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# VB SERIES

## Vertical Machining Center



# FEELER VB SERIES

Choose from the smallest to the largest model that meets your various demands for today's production. No matter which one you select, you get the same FEELER tradition of quality and excellence.



VB-1650A



VB-1900A

## Leadership through Performance! Feeler VB Series VMC Leads the Way to Your Competitive Edge!



VB-2200A



VB-1400A

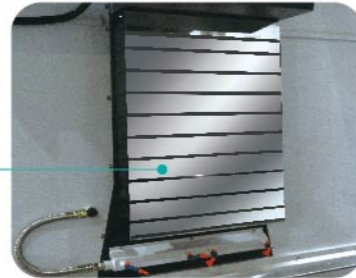
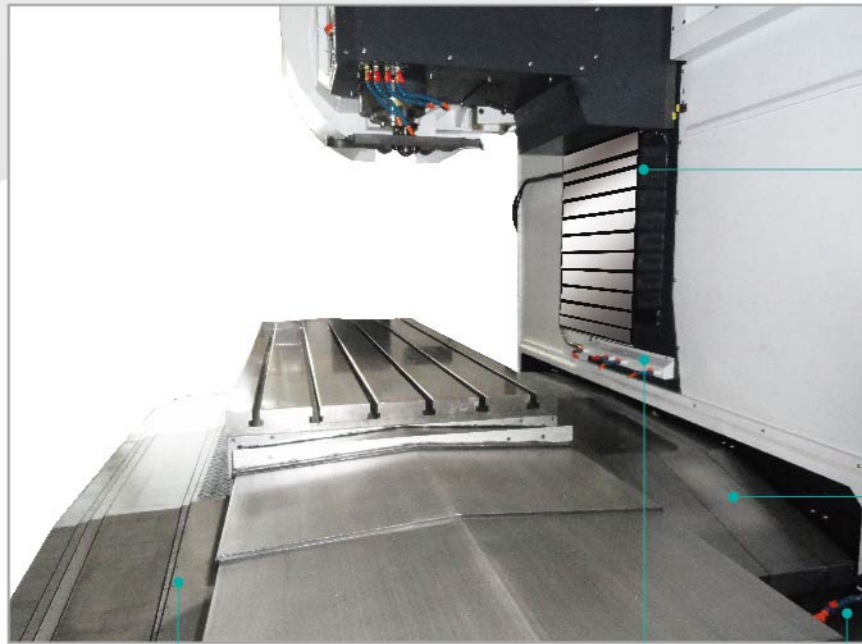


# RUGGED CONSTRUCTION GUARANTEES LIFETIME RIGIDITY AND STABILITY

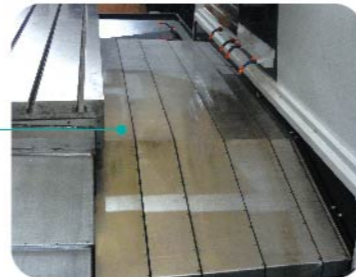
- ▶ The machine structure and major parts are manufactured from Meehanite cast iron for outstanding material stability, thereby assuring long-term, deformation-free performance.
- ▶ The entire machine construction is subjected to ANSYS and NASTRAN Finite Element Analysis to achieve optimum rigidity and stability.
- ▶ Heavy duty construction throughout, combined with extra stable base, supported by 8-16 foundation bolts.
- ▶ Box ways on X, Y, Z axis.

## TELESCOPIC COVERS

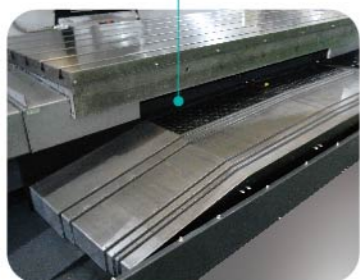
\* Full guards on all axis prevent the axis from any damage caused by chips and coolant, ensuring consistent operational accuracy and long working life-span.



Finned Bellows Covers



Y Axis Rear Side Telescopic Cover



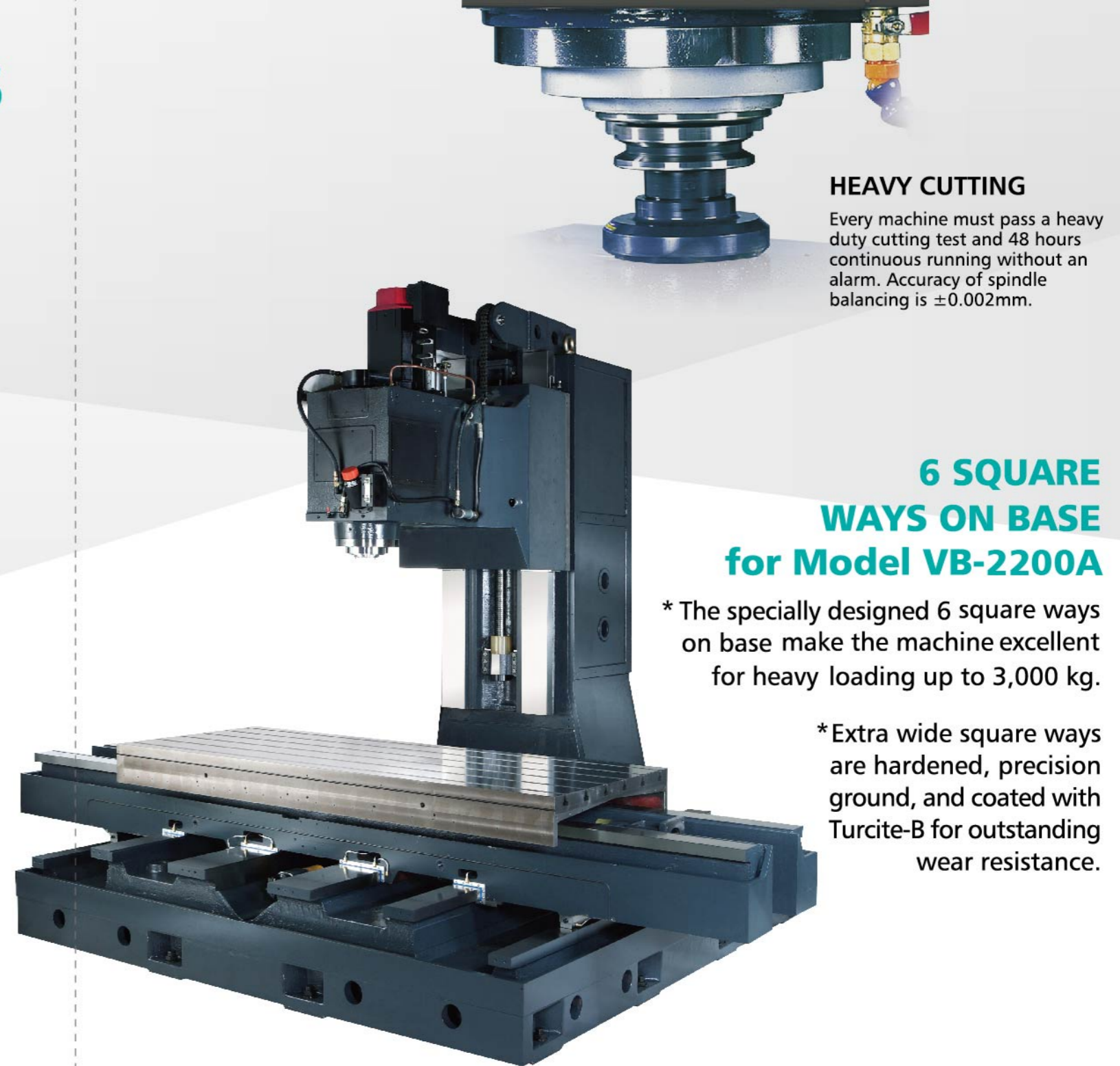
Telescopic Cover



Coolant Flushing



Chip Screws  
(Only for VB-1400/1650)



## HEAVY CUTTING

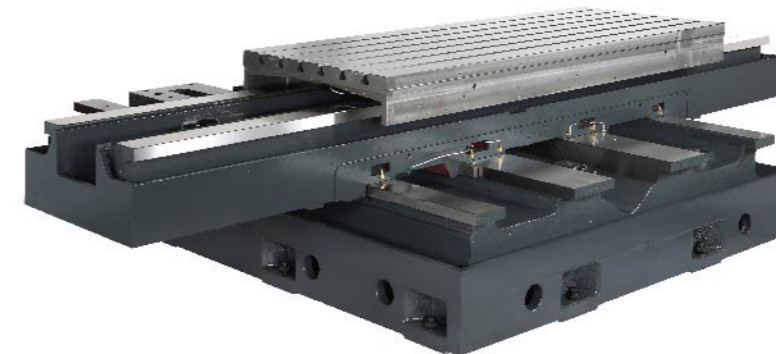
Every machine must pass a heavy duty cutting test and 48 hours continuous running without an alarm. Accuracy of spindle balancing is  $\pm 0.002\text{mm}$ .

## 6 SQUARE WAYS ON BASE for Model VB-2200A

\* The specially designed 6 square ways on base make the machine excellent for heavy loading up to 3,000 kg.

\* Extra wide square ways are hardened, precision ground, and coated with Turcite-B for outstanding wear resistance.

## 4 SQUARE WAYS ON BASE for Models VB-1400A, 1650A and 1900A

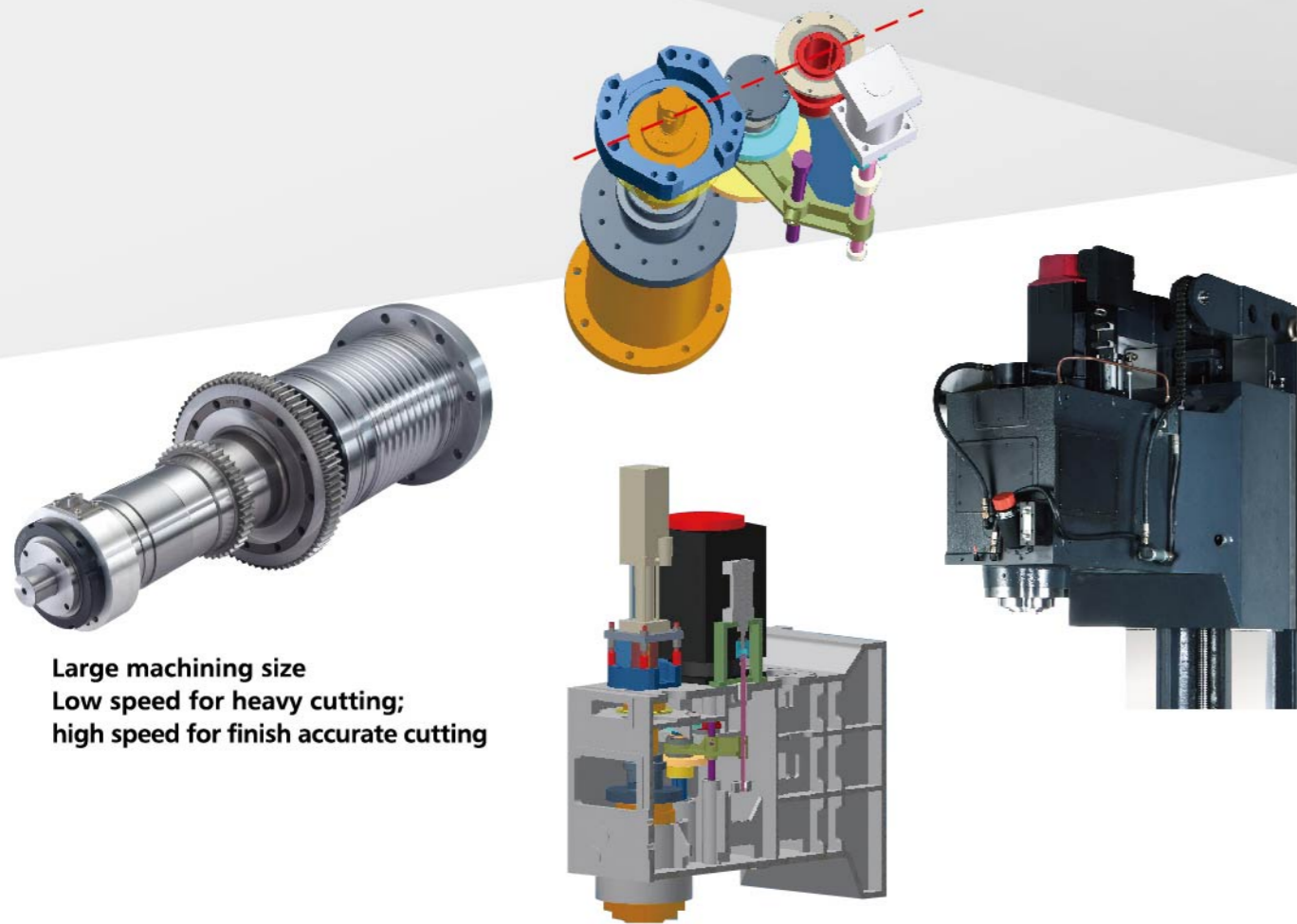


The X-axis travel of the table is fully supported by 4 square ways for heavy loading capability and for rigid and stable support.



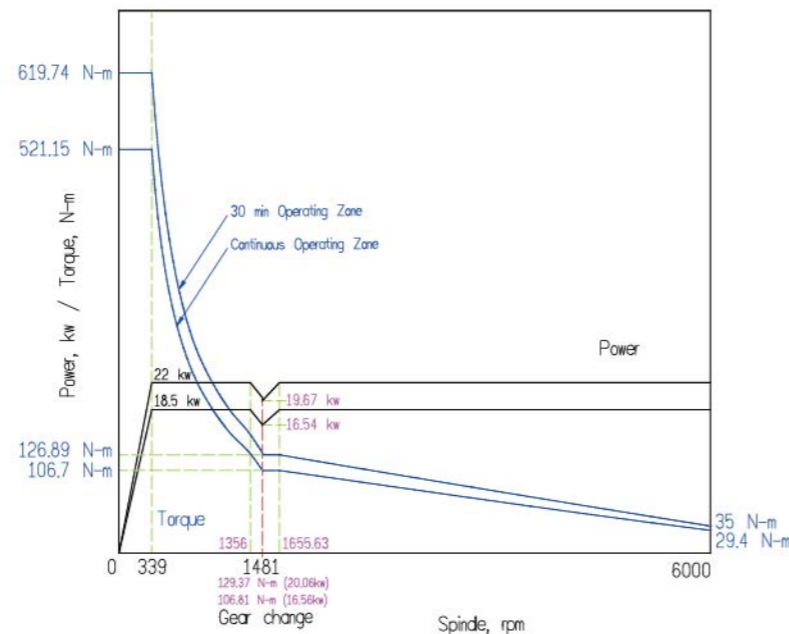
# GEAR DRIVE TRANSMISSION (OPT.)

Outstanding Features, Displaying Extraordinary Performance



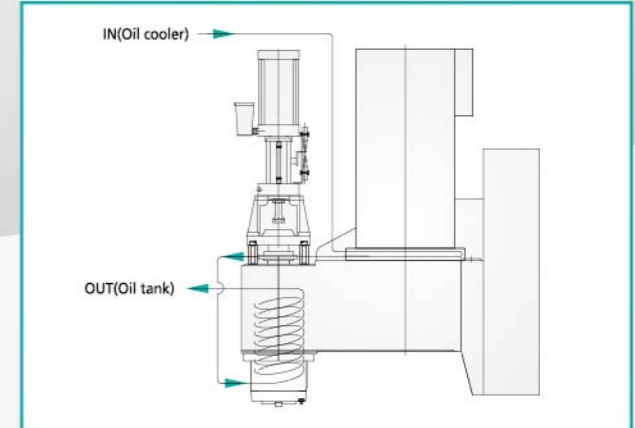
Large machining size  
Low speed for heavy cutting;  
high speed for finish accurate cutting

Power / Torque characteristic of FANUC  $\alpha$  18 / 7000i for Gear and Spindle 6,000 rpm (Ratio=0.906 : 4.425)



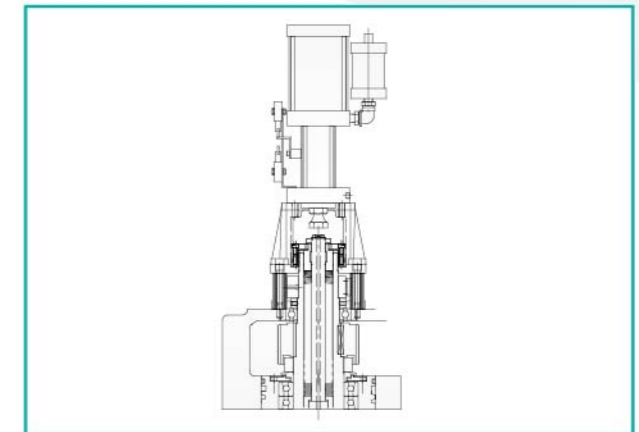
## Spindle Features:

- The headstock features box-structure with inner ribs enforcement, upgrades rigidity and stability for heavy duty cutting.
- Short spindle nose increases rigidity, which reduces overhanging distance and increases cutting capabilities.
- Parallel axial centerline deployment, reinforces machining accuracy.
- Direct transmission between motor and gear that delivers optimum power to the spindle.
- Coolant Through Spindle with floating unclamp mechanism eliminates bearing's axial loading, thus increase spindle durability and accuracy.



## SPINDLE COOLING DEVICE

The oil from the spindle cooling unit is particularly circulated around the spindle cartridge and spindle motor to maintain optimum running temperature to eliminate thermal expansion, and to prolong bearing life.



## FLOATING CUSHION DEVICE ON SPINDLE

While unclamping the tool, the floating cushion device eliminates any pressure exerted on spindle bearing while ensuring longer service life.

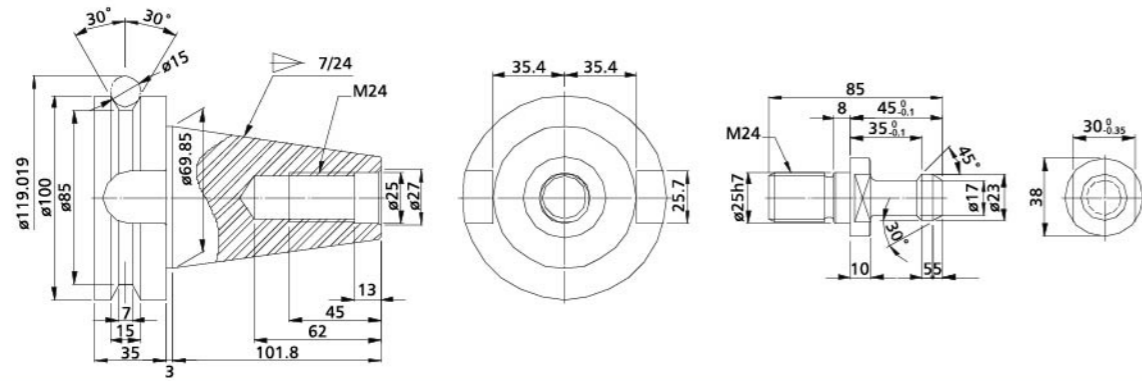
## Spindle Output Comparison Chart - VB1900A/2200A

TYPE	GEAR HEAD (Gear Direct Engage)	ZF-GEARBOX	BELY TYPE
SPEED	6000 rpm	6000 rpm	6000 rpm
POWER	$\alpha$ 18/7000i(Std)	$\alpha$ 18/7000i(Opt)	$\alpha$ P30/6000i(Std)
TORQUE	<b>619.74 N-m</b>	560 N-m	441.5 N-m

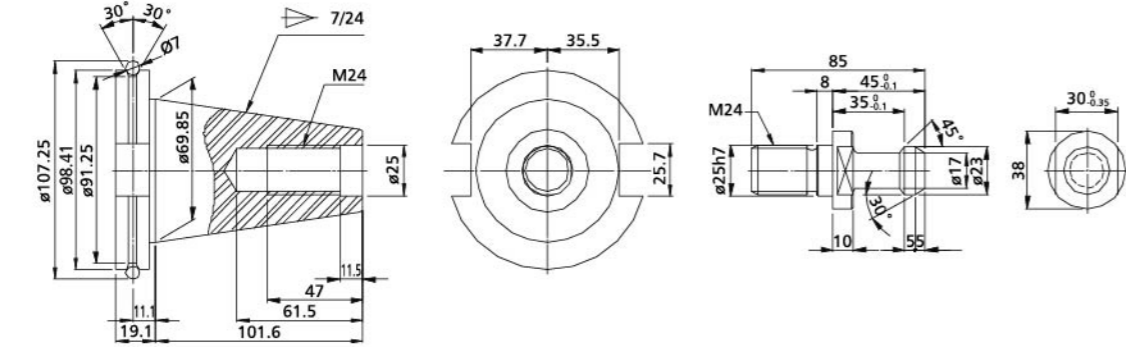


# TOOLING SHANK DIMENSIONS

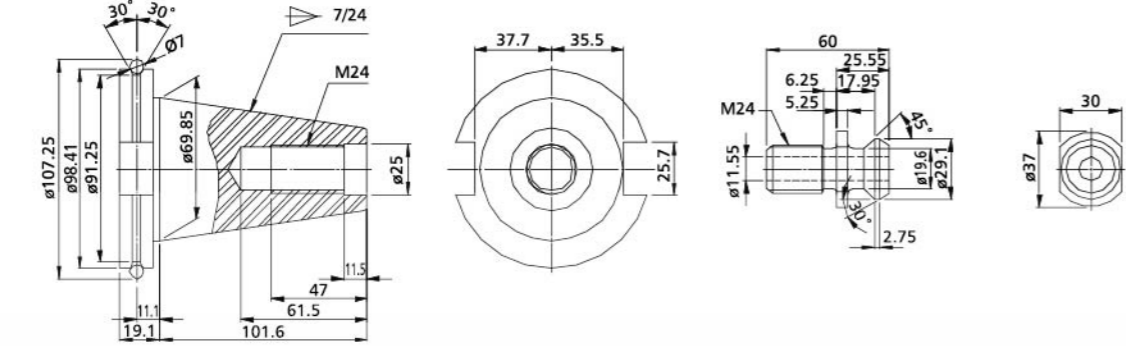
**BT-50 MAS 403 BT-50 SHANK + MAS 403 BT50 PULL STUD**



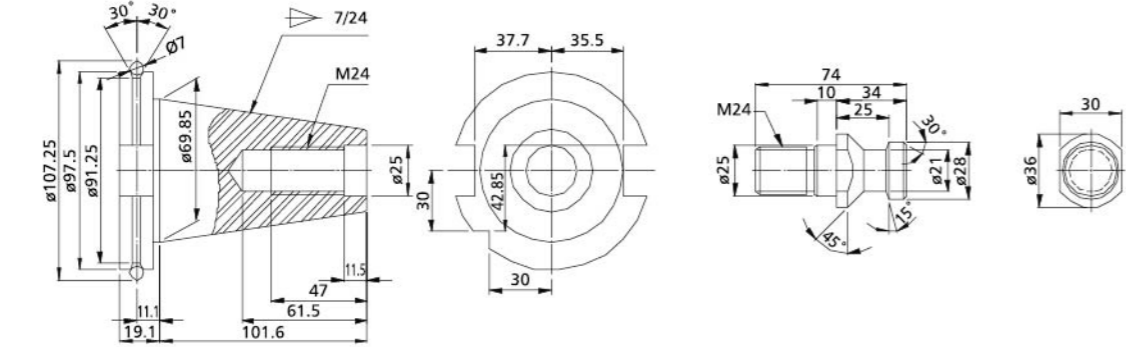
**CAT-50 ANSI / ASME B5.50 SHANK + MAS 403 BT50 PULL STUD**



**ANSI / ASME B5.50 CAT-50 ANSI / ASME B5.50 SHANK + PULL STUD**



**DIN SK-50 DIN 69871 SHANK + DIN 69872 PULL STUD**

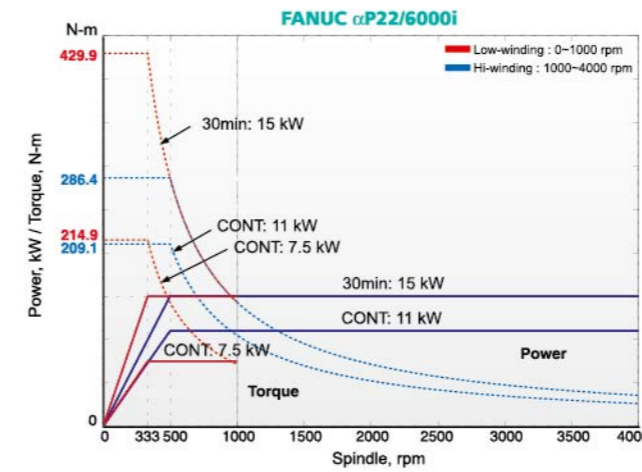


# SPINDLE SPEED & POWER OUTPUT DIAGRAM

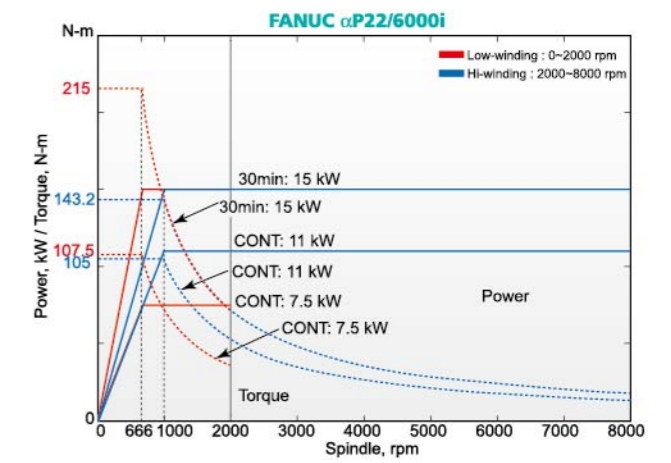
**VB-1400A/1650A (Belt Drive)**

**VB-1400A/1650A (Belt Drive) (OPT.)**

**NO.50/4,000RPM**

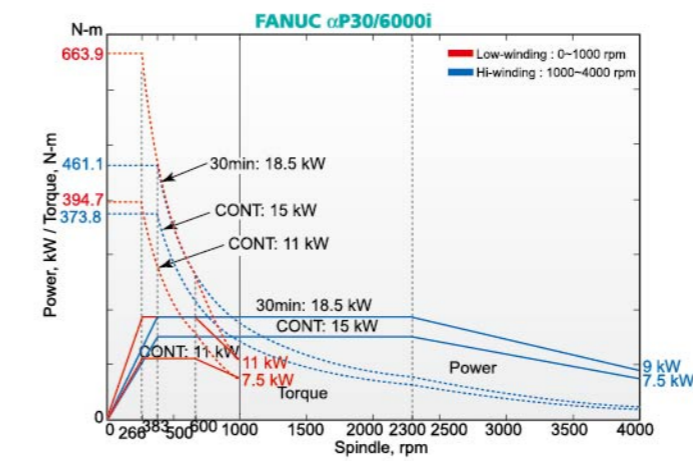


**NO.40/8,000RPM**



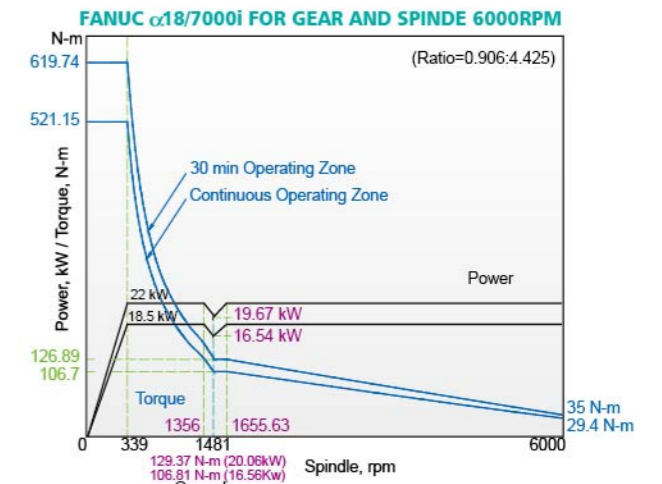
**VB-1900A/2200A (Belt Drive)**

**NO.50/4,000RPM**



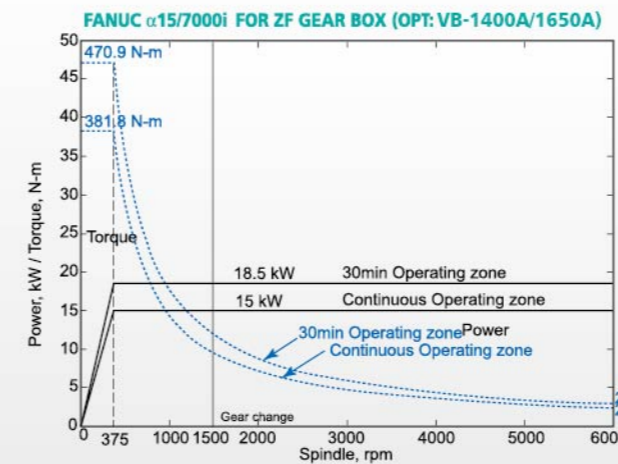
**GEAR HEAD(OPT.)**

**NO. 50/6,000RPM**



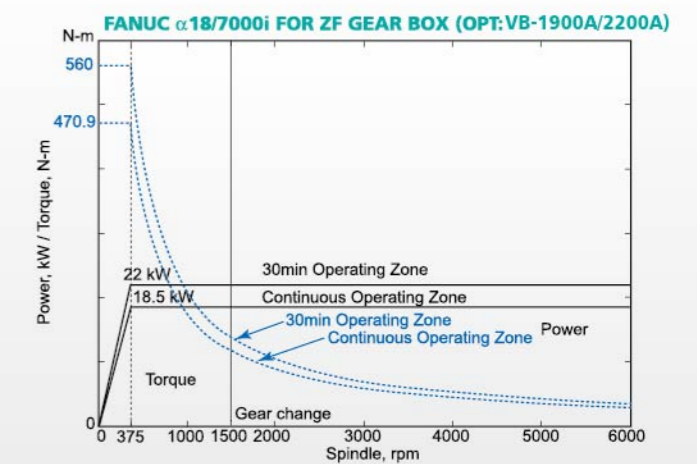
**ZF GEAR BOX (OPT.)**

**NO.50/6,000RPM**



**ZF GEAR BOX (OPT.)**

**NO.50/6,000RPM**

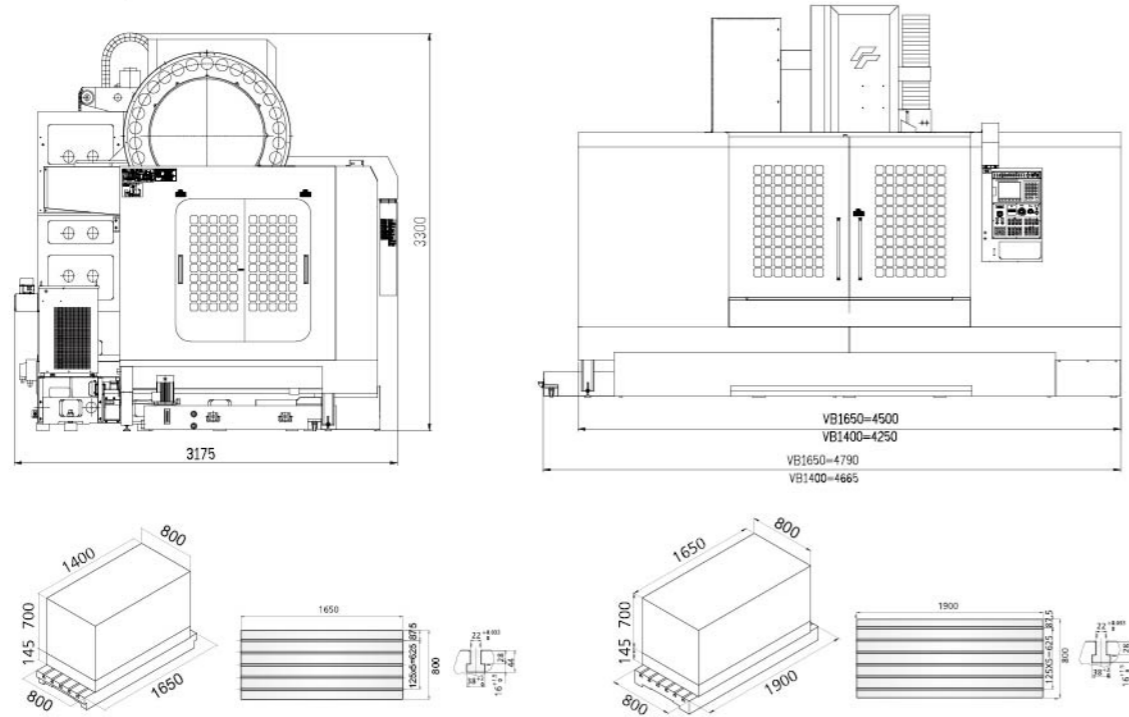




# MACHINE DIMENSIONS, TABLE DIMENSIONS & WORKING CAPACITY

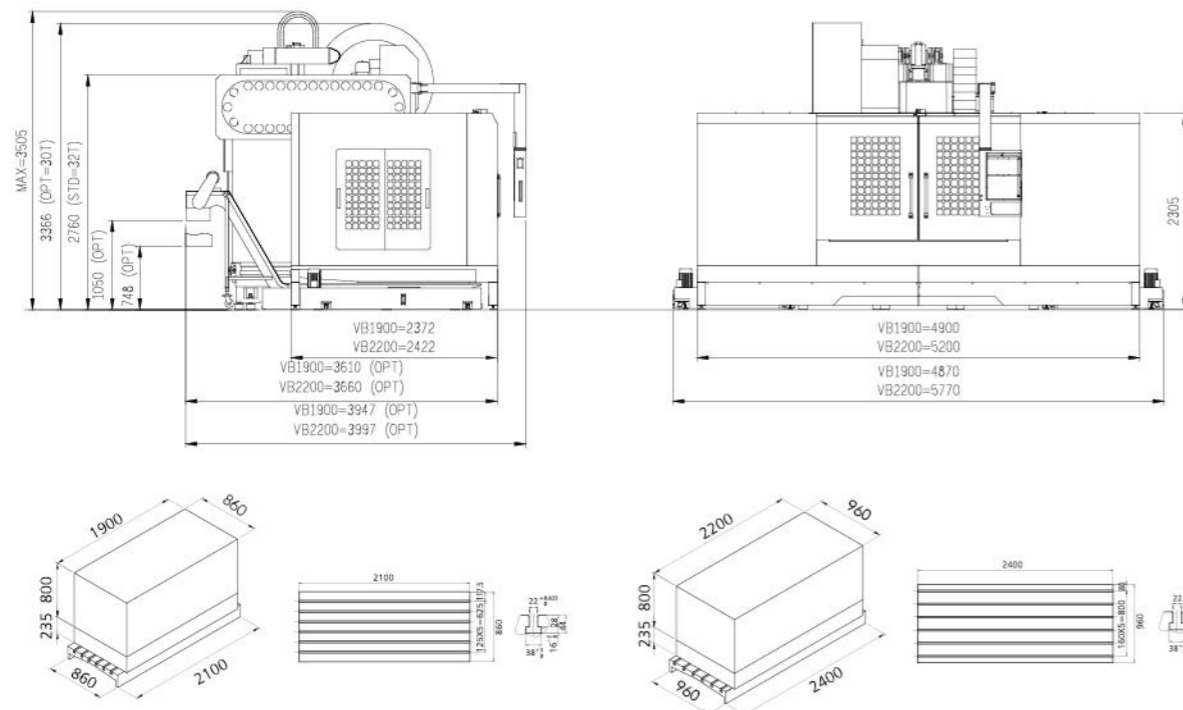
## ■ VB-1400A / 1650A

\*Unit : mm



## ■ VB-1900A / 2200A

\*Unit : mm



## Machine Specifications

(\*) Gear Specifications

MODEL	VB-1400A	VB-1650A	VB-1900A	VB-2200A		
<b>TRAVEL</b>						
X-axis Travel	1,400 mm	1,650 mm	1,900 mm	2,200 mm		
Y-axis Travel	800 mm (4 way)	800 mm (4 way)	860 mm (4 way)	960 mm (6 way)		
Z-axis Travel	700 mm		800 mm			
Spindle Nose to Table Surface	145-845 mm		235-1,035 mm			
Spindle Center to Column Surface	850 mm	850 mm	950 mm	1,050 mm		
<b>TABLE</b>						
Table Dimensions	1,650 x 800 mm	1,900 x 800 mm	2,100 x 860 mm	2,400 x 960 mm		
T-slot	22 x 6 x 125	22 x 6 x 125	22 x 6 x 125 mm	22 x 6 x 160 mm		
Maximum Load	1,500 kg	1,800 kg	2,200 kg	2,700 kg		
<b>SPINDLE</b>						
Spindle Speed	4,000 rpm (*6,000 rpm)	8,000 rpm	4,000 rpm (*6,000 rpm)	8,000 rpm		
Spindle Taper	7 / 24 Taper No.50	7 / 24 Taper No.40(OPT)	7 / 24 Taper No.50	7 / 24 Taper No.40(OPT)		
Spindle Motor	7.5 / 15 kW (*18.5 / 22 kw)		11/18.5 kW (*18.5/22 kw)			
Rapid Traverse (X / Y / Z Axes)	20 / 20 / 18 m/min		15 / 15 / 12 m/min			
Cutting Feedrate	15,000 mm/min		12,000 mm/min			
<b>ATC</b>						
Tool Changing Time	Arm Type	Approx. 3.5 sec.	Approx. 1.7 sec.	Approx. 3.5 sec.	Approx. 1.7 sec.	Approx. 3.5 sec.
(Tool to Tool)	Carrousel Type	Approx. 9 sec.	Approx. 7 sec.	Approx. 9 sec.	Approx. 7 sec.	-
Tool Changer	Arm Type / (Carrousel Type)				Arm Type	
No. of Tools	24 / (20)	24 / (22)	24 / (20)	24 / (22)	32 / (OPT: 40)	
Pull Stud	P-50T (45°)	P-40T (45°)	P-50T (45°)	P-40T (45°)	P-50T (45°)	
Maximum Tool Weight	15 kg / (15 kg)	7 kg / (6 kg)	15 kg / (15 kg)	7 kg / (6 kg)	15 kg	
Maximum Tool Length	300 mm	250 mm	300 mm	250 mm	300 mm	
Maximum Tool Diameter	ø100 mm	ø80 mm	ø100 mm	ø80 mm	ø100 mm	
Max. Tool Diam. (No Adjacent Tool)	ø200 mm	ø150 mm	ø200 mm	ø150 mm	ø200 mm	
<b>OTHER</b>						
Floor Space	4,665 x 3,175 mm		4,790 x 3,175 mm		4,870 x 3,947 mm	5,770 x 3,997 mm
Machine Weight	12,000 kg		13,000 kg		19,000 kg	22,000 kg
Maximum Machine Height	3,300 mm				3,505 mm	
Power Capacity	30 KVA				35 KVA	
Air Source	6-8 bar					

\* Specifications are subject to change without prior notice. \* Standard power source 220V / 60Hz / 3HP.

## Standard Accessories

- \* High torque wide-range spindle motor (for Fanuc controller only)
- \* Operation and maintenance manual
- \* Pretensioned 3-axis ball screws
- \* Heat exchanger for electrical cabinet
- \* Leveling blots and blocks
- \* Spindle oil cooler
- \* Automatic lubrication system
- \* Fully enclosed splash guard
- \* Chip conveyor (VB-1900/2200)
- \* Chip screw (VB-1400/1650)
- \* Coolant Flushing

- \* Portable manual pulse generator (M.P.G.)
- \* Spindle belt-drive transmission
- \* Rigid tapping
- \* Spindle air blast
- \* Pneumatic system
- \* Auto power off
- \* Work lamp

## Optional Accessories

- \* Belt-drive spindle 6,000 rpm (No.50)
- \* Belt-drive spindle 10,000 rpm / 12,000 rpm (No.40)
- \* 4th or 5th axis preparation or rotary table package
- \* Chip conveyor (VB-1400/1650)
- \* Coolant through spindle
- \* Automatic tool length measurement and breakage detection
- \* Air conditioner for electrical cabinet
- \* High pressure coolant pump
- \* Workpiece measurement system
- \* Linear scale
- \* Transformer
- \* ZF 2-stage gearbox
- \* Gear-drive spindle 6000 rpm (No. 50)