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✻ 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.

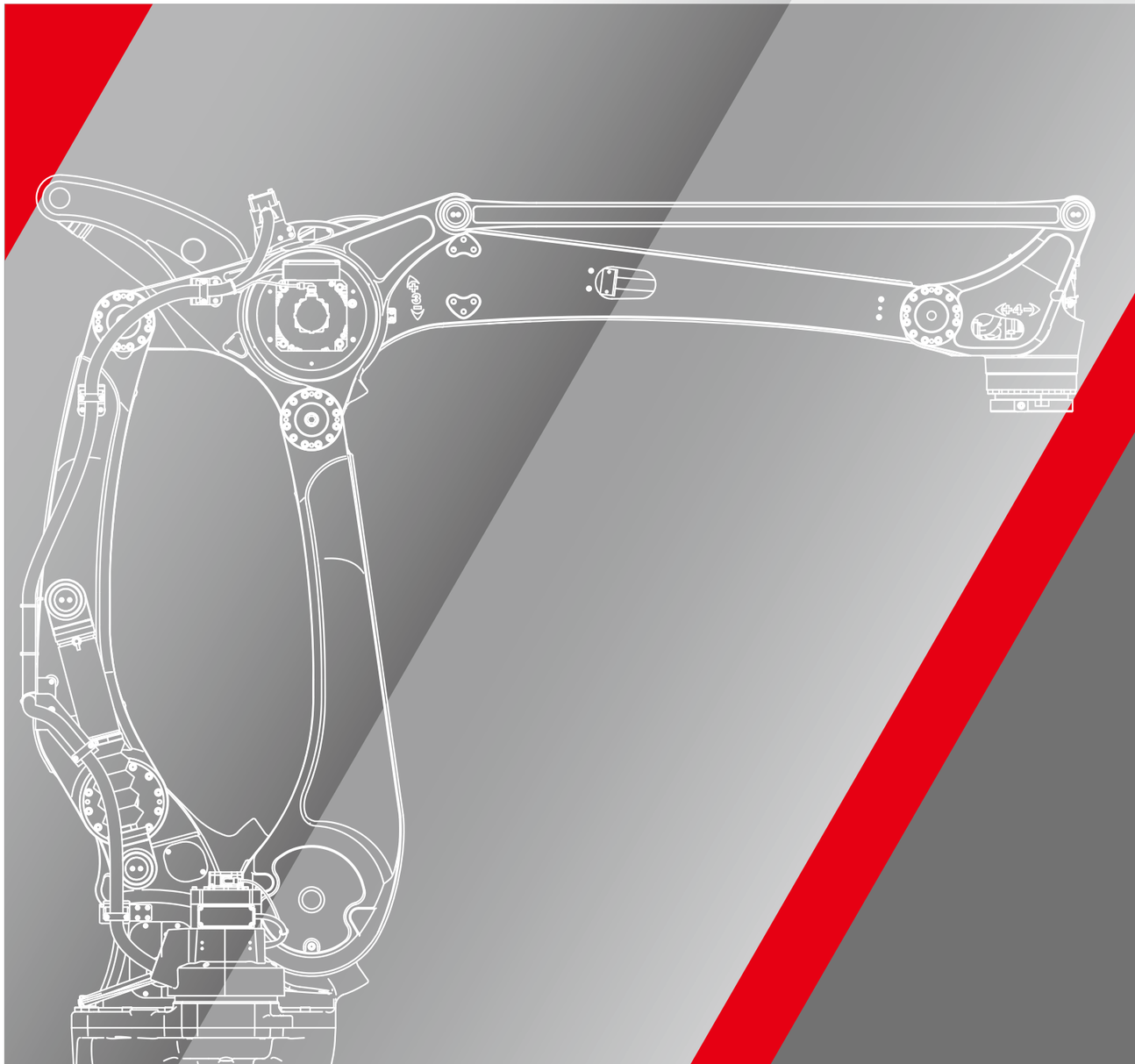
QUALITY SYSTEM CERTIFICATION ISO 9001 DNV MGMT.SYS. RvA C 024

ENVIRONMENTAL SYSTEM CERTIFICATION ISO 14001 DNV MGMT.SYS. RvA C 024

ISO certified in Akashi Works.

Cat. No. 3L0000 Jan. '15 Ⓜ

Kawasaki Robot
Palletizing robots



Kawasaki's high-speed palletizing robots can meet the demands for power and speed.

The food product, pharmaceutical, printed matter and various other industries are involved in multi-variety small-lot production in order to be able to address the diverse needs of their customers. In addition, there are also demands for the maintenance of product freshness and reductions in distribution inventories while "just-in-time" delivery has also become an essential condition.

The rationalization and automation of distribution are now a focus of attention as a means for responding to such demands. Palletizing and depalletizing, which are especially important factors, have given rise to demands for the development of flexible automated robot-based systems to ensure their rapid, precise and continuous implementation.

Kawasaki Heavy Industries produces a line of three different types of palletizing robots, including the RD80N with a maximum payload of 80 kg, model ZD130S/250S with a maximum payload of 130/250 kg and model CP180L/300L/500L with a maximum payload of 180/300/500 kg. Each has a broad Work envelope coupled with high-speed action and demonstrates its effectiveness in accelerating speed and reinforcing performance.

RD080N

ZD130S/250S

CP180L/300L

CP500L

Features

Broad operating range and high payload capacity

The RD80N is the most compact model, but possesses a wide range of movements. In addition, the RD80N stacks a maximum height of 2062.3 mm on 1,100 x 1,100 mm pallets. The CP series can handle with load capacities of up to 500kg, as well as cover multiple pallets of up to four with 1,100 x 1,100 mm.

Palletizing capacity worthy of our high-speed age

Kawasaki palletizing robots deliver the high-speed operation needed for distribution. When moving a vertical distance of 400 mm and a horizontal distance of 2,000 mm in a to-and-fro motion, the RD80N can perform 900 cycles per hour with loads of 80 Kg. In the same conditions the CP180L is capable of performing 2,050 cycles with loads of 130 Kg,

No wasted action with the small installation space

RD80N has a turning radius of 397 mm, enabling it to cover a wide working area at high speed while occupying less space than a person.
“Cubic-S” which is an optional function to monitor the movement of robots can be used to limit the range of robot movements and make safety fence area smaller.

Simple palletizing software K-SPARC (option)

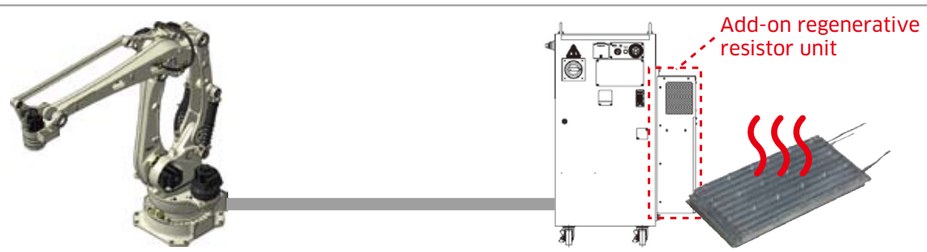
Kawasaki’s palletizing software K-SPARC allows layout planning and operations to be simulated on your computer. All you have to do is simply start up your computer and select the workpieces, pallets, and stacking patterns you want to use. You can also review layouts displayed on screen as well as simulate robots. With its enhanced usability, K-SPARC supports more pallet stacking patterns than conventional palletizing software, making it easier to teach robots.

Energy saving

The E03 controller used for CP series has an electricity regeneration function that reduces CO_2 emission as well as energy consumption.

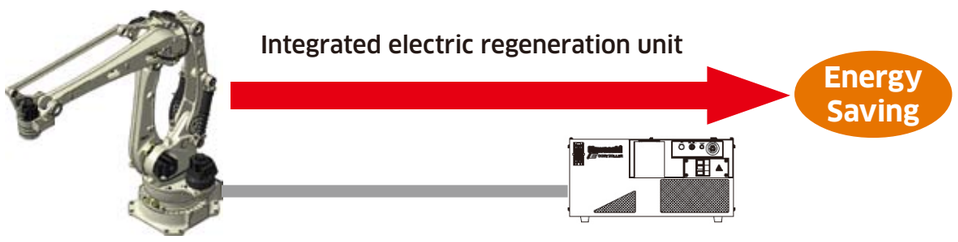
Electricity Regeneration Function

Conventional controller



Consume electric power by resistance

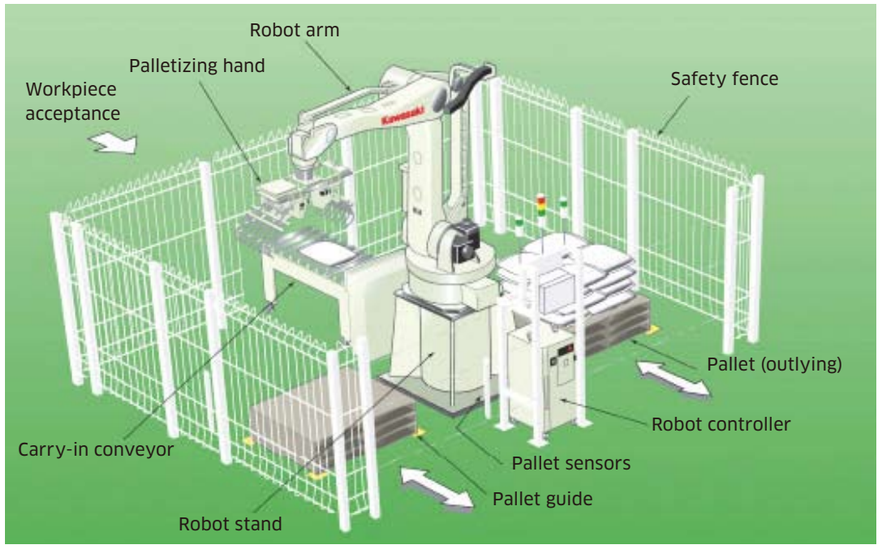
E03 Controller



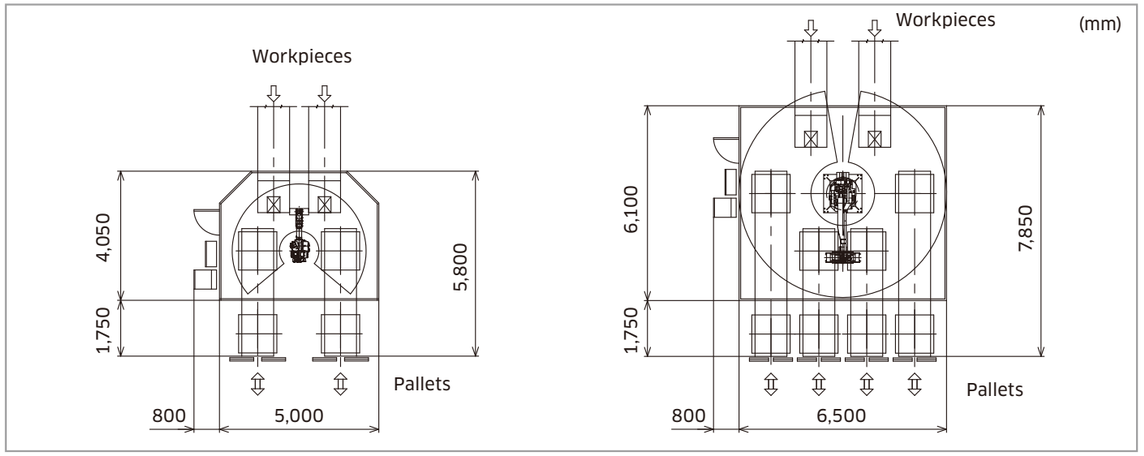
Return electric power to the primary power source

Palletizing package cells

Kawasaki provides system configurations perfectly adapted to your needs.



Sample layout for palletizing package cells

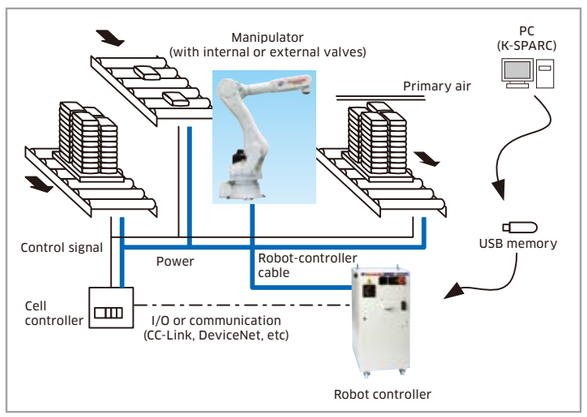


Sample of palletizing package cells

Different workpieces sent from the same conveyor are segregated and palletized.

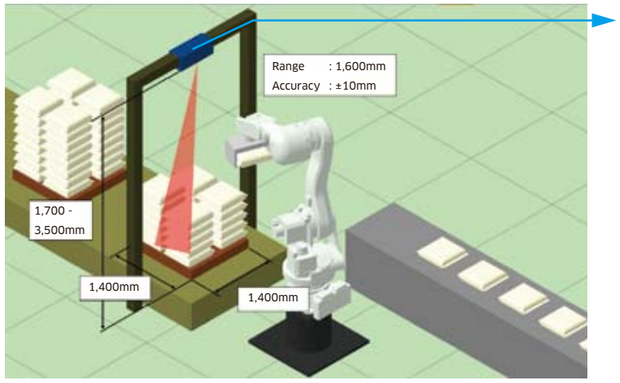
Different workpieces sent from different conveyors are segregated and palletized.

System configuration example



Depalletizing package cell

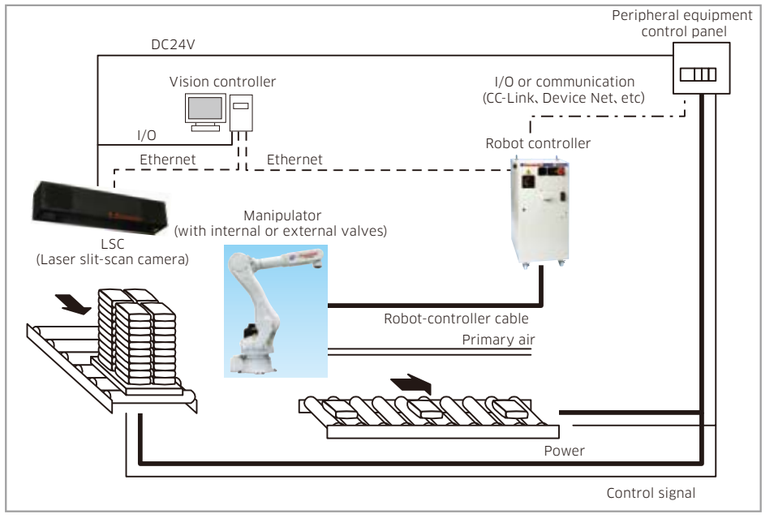
- Detects the 3-D position and posture of stacked bag packages.
- A single fixed camera can monitor wide stacking areas.
- Able to adjust to changes in peripheral lighting environments and workpiece surface conditions.
- No need for configuring the individual settings of each workpiece stacking pattern.
- Able to handle a combination of different types of workpieces at the same time.



LSC (Laser Slit-scan Camera)

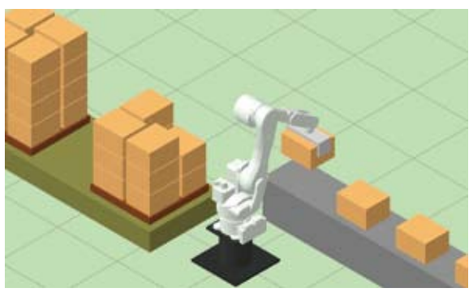
Item	Specification
Measuring range	L1,400mm×W1,400mm×L1,800mm
Objective distance	1,700mm
Laser class	Class 3R
Dimension	L1,100mm×W125mm×H125mm
Mass	About 6.5kg

System configuration example

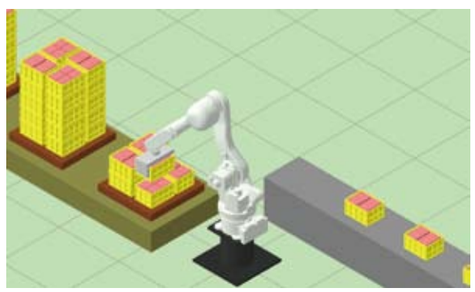


Other applications

*For these applications, the workpiece sizes and stacking patterns must be configured.



Depalletizing carton boxes



Depalletizing plastic containers

Robot motion monitoring safety function (Option)

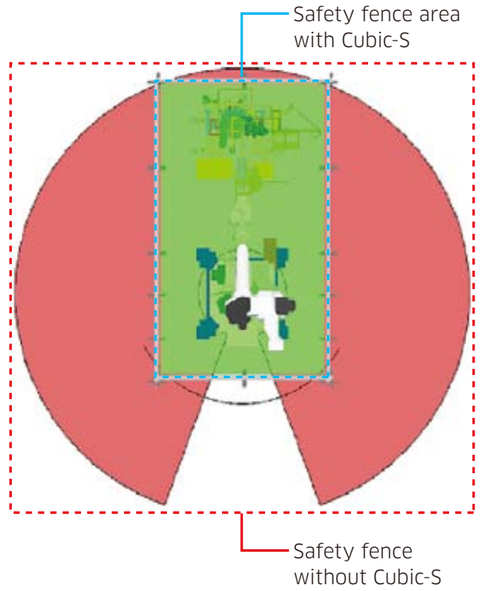
Cubic-S
Supervise Safety Smart

You can build an advanced and flexible robot safety system according to the motion condition by monitoring the movements of the robot.

- Save Space by limiting the range of robot movements
- Safety function can be switched according to the state of safety signal input
- IEC61508 (SIL2) and ISO13849-1 (PLd/category 3) certification

Save space

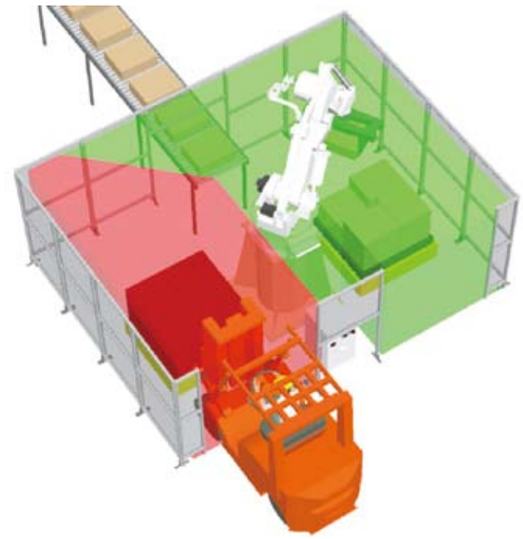
You can reduce the size of the safety fence area by limiting the range of robot movements to the minimum.



Reduced safety fence area

Transporting workpieces during robot motion

You can limit the range of robot movements according to the human work area.

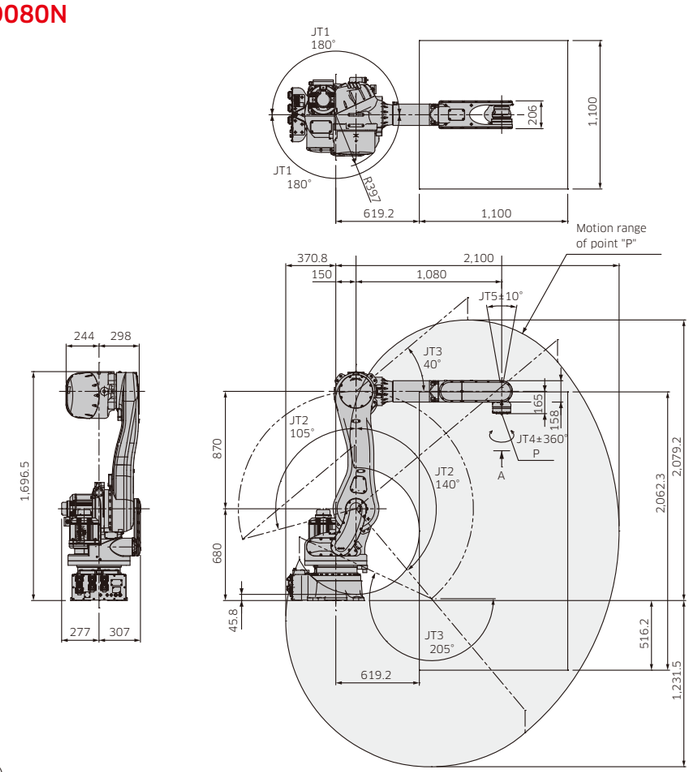


Reduced cycle time

Item	Specification
Safety performance	IEC61508 (SIL2) ISO13849-1 (PLd/category3)
Monitoring the number of joints	Maximum 9 joints
Safety function	Motion area monitoring, Joint monitoring, Speed monitoring, Stand still monitoring, Tool orientation monitoring, Protective stop, Emergency stop, Safety status output
Safety input and output	Dual channel safety input 8CH Dual channel safety output 8CH * It is possible to allocate Safety Status Output Signals and Safety Input Signals of each Safety functions

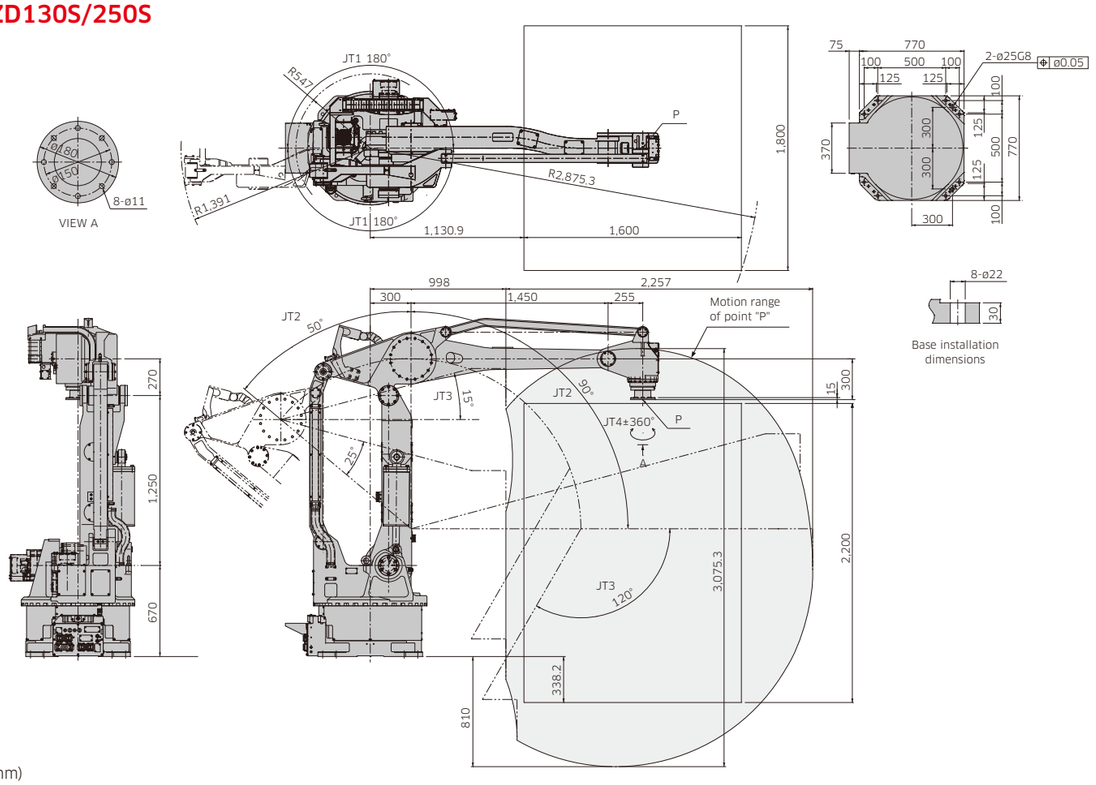
Motion range & dimensions

RD080N



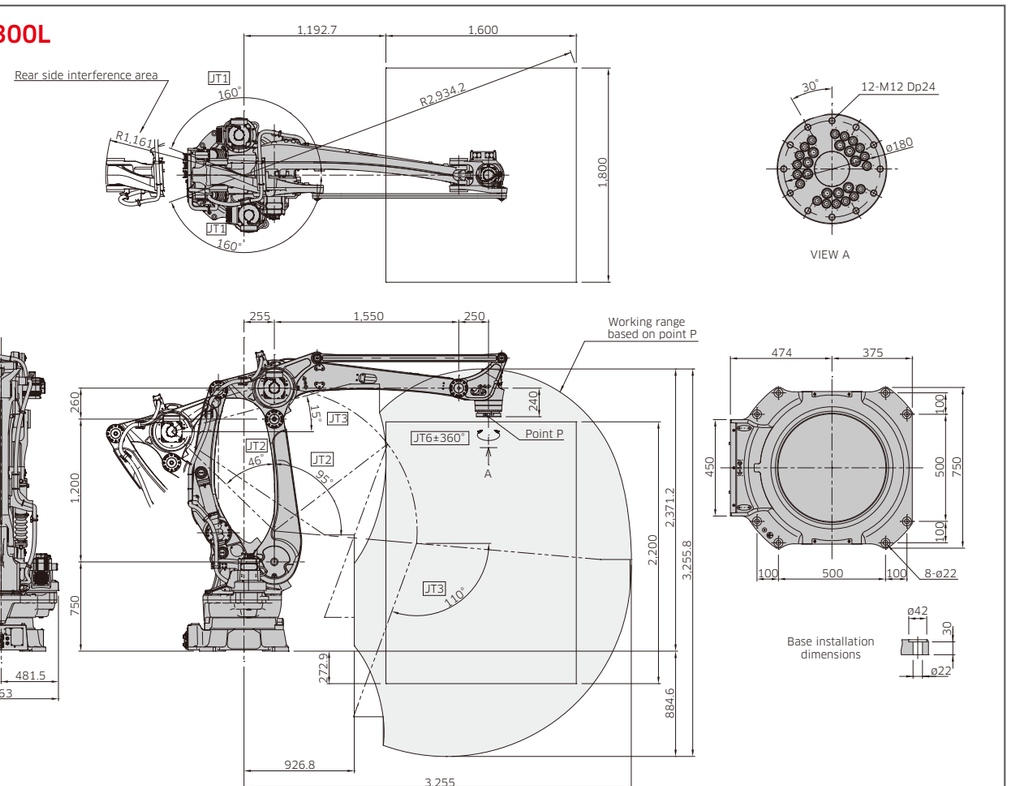
(mm)

ZD130S/250S



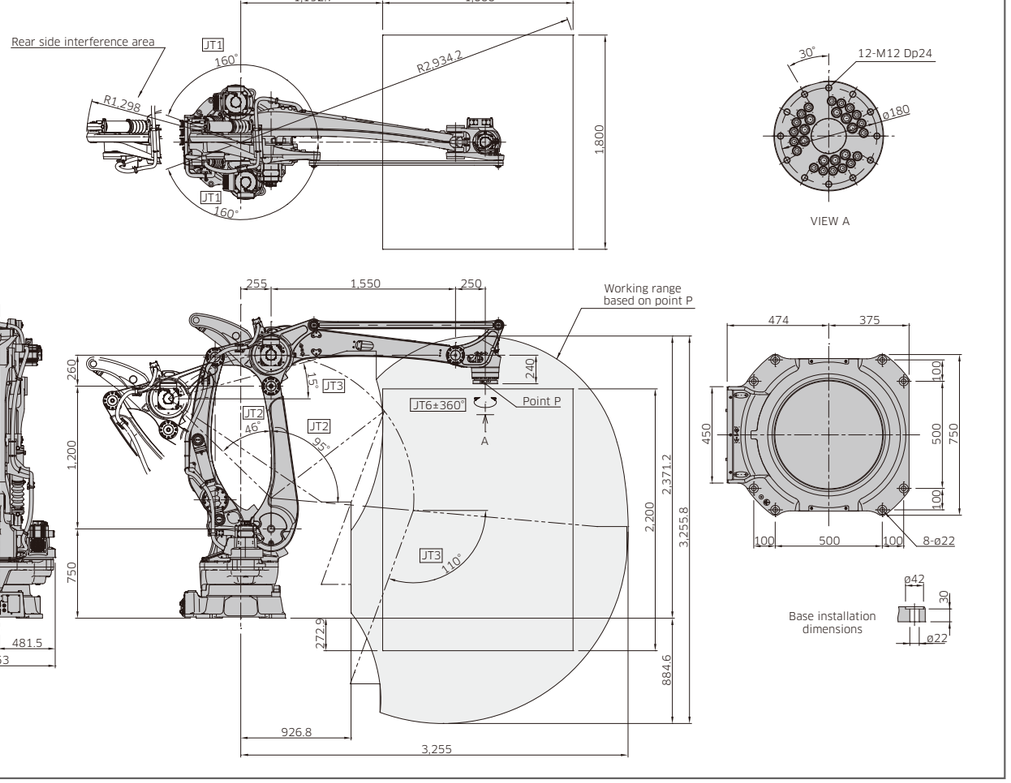
(mm)

CP180L/300L



(mm)

CP500L



(mm)

			RD080N	ZD130S	ZD250S
Arm type			Articulated type		
Degrees of freedom (axes)			5	4 (5 : option)	
Max. payload (kg)			80	130	250
Max. stroke (°)	Arm rotation	(JT1)	±180	±180	
	Arm out-in	(JT2)	+140 - −105	+90 - −50	
	Arm up-down	(JT3)	+40 - −205	+15 - −120	
	Wrist swivel	(JT4)	±360	±360	
	Wrist compensation	(JT5)	±10 *1	–	
Max. speed (°/s)	Arm rotation	(JT1)	180	135	95
	Arm out-in	(JT2)	180	110	90
	Arm up-down	(JT3)	175	130	95
	Wrist swivel	(JT4)	360	400	190
Working area (mm)	Width		1,100	1,800	
	Depth		1,100	1,600	
	Height		2,062.3	2,200	
Moment of inertia (kg•m²)			13.7	50	100
Palletizing capacity*2 (Payload)			900 cycle/hour (80 kg)	1,700 cycle/hour (130 kg)	1,400 cycle/hour (250 kg)
Positional repeatability (mm)			±0.07	±0.5	
Mass (kg)			540	1,350	
Power requirements*3 (kVA)			4.5	10	
Controller	America		E32	E33	
	Europe		E42	E43	
	Japan & Asia		E22	E23	

*1: operating angle of the JT5 is ±10 degrees perpendicular to the ground.
*2: Motion pattern (400 mm up, 2,000 mm horizontal, 400 mm down in a to-and-fro motion)
*3: depends on the payload and motion patterns

			CP180L	CP300L	CP500L
Arm type			Articulated type		
Degrees of freedom (axes)			4 (5 : option)		
Max. payload (kg)			180	300	500
Max. stroke (°)	Arm rotation	(JT1)	±160		
	Arm out-in	(JT2)	+95 - −46		
	Arm up-down	(JT3)	+15 - −110		
	Wrist swivel	(JT4)	±360		
	Wrist compensation	(JT5)	–		
Max. speed (°/s)	Arm rotation	(JT1)	140 *4	115 *5	85
	Arm out-in	(JT2)	125 *4	100 *5	80
	Arm up-down	(JT3)	130 *4	100 *5	80
	Wrist swivel	(JT4)	400 *4	250 *5	180
Working area (mm)	Width		1,800		
	Depth		1,600		
	Height		2,200		
Moment of inertia (kg•m²)			50 *4	100 *5	250
Palletizing capacity*2 (Payload)			2,050 cycle/hour *4	1,700 cycle/hour *5	1,000 cycle/hour
Positional repeatability (mm)			±0.5		
Mass (kg)			1,600		1,650
Power requirements*3 (kVA)			12		
Controller	America		E03		
	Europe				
	Japan & Asia				

*2: Motion pattern (400 mm up, 2,000 mm horizontal, 400 mm down in a to-and-fro motion)
*3: depends on the payload and motion patterns
*4: in case of 130 kg payload and less
*5: in case of 250 kg payload and less

Simple palletizing software (option)

K-SPARC

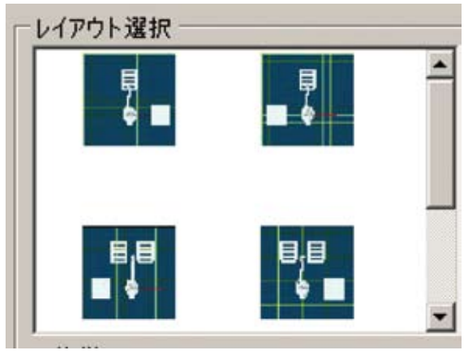
Kawasaki Robot Solutions
K-ROSET

This software lets you configure the pick and place positions of the workpieces by robots and register workpieces, pallets, and stacking patterns displayed on your computer's screen. It also allows you to easily create robot operation programs .

This optional software is one of the application programs for K-ROSET (Kawasaki's offline teaching software)

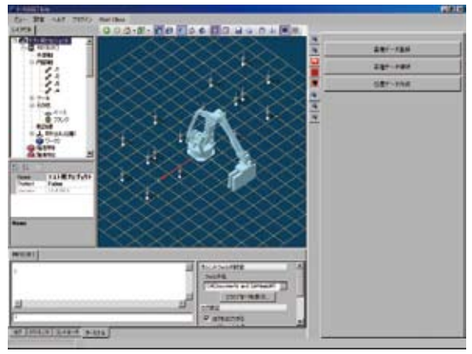
Easy setup by layout selection

Support for up to two pick positions and four place positions of workpieces by robots
Simply select a layout and enter a distance!



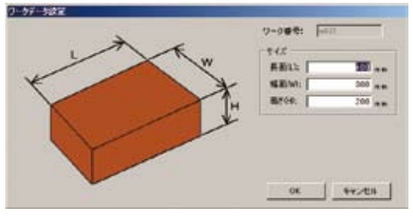
K-ROSET functions can be used

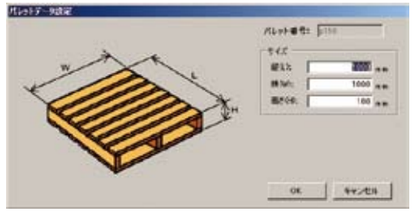
K-ROSET specify the layout by analyzing the installation positions automatically according to the robot types and place positions.
You can check for interference and measure cycle times by K-ROSET functions.



Easy registration of item types

Item types are registered simply by entering data on your computer for workpieces, pallets, and stacking patterns.





Support for many kinds of stacking patterns

Approximately 100 types of base patterns can be configured for each stage .
The place position of workpieces can be specified.
Gaps can also be adjusted.