

# Pinnacle

Since 1976

Founded in 1976, Pinnacle is specialized in manufacturing all kinds of machining centers with excellent experience in technology, quality and service. Pinnacle machining centers range from 5-axis, double column, vertical and horizontal types, to CNC lathes as well as conventional milling machines.

Well-trained service engineers are familiar with each step of assembly to ensure our quality service works and keep all machines running in the best status. The sales and service departments provide customers pre-sale and after-sale services. Prompt reaction is just our basic attitude to all customers only, accurate and effective technical solutions are provided within the shortest time.

**Product, Quality and Service, Pinnacle exceeds your expectations!**



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Simply Rigid, Simply **THE** Best!  
**Four Box  
Guide Ways**



## Triple Processes for Multiple Rigidity!

Superb mechanical structure features outstanding damping coefficient. All major structural components are made from Meehanite cast iron:

- 1.The melted iron is annealed in the furnace.
- 2.The cast iron is stress released in the electric oven at 600
- 3.The slide ways are hardened by high frequency induction.



The ISO50 direct drive spindle of the QV series is powered by high torque dual winding servo motor, featuring smooth, high speed power output for quality surface finish of the work piece.

## Four Slide Ways

To maintain absolute rigidity and to keep motion control's extraordinary sensitivity the machine base with four slide ways is the best technical solution.



Y Axis  
travel: 900mm

# Invincible Cutting Performance The Mightiest Equipment



Designed for high volume chip removal performance, the Pinnacle QV Series machine is your mightiest equipment for mold making or mass production jobs. From high speed ISO 40, 15000 rpm to high torque output of ISO 50 gearbox, the QV series machines satisfy your machining demands.



Picture Showing is  
BT50 6000rpm  
Gear Head Spindle

Wide Column  
1500 mm

Y Axis  
travel: 710mm

4-Hardened  
Box Way

Wide Base Width 1350mm

High Frequency Induction treatment on slide ways, the hardened depth is 2 mm., the hardness is HRC 55.

### Lubrication Technology

The Fixed-volume oil distributor assures the lubrication oil is precisely applied on the correct position with correct quantity.

- The contact sliding surfaces are coated with Turcite-B and fine-scraped.

# Power Spindles

From high speed to high torque, from power milling to small radius interpolation, Pinnacle offers a wide range spindle specifications to choose from. Plus the peripheral functions such as coolant through spindle and coolant curtain, the QV series machines are capable of handling all of the cutting conditions you need.



Gear-drive spindle.

Direct-drive Spindle.

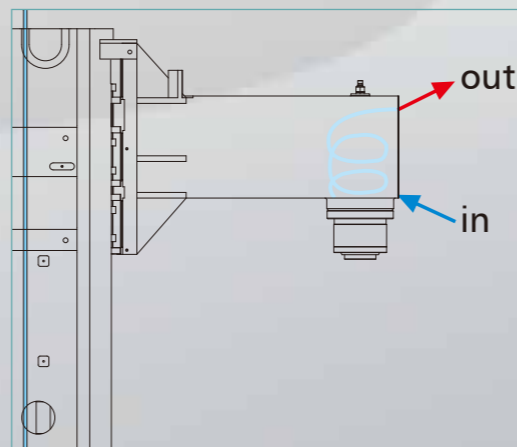
Belt-drive Spindle.

Spindle Taper	Spindle Type	Spindle Speed	QV117/137/147	QV159/179/209
BT 40	Belt Drive	8000 rpm	●	○
		10000 rpm	○	○
		12000 rpm	○	○
BT50	Direct Drive	10000 rpm	○	○
		12000 rpm	○	○
		15000 rpm	○	○
BT50	Gear Head	6000 rpm	○	●
		8000 rpm	○	○
		10000 rpm	○	○

Standard: ● Option: ○



Floating unclamping mechanism

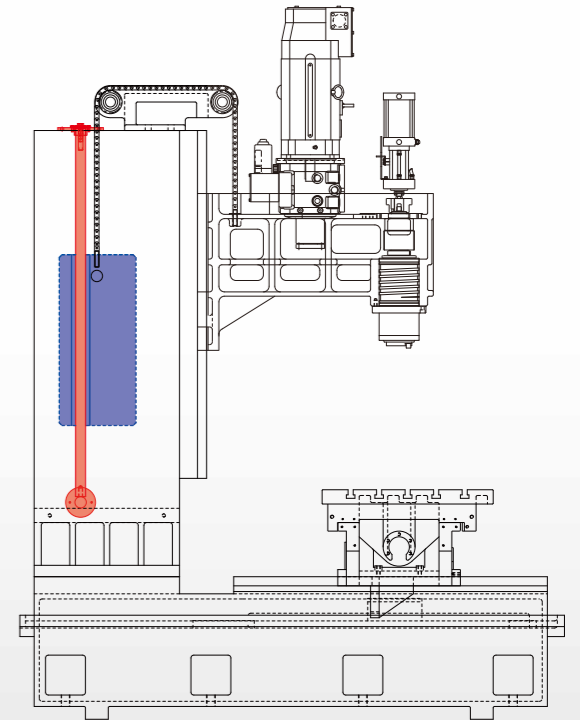


Cooling system with oil chiller



**Big enough to cut extra large workpieces.**  
**Compact enough to be shipped in a container.**

Even the Z-axis stroke is extended to 770 mm., the QV-117 / 137 / 147 can be loaded in a container. This important feature saves expensive shipping costs considerably, and the benefits are directly reflected by to the machine users.



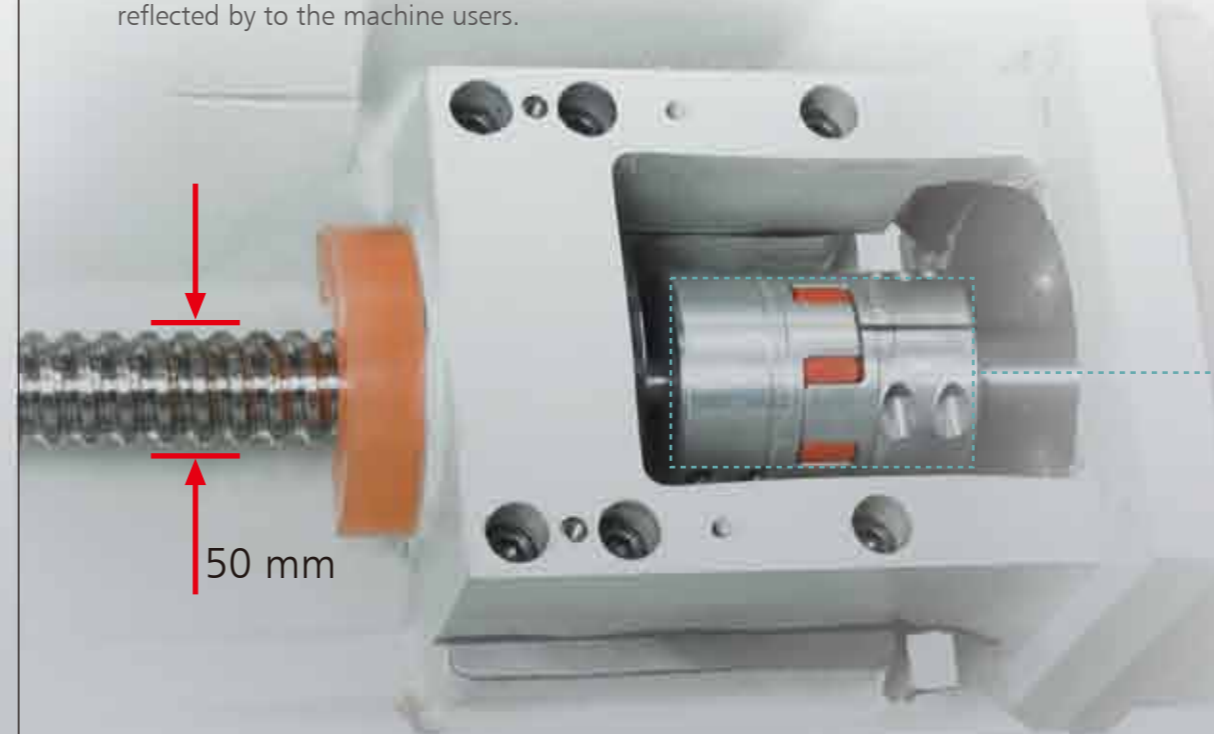
## Counter Weight Balance System

Exclusively designed counter weight balance system. The counter-balance weight moves on a guide shaft to assure movement straightness accuracy. There is no vibration in the forward/backwards and in the right/left directions. This creates superior workpiece surface accuracy to meet various mold machining requirements. Patented in Taiwan and China.

## ROTEX Coupling from Germany

The QV series machines adopt C3 grade 50 mm. ball screws on 3 axes(\*), which are direct coupled with drive motors.

Remark (\*): QV-159 / 179 / 209



50 mm



BT40 / 24 Tools



BT50 / 24 Tools



BT50 / 32 Tools

## Automatic Tool Changer

Magazine: Arm Type  
Capacity: 24 / 32 Tools

The arm type tool magazine is activated by an electric motor transmitted via a U-Cam mechanism, featuring stable and rapid tool change.



## Quality Through Precision Inspections

Each Pinnacle machine is subject to dynamic and static accuracy tests. Pinnacle machine accuracy meets VDI 3441, ISO 230, JIS B6388 and ASMEB5 standards.



LASER INSPECTION



BALL BAR INSPECTION



Right angle test on X and Y axes



Cutting Test



Dynamic Vibration

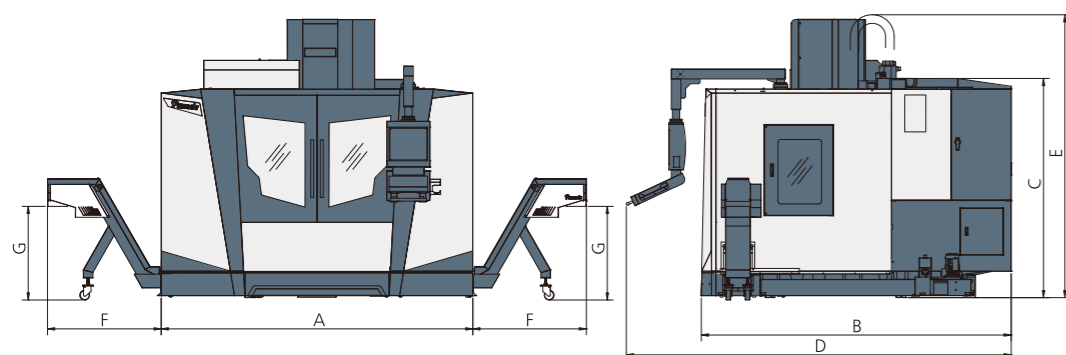


Noise Inspection

■ FLOOR SPACE:

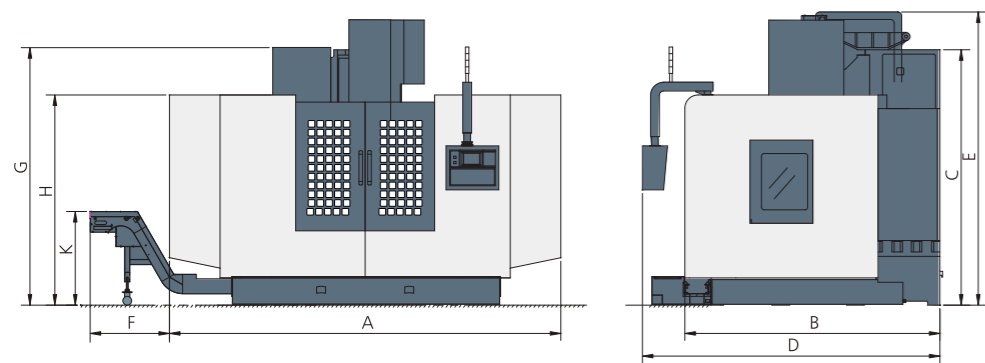
# Machine Dimensions

QV117 / QV137 / QV147



MODEL	A	B	C	D	E	F	G
QV117	3250	3235	2286	4020	2950	1185	1000
QV137	3490	3235	2286	4020	2950	1065	1000
QV147	3890	3235	2286	4020	2950	865	1000

QV159 / QV179 / QV209



MODEL	A	B	C	D	E	F	G	H	J	K
QV159	3950	2930	2905	3380	3200	900	2950	2390	370	1065
QV179	4450	2930	2905	3380	3200	900	2950	2390	370	1065
QV209	5000	2930	2905	3380	3200	900	2950	2390	370	1065



**Automatic Tool Measurement**  
Automatic measuring and data setting for tool diameter and length.(optional)



**20 Bar Hi-pressure Pump And Tank**  
20 μ m filter and extra large coolant tank to assure CTS system offers the highest efficiency.(optional)



**Chip Conveyor**  
Chip conveyor device in the front side of machine removes chips efficiently.(optional)



**Coolants Jets Around Spindle**  
Improved cooling efficiency on workpiece. (ISO 40 standard, ISO 50 optional)



**Chips Flushing Nozzles**  
Coolant flushing nozzles on rear inner wall of guard prevent jam of chips during operation.



**Twin Chip Augers**  
Chip Augers are deployed on the two sides of machine base to evacuate cutting chips efficiently.(QV117 / 137 / 147 standard, QV159 / 179 / 209 optional)

■ SPECIFICATIONS:

MODEL	QV117	QV137	QV147	QV159	QV179	QV209
<b>TABLE</b>						
TABLE SIZE (mm)	1300 x 700	1500 x 700	1600 x 700	1700 x 850	2000 x 850	2200 x 850
TRAVEL RANGES (X x Y x Z mm)	1140 / 710 / 610	1300 / 710 / 610	1400 / 710 / 610	1500 / 900 / 850	1700 / 900 / 850	2000 / 900 / 850
MAX. TABLE LOAD (Kgs)	1000	1200	1500	2000	2500	3000
SPINDLE NOSE TO TABLE SURFACE (mm)	110 ~ 720	110 ~ 720	110 ~ 720	150~1000	150~1000	150~1000
T-SLOT (Width x Distance x Number mm)	18 x 125 x 5	18 x 125 x 5	18 x 125 x 5	18 x 150 x 5	18 x 150 x 5	18 x 150 x 5
<b>SPINDLE</b>						
TOOL SHANK & PULL STUD	ISO40		ISO50	ISO40		ISO50
SPINDLE INNER DIAMETER (mm)	Ø70		Ø100	Ø70		Ø100
SPINDLE CENTER TO COLUMN (mm)	760		760	950		950
SPINDLE SPEED (rpm) Belt	40~8000		40~6000 (8000)	40~8000		40~6000 (8000)
SPINDLE SPEED (rpm) Gear	L40~1750, H1751~8000		L40~1500, H1501~6000	L40~1500, H1501~8000		L40~1500, H1501~6000
DRAW BAR FORCE (Kgf)	950		2000	950		2000
MAIN MOTOR (con/30min kW)	7.5 / 11		11 / 15	11 / 15	15 / 18.5	15 / 18.5
<b>FEED RATE</b>						
RAPID FEED RATE (X / Y / Z m/min)	20 / 20 / 16	20 / 20 / 16	20 / 20 / 16	16 / 16 / 12	16 / 16 / 12	16 / 16 / 12
FEED RATE (X / Y / Z mm/min)	10000	10000	10000	8000	8000	8000
<b>AXIS SERVO MOTOR</b>						
MITSUBISHI kW	HF353 (3.5)	HF353 (3.5)	HF353 (3.5)	HA300 (4.5)	HA700 (7.0)	HA700 (7.0)
FANUC kW		B22/3000i (3.0)		*22/3000i (4.0)	*30/3000i (7.0)	*30/3000i (7.0)
SIEMENS kW	1FK7083 (4.17)	1FK7083 (4.17)	1FK7083 (4.17)	1FK7101 (7.03)	1FK7101 (7.03)	1FK7101 (7.03)
FAGOR kW	FKM 64.30A	FKM 64.30A	FKM 64.30A	FKM 64.30A	FKM 64.30A	FKM 64.30A
HEIDENHAIN kW	QSY155D (5.68)	QSY155D (5.68)	QSY155D (5.68)	QSY155F (56.03)	QSY190D (9.6)	QSY190D (9.6)
<b>AUTO TOOL CHANGER</b>						
MAG TYPE	ISO40		ISO50	ISO40		ISO50
CAM TYPE	PLATE / DISK		DISK / CHAIN	PLATE / DISK		DISK / CHAIN
TOOL SELECTION (Bi-direction)	GENOVA / DAUL ARM		DAUL ARM	GENOVA / DAUL ARM		DAUL ARM
TOOL STORAGE CAPACITY (PCs)	ABSOLUTE / RANDOM		RANDOM	ABSOLUTE / RANDOM		RANDOM
TOOL STORAGE CAPACITY (PCs)	20 / 24		24 / 32	20 / 24		24 / 32
MAX. TOOL DIAMETER (mm)	Ø100 / Ø90		Ø105 / Ø127	Ø100 / Ø90		Ø105 / Ø127
MAX. TOOL LENGTH, WEIGHT	250mm, 8kgs		350mm, 15kgs	250mm, 8kgs		350mm, 15kgs
<b>MISCELLANEOUS</b>						
AIR REQUIREMENT (Kg/cm <sup>2</sup> )	6	6	6	6	6	6
VOLTAGE	220V, 3Ph, 50 / 60Hz	220V, 3Ph, 50 / 60Hz	220V, 3Ph, 50 / 60Hz	220V, 3Ph, 50 / 60Hz	220V, 3Ph, 50 / 60Hz	220V, 3Ph, 50 / 60Hz
POWER REQUIREMENT (KVA)	30	30	30	40	40	40
COOLANT TANK CAPACITY (L)	350	350	350	700	700	700
MACHINE WEIGHT (kgs)	9000	10000	11000	14000	15000	16000
MACHINE HEIGH (mm)	3000	3000	3000	3200	3200	3200
FLOOR SPACE (L x W mm)	3250 x 3235	3490 x 3235	3890 x 3235	3950 x 2900	4450 x 2900	5000 x 2900

● ALL SPECIFICATIONS AND DESIGNS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

■ Standard Accessories:

- Air blast through spindle
- Air blast for workpiece (nose)
- Coolant flushing system
- 3 axes telescopic covers
- Full splash guard
- Centralized automatic lubrication system
- Working lamp
- Operation status light
- Cooling system
- Air gun and water spray-gun
- MPG handwheel
- Heat exchanger
- RS-232 Interface
- Rigid tapping
- Spindle oil cooler
- Adjusting tools and box
- Leveling bolts and pads
- Operation and programming manual

■ Control System:

- Mitsubishi: M80 / M830
- Fanuc: Oi-MF / 31i-MB
- Heidenhain: TNC620 / TNC640
- Siemens: 828D / 840D
- Fagor: 8055 / 8060