

High-Reliability and High-Performance
Wire Electrical-Discharge Machine

FANUC

ROBOCUT α -CiC series



High-Reliability and High-Performance
Wire Electrical-Discharge Machine

FANUC ROBOCUT α -CiC series



ROBOCUT α -C400iC

XYZ axis travel : 400×300×255 mm



ROBOCUT α -C600iC

XYZ axis travel : 600×400×310 mm



ROBOCUT α -C800iC

XYZ axis travel : 800×600×310 mm

High Performance of Cutting

New mechanical structure, new discharge devices, and new discharge control to provide high speed, high precision, and high quality cutting

AI thermal displacement compensation function to provide stable cutting, and various functions to adjust shapes easily

High precision rotary table ROBOCUT CCR to expand the applications

Maximizing Uptime

High reliable automatic wire feeding (AWF3) provides continuous unmanned machining
Consumables management function and Maintenance guidance function support daily maintenance

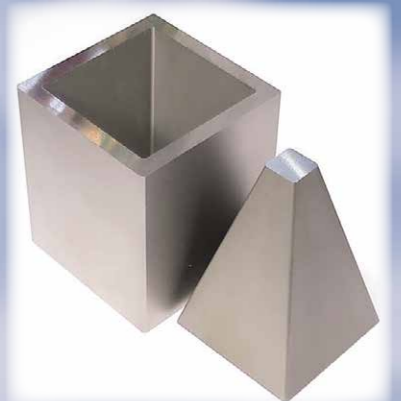
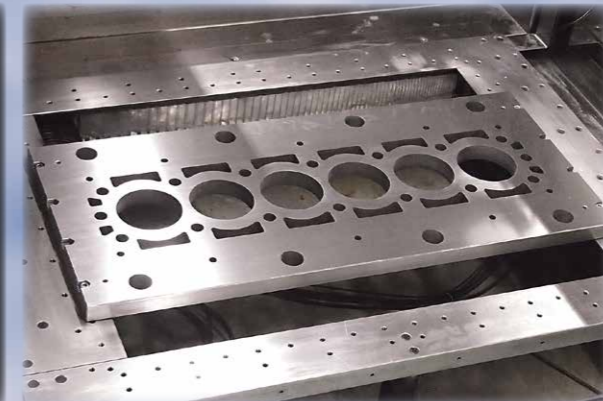
ROBOCUT-LINKi provides Production and Quality information management

Ease of Use

FANUC CNC and operation guidance function provide superior operations

Fulfilling EDM technologies support high speed, high precision, and high quality cutting

Automatic functions support set-up operations

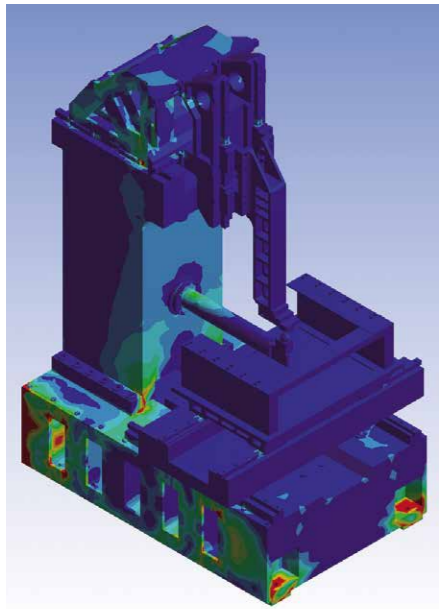


* The outer view will be different as machine specifications

High Performance of Cutting

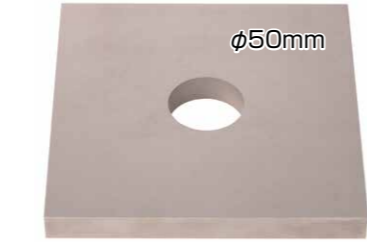
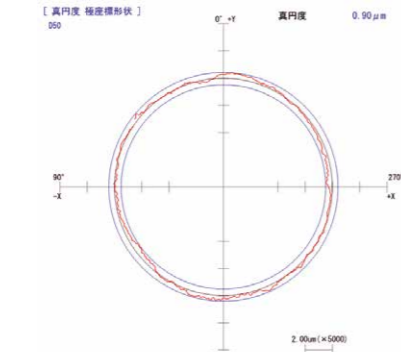
Mechanical structure to provide high precision cutting

- The strengthened machine rigidity suppresses the distortion of each part of the machine and will provide high precision cutting such as circle shape, pitch accuracy, and so on.



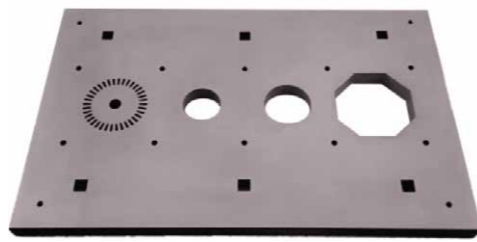
FEM analysis

[High precision cutting of circle shape]



Die steel, 20mm, φ0.25 brass wire
1 rough 5 skims
Roundness 0.90μm

[High precision pitch cutting]

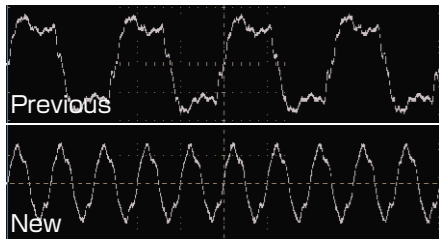


Die Steel, 30mm, φ0.20 brass wire
1 rough 4 skims, 20mm square holes
Pitch accuracy: X -0.9 to 1.1μm, Y -1.0 to 0.0μm

Discharge device to provide high quality cutting

- SF3 power supply (standard installed) generates both miniaturization and higher frequency of discharge pulse to improve surface roughness while the cutting speed is kept the same
- MF2 power supply generates the stable fine discharge to achieve the best surface roughness

[Discharge pulse by SF3]



[The best surface roughness by MF2 (option)]



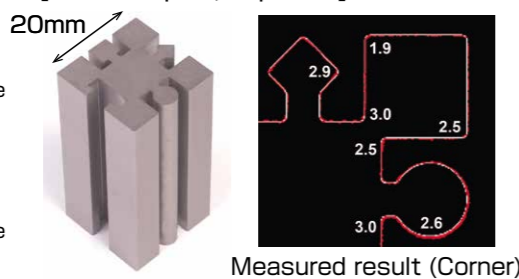
Carbide, 30mm, φ0.20 brass wire
1 rough 8 skims
Rz 0.7μm (Ra 0.10μm)

Discharge control to provide high precision cutting

- Discharge control *i*Pulse3 provides high precision cutting even while the clearance is open.

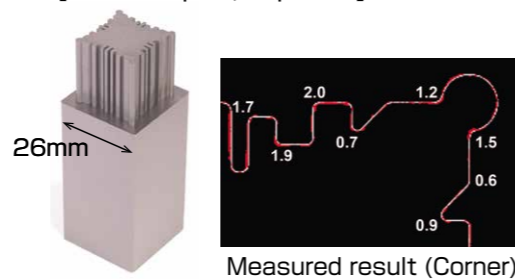
[Cutting example]

[Nozzle open, 3 paths]



Dis steel, 40mm, φ0.25 brass wire, 1 rough 2 skims, Accuracy ±3μm, Roughness Ra 0.60μm

[Nozzle open, 5 paths]



Dis steel, 50mm, φ0.20 brass wire, 1 rough 4 skims, Accuracy ±2μm, Roughness Ra 0.28μm

Various functions and mechanisms to support high precision cutting

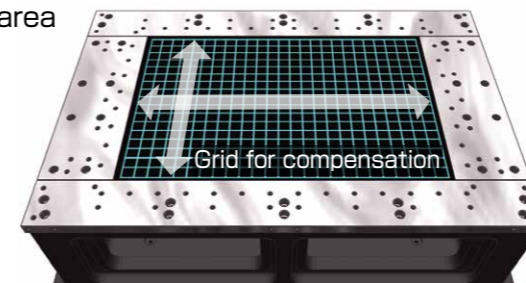
High precision positioning function

- Workpiece edge finding function with wire by applying the latest position detection method



High precision pitch error compensation function

- Corrects the pitch error over the entire table area



Taper adjustment function (Max. 4 directions)

- Simple setup for high precision taper cutting

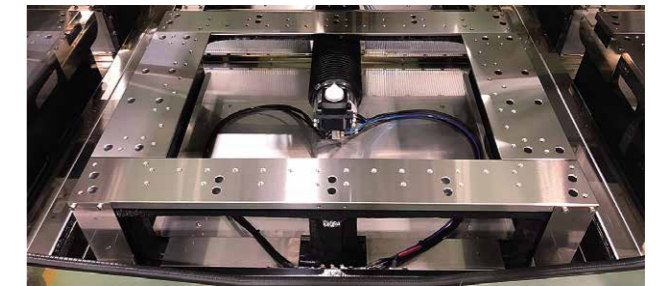


Die steel, 50mm, φ0.20 soft wire
1 rough 3 skims
Taper angle 20 degrees

Measured angle(4 directions)
+X 20.001 degrees
-X 20.007 degrees
+Y 19.998 degrees
-Y 20.009 degrees

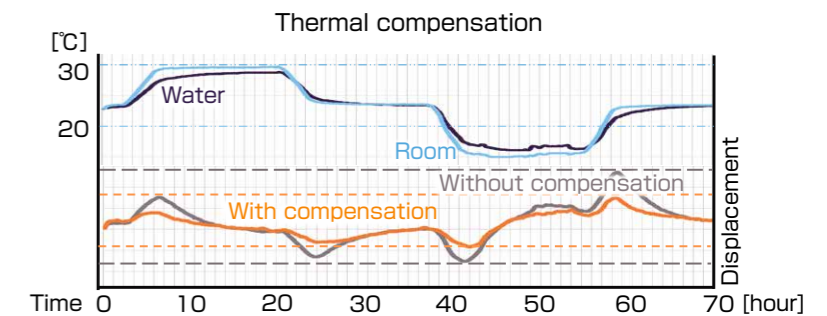
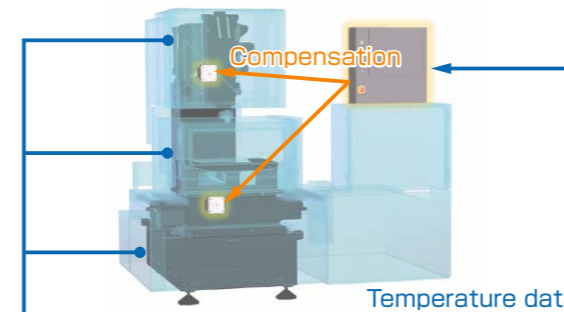
Workpiece table (standard installed)

- Durable table to prevent scratch



AI thermal displacement compensation function to realize stable cutting

- Multiple temperature sensors and AI (Machine Learning) realize stable cutting even if the temperature around the machine changes on a large scale.



High precision rotary table, ROBOCUT CCR, to expand applications (Option)

ROBOCUT CCR

- FANUC Servo motor & rotary encoder are installed

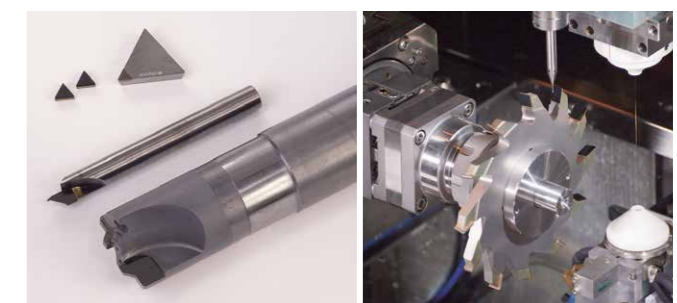


High precision positioning, light weight, and compact rotary table

[Cut sample] Helical cutting

PCD tool cutting

- PCD tool applications with ROBOCUT CCR

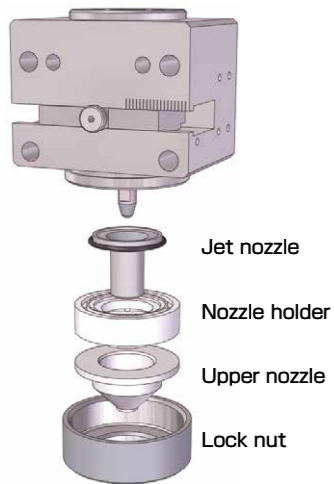
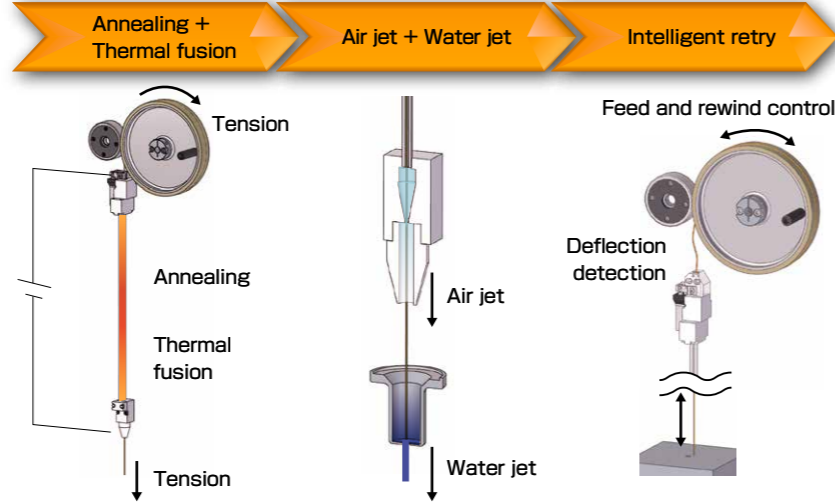


High quality cutting by PCD dedicated power supply

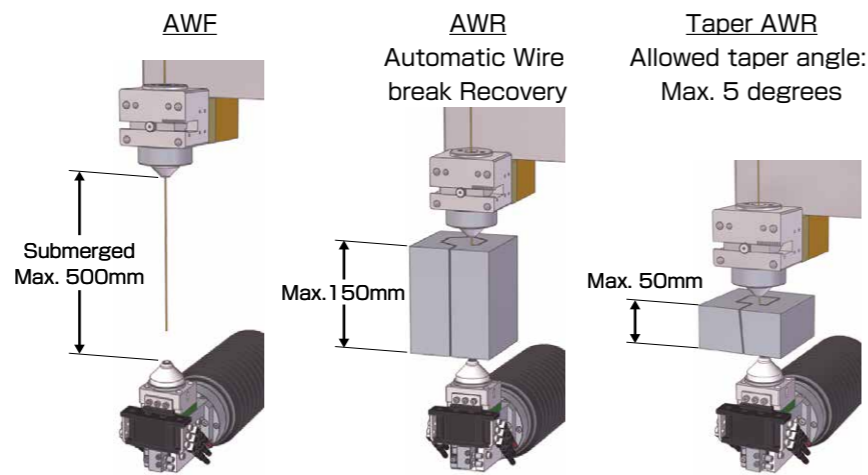
Maximizing Uptime

Automatic wire feeding system AWF3 to support unmanned operation

- Simple structure provides a great maintainability, higher rate of wire threading, and high reliability
- Provides AWF for Max.500mm work thickness in submerged condition, AWR with 150mm



Simplified upper guide unit

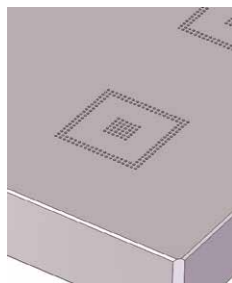


Various AWF functions strongly support the unmanned operations

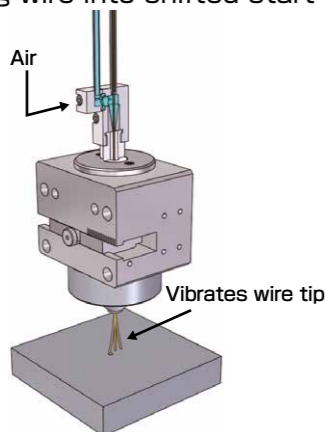
* All AWF obtained under FANUC-designated conditions

Level up performance of AWF

- Improved straightness of wire to shorten time for threading wire into small hole or wire break point while nozzle clearance is open.
- Vibrates wire tip during threading for various cases such as threading wire into shifted start hole or hole with burr inside (called Air Retry)



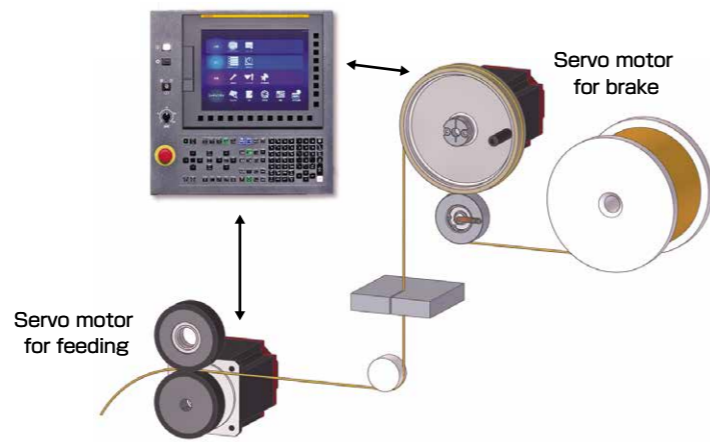
Min. hole size: $\phi 0.3\text{mm}$



Vibrates wire tip

Twin servo wire feeding system

- Wire feeding system with FANUC servo motors accurately controls the wire tension and suppresses the wire vibration to provide high precision cutting

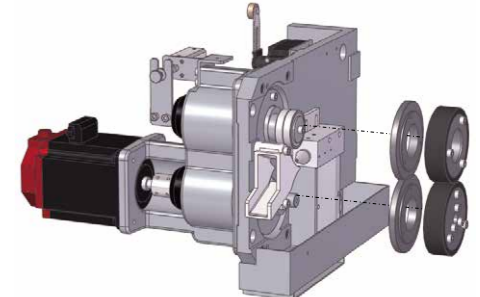
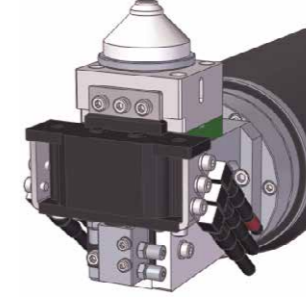
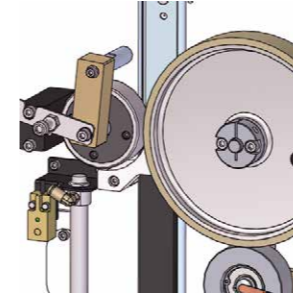


Servo motor for feeding

Servo motor for brake

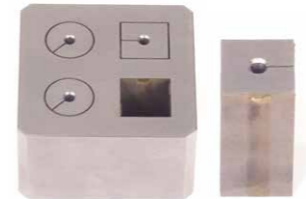
Wire feeding system to contribute for higher capacity utilization

- Simple structure to provide easier wire installation
- Maintenance-free structure on the lower guide
- 50%* shortened maintenance time at wire outlet mechanism * Compared to previous model

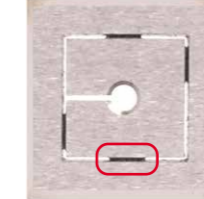


CORE STITCH* function to keep the cores

- The function to keep the core by brass adhering provides continuous unmanned operation.
- Prevents the machine damage due to the dropped cores
- Easy operation to activate on the CNC screen
- Easy setting of adhesion distance and gap

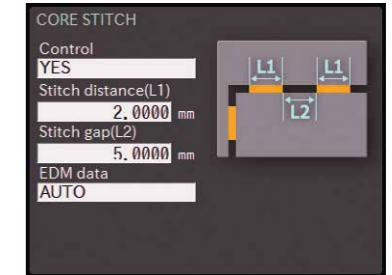


Core adhesion and a removed core



Adhesion by brass ingredient

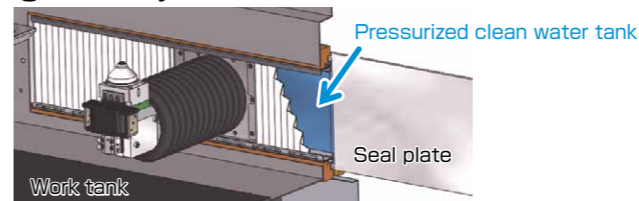
* CORE STITCH is a registered trademark of Seibu Electric & Machinery Co., Ltd.



Pre-seal mechanism for work tank to provide high reliability

Pre-seal mechanism

- Pressurized clean water tank prevents the seal plates from sludge adhering to it
- Reduces frictional resistance to prevent from deteriorating cutting accuracy



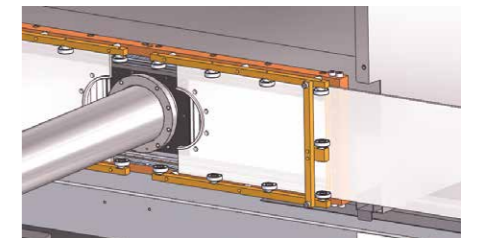
Work tank

Pressurized clean water tank

Seal plate

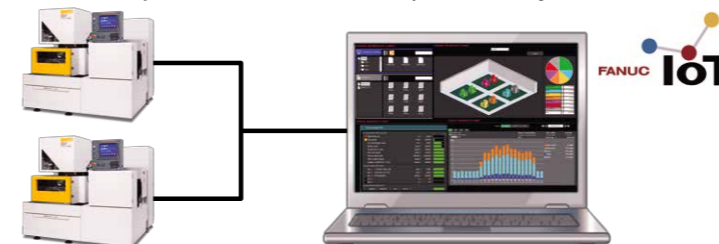
Two-split Transparent seal plates

- Easy to disassemble and keep clean
- Easy to check for dirt



ROBOCUT-LINK*i* to manage production and quality information

- Monitors the cutting status of ROBOCUT in real time
- High speed transfer of NC programs
- Notifies the job end or alarms to operators by emails



32 units connectable

* OS : Microsoft® Windows® 7 / 8 / 8.1 / 10 / 11 ** It's necessary to contract with provider to use email function.



Overall monitoring



Operation result



Consumables' lives



Power consumption monitor

Ease of Use

FANUC's latest CNC to improve operability



PANEL iH Pro, the high performance display unit of FANUC

- Provides 75% faster drawing speed than previous model

Previous 75% time savings

- Multi-touch screen to support operation
- Undo/Redo function will save the operation mistakes
- ROBOCUT-CAMi installed in the PC can be remote-operated from ROBOCUT screen

Simple adjustment function

- Cutting speed and the shape can be adjusted by simple and intuitive operation



Touching the buttons to adjust the EDM parameters



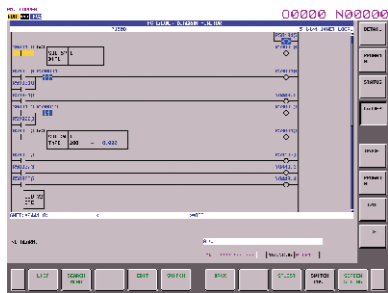
The cutting speed can be adjusted from 50% to 120% keeping the discharge gap to achieve stable cutting

The buttons to adjust visually at the corner shape and approaching shape without directly changing parameters

Customize functions to support user needs

Custom PMC

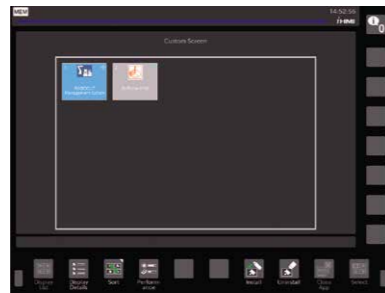
- Ladder programs for peripheral devices can be created on the screen



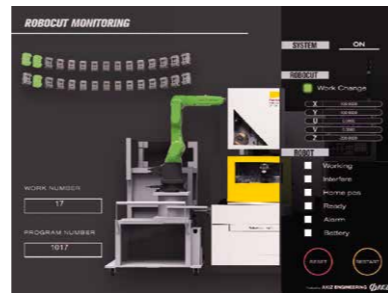
*Standard I/O : 8 points each

Custom screen

- Original applications created by yourselves can be installed and operated on ROBOCUT



*Designated software is necessary.



ROBOCUT ROBOT Package (Option)

- Packaging FANUC Robot, Robot interface, Robot stand, workpiece stocker, scheduler, and so on
- Easy setup of workpiece exchange system by Robot
- Automation system for high-mix low-volume production



Workpiece exchange system with FANUC Robot (sample)

Various functions to support setting up

Setup Guidance function

- Explains the set up procedure



Searching EDM screen

- Provides the proper EDM technologies to each application



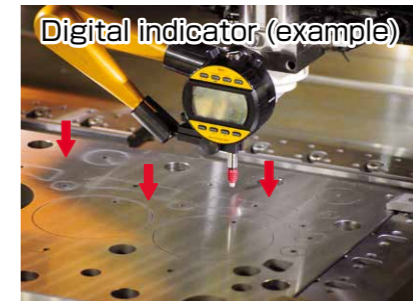
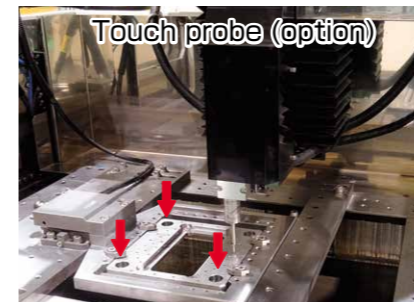
Smart Programming

- Simple operation to make NC programs automatically



3D Coordinate Rotation Function

- Compensates the wire vertical position by moving U / V axes according to the workpiece tilt.



Various functions to support daily maintenance

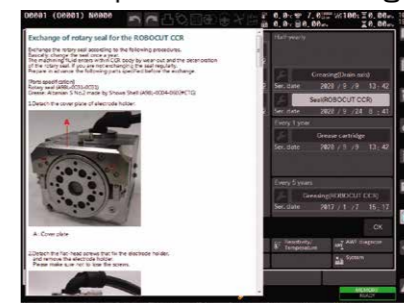
Consumables management

- For monitoring the lives of consumable parts



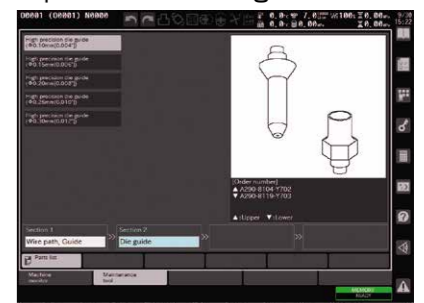
Maintenance guidance

- Provides the daily maintenance with pictures and drawings.



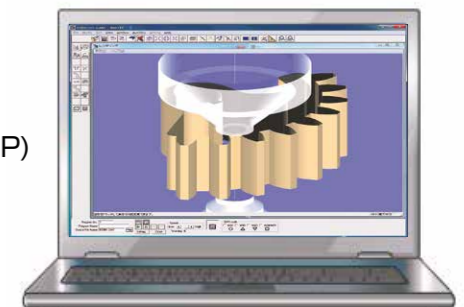
Parts list

- For searching maintenance parts and ordering information



ROBOCUT-CAMi (Option)

- This is the PC software to create NC programs for ROBOCUT
- Easy operation to make NC programs interactively for standard cutting, taper cutting, different profiles on the top and the bottom cutting, gear shape cutting, CORE STITCH, and so on
- Easy operation to create cutting path from CAD data (DXF,IGES,STEP) and NC programs
- Standard EDM technologies for ROBOCUT are installed
- USB memory and Ethernet can be used when transferring the data between ROBOCUT and the PC



*OS : Microsoft® Windows® 8 / 8.1 / 10 / 11

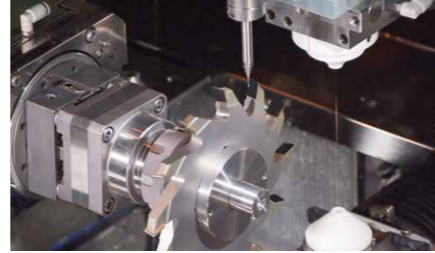
Options



Linear encoder



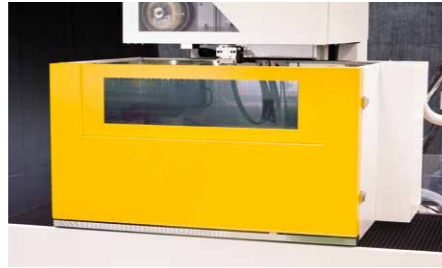
MF2 power supply for skim cutting



PCD tool cutting system



Double doors



Automatic door



45 degrees taper kit



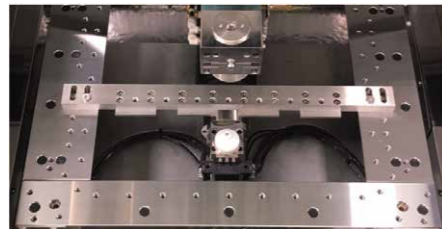
Work light (LED)



Warning light (Three-stage LED with buzzer)



Automatic grease lubrication



Removable table (α -C400iC)



Wire loader (Max. 30kg)

* The availability of options is different, depending on the country, region, model. Please contact FANUC.

Service & Support

Excellent Maintenance Services

FANUC service team delivers customer trust and confidence based on direction of service "Maximizing Uptime", "Global Service" and "Lifetime maintenance".

Service First

Conforming to the spirit of "Service First", FANUC provides lifetime maintenance to its products for as long as they are used by customers, through more than 270 service locations supporting more than 100 countries and regions throughout the world.

Maximizing Uptime



Global Service

Lifetime Maintenance

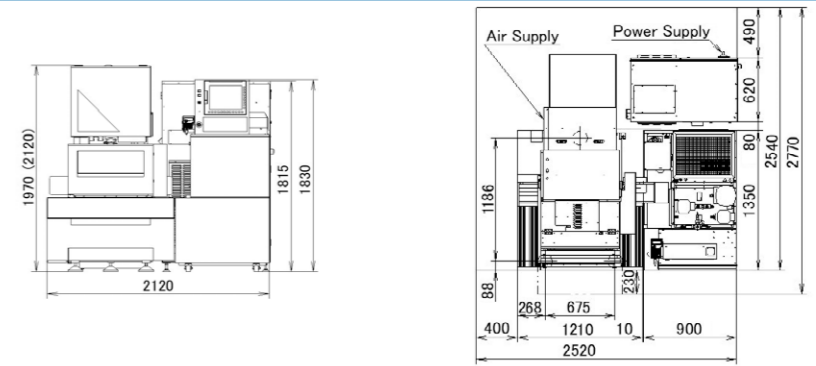
FANUC ACADEMY

FANUC ACADEMY operates training programs on FANUC ROBOCUT which focus on practical operations and programming with cutting know how and maintenance.

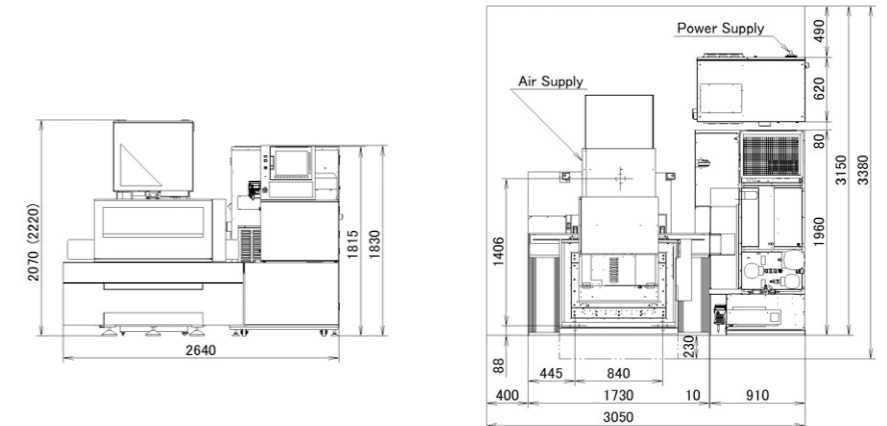


Floor Plan

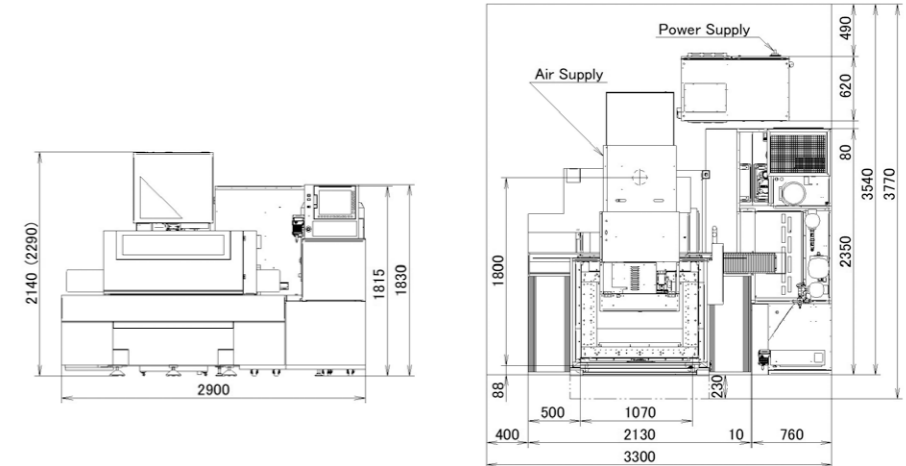
α -C400iC



α -C600iC



α -C800iC



* The values in parentheses () are when the safety cover is open.

* The above floor plan is that of a standard type machine. Contact FANUC if you wish to order the options such as a Z axis travel 410mm/510mm and 30kg wire loader options.

Installation Requirement

| | | | |
|--------------|---|-------------|--|
| Power supply | 200VAC \pm 10% 3-phase 50/60Hz \pm 1Hz 220VAC \pm 10% 3-phase 60Hz \pm 1Hz Connection cable terminal size : 8-5 Power consumption : 1.3kVA | Environment | Ambient temperature : 15 to 30°C *Recommend 20 \pm 1°C for high precision machining. Install under the oil mist free and dust free environment. Humidity : 75%RH or less |
| Air supply | Pressure : 0.5 to 0.7 MPa Flow rate : 160L/min or more *Regulator-side coupler mounting screw : Rc1/4 | Grounding | 400mm or more are recommended as concrete foundation ground where machine is located to endure its weight. Ground should be selected where no vibration or no impact effect. As vibration level, the maximum amplitude should be 2 μ m or less under frequency band from 10 to 20 Hz. The unit must be grounded to prevent damage resulting from electro-magnetic interference or electrical leakage. The unit is recommended to be installed so that the ground resistance is less than 10 Ω . Also, the grounding should be isolated from other machines. |
| Shield room | If discharge noise can interfere with surrounding radio, television and other sets, a shield room needs to be created | | |

Specifications

| Model | | | α -C400iC | α -C600iC | α -C800iC |
|--------------------------------------|------------------------|-------------------------------|---------------------------|-----------------------------|---------------------|
| Maximum workpiece dimensions | without Automatic door | Z axis travel standard | 730 x 630 x 250 mm | 1050 x 820 x 300 mm | — |
| | | Z axis travel option | — | 1050 x 820 x 400 mm | — |
| | with Automatic door | Z axis travel standard | 730 x 585 x 250 mm | 1050 x 775 x 300 mm | 1250 x 975 x 300 mm |
| | | Z axis travel option | — | 1050 x 775 x 400 mm | 1250 x 975 x 500 mm |
| Maximum mass of workpiece | | | 500 kg | 1000 kg | 3000 kg |
| XY axis table travel | | | 400 x 300 mm | 600 x 400 mm | 800 x 600 mm |
| Z axis travel | standard | 255 mm | 310 mm | | |
| | option | — | 410 mm | 510 mm | |
| UV axis travel | | | ± 60 mm x ± 60 mm | ± 100 mm x ± 100 mm | |
| Maximum taper angle | standard | $\pm 30^\circ$ /80 mm | $\pm 30^\circ$ /150 mm | | |
| | option | $\pm 45^\circ$ /40 mm | $\pm 45^\circ$ /70 mm | | |
| Wire diameter | standard | $\phi 0.10$ to $\phi 0.30$ mm | | | |
| | option | $\phi 0.05$ to $\phi 0.30$ mm | — | | |
| Maximum wire mass | | | 16 kg | | |
| Mass (including the dried work tank) | | | Approx. 2200 kg | Approx. 3600 kg | Approx. 5300 kg |
| Controller | | | FANUC Series 31i-WB | | |

Product
introduction video



FANUC CORPORATION

3580, Shibokusa, Oshino-mura, Minamitsuru-gun, Yamanashi, 401-0597, JAPAN

Phone: (+81)555-84-5555 <https://www.fanuc.co.jp/>

- All specifications are subject to change without notice.
- No part of this catalog may be reproduced in any form.
- The photo includes options.
- The products in this catalog are controlled based on Japan's "Foreign Exchange and Foreign Trade Law". The export of these products from Japan is subject to an export License by the government of Japan.
Further, re-export to another country may be subject to the license of the government of the country from where the product is re-exported.
Furthermore, the product may also be controlled by re-export regulations of the United States government.
- Should you wish to export or re-export these products, please contact FANUC for advice.

© FANUC CORPORATION, 2020
RCUT-CiC(E)-05, 2024.8, Printed in Japan