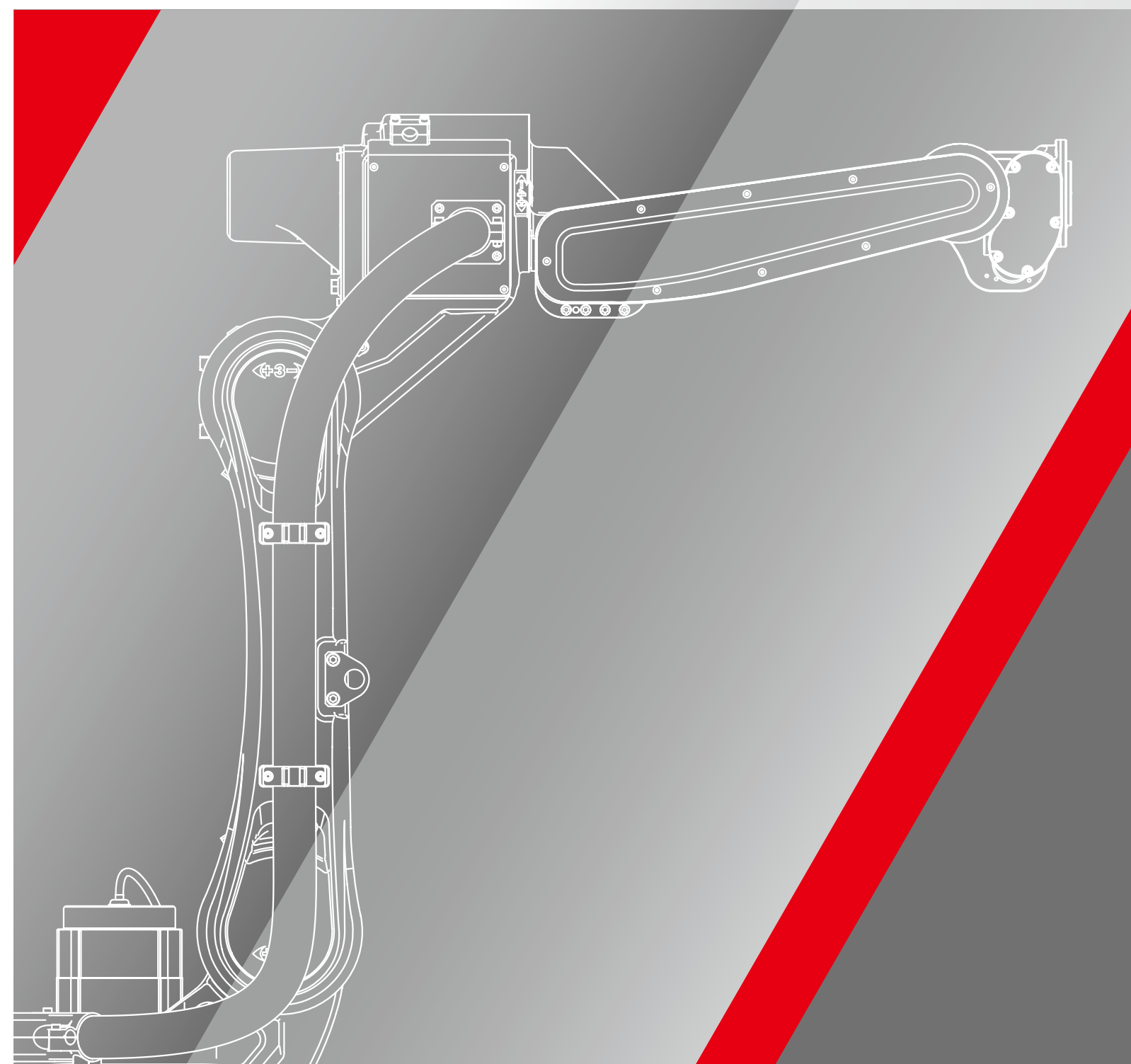


Kawasaki Robot Arc welding robots



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Kawasaki Robot



CAUTIONS TO BE TAKEN TO ENSURE SAFETY

- For those persons involved with the operation / service of your system, including Kawasaki Robot, they must strictly observe all safety regulations at all times. They should carefully read the Manuals and other related safety documents.
- Products described in this catalogue are general industrial robots. Therefore, if a customer wishes to use the Robot for special purposes, which might endanger operators or if the Robot has any problems, please contact us. We will be pleased to help you.
- Be careful as Photographs illustrated in this catalogue are frequently taken after removing safety fences and other safety devices stipulated in the safety regulations from the Robot operation system.



ISO certified in Akashi Works and Nishi-Kobe Works.

Kawasaki arc welding robots use the latest arc welding technology to rival the quality of a skilled human welder

Features

Easy operation

Each robot is equipped standard with an easy to view and operate color LCD touchscreen teach pendant. The operator teaches the process path using dedicated arc welding teaching screens that are designed for simplified use and easy operation.

Easy connection with the optimum welding equipment

The built-in interface dedicated to arc welding equipment enables an easy connection using a single cable.

Welding condition database

During an automated process, the operator can change the welding conditions on-the-fly, and then store these changes to a built-in database. The saved conditions can then be recalled from the database and reused.

Reduced downtime

A standard, dedicated start sequence function improves the arc establishment. Also, for weld process faults, the robot includes a restart sequence function to automatically conduct overlap welding and resume the operation.

Advanced technology

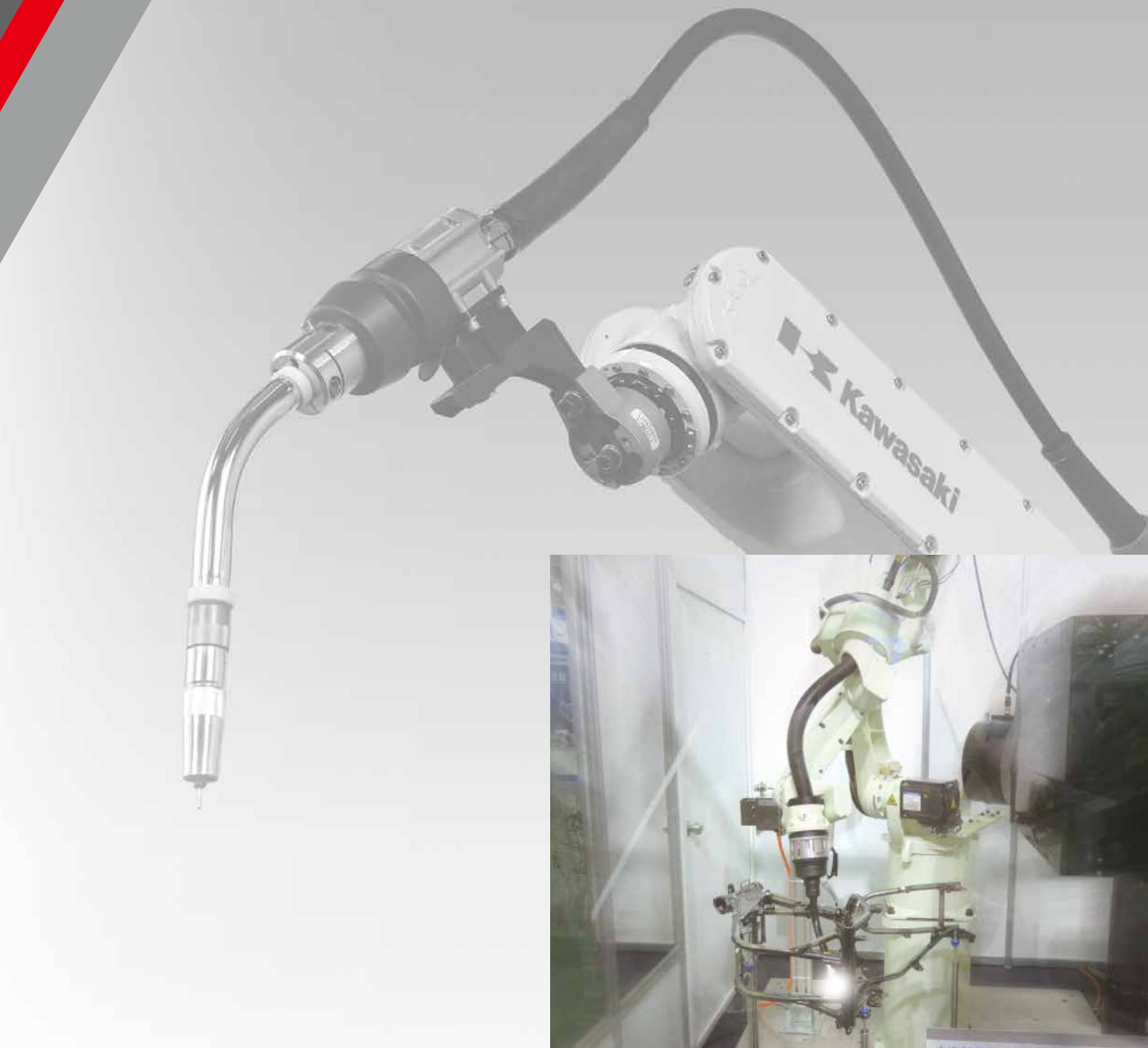
Servo-torch, touch sensing, special weaving pattern, real-time path modification (RTPM) sensor, start-point sensing, multilayer welding function, and auto voltage control (AVC) sensor are available for the Kawasaki welding robots as options.

Capable of TIG welding and Plasma welding/cutting

High-noise operations have been carefully considered at the R&D stage. TIG welding and Plasma cutting can be done without difficulties.

Offline programming

Kawasaki offers arc welding specific offline programming software to automatically generate robot programs from 3D CAD data. Kawasaki's KCONG software significantly reduces robot teaching time and lowers production costs.



		BA006N	BA006L	RA005L	RA006L	RA010N	RA010L	RA020N
Type		Articulated robot						
Degree of freedom (axes)		6						
Payload (kg)		6	6	5	6	10	10	20
Max. reach (mm)		1,445	2,036	903	1,650	1,450	1,925	1,725
Position repeatability (mm) *1		±0.06	±0.08	±0.03	±0.03	±0.03	±0.05	±0.04
Motion range (°)	Arm rotation (JT1)	±165	±165	±180	±180	±180	±180	±180
	Arm out-in (JT2)	+150 - -90	+150 - -90	+135 - -80	+145 - -105	+145 - -105	+155 - -105	+155 - -105
	Arm up-down (JT3)	+90 - -175	+90 - -175	+118 - -172	+150 - -163	+150 - -163	+150 - -163	+150 - -163
	Wrist swivel (JT4)	±180	±180	±360	±270	±270	±270	±270
	Wrist bend (JT5)	±135	±135	±145	±145	±145	±145	±145
	Wrist twist (JT6)	±360	±360	±360	±360	±360	±360	±360
Max. speed (°/s)	Arm rotation (JT1)	240	210	300	250	250	190	190
	Arm out-in (JT2)	240	210	300	250	250	205	205
	Arm up-down (JT3)	220	220	300	215	215	210	210
	Wrist swivel (JT4)	430	430	460	365	365	400	400
	Wrist bend (JT5)	430	430	460	380	380	360	360
	Wrist twist (JT6)	650	650	740	700	700	610	610
Allowable moment (N·m)	Wrist swivel (JT4)	12	12	12.3	13	22	22	45
	Wrist bend (JT5)	12	12	12.3	13	22	22	45
	Wrist twist (JT6)	3.75	3.75	7	7.5	10	10	29
Allowable moment of inertia (kg·m ²)	Wrist swivel (JT4)	0.4	0.4	0.4	0.45	0.7	0.7	0.9
	Wrist bend (JT5)	0.4	0.4	0.4	0.45	0.7	0.7	0.9
	Wrist twist (JT6)	0.07	0.07	0.12	0.14	0.2	0.2	0.3
Mass (kg)		150	160	37	150	150	230	230
Mounting		Floor, Ceiling						
Installation environment	Ambient temperature (°C)	0 - 45						
	Relative humidity (%)	35 - 85 (No dew, nor frost allowed)						
Controller/Power requirements	Americas	E01/5.6kVA	F60/2.0kVA	F60/2.0kVA,E01/5.6kVA		E01/5.6kVA		
	Europe							
	Japan & Asia							

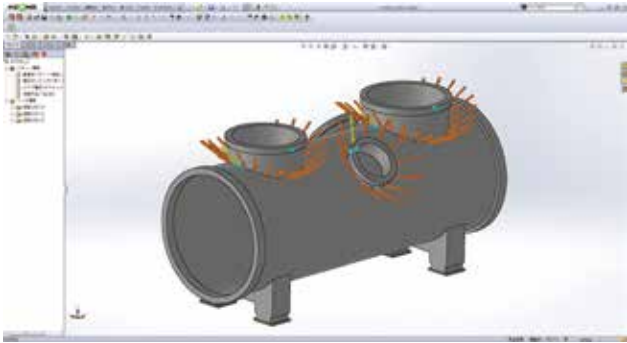
*1: conforms to ISO9283

Optional equipment

- Shock sensor
- Torch bracket (350 A/500 A)
- Installation base (600 mm / 300 mm)
- Base plate (750 mm × 750 mm × 25 mm)
- Linear slide
- Positioner
- Servo torch
- Touch sensing (DC15V, DC400V)
- RTPM (arc sensor)
- AVC (arc-sensor dedicated to TIG welding)
- 3D laser sensor
- Wall mounting

KCONG Kawasaki Common Offline NC data Generator

KCONG, our offline programming software, automatically generates a robot’s welding path based off of workpiece geometry.



Features

No need for time-consuming robot teaching

KCONG generates robot welding paths quickly and easily from 3D CAD data such as DXF, IGES, STEP or VRML.

Offline process verification

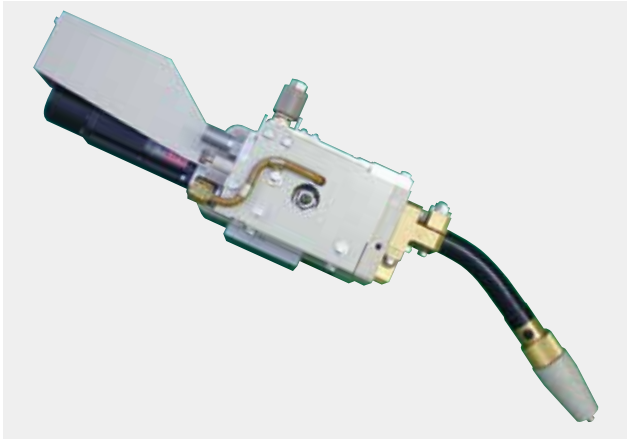
Once KCONG automatically generates the robot welding path, users can then view the simulation of the arc welding process, check for collisions, weld access, and system layout issues, and make fine adjustments to the generated welding path.

Direct program download

After verifying the weld process and making any necessary adjustments, the operation program is generated by KCONG. The completed weld operation program can then be downloaded directly to the robot controller.

Servo Torch

Kawasaki’s servo torch option delivers high quality welding.



Features

Can be used with small-gauge iron or aluminum wire

Feeds small-gauge iron wire (ø 0.6 mm) or aluminum wire steadily with no buckling.

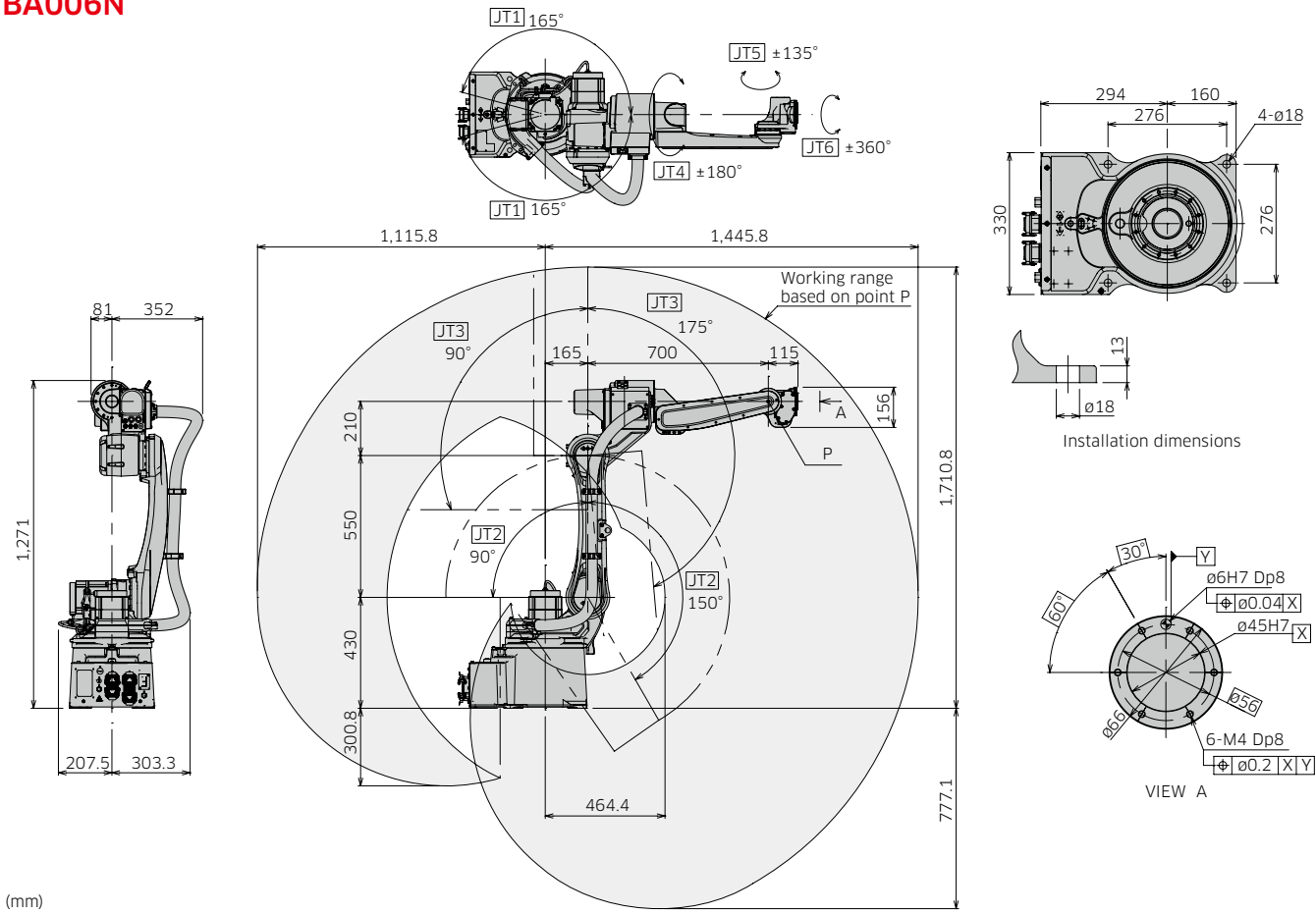
Excellent arc stability

The constant-speed wire feed control improves wire feeding performance, resulting in excellent arc stability.

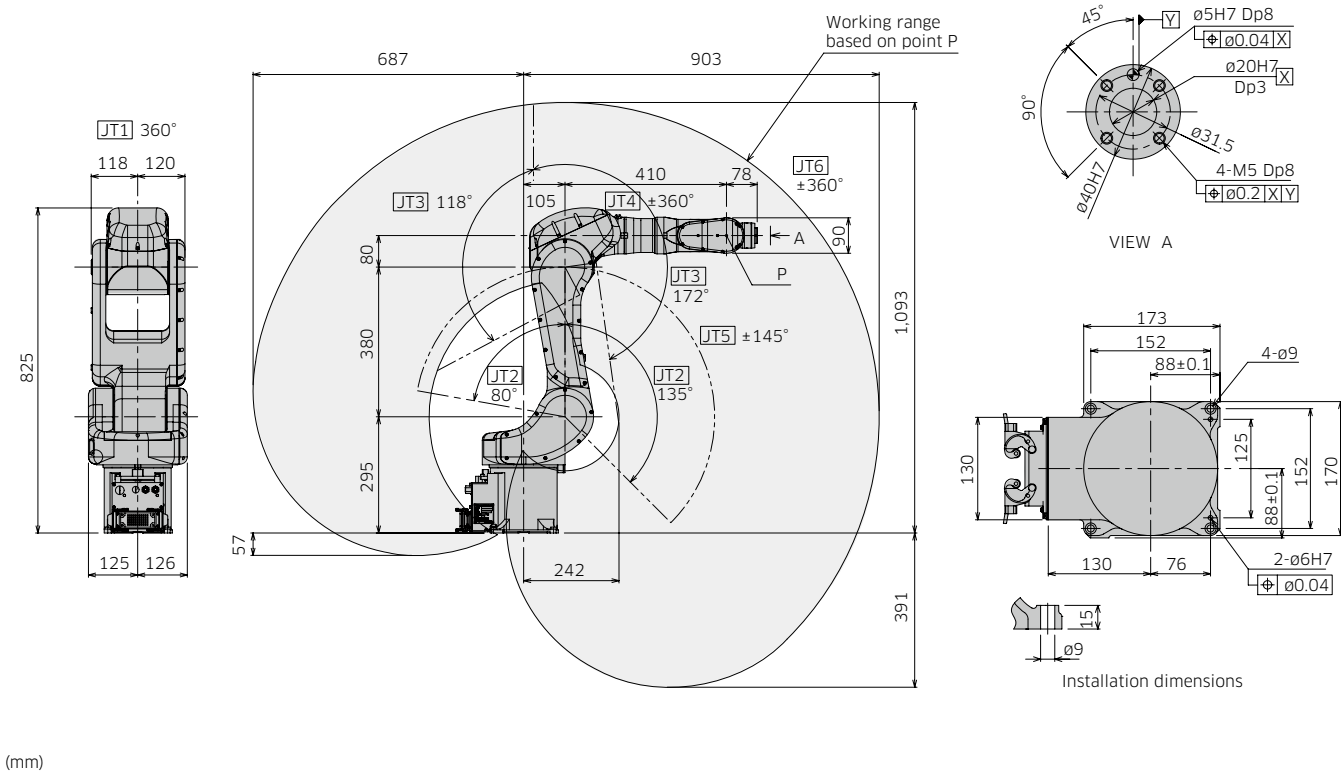
Improved arc ignition performance

The servo torch can control complex wire feeding at the start and end of welding operations, thereby improving arc ignition.

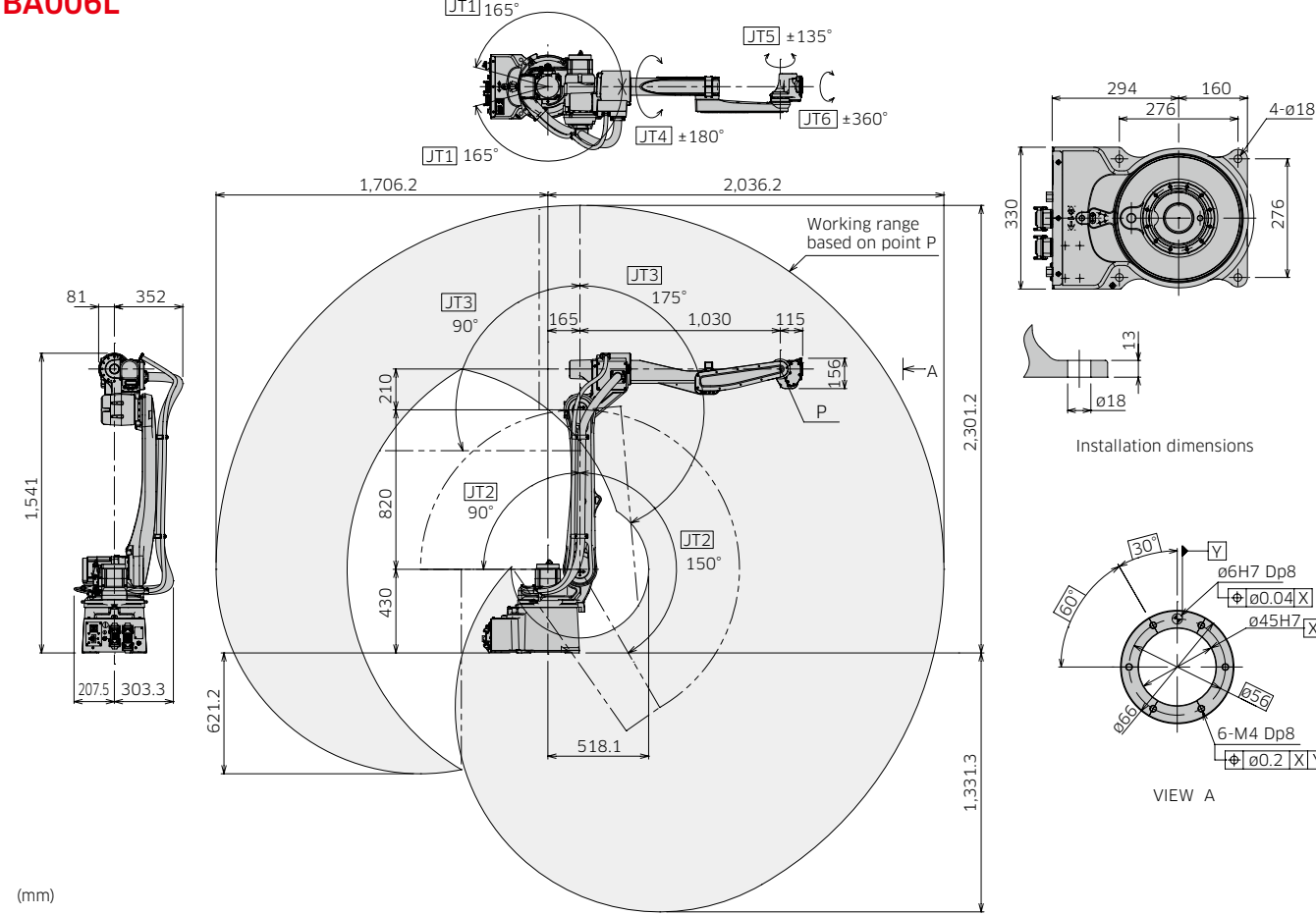
BA006N



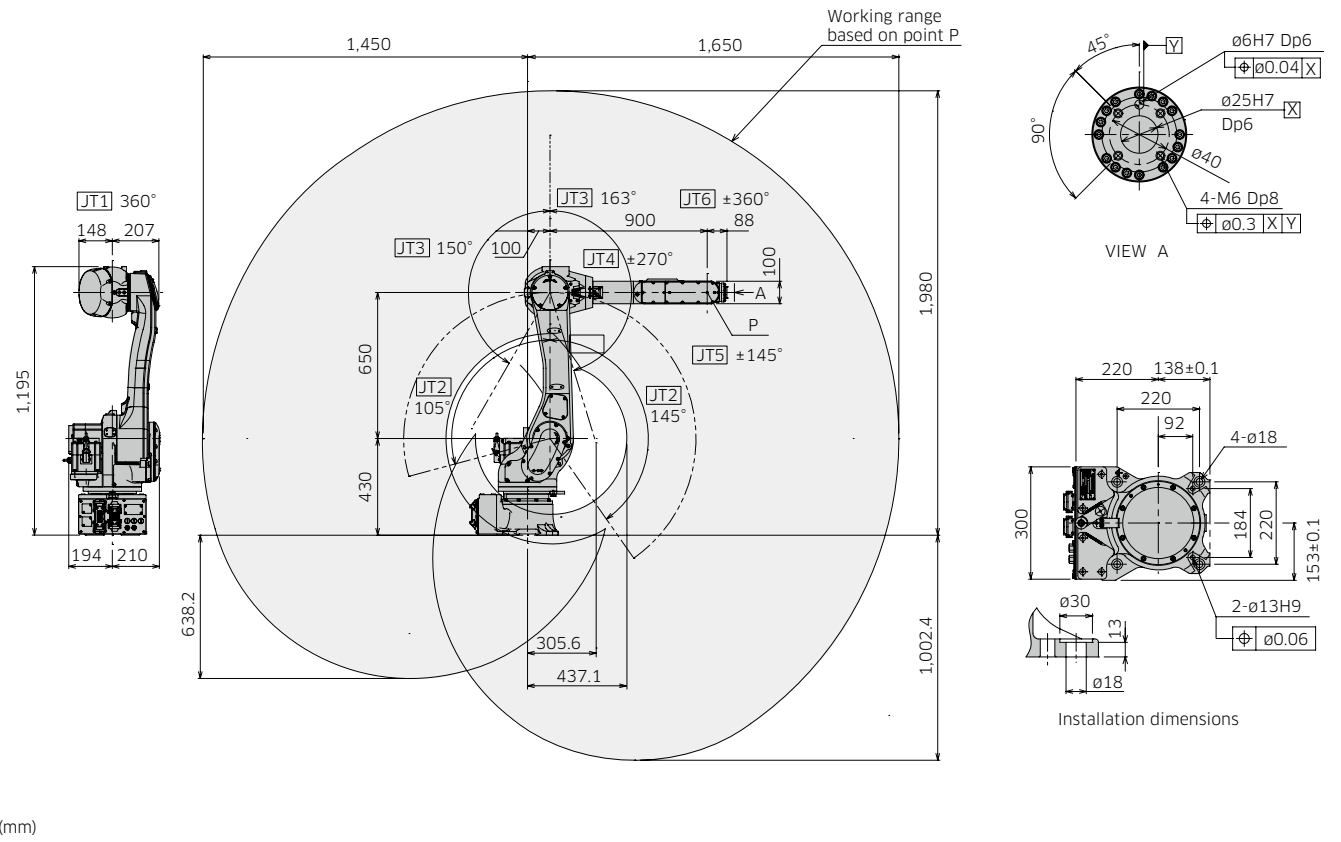
RA005L



BA006L



RA006L





F60 and E01/02 Controllers

- An evolution of engineering excellence

Kawasaki has incorporated 50 years' experience as a robot industry leader into the development of the most technically advanced controller available. The E and F Controllers combine high performance, unprecedented reliability, a host of integrated features and simple operation, all in a compact design.



Features

Compact

The overall volume of the E Controller has been reduced compared with the previous model. The small footprint of this compact controller allows for installation in “high-density” applications. For further space saving options, an upright-position or stacked installation is possible, without impeding performance. The industry’s smallest and lightest F60 controller can be installed in a 19-inch rack. Hand-carry is also possible.

User-friendly operation

The easy-to-use teach pendant now incorporates motor power and cycle start at your fingertips. Multiple information screens can be displayed simultaneously. The intuitive teaching interface is simple to use.

Programming ease & flexibility

A rich set of programming functions come standard with the E Controller to support a wide range of applications. Functions can be combined and easily configured within a system to suit a particular application. Also, the powerful Kawasaki AS Programming Language provides sophisticated robot motion and sequence controls.

Universal Support

Formerly, there were different controller specifications to support the respective standards of Japan/Asia, Europe, and the U.S. Now, functional safety technology has been employed to adopt a common safety circuit. The new controllers have common global specifications that support the standards of every country.

Easy maintenance

Modular components with limited cables translate into easy diagnostics and maintenance. A host of maintenance functions are available, including self-diagnostics on hardware and application errors to minimize troubleshooting and reduce MTTR (Mean Time To Repair). Remote diagnostics via the web server function enables service support from anywhere in the world.

Expandable

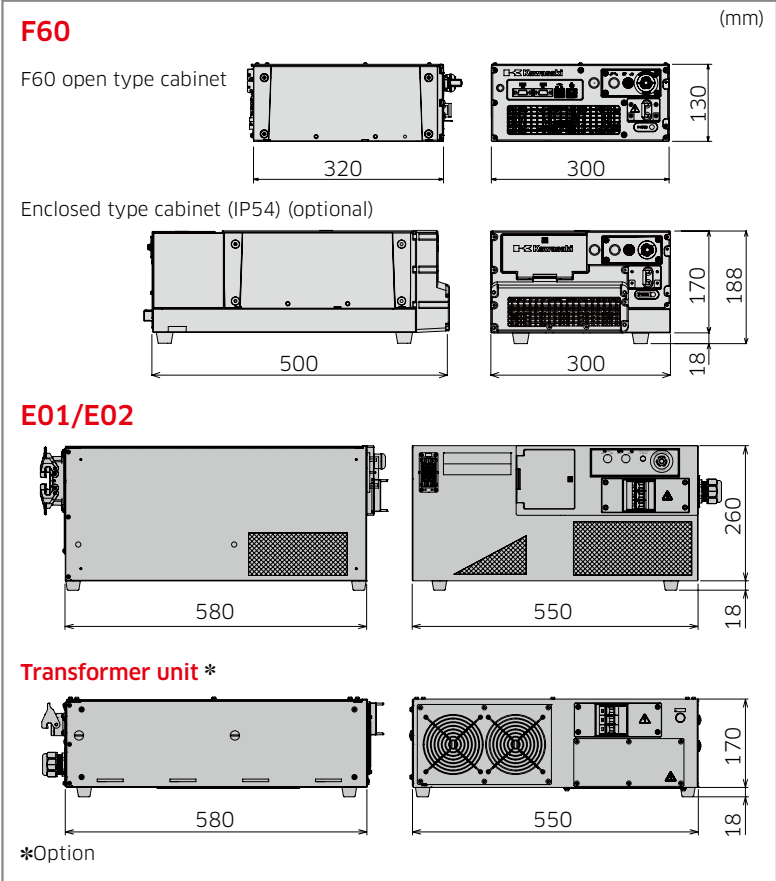
Three external axes can be added to the E0X controller for a total of nine controlled axes, while two can be added to the F60 controller for a total of eight controlled axes. Numerous communication fieldbuses are available for controlling peripheral devices. The Kawasaki K-Logic sequencer software can be combined with user customized interface panels on the teach pendant. The F60 controller also sports the following functions:

- Optional Bluetooth to connect to the controller.
- Max. four 32 I/O's as a remote I/O.

Specifications

	Standard			Option
	F60	E01	E02	
Dimensions (mm)	W300×D320×H130	W550×D580×H278		Transformer unit: W580×D580×H178 (E0X only)
Construction	Open type indirect cooling system (IP20)	Enclosed type direct cooling system (IP54)		IP54 : Enclosed type (only for F60) • Cabinet is larger
Controlled axes	6	7		Max. 9 (E0X) Max. 8 (F60)
Memory capacity (MB)	16	8		
I/O signals	External operation	Motor power off, Hold		
	Input (Channels)	16	32	E0X : Max. 96 F60 : Inside cabinet 64 (total max. 80) Including remote I/O : 128 (total max. 144)
	Output (Channels)	16	32	E0X : Max. 96 F60 : Inside cabinet 64 (total max. 80) Including remote I/O : 128 (total max. 144)
Cable length	Teach pendant (m)	5		
	Robot-controller (m)	5		
Mass (kg)	8.3	40		Transformer unit: 45 (E0X only)
Power requirements	AC200-230V ±10%, 50/60Hz, 1ø Max. 2.0kVA		AC200-220V ±10%, 50/60Hz, 3ø E01/Max. 5.6kVA, E02/Max. 7.5kVA	• Transformer unit (E0X only) AC380-415V ±10% or AC440-480V ±10% 50/60Hz, 3ø
	Class-D earth connection (Earth connection dedicated to robots), leakage current: Maximum 100mA			
Installation environment	Ambient temperature (°C)	0 - 45		
	Relative humidity (%)	35 - 85 (no dew, nor frost allowed)		
Teach pendant	Color LCD display with touch-panel, E-Stop switch, teach lock switch, Enable switch			
Operation panel	E-stop switch, teach/repeat switch, control power lamp			Fast check mode switch
External memory	-			USB Memory
External interface	USB2.0 x 3/RS-232C x 2, Ethernet (1000BASE-T/100BASE-TX/10BASE-T) x 2		USB, Ethernet (100BASE-T/10BASE-T), RS-232C	

External view & dimensions



System configuration diagram

