

HYRobotics Robot Training Program

LEVEL 1

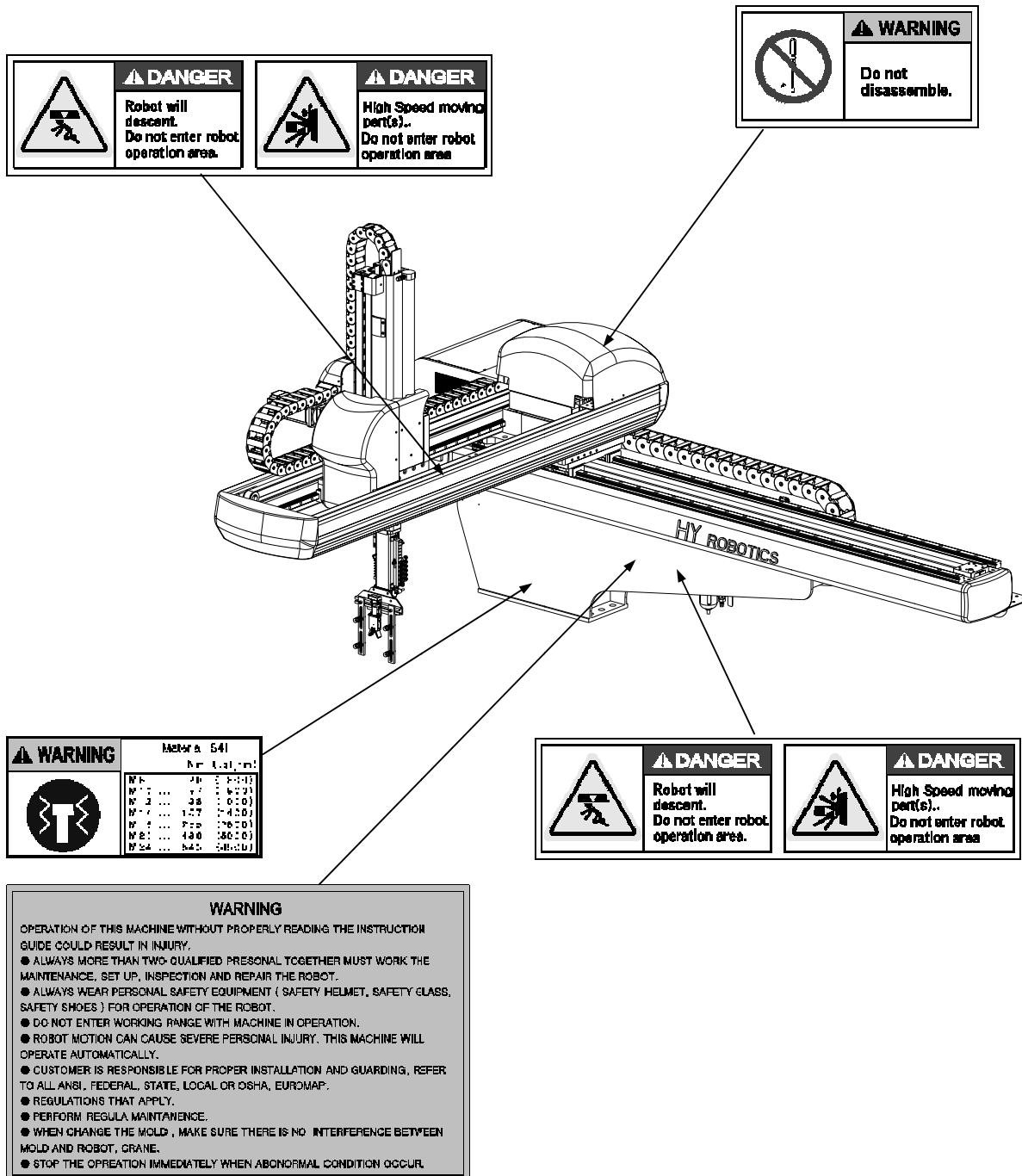
(Additional Material (Hello Robotics !) required for Plastics Molding Industry)

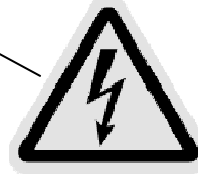
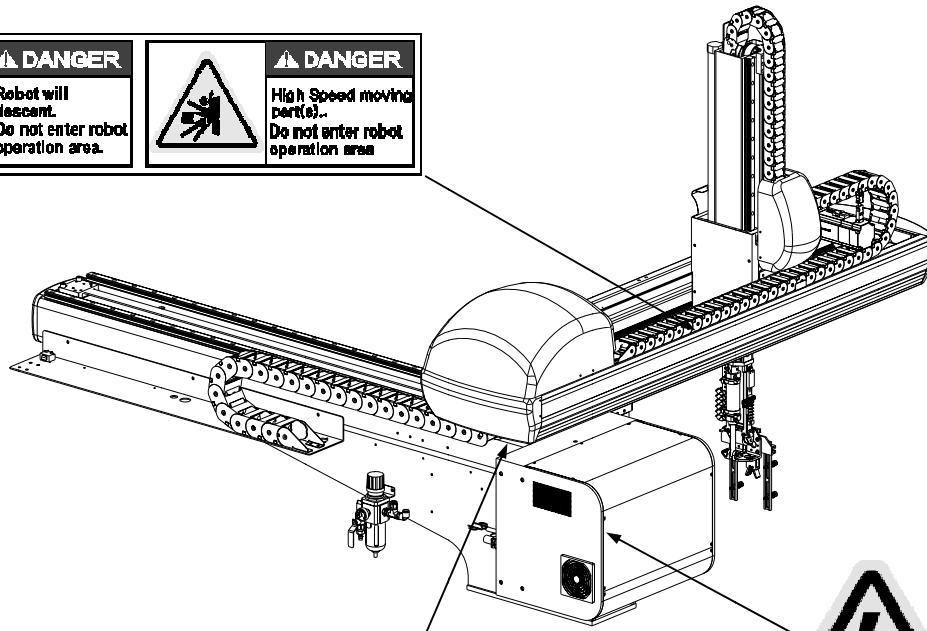
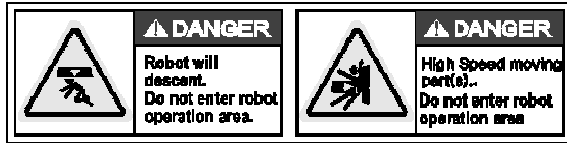
HYROBOTICS CORP

WWW.HYROBOTICS.COM

Safety Signs

There are safety signs on the robot like below figures. Respect and follow the messages on these signs when operating or performing maintenance on the robot. Do not peel off these labels or signs

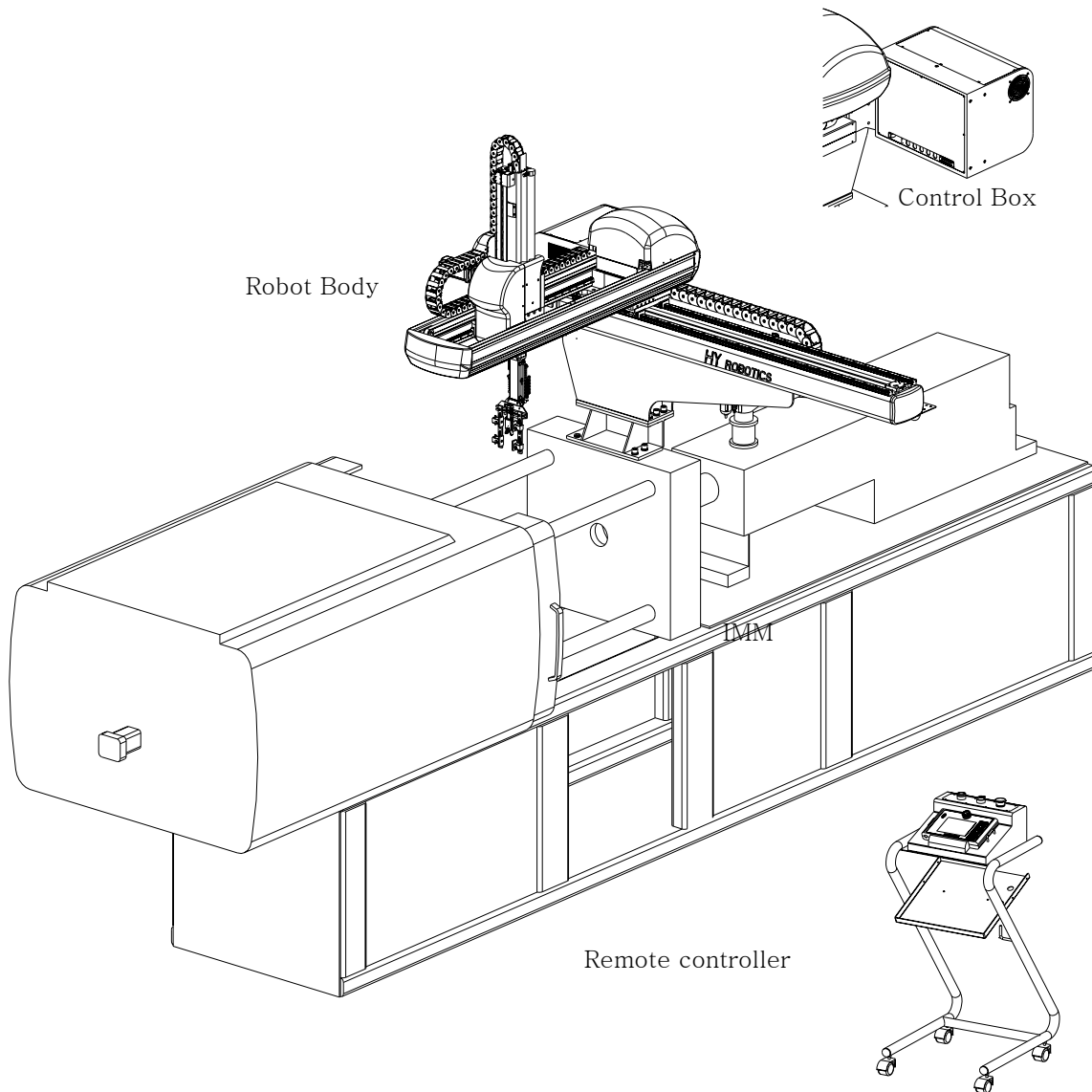




1.1 About Robot

This Robot is consisted of

- Robot Body
- Interlock and Control Box
- Handy Controller



1.2 Robot Body

Main Arm

For Up/Down Movement

Kick

Main and Sub Arm

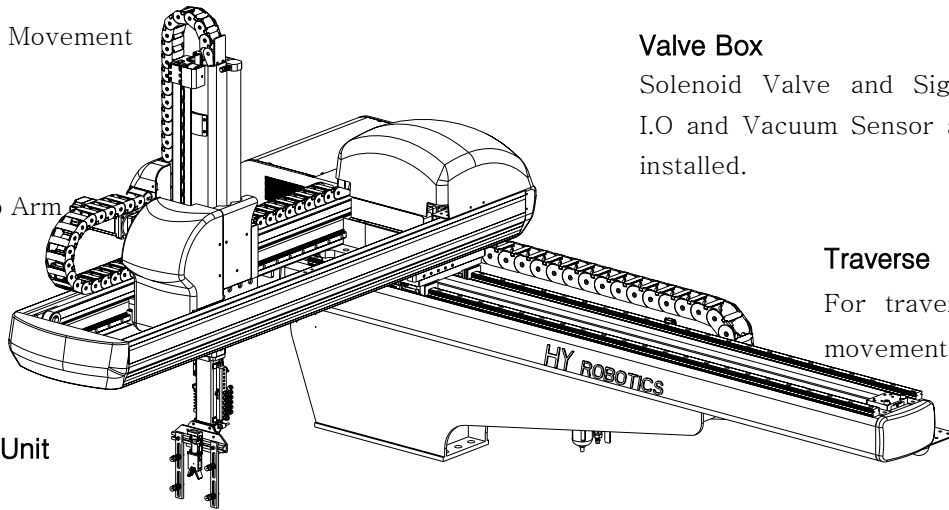
Valve Box

Solenoid Valve and Signal I.O and Vacuum Sensor are installed.

Traverse

For traverse movement

EOAT Unit

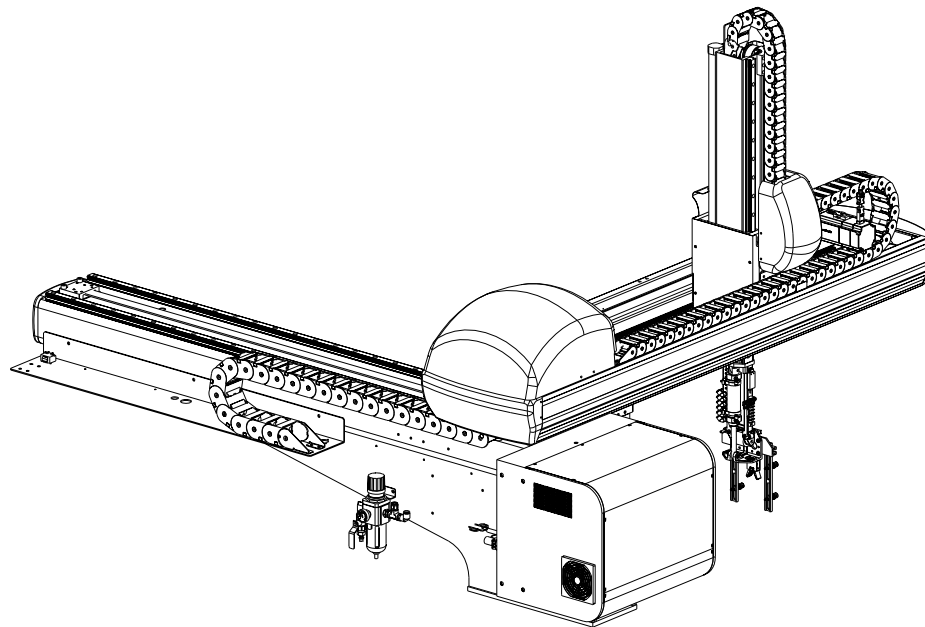


Regulator

Regulator and air filter are installed.

Control Box

Servo Controller etc. are installed.



1.3 Remote Controller (Stand Removed after 2010 Version to minimize foot print)

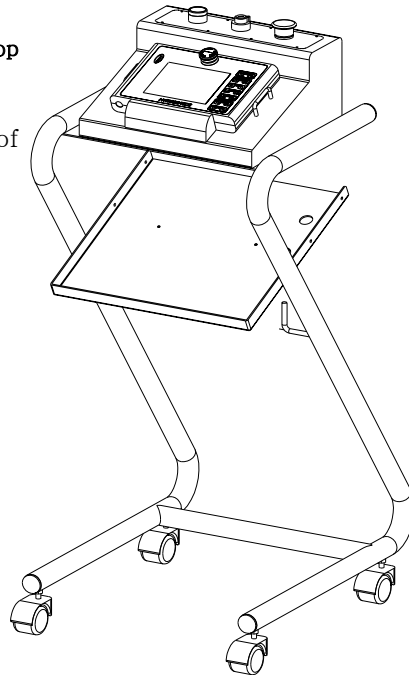
Power Lamp

Power on display

Emergency system stop button

Emergency stopping of take-out robot

LCD touch screen



Power Switch

전원을 ON/OFF

Emergency power interception button

Emergency stopping of take-out robot

Manual Button

Manual Button

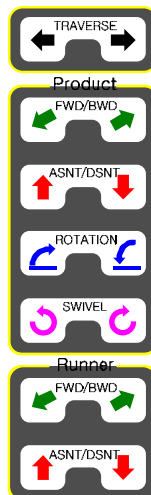
Pressing each relevant button moves each axis privately.

Traverse - (Traverse Return)

Main Arm Kick+ (Main Arm Kick)

Main Arm Up/down- (Main Arm Up)

Rotation- (Rotation Return)



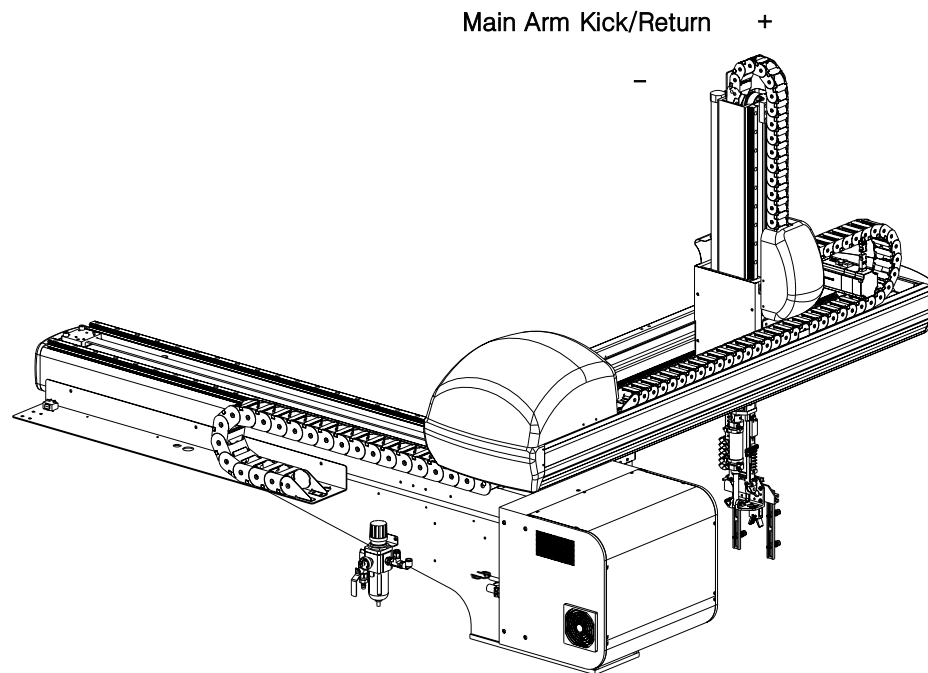
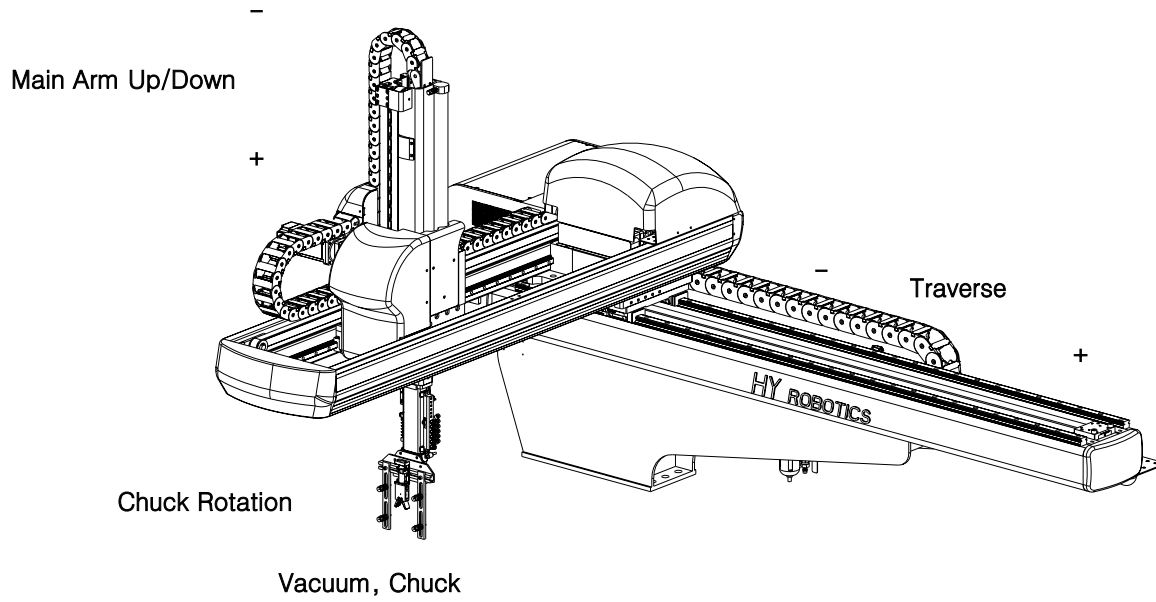
Traverse+ (Traverse)

Main Arm Kick- (Main Arm Kick Return)

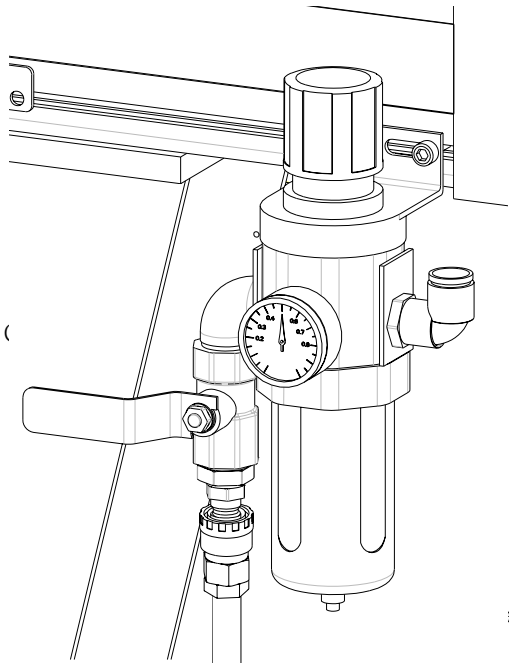
Main Arm Up/down+ (Main Arm Down)

Rotation+ (Rotation)

1.4 Each Axis



Air regulator



Make sure the robot arm is retracted
Beware that the robot may move suddenly
as the system is pressurized.

2. Turn Cock counterclockwise

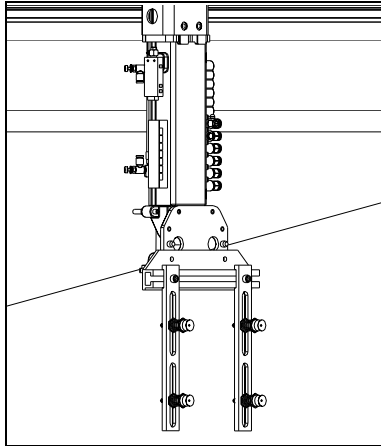
3. Pull Up the adjusting knob and adjust the
pressure to [5.9×10^5 Pa(Gauge) or 6
kg/cm²] and Push down to set

* Remove water from air regulator regularly
if required.

er

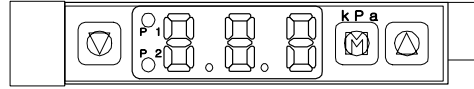
Plug

Vacuum Verification Sensor Adjustment



[Main Arm Up/Down]

Set Button



Digital Display

Mode Selection

Vacuum Sensitivity Adjustment (Normally not required)

● STEP 1



Press and at the same time
P1 will blink.

● STEP 2



Press or , set pressure -60(kpa) .

● STEP 3

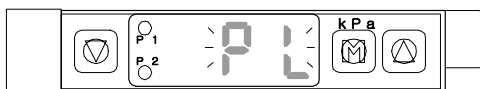


Press more than 1 seconds.
Set up finished, and LED will display current Vacuum pressure.



Lock and Unlock for Vacuum Sensor value

Locking Vacuum Sensor Value will prevent setup value from changing by any mistake



Press more than 3 seconds. “PL” will blink twice and Sensor will lock.



Press more than 3 seconds “PA” will blink twice and sensor will unlock.

Before Starting (Preventative Maintenance Schedule)

Before you start daily operation of the robot, perform preventive maintenance.

– Daily

- Check air Pressure is $5 \sim 6.5 \text{ kg/cm}^2$ or $5 \sim 7 \times 10^5 \text{ Pa}$ (Gauge)]
- Inspecting filter regulator unit : Check the bowl for water and contamination and for correct pressure.
- Check Hoses and Cables : Check for kinks, cuts and tears. Replace as needed.
- Inspecting Shock absorbers and cushions. : Make sure the are operating smoothly
- Checking Gripper return spring : Check that the gripper return spring is operating properly
- Checking residue buildup: Inspect the shafts and gripper for buildup of plastic residue. Clean as necessary.
- Checking Interlock functions. : Make sure the interlock functions are working properly.
- Checking part verification: Check that the parts verification is working properly.
- Check Suction cups

– Weekly or as often as needed.

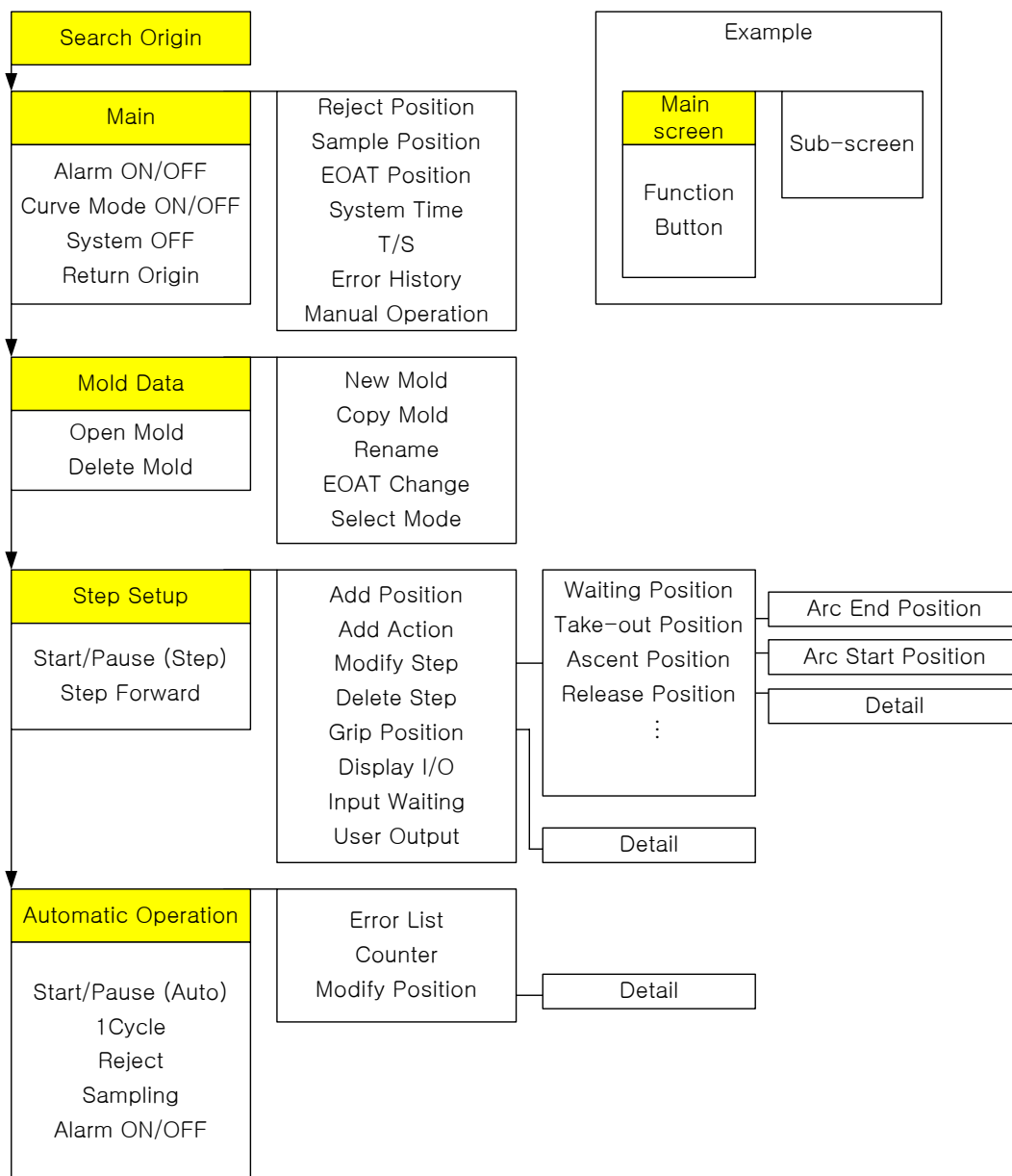
- Check EOAT mounting screw including gripper : Check EOAT screw for tightness . Tighten as required.
- Inspecting fittings and mounting hardware : Check all fittings, screws, and component mounting hardware for tightness. Tighten as needed.
- Check the safety latch cylinder for Down. : Make sure the safety latch cylinder is working properly
- Testing the Emergency Stop Button. : Verify that the emergency stop works properly.

– Monthly

- Inspecting the filter regulator : Check that the filter regulator is set at the correct pressure. Check the filter and clean or replace it as needed.
- Checking the solenoid valves : Check that the solenoid Valves are working properly. Replace as needed.
- Checking all electrical cables : Inspect all electrical cables for cuts, burns and replace as required
- Checking the exhaust filter.
- Inspecting electrical terminal : Check all electrical terminals for tightness, adjust as required.

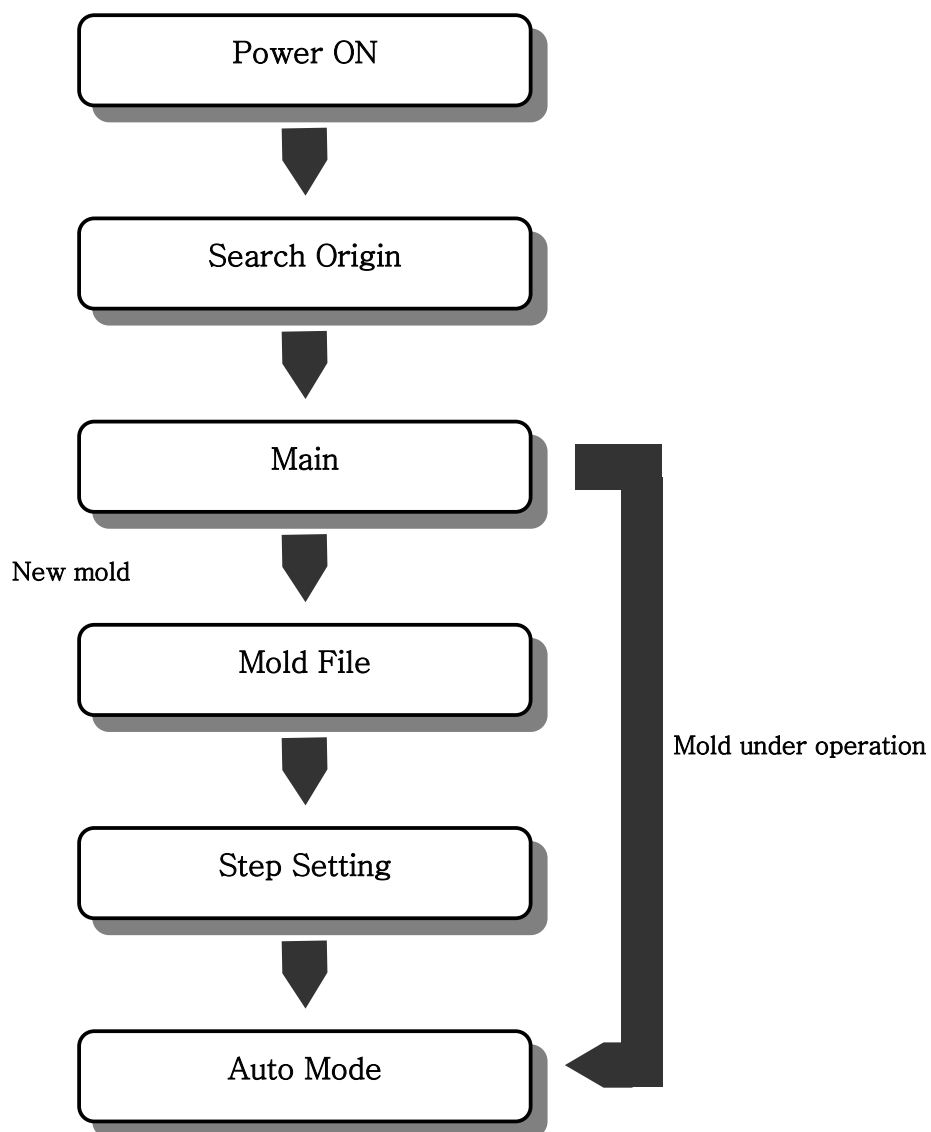
- Inspect each axis cylinder, make sure operation and the cushion is working properly
- Inspect body for any damage during mold set up or other operation

• Screen Structure

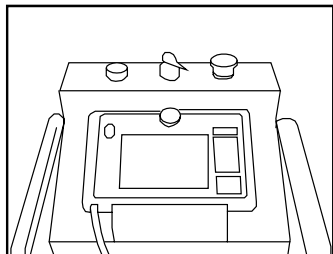


STEP FOR START-UP

Follow step for Auto Operation

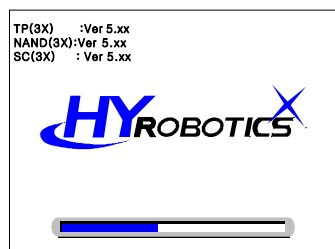


● Simple Start Up



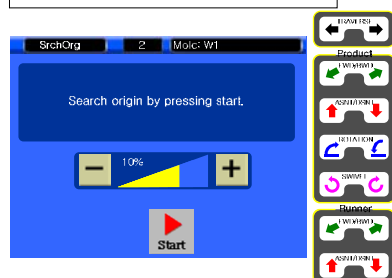
● STEP 1

Turn On Power..




● STEP 2

It will display System Version. And move to origin screen.



● STEP 3

Press  for origin point of robot motion.

Before move to Origin, make sure the robot arm is in safe location. If robot arm is not if safe location, move robot arm manually to safe location with manual button.



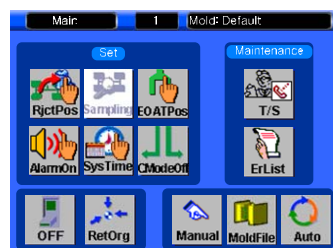
● STEP 4

In case origin searching is completed, move to Main screen.

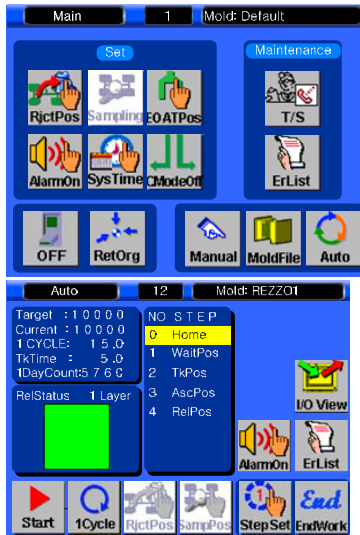
(Press  and Robot stop)

● STEP 5

Robot is in Main Screen to go to Manual or Auto



● Going Back To Auto



● STEP 1

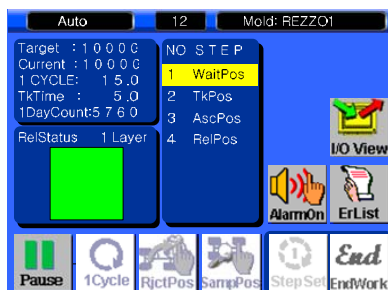
(If there is mold operated before)

Press  and move to Auto Mode Screen.

● STEP 1

Press  and start Auto Operation


• Stop Operation

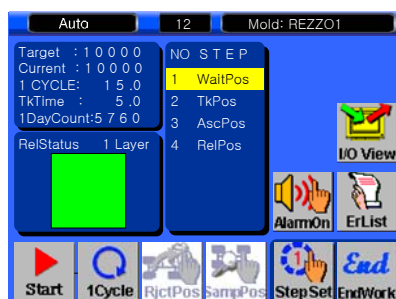


● STEP 1

In order to stop Automatic operation before completing object quantity, press .

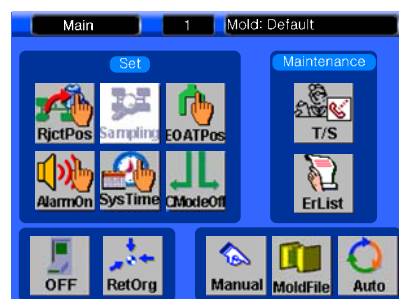
When the step under progress is completed, robot stops temporarily

 is switched to .




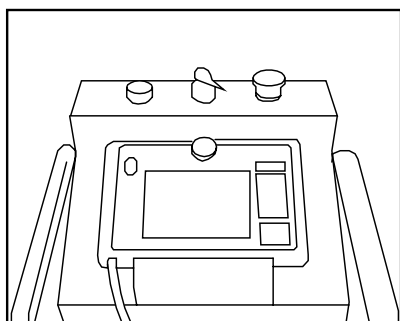
● STEP 2

Press  and move to Main Screen.



● STEP 3

In order to turn off Robot, press .

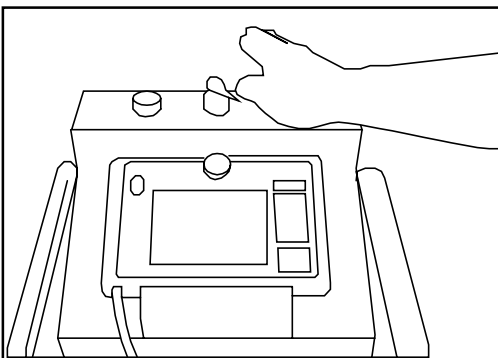


● STEP 4

Turn Off Power.

● Emergency Stop (EMO Stop)

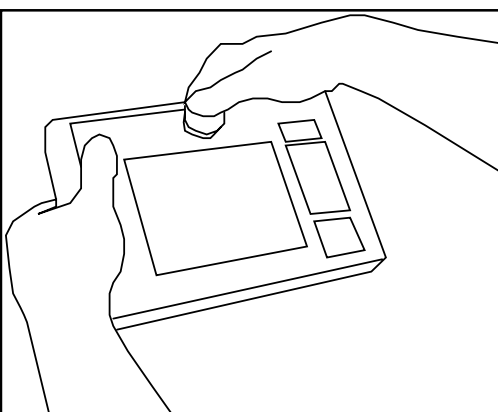
Press EMO button in any dangerous situation (Protect People, Robot, Mold Etc)



[Emergency power interception button]

● STEP 1

In case emergency power interception button is pressed, power of robot is turned off to stop.



[Emergency system stop button]

In case emergency system stop button is pressed, system power(servo driver) is turned off to stop.

Simultaneously, error message window appears on remote controller.

Test : NEXIA, ZEST, HYBRID Robot

1. How many step in the program required to take out parts from Molding Machine ?

2. Explain about Manual Mode ?

3. Explain about Automatic Mode ?

4. After E-stop , what you need to do ?

END OF LEVEL 1 PROGRAM