Vertical NC Lathes
for Line Applications

LVT SERIES

Innovation for automatic lines

My seat is reserved right on the production line

No loader is needed any longer. It is the spindle that carries the workpiece.

"We want to further automate our line."
"We want to realize a flexible line using general-purpose machines."
"We want to have a space saving machine."
Okuma has just come up with a brilliant answer to satisfy these requirements for NC lathes.
Our vertical NC lathe, LVT 300/400, is an innovator for the automatic lines.
Now, the spindle is equipped with a loading function, so the workpiece can be carried within the machine.
You can install this lathe in narrow spaces: 1.3 m (4.26 ft) width and 3.69 m^2 (39.7 ft^2) floor space (LVT300). You can build up a reliable automatic line with a marvelous rapid traverse, thermal stability and smooth chip disposal.

- Automatic and flexible lines are realized by the spindle equipped with a loader function
- The lines layout can be shortened, namely this lathe can be installed at only 1.3 width (4.26 ft), 3.69 m^2 (39.7 ft^2) (LVT300)
- High rapid traverse
  X: 60 m/min (2362 ipm), Z: 30 m/min (1181 ipm)
- Excellent thermal stability with a box type bed and a smooth chip disposal

Vertical NC Lathes for Line Applications

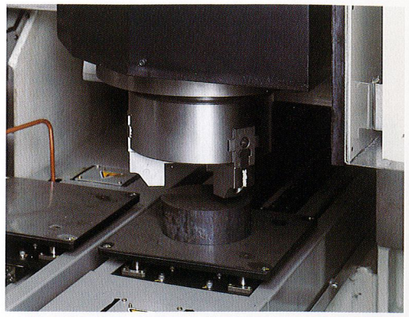
VTURN LVT Series

Outstanding machining capability and superior machining accuracy

Loading and unloading by the spindle greatly reduce both the cycle time and space

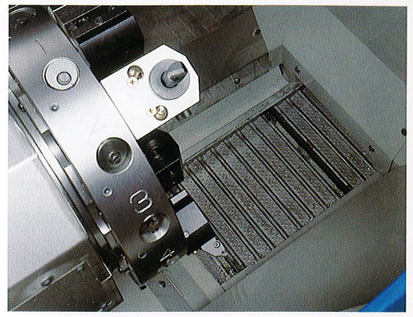
The vertical spindle itself functions as a loader, gripping a workpiece and moving it horizontally (X-axis) and vertically (Z-axis). Complete on-board automation of chucking and loading not only reduces the cycle time, it also creates a more compact line by greatly reducing the frontage and floor space.

- Max. workpiece weight: 20 kg (44 lb) [LVT300]
  (when using standard chuck cylinder) 60 kg (133 lb) [LVT400]
- Loading/unloading time: 8 sec



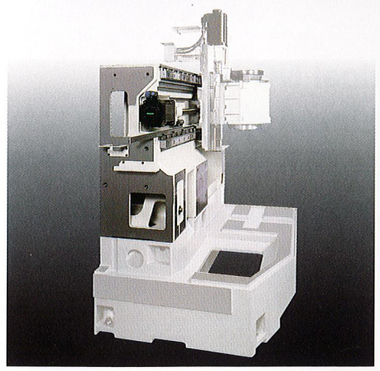
Smooth chip disposal

As the turret is fixed, the cutting point is always constant, and the chips drop down directly without any scattering. Then, the chip conveyor speedily disposal the chips out of the machine, and problems with the chips heating are practically eliminated.



Excellent thermal stability that supports continuous machining accuracy

A box type bed based on logically designed construction is adopted, which has little vibration effect as well as little local distortion due to heat. The thermal deviation and long run dimensional change are minimized.

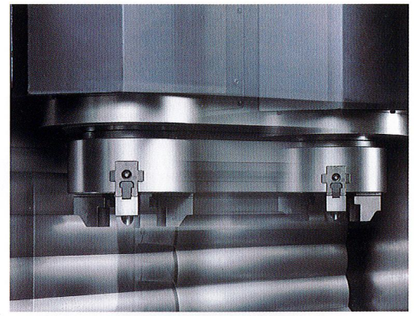


Reliable accuracy from logically suppressing heat and vibration

Rapid traverse marvelously reduces non-cutting time

A linear guide with high reliability and high stability is fully adopted for the spindle guideway. Together with the high-speed turret, it allows you to greatly reduce non-cutting time.

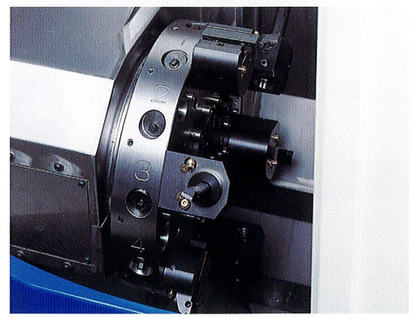
- Rapid traverse X: 60 m/min (2362 ipm)
  Z: 30 m/min (1181 ipm)
- Turret rotation 0.18 sec/index (LVT300)
  0.25 sec/index (LVT400)
  (For our standard tooling)



Highly rigid construction means powerful machining

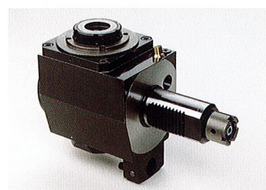
The highly rigid box type bed and large diameter coupling (ø250 (ø9.84) /LVT300) for the turret provide heavy cutting with the powerful hydraulic clamping mechanism (non-lift).

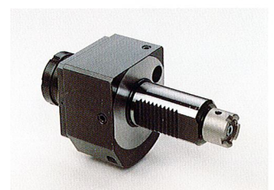
- Turning example (LVT300) Workpiece material: S45C
  Heavy cutting 3 mm² (0.005 in.²)
  Cutting speed V : 100 m/min (3937 ipm)
  Cutting depth t : 6 mm (0.24 in.)
  Feedrate f : 0.5 mm/rev (0.02 ipr)



Milling specification (LVT300-M/400-M)

With one chucking, this is the most suitable for multifunction machining such as turning, drilling, milling and tapping.

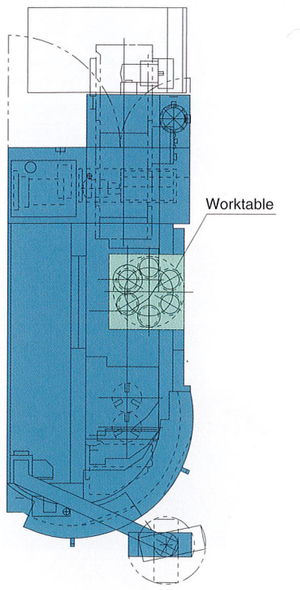




A variety of layouts can be realized, depending on your process management and factory space.

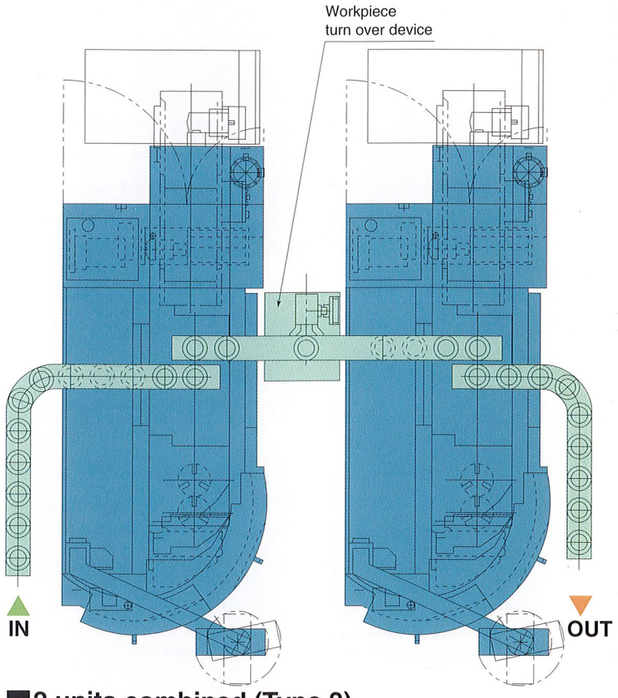
Examples of system configuration

■Single system (standard)



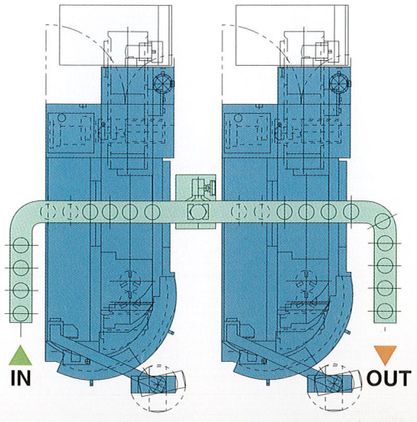
■2 units combined (Type 1)

To reduce loading and unloading time, this is a system, which provides IN and OUT conveyors.



■2 units combined (Type 2)

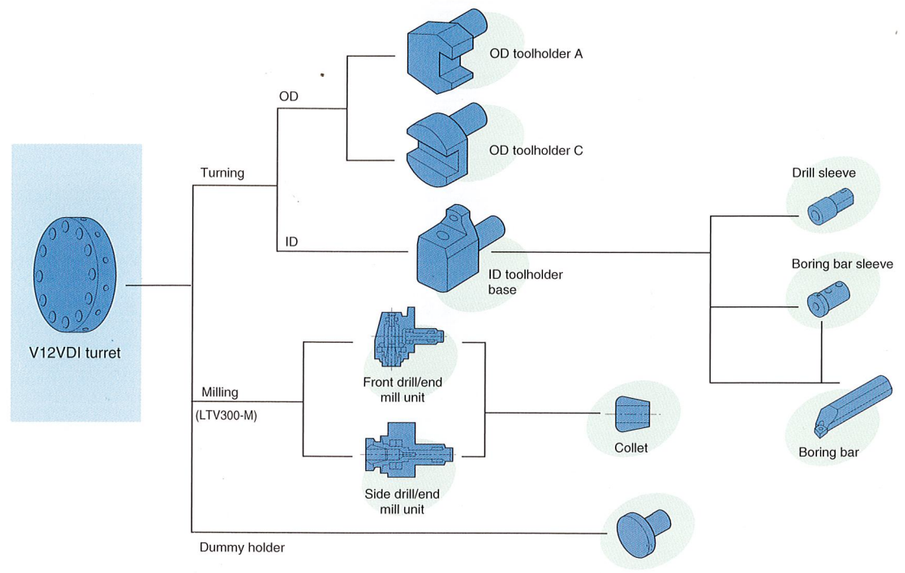
This system which loading and unloading are on one conveyor.



Vertical NC lathes

LVT300/LVT300-M LVT400/LVT400-M

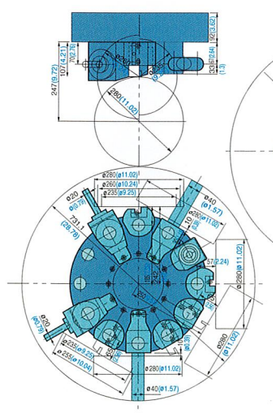
Tooling system



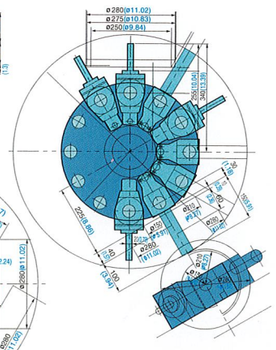
Tool interference

LVT300/LVT300-M

• OD toolholders

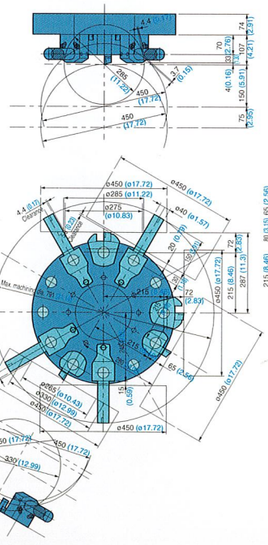


• Front drill/end mill unit

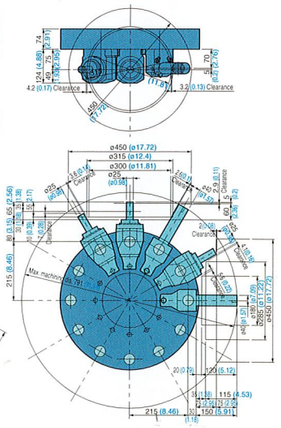


LVT400/LVT400-M

• OD toolholders



• Front drill/end mill unit



Vertical NC lathes

LVT300/LVT300-M
LVT400/LVT400-M

Machine specifications

Model			LVT300	LVT300-M	LVT400	LVT400-M
Capacity	Swing over bed	mm (in.)	ø320 (ø12.60)		ø480 (ø18.90)	
	Max turning diameter	mm (in.)	ø280 (ø11.02)		ø450 (ø17.72)	
	Max work length	mm (in.)	200 (7.87)		300 (11.81)	
Travel	X-axis	mm (in.)	210+845 (8.27+33.27) (for transfer)		290+1190 (11.42+46.85) (for transfer)	
	Z-axis	mm (in.)	330 (12.99)		490 (19.29)	
	C-axis	°	—	360° (0.001° increments)	—	360° (0.001° increments)
Spindle	Speed	min^{-1}	40~4000		45~3300	
	No. of speed steps		2 (VAC motor coil switching)		2 (Built-in motor coil switching)	
	Nose		JIS A2-6		JIS A2-8	
	Bore	mm (in.)	ø 62 (ø2.44)		ø 80 (ø3.15)	
	Front bearing diameter	mm (in.)	ø100 (ø3.94)		ø120 (ø4.72)	
Turret	Type		V12 NC turret (VDI)	V12 NC M-turret (VDI)	V12 NC turret (VDI)	V12 NC M-turret (VDI)
	Number of tools		12 tools (L)	12 tools (L+M)	12 tools (L)	12 tools (L+M)
	Tool shank height	mm (in.)	□25 (0.98)			
	Boring bar shank diameter	mm (in.)	ø 40 (ø1.57)			
	Index time*	sec	0.18 (Index)		0.25 (Index)	
M spindle speed		min^{-1}	—	45~4,500	—	45~3,000
Rapid traverse		mm/min (ipm)	X: 60,000 (2,362), Z: 30,000 (1,181), and C: 200 min^{-1} for -M machines			
Cutting feedrate		mm/rev (ipr)	X, Z: 0.001~1,000.000 (0.0001~40.0000)			
Motors	Spindle	kW (hp)	VAC 22/15 (30/20) 20 min/cont)			
	M spindle	kW (hp)	—	PREX 5.5/3.3 (7.5/4.5) (15 min/cont)	—	PREX 5.5/3.0 (7.5/4.1) (15 min/cont)
	Axis drives	kW (hp)	X: BL4 (5.44), Z: BL6 (8.15)		X: BL6 (8.15), Z: BL8 (10.87)	
	Coolant	kW (hp)	0.25 (0.34)		0.25 (0.34)	
Machine dimensions	Machine height	mm (in)	2,370 (93)		2,680 (106)	
	Floor space	mmXmm (inXin)	1,320 x 3,220 (52 x 127)		1,683 x 3,890 (66 x 153)	
	Machine mass (including NC)	kg (lb)	5,500 (12,125)	6,000 (13,227)	9,000 (19,841)	9,000 (19,841)
CNC controller			OSP-E100L			

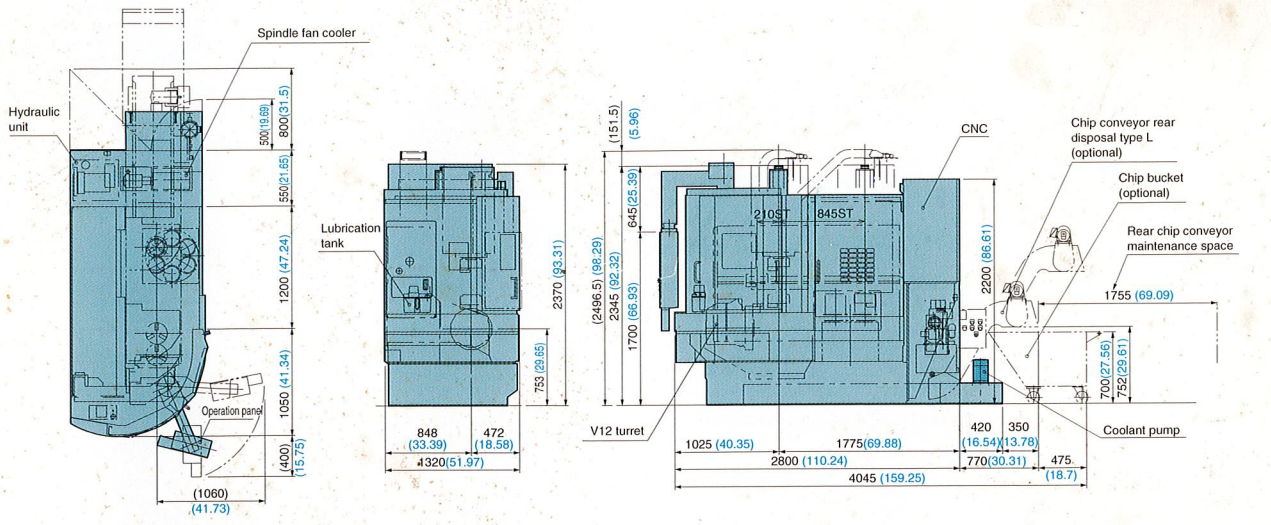
* Standard tooling

Standard accessories

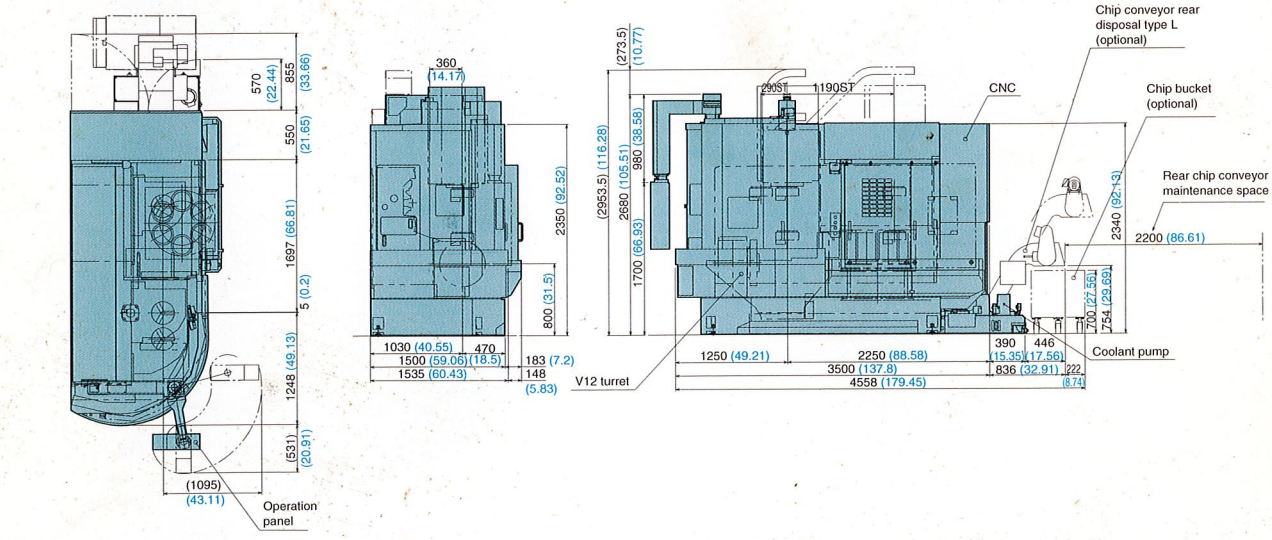
Model		LVT300	LVT300-M	LVT400	LVT400-M
Spindle motor		VAC 22/15 kW (30/20 hp) (20 min/cont)			
Spindle speed		40~4,000 min^{-1}		45~3,300 min^{-1}	
M spindle motor	(15 min/cont)	—	PREX 5.5/3.3 kW (7.5/4.5 hp)	—	PREX 5.5/3.0 kW (7.5/4.1 hp)
M spindle speed		—	45~4,500 min^{-1}	—	45~3,000 min^{-1}
Turret	V12 NC turret (VDI)	○	—	○	—
	V12 NC M-turret (VDI L+M)	—	○	—	○
C-axis control		—	○	—	○
Synchronized tapping		—	○	—	○
Equipment	Coolant system	○	○	○	○
	Work lamp (fluorescent)	○	○	○	○
	Enclosure shield	○	○	○	○
	Chip pan (rear disposal)	○	○	○	○
	Foundation washers	○	○	○	○
Accessories	Jack bolts	○	○	○	○
	Hand tools	○	○	○	○
	Solid hydraulic chuck	1 (8")	—	1 (10")	—
	Hydraulic cylinder	1		1	
CNC system	OSP-E100L	○	○	○	○

Dimensional Drawing

LVT300/LVT300-M



LVT400/LVT400-M



♦ **Measurements listed in this brochure are in mm (in.) format with 25.4 mm = 1 in.; other units are as indicated.**

OKUMA

When using Okuma products, always read the safety precautions mentioned in the instruction manual and attached to the product.

This product is subject to Japanese government regulations under the Foreign Exchange and Foreign Trade Control Act with regard to strategic goods. When further transport of this product to another country is being considered, prior consultation with Okuma Corporation is required.

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