



MVL-12 / MVL-12M
MVL-16 / MVL-16M
MVL-20 / MVL-20M
MVL-25 / MVL-25M

HEAVY DUTY CNC VERTICAL LATHE

MVL

SERIES

MOMENTUM
MACHINE TOOL COMPANY

RUGGED MACHINE CONSTRUCTION

A GUARANTEE OF **Rigidity and Stability**



WEAR-RESISTANT CROSSRAIL

- The slideways on the rail fitted with hardened steel to increase wear-resistance capability.
- Rail elevation is driven by two hydraulic cylinders.
- The rail positions are clamped securely by hydraulic power. Accurate perpendicularity between two clamping head is achieved through additional stops.

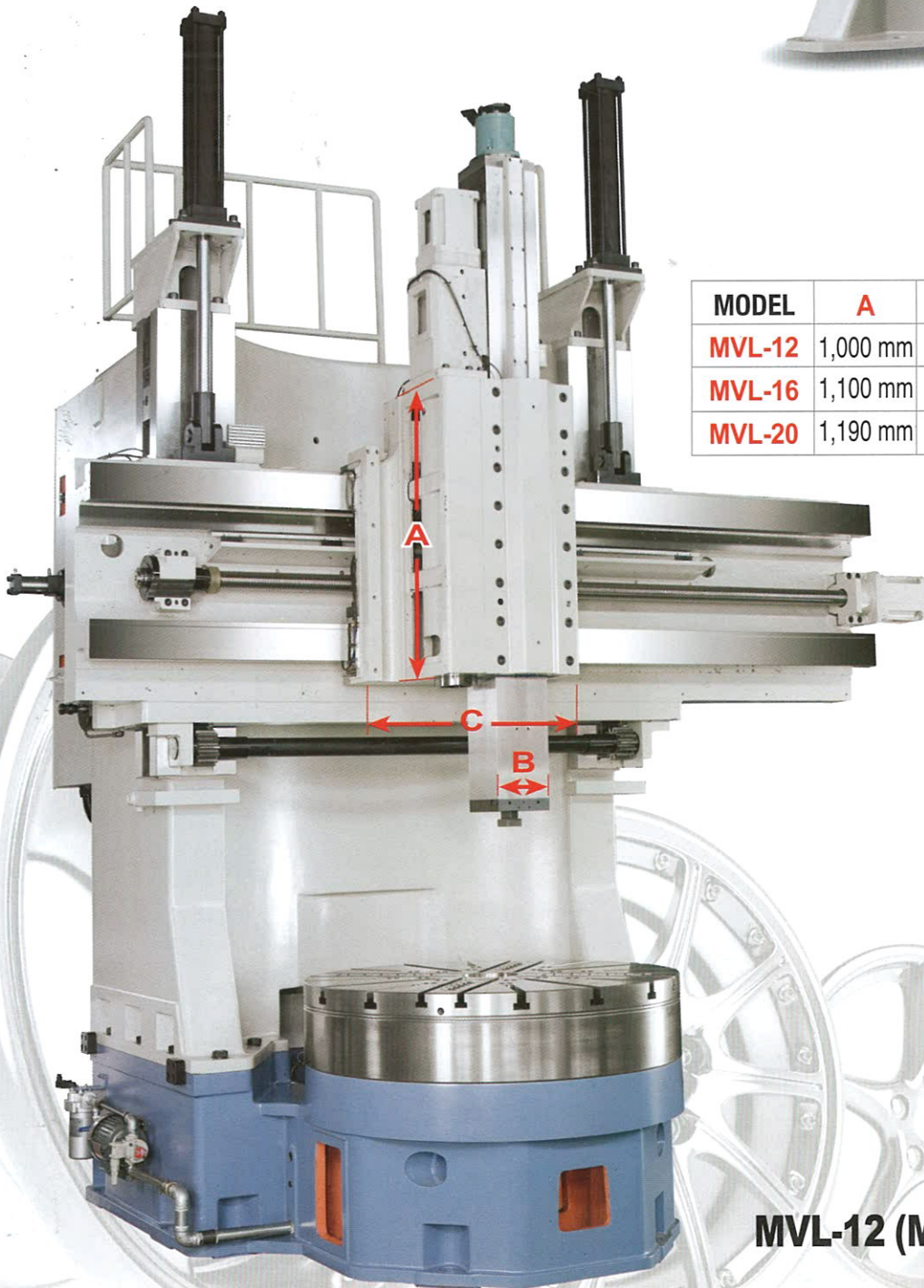
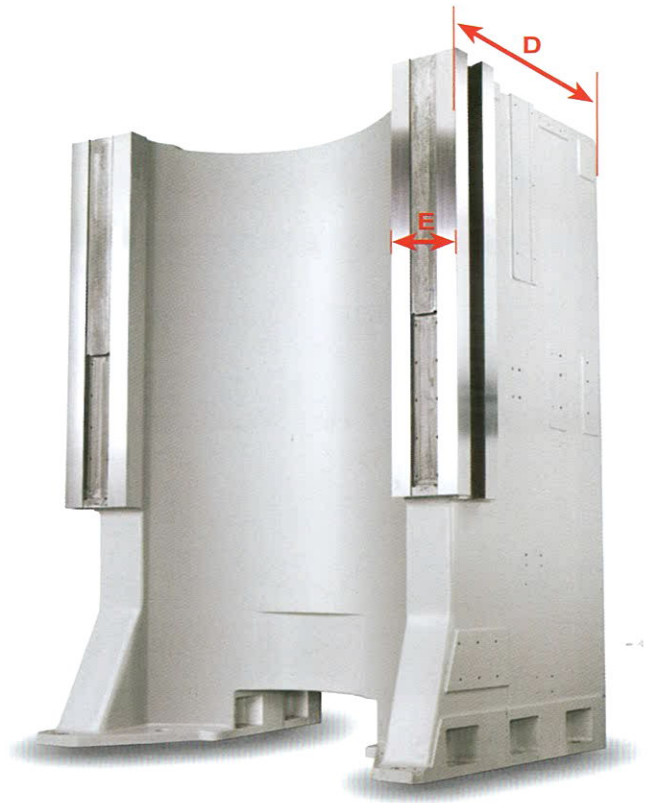
WAY-TYPE COLUMNS

- Way type columns ensure rigidity of columns.

AUTOMATIC TOOL CHANGER

- The loading capacity of the magazine is 12 tools.
- The magazine rotation is driven by a servo motor, featuring fast and high positioning accuracy.
- Tool selection method is bi-directional and random for increased efficiency.
- The tool magazine is separately mounted from the cutting area, combined with a safety door to fully prevent cutting tools from contamination by chips or coolant.

- The structural parts, such as base, table, columns and crossrail are all manufactured from high quality cast iron, stress relieved for deformation-free performance year after year.
- The contact surface of column, beam and saddle are hardened by high frequency induction, and coated with Turcite B for stronger wear-resistance.
- Compulsory lubrication system injects lubrication oil periodically by using fixed volume oil distributor, which reduces oil consumption and ensures each smooth operation of each lubrication points.

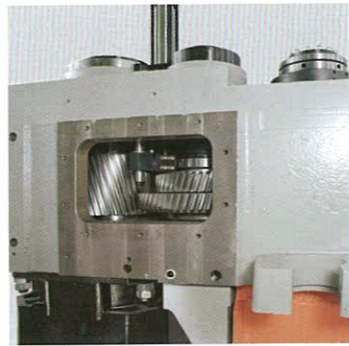


MODEL	A	B	C	D	E
MVL-12	1,000 mm	200 mm	650 mm	1,025 mm	300 mm
MVL-16	1,100 mm	240 mm	850 mm	1,305 mm	300 mm
MVL-20	1,190 mm	254 mm	1000 mm	1,655 mm	470 mm

MVL-12 (MVL-16)

MVL-12M / MVL-16M

RAISING YOUR TURNING AND MILLING



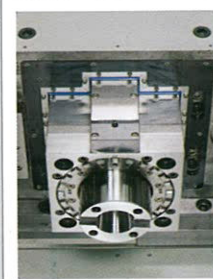
TWO SPEED GEAR BOX

The gearbox employs an oil cooler for lubrication and cooling, ensuring a constant temperature in the gearbox.



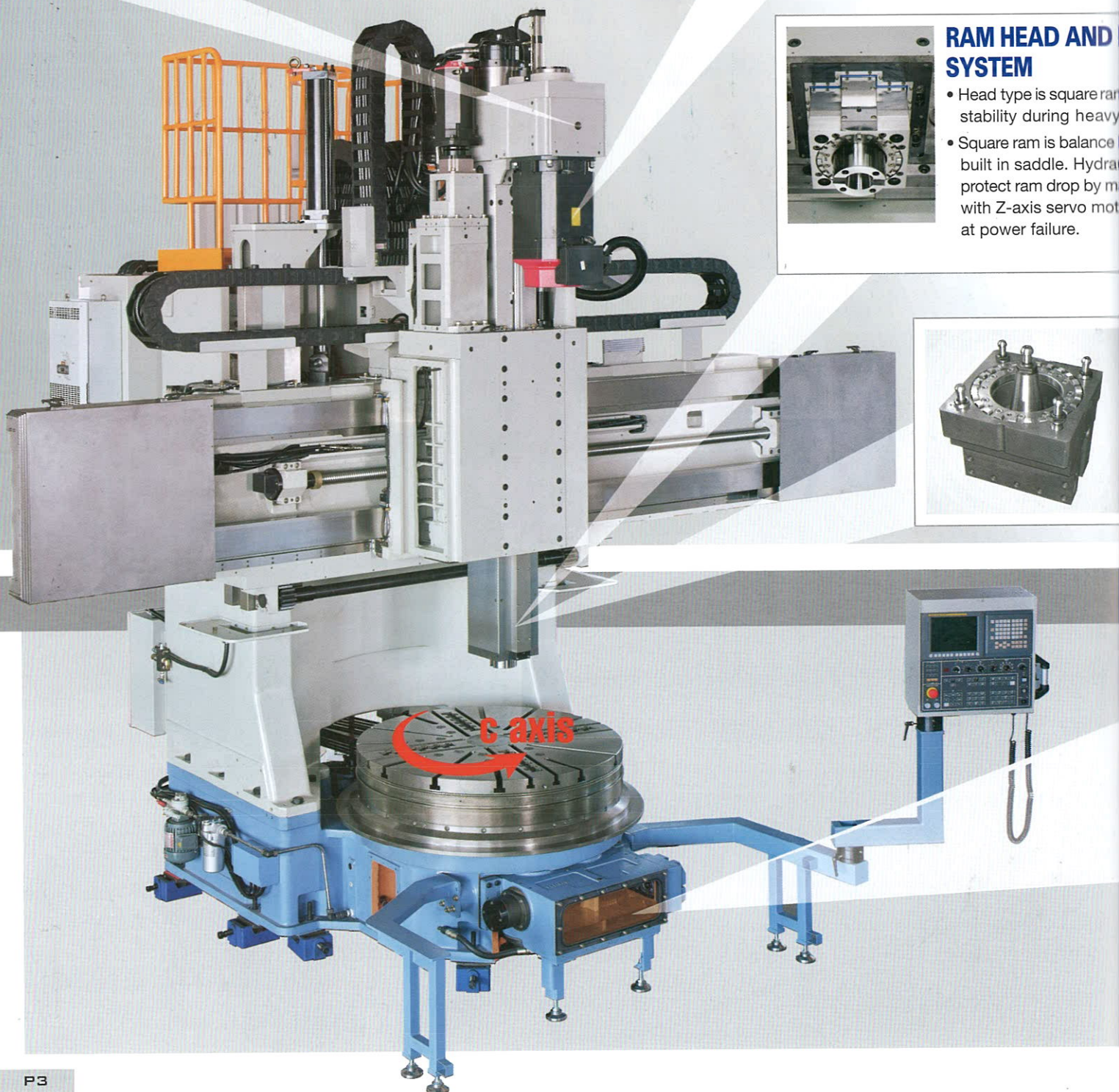
MILLING SPINDLE MOTOR

- The Fanuc driven milling spindle is transmitted through a robust gear box, providing increased torque.
- Max high speed is 3,000rpm.



RAM HEAD AND SYSTEM

- Head type is square ram for stability during heavy cutting.
- Square ram is balanced and built in saddle. Hydraulic ram drop protection prevents ram drop by monitoring Z-axis servo motor at power failure.



TO A NEW HEIGHT OF EFFICIENCY



BT-50 CLAMPING

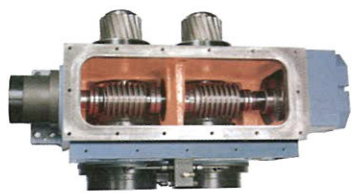
It provides maximum cutting.

by hydraulic ram cylinder
 lic counter balance
 gnetic brake equipment
 r and pilot check valve

- Powerful turning toolholder clamping
- In addition to the BT-50 tool pulling design, there are 4 additional auxiliary pulling kits that help to increase stability during heavy cutting.

※ Optional Accessories: Double ATC

CF AXIS



- The c-axis is driven by a servo motor combined with transmission through double worms for smooth rotation and minimized backlash.
- The indexing accuracy of the c-axis reaches 0.001°
- The c-axis operates together with the milling spindle to perform milling, drilling, tapping and contour cutting operations.
- Hydraulic double disk brake locking provides stability.

ROTARY ENCODER

The C axis is equipped with a rotary encoder, enabling the positioning accuracy and repeatability to achieve superb standard.

FOUR JAW INDEPENDENT MANUAL CHUCK

PLAIN TABLE WITH RADIAL PARALLEL T-SLOTS

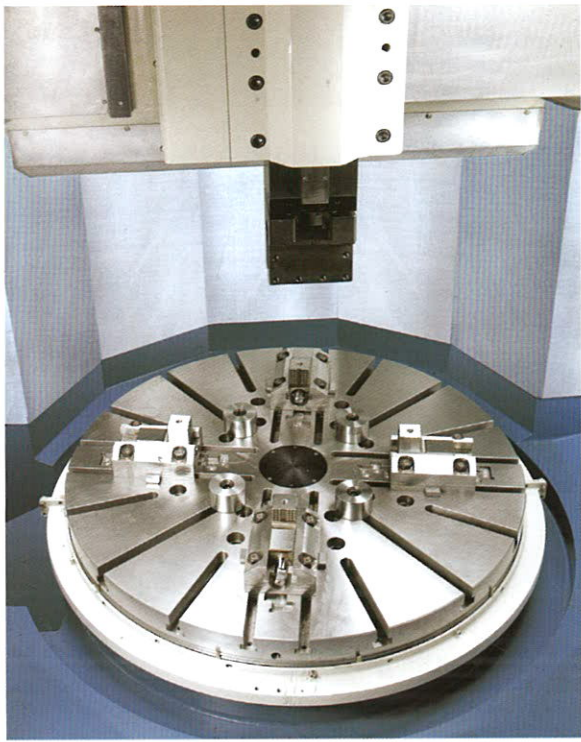


TABLE BEARINGS

Ample thrust and radial bearing provide excellent loading capacity for workpiece and table and greater cutting force resistance.

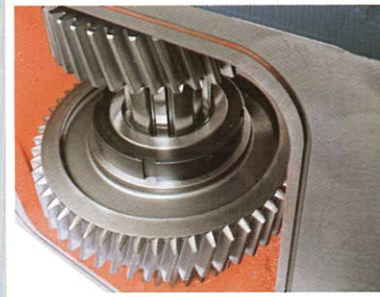
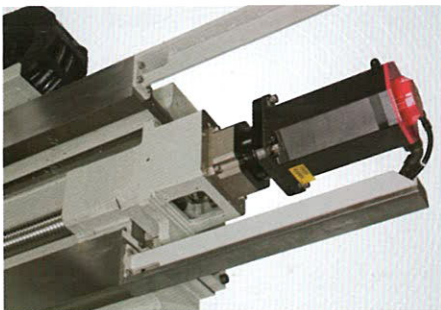


TABLE DRIVE GEARBOX

The table rotation is transmitted through a gearbox, providing high / low speed ranges.

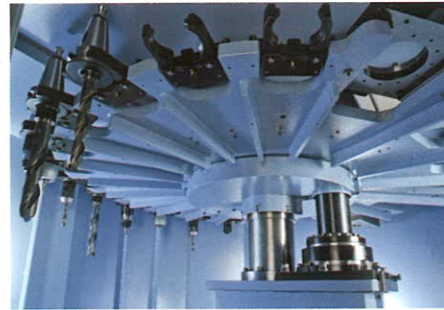
A forced circulated lubrication system is used for lubricating gears.

STANDARD ACCESSORIES



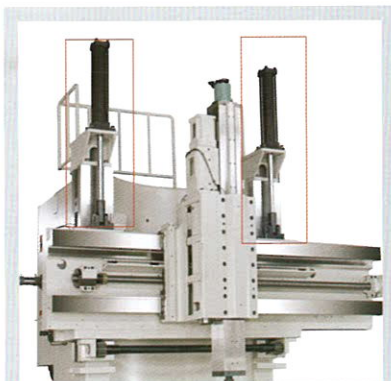
GEAR REDUCER ON X / Z AXIS (ONLY FOR MVL-16/12M/16M)

- X / Z axes are transmitted through gear reducers to increase torque, ensuring stability for heavy cutting conditions.



ONE FLOOR TYPE ATC SYSTEM (ONLY FOR MVL-12M/16M)

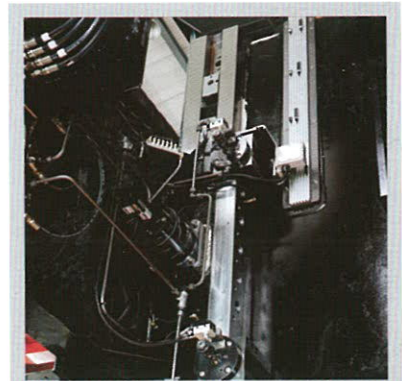
- 12 tool stations magazine is standard. 5 stations for turning, 6 stations for milling and 1 station for dummy cover.
- Max. weight for each turning tool holder is 50 kgs. Max. weight for each milling tool holder is 25 kgs.



HYDRAULIC-DRIVEN CROSSRAIL ELEVATION



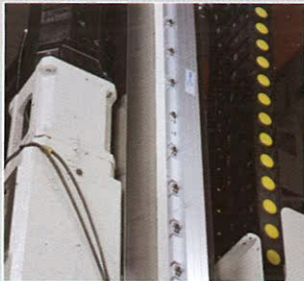
FLOOR TYPE ATC SYSTEM (MVL-12 / 16 / 12M / 16M)



RAIL POSITIONING SYSTEM



OPTIONAL ACCESSORIES



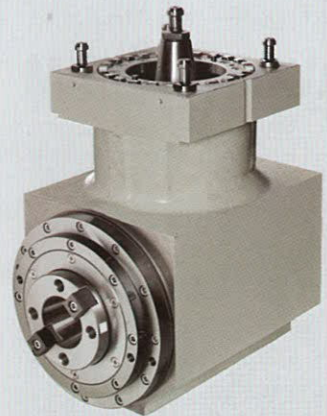
**LINEAR SCALE
(OPTIONAL)**



**OIL SKIMMER
(OPTIONAL)**



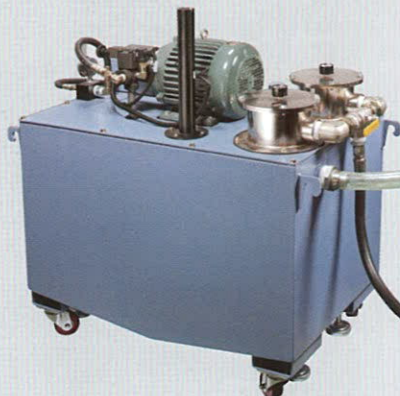
**AIR
CONDITIONER
FOR ELECTRIC
CABINET
(OPTIONAL)**



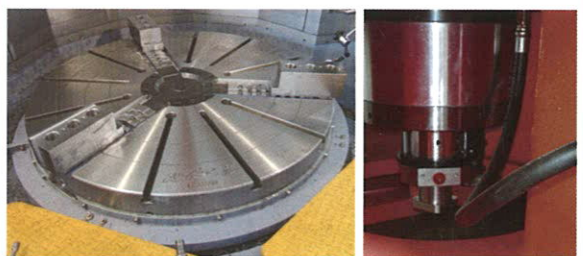
**MANUAL 90° ANGLE HEAVY
DUTY ATTACHMENT
(OPTIONAL)**

COOLANT THROUGH SPINDLE (CTS) TO THE CUTTING TOOL

- The CTS is applied when performing milling operations.
- The coolant through spindle device delivers coolant at 20 bars of pressure to the cutting edge, allowing the machine to perform deep hole drilling. (only for MVL-M)



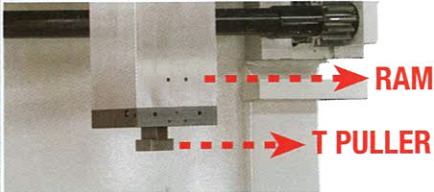
HYDRAULIC CHUCK WITH CYLINDER



TOOL HOLDER

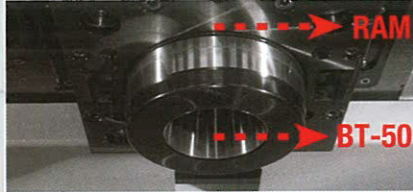
MVL-12 / MVL-16

STANDARD T PULLER TYPE



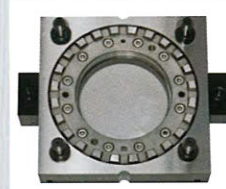
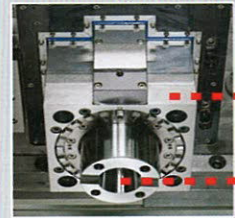
ONE PIECE TYPE
TOOL HOLDER

OPTIONAL BT TYPE



TOOL HOLDER

MVL-12M / MVL-16M



DUMMY COVER

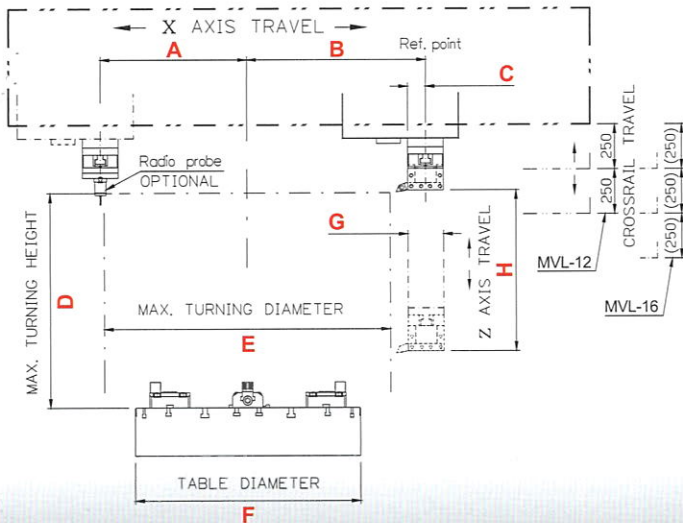
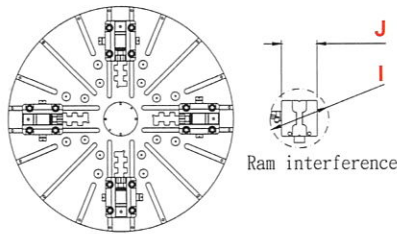


ONE PIECE
TURNING
TOOL HOLDER

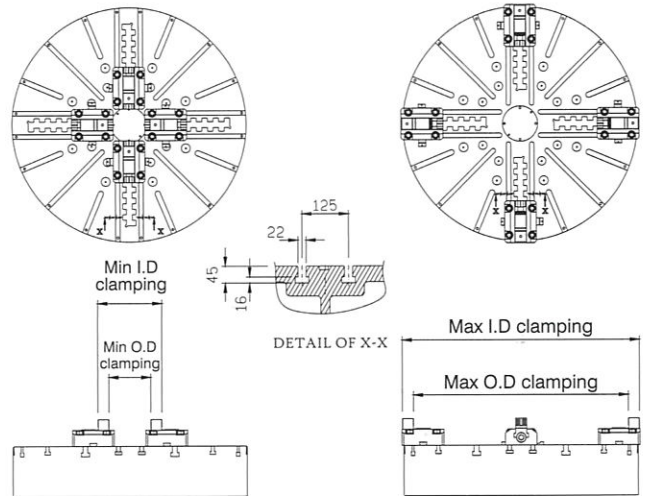


MILLING
TOOL SYSTEM

TRAVEL DIAGRAM



CLAMPING RANGE



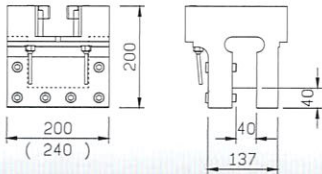
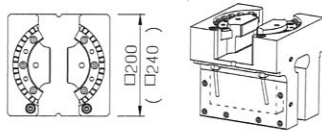
MODEL	MVL-12/12M	MVL-16/16M	MVL-20
Min I.D. clamping	345 mm	505 mm	665 mm
Max I.D. clamping	1,275 mm	1,615 mm	2,095 mm
Min O.D. clamping	225 mm	385 mm	525 mm
Max O.D. clamping	1,155 mm	1,495 mm	1,955 mm

MODEL	A	B	C	D	E	F	G	H	I	J
MVL-12	820 mm	1,000 mm	100 mm	1,200 mm	1,600 mm	1,250 mm	200 mm	900 mm	330 mm	200 mm
MVL-16	1,020 mm	1,220 mm	120 mm	1,600 mm	2,000 mm	1,600 mm	240 mm	1,000 mm	360 mm	240 mm
MVL-12M	820 mm	1,000 mm	120 mm	1,155 mm	1,600 mm	1,250 mm	240 mm	1,000 mm	360 mm	240 mm
MVL-16M	1,020 mm	1,220 mm	120 mm	1,555 mm	2,000 mm	1,600 mm	240 mm	1,000 mm	360 mm	240 mm
MVL-20	1,300 mm	1,510 mm	127 mm	1,800 mm	2,500 mm	2,000 mm	254 mm	1,250 mm	370 mm	254 mm

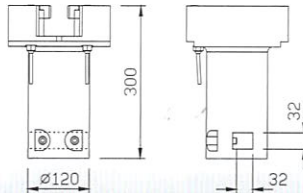
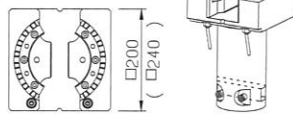
DIMENSION OF TOOL HOLDER

MVL-12 / MVL-16

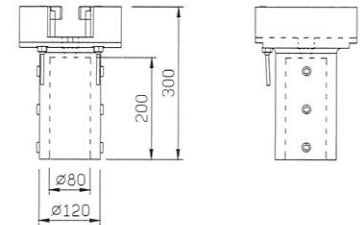
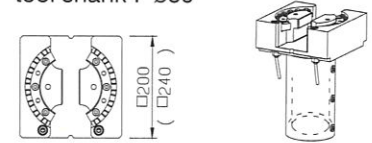
O.D. / Facing tool holder
tool shank : □25 / □32 / □40



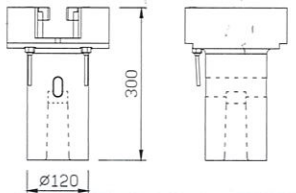
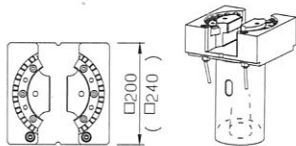
Boring tool holder
tool shank : □25 / □32



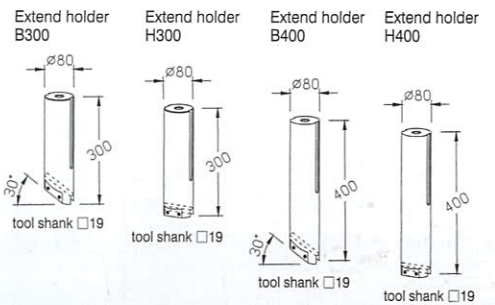
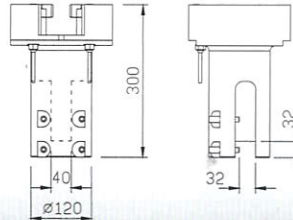
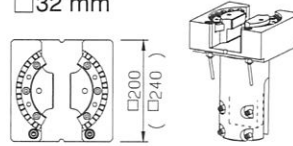
Socket tool holder
tool shank : $\varnothing 80$



Drilling tool holder
drill shank : MT5



Boring tool holder
(Long type) tool shank :
□32 mm

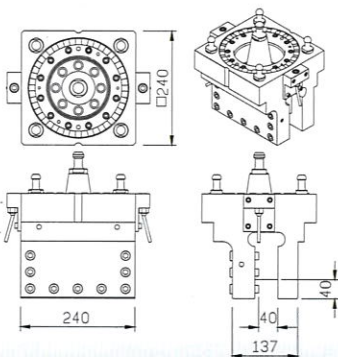


Unit: mm

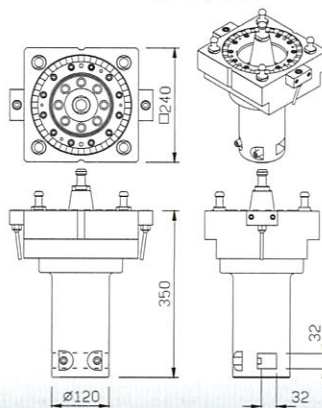
DIMENSION OF TOOL HOLDER

MVL-12M / MVL-16M

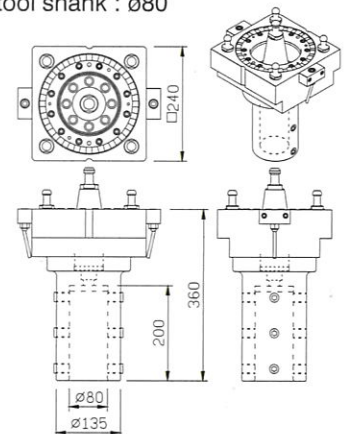
O.D. / Facing tool holder
tool shank : □25 / □32 / □40



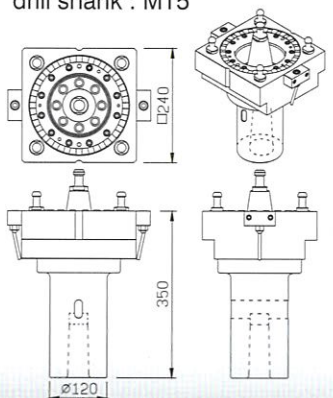
Boring tool holder
tool shank : □25 / □32



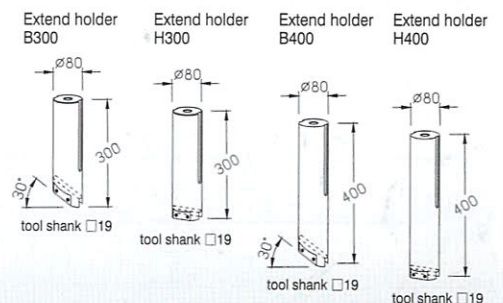
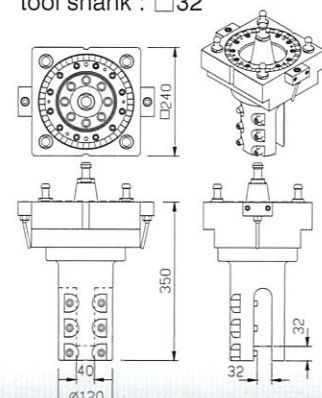
Socket tool holder
tool shank : $\varnothing 80$



Drilling tool holder
drill shank : MT5



Boring tool holder
tool shank : □32

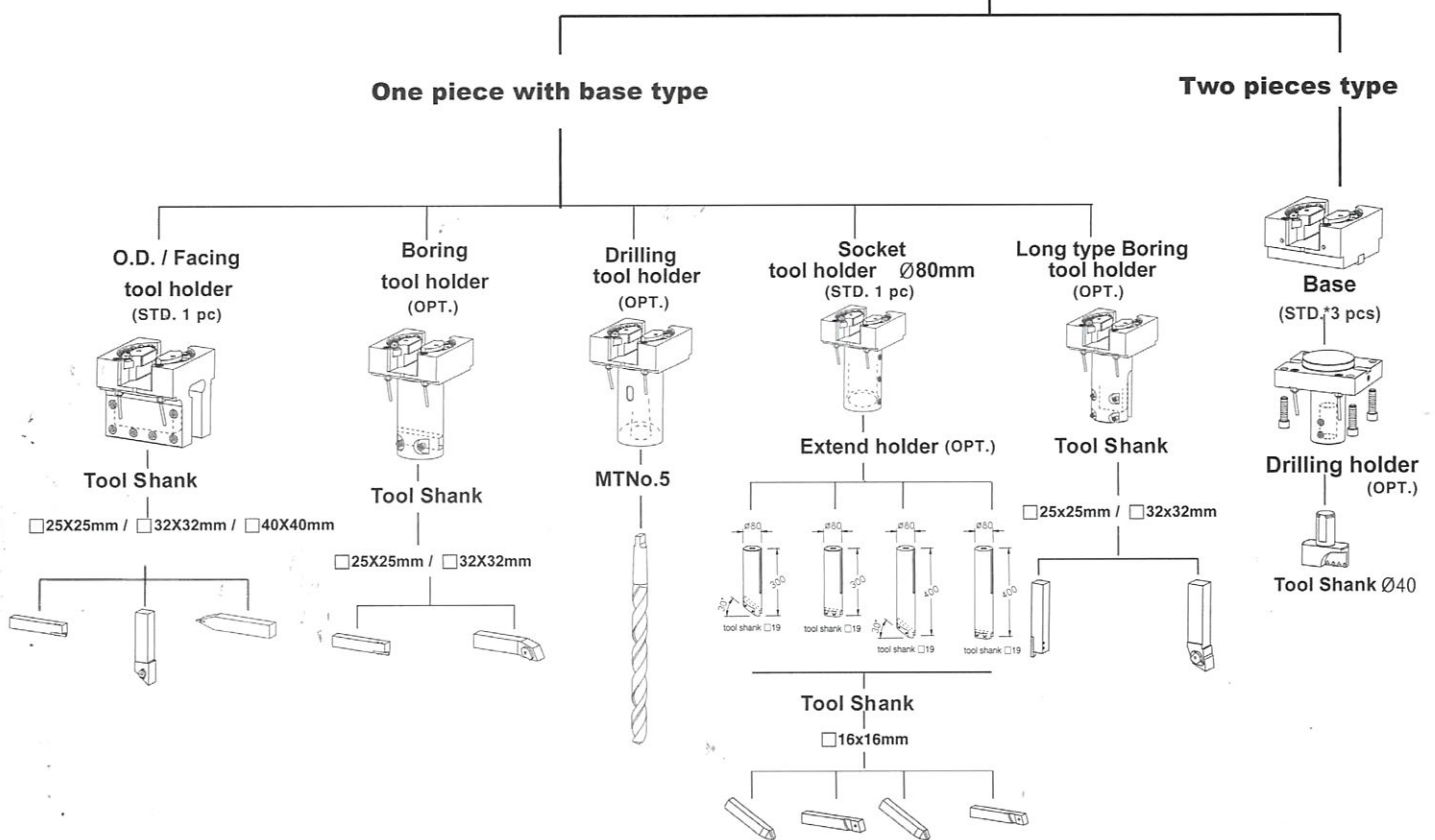


TOOLING SYSTEM

MVL-12 / MVL-16

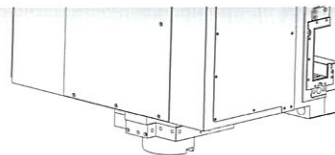


T-Puller

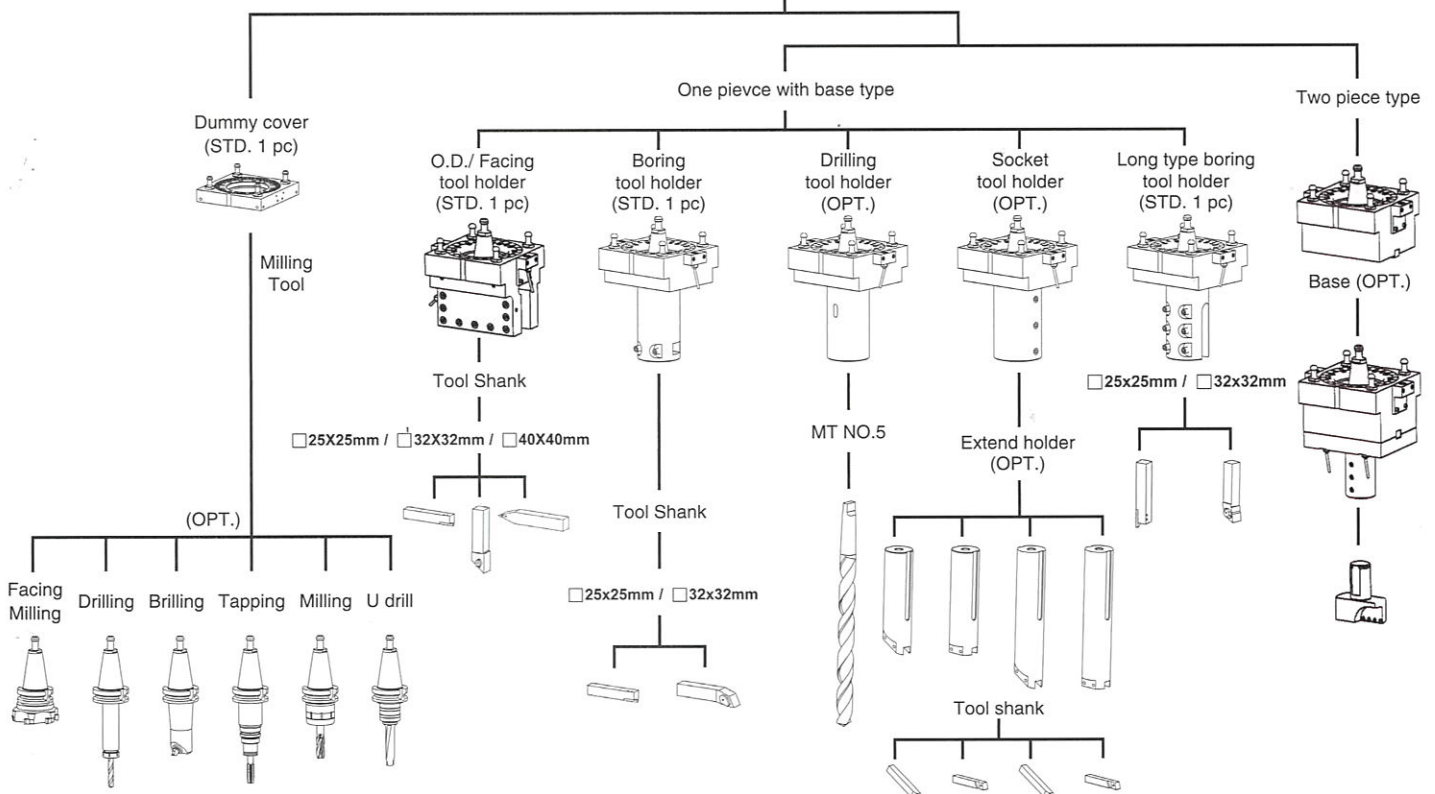


TOOLING SYSTEM

MVL-12M / MVL-16M



BT-50



SPINDLE SPEED / TORQUE DIAGRAM

MODEL: MVL-12 Table motor (A.C. 37 / 45 kW)

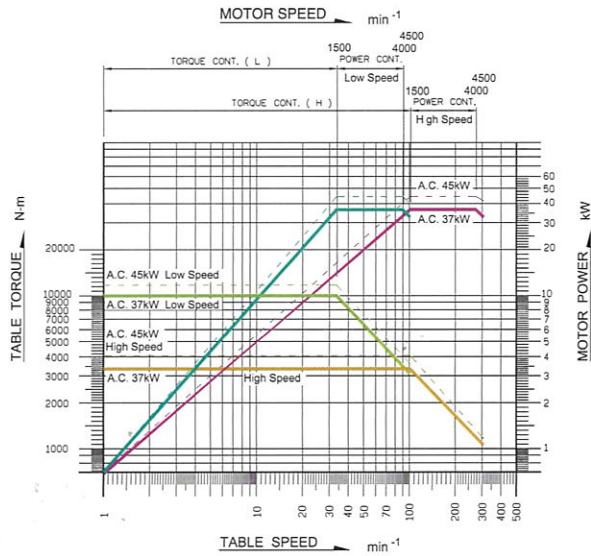


TABLE TORQUE MOTOR POWER

- Low speed 30min. operation zone
- High speed 30min. operation zone
- Low speed continuous operation zone
- High speed continuous operation zone

MODEL: MVL-16 Table motor (A.C. 45 / 55 kW)

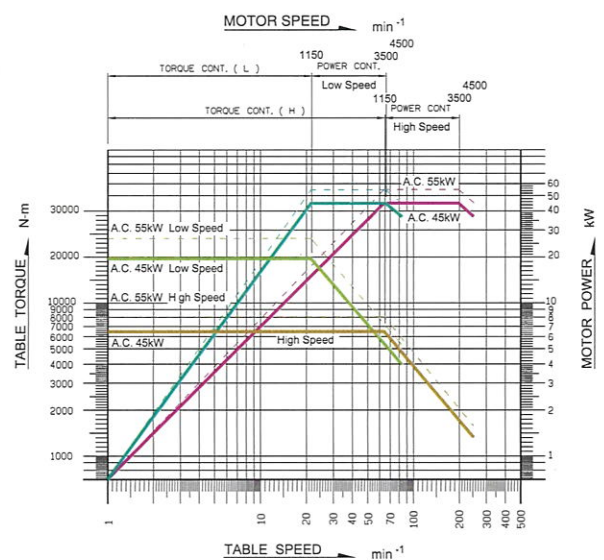
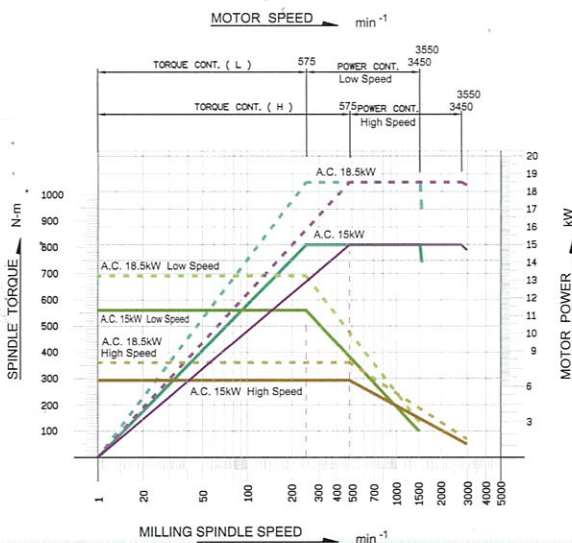


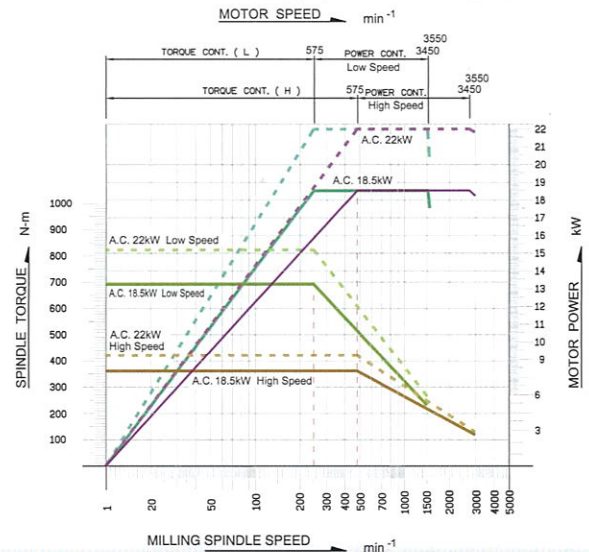
TABLE TORQUE MOTOR POWER

- Low speed 30min. operation zone
- High speed 30min. operation zone
- Low speed continuous operation zone
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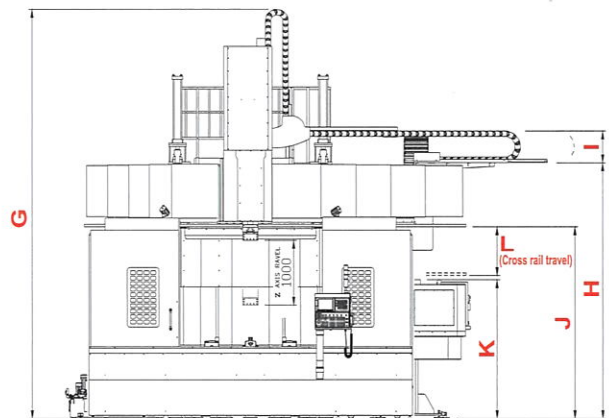
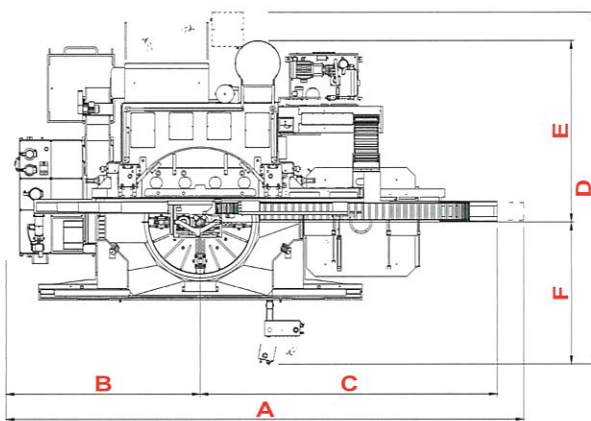
MODEL: MVL-12M Milling spindle head (A.C. 15 / 18.5 kW)



MODEL: MVL-16M Milling spindle head (A.C. 18.5 / 22 kW)



MACHINE DIMENSIONS



MODEL	A	B	C	D	E	F	G	H	I	J	K	L
MVL-12	7,200 mm	2,850 mm	4,010 mm	5,000 mm	2,525 mm	1,950 mm	5,450 mm	3,380 mm	500 mm	2,475 mm	1,900 mm	250 x 2 mm
MVL-16	8,000 mm	3,000 mm	4,590 mm	5,430 mm	2,800 mm	2,195 mm	6,325 mm	3,950 mm	500 mm	2,960 mm	2,145 mm	250 x 3 mm
MVL-12M	5,650 mm	2,300 mm	3,350 mm	5,150 mm	2,520 mm	2,100 mm	5,670 mm	3,540 mm	500 mm	2,420 mm	1,905 mm	250 x 2 mm
MVL-16M	6,470 mm	3,000 mm	3,470 mm	5,430 mm	2,800 mm	2,195 mm	6,205 mm	4,080 mm	400 mm	2,960 mm	2,150 mm	250 x 3 mm

SPECIFICATION

MODEL	UNIT	MVL-12	MVL-12M	MVL-16	MVL-16M	MVL-20	MVL-20M	MVL-25	MVL-25M
Capacity									
Max. swing diameter	mm (inch)	Ø1,600 (62.99)		Ø2,000 (78.74)		Ø2,500 (98.42)		Ø3,000 (118.11)	
Max. turning diameter	mm (inch)	Ø1,600 (62.99)		Ø2,000 (78.74)		Ø2,500 (98.42)		Ø3,000 (118.11)	
Distance from bite holder end to table surface	mm (inch)	0 ~ 1,205 (0 ~ 47.44)	0 ~ 1,155 (0 ~ 45.47)	0 ~ 1,605 (0 ~ 63.18)	0 ~ 1,555 (0 ~ 61.22)	0 ~ 1,850 (0 ~ 72.83)	0 ~ 1,800 (0 ~ 70.86)	0 ~ 2,230 (0 ~ 87.79)	0 ~ 2,180 (0 ~ 85.82)
Max. turning height	mm (inch)	1,200 (47.24)	1,150 (45.27)	1,600 (62.99)	1,550 (61.02)	1,800 (70.86)	1,750 (68.89)	2,180 (85.82)	2,130 (83.85)
Max. workpiece weight	kg	8,000		10,000		15,000		20,000	
Table									
Table diameter (Manual chuck)	mm (inch)	Ø1,250 (49.21)		Ø1,600 (62.99)		Ø2,000 (78.74)		Ø2,500 (98.42)	
Range of table speed (Low)	rpm	34 ~ 103		22 ~ 85		13 ~ 50		8 ~ 30	
Range of table speed (High)	rpm	104 ~ 312		65 ~ 255		51 ~ 200		31 ~ 120	
Gear speed	steps	2		2		2		2	
Max of Table torque	N.m	12,400		24,000		55,800		89,400	
ATC									
ATC (Automatic Tool Changer)	set	1		1		1		1	
Number of tool stations	-	12 (Random)		12 (Random)		12 (Random)		12 (Random)	
Tool type	-	T - Puller	BT-50	T - Puller	BT-50	T - Puller	BT-50	T - Puller	BT-50
Tool size	mm (inch)	□25 / 32 / 40 (1" / 1.25" / 1.5")		□25 / 32 / 40 (1" / 1.25" / 1.5")		□25 / 32 / 40 (1" / 1.25" / 1.5")		□25 / 32 / 40 (1" / 1.25" / 1.5")	
Cross-section of ram	mm (inch)	200 x 200 (7.87 x 7.87)	240 x 240 (9.44 x 9.44)	240 x 240 (9.44 x 9.44)		254 x 254 (10 x 10)		300 x 300 (11.81 x 11.81)	
Travel									
Horizontal travel (X-Axis)	mm (inch)	-820+1,000 (-32.28+39.37), Ref. point		-1,020+1,220 (-40.15+48.03), Ref. point		-1,300+1,510 (-51.18+59.44), Ref. point		-1,520+1,720 (-59.84+67.71), Ref. point	
Vertical travel (Z-Axis)	mm (inch)	900 (35.43)	1000 (39.37)	1,000 (39.37)		1,250 (49.2)		1,200 (47.24)	
Cross-rail travel	mm (inch)	500 (19.68), 2 steps (3 positions)		750 (29.52), 3 steps (4 positions)		1,120 (44.08), 4 steps (5 positions)		1,400 (55.10), 5 steps (6 positions)	
Feed rates									
Rapid rate (X-Axis)	m/min	10		10		10		10	
Rapid rate (Z-Axis)	m/min	10		10		10		10	
Cutting feed rate	mm/rev	0.001 ~ 50		0.001 ~ 50		0.001 ~ 50		0.001 ~ 50	
Feed override	%	0 - 150		0 - 150		0 - 150		0 - 150	
Motor									
Table main motor	kW (HP)	α 40i, 37 / 45 kW (49.6 / 60.3 HP)		α 50i, 45 / 55 kW (60.3 / 73.7 HP)		α 60HVi, 60 / 75 kW (80.4 / 100.5 HP)		α 60HVi, 60 / 75 kW (80.4 / 100.5 HP)	
Feed servo motor (X-Axis)	kW (HP)	α 30i, 7 kW (9.4 HP)		α 30i, 7 kW (9.4 HP)		α 30i, 7 kW (9.4 HP)		α 30i, 7 kW (9.4 HP)	
Feed servo motor (Z-Axis)	kW (HP)	α 30Bi, 7 kW (9.4 HP)		α 30Bi, 7 kW (9.4 HP)		α 30Bi, 7 kW (9.4 HP)		α 30Bi, 7 kW (9.4 HP)	
Milling spindle motor	kW (HP)	-	α P30i (15/18.5 kW)	-	α P40i (18.5/22 kW)	-	α P50i (22/30 kW)	-	α P50i (22/30 kW)
Cf axis motor	kW (HP)	-	α 30i, 7 kW (9.4 HP)	-	α 30i, 7 kW (9.4 HP)	-	α 30i, 7 kW (9.4 HP)	-	α 30i, 7 kW (9.4 HP)
Floor space (L x W)	mm (inch)	7,200 x 5,000	5,650 x 5,150	8,000 x 5,430	6,470 x 5,430	7,060 x 6,050 (277.95 x 238.18)		8,810 x 6,000 (346.85 x 236.22)	
Machine max. height (H)	mm (inch)	5,450	5,670	6,325	6,250	7,070 (278.34)		7,750 (305.11)	
Machine net. weight	kg	23,500	28,850	33,750	36,800	45,000		55,000	

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

STANDARD ACCESSORIES

1. Complete splash guard and safety door
2. Hydraulic unit
3. Four faceplate jaw independent manual chuck
4. Automatic lubrication system
5. Work light
6. Three color warning light (R/Y/G)
7. Workpiece counter (FANUC)
8. Coolant through tool holder (for turning)
9. Heat exchanger for electrical cabinet
10. Gear / bearing lubrication and oil cooler control
11. Service tool box & tool kits
12. Adjustable leveling block (without J type bolts)
13. Chip conveyor
14. Chip auger
15. Moveable vertical crossrail and mechanism
16. Coolant system with tank (6 bar)

OPTIONAL ACCESSORIES

1. Air conditioner for electrical cabinet
2. Transformer for power source 220V, 380V, 440V
3. Oil skimmer
4. Special size tool holder
5. Tool measuring device
6. Linear scale for X & Z axis (closed loop control system)
7. High pressure coolant pump (6 bar)
8. Auto door
9. Coolant level readout
10. Flushing chip system
11. FANUC 32i controller

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