DUGARD
EAGLE 660/850

Vertical Machining Centre

Power and Precision
For Today's Needs!

EAGLE 660

Superior Value in Capac

Spindle Speed

8000rpm (standard)
10000rpm/12000rpm/15000mm (optional)

Tool Capacity

20 Tool Carousel Type (standard)
24 Tool Twin Arm type (optional)
32 Tool Twin Arm type (optional)

Rapid Traverses:

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

Positioning Accuracy

± .004mm/300mm (JIS B6338)
0.014mm (VDI 3441 PS)

Repeatability Accuracy

± .003mm (JIS B6338)
0.010mm (VDI 3441 PS)

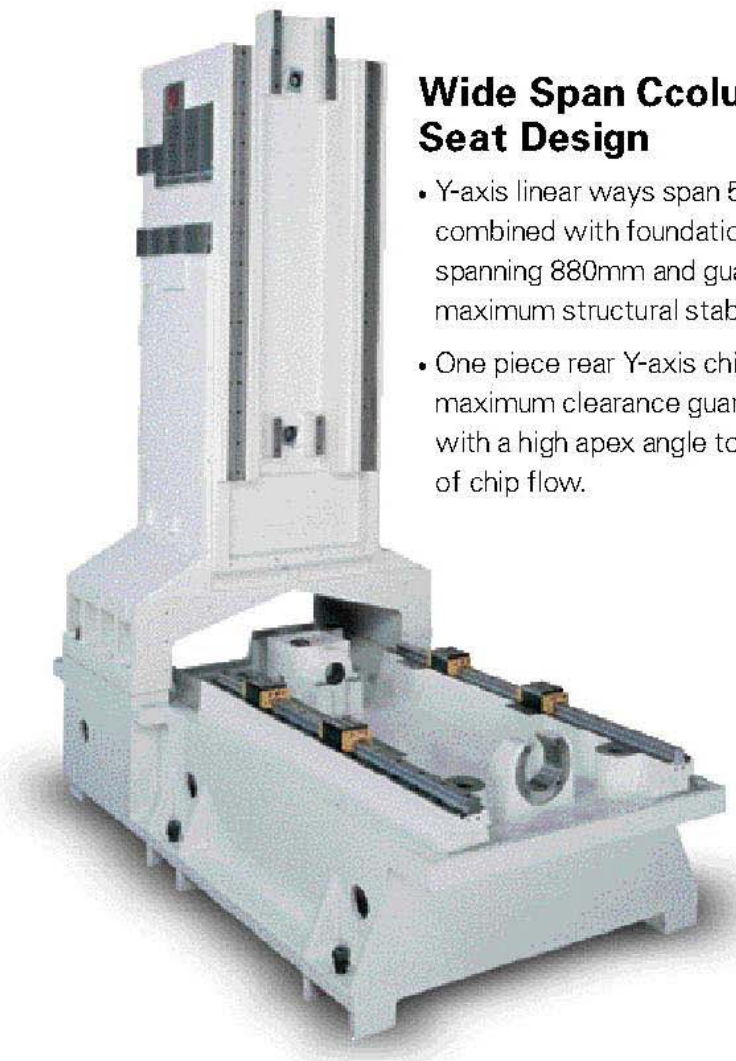
/850

ity, Precision and Efficiency

Rugged Construction

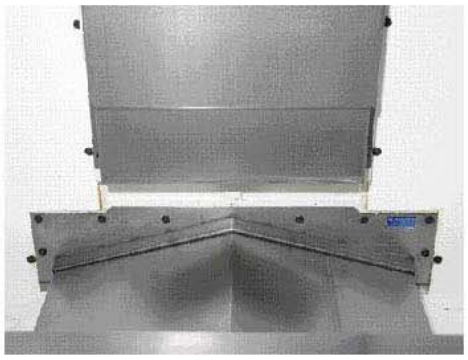
The heavy duty rigid design and construction assures optimum rigidity and stability for a longer machine life.

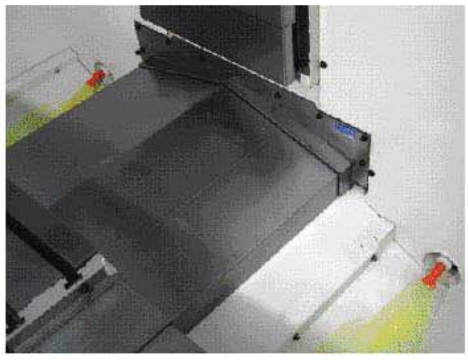
Picture Shows The 24 ATC Option



Wide Span Ccolumn Seat Design

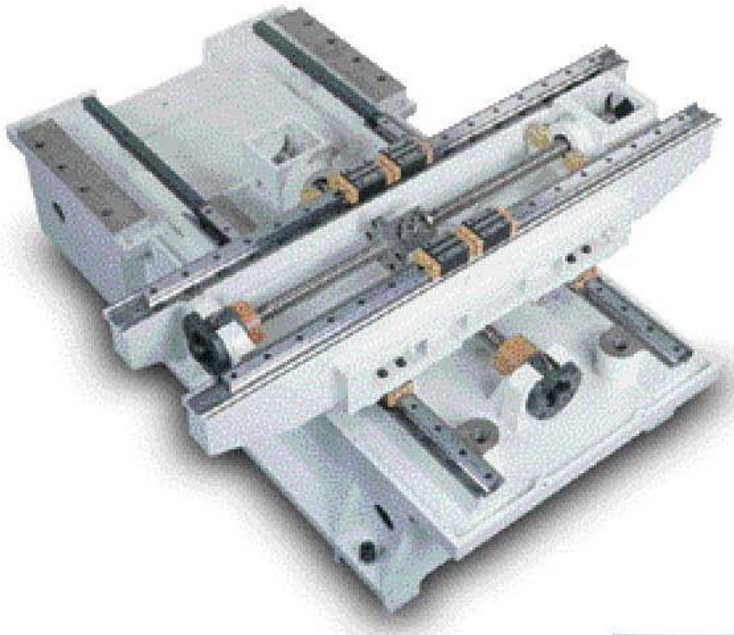
- Y-axis linear ways span 560mm combined with foundation bolts spanning 880mm and guarantees maximum structural stability.
- One piece rear Y-axis chip flow for maximum clearance guard designed with a high apex angle to allow ease of chip flow.





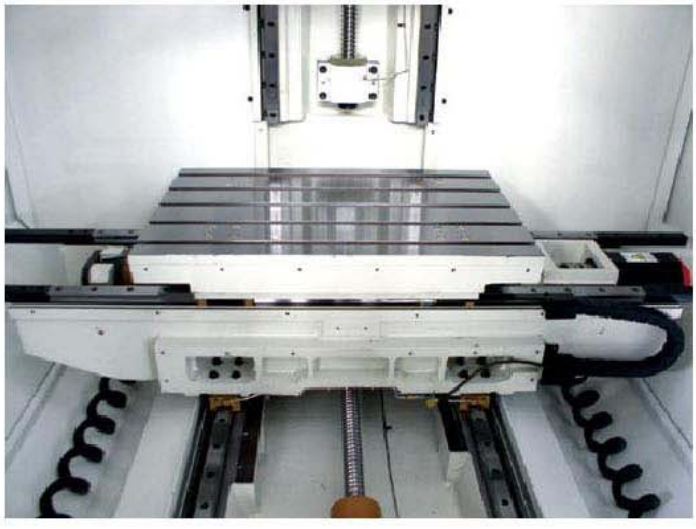
Easy Chip Flow Splash Guard Design

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



High Precision Ball Screws on 3 Axes

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

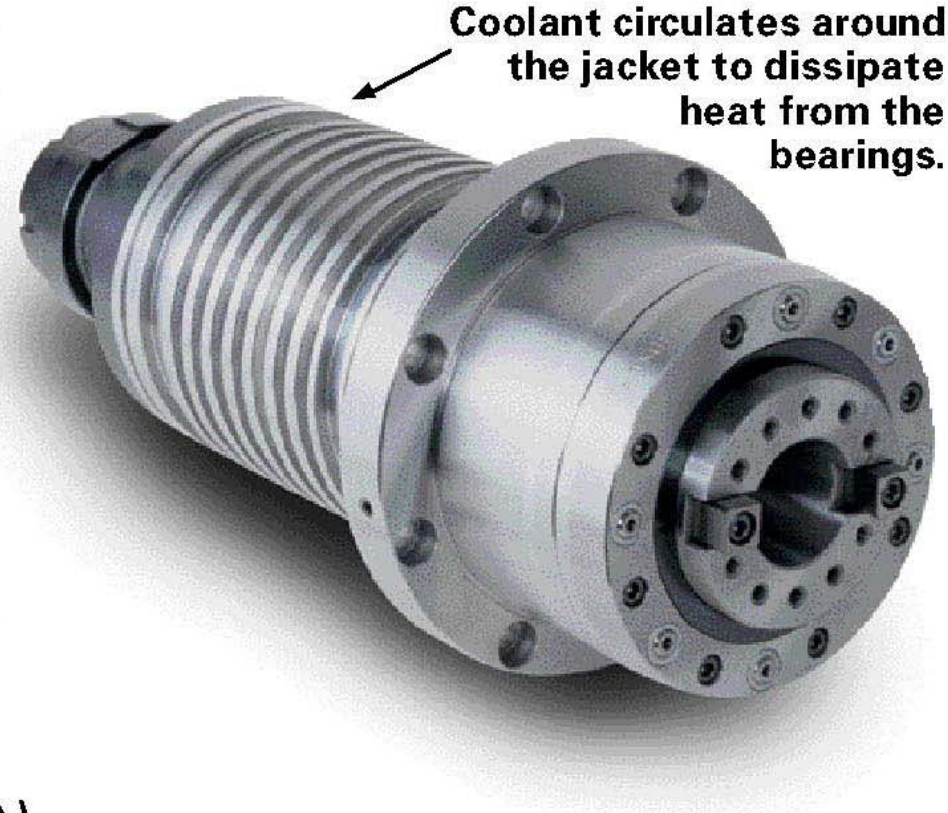


High Speed and Rigid Linear ways on X/Y/Z Axis

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

High Accuracy Spindle Design

Extra large spindle design, ø70 mm 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.



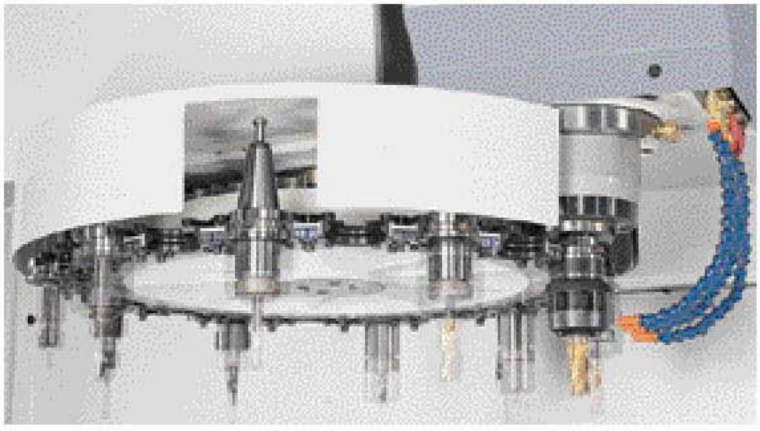
Belt Driven Spindle :

8000rpm (Standard)
10000rpm/12000rpm (optional)

Directly Coupled Spindle :

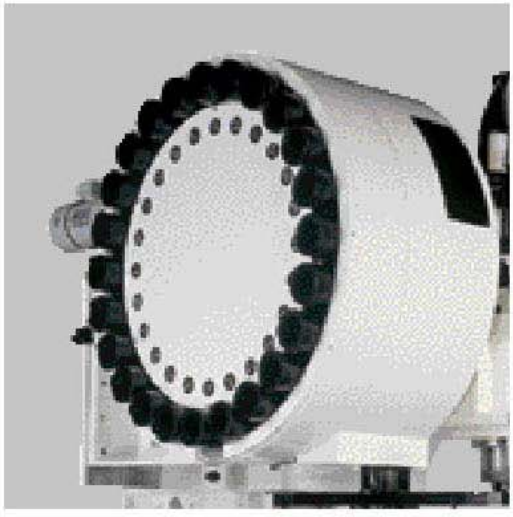
12000rpm (optional)
15000rpm (optional)

A.T.C. Mechanism (STD.)



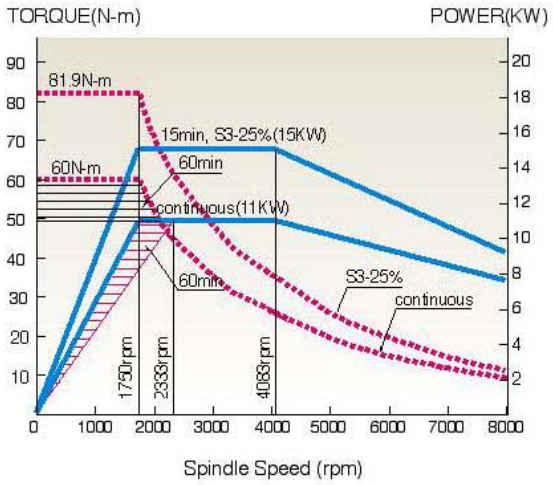
Type	Carousel	Arm
Tool Shank	BT40/CT40/DIN40/JT40	
Tool Capacity	20(std.)	24/32(opt.)
Tool Selection	Absolute	Random
Tool Access	Bi-Directional	

Twin Arm Type A.T.C. (OPT.)

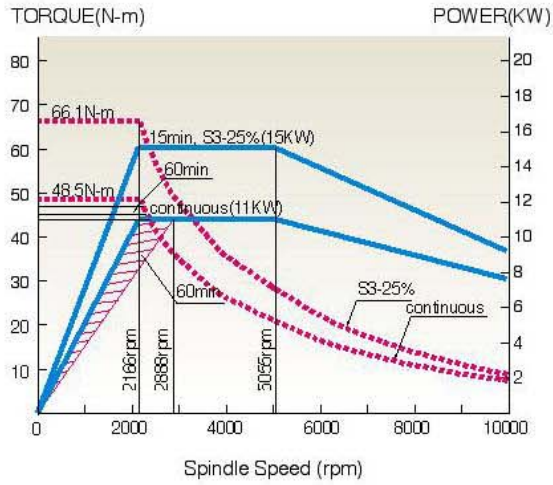


Directly Coupled Spindle (OPT.)

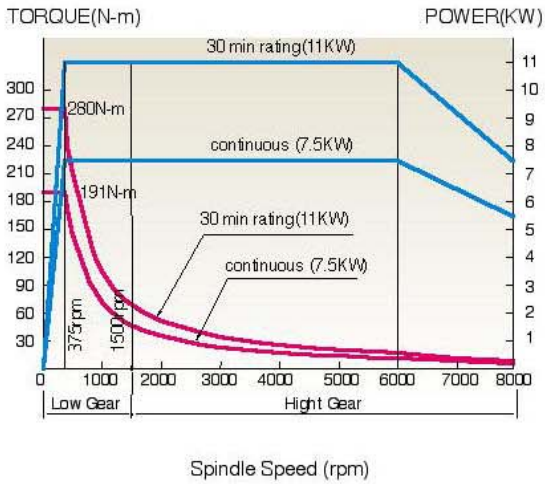
1. 8000rpm Spindle
FANUC β 12i(15kw)Spindle Motor



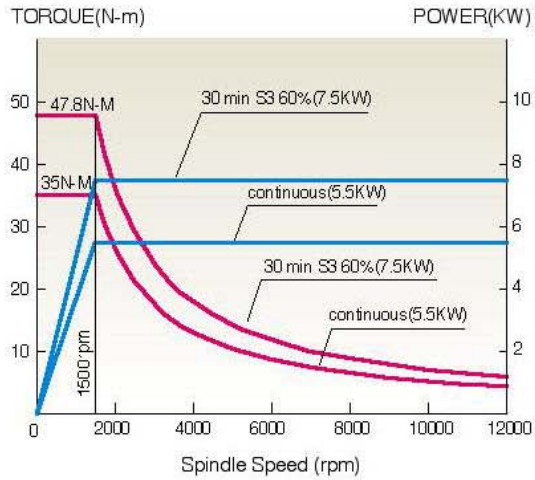
2. 10000rpm Spindle
FANUC β 12i(15kw)Spindle Motor



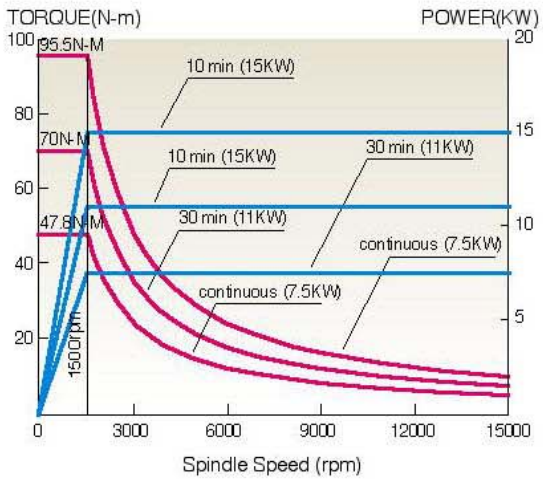
3. 8000rpm Spindle
FANUC α 8i(11kw) with ZF Gear Box



4. Directly Coupled 12000rpm Spindle
FANUC α 6i(7.5kw)Spindle Motor



5. Directly Coupled 15000rpm Spindle
FANUC α T8i(11kw)Spindle Motor



State-of-The-Art Controls For Increased Productivity

HEIDENHAIN
iTNC530 Control

Standard Control

FANUC 0iM 9.2" LCD
monochrome monitor

Other Available Controls

- FANUC 0iM
  8.4" TFT LCD with AICC & Data Server
- FANUC 18iM 8.4" TFT LCD
- HEIDENHAIN
  iTNC530 15"TFT LCD colour monitor
- SIEMENS 802D/810D 10.4"TFT LCD
  colour monitor, and "ShopMill" software

FANUC
0iM/18iM Control

SIEMENS
802D/810D Control

Inspection

Laser Calibration

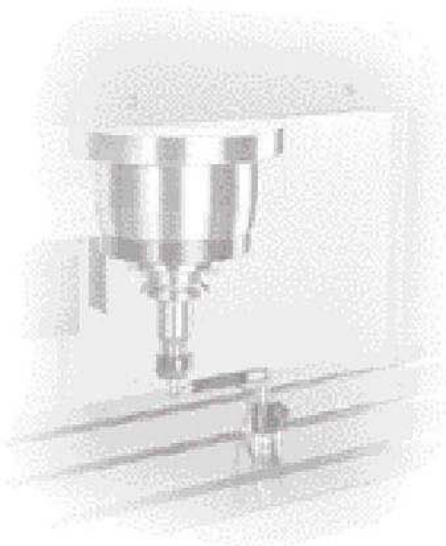
After assembly, all machines are inspected using state-of-the-art laser equipment. This process of inspection ensures all axes are verified and calibrated to provide the best possible accuracy and repeatability.

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.

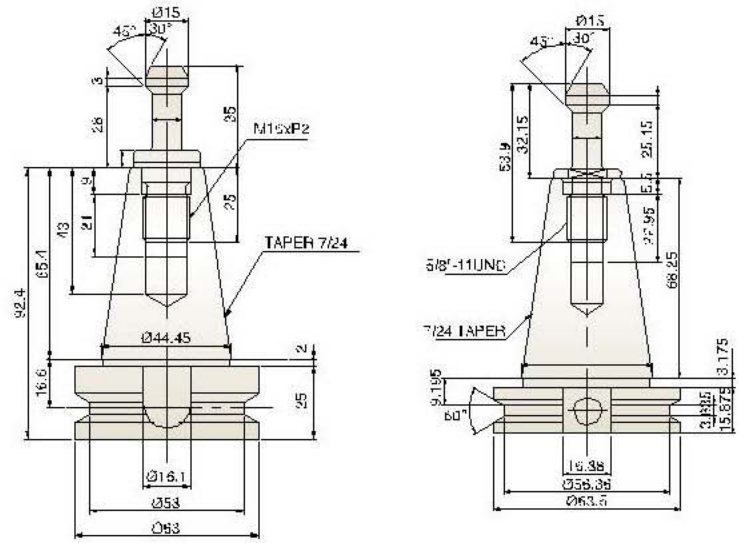
Workpiece Measurement (option)

Tool Measurement (option)



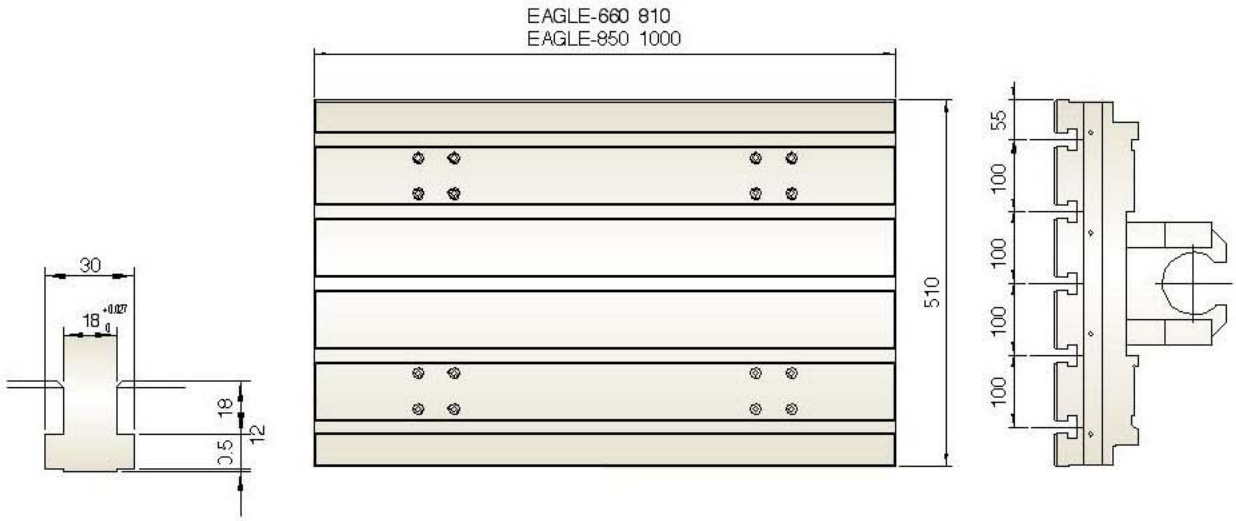
Tool Shank & Pull Stud

unit : mm



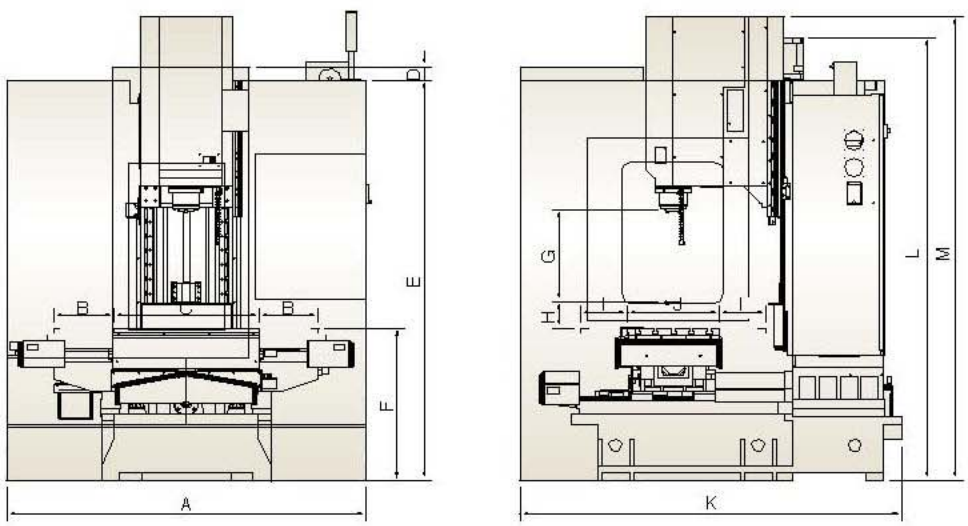
Working Capacity

unit : mm



Machine Dimensions

unit : mm



ITEM	EAGLE-660	EAGLE-850
A	2000mm	2300mm
B	330mm	425mm
C	810mm	1000mm
D	76mm	
E	2227mm	
F	850mm	
G	510mm	
H	150mm	
I	260mm	
J	510mm	
K	2125mm	
L	2467mm	
M	2590mm	

General Specifications

DESCRIPTION	EAGLE-660	EAGLE-850
Table		
Table Size	810 x 510mm	1000 x 510mm
T-Slots (no. x wid x dis)	5 x 18mm x 100mm	
Table Load	500kg	
Travel		
X Travel	660mm	850mm
Y Travel	530mm	
Z Travel	510mm	
Spindle		
Spindle Nose to Table	150-660mm	
Spindle Center to Column	585mm	
Spindle Taper	#40	
Spindle Speed	80-8000rpm(options.10000/12000/15000rpm)	
Spindle Diameter	70mm	
Feedrates		
Rapid on(X/Y/Z)Axes	30/30/24m/min	
Cutting Feedrate	1-10000mm/min	
Accuracy		
Positioning	±0.004mm	
Repeatability	±0.003mm	
Tool Changer		
Tool Capacity	20 carousel type	
Tool Shank	BT-40, CT40 or DIN40	
Pull Stud	P40T-1	
Max. Tool Diameter With Adjacent Tool	76mm 24station cam-arm type	
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)	2000 x 2060 x 2583mm	2300 x 2060 x 2583mm
Machine Weight (approx.)	5500kg	5800kg

• Specifications are subject to change without prior notice.

Standard Accessories

1. 20 carousel type ATC
2. Coolant system
3. Fully enclosed splash guard
4. Work light
5. Central lubrication system
6. Status light
7. Spindle air blast
8. Rear chip flush system
9. Tools kit
10. Leveling bolts and pads
11. Operation manual & parts list

Optional Accessories

1. BT-40,CT-40 or DIN-40 pull studs
2. Chip conveyor
3. Belt : 10000rpm/12000rpm spindle
4. Directly coupled : 12000/15000rpm spindle
5. 4th axis preparation
6. 4th axis rotary table & motor
7. Spindle oil chiller
8. Through - spindle coolant device
9. Chip flushing device at rear side
10. Automatic tool length measurement
11. Heat exchanger for electric cabinet
12. Dual screw type chip conveyor
13. 24 twin arm type ATC
14. 32 chain type tool magazine
15. Oil skimmer
16. Air gun
17. Coolant gun
18. Linear scale

w w w . d u g a r d . c o m

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