



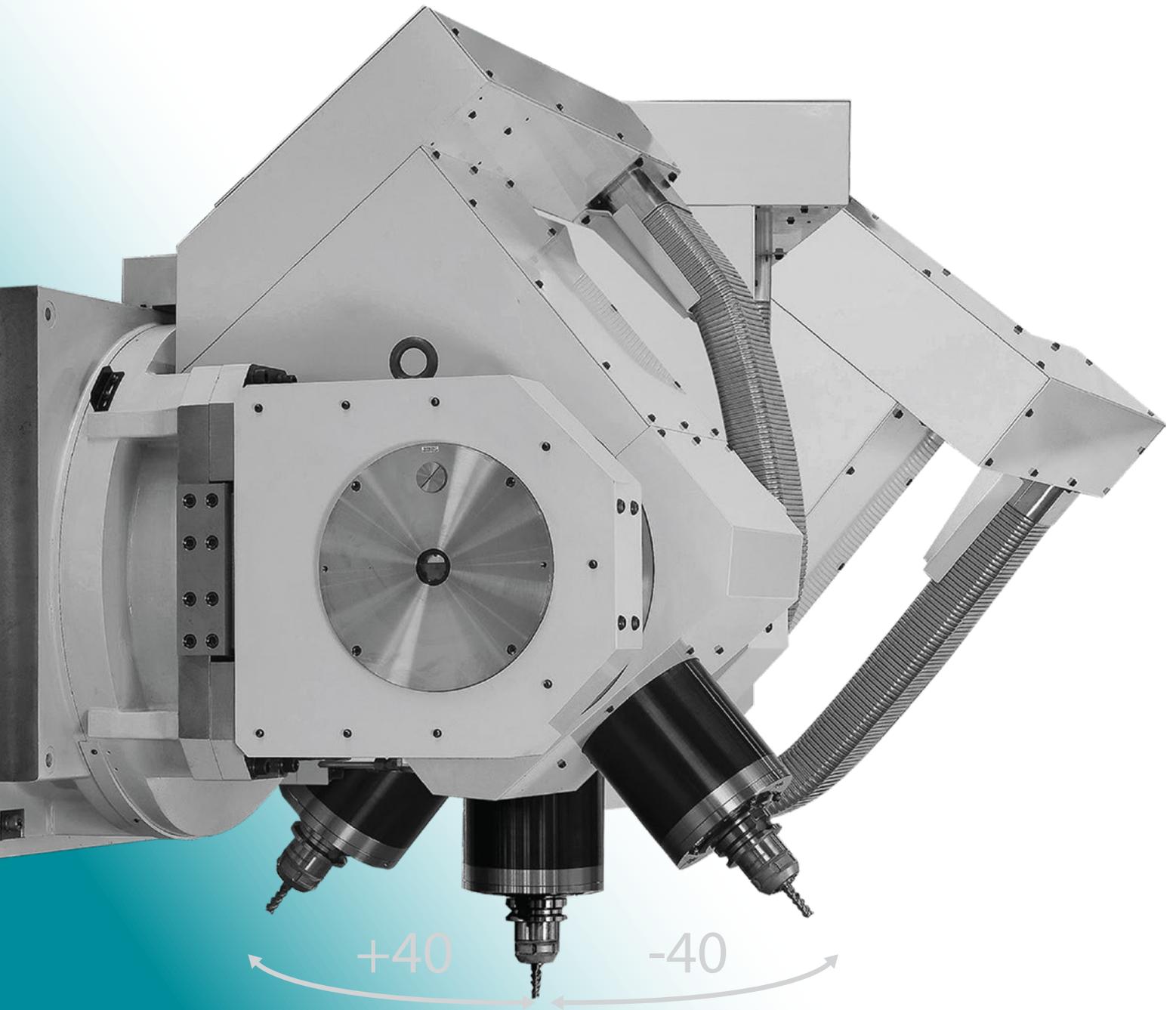
5-Axis Vertical Machining Center

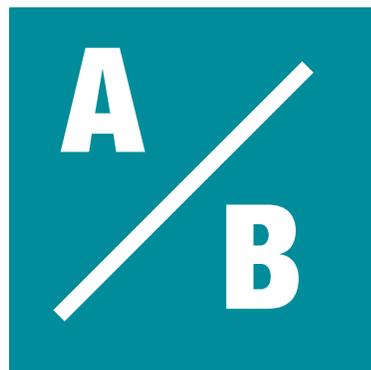
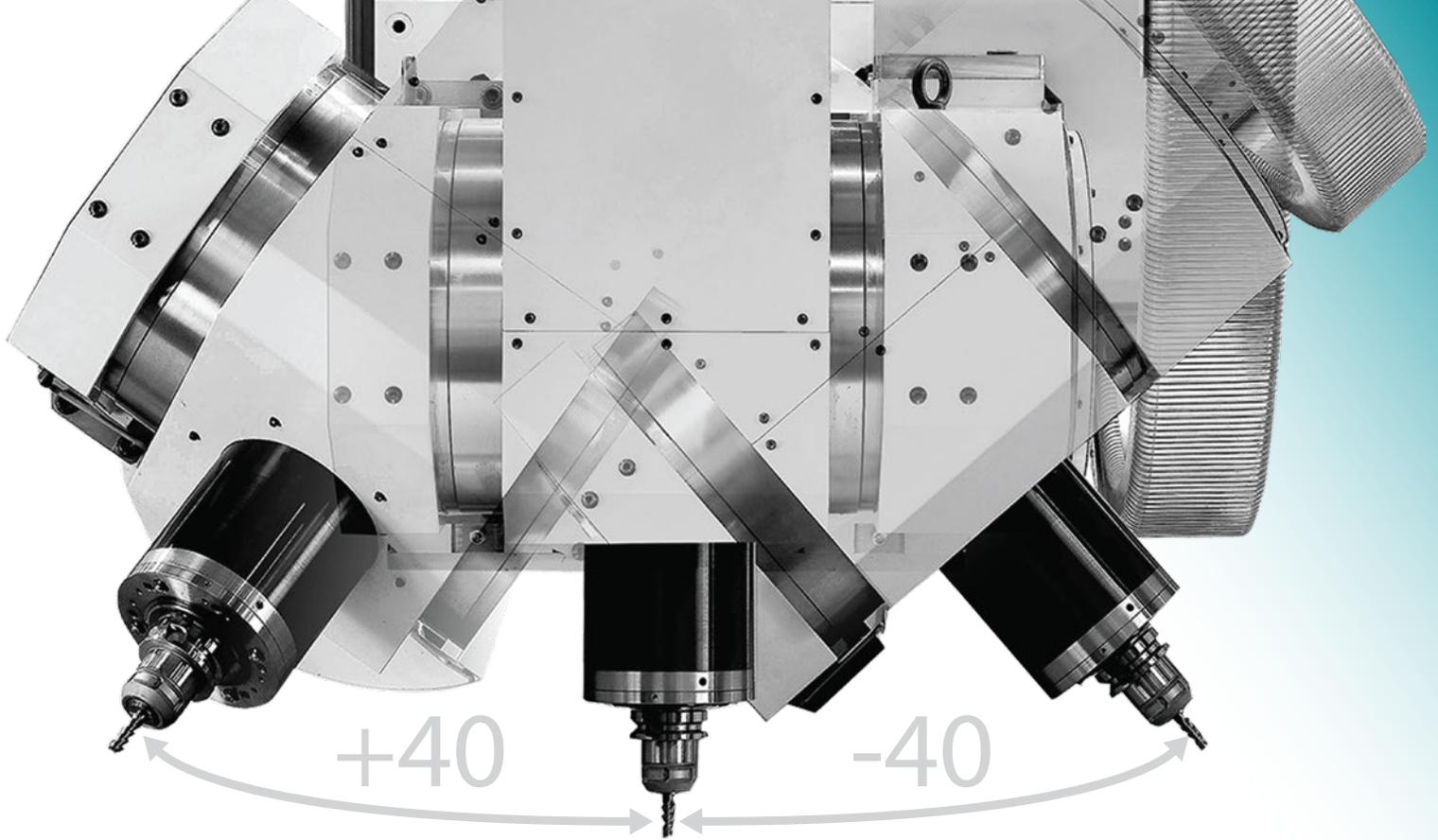
QV5 3000

 **SELWAY**
MACHINE TOOL COMPANY

QV5 3000

The QV5-3000 is a high accuracy 5 Axis vertical machining center with an A/B Rotary System. The perfect solution for simultaneous 5 axis machining of components with a range of 118.1"x 39.4".



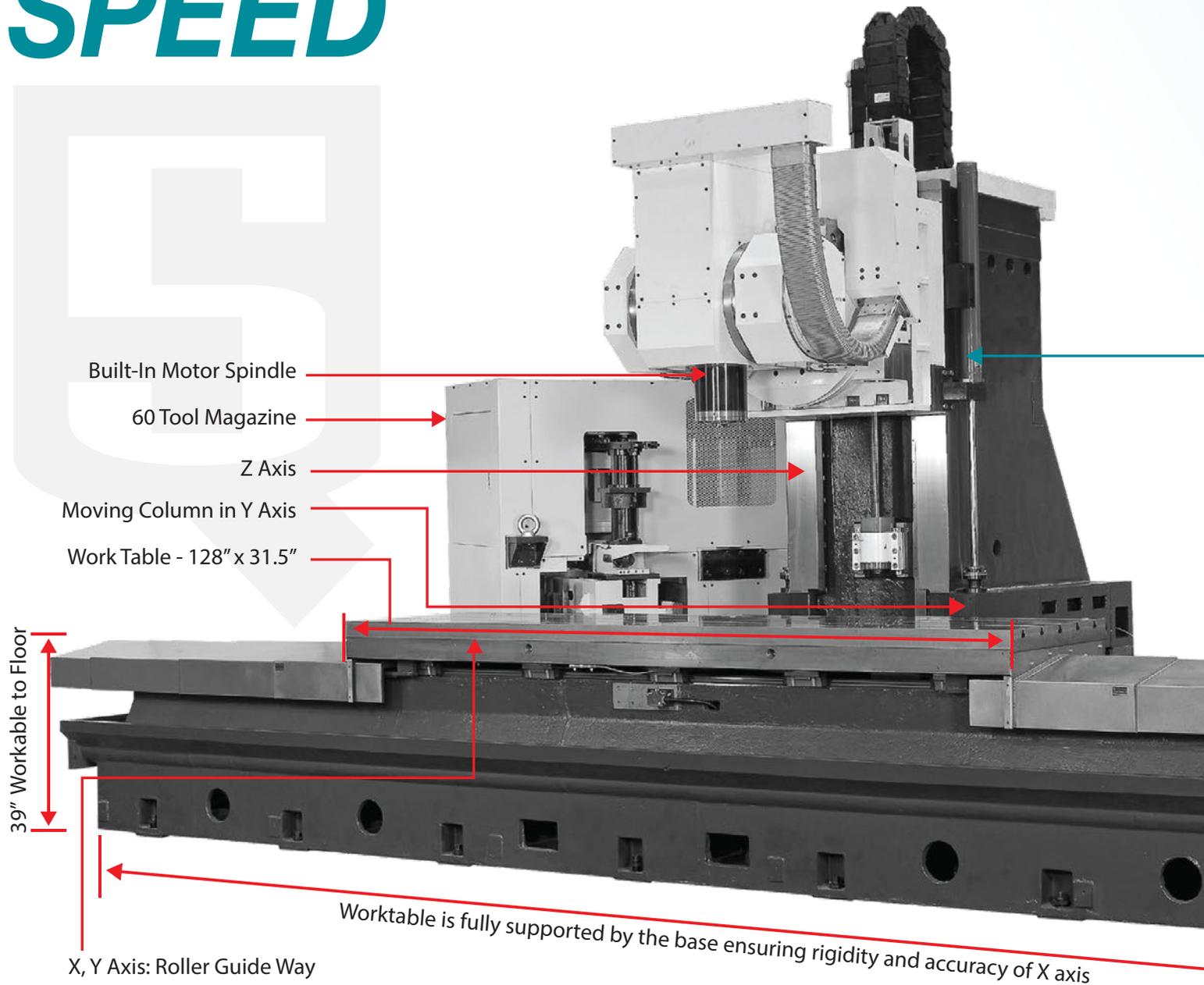


ROTARY AXIS SYSTEM

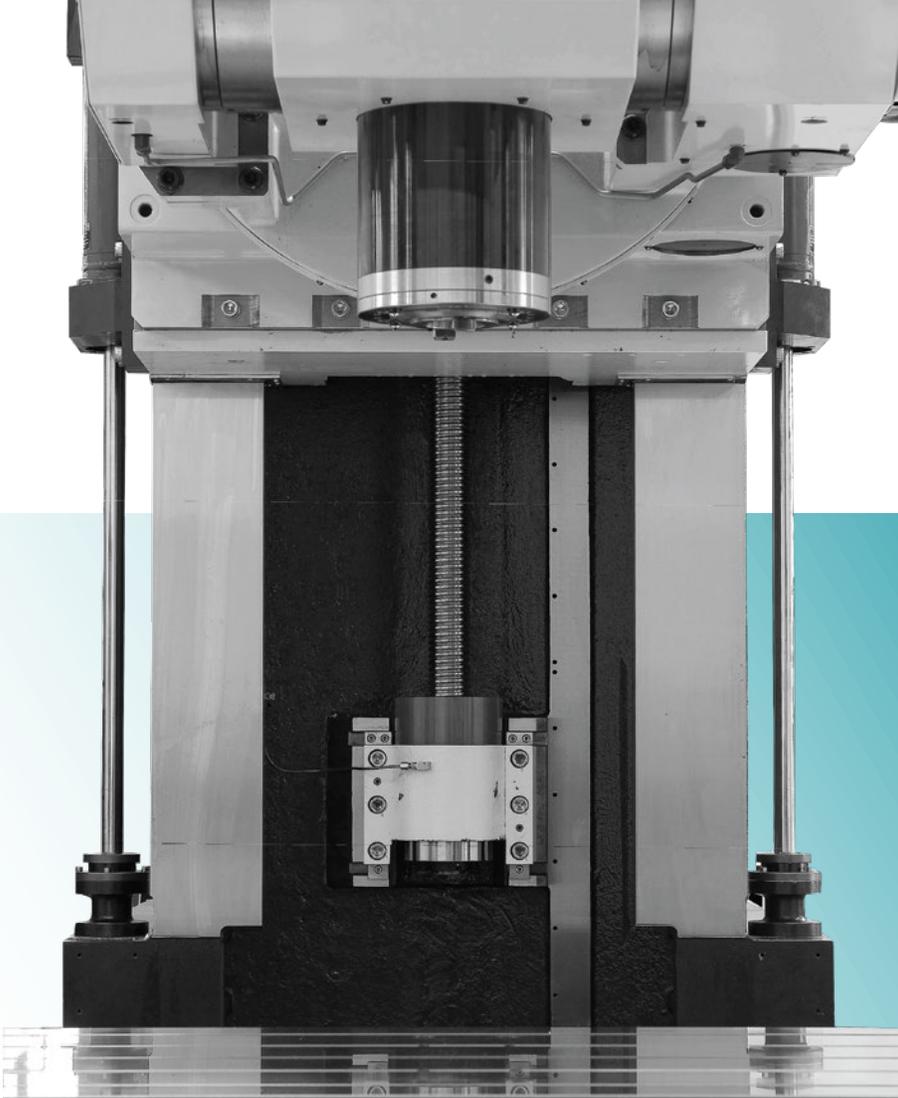
The QV5-3000 iA/B Rotary System was designed and built in Japan for Selway, by Tsudakoma. For over 20 years the A/B rotary unit has been proven, tested, and improved providing the QV5-3000 a design that is compact, lightweight, with a simple construction. Using the latest engineering technology the QV5-3000 Rotary System delivers outstanding performance, with high rigidity, repeatable accuracy, quality finish, and low maintenance.

DESIGNED FOR HIGH RIGIDITY AND SPEED

- **Superior Meehanite Cast Iron** main body components provide a solid structure ensuring long-term stability.
- **Inverted "T"** structure base design with 3-point support endows the machine with a firm foundation.
- **X /Y Axes** are designed with heavy-duty roller guide ways for supreme stability and precision.
- **Heidenhain Scale Feedback System** delivers the highest accuracy on X,Y,Z axes.
- **Z Axis** box way design supplies the A/B axes with unsurpassed machining rigidity.
- **60 Tool Magazine** is directly fixed to the floor, isolating the tool magazine movement, so that each moving axis can maintain maximum accuracy and finish.



Z-AXIS SPINDLE HEAD BALANCING SYSTEM



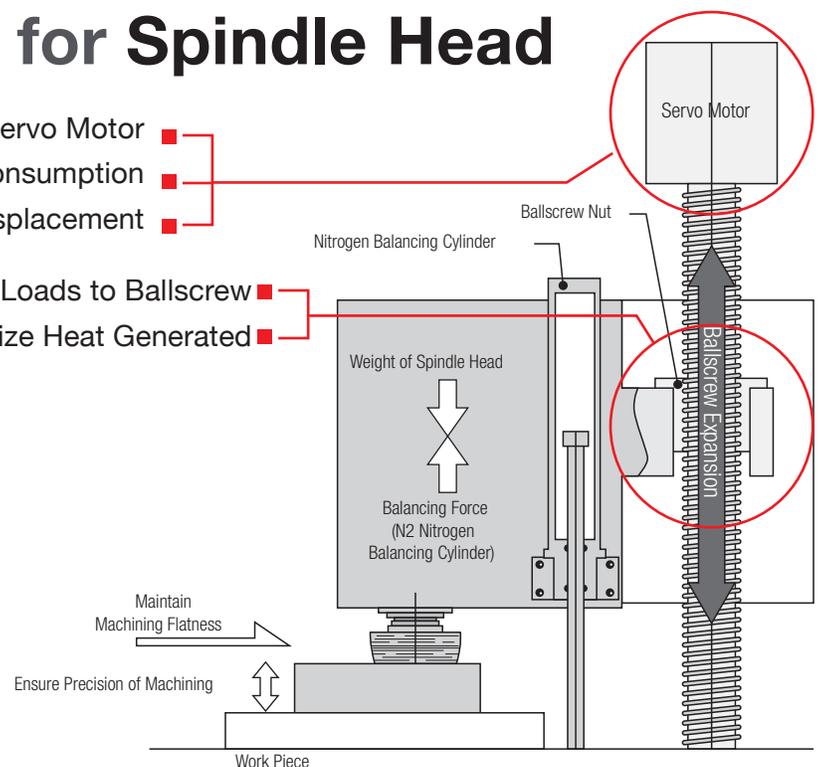
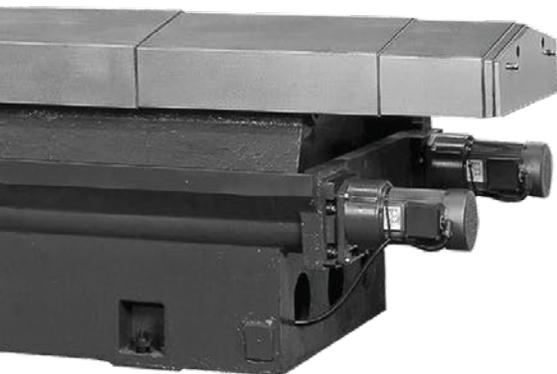
Nitrogen Balancing Cylinders

- Z-axis is equipped with two nitrogen balancing cylinders.
- Balancing cylinders are used to stabilize the momentum variation in vertical direction.
- The high performance nitrogen balancing cylinders are easily accessible for maintenance. Eliminating the need of sophisticated hydraulic piping or mechanical components.

Nitrogen Balancing Cylinder provides a Counter-Weight for Spindle Head

- Alleviate Loads to Servo Motor
- Reduce Power Consumption
- Minimize Thermal Displacement

- Reduce Loads to Ballscrew
- Minimize Heat Generated

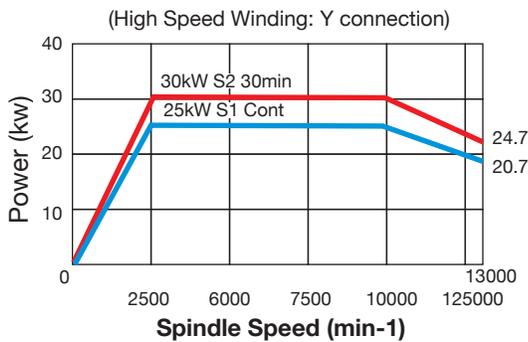
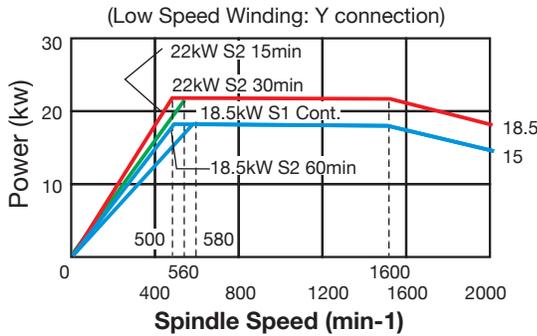




BUILT-IN MOTOR SPINDLE MADE FOR HEAVY DUTY MACHINING

The **QV5-3000's CAT 50 Spindle Taper** and high power / high torque electrical driving mechanism ensure maximum dynamic performance and position accuracy. With a compact structural design, it enlarges the machining range without interfering issues.

Spindle Power & Torque Diagram



Spindle Specifications

Spindle Taper		CAT 50
Spindle Speed		12,000 RPM
Output Torque	S1 cont.	304Nm
	S2 60min.	353Nm
	S2 30min.	375Nm
	S2 15min.	420Nm
Weight	Stator	143 lbs
	Rotor	62 lbs
Rotor Inertia		0.121 kgm ²
Insulation Class		H
Main Motor Servo		ai SP30
Cooling Condition	Capacity requirement of oil cooler: 4900W or more	

MACHINING CAPABILITIES

FACE MILLING

END MILLING

DRILLING

TAPPING

CUTTING TEST RESULTS

Tool	ø4.92" Face Cutter	ø0.98" End-Mill	ø1.77" Drill	M36xP4.0 Tap
Work Piece Material	Steel	S50C	1018	S50C
Spindle Speed RPM	764	2292	450	88
Feedrate (in/min)	47	48	0.003	13.8583
Cutting Depth (in)	0.196	1" x 0.1	N/A	N/A
Chips Removal (cu/in)	34in ³	33.7in ³	10in ³	N/A

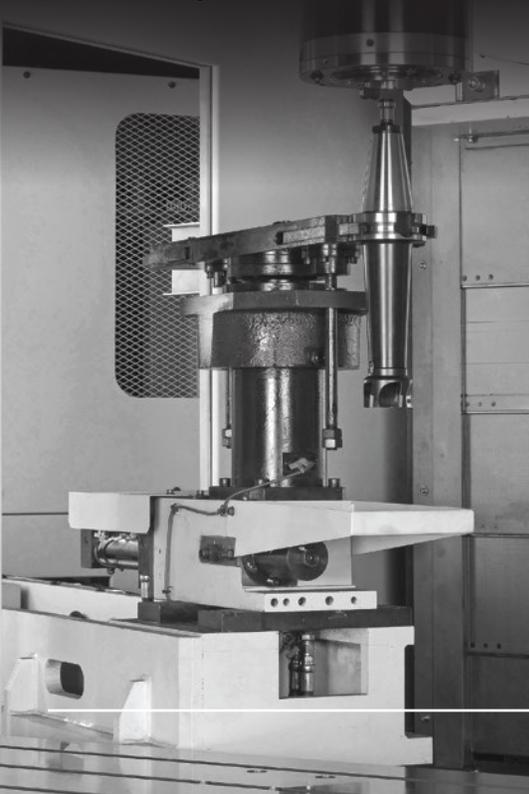
60 TOOL MAGAZINE



Unique cam-driven tool exchange with random axis magazine.

Proven & reliable the QV5-3000 ATC enhances production efficiency providing fast, repeatable performance over many years of operation.

ATC Chip Protection Door



CAT 50 Dual Arm ATC

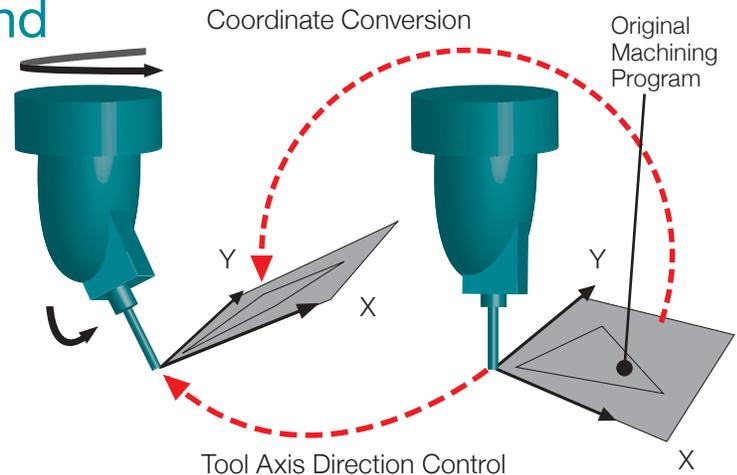


The **FANUC 31i MODEL B-5** CNC comes standard on all **QV5-3000** machining centers. With 5-axis simultaneous machining functions it can machine complex shapes at high speed with accuracy and high quality.

CONTROL YOUR

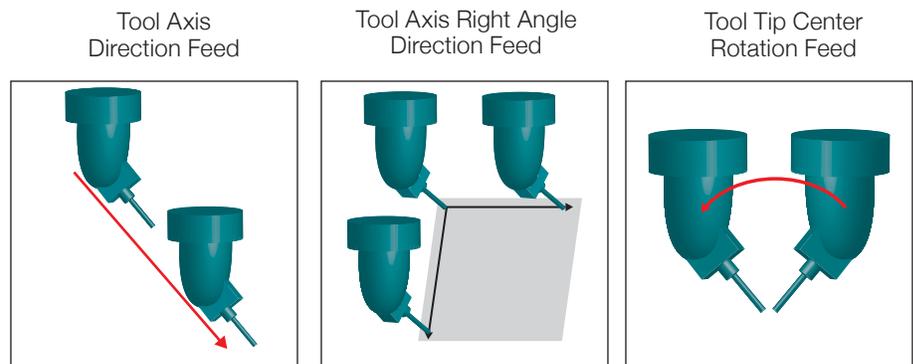
Tilted Working Plane Command

Tilted Work Plane is a function that allows the user to define a new Work Plane by specifying an X,Y,Z Coordinate Origin and the angular rotation about X,Y,Z axis centerlines. The benefit of this function is that you can use all the canned cycles while the head is tilted. You can also generate 2-1/2D tool-paths with arcs without having them linearized because of the plane orientation.



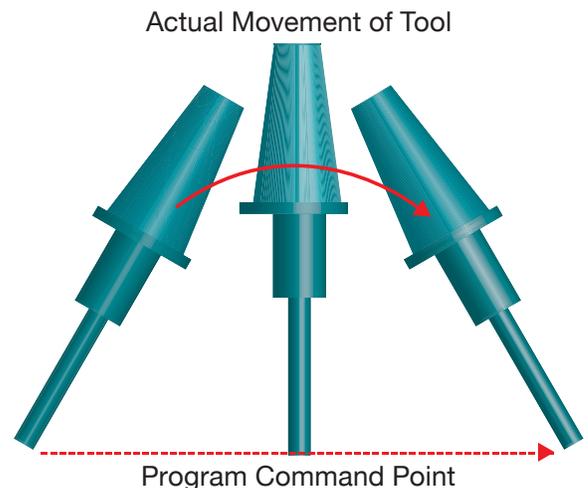
Manual Feed for 5-Axis Machining

Manual 5-Axis feed is a powerful function that aids in retracting the cutting tool along its current vector instead of just a strict single axis linear retract.



Tool Center Point Control

Tool center point control (TCPC) adds true 5-Axis functionality to the machine tool by allowing the control to handle the kinematic transformations and pivot distances. The intended feedrates are maintained relative to the tool's posture.

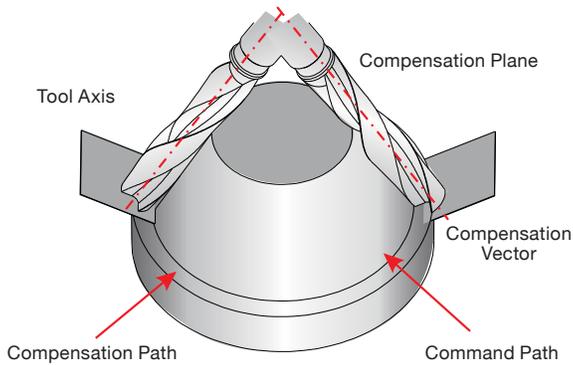


FUTURE

FANUC 31i MODEL B-5

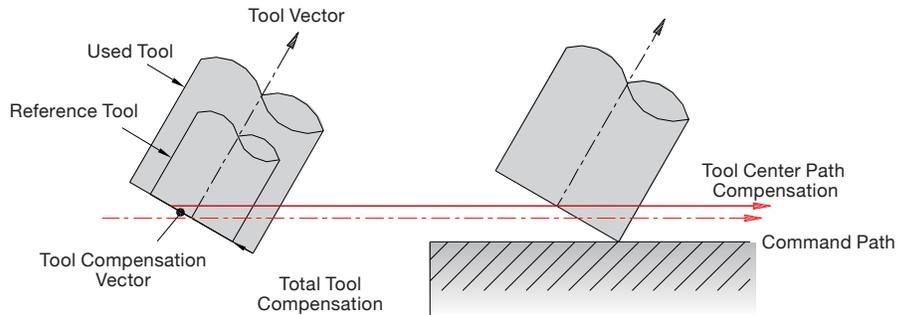
Tool Radius Compensation

Tool Radius Compensation value on the plane perpendicular to tool axis may follow command direction and set left/right hand side of the path. When tool radius is changed due to wear, there is no need to modify the machining program.



Tool Tip Compensation Function

When the tool length compensation is made on a plane, the system will calculate the tool contact point on a machined side depending on different inclining angles so that the accurate outline can be maintained. When the cutter length is changed there is no need to modify the machining program.



MACHINE SPEC

Machine Size

Machine Height	mm(in.)	3778(149)
Floor Space	mm(in.)	7410x5360(290x210)
Machine Weight	kg(lb)	28000(61700)

Travel

X-Axis Travel	mm(in.)	3000(118.1)
Y-Axis Travel	mm(in.)	1000(39.4)
Z-Axis Travel	mm(in.)	750(29.5)
A-Axis Travel	degree	-40~+40
B-Axis Travel	degree	-40~+40
Spindle Nose to Table	mm(in.)	100-850(3.9-33.5)

Table

Table Size	mm(in.)	3250x800(128x31.5)
T-Slot (No. X Width x Distance)	mm(in.)	5x18x150(5x0.7x5.9)
Table Height	mm(in.)	1075(42.3)
Maximum Load Capacity	kg(lb)	3000(6600)

Spindle

Max Spindle Speed	RPM	12000
Spindle Taper		7/24 Taper, No.50
Tool Clamping Force	KN	18
Power Requirement	AC	200V

Feed Rate

X/Y/Z Axis Rapid Speed	M/min(ipm)	X&Y 20(787), Z 10(394)
Cutting Feed	M/min(ipm)	X&Y 20(787), Z 10(394)
Jog Feed Rate	mm/min(ipm)	1260(49.6)

Automatic Tool Change (ATC)

Tool Shank		CT-50
Chain Magazine Station	tool	60
Maximum Tool Diameter (Without Adjustment Tool)	mm(in.)	250(9.8)
Maximum Tool Length	mm(in.)	350(13.8)
Maximum Tool Weight	kg(lb)	20(44)
ATC Type		Double ARM

Motor

Spindle Motor (cont./30 min)	KW(HP)	25/30(33.3/40)
Axes motor X/Y/Z	KW(HP)	4/4/9(5.3/5.3/12)

Power

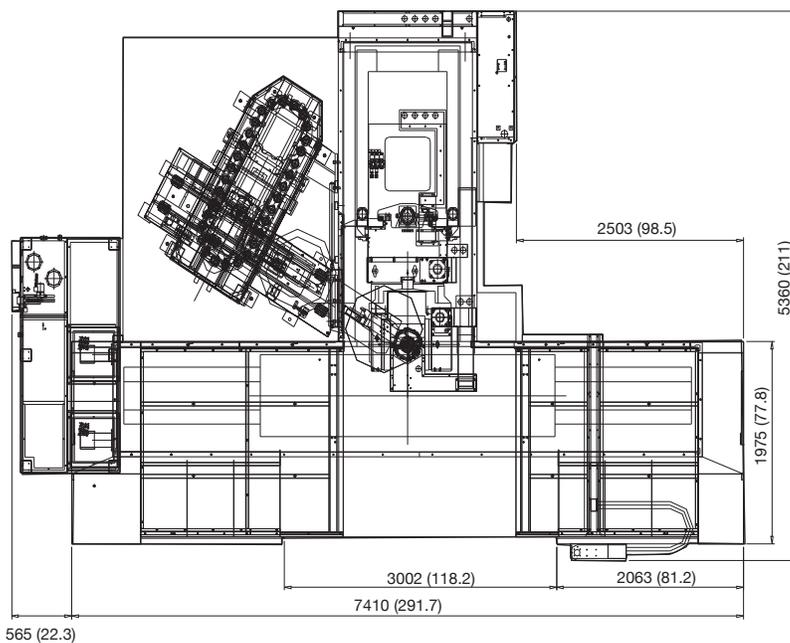
Power Equipment	KVA	45
Air Source	kg/cm2(Psi)	6(85)

Oil/Coolant Tank Capacity

Coolant Tank Capacity	gal	200
Hydraulic System Capacity	gal	15.9
Lubricating System Capacity	gal	1.1

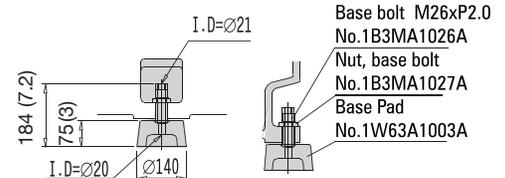
Top View

Unit: mm(in)



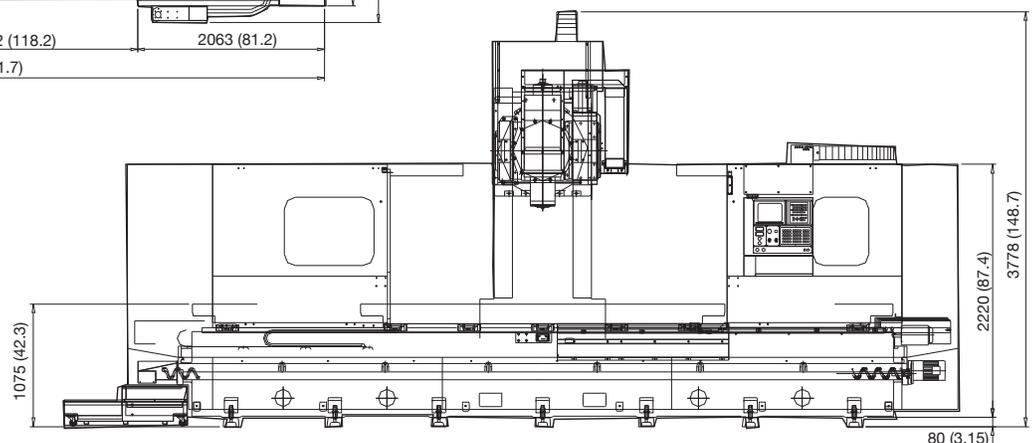
A View (21 Places)

Unit: mm(in)



Front View

Unit: mm(in)



IFICATIONS

■ NC System

FANUC 31i MODEL B-5

48 Additional Work Offsets
8mb Memory
Data Server, Ethernet and IC Card
AI Nano HPCC (1,000 Block Look Ahead)
Expanded Macro Variable (C#149-#199 and #549-999)
Smooth TPC (G43.4)
Nano Smoothing
3D Cutter Compensation for 5-axis
Tool Radius Comp
Tilted Work Plane Command (G68.2/G53.1/G69)
Manual Feed for 5-axis
3-D Interference Compensation
■ Scale Feedback System
X/Y/Z (HEIDENHAIN)

■ Standard Accessories

Total Enclosure with Top Cover
Z-Axis Motor Brake
Dual Nitrogen Balancing Cylinders
Interior Work Lamps
3-Color Patrol Light
Chip Wash Down System
Lift-up Chip Conveyor with Drum Filter
Disc Oil/Coolant Separator
Hydraulic Unit and Spindle Oil Cooling System
Spindle Oil Air Lubricator
Spindle Air Dryer
Movable Manual Pulse Generator

T-Slot Dimension

Unit: mm(in)

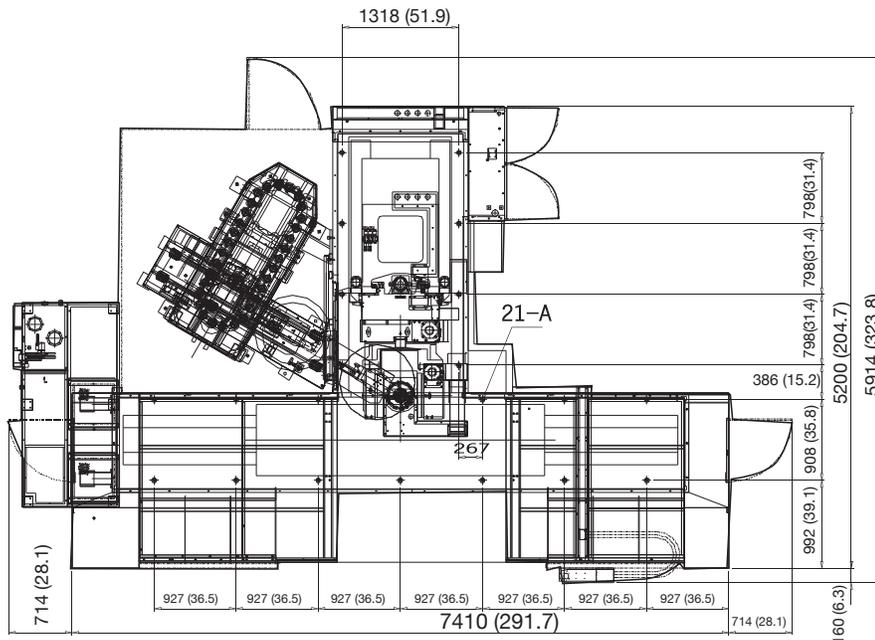
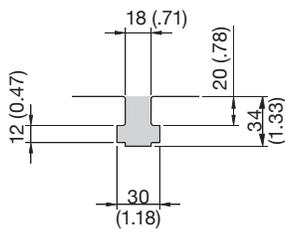
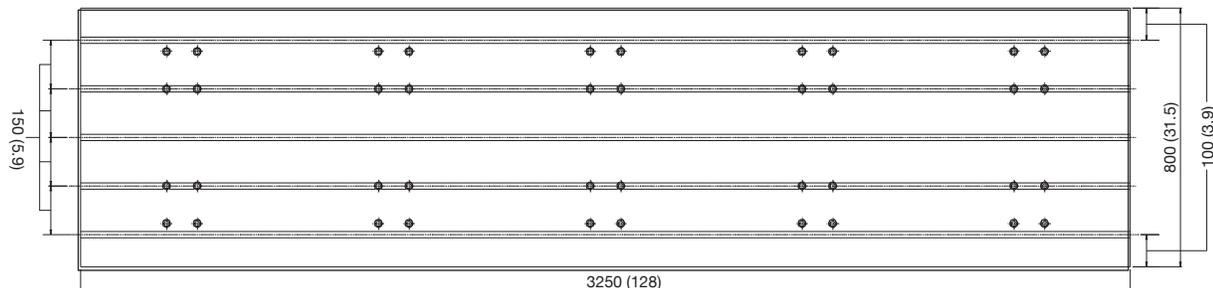
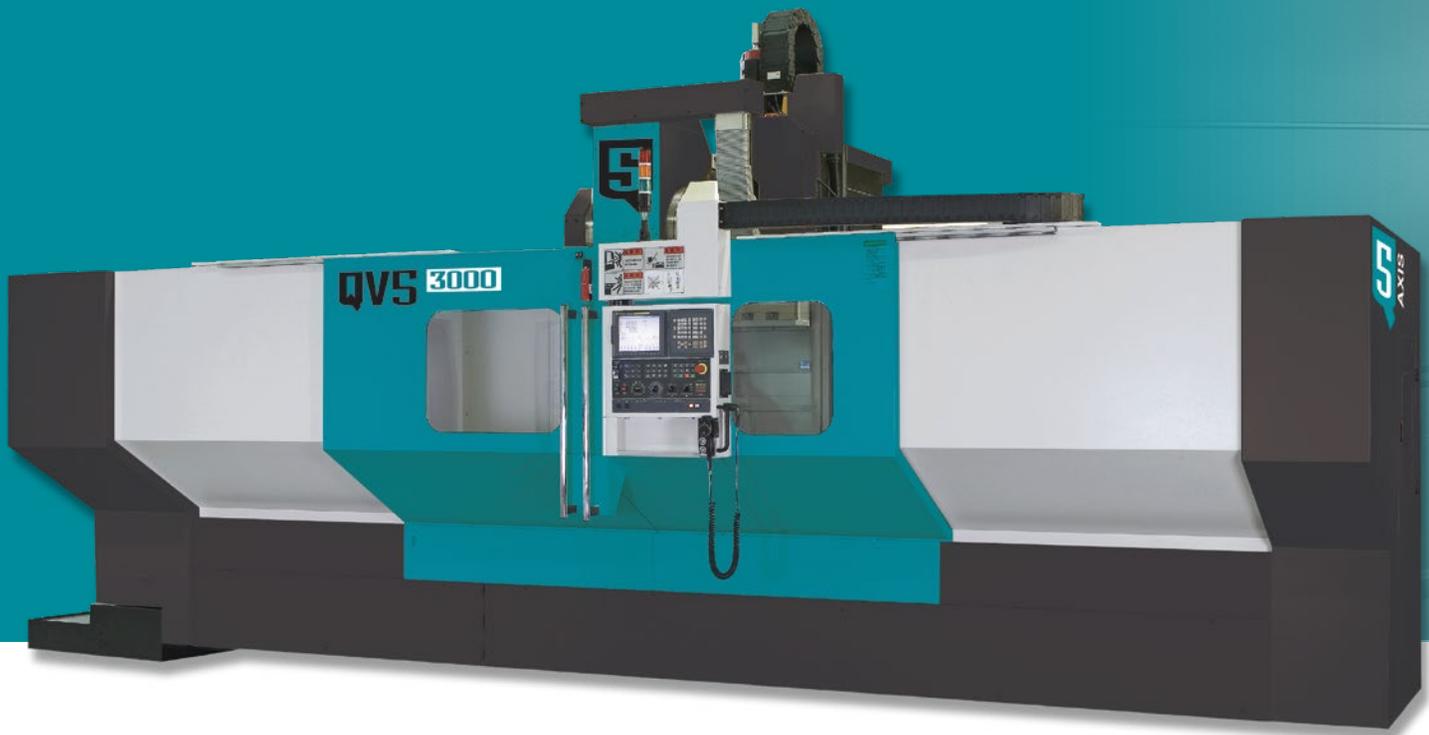


Table Top View

Unit: mm(in)



QVS AXIS



QVS 3000 by **SELWAY**
MACHINE TOOL COMPANY

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