DL S series
(Sub spindle / Y axis)

Multi Axis CNC Turning Center (En)

DL 22LMS / DL 22LSY / DL 25MS / DL 25Y / DL 25SY
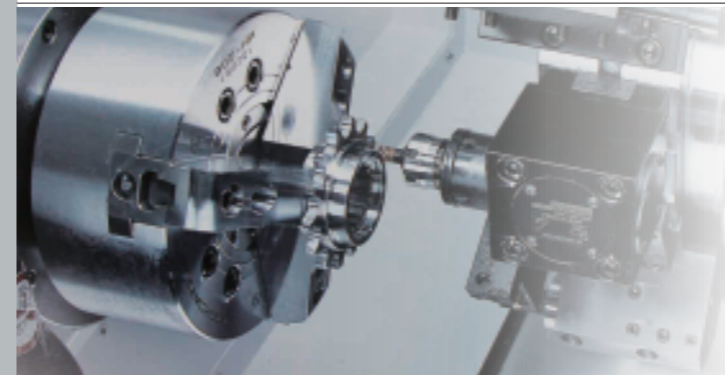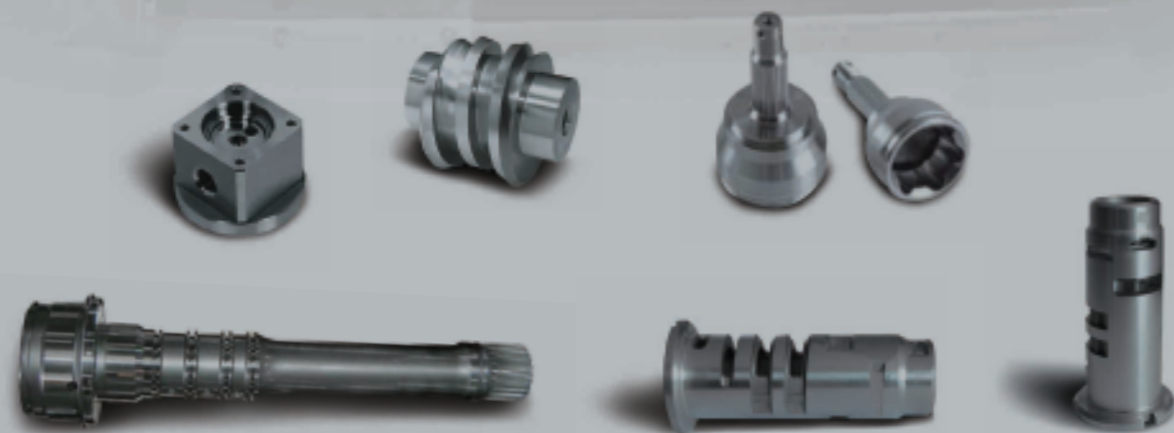
www.ffg-dmc.com

FFG DMC

DL S series
(Sub spindle / Y axis)

DL 22LMS / DL 22LSY

DL 25MS / DL 25Y / DL 25SY

[One time setup for complete part machining.]

DL 22LMS

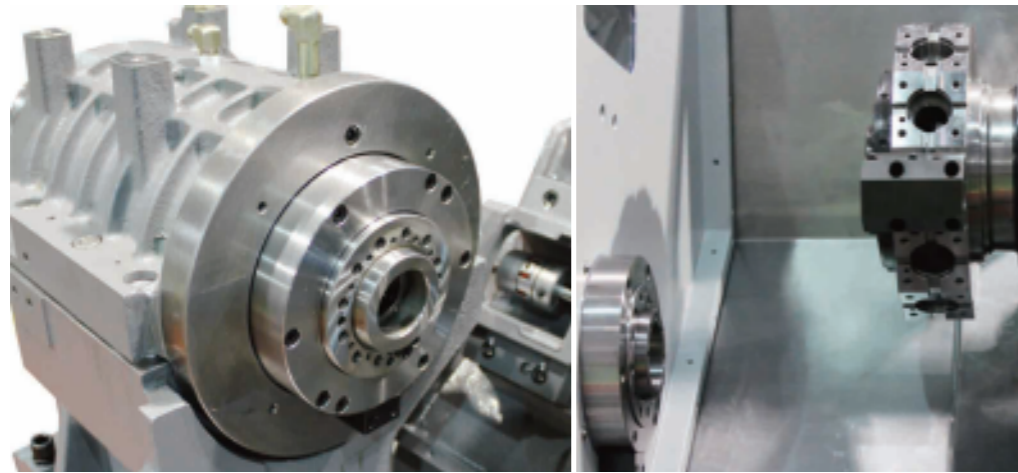|	
Travel (X/Z/B/Y) (mm)(inch)	190 × 550 × 580 × – (7.48 x 21.65 x 22.83 x –)
Guideway Type (X/Z/B/Y)	BOX Way/–
Main spindle speed (rpm)	4,000
Number of tools (pcs)	12

DL 25SY

|	
Travel (X/Z/B/Y) (mm)	220 × 1,050 × 940× ±55
(inch)	(8.66 × 41.34 × 37 × ±2.17)
Guideway Type (X/Z/B/Y)	BOX Way
Main spindle speed (rpm)	3,500
Number of tools (pcs)	12

High Productivity

Spindle

Bilateral symmetry structure stable and precise spindle

- Because of assembley between Spindle Cartridge and Head Body, it can block the transfer of heat.
- When repairing, only Cartridge needs to be changed.
- Cooling effect as designed Air Circulation Tunnel[Aerial Exposure in the bottom of structure]
- Keep high precision with blocking vibration and heat strain.

◦ Sectional View

Assembly face

Assembly face

Air circulation tunnel
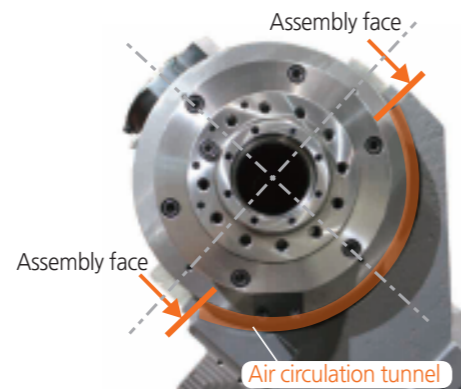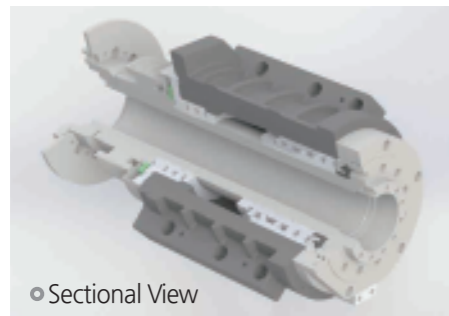
DL 22LMS, *DL 22LSY	
Max. Spindle Speed[rpm]	4,000
Main Spindle Motor[kw(hp)]	15(20)
Max. Spindle Torque[kgf·m(lbs·ft)]	45(326), *18.4(133)

*:Developing Model

αiIP 22/6,000
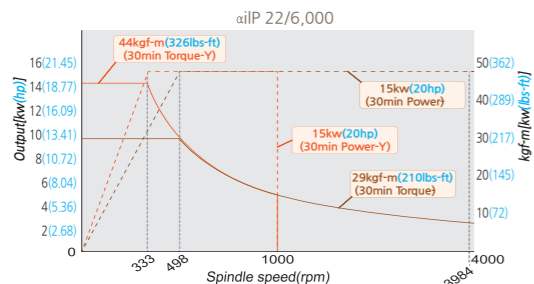
DL 25MS, *DL 25Y, DL 25SY	
Max. Spindle Speed[rpm]	3,500
Main Spindle Motor[kw(hp)]	18.5(25)
Max. Spindle Torque[kgf·m(lbs·ft)]	35.7(258)

*:Developing Model

αiIP 30/6,000-Y-△ Wiring(STD.)
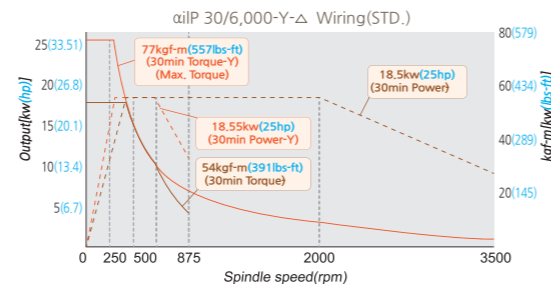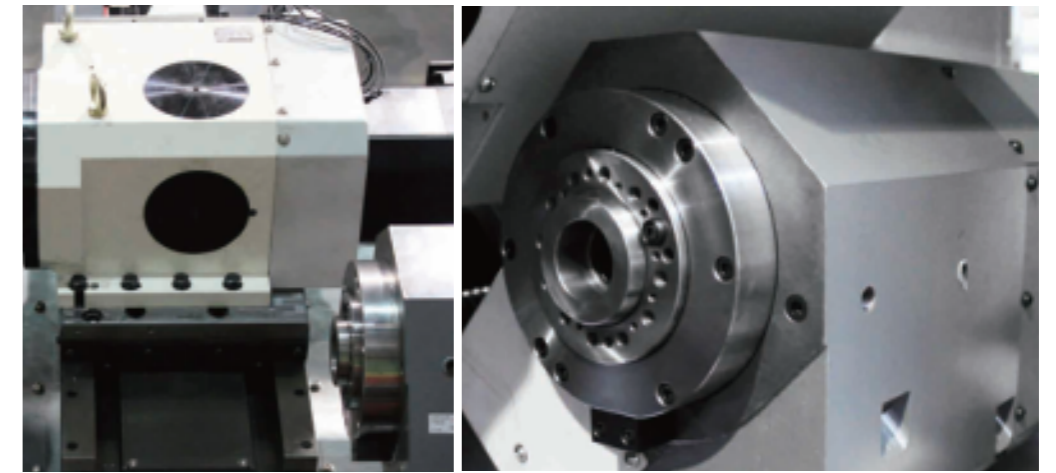
Spindle

High Productivity sub spindle

- Belt type sub spindle
- Built-in type sub spindle

8" model : DL 25MS, *DL 25Y, DL 25SY
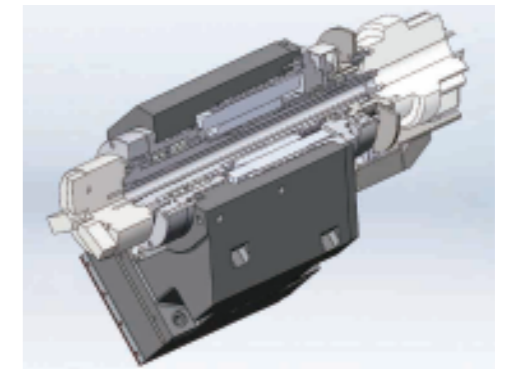
6" model : DL 22LMS, *DL 22LSY
         DL 25MS(OPT), DL 25SY(OPT)

CHUCK size : 8"	
Max. Spindle Speed[rpm]	4,000
Main Spindle Motor[kw(hp)]	11(15)
Max. Spindle Torque[kgf·m(lbs·ft)]	15(108)

*:Developing Model

CHUCK size : 6"	
Max. Spindle Speed[rpm]	6,000
Main Spindle Motor[kw(hp)]	7.5(10)
Max. Spindle Torque[kgf·m(lbs·ft)]	6(43)

*:Developing Model

Sub-spindle 8" Belt type
α 8/8,000

Sub-spindle 6" Built-in type
βiI 1125/15,000
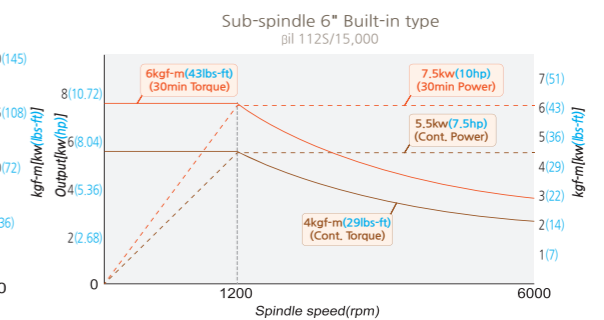
High Productivity

High-performance Y axis

Output[kw(hp)]   Torquek[gf-m(lbs-ft)]

3.7kw(5hp)[30min]

2.2kw(3hp)[cont.]

4(5.36)
2.4(4.02)
2(2.68)
1.45(1.94)
0

1400
1500   5000

Spindle speed(rpm)
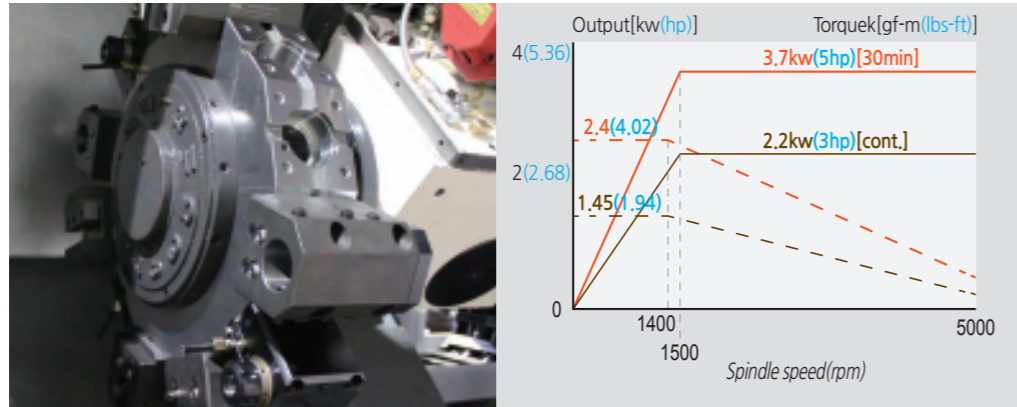
Spindle Center, Y axis are perpendicular to X axis structure Easy operation and shorten the non-machining time

Adding perpendicular type control method Y axis, after once chucking then can do many multiple work, easy operation and don't need C axis division, so can save non-machining time, can do the milling outer centered position and drilling machining.

Y axis

BOX SLIDE
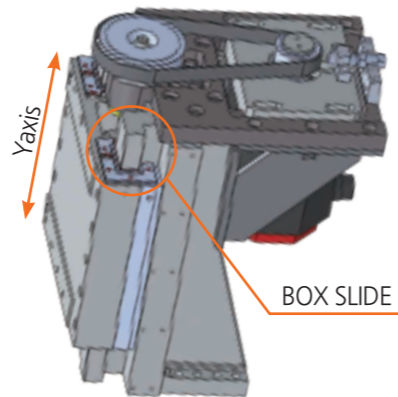
	*DL 22LSY	*DL 25Y/SY
Y axis Travel[mm(inch)]	±55(2.17)	±55(2.17)
Y axis rapid traverse rate[m/min(ipm)]	10(393.70)	10(393.70)

*:Developing Model

BMT turret

12D BMT Turret with Curvic coupling and powerful hydraulic clamping

The built-in largest curvic coupling and powerful hydraulic clamping 12D BMT turret has the largest tool holders in its class to ensure high rigidity and accuracy(0.2 sec/face).

CHUCK size	8"~10"
Max. No. of Tool	12ea
Tool system	BMT 55
Tool size OD/ID[mm(inch)]	25/Ø40 (1/Ø2)
Turret Indexing Time (1st swivel)	0.15sec

Mill tool power torque
- Spindle Motor : 3.7kw(5hp)
- Max spindle speed : 5,000rpm

Y axis Slide Structure

Y axis

X axis

Z axis
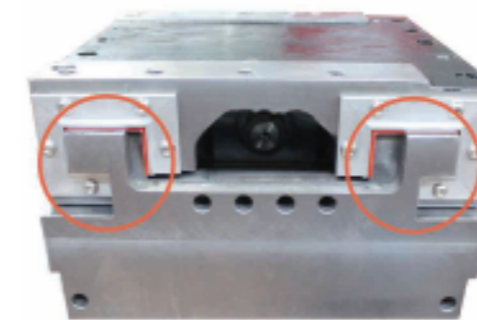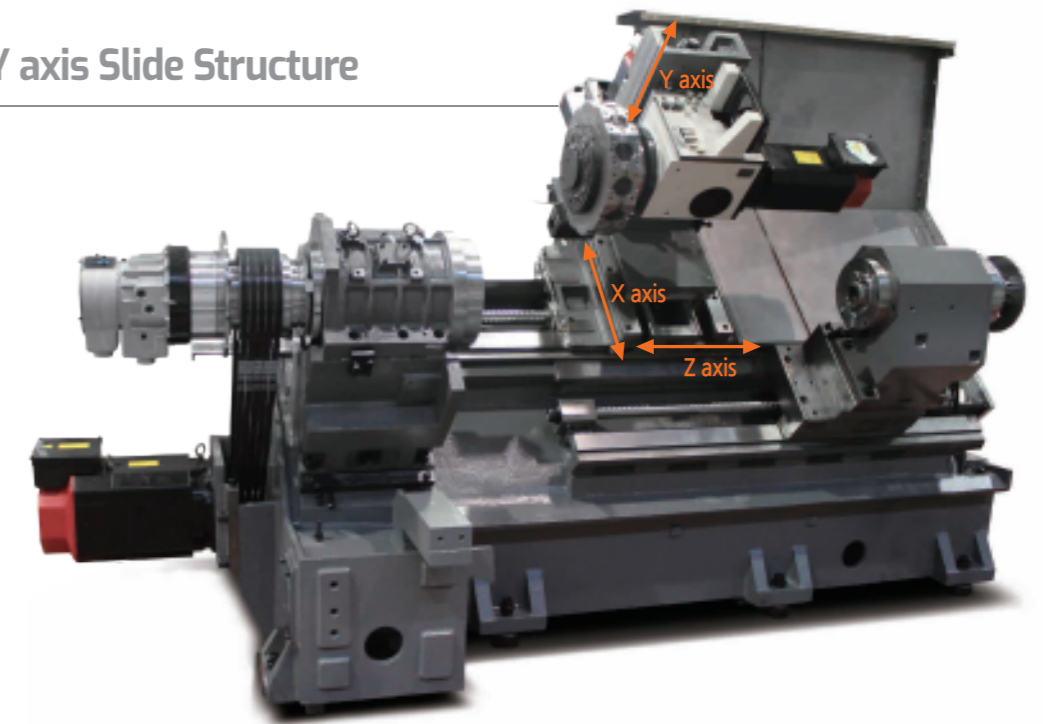
High rigidity, High accuracy, compact structure

» **BOX TYPE SLIDE apply**

- Using the strong structure Box Type Slide that has no shake vitration short speed cutting, make the possibility of strong cutting, guaranteed more stable machining face than LM Guide.

Y axis Machining Example

- Simultaneous X, Y, Z axis feed control and C axis function and X/Y axis circular interpolation function can make available for complex shape workpiece easy machining at high accuracy.

Y axis

Groove finishing cutting using Y-axis
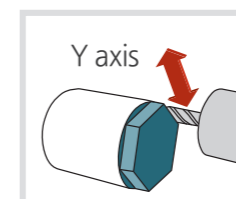
Y axis

Multi face machining

Y axis

Off centered milling

Y axis   X axis
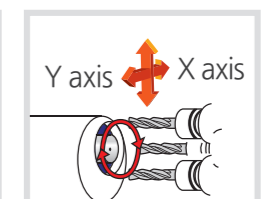
Y&X axis circular interpolation

High Productivity

Rapid Traverse

Unit : m/min(ipm)

X/Z/B/Y axis 24/24/24/10(944.88/944.88/944.88/393.70)

	DL 22LMS	*DL 22LSY	DL 25MS	*DL 25Y	DL 25SY
X axis	24(944.88)	24(944.88)	20(787.40)	20(787.40)	20(787.40)
Z axis	24(944.88)	24(944.88)	24(944.88)	24(944.88)	24(944.88)
B axis	24(944.88)	24(944.88)	24(944.88)	-	24(944.88)
Y axis	-	10(393.70)	-	10(393.70)	10(393.70)

Travel

Unit : mm(inch)

	DL 22LMS	*DL 22LSY	DL 25MS	*DL 25Y	DL 25SY
X axis	190(7.48)	190(7.48)	220(8.66)	220(8.66)	220(8.66)
Z axis	550(21.65)	550(21.65)	1050(41.34)	1050(41.34)	1050(41.34)
B axis	580(22.83)	580(22.83)	940(37)	-	-
Y axis	-	±55(2.17)	-	±55(2.17)	±55(2.17)

* : Developing Model

Axis

Triple bearing
Double + one bearing
Flexible Coupling
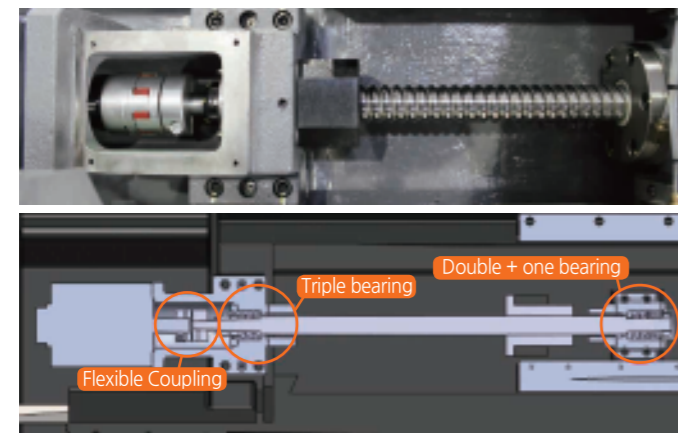
- Double Ahchoring Ball Screw Supporting structure
- Optimal combination of triple angular ball bearing, double angular ball bearing, and radial bearing for the highest rigidity and strength in thrust or radial direction moving.
- Minimized heat distortion with pretension process
- Flexible coupling connects ball screw and servo motor for intact power supply without lost motion and vibration damping ability.

**Biggest diameter in same class**
(DL 22LMS, DL 22LSY, DL 25SY,DL25Y)
Ball Screw diameter :
X/Z/B/Y axis Ø32/40/28/32mm
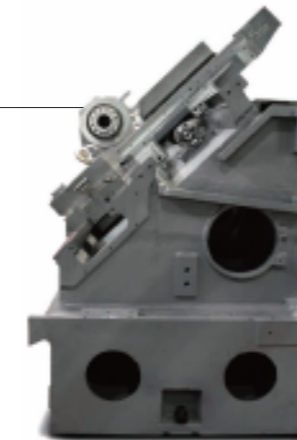**(Ø1.26/1.57/1.10/1.26inch)**

Wide saddle

Wide saddle, minimized machining vibration

- Best High Rigidity in Class
- Wide and Unique 6 faces arresting type box-way with high frequency heat treated and precision grounded slide ways to ensure machine life-time and high accuracy

WIDE   WIDE
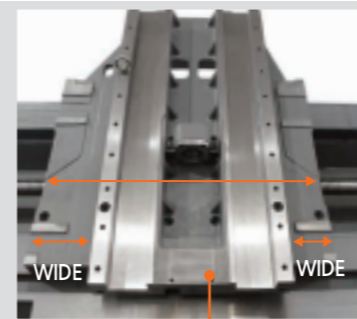
BED

FFG DMC
Other competitors
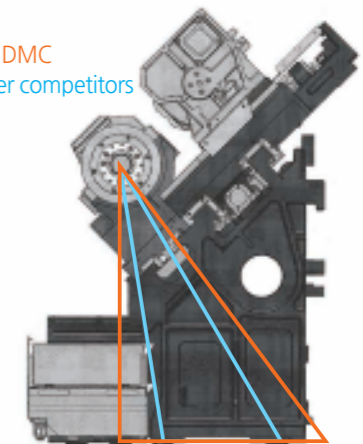
Highest precision even in intermittent cutting with great absorption ability

- 45digree slant bed is great for vibration-dampening capability. High precision quality is guaranteed in a heavy duty cutting and enhanced machine life with elimination of distortion or deformation.

Offers Wide Bed Leveling

- Spindle overhang prevention(provides greater stability)
  DMC : Right triangle
  Other company : Obtuse triangle
- Guaranteed stability against cutting resistance.
- Reduced vibration during high-speed rotation.
- Strong structure against any deformation in long-term.
- Protruding bed leveling boss ensures greater stability in performance.
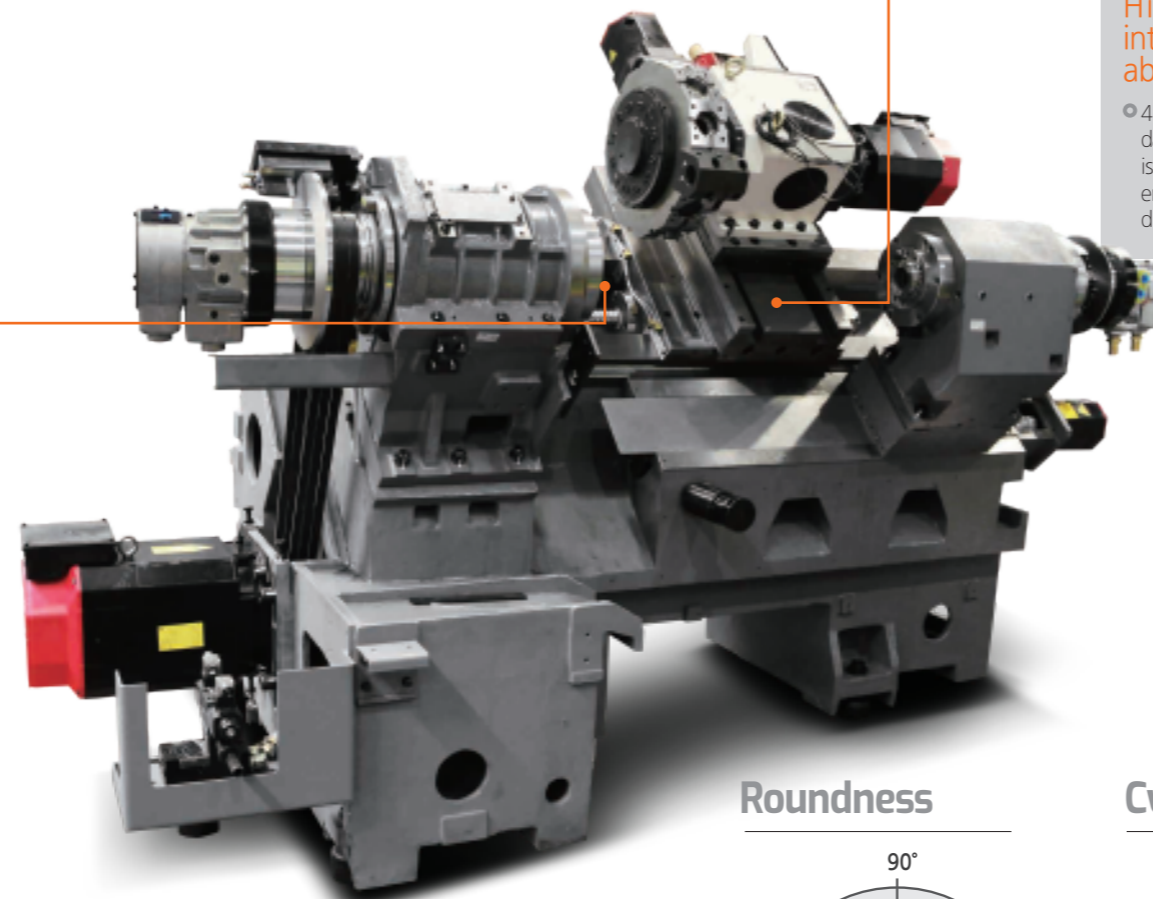
Box way

DL S series(Sub spindle /Y axis) All Models (X,Z) slide Structure

X, Y, Z axis

Wide&thick inner 6-faces Slide way, after high frequency Heat Treatment, can be precision ground so that keep high precision, strong cutting long-time.

Hydraulic Steady Rest

The hydraulic steady rest provides stable and accurate machining of long workpiece. **Option**

Roundness

90°
180°   **0.35** μm   0°
270°
⊢ 1μm

Cylindricity

90°
180°   **0.5** μm   0°
270°
⊢ 1μm

◎ This is actual cutting result. It might be not available under certain circumstances.
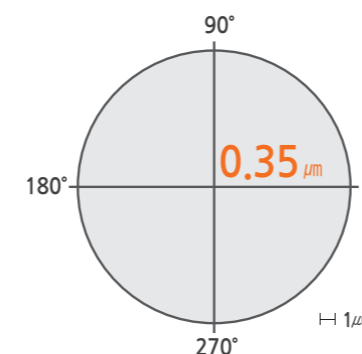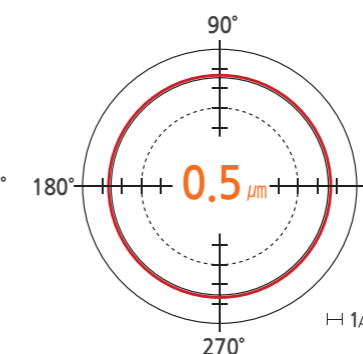
Surface Roughness(O.D. cutting)

10
-10
0.11 μm Ra
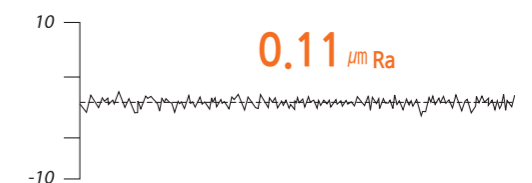
Model	DL 22LMS
Workpiece size	Ø50mmxL50mm(Ø1.97"xL1.97") (SM45C)
Spindle speed	4,000 r/min
Depth of cut	0.02mm(0.0008")
Feedrate	0.025mm/rev(0.001ipr)

User-Friendly, Safe and Designed for Operator Efficiency / Ergonomics

2-Panel Safety Glass

Metal plate
Polycarbonate
Out side
Tempered glass
Resin
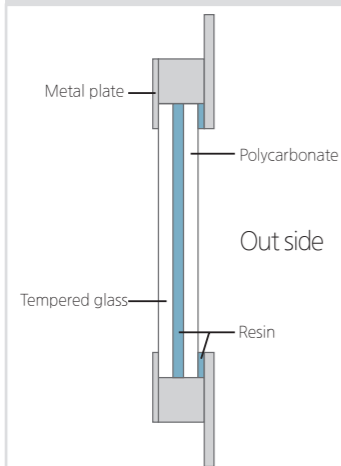
LED Working Light

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

Chuck open/close identification

+ Chuck status is regularly checked for smooth operation

Oil retrieval box

Oil leak prevention

+ Cover to ensure the pleasant work place.
+ Long-lasting life with wiper protection.

3 steps filter coolant tank
Easy Clean-up & Prevent Coolant over flow

+ Chip conveyor installation - front/side type

① ④ ③
Chip Bucket
Chip conveyor
Coolant Tank
②
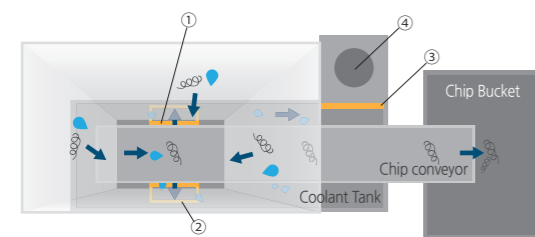
💧 Coolant
🌀 Chip
➡ Flow

① 1st step : Mesh filter
② 2nd step : Bucket mesh
③ 3rd step : Mesh filter
④ 4th step : Motor suction filter

Option

Coolant gun

Air gun

Nipple (air, coolant)

Coupling
Air   Coolant

Front Door Interlock Device

Patrol light

+ LED 3 color wrapped folded when shipping

+ CE standard safety switch can sense door open and close; door is closed during operation

Spindle load meter for the visual spindle load time check

Sub-spindle oil cooling unit (Built-in)

+ Sub spindle is surrounded by oil cooling system, so minimized the heat distortion, guaranteed high-speed, high-accuracy machining at multi work environments.
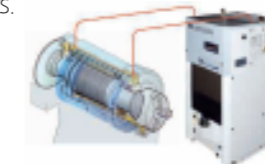
RS232C (Input/output interface)

+ USB port

Lubrication unit (3ℓ/0.79gal)

Movable CNC panel

+ Front assembled to be able to confirm by operator

+ Convenient swiveling CNC panel

Easy Clean-up Removable Coolant

+ Big size tank
+ Drawer-type oil tank with wheels is detachable from the coolant tank for easy daily maintenance.
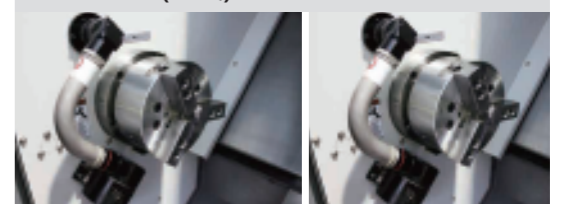
Tool setter(OPT.)

Manual
+ Manual Tool setter
+ Aluminum metallic tube,compact design

Automatic
+ Auto Tool setter
+ Fully authenticated components

Option

Various standard options and Specialized features for customers

Features

Hydraulic chuck, Soft jaw, Tool box, Hydraulic unit, Door interlock, Cutting oil supplying device, Work light, Leveling bolt&place, Foot switch, Air unit, Lubrication unit, 3-step patrol light, Chuck open/close identification, RS232C

Option Equipment

Turret

Coolant Tank

Auto Front Door

Chip conveyor

Moderate/High pressure Coolant(6/20 bar)

Oil Mist Collector

Oil Skimmer(Belt type)

FLOAT SWITCH   DISK TYPE OIL SKIMMER

Oil Skimmer(Disk type)

Line Filter(100 Mesh)

Air   Coolant

Spindle thru Air/Coolant (when special chuck is included)

Part Catcher

Special Chuck

Upper side chuck Air/Coolant

Point Sensor(2 Point high precision position control)

Multi Counter

Sub control panel

230ℓ (60.76gal) (Swing)
300ℓ (79.25gal) (Swing)
300ℓ (79.25gal) (Fork lift)
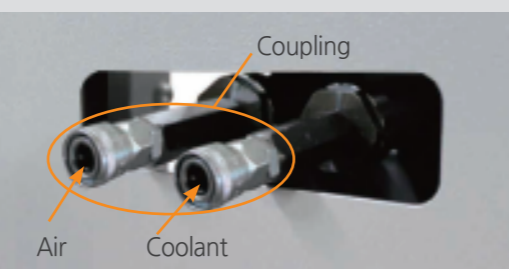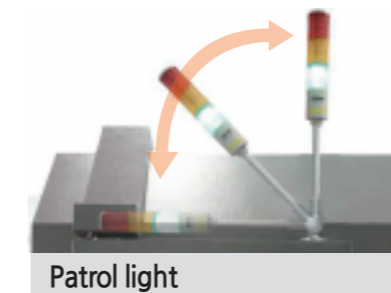380ℓ (100.38gal) (Fork lift)
440ℓ (116.23gal) (Fork lift)

Linear scale(High precision position control)

Counter

Air Limit(Workpiece contact surface check equipment)

Other soft options selection

◦ I/O extension(16 contacts, 32 contacts)   ◦ Automatic power-off   ◦ M - code

Tooling system

★ : Developing Model, □ : Option(Not-Supplied)

DL 22LMS, ∗DL 22LSY, DL 25MS, ∗DL 25Y, DL 25SY

Boring bar

Boring bar sleeve
Ø10-H40/Ø12-H40
Ø16-H40/Ø20-H40
Ø25-H40/Ø32-H40

I.D Tool holder(H40)

Ø40 Boring bar

Drill

Drill socket
MT#1-H40
MT#2-H40
MT#3-H40

U-Drill

U-Drill sleeve
Ø20-H40/Ø25-H40/
Ø32-H40

U-Drill cap(H40)

12st Turret(BMT55)

O.D tool holder

O.D tool □25

Face tool holder

Drill

ER25(OPT)

Axial / Mill holder

Radial / Mill holder

Tooling interference diagram

* : Developing Model, Unit : mm(inch)

DL 22LMS

DL 22LSY

DL 25MS, *DL 25Y, DL 25SY, *DL25LSY

Working range

* : Developing Model, Unit : mm(inch)

DL 22LMS

O.D tool holder

O.D tool holder

I.D tool holder

Radial tool holder

Axial tool holder

*DL 22LSY

O.D tool holder

I.D tool holder

Radial driven holder

Axial driven holder

Working range

＊ : Developing Model, Unit : mm(inch)

O.D tool holder

I.D tool holder

Radial tool holder

Face tool holder

Axial tool holder

DL 25MS / DL 25SY(6")
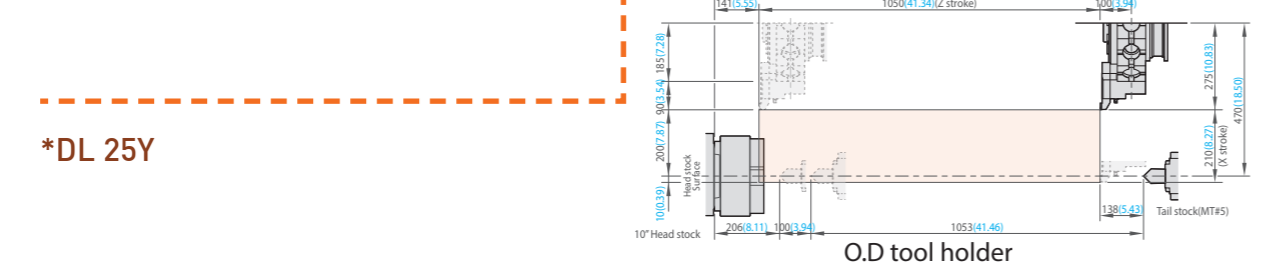
O.D tool holder

*DL 25Y

I.D tool holder

Face tool holder

Working range

＊ : Developing Model, Unit : mm(inch)

Radial tool holder

Axial tool holder

DL 25MS / DL 25SY(8")

O.D tool holder

I.D tool holder

Radial tool holder

Face tool holder

Axial tool holder

Machine lay-out

Unit : mm(inch)

DL 22LSY
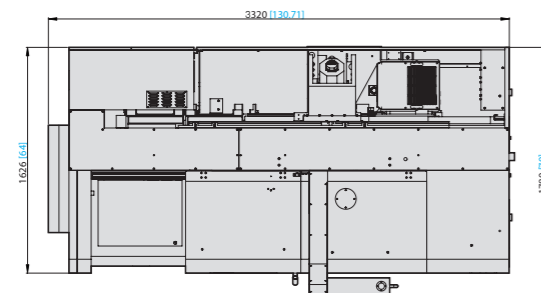
Top
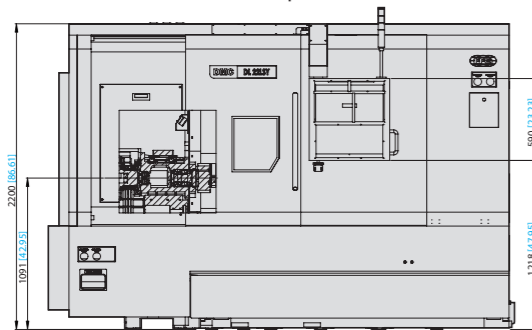
Front

Side

DL 25SY

Top
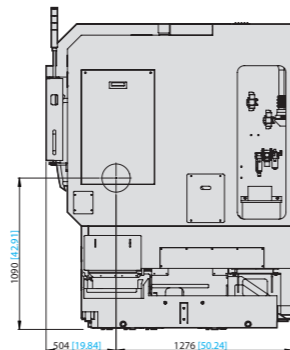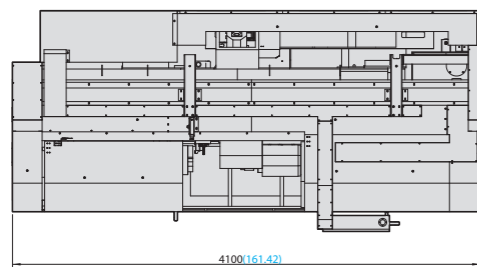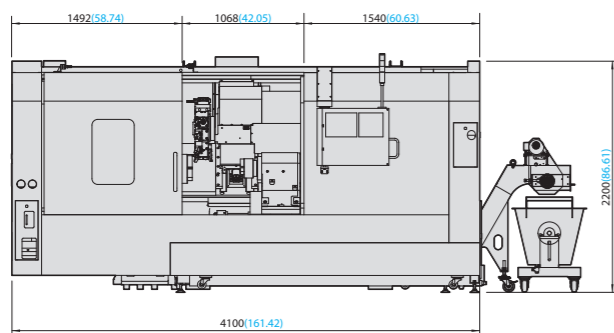
Perspective

Front
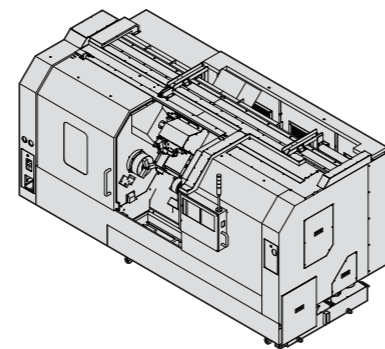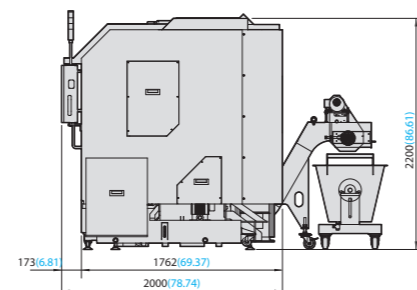
Side

Machine Specifications

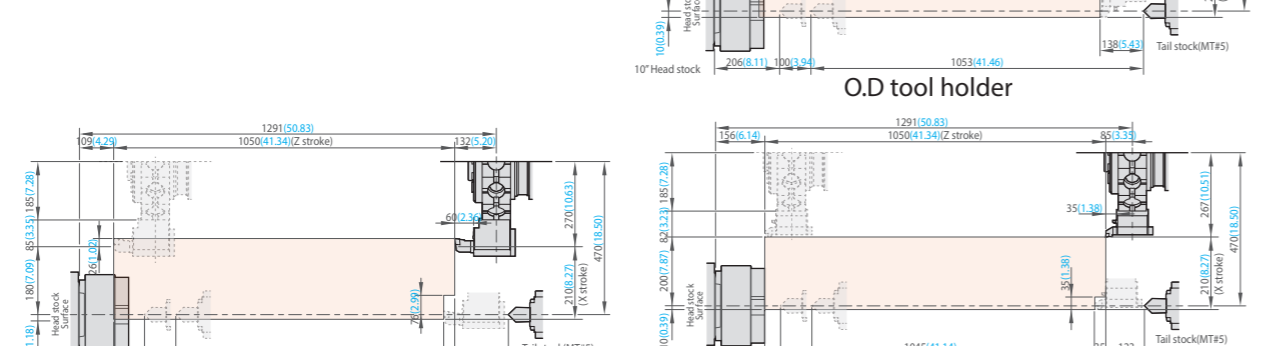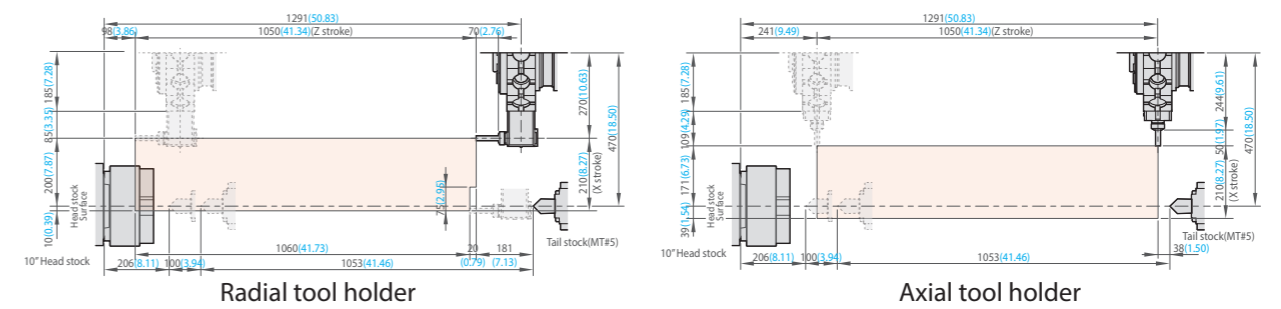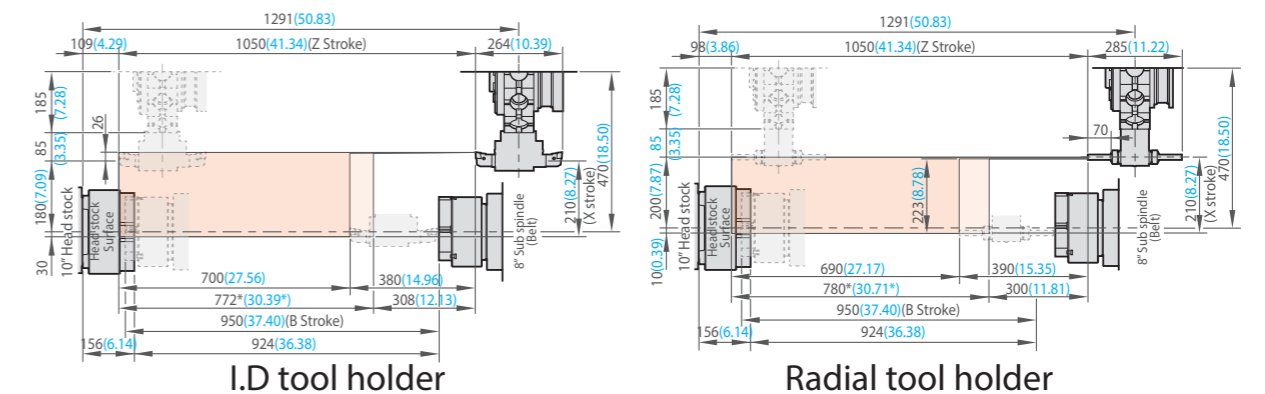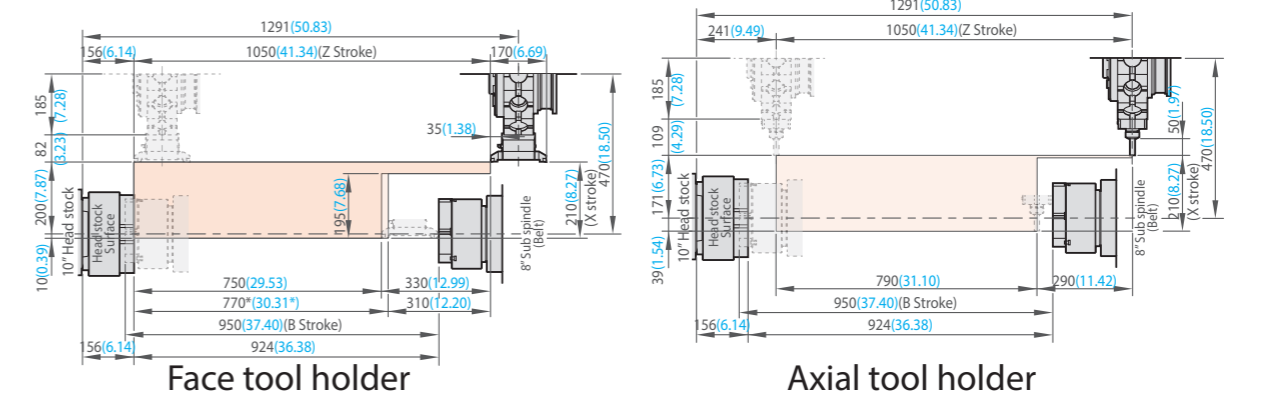| Specifications			DL 22LMS	*DL 22LSY
Capacity	Swing over Bed (Max.swing dia.)	mm(inch)	550(21.65)	550(21.65)
	Swing over Cross slide	mm(inch)	360(14.17)	410(16.14)
	Max. Turning Dia.	mm(inch)	280(11.02)	280(11.02)
	Max.Turning Length	mm(inch)	500(19.69)	500(19.69)
	Bar Capacity — Main	mm(inch)	64(2.52)	64(2.52)
	Bar Capacity — Sub	mm(inch)	26(1)	26(1)
Spindle	Max.Spindle Speed	rpm	4,000	4,000
	Spindle Nose	-	A2-6	A2-6
	Spindle Bore diameter (Main)	mm(inch)	76(2.99)	76(2.99)
	Max. Spindle Torque (Main)	kgf·m(lbs·ft)	45(326)	18.4(133)
	Spindle Driven Method (Main)	-	Belt	Belt
	Chuck Size (Main)	inch	8	8
	Sub Spindle Speed	rpm	6,000	6,000
	Sub Spindle Nose	-	A2-5 Mill	A2-5 Mill
	Sub Spindle Bore diameter (Sub)	mm(inch)	40(1.57)	40(1.57)
	Max. Sub Spindle Torque (Sub)	kgf·m(lbs·ft)	6(43)	6(40)
	Sub Spindle Driven Method (Sub)	-	Built-in	Built-in
	Chuck Size(Sub)	inch	6	6
Motor	Main Spindle Motor (Cont./30min) — Main	kw(hp)	11/15(15/20)	15/18.5(20/25)
	Main Spindle Motor (Cont./30min) — Sub	kw(hp)	5.5/7.5(7.5/10)	5.5/7.5(7.5/10)
	X/Z/B/Y axis Servo Motor	kw(hp)	3/3/3/-(4.02/4.02/4.02/-)	4/4/3/1.6(5.36/5.36/4.02/2.14)
	Mill Spindle Motor(Cont./30min)	kw(hp)	2.2/3.7(3/5)	1.1/3.7(1.5/5)
Travel	X axis travel	mm(inch)	190(7.48)	190(7.48)
	Z axis travel	mm(inch)	550(21.65)	550(21.65)
	B axis travel	mm(inch)	580(22.83)	580(22.83)
	Y axis travel	mm(inch)	-	±55
	Guideway Type — X/Z	-	Box way	Box way
	Guideway Type — B/Y	-	Box way/-	Box way/Box way
	X/Z/B/Y axis rapid traverse rate	m/min(ipm)	24/24/24/-(945/945/945/-)	24/24/24/10(945/945/945/394)
Turret	Turret Index Type	-	Servo	Servo
	Max. No. of Tools	ea	12/BMT55	12/BMT55
	Turning tool shank size	mm(inch)	25 (0.98)	25 (0.98)
	Boring bar diameter	mm(inch)	Ø40(Ø1.57)	Ø40(Ø1.57)
	Turret Indexing Time(1st swivel)	sec	0.15	0.15
	Rotating Tool Speed	rpm	5,000	4,500
Tank Capacity	Coolant Tank Capacity	ℓ(gal.)	250(66.04)	250(66.04)
	Hydraulic Tank Capacity	ℓ(gal.)	14(3.70)	14(3.70)
General	Machine Weight	kgf(lbs)	4,500(9,921)	4,660(10,273)
	Machine height	mm(inch)	2,050(80.71)	2,200(86.61)
	Floor space — Length	mm(inch)	3,320(130.71)	3,320(130.71)
	Floor space — Width	mm(inch)	1,600(62.99)	1,780(70)
	Power capacity	kVA	42	54
	Controller	-	F0i-TF	F0i-TF

Machine Specifications

Specifications			DL 25MS
Capacity	Swing over Bed (Max.swing dia.)	mm(inch)	710(27.95)
	Swing over Cross slide	mm(inch)	580(22.83)
	Max. Turning Dia.	mm(inch)	400(15.75)
	Max.Turning Length	mm(inch)	1,000(39.37)
	Bar Capacity — Main	mm(inch)	76(2.99)
	Bar Capacity — Sub		65(27)
Spindle	Max.Spindle Speed — Main	rpm	3,500
	Spindle Nose	-	A2-8
	Spindle Bore diameter	mm(inch)	86(3.39)
	Max. Spindle Torque	kgf·m(lbs·ft)	35.7(258)
	Spindle Driven Method	-	Belt
	Chuck Size	inch	10
	Sub Spindle Speed — Sub	rpm	Max. 4,000[8"](6,000[6"])
	Sub Spindle Nose	-	A2-6[8"](A2-5[6"])
	Sub Spindle Bore diameter	mm(inch)	76[8"](40[6"])(2.99[8"](1.57[6"]))
	Max. Sub Spindle Torque	kgf·m(lbs·ft)	15[8"](6[6"])(108[8"](44[6"]))
	Sub Spindle Driven Method	-	Belt[8"](Bult-in[6"])
	Chuck Size(Sub)	inch	8(6)
Motor	Main Spindle Motor (Cont./30min) — Main	kw(hp)	18.5/22(25/30)
	Main Spindle Motor (Cont./30min) — Sub		11/15[8"](5.5/7.5[6"])(15/20[8"](7/10[6"]))
	X/Z/B/Y axis Servo Motor	kw(hp)	3/3/3-(4.02/4.02/4.02/-)
	Mill Spindle Motor(Cont./30min)	kw(hp)	3.7/5.5(5/7.4)
Travel	X axis travel	mm(inch)	220(8.66)
	Z axis travel	mm(inch)	1,050(41.34)
	B axis travel	mm(inch)	940(37)
	Y axis travel	mm(inch)	-
	Guideway Type — X/Z	-	Box way
	Guideway Type — B/Y	-	Box way/-
	X/Z/B/Y axis rapid traverse rate	m/min(ipm)	20/24/16/- (787.40/944.88/629.92/-)
Turret	Turret Index Type	-	Servo
	Max. No. of Tools	ea	12/BMT55
	Turning tool shank size	mm(inch)	25 (0.98)
	Boring bar diameter	mm(inch)	Ø40(Ø1.57)
	Turret Indexing Time(1st swivel)	sec	0.15
	Rotating Tool Speed	rpm	5,000
Tank Capacity	Coolant Tank Capacity	ℓ(gal.)	260(68.68)
	Hydraulic Tank Capacity	ℓ(gal.)	28(7.40)
General	Machine Weight	kgf(lbs)	7,500(16,534)
	Machine height	mm(inch)	2,200(86.61)
	Floor space — Length	mm(inch)	4,100(161.42)
	Floor space — Width	mm(inch)	2,000(78.74)
	Power capacity	kVA	43
	Controller	-	F0i-TF

Machine Specifications

Specifications			*DL 25Y	DL 25SY
Capacity	Swing over Bed (Max.swing dia.)	mm(inch)	710(27.95)	710(27.95)
	Swing over Cross slide	mm(inch)	580(22.83)	580(22.83)
	Max. Turning Dia.	mm(inch)	400(15.75)	400(15.75)
	Max.Turning Length	mm(inch)	1,000(39.37)	1,000(39.37)
	Bar Capacity — Main	mm(inch)	76(2.99)	76(2.99)
	Bar Capacity — Sub		-	65[8"](28[6"])(2.56[8"](1.10[6"])
Spindle	Max.Spindle Speed — Main	rpm	3,500	3,500
	Spindle Nose	-	A2-8	A2-8
	Spindle Bore diameter	mm(inch)	86(3.39)	86(3.39)
	Max. Spindle Torque	kgf·m(lbs·ft)	35.7(258)	35.7(258)
	Spindle Driven Method	-	Belt	Belt
	Chuck Size	inch	10	10
	Sub Spindle Speed — Sub	rpm	-	Max. 4,000[8"](6,000[6"])
	Sub Spindle Nose	-	-	A2-6[8"](A2-5[6"])
	Sub Spindle Bore diameter	mm(inch)	-	76[8"](40[6"])(2.99[8"](1.57[6"])
	Max. Sub Spindle Torque	kgf·m(lbs·ft)	-	15[8"](6[6"])(108[8"](44[6"])
	Sub Spindle Driven Method	-	-	Belt[8"](Bult-in[6"])
	Chuck Size(Sub)	inch	-	8(6)
Motor	Main Spindle Motor (Cont./30min) — Main	kw(hp)	18.5/22(25/30)	18.5/22(25/30)
	Main Spindle Motor (Cont./30min) — Sub		-	11/15[8"](5.5/7.5[6"])(15/20[8"](7/10[6"])
	X/Z/B/Y axis Servo Motor	kw(hp)	3/3/-/2.5(4.02/4.02/-/3.35)	3/3/3/2.5(4.02/4.02/4.02/3.35)
	Mill Spindle Motor(Cont./30min)	kw(hp)	3.7/5.5(5/7.4)	3.7/5.5(5/7.4)
Travel	X axis travel	mm(inch)	220(8.66)	220(8.66)
	Z axis travel	mm(inch)	1,050(41.34)	1,050(41.34)
	B axis travel	mm(inch)	-	940(37)
	Y axis travel	mm(inch)	±55(±2.17)	±55(±2.17)
	Guideway Type — X/Z	-	Box way	Box way
	Guideway Type — B/Y	-	-/Box way	Box way/Box way
	X/Z/B/Y axis rapid traverse rate	m/min(ipm)	20/24/-/10(787.40/944.88/-/393.70)	20/24/16/10(787.40/944.88/629.92/393.70)
Turret	Turret Index Type	-	Servo	Servo
	Max. No. of Tools	ea	12/BMT55	12/BMT55
	Turning tool shank size	mm(inch)	25 (0.98)	25 (0.98)
	Boring bar diameter	mm(inch)	Ø40(Ø1.57)	Ø40(Ø1.57)
	Turret Indexing Time(1st swivel)	sec	0.15	0.15
	Rotating Tool Speed	rpm	5,000	5,000
Tank Capacity	Coolant Tank Capacity	ℓ(gal.)	260(68.68)	260(68.68)
	Hydraulic Tank Capacity	ℓ(gal.)	28(7.40)	28(7.40)
General	Machine Weight	kgf(lbs)	7,800(17,196)	7,800(17,196)
	Machine height	mm(inch)	2,200(86.61)	2,200(86.61)
	Floor space — Length	mm(inch)	4,100(161.42)	4,100(161.42)
	Floor space — Width	mm(inch)	2,000(78.74)	2,000(78.74)
	Power capacity	kVA	40	52
	Controller	-	F0i-TF	F0i-TF

NC Specifications (FANUC F0i-TF)

: Standard, OPT. : Option, (!) : M type, (!!) : 2SO type

	Item	Specification	0iTF
Controls	Controlled axes	Std. 2axes	MS:Std. 4axes(X,Z,C,B)/Y:Std. 4axes(X,Z,C,Y) /SY:Std. 6axes(X,Z,C,Y,B,A)
	Simultaneously control axes expansion(Total)	0.001mm/0.0001"	4 axes
Axis Functions	Least input increment		
	Cs contouring control		(!)
	HRV2 Control		
	Inch/metric conversion	G20/G21	
	Increment system 1/10	0.0001mm/0.00001"	
	Stored stroke 1	Overtravel control	
	Stored stroke 2 and 3		
	Mirror image		
	Chamfering on/off		
	Backlash compensation	Max. 255 pulses	
	Stored pitch error compensation		
Operation	Automatic operation(memory)		
	MDI operation		
	Buffer register		
	Program restart		
	Search function	Sequence NO./Program NO./Address	
	DNC operation		
	Reference position shift		-
	Manual handle feed rate	X1, X10, X100	
	Manual pulse generator	1unit	
	Manual handle interuption		
Interpolation	Linear interpolation	G01	
	Circular interpolation	G02, G03	
	Dwell	G04	
	Polar coordination interpolation	G12.1, G13.1	(!)
	Cylindrical interpolation		(!)
	Thread cutting/Synchronous cutting		
	Multiple threading		
	Thread cutting retract		
	1st, 2nd reference posision return & check	G27, G28, G30	
	Variable lead thread cutting		
	Continuous thread cutting		
	Circular thread cutting		OPT.
	3rd and 4th reference point return		
	polygon turning		OPT.
	Helical interpolation		OPT.
Feed functions	Rapid traverse override	F0/25/50/100%	
	Feedrate Override	0-200% (10% unit)	
	Jog feed override	0-2000 mm/min	
	Feed per minute	G98	
	Feed per revolution	G99	
	Cutting feedrate clamp		
	External deceleration		
	Feed stop		-
	AI Comtour control I/		OPT.
Axulliary & Spindle functions	Spindle speed override	0~150%	
	Constantant surface speed control	G96, G97	
	1st Spindle orientation		
	Rigid tapping		
	Multi-spindle control		(!)
	Auxiliary function	M8 digit	
Programming functions	Program/code	EIA/ISO	
	Optional block skip	1 Piece	
	Additional block skip	Total 9 (Only NC function)	

	Item	Specification	0iTF
Programming functions	Maximum command dimension	± 99999.999mm/(± 9999.9999 inch)	
	Program file name	32 characters	
	Sequence number	N8 digit	
	Absolute / Incremental programming		
	Decimal point input		
	Work coordinate system selection	G52 ~ G59	
	Direct drawing dimension programming		
	G code system A/B/C		
	G code system B/C(selectable)		
	Chamfering / corner R		
	Programmable data input	G10	
	Sub program call	Nested holds	10
	Custom macro		
	Simple canned cycles	G90, G92, G94	
	Circular interpolation by R programming		
	Multi repetitive canned cycle	G70 ~ G76	
	Multi repetitive canned cycle2		
	Drilling canned cycle(G80 series)		
	Program format for FANUC series 10/11		
	Manual guide oi		OPT.
Tool functions	Tool number command(t-code function)	T4-digit	
	Number of tool offsets		128 Pairs
	Tool offset	G43, G44, G49	
	Tool nose radius compensation	G40 ~ G42	
	Tool geometry / wear offset	Geometry & wear data	
	Tool life management		
	Tool offset value counter input		
	Auto tool offset		
	Direct input of tool offset value measured B		
Editing op. functions	Part program storage size		512 kb
	No. of Registered programs		400 ea
	Part program editing		
	Program protect		
	Background editing		
	Expanded part program editing	Copy, Move, Change of NC program	
Setting & display	Status display		
	Program name display	31 characters	
	Self diagnostic function		
	Help function	Alarm & Operation display	
	Running tiome / Parts number display	Auto running time & Parts No. display	
	Load meter display	Spindle & Servo load display	
	External message display		
	Display of spindle speed and T-code at all screen		
	Tool path graphic display		
	Servo setting screen		
	Spindle setting screen		
	Multi language display		
Data input & output	I/O interface	RS-232C/LAN Port	
	Memory card input and output		
	External key input		
	External program input		
	External work number search		
	USB Memory	Input/Output	
	Fast Data Server	Only 1 path, Need OPT board	OPT
Other functions	MDI / DISPLAY unit		10.4"
	PMC system		
	Ethernet function	Embedded ethernet function	