

# Installation

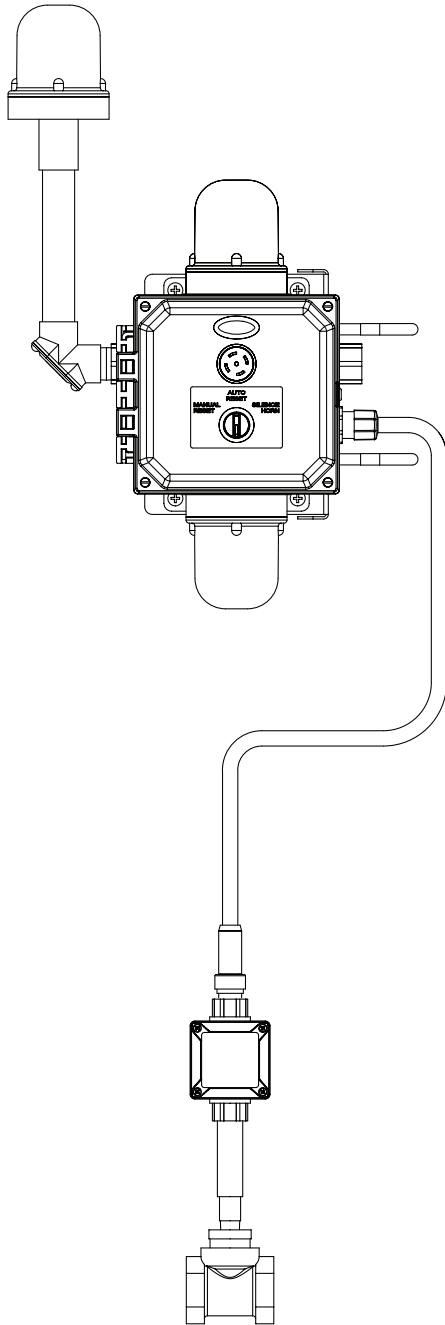
## S19-323

NEMA 3R

## S19-324

NEMA 4X

### Emergency Signaling System



S19-324DGW shown

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## **WARNING**

Power supplied to the unit should be between 90-264VAC, 50-60 Hz, 15 amp branch circuit with a dedicated circuit breaker or fuse and should not supply power to any other device. Compliance and conformity to local codes and ordinances is the responsibility of the installer.

Do not use this safety equipment in a location that does not match its hazardous location rating. Verify the appropriate ratings prior to installation.

When making electrical connections be sure to follow all lockout–tagout safety procedures.

Flush the water supply lines before beginning installation and after installation is complete. Test the unit for leaks and adequate water flow. Main water supply should be “ON” at all times unless system is being serviced. Provisions shall be made to prevent unauthorized shutoff.

## **CAUTION**

Supply the unit with clean, potable water.

## **NOTICE**

Before installing this product, ensure that there are adequate clearances around the product and activation of the product does not interfere with other products or obstructions.

It is recommended that all water supply and electrical connections be made at temperatures above freezing. Failure to do so may result in major product and/or property damage.

Constant power supply to safety equipment is necessary for it to function.

Avoid cleaners containing organic solvents, alcohols and hydrocarbons. Rinse with potable water after cleaning.

## IMPORTANT

The installation and location of all safety drench showers, eye and eye/face washes must comply with the requirements of ANSI/ISEA Z358.1.

Read this installation manual completely to ensure proper installation, then file it with the owner or maintenance department. Compliance and conformity to local codes and ordinances is the responsibility of the installer.

Separate parts from packaging and make sure all parts are accounted for before discarding any packaging material. If any parts are missing, do not begin installation until you obtain the missing parts.

Installation and maintenance of this system must be completed by a qualified plumber and electrician according to the information contained in this installation manual and in compliance with all national and local codes.

The ANSI/ISEA Z358.1 standard requires an uninterrupted supply of flushing fluid. Bradley plumbed emergency fixtures require a minimum of 30 PSI (0.21MPa) flowing pressure.

Weekly activation must be conducted on all plumbed emergency equipment to ensure a suitable flushing fluid supply is present and any sediment build up in the supply line is cleared. Inspect safety equipment monthly to address any maintenance issues ensuring the equipment is in good operating condition and that there are no signs of wear.

Perform functional test upon relocation of safety equipment.

Workers who may come in contact with potentially hazardous materials should be trained regarding the placement and proper operation of emergency equipment per ANSI/ISEA Z358.1.

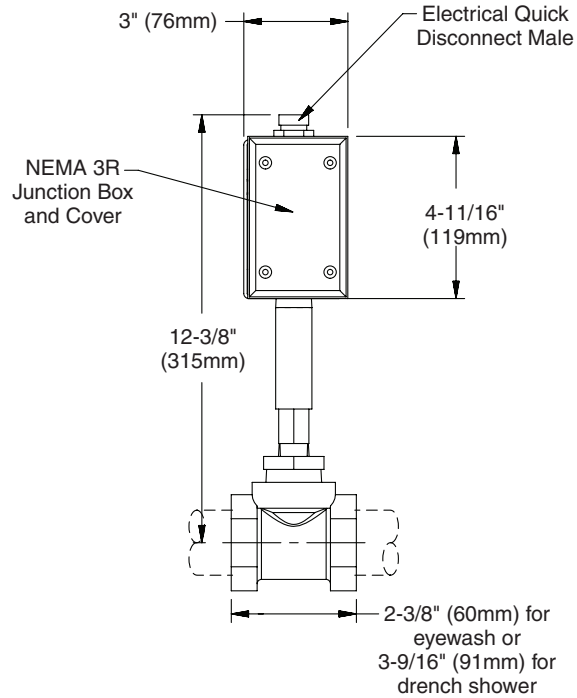
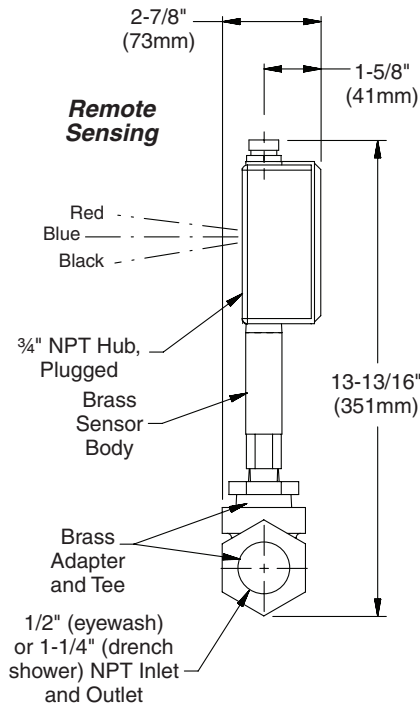
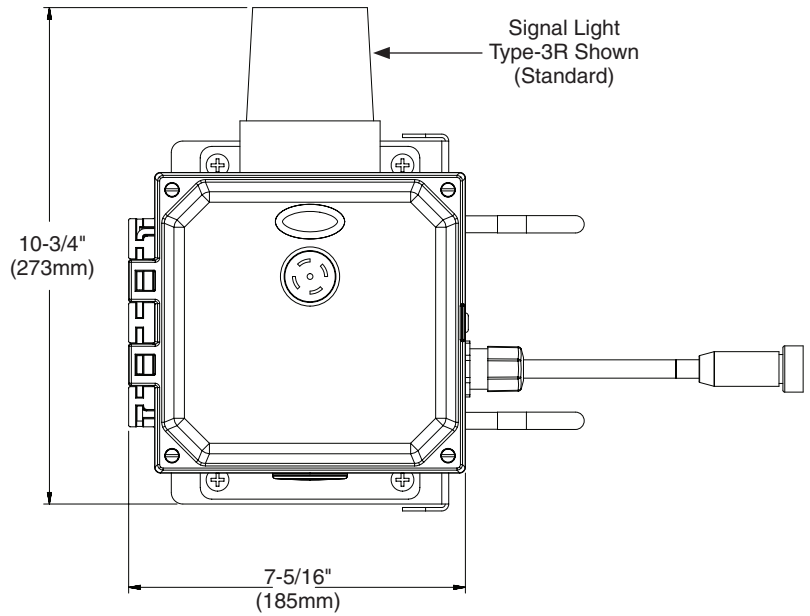
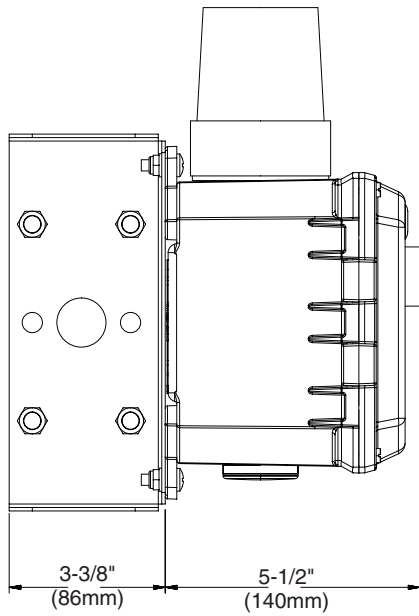
For questions regarding the operation or installation of this product, visit [www.bradleycorp.com](http://www.bradleycorp.com) or call 800-BRADLEY (272.3539).

Product warranties and parts information may also be found under "Products" on our web site at [bradleycorp.com](http://bradleycorp.com).

### Supplies Required

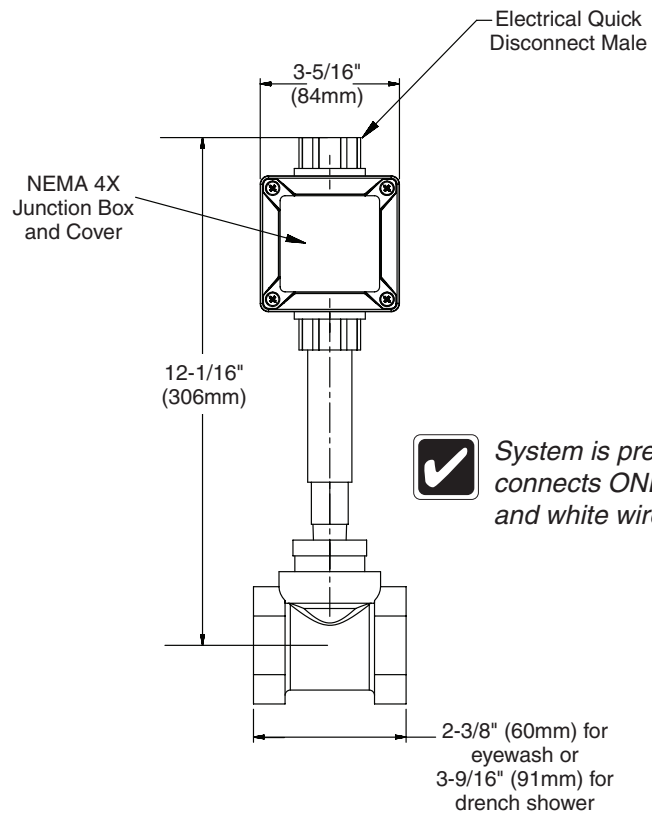
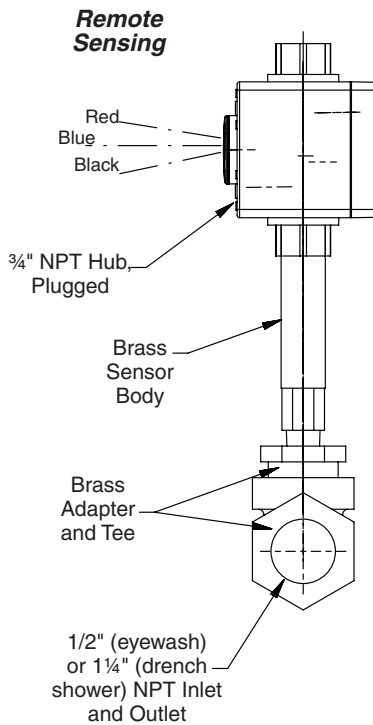
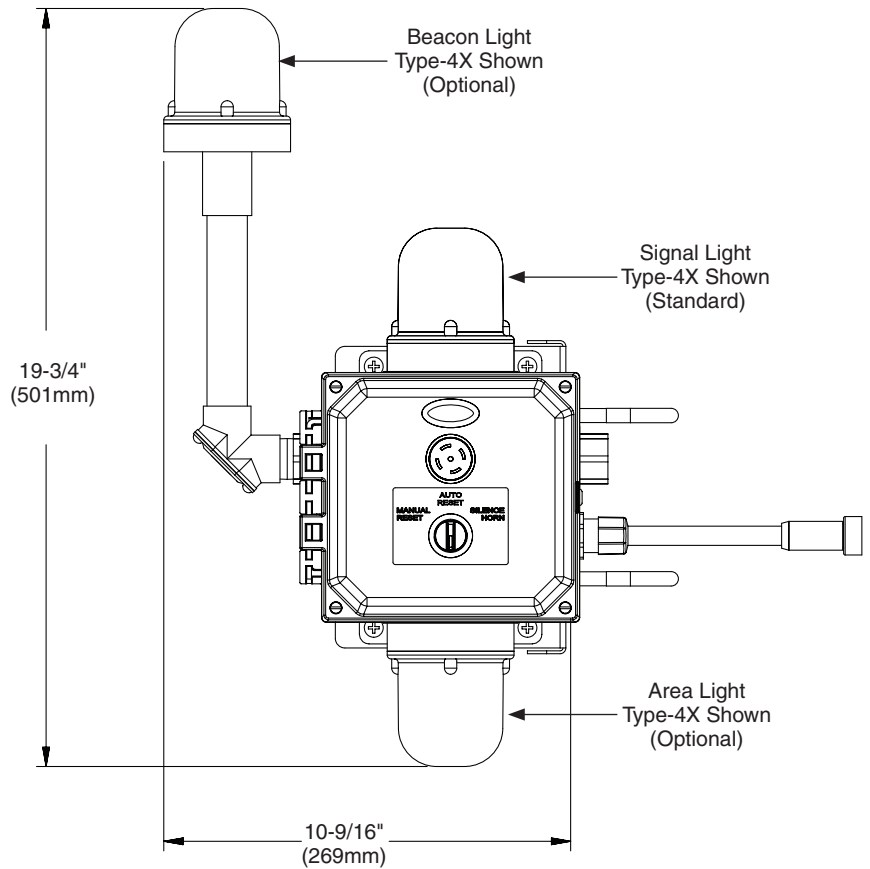
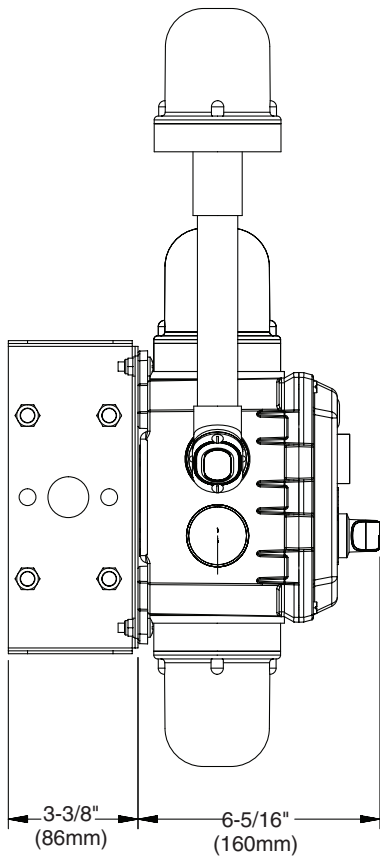
- Teflon tape or pipe sealant
- Black, white and green AWG 18 minimum (14 AWG maximum) wire to connect signaling system to electric power supply
- 3/4" hubs and fittings for electrical wiring (all customer supplied hubs and fittings must match the electrical rating of the enclosures)

# S19-323 Components



*System is prewired. Installer connects ONLY ground black and white wires.*

# S19-324 Components



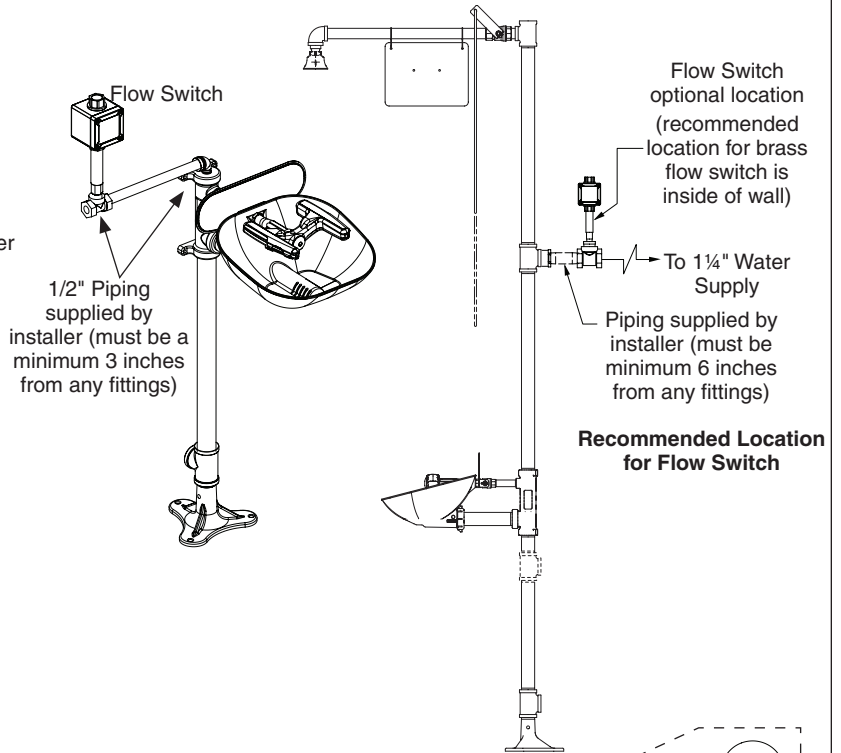
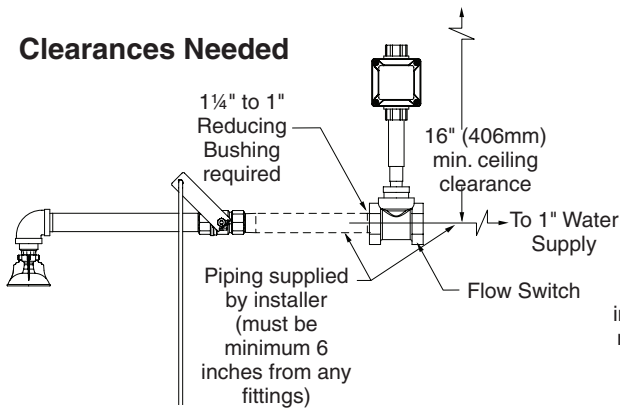
**System is prewired. Installer connects ONLY ground black and white wires.**

# 1 Install the Flow Switch and Mount Signaling Assembly



The flow switch will attach to the mounted alarm via a 6, 12 or 50 foot waterproof cable. Keep the location for mounting the alarm in mind when choosing the flow switch location.

## Clearances Needed



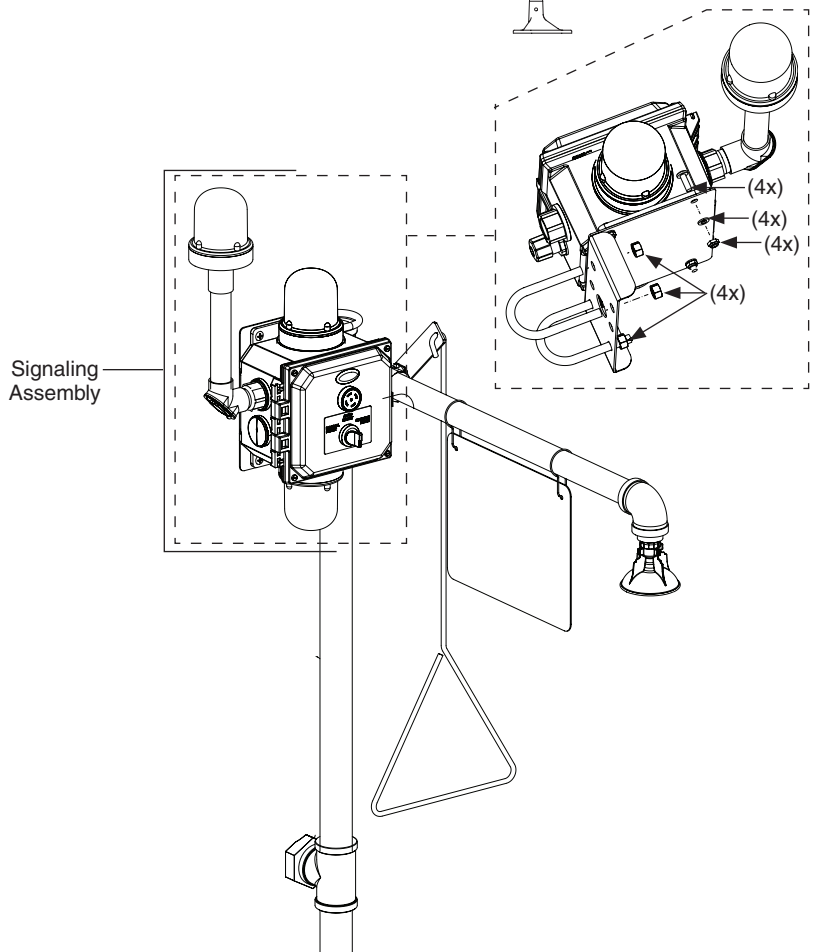
**A** Choose a location for mounting the flow switch in a horizontal run of the water supply line.

Mount the flow switch assembly in the water supply line.

- B**
- The switch body must be in the vertical position with the water pipe horizontal.
  - The water flow must be in the direction marked by the arrow on the flow switch body.
  - Use teflon tape or pipe sealant (supplied by installer) on all water pipe connections.

Choose a location for mounting the alarm. For best visibility, the signaling system should be mounted at least 7' above ground level.

- C**
- The signaling system may be mounted directly to the drench shower piping using the supplied U-bolts and nuts.
  - The signaling system can also be bolted to a flat surface such as a wall (hardware for this type of installation is NOT supplied).

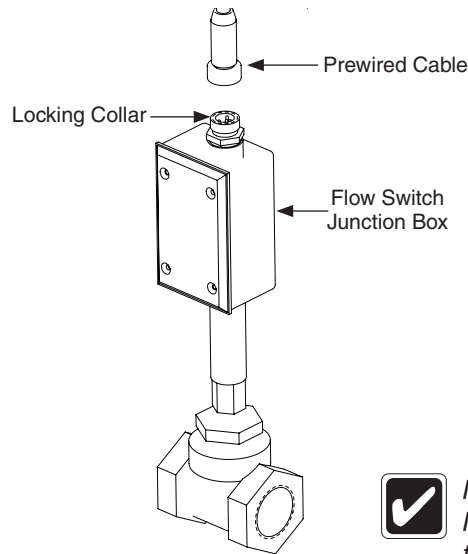


## 2 Connect Signaling Assembly to Flow Switch

**A** Plug the prewired cable into the socket provided in the flow switch junction box. The plug and socket have an alignment pin and groove which makes for error-free hook-up.

To prevent water condensation from dripping onto the flow switch, make sure the cable is not taut.

**B** Tighten the locking collar on the female cable socket by rotating it clockwise after plugging in. This makes a good watertight connection.



NEMA 3R flow switch shown, NEMA 4X flow switch connects the same way.

## 3 Complete electrical supply connections

**⚠ WARNING** To prevent personal injury and damage to the components, follow all manufacturer's warnings and instructions when performing any maintenance or installation of components used in this emergency signaling system.

**A** Loosen, but do not remove, the four screws on the front of the hinged cover.

**B** Run electric power conduit (3/4" conduit hub provided) and AWG 18 minimum power wire into the hole to the floating terminal block per the wiring schematic.

See wiring diagram and schematic on pages 13-14.

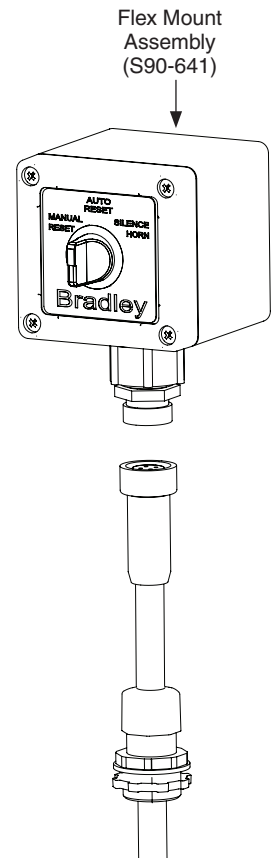
Do not exceed 14 AWG wire.

Compliance and conformity to local codes and ordinances is the responsibility of the installer.

**C** If unit is an S19-324 with flex mount selector switch option, determine mounting location of selector switch and size flexible cable length accordingly. Hook up the wires from the provided flexible cable to control board (see wiring diagram) while the cover is off. Attach the connector cable to the flex mount selector switch. Mount the selector switch enclosure to desired location (hardware provided by installer).

**D** Close the hinged cover and tighten the four screws.

**E** Turn on supply power to the signaling system. Test the signaling system at this time.



## 4 Test the Signaling System



*Testing the signaling assembly for the first time using the drench shower may expose the flow switch to an unnecessary water hammer since the downstream piping may be empty of water. The flow switch is designed to withstand such a water hammer, but using the smaller eyewash flow is recommended.*

### A

Apply power to the alarm branch circuit. The alarm should remain in the OFF position and the beacon and area light illuminate (if applicable). The signal light will not illuminate.

### B

Open the eyewash valve. The horn should sound and the signal light flash shortly after water flows from the system. If there is the optional beacon light, this beacon light will turn off once the fixture is activated (the signal light will stay on, flashing). The area light will always stay on.

### C

If present, use the auto reset on/off switch to silence the horn during a flow event. Toggling the switch to silence mode will shut off the horn but allow the signal light to keep flashing. All units can be silenced by deactivating the flow.

### D

Shut off the eyewash flow valve. The signal light should stop flashing and the beacon light (if applicable) will turn back on at a steady state.



*Discontinuing the flow will automatically reset the silence feature.*

### E

Repeat steps A through D, this time using the drench shower only.



*The alarm signaling system is designed to work properly even if both the eyewash and drench shower are used simultaneously. The alarm will continue to operate so long as either the eyewash or drench shower is still in use.*

## Signaling System Maintenance

The Bradley Emergency Signaling System is designed to be virtually maintenance free. An occasional damp cloth wiping of the clear dust cover is all that is needed to ensure maximum visual attention-getting ability.

## Remote Sensing Option

### Flow Switch Capability (see supplied wiring diagram)

If remote sensing is wanted, remove the pipe plug from the back of the junction box. Connect the extra black wire (common to both switch arrangements) and the blue wire (normally open switch arrangement) or red wire (normally closed switch arrangement) to your application per local electrical codes. The switch is rated at 5 amps at 125/250VAC and is isolated from the contacts used by the signaling station. The customer supplied connections should be of a type equal to or greater than the junction box's rating to maintain the integrity of the system.

### Control Box Capability (see supplied wiring diagram)

The control box is supplied with 2 sets of double pole double throw relay contacts which change state with flow. These contacts can be externally powered or powered by the 24VDC un-switched outputs; combined load cannot exceed 770mA when internal DC power is used. If contacts are externally powered, the contacts are rated for a maximum 160 volts at 5 amps.



## Servicing of Lights

### S19-324 Halogen Lights (Type 4X)

**A** De-power the control box by observing standard lock-out tag-out practices.

**B** To disconnect the wire leads of the light requiring the bulb to be replaced, use a small blade screwdriver to depress the orange terminal release tab adjacent to the wire's location. With the tab fully depressed, the wire can be easily removed from the terminal location.

**C** Remove the nut on the stem of the light which attaches it to the enclosure. Remove the entire light.

**D** Remove the gasket (if present) to expose the four screws which retain the dome.

**E** Remove the screws, take off the dome and the twist lock bulb is now visible. Press and turn the bulb to remove. Replace as needed with the same size bulb.

**F** Reverse the disassemble process to reinstall the light. Inspect all gaskets and seals to ensure the integrity of the unit.

**G** Check that the signaling station is functioning properly once the power is restored by activating the fixture attached to the signaling station.

### S19-323 Signal Light (Type 3R)

**A** De-power the control box by observing standard lock-out tag-out practices.

**B** To disconnect the wire leads of the light requiring replacement, use a small blade screwdriver to depress the orange terminal release tab adjacent to the wire's location. With the tab fully depressed, the wire can be easily removed from the terminal location.

**C** Remove the 2 nuts on the studs which attach the light to the enclosure and remove light. This is a sealed light and has no serviceable components, the complete housing must be replaced.

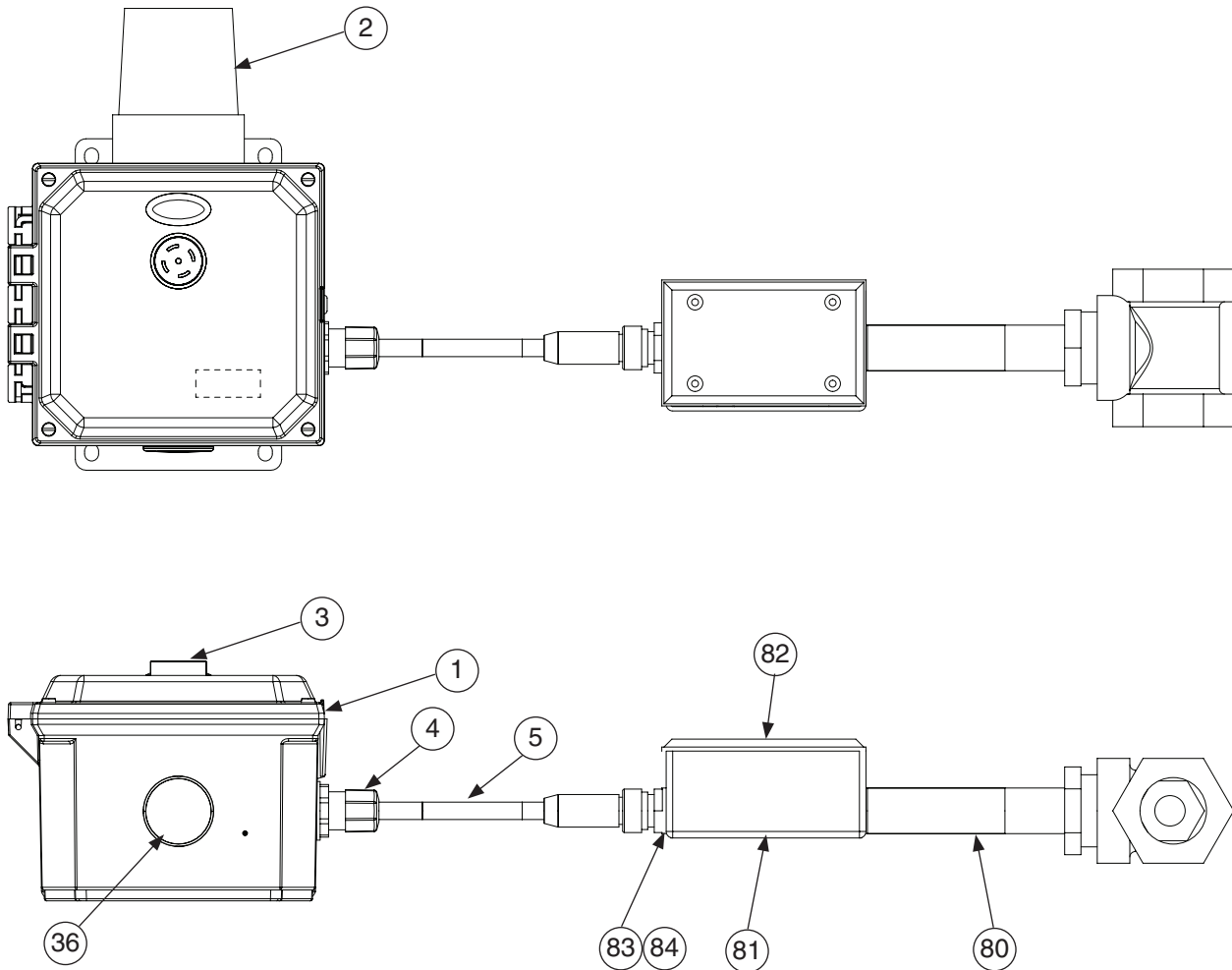
**D** Using the old light for reference, prepare the replacement light's lead wire and exposed conductor's lengths.

**E** Reverse the disassemble process to reinstall the lamp. Be sure to use the new gasket provided with the new light.

**F** Check that the signaling station is functioning properly once the power is restored by activating the fixture attached to the signaling station.

<b>Troubleshooting</b>		
<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
The signal light and horn (if applicable) does not operate when water flows.	No power to the signal station.	Check that the circuit breaker or fuse is supplying power to the signal station
	Component failure.	Check the two 3 Amp 24VDC fuses on the print circuit board in the signal station enclosure.
	No input power.	Check that there is 24VDC being supplied from the power supply mounted on the print circuit board in the signal station enclosure.
	Water flowing in wrong direction for flow switch body.	Verify that the direction of the water flow corresponds to the arrow on the flow switch body.
	Insufficient water flow.	Check that water flow is sufficient (2.4 gallons per minute is required).
	Installation error	Check all electrical connections, including power supply at the quick-connect cable, from the signal station to the flow switch.
Horn sounds and signal light does not light.	Component failure.	Check light connections and filament in the light.
Area light does not operate.	No power to the signal station.	Check that the circuit breaker or fuse is supplying power to the signal station
	Component failure.	Check the two 3 Amp 24VDC fuses on the print circuit board in the signal station enclosure.
	No input power.	Check that there is 24VDC being supplied from the power supply mounted on the print circuit board in the signal station enclosure.
	Component failure.	Check light connections and filament in the light.
Beacon light does not operate. (This light should turn off when the signal light turns on and back on when the signal light turns off.)	Fixture in use.	Make sure that the flow switch contacts are open (horn and/or signal light are not ON).
	Power disconnected in error.	Check that the circuit breaker or fuse is supplying power to the signal station.
	Component failure.	Check the 3 Amp 24VDC fuses on the print circuit board in the signal station enclosure.
	No input power.	Check that there is 24VDC being supplied from the power supply mounted on the print circuit board in the signal station enclosure.
	Component failure.	Check light connections and filament in the light.

# S19-323 Service Parts and Components



Item	Part No.	Qty.	Description
1	S90-566	1	Sub Assy, Signaling Station
2	257-006	1	Signal Light, Amber - Flashing
3	268-002	1	Buzzer, 24VDC-Tone 1
4	269-2454	1	Cord Grip, 3/4"-4x-200
5	269-524	1	Cond Cable, 6'
36	269-2460	1	Plug, 3/4" Conduit, NEMA 4X
60	140-1156	1	Bracket, Alarm Box GA
61	S90-634	1	General Area Hardware Kit

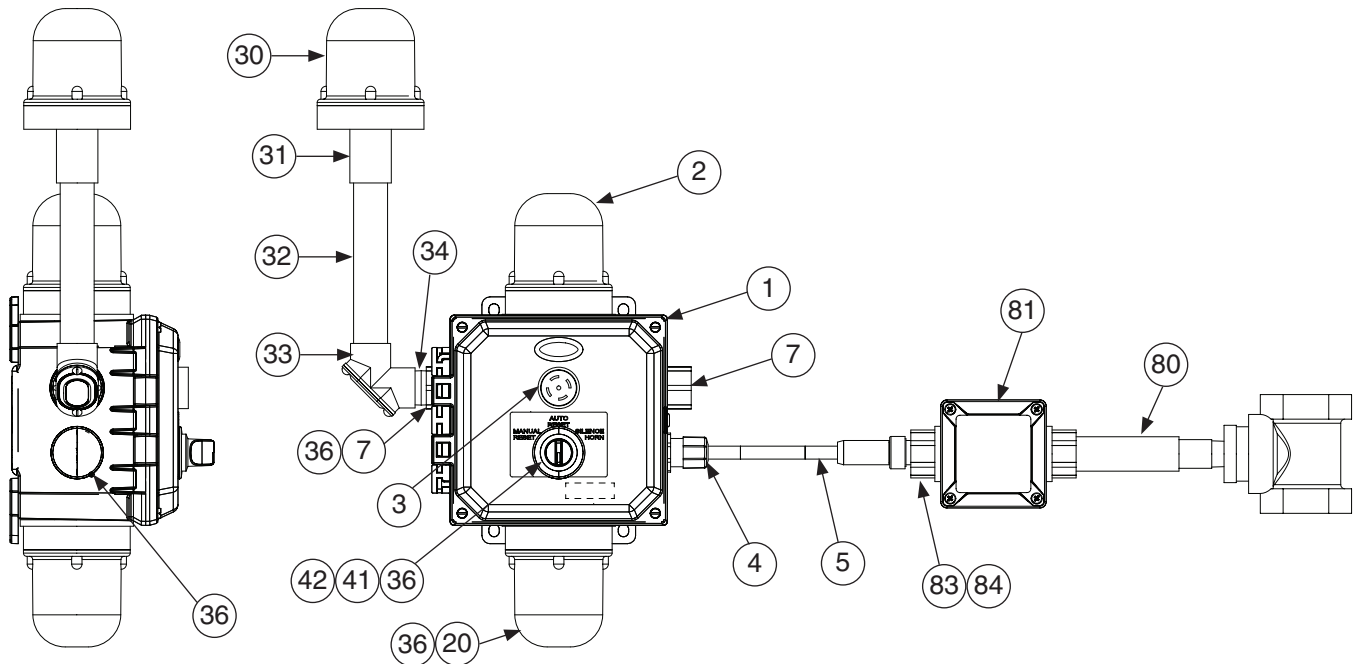
Item	Part No.	Qty.	Description
80	269-1421	1	Flowswitch, 1-1/4" T-DPDT
80	269-1522	1	Flowswitch, 1/2" - T-DPDT
81	269-1902	1	Junction Box, Conduit Outlet
82	269-1903	1	Cover
83	269-514	1	Cable Receptacle
84	269-518	1	Reducing Bushing

Items #60 and #61 are not shown and shipped loose.

## S90-634 General Area Hardware Kit (Item 61)

Part No.	Qty.	Description
160-467	4	Screw, 1/4-20x3/4 PN 300 SS
142-002AV	4	Washer, .265x.500x.0.63 Flat 304SS
161-060	4	Nut, 1/4-20 SS Nylon Insert
269-594	2	U-Bolt, SS
161-065	4	Nut, 3/8-16 Hex 18-8SS
161-171	2	3/4 NPSM Conduit Locknut

# S19-324 Service Parts and Components



Item	Part No.	Qty.	Description
1	S90-567	1	Sub Assy, Signaling Station
2	257-007	1	Signal Light, 4X, Amber-Flashing
2	257-008	1	Signal Light, 4X, Red-Flashing
3	268-002	1	Buzzer, NEMA 4X, 24VDC, Tone 1
3	268-003	1	Buzzer, NEMA 4X-24VDC, Tone 2
3	268-004	1	Buzzer, NEMA 4X-24VDC, Tone 3
4	269-2454	1	Cord Grip, 3/4"-4x200
5	269-524	1	Cond Cable, 6'
5	269-1249	1	Cond Cable, 12'
5	269-2480	1	Cond Cable, 50'
7	169-1139	2	Conduit Con, 3/4 Strt-W
20	257-010	1	Area Light, 4X Clear, Steady
20	257-011	1	Area Light, 4X, Red, Steady
30	257-009	1	Beacon Light, 4X, Green, Steady
30	257-012	1	Beacon Light, 4X, Blue, Steady
31	269-1780	1	Conduit Coupling, 3/4" NPT
32	269-1316	1	Conduit Nipple, 3/4 x 6
33	169-1145	1	Elbow, Pulling, Conduit

Item	Part No.	Qty.	Description
34	269-2156	1	Close Nipple, 3/4" Conduit
36	269-2460	*	Plug, 3/4" Conduit, NEMA
41	229-010	1	Selector Switch, NEMA-4X Panel Mount
42	114-310	1	Nameplate
60	140-1156	1	Bracket, Alarm Box, GA
61	S90-634	1	General Area Hardware Kit
80	269-1421	1	Flowswitch, 1-1/4" T-DPDT, Brass Tee and Body
80	269-1421SS	1	Flowswitch, 1-1/4" T-DPDT, SS Tee and Body, CSA Listed
80	269-1522	1	Flowswitch, 1/2" T-DPDT
80	269-1522SS	1	Flowswitch, 1/2" T-DPDT, SS Tee and Body, CSA Listed
81	S90-640	1	Box, Conduit Outlet
83	269-514	1	Cable Receptacle
84	269-518	1	Reducing Bushing

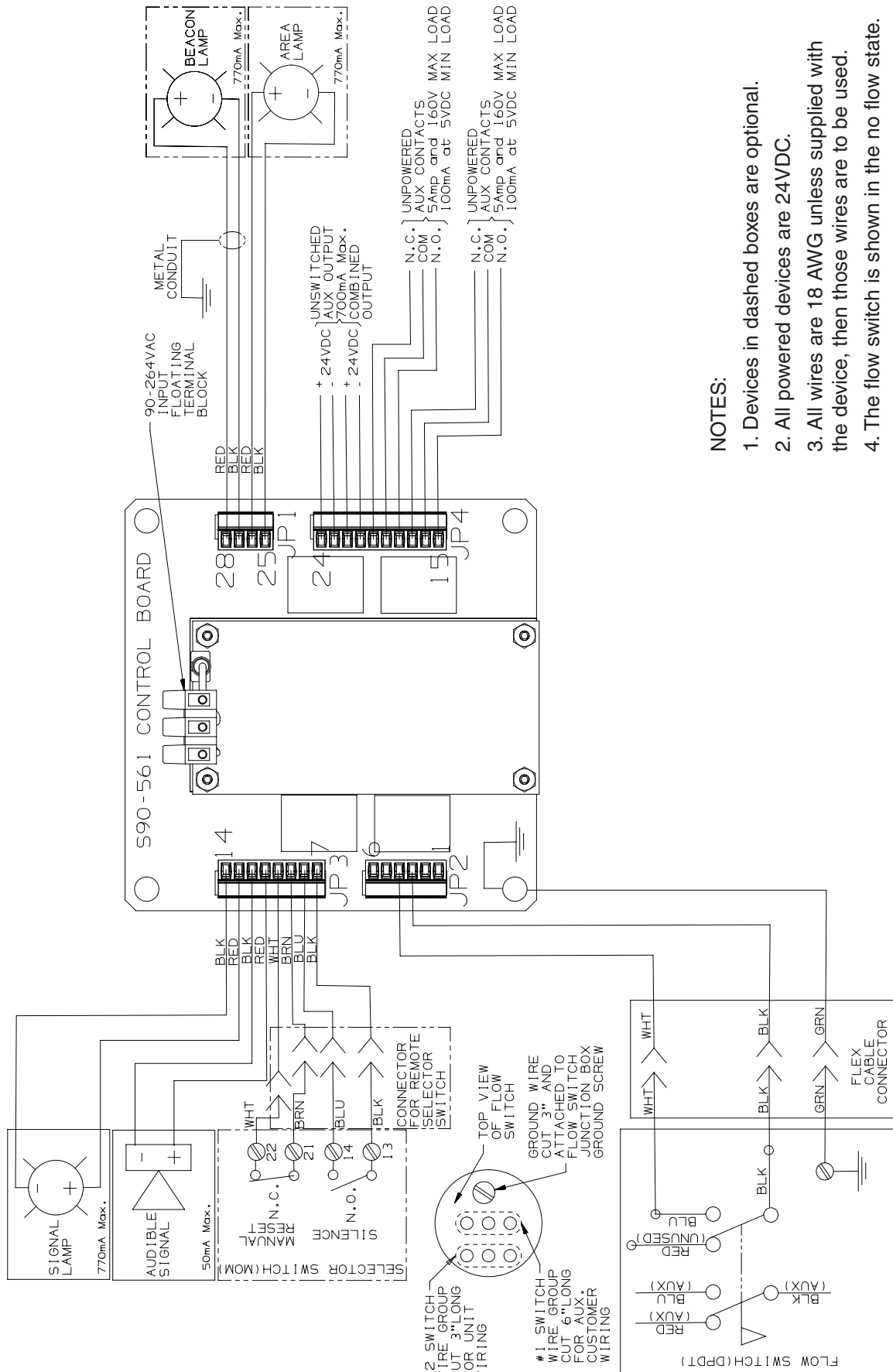


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Part No.	Qty.	Description
160-467	4	Screw, 1/4-20x3/4 PN 300 SS
142-002AV	4	Washer, .265x.500x.0.63 Flat 304SS
161-060	4	Nut, 1/4-20 SS Nylon Insert
269-594	2	U-Bolt, SS
161-065	4	Nut, 3/8-16 Hex 18-8SS
161-171	2	3/4 NPSM Conduit Locknut (for mounting to heat trace unit)

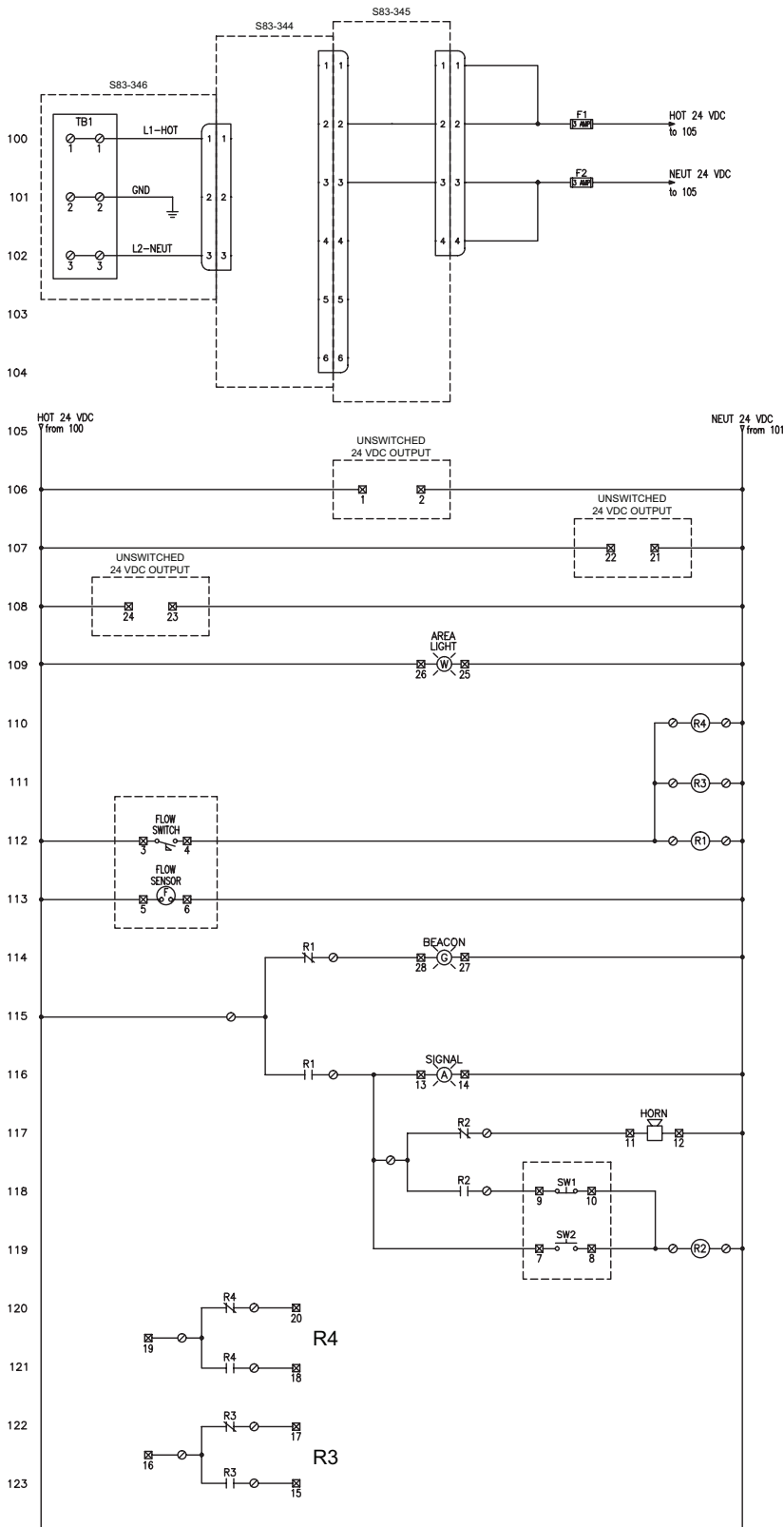
# Wiring Diagram



**NOTES:**

1. Devices in dashed boxes are optional.
2. All powered devices are 24VDC.
3. All wires are 18 AWG unless supplied with the device, then those wires are to be used.
4. The flow switch is shown in the no flow state.

# Schematic



## LEGEND

	WIRE		LIGHT
	INTERNAL JUMPER		HORN
	TERMINAL BLOCK CONNECTION		FLOW SWITCH NORMALLY OPEN
	COMPONENT SOLDERED CONNECTION		FLOW SENSOR
	FUSE		NORMALLY OPEN CONTACT
	NORMALLY OPEN SWITCH		NORMALLY CLOSED CONTACT
	NORMALLY CLOSED SWITCH		
	RELAY COIL		