MULTI-PURPOSE DOUBLE COLUMN MACHINING CENTER

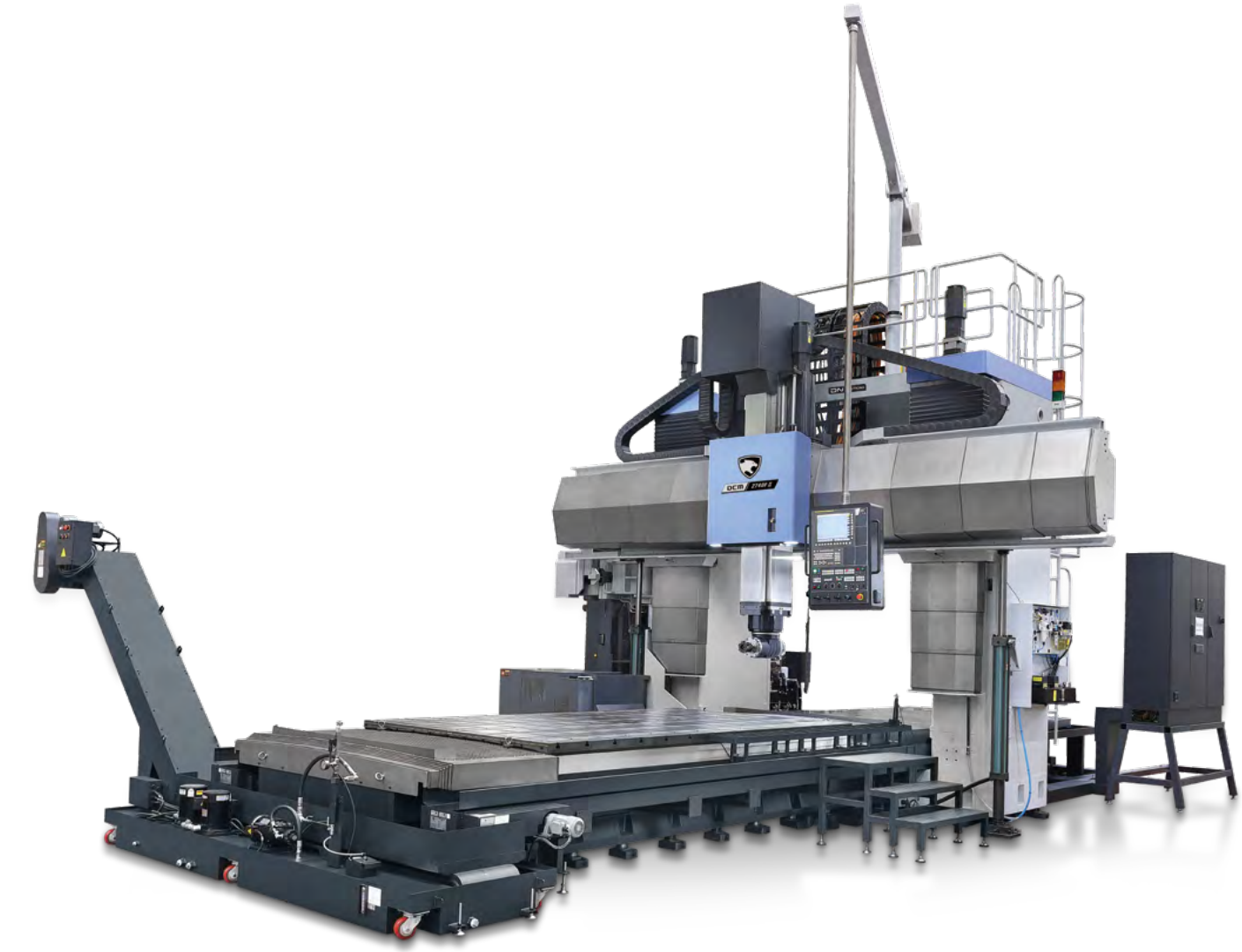
DCM Ⅱ

2740F Ⅱ · 2750F Ⅱ · 2760F Ⅱ · 2780 F Ⅱ · 3250F Ⅱ
3260F Ⅱ · 3280F Ⅱ · 3780F Ⅱ · 37100F Ⅱ · 4280F

DN SOLUTIONS

DCM II SERIES

The DCM II 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 II series provides a broad range of machining capabilities and optional equipment, together with many convenient functions for the operator.



BROAD RANGE OF MACHINING CAPABILITIES

- The best specifications in its class – effective widthbetween 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

Highspeed rapid traverse and cutting feedrate, highload 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

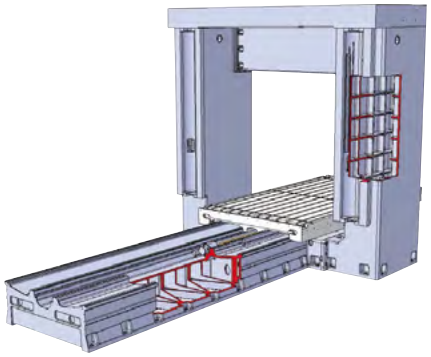
The DCM Ⅱ series provides a support system for 5face machining of large and heavy workpieces, easy pattern cycles, work load counter control, automatic feed control, and process monitoring function.

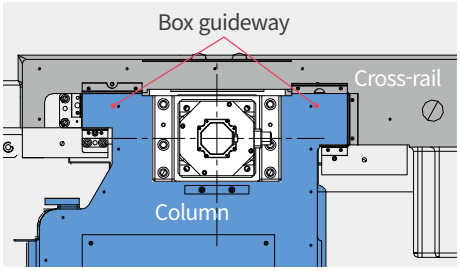
HIGH-RIGIDITY, HIGHPRECISION STRUCTURE

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

Bed and Column Structure

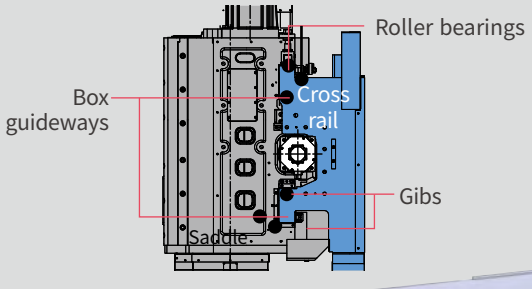
- The structure of the DCM series minimizes the effects of vibration on workpieces under loads produced by both vertical and horizontal cutting during machining of 5 faces. Symmetrical structure design and the application of effective compensation reduces thermal displacement during machining.
- The 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.

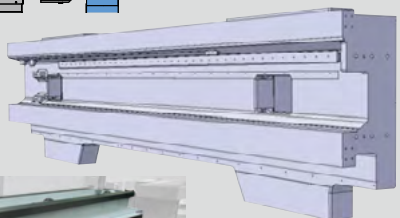


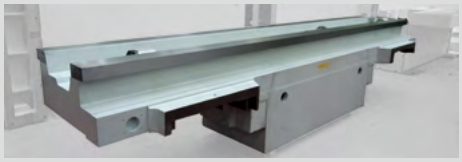


Cross-rail Structure

- 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.

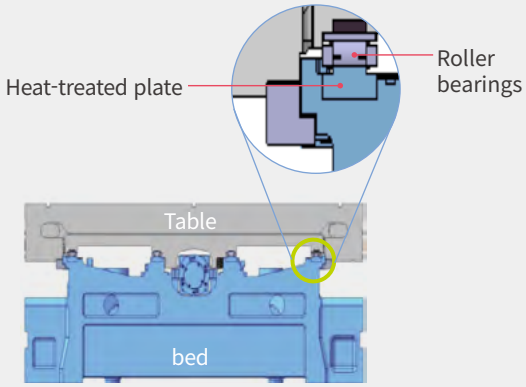


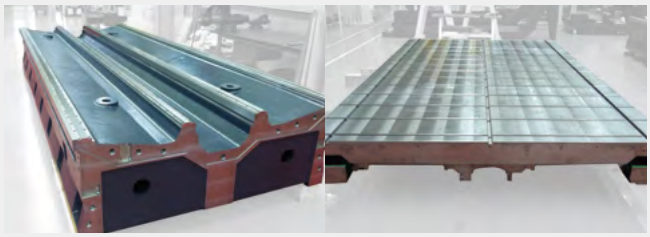




Bed and Table Structure

- 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 **20000** kg 44091.8 lb
DCM 2750F II **25000** kg 55114.8 lb
DCM 2760F II **30000** kg 66137.7 lb
DCM 2780F II **40000** kg 88183.6 lb
DCM 3250F II **33000** kg 72751.5 lb
DCM 3260F II **39000** kg 85979.0 lb
DCM 3280F II / 3780F II / 37100F II /**DCM** 4280F
45000 kg 99206.6 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

** DCM3250F II / DCM3260F II / DCM3280F II / DCM3780F II / DCM37100F 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.*

DCM 4280F

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 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

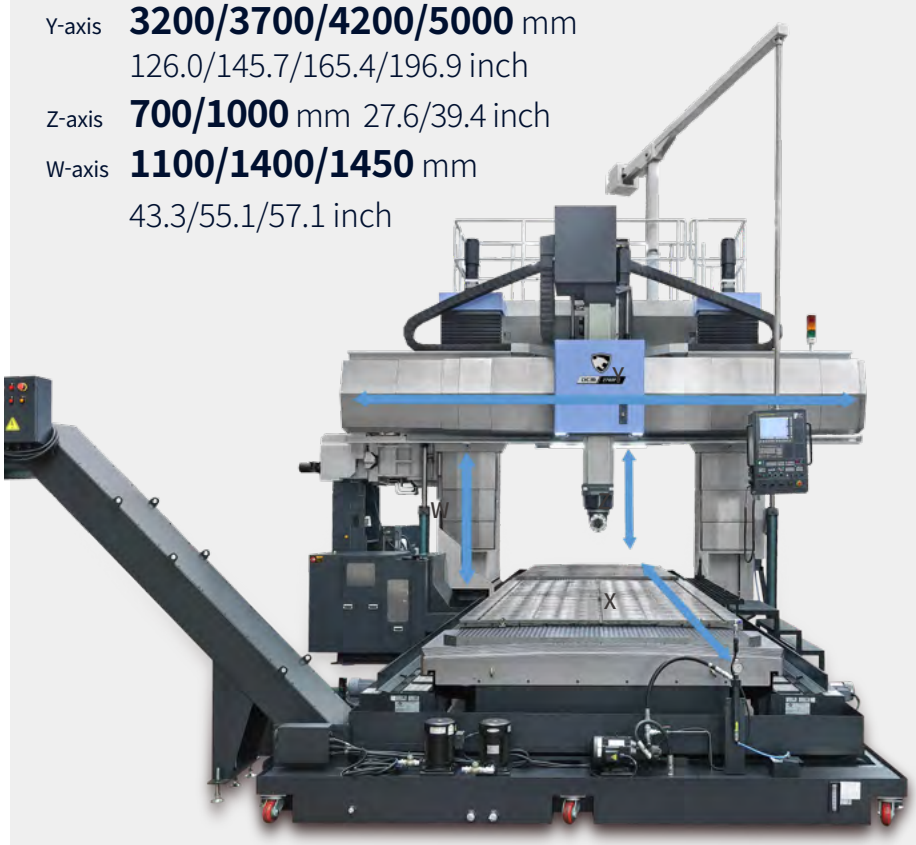
X x Y x Z x W axes Travel

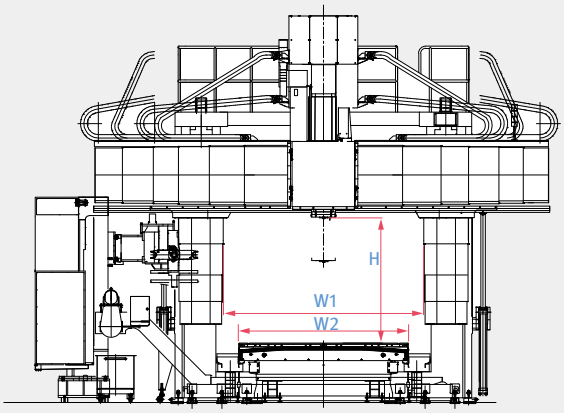
X-axis **4250/ 5250/6250/8250/10250** mm
167.3/206.7/246.1/324.8/403.5 inch

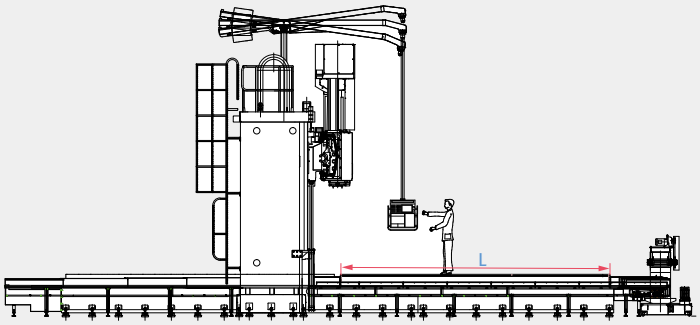
Y-axis **3200/3700/4200/5000** mm
126.0/145.7/165.4/196.9 inch

Z-axis **700/1000** mm 27.6/39.4 inch

W-axis **1100/1400/1450** mm
43.3/55.1/57.1 inch





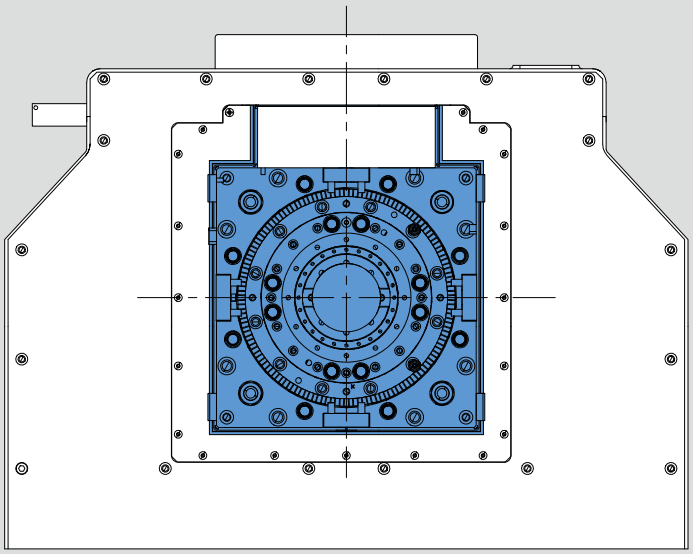


DIVERSE RAM SPINDLES

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

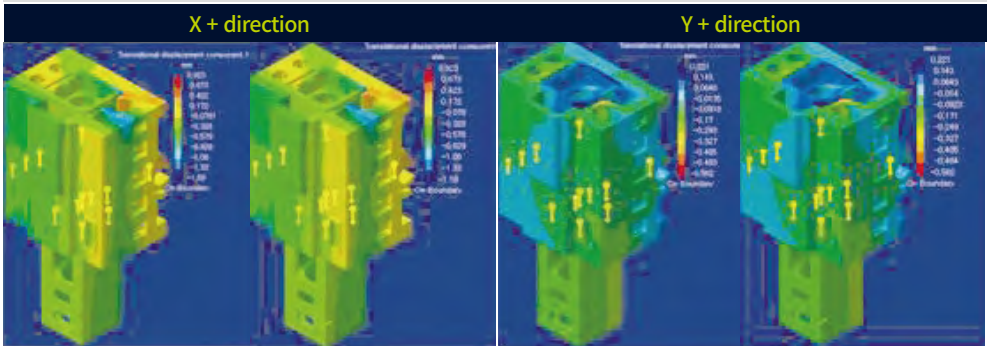
Adoption of ram spindle and saddle structure to support heavy-duty cutting

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

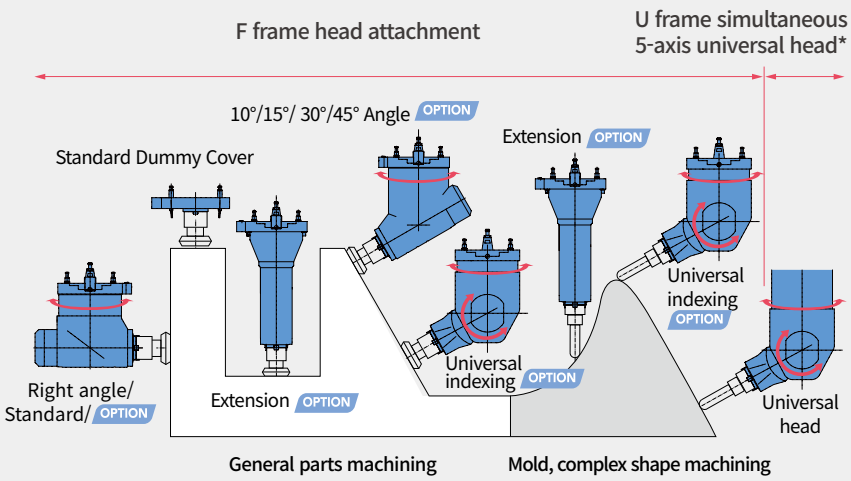
The ram spindle unit is designed to maintain ideal conditions under any load through stress analysis.



VARIOUS AUTO-CHANGE HEAD ATTACHMENTS

Diverse head attachments for a wider range of machining applications

A diverse range of auto-change head attachments enables the machining of a variety of complex shapes, from 5 axis simultaneous processing of Molds to angled faces using 1 degree indexing, as well as 5 face machining. Head indexing is achieved by C axis control through the ram



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.*

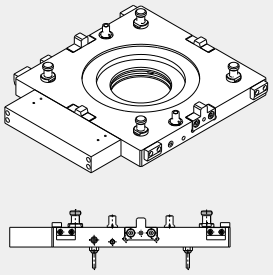
** When a universal head attachment, 10/15/30/45 degree angle attachment, or U-frame universal head is considered for purchase, please contact DN Solutions for detailed specifications.*

Features	Standard dummy cover	Extension OPTION	Right angle (Standard/ OPTION)
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)	OPTION	OPTION	OPTION
TSA (Through Spindle Air)	OPTION	OPTION	OPTION

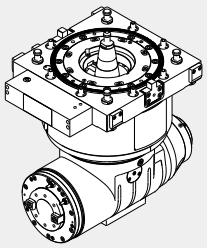
VARIOUS AUTO-CHANGE HEAD ATTACHMENTS

F Frame Head Attachment

Unit: mm (inch)

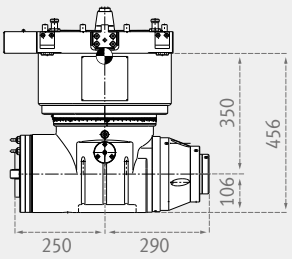


Standard dummy cover



Standard right angle

4000 r/min,
min. 5/2.5/1° indexing,
504.4 / 600.8 / 602.4 N·m
(372.2 / 443.4 / 444.6 ft-lbs)
(BI / 6K GB / 4K GB)

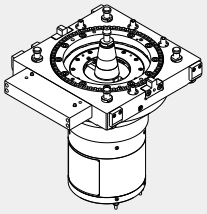


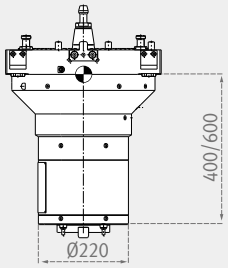
Angle Head OPTION

3000 r/min,
504.4 / 677.8 / 1005.5 N·m
(372.2 / 500.2 / 742.1 ft-lbs)
(BI / 6K GB / 4K GB)

High speed right angle OPTION

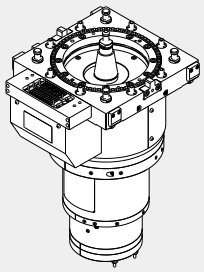
6000 r/min, min. 5/2.5/1° indexing,
400.8 / 400.5 / 400.5 N·m
(295.8 / 295.6 / 295.6 ft-lbs)
(BI / 6K GB / 4K GB)

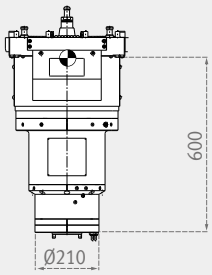




Extension OPTION

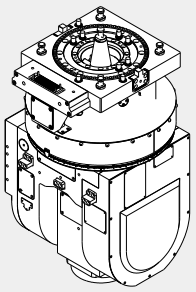
- 4000 r/min,
  504.4 / 600.8 / 602.4 N·m (372.2 / 443.4 / 444.6 ft-lbs) (BI / 6K GB / 4K GB)
- 6000 r/min,
  504.4 / 600.8 / 602.4 N·m (372.2 / 443.4 / 444.6 ft-lbs) (BI / 6K GB / 4K GB)

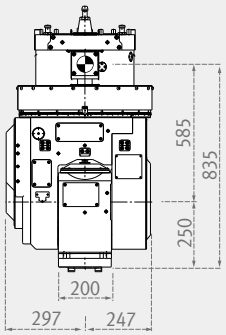




High-speed extension OPTION

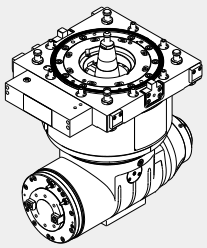
- 6000~12000 r/min,
  29.4 / 23.9 / 17.5 N·m (21.7 / 17.6 / 12.9 ft-lbs)
  (S2&10 min. / S2&30 min. / cont.)

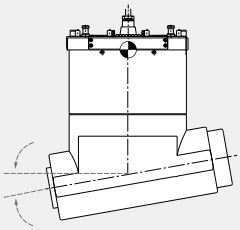




Universal indexing OPTION

- 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)



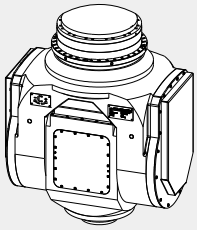


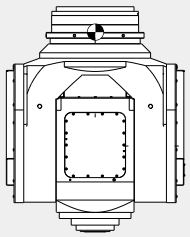
10°/15°/ 30°/45° angles OPTION

U Frame Simultaneous 5-Axis Universal Head

High-speed, high-precision built-in driven universal head 15000 r/min

- B axis 0.001° indexing
- C axis 0.001° indexing

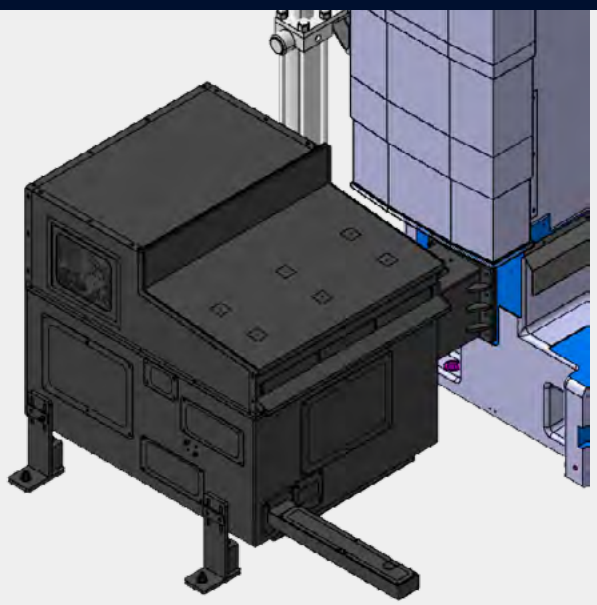




AUTOMATIC HEAD ATTACHMENT CHANGER (AAC)

Standard AAC – 2 Stations (NOMAL COLUMN, W/O AAC CHIP COVER)

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. (NORMAL COLUM)

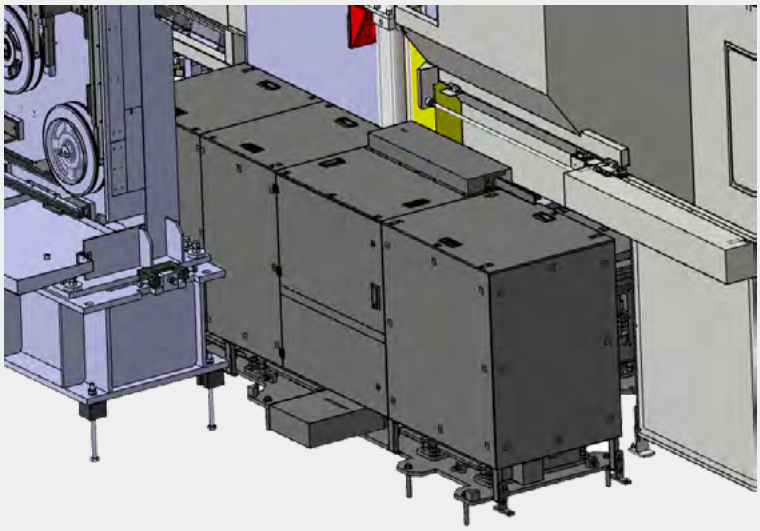


Standard AAC – 2 Stations (HITHG COLUMN, WITH AAC CHIP COVER

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. (HIGH COLUM)

Linear Shuttle type AAC - 3/4/5 Stations (WITH AAC CHIP COVER) OPTION

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

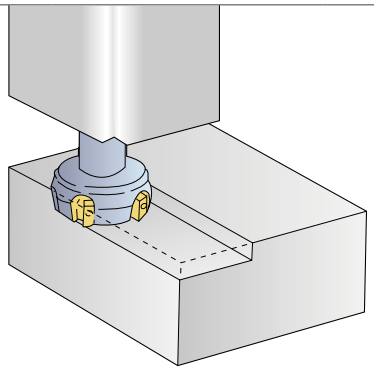


MACHINING CAPACITY

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)

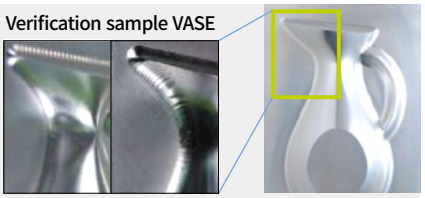
Max. Cutting Capacity (Heavy-Duty Cutting I)	**FACE CUTTER**				
	Cutter Dia.	Spindle speed	Feedrate	Chip removal rate	Cutting depth
	125 mm (4.9 inch)	310 r/min	1300 mm/min (51.2 ipm)	780 cm^3/min (47.6 $inch^3$/min)	6 mm (0.2 inch)
	125 mm (4.9 inch)	310 r/min	740 mm/min (29.1 ipm)	666 cm^3/min (40.6 $inch^3$/min)	9 mm (0.4 inch)
	U-DRILL				
	Drill Dia.	Spindle speed	Feedrate	Chip removal rate	
	70 mm (2.8 inch)	310 r/min	124 mm/min (4.9 ipm)	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

Cutting condition	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.

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

For high-speed mold machining, the rapid traverse of DCM II 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 II 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.*

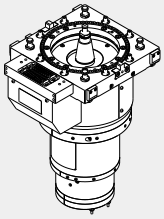
Rapid traverse (X/Y/Z/W-axis)

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

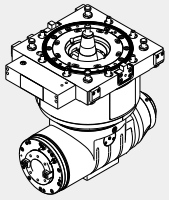
High-precision, High-speed head attachments and universal head specialized for mold machining

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



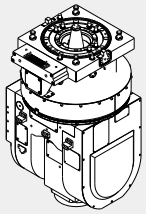
High-speed extension OPTION

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.)



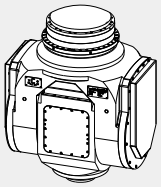
High-speed right angle OPTION

6000 r/min,
min 5/2.5/1° indexing,
400.8 / 400.5 / 400.5 N·m
(295.8 / 295.6 / 295.6 ft-lbs)
(BI / 6K GB / 4K GB)



Universal 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)

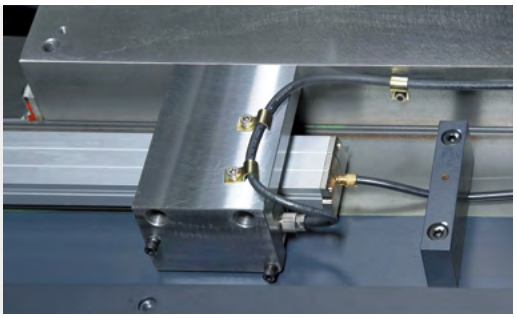


High-speed, high-precision builtindriven 5-axis simultaneous universal head 15000r/min

- B axis 0.001° indexing
- C axis 0.001° indexing

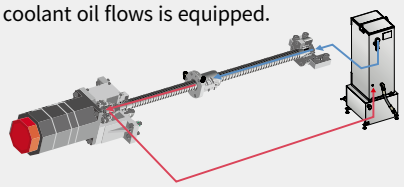
X/Y/Z/W-axis linear scale feedback system OPTION

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.



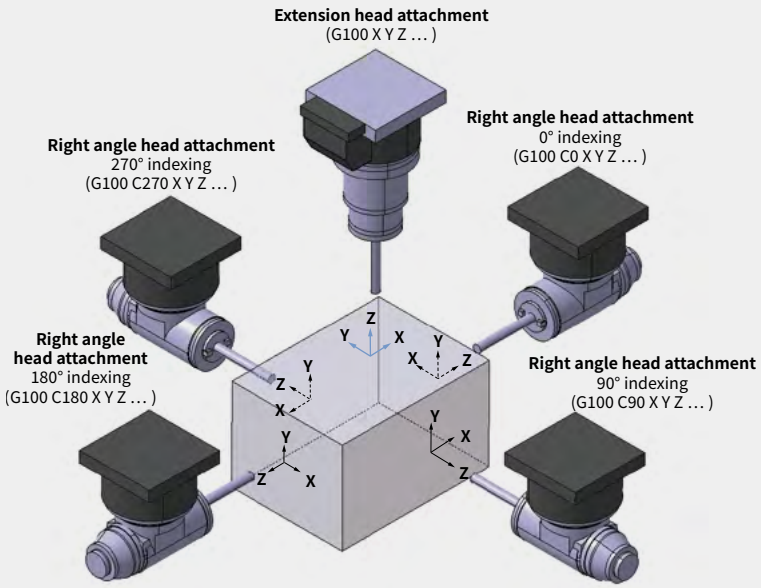
CONVENIENT MACHINING

5-face machining support system

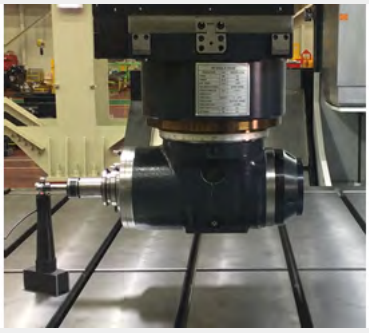
Supporting functions for 5-face machining

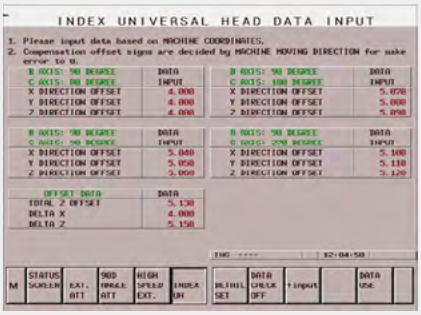
- 3-dimentional-work coordinates conversion system
- Tool end point shift within work coordinate system
- AAC control and head attachment position control by M-Code
- ATC is applicable for various head attachments.

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

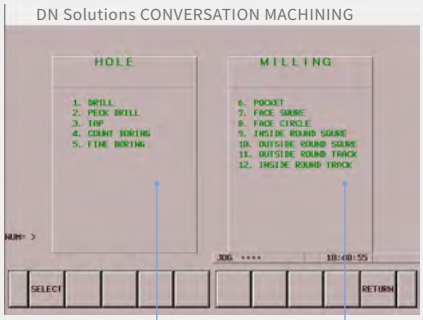


- Automatic head attachment offset measurement(G120)

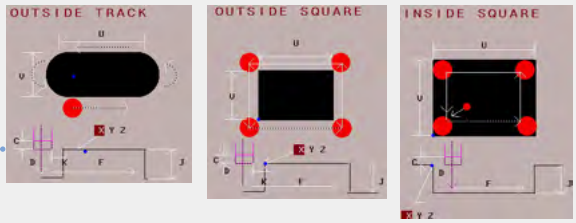




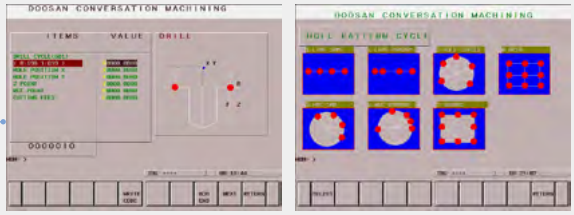
Easy pattern cycle



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

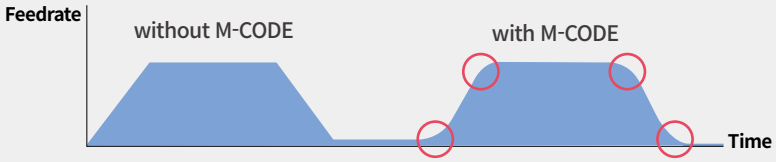


Example) Hole pattern

CONVENIENT MACHINING

Work load counter control

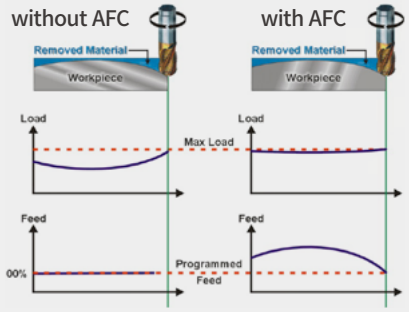
If customer selects proper M-Code according to weight of the work piece, the machine can decide itself the best moving pattern of the table. And machining can progress by this decision.

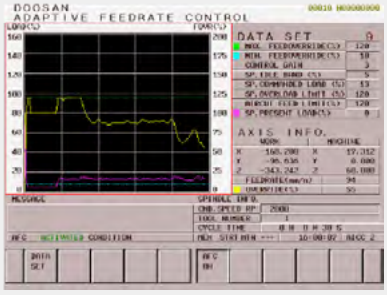


M-Code	Weight of work piece	DCM 2740F II	DCM2750F II	DCM 2760F II	DCM 3250F II	DCM 3260F II
M380 A1	5 tons(11023.0 lb) or less	•	•	•	•	•
M380 A2	10 tons(22045.9 lb) or less	•	•	•	•	•
M380 A3	15 tons(33068.9 lb) or less	•	•	•	•	•
M380 A4	20 tons(44091.8 lb) or less	•	•	•	•	•

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

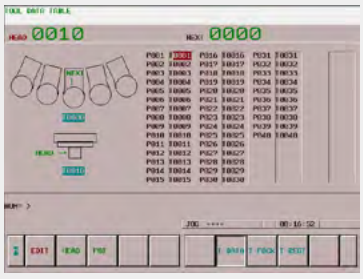
In-process monitoring minimizes the risk of damage to the workpiece during cutting.

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

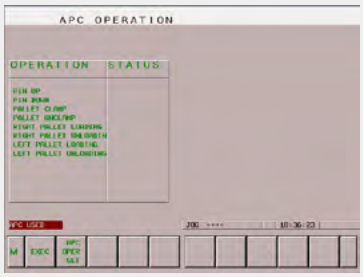
This function controls information on the tools in the tool magazine pots.



ATC and APC screens are provided for convenient manual operation.

ATC manual operation screen

APC manual operation screen

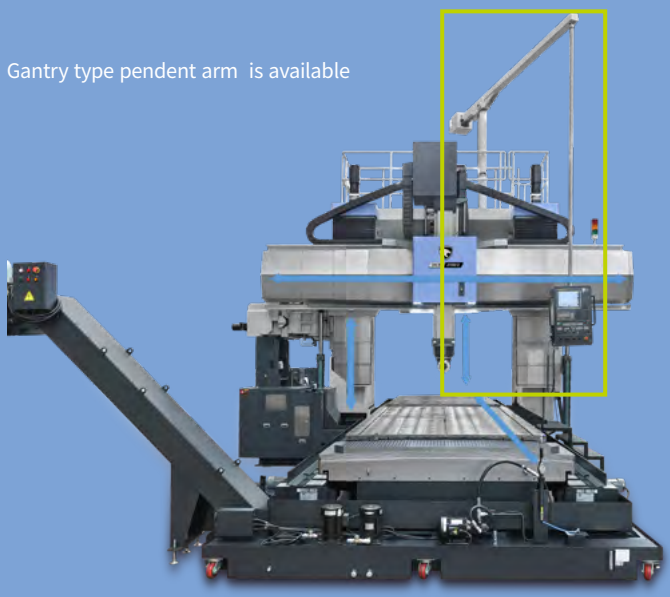


CONVENIENT MACHINING

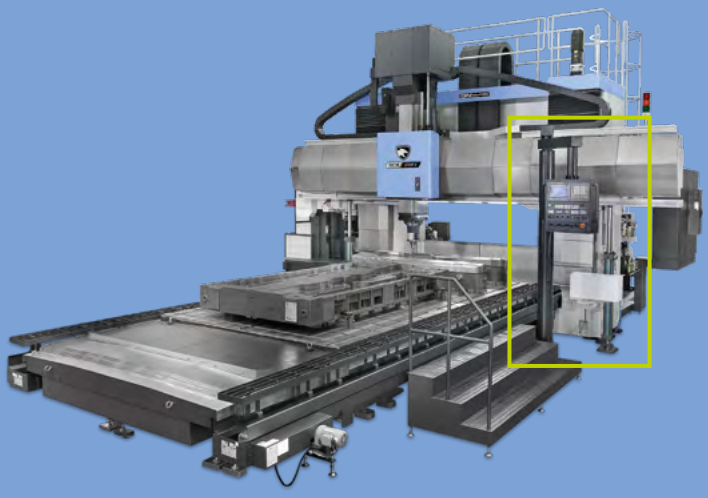
Enhanced operator's convenience

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.

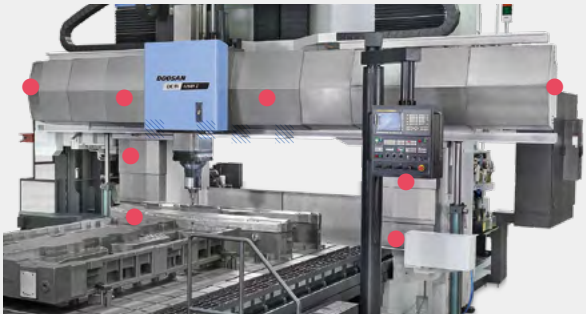
Manual handle
Portable MPG

Manual handle
Portable type 3 MPG
OPTION

Manual handle
MPG with LCD display
OPTION

Manual operation panel HMOP
(Handy MachineOperator'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

Diverse optional features are available for customer-specific work applications.

Division	Description		DCM II series
Electric cabinet light			○
Electric cabinet air conditioner			○
High-quality machining (DN Solutions SUPER QUALITY)	ACC 1000 BLOCK		●
	DATA SERVER: 1GB, 2GB, 4GB		○
Tool management			○
Tool shank	BT50		●
	CAT50		○
	DIN50		○
	HSK 63A		○
Tool magazine	40 tools		●
	60 tools		○
	90 tools		○
	120 tools		○
Work load counter control			●
Electric leakage breaker			○
Electric line filter			○
Ram spindle	6000 r/min (Built-in)	25/22 kW (33.5 / 29.5 Hp) (FANUC)	●
	8000 r/min (Built-in)	25/22 kW (33.5 / 29.5 Hp) (FANUC)	○
	6000 r/min (Gear box)	22/18.5 kW(29.5 / 24.8 Hp) (FANUC)	○
	4000 r/min (Gear box W/ HIGH TORQUE)	45/37/30KW(60.3/49.6 / 40.2 Hp) (FANUC)	○
	Spindle lubrication device		●
	Step Cooling System		●
Linear scale feedback system	X-axis		○
	Y-axis		○
	Z-axis		○
	W-axis		○
Lift-up chip conveyor	HINGED PLATE		○
	MAGNETIC SCRAPER		○
Components for installation	Leveling blocks and anchoring bolts		●
Safety ladder and top beam fence			●
Hydraulic power unit			●
Bellows cover for axis	W-axis		●
Sliding covers for axes	X/Y/Z axes		●
Easy pattern cycle			●
Automatic tool length measurement	TS27R_RENISHAW		○
	NC4_RENISHAW		○
Automatic workpiece measurement	RMP60,STYLUS LENTH50(100)_RENISHAW		○
	RMP600,STYLUS LENTH50(100)_RENISHAW		○
Master tool for automatic tool length measurement	CALIBRATION BLOCK		○
Automatic attachment changer (AAC)	LINEAR TYPE 2-ST (W/O AAC COVER, NORMAL COLUMN)		●
	LINEAR TYPE 2-ST (HIGH COLUMN)		○
	LINEAR SHUTTLE 3-ST (NONE U-INDEX HEAD)		○
	LINEAR SHUTTLE 3-ST		○
	LINEAR SHUTTLE 4-ST		○
	LINEAR SHUTTLE 5-ST		○
Auto power on			○
Auto power off			●
Automatic Pallet Changer (APC)	SIDE SHUTTLE (2-PALLET)		○
Work light	LED lamps: 2EA (DCM 27 Series II)LED lamps: 3EA (DCM 32/37/42 Series II)		●
Operator call lamp (Red/Yellow/Green)			●
Tool load monitoring			●
Coolant tank	500L(132.1 galon)		●
	1000L(264.2 galon)		○
Periodical checking function			●

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

● *Standard* ○ *Optional* X *N/A*

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

⚠ 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

Diverse optional features are available for customer-specific work applications.

Division	Description		DCM II series
Main operation panel (pendent type)	POLE TYPE		●
	STAND TYPE		○
	GANTRY TYPE		○
Max. tool weight	30KG(66.1 lb)		●
Max. tool length	400mm(15.7 inch)		●
Chip & coolant protective cover	CHIP COVER		○
	SEMI GUARD		○
Coolant	FLOOD 2.2 kW (2.95 Hp)		●
	FLUSHING		○
	Coolant gun		○
	Coolant level switch : Sensing level - Low / High**		○
Test bar	BT50		○
Table T-slot Table CROSS SLOT	$24H_8$ ($0.94H_8$)		●
	$28H_8$ ($1.10H_8$)		○
Chip bucket	Rotary type (380L) (100.4 galon)		○
	Lift type (380L) (100.4 galon)		○
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 (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 (L350/4K 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)		○
	UNIVERSAL INDEXING HEAD (L835/4K R/MIN)		○
F frame right angle head attachment indexing angle	5˚		●
	1˚		○
MPG	PORTABLE TYPE 1-MPG		●
	MPG WITH LCD DISPLAY		○
	PORTABLE TYPE 3-MPG		○
	HMOP(Handy Machine Operator's Panel)		○
NC Controller	FANUC 31i-B Plus		●
	HEIDENHAIN TNC640		○
	SIEMENS 840D		○
Oil skimmer	BELT TYPE		○
Pull stud	MAS 403 P50T-I (45˚)		●
	MAS 403 P50T-II (60˚)		○
Spot light on ram spindle			●
TSC	NONE		●
	1.5 kW_2.0 MPa		○
TSA	NONE		●
	0.5MPa		○
U frame universal head	UNIVERSAL CONTOURING HEAD (3K R/MIN)		○
	UNIVERSAL CONTOURING HEAD (15K R/MIN)		○
	UNIVERSAL CONTOURING HEAD	PACKAGE I	○
	SPINDLE MONITORING SYSTEM(15K R/MIN)	PACKAGE II	○
Thermal error compensation sensor (X-axis)			○
2-side chip conveyor (in machine to tank)	HINGED PLATE		○
	MAGNETIC SCRAPER		○
5-face machining support system			●
Additional 5th axis	PACKAGE #1 : ONLY WIRING		○
	PACKAGE #2 : HYD. & CONTROL READY		○
	PACKAGE #3 : FULL OPT.		○

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

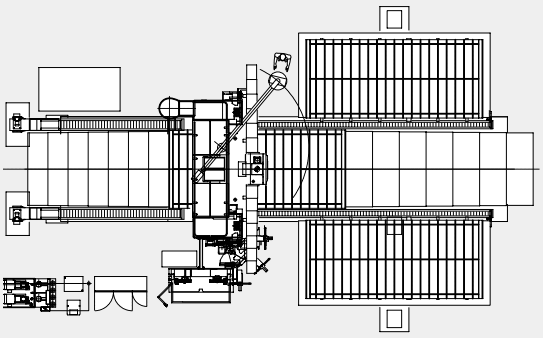
● *Standard* ○ *Optional* X *N/A*

⚠ 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.

PERIPHERAL EQUIPMENT

Automatic pallet changer (APC OPTION)

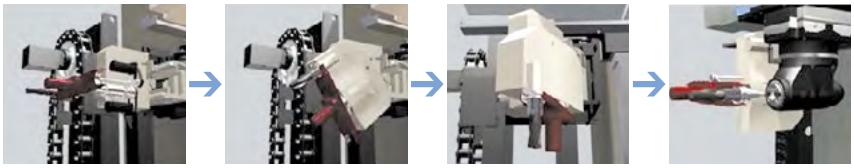
Faster shipment thanks to standardized modular design



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.

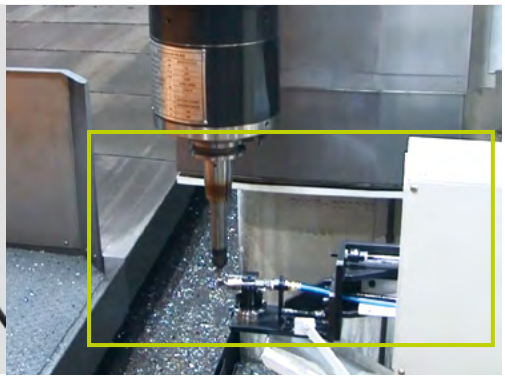


** Picture-Vertical ATC in operation*

Max. No. of tools	40 { OPTION 60, 90, 120} 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

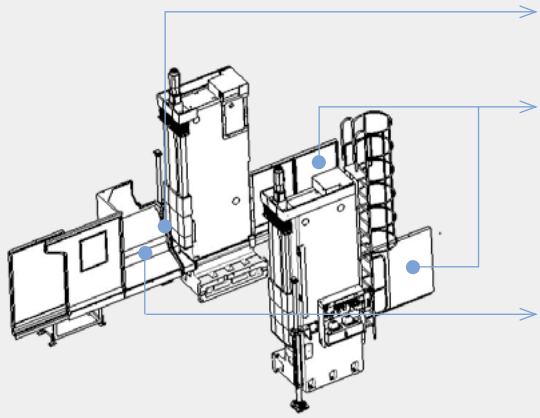
Automatic tool length measurement OPTION

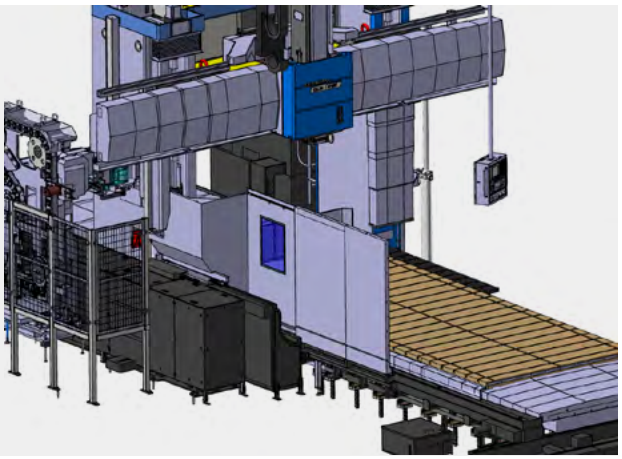
Tool length can be measured in the vertical and horizontal directions. The length of tool set up on the spindle is measured automatically, and the tool offset data of the tool number are entered automatically.



PERIPHERAL EQUIPMENT

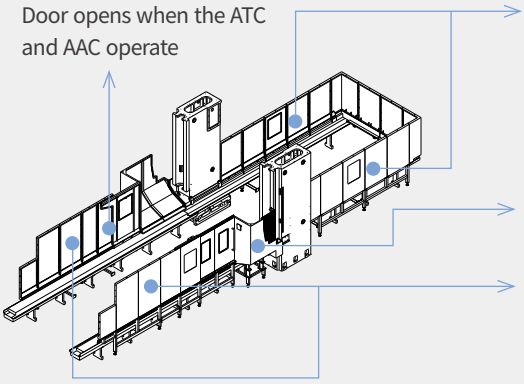
Chip cover OPTION

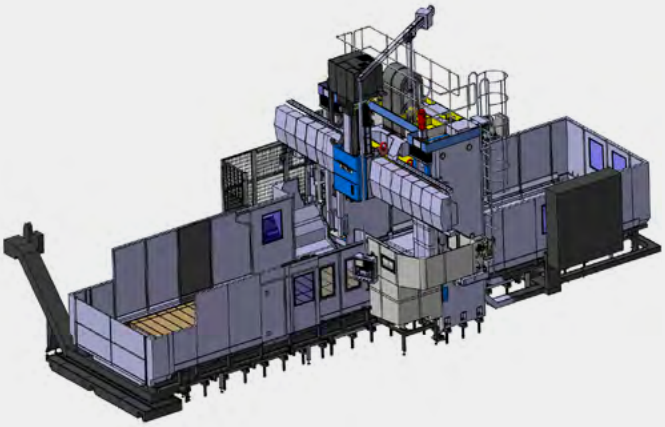




Semi-guard OPTION

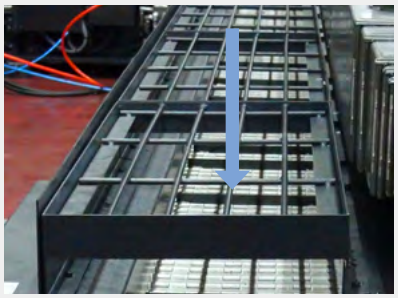
The semi-guard covers the entire cutting area to prevent chips and coolant from flying off during cutting operation.





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

** The hinged-plate chip conveyor and the magnetic scraper chip conveyor are optional features.*

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.

FANUC 31i PLUS

Fanuc 31i 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 Plus

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

USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonimic 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

FANUC

Division	Item	Specifications	DCM II series F31iB 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		●
Program input	Workpiece coordinate system	G52 - G59	●
	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	○

● *Standard* ○ *Optional* X *N/A* ✪ *Available*

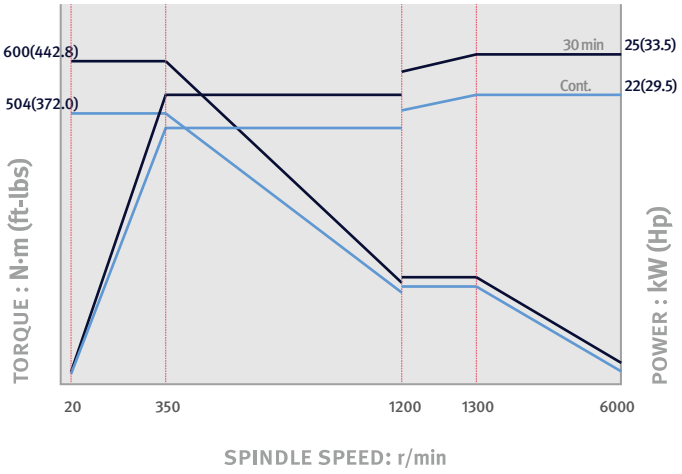
SPINDLE POWER | TORQUE

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

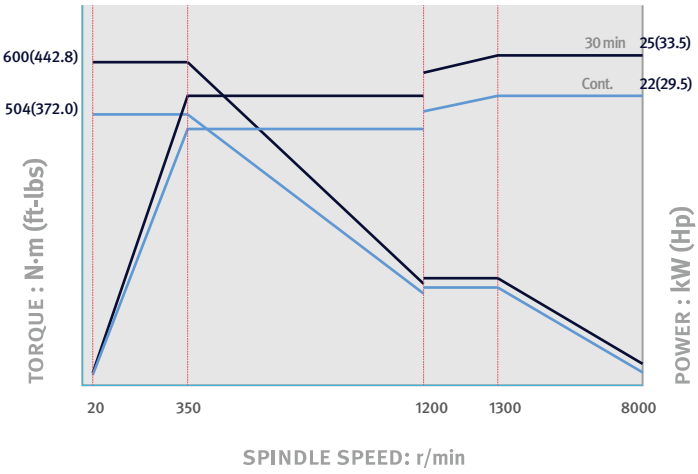


High speed_built-in driven OPTION

Max. Spindle speed : **8000** r/min

Max. Spindle power : **25** kW
33.5 Hp

Max. Spindle torque : **600** N·m
442.8 ft-lbs

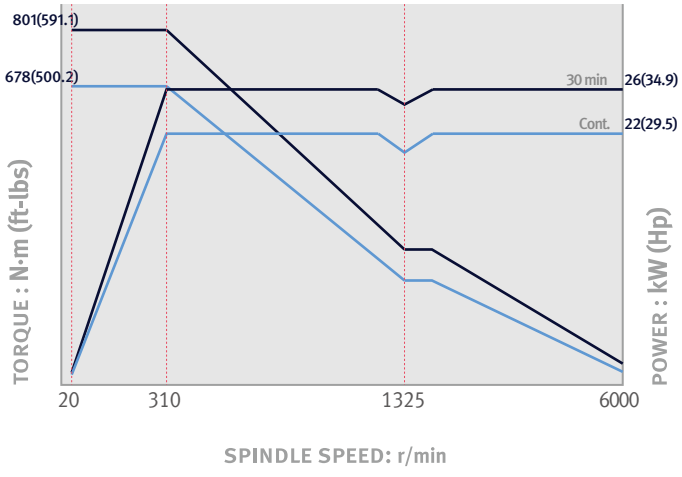


Heavy-duty cutting I_ gear driven OPTION

Max. Spindle speed : **6000** r/min

Max. Spindle power : **26** kW
34.9 HP

Max. Spindle torque : **801** N·m
591.1 ft-lbs

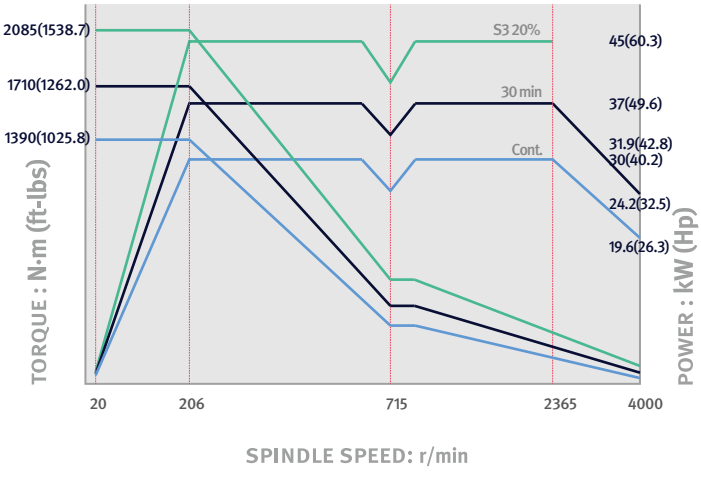


Heavy-duty cutting II_ gear driven OPTION

Max. Spindle speed : **4000** r/min

Max. Spindle power : **45** kW
60.3 Hp

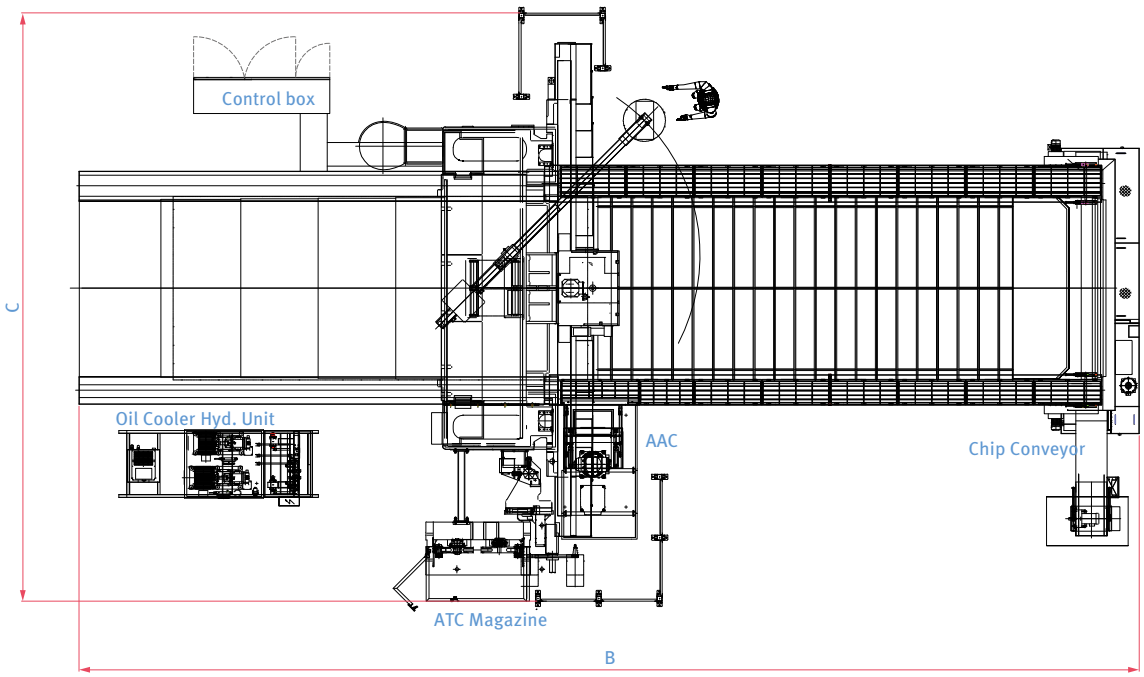
Max. Spindle torque : **2085** N·m
1538.7 ft-lbs



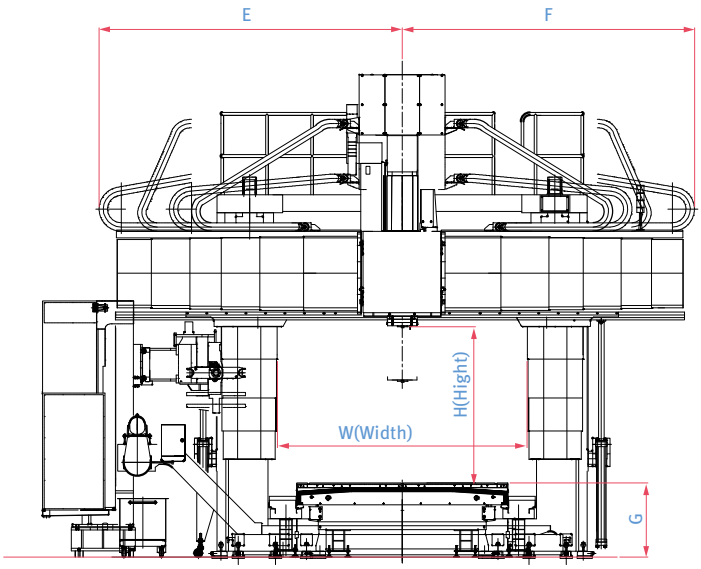
EXTERNAL DIMENSIONS

Unit: mm (inch)

TOP



FRONT



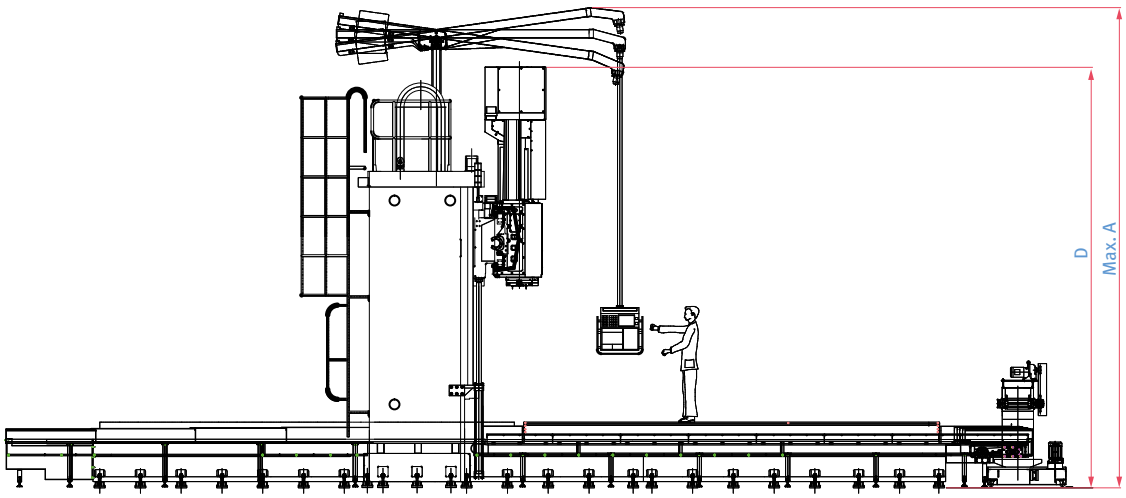
*** Providing anchoring bolts. Foundation work must be done.*

** 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	6700 (263.8)	11200 (440.9)	8150 (320.9)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 2750F II	6700 (263.8)	13375(526.6)	8150 (320.9)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 2760F II	6700 (263.8)	15790 (621.7)	8150 (320.9)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 2780F II	6700 (263.8)	19710 (776.0)	8150 (320.9)	5830 (229.5)	3710 (146.1)	3610 (142.1)	950 (37.4)	1650 (65.0)	2700 (106.3)
DCM 3250F II	6700 (263.8)	13600 (535.4)	8650 (340.6)	5830 (229.5)	3960 (155.9)	3860 (152.0)	950 (37.4)	1650 (65.0)	3200 (126.0)
DCM 3260F II	6700 (263.8)	15750 (620.1)	8650 (340.6)	5830 (229.5)	3960 (155.9)	3860 (152.0)	950 (37.4)	1650 (65.0)	3200 (126.0)
DCM 3280F II	6700 (263.8)	19710 (776.0)	8650 (340.6)	5830 (229.5)	3960 (155.9)	3860 (152.0)	950 (37.4)	1650 (65.0)	3200 (126.0)
DCM 3780F II	8000 (315.0)	20215 (795.9)	9220 (363.0)	7105 (279.7)	4210 (165.7)	4160 (163.8)	950 (37.4)	2350 (92.5)	3700 (145.7)
DCM 37100F II	8000 (315.0)	24235 (954.1)	9220 (363.0)	7105 (279.7)	4210 (165.7)	4160 (163.8)	950 (37.4)	2350 (92.5)	3700 (145.7)
DCM 4280F	8000 (315.0)	20405 (803.3)	10100 (397.6)	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.

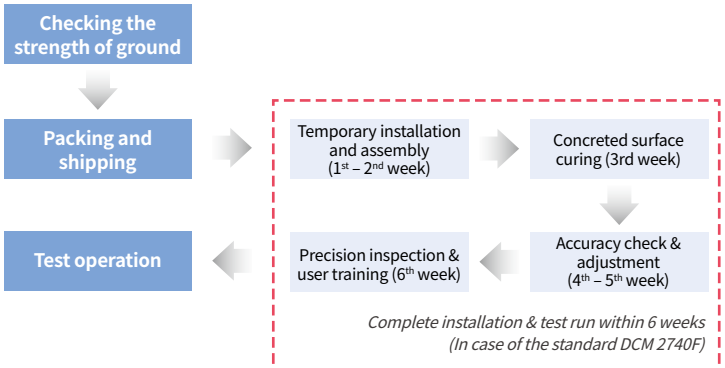
Installation precautions

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.*

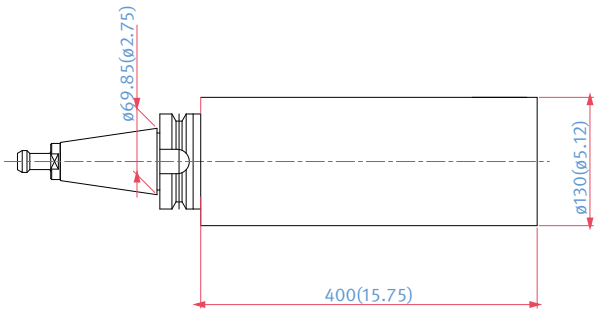
*** Providing anchoring bolts. Foundation work must be done.*

** Some peripheral equipment can be placed in other areas.*

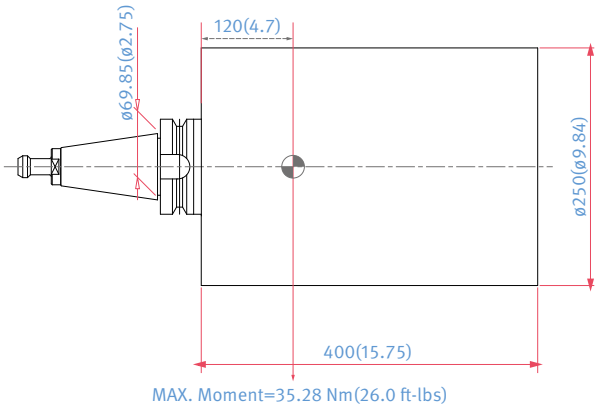
TOOL DIMENSIONS

Unit: mm (inch)

WITH AN ADJACENT TOOL

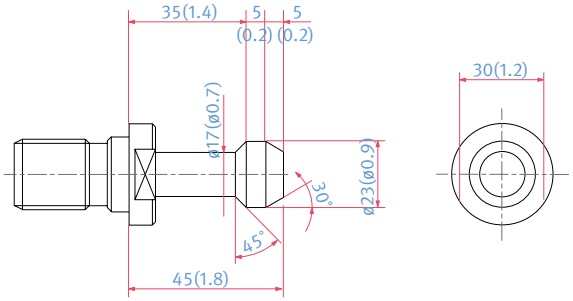


WITHOUT ADJACENT TOOLS

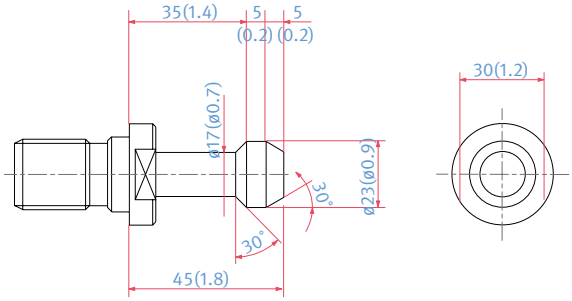


MAX. Moment=35.28 Nm(26.0 ft-lbs)

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

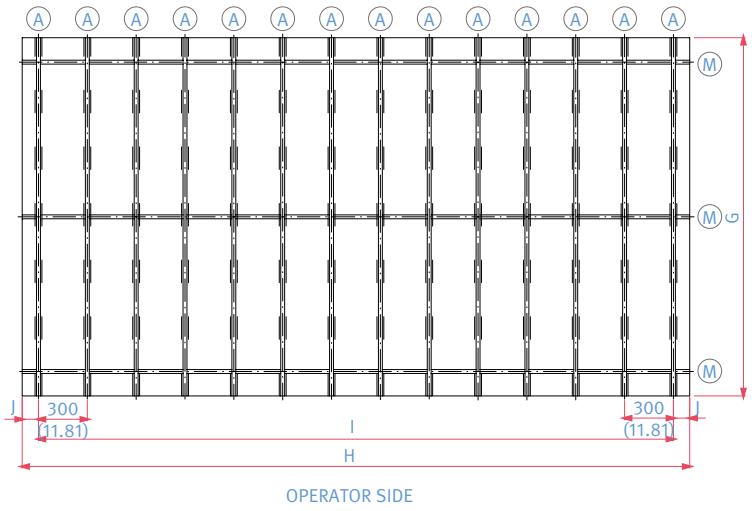
Maximum tool weight

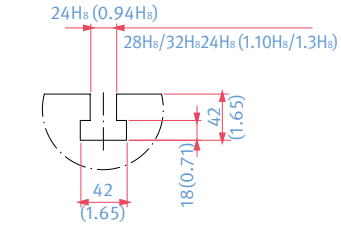
- Standard : 30 kg × 120 mm
- The center of gravity must be within 120 mm from the gauge line.

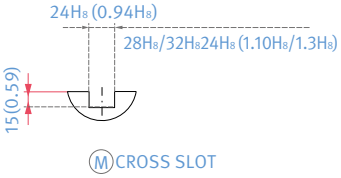
** Some peripheral equipment can be placed in other areas.*

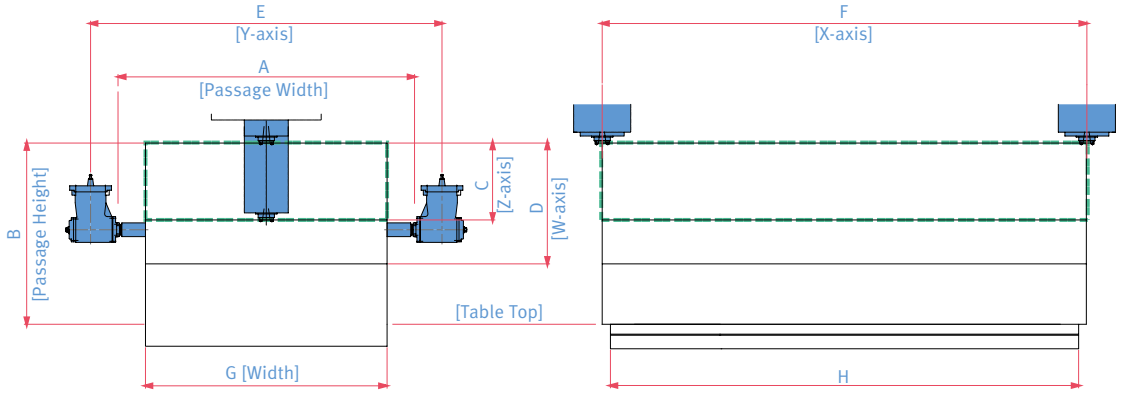
WORKING RANGE | TABLE DIMENSIONS

Unit: mm (inch)









Model	Table type	A	B	C	D	E	F	G	H	I	J
DCM 2740F II	22 x 41	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	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	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	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	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	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	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	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	3700 (145.7)	2350 (92.5)	1000 (39.4)	1400 (55.1)	4200 (165.4)	10250 (403.5)	3200 (126.0)	10100 (397.6)	9900 (389.8)	100 (3.9)
DCM 4280F	35 x 81	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)

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
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)
	Y-axis Travel (Spindle Head Cross)	mm (inch)	3200 (126.0)				3700 (145.7)			4200 (165.4)		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 }		
Feedrate	Rapid Traverse X, Y, Z, W	m/min (ipm)	16, 20*, 15, 3 (629.9, 787.4*, 590.6, 118.1)							1650 {2000, 2350, 2700}* (65.0 {78.7, 92.5, 106.3)		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 x200.8)	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 x10100 (126.0 x 397.6)	3500 x 8100 (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)	25 {Built-in 25, Gear box 26, 45} (33.5 {Built-in 25, Gear box 34.9, 60.3})									
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)	29.4 (21.7)									
	Tool Selection Type		Fixed address									
AAC	Type		Linear type 2-station {Linear shuttle type 3/4/5 stations}									
Machine Size	Machine Height	mm (inch)	6700 (263.8)									7870 (309.8)
	Floor Space (Machine only)	mm (inch)	7730 x 11200 (304.3 x 440.9)	7730 x 13375 (304.3 x 526.6)	7730 x 15710 (304.3 x 618.5)	7730 x 19710 (304.3 x 776.0)	8230 x 13375 (324.0 x 526.6)	8230 x 15710 (324.0 x 618.5)	8230 x 19710 (324.0 x 776.0)	8730 x 19710 (343.7 x 776.0)	8730 x 959.8 (343.7 x 776.0)	9970 x20920 (392.5 x 823.6)
	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)

{ } : optional

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

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

** Specifications of DCM U-frame with simultaneous 5-axis universal head should be reviewed in detail before contract.*

WHY DN SOLUTIONS

The DN Solutions promise, MACHINE GREATNESS, has two important meanings. The first is simple: DN Solutions makes great machines. The second is a challenge to our end-users. With a product line that is this comprehensive, accurate and reliable, we equip our customers to machine greatness. **The big question: *Why should you choose DN Solutions over other options?***

Here's why···

WHAT YOU MAKE AND HOW YOU MAKE IT MATTERS—SO MAKE IT GREAT WITH DN SOLUTIONS.

UNBEATABLE MACHINES

You won't find a more comprehensive range or a better combination of value, performance and reliability anywhere else.

READILY AVAILABLE - ANYWHERE IN THE WORLD

Machining centres (including 5-axis machines), lathes, multi-tasking turning centres and mill-turn machines, and horizontal borers with best-in-class specifications are all available···ready to install.

ROBUST PRODUCT LINE

We offer an impressive range of machine models and hundreds of configurations. Whatever your machining needs and requirements, there's a DN Solutions for you.

EXPERT SERVICE

Our dedicated, experienced and knowledgeable team is totally committed to improving your productivity, growth and success.

RESPONDING TO CUSTOMERS
ANYTIME, ANYWHERE

DN Solutions Global Network

DN Solutions provides systems-based professional support services, before and after the machine tool sale, by responding quickly and efficiently to customers. By supplying spare parts, product training, field service and technical support, we provide the expert care, attention and assistance our customers expect from a market leader.

Global sales and service support network		51	**Technical centers** Technical center, Sales support, Service support, Parts support
4	Corporations	200	Service posts
155	Dealer networks	3	Factories

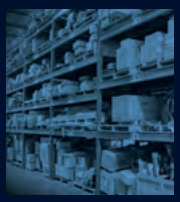
CUSTOMER SUPPORT AND SERVICES

We're there for you whenever you need us.

We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.

Field services

- On-site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair service



Parts supply

- Supplying a wide range of original DN Solutions spare parts
- Parts repair service

Training

- Programming, machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering

Technical support

- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy

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* Specifications and information contained within this catalogue may be changed without prior notice.

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