

# DUGARD

Machine Tools Since 1939

## Dugard 1000Y Plus / 1500 Vertical Machining Centres



[www.dugard.com](http://www.dugard.com)

# Dugard 1000Y Plus

## The Leading Edge in Precision Machining

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

10,000rpm (standard)  
12,000 / 15,000rpm (optional)

### Tool Capacity

24 tool twin arm type ATC (standard)  
32 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 0iMD

- 8.4" 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

# Vertical Machining Centre

## 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 XY 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 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

### 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

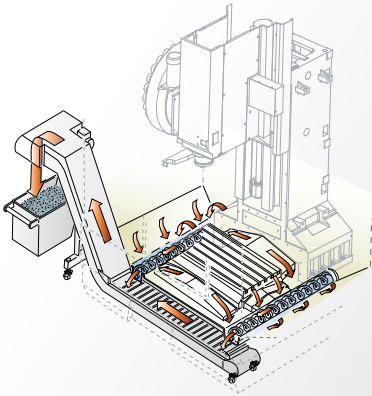
The heavy duty design and construction assures optimum rigidity and stability for a longer machine life

### Wide Span Column Base to Guarantee Maximum Rigidity

- Y axis linear ways span 610mm for maximum rigidity. Wide machine base 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

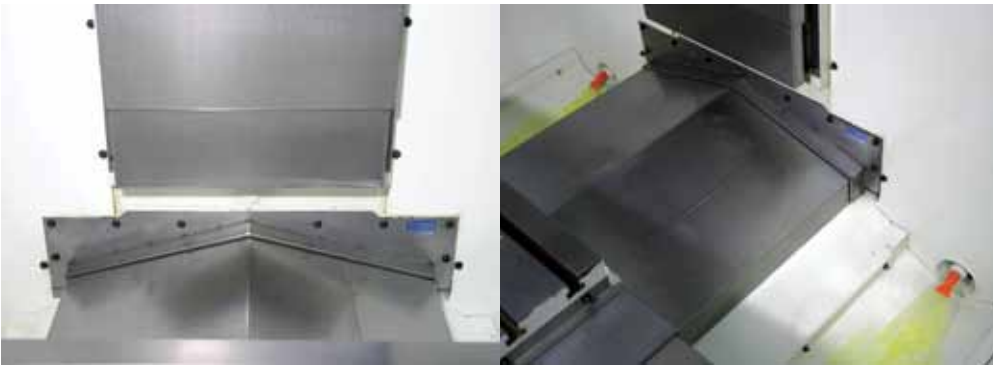


# Vertical Machining Centre



## 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
- 610mm 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.

## High Accuracy Spindle Design

The fine craftsmanship of our spindles maximises your machining quality

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

#### Belt Driven Spindle

10,000 rpm (standard)  
12,000 / 15,000 rpm (option)

#### Directly Coupled Spindle

12,000 rpm (option)  
15,000 rpm (option)



Type	Twin Arm
Tool Shank	BT40 / CT40 / DIN40 / JT40
Tool Capacity	24 / 32 (opt)
Tool Selection	Random
Tool Access	Bi-Directional



Directly Coupled Spindle



Twin

# Vertical Machining Centre

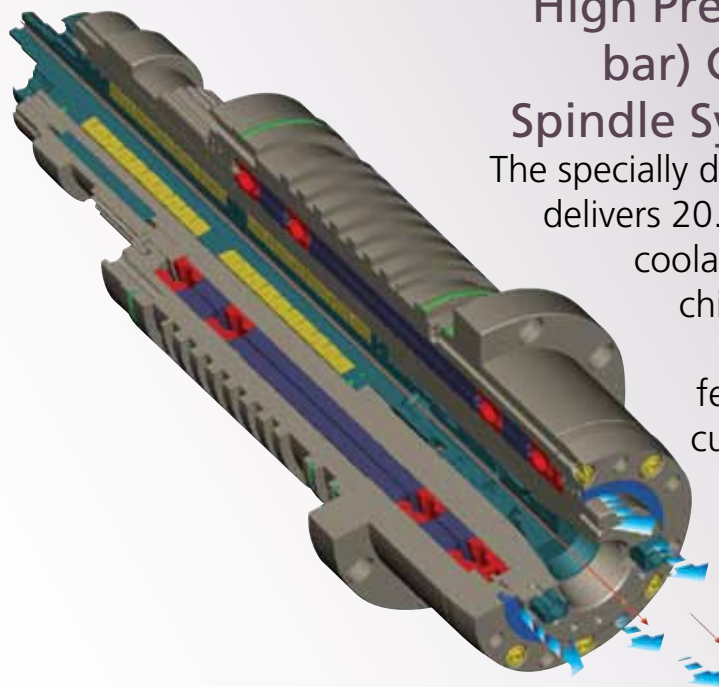
## Quick, Positive Tool Release

- 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)

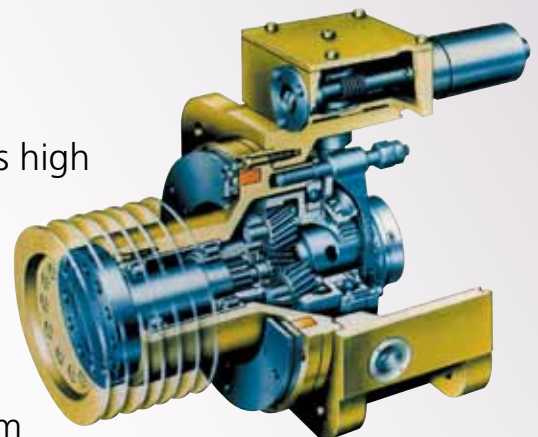
The specially designed cooling system delivers 20.4 kg/cm<sup>2</sup> high pressure coolant to efficiently remove chips and heat from deep hole machining. This feature greatly enhances cutting performance and tool life in addition to maintaining workpiece accuracy and reliability



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

## 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

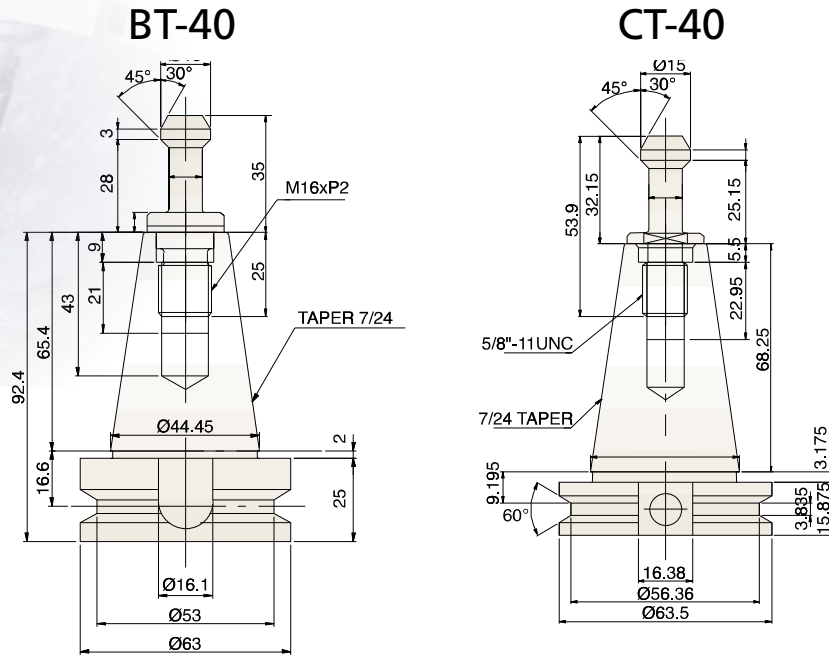


Arm Type ATC

# Dugard 1000Y Plus

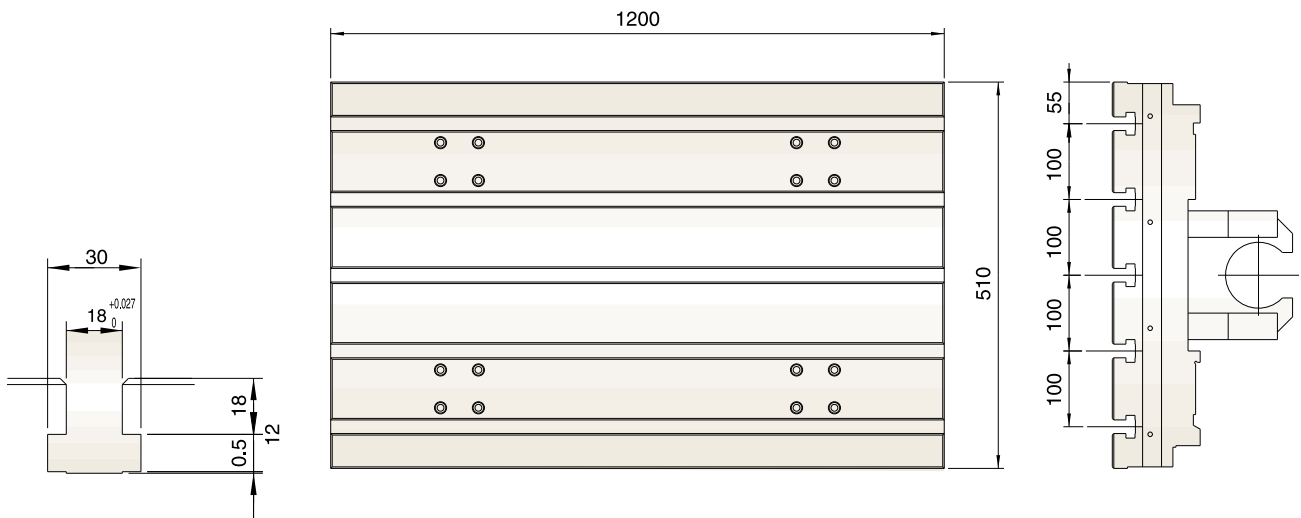
## Tool Shank and Pull Stud

Unit : mm



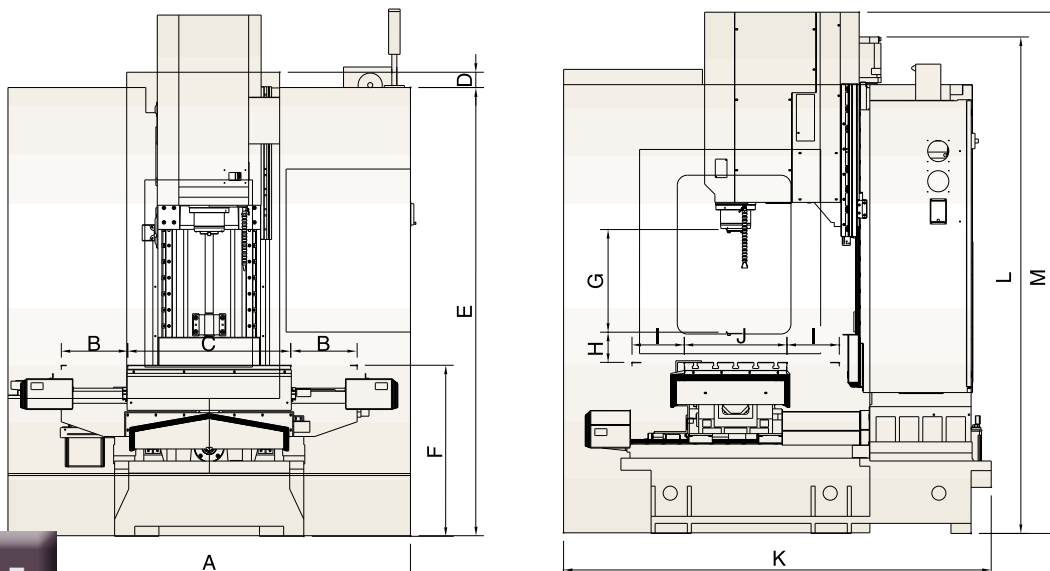
## Working Capacity

Unit : mm



## Machine Dimensions

Unit : mm



Item	Dugard 1000
A	2800mm
B	510mm
C	1200mm
D	76mm
E	2227mm
F	870mm
G	510mm
H	130mm
I	260mm
J	610mm
K	2125mm
L	2467mm
M	2590mm

# Vertical Machining Centre

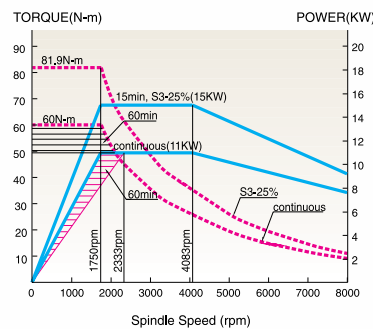
Specification	Dugard 1000Y Plus
<b>Table</b>	
Table size	1200 x 600mm
T-slots (no x wid x dis)	5 x 18mm x 100mm
Table load	600kg
<b>Travel</b>	
X travel	1020mm
Y travel	610mm
Z travel	510mm
<b>Spindle</b>	
Spindle nose to table	130~640mm
Spindle centre to column	585mm
Spindle taper	BT40 (CT40 opt)
Spindle speed	10,000rpm (8,000/ 12,000/15,000rpm opt)
Spindle diameter	70mm
<b>Feedrates</b>	
Rapid on (X/Y/Z) axes	30/30/24 m/min
Cutting feedrate	1~10,000 mm/min
<b>Accuracy</b>	
Positioning	±0.004mm
Repeatability	±0.003mm
<b>Tool Changer</b>	
Tool capacity	24 twin arm
Tool shank	BT-40 (opt CT40 or DIN40)
Pull stud	P40T-1
Max tool diameter with adjacent tool	76mm, 24 station cam-arm type
Max tool weight	7kg
<b>Motor</b>	
Drive motor X, Y, Z digital	1.8 / 1.8 / 2.5kW
Coolant pump	0.76kW
<b>General</b>	
Power required	15kVA
Air required	5kg/cm <sup>2</sup> , 200L/min
Floor space (L x W x H)	2800 x 2080 x 2583mm
Machine weight (approx)	6200kg

\*Specifications are subject to change without prior notice

## Spindle Motor

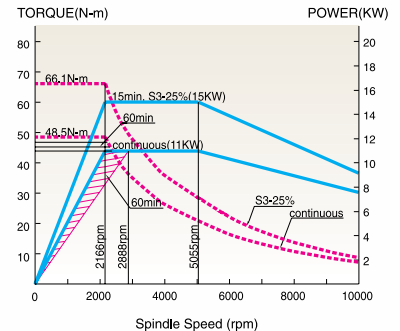
### 1. 8000rpm Spindle

#### FANUC β 12i(15kW)Spindle Motor



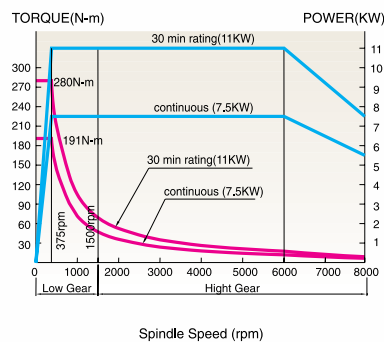
### 2. 10000rpm Spindle

#### FANUC β 12i(15kW)Spindle Motor



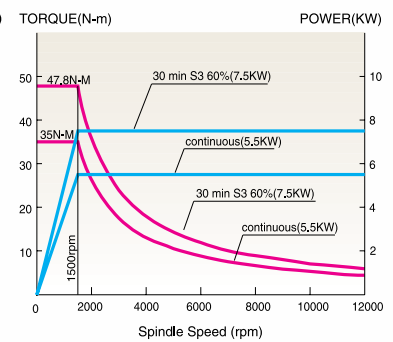
### 3. 8000rpm Spindle

#### FANUC α 8i(11kW) with ZF Gear Box



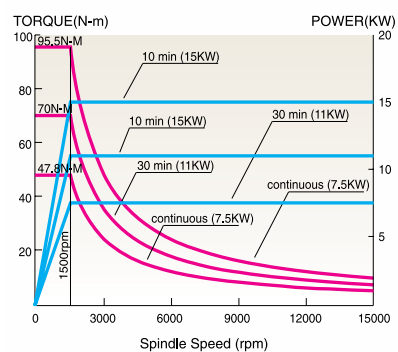
### 4. Directly Coupled 12000rpm Spindle

#### FANUC α 6i(7.5kW)Spindle Motor



### 5. Directly Coupled 15000rpm Spindle

#### FANUC α T8i(11kW)Spindle Motor



## Standard Accessories

- BT40 pull studs
- 24 twin arm ATC
- Coolant system
- 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
- Air gun
- Coolant gun
- Tool kit
- Leveling bolts and pads
- Operation manual and parts list

## Optional Accessories

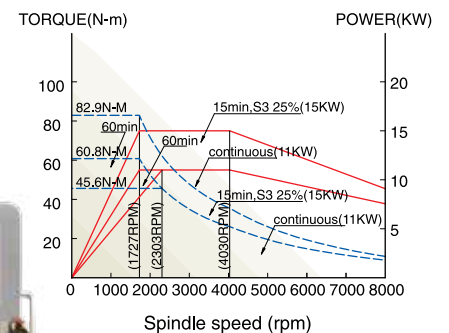
- Chip conveyor
- Belt: 8,000rpm / 12,000rpm spindle
- Directly coupled: 12,000 / 15,000rpm spindle
- 4th axis rotary table and motor
- Through spindle coolant device
- Automatic tool length measurement
- Dual screw type chip conveyor
- 32-station chain type tool magazine
- Oil skimmer
- Linear scale

## Precise, Productive and Profitable Dugard 1500 Helping to boost your productivity

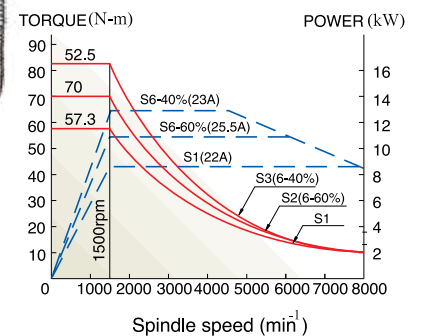


### Spindle Motor

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



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



### Standard Accessories

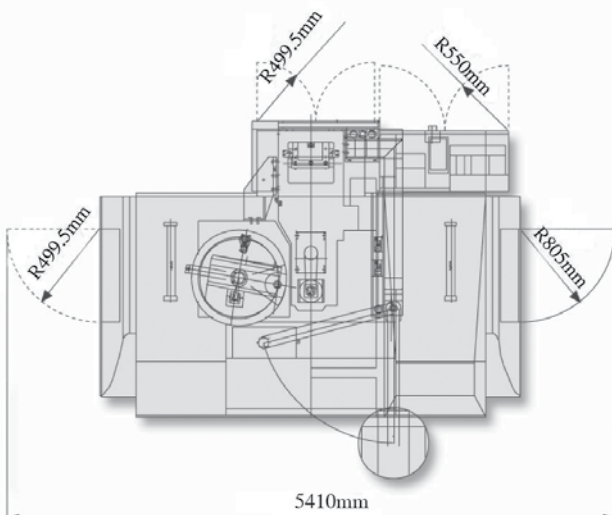
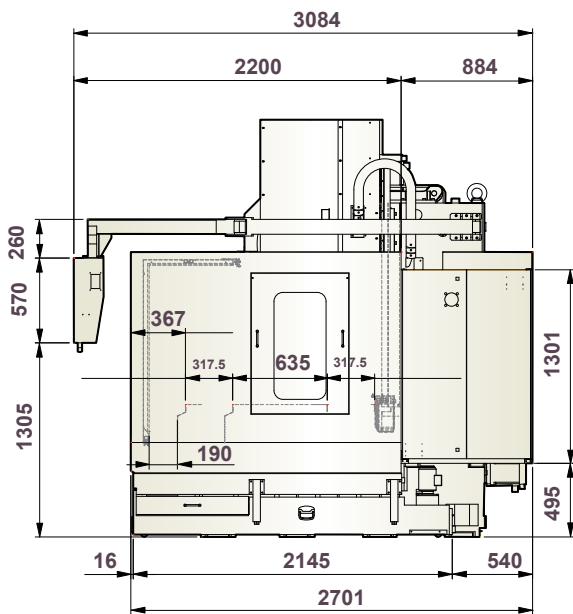
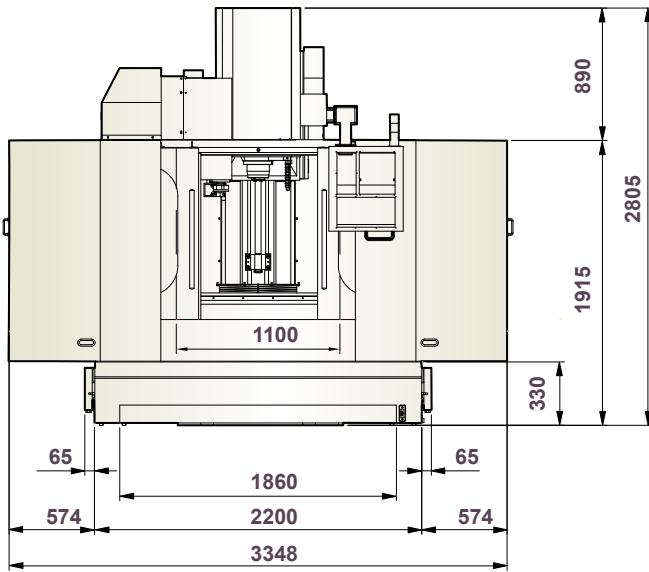
- BT40 pull stud
- 24 station twin arm ATC
- 10,000rpm spindle
- Coolant System
- Pneumatic counter balanced head
- Fully enclosed splash guard
- 4th axis preparation
- Central lubrication system
- Spindle air blast
- Tool kit
- Leveling bolts and pads
- Chip flushing
- Operating manual and parts list
- Workpiece wash gun
- Worklight

### Optional Accessories

- CT-40 pull stud
- Cutting air blast
- Through-tool coolant device
- Chip conveyor
- Oil skimmer
- Siemens 13kW spindle motor
- 32 station ATC (cam operated twin arm type, 76mm max tool diameter)
- 4th axis rotary table and motor
- Automatic power shut off
- Automatic tool length measurement
- 12,000rpm spindle with refrigeration unit
- Through-spindle coolant device
- Fanuc 18M
- Heidenhain TNC 530i
- Siemens 810D/840D

# Vertical Machining Centre

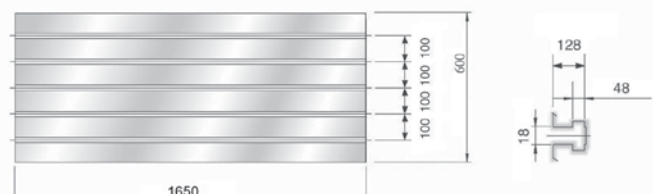
## Dimensional Drawings



Description	Dugard 1500
<b>Table</b>	
Table size	1650 x 635mm
T-slots (no x wid x dis)	5 x 18mm x 100mm
Table load	1200kg
<b>Travel</b>	
X travel	1525mm
Y travel	635mm
Z travel	635mm
<b>Spindle</b>	
Spindle nose to table	125~760mm
Spindle centre to column	685mm
Spindle taper	BT40 (CT40 opt)
Spindle speed	10,000rpm (8,000, 12,000rpm opt)
<b>Feedrates</b>	
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
<b>Accuracy</b>	
Positioning	0.004mm
Repeatability	±0.002mm
<b>Tool Changer</b>	
Tool capacity	24 station twin arm (32 station opt)
Tool shank	BT-40 (opt CT40)
Pull stud	JMBTA standard 45°
Max tool diameter	89mm, 24 station cam-arm type 76mm
Max tool weight	7kg
<b>Motor</b>	
Spindle motor (30min)	15kW (13kW opt)
Drive motor X, Y, Z	1kW (2.9kW opt)
Coolant pump	0.75kW
<b>General</b>	
Power required	20KVA (25KVA opt)
Air required	5kg/cm <sup>2</sup> ; 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

## Table Dimensions



European headquarters for Dugard CNC Machine Tools

**DUGARD.com**

www.dugard.com email: sales@dugard.co.uk tel: +44 (0)1273 732286