

FANUC

AND
Methods
Partners in Productivity

ROBOCUT

INTRODUCING ALL NEW WIRE EDMs

α -CiA-SERIES



FANUC
31i-WB

THE STANDARD
FOR RELIABILITY



FANUC ROBOCUT

High performance EDMs with low operating



SAMPLE WORKPIECES



Titanium
.039" thickness



.800" die
2.400" punch



Irregular
tapers



Involute
gear



4th axis



Stepped
workpiece

STANDARD FEATURES

- Discharge control AiP2
- Anti-recast power supply
- Auto wire feeding AWF2 measurement function
- FANUC 31i-WB controller
- Wire size: .004" to .012" (.002" Optional)
- Inverter controlled chiller
- Cutting & power consumption monitor functions
- Positioning accuracy: $\pm .0001"$
- Linear glass scales (.000004")
- 2 year parts/ 1 year labor standard warranty



FANUC
CNC 31i - WB

15" LCD with cutting & power consumption status. The setup and maintenance guidance makes it easy-to-use.

costs and easy maintenance.



Specification	C400iA	Specification	C600iA-12	C600iA-16
TRAVEL				
X axis travel	14.6 in (370 mm)	X axis travel	23.6 in (600 mm)	
Y axis travel	10.6 in (270 mm)	Y axis travel	15.7 in (400 mm)	
Z axis travel	10.0 in (255 mm)	Z axis travel	12.2 in (310 mm)	16.1 in (410 mm)

ROBOCUT CiA-Series Wire EDMs

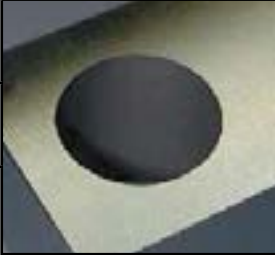
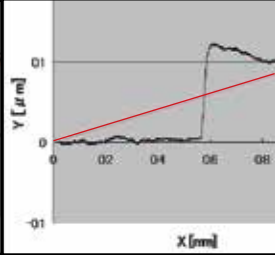
feature a new FANUC 31i-WB control, AWF2 and a new economy mode for energy and wire usage savings. The CiA-Series machines burn with virtually no re-cast* and the AWF2 has been enhanced to thread thicknesses of up to 16 inches. The FANUC RoboCut's automatic wire tension meter and servo motor adjustment ensures that you get accurate, straight parts. Above all, the RoboCut CiA-Series EDMs offer exceptional reliability for which FANUC is known worldwide.

* When 5F or 6M AI cutting technology is used.

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NANO INTERPOLATION

Nano Interpolation, with servo commands to 0.00000004" is standard on all CiA-Series machines. With Nano Interpolation, an accumulation of axis movement errors is eliminated resulting in high workpiece tolerances. Smooth axis motion and excellent circularity is now possible even at high speeds.

CUTTING EXAMPLE				With Nano Interpolation	Without
Material	Tool steel	Straightness	± .00008		
Thickness	1.57"	No. of passes	5		
Wire diameter	∅ 0.010" brass	Surface roughness	12 µ" Ra		

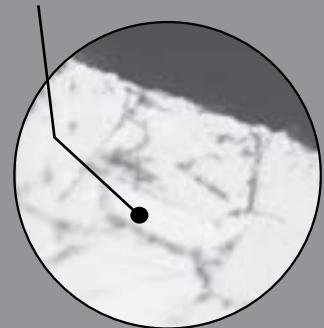
ANTI-RECAST POWER SUPPLY



α-CiA-SERIES 1000:1

RECAST
IS VIRTUALLY
UNDETECTABLE*

MAGNIFICATION OF
HIGH NICKEL ALLOYS



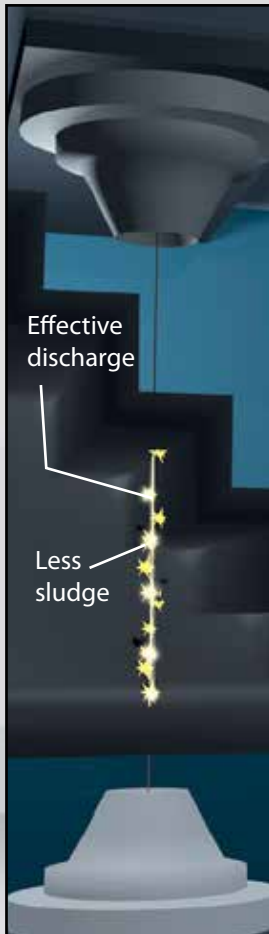
* When 5F or 6M AI cutting technology is used.

AiP2 ■ NANO INTERPOLATION ■ ANTI-RECAST POWER SUPPLY

AiP2 DISCHARGE CONTROL

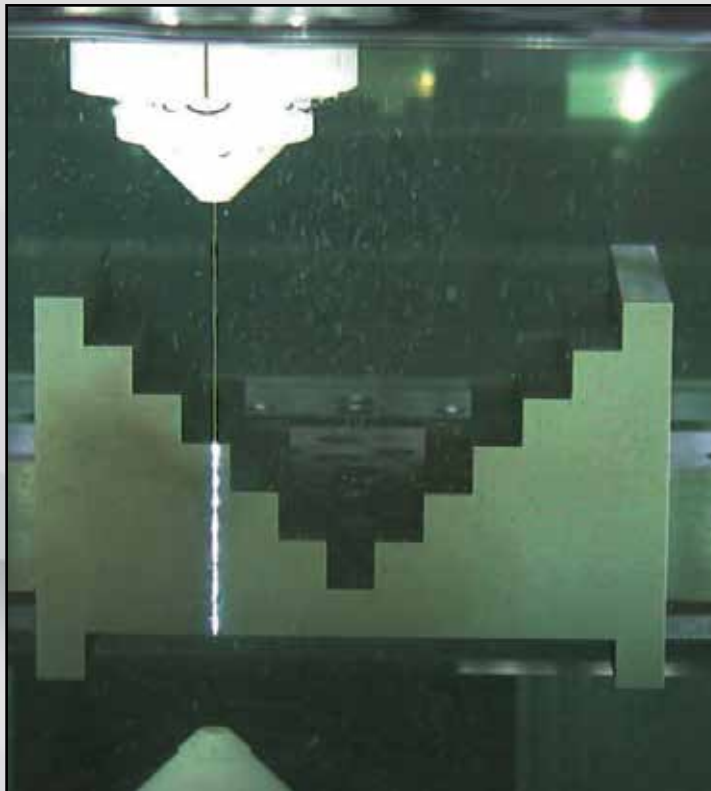
The CiA-Series machines **Ai Pulse 2 Discharge Control** improves accuracy and surface finishes with a reduced numbers of passes. By accurately counting the number of effective discharges and monitoring the uniformity of energy density and the discharge gap, AIP2 enables high precision cutting at high speeds.

WITH AiP2



AiP2 monitors the effective discharge for high precision, high speed cutting.

CUTTING EXAMPLE



Material	Die steel		
Thickness	.039" to 3.15"	No. of passes	3
Wire thickness	∅ 0.008" brass	Accuracy	± 0.0002"

The speed and precision of step shape cutting is enhanced with the AIP2, by detecting work thickness according to the number of discharge pulses. AIP2 optimizes cutting speeds in stepped, multi-level, and irregularly shaped work pieces.

WITHOUT AiP2



Without discharge control, cuts are slower and surface quality is compromised.

FOR HIGH PRECISION HIGH SPEED CUTTING

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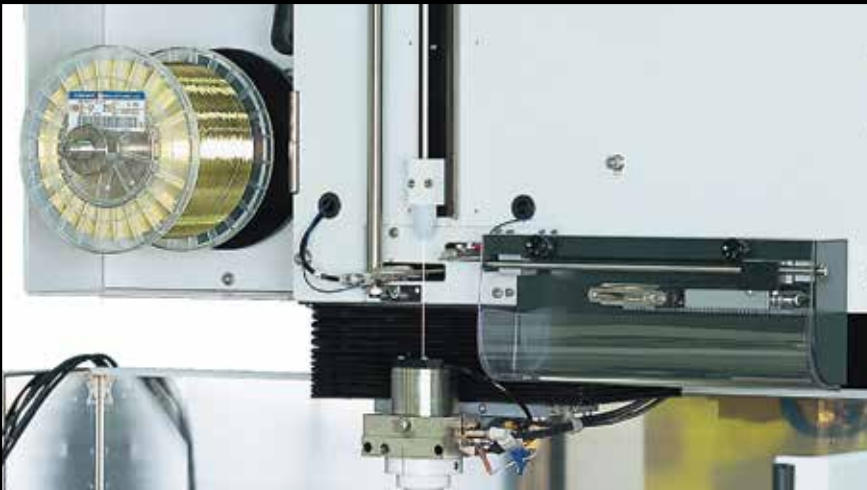
ENGINEERING ENHANCEMENTS

Unlike other complicated EDM threaders the ROBOCUT's simple **Auto Wire Feeder** anneals wire over the entire Z axis - virtually eliminating misfeeds, making threading extremely reliable. The AWF2's **Intelligent Retry Stroke** function detects wire deflection and automatically searches for the start hole. The **Twin AC Servo Wire Tension Control** drastically reduces variation for superior cutting accuracy and superb surface finish.

AIR JET AWF2 WIRE FEEDING



TWIN SERVO WIRE TENSION CONTROL



UPPER PIPE AIR JET TRANSPORT

10 SECOND
THREADING

FLAWLESS SUBMERGED WIRE
FEEDING IN 10 SECONDS OR LESS
(with .008 - .012).

.004"- .012"
WIRE CAPABLE

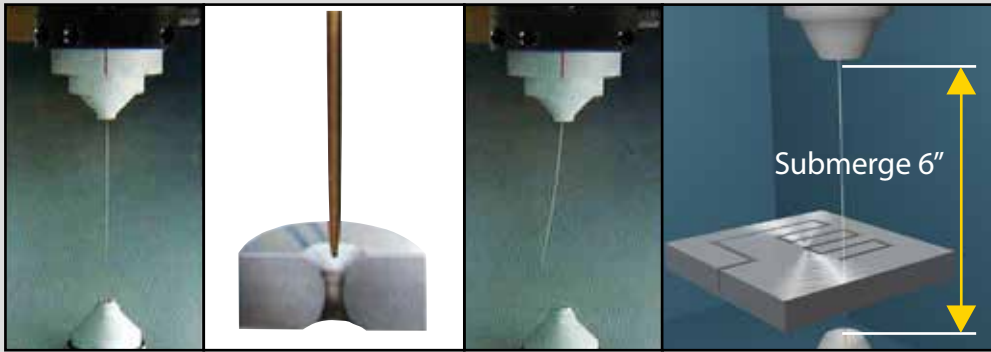
.002" WIRE OPTIONAL
.010" GUIDES STANDARD

Newly engineered **Air Jet AWF2** transport system delivers improved AWF accuracy, reliability and speed.

With annealing

Without annealing

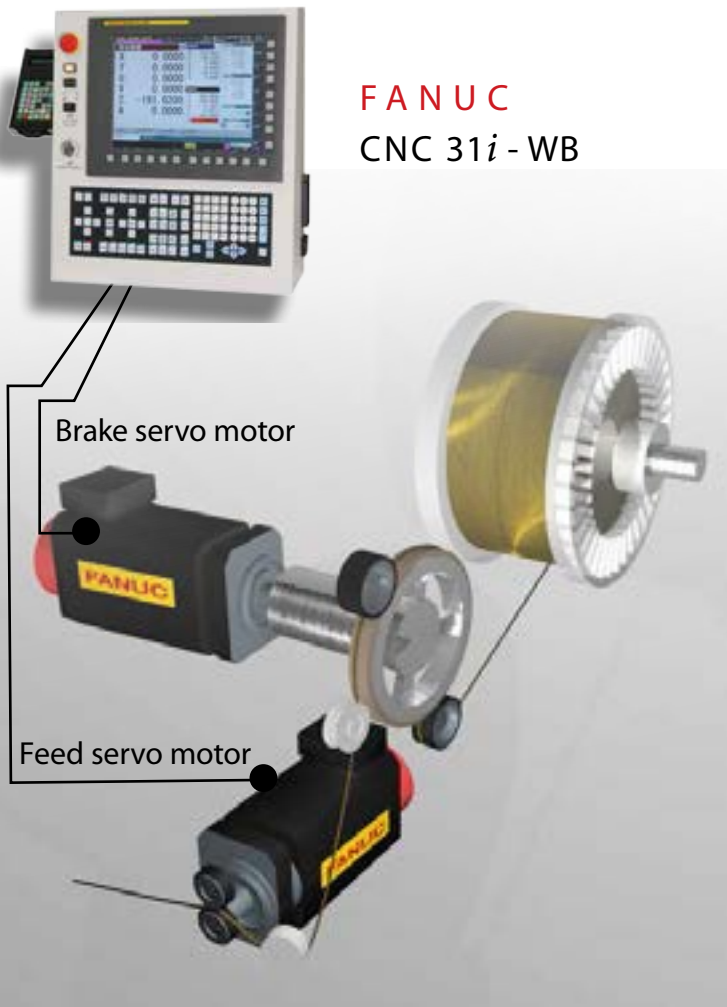
Ai Auto Wire Repair System



The *CiA-Series Ai Auto Wire Repair System* can thread through the kerf while submerged to a depth of up to 6.0" without returning to the start point.

Sharper wire tip and straighter annealed wire across the full Z stroke is more easily routed through very tight tolerance die guides.

HIGH PRECISION WIRE TENSION



The **Twin AC Servo Wire Tension Control** reduces tension variations by 25% compared to machines using powder brakes and improves cutting accuracy and surface finish.

Simple upper head assembly guide design for ease-of-use and maintenance.


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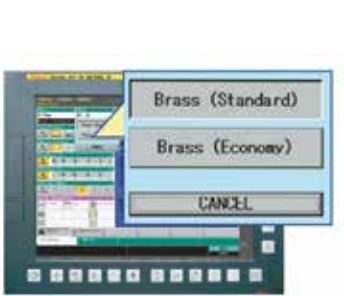
ENGINEERING ENHANCEMENTS

From the new **ECO Mode** controller settings to the **Corner & Taper Cutting Compensation** function, the new RoboCut has been designed to make you more productive and efficient. The improved lower head, patented seal plate design, **AC Servo Water Level Control**, and **Inverter Controlled Cooling System** were engineered for maximum productivity and lowered operating costs.


ECO MODE The new **ECO Mode** controller settings allow you the option to save energy and wire usage, including rough and skim cutting modes.

ECO Mode lowers wire expenses





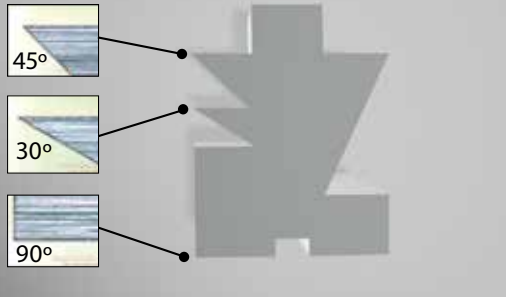
Ai setting screen



30% **25%**
WIRE COST SAVINGS FILTER COST SAVINGS

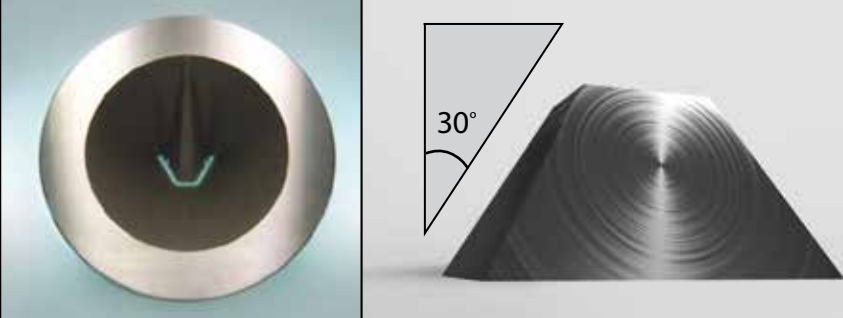
ECO MODE SAVES YOU ENERGY AND WIRE USAGE, AND MONEY

CORNER - TAPER COMPENSATION



**CORNER ACCURACY MAINTAINED
20% CUTTING TIME REDUCTION**

Thickness	1.57"	No. of passes	3
Wire diameter	ø 0.010 brass	Material	Die steel



AUTO TAPER COMPENSATION

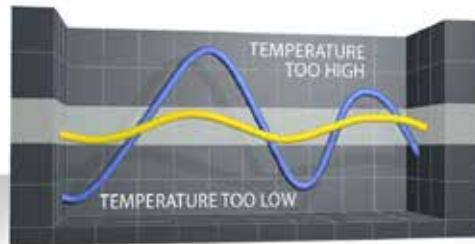
Thickness	3.15"	No. of passes	4
Wire diameter	ø 0.008" brass	Taper	30° max
Machine process	Extrusion die	Material	Die steel

INVERTER-CONTROLLED COOLING SYSTEM

±0.1°C

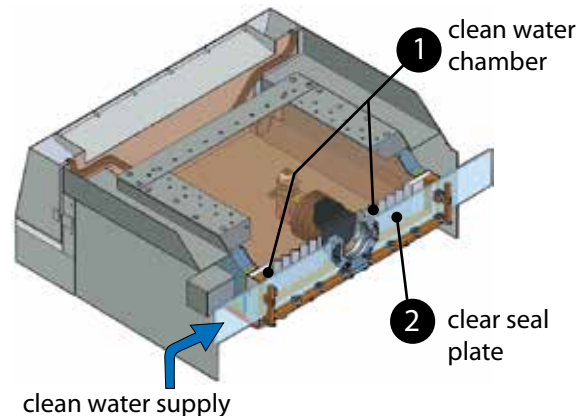
DIELECTRIC FLUID TEMPERATURE CONTROL

Unlike non-inverter chillers, the Fanuc RoboCut cooling system makes fine adjustments of ±0.1° C to prevent thermal expansion and improve positional accuracy.



HIGHER PERFORMANCE LOWER MAINTENANCE

Non-heat radiating lower head assembly has greater rigidity and sealed bearings for increased accuracy and lower maintenance.



IMPROVED LOWER GUIDE ASSEMBLY ■ PATENTED SEAL PLATE DESIGN



FANUC's patented two-partition design features a separate clean water chamber and a clear seal plate for easy maintenance and optimum cutting performance.

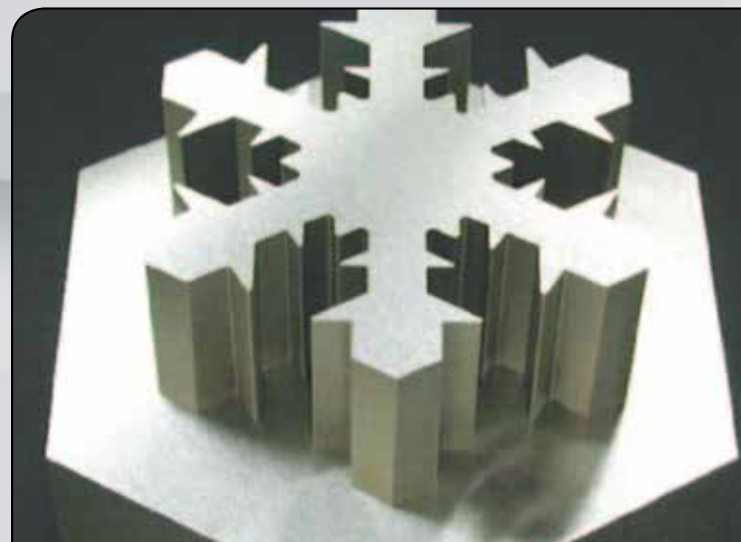
The clean water chamber reduces cutting debris on the clear seal plate. This design makes it easier to check when the seal plate needs to be cleaned.

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ANTI-ELECTROLYSIS TECHNOLOGY**
STANDARD FINISH² NE-POWER SUPPLY

PULSE MODE 15
(5 PASS TECHNOLOGY)
STANDARD FINISH

Fanuc's 5F Technology helps to minimize vibration on the wire and reduce the stray capacitance, the lower head electrode pin automatically moves away from the wire during skim cutting to eliminate recast.**



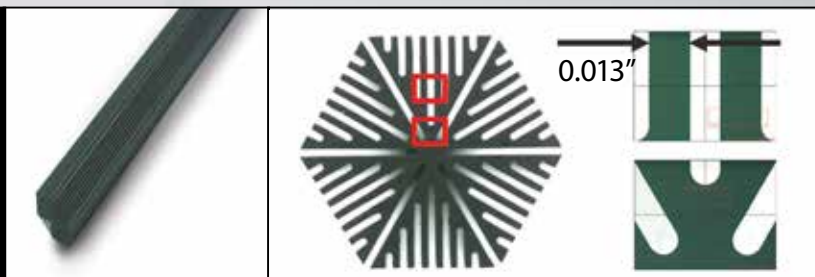
CUTTING EXAMPLE SF2

Thickness	1.57" - 2.36"	No. of passes	5
Wire diameter	ø 0.010" brass	Surface roughness	11.4 μ" Ra
Machine process	Die and punch	Material	Die steel

** No visible recast at 1000x in high nickel and some medical alloys.

GRAPHITE CUTTING

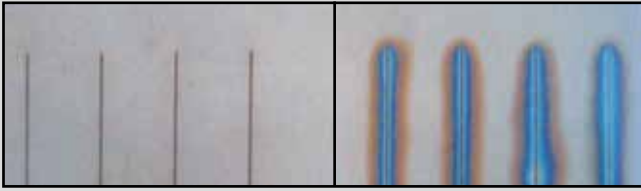
Thickness: 5.91"
Wire: ø 0.010" brass



* All cutting results obtained under FANUC designated conditions

RoboCut Standard
Non-electrolysis Power Supply

DC Power Supply

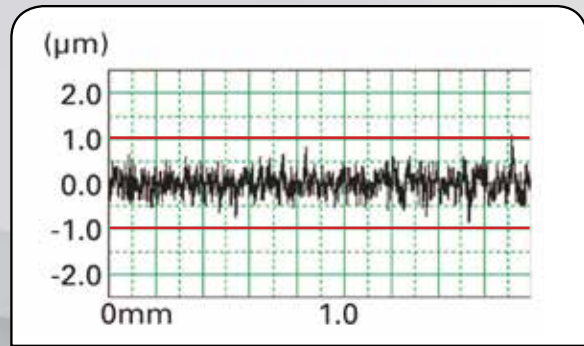
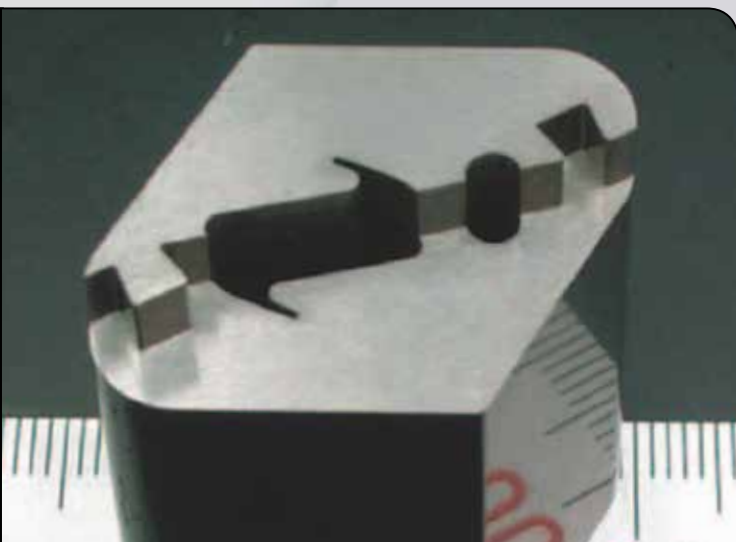


The Fanuc RoboCut's standard non-electrolysis AC power supply gives dies, molds, and production parts an unblemished, more polished look and virtually eliminates electrolytic corrosion.

MICROFINISH² POWER SUPPLY ROBOCUT OPTION

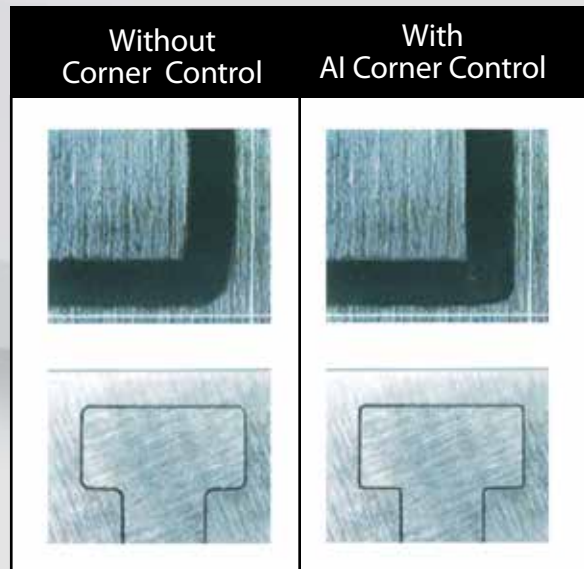
MF² MICRO FINISH

Tolerances to
 $\pm 39.37 \mu$ inches



ROBOCUT CORNER CONTROL STANDARD

CUTTING EXAMPLE MF2			
Thickness	1.18"	No. of passes	9
Wire diameter	ø 0.008" brass	Surface roughness	3.94 μ " Ra
Accuracy	$\pm .0001$	Material	Tungsten carbide



STAINLESS TUBE

Thickness: 5.91"
Wire: ø0.008" brass



FANUC ROBOCUT

FANUC Series 31i-WB controller WORLDWIDE CNC STANDARD



The 31i-WB LCD touch screen displays more information for faster and easier operation. The one-touch screen selection uses dedicated menu keys. Split screen displays allow you to monitor multiple functions. Fanuc's high speed controller incorporates 5 microprocessors, fully digital technology and fiber optic cable to ensure ease of use and reliability.

CUTTING MONITOR

Speeds drawing of even extremely detailed work pieces. Indicator shows actual wire position in real time. Auto-Pan feature re-centers the drawing during cutting.



POWER MONITOR

Shows real time display of power consumption and cumulative electric power.



SETUP GUIDANCE

Easy-to-follow setup and operating instructions prevents mistakes and makes for faster part setups.



MAINTENANCE GUIDANCE

Reminder screens prompt scheduled routine maintenance and alarms indicate the need for immediate action.



EASILY ACCESSIBLE UNIVERSAL INPUT/OUTPUTS

Programs or data can easily be input or saved using removable media such as USB memory sticks or compact flash cards or via the ethernet port for network I/O.

AUTOMATION BY **Methods**

CUSTOM TURNKEY SOLUTIONS

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.



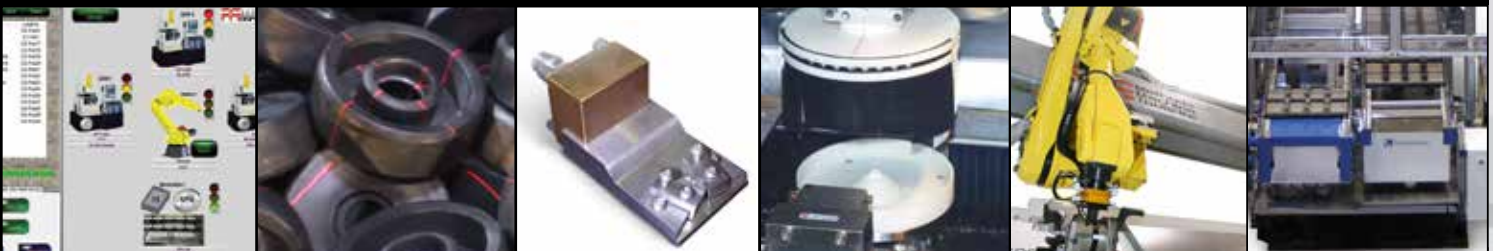
FANUC ROBOTICS

AUTOMATION CAPABILITIES



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

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



Drag & drop cell management

Integrated vision systems

Palletized raw material gripper

Finished parts baskets

Overhead rail mounted robots

Workpiece carriers

FANUC

ROBOCUT

ROBOCUT LINK

The RoboCut LINK *i* System enables remote real time machine / job status monitoring and recording to give you greater working flexibility than ever.

LINK *i* will enable you to make remote cutting changes as needed and to send/receive CNC programs. The RoboCut LINK *i* system will also notify you of machine alarms or successful job completions via emails to computers, cell phones, or PDAs. The new cutting results viewer records 213 items going on in the cut every 8 seconds and can be downloaded to a spreadsheet.



REMOTE MONITORING UP TO 32 MACHINES AT ONCE ■ HIGH SPEED NC PROGRAM TRANSFER



Real time cutting status monitor



Text notifications sent to electronic devices, including cell phones

* Actual screenshots may vary. OS: Microsoft® Windows 7. Subject to internet provider.

OPTIONAL ENHANCEMENTS



The HQ power supply and microfinish supply is optimized for cutting with PCD tools and dramatically improves surface finish and accuracy. Parts can be made with as few as one (1) rough and two (2) skim cuts. The HQ power supply and microfinish power supply minimizes damage to the PCD edges even during long-term cutting.

TURN AND BURN



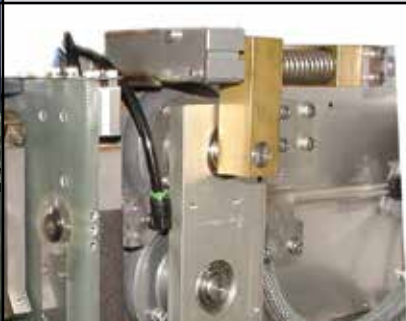
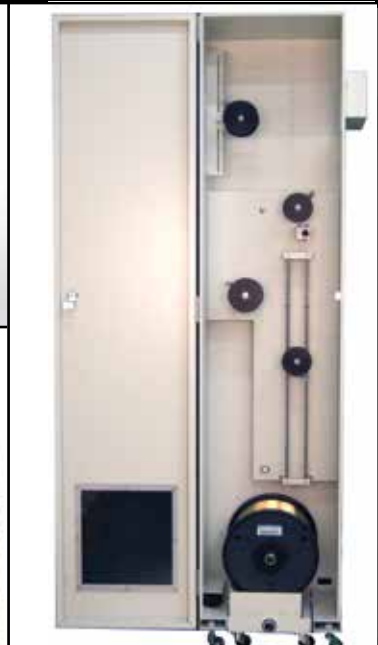
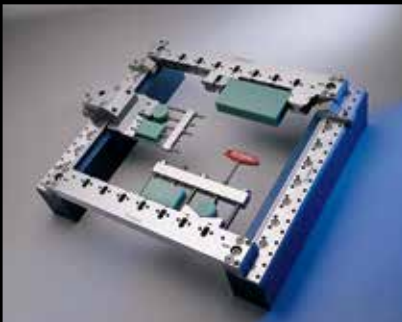
Rotary and Tilt/ Rotary tables are available for simultaneous machining.

Warning light

Tooling packages

Auto dropdown door

66 lb wire spooler



Rotary probe

Wire Chopper

FANUC

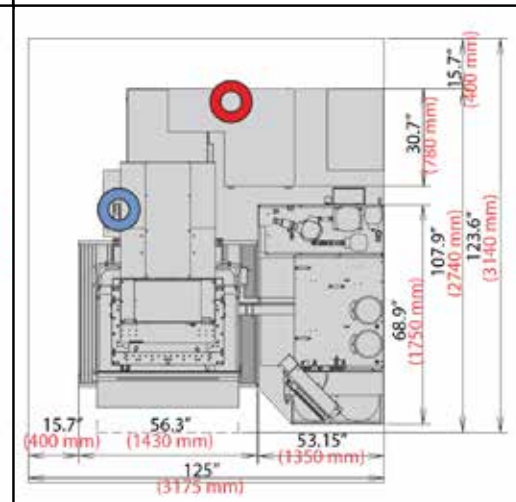
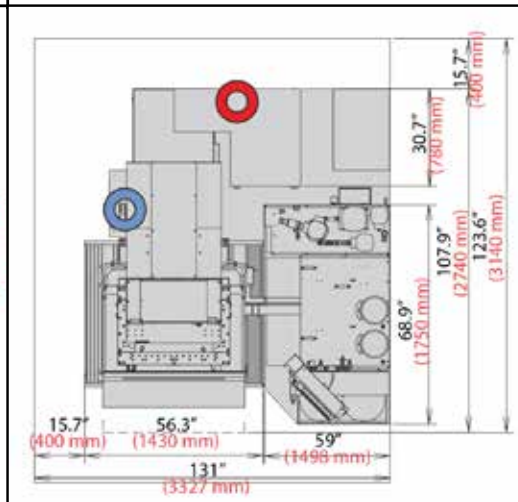
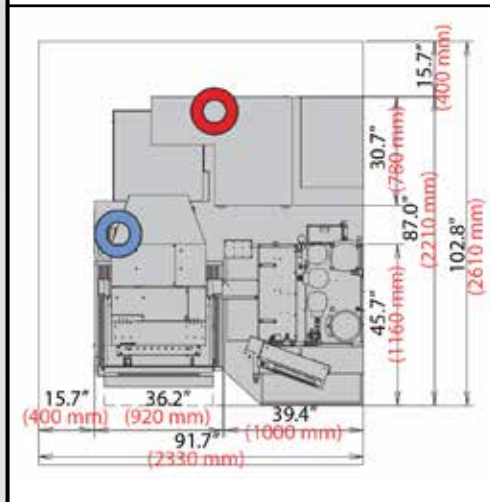
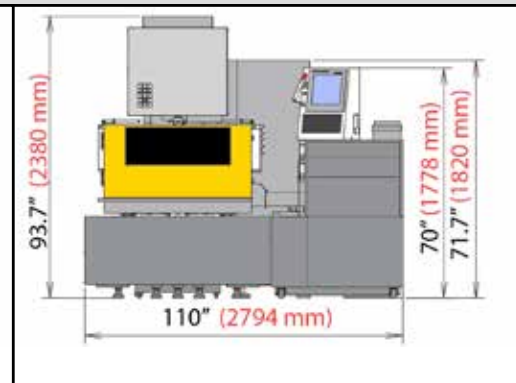
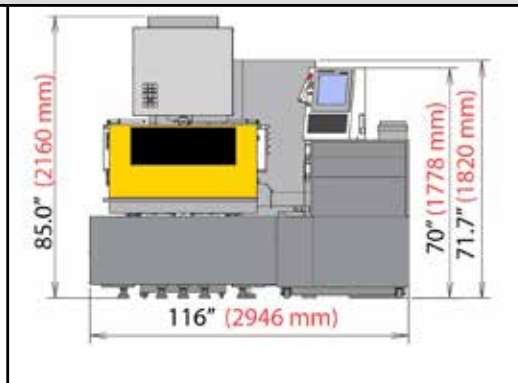
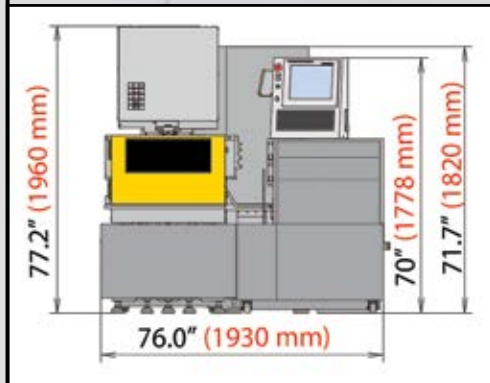
ROBODUC

OUTER DIMENSIONS & SPECIFICATIONS

C400iA

C600iA-12

C600iA-16



Power input position (200V AC, 3-phase)



Compressed air input position (Hi-coupler, plug 20 P attached)



FANUC

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α-C400iA

α-C600iA-12

α-C600iA-16

SPECIFICATIONS

		α-C400iA	α-C600iA-12	α-C600iA-16
Max. workpiece size (standard)	in	30.5 x 23.6 x 10	44.0 x 32.3 x 12.2	44.0 x 32.3 x 16.1
Max. workpiece weight	lbs	1100	3550	3550
Table travels (X & Y - axes)	in	14.6 / 10.6	23.6 / 15.7	23.6 / 15.7
U & V- axis travels	in	±2.362	±3.937	±3.937
Z - axis travels	in	10.2	12.2	16.2
Table feedrate	in/min	1 ~ 50	1 ~ 50	1 ~ 50
Auto Wire Feed (AWF)	–	standard	standard	standard
Wire diameter	in	Ø .004 - .012	Ø .004 - .012	Ø .004 - .012
Max. wire spool weight	lbs	35	35	35
Wire feedrate	in/min	0 ~ 590	0 ~ 590	0 ~ 590
Wire tension	grams	200 ~ 2500	200 ~ 2500	200 ~ 2500
Positioning accuracy	in	±.0001	±.0001	±.0001
Machine weight	lbs	4000	6700	6900
FANUC 31i-WB touchscreen control	in	15.2	15.2	15.2
Max. programming memory	megabytes	4 MB*	4 MB*	4 MB*

*Additional capacity available w/Flash and USB drives

DIELECTRIC TANK

		α-C400iA	α-C600iA-12	α-C600iA-16
Tank capacity	gallons	145	301	278
Paper filter (cartridge)	quantity	2	2	2
Deionizer (ion exchange resin)	cubic ft	1	1	1
Inverter chiller	–	standard	standard	standard

POWER SUPPLY

Digital power supply	–	standard	standard	standard
AC power supply (switchable)	–	AC/DC	AC/DC	AC/DC
Pulse generator (transistor)	–	standard	standard	standard
Microfinish power supply	–	optional	optional	N/A
Input power supply (3 phase 60 Hz)	VAC ±10%	200/220	200/220	200/220
	KVA	13	13	13

Specifications subject to change without notice

THE POWER OF PRODUCTIVITY - THE POWER TO MOVE YOUR

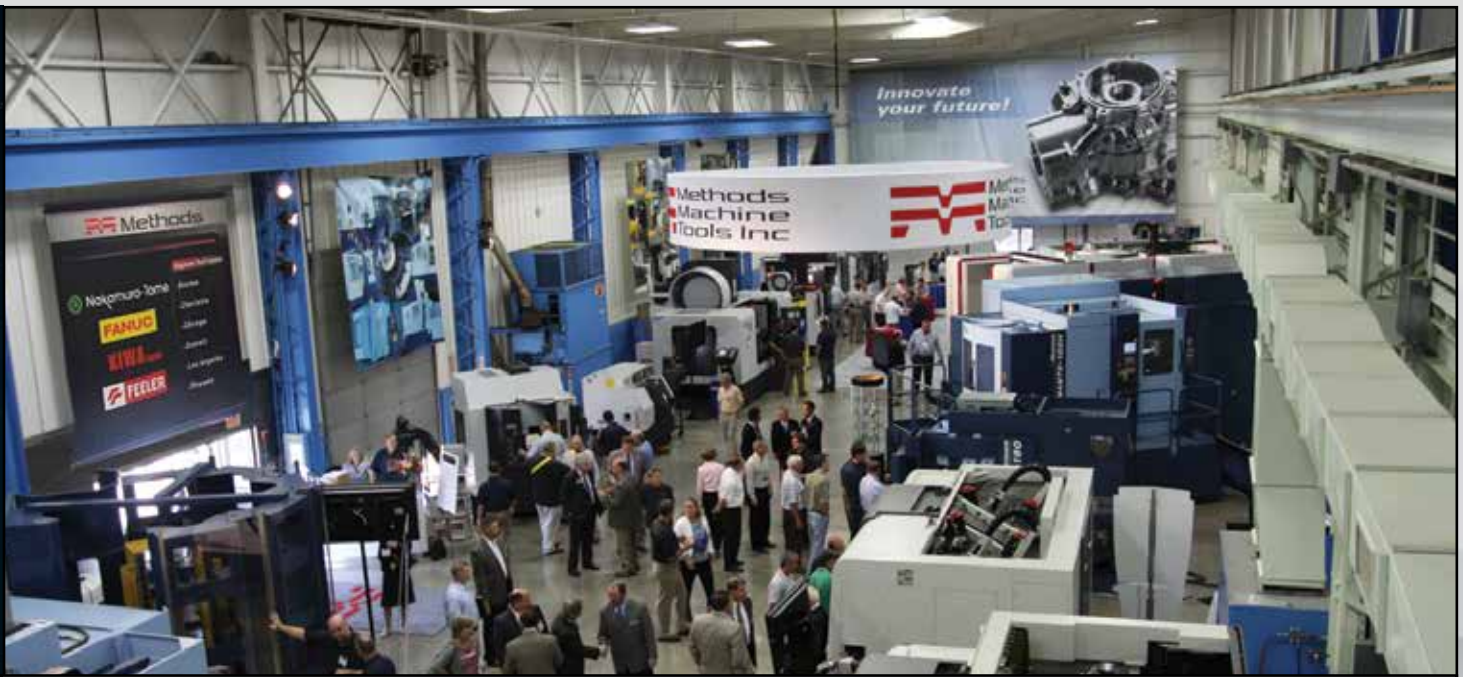


Methods Machine Tools has provided innovative productive solutions to manufacturing technology for over fifty years. Strategically located throughout North America, and headquartered in Sudbury, MA, our Methods team is more than 300 strong, and has installed more than 29,000 machines. Today, Methods' 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: Yasda, Nakamura-Tome for multi-tasking turning centers, FANUC RoboDrill for milling/ drilling and FANUC Robocut wire EDM, FEELER for machining centers, turning centers, bridge and boring mills, Exeron for EDM die sinking, Current EDM Drills, VisionGauge for part inspection, and Kiwa-Japan for expandable horizontal machining centers. Methods also has dozens of other lead suppliers for automation, tooling, fixtures, and quality control.

BUSINESS FORWARD...



Tech Center - Sudbury, MA

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 robots. 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.

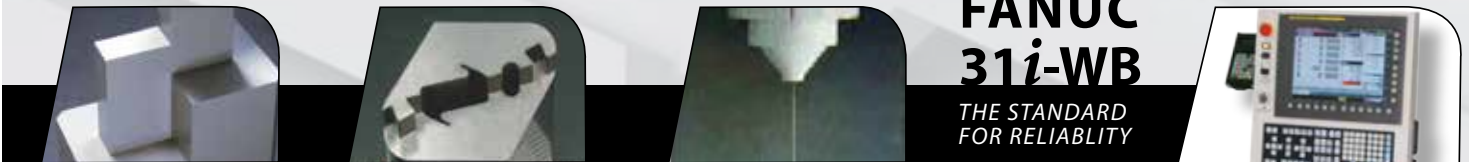
For more information visit:
www.METHODSMACHINE.COM



AUTOMATE YOUR FANUC ROBOCUT



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FANUC
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THE STANDARD
FOR RELIABILITY



MMT 12.17.13

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MACHINE TOOLS ■ **TURNKEY SOLUTIONS** ■ **AUTOMATION CELLS** ■ **PARTS AND SERVICE** ■ **TOOLING**