1K2K Dosing and Dispensing Private Limited
Plot No. A-44/1/A-55, Rajmata Jijau Mahila
Industrial Premises, Chakan MIDC Road,
Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501

ADoST 3-Axis Benchtop Robot Manual

ABSTRACT

This document provides step-by-step instructions for handling and maintaining the ADoST dispensing system. It covers every aspect of the equipment that an operator is expected to know and follow, ensuring proper usage and maintenance.

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ADoST- 3-Axis Benchtop Robot

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USER MANUAL

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Manufacturer - 1K2K Dosing and Dispensing Pvt. Ltd.

Address - Plot No. A-44/1/A-55, Rajmata Jijau Mahila Industrial Premises,

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Revision history

Document version	Date	Corresponding software version	Change History
1.0	10-09-2025	V1.0.0	Document created
1.1	21-11-2025	V1.0.0	Updated section 15
1.2	04-01-2026	V1.0.0	Updated screenshots
1.3	12-02-2026	V1.0.0	Cable numbers has changed

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Information Ownership

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Technicians and operators are expressly forbidden from reusing the information contained in this manual or using it for any purpose other than the proper maintenance and operation of the ADoST dosing system.

1K2K Dosing and Dispensing Pvt. Ltd. shall not be held liable for any damages resulting from the improper use of this user manual. It is imperative that the entire documentation provided with the system be read and thoroughly understood to prevent hazards that may arise from incorrect operations or maintenance procedures.

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CONTENTS

Definitions

1.	User	The person using the system
2.	Adhesive	Dispensing Adhesive
3.	TeachPad	Programming screen
4.	HMI	Human Machine Interface

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1 GENERAL

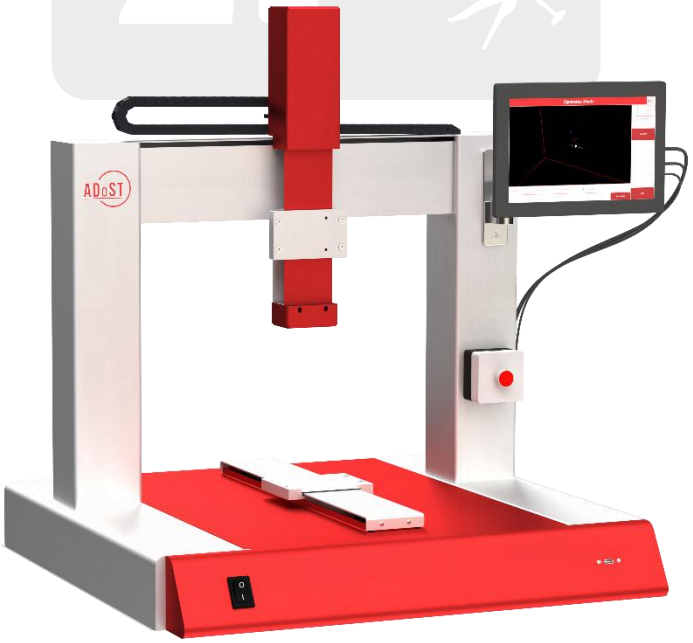
This Handbook is divided into sections to make it useful to understand every information about the system life cycle and to easily find that information necessary for the end user.

This document is specifically developed for 3-Axis Benchtop Robot model and the information given in this handbook can help users in achieving the best system performances while ensuring the long life-cycle to its components.

Due to ongoing developments and safety requirements and regulations system outfitting may be different from the one described in this document. In such a scenario, descriptions and procedures should be construed as generic. Quoted drawings and pictures are intended for example only.

2 INTRODUCTION

The ADoST 3X-RDS1 Robot is a desktop robotic system designed for automated & precision dispensing of adhesives and sealants to enhance their application efficiency. This robot features a high precision control system with 3 axis (X, Y & Z) allowing flexible and controlled movement within a defined work area. This setup ensures consistent and accurate dispensing, making it ideal for manufacturing processes where high speed and precision application are the requirements. The robot can be programmed through a digital teach pad to handle various patterns, speeds, and dispensing rates, enhancing productivity and repeatability in production tasks.



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3 FEATURES

- Easy to program touch screen TeachPad
- TeachPad mounted on manipulative stand
- High speed movement
- Consistency, Precision and Reliability
- USB Port for Data backup
- High-efficiency production with reduced manpower
- Optimized dispensing with negligible waste
- High-speed operation for dots or lines application

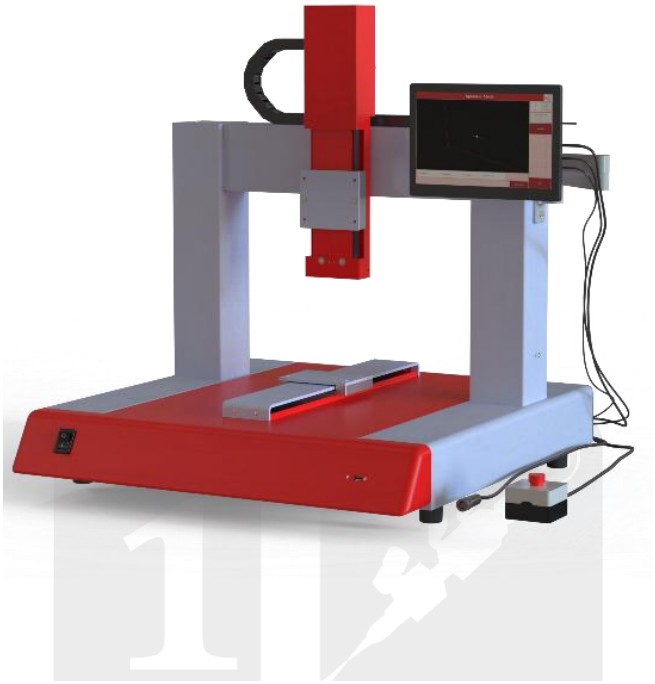
4 SYSTEM'S SPECIFICATIONS

Model no	**ADoST 3X-RDS1**
Bed size	400mm x 400mm x 160mm
Operational range	372mm x 392mm x 112mm
Outer Dimension	724mm x 735mm x 800mm
Drive Mechanism	Belt Drive/lead screw drive
Maximum Object Height	160mm
Power requirement	230 VAC, 50Hz 10A
Axes of Movement	3-axis (X, Y, Z) motion for precise positioning
Repeatability in each axis	+/- 0.01mm
Resolution in each axis	0.1mm
Maximum Pay Load, Tool	4 kg
Maximum Pay Load, Application Object	10kg
Net Weight	30 kg
Maximum Speed (x, y, z)	800 mm/sec, 800 mm/sec, 100 mm/sec
Acceleration	50- 4000 mm/sec2
Operational method	Teach Pad
Operating Temperature	0°C to 40°C.
Operating Humidity	10% to 80% RH (non-condensing).
Data Storage	Robot Memory storage/USB backup
Display	10.1-inch HD capacitive touch screen, LCD

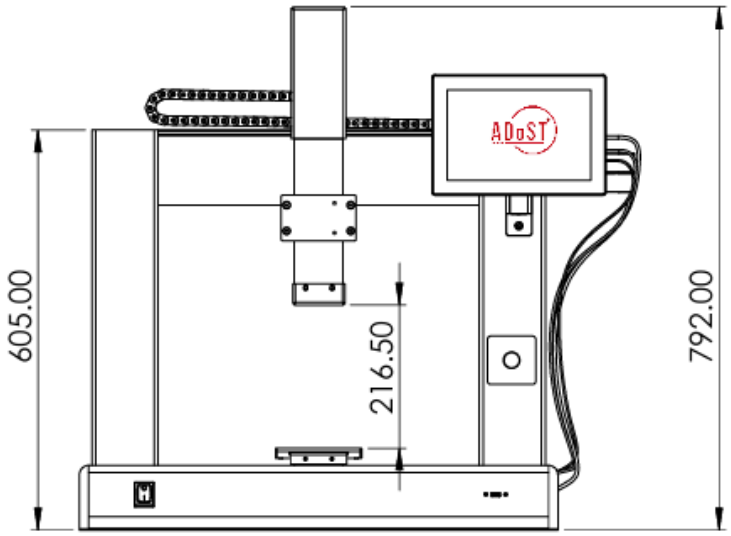
4.1 Detailed Dimensions

All dimensions are in mm

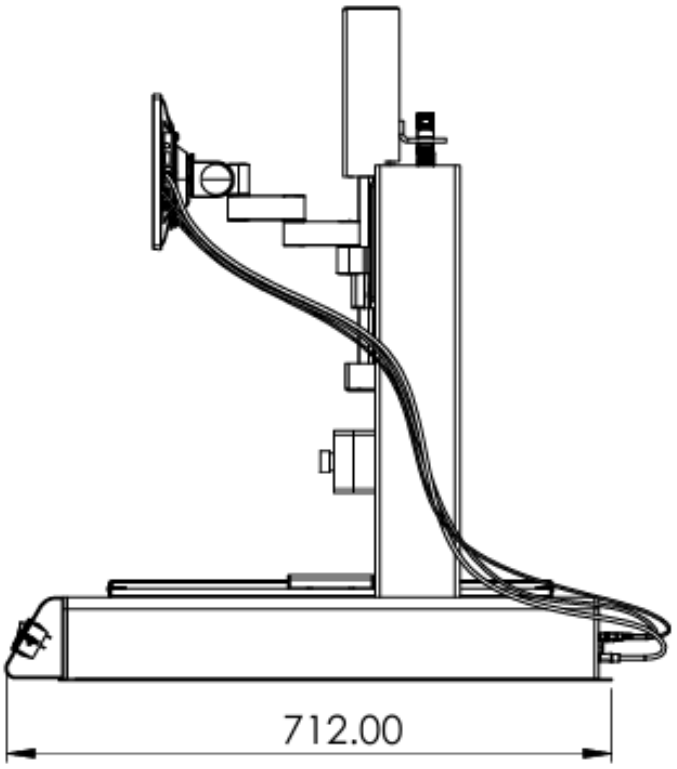
4.2 Isometric view



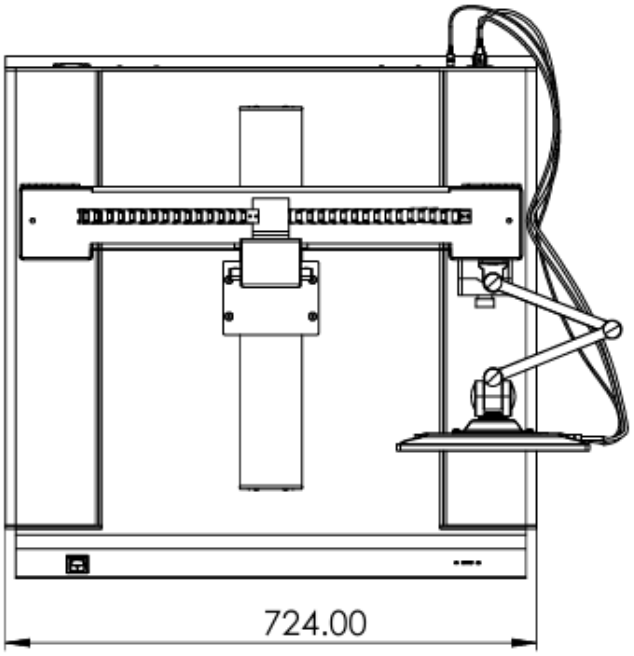
4.3 Front View



4.4 SIDE VIEW

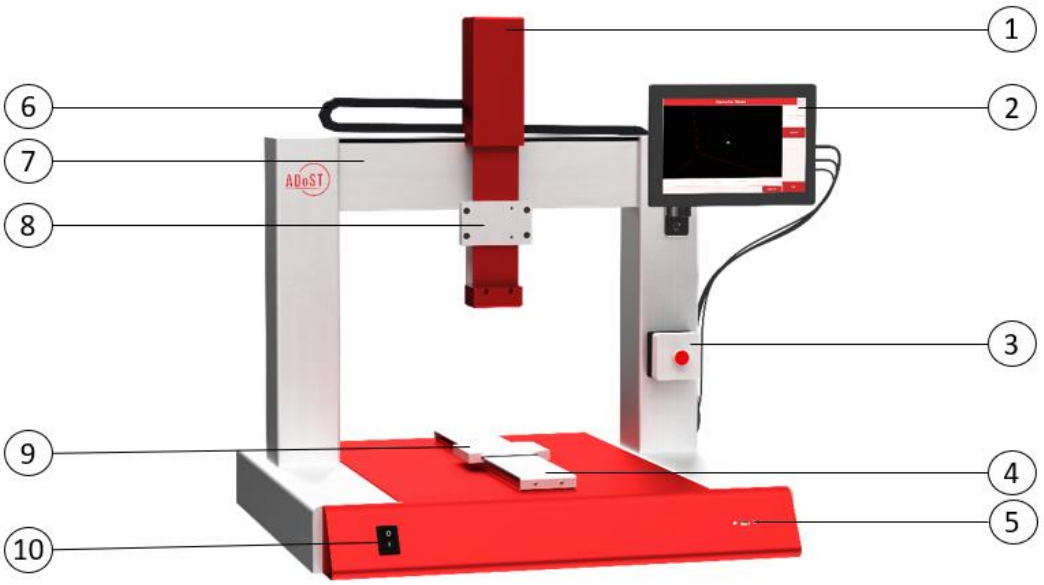


4.5 TOP VIEW



5 SYSTEM COMPONENTS

5.1 MAIN COMPONENTS



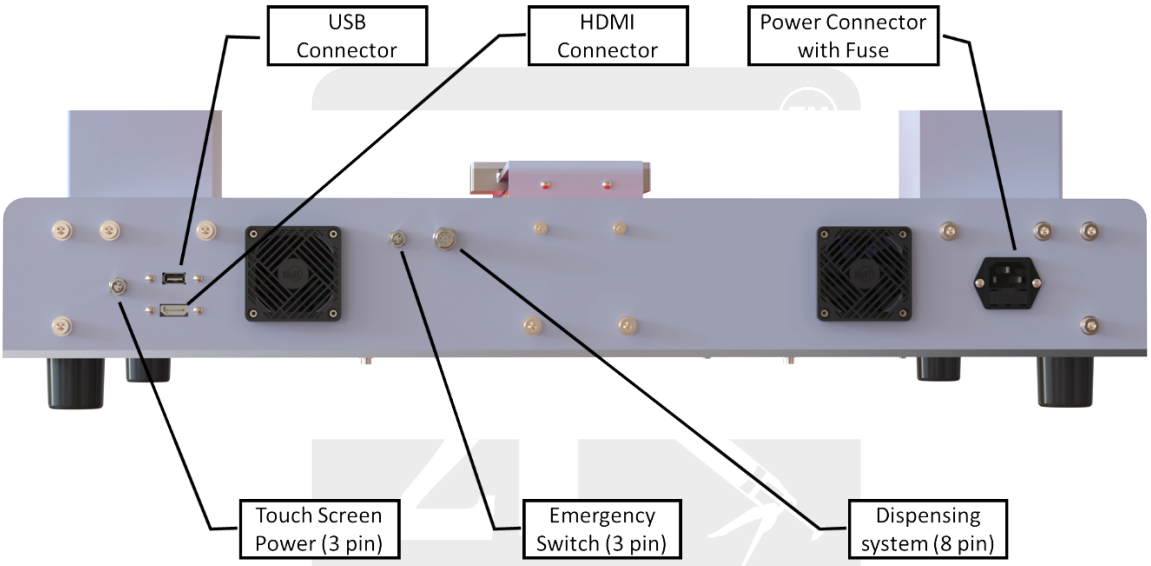
1. **Z-Axis:** The vertical axis responsible for up-and-down movement. It is a critical part of the robot, designed to position tools or Valve at the desired height for precise operations.
2. **Touch screen:** Configured with ADoST software, allowing program creation using the built-in teachpad feature. The system can then be operated seamlessly through the configured interface.
3. **Emergency Button:** A critical safety component for a system, ensuring immediate stopping of any ongoing operation in case of malfunction or hazard. Cuts off power to the system immediately when activated, halting all movements to prevent accidents.
4. **Y-Axis:** It is responsible for front-to-back movement, typically accommodating the workpiece or fixture. It serves as a stable base to hold the job securely during operations such as dispensing, assembly, or machining.
5. **USB Port:** It serves as an essential interface for communication, programming, and data transfer. It provides users with a convenient way to interact with the robot's control system.
6. **Drag Chain**: It is also known as a cable carrier, used to guide and protect cables, hoses, or other flexible connections in moving systems. It ensures proper cable management, preventing tangling, wear, and damage during operation.
7. **X-Axis:** It is responsible for horizontal movement across the work area. It provides the primary motion to shift the Z axis with tool, left to right, and it is crucial for precise positioning during tasks like assembly, material handling, dispensing, or inspection.
8. **Tool Mounting Plate:** The tool mounting plate is an essential component in a system, especially for applications that require precise tool adjustments, such as pick-and-place,

engraving, or dispensing. When mounted on the Z-axis, it allows for vertical tool adjustments, ensuring the tool can be positioned accurately relative to the workpiece.

9. **Fixture Mounting Plate:** This plate on the Y-axis of a plays a crucial role in securing the workpiece or fixture in place during the operations. The Y-axis is typically responsible for horizontal movement (front-to-back motion), and the fixture mounting plate ensures that the workpiece remains stable as the robot moves and interacts with it.
10. **ON/OFF Switch:** Allows the user to control the power supply to the robot and all its connected systems (motors, controllers, etc.). It ensures safety and provides easy control over the robot's operation.

5.2 CONNECTING COMPONENTS

Following figure shows the back side of 3-axis robot explaining all electrical connection points



- **USB Connector:** This connector is to make the connection between Robot and display for touch data transfer
- **HDMI Connector:** This connector is to make connection between Robot and display for UI data transfer
- **Touch screen Power:** This connector is for powering up the display
- **Emergency Switch:** The emergency switch supplied with the system is connector through this 3 pin connector
- **Power connector:** Power cord supplied with the system is connector to this connector for providing the power supply to the system.
- **Dispensing system connector (8 pin):** The dispensing system needs to be connected with this connector for controlling start/stop of dispensing of adhesive.

- **HDMI port:** The connector for HDMI connection with Robot
- **Touch port:** The connector for touch data transfer between Robot and Touch screen
- **12V Power input:** The connection port to supply power to touch screen

6 System Setup

6.1 Electrical Setup

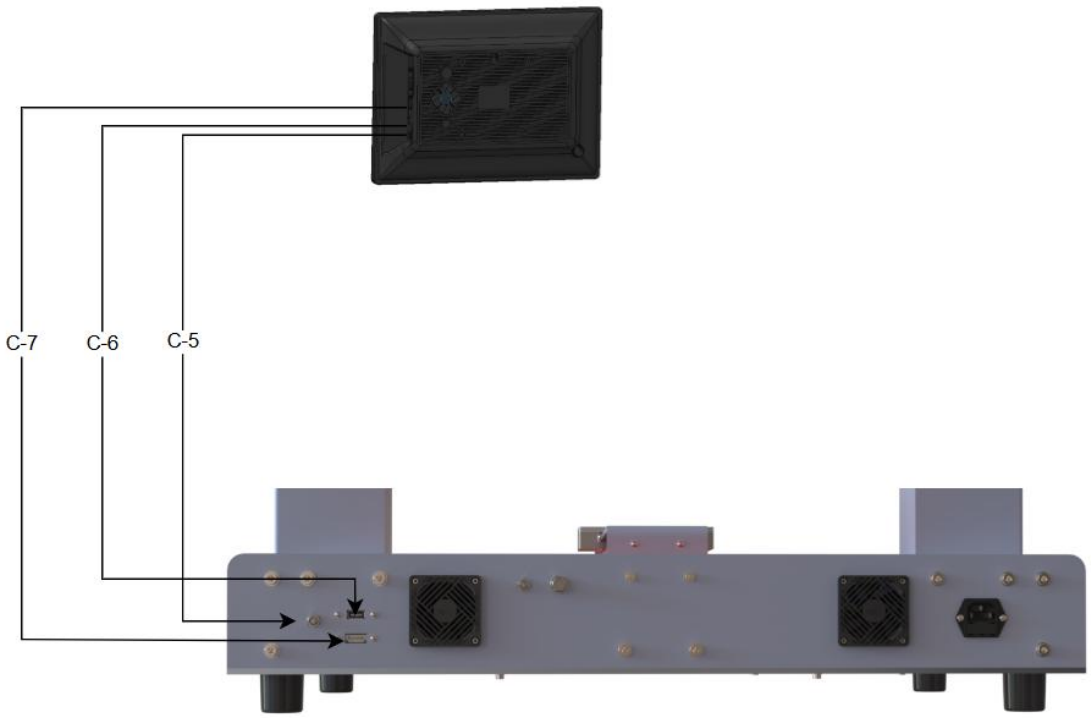
6.1.1 Touch screen

To connect a touchscreen to a robot using the three cables listed below, first make sure both devices are placed so you can easily access the ports at the back. Mount the touchscreen on an adjustable arm so you can change its angle and position as needed. Then, connect the cables in this order:

- Plug in Cable C-5 to power the touchscreen.
- Connect Cable C-6 to allow the touchscreen and robot to communicate.
- Connect Cable C-7 to send the display signal from the robot to the screen.

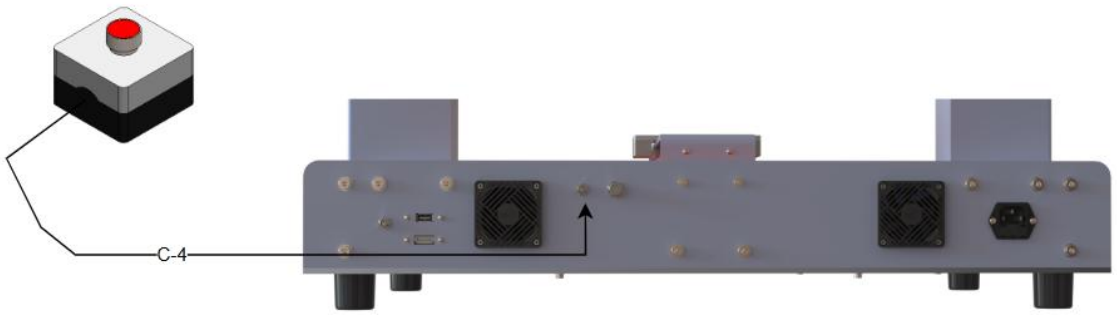
This setup will give you a stable connection and smooth touchscreen operation.

Cable	Touch screen	Robot Back Pannel
C-5	Power	Touch screen power (3pin)
C-6	Touch	USB connector
C-7	HDMI	HDMI Connector



6.1.2 Emergency Switch

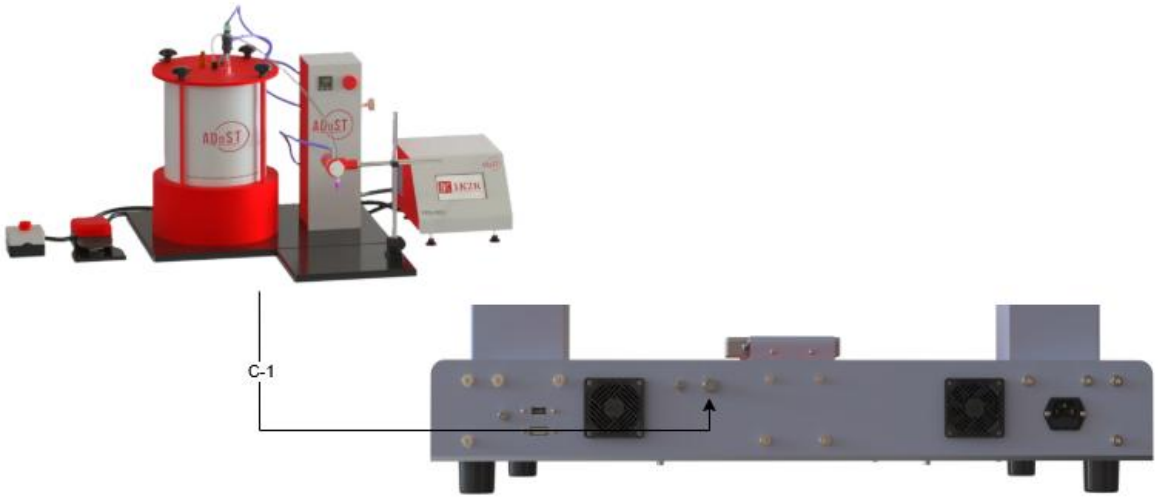
To connect the emergency switch to the robot using Cable C-4, first ensure the robot is turned off. Then, connect the emergency switch to the designated 3-pin port on the robot's back panel, as shown in the figure below.



Cable	Emergency switch	Robot Back Pannel
C-4	Emergency switch	3 pin connector

6.1.3 Dispensing Machine

To connect the dispensing Unit to the robot using Cable C-1, begin by ensuring the dispensing unit is positioned for safe access. Locate the designated 8-pin port on the robot's rear panel, as illustrated in the figure below. Carefully insert the 8-pin connector from Cable C-1 into this port, ensuring that the connector is properly aligned and fully compatible with the robot's interface. A secure and precise connection is essential for reliable operation of the dispensing system.



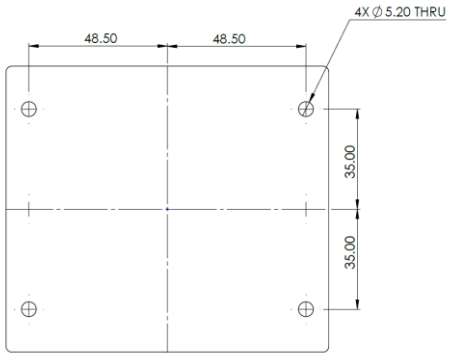
Cable	Dispensing system	Robot Back Pannel
C1	Dispensing system	Dispensing system (8pin)

6.2 System Power On

Power on the system after making necessary electrical connection as explained in sections above

6.3 Procedure to Mount Tool

The tool fixture should include a 5.2 mm hole for attachment to the robot. An M5 bolt will be used for this connection. The internal threading depth is 20 mm; therefore, the bolt length should be selected based on the fixture's width, plus an additional 20 mm to ensure proper engagement.



6.4 Procedure to Mount Dispensing Object

The Base Plate should include a 5.2 mm hole for attachment to the robot. An M5 bolt will be used for this connection. The internal threading depth is 15 mm; therefore, the bolt length should be selected based on the fixture's width, plus an additional 15 mm to ensure proper engagement

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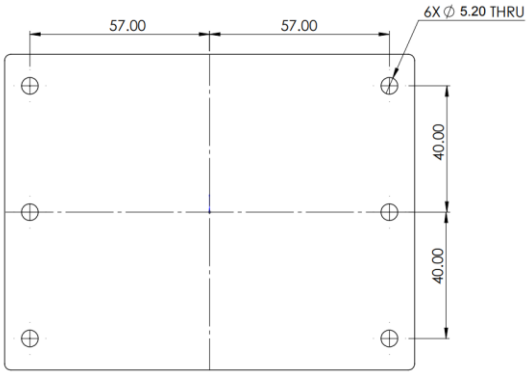


7 ADoST Software Guide

7.1 Introduction

ADoST Programming language is developed to ensure helping the programmer to program the complicated patterns.

This section serves as a comprehensive instructional guide for system operators, programmers, and process engineers, offering an in-depth overview of the Robot Control software and detailed explanations of all its features.

Readers are encouraged to review the descriptions of all buttons before proceeding to the instructions for creating their first program.

7.2 Initial Setup

On Boot up, machine will be in Switched off condition. To start working with the machine, one need to switch on the machine by selecting “Machine On” button. This shall enable buttons allowed to be used by operator.

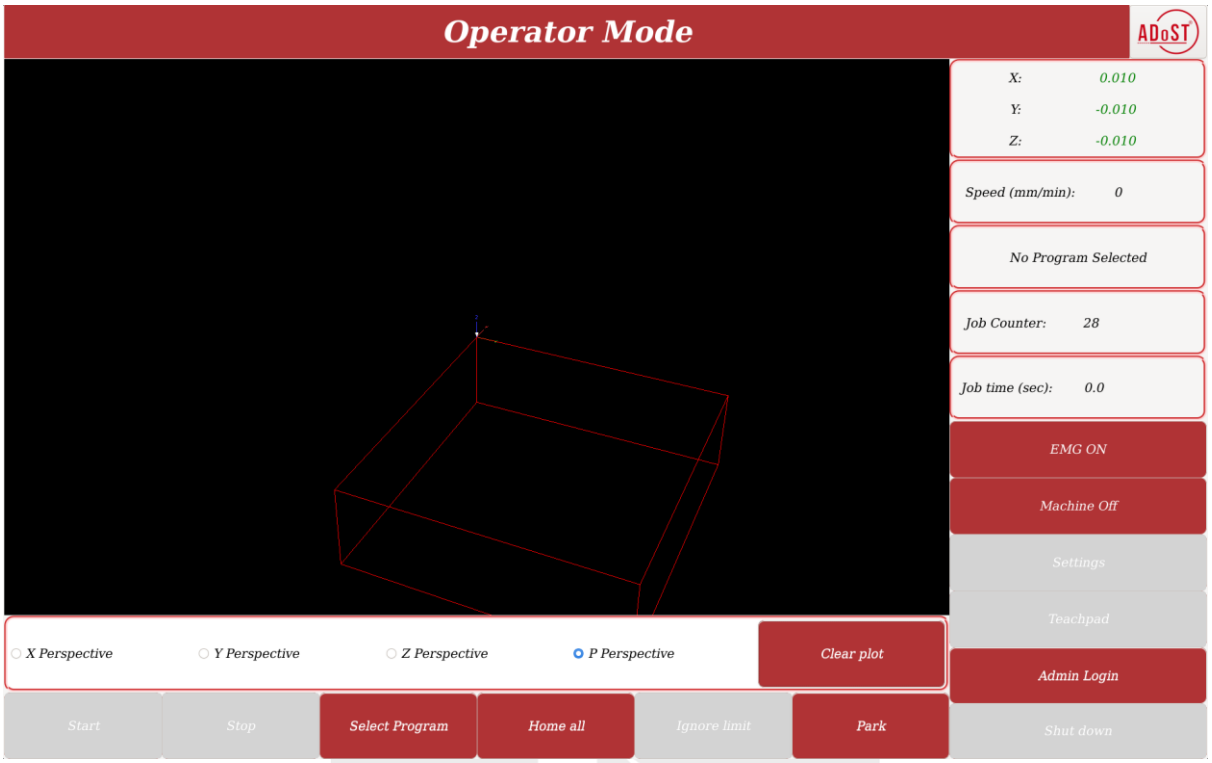
7.3 Modes of operation

There are 3 modes available in ADoST Software

- Operator Mode
- Admin Mode
- TeachPad Mode

7.3.1 Operator Mode

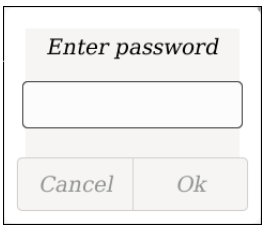
When the machine starts, it enters Operator Mode by default. This mode enables the operator to control and monitor the robot during its operation. It provides access to essential functions required for running the robot, including program execution.



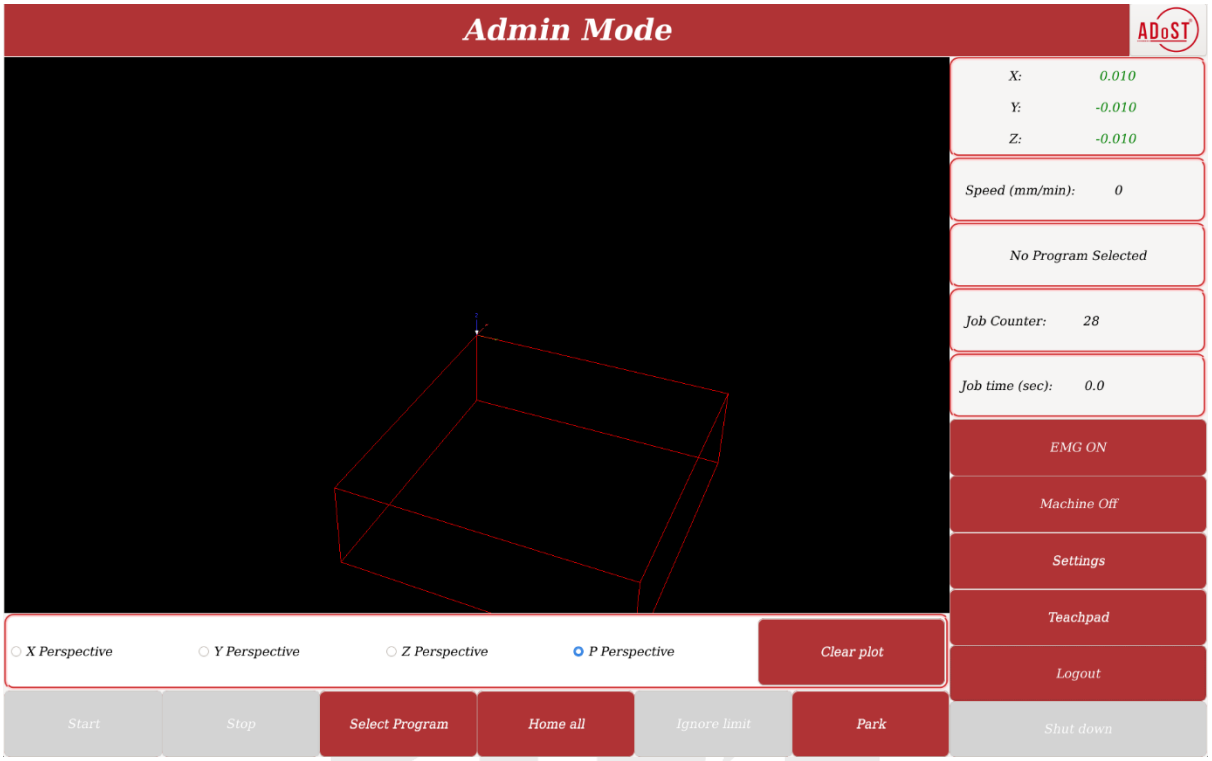
7.3.2 Admin Mode

Users can access Admin Mode by entering the designated login password. Upon successful authentication, the application switches to Admin Mode, allowing the user to configure advanced settings and utilize the TeachPad functionality.

When the Admin Login option is selected, the following screen is displayed. The default login password is "0" (zero).



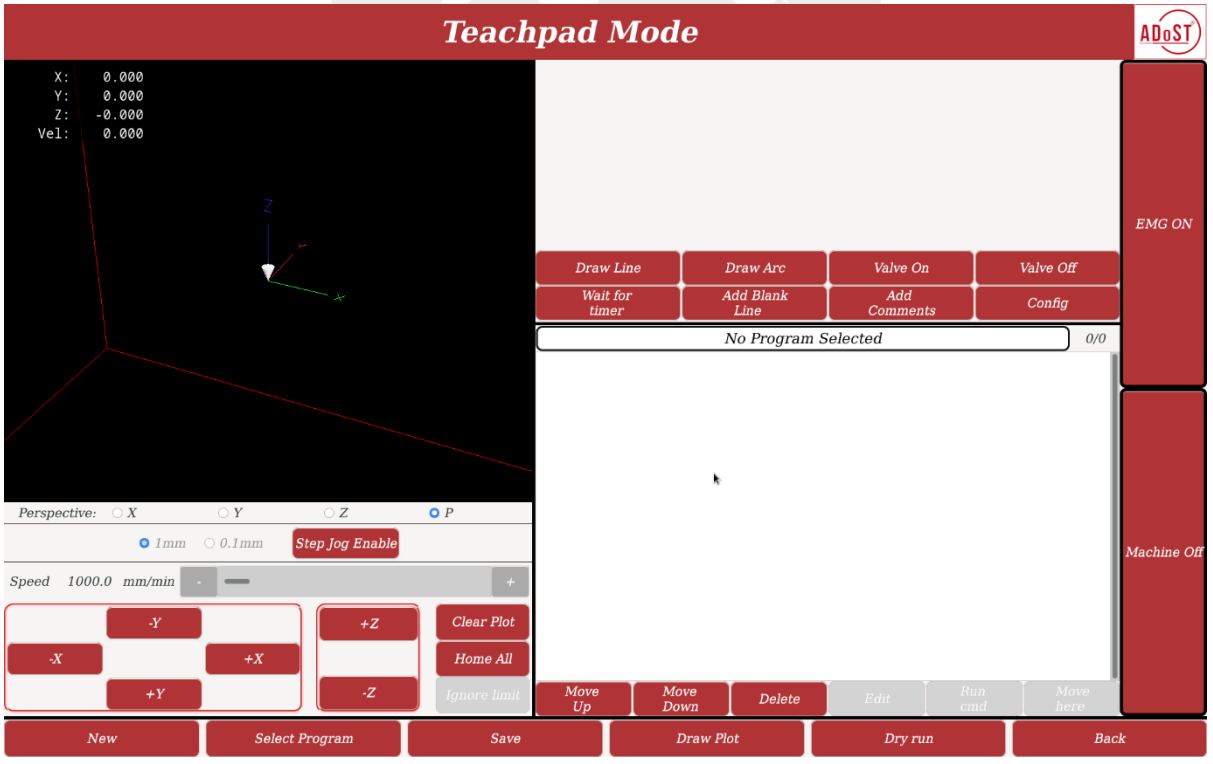
Upon successful login the screen appears as follows.



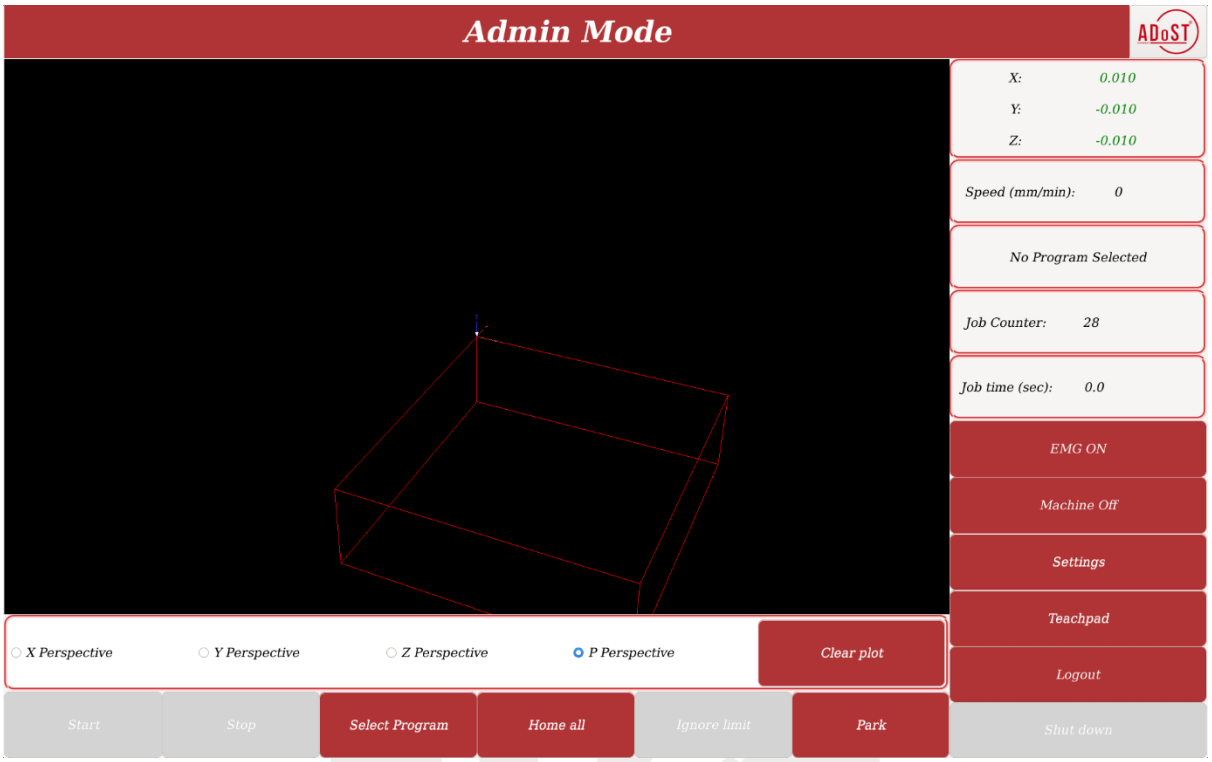
Note: The button status shall depend upon the current status.

7.3.3 TeachPad mode

This mode enables the administrator to program for the targeted workpiece with use of touchscreen commands.



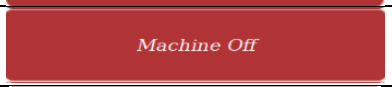
7.4 FIELDS/BUTTON DETAILS IN OPERATOR AND ADMIN MODE



7.4.1 Fields Description

Sr.no	Field	Features
1	X: 0.000 Y: 0.000 Z: -0.000	Current X, Y , Z coordinates.
2	Speed (mm/mins): 0	Speed of dispensing tip in mm/mins, when in motion
3	No Program Selected	Current selected program, which shall be executed
4	Job Counter: 1	The no of completed job. In other terms, how many times program has been executed till now
5	Job time (sec): 0.0	Time taken to complete the program execution. It's the same time taken to complete one job

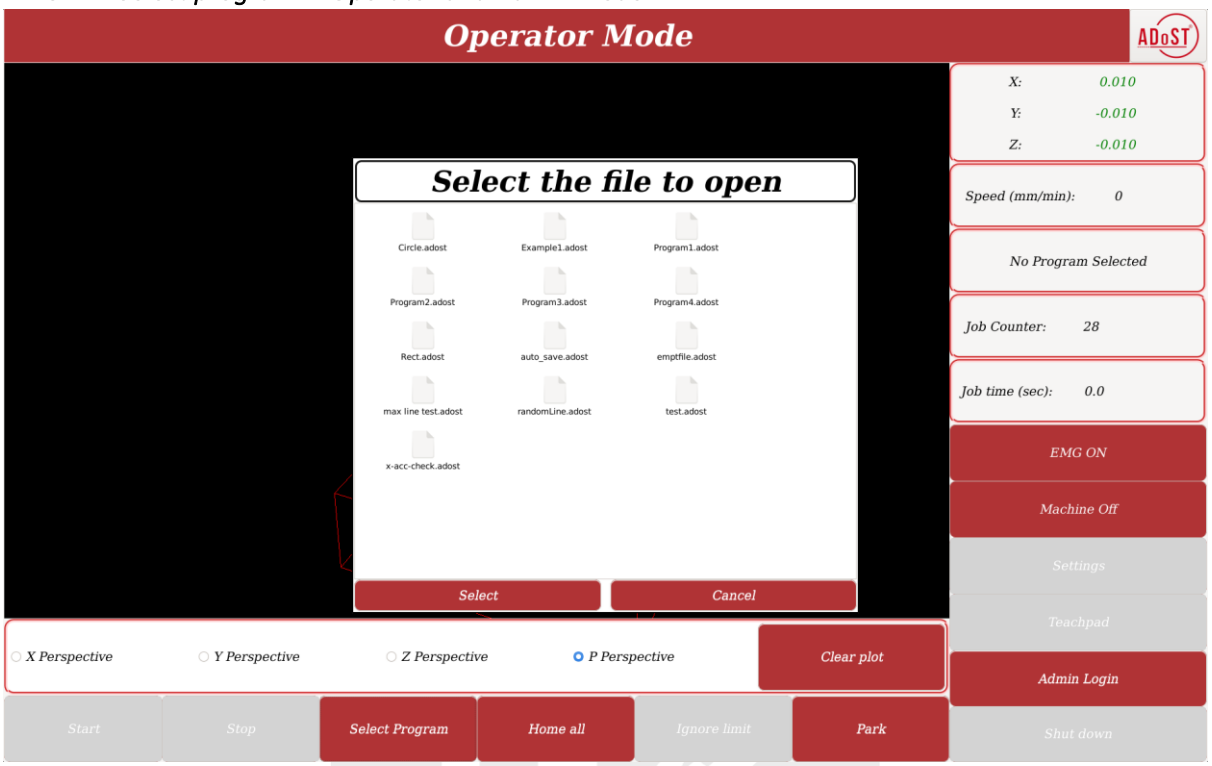
7.4.2 General Buttons

Sr.no	Button	Features
1		Activates the Emergency Mode.
2		Turns off the robot's control system.
3		Turns on the robot's control system.
4		Opens the system settings.
5		Opens the TeachPad interface. This button is enabled in Admin mode.
6		Logs the user out of Admin Mode.
7		Helps visualize robot paths in different axis views.
8		Clears the currently displayed path/plot on the screen.
9		Display another screen, which allows program selection, which needs to be executed.
10		Move each axes (X, Y, Z) to its home positions.
11		Moves the robot to a predefined "parked" safe position
12		This button by default is greyed gets enabled only when the hard limit is touched
13		This button is enabled when program is selected. On clicking on this, the selected program runs.
14		Completely stops the running program and exits execution.

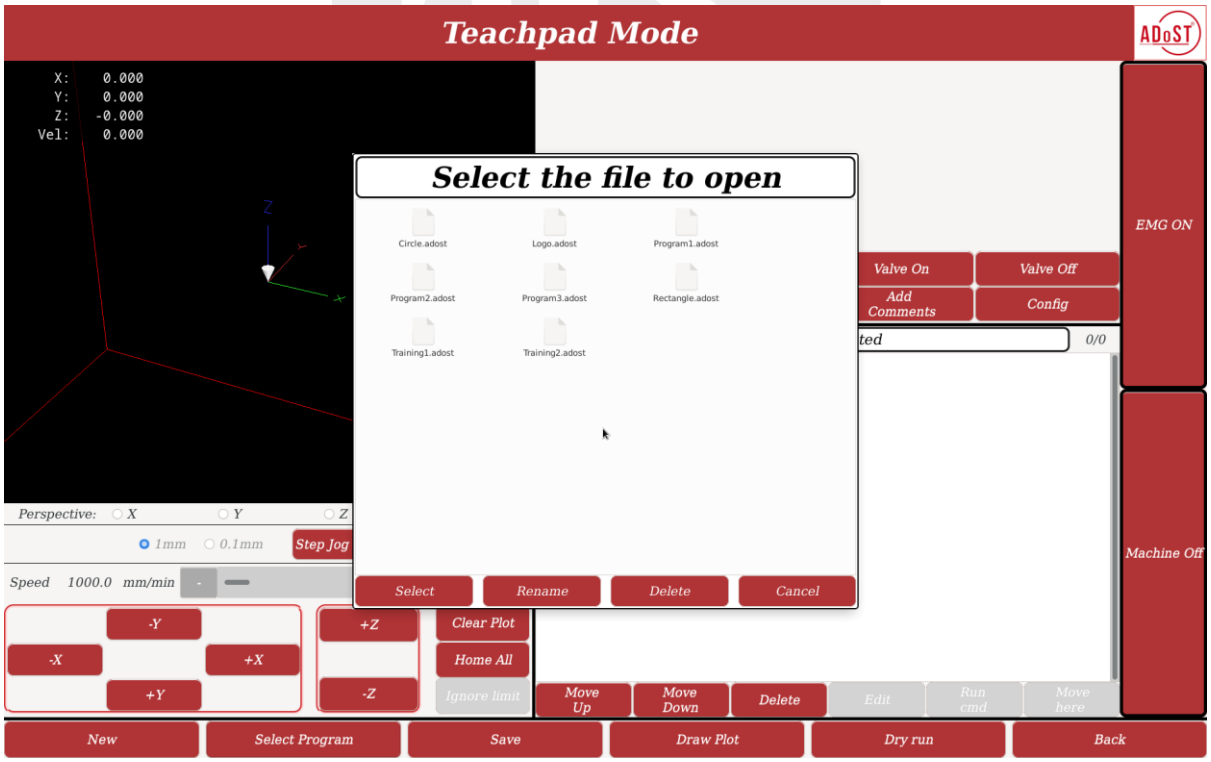
7.4.3 Select Program

This option appears in all modes. However when selected from TeachPad mode, it will have extra options.

7.4.3.1 Select program in Operator and Admin mode



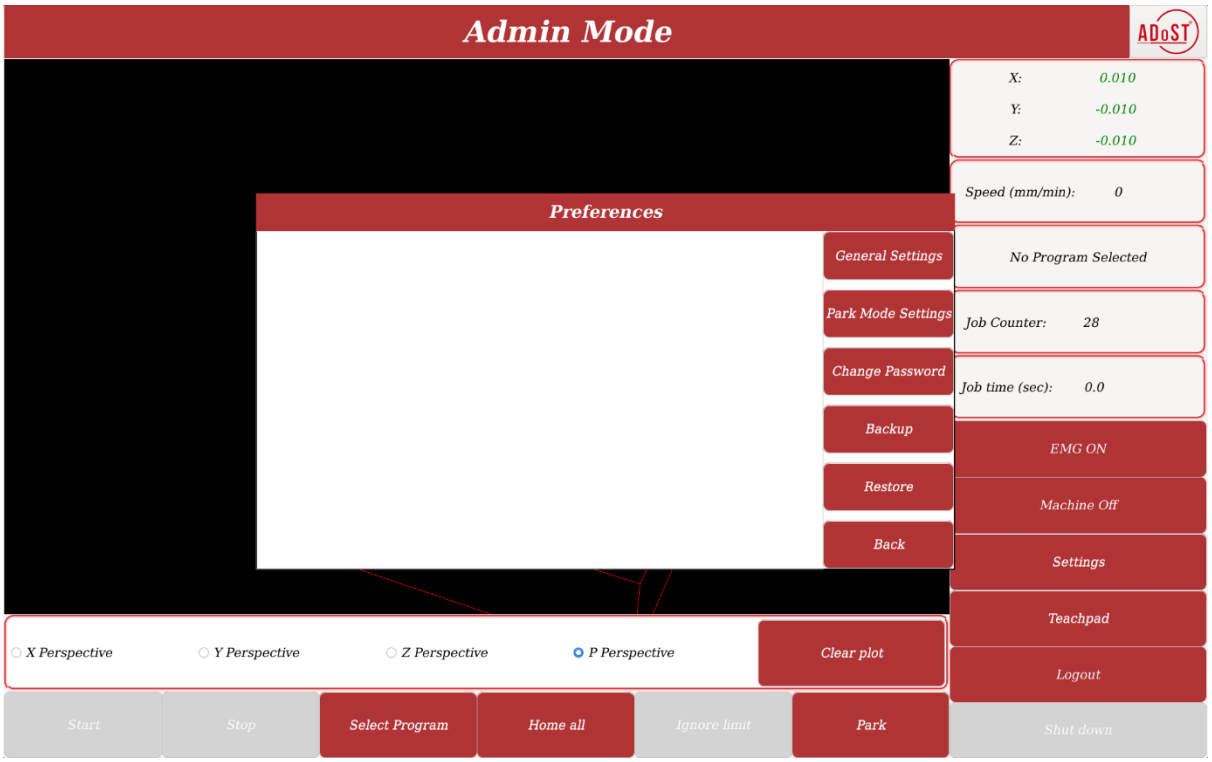
7.4.3.2 Select program in TeachPad mode

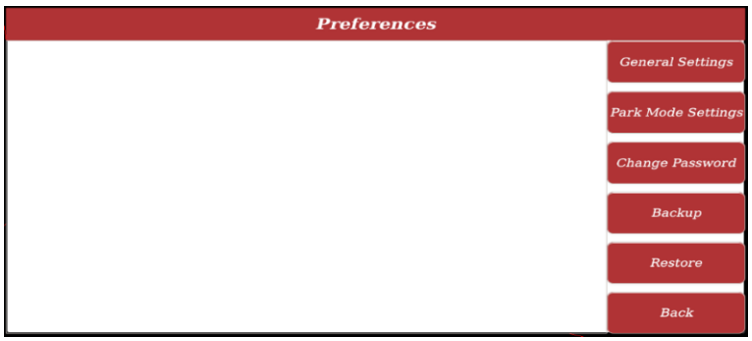


Sr. No.	Features	Function
1	Select	Open the highlighted program. Available in all modes
2	Rename	Change the name of program file. Available ONLY in TeachPad mode
3	Delete	Permanently delete the selected program. Available ONLY in TeachPad mode
4	Cancel	Close the select program window

7.4.4 Settings

Following screen will appear when Setting button is clicked.

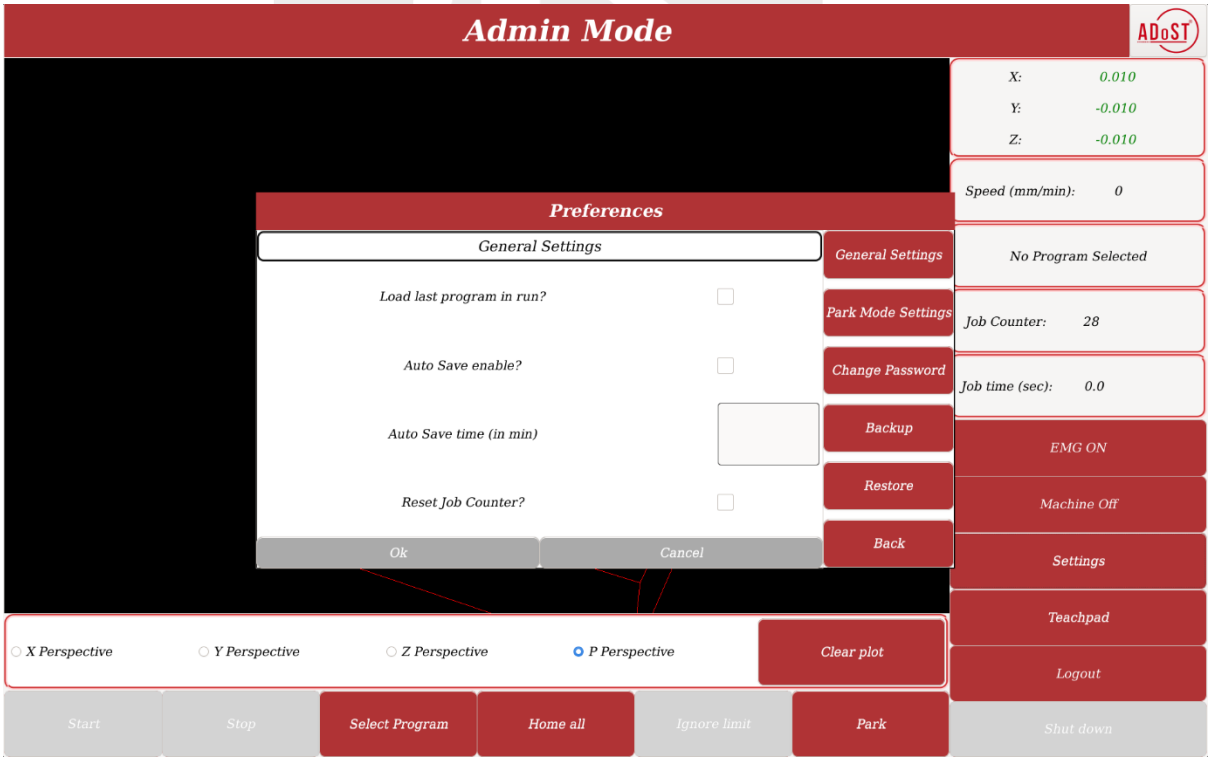




Sr.no	Button	Features
1	General Settings	Opens basic configurations. For eg. Auto save of program, reset job counter & autoload last running program
2	Park Mode Settings	Lets you define or change the Park Position (safe location where robot rests when idle OR the position where purging can be performed OR where nozzle can be dipped to avoid curing of adhesive,).
3	Change Password	Allows Admin or Operator to change the password.
4	Backup	Saves all the ADoST programs to USB connected to Robot through front panel
5	Restore	A USB can be connected through front panel, contain ADoST programs backed up from ADoST Robot previously and restored to current machine.
6	Back	Returns to the previous menu (exits the Settings/Preferences screen).

7.4.4.1 General Setting

Following screen will appear when General Setting button is clicked.



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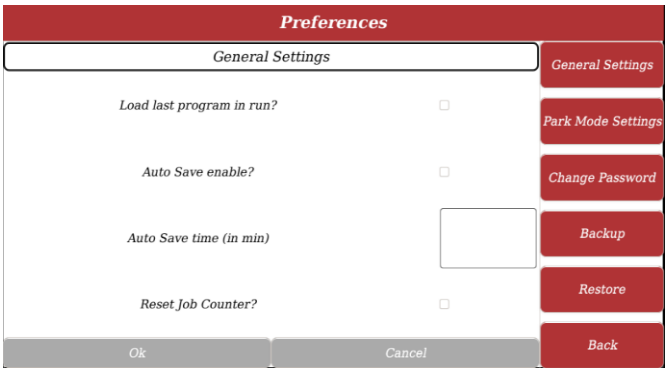
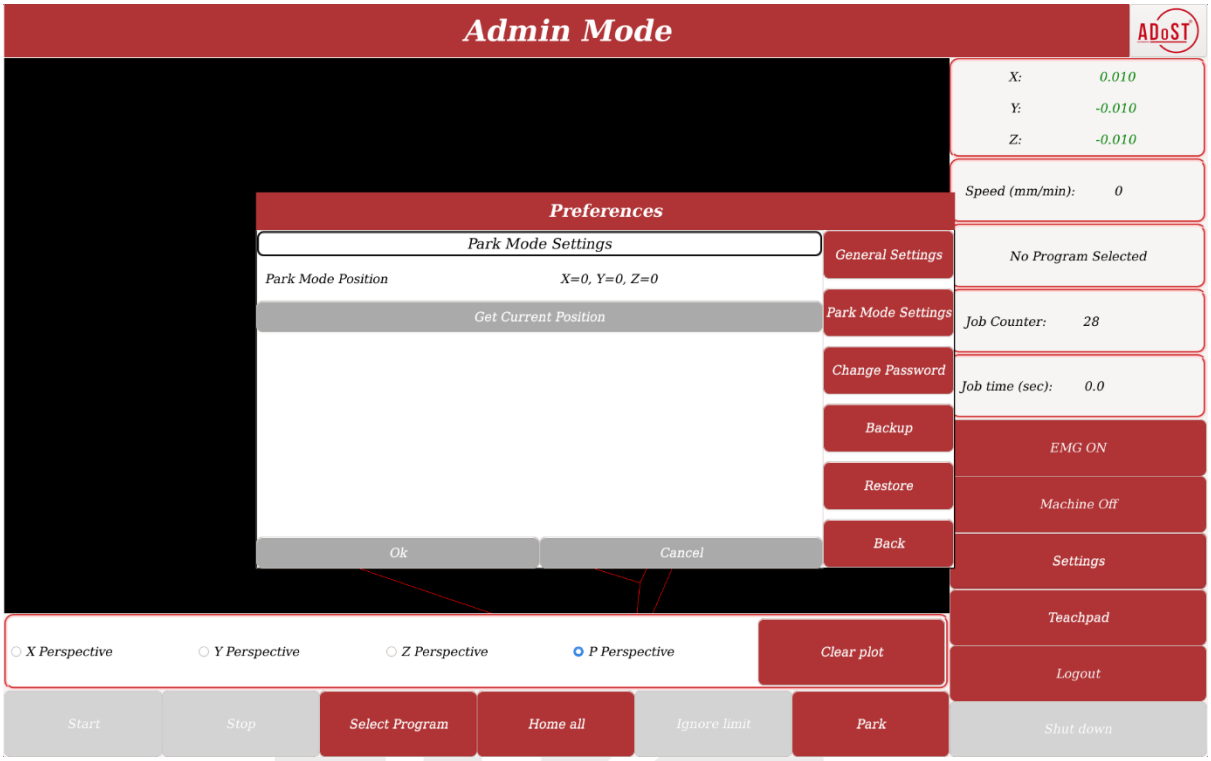


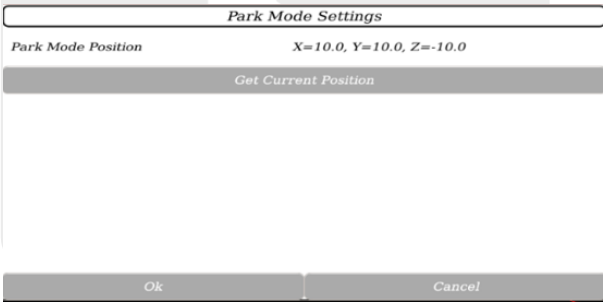
Sr. No.	Button	Features
1	Load last program in run? ☐	If enabled (☑), the system will automatically load the last used program (before shutting down) on boot up.
2	Auto Save enable? ☐	If enabled, it automatically saves the current program in TeachPad regularly at an interval defined by parameter “Auto Save Time (in min)
3	Auto Save time (in min)	Sets the interval for auto-saving the program. Example: If set to 10, the program will auto-save every 10 minutes (only works if Auto Save is enabled).
4	Reset Job Counter? ☐	When selected, this will reset the current job count (number of completed jobs/parts) back to 0. Useful for new batch tracking.
5	Ok	Save the changes made.
6	Cancel	Discards any unsaved changes and returns to the previous screen.

7.4.4.2 Park Mode setting

Following screen will appear when Park Mode Setting button is clicked.



The button in popup are explained here

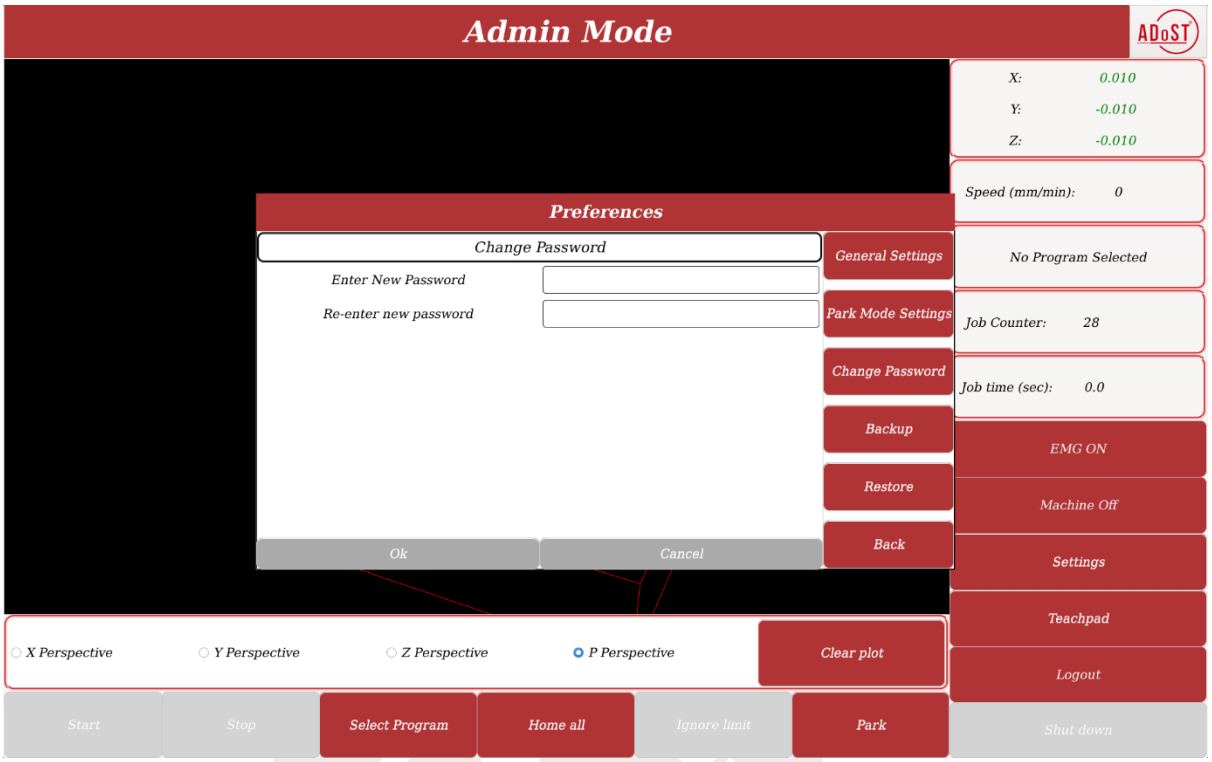


Sr. No.	Button /field	Features
1	Park Mode Position X=10.0, Y=10.0, Z=-10.0	Displays the current set coordinates (X, Y, Z) for the Park position. This is where the robot will move when you press the “Park” button.
2	Get Current Position	Captures the robot's present location and sets it as the new Park Position. Use this when you manually move the robot to a safe spot and want to define it as the park point.

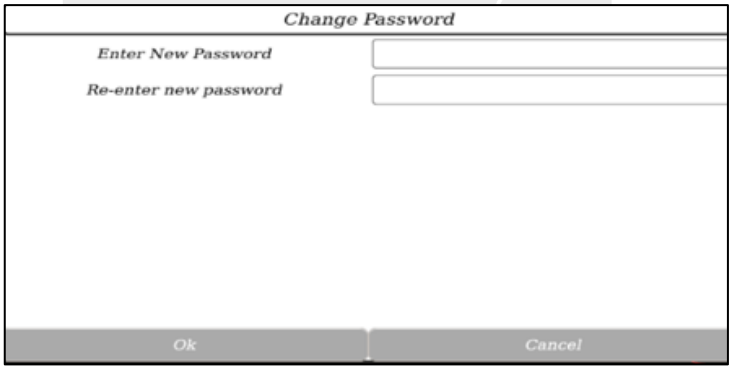
3	Ok	Save the changes made if any.
4	Cancel	Discards any changes made to the park position.

7.4.4.3 Change Password

Following screen will appear when Change Password button is clicked.



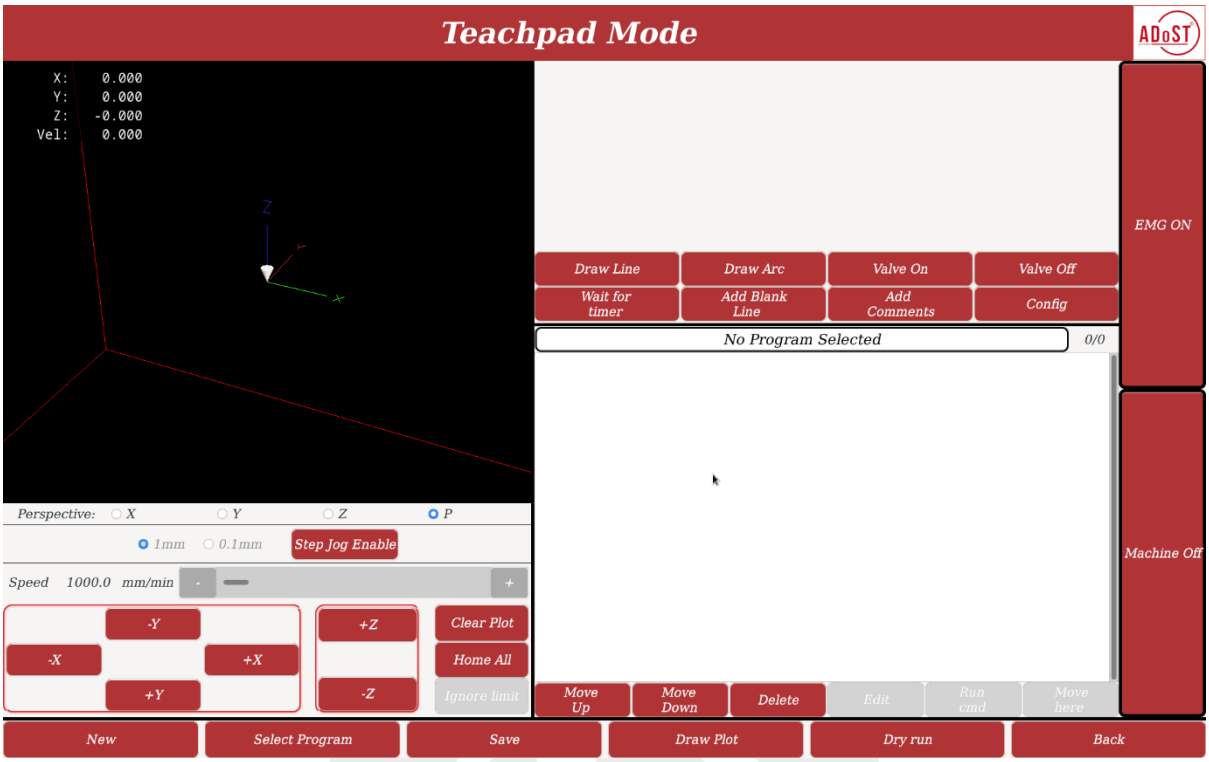
The button in popup are explained here



Sr.No.	Button	Features
1	Enter New Password	Enter the new password that you want to set for the Admin.
2	Re-enter new password	Re-type the same password again to confirm. This helps prevent typing mistakes.

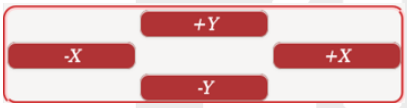
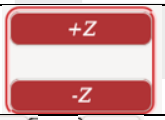
3	Ok	Executing the task.
4	Cancel	Discards any entries and returns to the previous screen.

7.5 BUTTON DETAILS IN TEACHPAD MODE



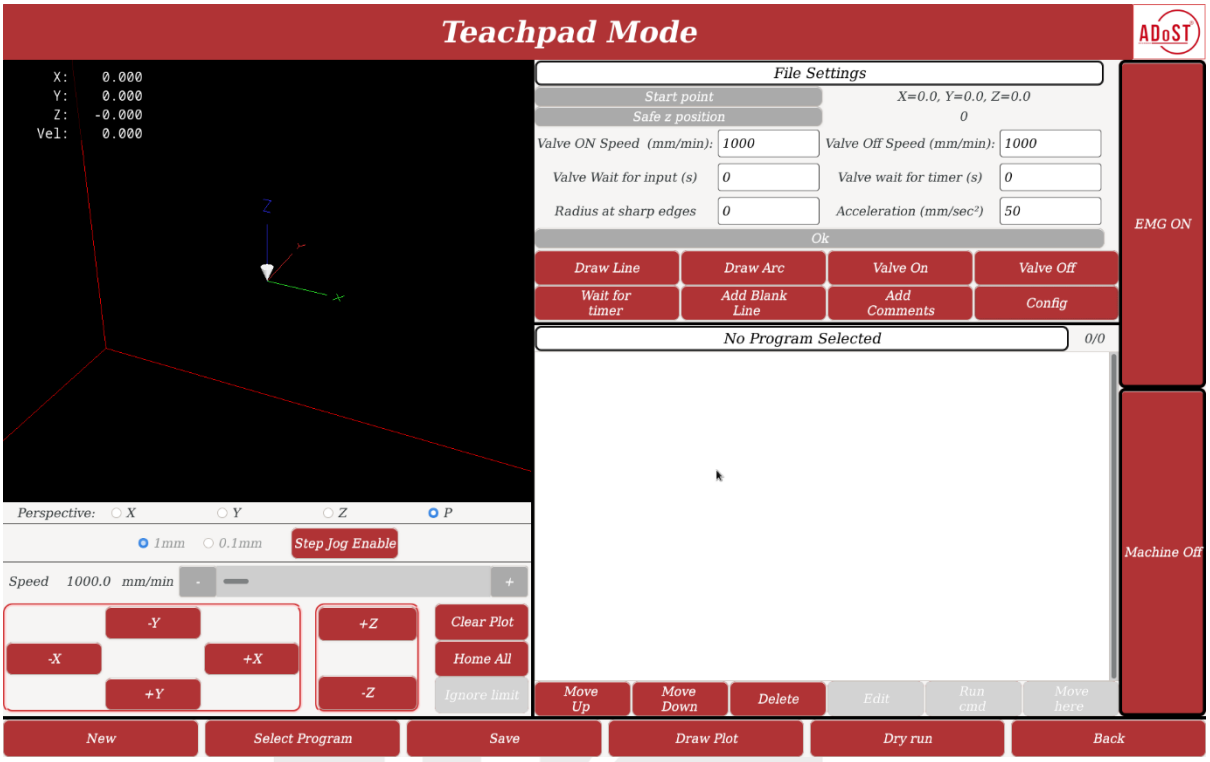
7.5.1 General buttons

Sr.no	Button	Features
1	New	Creating a new program.
2	Select Program	Select an existing program from the list of saved programs.
3	Save	Save the generated program.
4	Draw Plot	View the plot of current program.
5	Draw Line	Allows you to define a straight-line movement for the robot.
6	Draw Arc	Allows you to make arc-shaped movement between two points with specified radius.
7	Valve On	Activate the valve connected with the robotic system. Please follow connector diagram to understand the port used for connecting and activating Valve
8	Valve Off	Deactivate a valve connected with the robotic system. Please follow connector diagram to understand the port used for connecting and deactivating Valve

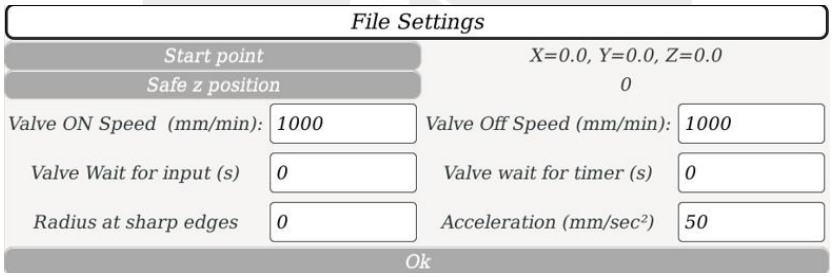
9		Wait for the valve to respond to activation command.
10		Wait for specified time to expire before executing the next command in program.
11		Add a blank line to improve the readability of program.
12		For naming/tagging the part of code in program.
13		Move selected line of code Upward. This helps in arranging the code execution sequence
14		Move selected line of code Downward. This helps in arranging the code execution sequence
15		Move each axes (X, Y, Z) to its home positions.
16		Activates the step-by-step jogging function, allowing the robot to move incrementally along its axes (X, Y, Z) with each press of the button by amount as selected as 1mm or 0.1mm.
17		Allows users to remove or reset any displayed graphical data generated due to jog/move here/run command motion of x/y/z axis.
18		These keys are used for jogging in X direction & Y direction.
19		These keys are used for jogging in Z direction.
		Allow to adjust the speed while jogging.

7.5.2 Config

Following screen will appear when Config button is clicked.



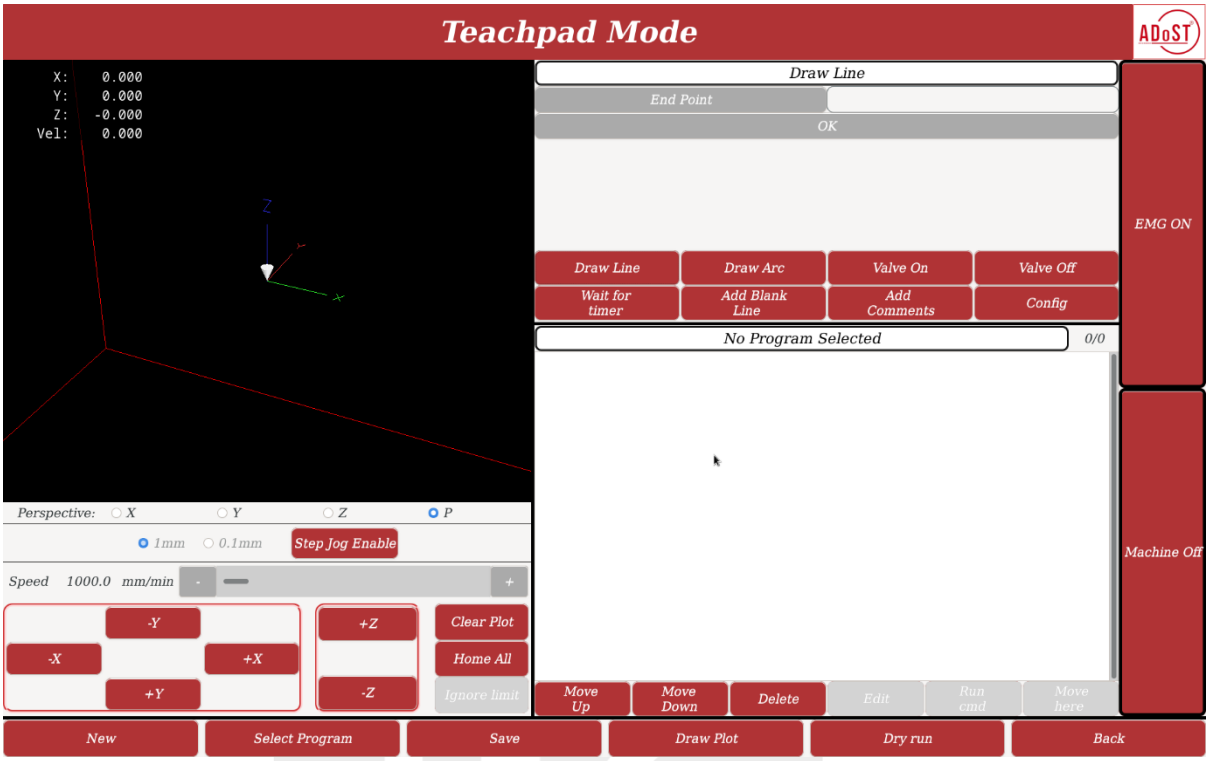
The button in rectangular area is explained here



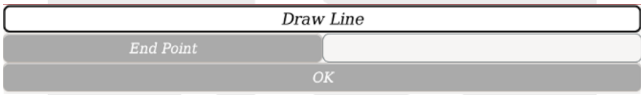
Sr.no	Button	Features
1	Start point	Pressing this button, stores the current position of X,Y & Z and sets its as Program Start Point. This is the point from where robot shall start and come back after executing all lines of program.
2	Safe z position	Pressing this button, stores the current Z position as safe position. This z position should be in general little higher than the highest z point of the job. This point is used along with Move Here command in TeachPad to ensure the safe movement of tool without hitting any part of the job

3	Valve ON Speed (mm/min): 1000	Robot speed while dispensing.
4	Valve Wait for input (s) 0	There will be conditions when the robot needs to wait for confirmation from connected dispensing machine to ensure dispensing has started before start of movement or executing any command. This time defines the maximum time, robot should wait before receiving conformation from connected dispensing machine. If the wait time expires, robot doesn't execute the next command but exits with error. If the value for this parameter is more than 0, Every valve ON command added in program will wait for timer till it gets the response from connected machine on pin no as defined in pin configuration in section below.
5	Valve Off Speed (mm/min): 1000	Robot speed when dispensing is OFF
6	Valve wait for timer (s) 0	Delay before starting movement. This option is mostly used
7	Radius at sharp edges 0	Smooths corners with a radius (e.g., 0.2mm).
8	Acceleration (mm/sec^2) 0	Acceleration rate of the motion, minimum value is 50 and maximum 4000
9	OK	Save all the parameters entered

7.5.3 Draw Line

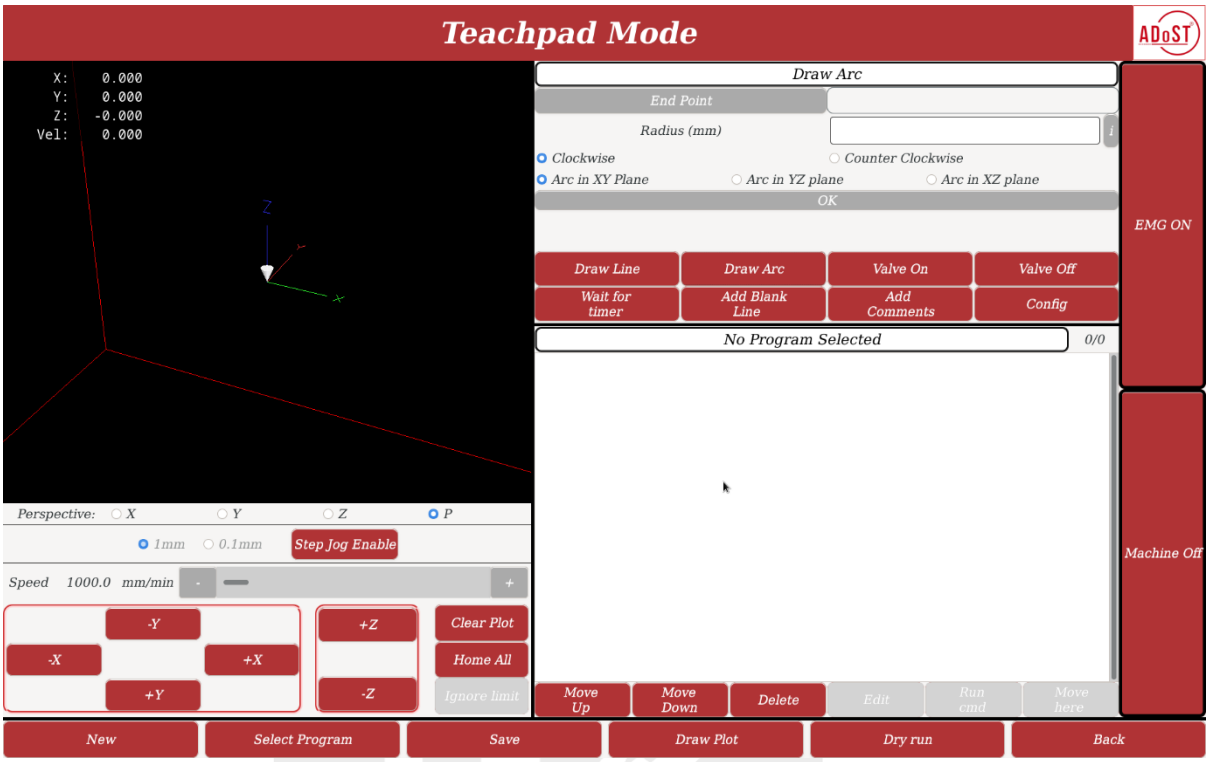


The interactable field in rectangular area are explained here

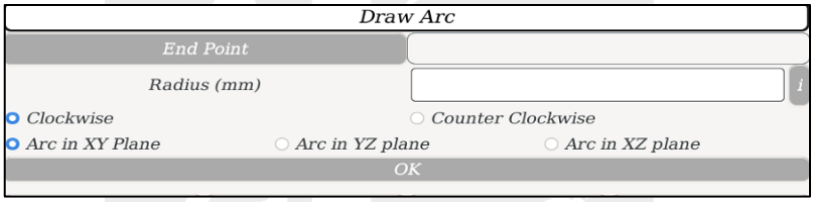


Sr.No.	Field	Features
1		The End Point button saves the current robot position as the final point of the line. Start point of the line will be the point selected through “Start Point” in config section if it’s the 1st line of the program else the previous selected point in the program
2		Accept the changes and create an entry in program to generate a line

7.5.4 Draw Arc



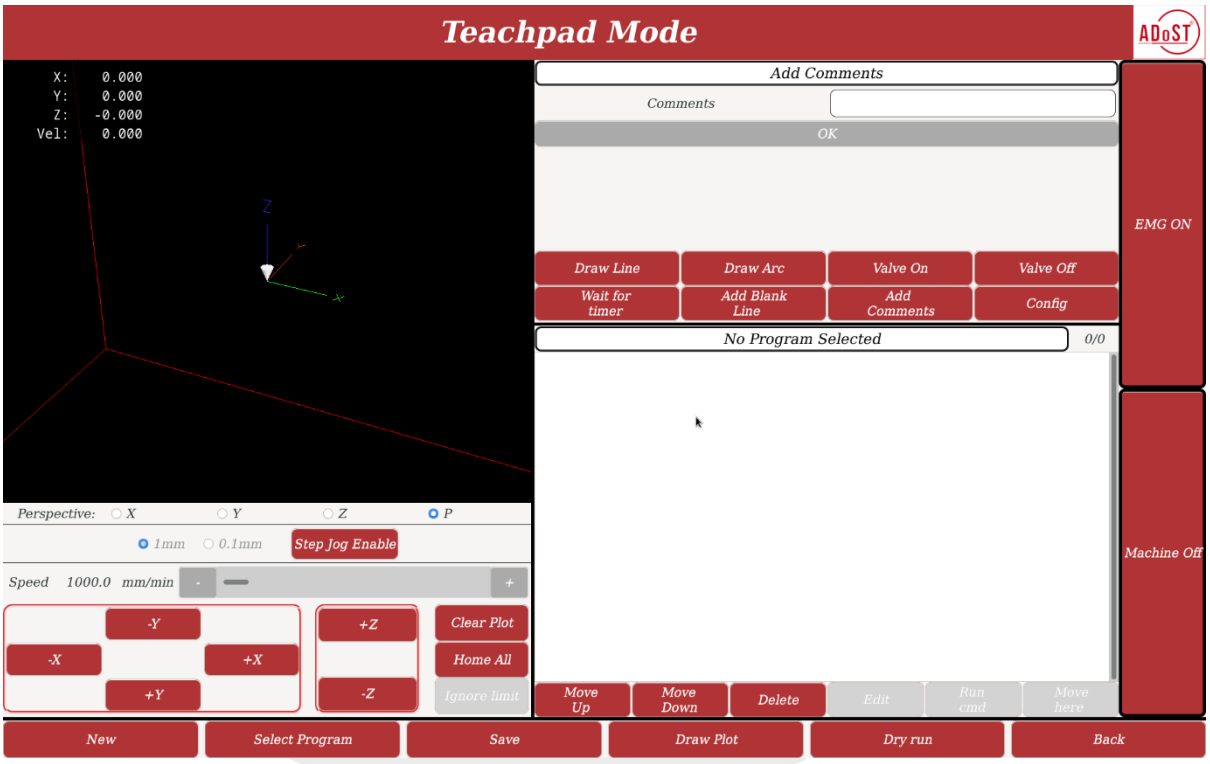
The interactable field in rectangular area are explained here



Sr. No.	Field	Description
1		The End Point button saves the current robot position as the final point of the Arc. Start point of the Arc shall be the point selected through “Start Point” in config section if it’s the 1st line of the program else the previous selected point in the program
2		Radius of the arc.
3		If this option is selected, the arc will be drawn clockwise
4		If this option is selected, the arc will be drawn counter clockwise
5		If this option is selected, The arc will be in XY plane.

6	Arc in YZ plane	If this option is selected, The arc will be in YZ plane.
7	Arc in XZ plane	If this option is selected, The arc will be in XZ plane.
8	OK	Save the selected parameter and create an entry in program window for generating an arc based on provided inputs

7.5.5 Comments



The interactable field in rectangular area are explained here

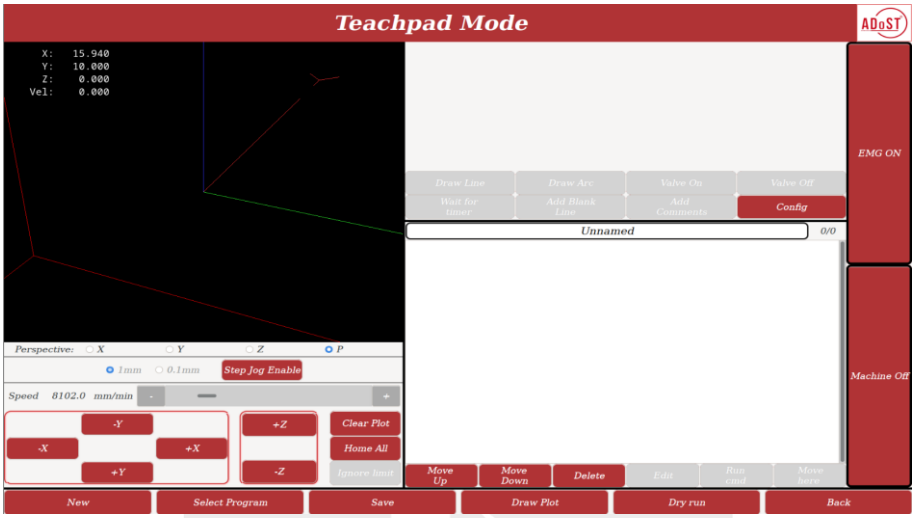
Sr. No.	Field	Features
1	Comments	Provision of adding a comment for self-understanding of program. This entry in program will NOT be executed.
2	OK	Saves the entered comment and create an entry in the program.

8 PROGRAM EXAMPLES

This section shall help in creating sample program to dispense in drop, line or circle. Combination of these shall help the operator to develop any program required for complicated patterns.

8.1 CREATING NEW PROGRAM

If you are using TeachPad for the first time, there will be no programs available by default. To create a new program, click on New button. Screen will appear as below.



Programs in **TeachPad** can be created easily using the on-screen buttons—manual typing is minimal. You can create various elements such as **lines, arcs**, and control actions like **valve ON/OFF** at specific points during the sequence.

To improve understanding and readability of the program:

- **Comments** can be inserted. These are helpful for documentation and do not affect execution.
- **Blank lines** can also be added to visually separate different sections of the code.

Example:

If you have drawn four lines to complete a rectangle and now want to draw a circle (which requires two arcs), you can insert a blank line and a comment (e.g., “Start of circle drawing”) before the next set of instructions. This makes the program easier to follow and maintain

8.2 COMMON PARAMETERS FOR ALL PROGRAMS

8.2.1 Home All

It is **strongly recommended** to perform a **Home All** operation before starting any new program. This ensures that the system's reference positions are correctly set.

- If you are using the system **for the first time after boot-up**, performing **Home All** is **mandatory**.
- To perform Home All, simply click on 

the button on the interface.

This step ensures accurate movement and positioning during program execution.

8.2.2 Config

There are several **common parameters** that are used throughout the program during runtime. These parameters **must be set before** starting any new program.

To view or modify these parameters, click on the 

button.

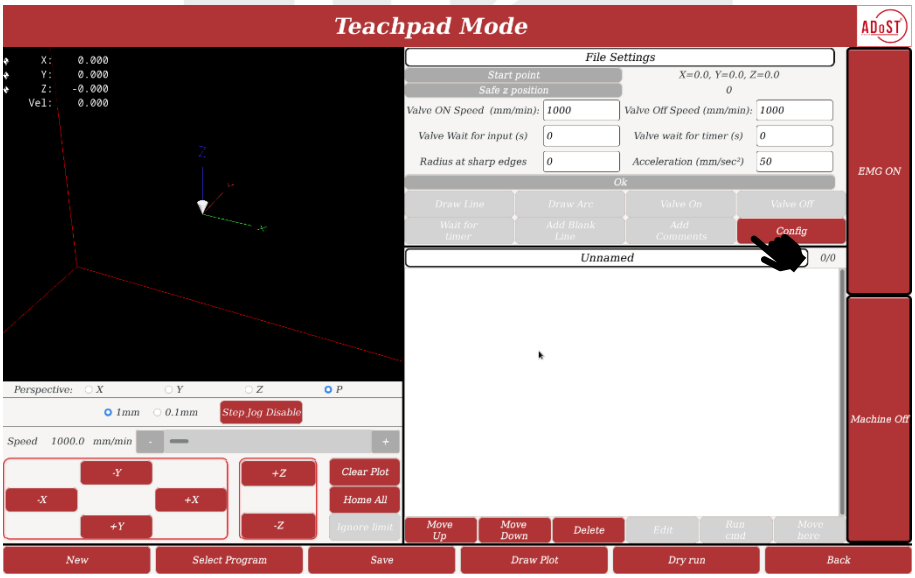
Recommended Starting Settings

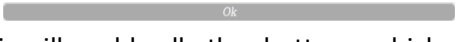
- Begin with **low acceleration and speed** values.
- Refer to the **load vs. acceleration graph** to determine the permissible acceleration and speed based on the current load conditions of the robot.

Note: In this example, we will proceed using the default parameters.

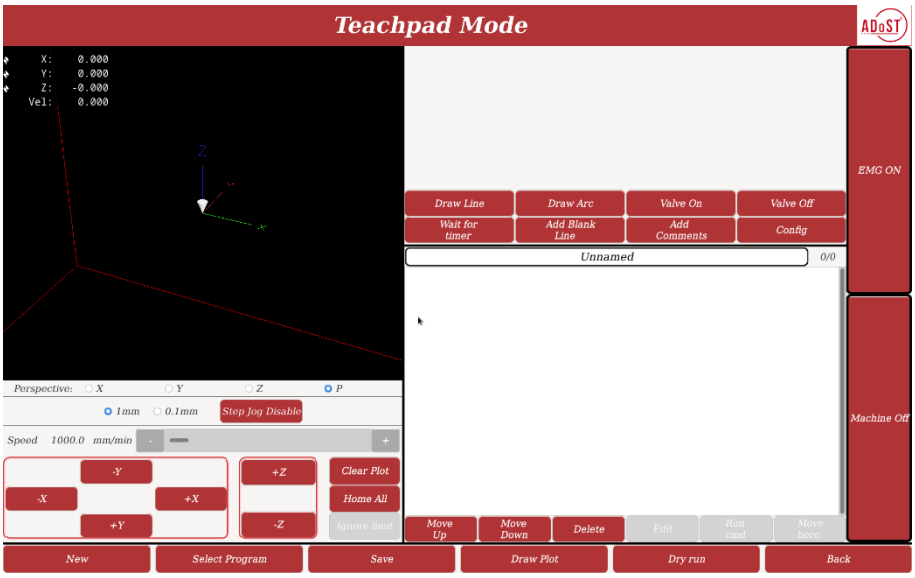
Valve Confirmation (Optional)

If the connected machine is expected to send a **confirmation response** when the valve is turned ON, then the "**Valve Wait for Input**" parameter should be defined. This ensures the program waits for the appropriate signal before continuing.



Click on 

button confirming the acceptance of entered values. This will enable all other buttons, which shall allow addition of other commands in the program. The screen will look as below

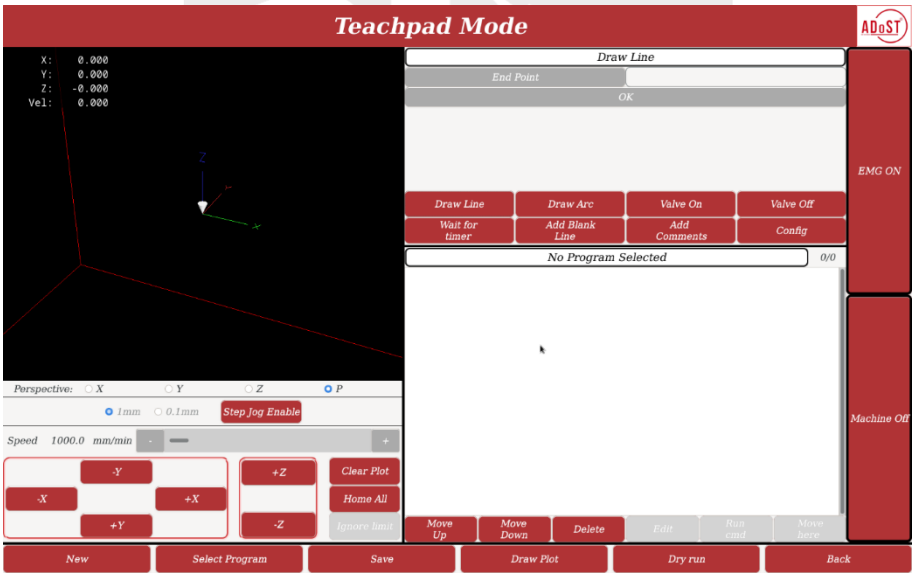


8.3 DISPENSING IN DOTS

This program shall dispense at two predefined points.

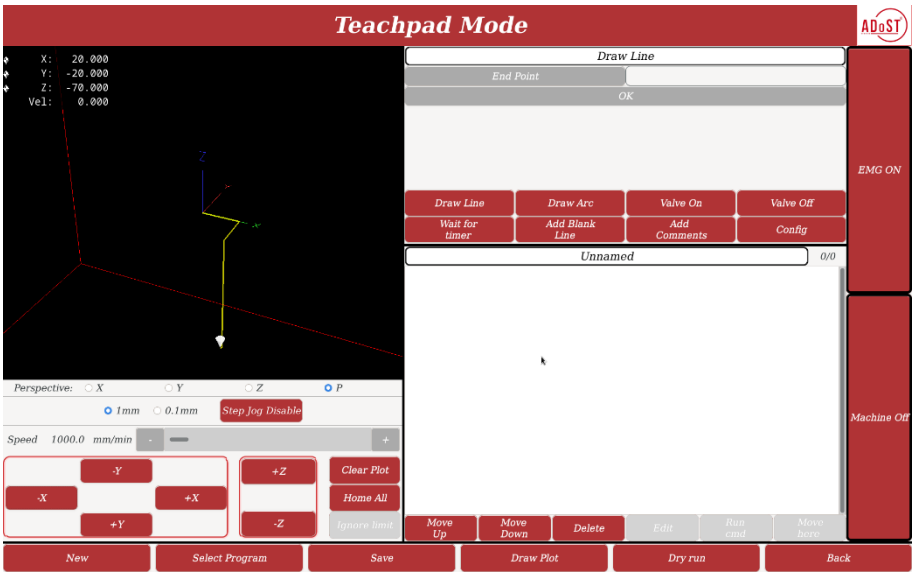
8.3.1 Draw Line

As the dispensing head is expected to move in a line to reach to the targeted point, select Draw Line button. Screen shall appear as follow, where it's expected to provide the end point of the line The start point of the line is automatically taken from the start point defined in the configuration parameters.



8.3.2 Moving the dispensing head to 1st defined point

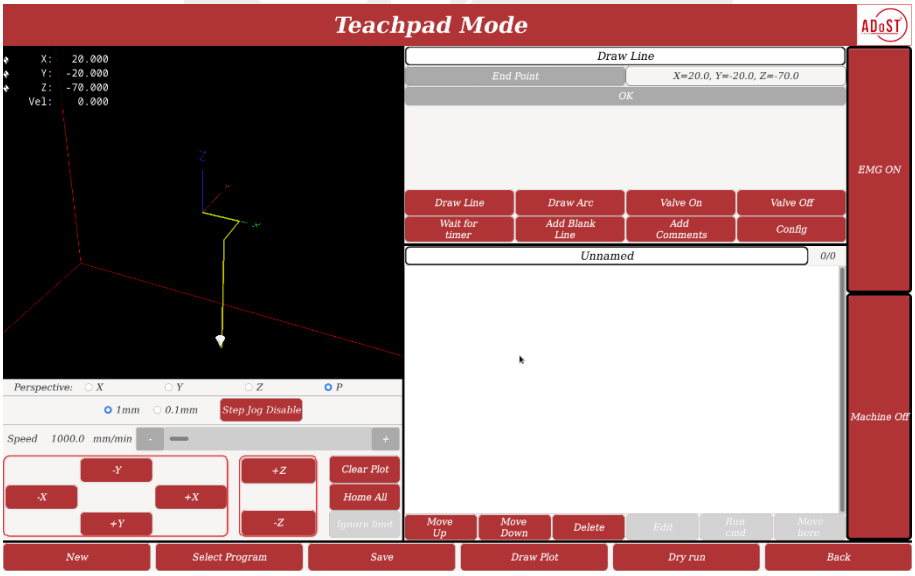
Use the Jog and Step Jog buttons to move the dispensing head to the exact point where the first dot is to be dispensed.



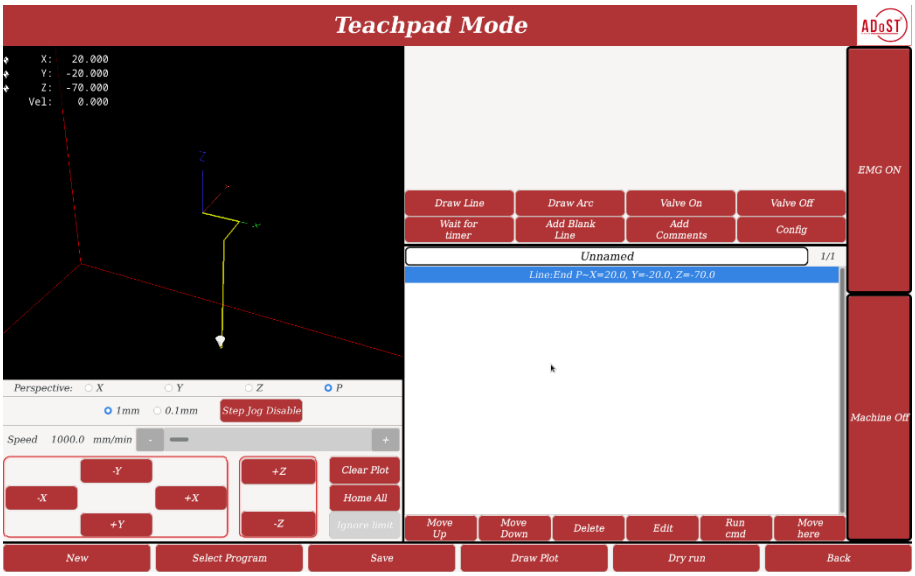
8.3.3 Select the End point of line

Once the desired end point is reached using the Jog or Step Jog buttons, you need to add this point to the program. Click on the End Point button. The system will automatically read the current coordinates of the dispensing head and set them as the end point of the line.

This action completes the line movement command in the program.



Select OK Button. This will add a statement into program and the screen shall appear as follow.



8.3.4 Dispensing 1st drop

As the dispensing head is positioned exactly at the point where dispensing is required:

1. Click on 

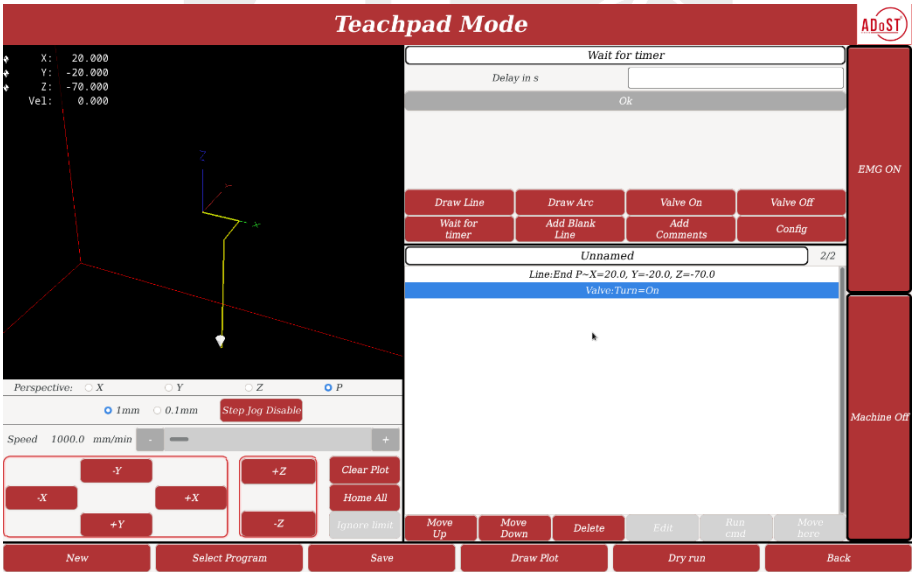
the button.

   – This will insert a program command to turn ON the valve, initiating dispensing at the current position.

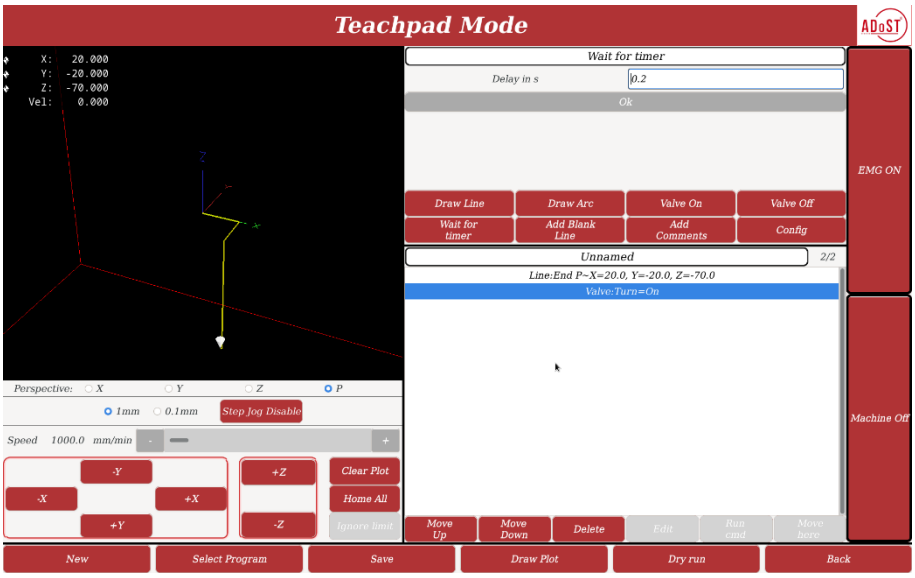
2. To ensure the correct drop size, the dispensing tip needs to remain stationary at this location for a specified duration.
3. Click on the 

button.

   – A new screen will appear, allowing you to enter the time (in seconds) for which the dispensing head should stay in position with the valve ON.

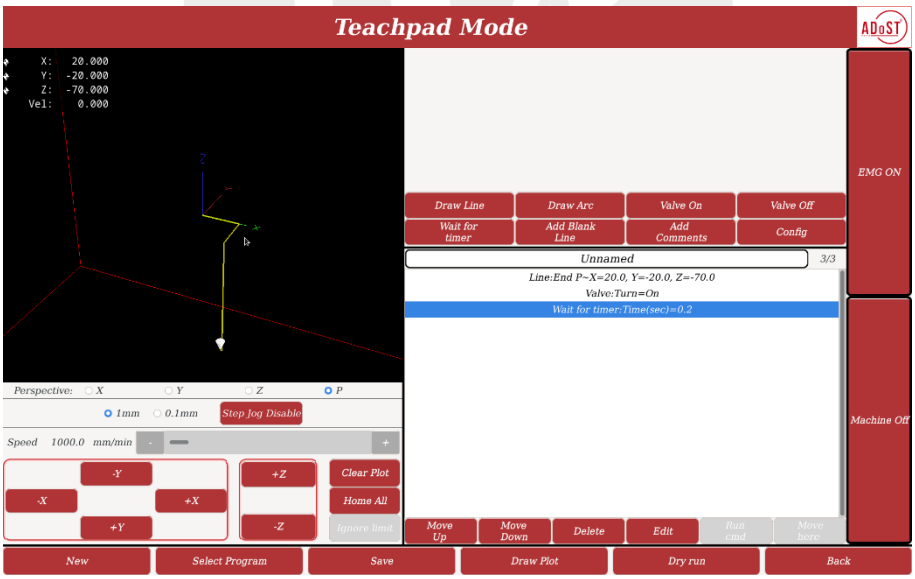


Enter 0.2 in the field available against Delay in s and select



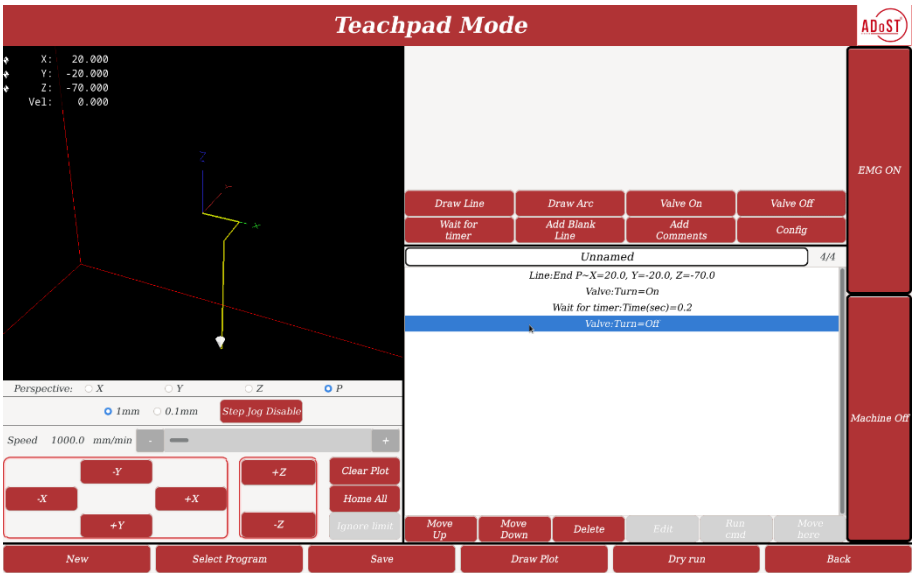
This action will add a line in the program (as shown in the screen below), instructing the dispensing head to wait for 0.2 seconds while continuing to dispense. This pause allows the formation of a drop of the desired size.

The waiting time can be increased or decreased depending on the drop size you want to achieve



As the desired dispensed drop is achieved, now its required to switch off the dispensing Valve. Select 

button. This will add program line and screen shall appear as below



8.3.5 Dispensing 2nd Drop

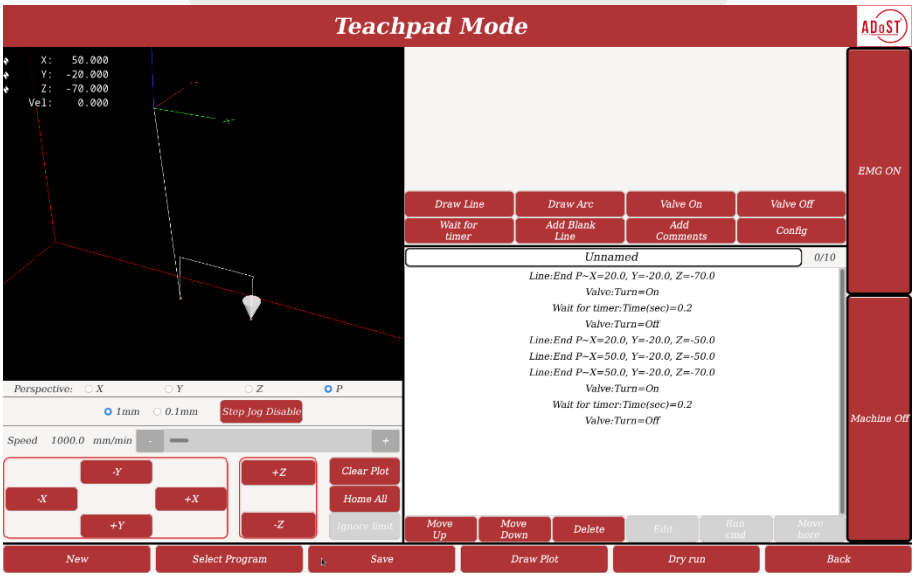
To dispense the 2nd drop, the dispensing head is required to be moved to the second dispensing point. There may be obstacle if moved from 1st dispensing point to 2nd dispensing point. Therefore its suggested to move the dispensing head up, bring till above second point and then move down using x, y, z jogging buttons.

This will need drawing of 3 lines.

1. Move up to a location which it is above the highest obstacle on job and Draw Line
2. Move horizontal towards the 2nd dispensing point and Draw Line
3. Move down to 2nd dispensing point and draw line

Once reached to 2nd dispensing point, need to add Valve On, Wait for Timer and Valve Off command to the program code as described in section above.

The final program shall look as below



8.4 Dispensing In A Straight Line

This section shall describe dispensing in line.

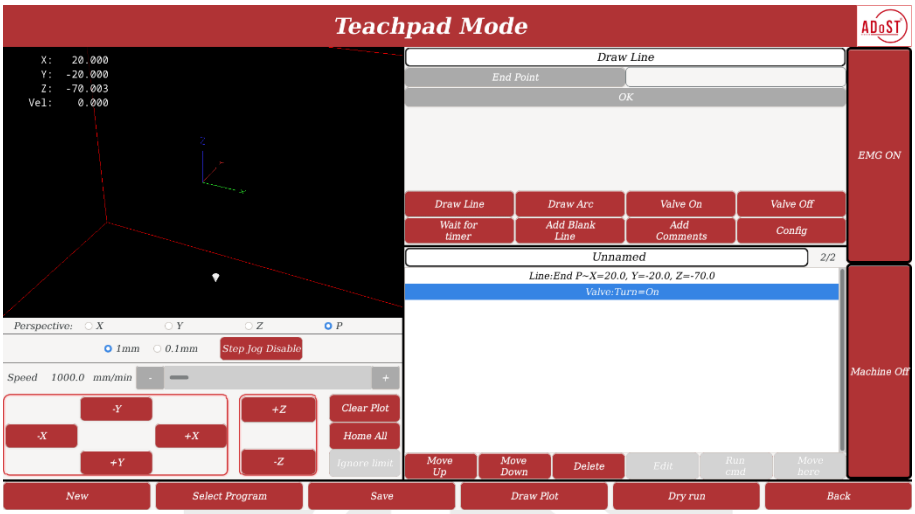
8.4.1 Draw a line to reach start point of dispensing

Follow the sub section Draw Line from section Dispensing in dots

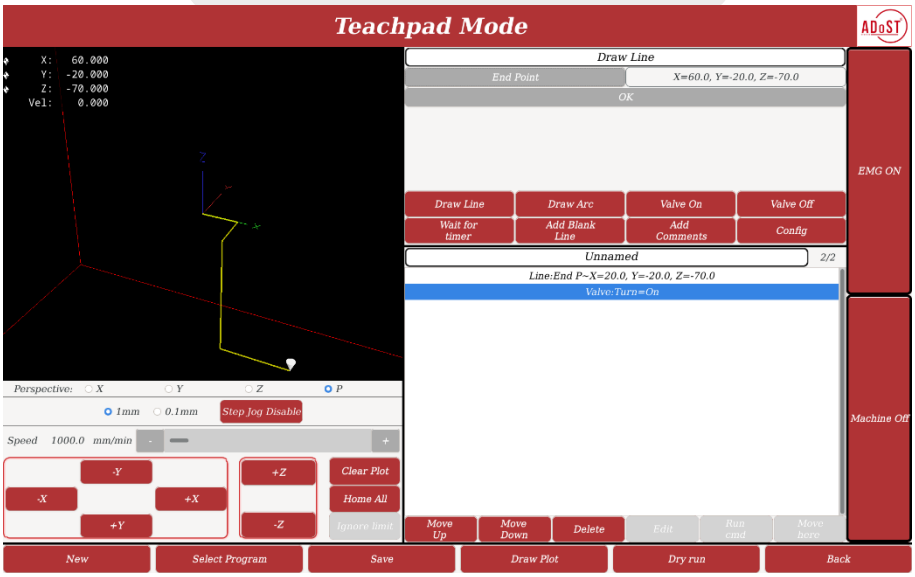
8.4.2 Dispensing in a straight line

As the dispensing head is right at the point from where dispensing is expected to start. Select Valve On button. This will add program statement to switch on the valve.

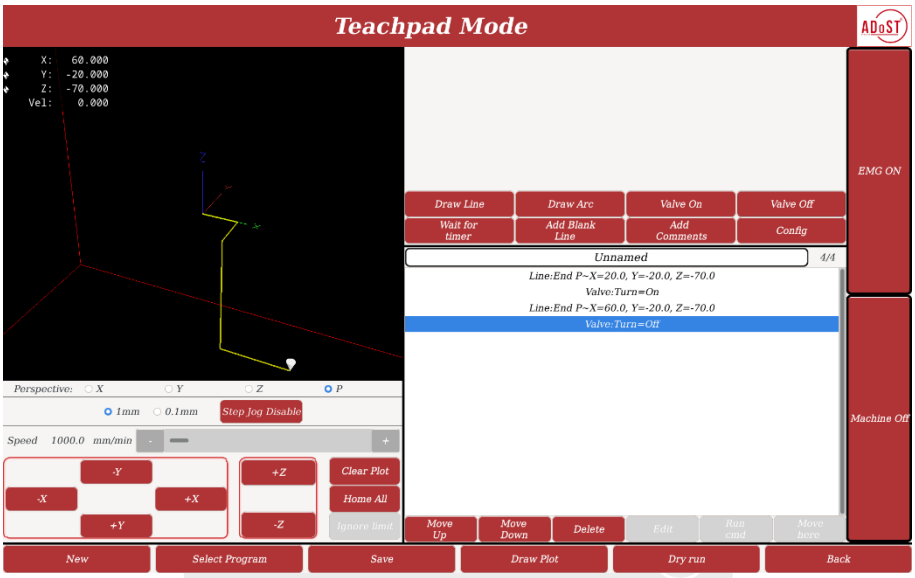
Now press the button Draw Line This will bring the window, allowing to add the end point. Please note that the start point for this line shall be same as point captured as end point in previous program line.



Use the jog button to move the dispensing head to the point where the dispensing should end. Now press End Point button, this will pick the current location of dispensing head to define end point of the line as shown in figure below



Select OK Button. This will add a statement into program. Now its required to switch off the Valve. So select Valve Off button. The complete program shall appear as shown in figure below.



8.5 Dispensing In A Circle

This section shall describe dispensing in a circle. To dispense in a circle, it's required to use two arcs, which are half circles.

The program example considers drawing of a circle with radius 25mm in XY plane.

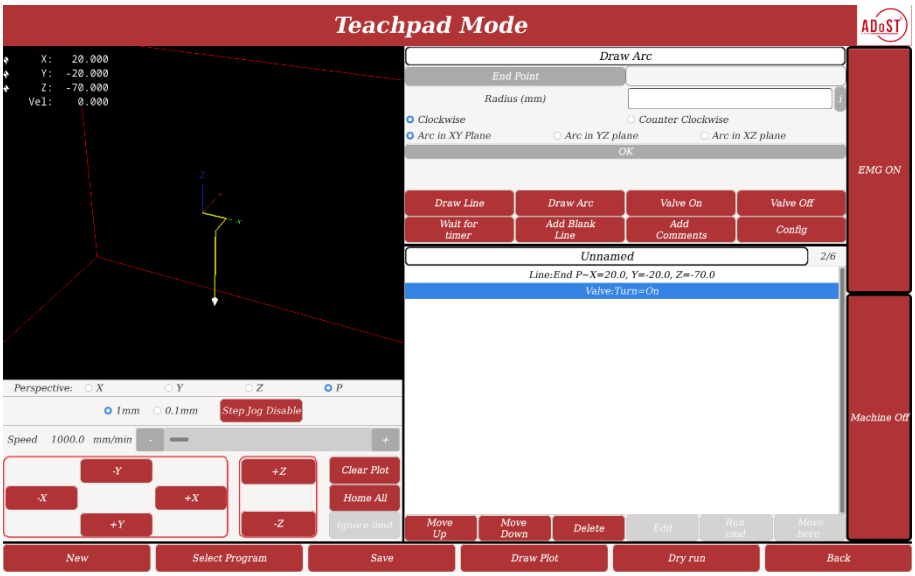
8.5.1 Draw a line to reach start point of dispensing

Follow the sub section Draw Line from section Dispensing in dots

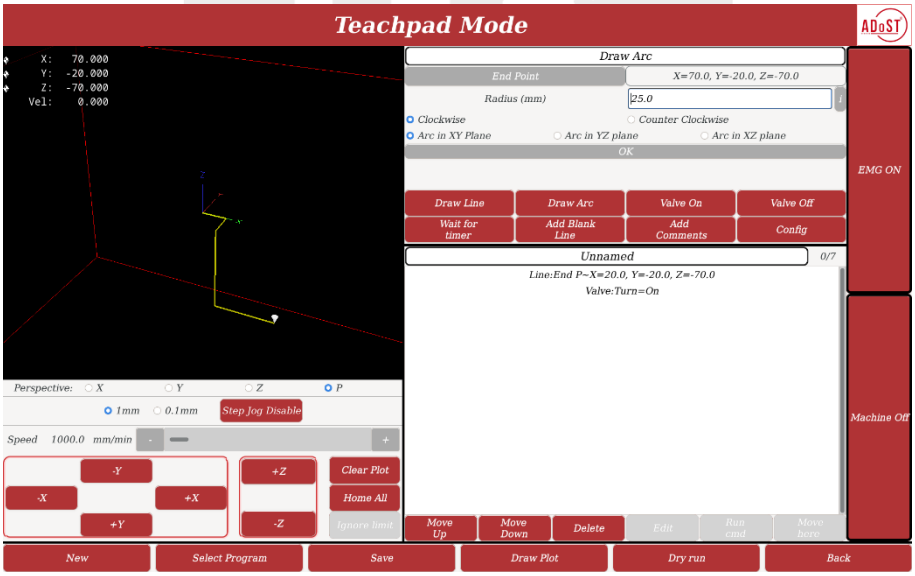
8.5.2 Dispensing in an arc (draw 1st half circle)

As the dispensing head is right at the point from where dispensing is expected to start. Select Valve On button. This will add program statement to switch on the valve.

Press Draw Arc button, the screen shall look as below.



Use the jog button to move the dispensing head to the point where the end point of half circle should be. Press End Point button, this will pick the current location of dispensing head to define end point of the half circle. Since we are considering 50mm diameter or the circle in XY plane, the Radius entered should be 25.0. The circle direction in which the dispensing should happen is Clockwise and in XY plane. After entering required values, the screen shall look as below.

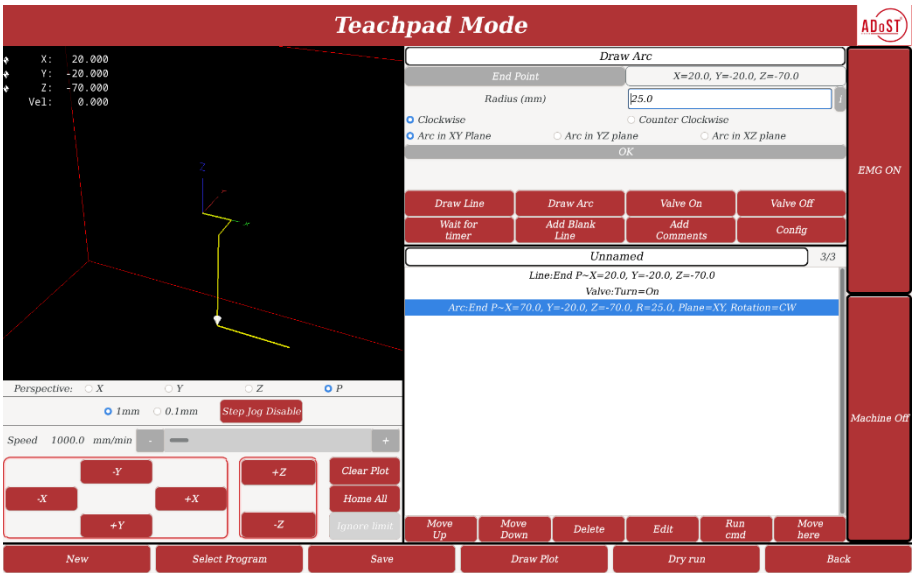


Select OK Button. This will add a statement into program as shown in figure below.

8.5.3 Dispensing in an arc (draw 2nd half circle)

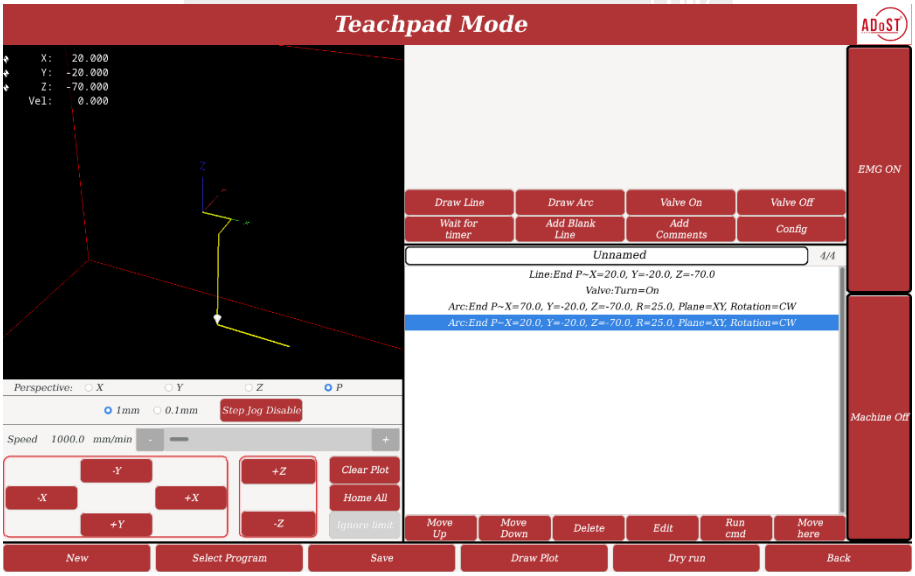
Press Draw Arc button. Use the jog button to move the dispensing head to the previous point from where the previous Arc started. Press End Point button, this will pick the current location of dispensing head to define end point of the half circle. As we are considering 50mm diameter or the circle in XY plane, the Radius entered should be 25.0. The circle direction in which the dispensing should happen is Clockwise and in XY plane. After entering required values, the screen shall look as below.

1K2K Dosing and Dispensing Private Limited
Plot No. A-44/1/A-55, Rajmata Jijau Mahila
Industrial Premises, Chakan MIDC Road,
Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501



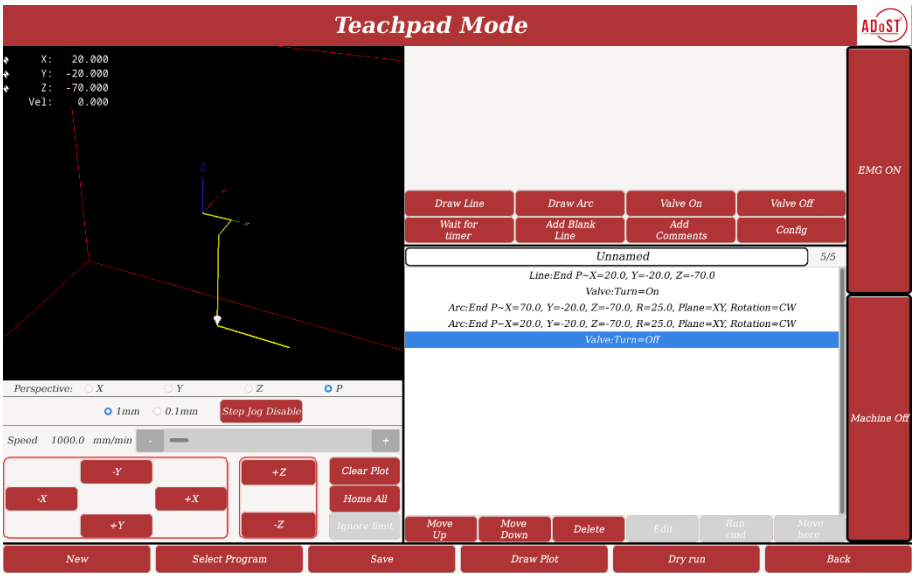
Select 

Button. This will add a statement into program as shown in figure below.



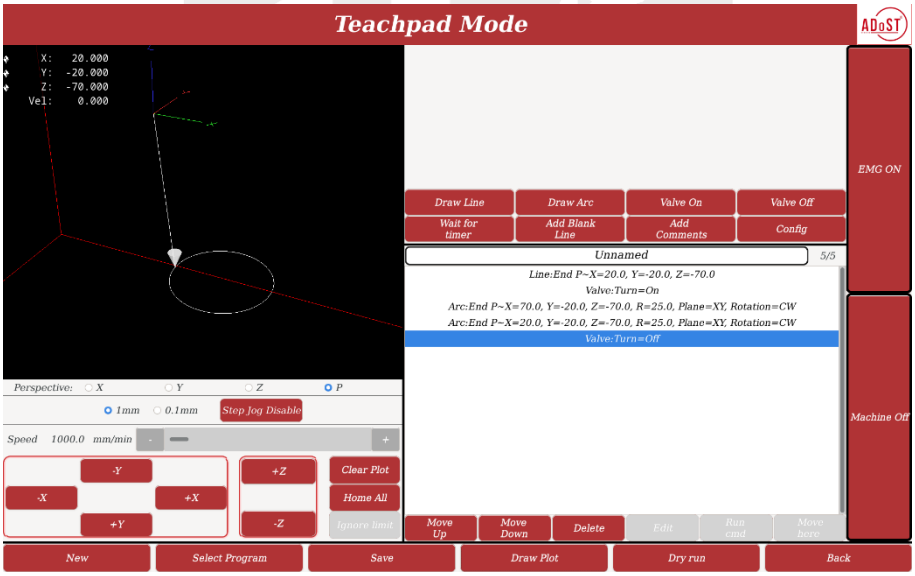
As the Movement of dispensing head in two arcs is completed, which is forming a circle. Its required to switch off the valve. Select 

button. This shall add required statement in the program. The screen shall look as below.



This completes the program for dispensing in a circle.

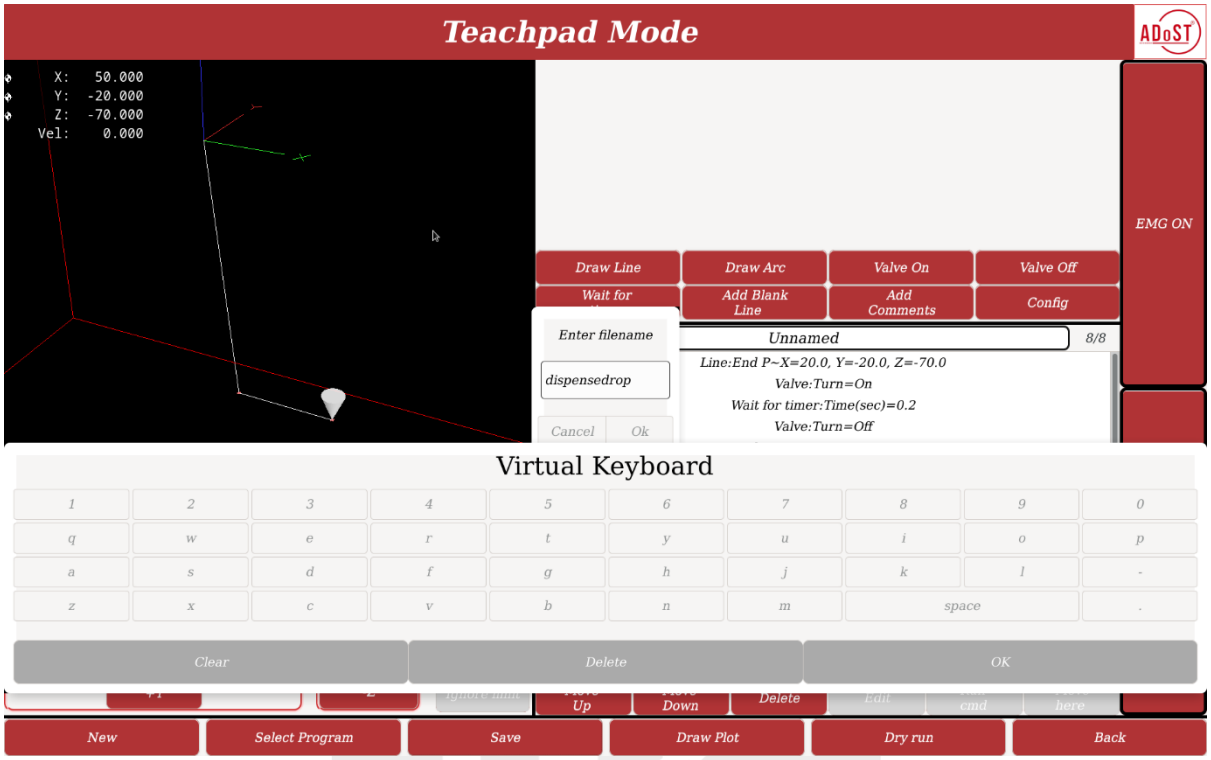
To check if the program is as per desired requirements. Select Draw Plot button. Following screen shall appear.



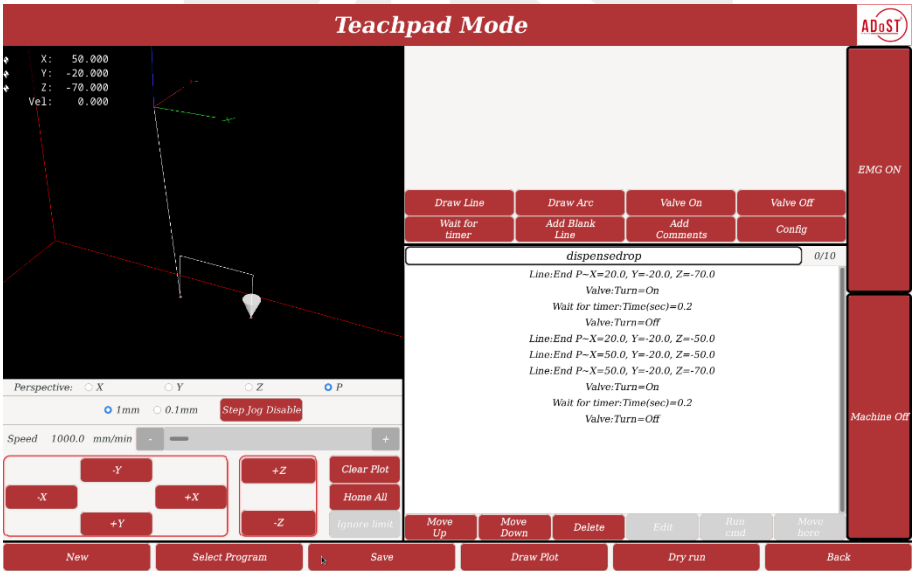
8.6 SAVING PROGRAM

Its required to save the program to run the same in operator mode. Its suggested to update the settings to autosave program every after few minutes to avoid loosing the program. If not made auto save settings then should select save as and when logical programming is concluded.

To save the above program, click on Save button. This will bring in popup allowing to save the program with given name. The screen shall look as below.



Type in the required name in given entry field and select Ok The program shall be saved with file name as entered. The name of the file, now shall be visible above the program as shown in screen below. This program can be selected and run by operator.



8.7 Draw Plot

Draw plot is used for visualizing the movement path of dispensing head. This functionality can be used anytime in between writing program. In above example on selecting Draw Plot button following screen shall appear with updated plot

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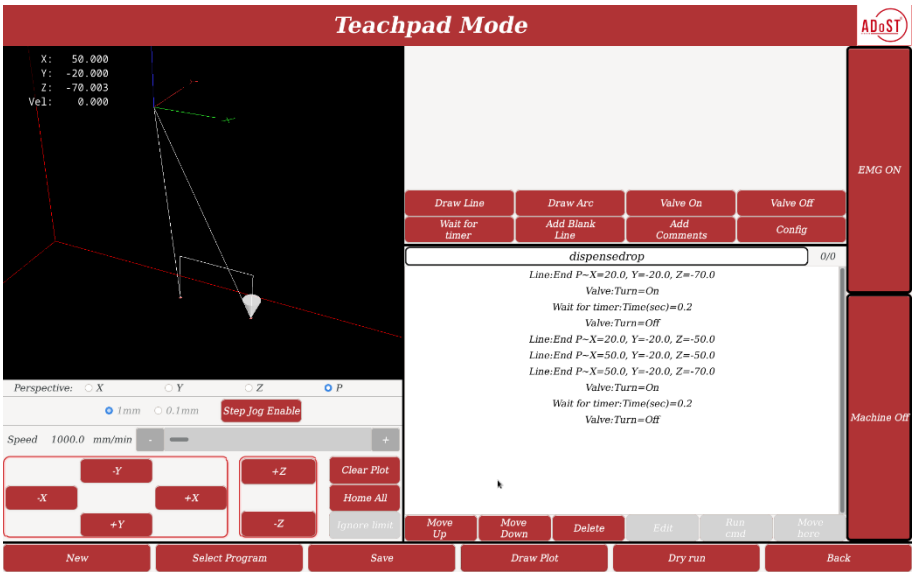

9 SOFTWARE TROUBLESHOOTING

S. No.	Issue	Solution
1.	Alert: Please enter a valid program name	• Valid Program name has a length of max 20 characters. Please enter program lesser than 20 chars • Program name without any characters not allowed. • Only Alphabets and numbers are allowed in programe name
2.	Alert: The X axis is out of range	The commanded position is out of the working range. Make sure homing is done before teaching points.
3.	Alert: The Y axis is out of range	
4.	Alert: The Z axis is out of range	
5.	Alert: The X and Y axes are out of range	
6.	Alert: The Y and Z axes are out of range	
7.	Alert: The X and Z axes are out of range	
8.	Alert: The X , Y and Z axes are out of range	
9.	Error: Dispenser error	Error received from dispenser, please check possible errors that are sent from Dispenser for more trouble shooting
10.	Alert: External ESTOP is set, could not change state!	Disengage hardware emergency stop
11.	Alert: Could not switch the machine on, Please ensure limit switch is not pressed	An axis is on the hardware limit and machine on is pressed

		• Select Ignore Limit button if enabled • Go to teach pad mode • Move axis by jogging • Machine on
12.	Alert: Error saving file. Please try again	Failed to save the file. Try providing another name. If not solved contact ADoST Technical services.
13.	Error: You are already at current position	You are trying to move here in teachpad mode.. if you are already at the selected position, its not possible to move further. You need to select another point to move.
14.	Error: Failed to open the file Error: Failed to open ADoST program	The file which you are trying to open is corrupted or not accessible. Try shutting down and restarting the system. If not solved contact ADoST Technical services.
15.	Error: Machine crossed hard limit please reset and do homing	You will be required to select Ignore limit and do jogging in TeachPad mode.
16.	Error: Soft limit warning	Axis has been moved beyond the soft limit Follow the steps below • Machine off and on • Select Ignore Limit button if enabled • Go to teach pad mode • Move axis by jogging • Select Home all
17.	Error: System response is slow, please try restarting machine	Contact ADoST representative if restarting the machine doesn't resolve the issue.
18.	Error: ADoST program error	Some input parameters in ADoST Program are not acceptable. • Please check your program • Save program in different name • Contact ADoST Technical services
19.	Error: Limit error while homing	Limit crossed on final home move Follow the steps below • Machine off and on • Select Home all
20.	Error: Axis is on homing	Homing command received while on homing Follow the steps below • Machine off and on • Select Ignore Limit button if enabled • Go to teach pad mode • Move axis by jogging • Select Home all
21.	Error: Homing error	Follow the steps below • Machine off and on • Select Ignore Limit button if enabled • Go to teach pad mode • Move axis by jogging • Select Home all

22.	Error: Machine enabled on Soft limit	Warning as the machine is enabled near the hardware limit • Login • Go to teach pad mode • Move axis out from the soft limit
23.	Error: X axis on limit switch error	Follow the steps below • Select Ignore Limit button if enabled • Go to teach pad mode • move X axis by jogging • Select Home all
24.	Error: Y axis on limit switch error	Follow the steps below • Select Ignore Limit button if enabled • Go to teach pad mode • move Y axis by jogging • Select Home all
25.	Error: Z axis on limit switch error	Follow the steps below • Select Ignore Limit button if enabled • Go to teach pad mode • move Z axis by jogging • Select Home all
26.	Error: X axis is already on homing	X axis on homing process and it got interrupted • Select Ignore Limit button if enabled • Go to teach pad mode • move axis by jogging if it is on limit • Select Home all
27.	Error: Y axis is already on homing	Y axis on homing process and it got interrupted • Select Ignore Limit button if enabled • Go to teach pad mode • move axis by jogging if it is on limit • Select Home all
28.	Error: Z axis is already on homing	Z axis on homing process and it got interrupted • Select Ignore Limit button if enabled • Go to teach pad mode • move axis by jogging if it is on limit • Select Home all
29.	Error: Limit error while home offset	• Make sure no axis is on limit • Select Ignore Limit button if enabled • Go to teach pad mode, • move axis by jogging. • Select Home all
30.	Error: Can't jog X axis further past min hard limit	Follow the steps below • Select Ignore Limit button if enabled • Go to teach pad mode, • move X axis by jogging. • Select Home all
31.	Error: Can't jog Y axis further past min hard limit	Follow the steps below • Select Ignore Limit button if enabled

		• Go to teach pad mode, • move Y axis by jogging. Select Home all
32.	Error: Can't jog Z axis further past min hard limit	Follow the steps below • Select Ignore Limit button if enabled • Go to teach pad mode, • move Z axis by jogging. • Select Home all
33.	Alert: Wait for sometime and try again.	If problem persist try Machine off and then on
34.	Alert: Unknown error	Machine off and On again. If problem persist then try restarting machine

10 INITIAL SYSTEM CONFIGURATION & STANDARD OPERATING PROCEDURE

10.1 INTRODUCTION

Each Adhesive exhibit specific rheological properties, so their flow behaviour changes based on application conditions. In adhesive dispensing applications, achieving the consistent bead width is essential for ensuring consistent product quality. The bead width directly affects the adhesive's bonding performance, while the dispensing speed influences application precision, material usage, and cycle time. It's also necessary to ensure the consistent dispensing tip height with respective to work piece to ensure same bead width even after change over.

This document focuses on understanding and defining the relationship between bead width of selected adhesive and dispensing speed in a 3-axis benchtop robot configured for adhesive dispensing. It outlines the parameters influencing these factors, including nozzle selection, adhesive viscosity, and robot motion settings.

10.2 PARAMETER VALUE IDENTIFICATION FOR DESIRED BEAD SIZE

The objective of this test is to define and optimize the process parameters for the adhesive dispensing system in order to achieve a consistent and target bead width suitable for the application requirements.

1. The Dispensing time delay between the command to start dispensing and the actual initiation of dispensing. (This is to accommodate the valve response time after dispensing on command)
2. Optimum Dispensing Speed at which desired bead width is achieved
3. The optimal point for stopping the dispensing.
4. The necessary Z-axis movement of the dispensing tip to break the adhesive string formed after dispensing stops. (This is required as the adhesive has tendency to form a stretchy string after dispensing, which can extend and form a bead of undesired width)

10.2.1 Pre-requisite

User or operator should have knowledge of ADoST Programming.

10.2.2 Input requirement

1) The desirable cycle time at which Adhesive dispensing is expected.
2) Desired bead width

10.2.3 Materials and Equipment:

1. 3-axis benchtop robot with adhesive dispensing system connected to work together.
2. Adhesive material planned to be used in production
3. Test workpiece of size more than 150mmx20mm (Length X Width) fixed on base using fixtures.
4. Measuring tools (callipers, or gauge for bead width & length measurement).
5. Cleaning tools and safety equipment (e.g., gloves, goggles).

10.2.4 Optimizing Bead Width and Dispensing Speed

10.2.4.1 Preparation:

1. **Power On Equipment**: Ensure the robot and dispensing system are operational.
2. **Purging (applicable only for Epoxy and Silicone):** Perform material purging every 2 to 3 minutes to prevent it from curing. (*The purging interval may vary depending on the material.*)
3. **Place the Test workpiece:** Securely fix the workpiece to the robot's work platform to avoid movement.
4. **Draw the rectangle over work piece:** Refer figure 1 below for dimensions. Height of the rectangle should be little more than desired bead width**.**

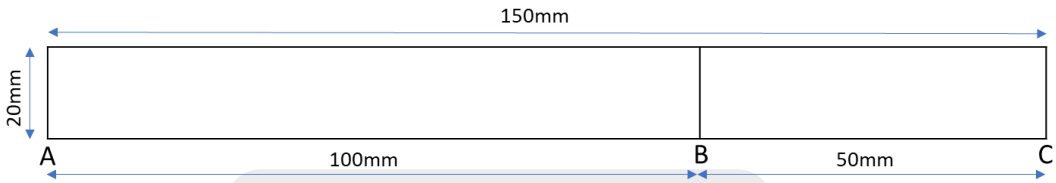

Figure 1

5. **Set Initial Parameters**: Set dispensing speed of around 1800mm/min, acceleration based on weight of valve and pressure based on recommendations or prior experience.

6. **Create program using teach pad:**

Create new program and set the config param as below

- Valve On Speed (mm/min): 1800
- Valve Off Speed (mm/min): 1800
- Valve wait for timer (sec): 0
- Acceleration (mm/sec^2): 100

Create a program with 3 points A, B and C referring to program below. Please note

- The position of Z coordinate will depend upon the height of dispensing tip from the test workpiece. The dispensing tip should be little higher than expected bead diameter and should be always same for this test procedure assuming workpiece is flat in nature.
- X and Y coordinate will change based on the position of workpiece and rectangle drawn over it. Expectation is, the dispensing tip is running in the middle of the rectangle.

```
Line: End P~X=0.0, Y=-0.0, Z=-68.52
Valve: Turn=On
Line: End P~X=100.0, Y=-0.0, Z=-68.52
Valve: Turn= Off
Line: End P~X=150.0, Y=-0.0, Z=-68.52
```

10.2.4.2 Program Execution:

1. **Dispense a Trial Bead**:

Run the robot to dispense a single bead on the test workpiece. The resulting bead formation shall resemble Figure 2 (b) below. Note that dispensing behaviour may vary based on the adhesive properties.

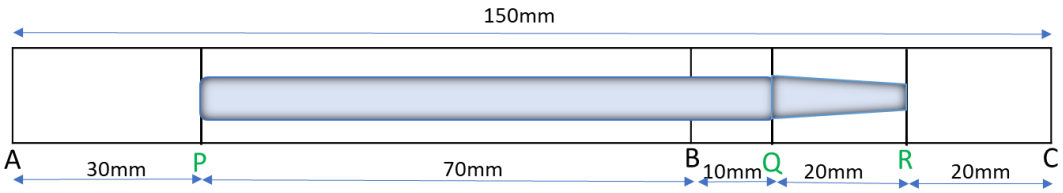

Figure 2(b): Actual Dispensing

Point A	Ideal Start Point of dispensing
Point B	Ideal Stop Point of dispensing
Point C	End point of line
Point P	Actual Start Point of dispensing
Point Q	Point upto which the desired bead width is observed
Point R	Point upto which dispensing present, but not with desired bead width
AP	Distance travelled without dispensing in mm
PB + BQ	Distance travelled with desired bead size in mm
QR	Distance travelled without desired bead size in mm

2. **Measure Bead Width**:

   Use a calliper or suitable measurement tool to record the width of the adhesive bead.

3. **Adjust Parameters**: Adjust the parameters following the guidelines as given in table below and repeat until desired results are achieved.

Condition	Possible solution	Comment
Bead width is too wide	• Decrease the dispensing pressure. • Reduce the nozzle size. • Increase the speed	Combination of all variables should be tried to achieve best result
Bead width is too narrow	• Increase the dispensing pressure. • Use a larger nozzle if necessary. • Reduce the speed	

Note:

- Robot speed can be increased or reduced. Low speed of robot is recommended (around 1800mm/min), to avoid different bead size at start and end due to acceleration and deceleration.
- The height of dispensing tip may require to be changed based on height of the bead. It should be little more than bead height to ensure it doesn't touch the adhesive bead.

4. **Parameters to note down after completing step 3.**
   Following are the sample parameters, which should be replaced with actual observed values
   - Robot Valve ON Speed **(V)**: 1200mm/min
   - Robot operating acceleration **(A)**: 500mm/sec^2
   - Distance travelled without adhesive dispensing after Valve On **(AP)**: 30mm
   - Distance travelled with desired bead size after Valve off **(BQ)**: 10mm
   - Distance travelled without desired bead size after valve off **(QR)**: 20mm
   - Dispensing tip Height: The height in mm. Eg 1.5mm
   - Operating Pressure: Dispensing system pressure, recorded in bar. Eg. 2 bar

5. **Calculation to be performed**
   - **Delay after switching on the valve**
   - This delay allows the valve to be at start point (Point A) till dispensing actually starts.
   - Delay Time (sec) = AP / V

$$Delay\ Time(sec) = \frac{30mm}{1200mm/min} = 0.03minute = 1.8\ sec$$

   - **Final point where valve should be stopped**
     X = AB-BQ
     X = 100 – 10 = 90

   - **Z point upto which the dispensing tip should be pulled up**
     Z = current Z + QR
     Z = -68.52 + 20 = -48.52

6. **Modify the program considering calculated data**
   Set following parameters in Config of the file
   - Valve On Speed (mm/min): 1200
   - Valve Off Speed (mm/min): 1200
   - Valve wait for timer (sec): 1.8
   - Acceleration (mm/sec^2): 500

7. **Updated program using calculated values**

```
Line: End P~X=0.0, Y=-0.0, Z=-68.52
Valve: Turn=On
Line: End P~X=90.0, Y=-0.0, Z=-68.52
Valve: Turn= Off
Line: End P~X=100.0, Y=-0.0, Z=-68.52
Line: End P~X=100.0, Y=-0.0, Z=-48.52
```

8. **Run the updated program**

User should see following dispensing pattern.

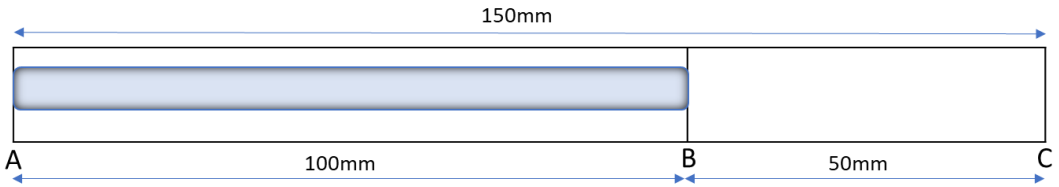

Figure 2(a): Ideal Dispensing

10.2.5 Optimising bead width & analysing dispensing speed for shorter lengths (Only in case of small object size)

If work piece has smaller bead length (less than 10mm) then the length up to which the adhesive can extend after stopping the valve may be short based on adhesive behaviour. So, it's suggested to repeat section 2.4 with smaller length of dispensing and keep the data ready. Here is the suggested length to get the data *Refer figure 4.* The dispensing length can be reduced to 5mm based on observed behaviour of adhesive during trials done following section 2.4

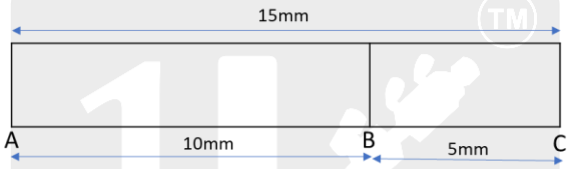

Figure 4

Point A	Start Point in Program
Point B	Stop Point in Program
Area B-C	Extended Area

11 Adhesive Cartridge Replacement and Reference Point Check

The height of the dispensing nozzle while dispensing the adhesive is very crucial for any application. Minor change in this value shall change the dispending behaviour. Change in position of dispensing tip is observed due to the change in nozzle height, change in placement of dispenser over fixture.

Therefore, before starting any programming for dispensing, it's suggested to define a reference point against which height of the dispensing nozzle can be validated.

11.1 Pre-requisite

A rectangular small block/Plate with all sides flat, top of which can be used as reference point. Mark a point on it to be used as a reference point.

11.2 Point/place selection for reference check

Look for a suitable place on Y axis which is available all the time for reference check. Place the block/ Plate over identified place.

11.3 Noting down position of selected point

Make the setup integrating Robot with Dispensing system. Bring in the dispensing tip to the selected point on rectangular block. Note down the position as X, Y, Z

11.4 Prepare program for reference check

Using the reference check point generate the program, where start point is same as reference check point. Valve on/valve off & acceleration is based on allowable value based on the load.

11.5 When to use the program

The program generated in step 3.4 should be used in case the dispensing tip is being replaced or its position with respect to height from base is suspected to be changed.

11.6 How to use the program

Run the program after changing/replacing/reattaching dispensing tip without keeping the rectangular block. Try to keep the block below dispensing tip to match the dispensing tip with marked point on the block.

11.7 Observation and corrections

While placing the rectangular block, one can come across following three conditions.

1. **Dispensing tip just touches the reference point on this block:** In this condition the setup is acceptable to go ahead with further dispensing
2. **It's not possible to place the block below dispensing tip:** Operator is expected to adjust the assembly up to ensure dispensing tip touch the reference point over rectangular block

Dispensing tip is at certain height from reference point: Operator is expected to adjust the assembly down to ensure dispensing tip touch the refence point over rectangular block

12 Hardware troubleshooting

Troubleshooting a 3-axis benchtop adhesive dispensing robot can involve addressing common issues like mechanical faults, adhesive clogging or uneven dispensing. Here are some key areas to check:

Mechanical Issues: Verify that the robot's linear rails and movement axes are functioning smoothly. If the robot is struggling with precision, recalibrating the system may be necessary.

Adhesive Clogging: Ensure the nozzle is clean and free from hardened adhesive. Using acetone or a specialized cleaner can help prevent blockages.

Uneven Dispensing: Check for air bubbles in the adhesive, inconsistent pressure settings, or worn-out dispensing needles

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S. No.	Issue	Possible Cause	Solution
1	Robot not powering on	Faulty power connection or damaged cable	Check power supply
			Check Power switch
2	Excessive vibration during operation	Loose mounting bolts or over weight	Reduce Load
			Reduce Operational Acceleration
			Retighten bolts
3	Machine Tilted	Robot Work Table got Tilted	Check Object holding Fixture.
			Adjust Levelling screw
		Robot too Close to Edge	Rearrange the position of Robot
4	Screen freeze	Long time machine working so over heat	Restart Machine
			Maintain standard Defined Environment
5	Not able to access move robot position	Limit pressed	Ignore limit and switch on machine
			Move all axis's away from home and do homing
			Reduce Load
			Reduce Operational Acceleration
6	Emergency switch not working	Loose connection	Reconnect Connector.
7	Touch screen not responding	Loose connection	Reconnect screen Connectors.
		Wires got Damage	Contact 1K2K Representative for replacing cables
8	Axis movement is jerky or unresponsive	Speed and Acceleration not in expected range for Tool and Workpiece load	Reduce Load
			Check the Speed Acceleration graph in TDS
9	Accuracy and Precision not as per specification	Backslash	Select Home All to regain precision. If this doesn't help, contact 1K2K Representative
		Misalignment	
		Belt Tension changed	
10	Software errors or unresponsive commands	Outdated firmware or corrupted program	Contact 1K2K Representative to update firmware and reload program settings
11	Overheating of components	Blocked cooling fans or excessive workload	Check Working Environment
			reduce operational load
			Contact 1K2K Representative for solution
12	Inconsistent adhesive dispensing	• Fluctuations in pressure or temperature. • Clogged or improperly maintained nozzles. • Adhesive degradation over time.	• Clean or replace nozzle • Adjust dispensing pressure • Store adhesives in temperature-controlled environments.

13	Unwanted strings of adhesive forming during or after application	• High adhesive viscosity. • Inadequate nozzle design. • Improper dispensing speed or pressure.	• Optimize dispensing speed and pressure settings. • Upgrade to anti-drip or string-resistant nozzles. • Controlled stop/start sequences in programming at which string cuts

Note:

- Contact 1K2K Representative in case your problem not resolved by above given troubleshooting.
- After every quarter running, all the motion parts would have used extensively and the capabilities of other motionless parts will change too. They may require adjustment, maintenance and/or replacement. The task should be completed by authorized personnel at authorized stations according to the advice from facility management technicians.

13 Connecting with Dispenser:

ADoST 3X-RDS1 is designed to be used with ADoST Dispensers along with any 3rd party dispensers. To integrate 3X-RDS1 with 3rd party dispenser, following connections are protocols are expected to be followed.

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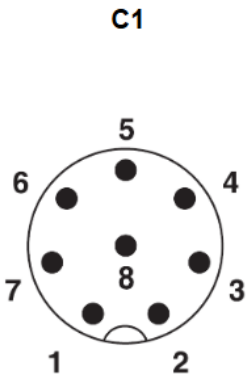
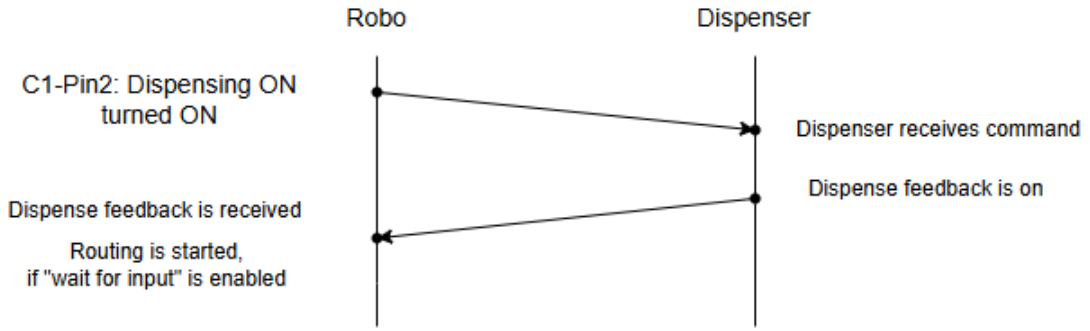
13.1 Connection Details



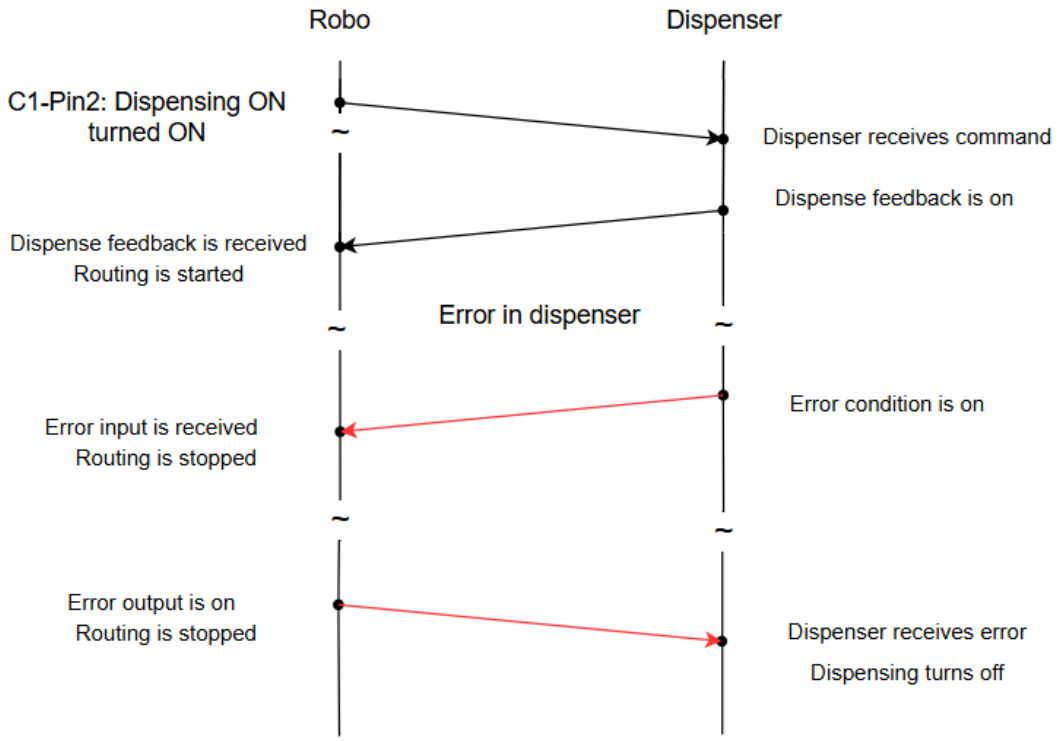
Pin and signal		
Pin number	Signal	Signal type
1	COM-	Reference ground for Input
8	COM+	Reference ground for Output
2	Dispense on	Output
3	Dispense feedback	Input
4	Error input	Input
5	Error output	Output
6 - 7	Not used	

13.2 Control Sequence Diagram

13.2.1 Normal operation sequence



13.2.2 Error conditions



14 Maintenance And Inspection

Routine maintenance and regular inspections are essential to ensure the robot functions safely and reliably. Implementing preventive measures helps reduce unexpected breakdowns and supports long-term performance and durability.

To keep the robot in optimal condition:

- Ensure all external surfaces remain clean and free of dust or adhesive buildup. Clean using a vacuum cleaner or a soft, dry cloth.
- The linear rail is designed for low maintenance but requires periodic Maintenance to ensure smooth and efficient operation. Periodic Maintenance helps prevent wear and extends the lifespan of the mechanism. (This should be done by 1K2K Representative only)

Adhere to the following periodic maintenance checklist to maintain safety and efficiency for every shift or batch change:

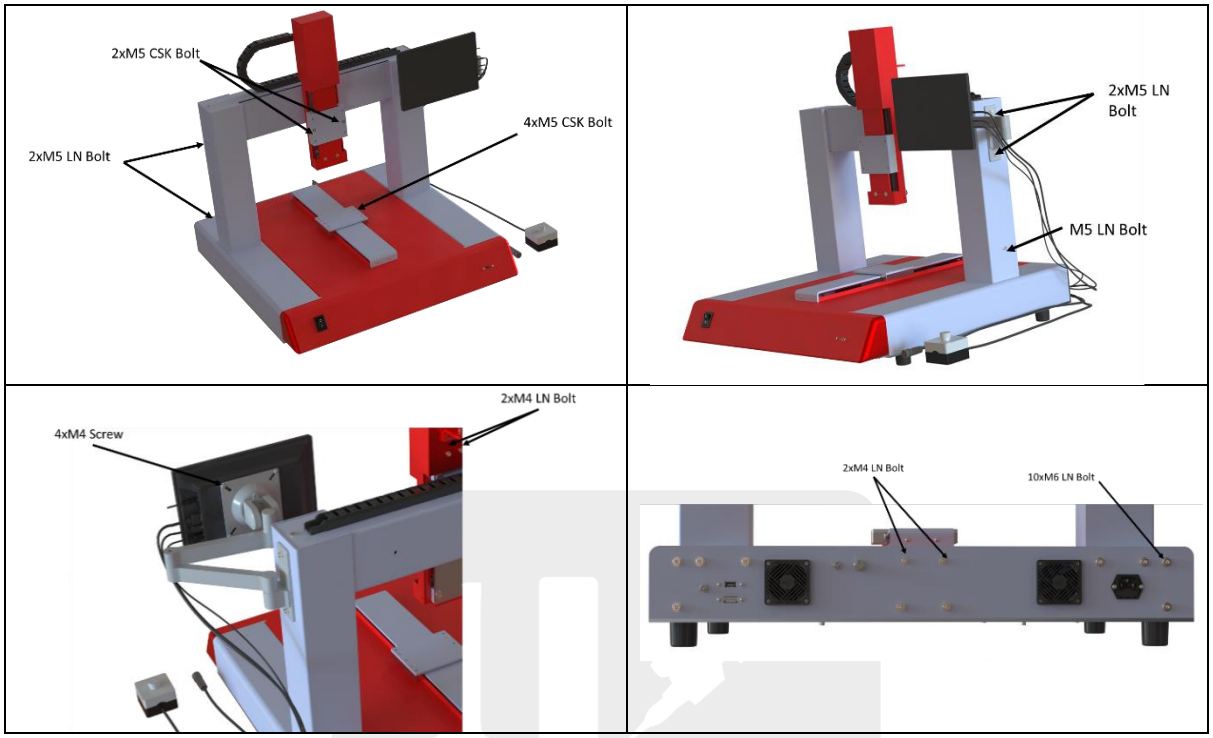
1. Inspect for machine is tilted.
2. Identify and address any signs of damage or loose parts.
3. Test the emergency stop button.
4. Verify homing and basic movement accuracy.

14.1 Inspect for machine is tilted.

Use a spirit level to check if the machine is properly levelled. Visually inspect its alignment and positioning to ensure there is no tilt or uneven placement.

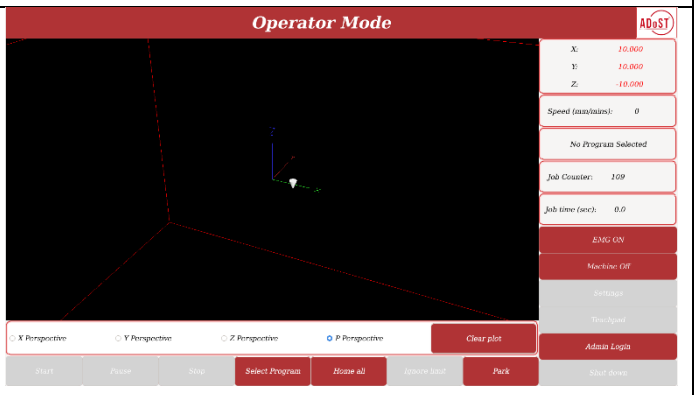
14.2 Identify and address any signs of damage or loose parts.

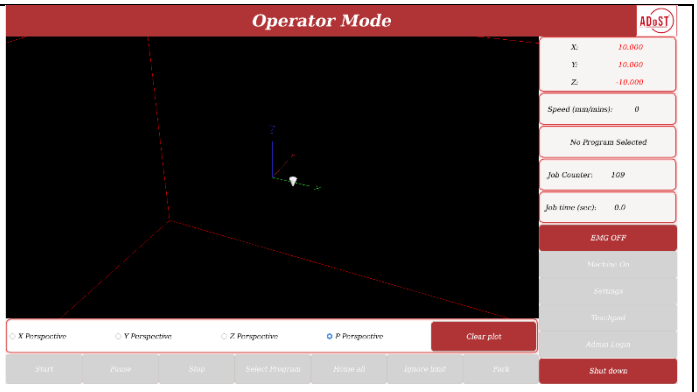
Examine the machine for any signs of physical damage or loosened parts. Inspect all visible nuts and bolts, and securely tighten them as indicated in the image below.



14.3 Test the emergency stop button.

1. Power on the machine.
2. Press the emergency stop switch.
3. Observe the touchscreen button status will update accordingly.
4. Buttons (Select Program, Park, Machine On/Off) will become disabled and non-interactive.
5. This confirms that the emergency stop function is operating correctly.
6. Release the emergency stop switch to resume normal operation.

S. No.	Condition	Observations
1	Before Pressing Emergency Switch	 Machine On/Off Button will be active

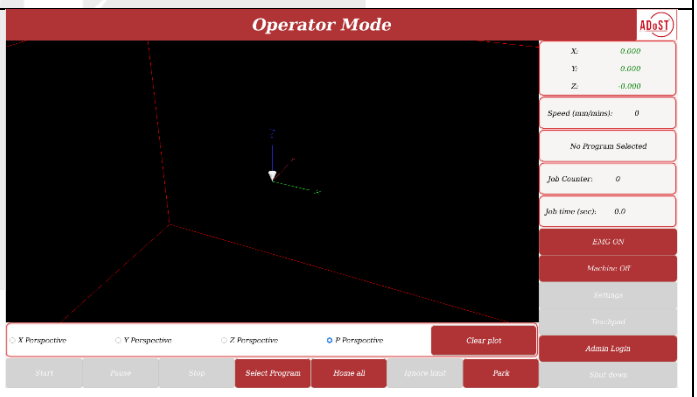
2	After Pressing Emergency Switch	 Machine On/Off Button will be inactive

14.4 VERIFY HOMING AND BASIC MOVEMENT ACCURACY.

After Testing Emergency switch follow bellow mentioned steps

14.4.1 Homing Through Operator Mode

1. Press Machine On/Off Button.
2. Press Home all Button
3. The coordinate indicators on top right corner of the screen for the X, Y, and Z axis will change colour from red to green, and their values will reset to zero upon successful alignment or homing.

S. No.	Condition	Observations
1	After Pressing Home all	 The coordinate indicators for the X, Y, and Z axes will change colour to green, and their values will reset to zero upon successful alignment or homing.

14.4.2 Basic Movement Check

1. In admin mode Press Teachpad button.
2. Move all Axis x, y and z axis using Jogging buttons one by one.
3. Axis's moving without error as per given command.
4. Press Home All button.
5. Now machine is ready for Continues Operation or production work.

15 SAFETY INSTRUCTIONS

WARNING
• Shut down the machine using screen before using Power On/Off button for powering off. • The product poses a risk of electric shock if used in an unsafe manner. • Push the emergency switch in emergency situation. • Forbid working while the power wire is damaged. • If the device remains unused for a long period of time remove the power cord out of power socket. • Disconnect the power cord from the machine before performing any maintenance or inspection. • Operate the machine within the specified specifications (such as payload, speed, operational range, user environment). • Do not plug or unplug cables when the machine is powered on. • Do not move the axis by hand, to avoid damaging the machine. • Avoid touching any moving parts during operation. • While the dispense operation is paused, inspect before continuing operation. • Ensure that the machine's working area is clear of people and obstacles before starting the dispensing operation. • Remove unsecured parts when moving machine location. • Caution: Watch your head and be mindful of the machine's edges when moving around it. • Carry safely to an applicable work area and install the machine on a flat, stable and robust workstation. • Before moving and carrying, ensure the axis is secured. • Install the machine on a flat, stable and robust workstation. • Regularly inspection and maintenance will ensure durability and performance.
Attention
• Do not discard the original packaging. • The machine must be placed vertically. • Keep machine dry. • Keep the area free around the robot for better use of flexible arm screen. • Close the screen inside the robot area after use to prevent it from damage.

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Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501

16 FAQs

1. What is a 3-axis benchtop robot?

A 3-axis benchtop robot is a compact, precision robotic system designed for various tasks such as dispensing, assembly, pick-and-place, or testing. It operates along the X, Y, and Z axes and is commonly used in laboratories, workshops, or manufacturing environments.

2. What are the key applications of this robot?

- Adhesive/Glue Dispensing: Accurate application of adhesives on surfaces.
- Assembly Tasks: Automated assembly of small components.
- Pick-and-Place: Moving items between predefined locations.
- Soldering/Welding: For electronics or small mechanical parts.
- Testing and Inspection: Automated quality checks.
- Engraving or Marking: High-precision marking on various materials.

3. What types of materials can it work with?

- Adhesives (epoxy, silicone, acrylics)
- Small mechanical or electronic components
- Various marking or testing surfaces, such as metals, plastics, or ceramics.

4. Is it programmable? What software does it use?

Yes, the robot is programmable. It supports various programming languages or proprietary software. Common software features include:

- **.adost** file compatibility.
- User-friendly GUI for setting paths and operations.

5. Can we use other format of file for operation?

No, only **.adost** file format will work in this software. (*you can convert file format to **.adost** & run the operation*)

6. Does it have safety features?

Yes, the robot includes:

- Emergency stop buttons.
- Overload protection.
- Short circuit protection.

7. How do I select the right end-effector/tool?

Choose the end-effector based on the application:

- Dispensing Valve: For adhesives or fluids.
- Gripper: For pick-and-place tasks.
- Suction Cup: For lightweight and delicate items.
- Soldering Tip or Laser: For specialized tasks.

8. Is the system battery operated?

No, the system needs AC power supply between 230-250 Volt AC.

9. Can it be integrated with other systems?

- Yes, it can be integrated with: ADoST Products such as PPS, PPS-NXT, CDS, etc

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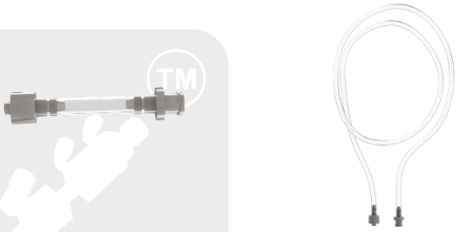
17 Accessories


Pinch valve

18 Consumables

	
Nozzle	Pinch Tube

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