

Technical Manual



ST-46 Scully Vapor Connect System



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Certification Appendix

Intertek Testing Services

ATM for Report 106420209DAL-001

Pages 26,27

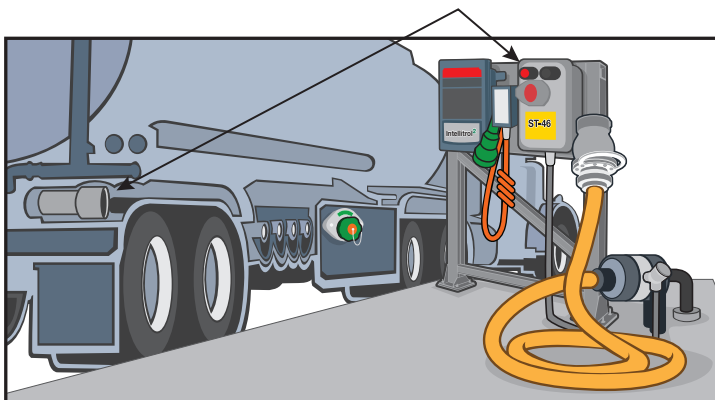
The ST-46 Scully Vapor Connect Controller is an integral component of the Vapor Connect System. It is an intelligent controller that continuously and automatically monitors the vapor recovery hose or loading arm connection between the vapor coupler and the tank truck vapor adaptor during loading operations. The ST-46 is designed to immediately shut down the loading operation if the vapor coupler becomes disconnected from the tank truck.

1.1 Description

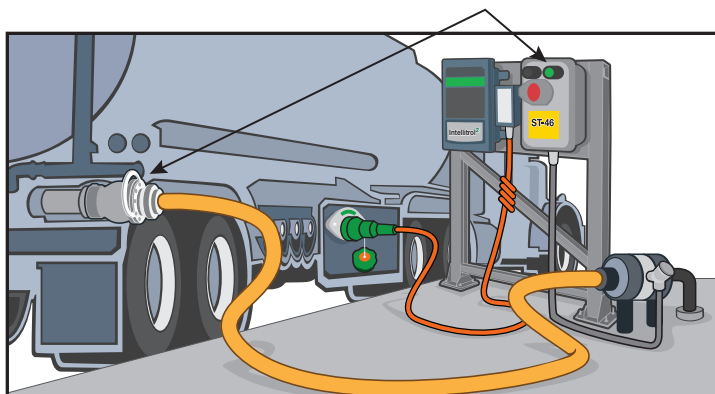
The ST-46 is mounted at the gantry (loading terminal). Indicator lights on the cover provide a visual reference to confirm whether or not a proper connection has been made. The controller also includes a dry relay that changes state based on the presence or absence of a connection. A signal from the Load-Computer can be wired through this relay, allowing terminal operations to incorporate the Scully Vapor Connect System into the loading permit logic. If this logic is applied and the vapor recovery hose is disconnected from the truck, the system will automatically shut down the loading operation. Alternative integration methods are available depending on the specific equipment used at the gantry.

The ST-46 controller monitors a proximity sensor integrated into the vapor coupler at the end of the vapor hose. The signal between the controller and the sensor is proprietary to Scully, making it difficult to bypass or override without approval. Before loading can begin, the controller must receive a valid return signal from the coupler, indicating that a proper vapor recovery hose connection has been established.

**Unconnected,
The System Should Show RED**



**When the Hose is Connected,
the Controller Should Show GREEN**



1.1.1 Model Designations

The ST-46 Controller is available in 120VAC or 240VAC models with control (Bypass) Switch.

Model suffix (E) = Explosion-proof Enclosure, (L) = Indicator Lights, (K) = Key Lockable Bypass Switch.

Model	Description
ST-46-120 ELK	Controller in Explosion-proof Enclosure with Indicator Lights and Key-lockable Bypass Switch, 120VAC
ST-46-240 ELK	Controller in Explosion-proof Enclosure with Indicator Lights and Key-lockable Bypass Switch, 240VAC

1.1.2 Explosion Proof Enclosure

Suffix "E" in the model number indicates controller is in an explosion-proof enclosure suitable for hazardous areas. Conduit holes are provided in the enclosure for electrical access. The installer must install Exd cable glands (or conduit and seal fittings) according to local codes.

1.1.3 Indicator Lights

Suffix "L" in the model number indicates red and green indicator lights on the controller enclosure. These lights indicate the following conditions:

GREEN	RED	Condition
ON	OFF	A good vapor recovery hose connection is verified. Controller output is in permissive state i.e. permit to load.
OFF	ON	A good vapor recovery hose connection is not verified. Controller output is in non-permissive state.
OFF	OFF	No power to the unit or Bypass Control Switch is in OFF or BYPASS position.

1.1.4 Bypass Control Switch

Adding the suffix "K" to the model number adds a lockable two-position control switch to the enclosure. In the "NORMAL" position the unit will operate normally with verification of proper vapor recovery hose connection causing the output relay to become energized (i.e. closed output contact). In the "BYPASS" position, power to the unit is switched "OFF" and the normally open relay contacts are bypassed to permit emergency operation of the equipment without vapor recovery hose connection verification.

For normal operation, this switch should always be set in the NORMAL position. The switch is enclosed in lockable box to allow locking with a user provided padlock.

CAUTION: When in "BYPASS" mode the vapor recovery hose connection verification is DISABLED and the system does not provide connection verification.

1.1.5 Accessory Equipment

In addition to the control unit and Vapor Sensor assembly, a coupler and cable assembly is needed to provide the interconnection from the ST-46 Control Unit to the vehicle.

See section 4.8 DWG 603000024

1.2 Technical Specifications

Technical Data

Environmental Operating Conditions	• - 40°C to +60°C (-40°F to +140°F), 0-95%RH • Overvoltage Category III, Pollution Degree 4 • Equipment not rated for altitudes over 2000M • Equipment rated for indoor and outdoor use
Power Requirements	120 VAC Models: 100-127 VAC, 50/60 Hz, 20VA Max.* 240VAC Models: 200-250 VAC, 50/60 Hz, 20VA Max. * *20VA does not include circuits controlled by the output relay load contact
Output Relay	One normally open volt-free contact rated 250VAC, 5A resistive max. The output contact closes when a proper Vapor Recovery connection has been established.
Response Time	0.5 second maximum
Indicator Lights	Output status indicator lights: • Red: Non-permissive • Green: Permissive
Output Control Fuse	Internal 5 Ampere
Connections	Provided by internal terminal strips.
Dimensions	See Appendix 4 for outline drawing
Weight	12 Kg (26 Lbs.)

Approvals

ST-46	ETL26CA106420209X NEMA4/IP65 Ex db [ia Ga] IIB T6 Gb (-40°C ≤ Ta ≤ +60°C) Provides Intrinsically Safe outputs [Ex ia] to Class I, Zone 0, Group IIB CSA C22.2 No. 60079-0:2019; CSA C22.2 No. 60079-1:2016; CSA C22.2 No. 60079-11:2014; CSA C22.2#61010-1:2012; CSA C22.2#94.1:2024; CSA C22.2#94.2:2020 Class I, Zone 1, AEx db [ia Ga] IIB T6 Gb (-40°C ≤ Ta ≤ +60°C) UL 60079-0:2019; UL 60079-1:2015; UL 60079-11:2013 UL 61010-1:2012; UL 50:2024; UL 50E:2020
Sensor	ETL26CA106572300X IP54 Ex ia IIB T4 Ga (-40°C ≤ Ta ≤ +60°C) CSA C22.2 No. 60079-0:2019; CSA C22.2 No. 60079-11:2014; CSA C22.2#61010-1:2012 Class I, Zone 0, AEx ia IIB T4 Ga (-40°C ≤ Ta ≤ +60°C) UL 60079-0:2019; UL 60079-11:2013; UL 61010-1:2012

ST-46 Entity Parameters

I.S. Area Output Pins	Uo	Io	IPo
1 to 2	28.4 V	0.95 mA	6.47 mW
2 to 3	29.6 V	15.1 mA	119 mW

General

I.S. Area Load Maximums

Group	Pins	Co(uF)	Lo(mH)
IIC	1 to 2	0.079	200
	3 to 2	0.070	155
IIB	1 to 2	0.632	200
	3 to 2	0.578	200
IIA	1 to 2	2.07	200
	3 to 2	1.88	200

Sensor Entity Parameters

Ui	Ii	Pi	Ci	Li
35 V	16 mA	120.7 mW	0 uF	0 uH

SPECIAL CONDITION OF USE:

Flamepaths must not be repaired

Les chemins de flamme ne doivent pas être réparés



ATTENTION: Do not drill any additional holes in the enclosure, as doing so violates the enclosure's hazardous location approval and voids the warranty.

ATTENTION: Ne pas percer de trous supplémentaires dans le boîtier, ce faisant, viole l'emplacement dangereux approbation et annule la garantie.



ATTENTION: Disconnect power before opening cover.

ATTENTION: Coupez l'alimentation avant d'ouvrir le couvercle.



CAUTION: Cover screws to be minimum grade A2-70 Stainless Steel

ATTENTION : Les vis du couvercle doivent être au minimum en acier inoxydable de grade A2-70.



WARNING: DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

AVERTISSEMENT : NE PAS OUVRIR EN PRÉSENCE D'UNE ATMOSPHÈRE EXPLOSIVE



WARNING: EXPLOSION HAZARD – DO NOT REPLACE THE MODULE UNLESS THE POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS

AVERTISSEMENT: RISQUE D'EXPLOSION ne remplacez pas le module à moins que le courant a été coupé ou l'environnement est classé non dangereux



WARNING: Improper connections, component substitution or tampering may impair intrinsic safety and create hazardous conditions.

AVERTISSEMENT: des connexions mal effectuées, la substitution ou la manipulation des composants peuvent nuire à la sécurité intrinsèque et créer des conditions dangereuses.

The enclosure is rated to IP65 per IEC 60529 and NEMA4 per UL50E. The rating of the enclosure is negated if the holes in the enclosure are unplugged/unscrewed or any holes are drilled into the enclosure. The ST-46 has been designed to be impact-resistant. Do not subject to excessive mechanical or thermal stresses. Do not allow the unit to come in contact with aggressive substances. The ST-46 may only be repaired by replacing the internal control module. The internal control module is not field-repairable.

The ST-46 is typically installed in areas that are classified as hazardous locations due to nature of the products being loaded. Installation of the control unit and accessories must therefore be done by qualified personnel in accordance with all national and local regulations (codes) governing the installation of electrical equipment in hazardous locations.

It is essential that the ST-46 and accessories be installed and used in accordance with the detailed specifications and instructions in this manual. Installations that violate national and local regulations (codes) for installation of electrical equipment in hazardous locations and/or details in this manual may lead to unsafe operation.

Intrinsically safe wiring to/from TB2 at the bottom of the control module must enter/exit the bottom opening in the control unit enclosure labeled "Intrinsically Safe Entry". Intrinsically safe wiring must be kept physically separated from any other wiring.

The ST-46 control system is typically installed in areas that are classified as hazardous locations due to nature of the products being loaded. Installation of the control unit and accessories must therefore be done by qualified personnel in accordance with all national and local regulations (codes) governing the installation of electrical equipment in hazardous locations.

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Installation

2.1 Mechanical Installation

When choosing a location on the loading rack for the control unit, the lights on the front of the control unit should be readily visible and within easy reach of the user. The control unit should be mounted vertically, in a location where the cover can open for servicing. (See Diagram 603000023 in Appendix 4 for installation.)

Refer to the Outline Drawing 31412 in Appendix 4 for physical dimensions, location of the mounting bolts, electrical cable/conduit entry locations and enclosure earth bonding stud. The enclosure earth-bonding stud is provided for proper electrical bonding (earthing) of the enclosure to earth (ground). Use only the three conduit entry holes provided for wiring. The top two holes are for power and control wiring. The bottom hole is for intrinsically safe sensor wiring only. Do not drill any additional conduit holes in the enclosure; doing so violates the enclosure's hazardous location approval and voids the warranty.

Refer to section 4.9 (DWG 603000024 – Vapor Coupler Installation) for detailed instructions on the Vapor Coupler installation and wiring.

To avoid future maintenance issues regarding water infiltration into the enclosure via the electrical cable entries, we strongly recommend the following precautions:

- Minimize long vertical cable (or conduit) runs into the top of the enclosure as long vertical runs promote water channeling to the cable gland.
- The cable glands at the top of the enclosure should be very carefully installed, taking extra precaution to make certain that the installation is proper and sealed (as required by code).
- Must seal all enclosure cable gland entries to maintain IP65 rating and protect against water infiltration. Install a fiber washer between the cable gland and the enclosure.

2.2 Electrical Installation

Refer to the Installation Wiring Diagrams in Appendix 4.

All cable entry fittings, junction boxes, connections, wiring, etc. are to be provided by the installer. Explosion- proof cable glands should be employed for cable entry. If conduits are used for cable entry, seal fittings must be installed in each conduit.

There are three holes in the enclosure for cable entry. Two holes in the top of the enclosure are for mains power and control output wiring. One hole in the bottom of the enclosure, labeled "Intrinsically Safe Entry" is for connection to vapor recovery hose verifications, via a Scully Sculcon Junction Box.

WARNING: *The electrical cable entry in the bottom of the enclosure marked "INTRINSICALLY SAFE ENTRY" must only be used to interface with the sensor integrated in the vapor coupler. To maintain intrinsic safety, this cable entry must not be used for any other wiring. DO NOT ROUTE MAINS POWER THROUGH THIS HOLE.*

2.2.1 Power Connections

Route the mains power wires through the top left-hand entry hole in the top of the enclosure. Connect mains power wires to the appropriate terminals on the terminal block (strip) on the metal bracket in the enclosure. The Power terminals are marked E, N & L, also shown in wiring diagram.

NOTE: *The ST-46 Control Module is protected by a field replaceable 1A high interrupt capacity fuse in the enclosure. The fuse (F1) is located next to the terminal strip on metal bracket.*

2.2.2 Enclosure Earth (Ground) Connection

Connect a wire (1.5mm² minimum) from the enclosure-bonding stud to earthed metallic structure of the gantry (rack).

2.2.3 Control Output (Controlled Circuit) Connections

Route the control output wiring through the top right hand entry hole in the enclosure and connect to output contact terminals, indicated on the terminal strip on metal bracket. The output control contact is open when no connection from the controller is made to a vehicle (idle state). The output control contact closes when a proper vapor recovery hose connection between the vehicle and the controller and the vehicle has been established (or when optional bypass switch is in the "Bypass" position).

The contact opens if the vapor recovery hose connection is broken or disconnected.

NOTE: *An internal field replaceable 5A high interrupt capacity fuse protects the output relay contact. The fuse (F2) is located on metal bracket.*

The output contact is rated 250VAC, 5A resistive maximum. It is used to close a valve or pump directly or by wiring it in series with other control contacts, such as a preset meter's control contacts. (See Diagram 61441, Typical Loading Rack Control in Appendix 4.) In addition it may also be connected to an input of a terminal automation system (TAS) to provide status of the controller's output to TAS.

Caution: *The ST-46's relay output contact is designed to directly control a valve or pump. Do not connect directly logic circuits of a TAS without reviewing the logic solver requirements of the TAS input as this can introduce unsafe failure modes into this emergency shutdown system. The TAS may also control a valve or pump based on other conditions.*

2.2.4 Intrinsically Safe Connections to Vapor Recovery Hose Coupler

Signals from ST-46 to the vapor recovery hose coupler are intrinsically safe.

The intrinsically safe connections must only be made via the entry hole in the bottom of the enclosure. The connections are made to the terminal strip TB2 at the bottom end of the printed circuit board module. The wires must be 1.5mm² (18AWG) minimum conductor size.

All wiring installation should be in accordance with local wiring codes.

Refer to section 4.8 for Vapor Coupler installation instructions.

2.3 Initial System Checkout

2.3.1 Operational Testing

Apply power to the ST-46 control unit.

NOTE: *The vapor recovery hose coupler should not be connected to a truck or test coupler at this time.*

Check status of lights with Bypass Control Switch in the following positions:

- NORMAL: Red light should be ON. Circuit is non-permissive
- BYPASS: Both lights should be OFF. Circuit is permissive

Return the Bypass Switch to the NORMAL position. The Bypass Switch should be kept under a lock (user provided) so that its setting cannot be tampered with.

Connect the Vapor Coupler to a truck or test coupler. ST-46 outputs will go permissive with green light ON and red light OFF. If a truck or test coupler is not available, pushing the poppet of the vapor coupler to its open position will also simulate a coupler to adapter connection and the ST-46 will change to a permissive state.

CAUTION: BEFORE PERFORMING ANY MAINTENANCE ON THE CONTROL UNIT, DISCONNECT POWER TO THE ST-46 AND WAIT FIVE MINUTES BEFORE OPENING THE ENCLOSURE. DO NOT OPEN WHEN AN EXPLOSIVE GAS IS PRESENT.

3.1 Enclosure

Inspect the enclosure routinely for deterioration due to environmental corrosion. The control unit should be opened once per year for internal inspection and replacement of the corrosion inhibitor capsule. Repair or replace as necessary only hardware that appears cracked, broken, corroded or otherwise deteriorated. Cover screws must be minimum grade A2 – 70 stainless steel.

3.2 Corrosion Protection

The control unit is shipped from the factory with a corrosion inhibitor capsule adhered to the inside of the cover. The corrosion capsule is designed to condition the atmosphere within the enclosure to resist corrosion. It is intended to last approximately 1 year in normal use. As previously mentioned, the control unit should be opened once per year for internal inspection. At this time the corrosion capsule should be replaced (see Replacement Parts Sheet in Appendix Section 4). It is also recommended to replace the cover O-ring at the same time.

3.3 Control Module (Circuit Board)

The ST-46 control unit's internal circuitry does not require any routine periodic maintenance, but should be inspected during routine maintenance for corrosion or other signs of damage. The control circuitry may be repaired only by replacing the internal control module with an equivalent module. The internal module is non-repairable.

DO NOT ATTEMPT TO SERVICE OR REPLACE COMPONENTS ON THE ST-46C MODULE. DOING SO WILL NEGATE WARRANTIES, CERTIFICATIONS AND JEOPARDIZE INTRINSIC SAFETY ASPECTS OF THE DEVICE.

If it is determined (after troubleshooting, see Section 3.8) that control module needs to be replaced, remove the faulty control module and install the replacement control module per the following steps: (See Figure 1 ST-46 Control Module Illustration on following page). Non-operational control modules may be returned to Scully for repair. Contact Scully Technical Services for assistance in obtaining a Return Material Authorization (RMA) before returning any material to the factory.

3.4 Module Replacement

REMOVING THE MODULE

1. Remove (disconnect) power from the ST-46 Control Unit. Make sure the work area is gas vapour free.
2. To open the ST-46 Control Unit cover, remove the (16) hex socket head bolts by using a 6mm hex wrench.
3. Use a volt meter to confirm there is no voltage on any terminal on TB1 (ref. section 4.4, DWG 606000019)
4. Mark/label wires connected to TB1 on printed circuit board (to be able to reconnect to the same terminal numbers on the replacement module).

5. Disconnect all wires connected to TB1.
6. Mark/label wires connected to TB2.
7. Disconnect all wires connected to TB2.
8. Remove the Control Module assembly by loosening the four-(4) mounting screws located in the four corners of the Control Module assembly.

INSTALLING REPLACEMENT MODULE

1. Place the new Control Module onto the mounting plate and attach the (4) mounting screws.
2. Reconnect the wires to TB2.
3. Reconnect the wires to TB1.
4. Close the cover and attach the (16) cover bolts. Ensure the bolts are evenly tightened.
5. Apply power to the Control Unit and test for proper operation.

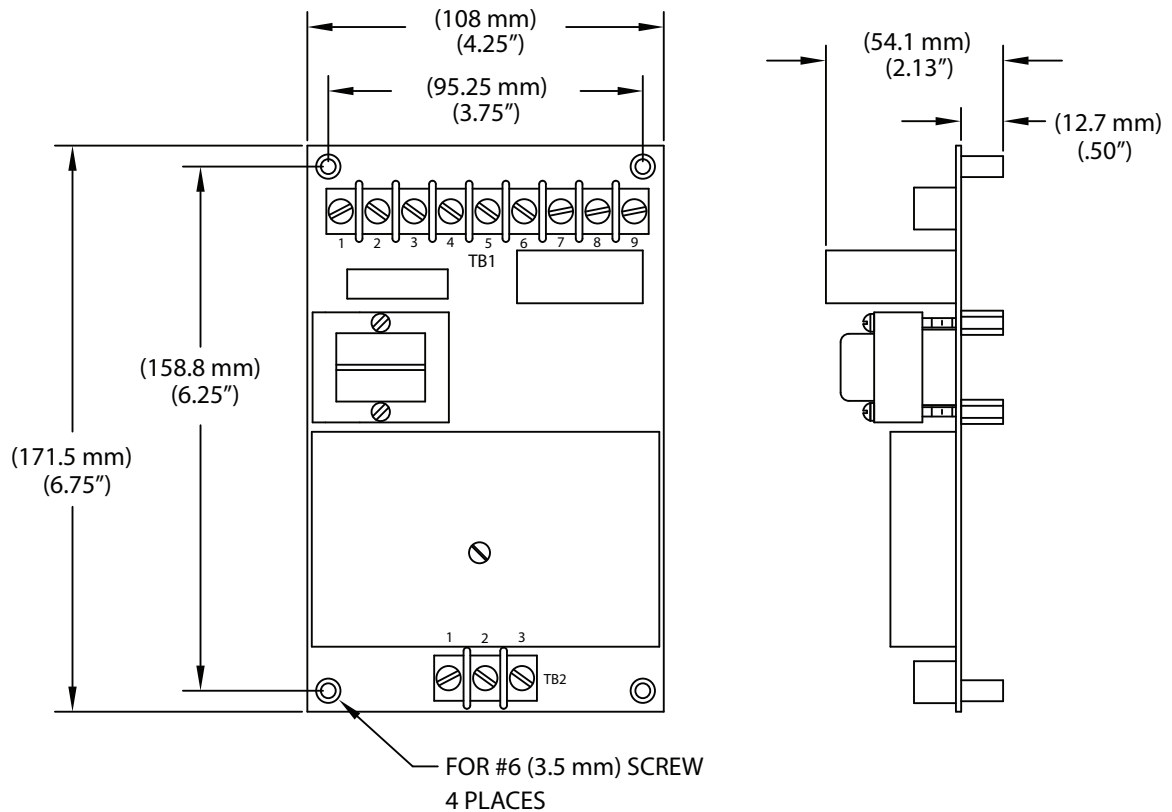


Figure 1: ST-46 Control Module Illustration

Note: The ST-46 Replacement Control Module cannot be repaired in the field. A damaged or faulty module must be replaced with an equivalent Scully ST-46 Control Module. The ST-46 Replacement Control Module must only be installed in Scully's explosion-proof enclosure. The enclosures' explosion-proof and weatherproof integrity must be maintained.

Caution: Do not expose the Control Module to any substance which may corrode or degrade the material of the module (including water, sealants, or cleaning agents).

When used properly, contact with the control module will not cause physical injury or harm and does not pose non-electrical dangers. The unit does not produce excessive surface temperatures, or emit infrared electromagnetic or ionizing radiation.

3.5 Indicator Lights

The control unit employs explosion-proof LED style lights. These do not require any maintenance or changing of bulbs. In the event a light is faulty, it must only be replaced with parts numbers shown in Replacement Parts Sheet in Appendix 4. Follow instructions provided with the replacement indicator lights (pilot lights).

3.6 Control (Bypass) Switch

On those models having a lockable control (Bypass) switch the switch box may be replaced, by removing two screws inside the switch box. The switch box is replaced as a unit.

A faulty switch may also be replaced if necessary, see Replacement Parts Sheet in Appendix 4 for replacement part numbers.

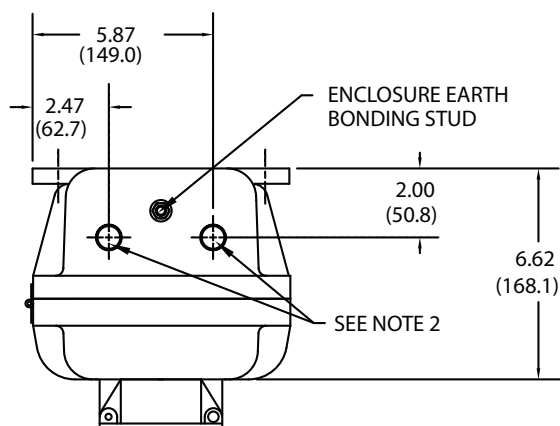
3.7 Troubleshooting

The following troubleshooting guide should aid in an initial diagnosis of most problems encountered with installation and operation of ST-46.

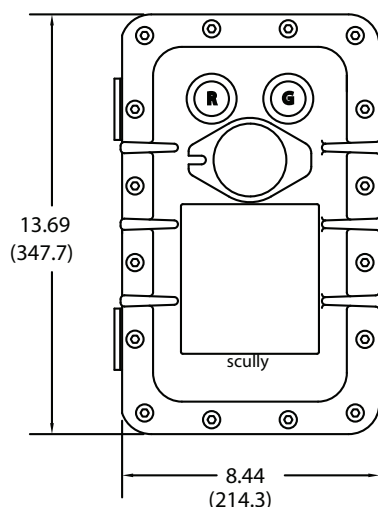
Condition	Possible Cause
No lights ON, on front cover	- No power to control unit - Control (Bypass) Switch in BYPASS position - Bulb blown (on older units with incandescent lamps) - Input power fuse (F1) is blown - Control Module is defective - Bad wiring to lamps
Green (Permissive) light ON, but control contact output does not activate valve/pump	- Control Output fuse (F2) is blown - Wiring defect (control output contact wiring) - Control Module is defective
Red (Non-permissive) light stays ON when Vapor Coupler connected to vehicle or test coupler equipped	- Fault in wiring between ST-46 TB2 and sensor in Vapor Coupler - Vapor Coupler not properly seated to truck or test socket - Control Module is defective - Vapor Sensor or coupler is defective

4.1 DWG 31412 – Outline Drawing – Control Unit Enclosure

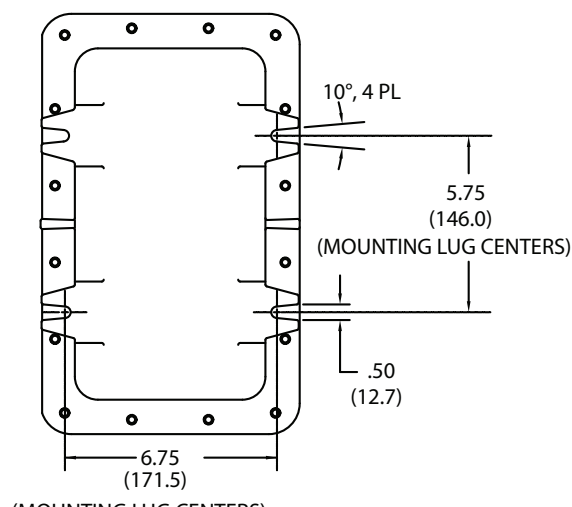
31412 RevC



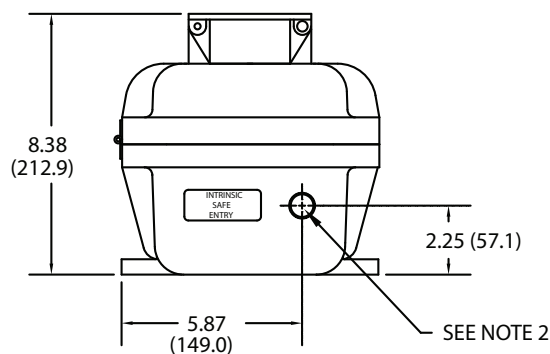
TOP VIEW



FRONT VIEW



REAR VIEW

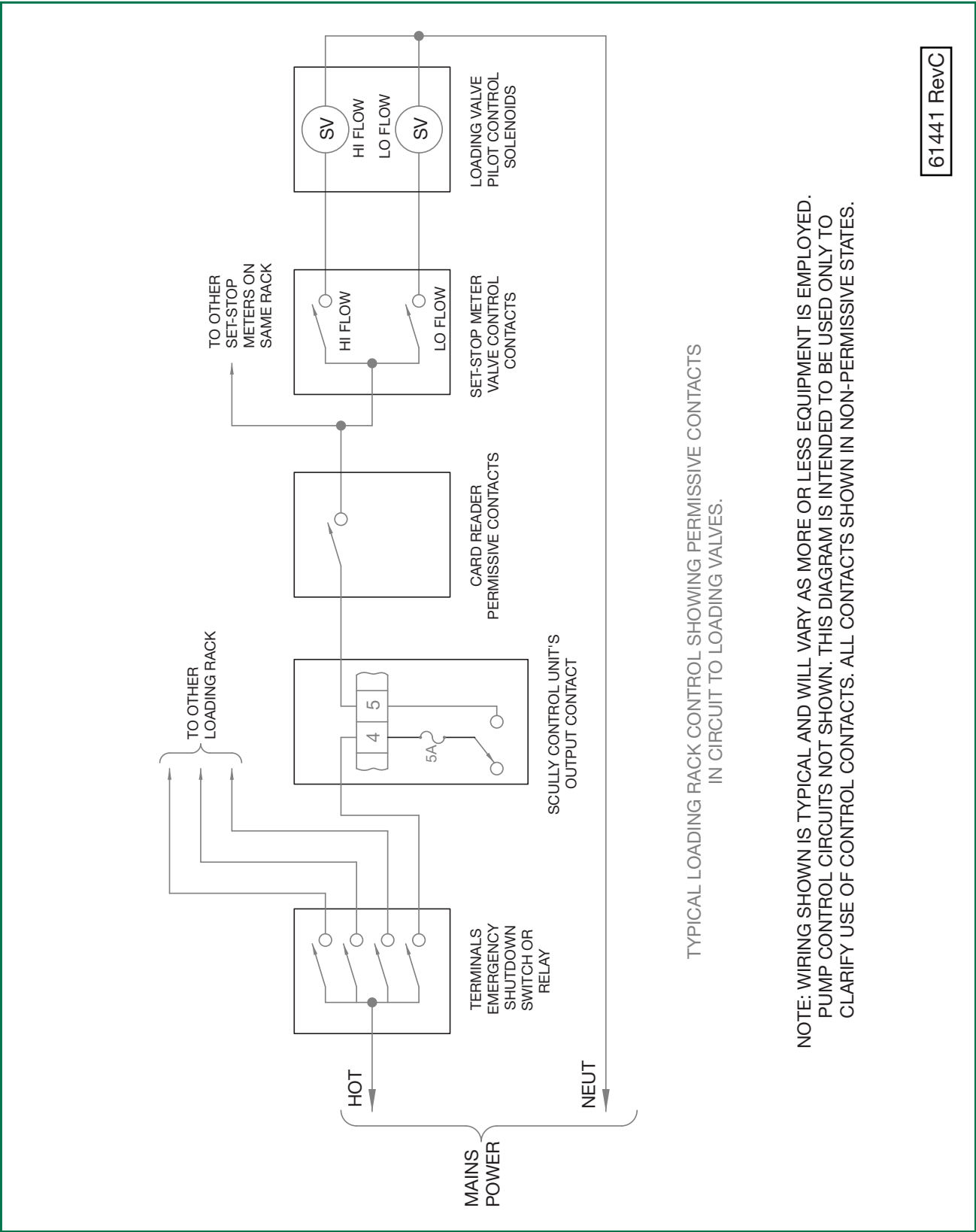


BOTTOM VIEW

NOTES:

1. DIMENSIONS ARE IN INCHES WITH MILLIMETERS IN PARENTHIESS.
2. ENTRY HOLES:
NORTH AMERICAN APPROVED MODELS: 3/4" NPT
TEX/IECEX APPROVED MODELS: M20 X 1.5

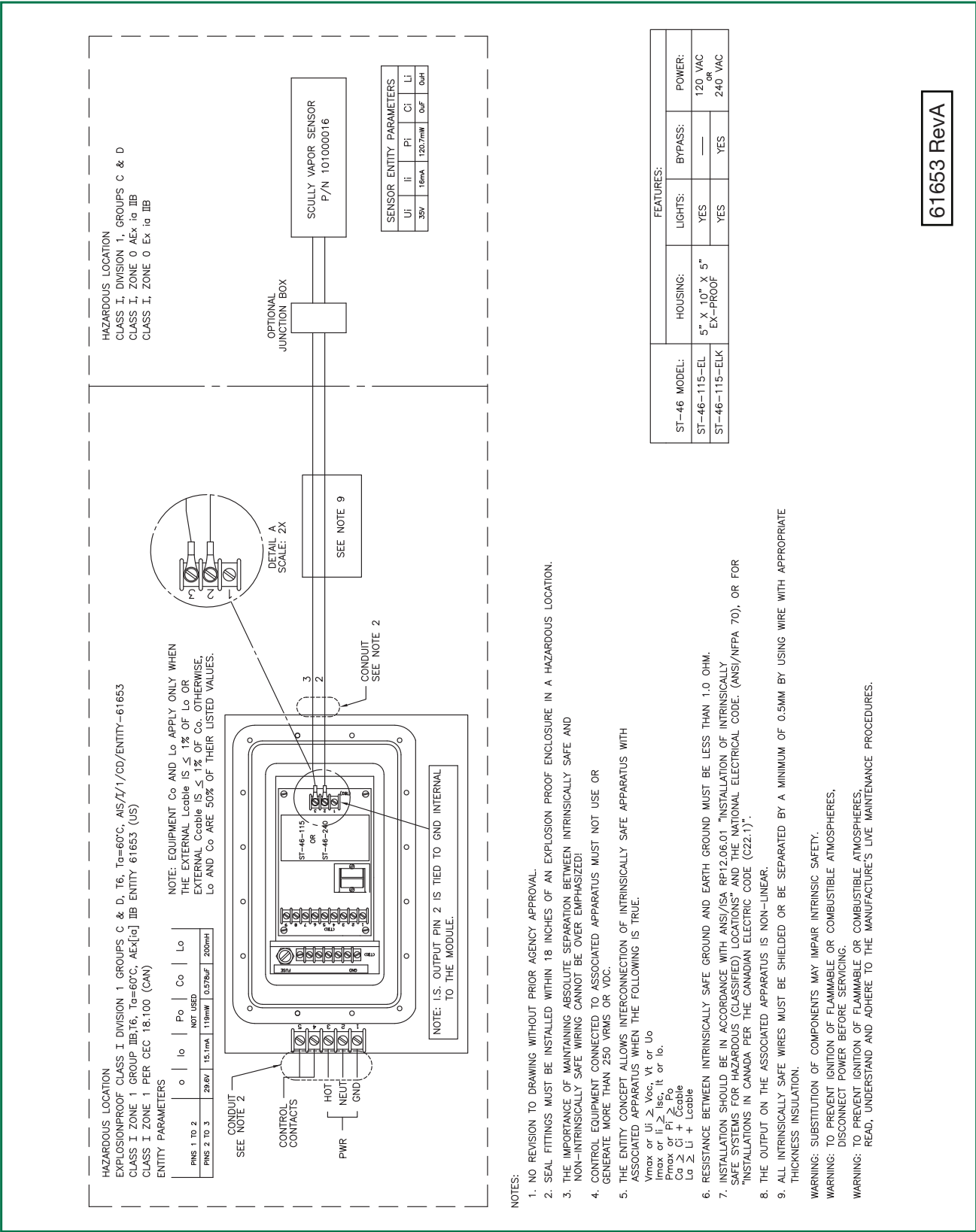
4.2 DWG 61441 – Wiring Diagram – Typical Loading Rack Control



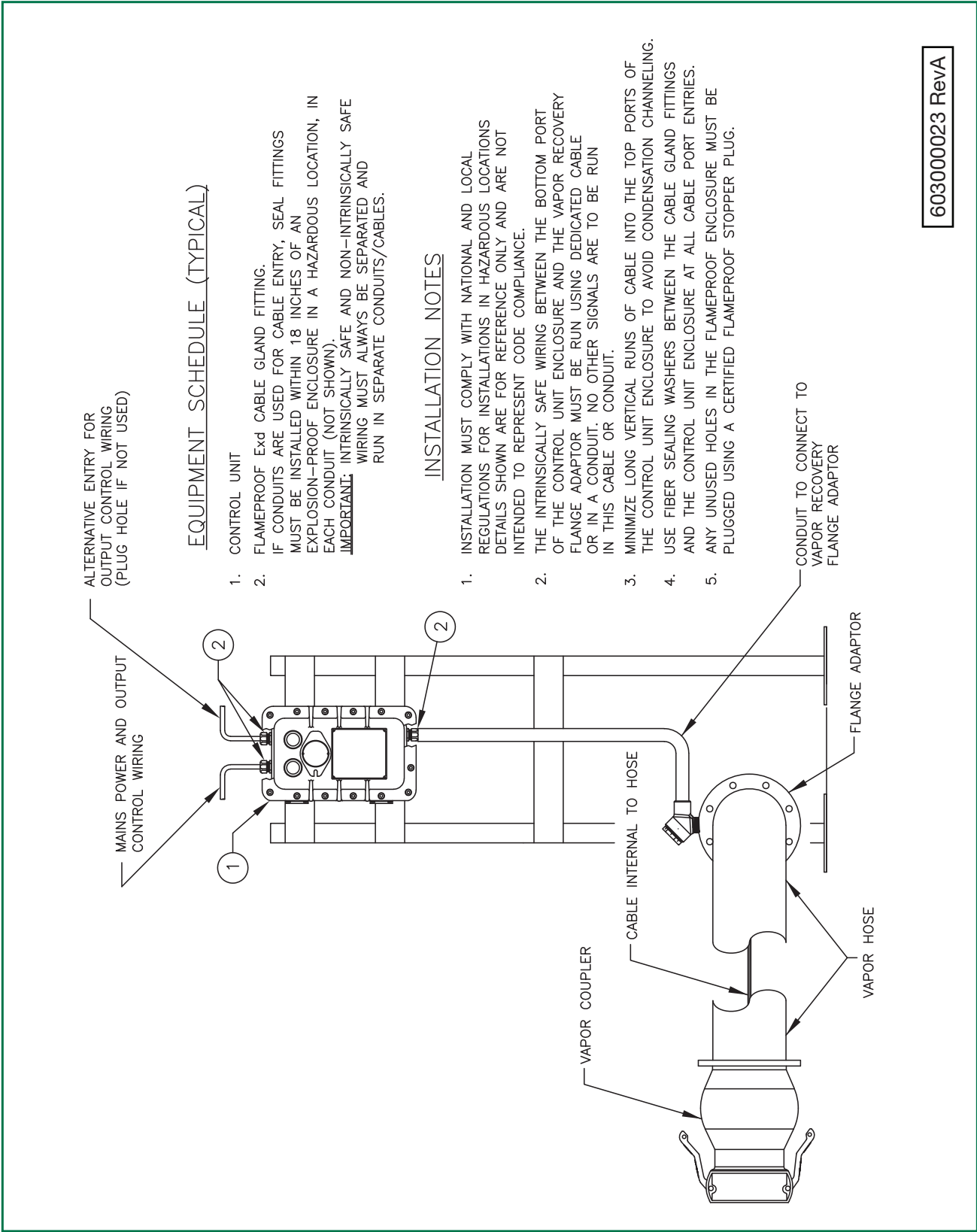
Scully Vapor Connect System

Diagram Appendix

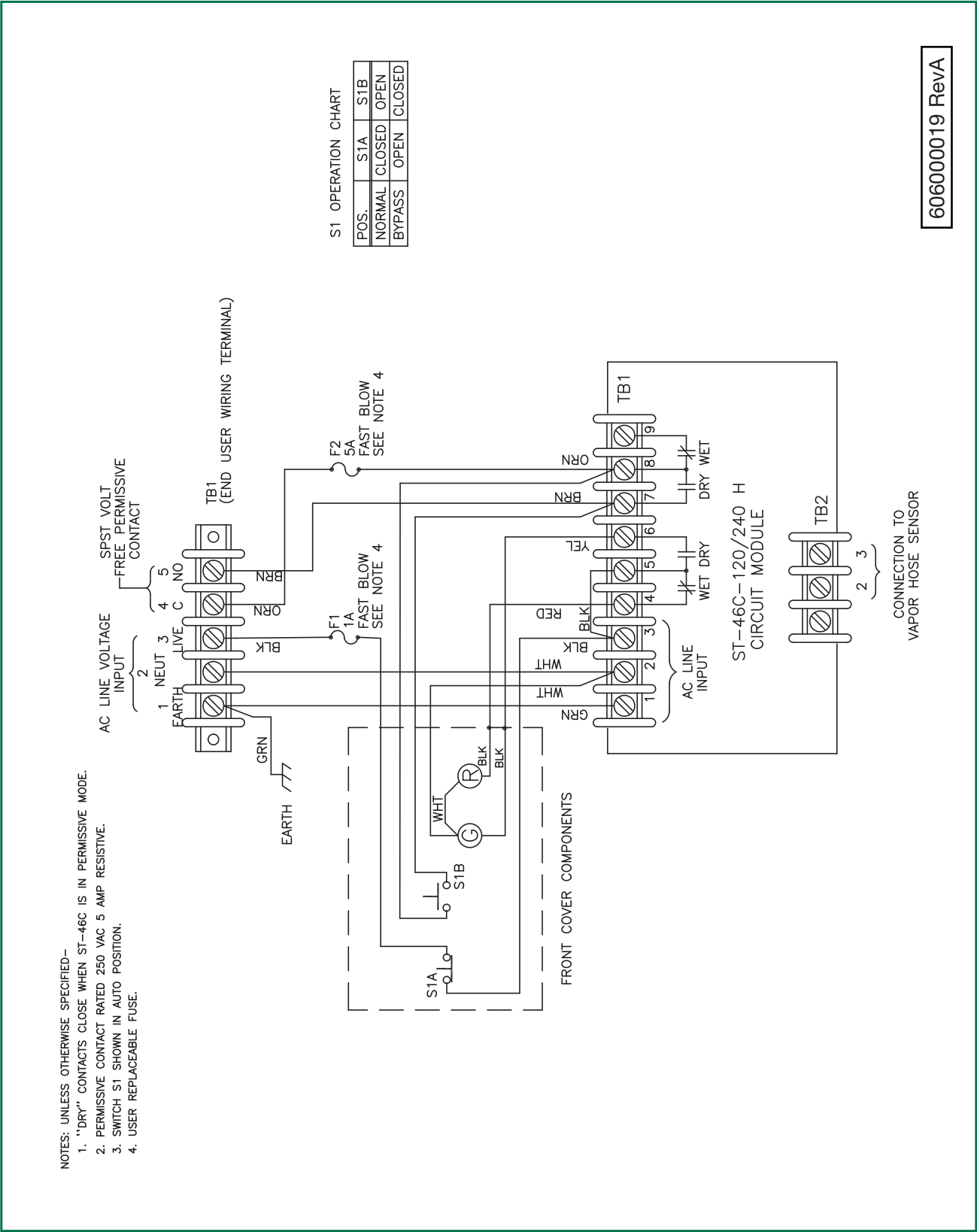
4.3 DWG 61653 – Installation Drawing with Entity Parameters



4.4 DWG 603000023 – Mounting Diagram – Control Unit

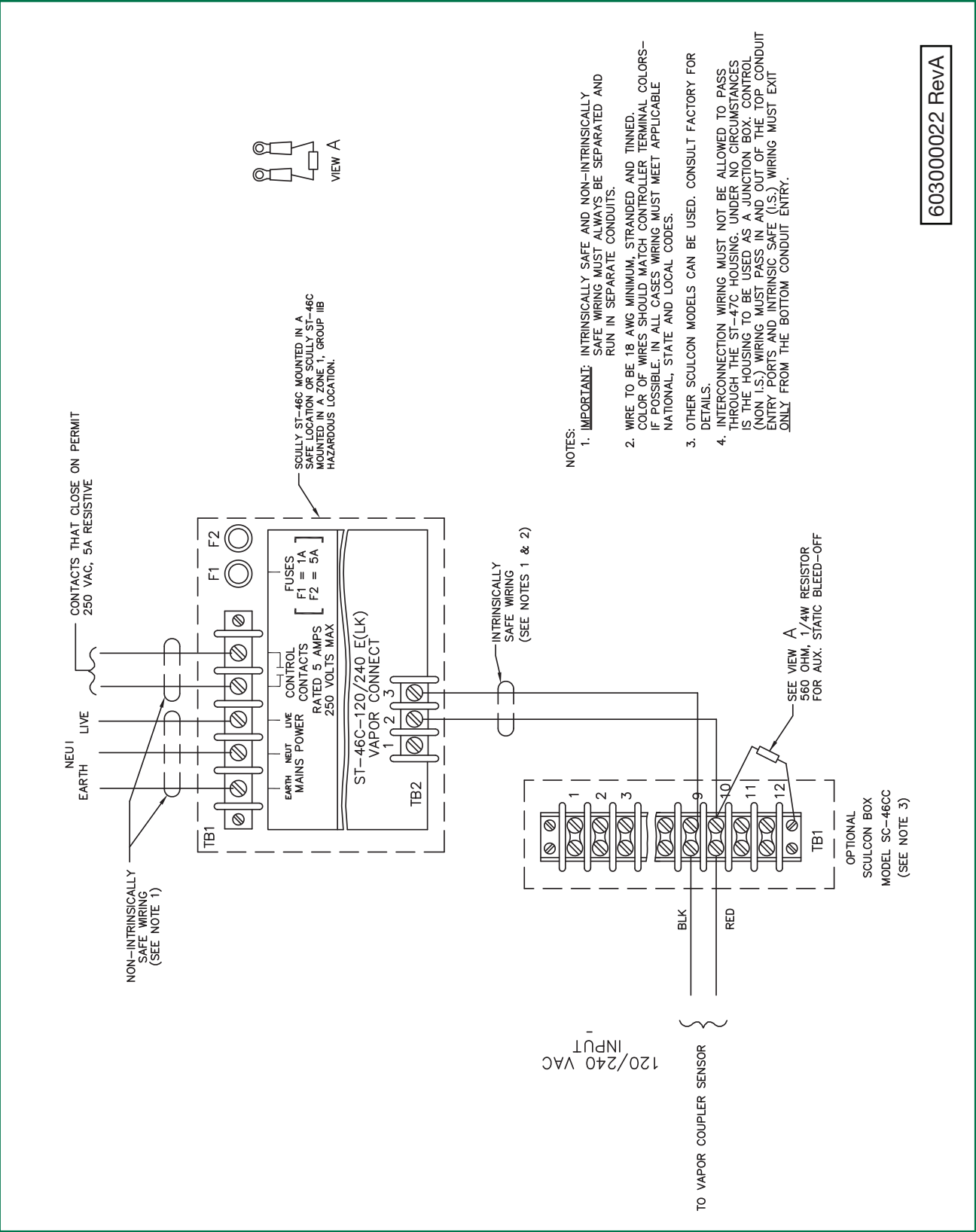


4.5 DWG 606000019 – Interconnection Diagram - ST-46-ELK



606000019 RevA

4.6 DWG 603000022 – Installation Wiring Diagram, ST-46



4.7 Replacement Parts ST-46-120

REPLACEMENT PARTS for ST-46 120VAC

ST-46 120VAC

North American Models

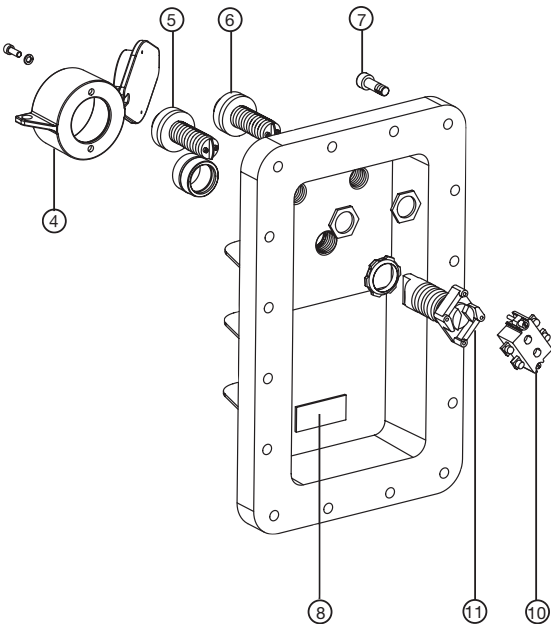
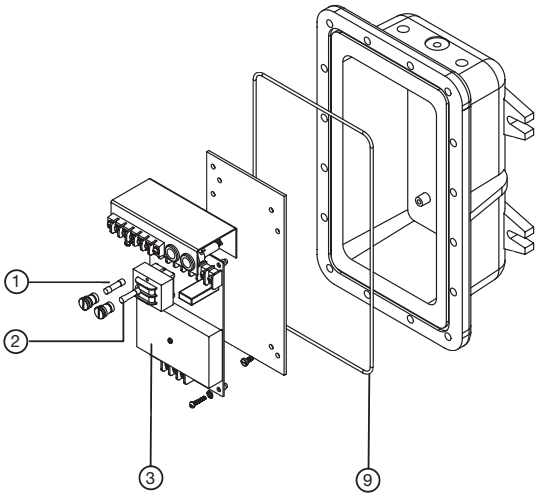
Part No.	Model
091000027	ST-46-120 ELK

Note: Controller Models Suffix::
Explosion-proof housing (E), Indicator Lights (L), Key (K) Lockable
Bypass Switch.

Replacement Parts

Item	Part No.	Description	Qty.
1	26343	Main Fuse, 1 Ampere	1
2	26350	Control Fuse, 5 Ampere	1
3	091000031	ST-46-120 Replacement Module	1
4	08350	Bypass Switch Lockbox (includes 2 mounting screws)	1
5	09220	Replacement Light Explosion Proof Lamp Assembly, Green, LED Style	1
6	09221	Replacement Light Explosion Proof Lamp Assembly, Red LED Style	1
7	50005	Socket Head Cap Screw, Stainles	16
8	21733	Corrosion Capsule	1
9	31340	O-ring cover seal	1
10	26022	Bypass Switch Contact Block	1
11	26093	Bypass Switch Operator 2 Position	1
*	27085	Bulb, 120V, 6W*	

Notes:
Item 7: New socket head screw used on models built after 10/92.
Item 9: O-ring used on models built after 10/92.
Item 5, 6: LED style lamps used on models built after 10/04/01.
* Replacement bulb for incandescent style explosion-proof lights only.
Use on models built prior to 10/04/01.



4.8 Replacement Parts ST-46-240

REPLACEMENT PARTS for ST-46 240VAC

ST-46 240VAC

North American Models

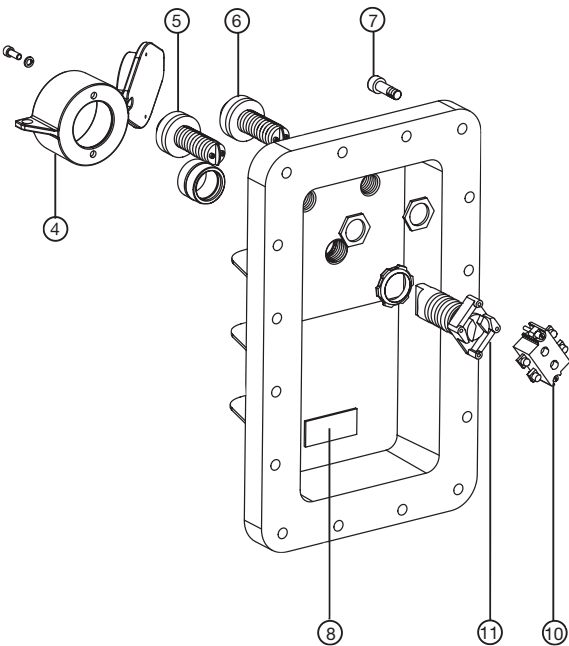
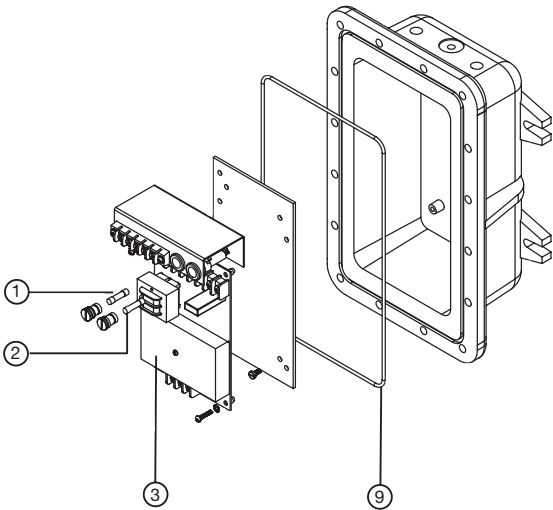
Part No.	Model
091000028	ST-46-240 ELK

Note: Controller Models Suffix:
Explosion-proof housing (E), Indicator Lights (L), Key (K) Lockable
Bypass Switch.

Replacement Parts

Item	Part No.	Description	Qty.
1	26343	Main Fuse, 1 Ampere	1
2	26350	Control Fuse, 5 Ampere	1
3	091000032	ST-46-240 Replacement Module	1
4	091000039	Bypass Switch Lockbox (includes 2 mounting screws)	1
5	09420	Replacement Light Explosion Proof Lamp Assembly, Green, LED Style	1
6	09421	Replacement Light Explosion Proof Lamp Assembly, Red LED Style	1
7	50005	Socket Head Cap Screw, Stainles	16
8	21733	Corrosion Capsule	1
9	31340	O-ring cover seal	1
10	26022	Bypass Switch Contact Block	1
11	26093	Bypass Switch Operator, 2 Position	1
*	27065	Bulb, 240V, 6W*	

Notes:
Item 7: New socket head screw used on models built after 10/92.
Item 9: O-ring used on models built after 10/92.
Item 5, 6: LED style lights used on models built after 8/01
* Replacement bulb for incandescent style explosion-proof lights only.
Use on models built prior to 8/01.

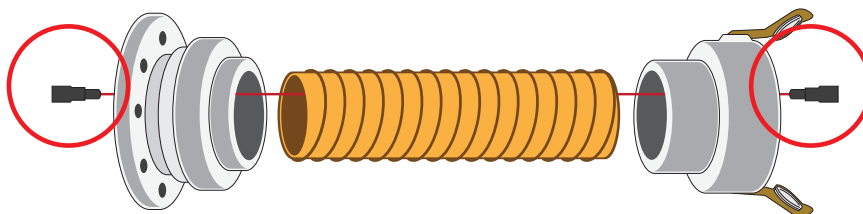


4.9 DWG 603000024 – Vapor Coupler Installation

ASSEMBLY STEPS

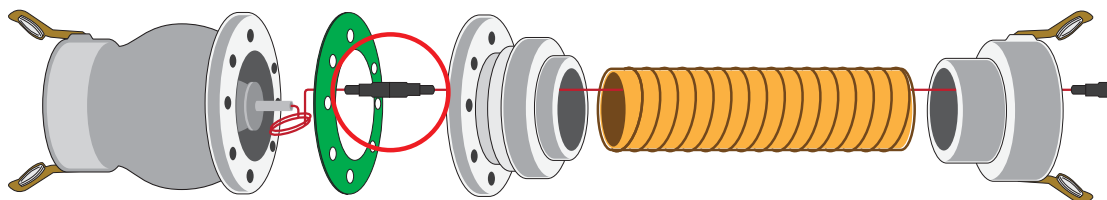
Step 1:

Route the supplied Signal Transfer cable through the vapor hose.



Step 2:

Connect the Signal Transfer Cable to the mating cable on the vapor coupler.

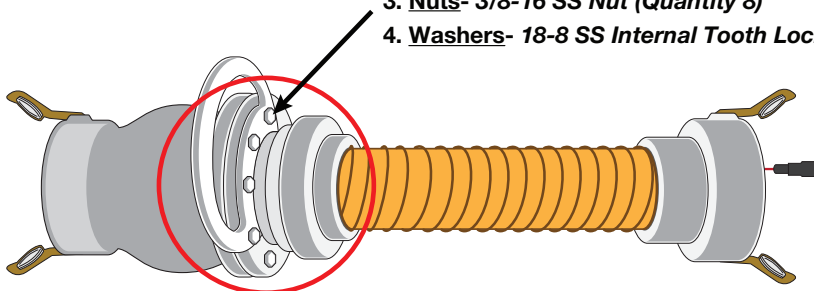


Gasket Recommendation: 4 X 1/16 Thick Fiber GTMA Full Face Gasket.

Step 3:

While the cable still attached, attach the coupler to the hose flange with necessary hardware AND the supplied carry handle.

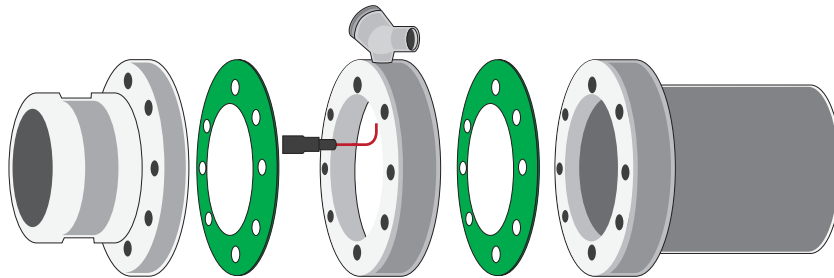
1. Long Screws- 3/8-16 SS, 1-5/8 Long Screw to Attach Handle (Quantity 4)
2. Short Screws- 3/8-16 SS, 1-3/8 Long Screw (Quantity 4)
3. Nuts- 3/8-16 SS Nut (Quantity 8)
4. Washers- 18-8 SS Internal Tooth Lock Washer for 3/8" Screw Size (Quantity 8)



ASSEMBLY STEPS *cont.*

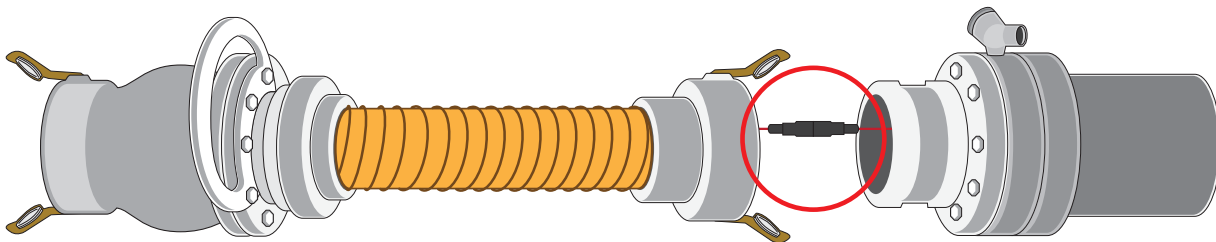
Step 4:

Install the Flange assembly (with the integrated cable) to the rack. Attach with necessary hardware. Shown is an example where the flange is attached to a TTMA style flange on the rack.



Step 5:

Connect the cable from the hose to the connector on the Flange. Install the hose to the Flange assembly with necessary hardware.



*When parking the coupler when no truck is in the lane, mount the handle on the hook.
Do not connect coupler to an adapter for storing purpose.*

Step 6:

Install the ST-46 controller on the rack terminal.

Enclosure:

The ST-46 is mounted in an explosion proof & weatherproof enclosure that is typically located near other rack equipment. Refer to typical loading rack installation for suggested mounting.

Physical Location:

- The front panel must be in the vertical position.
- The hinged front cover must be able to swing open for ease of servicing and chassis removal.
- The front panel indicators must be visible to the loader.

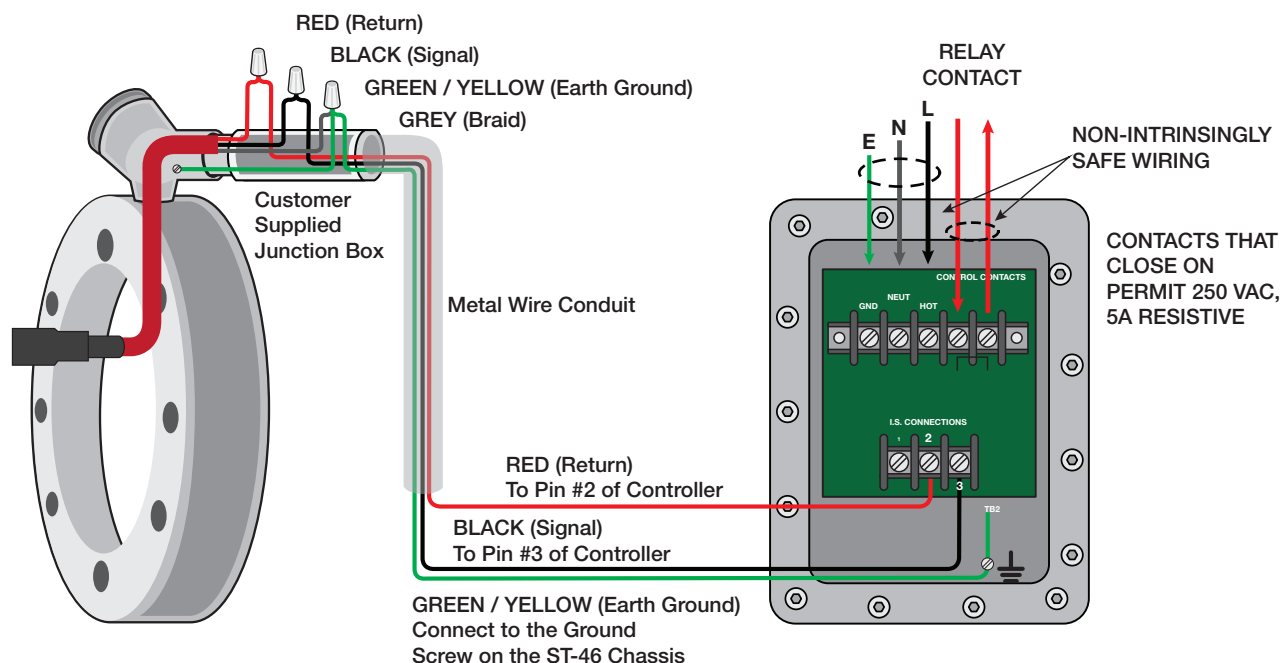


ASSEMBLY STEPS *cont.*

Step 7:

Complete the wiring from the gland port to the controller per the schematic.

Note that for sake of clarity the hose is not shown



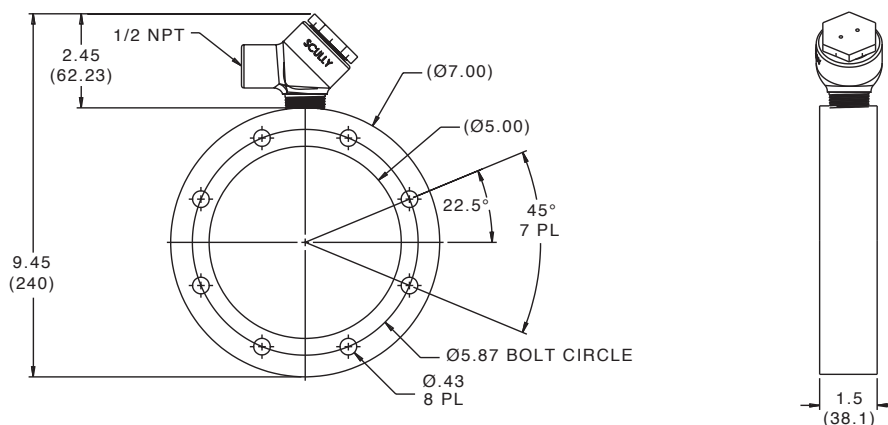
NOTES:

1. IMPORTANT: INTRINSICALLY SAFE AND NON-INTRINSICALLY SAFE WIRING MUST ALWAYS BE SEPARATED AND RUN IN SEPARATE CONDUITS.

2. WIRE TO BE 18 AWG MINIMUM, STRANDED AND TINNED. H07V-K OR UL 1015 RATED, AND MEET TEMPERATURE AND ENVIRONMENTAL EXPOSURE REQUIREMENTS FOR THE APPLICATION. COLOR OF WIRES SHOULD MATCH CONTROLLER TERMINAL COLORS—IF POSSIBLE. IN ALL CASES WIRING MUST MEET APPLICABLE NATIONAL, STATE AND LOCAL CODES.

3. INTERCONNECTION WIRING MUST NOT BE ALLOWED TO PASS THROUGH THE ST-46C HOUSING. UNDER NO CIRCUMSTANCES IS THE HOUSING TO BE USED AS A JUNCTION BOX. CONTROL (NON I.S.) WIRING MUST PASS IN AND OUT OF THE TOP CONDUIT ENTRY PORTS AND INTRINSIC SAFE (I.S.) WIRING MUST EXIT ONLY FROM THE BOTTOM CONDUIT ENTRY.

TECHNICAL DIAGRAM OF FLANGE ASSEMBLY





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Explosive Atmospheres – Part 0: Equipment – General Requirements [UL 60079-0:2019 Ed.7+R:19Jul2024]

Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures "d" [UL 60079-1:2015 Ed.7+R:22Apr2024]

Explosive Atmospheres - Part 11: Equipment Protection by Intrinsic Safety "i" [UL 60079-11:2013 Ed.6+R:25Jan2023]

Explosive Atmospheres — Part 0: Equipment — General Requirements (R2024) [CSA C22.2#60079-0:2019 Ed.4]

Standard(s)



AUTHORIZATION TO MARK

	Explosive atmospheres — Part 1: Equipment protection by flameproof enclosures "d" (2021) [CSA C22.2#60079-1:2016 Ed.3] Explosive Atmospheres — Part 11: Equipment Protection by Intrinsic Safety "I" (R2023) [CSA C22.2#60079-11:2014 Ed.2] Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements [UL 61010-1:2012 Ed.3+R:15Nov2024] Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements [CSA C22.2#61010-1-12:2012 Ed.3+U1;U2;A1;U3;U4]
Product:	Scully Signal Ground Hog and Vapor Connect System For use in Hazardous (Classified) Locations Class I, Zone 1, AEx db [ia Ga] IIB T6 Gb Provides Intrinsically Safe outputs [Ex ia] to Class I, Zone 0, Group IIB Ex db [ia Ga] IIB T6 Gb -40°C < Ta < +60°C
Brand Name:	
Models:	ST-46; followed by -115 or -240; and followed by -L or -LK. ST-47; followed by -115 or -240; followed by -L or -LK; and may be followed by /D.

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