

High-Reliability and High-Performance
Wire-cut Electric Discharge Machine

FANUC

ROBOCUT α -CiB series



High-Reliability and High-Performance Wire-Cut Electric Discharge Machine

FANUC ROBOCUT α -CiB series

High Performance of Cutting

High speed, High precision, High quality

Stable cutting

Wide range of applications

Applying the latest
CNC & servo
technology



Good combination
with FANUC Robot



Minimizing Downtime

High reliability

High maintainability

ROBOCUT-LINKi

Ease of Use

Superior operability

Fulfilling EDM technologies

Various automatic functions

High Performance of Cutting

New discharge control *i*Pulse2 and cutting power supply providing high speed, high precision, and high quality cutting

AI thermal displacement compensation function and various shape compensation functions provide stable and accurate cutting

High precision rotary table, ROBOCUT CCR extends the range of applications

Minimizing Downtime

High reliability of auto wire feeding (AWF3) provides efficient unmanned machining
Consumables management function and Maintenance guidance function support routine maintenance

ROBOCUT-LINK*i* provides production and quality information management

Ease of Use

New user interface *i*HMI provides new CNC screen functions

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

Automatic functions support set-up operations



α -C400*i*B

X×Y×Z axis travel
400×300×255 mm



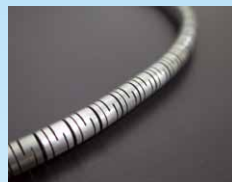
α -C600*i*B

X×Y×Z axis travel
600×400×310 mm
600×400×410 mm (Option)



α -C800*i*B

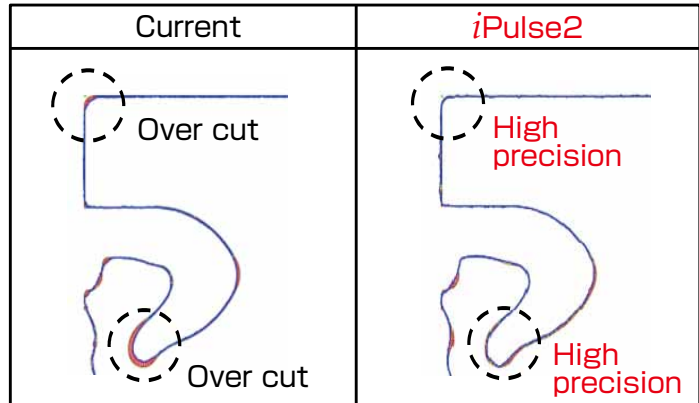
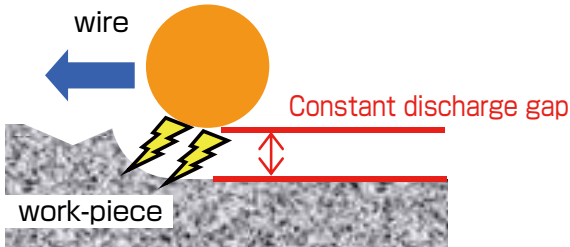
X×Y×Z axis travel
800×600×310 mm
800×600×510 mm (Option)



High Performance of Cutting

New discharge control *i*Pulse2 and cutting power supply providing high speed, high precision and high quality cutting

- New discharge control *i*Pulse2 realizes high precision cutting by keeping discharge gap constant according to discharge status and cutting shape
- Improvement of corner accuracy, surface finish and cutting speed



High speed, high precision, high quality cutting performance by *i*Pulse2

- Surface roughness $Ra0.30\mu m$ provided for the die steel less than 60mm thickness by *i*Pulse2 and SF2 (Standard power supply for skim cutting)

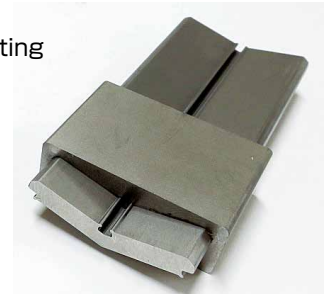
[Cutting example : *i*Pulse2 & SF2]

Die steel 50mm
Wire $\phi 0.20$ BS
Die and Punch
Standard 4 times cutting
Accuracy $\pm 3.0\mu m$
Surface roughness $Ra0.30\mu m$



[Cutting example : *i*Pulse2 & SF2]

Die steel 25mm/75mm
Wire $\phi 0.25$ BS
Press die
High speed 3 times cutting
Accuracy $\pm 3.0\mu m$
Surface roughness $Ra0.50\mu m$



Best surface roughness cutting by MF2 (Option)

- Best surface roughness $Ra0.10\mu m$ provided for the tungsten carbide less than 30mm thickness by MF2 (Optional Power Supply for Skim cutting)

[Cutting example : MF2]

Tungsten carbide 30mm
Wire $\phi 0.20$ BS
Best surface roughness
9 times cutting
Surface roughness $Ra0.10\mu m$



High accuracy thick work - piece cutting by *i*Pulse2

- High precision cutting provided of thick work-piece

[Cutting example : *i*Pulse2 & SF2]

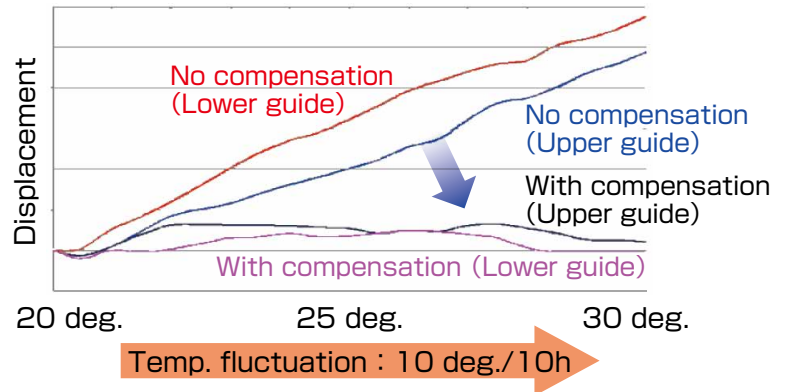
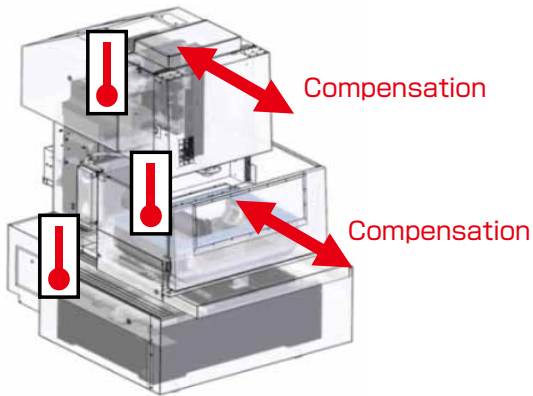
Die steel 40mm/300mm
Wire $\phi 0.25$ BS
Fit cutting
4 times cutting
Straightness $5.0\mu m$
Surface roughness $Ra0.50\mu m$



AI thermal displacement compensation function provides stable and accurate cutting

- Advanced thermal displacement compensation by multiple sensors
- With AI (Machine learning), machine keeps stable cutting even large temperature change
- Optimizes the amount of compensation depending on the user environment

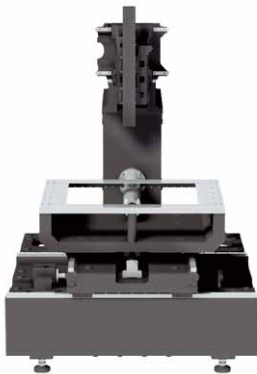
FANUC AI



Higher pitch accuracy by high rigidity casting and high accuracy pitch error compensation

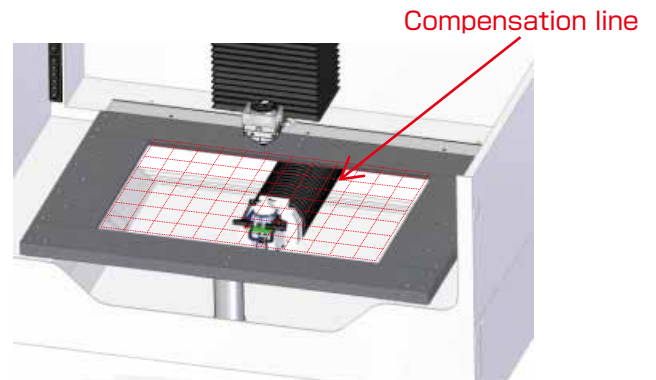
High rigidity casting structure designed symmetry

- Optimization of casting by the latest analysis tools
- Improvement of casting rigidity by utilizing design for heavy load



High accuracy pitch error compensation function

- Compensate pitch error over the entire cutting area by grid pattern.



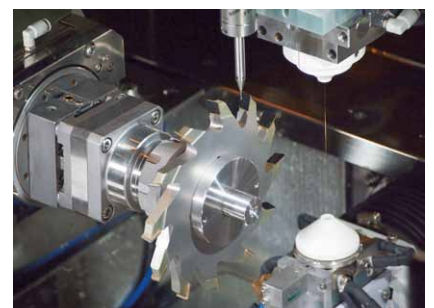
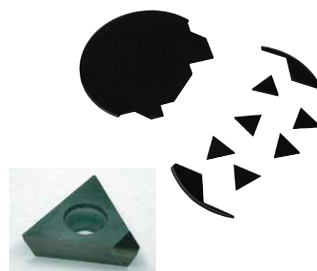
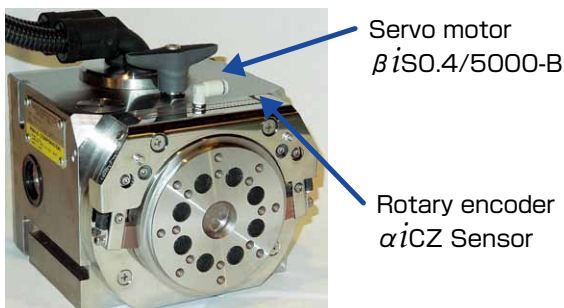
High precision rotary table, **ROBOCUT CCR**, extends the range of applications (Option)

ROBOCUT CCR

- High precision cutting is possible by FANUC Servo motor and rotary encoder
- Light weight and compact

Examples using PCD tool cutting

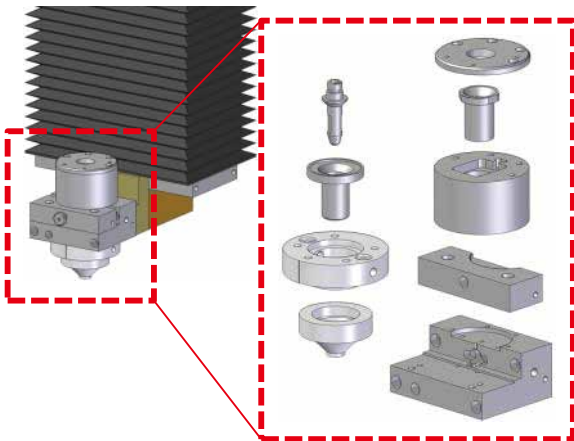
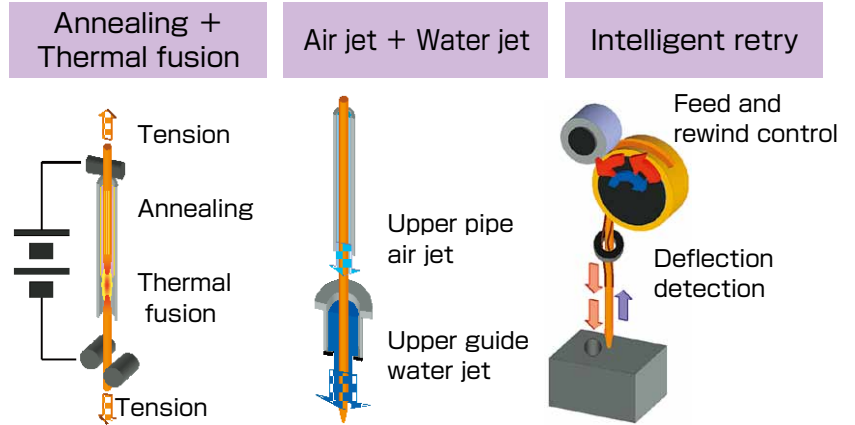
- PCD tool Cutting with ROBOCUT CCR



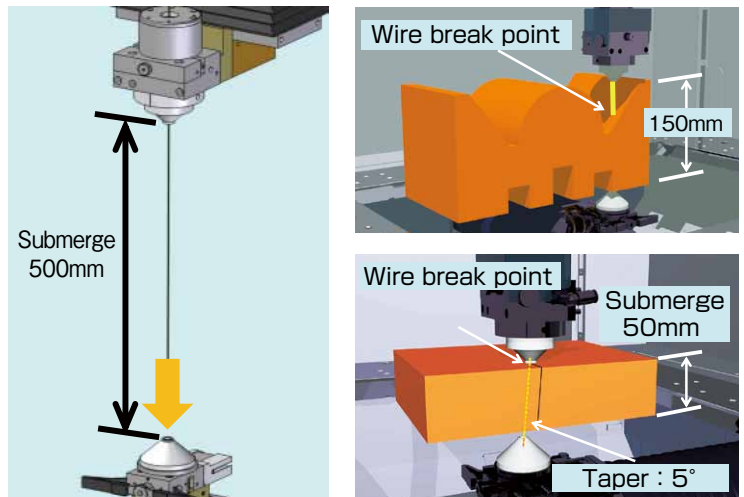
Minimizing Downtime

Auto wire feeding AWF3 providing unmanned machining

- An air jet transport system has been adopted to the upper pipe unit, which realizes high threading-rate and high reliability
- AWF3 makes it possible to thread the wire to the max.500mm work thickness and AWR (Automatic Wire Recovery) with 150mm work thickness in submerge



Simple upper guide units

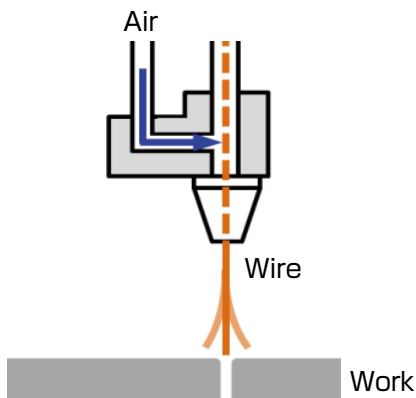


- Various AWF functions supporting unmanned machining strongly

*All cutting results obtained under FANUC-designated conditions

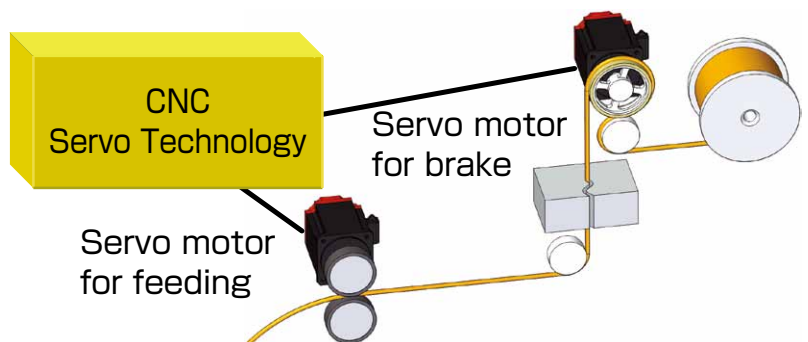
Air retry

Higher success rate of threading wire by intentional wire vibration. Possible to thread wire even in difficult situation such as wire break point or small start hole.



Twin servo wire feeding system

High precision cutting by stable wire tension and less wire vibration. Wire feeding system with twin FANUC servo motors keeps wire tension stable and suppresses wire vibration.



Core adhesion function by CORE STITCH*

- The core is adhered by welding brass wire
- Time reduction of the core cut off process
- Prevention of the machine damage by the falling core

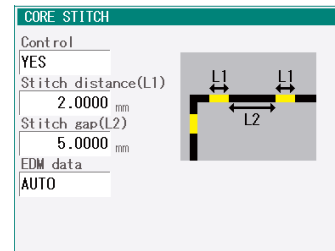
Core adhesion



Adhesion by brass material



- Easy operation to setting data by the setting screen
- Easy input of adhesion distance and gap

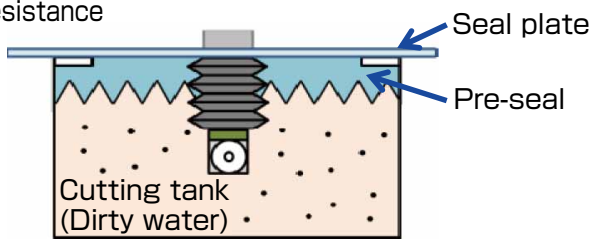


*CORE STITCH is a registered trademark of Seibu Electric & Machinery Co., Ltd.

Pre-seal mechanism for high reliability

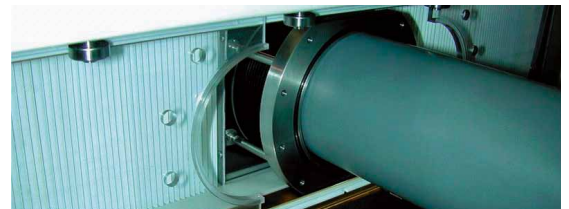
Pre-seal Mechanism

- Pressurized clean water tank prevents the sealing plate from sludge that adheres to it
- Prevents deterioration of cutting accuracy caused by the increased frictional resistance



Two-Split Transparent Seal Plates

- Easy to disassemble and clean
- Easy to check dirt



Parts list function and maintenance guidance function

Consumable management Function

- Monitoring of consumables' life



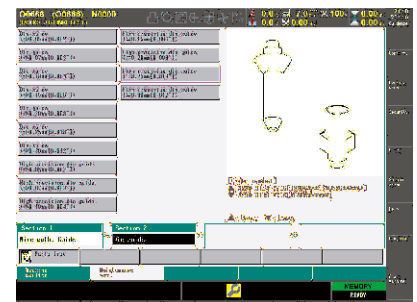
Maintenance Guidance Function

- Easy to understand the routine maintenance with pictures and figures



Parts List Function

- Search for maintenance parts



ROBOCUT-LINKⁱ provides production and quality information management

- Monitoring of cutting status in real time
- High speed transfer of NC program



32 unit max.



Mail to cellular phone



Operation monitor



Consumable life



Regular services



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

Ease of Use

FANUC user interface *i*HMI provides new CNC screen functions

Home screen

- Adopt *i*HMI home screen



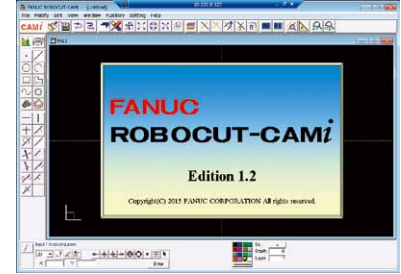
Manual viewer

- Referring to the manual on the CNC screen

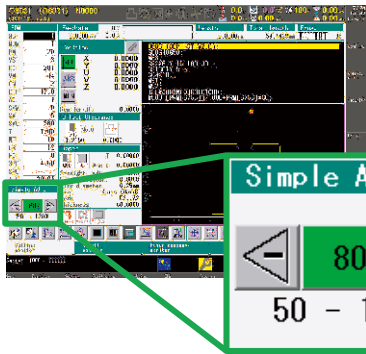


PC operation

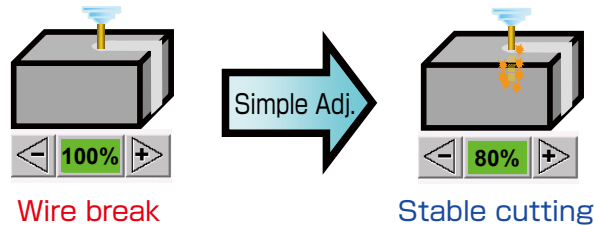
- Remote desktop connection with ROBOCUT-CAMi



Simple Adjustment Function of Cutting Technology to support stable cutting



- Simple adjustment in case wire break happens
- Simple adjustment with screen touch
- Cutting technology adjustable from NC program



FANUC CNC and operation guidance provide easy user friendly operations

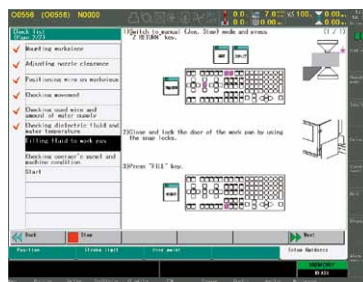
AI Setting Screen

- Selection of the optimal EDM technology depending on the cutting applications



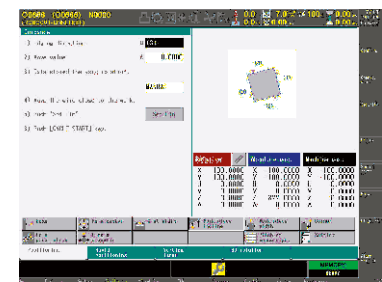
Setup Guidance Function

- Displaying the setup procedure step by step



Positioning Function

- Measuring the shape of the work-piece and positioning by the guidance



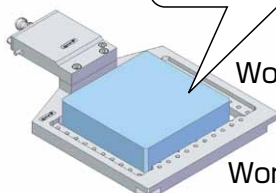
QSSR : Quick and Simple Startup of Robotization (Option)

QSSR : Quick and Simple Startup of Robotization

- Packaging FANUC Robot, Robot interface, Robot stand, safety fence, Robot sample program, and so on
- QSSR makes it possible to install the system which exchanges the work-piece by FANUC Robot easily



Handling the work-piece
(220 x 190 x 50 [mm],
25kg or less)



Work-piece

Work-piece holder

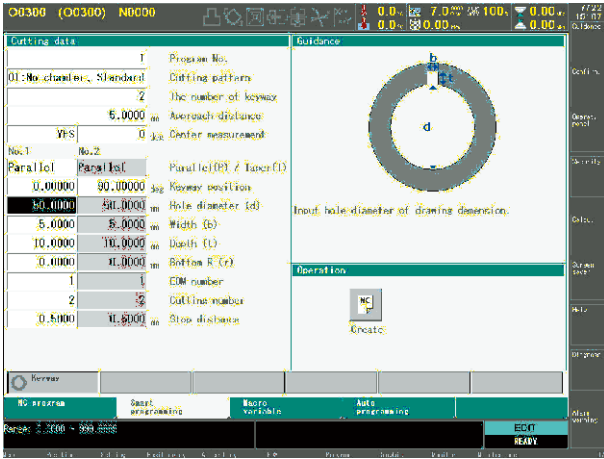


Work-piece exchange cell with Robot

Automatic function supporting the setup operation (Option)

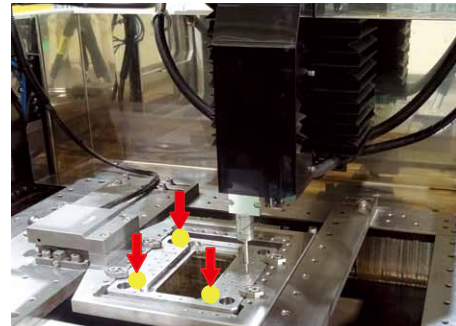
Smart Programming Function

- Easy programming for the keyway cutting



3D Coordinate System Rotation Function

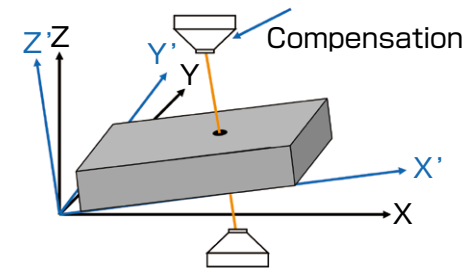
- Compensates the program coordinate automatically in 3D on the slope of the work-piece



Use of touch probe example

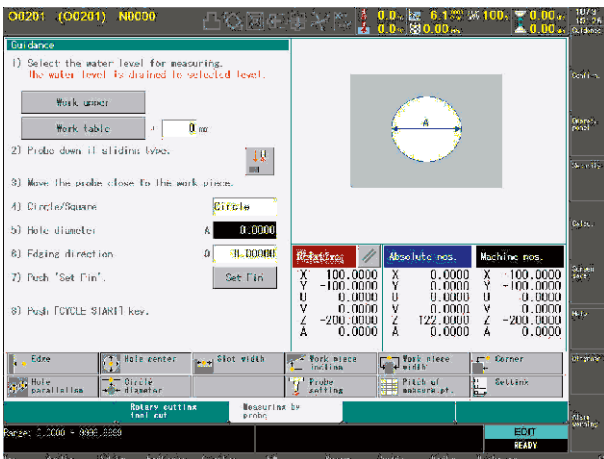


Use of indicator example



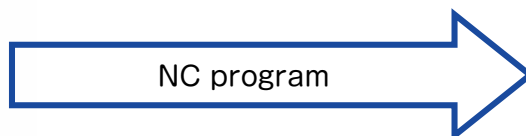
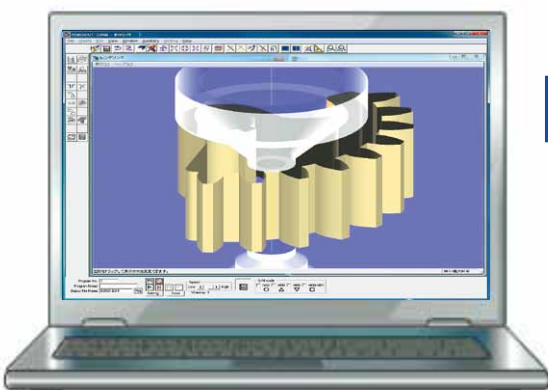
Probe Measurement Function

- Measuring the shape of work-piece on the machine with a touch probe



ROBOCUT-CAMi (Option)

- Easy operation to make NC programs for standard cutting, taper cutting, different profiles in the top and the bottom cutting, gear shape cutting, CORE STITCH, and so on for ROBOCUT
- Easy operation to make figure from CAD data or NC programs
- Standard EDM technologies for ROBOCUT

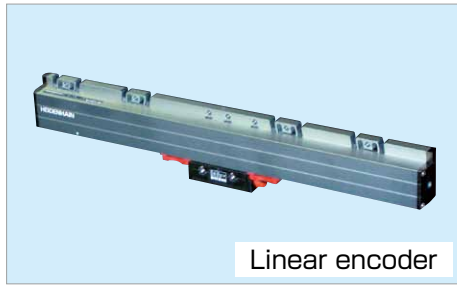


Fit the various items

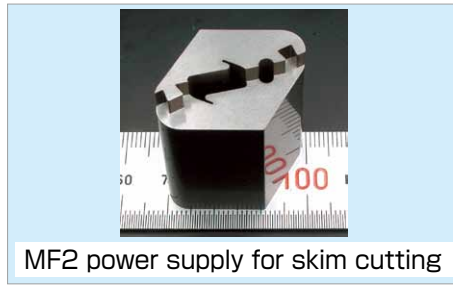
- USB stick
- CF card
- Ethernet

*OS : Microsoft® Windows® 7 / 8 / 8.1 / 10

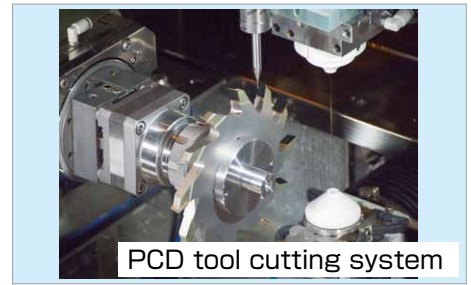
Various Option



Linear encoder



MF2 power supply for skim cutting



PCD tool cutting system



Two-stage door



Automatic door



45° Taper cutting kits



Work light (LED)



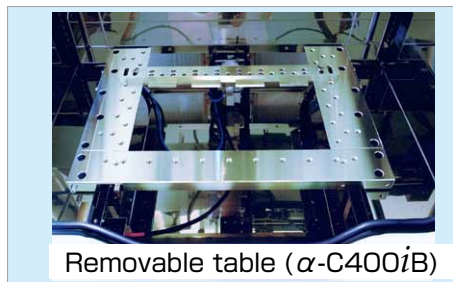
Warning light (Three-stage LED with buzzer)



20 to 30kg Wire loader



Auto grease lubrication



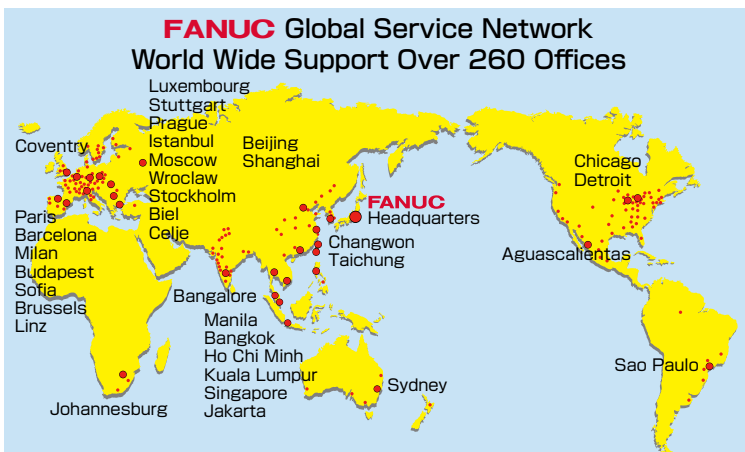
Removable table (α-C400iB)

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

Maintenance and Customer Support

Worldwide Customer Support and Service

FANUC operates customer service and support system anywhere in the world through subsidiaries, affiliates and distributor partners. FANUC provides the highest quality service with the quickest response at the location nearest you.



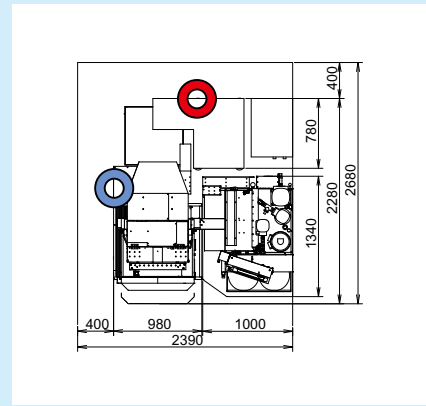
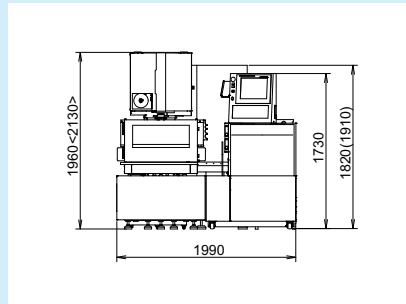
FANUC ACADEMY

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

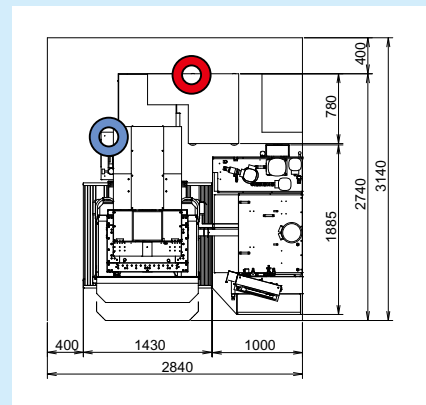
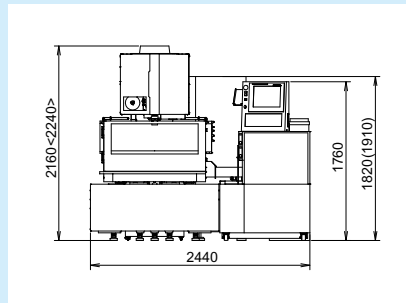


Outer Dimensions and Floor Plan

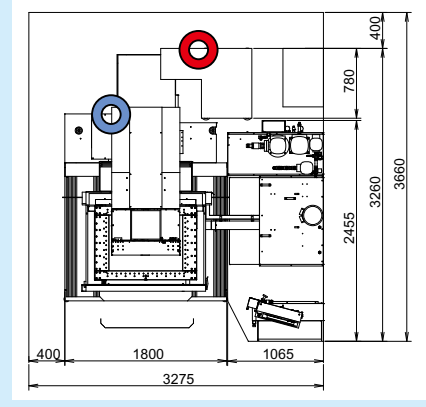
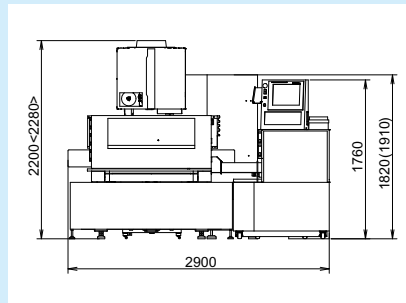
α -C400iB



α -C600iB



α -C800iB



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



Compressed air input position

- * The values in parentheses () are for thin wire or auto grease lubrication option.
- * 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.

Installing Conditions

| | | | |
|--------------|--|-------------|--|
| 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 : 13kVA | 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 : 100L / min or more : 120L / min or more (with a thin wire option) *Regulator-side coupler mounting screw : Rc1/4 | Grounding | 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 -C400iB | α -C600iB | α -C800iB |
|------------------------------|------------------------|-------------------------------|------------------------------|-----------------------------|-----------------------------|
| Maximum workpiece dimensions | without Automatic door | Z axis travel standard | 730 x 630 x 250 mm | 1050 x 820 x 300 mm | 1250 x 1020 x 300 mm |
| | | Z axis travel option | — | 1050 x 820 x 400 mm | 1250 x 1020 x 500 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 | — | — | 1250 x 975 x 500 mm |
| Maximum workpiece mass | | | 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 | 310 mm | |
| | option | — | 410 mm | 510 mm | |
| UV axis travel | | | ± 60 mm x ± 60 mm | ± 100 mm x ± 100 mm | ± 100 mm x ± 100 mm |
| Maximum taper angle | standard | $\pm 30^\circ$ /80 mm | $\pm 30^\circ$ /150 mm | $\pm 30^\circ$ /150 mm | |
| | option | $\pm 45^\circ$ /40 mm | $\pm 45^\circ$ /70 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 | | |
| Machine mass (approx.) | | | 1800 kg | 3000 kg | 4200 kg |
| Controller | | | FANUC Series 31i-WB | | |
| Acoustic noise level | | | LPA= 64 dB LPCpeak= 81 dB | | |

FANUC CORPORATION

Oshino-mura, Yamanashi 401-0597, Japan
 Phone: 81-555-84-5555 Fax: 81-555-84-5512
<http://www.fanuc.co.jp/>

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