

Program Template EXPLAINED

Pick and Place Single Gripper

ADAPTIVE GRIPPERS



HAND-**E**



2F-**85**



2F-**140**



ROBOTIQ
eLearning

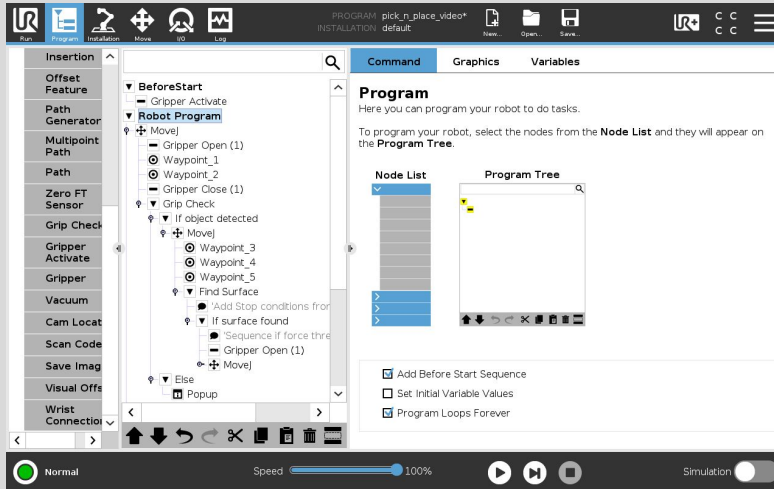
PROGRAM TEMPLATE USING ADAPTIVE GRIPPERS





Description

Use this document to help you program your application using the template for the **Adaptive Gripper**. You can learn more about the steps on how to program your first Adaptive Gripper application using the available video for this course. Visit support.robotiq.com for more details.



What you will need

- Robotiq Adaptive Gripper
- Robotiq Copilot
- Latest URCaps
 - Gripper URCap UCG-X.X.X.X
 - Copilot URCap UCS-X.X.X
- Universal Robot UR3e, UR5e, UR10e or UR16e
- Part for pick and place
- Program Template: PICKNPLACE.lesson.urp



The screenshot displays the Robotiq software interface. On the left, a tree view shows the program structure under 'Robot Program'. Two callouts, '1' and '2', point to 'Gripper Activate' and 'Gripper Open (1)' respectively. The main panel, titled 'Gripper', shows 'Gripper 1' with three status indicators: Position (40mm, Open), Speed (100%), and Force (100%). Below these is a 'Go to position' button with a play icon and a yellow warning triangle, and an 'Edit action' button with a gear icon. A checkbox at the bottom is checked and labeled 'Complete gripper motion before next action'. The interface includes tabs for 'Command', 'Graphics', and 'Variables', and a search bar at the top.

1 Gripper Activate
Before starting the main program, **activate** the gripper.

2 Open Gripper and Move to the Part
Open the gripper and move it over the part.



The screenshot displays a robotic programming software interface. On the left, a tree view shows a sequence of commands: 'BeforeStart', 'Gripper Activate', 'Robot Program', 'MoveJ', 'Gripper Open (1)', 'Waypoint_1', 'Waypoint_2', 'Gripper Close (1)', 'Grip Check', 'If object detected', 'MoveJ', 'Waypoint_3', 'Waypoint_4', 'Waypoint_5', 'Find Surface', 'Add Stop conditions from', 'If surface found', 'Sequence if force thre', 'Gripper Open (1)', 'MoveJ', 'Else', and 'Popup'. The 'Gripper Close (1)' command is highlighted with a circled '3', and the 'Grip Check' command is highlighted with a circled '4'. On the right, the configuration panel for the 'Grip Check' command is shown, with tabs for 'Command', 'Graphics', and 'Variables'. The 'Command' tab is active, showing 'Gripper ID 1', 'Check if object is...' (with 'Detected' selected), and 'Validate grip with dimension' (unchecked).

3 Gripper Close
Close the gripper on the part.

4 Grip Check
Insert a ***Grip Check*** command to confirm the object is properly picked up.



The screenshot displays the Robotiq software interface. On the left, a tree view shows a program structure under 'Robot Program'. A 'Grip Check' block contains an 'If object detected' block (circled with a '5') which has a 'Move' block (circled with a '6') as a child. Below it is a 'Find Surface' block with an 'If surface found' block containing a 'Gripper Open (1)' block and another 'Move' block. An 'Else' block contains a 'Popup' block. On the right, the 'Command' panel is active, showing the configuration for the selected 'Move' block. The title is 'Move' with a dropdown menu set to 'Move'. Below the title is the instruction: 'Specify how the robot will move between waypoints. The values below apply to all child waypoints and depend on the selected movement type.' The configuration includes: 'Set TCP' set to 'Use active TCP', 'Joint Speed' set to '60' %/s, 'Feature' set to 'Base', and 'Joint Acceleration' set to '80' %/s². There is an unchecked checkbox for 'Use joint angles' and a 'Reset' button at the bottom.

5 If/Else
If the part is detected, move it to the drop point. Otherwise, insert a popup to warn the user that there is no part.

6 Move the Part over the Drop Point
Move the part just over the drop point.



The screenshot displays the 'Find Surface' configuration panel in the software. The panel is titled 'Find Surface' and includes a description: 'Use the Force Torque Sensor's data to detect a surface during a robot motion in a given tool axis.' Below this, the 'Motion' section contains a 'Direction (A)' dropdown set to 'Tool' and 'Z+', a 'Hold to test' button, and checkboxes for 'Zero Sensor Before Execution' and 'Advanced parameters'. The 'Motion speed' is set to 25 mm/s, and there is an unchecked checkbox for 'Wait until sensor reading is steady before zero sensor'. The 'Stop condition' section includes 'Maximum distance traveled (C)' set to 100 mm, 'Force threshold (B)' set to 10 N, and checkboxes for inserting program instructions if conditions occur. A 3D diagram shows a gripper tool with axes A, B, and C. The task sequence tree on the left shows a 'Find Surface' step (circled 7) followed by a 'MoveJ' step (circled 8).

7 Find Surface
Use the find surface to make sure that the part is correctly positioned.

8 Open the Gripper and Move
Open the gripper and move it away from the part.



Command Graphics Variables

Gripper

Gripper 1

Position 0mm	Speed 100%	Force 100%
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Complete gripper motion before next action

9 Move to the Part
Move over the part to grip it.

10 Grip Close and Grip Check
Close the gripper and perform a **Grip Check** to make sure the part is properly gripped.



The screenshot shows a robotic programming interface with a task tree on the left and a configuration panel on the right. The task tree includes nodes for Waypoint_5, Find Surface, If surface found, Gripper Open (1), MoveJ, Waypoint_6, Wait: 2.0, Else, Popup, MoveJ, Waypoint_7, Gripper Close (1), Grip Check, If object detected, Waypoint_8, Waypoint_9, Waypoint_10, Gripper Open (1), and another Else/Popup block. The 'If object detected' node is highlighted with a blue box and a circled '11'. The 'Gripper Open (1)' node below it is also highlighted with a blue box and a circled '12'. The right panel shows an 'If' block with the text: 'Depending on the state of the parent node, the following lines will be executed.' and a 'Remove Else' button.

11 If/Else
If the part is detected, move it to the drop point. **Else**, insert a popup to warn the user that there is no part.

12 Move to Drop point and Gripper Open
Move to the final drop point and **open** the gripper to drop the part.



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