FUJI
innovative spirit

PARADIGM SHIFT

2 modules unit
Machine width : 900 mm

4 modules unit
Machine width : 1,800 mm

8 modules unit
Machine width : 3,600 mm

DLFn

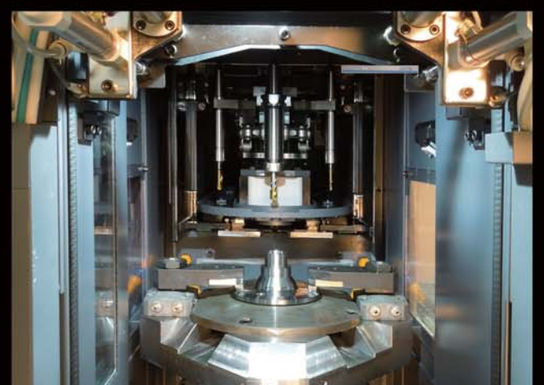
Modular production equipment

PARADIGM SHIFT

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

DLFn
Modular production equipment



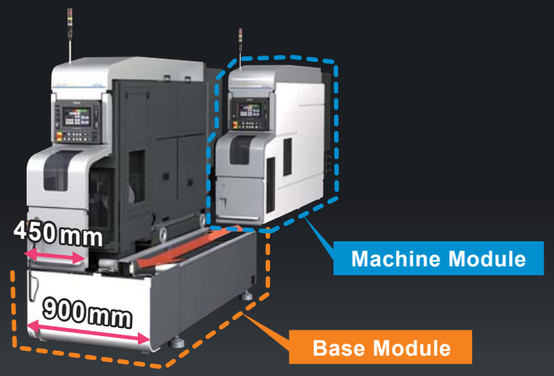

DLFn

Modular production equipment

MInimize Production Floor Space
Enhance Flexibility and Efficiency

Module

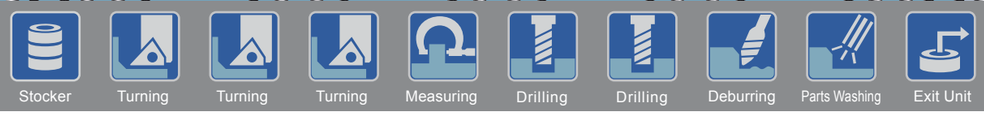
Two modules can be set on one base.
You have flexible processing on the standardized bases.

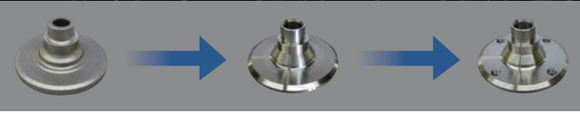


Automatic work conveyance

Internal work handling units allow fully automatic line configuration.
Work removal is performed in 5.8 seconds reducing.

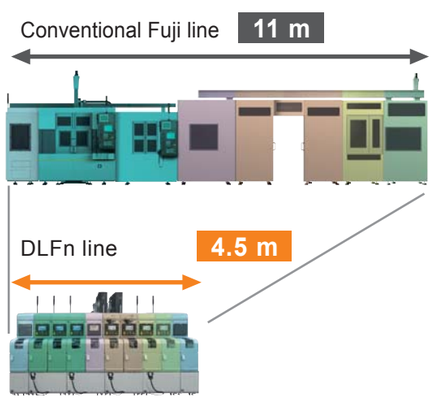
5 axes robot





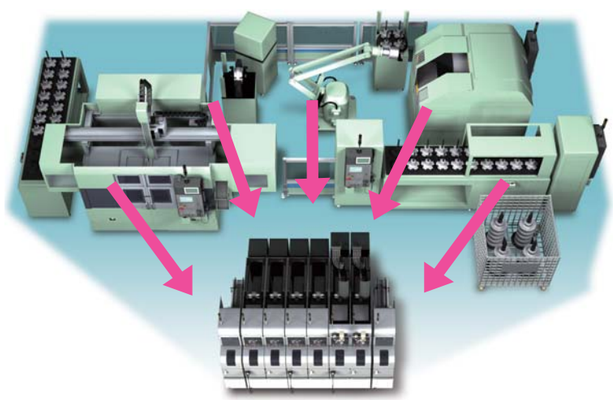
Entire line length reduced by 50%

Production is possible in less than half of the space required by current Fuji mode.



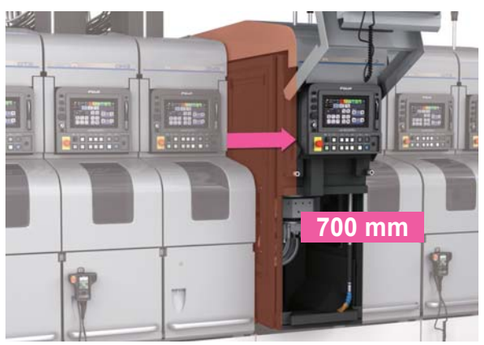
Improve productivity

Save the production space with DLFn



Modules can be pulled forward

Individual modules are capable of being pulled forward 700 mm allowing ease of changeover and maintenance.

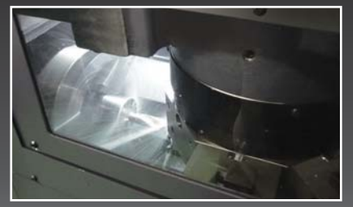


Controller UNICORN

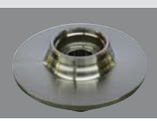
This is Fuji's original control unit. Machines, conveyance units, and peripherals are controlled by UNICORN.

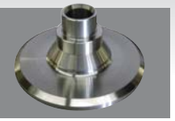
Each module is uniformly operated by UNICORN. Easy to operate and use.

DT Lathe Module



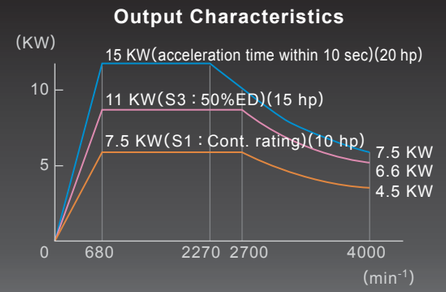
Rigid Compact Machine – The New Norm

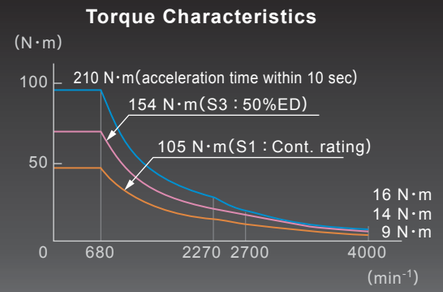




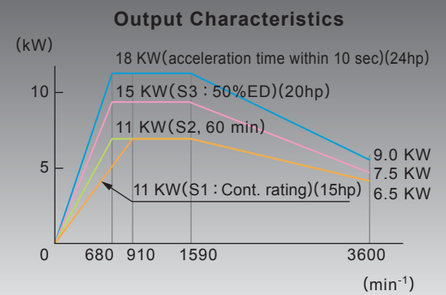
Spindle Output Characteristics

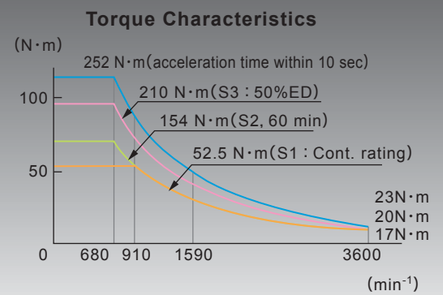
7.5 / 11kw



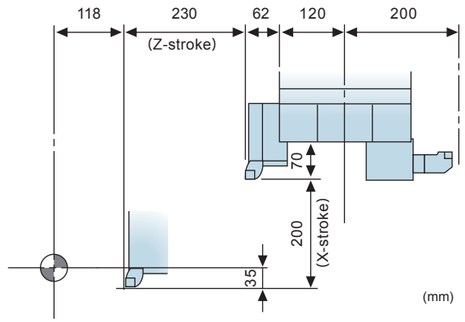


11 / 15kw
(Global Spec)





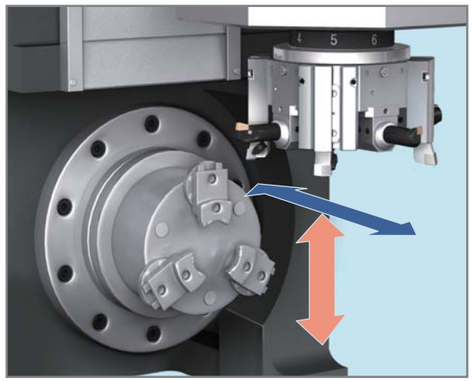
Tools Traveling Range

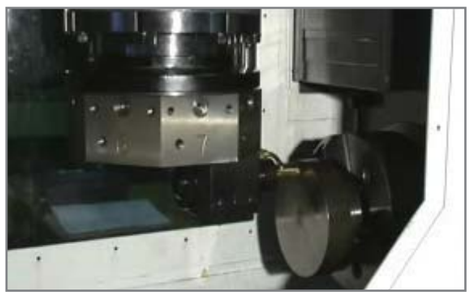


Option

Through Spindle Coolant
Air Confirmation
Tool Detector
Work Pusher

Tool Detector





Cutting Capacity（DT3, 7.5/11kw)

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(Live Tool Turret 0.75kw)

Drill Max. cutting dia **ϕ8**

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

Tapping Max. cutting dia **M8**

Material	Cutting speed	Feed speed
S45C	10 m/min	1.25 mm/rev

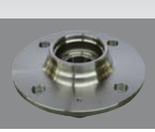
The above-mentioned data is actual values, but not a performance guarantee.

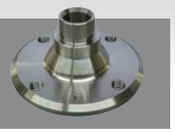
Module Specifications

Item		DT2	DT3	DT4
Max. Part Size	mm [inch]	ϕ200 [ϕ7.87]		
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 (Global Spec)	KW [hp]		11 [15] / 15 [20]	
Spindle Speed (Global Spec)	min-1		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	X-axis：0.001 Z-axis：0.001		
Module Weight	kg [lb.]	2,000 [4,400]		

Vertical Machining Center Module

Ultra-compact machining center
with Higher rigidity than standard BT-30.





BBT30

Cutting Capacity（DM3）

Drill Max. cutting dia **ϕ20**

Material	Cutting speed	Feed speed	Discharge volume of cutting chips
S50C	2000 rpm	0.30 mm/rev	120 cm³/min

Tapping Max. cutting dia **M20 x P2.5**

Material	Cutting speed	Feed speed
S50C	160 rpm	2.5 mm/rev

Endmill Max. cutting capacity **210 cm³/min**

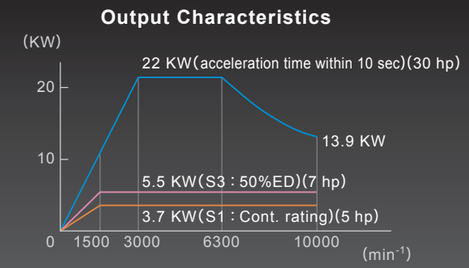
Material	Tool Diameter	Cutting speed	Feed speed	Cutting stock
S50C	ϕ20	3000 rpm	0.05 mm/tooth	10 mm

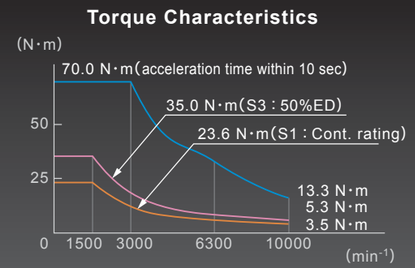
Face milling Max. cutting capacity **96 cm³/min**

Material	Tool Diameter	Cutting speed	Feed speed	Cutting stock
S50C	ϕ50	1500 rpm	0.11 mm/tooth	3 mm

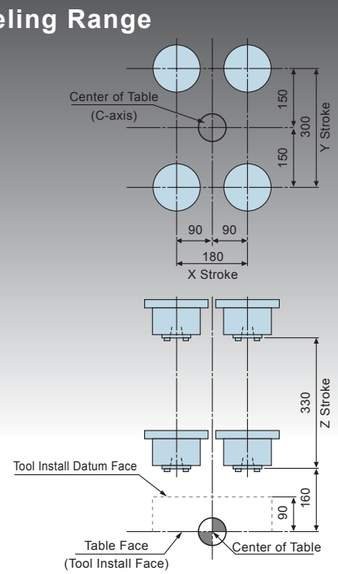
Spindle Output Characteristics

3.7 / 5.5 / 22kw

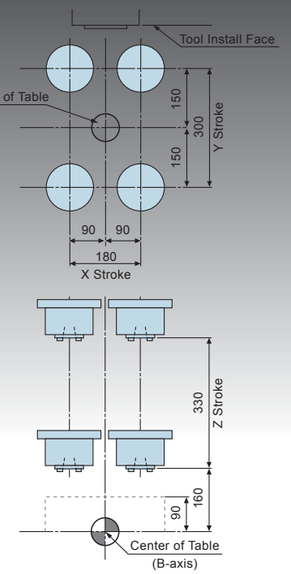




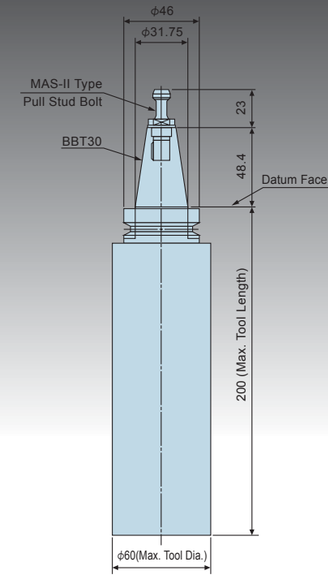
Tools Traveling Range



Fixed Type, C-axis Type



B-axis Type



Max. Tool Length

Table Specifications

fixed type

B-axis type

C-axis type

Item		DM3B	DM3C
		B-axis type	C-axis type
Table Diameter	mm[inch]	ϕ270[10.63]	ϕ250[9.84]
Live Tool Speed	min-1	50	50
Index Time(90°)	sec	0.4	0.5

Option

Rotary joint
- B-axis:Max.8ports (For oil or air)
- C-axis:Max.7ports
- (For oil or air 7ports,air 1port)

Air Confirmation
Part Probe for Spindle (Wireless)
Through Spindle Coolant

Module Specifications

Item		DM3
Spindle Speed	min-1	Max.10000
Spindle Nose		BBT30
Spindle Diameter	mm [inch]	ϕ55 [2.17]
Spindle Motor	KW [hp]	3.7/5.5/22 [5/7/30] (Cont./50%ED/acceleration time within 10 sec)
Construction		X, Y, Z-axis roller guide
Stroke	mm [inch]	X-axis：180 [7.09] Y-axis：300 [11.81] Z-axis：330[13.0]
Rapid Traverse	m/min	X-axis：25 Y-axis：36 Z-axis：45
Tool Storage	tools	16
Tool Length	mm [inch]	Max. 200 [7.87]
Tool Diameter	mm [inch]	Max. ϕ60 [2.4]
Tool Weight	kg / tools	Max. 3 [Max. 32 / 16]
ATC (Tool to Tool)	sec	1.8
Module Weight	kg [lb.]	2,500 [5,500]

Unit Controller

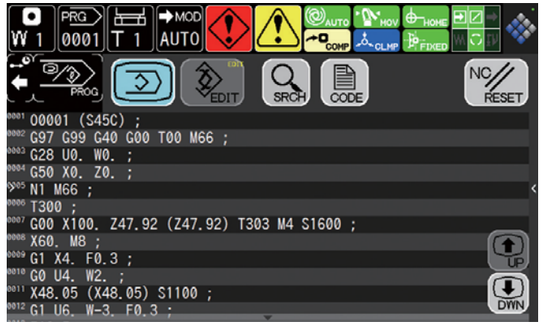
UNICORN

Fuji's own Unicorn controller easily operates both robot and NC functions.

Global Design

Globally accepted, intuitive touch screen panel incorporates an Icon based operational system.

Program

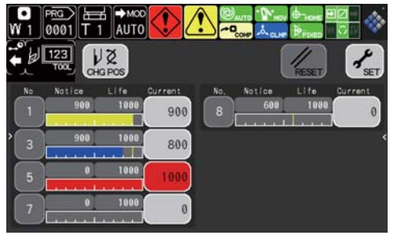


NC and robot controller are common.

Tool Management

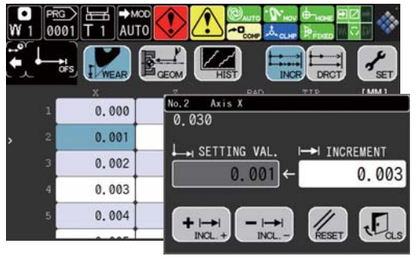
UNICORN

Tool Counter



Only utilized tools will be displayed.
Monitor tool life and reset counters on a common screen.
Monitor tool life status via displayed bar graphs.
Verify tool change procedure on the same screen.
Prediction before reaching tool life can be set.

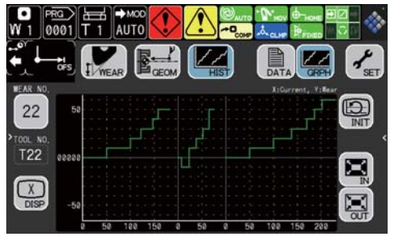
Offset Screen



Known Offset values can be preset.
Adding offset is possible with easy operation.

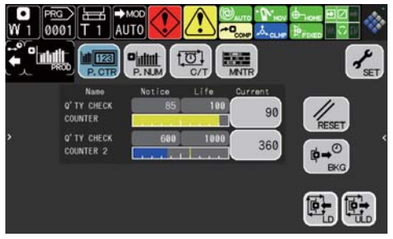
Quality Control Support

Offset History



Offset history is displayed in graph form.
Tool wear status is displayed along with history on the same screen.
Up to 10 wear correction numbers can be registered.
The history of up to 200 offsets can be displayed.

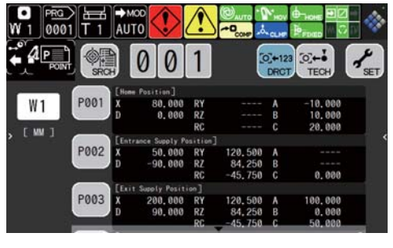
Quality Check Counter



Set up to 8 types of counters.
Maximum number of digits per counter is 8.
The count-up timing is set using ladder circuits.

Maintenance Function

Robot Point



Directly enter robot motion points or teach the robot's coordinates.
Create/edit a robot program per NC Program by work select number.

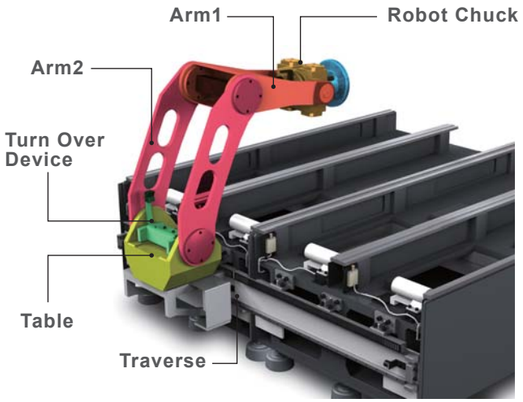
Alarm Message

During fault occurrence, the Alarm screen automatically appears.
On the Alarm screen, you can check detailed descriptions of how to find and correct the fault.
After the fault is cleared, you can return to the previous screen with a single touch.
Up to 500 items are recorded in the alarm history.

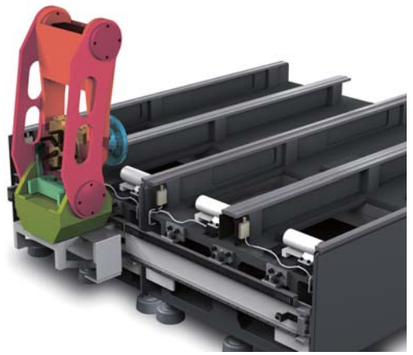
Transfer Device

DLL3 Multiple Axes Robot

Multiple Axes Robot DLL3

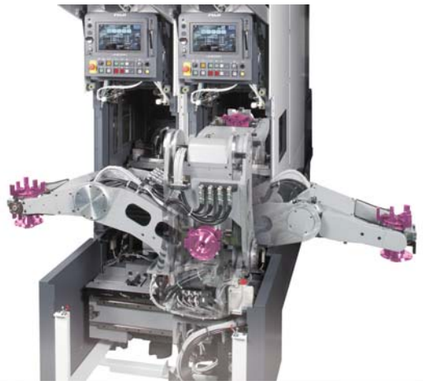


Robot Construction

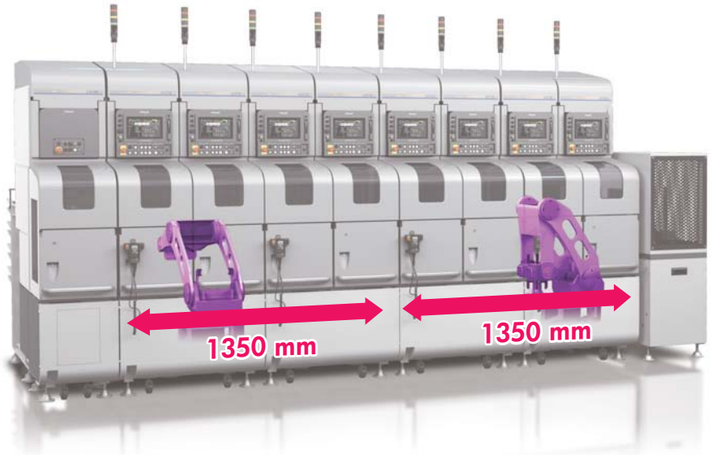


Arm at Home Position

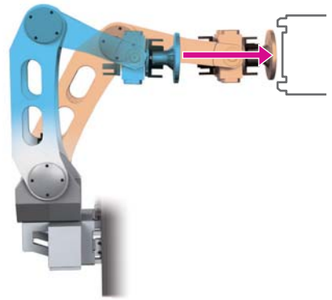
Part transfer between modules can be conducted while saving space.
Load / Unload robot chuck.
Workpiece load /unload 5.8 seconds.
Workpiece flip station is built into the robot's main body, saving valuable space.

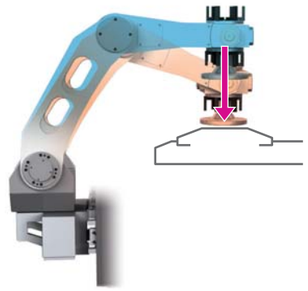


One robot supports two bases.



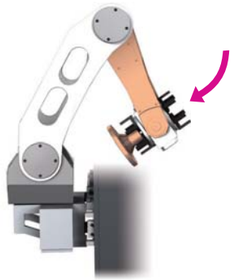
Linear Motion



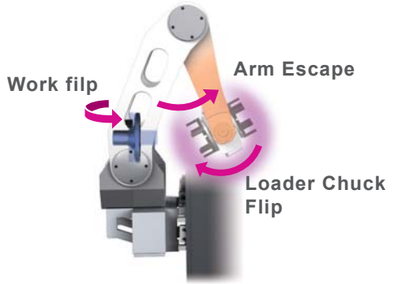


Simultaneous multi-axes robot movement.

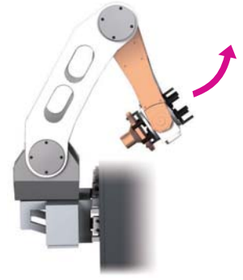
Turn Over Device



Pass the workpiece into turn-over unit



180 degree rotation for turn-over unit



Remove the workpiece from turn-over unit

Robot Specifications

Item		DLL3
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[inch]	ϕ200 [7.87] × 100 [3.94]
Carrying Capacity	kg [lb.]	5 + 5 [11 + 11]
Min.Tact Time	sec	36
Min. Loading Time	sec	9.6

Peripheral Device

DMP
Inlet 4 lines of Roller Conveyor

DMP
Work Stocker

DMT
Auto Gauge

Option

DMC
Conveyor

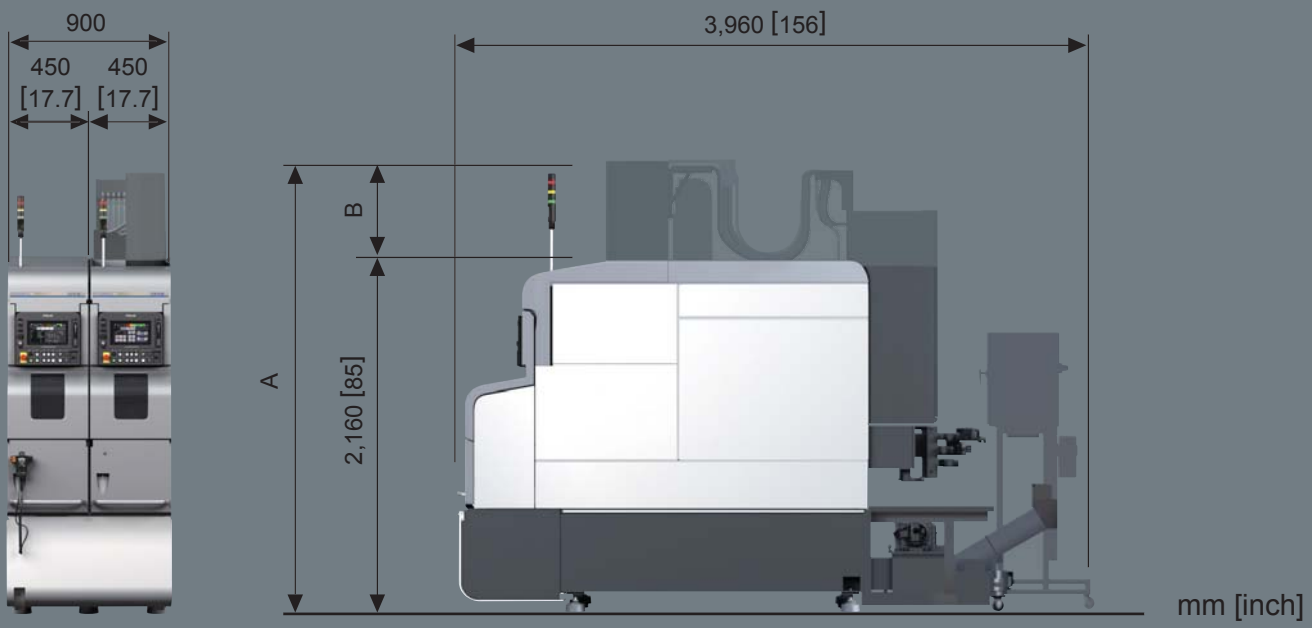
DMK
Work Table Between Module Quality Check Table

Chuck

FUJI offers its own designed/fabricated chucks as standard. Fuji, with vast work holding experience will also design and build special chucks specific to your application.

Machine Specifications

DLFn



		Lathe Module	Vertical Machining Center Module
A	mm [inch]	2,160 [85]	2,790 [110]
B	mm [inch]	0	630 [24.8]
Module Weight	Kg [lb.]	2,000 [4,400]	2,500 [5,500]

Base Module	Module		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.]	1,000 [2,200]
Transfer Device	Robot Type		Multiple Axis Robot 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)

FUJI innovative spirit

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URL：http://www.fuji.co.jp

- The mentioned data on this catalog is actual value, but not a performance guarantee.
- Specifications are subject to change without notice.
- The photos include options.

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