High-reliability and High-performance Wire-cut Electric Discharge Machine

FANUC ROBOCUT

α-C400iA/α-C600iA
High-reliability and high-performance wire-cut electric discharge machine with FANUC standard CNC installed

**FANUC ROBOCUT α-CiA series**

**High-Speed & High-Precision**
- Discharge Control: AIP2
- Skim Cutting PSU: SF2, MF2
- Auto Wire Feeding: AWF2

**High-Reliability**
- Worldwide Standard CNC
- Operation Guidance
- ROBOCUT-LINKi

**High-Performance**
- Low Running Cost
- PCD Tool Cutting
- Automatic Measurement
High-Speed & High-Precision

Discharge Control AIP2 providing high-speed and high-precision cutting
Skim Cutting Power Supply SF2 and MF2 providing high-quality cutting surface
Auto Wire Feeding AWF2 expanding applications of wire threading

High-Performance

Lower running cost reducing widely than before
PCD tool cutting providing high-quality tool edge
Automatic measurement function operating by touch probe

High-Reliability

Worldwide standard FANUC CNC with high-reliability
Operation guidance functions for supporting operator
ROBOCUT-LINK for production and quality management
High-Speed & High-Precision

Discharge Control AIP2 providing high-speed and high-precision cutting

• Appropriate discharge control according to cutting amount monitored by the number of effective discharge pulses contributing to cutting

Enhanced the accurate step shape cutting by detecting work thickness according to the number of discharge pulses

[Cutting example]
Die steel
Thickness 10-80mm
Wire φ 0.25 BS
3 times cutting
Accuracy ±5μm

Skim Cutting Power Supply SF2 and MF2 providing high-quality cutting surface

• Surface roughness Ra0.30μm by standard power supply SF2 (Standard Finish 2) for the die steel of below 60mm thickness
• Surface roughness Ra0.10μm by optional power supply MF2 (Micro Finish 2) for the tungsten carbide 10-30mm thickness

[Cutting example : SF2]
Die steel 40/60mm
Wire φ 0.25 BS
Die and Punch
5 times cutting
Surface roughness 0.29μmRa (2.5μmRz)

[Cutting example : MF2]
Tungsten carbide 30mm
Wire φ 0.20 BS
Best surface roughness
9 times cutting
Surface roughness 0.10μmRa (0.7μmRz)
Auto Wire Feeding AWF2 expanding applications of wire threading

- High-precision wire tension enhanced high-speed and high-performance AWF by FANUC’s digital servo technology

- Wire threading of work thickness 200mm in water and work thickness 150mm at the wire break point

Compensation functions with high-speed and high-precision cutting

Corner Shape Compensation
- 20% reduction of cutting time keeping corner accuracy in rough cut

Taper Cutting Compensation
- Automatic compensation of different cutting amount between upper and lower surface of work

[Cutting example]
- Die steel 40mm
- Wire φ 0.25 BS
- Test Piece
- 3 times cutting

[Cutting example]
- Die steel 80mm
- Wire φ 0.20 BS (Soft wire)
- Extrusion die
- 4 times cutting
- Taper : Max 30°

* All cutting results obtained under FANUC-designated conditions
**High-Performance**

Lower running cost reducing widely than before

**Long Life of Filter**
- New lineup 450mm filter
- 1.8 times longer lifetime

**Wire Consumption Saving (ECO Mode)**
- Cutting conditions of the ECO mode

**Running Cost**
Approx. 25% reduction than conventional

**PCD tool cutting providing high-quality tool edge (Option)**
- Superior cutting edge with PCD generator

**Running Cost**
Approx. 30% reduction than conventional

**AI Setting Screen**

**Typical cutting example**
Minimum damage (after skim cutting)
**Automatic measurement function operating by touch probe (Option)**

**Probe Measurement Function**
- Simple measuring of work piece on the machine such as edge position, hole center, hole pitch

![Measuring by Probe Screen](image)

**Cutting performance meeting various needs**

**Graphite Cutting**
- [Cutting example]
- Thickness 150mm
- Wire φ 0.20 BS

![Graphite Cutting](image)

**Medical Equipment Parts Cutting**
- [Cutting example]
- Titanium
- Thickness 1mm
- Wire φ 0.25 BS

![Medical Equipment Parts Cutting](image)

- [Cutting example]
- Stainless Tube
- Wire φ 0.20 BS
- Pitch 0.7mm

![Stainless Tube Cutting](image)

*All cutting results obtained under FANUC-designated conditions*
High-Reliability

Worldwide standard FANUC CNC with high-reliability

- Excellent operability and economical efficiency with CNC FANUC Series 31i-WB

Cutting Monitor Function
- Display of cutting condition, cutting information and the cutting path on a screen
- Easy check of cutting status

Power Consumption Monitor Function
- Real time display of power consumption situation
- Display of cumulative electric power

Operation guidance functions for supporting operator

Setup Guidance Function
- Indication of setup operation in order
- Prevention of operation mistakes

Maintenance Guidance Function
- Support of usual maintenance
- Easy explanations with many pictures
**ROBOCUT-LINK** for production and quality management (Option)

- Real time monitor of cutting status
- High-Speed NC program transfer

![Remote monitor](image)

Mail to cellular phone

*OS : Microsoft® Windows® 7  **Subject to Internet provider

**CAM software only for ROBOCUT PC FAPT CUT i (Option)**

- Creates optimum NC programs for ROBOCUT by interactive operation
- Enables easy creation of NC programs for taper cutting, gear cutting, etc.
- User friendly design including a self-learning function

*OS : Microsoft® Windows® 2000 SP4 / XP SP2 / Vista / 7 except for Windows® XP Professional / Vista / 7 x64 Edition

**Pre-seal mechanism with high-reliability**

**Pre-seal Mechanism**
- Prevention of cutting chips (sludge) adhesion on the seal plate

**Two-partition Transparent Seal Plate**
- Easy to check dirt of the seal plate
- Easy to disassemble and clean

![Pre-seal mechanism](image)

Clean water supply
**Various Options**

- Linear encoder
- Flow meter
- Pre-filter
- Work light
- Warning light
- Slide table (C400iA)
- Auto grease lubrication
- Wire cutter
- PCD tool cutting function
- Touch probe
- 30kg Wire loader

**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 Training Center**

FANUC training center operates training programs on FANUC ROBOCUT which focus on practical operations and programming with cutting know how and maintenance.
Outer Dimensions and Floor Plan

Installing Conditions

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC200V±10% 3-phase 50/60Hz ±1Hz</td>
<td>Ambient temperature : 15-30°C</td>
</tr>
<tr>
<td>AC220V±10% 3-phase 60Hz ±1Hz</td>
<td>*Recommend 20±1°C for high precision machining.</td>
</tr>
<tr>
<td>Connection cable terminal size : 8-5</td>
<td>Install under the oil mist free and dust free environment.</td>
</tr>
<tr>
<td>Power consumption : 13kVA</td>
<td>Humidity : 75%RH or less</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air supply</th>
<th>Grounding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pressure : 0.5 - 1.0 MPa</td>
<td>The unit must be grounded to avoid damage resulting from</td>
</tr>
<tr>
<td>Flow rate : 100L / min or more</td>
<td>electro-magnetic interference or electrical leakage.</td>
</tr>
<tr>
<td>: 120L / min or more</td>
<td>The grounding itself should be of type C (grounding resistance of 10Ω</td>
</tr>
<tr>
<td>(with a thin wire option)</td>
<td>max.) as specified in the electrical installation standards and should be</td>
</tr>
<tr>
<td>Connection port : Hi coupler 20PM</td>
<td>carried out independently of the grounding of any other piece of</td>
</tr>
<tr>
<td>(Nitto Industry Co.,Ltd.)</td>
<td>machinery(one piece grounding).</td>
</tr>
<tr>
<td>*Regulator-side coupler mounting screw : Rc1/4</td>
<td></td>
</tr>
</tbody>
</table>

| Shield room | |
|-------------| |
| If discharge noise can interfere with surrounding radio, television and other sets, a shield room needs to be created | |

*) The above floor plan is that of a standard type machine. Contact FANUC if you wish to order the options such as a 30kg wire feed unit.
### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>( \alpha-C400iA )</th>
<th>( \alpha-C600iA )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum workpiece dimensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>without Automatic door</td>
<td>standard</td>
<td>700×600×250 mm</td>
</tr>
<tr>
<td>with Automatic door</td>
<td>option</td>
<td>700×555×250 mm</td>
</tr>
<tr>
<td>Maximum workpiece mass</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>without Automatic door</td>
<td>500 kg</td>
</tr>
<tr>
<td></td>
<td>with Automatic door</td>
<td></td>
</tr>
<tr>
<td>XY axis table travel</td>
<td>370×270 mm</td>
<td>600×400 mm</td>
</tr>
<tr>
<td>Z axis travel</td>
<td>255 mm</td>
<td>310 mm</td>
</tr>
<tr>
<td>UV axis travel</td>
<td>±60 mm×±60 mm</td>
<td>±100 mm×±100 mm</td>
</tr>
<tr>
<td>Maximum taper angle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard</td>
<td>±30°/80 mm</td>
<td>±30°/150 mm</td>
</tr>
<tr>
<td>option</td>
<td>±45°/40 mm</td>
<td>±45°/70 mm</td>
</tr>
<tr>
<td>Wire diameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard</td>
<td>( 0.10 \sim 0.30 ) mm</td>
<td>( - )</td>
</tr>
<tr>
<td>option</td>
<td>( 0.05 \sim 0.30 ) mm</td>
<td>( - )</td>
</tr>
<tr>
<td>Maximum wire mass</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 kg</td>
<td></td>
</tr>
<tr>
<td>Machine mass (approx.)</td>
<td>1,800 kg</td>
<td>3,000 kg</td>
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<tr>
<td>Controller</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FANUC Series 31i-WB</td>
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<tr>
<td>Part program storage size</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4MB</td>
<td></td>
</tr>
<tr>
<td>Acoustic noise level</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LPA= 64dB  LPCpeak= 81dB</td>
<td></td>
</tr>
</tbody>
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