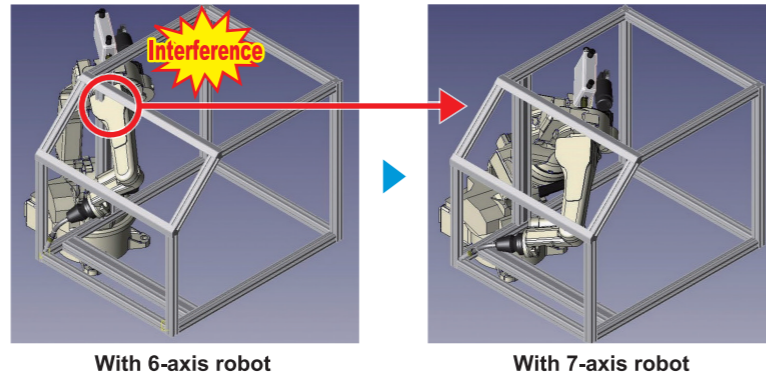


- The robot can change posture without changing the position and posture of the welding torch.
- Teaching of 7-axis robots can be complicated, but our synchronized motion technology now makes simple manual operation possible.
- The welding power cable is now incorporated into the seventh arm, welding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

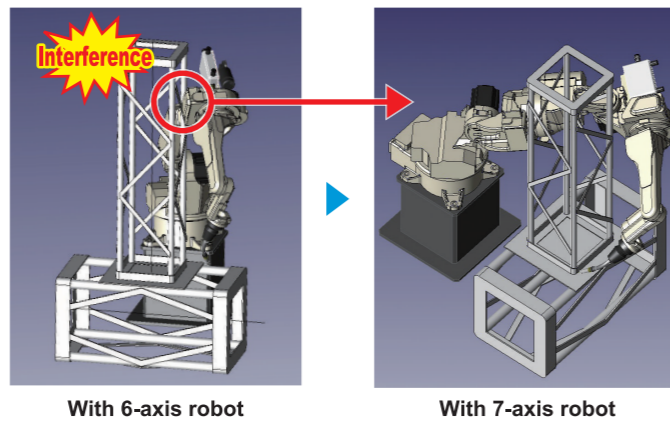
### Avoids interference

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.



### Circumferential welding

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



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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•The information contained in this catalog is current as of October 2022 and is subject to revision without notice.  
 •This catalog was printed with environmentally-friendly vegetable oil ink.



**Almega Friendly series II**

# 7-axis Robot

## FD-BT6/BT6L/VT8/VT8L/VT20

7-axis robot with built-in cable for maximum usability

Improved with all performances!



# Btype

7-axis robot of internal cable type

Wrist (Only J5, J6 Axis) IP65



**FD-BT6**

**FD-BT6L**

# Vtype

7-axis robot that supports various applications



**FD-VT8**

**FD-VT8L**

7-axis robot of medium load type



**FD-VT20**

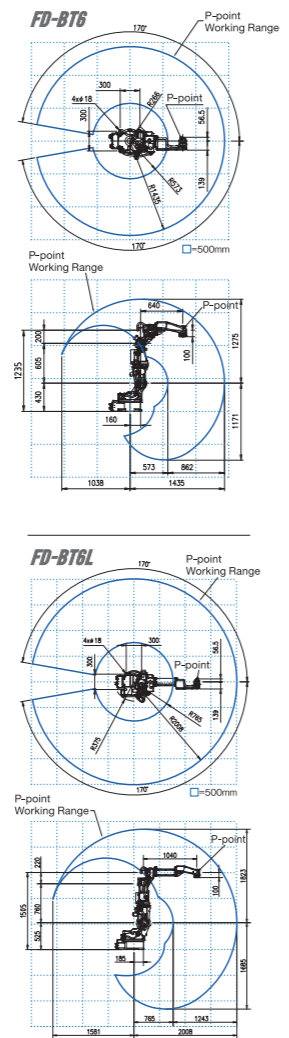
## Manipulator Specifications

	FD-BT6	FD-BT6L
Name	NBT6	NBT6L
Structure	Vertical articulated type	
Number of axis	7	
Max. payload capacity	6 kg	
Positional repeatability	±0.05 mm (Note 1)	±0.06 mm (Note 1)
Drive system	AC Servo motor	
Drive capacity	4,132W	5,832W
Position feedback	Absolute encoder	
Working range	J1 (Revolving1)	±170°
	Arm J2 (Fore/Back)	-145° ~ +70°
	J7 (Revolving2)	±90°
	J3 (Up/Down)	-170° ~ +142.6°
	J4 (Swing)	±155°
	Wrist J5 (Bending)	-45° ~ +225° (Note 2)
Max. velocity	J1 (Revolving1)	3.84 rad/s [220°/s]
	Arm J2 (Fore/Back)	3.93 rad/s [225°/s]
	J7 (Revolving2)	3.14 rad/s [180°/s]
	J3 (Up/Down)	4.01 rad/s [230°/s]
	J4 (Swing)	7.50 rad/s [430°/s]
	Wrist J5 (Bending)	7.50 rad/s [430°/s]
Wrist load	J4 (Swing)	10.5 N·m
	J5 (Bending)	10.5 N·m
	J6 (Twist)	5.9 N·m
	J4 (Swing)	0.28 kg·m <sup>2</sup>
	J5 (Bending)	0.28 kg·m <sup>2</sup>
	J6 (Twist)	0.06 kg·m <sup>2</sup>
Arm operation cross-sectional area	2.57 m <sup>2</sup> × 340°	5.28 m <sup>2</sup> × 340°
Ambient temperature and humidity	0 ~ 45°C, 20 ~ 80%RH (No condensation)	
Mass (weight)	185 kg	330 kg
Upper arm payload capacity	10 kg (Note 3)	
IP Code	IP65 (Only J5, J6 Axis)	
Installation type	Floor type	
Paint color	White (Munsell 10GY9/1)	

- Note) 1. The value of the positional repeatability is at the tool center point (TCP) compliant to ISO 9283  
 2. There are occasions where restrictions can be made to the operation range of the J6 axis, depending on the J5 axis's posture.  
 3. When loading the Max. payload capacity as the end effector.

## Manipulator Working Range

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



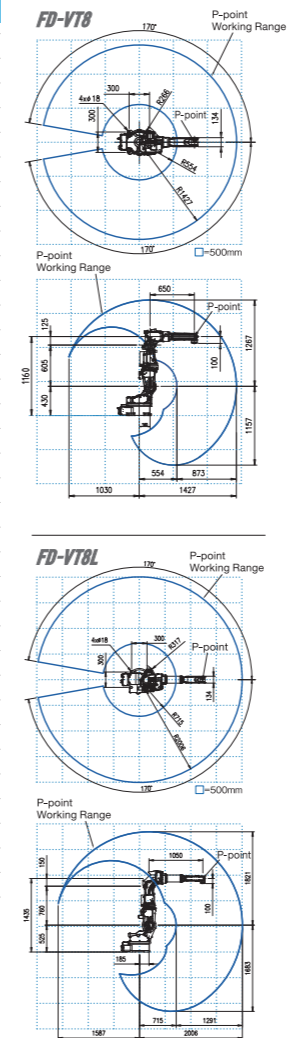
## Manipulator Specifications

	FD-VT8	FD-VT8L
Name	NVT8	NVT8L
Structure	Vertical articulated type	
Number of axis	7	
Max. payload capacity	8 kg	
Positional repeatability	±0.05 mm (Note 1)	±0.06 mm (Note 1)
Drive system	AC Servo motor	
Drive capacity	4,016W	6,000W
Position feedback	Absolute encoder	
Working range	J1 (Revolving1)	±170°
	Arm J2 (Fore/Back)	-145° ~ +70°
	J7 (Revolving2)	±90°
	J3 (Up/Down)	-170° ~ +149°
	J4 (Swing)	±180°
	Wrist J5 (Bending)	-50° ~ +230° (Note 2)
Max. velocity	J1 (Revolving1)	3.84 rad/s [220°/s]
	Arm J2 (Fore/Back)	3.93 rad/s [225°/s]
	J7 (Revolving2)	3.14 rad/s [180°/s]
	J3 (Up/Down)	4.01 rad/s [230°/s]
	J4 (Swing)	7.50 rad/s [430°/s]
	Wrist J5 (Bending)	7.50 rad/s [430°/s]
Wrist load	J4 (Swing)	17.6 N·m
	J5 (Bending)	17.6 N·m
	J6 (Twist)	7.8 N·m
	J4 (Swing)	0.43 kg·m <sup>2</sup>
	J5 (Bending)	0.43 kg·m <sup>2</sup>
	J6 (Twist)	0.09 kg·m <sup>2</sup>
Arm operation cross-sectional area	3.11 m <sup>2</sup> × 340°	5.40 m <sup>2</sup> × 340°
Ambient temperature and humidity	0 ~ 45°C, 20 ~ 80%RH (No condensation)	
Mass (weight)	182 kg	331 kg
Upper arm payload capacity	10 kg (Note 3)	20 kg (Note 3)
IP Code	—	
Installation type	Floor type	
Paint color	White (Munsell 10GY9/1)	

- Note) 1. The value of the positional repeatability is at the tool center point (TCP) compliant to ISO 9283  
 2. There are occasions where restrictions can be made to the operation range of the J6 axis, depending on the J5 axis's posture.  
 3. When loading the Max. payload capacity as the end effector.

## Manipulator Working Range

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



## Manipulator Specifications

	FD-VT20	
Name	NVT20	
Structure	Vertical articulated type	
Number of axis	7	
Max. payload capacity	20 kg	
Positional repeatability	±0.06 mm (Note 1)	
Drive system	AC Servo motor	
Drive capacity	6,600W	
Position feedback	Absolute encoder	
Working range	J1 (Revolving1)	±170°
	Arm J2 (Fore/Back)	-145° ~ +75°
	J7 (Revolving2)	±90°
	J3 (Up/Down)	-170° ~ 160°
	J4 (Swing)	±180°
	Wrist J5 (Bending)	-50° ~ +230° (Note 2)
Max. velocity	J1 (Revolving1)	3.93 rad/s [225°/s]
	Arm J2 (Fore/Back)	3.32 rad/s [190°/s]
	J7 (Revolving2)	2.79 rad/s [160°/s]
	J3 (Up/Down)	3.84 rad/s [220°/s]
	J4 (Swing)	7.80 rad/s [447°/s]
	Wrist J5 (Bending)	7.61 rad/s [436°/s]
Wrist load	J4 (Swing)	43.7 N·m
	J5 (Bending)	43.7 N·m
	J6 (Twist)	19.6 N·m
	J4 (Swing)	1.09 kg·m <sup>2</sup>
	J5 (Bending)	1.09 kg·m <sup>2</sup>
	J6 (Twist)	0.24 kg·m <sup>2</sup>
Arm operation cross-sectional area	3.91 m <sup>2</sup> × 340°	
Ambient temperature and humidity	0 ~ 45°C, 20 ~ 80%RH (No condensation)	
Mass (weight)	336 kg	
Upper arm payload capacity	5 kg (Note 3)	
IP Code	—	
Installation type	Floor type	
Paint color	White (Munsell 10GY9/1)	

- Note) 1. The value of the positional repeatability is at the tool center point (TCP) compliant to ISO 9283  
 2. There are occasions where restrictions can be made to the operation range of the J6 axis, depending on the J5 axis's posture.  
 3. When loading the Max. payload capacity as the end effector.

## Manipulator Working Range

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

