DAIHEN Inc.

Friendly series Ⅱ

The Optimum Robot for Collaborative Arc Welding

FD-VC4L FD-VC4

Welding package

Multiple Easy Teaching Methods with the Latest in Welding Technologies

Optimum robot
for collaborative arc welding with high track accuracy
and high durability!

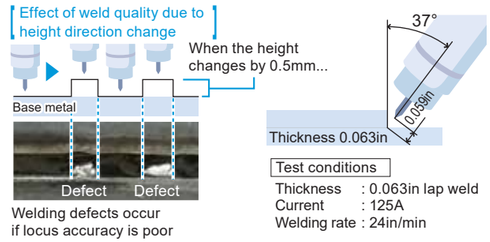
DAIHEN Robots Solve the Problem of Collaborative Arc welding applications

Optimum Robots for *Collaborative Arc Welding*

Quality

Achieves high track accuracy enabling high quality welding

Collaborative robots with low trajectory accuracy may cause welding defects as shown in the figure on the right.
DAIHEN, the Global Leader in Robotic Arc Welding Technology, has developed a new control technology to improve the trajectory accuracy of linear and circular interpolation, which improves welding quality, and installed in the Optimum Robot for collaborative applications.
Achieves high-quality welding with stable trajectory accuracy equivalent to that of industrial robots.

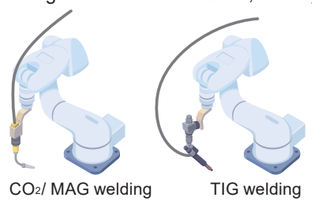


Use

Various welding methods are selectable

- CO_2/ MAG welding
- MAG pulse welding
- Low-Spatter welding
- Ultra-Low-Spatter Technology Synchro-feed robotic welding system
- TIG welding

By adopting the same controller as an industrial robot, a wide variety of peripheral devices and functions can be used. Various welding methods such as CO_2/ MAG welding, ultra-low spatter welding, and TIG welding can be selected to suit the application. A full range of welding functions can be used, so they are capable for all welding tasks.

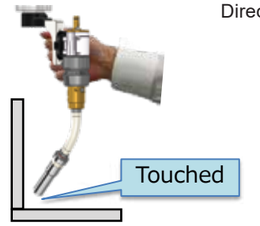

CO_2/ MAG welding

TIG welding

Extensive welding-only functions

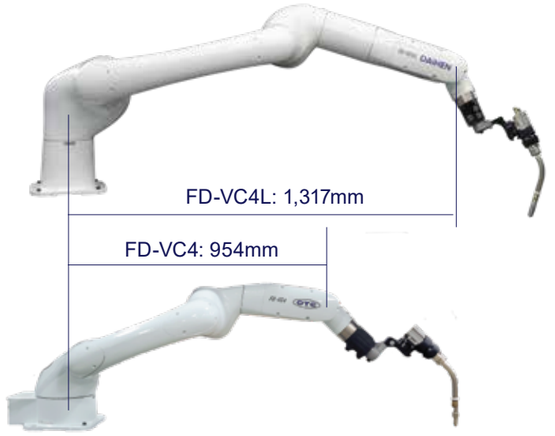
- Touch sensor function
- Arc sensor function
- Weaving function
- Offline Teaching System D-ST
- Robotic Welding Management-System FD-AM
- Various welding torches

Teaching



Easy to teach the target position with touch sensor mode
Directly move the arm by hand to teach the welding start position and aiming posture

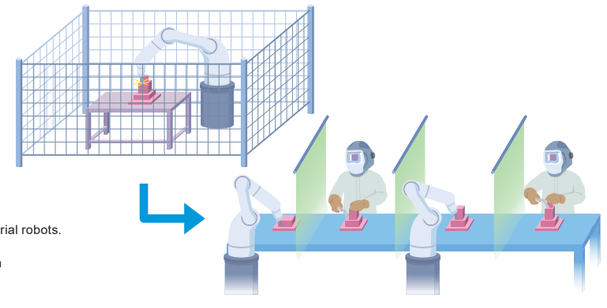
- Robot stops automatically when wire touches base material.
- The target welding position can be taught accurately and easily.
- Automatic stop function prevents interference between the base material and the torch due to operational errors.(Optional Touch sensor software requied)



Space Saving

No need for a safety fence to separate people and robot.

This optimum robot for collaborative application can work in the same space as a person without installing a safety fence.*1
Therefore, it is no longer necessary to secure a large space for introduction of conventional industrial robots.
*1 If a safety fence is not installed, a risk assessment by the customer is required.

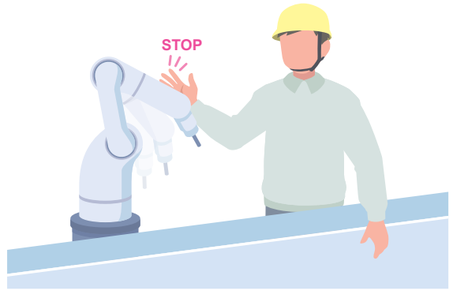


FD-VC4 and FD-VC4L complies with ISO 10218-1 safety standard for industrial robots. In addition, the Robot Controller conforms to the international standard "ISO 13849-1PLd(Cat.3" and safety certification by a third-party certification body has acquired.

Safety

When contact with a human is detected, the robot stops.

This optimum robot is equipped with a safety function that automatically stops when a force exceeding a preset contact level is detected.
In addition, it has an arm shape that prevents pinching of hands, fingers, and a design that eliminates corners, thereby alleviating impact during contact.



■ Basic specifications and operating range

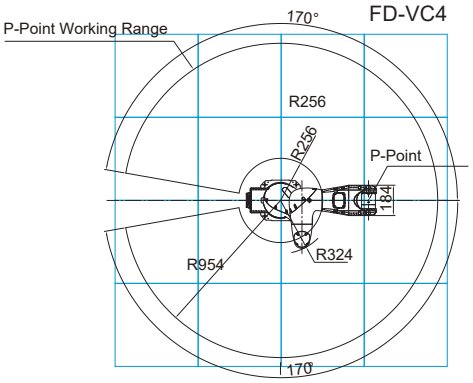
[Manipulator Specifications]

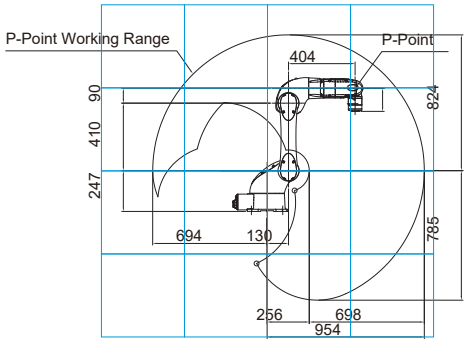
Note ¹) Position repeatability of thr tool center point (TCP) value complies with the JIS B 8432 Standard.
Note ²) Regarding the specification of the operation speed, a risk assessment in the use environment is required.

Item			Specification	Specification
Name			NVC4	NVC4L
Structure			Vertically articulated type	Vertically articulated type
Number of Axes			6	6
Wrist Capacity			8.81lb (4 kg)	8.81lb (4 kg)
Positional Repeatability			± 0.03mm (Note ¹)	± 0.04mm (Note ¹)
Drive Method			AC servo motor	AC servo motor
Drive Capacity			800 W	1300 W
Position Feedback			Absolute encoder	Absolute encoder
Working range	Arm	J1 (Rotation)	±170°	±170°
		J2 (Front/Back)	-155°~+90°	-155°~+90°
		J3 (Up/Down)	-155°~+180°	-155°~+240°
	Wrist	J4 (Swing)	±170°	±170°
		J5 (Bending)	-30°~+210°	-30°~+210°
		J6 (Twist)	±360°	±360°
Maximum Speed			39 in/s (Note ²)	39 in/s (Note ²)
Wrist Allowable Load	Allowable moment	J4 (Rotation)	13.0 N•m	13.0 N•m
		J5 (Bending)	13.0 N•m	13.0 N•m
		J6 (Twist)	4.4 N•m	4.4 N•m
	Allowable Moment of Inertia	J4 (Rotation)	0.462 kg•m²	0.462 kg•m²
		J5 (Bending)	0.462 kg•m²	0.462 kg•m²
		J6 (Twist)	0.048 kg•m²	0.048 kg•m²
Arm Cross-section Area			15.2ft² (1.41 m²) × 340°	32.7ft² (3.04m²) × 340°
Environmental Conditions			Temp.: 32°F to 113°F (0 to 45°C), Humidity: 20~80%RH (No-condensation)	Temp.: 32°F to 113°F (0 to 45°C), Humidity: 20~80%RH (No-condensation)
Weight			82lb (37kg)	104lb (47kg)
IP code			IP65	IP65
Installation method			Floor-mounted	Floor-mounted
Paint color			Ice Blue	Alice Blue

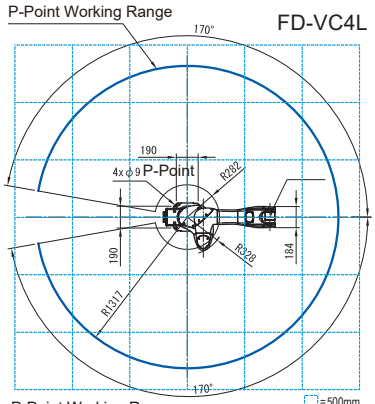
[Manipulator Working Range]

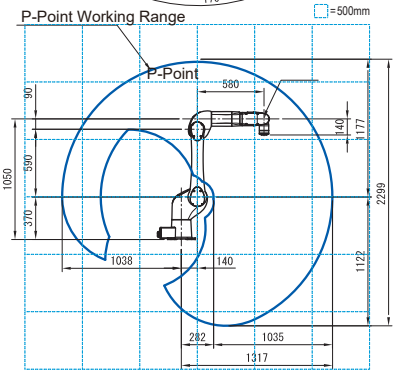
FD-VC4





FD-VC4L





DAIHEN Inc.

OTC DAIHEN Website
www.DAIHEN-USA.com

DAIHEN ROBOT Website
www.DAIHEN-robot.com/en

NORTH AMERICA CORPORATE HEADQUARTERS
1400 Blauser Dr, Tipp City OH 45371
Phone: (937) 667-0800
Fax: (937) 667-0885

ATLANTA TECHNICAL CENTER
3135 Medlock Bridge Road
Norcross, GA 30071
Phone: 888-OTC-ROBO
Fax: (937) 667-0885

DETROIT TECHNICAL CENTER
750 Welch Road
Commerce Township, MI 48390
Phone: 888-OTC-ROBO
Fax: (937) 667-0885

Member of DAIHEN Group

OTC-28 REV 08/24