

CNC · VERTICAL TURNING LATHE

# HEAVY TURNING

- ▶ Up to **55,000** lbs. Table Load
- ▶ Up to **100** hp Table Motor
- ▶ **2-Speed** Gear Driven Table



# VIPER



*Large Parts  
Heavy-Duty  
Turning*

VTL-Series

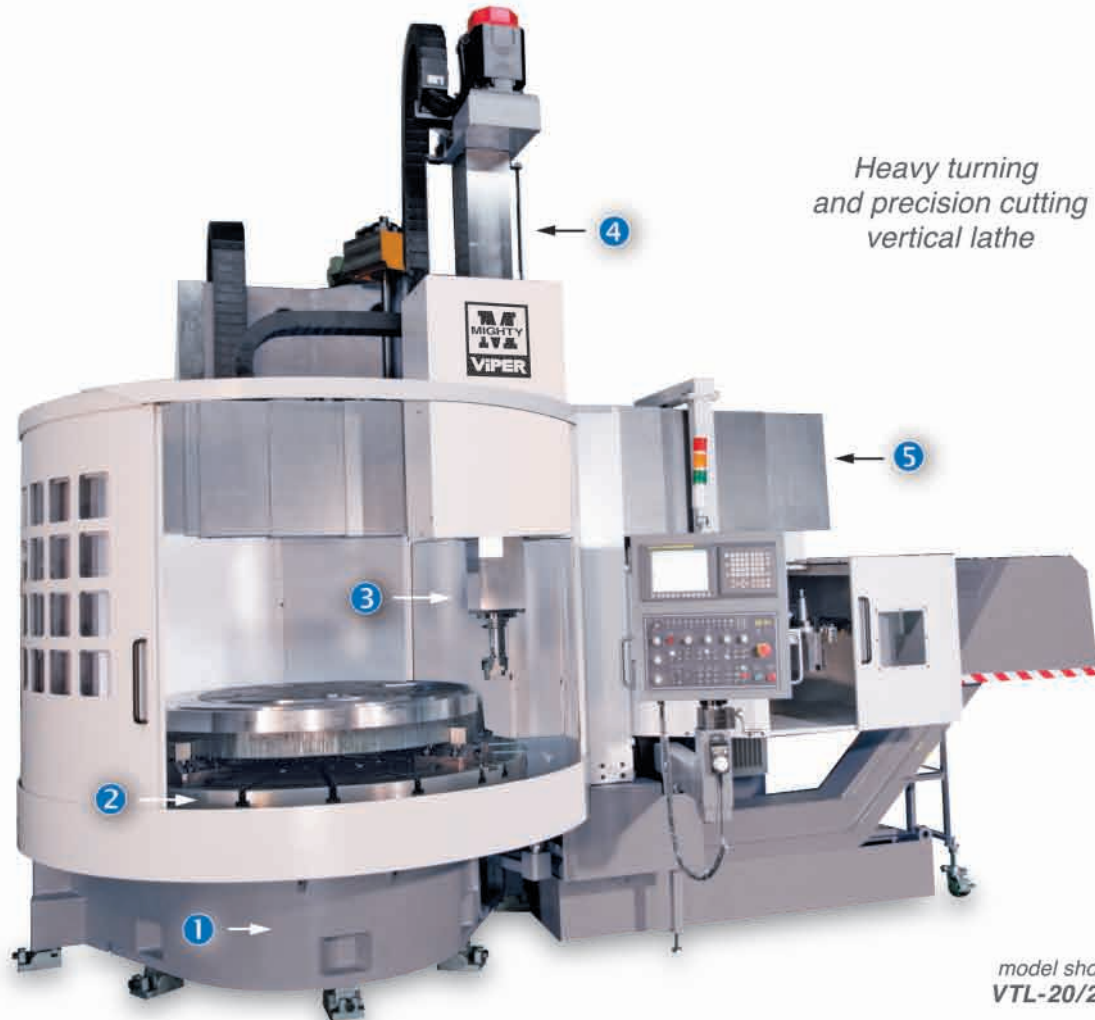
12/16

16/20

20/25

27/34

# Solid mechanical performance for greater Power And Rigidity



*Heavy turning  
and precision cutting  
vertical lathe*

*model shown  
VTL-20/25M*

Designed for heavy duty turning for large parts, the **Mighty Viper VTL** is engineered for the manufacturing of parts that require high rigidity and stability. With an optional milling function feature, the VTL is well suited for aerospace, oil field and power generation industries.

The VTL's large column and base along with an asymmetrical design are complemented by a 9" x 9" high speed steel square ram. Sliding crossrail provides precision movement and is moveable in set increments with auto latching against fixed stops. The column has three box ways for high rigidity Z-axis movement.

## VTL-20/25M MACHINE FEATURES

- ❶ 60 hp / 18,150 ft-lb gear transmission\*
- ❷ 44,000 lbs. maximum table load
- ❸ 20 hp milling spindle
- ❹ 9" x 9" square ram made of special grade high speed steel
- ❺ 5-position sliding crossrail with 5 steps at 7.9" intervals

*\*Optional, up to 60 hp motor*



**Ø79"**  
(VTL-20/25)

Large table diameter for  
wide-capacity turning

**Ø63"**  
(VTL-16/20)



## Wide Table and Powerful Torque

A wide table measuring 79" in diameter and a maximum turning capacity of 96". Table incorporates a manual independent four-jaw table chuck with top jaws that are 63" in diameter or 79" in diameter.



The Mighty Viper VTL-Series boast a geared table drive that generates powerful table torque. Driving gear is made from high grade nickel-chrome alloy steel. Class 3 ballscrews are driven by servo motors that ensure high precision turning.

- ◀ *Dual bearing systems: dynamic and static • Driving gear made of high grade nickel-chrome alloy steel*

## Powerhouse Gearbox

A heavy-duty spindle motor teamed with a two-speed gear assembly delivers tremendous torque and high speeds. As a result heavy duty machining and fine finishing are easily performed.

Oil chiller circulates oil through the gearbox, lowering oil temperature, for cooler gear oil. Chiller yields longer machine service life, and helps preserve machine accuracy.

*Gearbox slides in-and-out  
for easy maintenance*

*Air-cooled chiller  
regulates  
oil temperature*



- ◀ *Helical gearbox delivers tremendous torque (up to 43,140 ft-lbs)*

Rugged construction yields more rigidity for

# Heavy Duty Cuts



Machine structure made with **Meehanite** cast iron

**Box way design** provides smooth and steady XZ-travel

Base and column are **double-wall** constructed

### Greater Dynamic Stability

All major castings are heavily and symmetrically ribbed to provide increased dynamic stability and to keep vibration to a minimum during heavy-duty machining. **Meehanite** cast iron frames and box ways ensure that the machine has high rigidity for performing heavy cutting.

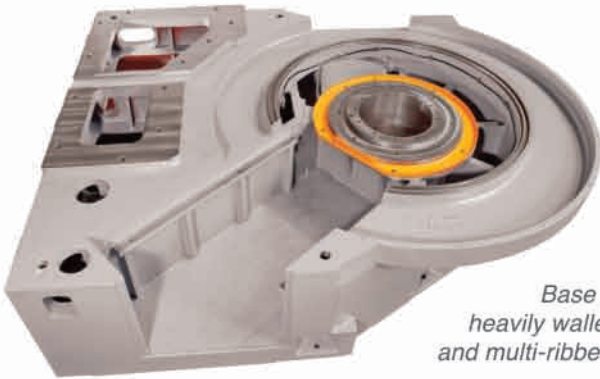
The machine base and column structures are double-wall constructed. The structures have scientifically designed rib reinforcement, that results in the dual benefit of uniform and maximum distribution of casting stress. The entire structure is manufactured from high

quality **GB300** or **GA350** Meehanite cast iron, specially heat treated to relieve stress, ensures that the structure remains free of distortion for the life of the machine.

### Less Casting Stress

The heavy column structure is designed to foster high stability and rigidity for solid support of the sliding cross rail. Both X and Z-axes are supported by box ways, that are over-sized, hardened and ground for greater rigidity. All box ways on the column and cross beam are coated with **Turcite-B** on mating surfaces and hand scraped for perfect fit and alignment.





Base is heavily walled and multi-ribbed.

## Base and Column Construction

One of the most important features of the Viper VTL is the one-piece Meehanite casting base. Unlike conventional jointing by welding method, Viper's one-piece structure effectively solves problems of insufficient rigidity and excessive vibration. The base is heavily walled and multi-ribbed for rigidity and high thermal stability while supporting workloads up to 55,000 lbs.

Heavily ribbed structure of the column and the base minimizes thermal distortion and dampens vibration.



Section view of Column Casting



### Tool Changer

Automatic Tool Changer (ATC) provides fast and efficient tool

changing. The ATC magazine is located on the right side of the cross rail, and is protected by an automatic guard door. Magazine holds a total of 18 tools (9 milling tools / 9 turning tools).

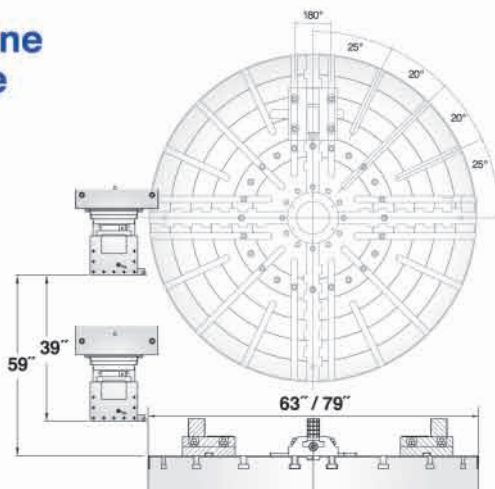
Heavy-duty design OD and ID tool holders direct turning force to headstock instead of spindle

bearings. The ram head tool pocket accepts wide contact 50 taper tool holders, which securely clamp with a powerful wedge locking system, yielding high accuracy and repeatability.

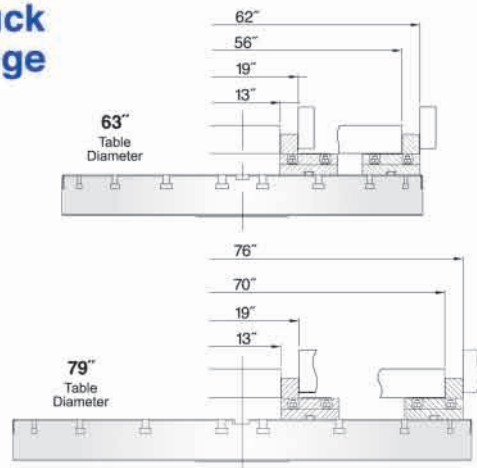


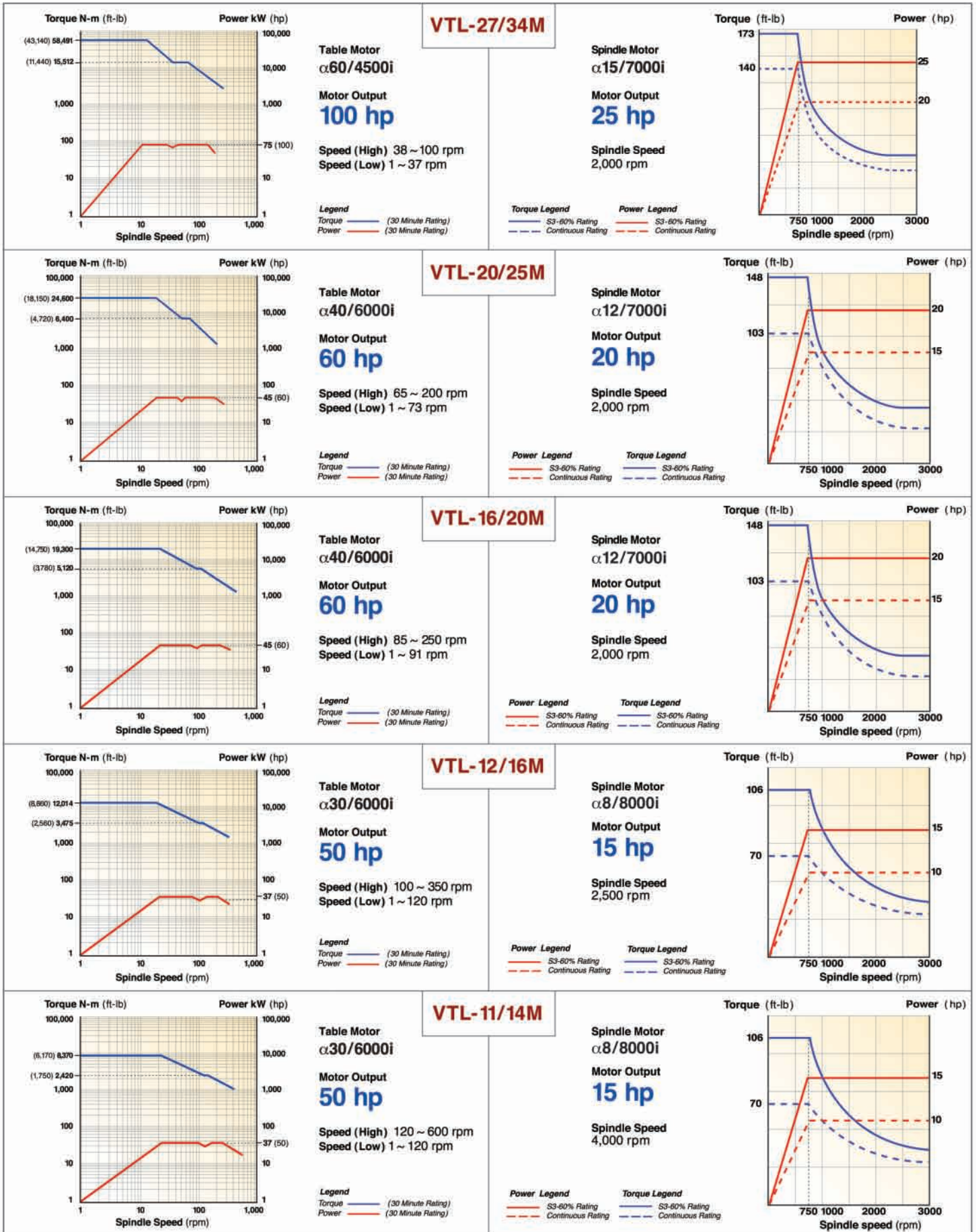
50-taper tool holders with wide contact.

### Machine Range



### Chuck Range

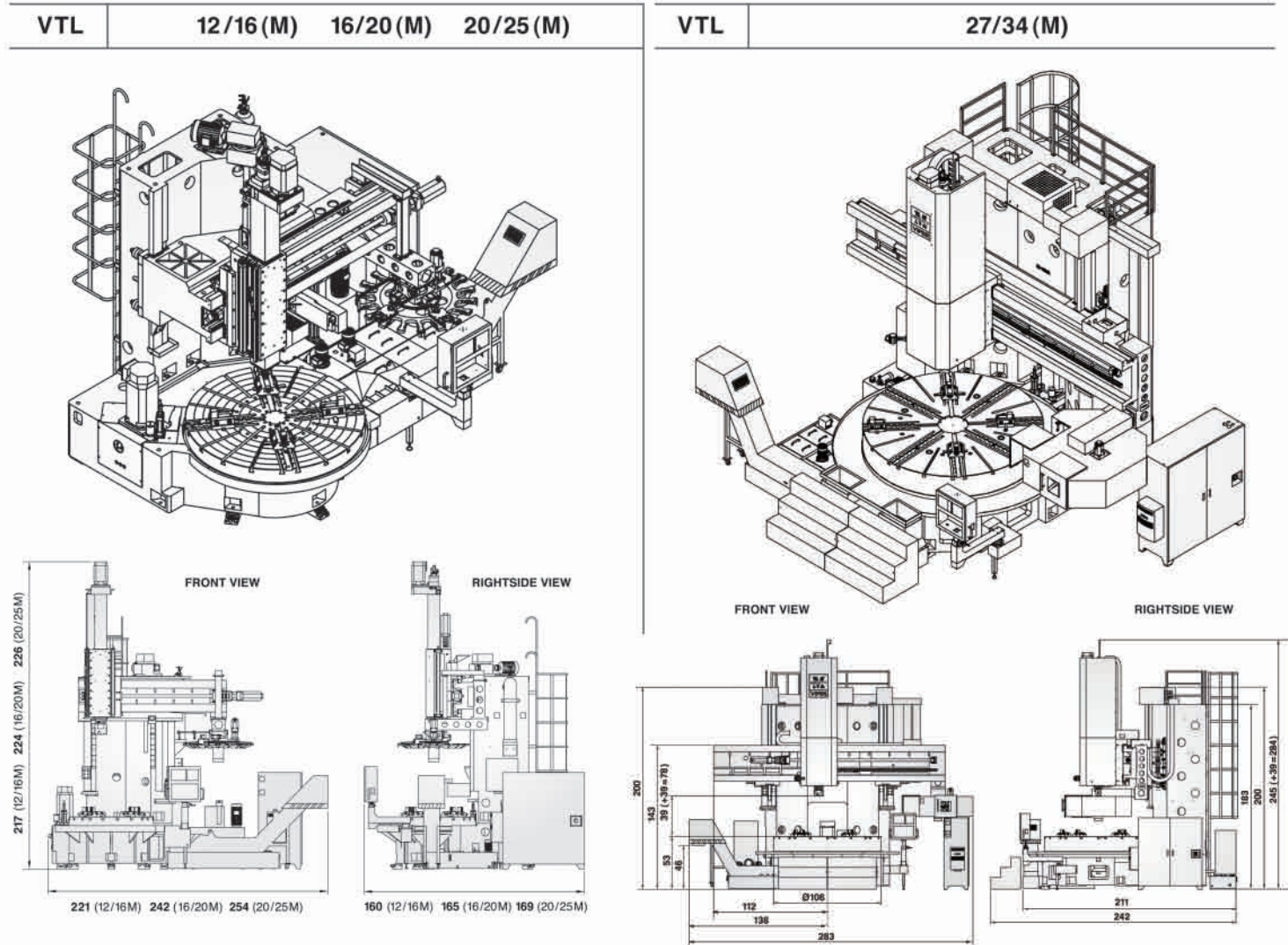






## Machine Dimensions

Units = Inch



### STANDARD FEATURES For VTL-16/20 and VTL-20/25

- Table chuck, independent 4-jaw manual:  $\text{Ø}63.0''$  for VTL-16/20 and  $\text{Ø}78.7''$  for VTL-20/25
- 2-Speed gear system
- 60 hp (30 min.) table motor
- Carbon steel 9" square ram with a Z-travel of 39.4"
- Adjustable cross rail: five cross rail positions
- High quality cast iron construction
- FANUC 0i-TD controller
- Auto tool changer system: 12 tools
- 2 turning tools (OD and ID)
- Coolant system and coolant through the ram
- Oil chiller for gearbox
- Oil chiller for spindle and table
- Hydraulic unit
- Air conditioner for electrical cabinet
- Chip conveyor system
- Splash guarding with sliding doors
- Automatic forced lubrication system
- Oil skimmer
- Crossrail telescopic steel covers
- Foot pedal
- Machine warranty for 1 year
- Control warranty for 2 years
- Operation manual
- Leveling pads

### Optional Accessories

- Coolant through spindle
- Extended Z-travel (48" and 60")
- Higher machine columns with higher clearances
- Glass scales on X and Z axes
- 90° Angular head
- Milling (M) Function:
  - AC 20 hp (30 min.) spindle motors
  - Live spindle speed 2,000 rpm
  - C-Axis
  - ATC 18 tools (9 milling/9 turning)
  - Tap drill diameter max. M30 x 3.5 (Tools: HSS; Work: S45C)
  - Drilling  $\text{Ø}2''$  maximum tool cemented carbide work: S45C. Cutting speed: 394 fpm. Cutting feed rate: 0.006" / reverse.

# Machine Specifications

SPECIFICATIONS	Unit	VTL-10/14(M)	VTL-12/16 (M)	VTL-16/20(M)	VTL-20/25(M)	VTL-27/34 (M)
<b>Table Diameter</b>	mm/ inch	1,000/39.4	1,250/49.2	1,600/ 63.0	2,000/ 78.75	2,700/106.3
Max. Turning Diameter	mm/ inch	1,250/49.2	1,600/63.0	2,000/ 78.75	2,440/96.0	3,400/133.8
Max. Swing	mm/ inch	1,400/55.1	1,600/63.0	2,000/ 78.75	2,500/ 98.4	3,400/133.8
Max. Turning Height	mm/ inch	9,00/34.5	1,250/49	1,500/ 59.0	1,500/ 59.0	2,000/78.74
Max. Mass of Workpiece	Kg/ Lbs	4,500/9,900	5,900/13,000	15,000/ 33,000	20,000/ 44,000	25,000/55,000
Max. Table Torque	NM/ lbs-ft	10,248/7,558	11,870/8,754	20,000/ 14,750	24,600/ 18,142	58,491/ 43,049
Max. Cutting Force	N / Lb	20,496/4,601	18,992/4,263	25,000/ 5,620	24,600/ 5,522	43,326/ 9,726
<b>TRAVEL</b>						
X axis Stroke	mm/ inch	1200/47.2	1,405 /55.3	1,635/ 64.4	1,785/ 70.3	2,667/105.0
Z axis Stroke	mm/ inch	800/31.5	1,000/39.4	1,000/ 39.4	1,000/ 39.4	1,500/59.0
X axis Torque	NM/ Lbs-ft	114/83.9	114/83.9	114/83.9	114/83.9	114/83.9
Z axis Torque	NM/ Lbs-ft	72/53.0	72/53.0	114/83.9	114/83.9	114/83.9
X axis ballscrew diameter	mm/ inch	50XP12 / 2XP0.5	63XP12 / 2.5XP0.5	63XP12 / 2.5XP0.5	63XP12 / 2.5XP0.5	63XP12 / 2.5XP0.5
Z axis ballscrew diameter	mm/ inch	50XP10 / 2XP0.39	50XP10 / 2XP0.39	50XP10 / 2XP0.39	50XP10 / 2XP0.39	50XP10 / 2XP0.39
<b>RAM</b>						
Ram Size	mm/ inch	180x180/ 7.08x7.08	230x230/ 9.06x9.06	230x230/ 9.06x9.06	230x230/ 9.06x9.06	230x230/9.06x9.06
Min. I.D. for Ram Pass	mm/ inch	φ 250/9.8	φ 330/13	φ 330/13	φ 330/13	φ 330/13
<b>SPEED</b>						
Table Speed(2 steps)	rpm	1-120 , 120-600	1~120,100~350	1~91, 85~250	1~73, 65~200	1~37, 38~100
Rapid traverse (X axis)	mm/min	12,000	12,000	12,000	12,000	10,000
	inch/min	472	472	472	472	394
Rapid traverse (Z axis)	mm/min	10,000	10,000	10,000	10,000	8,000
	inch/min	393	393	393	393	315
Crossrail Stroke	mm/ inch	-	600/23.6	800/31.5	800/31.5	1,000/39.4
Crossrail Step	mm/ inch xstep	-	200x4/7.87x4	200x5/7.87x5	200x5/7.87x5	200x6 /7.87x6
<b>MOTORS</b>						
Table Main Motor	Kw/HP	37/50	37/50	45/60	45/60	75/100
X axis Servo Motor	Kw/HP	6 / 8(a40)	6 / 8(a40)	6 / 8(a40)	6 / 8(a40)	6 / 8(a40HVI)
Z axis Servo Motor	Kw/HP	6 / 8(a40)	6 / 8(a40)	6 / 8(a40)	6 / 8(a40)	6 / 8(a40HVI)
ACT Servo Motor	Kw/HP	0.75/1.0(a4)	0.75/1.0(a4)	0.75/1.0(a4)	0.75/1.0(a4)	0.75/1.0(a4HVI)
Hydraulic Motor	Kw/HP	3.75/5	3.75/5	1.5/2	1.5/2	3.75/5
Crossrail Motor	Kw/HP	-	5.5/7.5	5.5/7.5	5.5/7.5	15/20
Lubrication Motor	Kw/HP	0.75/1	0.75/1	0.75/1	0.75/1	3.75/5
<b>ATC</b>						
ATC Magazine Capacity	Tool	std.	18	18	18	18
		op.	9 Live / 9 Static	9 Live / 9 Static	9 Live / 9 Static	9 Live / 9 Static
Max. Tool Length	mm/ inch	400/15.75	400/15.75	450/17.7	450/17.7	450/17.7
Max. Drill Diameter	mm/ inch	40/1.6	40/1.6	50.8/2	50.8/2	65/2.5
Max. Tap Diameter	mm/ inch	M25/1.0	M25/1	M30/1.2	M30/1.2	M50/2
Max. Torque for Drilling	NM/ Lbs-ft	196/145	196/145	196/145	196/145	235/173
Live Spindle Speed	rpm	2500	2,500	30~2000	30~2000	30~2000
Table Index Speed (C)	Min	3	3	3	3	3
	HP	10/15(30min)	10/15(30min)	15/20(30min)	15/20(30min)	20/25(30min)
Live Spindle Motor(30min)	Kw	AC7.5/11(a8)	AC7.5/11(a8)	AC11/15(a12)	AC11/15(a12)	15/18.5(a15HVI)
	mm/ inch	32x32/1.26x1.26	32x32/1.26x1.26	32x32/1.26x1.26	32x32/1.26x1.26	32x32/1.26x1.26
Tool Shank Size	mm/ inch	32x32/1.26x1.26	32x32/1.26x1.26	32x32/1.26x1.26	32x32/1.26x1.26	32x32/1.26x1.26
Tool Taper	-	50	50	50	50	50
Pull Stud	-	P50T-1	P50T-1	P50T-1	P50T-1	P50T-1
<b>MISCELLANEOUS</b>						
Total Power Capacity (208V)	KVA	50	60	60	100	150
Machine Weight	Kg/ Lbs.	21,000/46,200	24,000/52,800	29,000/63,800	32,500/71,500	75,000/165,000
Floor Space (LxWxH)	mm/inch	5075x4539x4215 / 199.8x178.7x165.9	5424x3727x5205 / 213.5x146.7x204.9	6182x4167x5700 / 243.4x164x224.4	6370x4300x5700 / 250.8x169.3x224.4	7120x6190x6239 / 280.3x243.7x245.6

Specifications are subject to change without notice.



伍將機械工業股份有限公司  
**ALEX-TECH MACHINERY INDUSTRIAL CO., LTD.**  
 No. 5, Chun An Rd., Shengang District, Taichung City 429, Taiwan  
 Tel:886-4-25626039 Fax:886-4-25626040  
<http://www.alex-tech.com> E-mail:alextech@ms24.hinet.net

ISO9001:2000 **MIGHTY USA, INC.**  
 19706 South Normandie  
 Avenue Torrance,  
 CA 90502 U.S.A.  
 Tel:310-516-7478  
 Fax:310-516-0368  
 E-mail:sales@mightyusa.com  
 Web:www.mightyusa.com