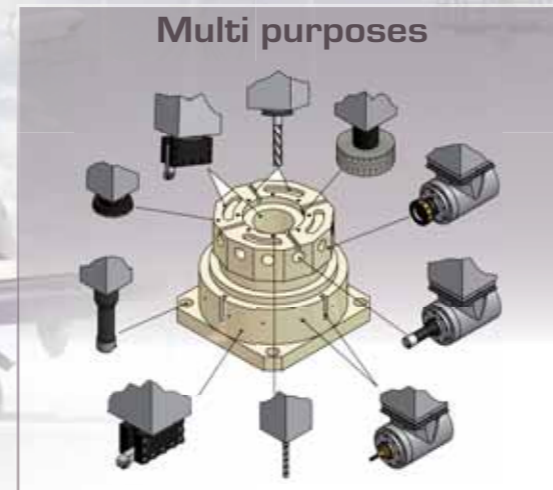
Above figure shown as VTC 1616 has attached with angular head and full splash guard system.

	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	AA65 Series	AA80 Series	AA90 Series	AQ Series	VQ Series	UG Series	UA Series	VTC Series	
VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48	RB Series	SB Series	LB Series	MB Series	HB Series	UB Series	MG Series	MVB Series	MT Series

## Application

WELE developed VTC series machines to meet the customers' vary demands and general purpose, such as:

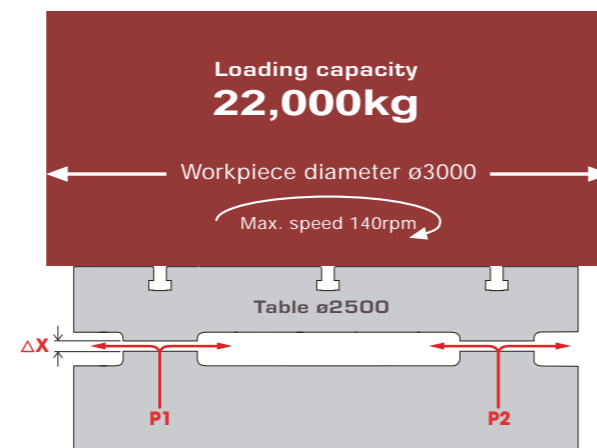
- Energy & Oil industry  
(ex. Windmill power generator's parts)
- Aerospace industry
- Ship building industry
- Transportation industry  
(ex. Railway engineering)
- Gas and Mining industry  
(ex. Mining machine parts)
- Huge and round shape parts  
(ex. Bearing, Gear, Hub, and Valve parts)



## High Rigidity of Turning table

WELE own developed hydro-static bearing for the ultra-heavy loading and cutting force.  
Cs axis backlash eliminated design which Indexing Increment is 0.001 degree.  
Available for rough and fine machining while the Cs axis does the milling work.  
Hydro-static bearing system has equipped with twin Hydraulic Supply unit, to ensure in case of Power Failure status for protect the bearing.

### Hydro-Static Bearing



## Multi-Functions puzzle type magazine design

Individual design:

Full size Curvic Coupling design for heavy cutting purpose. (200mm square, rectangle shape)

Auto-exchange in vertical type tool and Multi-head Attachment.

Angular head attachment with built-in unclamping devise has been well designed which can provide tool exchange for milling, drilling, tapping tools, could reduce the tool exchanging time.

Attached clamping mechanism has 4 sets of Self-Lock by hydraulic cylinders which to secure the clamping and provides heavy cutting performance.



Angular head



Grinding wheel



Turning tool holder



● 16 pockets tool magazine(STD) ; Two sets of curvic coupling attachment and 12 tools.



● Automatic exchange for multi-head attachment.

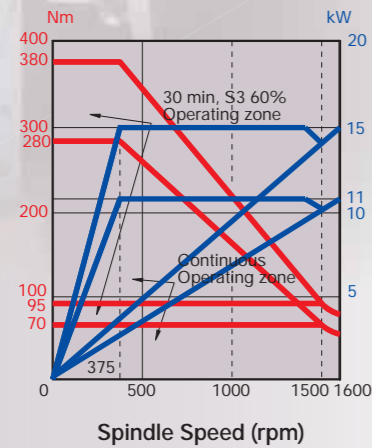


● Automatic tool exchange for vertical tools.

	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	AA65 Series	AA80 Series	AA90 Series	AQ Series	VQ Series	UG Series	UA Series	VTC Series	
VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48	RB Series	SB Series	LB Series	MB Series	HB Series	UB Series	MG Series	MVB Series	MT Series

## Powerful Spindle & Turning Table Output Torque

Milling spindle (Gear driven),  $\alpha$ 12i 11/15kW



Turning Table (Gear driven)

Model		Power, kW (cont./ 30min)	Speed, rpm	Torque, Nm
VTC1616	STD	37 / 45	260	20,063
	OPT	60 / 75	200	29,000
VTC2525	STD	60 / 75	140	52,507
	OPT	100	124	96,636

## High Efficiency Cutting Performance

VTC1616-20, 37/45 kW at turning spindle, 11/15kW at milling spindle, Material: SCM440.



	VTC 1616-20
Z axis elongation	600 mm
Linear velocity (Vc)	115 m/min
Cutting depth (Ap)	10 mm
Feed per rev. (fz)	1 mm/rev
Mass removal rate (MRR)	1,150 cc/min
Taiwan A brand	720 cc/min
Japan A brand	1,000 cc/min
Japan B brand	1,055 cc/min



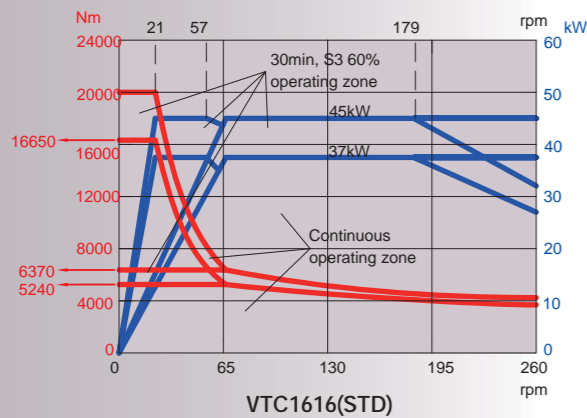
Cutting tool	Ø125 x 8
Cutting width (Ae)	100 mm
Cutting depth (Ap)	4 mm
Feedrate (f)	1000 mm/min
Mass Removal rate (MRR)	400 cc/min
Taiwan A brand	170 cc/min
Japan A brand	317 cc/min



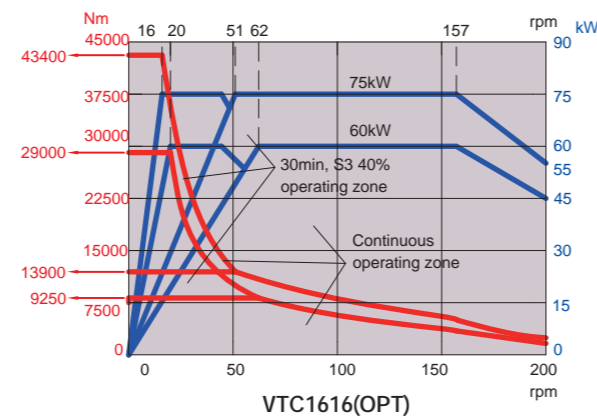
Cutting tool	Ø40 x 4
Cutting width (Ae)	8 mm
Cutting depth (Ap)	32 mm
Feedrate (f)	1432 mm/min
Mass Removal rate (MRR)	366 cc/min
Taiwan A brand	95 cc/min

Turning Table (Gear driven)

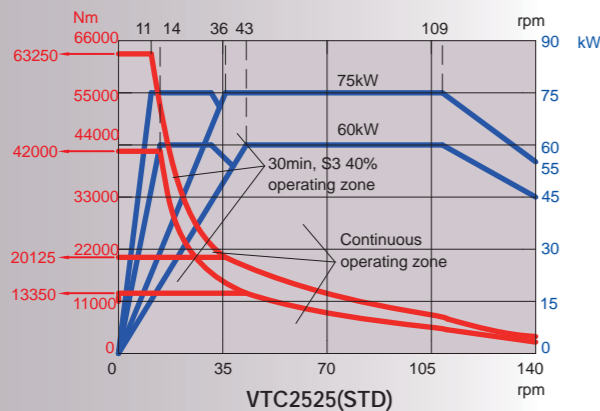
Speed up to 260 rpm with gear-driven of Fanuc  $\alpha$ 40HVi-6000 spindle motor (37/45 kW)



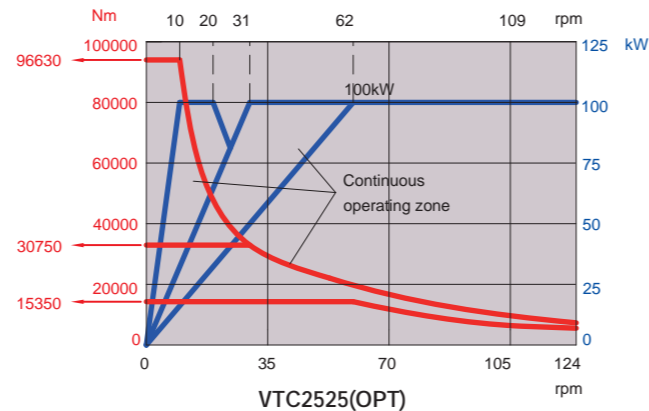
Speed up to 200 rpm with gear-driven of Fanuc  $\alpha$ 60HVi-4500 spindle motor (60/75 kW)



Speed up to 200 rpm with gear-driven of Fanuc  $\alpha$ 60HVi-4500 spindle motor (60/75 kW)



Speed up to 124 rpm with gear-driven of Fanuc  $\alpha$ 100HVi-4000 spindle motor (100 kW)



	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	AA65 Series	AA80 Series	AA90 Series	AQ Series	VQ Series	UG Series	UA Series	VTC Series	
VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48	RB Series	SB Series	LB Series	MB Series	HB Series	UB Series	MG Series	MVB Series	MT Series

## Genius Design and Experienced Technology

Machine accuracy is based on the flatness less than  $3\mu\text{m}$  in 1.2m by 1.2m. (JIS O grade standard: flatness less than  $7\mu\text{m}$  in 1m by 1m).

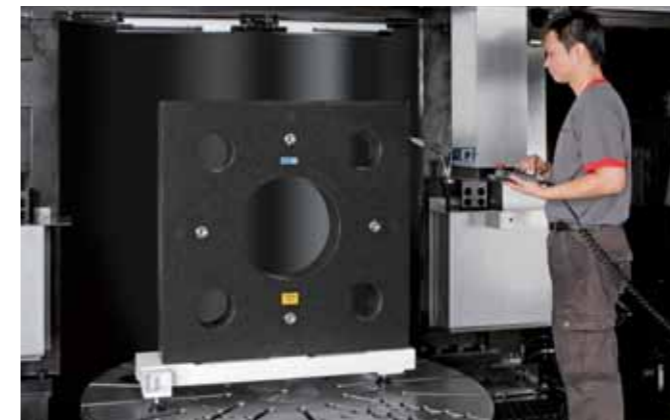
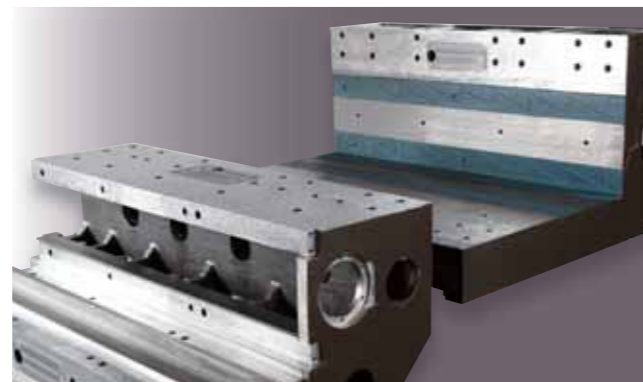
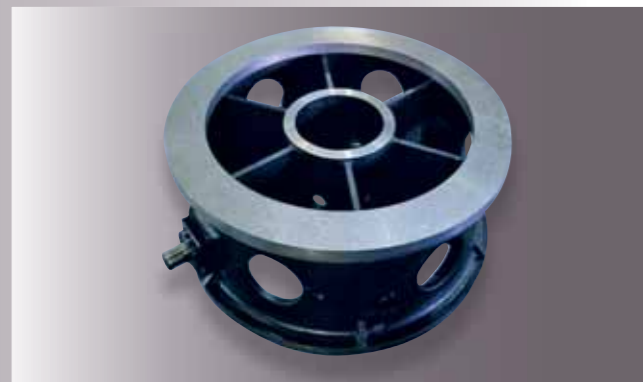


## Strictly Quality Assurance

The completely quality control procedure. Using the advanced and precise equipment as CMM, autocollimator, laser interferometer, Ball Bar test, Balancer. Ensure the excellent quality of machine.



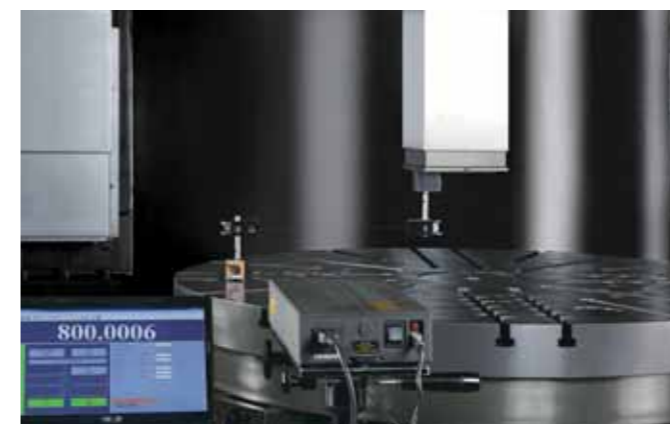
The series machine has scraping work in 66 contact surfaces. To ensure the machine has excellent accuracy and repeatability.



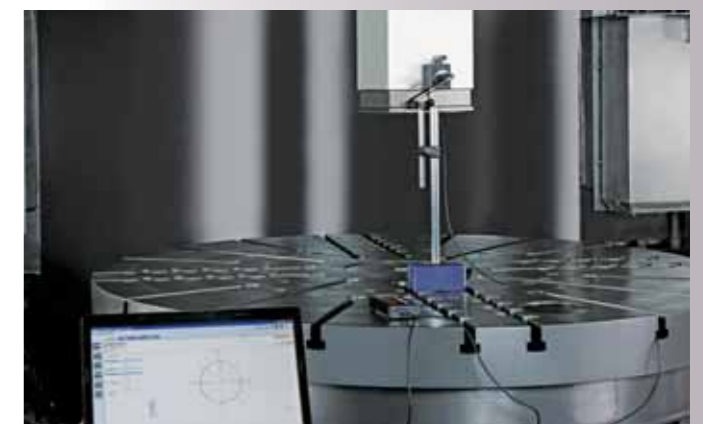
Strictly geometric accuracy measurement.



Cs axis rotation indexing positioning accuracy measurement.



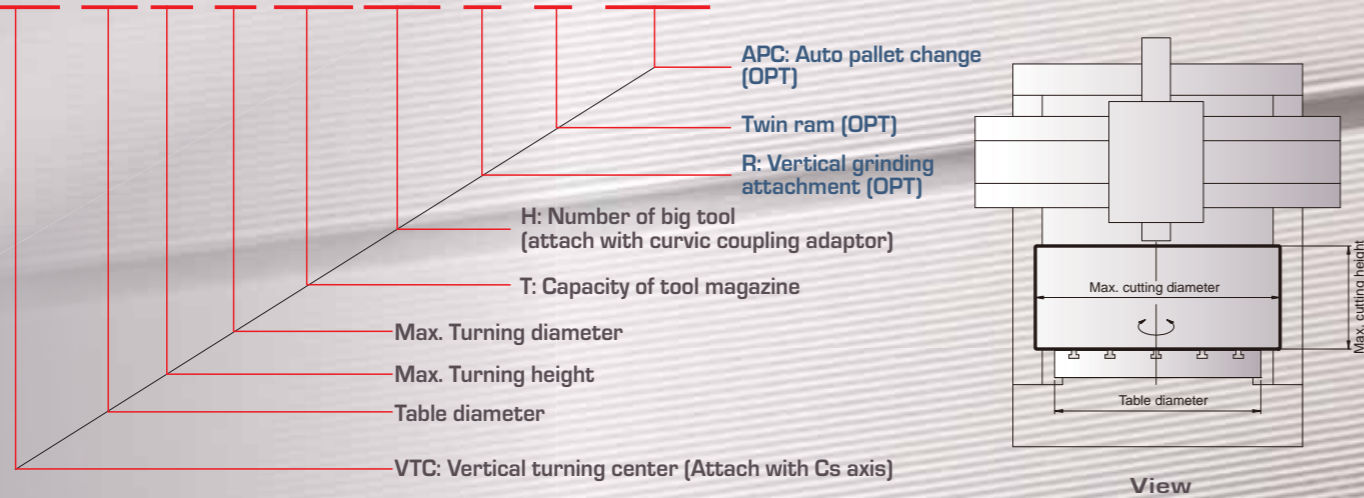
X axis laser positioning accuracy measurement.



Ball Bar circular measurement in X,Z axes.

## Definition of Machine Specification

### VTC abcd-ef-xxTyyH-G/R/APC

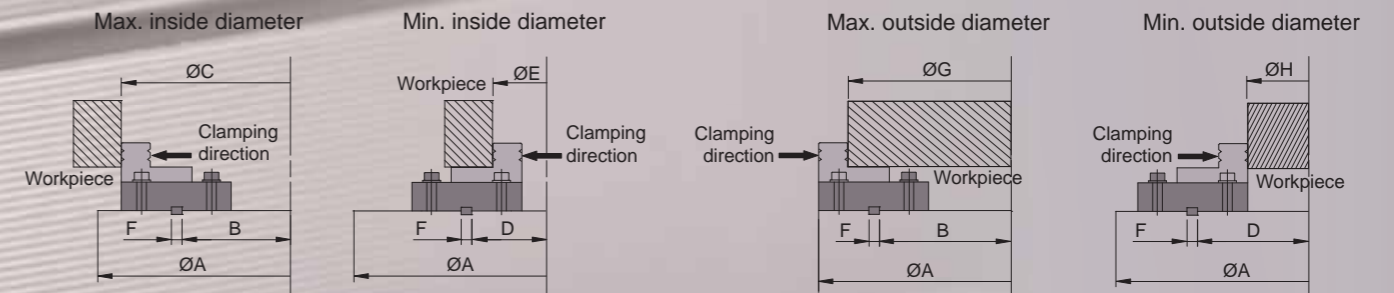


## Working Envelope Dimensions

### Clamping range inside diameter of workpiece

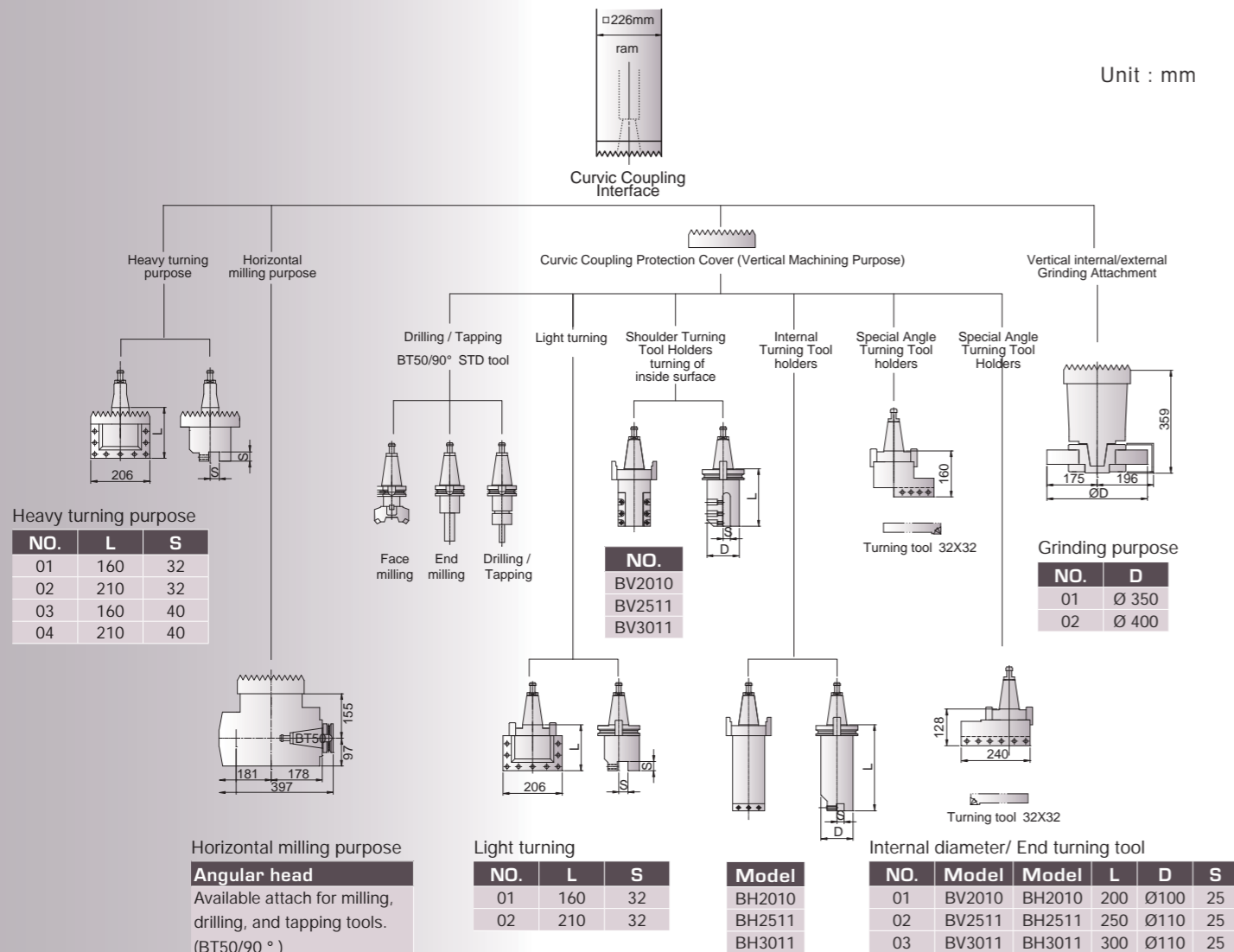
### Clamping range outside diameter of workpiece

Unit: mm (in)

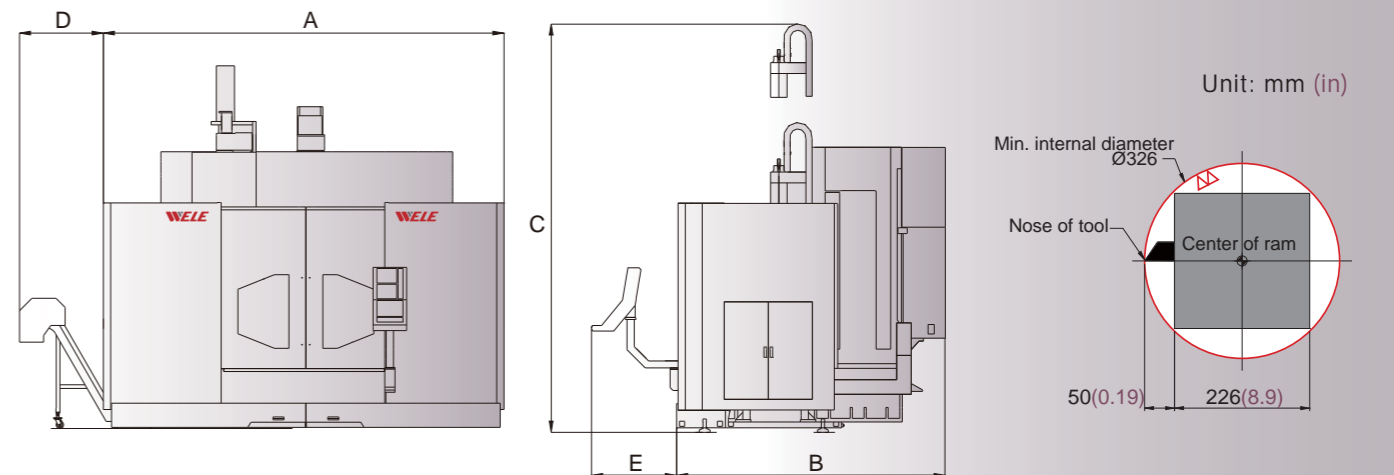


Model	A	B	C	D	E	F	G	H
VTC16	ø1,600 (63)	695 (27.4)	ø1,641 (64.6)	335 (13.2)	ø582 (22.9)	22 (0.86)	ø1,521 (59.9)	ø462 (18.2)
VTC20	ø2,000 (78.7)	901 (35.5)	ø2,053 (80.8)	316 (12.4)	ø544 (21.4)	22 (0.86)	ø1,933 (76.1)	ø424 (16.7)
VTC25	ø2,500 (98.4)	1,146 (45.1)	ø2,543 (100.1)	291 (11.5)	ø494 (19.4)	22 (0.86)	ø2,423 (95.4)	ø374 (14.7)
VTC30	ø3,000 (118.1)	1,412 (55.6)	ø3,109 (122.4)	287 (11.3)	ø489 (19.3)	30 (1.18)	ø2,969 (116.9)	ø349 (13.7)
VTC40	ø4,000 (157.5)	1,952 (76.9)	ø4,189 (164.9)	287 (11.3)	ø489 (19.3)	30 (1.18)	ø4,049 (159.4)	ø349 (13.7)

## Spindle Configuration



## Machine Dimensions and Space Requirement



Model	A	B	C	D	E
VTC1612	5500 (216.5)	3805 (149.8)	5175 (203.7)	1150 (45.3)	1170 (46.1)
VTC1616	5500 (216.5)	3805 (149.8)	5525 (217.5)	1150 (45.3)	1170 (46.1)
VTC2016	6000 (236.2)	4100 (161.4)	5540 (218.1)	1150 (45.3)	1170 (46.1)
VTC2020	6000 (236.2)	4100 (161.4)	5940 (233.8)	1150 (45.3)	1170 (46.1)
VTC2520	6530 (257.1)	4400 (173.2)	6265 (246.6)	1150 (45.3)	1170 (46.1)
VTC2525	6530 (257.1)	4400 (173.2)	6765 (266.3)	1150 (45.3)	1170 (46.1)
VTC3025	7100 (279.5)	5000 (196.8)	6665 (262.4)	1150 (45.3)	1170 (46.1)
VTC3032	7100 (279.5)	5000 (196.8)	7365 (290.0)	1150 (45.3)	1170 (46.1)
VTC4032	8400 (330.7)	6000 (236.2)	7550 (297.2)	1150 (45.3)	1170 (46.1)

	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	AA65 Series	AA80 Series	AA90 Series	AQ Series	VQ Series	UG Series	UA Series	VTC Series	
VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48	RB Series	SB Series	LB Series	MB Series	HB Series	UB Series	MG Series	MVB Series	MT Series

## Technical Specifications

Specification	Unit	VTC1612-20	VTC-1616-20	VTC2016-24	VTC2020-24	VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48
<b>Machining Capacity</b>										
Turning table diameter	mm(in)	Ø1600 (62.99)		Ø2000 (78.74)		Ø2500 (98.43)		Ø3000 (118.11)		Ø4000 (157.48)
Max. turning height capacity	mm(in)	1200 (47.24)	1600 (62.99)	1600 (62.99)	2000 (78.74)	2000 (78.74)	2500 (98.43)	2500 (98.43)	3200 (125.98)	3200 (125.98)
Max. swing diameter	mm(in)	Ø2000 (78.74)		Ø2400 (94.49)		Ø3000 (118.11)		Ø3500 (137.8)		Ø4800 (188.98)
Distance from table to ram's surface	mm(in)	1400 (55.12)	1800 (70.87)	1800 (70.87)	2200 (86.61)	2200 (86.61)	2700 (106.3)	2700 (106.3)	3400 (133.86)	3400 (133.86)
X axis travel	mm(in)	-810 to 1180 (-31.89 to 46.46)		-1010 to 1380 (-39.76 to 54.33)		-1260 to 1680 (-49.61 to 66.14)		-1510 to 2000 (-59.45 to 78.74)		-2410 to 2600 (-94.88 to 102.36)
Z axis travel	mm(in)	1050 (41.34)	1050 (41.34)	1050 (41.34)	1250 (49.21)	1250 (49.21)	1500 (59.06)	1500 (59.06)	2500 (98.43)	2500 (98.43)
W axis travel	mm(in)	800 (31.5)	1100 (43.31)	1200 (47.24)	1500 (59.06)	1500 (59.06)	1900 (74.8)	1900 (74.8)	2500 (98.43)	2500 (98.43)
<b>Turning Table and Spindle Unit</b>										
Turning table speed	rpm	2~260		2~200		2~140		2~116		1~86
Turning table motor	kW(HP)	37/45 (49/60)		37/45 (49/60)		60/75 (80/100)		60/75 (80/100)		100 (134)
Turning table output torque	Nm(lb-ft)	20063 (14796)		26802 (19766)		52507 (38722)		63009 (46467)		139766 (103072)
Turning table loading capacity	kg(lb)	14000 (30864.72)		18000 (39683.21)		22000 (48501.7)		25000 (55115.57)		50000 (110231.15)
Ram section (square)	mm(in)	226 (8.9)		226 (8.9)		226 (8.9)		226 (8.9)	300 (11.81)	300 (11.81)
Milling spindle motor (Ram)	kW(HP)	11/15 (15/20)		11/15 (15/20)		11/15 (15/20)		11/15 (15/20)		11/15 (15/20)
Milling spindle speed (Ram)	rpm	1600		1600		1600		1600	1200	1200
Milling spindle output torque (Ram)	Nm(lb-ft)	304 (224)		304 (224)		304 (224)		304 (224)		304 (224)
Turning spindle taper		ISO 50		ISO 50		ISO 50		ISO 50		ISO 50
Milling spindle taper (Ram)		ISO 50		ISO 50		ISO 50		ISO 50		ISO 50
Tool Magazine		16T		16T		16T		16T		16T
<b>Feedrate</b>										
X axis rapid feedrate	mm(in/min.)	12000 (472.44)		10000 (393.7)		10000 (393.7)		10000 (393.7)		12000 (472.44)
Z axis rapid feedrate	mm(in/min.)	8000 (314.96)		8000 (314.96)		8000 (314.96)		8000 (314.96)	10000 (393.7)	10000 (393.7)
X/Z axis cutting feedrate	mm(in/min.)	2000 (78.74)		2000 (78.74)		2000 (78.74)		2000 (78.74)		5000 (196.85)
W axis cutting feedrate	mm(in/min.)	2000 (78.74)		2000 (78.74)		2000 (78.74)		2000 (78.74)		2000 (78.74)
<b>Accuracy</b>										
XZ axis positioning accuracy (VDI)	mm(in)	0.015 (0.0006)		0.02 (0.0008)		0.02 (0.0008)		0.025 (0.001)		0.025 (0.001)
XZ axis repeatability accuracy (VDI)	mm(in)	0.008 (0.0003)		0.01 (0.0004)		0.01 (0.0004)		0.012 (0.0005)		0.012 (0.0005)
Cs axis positioning accuracy (VDI)	arcsec	30"/360 °		30"/360 °		30"/360 °		30"/360 °		30"/360 °
Cs axis repeatability accuracy (VDI)	arcsec	15"		15"		15"		15"		15"
<b>Space requirement</b>										
Machine height (Max.)	mm(in)	5175 (204)	5525 (217.52)	5540 (218.11)	5940 (233.86)	6265 (246.65)	6765 (266.34)	6665 (262.4)	7365 (289.96)	7550 (297.24)
Machine weight (Max.)	kg(lb)	30000 (66138)	34000 (74957)	40000 (88184)	42000 (92594)	44000 (97003)	46000 (101412)	60000 (132277)	65000 (143300)	73000 (160937)

\*\*Product specifications and accessories are subjected to change without notice.

	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	AA65 Series	AA80 Series	AA90 Series	AQ Series	VQ Series	UG Series	UA Series	VTC Series	
VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48	RB Series	SB Series	LB Series	MB Series	HB Series	UB Series	MG Series	MVB Series	MT Series

## Standard and optional accessories

: STANDARD : OPTION

Item	Model	VTC1612-20	VTC1616-20	VTC2016-24	VTC2020-24	VTC2520-30	VTC2525-30	VTC3025-35	VTC3032-35	VTC4032-48
FANUC 0iTD controller										
FANUC 31iB controller										
SIEMENS 828 controller										
Two steps gear transmission on spindle										
4 jaws manual chuck										
W axis cross rail up & down driven by dual servo motors										
Cross rail up & down clamping in any position by hydraulic system										
Counter balance system on cross rail										
Ram spindle stepless gear transmission										
Torque limit clutch on X, Z and W axis										
Twin feedback system on X, Z and W axis										
16 pockets puzzle type tool magazine										
24 pockets Puzzle type tool magazine										
32 pockets Puzzle type tool magazine										
Hydraulic system										
Pneumatic system										
Centralized guide ways lubrication system										
Coolant system and tank with 420L capacity										
Full enclosure guarding system										
Spindle cooling system										
Recycling collectors for lubrication on X, Z, W axis										
Heat exchanger on electrical cabinet										
Upgrade to air conditioner instead of heat exchanger on electrical cabinet										
Hydraulic unit chiller										
Coolant chiller										
Operation cycle finish and alarm lights										
Work light										
Caterpillar type chip conveyor and bucket										
Spray hose for chip wash down										
Air flush coolant system										
Bed coolant flushing system										
RS-232 and RJ45 interface										
MPG remote handwheel										
Technical manuals										
Tool kit and foundational bolt										
Data server (including 1G Card)										
Horizontal head attachment										
Automatic Cs axis and 0.001 degree indexing positioning function										
Automatic tool length measurement (Blum or Renishaw)										
Automatic workpiece measurement (Blum or Renishaw)										

\*\*Product specifications and accessories are subjected to change without notice.