TC-46

HIGH PERFORMANCE HEAVY DUTY CNC LATHE

YCM®

TC-46

THE MOST POWERFUL & RIGID CNC LATHE IN ITS CLASS

The TC-46 series is the most powerful and rigid CNC lathe in its class. Designed with the latest technology and excellent equipment by experienced technicians for the highest material removal rate and long-term accuracy. The TC-46 series is the best solution for producing large workpieces with high accuracy.

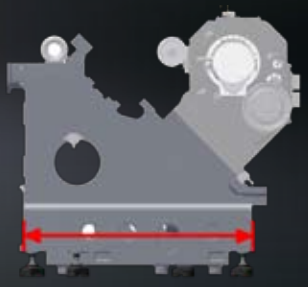
RIGID STRUCTURE DESIGN

- **MEEHANITE® casting frame through FEM analysis for one piece torque tube and 45 degree slant bed ensures the best rigidity and eliminates casting distortion.**
- **Z-axis design with an extra wide distance of 620mm between guideways offers the highest rigidity.**
- **The box way base of 950mm is suitable for heavy duty machining and powerful chip removal.**

	TC-46/1000	TC-46/1650	TC-46/2300	TC-46/3200
Max. Turning Diameter	ø750mm ø29.5"			
Max. Turning Length	1,000mm 39.4"	1,650mm 65"	2,300mm 90.6"	3,200mm 126"

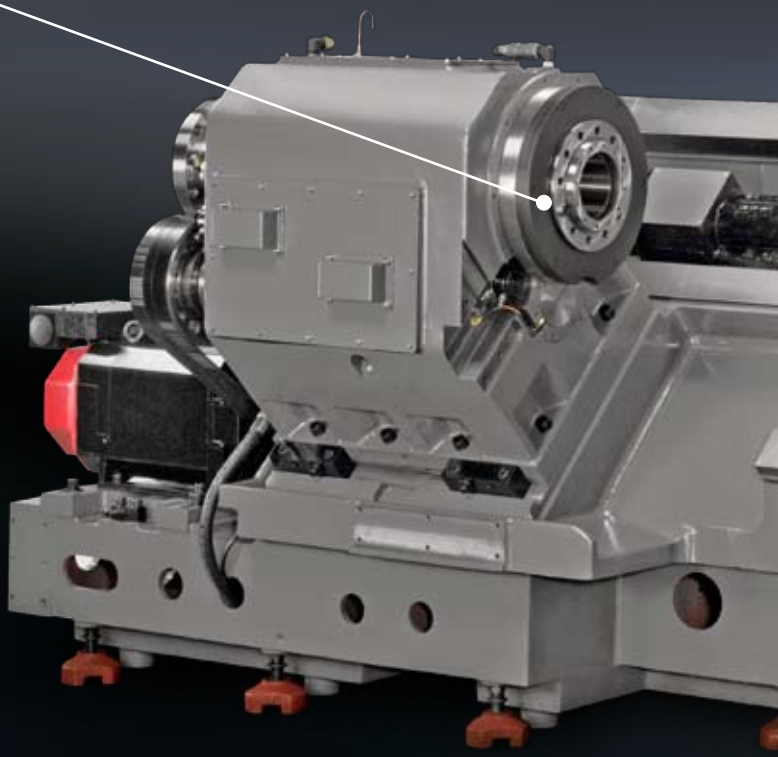
Large Workpiece Clamping Design

- Equipped with A2-11 spindle nose and 15" chuck. (18"/21"/24" chick or customized fixture is optional.)
- The chuck is operated by pedal switch for more safety and user-friendly.
- The clamping pressure can be adjusted by workpiece shape and materal.



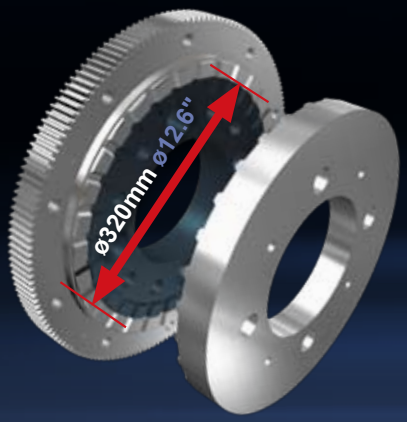
TC-46

Normal Design



FEM Finite Element Analysis

MEEHANITE



Large Diameter of Curvic Coupling

The large diameter of 3-piece curvic coupling design offers super rigid clamping force of 9,050kgf-m to ensure heavy cutting and long-term accuracy.

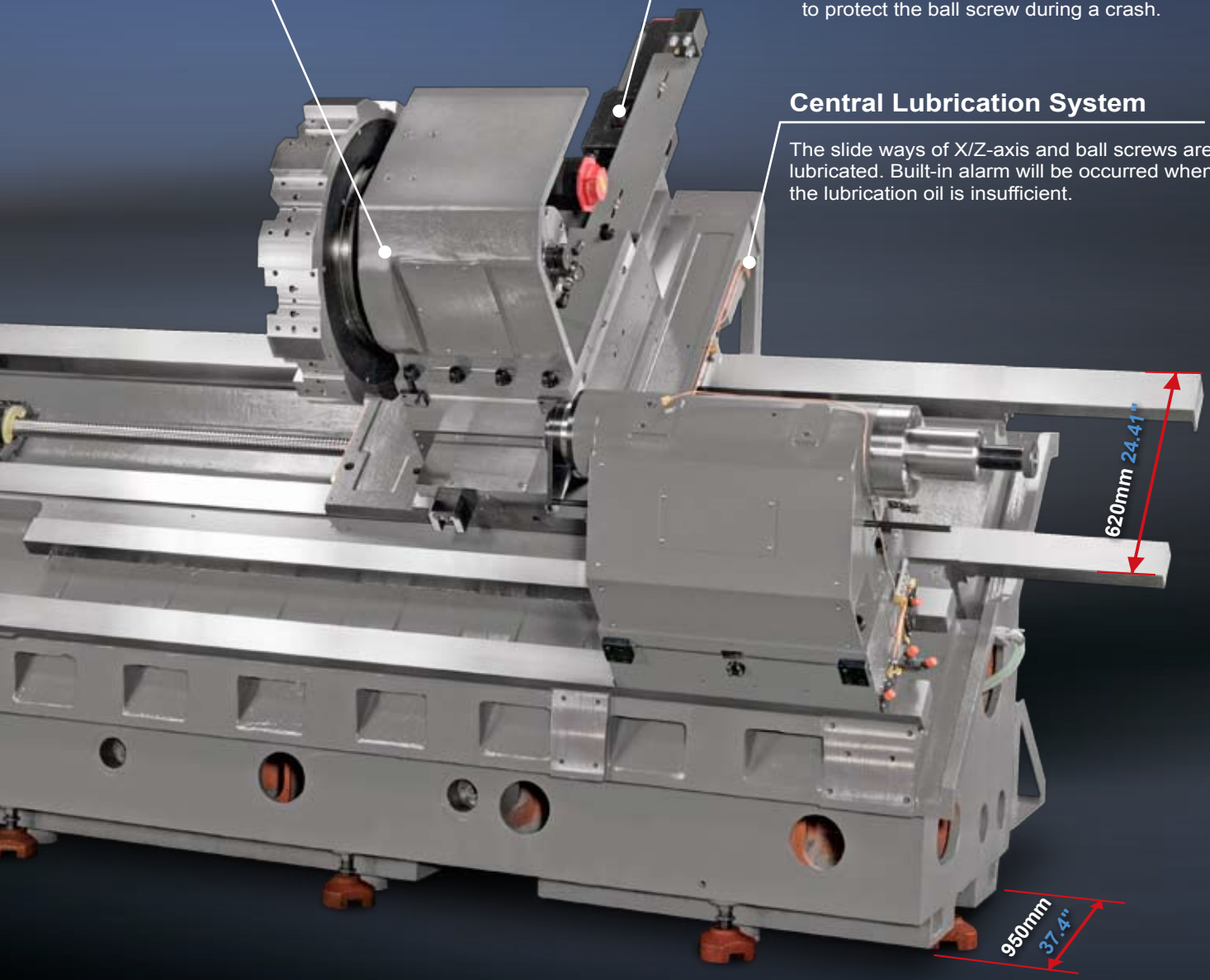
The Smoothest X-axis Movement and Prevents Turret Drop

- The hydraulic balance cylinder on X-axis ensures the smoothest axial movement and brake system prevents the turret from dropping when the power is suddenly off.

- With the double nuts design, the ball screws on the X/Z-axis provide the highest rigidity.
- The optional safety clutch will disassemble the ball screw from motor to protect the ball screw during a crash.

Central Lubrication System

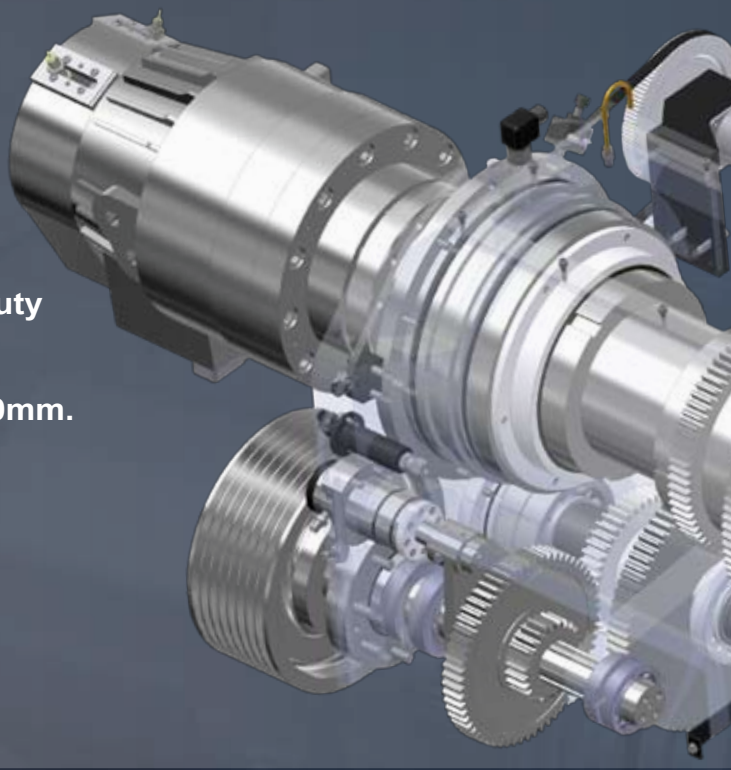
The slide ways of X/Z-axis and ball screws are lubricated. Built-in alarm will be occurred when the lubrication oil is insufficient.



PERFECT SPINDLE DESIGN

Powerful 4 Speed Gearhead Spindle

- Suitable for heavy duty machining requirements.

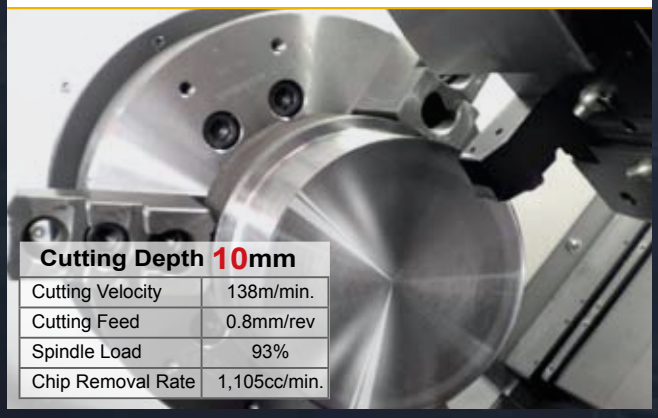


The Extra Large Front Bearing

- The extra large front bearing internal diameter is ø180mm to ensure the heavy duty cutting capability.
- Max. hole through spindle diameter is ø130mm.
- Max. hole through draw bar is ø117mm.

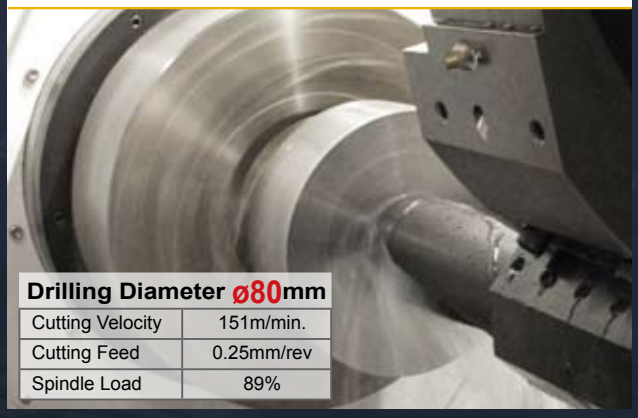
High Performance & High Precision

Turning - external — S45C Steel



Cutting Depth 10mm	
Cutting Velocity	138m/min.
Cutting Feed	0.8mm/rev
Spindle Load	93%
Chip Removal Rate	1,105cc/min.

Drilling — S45C Steel

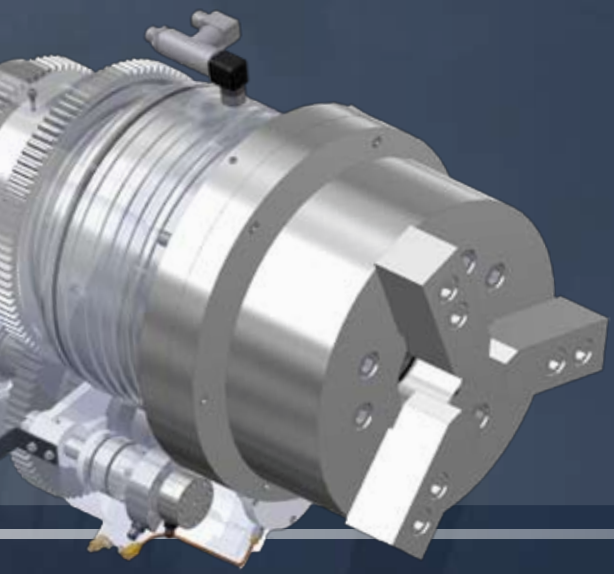


Drilling Diameter ø80mm	
Cutting Velocity	151m/min.
Cutting Feed	0.25mm/rev
Spindle Load	89%

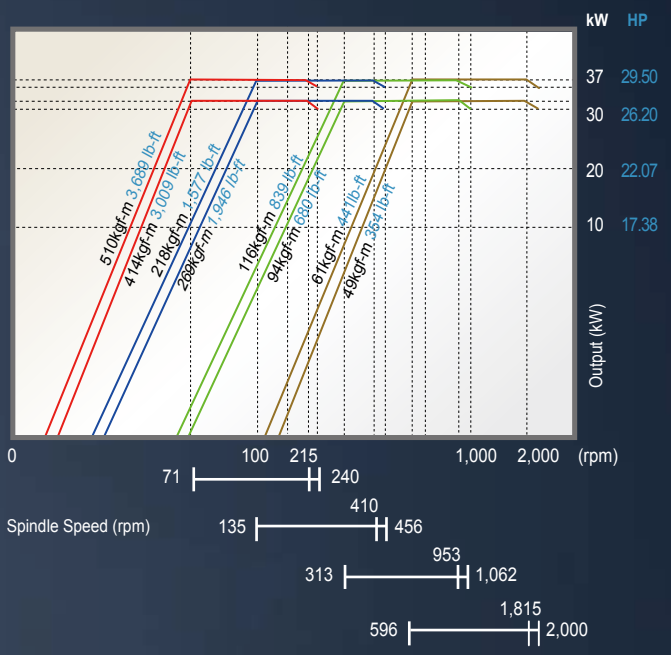
Surface Roughness

Tool:	CoroTurn □32
Spindle Speed:	800rpm
Outer Diameter:	ø120mm
Cutting Speed:	300m/min.
Feedrate:	0.04mm/rev
Material:	Copper

- Max. Speed 2,000rpm
- Max. Power 37kW 49HP
- Max. Torque 510kgf-m 3,689 lb-ft



Power Chart

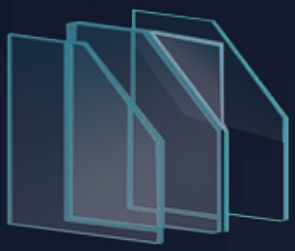


Excellent Thermal Stability

- Oil-cooled chiller for excellent thermal stability.

USER-FRIENDLY DESIGN

- **Optional hydraulic (manual) steady rest for turning long workpieces.**
- **The movable controller panel provides users with the most user-friendly operating convenience.**



Bright Illumination

- Design with T5 fluorescent tube and lighting is according with CE's regulation 500Lux.
- Low temperature and save energy.
- Long lifetime.

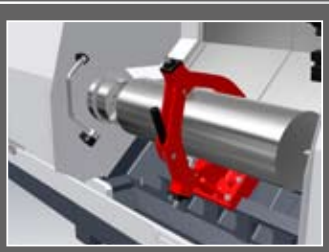
Double-wide Safety Window

- The operator can easily observe the machining area.
- The safety window possesses the characteristics of high grinding-resistance and anti-chemical which conforms to the CE's regulation EN12415-C3.

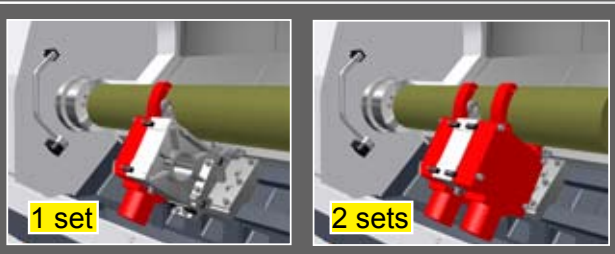
Visual Management Design

- The oil pressure gauge is placed in the front of the machine.
- The safety window possesses the characteristics of high grinding-resistance and anti-chemical which conforms to the CE's regulation EN12415-C3.

Equipped with Manual steady rest or hydraulic steady rest to support long workpiece.



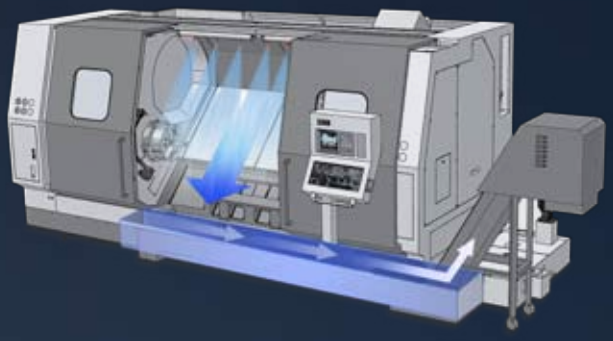
- Manual steady rest (opt.)
  ø40mm~ø250mm
  ø250mm~ø460mm



- SLU-B5.1 hydraulic steady rest (opt.)
- The support holder of hydraulic steady rest can be installed on both sides, customers can choose installation numbers and positions of support holder according to actual cutting application.

EFFICIENT CHIP DISPOSAL SYSTEM

- **With slanted design and superb chip removal space under the spindle, it is more easiler to clean chips.**
- **High pressure coolant is supplied for optimal chip removal.**
- **Shower coolant from the roof removes the chips from the chuck and telescopic guideway cover. (opt.)**



Rotary Controller Panel

One operation interface can complete all control and the controller is equipped with safety detection and warning notice.

Coolant Capacity

TC-46/1000	465L
TC-46/1650	540L
TC-46/2300	700L
TC-46/3200	1,060L

Programmable tail stock

- MT-5 fixed quill with live center is standard, high rigidity rotary quill with dead center is optional.
- Tail stock using dual cylinder to clamp the guideways for prevent tail stock skid during machining. Using hydraulic connect bar to link the tail stock and carriage during tail stock positioning to save effort and time.

SPECIAL TURRET DESIGN

Equipped with Large Servo Turret

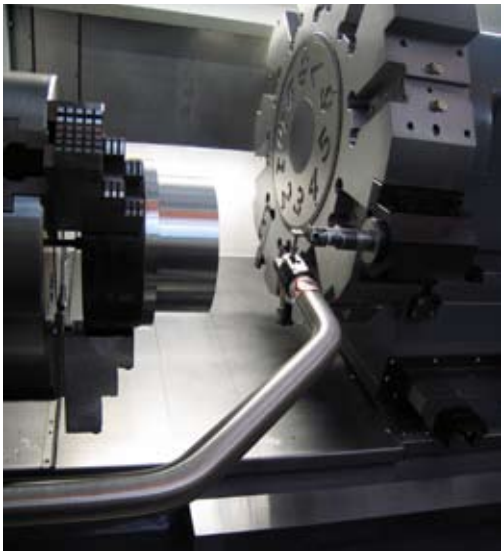
- **Equipped with large 10T (12T, opt.) servo driven turret that features fast turret indexing (0.9 sec.) and machining versatility.**

Extended Tooling Cavity

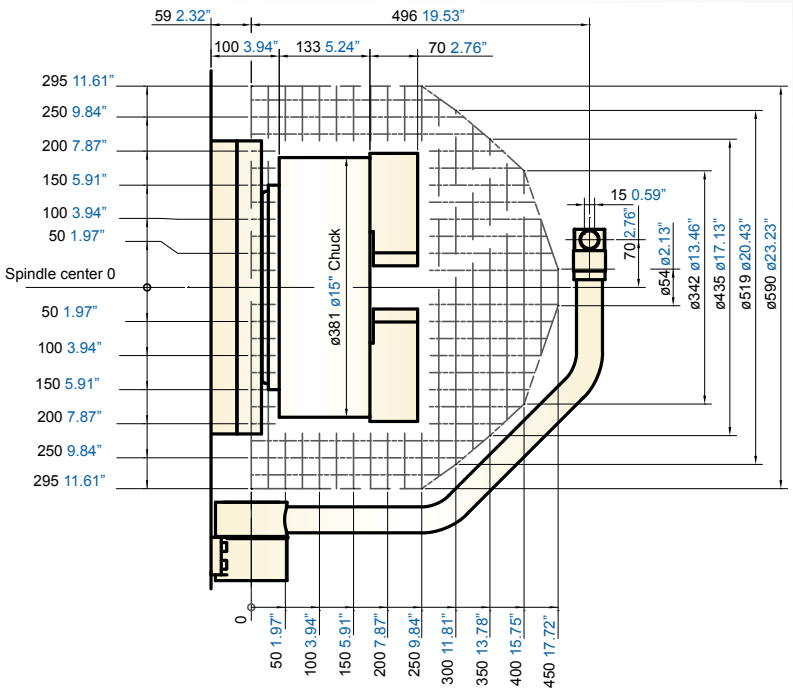
- **Extended tooling cavity design allows extra space for tooling maneuverability.**
- **Longer I.D. tools can be easily adjusted to meet more varieties of turning requirements and increase production efficiency.**

Optional Automatic Tool Pre-setter Reduces Setup Time

- **Optional automatic tool pre-setter reduces setup time by minimizing skim cuts and entering tool offsets.**



Optional automatic tool pre-setter (Renishaw)

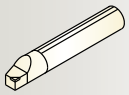


TOOLING CHART

● : Standard ○ : Optional

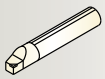
Unit : mm inch

Boring bar



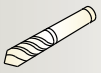
ø60mm, ø2 ½”

Boring bar

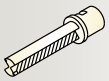


< ø50mm, < ø2”

Drill

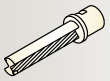


Oil-feed drill



ø60mm, ø2½”

Oil-feed drill



< ø50mm, < ø2”

Face and O.D.cutting

□32mm, □1¼”

Face and O.D.cutting

□32mm, □1¼”

Cutting off tool

□32mm, □1¼”

Boring bar sleeve

●ø50, ø2” - 2 PC
●ø40, ø1½” - 2 PC
●ø32, ø1¼” - 2 PC
●ø25, ø1” - 1 PC
●ø20, ø¾” - 1 PC
●ø16, ø⅝” - 1 PC
○ø12, ø½”
○ø10, ø⅜”
○ø8, ø5⁄16”

Drill socket

○ MT1
○ MT2
○ MT3
● MT4 - 1 PC
○ MT5

Oil-feed tool sleeve

●ø50, ø2” - 1 PC
●ø40, ø1½” - 2 PC
●ø32, ø1¼” - 2 PC
○ø25, ø1”
○ø20, ø¾”
○ø16, ø⅝”

Gib

●□32, □1¼” - 2 PC

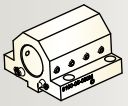
Gib

●□32, □1¼” - 10 PC

Gib

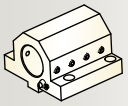
●□32, □1¼”

Boring bar holder



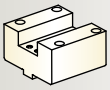
●ø60, ø2 ½” - 5 PC

Drill holder



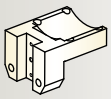
●ø60, ø2½” - 1 PC

Square tool holder

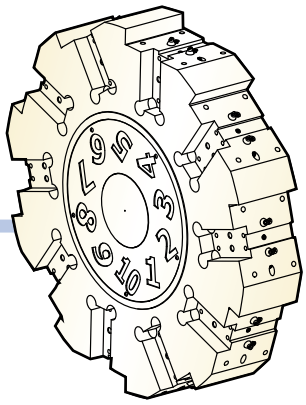


●□32, □1¼” - 2 PC

Cutting/Grooving tool holder



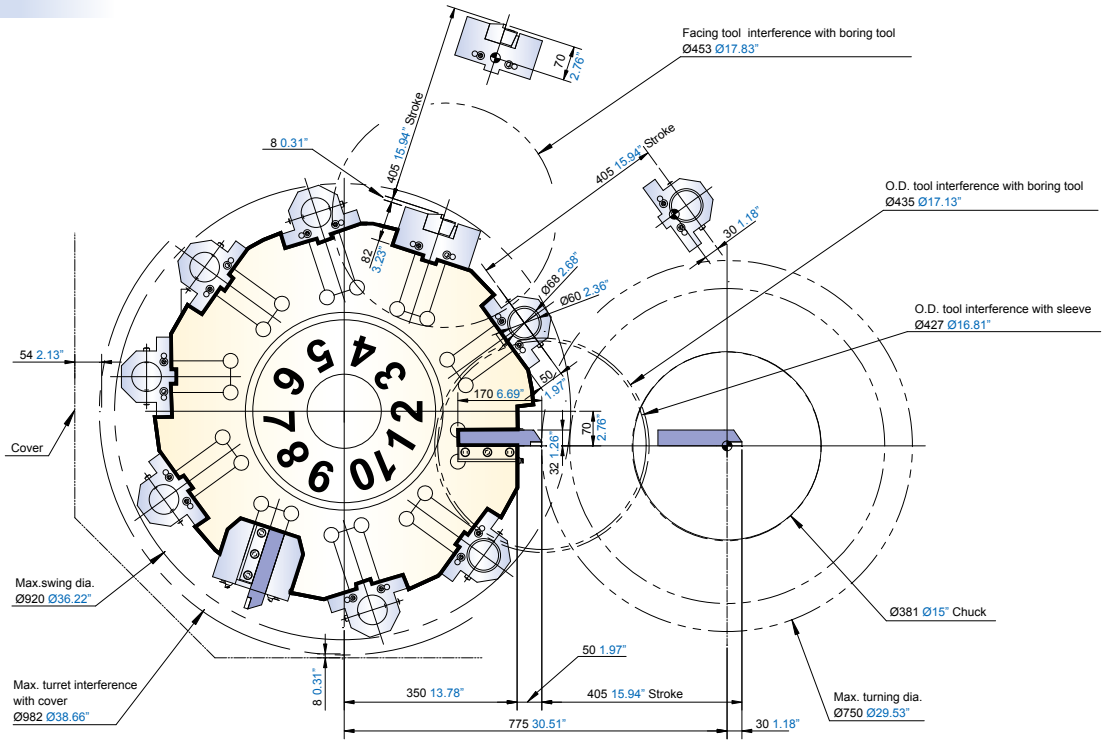
●□32, □1¼” - 1 PC



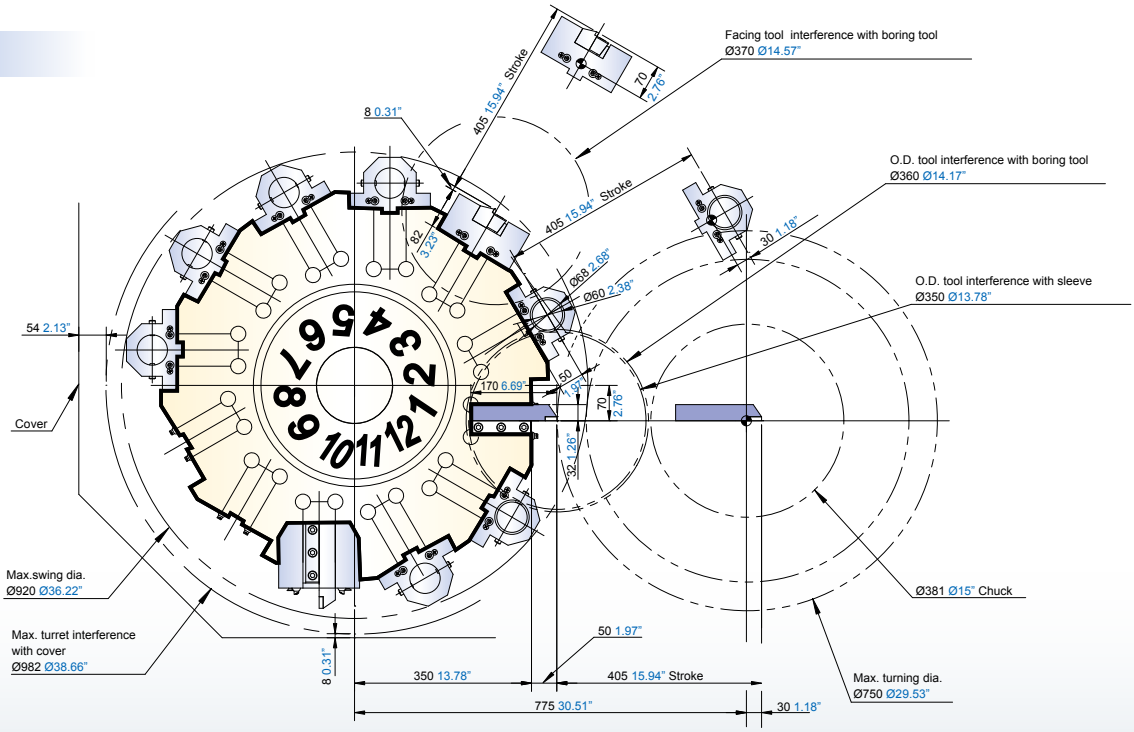
TOOL INTERFERENCE

Unit : mm inch

10T

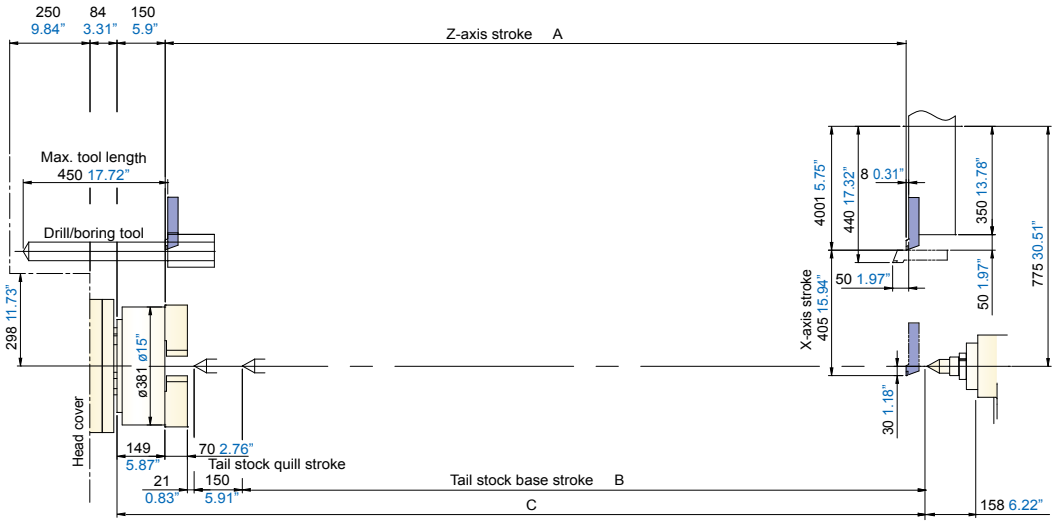


12T



WORKING CAPACITY

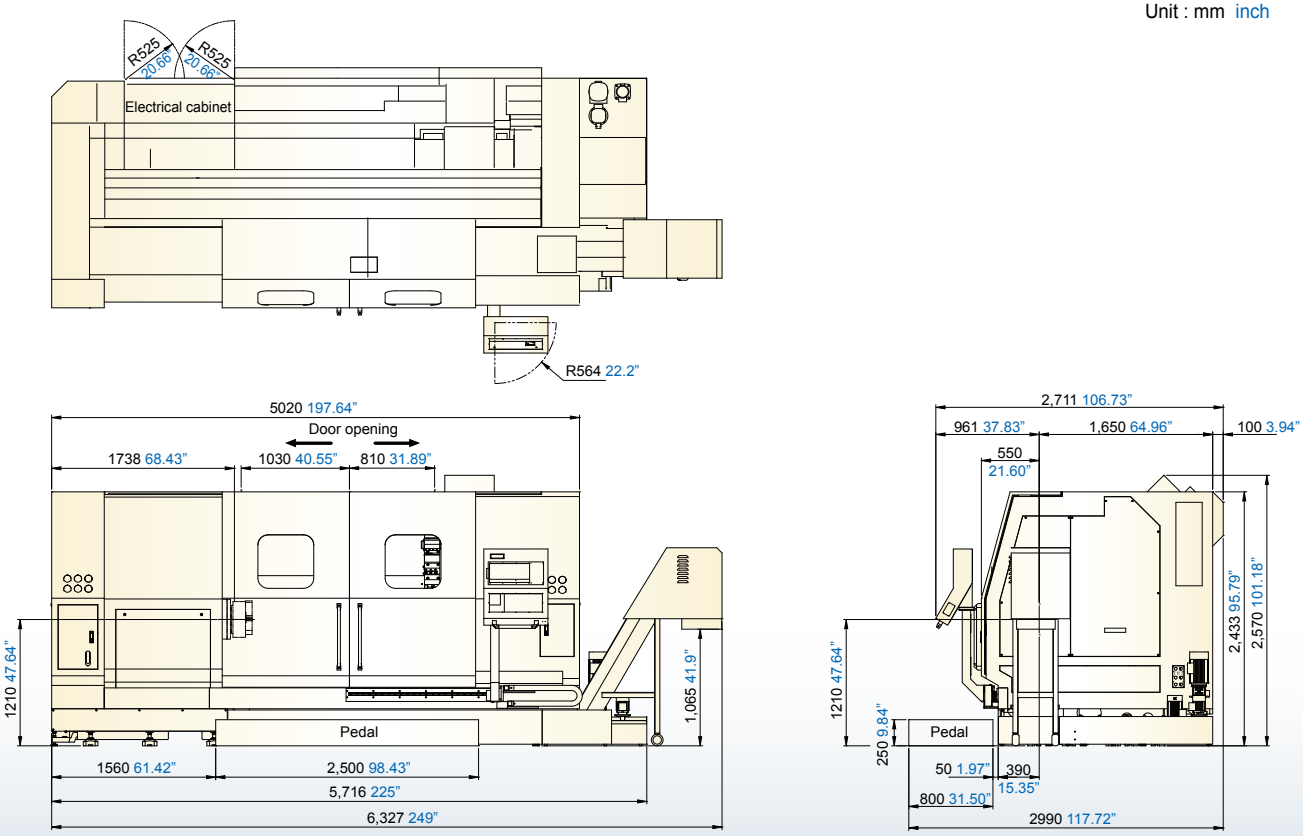
Unit : mm inch



	TC-46/1000	TC-46/1650	TC-46/2300	TC-46/3200
A	1,000mm 39.37"	1,650mm 30.51"	2,300mm 90.55"	3,200mm 125.98"
B	825mm 32.48"	1,475mm 58.07"	2,125mm 83.66"	3,025mm 119.09"
C	1,215mm 47.83"	1,865mm 73.43"	2,515mm 99.02"	3,415mm 134.45"

MACHINE DIMENSIONS

Unit : mm inch



SPECIFICATIONS

MACHINING CAPACITY		TC-46/1000	TC-46/1650	TC-46/2300	TC-46/3200
Swing Over Bed		ø850mm (ø33.5")			
Swing Over Carriage		ø720mm (ø28.4")			
Max. Turning Diameter		ø750mm (ø29.5")			
Max. Turning Length		1,000mm (39.4")	1,650mm (65")	2,300mm (90.6")	3,200mm (126")
Distance Between Center		1,215mm (47.8")	1,865mm (73.4")	2,515mm (99")	3,415mm (134.5")
SPINDLE					
Height From the Ground to Spindle		1,210mm (47.6")			
Chuck Size		15"(18"/21"/24")			
Spindle Nose		A2-11			
Spindle Inner Taper		1/20			
Spindle Front Bearing Inner Diameter		ø180mm (ø7.1")			
Hole Through Spindle		ø130mm (ø5.1")			
Hole Through Draw Bar		ø117mm (ø4.6")			
Spindle Speed		2,000rpm (15"/18")/1,700rpm (21")/1,400rpm (24")			
Max. Spindle Torque		510kgf-m (3,688.9 lb-ft)			
MAIN TRAVEL					
X-axis Travel		405 (375+30) mm (15.94")			
Z-axis Travel		1,000mm (39.4")	1,650mm (65")	2,300mm (90.6")	3,200mm (126")
FEED					
X-axis Rapid Feedrate		16m/min. (629.9ipm)			
Z-axis Rapid Feedrate		18m/min. (708.7ipm)		15m/min. (509.6ipm)	12m/min. (472.4ipm)
Cutting Feedrate (X/Z)		1~10,000mm/min. (0.04~393.7ipm)			
MOTOR					
Spindle Motor		30/37kW (40.2/49.6HP)			
Axial Motor (X/Z)		4/7kW (5.4/9.4HP)			
Turret Motor		1.8kW (2.4HP)			
TAIL STOCK					
Tail Stock Quill Diameter		ø150mm (ø5.9")			
Tail Stock Quill Taper		MT No.5			
Tail Stock Quill Stroke		150mm (5.9")			
Tail Stock Stroke		825mm (32.5")	1,475mm (58.1")	2,125mm (83.7")	3,025mm (119.1")
LUBRICATION					
Lubrication Pump		150W			
Lubrication Tank Capacity		6L			
TURRET					
Swing Over Bed		Servo Motor Drive (Hydraulic Clamp)			
Tool No.		10T (12T)			
Standard Tool	Shank Height for Square Tool	□32mm (□1¼")			
	Shank Dia. for Boring Bar	ø60mm (ø2.5")			
Max. Diameter When Turret Rotation		ø982mm (ø38.7")			
COOLANT					
Tank Capacity		465L	540L	700L	1,060L
GENERAL					
Power Consumption (Transformer)		71.6kVA (80kVA)			
Machine Weight		13,560kg	14,380kg	15,200kg	16,100kg
Floor Space		5,170 × 2,735 × 2,592mm (203.5 x 107.7 x 102.1")	5,660 × 2,735 × 2,592mm (222.9 x 107.7 x 102.1")	6,390 × 2,735 × 2,592mm (251.6 x 107.7 x 102.1")	6,820 × 2,735 × 2,592mm (268.5 x 108.7 x 102.1")

ACCESSORIES

● : Standard ○ : Optional - : N/A

		TC-46/1000	TC-46/1650	TC-46/2300	TC-46/3200
Tool Kit		●	●	●	●
Work Lamp		●	●	●	●
Pilot Lamp		●	●	●	●
Automatic Door		○	○	○	○
Safety Door		●	●	●	●
Hydraulic System		●	●	●	●
Spindle Cooling System		●	●	●	●
Hydraulic Hollow Chuck		●	●	●	●
Chuck & Hard Jaws and Soft Jaws 1 Set*1	15"	●	●	●	●
	18"	○	○	○	○
Soft Jaw Former	15"	○	○	○	○
	18"	-	-	-	-
Chuck Switch Pedal		●	●	●	●
Tail Stock Switch Pedal		○	○	○	○
Programmable Tail Stock		●	●	●	●
Tailstock Center Shaft	Stationary Quill Type	●	●	●	●
	Live Quill Type	○	○	○	○
Complete Chip Enclosure		●	●	●	●
Leveling Blocks and Bolts		●	●	●	●
Foundation Screw Bolt		○	○	○	○
Air Gun		●	●	●	●
Cutting Air Blast		○	○	○	○
Coolant Equipment System	Standard (40 l/min., 4.6 bar)	●	●	●	●
	8 BAR	○	○	○	○
	20 BAR	○	○	○	○
Coolant Gun		○	○	○	○
Oil Skimmer		○	○	○	○
Paper Filter		○	○	○	○
Oil Mist Suction	1 Set	○	○	-	-
	2 Set	-	○	○	○
Central Lubrication System		●	●	●	●
Chip Conveyor (Right Side)		●	●	●	●
Heat Exchanger for Electrical Cabinet		●	●	●	●
A/C Cooler for Electrical Cabinet		○	○	○	○
Work Length Setter		○	○	○	○
Auto Tool Length Measurement System (Renishaw)		○	○	○	○
Coolant Shower		○	○	○	○
Steady Rest	Manual*2	○	○	○	○
	Hydraulic*3	○	○	○	○
FANUC CNC Controller	TXP-100FA	●	●	●	●
	TXP-200FA	○	○	○	○
Mechanical Electrical & Operating Manuals		●	●	●	●

*1 The hard jaws are not included when select Kitagawa chuck.

*2 Manual steady rest has two 2 types; max. clamping diameter is ø40~250mm and ø250~460mm.

*3 Max. size of hydraulic steady rest is SLU5-B5.1 (Max. clamping diameter is ø350mm).

YCM®

ISO14001 CERTIFIED MANUFACTURE

Agent

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