

NC Unit Specification/FANUC Series

● : Standard ○ : Option

ITEM		Specification	0i-TF Plus
Controlled axis	Max. feed axes		2/3/4 Axis
	Feed axes		X/Z(Cs) X/Y/Z(Cs)
	Max. simultaneously controlled axis		4
	Least command increment	0.001mm / 0.0001"	●
Operation functions	Pulse handle feed	X1, X10, X100	●
	Feedrate per minute	G98	●
	Feedrate per revolution	G99	●
Interpolation functions	Linear interpolation	G01	●
	Circular interpolation	G02, G03	●
	Dwell	G04	●
	Polar coordinate interpolation	G12.1, G13.1	●
	Cylindrical interpolation	G07.1	●
	Helical interpolation		○
	Variable lead thread cutting	G34	●
	Continuous threading		●
	Reference position return	G28	●
	Reference position return check	G27	●
Feed function	Rapid traverse rate override	F0, 25%, 50%, 100%	●
	Feedrate override	0 ~ 200%	●
Spindle function	Spindle orientation		●
	Rigid tapping		●
	Arbitrary speed threading		○
Program input	Absolute/incremental programming		●
	Multiple repetitive canned cycle	G70 ~ G76	●
	Canned cycles	G90, G92, G94	●
	Inch/metric conversion	G20 / G21	●
	Program restart		●
	Retraction for rigid tapping		○
	Max. programmable dimension	±999999.999mm/±99999.9999	●
	M function	M3 digit	●
	Custom macro		●
	Canned cycle for drilling		●
	Direct drawing dimension programming		●
	Programmable data input	G10	●
	Optional block skip		●
	Workpiece coordinate system	G52 ~ G59	●
	Number of registerable programs		1000EA
Setting and display	Alarm & Operator history display		●
	Run hour and parts count display		●
	Display spindle & servo overload		●
	Self-diagnosis function		●
	Extended part program editing		●
	Display screen		15" Touch panel
Data input/output	Memory card input/output		●
	USB memory input/output		●
Editing operation	Part program storage size	2 Mbyte (5120m)	●
Manual guide <i>i</i>	Manual guide <i>i</i>		●



SMART Machine Tool Korea / R&D center / Factory
115-28, Techno valley 1-ro, Jillye-myeon, Gimhae-si,
Gyeongsangnam-da, Republic of Korea
TEL : +82-55-342-7972 FAX : +82-55-342-7970
E-mail : smtk@smtkor.com
www.smtkor.com

SMART Machine Tool America
N25W23287 Paul Rd, Pewaukee, WI 53072, USA
TEL : 1-855-637-3320
FAX : 1-262-521-1244
www.smartmachinetool.com

Best technology and know-how



NL 4000 | 5000 | 6000

Medium to Large CNC Turning Centers



NL Series NL 4000, NL 5000, NL 6000
Chuck Size 18, 21, 24 Inch

NL Series

Designed by Smart Machine Tool engineers with many years of experience, NL Series turning centers guarantee ultra-high precision, flexible, and reliable machining performance.

NL 4000 | 5000 | 6000

- ▶ 45° slanted torque tube design bed and wide slideway for high rigidity machining
- ▶ Wide box guideways machined from one-piece casting promote heavy duty cutting
- ▶ High torque AC servo motor ensures fast indexing time and repeatability
- ▶ Excellence rapid traverse rate
- ▶ High spindle power ensures powerful cutting capability
- ▶ User-friendly operation panel design for efficient machine operation
- ▶ Various peripheral equipment and options



		NL 4000 4000M	NL 4000L 4000LM	NL 4000XL 4000XLM	NL 4000LY [XLY]
Swing Over Bed	mm(inch)	790(31.10)	790(31.10)	790(31.10)	900(35.43)
Max. Machining Length	mm(inch)	1,213(47.76) 1,144(45.04)	2,213(87.13) 2,144(84.41)	3,213(126.50) 3,144(123.78)	2,017(79.41) [3,017(118.78)]
Chuck Size	inch	18	18	18	18
Bar Capacity	mm(inch)	116.5	116.5	116.5	116.5
Spindle Speed	rpm	2,000	2,000	2,000	2,000
Motor (Cont./Max)	kW(HP)	30/45(40/60)	30/45(40/60)	30/45(40/60)	30/45(40/60)
Travel (X/Z/Y)	mm(inch)	340/1,300(13.39/51.18)	340/2,300(13.39/90.55)	340/3,300(13.39/129.92)	300/2,155(3,155)/150 (11.81/84.84[124.21]/5.91)
No. of Tool Station	EA	12	12	12	12

		NL 5000 5000M	NL 5000L 5000LM	NL 5000XL 5000XLM	NL 5000LY [XLY]
Swing Over Bed	mm(inch)	900(35.43)	900(35.43)	900(35.43)	900(35.43)
Max. Machining Length	mm(inch)	1,155(45.47) 1,119(44.06)	2,155(84.84) 2,119(83.43)	3,155(124.21) 3,119(122.80)	1,992(78.43) [2,992 (117.80)]
Chuck Size	inch	21	21	21	21
Bar Capacity	mm(inch)	165.5(6.52)	165.5(6.52)	165.5(6.52)	165.5(6.52)
Spindle Speed	rpm	1,500	1,500	1,500	1,500
Motor (Cont./Max)	kW(HP)	30/45(40/60)	30/45(40/60)	30/45(40/60)	30/45(40/60)
Travel (X/Z/Y)	mm(inch)	350/1,300(13.78/51.18)	350/2,300(13.78/90.55)	350/1,300(13.78/129.92)	300/2,155(3,155)/150 (11.81/84.84[124.21]/5.91)
No. of Tool Station	EA	12	12	12	12

NL 4000 | 5000 | 6000

- ▶ 45° slanted torque tube design bed and wide slideway for high rigidity machining
- ▶ Wide box guideways machined from one-piece casting promote heavy duty cutting
- ▶ High torque AC servo motor ensures fast indexing time and repeatability
- ▶ Excellence rapid traverse rate
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- ▶ Various peripheral equipment and options



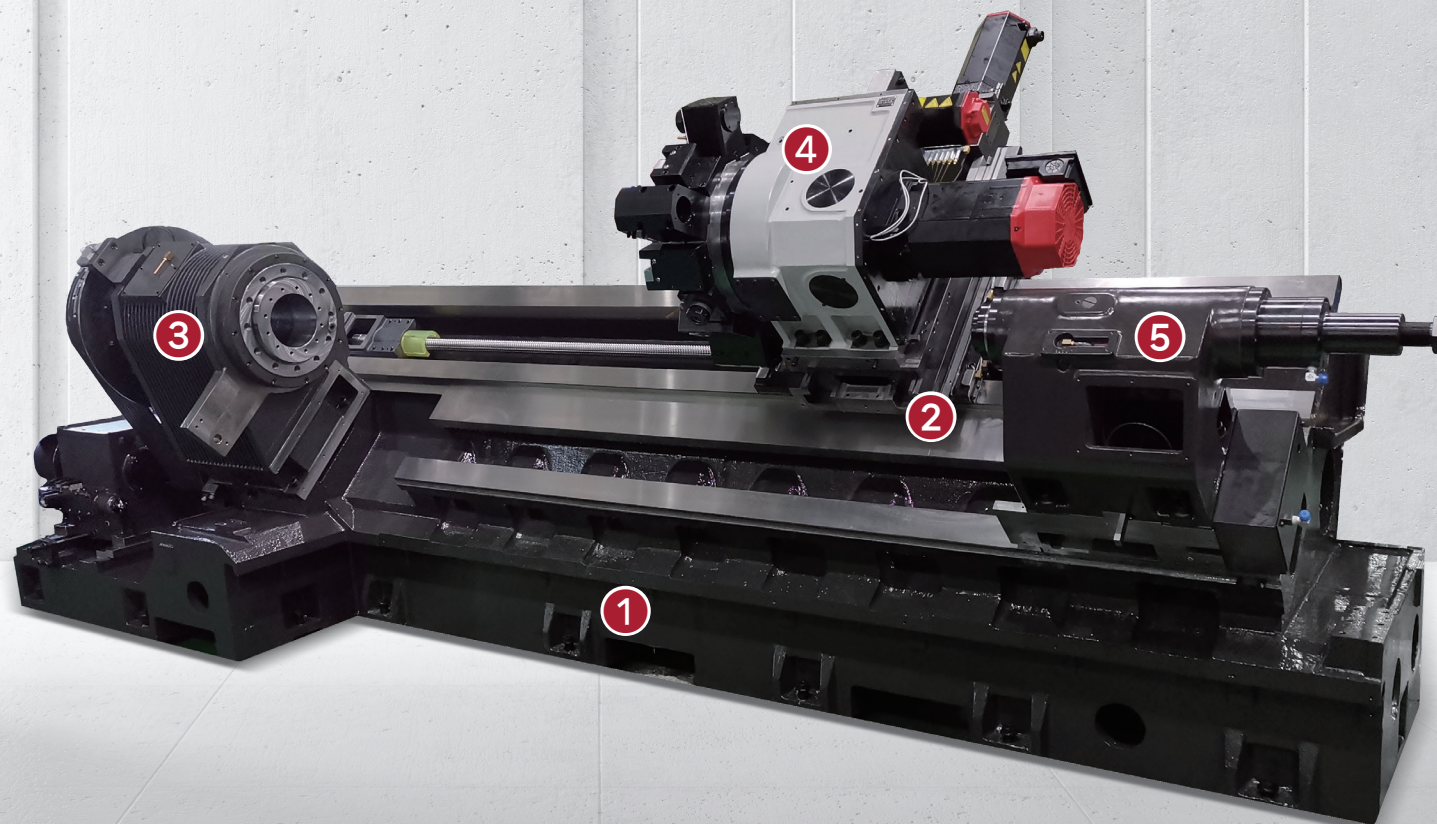
		NL 6000S	6000SM	NL 6000	6000M
Swing Over Bed	mm(inch)	1,030(40.55)	1,030(40.55)	1,030(40.55)	1,030(40.55)
Max. Machining Length	mm(inch)	750(29.53)	700(27.56)	1,550(61.02)	1,500(59.06)
Chuck Size	inch	24	24	24	24
Bar Capacity	mm(inch)	165.5(6.52)	165.5(6.52)	165.5(6.52)	165.5(6.52)
Spindle Speed	rpm	1,200	1,200	1,200	1,200
Motor (Cont./Max)	kW(HP)	37/55 (50/73)	37/55 (50/73)	37/55 (50/73)	37/55 (50/73)
Travel (X/Z/Y)	mm(inch)	475/800(18.7/31.5)	475/800(18.7/31.5)	475/1,600(18.7/63)	475/1,600(18.7/63)
No. of Tool Station	EA	12	12	12	12



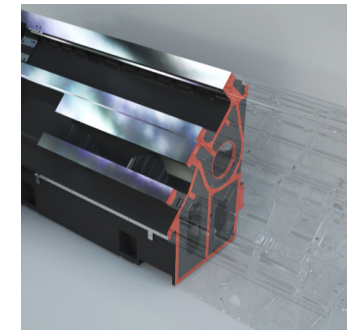
		NL 6000L	6000LM	NL 6000XL	6000XLM
Swing Over Bed	mm(inch)	1,030(40.55)	1,030(40.55)	1,030(40.55)	1,030(40.55)
Max. Machining Length	mm(inch)	2,250(88.58)	2,200(86.61)	3,250(127.95)	3,200(125.98)
Chuck Size	inch	24	24	24	24
Bar Capacity	mm(inch)	165.5(6.52)	165.5(6.52)	165.5(6.52)	165.5(6.52)
Spindle Speed	rpm	1,200	1,200	1,200	1,200
Motor (Cont./Max)	kW(HP)	37/55 (50/73)	37/55 (50/73)	37/55 (50/73)	37/55 (50/73)
Travel (X/Z/Y)	mm(inch)	475/2,300(18.7/90.55)	475/2,300(18.7/90.55)	475/3,300(18.7/129.92)	475/3,300(18.7/129.92)
No. of Tool Station	EA	12	12	12	12

Machine Structure

High Rigidity Body Structure for Heavy-duty Machining



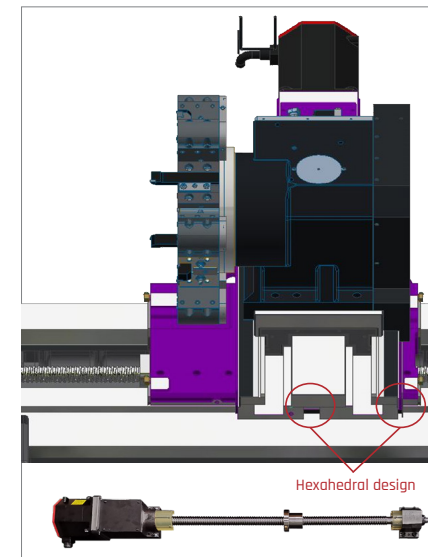
- ① One-Piece Casting Bed ② Wide box guideways ③ Main Spindle
- ④ 12-Station Turret ⑤ Programmable Tailstock Body & Quill



① One-Piece Casting Bed

One-piece 45-degree slant bed made out of GC300 high tensile strength gray cast iron, which has superb vibration absorption characteristics, provides rigid foundation for all machine components. Such design endures long-term machining accuracy and consistency. In addition, 45-degree slant bed design provides operators with convenient access to the workpiece and superb chip discharge.

Precision hand scraping of contact surfaces of all slides, headstock and tailstock with the bed ensure long-lasting machining accuracy and minimal surface wears.



② Wide box guideways and Carriage

Hexahedral design and wide box guideways, machined from one piece casting, promote heavy duty machining. Induction hardened and precision ground ways ensure accurate machining for extended period of time.

Wide carriage promotes less vibration and allows high precision machining.

High Performance Feed Motor

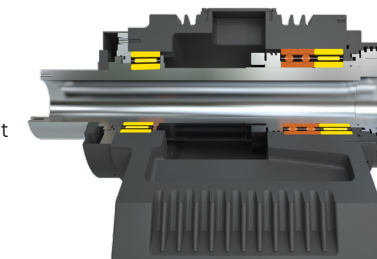
All axes are equipped with high performance feed motor for better travel ability, excellence rapid traverse rate, smooth and precise axis movement.

Pre-tensioned Ballscrews

All axes ballscrews are pre-tensioned, heat treated and fixed by double anchors on both ends, providing ultimate rigidity and minimal thermal growth.

③ Main Spindle

Double row cylindrical roller bearings in the front and back, coupled with angular thrust bearing, ensure high rigidity for heavy cutting and excellent surface finishes.



⑤ Programmable Tailstock Body & Quill

Wide-spaced guideways and heavy-duty tailstock body design ensure machining rigidity, and built in spindle quill design ensures higher rigidity.

NL 4000/5000

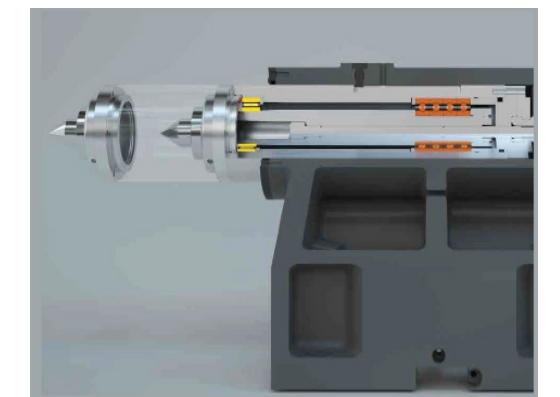
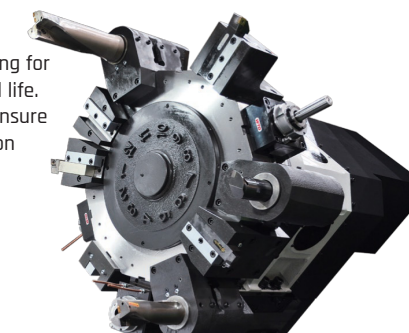
- Quill Type: **MT#5**
- Quill Dia: **Ø140 mm**
- Quill Travel: **120 mm**

NL 6000

- Quill Type: **MT#6**
- Quill Dia: **Ø180 mm**
- Quill Travel: **150 mm**

④ 12-Station Turret

Large diameter 3-piece Curvic coupling for excellence rigidity and extended tool life. High torque AC servo motor driven ensure fast indexing time, excellence position and repeatability.



Main Spindle

High Accuracy & Performance CNC Turning Center

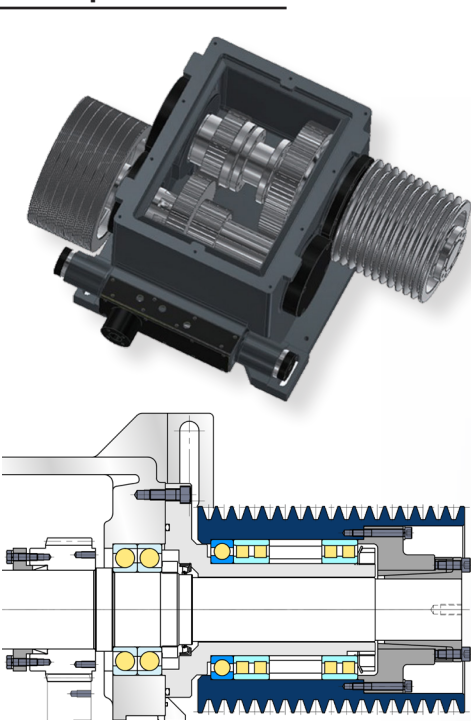
Main Spindle

Heavy-duty headstock machined from one-piece casting.
Reinforced with radiator fan-like pin tube rip design dissipates heat
generated by axis movements, maintaining minimal thermal expansion.

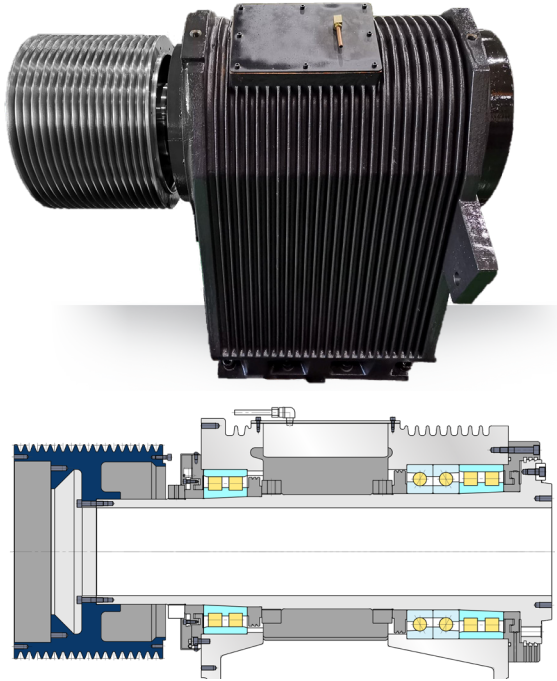
		NL 4000	NL 5000	NL 6000	NL 6000C
Chuck size	inch	18"	21"	24"	Option
Spindle nose	ASA	A2-11	A2-15	A1-15	A1-20
Max speed	rpm	2,000	1,500	1,200	1,000
Thru hole dia.	mm(inch)	Ø132(5.2)	Ø181(7.125)	Ø181(7.125)	Ø275(10.83)
Draw tube I.D.	mm(inch)	Ø117.5(4.63)	Ø166.5(6.56)	Ø166.5(6.56)	-

- ▶ Spindle pulley system is equipped with powerful and reliable Fanuc AC motor to ensure excellence heavy-duty cutting capability.
- ▶ V-pulley belts attach to main spindle and gearbox for high power transmission capacity, excellence grip and minimum slip between belt and pulley.
- ▶ PK type pulley belt is used to achieve low vibration, low noise and good surface roughness cutting result even at high speed.

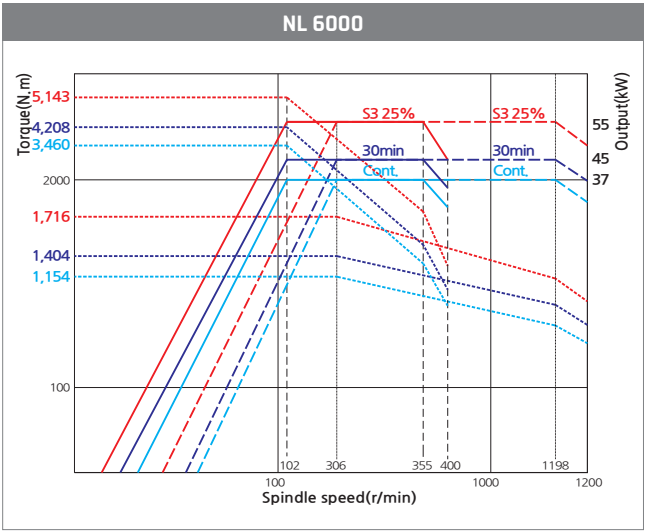
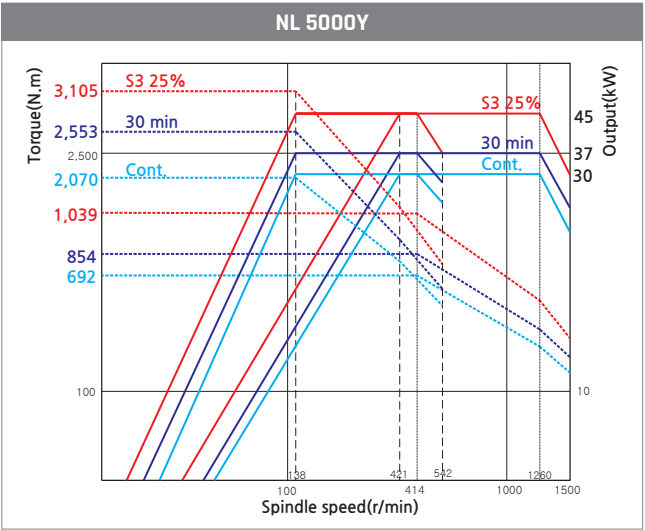
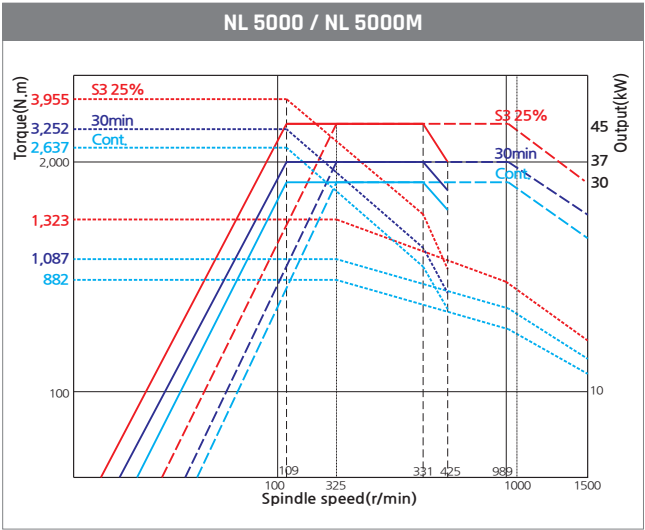
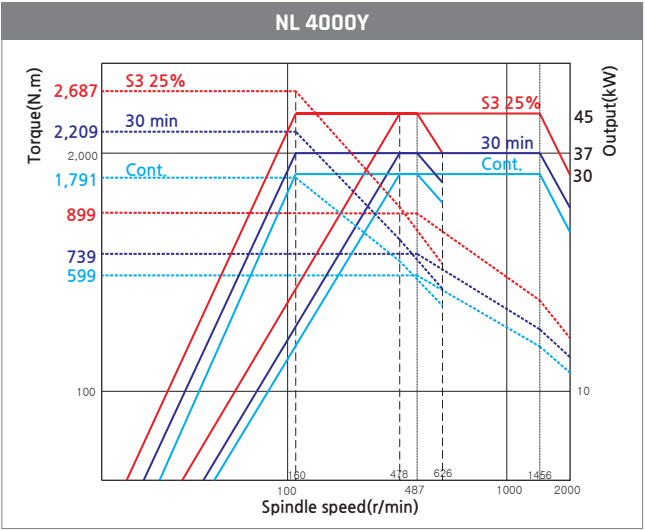
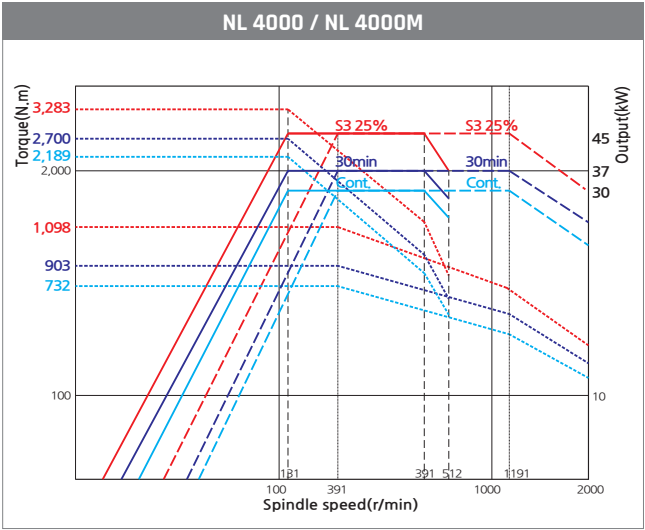
▼ Two-Speed Gearbox



- ▶ SMART own design two-speed gearbox.
The gearbox shaft is mounted with multiple sets of bearing to support high load capacity and reduce deflection.



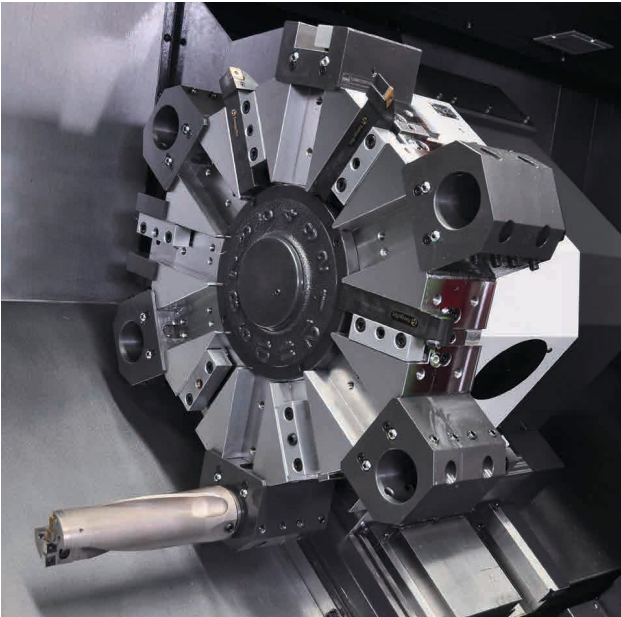
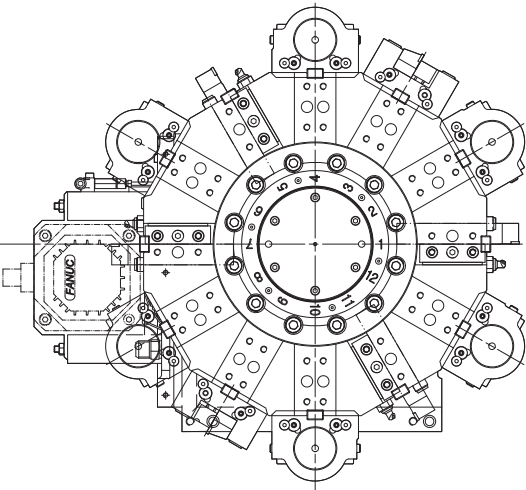
• Spindle Torque Diagram



Turret

Finest performance and high precision turret

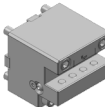
Standard Turret
Heavy-duty turret driven by high torque AC servo motor for rapid rotation and repeatability. The turret design features large diameter Curvic coupling ensure accurate positioning and strong clamping power.

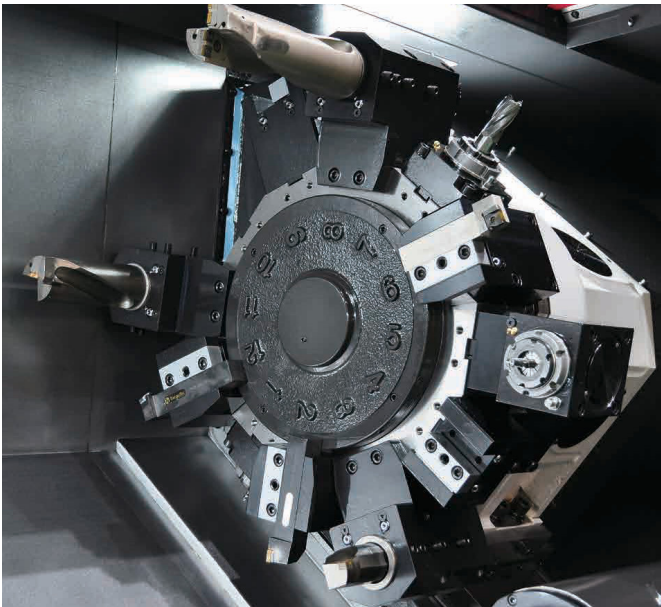


- No. of tools: **12 EA**
- Indexing time: **0.25 sec**

Tool Holder

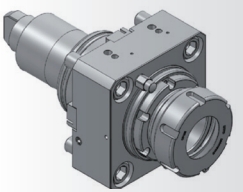
**Boring holder**
NL 4000/5000: **Ø60(2.5")**
NL 6000: **Ø80(3")**

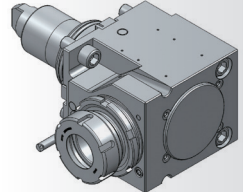
**Bite holder**
□32 (1.25")



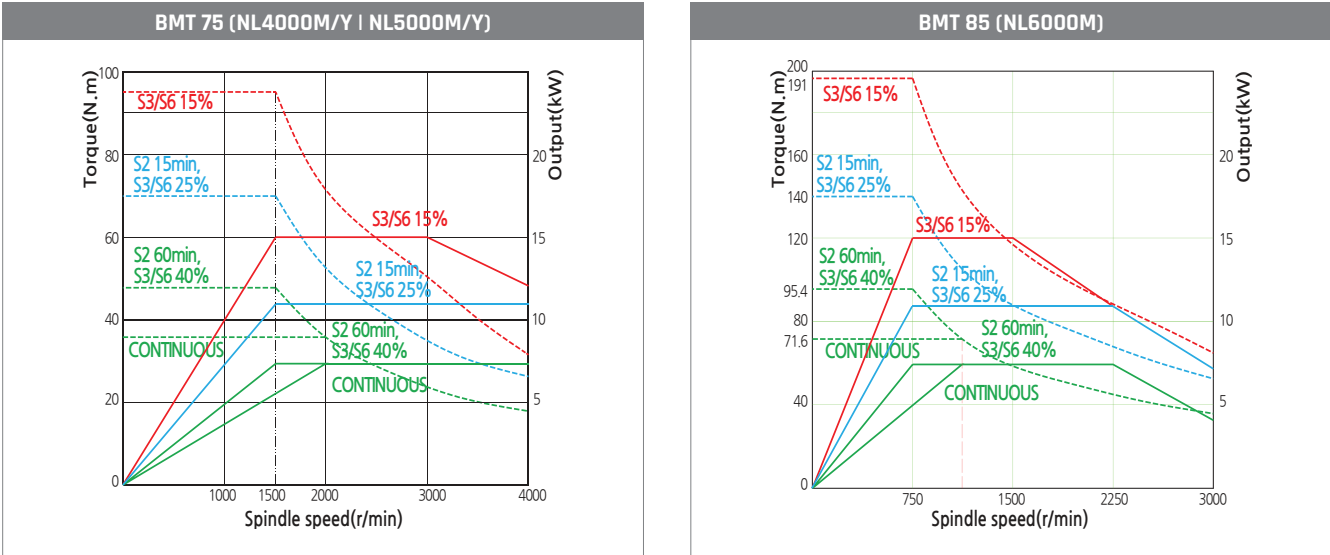
BMT Mill Turret
BMT turret is equipped with 2 separated motors for indexing and milling which improving machining performance and reducing processing time of workpiece.

Mill Tool Holder
Tool holder is mounted to BMT turret by 4 screws ensures stability, rigidity and heavy-duty machining operations.

Straight mill holder


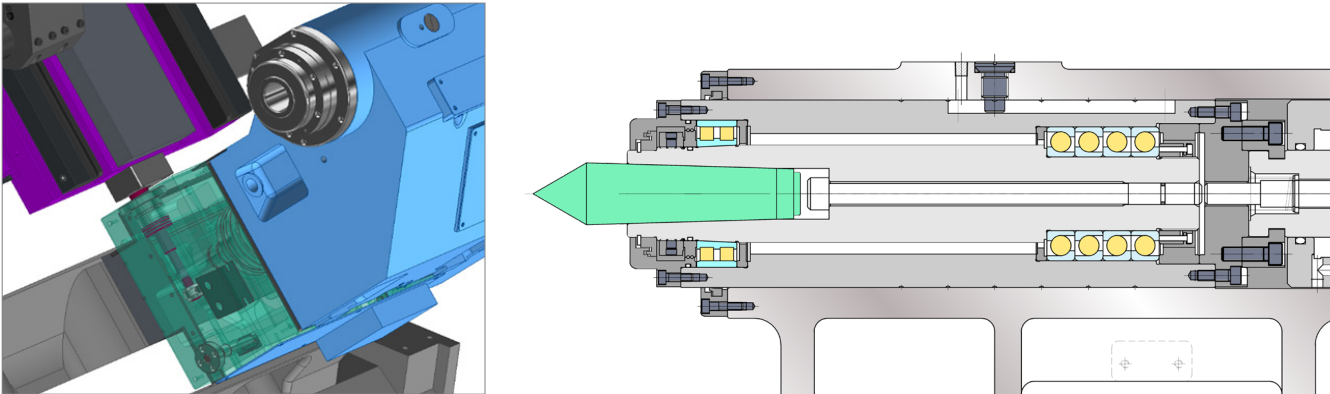
Angular mill holder


• Mill Tool Torque Diagram



Tailstock

Programmable tailstock body & quill is provided as standard equipment for NL series, make easier to adjust tailstock position and minimize setup time.



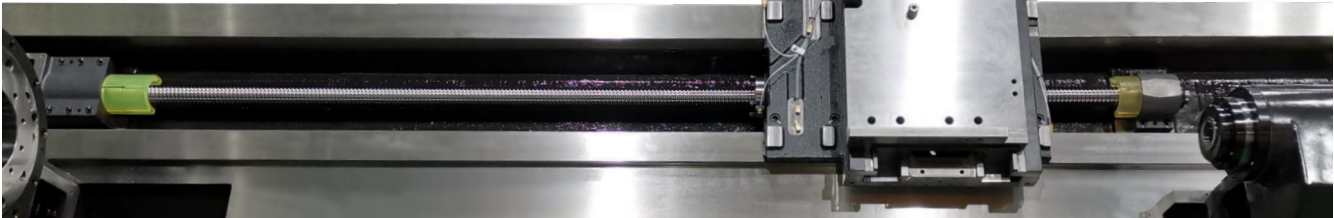
Model	Tailstock travel	Quill dia.	Quill travel	Taper	Hydraulic clamp	Hydraulic quill
	mm(inch)	mm(inch)	mm(inch)	-	kN	kN
NL 4000/M	1,165(45.87)	Ø140(5.51)	120(4.72)	MT#5 (dead center)	72.7 (at 45 bar)	26.2 (at 45 bar)
NL 4000L/LM	2,165(85.2)					
NL 4000XL/XLM	3,165(124.61)					
NL 5000/M	1,165(45.87)					
NL 5000L/LM	2,165(85.2)					
NL5000XL/XLM	3,165(124.61)					
NL 4000LY [XLY]	2,077(81.8)	Ø180(7.09)	150(5.91)	MT#6 (dead center)	271 (at 60 bar)	64 (at 60 bar)
NL 5000LY [XLY]	3,077(121.14)					
NL 6000S/SM						
NL 6000/M	1,450(57.09)					
NL 6000L/LM	2,150(84.65)					
NL 6000XL/XLM	3,150(124.02)					

Ballscrew

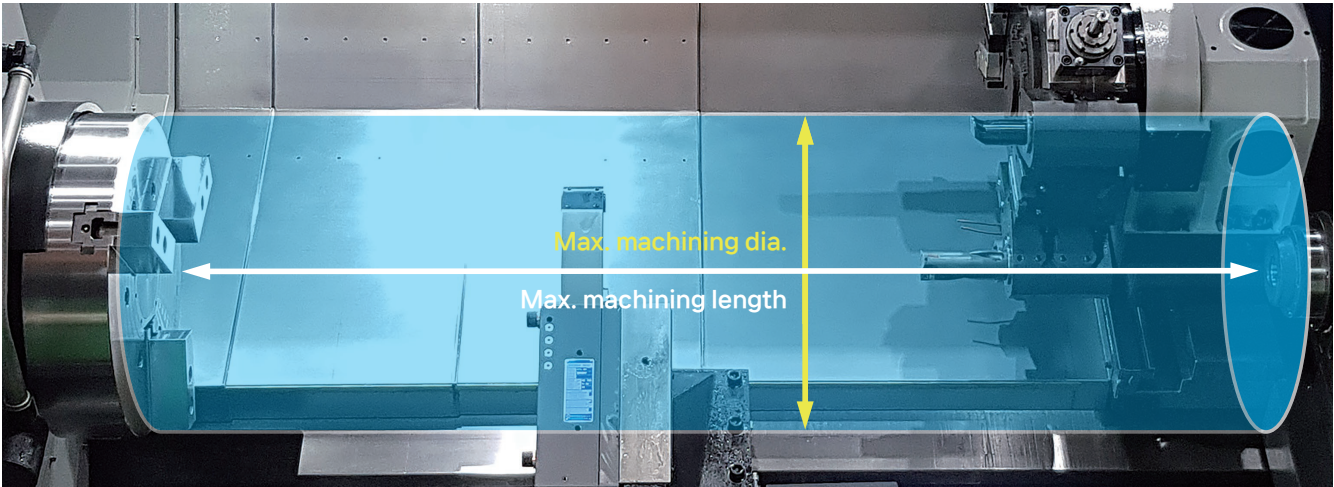
Ultimate rigidity ballscrew

Pre-Tensioned and Double Anchored Ballscrews

Both ends of X-axis and Z-axis are fixed and preloaded with P4 high precision Angular contact ball bearing ensure precise and smooth rotation.



Machining Area



Unit : mm (inch)

Model	Max. machining dia.	Max. machining length	Bar capacity
NL 4000	Ø648 (25.51")	1,213 (47.76")	Ø116.5 (4.59")
NL 4000M	Ø638 (25.11")	1,144 (45.04")	
NL 4000L	Ø648 (25.51")	2,213 (87.13")	
NL 4000LM	Ø638 (25.11")	2,144 (84.41")	
NL 4000XL	Ø648 (25.51")	3,213 (126.50")	
NL4000XLM	Ø638 (25.11")	3,144 (123.75")	Ø165.5 (6.52")
NL 5000	Ø670 (26.38")	1,155 (45.57")	
NL 5000M	Ø650 (25.59")	1,119 (44.06")	
NL 5000L	Ø670 (26.38")	2,155 (85.84")	
NL 5000LM	Ø650 (25.59")	2,119 (83.43")	
NL5000XL	Ø670 (26.38")	3,155 (124.21")	
NL5000XLM	Ø650 (25.59")	3,119 (122.80")	
NL 6000	Ø960 (37.80")	1,550 (61.02")	
NL 6000M	Ø900 (35.43")	1,500 (59.06")	
NL 6000L	Ø960 (37.80")	2,250 (88.58")	
NL 6000LM	Ø900 (35.43")	2,200 (86.61")	
NL6000XL	Ø960 (37.80")	3,250 (127.95")	
NL6000XLM	Ø900 (35.43")	3,200 (125.98")	

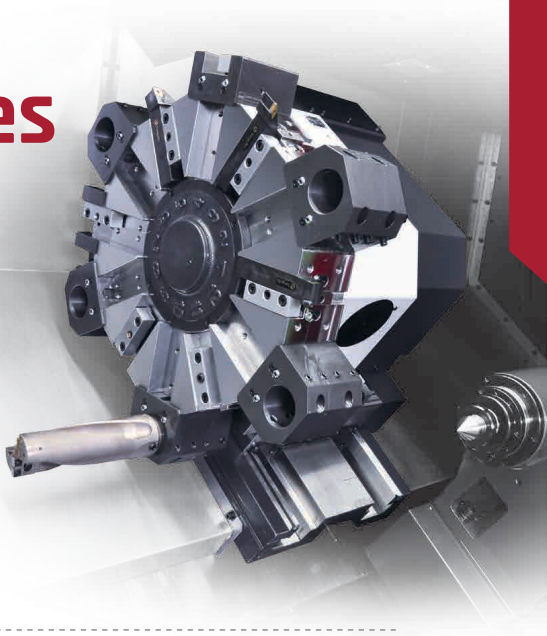
SMART Operation Features

Smart NL Series Turning Centers take operator convenience to the next level, offering key optional accessories as standard features of the machines.



BZi Sensor Std.

SMART provides BZi sensor as standard equipment, instead of position coder, for all models of NL series. Use of BZi sensor helps reduce after sale service cost as BZi sensor does not require maintenance, unlike position coder which need regular service maintenance.



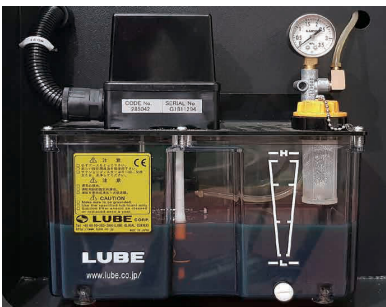
15 Inch Touchscreen Operation Panel Std.

15 inch touch type monitor with Fanuc iHMI as standard features, increase ease-of-use and improve operational efficiency. Operator-friendly design and QWERTY keyboard layout for efficient machine operation. Protected sealed buttons to prevent letters and signs from wearing off. Operator panel swivels up to 90 degrees, providing operators with easy access to the panel while working on the machine.

- ▶ 15 inch touchscreen
 - ▶ QWERTY keyboard
 - ▶ Fanuc iHMI
 - ▶ Semi-permanent A/S LED lamping
- ▶ Waterproof button
 - ▶ Big button size
 - ▶ Replaceable button cap
 - ▶ Light indicator at 100% driving status

Metered Lubrication System Std.

Automatic lubrication dispenser reliably dispenses exact amount of lubrication, only when axes is in operation. In the event of lubrication line failure, the system generates a warning message on CRT and stops the machine for operation safety.



High Pressure Coolant Pump Std.

Standard high pressure coolant pump sufficiently cools off the heat generated while cutting, ensuring precision machining and extended tool life, while Oil Skimmer effectively removes oil from coolant.



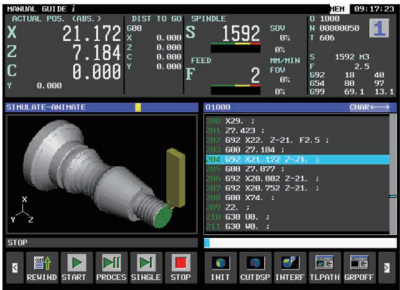
Oil Skimmer Std.



Features

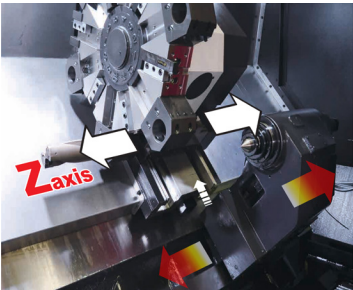
Manual Guide i **Std.**

MGI enables operators to program and simulate part programs using a conversational programming without actually running the machine.



Programmable Tailstock and Quill **Std.**

Programmable tailstock and quill make the set-up easier and faster.



Tool Presetter **Opt.**

Tool presetter reduces set-up time by minimizing the need for manual skin cuts, measurement, and entering of tool offsets.



Chip Conveyor **Opt.**

Equipped with wide hinged belt, worm gear reducer and torque limiter ensure stable movement and efficiently disposes of chips.



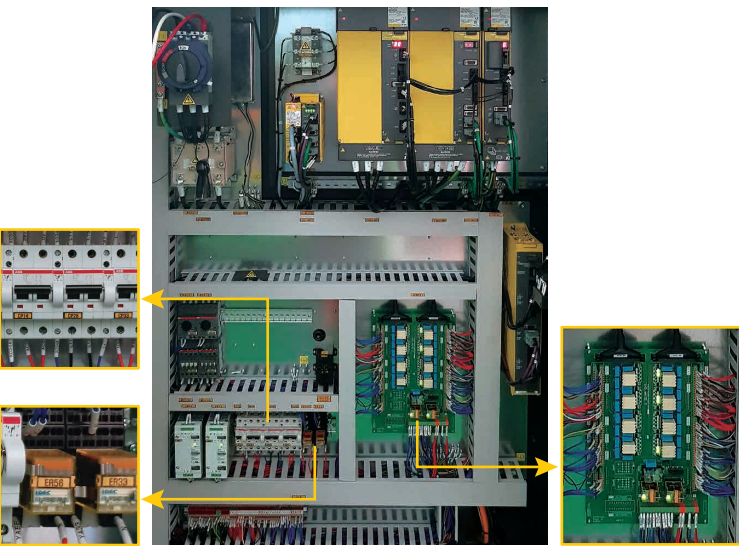
CE Approved Foot Switch **Std.** / Air Gun&Coolant Gun **Opt.**

Connection-ready module design to easily add or remove accessories.



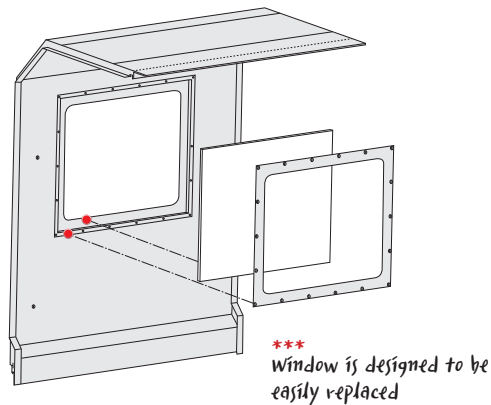
Highly Reliable Electrical Components **Std.**

Brake, power and relay circuits are integrated into one board system to minimize electrical system failure and easily to maintenance and service.

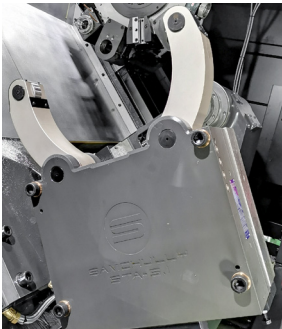


Service Oriented Sheet Metals Design **Std.**

Sheet metals are designed for easy access to the parts/ units when service is needed.



Features



Steady Rest **Opt.**

Steady rest supports turning long workpiece and prevent workpiece from trembling.

Model	SMW-AUTOBLOK		
	SLU-4	SLU-5	SLU-5.1
NL 4000	0	0	X
NL 5000	0	0	X
NL 6000	0	0	0

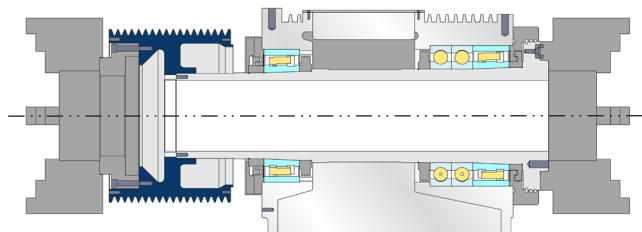
Long Boring Bar Holder **Opt.**

Long boring bar allows high efficiency deep-hole boring operation.

Model	Long Boring Bar Holder	
	Ø80 (3")	Ø100 (4")
NL 4000	0	X
NL 5000	0	0
NL 6000	0	0

Dual Chuck **Opt.**

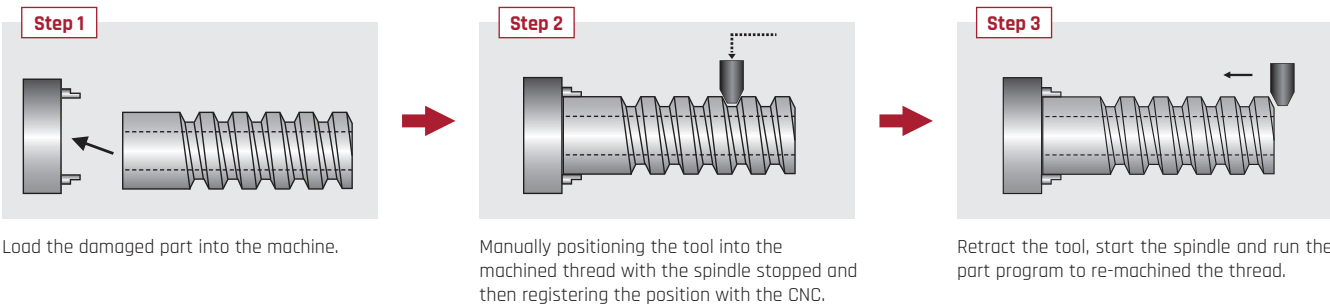
Dual chuck system helps improve machining stability for long workpiece by fix the workpiece at two positions.



Model	Front chuck				Rear chuck	
	Manual		Air		Manual	
	Size	Thru hole	Size	Thru hole	Size	Thru hole
NL 4000	14"	Ø130(5.12")	-	-	14"	Ø130(5.12")
NL 5000 NL 6000	18"	Ø190(7.48")	18"	Ø191(7.52")	18"	Ø190(7.48")
NL 6000C	24"	Ø275(10.83")	24"	Ø275(10.83")	24"	Ø275(10.83")

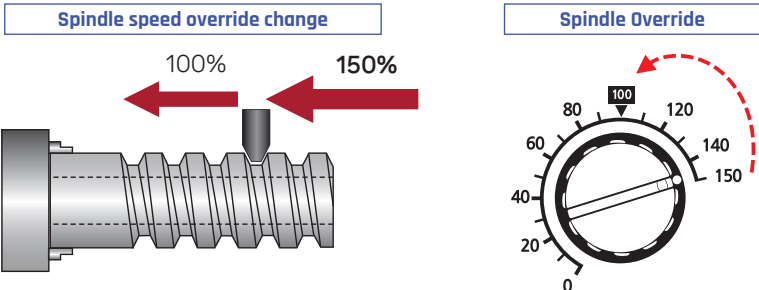
Re-Machining Function **Opt.**

This function allows user to easily repair damaged part.



Arbitrary Speed Threading **Opt.**

Arbitrary speed threading ensures cutting tool remains coordinated with spindle speed at all time during threading. It allows user to adjust spindle speed during threading without damaging the part.



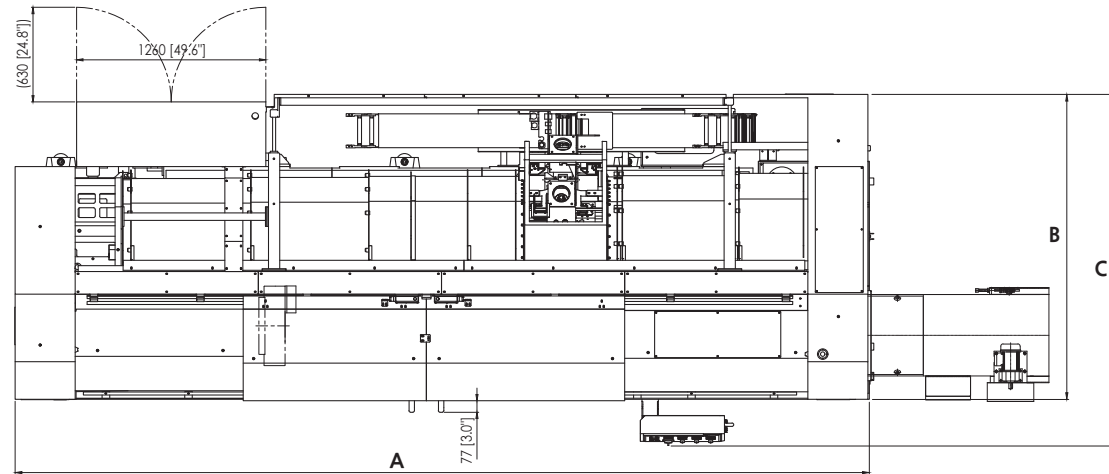
I Standard & Option Specifications

		NL 4000					NL 5000				
		-	M	L/XL	LM/XLM	LY/XLY	-	M	L/XL	LM/XLM	LY/XLY
Spindle and Chucking											
Hydraulic 3 jaw chuck	15 inch	○	○	○	○	○	X	X	X	X	X
	18 inch	●	●	●	●	●	○	○	○	○	○
	21 inch	X	X	X	X	X	●	●	●	●	●
	24 inch	X	X	X	X	X	○	○	○	○	X
Soft jaw	3 set	●	●	●	●	●	●	●	●	●	●
Hard jaw	1 set	●	●	●	●	●	●	●	●	●	●
Dual pressure chucking		○	○	○	○	○	○	○	○	○	○
Chuck clamp foot switch		●	●	●	●	●	●	●	●	●	●
Chuck clamp confirmation		●	●	●	●	●	●	●	●	●	●
Dual chuck		○	○	○	○	○	○	○	○	○	○
Special chuck		○	○	○	○	○	○	○	○	○	○
Turret											
Long boring bar holder	Ø60mm (2.5 inch)	○	○	○	○	X	○	○	○	○	X
	Ø80mm (3 inch)	○	○	○	○	X	○	○	○	○	X
	Ø100mm (4inch)	X	X	X	X	X	○	○	○	○	X
Steady Rest											
Hydraulic (Programmable)	SLU-4 (Ø30~Ø245 mm [1.18~9.65 inch])	○	○	○	○	○	○	○	○	○	○
	SLU-5 (Ø45~Ø310 mm [1.77~12.2 inch])	○	○	○	○	○	○	○	○	○	○
	SLU-5.1 (Ø85~Ø350 mm [3.35~13.78 inch])	X	X	X	X	○	X	X	△	△	○
Manual	Ø50~Ø260 mm [2.97-10.24 inch]	○	○	○	○	△	○	○	○	○	△
	Ø100~Ø350 mm [3.94-13.78 inch]	○	○	○	○	△	○	○	○	○	△
	Ø250~Ø450 mm [9.84-17.72 inch]	○	○	○	○	△	○	○	○	○	△
	Ø280~Ø500 mm [11.02-19.69 inch]	X	X	X	X	X	○	○	○	○	△
Tailstock											
Programmable tailstock		●	●	●	●	●	●	●	●	●	●
Built-in live center	MT#5	●	●	●	●	●	●	●	●	●	●
Tailstock in-out foot switch		●	●	●	●	●	●	●	●	●	●
Coolant											
High pressure coolant pump	10 bar (140 psi)	●	●	●	●	●	●	●	●	●	●
	20 bar (290psi)	○	○	○	○	○	○	○	○	○	○
Oil skimmer		●	●	●	●	●	●	●	●	●	●
Coolant chiller		○	○	○	○	○	○	○	○	○	○
Coolant filtration system		○	○	○	○	○	○	○	○	○	○
Chuck coolant		○	○	○	○	○	○	○	○	○	○
Shower coolant		○	○	○	○	○	○	○	○	○	○
Coolant gun		○	○	○	○	○	○	○	○	○	○
Chip Disposal											
Chip conveyor		○	○	○	○	○	○	○	○	○	○
Chip bucket		○	○	○	○	○	○	○	○	○	○
Air gun		○	○	○	○	○	○	○	○	○	○
Air blower		○	○	○	○	○	○	○	○	○	○
Mist collector		○	○	○	○	○	○	○	○	○	○
Measurement & Automatic Operation											
Tool presetter		○	○	○	○	○	○	○	○	○	○
Workpiece measurement		○	○	○	○	○	○	○	○	○	○
Auto door		○	○	○	○	○	○	○	○	○	○
Others											
Operation status light tower		●	●	●	●	●	●	●	●	●	●
Work light (LED lamp)		●	●	●	●	●	●	●	●	●	●
Manual and part list		●	●	●	●	●	●	●	●	●	●
Door interlock		●	●	●	●	●	●	●	●	●	●
Leveling blocks		●	●	●	●	●	●	●	●	●	●
Air conditioner		○	○	○	○	○	○	○	○	○	○

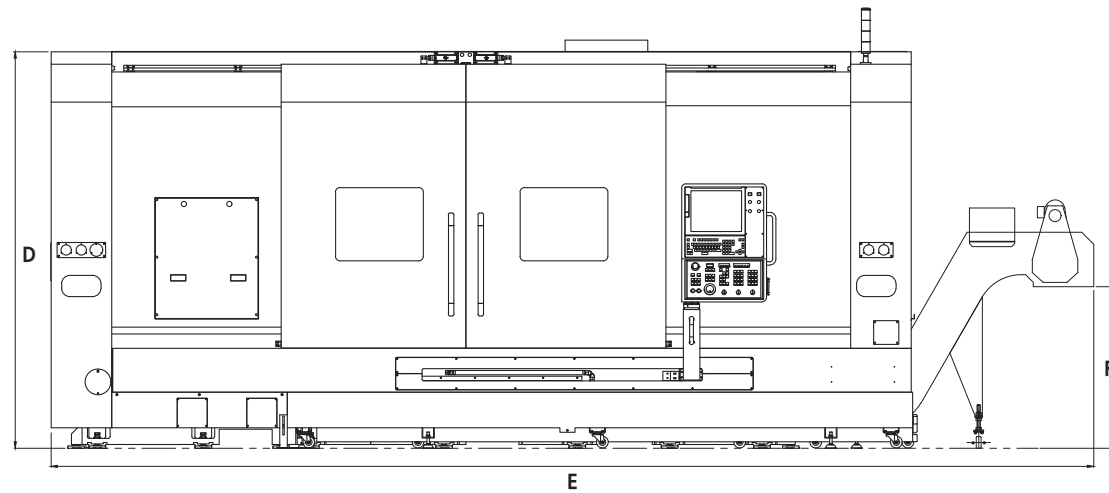
		NL 6000								
		S	SM	-	M	L	LM	XL	XLM	C
Spindle and Chucking										
Hydraulic 3 jaw chuck	24 inch	●	●	●	●	●	●	●	●	X
	32 inch	○	○	○	○	○	○	○	○	X
Soft jaw	3 set	●	●	●	●	●	●	●	●	○
Hard jaw	1 set	●	●	●	●	●	●	●	●	○
Dual pressure chucking		○	○	○	○	○	○	○	○	○
Chuck clamp foot switch		●	●	●	●	●	●	●	●	●
Chuck clamp confirmation		●	●	●	●	●	●	●	●	○
Dual chuck		○	○	○	○	○	○	○	○	○
Special chuck		○	○	○	○	○	○	○	○	○
Turret										
Wide turret disk	230mm	○	○	○	○	○	○	○	○	○
Long boring bar holder	Ø60mm (2.5 inch)	○	○	○	○	○	○	○	○	○
	Ø80mm (3 inch)	○	○	○	○	○	○	○	○	○
	Ø100mm (4inch)	○	○	○	○	○	○	○	○	○
Steady Rest										
Hydraulic (Programmable)	SLU-4 (Ø30~Ø245 mm [1.18~9.65 inch])	○	○	○	○	○	○	○	○	○
	SLU-5 (Ø45~Ø310 mm [1.77~12.2 inch])	○	○	○	○	○	○	○	○	○
	SLU-5.1 (Ø85~Ø350 mm [3.35~13.78 inch])	○	○	○	○	○	○	○	○	○
	K6 (Ø135~Ø460 mm [5.31-18.11 inch])	X	X	X	X	△	△	△	△	△
Manual	Ø30~Ø330 mm [1.18-12.99 inch]	○	○	○	○	○	○	○	○	○
	Ø250~Ø450 mm [9.84-17.72 inch]	○	○	○	○	○	○	○	○	○
	Ø280~Ø500 mm [11.02-19.69 inch]	○	○	○	○	○	○	○	○	○
	Ø530~Ø720 mm [20.87-28.35 inch]	X	X	X	X	△	△	△	△	△
	Ø580~Ø740 mm [22.83-29.13 inch]	X	X	X	X	△	△	△	△	△
Tailstock										
Programmable tailstock		○	○	●	●	●	●	●	●	●
Built-in live center	MT#6	○	○	●	●	●	●	●	●	●
Tailstock in-out foot switch		○	○	●	●	●	●	●	●	●
Coolant										
High pressure coolant pump	10 bar (140 psi)	●	●	●	●	●	●	●	●	●
	20 bar (290psi)	○	○	○	○	○	○	○	○	○
Oil skimmer		●	●	●	●	●	●	●	●	●
Coolant chiller		○	○	○	○	○	○	○	○	○
Coolant filtration system		○	○	○	○	○	○	○	○	○
Chuck coolant		○	○	○	○	○	○	○	○	○
Shower coolant		○	○	○	○	○	○	○	○	○
Coolant gun		○	○	○	○	○	○	○	○	○
Chip Disposal										
Chip conveyor		○	○	○	○	○	○	○	○	○
Chip bucket		○	○	○	○	○	○	○	○	○
Air gun		○	○	○	○	○	○	○	○	○
Air blower		○	○	○	○	○	○	○	○	○
Mist collector		○	○	○	○	○	○	○	○	○
Measurement & Automatic Operation										
Tool presetter		○	○	○	○	○	○	○	○	○
Workpiece measurement		○	○	○	○	○	○	○	○	○
Auto door		○	○	○	○	○	○	○	○	○
Others										
Operation status light tower		●	●	●	●	●	●	●	●	●
Work light (LED lamp)		●	●	●	●	●	●	●	●	●
Manual and part list		●	●	●	●	●	●	●	●	●
Door interlock		●	●	●	●	●	●	●	●	●
Leveling blocks		●	●	●	●	●	●	●	●	●
Air conditioner		○	○	○	○	○	○	○	○	○

I Machine Dimensions

Top View



Front View

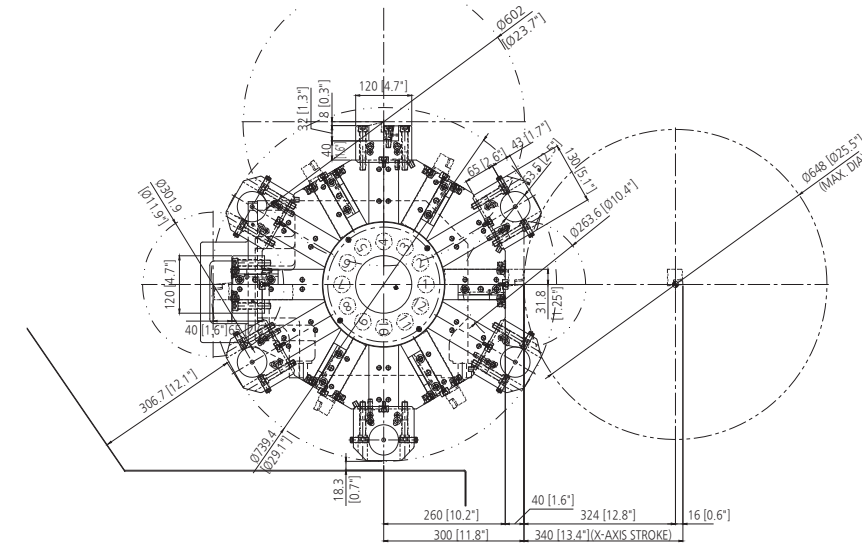


Unit : mm (inch)

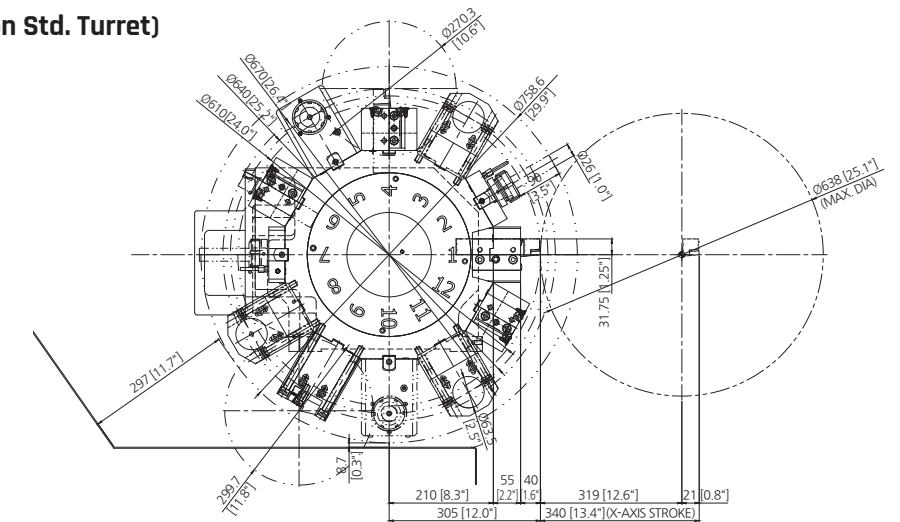
Model	A (Length)	B (Width)	C (Width with controller)	D (Height)	E (Length with side chip conveyor)	F (Chip conveyor height)
NL 4000/M	4,410 (173.6)	1,940 (76.4)	-	2,268 (89.3)	5,616 (221.1)	1,063 (41.9)
NL 4000L/LM	5,680 (223.6)	1,940 (76.4)	2,239 (88.1)		6,886 (271.1)	1,066 (42.0)
NL 4000XL/XLM	6,680 (263.0)	2,010 (79.1)	2,309 (90.9)		7,885 (310.4)	
NL 5000/M	4,410 (173.6)	1,940 (76.4)	-		5,616 (221.1)	1,063 (41.9)
NL 5000L/LM	5,680 (223.6)	1,940 (76.4)	2,239 (88.1)		6,886 (271.1)	1,066 (42.0)
NL 5000XL/XLM	6,680 (263.0)	2,010 (79.1)	2,309 (90.9)		7,885 (310.4)	
NL 4000LY	5,680 (223.6)	2,105 (82.9)	2,414 (95.0)	2,631 (103.58)	6,886 (271.1)	1,066 (42.0)
NL 5000LY						
NL 4000XLY	6,680 (263.0)				7,885 (310.4)	1,066 (42.0)
NL 5000XLY						
NL 6000S/SM	4,335 (170.7)	2,312 (91.0)	-	2,300 (90.6)	5,561 (218.9)	1,058 (41.7)
NL 6000/M	5,135 (202.2)				6,364 (250.6)	
NL 6000L/LM	5,948 (234.2)		2,611 (102.8)		7,174 (282.4)	
NL 6000XL/XLM	7,043 (277.3)	2,382 (93.8)	2,681 (105.6)	2,380 (93.7)	8,269 (325.6)	

I Interference

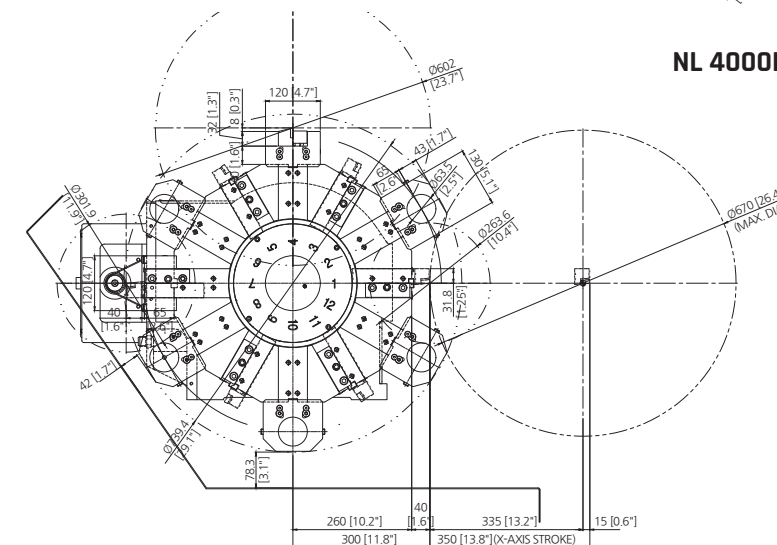
Unit : mm (inch)



NL 4000/L/XL (12 Station Std. Turret)

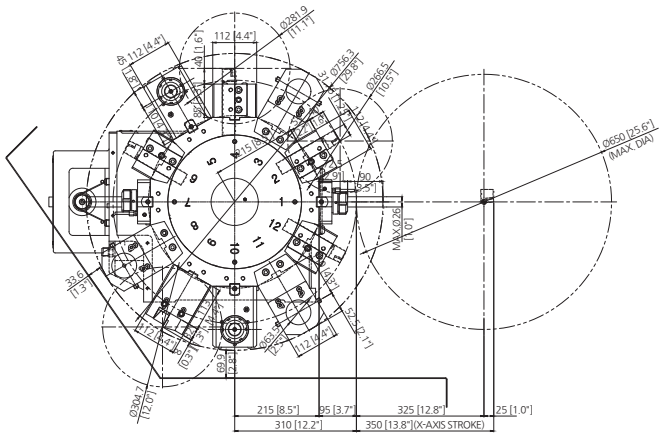


NL 4000M/LM/XLM (BMT75 12 Station Mill Turret)

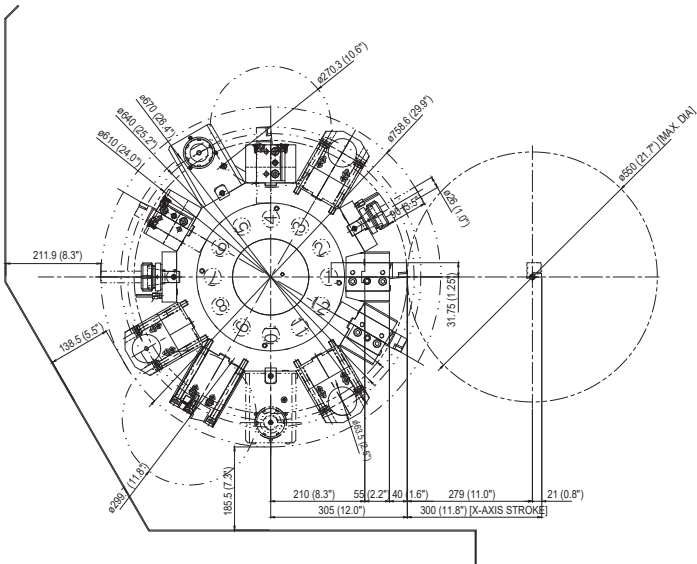
**NL 5000/L/XL (12 Station Std. Turret)**

I Interference

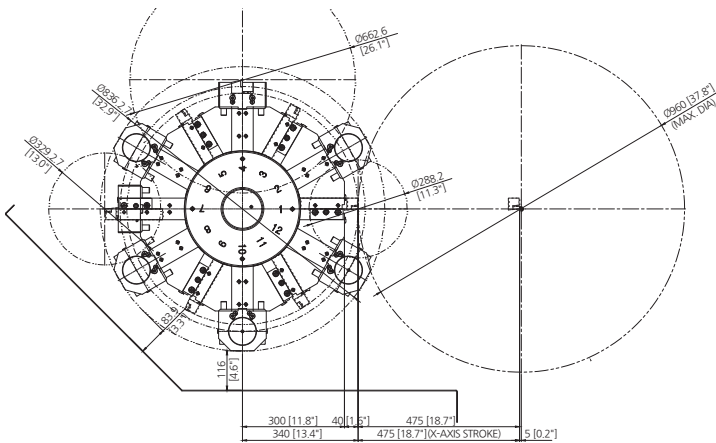
Unit : mm (inch)



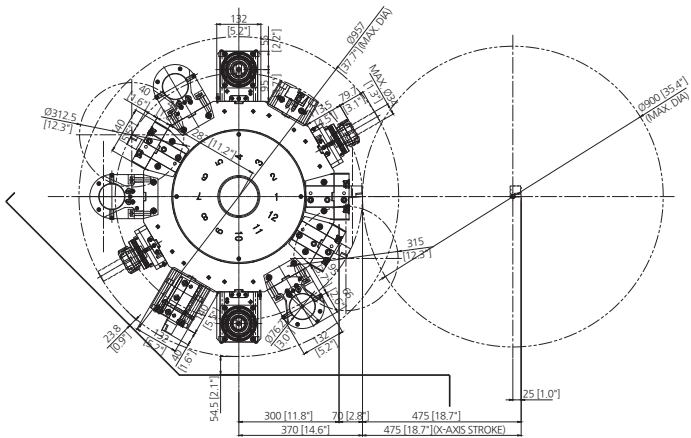
NL 5000M/LM/XLM
(BMT75 12 Station Mill Turret)



NL 4000Y/NL 5000Y
(BMT75 12 Station Mill Turret)



NL 6000/S/L/XL
(12 Station Std. Turret)

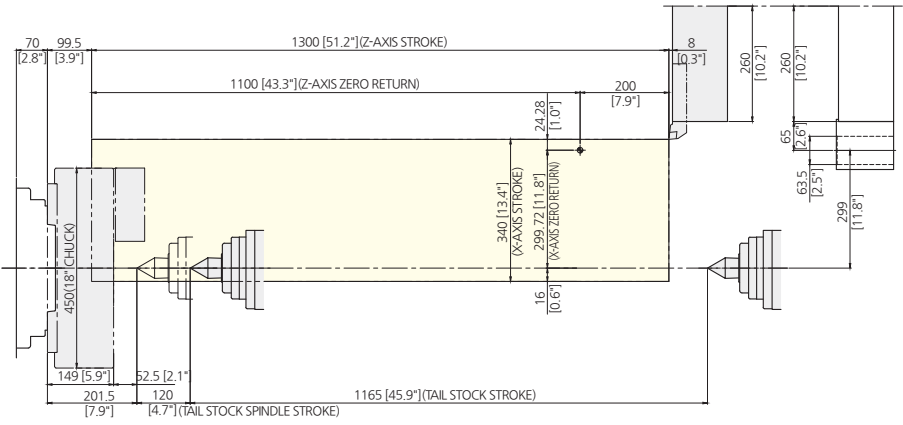


NL 6000M/SM/LM/XLM
(BMT85 12 Station Mill Turret)

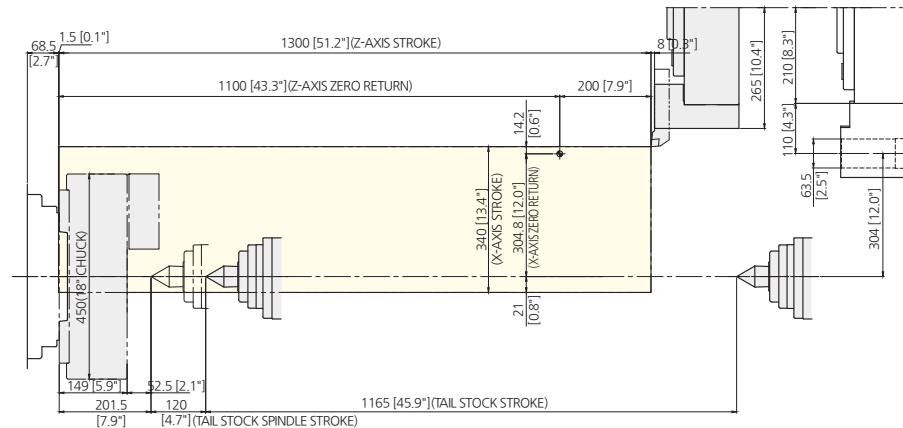
I Work Range

Unit : mm (inch)

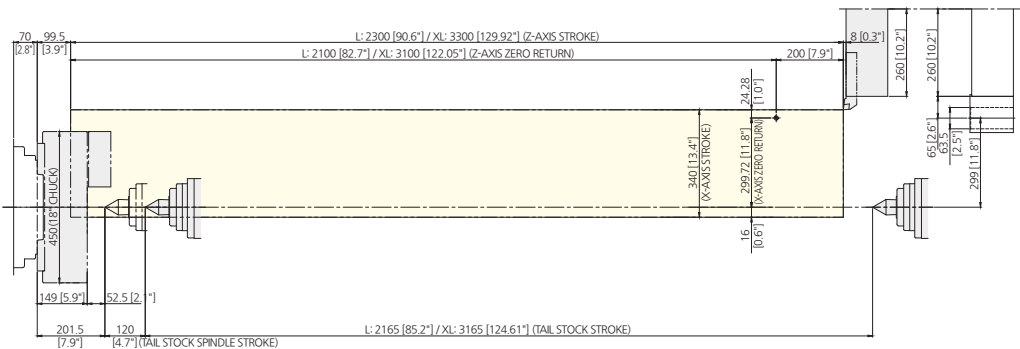
NL 4000



NL 4000M

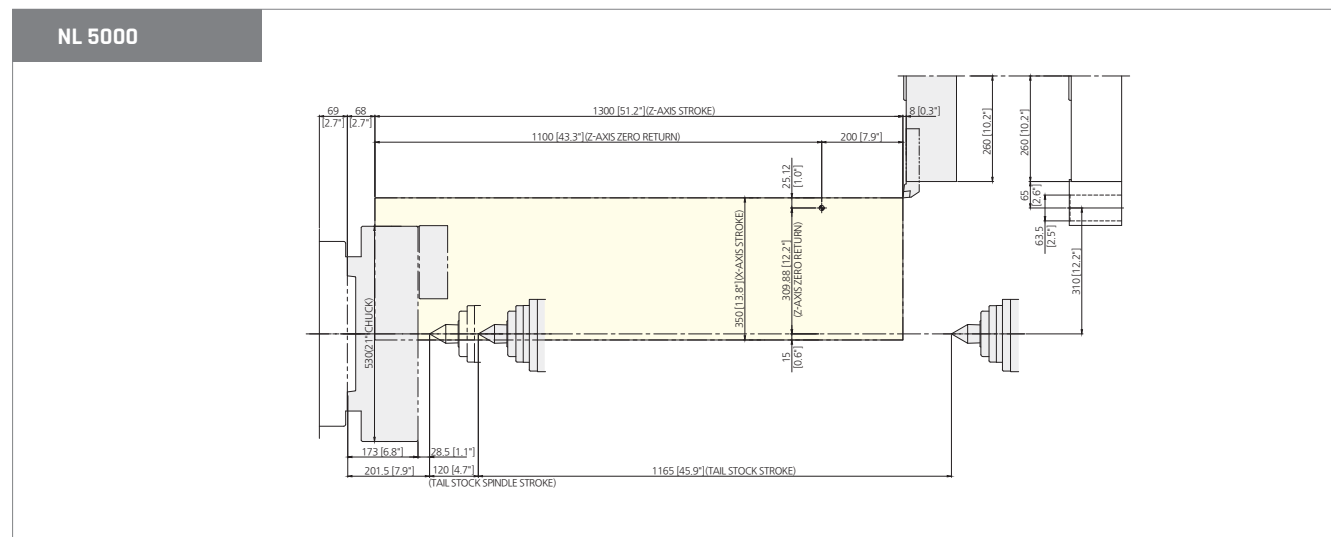
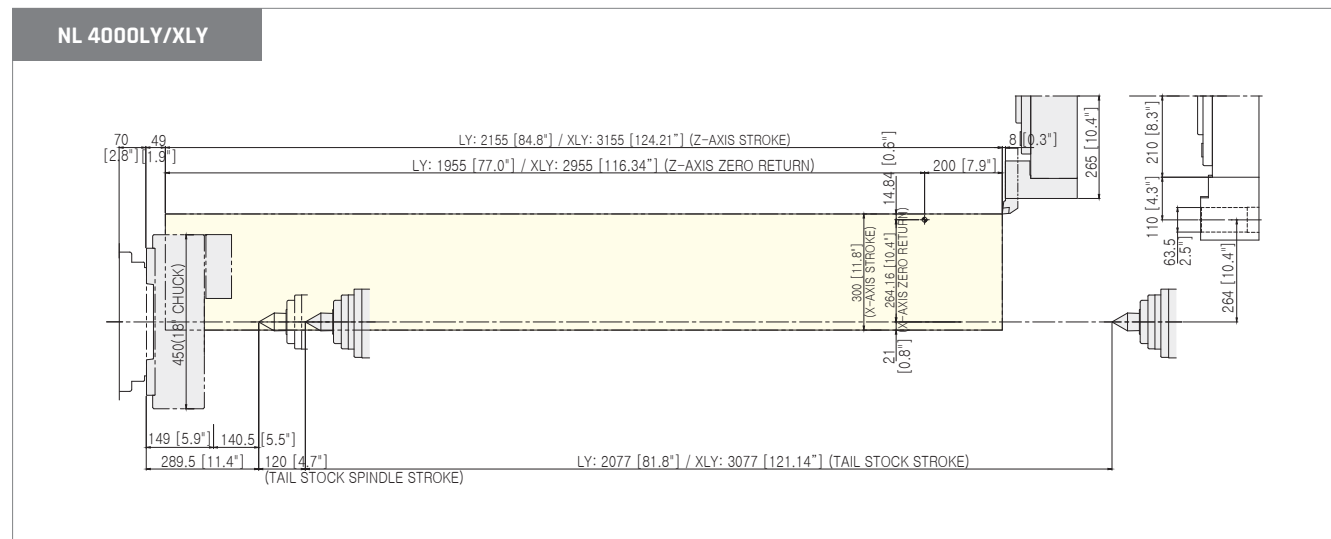
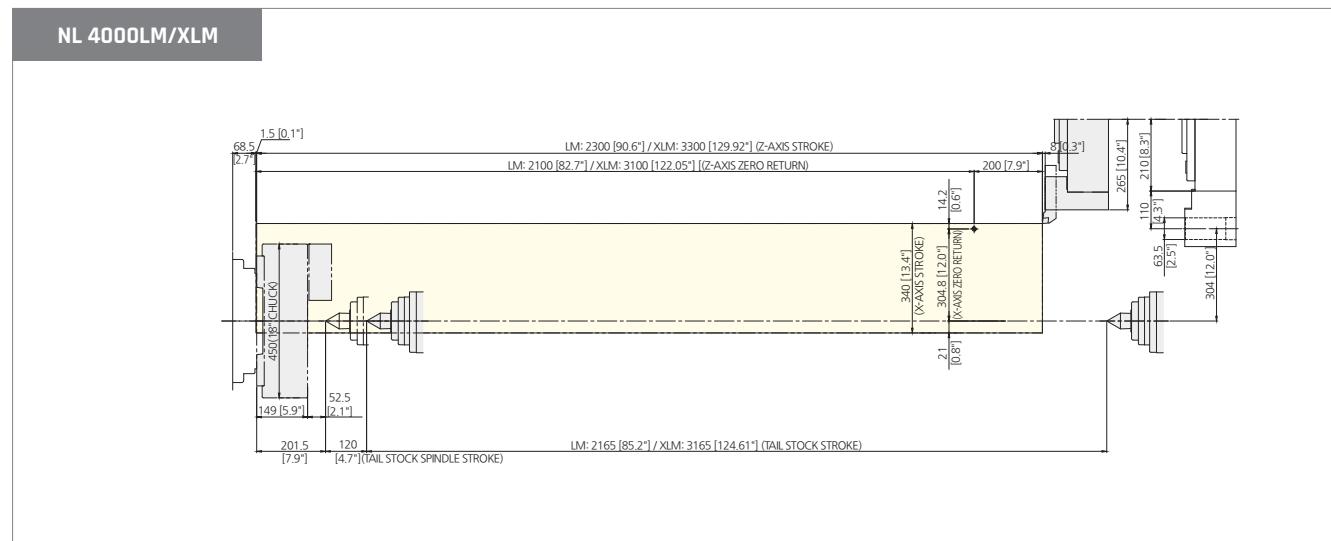


NL 4000L/XL

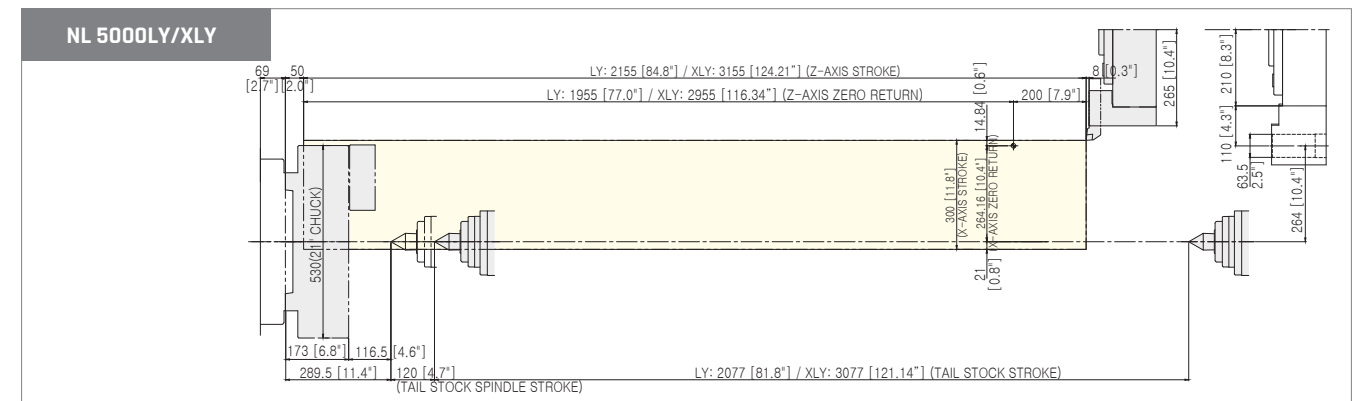
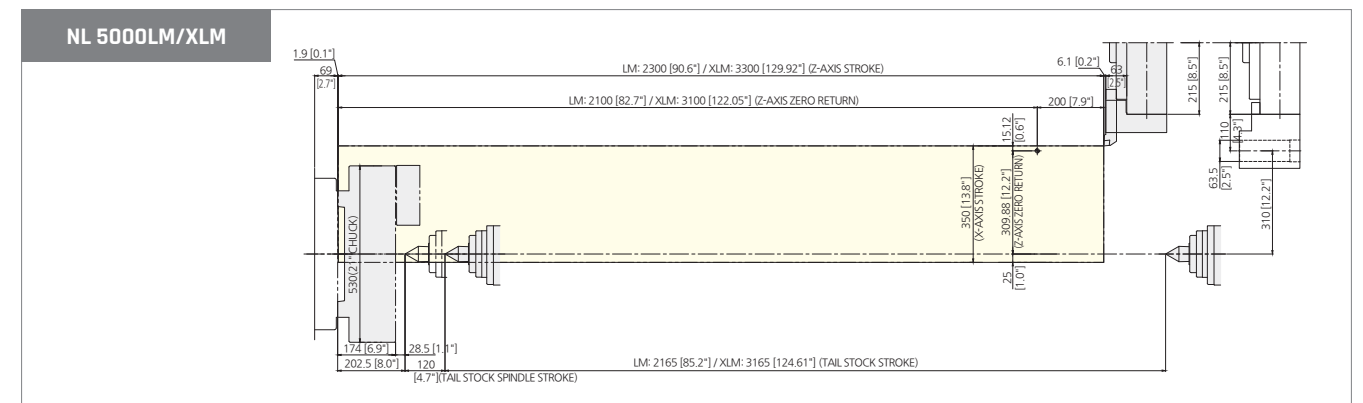
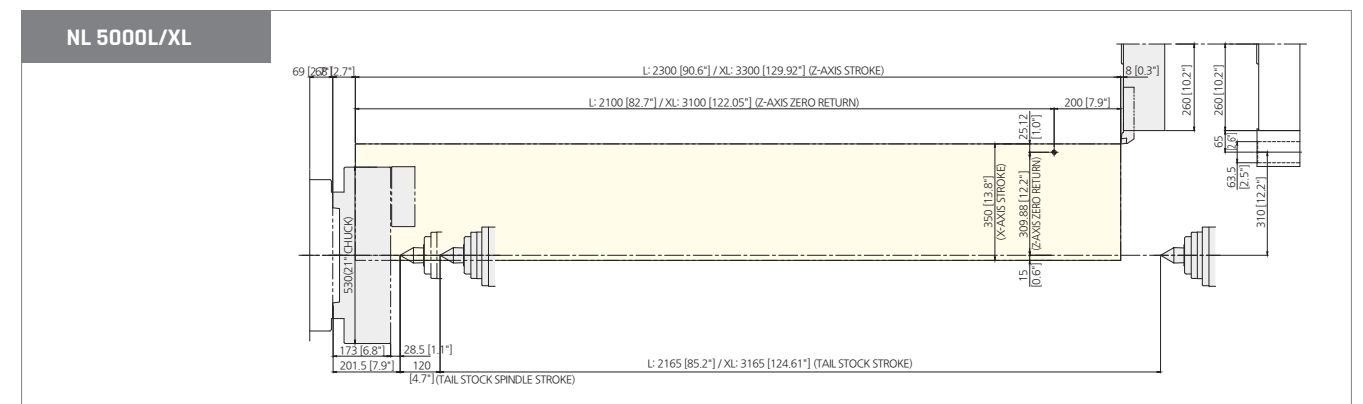
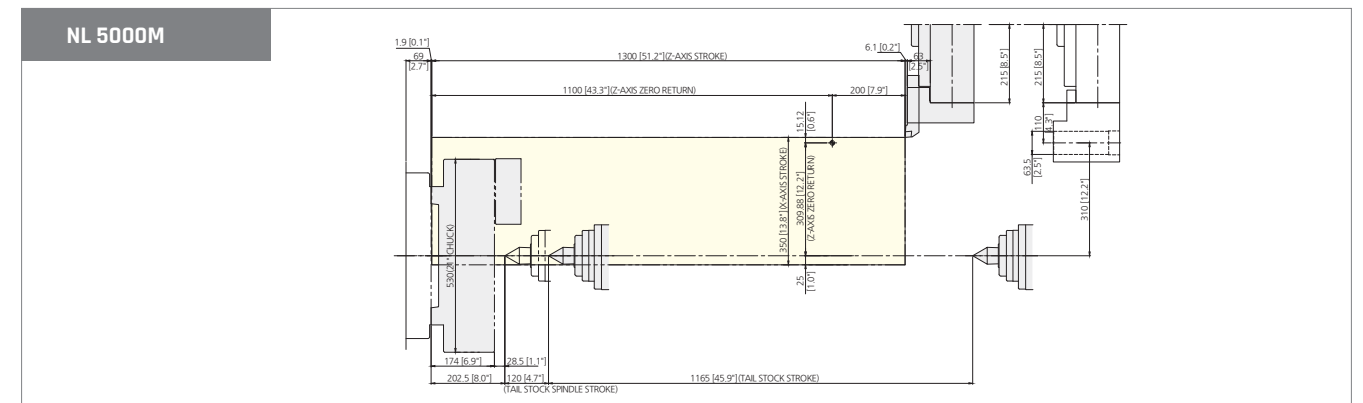


I Work Range

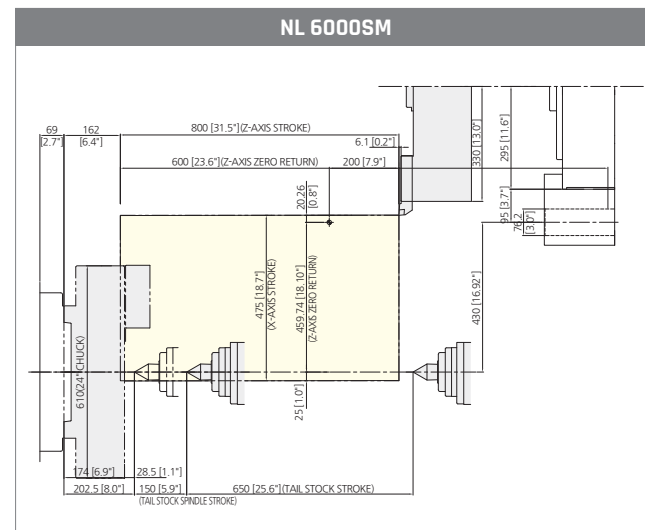
Unit : mm (inch)



Unit : mm (inch)

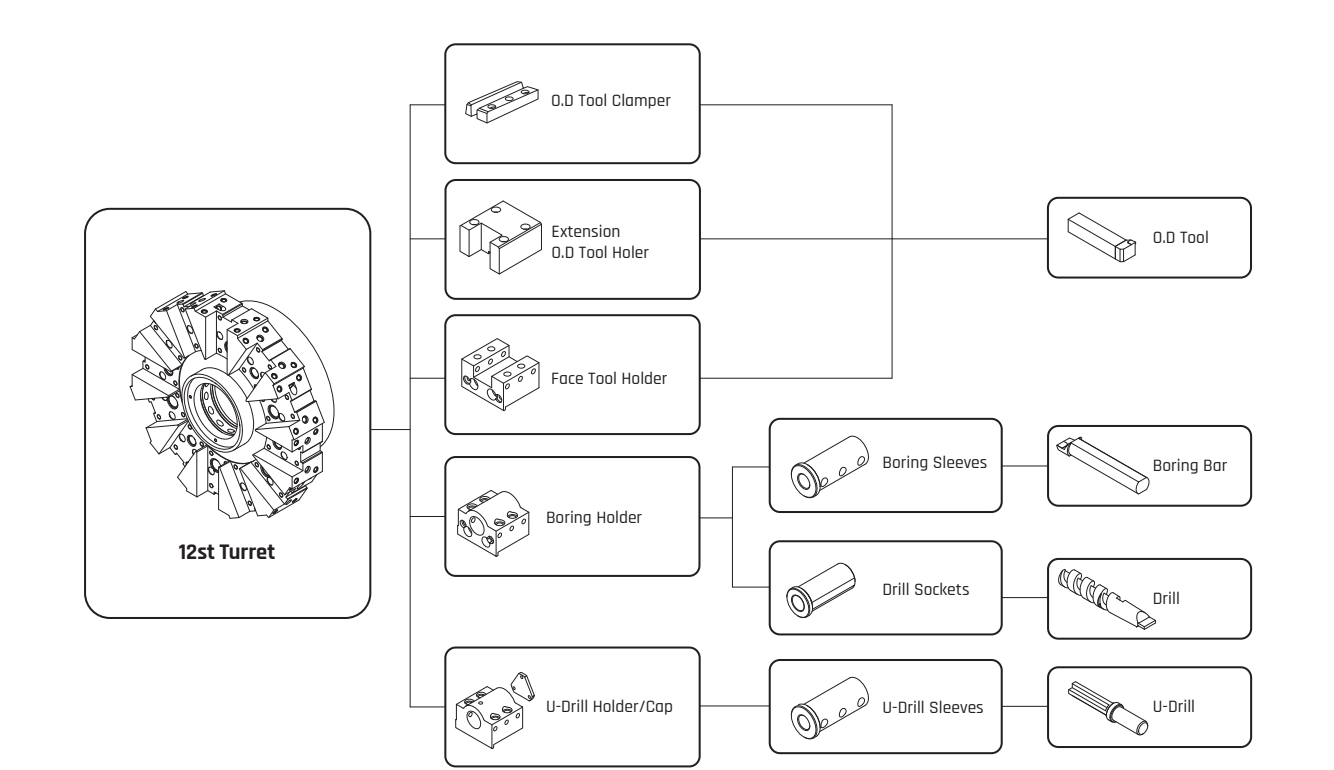


Unit : mm (inch)



I Tooling System

Standard Turret (12 Station)

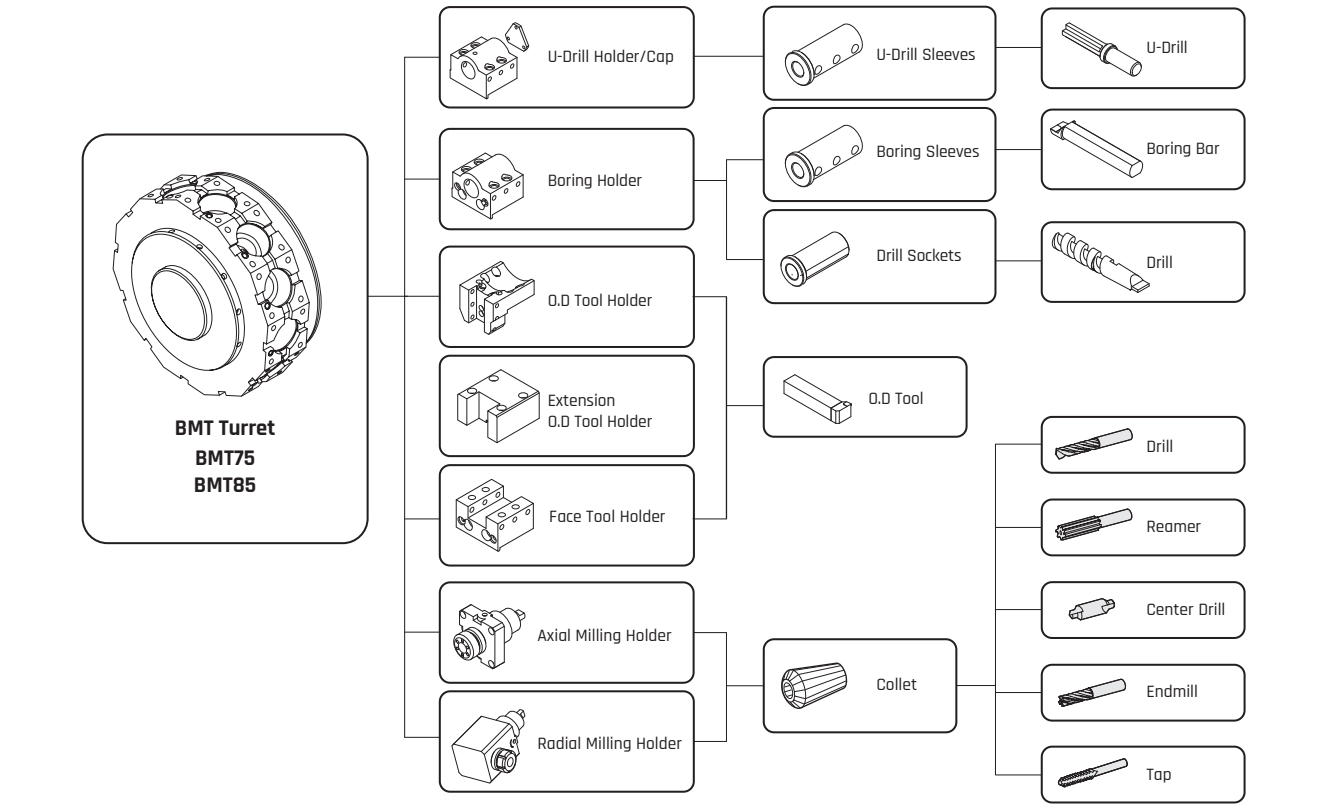


Standard Tooling Parts

Unit : mm (inch)

ITEM			NL 4000/L	NL 5000/L/XL	NL 6000/S/L/XL
Turning Holder	Extension O.D holder		1	1	1
	Facing Holder		1	1	1
Boring Holder	Boring Holder	-	-	4	3
	U-Drill Holder	-	5	1	2
Driven Holder	Axial Milling Holder	Standard	-	-	-
	Radial Milling Holder	Standard	-	-	-
Sleeve	Boring	Ø12(1/2")	1	1	-
		Ø16(5/8")	1	1	1
		Ø20(3/4")	1	1	1
		Ø25(1")	1	1	1
		Ø32(1 1/4")	1	1	1
		Ø40(1 1/2")	1	1	1
		Ø50(2")	1	1	1
		Ø60(2 1/2")	-	-	1
	Drill	MT2	1	1	1
		MT3	1	1	1
		MT4	1	1	1
		MT5	1	1	1

BMT Turret (12 Station)



Standard Tooling Parts

Unit : mm (inch)

ITEM			NL 4000M/LM	NL 5000M/LM/XLM	NL 4000Y/NL 5000Y	NL 6000M/SM/LM/XLM
Turning Holder	O.D Holder		1	3	1	3
	Extension O.D Holder		3	1	3	1
	Facing Holder		1	1	1	1
Boring Holder	Boring Holder	-	2	2	2	2
	U-Drill Holder	-	1	1	1	1
Driven Holder	Axial Milling Holder	Standard	1	1	1	1
	Radial Milling Holder	Standard	1	1	1	1
Sleeve	Boring	Ø12(1/2")	1	1	1	-
		Ø16(5/8")	1	1	1	1
		Ø20(3/4")	1	1	1	1
		Ø25(1")	1	1	1	1
		Ø32(1 1/4")	1	1	1	1
		Ø40(1 1/2")	1	1	1	1
		Ø50(2")	1	1	1	1
		Ø60(2 1/2")	-	-	-	1
	Drill	MT2	1	1	1	1
		MT3	1	1	1	1
		MT4	1	1	1	1
		MT5	1	1	1	1

I Machine Specifications

DESCRIPTION			NL 4000 [L/XL]	NL 4000M [LM/XLM]	NL 4000LY [XLY]
CAPACITY	Swing over the bed	mm(inch)	790 (31.10)		900 (35.43)
	Swing over the cross slide	mm(inch)	610 (24.02)		850 (33.46)
	Max. machining diameter	mm(inch)	648 (25.51)	638 (25.11)	550 (21.65)
	Max. machining length	mm(inch)	1,213 [2,213/3,213] (47.76 [87.13/126.50])	1,144 [2,144/3,144] (45.04 [84.41/123.78])	2,017 [3,017] (79.41 [118.78])
	Chuck size	Inch	18		
	Bar working dia.	mm(inch)	116.5 (4.59)		
SPINDLE	Spindle speed	rpm	2,000		
	Spindle motor	kW{Hp}	30/45 (40/60)		
	Spindle nose	ASA	A2 - 11		
	Spindle torque	N.m(ft.lbs)	3,283 (2,421)		2,687 (1,981)
	Spindle through hole dia.	mm(inch)	132 (5.2)		
	Min. C-axis indexing	deg	-	0.001	0.001
TRAVEL	Rapid traverse (X/Z/Y)	m/min(ipm)	16/20 (630/787) [XL/XLM: 16/10 (630/394)]		16/20[10]/10 (630/787[394]/394)
	X-axis travel	mm(inch)	340 (13.39)		300 (11.81)
	Z-axis travel	mm(inch)	1,300 [2,300/3,300] (51.18 [90.55/129.92])		2,155 [3,155] (84.84 [124.21])
	Y-axis travel	mm(inch)	-		150 (5.91)
	Feed motor (X/Z/Y)	kW{hp}	4/7 [XL/XLM: 4/6] (5.4/9.4 [XL/XLM: 5.4/8])		6/6/7 (8/8/9.4)
TURRET	Number of tool stations	st.	12		
	OD tool size	mm(inch)	□32(□1.25)		
	Max. boring bar size	mm(inch)	Ø60 (2.5)		
	Indexing time	sec	0.25/step		
	Milling tool holder type	-	-	BMT75	BMT75
	Max. rotary tool spindle speed	rpm	-	4,000	4,000
	Rotary tool motor power	kW{hp}	-	7.5/11/15 (10/14.8/20.1)	7.5/11/15 (10/14.8/20.1)
TAILSTOCK	Tailstock travel	mm(inch)	1,165 [2,165/3,165] (45.87 [85.24/124.61])		2,077 [3,077] (81.77 [121.14])
	Quill diameter	mm(inch)	140 (5.51)		
	Quill travel	mm(inch)	120 (4.72)		
	Taper of tailstock spindle	-	MT#5 (Built-in)		
BED TYPE		-	45° Slant		
ELECTRIC POWER SUPPLY		kVA	55		63
REQUIRED FLOOR SPACE		mm(inch)	4,450x2,017 [5,720x2,205/6,720x2,275] (175.2x79.4 [225.2x86.8/264.6x94.9])		5,720x2,340 [6,720x2,410] (225.2x92.1 [264.6x94.9])
MACHINE WEIGHT		kg(lbs)	10,700 [13,600/16,700] (23,589 [29,983/36,817])	10,800 [13,700/16,800] (23,810 [30,203/37,038])	14,800 [17,900] (32,628 [39,463])
CONTROLLER		-	Fanuc Oi-TF Plus		

DESCRIPTION			NL 5000 [L/XL]	NL 5000M [LM/XLM]	NL 5000LY [XLY]
CAPACITY	Swing over the bed	mm(inch)	900 (35.43)		
	Swing over the cross slide	mm(inch)	690 (27.17)		850 (33.46)
	Max. machining diameter	mm(inch)	670 (26.38)	650 (25.59)	550 (21.65)
	Max. machining length	mm(inch)	1,155 [2,155/3,155] (45.47 [84.84/124.21])	1,119 [2,119/3,119] (44.06 [83.43/122.80])	1,992 [2,992] (78.43 [117.8])
	Chuck size	Inch	21		
	Bar working dia.	mm(inch)	165.5 (6.52)		
SPINDLE	Spindle speed	rpm	1,500		
	Spindle motor	kW{Hp}	30/45 (40/60)		
	Spindle nose	ASA	A2 - 15		
	Spindle torque	N.m(ft.lbs)	3,955 (2,916)		3,105 (2,289)
	Spindle through hole dia.	mm(inch)	181 (7.125)		
	Min. C-axis indexing	deg		0.001	0.001
TRAVEL	Rapid traverse (X/Z/Y)	m/min(ipm)	16/20 (630/787) [XL/XLM: 16/10 (630/394)]		16/20[10]/10 (630/787[394]/394)
	X-axis travel	mm(inch)	350 (13.78)		300 (11.81)
	Z-axis travel	mm(inch)	1,300 [2,300/3,300] (51.18 [90.55/129.92])		2,155 [3,155] (84.84 [124.21])
	Y-axis travel	mm(inch)	-		150 (5.91)
	Feed motor (X/Z/Y)	kW{hp}	7/6 (9.4/8)		6/6/7 (8/8/9.4)
TURRET	Number of tool stations	st.	12		
	OD tool size	mm(inch)	□32(□1.25)		
	Max. boring bar size	mm(inch)	Ø60 (2.5)		
	Indexing time	sec	0.25/step		
	Milling tool holder type	-	-	BMT75	BMT75
	Max. rotary tool spindle speed	rpm	-	4,000	4,000
	Rotary tool motor power	kW{hp}	-	7.5/11/15 (10/14.8/20.1)	7.5/11/15 (10/14.8/20.1)
TAILSTOCK	Tailstock travel	mm(inch)	1,165 [2,165/3,165] (45.87 [85.24/124.61])		2,077 [3,077] (81.77 [121.14])
	Quill diameter	mm(inch)	140 (5.51)		
	Quill travel	mm(inch)	120 (4.72)		
	Taper of tailstock spindle	-	MT#5(Built-in)		
BED TYPE		-	45° Slant		
ELECTRIC POWER SUPPLY		kVA	55		65
REQUIRED FLOOR SPACE		mm(inch)	4,450x2,017 [5,720x2,205/6,720x2,275] (175.2x79.4 [225.2x86.8/264.6x94.9])		5,720x2,340 [6,720x2,410] (225.2x92.1 [264.6x94.9])
MACHINE WEIGHT		kg(lbs)	10,800 [13,700/16,800] (23,810 [30,203/37,038])	10,900 [13,800/16,900] (24,030 [30,424/37,258])	15,000 [18,100] (33,069 [39,903])
CONTROLLER		-	Fanuc Oi-TF Plus		

I Machine Specifications

DESCRIPTION			NL 6000S [CS]	NL 6000SM [CSM]	NL 6000 [C]	NL 6000M [CM]
CAPACITY	Swing over the bed	mm(inch)	1,030 (40.55)			
	Swing over the cross slide	mm(inch)	850 (33.46)			
	Max. machining diameter	mm(inch)	960 (37.80)	900 (35.43)	960 (37.80)	900 (35.43)
	Max. machining length	mm(inch)	750 (29.53)	700 (27.56)	1,550 (61.02)	1,500 (59.06)
	Chuck size	Inch	24 [user scope]		24 [user scope]	24 [user scope]
	Bar working dia.	mm(inch)	165.5 (6.52) [-]		165.5 (6.52) [-]	165.5 (6.52)
SPINDLE	Spindle speed	rpm	1,200 [1,000]		1,200 [1,000]	1,200 [1,000]
	Spindle motor	kW(Hp)	37/55 (50/73)			
	Spindle nose	ASA	A1 - 15 [A1 - 20]		A1 - 15 [A1 - 20]	A1 - 15 [A1 - 20]
	Spindle torque	N.m(ft.lbs)	5,143 (3,793.3)			
	Spindle through hole dia.	mm(inch)	181 (7.128) [275 (10.83)]		181 (7.128) [275 (10.83)]	181 (7.128) [275 (10.83)]
	Min. C-axis indexing	deg	-	0.001	-	0.001
TRAVEL	Rapid traverse (X/Z)	m/min(lpm)	16/20 (630/787)			
	Travel (X/Z)	mm(inch)	475/800 (18.7/31.5)		475/1,600 (18.7/62.99)	
	Feed motor (X/Z)	kW(hp)	6/6 (8/8)			
TURRET	Number of tool stations	st.	12			
	OD tool size	mm(inch)	□32(□1.25)			
	Max. boring bar size	mm(inch)	Ø80 (3)			
	Indexing time	sec	0.25/Step	0.35/Step	0.25/Step	0.35/Step
	Milling tool holder type	-	-	BMT85	-	BMT85
	Max. rotary tool spindle speed	rpm	-	3,000	-	3,000
	Rotary tool motor power	kW(hp)	-	7.5/11/15 (10/14.8/20.1)	-	7.5/11/15 (10/14.8/20.1)
TAILSTOCK	Tailstock travel	mm(inch)	Option		1,450 (57.09)	
	Quill diameter	mm(inch)	Option		180 (7.09)	
	Quill travel	mm(inch)	Option		150 (5.91)	
	Taper of tailstock spindle	-	Option		MT#6 (Built-in)	
BED TYPE		-	45° Slant			
ELECTRIC POWER SUPPLY		kVA	65			
REQUIRED FLOOR SPACE		mm(inch)	4,390x2,379 (172.8x93.7)		5,191x2,379 (204.4x93.7)	
MACHINE WEIGHT		kg(lbs)	11,500 (25.353)	12,000 (26,455)	15,300 (33.371)	15,800 (34,833)
CONTROLLER		-	Fanuc Oi-TF Plus			

DESCRIPTION			NL 6000L [CL]	NL 6000LM [CLM]	NL 6000XL [CXL]	NL 6000XLM [CXLM]
CAPACITY	Swing over the bed	mm(inch)	1,030 (40.55)			
	Swing over the cross slide	mm(inch)	850 (33.46)			
	Max. machining diameter	mm(inch)	960 (37.80)	900 (35.43)	960 (37.80)	900 (35.43)
	Max. machining length	mm(inch)	2,250 (88.58)	2,200 (86.61)	3,250 (127.95)	3,200 (125.98)
	Chuck size	Inch	24 [user scope]	24 [user scope]	24 [user scope]	24 [user scope]
	Bar working dia.	mm(inch)	165.5 (6.52) [-]	165.5 (6.52) [-]	165.5 (6.52) [-]	165.5 (6.52) [-]
SPINDLE	Spindle speed	rpm	1,200 [1,000]	1,200 [1,000]	1,200 [1,000]	1,200 [1,000]
	Spindle motor	kW(Hp)	37/55 (50/73)			
	Spindle nose	ASA	A1 - 15 [A1 - 20]	A1 - 15 [A1 - 20]	A1 - 15 [A1 - 20]	A1 - 15 [A1 - 20]
	Spindle torque	N.m(ft.lbs)	5,143 (3,793.3)			
	Spindle through hole dia.	mm(inch)	181 (7.128) [275 (10.83)]	181 (7.128) [275 (10.83)]	181 (7.128) [275 (10.83)]	181 (7.128) [275 (10.83)]
	Min. C-axis indexing	deg	-	0.001	-	0.001
TRAVEL	Rapid traverse (X/Z)	m/min(ipm)	16/16 (630/630)		16/10 (630/394)	
	Travel (X/Z)	mm(inch)	475/2,300 (18.7/90.55)		475/3,300 (18.7/129.92)	
	Feed motor (X/Z)	kW(hp)	6/6 (8/8)			
TURRET	Number of tool stations	st.	12			
	OD tool size	mm(inch)	□32(□1.25)			
	Max. boring bar size	mm(inch)	Ø80 (3)			
	Indexing time	sec	0.25/Step	0.35/Step	0.25/Step	0.35/Step
	Milling tool holder type	-	-	BMT85	-	BMT85
	Max. rotary tool spindle speed	rpm	-	3,000	-	3,000
	Rotary tool motor power	kW(hp)	-	7.5/11/15 (10/14.8/20.1)	-	7.5/11/15 (10/14.8/20.1)
TAILSTOCK	Tailstock travel	mm(inch)	2,150 (84.65)		3,150 (124.02)	
	Quill diameter	mm(inch)	180 (7.09)			
	Quill travel	mm(inch)	150 (5.91)			
	Taper of tailstock spindle	-	MT#6 (Built-in)			
BED TYPE		-	45° Slant			
ELECTRIC POWER SUPPLY		kVA	65			
REQUIRED FLOOR SPACE		mm(inch)	6,004x2,389 (236.4x94.1)		7,100x2,657 (279.5x104.6)	
MACHINE WEIGHT		kg(lbs)	17,300 (38,140)	17,800 (39,242)	19,800 (43,652)	20,300 (44,754)
CONTROLLER		-	Fanuc Oi-TF Plus			