

Fanuc CRX 10IA Collaborative Robot: Pick and Place with Gripper

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Program: Pick and Place with Gripper

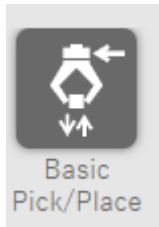
Code Block: Basic Pick/Place

Overview: Allows the user to provide Pick Location, Retreat Vertical Position and an Open/Close Claw in one block.

Without this Code Block a simple Pick/Place could take up to four code blocks to create:

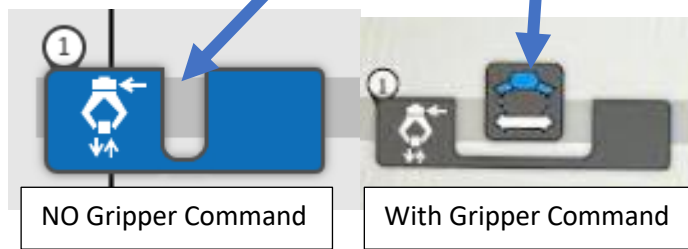
1. Approach Point Above the Object
2. Z Approach Vertical to the Object
3. Close/Open Gripper
4. Z Retreat Vertical from Pick/Drop Location

Icons



Programming Tab Icon

Gripper Open/Close Code Block goes in opening



NO Gripper Command

With Gripper Command

Timeline Icon

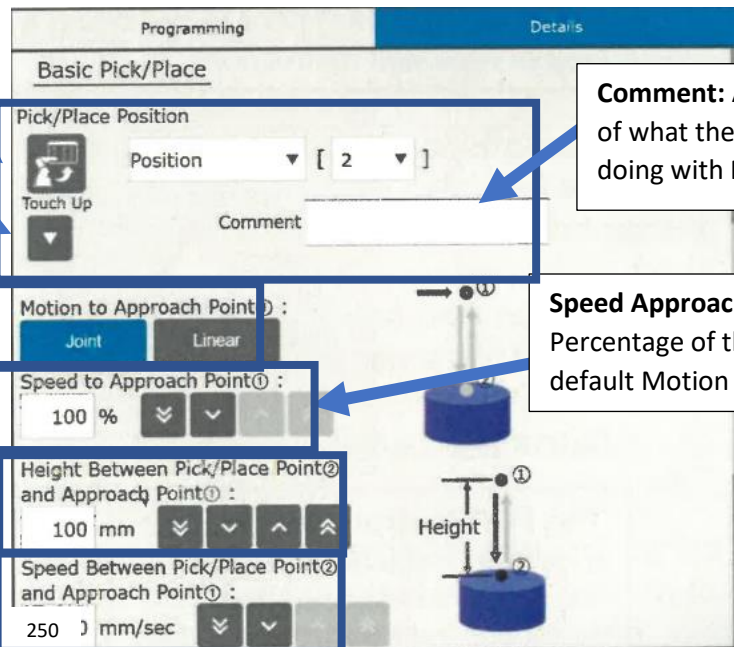
Details Menu

Touch Up: Set Position to the Pick/Place Position

Drop Down Arrow: See/Set Coordinate Positions

Motion Type Setting: Set Joint or Linear

Height Setting of End Effector from Pick/Place Position: Set the Retreat distance after pick place/drop place



Comment: Add a note of what the robot is doing with Pick/Place

Speed Approach: Percentage of the default Motion Speed

Speed Between Pick/Place Point and Approach Point: Set the travel speed after pick place/drop place. NOTE: this may not exceed the max speed limit based on the collaborative settings

Code Block: Gripper 2 Point

Model: OnRobot: RG6



ICON

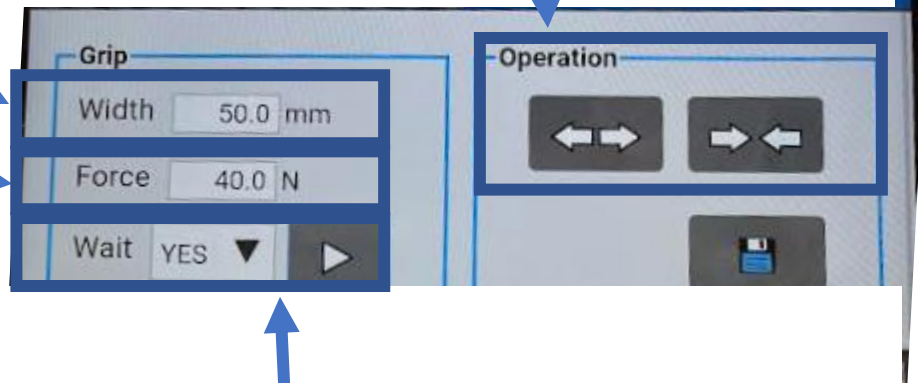
Operation: 2 Functions

1. Set the Function within the program for the jaw to open/close
2. Manual Open/Close Jaw: Hold Button Down to add/subtract Set Width Value to Gripper current position

Details Tab:

Width: Set opening for the claw

Force: Sensor set to Newton Force when closing Jaws to not crush the pick object



Play: Open/Close jaws to set Width Value

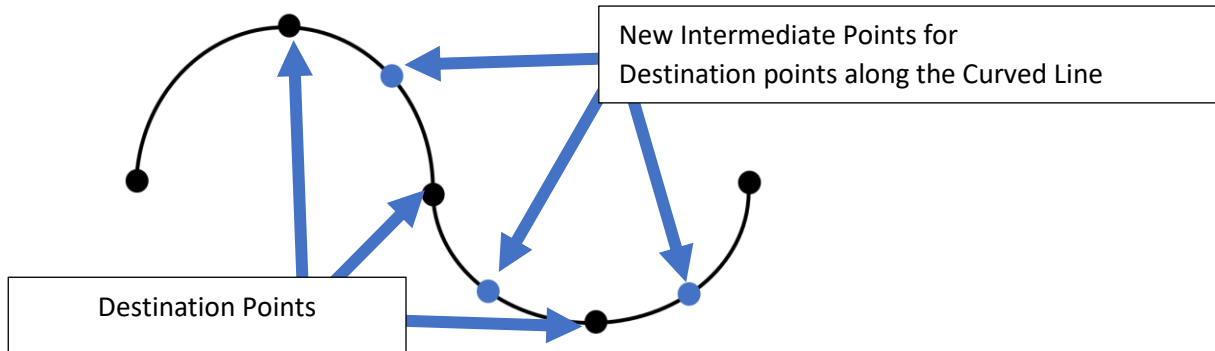
Program: Pick/Place

Objective: Using the Letter Blocks to pick and place the blocks along the Curved Line Points

Create the following Program

Consider the following when Creating the Program

- **Call Command:** Creating multiple Programs. Using a Main Program to Call multiple small programs to keep the timeline organized
- **Labels and Jump Command:** Placing Labels a different parts of your program to Jump to avoid having to repeat steps. i.e. pick up location and traversing straight to curved line: Set Label before and after these two commands with Jump Commands calling these labels
- **Curved Line:** After the first and last place. New Intermediate positions will need to be taught when only traversing a 90-degree versus the 180-degree arc



Gripper: Max Opening 50mm

1. Start with Calling: Home Program
2. Jog Robot to Pick up location marked on table: Compensate for
 - a. Any Barriers on the way to pick up location (i.e. angled metal table)
 - b. Jog slowing when aligning the claw to the block (Avoid Manual Guided Teaching when setting final height of gripper to block)
3. Pick up Block: Compensate for
 - a. the angle of the claw closing and the table
 - b. retreat distance
4. Move in a Straight Path to the start of the Curved Line worksheet taped to the table
5. Follow the curve to the end point
6. Place Block on the end dot of the Curved Line
 - a. Max Opening 50mm
 - b. Avoid Manual Guided Teaching when setting final height of gripper to block
 - c. the angle of the claw opening and the table
 - d. retreat distance
7. Follow the Curved Line back to the start of the Curve line
8. Move in a straight path back to the pick part
9. Pick up Block
 - a. Any Barriers on the way to pick up location (i.e. angled metal table)
 - b. Jog slowing when aligning the claw to the block (Avoid Manual Guided Teaching when setting final height of gripper to block)
10. Repeat Steps 5-9 Placing a block on each dot of the curved line
11. When 5 blocks have been placed Call: Home Program
 - a. Compensate for any Barriers on the way back to the Home up location (i.e. angled metal table)

Submission: Take a video of programming running and screenshot of code > Share Video and Code with Teacher