

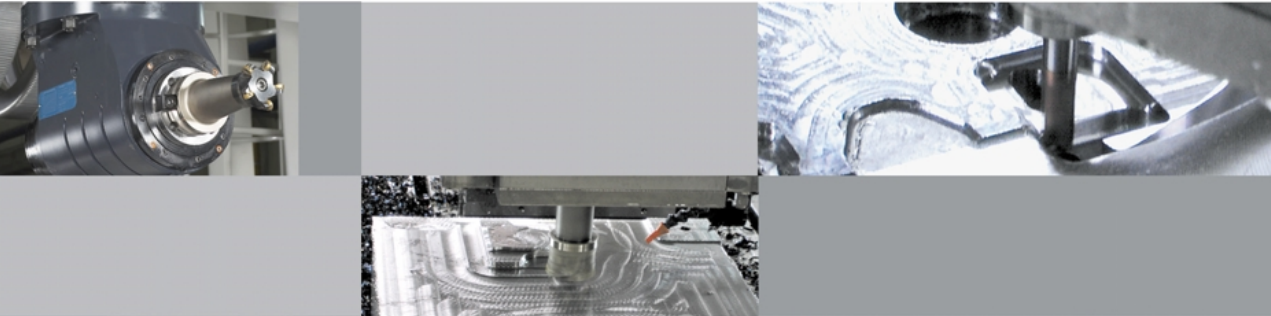


DCM Series

Five Face Double Column Machining Center



Market demand realization through the technology of Doosan!



Various machining and widen effective width between columns

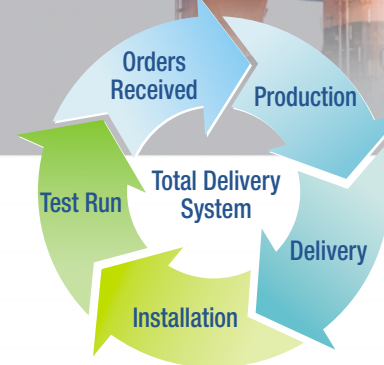
- Parts that had to be cut on several machines can be finished on one DCM
- Effective width between columns is 200 mm wider than that of competitors

Machine design to improve productivity

- Elevating type crossrail W-axis adopted as standard
- Various ram spindle line-up for handling a wide range of cutting work

Differentiated manufacturing system for quick delivery

- Quick machine delivery to customers through the modular design
- Speedy production to market request



Five Face Double Column Machining Center

DCM Series

D : Doosan Double
C : Column
M : Machining Center



• This machine has optional features.

Multi-tasking Machine for all your work needs the **DCM Series**

DCM series are the new concept machining center for all machining processes, from heavy cutting to high-accuracy finishing for mold & die works and large complex parts. To ensure such competitiveness, the precise ball-screw drive elevating type crossrail W-axis and a variety of head attachment line-up that enable complex machining are mounted.

Distinctive Option

1. Head attachments for various types of applications.
2. Spindle options for various types of applications.



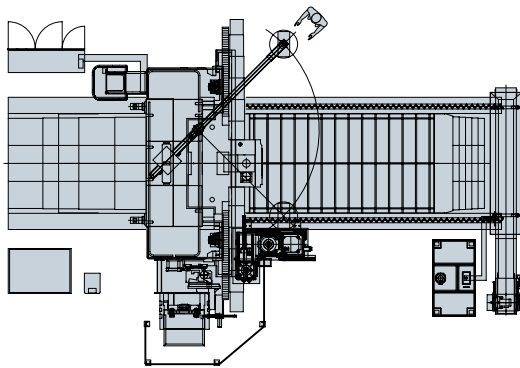
High-end Processing Support

1. Intelligent machining control®
(Automatic performance lever conversion to operator's selection)
2. Five face machining support system®
(Provides user convenience when five face machining)
3. Easy setup guidance®
(Easy and quick setup functions for large and heavy workpieces)



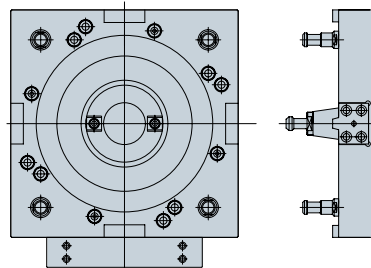
DCM Series Line-up

Table Type



W-Frame Type

4-Position Guide Key Type
(4-Position Guide Key Method)

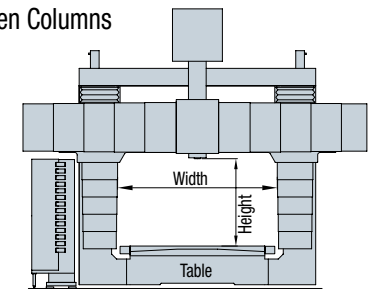


Standard Type

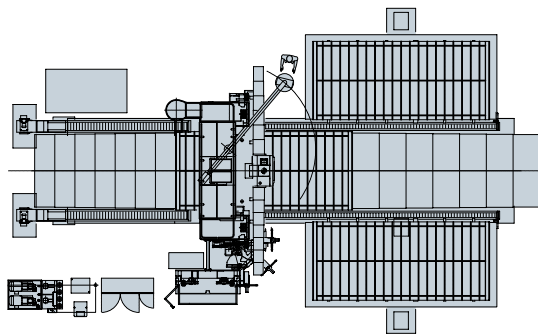
W : Effective Width Between Columns
H : Table to Spindle Nose

W : 2700 mm (106.30 inch)
3200 mm (125.98 inch)
3700 mm (145.67 inch)

H : 1650 mm (64.96 inch)

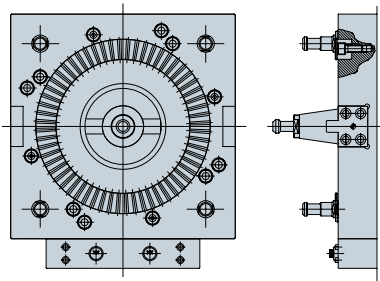


APC Type opt.



F-Frame Type

2-Position Guide Key + Curvic Coupling Type
(2-Position Guide Key + Curvic coupling method)

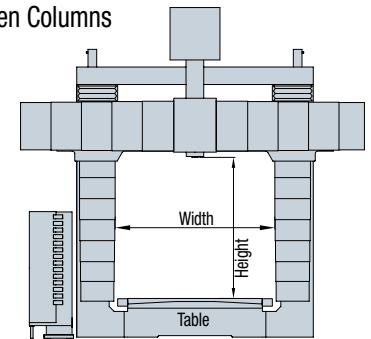


High Column Type opt.

W : Effective Width Between Columns
H : Table to Spindle Nose

W : 2700 mm (106.30 inch)
3200 mm (125.98 inch)
3700 mm (145.67 inch)

H : 2000 mm (78.74 inch)
2350 mm (92.52 inch)
2700 mm (106.30 inch)
3050 mm (120.08 inch)
3400 mm (133.86 inch)



Rigid Bed and Column Structure DCM series

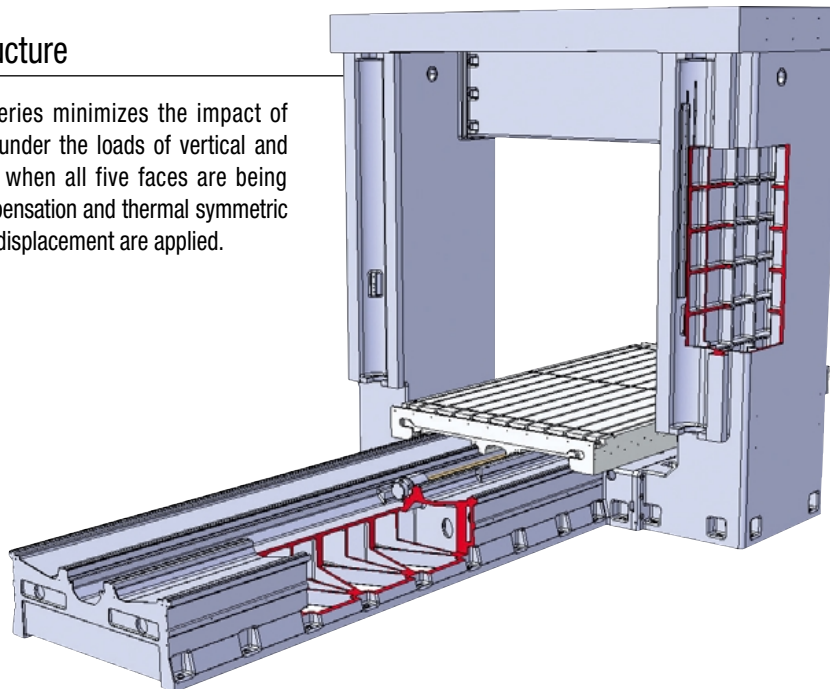
Stable bed and column structure designed for high-speed, heavy-duty machining.

Key Features of the DCM Series

The DCM series are the professional equipments for heavy-duty machining developed based on Doosan's know-how in machine design and production which ensure high accuracy and long life even under heavy machining loads.

Bed & Column Structure

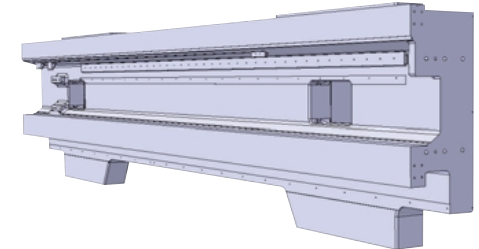
The structure of DCM series minimizes the impact of vibration on workpieces under the loads of vertical and horizontal cuttings even when all five faces are being processed. Accurate compensation and thermal symmetric design to reduce thermal displacement are applied.



Crossrail Structure

The crossrail guide structure upholds the moving loads of saddles, rams and head attachments. It maintains high accuracy from heavy to finish cutting.

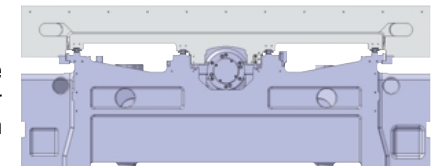
- The wide guides are highly rigid rectangular sliding faces.



Bed & Table Structure

The table moves on four guideways. Numerous guideways can prevent local deformation through load distribution.

- The accuracy is maintained by the roller bearing pack assembled under the table and the slide bearing which has vibration absorption capability.





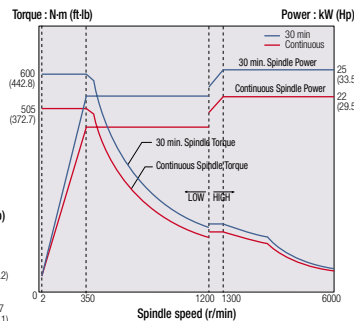
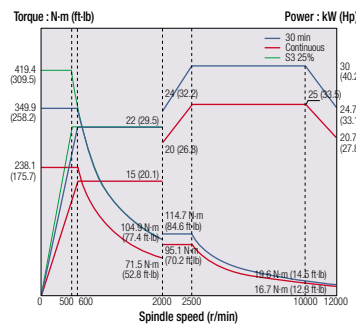
Optimal Design Based on Structure Analysis of Saddles and Ram Spindles

The ram section is bigger than that of competitors at 380 x 380 mm (14.96 inch x 14.96 inch) which allows a superior heavy cutting under any direction of horizontal machining loads. The spindle with 6000 r/min has been equipped as a standard.

Spindle power-torque diagram

Standard Specifications

- Built-in spindle : **6000 r/min**
- Spindle motor : **25/22 kW (34/30 Hp)**
- Spindle torque : **600 N-m (442.8 ft-lb)**



opt.

- High speed spindle (Built-in) : **12000 r/min**
- Spindle motor : **30/25 kW (40/34 Hp)**
- Spindle torque : **419.4 N-m (309.5 ft-lb)**

Various Ram Spindle line-up **opt.**

Heavy cutting option I (Gear box)

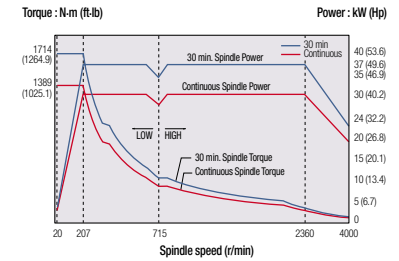
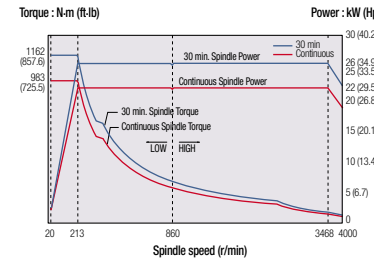
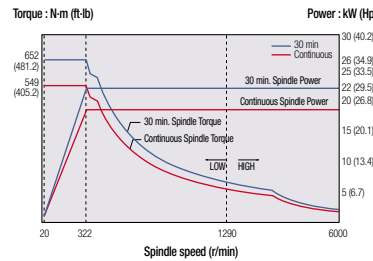
- High speed spindle : **6000 r/min**
- Spindle motor : **22/18.5 kW (30/25 Hp)**
- Spindle torque : **646 N-m (476.7 ft-lb)**

Heavy cutting option II (Gear box)

- High speed spindle : **4000 r/min**
- Spindle motor : **26/22 kW (35/30 Hp)**
- Spindle torque : **1165 N-m (859.8 ft-lb)**

Heavy cutting option III (Gear box)

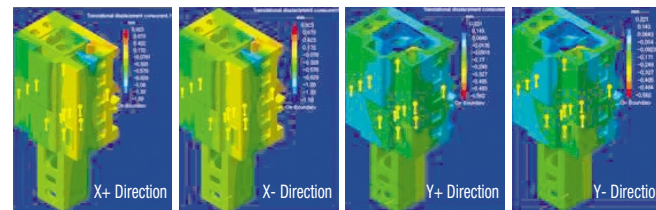
- High speed spindle : **4000 r/min**
- Spindle motor : **37/30 kW (50/40 Hp)**
- Spindle torque : **1705 N-m (1258.3 ft-lb)**



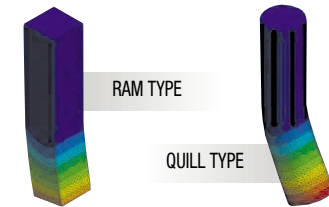
Structure Design for Powerful Heavy Cutting

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

Unit stress analysis of saddle & Ram spindle



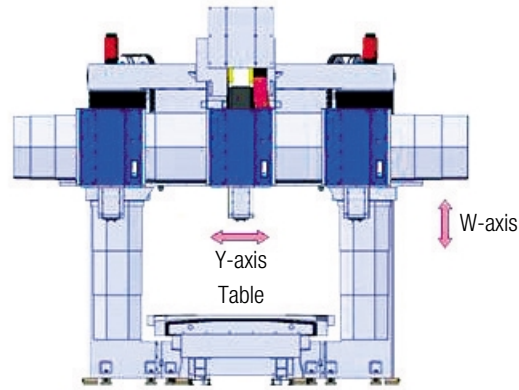
Stress comparison of spindle sections



- FEM analysis used to design a stable body. (FEM : Finite Element Method)
- The data is based on Doosan Machine Tools standards.

W-axis Machining Function Patent pending opt.

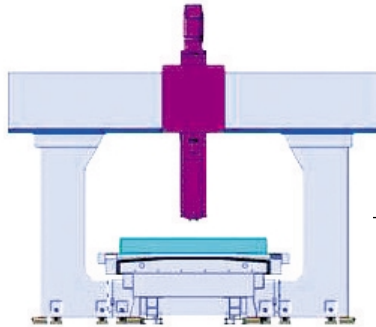
Perfect parallelism in between machine table and Y-axis movement along full stroke is maintained by this unique function composed of accurate proportional hydraulic and fine synchronous servo technology.



Performance Comparison between 3-axis and W-axis DCM

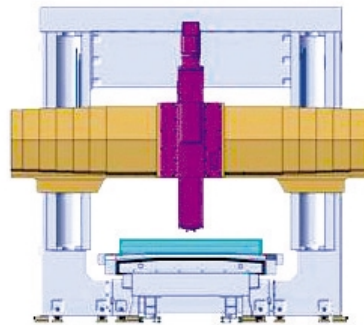
Crossrail (W-axis)-vertical traverse

Protruded part of the ram spindle can be minimized as the crossrail (W-axis) travels vertically. Therefore, cutting conditions remain stable from rough to finish cutting.



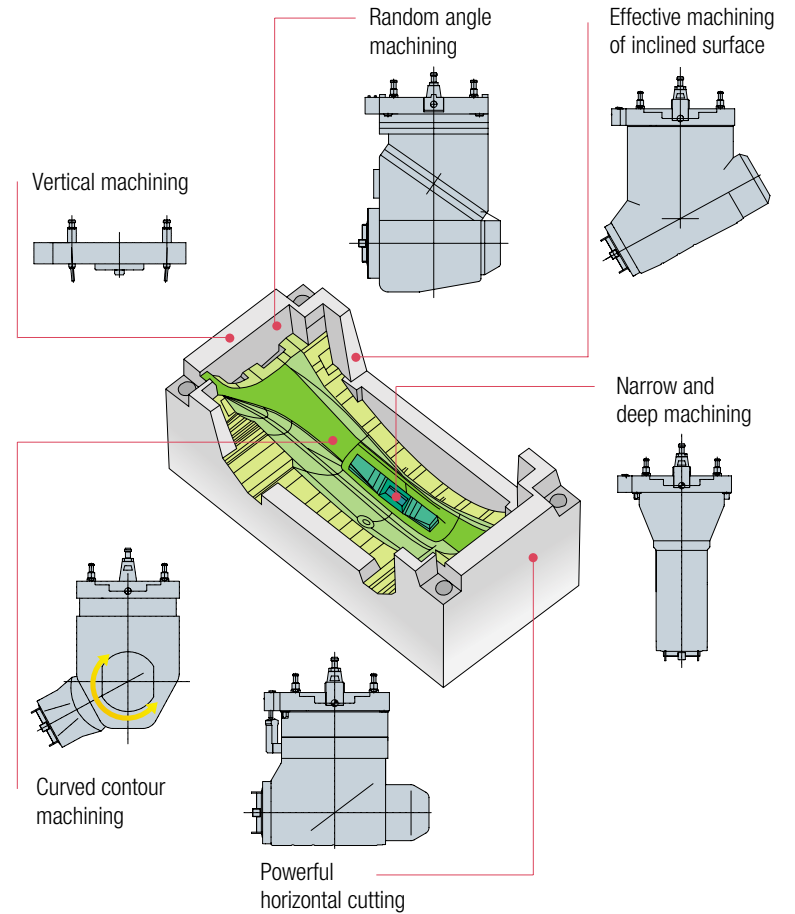
3-axis fixed top beam

Excessive protrusion will cause vibration during heavy cutting. This will undermine the efficiency of rough cutting and the quality of finish cutting.



Diverse Head Attachments for Assorted Processes

Various head attachments can be provided. ATC is applicable both vertical and horizontal attachment.



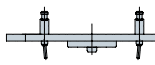
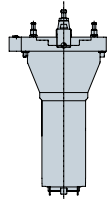
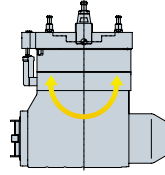
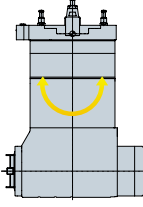
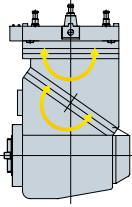
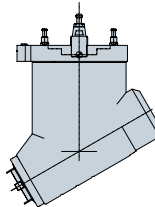
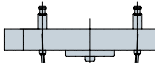
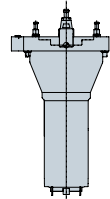
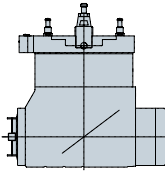
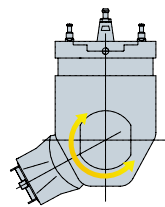
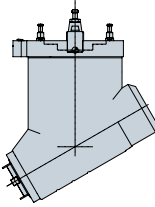
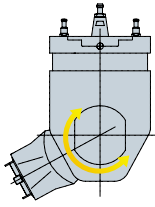


Head Attachment Line-up Patent pending opt.

Provides numerous utilities to ensure the same performance provided by the original ram spindle even after changing a Head Attachment.

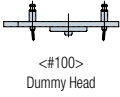
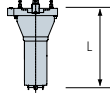
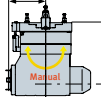
Utility Definition	Dummy	Extension	90° Angle
Spindle Air Curtain	std.	std.	std.
Flood Coolant/Air Blow	std.	std.	std.
Head Attachment Tool Unclamp	-	-	std.
Head Attachment Spindle Air Purge	-	-	std.
TSC (Through Spindle Coolant)	opt.	opt.	opt.
Spindle Cooling In	-	opt.	opt.
Spindle Cooling Out	-	opt.	opt.
Head Attachment Bearing Lubricant	-	opt.	opt.

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

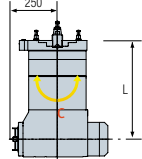
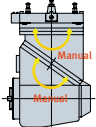
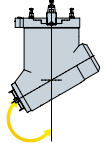
<p>W-Frame Head Attachment (Vertical spindle with multi-orientation functions)</p>	 <p><#100> Dummy Head</p>  <p><#200> Extension Head</p>  <p><#300> 90° Angle Head (Manual index)</p>	 <p><#400> Indexable 90° Angle Head (2.5° Index)</p>  <p><#600> Universal Head (Manual index)</p>	 <p><#900> Special Head (10°, 15°, 30°, 45° Head) (Manual index)</p>
<p>F-Frame Attachment (5-face machining spindle with C-axis indexing function)</p> <p>U- Frame Head Attachment (5-axis machining spindle with B/C-axis contouring)</p>	 <p><#150> Dummy Head</p>  <p><#250> Extension Head</p>  <p><#350> 90° Angle Head (1°, 5° Index)</p>	 <p>**<#700> Universal Indexing Head (B/C-axis 1° Index)</p>	 <p><#950> Special Head (10°, 15°, 30°, 45° Head)</p>  <p>***<#800> Universal Contouring Head (B/C-axis 0.001° contouring)</p>

• In addition to provided above head attachment, we can offer various head attachment to meet customers needs. Please contact our engineering team if necessary.

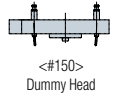
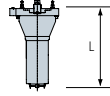
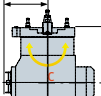
W-Frame Spindle

Type	Dummy Head	Extension Head	Angle Head
Line-up	 <#100> Dummy Head	 <#200 Series> Extension Head	 <#300 Series> 90° Angle Head (Manual Index)
Applications	Common Part	Narrow and Deep Machining	Horizontal & Indexed Positon Machining
Specification	Industrial Area	Ram: mm (inch) L: mm (inch) Power: kW (Hp) Speed (r/min) Cooling	Ram: mm (inch) L: mm (inch) Power: kW (Hp) Speed (r/min) Cooling
	Mold & Die	380 (15.0) 600 (23.6) 22 (29.5) 6K Cooling Jacket	380 (15.0) 350 (13.8) 22 (29.5) 6K Cooling Jacket
		380 (15.0) 400 (15.8) 22 (29.5) 6K Cooling Jacket	380 (15.0) 350 (13.8) 22 (29.5) 3K None
	General Job Shop	380 (15.0) 600 (23.6) 37 (49.6) 4K Cooling Jacket	380 (15.0) 350 (13.8) 22 (29.5) 3K None
		380 (15.0) 600 (23.6) 37 (49.6) 2K None	380 (15.0) 350 (13.8) 37 (49.6) 2K None
			380 (15.0) 500 (19.7) 37 (49.6) 2K None

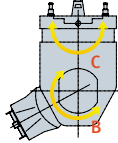
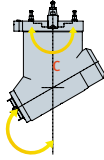
W-Frame Spindle

Type	Indexable 90° Angle Head	Universal Head	Special Head
Line-up	 <#400 Series> Indexable 90° Angle Head (2.5° Index)	 <#600 Series> Universal Head (Manual Index)	 <#900 Series> Special Head (10°, 15°, 30°, 45° Angle Head) (Manual Index)
Applications	Auto Index Fuction	Mold & Boring Machining	Inclined Surface Machining
Specifications	No. Ram: mm (inch) L: mm (inch) Power: kW (Hp) Speed (r/min) Cooling	Ram: mm (inch) Power: kW (Hp) Speed (r/min)	Ram: mm (inch) Power: kW (Hp) Speed (r/min)
	#401 380 (15.0) L450 (17.7) 37 (49.6) 4K None	380 (15.0) 26 (34.9) 2K Order Made	380 (15.0) 26 (34.9) 2K Order Made

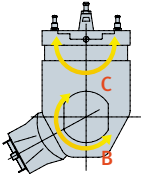
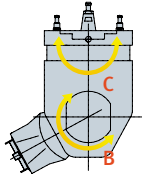
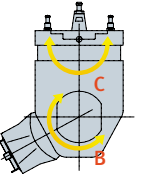
F-Frame Spindle

Type	Dummy Head	Extension Head	Angle Head
Line-up	 <#150> Dummy Head	 <#250 Series> Extension Head	 <#350 Series> 90° Angle Head (1°, 5° Indexing)
Applications	Common Part	Narrow and Deep Machining	Horizontal & Indexed Positon Machining
Specification	Industrial Area	Ram: mm (inch) L: mm (inch) Power: kW (Hp) Speed (r/min) Cooling	No. Ram: mm (inch) L: mm (inch) Power: kW (Hp) Speed (r/min) Cooling
	Mold & Die	380 (15.0) 600 (23.6) 22 (29.5) 6K Cooling Jacket	#361 380 (15.0) 350 (13.8) 22 (29.5) 6K Cooling Jacket
		380 (15.0) 400 (15.8) 22 (29.5) 6K Cooling Jacket	
	General Job Shop	380 (15.0) 600 (23.6) 37 (49.6) 4K Cooling Jacket	380 (15.0) 350 (13.8) 22 (29.5) 3K None
		380 (15.0) 600 (23.6) 37 (49.6) 2K None	380 (15.0) 350 (13.8) 37 (49.6) 2K None
			380 (15.0) 500 (19.7) 37 (49.6) 2K None

F-Frame Spindle

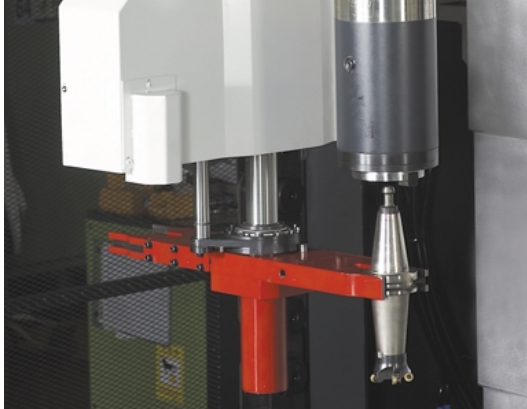
Type	Universal Head	Special Head
Line-up	 <#700 Series> Universal Indexing Head (B/C-axis 1° Index)	 <#950 Series> Special Head (10°, 15°, 30°, 45° Angle Head)
Applications	Roughing of Mold	Inclined Surface Machining
Specifications	No. Ram: mm (inch) Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)	Ram: mm (inch) Power: kW (Hp) Speed (r/min)
	#701 380 (15.0) 37 (34.9) 1100 (811.8) 3K	380 (15.0) 26 (34.9) 3K
	B-axis Tilting Range Driving Torque: N-m (ft-lb) Speed (r/min)	Order Made
	±120°/1° Index 3200 (2361.6) 20K	
C-axis Swivel Range Driving Torque: N-m (ft-lb) Speed (r/min)		
	±220°/1° Index 3900 (2878.2) 10K	

U-Frame Spindle

Type	Universal Head Attachment to 5 axis Full Contouring (B/C-axis 0.001° Contouring)											
	Type 1 (Ram Spindle + Gear Driven)				Type 2 (Built-in Spindle)				Type 3 (Built-in Spindle)			
Line-up												
Applications	Roughing				High-Precision Finishing				Rough & Finishing			
Spindle	No. Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)	No. Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)		No. Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)		No. Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)		No. Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)		No. Power: kW (Hp) Torque: N-m (ft-lb) Speed (r/min)		
	#801 30 (40.2) 800 (590.4) 3K	#802 22 (29.5) 100 (73.8) 12K		#803 30 (40.2) 450 (332.1) 12K								
B-axis	Tilting Range Driving Torque : N-m (ft-lb) Speed (r/min)	Tilting Range Driving Torque : N-m (ft-lb) Speed (r/min)		Tilting Range Driving Torque : N-m (ft-lb) Speed (r/min)		Tilting Range Driving Torque : N-m (ft-lb) Speed (r/min)		Tilting Range Driving Torque : N-m (ft-lb) Speed (r/min)		Tilting Range Driving Torque : N-m (ft-lb) Speed (r/min)		
	±120°/0.001° Contouring 6000 (4428.0) 20	±120°/0.001° Contouring 1200 (885.6) 30		±120°/0.001° Contouring 6000 (4428.0) 20		±120°/0.001° Contouring 6000 (4428.0) 20		±120°/0.001° Contouring 6000 (4428.0) 20		±120°/0.001° Contouring 6000 (4428.0) 20		
C-axis	Swivel Range Driving Torque : N-m (ft-lb) Speed (r/min)	Swivel Range Driving Torque : N-m (ft-lb) Speed (r/min)		Swivel Range Driving Torque : N-m (ft-lb) Speed (r/min)		Swivel Range Driving Torque : N-m (ft-lb) Speed (r/min)		Swivel Range Driving Torque : N-m (ft-lb) Speed (r/min)		Swivel Range Driving Torque : N-m (ft-lb) Speed (r/min)		
	±220°/0.001° Contouring 4500 (3321.0) 10	±220°/0.001° Contouring 2000 (1476.0) 30		±220°/0.001° Contouring 4500 (3321.0) 10		±220°/0.001° Contouring 4500 (3321.0) 10		±220°/0.001° Contouring 4500 (3321.0) 10		±220°/0.001° Contouring 4500 (3321.0) 10		

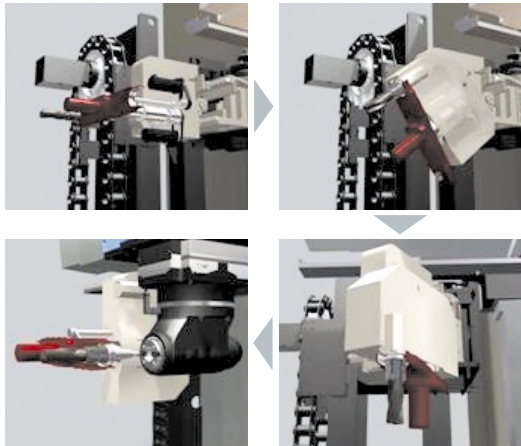
Automatic Tool Changer

One arm performs the changes for both the horizontal and vertical spindle. The next tool to be used, regardless of the spindle location, is brought to the standby position during cutting. The most reliable ATC and magazine with its servo motor minimize troubles and downtime.



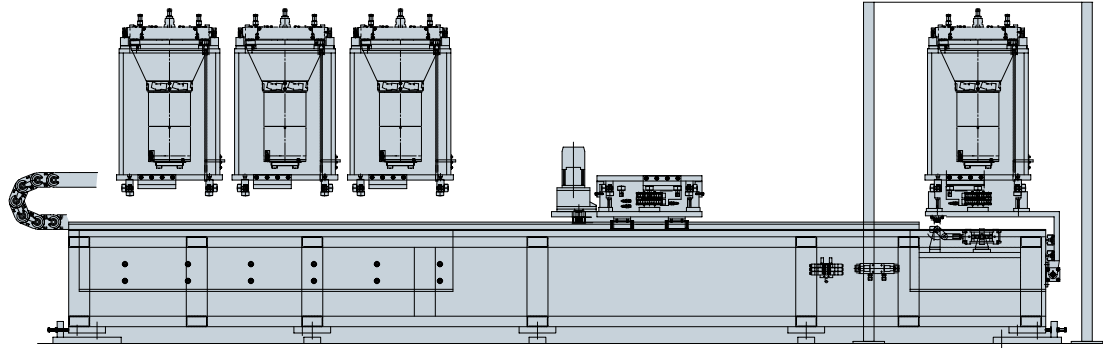
• Picture-Vertical ATC in operation

Horizontal ATC operation with a 90° head attach mounted.



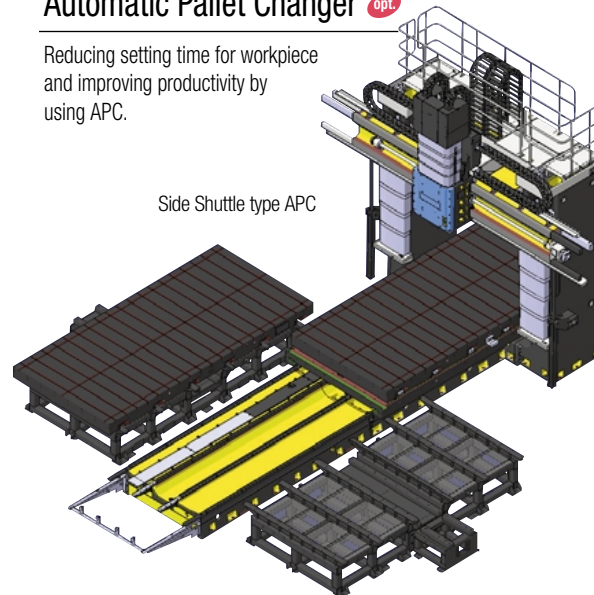
Linear Shuttle AAC (Automatic Head Attachment Changer) opt.

For the multi face machining, various type of head attachment is required. AAC, controlled by NC, is available to realize full automation in multi face machining.



Automatic Pallet Changer opt.

Reducing setting time for workpiece and improving productivity by using APC.



Chip Disposal opt.

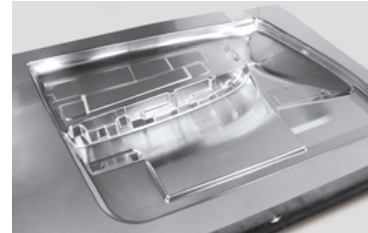
Chips are rapidly and continuously discharged. Lift-up chip conveyor is optional / side chip conveyor (coil conveyor) is standard.



High Accuracy for Mold & Die



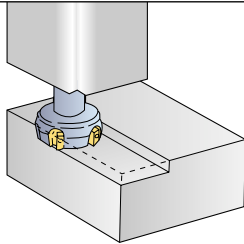
Rail-shape Prastic toy (injection mold)	
Model No.	DCM 2740W
Process material	KP4M
Material size	1000 x 700 x 400 (39.37 x 27.56 x 15.75)
Processing time	10H (Finish Cutting)



4-Door Sedan Door Trim (press mold)	
Model No.	DCM 3250F
Process material	KP4M
Material size	1500 x 1000 x 500 (59.06 x 39.37 x 19.69)
Processing time	80H (Finish Cutting)

Heavy Cutting Performance

Face mill



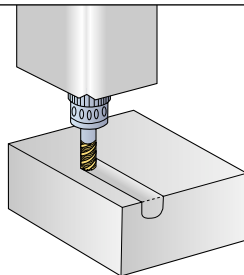
• Material : SM45C (Carbon steel)

RAM spindle line-up	Cutter diameter ø : mm (inch)	Cutting width : mm (inch)	Cutting depth : mm (inch)	Spindle speed : r/min	Feedrate : mm/min (ipm)	Removal rate : cm ³ /min (inch ³ /min)
Heavy cutting option I (α18+SPM22)	160 (6.30)	112 (4.41)	7 (0.28)	315	665 (26.2)	521 (20.51)
Heavy cutting option II (α22+SPM30)	160 (6.30)	140 (5.51)	6 (0.24)	315	1080 (42.5)	907 (35.71)

• Material : GC300 (Cast iron)

Heavy cutting option I (α18+SPM22)	160 (6.30)	112 (4.41)	6 (0.24)	315	1188 (46.8)	798 (31.42)
Heavy cutting option II (α22+SPM30)	160 (6.30)	140 (5.51)	8 (0.31)	315	1404 (55.3)	1572 (61.89)

End mill



• Material : SM45C (Carbon steel)

Model No.	Cutter diameter ø : mm (inch)	Cutting width : mm (inch)	Cutting depth : mm (inch)	Spindle speed : r/min	Feedrate : mm/min (ipm)	Removal Rate : cm ³ /min (inch ³ /min)	Ram expansion : mm (inch)
DCM series	63 (2.48)	63 (2.48)	31.5 (1.24)	495	312 (12.3)	619 (24.37)	325 (12.80)

• Material : GC300 (Cast iron)

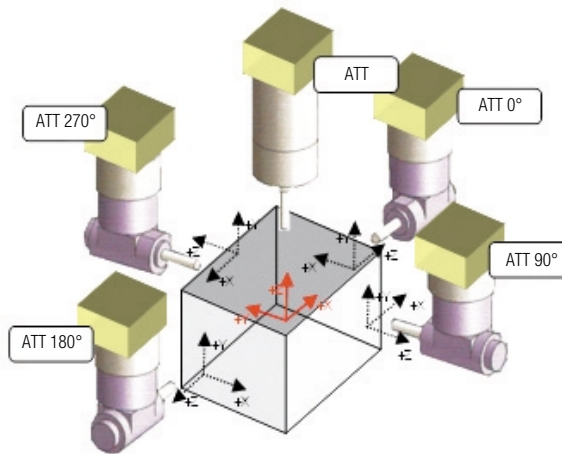
DCM series	63 (2.48)	63 (2.48)	63 (2.48)	360	200 (7.9)	794 (31.26)	325 (12.80)
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- The data is based on Doosan Machine Tools standards.
- The data may vary under different test conditions.

Five Face Machining Support System®

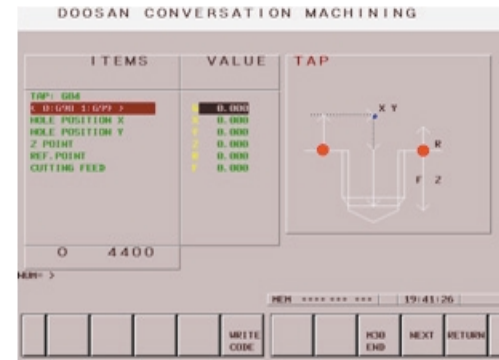
- 3-dimensional-work coordinates conversion system
- Tool end point shift within work coordinate system
- AAC control and head attachment position control by M-Code
- ATC is applicable various head attachments.

* The functions above are provided as package when 5-face machining head attachment is selected.



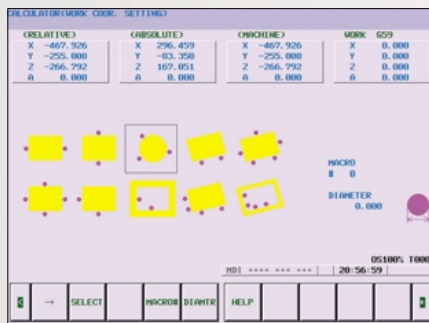
Easy Pattern Cycle Patent pending

This software provides machining patterns required for part machining. It will greatly reduce programming time and can be used for machining on the shop floor immediately.

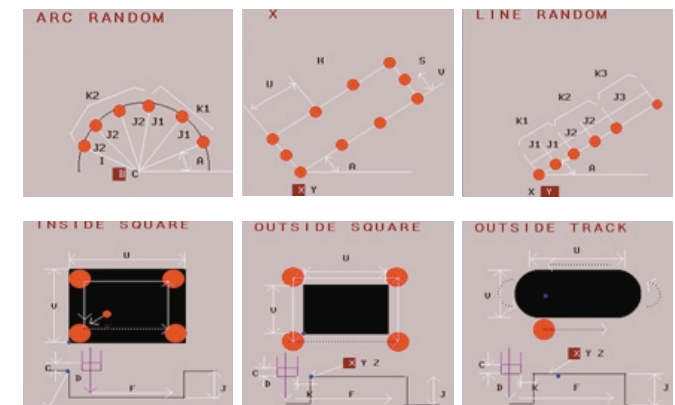


Easy Setup Guidance Provided with RMP60 (OMP60) opt.

The work coordinate system can be set easily and simply by getting the tool or test bar in touch with work and making operations on the screen. Also it can be used for the automatic measuring probe.



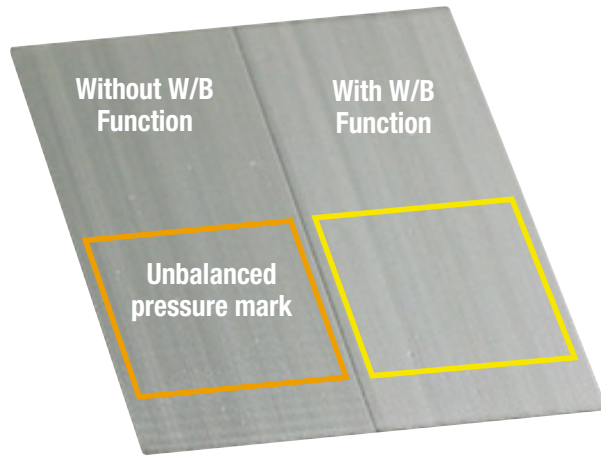
Various hole patterns & milling patterns



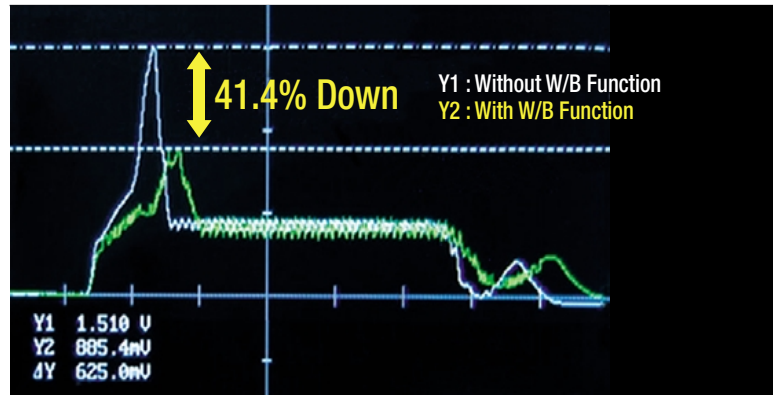
Weight Balancer II[®] Patent pending opt.

The load balancing capability for the stable motion is automatically controlled to keep consistent process efficiency even when the material weight changes dramatically during rough cutting.

Quality control by managing variables



With W/B, cutting load rate declines by maximum of 41%



- The data is based on DOOSAN machine tool standards.
- The data may vary under different test conditions.

Process Monitoring Function

Minimizes the failure of material on processing through process monitoring and actualizes automation.

Cutting load monitoring function opt.

- Automatic tracking of worn-out or broken tools when abnormal load is checked.
- Data storage function for each workpiece.



Tool Maintenance Function opt.

- An alarm sounds when the tool's life reaches its end.
- Tool management by groups and alternative tool usages are possible.

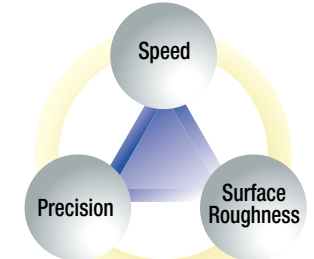


Intelligent Machining Control[®]

- Offers M-Code for differentiated operation parameters for each process.
- Offers universal functions applicable from die & mold to industrial parts.

- High speed CPU use
- Servo spindle motor with superb dynamic characteristics
- Equipment structure with outstanding hardness

Application stage	Performance level	Mold market response	Industrial machinery market response
Efficient mode M320	High speed processing	●	●
Standard mode M321	High speed & precision processing	●	●
Finish cutting mode M322	High precision	●	

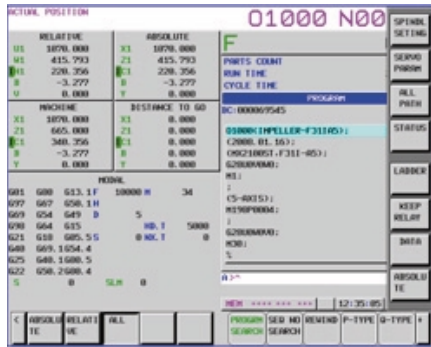


- High speed servo system
- Variable acceleration control
- Control in advance
- Powerful block handling capacity (100 blocks)
- NANO level control
- CAM S/W linkage capability, NURBS function etc.

Advanced CNC system (FANUC-31i)

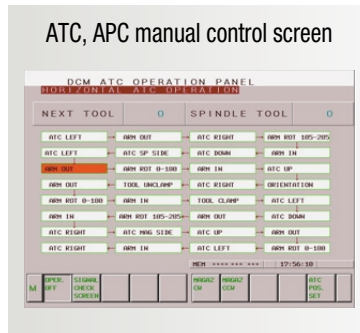
Buttons compatible with HEIDENHAIN & Siemens

Buttons are divided into vertically and horizontally by functions.



Greater user friendliness

Mono lever jog switches below the main control panel (MCP) for convenient traverse of large equipment's major axis. Pulse handle for user convenience & manual handle (Portable MPG) for easy setting.

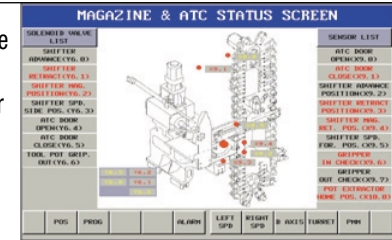


Maintenance Function

Easy Operation Guidance opt.

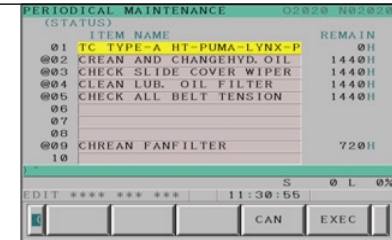
This Guidance can be to operate machine easily and offer customer five detail function for convenience.

- Alarm guidance
- Useful function setting screen
- Operation report
- Thermal error compensation
- Program remaining cycle time

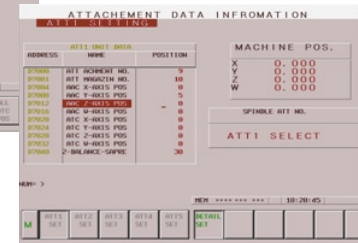


Periodically checking function

Provides notification of checked items including oil filling for equipment maintenance.



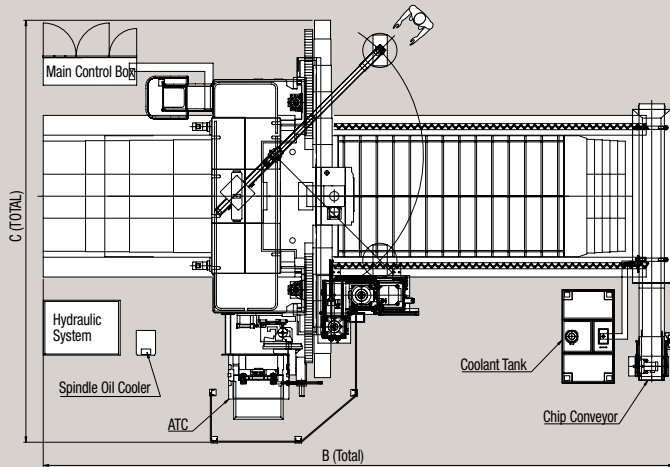
AAC opt. & ATC position setting function



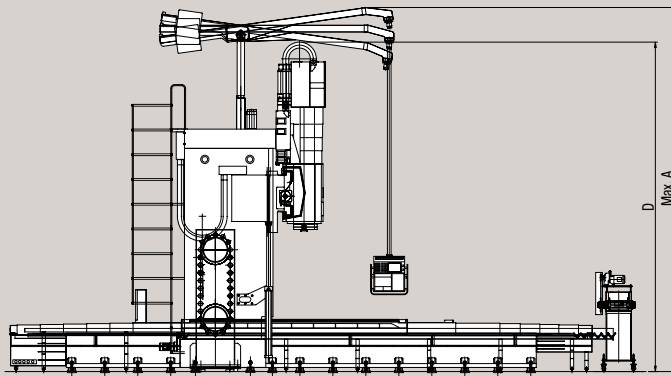
External Dimensions

Unit : mm (inch)

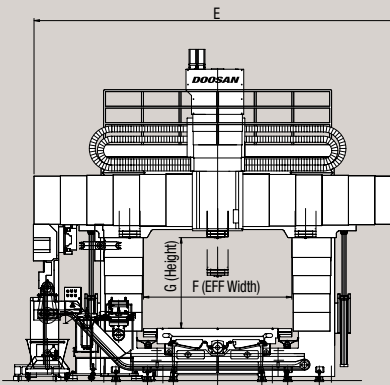
Top View



Side View



Front View



The dimension above is the standard type for each model.

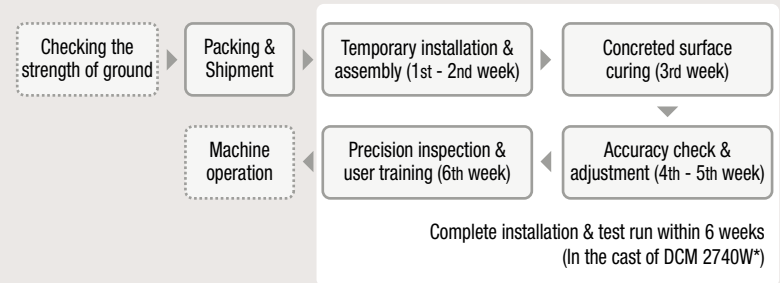
Model	A	B	C	D	E	F	G
DCM 2740	6750 (265.75)	11475 (451.77)	7675 (302.17)	5880 (231.50)	6400 (251.97)	2700 (106.30)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 2750	6750 (265.75)	13475 (530.51)	7675 (302.17)	5880 (231.50)	6400 (251.97)	2700 (106.30)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 2760	6750 (265.75)	15475 (609.25)	7675 (302.17)	5880 (231.50)	6400 (251.97)	2700 (106.30)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 3250	6750 (265.75)	13475 (530.51)	8175 (321.85)	5880 (231.50)	6900 (271.65)	3200 (125.98)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 3260	6750 (265.75)	15475 (609.25)	8175 (321.85)	5880 (231.50)	6900 (271.65)	3200 (125.98)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 3280	6750 (265.75)	19800 (799.53)	8175 (321.85)	5880 (231.50)	6900 (271.65)	3200 (125.98)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 3780	6750 (265.75)	19800 (799.53)	8675 (341.54)	5880 (231.50)	7400 (291.34)	3700 (145.67)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])
DCM 37100	6750 (265.75)	23800 (937.00)	8675 (341.54)	5880 (231.50)	7400 (291.34)	3700 (145.67)	1650 [2000 / 2350] (64.96 [78.74 / 92.52])

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 Doosan.
(Test for bearing capacity of soil should follow Doosan's standards.)
3. Our engineering team may be available even during the foundation work at customer's request.

Installation & test run

It will take five weeks at the customer site after transportation.
[Barring the third week for concreted surface curing.]
Actual installation & test run time will be varied by site's conditions and optional features supplied.



- Installation & test period is other to machine size and option.
Please contact Doosan for detail.

ATC Tooling

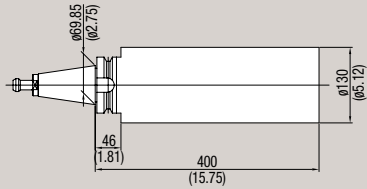
Unit : mm (inch)

Work Area & Table-Shape

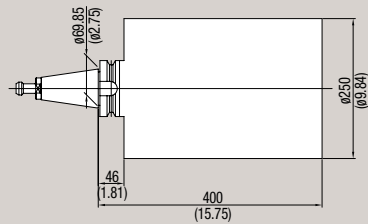
Unit : mm (inch)

Maximum tool length

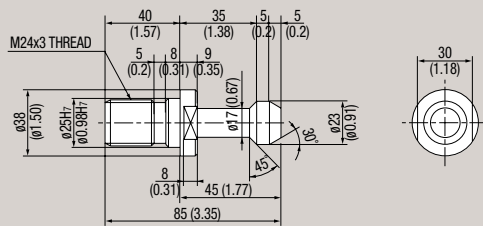
- With an adjacent tool



- Without an adjacent tool



- Pull Stud : MAS 403 P50T-1 (45°)



Maximum tool weight [29.4 N-m (21.7 ft-lbs)]

- Standard : 25 kg x 120 mm (55.1 lb x 4.72 inch)
- The center of mass should be within 120mm (4.72 inch) from the gauge line.

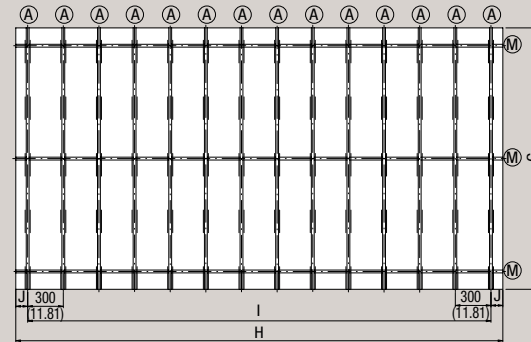
Maximum 30 kg (66.1 lb) are available with option specifications.

Various tooling applications

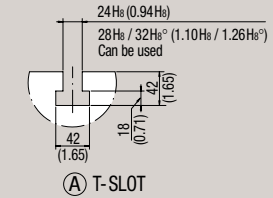
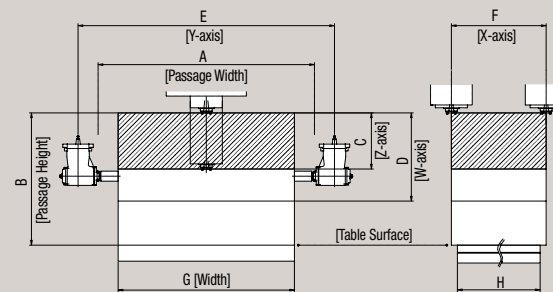
Any type of tooling

(Mas, CAT, DIN, Big-plus, HSK) can be used.

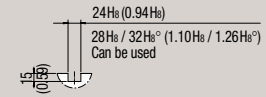
Please contact our engineering team if necessary.



OPERATOR SIDE



(A) T-SLOT



(M) CROSS SLOT

Model	Table Type	A	B	C	D	E	F	G	H	I	J
DCM 2740	22 x 41 (0.87 x 1.61)	2700 (106.30)	1650 (64.96)	700 (27.56)	1100 (43.31)	3200 (125.98)	4250 (167.32)	2200 (86.61)	4100 (161.42)	3900 (153.54)	100 (3.94)
DCM 2750	22 x 51 (0.87 x 2.01)	2700 (106.30)	1650 (64.96)	700 (27.56)	1100 (43.31)	3200 (125.98)	5250 (206.69)	2200 (86.61)	5100 (200.79)	4800 (188.98)	150 (5.91)
DCM 2760	22 x 61 (0.87 x 2.40)	2700 (106.30)	1650 (64.96)	700 (27.56)	1100 (43.31)	3200 (125.98)	6250 (246.06)	2200 (86.61)	6100 (240.16)	5700 (224.41)	200 (7.87)
DCM 3250	27 x 51 (1.06 x 2.01)	3200 (125.98)	1650 (64.96)	700 (27.56)	1100 (43.31)	3700 (145.67)	5250 (206.69)	2700 (106.30)	5100 (200.79)	4800 (188.98)	150 (5.91)
DCM 3260	27 x 61 (1.06 x 2.40)	3200 (125.98)	1650 (64.96)	700 (27.56)	1100 (43.31)	3700 (145.67)	6250 (246.06)	2700 (106.30)	6100 (240.16)	5700 (224.41)	200 (7.87)
DCM 3280	27 x 81 (1.06 x 3.19)	3200 (125.98)	1650 (64.96)	700 (27.56)	1100 (43.31)	3700 (145.67)	8250 (324.80)	2700 (106.30)	8100 (318.90)	7800 (307.09)	150 (5.91)
DCM 3780	32 x 81 (1.26 x 3.19)	3700 (145.67)	1650 (64.96)	700 (27.56)	1100 (43.31)	4200 (165.35)	8250 (324.80)	3200 (125.98)	8100 (318.90)	7800 (307.09)	150 (5.91)
DCM 37100	32 x 101 (1.26 x 3.98)	3700 (145.67)	1650 (64.96)	700 (27.56)	1100 (43.31)	4200 (165.35)	10250 (403.54)	3200 (125.98)	10100 (397.64)	9900 (389.76)	100 (3.94)

Machine Specifications

Item		DCM 2740	DCM 2750	DCM 2760	DCM 3250	DCM 3260	DCM3280	DCM 3780	DCM 37100	
Travel	X-axis Travel (Table Longitudinal)	mm (inch)	4250 (167.32)	5250 (206.69)	6250 (246.06)	5250 (206.69)	6250 (246.06)	8250 (324.80)	10250 (403.54)	
	Y-axis Travel (Spindle Head Cross)	mm (inch)	3200 (126.0)			3700 (145.67)			4200 (165.35)	
	Z-axis Travel (Ram Vertical)	mm (inch)	700 (27.56)							
	W-axis Travel (Vertical Movement of Crossrail)	mm (inch)	1100 (43.31)							
	Effective width between columns	mm (inch)	2700 (106.3)			3200 (125.98)			3700 (145.7)	
	Table to Spindle Nose	mm (inch)	1650 (2000, 2350) (643.96 (78.74, 92.52))							
Table	Table Size (Width x Length)	mm x mm (inch x inch)	2200 x 4100 (86.61 x 161.42)	2200 x 5100 (86.61 x 200.79)	2200 x 6100 (86.61 x 240.16)	2700 x 5100 (106.30 x 200.79)	2700 x 6100 (106.30 x 240.16)	2700 x 8100 (106.30 x 318.90)	3200 x 8100 (125.98 x 318.90)	3200 x 10100 (106.30 x 397.64)
	Load Capacity	kg (lb)	18000 (39682.6)	20000 (44091.8)	28000 (61728.5)	30000 (66137.7)	36000 (79365.2)	46000 (101411.1)	55000 (121252.5)	68000 (149912.1)
	T-Slot x Numbers	mm (inch)	24Hø (28Hø, 32Hø) (0.94Hø (1.10Hø, 1.26Hø)) x 13 : DCM 2740							
Spindle Head	Tool Shank		BT 50							
	Ram Size	mm x mm (inch x inch)	□ 380 x 380 (□ 14.96 x 14.96)							
	Number of Speed Ranges	step	2							
	Max. Spindle Speed	r/min	6000 (4000, 6000, 10000)							
	Spindle Drive Motor (30min. / cont.)	kW (Hp)	25/22 (26/22, 22/18.5, 30/25) (33.5/29.5 (34.9/29.5, 29.5/24.8, 40.2/33.5))							
Feedrate	Rapid Traverse X, Y, Z, W	m/min (ipm)	16, 16, 10, 3 (629.9, 629.9, 393.7, 118.1)							
	Max. Cutting Feedrate X, Y, Z, W	mm/min (ipm)	10000, 10000, 10000, 3000 (393.7, 393.7, 393.7, 118.1)							
ATC	Tool Storage Capacity	ea	40 (60, 90, 120)							
	Max.Tool Diameter	mm (inch)	continuous : 130 (5.12), adjacent pot empty : 250 (9.84)							
	Max.Tool Length	mm (inch)	400 (15.75)							
	Max.Tool Weight	kg (lb)	25 (30) (55.1 (66.1))							
	Tool Selection Type		Fixed address							
AAC	Type		Linear Shuttle [3, 5, 7], Two Station, Three Station, AAC on Table [4]							
	Max. Head Attachment Weight	kg (lb)	500 (1102.3)							
Machine Size	Machine Height	mm (inch)	6750 (265.75)							
	Floor Space (Machine only)	mm x mm (inch x inch)	7675 x 11475 (302.17 x 451.77)	7675 x 13475 (302.17 x 530.51)	7675 x 15475 (302.17 x 609.25)	8175 x 13475 (321.85 x 530.51)	8175 x 15475 (321.85 x 609.25)	8175 x 19800 (321.85 x 779.53)	8675 x 19800 (341.54 x 779.53)	8675 x 23800 (341.54 x 937.01)
	Machine Weight	kg (lb)	55000 (121252.5)	58000 (127866.2)	60000 (132275.4)	62000 (136684.6)	64000 (141093.8)	76000 (167548.8)	82000 (180776.4)	95000 (209436.1)

Note : { } are optional

Standard Feature

- F-Frame
 - 90° Angle Head
 - C-Axis Control with BZ Sensor
 - Two Station AAC
 - Spindle Air Purge
 - Air Blower (4-Nozzle)
 - Coolant Tank Capacity 500L
 - Counter Balancing Pendant Arm
 - W-Axis Balancing System
 - Safety Ladder & Fence
 - ATC Safety Fence
 - Slideway Covers (X/Y/W)
 - Slideway Bellows Cover (Z)
 - Spindle Cooling System
 - Hydraulic Power Unit
 - Spindle Lubrication Device
 - Leveling Blocks & Anchor Bolts
 - Main Op. Panel
 - ATC Op. Panel
 - Side Coil Conveyor (DCM 2740 Only)
 - Side Chip Conveyor (Over DCM 2750)
 - Standard Tooling Kit
 - Backside Chip Cover
 - Datum Slot
 - W-Axis Cutting Feed Function
 - Operator Call Lamp (Red/Yellow/Green)
 - Work light (fluorescent lamp)
 - Easy Pattern Cycle
 - Periodical Checking Function
 - External M-CODE (4 ea)
 - #100 Dummy Head (W-Frame)
 - #150 Dummy Head (F-Frame)
 - Auto Power Off
 - 3-Dimensional Coordinate Conversion
 - 5-Faces Machining Support System®
 - Intelligent Machining Control®
 - Mono Lever Jog Switches
 - Push Button For Tool Unclamp
 - Spindle Load Meter
 - Self Diagnostic Function
 - DSQ 1
- Note)
DSQ1 : AICC II + Machining Condition Selection

Optional Feature

- Head Attachments*
 - W-Frame
 - #200 Extension Head
 - #300 Manual 90° Angle Head
 - #400 Indexable 90° Angle Head
 - #600 Manual Universal Head
 - #900 Special Head (Custom Spec.)
 - F-Frame
 - #250 Extension Head
 - #350 90° Angle Head
 - #500 HV Head (1° Index)
 - #700 Universal Indexing Head (A/C* Index)
 - #800 Universal Contouring Head (A/C 0.001° Index)
 - #950 Special Head (Custom Spec.)
 - Spindle Thermal Compensation System
 - Linear Scale Feedback System (X / Y / Z / W)
 - AAC
 - Two Station, Three Station
 - Linear Shuttle 3, 5, 7 Station
 - Pendant Arm
 - Pole Type
 - Gantry Type
 - Coolant Gun
 - Coolant Tank Capacity 1000L
 - TSC-20 bar
 - Oil Skimmer
 - Chip / Coolant Splash Guard
 - Semi Guard / Full Guard / Chip Cover
 - APC (Side Shuttle : Two Pallet)
 - Side Chip Conveyor
 - Hinged Plate Chip Conveyor
 - Magnetic Scraper Chip Conveyor
 - Lift Up Chip Conveyor
 - Hinged Plate Chip Conveyor
 - Magnetic Scraper Chip Conveyor
 - Chip Bucket (360L)
 - Air Compressor
 - Air Gun
 - Air Dryer
 - Easy Operation Guidance
 - Automatic Tool Measurement
 - High-Column
 - Auto.Tool Breakage Detection
 - Auto.Workpiece Measurement
 - Easy Setup Guidance
 - Tool Measurement Master Tool
 - Calibration Block
 - Test Bar (BT 50)
 - Spot Light on Ram Spindle
 - Electric Box Light (fluorescent lamp)
 - Electric Box Aircon.
 - 3-MPG
 - Stand Type
 - Portable Type
 - MPG with Position Display
 - Doosan Tool Load Monitoring
 - Doosan Tool Management
 - Work Counter
 - Total Counter
 - Auto Power On
 - Electric Leakage Breaker
 - Electric Line Filter
 - Operator Call Buzzer
 - DSQ2
 - DSQ3
 - CAD/CAM System Support
 - Additional 5th Axis
 - Package #1 : Only Wiring
 - Package #2 : Hyd. & Control Ready
 - Package #3 : Full OPT.
 - Weight Balancer II®
- Note
DSQ2 : AICC II +Machining Condition Selection + Data Server (1GB)
DSQ3 : AICC II with High Speed Processing
+ Machining Condition Selection + Data Server (1GB)
- * Please contact doosan for detail.

CNC Unit Specifications (Fanuc 31i-A)

AXES CONTROL

- Controlled axes	4 (X, Y, Z, W)
- Simultaneously controllable axes	
Positioning(G00) / Linear interpolation(G01) : 3 axes	
Circular interpolation(G02, G03) : 2 axes	
- Backlash compensation	
- Emergency stop / overtravel	
- Follow up	
- Least command increment :	0.001mm / 0.0001"
- Least input increment :	0.001mm / 0.0001"
- Machine lock	all axes / Z axis
- Mirror image	Reverse axis movement
	(setting screen and M - function)
- Stored pitch error compensation	
	Pitch error offset compensation for each axis
- Stored stroke check 1	Overtravel controlled by software
- HRV2 Control	

INTERPOLATION & FEED FUNCTION

- 2nd reference point return	G30
- 3rd/4th reference point return	G30P3 / P4
- Circular interpolation	G02, G03
- Dwell	G04
- Exact stop check	G09, G61(mode)
- Feed per minute	mm / min
- Feedrate override (10% increments)	0 - 200 %
- Jog override (10% increments)	0 - 200 %
- Linear interpolation	G01
- Manual handle feed (1 unit)	
- Manual handle feedrate	0.1 / 0.01 / 0.001 mm
- Override cancel	M48 / M49
- Positioning	G00
- Rapid traverse override	F0 (fine feed), 25 / 50 / 100 %
- Reference point return	G27, G28, G29
- Skip function	G31
- Helical interpolation	
- AI Contour Control II	200 block preview
- Thread cutting, synchronous cutting	
- Program restart	
- Automatic corner deceleration	
- Feedrate clamp by circular radius	
- Linear ACC / DEC before interpolation	
- Linear ACC / DEC after interpolation	
- Control axis detach	

- Rapid traverse bell-shaped acceleration/deceleration	
- Dual position feedback	

SPINDLE & M-CODE FUNCTION

- M-code function	M 3 digits
- Spindle orientation	
- Spindle serial output	
- Spindle speed command	S5 digits
- Spindle speed override (10% increments)	10 - 150 %
- Spindle output switching	
- Retraction for rigid tapping	
- Rigid tapping	G84, G74

TOOL FUNCTION

- Cutter compensation C	G40, G41, G42
- Number of tool offsets	200 ea
- Tool length compensation	G43, G44, G49
- Tool number command	T3 digits
- Tool life management	
- Tool offset memory C	

PROGRAMMING & EDITING FUNCTION

- 3-dimensional coordinate conversion	
- Absolute / Incremental programming	G90 / G91
- Auto. Coordinate system setting	
- Background editing	
- Canned cycle	G73, G74, G76, G80 - G89, G99
- Circular interpolation by radius programming	
- Custom macro B	
- Custom size 512kb	
- Addition of custom macro common variables	
- Decimal point input	
- I / O interface	RS - 232C
- Inch / metric conversion	G20 / G21
- Label skip	
- Local / Machine coordinate system	G52 / G53
- Maximum commandable value	±99999.999mm (±9999.9999 inch)
- No. of Registered programs	250 ea
- Optional block skip	
- Optional stop	M01
- Part program storage	640 m
- Program number	O4-digits

- Program protect	
- Program stop / end	M00 / M02, M30
- Programmable data input	
Tool offset and work offset are entered by G10, G11	
- Sub program	Up to 4 nesting
- Tape code	ISO / EIA Automatic discrimination
- Work coordinate system	G54 - G59
- Additional work coordinate system (48 Pair)	G54.1 P1 - 48 pairs
- Coordinate system rotation	G68, G69
- Extended part program editing	
- Optional angle chamfering / corner R	
- Macro executor	

OTHERS FUNCTIONS (Operation, Setting & Display, etc)

- Alarm display	
- Alarm history display	
- Clock function	
- Cycle start / Feed hold	
- Display of PMC alarm message	
Message display when PMC alarm occurred	
- Dry run	
- Ethernet function (Embedded)	
- Graphic display	Tool path drawing
- Help function	
- Loadmeter display	
- MDI / DISPLAY unit	
10.4" color LCD, Keyboard for data input, soft-keys	
- Memory card interface	
- Operation functions	Tape / Memory / MDI / Manual
- Operation history display	
- Program restart	
- Run hour and part number display	
- Search function	Sequence NO. / Program NO.
- Self - diagnostic function	
- Servo setting screen	
- Single block	
- External data input	
- Multi language display	

OPTIONAL SPECIFICATIONS

- 3-dimensional tool compensation	
- Addition of tool pairs for tool life management	512 pairs

- Additional controlled axes	max. 6 axes in total
- Additional work coordinate system	G54.1 P1-300 (300 pairs)
- AI Contour Control II	600 block preview
- Automatic corner override	G62
- Chopping function	G81.1
- Cylindrical interpolation	G07.1
- Data server	
- Dynamic graphic display (This can't use with the EZ Guide-i)	
Machining profile drawing	
- Exponential interpolation	
- Interpolation type pitch error compensation	
- EZ Guide i (Doosan infracore Conversational Programming Solution) with 10.4" Color TFT	
- Tape format for FS15	
- Increment system 1/10	
- Figure copying	G72.1, G72.2
- Manual handle feed 2/3 unit	
- Handle interruption	
- High speed skip function	
- Involute interpolation	G02.2, G03.2
- Look ahead control (Include : AI Contour Control)	G08
- Machining time stamp function	
- No. of Registered programs	500 / 1000 ea
- Number of tool offsets	400 / 499 / 999 / 2000 ea
- Optional block skip addition	9 blocks
- Part program storage	1280 / 2560 m
- Playback function	
- Polar coordinate command	G15 / G16
- Polar coordinate interpolation	G12.1 / G13.1
- Programmable mirror image	G50.1 / G51.1
- Remote buffer	
- Scaling	G50, G51
- Single direction positioning	G60
- Stored stroke check 2 / 3	
- Tool load monitoring function (doosan)	
- Doosan tool management package I	
- Tool position offset	G45 - G48
- Tool length measurement	
- Position switch	
- High speed HRV3 function	
- High speed HRV4 function	

*) Pre discussion required

DCM Series

Five Face Double Column Machining Center



<http://www.doosaninfracore.com/machinetools>

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