

915S/915ST Solenoid Unit

Installation, Operation, and Maintenance Instructions

The 915S and 915ST Solenoids are designed to work with the 915 Alarm Console to provide pneumatic control for devices like diaphragm pumps using only a wall mounted power supply. The 915S is normally open and the 915ST (with timer function) is normally closed when connected to a 915 Alarm Console.



Failure to follow any or all of the warnings and instructions in this document could result in a hazardous liquid spill, which could result in property damage, environmental contamination, fire, explosion, serious injury or death.

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Specifications

IMPORTANT: *Not approved for use in explosive atmosphere locations.*

IMPORTANT: *Install in accordance with all applicable local, state and federal regulations.*

IMPORTANT: *Never use with highly flammable liquids as defined by OSHA/GHS.*

Solenoid Valve Input Power

Nominal Input Voltage: 12 VDC

Maximum Current Draw: 1 Amps

Maximum Power Consumption: 12 Watts

Operating Environment

-4°F to 104°F (-0°C to 40°C) to 100% humidity non-condensing

Indoor Use Only

Maximum Wiring Distance

Maximum wiring distance between the 915 Tank Alarm Console and the 915S or 915ST Solenoid Valve Unit is 300 ft.

Installation and Testing



WARNINGS

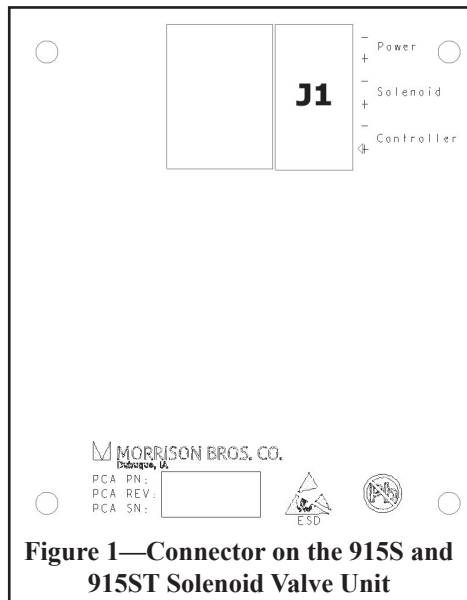
- Any modification of this unit beyond what is outlined in this instruction will void product warranty.
- For your safety, it is important to follow local, state, federal and/or OSHA rules that apply to working inside, above, or around the storage tank and piping area. Use all personal protective equipment required for working in the specific environment.
- Install in accordance with all applicable local, state and federal regulations and codes.
- This device is intended to be used as an auxiliary warning to the operator of an abnormal condition of the system, such as a possible overflow situation and should not be the only system in place to prevent an unwanted condition, such as preventing a tank from overflowing. It is the sole responsibility of the operator to continuously prevent any spillage regardless of the situation.
- In the event of malfunction, remove from service immediately and contact Morrison Bros. Customer Service

Mounting

In order to prevent contamination from entering the enclosures, follow these instructions:

1. Mount the enclosure to a stable, vertical surface using the mounting flanges of the enclosure. Do not make additional holes in the enclosure.
2. Morrison has provided an opening with wire gland in the bottom of the enclosure. All wiring should enter and exit through this opening. Do not make additional openings in the enclosure.
3. Once the enclosure is securely mounted on a stable surface and the wiring is complete, place the enclosure cover in the proper orientation on the enclosure base and secure in place by snugging each of the cover screws. These are captured screws and are not intended to be removed. Partially thread each screw in place and then move from screw-to-screw to do the final snugging of the screws.
4. Using a wrench support the 1/2" NPT fittings on solenoid while attaching mating airlines (do not over tighten).

Steps to Wire and Configure the 915 Solenoid Valve Unit



Preparation

Open the front cover of the Tank Alarm Console by first loosening the captive screws at each corner. This allows the front cover to be carefully removed.

NOTE: *The corner screws that hold the front cover in place are captive screws and are not intended to be COMPLETELY removed from the front cover.*

NOTE: There are wires that connect the Solenoid Valve to the main PCA on the front cover. Do not suspend the front cover from the wires. Always support the front cover by some other means.

Installation

Basic Connection Instructions

All of the connections to the Solenoid Valve Unit are made using the screwless connector block. Please follow the connection instructions provided below when making connection to these connection blocks. See Figure 2.

IMPORTANT: These connectors are rated to be used with 24AWG to 18AWG wire ONLY. All connections to these connectors must adhere to these requirements.

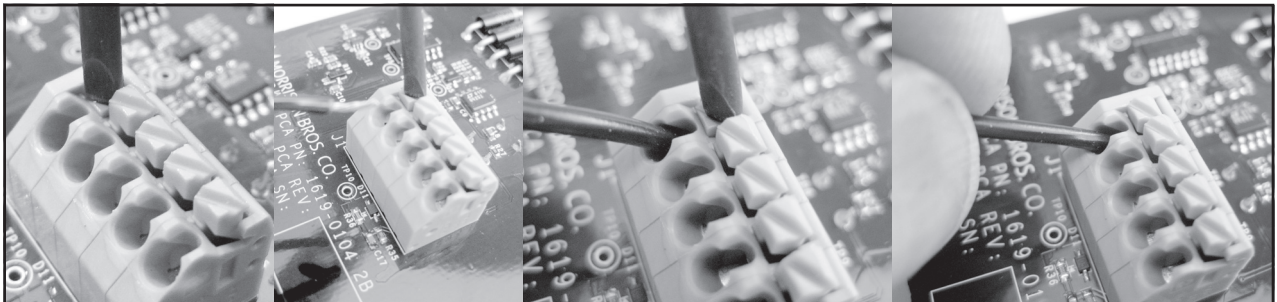


Figure 2—Connecting wires to a screwless connector block.

1. Wire Preparation
 - a. Strip the wire to be connected to the connector **9mm/0.35inches**.
 - b. Twist the strands of wire together.
2. Wire Connection
 - a. Fully depress the connector's plunger using a suitable tool.
 - b. Fully insert the wire into the connector.
 - c. Release the connector's plunger while maintaining the wire's position in the connector.
 - d. Gently tug on the wire to verify that it has been captured by the connector.

Solenoid Valve Unit Power

The Solenoid Valve Unit is powered by a single, wall mounted AC-DC Wall Adapter.

IMPORTANT: Do NOT plug in the wall adapter until the entire installation is complete including final inspection.

1. Prepare the ends of the two conductors that make up the wall adapter's power cable per the instructions in Basic Connection Instructions/Wire Preparation above.
2. Bring the AC-DC Wall Adapter's cable into the console's enclosure through the cable gland provided in the bottom of the enclosure base.

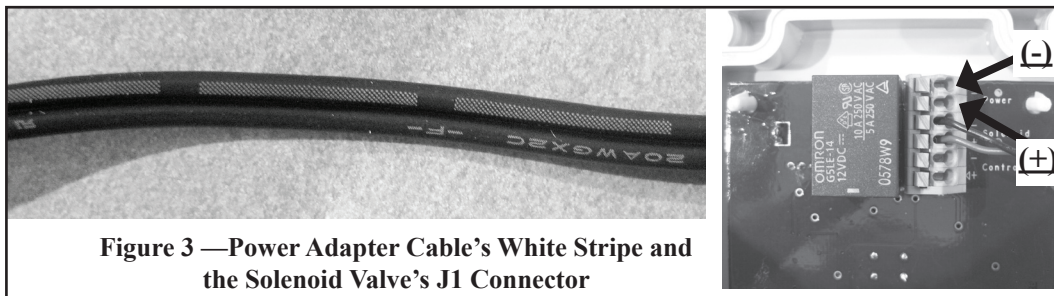
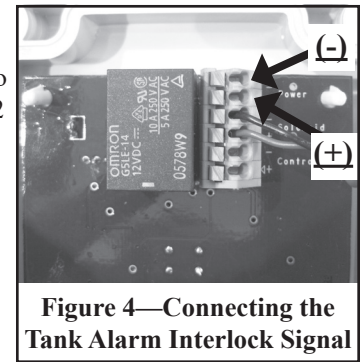


Figure 3 —Power Adapter Cable's White Stripe and the Solenoid Valve's J1 Connector

3. Inspect the wall adapter's cable and locate the conductor that has the white stripes on it (see Figure 3).
4. Following the connection instructions in Basic Connection Instructions/Wire Connection above, connect the power cable conductor WITH the white stripes to pin six (6), the side labeled with a MINUS sign (-) (see Figure 3).
5. Following the connection instructions in Basic Connection Instructions/Wire Connection above, connect the other power cable conductor (WITHOUT the white stripes) to pin five (5), the side labeled with a PLUS sign (+) (see Figure 3).

Interlock Signal Input

1. Run two 18 to 24 AWG oil resistant wires from the 915 Tank Alarm Console to the Solenoid Valve Unit. Note which of the two wires are connected to which of the 915 Tank Alarm Console's J2 connector.
2. Bring the two wires into the 915S or 915ST Solenoid Valve Unit enclosure through the opening provided in the bottom of the unit ONLY.
3. Prepare the ends of the two wires per the instructions in Basic Connection Instructions/Wire Preparation above.
4. Following the connection instructions in Basic Connection Instructions/Wire Connection above, connect the Tank Alarm Interlock Signal to the 915S or 915ST J1 connector. The wire connected to the 915 Tank Alarm Console's:
 - a. J2 pin two (2) {OUT1} or pin seven (7) {OUT2} (this is the NEGATIVE connection) connect to the 915S or 915ST J1 pin two (2) – labeled with a '-' symbol.
 - b. 2. J2 pin five (5) {OUT1} or pin ten (10) {OUT2} (this is the POSITIVE connection) connect to the 915S or 915ST J1 pin one (1) – labeled with a '+' symbol.
5. Follow the instructions in the 915 Tank Alarm Console Installation Manual (PN: 915---0142 PP) for wiring and configuration of the 915 Tank Alarm Console.



915S or 915ST Solenoid	915 Tank Alarm Console	
	OUT1	OUT2
J1 pin 1 (+)	J2 pin 5	J2 pin 10
J1 pin 2 (-)	J2 pin 2	J2 pin 7

Completion

1. Inspect all of the wiring to verify that it has been done properly. Correct any discrepancies and re-inspect.
2. When the installation has passed inspection, reinstall the front panel of the Solenoid Valve Unit.
 - a. Place the front panel on the enclosure base being careful to orient the panel in the upright position, carefully folding the wires into the enclosure.
 - b. Partially thread in the four screws that hold the front cover in place.
 - c. Verify the proper seating of the cover.
 - d. Snug the four screws in place.

IMPORTANT: DO NOT APPLY POWER TO THE 915 or any of the system components until the entire installation is complete and the wiring has passed final inspection.

Testing

Testing the system should only be performed after the entire system has been inspected, verifying both the wiring and the configuration.

NOTE: When power is first applied to the 915 Tank Alarm Console, the Beacon on top of the console and the Beacon(s) on any Remote Horn with Beacon should go through a quick "hello" flash, demonstrating that it is powered up and ready.

1. Apply power to the system by plugging in each of the AC-DC Wall Adapters.
2. Verify that
 - a. The Beacon on the 915 Tank Alarm Console does its quick flash.
 - b. The Beacon on any Remote Horn with Beacon units also does their quick flash.
 - c. The GREEN Power Indicator is brightly illuminated on the front panel of the 915 Tank Alarm Console.
 - d. The RED Channel Alarm Indicators on the 915 Tank Alarm Console are not blinking or illuminated.
 - e. The Horn/Buzzer on the 915 Tank Alarm Console is silent.
 - f. The Horn/Buzzer on any Remote Horn With Beacon units are also silent.

- g. The GREEN ACTIVE Indicator on each 915S and/or 915ST unit(s) associated with the system are brightly illuminated.
 - i. 915S–Verify that the downstream air activated device is fully functional
 - ii. 915ST–
 - Set the Timer for 1 minute run time by turning the dial to the 1.
 - Press and release the Start/Stop button in the front panel of the 915ST. Verify that:
 - 1. The ACTIVE Indicator now blinks ... about one second on, one second off.
 - 2. The downstream air activated device is fully functional
 - Wait for the one minute
 - Verify that:
 - 1. The ACTIVE Indicator stops blinking.
 - 2. The downstream air activated device is no longer functional.
- h. The following test should be performed on each Input Channel of the 915 Tank Alarm Console
 - i. If the input device utilizes Normally-Open contacts, then connect the two wires together at the tank. If the input device utilizes Normally-Closed contacts, then disconnect the two wires at the tank. Verify that:
 - The Channel indicator associated with the channel is blinking
 - The Horn/Buzzer is sounding
 - The Beacon is illuminated
 - The Output Devices associated with the channel are in their alarm condition

EXAMPLE: If the channel is associated with Morrison Bros. Co. 915S or 915ST Solenoid unit(s), the GREEN ACTIVE light should be extinguished.

- ii. Acknowledge the alarm by pressing the “Test/Cancel” button on the front of the Solenoid Valve Unit.
- iii. Remove the alarm condition at the tank.
- iv. Connect the two Tank Sensor wires to the Tank Sensor
- v. Simulate an alarm condition by moving the Tank Sensor float into the alarming position
- vi. Verify that:
 - The Channel indicator associated with the channel is blinking
 - The Horn/Buzzer is sounding
 - The Beacon is illuminated
 - The Output Devices associated with the channel are in their alarm condition

EXAMPLE: If the channel is associated with Morrison Bros. Co. 915S or 915ST Solenoid unit(s), the GREEN ACTIVE light should be extinguished.

- vii. Acknowledge the alarm by pressing the “Test/Cancel” button on the front of the Solenoid Valve Unit.
- viii. Remove the alarm condition at the tank.



Failure to follow any or all of the warnings and instructions in this document could result in a hazardous liquid spill, which could result in property damage, environmental contamination, fire, explosion, serious injury or death.

Operation

The 915S or 915ST Solenoid Valve Unit is designed to operate as part of the 915 Tank Alarm system. These Solenoid Valve Units are designed to control a pneumatically operated device such a diaphragm pump.

915S Solenoid Valve Unit Without Timer

If the Interlock Signal from the 915 Tank Alarm is present – AND – the Solenoid Valve Unit has power from its AC-DC Wall Mounted Power Supply, then the GREEN ACTIVE Indicator will be brightly illuminated on the front panel of the Solenoid Unit. Air may pass through this Solenoid Valve Unit allowing the downstream Pneumatic Device to operate.

If the Interlock Signal from the 915 Tank Alarm is NOT present – OR – power has been lost at the site of the Solenoid Valve Unit such as if the AC-DC Wall Mounted Power Supply has become unplugged, then the GREEN ACTIVE Indicator will NOT be illuminated. The Solenoid Valve will be closed and the downstream pneumatic device will not operate.

915ST Solenoid Valve Unit With Timer

If the Interlock Signal from the 915 Tank Alarm is present – AND – the Solenoid Valve Unit has power from its AC-DC Wall Mounted Power Supply, then the GREEN ACTIVE Indicator will be brightly illuminated on the front panel of the Solenoid Unit. Air will still NOT pass to the downstream pneumatic devices without starting the Timer.

To allow air to pass to the downstream pneumatic devices for a set period of time, rotate the “Run Time” control so the pointer points to the desired number of minutes you want the air to be available to your downstream Pneumatic Device.

Press and release the “Start/Stop” button on the front of the 915ST Solenoid Valve Unit. Air is now allowed to pass through this Solenoid Valve Unit allowing the downstream Pneumatic Device to operate for the period of time set on the “Run Time” control. When the Timer is running and the downstream Pneumatic Device should be operating, the “ACTIVE” indicator on the front panel of the Solenoid Valve Unit will blink.



Figure 5—915ST Controls

NOTE: *The Run Time of the downstream Pneumatic Device is set when the “Start/Stop” button is pressed. Changing the setting of the “Run Time” control after this point will not change the run time. If you wish to change the run time, press and release the “Start/Stop” button to stop the timer, reset the desired amount of time and press and release the “Start/Stop” button to start the timer.*

To STOP the Timer and disable the downstream Pneumatic Device, press and release the “Start/Stop” button on the front panel of the 915ST Solenoid Valve Unit. The “ACTIVE” indicator will stop blinking and be continuously illuminated.

If the Interlock Signal from the 915 Tank Alarm is NOT present – OR – power has been lost at the site of the Solenoid Valve Unit such as if the AC-DC Wall Mounted Power Supply has become unplugged, then the GREEN ACTIVE Indicator will NOT be illuminated. The Solenoid Valve will be closed and the downstream pneumatic device will not operate.



WARNINGS

- Any modification of this unit beyond what is outlined in this instruction will void product warranty.
- For your safety, it is important to follow local, state, federal and/or OSHA rules that apply to working inside, above, or around the storage tank and piping area. Use all personal protective equipment required for working in the specific environment.
- Install in accordance with all applicable local, state and federal regulations and codes.
- This device is intended to be used as an auxiliary warning to the operator of an abnormal condition of the system, such as a possible overflow situation and should not be the only system in place to prevent an unwanted condition, such as preventing a tank from overflowing. It is the sole responsibility of the operator to continuously prevent any spillage regardless of the situation.
- In the event of malfunction, remove from service immediately and contact Morrison Bros. Customer Service.

Maintenance

There are two scheduled maintenance operations:

- **At the Beginning of Each Work Shift:** Test the overall operation of the 915 Tank Alarm
 - **YEARLY:** Simulate an alarm condition and verify the operation of the System
-

At the Beginning of Each Work Shift

Test the overall operation of the 915 Tank Alarm System **at the beginning of each work shift.**

1. Press and hold the “Test/Cancel” button while listening to the audible alarm and observing the Channel Alarm indicator(s) and the Beacon.
 - Audible Alarm is loud and strong.
 - Channel Alarm Indicator(s) is (are) blinking
 - Beacon is operating
 - GREEN ACTIVE Indicator(s) on all 915S and 915ST Solenoid Valve Units is extinguished.
2. If alarm does not sound, the Channel Alarm Indicator(s) do not blink, the Beacon is not operating or the ACTIVE Indicators on Solenoid Valve Units remain illuminated, verify that power is applied to the Tank Alarm and that there are not wiring faults between the 915 Tank Alarm Console and the 915S and/or 915ST Solenoid Valve Units and re-test. If the alarm still does not sound or the Solenoid Valve Units do not disable, call Morrison Bros. Co Customer Service.

Yearly

This check is to be performed **no less than once per year.**

1. Perform per-work shift check as outlined above to verify the overall operation of the Tank Alarm System.
2. It is recommended to simulate an alarm condition and manually trigger the alarm using input device (Clock Gauge, float switch, 915 sensor, or other dry contact device). If it does not respond as with an alarm condition, check wiring at junction box and verify that the installation procedure was performed correctly. The alarm can be silenced after being activated by pressing the “Test/Cancel” button.