918S, 918D, and 918Q Series Alarms

Installation, Operation, and Maintenance Instructions

918S Single Channel Alarm
The 918S is designed to provide a visible and audible alarm. The 918S may be used anywhere that a single set of dry contacts are available. The 918S can be configured to respond to either Normally Open (default configuration) or Normally Closed contacts. Two possible primary applications are used as an overfill alarm or as an interstitial alarm.

918D Dual Channel Alarm
The 918D is designed to provide a visible and audible alarm. The 918D has two front panel Alarm Indicators to indicate which channel is being alarmed. The 918D may be used anywhere that up to two sets of dry contacts are available. The 918D can be configured to respond to either Normally Open (default configuration) or Normally Closed contacts. Two possible primary applications for each channel are as an overfill alarm or as an interstitial alarm.

918Q Quad Channel Alarm
The 918Q is designed to provide a visible and audible alarm. The 918Q has four front panel Alarm Indicators to indicate which channel is being alarmed. The 918Q may be used anywhere that up to four sets of dry contacts are available. The 918Q can be configured to respond to either Normally Open (default configuration) or Normally Closed contacts. Two possible primary applications for each channel are as an overfill alarm or as an interstitial alarm.

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.

Le fait de ne pas se conformer à l'un ou l'autre des avertissements ou à l'une ou l'autre des directives apparaissant dans ce document pourrait donner lieu à des déversements de liquides dangereux, lesquels pourraient engendrer des dommages matériels, des risques de contamination environnementale, d'incendie ou d'explosion, des blessures graves ou la mort.

Specifications

The 918S, 918D and 918Q are intrinsically safe devices for use in Class I, Division 1, Group D, T4 and Zone 2, Group IIA, T4 Hazardous locations when powered by Morrison Bros. Co. battery pack part number 918SB-0128 2B.

WARNING: *This is an intrinsically safe device and must be wired in accordance with National Electrical Code Article 504. This device and its wiring may not share any junction box, conduit, or raceway with any other type circuit or wiring. Do not perform live maintenance. Do not substitute components with anything other than Morrison Bros. Co. components. Care must be taken to avoid an ignition hazard from impact or friction with the enclosure.*

AVERTISSEMENT: *Cet appareil intrinsèquement sécuritaire doit être branché conformément à l'article 504 du code électrique national. Il se peut que ce dispositif et son câblage ne partagent pas de boîte de connexion, de conduit ou de canalisation avec un autre type de circuit ou de câblage. Ne menez pas de travaux de maintenance sous tension. Ne remplacez les composantes que par des composantes de Morrison Bros. Co. Assurez-vous d'éviter le risque d'infl ammation pouvant découler d'un impact ou de friction avec l'enceinte.*

Entity Parameters for Terminals P1 through P4:

V_{OC} = 7.525 VDC	I_{SC} = 31 mA	Ca = 700 µF	La = 105 µH	P_O = 0.06 W

Operating Temperature: -40ºF to 140ºF (-40ºC to 60ºC)
Maximum Wiring Distance: Maximum wiring distance between Alarm and input device is 500 ft.

WARNINGS

- **Fire Hazard** – Death or serious injury could result from spilled liquids.
- You must be trained to install or maintain this alarm. **Stop** now if you have not been trained.
- 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.
- 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 overfill situation and should not be the only system in place to prevent an unwanted condition, such as preventing a tank from overfilling. It is the sole responsibility of the operator to continuously prevent any spillage regardless of the situation.
- Tanks could be under pressure. Vapors could be expelled from tank vents, piping, valves or fittings while performing maintenance. Vapors could catch fire or cause an explosion. **Avoid** sparks, open flame, or hot tools when working on tank system.
- Use a dampened cloth when cleaning the alarm enclosure to prevent static buildup and discharge.
- The only battery approved for use with the 918 Series Alarm is the Morrison Bros. Co. battery pack part number 918SB-0128 2B.
- In the event of malfunction, contact Morrison Bros. Customer Service.

AVERTISSEMENTS

- **Risque d'incendie –** Un déversement de liquide pourrait entraîner des blessures graves ou la mort.
- Vous devez avoir reçu une formation pour installer cette alarme ou en assurer la maintenance. Arrêtez-vous immédiatement si vous n'avez reçu aucune formation à cet effet.
- Toutes les modifications apportées à cette unité autres que celles indiquées dans ces directives engendreront l'annulation de la garantie du produit.
- Pour assurer votre sécurité, il est important de vous conformer à la réglementation locale, d'État, fédérale ou OSHA régissant les travaux à l'intérieur, au-dessus ou autour du réservoir de stockage et de la zone de canalisation. Utilisez tout l'équipement de protection individuelle exigé pour travailler dans l'environnement spécifi que.
- Cet appareil est destiné à être utilisé comme mécanisme avertissant l'opérateur d'un état anormal du système tel une situation de remplissage excessif et ne devrait pas être le seul système en place pour empêcher un état indésirable, par exemple, un réservoir qui se remplit trop. L'opérateur a l'entière responsabilité de s'assurer continuellement de prévenir tout déversement, quelle que soit la situation.
- Les réservoirs pourraient être sous pression. Des vapeurs pourraient être expulsées des conduits d'aération, des canalisations, des soupapes ou des raccords du réservoir durant la maintenance. Les vapeurs pourraient s'enfl ammer ou engendrer une explosion. Évitez les étincelles, les fl ammes nues ou les outils chauds lors de travaux menés dans le système du réservoir.
- Utilisez un linge humide pour nettoyer l'enceinte de l'alarme afi n de prévenir l'accumulation d'électricité statique et les décharges.
- La seule pile approuvée aux fi ns d'utilisation avec l'alarme de série 918 est le bloc-piles de Morrison Bros. Co. (pièce #918SB-0128 2B).
- En cas de défaillance, communiquez avec le service à la clientèle de Morrison Bros.

Note: As defined in Article 501 – Class 1 Locations of NFPA 70, this apparatus and its connected wiring are intrinsically safe. Under normal conditions this apparatus and its wiring cannot release sufficient energy to ignite a specific ignitable atmospheric mixture by opening, shorting, or grounding.

NOTICE: Care should be taken to avoid impacting the sounding device (buzzer/beeper) associated with this product in order to prevent damage to the device and possible excess energy production.

WARNING: Interconnect wiring between the gauge and the alarm unit must be kept totally isolated and separate from any other wiring. This wiring must not share any junction box, conduit, raceway, or fixtures with circuits other than those defined by NEC as being intrinsically safe for all Class 1 locations.

AVERTISSEMENT: Le câblage d'interconnexion entre la jauge et l'unité d'alarme doit être complètement isolé et distinct du reste du câblage. Le câblage ne doit partager aucune boîte de connexion, aucun conduit, aucune canalisation, ni aucun accessoire avec des circuits autres que ceux défi nis par NEC comme étant intrinsèquement sécuritaires pour tous les emplacements de classe 1.

Location: NEC ARTICLE 501-3-CLASS 1 Locations exempt intrinsically safe enclosures in paragraph 501-3(b)(1)(c), and therefore may be placed in the most convenient location but must be within reach of the operator and within audible range.

Mounting: Since a general purpose NEMA 4X enclosure is used to protect the alarm circuits and batteries, any mounting holes, conduit, or fasteners must be sealed in order to maintain the waterproof integrity of the enclosure. All penetrations into the enclosure must be made at the bottom of the Alarm Box.

Steps

1. Wire Input Device
    a. Run two **stranded conductor** oil and gas resistant wires from each input device to the location where the alarm box will be mounted. Do NOT attach the wires to the wires in the junction box of the input device(s) at this time. Although not required, it is recommended to run the wires in some type of conduit in order to protect them against possible damage and environmental conditions. It may be necessary to remove the junction box cover of the input device(s).

> **INPUT DEVICE WIRING WIRE SIZE LIMITS:**
> Input device wiring shall have a minimum cross section of 0.4 mm^2 (equivalent of a single 26 AWG wire) to a maximum cross section of 1.0 mm^2 (the equivalent of a single 18 AWG wire).

    b. Do NOT attach the wires to the wires in the junction box of the input device at this time.
2. Mount the Alarm
    a. **Separate** the two halves of the Alarm Unit box by loosening the Phillips head fasteners visible at the four corners of the front panel.
    b. **Support** the front panel while mounting the rear half.
    c. **Attach** the rear half of the box to a suitable fixture.
    d. **Seal** any penetrations made into the interior of the box to prevent moisture ingress.
3. Test the Alarm.
    a. **Turn on** the power switch, SW5 (see Figure 1).
    b. **Press and hold** the "Test/Cancel" button until the alarm sounds at least three times while observing the Channel Alarm and BATTERY LOW Indicators (see Figure 1).

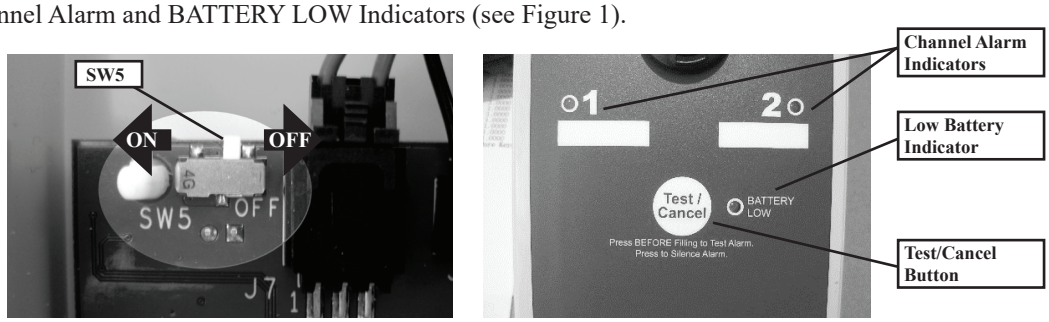


Fig. 1 Power Switch (SW5) ... Channel Alarm Indicators, Battery Low Indicator and Test/Cancel Button on the 918D

    c. **Observe** the 918 Series Alarm indicates the following:
    - The BATTERY LOW indicator will flash momentarily at the beginning of the cycle.
    - If the Audible Alarm is configured to sound with an alarm condition, it is loud and strong.

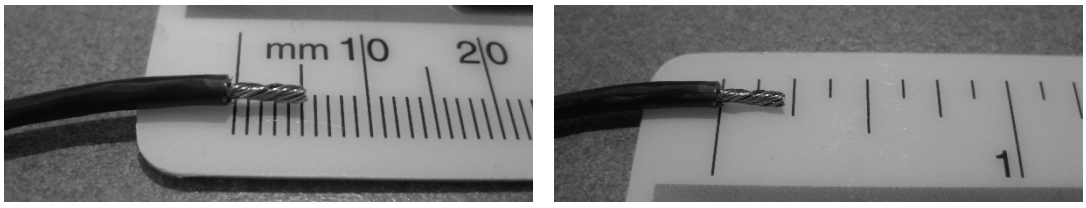
- The Channel Alarm indicators will illuminate when the Audible Alarm is not sounding. If configured for no audible alarm, only the Channel Alarm indicator(s) will flash.
- BATTERY LOW indicator is NOT illuminated after the initial momentary flash.

d. **Troubleshoot as needed.** If the Audible Alarm does not sound or the BATTERY LOW indicator illuminates after the initial flash, replace the 918S Battery Assembly (see instructions, below). If the Audible Alarm still does not sound or the BATTERY LOW indicator illuminates, replace the Alarm Box or call Morrison Bros. Co. Customer Service.

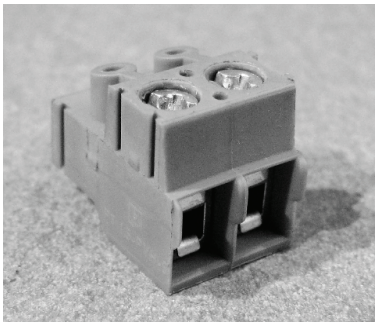
e. **Turn off** the power switch, SW5 before proceeding (see Figure 1).

4. **Connect** the two wires from each input device to the Input of the Alarm

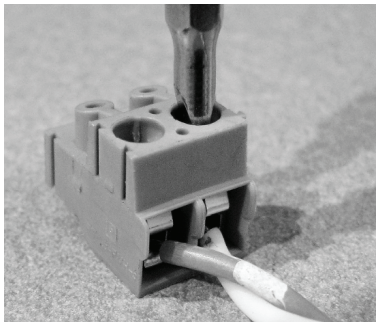
a. Connect the two wires from each input device to their respective Channel Input Connector(s) (see Figure 2).



Strip off about ¼ inch (5mm) of insulation from the wire and twist the striped end to eliminate stray wire strands as shown above.



The Channel Input Connector



Insert the wire fully into the connector and snug the screw.

Figure 2 Wiring the Channel Input Connector

b. Verify that the wires are securely held in the connector by gently tugging on them. Plug the connector onto the Channel Input pins of the Alarm Circuit Board (see Figure 3).

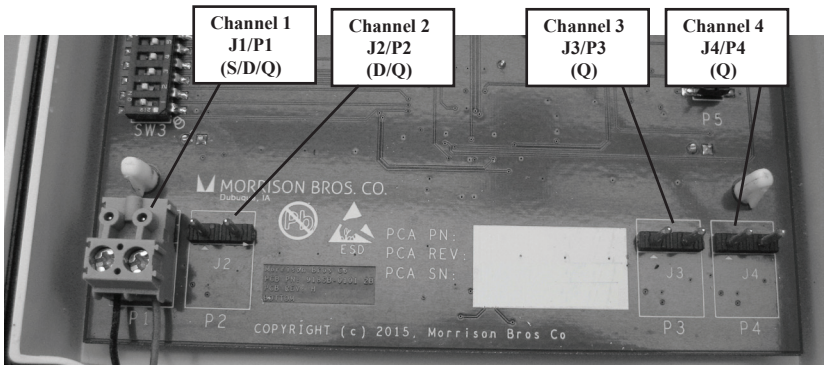


Figure 3 Plug the Channel Input Connector(s) onto the Channel Input Pins of the Alarm Circuit Board (918Q shown)

5. DIP Switch Configuration. Changing the DIP switch configuration settings requires two steps:
   - Configure the DIP switch, SW3 as desired.
   - Press and release the RESET button, SW4 (see Figure 4).

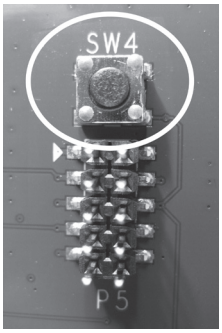


Figure 4 RESET button

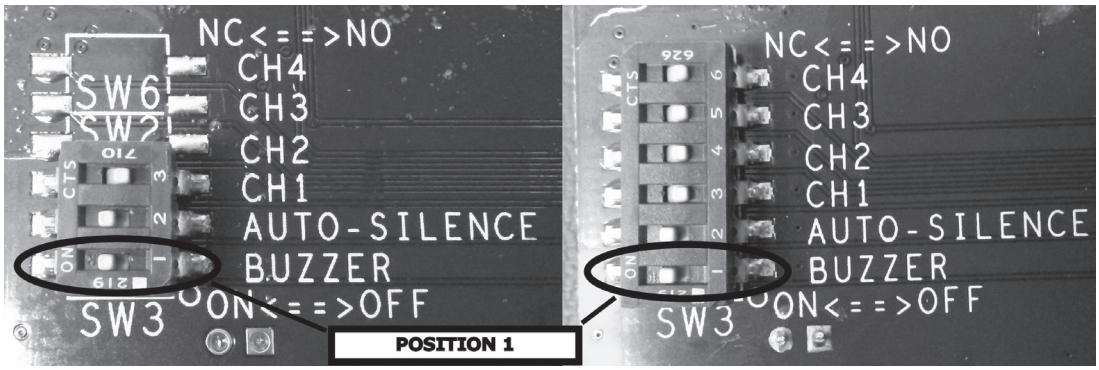


Figure 5 Configuration DIP Switch

POSITION	FUNCTION	MODELS
1	**Audible Alarm** ON (default) = ENABLED OFF = DISABLED	918S 918D 918Q
2	**Auto Silence** ON (default) = ENABLED OFF = DISABLED	918S 918D 918Q
3	**Channel 1 Normally Closed/Open** ON = Normally Closed Contacts OFF (default) = Normally Open Contacts	918S 918D 918Q
4	**Channel 2 Normally Closed/Open** ON = Normally Closed Contacts OFF (default) Normally Open Contacts	918D 918Q
5	**Channel 3 Normally Closed/Open** ON = Normally Closed Contacts OFF (default) = Normally Open Contacts	918Q
6	**Channel 4 Normally Closed/Open** ON = Normally Closed Contacts OFF (default) = Normally Open Contacts	918Q

Table 1 Configuration Dip Switch Summary

a. **AUDIBLE ALARM OPTION**

i. **To Enable the Audible Alarm for Alarms (default):** If the Audible Alarm is to sound when an alarm condition occurs, place DIP switch position 1 in the ON position.

ii. **To Disable the Audible Alarm:** If the Audible Alarm is NOT to sound when an alarm condition occurs, place DIP switch position 1 in the OFF position.

NOTICE: When the Audible Alarm is disabled (silent operation) the alarm condition will only flash the Channel Alarm Indicator(s). Ensure that the Alarm is in a position where it can be clearly seen so that an alarm condition does not go unnoticed.

NOTICE: When the Audible Alarm is disabled (silent operation) Audible Alarm will not sound during the Test Mode.

b. **AUTO-SILENCE OPTION**

i. **To Enable the Autosilence Feature (default):** If the 918 Series Alarm is to silence itself after being in an alarm condition for 10 minutes, place DIP switch, position 2 in the ON position.

ii. **To Disable the Autosilence Feature:** If the 918 Series Alarm is to continue to illuminate its Channel Alarm Indicator(s) and sound the Audible Alarm (if enabled) until either an operator acknowledges the alarm by pressing the Test/Cancel button or the battery is no longer able to power the Alarm Box, place DIP switch, position 2 in the OFF position.

NOTICE: When the Autosilence feature is disabled, the Alarm will flash its Channel Alarm Indicator(s) and sound the Audible Alarm (if so configured) until the battery can no longer power the Alarm Box. Operational verification should be checked on a more frequent schedule if the Autosilence feature is disabled.

c. **CONTACT MODE OPTION**

i. **Normally Open Contact Input Devices (default):** If the input device(s) to be connected to the 918 Series Alarm utilize normally open contacts, set DIP switch, position from Table 2 in the OFF position (see Figure 5).

Channel	DIP Switch Position
1	3
2	4
3	5
4	6

Table 2 Channel to DIP Switch Position Mapping

ii. **Normally Closed Contact Input Devices:** If the input device(s) to be connected to the 918 Series Alarm utilize normally closed contacts, set DIP switch, position from Table 2 in the ON position (see Figure 4).

NOTICE: When the 918 Series Alarm is configured for Normally Closed Contact input devices, the long term battery life will be somewhat shorter due to the current that must continuously flow through the contacts to verify their position. Operational verification should be checked on a more frequent schedule if the inputs are configured for Normally Closed Contacts.

NOTICE: Changing the DIP switch configuration settings requires two steps:

- Configure the DIP switch, SW3 as desired.
- Press and release the RESET button, SW4 (see Figure 4).

6. Power Switch

a. **Turn OFF the power (DEFAULT):** To turn OFF to the 918 Series Alarm, place SW5 in the OFF position. (see Figure 1)

b. **Turn ON the Power:** To turn ON the power to the 918 Series Alarm, place SW5 in the ON position (see Figure 1)

7. **Reattach** the front cover of the Alarm using the fasteners at the four corners of the cover. DO NOT OVERTIGHTEN. "Snug" the fasteners in place and verify that the cover is fully seated to the enclosure base.
8. **Test** the Installation
    a. **Test** connection at the alarm and wiring
        i. **For Normally Open Contact Inputs:**
        Short the two wires together at the input device end for each input device. This should cause the alarm to illuminate its Channel Alarm Indicator(s) and sound (if so configured) until the Test/Cancel button is pushed. If the alarm fails to go into an alarm condition, check the connections and the batteries and retest until results are satisfactory.
        ii. **For Normally Closed Contact Inputs:**
        Short the two wires together and then separate the wires at the input device end for each input device. This should cause the alarm to illuminate its Channel Alarm Indicator(s) and sound (if so configured) until the Test/Cancel button is pushed. If the alarm fails to go into an alarm condition, check the connections and the batteries and retest until results are satisfactory.
    b. **Connect** the wires from the Alarm Box to the wires of the input device at the junction box for each device.
    c. **Replace** the junction box cover.
    d. **Simulate** an alarm condition and manually trigger the alarm using the input device (Clock Gauge, float switch or other dry contact device).
    e. **Troubleshoot** as needed. If the Alarm does not go into 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.
9. **IMPORTANT:** Install the included Warning Tag where it will be visible to the operator filling or unloading the tank that is fitted with this alarm.

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.

Le fait de ne pas se conformer à l'un ou l'autre des avertissements ou à l'une ou l'autre des directives apparaissant dans ce document pourrait donner lieu à des déversements de liquides dangereux, lesquels pourraient engendrer des dommages matériels, des risques de contamination environnementale, d'incendie ou d'explosion, des blessures graves ou la mort.

Operation

The 918S may be used anywhere that a single set of dry contacts are available. The 918S can be configured to respond to either Normally Open (default configuration) or Normally Closed contacts. Two possible primary applications are used as an overfill alarm or as an interstitial alarm. These two uses are addressed below.

The 918D may be used anywhere that up to two set of dry contacts are available. The 918D can be configured to respond to either Normally Open (default configuration) or Normally Closed contacts. Two possible primary applications for each channel are as an overfill alarm or as an interstitial alarm. These two uses are addressed below.

The 918Q may be used anywhere that up to four set of dry contacts are available. The 918Q can be configured to respond to either Normally Open (default configuration) or Normally Closed contacts. Two possible primary applications for each channel are as an overfill alarm or as an interstitial alarm. These two uses are addressed below.

Use as an Overfill Alarm

Use with the Morrison Brothers 918 Clock Gauge or other similar input device.

1. Prior to filling a tank, test for an existing overfill condition, the battery level and overall operation of the Alarm.
    a. Press and hold the "Test/Cancel" button until the alarm sounds at least three times while observing the Channel Alarm Indicator(s) and BATTERY LOW Indicators (see Figure 1).

b. If an overfill condition already exists when the “Test/Cancel” button is pressed, the Channel Alarm Indicator(s) will illuminate prior to the sounding of the Audible Alarm associated with the “Test” mode. (see Figure 1)

c. The 918 Series Alarm indicates the following:

- The BATTERY LOW indicator will flash momentarily at the beginning of the cycle.
- If the Audible Alarm is configured to sound with an alarm condition, it is loud and strong.
- The Channel Alarm indicators will illuminate when the Audible Alarm is not sounding. If configured for no audible alarm, only the Channel Alarm indicator(s) will flash.
- BATTERY LOW indicator is NOT illuminated after the initial momentary flash.

2. If an overfill condition occurs while filling the tank, the Channel Alarm Indicator(s) is illuminated and the Audible Alarm will sound (if so configured).
   a. The alarm can be acknowledged and silenced by pressing the “Test/Cancel” button on the front of the Alarm.
   b. **If the...**
      i. **Autosilence feature is enabled** and the alarm is not silenced by the operator, the 918 Series Alarm will continue in the alarm state for no more than 10 minutes at which point it will silence itself.
      ii. **Autosilence feature is NOT enabled** and the alarm is not silenced by the operator, then the 918 Series Alarm will continue to alarm until the battery can no longer power the device.

Use as an Interstitial Alarm

1. Should the contacts associated with an interstitial switch be activated, the Alarm will immediately go into an alarm state; it will sound the Audible Alarm (if so configured) and illuminate the Channel Alarm Indicator.
2. **If the...**
   a. **Autosilence feature is enabled** and the alarm is not silenced by the operator, the 918 Series Alarm will continue in the alarm state for no more than 10 minutes at which point it will silence itself.
   b. **If the Autosilence feature is NOT enabled** and the alarm is not silenced by the operator, then the 918 Series Alarm will continue to alarm until the battery can no longer power the device.
3. To check for an alarm state once the Alarm has silenced itself, press and hold the “Test/Cancel” button until the alarm sounds at least three times while observing the Channel Alarm Indicators.
   a. If there is an interstitial alarm state and the Channel Alarm Indicator(s) will illuminate prior to entering “Test Mode.”
   b. If there is not an interstitial alarm and the Channel Alarm Indicator(s) will not illuminate prior to entering the “Test Mode.”

Maintenance

WARNINGS

- **Fire Hazard** – Death or serious injury could result from spilled liquids.
- You must be trained to install or maintain this alarm. **Stop** now if you have not been trained.
- 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.
- 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 overfill situation and should not be the only system in place to prevent an unwanted condition, such as preventing a tank from overfilling. It is the sole responsibility of the operator to continuously prevent any spillage regardless of the situation.
- Tanks could be under pressure. Vapors could be expelled from tank vents, piping, valves or fittings while performing maintenance. Vapors could catch fire or cause an explosion. **Avoid** sparks, open flame, or hot tools when working on tank system.
- Use a dampened cloth when cleaning the alarm enclosure to prevent static buildup and discharge.
- The only battery approved for use with the 918 Series Alarm is the Morrison Bros. Co. battery pack part number 918SB-0128 2B.
- In the event of malfunction, contact Morrison Bros. Customer Service.

AVERTISSEMENTS

- **Risque d'incendie** – Un déversement de liquide pourrait entraîner des blessures graves ou la mort.
- Vous devez avoir reçu une formation pour installer cette alarme ou en assurer la maintenance. Arrêtez-vous immédiatement si vous n'avez reçu aucune formation à cet effet.
- Toutes les modifications apportées à cette unité autres que celles indiquées dans ces directives engendreront l'annulation de la garantie du produit.
- Pour assurer votre sécurité, il est important de vous conformer à la réglementation locale, d'État, fédérale ou OSHA régissant les travaux à l'intérieur, au-dessus ou autour du réservoir de stockage et de la zone de canalisation. Utilisez tout l'équipement de protection individuelle exigé pour travailler dans l'environnement spécifi que.
- Cet appareil est destiné à être utilisé comme mécanisme avertissant l'opérateur d'un état anormal du système tel une situation de remplissage excessif et ne devrait pas être le seul système en place pour empêcher un état indésirable, par exemple, un réservoir qui se remplit trop. L'opérateur a l'entière responsabilité de s'assurer continuellement de prévenir tout déversement, quelle que soit la situation.
- Les réservoirs pourraient être sous pression. Des vapeurs pourraient être expulsées des conduits d'aération, des canalisations, des soupapes ou des raccords du réservoir durant la maintenance. Les vapeurs pourraient s'enfl ammer ou engendrer une explosion. Évitez les étincelles, les fl ammes nues ou les outils chauds lors de travaux menés dans le système du réservoir.
- Utilisez un linge humide pour nettoyer l'enceinte de l'alarme afi n de prévenir l'accumulation d'électricité statique et les décharges.
- La seule pile approuvée aux fi ns d'utilisation avec l'alarme de série 918 est le bloc-piles de Morrison Bros. Co. (pièce #918SB-0128 2B).
- En cas de défaillance, communiquez avec le service à la clientèle de Morrison Bros.

There are two scheduled maintenance operations:

- **MONTHLY:** Test the battery level and overall operation of the Alarm (see 2 below)
- **YEARLY:** Check the Enclosure for water ingress (see 3 below)

Battery replacement instructions are in 4 below.

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1. If necessary, clean the Alarm Box with a damp cloth.
2. Test the battery level and overall operation of the Alarm no less than **once per month.**
    a. Press and hold the "Test/Cancel" button until the alarm sounds at least three times while observing the Channel Alarm and BATTERY LOW indicator(s).
    b. The 918 Series Alarm indicates the following:
        - The BATTERY LOW indicator will flash momentarily at the beginning of the cycle.
        - If the Audible Alarm is configured to sound with an alarm condition, it is loud and strong.
        - The Channel Alarm indicators will illuminate when the Audible Alarm is not sounding. If configured for no audible alarm, only the Channel Alarm indicator(s) will flash.
        - BATTERY LOW indicator is NOT illuminated after the initial momentary flash.
    c. If alarm does not sound or the BATTERY LOW indicator illuminates, replace the 918 Series Alarm Battery Assembly (see instructions in 4 below). If the alarm still does not sound replace the Alarm Box or call Morrison Bros. Co Customer Service.
    d. Inspect the warning tag located near the tank fill or off-loading area. If the tag is damaged or difficult to read, contact Morrison Bros. at (800) 553-4840 for a free replacement tag.
3. Check the Enclosure for water ingress no less than **once per year.**
    a. Carefully open the 918 Series Alarm enclosure by loosening the Phillips head fasteners at the four corners of the cover.
    b. Inspect the interior of enclosure to determine if any water has infiltrated the enclosure. If water has infiltrated the enclosure, take corrective action to seal the points of ingress.
    c. Inspect the electronics for corrosion. If there is corrosion present on the electronic assembly(ies)
        - Take corrective action to seal the enclosure from further water ingress.
        - Contact Morrison Bros. Co. for further action.
    d. Reattach the front cover of the Alarm using the Phillips head fasteners at the four corners of the cover. DO NOT OVERTIGHTEN. "Snug" the fasteners in place and verify that the cover is fully seated to the enclosure base.

e. Perform step 2 above to verify the battery level and overall operation of the Alarm.

4. If the "BATTERY LOW" indicator illuminates at any time, replace the internal battery by performing the following steps:

CAUTION: *The following steps should be followed being sure that there is no possibility of fluid ingress into the alarm enclosure.*

ATTENTION: *Les étapes ci-dessous doivent être suivies avec l'assurance qu'il n'y a aucune possibilité d'entrée de fl uide dans l'enceinte de l'alarme.*

Steps

a. Carefully open the 918 Series Alarm enclosure by loosening the Phillips head fasteners at the four corners of the cover.

b. Turn off the power switch, SW5 (see Figure 1).

c. Disconnect input device(s) from the Alarm Circuit Board by unplugging the channel connectors from the Alarm Circuit Board.

d. Disconnect the battery cable from the Alarm Circuit Board (J7). Gently depress the retaining tab of the connector and pull the connector free (see Figure 6).

e. Remove and retain the two screws holding the battery assembly to the rear cover and remove the battery assembly from the Alarm (see Figure 7).

f. Install and secure the new battery assembly into the rear cover using the two screws retained in the previous step.

f. Install and secure the new battery assembly into the rear cover using the two screws retained in the previous step.

g. Connect the new Battery Assembly to the Alarm Circuit Board's J7 being sure to fully seat the connector. Gently tug on the cable to ensure the retaining tab has clicked into place.

h. Turn on the power switch, SW5 (see Figure 1).

NOTE: If the 918 Series Alarm has been configured to operate with Normally Closed Contacts, the Alarm should go into the alarm state when the power switch is turned on; silence this by pressing the "Test/Cancel" button.

i. Test the Alarm by pressing and holding the "Test/Cancel" button until the alarm sounds at least three times while observing the Channel Alarm and BATTERY LOW indicators (see Figure 1).

j. The 918 Series Alarm indicates the following:

- The BATTERY LOW indicator will flash momentarily at the beginning of the cycle.
- If the Audible Alarm is configured to sound with an alarm condition, it is loud and strong.
- The Channel Alarm indicators will illuminate when the Audible Alarm is not sounding. If configured for no audible alarm, only the Channel Alarm indicator(s) will flash.
- BATTERY LOW indicator is NOT illuminated after the initial momentary flash.

k. If alarm does not sound, the Channel Alarm Indicators does not illuminate or the BATTERY LOW indicator illuminates, replace the Alarm Box or call Morrison Bros. Co. Customer Service.

l. Connect the input device to the Alarm Circuit Board. Connect input device to the Channel Input Connector (see Figure 2).

m. Reattach the front cover of the Alarm using the Phillips head fasteners at the four corners of the cover. DO NOT OVERTIGHTEN. "Snug" the fasteners in place and verify that the cover is fully seated to the enclosure base.

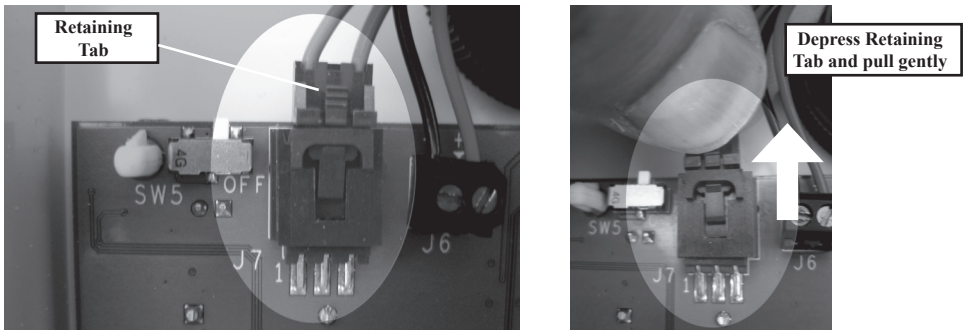


Figure 6 Disconnecting the Battery from the Control Board

n. It is recommended to simulate an alarm condition and manually trigger the alarm using input device (Clock Gauge, float switch or other dry contact device). If it does not, check wiring at junction box and

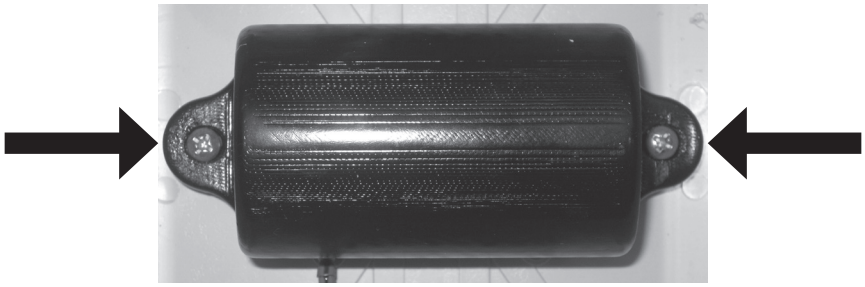


Figure 7 Removing/Replacing the Battery Assembly

verify that the installation procedure was performed correctly. The alarm can be silenced after being activated by pressing the Test/Cancel button.

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.

Le fait de ne pas se conformer à l'un ou l'autre des avertissements ou à l'une ou l'autre des directives apparaissant dans ce document pourrait donner lieu à des déversements de liquides dangereux, lesquels pourraient engendrer des dommages matériels, des risques de contamination environnementale, d'incendie ou d'explosion, des blessures graves ou la mort.

918S-, 918D-, 918Q-, 918SB, 918DB, 918QB ALARM BOX CONTROL DRAWING (C1)

REV	DESCRIPTION	BY	EO
A	PRELIMINARY DESIGN PURPOSES ONLY	CRC	14-83
B	ADD PAGE 2, RELEASE TO PRODUCTION	CRC	14-83
C	C1:UPDATED DESCRIPTION PAGE1; C2:UPDATED NOTE PAGE1; C3:UPDATED NOTE PAGE2	CRC	14-83

MOUNT/INSTALL ALARM

The opening in the enclosure (for connection to simple switch apparatus) shall be made through the bottom of the alarm box, such that a minimum of IP20 is maintained.

BATTERY PACK REPLACEMENT

A) Carefully open the enclosure by loosening the phillips head fasteners at the four corners of the cover.
B) Turn the alarm power swith located in the upper left corner of the control board to the "OFF" position.
C) Disconnect battery pack harness located to the right of the power switch.
D) Remove the two phillips head screws holding the battery pack in place.
E) Remove the battery pack.

- To install battery pack, repeat steps in reverse order.

Model 918** where ** represents any model in the following table. Please note that manufacturer specifiers and internal indicators should have a higher level terminology and UL will need additional information to verify what these specifiers and indicators are.

1. Model
   A. 918 Alarm Box

2. Number of Channels
   A. Q -4 Channels
   B. D -2 Channels
   C. S -1 Channel
   D. T -3 Channels

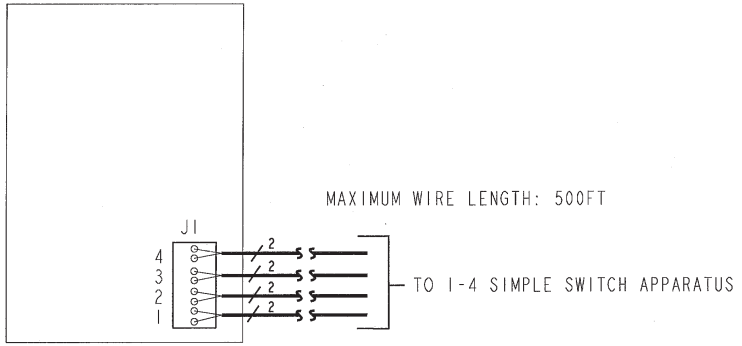
3. With or Without Beacon (C2)
   A. B -With beacon
   B. - -Without beacon

4. Overlay
   A. X -Any alphanumeric character representing a customer specific overlay artwork. (C2)
   B. - -Standard offering overlay

5. External Packaging
   A. XXXX -Any alphanumeric characters representing manufacturing packaging

6. Internal Packaging
   A. XX -Any alphanumeric characters representing manufacturing internal packaging

HAZARDOUS (CLASSIFIED) LOCATION
CLASS I, DIVISION 1, GROUP D, T4
ZONE 2, GROUP IIA, T4
-40°C <= Tamb <= +60°C



918** SERIES ALARM BOX (C2)

WHERE ** REPRESENTS ANY MODEL IN THE NOMENCLATURE TABLE

TERMINAL	INTRINSIC SAFETY PARAMETER
J1	Voc (Uo) = 7.525 VDC
	Isc (Lo) = 0.031 A
	Po = 0.06 W
	Ca (Co) = 700 µF
	La (Lo) = 105 µH

The Ca and La values assigned to the terminal J1 are the maximum total combined values of each of the four channels of the capacitance and inductance permitted for connection to the simple apparatus and the cable.

STANDARD TOLERANCES
UNLESS OTHERWISE SPECIFIED
1 PL DECIMAL ±.1 2 PL DECIMAL ±.045 3 PL DECIMAL ±.045
ANGULAR ±1° CASTING ±.025
SURFACE FINISH 125MICRO INCH RMS MAX
.035 INSIDE RADIUS MAX .065 OUTSIDE RADIUS MAX
BREAK AND DEBURR ALL SHARP EDGES
DIMENSIONS ARE IN INCHES

CONTROL DRAWING
918S, 918D, 918Q, 918SB, 918DB, 918QB
FIG. NO. 918SB

SCALE 1/1 | MATERIAL: N/A

MORRISON BROS. CO.
DRAWN: CRC DATE: 21-Jul-15
CHECKED DATE: 7-27-16
PART I.D. NO. 918SB-0135 PP
DWG. NO. B-7785-35 UL SHEET 1 OF 2

CREO

NOTES:

WARNING: Substitution of components may impair intrinsic safety.
AVERTISSEMENT: La substitution des composantes pourrait compromettre la sécurité intrinsèque.

WARNING: To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
AVERTISSEMENT : Afin de prévenir l'inflammation ou les atmosphères combustibles, débranchez l'alimentation électrique avant de faire l'entretien.

WARNINGS:
1. Aluminum enclosure - Care should be taken to minimize the risk of ignition due to impact or friction.
2. Substitution of components may impair intrinsic safety.
3. Use only battery pack Part No. 918SB-0128 2B.
4. During installation / battery replacement, care must be taken to ensure the methods of wire securement are properly maintained to ensure adequate separation between the internal wires and output connections of J1.

AVERTISSEMENTS :
1. Enceinte en aluminium - Il faut s'assurer de minimiser le risque d'ignition pouvant découler d'un impact ou de friction.
2. La substitution des composantes pourrait compromettre la sécurité intrinsèque.
3. N'utilisez que le bloc-piles No 918SB-0128 2B.
4. Lors de l'installation ou du remplacement de la pile, il faut veiller à maintenir les méthodes de fixation des fils de façon appropriée afin d'assurer une séparation adéquate entre les fils internes et les connexions de sortie de J1.

1. Capacitance and inductance of the field wiring from the Model 918** Series to the simple switch apparatus shall be calculated and must be included in the system calculations as shown in Table 1. Cable capacitance, Ccable, plus intrinsically safe equipment capacitance, Ci, must be less than the marked capacitance, Ca (or Co), the Model 918** Series. The same applies for inductance (Lcable, Li and La or Lo, respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used: Ccable = 60 pF/ft (200pF/m), Lcable = 0.2 µH/ft (1.0 µH/m). (C3)

TABLE 1:

Simple Switch Apparatus		Model 918** Series (C3)
V max (or Ui)	≥	Voc or Vt (or Uo)
I max (or Ii)	≥	Isc or It (or Io)
P max (or Pi)	≥	Po
Ci + Ccable	≤	Ca (or Co)
Li + Lcable	≤	La (or Lo)

For installations in which both Ci and Li of the simple switch apparatus exceeds 1% of the Ca (or Co) and La (or Lo) parameters of the Model 918** Series (excluding the cable), then 50% of the Ca (or Co) and La (or Lo) parameters are applicable and shall not be exceeded. The reduced capacitance shall not be greater than 1 µF for Groups C and/or D, and 600 nF for Groups A and B.

The values of Ca (or Co) and La (or Lo) determined by this method shall not be exceeded by the sum of all of Ci plus cable capacitances and the sum of all of the Li plus cable inductances in the circuit respectively.

If Po of the associated apparatus is not known, it may be calculated using the formula Po = (Voc * Isc)/4 = (Uo * Io)/4.

2. Model 918** Series must be installed in accordance with its manufacturer's control drawing and Article 504 of the National Electrical Code (ANSI/NFPA 70) for installation in the United States, or Section 18 of the Canadian Electrical Code for installations in Canada or other local installation code, as applicable.

3. Conditions of safe use: Potential electrostatic discharge - Clean product only with a damp cloth.

Suitability for installation in particular applications is at the discretion of the Authority Having Jurisdiction (AHJ).

SPEC PLATE DETAIL

XXXX - CAN BE ANY NUMERICAL VALUE

** - REPRESENTS ANY MODEL IN THE NOMENCLATURE TABLE (C3)

STANDARD TOLERANCES UNLESS OTHERWISE SPECIFIED 1 PL DECIMAL ±.1 2 PL DECIMAL ±.045 3 PL DECIMAL ±.045 ANGULAR ±1° CASTING ±.025 SURFACE FINISH 125MICRO INCH RMS MAX .035 INSIDE RADIUS MAX .065 OUTSIDE RADIUS MAX BREAK AND DEBURR ALL SHARP EDGES DIMENSIONS ARE IN INCHES/ALL DIMENSIONS SHOWN ARE PRIOR TO ANY COATING	CONTROL DRAWING 918S, 918D, 918Q, 918SB, 918DB, 918QB FIG. NO. 918SB	MORRISON BROS. CO. DRAWN: CRC DATE: 24-Feb-16 CHECKED DATE: 7-26-16
	SCALE 1/1 MATERIAL: N/A	PART I.D. NO. 918SB-0135 PP
CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MORRISON BROS. CO. TO BE USED ONLY FOR THE PURPOSE EXPLICITLY DIRECTED BY MORRISON BROS. CO. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MORRISON BROS. CO. IS PROHIBITED		DWG. NO. B-7785-35_UL SHEET 2 OF 2

CREO