

MULTI-PURPOSE DOUBLE COLUMN MACHINING CENTER

DCM-F series

DCM 2740FII · 2750FII · 2760FII · 2780 FII

DCM 3250FII · 3260FII · 3280FII

DCM 3780FII · 37100FII

DCM 4280F · 42100F



DCM-F series

The DCM F series is a multi-purpose double column machining center for applications such as heavy duty machining of large parts and high precision dies and molds. Designed with the highest specifications in its class, the DCM F series provides a broad range of machining capabilities and optional equipment, together with many convenient functions for the operator.

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BROAD RANGE OF MACHINING CAPABILITIES



- The best specifications in its class – effective width between columns has been further extended by 200 mm(7.9 inch) for increased machining capacity.
- A variety of different ram spindle specifications and a wide range of auto-change attachments support many types of machining applications, from simultaneous 5 axis processing of dies/ molds to heavy duty cutting.

HIGH-PRECISION, HIGH-SPEED MOLD MACHINING PERFORMANCE

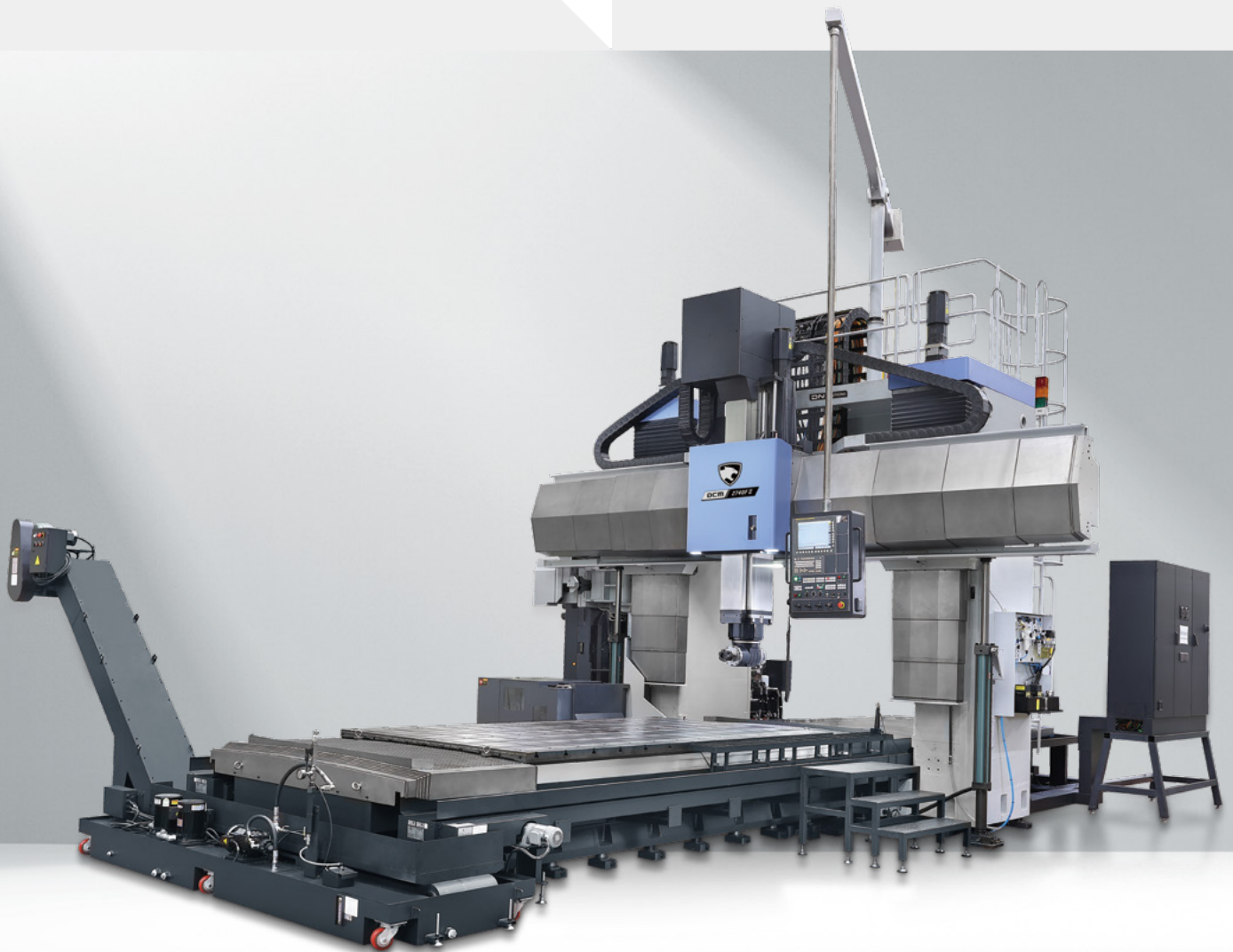


- High speed rapid traverse and cutting feedrate, high load table capacity, high-precision/high-speed head attachments, X/Y/Z/W axes linear scale, or X/Y/Z axes ball screw shaft cooling as options enables the machining of high-accuracy and high-speed molds and general parts.

CONVENIENT MACHINING FUNCTIONS



- The DCM F series provides a support system for 5face machining of large and heavy workpieces, easy pattern cycles, work load counter control, automatic feed control, and process monitoring function.

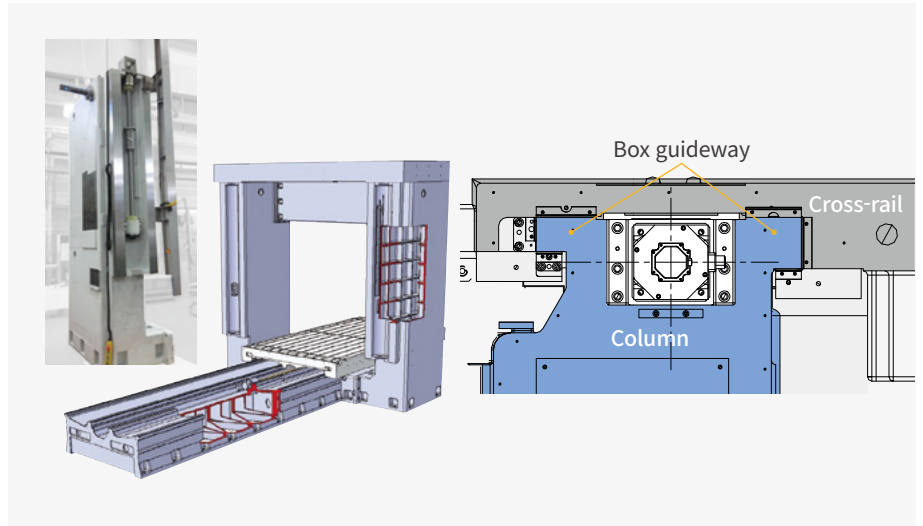


HIGH-RIGIDITY, HIGH-PRECISION STRUCTURE

Designed for large work pieces, the machine enables long-term, heavy-duty cutting with stable machining accuracy.

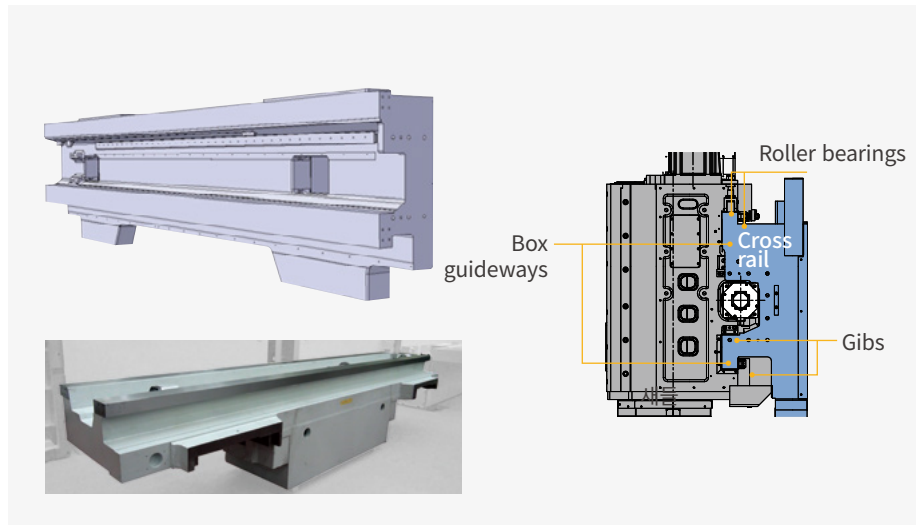
Bed and Column Structure

- The structure of the DCM series minimizes the effects of vibration on workpieces under loads produced by both vertical and horizontal cutting during machining of 5 faces. Symmetrical structure design and the application of effective compensation reduces thermal displacement during machining.
- The bed is made of an M-type cast structure excellent for vibration absorption to ensure a high level of machining accuracy.
- The column provides extremely high rigidity thanks to its square-structured latticed-rib casting, which is excellent for vibration damping, and wide box guideways that are heat-treated and precision-ground. The integrated column design provides a high degree of machining accuracy at all heights from the machine table, from heavy duty cutting to high precision finishing.



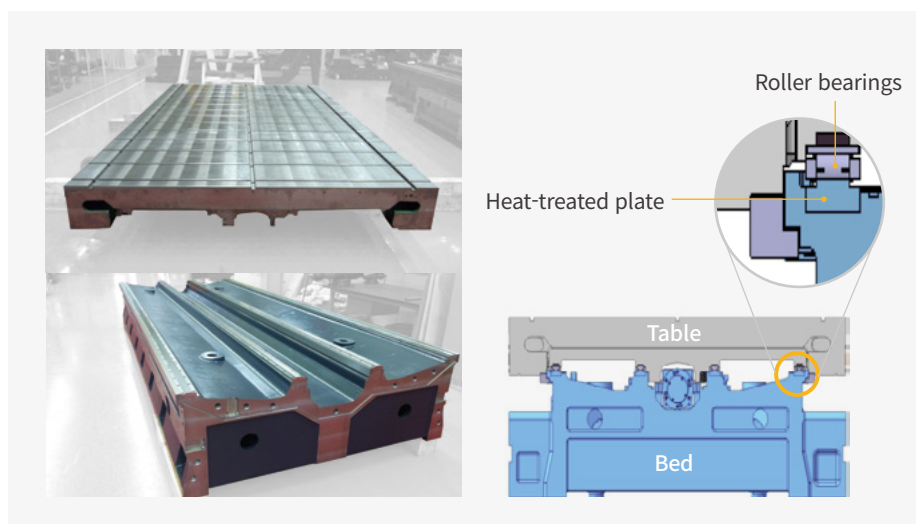
Cross-rail Structure

- The guide-structure of the cross-rail supports the kinetic load of the saddle and ram spindle to maintain a high degree of accuracy for every type of work from heavy-duty cutting to finish cutting. In addition, the hybrid-type structure combined with roller bearings and gibs enables smooth traveling.
- The cast structure optimized for vibration damping, and the wide box guideway heat-treated and precision-ground are composed of highly rigid, square, sliding surfaces.



Bed and Table Structure

- The bed supports traveling motion with four rows of heat-treated, precision-ground guideways.
- A roller bearing pack for heavy-duty cutting and slide bearings for effective vibration damping are equipped at the bottom of the table to ensure a high level of cutting accuracy.



WIDE MACHINING SPECIFICATIONS

The best specifications in its class – effective width between columns has been further extended by 200 mm (7.9 inch) for increased machining capacity.

Table load capacity

DCM 2740F II DCM 2750F II
20000 kg **25000** kg
 (44091.8 lb) (55114.8 lb)

DCM 2760F II DCM 2780F II
30000 kg **40000** kg
 (66137.7 lb) (88183.6 lb)

DCM 3250F II DCM 3260F II
33000 kg **39000** kg
 (72751.5 lb) (85979.0 lb)

DCM 3280F II / 3780F II / 37100F II
 DCM 4280F / 42100F
40000 kg (88183.6 lb)

Rapid traverse (X / Y / Z / W-axis)

DCM 2740F II / 2750F II / 2760F II / 2780F II
 DCM 3250F II / 3260F II / 3280F II
 DCM 3780F II / 37100F II

16 / 20* / 15 / 3 m/min
 (629.9/787.4*/590.6/118.1 ipm)

* DCM 3250FII / 3260FII / 3780FII / 37100FII / 4280F model, the rapid traverse is reduced to 18m/min(708.7ipm) or less in range of Y axis travel tip 250 mm(9.84inch) for the stable deceleration.

DCM 4280F / 42100F

16 / 18 / 15 / 3 m/min
 (629.9/708.7/590.6/118.1 ipm)

* Specifications and delivery of DCM 3780F II / 37100F II / 4280F 42100F should be reviewed in detail before contract.

Cutting Feedrate (X / Y / Z-axis)

10000 m/min (393.7 ipm)

Effective width between columns W1

2700 / 3200 / 3700 / 4200 mm
 (106.3/126.0/145.7/165.4 inch)

Workpiece height H

1650 / 2000 / 2350 / 2700 mm
 (65.0/78.7/92.5/106.3 inch)

Table size in Y and X axis W2 x L

W2

2200 / 2700 / 3200 / 3500 mm
 (86.6/106.3/126.0/137.8 inch)

L

**4100 / 5100 / 6100 /
 8100 / 10100** mm
 (161.4/200.8/240.2/318.9/397.6 inch)

Travel distance (X / Y / Z / W axis)

X-axis

4250 / 5250 / 6250 / 8250 / 10250 mm
 (167.3/206.7/246.1/324.8/403.5 inch)

Y-axis

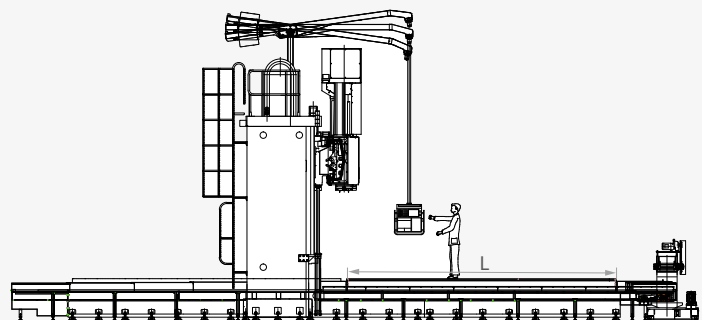
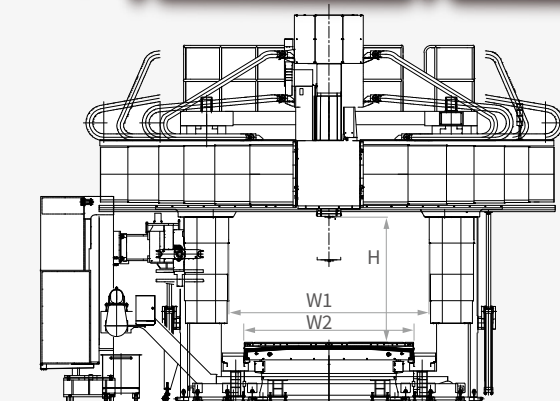
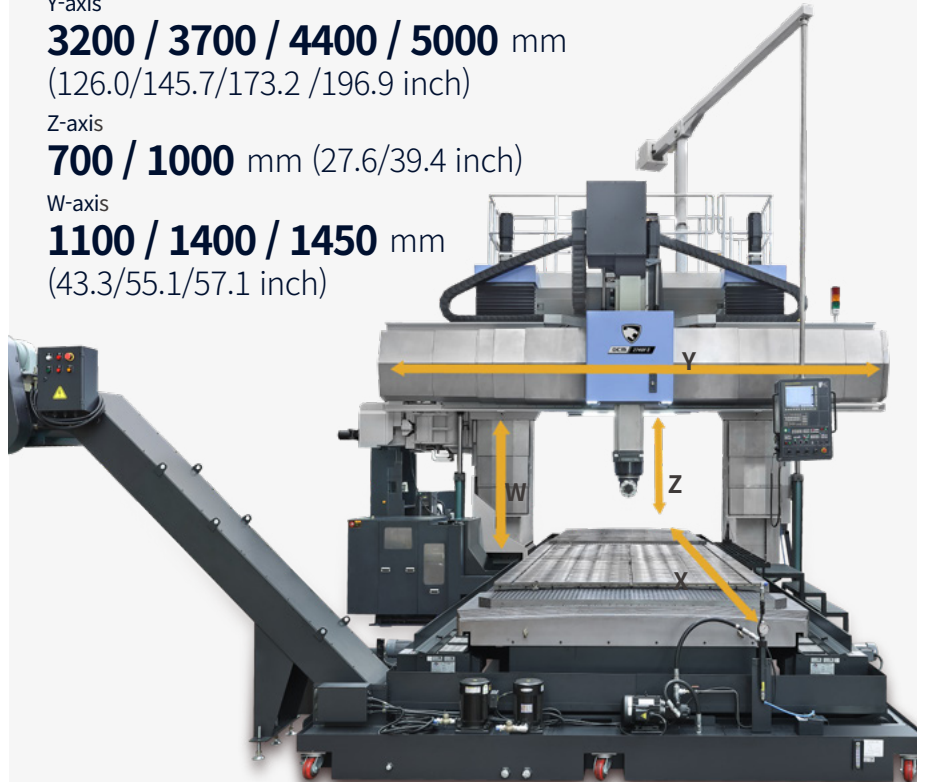
3200 / 3700 / 4400 / 5000 mm
 (126.0/145.7/173.2 /196.9 inch)

Z-axis

700 / 1000 mm (27.6/39.4 inch)

W-axis

1100 / 1400 / 1450 mm
 (43.3/55.1/57.1 inch)



DIVERSE RAM SPINDLES

A variety of different ram spindle specifications support a wide range of applications from heavy duty cutting to high speed / high precision mood machining.

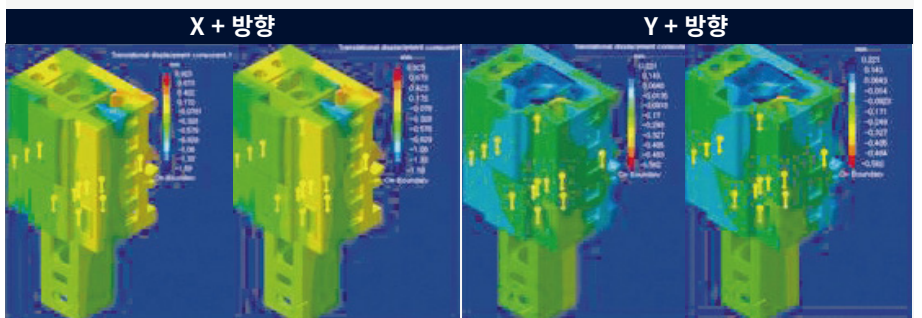
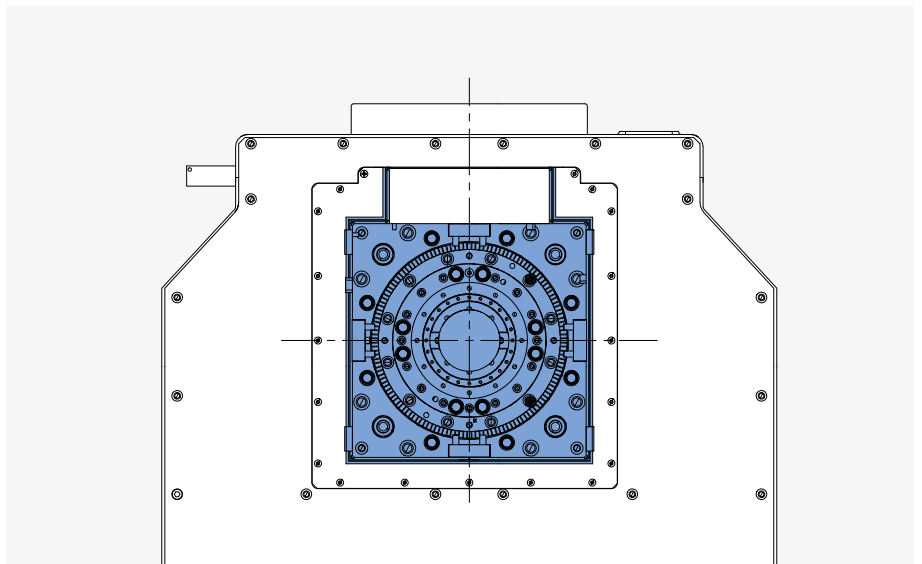


Adoption of ram spindle and saddle structure to support heavy-duty cutting

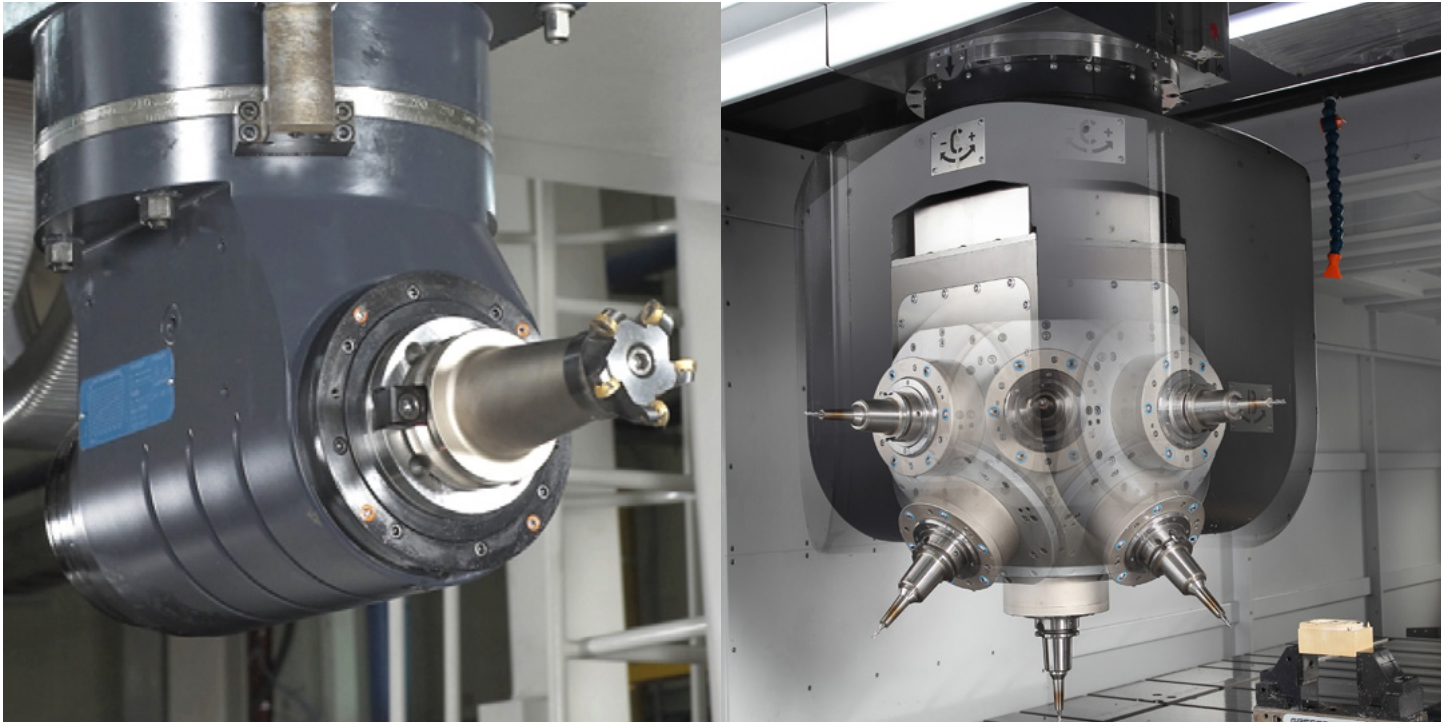
The highly rigid, square type box guideway ram has a cross section of 380 x 380mm(14.96 x 14.96 inch), which is the biggest in its class. This ensures optimum heavy duty machining capability in both vertical and horizontal applications.

Stress analysis of ram spindle unit

The ram spindle unit is designed to maintain ideal conditions under any load through stress analysis.



VARIOUS AUTO-CHANGE HEAD ATTACHMENTS



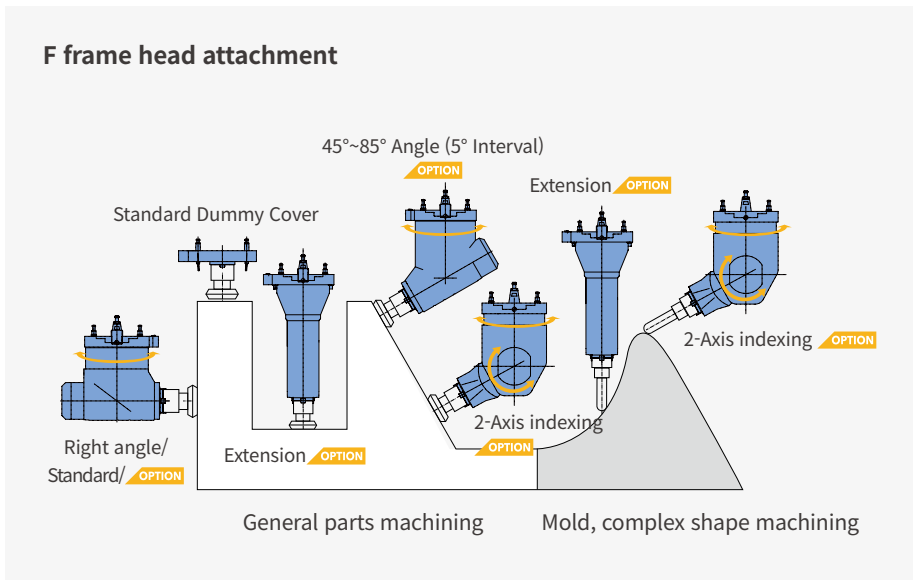
Diverse head attachments for a wider range of machining applications

By selecting a variety of automatically exchangeable head attachments, various complex shape processing is possible, such as free inclined surface processing that can be divided into 5 degrees (1 degree), as well as mold processing and 5-sided processing.

Various utilities are available to keep the same level of performance even when the head attachment is changed. Provides numerous utilities to ensure the same performance provided by the original ram spindle even after changing a Head Attachment.

* The provided utility line could be different as choosing the head attachment.

* 45-85 degree angle attachment (5 degree interval) or special head attachment is being considered, please contact DN Solutions for detailed specifications



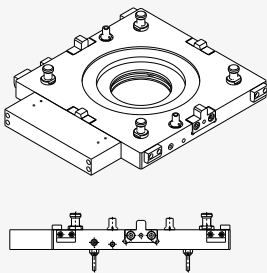
Features	Standard dummy cover	Extension OPTION	Right angle (Standard)
Spindle air curtain	Standard	Standard	-
Flood Coolant / Air Blow	Standard	Standard	Standard
Head attachment tool unclamp	Standard	Standard	Standard
Head attachment spindle air purge	Standard	Standard	Standard
TSC (Through Spindle Coolant 2.0 or 3.0 Mpa)	OPTION	OPTION	OPTION
TSA (Through Spindle Air)	OPTION	OPTION	OPTION

VARIOUS AUTO-CHANGE HEAD ATTACHMENTS

F Frame Head Attachment

Unit: mm (inch)

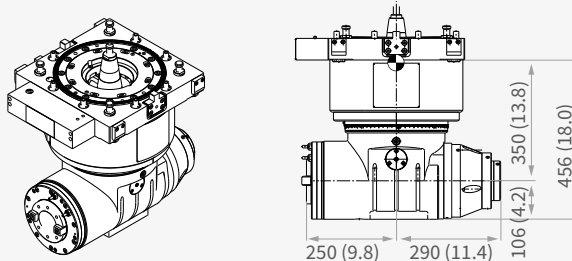
Standard dummy cover



* TSC option applies up to 3.0 Mpa

Right angle head

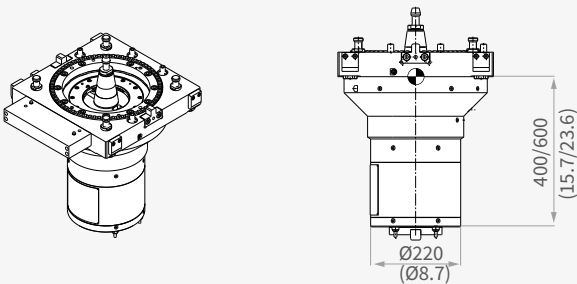
- 4000 r/min, Min 5/1 Degree Indexing, 504.4 / 600.8 / 602.4 N·m (BI / 6K GB / 4K GB)
- 3000 r/min, Min 5/1 Degree Indexing, 504.4 / 677.8 / 1005.5 N·m (BI / 6K GB / 4K GB) OPTION
- 6000 r/min, Min 5/1 Degree Indexing, 400.8 / 400.5 / 400.5 N·m (BI / 6K GB / 4K GB) OPTION



* TSC option applies up to 3.0 Mpa

Extension OPTION

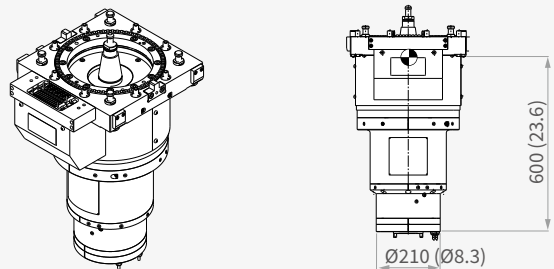
- 4000 r/min, 504.4 / 600.8 / 602.4 N·m (372.2 / 443.4 / 444.6 ft-lbs) (BI / 6K GB / 4K GB)
- 6000 r/min, 504.4 / 600.8 / 602.4 N·m (372.2 / 443.4 / 444.6 ft-lbs) (BI / 6K GB / 4K GB)



* TSC option applies up to 3.0 Mpa

High-speed extension OPTION

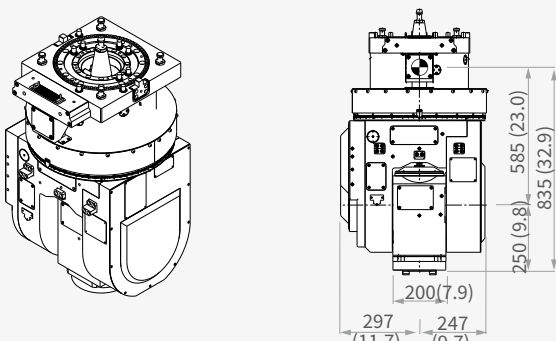
- 6000~12000 r/min, 29.4 / 23.9 / 17.5 N·m (21.7 / 17.6 / 12.9 ft-lbs) (S2&10 min. / S2&30 min. / cont.)



* TSC option is not applied

2-axis indexing OPTION

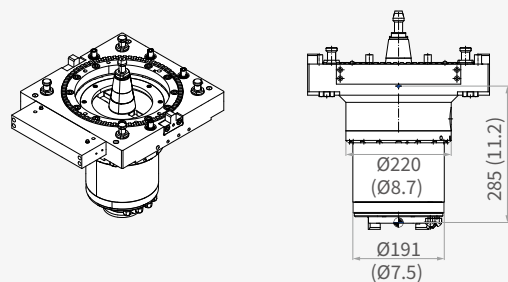
- 4000 r/min, B/C axes min. 1° indexing, 299.9 / 301 / 301 N·m (221.3 / 222.1 / 222.1 ft-lbs) (BI / 6K GB / 4K GB)



* TSC option is not applied

Small extension OPTION

- MAX 8000 r/min, 387 N·m (285.6 ft-lbs)



* TSC option applies up to 3.0 Mpa

AUTOMATIC HEAD ATTACHMENT CHANGER

(AAC, Standard / **OPTION**)

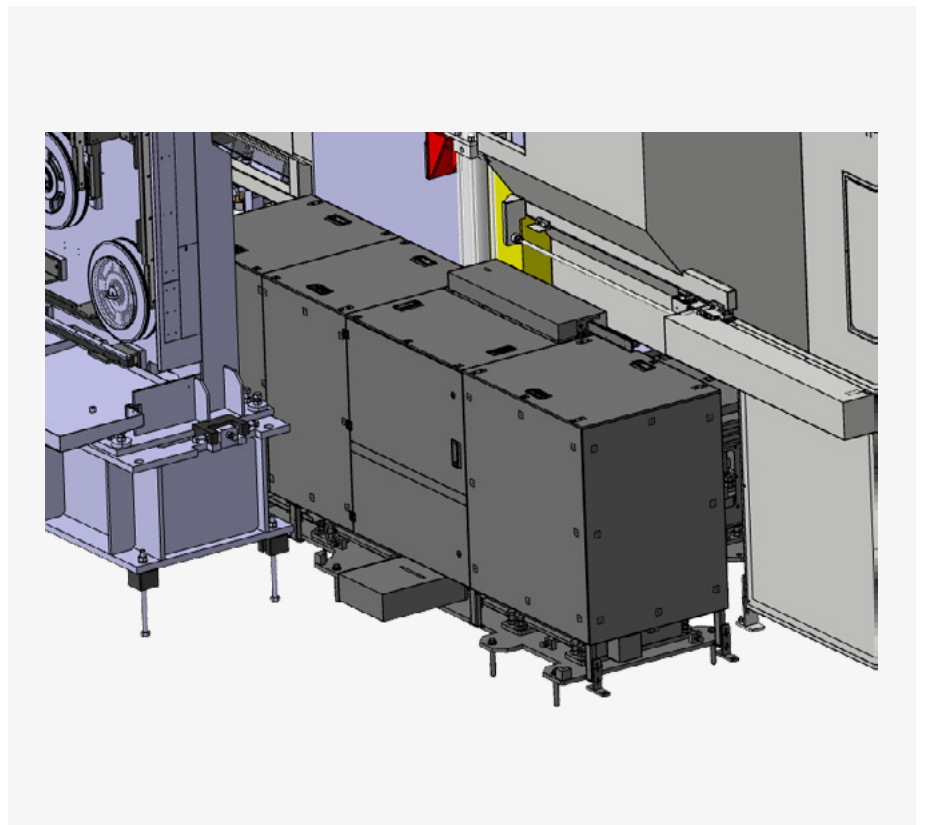
Standard AAC – 2 Stations

Two types of head attachment including dummy cover and 90° angle are equipped as a standard feature to minimize the time required to change a head attachment.

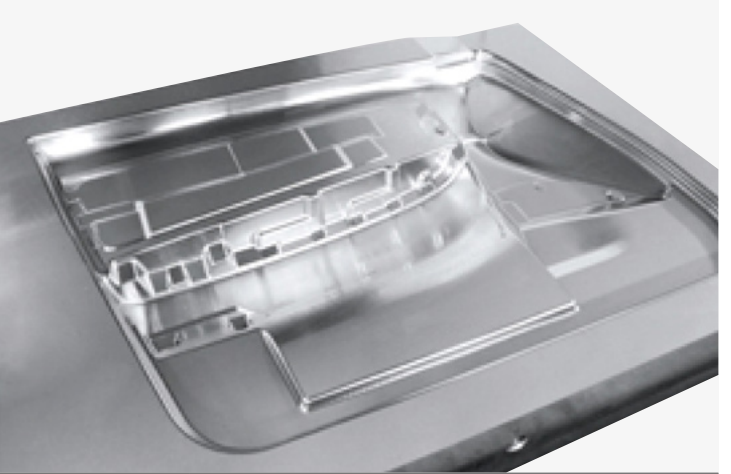


Linear Shuttle type AAC - 3/4/5 Stations **OPTION**

Optionally 3, 4, 5 head attachment can be equipped.



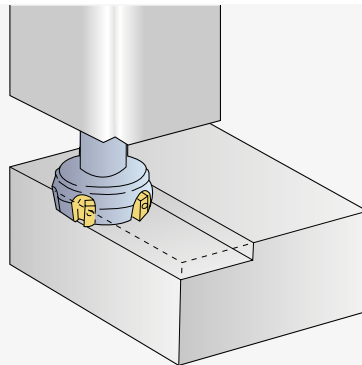
MACHINING CAPACITY



Automotive Side Outer(Press mold)		4-Door Sedan Door Trim (press mold)	
Model	DCM 3250F II	Model	DCM 3250F II
Material	HK700 & FC300	Material	KP4M
Workpiece size	4500 mm x 2500 mm x 900 mm (177.2 inch x 98.4 inch x 35.4 inch)	Workpiece size	1500 mm x 1000 mm x 500 mm (59.06 inch x 39.37 inch x 19.69 inch)
Machining time	35H (Roughing/Finishing)	Machining time	80H (finishing)

Heavy-duty cutting capacity

Face mill



Material : SM45C (Carbon steel)

Max. Cutting Capacity (Heavy-Duty Cutting I)	FACE CUTTER			
	Cutter Dia.	Spindle speed	Feedrate	Chip removal rate
	125 mm (4.9 inch)	310 r/min	1300 mm/min (51.2 ipm)	780 cm ³ /min (47.6 inch ³ /min)
	125 mm (4.9 inch)	310 r/min	740 mm/min (29.1 ipm)	666 cm ³ /min (40.6 inch ³ /min)
	U-DRILL			
	Drill Dia.	Spindle speed	Feedrate	Chip removal rate
	70 mm (2.8 inch)	310 r/min	124 mm/min	477 cm ³ /min (29.1 inch ³ /min)
	MAX. TAPPING			
	Thread	Spindle speed	Feedrate	Reamark
	M42xP4.5	190 r/min	855 mm/min (33.7 ipm)	Fine.

* The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

HIGH-PRECISION | HIGH-SPEED MOLD MACHINING

High-speed, High-precision contouring control

- AICC 1000 block + Machining condition selection function
- {Data Server : 1GB, 2GB, 4GB}

Cutting condition selection function

Cuttingcondition	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10
Quality	Normal									Excellent
Tool life	Long									Normal
Application	High-speed roughing							High-precision finishing		

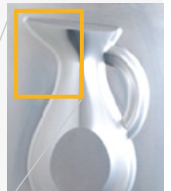
• Use the R code in the program to change the cutting condition by up to 10 steps. - Improved productivity (high-speed roughing, high-precision finishing)

• Various servo-related NC parameters such as acceleration and deceleration time constants and maximum cutting feed can be set automatically.

Verification sample VASE



R1 Applied R10 Applied



High-speed rapid traverse and cutting feedrate, High-load table capacity

Rapid traverse (X / Y/ Z / W-axis)

DCM 2740F II /2750F II /2760F II /2780F II

DCM 3250F II /3260F II /3280F II

DCM 3780F II / 37100F II

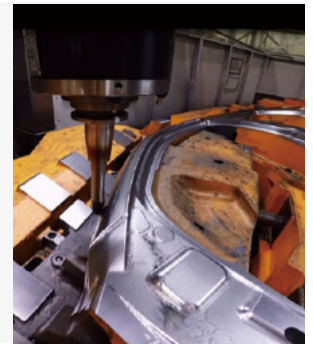
16 / 20* / 15 / 3 m/min
(629.9/787.4*/590.6/118.1 ipm)

DCM 4280F/42100F

16 / 18 / 15 / 3 m/min
(629.9/708.7/590.6/118.1 ipm)

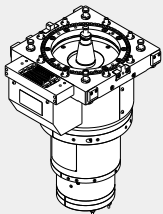
For high-speed mold machining, the rapid traverse of DCM F is increased by 25% on Y-axis, 50% on Z-axis, and 10m/min(393.7ipm) on X/Y/Z-axis cutting feedrate compared to the previous model. For high-load mold machining, the table load capacity of DCM F is increased by 30% compared to the previous model.

* DCM 3250F II /3260F II /3280F II /3780F II /37100F II model, the rapid traverse is reduced to 18m/min (708.7ipm) or less in range of Y-axis travel tip 250 mm(9.84inch) for the stable deceleration.



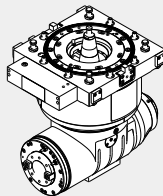
High-precision, High-speed head attachments and universal head specialized for mold machining

Optimized mold machining can be achieved by selecting various head attachments and ram spindles specialized for diverse mold shapes and high-speed mold machining.



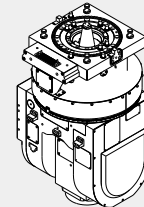
High-speed extension OPTION

6000~12000 r/min,
29.4 / 23.9 / 17.5 N·m
(21.7 / 17.6 / 12.9 ft-lbs)
(S2&10 min. / S2&30 min.
/ cont.)



High-speed right angle head OPTION

6000 r/min, min 5/1° indexing,
400.8 / 400.5 N·m
(295.8 / 295.6 ft-lbs)
(BI / 6K GB / 4K GB)



2-Axis Indexing OPTION

4000 r/min,
B/C axes min. 1° indexing,
299.9 / 301 / 301 N·m
(221.3 / 222.1 / 222.1 ft-lbs)
(BI / 6K GB)

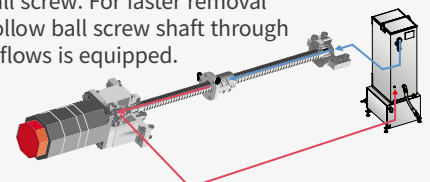
X/Y/Z/W-axis linear scale feedback system OPTION

The linear scale feedback system provides high positioning accuracy in the X, Y, Z, and W axes.



X/Y/Z-axis ball screw shaft cooling OPTION

The heat generated in the ball screw is removed by a high-efficiency cooler to minimize thermal deformation of the ball screw. For faster removal of frictional heat, a hollow ball screw shaft through which the coolant oil flows is equipped.



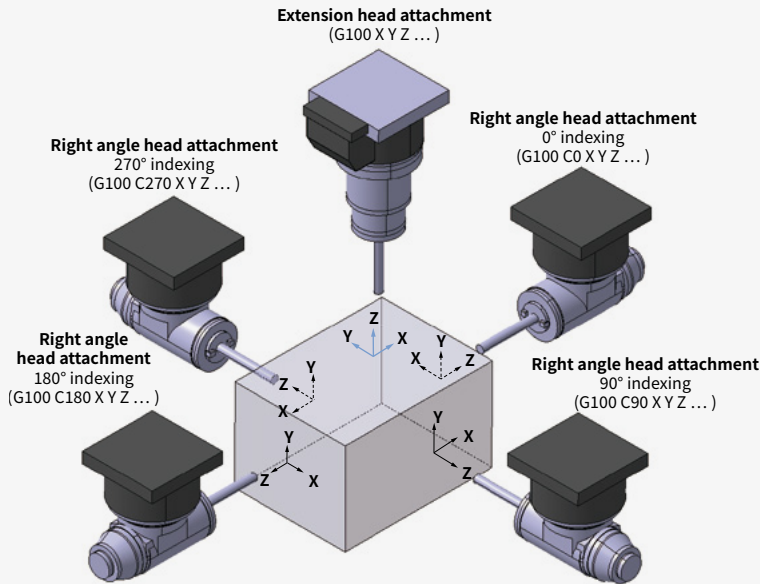
CONVENIENT MACHINING

5-face machining support system

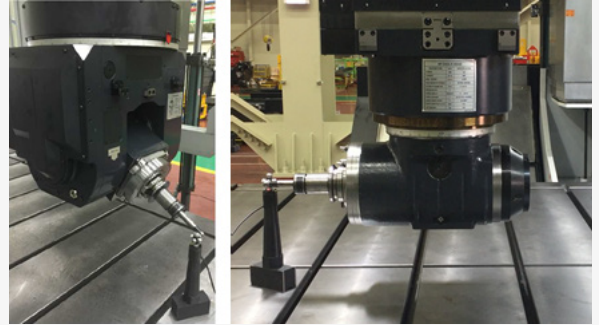
Supporting functions for 5-face machining

- 3-dimensional-work coordinates conversion system
- Tool end point shift within work coordinate system
- AAC control and head attachment position control by M-Code
- ATC is applicable for various head attachments.

* These functions are provided as a standard package when the 5 face machining head attachment is supplied.

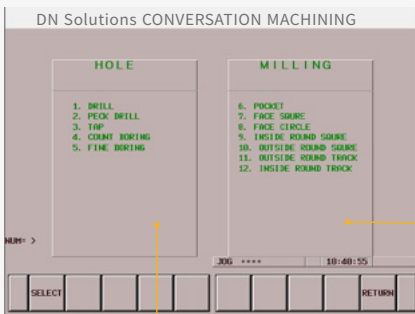


- Automatic head attachment offset measurement(G120)



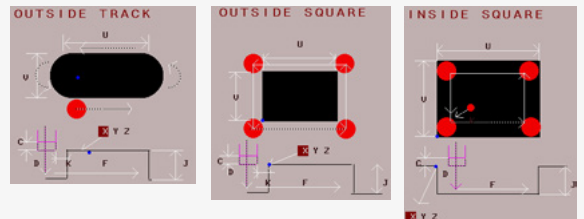
INDEX UNIVERSAL HEAD DATA INPUT			
1. Please input data based on MACHINE COORDINATES.			
2. Compensation offset signs are decided by MACHINE MOVING DIRECTION for sake error to 0.			
B AXIS: 90 DEGREE	DATA	B AXIS: 90 DEGREE	DATA
C AXIS: 00 DEGREE	INPUT	C AXIS: 00 DEGREE	INPUT
X DIRECTION OFFSET	4.000	X DIRECTION OFFSET	5.070
Y DIRECTION OFFSET	4.000	Y DIRECTION OFFSET	5.000
Z DIRECTION OFFSET	4.000	Z DIRECTION OFFSET	5.000
B AXIS: 90 DEGREE	DATA	B AXIS: 90 DEGREE	DATA
C AXIS: 90 DEGREE	INPUT	C AXIS: 270 DEGREE	INPUT
X DIRECTION OFFSET	5.050	X DIRECTION OFFSET	5.100
Y DIRECTION OFFSET	5.050	Y DIRECTION OFFSET	5.110
Z DIRECTION OFFSET	5.050	Z DIRECTION OFFSET	5.100
OFFSET DATA		DATA	
TOTAL Z OFFSET	5.130		
BETA X	4.000		
BETA Z	5.150		

Easy pattern cycle

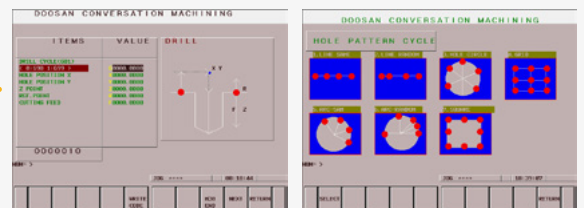


Programming time can be dramatically reduced by creating cutting programs and inputting the major parameters of the cutting pattern cycle required for parts cutting. The function is embedded in the CNC for convenient use in the field. Up to 22 complex pattern cycles including basic 5 patterns are available.

Example) Milling pattern



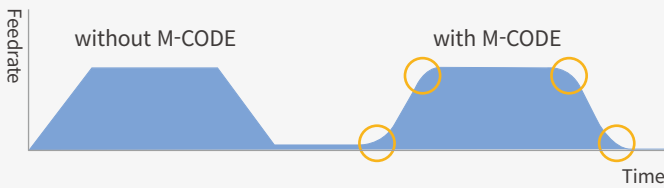
Example) Hole pattern



CONVENIENT MACHINING

Work load counter control

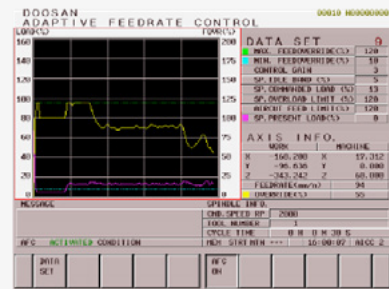
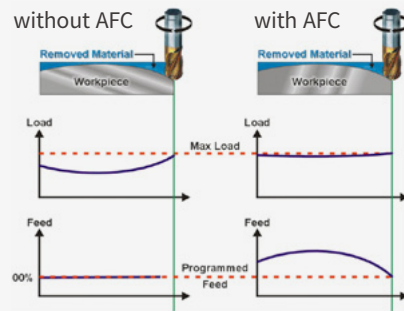
If customer selects proper M-Code according to weight of the work piece, the machine can decide itself the best moving pattern of the table. And machining can progress by this decision.



M-Code	Weight of work piece	DCM 2740F II	DCM 2750F II	DCM 2760F II	DCM 3250F II	DCM 3260F II
M380 A1	5 tons (11023.0 lb) or less	•	•	•	•	•
M380 A2	10 tons (22045.9 lb) or less	•	•	•	•	•
M380 A3	15 tons (33068.9 lb) or less	•	•	•	•	•
M380 A4	20 tons (44091.8 lb) or less	•	•	•	•	•

Adaptive Feedrate Control(AFC)

If tool overload is detected during operation, the feed rate is controlled to prevent the tool from being damaged.



Process monitoring function and manual operation screen

In-process monitoring minimizes the risk of damage to the workpiece during cutting.

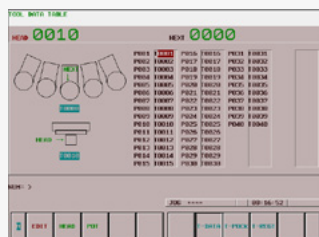
Tool Load Monitoring

During cutting operation, abnormal load caused by wear and tear of the tool is detected and an alarm is triggered to prevent further damage.



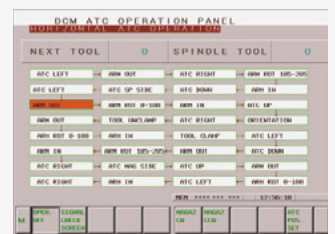
Tool Management

This function controls information on the tools in the tool magazine pots.



ATC and APC screens are provided for convenient manual operation

ATC manual operation screen



APC manual operation screen

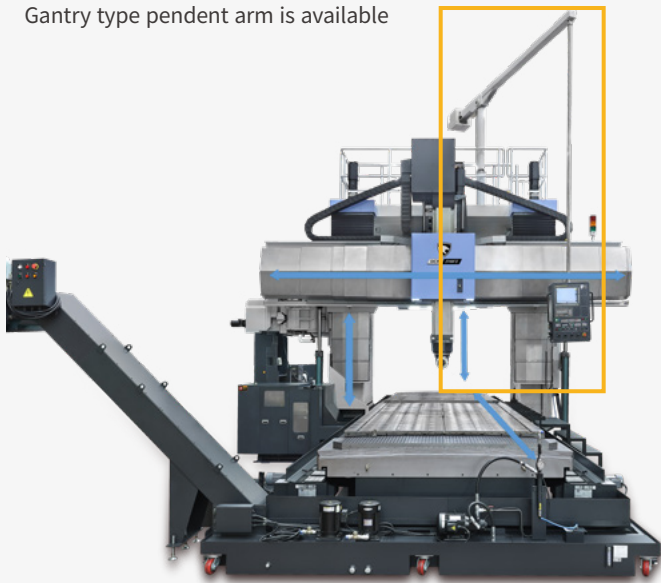


CONVENIENT MACHINING

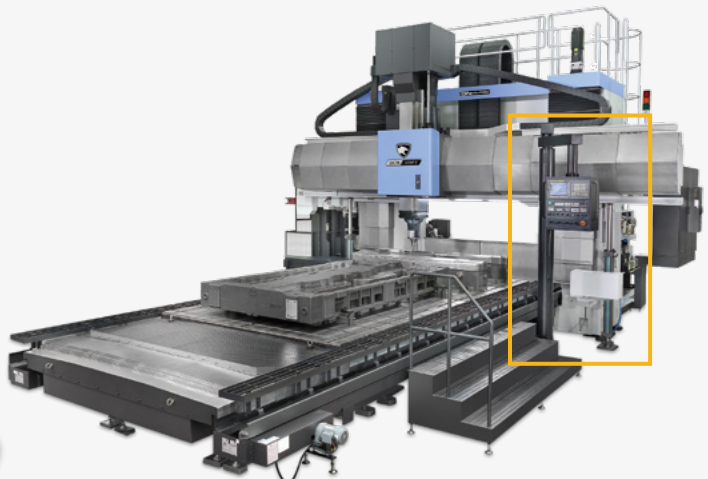
Enhanced operator's convenience

A pendent-arm type operation panel, movable from top beam to the operator, ensures easier operation.

Gantry type pendent arm is available



Stand-type pendent arm operation panel installed on the floor **OPTION**



• Various switches are available as standard or option at the bottom of the main operation panel for easier longaxis feeding of large machine tools.



Mono lever type switch



Button type switch 1 **OPTION**



Button type switch 2 **OPTION**

* The name of each axis can be different for each option.

• The pulse handle, manual handle (portable MPG) or others enabling easy setup of work pieces for the operator's convenience are provided as a standard feature or option.



Manual handle Portable MPG



Manual handle Portable type 3 MPG **OPTION**



Manual handle MPG with LCD display **OPTION**



Manual operation panel HMOP (Handy Machine Operator's Panel) **OPTION**

• In order to increase the brightness around the ram spindle to improve the workability, 2 to 3 work lights at the bottom of the cross rail and 2 work lights at the bottom of the ram saddle are provided as standard according to the model. (☁ mark)

• Stainless steel materials are used to prevent rust on the end of covers and the first sliding covers on the left and right sides of the Y and W axes. (● mark)



STANDARD | OPTIONAL SPECIFICATIONS

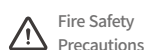
Various optional features are available to meet customers' specific machining requirements and applications.

Division	Description	DCM F series	
Electric cabinet light		<input type="radio"/>	
Electric cabinet air conditioner		<input type="radio"/>	
High-quality machining	AICC 1000 block Data Server : 1GB, 2GB, 4GB	<input checked="" type="radio"/>	
Tool management		<input type="radio"/>	
Tool shank	BT50	<input checked="" type="radio"/>	
	CAT50	<input type="radio"/>	
	DIN50	<input type="radio"/>	
Tool magazine	40 tools	<input checked="" type="radio"/>	
	60 tools	<input type="radio"/>	
	90 tools	<input type="radio"/>	
	120 tools	<input type="radio"/>	
Work load counter control		<input checked="" type="radio"/>	
Electric leakage breaker		<input type="radio"/>	
Electric line filter		<input type="radio"/>	
Ram spindle	6000 r/min (Built-in)	25/22 kW (33.5 / 29.5 Hp) (FANUC)	<input checked="" type="radio"/>
	8000 r/min (Built-in)	25/22 kW (33.5 / 29.5 Hp) (FANUC)	<input type="radio"/>
	6000 r/min (Gear box)	26/22 Kw(34.9 / 29.5) (FANUC)	<input type="radio"/>
	4000 r/min (Gear box W/ HIGH TORQUE)	45/37/30KW(60.3/49.6 / 40.2 Hp) (FANUC)	<input type="radio"/>
	Spindle lubrication device		<input checked="" type="radio"/>
	Spindle thermal compensation		<input checked="" type="radio"/>
Linear scale feedback system	X-axis	<input type="radio"/>	
	Y-axis	<input type="radio"/>	
	Z-axis	<input type="radio"/>	
	W-axis	<input type="radio"/>	
Lift-up chip conveyor	HINGED PLATE	<input type="radio"/>	
	MAGNETIC SCRAPER	<input type="radio"/>	
Components for installation	Leveling blocks and anchoring bolts	<input checked="" type="radio"/>	
Safety ladder and top beam fence		<input checked="" type="radio"/>	
Hydraulic power unit		<input checked="" type="radio"/>	
Bellows cover for axis	W-axis upper side	<input checked="" type="radio"/>	
Sliding covers for axes	X/Y/W-axis lower side	<input checked="" type="radio"/>	
Easy pattern cycle		<input checked="" type="radio"/>	
Automatic tool length measurement	TS27R_RENISHAW	<input type="radio"/>	
	NC4_RENISHAW	<input type="radio"/>	
	MASTER TOOL	<input type="radio"/>	
Automatic workpiece measurement	RMP60,STYLUS LENTH50(100)_RENISHAW	<input type="radio"/>	
	RMP600,STYLUS LENTH50(100)_RENISHAW	<input type="radio"/>	
	CALIBRATION BLOCK	<input type="radio"/>	
Automatic attachment changer (AAC)	LINEAR TYPE 2-ST	<input checked="" type="radio"/>	
	LINEAR SHUTTLE 3-ST (NONE 2-Axis Indexing Head)	<input type="radio"/>	
	LINEAR SHUTTLE 3-ST	<input type="radio"/>	
	LINEAR SHUTTLE 4-ST	<input type="radio"/>	
	LINEAR SHUTTLE 5-ST	<input type="radio"/>	
Auto power on		<input type="radio"/>	
Auto power off		<input checked="" type="radio"/>	
Automatic Pallet Changer (APC)	SIDE SHUTTLE (2-PALLET)	<input type="radio"/>	
Work light	LED lamps: 2EA (DCM 27 Series II)LED lamps: 3EA (DCM 32/37/42 Series II)	<input checked="" type="radio"/>	
Operator call lamp (Red/Yellow/Green)		<input checked="" type="radio"/>	
Tool load monitoring		<input checked="" type="radio"/>	
Coolant tank	900L(27 SERIES) / 1000L(32 SERIES) / 2000L(37 SERIES) / 2000L(42 SERIES)	<input checked="" type="radio"/>	
	1100L(27 SERIES) / 1200L(32 SERIES)	<input type="radio"/>	
Periodical checking function		<input checked="" type="radio"/>	

* Please contact your DN Solutions representative for detailed machine information. .

* When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.

Standard Optional X N/A



Fire Safety
Precautions

There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.

STANDARD | OPTIONAL SPECIFICATIONS

Various optional features are available to meet customers' specific machining requirements and applications.

Division	Description	DCM F series
Main operation panel (pendent type)	COUNTER BALANCING TYPE	●
	STAND TYPE	○
	GANTRY TYPE	○
Chip & coolant protective cover	CHIP COVER	○
	SEMI GUARD	○
Coolant	FLOOD	●
	Coolant gun	○
	Water soluble Coolant Chiller**	○
Test bar	Coolant level switch : Sensing level_High/Low	○
	BT50	○
Table T-slot	24H8 (0.94H8)	●
Table CROSS SLOT	28H8 (1.10H8)	○
Chip bucket	Rotary type (380L) (100.4 gallon)	○
	Lift type (380L) (100.4 gallon)	○
High column	+350mm (13.8 inch)	○
	+700mm (27.6 inch)	○
	+1050mm (41.3 inch)	○
W-axis balancing system		●
Air	AIR BLOWER	●
	AIR PURGE	●
	AIR CURTAIN	●
	AIR GUN	○
	AIR DRYER	○
CS control BZ sensor		●
Display unit	15" COLOR LCD	●
F frame head attachment	DUMMY HEAD	●
	EXTENSION HEAD (L285/6K R/MIN)	○
	EXTENSION HEAD (L400/4K R/MIN)	○
	EXTENSION HEAD (L400/6K R/MIN)	○
	EXTENSION HEAD (L600/4K R/MIN)	○
	EXTENSION HEAD (L600/6K R/MIN)	○
	EXTENSION HEAD (L600/12K R/MIN)	○
	RIGHT ANGLE HEAD (L350/3K R/MIN)	○
	RIGHT ANGLE HEAD (L350/3K R/MIN W/TSC)	○
	RIGHT ANGLE HEAD (L350/4K R/MIN)	●
	RIGHT ANGLE HEAD (L350/4K R/MIN W/TSC)	○
	RIGHT ANGLE HEAD (L350/6K R/MIN)	○
	RIGHT ANGLE HEAD (L350/6K R/MIN W/TSC)	○
2-AXIS INDEXING HEAD (L835/4K R/MIN)	○	
F frame right angle head attachment indexing angle	5°	●
	1°	○
Auto head attachment offset support	G100	●
Auto head attachment offset measurement	G120	○
MPG	PORTABLE TYPE 1-MPG	●
	MPG WITH LCD DISPLAY	○
	PORTABLE TYPE 3-MPG	○
NC Controller	HMOP(Handy Machine Operator's Panel)	○
Oil skimmer	FANUC 31i-B Plus	●
Pull stud	BELT TYPE	○
	MAS 403 P50T-I (45°)	●
Spot light on ram spindle	MAS 403 P50T-II (60°)	○
		●
TSC	NONE	●
	2.0MPa	○
	3.0MPa	○
TSA	NONE	●
	0.5MPa	○
2-side chip conveyor (in machine to tank)		○
5-face machining support system	HINGED PLATE	○
Rotary table		●
	PACKAGE #1 : ONLY WIRING	○
	PACKAGE #2 : HYD. & CONTROL READY	○
	PACKAGE #3 : FULL OPT.	○

* Please contact your DN Solutions representative for detailed machine information. .

* When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.

● Standard ○ Optional X N/A



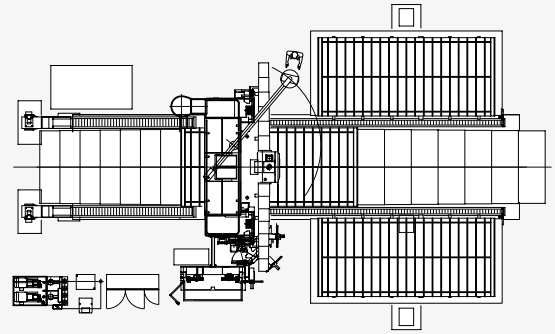
There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.

PERIPHERAL EQUIPMENT

Automatic pallet changer (APC, OPTION)



Faster shipment thanks to standardized modular design

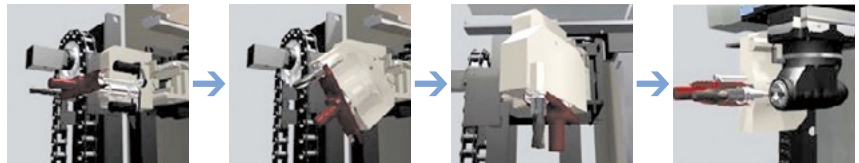


Automatic tool changer (ATC)

Equipped with one tool change arm, ATC can change tools regardless of the head attachment. Hydraulic-driven ATC and servo motor-driven magazine provide high reliability and minimize machine downtime.



Horizontal ATC operation with a right head attach mounted.



* Picture-Vertical ATC in operation

Max. No. of tools	40 {60, 90, 120 OPTION } ea
Max. tool diameter	130 [near pot empty: 250] mm (5.1 [near pot empty: 9.8] inch)
Max. tool length	400mm (15.7 inch)
Max. tool weight	30 kg (66.1 lb)
Tool selection type	Fixed address
Tool changing time (T-T)	5.5 s

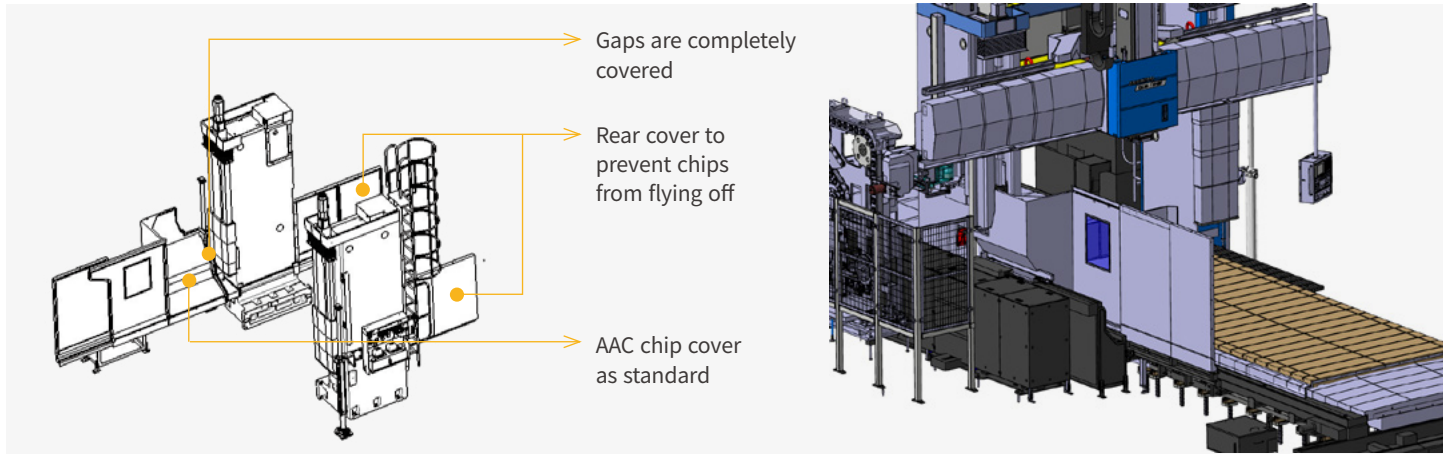
Automatic tool length measurement OPTION

Tool length can be measured in the vertical and horizontal directions. The length of tool set up on the spindle is measured automatically, and the tool offset data of the tool number are entered automatically.



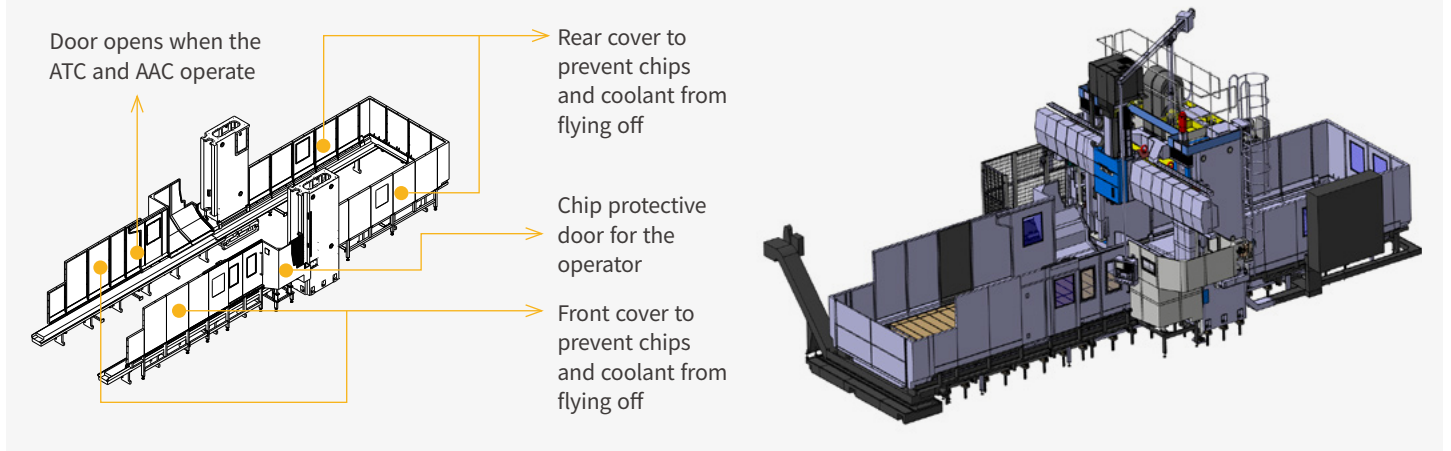
PERIPHERAL EQUIPMENT

Chip cover OPTION



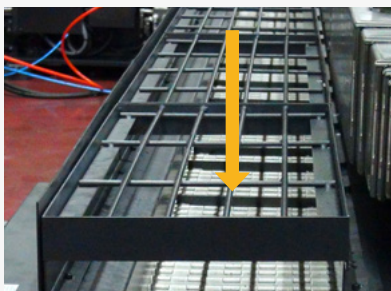
Semi-guard OPTION

The semi-guard covers the entire cutting area to prevent chips and coolant from flying off during cutting operation.



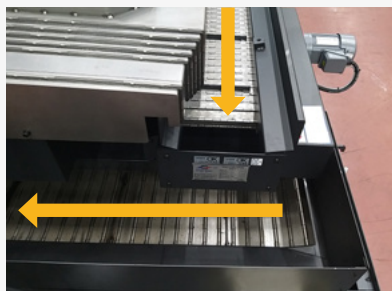
Chip conveyor

Optional chip conveyors are available to discharge chips and improved to prevent chips and coolant from falling on the floor.



Both sides of the table-chip conveyors

OPTION



Lift-up chip conveyor OPTION

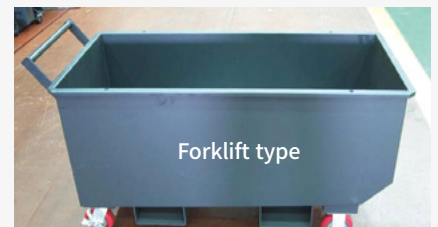
Chip bucket OPTION

Forklift type

The bottom of the chip bucket has a space into which forks can be inserted to allow transportation by a forklift.

Rotation type

The chip bucket is fitted with a rotating joint for tilting and emptying the bucket.



Forklift type

FANUC 31i-B PLUS

FANUC 31i-B Plus maximizes customer productivity and convenience.

15" Touch screen + New OP

DN Solutions Fanuc 31iB/B5 Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

FANUC 31i-B Plus

- 15-inch color display
- Intuitive and user-friendly design

USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonomic operator panel
- 4MB Memory
- Hot keys
- Enhance AICC BLOCK
- Touch pen provided as standard



iHMI touchscreen

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.



NUMERIC CONTROL SPECIFICATIONS

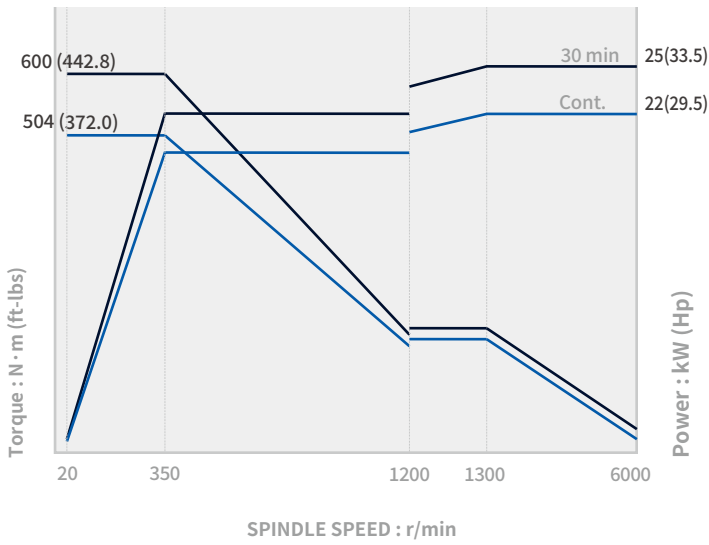


Description	Item	Specifications	DCM F series F31i-B PLUS
Controlled axis	Controlled axes		3 (X,Y,Z,W)
	Simultaneously controlled axes		3 axes
	Additional controlled Axis	Add 1 Axis (5th Axis)	○
Data input/output	Fast data server		○
	Memory card input/output		●
	USB memory input/output		●
	Large capacity memory(2GB)*2	Available Option only with 15" Touch LCD (iHMI Only) *2)	○
Interface function	Embedded Ethernet		●
	Fast Ethernet		○
	Enhanced Embedded Ethernet function		●
Operation	DNC operation	Included in RS232C interface.	●
	DNC operation with memory card		●
	Workpiece coordinate system	G52 - G59	●
Program input	Addition of workpiece coordinate system	G54.1 P1 X 48 (48 pairs)	●
	Tool number command		T4 digits
	Tilted working plane indexing command	G68.2 TWP	X
Feed function	AI contour control I	G5.1 Q_, 40 Blocks	X
	AI contour control II	G5.1 Q_, 200 Blocks	X
	AI contour control II	G5.1 Q_, 600 Blocks	X
	AI contour control II	G5.1 Q_, 1000 Blocks *1)	●
	High smooth TCP		X
Operation Guidance Function	EZ Guidei (Conversational Programming Solution)		●
	iHMI with Machining Cycle	Only with 15" Touch LCD standard *2)	●
	EZ Operation package		●
Setting and display	CNC screen dual display function		●
Network	FANUC MTConnect		⊕
	FANUC OPC UA		⊕
Others	Display unit	15" color LCD	X
		15" color LCD with Touch Panel	●
	Part program storage size & Number of registerable programs	640M(256KB)_500 programs	X
		1280M(512KB)_1000 programs	X
		2560M(1MB)_1000 programs	X
		5120M(2MB)_1000 programs	X
		10240M(4MB)_1000 programs	●
		20480M(8MB)_1000 programs	○
		2560M(1MB)_2000 programs	○
		5120M(2MB)_4000 programs	○
		10240M(4MB)_4000 programs	○
20480M(8MB)_4000 programs		○	

POWER | TORQUE

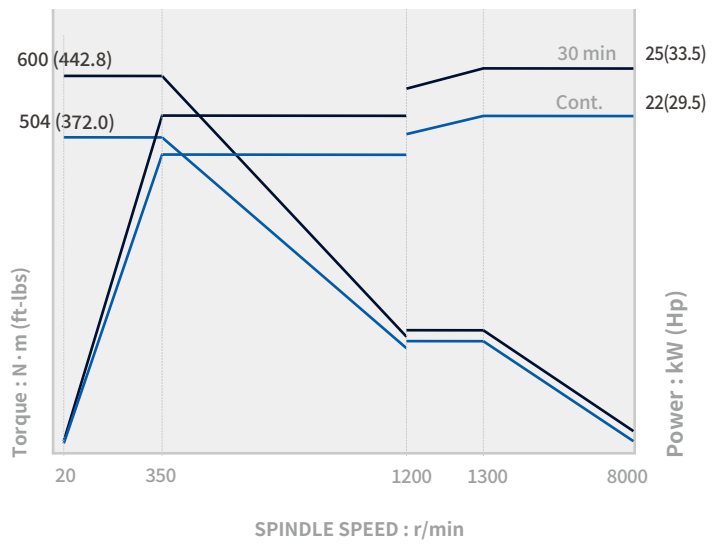
Standard_built-in driven

Max. Spindle speed **6000** r/min
 Max. Spindle power **25** kW (33.5 Hp)
 Max. Spindle torque **600** N·m (442.8 ft-lbs)



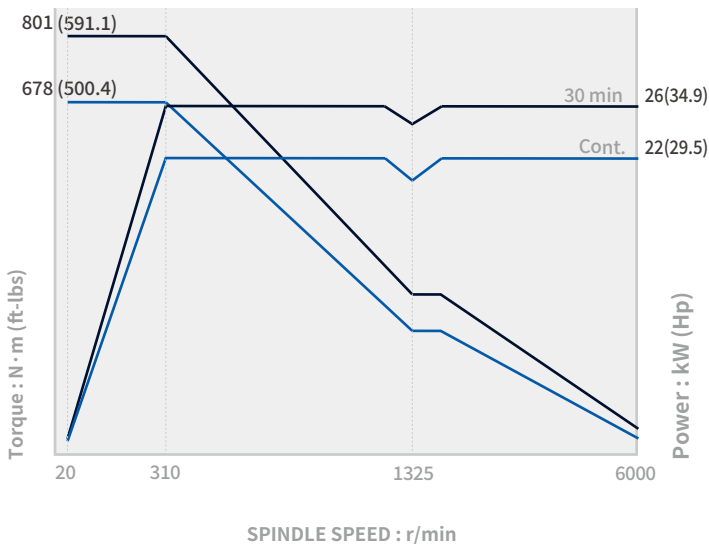
High speed_built-in driven OPTION

Max. Spindle speed **8000** r/min
 Max. Spindle power **25** kW (33.5 Hp)
 Max. Spindle torque **600** N·m (442.8 ft-lbs)



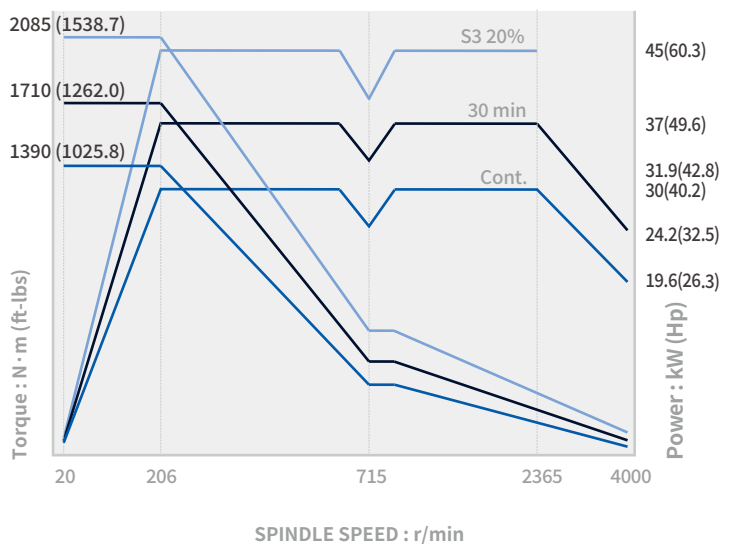
Heavy-duty cutting I_gear driven OPTION

Max. Spindle speed **6000** r/min
 Max. Spindle power **26** kW (34.9 HP)
 Max. Spindle torque **801** N·m (591.1 ft-lbs)



Heavy-duty cutting II_gear driven OPTION

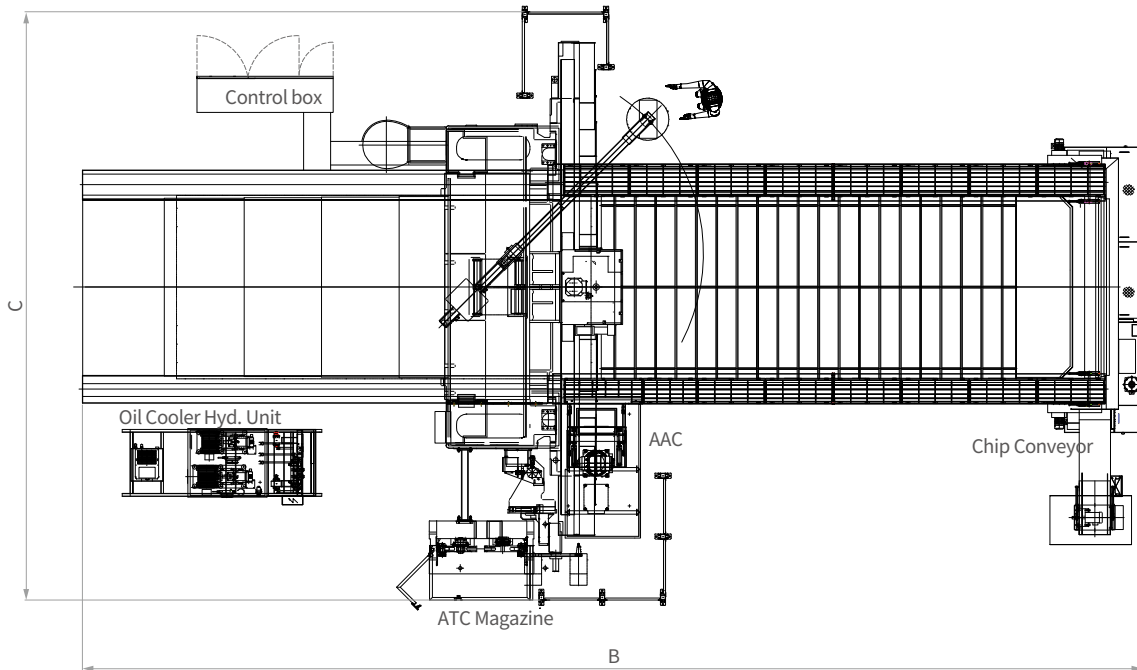
Max. Spindle speed **4000** r/min
 Max. Spindle power **45** kW (60.3 Hp)
 Max. Spindle torque **2085** N·m (1538.7 ft-lbs)



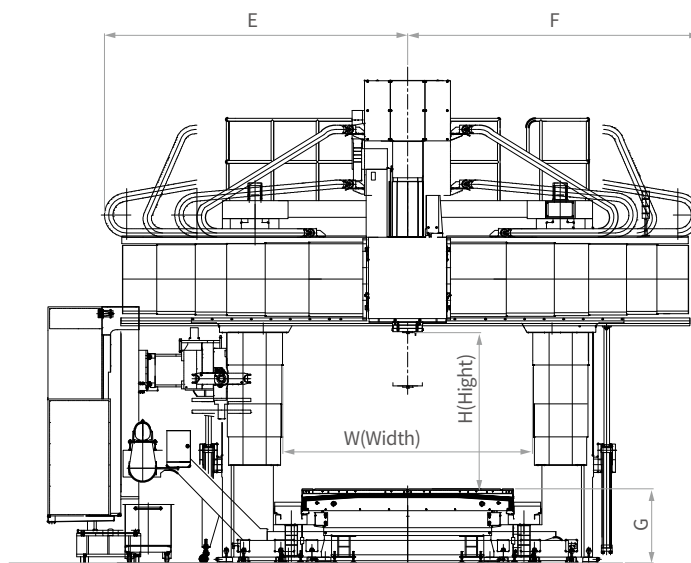
EXTERNAL DIMENSIONS

Unit: mm (inch)

TOP



FRONT



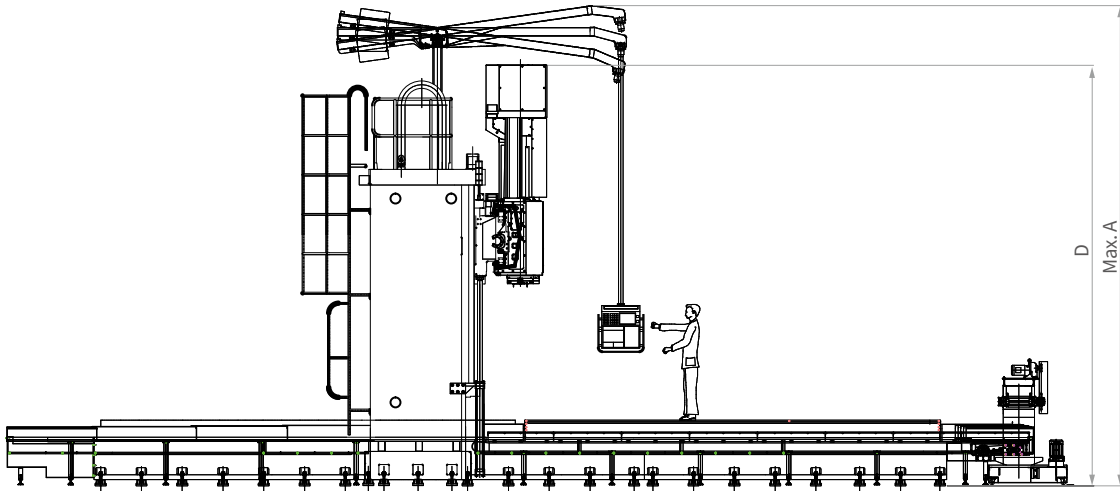
** Providing anchoring bolts. Foundation work must be done.

* Some peripheral equipment can be placed in other areas.

EXTERNAL DIMENSIONS

Unit: mm (inch)

SIDE



Model	A	B	C	D	E	F	G	H	W
DCM 2740F II	6730 (264.9)	12590 (495.7)	8565 (337.2)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 2750F II	6730 (264.9)	14590 (574.4)	8565 (337.2)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 2760F II	6730 (264.9)	16040 (631.5)	8565 (337.2)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 2780F II	6730 (264.9)	19970 (786.2)	8565 (337.2)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 3250F II	6730 (264.9)	14590 (574.4)	8790 (346.1)	5830 (229.5)	3960 (155.9)	3860 (152.0)	950 (37.4)	1650 (65.0)	3200 (126.0)
DCM 3260F II	6730 (264.9)	16240 (639.4)	8790 (346.1)	5830 (229.5)	3960 (155.9)	3860 (152.0)	950 (37.4)	1650 (65.0)	3200 (126.0)
DCM 3280F II	6730 (264.9)	19900 (783.5)	8790 (346.1)	5830 (229.5)	3960 (155.9)	3860 (152.0)	950 (37.4)	1650 (65.0)	3200 (126.0)
DCM 3780F II	8080 (318.1)	19920 (784.3)	9390 (369.7)	7105 (279.7)	4210 (165.7)	4160 (163.8)	950 (37.4)	2350 (92.5)	3700 (145.7)
DCM 37100F II	8080 (318.1)	24670 (971.3)	9390 (369.7)	7105 (279.7)	4210 (165.7)	4160 (163.8)	950 (37.4)	2350 (92.5)	3700 (145.7)
DCM 4280F	8080 (318.1)	20915 (823.4)	9390 (369.7)	7105 (279.7)	4800 (189.0)	4800 (189.0)	950 (37.4)	2350 (92.5)	4200 (165.4)
DCM 42100F	8080 (318.1)	25915 (1020.3)	9390 (369.7)	7105 (279.7)	4800 (189.0)	4800 (189.0)	950 (37.4)	2350 (92.5)	4200 (165.4)

※ The dimensions above are the standard type for each model.

Installation precautions

1. Test for bearing capacity of soil should be taken more than four areas. (In particular, places for bed and column where the loads are concentrated must be tested.)
2. Basically, the bearing capacity of soil should exceed the values determined by DN Solutions. (Test for bearing capacity of soil should follow DN Solutions's standards.)
3. Our engineering team may be available even during the foundation work at customer's request.

* Please comply with our company's installation guideline, such as ground condition and anchoring, in order to achieve the maximum precision and performance of the machine.

Installation & test run

On-site installation and commissioning will be conducted according to a '5-week' schedule.
[Excluding the concreted surface curing period (3rd week)]

* The installation plan may vary according to the size of the machine, optional devices, and the conditions and environment of the site.

Checking the strength of ground



Packing and shipping



Temporary installation and assembly (1st - 2nd week)

Concreted surface curing (3rd week)



Accuracy check & adjustment (4th - 5th week)

Complete installation & test run within 6 weeks
(In case of the standard DCM 2740F)

Test operation

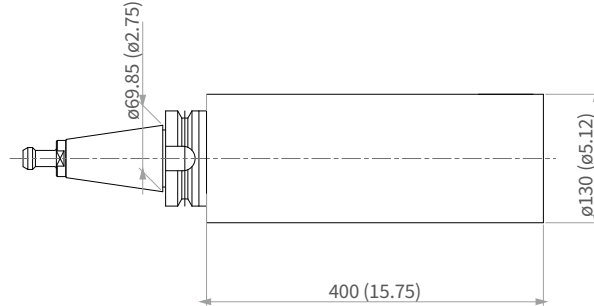


** Providing anchoring bolts. Foundation work must be done.
* Some peripheral equipment can be placed in other areas.

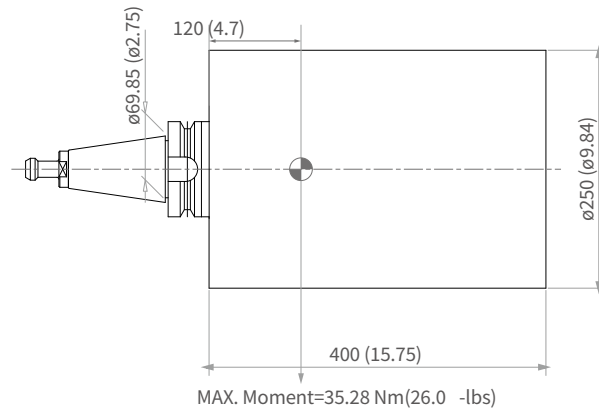
TOOL DIMENSIONS

Unit: mm (inch)

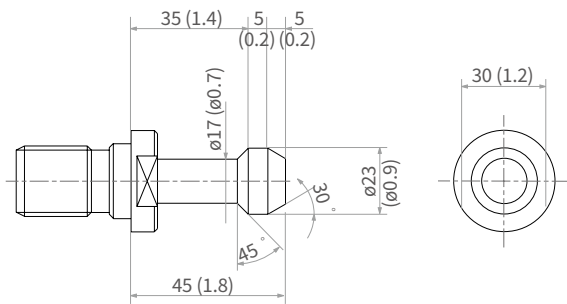
WITH AN ADJACENT TOOL



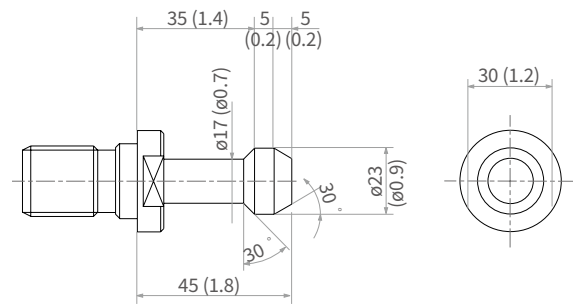
WITHOUT ADJACENT TOOLS



Pull Stud : MAS 403 P50T-I (45°)



Pull Stud : MAS403 P50T-II (60°)



Various tooling applications

- Any type of tooling is applicable.
- Please contact our engineering team if necessary



Maximum tool weight

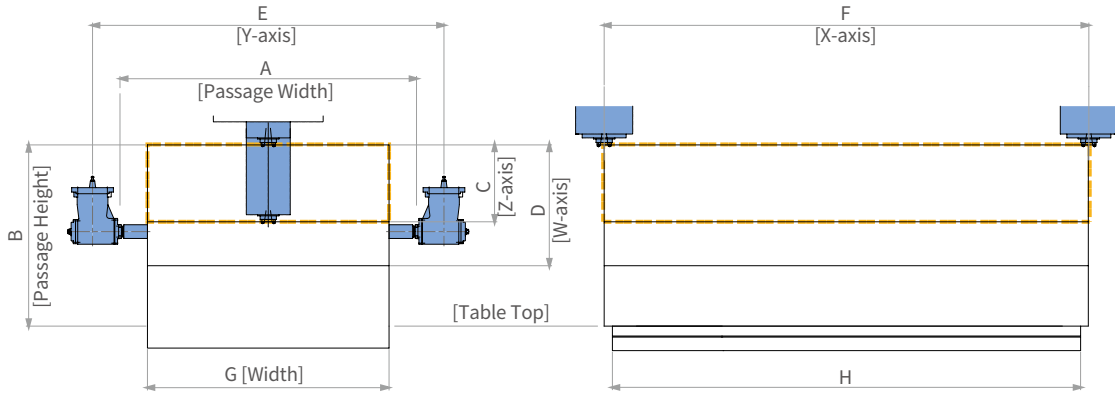
Standard

30 kg x 120 mm
(66.1 lb x 4.7 inch)

- The center of gravity must be within 120 mm(4.7 inch) from the gauge line.

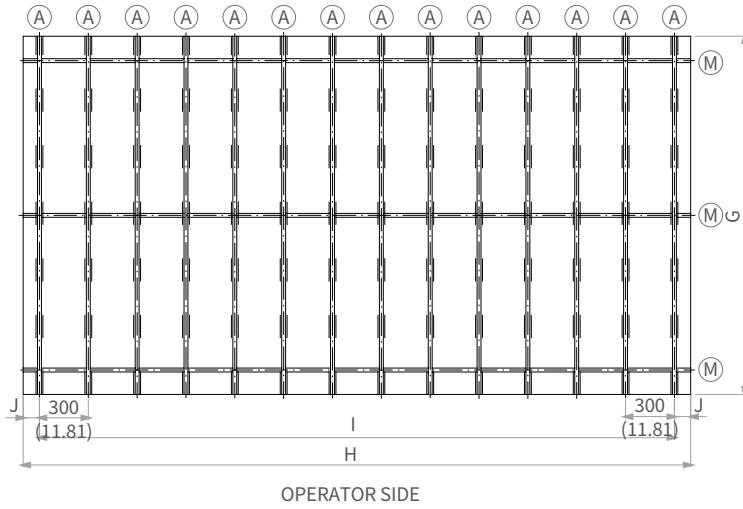
* Some peripheral equipment can be placed in other areas.

WORKING RANGE

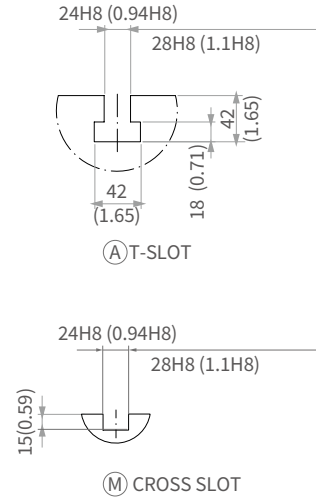


Unit: mm (inch)

TABLE DIMENSIONS



Unit: mm (inch)



Model	Table type	A	B	C	D	E	F	G	H	I	J
DCM 2740F II	22 x 41 (0.9 x 1.6)	2700 (106.3)	1650 (65.0)	700 (27.6)	1100 (43.3)	3200 (126.0)	4250 (167.3)	2200 (86.6)	4100 (161.4)	3900 (153.5)	100 (3.9)
DCM 2750F II	22 x 51 (0.9 x 2.0)	2700 (106.3)	1650 (65.0)	700 (27.6)	1100 (43.3)	3200 (126.0)	5250 (206.7)	2200 (86.6)	5100 (200.8)	4800 (189.0)	150 (5.9)
DCM 2760F II	22 x 61 (0.9 x 2.4)	2700 (106.3)	1650 (65.0)	700 (27.6)	1100 (43.3)	3200 (126.0)	6250 (246.1)	2200 (86.6)	6100 (240.2)	5700 (224.4)	200 (7.9)
DCM 2780F II	22 x 81 (0.9 x 3.2)	2700 (106.3)	1650 (65.0)	700 (27.6)	1100 (43.3)	3200 (126.0)	8250 (324.8)	2200 (86.6)	8100 (318.9)	7800 (307.1)	150 (5.9)
DCM 3250F II	27 x 51 (1.1 x 2.0)	3200 (126.0)	1650 (65.0)	700 (27.6)	1100 (43.3)	3700 (145.7)	5250 (206.7)	2700 (106.3)	5100 (200.8)	4800 (189.0)	150 (5.9)
DCM 3260F II	27 x 61 (1.1 x 2.4)	3200 (126.0)	1650 (65.0)	700 (27.6)	1100 (43.3)	3700 (145.7)	6250 (246.1)	2700 (106.3)	6100 (240.2)	5700 (224.4)	200 (7.9)
DCM 3280F II	27 x 81 (1.1 x 3.2)	3200 (126.0)	1650 (65.0)	700 (27.6)	1100 (43.3)	3700 (145.7)	8250 (324.8)	2700 (106.3)	8100 (318.9)	7800 (307.1)	150 (5.9)
DCM 3780F II	32 x 81 (1.3 x 3.2)	3700 (145.7)	2350 (92.5)	1000 (39.4)	1400 (55.1)	4200 (165.4)	8250 (324.8)	3200 (126.0)	8100 (318.9)	7800 (307.1)	150 (5.9)
DCM 37100F II	32 x 101 (1.3 x 4.0)	3700 (145.7)	2350 (92.5)	1000 (39.4)	1400 (55.1)	4200 (165.4)	10250 (403.5)	3200 (126.0)	10100 (397.6)	9600 (378.0)	250 (9.8)
DCM 4280F	35 x 81 (1.4 x 3.2)	4500 (177.2)	2350 (92.5)	1000 (39.4)	1400 (55.1)	5000 (196.9)	8250 (324.8)	3500 (137.8)	8100 (318.9)	7800 (307.1)	150 (5.9)
DCM 42100F	35 x 101 (1.4 x 4.0)	4500 (177.2)	2350 (92.5)	1000 (39.4)	1400 (55.1)	5000 (196.9)	10250 (403.5)	3500 (137.8)	10100 (397.6)	9600 (378.0)	250 (9.8)

MACHINE SPECIFICATIONS

Item		Unit	DCM 2740F II	DCM 2750F II	DCM 2760F II	DCM 2780F II	DCM 3250F II	DCM 3260F II	DCM 3280F II	DCM 3780F II	DCM 37100F II	DCM 4280F	DCM 42100F	
Travel	X-axis Travel (Table Longitudinal)	mm (inch)	4250 (167.3)	5250 (206.7)	6250 (246.1)	8250 (324.8)	5250 (206.7)	6250 (246.1)	8250 (324.8)	8250 (324.8)	10250 (403.5)	8250 (324.8)	10250 (403.5)	
	Y-axis Travel (Spindle Head Cross)	mm (inch)	3200 (126.0)				3700 (145.7)			4400 (173.2)		5000 (196.9)		
	Z-axis Travel (Ram Vertical)	mm (inch)	700 {1000}* (27.6{39.4})								1000 (39.4)			
	W-axis Travel (Vertical Movement of Crossrail)	mm (inch)	1100 (43.3) {1450 (57.1): applicable to height of table to spindle nose 2350mm and over}*								1400 (55.1)			
	Effective width between columns	mm (inch)	2700 (106.3)				3200 (126.0)			3700 (145.7)		4200 (165.4)		
	Table to Spindle Nose	mm (inch)	1650 {2000, 2350, 2700}* (65.0 {78.7, 92.5, 106.3})								2350 {2700} (92.5 {106.3})			
Feedrate	Rapid Traverse X, Y, Z, W	m/min (ipm)	16, 20*, 15, 3 (629.9, 787.4*, 590.6, 118.1)								16, 18, 15, 3 (629.9, 708.7, 590.6, 118.1)			
	Max. Cutting Feedrate X, Y, Z	mm/min (ipm)	10000, 10000, 10000 (393.7, 393.7, 10000)											
Table	Table Size (Width x Length)	mm (inch)	2200 x 4100 (86.6 x 161.4)	2200 x 5100 (86.6 x 200.8)	2200 x 6100 (86.6 x 240.2)	2200 x 8100 (86.6 x 318.9)	2700 x 5100 (106.3 x 200.8)	2700 x 6100 (106.3 x 240.2)	2700 x 8100 (106.3 x 318.9)	3200 x 8100 (126.0 x 318.9)	3200 x 10100 (126.0 x 397.6)	3500 x 8100 (137.8 x 318.9)	3500 x 10100 (137.8 x 318.9)	
	Load Capacity	kg (lb)	20000 (44091.8)	25000 (55114.8)	30000 (66137.7)	40000 (88183.6)	33000 (72751.5)	39000 (85979.0)	45000 (99206.6)					
	T-Slot	mm (inch)	24H8 {28H8, 32H8}* (0.94H8 {1.10H8, 1.26H8})											
Spindle Head	Tool Shank	-	BT 50 {CAT 50, DIN 50, HSK 63A}											
	Ram Size	mm (inch)	380 x 380 (15.0 x 15.0)											
	Max. Spindle Speed	r/min	Built-in 6000, {Built-in 8000, Gear box 6000, 4000}											
	Spindle Drive Motor (30min. / cont.)	kW (Hp)	Built-in 25/22{Gear box 26/22, Gear box 45(S3 20%)/37/30}											
ATC	Tool Storage Capacity	ea	40 {60, 90, 120}											
	Max. Tool Diameter	mm (inch)	130 [adjacent pot empty: 250](5.1[adjacent pot empty: 9.8])											
	Max. Tool Length	mm (inch)	400 (15.7)											
	Max. Tool Weight	kg (lb)	30 (66.1)											
	Max. tool moment	N·m (ft·lbs)	35.2 (26)											
	Tool Selection Type		Fixed address											
AAC	Type		Linear type 2-station {Linear shuttle type 3/4/5 stations}											
Machine Size	Machine Height	mm (inch)	6730 {7180, 7700, 8050} (265.0 {282.7, 303.1, 303.1})								8080 {8430} (318.1 {331.9})			
	Floor Space (Machine only)	mm (inch)	8565 x 12590 (337.2 x 495.7)	8565 x 14590 (337.2 x 574.4)	8565 x 16040 (337.2 x 631.5)	8565 x 19970 (337.2 x 786.2)	8790 x 14590 (346.1 x 574.4)	8790 x 16240 (346.1 x 639.4)	8790 x 19900 (346.1 x 783.5)	9390 x 19920 (369.7 x 783.5)	9390 x 24670 (369.7 x 971.3)	9790 x 20915 (385.4 x 823.4)	9790 x 25915 (385.4 x 1020.3)	
	Machine Weight	kg (lb)	65000 (143298.4)	68000 (149912.1)	71000 (156525.9)	77000 (169753.4)	82000 (180776.4)	86000 (189594.7)	94000 (207231.5)	112000 (246914.1)	120000 (264550.8)	130000 (286596.7)	140000 (308647.2)	

{ } : optional

* DCM 3250F II / 3260F II / 3780F II / 37100F II / 4280F model, the rapid traverse is reduced to 18m/min(708.7ipm) or less in range of Y axis travel tip 250mm(9.84inch) for the stable deceleration.

* Specifications and delivery of DCM 3780F II / 37100F II / 4280F / 42100F should be reviewed in detail before contract.

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