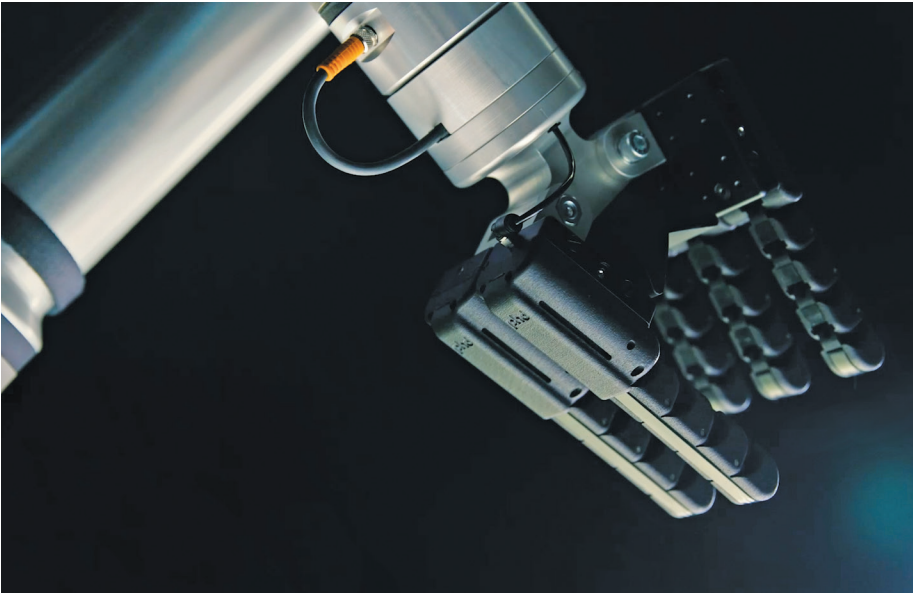


FLEXION URCAP SETUP INSTRUCTIONS



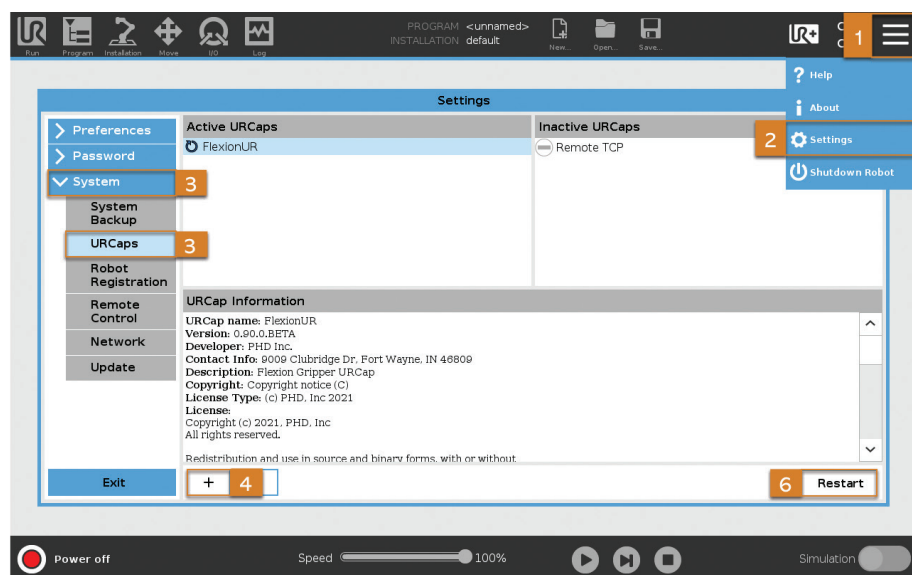
CB & E Series
Version:
0.90 BETA

LOADING AND INSTALLING THE URCAP (E-SERIES)

PHD, Inc. makes no warranty as to the fitness of its products or as to the length of service life after being repaired or parts replaced by anyone other than authorized employees of PHD, Inc. In no event shall PHD, Inc. be liable for loss of profits, indirect, consequential, or incidental damages arising out of the use of PHD Products.

IMPORTANT: Robot Software version 5.4.0 or higher is required for proper functionality.

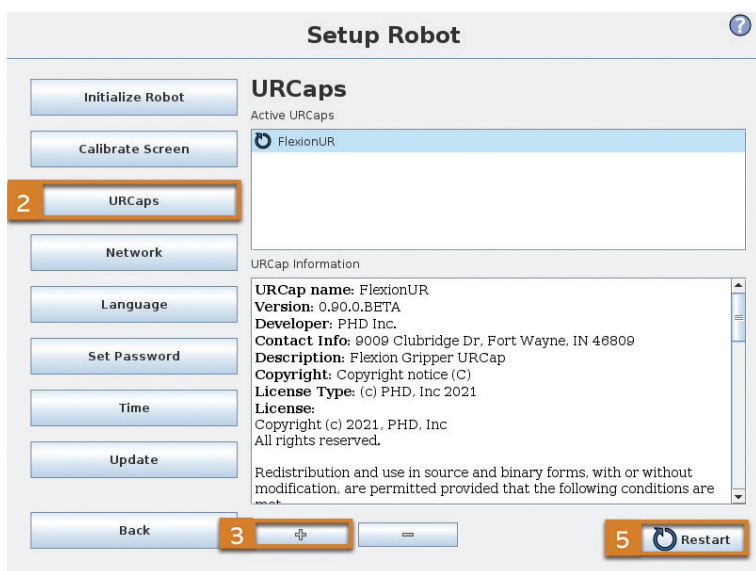
- 1) Connect the USB drive provided in the Flexion kit to either the USB port on the teach pendant or the USB ports in the control box, then tap the  symbol.
- 2) Tap **Settings** in the resulting drop-down menu.
- 3) On the settings page, tap on the **System** drop-down and select **URCaps**.
- 4) Tap the **+** button to open the file directory browser and select **usbdisk** to access the connected USB drive.
- 5) Select the file containing the label **Flexion-***-***.urcap** and tap the **Open** button.
- 6) When prompted, tap **Restart** to restart the robot and apply the URCap.



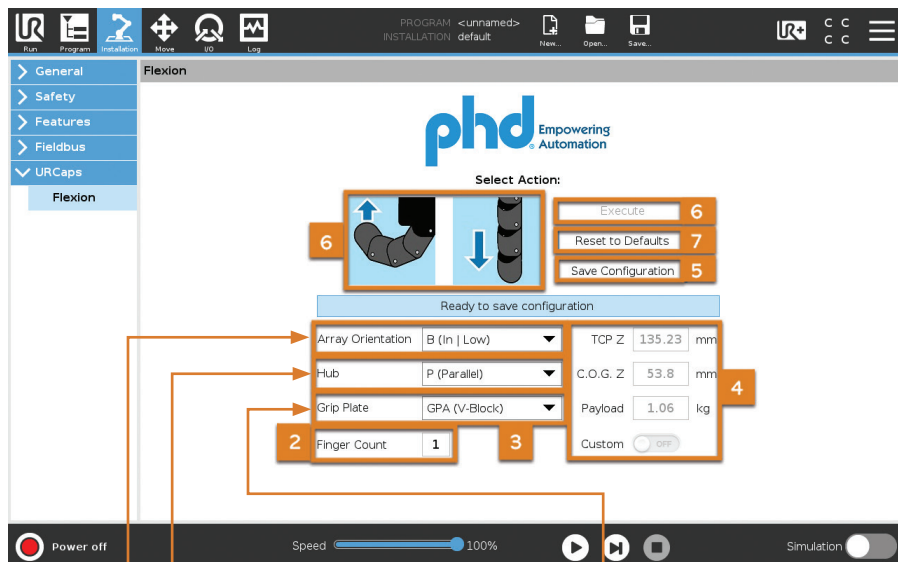
LOADING AND INSTALLING THE URCAP (CB-SERIES)

IMPORTANT: Robot Software version 3.15.3 or higher is required for proper functionality.

- 1) Connect the USB drive provided in the Flexion kit to either the USB port on the teach pendant or the USB ports in the control box, then tap **Setup Robot** in the main menu.
- 2) In the **Setup Robot** menu, tap **URCaps** to display the list of currently installed URCaps.
- 3) Tap the **+** button to open the file directory browser and select **usbdisk** to access the connected USB drive.
- 4) Select the file containing the title **Flexion-***.urcap** and tap the **Open** button.
- 5) When prompted, tap **Restart** to restart the robot and apply the URCap.



INSTALLATION NODE (E-SERIES AND CB-SERIES)



EXAMPLE ORDERING:

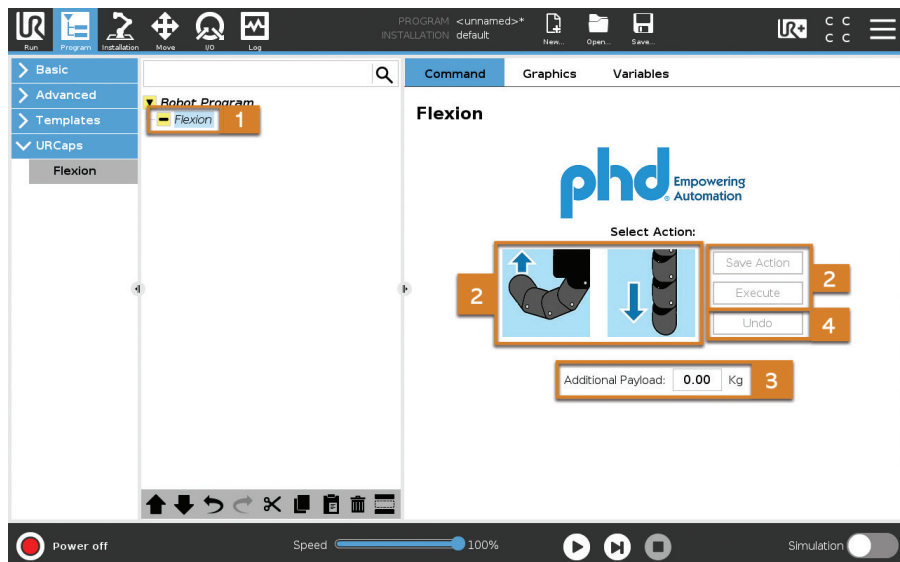
FG C B P - 5 - 20 x 2 - FG 4 10 - GPA - MTA - SCN K 1

- 1) To configure the URCap to match a standard Flexion configuration, please refer to the ordering sheet to obtain the values needed for each drop-down menu.
- 2) Count the amount of finger modules to be installed and input this number into the **Finger Count** field.
- 3) Once the **Array Orientation**, **Hub**, **Grip Plate**, and **Finger Count** have been specified, the **TCP Z**, **C.O.G. Z**, and **Payload** settings will be adjusted accordingly.
- 4) If using a configuration which does not conform to an ordering code, tap the **Custom** switch to directly modify the **TCP Z**, **C.O.G. Z**, and **Payload** settings.
- 5) Once the desired selections have been made, tap **Save Configuration** to save the changes to the robot.

IMPORTANT: This step must be performed to save any changes made to the configuration. Unsaved changes WILL NOT be applied to the robot on program execution.

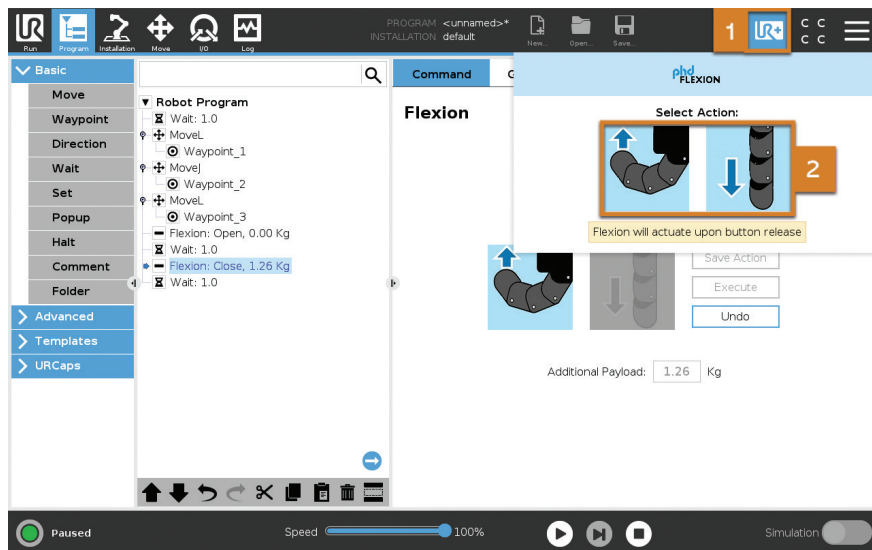
- 6) Select either the **Close Flexion** or **Open Flexion** button followed by the **Execute** button to actuate the gripper if desired.
- 7) Tap **Reset to Defaults** to reset all fields to original settings.

PROGRAM NODE (E-SERIES AND CB-SERIES)



- 1) The title of the node will initialize as **Flexion**. Once the action has been saved, the title will change to reflect the saved settings.
- 2) Select either the **Close Flexion** or **Open Flexion** button followed by the **Execute** button to actuate the gripper or the **Save Action** button to save the desired action to the program tree.
- 3) Input the payload of the object being gripped in the **Additional Payload** field. Set to 0.00 if releasing the object at the current node.
- 4) To select a different action after saving, tap the **Undo** button.

TOOLBAR NODE (E-SERIES ONLY)



- 1) Click the  logo to open or close the toolbar node.
- 2) Select the **Open Flexion** or **Close Flexion** button to actuate Flexion in the desired manner.



WARNING: The selected action will be performed immediately after the button is released. Ensure Flexion is positioned accordingly.

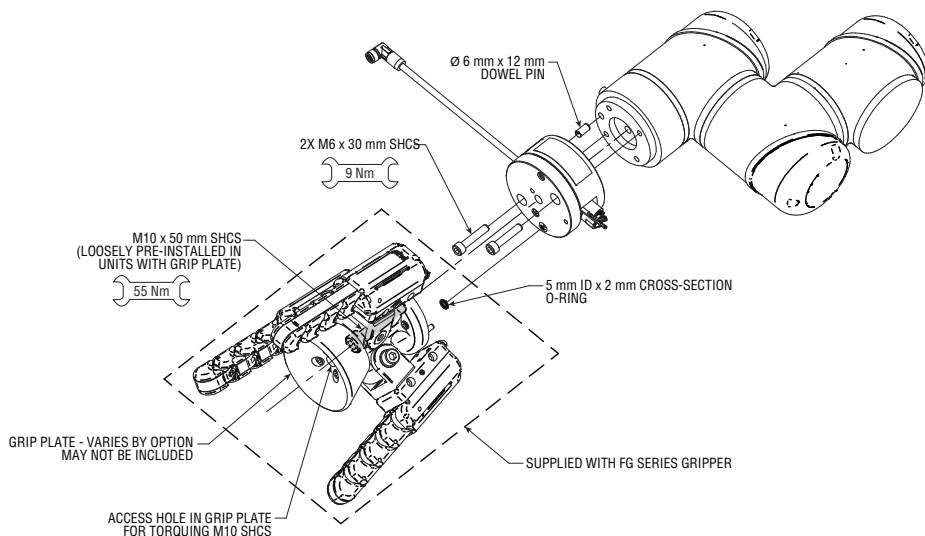
MOUNTING FLEXION TO THE PNEU-CONNECT

FG FLEXION GRIPPER:

1. Install $\varnothing$ 6 mm x 12 mm dowel pin into robot.
2. Place cuff and mounting plate assembly onto robot.
3. Fasten assembly to robot using 2X M6 x 30 mm SHCS (torque to 9 Nm).
4. Seat 5 mm ID O-ring into groove in assembly (small amount of grease on seal will help retain in groove).
5. Align and attach Series FG gripper to assembly using M10 x 50 mm SHCS (torque to 55 Nm).
Note that units with grip plates will have SHCS loosely pre-installed in gripper assembly, 8 mm hex of SHCS is accessed through clearance hole in grip plate.
6. Connect cable to I/O port of robot.
7. Connect air line (4 mm or 5/32 inch tubing) to air fitting.

Controllable through UR Tool Port

See next page.



ELECTRICAL SCHEMATICS: PNEU-CONNECT

M8 FEMALE 8-PIN CONNECTOR

The pinout diagrams below provide the Pneu-Connect wire assignments for direct I/O control without the software interface.

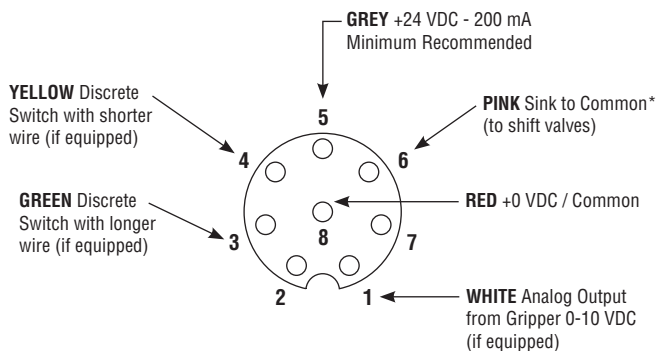
NOTE: A mating M8 8-Pin Male Cordset is required as a flying lead to the robot controller.

PNEU-CONNECT®

Operation: Pneu-Connect's internal circuitry uses a Digital Output to operate the gripper.

Requires three (3) connections to operate:

- 5 GREY +24 VDC
- 6 PINK "Sink" to Common to shift valves
- 8 RED +0 VDC / Common



*Sink Current is 5 mA with 24 V Supply

