

SINCE 1944

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* Please contact us or visit our site for more product information.

DL R/B series (En)

CNC Turning Center

DL R series (Roller guide way)

DL 21A / DL 21LA / DL 21MA / DL 21LMA
DL 21B / DL 21LB / DL 21MB / DL 21LMB

DL B series (Box guide way)

DL 22A / DL 22LA / DL 22LMA
DL 22B / DL 22LB / DL 22LMB

www.ffg-dmc.com



FFG DMC CO.,LTD.

631-821,86,Sandan 2-gil, Jinbuk-myeon, Masanhappo-gu,
Changwon-si, Gyeongsangnam-do, Korea

Phone : +82-(0)55-340-8200

Fax : +82-(0)55-340-8394

E-mail : sales@dmcmt.com

www.ffg-dmc.com



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DL R/B series

DL R series (Roller guide way)

DL 21A / DL 21LA / DL 21MA / DL 21LMA
DL 21B / DL 21LB / DL 21MB / DL 21LMB

DL B series (Box guide way)

DL 22A / DL 22LA / DL 22LMA
DL 22B / DL 22LB / DL 22LMB

High speed, High precision, High productivity
High accuracy and powerful turning center equipped
with Roller guide and Box way



DL 21MA

Travel (X/Z) (mm)(inch)	200 × 410	7.87 × 16.14
Guideway Type	Roller Guide Way	
Spindle speed (rpm)	4,000	
Number of tools (pcs)	12	



DL 21LMA

Travel (X/Z) (mm)(inch)	200 × 550	7.87 × 21.65
Guideway Type	Roller Guide Way	
Spindle speed (rpm)	4,000	
Number of tools (pcs)	12	



DL 22LMA

Travel (X/Z) (mm)(inch)	200 × 550	7.87 × 21.65
Guideway Type	BOX Way	
Spindle speed (rpm)	4,000	
Number of tools (pcs)	12	

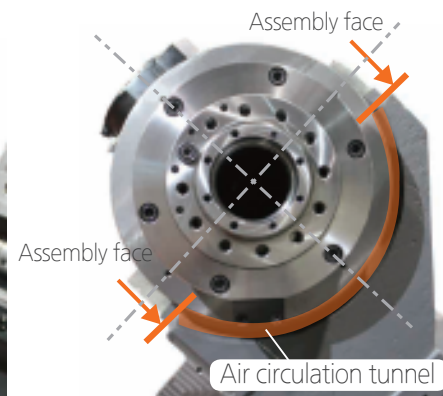
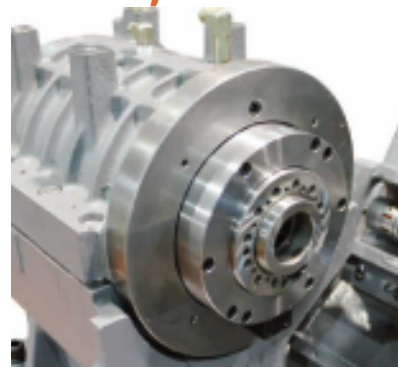


DL 22LMB

Travel (X/Z) (mm)(inch)	200 × 550	7.87 × 21.65
Guideway Type	BOX Way	
Spindle speed (rpm)	3,500	
Number of tools (pcs)	12	

High productivity

Spindle



The central fixation spindle cartridge structure prevents heat distortion, enabling highly stable and precise spindle capability.

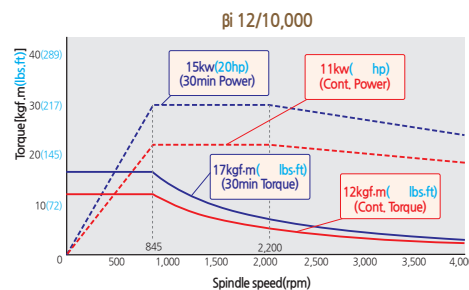
- Because of separate assemble between Spindle Cartridge and Head Body, it can block the transfer of heat.
- When repairing, only Cartridge needs to be changed.
- Cooling effect as designed Air Circulation Tunnel[Aerial Exposure in the bottom of structure]
- Keep high precision with blocking vibration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

[]:Option

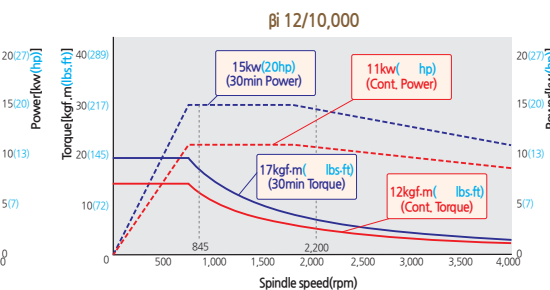
	DL 21A/21LA DL 21MA/21LMA	DL 21B/21LB DL 21MB/21LMB	DL 22A/22LA DL 22LMA	DL 22B/22LB DL 22LMB
Chuck size	8" BIG	10"	8" BIG	10"
Max. Spindle Speed[rpm]	4,000	3,500	4,000	3,500
Max Spindle Motor[kw(hp)]	15(20)	15(20)[20/25]	15(20)	15(20)[20/25]
Max Spindle torque[Nm(lbs-ft)]	167(1205)	196(1418)	167(1205)	196(1418)
Spindle Bore diameter[mm(inch)]	76(2.99)	86(3.39)	76(2.99)	86(3.39)
Bar Capacity[mm(inch)]	65(2.56)	76(2.99)	65(2.56)	76(2.99)

Power - Torque diagram

DL 21A/21LA/21MA/21LMA
DL 22A/22LMA



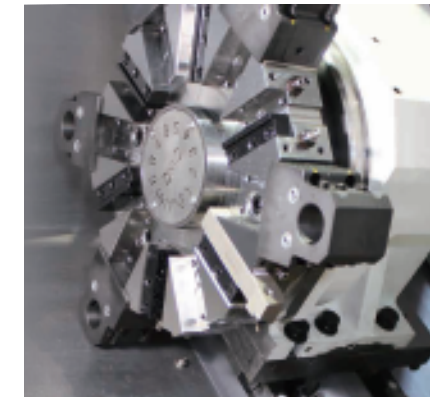
DL 21B/21LB/21MB/21LMB
DL 22B/22LB/22MB/22LMB



- High precision spindle structure
Front-end double anchorage cylindrical roller bearing(4 at the front and 2 at the back)

Turret

High Torque Servo Turret



Indexing time	Number of tool positions
0.2 sec	12 station

- The 12-position turret enables various combinations of O.D./I.D. tool holders in all positions, FANUC servo motor index and 3-pieces curvic coupling of 4,913kgf hydraulic clamping power guarantees rapid tool change, quiet and stable machining experience, and versatile cutting abilities such as heavy duty and intermittent cutting.
- Turret indexing is non-stop bi-direction with a 0.2 sec next station time each turret stations capable of accepting both milling and turning tools.

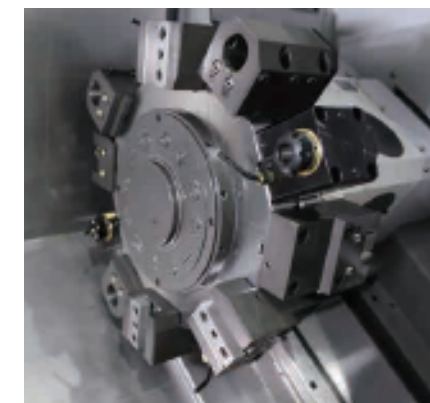
Standard Turret

unit:mm(inch)

- 3Piece curvic coupling non protruding when turret rotating
- Tool size :25 (0.98)xØ40(1.57)
- Turret clamping : 4,913kgf(10,831lbs)
- Turret indexing : repeatability ±0.005(0.0002)

24 tools can be attached
(consult with our engineer)

High Torque BMT Servo Turret



Milling spindle speed	Tool holer
5,000 rpm	BMT55

The 12 station BMT turret with the curvic coupling and hydraulic clamping power

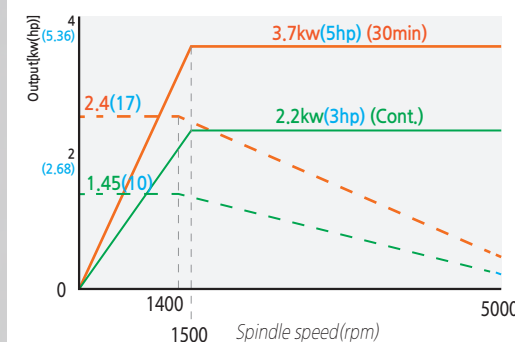
The 12-station turret of curvic coupling and hydraulic clamping capability effectively prevents vibration in heavy cutting. Longer tool life and high accuracy indexing add to great precision machining. All turret acceleration/deceleration clamp activities are controlled by the high torque servo motor. The milling tool holder(BMT55), which is to be attached on the turret face, is operated by the separate servo motor, and superb accuracy and precision are greatly improved.

Mill Turret [BMT55]

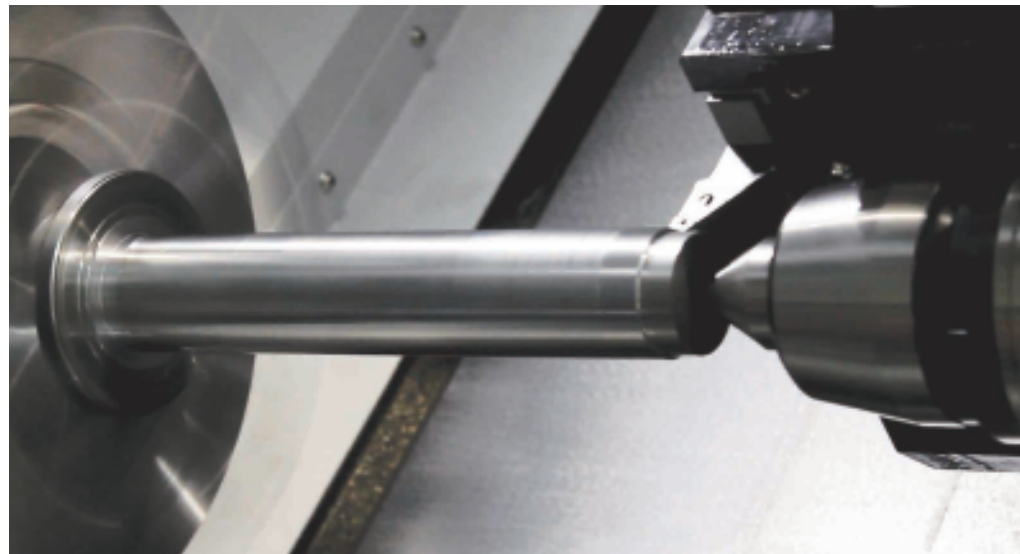
unit:mm(inch)

- Tool size :25 (0.98), Ø40(1.57)
- Turret clamping :4453kgf(9,817lbs)
- Turret indexing : repeatability ±0.005(0.0002)
- Large size diameter coupling : Ø200(7.87)
- Spindle Motor : 3.7kw(5hp)
- Milling Spindle Speed : 5,000rpm

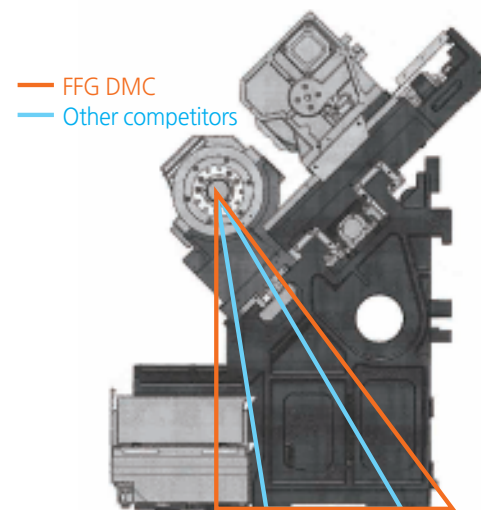
Milling motor torque diagram



High productivity



Bed

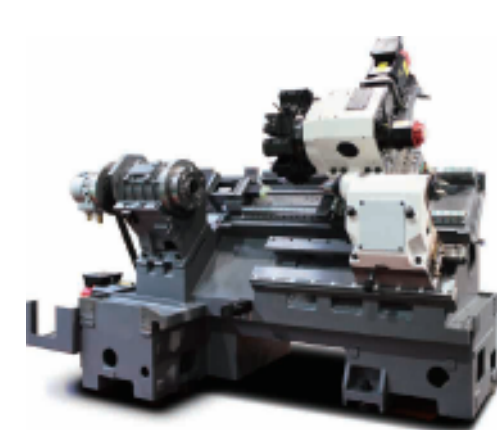
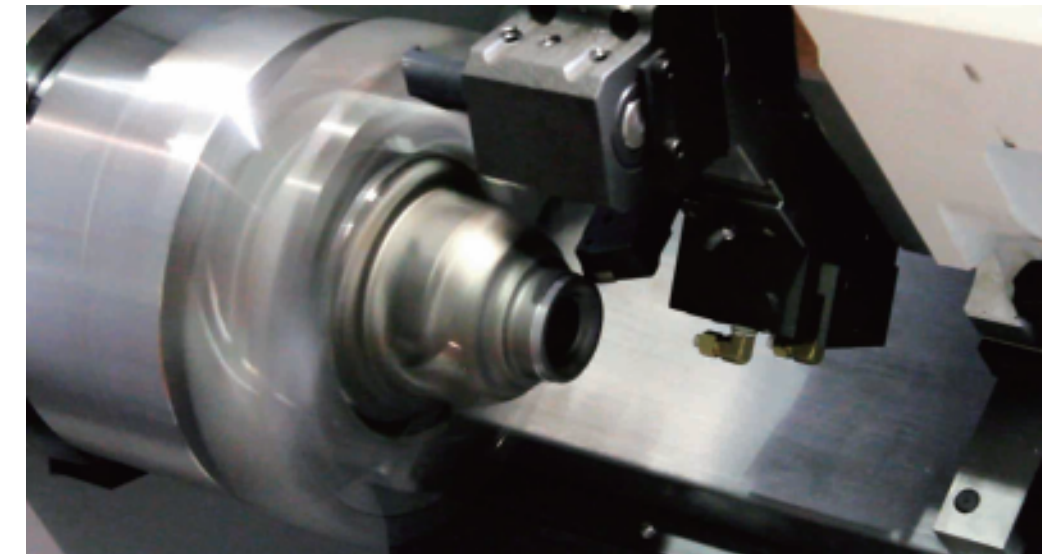


Highest precision even in intermittent cutting with great absorption ability

- 45degree 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)
- FFG 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.



Roller Guide type

DL 21A / 21LA / 21MA / 21LMA
DL 21B / 21LB / 21MB / 21LMB



NO Turcite

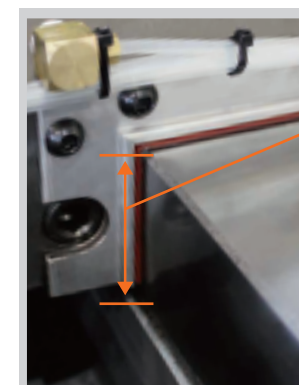
Box way type

DL 22A / 22LA / 22LMA
DL 22B / 22LB / 22LMB

Roller guide best for high speed heavy industry cutting



Roller guide offers faster speed and realizes repeat accuracy in determining position with 0.001 mm accuracy.



Box way: 1.8x thicker than other company's

Wider and thicker guide way and 6-faces fixed slide way are meticulously machined after high frequency heat treatment for the long-lasting precision quality and strong heavy cutting. Hand scrapping on the cast iron (other companies use turcite)

High productivity

Rapid traverse rate

Roller type Rapid traverse rate **X/Z axis 36m/min(1,417ipm)**
Competitor's model rapid traverse rate X/Z axis 20m/min(787ipm)

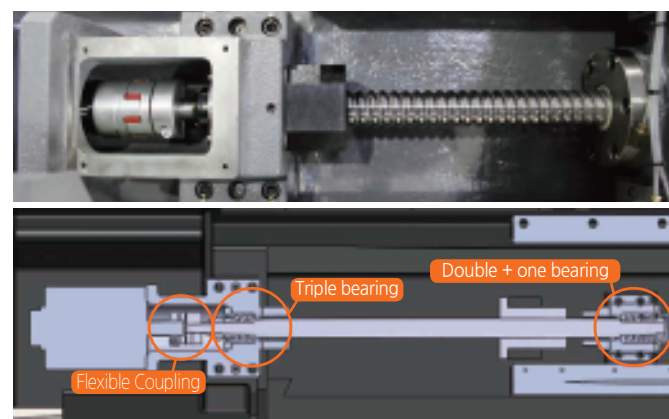
Box type Rapid traverse rate **X/Z axis 24m/min(945ipm)**
Competitor's model rapid traverse rate X/Z axis 20m/min(787ipm)

Unit : m/min(ipm)			
Type	MODEL	X axis	Z axis
Roller	DL 21A/21LA/21MA/21LMA	36(1,417)	36(1,417)
	DL 21B/21LB/21MB/21LMB		
Box	DL 22A/22LA/22LMA	24(945)	24(945)
	DL 22B/22LB/22LMB		

Travel

Unit : mm(inch)		
MODEL	X axis	Z axis
DL 21A/22A/21B/22B	210(8.27)	430(16.93)
DL 21LA/22LA/21LB/22LB	210(8.27)	580(22.83)
DL 21MA/21MB	200(7.87)	410(16.14)
DL 21LMA/22LMA/21LMB/22LMB	200(7.87)	550(21.65)

Axis



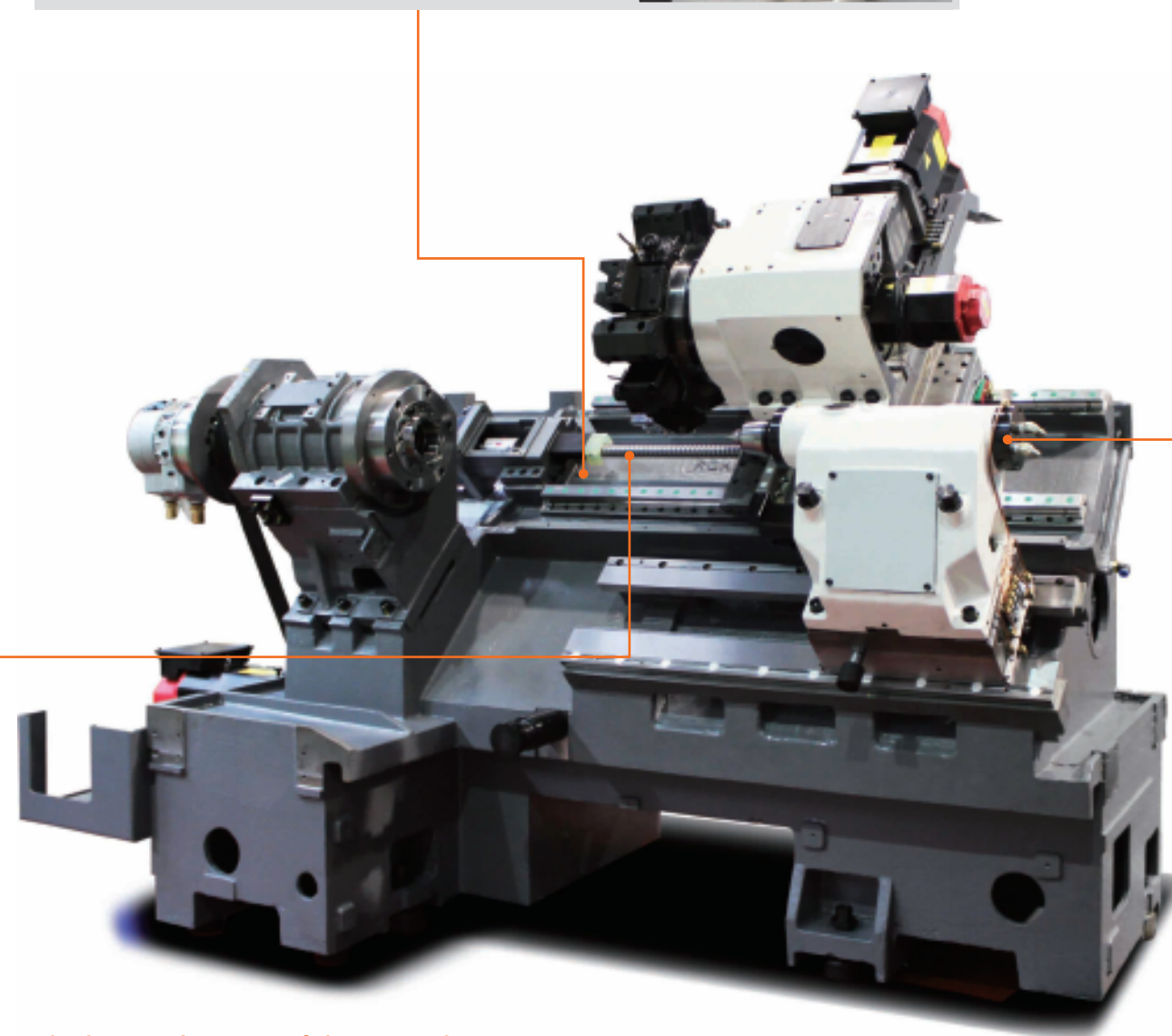
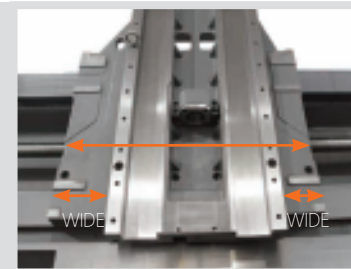
Flexible coupling connection for the efficient delivering power input and shock absorbtion

- Double anchorage ball screw support type.
- Optimized combination of the triple angular ball bearing, double angular ball bearing, and radial bearing to maximize thrust & radial direction rigidity.
- Minimized heat distortion due to the pretension treatment.
- Flexible coupling connects large size diameter, high precision ball screw to convey motion power without loss and to dampen shock.

Wide saddle

Wide saddle structure prevent machining vibrations

- The highest rigidity of the same class
- Expand Saddle Guideway's contact surface width, prevent the overhang of turret and machining vibration.



Manual Tail stock

- The superb tail stock comes with the widest guideway of the same class and tail spindle diameter.
- High rigidity and high precision guideway with the largest size of tail spindle diameter.

Tail stock specification		DL 21A DL 21MA DL 21B DL 21MB	DL 21LA/21LMA DL 21LB/21LMB DL 22LA/22LMA DL 22LB/22LMB
Manual (STD.)	Live Center	Tail spindle diameter [mm(inch)]	Ø65(2.56) Ø80(3.15)
		Tail spindle travel [mm(inch)]	80(3.15) 80(3.15)
		Tail spindle power [kgf(lbs)]	511(1,127) 690(1,521)
		Tail spindle taper	MT#4 MT#4

The largest diameter of the same class

DL 22A/22LA/22LMA/22B/22LB/22LMB

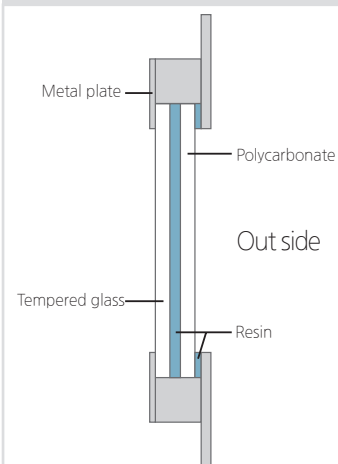
FFG DMC X axis Ø32(1.26), Z axis 40(1.57)

Competitor's X axis Ø32(1.26), Z axis Ø32(1.26)

Unit : mm(inch)

Enhanced Operator Feature

Double-paneled safety window



LED Worklight



+ Long life LED allows bright and safe work ambience.

Chuck open/close identification

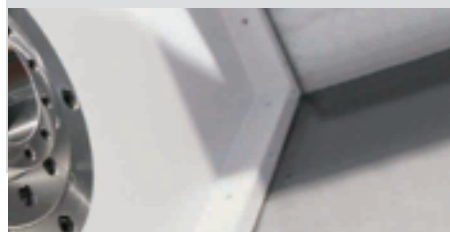
+ Chuck status is regularly checked for smooth operation

Oil retrieval box



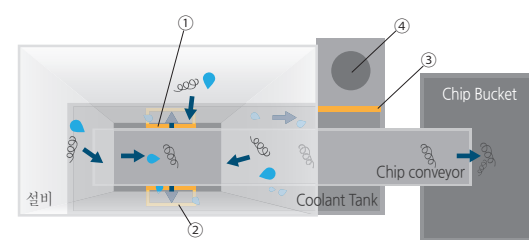
Oil leak prevention

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



3-steps filter coolant tank to prevent over flow and for easy maintenance

+ Chip conveyor installation - front/side type



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

Option

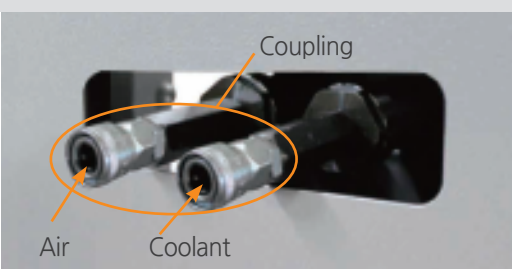
Coolant gun



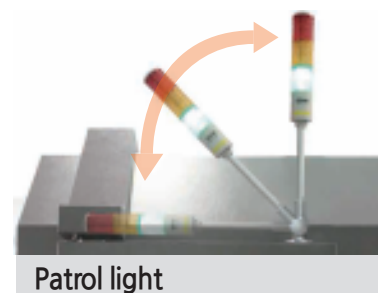
Air gun



Nipple (air, coolant)



Spindle load meter for the visual spindle load time check



Patrol light

+ LED 3 color wrapped folded when shipping

Front door interlock equipment



+ Safety switch identifies open/close status of the door. To ensure safety, machining is only operated when the door is properly locked.

RS232C (Input/output interface)



+ USB port

Movable CNC panel



+ Convenient swiveling CNC panel

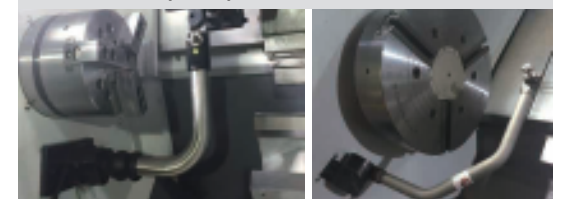
Detachable cutting oil tank for easy maintenance and cleaning



+ Large tank volume
+ Drawer-type oil tank with wheels is detachable from the coolant tank for easy daily maintenance.

Cutting oil tank volume	140ℓ (36.98gal) : DL 21A/21LA/21MA/21B/21MB/22A/22B 190ℓ (50.19gal) : DL 21LMA/21LB/21LMB/22LA/22LMA/22LB/22LMB
Hydraulic tank volume	14ℓ (3.7gal)

Tool setter(OPT.)



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

Automatic(auto)
+ Motor Driven Arm Tool setter
+ Fully authenticated components

Foot switch



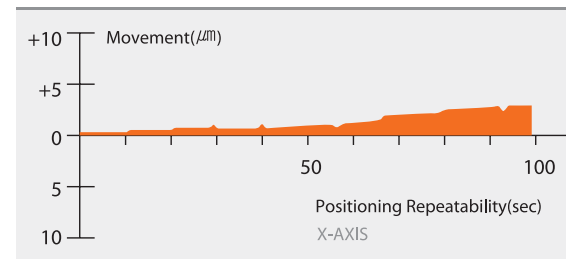
Precision

High precision and repeatability, provides high accuracy and acceleration

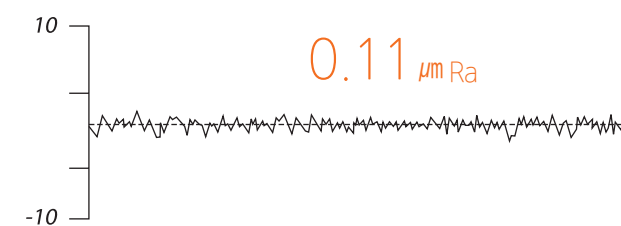
- Effectively prevented heat distortion
- Backlash prevented and vibration dampened



- Ball screw length movement

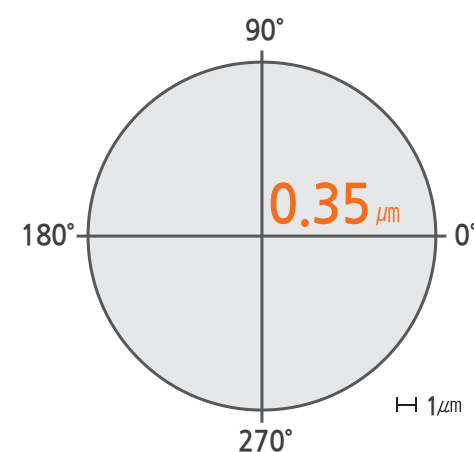


Surface profile

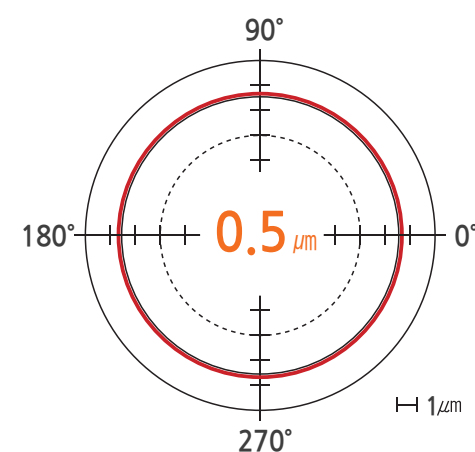


Model	DL 22B
Workpiece size	Ø50(1.97")xL50(1.97") (SM45C)
Spindle speed	3,500rpm
Cutting depth	0.02mm(0.000787inch)
Traverse	0.025 mm/rev

Roundness



Cylindricity



• Above data are based on our in-house testing standards and can be circumstantial depending on working environment.

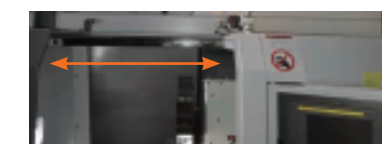
Option

Various standard options and Specialized features for customers

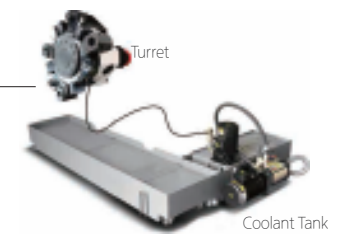
Features

Standard: 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, Chuck open/close identification devices, RS232C + USB Port

Option Equipment



Auto Front Door



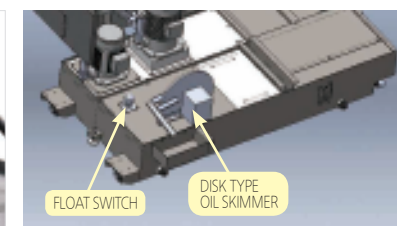
Moderate/High pressure Coolant(6/20 bar)



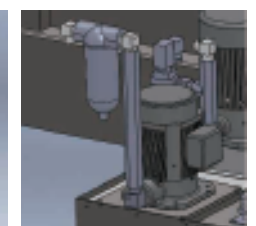
Oil Mist Collector



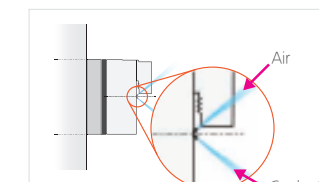
Oil Skimmer(Belt type)



Oil Skimmer(Disk type)



Line Filter(100 Mesh)



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



Parts Catcher



Special Chuck



Upper side chuck Air/Coolant



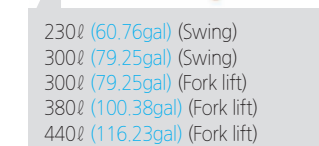
Point Sensor(2 Point high precision position control)



Multi Counter



Counter



Linear scale(High precision position control)



Sub control panel



Air Limit(Workpiece contact surface check equipment)

Other soft options selection

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

Automation

Gantry Loader Automation

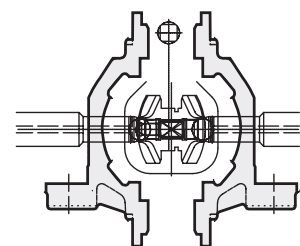
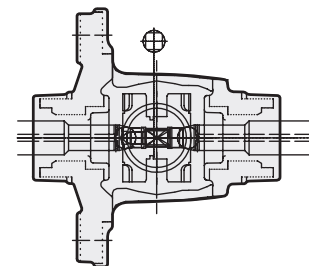


Work piece : Diff case(separate type)

No.	Process	Machine	Unit	Notes
OP10	1st turning	DL 22B	1	
OP20	2nd turning	DL 22B	1	
OP30	3rd turning	DL 22B	1	
OP40	Plug hole	DM 43VCD	1	
OP50	Bolt hole	DM 43VCD	1	
OP60	Machining of facing	Special M/C	1	
OP70	Boring	Finish boring M/C	1	Selectable depending on allowance



- Line cycle time : 119sec
- Production : 159,600ea/year
- Space : 34,390x12,200 (1,353.94x480.71inch)

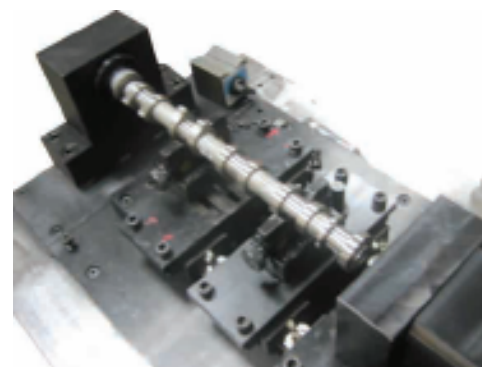


Work piece : Diff case(Integrative type)

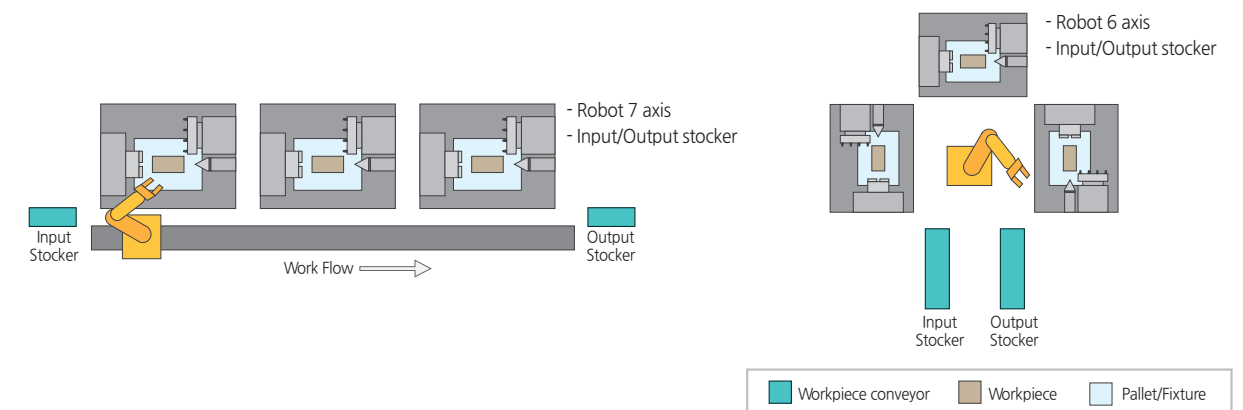
No.	Process	Machine	Unit	Notes
OP10	1st turning	DL 22B	1	
OP20	2nd turning	DL 22B	1	
OP30	3rd turning	DL 22B	1	
OP40	Plug hole	DM 43VCD	1	
OP50	Bolt hole	DM 43VCD	1	
OP60	Machining of facing	DL 22LB	1	
OP70	Machining of sphere	DL 22LB	1	
OP80	Finish boring	Finish boring M/C	1	Selectable depending on allowance

Cam shaft

No.	Process	Machine	Unit	Notes
OP10	FACING & CENTERING	SPECIAL MACHINE	1	
OP20	Turning of Journal	DL 22LB	1	
OP30	Turning of Journal	DL 22LB	1	
OP40	Machining of oil hole	DM 43VCD	1	



Robot Automation



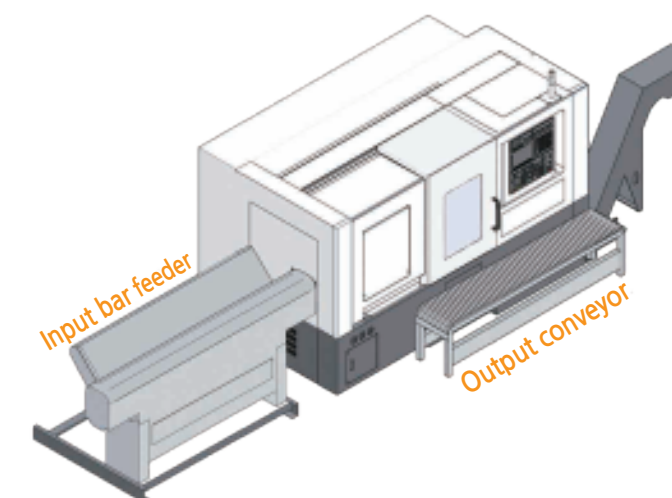
Work piece : Cylinder liner



No.	Process	Machine	Unit	Notes
OP10	1st turning	DL 22B	5	
OP20	2nd turning	DL 22B	5	
OP30	Finish boring	CVH-12D	2	Special

- Line cycle time : 171sec
- Production : 480,000ea/year
- Space : 40,700x6,000 (1,602.36x272.44inch)

Bar Feeder Automation



- Use of bar feeder, parts catcher, and output conveyor at once to maximize production through automation

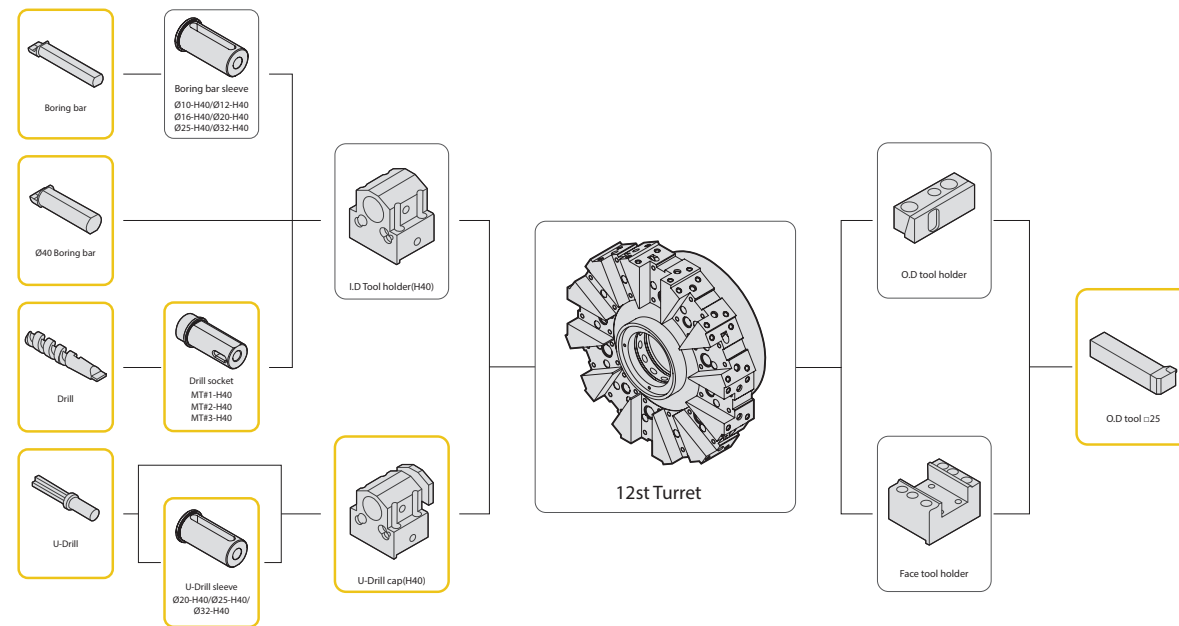
Work



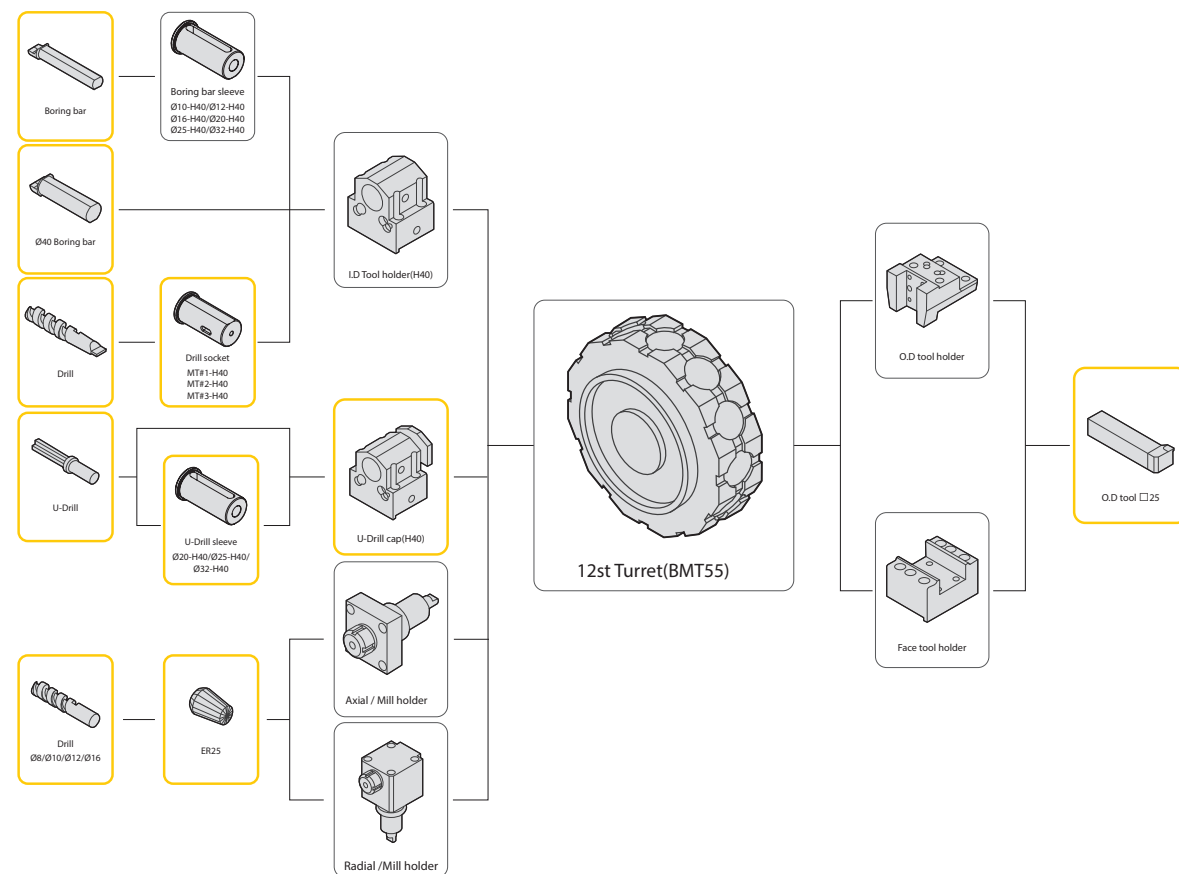
Tooling system

□ : Option (Not-Supplied)

DL 21A/21LA/22A/22LA/21B/21LB/22B/22LB



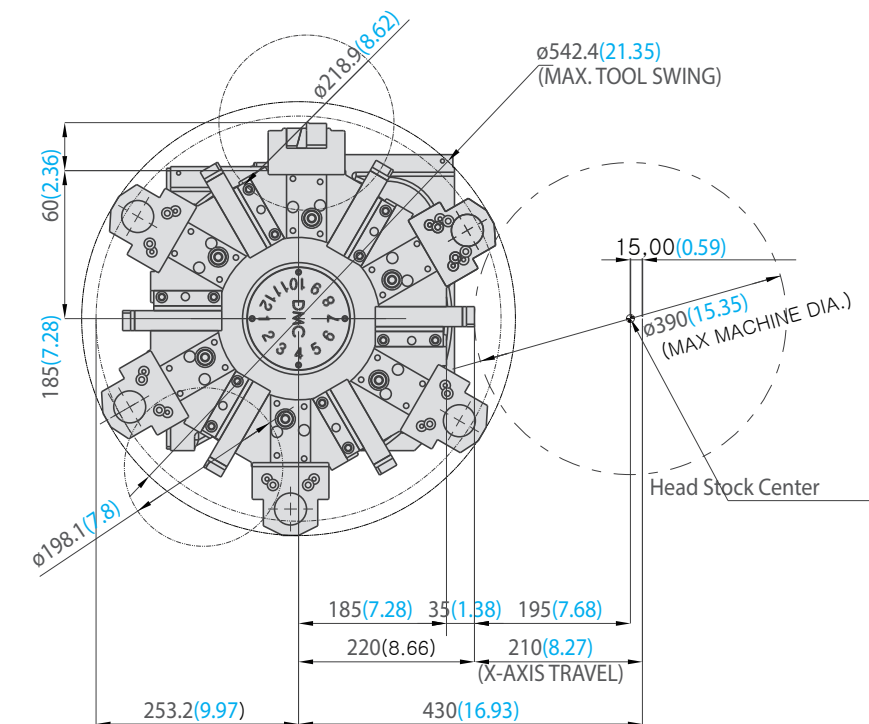
DL 21MA/21LMA/22LMA/21MB/21LMB/22LMB



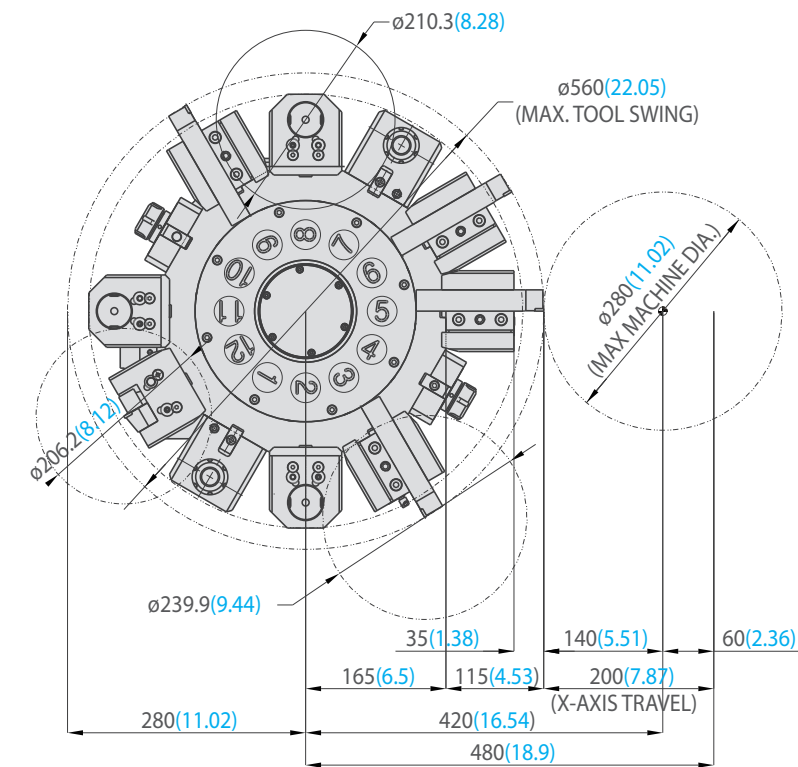
Tooling interference diagram

Unit : mm (inch)

DL 21A/21LA/22A/22LA/21B/21LB/22B/22LB



DL 21MA/21LMA/22LMA/21MB/21LMB/22LMB

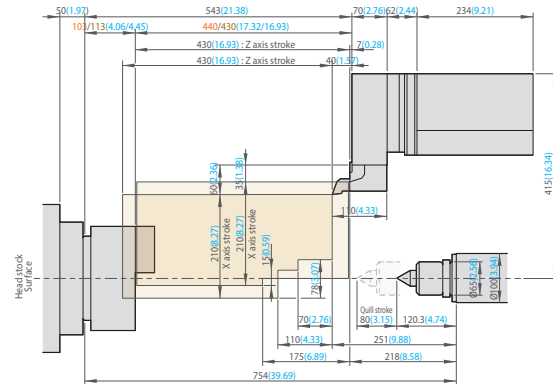


DL R/B series

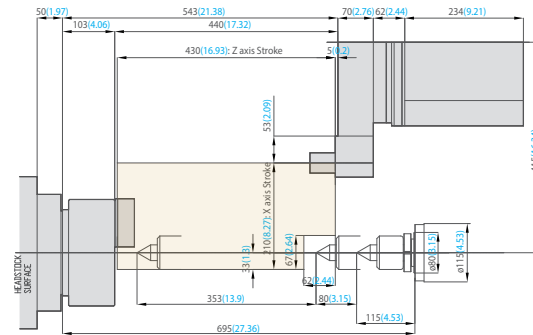
Working range

Unit : mm(inch)

DL 21A/22A/21B/22B

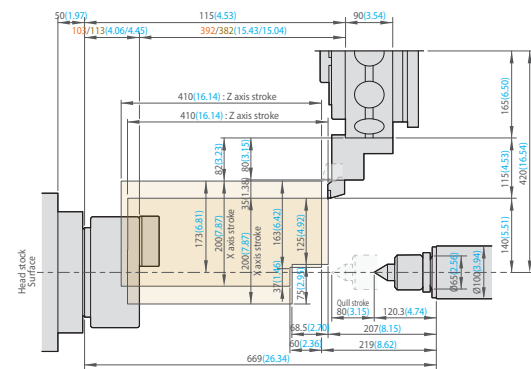


O.D tool/Face tool

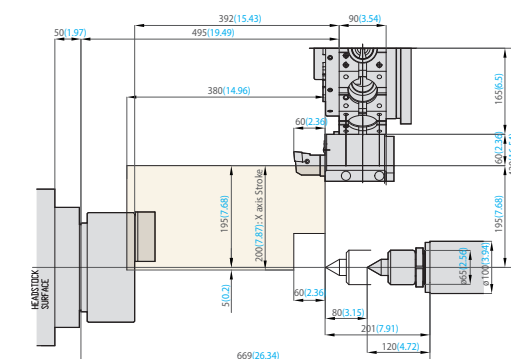


I.D tool

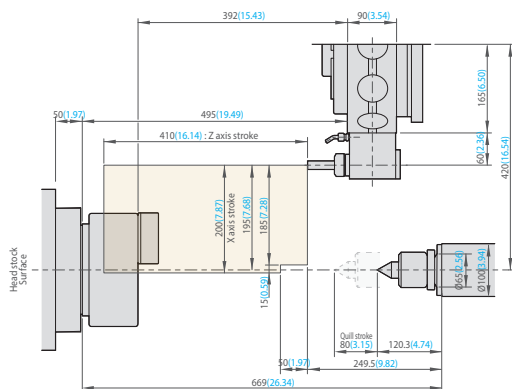
DL 21MA/21MB



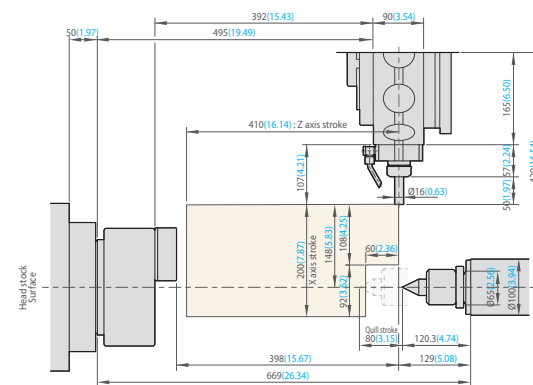
O.D tool/Face tool



I.D tool



Axial(z axis) driven tool

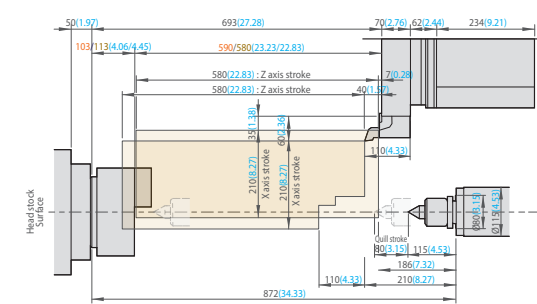


Radial(x axis) driven tool

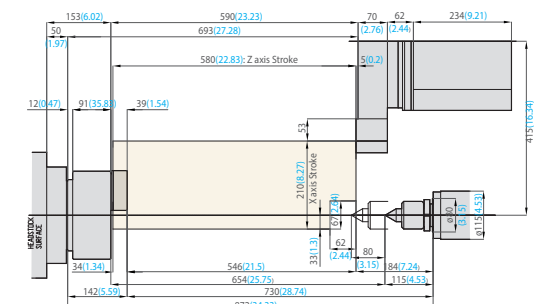
Working range

Unit : mm(inch)

DL 21LA/22LA/21LB/22LB

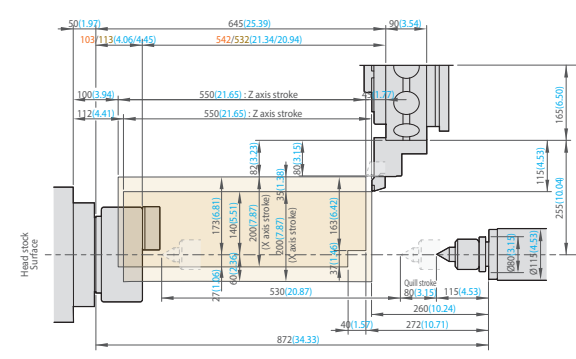


O.D tool/Face tool

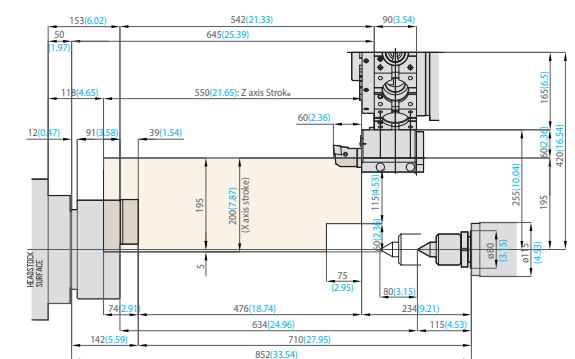


I.D tool

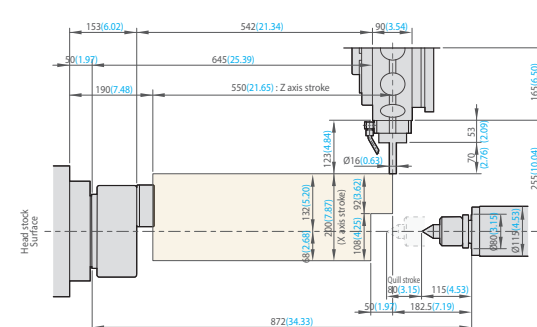
DL 21LMA/22LMA/21LMB/22LMB



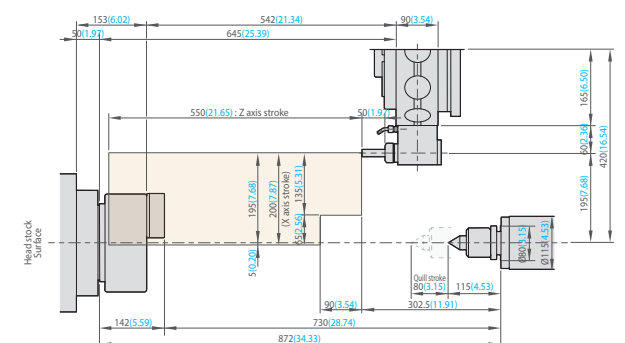
O.D tool/Face tool



I.D tool



Axial(z axis) driven tool

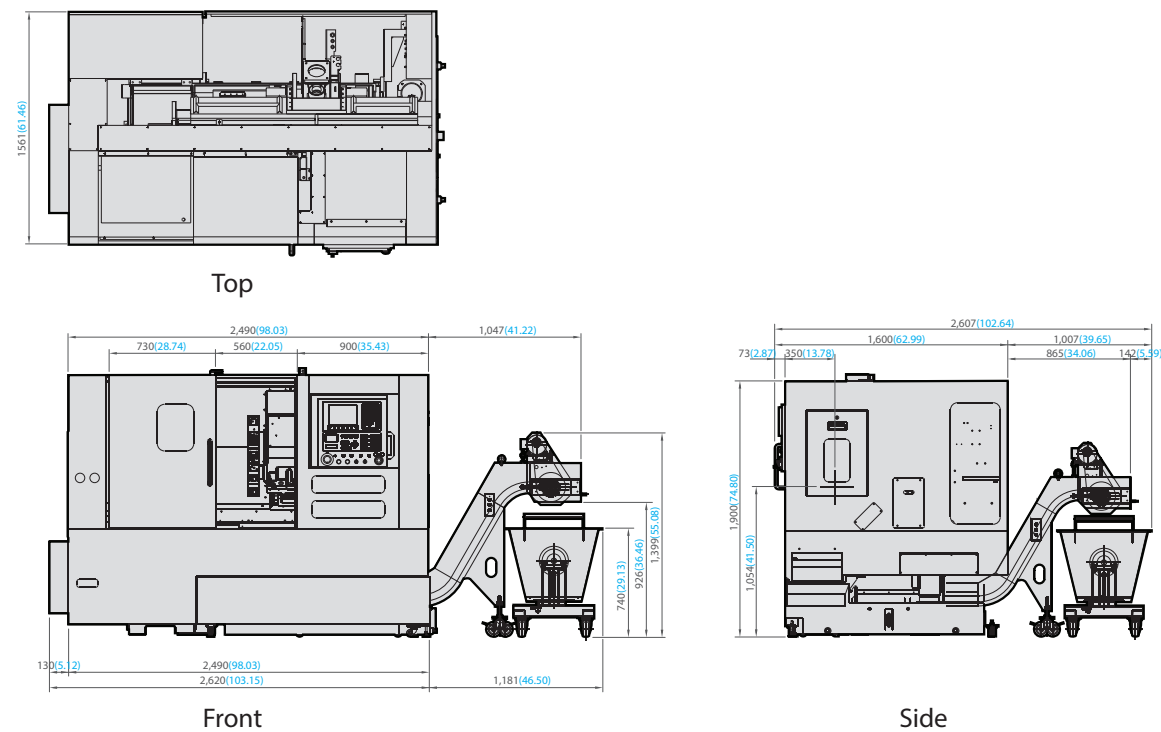


Radial(x axis) driven tool

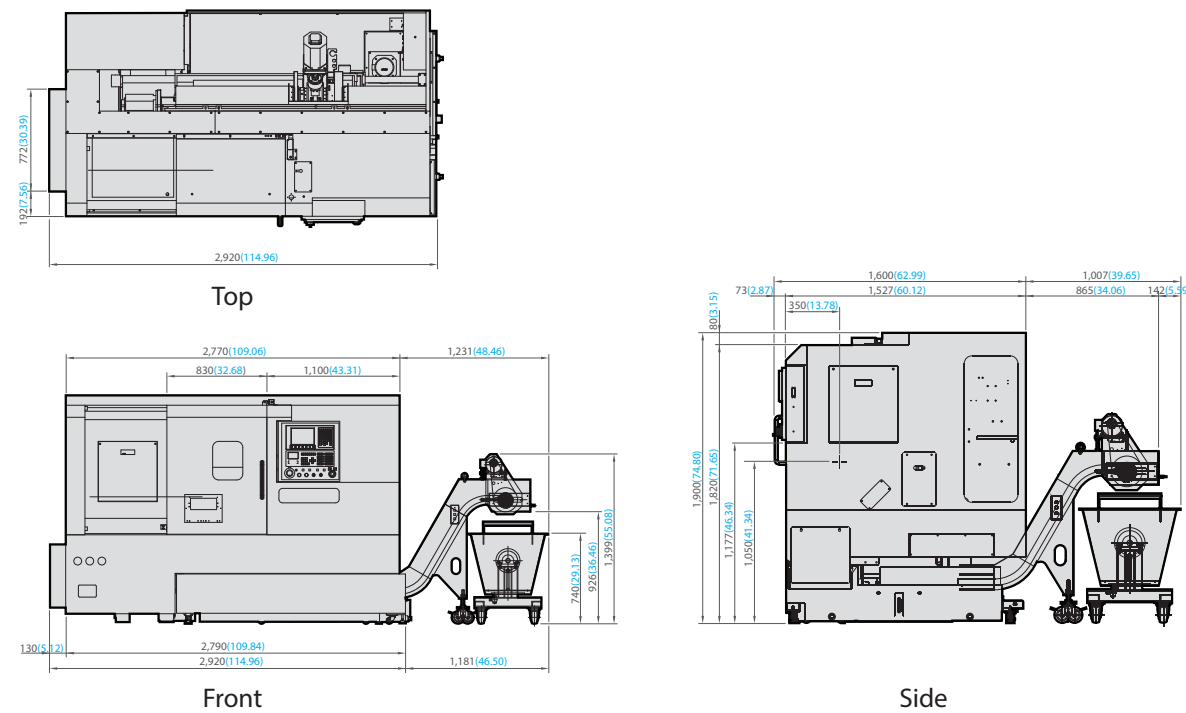
Machine lay-out

Unit : mm(inch)

DL 21A/22A/21MA/21B/22B/21MB



DL 21LA/22LA/21LMA/22LMA/21LB/22LB/21LMB/22LMB



Machine Specifications

Specifications		DL 21A	DL 21LA	DL 21MA	DL 21LMA	DL 21B	DL 21LB	DL 21MB	DL 21LMB
Capacity	Swing over Bed (Max.swing dia.)	mm(inch)	550(21.65)	550(21.65)	550(21.65)	550(21.65)	550(21.65)	550(21.65)	550(21.65)
	Swing over Cross slide	mm(inch)	360(14.17)	360(14.17)	360(14.17)	360(14.17)	360(14.17)	360(14.17)	360(14.17)
	Max. Turning Dia.	mm(inch)	390(15.35)	390(15.35)	280(11.02)	280(11.02)	390(15.35)	390(15.35)	280(11.02)
	Max.Turning Length	mm(inch)	410(16.14)	540(21.26)	340(13.39)	500(19.69)	380(14.96)	530(20.87)	330(12.99)
	Bar Capacity	mm(inch)	65(2.56)	65(2.56)	65(2.56)	65(2.56)	76(2.99)	76(2.99)	76(2.99)
Main spindle	Max.Spindle Speed	rpm	4,000	4,000	4,000	4,000	3,500	3,500	3,500
	Spindle Nose	-	A2-6	A2-6	A2-6	A2-6	A2-8	A2-8	A2-8
	Spindle Bore diameter	mm(inch)	76(2.99)	76(2.99)	76(2.99)	76(2.99)	86(3.39)	86(3.39)	86(3.39)
	Cs-Axis Spindle Index angle	deg	-	-	360(0.001)	360(0.001)	-	-	360(0.001)
	Max. Spindle Torque	Nm(lbs.ft)	167(1205)	167(1205)	167(1205)	167(1205)	196(1418)	196(1418)	196(1418)
	Spindle Driven Method	-	Belt	Belt	Belt	Belt	Belt	Belt	Belt
	Chuck Size	inch	8"BIG	8"BIG	8"BIG	8"BIG	10"	10"	10"
	Chuck Capacity	kg(lbs)	1,000(2,205)	1,000(2,205)	1,000(2,205)	1,000(2,205)	1,500(3,307)	1,500(3,307)	1,500(3,307)
Motor	Main Spindle Motor(Cont./30min)	kw(hp)	11/15(15/20)				11/15[15/18.5] (15/20[20/25])		
	X axis Servo Motor	kw(hp)	3(4)	3(4)	3(4)	3(4)	3(4)	3(4)	3(4)
	Z axis Servo Motor	kw(hp)	3(4)	3(4)	3(4)	3(4)	3(4)	3(4)	3(4)
	Mill Spindle Motor(Cont./30min)	kw(hp)	-	-	2.2/3.7(2.95/4.96)	-	-	2.2/3.7(2.95/4.96)	-
Travel	X axis travel	mm(inch)	210(8.27)	210(8.27)	200(7.87)	200(7.87)	210(8.27)	210(8.27)	200(7.87)
	Z axis travel	mm(inch)	430(16.93)	580(22.83)	410(16.14)	550(21.65)	430(16.93)	580(22.83)	410(16.14)
	Guideway Type(X/Z)	-	Roller Guide	Roller Guide	Roller Guide	Roller Guide	Roller Guide	Roller Guide	Roller Guide
	X axis rapid traverse rate	m/min(ipm)	36(1,417)	36(1,417)	36(1,417)	36(1,417)	36(1,417)	36(1,417)	36(1,417)
	Z axis rapid traverse rate	m/min(ipm)	36(1,417)	36(1,417)	36(1,417)	36(1,417)	36(1,417)	36(1,417)	36(1,417)
Turret	Turret Index Type	-	Servo	Servo	Servo	Servo	Servo	Servo	Servo
	Max. No. of Tools	ea	12	12	12/BMT55	12/BMT55	12	12	12/BMT55
	Turning tool shank size	mm(inch)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)
	Borning bar diameter	mm(inch)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)
	Turret Indexing Time(1st swivel)	sec	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Rotating Tool Speed	rpm	-	-	5,000	5,000	-	-	5,000
	Tool Capacity	-	12	12	12	12	12	12	12
	Tool Change Time	sec	10	10	10	10	10	10	10
Tailstock	Tailstock Quill diameter	mm(inch)	65(2.56)	80(3.15)	65(2.56)	80(3.15)	65(2.56)	80(3.15)	65(2.56)
	Tailstock Quill stroke	mm(inch)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)
	Tailstock Quill Taper	MT	MT#4	MT#4	MT#4	MT#4	MT#4	MT#4	MT#4
Tank Capacity	Coolant Tank Capacity	ℓ(gal)	140(36.98)	190(50.19)	140(36.98)	190(50.19)	140(36.98)	190(50.19)	140(36.98)
	Hydraulic Tank Capacity	ℓ(gal)	14(3.70)	14(3.70)	14(3.70)	14(3.70)	14(3.70)	14(3.70)	14(3.70)
General	Machine Weight	kgf(lbs)	3,950(8,708)	4,350(9,590)	4,050(8,929)	4,450(9,810)	4,050(8,929)	4,450(9,810)	4,150(9,149)
	Machine height	mm(inch)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)
	Floor space	Length	mm(inch)	2,660(104.72)	2,960(116.54)	2,660(104.72)	2,960(116.54)	2,660(104.72)	2,960(116.54)
		Width	mm(inch)	1,650(64.96)	1,650(64.96)	1,650(64.96)	1,650(64.96)	1,650(64.96)	1,650(64.96)
	Power capacity[15/18.5kw]	kVA	27	27	30	30	27[32]	27[32]	30[32]
	Controller	-	FOi-TF	FOi-TF	FOi-TF	FOi-TF	FOi-TF	FOi-TF	FOi-TF

Machine Specifications

Specifications		DL 22A	DL 22LA	DL 22LMA	DL 22B	DL 22LB	DL 22LMB
Capacity	Swing over Bed (Max.swing dia.) mm(inch)	550(21.65)	550(21.65)	550(21.65)	550(21.65)	550(21.65)	550(21.65)
	Swing over Cross slide mm(inch)	360(14.17)	360(14.17)	360(14.17)	360(14.17)	360(14.17)	360(14.17)
	Max. Turning Dia. mm(inch)	390(15.35)	390(15.35)	280(11.02)	390(15.35)	390(15.35)	280(11.02)
	Max.Turning Length mm(inch)	410(16.14)	540(21.26)	500(19.69)	380(14.96)	530(20.87)	490(19.29)
	Bar Capacity mm(inch)	65(2.56)	65(2.56)	65(2.56)	76(2.99)	76(2.99)	76(2.99)
Main spindle	Max.Spindle Speed rpm	4,000	4,000	4,000	3,500	3,500	3,500
	Spindle Nose -	A2-6	A2-6	A2-6	A2-8	A2-8	A2-8
	Spindle Bore diameter mm(inch)	76(2.99)	76(2.99)	76(2.99)	86(3.39)	86(3.39)	86(3.39)
	Cs-Axis Spindle Index angle deg	-	-	360(0.001)	-	-	360(0.001)
	Max. Spindle Torque Nm(lbs-ft)	167(1205)	167(1205)	167(1205)	196(1418)	196(1418)	196(1418)
	Spindle Driven Method -	Belt	Belt	Belt	Belt	Belt	Belt
	Chuck Size inch	8"BIG	8"BIG	8"BIG	10	10	10
Motor	Main Spindle Motor(Cont./30min) kw(hp)	11/15(15/20)			11/15[15/18.5] (15/20[20/25])		
	X axis Servo Motor kw(hp)	3(4)	3(4)	3(4)	3(4)	3(4)	3(4)
	Z axis Servo Motor kw(hp)	3(4)	3(4)	3(4)	3(4)	3(4)	3(4)
	Mill Spindle Motor(Cont./30min) kw(hp)	-	-	2.2/3.7(2.95/4.96)	-	-	2.2/3.7(2.95/4.96)
Travel	X axis travel mm(inch)	210(8.27)	210(8.27)	200(7.87)	210(8.27)	210(8.27)	200(7.87)
	Z axis travel mm(inch)	430(16.93)	580(22.83)	550(21.65)	430(16.93)	580(22.83)	550(21.65)
	Guideway Type(X/Z) -	BOX Guide	BOX Guide	BOX Guide	BOX Guide	BOX Guide	BOX Guide
	X axis rapid traverse rate m/min(ipm)	24(945)	24(945)	24(945)	24(945)	24(945)	24(945)
	Z axis rapid traverse rate m/min(ipm)	24(945)	24(945)	24(945)	24(945)	24(945)	24(945)
Turret	Turret Index Type -	Servo	Servo	Servo	Servo	Servo	Servo
	Max. No. of Tools ea	12	12	12/BMT55	12	12	12/BMT55
	Turning tool shank size mm(inch)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)	25 (0.98)
	Boring bar diameter mm(inch)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)	Ø40(1.57)
	Turret Indexing Time(1st swivel) sec	0.2	0.2	0.2	0.2	0.2	0.2
	Rotating Tool Speed rpm	-	-	5,000	-	-	5,000
Tailstock	Tailstock Quill diameter mm(inch)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)
	Tailstock Quill stroke mm(inch)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)	80(3.15)
	Tailstock Quill Taper MT	MT#4	MT#4	MT#4	MT#4	MT#4	MT#4
Tank Capacity	Coolant Tank Capacity ℓ(gal)	140(36.98)	190(50.19)	190(50.19)	140(36.98)	190(50.19)	190(50.19)
	Hydraulic Tank Capacity ℓ(gal)	14(3.70)	14(3.70)	14(3.70)	14(3.70)	14(3.70)	14(3.70)
General	Machine Weight kgf(lbs)	3,950(8,708)	4,400(9,700)	4,450(9,810)	4,000(8,818)	4,450(9,810)	4,500(9,921)
	Machine height mm(inch)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)	1,900(74.80)
	Floor space	Length mm(inch)	2,660(104.72)	2,960(116.54)	2,960(116.54)	2,960(116.54)	2,960(116.54)
		Width mm(inch)	1,650(64.96)	1,650(64.96)	1,650(64.96)	1,650(64.96)	1,650(64.96)
	Power capacity[15/18.5kw] kVA	27	27	30	27[32]	27[32]	30[32]
	Controller -	F0i-TF	F0i-TF	F0i-TF	F0i-TF	F0i-TF	F0i-TF

NC Specifications (FANUC F0i-TF)

	Item	Specification	0iTF
Controls	Controlled axes	Std. 2axes	X, Z, C (!)
	Simultaneously control axes expansion(Total)	0.001mm/0.0001"	3 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	
Operation	Stored pitch error compensation		
	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	
Interpolation	Manual handle interruption		
	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 position return & check	G27, G28, G30	
Feed functions	Variable lead thread cutting		
	Continuous thread cutting		
	Circular thread cutting		-
	3rd and 4th reference point return		OPT.
	polygon turning		OPT.
	Helical interpolation		OPT.
	Rapid traverse override	F0/25/50/100%	
	Feedrate Override	0-200% (10% unit)	
	Jog feed override	0-2000 mm/min	
	Feed per minute	G98	
Axulliary & Spindle functions	Feed per revolution	G99	
	Cutting feedrate clamp		
	External deceleration		
	Feed stop		-
	Advanced preview control		OPT.
	Spindle speed override	0~150%	
	Constantant surface speed control	G96, G97	
	1st Spindle orientation		
	Rigid tapping		
	Multi-spindle control		(!)
Programming functions	Auxiliary function	M8 digit	
	Program/code	EIA/ISO	
	Optional block skip	1 Piece	
	Additional block skip	Total 0(Only NC function)	

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

	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		
	G code system B/C(selectable)		
	Chamfering / corner R		
	Programmable data input	G10	
	Sub program call	Nested holds	10
	Custom macro B		
	Simple canned cycle	G90, G92, G94	
	Circular interpolation by R programming		
Tool functions	Multi repetitive canned cycle	G70 ~ G76	
	Multi repetitive canned cycle2		
	Drilling canned cycle(G80 series)		
	Tape format for FANUC series 15		-
	Tape format for FANUC series 10/11		
	Manual guide oi		OPT.
	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	
Editing op. functions	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		
	Part program storage size		512 kb
	No. of Registered programs		400 ea
	Part program editing		
	Program protect		
	Background editing		
Setiing & display	Expanded part program editing	Copy, Move, Change of NC program	
	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		
Data input & output	Servo setting screen		
	Spindle setting screen		
	Multi language display		
	Reader puncher control	CH1 interface	
	I/O interface	RS-232C	
	Memory card input and output		
	External key input		
	External program input		
	External work number search		
	USB Memory	Input/Output	
Other functions	Data Server	Only 1 path, need option board	-
	MDI / DISPLAY unit		8.4"10.4"(OPT)
	PMC system		
	Ethernet function	Embedded ethernet function	