
Company, Inc.
Location

Electrical Compliance Audit
December 04, 2007



Electrical Solutions Corporation
2368 Eastman Ave, Suite 13,
Ventura CA 93003

Greetings,

On December 4, 2007, Electrical Solutions conducted a field audit of the electrical installation at *location*. This audit focused primarily on physical construction and did not address any of the *design* issues which may need to be revisited. For example, we did not check breaker or conductor sizes for feeders or branch circuits. We did not check the breaker or overload trip settings for motors, or compare those settings with code requirements. And we did not check the conductor fill of electrical conduits or conduct any ampacity correction or derating calculations.

In our experience, these types of code violations are much more common and harder to detect than the code violations listed in this report. Based on the quality of work found in this preliminary inspection, we recommend further, more detailed audits.

In the following sections, you will find a thumbnail picture of each area of the plant, along with a brief description of the code violation(s) which are involved. The thumbnail picture is a hyperlink to full-sized picture which is located in the "pics" folder on this same CD. Also, hyperlinks have been added for each code violation, to the [reference section](#) at the end of this document, where more detailed excerpts of the code may be found. If in doubt, however, you should check the full code reference by looking it up in the 2005 edition of the National Electric Code (NEC).

What we find most disturbing in this audit is that these code violations do not appear to be the result of a lapse in judgment, but rather a lack of *knowledge* of the NEC. The NEC is not something that is secret or arcane... it is the *basic standard* for all electrical work in the United States. Every single journeyman electrician, anywhere in the U.S., should know this code. Further, it is not a bunch of rules that some inspector thought up just to be difficult... it is a *consensus-based* standard that identifies the minimum requirements which are necessary for safeguarding people and property. Each one of these code violations represents a safety issue that must be resolved.

Sincerely,

Duane Couch and Rick Hurdle
Electrical Solutions Corporation

PV-V4 - (pic 3694)

- Arcing device must have a seal. [Article 501.15\(B\)\(1\)](#).
- Field device should have ID tag.
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



PV-V4 - (pic 3695)

- Conductors should have labels identifying the source of supply.



PV-V4 - (pic 3696)

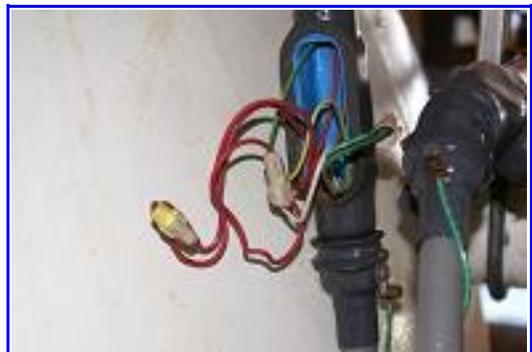
- Conduit body must be supported. [Article 314.23\(E\)](#).

Note: Sealtite cannot be used to support a conduit body, and if the nipple is considered to be the “support” for the conduit body, then it, in turn, would need to be rigidly supported (just like any other conduit).



PV-V4 - (pic 3697)

- Conductors should have labels identifying the source of supply.



V4 Alarm Panel - (pic 3698)

- 7 conduits need proper support.
- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30.](#)
- MC cable must be secured within 3 ft of each connection point if it contains four or fewer conductors sized no larger than 10 AWG. [Article 330.30.](#)



V4 Micro Motion Transmitter - (pic 3699)

- Arcing device must have seals. [Article 501.15\(B\)\(1\).](#)
- Sealtite requires bonding jumper. [Article 501.30\(B\).](#)
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.
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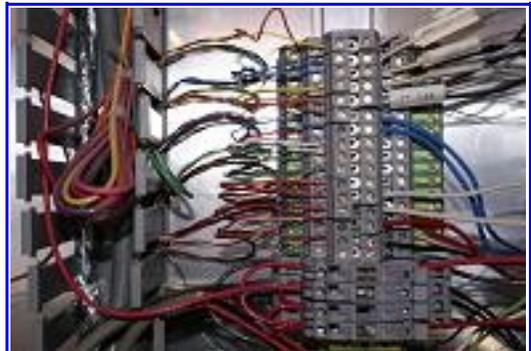
V4 Alarm Panel - (pic 3700)

- All conduits and metal parts, including the backpanel, need to be bonded together inside the fiberglass enclosure. [Article 250.100.](#)
- Glass fuses are an arcing device – panel must be purged. [Article 501.115\(B\)\(3\).](#)
- Unused loose wires should be terminated - not left open-ended.



V4 Alarm Panel - PLC Analog Pairs - (pic 3701)

- Class 1 signaling circuits must be a minimum of 18 AWG. [Article 725.27 \(A\).](#)
- Conductors should have labels identifying the source of supply.
- Analog cables should be shielded to reduce the electrical noise imposed on them from their surrounding environment.



V4 Alarm Panel - (pic 3702)

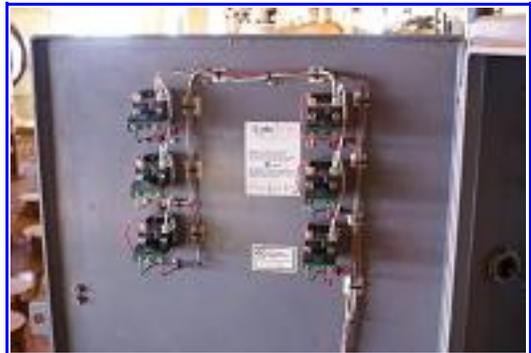
- Construction trash should be removed from the inside of the panel – bits of wire, insulation, paper, fiberglass dust, etc.



V4 Alarm Panel - (pic 3703)

- Conductors should have labels identifying the source of supply.

Note: troubleshooting is extremely difficult when conductors are not properly identified. Identifying these conductors during the construction phase is much, much easier than during a dark and stormy night.



V4 Transmitters - (pic 3704)

- Arcing devices must have seals. [Article 501.15\(B\)\(1\)](#). UTV4A, 4TV4B, PIT U-4B, and PIC V-4A.
- Sealtite cannot be connected directly to a conduit coupling. Since neither the connector nor the coupling have tapered threads, it is impossible to make a lasting, low impedance connection. [Article 250.4\(A\)\(5\)](#).



V4 TV-E3 - (pic 3706)

- Sealtite requires bonding jumper. [Article 501.30\(B\)](#).
- Conduit body must be supported. [Article 314.23\(E\)](#).



Cable Support - (pic 3707)

- Conduit cannot be used to support cables. [Article 300.11\(B\)](#).



SDV-V1 and SDV-V3 - (pic 3709)

- SPDT switches are arcing devices which must to be sealed. [Article 501.15\(B\)\(1\)](#).
- Seal-tite requires bonding jumper. [Article 501.30\(B\)](#).
- Seal-tite cannot exceed 3' in length. [Article 501.10.\(B\)\(2\)](#).



PV-V1B - (pic 3710)

- Seal-tite to I/P must be supported. [Article 350.30](#).
- Seal-tite requires bonding jumper. [Article 501.30\(B\)](#).



T37 above V-2 for GDXE-21 - (pic 3711)

- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).



Micro Motion Transmitter - (pic 3717)

- Label on device states that transmitter must be sealed within 18 inches.



Jamesbury Shutdown Valve - (pic 3718)

- Sealrite cannot exceed 3' in length. [Article 501.10.\(B\)\(2\)](#).
- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).



P-3A and P-3B – Shipping Pumps - (pic 3726)

- Seal must be poured. [Article 501.15\(C\)\(2\)](#).
- Union should be installed on other side of seal.
- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- Start/Stop station requires seals and everything between the Start/Stop and the seal needs to be explosionproof. [Article 501.15\(B\)\(1\)](#).



GDXE B-17 Gas Detector - (pic 3727)

- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- Label on device indicates that it is a potential ignition source, and therefore must be sealed.
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



SDV-P3A and SDV-P3B - (pic 3728)

- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- Arcing devices should have an explosionproof union between the device and the seal to facilitate servicing.



P3A / P3B Alarm Panel - (pic 3729)

- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- Sealrite cannot exceed 3' in length. [Article 501.10.\(B\)\(2\)](#).
- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).



P3A / P3B Alarm Panel - (pic 3730)

All comments from pics 3700 and 3701 apply here.

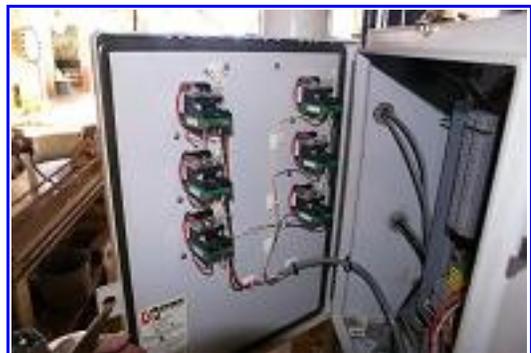
- Bond conduits and backpanel,
- Purge enclosure
- Terminate all wires
- Minimum wire size: #18 AWG
- Label all conductors
- Install shielded cable



P3A / P3B Alarm Panel - (pic 3731)

- Conductors should have labels identifying the source of supply.

Note: troubleshooting is extremely difficult when conductors are not properly identified. Identifying these conductors during the construction phase in much, much easier than during a dark and stormy night.



P3A / P3B Alarm Panel - (pic 3732)

- Construction trash should be removed from the inside of the panel – bits of wire, insulation, paper, fiberglass dust, etc.



PIT-3A1, -3B1, -3A2, -3B2 - (pic 3733)

- PIT-3B2 must have a seal installed. [Article 501.15\(B\)\(1\)](#).
- All 4 transmitters should have unions between the device and the seal to facilitate servicing.
- Sealtite requires bonding jumper. [Article 501.30\(B\)](#).
- Sealtite cannot exceed 3' in length. [Article 501.10.\(B\)\(2\)](#).



Control Valve on Recycle to V-8 - (pic 3734)

- Sealtite requires bonding jumper. [Article 501.30\(B\)](#).
- Sealtite cannot exceed 3' in length. [Article 501.10.\(B\)\(2\)](#).
- I/P must be sealed (and have a plug installed on the non-sealed end). [Article 501.15\(B\)\(1\)](#).
- Field device should have ID tag.
- Install union between seal and I/P.



LB27 above P3A/P3B Alarm Panel - (pic 3735)

- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).



T28 above SDV-P3B - (pic 3736)

- Conduit body cover must be installed.
- Check that plug in installed in unused hub.



GDXE B-18 Gas Detector - (pic 3737)

- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- LB must be explosionproof or placed on other side of seal. [Article 501.15\(C\)\(2\)](#).
- Arcing devices should have an explosionproof union between the device and the seal to facilitate servicing.



GDXE B-19 Gas Detector - (pic 3738)

- All parts of the conduit system between the seal and the explosionproof enclosure must be explosionproof. [Article 501.15\(C\)\(2\)](#).
- Arcing devices should have an explosionproof union between the device and the seal to facilitate servicing.
- Install device >> union >> seal >> LB or
- Device >> union >> EP LB >> seal.



V1 and V3 Alarm Panel - (pic 3740)

- Arcing device must have seals. [Article 501.15\(B\)\(1\)](#).
- Sealtite requires bonding jumper. [Article 501.30\(B\)](#).
- Sealtite max 3ft [Article 501.10\(B\)\(2\)](#).
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



V1 and V3 Alarm Panel - (pic 3741)

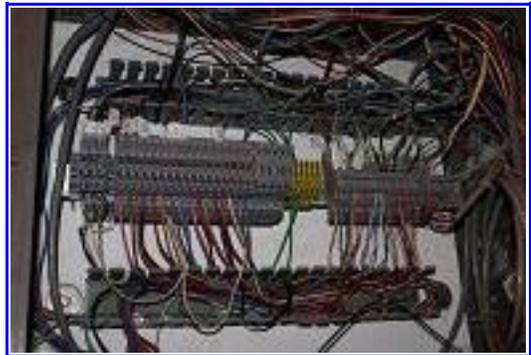
- Construction trash should be removed from the inside of the panel – bits of wire, insulation, paper, fiberglass dust, etc.



V1 and V3 Alarm Panel - (pic 3742)

All comments from pics 3700 and 3701 apply here.

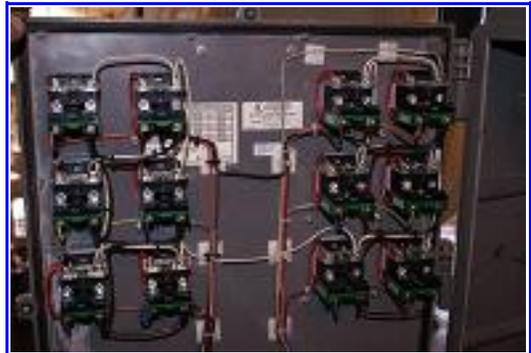
- Bond conduits and backpanel,
- Purge enclosure
- Terminate all wires
- Minimum wire size: #18 AWG
- Label all conductors
- Install shielded cable



V1 and V3 Alarm Panel - (pic 3743)

- Conductors should have labels identifying the source of supply.

Note: troubleshooting is extremely difficult when conductors are not properly identified. Identifying these conductors during the construction phase is much, much easier than during a dark and stormy night.



V1 and V3 Alarm Panel - (pic 3745)

- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).



LY-V4B near V3 - (pic 3746)

- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- Sealrite cannot exceed 3' in length. [Article 501.10\(B\)\(2\)](#).
- I/P must be sealed [Article 501.15\(B\)\(1\)](#).
- Condulet must be supported. [Article 314.23\(E\)](#).
- Union should be installed at device.



V3 Transmitters - (pic 3747)

- Orange plastic dust plugs are not explosionproof.
- Arcing devices must have a seals. [Article 501.15\(B\)\(1\)](#).
- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- Install devices in the correct order: device >> union >> seal >> flex.



LY-V5A - (pic 3749)

- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- All parts of the conduit system between the seal and the explosionproof enclosure must be explosionproof. [Article 501.15\(B\)\(1\)](#).



SOV at LV-V5A - (pic 3750)

- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- SOV is not permitted to be supported by conduit. [Article 300.11\(B\)](#).



New J-box between V-5 and V-7 - (pic 3752)

- Enclosure should have ID tag.
- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- If the enclosure contains glass fuses, it needs to be purged. [Article 501.115\(B\)\(3\)](#).



V8 Transmitters - (pic 3753)

- Conduit system must be arranged so moisture does not accumulate in equipment. [Article 501.15\(F\)\(1\)](#).
- Sealtite requires bonding jumper. [Article 501.30\(B\)](#).
- Transmitter may require seal if not factory sealed. Check device label.



SDV-V8 - (pic 3754)

- Arcing device must have a seal. [Article 501.15\(B\)\(1\)](#).
- Sealtite requires bonding jumper. [Article 501.30\(B\)](#).
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



SDV-V8 - (pic 3756)

Photo of cover showing that the device is an arcing device and requires an explosionproof seal.



Transmitter and GUAT26 - (pic 3757)

- Replace CGB on bottom with drain.
- Arcing device must have seal unless “factory sealed.” [Article 501.15\(B\)\(1\)](#).
- Sealite requires bonding jumper. [Article 501.30\(B\)](#).



PIT-F63 near B1-1 - (pic 3759)

- Arcing device must have seal.. [Article 501.15\(B\)\(1\)](#).
- Explosionproof union should be installed between the device and the seal.
- Sealite requires bonding jumper. [Article 501.30\(B\)](#).



Near B1-1 - (pic 3760)

- Field device should have ID tag.
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.
- Sealite requires bonding jumper. [Article 501.30\(B\)](#).
- Seal must be poured. [Article 501.15\(C\)\(2\)](#).



Electrical Panel near B1-1 - (pic 3761)

All comments from pics 3700 and 3701 apply here.

- Bond conduits and backpanel,
- Purge enclosure
- Terminate all wires
- Minimum wire size: #18 AWG
- Label all conductors
- Install shielded cable
- ID panel and pour seals.



Modicon Processor P - (pic 3782)

- Inputs and outputs for this PLC have been scabbed onto the existing wiring without first determining the exact source. This could present serious safety and reliability hazards.
- The I/O wiring should be traced out to verify that fuses are properly installed and neutrals are properly isolated.



LIT-TK3A - (pic 3783)

- Check area classification. The sample ports probably make this a Class I, Div 1 area.
- Install boundary seal. [Article 501.15\(A\)\(4\)](#).
- Replace Sealtite with explosionproof flex (flexible fitting) and a seal. [Article 501.10\(A\)\(2\)](#).



LIT-TK3B - (pic 3784)

- Check area classification. The sample ports probably make this a Class I, Div 1 area.
- Install boundary seal. [Article 501.15\(A\)\(4\)](#).
- Replace Sealtite with explosionproof flex (flexible fitting). [Article 501.10\(A\)\(2\)](#).
- Cannot install a plug in a coupling - neither the plug nor the coupling have tapered threads. [Article 500.8\(D\)](#).



Electrical Enclosure near V33A - (pic 3785)

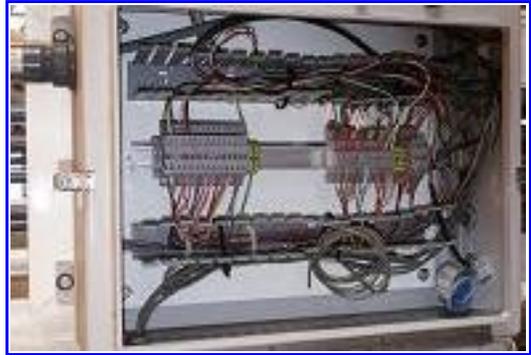
- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- Raceways cannot be used to support cables. [Article 300.11\(B\)](#).
- MC cable must be supported with 12 in of every cabinet. [Article 330.30](#).
- Cabinet should have an ID tag.



Electrical Enclosure near V33A - (pic 3786)

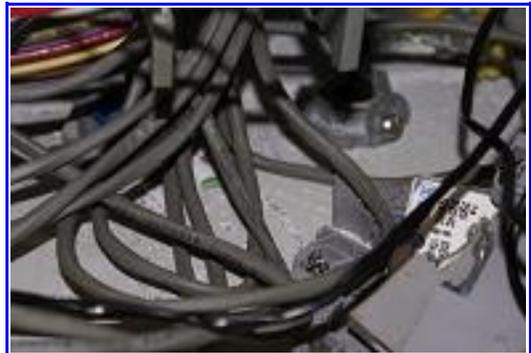
All comments from pics 3700 and 3701 apply here.

- Bond conduits and backpanel,
- Purge enclosure
- Terminate all wires
- Minimum wire size: #18 AWG
- Label all conductors
- Install shielded cable



Electrical Enclosure near V33A - (pic 3787)

- Construction trash should be removed from the inside of the panel – bits of wire, insulation, paper, fiberglass dust, etc.



PV-V14 - (pic 3788)

1. Replace plastic dust cap is not explosionproof plug.
2. Arcing device must have a seal. [Article 501.15\(B\)\(1\)](#).
3. Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



V14 Valve Switch - (pic 3791)

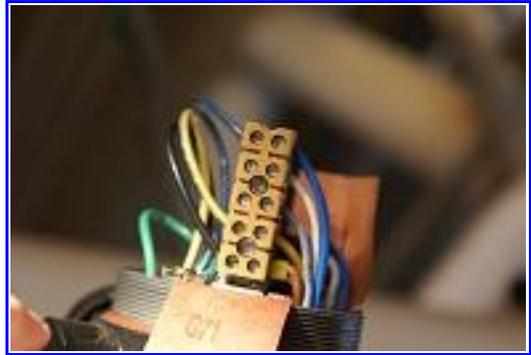
- Arcing device must have a seal. [Article 501.15\(B\)\(1\)](#).
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



V14 Valve Switch - (pic 3792)

- Conductors should have labels identifying the source of supply.

Note: troubleshooting is extremely difficult when conductors are not properly identified.



Valve V14 - T37 - (pic 3793)

- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).

Note: even though this conduit is supported within 3' of the conduit body, it is not **securely fastened** (we can grab the fitting and move it back and forth.) An additional support is required for the T37.



V33B - (pic 3794)

- Conduit cannot be used to support cables. [Article 300.11\(B\)](#).
- Rigid conduit must be securely fastened within 3 ft of each enclosure, fitting and conduit body. [Article 344.30](#).
- Seal must be poured. [Article 501.15\(C\)\(2\)](#).



V33A - (pic 3795)

- Rigid conduit must be securely fastened within 3 ft of each enclosure. [Article 344.30](#).
- Arcing device must have a seal. [Article 501.15\(B\)\(1\)](#) (transmitters)
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing (transmitters).



Enclosure near V33A - (pic 3796)

All comments from pics 3700 and 3701 apply here.

- Bond conduits and backpanel,
- Purge enclosure
- Terminate all wires
- Minimum wire size: #18 AWG
- Label all conductors
- Install shielded cable



Enclosure near V33A - (pic 3797)

- Construction trash should be removed from the inside of the panel – bits of wire, insulation, paper, fiberglass dust, etc.



I/P near V33A - (pic 3798)

- Arcing device must have seals. [Article 501.15\(B\)\(1\)](#).
- Arcing device should have an explosionproof union between the device and the seal to facilitate servicing.



V33A Transmitter - (pic 3799)

- Sealite requires bonding jumper. [Article 501.30\(B\)](#).



P55A/B near V33A - (pic 3800)

- Arcing device must have seal.. [Article 501.15\(B\)\(1\)](#) (at bottom of switches).



V19 Transmitter - (pic 3801)

- Arcing device must have seal.. [Article 501.15\(B\)\(1\)](#) and should have a union.
- Sealrite requires bonding jumper. [Article 501.30\(B\)](#).
- Rigid conduit at LB is not securely fastened. [Article 344.30](#).



PIT at V14 - (pic 3802)

- Arcing devices must have seals. [Article 501.15\(B\)\(1\)](#) (blue Rosemount, GDXE-A9).
- Check I/P. It does not look like it is factory seal. If the label does not specify, then it must be sealed also.
- Unions should be installed between seals and end devices.



Unknown - Not Labeled - (pic 3803)

- Rigid conduit must be securely fastened within 3 ft of each enclosure [Article 344.30](#).
- Switches and equipment should have ID tags.
- Area classification for this area must be checked. If it is CI, D1, then Sealrite must be replaced with explosionproof flex, the T37 with a GUAT, and a boundary seal installed.



TotalFlow near V19 - (pic 3804)

1. TotalFlow conduit should be sealed.

Note: TotalFlow equipment usually has a label indicating that it is suitable for CI, D2 if the latch has a locking pin installed. This indicates that the flow of gas to and from the interior of the unit must be controlled.



E-10 Gas Heat Exchanger - (pic 3806)

- Arcing device must have a seal. [Article 501.15\(B\)\(1\)](#). Top right transmitter is factory sealed, the other 3 units need seals and unions.
- Check area classification. This area may need to have boundary seals installed, especially if the conduits arriving in this area come from an unclassified area. [Article 501.15\(B\)\(2\)](#).



Code References

(based on the 2005 National Electric Code - NFPA 70).

Article 250.4(A)(5) – General Requirements for Grounding and Bonding

Electrical equipment and wiring and other electrically conductive material likely to become energized shall be installed in a manner that creates a permanent, low-impedance circuit facilitating the operation of the overcurrent device....

Article 250.100 – Bonding in Hazardous (Classified) Locations

Regardless of the voltage of the electrical system, the electrical continuity of non-current-carrying metal parts of equipment, raceways, and other enclosures in any hazardous (classified) location... shall be ensured by any of the methods specified in 250.92(B)(2) through (B)(4) that are approved for the wiring method used. One or more of these bonding methods shall be used whether or not supplementary equipment grounding conductors are installed.

Article 300.11(B) – Securing and Supporting – General

Raceways shall be used only as a means of support for other raceways, cables, or non-electric equipment under any of the following conditions:

1. Where the raceway or means of support is identified for the purpose.
2. Where the raceway contains power supply conductors for electrically controlled equipment and is used to support class 2 circuit conductors that are solely for the purpose of connection to the equipment control circuits.
3. Where the raceway is used to support boxes or conduit bodies in accordance with 314.23 or to support luminaries (fixtures) I accordance with 410.16(F).

Article 314.23(E) – Raceway Supported Enclosures

Exception: Rigid metal conduit... shall be permitted to support a conduit body of any size, including a conduit body constructed with only one conduit entry.

Article 330.30 – Securing and Supporting MC Cable

Unless otherwise provided, [MC] cables shall be secured at intervals not exceeding **6 ft**. Cables containing four or fewer conductors sized no larger than 10 AWG shall be secured within **12 in** of every box, cabinet, fitting, or other cable termination.

Article 344.30 – Securing and Supporting Rigid Conduit

Rigid metal conduit shall be securely fastened within **3ft** of each outlet box, junction box, cabinet, conduit body, or other conduit termination... and at intervals not exceeding **10 ft**.

Article 350.30 – Securing and Supporting Sealtite

LFMC shall be securely fastened in place by an approved means within **12 in** of each box, cabinet, conduit body, or other conduit termination and shall be supported and secured at intervals not to exceed **4.5 ft**.

Exception No. 3 – Lengths not exceeding **3 ft** at terminations where **flexibility is necessary**.

Article 500.8(D) – Threading

All NPT threaded conduit and fittings referred to herein shall be threaded with a National (American) Standard Pipe Taper (NPT) thread that provides a taper of 1 in 16. Conduit and fittings shall be made **wrenchtight** to prevent sparking when fault current flows through the conduit system, and to ensure the **explosionproof integrity** of the conduit system where applicable.

Article 501.10(A)(2) – Flexible Connections Class I, Division 1

Where necessary to employ flexible connections, as at motor terminals, flexible fittings listed for Class I, division 1 locations [explosionproof flex]... shall be permitted.

Article 501.10(B)(2) – Flexible Connections – Class I, Division 2

Where provision must be made for limited flexibility, one or more of the following [wiring methods] shall also be permitted:

1. Flexible metal fittings
2. Flexible metal conduit with listed fittings
3. Liquidtight flexible metal conduit with listed fittings
4. Liquidtight flexible nonmetallic conduit with listed fittings
5. Flexible cord listed for extra-hard usage and provided with listed bushed fittings.

An additional conductor for grounding shall be included in the flexible cord.

Note: It is our interpretation at ESC that “limited flexibility” cannot extend past the point where the conduit would have to be “securely fastened in place”. See [Article 350.30 Exception No. 3](#).

Article 501.15(A)(4) –Seals, Boundary – Class I, Division 1

[In a Division 1 location, conduit seals are required] in each conduit run leaving a Class I, Division 1 location.

Article 501.15(B)(1) – Seals, Enclosure – Class I, Division 2

For connections to enclosures that are required to be explosionproof, a conduit seal shall be provided in accordance with 501.15(A)(1) and (A)(3). All portions of the conduit run or nipple between the seal and such enclosure shall comply with 501.10(A).

Article 501.15(B)(2) – Seals, Boundary – Class I, Division 2

[A boundary seal is required] in each conduit run passing from a Class I, Division 2 location into an unclassified location.

Article 501.15(C)(2) – Seals, Sealing Compound

The compound shall provide a seal against passage of gas or vapors through the seal fitting, shall not be affected by the surrounding atmosphere or liquids, and shall not have a melting point of less than 200°F.

Article 501.15(F)(1) – Seals, Drainage

Where there is a probability that liquid or other condensed vapor may be trapped within enclosures for control equipment or at any point in the raceway system, approved means shall be provided to prevent accumulation...

Article 501.30(B) – Bonding Sealite – Class I, Division 2

Where... liquidtight flexible metal conduit is used as permitted in [501.10\(B\)](#) and is to be relied on to complete as sole equipment grounding path, it shall be installed with internal or external jumpers in parallel with each conduit and complying with 250.102.

Article 501.115(B)(3) – Fuses – Class I, Division 2

Fuses... shall be permitted if they are within general-purpose enclosures, and if they are of a type in which the operating element is immersed in oil or other approved liquid, or the operating element is enclosed within a chamber hermetically sealed against the entrance of gases and vapors, or the fuse is a nonindicating, filled, current-limiting type.

Article 725.27(A) – Size and Use of Class 1 Circuit Conductors

Conductors of sizes **18 AWG** and 16 AWG shall be permitted to be used, provided they supply loads that do not exceed the ampacities given in 402.5 and are installed in a raceway, an approved enclosure, or a listed cable.