QuickStart Guide to QuickBot Cell Operation

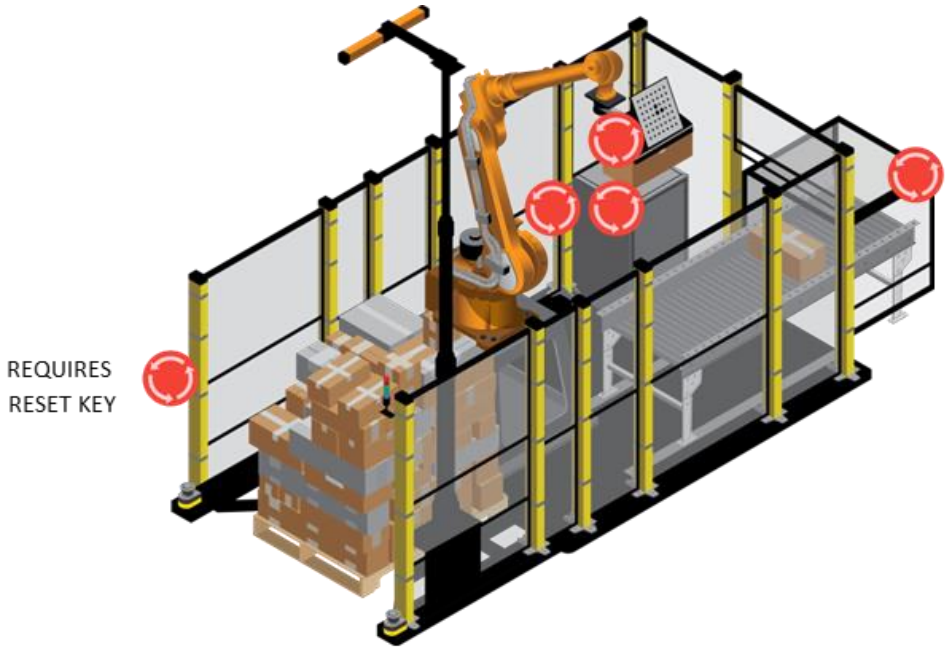
This QuickStart guide provides an in-depth overview of essential day-to-day tasks and information operators need to efficiently and safely operate the QuickBot cell. It includes essential safety measures and basic operation procedures. For more detailed information, please consult the full manual (link below).

SCAN QR CODE FOR LINK TO THE LATEST MANUAL

https://mujin-corp.com/quickbot-manual/

Safety

Safety is paramount when operating the QuickBot cell. Always be aware of the Emergency Stop (E-stop) button's location (shown below), which immediately halts all cell operations in case of emergencies or potential hazards. To resume operation, reset the E-stop button and address any issues before restarting the system. Also, ensure that unauthorized personnel do not enter the protective zone surrounding the QuickBot cell during operation to avoid accidents and injuries. Follow Lockout/Tagout (LOTO) procedures when performing tasks that require de-energizing the equipment.



Preparing for Operation:

- Set the manufacturer pendant and controller mode selectors to Auto mode.
- Set the Mujin pendant mode selector to Auto and Production Mode.
- Verify the conveyor is clear of any boxes or objects.
- Ensure the safe zone and robot cell is clear of any personnel.
- Ensure the pallet or AGV containing the pallet is in the proper position.
- Verify all E-stops are in the unpressed position.
- Check the Mujin pendant for any warnings or errors. If all warnings or errors are ready to be cleared and all the above conditions are satisfied, press the blue "Reset" push-button.
- Press and hold the green "Start" push-button for 4 seconds. The buzzer should turn on for 3 seconds, and the stack light should turn green to indicate that the production cycle has begun.

Manual Load/Unload Pallet (if applicable):

To manually load or unload a pallet of material in the robot cell, follow these steps:

- Press the "Request to Enter" button on the push-button box and wait for the robot to be in the home position and the stack light to change to solid red.
- Press the emergency E-stop at the entrance of the cell and remove the reset key to safely enter the cell.
- Remove the existing pallet in the cell to make room for the new pallet of material.
- Manually load the new pallet of material into the robot cell and position it correctly. The pallet should block the first pallet detection photo-eye (furthest away from the robot) but not block the second (closest to the robot). If it is blocking the second photo-eye, reposition the pallet.
- Exit the cell, release the emergency E-stop button by inserting and twisting the key.

- Ensure all safety areas are clear of personnel and obstruction, then press the "Reset" button.
- Press and hold the "Start" button to start the production cycle.

Automated Guided Vehicle (AGV) Load/Unload (if applicable):

AGV Load/Unload (if applicable): The QuickBot cell can interact with an AGV to automatically load and unload pallets. Ensure the AGV is programmed correctly and the pallet is centered.

For both load and unload sequences, signals initiate AGV movement. The AGV positions itself outside safety zones, and the robot moves to its home position. Once ready, another signal allows the AGV to enter the cell. Safety scanners mute during this process and unmute once the AGV is in position (loading) or has removed the pallet and exited the safe zones (unloading).

Ensure safety areas are clear of personnel and obstructions. Note that safety zones may be muted during AGV interaction, but exercise caution in these areas. In case of issues, use the E-stop button and verify AGV programming before proceeding.

Pausing Production Cycle:

During operation, it may be necessary to pause the production cycle to perform adjustments or address any issues that may arise. The "Request to Enter" button can be used to safely pause the production cycle and temporarily stop the robot and conveyor. To properly pause the production cycle, the operator should press the "Request to Enter" button on the push-button box. The robot will complete its current program tasks and move to the home position, and the conveyor should stop moving. The stack light will change to a solid red color, indicating that the production cycle is temporarily paused.

Resume Production Cycle:

After the necessary adjustments have been made, the operator can resume the production cycle by ensuring that the area around the robot is clear of any obstructions and that there are no objects or personnel in the robot cell or safe zones. The operator should press the "Reset" button, then press and hold the "Start" button for 4 seconds. The buzzer should sound for three seconds, and the stack light should turn green to indicate that the production cycle has begun. The conveyor and robot will start moving again, and the operator should verify that the robot is moving correctly and performing the necessary tasks.

If there are any issues with the operation of the robot cell after resuming, the operator should stop the cycle immediately by using the "Request to Enter" button or E-stop button, as appropriate. The operator should then diagnose and perform the necessary maintenance or adjustments before attempting to resume the production cycle again.

Error Recovery:

To recover from an error, the operator should first identify the error message displayed on the Mujin Pendant. This information will provide information on the cause of the error. Once the error has been identified, the operator should take the appropriate action, following the recommended procedures to ensure that the error is resolved with minimal disruption.

It is important to note that errors can be prevented by following the recommended maintenance procedures, performing regular checks, and ensuring proper training for all personnel operating the QuickBot cell.

Manual Jogging of Robot and Gripper Chuck/Unchuck:

The Manual Robot Jog and Gripper Screen is used to control the robot and its gripper. This feature allows operators to move the robot in different coordinate systems, including the Joint, Robot, World, Tool, and User Coordinate Systems. Manual jogging can be useful for diagnosing issues or performing maintenance tasks that require precise control of the robot.

To access the Manual Robot Jog and Gripper Screen, follow these steps:

- Press the "Manual Control" button on the Mujin Pendant.
- Select the "Jogging" tab.
- Choose the desired coordinate system for jogging.
- Use the arrow buttons on the Mujin Pendant to move the robot in the selected coordinate system. Be cautious and pay close attention to the robot's movement, as it is not aware of its surroundings during manual jogging.

Gripper Chuck/Unchuck:

In addition to manual jogging, the Gripper Screen allows operators to control the gripper's chucking and unchucking actions manually. This can be useful for troubleshooting or maintenance tasks that require manual control over the gripper.

To control the gripper chuck and unchuck actions, follow these steps:

- Press the "Manual Control" button on the Mujin Pendant.
- Select the "Gripper" tab.
- Press the "Chuck" button to close the gripper.
- Press the "Unchuck" button to open the gripper.

Always exercise caution when manually controlling the robot and gripper, as they are not aware of their surroundings during manual operation. Ensure that the area around the robot is clear of obstructions and personnel before jogging or controlling the gripper manually.

In conclusion, this QuickStart guide covers the essential safety measures and basic operation procedures for the QuickBot cell. Operators should always prioritize safety, follow the recommended maintenance procedures, and address any issues promptly to ensure smooth and efficient operation. For more detailed information and guidance, please consult the full manual.