Kawasaki Robot
Palletizing robots

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.

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Materials and specifications are subject to change without notice.
Kawasaki’s high-speed palletizing robots meet the demands for flexibility and speed.

In today’s highly competitive marketplace, meeting the demand for just-in-time deliveries, flexible packaging, the freshest products, or the highest production line efficiencies can be crucial to a company's success. Efforts to meet these demands have led to the development of automation systems for the end-of-line and distribution processes of palletizing and depalletizing. Kawasaki’s robotic palletizing solutions provide the pallet pattern flexibility, tooling flexibility, and cycle times needed to deal with multi-variety and small-batch production, and reduce process change costs.

Kawasaki Robotics offers two different lines of palletizing robots with a wide range of payload options to suit most needs, including model RD80N with a maximum payload of 80 kg and models CP180L/300L/500L/700L with maximum payloads of 180/300/500/700 kg. Each has industry leading reach, speed and quality to deliver high-performance automation technology for most any palletizing application.

Kawasaki can provide a solution to give your production line the palletizing flexibility and product rate it needs to compete in today’s economy.
Features

Palletizing capacity worthy of our high-speed age

Kawasaki palletizing robots deliver the high-speed operation needed for distribution. Based on a robot stroke of 400 mm upward-downward and 2,000 mm in the left-right direction, the RD080N can perform 900 cycles per hour with loads of 80 kg, and the CP180L achieves an industry leading 2,050 cycles per hour with loads of 130 kg.

Compact applications

The Kawasaki RD080N is designed specifically for applications where a compact, high-speed, palletizing robot is required. Despite its slim space saving design, the RD080N can manipulate loads up to 80 kg and create pallet stacks over 2 meters tall.

Large work envelope and high payload capacity

With the large vertical reach of 3,256 mm, the CP series robots are ideal for tall pallet stacks and multi-lane applications. The extra-long horizontal reach of 3,255 mm allows the robot to cover up to four pallets. The high payload capacity CP series robots can handle up to 700 kg. This allows for multiple product picks and complete pallet layer handling, resulting in fewer cycles per completed pallet.

Easy-to-use palletizing software K-SPARC

Available as an option, Kawasaki’s K-SPARC palletizing software enables users to quickly and easily simulate layout planning and operations, as well as create robot operation programs on a computer.

Space and energy saving

The CP series E03 controller is only 25% of the standard palletizing controller size (41% with transformer unit) and fits under conveyors and other equipment. The E03 controller generates electric power while in a deceleration mode, reducing energy consumption and minimizing CO2 emissions.

Electricity Regeneration Function

Conventional controller

- Consume electric power by resistance

E03 Controller

- Integrated electric regeneration unit
- Return electric power to the primary power source
- Energy Saving

Sample layout for palletizing cells

Kawasaki provides system configurations perfectly adapted to your needs.

Sample of palletizing cells

Different workpieces sent from different conveyors are segregated and palletized.

System configuration example

Different workpieces sent from the same conveyor are segregated and palletized.
**3D Vision system (option)**

- Initial adjustment work is drastically reduced thanks to suitable robot application packages.
- High-speed recognition is possible using dedicated vision equipment.

**Easy setup by layout selection**

Support for up to three pick positions and four place positions of workpieces by robots.

Simply select a layout and enter a distance!

**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 200 types of base patterns can be configured for each stage.

The place position of workpieces can be specified. Gaps can also be adjusted.

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**Simple palletizing software (option)**

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 built on K-ROSET, Kawasaki’s offline teaching software.

OS environment: Windows 7/10 (x86, x64)

On a 64-bit computer, it runs in the 32-bit compatible mode.

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**Specifications**

- **Measuring range**: 1,100mm x 1,100mm
- **Distance to object**: 1,300mm - 3,700mm (distance from top of workpiece)
- **Processing speed**: Less than 1 second (processing time fluctuates depending on the object)
- **Resolution of Z**: ± 3.5 to ± 12mm (varies with distance to the object)
- **Resolution of XY**: ± 1.2mm to ± 2.5mm (varies with distance to the object)

**Features**

- Registration of the target workpiece is not necessary. Automatic recognition is possible with only dimensional information of the workpiece from outside.

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**Easy-to-use palletizing software (option)**

- Initial adjustment work is drastically reduced thanks to suitable robot application packages.
- High-speed recognition is possible using dedicated vision equipment.

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**Save space**

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

**Transporting workpieces during robot motion**

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

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**Item Specification**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety performance</td>
<td>IEC61508 SIL2 - ISO13849-1 (PLd/category 3)</td>
</tr>
<tr>
<td>Monitoring the number of joints</td>
<td>Maximum 9 joints</td>
</tr>
<tr>
<td>Safety function</td>
<td>Motion area monitoring, joint monitoring, speed monitoring, stand still monitoring, tool orientation monitoring, Protective stop, Emergency stop, Safety status output</td>
</tr>
<tr>
<td>Safety input and output</td>
<td>Dual channel safety input 8CH - Dual channel safety output 8CH</td>
</tr>
<tr>
<td></td>
<td>It is possible to allocate Safety Status Output Signals and Safety Input Signals of each Safety functions</td>
</tr>
</tbody>
</table>

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**K-ROSET functions can be used**

With K-ROSET, users can specify the layout by analyzing the installation positions automatically according to the robot types and place positions.

You can also check for interference and perform cycle time analysis.

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**Depalletizing of cardboard and paper bags**

Specifications

- **Measuring range**: 1,100mm x 1,100mm
- **Distance to object**: 1,300mm - 3,700mm (distance from top of workpiece)
- **Processing speed**: Less than 1 second (processing time fluctuates depending on the object)
- **Resolution of Z**: ± 3.5 to ± 12mm (varies with distance to the object)
- **Resolution of XY**: ± 1.2mm to ± 2.5mm (varies with distance to the object)

Features

- Registration of the target workpiece is not necessary. Automatic recognition is possible with only dimensional information of the workpiece from outside.
Controller

E series

The E Controller combines high performance, unprecedented reliability, a host of integrated features and simple operation, all in a compact design.

Features

Compact

The E03 controller for CP series palletizing robots has far less volume. You can use it in an upright-position or in a stacked installation to reduce the footprint of this controller.

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.

Space and energy saving

The CP series E03 controller is only 25% of the standard palletizing controller size (41% with transformer unit) and fits under conveyors and other equipment. The E03 controller generates electric power while in a deceleration mode, reducing energy consumption and minimizing CO2 emissions.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (mm)</td>
<td>W550×D580×H278</td>
<td>Transformer unit: W580×D580×H178</td>
</tr>
<tr>
<td>Structure</td>
<td>Enclosed structure / Indirect cooling system</td>
<td></td>
</tr>
<tr>
<td>Number of controlled axes</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Drive system</td>
<td>Full digital servo system</td>
<td></td>
</tr>
<tr>
<td>Coordinate systems</td>
<td>Joint, Base, Tool</td>
<td>Fixed tool point</td>
</tr>
<tr>
<td>Types of motion control</td>
<td>Joint/Linear/Circular Interpolated motion</td>
<td></td>
</tr>
<tr>
<td>Programming</td>
<td>Point to point teaching or language based programming</td>
<td></td>
</tr>
<tr>
<td>Memory capacity (MB)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>General purpose signals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input (Channels)</td>
<td>32</td>
<td>Max. 96</td>
</tr>
<tr>
<td>Output (Channels)</td>
<td>32</td>
<td>Max. 96</td>
</tr>
<tr>
<td>Operation panel</td>
<td>E-Stop switch, teach/repeat switch, control power light</td>
<td>Fast check mode switch</td>
</tr>
<tr>
<td>Cable length</td>
<td>Teach pendant (m) 5</td>
<td>10, 15</td>
</tr>
<tr>
<td></td>
<td>Robot-controller (m) 5</td>
<td>10, 15</td>
</tr>
<tr>
<td>Mass (kg)</td>
<td>45</td>
<td>Transformer unit: 45</td>
</tr>
<tr>
<td>Power requirements</td>
<td>AC200-220V ±10% 50/60Hz, 3ø</td>
<td>AC380-415V ±10% 50/60Hz, 3ø or AC440-480V ±10% 50/60Hz, 3ø</td>
</tr>
<tr>
<td>Class O earth connection (Earth connection dedicated to robots), leakage current: Maximum 100mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental condition</td>
<td>Ambient temperature (°C)</td>
<td>0 - 45</td>
</tr>
<tr>
<td></td>
<td>Relative humidity (%)</td>
<td>35 - 85 (No dew, nor frost allowed)</td>
</tr>
<tr>
<td>Body color</td>
<td>Munsell 10GY/1 equivalent</td>
<td></td>
</tr>
<tr>
<td>Teach pendant</td>
<td>TFT color LCD display with touch-panel, E-Stop switch, teach lock-switch, Enable switch</td>
<td></td>
</tr>
<tr>
<td>Auxiliary storage unit</td>
<td>USB Memory</td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>USB, Ethernet (100BASE-TX), RS-232C</td>
<td></td>
</tr>
</tbody>
</table>

Teach pendant

Large, color LCD touch screen display.

The key arrangement has been optimised through extensive studies of operator hand movements.

Equipped with Enable switches.

Transformer unit

Large, color LCD touch screen display.

The key arrangement has been optimised through extensive studies of operator hand movements.

Equipped with Enable switches.