



# VB series

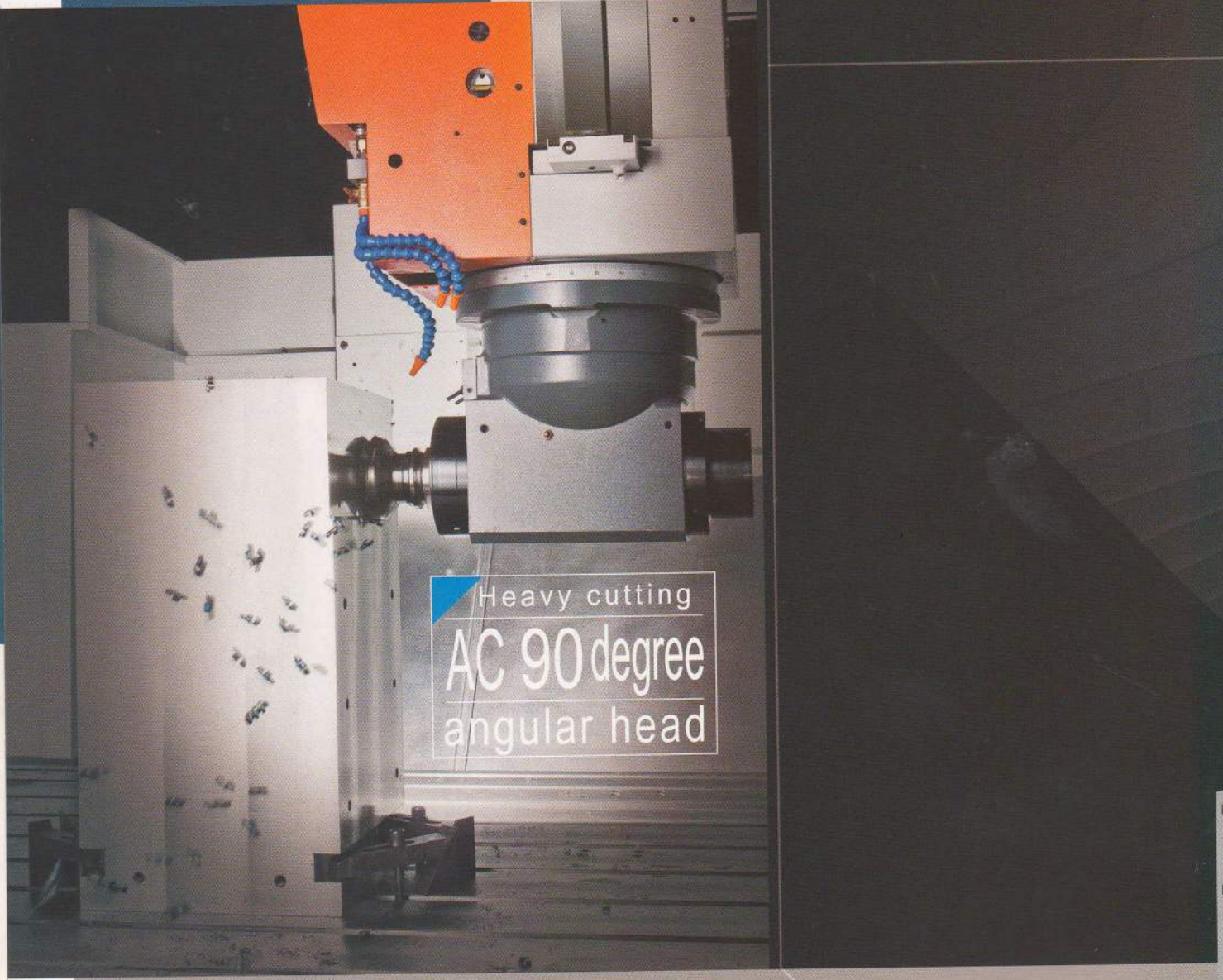
CNC Double Column Vertical Machining Center  
Heavy Cutting Double  
Column Machining Center

[www.visionwide-tech.com](http://www.visionwide-tech.com)



**VB** series  
VISION WIDE

# VB Series Heavy cutting double column machining center



Heavy cutting  
AC 90 degree  
angular head

w i d e n   y o u r   c u t t i n g   v i s i o n

With Vision Wide tradition in making high rigid structure, VB series provides not only high accuracy but also heavy cutting ability.

VB series is designed for being the most proper devices in mold and precision machining industry.



- ▶ Rapid traverse: 15 m/ min
- ▶ Cutting feed rate: 7 m/ min
- ▶ High torque gear type spindle: 4,000/ 6,000 rpm
- ▶ Belt type spindle: 8,000/ 10,000rpm

X-axis travel: 2.0/ 2.5/ 3.1/ 4.1m

Y-axis travel: 1.6/ 2.0m

Z-axis travel: 800/ 1,020mm

Port width: 1,700/ 2,100mm

Box way for XYZ-axis

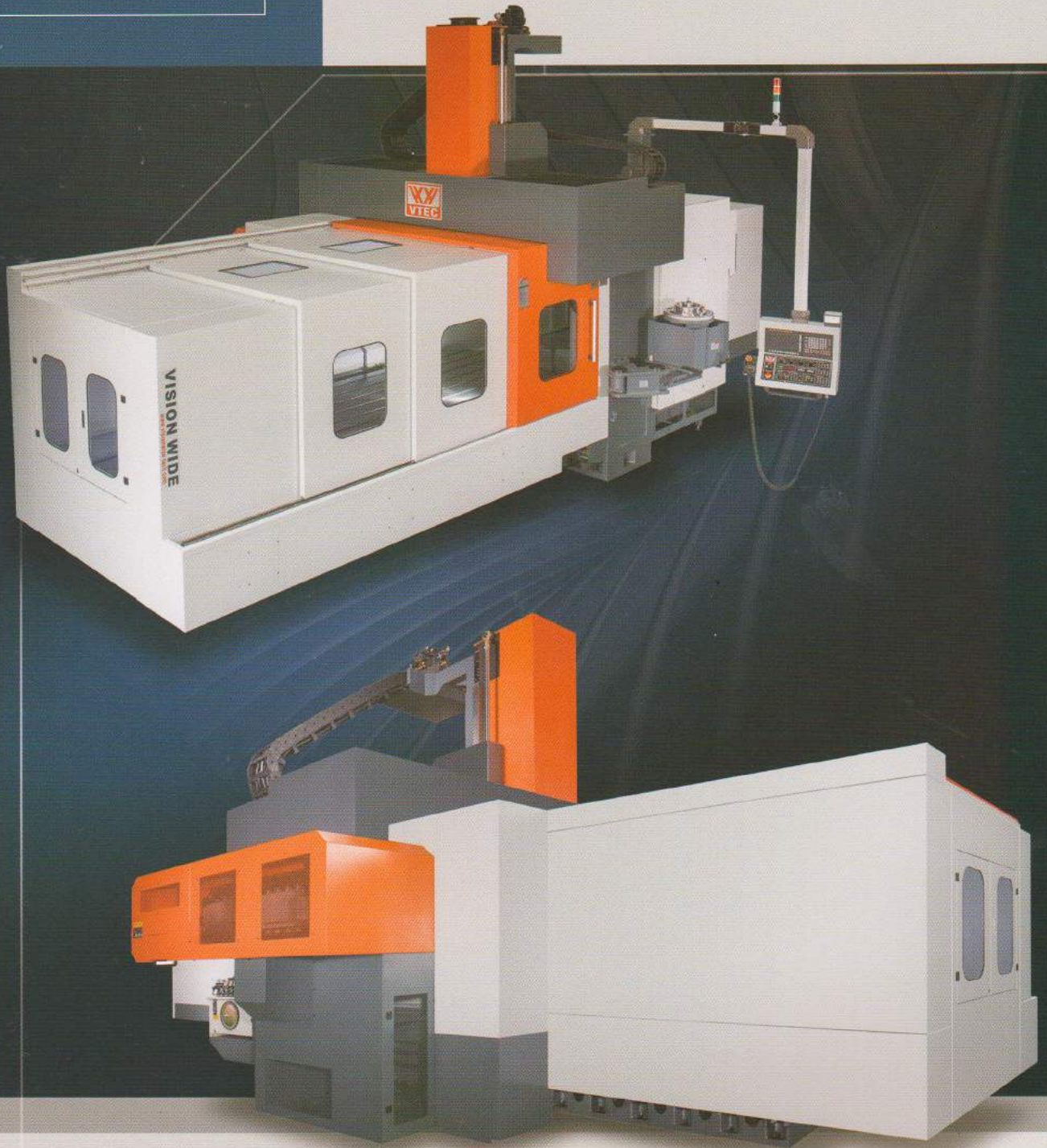


Photo: VB-2016 model with enclosed splash guard (without roof) and manual swiveling arm type head bracket

**VB** series  
**VISION WIDE**

Diversity machining  
module and function  
can be equipped with

- a Various types of heads
- b Manual swiveling arm type head bracket (on operation side)
- c Auto swiveling arm type head bracket (on operation side)
- d Arm type ATC



a

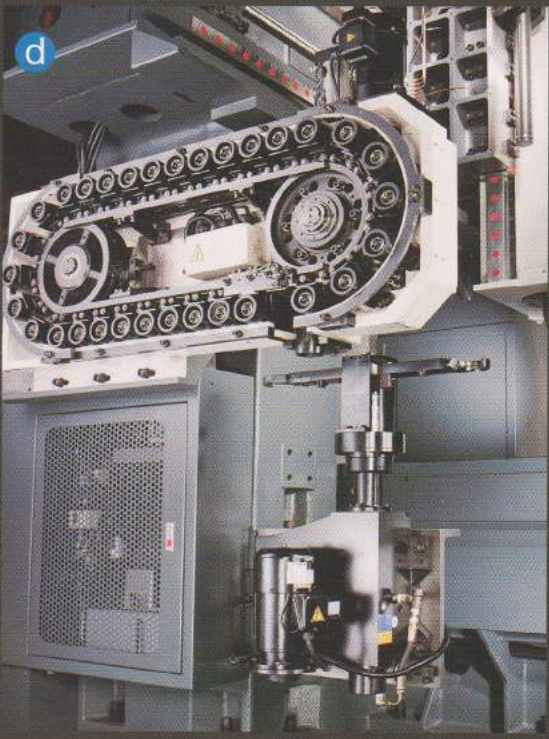


# VISION WIDE

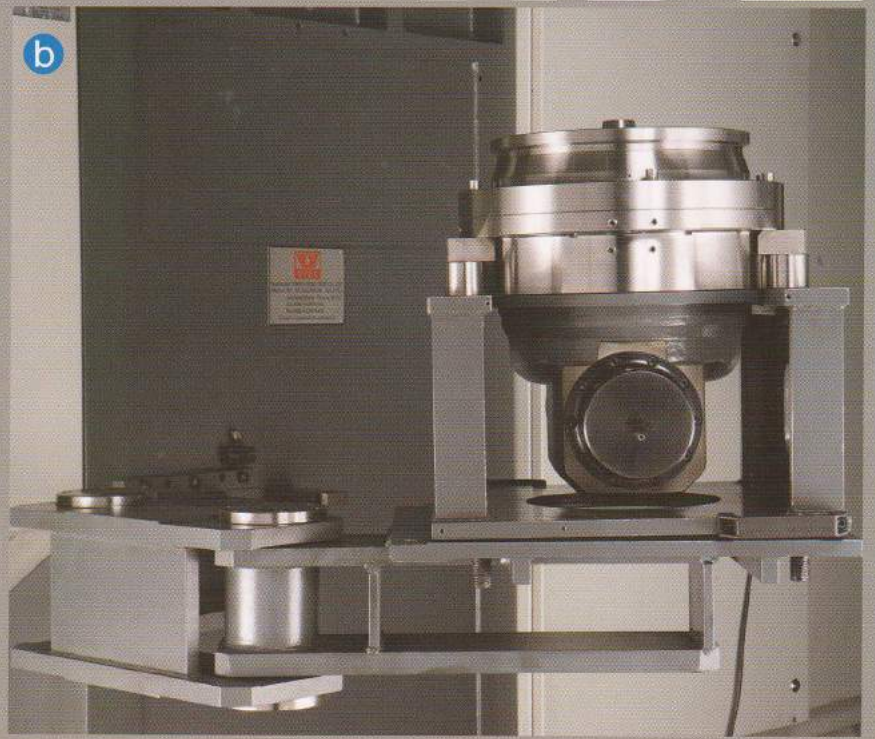
c



d



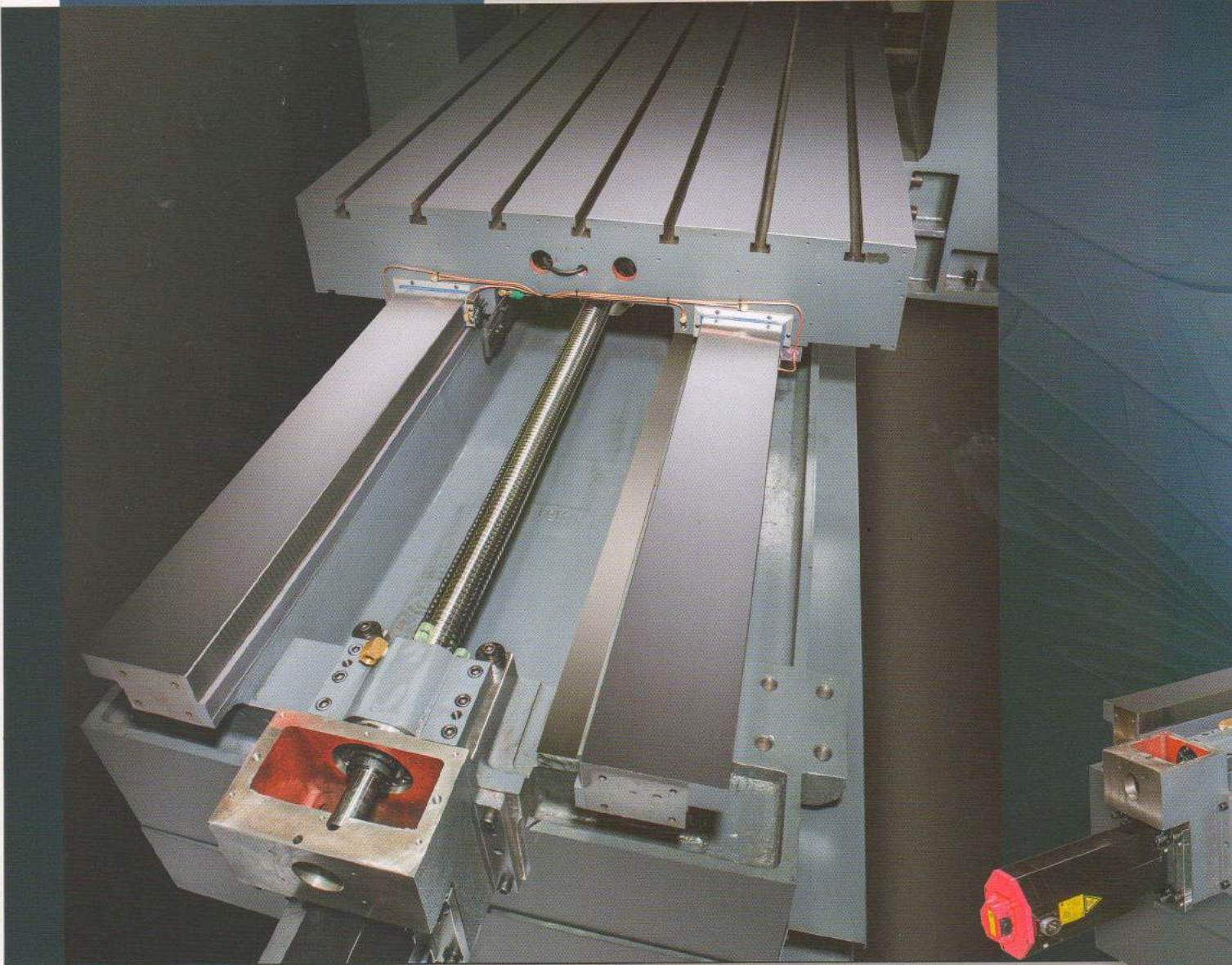
b



widen your cutting vision

**VB** series  
VISION WIDE

# High rigid structure design



X-axis feeding system is fully supported by box guide w

High rigid box way

2-way support design on the bed with optimal span des

With Vision Wide tradition,  
the optimized structure design offers heavy  
cutting rigidity in heavy cutting.



Photo: VB-2016 model with gear type spindle 6,000rpm



Improving high rigidity and reliability



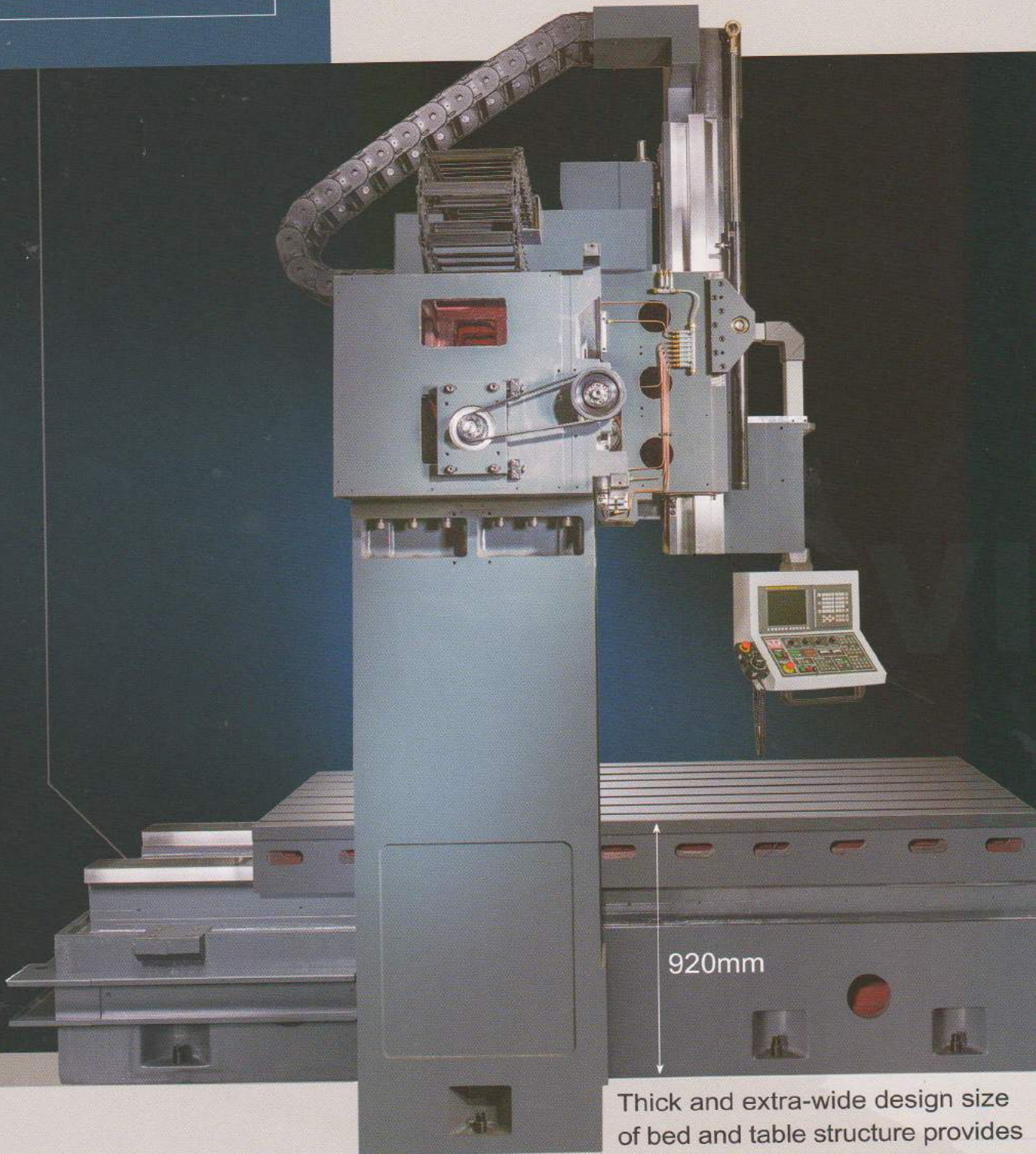
Enhancing the loading capability, and keeping high dynamic level accuracy



Ensuring straightness within 0.01mm/2m at X-axis motion

**VB** series  
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Large size column  
provides the beam  
the strongest support



920mm

Thick and extra-wide design size of bed and table structure provides optimal straightness of workpiece movement.





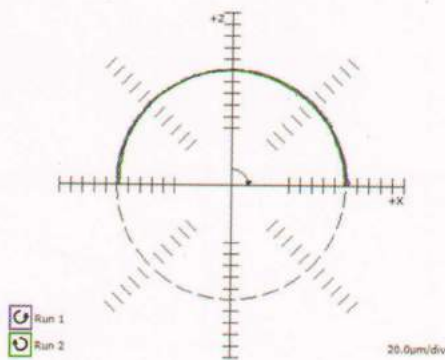
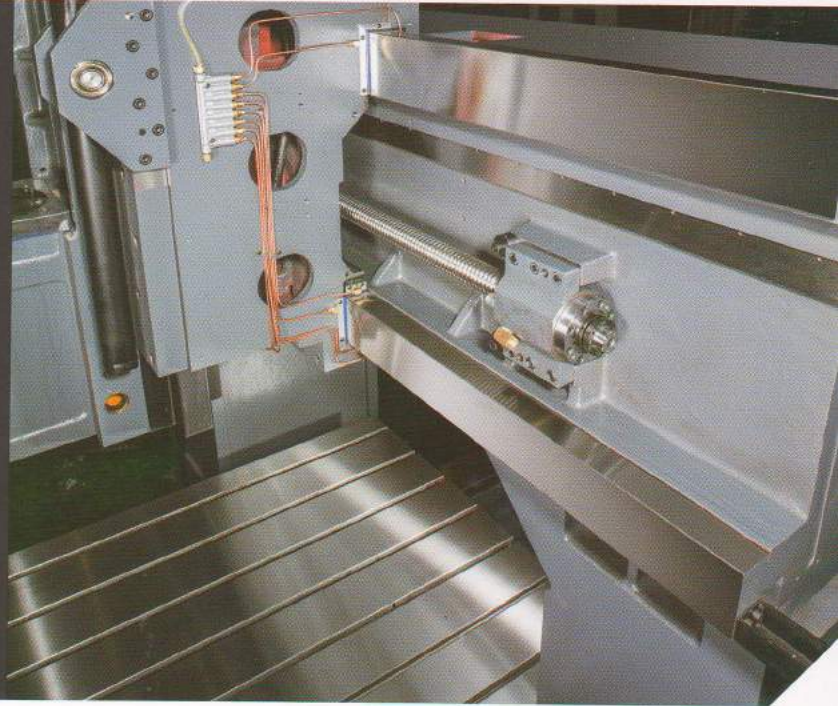
400mm

VISION WIDE

**VB** series  
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## High precision mechanism features

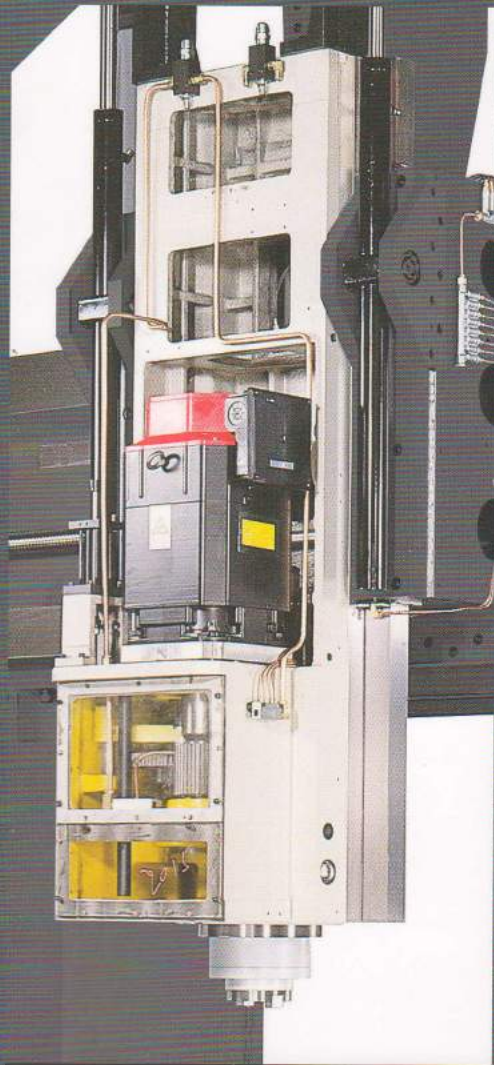
Large special span in Y-axis for rigidity, with stepped design reduces movement friction, and improve positioning accuracy.



Z-axis 15m/ min rapid traverse, 0.5G high acceleration/ deceleration performance achieve the requirements from contour accuracy of high speed mold machining. High speed balancing system including economical twin hydraulic cylinders with pressured air assistance achieves:

- Smoother Z-axis movement
- Z-axis retract function at power failure
- Excellent performance for power saving



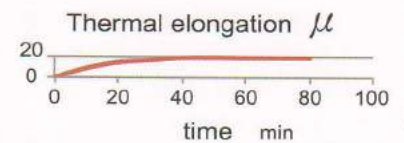
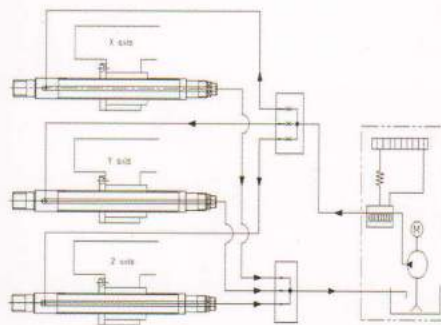


One-piece casting design in Z-axis and spindle gear box for symmetrical heat conduction and high rigidity ensuring.

2-step gear type spindle with 4 sets high rigidity ball type bearing configuration, bearing dimension 100x50mm provides high rigidity, and also increases working lifetime.



- 3-axis ball screw cooling system  
The hollow ball screw with oil cooling system efficiently reduces thermal deformation at machine operation.
- Spindle and 3-axis ball screw cooling system ensure optimal heat balance control.



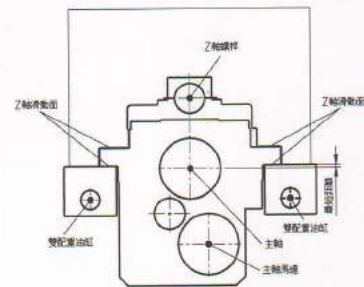
Independent spindle and 3-axis ball screw cooling system:

1. To force spindle bearing and gear cooling, effectively restrain spindle thermal deformation
2. Effectively control ball screw temperature within +/-2 degree to ensure ball screw thermal deformation

# VB series VISION WIDE

## Optimal central symmetric spindle system design offers high cutting performance

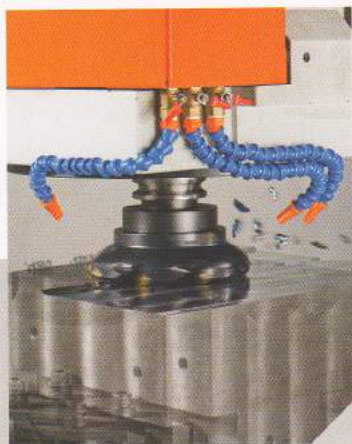
- ▶ Minimum distance between spindle center and Z-axis roller way not only shortens cutting lever arm but also significantly improves cutting rigidity.
- ▶ Symmetric spindle gravity configuration, Z-axis ball screw, spindle center and spindle motor configure at gravity point of Z-axis box structure centerline provide the best feed precision and thermal balance.
- ▶ Gear spindles made of Japan-made JIS-0 grade precision gears are with high precision, low noise and high efficiency transmission performance.
- ▶ 2-step gear type spindle provides high torque and high speed characteristics to ensure heavy cutting ability on surface finish of high speed cutting.



2-step gear type 4,000/ 6,000,  
belt-driven 8,000/10,000rpm spindle speed  
can be chose according different kinds of machining.



### Heavy cutting ability | test specification 22/ 26kW 4,000rpm spindle



Face milling:  
Tool dia.:125mm  
Removal rate:750cc/min



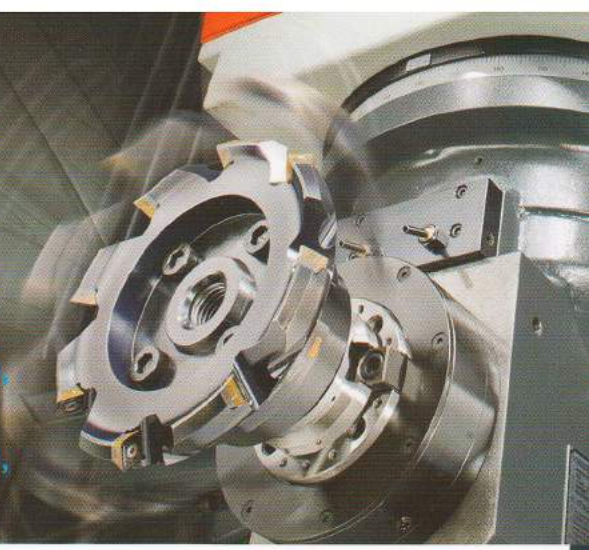
Mold cutting:  
Tool dia.:25mm  
Feed rate:5000mm/min



Gun drilling:  
Tool dia.:32mm  
Feed rate:550mm/min

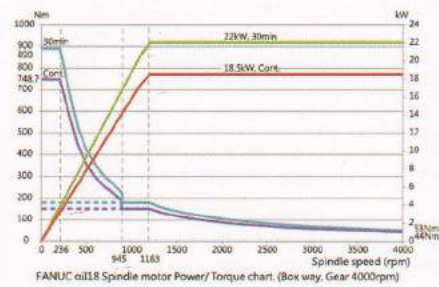
High torque gear type spindle  
Industry-leading output torque,  
**15% more** than competitors,  
providing excellent heaving  
cutting performance

Spindle speed 4000rpm, max. torque 890Nm (18.5/22kW),  
1052Nm (22/26kW), 1952Nm (30/37kW)  
Spindle speed 6000rpm, max. torque 691Nm (18.5/22kW),  
817Nm (22/26kW), 1517Nm (30/37kW)

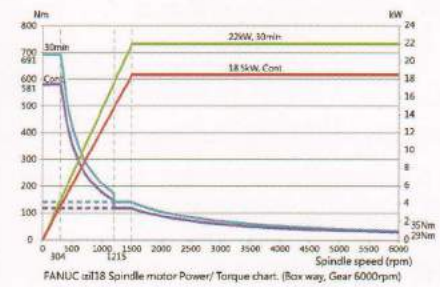


### Spindle power and torque chart

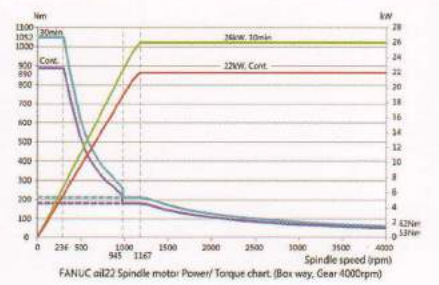
Fanuc α 18 18.5/22kW gear type 4,000rpm



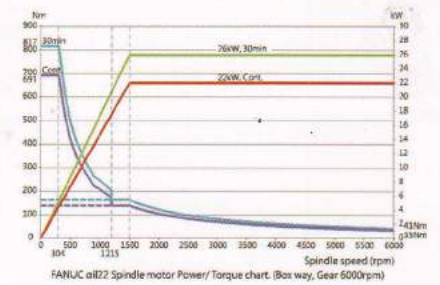
Fanuc α 18 18.5/22kW gear type 6,000rpm



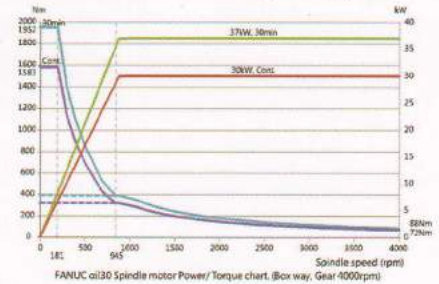
Fanuc α 22 22/26kW gear type 4000rpm



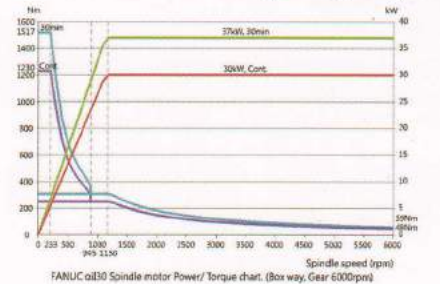
Fanuc α 22 22/26kW gear type 6,000rpm



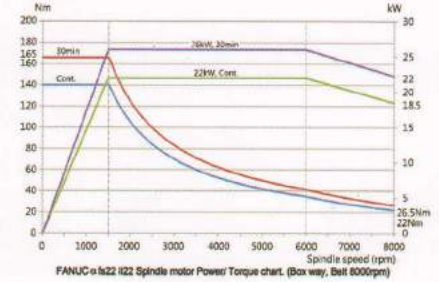
Fanuc α 30 30/37kW gear type 4000rpm



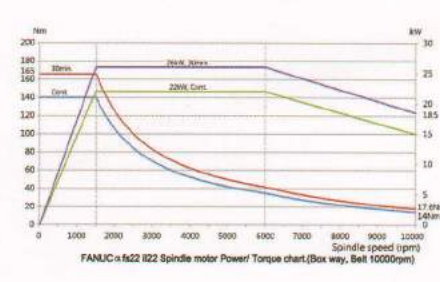
Fanuc α 30 30/37kW gear type 6,000rpm



Fanuc α 22 22/26kW belt type 8,000rpm



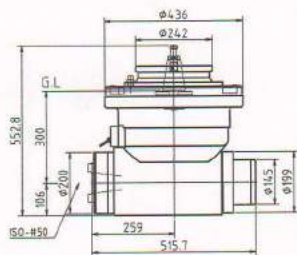
Fanuc α 22 22/26kW belt type 10,000rpm



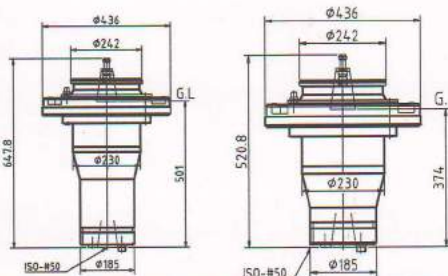
# VB series VISION WIDE

## Auto multi-angle head attachment

- ▶ B/C-axis auto 5° indexing
- ▶ C-axis auto 1° indexing
- ▶ Large diameter indexing mechanism
- ▶ Auto tool clamping device
- ▶ Flood coolant function
- ▶ AC 90° angular head with coolant through spindle



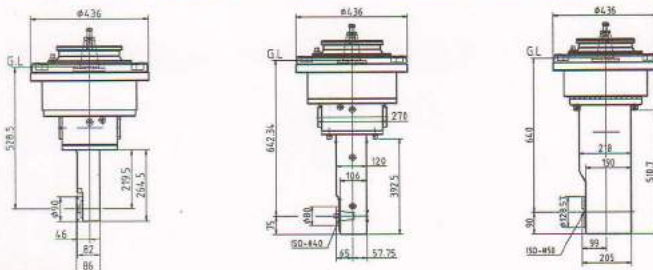
Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1°/ 5°
Machining coolant	External nozzle/ coolant through spindle(opt.)
Max. power	26 kW
Max. speed	3,000 rpm



Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
Max. power	26kW
Max. speed	4,000rpm

through spindle

### Various types of milling head



Tool clamping	Manual
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1°/ 5°
Max. power	26 kW
Max. speed	800 rpm

### Can be opted with manual head attachments



- ▶ Manual 90 degree angular head  
Max. power: 11 kW  
Max. speed: 2000 rpm



- ▶ Manual universal head  
Max. power: 15 kW  
Max. speed: 1200 rpm



- ▶ Manual extended head  
Max. power: 15kW  
Max. speed: 2000 rpm

# Intelligent multi-faced machining

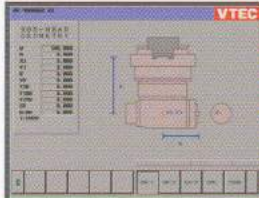
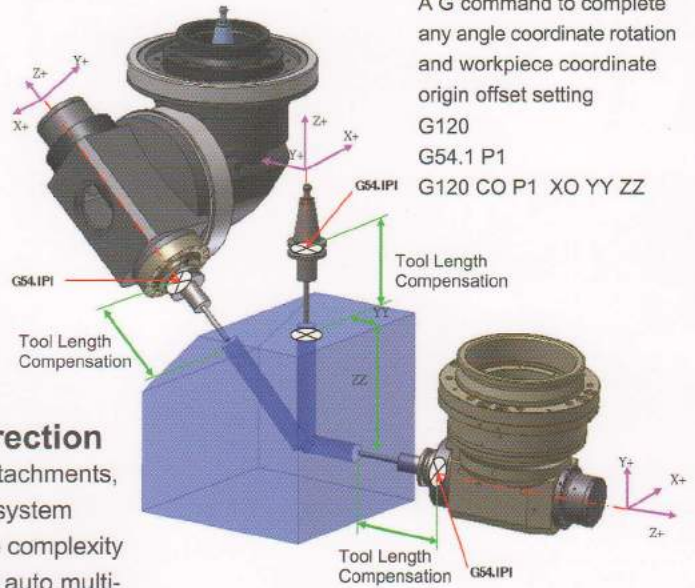
(For AC head attachments)

## Tool center point management (TCPM)

Each type of head attachment with tool center point management, takes vertical workpiece as origin benchmark, and converts the workpiece coordinates to any new specified plane of workpiece coordinates automatically.

## Head attachment dimensions correction

Intelligent compensation on each type of head attachments, rotation center, tool size, workpiece coordinates system correction management, and greatly simplifies the complexity of programming and operation to achieve perfect auto multi-angle machining.



## FX500 5-face machining function

- V/H tool diameter correction
- V/H spindle origin correction
- V/H working coordinate affine transformation
- V/H 3D rigid tapping
- V/H manual interrupting



## Auto coordinates tool axis 3D conversion

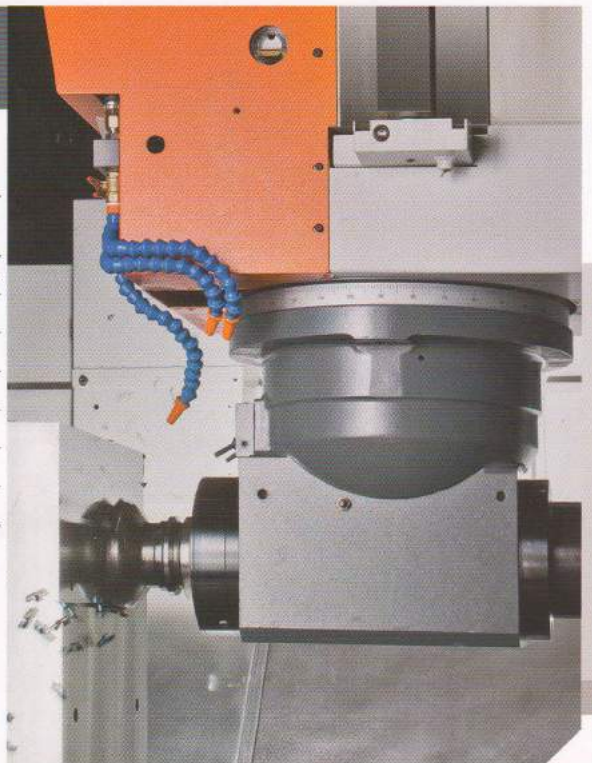
3-axis mechanical coordinates system can be automatically converted to machining coordinates system, easily achieving face milling, end milling, drilling and rigid tapping machining operations.

## Heavy cutting ability

test specification: 22/26kW 4,000rpm spindle

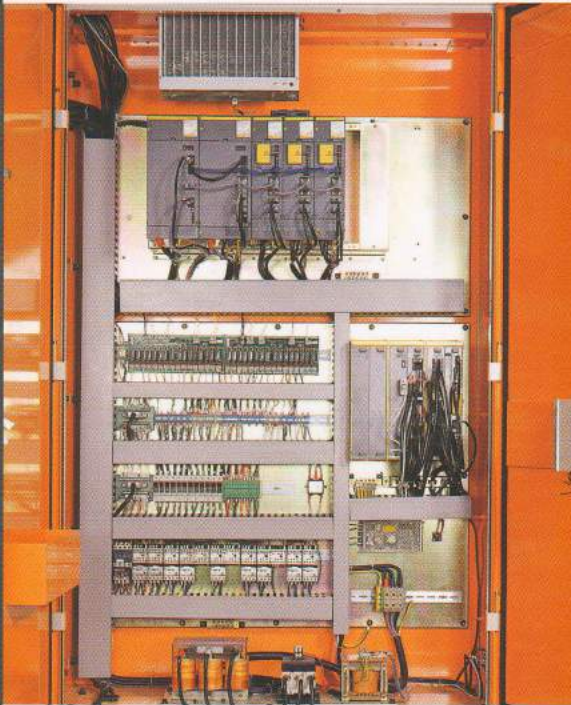
### Through cutting depth test to show excellent heavy cutting rigidity

Head attachment	Extended head	90 degree angular head	2-axis head
Tool type	BT-50 face milling tool-diameter $\varnothing$ 125/5 edge		
Cutting material	S45C		
Spindle speed(rpm)	600		
Machining width(mm)	100		
Feed rate(mm/min)	1000		
Machining depth	5	7	6
Removal rate(cc/min)	500	700	600



# VB series VISION WIDE

## Safe, friendly and reliable operation interface



- Safe and reliable electrical circuit design
- CE compliant safety circuit design
- CE compliant EU regulation electrical parts for whole machine
- Auto locking operation door protection switch
- Z-axis retract function at power failure
- Anti-interference design on motor power cables
- Overload and phase protecting device on servo motors
- 3-axis over travel and hard limit protection
- Heat exchanger for electrical cabinet
- Main power protecting device
- EU regulation softkey operation panel
- Ethernet and RS232 interface
- USB port

Sectional type design of sliding door type at operator's side extends the space for workpiece loading. Open-outward doors at both ends of the machine offer safety and large door open space.

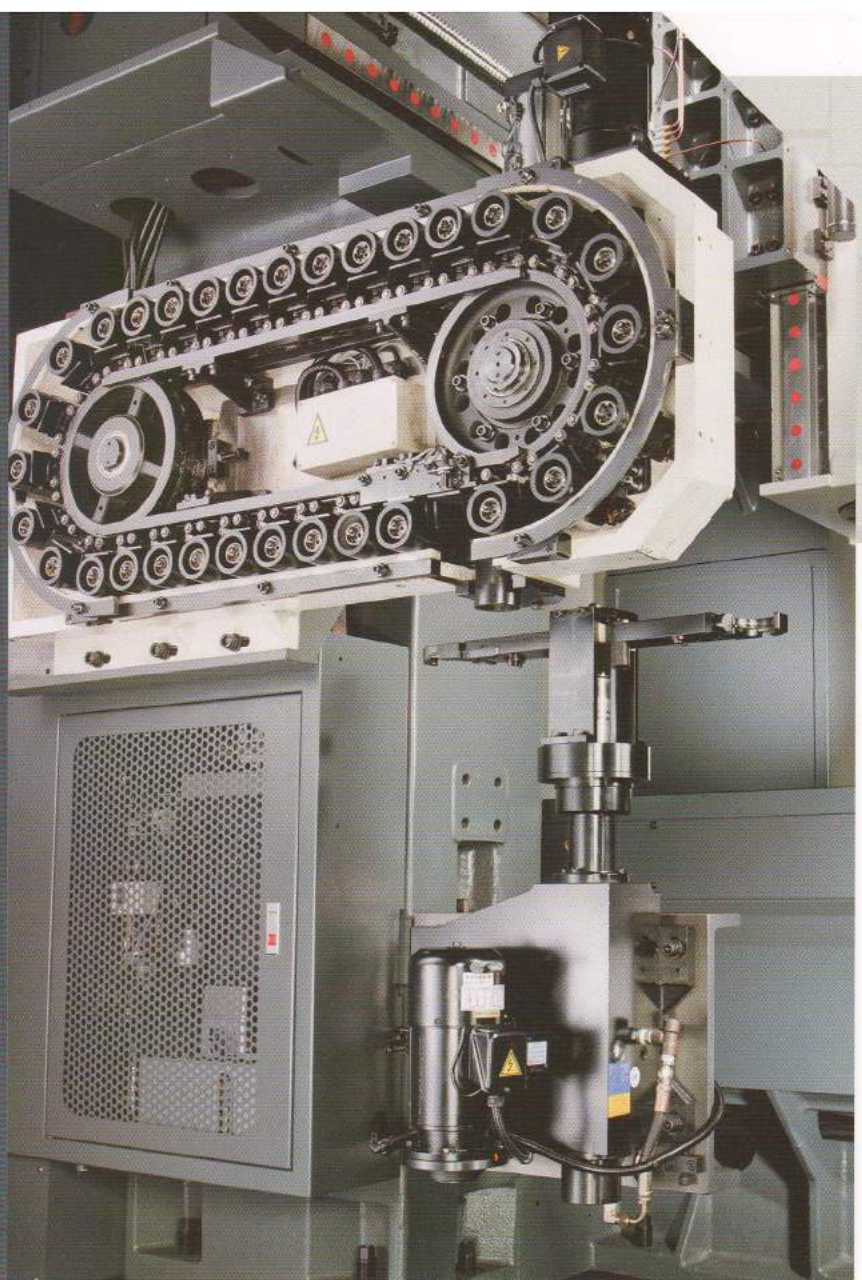


▶ Overhead pendulum type operation panel for users offers an easy-measuring, easy-programming, and safe working environment.

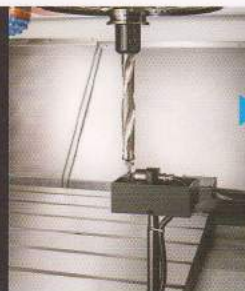


# VISION WIDE

Side-mount tool magazine to save floor space,  
32 tools magazine  
(40 tools magazine(opt.))  
Random tool change and  
special tool management  
offer easy cutting operation.



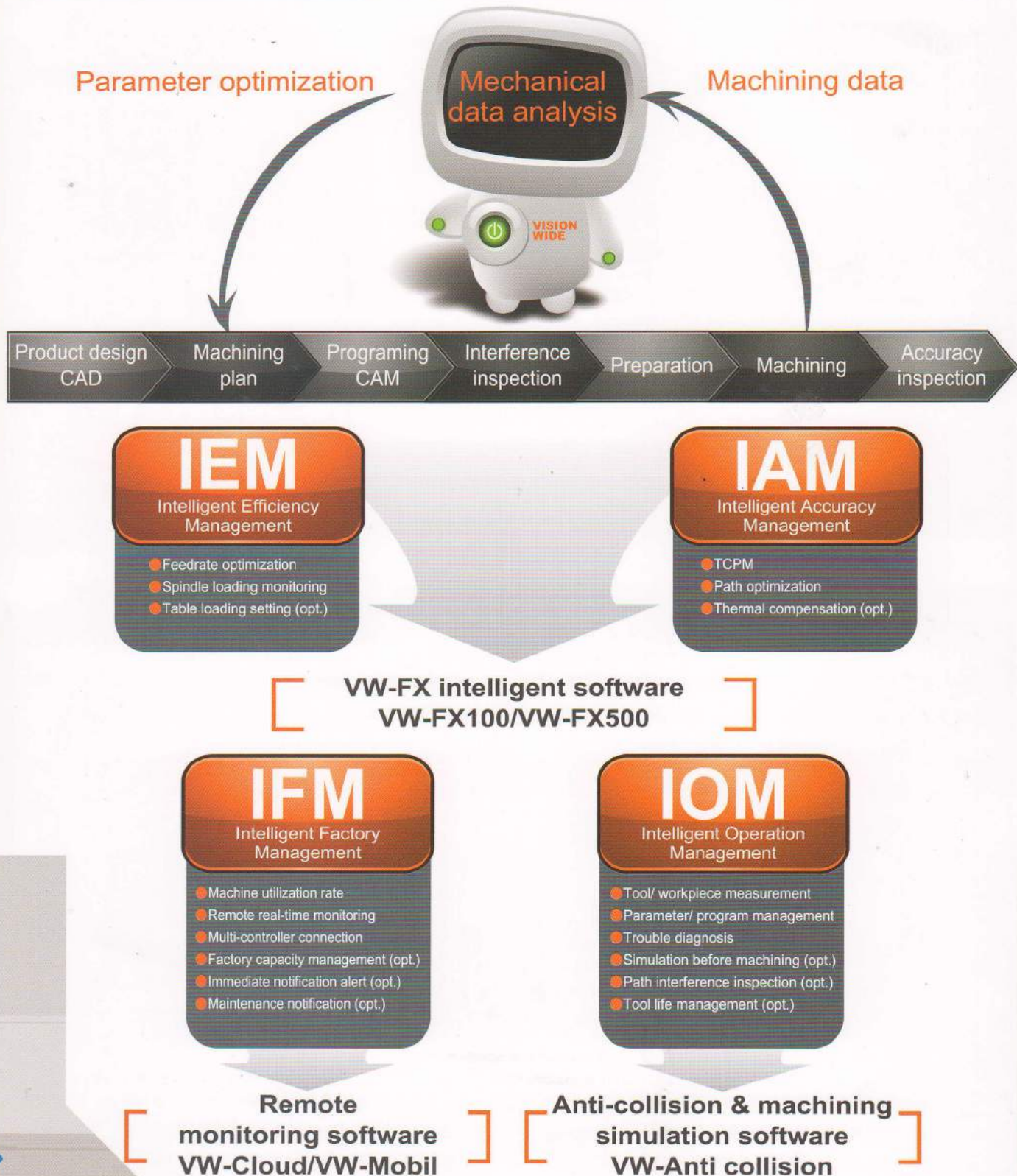
▶ Auto tool exchange,  
tool to tool 5 sec.



▶ Fast tool length measurement  
device for mold cutting.

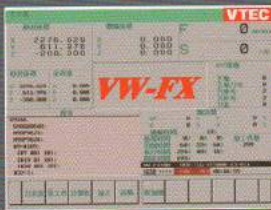
▶ Spindle annular coolant jet efficiently  
reduces chips and heat in machining.  
(opt. for no head attachment)





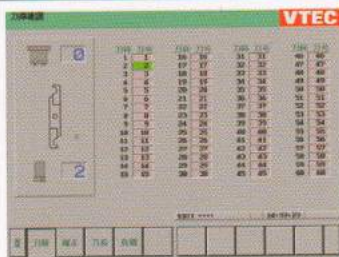
# VW-FX

## Intelligent Software



### VW-FX for Fanuc controller

#### Tool List



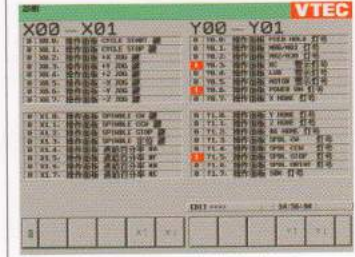
- Tool table data
- Tools status refer to ATC

#### Tool Compensation



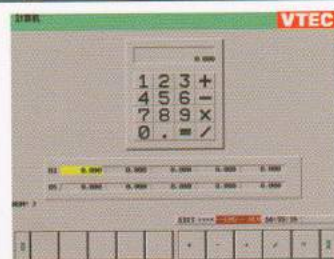
- Tool compensation data
- Tool position
- Utilization rate information

#### Machine Status



- Fast mappings of I/O and program comment

#### Calculator



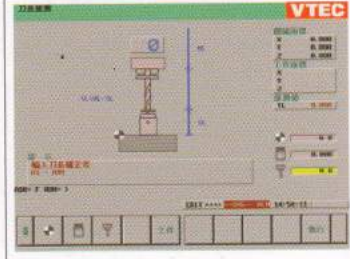
- +, -, ×, ÷ arithmetic operations
- Sine, cosine and tangent function
- 10 sets memory function

#### Workpiece Measurement



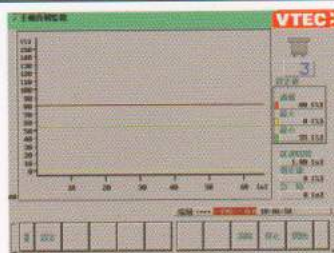
- Rectangle center measurement
- Rectangle corner center & angle measurement between workpiece
- Circle center/ circle radius measurement
- Angle corner center measurement

#### Manual Tool Length Measurement



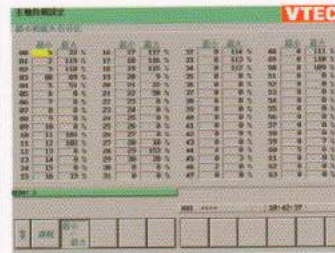
- Fast Z-axis workpiece coordinate/ tool length measurement

#### Tool Load Manager



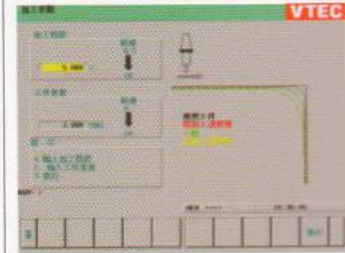
- 1 min. spindle loading status can be recorded
- Each tool spindle loading value can be set
- Machine stops when spindle overloading

#### AFO Feedrate Optimization



- Max. & min. spindle cutting overloading setting for each tool
- Auto acceleration when spindle lower than the min. overloading value

#### APO Auto Parameter Optimization



- Optimal parameters can be obtained through entering machine accuracy and workpiece weight
- Parameters backup and restore function
- Linear, angular acceleration/ deceleration function, effectively improve angular error

# VB series VISION WIDE

## Intelligent Application / Remote monitoring software VW-Cloud/ VW-Mobil

not available for Siemens controller

### Factory production line



Ethernet

### Internet



### Cloud (opt.)

- Production schedule
- Remote monitoring
- Remote diagnosis
- Immediate notification alert



Fixed IP  
(standard)

### Internet



### VW-Mobile



### VW-Cloud



### Machine Status



- +, -, X, ÷ arithmetic operations
- Machine coordinate/ absolute coordinate/ incremental coordinate
- Running program showing
- G/S/T/M code status
- Spindle speed/ axial feedrate
- Machine boot time
- Machine total machining time
- Single program machining time

### Program Transfer



- Program network transfer function (upload/ download)  
PC ↔ Data Server  
PC ↔ NC Memory

### Alarm Record



- Controller Alarm Record
- Operation record

### Compensation Data Transfer



- Tool compensation value
- Workpiece coordinate
- Macro variable
- ※ edit function (opt.)

### Server and Spindle Loading Record (opt.)



- Record spindle and server overloading status

### Maintenance time auto notification (opt.)



- Maintenance items/ time can be set
- Alarm notification when overtime

### Tool Management (opt.)



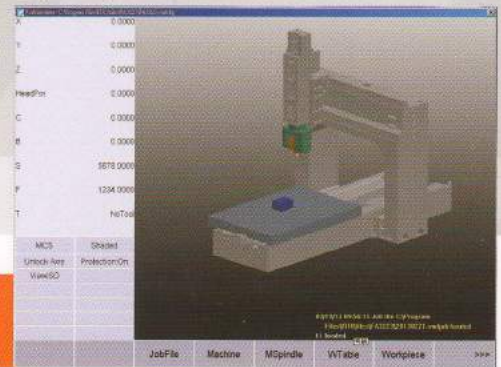
- Tool data and lifetime setting
- Alarm notification when overtime

### APP VW-Mobile



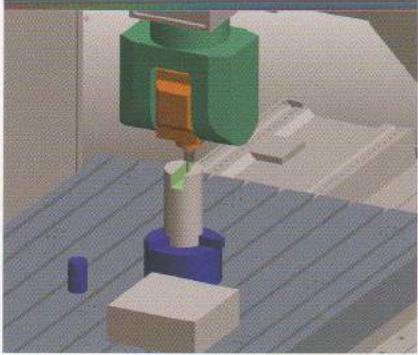
- Machine status
- Program transfer
- Production status
- Alarm signal
- Compensation data transfer

Intelligent Application /  
**Anti-collision and machining simulation software**  
**VW-Anti collision(opt.)**  
 not available for Mitsubishi controller



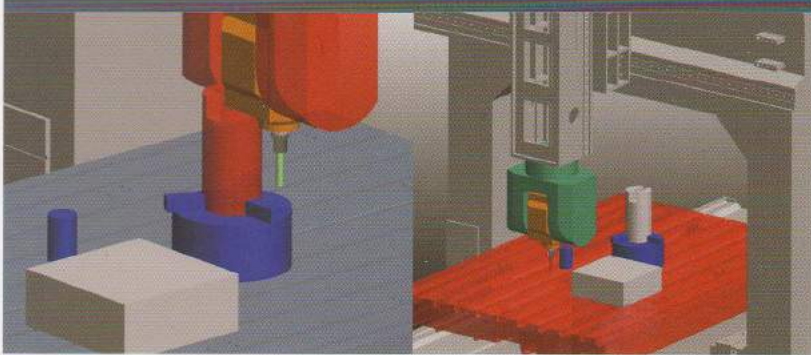
**Safety | Efficiency**

**Online cutting simulation and monitoring**



- Sync 3D cutting simulation
- Material removal operation
- Wide angle monitoring and surveillance

**Online Anti-collision Detection and Protection**



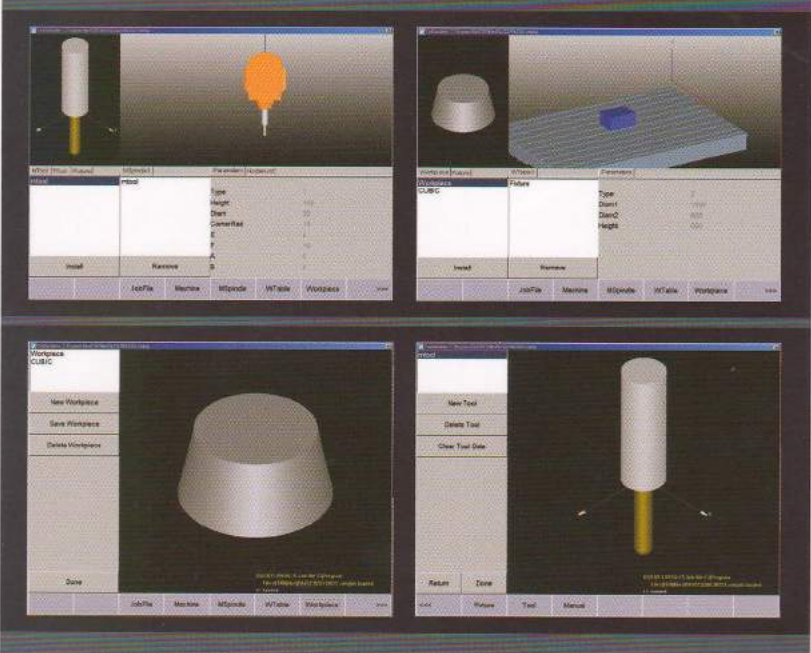
- Tool, tool shank, workpiece, fixture anti-collision detection
- Hand wheel/ manual/ auto mode anti-collision protection
- Dynamic anti-collision protection zone

**Continuous Machining process Validation**



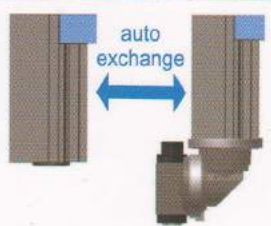
- Machining program simulation (online dry run)
- End product and semi-product import and access

**Continuous Machining process Validation**



- Easy and Fast Process
- Built-in machine data
- Complete tool, billet, fixtures geometry editing and installation setting
- Controller origin data synchronization

**Head Attachment Auto Exchange**

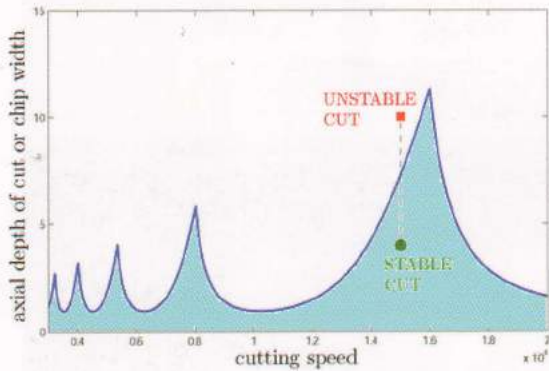


- Machine head attachment graphic auto switch

# VB series VISION WIDE

## Optimal cutting application from the analyzation of the combination between CAD/CAM and LOBE analysis

▶ To provide best cutting conditions and recommendations on combination between tool and machine



Spindle speed: 2500 rpm  
Cutting depth: 4 mm



Optimization of  
cutting accuracy

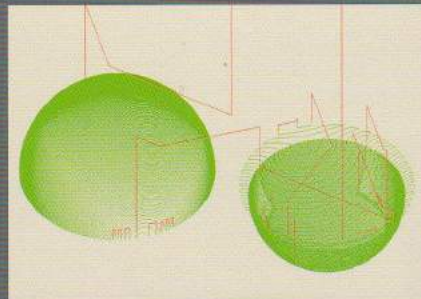
Spindle speed: 3500 rpm  
Cutting depth: 5 mm



Optimization of  
cutting capacity

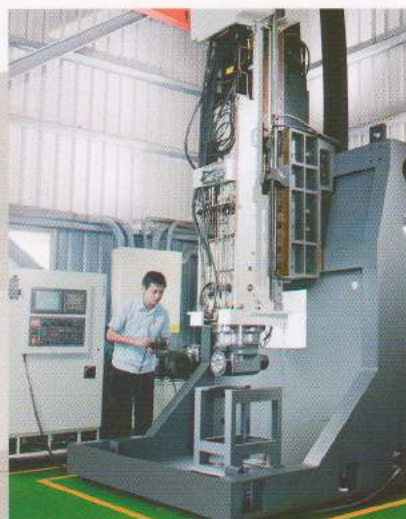
▶ Providing estimate cutting time

▶ 2D/3D cutting path optimization analysis



## Modularized Production-After components assembled and tested.

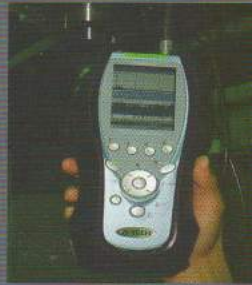
▶ After assembling & testing, these parts will be assembled in the main production line



Strict production processes and quality management system  
 Complete quality check procedures to create high machine quality



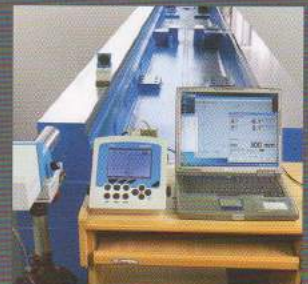
▲ 3D mold cutting test



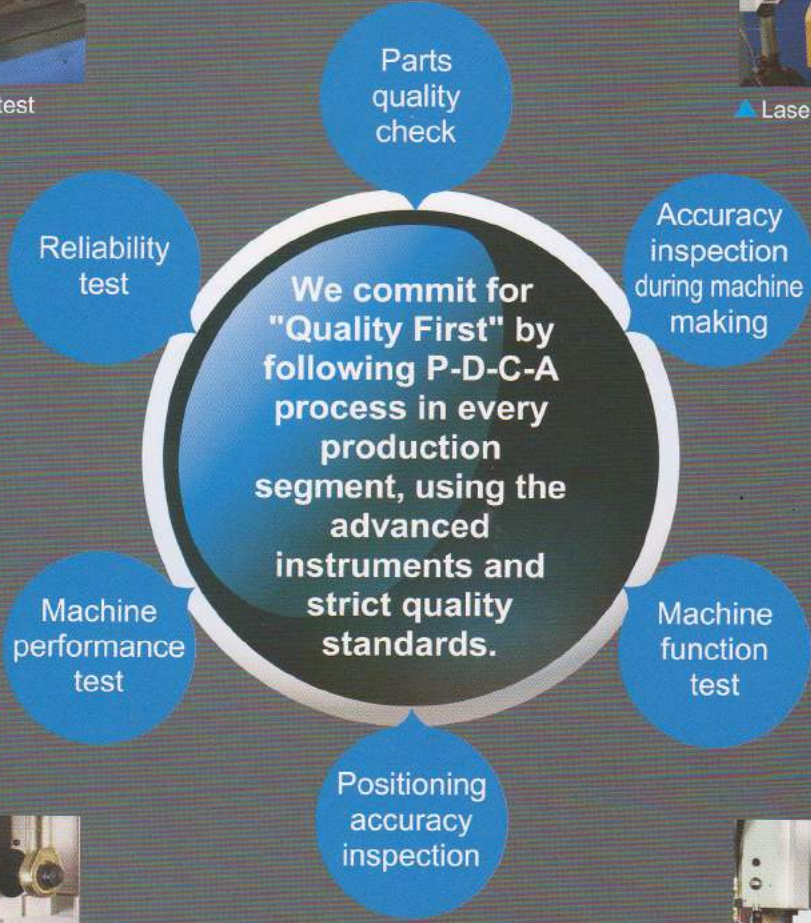
▲ Noise and vibration test (ISO-230)



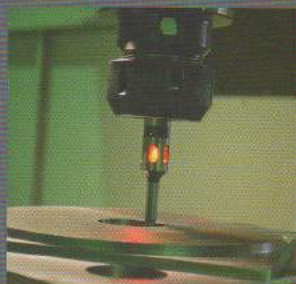
▲ CMM inspection



▲ Laser alignment inspection



▲ Heavy cutting test



▲ Dynamic accuracy cutting test ISO 10791-7

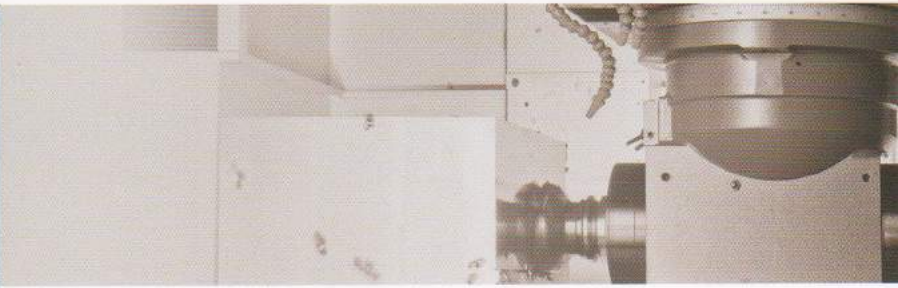


▲ 2-axis accuracy inspection ISO 10791-6

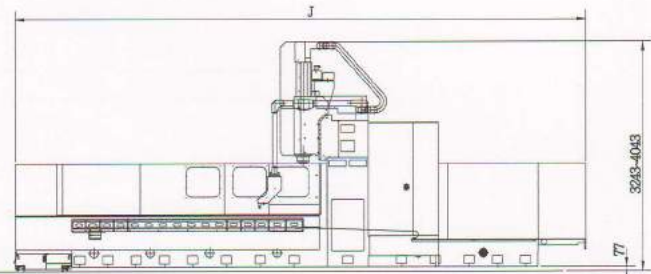
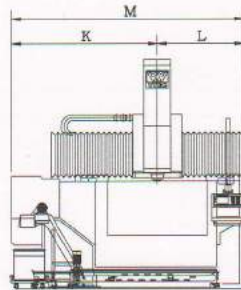
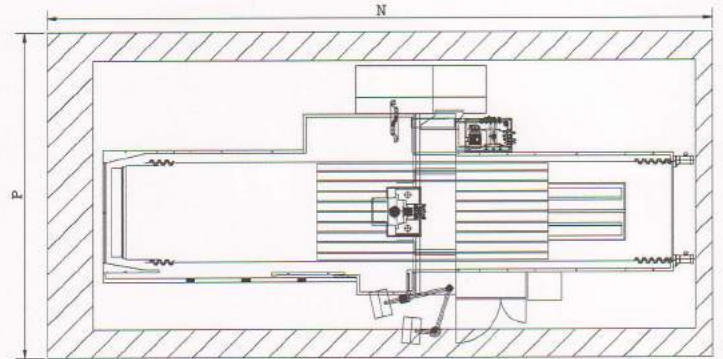


▲ Positioning accuracy inspection ISO 10791-4

# VB series VISION WIDE



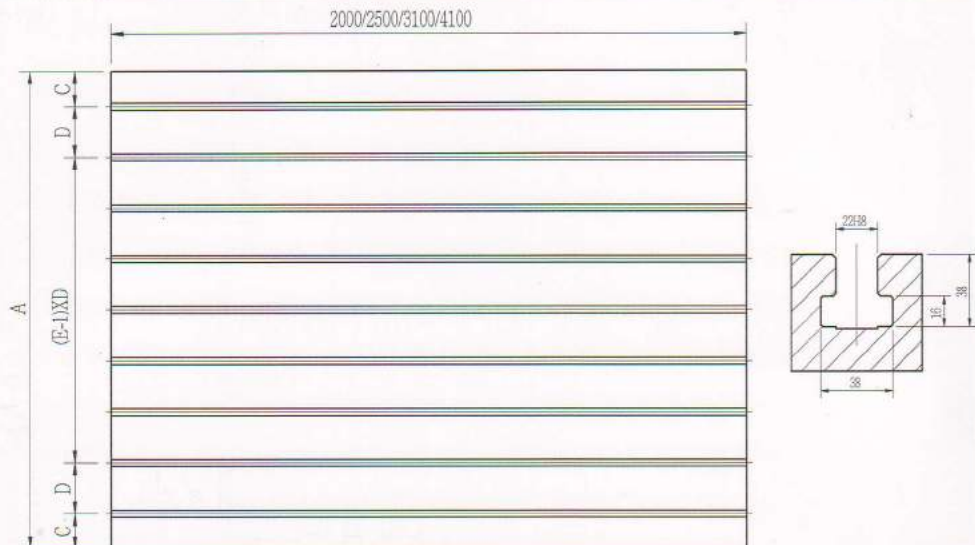
## Machine Dimension



Unit:mm

Model	J	K	L	M	N	P
VB-2016	5,910	2,381	1,371	3,752	7,580	5,355
VB-2516	6,910				8,580	
VB-3016	8,110				9,780	
VB-2020	5,910	2,581	1,571	4,152	7,580	5,755
VB-2520	6,910				8,580	
VB-3020	8,110				9,780	
VB-4020	10,110				11,780	

## Table Dimension



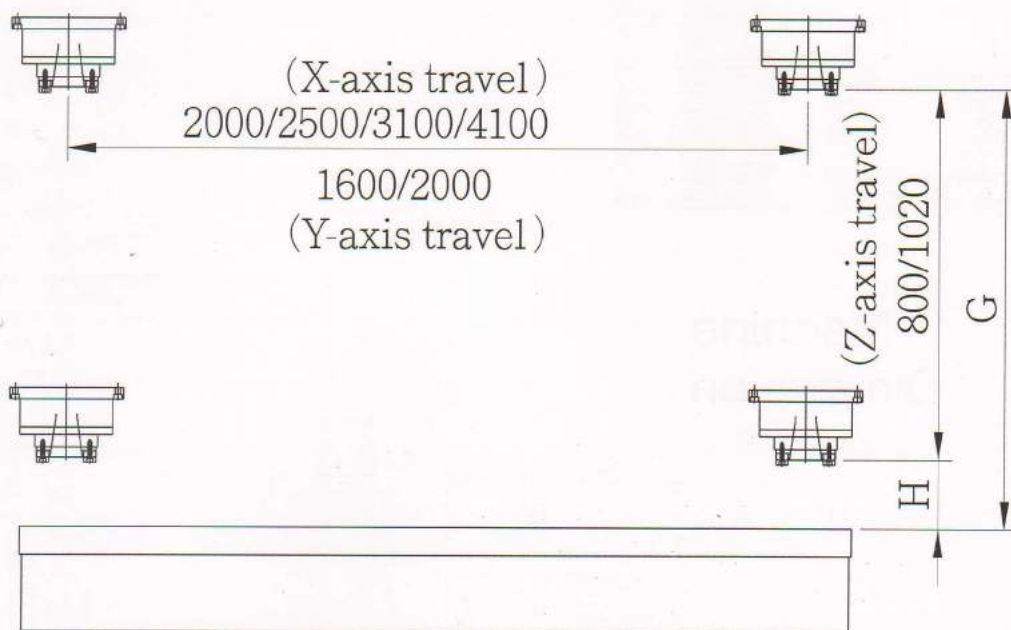
Unit:mm

	A	C	D	E(pcs)
VB-XX16	1,300	110	180	7
VB-XX20	1,700	130	180	9



# Working Range

Vertical machining zone (without head attachment)

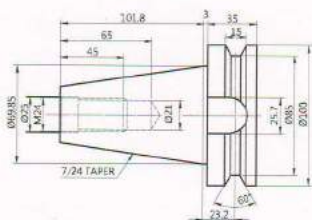


Unit:mm

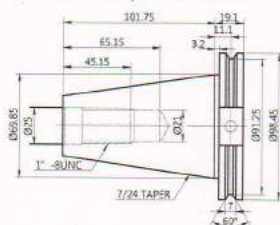
Spindle type	Z-axis travel 800mm	Z-axis travel 1020mm
<b>H</b>	<b>150</b>	<b>150</b>
<b>G</b>	<b>950</b>	<b>1170</b>

## Tool Shank & Pull Stud Dimension

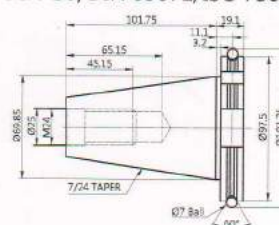
Tool shank  
BT-50, MAS403



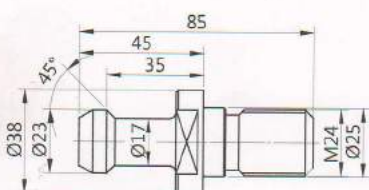
Tool shank  
CAT-50, ANSI B5.50



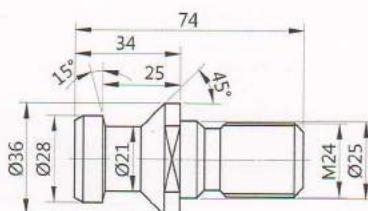
Tool shank  
DIN-50, DIN 69871/ISO 7388/1



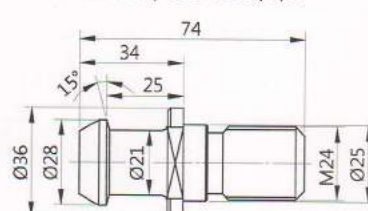
Pull stud bolt  
MAS403 P50T-1



Pull stud bolt  
DIN-50, DIN 69872



Pull stud bolt  
DIN-50, ISO 7388/2/A



# Machine Specification

# VB series

Model		unit	VB-2016	VB-2516	VB-3016	VB-2020	VB-2520	VB-3020	VB-4020
<b>TRAVEL</b>									
X axis		mm	2,000	2,500	3,100	2,000	2,500	3,100	4,100
Y axis		mm	1,600			2,000			
Z axis	Box way	mm	800/ 1,020 (opt.)			800/ 1,020 (opt.)			
Distance form spindle nose to table	Box way (2-step gear/ Belt-driven)	Z axis=800	150-950			150-950			
		Z axis=1,020	130-1,150(column+200mm)			130-1,150(column+200mm)			
Distance form spindle center to column		mm	430			430			
Distance between columns (port width)		mm	1,700			2,100			
<b>TABLE</b>									
Dimension		mm	2,000x1,300	2,500x1,300	3,100x1,300	2,000x1,700	2,500x1,700	3,100x1,700	4,100x1,700
T-slot(Width x Number x Pitch)		mm	22x7x180			22x9x180			
Max. table load		kg	8,000	9,000	10,000	9,000	10,000	11,000	12,000
<b>SPINDLE</b>									
Spindle motor(cont./30 min. rated)		kW	18.5/ 22 (22/ 26 opt.)(30/ 37 opt.)			18.5/ 22 (22/ 26 opt.)(30/ 37 opt.)			
Spindle speed	Box way	2-step gear	4,000/ 6,000 (opt.)			4,000/ 6,000 (opt.)			
		Belt-driven	8,000(opt.) / 10,000 (opt.)			8,000 (opt.) / 10,000 (opt.)			
Spindle taper		-	ISO NO.50			ISO NO.50			
<b>FEED</b>									
Cutting feed rate		mm/min	1-17,000			1-17,000			
Rapid traverse		m/min	X/ Y:12, Z:15			X/ Y:12, Z:15			
3 axis motor power (FANUC)	Z axis=800	kW	X:7, Y:4, Z:7			X:7, Y:4, Z:7			
			Z axis=1,020	X:7, Y:4, Z:7			X:7, Y:4, Z:7		
<b>ACCURY(X,Y,Z)(Measured by laser instrument)</b>									
Positioning accuracy	Refer to JIS B6333	mm	±0.005/300, ±0.015 Full travel			±0.005/300, ±0.015 Full travel			
	Refer to ISO 10791-2	mm	P0.025	P0.03	P0.025	P0.03			
Repeatability	Refer to JIS B6333	mm	±0.003			±0.003			
	Refer to ISO 10791-2	mm	Ps0.02	Ps0.025	Ps0.02	Ps0.025			
<b>ATC</b>									
ATC capacity		pcs	32/ 40 (opt.)			32/ 40 (opt.)			
Max. tool weight		kg	18			18			
Tool size (DxL) (Full tools)		mm	Φ 125x380L			Φ 125x380L			
Max. tool size (DxL) (next pocket empty)		mm	Φ 180x380L			Φ 180x380L			
Tool shank		-	BT 50/ CAT 50			BT 50/ CAT 50			
Pull stud		-	P50T-1			P50T-1			
<b>OTHERS</b>									
Power requirement		kVA	55			55			
Machine net weight		kg	21,500	24,500	27,500	23,500	26,500	29,500	32,500
Machine gross weight		kg	25,000	28,000	32,000	27,000	30,000	34,000	35,000
Max. space (LxWxH)		m	7.58x5.36x4.05	8.58x5.36x4.05	9.78x5.36x4.05	7.58x5.76x4.05	8.58x5.76x4.05	9.78x5.76x4.05	11.78x5.76x4.05

## Standard Accessory

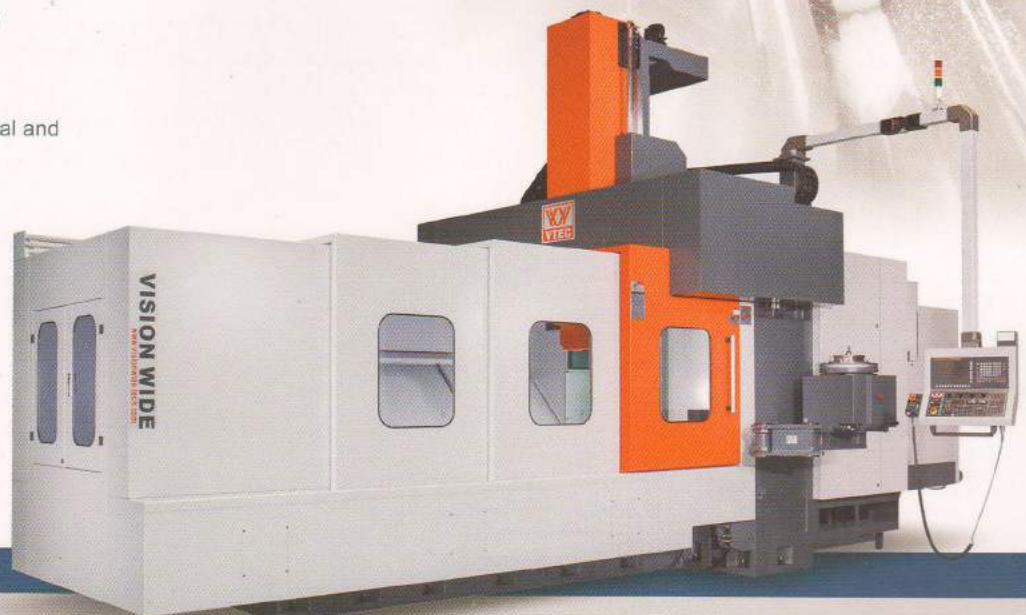
- 1 FANUC 0iMD controller
- 2 4,000rpm 2-step gear type spindle
- 3 Spindle oil cooler
- 4 Twin hydraulic cylinders with pressured air assistance balacing system
- 5 X-axis ball screw supporter (4m)
- 6 Centralized auto lubrication system
- 7 Independent lubrication oil collector
- 8 Ball screw cooling system
- 9 Air blast through spindle
- 10 Wash gun and pneumatic interface
- 11 Cutting fluid cooling system
- 12 Spindle ring cutting coolant device (for no head attachment)
- 13 32 tools magazine with arm type ATC
- 14 Enclosed splash guard (without roof)
- 15 Swiveling arm type operation panel
- 16 Screw type chip conveyor on table side
- 17 Caterpillar type chip conveyor
- 18 Heat exchanger for electrical cabinet
- 19 Working lamp
- 20 Operation cycle finish and alarm light
- 21 Movable manual pulse generator(MPG)
- 22 Footswitch for tool clamping
- 23 RS232 and RJ45 interface
- 24 XYZ-axis absolute pulse coder feedback
- 25 XYZ-axis travel hard limits protection
- 26 Auto power off
- 27 Vision Wide FX graphical user interface (Fanuc only)
- 28 Foundation pads and bolts kits
- 29 Adjustment tool and tool kits
- 30 Technical manuals (operation, maintenance manual and circuit diagram)

## Optional Accessory & Function

- 1 6,000rpm 2-step gear type spindle
- 2 8,000/ 10,000rpm belt-driven spindle
- 3 Z-axis travel 1020mm
- 4 200/ 300/ 400/ 500mm higher column
- 5 Interface preparation for coolant through spindle system
- 6 Coolant through spindle system 20/70 bar (Vertical spindle)
- 7 Coolant through tool holder interface
- 8 Coolant through tool holder 5/20 bar cutting fluid interface
- 9 Oil skimmer
- 10 Oil mist cooling device
- 11 40 tools magazine with arm type ATC
- 12 Enclosed splash guard with roof
- 13 Chip auger on table side
- 14 Chip cart
- 15 Air conditioner for electrical cabinet
- 16 XYZ axis linear scale feedback
- 17 3-axis independent manual pulse generator
- 18 Sub table
- 19 Rotary table
- 20 Interface preparation for rotary table
- 21 Spindle cutting load software protection
- 22 Z-axis retract function at power failure
- 23 Auto tool length measurement
- 24 Auto workpiece measurement
- 25 Transformer
- 26 Auto warm up

## Optional accessory for auto head attachment

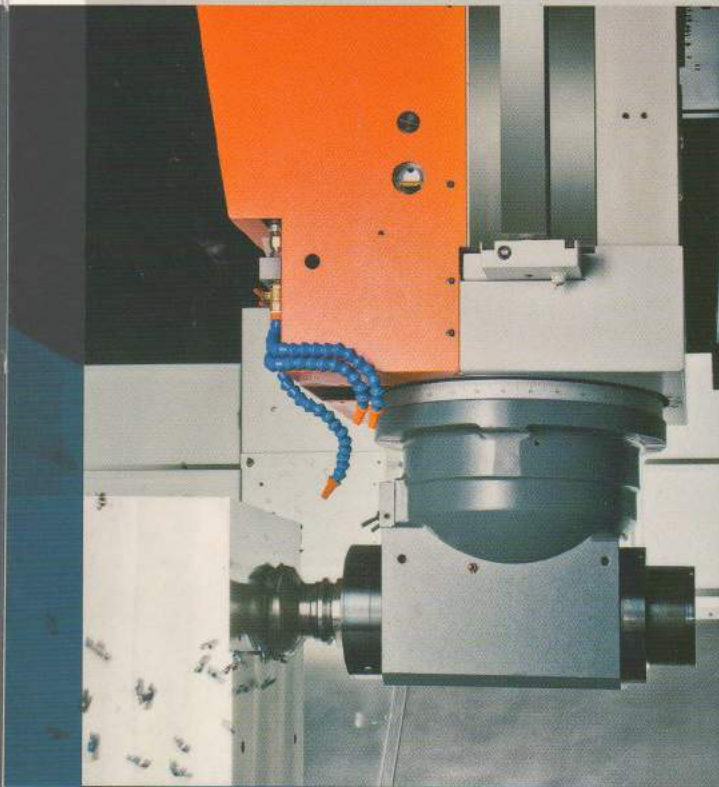
- 1 Auto AC90 degree angular head/ AC extended head
- 2 Auto AC milling head/ small head/ customized head attachment
- 3 Manual 90 degree angular head/ extended head/ universal head
- 4 Manual swiveling arm type head bracket on operation side(one head attachment)
- 5 Auto swiveling arm type head bracket on operation side(one head attachment, one cover)
- 6 AC90 degree angular head coolant through spindle system 20bar



# VISION WIDE

# VISION WIDE

widen your cutting vision



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