HIGH-SPEED, HIGH-PRODUCTIVITY TAPPING CENTER

T

4000 · **4000**HP/HS/L/LHS

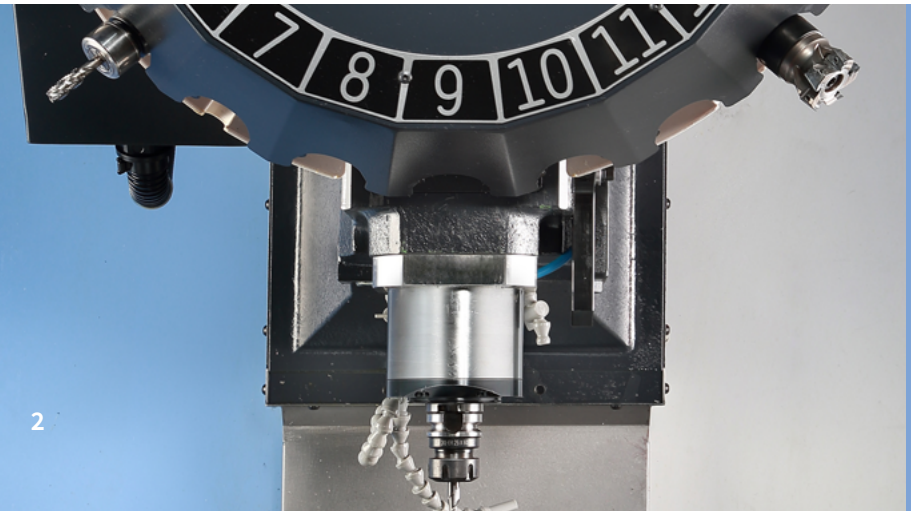
DN SOLUTIONS

T SERIES

DN Solutions's T series high-speed tapping centers deliver excellent cutting performance and help customers significantly improve their productivity. T series machines have good sized working envelopes, fast rapid rates on their X-,Y- and Z-axes and, depending on the model, different spindle options - all designed to meet customers' needs and requirements. The machines are reliable and can take light to heavy duty cutting their stride. For larger parts the T4000L, with 700mm X-axis stroke is available.

T4000

T4000HS



From the T 4000HP (high-productivity) model with its ultra-fast rapids, through to the T 4000HS (high-speed) model with its 24000 r/min spindle capable of reliable performance over extended periods … there is a T Series machine that meets your drilling and tapping needs perfectly.

T4000L

HIGH RELIABILITY FAST PROCESSING

The servo-driven T series machines, equipped with 21 tools and servo -driven ATC as standard, deliver improved process reliability and, due to spindle length optimization, improved acceleration and deceleration too.

HIGH-SPEED, HIGH-PRODUCTIVITY TAPPING CENTER

The T series machine tool line up comprises high-speed and high-productivity models with different spindle options.
Additional process security and guaranteed precision is available via a smart technology spindle thermal compensation system provided as standard.

ENHANCED STABILITY AND USER CONVENIENCE

User convenience has been improved by reducing the height of the machine and the worktable and by optimizing the center of gravity.

BASIC STRUCTURE

DN Solutions' Compact Machining Centers with a stable structure for high productivity and excellent precision.

High-speed and High-productivity tapping centres

The new tapping centres deliver best-in-class productivity by providing superior machining capabilities, higher feed rates, and faster tool change times. The machines have a wide appeal especially for component manufacturers serving the Automotive and IT industry segments.

Machine line up

	Standard	High productivity	High speed
X axis 500 mm 19.7 inch	 T 4000 12000/18000 r/min	 T 4000HP 12000 r/min	 T 4000HS 24000 r/min
X axis 700 mm 27.6 inch	 T 4000L 12000/18000 r/min		 T 4000LHS 24000 r/min
Acc./Deceleration	0.8/0.8/1.1g	2.0/1.3/2.2g	0.8/0.8/1.0g
Tool to Tool	1.6sec	1.5sec	1.6sec

Travel distance (X x Y x Z axis)

T 4000/HP/HS

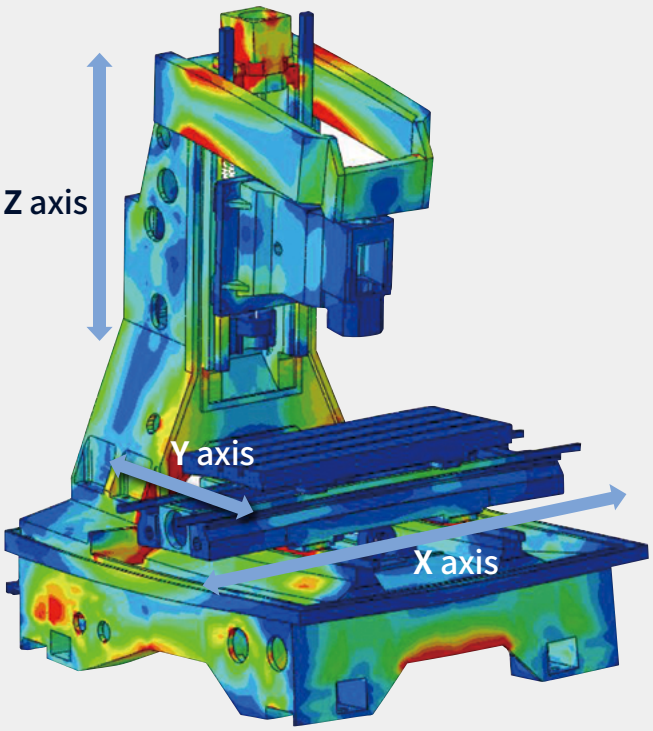
520 x 400 x 350 mm

20.5 x 15.7 x 13.8 inch

T 4000L/LHS

700 x 400 x 350 mm

27.6 x 15.7 x 13.8 inch



MACHINING AREA

Increased table size and maximum load capacity improve flexibility and broaden the machines' appeal.

Table size (A x B)

T 4000/HP/HS
650 x 400 mm
25.6 x 15.7 inch

T 4000L
850 x 400 mm
33.5 x 15.7 inch

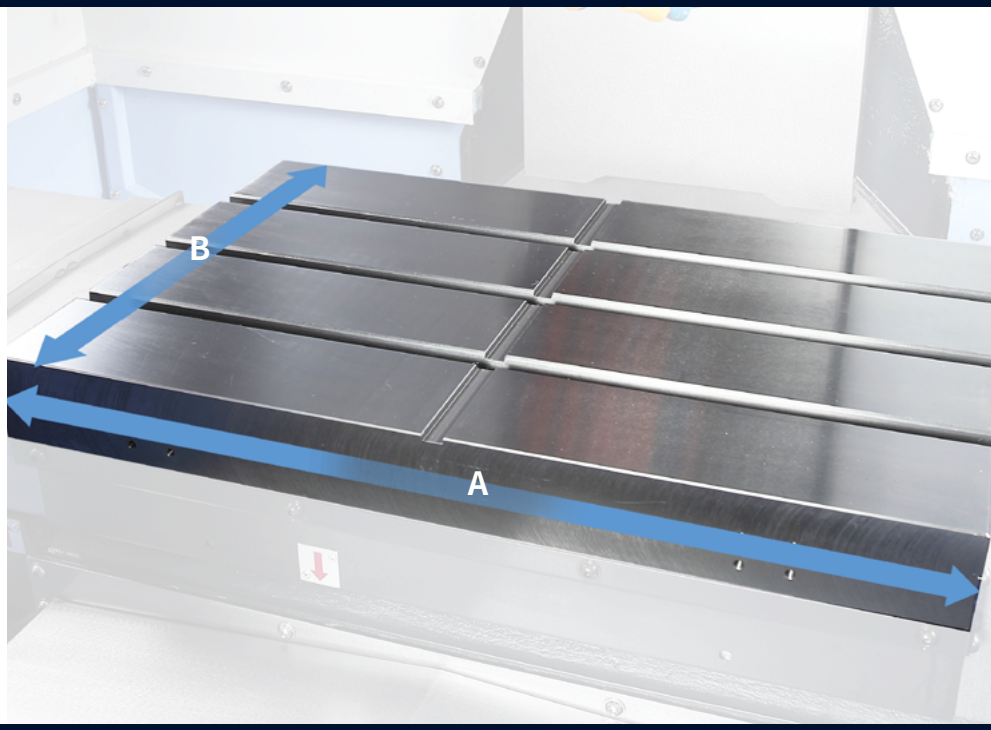
Max weight on table

T 4000/L/HP/LHS
300 kg 661.4 lb

T 4000HS/LHS
200 kg 440.9 lb

FEED AXIS

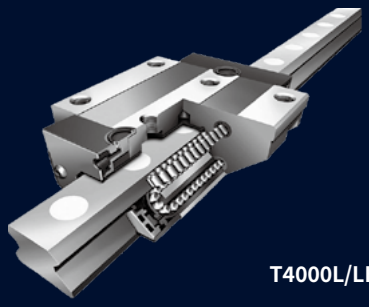
High productivity is achieved by the machines' increased acceleration/deceleration rates, and the integration of roller-type LM guides, improve rigidity leading to increased accuracies.



Rapid traverse rate (X/Y/Z axis)

T 4000HS/LHS
48/48/48 m/min
1889.8 / 1889.8 / 1889.8 ipm

T 4000/L
56/56/56 m/min
2204.7 / 2204.7 / 2204.7 ipm


T4000L/LHS


T4000/HP/HS

T 4000HP

High-Productivity

Axis acceleration/deceleration time is minimized by applying an Synchronous motor.

Rapid traverse rate (X/Y/Z axis)

50/50/56 m/min
1968.5 / 1968.5 / 2204.7 ipm

SPINDLE

T series machines are equipped with spindle technology that delivers increased productivity, improved reliability and rapid acceleration/deceleration rates.

T 4000HP

High-precision spindle

The spindle length has been minimized to reduce the time required for acceleration/deceleration times to be realized and to minimize idle time resulting, not only in greater productivity, but also in reduced vibration and noise generation.

High-productivity spindle

A synchronous motor integrated with the spindle enables fast acceleration and deceleration rates to be achieved and non-cutting time reduced.

Max spindle speed

12000 r/min

T 4000HS/LHS

High-Precision, High-Speed spindle

The high speed, high precision spindle has achieved a proven level of durability during many applied survival test procedures. The oil/air lubrication method is applied to the spindle bearings which satisfies the requirements for high speed machining over long periods.

Max spindle speed

24000 r/min

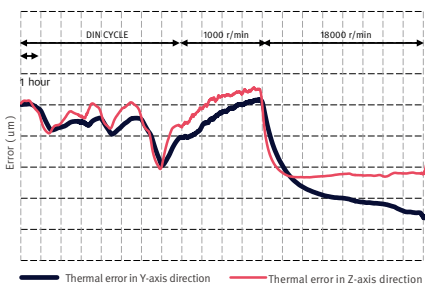
T 4000/L

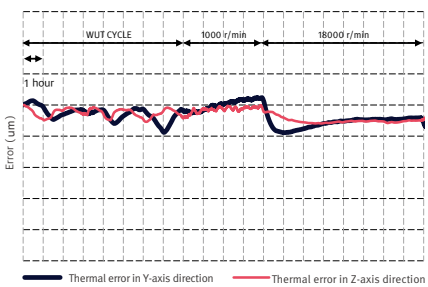
12000{18000} r/min

Spindle Thermal Error Compensation System(Standard)

Thermal displacement is calculated in real time by temperature sensors and automatically compensated for to ensure accuracy.

T 4000HP : 12K Sensor type thermal error compensation system
T4000/L : 12K Sensorless type
T 4000/L : 18K Sensor type thermal error compensation system
T4000HS : 24K Sensor type thermal error compensation system





Before thermal error compensation → **After thermal error compensation***

** T 4000, 18000 r/min, tested at the factory.*

MAGAZINE

Machine reliability has been optimized with the new servo tool magazine, while productivity has been enhanced by reducing the tool change time.

Tool Magazine

The servo-driven control system used in the magazine has passed the 2 Million cycle test mark, proving its excellent reliability and durability.

Tool storage capacity

T 4000/L/HP/HS

21 ea

Tool to Tool

T 4000/HS/L

1.6 sec

T 4000HP

1.5 sec

Chip to Chip

T 4000/HS/L

2.6 sec

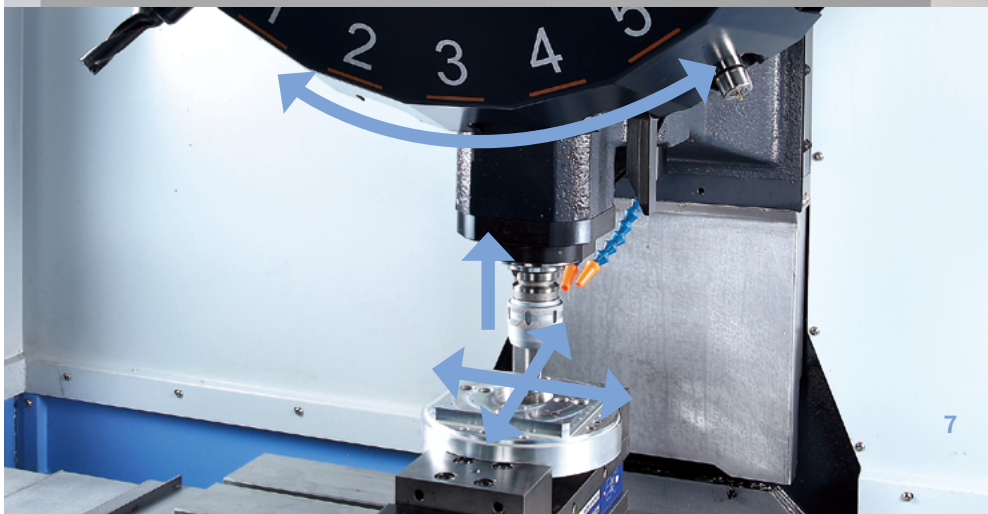
T 4000HP

2.2 sec

** The Chip to Chip time was tested in accordance with DN Solutions's strict testing conditions, but may vary depending on the user's operating conditions.*

	Specifications	Max tool diameter (mm (inch))	
		Continuous	Adjacent pots empty
T 4000HP	21 tools	80 (3.1)	150 (5.9)
T 4000			
T 4000L/HS			

	Max tool length (mm(inch))	Max tool weight (kg (lb))
T 4000HP	240 (9.4)	2.8 (6.2)
T 4000		
T 4000L/HS		



PRODUCTIVITY | CUTTING PERFORMANCE

The newly-designed, directly-coupled spindle delivers greater productivity combined with excellent reliability and rapid acceleration/deceleration rates.

High productivity

Spindle power and torque have been increased enabling new T series machines to undertake a range of machining operations in divers erent cutting conditions.

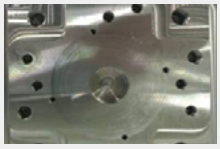
Improved spindle motor performance

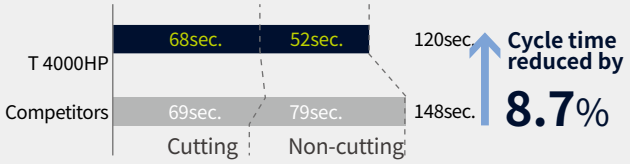
Item		T 4000 (F-0IMF_12K)	T 4000HP(FANUC_12K)
Spindle	kW (Hp)	13(17.4)	36(48.3)
	N·m (ft·lbs)	82.7(61.0)	43(31.7)

T4000HP Acceleration/Deceleration (10K)

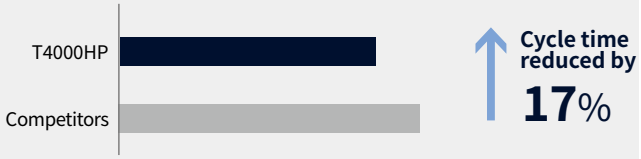
T4000HP	FANUC
Acceleration	0.15
Deceleration	0.166

Cycle Time





• Automotive parts
• Material : Aluminum



• IT parts

Variable workload control

Instructing M-code equivalent to the weight of the work automatically selects a table transfer pattern appropriate for the weight to be processed.

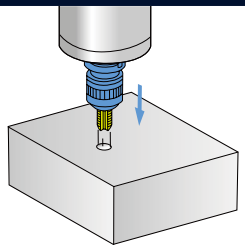
AICC (Fanuc)

Higher cutting speeds and feeds can be used and exploited, safely and securely. Corner rounding and overshoot issues are avoided due to good block look-ahead capability resulting in more accurate profiling.

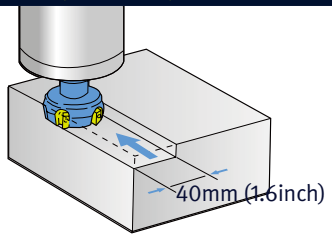
Powerful cutting

A range of machining operations including end milling, face milling, drilling and tapping etc., can be undertaken quickly and easily with minimal time spent on job set ups.

Tap



Face mill (Ø63 mm (2.5 inch) Face mill)



	Tool diameter (mm (inch)) X Pitch (mm (inch))		
	SM45C	GC25	AL6061
DN Solutions FANUC i series (12000 r/min)	M20(0.8) X 2.5 (0.1)	M24(0.9) X 3.0(0.1)	M30(1.2) X 3.5(0.1)
DN Solutions CNC D300 (12000 r/min)	M12(0.5) X 1.75(0.1)	M16 X 2.02.0(0.1)	M20(0.8) X 2.5(0.1)

	Chip removal rate (cm³/min) X Spindle speed (r/min) X Feed rate (mm/min) X Cutting depth (mm (inch))		
	SM45C	GC25	AL6061
DN Solutions FANUC i series (12000 r/min)	208 X 1500 X 2600 X 2.0(0.1)	320 X 1500 X 4000 X 2.0(0.1)	684 X 1500 X 5700 X 3.0(0.1)
DN Solutions CNC D300 (12000 r/min)	120 X 3000 X 1500 X 2.0(0.1)	153 X 3000 X 2550 X 1.5(0.1)	912 X 6000 X 5700 X 4.0(0.2)

** The results provided above are indicative examples only. Differences in cutting and environmental conditions may well affect the results obtained.*

STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Specifications		T4000HP	T4000HS/LHS	T4000/L
Spindle	12000 r/min		●	X	●
	18000 r/min		X	X	○
	24000 r/min		X	●	X
TSC	NONE		●	●	●
	1.5kW_2.0MPa		○	○	○
	4.0kW 2.0MPa		○	○	○
Coolant	Flood(0.15MPA)		●	●	●
	Flushing		●	●	●
	Fixture Shower		○	○	○
	Coolant gun		○	○	○
LCD size	10.4 inch(FANUC)		●	●	●
Tool shank type	Big plus BT30		●	●	●
Tool magazine	Armless type(21 tool)		●	●	●
	CAM TYPE(20/24TOOL)		○	○	○
HYDRAULIC fixture interface	A/B line_1 pair		○	○	○
	A/B line_2 pair		○	○	○
Oil skimmer	Belt type		○	○	○
Air	Air blower		○	○	○
	Air gun		○	○	○
	Spindle air curtain		●	●	●
Chip conveyor	Chip pan		●	●	●
	Hinged type		○	○	○
	Magnetic scraper type		○	○	○
Chip bucket	Forklift or rotation		○	○	○
Automatic front door	Automatic front door		○	○	○
Mist collector			○	○	○
M achine cover type	Top cover		●	●	●
Auto tool length measuring device	TS27R_RENISHAW		○	○	○
Auto tool damage detection device	Needle swing type		○	○	○
	OMRON limit switch type		○	○	○
Datr server	Data server (* FANUC optional)		○	○	○
Auto power cut-off			○	○	○
Test bar	Test bar guage		○	○	○
Signal tower	System condition indicator		●	●	●
Smatr thermal control	12000 r/min		●	X	●
	18000 r/min		X	X	●
	24000 r/min		X	●	X
Customized Special Option	Raising block	150 mm	○	○	○
		200 mm	○	○	○
		300 mm	○	○	○
	Drum chipconveyor	Hinged type	○	○	○
		Scraper type	○	○	○
	Tool washing	-	○	○	○

Please contact your DN Solutions representative for detailed machine information.

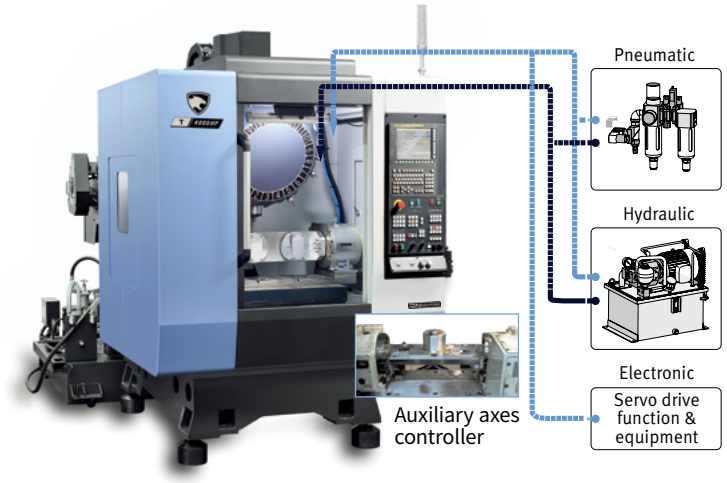
● *Standard* ○ *Optional* X N/A

⚠ 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

4-axis interface/hydraulic & pneumatic jig line

Chip conveyors are designed to improve chip disposal and help optimise machine maintenance.



Checklist for hydraulic/pneumatic lines for work clamping

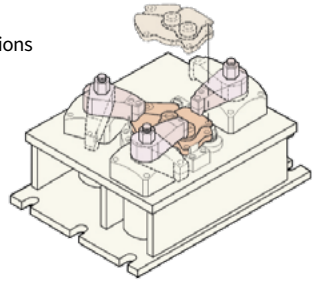
Hydraulic/pneumatic line for jig
Hydraulic line ☐ P/T ☐ A/B
Pneumatic line ☐ P/T ☐ A/B

Hydraulic unit
Supplier : ☐ End user ☐ DN Solutions

☐ Hydraulic unit
24 L/min / 4.4 MPA

☐ Customer requirements
_____ L/min at _____ MPA

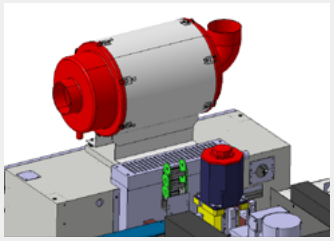
Number of jig ports
☐ 1pair (2-PT 1/4" port)
☐ 2pair (4-PT 1/4" port)



• Please contact us for further detailed specifications.

Mist collector

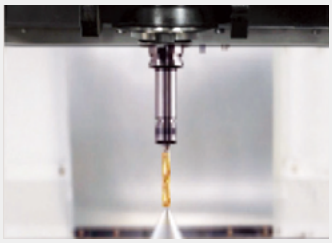
- When installing an oil mist collector please refer to DN Solutions's recommendations.
- Installing an oil mist collector in an inappropriate place or position may affect the performance of the machine.



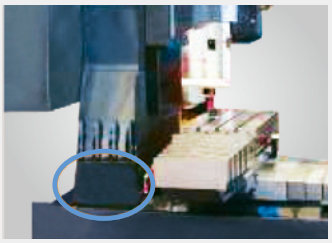
4th-axis rotary table

The compact high-precision, highly-rigid designed system enables vertical and horizontal use, and delivers a strong clamping force.

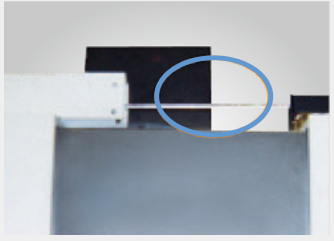
Through-spindle-coolant system



Raised column(150mm (5.9inch))



Auto door

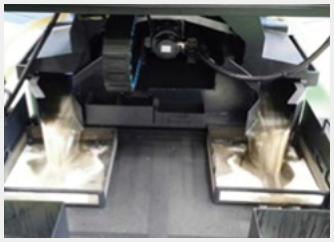


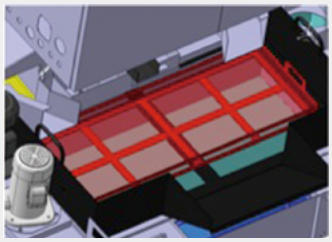
Chip conveyor

Minimum quantity lublication

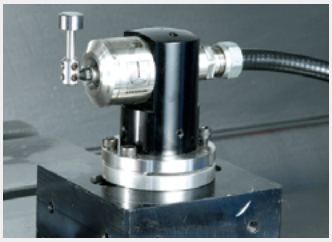
Oil skimmer

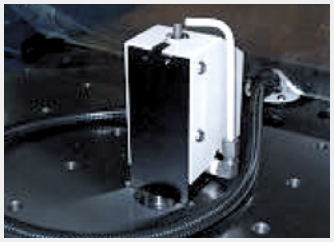
Chip box for fine chip disposal





Auto tool measurement device





DN SOLUTIONS FANUC i PLUS

DN Solutions Fanuc i Plus maximizes customer productivity and convenience.

10.4" Screen + New OP

DN Solutions Fanuc i 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.

DN Solutions Fanuc i Plus

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

USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonimic operator panel
- 2MB Memory
- Hot keys

PCMCIA Card

The PCMCIA card enables uploading and downloading of the NC program, NC parameters, tool information, ladder programs, and also supports DNC operation.

USB Port

The USB memory stick enables uploading and downloading of the NC program, NC parameters, tool information and ladder programs. (DNC operation is not supported.)

NUMERIC CONTROL SPECIFICATIONS

FANUC

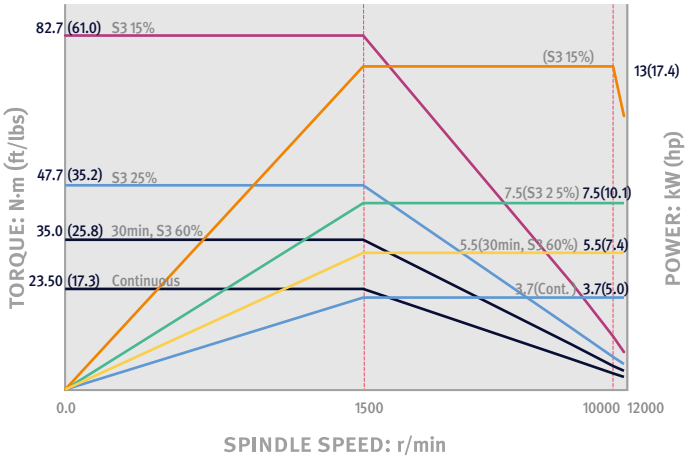
Division	Item	Specifications	T4000/L/HP/HS/LHS DN Solutions Fanuc i Plus
Controlled axis	Controlled axes		3 (X,Y,Z)
	Simultaneously controlled axes		4 axes
	Additional controlled Axis	Add 1 Axis (5th Axis)	●
Data input/output	Fast data server		○
	Memory card input/output		●
	USB memory input/output		●
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		T2 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	●
	AI contour control II	G5.1 Q_, 600 Blocks	○
	AI contour control II	G5.1 Q_, 1000 Blocks	X
	High smooth TCP		X
Operation Guidance Function	EZ Guidei (Conversational Programming Solution)		○
	iHMI with Machining Cycle	Note *1) Only with 15" Touch LCD standard	X
	EZ Operation package		●
Setting and display	CNC screen dual display function		●
Network	FANUC MTConnect		✪
	FANUC OPC UA		✪
Others	Display unit	10.4" color LCD	●
		15" color LCD	X
		15" color LCD with Touch Panel	X
	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	●
		10240M(4MB)_1000 programs	X
		20480M(8MB)_1000 programs	X
		2560M(1MB)_2000 programs	X
		5120M(2MB)_4000 programs	X
		10240M(4MB)_4000 programs	X
		20480M(8MB)_4000 programs	X

Network: FANUC MTConnect and FANUC OPC UA available.

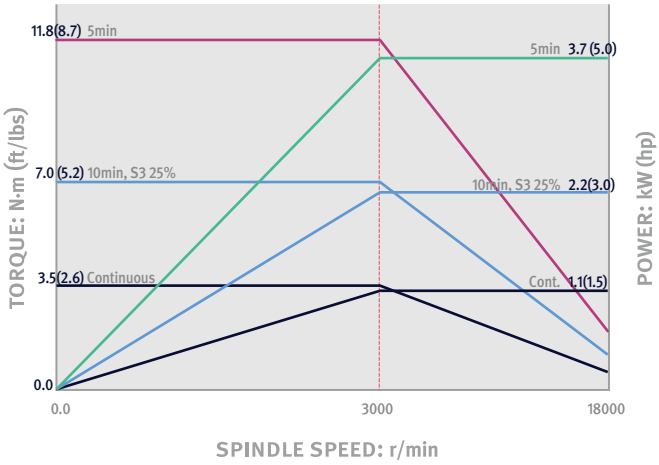
● *Standard* ● *Optional* X *N/A* ✪ *Available*

POWER | TORQUE

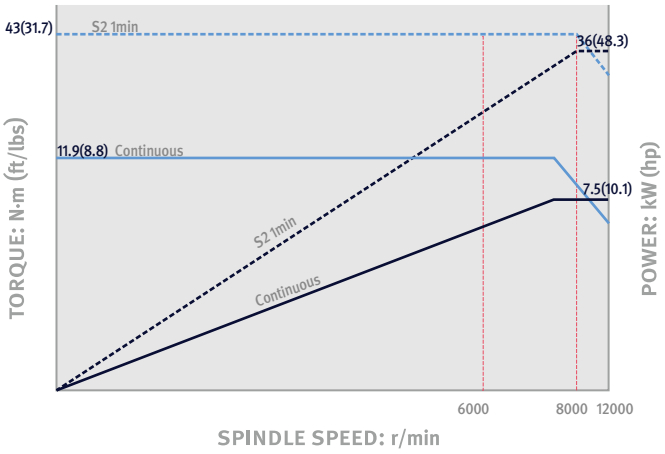
DN Solutions FANUC i PLUS_T 4000/L



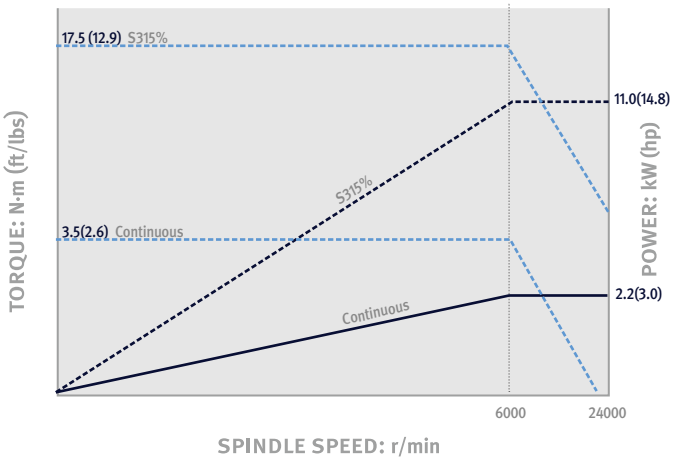
DN Solutions FANUC i PLUS_T 4000/L OPTION



DN Solutions FANUC i PLUS_T4000HP



DN Solutions FANUC i PLUS_T4000HS/LHS

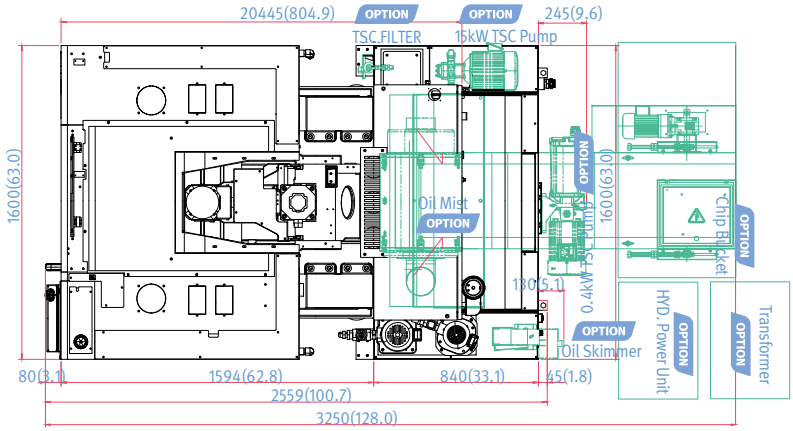


EXTERNAL DIMENSIONS

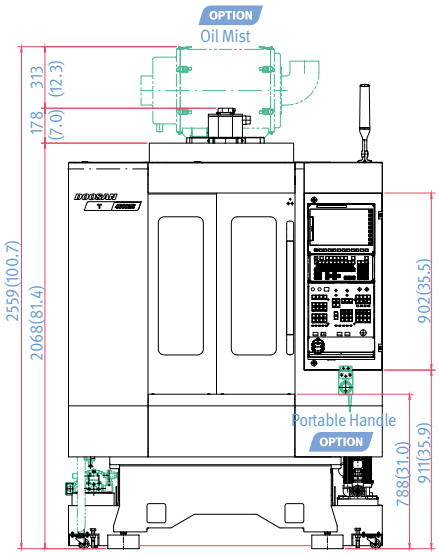
T 4000HP/HS

Unit : mm (inch)

TOP



FRONT



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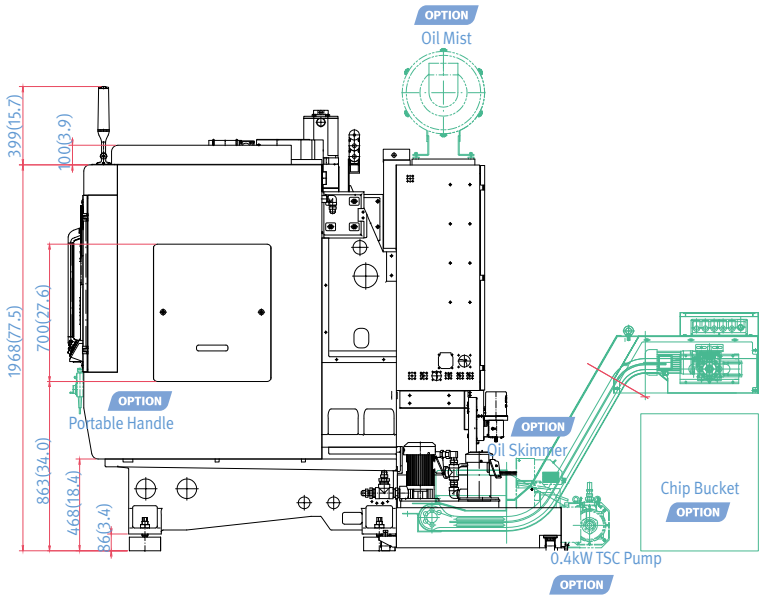


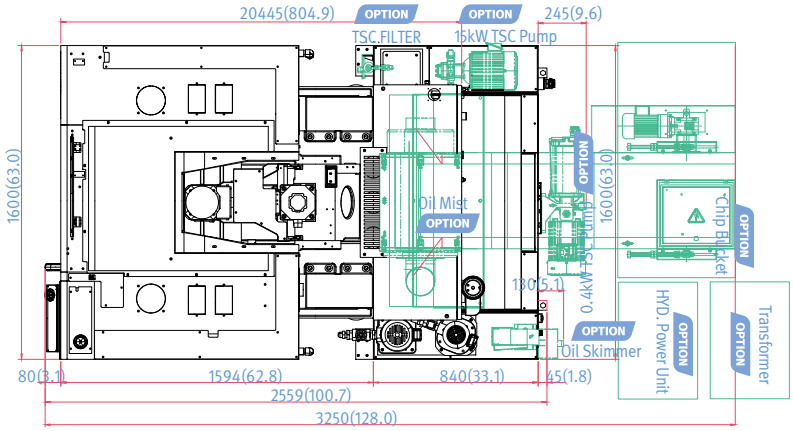
** Some peripheral equipment can be placed in other areas.*

EXTERNAL DIMENSIONS

T 4000

Unit : mm (inch)

TOP



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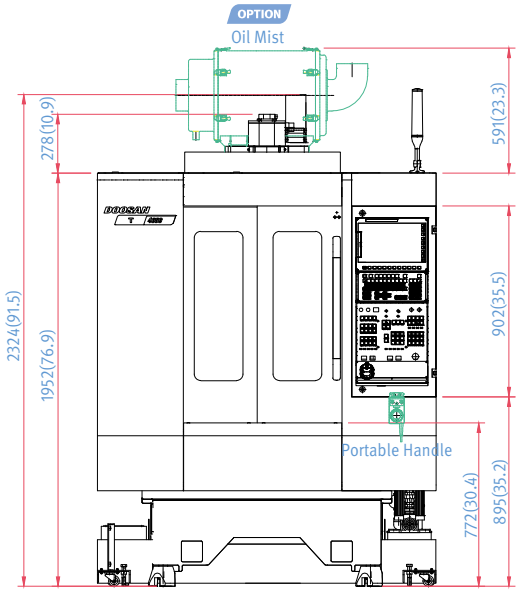

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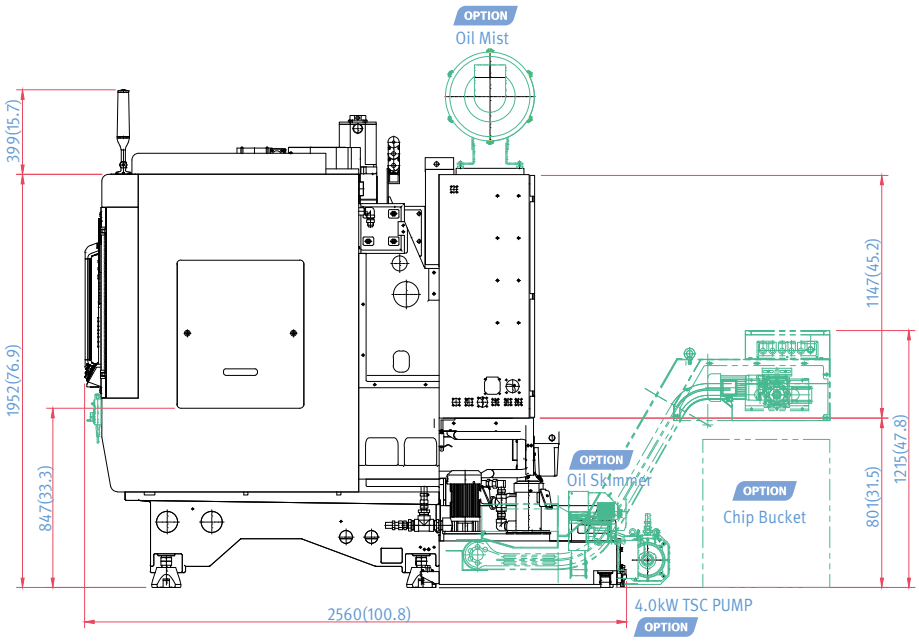


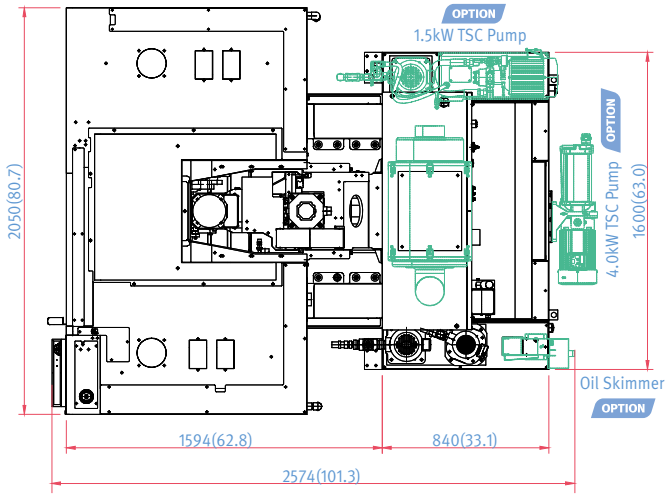
** Some peripheral equipment can be placed in other areas.*

EXTERNAL DIMENSIONS

T 4000L

Unit : mm (inch)

TOP



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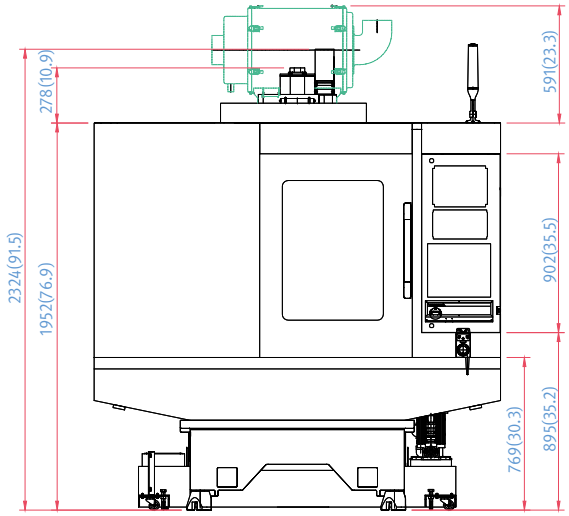

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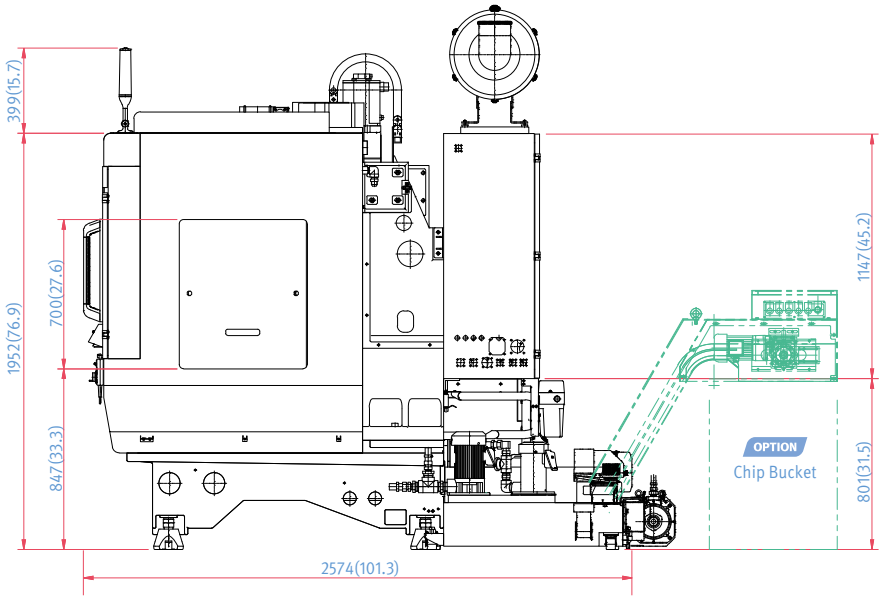


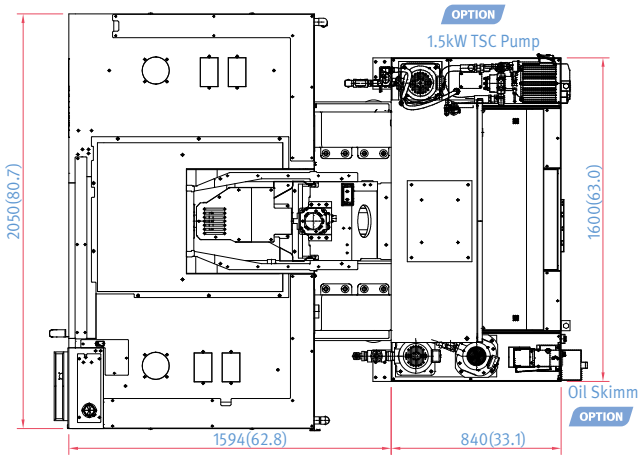
** Some peripheral equipment can be placed in other areas.*

EXTERNAL DIMENSIONS

T 4000LHS

단위 : mm

TOP



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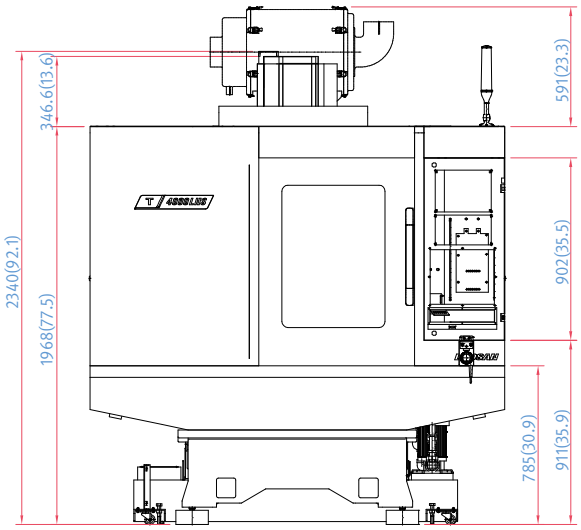

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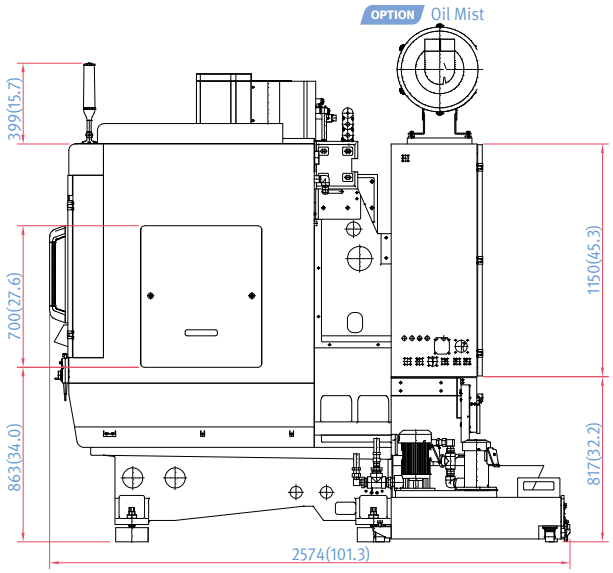
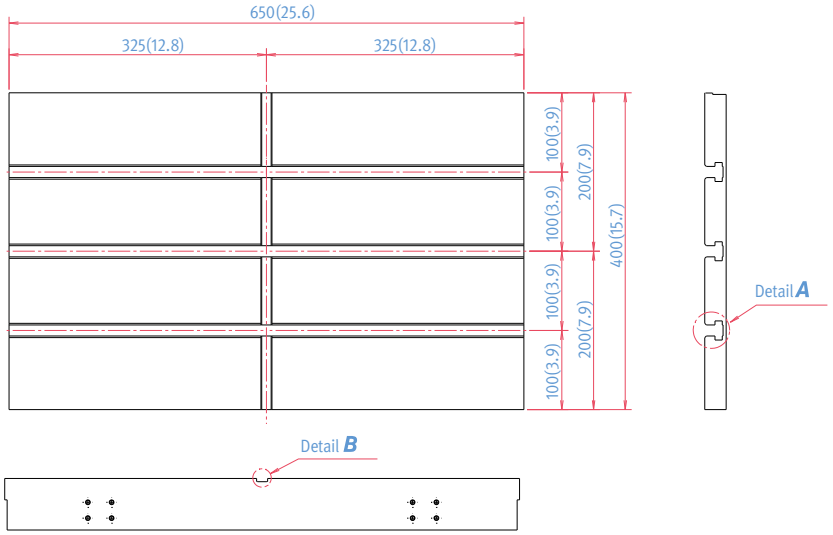


** Some peripheral equipment can be placed in other areas.*

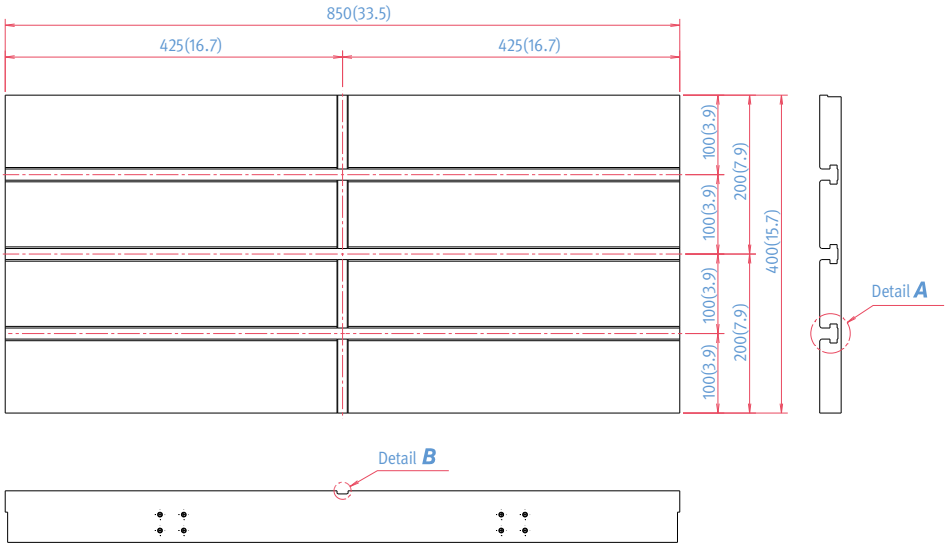
TABLE

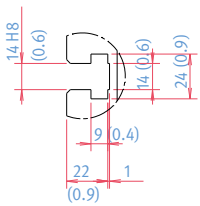
Unit : mm (inch)

T 4000/HP/HS

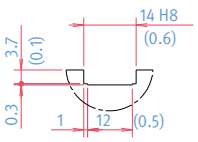


T 4000L/LHS





Detail A



Detail B

MACHINE SPECIFICATIONS

Item			Unit	T 4000HP	T 4000HS/LHS	T4000/L	
				F0i-F Plus	F0i-F Plus	F0i-F Plus	
Travel	Travel distance	X-axis	mm (inch)	520 (20.5)	520 {700} (20.5 {27.6})	520 {700} (20.5 {27.6})	
		Y-axis	mm (inch)	400 (15.7)			
		Z-axis	mm (inch)	350 (13.8)			
	Distance from spindle center to table top		mm (inch)	150 (5.9) - 500 (19.7)			
Feed rate	Rapid Transfer Rate	X-axis	m/min (ipm)	50 (1968.5)	48 (1889.8)	56 (2204.7)	56 (2204.7)
		Y-axis	m/min (ipm)	50 (1968.5)	48 (1889.8)	56 (2204.7)	56 (2204.7)
		Z-axis	m/min (ipm)	56 (2204.7)	48 (1889.8)	56 (2204.7)	56 (2204.7)
	Max. cutting feedrate		m/min (ipm)	25 (984.3)	24 (944.9)	28 (1102.4)	28 (1102.4)
Table	Table size		mm (inch)	650 X 400 (25.6 X 15.7)	650 X 400 (25.6 X 15.7) {850 X 400 (33.5 X 15.7)}	650 X 400 (25.6 X 15.7) {850 X 400 (33.5 X 15.7)}	
	Loading capacity		kg (lb)	300 (661.4)	200 {300} (440.9 {661.4})	300 (661.4)	
	Table type			T-SLOT(3-100X14H8)	T-SLOT(3-100x14H8)	T-SLOT (3-100 X 14H8)	
Spindle	Max. spindle speed		r/min	12000	24000	12000 {18000}	12000 {18000}
	Max. spindle torque		N.m (ft-lbs)	43 (31.7)	17.5 (12.9)	18.8 (13.9) {31.8 (23.5)}	82.7 (61.0) {17.5 (12.9)}
	Spindle motor power		kW (Hp)	36 / 7.5 (48.3 / 10.1)	11 / 2.2 (14.8 / 3.0)	5.5/3.7 (7.4 / 5.0) {5.5/3.7 (7.4 / 5.0) }	13 / 3.7 (17.4 / 5.0) {11/2.2 (14.8/3.0)}
	Spindle taper			ISO #30			
ATC	Tool shank type			BT 30			
	Tool storage capacity		ea	21 {20/24}	21 {20/24}	21 {20/24}	
	Max. tool diameter	Continuous	mm (inch)	80 (3.1)			
		Near port empty	mm (inch)	150 (5.9)			
	Max. tool length		mm (inch)	240 (9.4)			
	Max. tool weight		kg (lb)	2.8 (6.2)			
	Max. tool moment		N·m (ft-lbs)	1.47 (1.1)			
	Max. magazine weight		kg (lb)	33 (72.8)			
	Max. magazine eccentric load weight		kg (lb)	21 (46.3)			
	Tool selection			Fixed address			
	Tool change time (tool to tool)		s	1.5	1.6	1.6	
	Tool change time (chip-to-chip)		s	2.2	2.6	2.6	
Coolant Pump	Coolant pump motor power		kW (Hp)	Flood : 0.4 Flushing : 1.1			
Power source	Electric power		kVA	27.8	19 {16.46}	17.95 {17.95}	19.79 {16.46}
	Air pressure		MPa	0.54			
Dimensions	Height		mm (inch)	2475 (97.4)			
	Length		mm (inch)	2560 (100.8)	2560 {2575} (100.8 {101.4})	2560 {2575} (100.8 {101.4})	
	Width		mm (inch)	1600 (63.0)	1600 {2050} (63.0 {80.7})	1600 {2050} (63.0 {80.7})	
	Weight		kg (lb)	3000 (118.1)	3000 (118.1) {3200(7054.7)}	2800(110.2) {3000(118.1)}	

*{ } : Optional

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.

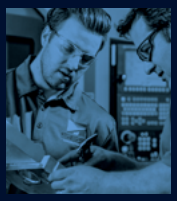
We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.

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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* For more details, please contact DN Solutions.

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

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