

LOCTITE[®]

EQUIPMENT OPERATION MANUAL



LOCTITE[®] SCARA-N ROBOT

S440 Series

Dispensing Applications

Thank you for purchasing this Loctite[®] Robot.

- Read this manual thoroughly in order to ensure proper use of this robot. Be sure to read “For Your Safety” before you use the robot. The information will help you protect yourself and others from possible dangers during operation.
- After having read this manual, keep it in a handy place so that you or the operator can refer to it whenever necessary.



FOR YOUR SAFETY

Safety Precautions

The precautions in this manual are provided for the customer to make the best use of this product safely, and to provide preventive measures against injury to the customer or damage to property.

. **Be sure to follow the instructions**

Various symbols are used in this manual. Please read the following explanations of each symbol.

- **Symbols Indicating the Degree of Damage or Danger**

The following symbols indicate the degree of damage or danger which may be incurred if the safety notes are neglected.

	Warnings The Warning symbol indicates the possibility of death or serious injury.
	Cautions The Caution symbol indicates the possibility of accidental injury or damage to property.

- **Symbols Indicating Details of Danger and Preventive Measures**

The following symbols indicate the type of safety measure that should be taken.

	Indicates the safety measures that should be taken.
	Be careful. (General caution)
	Indicates prohibition.
	Never do this. (General prohibition)
	Do not disassemble, modify or repair.
	Do not touch. (Contact prohibition)
	Indicates necessity.
	Be sure to follow instructions.
	Be sure to unplug power cord from wall outlet.
	Be sure to check grounding.

FOR YOUR SAFETY

Warnings



Do not leave the unit plugged in (power cord and connectors) when it is not in use for long periods of time. Dust can cause fire.

Be sure to shut off the power supply before removing the power cord.



Keep the emergency stop switch within reach of an operator while teaching or running the robot.

Failure to do so may cause danger since the robot may not be able to be stopped immediately and safely.



Regularly check that the I/O-S circuits and emergency stop switch work properly.

Failure to do so may cause danger since the robot may not be able to be stopped immediately and safely.



Check the mounting screws regularly so that they are always firmly tightened.

Loose screws may cause injury or breakdown.



Power the unit only with the rated voltage.

Excessive voltage can cause fire or malfunction of the unit.



Do not sprinkle water or oil on the robot, operation box, or power cord.

Contact with water or oil can cause electric shock, fire, or unit malfunction.

IP Protection Rating: IP20

FOR YOUR SAFETY

■ INSTALLATION ■

Warnings



Always use a safety barrier.

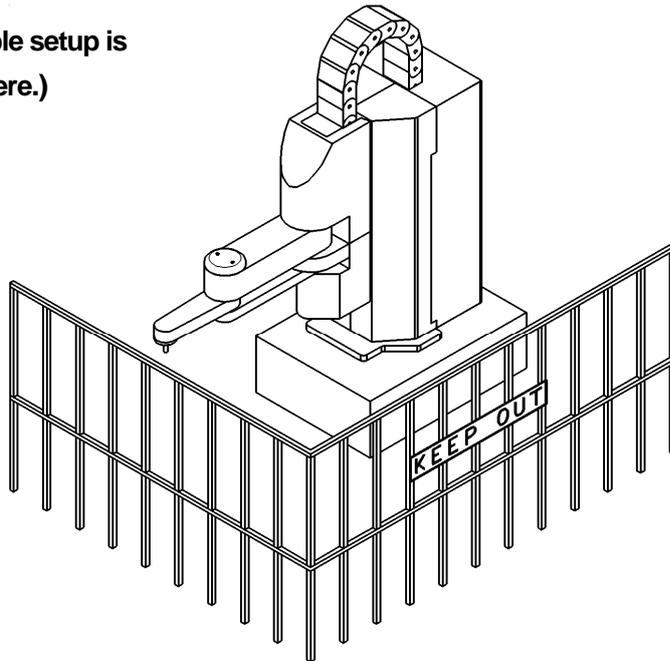
A person entering anywhere in the robot's maximum operating range may be injured.

Establish an interlock as a safety barrier that triggers an emergency stop when the gate is opened at the entry gate of the safety barrier.

Use the I/O-S connector included in the package. Ensure there is no other way of entering the restricted area.

Furthermore, **put up a “No Entry” or “No Operating” warning sign** in a clearly visible position.

(An example setup is pictured here.)



Install a safety barrier of adequate strength in order to protect the operator from moving tools and flying objects.

Always use protective wear (helmet, protective gloves, protective glasses, and protective footwear) when going inside the safety barrier.



Take adequate precautions against objects the robot is gripping from flying or falling off **taking into account the object's size, weight, temperature and chemical composition.**

FOR YOUR SAFETY

Warnings



Confirm that the robot is properly grounded before use.
Insufficient grounding can cause electric shock, fire, malfunction, or breakdown.



Install the robot in a place which can endure its weight and conditions while running.
Placing the unit in an insufficient or unstable surface may cause the unit to fall, overturn, or breakdown. This could result in injury of the operator.



Do not block the air intake on the lower part of the back of the robot (18mm above the floor.) This may cause overheating or fire.



Do not use the unit where flammable or corrosive gas is present.
Leaked gas accumulated around the unit can cause fire or explosion.



Place the unit in a well-ventilated area for the health and safety of the operator.



Use the robot in an environment between 0 and 40 degrees centigrade with a humidity level of 20 to 90 percent and without condensation.
Failure to do so may result in malfunction. IP Protection Rating: IP20



Use the robot in an environment where no electric noise is present.
Failure to do so may result in malfunction or breakdown.



Use the robot in an environment where it is not exposed to direct sunlight.
Direct sunlight may cause malfunction or breakdown.



Be sure to use within the voltage range indicated on the unit.
Failure to do so may cause electric shock or fire.



Do not attempt to disassemble or modify the robot.
This may lead to electric shocks or fire.

FOR YOUR SAFETY

Warnings



Be sure to secure the movable parts of the robot before transportation.
Failure to do so may result in injury or breakdown.



Do not bump or jar the unit while it is being transported or installed.
This can cause breakdown.



Be sure to confirm that all the air tubes are connected correctly and firmly.



Be sure to confirm that tools such as the electric screwdriver unit, etc. are properly connected.
Failure to do so may result in injury or breakdown.



Be sure to check the wiring to the main unit.
Improper wiring may result in malfunction or breakdown.



Keep the emergency stop switch within reach of an operator.
Failure to do so may cause danger since it may not be possible to stop the robot immediately and safely.



Turn off the unit before inserting and removing cables.
Failure to do so may result in electric shock, fire, or malfunction of the unit.



Be sure to shut off the power supply before plugging in the power cord.



Plug the power cord firmly into the wall outlet and check that it is not covered with dust.
Incomplete insertion into the wall outlet causes the plug to heat up and may result in fire. Be sure to shut off the power supply before connecting the power cord.

FOR YOUR SAFETY



Cautions



Place the operation box on a flat surface more than 80 cm above the floor so that it is easier to operate it.



Use the unit in an environment that is not dusty or damp.

Dust and dampness may lead to breakdown or malfunction.

IP Protection Rating: IP20

FOR YOUR SAFETY

■ WORKING ENVIRONMENT ■

Warnings



When you lubricate or inspect the unit, unplug the power cord from the robot.

Failure to do so may result in electric shock or injury.

Be sure to shut off the power supply before removing the power cord from the robot.



When going inside the safety barrier, **place a “Do Not Operate” sign** on the start switch.



Keep the emergency stop switch within reach of an operator while teaching or running the robot.

Failure to do so may cause danger since it may not be possible to stop the robot immediately and safely.



Establish a safety barrier of adequate strength so as to protect the operator from moving tools and flying objects.

Always use protective wear (helmet, protective gloves, protective glasses, and protective footwear) when going inside the safety barrier.



Be sure to confirm that all the air tubes are connected correctly and firmly.



Always be aware of the robot's movement, even in the Teaching mode.

Careful attention will protect the operator from injury.

FOR YOUR SAFETY

■ DURING OPERATION ■

Warnings



When operations are taking place within the safety barrier, **ensure no one enters the robot's maximum operating range.**



If you must go inside the safety barrier, be certain to **push the emergency stop switch** and **put a "Do Not Operate" sign** on the start switch.



When starting the robot, check that **no one is within the safety barrier and that no object will interfere with the robot's operation.**



Under no circumstances should you go inside the safety barrier or place your hands or head inside the safety barrier while the robot is operating.



If anything unusual (e.g. a burning smell or abnormal sound) occurs, stop operation and unplug the cable immediately. Contact the dealer from which you purchased the robot or the office listed on the last page of this manual.

Continuous use without repair can cause electric shock, fire, or breakdown of the unit.



Keep the emergency stop switch within reach of an operator while teaching and running the robot.

Failure to do so may cause danger since it may not be possible to stop the robot immediately and safely.

PREFACE

The Loctite® SCARA-N Robot S440 Series is a new low cost, high performance robot. Energy- and space-saving are made possible through the combined use of pulse motors and special micro step driving circuits.

This manual describes dispensing applications of the S440 Series. Refer also to the following manuals during actual operation of this robot.

Set Up	This manual explains how to set up the robot. ● Be sure to read this manual.
Maintenance	This manual explains how to maintain the robot. ● Be sure to read this manual.
Basic instructions	This manual provides part names, data structures, and the basic knowledge necessary to operate the robot.
Quick Start	This manual explains the actual operation of the robot with simple running samples.
TP Operation	This manual explains how to operate the robot via the teaching pendant.
PC Operation	This manual explains how to operate the robot from a computer (using the LR C-Points software.)
Features I	This manual explains point teaching.
Features II	This manual explains commands, variables, and functions.
Features III	This manual explains features such as run mode parameters, sequencer program, etc.
External Control I (I/O-SYS)	This manual explains the I/O-SYS control.
External Control II (COM Communication)	This manual explains the COM communication control system (COM1 – COM3.)
Specifications	This manual provides comprehensive specifications, including mechanical or electrical requirements.

Note: The product specifications in these manuals may differ from those of the robot you have received due to product improvement.

Please be sure to follow the instructions described in these manuals. Proper use of the robot will ensure continued functionality and high performance.

“**For Your Safety**” is also provided so that the operator can make the best use of this robot safely. This book includes preventive measures that can be taken against injury to the operator or damage to property. Please be sure to read “For Your Safety” before using the robot.



Be sure to shut off the power supply before plugging in the power cord.



BE SURE TO PROPERLY GROUND THE ROBOT WHEN YOU INSTALL IT.



Be sure to save data whenever it is added or modified. **Otherwise, changes will not be saved if the power to the robot is cut off.**

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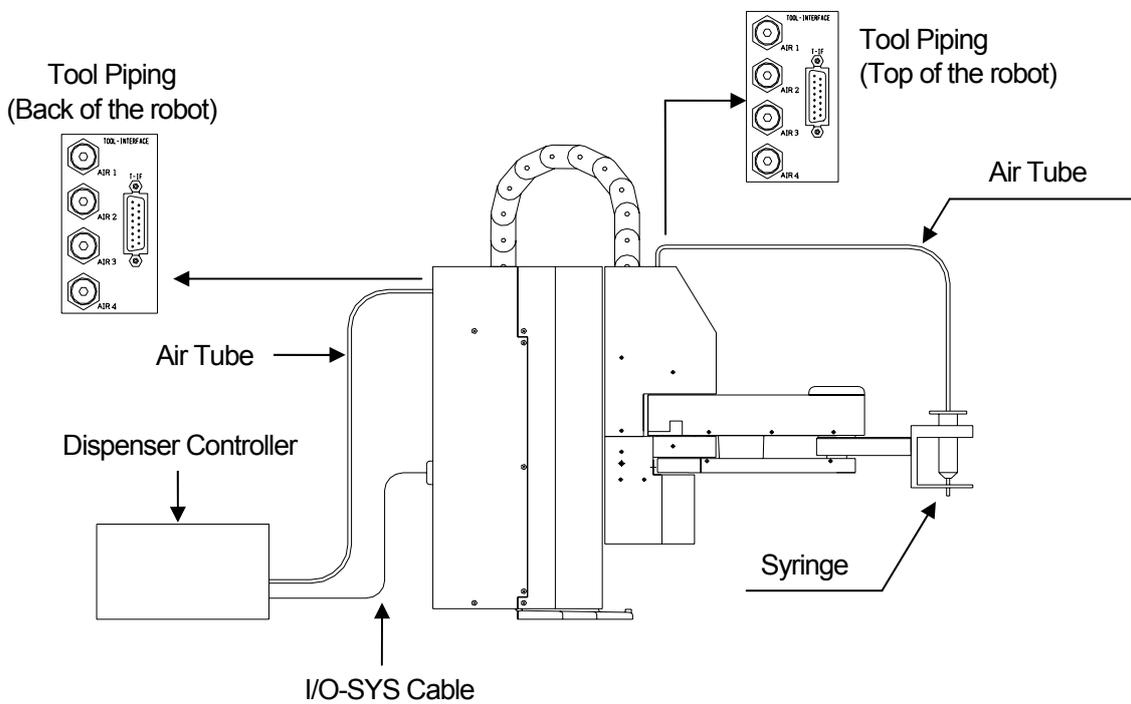
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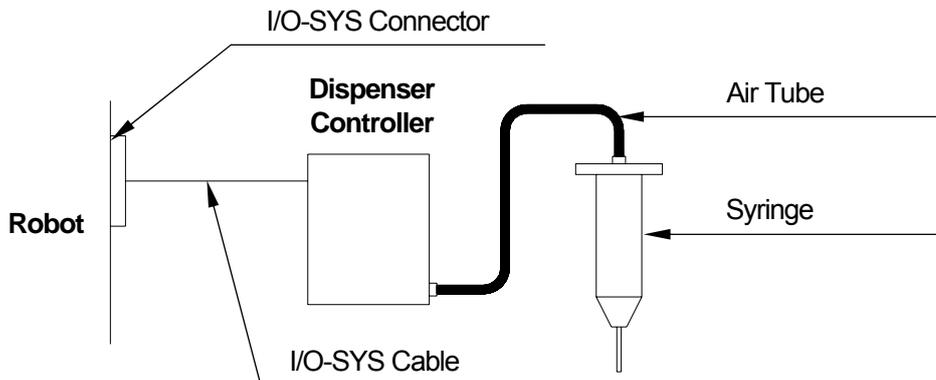
INSTALLATION

How to Mount the Dispenser (for 3-Axis Model)

1. Mount the syringe on the J2 Axis of the robot.
2. Connect the air tube to the tool piping and syringe.
 - Do not use the tool pipe for anything other than air. When a liquid such as an adhesive substance is used, it gets stuck in the tube inside the robot, and may cause trouble.
3. Connect the air tube to the tool piping on the back of the robot and to the dispenser controller.



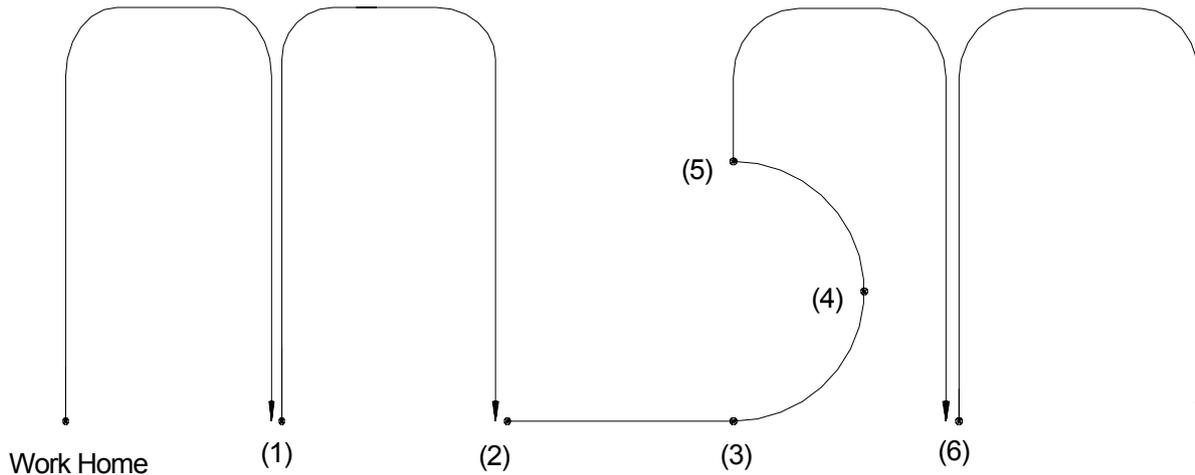
4. Connect the I/O SYS cable to the dispenser controller and to the robot.



TEACHING DATA

■ Point Type

Point types are defined according to the type of job or movement, such as Point Dispense or Start of Line Dispense.



(1) Point Dispense

The point where a point dispensing operation is carried out. Set [Dispense Time] to this point. After the point dispense is complete, the tool unit carries out the “Up Movement” (rising in the Z direction by the [Up Amount] and at the [Up Speed]) as specified in [Dispense Condition] and then moves to the next point in PTP drive.

(2) Start of Line Dispense

The point where the tool unit starts a line dispensing operation and switches from PTP to CP drive. Set [Dispenser ON/OFF] and [Line Speed] to this point. After the dispenser is turned on, the tool unit stands by for the [Wait Time at Start] specified in [Dispense Condition] and then moves on to the [End of Line Dispense] point in CP drive.

(3) Line Passing

The point where the tool unit changes the direction or speed of CP drive between the [Start of Line Dispense] and [End of Line Dispense] points. Set [Dispenser ON/OFF] and [Line Speed] to this point.

(4) CP Arc Point

This point is used to specify an arc in CP drive drawn by the tool unit between the [Start of Line Dispense] and [End of Line Dispense] points. Set [Line Speed] to this point.

(5) End of Line Dispense

After completing line dispensing in CP drive, the tool unit carries out an “Up Movement” (rising in the Z direction by the [Up Amount] and at the [Up Speed]) as specified in [Dispense Condition] and then moves to the next point in PTP drive.

(6) Wait Start Point

The tool unit stands by at this point until the start switch is pressed or a start signal comes on. And the tool unit moves to the next point in PTP drive.

- There are 12 point types, 6 point types for dispensing applications and 6 standard point types. Refer to the general operation manuals pertaining to this robot for explanations of the standard point types.

The table below shows which point jobs and additional functions can be set to which point types. The available items vary according to point type.

(○ : can be set, ×: cannot be set)

Point Type	Dispense Time	Dispenser ON/OFF	Line Speed	Job before Moving	Job while Moving	Job while CP Moving	Point Job	PTP Condition	CP Condition	Tool Data	Pallet Routine	Execute Condition	Workpiece Adjustment	Tag Code
Point Dispense	○	×	×	○	○	×	○	○	×	○	○	○	○	○
Start of Line Dispense	×	○	○	○	○	○	○	×	○	○	○	○	○	○
Line Passing	×	○	○	×	×	×	○	×	×	×	×	○	×	○
CP Arc Point	×	×	○	×	×	×	○	×	×	×	×	○	×	×
End of Line Dispense	×	×	×	×	×	×	○	○	×	×	×	○	×	○
Wait Start Point	×	×	×	○	○	×	○	○	×	○	○	○	○	○
PTP Point	×	×	×	○	○	×	○	○	×	○	○	○	○	○
CP Start Point	×	×	○	○	○	○	○	×	○	○	○	○	○	○
CP Passing Point	×	×	○	×	×	×	○	×	×	×	×	○	×	○
CP Stop Point	×	×	○	×	×	○	○	×	○	×	×	○	×	○
CP End Point	×	×	×	×	×	×	○	○	×	×	×	○	×	○
PTP Evasion Point	×	×	×	×	×	×	×	○	×	×	○	○	×	×

■ Program Data (Dispense Condition)

[Dispense Condition] is included in the program data of each program and is only valid for the program in which it is contained.

There are 5 dispensing conditions.

(1) Wait Time at Start

After the dispenser signal is turned on, the robot stands by for the specified Wait Time at Start before it starts moving the tool unit for line dispensing.

(Standby point: Start of Line Dispense)

(2) Wait Time at Stop

After the dispenser signal is turned off, the robot stands by for the specified Wait Time at Stop before raising the Z-Axis.

(Standby point: Point Dispense/End of Line Dispense)

(3) Up Amount

The distance the Z-Axis rises. After standing by for the specified Wait Time at Stop, the robot raises the Z-Axis by the specified Up Amount.

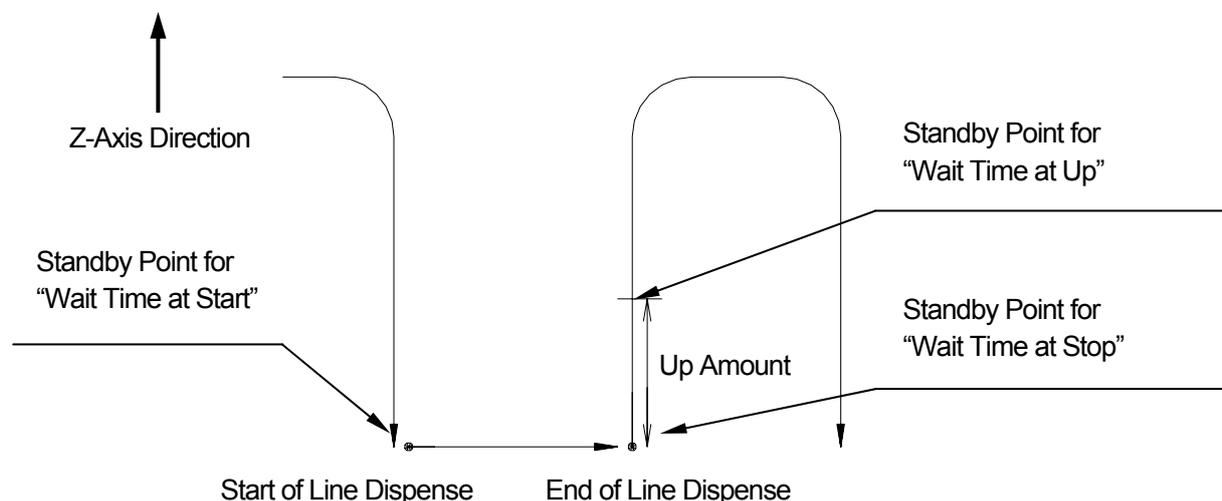
(4) Up Speed

The speed at which the Z-Axis rises. After standing by for the specified Wait Time at Stop, the robot raises the Z-Axis at the specified Up Speed.

(5) Wait Time at Up

The wait time after the Z-Axis rises. After the tool unit rises by the specified Up Amount at the specified Up Speed, the robot stands by for the specified Wait Time at Up before it starts raising the Z-Axis at the normal speed.

(Standby point: Point Dispense point + Up Amount or End of Line Dispense point + Up Amount)



■ Dispenser

The [Dispenser] setting is valid regardless of program.

Set or change where the dispenser is connected, the type of signals returned by the dispenser, dispenser mode, and [Evasion Points of Going Home.]

(1) IO Function Assignment

The input/output direction of the [Dispense Response] signal and [Dispense] ON output signal can be changed to I/O-SYS, I/O-1, etc.

(2) Dispenser Type

The type of signal returned by the dispenser can be selected from the following 3 items.

- No Response Signal: The robot ignores the signal returned from the dispenser.
- Busy Signal Operation: The robot verifies the busy signal returned from the dispenser while dispensing.
- Finish Signal Operation: The robot verifies the finish signal from the dispenser when the dispensing operation completes.

(3) Dispenser Mode

Dispenser mode can be selected from the following 2 items.

- Steady: Dispensing time is controlled by the robot.
Note: The Dispenser ON/OFF signal (genOut1) is output continuously.
- Timer: Dispensing time is controlled by the timer on the dispenser.
Note: The Dispenser ON/OFF signal (genOut1) is output as a pulse signal.

However, during a line dispensing or when [Dispenser Type] has been set to [No Response Signal], the operation will be carried out in Steady mode even if [Dispenser Mode] is set to [Timer.]

(4) Evasion Points of Going Home

Set the points to be evaded (where any obstacle is blocking the passage of the tool unit between the stop position and the work home position) when the robot is stopped suddenly during operation.

I/O – SYS *1

	No.	Signal	PIN No.	Color of Insulator	Spiral Mark	
Input	Ex	sysIn1	Start	1	Black	
		sysIn2	Free/Start Inhibition/Stop-Start Inhibition/ Soft Lock/Emergency Stop	2	White	
		sysIn3	Program Number LOAD	3	Red	
		sysIn4	Program Number bit0 $2^0=1$	4	Green	
		sysIn5	Program Number bit1 $2^1=2$	5	Yellow	
		sysIn6	Program Number bit2 $2^2=4$	6	Brown	
		sysIn7	Program Number bit3 $2^3=8$	7	Blue	
		sysIn8	Program Number bit4 $2^4=16$	8	Gray	
		sysIn9	Program Number bit5 $2^5=32$	9	Orange	
		sysIn10	Program Number bit6 $2^6=64$	10	Pink	
		sysIn11	Last Work/ Program Number bit7 $2^7=128$	11	Light blue	
		sysIn12	Temporary Stop	12	Purple	
		sysIn13	Dispenser Response	13	White	Black
		sysIn14	Free/Start Inhibition/Stop-Start Inhibition/ Soft Lock/Emergency Stop	14	White	Red
		sysIn15	Free	15	White	Green
		sysIn16	Free	16	White	Blue
Output	Ex	sysOut1	Ready for Start	17	Black	White
		sysOut2	Robot Stopping	18	Black	Red
		sysOut3	Program Number ACK	19	Black	Green
		sysOut4	Program Number Error	20	Black	Blue
		sysOut5	Running	21	Red	White
		sysOut6	Error	22	Red	Black
		sysOut7	Emergency Stop	23	Red	Green
		sysOut8	Position Error	24	Red	Blue
		sysOut9	Dispenser Error	25	Green	White
		sysOut10	Dispense ON/OFF	26	Green	Black
		sysOut11	Free	27	Green	Red
		sysOut12	Free	28	Green	Blue
		sysOut13	Free	29	Yellow	White
		sysOut14	Free	30	Yellow	Black
		sysOut15	Free	31	Yellow	Red
		sysOut16	Free	32	Yellow	Green
Other		Unused	33	Yellow	Blue	
		COM+ (DC24V)	34	Brown	White	
		COM- (GND)	35	Brown	Black	
		COM- (GND)	36	Brown	Red	
		COM- (GND)	37	Brown	Green	

Ex: Valid only in External Run Mode

*1. Signal arrangement shown is valid when Dispenser response is set to (I/O-Sys)

If Dispensing parameters are not established, I/O-Sys pin arrangements are as shown on page 28 in the Specifications Manual.

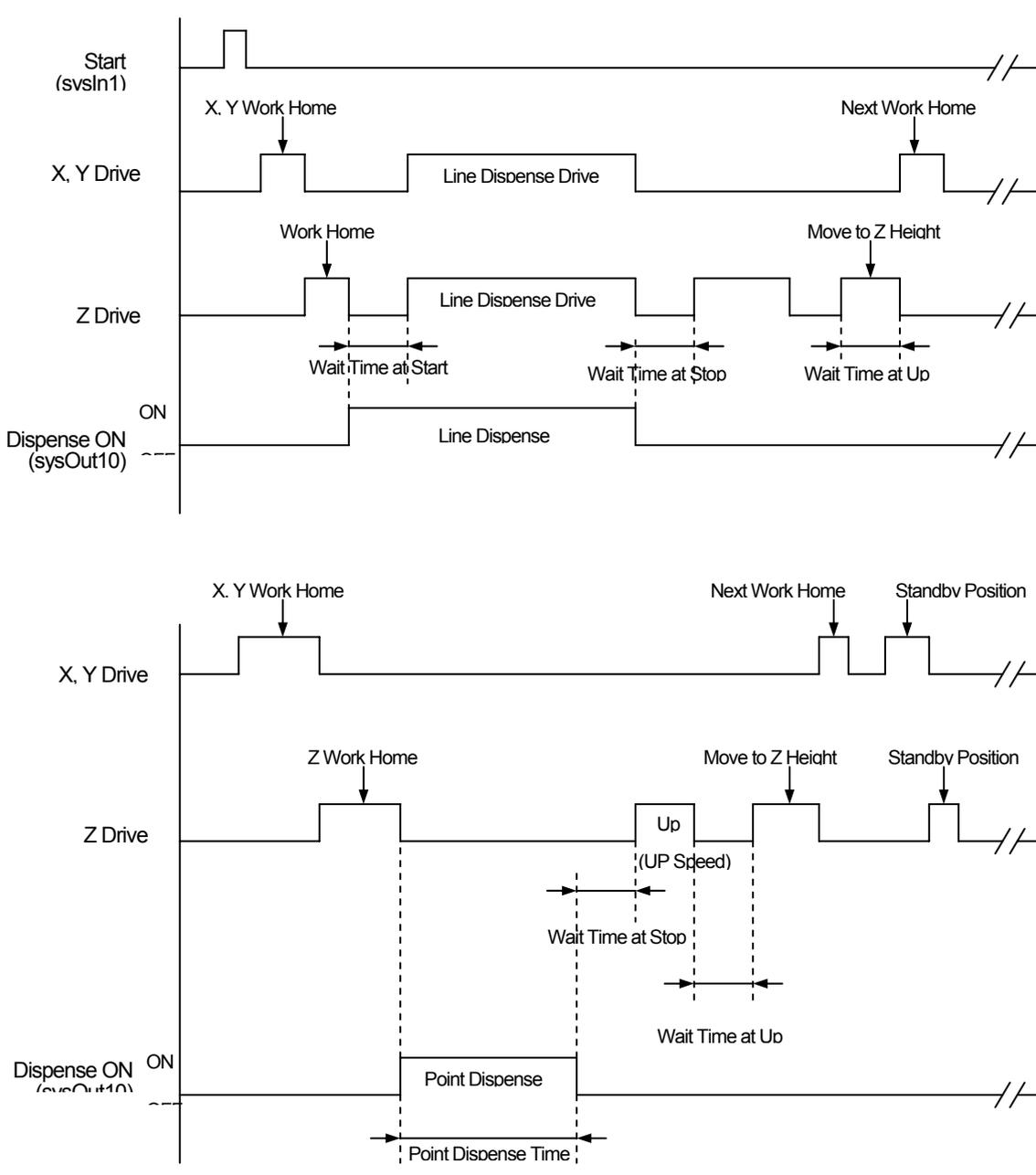
I/O-SYS CABLE CONNECTION

Pin No.	Color of Insulator	Spiral Mark
1	Black	
2	White	
3	Red	
4	Green	
5	Yellow	
6	Brown	
7	Blue	
8	Grey	
9	Orange	
10	Pink	
11	Light blue	
12	Purple	
13	White	Black
14	White	Red
15	White	Green
16	White	Blue
17	Black	White
18	Black	Red
19	Black	Green

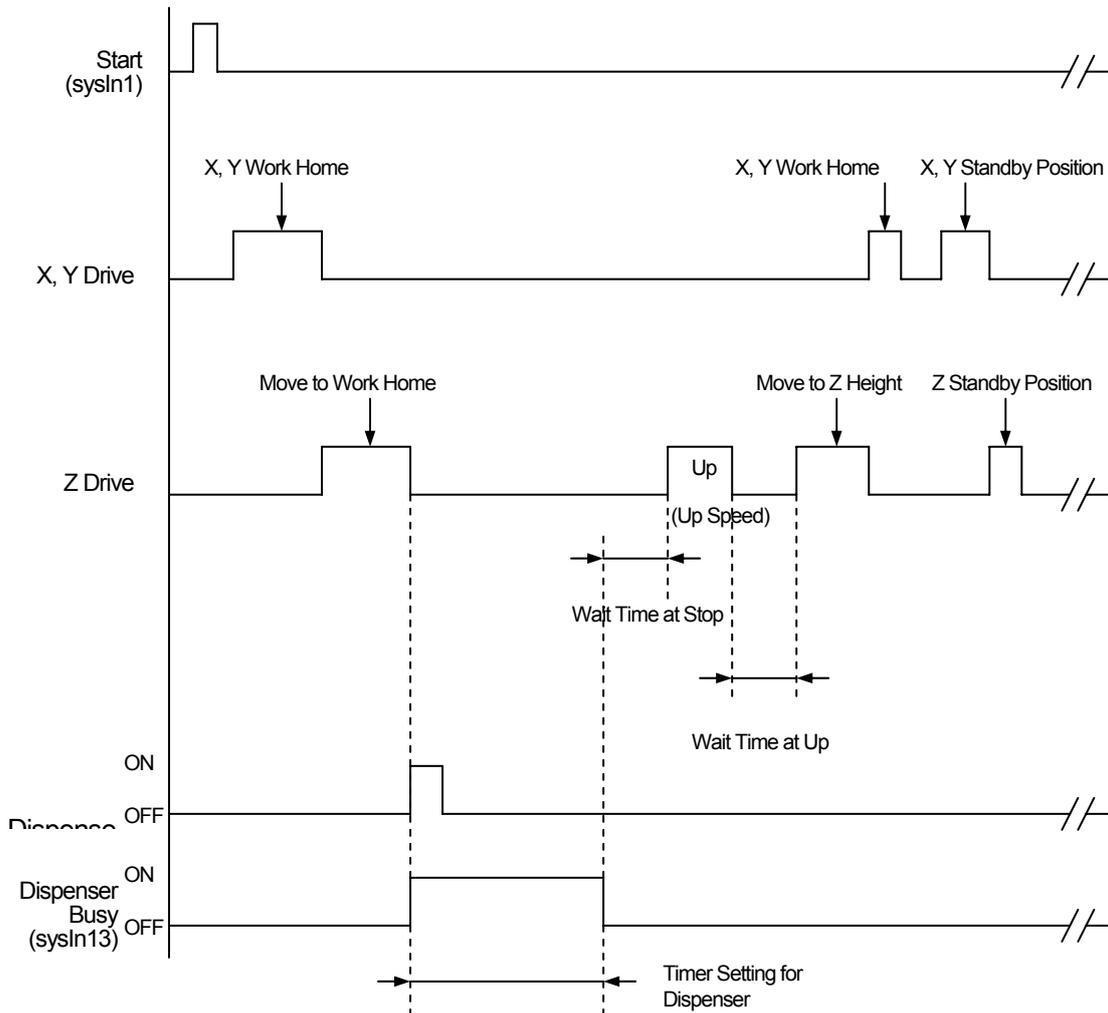
Pin No.	Color of Insulator	Spiral Mark
20	Black	Blue
21	Red	White
22	Red	Black
23	Red	Green
24	Red	Blue
25	Green	White
26	Green	Black
27	Green	Red
28	Green	Blue
29	Yellow	White
30	Yellow	Black
31	Yellow	Red
32	Yellow	Green
33	Yellow	Blue
34	Brown	White
35	Brown	Black
36	Brown	Red
37	Brown	Green

TIMING CHARTS

1. Movement in the No Busy Signal Operation (Steady mode, Line dispense, Point dispense)



2. Movement during Busy Signal Operation (Timer mode, Point dispense)



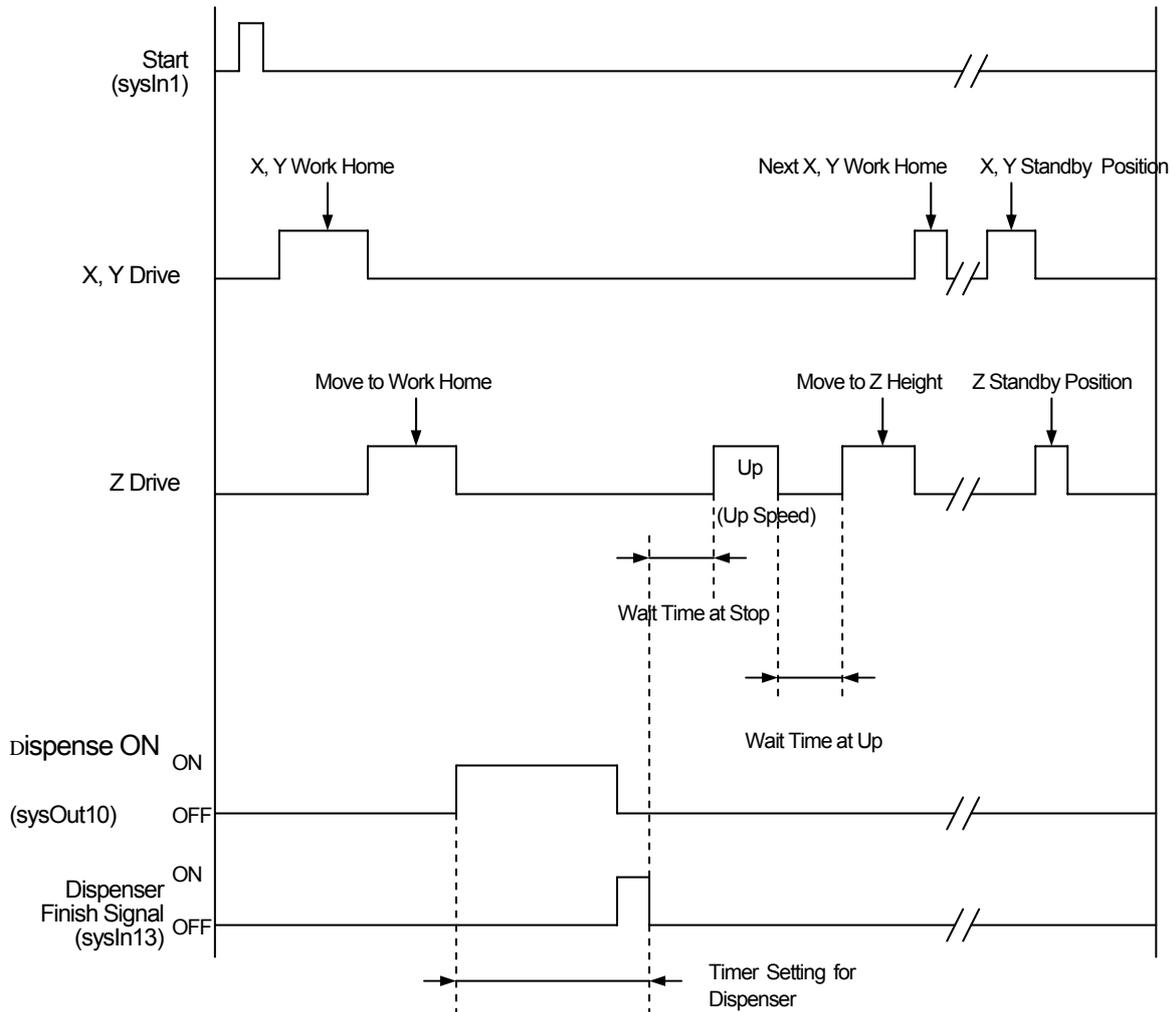
After turning on the Dispense ON/OFF Signal (sysOut10), the robot waits for the Dispenser Busy signal (sysIn13) to come on.

When the Busy Signal (sysIn13) comes on, the robot recognizes that dispensing has started, turns off the Dispense ON/OFF Signal (sysOut10) and waits till the Dispenser Busy Signal (sysIn13) goes off.

When it goes off, the robot recognizes that dispensing has finished and starts the next movement

However if the Dispenser Busy Signal (sysIn13) does not come on after 0.5 seconds, the robot recognizes a failure to connect the device with the robot, or a malfunction of the device itself and stops. In this case, the Dispenser Error Signal will come on.

3. Movement while Finish Signal (Timer mode, Point dispense) is on



After turning on the Dispense ON/OFF Signal (sysOut10), the robot waits for the Dispenser Finish Signal to come on.

After turning on the Dispense Finish Signal the robot turns off the Dispense ON/OFF Signal (sysOut10.)

When the Dispense Finish Signal goes off the robot recognizes that the dispensing is finished and starts the next movement.

POINT DISPENSE

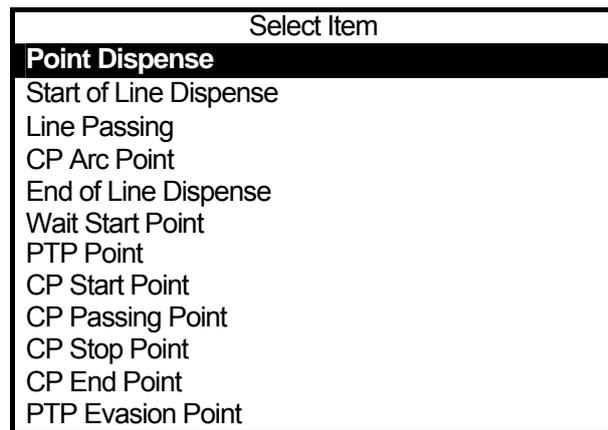
In a point dispense operation, the robot stops for the specified point dispense time and turns on the dispenser. To execute a point dispense, register the point type as [Point Dispense.]

Enter the point position at which you want to execute the point dispense. If you register a new teaching point, the Point Type selection screen to the right will appear after you enter the coordinates. Select [Point Dispense.]

If you want to change the point type of an existing point to [Point Dispense], display the setting screen for the point and select [Point Type.] The point type selection screen will appear.

When you select [Point Dispense], the [Dispense Time] entry screen will appear.

Set the time length of the dispensing operation here.



Point Type Selection Screen

If you are using a PC (LR C-Points) for data teaching, click on the icon  to register a “point dispense” point at the end of the program.

- The point dispense time can also be controlled by the timer. Select [Dispenser Mode] from [MENU] and set it to [Timer].
If [Timer] is selected, the point dispense time set to the point is ignored and the dispensing operation is carried out for the length of time specified by the dispenser.
- After the point dispense, operation continues using the [Wait Time at Stop], [Up Amount], [Up Speed], and [Wait Time at Up] settings set under dispense condition in the program data.

LINE DISPENSE

To perform a line dispense operation, you need to register a [Start of Line Dispense] point and an [End of Line Dispense] point. Insert a [Line Passing] point between the [Start of Line Dispense] and [End of Line Dispense] points to change direction during a line dispense.

You can also use the [CP Arc Point] to draw an arc.

Enter the point position to which you want to begin the line dispense. If you register a new teaching point, the Point Type selection screen (shown to the right) will appear after you enter the coordinates.

Select [Start of Line Dispense], and the Line Speed entry screen will appear. Enter the line speed on the screen.

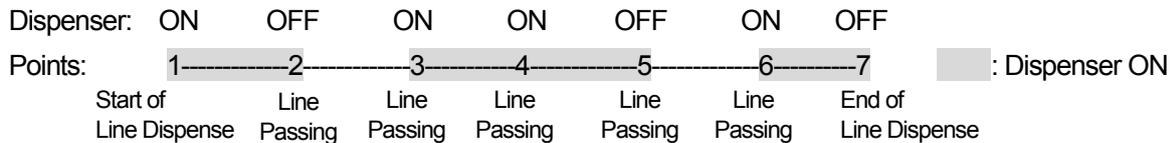
Register [Line Passing] or [CP Arc Point] in the same way if necessary.

Select Item
Point Dispense
Start of Line Dispense
Line Passing
CP Arc Point
End of Line Dispense
Wait Start Point
PTP Point
CP Start Point
CP Passing Point
CP Stop Point
CP End Point
PTP Evasion Point

Point Type Selection Screen

Register [End of Line Dispense] at the position you want to finish the line dispense. The dispenser automatically turns off at this point.

At the [Start of Line Dispense] and [Line Passing] points, you can select whether to turn the dispenser on or off. To specify where dispensing is and isn't performed, set [Dispenser ON/OFF] under [Line Passing.]



If you are using a PC (LR C-Points) for data teaching, click the icons below to add the corresponding points at the end of the program.

-  : Start of Line Dispense
-  : Line Passing
-  : End of Line Dispense
-  : CP Arc Point

- At the [Start of Line Dispense] point, the robot stands by for [Wait Time at Start] set under [Dispense Condition] in the program data. The [Wait Time at Start] is only valid at the [Start of Line Dispense] point.
- At the [End of Line Dispense] point, the robot moves according to the [Wait Time at Stop], [Up Amount], [Up Speed], and [Wait Time at Up] settings set under [Dispense Condition] in the program data.
- In a line dispense operation, the Dispenser ON/OFF signal (genOut1) is output continuously, not in pulse width. The line dispensing is not controlled by the dispenser timer even if [Timer] is selected in [Dispenser Mode.] It is performed in [Steady] mode regardless of [Dispenser Mode] setting.

HOW TO CONNECT THE DISPENSER

The [Dispenser Response] and [Dispenser ON/OFF] are assigned to #genIn1 and #genOut1 respectively as default settings.

You need to connect the dispenser to I/O-SYS or to output the ON signals to multiple dispensers, change the I/O assignment, see page 15.

TP → **MENU** [Dispense]
[IO Function Assignment]

PC → [Data] → [Dispenser] → [IO Signal Setting]

Select [Dispense] from [MENU].
The dispenser setting screen will appear as shown to the right.

Dispense	
IO Function Assignment	
Dispenser Type	No Response Signal
Dispenser Mode	Steady
Evasion Points of Going Home	

Dispenser Setting Screen

Select [IO Function Assignment.]
2 I/O signal settings for the dispenser will appear as shown to the right.
Select the signal you want to set or change.

IO Function Assignment	
Dispenser Response	genIn1
Dispenser ON	genOut1

I/O Signal Setting Screen

The following 3 signals are unique for the dispensing application.

The assignment of the 3 signals can be changed by [IO Function Assignment.] Their default values are assigned as IO-SYS.

< INPUT >

Dispenser Response (sysIn13): This signal is invalid when the [No Busy Signal Operation] is set in the [Dispenser Type.] If the [Busy Signal Operation] is set the signal will come ON while dispensing is being executed. If the [Finish Signal] is set, the signal will come ON when the dispensing has finished.

Dispenser Response
IO-SYS (sysIn)
IO-1 (genIn)
IO-SYS (sysOut)
IO-1 (genOut)
Internal Relay (mv)
Keep Relay (mkv)

Dispenser Response Selection Screen

< OUTPUT >

Dispenser Error (sysOut9): If the [Dispenser Type] is set to the [Busy Signal Operation] or the [Finish Signal] the dispenser error signal comes ON in case of the following errors.

The Dispense ON/OFF signal has not been output even though the response signal has come on.

The Busy Signal does not go off when the dispenser turns off.

The Finish Signal does not come on when the dispenser turns off.

Dispense ON/OFF (sysOut10): This signal turns ON the dispenser (to execute dispensing.) However, the point dispense is excluded when the [Busy Signal Operation] is set in the [Dispenser Type.] See "Timing Charts".

DISPENSER TYPE

Before using the robot, specify [Dispenser Type] under [Dispense] in [MENU] according to the dispenser mounted on the robot. There are three dispenser type settings.

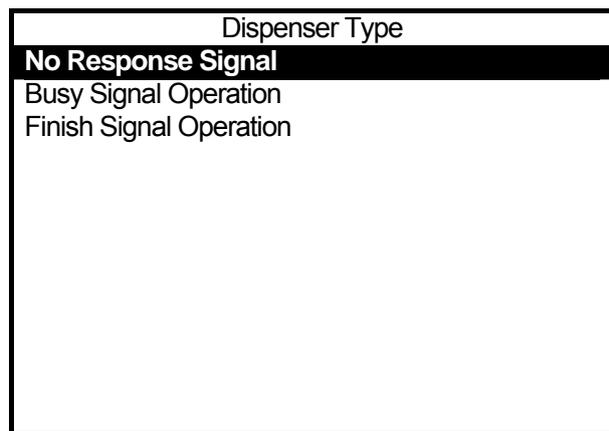
- No Response Signal: The robot ignores the busy signal returned by the dispenser.
- Busy Signal Operation: The robot verifies the busy signal returned by the dispenser while dispensing.
- Finish Signal Operation: The robot verifies the finish signal returned by the dispenser when the dispensing operation is complete.

TP → **MENU** [Dispenser]
[Dispenser Type]

PC → [Data] → [Dispenser] → [Dispenser Type]

Select [Dispenser] from [MENU], and then select [Dispenser Type.]

The Dispenser Type selection screen will appear as shown to the right.



Dispenser Type Selection Screen

DISPENSER MODE

Before using the robot, [Dispenser Mode] also needs to be specified under [Dispense] in [MENU.] There are two settings for the [Dispenser Mode.]

- Steady: The dispensing time is controlled by the robot.
Note: The Dispenser ON/OFF signal (#genOut1) is output continuously.
- Timer: The dispensing time is controlled by the timer on the dispenser.
Note: The Dispenser ON/OFF signal (#genOut1) is output as a pulse signal.

However, during a line dispense or when [Dispenser Type] is set to [No Response Signal], the timer setting is ignored. In these cases, the operation is carried out in Steady mode even if [Dispenser Mode] is set to [Timer.]

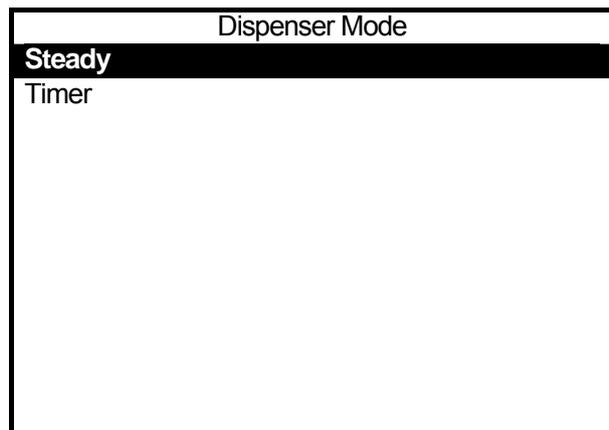
TP → **MENU** [Dispenser]
[Dispenser Mode]

PC → [Data] → [Dispenser] → [Dispenser Mode]

Select [Dispenser] from [MENU] and select [Dispenser Mode].

The Dispenser Mode selection screen will appear as shown to the right.

Select [Timer] to control the dispensing time with the timer on the dispenser.



Dispenser Mode Selection Screen

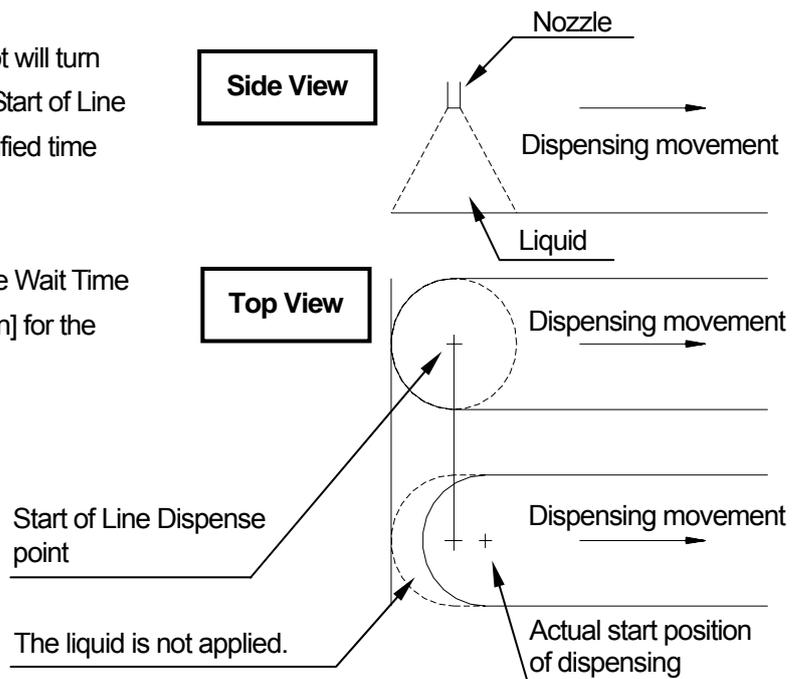
- If [Dispenser Mode] is set to [Timer], the [Dispense Time] registered to both newly created Point Dispense points and existing Point Dispense points will be ignored.

WAIT TIME AT START FOR LINE DISPENSE

Set [Wait Time at Start] under [Dispense Condition] to delay the start of the tool unit movement if the X- or Y-Axes move before the dispensing is started or if you want the dispensing at the start section to be thicker than in other sections.

When [Wait Time at Start] is set, the robot will turn on the Dispenser ON/OFF signal at the Start of Line Dispense point and wait there for a specified time period before starting to move.

The following explains how to change the Wait Time at Start setting under [Dispense Condition] for the program you are currently using.



TP **MENU** [Program Data Settings]
[Dispense Condition]

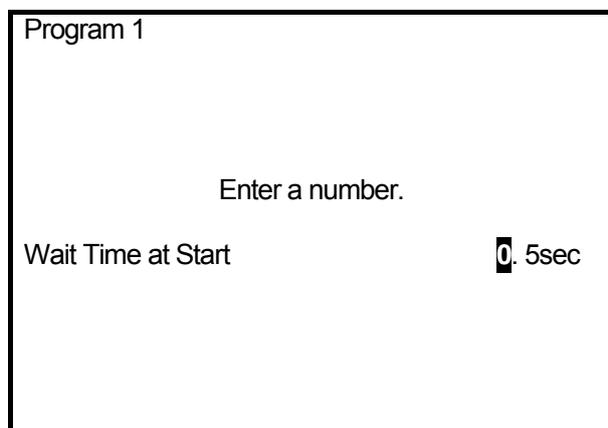
PC [Program] → [Program Data] → [Dispense Condition]

Select [Program Data Settings] from the [MENU], and then select [Dispense Condition] and [Wait Time at Start].

The Wait Time at Start entry screen will appear as shown to the right.

Enter the desired value.

- The [Wait Time at Start] setting is only applied to the Start of Line Dispense points.



Wait Time at Start Entry Screen

WAIT TIME AT END OF DISPENSING

If the X- or Y-Axes start rising before the dispensing operation is complete at Point Dispense or End of Line Dispense points, the liquid may splatter. In such cases, set [Wait Time at Stop] under [Dispense Condition] to delay the start of the tool unit rising.

If you set the [Wait Time at Stop], the robot turns the Dispenser ON/OFF signal off at a [Point Dispense] or [End of Line Dispense] point, and waits for the specified time period before starting to rise.

The following explains how to change the Wait Time at Stop setting under [Dispense Condition] for the program you are currently using.

TP → **MENU** [Program Data Settings]
[Dispense Condition]

PC → [Program] → [Program Data] → [Dispense Condition]

Select [Program Data Settings] from the [MENU], and then select [Dispense Condition].

The Dispense Condition setting screen will appear as shown to the right.

Select [Wait Time at Stop].

The Wait Time at Stop entry screen will appear. Enter the desired value.

Program 1	Dispense Condition
Wait Time at Start	0.5sec
Wait Time at Stop	0sec
Up Amount	10mm
Up Speed	20mm/s
Wait Time at Up	0sec

Dispense Condition Setting Screen

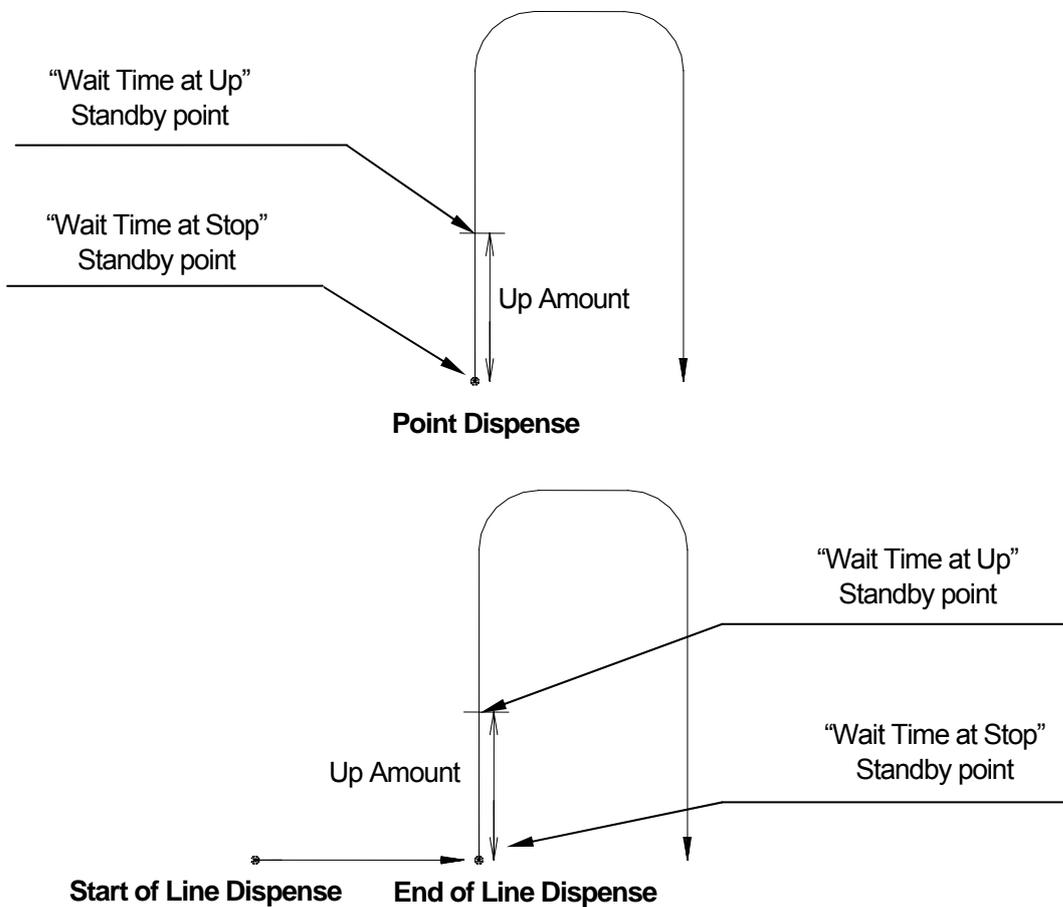
- The [Wait Time at Stop] setting is only valid for Point Dispense and End of Line Dispense points.

UP AMOUNT & UP SPEED AT STOP

Set [Up Amount], [Up Speed] and [Wait Time at Up] under [Dispense Condition] to prevent liquid dripping after the dispensing operation is complete at a Point Dispense or End of Line Dispense point.

When these items are registered, the tool unit stops at the [Point Dispense] or [End of Line Dispense] point, stands by for the specified [Wait Time at Stop], rises by the specified [Up Amount] distance at the specified [Up Speed], and then waits on the spot for the specified [Wait Time at Up] before moving to the next point.

The following explains how to change the above settings under [Dispense Condition] for the program you are currently using.



TP MENU [Program Data Settings]
[Dispense Condition]

PC [Program] → [Program Data] → [Dispense Condition]

Select [Program Data Settings] from [MENU], and then select [Dispense Condition.]

The Dispense Condition setting screen will appear as shown to the right.

Select [Up Amount] and the Up Amount entry screen will appear.

Enter the desired value and press the **ENTR** key. You will return to the Dispense Condition setting screen.

Program 1	Dispense Condition
Wait Time at Start	0.5sec
Wait Time at Stop	0sec
Up Amount	10mm
Up Speed	20mm/s
Wait Time at Up	0sec

Dispense Condition Setting Screen

[Up Speed] and [Wait Time at Up] can also be selected from the Dispense Condition setting

screen. Enter the desired values in each entry screen and press the **ENTR** key to register them.

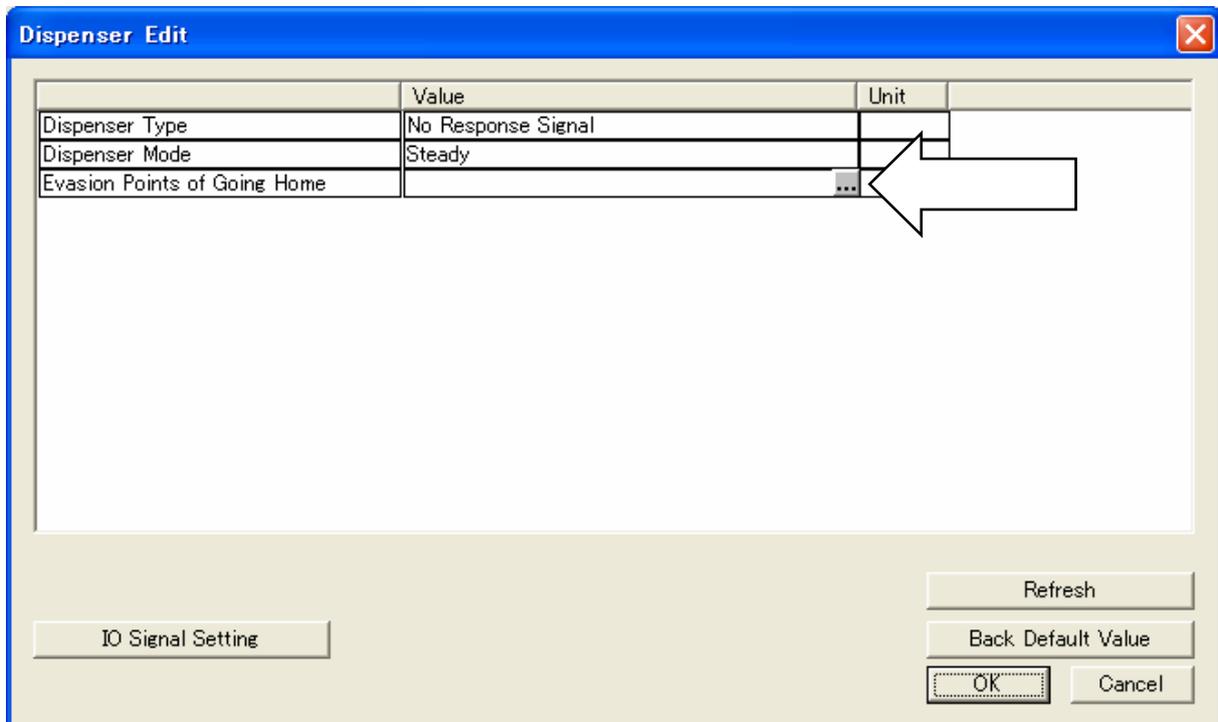
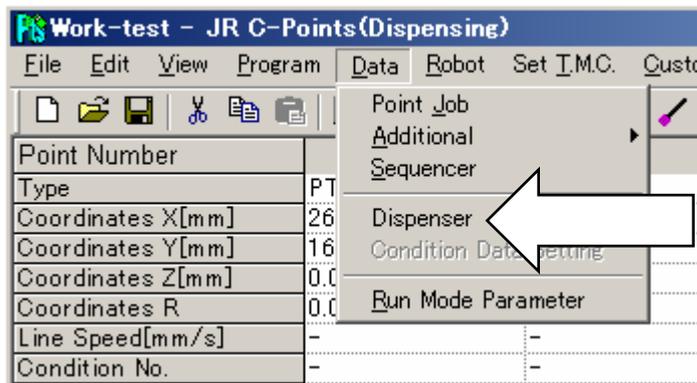
- The [Up Amount], [Up Speed] and [Wait Time at Up] settings are only valid for Point Dispense and End of Line Dispense points.

PC DISPLAY

Dispenser Function Settings

PC →

[Data] → [Dispenser]



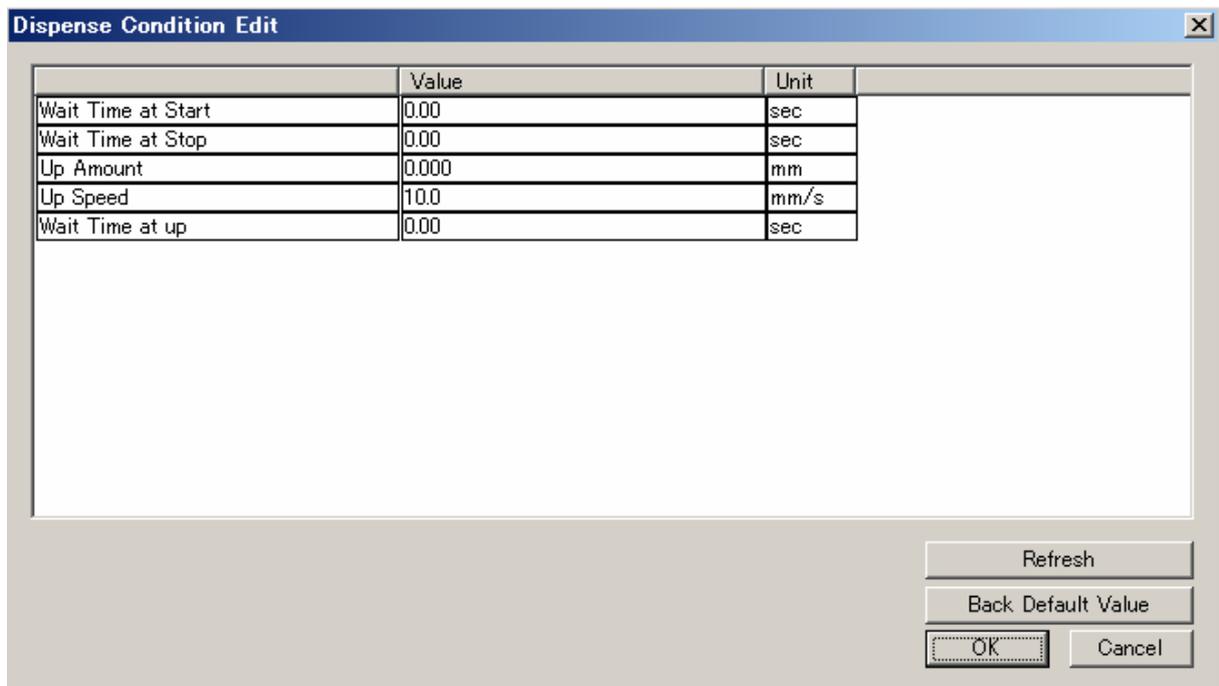
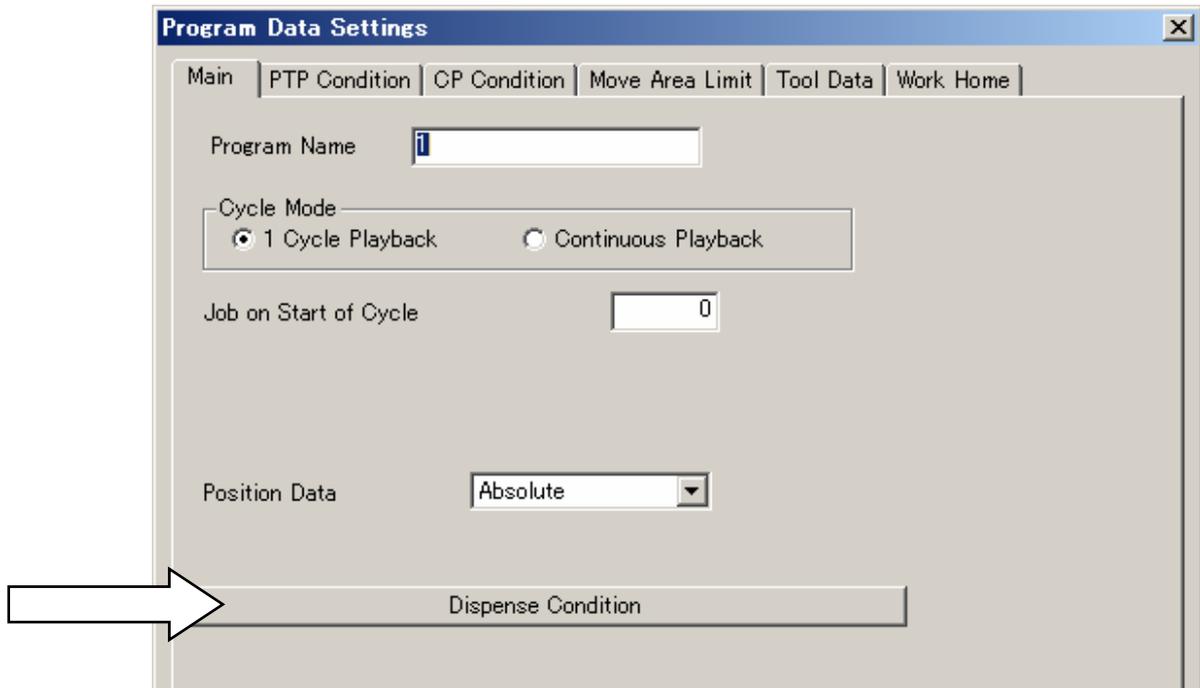
Click the “Value” to display the items that can be selected.

Click the [...] button to display the point setting screen.

Dispenser Condition Settings

PC

[Program] → [Program Data] → [Dispense Condition]



Warranty

Henkel Corporation warrants, to the original Buyer for a period of one (1) year from date of delivery, that the Loctite® Equipment or System sold by it is free from defects in material and workmanship. Henkel will, at its option, replace or repair said defective parts. This warranty is subject to the following exceptions and limitations.

1. Purchaser Responsibilities – The Purchaser shall be responsible for:
 - Maintenance of the equipment as outlined in the Equipment Manual for the product.
 - Inventory of recommended maintenance parts established by Henkel;
 - Notification to Henkel within 6-8 hours of downtime.
 - Any cost of travel or transportation connected with warranty repair.
 - All cost associated with investigating or correcting any failure caused by the purchaser's misuse, neglect or unauthorized alteration or repair.
 - All costs attributed to accident or other factors beyond Henkel's control.

2. A thirty (30) day warranty will be extended on any items subject to normal wear, such as:
 - Pump Seals -Tubing -Wear Surfaces of Wiping Rollers
 - O-Rings -Hoses

Purchased items used in Loctite® dispensing equipment are covered under warranties of their respective manufacturers and are excluded from coverage under this warranty. Typical purchased items are:

- Solenoids -Electrical Relays -Refrigeration Units
- Timers -Fluid Power Cylinders -Electrical Motors

3. No warranty is extended to perishable items, such as:
 - Fuses -Dispensing Needles -Dispensing Nozzles
 - Light Bulbs -Lamps -Product Barrels

Henkel reserves the right to make changes in design and/or improvements to its equipment without obligation to include these changes in any equipment previously manufactured.

Henkel's warranty herein is in lieu of and excludes all other warranties of Henkel and its affiliated and related companies (hereinafter the "seller companies"), express, implied, statutory, or otherwise created under applicable law including, but not limited to, any warranty or merchantability and/or fitness for a particular purpose of use. In no event shall the seller and/or the seller companies be liable for any direct, indirect, special, incidental or consequential damages, including, but not limited to, loss of profits. In addition, this warranty shall not apply to any products, which have been subjected to abuse, misuse, improper installation, improper maintenance or operation, electrical failure or abnormal conditions; and to products, which have been tampered with, altered, modified, repaired or reworked by anyone not approved by seller. Buyer's sole and exclusive remedy under this warranty shall be limited to, at seller's discretion, the replacement or repair of any defective product or part thereof, or a refund of the purchase price paid by for the product in exchange for buyer's return of the product to seller, free and clear of any and all liens and encumbrances of any nature.

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