Kawasaki Heavy Industries, Ltd.
Robot Business 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

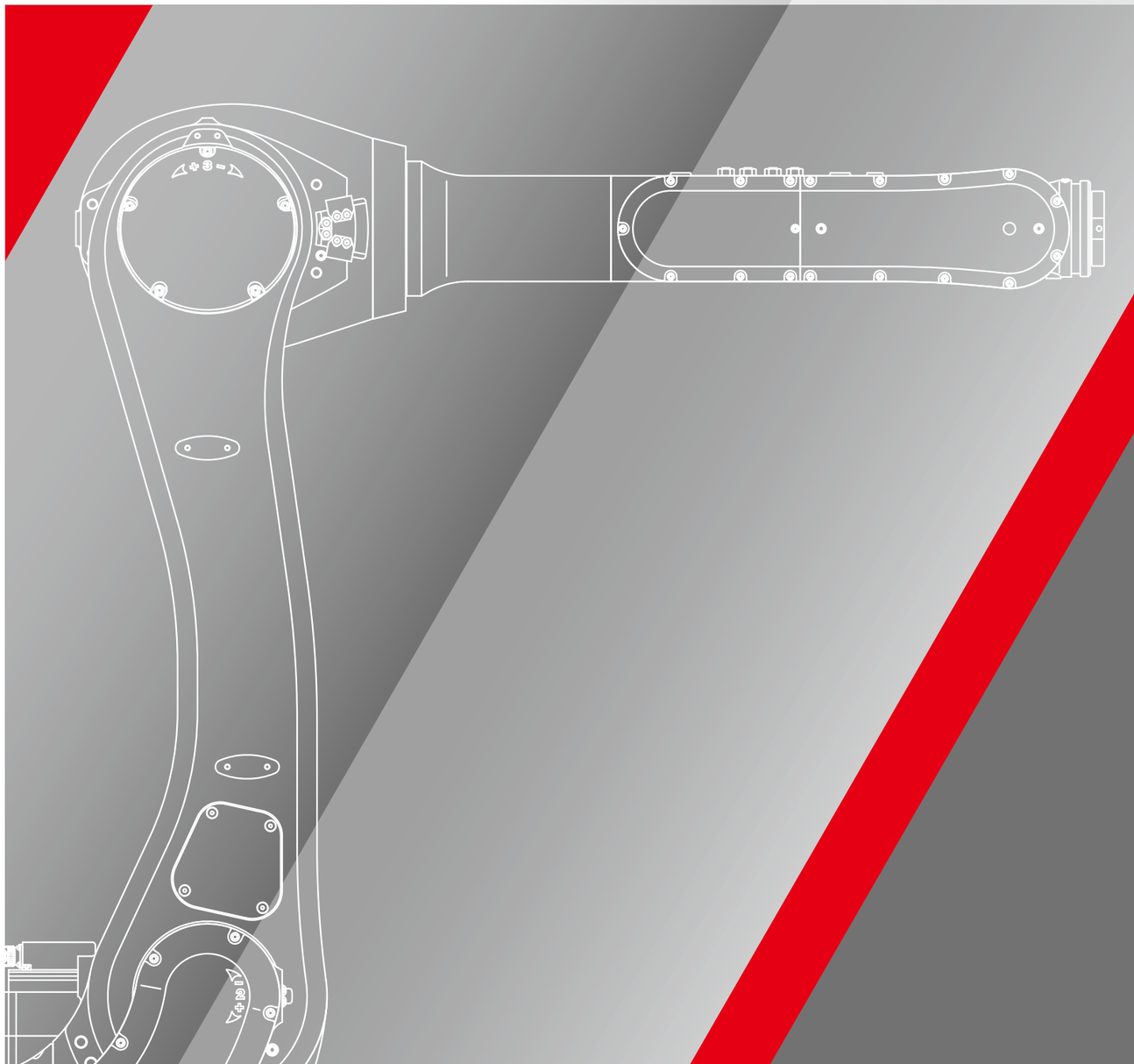
CAUTIONS TO BE TAKEN TO ENSURE SAFETY

- 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 and Nishi-Kobe Works.

Cat. No. 3L1903 May '19 Ⓜ
Printed in Japan

Kawasaki Robot
R series
Small-to-medium payload robots up to 80 kg



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.

RS003N RS005N RS005L RS006L RS007N RS007L RS010N

RS010L RS015X RS020N RS030N/RS050N/RS080N

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

Standard specifications

		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
	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
	Wrist bend (JT5)	±135	±145	±145	±145	±125	±125	±145	±145	±145	±145	±145	±145	±145
	Wrist twist (JT6)	±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
	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 ($kg \cdot m^2$)	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 (℃)	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		

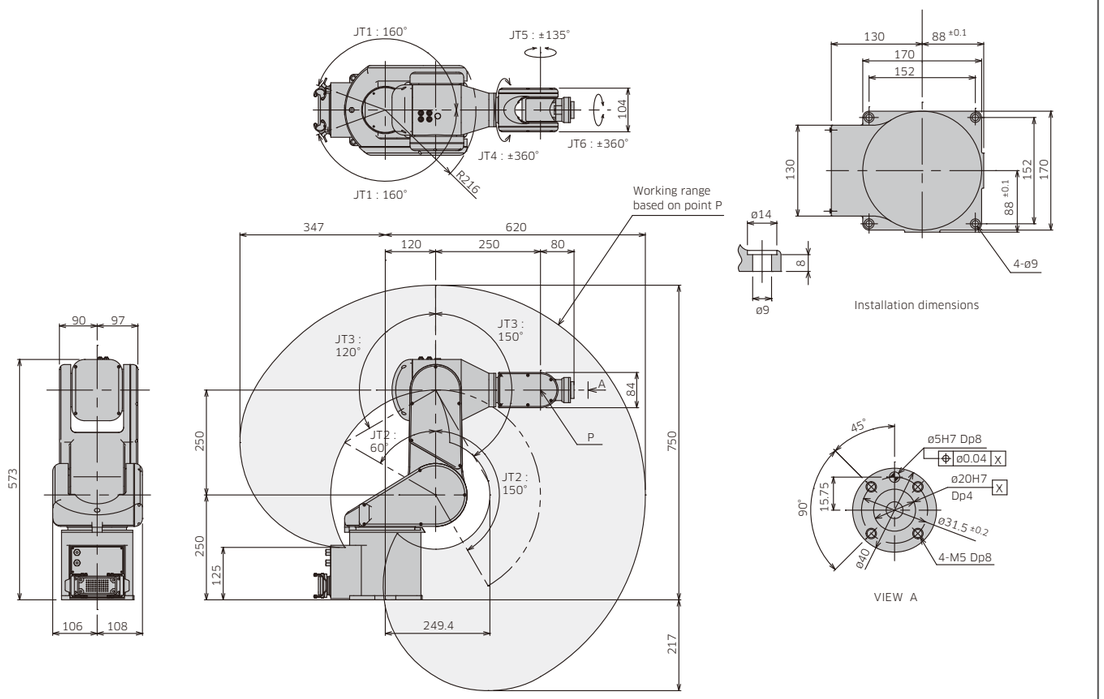
*1: conforms to ISO9283 *2: depends on the payload and motion patterns

Options

● : Option available – : Option not available

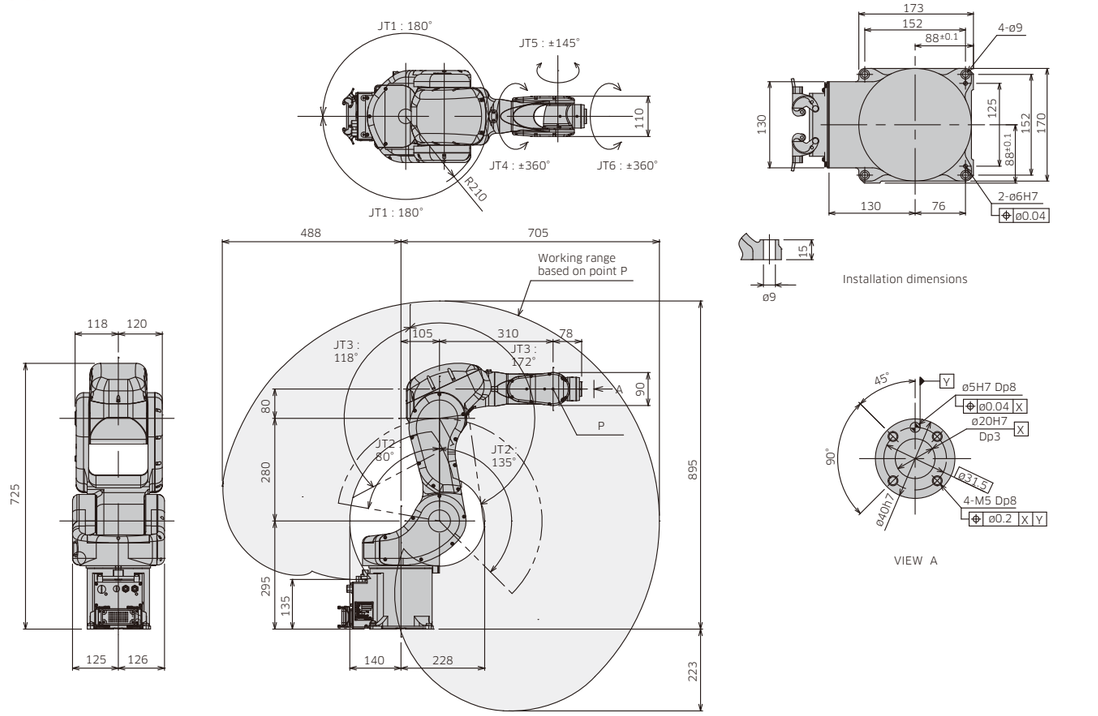
	RS003N	RS005N	RS005L	RS006L	RS007N	RS007L	RS010N	RS010L	RS015X	RS020N	RS030N	RS050N	RS080N
IP67 (JT1-3)	–	–	–	●	●	●	●	●	●	●	●	●	●
Wall mount	●	●	●	●	–	–	●	●	●	●	●	●	●
Traverse unit	–	–	–	●	–	–	●	●	●	●	●	●	●
Riser (300/600mm)	–	●	●	●	●	●	●	●	●	●	●	●	●
Base plate	–	●	●	●	●	●	●	●	●	●	●	●	●
Mechanical stopper 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)	–	–	–	●	–	–	●	●	●	●	●	●	●

RS003N



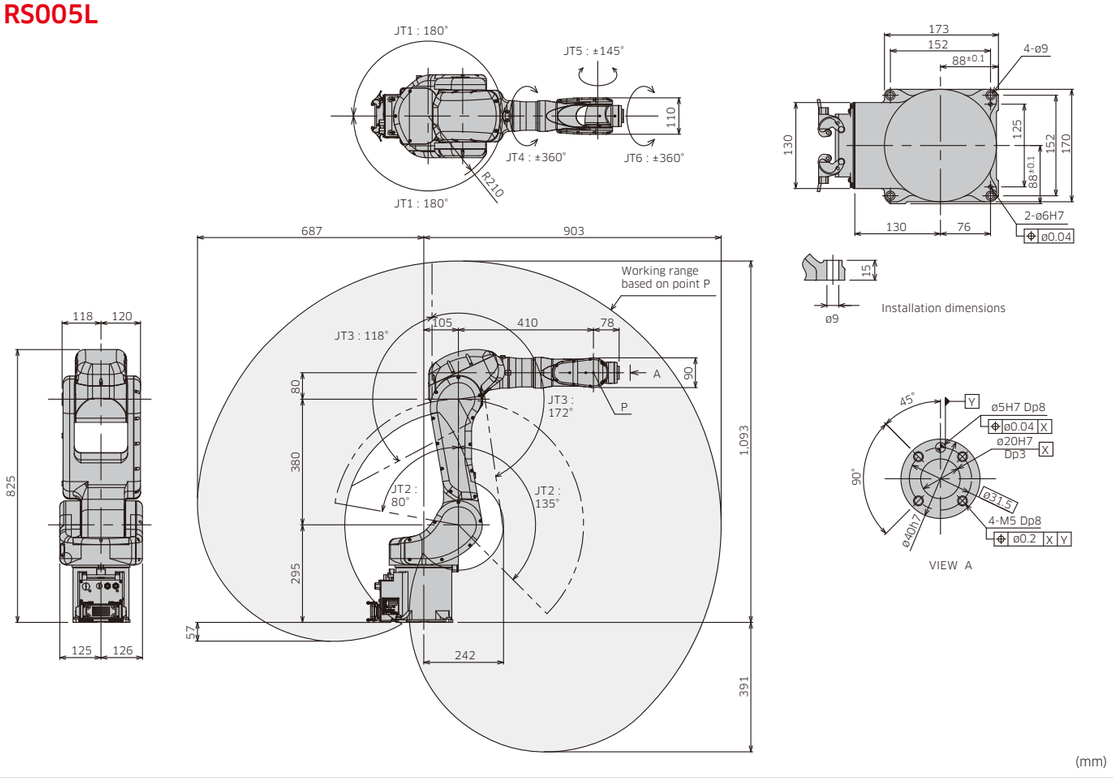
(mm)

RS005N



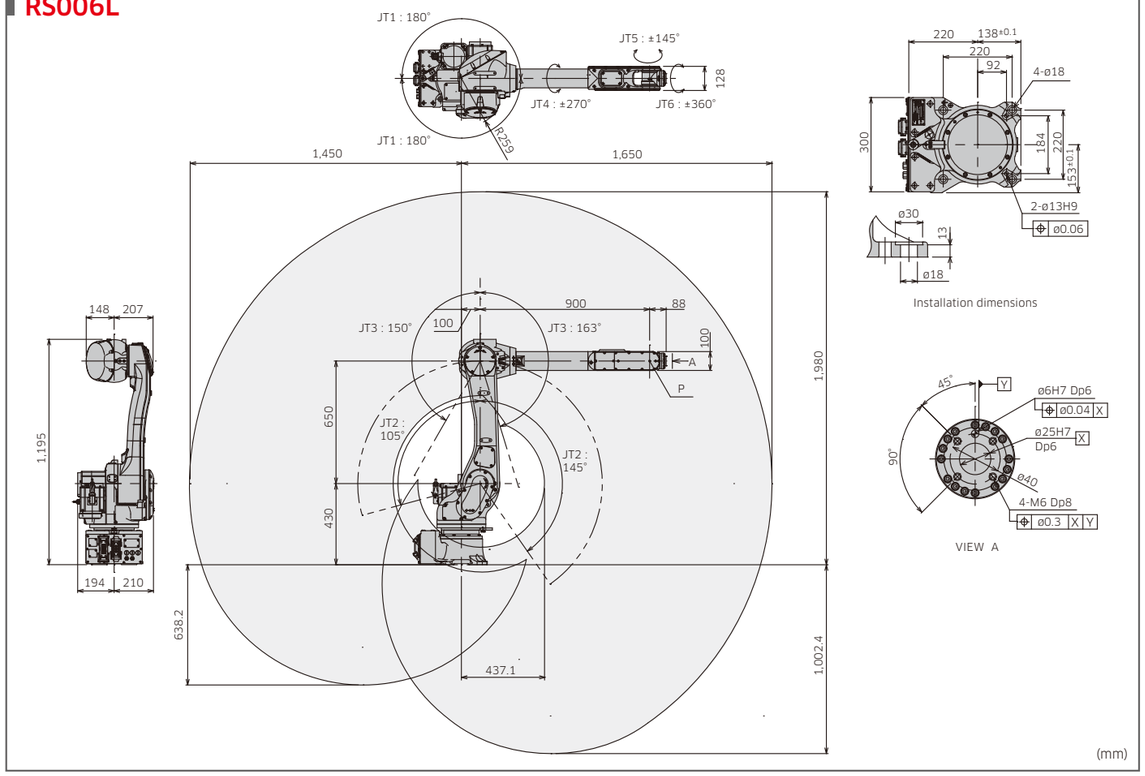
(mm)

RS005L



(mm)

RS006L



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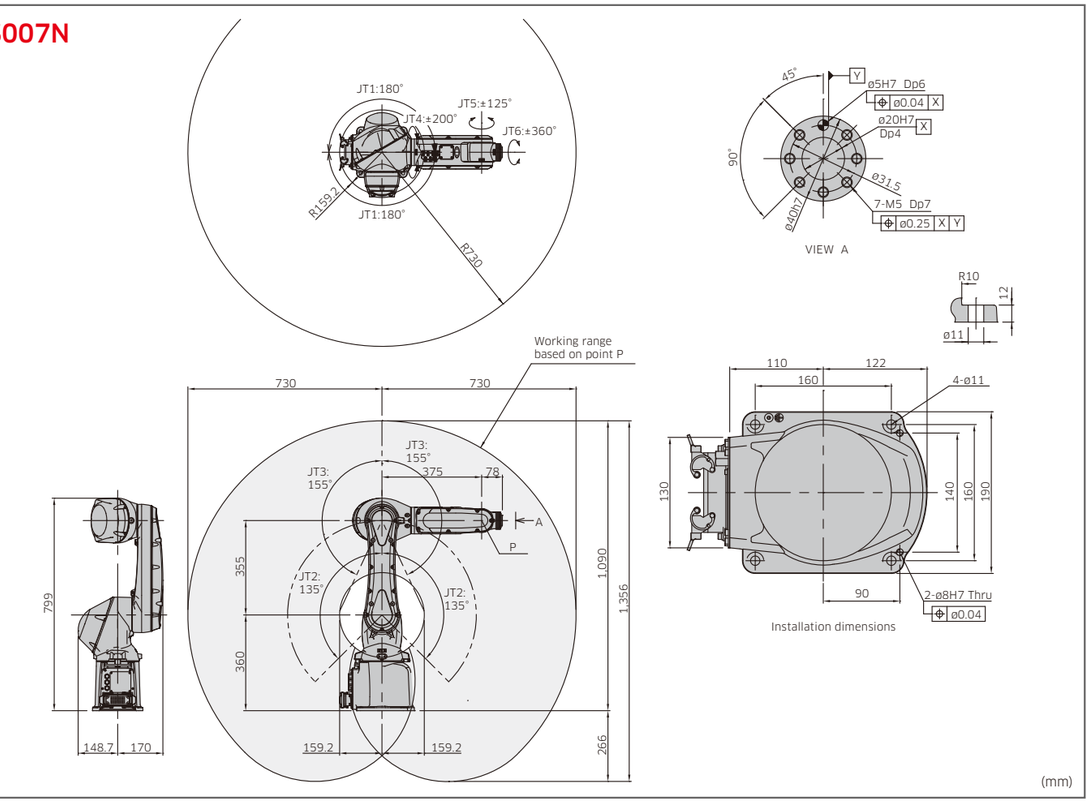
RS007N



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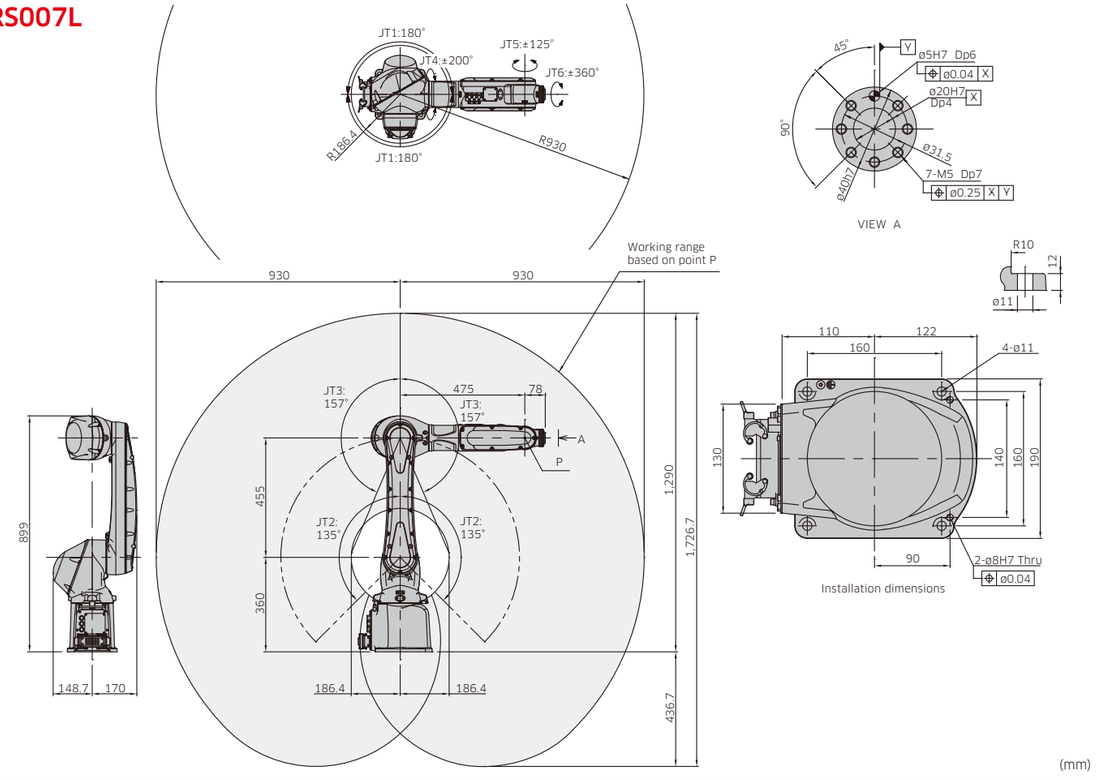
RS007L



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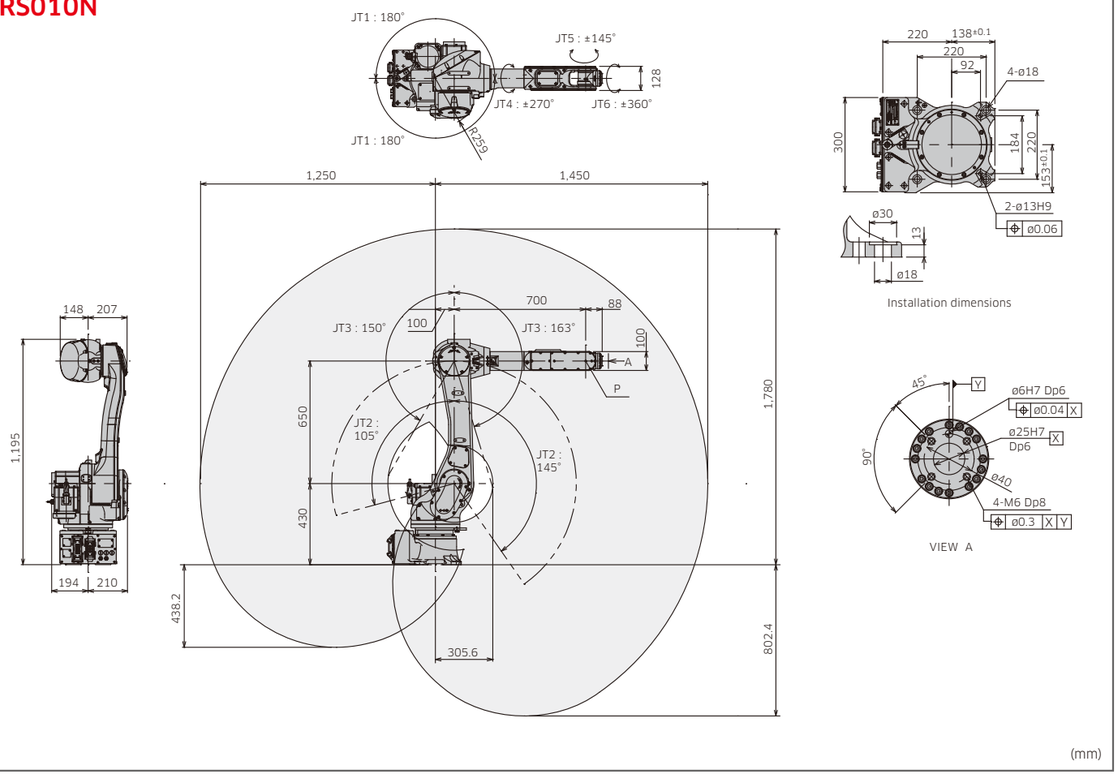
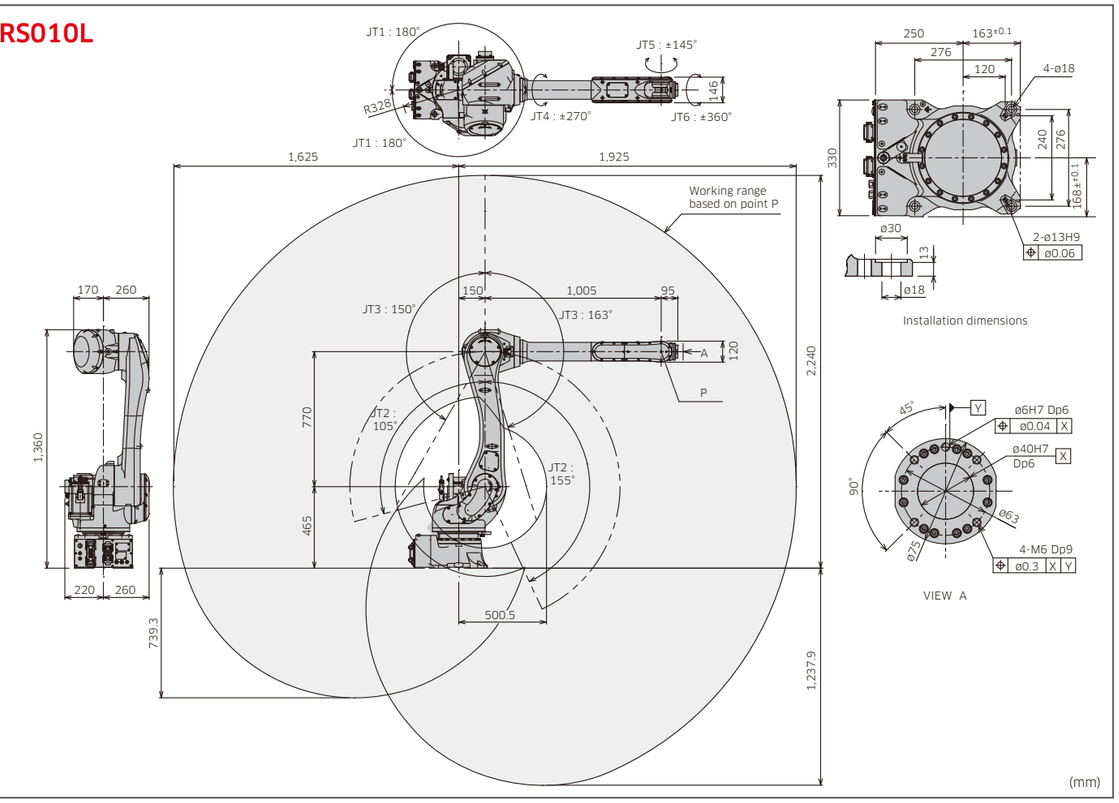
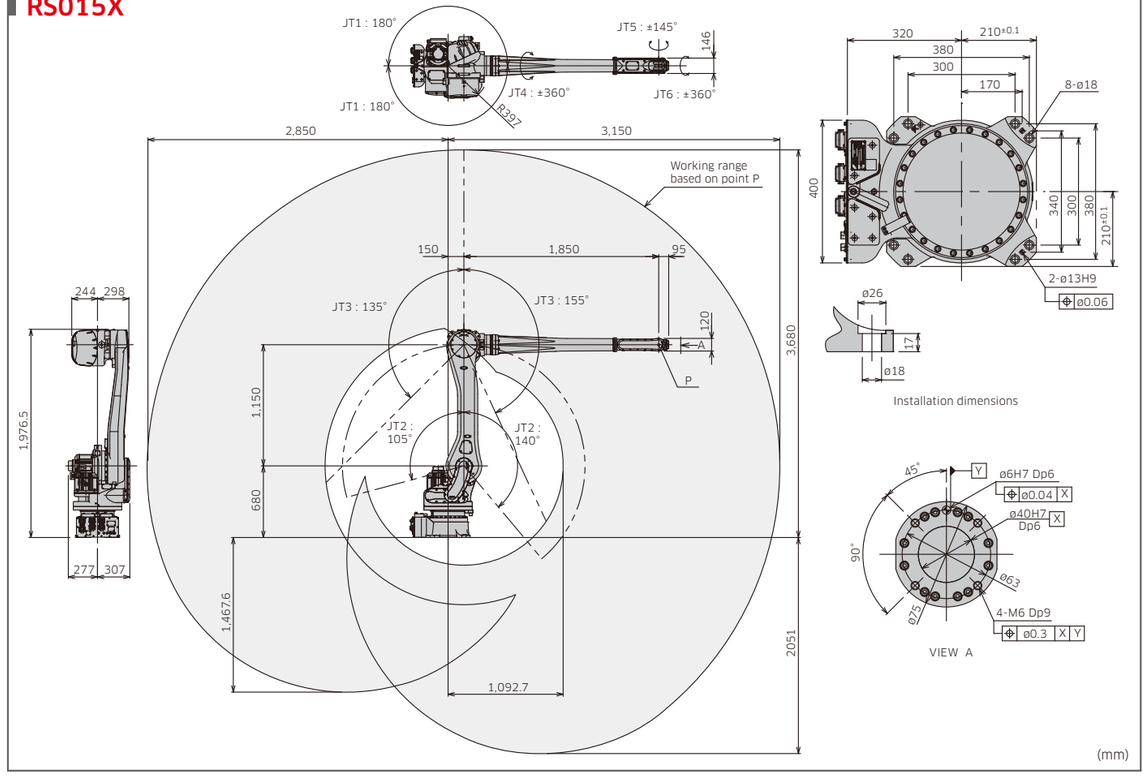
RS010N



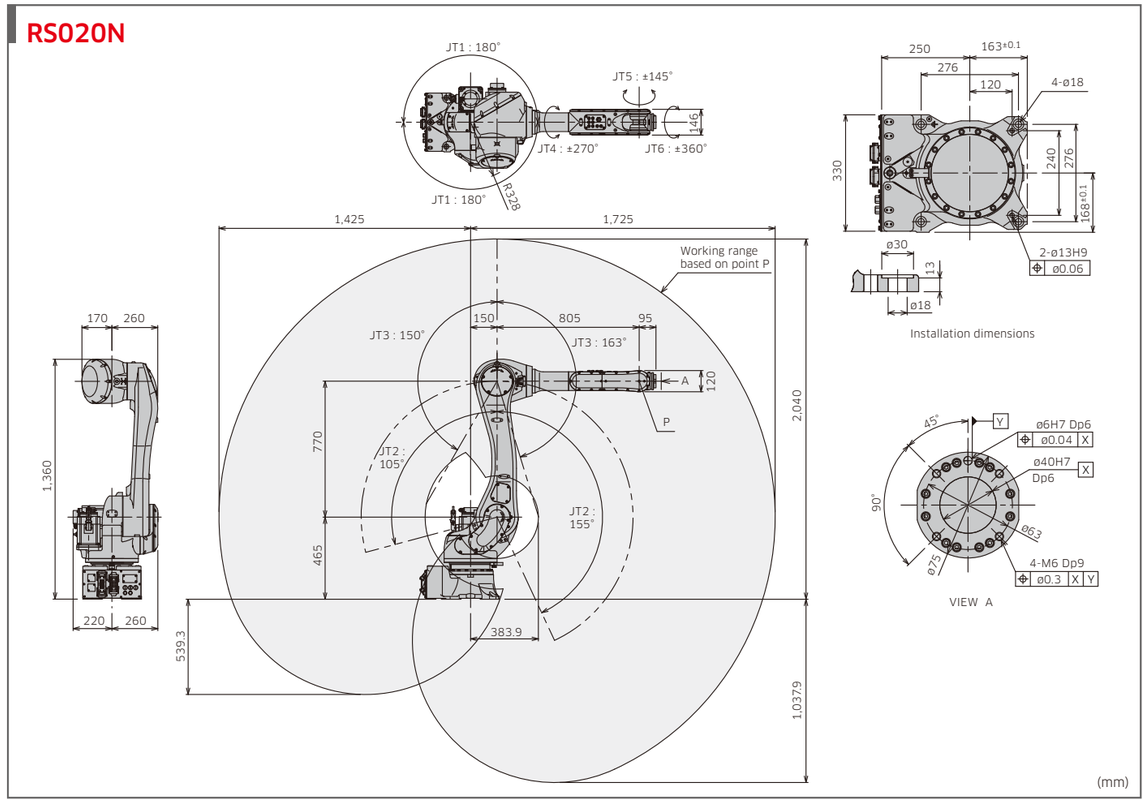
RS010L



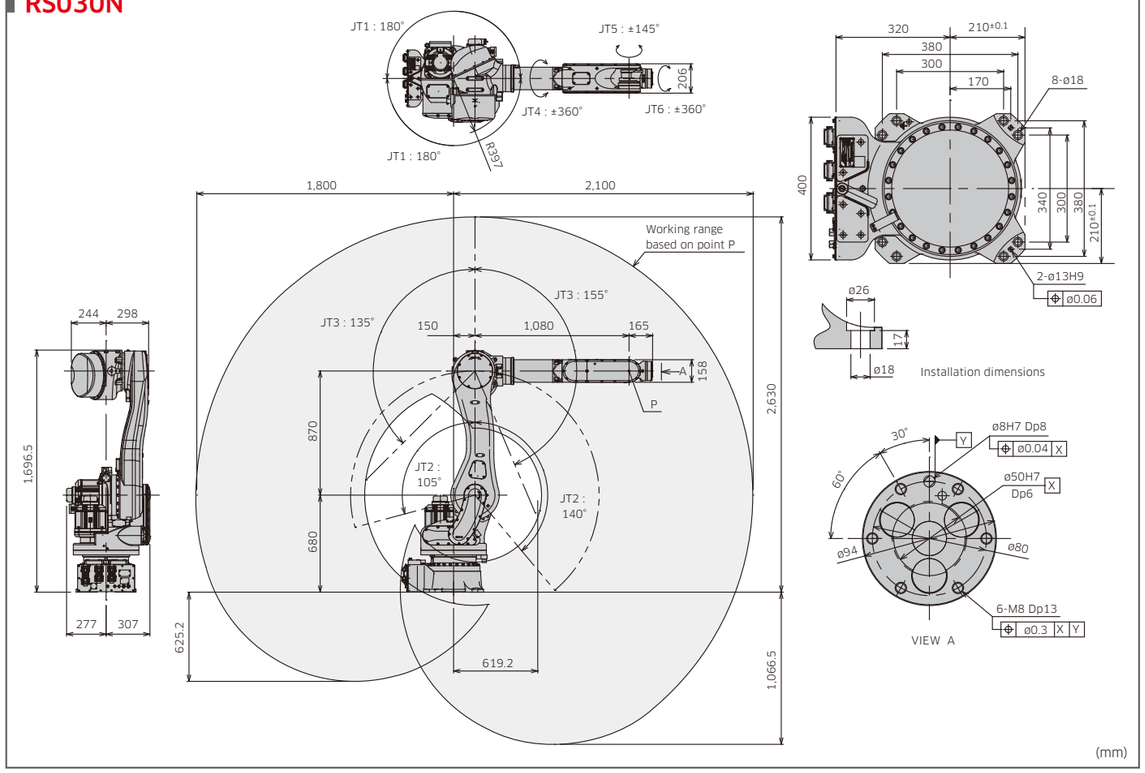
RS015X



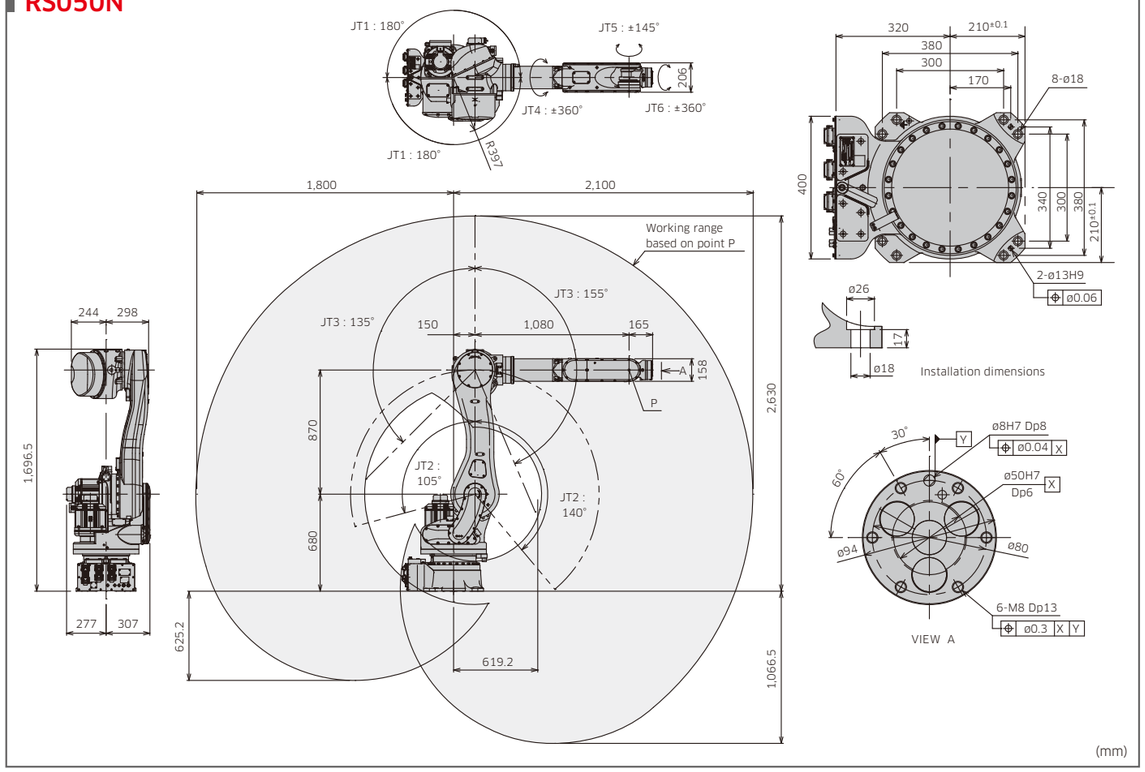
RS020N



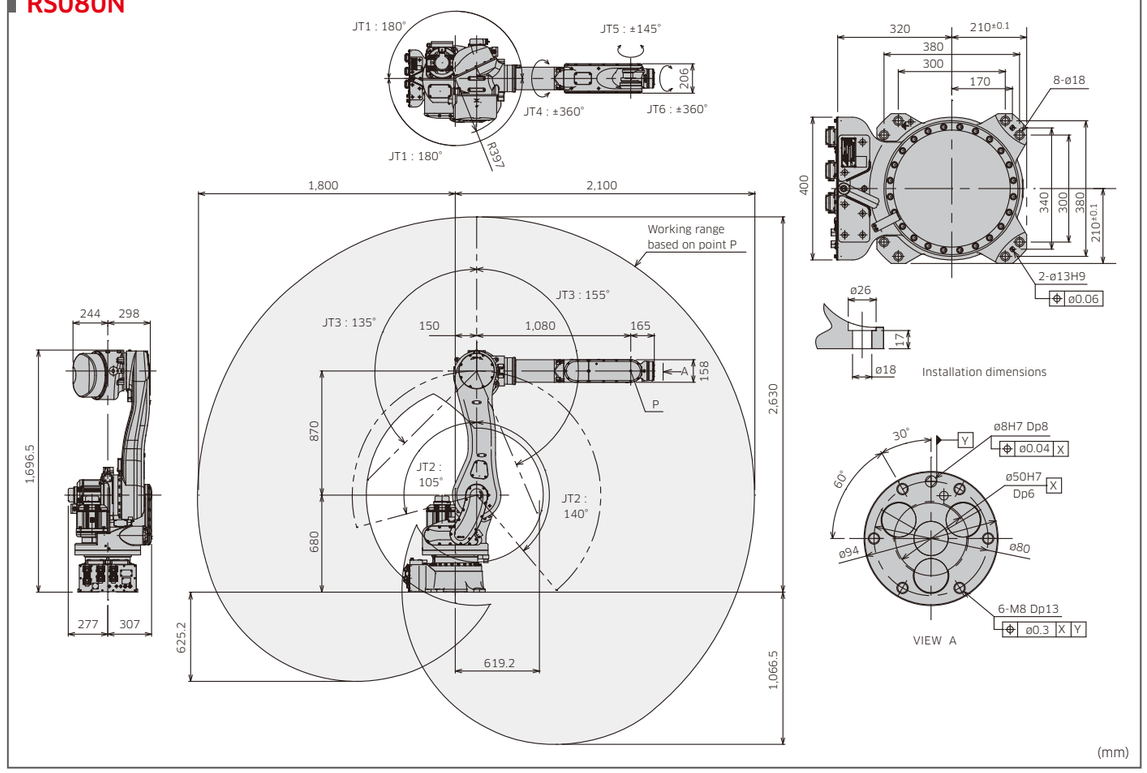
RS030N



RS050N



RS080N



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.

E0X

*Option

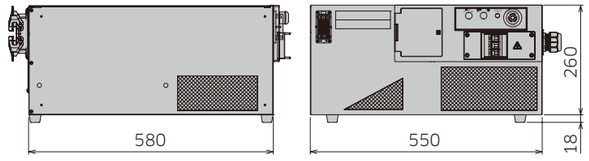
Teach pendant

F60

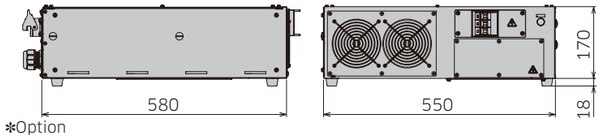
External view & dimensions

(mm)

E01/E02



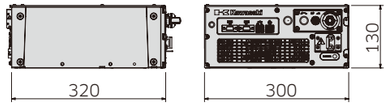
Transformer unit *



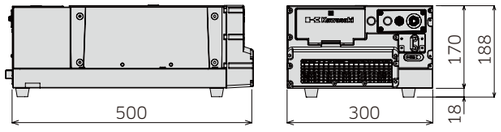
*Option

F60

F60 open type cabinet



Enclosed type cabinet (IP54) (optional)



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:

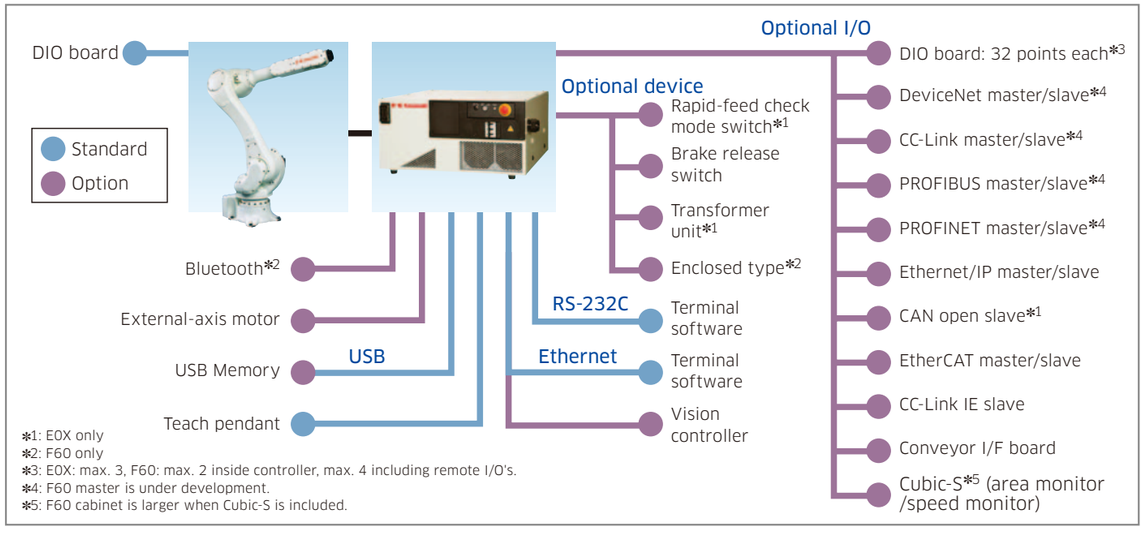
- Optional Bluetooth to connect to the controller.
- Max. four 32 I/O's as a remote I/O.

Specifications

		Standard		Option
		E01/E02	F60	
Dimensions (mm)		W550×D580×H278	W300×D320×H130	Transformer unit: W580×D580×H178 (E0X only)
Structure		Enclosed type direct cooling system (IP54)	Open type indirect 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		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	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



*1: E0X only
*2: F60 only
*3: E0X: max. 3, F60: max. 2 inside controller, max. 4 including remote I/O's.
*4: F60 master is under development.
*5: F60 cabinet is larger when Cubic-S is included.