FANUC and Methods
Partners in Productivity

ROBODRILL

WORLD RENOWN FOR **HIGH RELIABILITY, PRECISION, & SPEED**

α-DiA·SERIES



FANUC
31*i*-B
THE STANDARD
FOR RELIABILITY

ROBODRILL

STANDARD FEATURES

- Alpha Numeric Keypad
- 1,000 Registerable Programs
- 54 Work Offsets
- RS 232
- 3-Axis Simultaneous Machining
- 31i-B5 Nano CNC System
- Ultra Precise 16,000,000 Pulse/Rev Encoders
- Ai Contour Control I
- Thermal Growth Compensation
- Part Program Storage: 1280 Meters
- Tool Compensation Memory C
- Helical Interpolation Program Storage
- Rigid Tapping 5,000/8,000 RPM
- Thread Milling
- High Speed Reverse Tapping
- "Quick" Tap Recovery System
- Custom Macro B
- Canned Cycles for Drilling
- Coordinate System Rotation
- Coordinate System Setting
- Simultaneous ATC / Table Positioning
- On Screen Display of Spindle 'RPM' and 'Load' meters

The world's most popular small machining centers.

α-DiA·SERIES

RoboDrill VMCs offer milling capabilities unmatched in a 30 taper machine. Available in three sizes with BIG-PLUS spindles, (14 & 21) station tool changer and the high performance FANUC 31*i*-B5 Nano control, RoboDrill VMCs provide lightning fast milling, drilling, tapping, and ease of operation.

SPECIFICATIONS	Unit	Short-bed	Medium-bed	Long-bed
TRAVEL				
X-Axis Travel	inches	11.8	19.7	27.6
Y-Axis Travel	inches	11.8	15.7	15.7
Z-Axis Travel	inches	13	13	13
Spindle to Table	inches	5.9 ~ 18.9	5.9 ~ 18.9	5.9 ~ 18.9
TABLE SIZE				
Table Size	inches	24.8 x 13	25.6 x 15.7	33.5 x 16.1
Table Capacity	lbs	440	660	660
DIMENSIONS/WEIGHT				
Machine Size w/ Coolant Tank (W/D/H)	inches	40 x 94.9 x 88.1	62 x 94.9 x 88.1	84 x 94.9 x 88.1
Machine Weight	lbs	4,290	4,400	4,620

10,000 or 24,000 rpm
HIGH SPEED SPINDLE

Ai THERMAL DISPLACEMENT COMPENSATION

4 / 5 AXIS CAPABLE

SPECIFICATIONS
S*i*A5, M*i*A5, & L*i*A5,

SPINDLES		
Spindle taper	-	BBT-30 Big Plus
10000 rpm	hp	18.7*/ 5.4 **
24000 rpm	hp	34.8*/ 7.3 **
Max Torque (10000 rpm / 24000 rpm)	lbs-ft (1 min)	58.8 / 25.8
FEEDRATE		
X axis rapid traverse	in / min	2125
Y axis rapid traverse	in / min	2125
Z axis rapid traverse	in / min	2125
Contouring	in / min	1181 (2362 opt.)
Acceleration	G	1.5
ATC		
ATC Turret Capacity	-	21 tools (14 OPT)
Max. tool weight (magazine)	lbs (kg)	4.4 / 6.6
Max. total tool weight	lbs (kg)	33 / 48
Tool to tool change time	sec	0.9 / 1.1
Chip to chip change time	sec	1.6 / 2.1
Max. tool length	in (mm)	9.8
Max. tool diameter	in (mm)	3.14

10,000 RPM

24,000 RPM

Specifications subject to change without notice.
* 1 min rating
** Continuous

ROBODRILL

An economical workhorse VMC for years of continuous milling, drilling, & tapping.

eco

FANUC CNC 31*i*-B5

Achieve high speed rigid tapping with FANUC Serial Servo Bus communication. 1000 block look-ahead, 0.4 millisecond bps

STANDARD FEATURES

- Rigid tapping up to 5,000 rpm
- High speed reverse tapping
- "Quick" tap recovery system
- 3 axis simultaneous machining
- Nano CNC system
- Part program storage: 1280 meters
- Custom macro B
- Canned cycles for drilling
- Coordinate system rotation
- Coordinate system setting
- Tool compensation memory C
- Tool offset pairs 200-pairs
- Thread milling
- Helical interpolation
- Ai Contour Control I
- 1 millisecond servo response time
- Thermal growth compensation
- Simultaneous ATC / table positioning
- On screen display of spindle 'rpm' and 'load' meters

Specification	Unit	ECO
TRAVEL		
X axis travel	in	19.7
Y axis travel	in	15.7
Z axis travel	in	13
Spindle to table	in	18.9
TABLE		
Table size	in	25.6 x 15.7
Load capacity	lbs	660
SPINDLE		
Spindle speed	rpm	10000
Spindle taper	-	BT-30
Spindle power	hp	14.75 direct drive
Spindle torque	ft-lbs	39
CONTROL		
FANUC	-	31*i*-B5

Specification	Unit	ECO
FEEDRATE		
X axis rapid traverse	in / min	2,125
Y axis rapid traverse	in / min	2,125
Z axis rapid traverse	in / min	2,125
Contouring	in / min	1,181
Acceleration	G	1.5
ATC		
ATC type	-	14 station turret
Maximum tool weight	lbs	4.4 / 6.6
Maximum tool length	in	9.8
Maximum tool diameter	in	3.14
Tool to tool change time	sec	0.9 / 1.1
DIMENSIONS/WEIGHT		
Floor space	in	62 x 80 x 88
Weight	lbs	4,400

Specifications subject to change without notice

OPTIONAL FEATURES

- Rotary tables & indexers
- 4 & 5 axis simultaneous machining
- Robotic loading
- Methods turnkeys

5 million cycle ATC designed for highly reliable manufacturing.

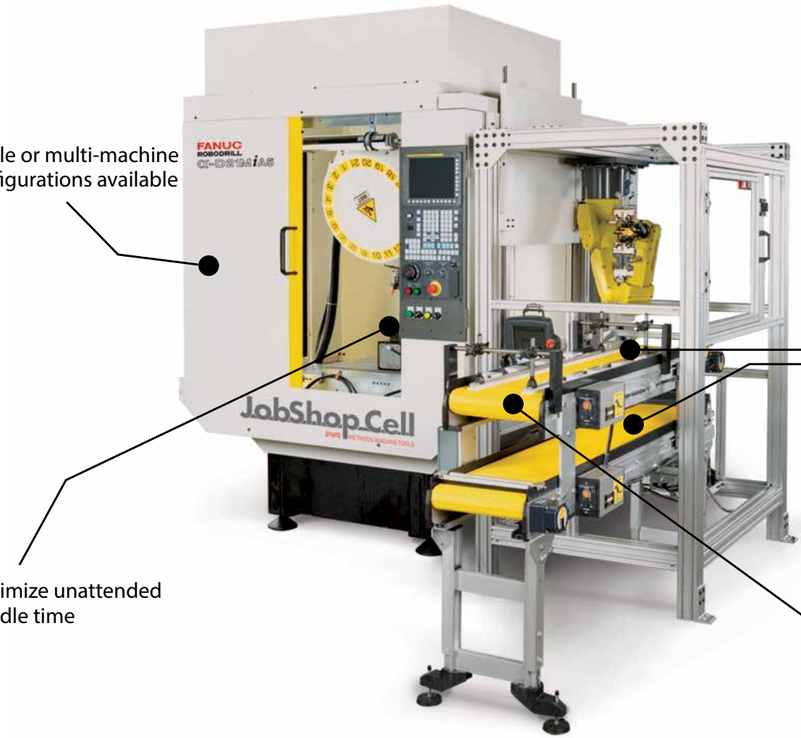
14.75 HP (peak) 10,000 rpm direct drive spindle delivers 39 ft lbs of torque

LIGHTNING FAST & COST EFFECTIVE 30 TAPER VMC

14.75 HP 10000 RPM DIRECT DRIVE SPINDLE 39 FT-LBS TORQUE

ROBODRILL

Pre-Engineered Automation: Flexible - Easy to Setup - Easy to Use



Optional circular conveyor

Optional 4th axis and workholding fixture available

JobShop Cell

STANDARD FEATURES

iPendant™

- Intuitive multi-window displays and flyout menus
- Multiple program editing
- Integrated help & diagnostics

JobShop Cell

- Available on all model RoboDrills
- Robot interface and robot side auto door
- Robot safety guarding with safety interlock
- Inbound conveyor: 12" x 60"
- Outbound conveyor: 12" x 72"
- Collision guard software (optional)
- 1 Pneumatic double-acting valve for workholding
- Chip management system: Flush and air blow (does not include chip conveyor)
- 1 Positive pressure nozzles for part blow-off
- Triple alarm light

FANUC LR Mate 200i Robot

- Axes: 6
- Payload (at wrist): 6.6 pounds
- End-of-arm tooling: Double gripper
- Teaching pendant: Color graphics
- Standard load/unload programming sequences
- Standard robot workcell documentation
- On-site robot training (operation and maintenance)

Power Requirements

- RoboDrill power: 15 KVA
- RoboDrill compressed air: 80 PSI

FANUC RoboDrill VMC

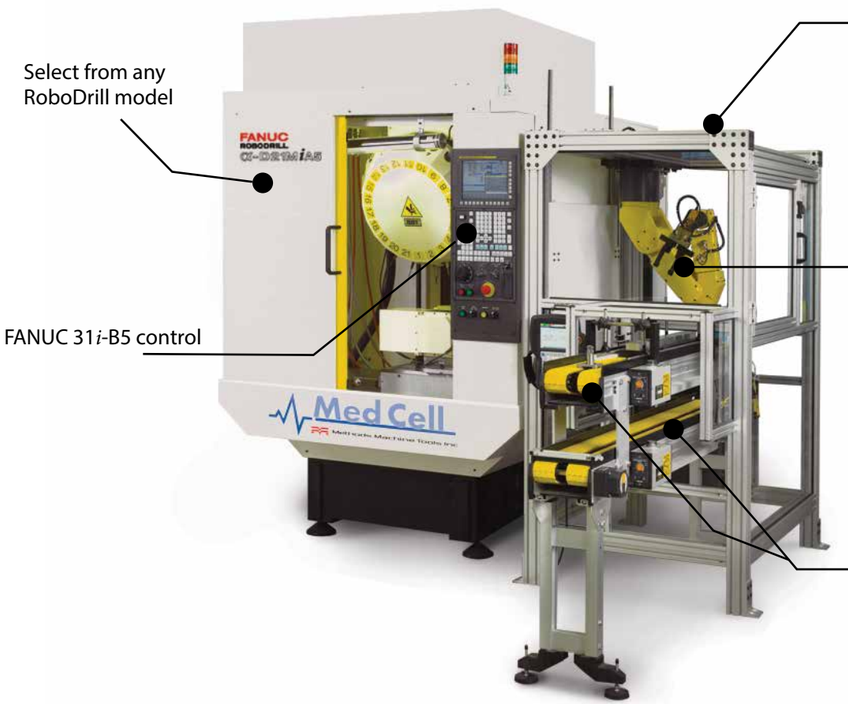
- FANUC RoboDrill (All models available)
- Horsepower: Up To 35 @ 1,700 RPM
- Spindle speed: 10,000 RPM or 24,000 RPM
- Toolchanger: 14 or 21 tools
- Torque: Up To 56 ft.lb (.750 tap in 303 SS)
- X Axis travels: 300 mm, 400 mm, or 700 mm
- Y Axis travels: 300 mm or 400 mm
- Tool change time: .9 seconds tool to tool
- Rigid tapping: Up To 5,000 RPM (8,000 RPM optional)
- Accelerations (X, Y, Z): 1.5 G
- Rapid traverses: 2,125 IPM
- Feed rate: 1,181 IPM (2,362 IPM optional)
- Coolant-thru-spindle ready
- High-speed reverse tapping
- Thread milling
- Basic top cover
- Memory: 512 K
- 1,000 registerable programs
- Tool comp C (length and diameter)
- 54 work offsets
- Custom macro B
- Thermal compensation

- JobShop Cell power: 110 VAC / 15 A
- JobShop Cell compressed air: 90 PSI

AUTOMATED SOLUTIONS FOR SMALL AND MEDIUM VOLUMES

ROBODRILL

Economical, Superbly Accurate 5-Axis Medical Automation



Compact integrated 5-axis table with palletized workholding

MedCell

STANDARD FEATURES

iPendant™

- Intuitive multi-window displays and flyout menus
- Multiple program editing
- Integrated help & diagnostics

MedCell

- Available on all model RoboDrills
- Robot interface and robot side auto door
- Robot safety guarding with safety interlock
- Inbound conveyor: 60" long
- Outbound conveyor: 72" long
- 1 Pneumatic double-acting valve for workholding
- Chip management system: Flush and air blow (does not include chip conveyor)
- 1 air nozzle for part blow off
- Tsudakoma RTT-111-CA 4th and 5th axis rotary table with built-in pneumatic pallet clamping system
- System designed to handle 70mm square pallets (3R, Hirshmann, Erowa), pallets not included
- Triple alarm light

FANUC LR Mate 200i Robot

- Axes: 6
- Payload (at wrist): 6.61 pounds
- End-of-arm tooling: Single gripper
- Teaching pendant: Color graphics
- Standard load/unload programming sequences
- Standard robot workcell documentation
- On-site robot training(operation and maintenance)

Power Requirements

- RoboDrill power: 15 KVA
- RoboDrill compressed air: 80 PSI

FANUC RoboDrill VMC

- FANUC RoboDrill (All models available)
- Horsepower: Up To 35 @ 1,700 RPM
- Spindle speed: 10,000 RPM or 24,000 RPM
- Toolchanger: 14 or 21 tools
- Torque: Up To 73 ft.lb (.750 tap in 303 SS)
- X Axis travels: 300 mm, 400 mm, or 700 mm
- Y Axis travels: 300 mm or 400 mm
- Tool change time: .9 seconds tool to tool
- Rigid tapping: Up To 5,000 RPM (8,000 RPM optional)
- Accelerations (X, Y, Z): 1.5 G
- Rapid traverses: 2,125 IPM
- Feed rate: 1,181 IPM (2,362 IPM optional)
- Coolant-thru-spindle ready
- High-speed reverse tapping
- Thread milling
- Basic top cover
- Memory: 512 K
- 1,000 registerable programs
- Tool comp C (length and diameter)
- 54 work offsets
- Custom macro B
- Thermal compensation

- JobShop Cell power: 110 VAC / 15 A
- JobShop Cell compressed air: 90 PSI

AUTOMATED PALLET LOADING **5 AXIS MACHINING**

PC2

PALLET CHANGER

The flexibility of a stand alone machine with the productivity of a pallet shuttle.

ROBODRILL

STANDARD FEATURES

- Alpha numeric keypad
- 1,000 registerable programs
- 54 work offsets
- RS 232
- 3 axis simultaneous machining
- 31*i*-B5 Nano CNC system
- Ultra precise 16,000,000 pulse/rev encoders
- AI Contour Control I
- Thermal growth compensation
- Part program storage: 1280 meters
- Tool compensation memory C
- Helical Interpolation
- Rigid Tapping 5,000/8,000 RPM
- Thread milling
- High Speed Reverse Tapping
- "Quick" Tap recovery system
- Custom macro B
- Canned cycles for drilling
- Coordinate system rotation
- Coordinate system setting
- Simultaneous ATC / table positioning
- On screen display of spindle 'rpm' and 'load' meters

FANUC CNC 31*i*-B5

Achieve high speed rigid tapping with FANUC Serial Servo Bus communication. 1000 block look-ahead, 0.4 millisecond bps

Specification	Unit	PC2
TRAVEL		
X axis travel	in	27.6
Y axis travel	in	15.7
Z axis travel	in	13
Spindle to table	in	17.5
TABLE/PALLET (PC2)		
Table size	in	33.5 x 16.1
Pallet size	in	27.5 x 15.4
Pallet load capacity	lbs	220
Pallet change time	sec	7
Pallet change Repeatability X/Y/Z	in	±.00022
SPINDLE		
Spindle taper	-	BIG-PLUS BBT-30
Spindle option #1	hp /rpm	* 18.7/10,000
Spindle option #2	hp /rpm	* 34.8/24,000
CONTROL		
FANUC	-	31*i*-B5

Specification	Unit	PC2
FEEDRATE		
X axis rapid traverse	in / min	2,125
Y axis rapid traverse	in / min	2,125
Z axis rapid traverse	in / min	2,125
Contouring (optional)	in / min	1,181 (2,362)
Acceleration	G	1.5
ATC		
ATC type	-	21 station turret
Maximum tool weight	lbs	4.4 / 6.6
Maximum tool length	in	9.8
Maximum tool diameter	in	3.14
Tool to tool change time	sec	1.1 / 1.6
DIMENSIONS/WEIGHT		
Floor space w/ pallet changer (W /D/H)	in	116 x 80 x 93
Weight w/ pallet changer	lbs	5,540

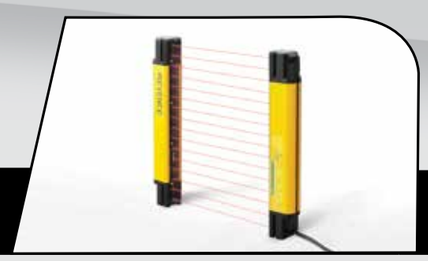
* 1 min rating

Specifications subject to change without notice

OPTIONAL FEATURES

- Rotary tables & indexers
- Pneumatic fixturing
- Robotic loading
- Methods turnkeys

2-pallet shuttle design



Light curtain option

TWIN PALLET CHANGER **30 TAPER VMC**

TrodeMaster

The smart choice for high precision 3D graphite machining.

All models available in Short Bed, Medium Bed, and Long Bed.

FANUC 31i-B5 Nano control with ultra precise 16 million pulse/ rev encoders

24000 rpm 30 taper BIG-PLUS® spindle

Integrated 1000 CFM Torit Downflo® Oval dust collector provides up to 25% more filtration capacity than other same-sized cartridge collectors.

STANDARD FEATURES

- Torit DFO 2-2 1,000 cfm graphite dust collector
- Alpha numeric keypad
- 1,000 registerable programs
- 54 work offsets
- RS 232
- 3 axis simultaneous machining
- 31i-B5 Nano CNC system
- Ultra precise 16,000,000 pulse/rev encoders
- AI Contour Control II & high speed processor
- Thermal growth compensation
- Rigid tapping up to 8,000 rpm
- Part program storage: 1280 meters
- Tool compensation memory C
- Helical interpolation
- Ethernet
- Fast data server w/1GB program storage
- Nano smoothing
- Jerk control
- 1,000 block look ahead w/.04 millisecond response time
- Renishaw NC-4 laser tool measurement

ROBODRILL

FANUC CNC 31*i*-B5

Achieve high speed rigid tapping with FANUC Serial Servo Bus communication. 1000 block look-ahead, 0.4 millisecond bps

Specification	Unit	Trodemaster α-D21SiA5	Trodemaster α-D21MiA5	Trodemaster α-D21LiA5
TRAVEL				
X axis	in	11.8	19.7	27.6
Y axis	in	11.8	15.7	15.7
Z axis	in	13	13	13
Spindle to table	in	5.9 ~ 18.9	5.9 ~ 18.9	5.9 ~ 18.9
TABLE SIZE				
Table size	in	24.8 x 13	25.6 x 15.7	33.5 x 16.1
Table capacity	lbs	440	660	660
DIMENSIONS/WEIGHT w/o DUST COLLECTOR				
(Width/depth/height)	in	39 x 87 x 94	62 x 87 x 94	83 x 87 x 94
Machine weight	lbs	4,290	4,400	4,620
Tool-tool change time	sec	0.9 / 1.1		
Chip-chip change time	sec	1.6 / 2.1		
Max. tool length	in	9.8		
Maximum Tool Dia.	in	3.14		
CONTROL				
FANUC	-	31*i*-B5		

Specification	Unit	Trodemaster
SPINDLES		
Spindle taper	-	BIG-PLUS BBT-30
Spindle (24000 rpm)	HP	* 34.8
Torque	in-lbs	25.8
FEEDRATE		
X axis rapids	in/min	2,125
Y axis rapids	in/min	2,125
Z axis rapids	in/min	2,125
Contouring	in/min	2,362
Acceleration	G	1.5
ATC		
ATC type	-	14/21 station turret
Max. tool wgt.	lbs	4.4 / 6.6
Max. total tool wgt.	lbs	33 / 48
Tool to tool chg time	sec	0.9 / 1.1
Chip to chip chg time	sec	1.6 / 2.1
Max. tool length	in	9.8

Specifications subject to change without notice

BIG-PLUS 24,000 rpm spindle and 0.9-second tool changer

Full Torit dust collection system

OPTIONAL FEATURES

- Rotary tables & indexers
- 4 & 5 axis simultaneous machining
- Robotic loading
- Methods turnkeys

COMPACT COST EFFECTIVE ELECTRODE MANUFACTURING

1000 CFM Downflo® OVAL DUST COLLECTOR ▪ **24000** RPM SPINDLE

* 1 min rating

ROBODRILL Options

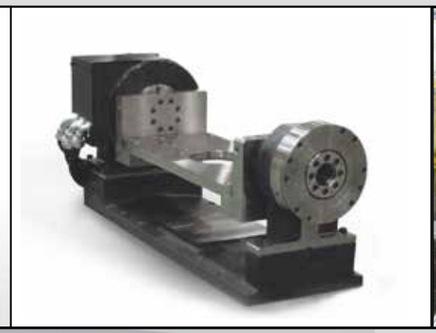
FANUC DDR / DDR-T

The FANUC DDR is a full fourth-axis table designed specifically to complement the speed and versatility of the RoboDrill. Capable of 200 RPM, the FANUC DDR can unclamp, rotate 180°, and reclamp in less than 0.3 seconds.

Virtually backlash-free, the DDR's direct drive motor has no gears to wear out or sustain damage. If bumped, it can be easily tuned to original specifications.

A true milling fourth axis, the DDR has a part loading capacity of 220 lb and 369 ft-lb of torque, enough to handle even the most difficult applications.

With its unique combination of speed, strength, and reliability, the DDR is ideal for small volume job shops or OEMs making millions of parts. Priced at thousands of dollars less than comparable fourth-axis tables, it is an exceptional value.



SIMULTANEOUS 4 OR 5 AXIS MACHINING

(1) or (2) additional axis control can be added to the Fanuc 31*i*-B5 to enable simultaneous contour machining. Utilizing an optional Fanuc DDR direct drive rotary table, or conventional 4th or 4th and 5th axis rotary tables, the RoboDrill becomes a high speed 4/5-axis VMC.

Additional axis control

SpiderCool programmable flush

MORE ROBODRILL OPTIONS

Coolant through spindle

Chip conveyor

Auto door

Part probe

Laser tool setter

High pressure coolant system

ROBODRILL AUTOMATION BY Methods

FANUC Robotics AUTHORIZED INTEGRATOR

ROBOTICS

- Certified FANUC Robotics Integrator
- Custom end-of-arm tooling
- On-site robotics training

COMPLETE TURNKEY SYSTEMS

With 50 years of experience, Methods can engineer a turnkey solution to your production demands. Starting with an in-depth analysis of your company's machining goals, problems, and quality control requirements, Methods will provide not only a machine, but a total package of tool research and selection, part programming, fixturing, robotic or automated loading, and machine customization.

Drag and drop cell management

Integrated vision systems

Palletized raw material workholding

Overhead rail mounted robots

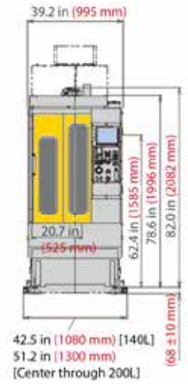
Workpiece carriers

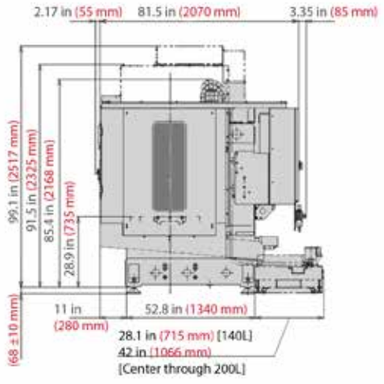
AUTOMATION CAPABILITIES

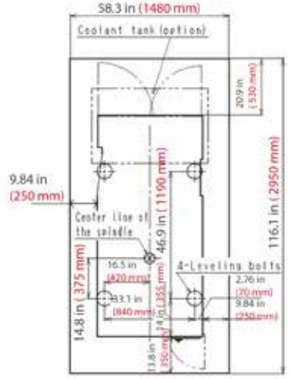
- Integrated vision systems
- Automated part inspection
- Remote monitoring systems
- Customized tooling and workholding
- Customized in-feed and out-feed conveyor systems

ROBODRILL Dimensions

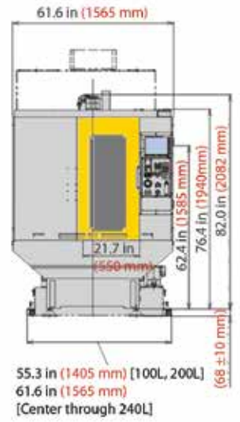
α-D21SiA5

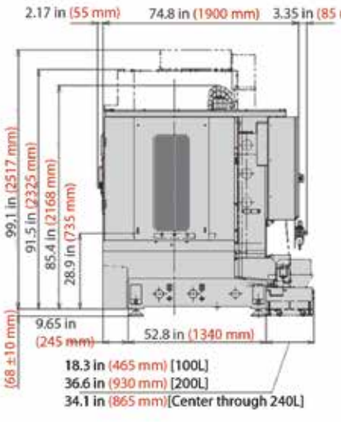


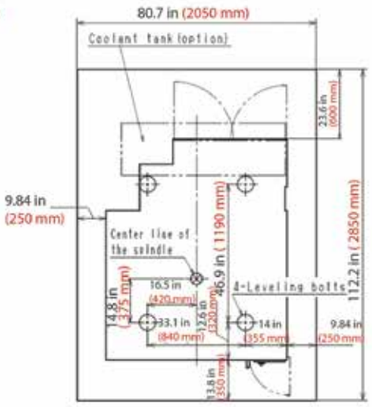




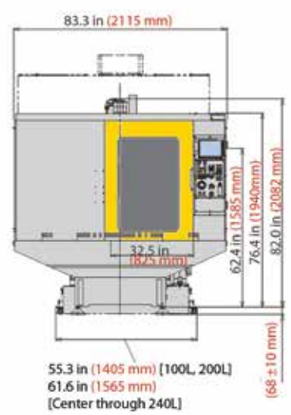
α-D21MiA5

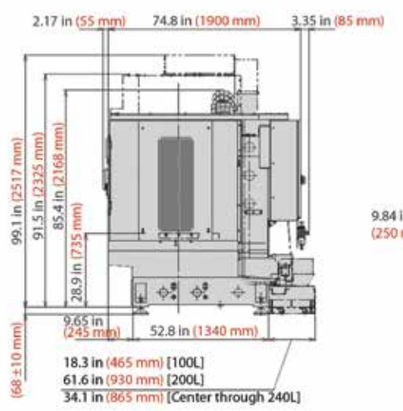


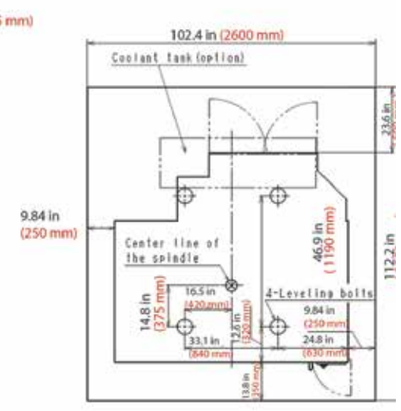




α-D21LiA5

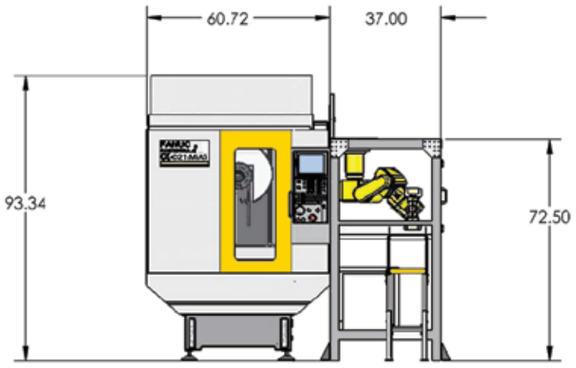


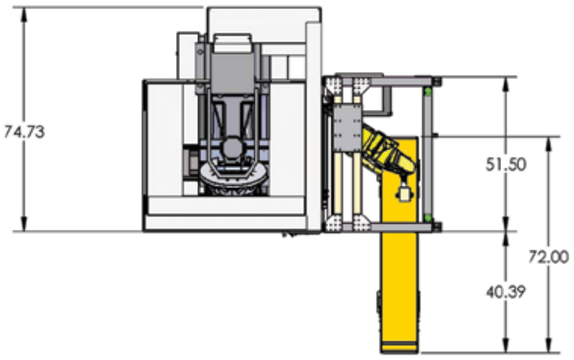




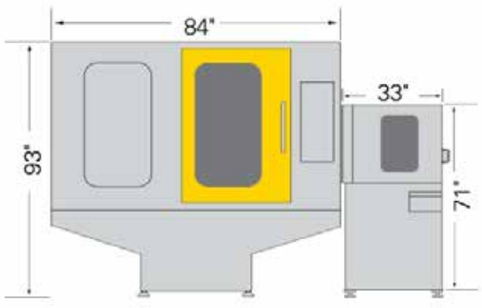
JobShop_Cell

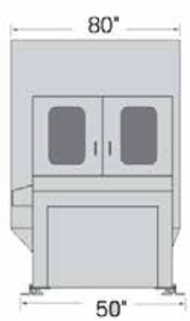
MedCell

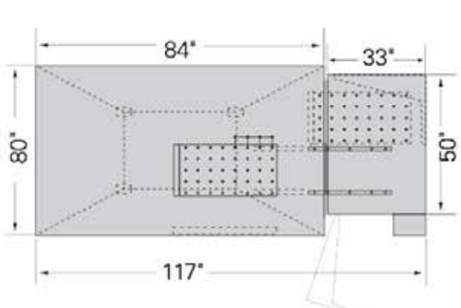




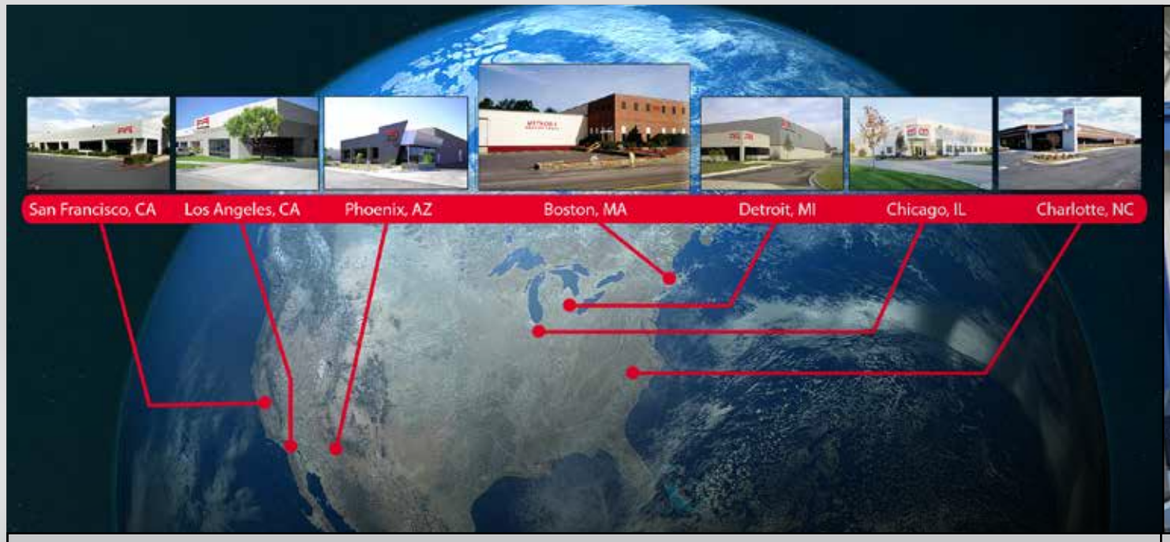
PC2

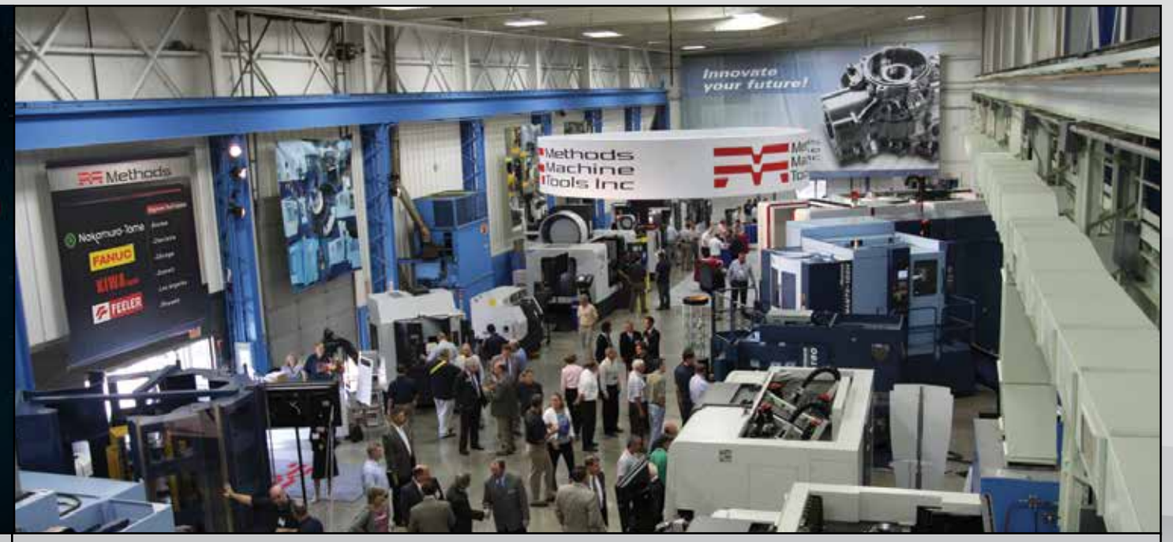






Methods





Tech Center - Sudbury, MA

Methods

Machine Tools has provided innovative productive solutions to manufacturing technology for over fifty years. Strategically located throughout North America, our Methods team is more than 300 strong, and has installed more than 29,000 machines. Today, Methods' solutions are at the heart of some of the most advanced automated metalworking operations in North America.

Methods has built an excellent reputation as the leading supplier of precision machine tools, closely partnering with machine manufacturers and end-user customers. With an unrivaled combination of leading machine technology, application expertise, and service, we've given manufacturers the ability to consistently obtain highly productive, profitable operations and quality parts.

Our partners include Nakamura-Tome for multi-tasking turning centers, FANUC for drilling and wire EDM, FEELER for machining centers, turning centers, bridge and boring mills, Exeron for EDM die sinking, and Kiwa-Japan for expandable horizontal machining centers. Methods also has dozens of other lead suppliers for automation, tooling, fixtures, and quality control.

Partners in Productivity

FANUC

has been relentless in machining research and development since 1956, when it began developing NCs. Since then, FANUC technology has built a worldwide reputation as a leader in the CNC and robotic manufacturing revolution. The FANUC product lineup includes their renown CNCs, RoboDrills, RoboCut EDMs, servo motors, and robotic arms. Their unmatched quality has earned them an excellent reputation throughout the world, including Japan, Europe, and other Asian countries, where FANUC has invested in an expansive customer service network of highly skilled, experienced engineers trained to assist customers with all of their maintenance needs.

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