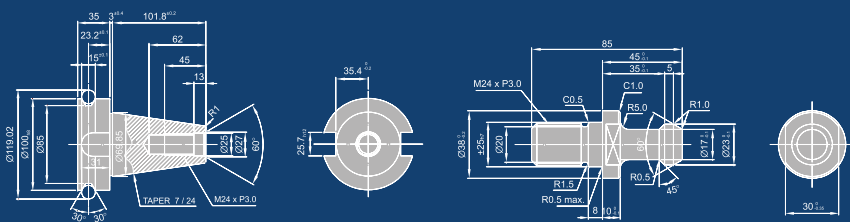


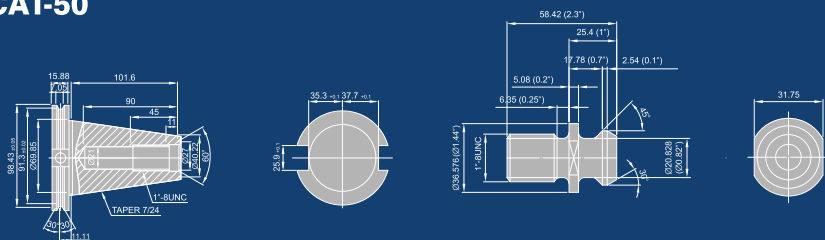
# Tooling System



## BT-50



## CAT-50



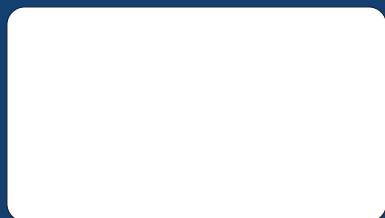
# PV Series



Campro Precision Machinery Co., Ltd.



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QAC11-01

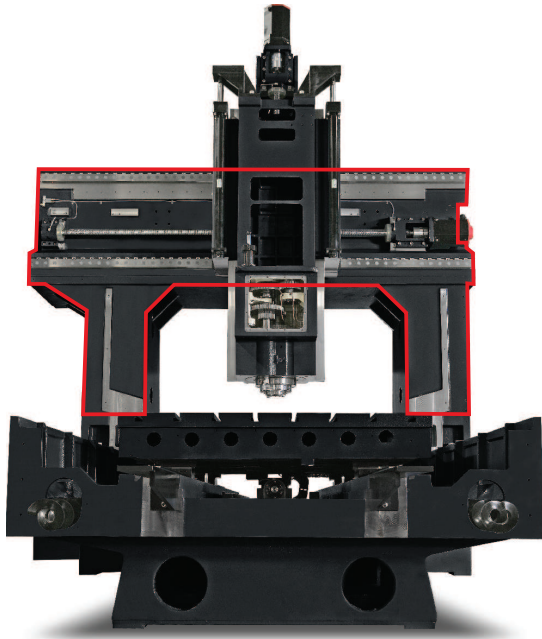
2000-2016-09



Campro Precision Machinery Co., Ltd.

www.campro.com.tw

## PV-2216 / 3216 / 4216



The bridge part of the PV series is made from one-piece (monobloc) box type construction, which is annealed and stress released to ensure rigidity and stability.

### Main Characteristics

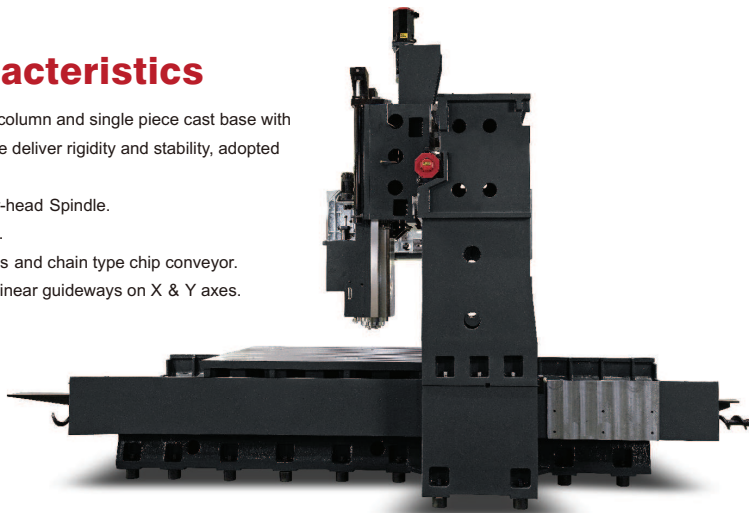
One-piece monoblock column and single piece cast base with scraped contact surface deliver rigidity and stability, adopted following as standard.

25 HP 6,000 rpm Gear-head Spindle.

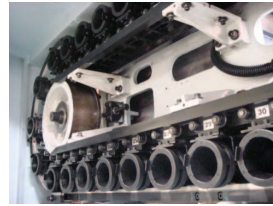
32-tool chain type ATC.

Built-in twin chip screws and chain type chip conveyor.

Heavy duty roller type linear guideways on X & Y axes.



### Automatic Tool Change Capacity



PV series comes with standard 32-tool BT-50 chain type ATC. Dual arm system ensures the stability during tool change.  
Max. Tool dia. 125mm  
Tool length 350mm  
Tool weight : 20KG

- 
- 1 One-piece casting design in ram and gear box.
  - 2 Box guideways on Z-axis is excellent for heavy-duty cutting.
  - 3 Stepped type design shifts the gravity center toward crossbeam.
  - 4 Crossbeam guideways with max. span design.
  - 5 Roller linear guideways on Y-axis increases rigidity while in axial and lateral directions.
  - 6 The base is made of pure casting structure ensures long term accuracy and stability.
  - 7 Optimal span between guideways supports working table.
  - 8 One-piece cast base with two chip slots minimizes cleaning time and provides higher durability and leakage prevention.
  - 9 Roller linear guideways on X-axis increase table loading capacity and rigidity.

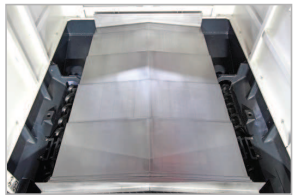
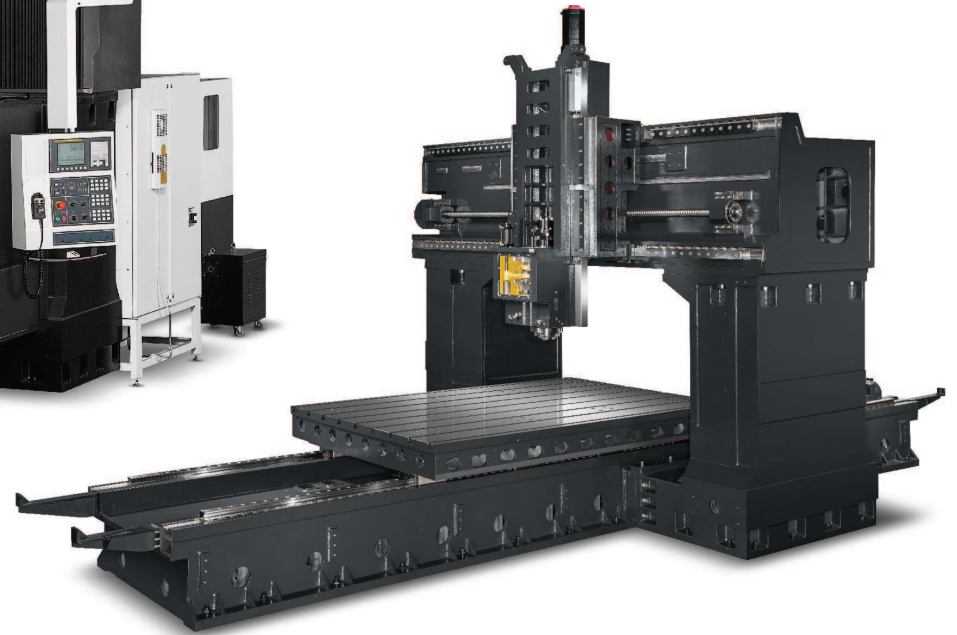
## Wider door span, bigger machining range

PV-3221 / 4221 / 5221 / 3226 / 4226 / 5226 / 4231 / 5231

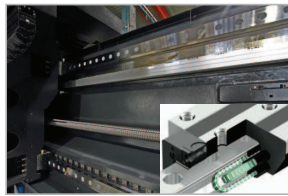


Campro double column series retained Campro's traditional machine characteristics: **Strong, Rigidity, and Precision.**

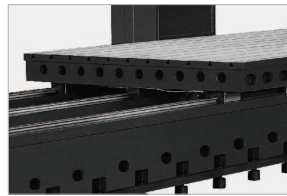
Its lengthen X-axis with over 2 meters oversized column offers versatility and rigidity. The structure provides wide range of options and customer can adopt different milling heads to finish larger workpiece(s) as in the automobile and aerospace industries.



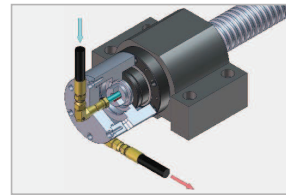
Twin chip screws as standard



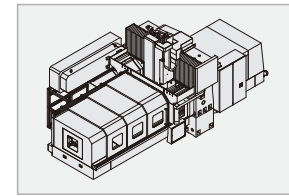
Ultra loading roller type linear guideways on X & Y axes.



PV-3226 / 4226 / 5226 / 4231 / 5231 are equipped with 3 guideways on the X-axis.



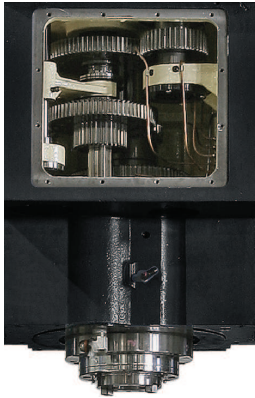
Central cooling ballscrew (Optional) controls thermal expansion efficiently.



Fully Enclosed top roof cover as option.



Linear scale (optional) helps maintaining working accuracy of long-hour operation.



## High reliability and high power double column machine

BT-50, 25 HP spindle motor 6,000 rpm two steps variable gear-head for heavy cutting

Output torque is 623 Nm, provides wide range of cutting capacity for heavy cutting at low speed and fine cutting at high speed

BT-50, 34 HP 10,000 rpm built-in motor spindle for robust performance and unsurpassed reliability (Optional)

## Optional Milling Heads



90° Angular Head			
Tool clamping :	Manual	Hydraulic	Hydraulic
Head clamping :	Manual	Manual	Auto Hydraulic Clamping
C-axis index :	Manual	Auto 5°	Auto 5°
Max. Speed :	2,000 rpm / 2,500 rpm	2,000 rpm / 3,500 rpm	3,500 rpm



Extended Head		
Tool clamping :	Hydraulic	Hydraulic
Head clamping :	Manual	Manual
Length :	300 mm	500 mm
Max. Speed :	3,500 rpm	3,500 rpm

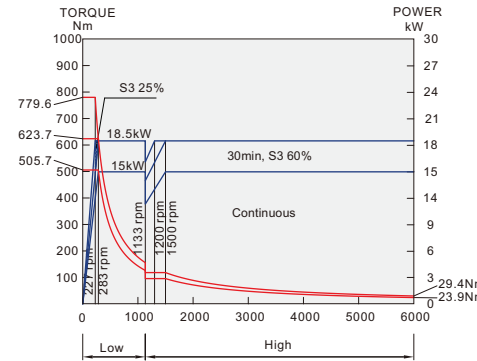


2 Axis Head		
Tool clamping :	Manual	Manual
Head clamping :	Manual	Manual
C-axis index :	Manual	Auto 5°
B-axis index :	Manual	Manual
Max. Speed :	3,500 rpm	3,500 rpm

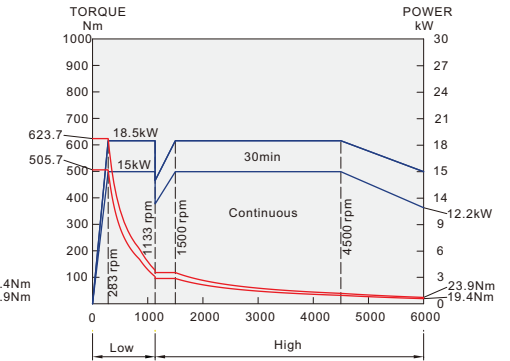
## Spindle Diagrams

Gear type

FANUC 25HP

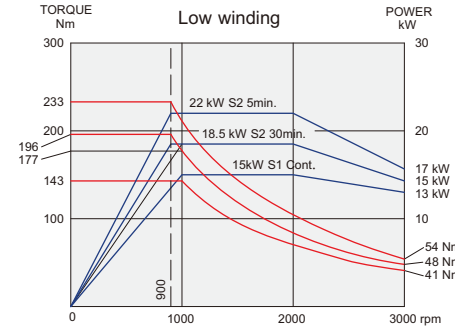


MITSUBISHI 25HP

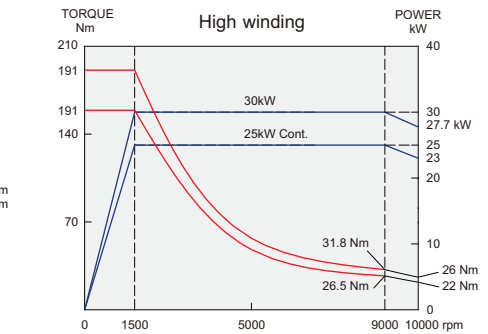
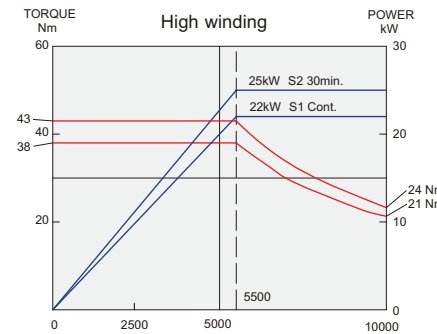
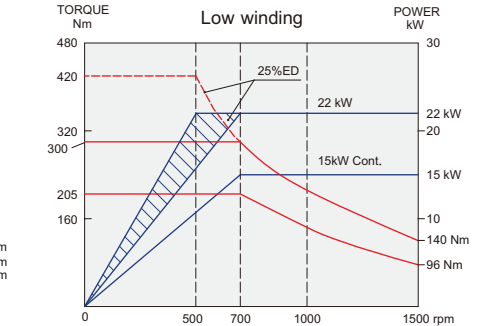


Buil-in Motor Spindle (Optional)

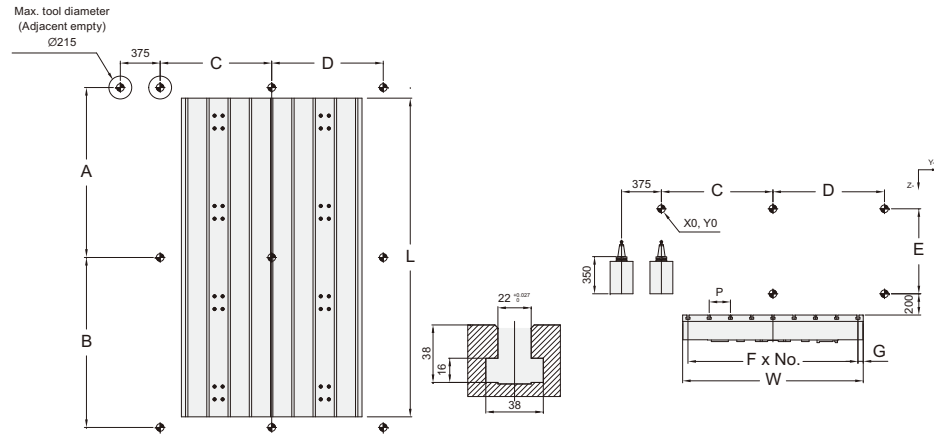
FANUC 34HP



MITSUBISHI 40HP



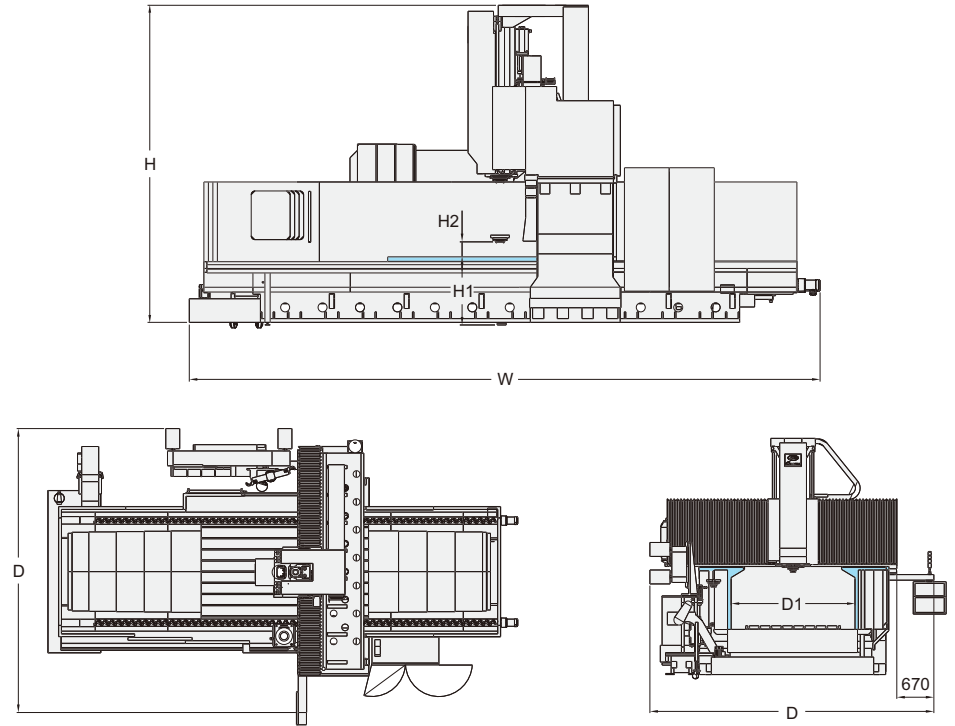
## Working range & Table dimension



Unit : mm

Model	A	B	C	D	E	F	NO.	G	L	W
						(F x No.) + (G x 2) = W				
PV-2216	1,100	1,100	800	800	750	180	7	95	2,300	1,450
PV-3216	1,600	1,600	800	800	750	180	7	95	3,300	1,450
PV-4216	2,100	2,100	800	800	750	180	7	95	4,300	1,450
PV-3221	1,600	1,600	1,050	1,050	800(1,000)	200	8	50	3,000	1,700
PV-4221	2,100	2,100	1,050	1,050	800(1,000)	200	8	50	4,000	1,700
PV-5221	2,600	2,600	1,050	1,050	800(1,000)	200	8	50	5,000	1,700
PV-3226	1,600	1,600	1,300	1,300	800(1,000)	200	10	100	3,000	2,200
PV-4226	2,100	2,100	1,300	1,300	800(1,000)	200	10	100	4,000	2,200
PV-5226	2,600	2,600	1,300	1,300	800(1,000)	200	10	100	5,000	2,200
PV-4231	2,100	2,100	1,550	1,550	800(1,000)	200	13	50	4,000	2,700
PV-5231	2,600	2,600	1,550	1,550	800(1,000)	200	13	50	5,000	2,700

## Machine Dimensions



Unit : mm

Model	W	D	D1	H		H1 Table to floor	H2 (Spindle nose to table)	
			Dist. between columns	Z-axis (STD)	Z=1,000mm		Z-axis (STD)	Z=1,000mm
PV-2216	6,600	4,840	1,730	3,950	X	935	200	X
PV-3216	8,800	4,840	1,730	3,950	X	935	200	X
PV-4216	10,800	4,840	1,730	3,950	X	935	200	X
PV-3221	8,800	5,000	2,200	4,200	4,600	910	200	250
PV-4221	10,800	5,000	2,200	4,200	4,600	910	200	250
PV-5221	12,800	5,000	2,200	4,200	4,600	910	200	250
PV-3226	8,800	5,500	2,700	4,200	4,600	910	200	250
PV-4226	10,800	5,500	2,700	4,200	4,600	910	200	250
PV-5226	12,800	5,500	2,700	4,200	4,600	910	200	250
PV-4231	10,800	6,000	3,200	4,200	4,600	910	200	250
PV-5231	12,800	6,000	3,200	4,200	4,600	910	200	250

# Machine Specifications

MODEL	UNIT	PV-2216	PV-3216	PV-4216	PV-3221	PV-4221	PV-5221	PV-3226	PV-4226	PV-5226	PV-4231	PV-5231				
<b>TRAVEL</b>																
X-axis travel	mm	2,200 (86.61")	3,200 (125.98")	4,200 (165.35")	3,200 (125.98")	4,200 (165.35")	5,200 (204.72")	3,200 (125.98")	4,200 (165.35")	5,200 (204.72")	4,200 (165.35")	5,200 (204.72")				
Y-axis travel	mm		1,600 (62.98")			2,100 (82.68")			2,600 (102.36")		3,100 (122.05")					
Z-axis travel	mm		750 (29.52")		800 (1,000)	31.49" (39.37")		800 (1,000)	31.49" (39.37")		800 (1,000)	31.49" (39.37")				
Distance between columns	mm		1,750 (68.89")			2,200 (86.61")			2,700 (106.3")		3,200 (125.98")					
Spindle nose to table surface	mm		200-950 (7.87"-37.4")		200-1,000 (250-1,250)	7.87"-39.37" (9.84"-49.21")		200-1,000 (250-1,250)	7.87"-39.37" (9.84"-49.21")		200-1,000 (250-1,250)	7.87"-39.37" (9.84"-49.21")				
<b>TABLE</b>																
Table dimension	mm	2,300 x 1,450 (90.54" x 57.08")	3,300 x 1,450 (129.91" x 57.08")	4,300 x 1,450 (169.28" x 57.08")	3,000 x 1,700 (118.11" x 66.93")	4,000 x 1,700 (157.48" x 66.93")	5,000 x 1,700 (196.85" x 66.93")	3,000 x 2,200 (118.11" x 86.61")	4,000 x 2,200 (157.48" x 86.61")	5,000 x 2,200 (196.85" x 86.61")	4,000 x 2,700 (157.48" x 106.30")	5,000 x 2,200 (196.85" x 106.30")				
Max. loading weight	kg	6,000 (13,228 lbs)	8,000 (17,637 lbs)	10,000 (22,046 lbs)	8,000 (17,637 lbs)	10,000 (22,046 lbs)	12,000 (26,455 lbs)	12,000 (26,455 lbs)	14,000 (30,865 lbs)	16,000 (35,274 lbs)	18,000 (39,683 lbs)	20,000 (44,092 lbs)				
T-slots (W x No.)	mm		22 x 8 (0.86" x 8)			22 x 9 (0.86" x 9)			22 x 11 (0.86" x 11)		22 x 14 (0.86" x 14)					
<b>SPINDLE</b>																
Spindle speed	rpm	6,000rpm Gear-head spindle														
Spindle motor	kw	15 / 18.5 (25 HP)														
Spindle taper	type	7/24 taper No.50														
<b>AUTOMATIC TOOL CHANGER</b>																
Tool shank	type	BT-50			BT-50			BT-50			BT-50					
Tool storage capacity	pcs.	32T (40T / 60T)			32T (40T / 60T)			32T (40T / 60T)			32T (40T / 60T)					
Max. tool diameter (W/O adjacent empty)	mm	Ø125 (4.92") / Ø215 (8.46")			Ø125 (4.92") / Ø215 (8.46")			Ø125 (4.92") / Ø215 (8.46")			Ø125 (4.92") / Ø215 (8.46")					
Max. tool length	mm	350 (17.38")			350 (17.38")			350 (17.38")			350 (17.38")					
Max. tool weight	kg	20 (44 lbs)			20 (44 lbs)			20 (44 lbs)			20 (44 lbs)					
<b>FEEDRATE</b>																
Rapid feedrate (X / Y / Z)	m/min	20 / 20 / 16 (787.38 / 787.38 / 629.9 ipm)			12 / 15 / 15 (472.44 / 590.55 / 590.55 ipm)			10/12/12 (393.7/472.44 / 472.44 ipm)			12 / 15 / 15 (472.44 / 590.55 / 590.55 ipm)			10/12/12 (393.7/472.44 / 472.44 ipm)		
Cutting feedrate	mm/min	1~10,000 (393.69 ipm)			1~8,000 (314.96 ipm)			1~8,000 (314.96 ipm)			1~8,000 (314.96 ipm)			1~8,000 (314.96 ipm)		
<b>OTHER</b>																
Floor plan (W x D)	mm	6,600x4,800 (259.83"x 188.97")	8,800 x 4,800 (346.47" x 188.97")	10,800 x 4,800 (425.2" x 188.97")	8,800 x 5,000 (346.47" x 196.85")	10,800 x 5,000 (425.2" x 196.85")	12,800 x 5,000 (503.94" x 196.85")	8,800 x 5,500 (346.47" x 216.54")	10,800 x 5,500 (425.2" x 216.54")	12,800 x 5,500 (503.94" x 216.54")	10,800 x 6,000 (425.2" x 236.22")	12,800 x 6,000 (503.94" x 236.22")				
Machine weight	kg	25,000 (55,115 lbs)	27,000 (59,524 lbs)	30,000 (66,138 lbs)	35,000 (77,162 lbs)	38,000 (83,776 lbs)	42,000 (92,594 lbs)	39,000 (85,980 lbs)	42,000 (92,594 lbs)	48,000 (105,822 lbs)	45,000 (99,208 lbs)	51,000 (112,436 lbs)				
Max. machine height	mm	3,950 (155.51")			4,200 (165.35")			4,200 (165.35")			4,200 (165.35")					
Power capacity		40 kVA														
Air source		6~8 kgf / cm <sup>2</sup>														

• Machine specifications and design are subject to change without prior notice due to on-going innovation.

Standard accessories			Optional accessories		
• 6,000rpm gear-head spindle	• Chip screws	• Working lamps	• BT-40 I.D.D. spindle	• Linear scales	• Central cooling ballscrews
• Spindle oil cooler	• Chip conveyor with bucket	• Working stair	• 10,000 rpm built-in motor spindle	• 4 <sup>th</sup> -axis rotary table	• CE modification
• 32T chain type ATC	• Oil-skimmer	• Leveling bolts	• 40T or 60T chain type ATC	• Auto tool length measurement	• Transformer
• Foot switch for tool clamping/unclamping	• Heat exchanger		• Coolant through spindle	• Workpiece measurement	
• Coolant flushing system	• Automatic lubrication unit		• Deep hole adaptor	• Milling head	
• Chip air blast	• Pneumatic system		• High pressure pump	• Air condition	
	• Hydraulic counter-balance				