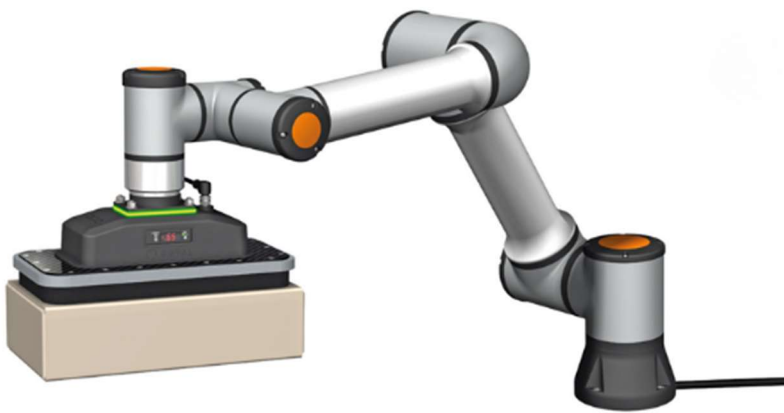


UR POLYSCOPE X CVGC PLUGIN – USER MANUAL

A guide destined to plugin users.

2791UM022 Rev. B
12/2025



COVAL
vacuum managers

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1 EDIT HISTORY

Revision	Date	Corresponding software version COVAL_CVGCBridge	Description
A	11/2025	V1.3.3	Document creation
B	12/2025	V1.3.3	First official release of the document

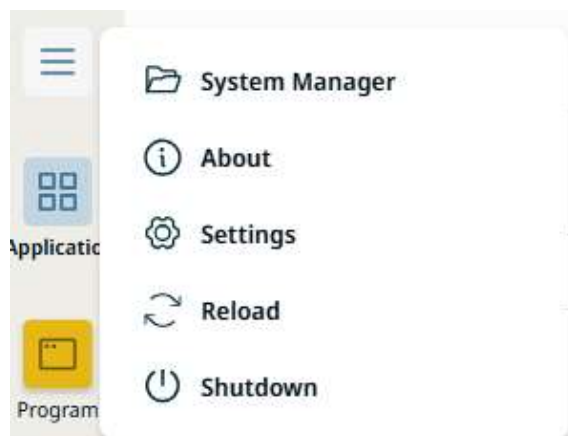
2 INTRODUCTION

This document aims to ease the installation and use of the CVGC Bridge plugin for UR robots under Polyscope X.

The robot will be taken as configured in English.

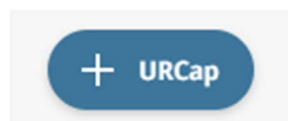
3 INSTALLATION

In the hamburger menu, select “System Manager”.



Access the “URCaps” menu. Unlock the settings with the administrator password if needed.

Select the “+URCap” button to install the plugin .urcapx file.



Select the .urcapx file then “Install”. The controller will reboot at the end of the install.

4 APPLICATION

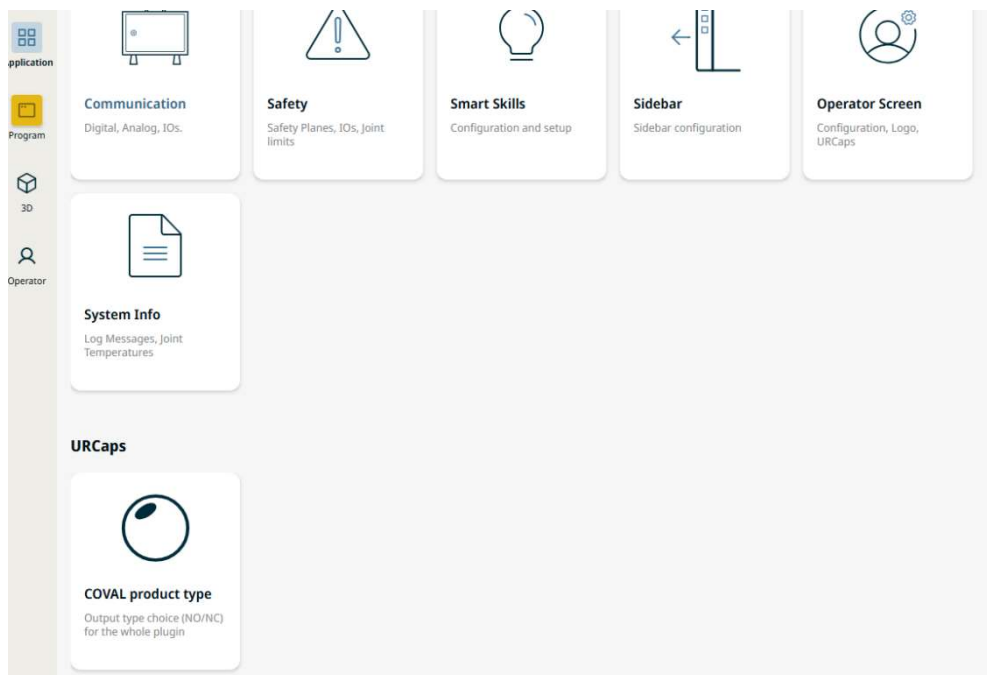
4.1 Description

The Application part of the plugin only serves to set the CVGC product type for the whole plugin.

This setting is mandatory **before any other use of the plugin**.

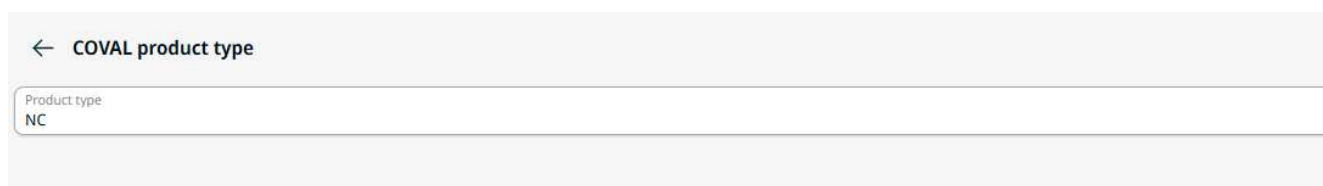
4.2 Product type configuration

After the plugin installation, select the “Application” icon in the left sidebar.



Scrolling down, you should see the URCap part of the application. Select the “COVAL product type” tile.

You should get the following dropdown menu:



Select the product type of your CVGC, knowing that:

- NC means “Normally Closed”. The product does not generate vacuum until it gets a command on its Input 0. It blows when it gets a command on its Input 1.
- NO means “Normally Open”. The product generates vacuum until it gets a command on its Input 0. It blows when it gets a command on its Input 1. Please always set both inputs at the same time when you want to blow, to avoid a double command.

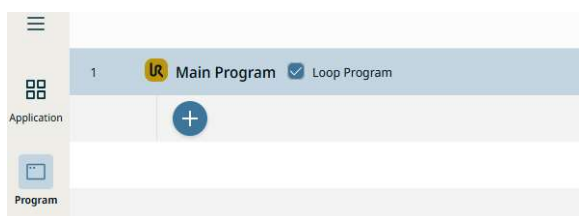
You only need to set the product type once.

5 PROGRAM

5.1 Adding instructions

Before adding any program node, be sure to set the product type (NO/NC) in the “Application” part of the plugin.

Select the “Program” icon in the left sidebar.

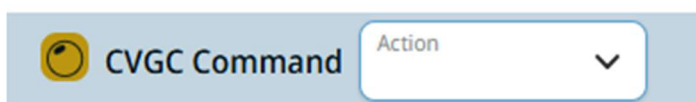


Select the “+” button to add an instruction.

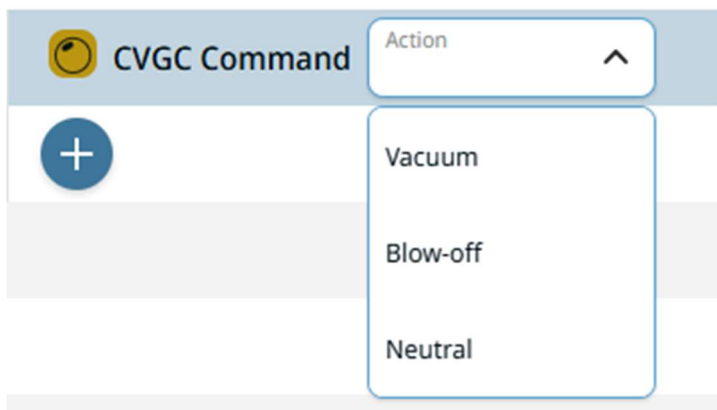
Select the tile “CVGC Command”.



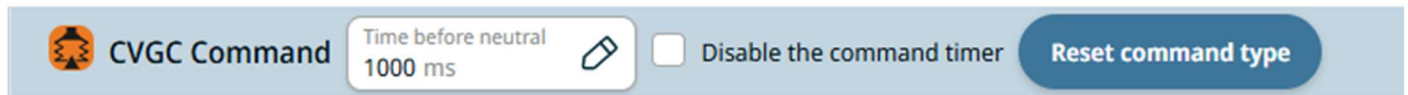
You will get the following program node:



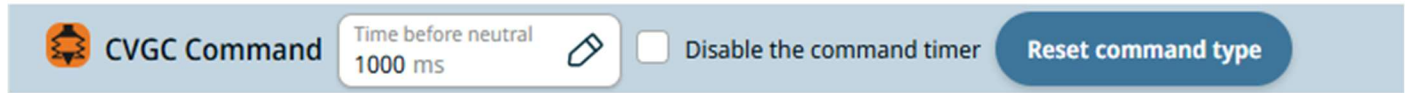
The yellow background means that the command is incomplete. Select your desired action in the dropdown menu “Action”.



If you select “Vacuum”, you will obtain a vacuum program node.






If you select “Blow-off”, you will obtain a blow-off program node.



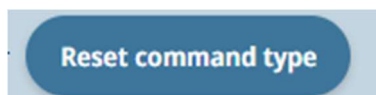
If you select “Neutral”, you will obtain a neutral program node.



These nodes are respectively displayed like so when not selected:

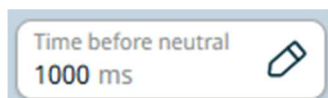
2	 Vacuum: COVAL CVGC
3	 Blow-off: COVAL CVGC
4	 Neutral: COVAL CVGC

If the wrong command is accidentally selected, it is possible to reset it by using the “Reset command type” button.



5.2 Timed mode

By default, the vacuum and blow-off commands last 1 second, then the product goes back to doing nothing. The command time can be modified in the “Time before neutral” textbox.



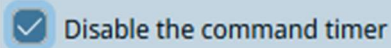
The command can last between 200ms and 3600000ms, so an hour.

The neutral command can not be timed, it only exists to set the CVGC to its neutral state regardless of its current state.

The global variables are only updated during timed mode.

5.3 Disabling the command timer

When the checkbox “Disable the command timer” is checked, the corresponding node changes the tool output to activate a vacuum or blow-off command until another command is set on top of it.



5.4 Examples

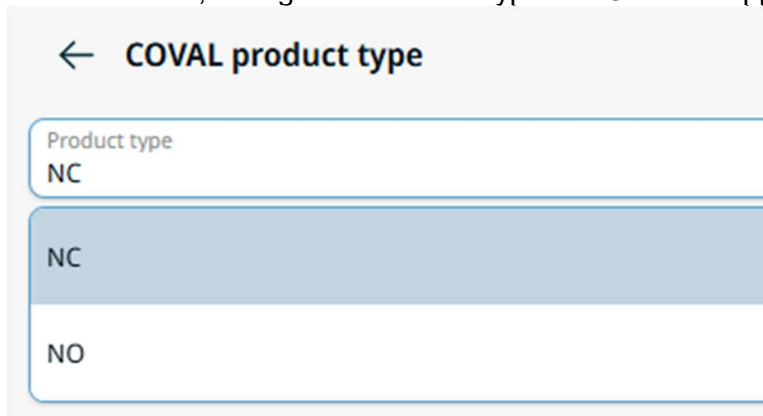
This part aims to give a program example using most of the plugin's instructions:

- Product type is NC;
- 3 seconds of vacuum;
- 3 seconds of blow-off;
- 3 seconds of neutral.

The program then loops.

5.4.1 First method

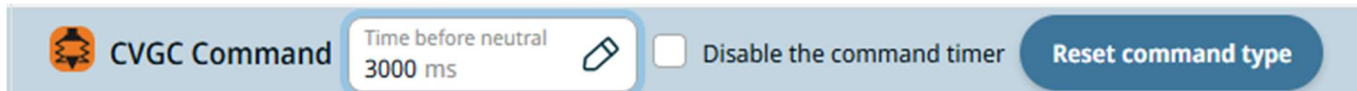
1. If it is not done, change the Product Type to NC in the “Application”.



2. Create the vacuum command and set it for 3 seconds.



3. Create the blow-off command and set it for 3 seconds.




4. Create your neutral command.




5. Create your Wait command for 3s. The program will loop after it.



The program should look like this:

 Vacuum: COVAL CVGC

 Blow-off: COVAL CVGC

 Neutral: COVAL CVGC

 Wait: 3.00 s

5.4.2 Second method

1. If it is not done yet, change the Product Type to NC in the “Application” tab.

← **COVAL product type**

Product type
NC



NC

NO


2. Create your vacuum command and disable the timer.

 CVGC Command ☒ Disable the command timer **Reset command type**



3. Create your Wait command for 3s.

 Wait Type Time 

4. Create your blow-off command and disable the timer.

 CVGC Command ☒ Disable the command timer **Reset command type**



5. Create your Wait command for 3s.

 Wait Type Time 









6. Create your neutral command.

 CVGC Command **Reset command type**

7. Create your Wait command for 3s. The program will loop after this.







 Wait Type Time 

The final program should look like this:

1	 Main Program <input checked="" type="checkbox"/> Loop Program
	
2	 Vacuum: COVAL CVGC
3	 Wait: 3.00 s
4	 Blow-off: COVAL CVGC
5	 Wait: 3.00 s
6	 Neutral: COVAL CVGC
7	 Wait: 3.00 s

5.4.3 Program waiting for a part grip to continue

It is possible to wait for a “part gripped” signal to continue with the program. In order to do this, use the “Wait” function with the “Input signal” option.

1	 Main Program <input checked="" type="checkbox"/> Loop Program
	
2	 Vacuum: COVAL CVGC
3	 Wait: DI 0 == HI
4	 Blow-off: COVAL CVGC
5	 Wait: DI 0 == LO

5.5 Variables and product outputs

COVAL program nodes create global variables that change during program execution. Those variables are only updated when timed mode is active.

5.5.1 *coval_part_gripped*

The *coval_part_gripped* variable becomes True when the product sends the part gripped signal. The Tool Digital Input signal “DI 0” becomes 1 too in that case.

5.5.2 *coval_part_lost*

The *coval_part_lost* variable becomes True when the products unintentionally loses a previously gripped part.

5.5.3 *coval_grip_count*

The *coval_grip_count* variable counts the parts taken from the beginning of the program execution.

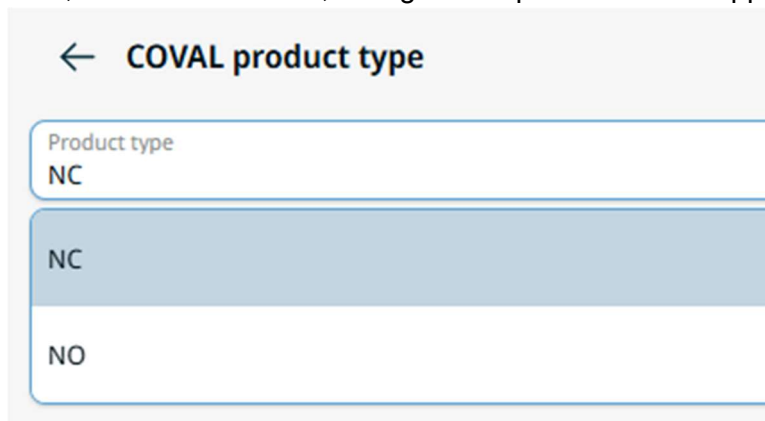
5.5.4 *coval_loss_count*

The *coval_loss_count* variable counts the parts unintentionally lost from the beginning of the program execution.

6 SMARTSKILL

6.1 Configuration

First, if it is still not done, configure the product in the “Application” tab.



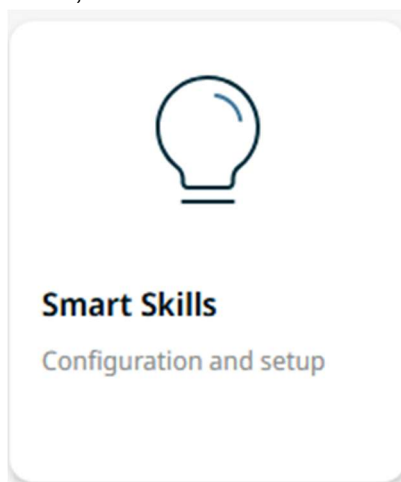
← **COVAL product type**

Product type
NC

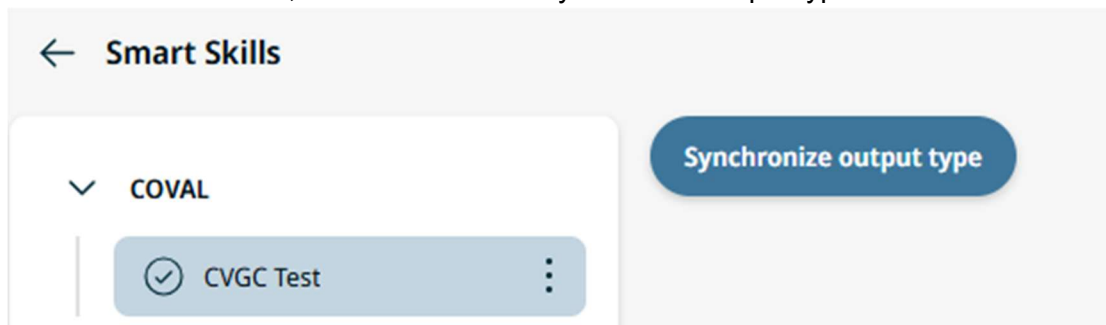
NC

NO

Then, select the “Smart Skills” tile in the same “Application” tab.



In the CVGC Test tab, select the button “Synchronize output type”.



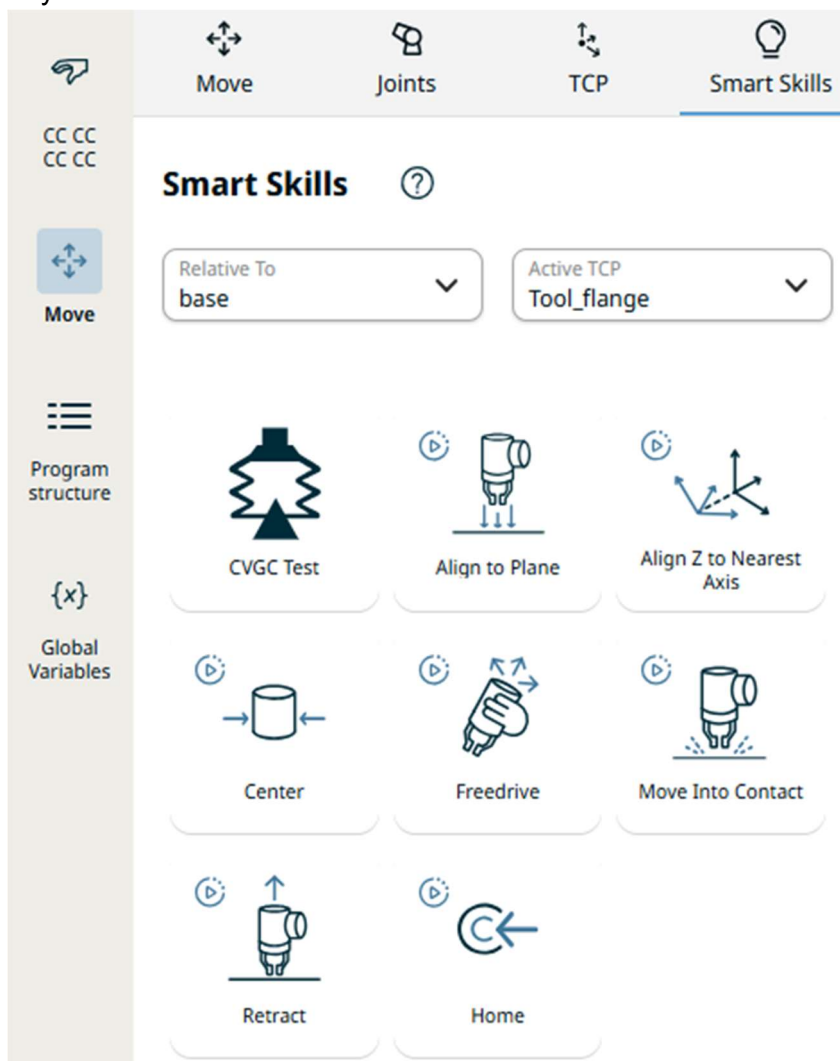
This step is mandatory even if the CVGC is already of the default (NC) product type.

6.2 Using the Smart Skill

Select “Move” on the right sidebar, then navigate to the “Smart Skills” tab.

Select the “CVGC Test” tile to start a 30-minute vacuum command.

If the tile is unselected during the 30 minutes, the product will blow for five seconds then go back to neutral. If the whole 30 minutes of vacuum happen without interruption, the product will go back to neutral without any blow-off.



7 TROUBLESHOOTING

7.1 The vacuum commands are inverted

If the product generates vacuum in a neutral state and stops when instructed to generate vacuum, then its product type has not been set correctly in “Application”. Please follow the instructions noted in 4.2 for more information on that.

Please correct the setting in “Application”, then use the “Reset command type” button on each COVAL program node to regenerate the code with the right product type.

A blue button with rounded corners and a white border, containing the text "Reset command type" in white. It is positioned on a light blue rectangular background.

Reset command type

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