

Scully ST-47C Groundhog

Technical Manual



ST-47C Series Self-Proving Vehicle Earthing Verification System

scully

MaxSafety®
SYSTEMS

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ST-47C Groundhog - Technical Manual

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The ST-47C Groundhog is an intelligent system that continuously and automatically monitors the earthing connection during loading operations at the gantry (loading terminal). The Groundhog is designed to immediately shut down the loading operation if the earth connection is broken.

The Groundhog control monitor is mounted at the gantry. Indicator lights on the cover of the control monitor are visual reference that proper earthing has or has not been accomplished.

The Groundhog requires that each vehicle be equipped with a specially designed Scully electronic Ground Ball or Ground Bolt. Before the loading operation can begin, the controller must see an intelligent return signal from the Ground Ball or Ground Bolt, indicating that a proper earthing connection has been made.

The Groundhog frustrates typical cheating methods and malfunctioning problems that can lead to earthing vehicles improperly. The ST-47C Groundhog insures that unless the proper earthing connection has been made, the loading process will not begin. It will automatically shut down the loading operation if the ground is broken.

1.1 Description

The ST-47C Groundhog can be wired into your existing Scully Overfill Prevention system for the ultimate safety system. One connection gives you overfill and earthing protection. This single connection simplifies loading and eliminates the need for additional plugs and cables at the gantry. When wired into an overfill prevention system, the ST-47C Groundhog utilizes a spare conductor in the existing Scully overfill prevention plug and cable together with a special Scully Ground Bolt mounted on each vehicle. The Scully Ground Bolt sensing lead is wired to the Scully overfill prevention socket.

The ST-47C Groundhog can be used as a completely independent system. This system is ideal for top loading or applications where a Scully Overfill Prevention System is not in use. The ST-47C Groundhog control monitor connects to a heavy duty Scully Sculcon® Junction Box Kit with attached cable and special quick release snap-on plug. The Scully Ground Plug connects to a specially designed electronic Scully Ground Ball mounted on each vehicle. The controller, in conjunction with the Ground Ball provides and verifies vehicle earthing before loading can begin. The controller must receive an electronic return signal from the Ground Ball throughout the loading operation.

1.1.1 Model Designations

The ST-47C Controller is available in 120VAC or 240VAC models, with or without control (Bypass) Switch.

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

Model	Description
ST-47C-120 EL	Controller in Explosion-proof Enclosure with Indicator Lights, 120VAC
ST-47C-120 ELK	Controller in Explosion-proof Enclosure with Indicator Lights and Key-lockable Bypass Switch, 120VAC
ST-47C-240 EL	Controller in Explosion-proof Enclosure with Indicator Lights, 240VAC
ST-47C-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 earth (ground) connection is verified Controller output is in permissive state i.e. permit to load.
OFF	ON	A good earth (ground) connection is not verified. Controller output is in non-permissive state i.e. no permit to load.
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 earth (ground) 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 earthing 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 earth ground verification is DISABLED and the system does not provide earth (ground) connection verification.

1.2 Technical Specifications

Temperature Range	-40°C to +60°C (-40°F to +140°F)
Power Requirements	120VAC Models: 100-130 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 contact
Vehicle Interface	Scully Ground Ball (via Ground Ball connector plug), Scully Ground Bolt (via plug for overfill prevention socket), Clamp connection (Resistive).
Output Relay	One normally open volt-free contact rated 250VAC, 5A resistive max. The output contact closes when a proper earth 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.
Enclosure	Explosion-proof weatherproof IP65
Dimensions	See Appendix 4 for outline drawing
Weight	12 Kg (26 Lbs.)
Approvals	Ex d [ia] IIB T5 Gb (T _{amb} = -40°C to +60°C) U _m = 120VAC or 240VAC U _o = 51V C _o = 19nF I _o = 17mA L _o = 40mH P _o = 0,215W L _o /R _o = 100μH/wΩ

The enclosure provides protection from hazardous area in accordance with standard IP65. The rating of the enclosure is negated if the holes in the enclosure are unplugged/unscruwed or any holes are drilled into the enclosure. Cover screws to be minimum grade A2-70 stainless steel. The ST-47C control unit 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-47C may only be repaired by replacing the internal control module. The internal control module is non-repairable.

WARNING: Do not open when an explosive gas atmosphere is present.

General

1.3 Accessory Equipment

In addition to the control unit, a plug and cable assembly is needed to provide the inter-connection from the ST-47C Control Unit to the vehicle.

Scully highly recommends the use of our Sculcon® Junction Box with Plug and Cable assembly. Use of Sculcon junction box simplifies system installation and provides for easy service of the plug and cable assembly for maintenance. Wiring the plug and cable assembly directly into the bottom of the ST-47C enclosure is not recommended and will result in greatly increased maintenance time and difficulty when the plug and cable assembly requires maintenance.

1.3.1 Sculcon Junction Box with Plug and Cable Assembly

One of the following junction box and cable kits is needed to make connection to a vehicle when fitted with Scully Ground Ball.

Model	Description
SC-47	Sculcon Junction Box Kit with 6m (20') straight cable and ground-proving plug for connection to vehicle mounted ground-proving ball (independent system).
SC-47CC	Sculcon Junction Box Kit with 10m (32') coiled cable and ground-proving plug for connection to vehicle mounted ground-proving ball (independent system).
SC-47CC-CLMP	Sculcon Junction Box Kit with 10m (32') coiled cable and isolated jaw, static ground clamp for connection to vehicle chassis (independent system). This Junction Box and Clamp Kit is required for connection directly to the frame of the vehicle. *

* Use of this cable requires operation of the ST47C system in its resistive verification configuration. Such use does not use a Ground Bolt or Ground Ball and, as such, does not have the anti-cheating advantages provided by the Ground Bolt or Ground Ball systems. Contact Scully Technical Services for more information.

For a list of cables that integrate the ST-47C into Overfill Prevention systems, consult Scully Tech Data Sheet 60614.

The ST-47C 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.

It is essential that the ST-47C control unit 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.

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 61442 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.

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 ground 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 for vehicle interconnection (via plug and cable assembly). 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-47C 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 static discharge path (earthing) between the gantry and the vehicle has been established (or when optional bypass switch is in the "Bypass" position). The contact opens if the discharge path 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: A valve or pump should be directly controlled by ST-47C's relay output contact. It should not go via the logic circuits of a TAS, as that can introduce unsafe failure modes into this emergency shutdown system. TAS may also control a valve or pump based on other conditions.

2.2.4 Intrinsically Safe Connections to Sculcon Plug & Cable Unit

Signals from ST-47C to Sculcon Plug & Cable Unit 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. Connect wires to Sculcon as shown in the Wiring Diagram in Appendix 4. Use wire colors as indicated. If other than suggested color codes are used, this information should be so noted in the back of this manual for future reference and troubleshooting. All wiring installation should be in accordance with local wiring codes.

2.3 Initial System Checkout

2.3.1 Test Equipment

Scully suggests the use of Scully ST-2-DSWJ Universal Loading Rack Tester to perform system tests out as described below. The tester will expedite the initial system checkout of the ST-47C (when integrally wired with overfill).

While not required, the tester provides all of the proper overfill prevention system connections to verify the new installation without the need to secure an actual vehicle for testing.

- ST-2-DSWJ Tester has multiple socket configurations for connection to all Scully Sculcon Plug Models.

Note: If the ST-47 is not being used integrally with a Scully overfill prevention system, you must provide a vehicle or simulation equipped with the ground verification device(s) installed.

2.3.2 Operational Testing

Apply power to the ST-47C control unit (and overfill control units, if present).

If the ST-47 is not equipped with a Bypass Control Switch then the red lamp should be lit and the Green lamp should be off.

If the unit is equipped with a Bypass Control Switch, place Bypass Control Switch in the normal position. Verify that the Red lamp is lit and Green lamp is off.

Bypass Equipped Units only: 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

Installation

On units equipped with Bypass Control Switch: 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 Sculcon plug to the socket on the tester. Follow instructions provided with the tester. As the tester simulates a vehicle's overfill system and a Ground Bolt, the Overfill Control and ST-47C outputs will go permissive with green light ON and red light OFF.

CAUTION: BEFORE PERFORMING ANY MAINTENANCE ON THE CONTROL UNIT, DISCONNECT POWER TO THE ST-47C 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-47C 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-47C 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-47C 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-47C Control Unit. Make sure the work area is gas vapour free.
2. To open the ST-47C Control Unit cover, remove the (16) hex socket head bolts by using a 6mm hex wrench.
3. Mark/label wires connected to TB1 on printed circuit board (to be able to reconnect to the same terminal numbers on the replacement module).
4. Disconnect all wires connected to TB1.
5. Mark/label wires connected to TB2.
6. Disconnect all wires connected to TB2.
7. 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.

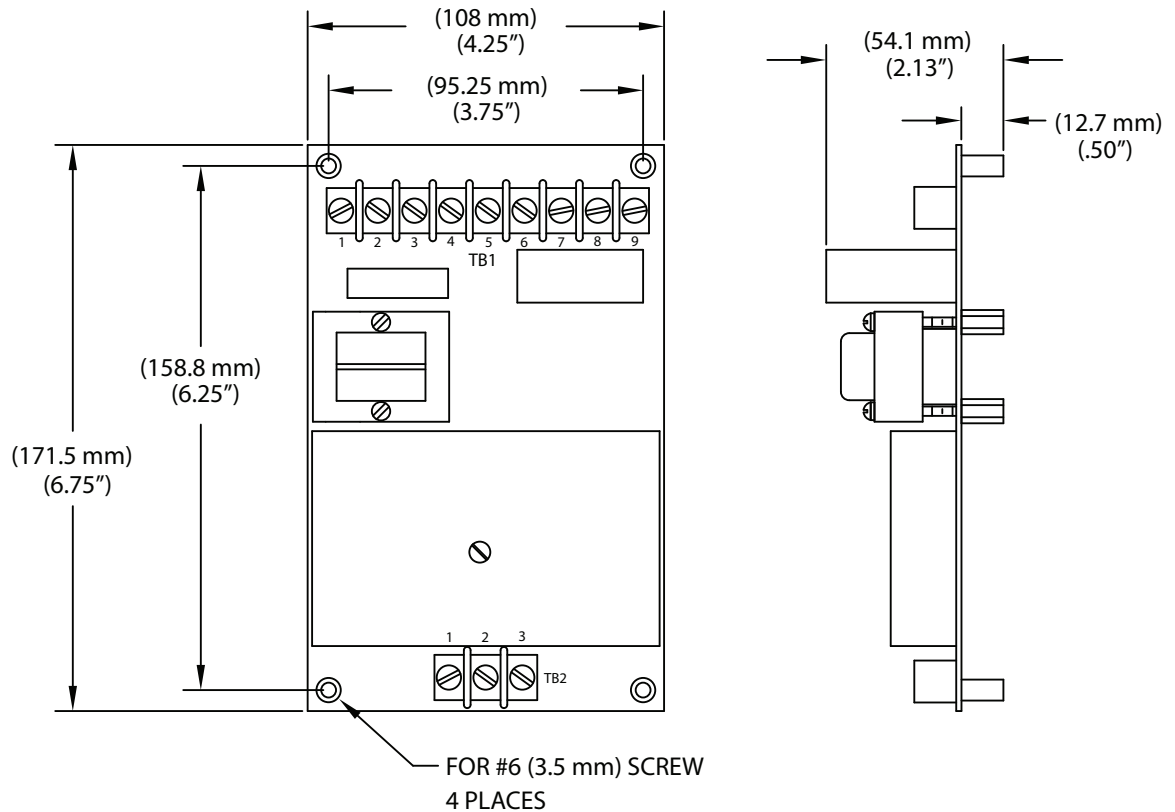


Figure 1: ST-47C Control Module Illustration

Note: The ST-47C Replacement Control Module cannot be repaired in the field. A damaged or faulty module must be replaced with an equivalent Scully ST-47C Control Module. The ST-47C 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 aggressive substances that may attack the exposed material.

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).

Note: Older ST-47C Controllers employed incandescent style lights. These require replacement of bulb if it blows. Refer to Replacement Parts Sheet in Appendix 4. Switch off AC power supply to the controller before replacing a bulb.

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 **Junction Box and Plug & Cable Unit**

The Sculcon Junction Box and Cable unit requires simple routine maintenance. More attention is needed in highly corrosive environments.

Although it is not required, we recommend that the exposed electrical contact of the plug be coated with a corrosion inhibiting film routinely (once per month is suggested). Corrosion inhibiting spray, ACF-50 Corrosion Block® (manufactured by Lear Chemical Research Corporation, Mississauga ON Canada www.learchem.com). Other external metal parts of these accessories may also be treated as necessary to prevent atmospheric corrosion problems.

The exterior surface of the plug should be kept clean using a mild detergent based cleaning solution and water. The cabling should be routinely wiped of foreign material and cleaned to preserve the outer jacket. To protect it from loading arm damage etc., it is important to store the plug and cable out of harms way when it is not in use. A hook is provided on Sculcon Junction Box or, if an overfill prevention plug is used, a Scully Storage Socket may be used.

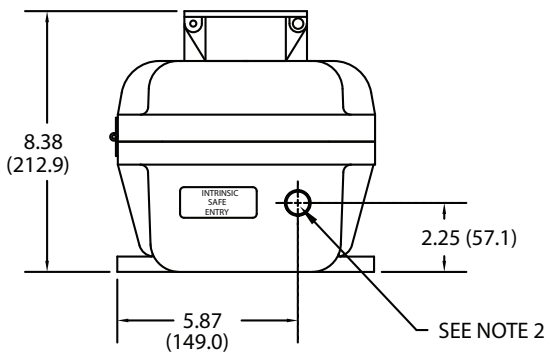
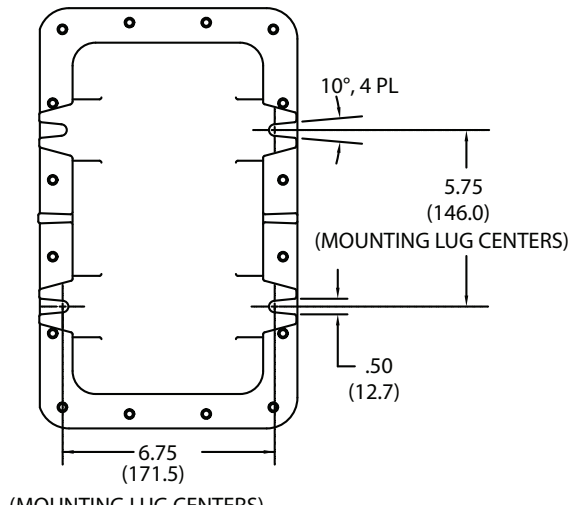
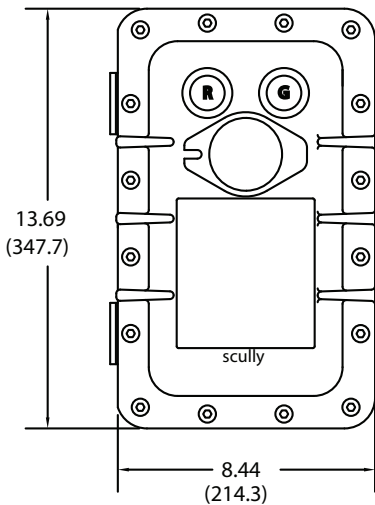
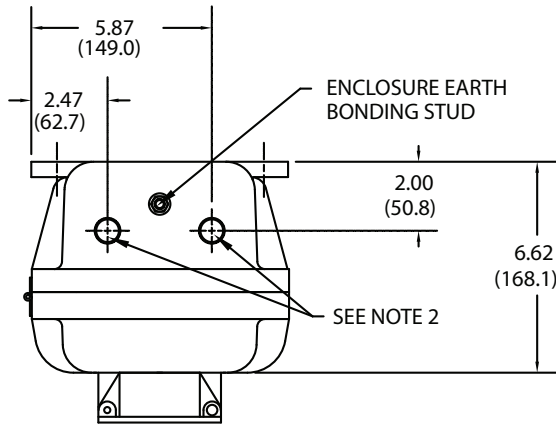
3.8 **Troubleshooting**

The following troubleshooting guide should aid in an initial diagnosis of most problems encountered with installation and operation of ST-47C.

Condition	Possible Cause
No lights ON, on front cover	<ul style="list-style-type: none"> • No power to control unit • Control (Bypass) Switch in OFF 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	<ul style="list-style-type: none"> • Control Output fuse (F2) is blown • Wiring defect (control output contact wiring) • Control Module is defective
Red (Non-permissive) light stays ON when connected to vehicle equipped with Ground Ball (or Ground Bolt)	<ul style="list-style-type: none"> • Fault in wiring to junction box and/or plug • Ground Ball (or Ground Bolt) not installed properly on vehicle. • Bad plug to Ground Ball or Ground Bolt socket connection • Control Module is defective • Incorrect wiring to ST-47C TB2

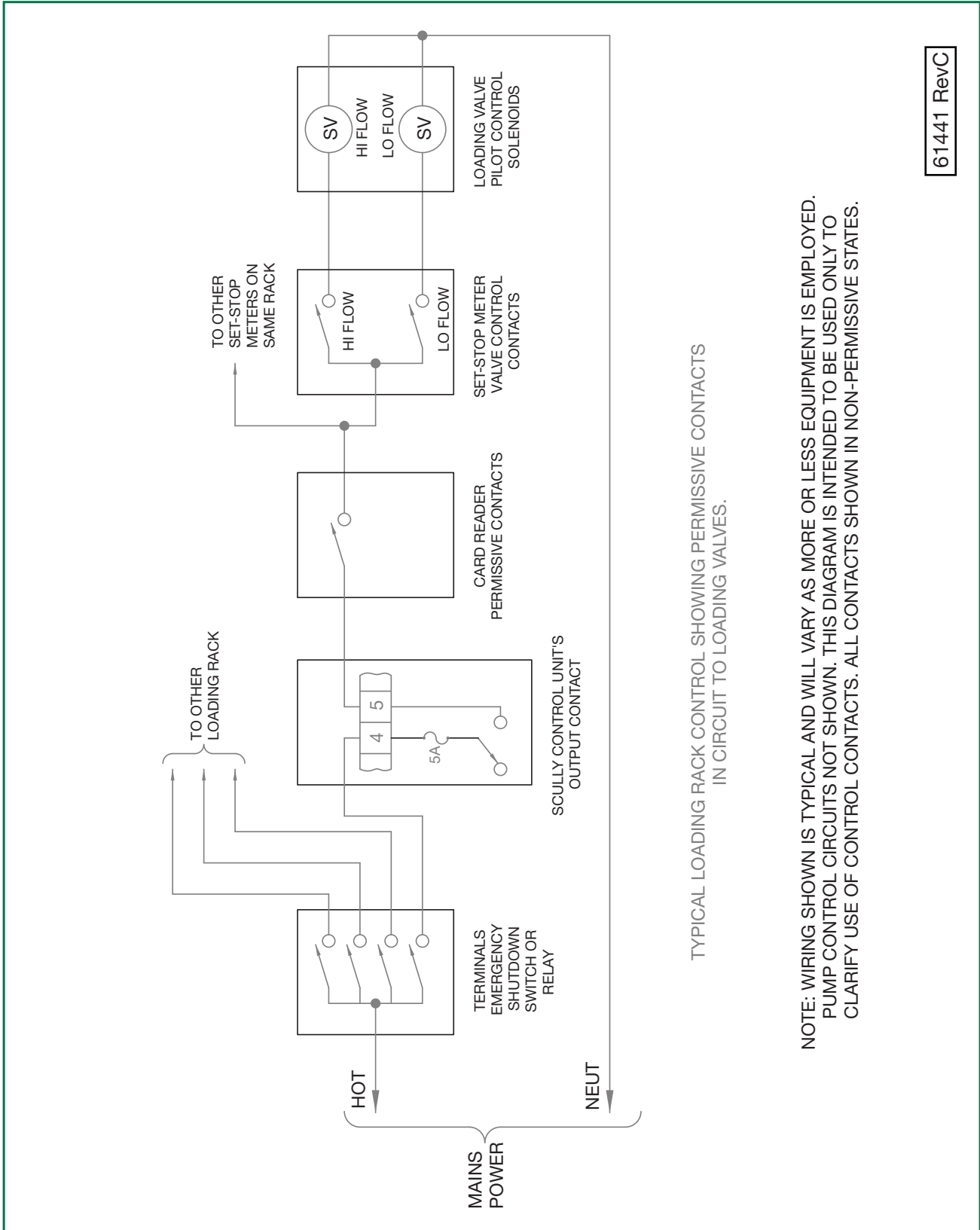
4.1 DWG 31412 – Outline Drawing – Control Unit Enclosure

31412 RevC

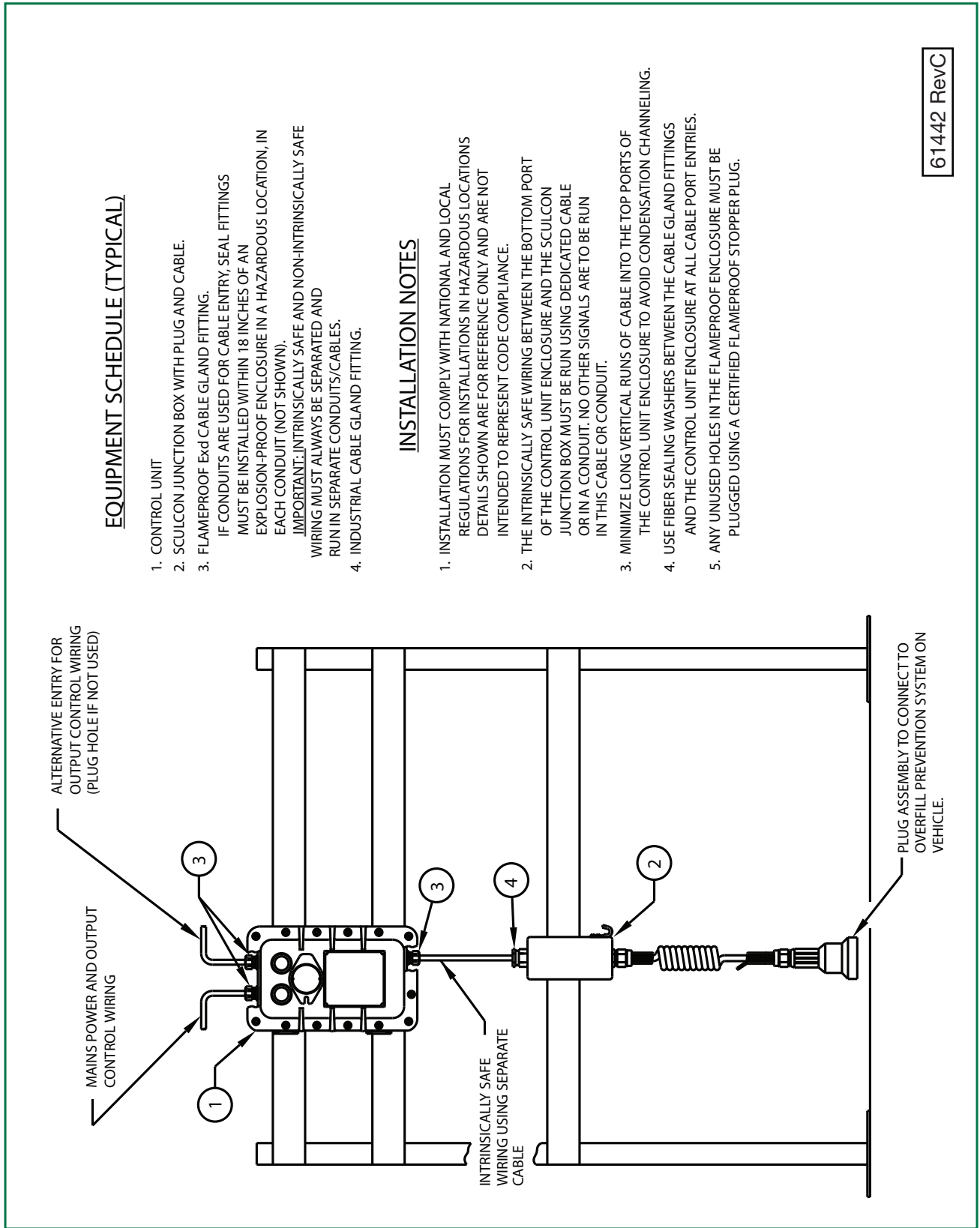


- NOTES:
1. DIMENSIONS ARE IN INCHES WITH MILLIMETERS IN PARENTHESES.
 2. ENTRY HOLES:
 FMC APPROVED MODELS: 3/4" NPT
 ATEX APPROVED MODELS: M20 X 1.5

4.3 DWG 61441 - Wiring Diagram - Typical Loading Rack Control



4.4 DWG 61442 – Mounting Diagram – Control Unit & Junction Box



EQUIPMENT SCHEDULE (TYPICAL)

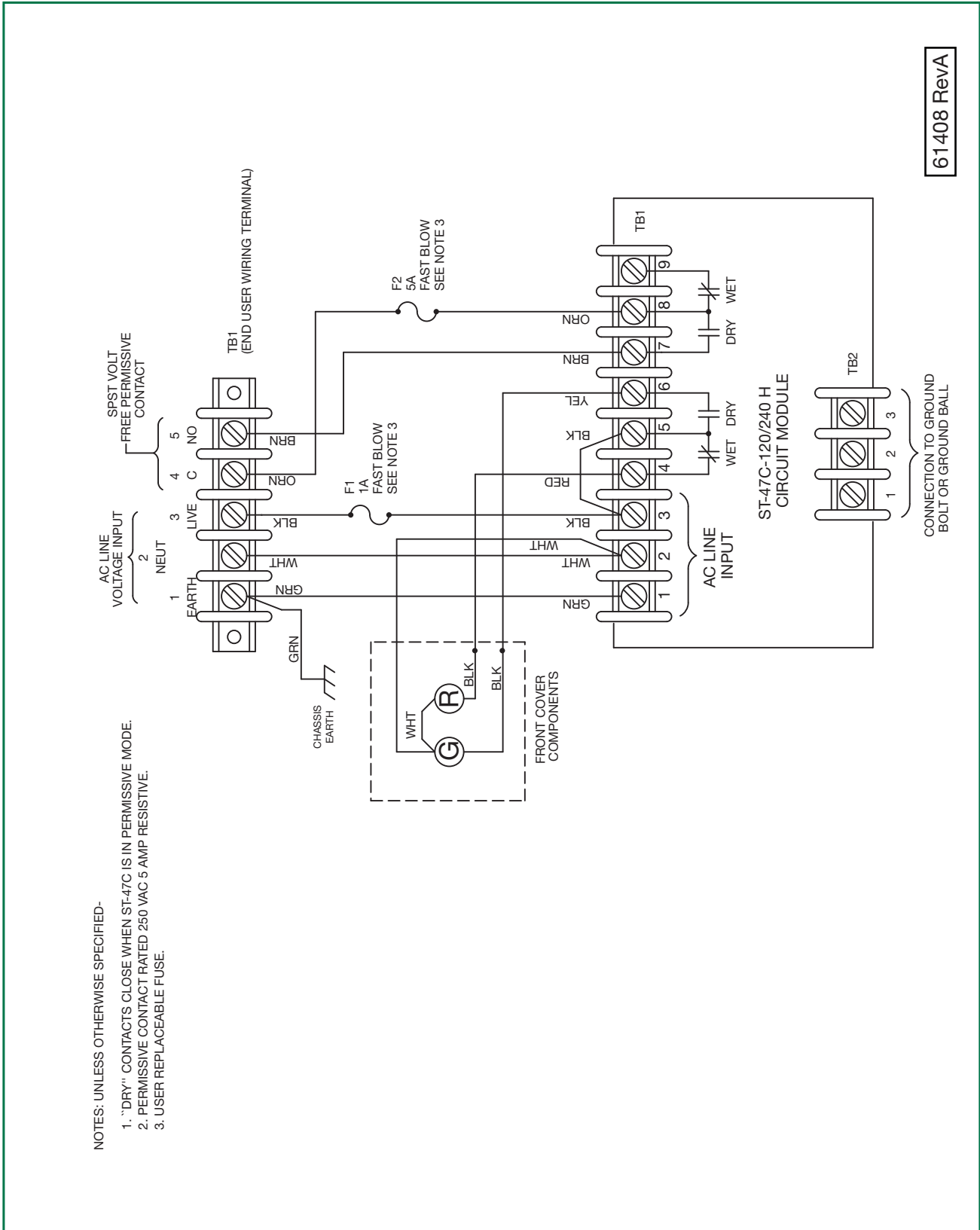
1. CONTROL UNIT
2. SCULCON JUNCTION BOX WITH PLUG AND CABLE.
3. FLAMEPROOF Exd CABLE GLAND FITTING.
IF CONDUITS ARE USED FOR CABLE ENTRY, SEAL FITTINGS MUST BE INSTALLED WITHIN 18 INCHES OF AN EXPLOSION-PROOF ENCLOSURE IN A HAZARDOUS LOCATION, IN EACH CONDUIT (NOT SHOWN).
IMPORTANT: INTRINSICALLY SAFE AND NON-INTRINSICALLY SAFE WIRING MUST ALWAYS BE SEPARATED AND RUN IN SEPARATE CONDUITS/CABLES.
4. INDUSTRIAL CABLE GLAND FITTING.

INSTALLATION NOTES

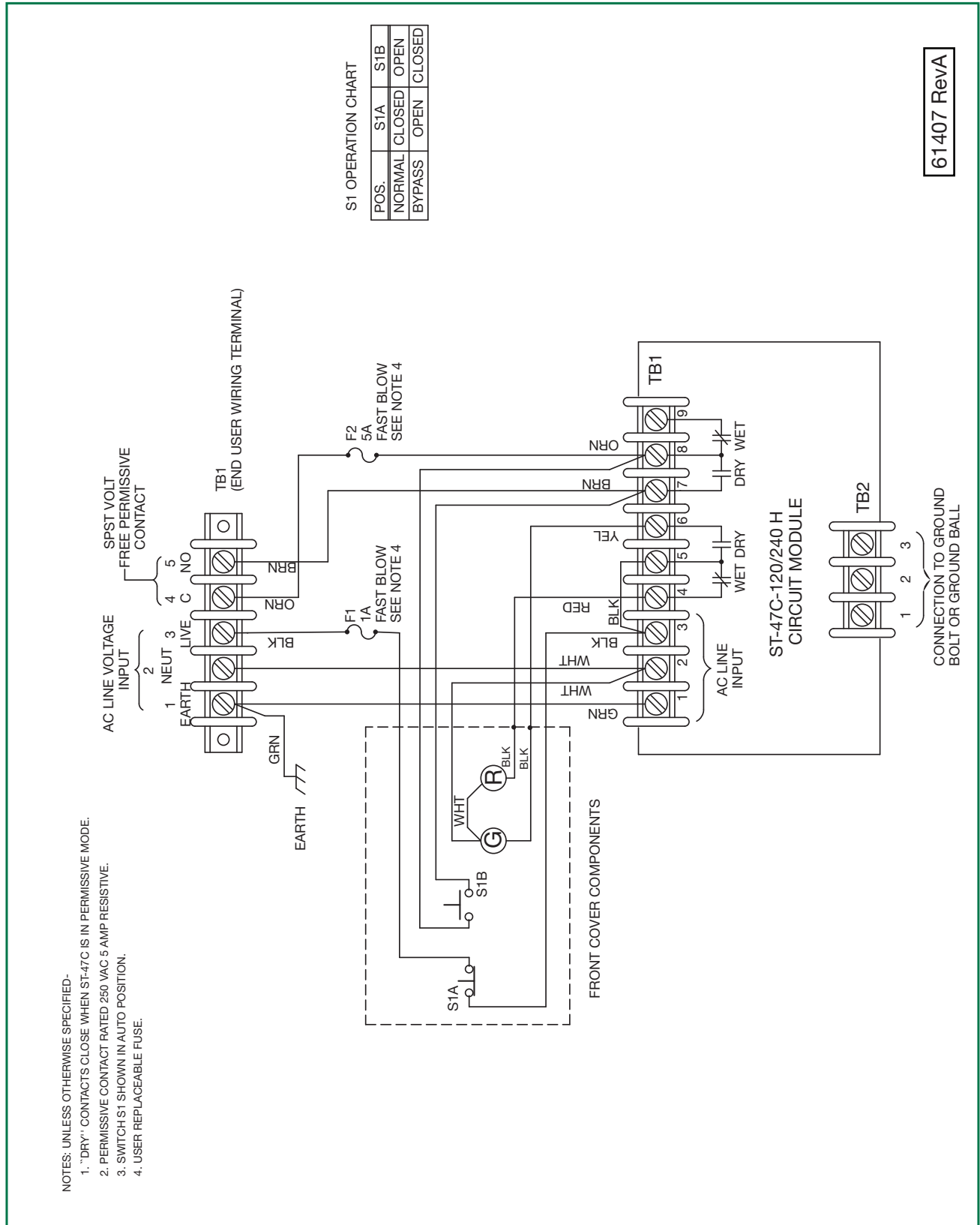
1. INSTALLATION MUST COMPLY WITH NATIONAL AND LOCAL REGULATIONS FOR INSTALLATIONS IN HAZARDOUS LOCATIONS. DETAILS SHOWN ARE FOR REFERENCE ONLY AND ARE NOT INTENDED TO REPRESENT CODE COMPLIANCE.
2. THE INTRINSICALLY SAFE WIRING BETWEEN THE BOTTOM PORT OF THE CONTROL UNIT ENCLOSURE AND THE SCULCON JUNCTION BOX MUST BE RUN USING DEDICATED CABLE OR IN A CONDUIT. NO OTHER SIGNALS ARE TO BE RUN IN THIS CABLE OR CONDUIT.
3. MINIMIZE LONG VERTICAL RUNS OF CABLE INTO THE TOP PORTS OF THE CONTROL UNIT ENCLOSURE TO AVOID CONDENSATION CHANNELING.
4. USE FIBER SEALING WASHERS BETWEEN THE CABLE GLAND FITTINGS AND THE CONTROL UNIT ENCLOSURE AT ALL CABLE PORT ENTRIES.
5. ANY UNUSED HOLES IN THE FLAMEPROOF ENCLOSURE MUST BE PLUGGED USING A CERTIFIED FLAMEPROOF STOPPER PLUG.

61442 RevC

4.5 DWG 61408 – Internal Wiring Diagram - ST-47C-EL



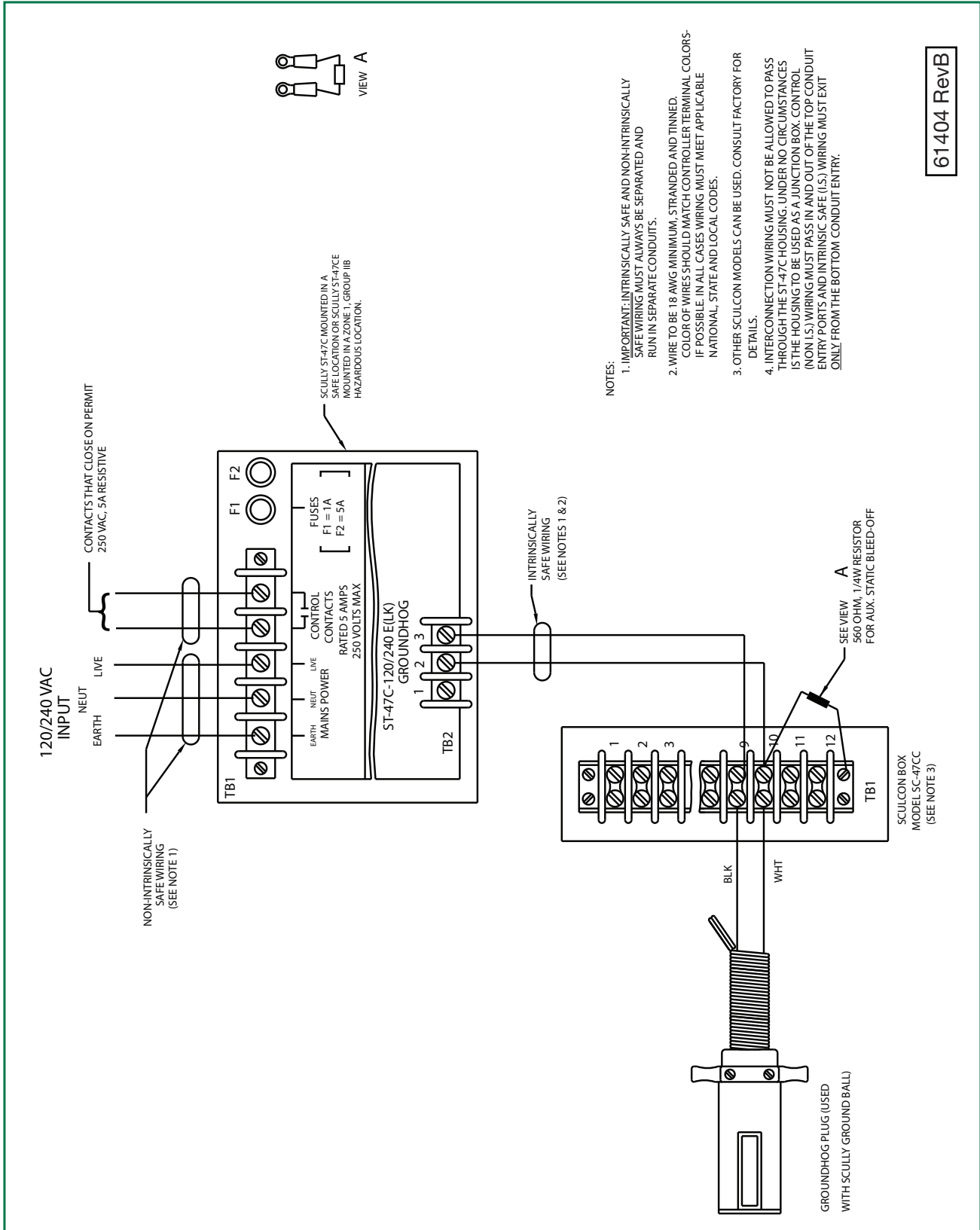
4.6 DWG 61407 – Internal Wiring Diagram - ST-47C-ELK



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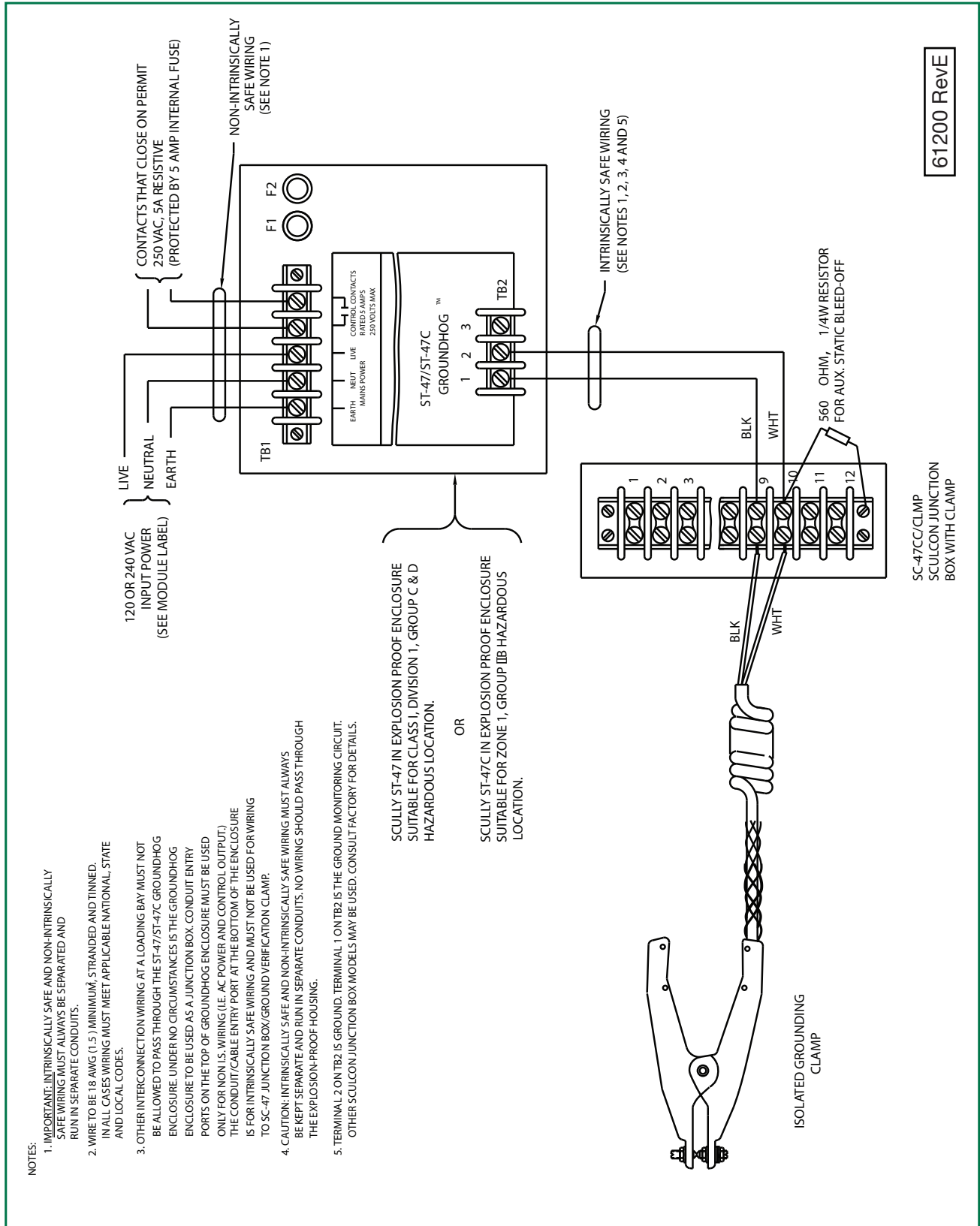
Diagram Appendix

4.7 DWG 61404 – Installation Wiring Diagram, ST-47C w/ SC-47 Plug



61404 RevB

4.8 DWG 61200 – Installation Wiring Diagram, ST-47C w/ SC-47 Clamp



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Diagram Appendix

4.9 DWG 61405 – Installation Wiring Diagram, ST-15C/ST-47C

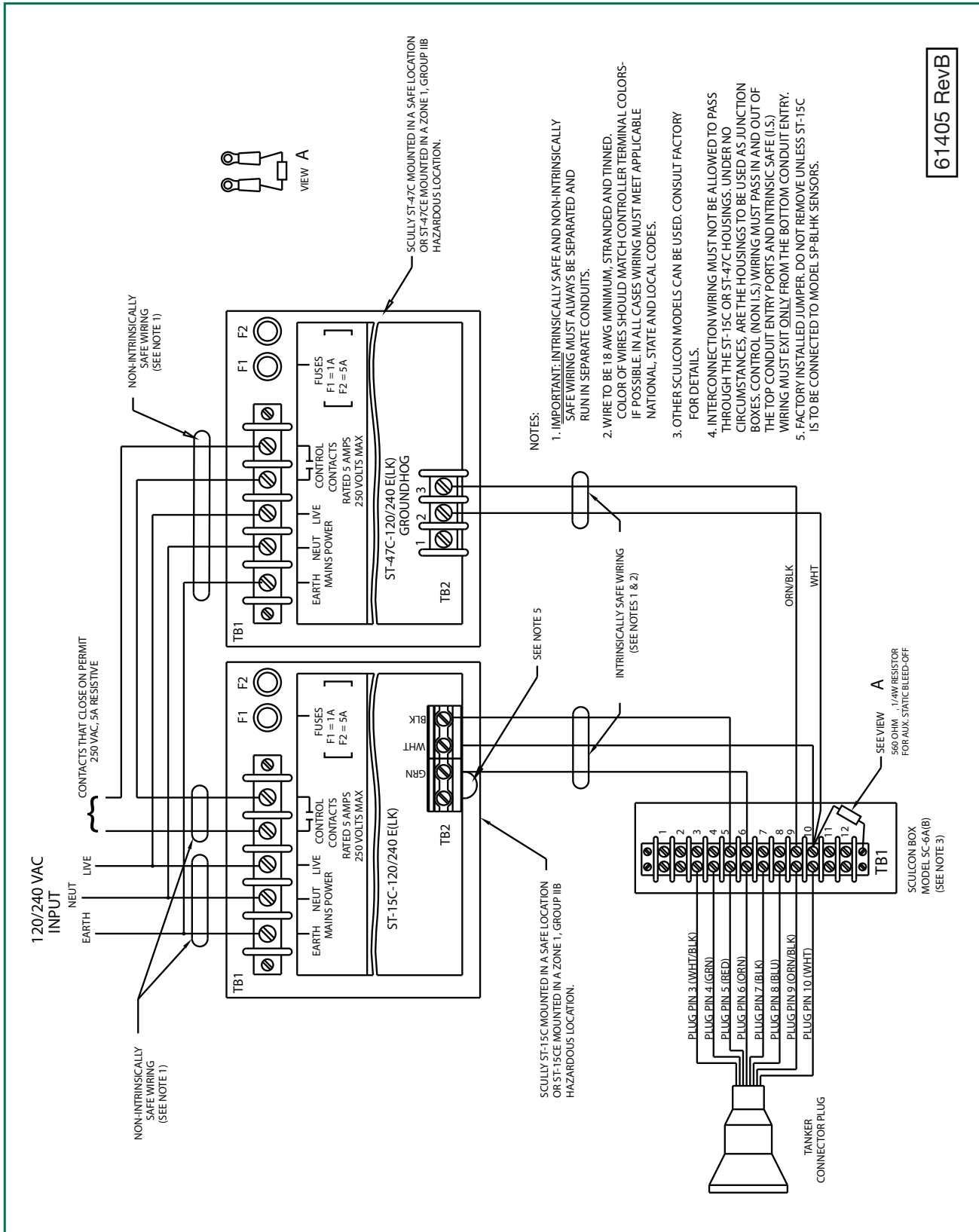
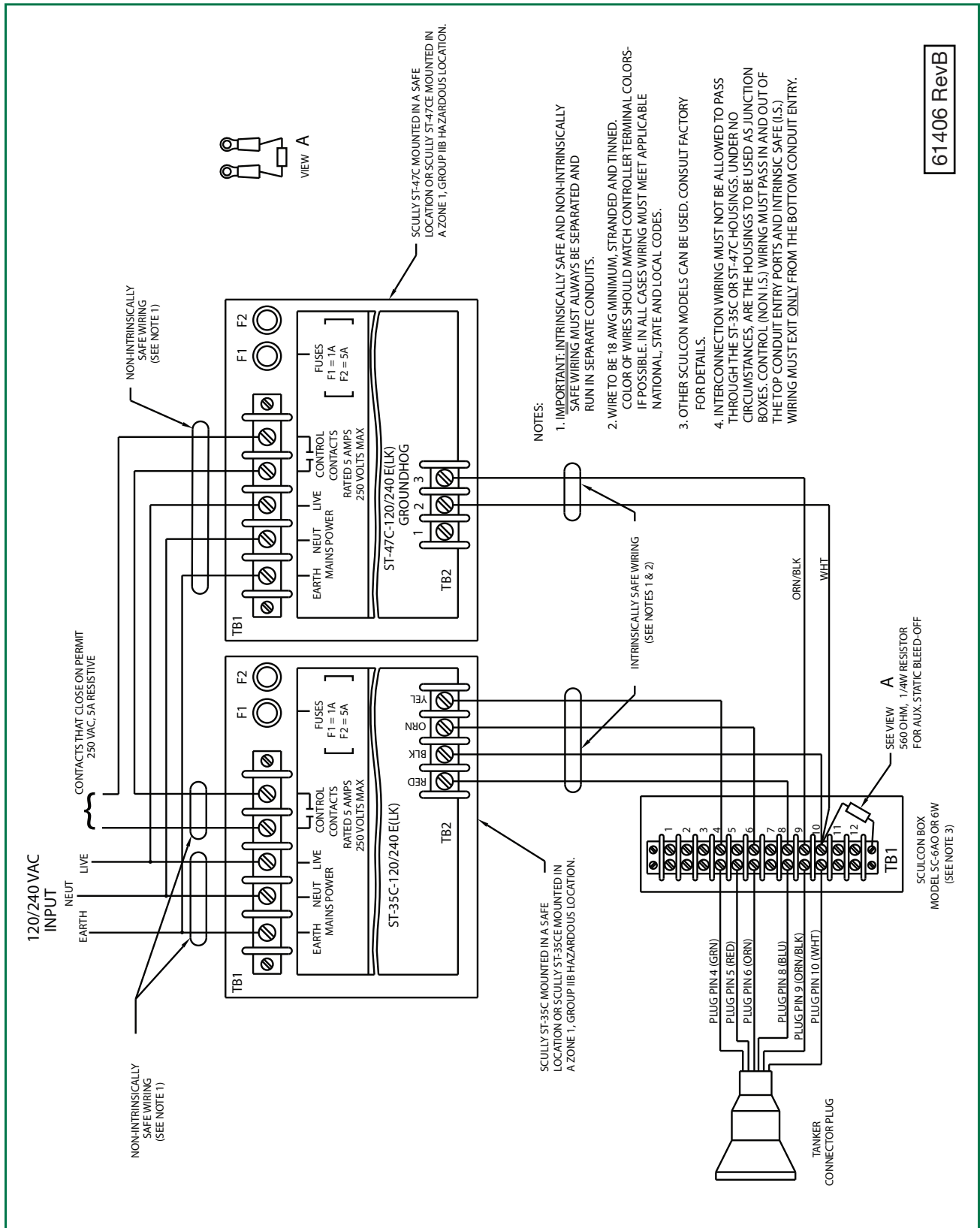


Diagram Appendix

4.10 DWG 61406 – Installation Wiring Diagram, ST-35C/ST-47C



61406 RevB

4.11 DWG 61557 – Replacement Parts ST-47C-120

REPLACEMENT PARTS for ST-47C 120VAC

ST-47C 120VAC

Groundhog™ Vehicle Earthing Controller
ATEX Models

Part No.	Model
08844	ST-47C-120 EL
08845	ST-47C-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	09511	ST-47C-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*	

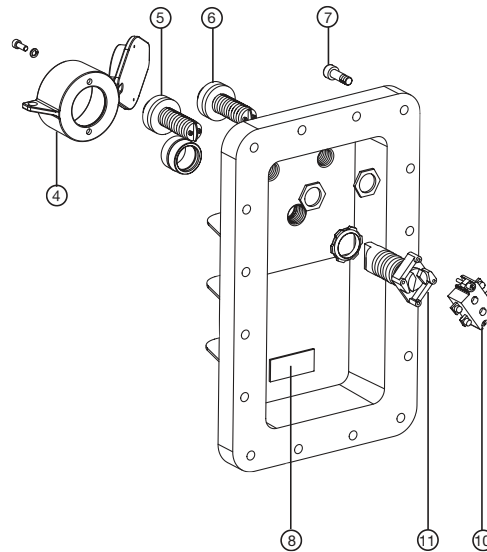
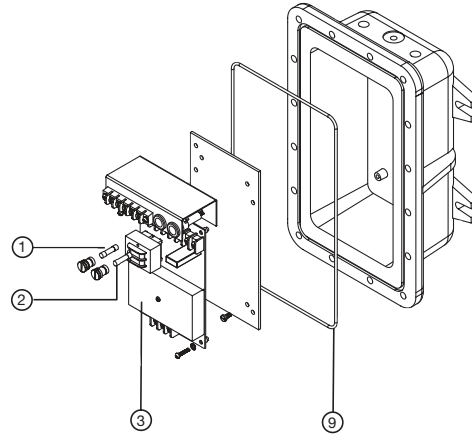
Notes:

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.



61557, Rev B 2013

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Dynamic Self-Testing® Overfill Prevention Systems

4.12 DWG 61274 – Replacement Parts ST-47C-240

REPLACEMENT PARTS for ST-47C 240VAC

ST-47C 240VAC

Groundhog™ Vehicle Earthing Controller
ATEX Models

Part No.	Model
08710	ST-47C-240 EL
08711	ST-47C-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	09512	ST-47C-240 Replacement Module	1
4	08350	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*	

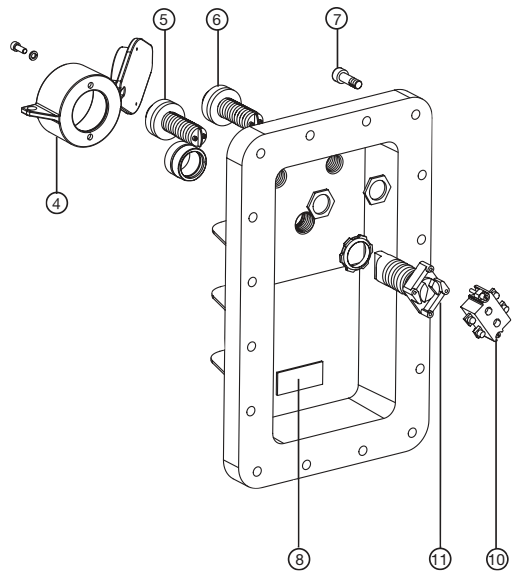
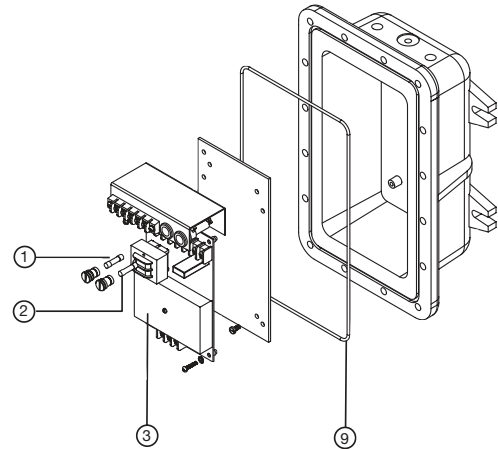
Notes:

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.



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61274, Rev D 2013

Dynamic Self-Testing® Overfill Prevention Systems

Notes:

Notes:

Notes:

Scully - Setting Standards in Safety and Dependability since 1936.

For over seventy-five years Scully has been engineering and building products to the highest safety and reliability standards. We design and manufacture all of our systems under one roof to ensure complete quality control over our manufacturing and testing operations. Scully is ISO certified and all of our products are 100% made in the U.S.A. In addition, we back up our products with the best service in the industry. We have direct sales and service personnel in the U.S.A., The United Kingdom, and Europe and are represented in over 50 countries.

*For more information and 24 hour technical assistance,
call Scully Signal Company at 1-800-SCULLY (1-800-272-8559).*

Scully Headquarters in Wilmington, MA U.S.A.

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