

DUGARD

Machine Tools That Create Solutions Since 1939

DUGARD
VMCs

850 / 1000Y **Plus** / 1500

Dugard Vertical Machining Centres

Designed for high metal removal rates



DUGARD Machine
Tools

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The Leading Edge in

Dugard 850



Dugard 1000Y Plus



- X axis travel 850mm
- Y axis travel 530mm
- Z axis travel 510mm
- Maximum table loading 500kg
- Dimensions (L x W x H) 2300 x 2060 x 2583mm
- Machine weight 5800kg

Now with 610mm Y travel and linear ways

- X axis travel
- Y axis travel
- Z axis travel
- Maximum table loading
- Dimensions (L x W x H)
- Machine weight



Spindle Speed

12,000rpm (std)
15,000rpm / 20,000rpm (opt)

1000Y Plus

12,000rpm (std)
15,000rpm (opt)

Tool Capacity

30 tool twin arm type (std)
20 tool carousel type (opt)
40 tool twin arm type (opt)

1000Y Plus

30 tool twin arm type (std)

Rapid Travel

Dugard 1000Y Plus

X axis 30m/min
Y axis 30m/min
Z axis 30m/min

Dugard 850

X axis 36m/min
Y axis 36m/min
Z axis 24m/min

Precision Machining

Dugard 1500



heavy duty roller

1020mm
610mm
510mm
600kg
2800 x 2080 x 2583mm
7000kg

• X axis travel	1525mm
• Y axis travel	635mm
• Z axis travel	635mm
• Maximum table loading	1200kg
• Dimensions (L x W x H)	3800 x 2890 X 2635mm
• Machine weight	8500kg

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s / Dugard 1500

Positioning Accuracy
± 0.004mm / 300mm (JIS B6338)
0.014mm (VDI 3441 PS)1111

Repeatability Accuracy
Dugard 850 / 1000Y Plus
± 0.003mm (JIS B6338)
0.010mm (VDI 3441 PS)

Dugard 1500
±0.002mm(JIS B6338)
0.010mm (VDI 3441 PS)

Dugard 1000Y Plus VMC

Now with 610mm Y travel and heavy duty roller linear ways

The Dugard 1000Y Plus is a precision built rugged machine that meets industrial requirements for high speed machining and precision mould machining. The Dugard 1000Y Plus features outstanding rigidity, stability and accuracy which will give you competitive leadership year after year.

Spindle Speed

12,000rpm direct drive (standard)
15,000rpm direct drive (optional)

Tool Capacity

30 tool twin arm ATC (standard)
40 tool chain type magazine (optional)



Rapid Traverses

X axis 30 m/min
Y axis 30 m/min
Z axis 24 m/min

Positioning Accuracy

$\pm 0.004\text{mm} / 300\text{mm}$ (JIS B6338)
0.014mm (VDI 3441 PS)

Repeatability Accuracy

$\pm 0.003\text{mm}$ (JIS B6338)
0.010mm (VDI 3441 PS)

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 OiMF

- 10.4" TFT LCD colour monitor
- New D series high speed
- PC flash card storage
- Industry standard programming



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



- CF memory card
- RS-232C
- Ethernet

Dependability Through Rigorous Inspection

Dugard 1000Y Plus is subject to rigorous inspection using sophisticated inspection instruments.

These quality control checks ensure total machine accuracy and dependability



Ball Bar Testing

The test is carried out using a precision test bar which outputs micron changes in length. The bar is fixed to the spindle and table. The machine is then put through a series of circular moves in the X/Y plane and 1/2 circle moves in the X/Z and Y/Z planes. Encoder data



from the bar is fed into a computer, which outputs a chart of machine accuracy. Any deviations in squareness or length show up as distorted circles that are very easy for a technician to spot. This chart assures that the machine is accurate and properly aligned.

Other Available Controls

Heidenhain TNC 640

- 15" TFT LCD colour monitor
- 21GB NC programme memory
- Intelligent machining
- Fast USB 2.0 interface for increased connectivity

Siemens 828D

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

Laser Calibration

After assembly, all machines are inspected using state-of-the-art laser equipment.

This process of inspection ensures all axes are verified

and calibrated to provide the best possible accuracy and repeatability.



Rugged Construction

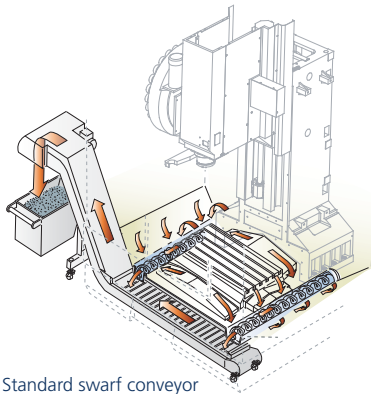
The heavy duty design and construction on all Dugard VMCs assures optimum rigidity and stability for a longer machine life



Wide Span Column Base to Guarantee Maximum Rigidity

- Y axis linear ways are impressive on Dugard VMC models and ensure maximum rigidity. The wide machine base also guarantees maximum structural stability
- One piece rear Y axis chip guard for maximum chip clearance designed with a high apex angle to allow ease of chip flow

Machine shown - Dugard 1500



Machine Base and Saddle Casting Incorporate Integral X & Y Motor Mountings

Unlike the conventional design of separately bolted motor brackets, this one piece construction greatly improves accuracy and rigidity.

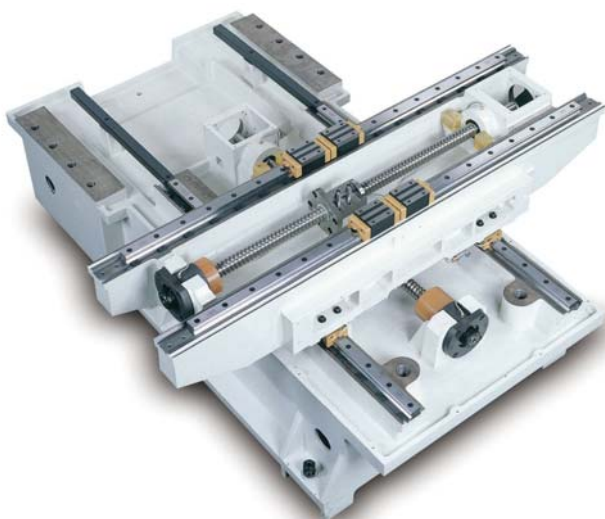
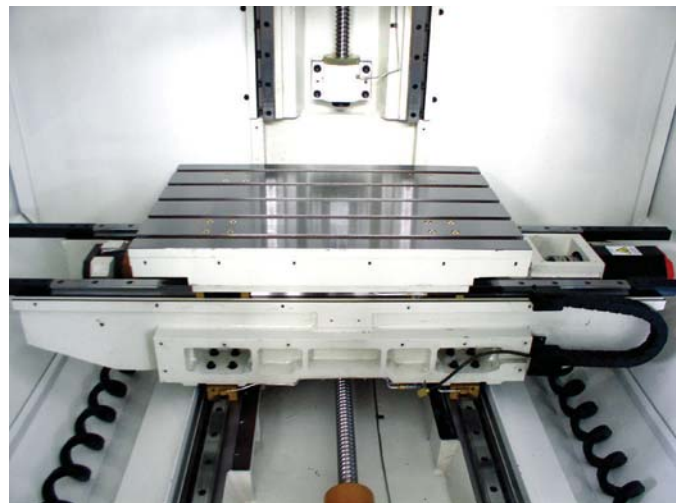


Easy Chip Flow Splash Guard Design

- High apex angle chip guard design provides easier chip flow
- Standard rear flood nozzles creating coolant jets to aid chip clearance

High Speed and Rigid Roller Linear Ways on X/Y/Z Axis

- Heavy duty roller type linear ways on three axes with 35mm width. Z axis employs extended length bearing blocks for added rigidity
- Substantial Y axis travel makes the machine ideal for precision mould and job-shop machining
- Dual chip auger is optional



High Precision Ball Screws on 3 Axes

High precision class C3 ball screws are used for all three axes. Precision pre-tension is applied to the ball screws. Both backlash and pitch errors are compensated by laser calibration equipment.

Direct Drive Spindle

Finely crafted spindles to maximise your machining quality.

Features “Big Plus” double contact tooling system; adding significant rigidity resulting in 30-40% improvement in heavy cutting and tool life - can also accept customers’ existing BT40 tooling

Extra large spindle design, Ø70mm front spindle bearing inner diameter, combined with ABEC class 7 (P4) super high precision angular contact ball bearings to ensure high axial thrust and radial loads.

Choice of various spindles

Direct Drive Spindle

12,000 rpm (standard)

15,000 rpm (option)



Direct drive gives you instant spindle response, reduced noise and less wear and tear so fewer parts to replace

Type	Twin Arm
Tool Shank	BT40 / CT40 / DIN40 / JT40
Tool Capacity	30 (40 optional)
Tool Selection	Random
Tool Access	Bi-Directional



Twin Arm Type ATC



Chain



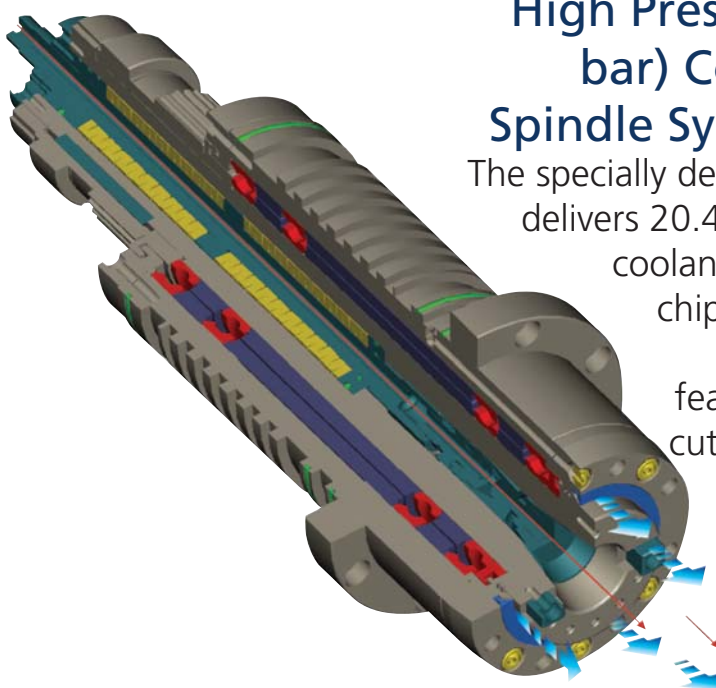
Quick, Positive Tool Release

- The large diameter cylinder provides quick and positive tool releasing
- The floating tool unclamping feature ensures lifetime accuracy and long service life of spindle bearings



High Pressure 300 psi (20 bar) Coolant Through Spindle System (Optional)

The specially designed cooling system delivers 20.4 kg/cm² high pressure coolant to efficiently remove chips and heat from deep hole machining. This feature greatly enhances cutting performance and tool life in addition to maintaining workpiece accuracy and reliability



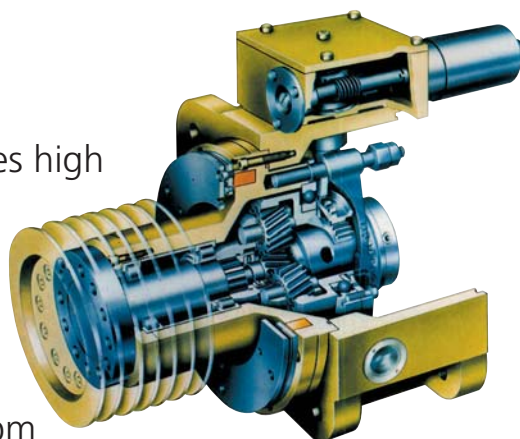
- Spindle air purge (standard)
- Coolant through spindle (optional)



Type ATC

ZF Gearbox (Optional)

- The advanced gearbox provides high torque output in low speed range, making the machine excellent for heavy duty cutting, drilling and tapping
- The ZF gearbox provides maximum speed up to 8000rpm for high speed machining with superior surface finish



Description	Dugard 850
Table	
Table size	1000 x 510mm
T-slots (no x wid x dis)	5 x 18mm x 100mm
Table load	500kg
Travel	
X / Y / Z travel	850 / 520 / 510mm
Spindle	
Spindle nose to table	150~660mm
Spindle centre to column	585mm
Spindle taper	BT40 (CAT flange opt)
Spindle speed	80~12,000rpm (15,000 / 20,000rpm opt)
Feedrates	
Rapid on X/Y/Z axes	36/36/24 m/min
Cutting feedrate	1~10,000 mm/min
Accuracy	
Positioning	±0.004mm
Repeatability	±0.003mm
Tool Changer	
Tool capacity	30 twin arm (40 opt)
Tool shank	BBT40
Pull stud	P40T-1
Max tool diameter	76mm
Max tool weight	7kg
Motor	
Drive motor X, Y, Z digital	1.8 / 1.8 / 2.5kW
Coolant pump	0.76kW
General	
Power required	15KVA
Air required	5kg/cm ² ; 200L/min
Floor space (L x W x H)	2300 x 2060 x 2583mm
Machine weight approx	5800kg

*Specifications are subject to change without prior notice

Standard Features

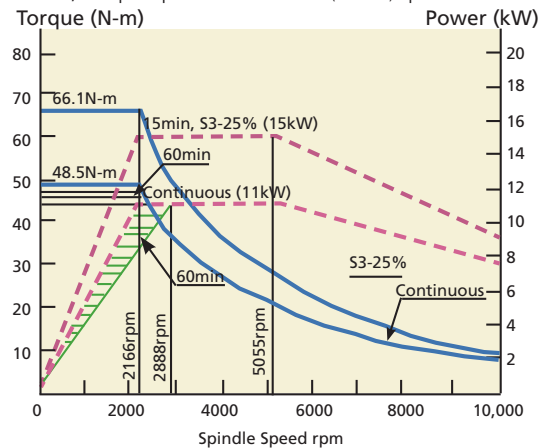
- 30 twin arm ATC
- 20 bar through spindle coolant
- Swarf conveyor
- Fully enclosed splash guard
- Central lubrication system
- Rear chip flush system
- Leveling bolts and pads
- Operation manual & parts list
- 4th axis wiring
- BT40 pull studs
- Chip flushing device at rear
- Heat changer for electric cabinet
- Spindle air blast and oil chiller
- Work light, tool kit, status light
- Air gun, coolant gun
- Linear scale

Optional Accessories

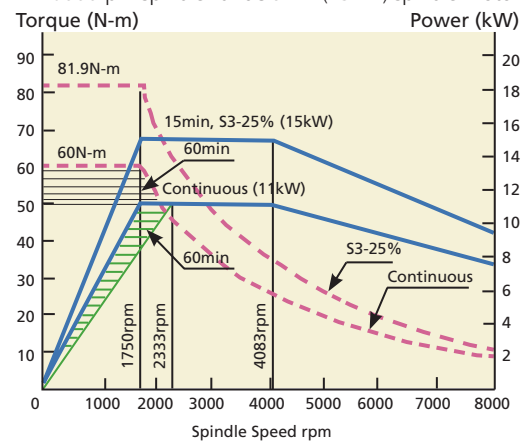
- CT-40 or DIN-40 pull studs
- 15,000rpm / 20,000rpm spindle
- 4th axis preparation
- 4th axis rotary table and motor
- Spindle oil chiller
- Automatic tool length measurement
- Dual screw type chip conveyor
- 40 station ATC
- Oil skimmer

Spindle Motor

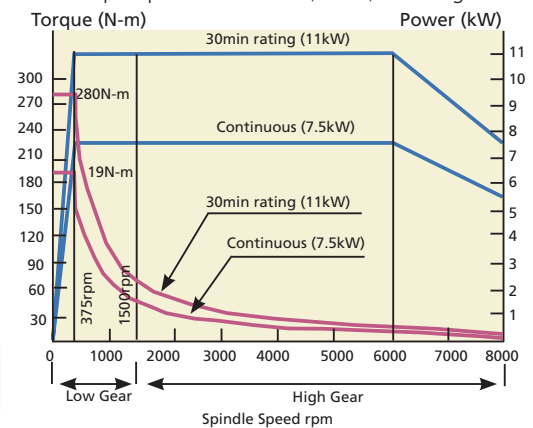
1. 10,000rpm spindle Fanuc β 12i (15kW) spindle motor



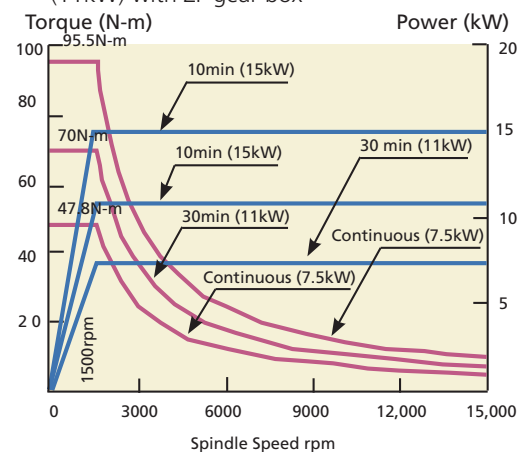
2. 8000rpm spindle Fanuc β 12i (15kW) spindle motor

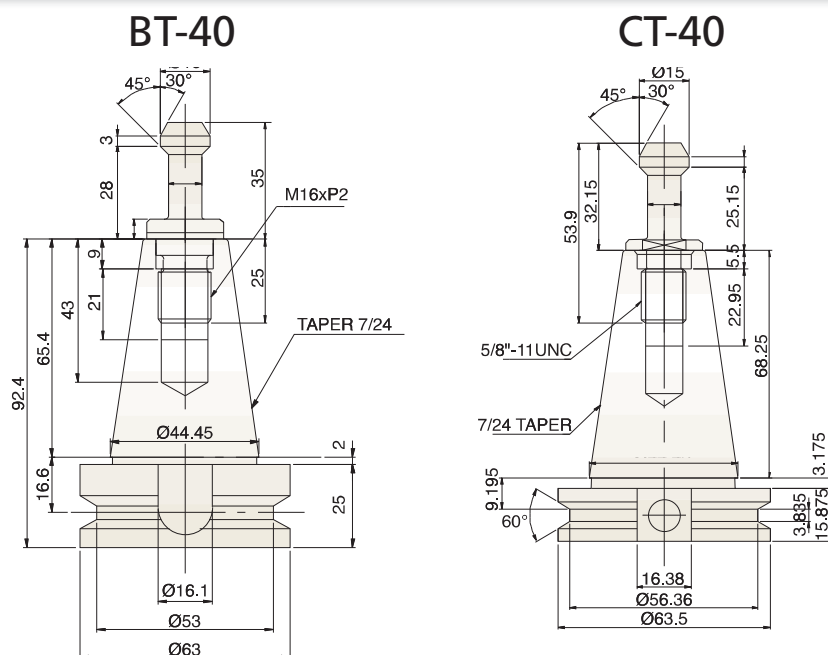


3. 8000rpm spindle Fanuc α 8i (11kW) with ZF gear box

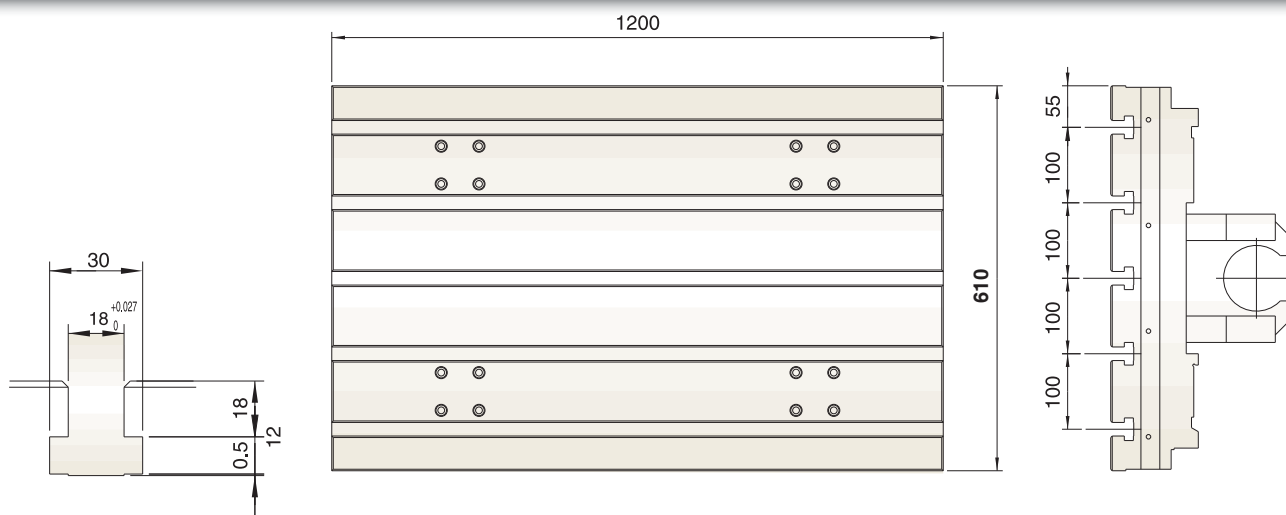


4. Directly coupled 15,000rpm spindle Fanuc α 8i (11kW) with ZF gear box

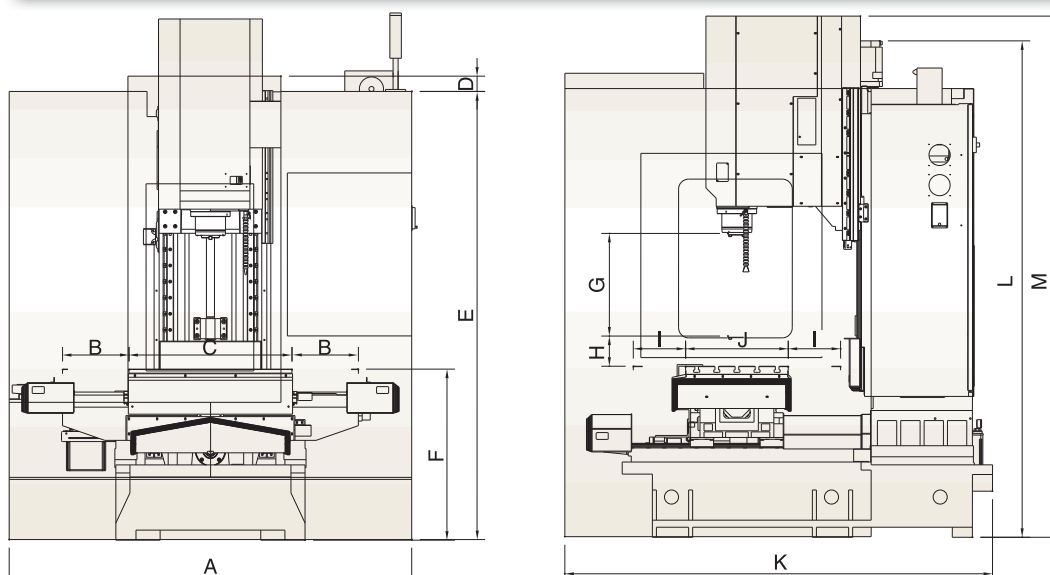




Unit : mm



Unit : mm



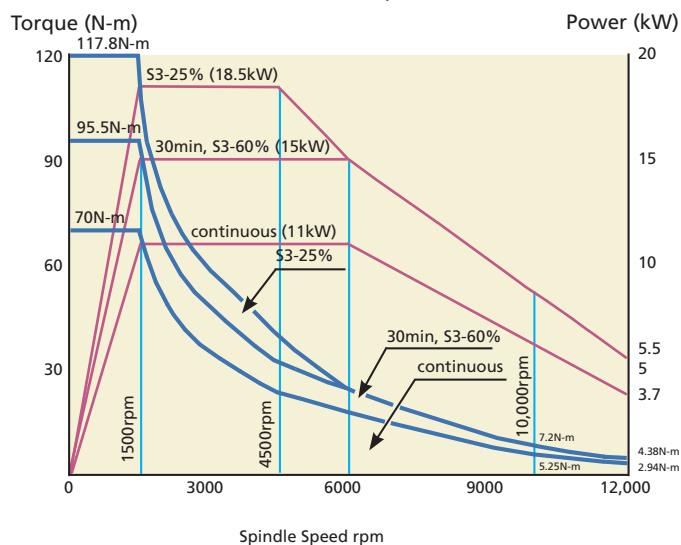
Item	Dugard 1000Y Plus
A	2800mm
B	610mm
C	1200mm
D	76mm
E	2230mm
F	870mm
G	550mm
H	130mm
I	305mm
J	600mm
K	2200mm
L	2467mm
M	2898mm

Specification	Dugard 1000Y Plus
Table	
Table size	1200 x 600mm
T-slots (no x wid x dis)	5 x 18mm x 100mm
Table load	600kg
Travel	
X travel	1020mm
Y travel	610mm
Z travel	510mm
Spindle	
Spindle nose to table	150~660mm
Spindle centre to column	665mm
Spindle taper	BT40 (CAT flange opt)
Spindle speed	12,000rpm (15,000 / 20,000rpm opt)
Direct spindle drive	18.5kW Fanuc 17kW Siemens / Heidenhain
Spindle diameter	70mm
Feedrates	
Rapid on (X/Y/Z) axes	30/30/30 m/min
Cutting feedrate	15 m/min
Accuracy	
Positioning	±0.004mm
Repeatability	±0.003mm
Tool Changer	
Tool capacity	30 twin arm (40 opt)
Tool shank	BBT-40
Pull stud	P40T-1
Max tool diameter with adjacent tool	76mm
Max tool weight	7kg
Motor	
Drive motor X, Y, Z digital	1.8 / 1.8 / 2.5kW
Coolant pump	0.76kW
General	
Power required	15kVA
Air required	5kg/cm ² , 200L/min
Floor space (L x W x H)	2800 x 2080 x 2583mm
Machine weight (approx)	7000kg

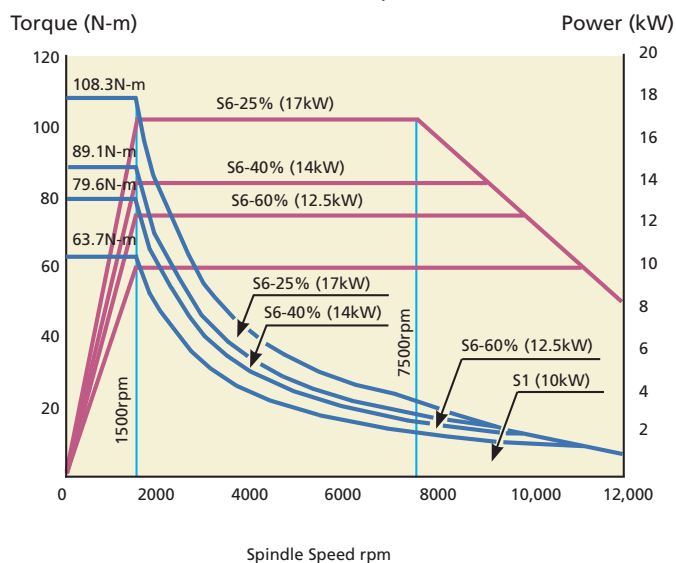
*Specifications are subject to change without prior notice

Spindle Motor

Fanuc α 12 / 12000i (12,000rpm)



Heidenhain QAN-200U (12,000rpm)



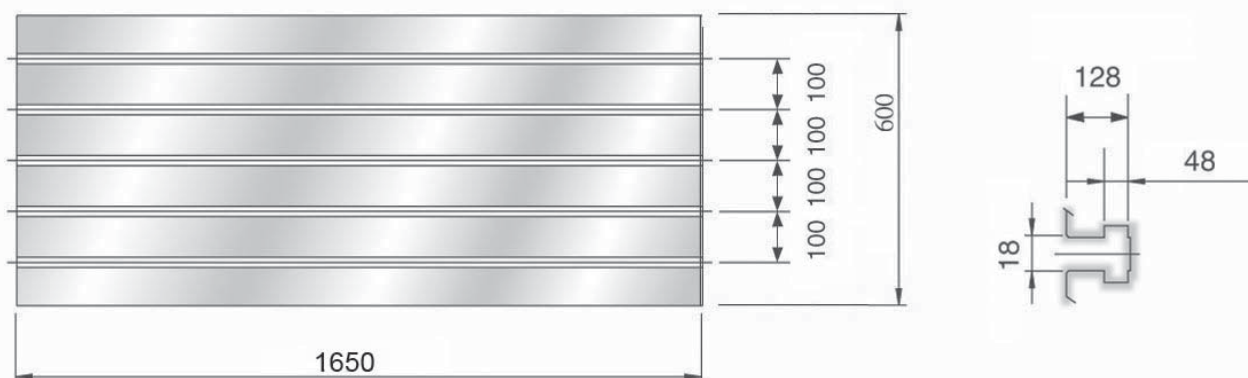
Standard Features

- Heavy duty rollerways
- Through spindle coolant
- Swarf conveyor
- BT40 pull studs
- 30 twin arm ATC
- 12,000rpm direct drive spindle
- Fully enclosed splash guard
- Work light
- Central lubrication system
- 4th axis preparation
- Status light
- Spindle air blast
- Spindle oil chiller
- Rear chip flush system
- Heat exchanger for electric cabinet
- Oil skimmer
- Air gun
- Coolant gun
- Tool kit
- Levelling bolts and pads
- Operation manual and parts list

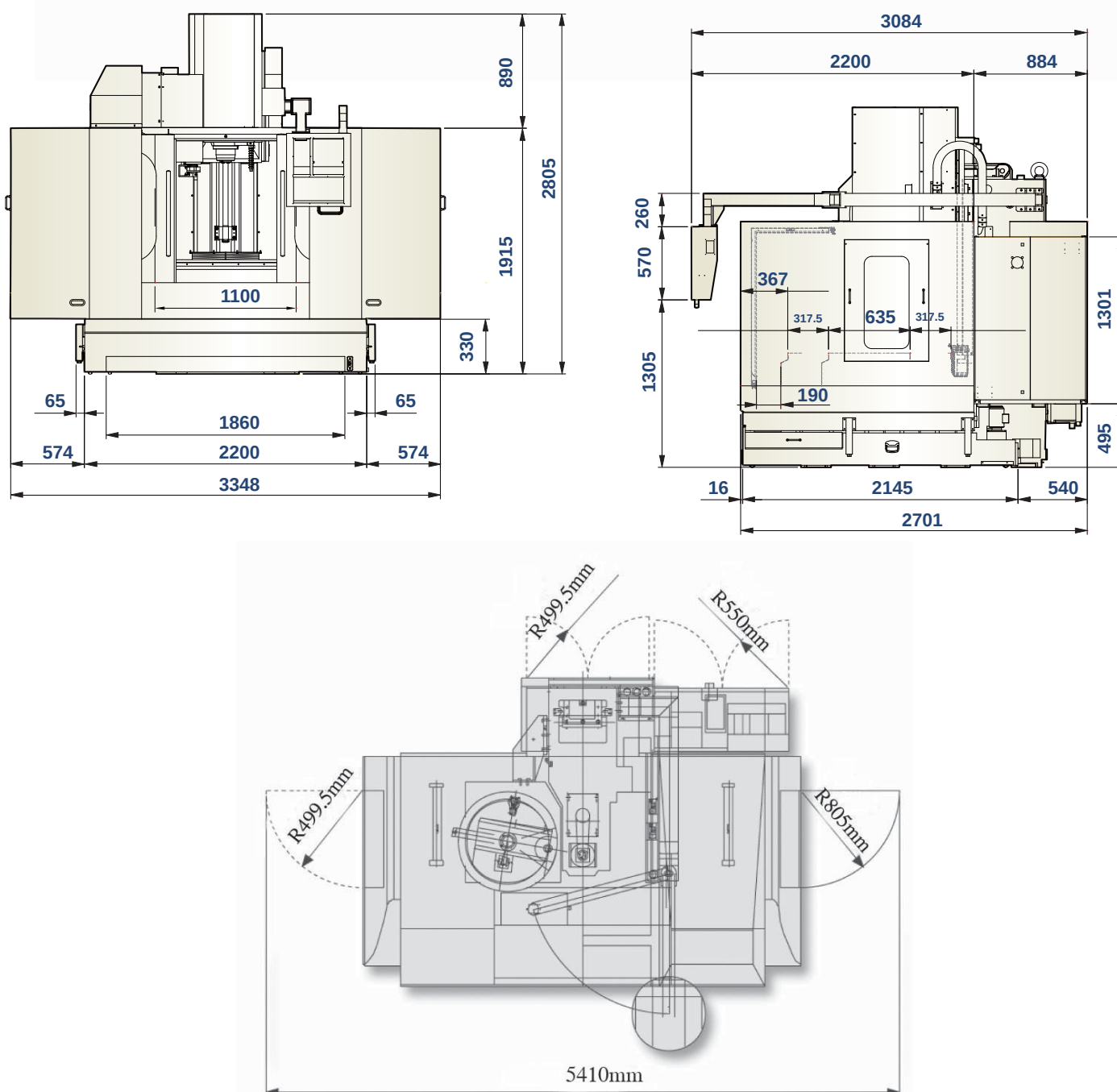
Optional Accessories

- 15,000rpm spindle speed
- 4th axis rotary table and motor
- 40 station chain type tool magazine
- Automatic tool length measurement
- Dual screw type chip conveyor
- Linear scales - X, Y & Z

Table Dimensions

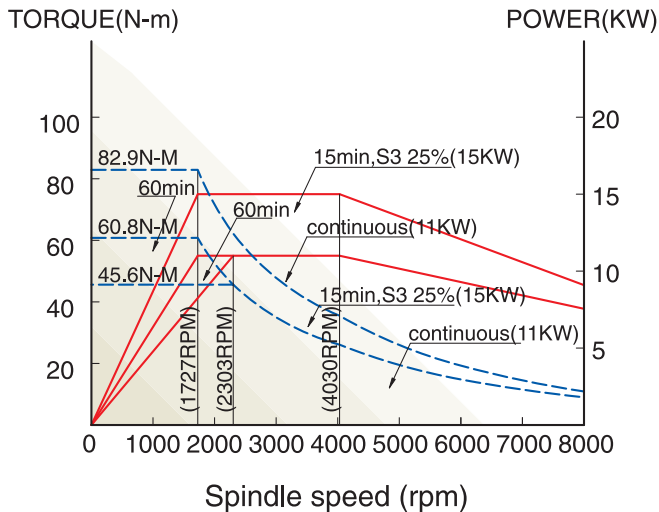


Dimensional Drawings

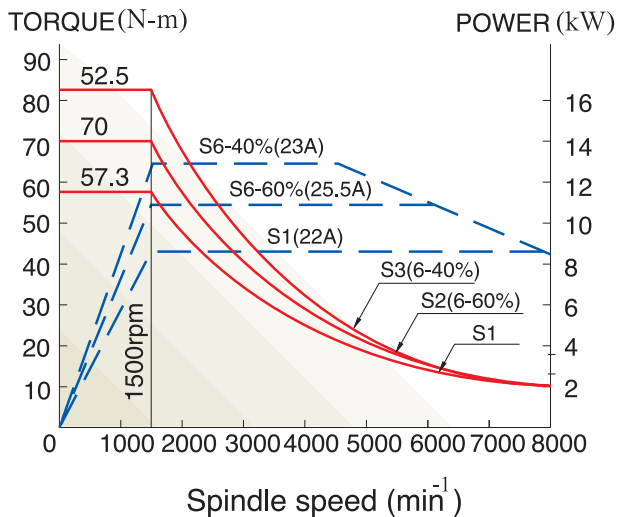


Spindle Motor

FANUC 15KW AC Spindle Motor 8000RPM SPINDLE (15KW,30min)



SIEMENS 13KW AC Spindle Motor 8000RPM SPINDLE (13KW,30min)



Description	Dugard 1500
Table	
Table size	1650 x 570mm
T-slots (no x wid x dis)	5 x 18mm x 100mm
Table load	1200kg
Travel	
X / Y / Z travel	1525 / 635 / 635mm
Spindle	
Spindle nose to table	125~760mm
Spindle centre to column	685mm
Spindle taper	BT40 (CAT flange opt)
Spindle speed	12,000rpm (15,000 / 20,000rpm opt)
Feedrates	
Rapid on X/Y/Z axes	30/30/30 m/min
Cutting feedrate FANUC	1~10,000 mm/min
Cutting feedrate S810/HH410/F18M	1~12,000 mm/min
Cutting feedrate HH426/A2100	1~15,000 mm/min
Accuracy	
Positioning	0.004mm
Repeatability	±0.002mm
Tool Changer	
Tool capacity	30 station twin arm
Tool shank	BT-40
Pull stud	JMBTA standard 45°
Max tool diameter	89mm
Max tool weight	7kg
Motor	
Spindle motor (30min)	15kW (13kW opt)
Drive motor X, Y, Z	1kW (2.9kW opt)
Coolant pump	0.75kW
General	
Power required	20KVA (25KVA opt)
Air required	5kg/cm ² ; 200L/min
Floor space (L x W x H)	3800 x 2890 x 2635mm
Packing dimension (L x W x H)	2930 x 2290 x 2560mm 4680 x 2140 x 1950mm (sheet metal)
Net weight approx	8500kg
Gross weight approx	10,500kg

*Specifications are subject to change without prior notice

Standard Features

- BT40 pull stud
- 30 station twin arm ATC
- 12,000rpm direct drive spindle
- Swarf conveyor
- Through spindle coolant
- Pneumatic counter balanced head
- Fully enclosed splash guard
- 4th axis preparation
- Central lubrication system
- Spindle air blast
- Leveling bolts and pads
- Oil skimmer
- Chip flushing
- Operating manual and parts list
- Workpiece wash gun
- Worklight
- Tool kit

Optional Accessories

- 15,000rpm spindle speed
- CT-40 pull stud
- Cutting air blast
- Through-tool coolant device
- Siemens 13kW spindle motor
- 40 station chain type tool magazine
- 4th axis rotary table and motor
- Automatic power shut off
- Automatic tool length measurement
- Heidenhain TNC 640i / Siemens 828D control options

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