



# QTV-200 SERIES

QUICK TURN UNIVERSAL (QTV) | 200 | 200M | 200MS | 200MY | 200MSY

**Mazak**



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## QUICK TURN UNIVERSAL (QTU)

### 200 | 200M | 200MS | 200MY | 200MSY

Built in Kentucky, the simple but innovative compact **QUICK TURN UNIVERSAL 200** model machines represent the next-generation of world-class CNC Turning Centers that deliver both high productivity and cost effectiveness.

#### MACHINE CONFIGURATIONS:

- QTU 200
- QTU 200M
- QTU 200MS
- QTU 200MY
- QTU 200MSY

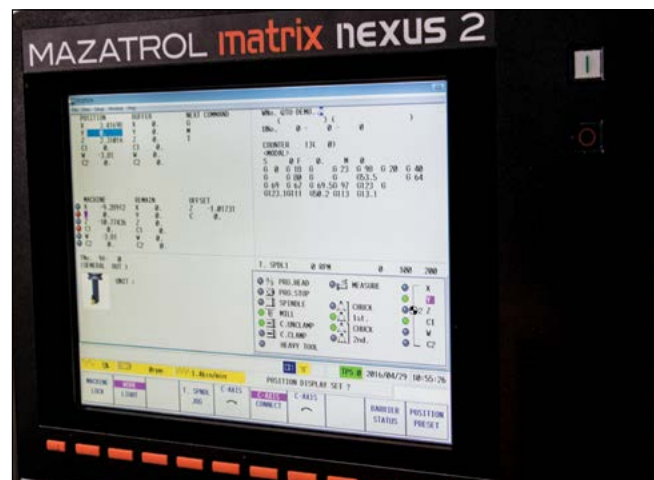
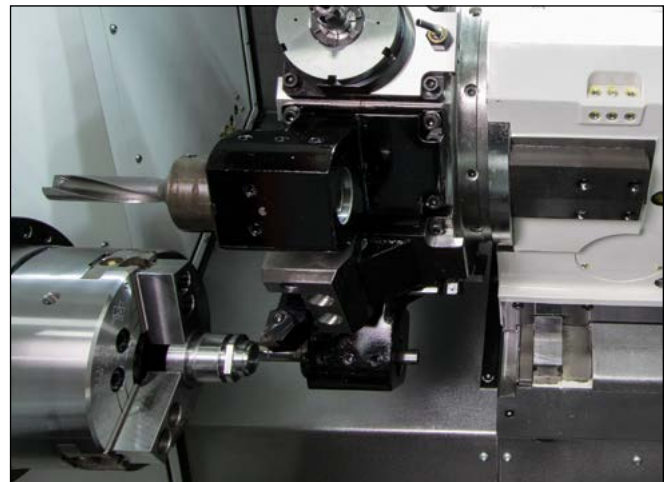
**M** = turret with rotary milling

**S** = second spindle

**Y** = Y-axis off-centerline capability



QUICK TURN UNIVERSAL 200MSY





## TOP 10 TECHNOLOGICAL ADVANTAGES

While basic in their designs, QTU 200 Series machines feature new and innovative technologies that bring high productivity, precision, performance and value to job shops as well as first and second tier manufacturing suppliers. The series provides the perfect balance of technology and minimized operational costs.

### TOP 10 TECHNOLOGICAL ADVANTAGES OF THE QTU 200 SERIES

1. **New design concept** for a wide range of machine configurations – 2 axis or 3 axis with or without milling capability and single or double spindles.
2. **Extremely rigid base** with low center of gravity for stability and vibration damping.
3. **Proven advanced integral spindle motor/headstock** technology ensures reliable, maintenance-free high performance.
4. **High-precision C-axis** delivers 360 degrees of programmable motion for processing flexibility.
5. **Innovative servo turret** expands for added tooling capacity.
6. **NC servo-driven tailstock** that is fully programmable for simple and precise operation.
7. **Large swing capacity** minimizes risk of interference.
8. **MAZATROL SMART CNC and MAZATROL MATRIX NEXUS 2 CNC** further enhance overall performance.
9. **Green, energy efficient and ergonomic features**, make for ease of use, environmentally friendly, low-maintenance operation.
10. **Optional seamless automation integration** increases uptime and lights-out production.





## STRUCTURE

An innovative base design outfitted with the industry's leading guideway system forms the perfect foundation for the outstanding performance of the QTU 200 Series machines.

### BASE

New high-rigidity base/bed design ensures thermal control, ample part capacity and speed stability.

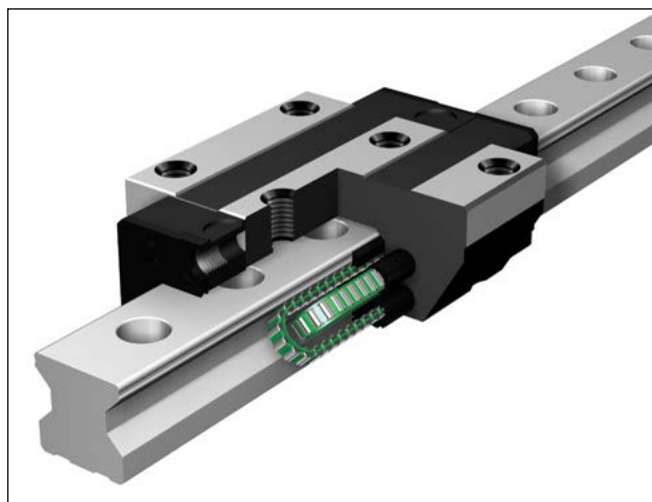
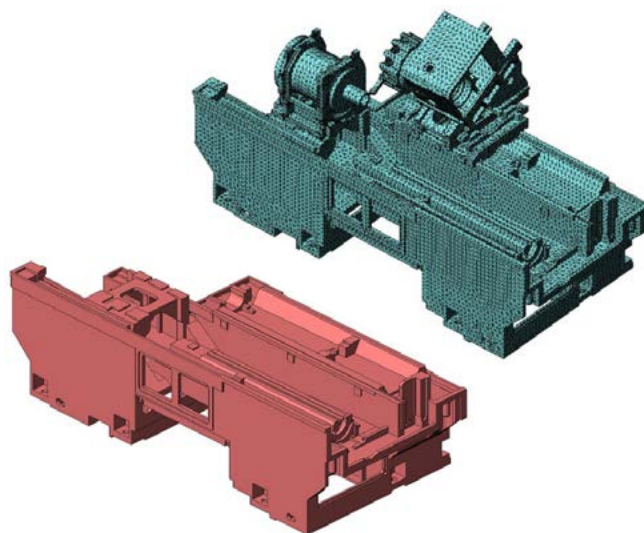
- Finite Element Method (FEM) yields maximum cooling and expansion control
- Low center of gravity provides the foundation and durability for sustained heavy cutting
- Bed lengths range from 20" (508 mm) and 40" (1,016 mm)
- ISO 9001 certified factory hand scraped to ensure quality and high precision accuracy
- Large 27.4" (696 mm) swing capacity for less interference
- Maximum turning diameter of 16.1" (410 mm) on QTU 200 and 13.4" (340 mm) on QTU 200M/MY/MS/MSY
- Rapid traverse rates of 1,181 ipm (30 m/min) in X axes and 1,417 ipm (36 m/min) in Z axes.

### ROLLER GUIDEWAY SYSTEM

Mazak's MX Hybrid Roller Guide System incorporates a special X-design that efficiently distributes load in four directions — radial (clockwise and counterclockwise), reverse radial and lateral.

MX Hybrid Roller Guide benefits:

- Best combination of consistent performance, accuracy, rigidity and durability
- More surface contact than ball guide systems, yet less friction than boxways
- Heavy load capacity
- Unparalleled levels of vibration dampening extends tool lives
- Less elastic deformation with rollers
- Minimal lubricant consumption for greener operation
- Maintenance free system





## HEADSTOCK AND SPINDLE

All QTU 200 Series machines incorporate Mazak's exclusive integral (built-in) spindle/motor headstocks that eliminate the need for belts or pulleys, resulting in zero backlash or belt stick/slip. The machines feature three rows of angular ball bearings in the front of the headstock and cylindrical roller bearings in the rear fully support the spindle.

Spindle cooling systems further ensure stable and continuous precision machining by maintaining constant headstock temperatures. With optional spindle C axis milling, the QTUs offer high-accuracy complex and prismatic machining and 3D contouring capabilities.

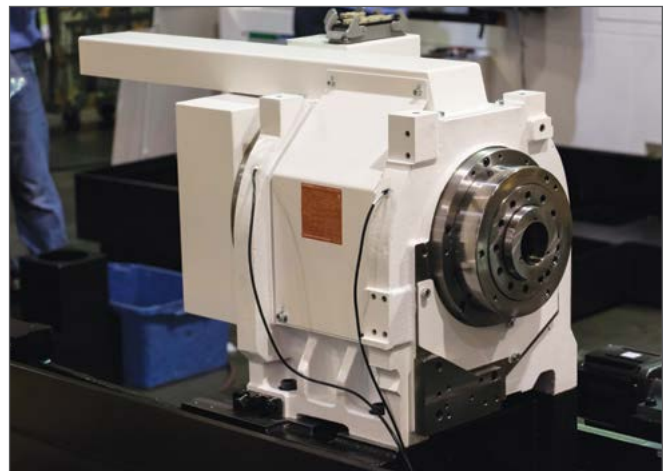
- Variable-speed AC inverter eliminates need for belts and pulleys
- Short acceleration/deceleration times
- Reliable and maintenance free
- Integrated direct-drive, programmable full 360-degree C-axis positioning at 0.001-degree increments

### SPECIFICATIONS

- Spindle bore diameter of 2.4" (61 mm)
- Maximum bar diameter of 2" (42 mm)
- Speeds from 35 to 6,000 rpm with 90 ft-lb torque
- A2-6, 20 hp (15 kW)(15% ED)



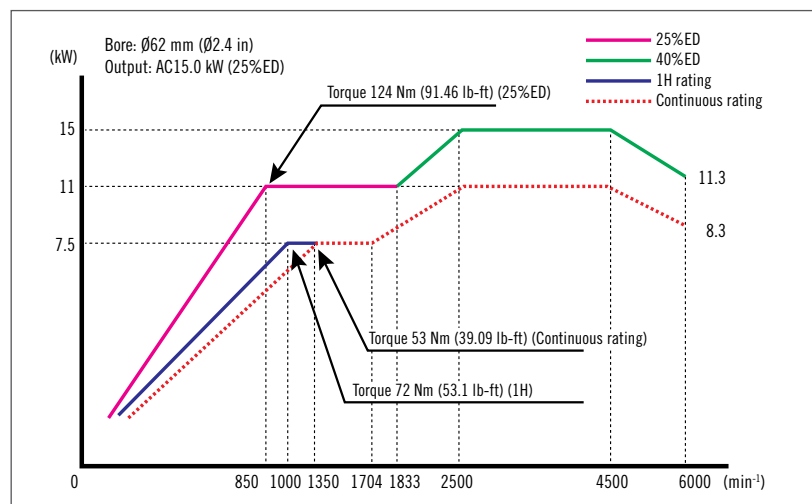
MAIN TURNING SPINDLE



HEADSTOCK AND SPINDLE

### SPINDLE POWER-TORQUE DIAGRAM

The Mazak integral spindle/motor headstock design delivers increased rigidity, high-speed, high-torque for heavy-duty machining performance. This balance of power and speed boosts material removal rates and shortens machining cycle times



MAIN SPINDLE POWER-TORQUE DIAGRAM



## SERVO TURRET

QTU 200 machines feature an innovative turret that utilizes roller gear cam drive systems for smooth, high-speed, high-accuracy digital indexing as well as expandability.

The enhanced 12-position, integral-motor turrets:

- Eliminate the need for curvic/index couplings
- Easily expandable from 12 tool positions to 16 to 24
- Digitally indexes to any position without changes to the turret housing
- Employ integral hydraulic clamping systems for maximum rigidity
- Rotary tool capability standard on only QTU M designated machines

### OPERATION

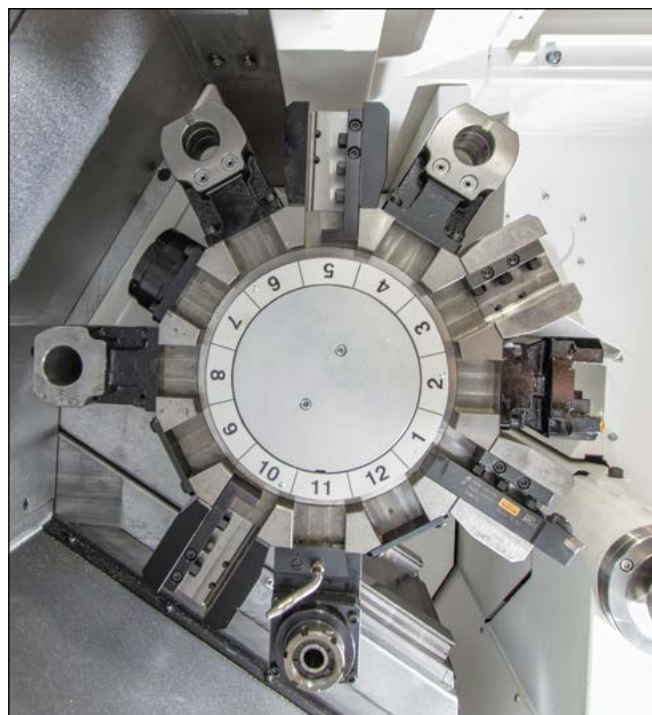
During indexing, the turret rotates via the shortest path to bring up the programmed tool. The turret is clamped and unclamped automatically when the next tool index initiates.

### ROLLER GEAR CAM DRIVE SYSTEM

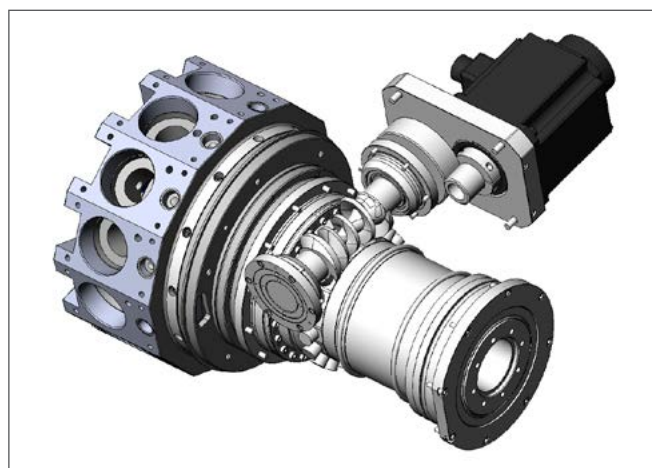
QTU turrets feature industry-proven drive systems that enhance overall machine productivity and performance. The system delivers smooth acceleration/deceleration and extreme durability along with cost-effective and easy maintainability.

Benefits of roller gear cam technology:

- High-speed, high-accuracy indexing
- Maximum rigidity
- Expandability and versatility
- Low maintenance



3-AXIS SERVO TURRET



ROLLER GEAR CAM DRIVE SYSTEM

The Mazak Roller Gear Cam Drive System provides ample accessibility for fast and easy routine maintenance.



## TAILSTOCK

### NC SERVO-DRIVEN TAILSTOCK

Mazak's fully programmable NC servo-driven tailstock provides simple, precise and automatic operation to reduce set up time and increase productivity.

Through the part program, the tailstock moves to a known position and the center makes contact with the part at a programmed holding pressure. With its positive independent drive system, the tailstock has on centerline drilling capability to add part processing versatility.

Servo motor-controlled movement and thrust give Mazak's NC tailstock increased operability and ease of use. The servo motor monitors tailstock thrust and adjusts on-the-fly while a workpiece is being held.

Thrust settings are adjustable in increments of 22.5 ft-lb (0.1 kN) of force. The tailstock gives users the option to set thrust levels according to workpiece material and shape. This eliminates the risk of part damage while simultaneously providing safe and secure holding and support.

Tailstock specifications include:

- Center bore Morse taper MT No.5 live center
- Travels (depending on machine model) from 13.25" (340 mm) to 22.125" (565 mm)
- Minimum thrust of 225 ft-lb (225 Nm)
- Maximum thrust of 1,124 ft-lb (2,000 Nm).

### LOW-THRUST OPERATION

For extremely delicate and soft workpiece materials such as phenolic and resins, a low-thrust function provides holding force settings below 225 ft-lb (1 kN). A pulse hand feed allows users to manually control the desired thrust during delicate part setup.



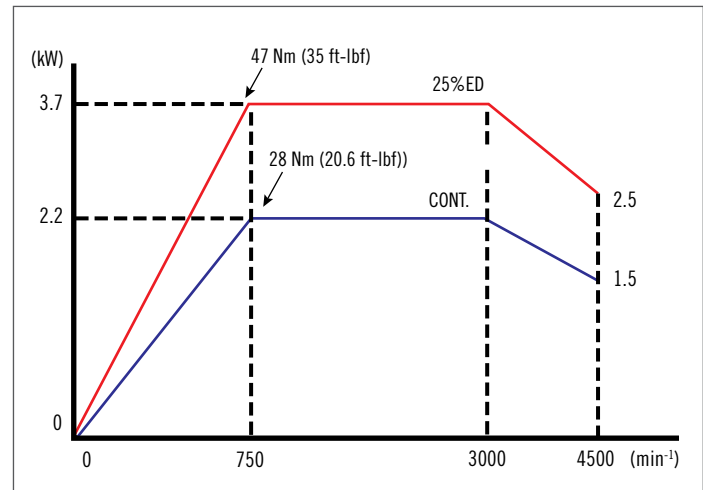
NC SERVO-DRIVEN TAILSTOCK



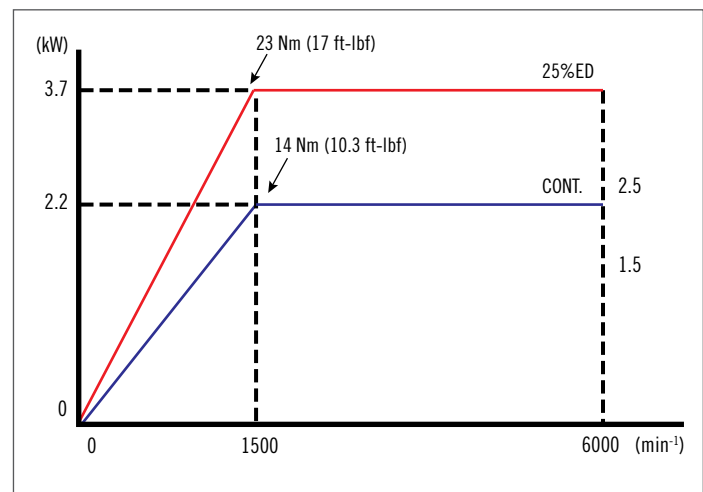
## MILLING OPTION

For increased flexibility and Multi-Tasking part processing, QTU 200 M, MS, MY and MSY machines feature rotary tool spindles for milling (M) capabilities.

MILLING TOOL SPECIFICATION			
Item	Unit	QTU200 M/MS/MY/MSY	
Rotary tool speed		4500 min <sup>-1</sup> (standard)	6000 min <sup>-1</sup> (optional)
Output	kW	3.7	
Rotary tool speed	-	Variable automatic speed	
Rotary tool speed	min <sup>-1</sup>	4500	6000
Maximum rotary tool	Nm	47 (34.7)	23 (17)



ROTARY TOOL SPEED / 4500 (STANDARD)



ROTARY TOOL SPEED / 6000 (OPTIONAL)



## X, Y AND Z-AXIS

QTU 200 MY and MSY models with Y-axis off-centerline machining capability feature Mazak's special high-gain servo-control turret/feed axis-motion. The double-slide design ensures rigid high-speed, high-precision positioning and machining along with smooth axis acceleration/deceleration.

### X, Y and Z-axis positioning

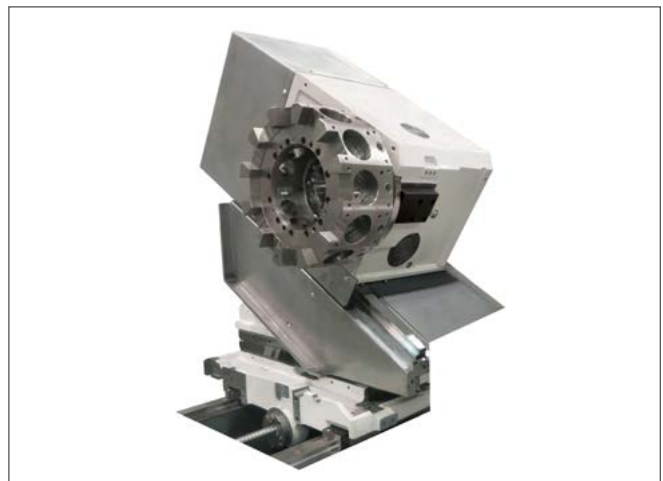
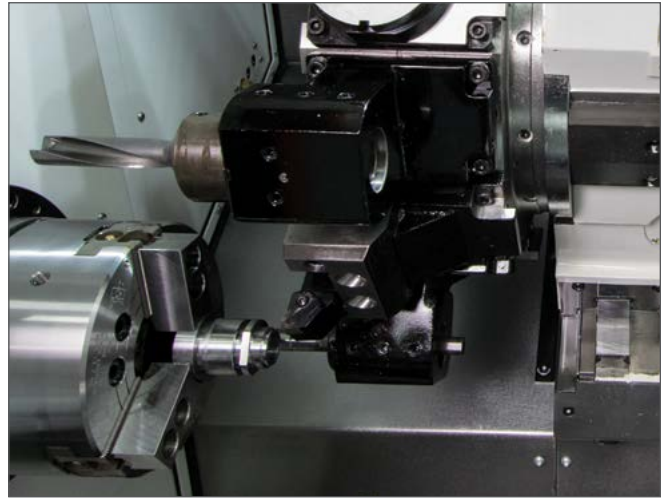
For desired machine motion, the X, Y and Z-axis are driven by AC servo motors. Direct coupling of motors to pretension ballscrews deliver exact positioning and precise motion control.

### Y-axis option

The machine's X-axis ballscrews work in tandem with Yt-axis ballscrews that are inclined at 30 degrees to move machine turrets 3.94" (100 mm) in the Y axis.

QTU 200 Series machine rapid traverse speeds:

- 1,181 ipm (30 m/min) in X axis
- 1,418 ipm (36 m/min) in Z axis
- 394 ipm (10 m/min) in Y axis





## SECOND SPINDLE

QTU MS or MSY machines feature second spindles for more productivity and to further reduce cost per part. Internal parts transfer allows greater part accuracy by eliminating manual handling.

In operation, second spindles automatically transfer parts from one spindle to another for secondary/sequential operations to eliminate manual part handling. Part transfer capabilities also allow the machines to process both faces or sides of workpieces/backwork through secondary operations such as drilling and tapping.

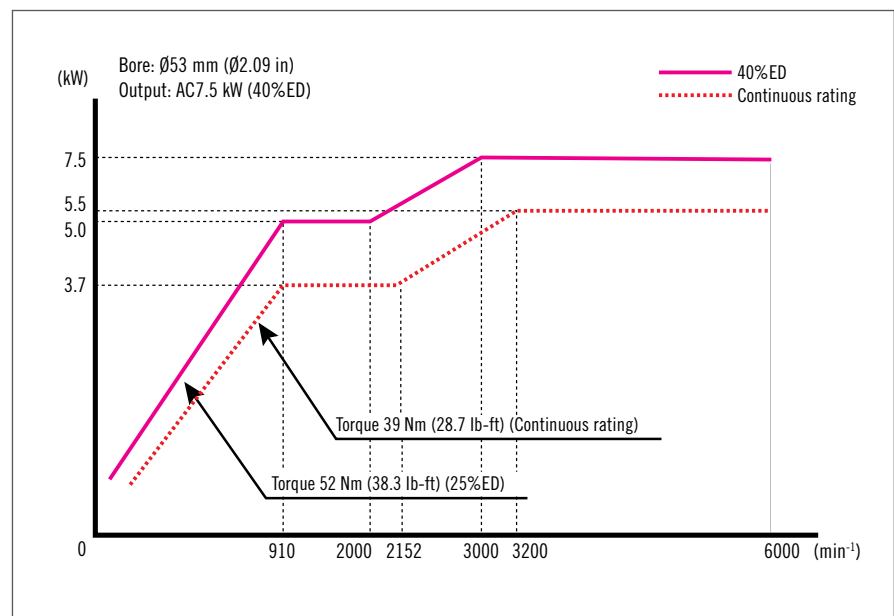
With C-axis option, second spindles position in programmed 0.0001-degree increments and synchronize with machine X and Z axes for complex 3D part contouring on M and S designated models.

Features and benefits of second spindles:

- Adds Mazak's **DONE IN ONE®** part processing capability
- Speed range of 35 to 6,000 rpm
- Air cooled to prevent thermal distortion
- Provide chuck-to-chuck part transfer capability for backworking/secondary operations
- Programmable C-axis motion



SECOND SPINDLE



SECOND SPINDLE POWER/TORQUE DIAGRAM



## HIGH ACCURACY

Mazak's rigid machine base structure, advanced spindle/motor design and MAZATROL CNC submicron machine movement gives QTU machines extremely high accuracy part roundness and surface finish capabilities.

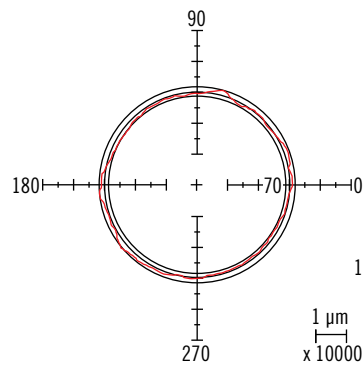


### QTU 200 roundness and roughness test\*:

	(in/mm)
Spindle speed	11.8 in / 300 mm per min.
Feed rate	0.0008 in / 0.02 mm per revolution
Depth of cut	0.0008 in / 0.02 mm
Tool	synthetic diamond

### Roundness results:

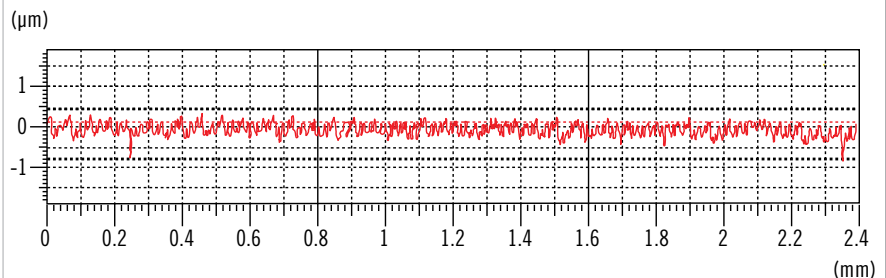
Roundness 0.32 $\mu$ m



### Surface roughness results:

Ra 0.1217

Rz 0.7180



\* Cutting test is an example and actual results may vary.




# HIGH QUALITY PRODUCTION

Machine check by many inspection items with runoff data book.

## RUNOFF DATA BOOK

- Static accuracy test
- Bed level
- Run-out spindle
- Parallelism of spindle
- Index repeatability accuracy
- Positioning accuracy
- Alignment error of main spindle
- Accuracy of turret
- Position of tool-eye
- Tailstock thrust sensor
- Mass cutting accuracy



**CNC LATHE**  
**Certification of the Machine**  
**(MAZAK PRECISION STANDARD)**

**CUSTOMER :** \_\_\_\_\_

**TYPE : QUICK TURN UNIVERSAL**


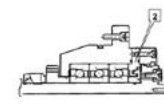
**SERIAL No. :** \_\_\_\_\_

**MAZAK CORPORATION**

**QT SMART 200 15 kW HEADSTOCK DATA SHEET**

Spindle No.: 6855 Unit I.D. No.: 180503A3 Date: 7.14.15  
 Headstock Type: QTU 200 F35 Motor S/N: A7300003

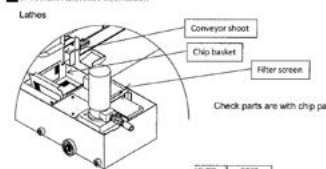
Rotating Precision				
Item	#1 Copy	#2 Repeater	#3 Spindle	
Tolerance	2-4 $\mu$ m	1-25 $\mu$ m	5-50 $\mu$ m	
Actual	4 $\mu$ m	24 $\mu$ m	12 $\mu$ m	
Inspection	30	10	30	

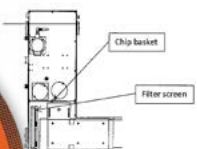
Grinding Bearings			
Bearing	Front roller	Rear roller	
Grinding Type	WHL 10	WHL 8	
Grinding Type	QTS-300	QTS-200	
Grinding Speed	8 m	7 m	
Inspection	30	30	

**2. Coolant Reference Information**

**Lathes**



	150W	300W	1500W	COVER COOLANT	REST COOLANT
BPK13	MTH2-300	MTH2-300	MTH2-300		
200/500	STD	OPF	OPF	YOFF	YOFF
300/500	X	STD	OPF	YOFF	YOFF
400/500	X	STD	OPF	MTH2-300	YOFF

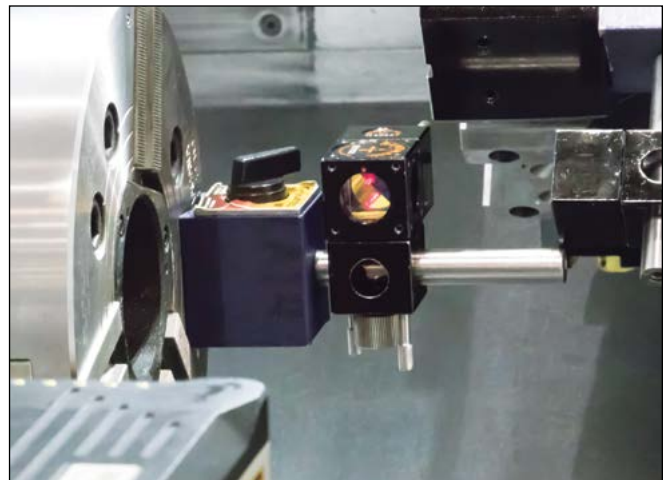


Vertical machine use the same model coolant pumps per the option they are for (except VTC)

Standard flood coolant	MTH2-300
High Through spindle coolant	MTH2-400
High Spindle coolant	QTH2-100/200
Non-spindle coolant	QTH2-100/200
Spindle coolant (CNC unit)	MTH2-300



ALIGNMENT CHECK



LASER CALIBRATION



# MAZATROL SMART CNC

## FAST, EASY PROGRAMMING

- QUICK TURN UNIVERSAL 200
- QUICK TURN UNIVERSAL 200M

The **MAZATROL SMART CNC** makes it possible for inexperienced operators to quickly and easily develop machining programs as well as achieve fast job set up. Programming time is 75 percent faster when compared with machines using EIA/ISO systems which is especially effective when machining basic workpiece geometries that require simple turning, milling, drilling and tapping operations.

## HARDWARE

- Control of up to 4 axes and 2 spindles
- EIA/ISO and conversational programming for versatility and user-friendly operation
- Accommodates up to 512 programs
- Capacity for 128 tool offset groups, 54 work offset groups and 500 alarm histories
- QWERTY keyboard provides same data input method as a PC

## SOFTWARE

- Intelligent Thermal Shield provides heat displacement control for improved stability
- Intelligent Maintenance Support prevents unexpected machine downtime
- SMART menu keys minimize required programming screens and key presses





# MAZATROL MATRIX NEXUS 2 CNC

## EFFORTLESS MULTI-TASKING

- QUICK TURN UNIVERSAL 200MS
- QUICK TURN UNIVERSAL 200MY
- QUICK TURN UNIVERSAL 200MSY

The **MAZATROL MATRIX NEXUS 2 CNC** simplifies multi-tasking operations for parts requiring off-centerline machining and angled drilling, milling or tapping. With innovative conversational programming capability, the control incorporates a wide variety of advanced features for increased productivity through high-speed, high-accuracy machining as well as ease of use.

## HARDWARE

- Simultaneous control of up to 3 axes and continuous control of second spindles
- A 20GB hard drive offers increased program storage capacity
- High-speed CPU and large 12.1" CNC display supports multiple functions
- EIA/ISO and conversational programming offers versatility and user-friendly operation
- Sub-micron input and nano control delivers high-accuracy machining
- QWERTY keyboard provides same data input method as a PC

## SOFTWARE

- Intelligent Thermal Shield provides heat displacement control for improved stability
- Active Vibration Control reduces vibration for high-accuracy positioning
- Intelligent Safety Shield offers safe operation during machine setup and manual operation
- Mazak Voice Adviser provides verbal support for machine setup and safety
- SMART Functions streamline data entry and reduce programming time
- Virtual machining provides convenient program and interference checks





# FAST, EASY AND EFFICIENT PROGRAMMING

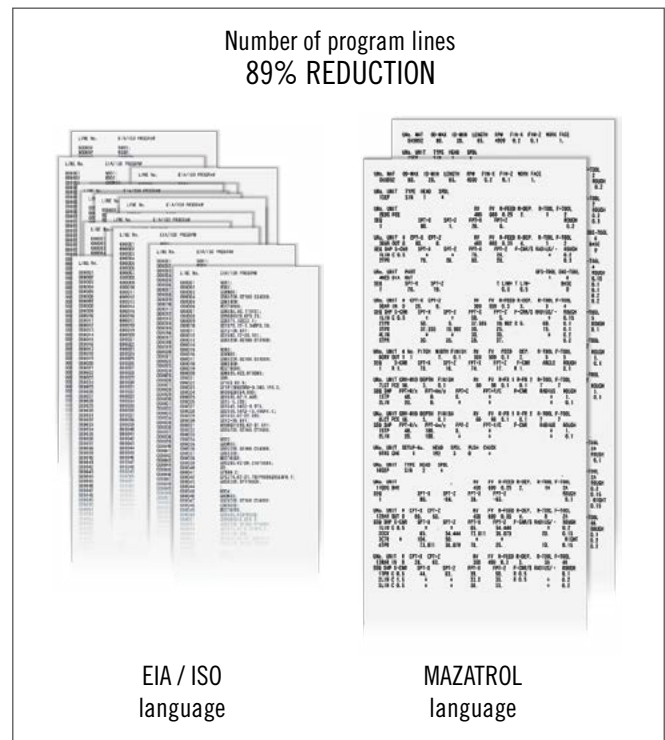
The continuously innovative Mazak MAZATROL CNC controls make programming QTU 200 Series machines easy, fast and efficient. The highly versatile controls allow for both [EIA/ISO and conversational programming capabilities](#), while several Smart menu key functions significantly shorten programming time and streamline control screen navigation.

## EIA/ISO COMPATIBILITY

MAZATROL G-codes are the same as those used in conventional EIA CNC machines. This allows QTU 200 Series machine users to run programs made for other machine brands by simply editing M codes and confirming axis strokes along with cutting conditions.

## CONVERSATIONAL PROGRAMMING

The industry standard MAZATROL conversational programming makes it possible for inexperienced operators to quickly and easily develop machining programs for QTU 200 Series machines. Operators answer conversationally displayed questions concerning the intended workpiece. These queries include type of material, OD/ID dimensions, part lengths and several others. Then, according to the input data, the MAZATROL control automatically calculates intersection coordinates and tool index positioning in addition to optimized cutting conditions and machining processes.





## SMART MENU KEY FUNCTIONS

The standard Smart menu key functions of MAZATROL CNCs streamline data entry and minimize the number of displays to reduce programming times for QTU 200 Series machines. After an operator selects the desired type of programming, the control displays only those necessary screens for programming and editing.

Smart menu key functions include:

- Versatile position screen**

Operators can easily change the bottom of the position screen from monitoring current operation to set up or tool offset data. And when switching from one display to the next, the entire screen remains unchanged to eliminate any confusion.

- Tool path and time study analysis**

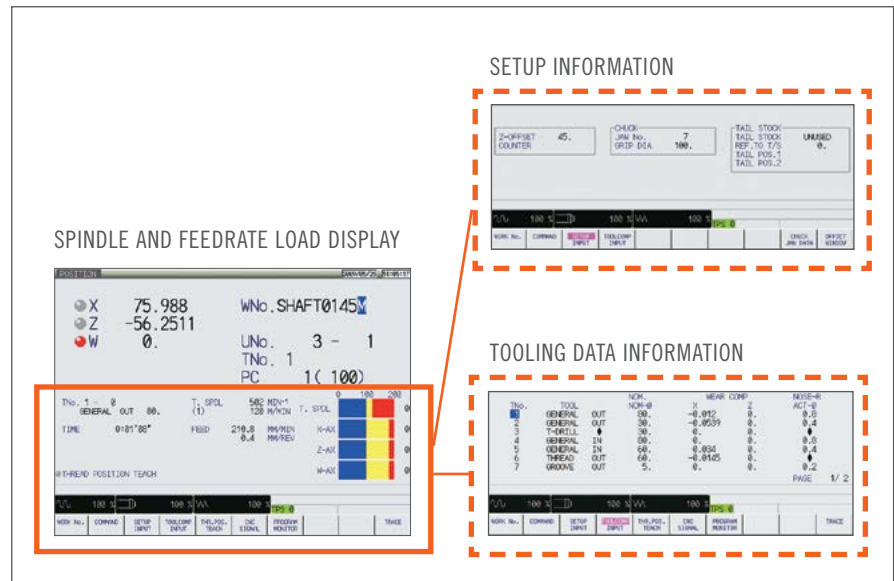
The control's toolpath-check screen displays time study analysis results. These results allow operators to quickly check both MAZATROL conversational and EIA programs for opportunities to reduce machining cycle times.

- Work number input**

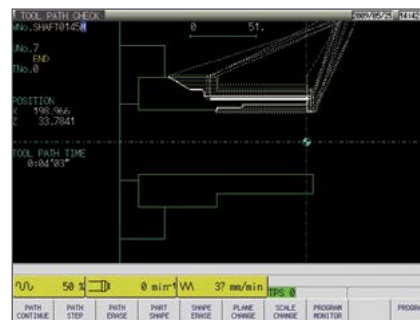
For convenient program management, MAZATROL controls accept up to 16 alphanumeric characters for work number input.

- Tool data screen**

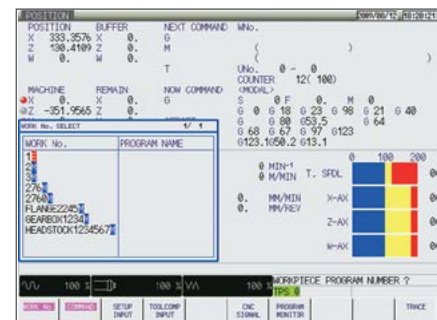
This screen displays the program tool list in table form and provides streamlined tool data entry. And for easy operation, the tool data screen displays separately during setup operations.



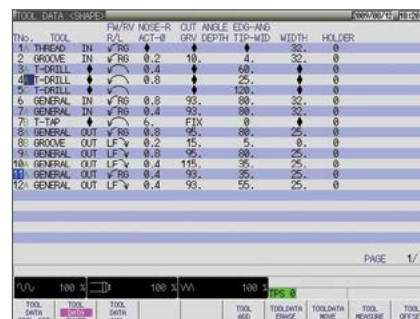
VERTICAL POSITION SCREEN



TOOL PATH TIME STUDY ANALYSIS SCREEN



WORK NUMBER INPUT SCREEN



TOOL DATA SCREEN



## ENVIRONMENTALLY FRIENDLY

### ENVIRONMENTAL CONSIDERATIONS

The environment and our impact on our natural surroundings have always been important concerns of Mazak. This is shown by the fact that all factories where Mazak machine tools are produced are ISO 14001 certified, an international standard confirming that the operation of our production facilities do not adversely affect air, water or land.

The QUICK TURN UNIVERSAL 200 Series utilizes a high efficiency lubrication system that has reduced oil consumption more than 90% when compared to comparable systems. High efficiency LED work lights are used for illumination of the machining area. These lights and the optional chip conveyor are automatically shut off after a predetermined period for lower power consumption when the machine is in the stand-by state.



QUICK TURN UNIVERSAL 200MSY



### Power Consumption Display (Optional)

The electrical power meter displays the machine's accumulated electrical power consumption.

### Personnel Sensor

The work lights and CNC display are automatically shut off after a predetermined time period for lower power consumption when the operator is not near the machine. When the personnel sensor has detected that the operator has returned to the machine, these lights are automatically turned on.

### Chip Conveyor/Automatic Power Off (Optional)

The chip conveyor is automatically shut off after a predetermined time period for lower power consumption when the machine is in the stand-by state.



## OPTIONAL EQUIPMENT

Mazak offers a wide array of options from which to choose for the QTU 200 Series that further enhance machine performance, increase uptime and boost overall operational efficiency.

- **Bar feeder and automatic parts catchers** for easily implemented, unattended operations
- **Automated loading systems pre-engineered or custom systems** are available for lights out production
- **Tool eye** automatically measures tool tip positions and detects wear/damage and greatly reduces setup time
- **Workpiece conveyor systems** bring parts to and from the machine
- **Automatic front door open/close** for M-code controlled opening and closing
- **Auto power on/off** ensures machine is ready to run and conserves energy
- **Turret air blast** keeps tool positions clear of chips and debris
- **Chuck air blast** removes sticking chips from chuck and workpiece
- **Chip conveyor** designs for a wide variety of materials
- **High-power coolant** delivers efficient chip evacuation for longer tool life
- **Mist collector** maintains clean, safe work areas
- **Probe kit RMP40M/LP2** provides in-process workpiece measurement



CHIP CONVEYOR



MIST COLLECTOR



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## MAZAK AUTOMATION SYSTEMS

Mazak automation further increases the productivity, throughput and part quality of the QTU 200 Series machines. Standard and customized [Mazak automation solutions](#) paired with extensive and ongoing support ensure the best fit for individual production needs and that output goals are achieved.

### STANDARD AUTOMATION



#### BAR FEEDERS

[Bar feeders](#) are the simplest, most cost-effective forms of automating the loading and feeding of bar material into a QTU 200 Series machine.

Bar feeders provide the capability to:

- Easily and affordably boost machining efficiency and productivity
- Increase throughput by not having to individually feed slug material
- Automatically sequence workpiece machining for minimal bar material scrap
- Machine multiple part types from one piece of bar material
- Save workspace via side storage and bar loading
- Precisely machine at high speeds as the machine's spindle remains unaffected
- Process bar materials with imperfect shapes and dimensions



#### GANTRY LOADERS

[Gantry loaders](#) quickly load and unload workpieces into and from machines and are ideal for small batch runs of common part families. The automation is easy to install and operate and is most suitable for chucker-style work, but can handle certain length sizes for shaft applications.

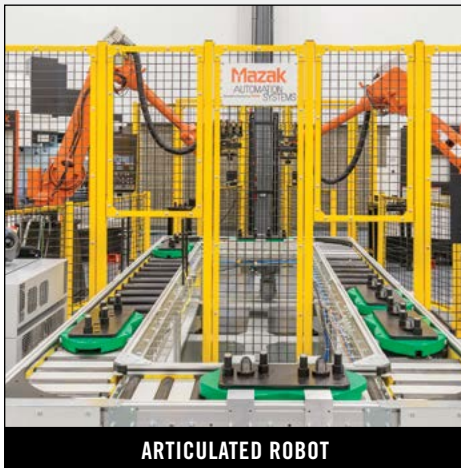
Gantry loaders provide the capability to:

- Economically boost efficiency through unsupervised workpiece loading and unloading
- Achieve continuous operation with accurate and consistent performance
- Shorten workpiece change times for an overall increase in productivity
- Increase versatility via a variety of loading stations and robot hands
- Effectively run multiple machines with only one operator





## ENGINEERED SOLUTIONS



ARTICULATED ROBOT



ARTICULATED ROBOT

## CUSTOM ENGINEERED SOLUTIONS

A variety of custom automation solutions tailored specifically to individual customer needs are available for the QTU 200 Series machines. Mazak's expert applications engineers design and implement systems and software that will boost productivity and ensure maximum return on customer automation investments.

Custom engineered solutions provide the capability to:

- Boost machine throughput and part quality
- Ensure production reliability and repeatability
- Service one or more machines with minimal operator intervention
- Perform multiple tasks and eliminate the number of necessary components in a system
- Keep machines running 24/7 without additional night or weekend shifts
- Reduce in-process inventory and accomplish just-in-time production



## MTCONNECT

**MTConnect®**, an open-source, royalty-free manufacturing protocol, easily connects devices and systems from different suppliers to capture and share information in a common format such as XML. It then gives manufacturers the means to gather valuable data from machines and automated systems for use in process improvement and increased equipment utilization.

With MTConnect, manufacturers can:

- Gain real-time data sharing throughout a manufacturing facility
- Calculate overall equipment efficiency
- Monitor all equipment from one system
- Reduce production losses
- Identify lean manufacturing strategies

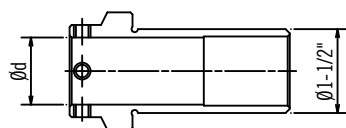
Mazak builds all its machines, including those in the QTU 200 Series, to be MTConnect compliant and offers affordable adapters for existing Mazak machines in the field.





## TOOLING SYSTEM (2 AXIS)

BORING BAR SOCKET

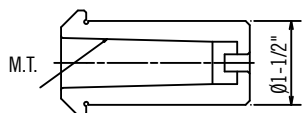


d	STD. QTY.	
	8"	10"
$\phi 1-1/4''$	1	1
$\phi 1''$	1	1



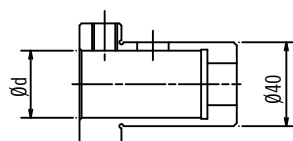
d	STD. QTY.	
	8"	10"
$\phi 3/4''$		
$\phi 5/8''$		
$\phi 1/2''$		
$\phi 3/8''$		
$\phi 5/16''$		

M.T. DRILL SOCKET



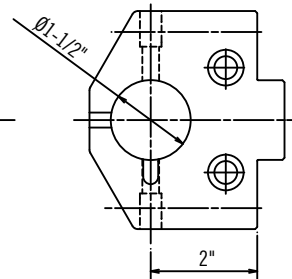
M.T.	STD. QTY.	
	8"	10"
M.T.3		
M.T.2	1	1
M.T.1		

U DRILL SOCKET



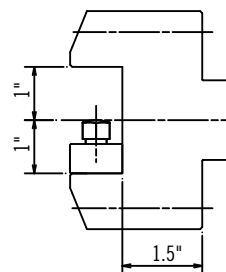
d	STD. QTY.	
	8"	10"
$\phi 32$		
$\phi 25$		
$\phi 20$		

BORING BAR HOLDER



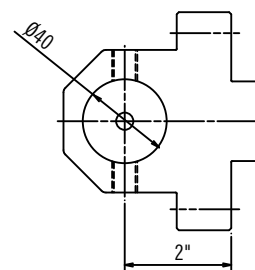
STD. QTY.	
8"	10"
2	2

FACING HOLDER



STD. QTY.	
8"	10"

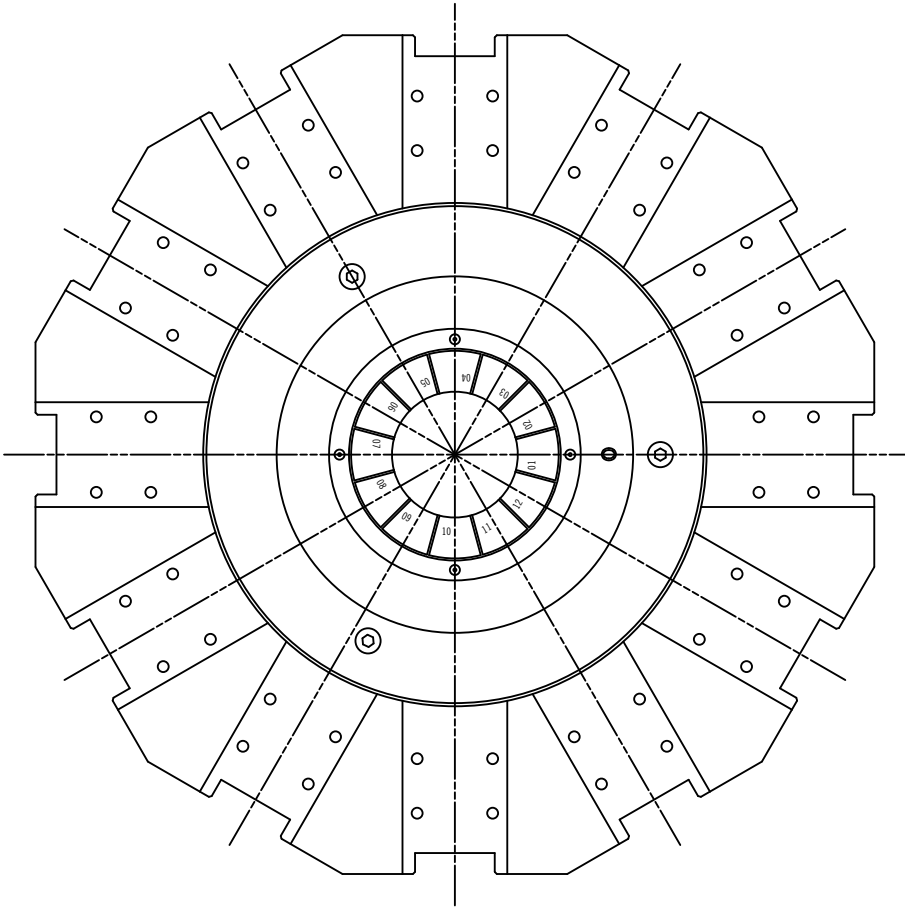
U DRILL HOLDER



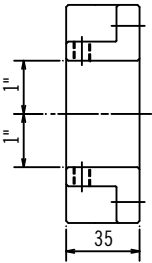
STD. QTY.	
8"	10"
1	1

Metric available upon request.



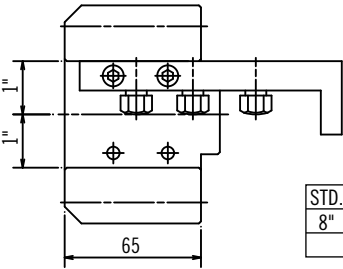


TURNING HOLDER



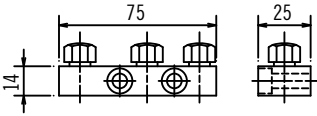
STD. QTY.	
8"	10"
2	

TURNING HOLDER  
FOR 10" CHUCK



STD. QTY.	
8"	10"
	2

TURNING BLOCK

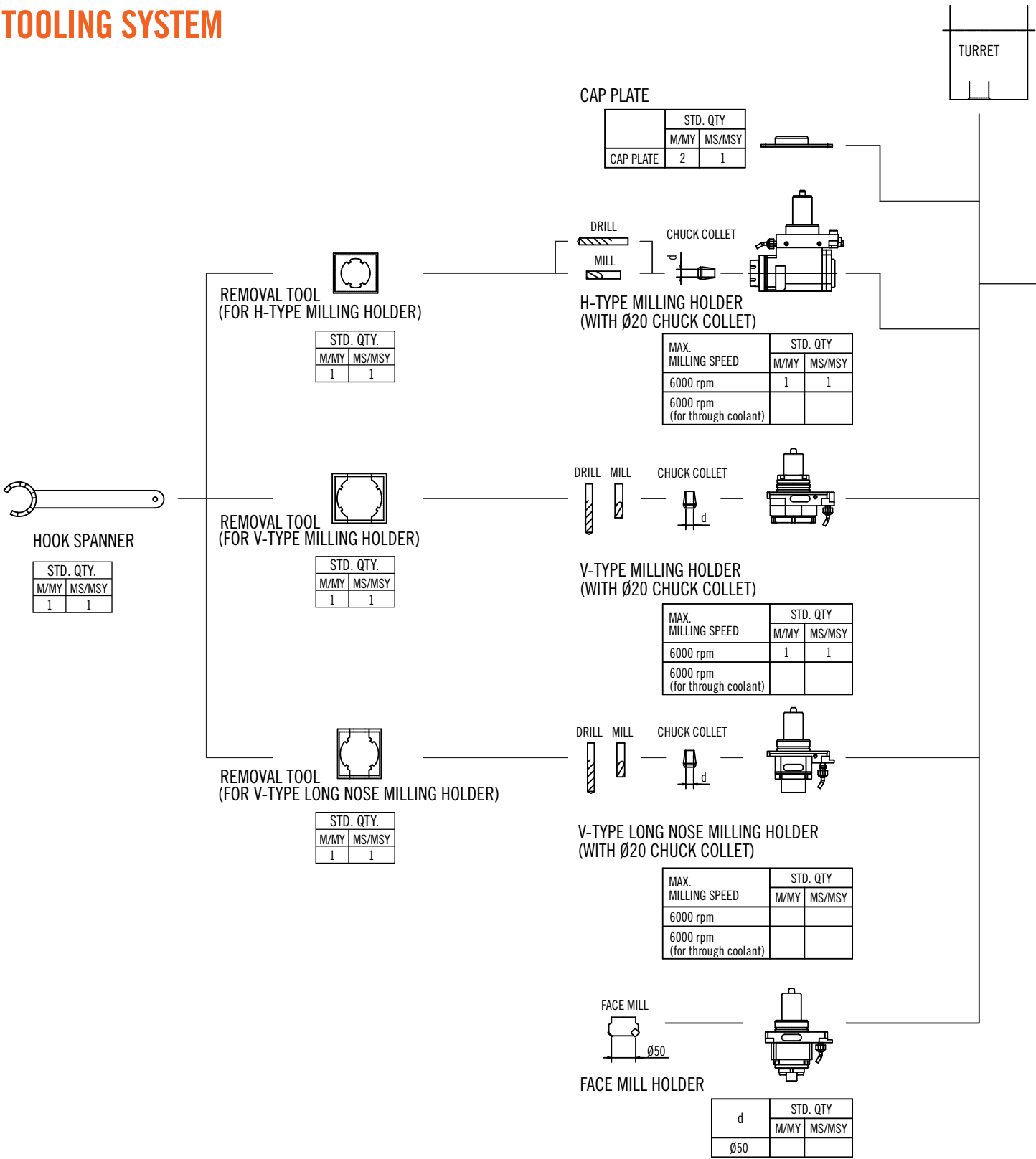


STD. QTY.	
8"	10"
5	3

Metric available upon request.

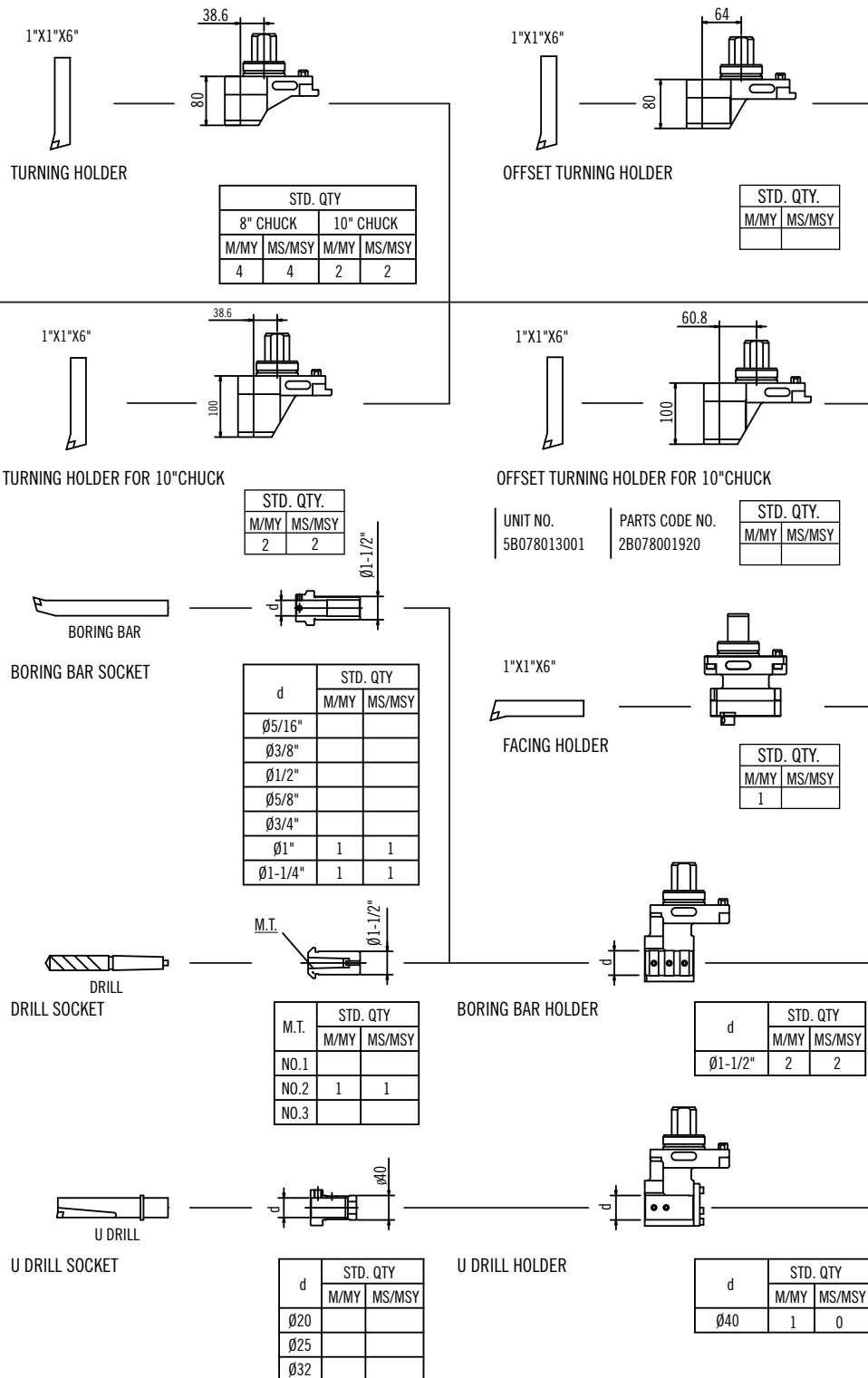


# TOOLING SYSTEM



Metric available upon request.





CHUCK COLLET

TYPE	STD. QTY
ER32-2	
ER32-2.5	
ER32-3	
ER32-3.5	
ER32-4	
ER32-4.5	
ER32-5	
ER32-6	
ER32-7	
ER32-8	
ER32-9	
ER32-10	
ER32-11	
ER32-12	1
ER32-13	
ER32-14	
ER32-15	
ER32-16	1
ER32-17	
ER32-18	
ER32-19	
ER32-20	

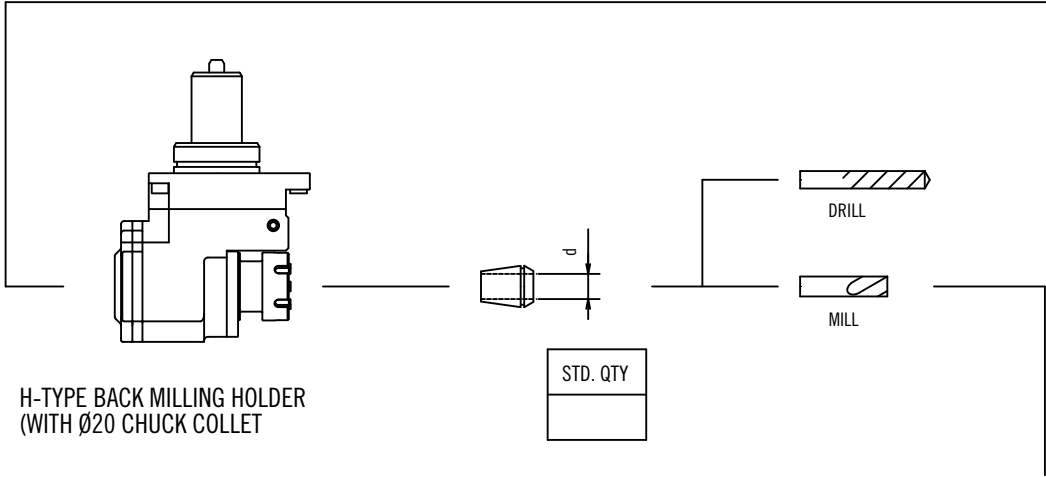
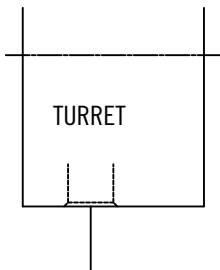
CHUCK COLLET  
(applicable to through coolant)

TYPE	STD. QTY
AR32-OH-8	
AR32-OH-8.5	
AR32-OH-9	
AR32-OH-9.5	
AR32-OH-10	
AR32-OH-10.5	
AR32-OH-11	
AR32-OH-11.5	
AR32-OH-12	
AR32-OH-12.5	
AR32-OH-13	
AR32-OH-13.5	
AR32-OH-14	
AR32-OH-14.5	
AR32-OH-15	
AR32-OH-15.5	
AR32-OH-16	
AR32-OH-16.5	
AR32-OH-17	
AR32-OH-17.5	
AR32-OH-18	
AR32-OH-18.5	
AR32-OH-19	
AR32-OH-19.5	
AR32-OH-20	

Metric available upon request.

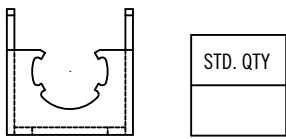


# TOOLING SYSTEM

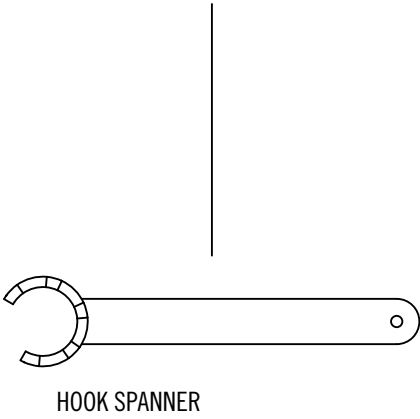


## COLLET

d	STD. QTY
0.079" (Ø2)	
0.098" (Ø2.5)	
0.118" (Ø3)	
0.138" (Ø3.5)	
0.157" (Ø4)	
0.177" (Ø4.5)	
0.197" (Ø5)	
0.236" (Ø6)	
0.276" (Ø7)	
0.315" (Ø8)	
0.354" (Ø9)	
0.394" (Ø10)	
0.433" (Ø11)	
0.472" (Ø12)	
0.512" (Ø13)	
0.551" (Ø14)	
0.591" (Ø15)	
0.630" (Ø16)	
0.669" (Ø17)	
0.709" (Ø18)	
0.748" (Ø19)	
0.789" (Ø20)	

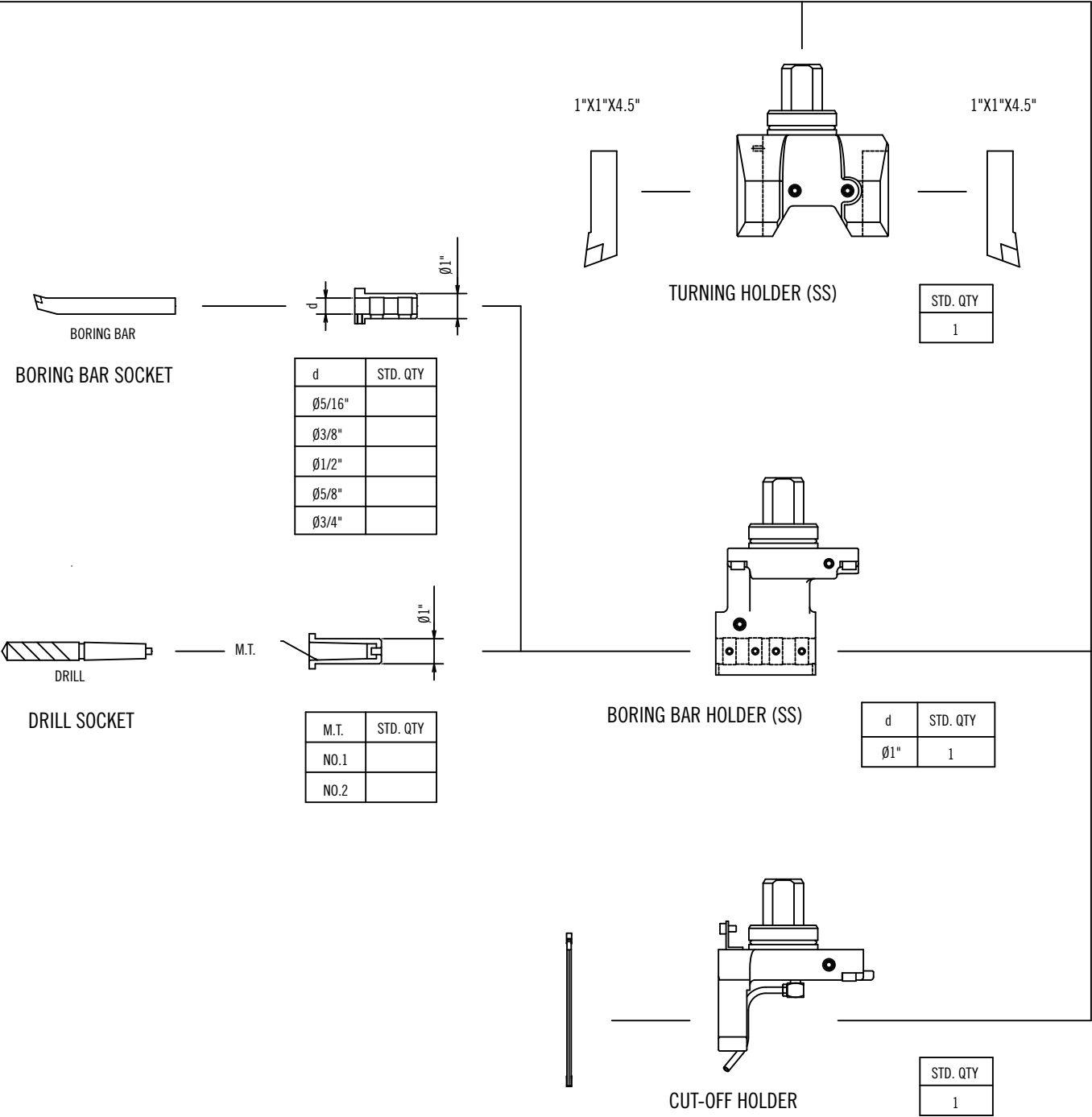


REMOVAL TOOL  
(FOR H-TYPE BACK MILLING HOLDER)



Metric available upon request.



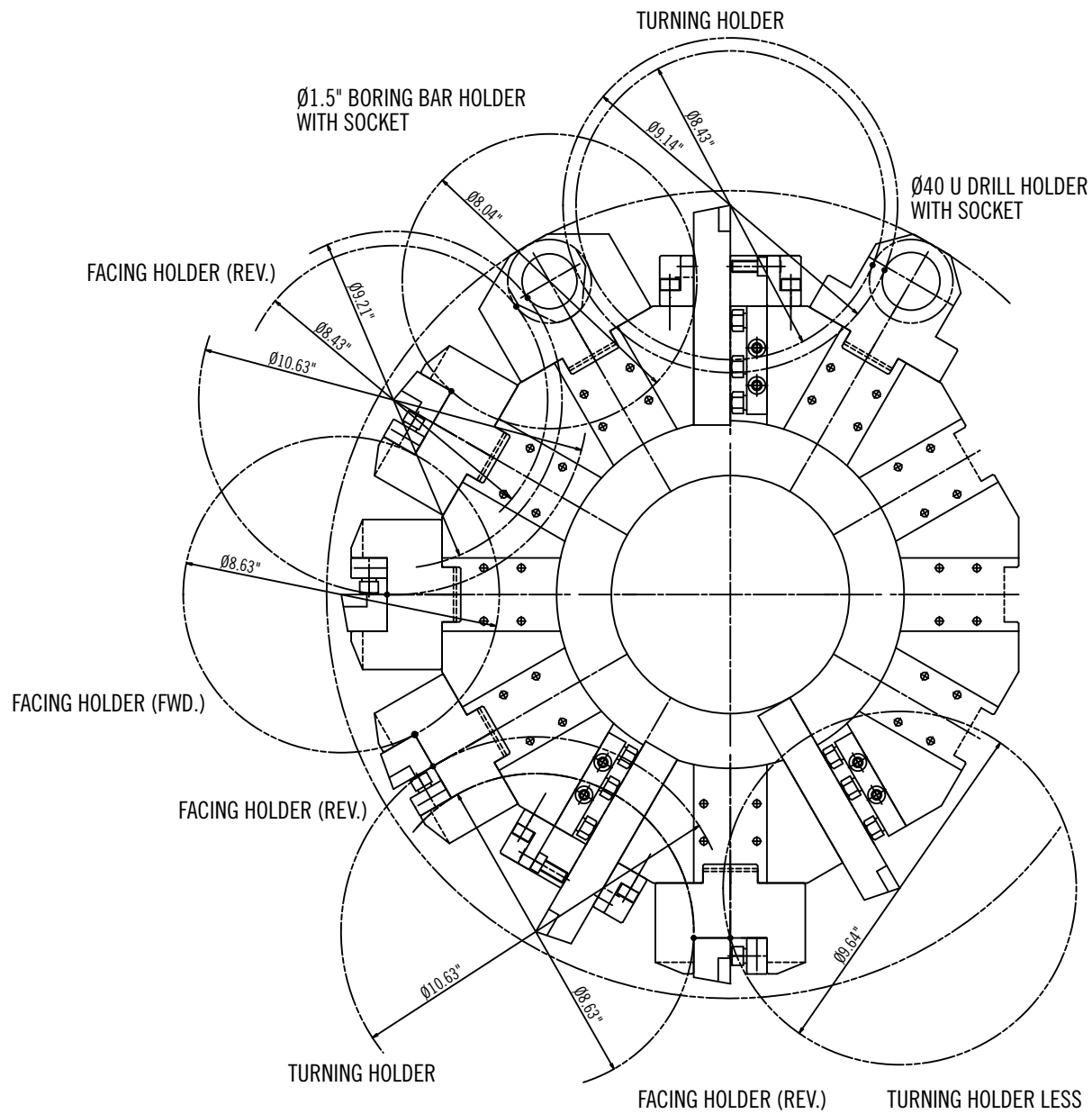


Metric available upon request.





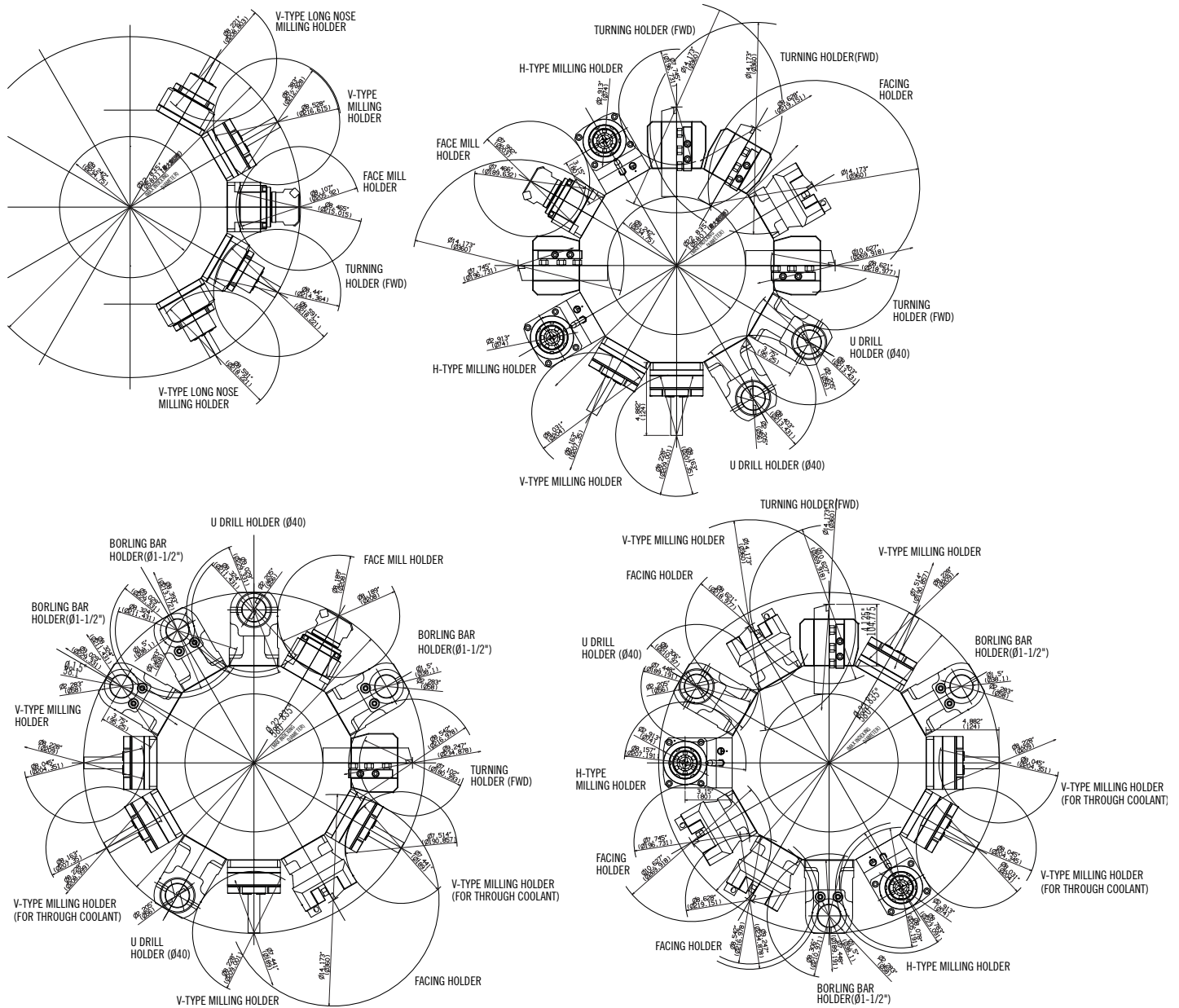




Metric available upon request.

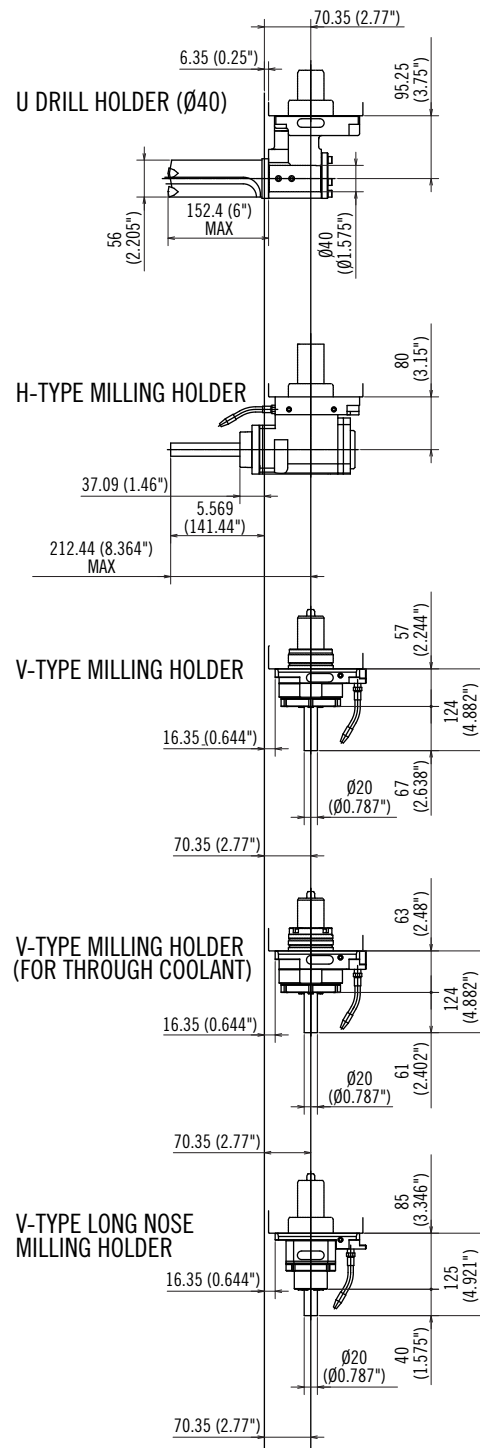
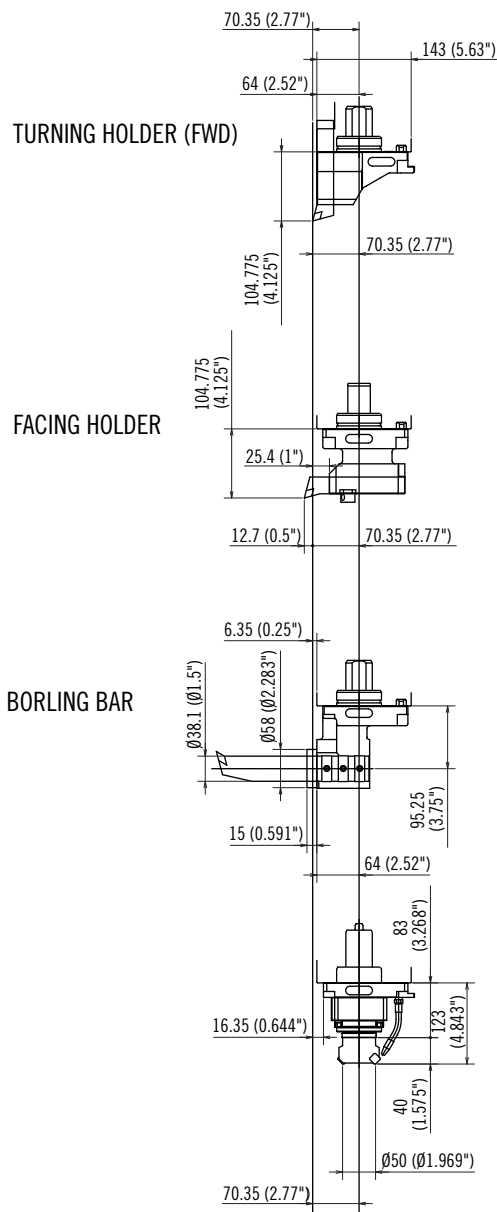


# TOOL INTERFACE DIAGRAM



Metric available upon request.





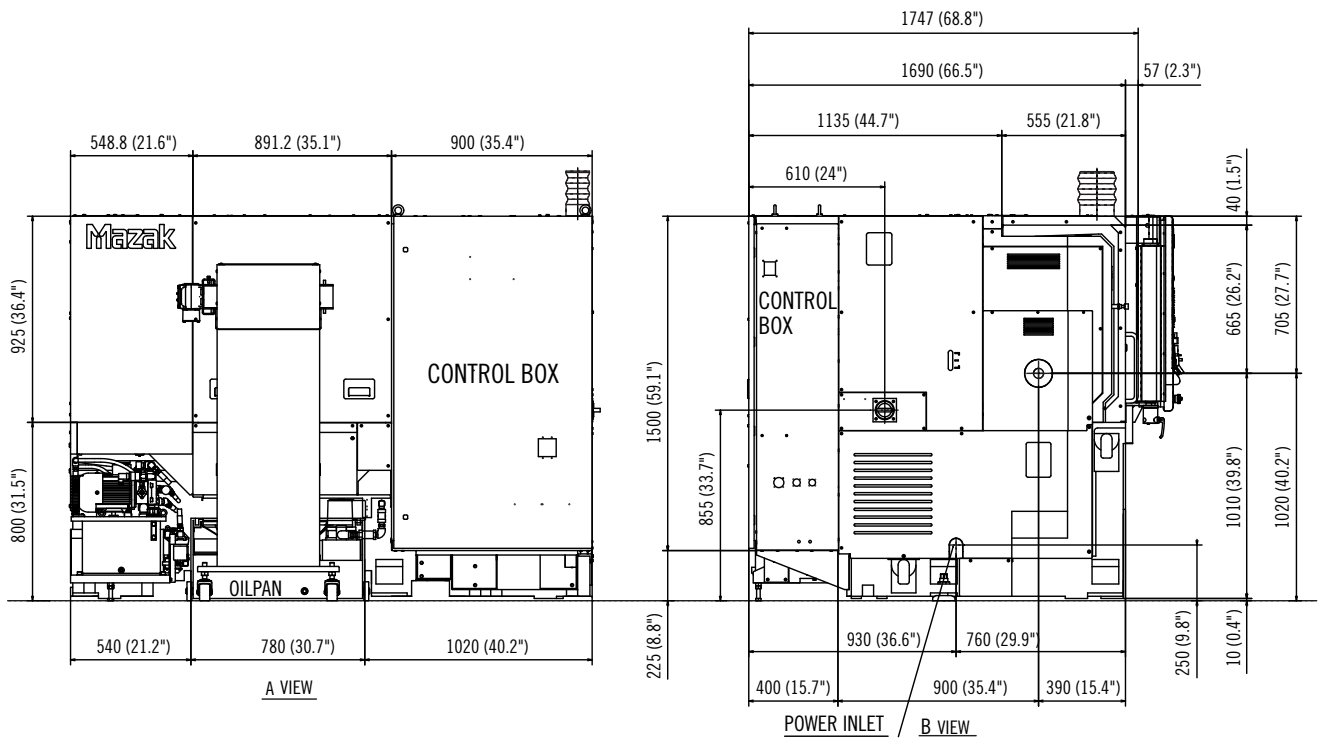
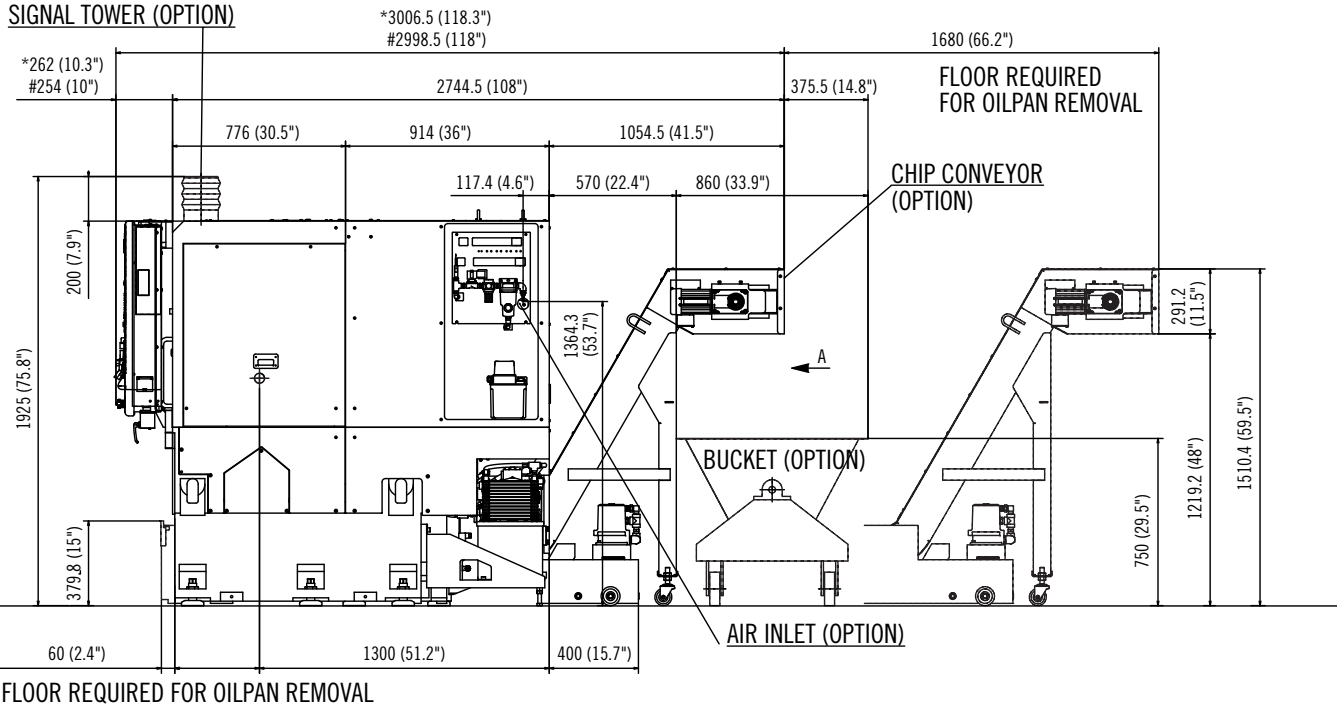
DRAWING CONCERNED OF TOOL TIP LOCATION OF EACH TOOL



# Mazak

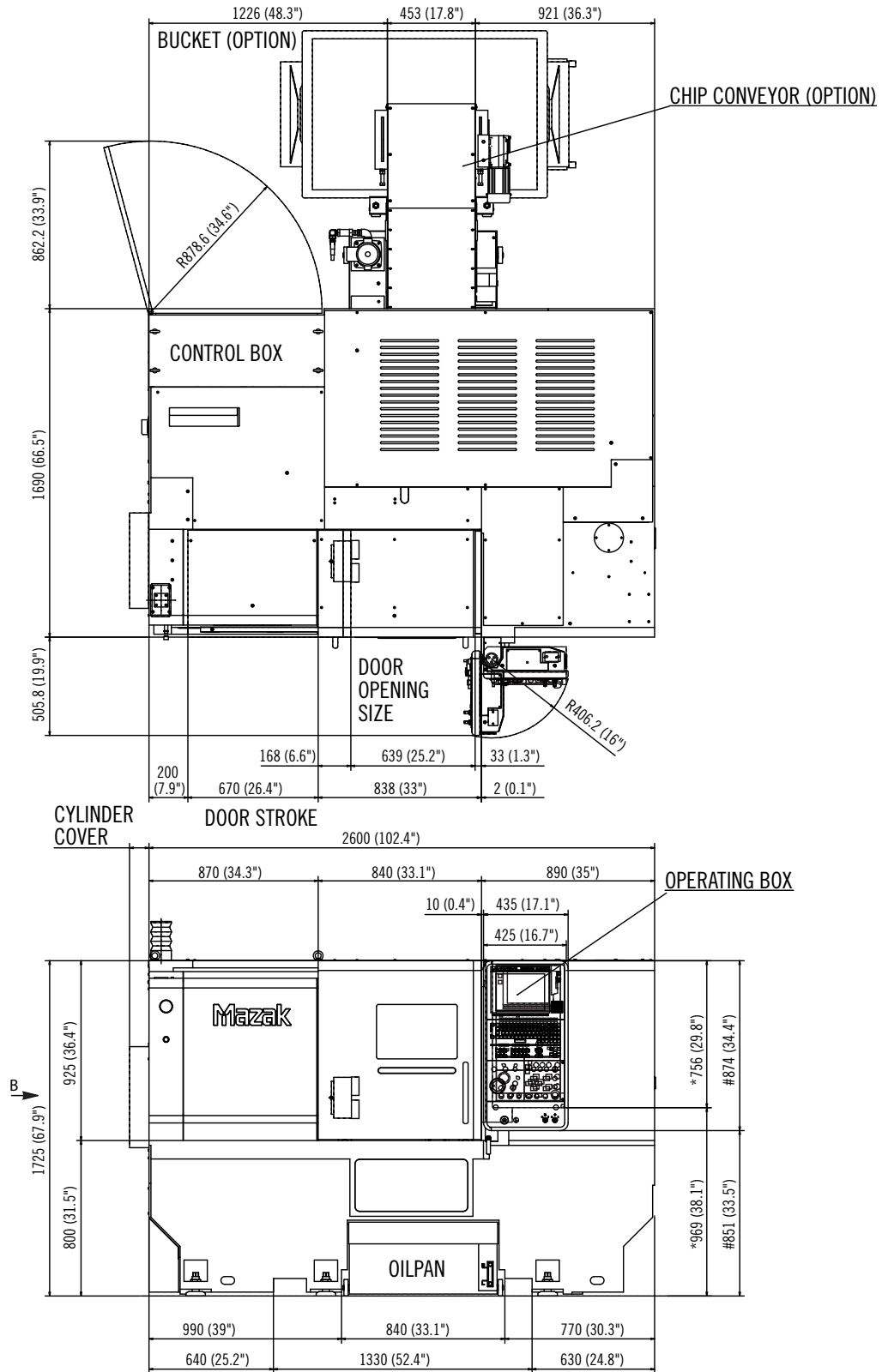




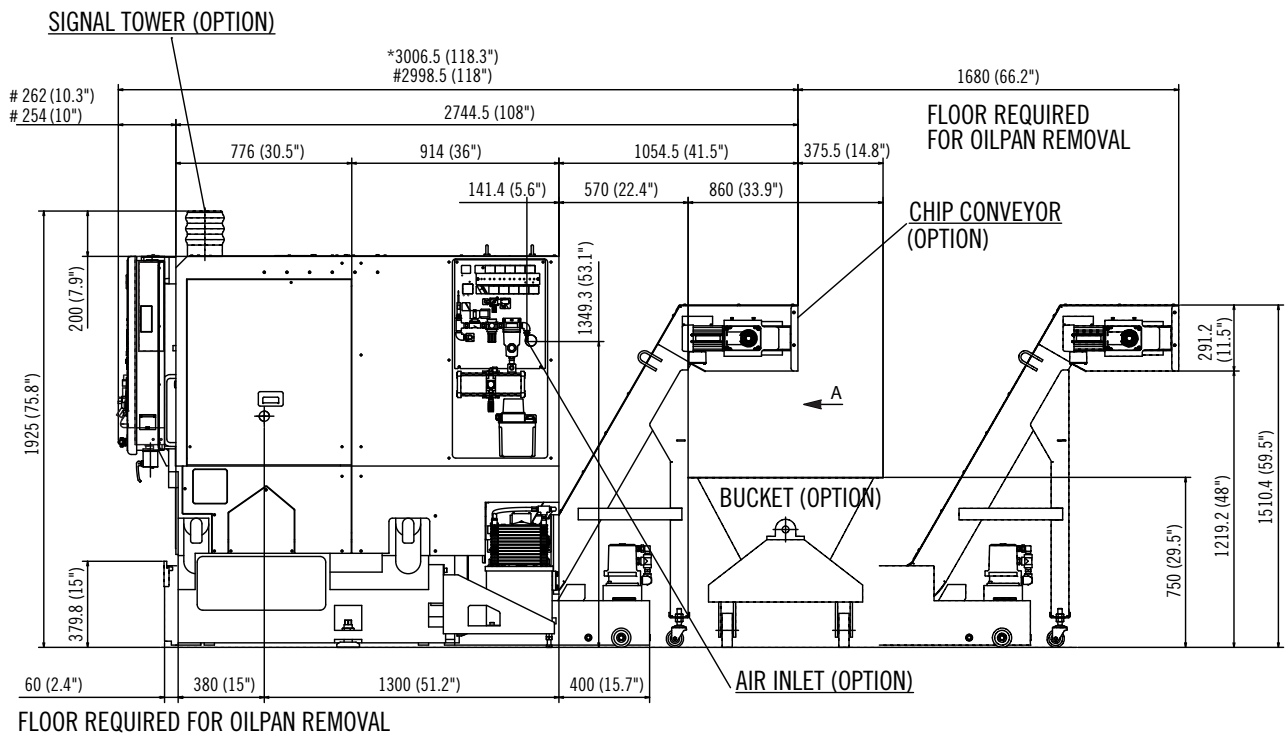
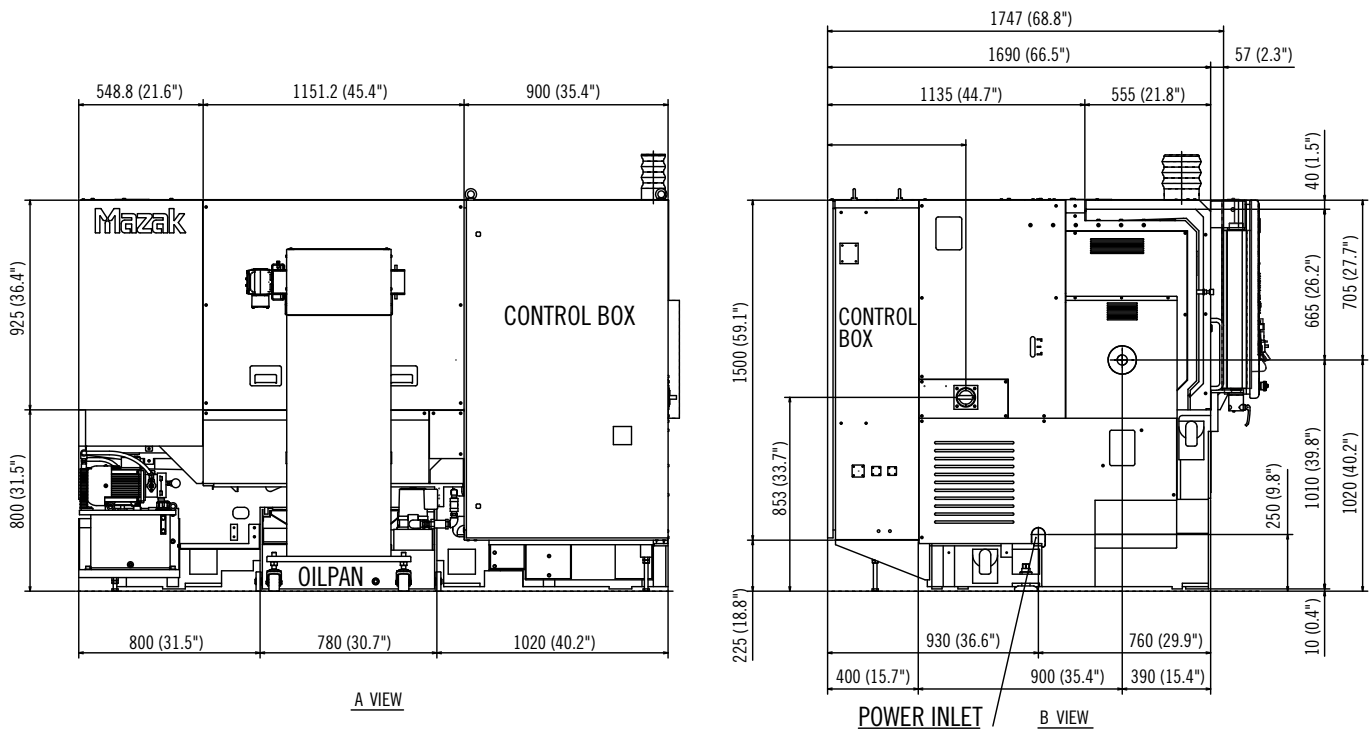
**SIGNAL TOWER (OPTION)**



# EXTERNAL DIMENSIONS: QTU200/M









## MACHINE SPECIFICATIONS

Features		Machine bed length	QTU-200 300U	QTU-200 500U	QTU-200M 300U	QTU-200M 500U
Capacity	Maximum swing	in (mm)	27.4 (695)			
	Maximum machining diameter	in (mm)	16.25 (410)		13.5 (340)	
	Maximum bar work capacity (dependent on chuck system)	in (mm)	1.65 (42) [OPT: 2 (51)]			
	Maximum machining length	in (mm)	14.502 (366)	23.252 (590)	11.877 (300)	20.627 (524)
Main spindle	Chuck size	in	6 (OPT: 8)			
	Maximum speed	rpm	6,000			
	Motor output (40% ED)	hp (kw)	20 (15)			
Second spindle	Chuck size	in	N/A			
	Maximum speed	rpm	N/A			
	Motor output (40% ED)	hp (kw)	N/A			
Turret	Number of tools	—	12			
	Mill spindle maximum speed	rpm	N/A		4,500	
	Mill spindle motor output (25% ED)	hp (kw)	N/A		5 (3.7)	
Rotary axis	Main spindle indexing increment (C axis)	degrees	N/A		0.0001	
	Second spindle indexing increment (C axis)	degrees	N/A			
Feed axes	Travel (X axis)	in (mm)	8.5 (215)			
	Travel (Y axis)	in (mm)	N/A			
	Travel (Z axis)	in (mm)	15.75 (400)	24.5 (625)	15.75 (400)	23.75 (605)
	Travel (W axis)	in (mm)	N/A	N/A	N/A	N/A
Feed rate	Rapid traverse rate (X-axis)	ipm (m/min)	1,181 (30)			
	Rapid traverse rate (Y-axis)	ipm (m/min)	N/A			
	Rapid traverse rate (Z-axis)	ipm (m/min)	1,417 (36)			
Machine dimensions	Height	in (mm)	67.9 (1,725)			
	Width	in (mm)	66.5 (1,690)			
	Length	in (mm)	92.1 (2,340)	102.4 (2,600)	92.1 (2,340)	102.4 (2,600)
	Weight	lbs (kg)	10,582 (4,800)	11,244 (5,100)	10,803 (4,900)	11,464 (5,200)



Features		Machine bed length	QTU-200MY 300U	QTU-200MY 500U	QTU-200MS 500U	QTU-200MSY 500U
Capacity	Maximum swing	in (mm)	27.4 (695)			
	Maximum machining diameter	in (mm)	13.5 (340)			
	Maximum bar work capacity (dependent on chuck system)	in (mm)	1.65 (42) [OPT: 2 (51)]			
	Maximum machining length	in (mm)	11.877 (300)	20.627 (524)	22.403 (567)	
Main spindle	Chuck size	in	6 (OPT: 8)			
	Maximum speed	rpm	6,000			
	Motor output (40% ED)	hp (kw)	20 (15)			
Second spindle	Chuck size	in	N/A		5	
	Maximum speed	rpm	N/A		6,000	
	Motor output (40% ED)	hp (kw)	N/A		10 (7.5)	
Turret	Number of tools	N/A	12			
	Mill spindle maximum speed	rpm	4,500			
	Mill spindle motor output (25% ED)	hp (kw)	5 (3.7)			
Rotary axis	Main spindle indexing increment (C axis)	degrees	0.0001			
	Second spindle indexing increment (C axis)	degrees	N/A		0.0001	
Feed axes	Travel (X axis)	in (mm)	8.5/215			
	Travel (Y axis)	in (mm)	4 (100)		N/A	4 (100)
	Travel (Z axis)	in (mm)	14.875 (380)	23.75 (605)	23.75 (605)	
	Travel (W axis)	in (mm)	N/A	N/A	22.125 (565)	
Feed rate	Rapid traverse rate (X-axis)	ipm (m/min)	1,181 (30)			
	Rapid traverse rate (Y-axis)	ipm (m/min)	394 (10)			
	Rapid traverse rate (Z-axis)	ipm (m/min)	1,417 (36)			
Machine dimensions	Height	in (mm)	67.9 (1,725)			
	Width	in (mm)	66.5 (1,690)			
	Length	in (mm)	92.1 (2,340)	102.4 (2,600)	102.4 (2,600)	
	Weight	lb (kg)	11,244 (5,100)	11,905 (5,400)	11,685 (5,300)	12,125 (5,500)



# MAZATROL SMART CNC

	MAZATROL	EIA / ISO
Number of controlled axes	4 axes (simultaneous 3 axes)	4 axes (simultaneous 4 axes)
Least input increment	0.0001 mm, 0.00001 inch, 0.0001°	
Max. programmable value	±99999.9999 mm, ±9999.99999 inch, ±99999.9999°	
High precision control	Smooth high gain control, *Scale feedback, Absolute position detection	
Interpolation	Positioning (Independent axes control, Linear interpolation), Linear interpolation. *1*2 Synchronized milling spindle tapping	
		Thread cutting (equal pitch, variable pitch), *1*2 Polygon cutting, *1*2 Polar coordinate interpolation, *1*2 Cylindrical coordinate interpolation
Feed function	Rapid traverse, Cutting feed (per revolution, per minute), Feedrate clamp, Override (Rapid traverse, Cutting feed, External override, 2nd override, Override cancel), Automatic acceleration/deceleration feedrate (Linear acc/dec., time constant), Constant tangential speed control, Dry run	
Program registration	256, *1512	
Program storage capacity	320 KB	
Display	10.4 inch color TFT	
NC display languages	English, German, French, Italian, Spanish, Dutch, Norwegian, Swedish, Finnish, Danish, Portuguese, Turkish, Polish, Czech, Romanian, Chinese simplified form, Chinese traditional form, Korean, Slovakian, Russian, Hungarian, Bulgarian, Japanese (one touch language switching)	
Data input/output	USB	
Spindle function	S code output (8-digit binary output, Analog output, Actual revolution speed binary output), Constant surface speed, Spindle revolution control (RPM clamp, High speed indication/speed change detection, Rotary speed display), Spindle override (0-150%)	
Tool function	T code output (8-digit binary data, next tool, used tool), Tool life monitoring (Number of workpieces, time and wear compensation), Spare tool exchange, Tool management (Group number, Pocket number)	
Tool compensation	Tool tip R compensation, Tool tip shape compensation, Tool position compensation, Tool wear compensation, Tool radius compensation	
Number of registered tools	Max. 64	
Tool offset pairs	128	
Miscellaneous functions	M code output (M3-digit), simultaneous output of four 3-digit M codes, Second miscellaneous functions (B 3-digit output), High speed MSTB interface	
Coordinate system control	MAZATROL coordinate system	Machine coordinate system (Machine coordinate system shift, zero point shift), Work coordinate system (Work coordinate system, Work coordinate system shift)
Manual operation	Rapid traverse, Cutting feed, Handle feed, Zero-point return, Manual control (machine lock, gear shift, barrier cancel), Manual spindle control (spindle start, stop, reverse, jogging)	
Automatic operation	Memory operation, MDI operation, Cycle start, NC reset, Single block, Feed hold, Single process, Optional block skip, Optional stop, Machine lock, Barrier cancel, Feed override, Spindle control, Dry run, Manual handle control, Tool path storage (TPS)	
Background function	During automatic operation (Programming, Data input/output, Tool path check)	
Machine compensation	Backlash compensation, Pitch error compensation, Rotational axis pitch error compensation, Thermal displacement compensation	
Protection function	Emergency stop, Over travel, Barrier (stored stroke limit, tool barrier, chuck barrier, tail barrier), Interlock (cutting start, axis interlock), Alarm	
Measuring function	Manual measurement (Tool set measurement, *2C-offset measurement, Z-offset measurement), Automatic measurement (Work measurement, *2C-offset measurement, Z-offset measurement, Tool tip point measurement, External measurement, Constant compensation)	

\*1 Option

\*2 M version only



# MAZATROL MATRIX NEXUS 2 CNC

	MAZATROL	EIA / ISO
Number of controlled axes	4 axes (simultaneous 4 axes)	4 axes (simultaneous 4 axes)
Least input increment	0.0001 mm, 0.00001 inch, 0.0001°	
Max. programmable value	±99999.9999 mm, ±9999.99999 inch, ±99999.9999°	
High precision control	Smooth high gain control, Scale feedback, Absolute position detection	
MAZACC-2D	*Shape error designation, *Rotational-shape correction	
MAZACC-3D		*High-speed feedrate for contour defined in small program increments
Interpolation	Positioning (Independent axes control, Linear interpolation), Linear interpolation. *Synchronized milling spindle tapping	
		Polar coordinate interpolation, *Cylindrical coordinate interpolation, *Polygon cutting *Thread cutting (equal pitch, variable pitch)
Feed function	Rapid traverse, Cutting feed (per revolution, per minute), Feedrate clamp, Override (Rapid traverse, Cutting feed, External override, 2nd override, Override cancel) Automatic acceleration/deceleration feedrate (Linear acc/dec., time constant), Constant tangential speed control, Dry run	
Program registration	256, *512, 960 2MB, *8MB (user area 7.7MB)	
Display	12.1 inch color TFT	
NC display languages	English, German, French, Italian, Spanish, Dutch, Norwegian, Swedish, Finnish, Danish, Portuguese, Turkish, Polish, Czech, Romanian, Chinese (simplified), Chinese (traditional), Korean, Russian, Japanese (simplified language switching)	
Windows languages	English, Chinese (simplified/traditional), Korean, Russian, Japanese (Selection)	
Data input/output	USB, CF memory card	
Protocol	*MAZAK protocol, Network protocol	
Interface	Card BUS, Ethernet (1000BASE-TX), *PROFIBUS-DP, *Ethernet IP, *CC-Link	
Spindle function	S code output (8-digit binary output, Analog output, Actual revolution speed binary output), Constant surface speed, Spindle revolution control (RPM clamp, High speed indication/speed change detection, Rotary speed display), Spindle override (0-150%)	
Tool function	T code output (8-digit binary data, next tool, used tool), Tool life monitoring (Number of workpieces, time and wear compensation), Spare tool exchange, Tool management (Group number, Pocket number)	
Tool compensation	Tool tip R compensation, Tool tip shape compensation, Tool position compensation, Tool wear compensation, Tool radius compensation	
Number of registered tools	Max. 4000	
Tool offset pairs	4000	
Miscellaneous functions	M code output (M3-digit), simultaneous output of four 3-digit M codes, Second miscellaneous functions (B 3-digit output), High speed MSTB interface	
Coordinate system control	MAZATROL coordinate system	Machine coordinate system (Machine coordinate system shift, zero point shift), Work coordinate system (Work coordinate system shift)
Manual operation	Rapid traverse, Cutting feed, Handle feed, Zero-point return, Manual control (machine lock, gear shift, barrier cancel), Manual spindle control (spindle start, stop, reverse, jogging)	
Automatic operation	Memory operation, MDI operation, Cycle start, NC reset, Single block, Feed hold, Single process, Optional block skip, Optional stop, Machine lock, Barrier cancel, Feed override, Spindle control, Dry run, Manual handle control, Tool path storage (TPS)	
Background function	During automatic operation (Programming, Data input/output, Tool path check)	
Machine compensation	Backlash compensation, Pitch error compensation, Rotational axis pitch error compensation, Thermal distortion compensation	
Protection function	Emergency stop, Over travel, Barrier (stored stroke limit, tool barrier, chuck barrier, work barrier), Interlock (cutting start, axis interlock), Alarm, INTELLIGENT SAFETY SHIELD, (*1) Virtual Machining, MAZAK VOICE ADVISER	
Measuring function	Manual measurement (Tool set measurement, C-offset measurement, Z-offset measurement), Automatic measurement (Work offset measurement, C-offset measurement, Z-offset measurement, Tool tip point measurement, External measurement), Measurement data printout, Constant compensation	

\* Option

\*1 Cannot operate in background



# COMPREHENSIVE SUPPORT

## MAZAK OPTIMUM PLUS

To maximize machine tool investments, the [Mazak Optimum Plus](#) program represents a company-wide commitment to provide the best possible, most comprehensive support.

The Optimum Plus program encompasses Five Pillars — distinct, yet interrelated areas:

- Single-source service
- Technical Support — machine and CNC
- Parts support
- Progressive learning
- Spindle and unit rebuild

### Single-source service

Mazak is a single point of contact for any Mazak-related service need, whether it involves a machine, control, accessory or automation solution. This effective service approach helps customers maintain the highest possible levels of productivity.

Benefits of [Mazak's single-source approach](#) include:

- Free technical phone support and software upgrades for the life of a Mazak machine
- Diagnostic software support that provides instantaneous remote diagnostic services via remote real-time systems
- Guaranteed phone response to any technical question within 1 hour via a 24/7 technical phone support system
- More than 350 factory-trained Mazak service representatives and certified distributor personnel that can be at a customer's site within 24 hours under most circumstances
- Wide variety of services, including laser calibration to ISO, ANSI and JIS standards; ball bar qualification and analysis; preventive maintenance plans and programs; and vibration analysis and benchmarking

### Technical support — machine and CNC

Comprehensive warranties on every Mazak machine tool component, including a 2-year part warranty on CNC control components.

[Technical support](#) for machines and CNCs also includes:

- Additional warranty coverage available upon request
- Free technical phone support and software upgrades for machine lifetime
- Diagnostic software support/real-time remote diagnostic services

**Mazak** OPTIMUM *plus*  
TOTAL SUPPORT FOR MAZAK CUSTOMERS



MAZAK SINGLE-SOURCE SERVICE AND TECHNICAL SUPPORT



## Parts support

Mazak's spare parts fulfillment ensures the fastest possible reaction time. The state-of-art Mazak North America Parts Center uses the latest AS/RS fully automated warehouse storage system technology and maintains a \$65 million parts inventory.

Benefits of the North American Parts Center include:

- Average 97% same day parts shipment and after hours shipping
- 52,000 part numbers in stock
- Call center open Monday-Saturday
- Convenient web-based parts ordering
- Experienced part specialists
- Lifetime CNC parts support

[Click here for more information on parts support.](#)



FULLY AUTOMATED WAREHOUSE STORAGE SYSTEMS ENSURE THE FASTEST DELIVERY OF MAZAK SPARE PARTS.

## Progressive learning

For customer training, [Mazak's Progressive Learning](#) represents a unique, phased approach to education and training, combining hands-on training, web-based instruction and real world examples. The program's tiers of offerings — Pyramid of Learning — range from self-paced coursework to highly advanced classes. Every Mazak machine includes three years of programming training at no charge to customers.

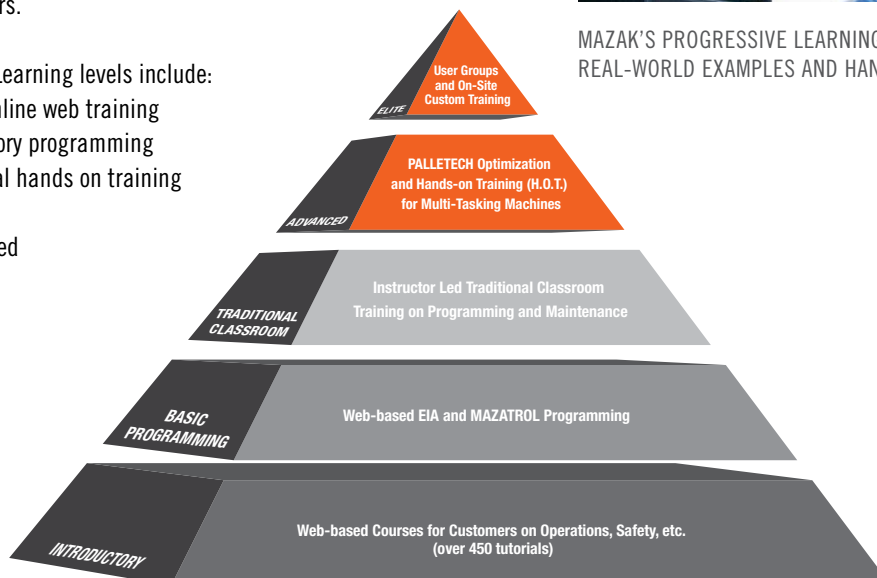
[Mazak's Pyramid of Learning](#) is a visual representation of its approach to training. The lower levels at the base of the pyramid represent basic skills education for new machinists, while the upper levels signify advanced training for highly experienced programmers and operators.



MAZAK'S PROGRESSIVE LEARNING COMBINES WEB-BASED INSTRUCTION, REAL-WORLD EXAMPLES AND HANDS-ON TRAINING.

Pyramid of Learning levels include:

- Simple online web training
- Introductory programming
- Traditional hands on training
- Advanced
- Customized





## COMPREHENSIVE SUPPORT

### Spindle rebuild

[Mazak's spindle exchange and rebuild program](#) provides the option to purchase a brand new spindle, have an existing spindle repaired or acquire a Mazak rebuilt spindle.

Benefits of Mazak's spindle and unit rebuild service include:

- More than 900 different spindle variations for all types of turning centers, vertical and horizontal machining centers as well as Multi-Tasking machines.
- Over 300 available rebuilt spindles for a cost-effective spindle solution delivered in as little as 2 or 3 days.
- Spindle repairs are processed in a clean room environment and overseen by quality control teams with ISO: 9001:2008 certification.
- Spindle repairs/rebuilds occur within 5 days of receipt and include 12 hours of test stand runoff.
- A 7-month parts and labor warranty on rebuilt spindles with Mazak installation.
- Free technical support regarding replacement options and processes.



SPINDLE REPAIR



BEFORE



AFTER



## MAZAK TECHNOLOGY CENTERS

As a key component of Mazak's comprehensive customer support, its network of eight Technology Centers strategically located across North America put component machining demonstrations, experienced applications engineers and training in close proximity to customers. These Technology Centers also provide a channel for customer input to Mazak manufacturing for the development of new machine tool technology.

Technology Centers offer advanced application support, education and training, new technology and manufacturing systems along with on-site training and technology seminars.

[Click here for more information on Mazak Technology Centers.](#)

### Advanced application support

- Expert applications engineers help customers optimize part-production processes and create effective manufacturing solutions
- Mazak-certified cutting tool, workholding and automation partners collaborate to develop optimized turnkey manufacturing solutions
- Test cuts of customer parts run on the latest, most advanced machine tools
- Secure applications development and complete design privacy of each customer's individual manufacturing system.

### Education and training

- Education, training and seminar events in cooperation with Mazak technology partners.
- Free access to the most advanced machine tools.
- Industry focused education — general contract machining, aerospace, energy, jet engine and construction.



MAZAK NATIONAL TECHNOLOGY CENTER

### New technology and manufacturing systems

- The latest, most advanced manufacturing systems that can optimize the processing of industry-specific components.
- Productivity experts help customers select the best new machine tool technology for their particular businesses.

### On-Site Training and Technology Seminars

- Hands-on applications and operator development courses.
- Technical seminars held in conjunction with our Value Inspired Partners (VIPs).
- Regularly scheduled market-focused events that provide valuable industry insight.



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## COMPREHENSIVE SUPPORT



NATIONAL TECHNOLOGY CENTER  
8025 Production Drive  
Florence, Kentucky 41042  
1-800-331-9151



MIDWEST TECHNOLOGY CENTER  
300 East Commerce Drive  
Schaumburg, Illinois 60173  
(847) 885-8311



WESTERN TECHNOLOGY CENTER  
1333 West 190th Street  
Gardena, California 90248  
(310) 327-7172



NORTHEAST TECHNOLOGY CENTER  
700 Old County Circle  
Windsor Locks, Connecticut 06096  
(860) 292-4400





SOUTHWEST TECHNOLOGY CENTER  
10950 Greenbend Blvd.  
Houston, Texas 77067  
(281) 931-7770



SOUTHEAST TECHNOLOGY CENTER  
1075 Northbrook Parkway  
Suwanee, Georgia 30024  
(678) 985-4800



CANADA TECHNOLOGY CENTRE  
50 Commerce Court  
Cambridge, Ontario N3C 4P7  
(519) 658-2021



MEXICO TECHNOLOGY CENTER  
Calle Spectrum No. 100 Parque  
Industrial FINSA Monterrey  
Apodaca, Nuevo Leon C.P., Mexico 66600  
+52-818-221-0910

[Click here for more information on Mazak Technology Centers.](#)



## FINANCING

### MAZAK CREDIT CORPORATION

As a wholly owned subsidiary of Mazak Corporation, Mazak Credit Corporation is one-stop choice for manufacturers throughout the United States and Canada that want fast, hassle-free, low-cost financing on a QTU 200 Series machine or any other piece of Mazak equipment. With complete knowledge of Mazak's product portfolio, Mazak Credit provides factory terms that can work to customer advantages. Plus, its direct access to machine specifications, delivery schedules and installation dates eliminates any additional paperwork or a delay in the approval or shipment process.

#### Advantages of working with Mazak Credit Corporation:

- Approval of up to \$350,000 with a simple online credit application (subject to credit approval)
- Quick turnarounds on highly competitive leases and loans with no blanket liens
- Waive security deposits
- Apply machine deposits directly toward advanced rents, fees or monthly rental payments
- Offer 3 to 5 years financing on all Mazak equipment
- Preserve bank credit lines for working capital and your company's growth
- Structure true leases for off-balance sheet accounting treatment and maximum cash flow

[Click here for more information on financing options.](#)





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## AFTER HOURS SERVICE

800-231-1456

## AFTER HOURS PART SUPPORT

[Click here to register for after hours parts support.](#)