

SAMSUNG Machine Tools

PL60

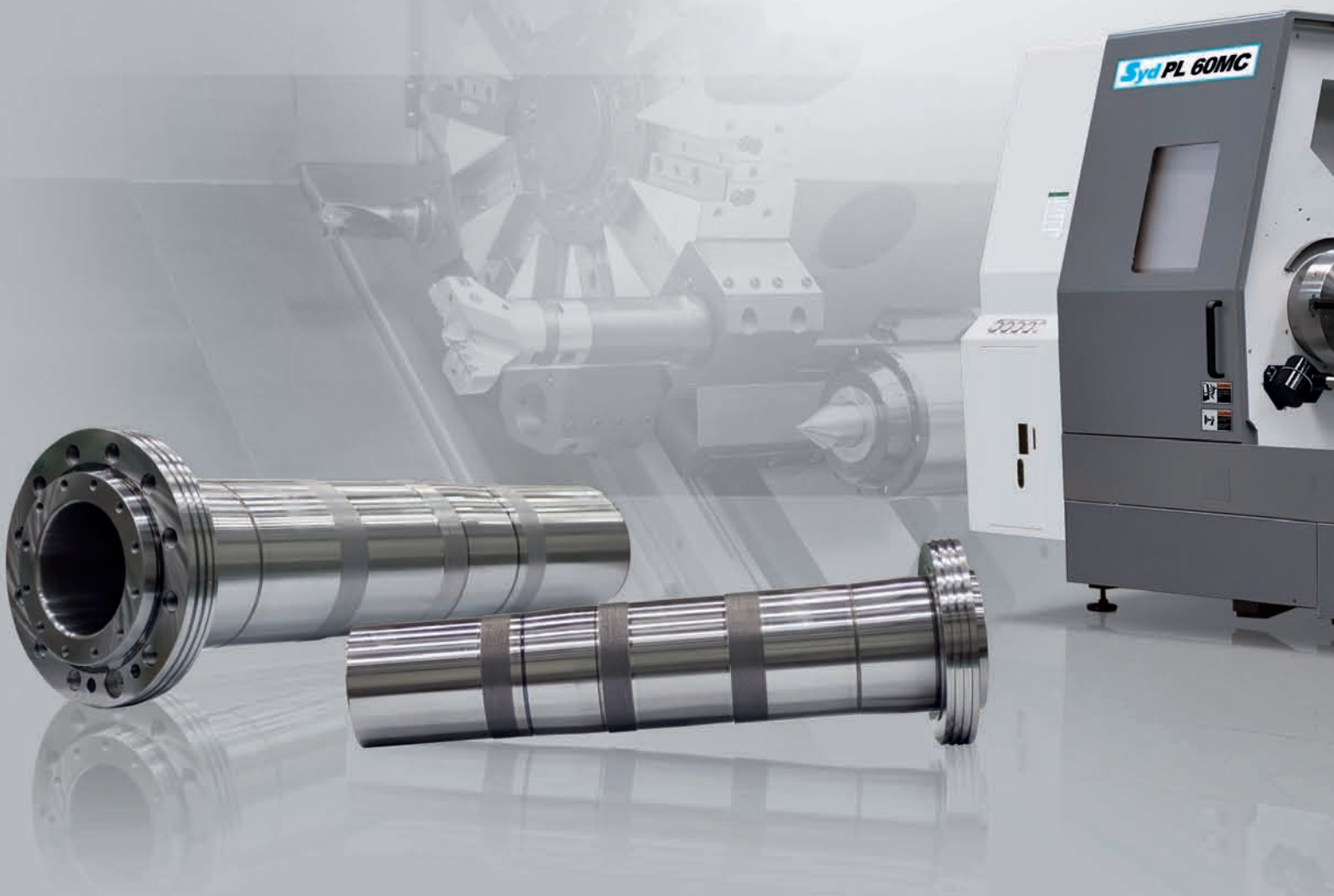
CNC TURNING CENTER



SAMSUNG MACHINE TOOLS

SAMSUNG'S Advanced Engineering and Machine Design

- *Cast iron structure for superior dampening characteristics and thermal displacement*
- *Rigid 45 degree slant bed design for heavy-duty machining*
- *Torque tube design to minimize bending and twisting*
- *Integrated box ways for long-term rigidity and heavy-duty machining*

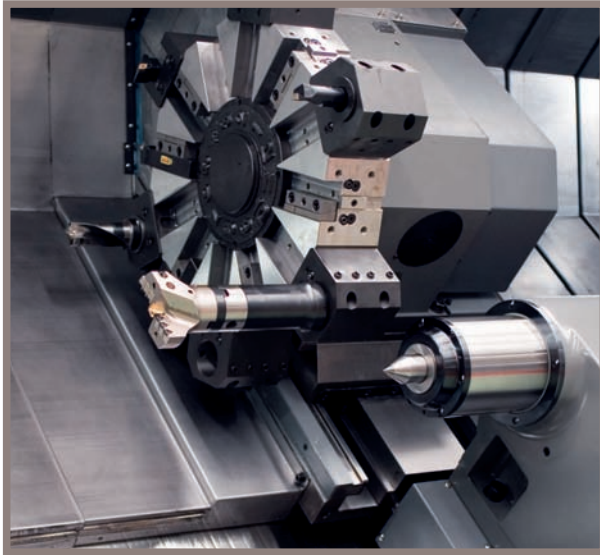


PL 60/1000
PL 60MC/1000
PL 60/3200
PL 60MC/3200



SAMSUNG Machine Tools

PL60/60MC is a heavy duty, ultra precision Turning Center, combined with Samsung's advanced technological features.



Spindle Speed

1,500 rpm

Spindle Motor(30min/cont.)

45/37 kW

Rapid Travel(X/Z)

12/10 m/min(PL60,60MC/3200)

12/18 m/min(PL60,60MC/1000)

Feed Motor(X/Z)

4/9 kW

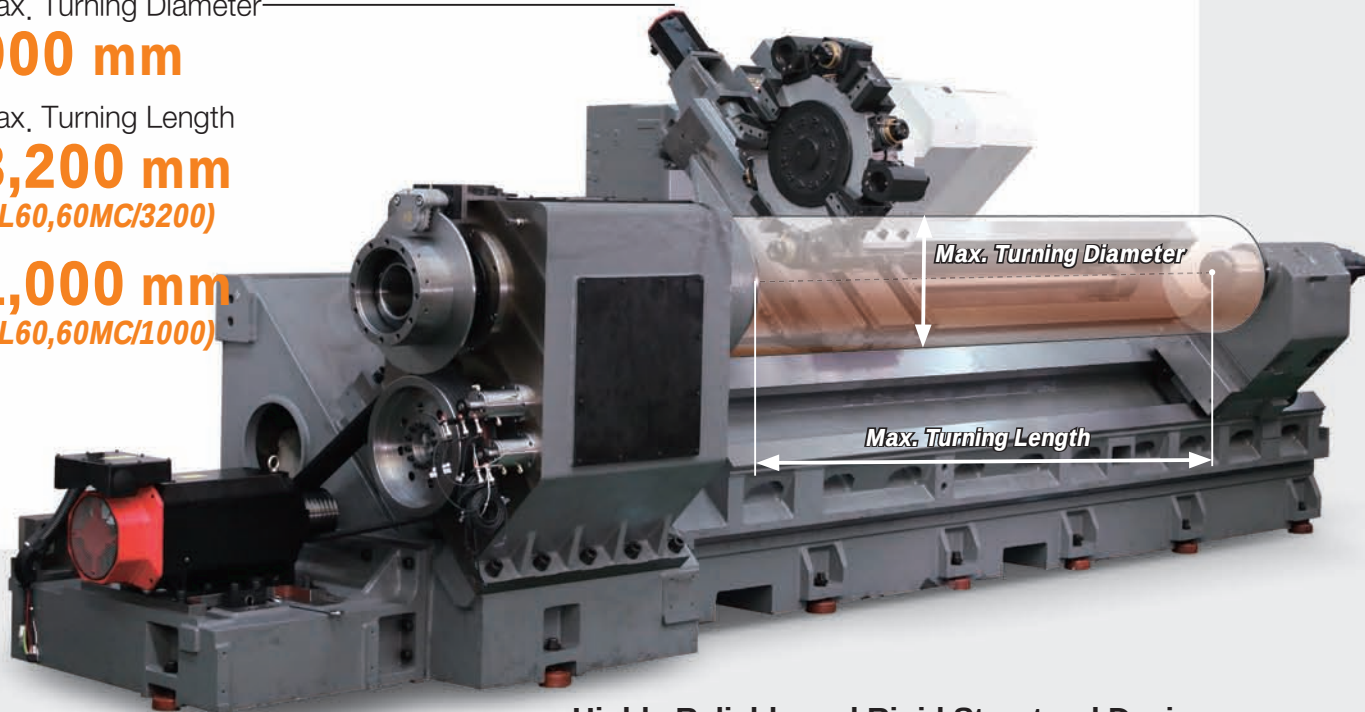
Max. Turning Diameter

900 mm

Max. Turning Length

3,200 mm
(PL60,60MC/3200)

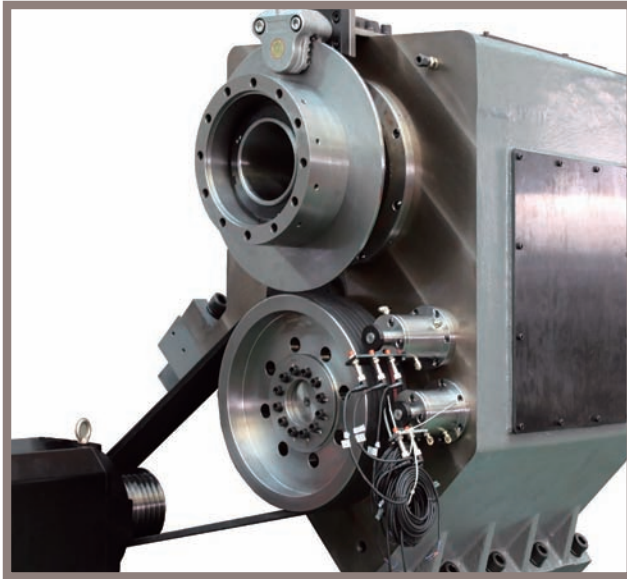
1,000 mm
(PL60,60MC/1000)



■ Highly Reliable and Rigid Structural Design

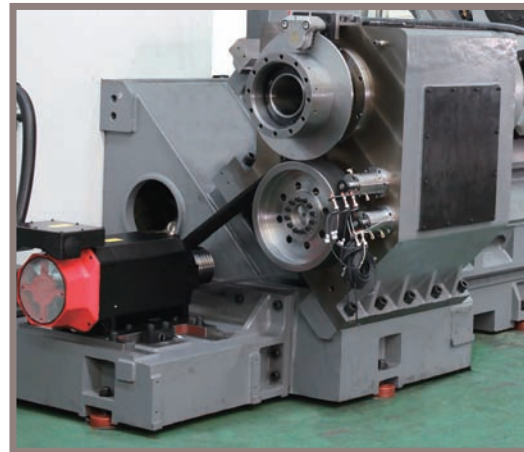
- Meehanite casting with heavily ribbed torque tube design
- Rigid bed supports for powerful cutting
- Excellent vibration dampening and thermal displacement design

High Accuracy, High Rigidity Spindle



■ One Body Spindle and Headstock Construction for Minimal Thermal Expansion

The headstock and spindle are constructed in one body to effectively dissipate the heat, maintaining minimal thermal expansion, and to reduce vibrations and noise by simplifying belt design.



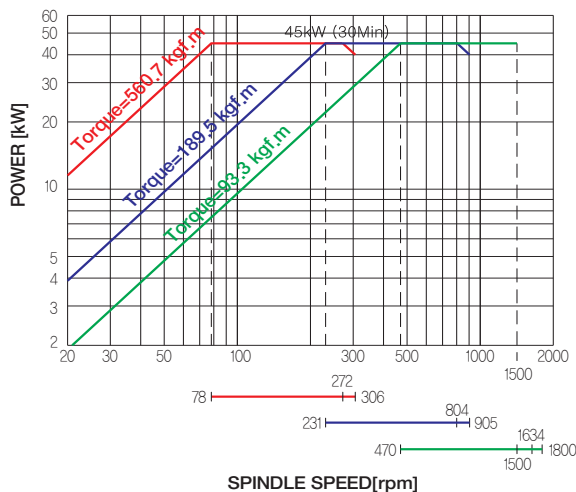
■ Main Spindle Motor and Geared Headstock

The main spindle motor(45kW) speed is reduced to 2.5:1 and its power is delivered to the spindle through a three-speed geared headstock to provide powerful torque(560.7kg-m)

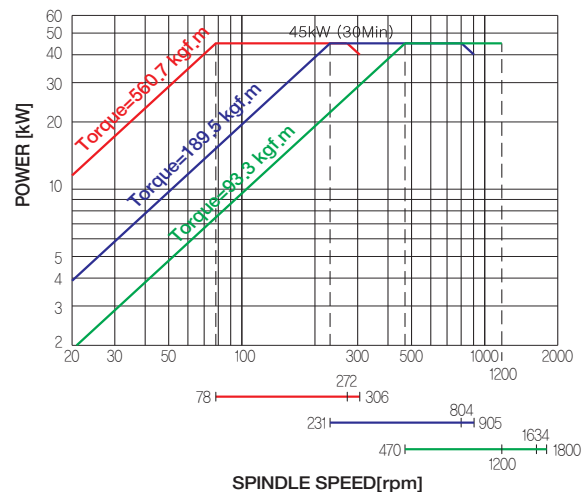
■ Spindle Power & Torque Diagram

Unit : mm

PL60,60MC (21")

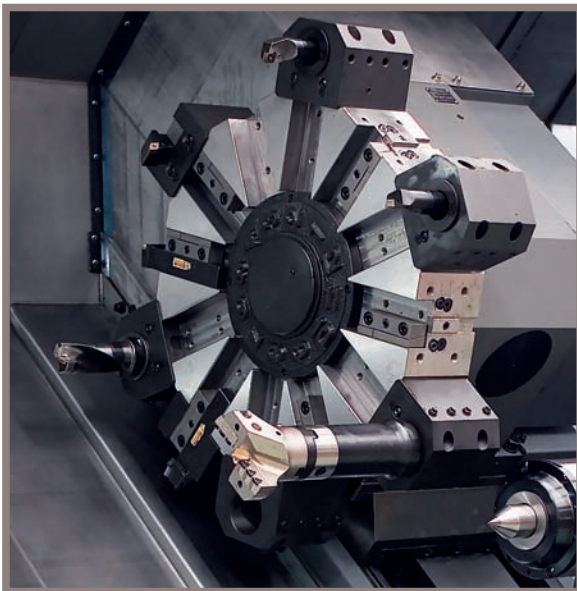


PL60,60MC (24")



Machine Structure

■ PL60 (High Speed Servo Turret)



Indexing time

0.25 sec.

Number of tool positions

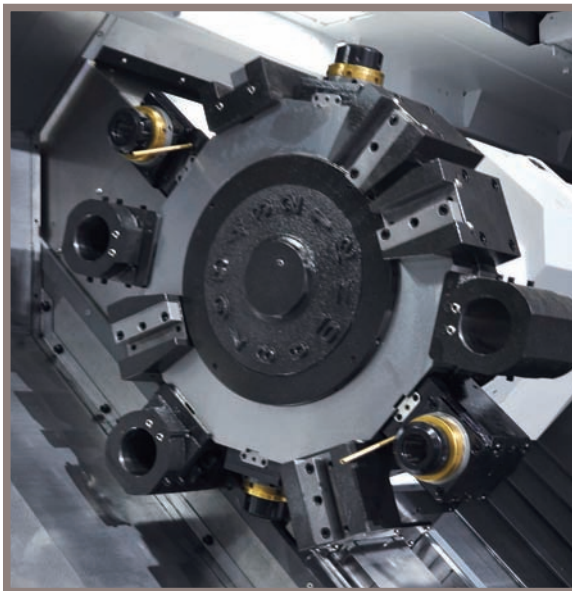
12 stations

■ High Speed, Heavy Duty Servo Turret

Driven by a high torque servo motor, the 12-station heavy-duty turret can accept tools on both left and right side of each station. Turret indexing (repeatability ± 0.01) is non-stop, bi-directional with a fast 0.25 second next station index time. Large diameter ($\varnothing 287$) precision Curvic coupling with 18,225kgf clamping force enables precision as well as heavy-duty cutting.



■ PL60MC (BMT High Speed Turret)



Indexing time

0.25 sec.

Number of tool positions

12 stations

Milling Spindle Speed

3,000 rpm

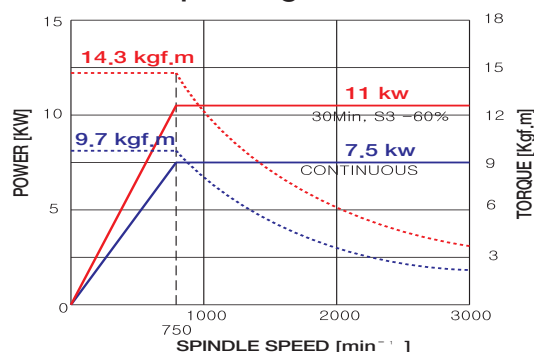
Tool Holder

BMT 85

■ BMT Milling Turret (M Type)

PL60MC is equipped with standard 12-station BMT turret capable of accepting rotary tools at any station, providing flexible machining thru various machining operations in just one set-up. Each BMT holder is securely tightened by 4 screws, allowing the turret to perform heavy-duty cutting, milling and drilling operations. Turret indexing is non-stop, bi-directional with a fast 0.25 second next station index time.

■ Turret Torque Diagram

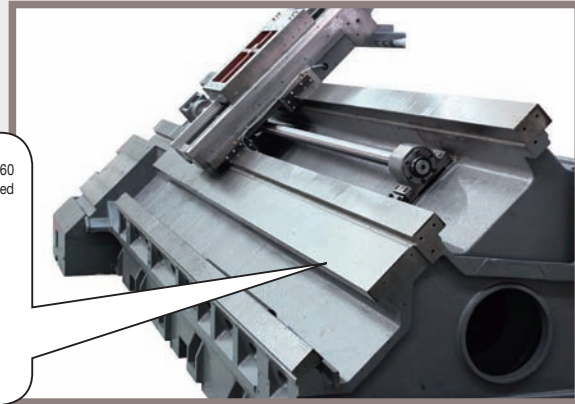
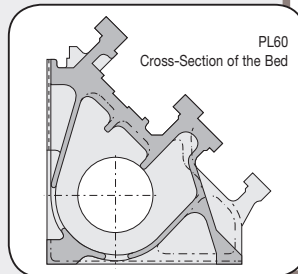


Machine Structure

■ Rigid 45 degree Slant Bed

45 degree slant torque tube design bed and wide guide slide way ensure long term rigidity and machining accuracy.

Featuring superior workability and chip-discharging capability, the bed is designed in a single tube structure boasting strong durability even in heavy-duty cutting.



■ Swivel Operation Panel

Swiveled operation panel is designed to turn 90 degree, allowing operators for easier access to the control panel at any given position.



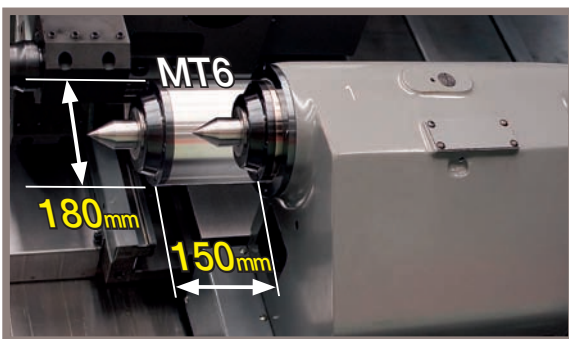
■ Pre-tensioned and Double Anchored Ballscrews



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

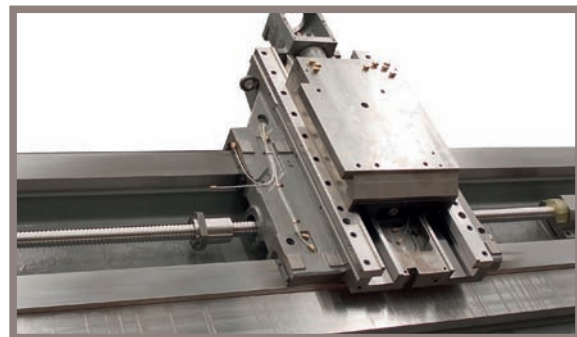
■ Tailstock

The programmable tailstock body mounted on wide guide ways ensure rigid work piece support.



■ Hexahedral Slide Way Frame

Wide integral way is machined from the casting, induction hardened and precision ground to ensure long-term rigidity and machining accuracy and heavy-duty machining.

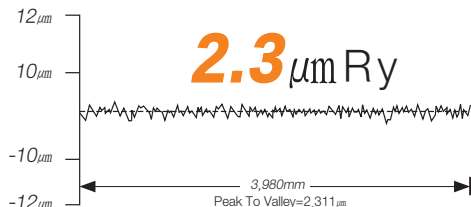


SAMSUNG Machine Tools PL60/60MC

CNC TURNING CENTER

High Precision

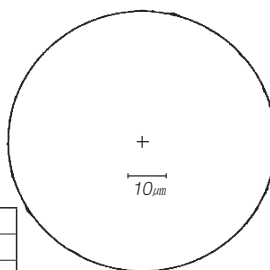
Surface Roughness (O.D. cutting)



Machine type	PL60
Tool	Diamond tool (nose radius 0.5mm)
Material	AL150 (Aluminum)

Cutting speed	230m/min
Feedrate	0.05mm/rev
Depth of cut	0.1mm
Outer diameter	200mm

Roundness

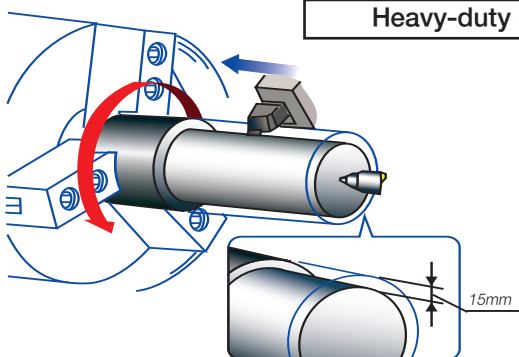


0.48 μm (actual result)

Machine type	PL60
Tool	Diamond tool (nose radius 0.5mm)
Material	AL150 (Aluminum)
Cutting speed	230m/min
Feedrate	0.05mm/rev
Depth of cut	0.1mm
Outer diameter	200mm
Filter	1-50

Processing Speed

Turning Performance (material:SM45C) PL60/3200



Heavy-duty cutting (O.D) (32mm × 32mm qualified tool)

Spindle speed

367 rpm

Cutting speed

150 m/min

Depth of cut

15 mm <Spindle Load 65%>

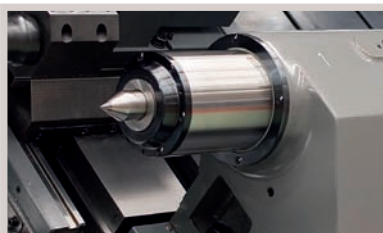
Feedrate

0.4 mm/rev

Accessories



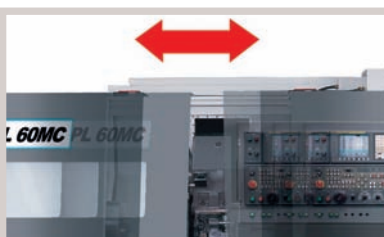
Automatic Lubricator (Standard)



Programmable Tailstock (Standard)



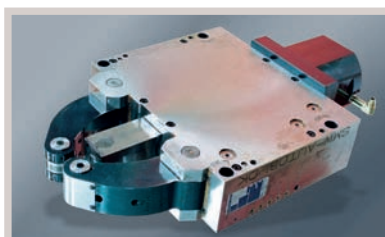
Tool Presetter (Option)



Auto Door (Option)

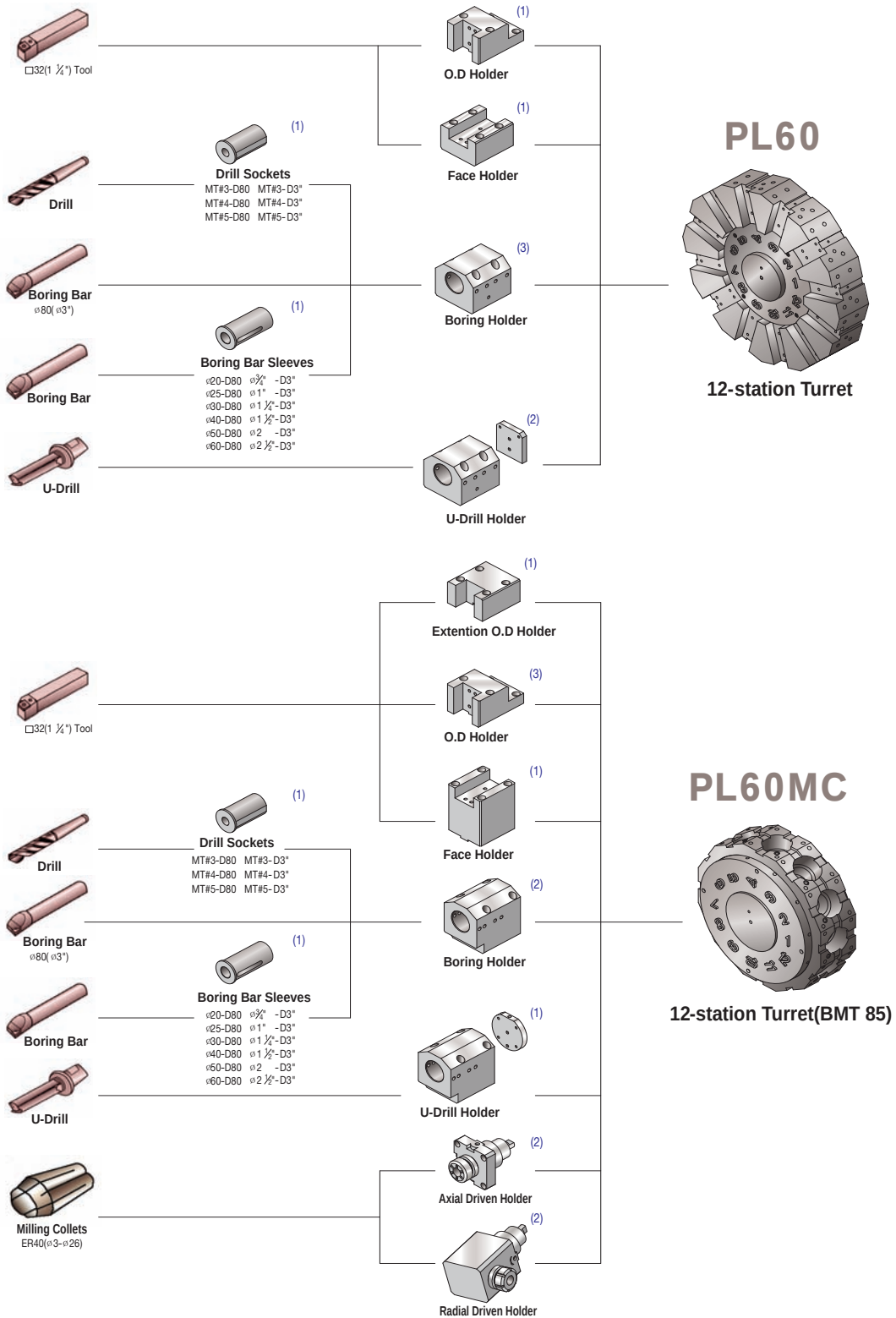


Chip Conveyor (Option)



Steady Rest (Option)

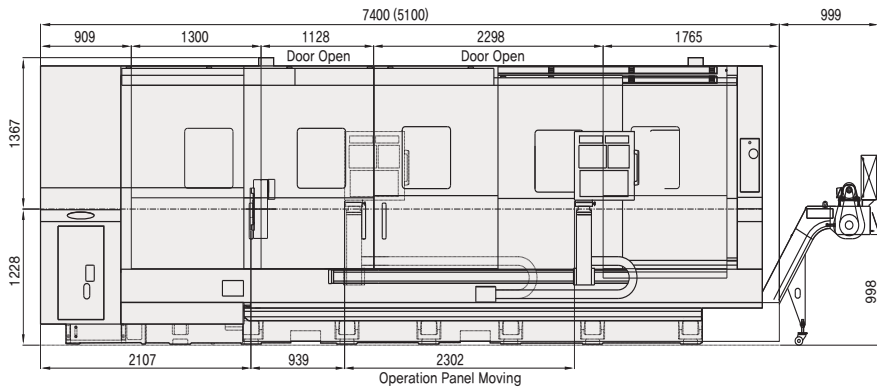
Tooling System



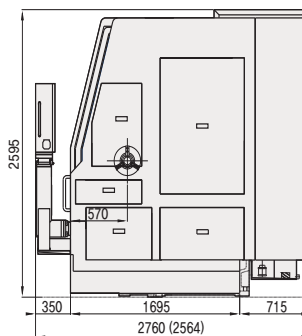
Machine Dimensions

PL60MC/3200 () : PL60/1000

Unit : mm



FRONT VIEW



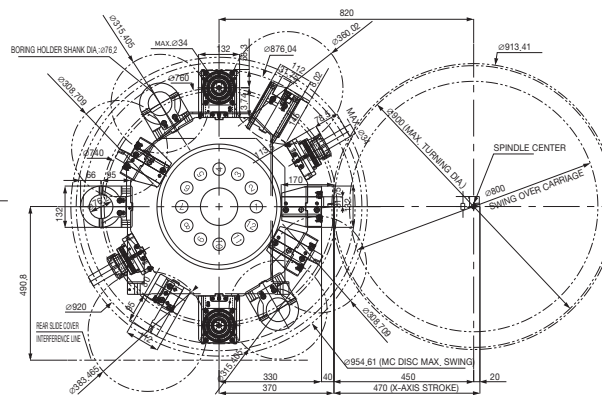
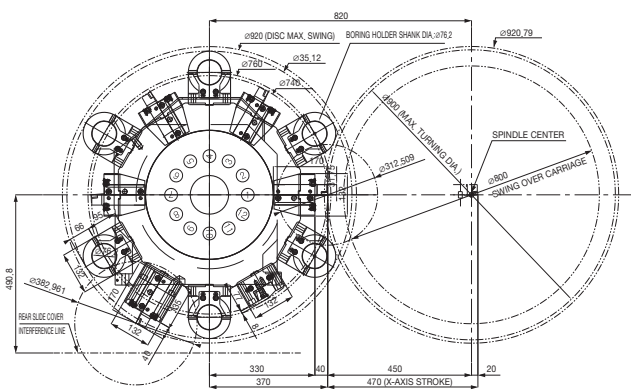
SIDE VIEW

■ Turret Head Interference

STD TURRET (STD 12 station)

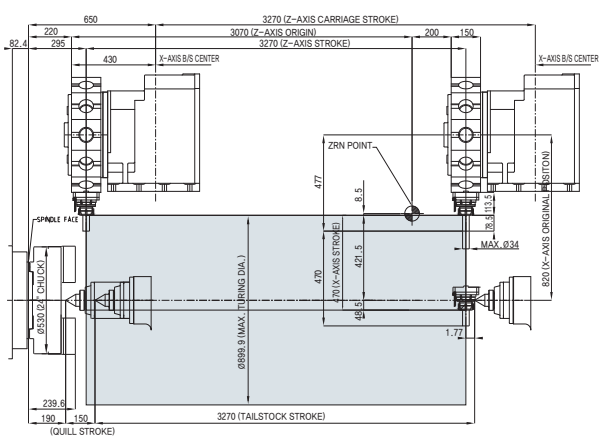
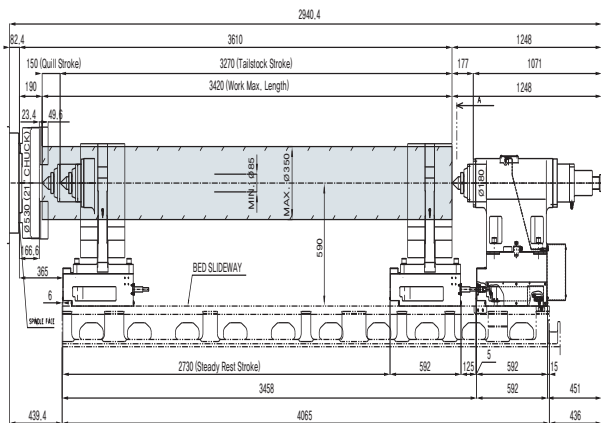
MILL TURRET (BMT 85)

Unit : mm



■ **Work Range**

Unit : mm



Major Specifications

DESCRIPTION			PL60/1000	PL60MC/1000	PL60/3200	PL60MC/3200
CAPACITY	Swing over bed	mm	ø 1030			
	Cross slide over Swing	mm	ø 800			
	Recom, turning diameter	mm	900			
	Max, machining diameter	mm	1,000		3,200	
	Bar working diameter	mm	ø 139			
TRAVELS	X-axis travel	mm	470			
	Z-axis travel	mm	1,050		3,270	
MAIN SPINDLE	Spindle speed	rpm	1,500			
	Spindle nose	ASA	A2-15			
	Spindle through hole diameter	mm	152			
	Min, spindle indexing angle(C-Axis)	deg	-	0,001	-	0,001
TURRET (STD.)	Number of tool stations [option]	ea	12			
	Shank size for square tool	mm	□ 32			
	Shank diameter for boring bar	mm	ø 80			
TURRET (MC)	Number of tool stations	ea	12	12(BMT85)	12	12(BMT85)
	Shank size for square tool	mm	□ 32			
	Shank diameter for boring bar	mm	ø 80			
	Indexing time	sec	0,25			
	Rotary tool spindle speed	rpm	-	3,000	-	3,000
FEED RATE	Rapid traverse (X/Z)	m/min	12 / 18		12 / 10	
	Feed per revolution	m/rev	0,0016~500			
MOTOR	X axis feed motor	kW	4			
	Z axis feed motor	kW	9			
	Spindle drive motor(cont./30min)	kW	37 / 45			
	Rotary tool spindle motor(cont./30min)	kW	-	7,5 / 11	-	7,5 / 11
TAILSTOCK	Quill diameter	mm	ø 180			
	Quill bore taper	MT	MT-6(BUILT-IN)			
	Quill travel	mm	150			
ELECTRIC POWER SUPPLY		kVA/V	67 / 220			
REQUIRED FLOOR SPACE(L × W)		mm	5,120 × 2,640		7,400 × 2,900	
MACHINE WEIGHT		kg	16,500		22,000	
CONTROLLER			Fanuc Oi-TD			

• Figures in inches are converted from metric measurements.

• Design and specifications subject to change without notice.

Standard Accessories

- COOLANT SYSTEM
- BUILT-IN WORK LIGHT
- SPLASH GUARD
- HAND TOOLS
- 21 " HYDRAULIC CHUCK
- SOFT JAW 3 SETS
- TOOL HOLDERS
- LEVELING BLOCK
- PROGRAMMABLE TAILSTOCK
- DOOR INTERLOCK

Optional Accessories

- HARD JAW 1 SET
- CHIP CONVEYOR WITH BUCKET
- AIR BLOW UNIT
- 24 " HYDRAULIC CHUCK
- STEADYREST
- TOOL PRESETTER
- OIL SKIMMER
- GUN COOLANT

■ NC 사양 / FANUC 0i-TD

	Item	Specification
Controls	Simultaneous controllable axes	X, Z axes
	Least command increment	0.001 mm (0.000039")
	Least input increment	0.001 mm (0.000039")
Feed functions	Feedrate override	0 ~ 150% (10 % unit)
	Dwell	G04
	Zero return	G27, G28, G30
	Pulse handle feed	×1, ×10, ×100
	Rapid traverse rate override	F0, 25%, 50%, 100%
	Feedrate per minute	G98
	Feedrate per revolution	G99
	3rd and 4th reference return	
Tool functions	Feed forward function	
	Tool number command	T4 - digit
	Tool nose radius compensation	G40 - G42
	Number of tool offsets	16 pairs
	Tool geometry/wear offset	Geometry & wear data
Programming functions	Tool life management	
	Tool path graphic display	
	Absolute/ incremental programming	X, Z & U, W
	Constant surface speed control	G96, G97
	Multiple repetitive canned cycle	G70 - G76
	Simple canned cycle	G90, G92, G94
	Decimal point input	Decimal point value
	Inch/metric conversion	G20, G21
	Circular interpolation by radius programming	Radius R instead of I, K
	Chamfering & corner R programming	Chamfer & corner R can be machined
	Sub program call	4 Nested holes
	Thread cutting cycle retract	Thread cutting is temp. stop, return to start point
	Work coordinate system selection	G54 - G59
	Local/ machine coordinate system	G52, G53
	Maximum programmable dimension	± 99999.999mm (9999.9999")
	M function	M3 digit
	User macros	
	Variable lead thread cutting	
	Continuous thread cutting	
Tape functions	Drilling canned cycle (G80 series)	
	Line/ angle (direct dimension) programming	
	Three G code system (selectable)	
	Input code	ISO, EIA
	I/O interface	RS-232C
Other functions	Part program storage length	1,280m
	Number of stored programs	400EA
	Search function	Sequence, program, address search
	MDI / CRT unit	10.4" LCD
	Stored stroke check 1	Overtravel control
	Background editing	Program editing during automatic operation
	Help function	Alarm & operation display
	Running time / Parts number display	Automatic running time & parts Number display
	Load meter display	Spindle load display
	Self diagnostic function	Self-design Test
	Expanded program editing	Copy, move, change of NC program
	Stored stroke 2 and 3	
	Spindle orientation	

