



# Plugin user guide

Robotiq  
v1.1.0

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**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 this document is in the header of the pages of the document.

The perspective of the Robotiq 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](mailto:support@kinova.ca).

# Abbreviations

TCP

Tool Center Point

USB

Universal Serial Bus

# Plugins

The modular design of Link 6 makes it a robot with expanding capabilities. The expanding capabilities are added on as [plugins](#).

All plugins start to run right after they are installed. However, they can be stopped so the settings can be modified. All plugins that are running are, by default, active. They can be deactivated to stop their functionality.

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

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

## Robotiq plugin

Install the plugin to control various Robotiq tools.

The [wrist](#) of Link 6 has a central Ethernet connection to the Kinova Robotiq adapter for the Robotiq 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 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 tools supported by the plugin**

| Robotiq tool           | Tool ID        | Robotiq Plugin version |
|------------------------|----------------|------------------------|
| Robotiq 2F-85 Gripper  | AGC-GRP-2F85   | 1.1.0                  |
| Robotiq 2F-140 Gripper | AGC-GRP-2F140  | 1.1.0                  |
| Hand-E Gripper         | HND-GRP        | 1.1.0                  |
| Robotiq Coupling       | GRP-ES-CPL-062 | 1.1.0                  |

## Getting the plugins for the robot

Upload and installation must be done from a computer and a [USB](#) storage device.

### 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                         |

| Dependency                                         | What to expect when dependencies are not met |
|----------------------------------------------------|----------------------------------------------|
| Software package must be compatible with the robot | Installation failure                         |

### About this task

The plugin installation file is named `robotiq_plugin_<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 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.

### Procedure

1. Download the plugin installation file `robotiq_plugin_<version>.kp`.
2. Save the plugin installation file in the root directory of the USB storage device.
3. Eject the USB after the transfer of the plugin installation file is complete.
4. Plug the USB storage device on the [controller](#).
5. Switch on the [teach pendant](#).
6. Enter the administrator credentials.
7. Tap **CONNECT**.
8. 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 5

## 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. The USB must be plugged into the controller

### About this task

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

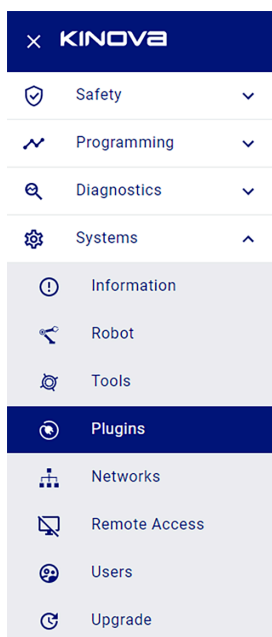
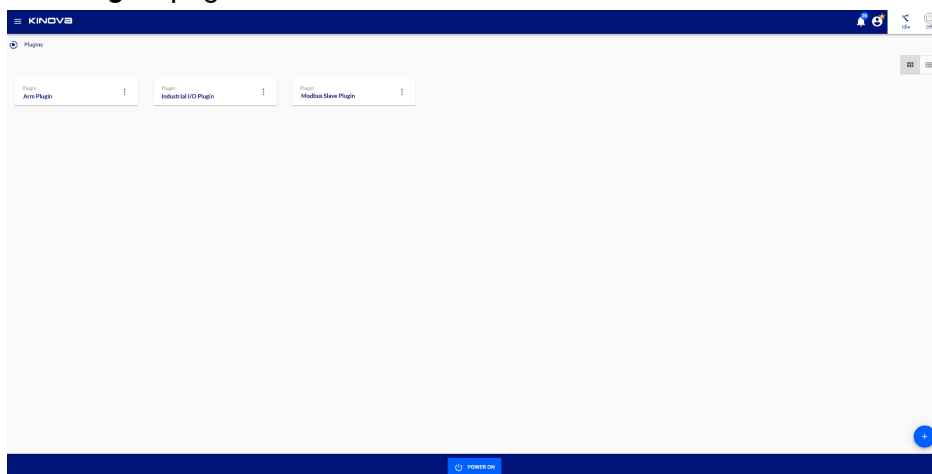


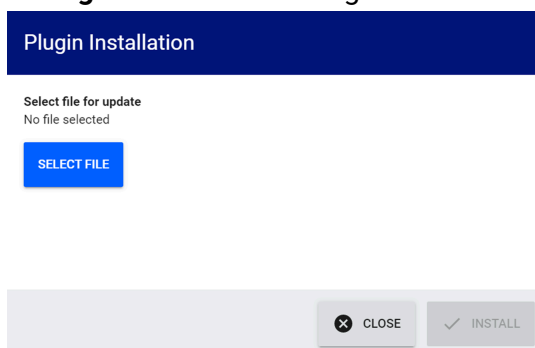
**Figure 1: Accessing the plugins**

## Procedure

1. Tap **Systems > Plugins**.  
The **Plugins** page launches.



2. Tap **+**.  
A **Plugin Installation** dialog launches.

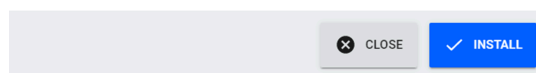
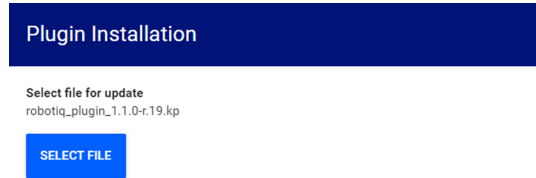


**3. Tap SELECT FILE.**

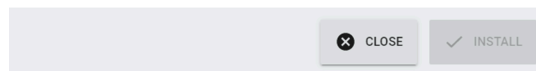
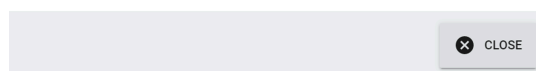
A file browse window launches.

**4. 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 installed plugin appears on the **Plugins** page. A running icon (Plugin ) , displayed near the plugin name on the **Plugins** page, indicates the plugin is running.

**What to do next**

Install the Robotiq device.

**Related topics**

[Installing the Kinova Robotiq adapter](#) on page 14

[Installing Robotiq tools](#) on page 16

## Updating plugins

Integrate improvements to the plugins by updating them.

### Before you begin

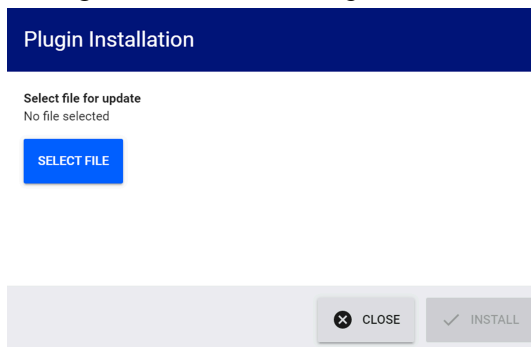
Download the latest version of the plugin from the Contact Kinova to get the appropriate plugin file if you are unsure which files you need.

### About this task

Updating plugins is similar to installing them. Use a computer or USB device.

### Procedure

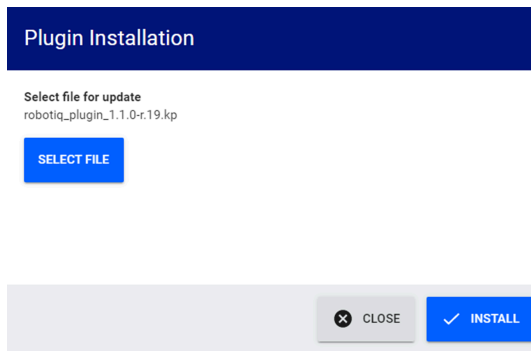
1. Get the latest version of the plugin.
2. Tap **Systems** > **Plugins**.
3. Tap the plugin that you want to update.
4. Tap **Stop** (Stop ■).
5. Tap **Deactivate**.
6. Navigate back to the **Plugins** page.
7. Tap the kebab menu (⋮) of the plugin that you want to update.
8. Tap **Delete**.
9. Tap +.  
A **Plugin Installation** dialog launches.



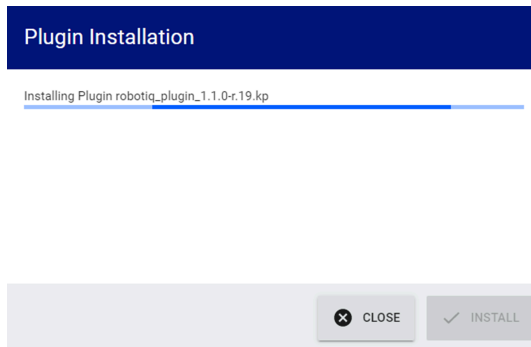
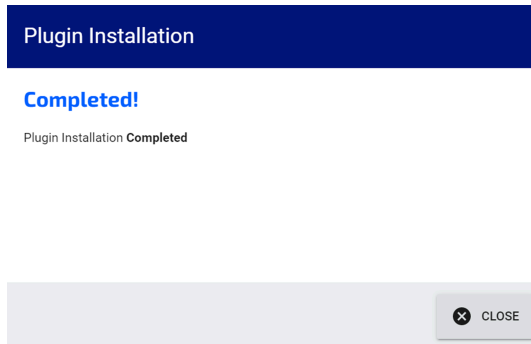
10. Tap **SELECT FILE**.  
A file browse window launches.
11. Browse to the plugin installation files.
12. Select a plugin installation file.

**13. Tap Open.**

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

**14. Tap INSTALL.**

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

**15. Tap CLOSE when installation is complete.****Results**

The installed plugin appears on the **Plugins** page. A running icon (Plugin ) displayed near the plugin name on the **Plugins** page, indicates the plugin is running.

**What to do next**

Install the Robotiq device.

**Related topics**

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

## Overview of working with plugins

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

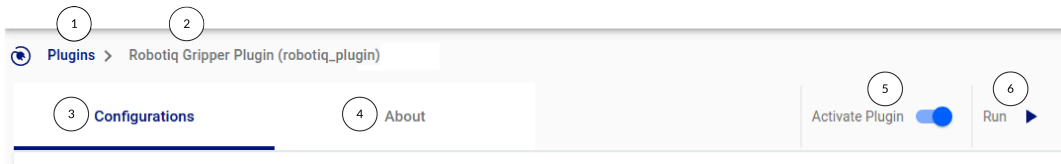


**Figure 2: Example of a plugin page of a plugin that is stopped**

- 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 **Run** (Run ►) 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
  - Package Name
  - Version
  - Installation Type
  - Description
- 5 Tap **Deactivate** to deactivate plugins that need to be installed but are not being used. Tap **Activate Plugin** to activate a deactivated plugin.
- 6 The current operating state of the plugin.
 

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

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

# Configurations of the Robotiq Plugin

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

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



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



**Important:** Tap **Run** (Run ►) 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.

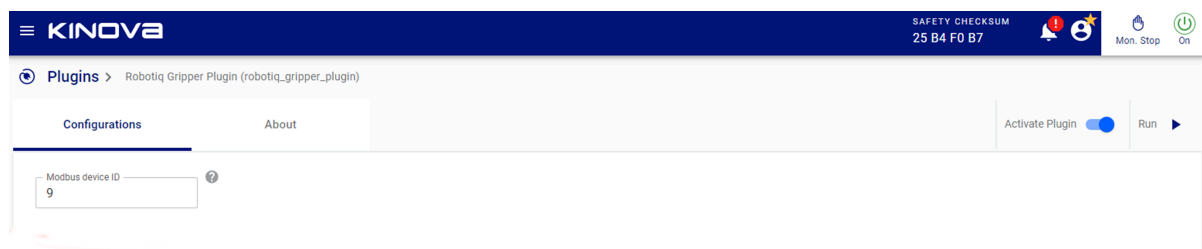


**Figure 3: Configuration page for the Robotiq plugin**

Only one parameter of the Robotiq Plugin is modifiable. Modify it only when absolutely necessary.

## Modbus device ID

The modbus device ID matches the modbus device ID of the Robotiq grippers. By default, the ID of the Robotiq gripper and the value displayed in Kortex Web App is 9.



**Tip:** If the light on the Robotiq tool is red, change the **Modbus device ID** to a number between 1 and 8 until the light is blue.

## Robotiq tools

Several Robotiq tools are compatible with Link 6. The same Robotiq *plugin* is used for all Robotiq grippers.

Each of the Robotiq grippers needs to be secured to the Kinova Robotiq adapter or to the Robotiq coupling device.

- Robotiq 2F-85 gripper
- Robotiq 2F-140 gripper
- Robotiq Hand-E gripper

## Kinova Robotiq adapter

The Kinova Robotiq adapter 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 4: Wrist interface side of Robotiq adapter**



**Figure 5: Robotiq tool side of Robotiq adapter**

## Robotiq coupling device

The Robotiq coupling device 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*

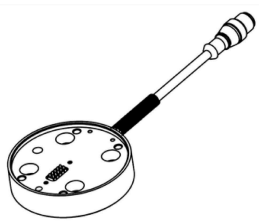
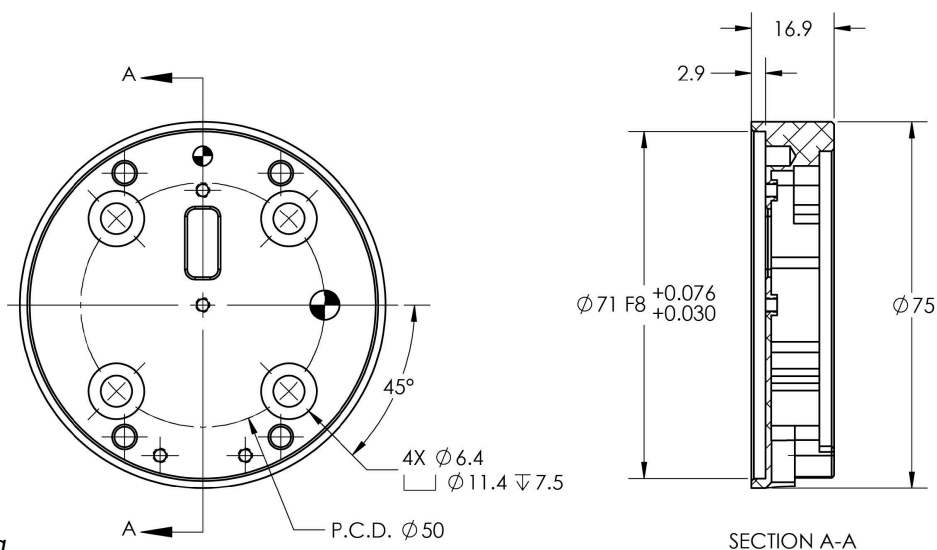


**Figure 6: Robotiq coupling device**



*Drawings: Robotiq*

**Figure 7: Schematics of the Robotiq coupling device**

## 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 8: Robotiq 2F-85 gripper**

*Photo: Robotiq*



**Figure 9: Robotiq 2F-140 gripper**

## 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 10: Robotiq Hand-E gripper**

## 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

- 4.0 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 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

- 4.0 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.

## 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
- 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 gripper, the light on the OnRobot device is blue.

### What to do next

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

#### Related topics

[Configuring tools](#) on page 18

# Configuring tools

An *end effector* tool *plugin* can be installed even if the corresponding tool is not mounted on the robot.

## 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.

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



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

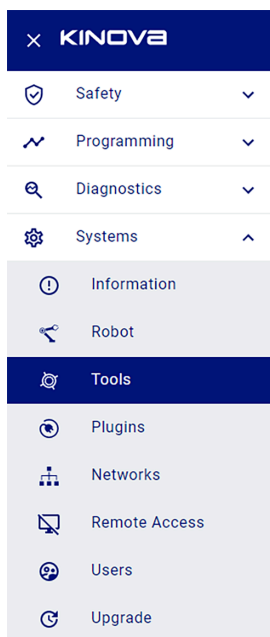
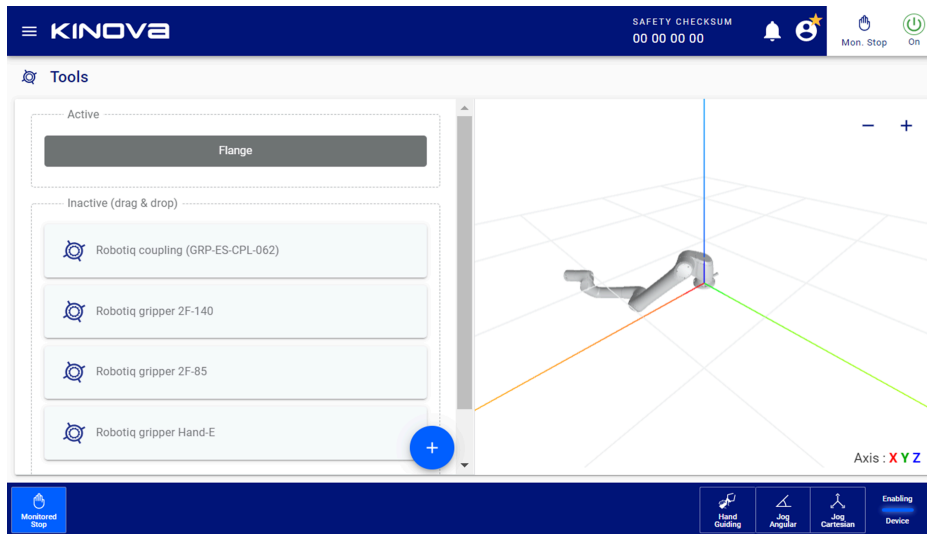


**Figure 11: Accessing tool configuration operations**

## Procedure

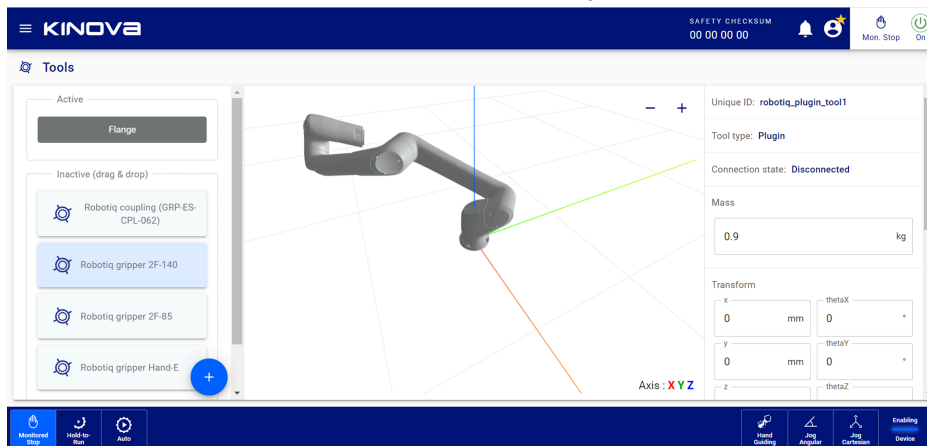
1. Tap **Systems > Tools**.  
The **Tools** page launches.



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

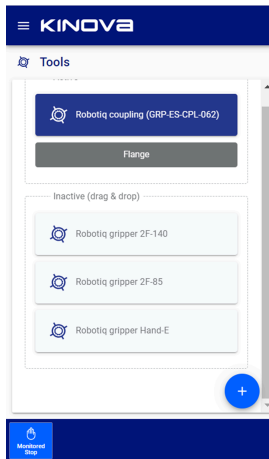


**Note:** Configure the tools only when they are still in the **Inactive** pane.

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 21

## Tool configuration fields

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

|                                              |                      |
|----------------------------------------------|----------------------|
| Unique ID: <code>robotiq_plugin_tool2</code> |                      |
| Tool type: <code>Plugin</code>               |                      |
| Connection state: <code>Disconnected</code>  |                      |
| Mass                                         |                      |
| 0.831                                        | kg                   |
| Transform                                    |                      |
| x<br>0 mm                                    | thetaX<br>0 °        |
| y<br>0 mm                                    | thetaY<br>0 °        |
| z<br>163 mm                                  | thetaZ<br>0 °        |
| Center of Mass                               |                      |
| x<br>0 mm                                    |                      |
| y<br>0 mm                                    |                      |
| z<br>47.3 mm                                 |                      |
| Inertia Matrix                               |                      |
| ixx<br>0.00105 kg/m²                         | iyx<br>0.00173 kg/m² |
| ixy<br>0 kg/m²                               | iyz<br>0 kg/m²       |
| ixz<br>0 kg/m²                               | izz<br>0.00099 kg/m² |

**Figure 12: Configuration settings for the selected tool**

**Table 3: Configurable fields on the Tools page for Robotiq**

| Field name              | Description                                                                                                                                                                                                                                                                                                                                                          | Modifiable |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Unique ID</b>        | <p>Unique identifier assigned by the plugin to the tool</p> <p>The plugin assigns the unique identifier for all Robotiq tools.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• robotiq_gripper_plugin_tool1</li> <li>• robotiq_gripper_plugin_tool2</li> <li>• robotiq_gripper_plugin_tool3</li> </ul>                                                 | No         |
| <b>Tool type</b>        | <p>Type of tool being used</p> <p>There are two types of tools.</p> <ul style="list-style-type: none"> <li>• Custom</li> <li>• Plugin</li> </ul> <p>When you create a tool by tapping the <b>+</b>, the type is Custom.</p> <p>When the Robotiq plugin is installed, the plugin creates and adds the Robotiq tools to the <b>Tools</b> page. The type is Plugin.</p> | No         |
| <b>Connection state</b> | <p>State of the connection between the robot and the device</p> <ul style="list-style-type: none"> <li>• Connected</li> <li>• Disconnected</li> <li>• Unknown</li> </ul>                                                                                                                                                                                             | No         |
| <b>Mass</b>             | Mass of Robotiq tool, measured in kg                                                                                                                                                                                                                                                                                                                                 | Yes        |
| <b>Transform</b>        | <p>Position and orientation of the TCP, relative to the reference frame of the previous element in the tool stack</p> <p>Position is measured as x,y,z in mm.</p> <p>Orientation is measured as thetaX, thetaY, thetaZ in °.</p>                                                                                                                                     | Yes        |

| Field name            | Description                                                                                                                                        | Modifiable |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Center of mass</b> | Position of the center of mass of the tool, relative to the previous element in the tool stack<br><br>Position is measured as x,y,z in mm.         | Yes        |
| <b>Inertia matrix</b> | Specific three-dimensional positions measured as $ixx$ , $iyy$ , $ixy$ , $iyz$ , $ixz$ , $izz$ in $\text{kg/m}^2$ , relative to the center of mass | Yes        |

# 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 Plugin are available as tiles that can be dragged into the **Sequence editor** pane of the current program.

The Robotiq *plugin* has four 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*.

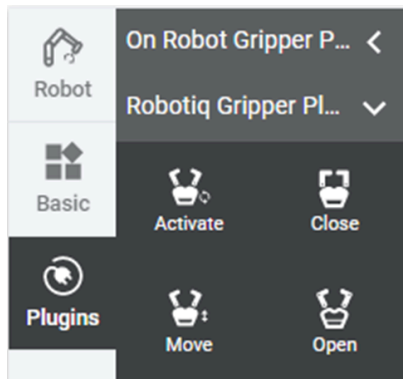
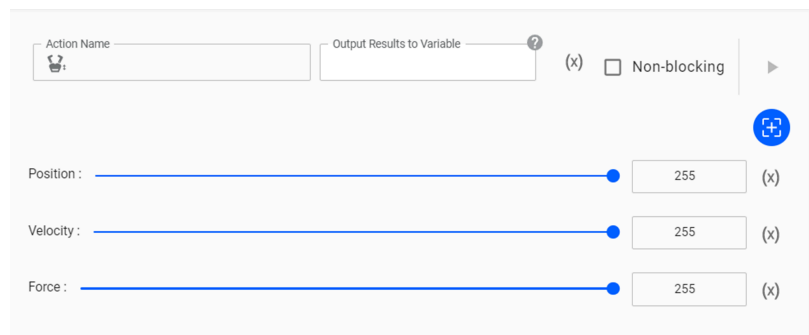


Figure 13: Actions available from the Robotiq plugin

Table 4: Parameters of Robotiq plugin actions

| Action   | Icon                                                                                | Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Activate |  | <p>Initializes the gripper.</p> <hr/> <div> <div>Action Name <input type="text"/></div> <div>Output Results to Variable <input type="text"/> (x) <input type="checkbox"/> Non-blocking <input type="button" value="▶"/></div> </div> <hr/> <p>The gripper opens to its maximal position, closes to its minimal position, and opens again during initialization.</p> <hr/> <p>Run <b>Activate</b> each time the gripper receives power. The wrist buttons can then interact with the gripper; the gripper actions are available to the robot.</p> |
| Close    |  | <p>Closes the gripper.</p> <hr/> <div> <div>Action Name <input type="text"/></div> <div>Output Results to Variable <input type="text"/> (x) <input type="checkbox"/> Non-blocking <input type="button" value="▶"/></div> </div> <hr/> <p>Velocity : <input type="range" value="255"/> (x)</p> <p>Force : <input type="range" value="255"/> (x)</p>                                                                                                                                                                                               |

| Action      | Icon                                                                              | Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                                                   | <b>Velocity</b> <p>The higher the value, the faster the gripper closes.</p> <p>A value of 0 is the minimal speed required to close the gripper.</p> <p>A value of 255 is the maximal speed required to close the gripper.</p> <b>Force</b> <p>The higher the value, the greater amount of force is needed before the closing movement stops.</p> <p>A value of 0 is the minimal force required to close the gripper; it disables the automatic regrasp of the gripper.</p> <p>A value of 255 is the maximal force required to close the gripper.</p>                                                                                                                                                                                                                                                  |
| <b>Move</b> |  | <p>Moves the gripper to a specific location.</p> <div data-bbox="581 772 1385 1104">  </div> <b>Position Target</b> <p>A value of 0 is the maximal open position.</p> <p>A value of 255 is the maximal closed position.</p> <b>Velocity Target</b> <p>The higher the value, the faster the gripper moves.</p> <p>A value of 0 is the minimal speed to move the gripper.</p> <p>A value of 255 is maximal speed to move the gripper.</p> <b>Force Target</b> <p>The higher the value, the greater amount of force is needed before it stops moving.</p> <p>A value of 0 is the minimal amount of force required to move objects.</p> <p>A value of 255 is the maximal amount of force required to move objects.</p> |

| Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Icon                                                                              | Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Open                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | <p>Opens the gripper.</p> <div> <div> <div>Action Name</div> <div></div> </div> <div> <div>Output Results to Variable</div> <div>(x)</div> </div> <div> <input type="checkbox"/> Non-blocking </div> <div>▶</div> </div> <div> <div>Velocity :</div> <div></div> <div>255 (x)</div> </div> <div> <div>Force :</div> <div></div> <div>255 (x)</div> </div> |
| <p><b>Velocity</b></p> <p>The higher the value, the faster the gripper opens.</p> <p>A value of 0 is the minimal speed required to open the gripper.</p> <p>A value of 255 is the maximal speed required to open the gripper.</p> <p><b>Force</b></p> <p>The higher the value, the greater amount of force is needed before the opening movement stops.</p> <p>A value of 0 is the minimal force required to open the gripper.</p> <p>A value of 255 is the maximal force required to open the gripper.</p> |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 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**
- **Move**
- **Open**

| Name                                                                                                                                           | Type   | Schema                          | Unit | Default value                                                                                                                   | Actions                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div> <div>⌵</div> <div> <div>action_close</div> <div>object_detected*</div> <div>requested_position*</div> <div>position*</div> </div> </div> | Object | Robotiq Plugin - Close - Output | N/A  | <input checked="" type="checkbox"/> Value  |    |

**Figure 14: Example of data structure returned by action**

You can 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 expose 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

✕ CANCEL

✓ SAVE

**Figure 15: Example of JSON Object Editor of an action**

**Table 5: Information in Robotiq actions that have output data**

| Action   | Data element       | Description                                                         |
|----------|--------------------|---------------------------------------------------------------------|
| Activate | result             | Value: SUCCESS                                                      |
| Close    | Object detected    | Whether an object is detected                                       |
| Move     |                    | Uses the Object detection feature of the Robotiq gripper            |
| Open     |                    | Details are in the Instruction Manual of the Robotiq manual         |
|          |                    | Values: true, false                                                 |
|          | Requested position | Actual position of the gripper, as it is received from the encoders |
|          |                    | Value between 0 and 255, inclusive                                  |
|          |                    | Fully open: 0                                                       |
|          |                    | Fully closed: 255                                                   |
|          | Actual position    | Actual position of the gripper, as it is received from the encoders |
|          |                    | Value between 0 and 255, inclusive                                  |
|          |                    | Fully open: 0                                                       |
|          |                    | Fully closed: 255                                                   |

# Troubleshooting

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

## 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 is red and the tool is not responding.

### Cause

The Modbus communication between the robot and the gripper is not running. The Modbus identifier is set to an unexpected value.

### Remedy

Tap **Plugins > Robotiq Gripper Plugin > Configurations** to view the current Modbus identifier. The identifier must be a number between 1 and 9, inclusive.

Change the value of the identifier on the **Configurations** to another number that is between 1 and 9 until a blue light illuminates from the gripper.

Alternatively, use Robotiq software to change the identifier to match what is on the Robotiq Gripper Plugin **Configurations** page.

## Why is the light on the Robotiq tool flashing?

### Condition

The light on the Robotiq tool is flashing.

### Cause

A fault occurred.

### Procedure

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

# Glossary

## C

### controller

the part of the robot from where the software operates

## E

### end effector

the end of the arm of a robot; also, a tool or [flange](#) connected to the end of the arm of the robot

## F

### flange

a rim 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:** human machine interface (HMI)

## K

### 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, non-blocking, action is not finished

**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**

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

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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