HOW TO SET UP A PALLETIZING DEMONSTRATION

- USING THE DEMO PROGRAM TEMPLATE -

Disclaimer : The installer is responsible for the safe installation and commissioning of the Palletizer. Robotiq accepts no liability for damage or injury or any legal responsibility incurred directly or indirectly from the use of this product. The user (installer and operator) shall observe safe and lawful practices including but not limited to those set forth in this document. Always comply with local and/or national laws, regulations and directives on automation safety and general machine safety. Do not base your risk assessment solely on the information provided in this presentation.

⚠ Make sure to plan safety measures around the palletizing solution at any moment of the demonstration.

⚠ A conveyor with guiding rails or another centering dispositive is required to ensure the box is in its ideal pick position. This is necessary in order to maintain repeatability and precision throughout the demonstration session.

⚠ Box deformation may induce imprecision in the palletizing process. Use reinforced boxes or plastic containers to ensure repeatability since regular cardboard will deteriorate after numerous cycles.

1. Program description

This program is made for demonstration purposes. In its default setting, the palletizer will pick boxes from the left pallet (depalletizing) and place them on the right pallet (palletizing) in a predefined pattern. This process is reversed as the program repeats itself.

The first cycle goes as follows:

1. The robot moves the vacuum gripper over a box on the left pallet.
2. The vacuum gripper picks the box.
3. The robot places the box in the centering dispositive.
4. The robot moves the vacuum gripper over the pick position.
5. The box is picked again by the robot when it reaches the box sensor.
6. The robot moves the box to a predefined emplacement on the right pallet.
7. The vacuum gripper releases the box.
8. The robot returns the vacuum gripper over the left pallet via a teached waypoint.

This program is designed to simulate pallet replacement on each side of the palletizer. This means the pallets do not have to be moved during the demonstration session.

2. How to start a demonstration

This program is designed to start with boxes on the left pallet. To start with boxes on the right pallet, the *R_PalDepal* variable must be set to **True**.

The demo program consists of two palletizing nodes, the first one (left side) being set to "Depalletizing" , the second one (right side) being set to "Palletizing" by default. **The user must verify if the settings correspond to the right task each time** a new demonstration is started.

1. Make sure the variable *R_PalDepal* is set to **False** (if boxes are on the left pallet at the beginning of the demonstration).

2. In each Palletizing node, go to **Settings** and make sure the left *Palletizing* node is set to "Depalletizing" and the right *Palletizing* node is set to "Palletizing" (reverse the settings if the boxes start on the right side).

3. For the Palletizing node set to *Depalletizing*, set the box attributes, pallet size, palletizing pattern and settings. (See section 5.1.1. Palletizer node in the instruction manual.) **Do not set a drop position as this will come in step 5.**

4. For the Palletizing node set to *Palletizing,* set the box attributes, pallet size, palletizing pattern and settings (See section 5.1.1 in the instruction manual.) **Do not set a pick position as this will come in step 5.**

5. Here is how to set the relative moves over the centering dispositive:

   Best practice : **Teach each position going from 3 to 1** with a box at the end of the gripper at all times. Teaching this way will reduce imprecision and prevent collisions between the box and the centering dispositive.

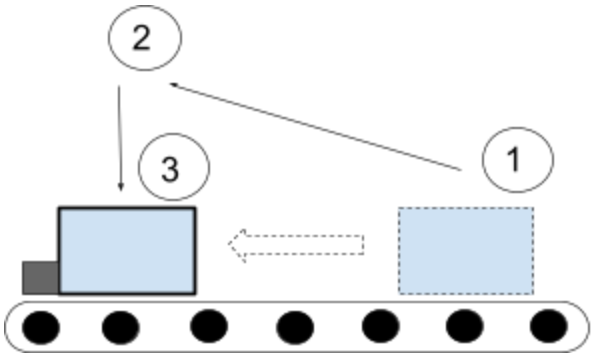


Figure 1: Box and gripper movement during the demonstration

- ***Two_to_three*** : From position 2 to position 3

  Start in position 3, gripping a box. Teach the destination (3) and then the start (2) position.

- ***One_to_two*** : From position 1 to position 2

  Still gripping a box, set position 2 as the destination position and position 1 as the start position.

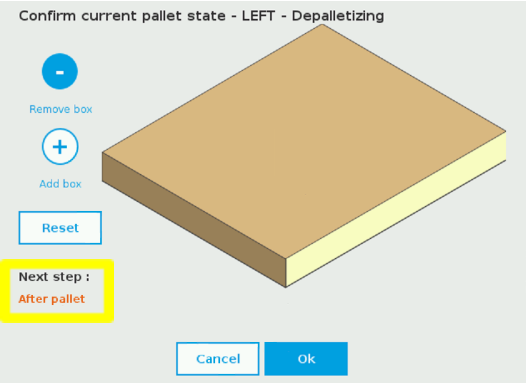
  Also set position 1 as the drop or pick position for the palletizing nodes (in the **BOX** section). A conditional instruction in the program will then make sure the robot recognizes position 1 as the drop position (while depalletizing) and position 3 as the pick position (while palletizing).

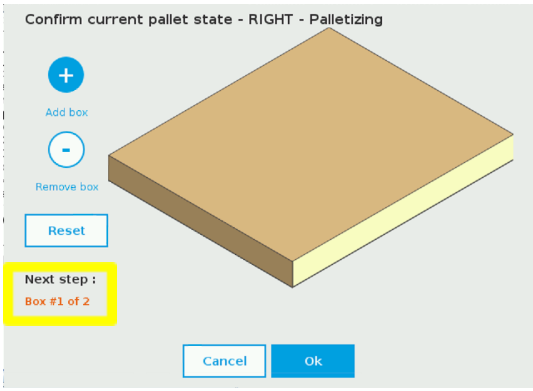
6. Set the ***Transition*** waypoint (near the end of the program) in a safe position between the two pallets, a bit higher than the palletizer carriage.

7. Make sure to stay clear from the palletizing solution and tap the **Play** button.

In case you need to place boxes on a pallet to start the demonstration:

Set the pallet viewer as follows:
- On the depalletizing side, empty the pallet and, using to **+** and **-** buttons, set the next step to **After pallet**.
- On the palletizing side, empty the pallet and, using to **+** and **-** buttons, set the next step to **Box #1**.





The palletizing solution will then wait for boxes to arrive in the centering dispositive to place them on the palletizing side. Once the pallet is completed, the demonstration will continue without any intervention required.

Otherwise:

8. Set the pallet viewer according to the number of boxes on each pallet.

9. Tap **Ok**.

3. Glossary

Variables

firstloop : Shows if the program is in its first loop (**True**). Possible values : **True** / **False**

L_TaskCompleted : Shows if the palletization or depalletization task is completed on the left pallet. Possible values : **True** / **False**

R_TaskCompleted : Shows if the palletization or depalletization task is completed on the right pallet. Possible values : **True** / **False**

R_PalDepal : Shows if the right pallet is to be depalletized. Possible values : **True** / **False**

Moves

Two_to_three : Relative move from position 2 to position 3 (see figure on page 3).

One_to_two : Relative move from position 1 to position 2 (see figure on page 3).

Transition : Waypoint between the pallets to prevent unwanted trajectories.

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