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KawasakiRobotics.com

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.

QUALITY SYSTEM CERTIFICATION ISO 9001:2008 DNV

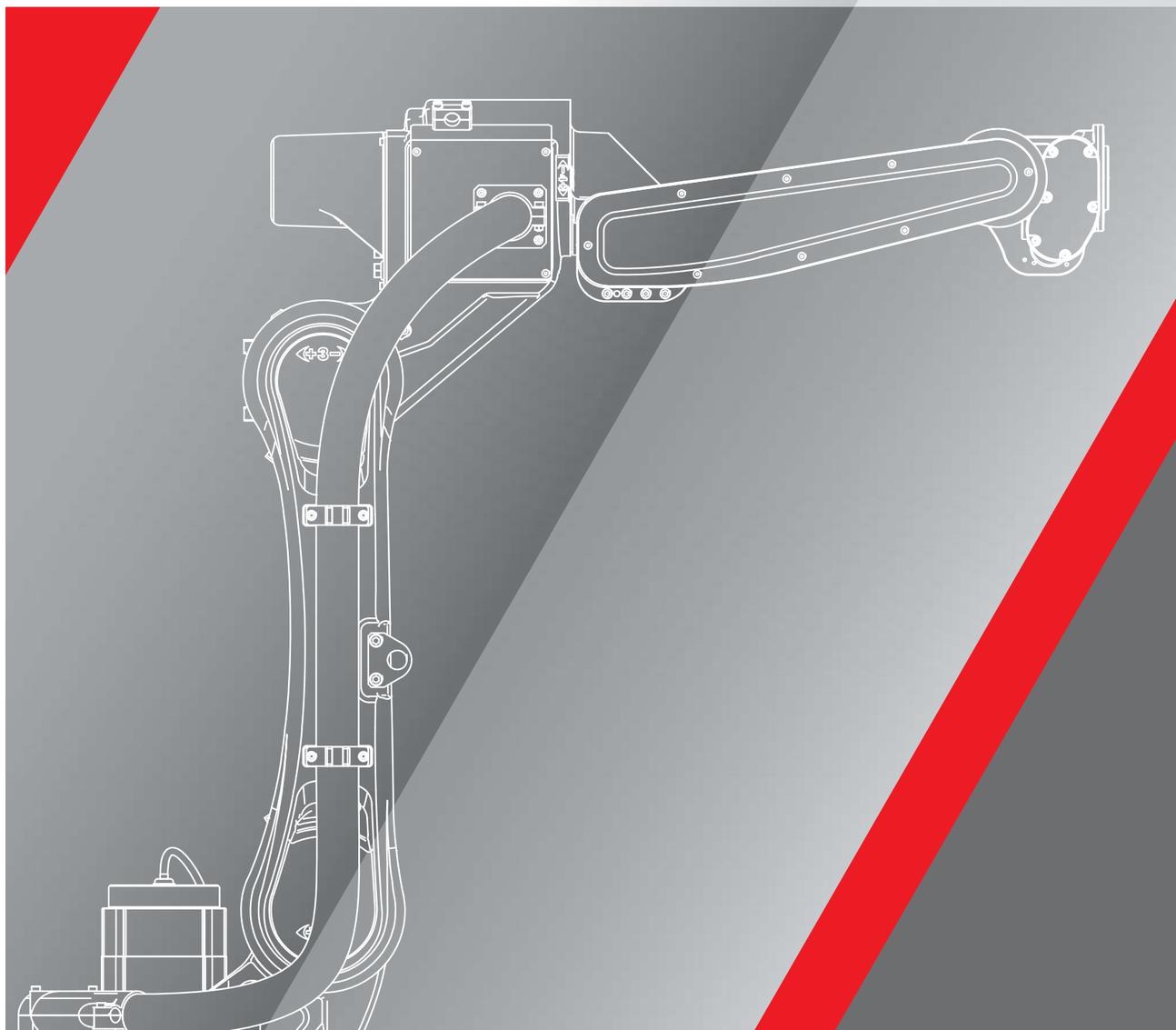
CERTIFIED ENVIRONMENTAL MANAGEMENT SYSTEM ISO 14001:2004 ANAB DNV

ISO certified in Wixom, Michigan U.S.A.

Cat. No. AW2007 Ⓜ

Kawasaki Robot

Arc welding robots



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

Features

Application specific 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.

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.

Manual arc control

The Kawasaki arc welding robots feature a one button “arc on / arc off” function to allow operators to easily and quickly turn the weld off and on during the automatic weld process. This manual arc control helps operators deal with part anomalies.

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 some of the advanced arc welding options available with the Kawasaki welding robots.

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

RA006L

RA010N

RA010L

RS015X

RA020N

Standard specifications

		BA006N	BA006L	RA006L	RA010N	RA010L	RS015X	RA020N
Type		Articulated						
Degree of freedom (axes)		6						
Max. payload (kg)		6	6	6	10	10	15	20
Max. reach (mm)		1,445	2,036	1,650	1,450	1,925	3,150	1,725
Positional repeatability (mm) *1		±0.06	±0.08	±0.03	±0.03	±0.05	±0.06	±0.04
Motion range (°)	Arm rotation (JT1)	±165	±165	±180	±180	±180	±180	±180
	Arm out-in (JT2)	+150 - -90	+150 - -90	+145 - -105	+145 - -105	+155 - -105	+140 - -105	+155 - -105
	Arm up-down (JT3)	+90 - -175	+90 - -175	+150 - -163	+150 - -163	+150 - -163	+135 - -155	+150 - -163
	Wrist swivel (JT4)	±180	±180	±270	±270	±270	±360	±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	250	250	190	180	190
	Arm out-in (JT2)	240	210	250	250	205	180	205
	Arm up-down (JT3)	220	220	215	215	210	200	210
	Wrist swivel (JT4)	430	430	365	365	400	410	400
	Wrist bend (JT5)	430	430	380	380	360	360	360
	Wrist twist (JT6)	650	650	700	700	610	610	610
Max. torque (N·m)	Wrist swivel (JT4)	12	12	13	22	22	34	45
	Wrist bend (JT5)	12	12	13	22	22	34	45
	Wrist twist (JT6)	3.75	3.75	7.5	10	10	22	29
Moment of inertia ($kg·m^2$)	Wrist swivel (JT4)	0.4	0.4	0.45	0.7	0.7	0.8	0.9
	Wrist bend (JT5)	0.4	0.4	0.45	0.7	0.7	0.8	0.9
	Wrist twist (JT6)	0.07	0.07	0.14	0.2	0.2	0.25	0.3
Mass (kg)		150	160	150	150	230	545	230
Body color		Munsell 10GY9/1 equivalent						
Installation		Floor, Ceiling						
Environmental conditions	Ambient temperature (℃)	0 - 45						
	Relative humidity (%)	35 - 85 (no dew, nor frost allowed)						
Power requirements (kVA) *2		2.0	2.0	2.0	2.0	3.0	4.0	3.0
Controller	America	E01		E01, F60		E01	E02	E01
	Europe							
	Japan & Asia							

*1: Conforms to ISO9283 *2: Depends on the payload and motion patterns

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
- RTPM (arc sensor)
- AVC (arc sensor dedicated to TIG welding)
- 3D laser sensor
- Wall mounting

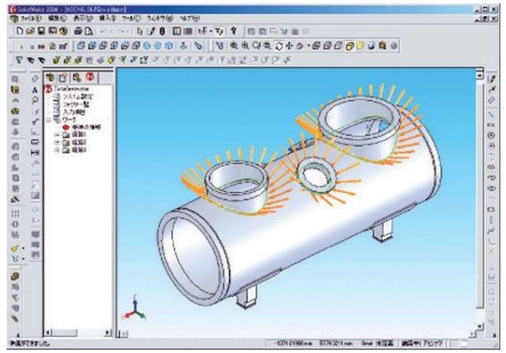
Integration with many welding power supplies

For communication between the Kawasaki robot and power source as well as easy and comprehensive arc welding process controls, Kawasaki Robotics offers welder specific interfaces to leading arc welding power sources, such as:

- Lincoln
- Miller
- Fronius
- OTC Daihen

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

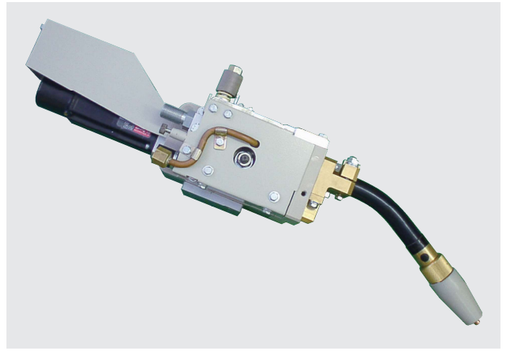
Once KCONG automatically generates the robot welding path, users can then view the simulation of the arc welding process, check for collisions, weld access, and system layout issues, and make fine adjustments to the generated welding path.

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

The steady feed of the iron (ø 0.6 mm) or aluminum wire results in no buckling.

Excellent arc stability

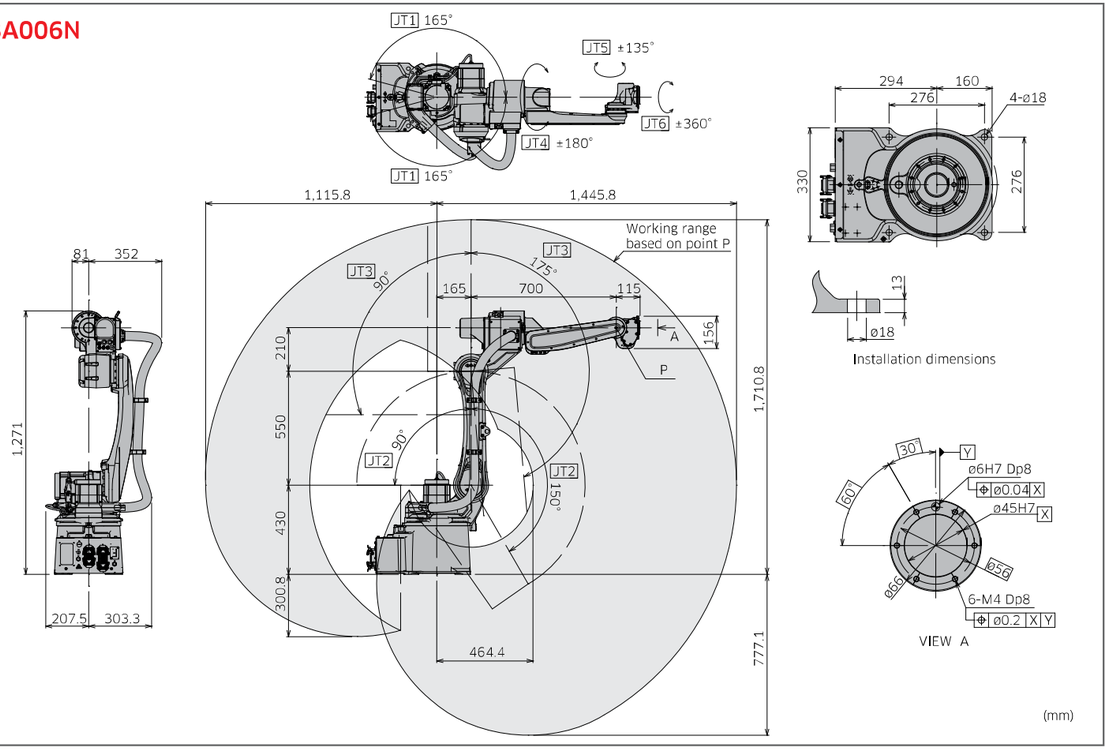
The constant speed and control of the wire feed results in excellent arc stability.

Improved arc ignition performance

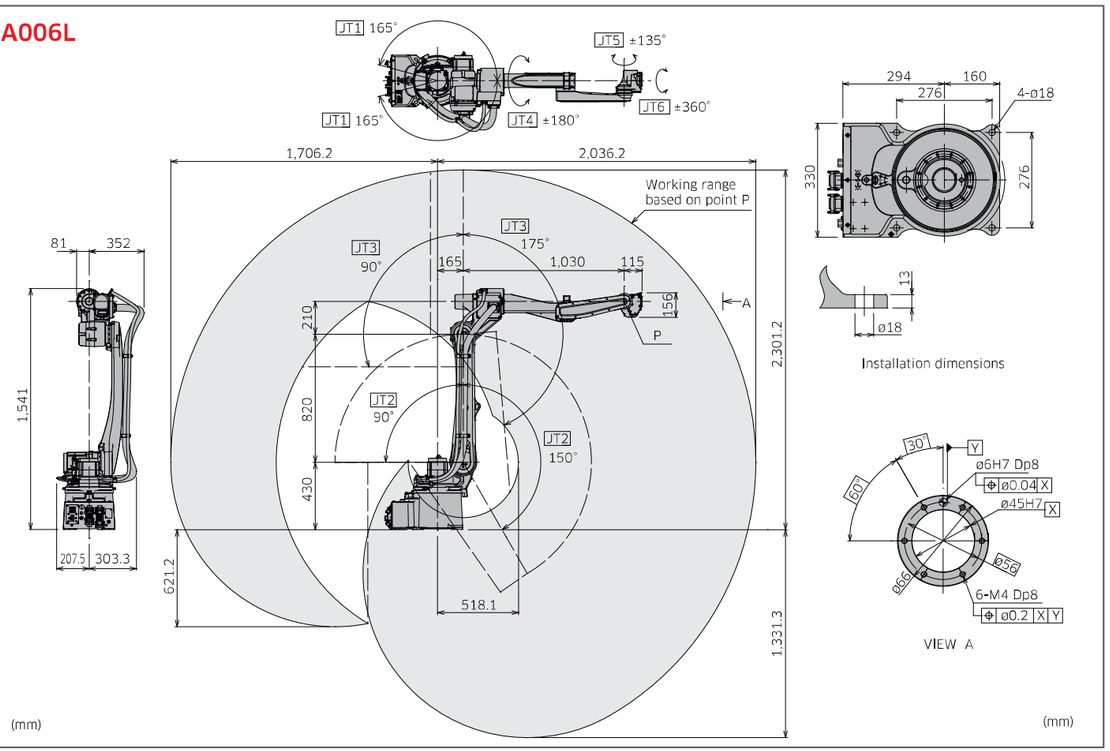
The servo torch can control complex wire feeding at the start and end of welding operations, thereby improving arc ignition.

Motion range & dimensions

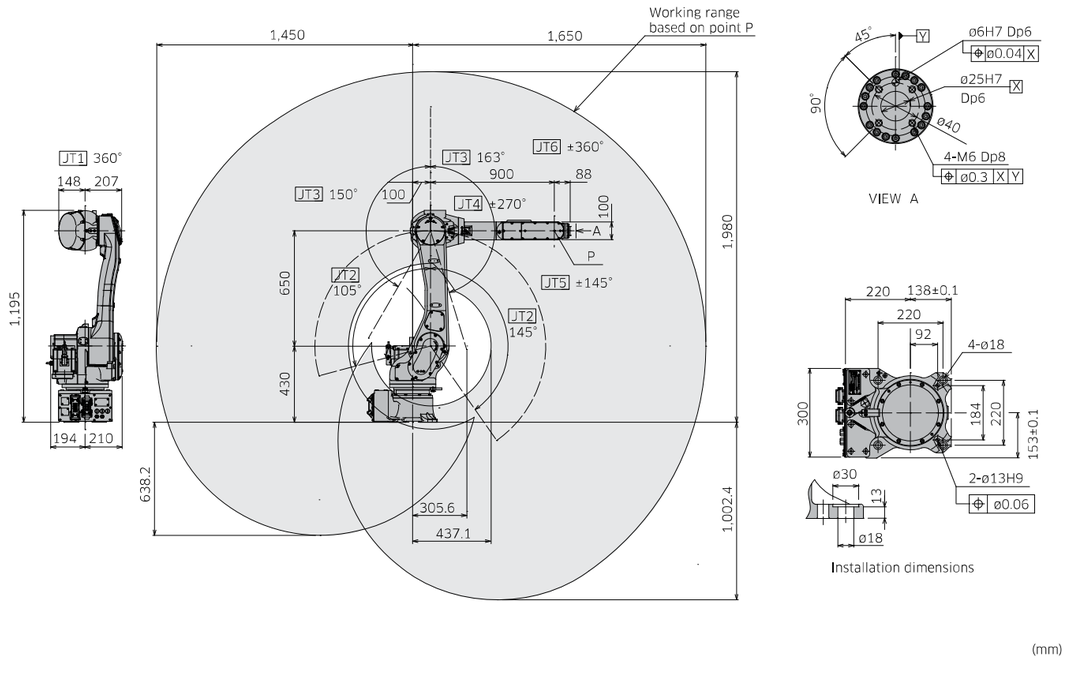
BA006N



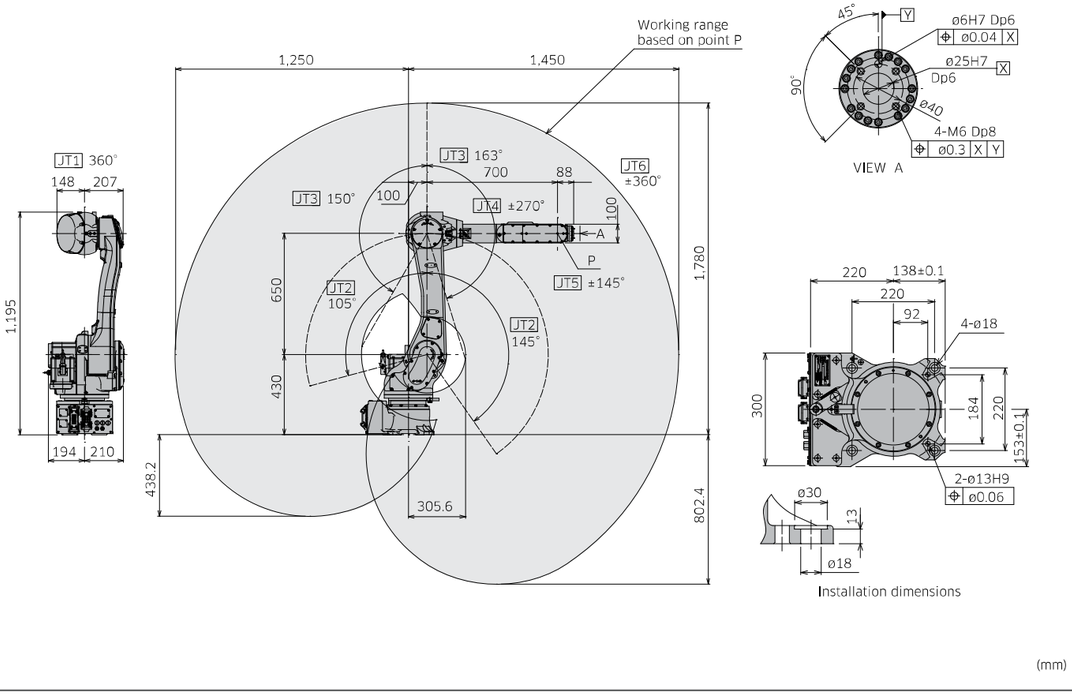
BA006L



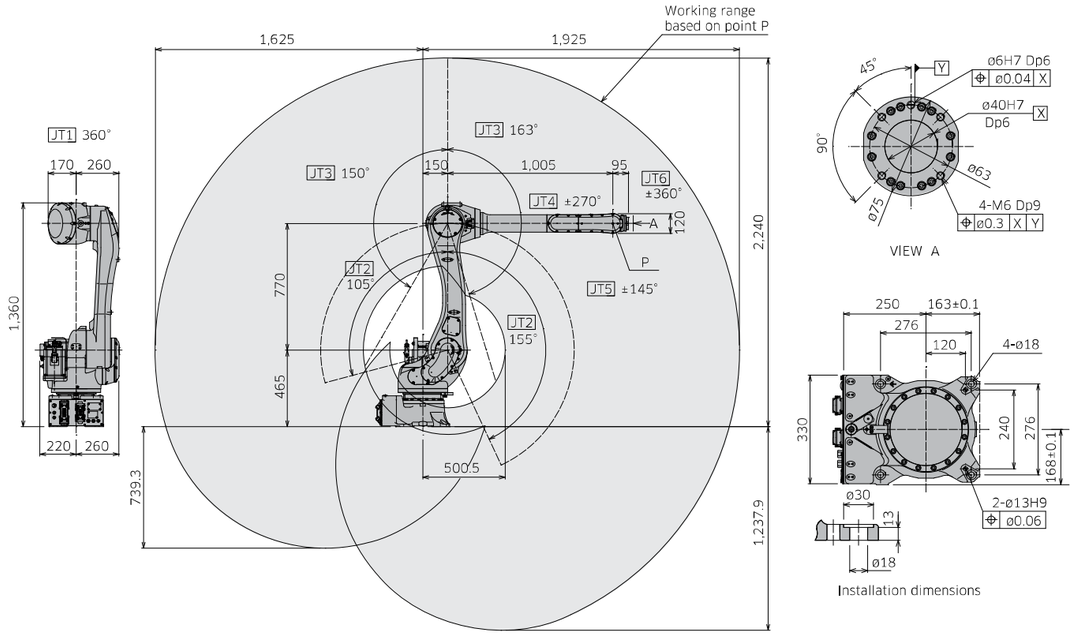
RS006L



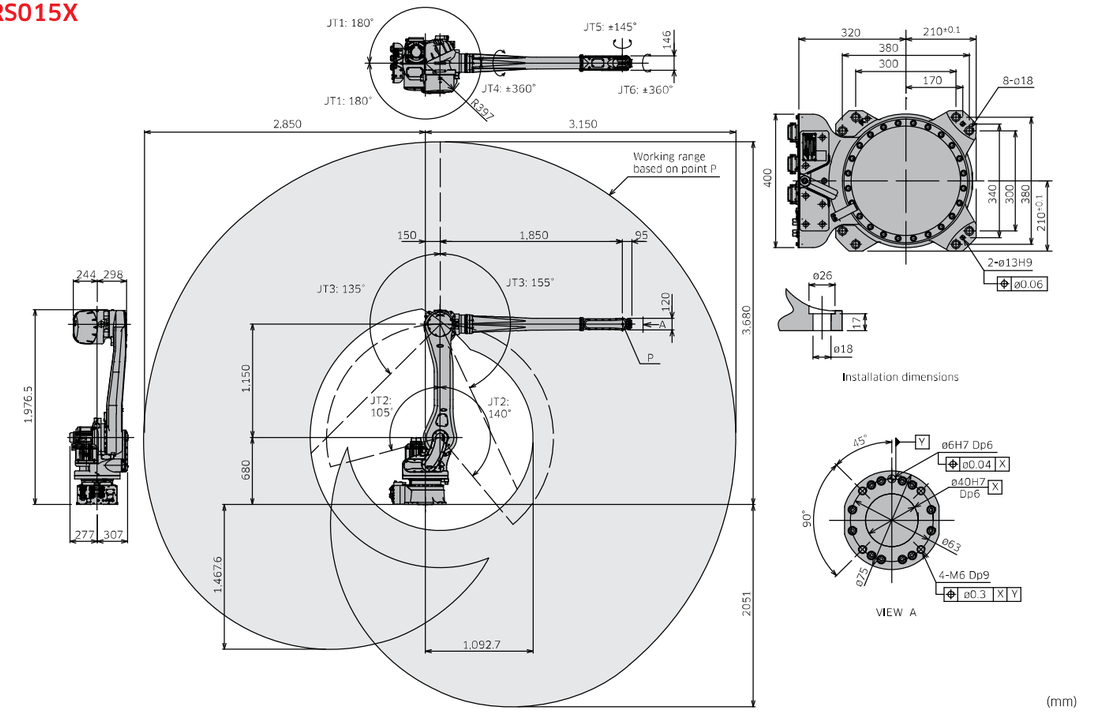
RS010N



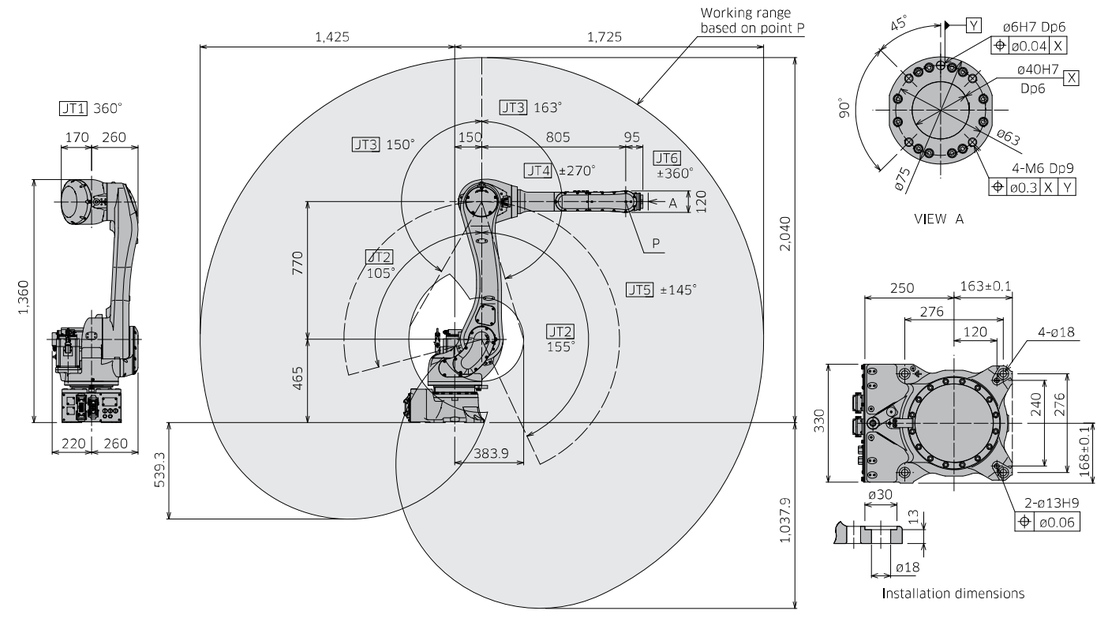
RS010L



RS015X



RS020N



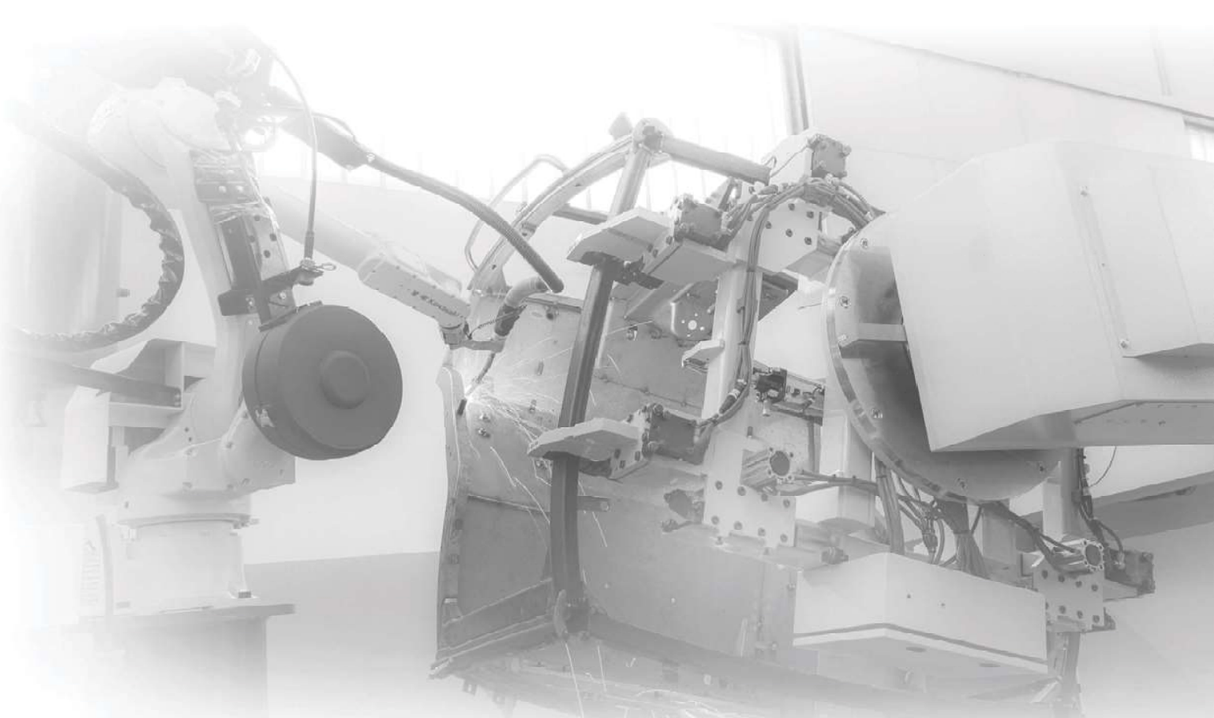


Photo courtesy of Tiesse Robot

E series
- An evolution of engineering excellence

Kawasaki has incorporated more than 45 years of experience as a robot industry leader into the development of the most technically advanced controller available. The E Controller combines high performance, unprecedented reliability, a host of integrated features and simple operation, all in a compact design.

E01 / E02

* Option

Teach pendant

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.

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.

Advanced technologies

The enhanced CPU capacity allows for more accurate trajectory control, faster program execution, and quicker loading and saving of files. In addition, memory has been expanded to meet the need for higher program storage capacity. The controller comes equipped with a USB port for external storage devices.

Easy maintenance

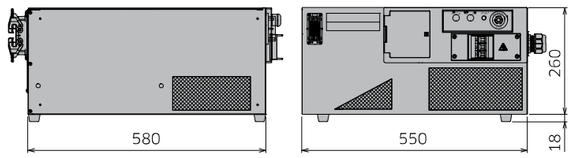
Modular components with limited cables translate into easy diagnostics and maintenance. A host of maintenance functions are available, including self-diagnostics on hardware and application errors to minimize troubleshooting and reduce MTTR (Mean Time To Repair). Remote diagnostics via the web server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

Expandable

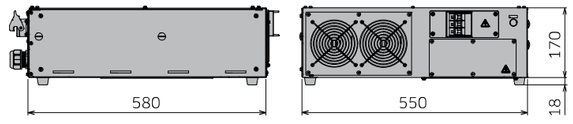
Two external axes can be added to the E01/E02 controller for a total of nine controlled axes. Numerous communication fieldbuses are available for controlling peripheral devices. The Kawasaki K-Logic sequencer software can be combined with user customized interface panels on the teach pendant.

External view & dimensions

E01 / E02



Transformer unit *



* Option (mm)

Specifications

		Standard	Option
America / Europe / Japan & Asia		E01 / E02	
Dimensions (mm)		W550 × D580 × H278	Transformer unit: W580 × D580 × H178
Structure		Enclosed structure / Indirect cooling system	
Number of controlled axes		7	Max. 9
Drive system		Full digital servo system	
Coordinate systems		Joint, Base, Tool	Fixed tool point
Types of motion control		Joint / Linear / Circular Interpolated motion	
Programming		Point to point teaching or language based programming	
Memory capacity (MB)		8	
General purpose signals	External operation	Motor power off, Hold	
	Input (channels)	32	Max. 96
	Output (channels)	32	Max. 96
Operation panel		E-Stop switch, Teach/repeat switch, Control power light (Cycle start, motor-on, hold/run, and error reset are activated from the teach pendant)	Cycle start switch, Motor-on switch, Hold/run switch, Error light, Rapid-feed check mode switch
Cable length	Teach pendant (m)	5	10, 15
	Robot-controller (m)	5	10, 15
Mass (kg)		40	Transformer unit: 45
Power requirements		AC200-220V ±10%, 50/60Hz, 3ø	Transformer unit: AC380-415V ±10% or AC440-480V ±10% 50/60Hz, 3ø
		Class-D earth connection (Earth connection dedicated to robots). Leakage current: Maximum 100mA	
Environmental conditions	Ambient temperature (°C)	0 - 45	
	Relative humidity (%)	35 - 85 (no dew, nor frost allowed)	
Body color		Munsell 10GY9/1 equivalent	
Teach pendant		TFT color LCD display with touch-panel, E-Stop switch, Teach lock switch, Enable switch	
Auxiliary storage unit		–	USB memory
Interface		USB, Ethernet (100BASE-TX), RS-232C	

System configuration diagram