

DAIHEN

Almega Friendly series
Arc Welding Robot
FD-B6  **DM350**

**Faster, Slimmer,
& more User-Friendly**

A fully re-designed robot with built-in cables
completely new and improved!



**FLEXIBLE WELDING
POWER SOURCE
(ROBOTIC AND MANUAL)**

OTC DAIHEN INDIA PVT. LTD.

A Fully re-designed robot with built-in cables completely new and improved!

FD-B6

Faster cycle time

Due to the industry's fastest speeds, cycle times are reduced.

Slim design

Built-in wrist motors avoid interference with jigs and workpieces.

User-friendly operation

Designed to avoid interference behind the arm (all cables required for synchro-feed welding are already built into the robot)

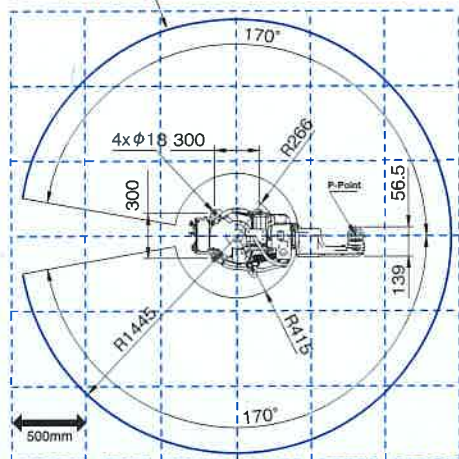
Stronger structure

Payload increase 1.5X for various range of welding tasks. It also is good for handling application.

Manipulator Working Range

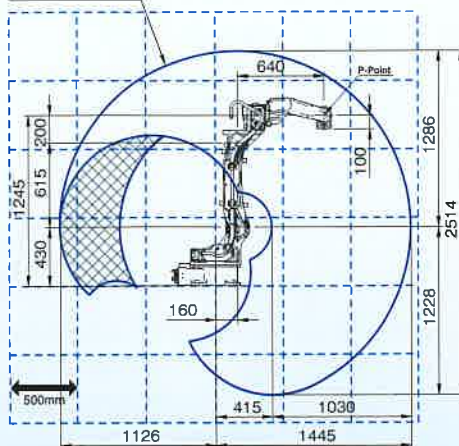
P-Point

Working Range



□ When mounted on floor

P-Point Working Range



⊞ + □ When mounted on wall or ceiling

Manipulator Specifications

FD-B6

| | | FD-B6 |
|----------------------------|-----------------------------|--|
| Structure | | Vertical articulated type |
| Number of Axes | | 6 |
| Max. Payload Capacity | | 6kg |
| Positional Repeatability | | ±0.08mm (Note 1) |
| Drive System | | AC servomotor |
| Drive Capacity | | 3132W |
| Position Feedback | | Absolute encoder |
| Working Range | Arm | J1 (Rotation) ±170° (±50°) (Note 2) |
| | | J2 (Lower arm) -155° to +90° (Note 3) |
| | | J3 (Upper arm) -170° to +245° (Note 4) |
| | | J4 (Swing) ±155° (±170°) (Note 5) |
| | Wrist | J5 (Bending) -45° to +225° (Note 6) |
| | | J6 (Twist) ±205° (±360°) (Note 5 and 6) |
| Maximum Speed | Arm | J1 (Rotation) 4.19rad/s {240°/s} (3.32rad/s {190°/s}) (Note 2) |
| | | J2 (Lower arm) 4.19rad/s{240°/s} |
| | | J3 (Upper arm) 4.01rad/s{230°/s} |
| | | J4 (Swing) 7.50rad/s{430°/s} |
| | Wrist | J5 (Bending) 7.50rad/s{430°/s} |
| | | J6 (Twist) 11.00rad/s{630°/s} |
| Wrist Allowable Load | Allowable Moment | J4 (Swing) 10.5 N·m |
| | | J5 (Bending) 10.5 N·m |
| | | J6 (Twist) 5.9 N·m |
| | Allowable Moment of Inertia | J4 (Swing) 0.28kg·m ² |
| | | J5 (Bending) 0.28kg·m ² |
| | | J6 (Twist) 0.06kg·m ² |
| Arm Cross-sectional Area | | 3.59 m ² x 340° |
| Ambient Conditions | | Temp: 0 to 45°C, Hmd: 20 to 80%RH (No Condensation) |
| Mass (weight) | | 145kg |
| Upper Arm Payload Capacity | | 10 kg (Note 7) |
| Installation Type | | Floor, wall, or ceiling |
| Paint Color | | White (Munsell notation 10GY 9/1) |

Notes

1. Positional repeatability of the tool center point (TCP) value complies with the JIS-B-8432 Standard.
2. Specifications for wall mounting appear in parentheses
3. The working range of the J2 axis may be restricted when wall mounted.
4. When this unit is mounted on the floor, the working range of the J3 axis restricted to between -170° and +180°
5. This specification applies when a single-wire power cable is fed through the hollow part of J4 and J6. The value in parentheses represents all other specifications.
6. The working range of the J6 axis may be restricted by the specific posture of J5 axis.
7. The capacity of the upper arm varies with the wrist capacity.

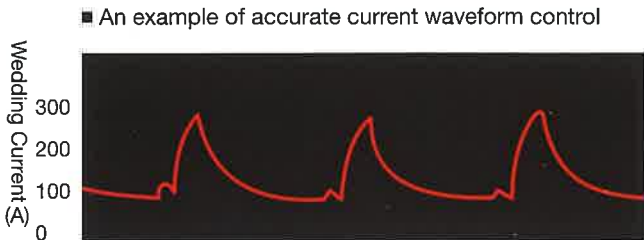
Digital Control creates new CO2/MAG Welding W

The Newest Advanced Welding Machine with new user-friendly functions, changing conventional w

New Functions with High Quality and High Efficiency Welding

• Less Spatter Generation

High accurate control of current waveform in the short circuit period granulates and generates fewer spatters.



• Stable arc control within full range of current

Stable Welding Control from 30A to 350A. Excellent for complicated joint welding and out of position welding.

• Bead Appearance



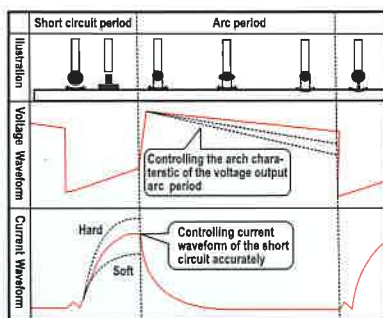
• 40A, 16V, 50cm/min

• 180A, 21 V, 65cm/min

• Digital Electronic Reactor Control which supports high quality welding

OTC's original Digital Electronic Reactor controls output voltage accurately not only in the short circuit period, but also in the arc period.

• Conceptual diagram of newly developed Digital Electronic Reactor Control



• Adjustment of arc characteristic provides various selection of arc control

• Arc characteristic adjustment

| HARD | SOFT |
|---|--|
| <ul style="list-style-type: none"> Improvement of stability for high speed welding Improvement of efficiency of out of position welding Arc stability control when the extension cable is lengthened Hard arc feeling is required | <ul style="list-style-type: none"> Reduce spatter generation Secure the flat bead Improvement of high current weldability Soft arc feeling is required |

• Substantially improved the instantaneous arc starts by digital turbo start function and digital antistick

By standardizing the diameter of the wire point, stable arc starts are achieved for Spatter Free Welding. With automatic welding the number of start errors and down time are drastically reduced.

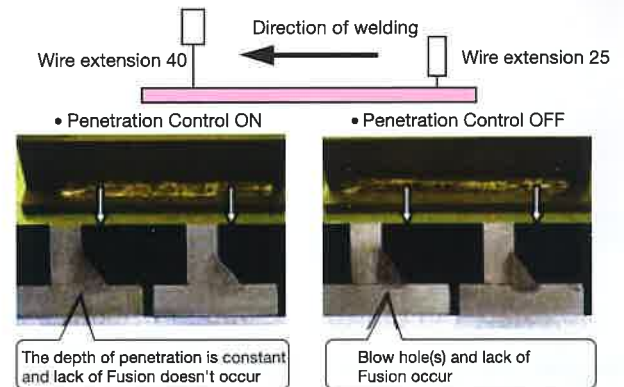


• The wire points are small and same size

• The wire points are irregular and not same size

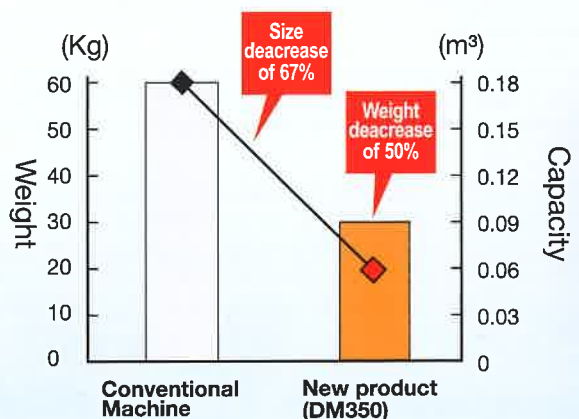
• Standard Feature: Penetration Adjustment Function, contributes to the stabilization of the welding quality

Even when the wire extension is changed while welding, penetration is maintained and welding defects are prevented.



• Substantially small size and light weight

• A combination of 80KHz (Output Frequency) high speed inverter circuit by OTC's original Soft Switching Control and digital control provides substantially small size and light weight.



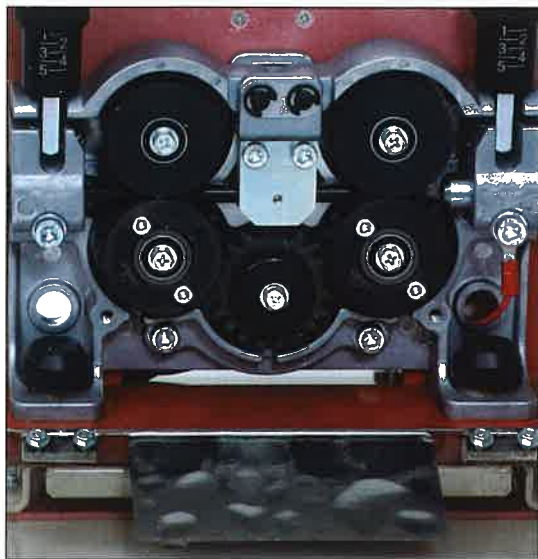
World!!!
welding machines.



DM350

• 4 Roll Feeder Standard

Wire feeding power of this type is 1.5 times greater than that of a 2 roll feeding type! The powerful 4-roll wire feeding allows for greater welding torch flexibility.



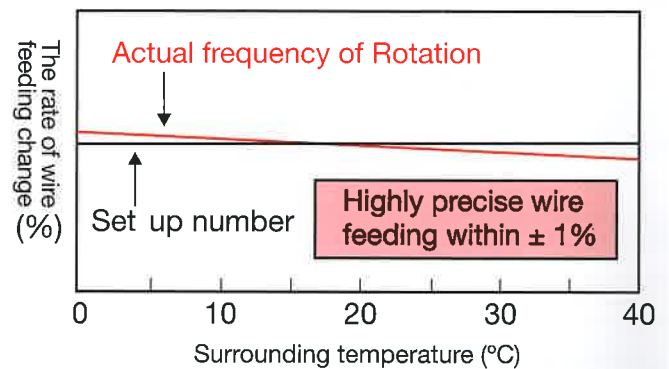
User Friendly Design and Operation

- 5 welding types can correspond with 16 types of wire diameter. With option soft, Aluminum can be welded.
- Easy to control the welding condition of the welding power source intensively or connect with Automatic Machine and Robots.
- **Soft Arc Mode Standard**
For soft arc, select Soft Arc Mode by Function Key. (Soft arc applicable mode: CO₂ mild steel solid 0.9, 1.0, 1.2)
- **Input Power Capacity And Cable Specifications**

| ITEM | MODEL NAME | DM350 |
|--------------------------------|-----------------|--|
| Power Source Voltage | V | 400± 15% (Inform input voltage when ordering) |
| Phase | - | 3 phase |
| Input Power Capacity | kVA | more than 20 |
| Fuse/Breaker Capacity | Fuse | A 50 |
| | Breaker | A 50 |
| Input Side Cable | mm ² | more than 4 |
| Base Metal/ Feeder Power Cable | mm ² | 38 |
| Earth Cable | mm ² | more than 4 |

• Encoder Feedback Type with newly developed adjustable Inertia Control

Highly precise wire feeding, not influenced by surrounding temperature or extension cable, contributes to the stabilization of the welding quality.



• DM350 Welding Modes

| Wire type | Gas | Wire Diameter (mm) | Gas | Wire type | Wire Diameter (mm) | |
|------------------|---------------------------------------|--------------------|-----------------------|---------------------------------------|--------------------|-----|
| Mild Steel Solid | CO ₂ | 0.8 | Mild Steel Cord | CO ₂ | 1.2 | |
| | | 0.9 | | | 1.4 | |
| | | 1.0 | | | - | |
| | | 1.2 | Stainless Steel Solid | MIG [80% Ar + 20%CO ₂] | 0.8 | |
| | - | 0.9 | | | | |
| | - | 1.0 | | | | |
| | 0.8 | 1.2 | | | | |
| | MAG [80% Ar + 20%CO ₂] | - | 0.9 | Mild Steel Solid | CO ₂ | - |
| | | | 1.0 | | | 0.9 |
| | | | 1.2 | | | 1.2 |
| - | | | - | | | |
| - | - | - | - | - | - | |

• Welding Power Source

| Welding Power Source | Type | DM350 |
|-------------------------|------|---|
| Rated Input Voltage | V | 400±15% (Inform Input Voltage when ordering) |
| Phase | | 3 phase |
| Rated Input | kVA | 18 (15kW) |
| Rated Output Current | A | 350 |
| Rated Load Voltage | V | 31.5 |
| Range of Output Current | A | 30-350 |
| Range of Output Voltage | V | 12-36 |
| Max. no-load Voltage | V | 58 |
| Rated Duty Cycle | % | 60 |
| Dimensions (WxDxH) | mm | 250 x 640 x 370(except handle) |
| Weight | kg | 30 |

SMOOTH OPERATION

TEACH PENDANT

Compact and lightweight

- 27% lighter (960 g) compared to previous model, making teaching for a long time possible.
- 40% smaller in size compared to previous model, making simple handling even in tight spaces possible.



Smooth teaching

- Simple operation with the Touch panel
- Simple adjustment with the jog dial

Smooth backups

- Inclusion of a USB memory slot makes data saving and reading possible



SMART CONTROLLER

FD11

Electric Power Conservation

- Use of power conservation modes **reduces electric power consumption by 50%** (energy conservation timer function) (External servo off signal function). *Comparison of apparent power

Minimal maintenance

- Addition of axes is made possible.
- Reduced number of parts by 30%

Space conservation

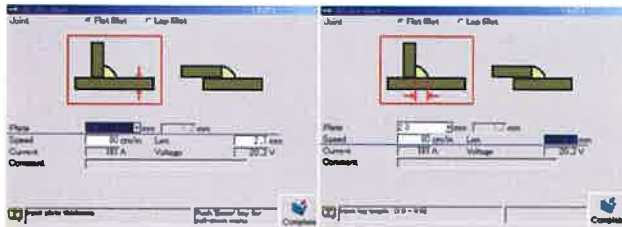
- Volume reduced by 20% (compared to a conventional model)
- Increased space freed above



SMART WELDING

Welding condition guide function

Anyone can easily teach welding conditions.



SMOOTH OPERATION

Jog dial

It is possible to do high and low scroll of teaching programs, to make an adjustment of wire aiming position and to do wire inching and retract movement with jog dial. Jog dial can provide intuitive operation for multiple items.



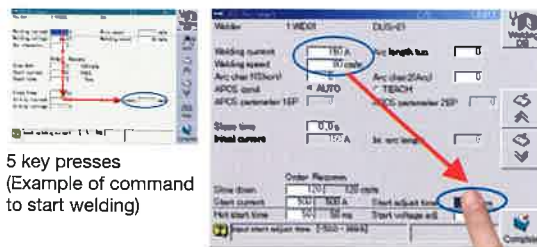
Turn jog dial



SMOOTH OPERATION

One-touch access

The touch Panel offers one-touch access to the input section, minimizing the number of times keys must be pressed.



5 key presses
(Example of command to start welding)

1 key press

SMOOTH WELDING

Improved operability

correcting teaching to improve welding quality is made possible in a short time.



Adjustment of the torch angle is possible

The torch position and torch angles (push angle, drag angle, work angle) of the working section can be changed all at once.

SMART WELDING

Increased reliability

When a welding error occurs, troubleshooting can be done easily, leading to reducing downtime.



Welding recorder (optional)

When a welding error occurs, data is backed up automatically. This helps to find the cause of the trouble reducing downtime.



Traceability is easily added (optional)

Simply by connecting an FD-AM computer, traceability can be included.

SINGLE AXIS POSITIONER

High-speed motion increases production efficiency!

- **Faster** Increasing productivity due to faster speed, 120 degrees per second (1PC500), 72 degrees per second (1PC1000)
- **Accurate** Adopting Non-Backrush mechanism for high accuracy. (Position Repeatability $\pm 0.1\text{mm}$ (At 300mm from Rotation Center))
- **Durable** Simple drive system can reduce the risk of failure.
- **Easy Installation** Designed for compact, lightweight and easy installation. Standard built-in secondary welding terminal (500A) for easy connection. Cables and hoses can be routed at center of rotation table due to through-hole designs. Thus, the welding jig can be simply connected.



All-1PC500 / 1PC1000

For Automatic Cleaning of the Torch & Wire Cutting



- ① Wire cut
- ② Brushing
- ③ Cleaning of spring
- ④ Soaking in liquid
- ⑤ Suction cleaning, application of liquid

L-10748

CLEAN KIT

The clean kit has realized improvement in the operation rate of welding robot and the welding quality.

- Automatically removes spatters in the torch nozzle. (L-10748, K-2725)
- Enables simultaneous operation of cleaning and application of adhesive spatter inhibitors. (L-10748, K-2725)
- Brushing function is added to wire cutting function (K-2726). (L-10748, K-2725)

GAS SAVER GFC

Reduces the sudden flow of gas and constantly controls the flow of shielding gas.

Features and mechanism of Gas Saver

- The gas flow rate from each welding section can be adjusted with the Teach Pendant. You can also set the gas flow rate for particular types of gas or welding methods.
- The actual gas flow rate can be monitored in real time with the Teach Pendant.
- The flow control prevents a sudden increase in flow at the start of welding. Because it controls the flow with high accuracy in real time, the desired gas flow rate can be kept stable (flow accuracy $\pm 2\%$)
- While the gas is flowing, the flow rate is constantly monitored. If a flow shortage occurs, the robot can be stopped.

In accordance with DAIHEN's policy to make continuing improvements, design and/or specifications are subject to change without notice and without any obligation on the part of manufacturer.



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