

SINCE 1944

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DL TT series (En)

*Twin Spindle & Twin Turret
Horizontal CNC Turning Center*

DL 24TTGA / 24TTGB

www.ffg-dmc.com



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DL TT series

DL 24TTGA

DL 24TTGB

Twin Spindle & Twin Turret Turning Center

- By adopting high-speed Gantry loader
- High rigidity servo turret installation
- Stable machine structure by wide saddle



DL 24TTGA

Main Specification

Axis Travel(X/Z)(mm)(inch)	190 × 200(7.48" × 7.87")
Standard Chuck Size(inch)	8"
Max.Turning Dia.(mm)(inch)	150(5.91")
Max.Turning Length(mm)(inch)	150(5.91")

Loader Specification

Working Size(mm)	OD Ø250×150L / ID Ø250×100L
Working Size(inch)	OD Ø9.84"×59.06L / ID Ø9.84"×3.94"L
A/B/C-axis Speed(m/min)(ipm)	127/76/52(5000/2992/2047)
Max. Handling Weight(kgf)(lbs)	8+8(17.64+17.64)



DL 24TTGB

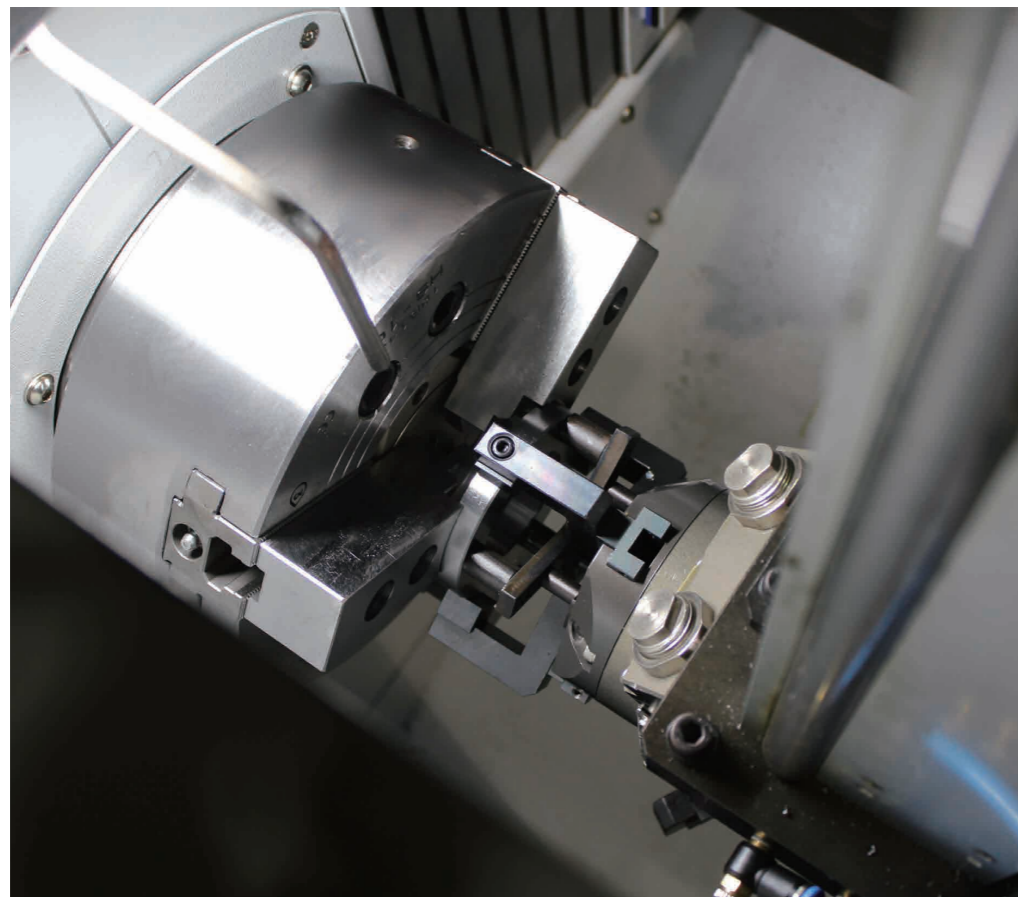
Main Specification

Axis Travel(X/Z)(mm)(inch)	190 × 200(7.48" × 7.87")
Standard Chuck Size(inch)	10"
Max.Turning Dia.(mm)(inch)	250(9.84")
Max.Turning Length(mm)(inch)	150(5.91")

Loader Specification

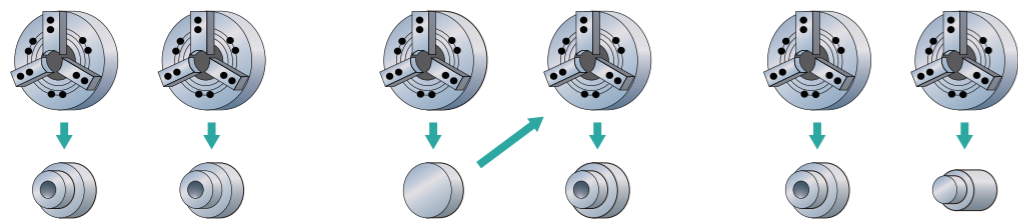
Working Size(mm)	OD Ø250×150L / ID Ø250×100L
Working Size(inch)	OD Ø9.84"×5.91L / ID Ø9.84"×3.94"L
A/B/C-axis Speed(m/min)(ipm)	127/76/52(5000/2992/2047)
Max. Handling Weight(kgf)(lbs)	8+8(17.64+17.64)

High Productivity



Main Spindle

Maximize productivity by twin spindle



Same product can be produced simultaneously.

As both spindles are produced simultaneously, it can perform to be twice as effective as one machine

Same product can be divided in half to produce.

After the workpiece has been finished in Primary process, it can be transferred to Secondary process continuously.

Different products can be produced independently.

Two different spindles are enabled to produce different products.

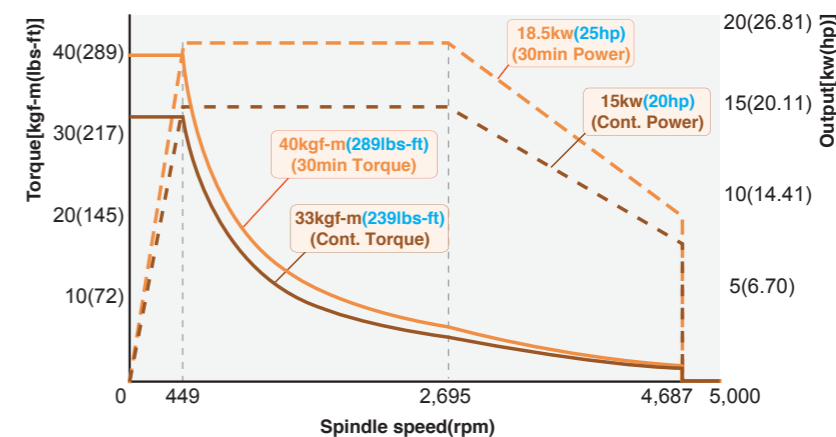
High rigidity main spindle structure

Adoption of high torque in main spindle demonstrates high performance during heavy duty cutting

and main spindle consist of cylindrical roller bearings and angular ball bearing, can produce high precision & accurate workpieces



Power Torque Diagram(DL 24TTGB)



Main Spindle Specification

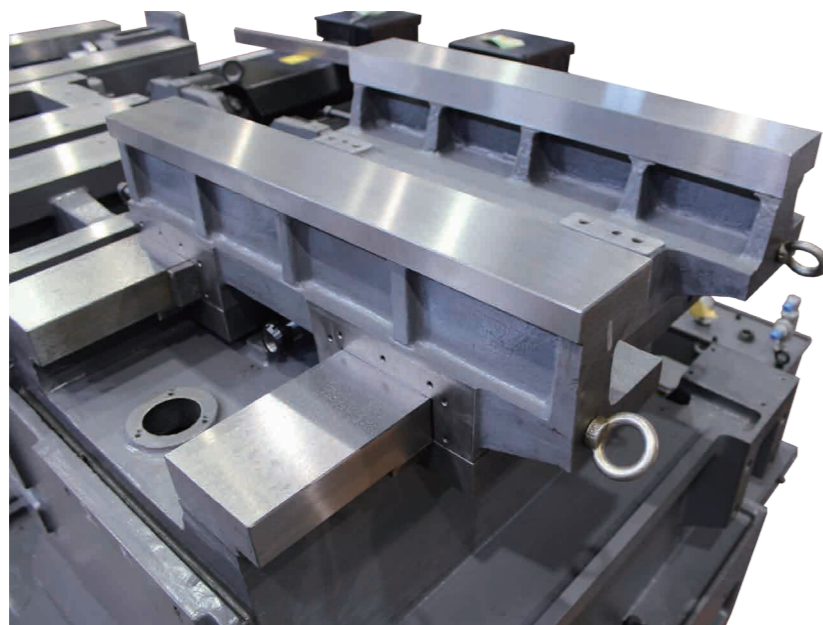
DL TT series	DL 24TTGA	DL 24TTGB	
Chuck size	inch	8"	10"
Spindle bore diameter	mm (inch)	76 (2.99")	86 (3.39)
Max. Spindle Speed	r/min	4,000	3,500
Max. Spindle Torque	kgf-m (lbs-ft)	9 (65)	57 (417)
Spindle spindle driven method	-	Belt	Belt
Spindle Nose	-	A2-6	A2-8

High Productivity Separate Bed



By applying right & left separate bed type, Minimize the vibration and Increase high precision.

Slide way structure



Adopting Box guide way provides outstanding heavy cutting.

Turret



10 Station Servo turret. By adopting Left 10 + Right 10, various tools are able to be installed, specially maintain accurate while interrupted machining / heavy cutting with curvic coupling and strong clamping power

Turret indexing time : **0.2sec** Max. No. of Tools : **10ea**

Wide Axis

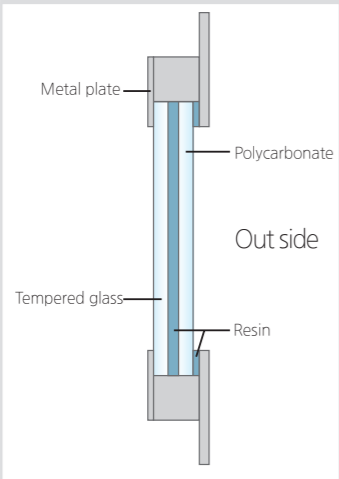
Axis rapid traverse rate
Conduct excellent performance by strong motor

X axis : **20m/min (787ipm)** Z axis : **24m/min (945ipm)**

DL TT series		DL 24TTGA	DL 24TTGB
Max. Turning Dia	mm(inch)	150(5.91")	250(9.84")
Max. Turning Length	mm(inch)	150(5.91")	150(5.91")
X axis travel	mm(inch)	190(7.48")	190(7.48")
Z axis travel	mm(inch)	200(7.87")	200(7.87")
X axis rapid traverse rate	m/min(ipm)	20(787)	20(787)
Z axis rapid traverse rate	m/min(ipm)	24(945)	24(945)
Spindle Nose		A2-6	A2-8

User's convenience & safety and pleasant working environment

2-Panel Safety Glass



LED Working Light

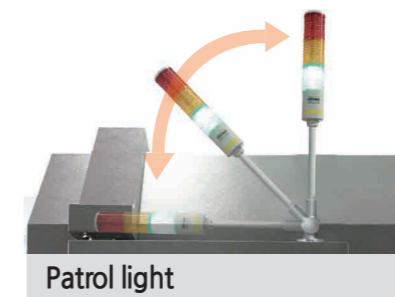


+ Long-life LED lighting creates well-lighted work environments.

Chuck opening checking device.(STD.)

+ Prevent malfunction with chuck opening and close checking device.

Spindle load meter can check spindle load



Patrol light

+ LED 3-color lighting can be attached before shipping.

Front Door Interlock Device



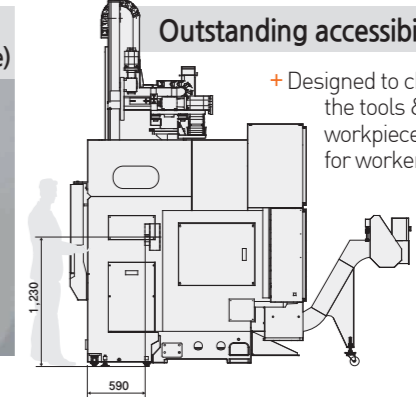
+ CE standard safety switch can sense door opening and close; door is closed during processing.

RS232C (Input/output interface)



+ USB port

Outstanding accessibility



+ Designed to change the tools & workpiece easily for workers

Oil Recovery Box



Rear Leak Prevention

+ Cover improves work environment.
+ Wiper protection.



Separable coolant tank for cleaning

+ it's drawer type that maintain the temperature and attach wheel to clean easily

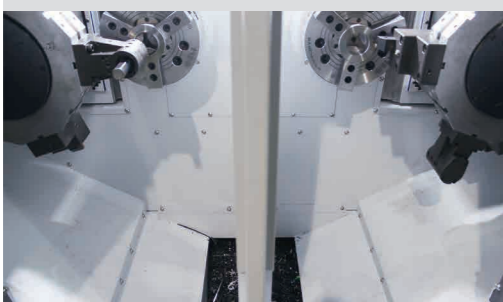


Auto Top Door

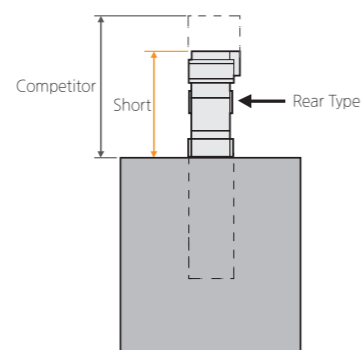


Easy chip disposal

+ Discharge chip oil rapidly by bed of steep slope structure
+ It can collect chip smoothly, Decrease failure rate by chip.



Efficiently use space of chip conveyor



Option

Air gun



Coolant gun

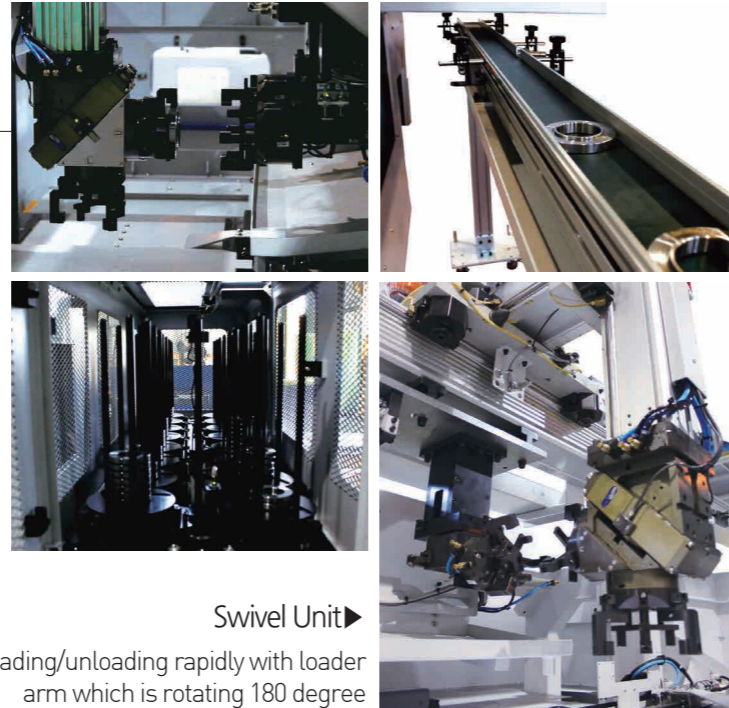


Automatic lubrication system(3ℓ)



High Productivity Gantry Loader

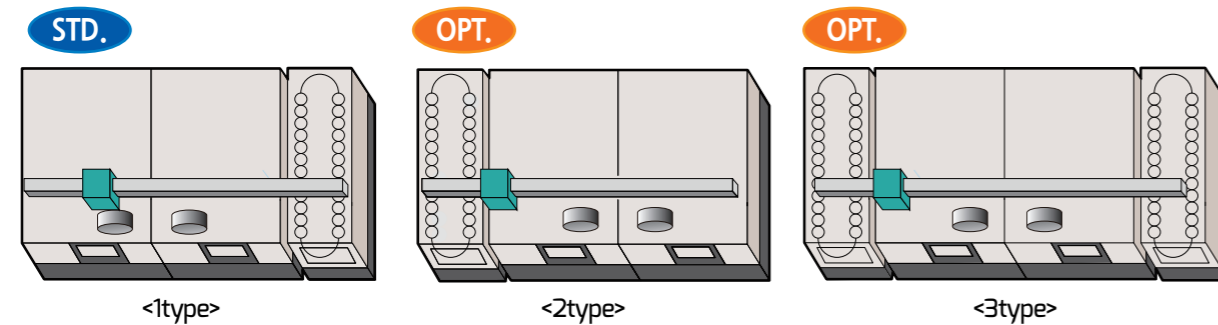
Can achieve high productivity in optimizing installation space for Gantry loader



Swivel Unit▶

Can perform loading/unloading rapidly with loader arm which is rotating 180 degree

- Customer can choose stocker location (16 Station stocker OPT)



Loader Specification

TYPE			DL 24TTGA / 24TTGB	
NO. OF FEED AXIS	axis		3 SERVO	
WORKING SIZE	mm	inch	ODØ250*150L	ODØ9.84*5.91L
MAX. HANDLING WEIGHT	Kgf	lbs	8+8	17.64+17.64
A/B/C - AXIS SPEED	m/min	ipm	127/76/52	5000/2992/2047
A/B/C - AXIS STROKE	mm	inch	3690/700/260	145.3/27.6/10.2
LO/UNLOADER TIME	sec		within 10	

Option

Various & Convenience Standard Accessories and optional Accessories

Standard Accessories

Hydraulic Chuck with one set of soft jaw, Additional 1 set of soft jaw, Tool box with necessary operating tools, Hydraulic unit, door interlock, Coolant system work light, leveling bolt & plate, foot switch, lubrication system, 3 patrol light, chucking operation equipment, RS232C+USB port

Optional Accessories

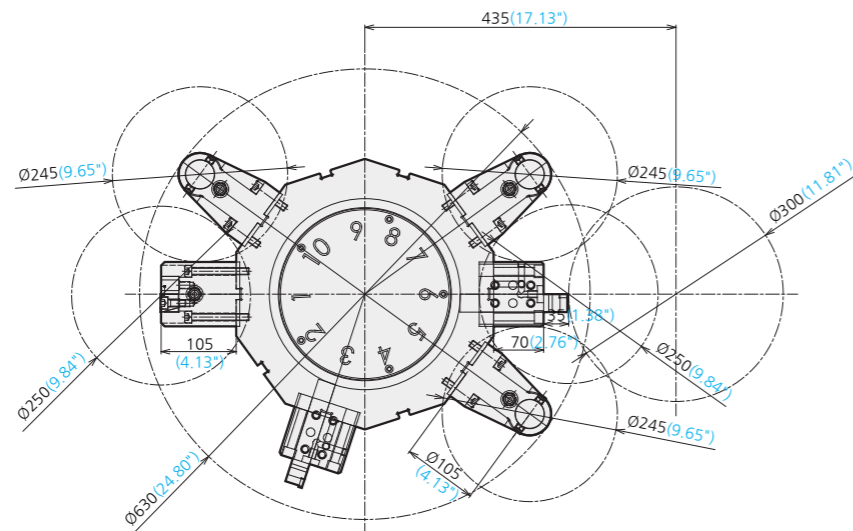
- 230ℓ (60.76gal) (Swing)
- 300ℓ (79.25gal) (Swing)
- 300ℓ (79.25gal) (Fork lift)
- 380ℓ (100.38gal) (Fork lift)
- 440ℓ (116.23gal) (Fork lift)
- Line Filter(100 Mesh)(OPT)
- Turret
- Coolant Tank
- Mid/High Coolant 6Bar / 20Bar(OPT)
- Sub operation
- Special Chuck
- Air/Coolant above chuck
- Air Limit(Workpiece contact equipment)
- Spindle thru Air/Coolant(Special chuck)
- Multi Counter
- Counter

Various Soft Options

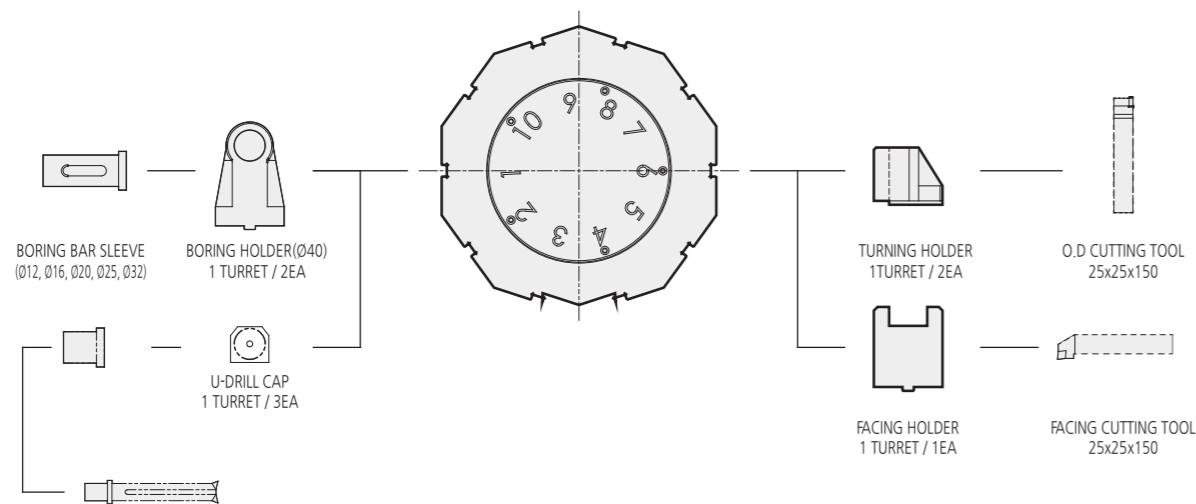
- I/O expansion (16-contact, 32-contact)
- Power disconnection device
- M - code

Turret Head Interference

Unit : mm(inch)

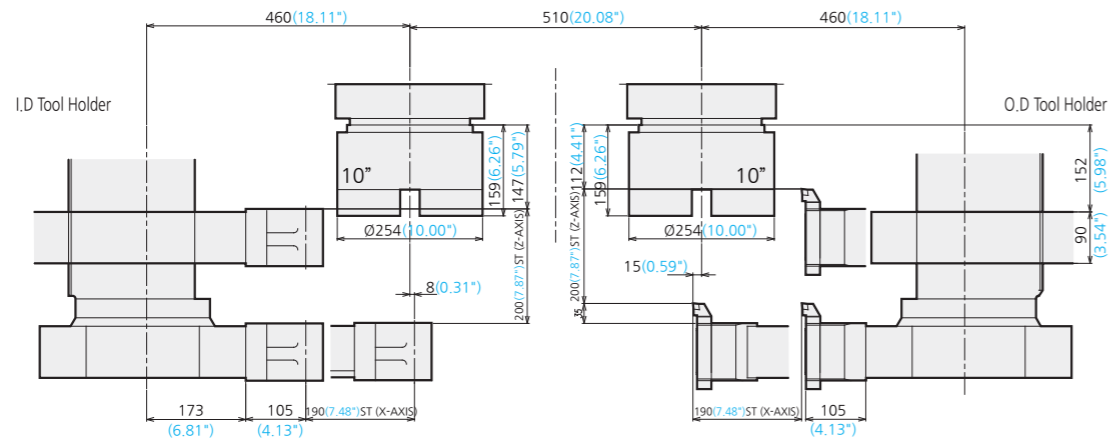


Tooling System

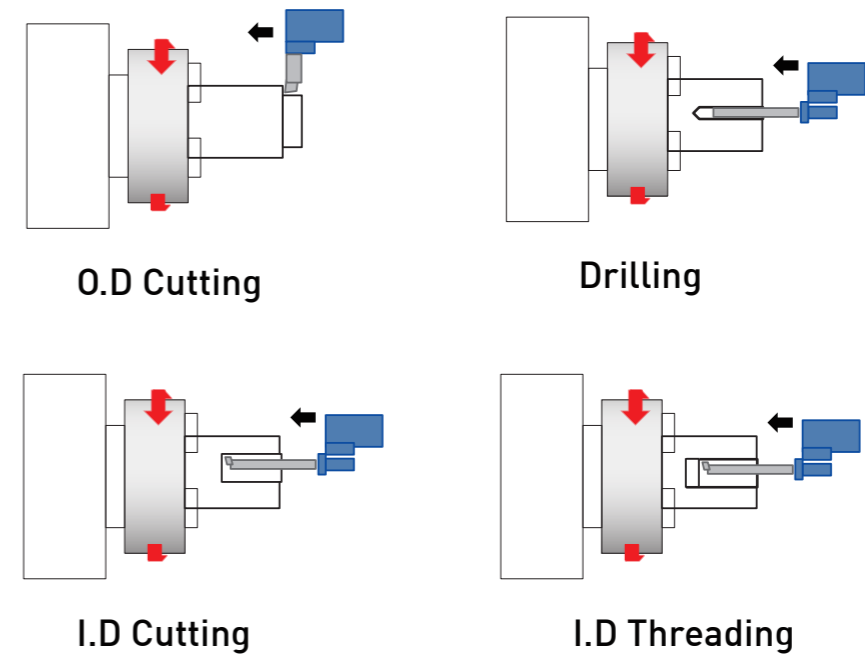


Tooling Travel tange

Unit : mm(inch)

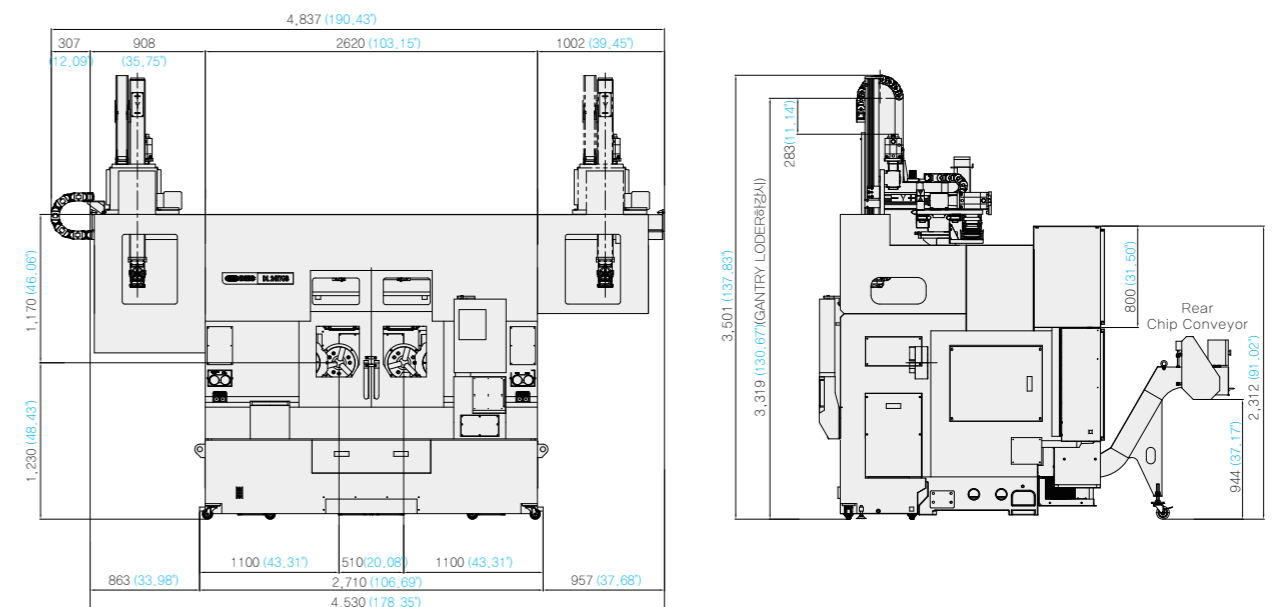


Machining Variation



Machine Lay-Out

Unit : mm(inch)



Machine Specifications

Specifications				DL 24TTGA		DL 24TTGB		
Capacity	Swing over bed (Max.Swing dia)	mm	inch	500	19.69"	500	19.69"	
	Max turning dia	mm	inch	150	5.91"	250	9.84"	
	Max.Turning length	mm	inch	150	5.91"	150	5.91"	
	Bar Capacity	mm	inch	65	2.56"	75	2.95"	
Main spindle	Max.Spindle speed	rpm		4,000		3,500		
	Spindle nose	-		A2-6		A2-8		
	Spindle bore diameter	mm	inch	76	2.99"	86	3.39"	
	Max.Spindle torque	kgf-m	lbs-ft	9	65	57	417	
	Spindle driven method	-		Belt		Belt		
	Standard chuck size	inch		8"		10"		
Motor	Main Spindle Motor(Cont./30min)	kw	hp	11/15	15/20	15/18.5	20/25	
	X axis servo motor	kw	hp	0.75	1	1.6	2	
	Z axis servo motor	kw	hp	1.2	1.6	3	4	
	Turret index motor	kw	hp	1.2	1.6	1.2	1.6	
	Bed, Saddle, Cross slide	X axis travel	mm	inch	190	7.48"	190	7.48"
Z axis travel		mm	inch	200	7.87"	200	7.87"	
Guideway Type(X/Z)		-		BOX Guide		BOX Guide		
X axis rapid traverse rate		m/min	ipm	20	787	20	787	
Z axis rapid traverse rate		m/min	ipm	24	945	24	945	
Turret		Turret Index Type	-		Servo / BMT		Servo / BMT	
	Max. No. of Tools	ea		10		10		
	Turning tool shank size	mm	inch	25	0.98"	25	0.98"	
	Boring bar diameter	mm	inch	40	1.57"	40	1.57"	
	Turret Indexing time (1st swivel)	sec		0.2		0.2		
	Tank Capacity	Coolant tank capacity	ℓ	gal.	270	71.33	270	71.33
Hydraulic tank capacity		ℓ	gal.	13×2EA	3.4×2EA	13×2EA	3.4×2EA	
Lubrication Tank Capacity		ℓ	gal.	3×2EA	0.79×2EA	3×2EA	0.79×2EA	
Others	Machine Weight	kgf	lbs	7,200	15,873	7,200	15,873	
	Height	mm	inch	3,446	135.67"	3,446	135.67"	
	Floor space	Length	mm	inch	4,290	168.90"	4,290	168.90"
		Width	mm	inch	2,271	89.41"	2,271	89.41"
	Power Capacity	kVA		66		66		
Controller	-		FOi-TF		FOi-TF			

NC Specifications (FANUC FOi-TF)

○ : Standard, OPT. : Option, (!) : M type, (!!): 250 type

	Item	Specification	OiTF		Item	Specification	OiTF
Controls	Controlled axes	Std. 2axes	X, Z, C (!)	Programming functions	Maximum command dimension	± 99999.999mm(± 9999.9999 inch)	○
	Simultaneously control axes expansion(Total)	0.001mm/0.0001"	3 axes (!)		Program file name	32 characters	○
Axis Functions	Least input increment		○	Sequence number	N8 digit	○	
	Cs contouring control		○ (!)	Absolute / Incremental programming		○	
	HRV2 Control		○	Decimal point input		○	
	Inch/metric conversion	G20/G21	○	Work coordinate system selection	G52 ~ G59	○	
	Increment system 1/10	0.0001mm/0.00001"	○	Direct drawing dimension programming		○	
	Stored stroke 1	Overtravel control	○	G code system A/B/C		○	
	Stored stroke 2 and 3		○	Chamfering / corner R		○	
	Mirror image		○	Programmable data input	G10	○	
	Chamfering on/off		○	Sub program call	Nested holds	10	
	Backlash compensation	Max. 255 pulses	○	Custom macro		○	
Operation	Stored pitch error compensation		○	Canned cycles	G90, G92, G94	○	
	Automatic operation(memory)		○	Circular interpolation by R programming		○	
	MDI operation		○	Multi repetitive canned cycle	G70 ~ G76	○	
	Buffer register		○	Multi repetitive canned cycle2		○	
	Program restart		○	Drilling canned cycle(G80 series)		○	
	Search function	Sequence NO. / Program NO. / Address	○	Program format for FANUC series 10/11		○	
	DNC operation		○	Tool number command(t-code function)	T4-digit	○	
	Reference position shift		-	Number of tool offsets		128 Pairs	
	Manual handle feed rate	X1, X10, X100	○	Tool offset	G43, G44, G49	○	
	Manual pulse generator	1unit	○	Tool nose radius compensation	G40 ~ G42	○	
Interpolation	Manual handle interruption		○	Tool geometry / wear offset	Geometry & wear data	○	
	Linear interpolation	G01	○	Tool life management		○	
	Circular interpolation	G02, G03	○	Tool offset value counter input		○	
	Dwell	G04	○	Auto tool offset		○	
	Polar coordination interpolation	G12.1, G13.1	○ (!)	Direct input of tool offset value measured B		○	
	Cylindrical interpolation		○ (!)	Tool monitoring system		OPT.	
	Thread cutting/Synchronous cutting		○	Part program storage size		512 kb	
	Multiple threading		○	No. of Registered programs		400 ea	
	Thread cutting retract		○	Part program editing		○	
	1st, 2nd reference position return & check	G27, G28, G30	○	Program protect		○	
Feed functions	Variable lead thread cutting		○	Background editing		○	
	Continuous thread cutting		○	Expanded part program editing	Copy, Move, Change of NC program	○	
	Circular thread cutting		OPT.	Status display		○	
	3rd and 4th reference point return		○	Program name display	31 characters	○	
	polygon turning		OPT.	Self diagnostic function		○	
	Helical interpolation		OPT.	Help function	Alarm & Operation display	○	
	Rapid traverse override	F0/25/50/100%	○	Running time / Parts number display	Auto running time & Parts No. display	○	
	Feedrate Override	0-200% (10% unit)	○	Load meter display	Spindle & Servo load display	○	
	Jog feed override	0-2000 mm/min	○	External message display		○	
	Feed per minute	G98	○	Display of spindle speed and T-code at all screen		○	
Auxiliary & spindle function	Feed per revolution	G99	○	Tool path graphic display		○	
	Cutting feedrate clamp		○	Servo setting screen		○	
	External deceleration		○	Spindle setting screen		○	
	Feed stop		-	Multi language display		○	
	AI Comtour Control I/II		OPT.	I/O interface	RS-232C/Lan port	○	
	Spindle speed override	0~150%	○	Memory card input and output		○	
	Constantant surface speed control	G96, G97	○	External key input		○	
	1st Spindle orientation		○	External program input		○	
	Rigid tapping		○	External work number search		○	
	Multi-spindle control		○ (!)	USB Memory	Input/Output	○	
Programming functions	Auxiliary function	M8 digit	○	Fast Data Server	Only 1 path, Need OPT board	OPT	
	Program/code	EIA/ISO	○	MDI / DISPLAY unit		10.4"	
	Optional block skip	1 Piece	○	PMC system		○	
	Additional block skip	Total 9(Only NC function)	○	Ethernet function	Embedded ethernet function	○	