

DUGARD

Machine Tools Since 1939

Dugard Heavy Duty Vertical Machining Centres



www.dugard.com

2200L Roller Linear Way BBT50 2200B Box Way BBT50

- Table Size - 2200 x 1000mm
- 3 axes travel - 2200 x 1000 x 900mm
- BBT50 heavy duty spindle

State of the Art Controls

Choice of various controls to meet your requirements. Each one features user-friendly operation, powerful functions and maximum dependability

Standard Control



Fanuc 0iMD Alpha Package

- 10.4" TFT LCD colour monitor
- AICC with 200 block look ahead
- Background edit
- Manual Guide i



Various interfaces for programme saving, loading and software updating including:

Other Available Controls



Heidenhain iTNC 530

- 18" TFT LCD colour monitor
- Super high speed
- Huge programme storage
- Conversational programming



Siemens 828D

- 10.4" TFT LCD colour monitor
- Shopmill conversational programming
- Super high speed
- USB/PC card storage



- CF memory card
- RS-232C
- Ethernet



Vertical Machining Centres

- The life of wide linear roller guideways is superior to narrow linear guideways

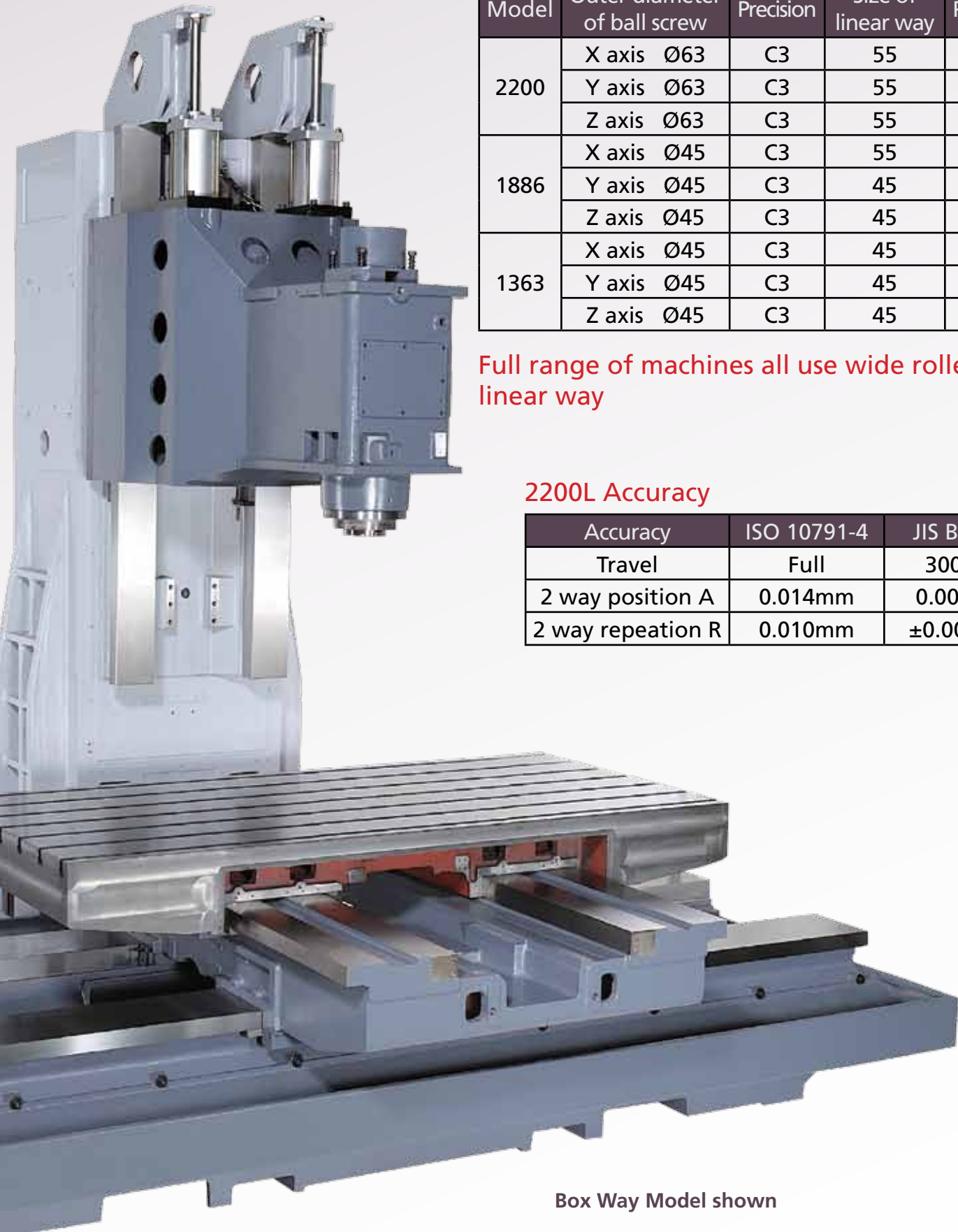
Ball screw and the size of linear way

Model	Outer diameter of ball screw	Precision	Size of linear way	Precision
2200	X axis Ø63	C3	55	P
	Y axis Ø63	C3	55	P
	Z axis Ø63	C3	55	P
1886	X axis Ø45	C3	55	P
	Y axis Ø45	C3	45	P
	Z axis Ø45	C3	45	P
1363	X axis Ø45	C3	45	P
	Y axis Ø45	C3	45	P
	Z axis Ø45	C3	45	P

Full range of machines all use wide roller linear way

2200L Accuracy

Accuracy	ISO 10791-4	JIS B 6338
Travel	Full	300mm
2 way position A	0.014mm	0.004mm
2 way repetition R	0.010mm	±0.003mm



Box Way Model shown

Dugard Heavy Duty

1680L Roller Linear Way BBT50

1680B Box Way BBT50

- Table Size - 1600 x 700mm
- 3 axes travel - 1600 x 800 x 700mm

1886L Roller Linear Way BBT50

1886B Box Way BBT50

- Table Size - 1800 x 860mm
- 3 axes travel - 1800 x 860 x 700mm



Vertical Machining Centres

1363L Roller Linear Way BBT50

1363B Box Way BBT50

- Table Size - 1450 x 600mm
- 3 axes travel - 1300 x 630 x 600mm



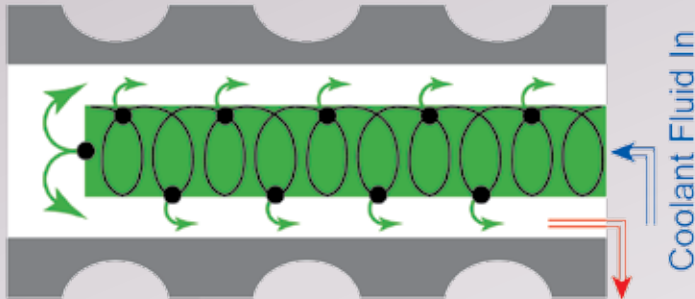
4 layers of RIB
inside the column

- Fan coolant for spindle motor side
- Reduce heat & energy
- Raise precision & spindle power

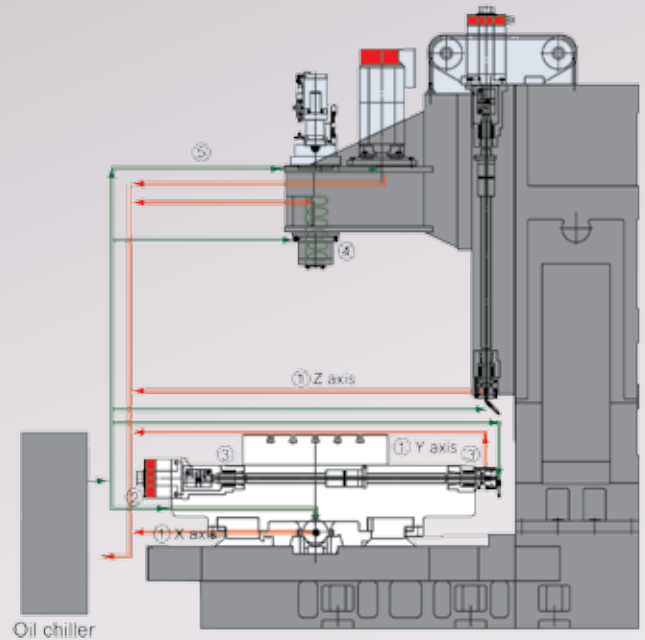


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3 axes coolant-through ball screw device

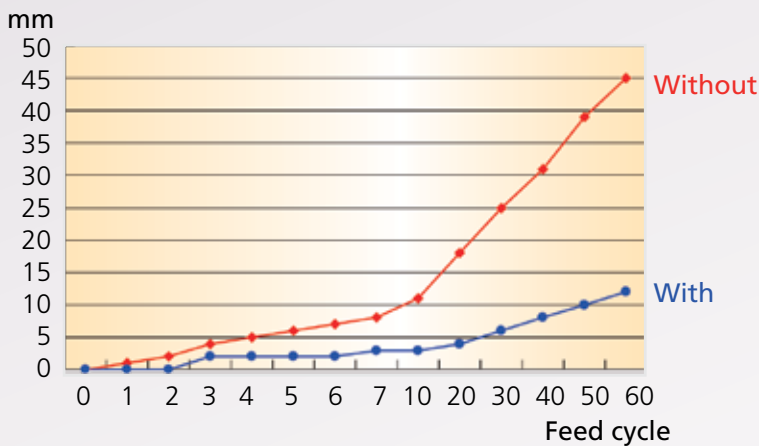


inner tube inside the ball screw



- ① ③ Coolant through device is equipped with the 3 axes ball screw
- ④ Spindle oil circulation chiller
- ⑤ Spindle cast iron base equipped with oil circulation chiller

Repeated precision of with or without coolant through ball screw



Coolant through with three ball screws



1363 / 1886 / 2200 Precision Chart

Item	Standard	ISO 10791-4	Dugard	ISO 10791-4	Dugard
		800<Travel ≥1250		1250<Travel ≥2000	
Two-way positioning precision	A:	0.032mm	0.01mm	0.042mm	0.01mm
Two-way repeating positioning precision	R:	0.018mm	0.007mm	0.020mm	0.007mm

Japan's JIS B6336-4 equals to ISO 10791-4 standard
 VDI/DGQ3441's P value equals to A value from above chart and PS value equals to R value from above chart
 Machine is tested under good air-conditioning environment

Vertical Machining Centres

Full support the saddle and work table **No Overhang**



Left



Right



Dual layers box type base



Broad base construction,
dual type chip screw



Multiple layers box type
or RIB inside the column



4 layers of RIB inside
the column

Dugard Heavy Duty

Spindle •

Work Table •

Saddle



Precise head scrapping for spindle



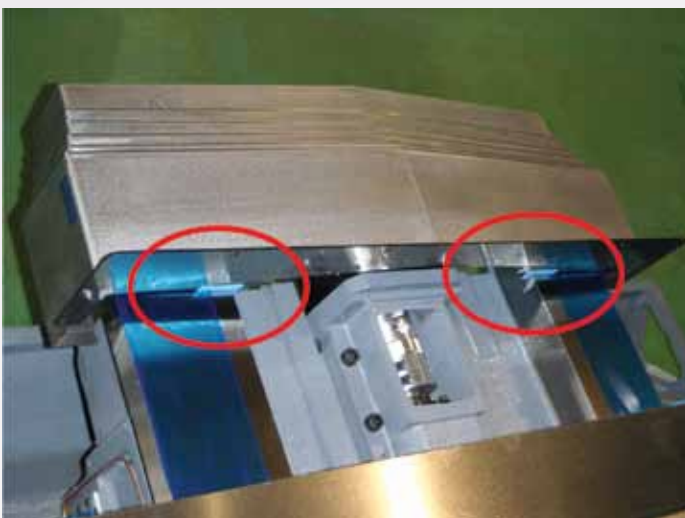
6 sliding blocks on spindle head



Reliable lubrication system



18 pieces of GIB on 3 axes avoid spindle head hanging down, saddle and work table swaying



The rolling wheel of sliding cover does not damage the sliding trace

Vertical Machining Centres

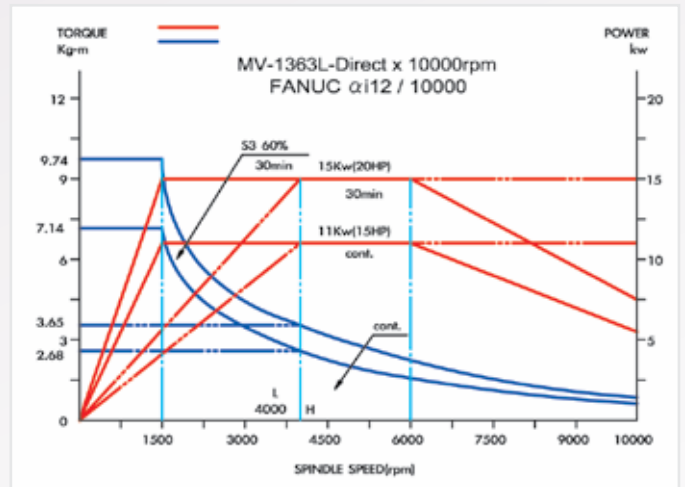
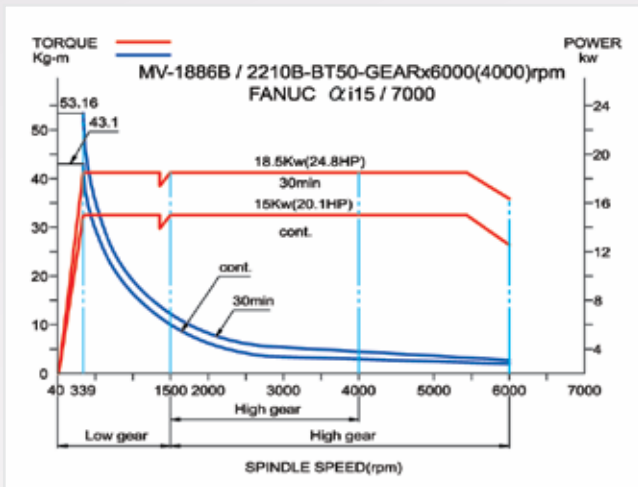
Cutting Report

	Tool material	Tool size	Cutting width x depth	Spindle revolution (rpm)	Feed (mm/min)	Cutting quantity	Machine model
Face milling	S45C	Ø100	135 x 5	500	1200	600CC	2200B
Face milling	S45C	Ø80	70 x 4	700	3000	840CC	2200B
Tapping	S45C	M24	20	200	600	10%	1363AB

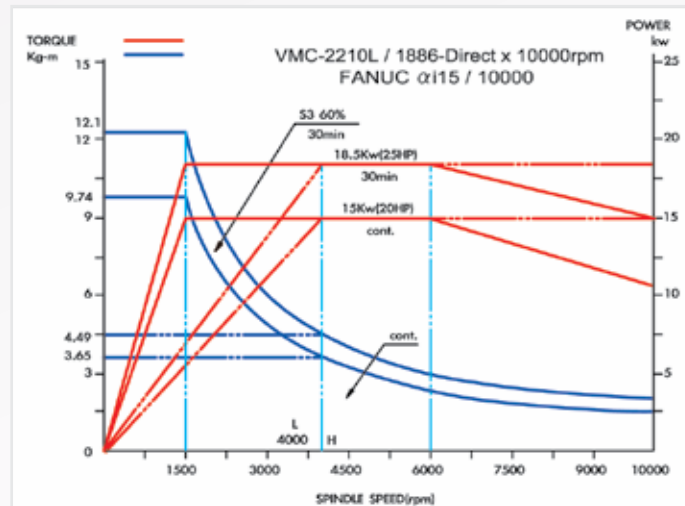
Spindle Construction and Motor Torque Output Chart

α i15-7000 BT-50# Gear

α i12-12000 Direct

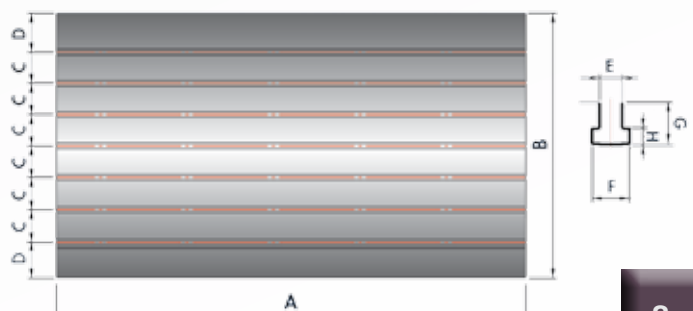


α i15-10000 Direct



Work Table Size (mm)

Model	A	B	C	D	E	F	G	H	T slot
1363	1450	600	100	75	18	30	33	12	5
1680	1600	700	100	50	18	30	33	12	7
1886	1800	860	150	130	18	30	33	12	5
2200	2200	100	150	50	22	38	43	16	7

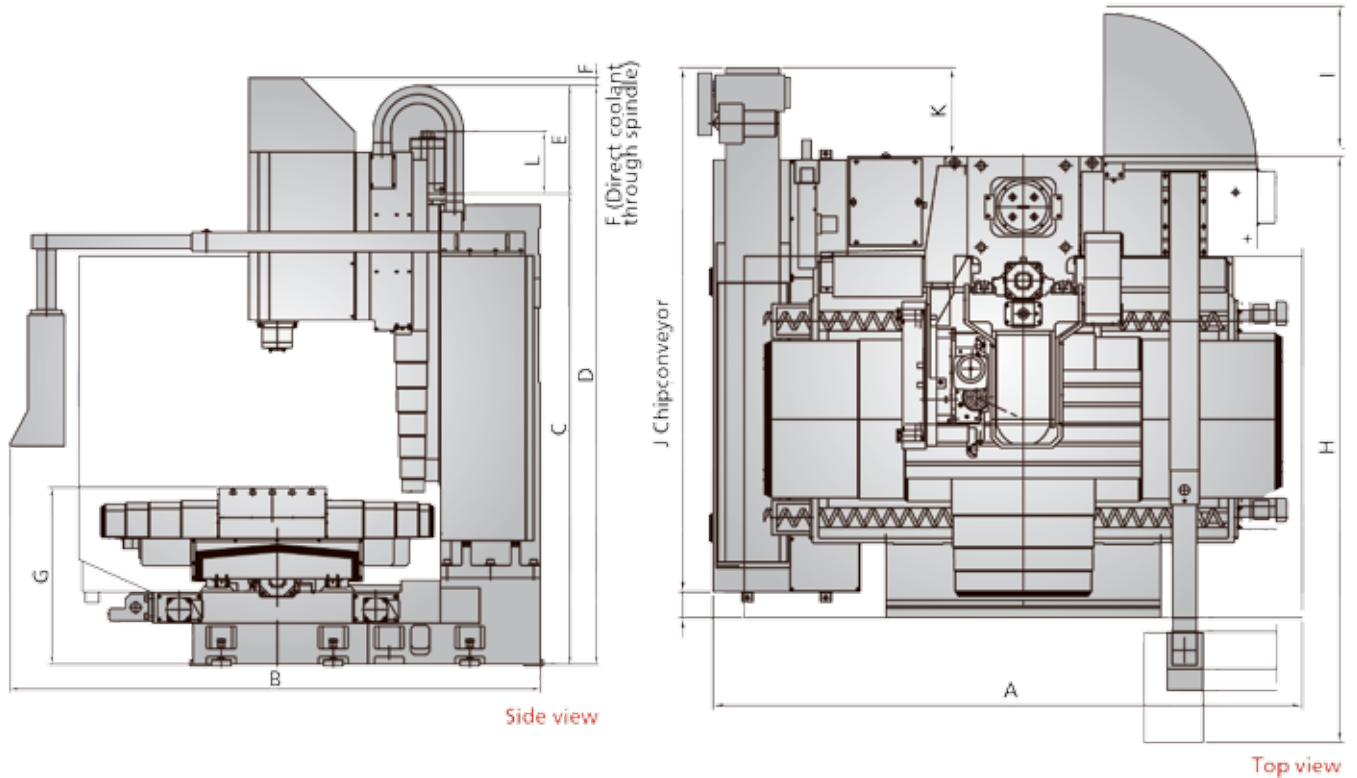


Dugard Heavy Duty

Description	Unit	Linear Way 1363L	Box Way 1363B	Linear Way 1680L	Box Way 1680B	Linear Way 1886L	Box Way 1886B	Linear Way 2200L
Table								
Table size	mm	1450 x 600		1600 x 700		1800 x 860		2200 x
T-slot	mm	18 x 5 x 100		18 x 7 x 100		22 x 5 x 150		22 x 7 x
Table load (max)	kg	1200		2000				3000
Travel								
X travel	mm	1300	1300	1600	1600	1800	1800	2200
Y travel	mm	630	630	800	800	860	860	1000
Z travel	mm	600	600	700	700	700	700	900
Spindle								
Spindle nose to table	mm	140~740	100~700	170~870		175~875	200~900	160~1060
Spindle centre to column	mm	710	690	822	800	952	930	1070
Spindle centre to column cover	mm	630	630	750	750	860	860	1000
Spindle speed	rpm	8000 belt (opt 10,000 direct)	4000 / 6000 gear	8000 belt (opt 10,000 direct)	4000 / 6000 gear	8000 belt (opt 10,000 direct)	4000 / 6000 gear	8000 belt (opt 10,000 direct)
Feedrates								
Rapid on XY/Z axes	m/min	32 x 32 x 30	24 x 24 x 20	20 x 20 x 20	18 x 18 x 15	20 x 20 x 20	18 x 18 x 15	16 x 16 x 12
Cutting feedrate	m/min	1~20	1~15	1~20	1~15	1~15		
No counter weight	Z axis							
ATC								
Tool pocket magazine capacity CAM	piece	BBT50 / 24T (opt 32T)						
Tool change method		random bi-directional, arm type						
Max tool diameter	mm	110						
Max tool dia without neighbour tool	mm	200						
Maximum tool length	mm	300						
Maximum tool weight	kg	15						
Motor								
Feed AC servo motor (feed AC servo motor power)	kW	$\alpha 12 / \alpha 12 / \alpha 12B$ (3/3/3)	$\alpha 22 / \alpha 22 / \alpha 22B$ (4/4/4)	$\alpha 22 / \alpha 12 / \alpha 22B$ (4/3/4)	$\alpha 22 / \alpha 22 / \alpha 22B$ (4/4/4)	$\alpha 22 / \alpha 22 / \alpha 22B$ (4/4/4)		$\alpha 30 / \alpha 30 / \alpha 30B$
Spindle AC servo motor	kW	opt direct opt $\alpha i 12 / \alpha i 8$		opt direct opt $\alpha 15$		opt direct opt $\alpha 15$		opt direct opt $\alpha 15$
Spindle AC servo motor (continuous / 30 mins)	kW	Belt $\alpha i 8$ (11/15)	Gear $\alpha i 8$	Belt $\alpha 15$ (15/18.5)	Gear $\alpha 15$ (15/18.5)	Belt $\alpha 15$ (15/18.5)	Gear $\alpha 15$ (15/18.5)	Belt $\alpha 15$ (15/18.5)
Coolant chiller 20L		400PTSBM3	750PSBM	400PTSBM3	750PSBM	400PTSBM3	750PSBM	400PTSBM3
Coolant pump	kW	1.27						
Coolant tank capacity	L	350						
Pneumatic supply	kg/cm ²	6						
Power	KVA	30			40			45
General								
Bi-directional repeat precision R		ISO 10791-4 R : 0.007mm/full, JIS B 6336-4 \pm 0.003mm/300mm						R : 0.010
Positioning precision A		ISO 10791-4 A : 0.010mm/full, JIS B 6336-4 0.004mm/300mm						A : 0.014
Total weight (approx)	kg	9300		12,500	13,000	13,500	14,000	16,5

Vertical Machining Centres

Machine Dimensions



Model	A	B	C	D	E	F	G	H	I	J	K	L
1363	3400	2700	2395	3046	405	82	900	2985	724	2668	450	243
1680	4000	2980	2670	3155	485	82	870	3265	680	2834	406	317
1886	4500	3150	2700	3185	485	82	870	3435	680	2834	406	317
2200	5300	3700	3050	3500	450	82	970	3745	639	2834	154	391

Standard Accessories

- 3 axes coolant-through ball screw device
- Dual auger chip crew conveyors
- Coolant system
- Central lubrication system
- Work lamp and pilot lamp
- 24 station ATC unit
- Spindle air blast
- 3 colour alarm lamp
- Spindle load meter
- Leveling blocks and screws (foundation bolt)
- M-code 30 auto power off
- Heat exchanger for electrical cabinet
- RS-232/PCMCIA interface
- Adjustment tools
- Spindle oil chiller
- M-code air blow chip
- Air gun and coolant pump
- Operation panel and storage tank
- Disk oil-skimmer
- Fully enclosed guarding
- Folded operation cabinet

Optional Accessories

- Spindle thermal compensation device
- Deep hole drilling
- Heavy duty coolant pump
- Tool length measurement system
- Work-piece measurement
- Chip conveyor
- A/C cooler for electrical cabinet
- Coolant through spindle system (20 bar)
- Oil-mist draft device
- 4th axis rotary table
- Optical linear scale
- Data server
- ATC 32/40 pockets
- DNC link and CF card
- HSK/CAT tool shank
- Siemens/Heidenhain control options

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