



*Welding & Handling Robot*  
***Friendly series***

The Ultimate in Usability

# 7-axis Robot

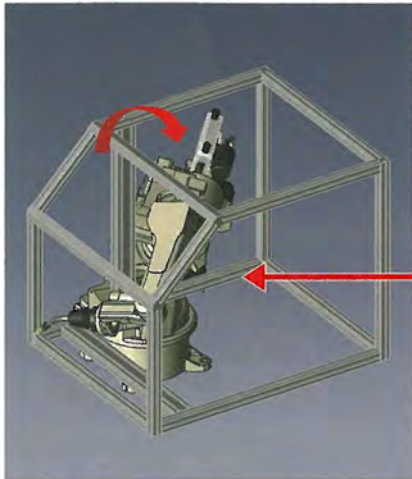
**FD-B4S**  
**FD-V6S**



**FD-B4S**

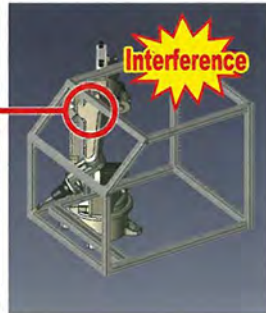
**FD-V6S**

- The robot can change posture without changing the position and posture of the welding torch.
- Teaching of 7-axis robots can be complicated, but our synchronized motion technology now makes simple manual operation possible.
- The welding power cable is now incorporated into the seventh arm—an industry first. Teaching is now possible without concern for interference with jigs and workpieces.

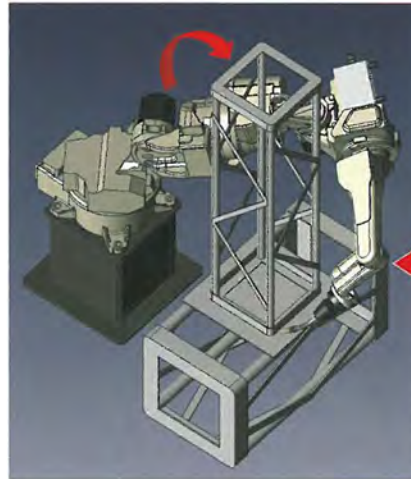


With 7-axis Robot

**Avoids interference**  
Even when using complicated jigs and workpieces, the seventh rotary joint makes it possible to avoid interference and determine the most effective welding torch posture. This contributes to improved welding quality.

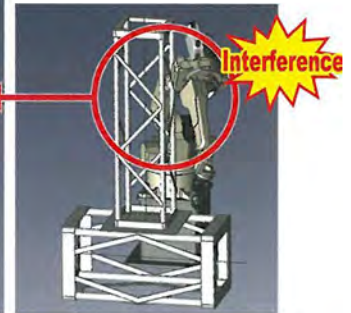


With 6-axis robot



With 7-axis Robot

**Circumferential welding**  
The seventh rotary joint makes it possible to encircle the workpiece and perform circumferential welding with only a single robot.



With 6-axis robot

Manipulator Specifications

	FD-B4S	FD-V6S	
Structure	Vertical articulated type	Vertical articulated type	
Number of Axes	7	7	
Wrist Capacity	4 kg	6 kg	
Positional Repeatability	±0.08 mm (Note 1)	±0.08 mm (Note 1)	
Driving Method	AC servomotor	AC servomotor	
Driving Capacity	3550 W	3600 W	
Positional Feedback	Absolute encoder	Absolute encoder	
g Range	Arm	Arm	
	J1 (Rotation 1)	±170°	±170°
	J2 (Front/back)	-145° to +70°	-145° to +70°
	J7 (Rotation 2)	±90°	±90°
W	Wrist	Wrist	
	J3 (Up/down)	-170° to +142.6°	-170° to +149°
	J4 (Swing)	±155°	±180°
	J5 (Bending)	-45° to +225° (Note 2)	-50° to +230°
m S eed	Arm	Arm	
	J6 (Twist)	±205° (Note 2)	±360°
	J1 (Rotation 1)	3.66 rad/s [210°/s]	3.66 rad/s [210°/s]
	J2 (Front/back)	3.66 rad/s [210°/s]	3.66 rad/s [210°/s]
	J7 (Rotation 2)	3.14 rad/s [180°/s]	3.14 rad/s [180°/s]
	J3 (Up/down)	3.66 rad/s [210°/s]	3.66 rad/s [210°/s]
Maxi	Wrist	Wrist	
	J4 (Swing)	7.33 rad/s [420°/s]	7.33 rad/s [420°/s]
	J5 (Bending)	7.33 rad/s [420°/s]	7.33 rad/s [420°/s]
able Load	Arm	Arm	
	J6 (Twist)	10.5 rad/s [600°/s]	10.82 rad/s [620°/s]
	J4 (Swing)	10.1 N·m	11.8 N·m
Moment of Inertia	Wrist	Wrist	
	J5 (Bending)	10.1 N·m	9.8 N·m
	J6 (Twist)	2.94 N·m	5.9 N·m
Wrist/Allowable	Arm	Arm	
	J4 (Swing)	0.38 kg·m <sup>2</sup>	0.30 kg·m <sup>2</sup>
	J5 (Bending)	0.38 kg·m <sup>2</sup>	0.25 kg·m <sup>2</sup>
Arm Cross-sectional Area	Wrist	Wrist	
	J6 (Twist)	0.03 kg·m <sup>2</sup>	0.06 kg·m <sup>2</sup>
	J4 (Swing)	0.38 kg·m <sup>2</sup>	0.25 kg·m <sup>2</sup>
Environmental Conditions	Arm	Arm	
	J5 (Bending)	0.38 kg·m <sup>2</sup>	0.25 kg·m <sup>2</sup>
	J6 (Twist)	0.03 kg·m <sup>2</sup>	0.06 kg·m <sup>2</sup>
Capacity of Upper Arm	Arm	Arm	
	J5 (Bending)	0.38 kg·m <sup>2</sup>	0.25 kg·m <sup>2</sup>
	J6 (Twist)	0.03 kg·m <sup>2</sup>	0.06 kg·m <sup>2</sup>
Installation Method	Arm	Arm	
	J5 (Bending)	0.38 kg·m <sup>2</sup>	0.25 kg·m <sup>2</sup>
	J6 (Twist)	0.03 kg·m <sup>2</sup>	0.06 kg·m <sup>2</sup>
Paint Color	Arm	Arm	
	J5 (Bending)	0.38 kg·m <sup>2</sup>	0.25 kg·m <sup>2</sup>
	J6 (Twist)	0.03 kg·m <sup>2</sup>	0.06 kg·m <sup>2</sup>

- Notes
1. Positional repeatability of the tool center point (TCP) value complies with the JIS-B 8432 Standard
  2. Working range of J6 axis may be restricted by the position of J5 axis.
  3. The capacity of the upper arm varies with the wrist capacity.
  4. For wall- and ceiling-mount configurations, please contact our sales staff.

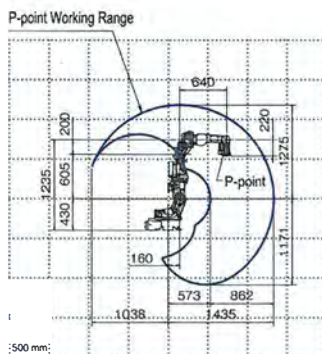
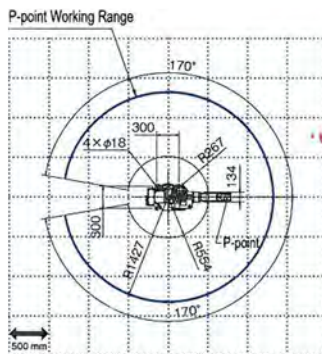
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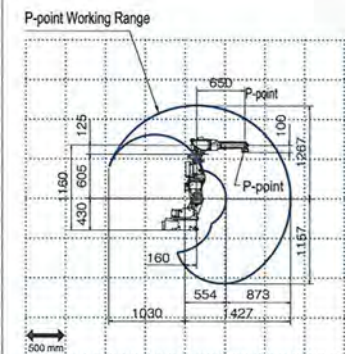
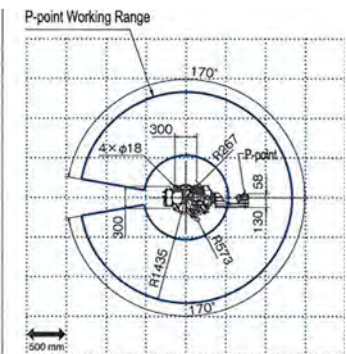
Manipulator Working Range

FD-B4S



\* The figures above show working range of P-point with no torch mounted.

FD-V6S



\* The figures above show working range of P-point with no torch mounted.

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