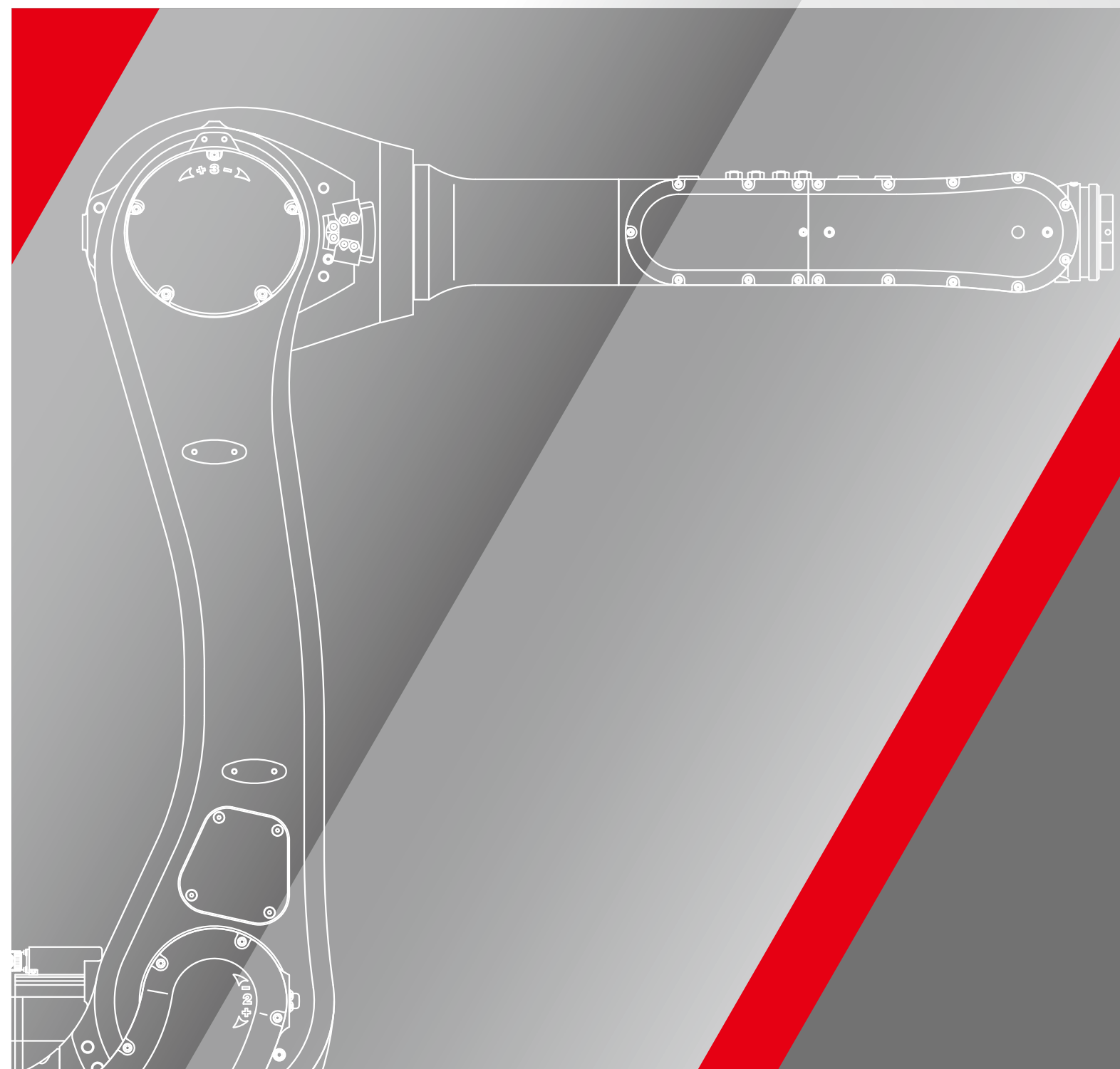




# Kawasaki Robot

## R series

Small-to-medium payload robots up to 80 kg



### Kawasaki Heavy Industries, Ltd.

#### ROBOT DIVISION

**Tokyo Head Office/Robot Division**  
1-14-5, Kaigan, Minato-ku, Tokyo 105-8315, Japan  
Phone: +81-3-3435-2501 Fax: +81-3-3437-9880

**Akashi Works/Robot Division**  
1-1, Kawasaki-cho, Akashi, Hyogo 673-8666, Japan  
Phone: +81-78-921-2946 Fax: +81-78-923-6548

#### Global Network

**Kawasaki Robotics (USA), Inc.**  
28140 Lakeview Drive, Wixom, MI 48393, U.S.A.  
Phone: +1-248-446-4100 Fax: +1-248-446-4200

**Kawasaki Robotics (UK) Ltd.**  
Unit 4 Easter Court, Europa Boulevard, Westbrook Warrington  
Cheshire, WA5 7ZB, United Kingdom  
Phone: +44-1925-71-3000 Fax: +44-1925-71-3001

**Kawasaki Robotics GmbH**  
Im Taubental 32, 41468 Neuss, Germany  
Phone: +49-2131-34260 Fax: +49-2131-3426-22

**Kawasaki Robotics Korea, Ltd.**  
43, Namdong-daero 215beon-gil, Namdong-gu, Incheon, 21633,  
Korea  
Phone: +82-32-821-6941 Fax: +82-32-821-6947

**Kawasaki Robotics (Tianjin) Co., Ltd.**  
1-2/F, Building 6, No.19 Xinhuan Road, TEDA, China  
Phone: +86-22-5983-1888 Fax: +86-22-5983-1889

**Kawasaki Motors Enterprise (Thailand) Co., Ltd.**  
(Rayong Robot Center)  
119/10 Moo 4 T.Pluak Daeng, A.Pluak Daeng, Rayong 21140  
Thailand  
Phone: +66-38-955-040-58 Fax: +66-38-955-145

<https://robotics.kawasaki.com/>

\* Materials and specifications are subject to change without notice.

## 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.

# High-speed, high-performance industrial robots that raise the bar

Kawasaki's R series robots are setting the benchmark for all small to medium duty industrial robots. The compact design along with industry leading speed, reach, and work range make the R series robots ideal for a wide range of applications throughout diverse industries.

## Features

### High-speed operation

The light weight of the R series arm together with high output, high revolution motors provide industry leading acceleration and high-speed operation. The acceleration rate automatically adjusts to suit the payload and robot posture to deliver optimum performance and the shortest cycle times.

### High torque

High output motors combined with a rigid arm construction deliver superior wrist torque and load capacity. This high torque rating lets system designers select from a broad range of end-of-arm tooling, as well as provides more flexibility when working with complex workpieces.

### Wide work range

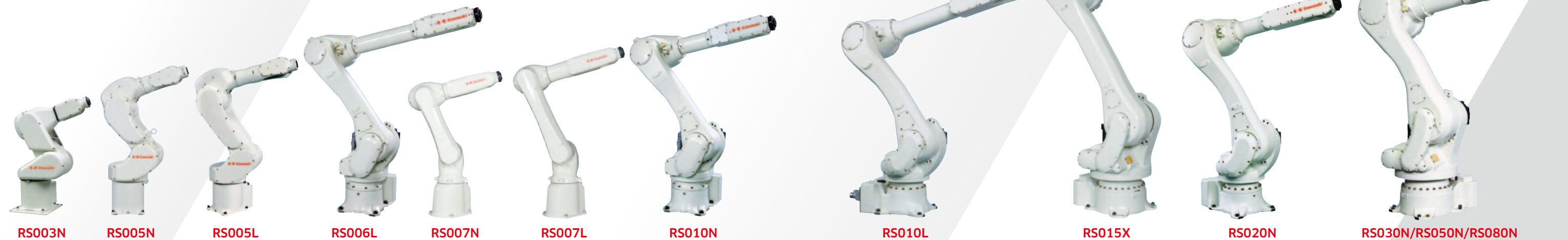
In addition to extending the robot's maximum reach, the rotation range of each axis has also been increased. The extended motion range translates to a larger usable work area with minimal dead space and greater flexibility.

### Environmental protection

The R series incorporates a double seal construction on all axes and water-resistant electrical connections, offering an IP67 classification for the wrist and IP65 for the remaining axes. If a washdown arm is required, the entire robot can be provided as IP67. (Except for the RS003N)

### Integrated features

Built-in pneumatic lines and internal wiring for sensors and solenoid valves are standard. Mounting pads and taps are provided to allow the easy installation of additional cabling, tubing or equipment.



**Typical applications :** Assembly / Dispensing / Machine tending / Material handling/Material removal / Palletizing / Welding



		RS003N	RS005N	RS005L	RS006L	RS007N	RS007L		RS010N	RS010L	RS015X	RS020N	RS030N	RS050N	RS080N	
Type	Articulated robot								Articulated robot							
Degree of freedom (axes)	6								6							
Max. payload (kg)	3	5	5	6	7	7		10	10	15	20	30	50	80		
Max. reach (mm)	620	705	903	1,650	730	930		1,450	1,925	3,150	1,725	2,100	2,100	2,100		
Positional repeatability (mm) *1	±0.02	±0.02	±0.03	±0.03	±0.02	±0.03		±0.03	±0.05	±0.06	±0.04	±0.06	±0.06	±0.06		
Motion range (°)	Arm rotation (JT1)	±160	±180	±180	±180	±180	±180	±180	±180	±180	±180	±180	±180	±180	±180	
	Arm out-in (JT2)	+150 - -60	+135 - -80	+135 - -80	+145 - -105	±135	±135	±145 - -105	+155 - -105	+140 - -105	+155 - -105	+140 - -105	+140 - -105	+140 - -105		
	Arm up-down (JT3)	+120 - -150	+118 - -172	+118 - -172	+150 - -163	±155	±157	+150 - -163	+150 - -163	+135 - -155	+150 - -163	+135 - -155	+135 - -155	+135 - -155		
	Wrist swivel (JT4)	±360	±360	±360	±270	±200	±200	±270	±270	±360	±270	±360	±360	±360	±360	
	Wrist bend (JT5)	±135	±145	±145	±145	±125	±125	±145	±145	±145	±145	±145	±145	±145	±145	
	Wrist twist (JT6)	±360	±360	±360	±360	±360	±360	±360	±360	±360	±360	±360	±360	±360	±360	
Max. speed (°/s)	Arm rotation (JT1)	360	360	300	250	470	370	250	190	180	190	180	180	180	180	
	Arm out-in (JT2)	250	360	300	250	380	310	250	205	180	205	180	180	180		
	Arm up-down (JT3)	225	410	300	215	520	410	215	210	200	210	185	185	160		
	Wrist swivel (JT4)	540	460	460	365	550	550	365	400	410	400	260	260	185		
	Wrist bend (JT5)	225	460	460	380	550	550	380	360	360	360	260	260	165		
	Wrist twist (JT6)	540	740	740	700	1,000	1,000	700	610	610	610	360	360	280		
Moment (N·m)	Wrist swivel (JT4)	5.8	12.3	12.3	13	17	17	22	22	34	45	210	210	336		
	Wrist bend (JT5)	5.8	12.3	12.3	13	17	17	22	22	34	45	210	210	336		
	Wrist twist (JT6)	2.9	7	7	7.5	10	10	10	10	22	29	130	130	194		
Moment of Inertia (kg·m <sup>2</sup> )	Wrist swivel (JT4)	0.12	0.4	0.4	0.45	0.5	0.5	0.7	0.7	0.8	0.9	16.8	28	34		
	Wrist bend (JT5)	0.12	0.4	0.4	0.45	0.5	0.5	0.7	0.7	0.8	0.9	16.8	28	34		
	Wrist twist (JT6)	0.03	0.12	0.12	0.14	0.2	0.2	0.2	0.2	0.25	0.3	6.6	11	13.7		
Max. speed (mm/s)	6,000	9,100	9,300	13,700	12,100	12,000		11,800	13,100	19,900	11,500	13,400	13,400	12,700		
Mass (kg)	20	34	37	150	35	36		150	230	545	230	555	555	555		
Body color	Munsell 10GY9/1 equivalent								Munsell 10GY9/1 equivalent							
Installation	Floor, Ceiling								Floor, Ceiling							
Environmental condition	Ambient temperature (°C)	0 - 45								0 - 45						
	Relative humidity (%)	35 - 85 (No dew, nor frost allowed)								35 - 85 (No dew, nor frost allowed)						
Power requirements (kVA) *2	1.0	1.5	1.5	2.0	2.0	2.0		2.0	3.0	4.0	3.0	4.5	4.5	4.5		
Degree of protection	IP54	Wrist : IP67 Base axis : IP65								Wrist : IP67 Base axis : IP65						
Controller	F60			E01/F60	F60				E01/F60	E01	E02	E01	E02			

\*1: conforms to ISO9283 \*2: depends on the payload and motion patterns

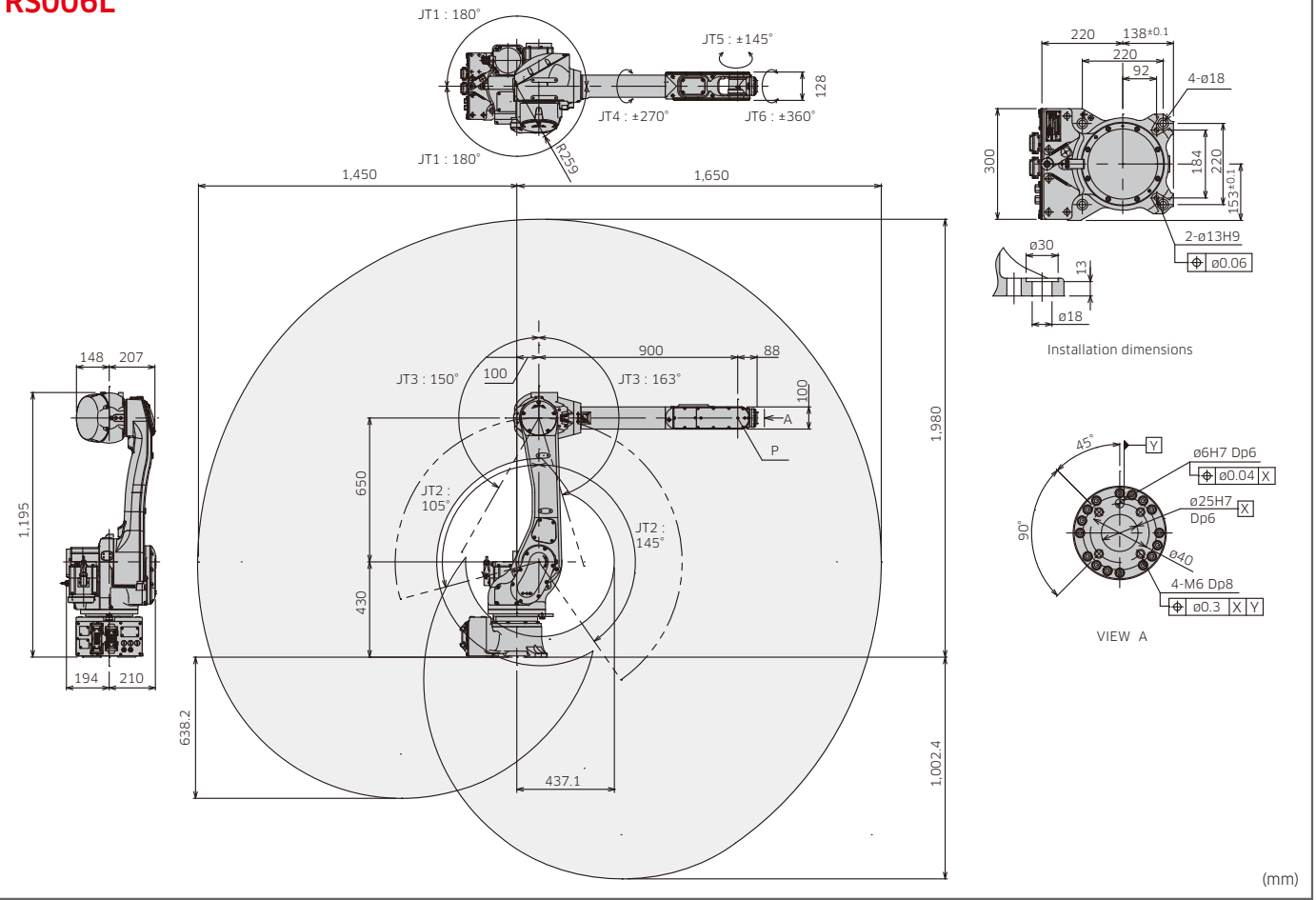
## Options

● : Option available – : Option not available

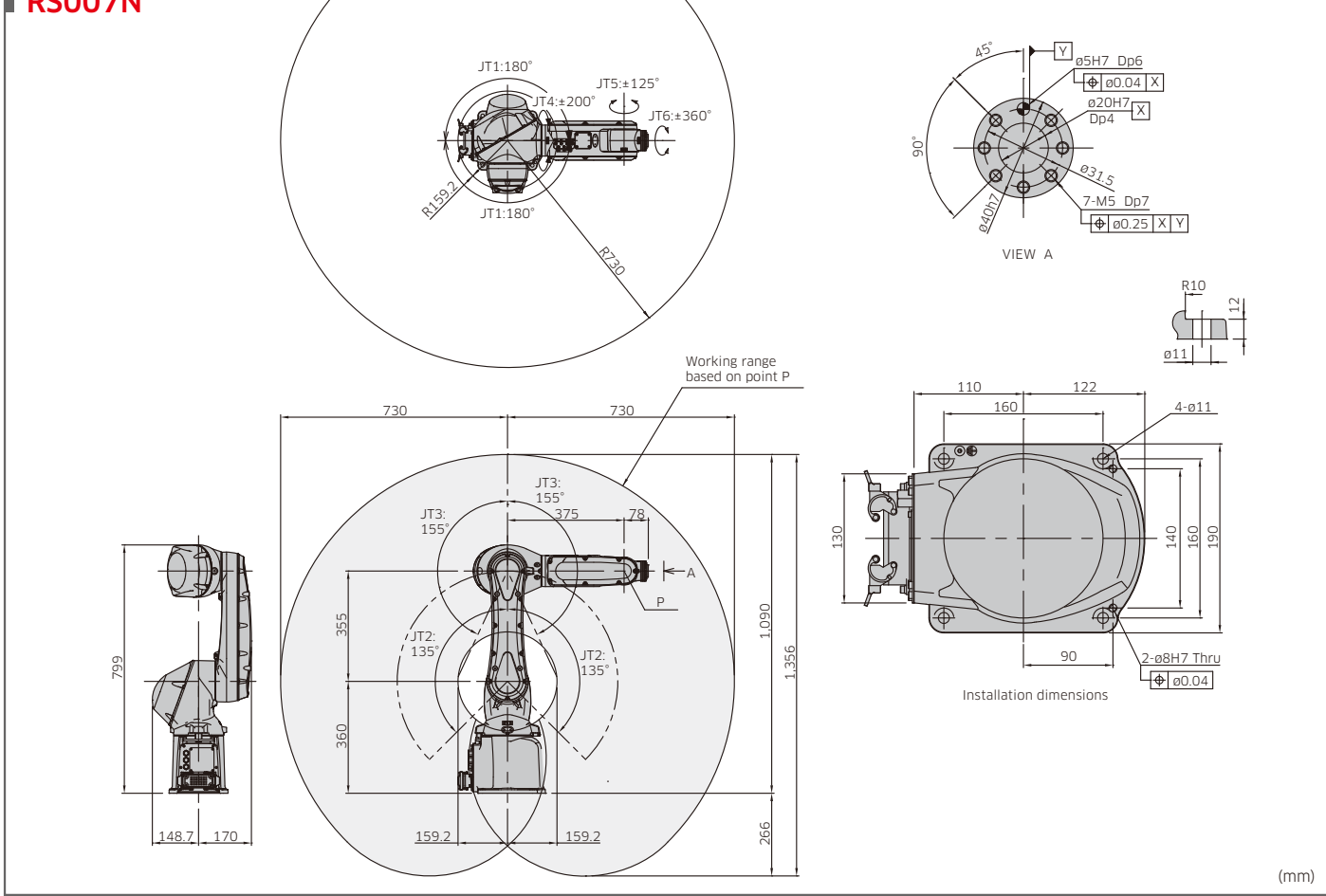
	RS003N	RS005N	RS005L	RS006L	RS007N	RS007L		RS010N	RS010L	RS015X	RS020N	RS030N	RS050N	RS080N
IP67 (JT1-3)	–	–	–	●	●	●		●	●	●	●	●	●	●
Wall mount	●	●	●	●	–	–		●	●	●	●	●	●	●
Traverse unit	–	–	–	●	–	–		●	●	●	●	●	●	●
Riser (300/600mm)	–	●	●	●	●	●		●	●	●	●	●	●	●
Base plate	–	●	●	●	●	●		●	●	●	●	●	●	●
Mechanical stopper JT1	●	●	●	●	●	●		●	●	●	●	●	●	●
Mechanical stopper JT2/JT3	–	–	–	●	●	●		●	●	●	●	●	●	●
Solenoid valve (1 circuit)	●	●	●	●	●	●		●	●	●	●	●	●	●
Solenoid valve (2 circuits)	●	●	●	●	●	●		●	●	●	●	●	●	●
Solenoid valve (3 circuits)	–	●	●	●	●	●		●	●	●	●	●	●	●
Solenoid valve (4 circuits)	–	–	–	●	–	–		●	●	●	●	●	●	●
Sensor harness (4 circuits)	●	–	–	–	–	–		–	–	–	–	–	–	–
Sensor harness (8 circuits)	–	–	–	–	●	●		–	–	–	–	–	–	–
Sensor harness (12 circuits)	–	●	●	●	–	–		●	●	●	●	●	●	●
Op. machine harness (7 pairs)	–	–	–	–	–	–		–	–	●	–	●	●	●
Servo-on lamp	●	●	●	●	–	–		●	●	●	●	●	●	●
Limit switch (JT1)	–	–	–	●	–	–		●	●	●	●	●	●	●



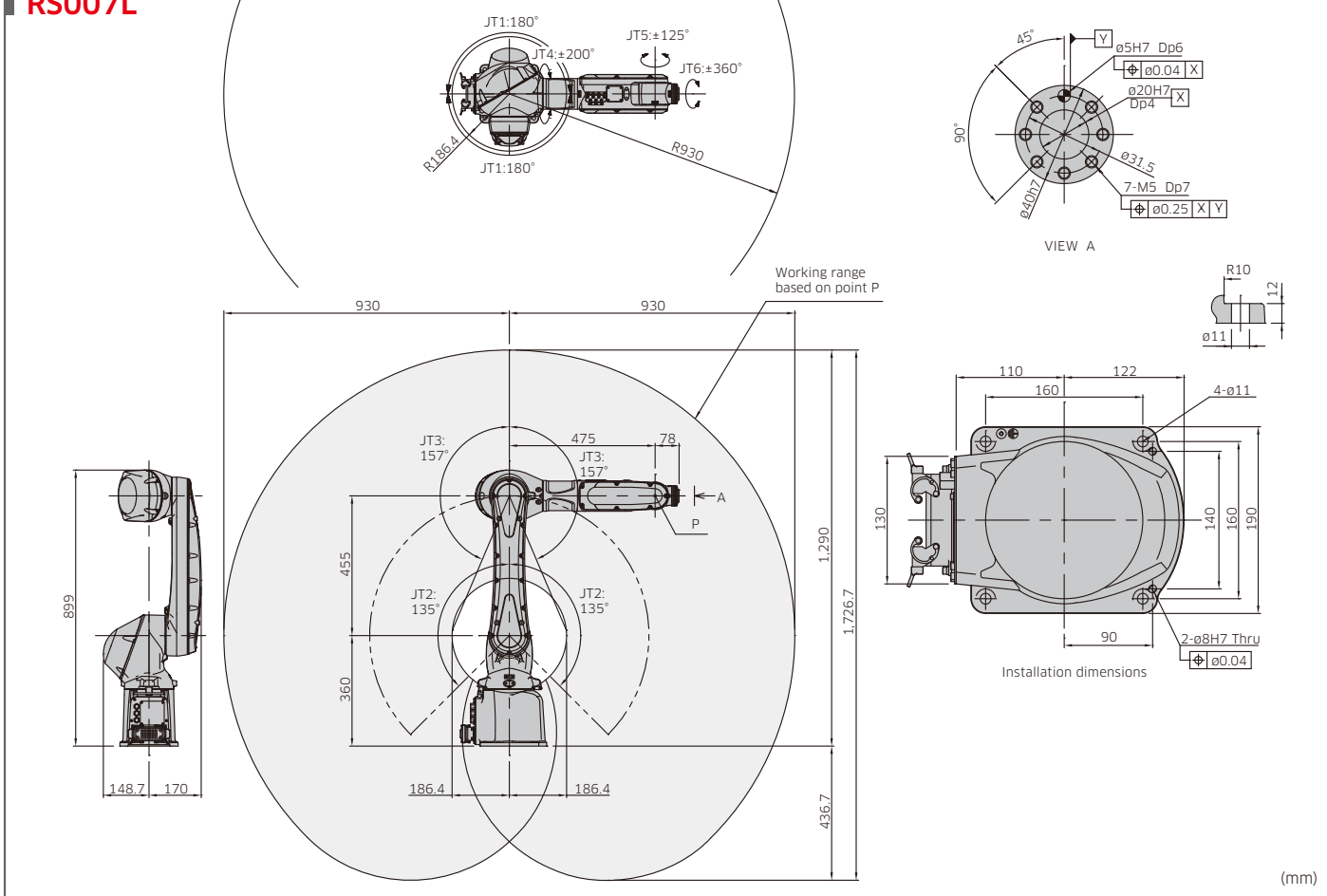
**RS006L**



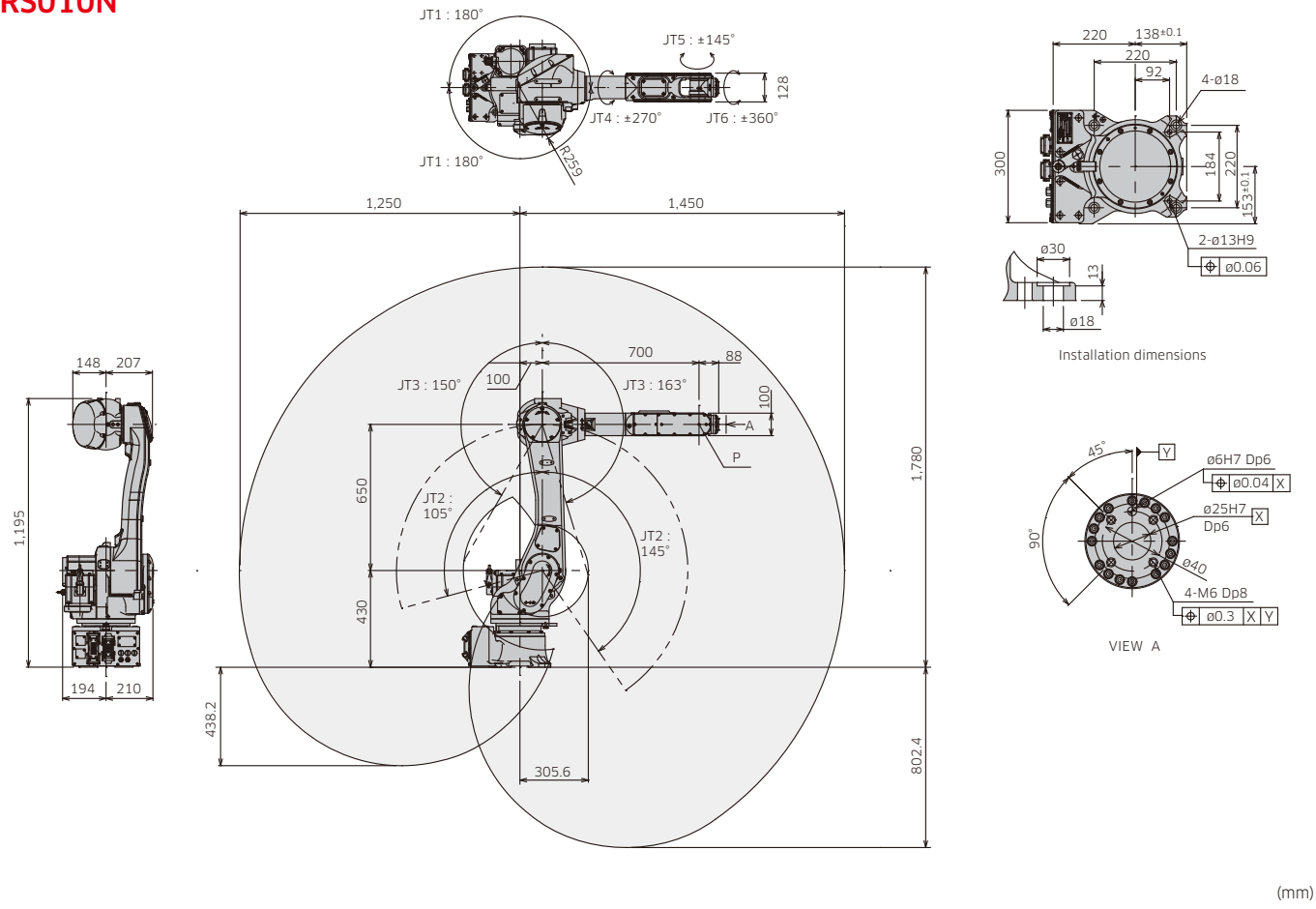
**RS007N**



**RS007L**

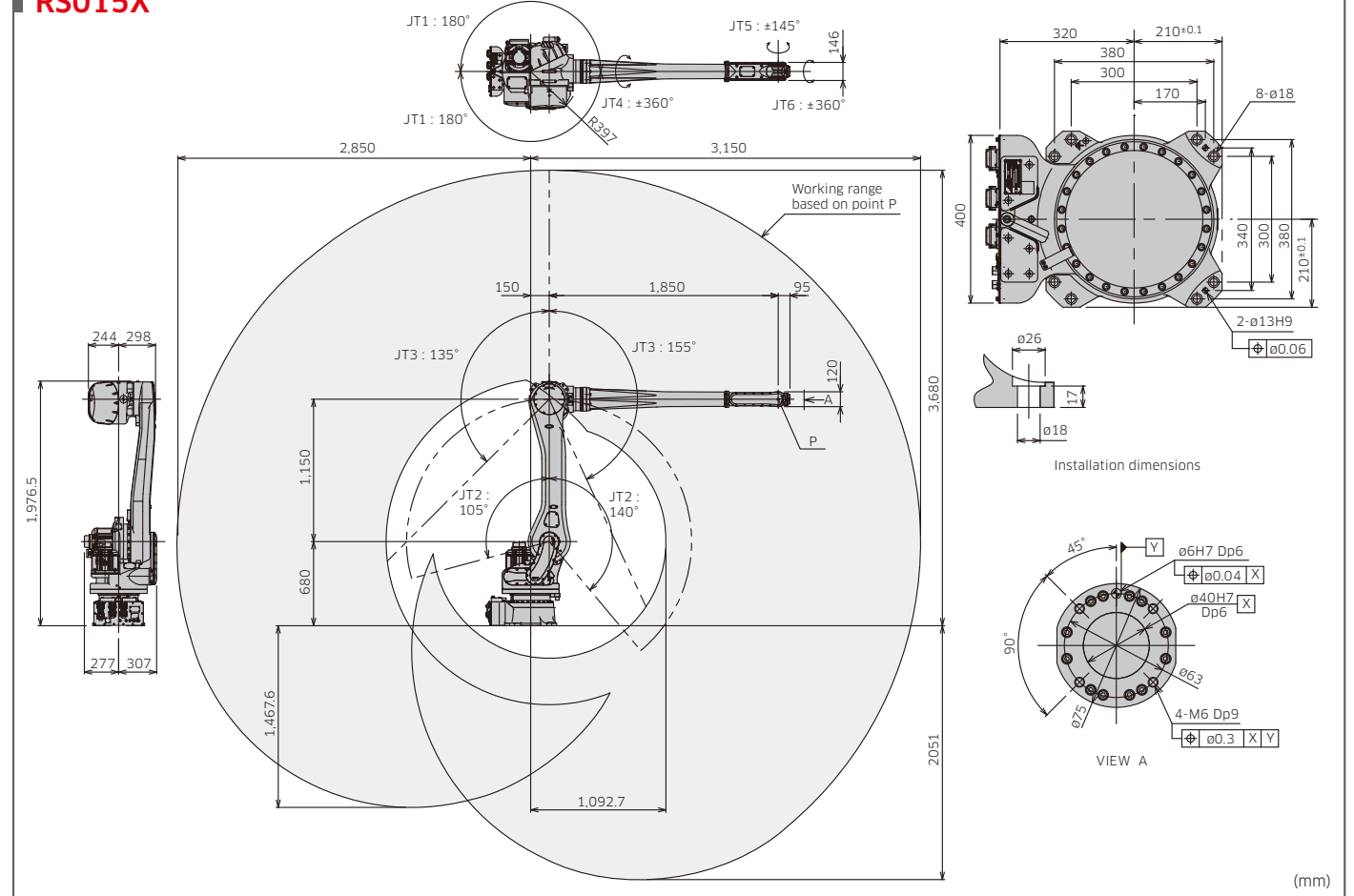


**RS010N**



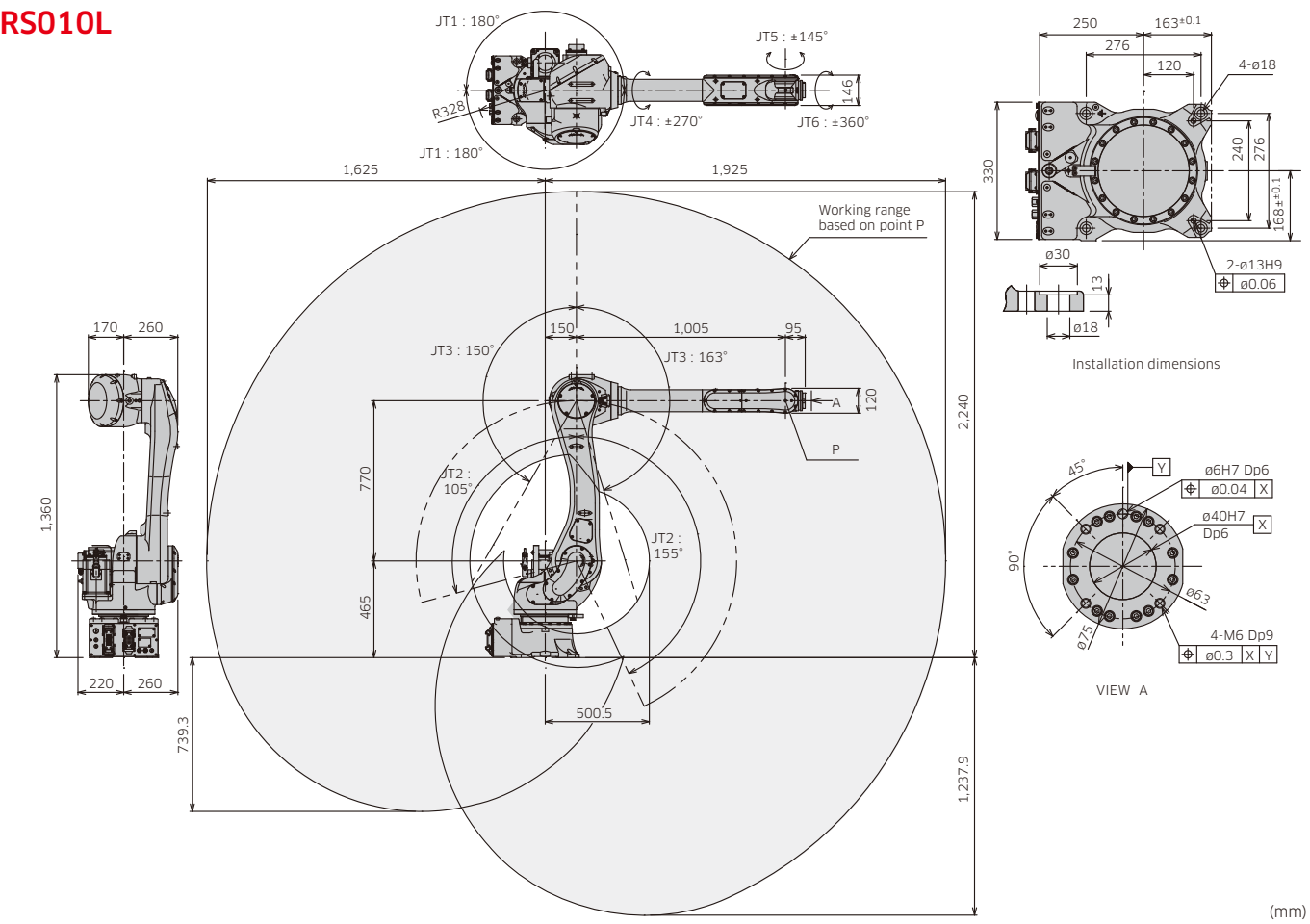
(mm)

**RS015X**



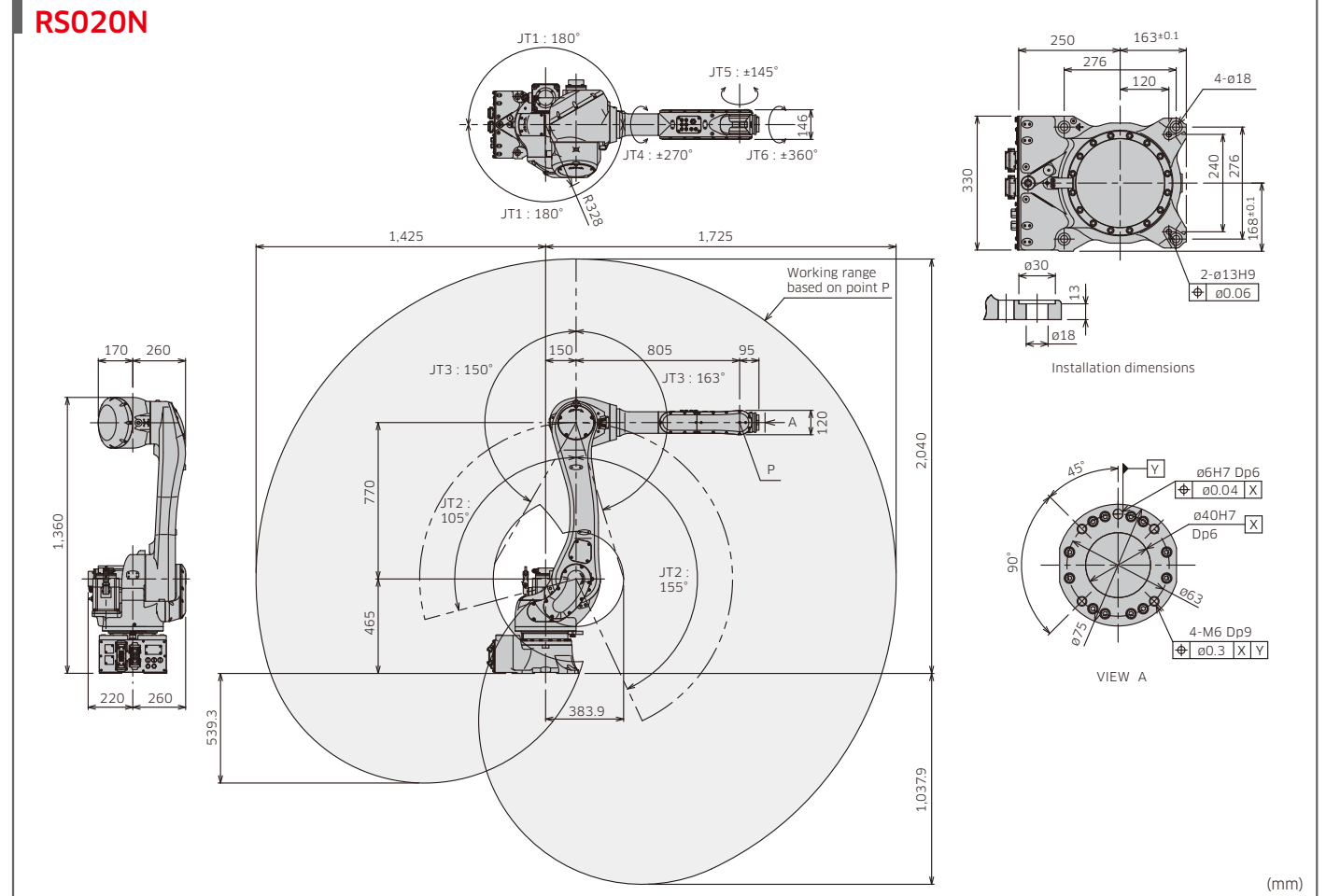
(mm)

**RS010L**



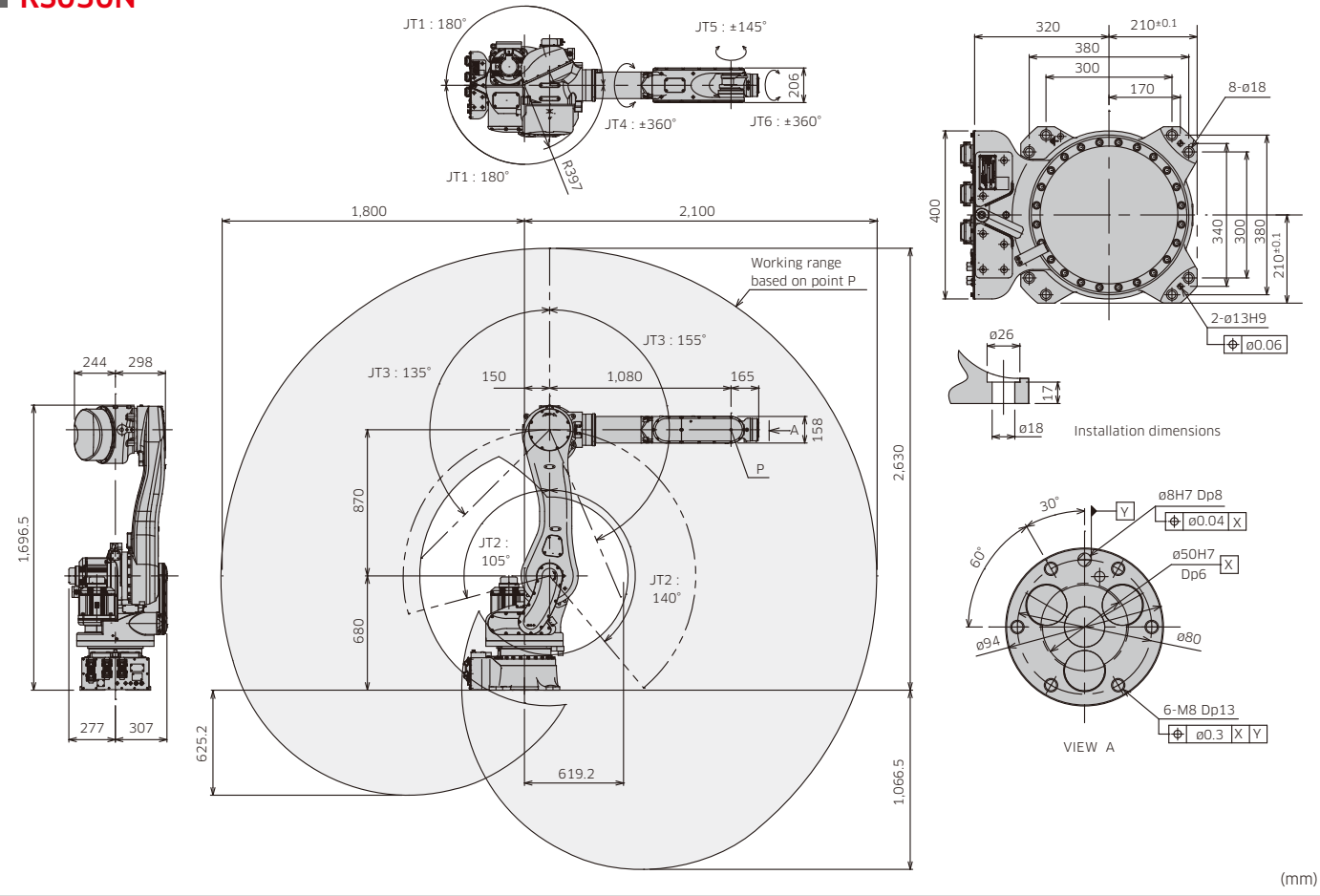
(mm)

**RS020N**

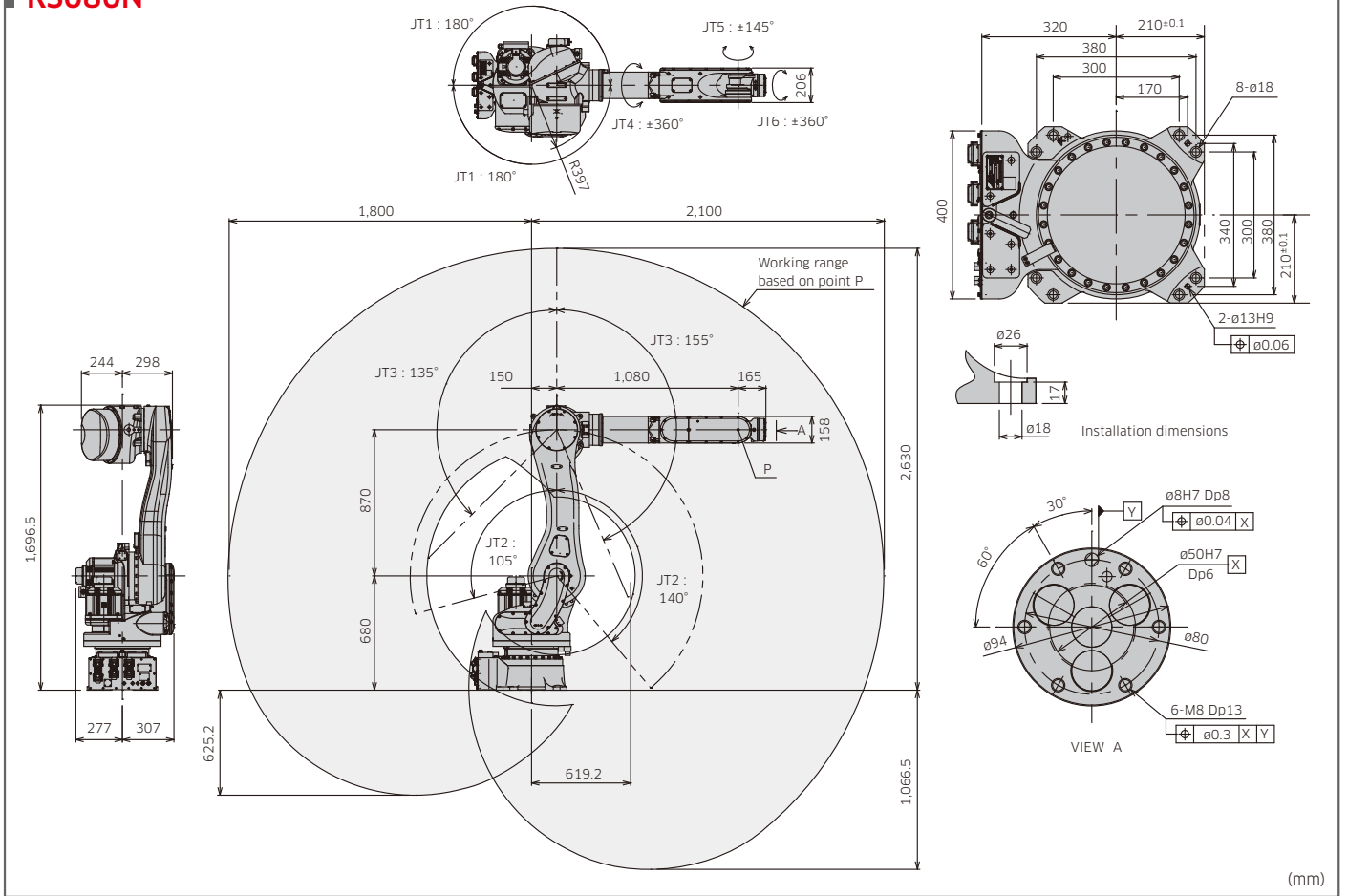


(mm)

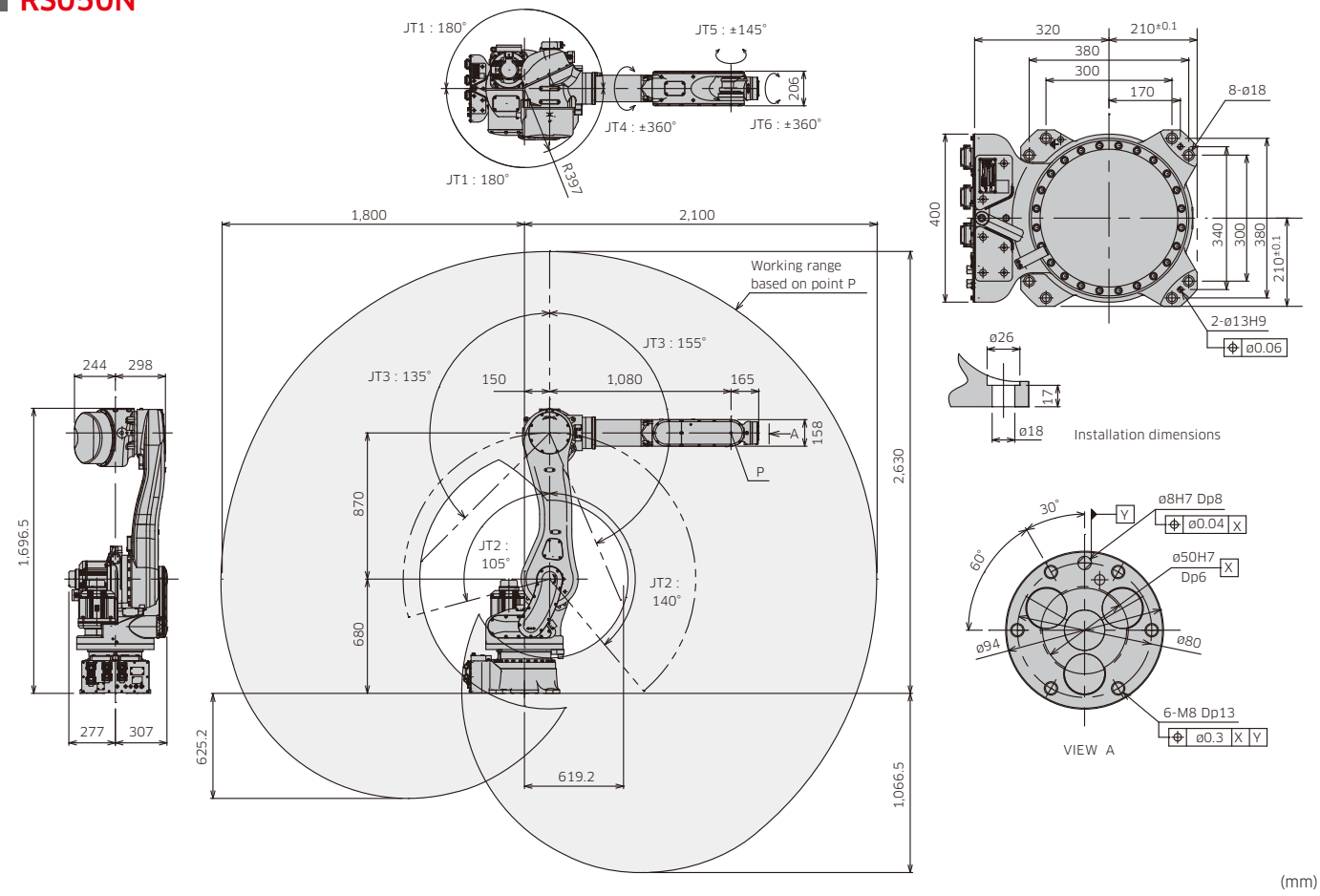
**RS030N**



**RS080N**



**RS050N**





# E01/02 and F60 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

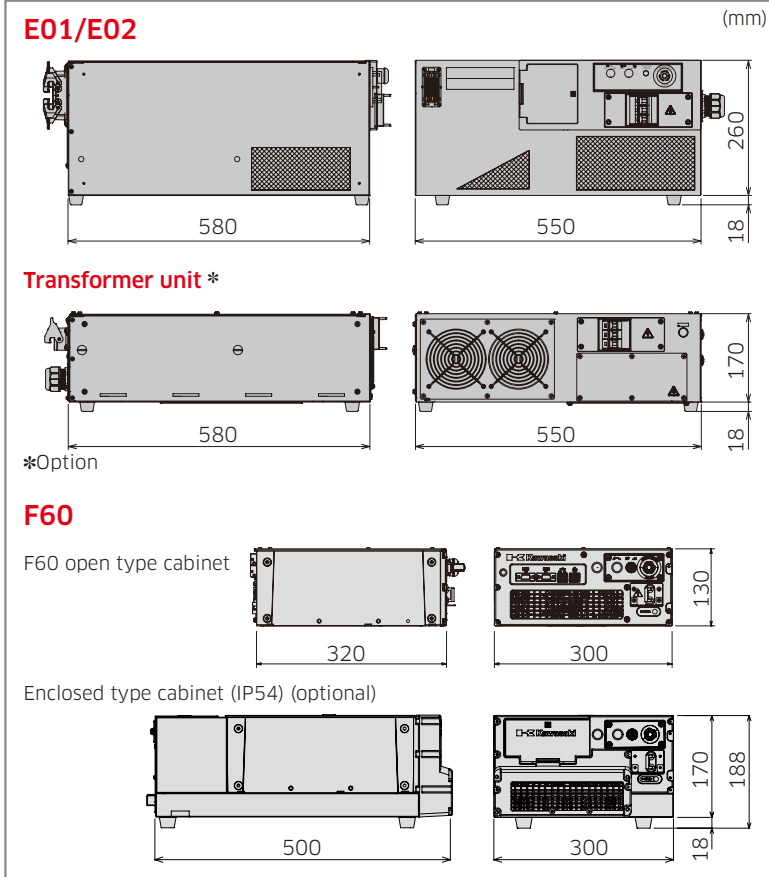
Modular components with limited cables translate into easy diagnostics and maintenance. A host of maintenance functions are available, including self-diagnostics on hardware and application errors to minimize troubleshooting and reduce MTTR (Mean Time To Repair). Remote diagnostics via the web server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

### External view & dimensions



### Specifications

	Standard		Option	
	E01/E02	F60		
Dimensions (mm)	W550×D580×H278	W300×D320×H130	Transformer unit: W580×D580×H178 (E0X only)	
Structure	Open type indirect cooling system (IP54)	Enclosed type direct cooling system (IP20)	IP54 : Enclosed type (only for F60) • Cabinet is larger	
Number of controlled axes	7	6	Max. 9 (E0X) Max. 8 (F60)	
Drive system	Full digital servo system			
Coordinate systems	Joint, Base, Tool			
Types of motion control	Joint/Linear/Circular Interpolated motion			
Programming	Point to point teaching or language based programming			
Memory capacity (MB)	8	16		
General purpose signals	External operation	Motor power off, Hold		
	Input (Channels)	32	16	E0X : Max. 96 F60 : Inside cabinet 64 (total max. 80) Including remote I/O : 128 (total max. 144)
	Output (Channels)	32	16	E0X : Max. 96 F60 : Inside cabinet 64 (total max. 80) Including remote I/O : 128 (total max. 144)
Operation panel	E-Stop switch, teach/repeat switch, control power lamp		Fast check mode switch	
Cable length	Teach pendant (m)	5	10, 15	
	Robot-controller (m)	5	10, 15	
Mass (kg)	40	8.3	Transformer unit: 45 (E0X only)	
Power requirements		AC200-220V ±10%, 50/60Hz, 3ø	AC200-230V ±10%, 50/60Hz, 1ø	• 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		
Environmental condition	Ambient temperature (°C)	0 - 45		
	Relative humidity (%)	35 - 85 (no dew, nor frost allowed)		
Body color	Munsell 10GY9/1 equivalent	Munsell 5Y8.5/1 equivalent		
Teach pendant	TFT color LCD display with touch-panel, E-Stop switch, teach lock switch, Enable switch			
Auxiliary storage unit	-			USB Memory (E0X only)
Interface	USB, Ethernet (100BASE-T/10BASE-T), RS-232C	USB2.0 x 3/RS232C x 2, Ethernet (1000BASE-T/100BASE-TX/10BASE-T) x 2		

\* Please contact Kawasaki about the robot arm types that match the F60 controller and options.

### System configuration diagram

