

Paradigm Shift

The Revolutionary DLFn - Modular Machining
Has Never Been So Flexible and Fast.

2 module unit
Machine width : 900 mm



4 module unit
Machine width : 1,800 mm



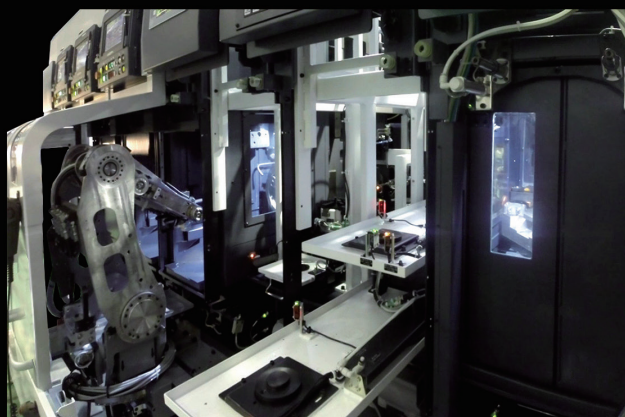
8 module unit
Machine width : 3,600 mm



PARADIGM SHIFT

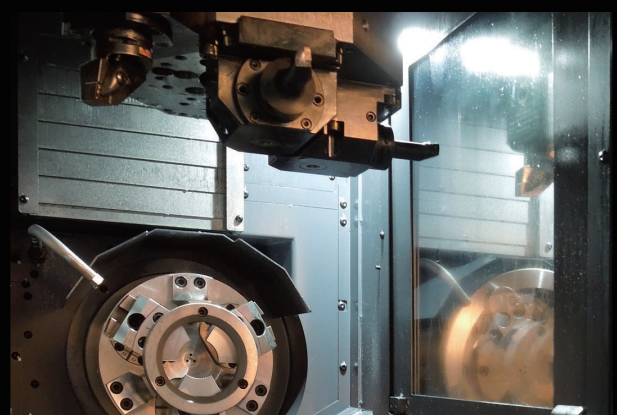
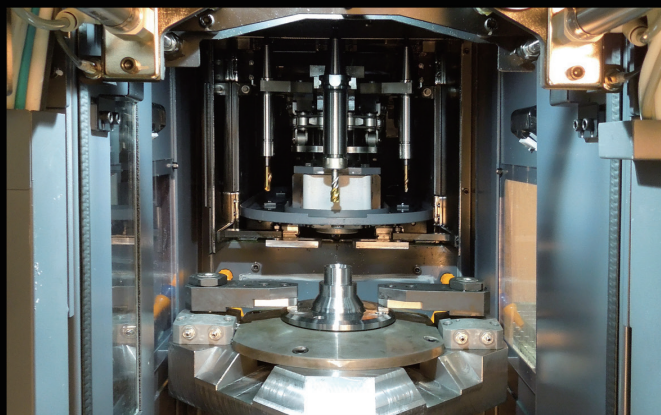


The Revolutionary DLFn - Modular Machining
Has Never Been So **Flexible** and **Fast**



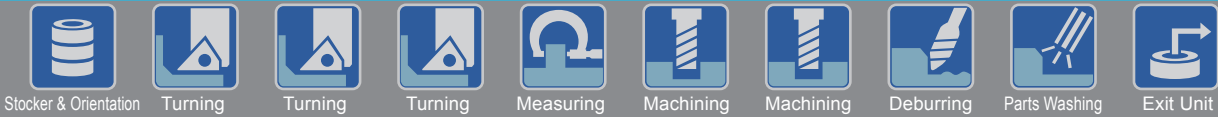
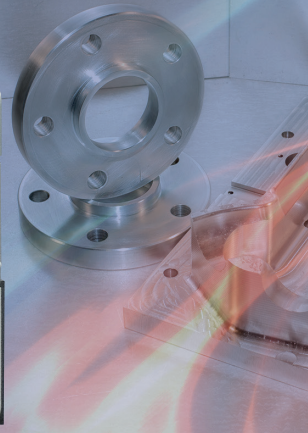
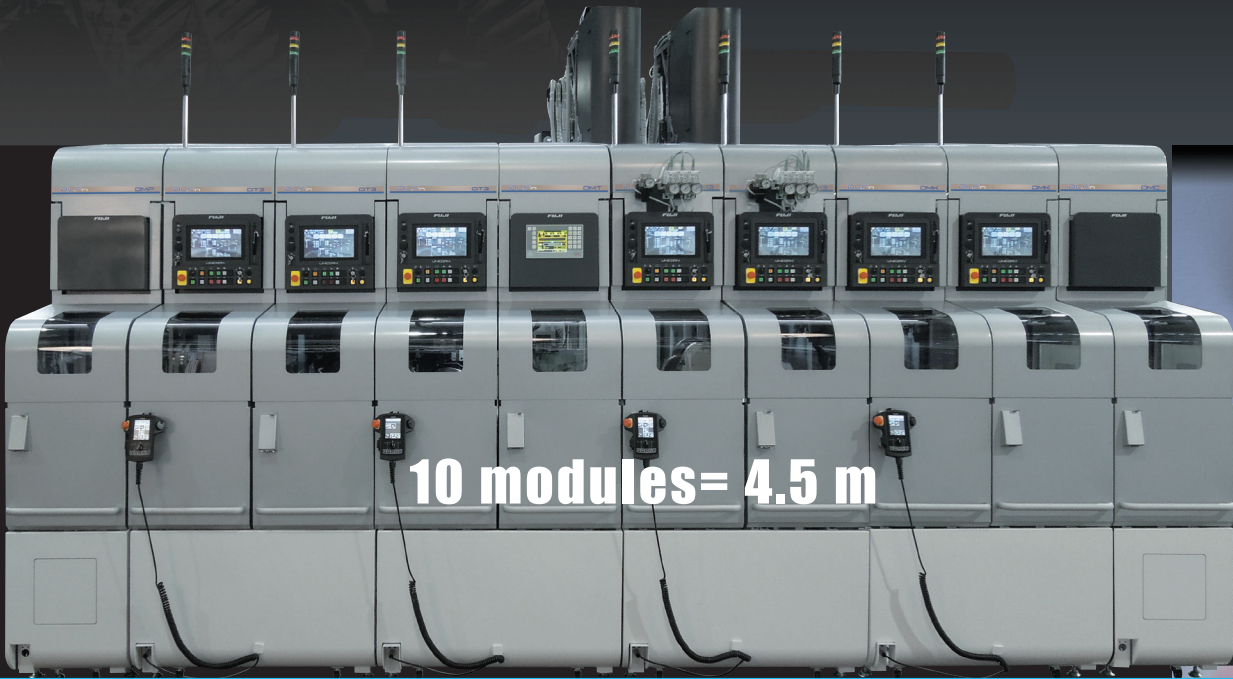


DLF_n
Modular production equipment



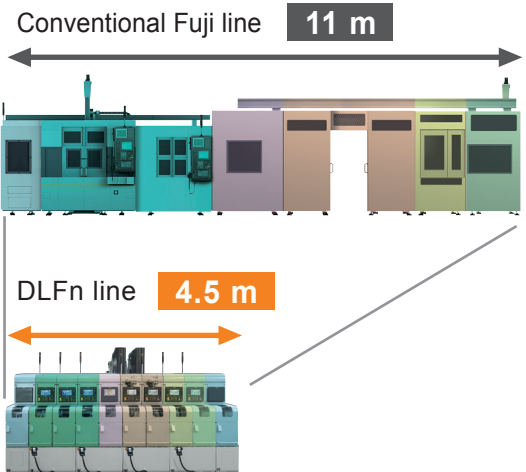
DLFn

Minimize Production Floor Space Enhance Flexibility and Efficiency



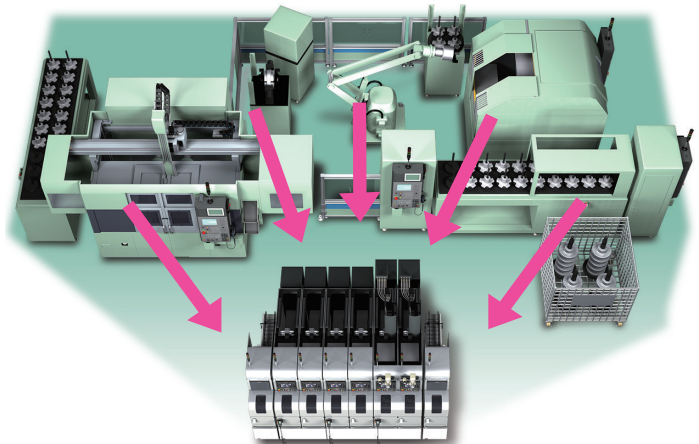
Entire line length reduced by 50%

Production is possible in less than half of the space required.



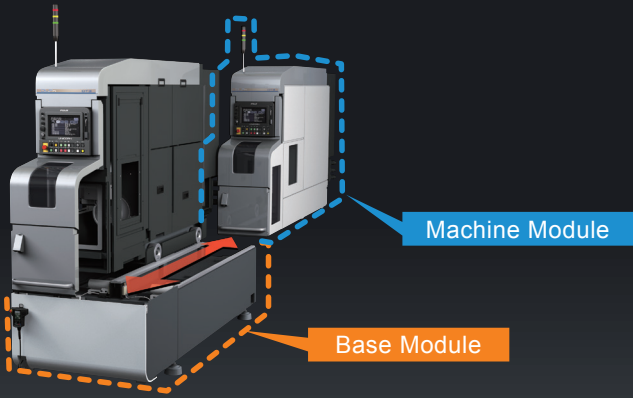
Improve productivity

Minimize production space with DLFn



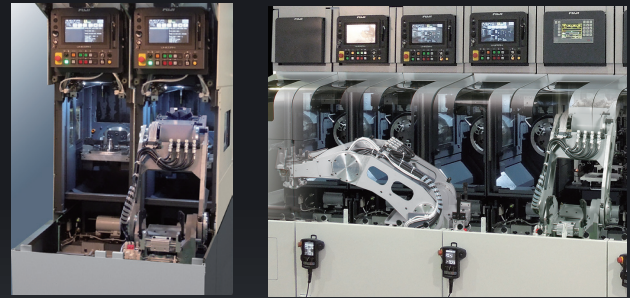
Module

Two modules can be set on one base. You have flexible processing on the standardized bases.

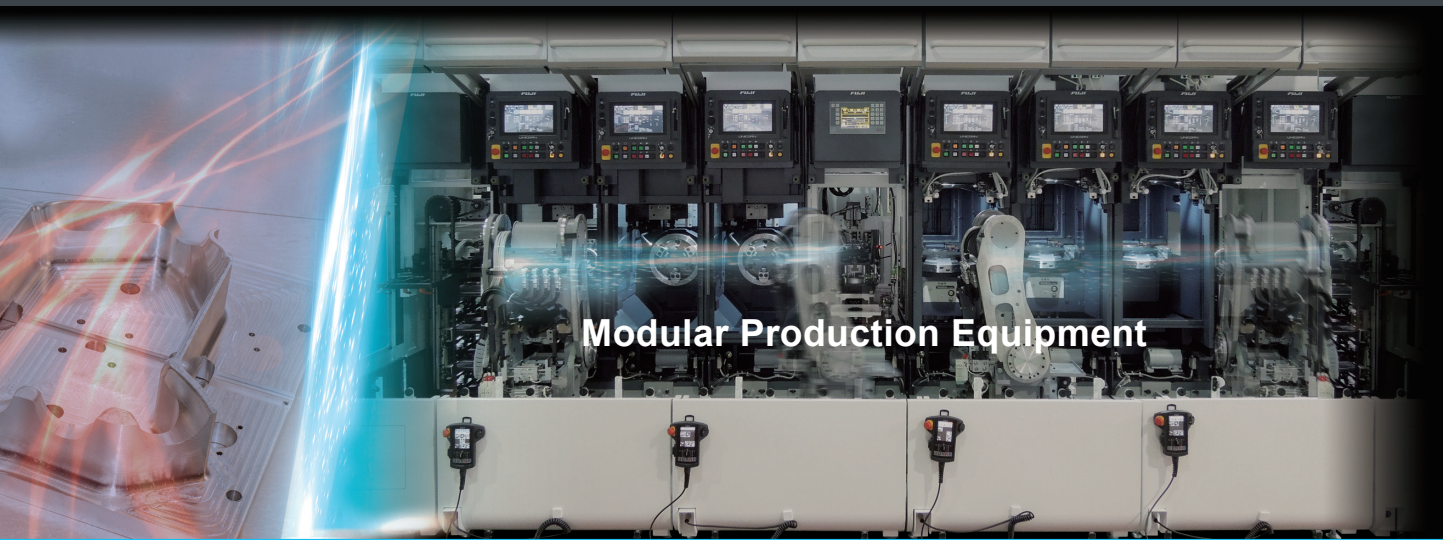


Automatic work conveyance

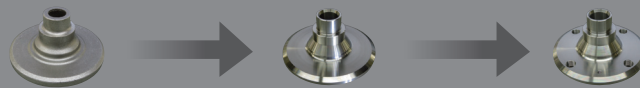
Integral Fuji Robots allow fully automatic line configuration. Work removal is performed in 5.8 seconds.



5 axis robot



Modular Production Equipment



Controller UNICORN

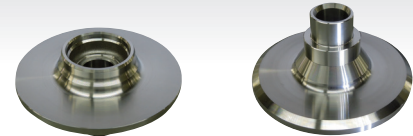
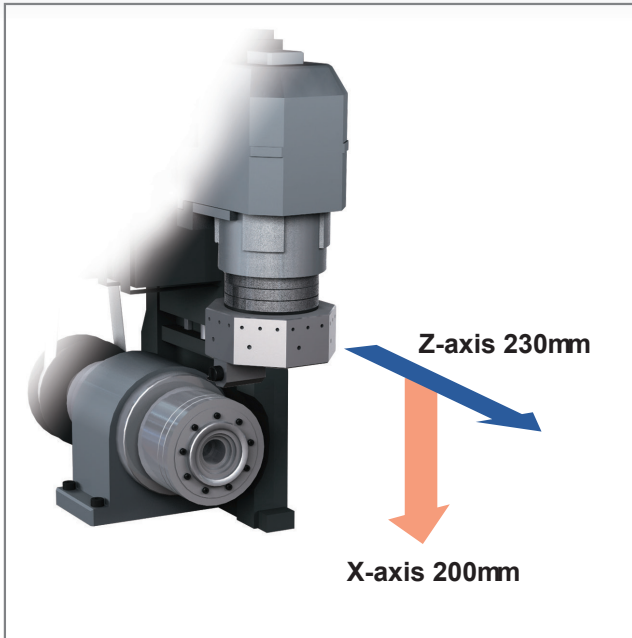
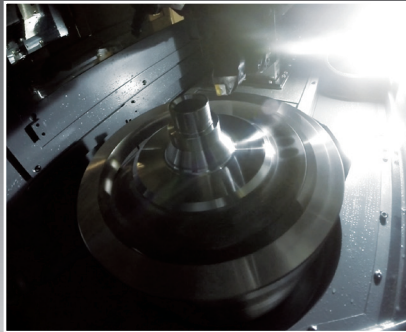
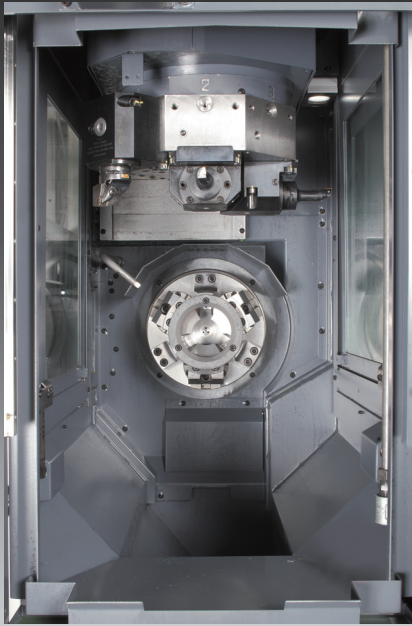
UNICORN the control monitor that responds to your touch.



Modules can be pulled forward

Individual line modules advance forward, allowing ease of changeover and maintenance.





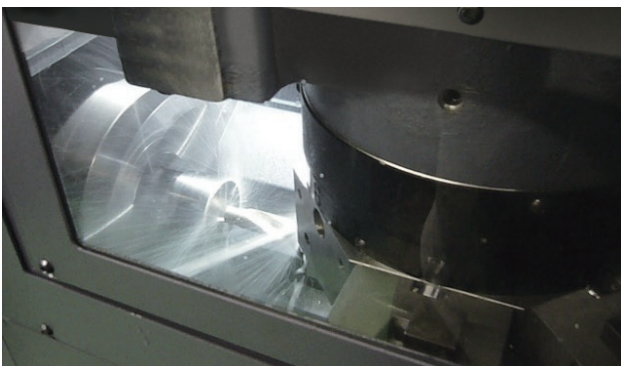
Lathe Module (DT3, 7.5/11kw) Cutting Capacity

Max.O.D. cutting stock **7.5 mm**

Material	Cutting speed	Feed speed
S45C	150 m/min	0.3 mm/rev

Max.Grooving width **11 mm**

Material	Cutting speed	Feed speed
S45C	100 m/min	0.1 mm/rev



Live Tool Specification

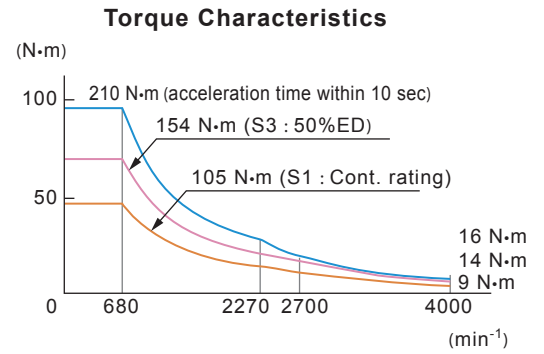
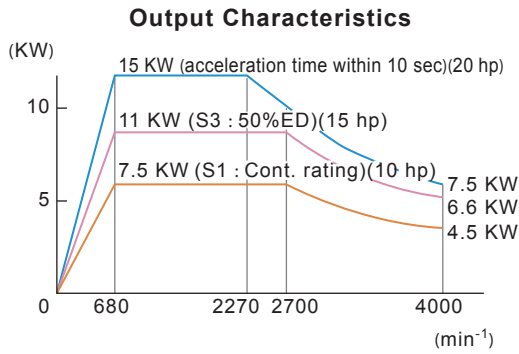
Drill Max. cutting dia

Material	Drill dia	Cutting speed	Feed speed
S45C	φ8	55 m/min	0.1 mm/rev

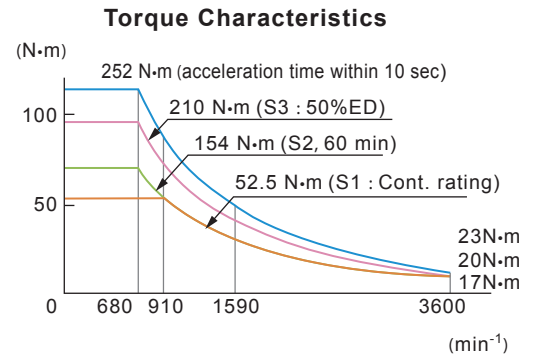
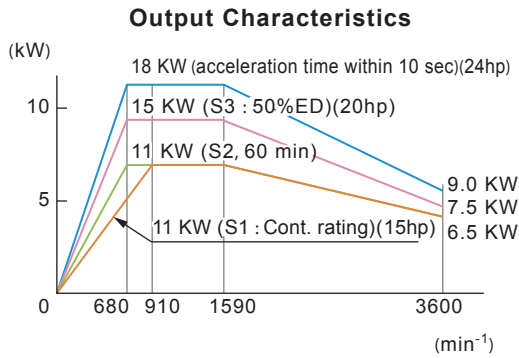
Tapping Max. cutting dia

Material	Cutting speed	Feed speed
S45C	M8 x P1.25	10 m/min 1.25 mm/rev

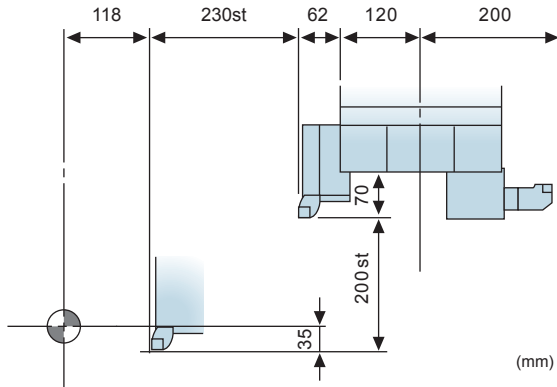
7.5 / 11kw



11 / 15kw
(North America)

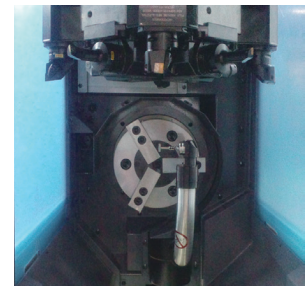


Work Envelope



Options

- Through Spindle Coolant
- Air Confirmation
- Tool Detector
- Work Pusher



Tool Detector

Module Specifications

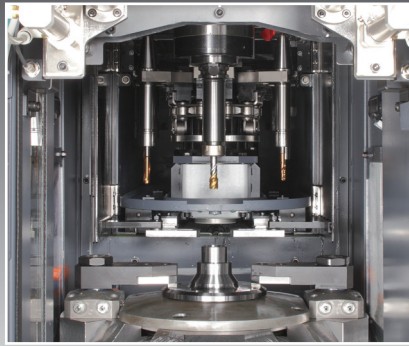
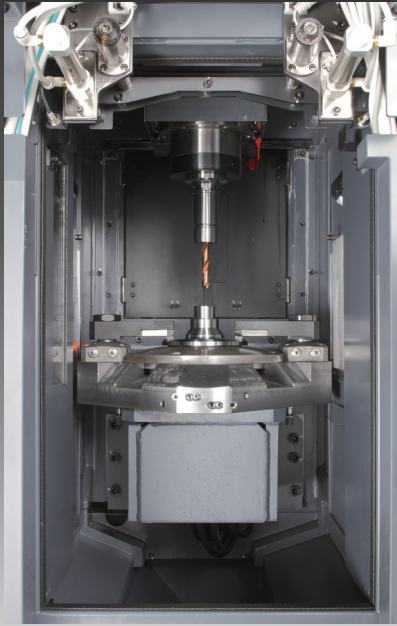
Type		DT2	DT3	DT4
Max. Part Size	mm [inch]	φ200 [φ7.87] with Robot		
Max. Swing	mm [inch]	φ310 [φ12.2]		
Spindle diameter	mm [inch]	φ80 [φ3.15]	φ100 [φ3.94]	φ120 [φ4.72]
Spindle Nose		A2-5	A2-6	A2-8
Spindle Bore	mm [inch]	φ47 [1.9]	φ56 [2.2]	φ67 [2.6]
Spindle Motor	KW [hp]	7.5 [10] / 11 [15]		
Spindle Speed	min ⁻¹	Max 4,300	Max 4,000	Max 3,000
Spindle Motor (option)	KW [hp]	11 [15] / 15 [20]*1		
Spindle Speed (option)	min ⁻¹	Max 3,600	Max 3,600	Max 3,000
Number of stations	tools	8		
Cutting Tool		Square Shank □25 Boring Bar φ32		
Cutting Tool (option)		Capto (Type-C4)		
Chuck Size	inch	6~8	8~10	8~12
Slide Stroke	mm [inch]	X-axis : 200 [7.87] Z-axis : 230 [9.06]		
Rapid Traverse	m / min	X-axis : 24 Z-axis : 24		
Feed Setup Unit	mm [inch]	X-axis : 0.001 Z-axis : 0.001		
Module Weight	kg [lb.]	2,000 [4,400]		

*1 North America



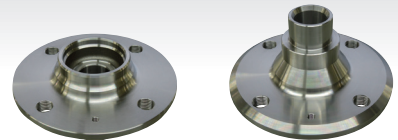
DM

Vertical Machining Center Module



Vertical Machining Center Module (DM3)

Cutting Capacity



BBT30



Drill Max. cutting dia

Material	Drill dia	Discharge volume of cutting chips
S50C	φ20	120 cm ³ /min

Tapping Max. cutting dia

Material	
S50C	M20 x P2.5

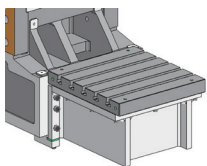
Endmill Max. cutting capacity

Material	Discharge volume of cutting chips
S50C	210 cm ³ /min

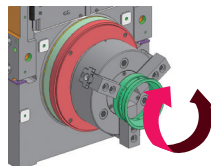
Face milling Max. cutting capacity

Material	Discharge volume of cutting chips
S50C	96 cm ³ /min

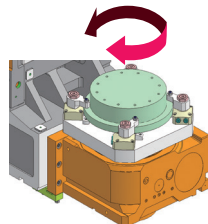
fixed type



B-axis type



C-axis type



Options

Rotary joint

B-axis:Max.8 ports (For fluid or air)

C-axis:Max.7 ports

(For fluid or air 7 ports,air 1 port)

Air Confirmation

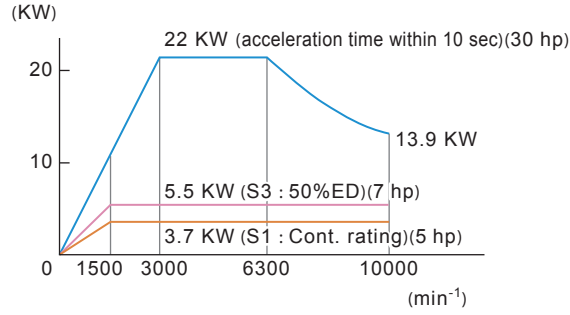
Part Probe for Spindle (Wireless)

Through Spindle Coolant

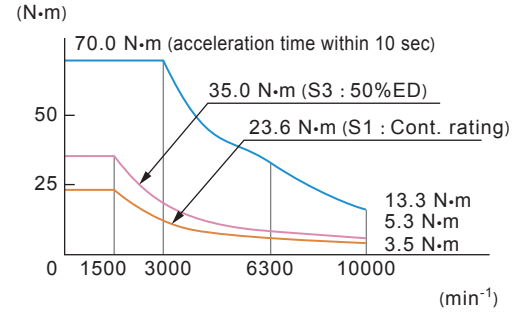
Item		DM3	
		B-axis type	C-axis type
Table Diameter	mm	φ270	φ250
Live Tool Speed	min ⁻¹	50	50
Index Time(90°)	sec	0.4	0.5

3.7 / 5.5 / 22kw

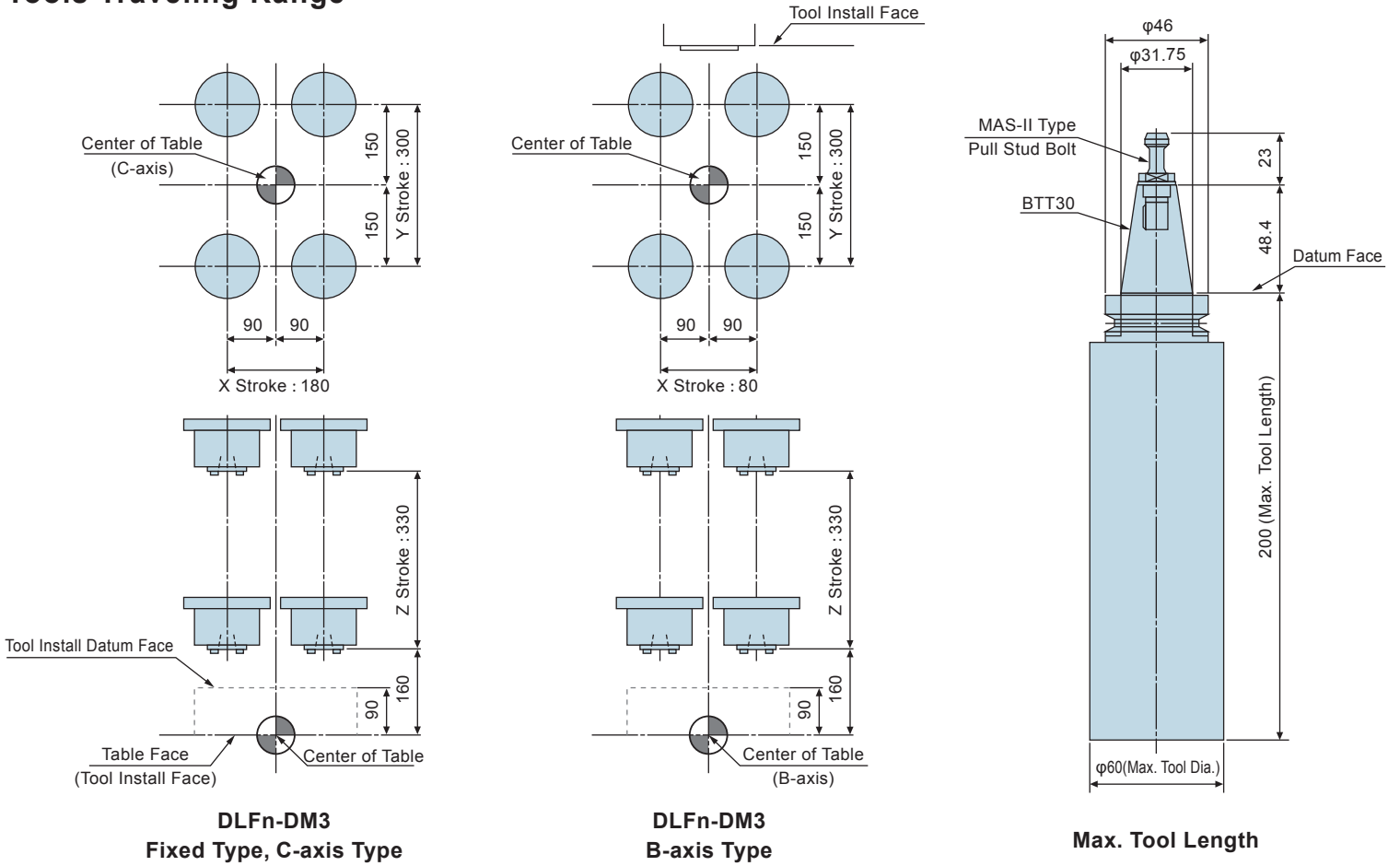
Output Characteristics



Torque Characteristics



Tools Traveling Range

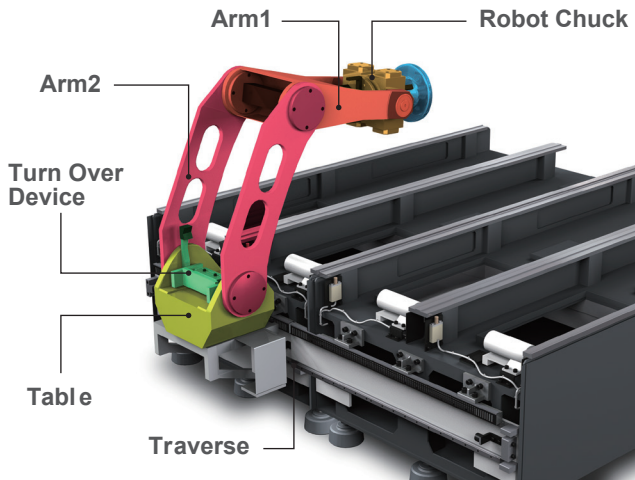


Module Specifications

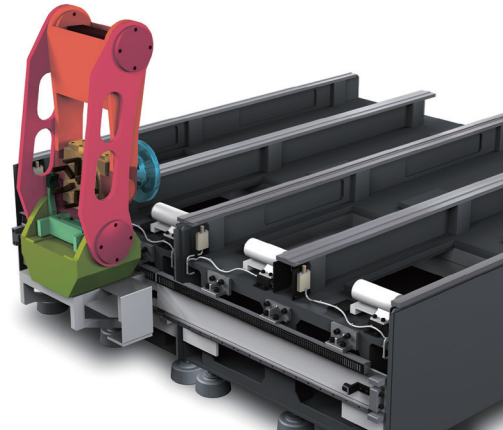
Item		DM3
Spindle Speed	min ⁻¹	Max.10000
Spindle Nose		BBT30
Spindle Diameter	mm [inch]	φ55
Spindle Motor	KW [hp]	3.7/5.5/22 (Cont./50%ED/acceleration time within 10 sec)
Construction		X, Y, Z-axis : roller guide
Stroke	mm [inch]	X-axis:180st Y-axis:300st Z-axis:330st
Rapid Traverse	m/min	X-axis : 25 Y-axis : 45 Z-axis : 45
Tool Storage	tools	16
Tool Length	mm [inch]	Max.200 [7.9]
Tool Diameter	mm	Max.φ60 [2.4]
Tool Weight	kg / tools	Max. 3/tools [Max. 3.2 kg/16 tools]
ATC (Cut to Cut)	sec	2.1
ATC (Tool to Tool)	sec	1.3
Module Weight	kg [lb.]	2,500 [5,500]

Transfer Device

Multiple Axis Root DLL3

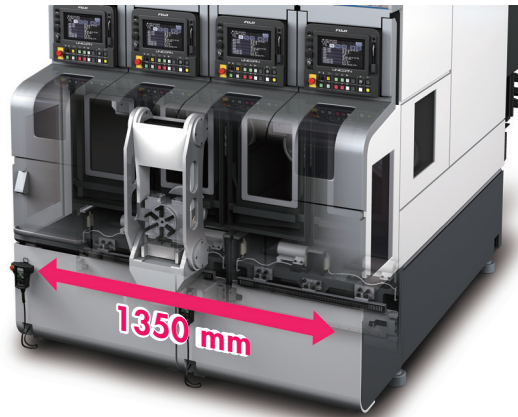


Robot Construction



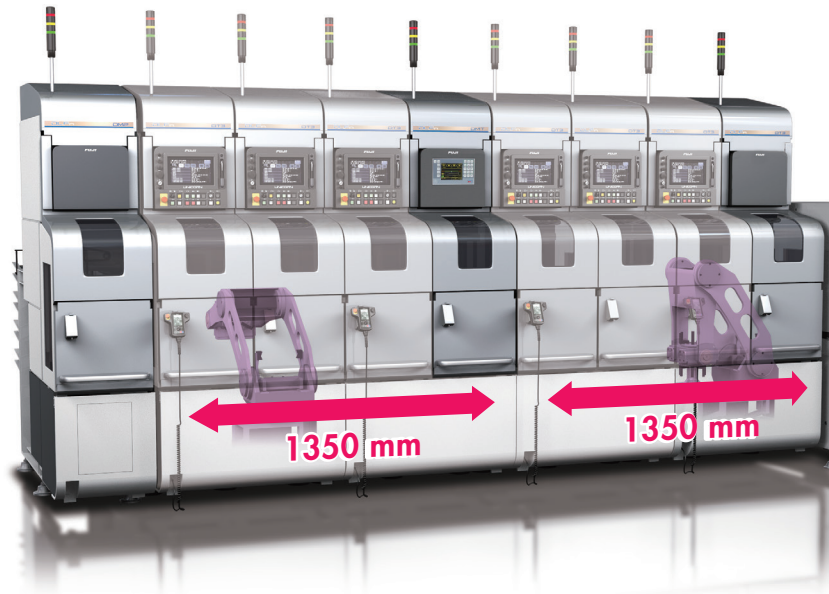
Arm at Home Position

The arm can be stored in its own body so that the loader can access up to four machine module spindles and the peripheral devices at the left and right of the machine, thereby, reducing required robot floor space. The loader has interchangeable hands which helps to reduce the load/unload cycle times. The turn-over unit is integrated into the robot body.



Robot can traverse between two set of base modules.

Robot Traverse 1350mm = 1.5yard



Peripheral Device

Peripheral Device Module (Mounted on Base Module)



DMP

Inlet 4 lines of Roller Conveyor

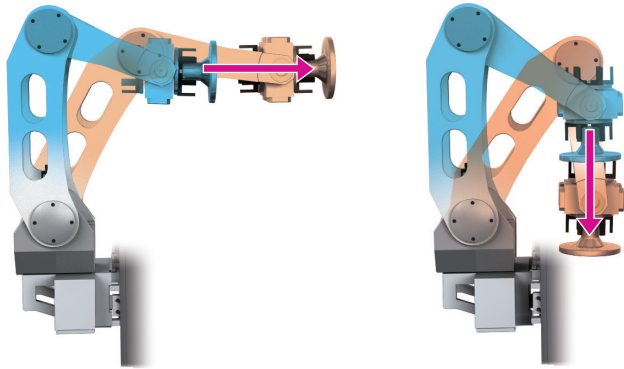


DMP

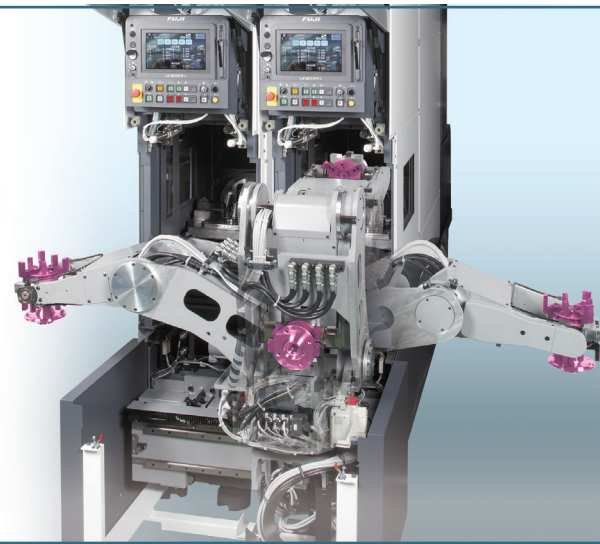
Work Stocker



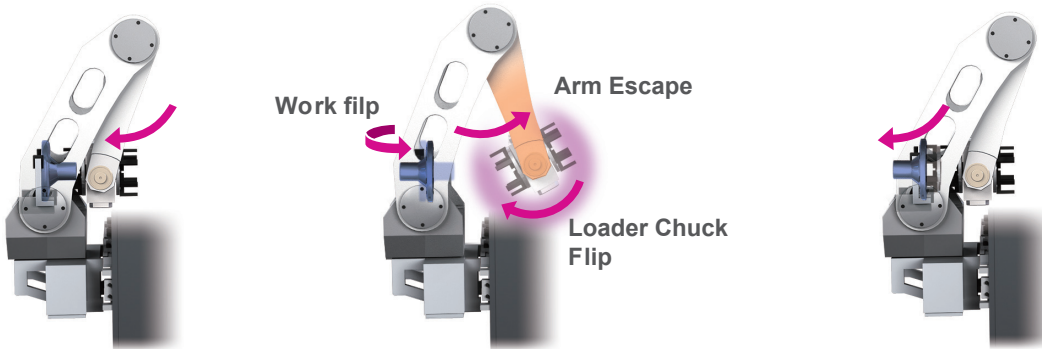
Linear Motion



The robot moves in a linear direction during loading and unloading using synchronization of the loader chuck axis, arm 1 and arm 2.



Turn Over Device

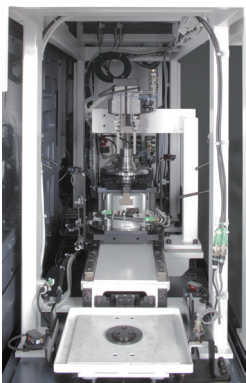


Pass the workpiece into turn-over unit

Remove the workpiece from turn-over unit

The turn-over unit is integrated into the robot body which enables workpiece turn-over in a small space.

Robot Specifications		
Loader Chuck	°/sec	600
Arm1 Rotation Speed	°/sec	270
Arm2 Rotation Speed	°/sec	180
Table Rotation Speed	°/sec	180
Max. Traverse Speed	m / min	Max. 100
Max. Front/Back Speed	m / min	Max. 70
Max. Up/Down Speed	m / min	Max. 70
Carrying Capacity	mm	φ200 x100
Carrying Capacity	kg [lb.]	5 + 5 [11 + 11]
Min.Tact Time	sec	20.9
Min. Loading Time	sec	5.8



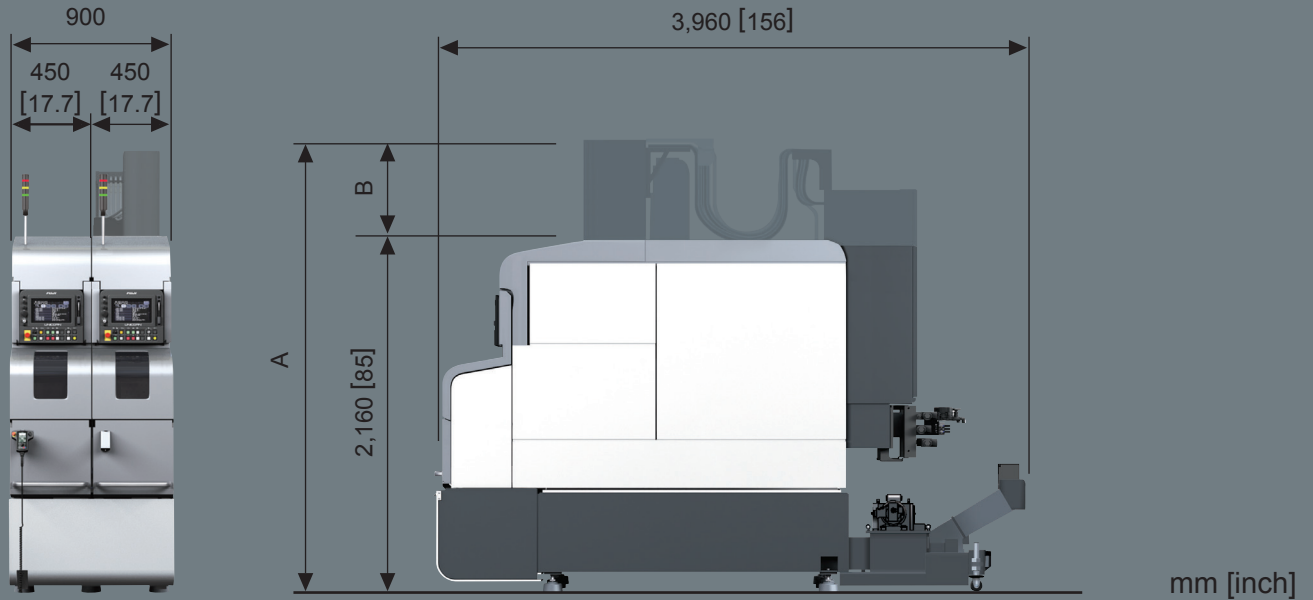
Options

DMC
Conveyor

DMK
Work Table Between Module
Quality Check Table

FUJI Work Holding Chucks





		Lathe Module	Vertical Machining Center Module
A	mm [inch]	2,160 [85]	2,650 [104]
B	mm [inch]	0	490 [19.3]
Module Weight	kg [lb.]	2,000 [4,400]	2,500 [5,500]

Base Module	Module Width		450 [17.72] x 2 Modules or 900 [35.43] x 1 Module
	Pull-Out Distance	mm [inch]	700 [27.56] Front
	Chip Conveyor		Screw Type
	Base Weight	kg [lb.]	500[1100]
Transfer Device	Robot Type		Multiple Axis Root DLL3
	Carrying Capacity	kg [lb.]	5 [11] + 5 [11]
	Construction		4 Axis Swing Arm + 1 Traverse Axis
	Turn Over Device		OD Clamp + Rotation (Built-in robot)