

KINOVA



TOGETHER IN ROBOTICS

ROBOTIQ PLUGIN

v1.4.0

USER GUIDE

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Copyright notice

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The Robotiq Gripper Plugin is an evolving product. Kinova continually works towards improving the reliability and performance of its products. Kinova does its best to ensure the content of the Robotiq Gripper Plugin user guide is accurate and precise with respect to the latest version of the robot. However, Kinova does not take responsibility for any erroneous, inaccurate, or missing information.



Note: Colors of the user interface in the guide may appear differently than in the actual user interface in an attempt to increase readability.



Note: The user guide may be updated from time to time. Please make sure to look at the latest version on our website.

The version of the document is in the header of the pages of the document.

The perspective of the Robotiq Gripper Plugin user guide is of Kinova and Link 6. To acquire more information about Robotiq hardware used in conjunction with Link 6, please refer to the Robotiq documentation.

Any questions or comments concerning this document, the information it contains or the product it describes may be addressed through support@kinova.ca.

Plugins

Link 6 is designed modularly, which makes it easy to expand on its capabilities. The extensions are added on as [plugins](#).

All installed plugins start to run when the controller is switched on. However, they can be stopped so the settings can be modified or deactivated.

Many plugins contain actions that the user can use when programming the robot with the visual programming interface in Kortex Web App. Each plugin may also contain parameters that can be modified in Kortex Web App from the corresponding plugin page. **Deactivate** the plugin before modifying the plugin parameters.

All plugins have two pages: **Configurations** and **About**.

Robotiq plugin

Install the plugin to control various Robotiq Gripper Plugin tools.

The [wrist](#) of Link 6 has a central Ethernet connection to the Kinova Robotiq Gripper Plugin adapter for the Robotiq Gripper Plugin tool. The adapter provides a connection without cables between robot and tool.

The plugin contains different configuration roles.

- Configure and establish communication between the Robotiq Gripper Plugin tool and Link 6.
- Configure and define the tools on the **Tools** page.
- Configure the actions that the tool can perform for visual programming.

Table 1: Robotiq Gripper Plugin tools supported by the plugin

Robotiq tool	Robotiq part number	Robotiq Gripper Plugin version
Robotiq 2F-85 Gripper	AGC-GRP-2F85	1.4.0
Robotiq 2F-140 Gripper	AGC-GRP-2F140	1.4.0
Robotiq Hand-E Gripper	HND-GRP	1.4.0
Robotiq AirPick vacuum gripper	VAC-GRP-AIRPICK	1.4.0
Robotiq EPick vacuum gripper	VAC-GRP-EPICK	1.4.0

Getting the plugins for the robot

Upload and installation must be done from the teach pendant and a *USB storage device* connected to the controller or from Kortex Web App running on a computer that has access to the files.

Before you begin

All plugins have dependencies on different aspects of the robot.

Make sure to verify all dependencies before installing the plugin.

Table 2: Plugin dependencies and expected issues when dependencies not met

Dependency	What to expect when dependencies are not met
Robot model must be Link 6	Installation failure
No other active plugin is using the wrist connection	Installation failure
Software package must be compatible with the robot	Installation failure

About this task

The plugin installation file is named `robotiq_gripper_plugin_cobot<version>.kp`, where `<version>` is the version of the plugin. Contact Kinova to get the appropriate plugin file if you are unsure which files you need.

A computer or *USB storage device* is needed to upload and install the plugin installation file.



Note: Plugins are updated from time to time. Always make sure you have the latest plugin for your installation.



Important: If the plugin is not compatible with the currently running version of Link 6, an error dialog launches.

Procedure

1. Plug the USB storage device on the computer.
2. Download the plugin installation file `robotiq_gripper_plugin_cobot<version>.kp`.
3. Save the plugin installation file in the root directory of the USB storage device.
4. Eject the USB storage device after the transfer of the plugin installation file is complete.

5. Plug the USB storage device on the *controller*.



6. Switch on the *teach pendant*.



7. Enter the administrator credentials.



Kortex™ Web App

Username

admin

Password

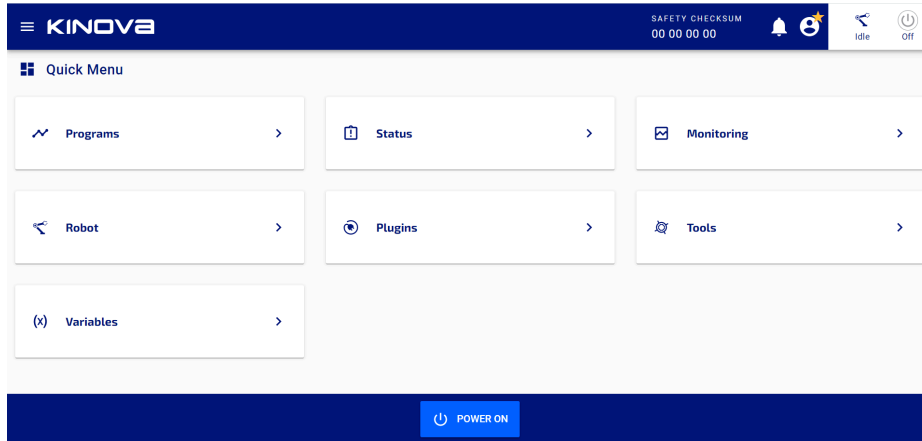
.....



☐ MAINTENANCE MODE

CONNECT

8. Tap **CONNECT**.



9. Tap **POWER ON**.

The arm is switched on.

What to do next

Install the required plugins from the **Plugins** page in [Kortex Web App](#).

Related topics

[Installing plugins](#) on page 6

Installing plugins

To use an end effector, its associated plugin must be installed.

Before you begin

The plugin files must be on a *USB storage device*.



Important: The USB must be plugged into the controller when the plugin is being installed on Link 6. Refer to the documentation of other robots for the location of USB connections.

About this task

Access all installed plugins by tapping **Systems > Plugins**.

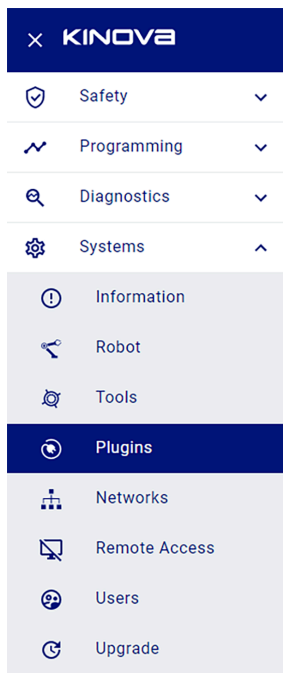
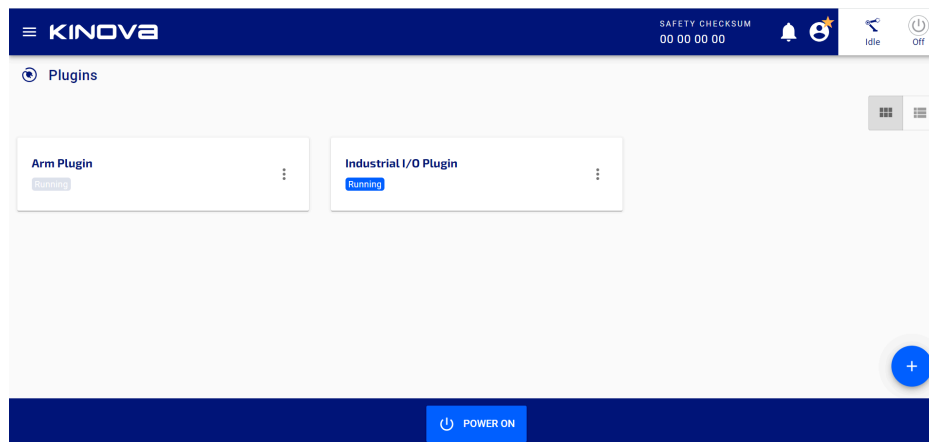


Figure 1: Accessing the plugins

Procedure

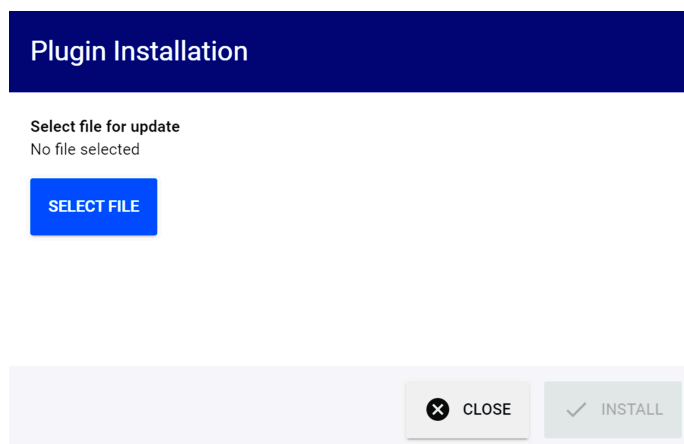
1. Tap **Systems > Plugins**.

The **Plugins** page launches.



2. Tap **+**.

A **Plugin Installation** dialog launches.



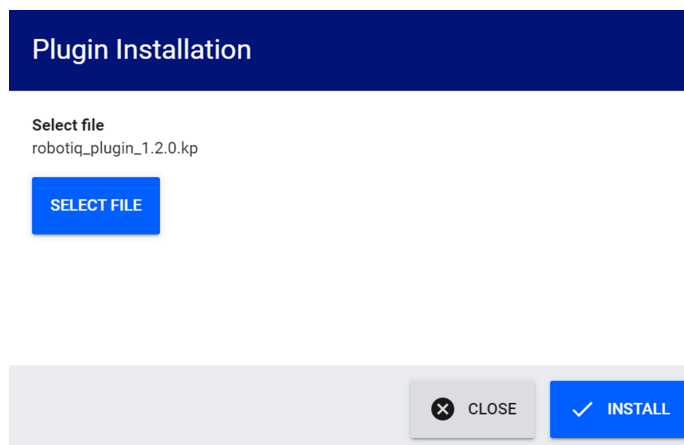
3. Tap **SELECT FILE**.

4. Optional: Browse to the plugin installation files.

5. Select a plugin installation file.

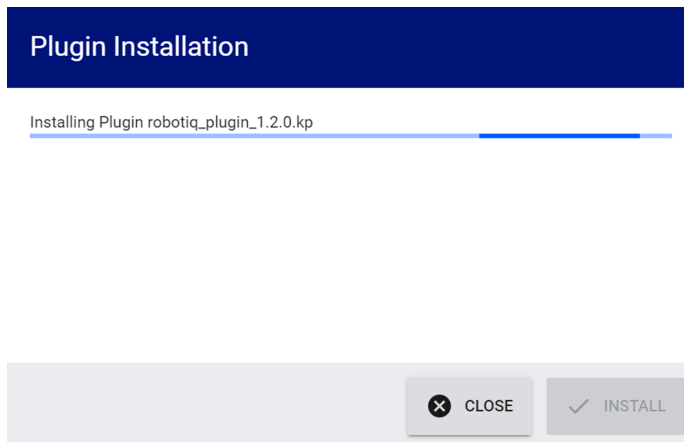
6. Tap **Open**.

The **Plugin Installation** dialog shows the name of the selected file.

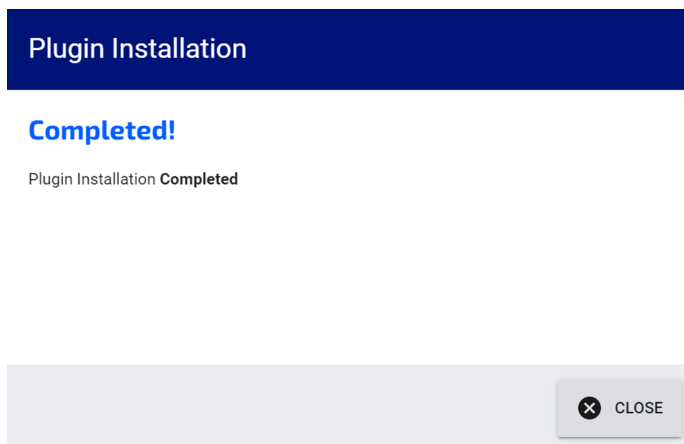


7. Tap **INSTALL**.

The **Plugin Installation** dialog shows that the plugin installation is in progress.

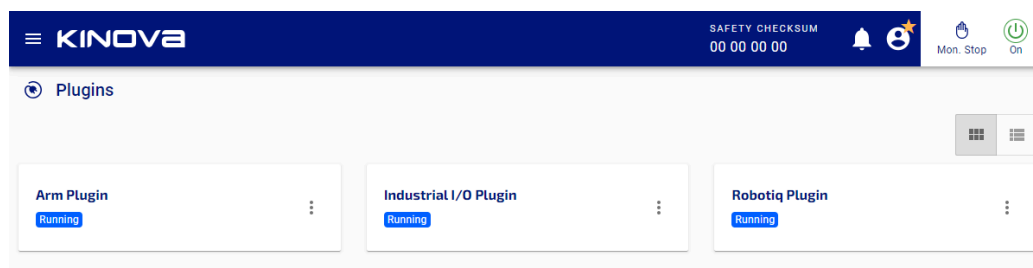


8. Tap **CLOSE** when installation is complete.



Results

The plugin is displayed on the **Plugins** page and is running.



All tools associated with the plugin are added automatically to the **Inactive (drag & drop)** pane on the **Tools** page.

What to do next

When the Robotiq device illuminates red and the tool on the **Tools** page indicates the tool is **Disconnected**, check the installation of the Robotiq device. When the Robotiq device illuminates blue, the tool on the **Tools** page indicates the tool is **Connected**; start using the robot.

Related topics

[Installing the Kinova Robotiq adapter](#) on page 22

[Installing Robotiq tools](#) on page 25

Updating plugins

Integrate improvements to the plugins by updating them.

Before you begin

Download the latest version of the plugin. Contact Kinova to get the appropriate plugin file if you are unsure which files you need.



Important: Make sure to export all programs to JSON files, especially when the upgrade is from v1.0 of the plugin, because of internal changes to the structure of the data.

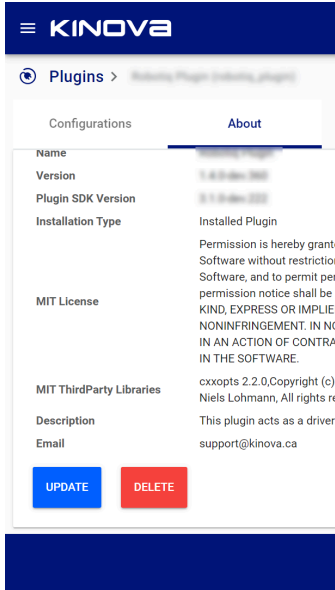
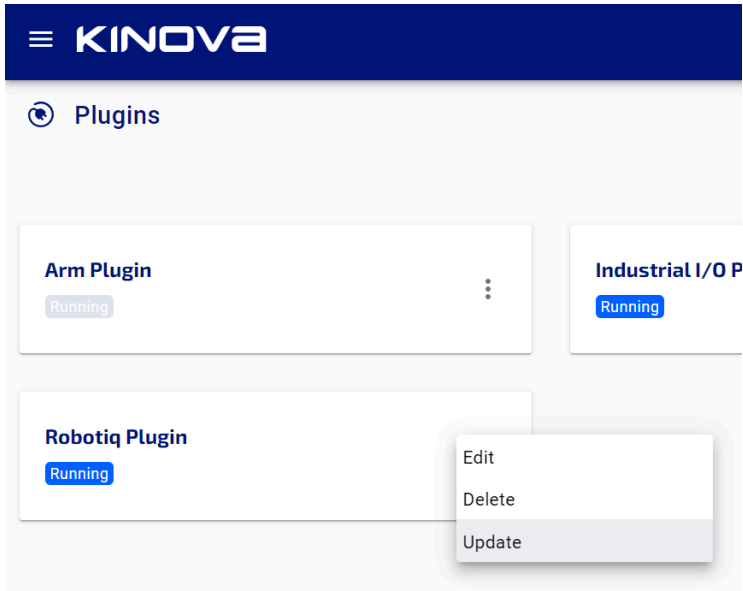
About this task

Use a computer or a [teach pendant](#). Update plugins directly from the **Plugins** page or from the **About** page of the plugin.

Procedure

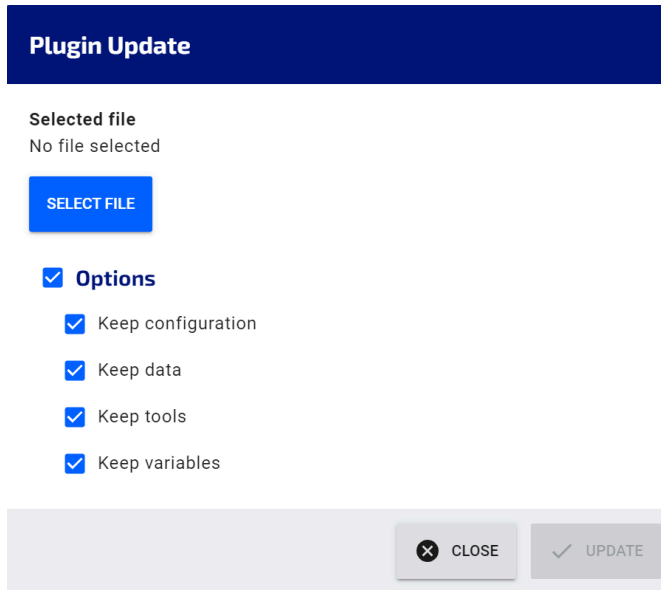
1. Get the latest version of the plugin.
2. Tap **Systems** > **Plugins**.
3. Tap the plugin that you want to update.

4. Access the update dialog in one of two ways.

Option	Description
Update from the About page of the plugin	a. Tap About. The About page launches. 
Update from the Plugins page	a. Navigate to the Plugins page. b. Tap the <i>kebab menu</i> (⋮) of the plugin that you want to update. 

5. Tap **Update**.

The **Plugin Update** dialog launches.

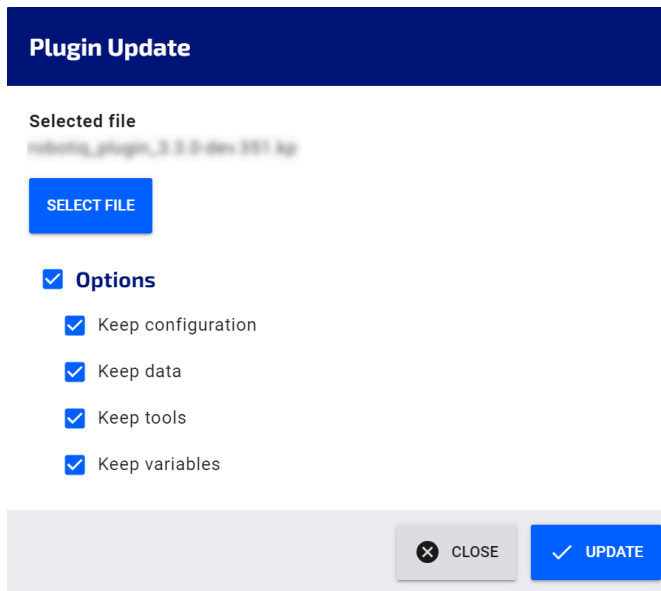


The screenshot shows the 'Plugin Update' dialog. At the top is a dark blue header with the text 'Plugin Update'. Below the header, the text 'Selected file' is followed by 'No file selected'. A blue button labeled 'SELECT FILE' is positioned below this. Underneath is a section titled 'Options' with a checked checkbox. Below 'Options' are four items, each with a checked checkbox: 'Keep configuration', 'Keep data', 'Keep tools', and 'Keep variables'. At the bottom right, there are two buttons: 'CLOSE' with a close icon and 'UPDATE' with a checkmark icon.

6. Tap **SELECT FILE**.

7. Select the plugin file.

The name of the file is displayed as the **Selected file**.



This screenshot shows the 'Plugin Update' dialog after a file has been selected. The 'Selected file' section now displays the text 'robotiq_plugin_3.3.0-dev 2023.kip'. The 'SELECT FILE' button remains below. The 'Options' section and the bottom 'CLOSE' and 'UPDATE' buttons are identical to the previous screenshot. The 'UPDATE' button now has a checkmark icon.

8. Tap **Options**.

By default, all data is selected. Deselect any information you want to ignore. Data that can be saved include the configuration, data, tools, and variables.

9. Select the type of data you want to keep from the current plugin.

10. Tap UPDATE.

The **Plugin Update** indicates that the plugin is updated.

**11. Tap CLOSE.**

The **Plugin Update** dialog closes.

Related topics

[Getting the plugins for the robot](#) on page 4

Activating plugins

When a plugin is installed, but does not appear in the **Action** menu on the **Program** page, the plugin is deactivated. Activate the plugin to use the actions of the plugin.

Before you begin

The plugin must be installed on the robot. The plugin must be deactivated.

About this task

The actions associated with Robotiq Gripper Plugin are available on the **Programs** page only when the plugin is activated.

Procedure

1. Tap **Robotiq Gripper Plugin** on the **Plugins** page.
 - The **Configurations** page of the **Robotiq Gripper Plugin** launches.
 - No **Robotiq Gripper Plugin** actions are in the **Action** menu on the **Action Program** page.
2. Tap **Active** to activate the plugin.

Results

- **Active** is blue.
- **Stop** is available to stop the plugin before deactivating it.



- The status of the **Robotiq Gripper Plugin** changes to **Running** on the **Plugins** page.

- **Robotiq Gripper Plugin** actions appear under **Action** on the **Action Program** page.
- The installed tool is detected within one minute.

What to do next

Create a program with Robotiq actions.

Deactivating plugins

When the actions associated with a plugin are not needed in the program, deactivate the plugin without uninstalling it.

Before you begin

The plugin must be installed on the robot and must be active.

About this task

The actions associated with Robotiq Gripper Plugin are available on the **Programs** page.

Procedure

1. Tap **Robotiq Gripper Plugin** on the **Plugins** page.
 - The **Configurations** page of the **Robotiq Gripper Plugin** launches.
 - **Robotiq Gripper Plugin** actions appear under the **Action** menu on the **Program** page.
2. Tap **Inactive** to deactivate the plugin.

Results

- The toggle is white and is closest to **Inactive**.
- **Stop** is not available to stop the plugin.



- The **Robotiq Gripper Plugin** button on the **Plugins** page changes its appearance to indicate that the plugin is not active.
- **Robotiq Gripper Plugin** does not appear in the Plugins **Action** menu on the **Program** page.

Overview of working with plugins

Tapping a plugin from the **Plugins** page launches the page of that plugin.

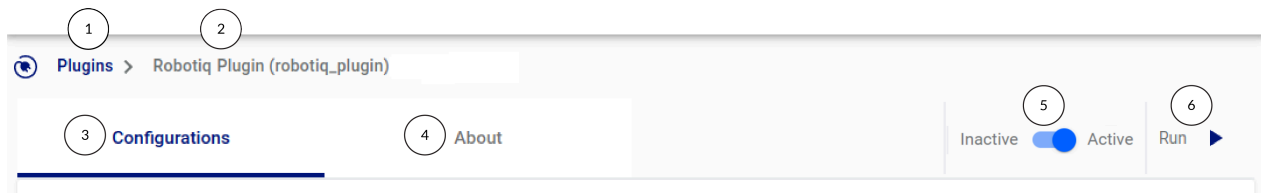


Figure 2: Example of a plugin page of a plugin that is stopped

- 1 Tap **Plugins** to return to the list of plugins.
- 2 Name of the selected plugin with the name of the *namespace* associated with the selected plugin in parentheses.
- 3 Tap **Configurations** to view and modify the current configurations of the selected plugin.
 - ! **Important:** Tap **Stop** (Stop ■) before you attempt to modify the current configurations.
 - ! **Important:** Tap **Start** (Start ►) after you modify the configurations. The plugin runs with the latest configuration values.

When there are no modifiable configurations in the plugin, a message is displayed.

This plugin does not expose any configuration.

- 4 Tap **About** to view important information about the selected plugin.
 - Name
 - Version
 - Plugin SDK Version
 - Installation Type
 - Licenses
 - Libraries
 - Description
 - Email
- 5 Toggle **Active** to deactivate plugins that need to be installed but are not being used. When the toggle is white, it is off.

Tap **Active** to activate a deactivated plugin. When the toggle is blue, it is on.
- 6 The current operating state of the plugin.

Tap **Stop** (Stop ■) to stop the plugin from running. The button changes to **Start** (Start ►).

Tap **Start** to restart the plugin after modifying its settings. The button changes to **Stop**.

Configurations of the Robotiq Gripper Plugin

The **Configurations** page of the Robotiq Gripper Plugin displays the parameters that are used to communicate with the gripper.

To access the **Configurations** of the Robotiq Gripper Plugin plugin, tap **Systems > Plugins > Robotiq Gripper Plugin**.



Note: Tap **Stop** (Stop ■) before you attempt to modify the current configurations.



Note: Tap **Start** (Start ►) after you modify the configurations. The plugin runs with the latest configuration values.



Remember: A blue light appears on the Robotiq device when there is communication between Link 6 and the Robotiq device.

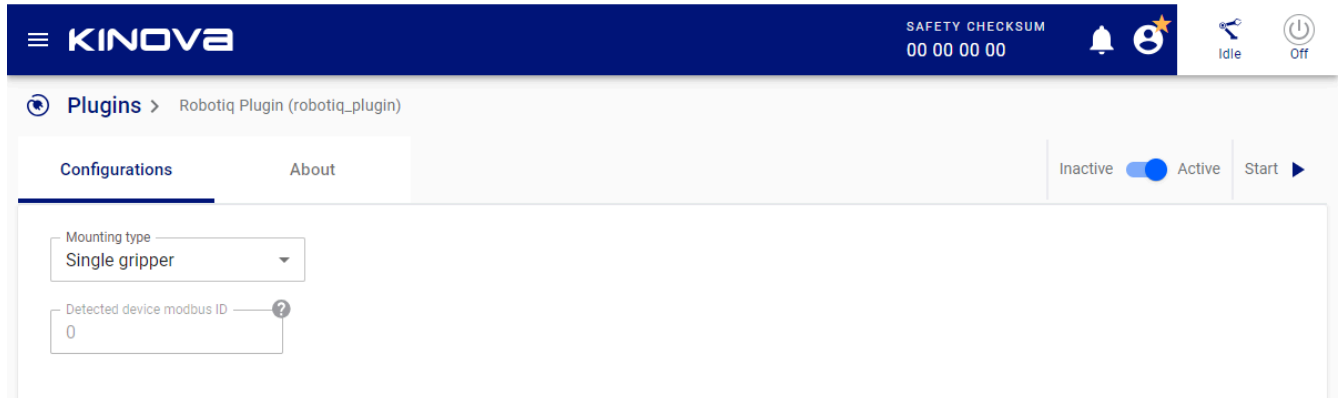


Figure 3: Configuration page for the Robotiq plugin with Single gripper mount

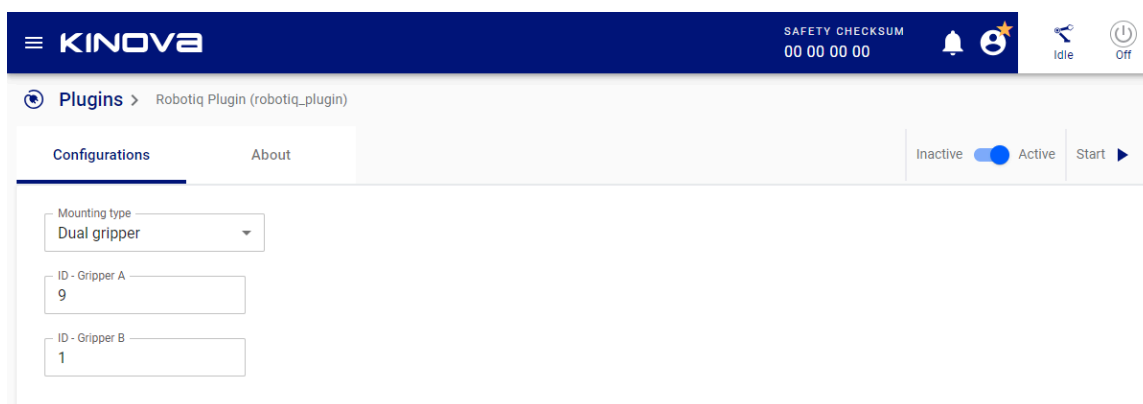


Figure 4: Configuration page for the Robotiq plugin with Dual gripper mount

The parameters are listed on the **Configurations** page of the Robotiq Gripper Plugin.

Mounting type

Choose of two options: **Single gripper** or **Dual gripper**.

Detected device modbus ID, ID - Gripper A, ID - Gripper B

The ID is the Modbus ID of the Robotiq tool. The plugin automatically detects the Modbus ID of the Robotiq tool.



Important: It is not modifiable because the software automatically detects the Modbus ID of the tool attached to Link 6



Tip: When the Modbus device ID is 0, the plugin is not detecting a Robotiq tool. It takes up to sixty (60) seconds for the device to be detected. When the plugin detects a Robotiq tool, it displays the Modbus ID of the tool.



Trouble: If the plugin does not detect a Robotiq tool after a few minutes, reboot the controller.

Single gripper	Detected device modbus ID
Dual gripper	ID - Gripper A
	ID - Gripper B

Robotiq tools

Several Robotiq tools are compatible with Link 6. The same Robotiq [plugin](#) is used for all Robotiq tools.

Each of the Robotiq tools needs to be secured to the Kinova Robotiq adapter, the Robotiq coupling device, or the Robotiq dual gripper adapter.

- Robotiq 2F-85 gripper
- Robotiq 2F-140 gripper
- Robotiq Hand-E gripper
- Robotiq AirPick vacuum gripper
- Robotiq EPick vacuum gripper



Remember: When using the Robotiq **Dual gripper**, add the dual gripper as a new tool on the **Tools** page. In programs, use **Change Active Tool List** to select the tool needed for the current task.

Link 6 Kinova Robotiq adapter

The Kinova Robotiq adapter (KR22096) is an optional, but vital, part when connecting Robotiq tools to Link 6. It contains the electrical and mechanical interface needed to connect the two products.

The adapter has central pogo pins for connections; no external cables are needed.



Figure 5: Wrist interface side of Robotiq adapter (KR22096)



Figure 6: Robotiq tool side of Robotiq adapter (KR22096)

Related topics

[Installing the Kinova Robotiq adapter](#) on page 22

Robotiq coupling device

The Robotiq coupling device (GRP-ES-CPL-062) is an optional part when connecting Robotiq tools to Link 6. It replaces the Kinova Robotiq adapter. It contains the electrical and mechanical interface needed to connect the two products.

The coupling device is used with the Robotiq tools that are compatible with Link 6. The device comes with an external cable and connects directly to connector B of the wrist. Power and communication go through the cable to the robot.



Tip: Use the Robotiq coupling device only when you are not using the Kinova Robotiq adapter.

Drawing: Robotiq

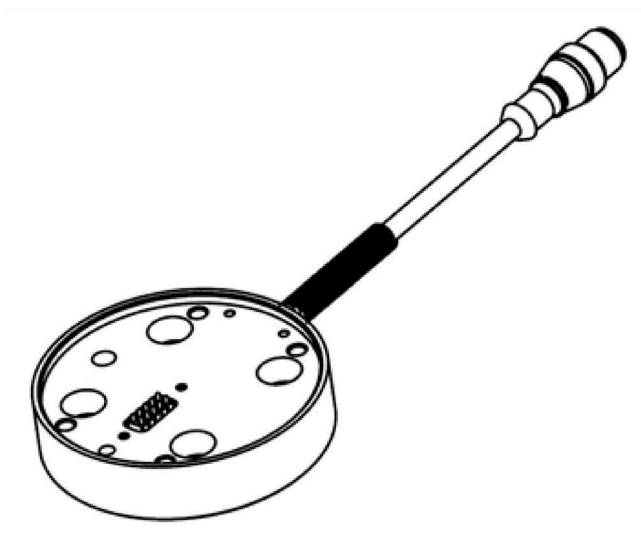


Figure 7: Robotiq coupling device (GRP-ES-CPL-062)

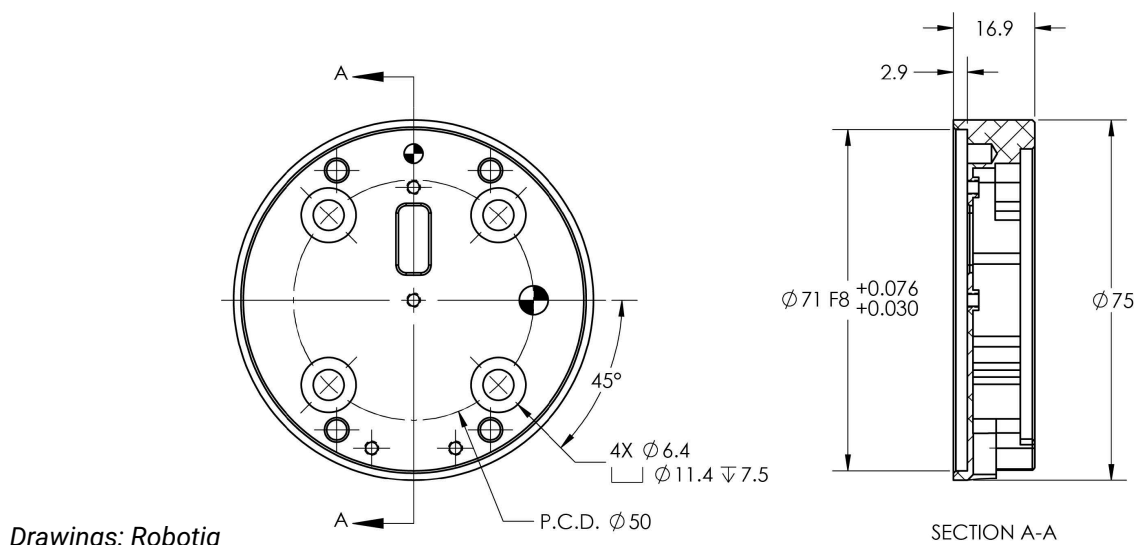


Figure 8: Schematics of the Robotiq coupling device

Related topics

[Installing the Robotiq coupling device](#) on page 24

Robotiq 2F-85 and 2F-140 grippers

The Robotiq 2F-85 and 2F-140 adaptive grippers are high-precision, flexible, multi-grasp grippers used with collaborative robots, like Link 6.

Photo: Robotiq



Figure 9: Robotiq 2F-85 gripper

Photo: Robotiq



Figure 10: Robotiq 2F-140 gripper

Related topics

[Installing Robotiq tools](#) on page 25

Robotiq Hand-E gripper

The Robotiq Hand-E gripper is an optional Robotiq tool that has an adjustable 50 mm stroke. It is made for harsh conditions and is one of the most rigid grippers.

A variety of holders, fingertips, and fingertip extenders for the Hand-E gripper are available from Robotiq.

Photo: Robotiq



Figure 11: Robotiq Hand-E gripper

Related topics

[Installing Robotiq tools](#) on page 25

Robotiq AirPick tool

The Robotiq AirPick tool is a special vacuum gripper that can pick up even and uneven objects that are made from a wide range of materials, such as glass, cardboard, and plastic. It works like a vacuum to pick up the objects.

The AirPick vacuum gripper is often used in assembly, machine tending, and palletizing operations. Its uses air flow to suction the air and grasp an object. The vacuum gripper stops sucking when it is time to release the object.

Photo: Robotiq



Figure 12: Robotiq AirPick vacuum gripper

Related topics

[Installing Robotiq tools](#) on page 25

Robotiq EPick tool

The Robotiq EPick tool is a special gripper that can pick up even and uneven objects that are made from a wide range of materials, such as glass, cardboard, and plastic.

The EPick generates its own airflow so it can work like a vacuum to pick up the objects. The vacuum gripper releases the suction when it is time to release the object.

Photo: Robotiq



Figure 13: Robotiq EPick vacuum gripper

Related topics

[Installing Robotiq tools](#) on page 25

Installing the Kinova Robotiq adapter

The Robotiq adapter is an optional tool that connects Robotiq tools to Link 6 without cables.

Before you begin

- Make sure you have all the tools and hardware needed to fasten the Kinova Robotiq adapter to Link 6.
- Make sure the robot is off.

Personnel:

- **Number of Workers:** 1

Supplies

- 5.0 mm hex key
- 4 x M6 screws



Note: Torque: 7-9 N·m

About this task

The Kinova Robotiq adapter must be fixed to the [wrist](#) before fixing a Robotiq tool to the adapter.

Procedure

1. Remove the end cap from the wrist and the end cap from the Kinova Robotiq adapter.



2. Align the adapter dowel pin to the 0° reference dowel hole on the wrist.



3. Secure the adapter with the screws using a fastener torque of 7-9N·m.

What to do next

Fasten the Robotiq tool to the Kinova Robotiq adapter.

Related topics

[Configuring tools](#) on page 30

[Link 6 Kinova Robotiq adapter](#) on page 18

Installing the Robotiq coupling device

The Robotiq coupling device is an alternative to using the Kinova Robotiq adapter to connect Robotiq tools to Link 6.

Before you begin

- Make sure you have all the tools and hardware needed to fasten the Robotiq coupling device to Link 6.
- Make sure the robot is off.

Personnel:

- **Number of Workers:** 1

Supplies

- 5.0 mm hex key
- 4 x M6 screws



Note: Torque: 7-9 N·m

About this task

The Robotiq coupling device must be fixed to the [wrist](#) before fixing a Robotiq tool to the coupling device.

Procedure

1. Remove the end cap from the wrist and any end caps from the Robotiq coupling device.



2. Align the coupling dowel pin to the 0° reference dowel hole on the wrist.
3. Secure the adapter with the screws using a fastener torque of 7-9N·m.
4. Attach the external connector of the coupling device to connector B on the wrist.

What to do next

Fasten the Robotiq tool to the Robotiq coupling device.

Related topics

[Robotiq coupling device](#) on page 19

Installing Robotiq tools

All Robotiq tools that work with Link 6 have similar installations.

Before you begin

1. Make sure the robot is off.
2. Make sure either the Kinova Robotiq adapter or the Robotiq coupling device is installed on Link 6.

Personnel:

- **Number of Workers:** 1

Supplies

- 4 mm hex key
- M5 screws that come with the Robotiq tool

About this task

The Kinova Robotiq adapter must be secured to the [wrist](#) before affixing a Robotiq tool to the adapter.

Procedure

1. Secure the Robotiq gripper to the Kinova Robotiq adapter using the hardware provided with the gripper.



Important: For more detailed information on how to install the Robotiq tool, please refer to the Robotiq documentation.

2. Switch on the arm.

The tool is not yet operational. It is configured with default values.

3. Wait for a light on the Robotiq gripper.

When communication is established between the robot and the Robotiq tool, the light on the Robotiq device illuminates blue.

What to do next

Configure and activate the tool on the **Tools** page.

Related topics

[Configuring tools](#) on page 30

[Configurations of the Robotiq Gripper Plugin](#) on page 16

[Robotiq 2F-85 and 2F-140 grippers](#) on page 20

[Robotiq Hand-E gripper](#) on page 21

[Robotiq AirPick tool](#) on page 21

[Robotiq EPick tool](#) on page 22

Adding tools

Custom tools do not come with their own [plugins](#). The tool can still be added and defined so that the robot can take it into consideration when following position commands.

Before you begin

Know the mass, transformation, center of mass, and inertia matrix of your tool.

About this task

The properties of the custom tool affect the [Tool Center Point \(TCP\)](#) of the entire robot.

The Robotiq dual adapter is not loaded automatically with the plugin.



Important: Make sure to add the dual gripper adapter as a tool and configure it on the **Tools** page.

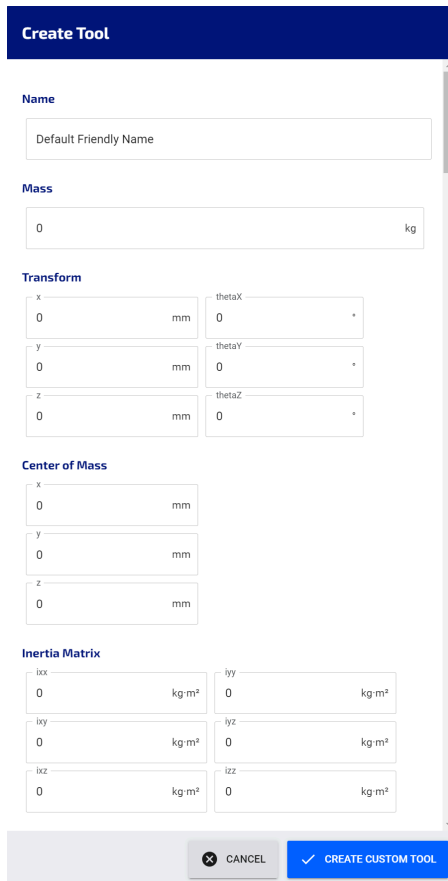


Important: If the Robotiq tool being used is not already listed in the list on the **Tools** page, make sure to add the Robotiq tool.

Procedure

1. Tap .

The **Create Tool** dialog launches.



Create Tool

Name

Default Friendly Name

Mass

0 kg

Transform

x 0 mm thetaX 0 °

y 0 mm thetaY 0 °

z 0 mm thetaZ 0 °

Center of Mass

x 0 mm

y 0 mm

z 0 mm

Inertia Matrix

ixx 0 kg·m² iyy 0 kg·m²

ixy 0 kg·m² iyz 0 kg·m²

ixz 0 kg·m² izz 0 kg·m²

 CANCEL  CREATE CUSTOM TOOL

2. Enter the information about the tool.

- **Name**
- **Mass** in kg
- **Transform: x, y, z** in mm
- **Transform: thetaX, thetaY, thetaZ**
- **Center of Mass: x, y, z** in mm
- **Inertia Matrix: ixx, ixy, ixz, iyy, iyz, izz** in kg·m²

3. **DANGER:** Make sure the **Mass** and **Center of Mass** input for the payload correspond to the physical mass and center of mass of the payload installed on the robot.

If the physical mass and physical center of mass of the payload does not match what is entered in the Create Tool form, it could lead to erratic behavior of the robot when it is used in Hand Guiding mode.

Always validate the mass and center of mass that is entered in Create Tool against the physical inertial parameters.

Tap **CREATE CUSTOM TOOL**.

The new tool is added to the list of available tools.

Configuring tools

An *end effector* tool that is associated with the *plugin* can be configured even if the corresponding tool is not mounted on the robot, as long as its corresponding plugin is installed.

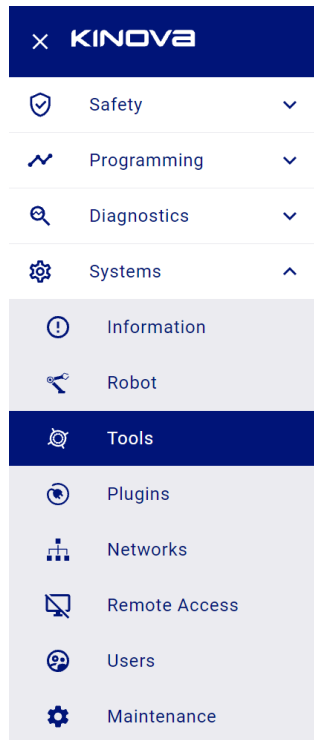
About this task

A single plugin can communicate with multiple end effector models. Therefore, it is necessary to configure the properties of the tool currently installed on the robot. The associated tool plugin may populate the **Tools** page with tools.



Tip: Before you can edit the active tools, the robot must be switched on and it must be in Monitored Stop.

All tool configuration tasks are accessed by tapping **Systems > Tools**.



3.3.0

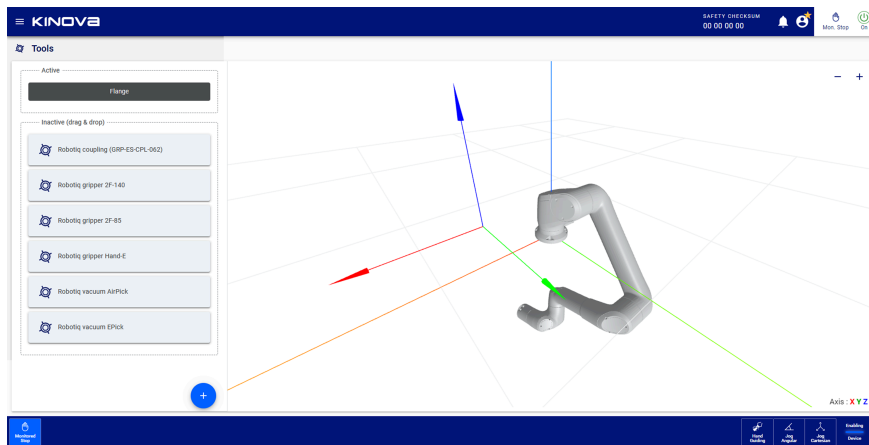
[Open Source Software](#)

Figure 14: Accessing tool configuration operations

Procedure

1. Tap **Systems > Tools**.

The **Tools** page launches.

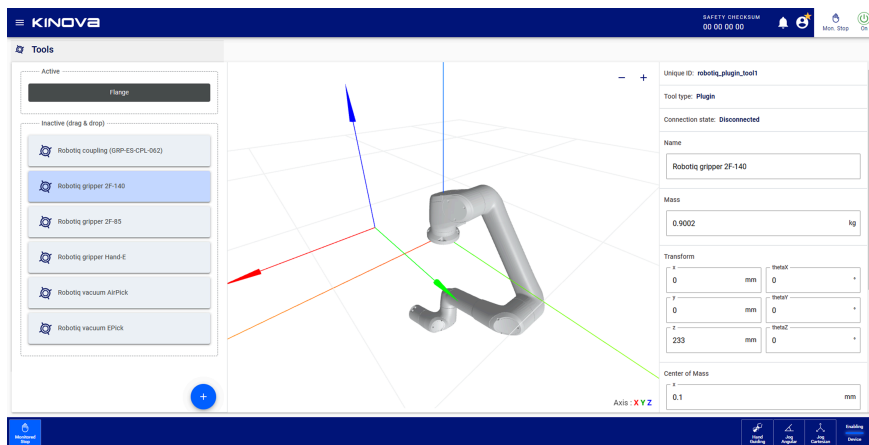


The tools are listed on the left side in two groupings: **Active** and **Inactive (drag & drop)**. The **flange** is always listed in the **Active** tools list because all tools are attached to it.

The center is a 3D view of the arm that can be moved around to help you visualize the tool reference frame. Tap **+** or **-** to zoom in or out. Hold and move the view around to have different viewpoints of the robot.

2. Select a tool in the **Inactive (drag & drop)** pane.

The properties of the selected tool are displayed on the right.



3. Modify the values in the **Properties** panel.

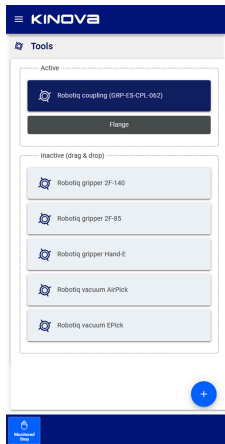


Note: Configure the tools only when they are still in the **Inactive (drag & drop)** pane.

4. Drag each tool in the order they are assembled onto the flange of the **wrist**.

Example: A flange is already on the wrist when you physically add a Robotiq tool. First drag the Kinova Robotiq adapter or the Robotiq coupling device from the **Inactive (drag & drop)**

pane to be above flange. The next tool to drag above the Kinova Robotiq adapter or the Robotiq coupling device is the Robotiq tool.



Related topics

[Tool configuration fields](#) on page 33

Tool configuration fields

You can view the default configuration of a Robotiq tool on the **Tools** page.

Unique ID: robotiq_plugin_tool2	
Tool type: Plugin	
Connection state: Disconnected	
Name Robotiq gripper 2F-85	
Mass 0.831 kg	
Transform	
0 mm	0 °
0 mm	0 °
163 mm	0 °
Center of Mass	
0 mm	
0 mm	
47.3 mm	
Inertia Matrix	
0.00105 kg/m²	0.00173 kg/m²
0 kg/m²	0 kg/m²
0 kg/m²	0.00099 kg/m²

Figure 15: Example of the configuration settings for the selected tool

Table 3: Configurable fields on the Tools page for Robotiq

Field name	Description	Modifiable
Unique ID	Unique identifier assigned by the plugin to the tool The plugin assigns the unique identifier for all Robotiq tools. Examples: - robotiq_plugin_tool1 - robotiq_plugin_tool2 - robotiq_plugin_tool3	No

Field name	Description	Modifiable
Tool type	Type of tool being used There are two types of tools. • Custom • Plugin When you create a tool by tapping the +, the type is Custom. When the Robotiq plugin is installed, the plugin creates and adds the Robotiq tools to the Tools page. The type is Plugin.	No
Connection state	State of the connection between the robot and the device • Connected • Disconnected • Unknown	No
Name	Configured name of the tool	Yes
Mass	Mass of Robotiq tool, measured in kg	Yes
Transform	Position and orientation of the TCP, relative to the reference frame of the previous element in the tool stack Position is measured as x,y,z in mm. Orientation is measured as thetaX, thetaY, thetaZ in °.	Yes

Field name	Description	Modifiable
Center of Mass	Position of the center of mass of the tool, relative to the previous element in the tool stack Position is measured as x,y,z in mm.	Yes
Inertia Matrix	Specific three-dimensional positions measured as ixx , iyy , ixy , iyz , ixz , izz in kg/m^2 , relative to the center of mass	Yes

Related topics

[2F-140 gripper default configuration](#) on page 63

[2F-85 gripper default configuration](#) on page 64

[AirPick vacuum default configuration](#) on page 65

[Coupling default configuration](#) on page 66

[EPick vacuum default configuration](#) on page 67

[Hand-E gripper default configuration](#) on page 68

Robotiq plugin actions

The Robotiq grippers have their own set of actions available for further configuration when programming Link 6.

All actions associated with the Robotiq Gripper Plugin are available as tiles that can be dragged into the **Sequence editor** pane of the current program.

The Robotiq *plugin* has several actions available. Some actions have their own set of parameters to make them configurable. All of the actions can have a specific name assigned to them, output results to variables, and can set the action as *non-blocking*.

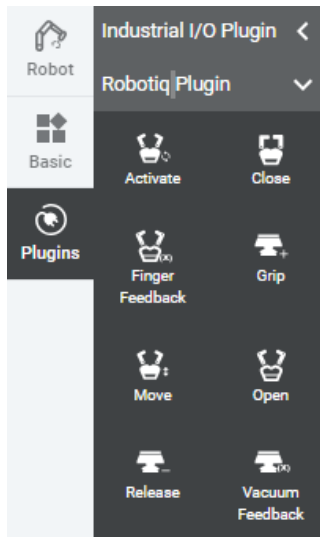


Figure 16: Actions available from the Robotiq plugin

Table 4: Parameters of Robotiq plugin actions

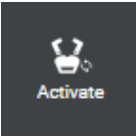
Action	Icon	Parameter
Activate		Initialize the gripper.



Figure 17: Single mount

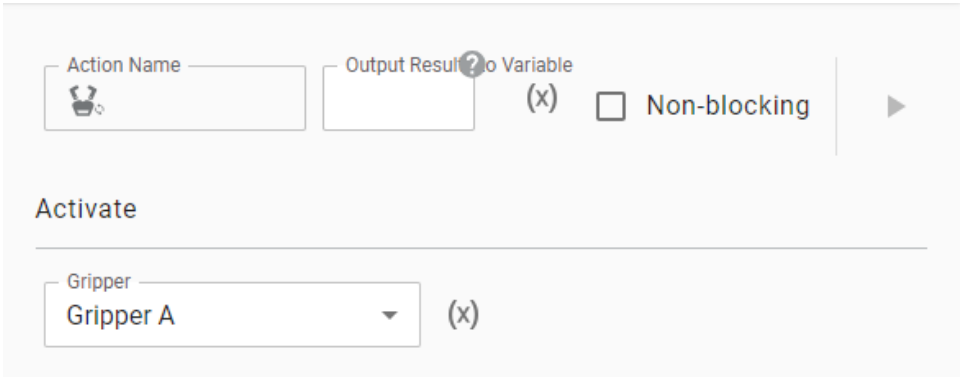


Figure 18: Dual mount

The gripper opens to its maximal position, closes to its minimal position, and opens again during initialization.

Run **Activate** each time the gripper receives power. The wrist buttons can then interact with the gripper; the gripper actions are available to the robot.

Mounting type: Select **Gripper A** or **Gripper B**, and define its parameters.

Dual gripper

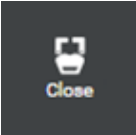
Action	Icon	Parameter
Close		Close the gripper. Action Name  Output Result?o Variable (x) ☐ Non-blocking ▶ Close Velocity : 255 (x) Force : 255 (x)

Figure 19: Single mount

Action Name



Output Result?o Variable

(x)

☐ Non-blocking

▶

Close

Gripper

Gripper A

▼

(x)

Velocity :

255

(x)

Force :

255

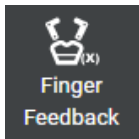
(x)

Figure 20: Dual mount

Mounting type:	Select Gripper A or Gripper B , and define its parameters.
Dual gripper	
Velocity	The higher the value, the faster the gripper closes. A value of 0 is the minimal speed required to close the gripper. A value of 255 is the maximal speed required to close the gripper.

Action	Icon	Parameter
		Force The higher the value, the greater amount of force is needed before the closing movement stops. A value of 0 is the minimal force required to close the gripper; it disables the automatic regrasp of the gripper. A value of 255 is the maximal force required to close the gripper.

Finger
Feedback



Return the current state of the finger gripper.

Action Name



Output Result

 Variable

 (x)

☐ Non-blocking

▶

Figure 21: Single mount

Action Name



Output Result

 Variable

 (x)

☐ Non-blocking

▶

Finger Feedback

Gripper

Gripper A

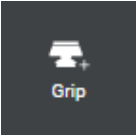
▼

(x)

Figure 22: Dual mount

The feedback is stored as output in a user-created variable.

Mounting type: Select **Gripper A** or **Gripper B**, and define its parameters.
Dual gripper

Action	Icon	Parameter
Grip		Grasp an object with a vacuum gripper.

Action Name



Output Results to Variable

(x)

☐ Non-blocking

▶

Grip

mode

Manual

☐ Stop program if part dropped

Vacuum min

20

kPa

(x)

Vacuum max

60

kPa

(x)

Timeout

0

s

(x)

Figure 23: Single mount

Action Name



Output Results to Variable

(x)

☐ Non-blocking

▶

Grip

Gripper

Gripper A

Mode

Manual

☒ Stop program if part dropped

Vacuum min

20

kPa

(x)

Vacuum max

60

kPa

(x)

Timeout

10

s

(x)

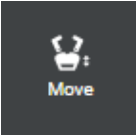
Figure 24: Dual mount

Mounting type:	Select Gripper A or Gripper B , and define its parameters.
Dual gripper	
Mode	Vacuum grippers are used in one of two modes. • Automatic • Manual

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Action	Icon	Parameter
		Stop program if part dropped When selected, the program stops when a part drops from the vacuum gripper.
		Vacuum min A minimum amount of pressure is required for the vacuum to grip an object. Measured in kPa Range: 0 kPa to 80 kPa
		Vacuum max A maximum amount of pressure is required for the vacuum to grip an object. Measured in kPa Range: 0 kPa to 100 kPa
		Timeout A maximum number of seconds the robot can take to grasp an object.

Action	Icon	Parameter
Move		Moves the gripper to a specific location.

Action Name



Output Result

No Variable

(x)

☐ Non-blocking

▶

Move

SNAPSHOT

Position :

255

(x)

Velocity :

255

(x)

Force :

255

(x)

Figure 25: Single mount

Action Name



Output Result

No Variable

(x)

☐ Non-blocking

▶

Move

SNAPSHOT

Gripper

Gripper A

(x)

Position :

255

(x)

Velocity :

255

(x)

Force :

255

(x)

Figure 26: Dual mount

Position	A value of 0 is the maximal open position. A value of 255 is the maximal closed position.
Velocity	The higher the value, the faster the gripper moves. A value of 0 is the minimal speed to move the gripper. A value of 255 is maximal speed to move the gripper.

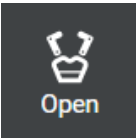
Action	Icon	Parameter
		Force The higher the value, the greater amount of force is needed before it stops moving. A value of 0 is the minimal amount of force applied on the object. It disables the automatic regrasp of the gripper. A value of 255 is the maximal amount of force applied to the object.
Open		Open the gripper. Action Name  Output Result No Variable (x) ☐ Non-blocking ▶ Open Velocity : 255 (x) Force : 255 (x)

Figure 27: Single mount

Action Name



Output Result

No Variable

(x)

☐ Non-blocking

▶

Open

Gripper

Gripper A

(x)

Velocity :

255

(x)

Force :

255

(x)

Figure 28: Dual mount

Action	Icon	Parameter
		Velocity The higher the value, the faster the gripper opens. A value of 0 is the minimal speed required to open the gripper. A value of 255 is the maximal speed required to open the gripper.
		Force The higher the value, the greater amount of force is needed before the opening movement stops. A value of 0 is the minimal force required to open the gripper. A value of 255 is the maximal force required to open the gripper.

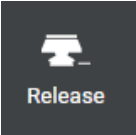
Action	Icon	Parameter
Release		Remain in the released state. Action Name  Output Result ? to Variable (x) ☐ Non-blocking ▶ Release Release time 0 s (x)

Figure 29: Single mount

Action Name



Output Result

?

to Variable

(x)

☐ Non-blocking

▶

Release

Gripper

Gripper A

▼

(x)

Release time

0

s

(x)

Figure 30: Dual mount

Release time	The vacuum gripper remains in the released state after releasing the object for the defined amount of time. Range: 0.0 s to 25.5 s, increments of 0.1 s
--------------	--

Action	Icon	Parameter
Vacuum Feedback		Return the current state of the vacuum.

Action Name

Output Result? Variable

(x)

☐ Non-blocking

▶

Figure 31: Single mount

Action Name

Output Result? Variable

(x)

☐ Non-blocking

▶

Vacuum Feedback

Gripper

Gripper A

(x)

Figure 32: Dual mount

The feedback is stored as output in a user-created variable.

Note: **Vacuum Feedback** is useful to verify whether the vacuum has dropped an object while carrying it.

Variables

It is possible to create variables that are based on the output values of the actions from the plugin.

Program variables can be one of several types, one of which is **Object**. The **Object** type can take on one of many different schemas related to the pose and angles of the robot, as well as output values coming from the pre-installed Arm plugin. The schema must match the selected action.

In the case of the Robotiq plugin, the variable can be set to return the data that is found in the data structure that is output by the Robotiq actions.

- **Activate**
- **Close**
- **Finger Feedback**
- **Grip**
- **Move**
- **Open**
- **Release**
- **Vacuum Feedback**

Name	Type	Schema	Unit	Value
☰ close 🔗 object_detected* # requested_position* # position*	Object ▾	Robotiq Plugin - Close - Output ▾	N/A	Value 

Figure 33: Example of data structure returned by action

Use the output variable of the action when you are programming with the visual programming interface.



Note: Use `object_detected` as the title of a **Condition** to confirm an object is grasped.

Each of the actions exposes the same type of information. Modify the values in the **JSON Object Editor** that launches after you tap the `{}` of the variable.

JSON Object Editor

action_close

☐ Object detected

Echo of the requested position for the Gripper, value between 0 and 255, 0 - Full opening, 255 - Full closing.

Requested position
0

Actual position of the Gripper obtained via the encoders, value between 0 and 255, 0 - Fully opened, 255 - Fully closed.

Actual position
0

Figure 34: Example of JSON Object Editor of an action



Important: The **Release** action releases the object within a determined amount of time.

Accessing variables

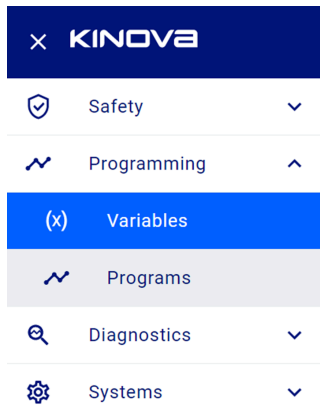
It is possible to create variables from the **Tile configuration** page, it is also possible to create them directly from the **Variables** page.

About this task

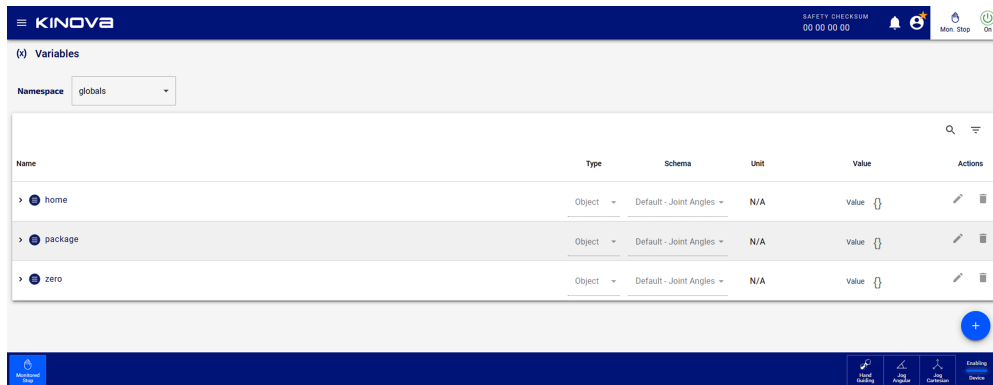
To see all variables that are available or to create a variable ahead of time, access the **Variables** page.

Procedure

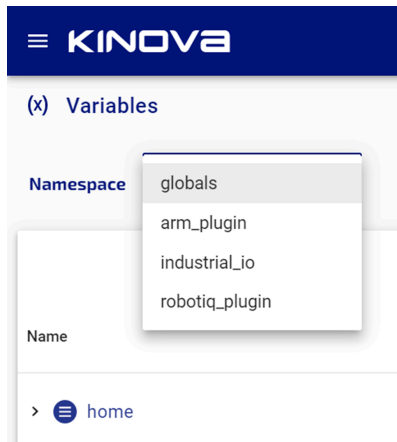
1. Tap **Programming > Variables**.



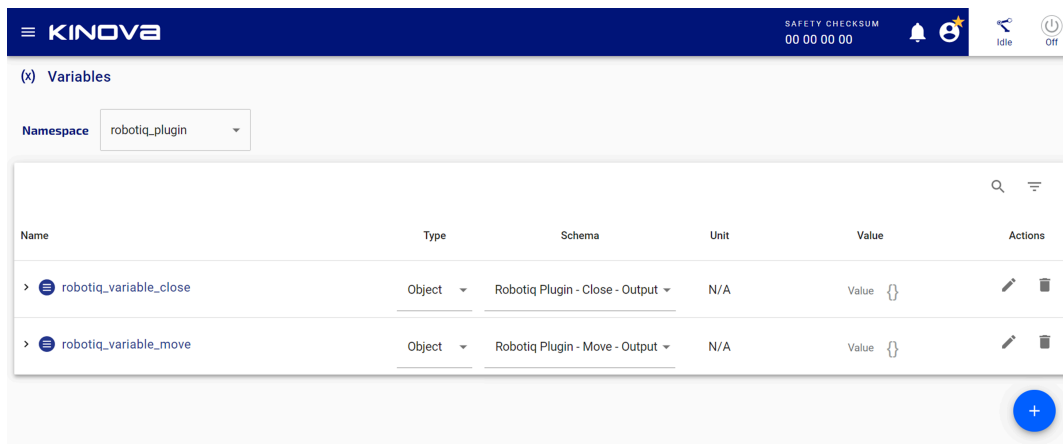
The **Variables** page launches.



2. Select robotiq_plugin from the **Namespace** menu.



All variables with the robotiq_plugin namespace are displayed.



What to do next

Create variables before programming in the Visual programming interface

Output variables of the Activate action

The **Activate** action outputs only one piece of information: *result*.

Data element	Description
<i>result</i>	- Unknown when first dragged onto the Sequence editor and when the action is not done properly - SUCCESS when run

Output variables of the Close action

The **Close** action outputs the same information as the **Move** and **Open** actions.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>requested_position</i>	Echo of the requested position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255
<i>position</i>	Actual position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255

Output variables of the Finger Feedback action

The **Finger Feedback** action outputs several pieces of information.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>activated</i>	Whether the gripper is activated
<i>in_motion</i>	Whether the gripper is currently moving
<i>requested_position</i>	Echo of the requested position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255
<i>position</i>	Actual position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255
<i>fault</i>	Last fault code returned by the gripper No fault: 0  Note: Refer to the user manual from Robotiq for more details about fault codes.
<i>current</i>	Motor current Range: 0 mA to 2550 mA

Output variables of the Grip action

The **Grip** action outputs several pieces of information.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>activated</i>	Whether the gripper is activated
<i>max_pressure</i>	Echo of the maximum pressure for the vacuum Range: 0 kPa to 100 kPa
<i>pressure</i>	Current pressure of the vacuum Range: 0 kPa to 100 kPa
<i>fault</i>	Last fault code returned by the gripper No fault: 0
	 Note: Refer to the user manual from Robotiq for more details about fault codes.

Output variables of the Move action

The **Move** action outputs the same information as the **Close** and **Open** actions.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>requested_position</i>	Echo of the requested position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255
<i>position</i>	Actual position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255

Output variables of the Open action

The **Open** action outputs the same information as the **Close** and **Move** actions.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>requested_position</i>	Echo of the requested position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255
<i>position</i>	Actual position of the gripper, as it is received from the encoders Value between 0 and 255, inclusive Fully open: 0 Fully closed: 255

Output variables of the Release action

The **Release** action outputs several pieces of information.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>activated</i>	Whether the gripper is activated
<i>max_pressure</i>	Echo of the maximum pressure for the vacuum Range: 0 kPa to 100 kPa
<i>pressure</i>	Current pressure of the vacuum Range: 0 kPa to 100 kPa
<i>fault</i>	Last fault code returned by the gripper No fault: 0
	 Note: Refer to the user manual from Robotiq for more details about fault codes.

Output variables of the Vacuum Feedback action

The **Vacuum Feedback** action outputs several pieces of information.

Data element	Description
<i>object_detected</i>	Whether an object is detected It uses the Object detection feature of the Robotiq gripper. Details are in the Instruction Manual of the Robotiq manual. Values: true, false
<i>activated</i>	Whether the gripper is activated
<i>max_pressure</i>	Echo of the maximum pressure for the vacuum Range: 0 kPa to 100 kPa
<i>pressure</i>	Current pressure of the vacuum Range: 0 kPa to 100 kPa
<i>fault</i>	Last fault code returned by the gripper No fault: 0
	 Note: Refer to the user manual from Robotiq for more details about fault codes.

Working with a dual mount

Use the **Change Active Tool List** action when a dual mount is installed.

About this task

A few extra steps are needed to work with a dual mount.

To access the Robotiq **Configurations** page, tap **Plugins > Robotiq Plugin**.

Procedure

1. Select **Dual gripper**.
2. Create a dual gripper adapter tool on the **Tools** page.
3. Configure the dual gripper adapter tool using information in the Robotiq manuals.
4. Create a program from the **Programs** page.
5. Drag and drop a Robotiq **Activate** action tile in the **Sequence editor**.
6. Select **Gripper A**.
7. Drag and drop another Robotiq **Activate** action tile in the **Sequence editor**.
8. Select **Gripper B**.
9. Continue to write the program, using the **Change Active Tool List** Robot action to switch between the two grippers.

Troubleshooting

Examples of issues related to the interfaces between Robotiq tools and Link 6 include such things as installation and communication.

Should none of the suggestions help solve any problem you are experiencing with the Robotiq tool, refer to the documentation from Robotiq.

Why is there an error when the LED indicator on the Robotiq device is blue?

Condition

A Robotiq tool is installed on the [end effector](#). The Robotiq plugin is installed. The LED indicator on the Robotiq tool illuminates blue, but an error message is displayed and the action is delayed.

Cause

The **Open**, **Close**, or **Move** action is invoked, but the device is not activated.

Remedy

Drag an **Activate** action into the program before the **Open**, **Close**, or **Move** action in the program.

Why is the LED indicator on the Robotiq gripper red?

Condition

A Robotiq tool is installed on the [end effector](#). The Robotiq plugin is installed. The LED indicator on the Robotiq tool illuminates red and the tool is not responding for at least one second.

Cause #1

The OnRobot plugin is installed and running on the controller.

Remedy #1

Procedure

1. Tap **Plugins** > **OnRobot Plugin**.
2.
 - Tap **kebab** (⋮) > **Delete**.
 - Tap **Plugins** > **OnRobot plugin** > **Configurations** > **Stop**.
3. Install and run the Robotiq Gripper Plugin.

Cause #2

The robot has exceeded its maximum operating temperature.

Remedy #2

Do not use the robot. Wait for it to cool down.

Why is the light on the Robotiq tool flashing?

Condition

The light on the Robotiq tool is flashing.

Cause

A major fault occurred.

- The voltage is operating under the minimum allowed value.
- There is an internal fault.
- There is an activation fault.
- An automatic release is in progress or completed.

Procedure

1. Tap .
2. Filter for **WARNING** and **INFO** types of events.
3. Search for Robotiq or gripper or vacuum.
4. Tap on the gripper event to view and follow the **Suggestion**.

Changes since the last release

Modifications were made from the previous version to the current version.

Changes made in version 1.4

Version 1.4 of the Robotiq Gripper Plugin is compatible with the latest Kortex v3.3.0 and the Robotiq Dual Gripper Adapter.

New features

The Robotiq Gripper Plugin supports the Robotiq Dual Gripper Adapter to control two grippers on the same robot.

When the Dual Gripper Adapter is connected to the arm, make sure to add the adapter and tools on the **Tools** page. Use the information in the Robotiq manuals to enter into the **Configuration** pane on the **Tools** page.

Fixes

All fixed issues are described as if the problem exist.

- When variables used in a Robotiq action exceed the minimum and maximum limits of the action, the action does not run and the program stops.
-
- No fault is triggered when communication with the gripper is lost.
- When the Robotiq plugin is updated, all tool configurations are erased.

Known issues

The current version of Link 6 has a few known issues. Kinova is working towards to fixing the issues.

- If the Robotiq Gripper Plugin and OnRobot Plugin are installed simultaneously, make sure to deactivate the OnRobot Plugin before using the Robotiq Gripper Plugin.
- The **Connection state** on the **Tools** page does not always display the current connection state of the Robotiq tool.



Note: The **Connection state** is supposed to reflect whether a tool is physically connected to the arm of Link 6.

- The Robotiq coupling device (GRP-ES-CPL-062) is added automatically to the **Tools** page. It should not be added because a different coupling device may be used.

Changes made in version 1.3

Version 1.3 of the Robotiq Gripper Plugin benefits from minor bug fixes, increased robustness, and compatibility with the ePick and the AirPick vacuum grippers.

New features

The Robotiq Gripper Plugin now supports Robotiq AirPick and EPick vacuum gripper tools.

The Robotiq Gripper Plugin can now detect the Robotiq tools automatically.

Known issues

If the Robotiq Gripper Plugin and OnRobot Plugin are installed simultaneously, make sure to deactivate the OnRobot Plugin before using the Robotiq Gripper Plugin.

Changes made in version 1.2

Version 1.2 of the Robotiq Gripper Plugin benefits from minor bug fixes, increased robustness, and compatibility with the latest Kortex v3.2.0.

Appendix

2F-140 gripper default configuration

The 2F-140 gripper comes with its default configuration. It can be reconfigured on the **Tools** page. To reuse the default values after a reconfiguration, you must reconfigure the tool with the default values.

Only values that are modifiable are listed.



Note: Fields of the Inertia Matrix that are listed as 0 are an approximation of the real value. The difference between the listed value and the real value is negligible and does not affect computations done by the plugin.

Table 5: Default configuration of the Robotiq 2F-140 gripper

Name	Robotiq gripper 2F-140					
Mass	0.9002 kg					
Transform	x	0 mm	y	0 mm	z	233 mm
	thetaX	0°	thetaY	0°	thetaZ	0°
Center of Mass	x	0.1 mm	y	0 mm	z	62.4 mm
Inertia Matrix	ixx	0.002167 kg/m ²	ixy	0.000002 kg/m ²	ixz	0 kg/m ²
	iyy	0.00391 kg/m ²	iyz	-0.000002 kg/m ²	izz	0.002054 kg/m ²

Related topics

[Tool configuration fields](#) on page 33

2F-85 gripper default configuration

The 2F-85 gripper comes with its default configuration. It can be reconfigured on the **Tools** page. To reuse the default values after a reconfiguration, you must reconfigure the tool with the default values.

Only values that are modifiable are listed.



Note: Fields of the Inertia Matrix that are listed as 0 are an approximation of the real value. The difference between the listed value and the real value is negligible and does not affect computations done by the plugin.

Table 6: Default configuration of the Robotiq 2F-85 gripper

Name	Robotiq gripper 2F-85					
Mass	0.831 kg					
Transform	x	0 mm	y	0 mm	z	163 mm
	thetaX	0°	thetaY	0°	thetaZ	0°
Center of Mass	x	0 mm	y	0 mm	z	47.3 mm
Inertia Matrix	ixx	0.000105 kg/m ²	ixy	0 kg/m ²	ixz	0 kg/m ²
	iyy	0.00173 kg/m ²	iyz	0 kg/m ²	izz	0.00099 kg/m ²

Related topics

[Tool configuration fields](#) on page 33

AirPick vacuum default configuration

The AirPick vacuum comes with its default configuration. It can be reconfigured on the **Tools** page. To reuse the default values after a reconfiguration, you must reconfigure the tool with the default values.

Only values that are modifiable are listed.



Note: Fields of the Inertia Matrix that are listed as 0 are an approximation of the real value. The difference between the listed value and the real value is negligible and does not affect computations done by the plugin.

Table 7: Default configuration of the Robotiq AirPick vacuum

Name	Robotiq vacuum AirPick					
Mass	0.463 kg					
Transform	x	0 mm	y	0 mm	z	33.9 mm
	thetaX	0°	thetaY	0°	thetaZ	0°
Center of Mass	x	0.5 mm	y	-10 mm	z	22 mm
Inertia Matrix	ixx	0.000661 kg/m ²	ixy	0 kg/m ²	ixz	0 kg/m ²
	iyy	0.000544 kg/m ²	iyz	-0.000131 kg/m ²	izz	0.000558 kg/m ²

Related topics

[Tool configuration fields](#) on page 33

Coupling default configuration

The Coupling device comes with its default configuration. It can be reconfigured on the **Tools** page. To reuse the default values after a reconfiguration, you must reconfigure the tool with the default values.

Only values that are modifiable are listed.



Note: Fields of the Inertia Matrix that are listed as 0 are an approximation of the real value. The difference between the listed value and the real value is negligible and does not affect computations done by the plugin.

Table 8: Default configuration of the Robotiq Coupling device

Name	Robotiq Coupling					
Mass	0.09 kg					
Transform	x	0 mm	y	0 mm	z	11.1 mm
	thetaX	0°	thetaY	0°	thetaZ	0°
Center of Mass	x	0 mm	y	0 mm	z	5.5 mm
Inertia Matrix	ixx	0 kg/m ²	ixy	0 kg/m ²	ixz	0 kg/m ²
	iyy	0 kg/m ²	iyz	0 kg/m ²	izz	0 kg/m ²

Related topics

[Tool configuration fields](#) on page 33

EPick vacuum default configuration

The EPick vacuum comes with its default configuration. It can be reconfigured on the **Tools** page. To reuse the default values after a reconfiguration, you must reconfigure the tool with the default values.

Only values that are modifiable are listed.



Note: Fields of the Inertia Matrix that are listed as 0 are an approximation of the real value. The difference between the listed value and the real value is negligible and does not affect computations done by the plugin.

Table 9: Default configuration of the Robotiq EPick vacuum

Name	Robotiq vacuum EPick					
Mass	0.706 kg					
Transform	x	0 mm	y	0 mm	z	102.3 mm
	thetaX	0°	thetaY	0°	thetaZ	0°
Center of Mass	x	0 mm	y	0 mm	z	51.5 mm
Inertia Matrix	ixx	0.003084 kg/m ²	ixy	0 kg/m ²	ixz	0 kg/m ²
	iyy	0.002999 kg/m ²	iyz	0 kg/m ²	izz	0.000546 kg/m ²

Related topics

[Tool configuration fields](#) on page 33

Hand-E gripper default configuration

The Hand-E gripper comes with its default configuration. It can be reconfigured on the **Tools** page. To reuse the default values after a reconfiguration, you must reconfigure the tool with the default values.

Only values that are modifiable are listed.



Note: Fields of the Inertia Matrix that are listed as 0 are an approximation of the real value. The difference between the listed value and the real value is negligible and does not affect computations done by the plugin.

Table 10: Default configuration of the Robotiq Hand-E gripper

Name	Robotiq gripper Hand-E					
Mass	0.962 kg					
Transform	x	0 mm	y	0 mm	z	146 mm
	thetaX	0°	thetaY	0°	thetaZ	0°
Center of Mass	x	0 mm	y	0 mm	z	51 mm
Inertia Matrix	ixx	0.001336 kg/m ²	ixy	-0.000009 kg/m ²	ixz	-0.000003 kg/m ²
	iyy	0.001387 kg/m ²	iyz	0 kg/m ²	izz	0.000561 kg/m ²

Related topics

[Tool configuration fields](#) on page 33

Glossary

C

controller

the part of the robot from where the software operates

E

end effector

device specifically designed for attachment to the flange of the wrist

F

flange

a mechanical interface used for attaching another object

G

GUI

a way of interacting with a program of a computer that involves windows, dialogs, icons, and menus

Graphical User Interface ([GUI](#))

synonym: *HMI*

K

kebab menu

three vertical dots that, when tapped, expose a menu of actions or tasks from which the user can choose; usually used for contextual menus



synonym: contextual menu, menu options, options, menu

Kortex Web App

the [GUI](#) that runs on a web server on the [controller](#) and is accessed on the [teach pendant](#) or on an external computer

synonym: Web App

N

namespace

a way in computer science of grouping together all objects that work together such that each object has a unique name

non-blocking

the ability for a robotic program to proceed to its next step even when the current action is not finished

synonym: *synchronous operation*

P

pendant

a device used to configure and control the movements of a robot

synonym: [teach pendant](#)

plugin

software that is added to an pre-existing base software so as to give the application additional capabilities

T

TCP

the position and orientation of the tool

Tool Center Point ([TCP](#))

teach pendant

a device used to configure and control the movements of a robot

synonym: pendant

U

USB device

industry computer bus standard that makes it easier to transfer data between devices

Universal Serial Bus ([USB](#))

W

wrist

the part found at the end of the robot arm to which end effectors may be attached

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