LOCTITE®

EQUIPMENT
Operation Manual

Loctite® Robot Interface Junction Box

Item Number: 98549

Table of Contents

1 Please Observe The Following

1.1 Emphasized Sections

⚠ **Warning!**
Refers to safety regulations and requires safety measures that protect the operator or other persons from injury or danger to life.

! Caution!
Emphasizes what must be done or avoided so that the unit or other property is not damaged.

☞ **Notice:**
Gives recommendations for better handling of the unit during operation or adjustment as well as for service activities.

1.2 For Your Safety

⚠ For safe and successful operation of the unit, read these instructions completely. If the instructions are not observed, the manufacturer can assume no responsibility.

⚠ Do not use the Unit to Interface non Loctite Robots.

⚠Do not expose the connecting cable to heat, oil, or sharp edges.

⚠Make sure the Unit stands stable and secure.

⚠Use only original equipment replacement parts.

⚠Do not operate the Unit submerged in liquid.

⚠Always disconnect the power supply before servicing the unit.

⚠ Observe general safety regulations for the handling of chemicals such as Loctite® adhesives and sealants. Observe the manufacturer's instructions as stated in the Material Safety Data Sheet (MSDS).

☞ *While under warranty, the unit may be repaired only by an authorized Loctite service representative.*

1.3 Unpacking and Inspection

Carefully unpack the Loctite® Robot Interface and examine the items contained in the carton. Inspect the unit for any damage that might have occurred in transit. If such damage has occurred, notify the carrier immediately. Claims for damage must be made by the consignee to the carrier and should be reported to the manufacturer.

1.4 Items supplied

98549 Robot Interface
960355 Power Module +24 volt .63 amp (Auxiliary Power Module)
989432 Three meter cable 9 pin D male to female
1053227 Adapter, 9 pin female to 3.5mm mono plug
989434 D-Sub 37 Pin Male To Male Cable, 10 Ft

1.5 Features

Simplified Robot Interfacing
One Interface for all Loctite Robots
Electrical Isolation between the Robot and Items being interfaced.
Viewing window to monitor operation when the cover is installed.
Visual indicators for: Robot Power, Auxiliary Power, all inputs & outputs.
Ability to interface NPN & PNP sensors, relays, switches, multiple voltages
Easy connect Wire terminals

1.6 Usage

To Interface:

Loctite Bench Top Robots: **Series 200,300,400,500**
& New SCARA-N Robots

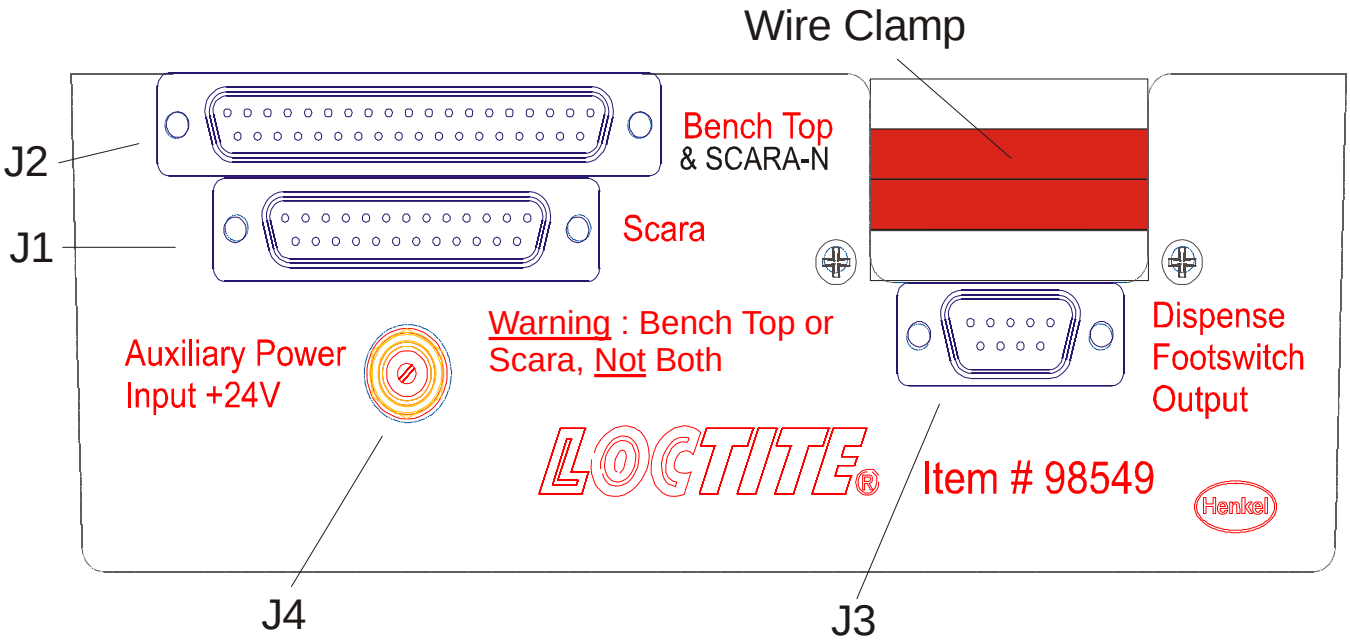
☞ **REQUIRE 989434 – 10 ft. Cable 37 Pin D Male to Male**
Connects the Robot to the Robot Interface Junction Box

Loctite Articulated Arm (SCARA) Robots : **Series S440**

☞ **REQUIRE 989433 – 10 ft. Cable 25 Pin D Male to Female**
Connects the Robot to the Robot Interface Junction Box

2 Description

The Loctite® 98549 Robot Interface Junction Box.



2.1 Inputs:

a. Bench Top (J2)

This input is used only with Bench Top & SCARA-N Robots.
989434 Cable is connected to this input and to the Robot.
All inputs and outputs flow through this connection to the Bench Top & SCARA-N Robots.

b. SCARA (J1)

This input is used only with Articulated Arm (SCARA) Robots.
989433 Cable is connected to this input and to the Robot.
All inputs and outputs flow through this connection to the Articulated Arm (SCARA) Robots

c. Auxiliary Power (J4)

This input is required for power input devices. A 24 volt .63 amps Power Module is supplied with the 98459. Some of the .63 amps is required to power input relays, but .35 amps can be used to power external sensors. The unit is fused for .75 amps, but the circuitry is able to accommodate up to 3 amps when the fuse is changed to a 3 amp fast blow fuse, and the 24 volt input is replaced with a 24 volt 3 amp power supply. Note! **3 amps Maximum**.

2.2 Outputs (J3)

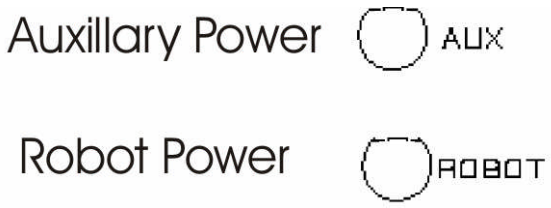
a. Dispense Footswitch Output

This 9 pin D connector along with the supplied 989432 9 Pin D Male to Female Cable, allows the Robot to act as a foot switch driver that closes the footswitch for each dispense signal from the Robot. This connection is compatible with Loctite 9 pin D footswitch actuated Loctite Equipment (that connect pin 1 and 9 of the D connector).

b. Wire Clamp

Located above the Dispense Footswitch Output (J3) is a wire clamp. The wire clamp provides strain relief for wires that are connected inside the interface box and then run outside the box to other equipment.

2.3 Inside the Robot Interface Junction box.



a. Power Indicators

Robot Power on should be lit whenever the Robot is on and the Robot Interface Junction box is connected.

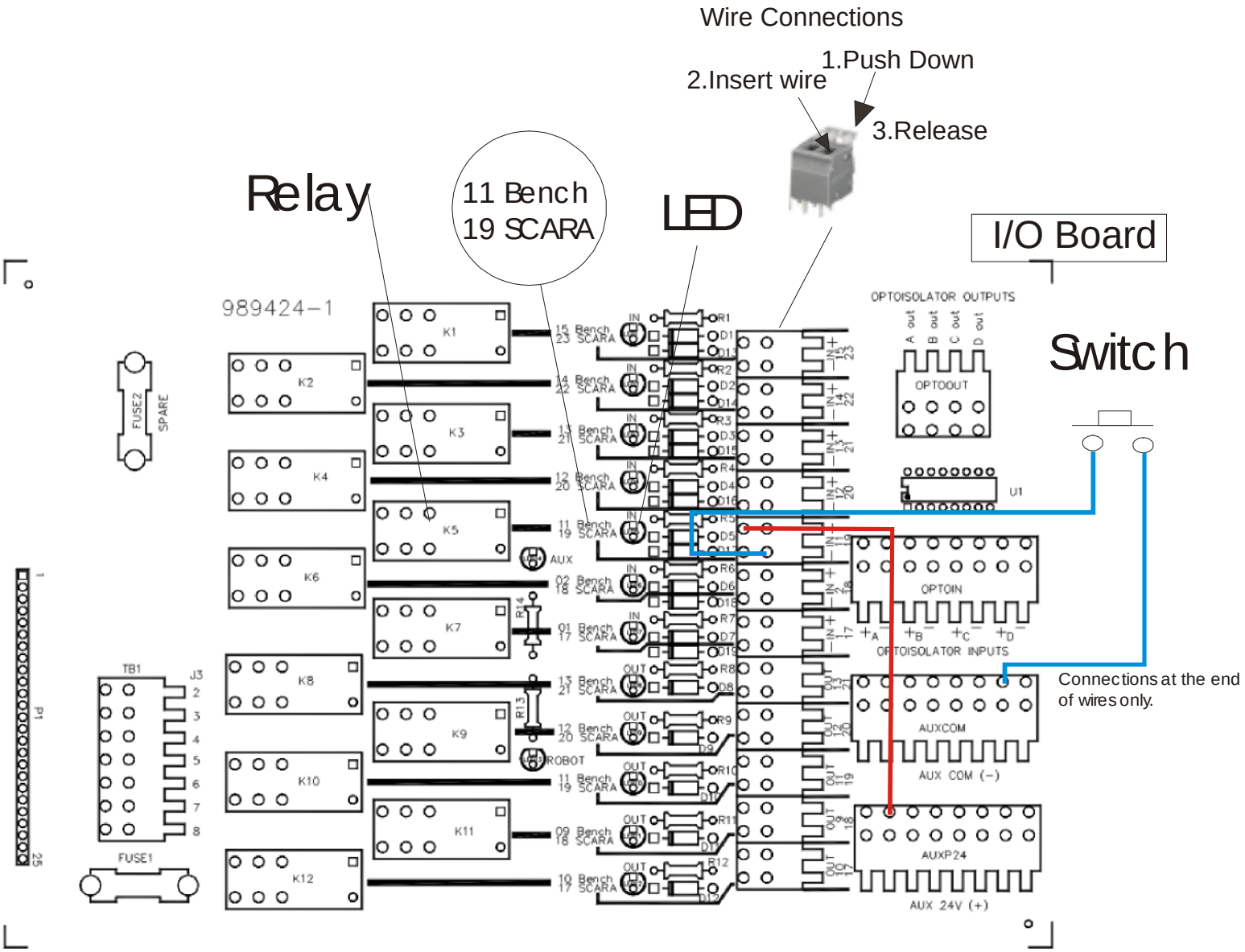
b. Auxiliary Power will be on whenever the Auxiliary Power is plugged in to the wall outlet and the Robot Interface Junction Box.

☞

c. If only **Outputs** are being used, the Auxiliary Power is not required.

d .Inputs

Relay, LED and Input terminals **are in line**.
Observe the polarity of the input terminals.
In this example power is supplied to the Plus terminal and the input is actuated when the switch is closed. At that time the input LED will light, and an input will be sent to 11 Bench or 19 SCARA Robot inputs.
Note: Inputs need Auxiliary Power.

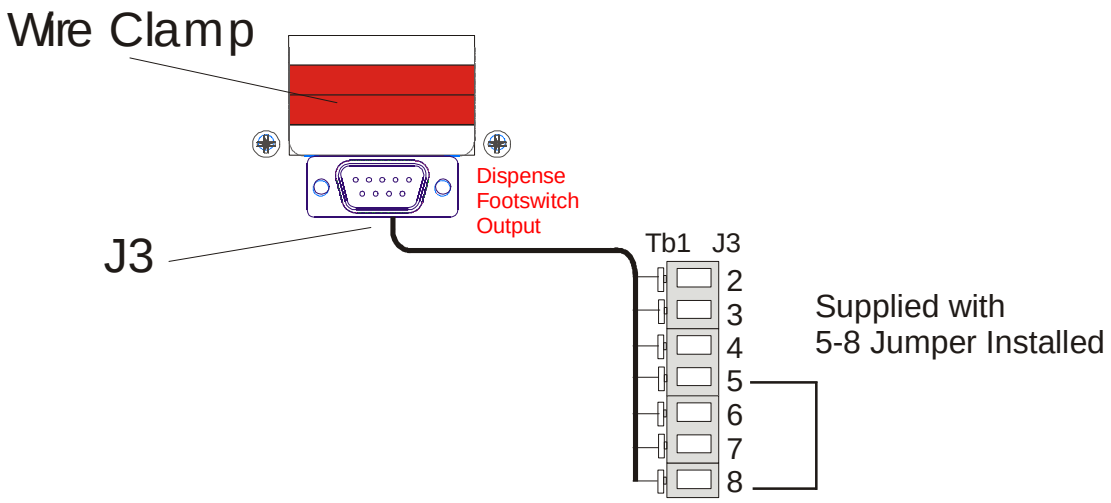


d. Optoisolator Inputs

<u>Using the Optoisolator Inputs allows you to turn on and off inputs using voltages other than 24 volts</u>. **<u>See Appendix</u>**

d. 9 Pin D Inputs

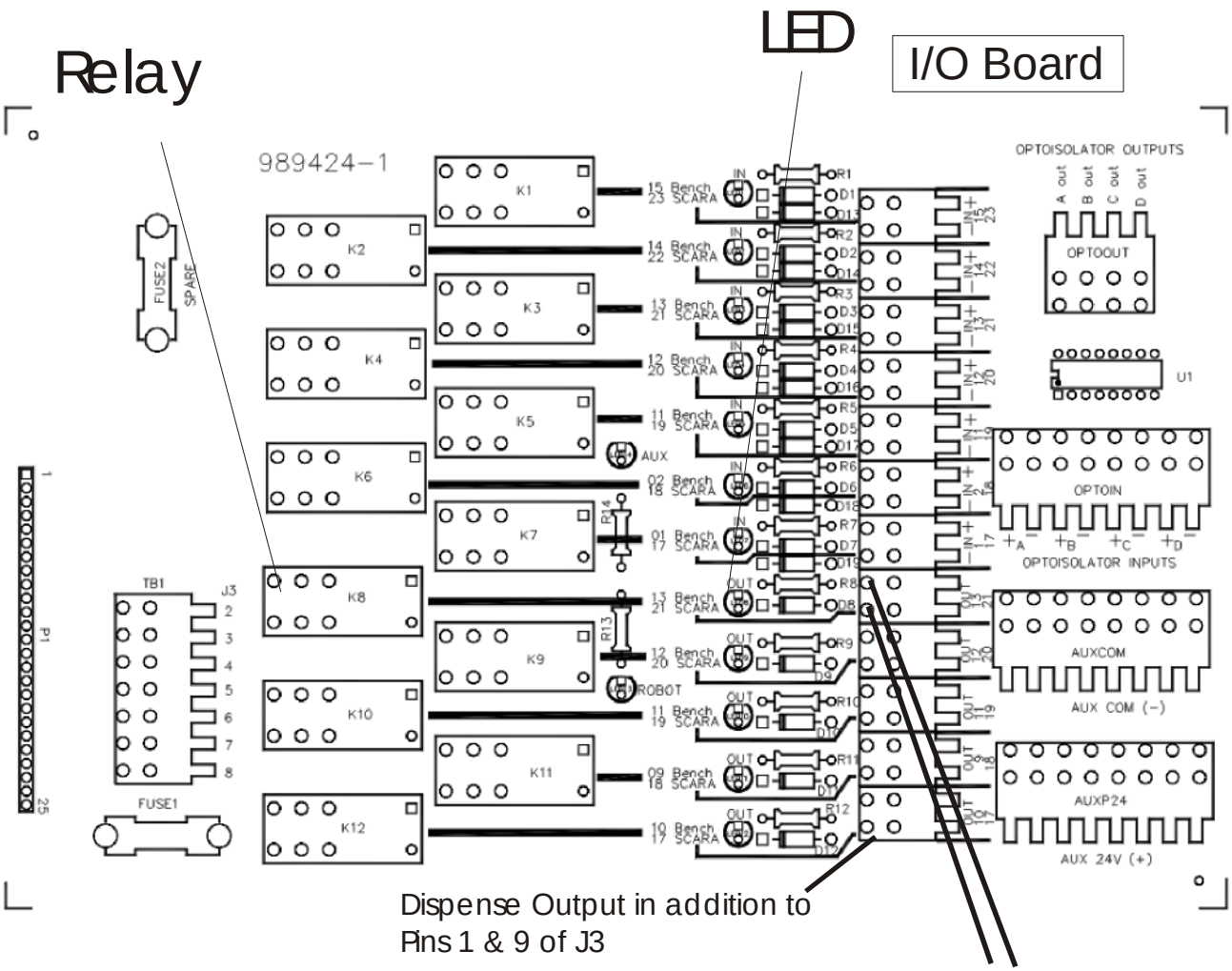
Pins 1 and 9 of J3 are used as footswitch output.
Pins 2-8 are available on Tb1. This allows connection to low level inputs connected to those connector pins.



e. Outputs

When the Robot activates an output the LED will light and the normally open contacts will close. These contacts can carry up to 4 amps. The dispense channel has a set of open contacts in addition to The 9 pin D connector output. Dispense output is @ 10 Bench

Output to Devices



17 SCARA.

3 Technical Data

Dimensions (L x W x H):	approx. 10.8” x 6.9” x 2.6” (approx. 275 x 176 x 67 mm)
Total weight:	approx. 2.5 lbs. (1.15Kg)
Connection cable with main plug:	10 ft (3 m) long
Operating voltage:	90-260 VAC 47-63Hz
Power consumption:	25W

4 Installation

! Before using the Robot Interface for the first time, check it carefully for signs of external damage. If any shipping damage is found DO NOT USE return it to your supplier immediately.

4.1 Make sure that the Robot is turned off.
4.2 Connect Proper cable from the Robot to the Robot Interface Junction Box.
4.3 Locate Robot Interface so as to minimize Strain on the cable connectors.
4.4 Make all connections to the Robot Interface Junction Box using this manual as a guide.
4.5 If You are using inputs that require Power Connect Power Module 960355 connector to J4
4.6 Install any wires by depressing lever and inserting stripped wire into connector.
4.7 Gather any wires that run outside the box and secure them in the wire clamp.
4.8 You may install the cover at this point, because you can observe the LED’s through the viewing window provided.

5 Operation

5.1 Before Powering up the Robot, Provide Power to the Power module 960355.
5.2 Power Up the Robot and test various inputs and outputs by observing the LED’s that are visible through the viewing window.

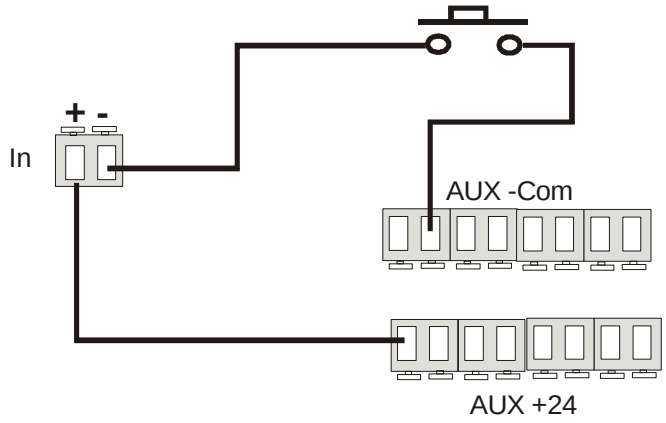
Check List.

a. Red LED for Robot Power should be Lit.
b. If Auxiliary Power is used, Red Auxiliary LED Should be Lit.
c. As inputs are toggled Yellow LED’s should light at the appropriate input.
c. As outputs, including Dispense, are toggled The Green LED’s should light.

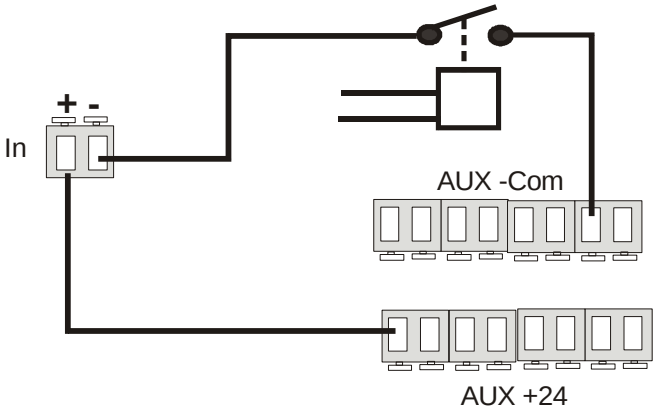
6 External Device – Connections and Wiring

Shown below are connections for typical applications that may be encountered. Each Input is isolated from all other inputs and outputs, this allows for the ability to mix different types of sensors and input devices in the same Robot Interface Junction Box.

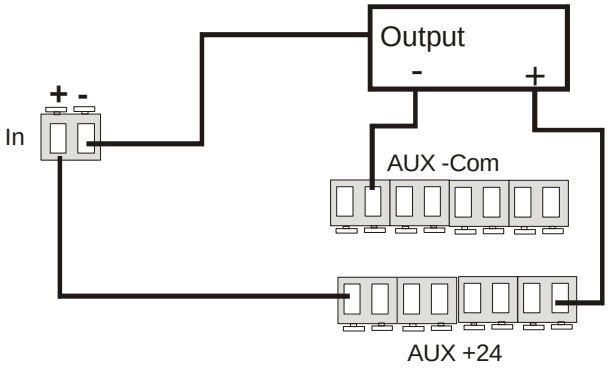
Switch Input



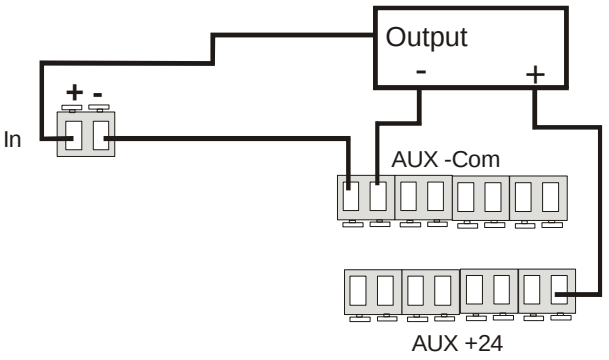
Relay Input



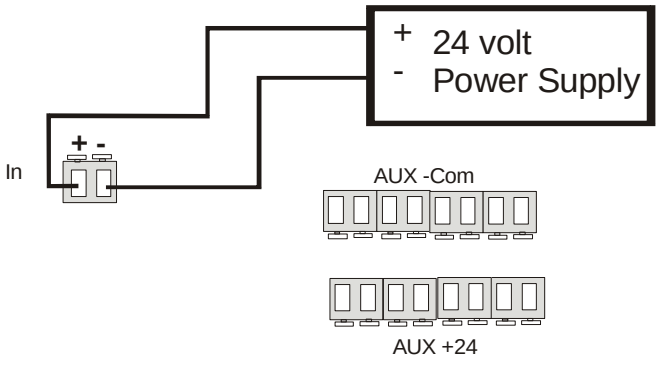
NPN Sensor Input



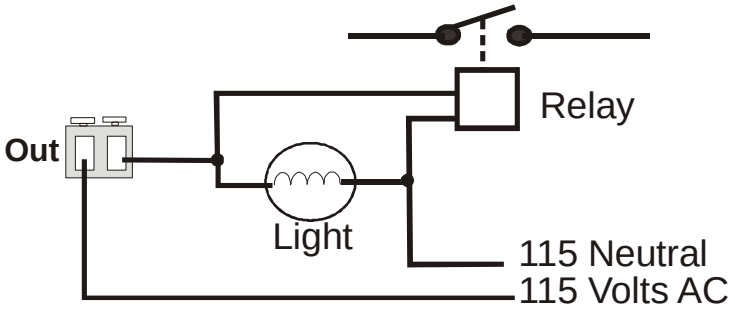
PNP Sensor Input



External 24 volt source Input



Using an Output to Turn on a Relay and Light Bulb.



7 Troubleshooting

7.1 Prior to turning power off observe the following indicators.
Is the Robot Power indicator ON ?

If not is the Robot turned on and the cable connected ?

7.2 Is the Auxiliary Power Indicator ON ?

If not is the Auxiliary Power unit Plugged into the Robot interface and is it plugged into the wall power outlet ?

7.3 Are the input or output LED's lit. If so which ones are LIT ?

Verify that the inputs and outputs you desired to use correspond to the ones that are lit or else you may need to verify the wiring.

⚠ **Before proceeding with any repair or maintenance operation disconnect the tool from the main electricity supply. Also Turn power off of all devices connected to 98549 Robot Interface Junction Box.**

7.4 All relays are interchangeable on the PC Board.

If a relay is suspect, you may exchange it with a relay from an unused I/O channel.

7.5 Check wiring against the examples given in this manual.

8 Care and Maintenance

8.1 All connections should be secure when in operation.
8.2 Cables should be placed to minimize strain on connections.
8.3 Keep viewing window clear of clutter to avoid scratches.

9 Accessories and Spare Parts

Accessories:

989432 – 10 ft. Cable 9 Pin D Male to Female
989433 – 10 ft. Cable 25 Pin D Male to Male (for SCARA)
989434 – 10 ft. Cable 37 Pin D Male to Male (for Bench Top)
960355 Universal Power Supply, +24 VDC, 0.63 A
1053227 Adapter, 9 pin female to 3.5mm mono plug

Recommended Spare Part: F1	Fuse 5 x 20 mm .75 amp fast blow fuse Cooper/ Bussmann Part number GMA-750ma

10 Appendix A

Interfacing with voltages other than 24 volts, use the Optoisolator.

How to use the Optoisolator.

When using the optoisolator the current to the optoisolator input must be set to 20 milliamps. To provide a current limit the voltage you want to use is divided by .02 amps which is equal to 20 milliamps. The result is the value of resistor(in ohms) needed to limit current. The resistor wattage should be 1 watt. This resistor is connected in series with the optoisolator as shown in the example.

Note: The optoisolator only requires the optoisolator output be connected to the negative side of an input, because the connection to Aux Com is internally wired. (See diagram and schematic.)

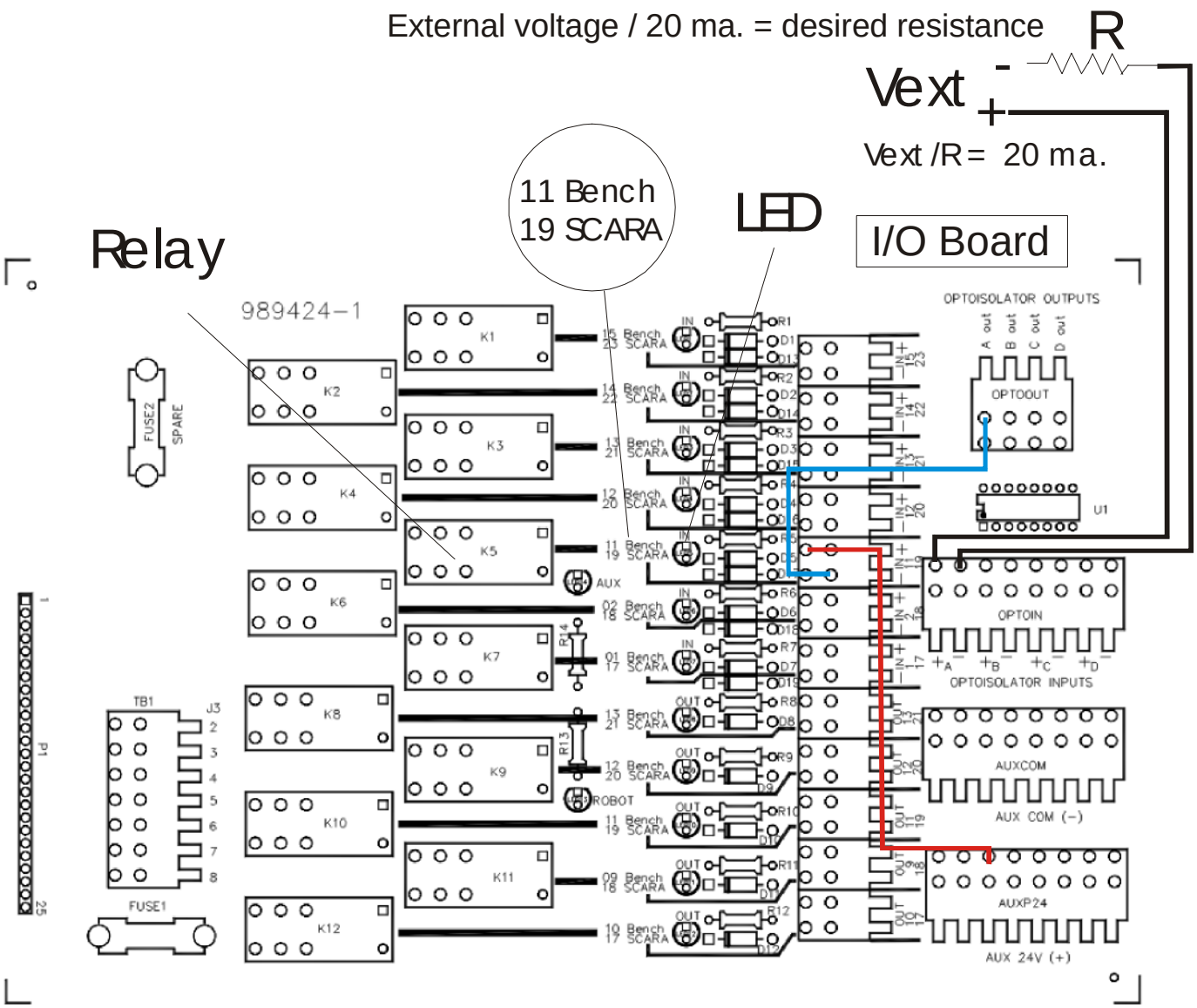
Example of using the Optoisolator: for 12volt interface

Vext = 12 volts R = Vext/20 ma. = 12/.02 amps = 600 ohms
When 20 ma. current is present at the input Optoinput A, wired as shown,
the LED will be lit, and the robot will receive an input @ 11 Bench / 19 SCARA.

Using the Optoisolator

Connections at the end of wires only.

External voltage / 20 ma. = desired resistance



11 Appendix B

98549 J-Box Interfacing Applications and Examples

A REFERENCE GUIDE

Always consult your equipment manuals or become familiar with the equipment through an on-site training program. Contact your local Henkel Loctite Sales Representative or Equipment Distributor for more information.

1-800-LOCTITE

CONTENTS

TYPICAL DISPENSE SETUP

The following diagrams illustrate the typical setup for dispense equipment as it relates to the use of Loctite robots in general. Keep in mind that these configurations are just for reference and not exclusive. Most configurations of dispense systems can be arranged in 3 general categories.

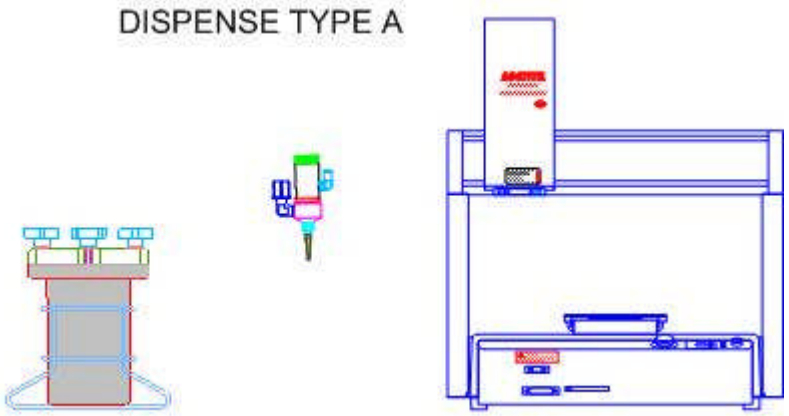


FIG. 1

Dispense Type A refers to a system that utilizes a product reservoir and a dispense valve in the Robot application. The reservoir could be equipment such as a ram pail pump, a cartridge pusher, or a 10-gallon tank. As this arrangement relates to our robot integration, the only device that is of concern is the dispense valve. The valve will need to be actuated by a Robot output signal in order to dispense at the proper time during the robot motion. The Henkel Loctite J-Box 98549 is suggested for the robot integration. The Loctite Equipment Application Chart (at the end of this appendix) can help in selecting components related to this configuration and the figures in this appendix that can aide with integration between the Loctite Robot and the J-Box.

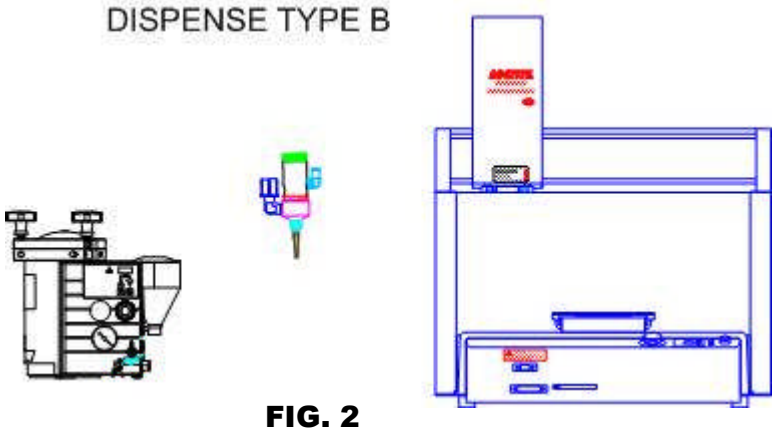


FIG. 2

Dispense Type B (figure 2) refers to a system that is connected to a control device that actuates the dispense valve. In this configuration, the Robot signals the controller to open or close the valve. Typically, the controller is placed in a continuous (not timed) mode of

operation and the Robot controls the On/Off dispense time. In this arrangement, the primary concern in the integration is signaling the controller for the dispense valve actuation. Most controllers only require a contact closure to cause the valve to cycle and dispense—but there are exceptions. The Loctite Equipment Application Chart (at the end of this appendix) can help in selecting components related to this configuration and the figures in this appendix that can aide with integration between the Loctite Robot and the J-Box.

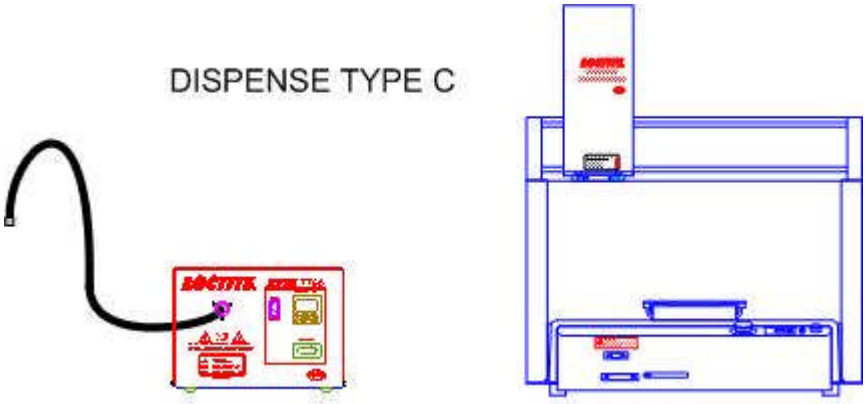


FIG. 3

Dispense Type C (figure 3) refers to UV style equipment. These systems typically require a contact signal for cycle actuation. These devices can be UV wand systems, and hand held LED light sources. As in Type B systems, this configuration is typically placed in a continuous mode of operation and the Robot signal controls the time the UV output remains ON. The Loctite Equipment Application Chart (at the end of this appendix) can help in selecting components related to this configuration and the figures in this appendix that can aide with integration between the Loctite Robot and the J-Box.

☞ These configurations are presented so that the user may have a better perspective of the layout of your particular application and how each component is integral in the overall dispense system. By having the basic premise of the configuration, the focus can then shift to those components that will require integration using the 98549 J-Box.

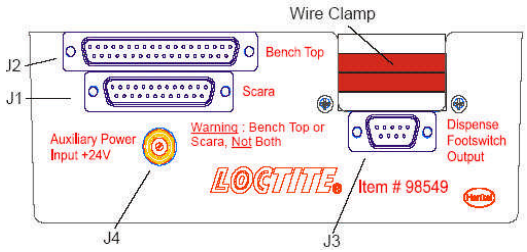
Note:
The Benchtop and Scara-N models use a 37 pin edge connector for I/O interface; whereas, the Scara model uses a 25 pin edge connector. Further, the 37 pin connector (Bench/Scara-N) refers to the I/O-Sys; and the 25 pin connector (Scara) refers to the I/O-2 functions.

☞ Throughout this appendix you will be asked to place Point jobs in certain locations. To access Point Job loaded or to create them, press the Menu key (in Teach Mode) and select Point Job Settings.

DISPENSE CYCLE

■ Foot Pedal Actuation

Most Loctite controllers are actuated by footswitch action. These devices require a contact closure to cause a dispense function to occur. Henkel Loctite cable 989432 is supplied with the robot J-Box; this cable is used to connect directly to a Loctite foot-actuated system to the Robot. Connect the Sub-D, 9-pin connector (J3) directly to the plug on the Loctite 98549, connect the opposite end of the cable to the dispense system controller (typically XS1). See the application chart at the end of this manual to see if your equipment conforms to this configuration.



Once the robot is programmed for a dispense routine, it will signal the dispense system when to perform a dispense cycle by sending a trigger signal to the dispense controller via the 989432 cable.

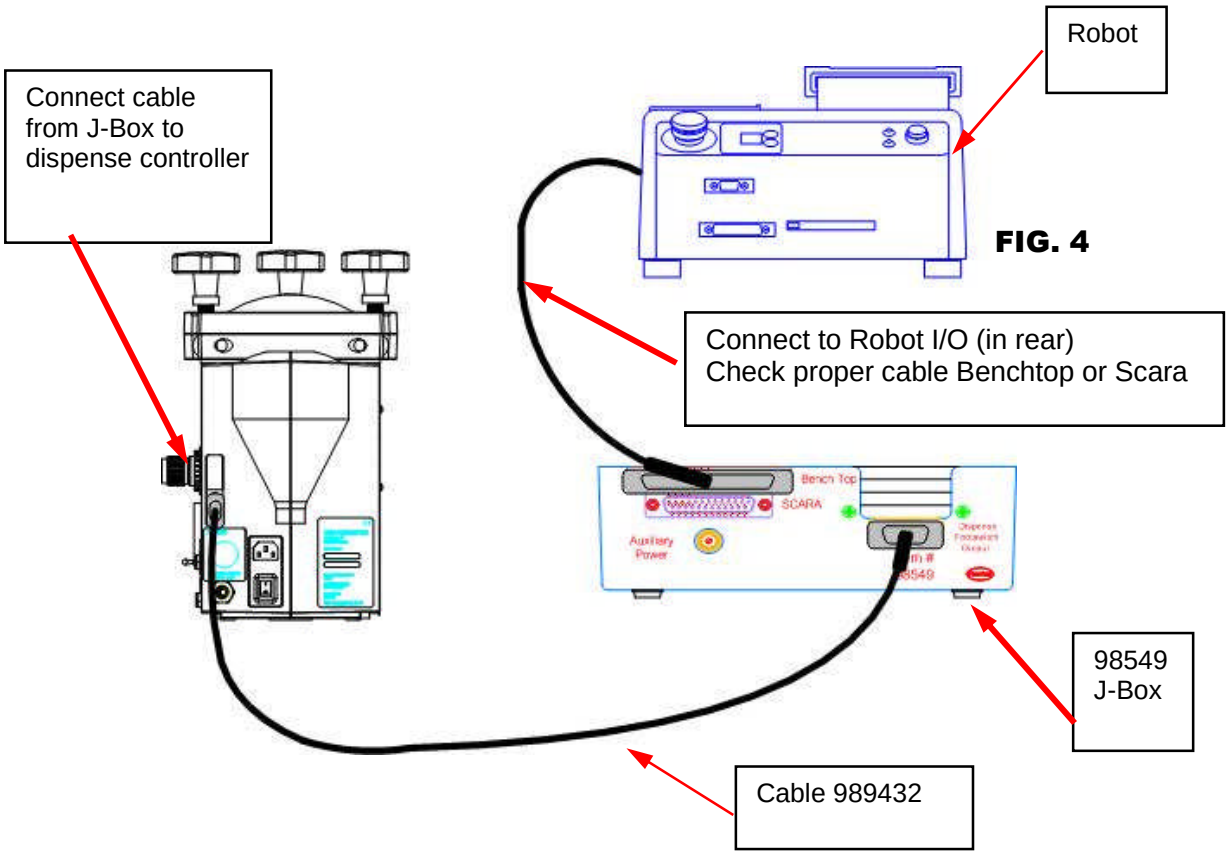


FIG. 4

Some Henkel Loctite equipment can make use of the 98395 (Bench/Scara-N) Robot Interface Cable (98636 for Scara model), and thus not require the 98549 J-Box. This cable can be used to actuate controllers that are equipped with a dry contact type switch for cycle actuation. Keep in mind that if you choose to use a 98395 Interface cable, it will not be possible to do any further interfacing; only signaling the controller for a cycle start. See the application chart at the end of this manual for compatible equipment with this cable.

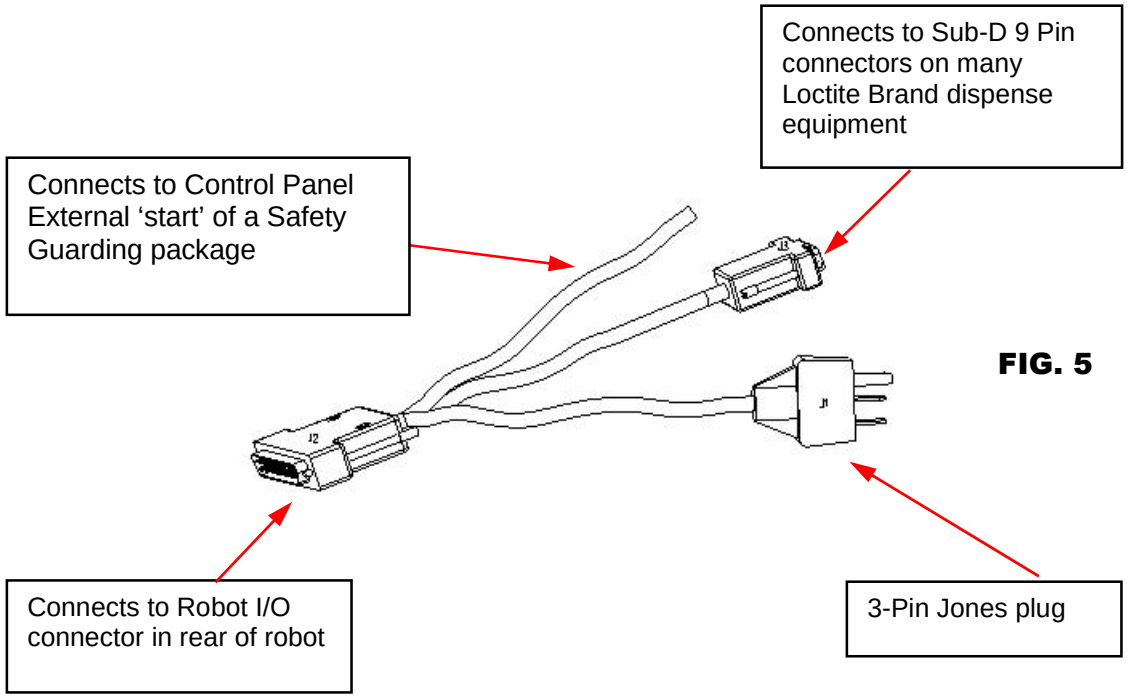


FIG. 5

98395 Interface cable (Bench/Scara-N)
98636 Interface Cable (Scara) Model

A separate adapter (Item Number 1053227 shown below) is also required to operate:

Digital Syringe Dispenser Item Number 883976.

Simply insert the 9 pin connector end into the adapter and plug into the mono plug jack on the dispenser.

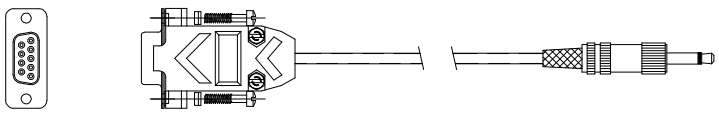


FIG. 5A

If the dispense system is a dry contact actuated type and does not have a 9 pin sub-D connector, hookup two wires from the dispense controller unit's actuate terminal to the DISPENSE terminal on the robot J-Box. The terminals on the J-Box will provide a switch closure anytime that the dispense signal is active (a 98549 J-Box is required).

DISP
Bench/Scara-N B10
Scara B17

These terminals will provide a switch contact closure during cycling per Robot dispense program

FIG. 6

☞ **DO NOT exceed contact current rating!**

■ Dispense Valve

By far, most industrial adhesive dispense valves operate pneumatically. The valves typically require either air to open and air to close, or air to open and then are spring closed. Henkel Loctite has a solenoid device that can drive these pneumatic valves (p/n 988000). The solenoid is actuated by a dispense signal from the Robot. There is a dedicated terminal OUTPUT for the dispense signal on the 98549 Robot J-Box. Connect the solenoid as shown in the illustration below.

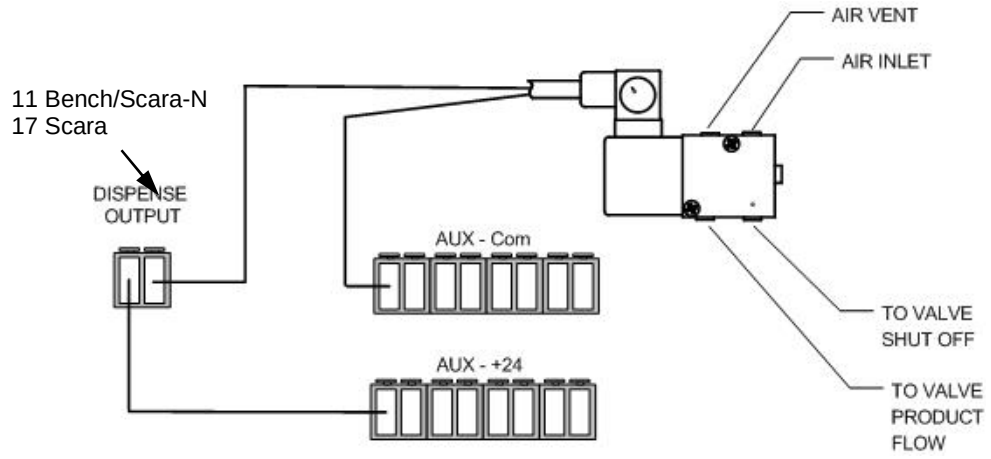


FIG. 7

☞ Auxiliary Power is required to actuate the solenoid

In the case where a valve is spring closed, the setup in Figure 7 can still be utilized but use a port plug to close off the valve shut off port (see illustration below, figure 8).

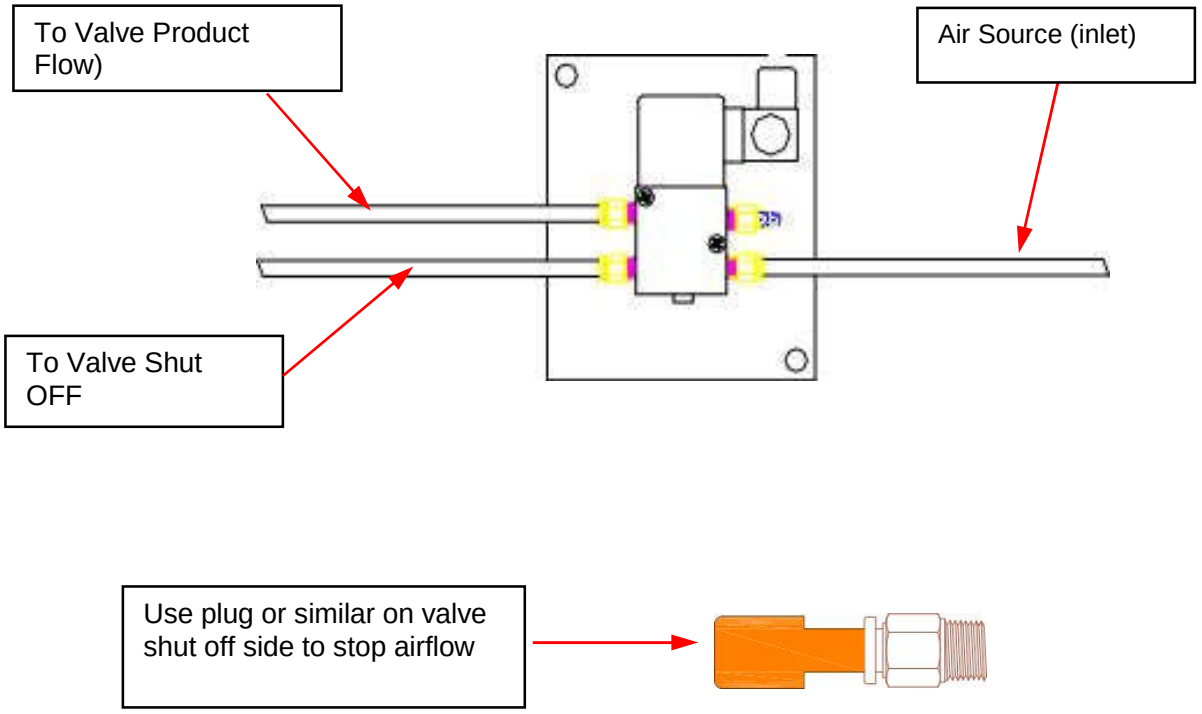


FIG. 8

LOW LEVEL SIGNAL

■ Bond-A-Matic 3000

An inductive device type sensor in the reservoir is used to provide a signal when the volume in the product reservoir is near empty. This signal is useful for stopping the dispense operation so that assemblies are not processed without the required adhesive. These sensors are solid-state devices and are meant to plug directly into Loctite Controllers such as the 98023 or 98024. The controller performs the product low level monitoring and prevent the start of dispense cycle if the low level signal is detected.

If the Loctite Controllers are not used, the low level sensor can be wired into the Loctite Robot J-Box (98549) and then program the robot to monitor for product low-level signal. Perform the following:

1. Cut off the 3-pin connector at the end of the sensor cable.

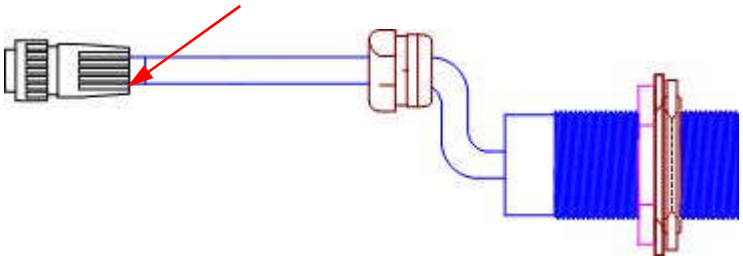


FIG. 9A

2. Splice the wires and connect to the J-Box as shown in the following illustration.

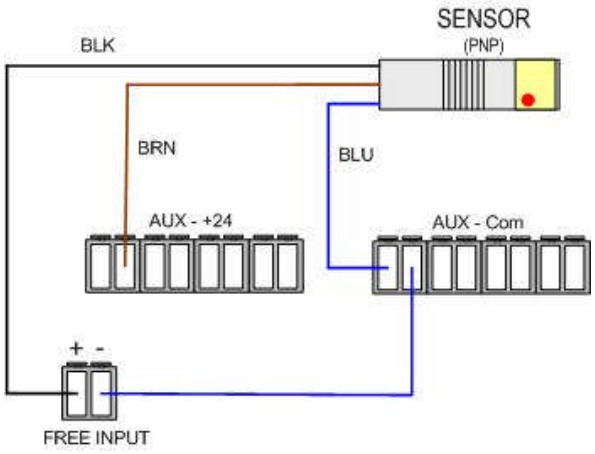


FIG. 9B

☞ **Auxiliary Power is required on the J-Box**

a. Connect the brown wire to +24 VDC terminal.
b. Connect the blue wire to –com terminal.
c. Connect the black wire to + on the selected free input.
d. Connect a wire from the – of the free input to –com terminal.

For customers using non-Henkel Loctite reservoirs, which may have, sinking (NPN) type sensors, use the illustration below to make the interface to the J-Box:

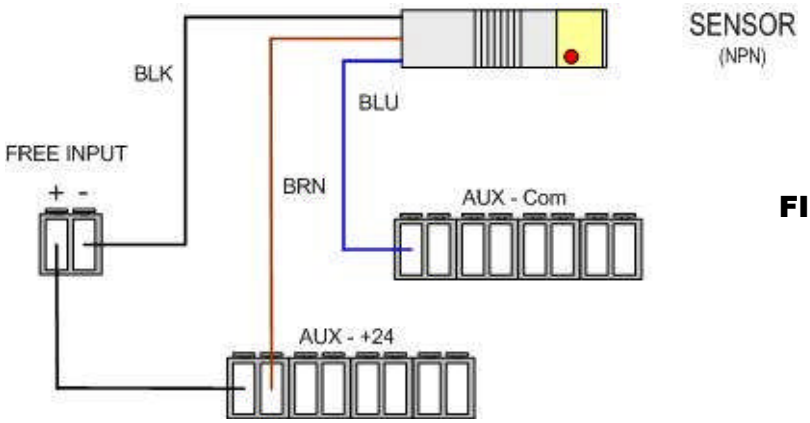


FIG. 9C

☞ **Auxiliary Power is required on the J-Box**

3. Add a Point Job to the dispense program to monitor the sensor.

```
001
002             LD #sysIn15
003     THEN
004             WAIT START (BZ)
005     ELSE
006     END IF
```

FIG. 9D

☞ **The LD #SysIn15 in the figure above, is just an example, use any available INPUT.**

☞ **If your sensor is operating with the low level signal in a default manner (input is active with no product in reservoir); change the LD #SysIn to LDI #SysIn.**

4. The point job is ideally placed at the beginning of the dispense program under 'POINT JOB AT START of CYCLE.' (Menu, Run Mode Parameters, Job and sequencer on Run Mode, Job on Start). The Point Job can also be placed at the end of the dispense program. The objective is to look at the sensor status before starting a dispense cycle.
5. Test the program and connection by creating a low level condition (remove product bottle from reservoir).
6. If a low level condition occurs, the low product situation needs to be remedied and then press the start cycle button for the process to continue.
7. The low level alarm will occur each time before a dispense cycle until the low level condition is corrected.

☞ **DO NOT allow the dispense system to cycle without product. Air will get in the product line and the dispense quality will be compromised. Resolve the low-level product issue promptly.**

■ Semi Auto Controllers

The product low-level sensors for these devices are built-in (for controllers 97017 and 97020) and have no external cable as the Bond-A Matic reservoirs have. The 989432 cable supplied with the J-Box can be directly connected to the front of the J-Box and the other end of the cable plugs XS1 connector on the Semi-Auto Controller. This cable permits a 'plug-and-play connection between the J-Box and the Controller. In addition, the product low-level wires are passed through the cable and are available in the J-Box.

☞ **Most footswitches provided with the controllers have only 2 wires—the dispense actuate wires. Use the 989432 cable instead of the footswitch cable; this will permit the integration of the low level sensor with the robot.**

Go to the Tb1 terminal in the Robot J-Box. The low level signals are available out of pins 6 and 7 (please examine controller manual carefully).

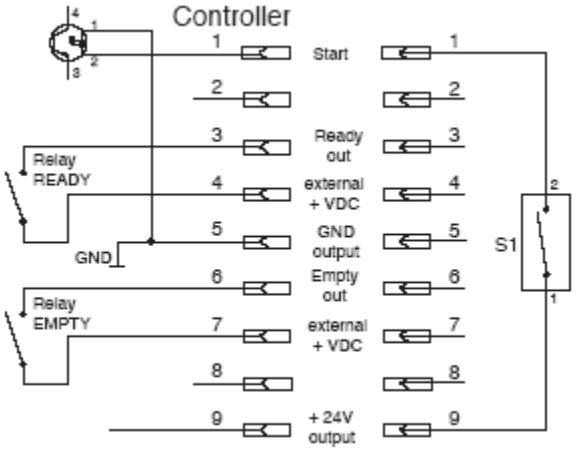


FIG. 10A

1. Use the diagram above as reference to connect the low level signal to the robot J-Box.
2. Once the cable (989432) is connected between the Controller and the J-Box, it will be necessary to pull the low-level wire signals that are now at the J3 connector (see J-Box diagrams). The wires are connected directly from the J3 connector to the Tb1 terminal strip (except for positions 1 and 9).
3. Connect a wire from Tb1-6 and one from Tb1-7 to the terminals of a FREE input on the J-Box (such as IN7: A15 Bench/Scara-N or A23 Scara).

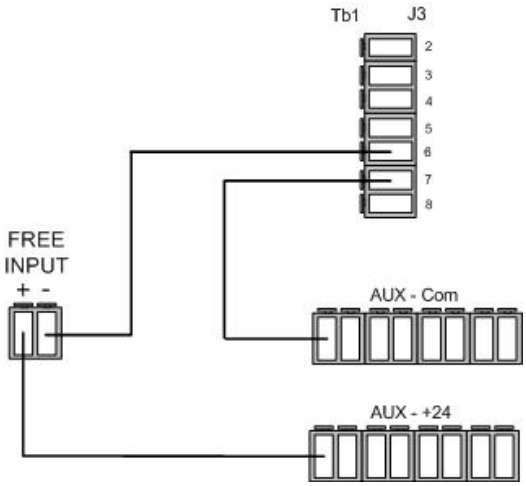


FIG. 10B

☞ **Auxiliary Power is required on the J-Box**

4. Write the Point Job so that the Robot can monitor the sensor (any FREE input). The point job is ideally placed just prior to the dispense program starting. Place the Point Job on the beginning of the program under 'POINT JOB AT START,' in Run Mode Parameters, Job and sequencer on Run Mode, under the Menu page. The point job can also be placed at the end of the dispense cycle Run Mode parameters, Job & Sequencer on Run Mode, Job at End of Cycle).

```
001     IF
002             LD #SysIn15 (FREE input)
003     THEN
004             WAIT START (BZ)
005     ELSE
006     END IF
```

FIG. 10C

☞ **If your sensor is operating with the low level signal in a default manner (input is active with no product in reservoir); change the Command LD #Sysin15 to LDI #SysIn15.**

5. The objective is for the robot to monitor the low level status before a dispense cycle begins.
6. Once all wiring is completed, test the functionality by creating a low level condition. Remove the product bottle from the reservoir.
7. The robot should stop and sound a short buzzer; this is an indication that the low level sensor is active. The low level condition has to be remedied and then the start pushbutton actuated to return to normal cycling.
8. If the low level signal does not clear, the sensor may require adjustment.

■ Cartridge Pusher (300 ml)

The Loctite 300 ml cartridge pusher is equipped with a magnetic reed switch used as the product low-level detector. This device is a PNP type and should be wired to the robot J-Box (98549) as shown in the illustration below.

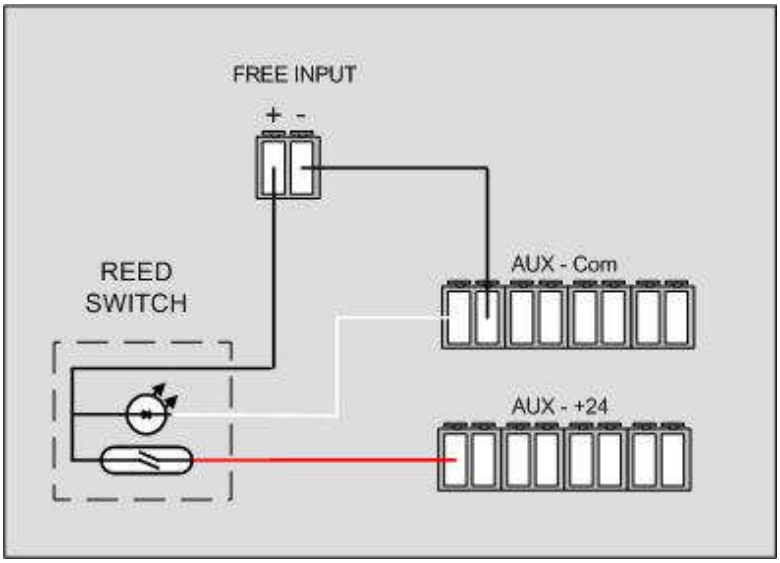


FIG. 11A

☞ **Auxiliary Power is required on the J-Box**

1. Select a FREE input to wire the sensor to (such as IN 7, A15 Bench/Scara-N, or A23 Scara).
2. After the sensor is wired to the J-Box, the robot will have to be programmed with a Point Job (routine) to monitor the status of the sensor.

```
001     IF
002             LD #Sysin15
003     THEN
004             WAIT START (BZ)
005     ELSE
006     END IF
```

FIG. 11B

3. Place the routine under 'POINT JOB ON START,' in Run Mode Parameters, Job and Sequencer on Run Mode, under the Menu page.
4. The routine could also be placed at the end of the dispense cycle (POINT JOB AT END of CYCLE). The objective is to have the sensor monitored before or after a dispense, and not during the dispense cycle.
5. If a low level condition occurs, the signal will be detected by the Robot (at the end or beginning of the dispense routine) depending on where the Point Job was placed. The robot will stop, at which time the user should correct the low-level condition.

6. Once the problem has been corrected, the start switch can be initiated, and the Robot will continue cycling normally.

☞ See the Henkel Loctite Robot Manuals to add Point Jobs to your program. The basic procedure is to be in the Teaching Mode Menu, then select Point Job Settings and select to create a new Point Job.

☞ Throughout this appendix you will be asked to place these Point jobs in certain locations. Access most Point Job locations by pressing the Menu key (in Teach Mode) and select Point Job Settings. Once you identify the location your Point Job needs to be, press the Enter key and select the Point Job number previously created.

EXTERNAL START

External start is useful when a remote device is required to provide the signal to start a dispense cycle (program). The signal can typically come from a PLC, an operator working behind a safety light curtain, an industrial PC, or any control device that is executing process commands.

The external start input signal is pre-assigned for the Benchtop (and Scara-N) robots as A01 (#SysIn1). All that is required is a temporary +24 VDC signal to the input terminals (on the J-Box) to cause the robot to start a dispense cycle.

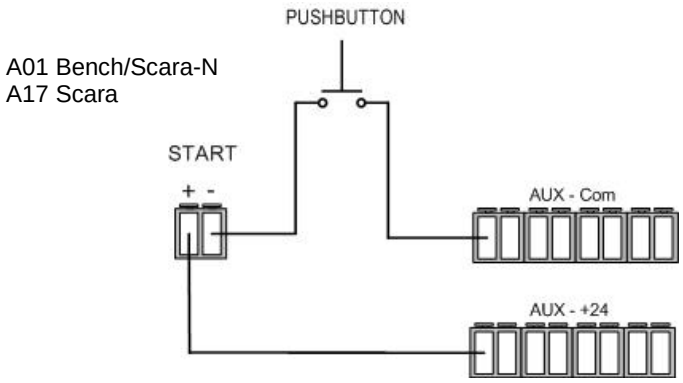


FIG. 12

The illustration above shows an operator pushbutton that initiates an external start command. Any contact switch, such as one from a PLC or other control device, can substitute the pushbutton. The signal only needs to be active for 50 milliseconds for it to be recognized by the Robot. But, keep in mind that when using relays or switches the mechanical reaction time of these may be longer than 50 ms.

☞ **The robot needs to be in External Run cycle MODE in order to be started by a remote (external) start signal**

For the Scara and Scara-N Robots, the external start is typically accomplished with the required Operations Box (987512). If an external start from another remote device is required, a 37-pin Sub-D male edge connector will be needed to plug into the I/O-2 plug on the rear of the Scara unit (not applicable to Scara-N types; Scara-N types operate the same as Bench top models). Two wires will require closure in order to generate the signal. Solder two wires to positions 1 (A01, Start) and 34 (COM). When these two wires are closed by an external device, the system will begin a dispense cycle (the Scara operations box must be in External Mode).

HOT MELT UNITS

Hot melt units require dispense valve actuation in a different manner. In addition to turning on the dispense valve, the Hot melt Unit's pump has to be turned on/off; otherwise product will not flow. In normal hot melt applications with the system in a production environment; the pump of the unit is set to 'crawl.' In some other cases where production is high, the pump is set to RUN so that little time is wasted in obtaining the dispense.

Obtain the proper PLC interface cable for your unit (12 or 14 lb units use the 986891 cable; 34 lb unit uses the 987835 cable). The cable will plug into the Hot Melt unit in the I/O port. Use the un-terminated end to perform the interfacing. The accompanying cable documentation will provide the information necessary to actuate the pump. Either unit requires a dry contact closure to actuate the pump. The pump is typically actuated about ½ second prior to dispensing (for priming).

FIG. 13

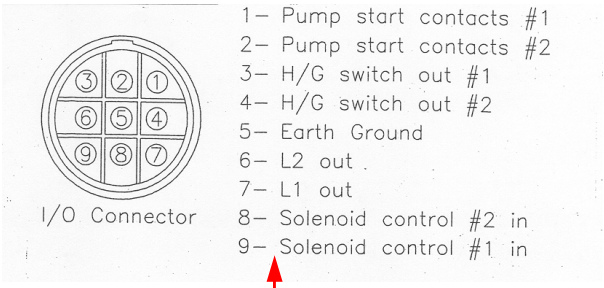


FIG. 14

PIN	COLOR	DESCRIPTION	
1	RED	PUMP CTRL A	>PAIR
2	ORANGE	PUMP CTRL B	
8	WHITE	AC L2	
9	BLACK	AC L1	
10	GREEN	SAFETY GROUND	
	GREEN	SAFETY GROUND	
12	RED	HEAD 1 SWITCHED	>PAIR
16	BLACK	HEAD 1 COMMON	
13	WHITE	HEAD 2 SWITCHED	>PAIR
14	BROWN	HEAD 2 COMMON	
15	BLUE	HEAD 3 SWITCHED	>PAIR
19	ORANGE	HEAD 3 COMMON	
17	VIOLET	HEAD 4 SWITCHED	>PAIR
18	YELLOW	HEAD 4 COMMON	

6 COND (BLUE SPARE)

9 COND

Read and review the Hot Melt Bulk Unit Manual for safety information and additional interface requirements. Check the current cable configuration accompanying the PLC cable that is on-hand. CAUTION there is HIGH VOLTAGE in these cable assemblies when connected to the Hot melt Unit.

Electric Applicator

1. The pump control is labeled (for both cables) PUMP CNTRL A and PUMP CNTRL B.
2. After properly identifying these 2 wires, connect them to a FREE Output terminal on the J-Box. The pump only requires contact closure to turn on/off the pump.
3. The electric applicators require considerable current (more than the J-Box Aux supply can provide). It will be necessary to provide an auxiliary or separate DC power supply to actuate the coil of the Hot Melt Applicator. The coils are available in 24VDC,

115VAC and 230VAC (the 24VDC coil requires 2 amps).

4. Identify the dispense valve wires; they are typically labeled HEAD CNTRL (or SWITCHED), and HEAD CNTRL common or HEAD CNTRL Ref., Or solenoid control 1 and 2. Hookup wires as shown in the illustration below (the power supply must match the coil rated voltage).

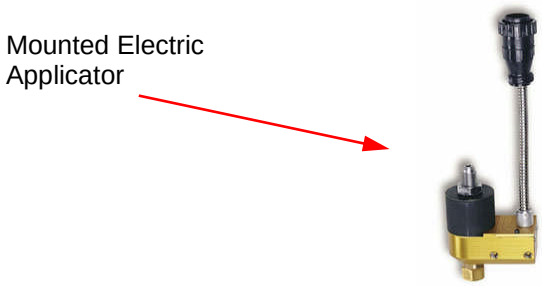


FIG. 15A

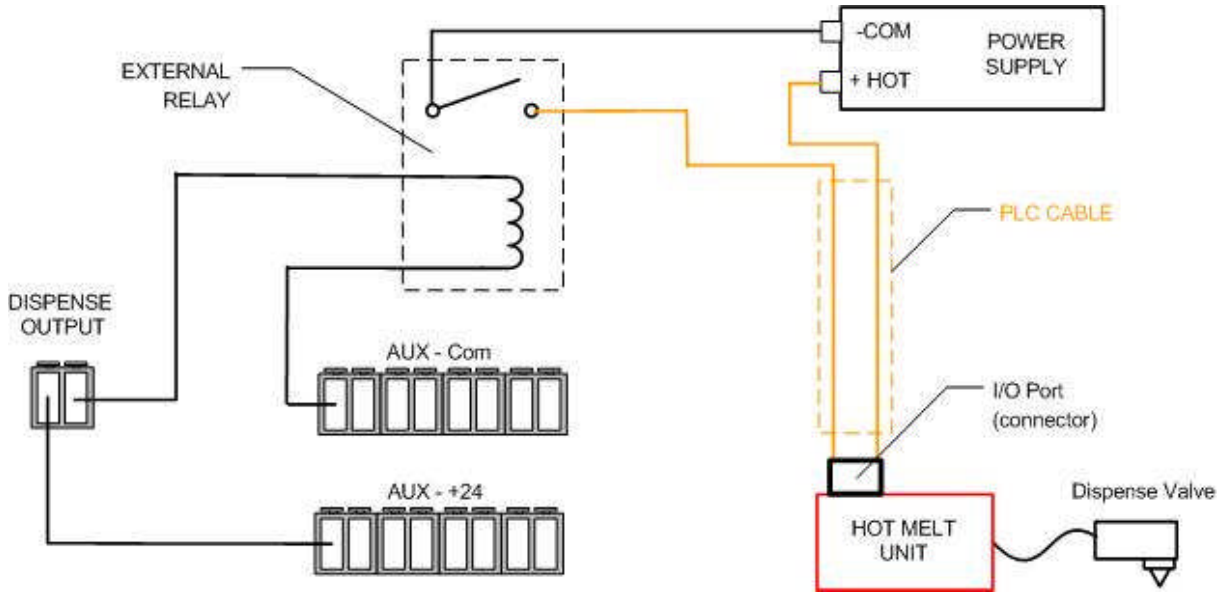


FIG. 15B

☞ **DO NOT exceed the J-Box (output) relay contact current maximum. Auxiliary power for the J-Box is required in addition to the separate power supply for the dispense coil.**

5. Select the power supply and external relay for step 4 to handle the current needs of the dispense coil. The external relay is used to connect the external power supply to the Hot melt unit in order to actuate the dispense valve.

6. Write the following Point Job to actuate the hot melt pump for the dispense cycle. Place the Point Job at the beginning of the program under 'POINT JOB AT START,' in Job on Start of Cycle, under the Job and Sequencer on Run Mode. The example shows B13 or #SysOut13; use the output your application utilized following step 2.

```
001     WAIT 100 (MILLISEC)
002     SET #SysOut13 (Bench/Scara-N; for Scara B21)
```

FIG. 15C

7. The pump must be turned OFF after the dispense cycle is over. Add the following Point Job at the END of the dispense cycle (Job and Sequencer on Run Mode, Job on End of Cycle).

001	RST #SysOut13

FIG. 15D

8. Test the system with a working dispense program to ensure correct functionality. The hot melt pump should turn ON just before dispensing and shut-OFF after the dispense cycle is over.

Pneumatic Applicator

For Hot melt units utilizing a pneumatic actuated head, the setup is similar to the electric applicators in several ways. Proceed with the follow steps:

1. Perform the steps 1 and 2 of the electric applicator procedure.
2. Use a Loctite solenoid actuator (988000) and connect as shown below. Connect the pneumatic lines from the solenoid to the mounted pneumatic hot melt applicator.

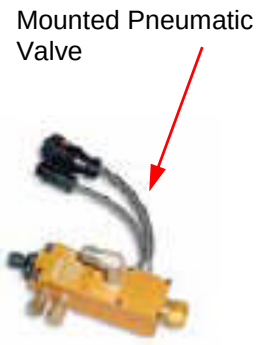


FIG. 16A

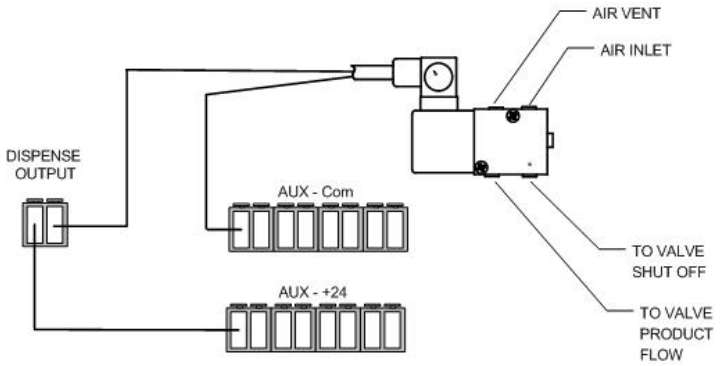


FIG. 16B

☞ **Auxiliary Power is required**

3. Perform steps 5 through 8 of the electric applicator procedure. These steps apply to turning on/off the hot melt pump, which is no different than the electric version of the dispense applicator.

SAFETY LIGHT CURTAIN

The safety light curtain was designed and built for use with Henkel Loctite robots. When the Robot guarding package is delivered, there are 2 cables for the Benchtop unit, and 1 cable for the Scara unit (aside from the power cord), which will require wiring connections necessary to activate the system.

1. Ensure that the Robot is OFF.
2. Ensure that the guarding control cabinet is unplugged.
3. Plug the Robot power cord to the outlet on the rear of the control cabinet of the guarding system.
4. Make wiring additions as outlined in the (attached) layout drawing.

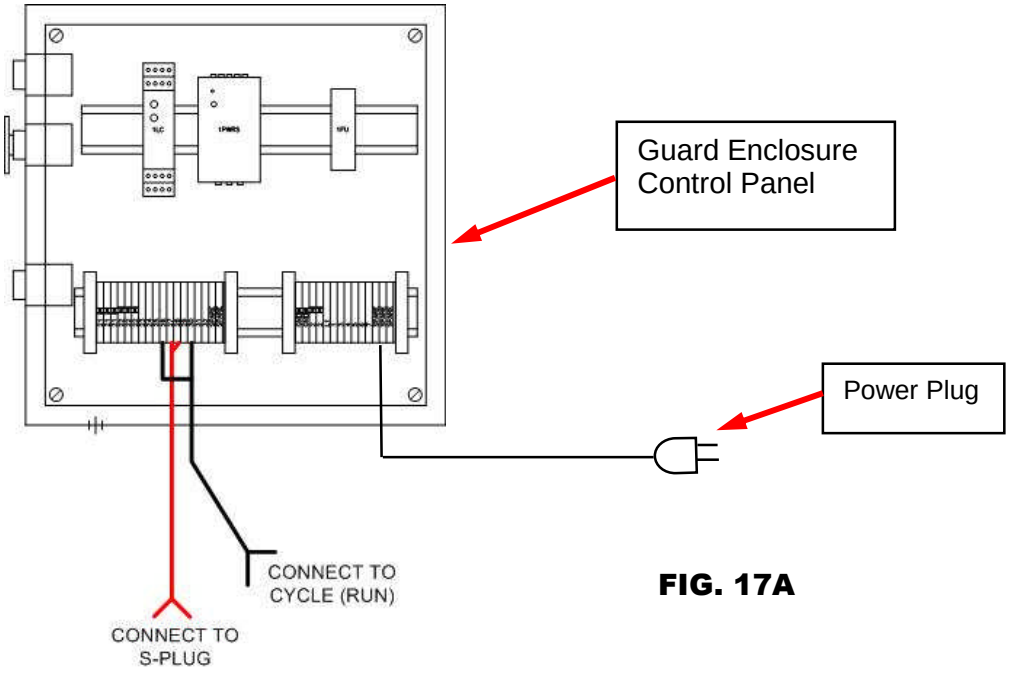


FIG. 17A

a. Connect the Cycle Start pushbutton cable, labeled R (2-conductor) to the Robot J-Box IN 1 terminal (start input; A01 (#SysIn1 Bench) as shown in the figure below.

☞ This connection is not necessary for the Scara model. The Scara Operations Box will control the external start. Make this connection only if the Operations Box will not provide the external start signal (see page 29 Scara notes).

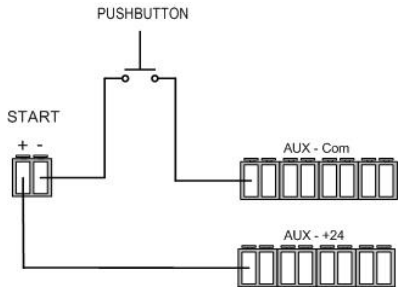


FIG. 17B

☞ **Auxiliary Power is required on the J-Box**

b. Connect the S-Connector cable (from the guard control panel) to the Robot S-Plug (rear of Robot). The S-Connector ships typically with the two wires shorted (twisted together). Remove the twisted pair and connect to the 2- conductor cable—make sure you insulate the connection properly!

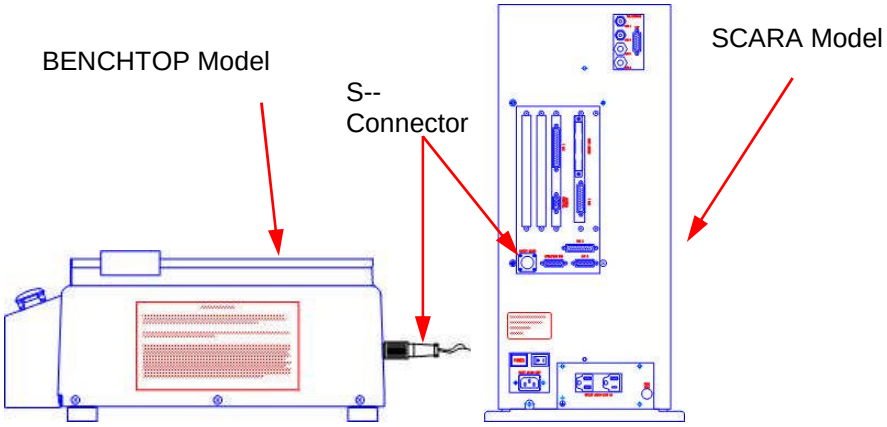


FIG. 18

5. Connect the Teach Pendant to the Robot.
6. Plug the Guarding enclosure power cable to the appropriate AC power outlet.
7. Turn the Robot power switch (rear of Robot) to ON.
8. Pull the E-Stop button on the Guarding enclosure operator panel, the Power On lamp will illuminate.
9. Depending on how the robot was left (on previous shut-down), it will be necessary to change modes to access the robot and place in TEACH mode.
10. Press the MENU key, select Run Mode Parameters, select I/O Settings, then select I/O-S Function Settings, Select Interlock.
11. Next, go to the Administration Mode and select Administration settings, select Start Channel and set to IO-SYS.
12. The system is now ready to operate. Place the robot in a dispense program, set the robot to External Run Mode. It may be necessary to press the External Start pushbutton twice if the robot requires re-initialization.
13. Parts can be loaded or unloaded without affecting the Robot so long as the Robot is idle (cycle completed).
14. The Robot will loose power to its motors if the light curtain is interrupted during Robot cycling.
15. If the Light Curtain is interrupted in the middle of a cycle, it will be necessary to initialize

the Robot by pressing the Start pushbutton.

16. If the E-Stop button is depressed on the Light Guarding Enclosure, power to the Robot and any equipment plugged to the rear of the unit will be removed.

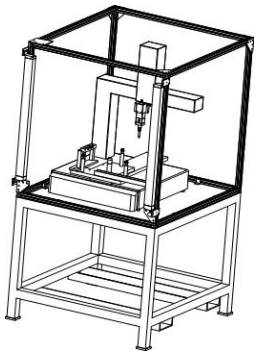


FIG. 19

☞ If only interfacing a dispense controller with a dry contact actuate signal (for dispense), like a syringe dispenser or semi-automatic controller, then the 98395 cable can be used instead of the 98549 J-Box. This cable will provide the controller the **DISP**ense signal (from the robot); and can provide the External start (program Run) signal to the robot (Benchtop series only). **See Figure 5 for further details**.

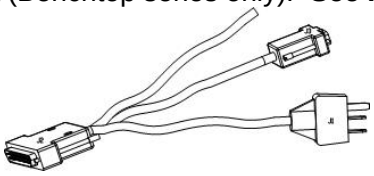


FIG. 20

Connect the S-Connector as in step 4b above, and then splice the START signal 2 conductors to the loose 2-wires on the 98395-cable assembly. This cable also has the 9-pin sub D connector to actuate most Loctite controllers. The cable also has the 3-pin Jones connector used to actuate Loctite 98021 Analog Syringe Controller and the 98521 Spray Controller.

A separate adapter (Item Number 1053227 shown below) is also required to operate:

Digital Syringe Dispenser Item Number 883976.

Simply insert the 9 pin connector end into the adapter and plug into the mono plug jack on the dispenser.

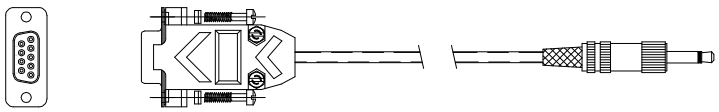


FIG. 20A

☞ **IMPORTANT NOTE:**
IF YOUR ROBOT HAS HAD OUTPUTS ADDED FOR FUNCTIONS ASIDE FROM DISPENSE, THOSE OUTPUTS WILL REMAIN ON DURING AN E-STOP (if they were on during cycling). The outputs need to be RESET (on Emergency Stop using a Point Job), otherwise they will remain SET when a cycle is interrupted.

IN-LINE FLOW MONITOR

1. Have on hand the following components:
   a. Loctite Benchtop Robot
   b. Loctite J-Box 98549.
   c. Loctite Controller 97123 or 97103.
   d. Loctite Monitor 97211.
   e. Pressure Sensor and cable 8965008
   f. Hookup wire, gauge 18, 20 or 22.
   g. Four-Conductor Harness with 15-pin male sub db connector for the 97123 Controller, XS5 connector (wired as shown in Figure 24).

2. Ensure that the Robot is OFF. Read and familiarize yourself with the equipment and setup the Flow Monitor using the manuals accompanying the equipment. The Flow monitor should be connected to the pressure sensor (on the dispense valve), see figure 21. The Controller should be connected to the Flow monitor before proceeding—see figures 22 and 23. Refer to Henkel Loctite manuals 8951178 and 8900424 for details on system setup and hookup.

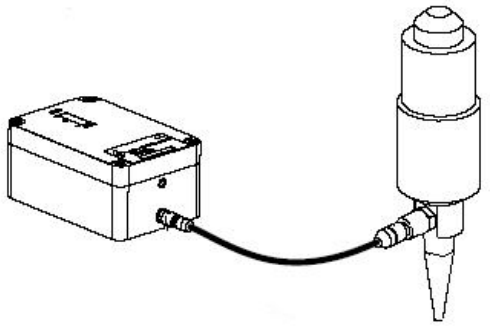


FIG. 21

Automatic Controller 97123

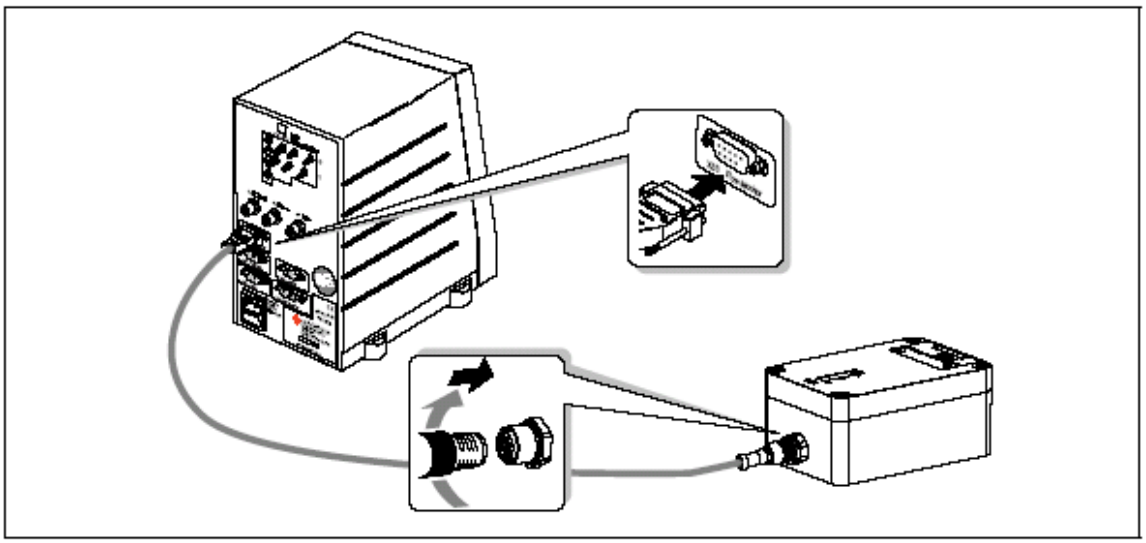


FIG. 22

Automatic Controller 97103

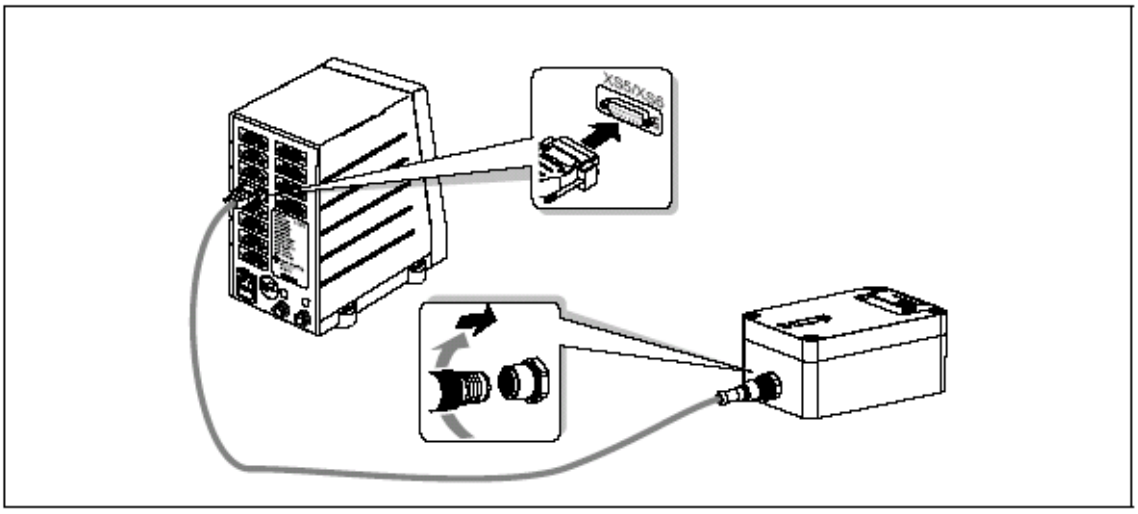


FIG. 23

3. Once the Flow Monitor setup is complete, the connections to interface the system to the Robot can begin. Use figure 4 as guide to wire the J-Box to the Controller.
4. Connect the Sub-D connector of the Cable harness to the 97123 Controller. Then hookup the wires to the J-Box as shown in Figure. Observe polarity at the J-Box, and ensure the wires on the 97123 Controller have been identified. This harness connects the Flow Monitor Error signal and Reset signal from the Controller to the robot J-Box.

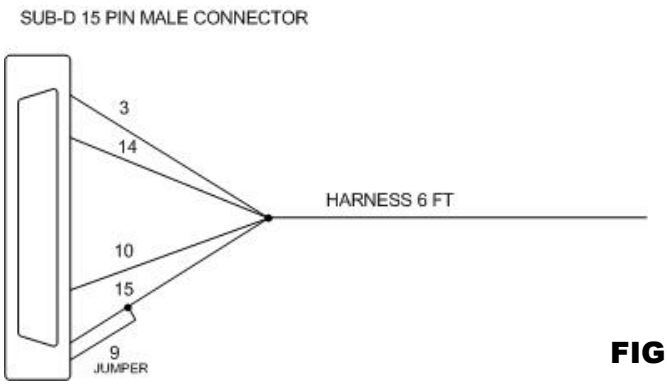


FIG. 24

5. Connect the cable supplied with the robot J-Box and plug one end to the controller's XS1 connector. Plug the other end to the 9-pin Sub-D connector on the face of the J-Box. This is the CYCLE signal connection.
6. Use hookup wire and connect the Error signal from the Controller pins 3 and 14 to the Robot J-Box. Choose any free input (i.e. A15 Bench/Scara-N or A23 Scara). Observe Polarity!
7. Use hookup wire and connect the RESET signal from Controller pins 10 and 15 to the Robot J-Box. Choose any FREE output (i.e. B13 Bench/Scara-N or B21 Scara) Observe Polarity!

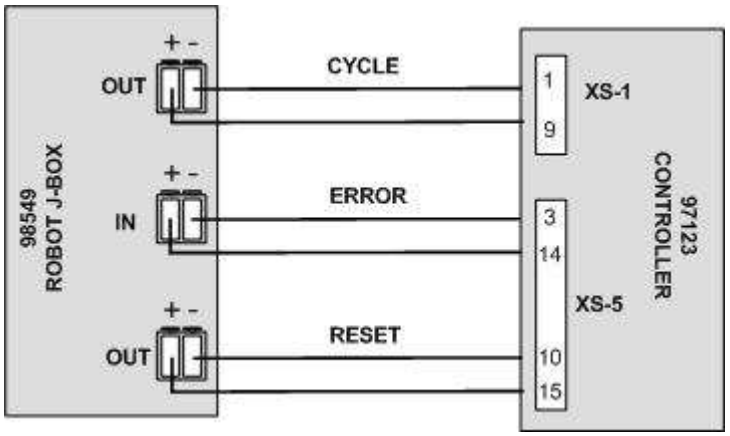


FIG. 25

Enable the Flow Monitor

1. Ensure that all hardware (setup/hookup) has been connected before proceeding.
2. Keep in mind, that once the Flow monitor routine is loaded onto the Robot, the system will not cycle properly if the flow monitor is not on line. Read and become familiar with the 97211 Flow Monitor Amplifier manual 8951178, and 97123 Controller manual 8900424 for dispense and sensor setup.
3. Enable the Flow Monitor function by accessing the Periphery Setup. Refer to the 97123 Manual 8900424 for complete details.

4. Turn the 97123 (power) OFF. Hold the Forms button , and then turn ON the 97123; release the Forms button when you see the Periphery Welcome display.

5. Use the +/- keys until you reach the Flow. Monitor [0] display, and press the Store key .

6. Use the +/- keys until you see the Tolerance Adj. Display. Use the +/- keys to adjust this tolerance setting. Initially, for setup only, adjust the tolerance to 50%, and then press the Store key. After the system is running normally, the % tolerance can be adjusted to a tighter or looser limit. The production application itself will be the best guide for the % tolerance adjustment.

7. Escape the periphery setup by pressing the Forms key.

Store Reference Waveforms

1. It is necessary to store a reference waveform into the 97123 (or 97103) Controller for it to compare against production waveforms generated during dispense cycles.

2. Steps 1 through 7 should be completed before proceeding with Reference waveform storing.

3. The dispense system must be in operation and dispensing normally, or be ready to dispense a normal cycle.

4. Hold the Forms key and press the ESC key . The A at the far left corner of the top display will change to an **R**.

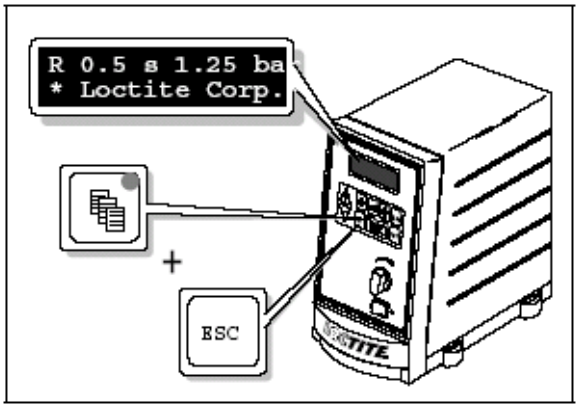


FIG. 26

5. Actuate a normal dispense cycle. Press the Store key at the end of that cycle. The **R** will be changed to an **A**, indicating the reference waveforms have been stored.

6. It may be necessary to repeat this reference process (at a later time), once Flow tolerance is established and any remaining setup adjustments are completed.

7. If the dispense profile changes (dispense pressure, dispense nozzle, valve stroke, dispense time, product type or viscosity), waveform reference storing should be performed again.

Program the Robot

1. Create a new Point Job so that the Robot can detect an Error signal from the 97123 Controller. This Point job (figure 27) will also Reset the 97123 Controller after an Error signal is received.
2. The program routine will cause the Robot to stop when an error condition occurs. The Robot will then reset the 97123 Controller and wait for the operator to clear the bad part, and press the start button on the Robot.
3. Using the Robot Teach Pendant, access the main dispense program for the application.
4. Place the following Point Job at the end (last line) of the dispense program (under 'Job at End of Cycle', in Run Mode Parameters, Job & Sequencer on Run Mode, under the Menu page.

```
001     IF
002             LDI #SysIn15
003     THEN
004             SET #SysOut13
005             WAIT 2 SEC
006             RST #SysOut13
007             WAIT START (BZ)
008     END IF
```

FIG. 27

5. The above example is using input #15 (A15) and output #13 (B13). But any free input, and any free output will also work—refer to Robot manuals I/O Operation or I/O Settings tables. The 2-second WAIT is arbitrary; choose a wait time suitable for your application.
6. Test the program by performing a dispense cycle. If an error is detected the robot will stop (beep) and reset the Loctite controller. Then the robot will wait for the start signal to continue after the problem has been observed and corrected.

BASIC I/O

☞ **IMPORTANT NOTE:**
IF YOUR ROBOT HAS HAD OUTPUTS ADDED FOR FUNCTIONS ASIDE FROM DISPENSE, THOSE OUTPUTS WILL REMAIN ON DURING AN E-STOP (if they were on during cycling). The outputs need to be RESET (on Emergency Stop using a Point Job), otherwise they will remain SET when a cycle is interrupted.

■ Turning on a Lamp or Buzzer

There are times when visual or audible indicators are necessary to make users aware of the status of a process. A lamp, audible buzzer or other device can be used to perform this function. In addition, the status signal could be sent to the input of a PLC or other control device that would make other decisions based on the production process.

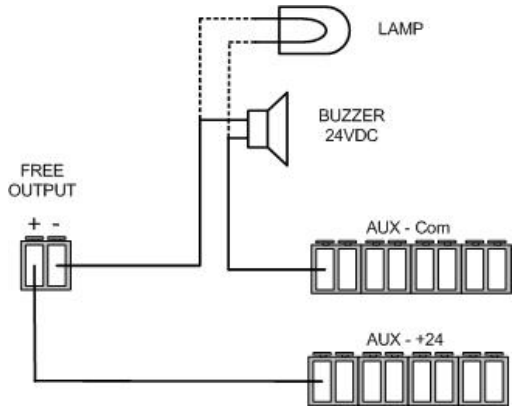


FIG. 28

☞ **Auxiliary Power is required on the J-Box**

The buzzer or lamp need not be a 24 VDC device; an external power supply can be used to match the lamp or buzzer's voltage rating. Keep in mind that the contacts of the J-Box are rated for 4A maximum.

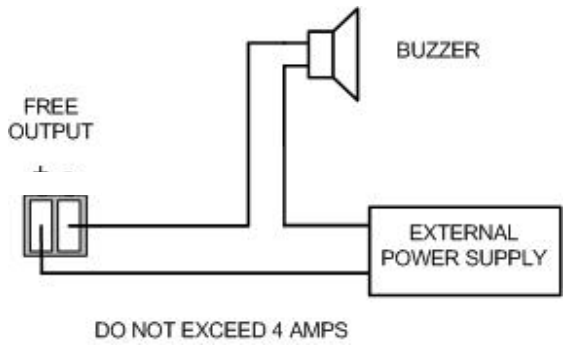


FIG. 29

☞ **Do not exceed current rating of contact device on the 98549 J-Box. Follow the Use and Safety Procedures at the front of this manual. If higher current**

devices are being considered, use an external power supply, rather than the Robot's internal 24vdc supply.

It is necessary then to define at what point the indicator is required. For this example, we will mark the end of a dispense cycle as an indicator for the operator to remove a completed assembly. A (Point Job) routine needs to be programmed into the robot in order for the device to signal when a cycle is complete. There are many ways to do this. The following is one example:

```
001   IF
002         LD #SysOut2 (Bench; #SysOut7 for Scara-N; for Scara use B07)
003   THEN
004         SET #SysOut13 (B13 Bench/Scara-N; for Scara use B21)
005   ELSE
006   END IF
```

FIG. 30A

B02 is pre-assigned as the Robot Stopped signal output; check your manual. Since this output is not directly connected to the 98549 J-Box, the Point Job above monitors the status of B02 and uses B09 (which is directly connected to the 98549) to provide the signaling.

☞ If using a buzzer, place a (WAIT) time (command) limit so that the buzzer goes off automatically, after the SET command. Then add a reset (RST) to B13 to silence the buzzer.

Setting B13 (for Benchtop unit, B21 for the Scara unit) will close a set of contacts on the 98549 J-Box. Use these contacts to wire your Robot Stopped signal to other control devices. The 1-line Point Job below is used to turn OFF the output that turned ON the alarm. It should look something like this.

```
001   RST #SysOut13 (Bench/Scara-N; for Scara use B21)
```

FIG. 30B

☞ **Place the above Point Job on the beginning of the dispense program. One location for the Reset can be under 'Job on Start' (Menu, Run Mode Parameters, Job and sequencer on Run Mode, Job on Start)**

The point job will reset the output so that it does not stay on during the dispense routine after it was turned on at the end of the last dispense cycle.

■ Temporary Stop

This is a useful INPUT command when it is anticipated that the process may require interruption from a master control system to halt the robot. Though this command is not an E-Stop, it will stop the Robot once the robot has reached the end of a programmed line (when the command was detected). Once the command is removed, the robot will continue where it left off after a START signal to the robot.

The Temporary Stop input is not directly connected to the 98549 J-Box for the Scara model. Acquire a 37- pin, male, Sub-D connector and connect or solder 2 wires. One wire is to the temporary Stop Input, pin 12 Bench; check your robot manual. The other wire can go to any of the robot common terminals (Com –(GND)). Connecting either pins 35, 36 or 37 to pin 14 by an external device will cause the temporary Stop function to occur.

In a Benchtop Model, Input #4 (A12 or #Sysin12) has to be actuated for the robot to see the signal. Use figure 31 as an example for the hook-up, but remember that the input required is #4 (on the J-Box). Use #SysIn14 for the Scara-N; check your manual for the Temporary Stop Input Function assignment.

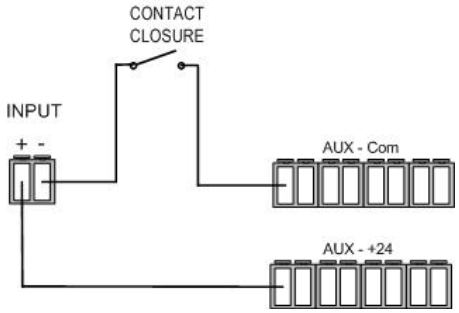


FIG. 31

☞ **Auxiliary Power is required on the J-Box**

■ Ready to Start

This is an output signal from the Loctite robot. This signal is useful when the robot is being used in conjunction with a master control device which monitors the robot for readiness (availability) and in many instances actuates the dispense cycle remotely. This signal is available for the Benchtop/Scara-N and the Scara units the output is B01.

The Ready to Start output is not directly connected to the 98549 J-Box. It will thus be necessary to monitor the Ready to Start robot signal and use a FREE output available on the J-Box to make the signal available to an external device. Create a Point Job as the one below:

```
001    IF
002            LD #SysOut1 (All)
003    THEN
004            SET #SysOut13 (Bench/Scara-N; for Scara use B21)
005    ELSE
006    END IF
```

FIG. 32A

☞ **The Point Job can be placed after the Robot initialization is complete. Look in the list of Point jobs (Menu, Run Mode Parameters, Job and sequencer on Run Mode)**

Setting B13 (for Benchtop unit, B21 for the Scara unit) will close a set of contacts on the 98549 J-Box (04 Output in this case). Use these contacts to wire your Robot Start signal to other control devices. The signal will have to be removed once the Robot is running and is 'In Cycle.' Place the Point Job below to RESET the signal once the robot has begun a dispense cycle.

Use the MENU key and go to Run Mode Parameters, Job & Sequencer on Run Mode, and select point Job at Start of Cycle.

```
001     RST SysOut13 (Bench/Scara-N; for Scara use B21)
```

FIG. 32B

☞ **Place the above (fig 32B) Point Job to Reset or to remove the Ready signal to your control device (Menu, Run Mode Parameters, Job and sequencer on Run Mode, Job on Cycle Start)**

Out 4
Bench/Scara-N B13
Scara B21

These terminals will provide a switch contact closure based on the logic of the Ready to Start status per Fig 32A

FIG. 32C

■ Robot Stopped/Running

This output is useful when another control device needs to know the status of the robot (running or idle). In this case, we are monitoring the robot NOT running or in idle mode. This signal may be used by an automatic process to know when to load/unload parts onto the robot, when to unlock a safety gate or when an assembly operation can take place.

The actual Robot Stopped/Running signal is not directly connected to the robot J-Box. A program routine is required to monitor the output and then use a free output from the J-Box to switch on the actual Robot Stopped signal. Create a Point Job as the one below:

```
001     IF
002             LDI #SysOut5 (Bench; for Scara-N #SysOut6; for Scara use B06)
003     THEN
004             SET #SysOut13 (Bench/Scara-N; for Scara use B21)
005     ELSE
006     END IF
```

FIG. 33A

☞ **Place the above Point Job (fig 33A) at the end of the dispense program (Menu, Run Mode Parameters, Job and Sequencer on Run Mode, Job on End of Cycle)**

Setting B13 (for Benchtop/Scara-N unit, B21 for the Scara unit) will close a set of contacts on the 98549 J-Box. Use these contacts to wire your Robot Stopped signal to other control devices.

001 **RST #SysOut13** (Bench/Scara-N; for Scara use B21)	**FIG. 33B**

☞ **Place the above Point Job (Fig 33B) on the beginning of the dispense program (Menu, Run Mode Parameters, Job and Sequencer on Run Mode, Job on Start of Cycle)**

The point job will reset the output so that it does not stay on during the dispense routine after it was turned on at the end of the last dispense cycle. This will cycle the external control system that the robot is in-cycle.

Out 4
Bench/Scara-N B13
Scara B21

These terminals will provide a switch contact closure based on the logic of the Robot Stopped status per Fig 33A

FIG. 33C

■ Error Output Monitoring

If the status of the robot is desired at the time an error (or any error) occurs, this will then need to be programmed. Most applications in this area are either looking to provide the robot status to a master control device or turn on an alarm (audible or visual).

To accomplish this:

1. Write the following Point Job and place under 'Job on System Error,' (Menu, Run Mode Parameters, Job and Sequencer on Run Mode).

0001 **Set #SysOut13** (for Bench/Scara-N unit; B21 for Scara unit)	**FIG. 34A**

2. The routine will close the set of contacts on OUTPUT 4 (on the J-Box) when any (robot) error occurs during the cycling of the robot.
3. After an error, the robot will require initialization (by pressing the start pushbutton)
4. The ERROR output will have to be turned OFF during, or after initialization. Place a reset routine under a new Point Job and place it under 'Job on Initialization,' (Menu, Run Mode Parameters, Job and sequencer on Run Mode).

0001 **RST #SysOut13** (for Bench/Scara-N unit; B21 for Scara unit)	**FIG. 34B**

5. The reset Point Job routine will remove the error alarm set in Fig 34A.

■ Automatic Program Selection

Some robot applications involve the use of more than one assembly part type in the production environment. A simple way to run dispense cycles whereas the dispense program can be automatically called by the part itself is by using a sensor(s).

The assembly parts should be examined carefully for a feature, where a sensor can be located such that the sensor would only be active with a particular assembly being loaded on the fixture. In most cases, similar parts but of different types have some feature (in size, orientation, or geometry) different from others. If possible, use this feature for it to be detected by a suitable sensor (proximity, beam, diffuse or otherwise).

Multiple Part Example

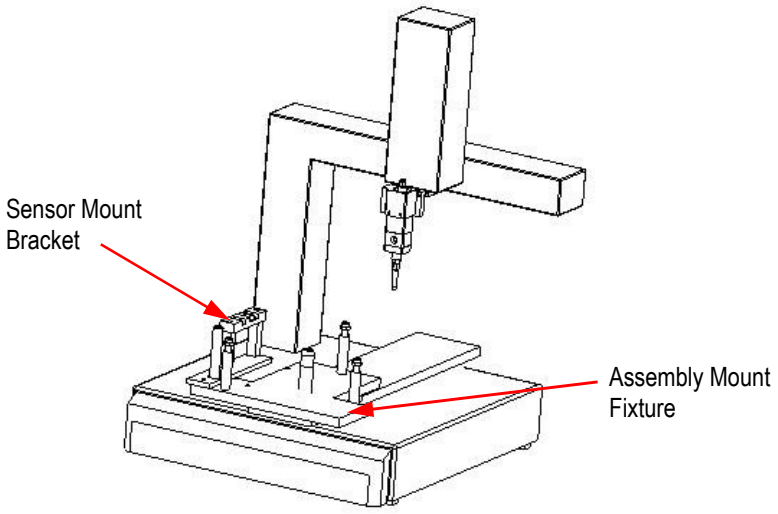


FIG. 35

Once it is verified that the parts can be ‘sensed’ distinctly from each other, mount the sensor(s), and then program the robot. The following example is based on 3 different (size) assemblies, using 2 sensors to select the dispense programs. In this case, a particular spot on the edge of the parts causes a signal (or not) with the sensor—and allows the distinction between assemblies to take place.

1. Write individual programs for each assembly part. Label each dispense routine as follows 001 SMALL, 002 MEDIUM, and 003 LARGE.
2. The 2 sensors are arranged such that when the large assembly is loaded, both sensors detect the part. When the medium assembly is loaded, only the top sensor ‘detects the assembly. When the small assembly is loaded only the bottom sensor detects the assembly.
3. When the sensors are working according to the part size loaded, then write the following program; 004 MAIN.

4. The sample program arrangement below is desirable rather than one large dispense program for all three parts. One good reason to have the program like this is in the event that one sensor goes bad or is mis-aligned, the machine can still be utilized by manually selecting the appropriate program.

001	IF				
002		LD #SysIn14	**012**		CALL Program 002 Medium
003		AND #SysIn15	**013**	ELSE	
004	THEN		**014**	ENDIF	
005		CALL Program 003 Large		**015**	IF
006	ELSE		**016**		LD #SysIn14
007	ENDIF		017		ANI #SysIn15
008	IF		**018**	THEN	
009		LD #SysIn15	**019**		CALL Program 001 Small
010		ANI #SysIn14	**020**	ELSE	
011	THEN		**021**	END IF	

FIG. 36

■ I/O Monitoring

When connecting signals to and from the Loctite J-Box, it is a good practice to validate the connection points and signals entering and leaving the J-Box.

1. While in the Teach Mode, press the MONITOR key on the teach Pendant.
2. Select I/O Test. In this screen you can see all the activity on-going with the I/O of the Robot.
3. Test the dispense output by scrolling to the dispense output number of your robot (with the arrow keys) and pressing the +/_ key to actuate on or off.
4. Test input signals coming in by looking for a '**1**' to illuminate under the appropriate input position. If the '**1**' illuminates in another position, the wire in the input terminal will have to be moved or the program will have to be modified to reflect the actual input that is being turned on.
5. To look at the I/O assignments so that you choose the intended or correct incorrect input or output to work with:
    a. Press the MENU key.
    b. Select Run Mode parameters.
    c. Select I/O Settings.
    d. Select I/O-Sys Assignments.

LOCTITE EQUIPMENT APPLICATION CHART

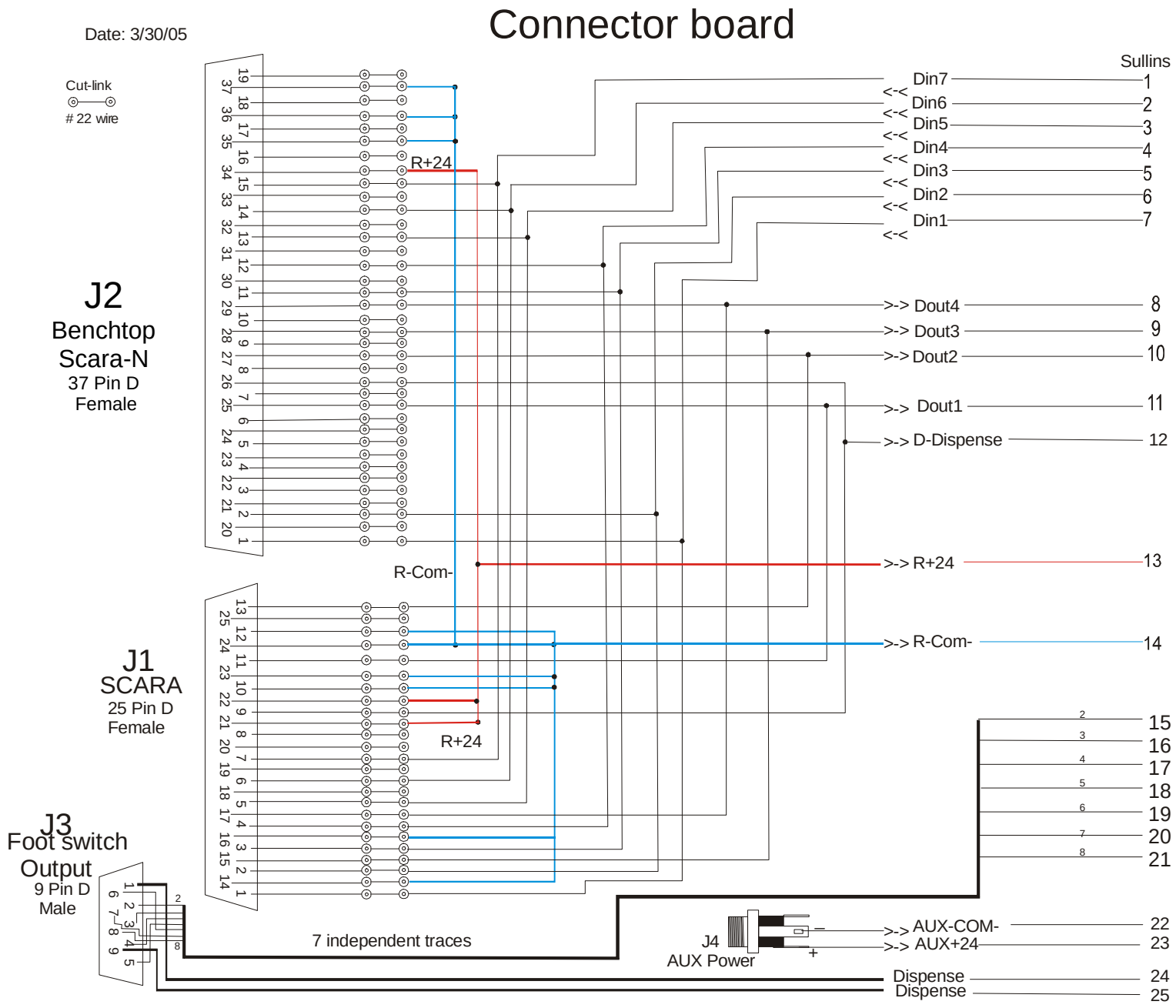
(ROBOT TO J-BOX INTERFACE) Go to Figure Indicated in Chart

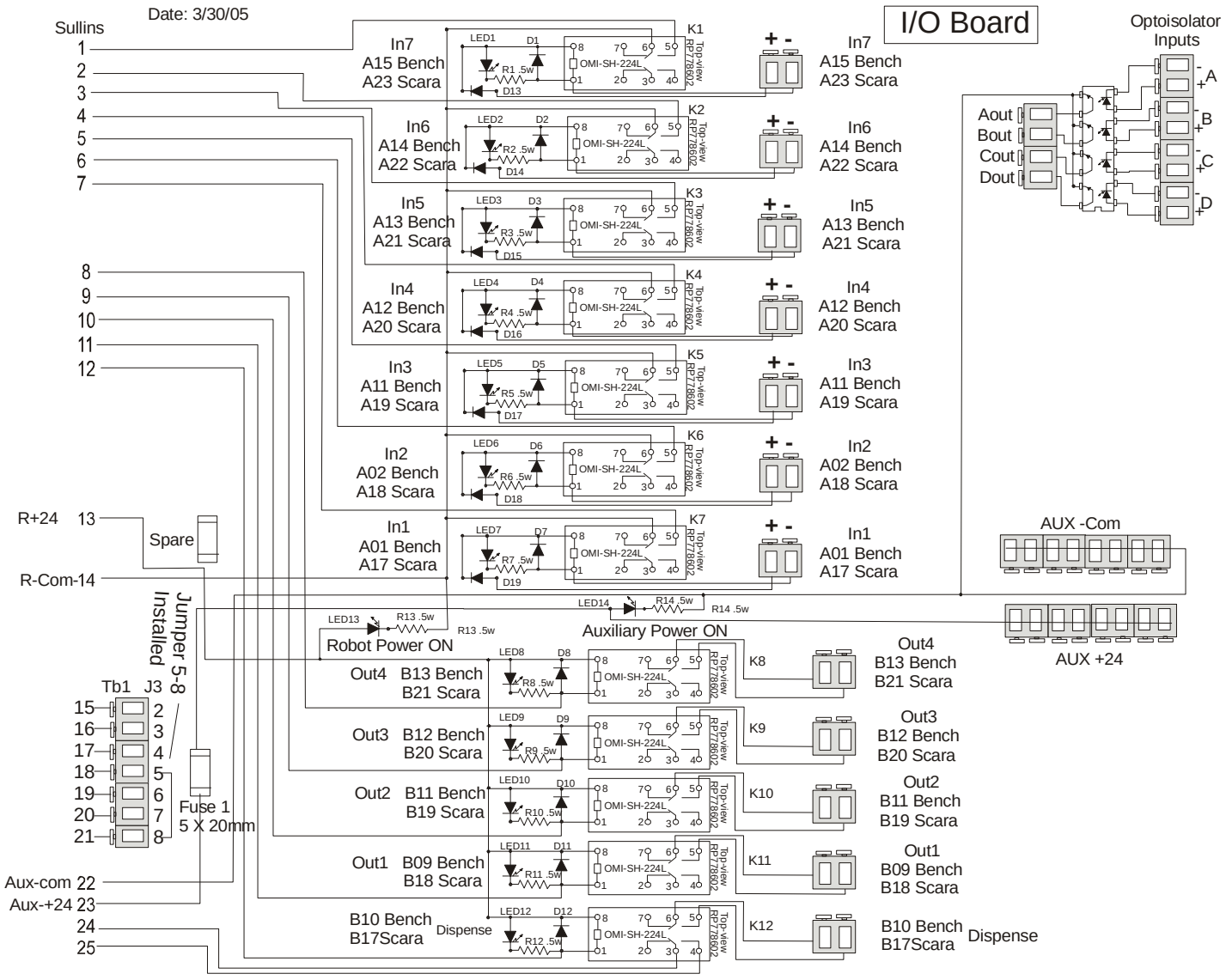
Equipment	Dispense	Low Level Sensor	Pneumatic Actuate	Typical Setup	Require Other Equipment	Not Recommended	Additional Info
7700	4			3			
7702	4			3			
7735	4			3			
7740	4			3			
7750	4			3			
7760	4			3			
97006	4			2			5
97007	4			2			5
97010	4			2			5
97017	4	12		2			5
97020	4	12		2			5
97042						X	
97111						X	
97112						X	
97113			7	1			
97114			7	1			
97115	4			2	X		
97116						X	
97211				2	31		
97123	4	12		2			5
97130			7	1			
97131						X	
97132						X	
97135			8	2			
97136			8	2			
97211					24		25
98009			8	1			
98013			8	1			
98022		11	8	1			
98023						X	
98024						X	
98050						X	
98079						X	
98084			8	2			
98085			8	2			
98090				1	X		
98116						X	
98131	13			2			15
98132	13			2			15
98133	13			2			15
98134	13			2			15

Equipment	Dispense	Low Level Sensor	Pneumatic Actuate	Typical Setup	Require Other Equipment	Not Recommended	Additional Info
98135	14			2			15
98136			8	2			
98359				1			
98417	4			2			
98426						X	
98427						X	
98428						X	
98443						X	
98520			7	2			
98521	4			2			5
98548	4			2			
982702		8			X		
982716						X	
982720		8		1	X		
982721				1	X		
982723		8		1	X		
982724				1	X		
982726				1	X		
982727				1	X		
982880				1	X		
983330			7	1			
983914			7	1			
984594			7	1			
984691			7	2	X		
984727				2	X		
986000			7	2			
986300			7	1			
988510			7	1			
988514			7	1			
988516			7	1			
988517			7	1			
988519			7	1			
988520			7	1			
988522			7	1			
988523			7	1			
988525			7	1			
988906	6			2			
988907	6			2			
988908	6			2			
988909	6			2			

If your equipment is not listed above and you have inquiries as to the capabilities or integration possibilities of your equipment to Loctite Robots, please call our equipment Customer Service Tech Help Line at 860-571-3620.

12 Schematic Diagram




Date: 3/30/05
I/O Board
Sullins
Optoisolator Inputs
Aout
Bout
Cout
Dout
In7 A15 Bench A23 Scara
In6 A14 Bench A22 Scara
In5 A13 Bench A21 Scara
In4 A12 Bench A20 Scara
In3 A11 Bench A19 Scara
In2 A02 Bench A18 Scara
In1 A01 Bench A17 Scara
R+24
Spare
R-Com
AUX -Com
AUX +24
Robot Power ON
Auxiliary Power ON
Jumper 5-8 Installed
Tb1 J3
Fuse 1 5 X 20mm
Aux-com
Aux-+24
Out4 B13 Bench B21 Scara
Out3 B12 Bench B20 Scara
Out2 B11 Bench B19 Scara
Out1 B09 Bench B18 Scara
B10 Bench B17Scara
Dispense
OMI-SH-224L

12 Warranty

Henkel Corp. expressly warrants that all products referred to in this Instruction Manual for (**98549** Robot Interface Junction Box) (hereafter called "Products") shall be free from defects in materials and workmanship. Liability for Henkel shall be limited, as its option, to replacing those Products which are shown to be defective in either materials or workmanship or to credit the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefor by the user). The purchaser's sole and exclusive remedy for breach of warranty shall be such replacement or credit.

A claim of defect in materials or workmanship in any Products shall be allowed only when it is submitted in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered and in any event, within (12) months after the delivery of the Products to the purchaser. This warranty does not apply to perishable items, such as (indicate items: fuses, filters, lights, ect.) No such claim shall be allowed in respect of products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained. In the event of unauthorized modification of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel, the use of products, parts or attachments which are not manufactured by Henkel, no claim shall be allowed.

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