

DUGARD

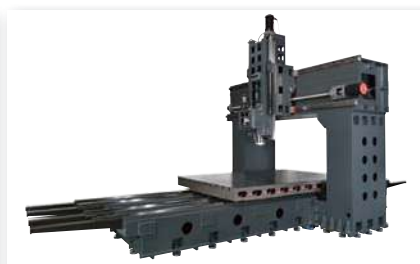
Machine Tools That Create Solutions Since 1939

DUGARD
Heavy Duty

LB Range

Dugard Double Column Machining Centres

Exceptional heavy duty capacity at a competitive price



DUGARD Machine
Tools

www.dugard.com

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LB Series - 2616/4016/3227/4227

Double Column Machining Centres

Cutting Performance is Our Speciality**LB Series**

- Designed exclusively by our experienced senior design team
- Massive machine structure with powerful geared head for heavy duty and high efficiency cutting
- Optional manual or semi-automatic 90° horizontal milling head for 5 face machining
- Optional direct drive spindle & motor for high speed cutting (BT50 - 10,000rpm)
- High accuracy & superb surface finish suitable for mould work and high precision parts
- Z axis with box ways design for superior rigidity and heavy duty cutting
- Available with direct drive spindles and Z axis roller type linear ways

Model	Ballscrew diameter	Grade	Linear way width	Grade
LB-4016	X axis Ø63	C3	55	P
	Y axis Ø50	C3	55	P
	Z axis Ø50	C3	55	P



Superior Machine Structure

LB 3227 4227 Series

- Ultra rigid machine design giving stability, accuracy and unbeaten performance
- X axis utilises two heavy duty roller type linear ways for low friction at high rigidity and high speed

Ballscrew diameter	Grade	Linear way width	Grade
X axis Ø80	C3	55x2 + 45x2	P
Y axis Ø63	C3	65	P
Z axis Ø63	C3	55	P



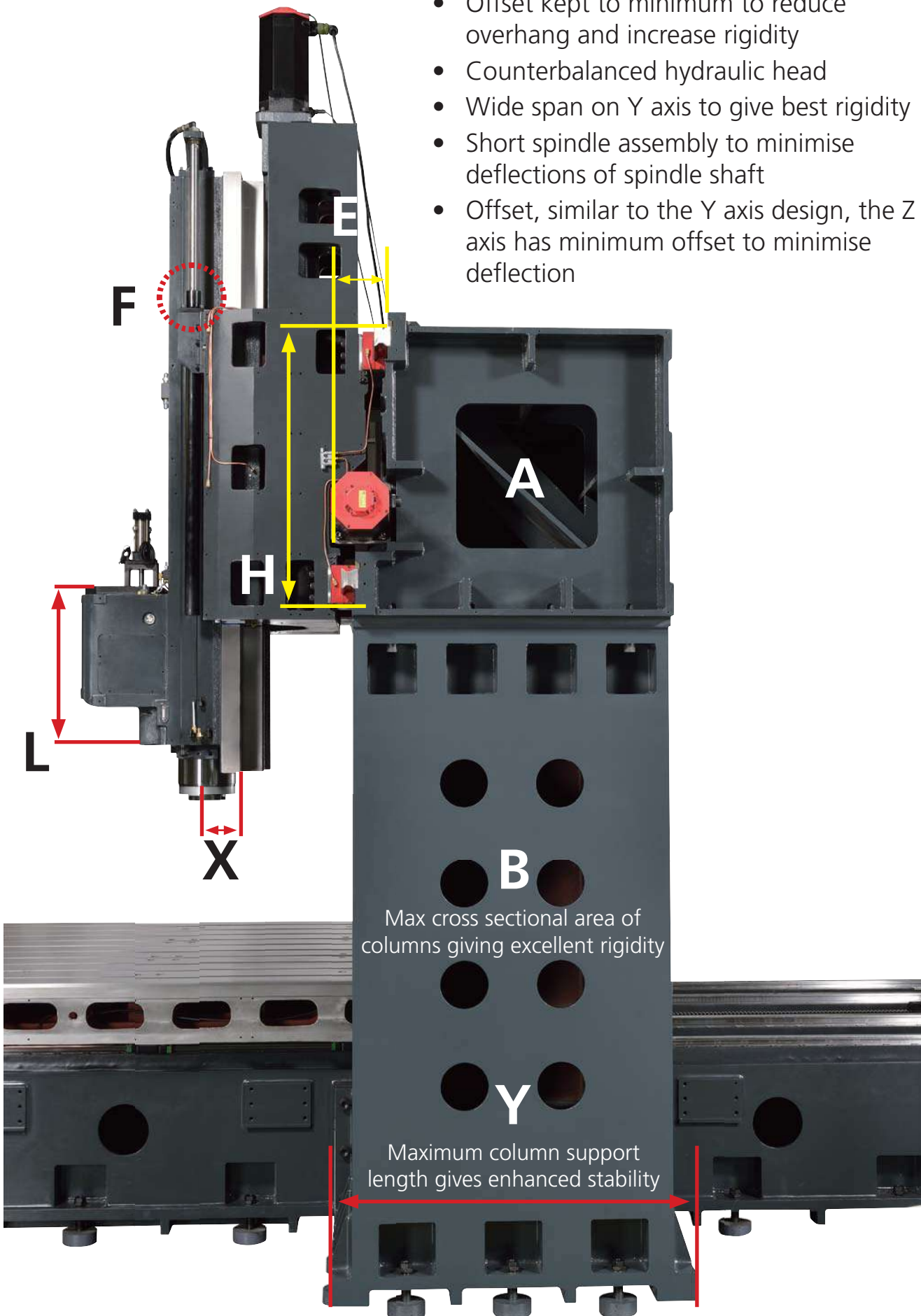
Revolutionary Machine Design

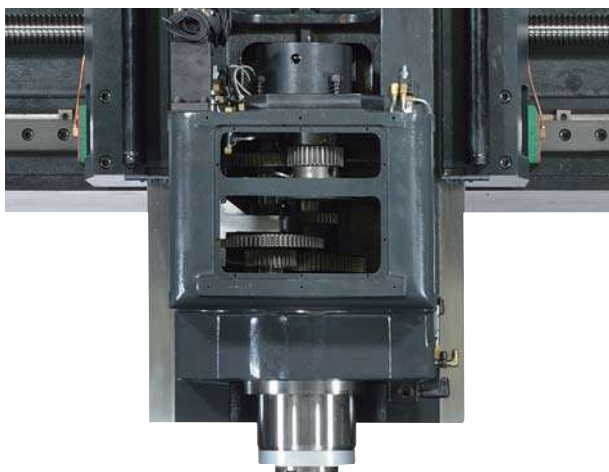
- X axis designed with 4 linear ways. 2 inboard ways are roller type, giving superb geometry control with 2 outboard ball type ways to fully support the table and minimise friction (LB 3227/4227)
- X/Y/Z ballscrews are refrigerated by a coolant through ballscrew system
- X axis has a gear box giving high torque performance for heavy duty cutting and high resolution encoder for high precision accuracy



LB3227 / 4227 series

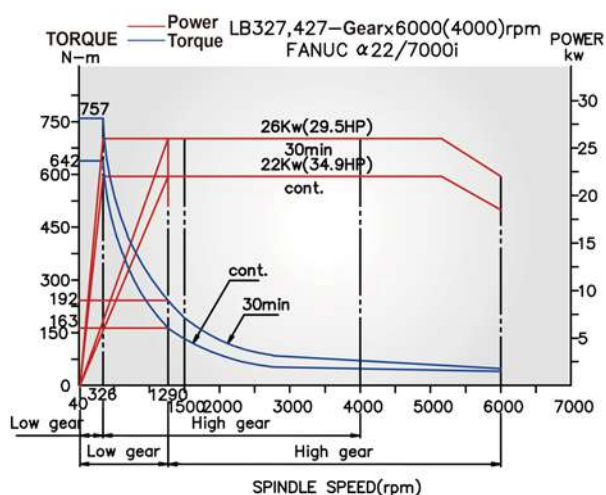
- Large cross sectional area of beam from cross slide A
- Offset kept to minimum to reduce overhang and increase rigidity E
- Counterbalanced hydraulic head F
- Wide span on Y axis to give best rigidity H
- Short spindle assembly to minimise deflections of spindle shaft L
- Offset, similar to the Y axis design, the Z axis has minimum offset to minimise deflection X



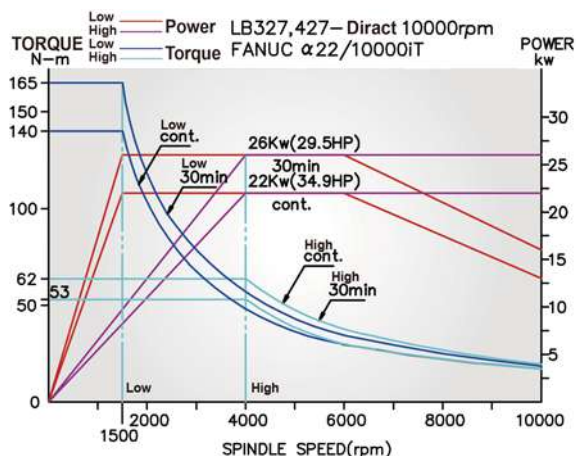


Precision Gear Transmission, Cutting Power, Low Noise, Low Vibration

• BT50 6000rpm gear head (Fanuc α 22i/7000)



• 10,000rpm direct drive (opt) (Fanuc α 22i/10,000)



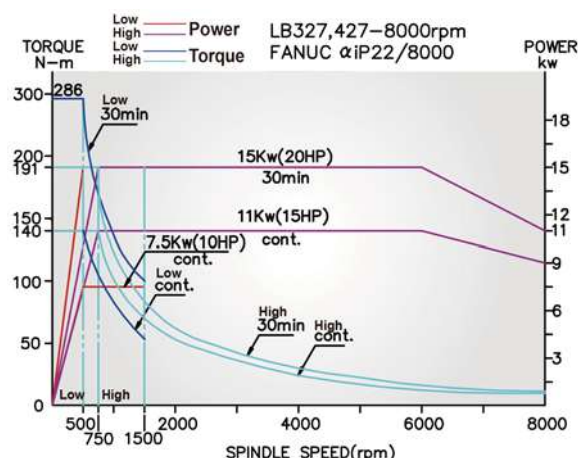
Powerful Cutting Performance

Workpiece material	S45C
Face cutter diameter	$\varnothing 100$
Spindle rpm	560rpm
Cutting width	85mm
Cutting depth	7.1mm
Cutting feed rate	1000 mm/min
Spindle motor	22/26kW
Total chip removal	600 cc/min
Workpiece height	330mm

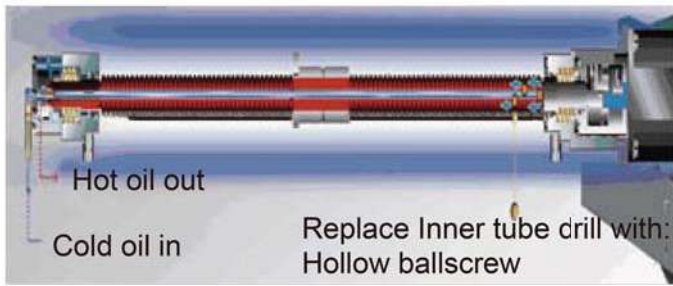
1. Increased torque from geared head
2. Larger spindle bearing - ID to 100mm
3. New spindle design

- 22/26kW powerful spindle motor, #50 taper two speeds gear change 6000rpm spindle, max torque 642/757Nm, excellent for heavy duty cutting
- For heavier cutting, #50/4000rpm gear head available
- Direct drive spindle (#50/10,000rpm) available for high speed and fine surface finish workpiece

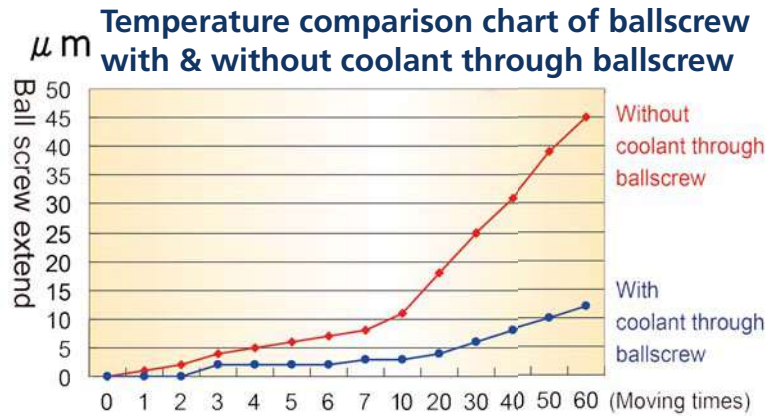
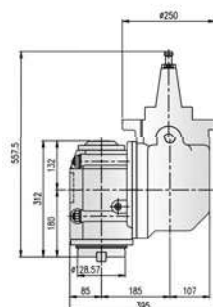
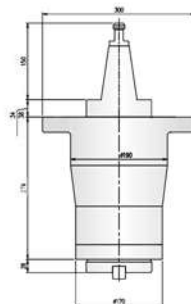
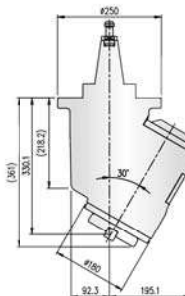
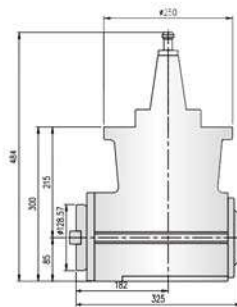
• 8000rpm direct drive wide range spindle motor (opt) (Fanuc α 22iP/8000)



Coolant through ballscrew design



Optional multi-function angle milling head



Above test room temperature 24°C, the measured value will vary in different environments

90° angle milling head

Manual mount head & tools
Manual indexing
Maximum 2000rpm

30° angle milling head

Manual mount head & tools
Manual indexing
Maximum 2000rpm

Extension milling head

Manual mount head & tools
No indexing function
Maximum 2000rpm

Universal milling head

Manual mount head & tools
Manual indexing
Maximum 2000rpm

High Accuracy, High Torque Design



X axis with high resolution encoder, ballscrew refrigeration through centre



X axis with high torque gear transmission



Manual 90° angle head (allows 5 face milling), manual changing head, auto hyd tool clamping

Standard Control



Fanuc 0iMD Alpha Package

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

Other Available Controls



Heidenhain iTNC 530

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

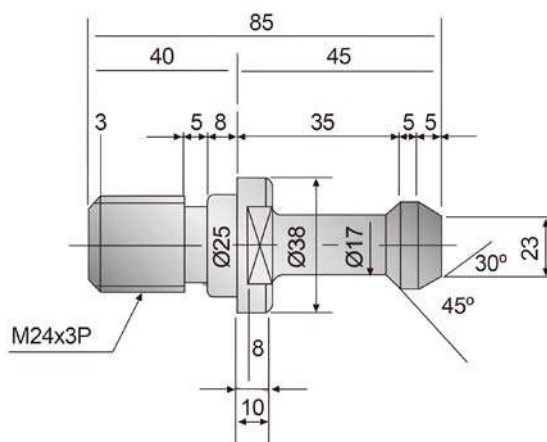


Siemens 828D

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

Pull Stud Specification

BT50



Control Accessories



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

- CF memory card
- RS-232C
- Ethernet



Table Dimensions

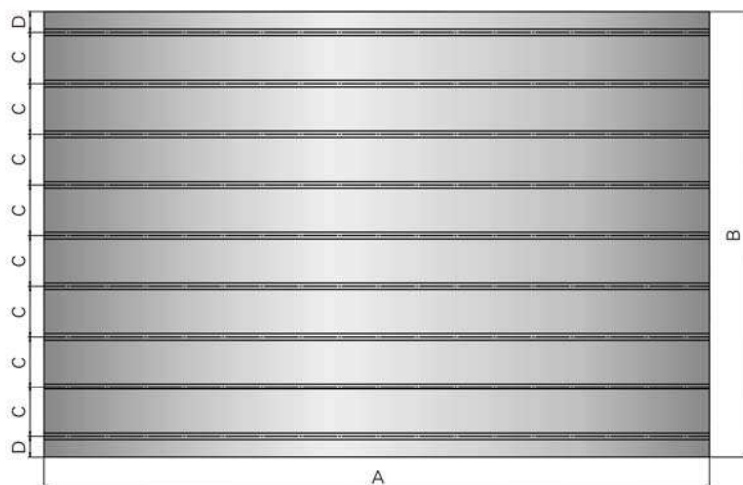
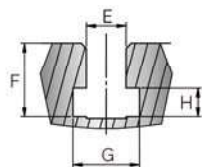


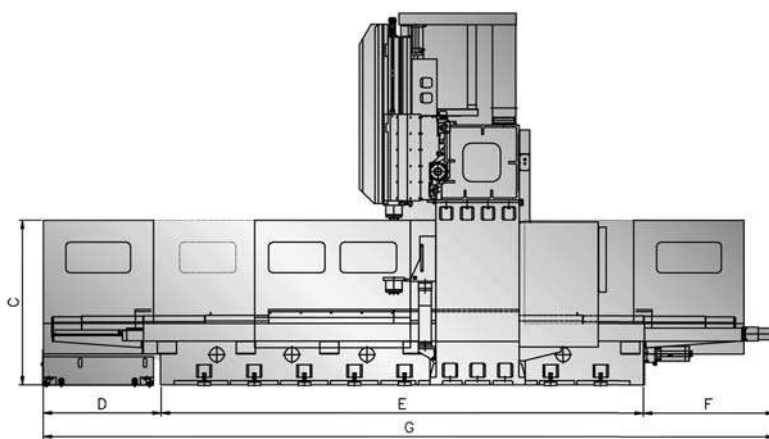
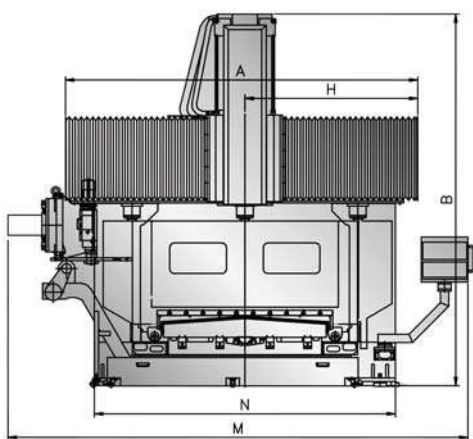
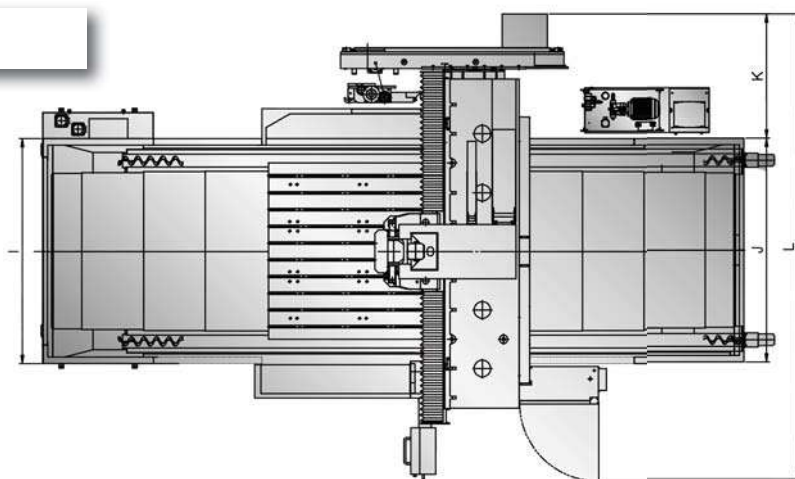
Table Dimension

	A	B	C	D	E	F	G	I	T
2616	2400	1500	170	70	22	42	37	16	9
4016	3000	1500	170	70	22	42	37	16	9
3227	3000	2100	200	150	28	48	46	20	10
4227	4000	2100	200	150	28	48	46	20	10



Machine Dimensions

LB2616/4016/3227/4227



Machine Dimensions

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
2616	3082	4304	1923	1370	4590	1535	7495	1513	1890	1890	1337	4612	4500	2700
4016	3082	4304	1923	1370	5970	1535	8695	1513	1890	1890	1337	4612	4500	2700
3227	4210	4454	1973	1410	5785	1570	8765	2065	2690	2690	1487	5582	5500	3600
4227	4210	4454	1973	1410	7785	1570	10765	2065	2690	2690	1487	5582	5500	3600

	Description	Unit	2616	
Travel	X axis travel	mm	2600	
	Y axis travel	mm	1600	
	Z axis travel	mm	850	
	Spindle nose to table	mm	200-1050	
	Distance between columns	mm	1700	
Table	Table size (X)	mm	2400	
	Table size (Y)	mm	1500	
	Table loading capacity	kg	9000	
	T-slot	mm	22 x 170 x 9	
Spindle	Spindle horse power (continuous/30min)	kW	22 / 26	
	Maximum spindle	rpm	Hi/Lo	
	Spindle maximum torque	Nm	642 / 757	
	Spindle taper / pull stud	#		
	Spindle tool clamping force	kg		
	Spindle bearing ID	mm		
Feedrate	Rapid feedrate (X)	m/min	20	
	Rapid feedrate (Y / Z)	m/min	24 / 15	
	Cutting feedrate (X / Y / Z)	m/min		
	X / Y / Z axial motor	kW	7 / 4 / 4	
	XYZ linear way width		X: 55mm, Y:55mm roller type linear ways (Z axis box way or	
	X axis ballscrew (D x P)	mm	Ø63 x P20	
	Y axis ballscrew (D x P)	mm	Ø50 x P12	
	Z axis ballscrew (D x P)	mm	Ø50 x P12	
Tool Magazine	Tool magazine capacity		60 station	
	Max tool Ø without adjacent tool Ø	mm	Ø127 / 215	
	Maximum tool length	mm	300	
	Maximum tool weight	kg	20	
General	Electric power			
	Total electric power requirement	KVA	50	
	Air pressure requirement	kg/cm ²	min 5	
	Hyd tank volume (hyd motor HP)	liter	120 (7.5HP)	
	Lubrication oil tank volume	liter	6	
	Coolant tank & motor hp	liter	500 (1.5HP)	
	Control system		Fanuc OiMD	
	Machine L x W x H	mm	7495 x 4500 x 4304	8695
	Machine gross weight	kg	24,000	

Standard Accessories

- 6000rpm, Hi/Lo gear auto change spindle
- XYZ refrigeration through ballscrew
- Chain type tool magazine 60 tool capacity
- Twin arm type auto tool change system
- Double air cylinder counterbalance system
- Pneumatic system (excluding outer air piping)
- Thermal compensation
- Spindle oil chiller, spindle air blast
- Centralised lubrication system
- Fully enclosed splash guard design
- Coolant system (tank & motor)
- Dual chip auger
- Swarf conveyor and bin
- Foundation pads and bolts
- Tool box with tools
- Sealed electrical cabinet with heat exchanger
- Over arm operational panel box
- Portable type MPG wheel
- Pedal switch for tool clamp / unclamp
- Work light
- Programme finish alarm light
- RS232C transmission plug
- Rigid tapping
- Auto power off
- Technical manual one set including operator's manual, wiring diagram, ladder diagram
- Transformer
- CE certification

4016	3227	4227
4000	3200	4200
1600	2700	2700
850	900 (1100 opt)	900 (1100 opt)
200-1050	200-1100 (200-1300 opt)	200-1100 (200-1300 opt)
1700	2500	2500
4000	3000	4000
1500	2100	2100
13,000	12,000	15,000
	28 x 200 x 10	
	22 / 26	
gear change 6000 (4000 gear head, 10,000 direct drive opt)		
	642 / 757	
BT50 / 45° (MAS407-P50T-1)		
1800		
100		
	18	
	18 / 15	
1-10,000		
	7 / 7 / 7	
roller type linear way	X:55mm roller + 45mm ball linear ways, Y:65mm roller linear ways (Z axis box or roller linear ways)	
	Ø80 x P16	
	Ø63 x P12	
	Ø63 x P12	
	60 station	
	Ø127 / 215	
	300	
	20	
AC220V ± 10%, 3Ø, 60 / 50Hz		
	60	
	min 5	
	125 (7.5HP)	
	6	
	500 (1.5HP)	
	Fanuc 0iMD	
x 4500 x 4304	8765 x 5500 x 4454	10,765 x 5500 x 4454
28,000	34,000	39,000

*Specifications are subject to change without prior notice

Optional Accessories

- 4000rpm gear head
- Direct drive high speed spindle, 10,000rpm
- Coolant through spindle (form A) 20,70 bar + paper filter
- Column raiser block (200 or 300mm)
- Sub work table, select according to models
- XYZ three axes linear scale
- Fully enclosed splash guard with top guard and multi-layer operation doors
- Semi auto 90° milling head (for 5 facing), manual change head, auto hyd tool clamp
- Arm type milling head magazine
- 90°, 30° milling heads
- Horizontal pendant operation panel
- 5 face pendant operation panel
- Air conditioner for electrical cabinet
- Hydraulic tank with chiller
- Auto tool length measurement
- Auto workpiece measurement
- Auto heat distortion compensation
- 4th axis rotary table
- Coolant through tool interfacing without tool
- Spindle oil mist cutting blast system
- Oil mist collector
- Scraper type swarf conveyor
- Circular type oil/water separator
- Data server with 2GB memory
- AICC2 preview 600 blocks
- AICC2 preview 1000 blocks
- XYZ independent MPG
- Digital display MPG
- 3D coordinate and zero point auto shift



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