



## **LO-2, LO-4, Dual LO-4, & LO-6 High Energy Ignition Systems Installation and Operation Manual**



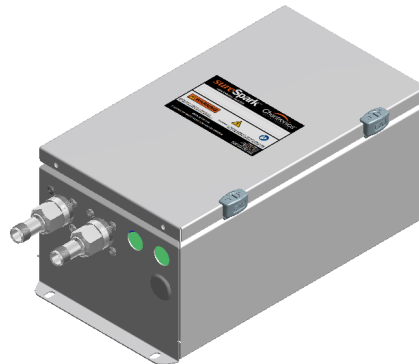
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### **KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE**

**READ THIS MANUAL BEFORE USING THIS PRODUCT. FAILURE TO FOLLOW THE INSTRUCTIONS AND SAFETY PRECAUTIONS IN THIS MANUAL CAN RESULT IN SERIOUS INJURY OR DEATH OR DAMAGE TO EQUIPMENT.**

*FOR A LIST OF RELEVANT PATENTS AND TRADEMARKS PLEASE SEE [CHENTRONICS.COM/LEGAL-NOTICES](http://CHENTRONICS.COM/LEGAL-NOTICES)*

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## 1.0 Important Safety Information



### Read All Instructions before Using Equipment



The instructions provided in this manual have been prepared to serve as a general guide. It is intended for use by qualified personnel with knowledge of equipment of this type. It is not intended to cover all possible variations in equipment or to provide for specific operating problems which may arise.

You are responsible for adhering to all warnings or cautions provided in this Manual.

In addition to any general safety measures provided in this Manual, you must comply with all current national, state, local and company safety regulations at all times.

### Safety Symbols used in this manual comply with ISO 3864.

**THESE SYMBOLS ARE USED TO ALERT YOU TO POTENTIAL PERSONAL INJURY HAZARDS.**

**OBEY ALL SAFETY MESSAGES THAT FOLLOW THESE SYMBOLS TO AVOID POSSIBLE INJURY OR DEATH.**



Indicates a hazard with a high level of risk which, if not avoided will result in death or serious injury.



Indicates a hazard with a medium level of risk which, if not avoided could result in death or serious injury.



Indicates a hazard with a low level of risk which, if not avoided will result in minor or moderate injury.



## HAZARDOUS VOLTAGE

The equipment contains a High Energy Ignition System which contains **DANGEROUS AND POTENTIALLY LETHAL VOLTAGE**. To avoid risk of serious injury from electric shock, always follow the safety precautions listed below:

Disconnect power before servicing the equipment.

Ensure the equipment is appropriately bonded to earth before use. See Section 5.7 regarding equipment earth bond locations.

Do not join or separate any connection to the equipment when the equipment is energized.

Do not apply power to the equipment without an igniter.

Keep the igniter firing end away from all personnel and flammable material.

The equipment must be installed and serviced by qualified personnel in accordance with this manual and applicable local and national codes, standards, and ordinances.

The equipment is not field-repairable. Do not attempt to disassemble or repair the equipment.

## Les symboles de sécurité utilisés dans ce manuel sont conformes à la norme ISO 3864.

**CES SYMBOLES SONT UTILISÉS POUR VOUS AVERTIR DES RISQUES DE BLESSURES POTENTIELS.  
RESPECTEZ TOUS LES MESSAGES DE SÉCURITÉ QUI SUIVENT CES SYMBOLES POUR ÉVITER LES BLESSURES  
POTENTIELLES OU LA MORT.**



Indique un danger avec un niveau élevé de risque qui, s'il n'est pas évité, entraînera la mort ou des blessures graves.



Indique un danger avec un niveau de risque moyen qui, s'il n'est pas évité, pourrait entraîner la mort ou des blessures graves.



Indique un danger avec un niveau de risque bas qui, s'il n'est pas évité, entraînera des blessures mineures ou modérées.



## **TENSION DANGEREUSE**

L'appareil contient un système d'allumage à haute énergie qui contient une **TENSION DANGEREUSE ET POTENTIELLEMENT MORTELLE**. Pour éviter les risques de blessures graves par électrocution, suivez toujours les précautions de sécurité indiquées ci-dessous:

Coupez l'alimentation avant l'entretien du matériel.

S'assurer que l'équipement est correctement mis à la terre avant l'utilisation. Voir la section 5.7 concernant l'emplacement des liaisons à la terre de l'équipement.

Ne pas connecter ou séparer toute connexion à l'équipement lorsque l'appareil est sous tension.

Ne pas appliquer de tension à l'appareil sans un allumeur.

Gardez l'extrémité de l'allumeur loin de tout personnel et de matériels inflammables.

L'équipement doit être installé et entretenu par du personnel qualifié, conformément à ce manuel, aux codes locaux et nationaux applicables, et aux normes et règlements en vigueur.

L'appareil n'est pas réparable sur site. Ne tentez pas de démonter ou de réparer l'équipement.

## 2.0 Definitions

**Spark** – An electric current arc.

**High Energy Ignition** – Electric spark ignition system utilizing high energy sparks for direct ignition of hydrocarbon fuels such as gas, diesel, or #6 oil.

**High Energy Exciter** – An electronic device that stores electric charge and releases it cyclically in abrupt bursts to an igniter to create high power sparks.

## 3.0 Chentronics High Energy Ignition Systems

Chentronics High Energy Ignition (HEI) systems directly ignite burner fuels by providing short time duration (impulse), high current electrical arcs commonly referred to as *sparks*. These sparks are generated by abruptly releasing electrical energy (charge) stored in large capacitors. The energy is released through an igniter driver circuit called a *pulse forming network* to specialized high energy igniters. The result is a high power spark with increased ability to ignite fuels.

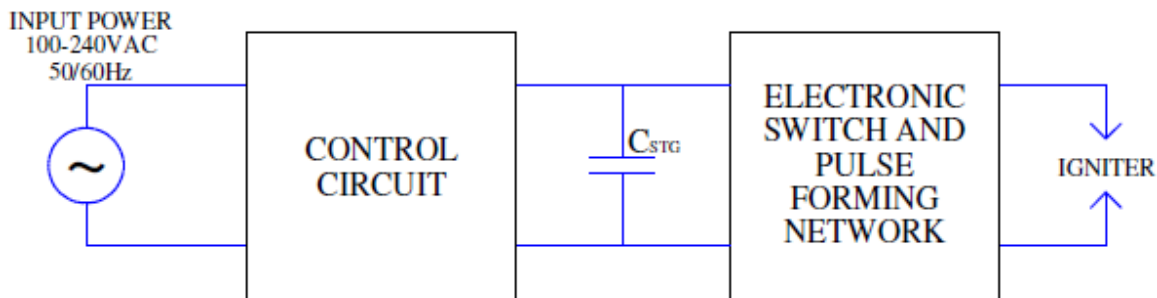


Figure 1: High Energy Exciter basic schematic.

Chentronics High Energy Ignition Systems are designed to operate in conditions of extreme temperature, moisture, and contamination; creating high power sparks that dependably provide direct spark ignition to a wide range of fuels in a wide range of adverse conditions. The igniter can spark even under water.



Figure 2: Igniter firing in water.

**NOTE:** Firing igniters submerged in water will cause them to excessively wear and reach end of life very quickly.

## 4.0 System Specifications

### 4.1 Description of Equipment

The Chentronics SureSpark LO-2, LO-4, and LO-6 series high energy ignition systems are specifically designed to ignite gas, light oil (#2), and diesel fuels directly while operating in a wide range of environmental conditions. For convenience, there is an external Spark LED (two for dual units, one per output) which indicates when the igniter is sparking and when the igniter tip needs to be replaced. This allows the user to replace igniter tips before they fail and prevent ignition faults from occurring. There is also an Igniter Wear indicator which turns on red when an igniter fault is detected and remains on until the run signal is cycled. This additional feature allows for easier location of failed units when multiple units are being operated simultaneously.

### 4.2 General Arrangements

#### 4.2.1 Coaxial Output LO Series Exciter

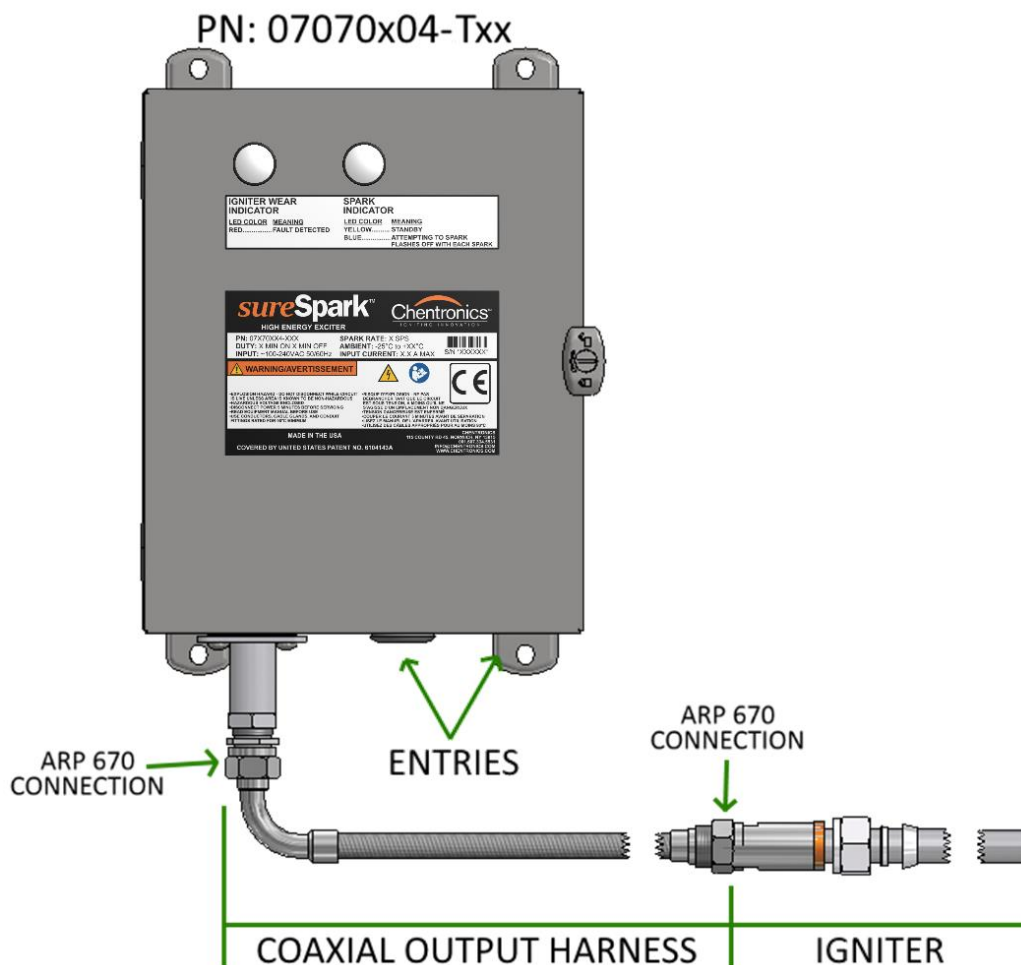
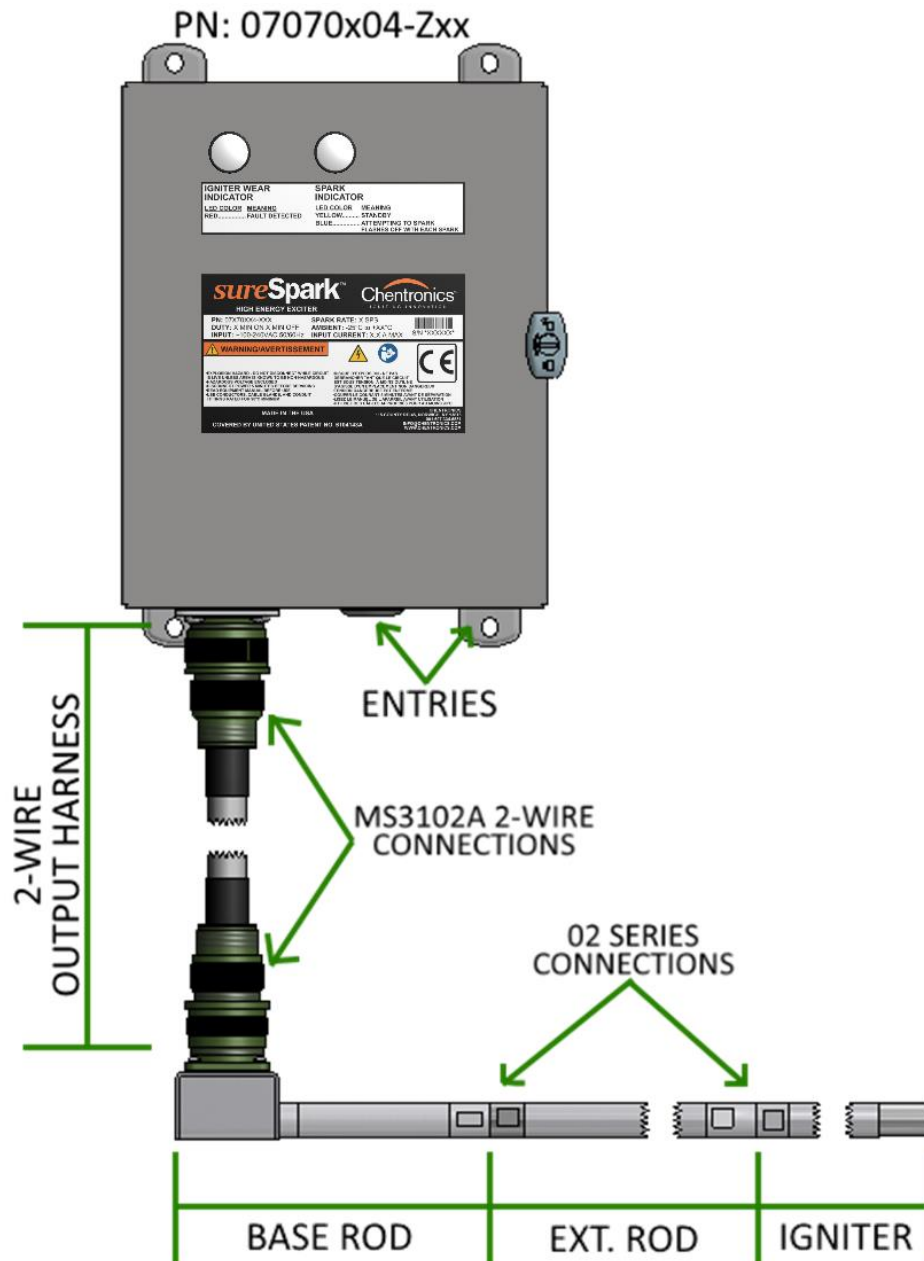


Figure 3: Ordinary area, Coaxial LO series ignition system general arrangement.

NOTE: Harness and igniter are sold separately.

#### 4.2.2 2-Wire LO Series Exciter



**Figure 4: Ordinary area, 2-Wire LO series ignition system general arrangement.**  
**NOTE:** Harness, base rod, extension rod (optional), and igniter are sold separately.

#### 4.2.3 LO Series Exciter with Explosion Proof Enclosure

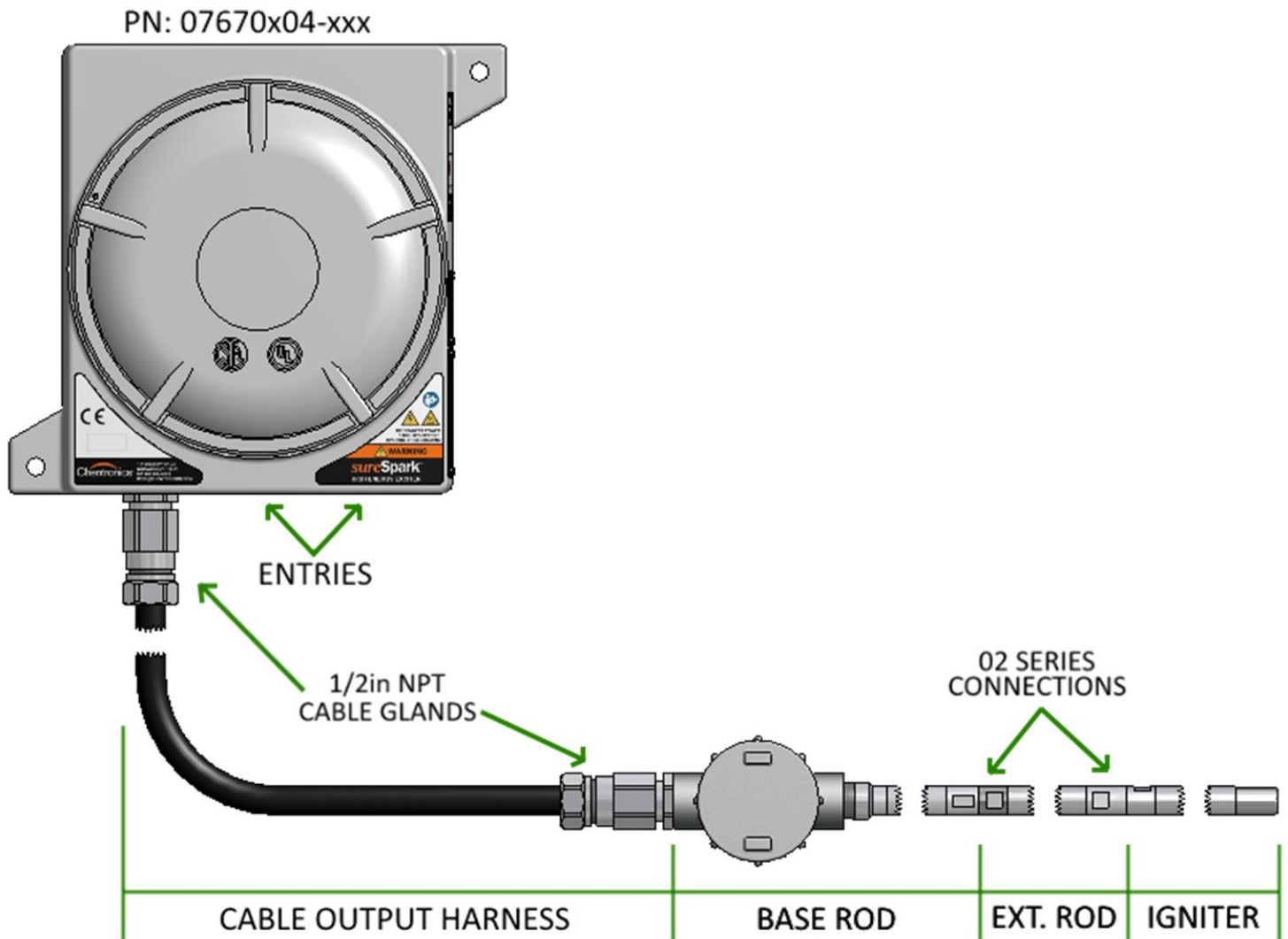


Figure 5: LO series ignition system with explosion proof enclosure general arrangement.

**NOTE:** Harness, base rod, extension rod (optional), and igniter are sold separately.

#### 4.2.4 Coaxial Dual Output LO-4 Exciter

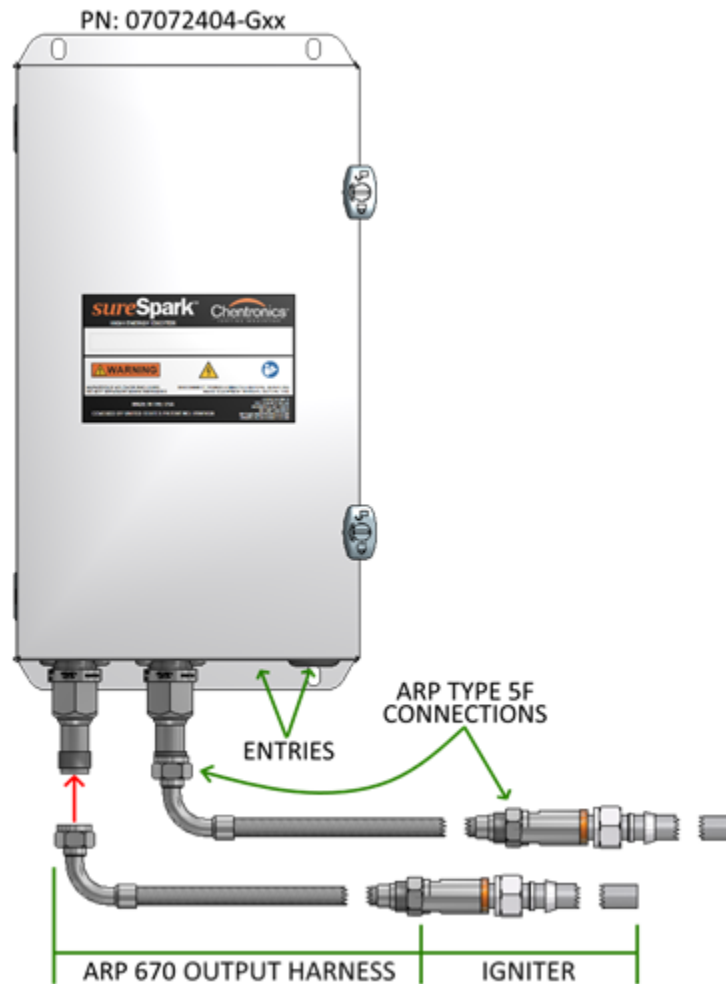


Figure 6: SureSpark Coaxial Dual Output ignition system general arrangement (ARP 670 Type 5F connections).

**NOTE:** Harnesses and igniters are sold separately.

#### 4.2.5 2-Wire Dual Output LO-4 Exciter

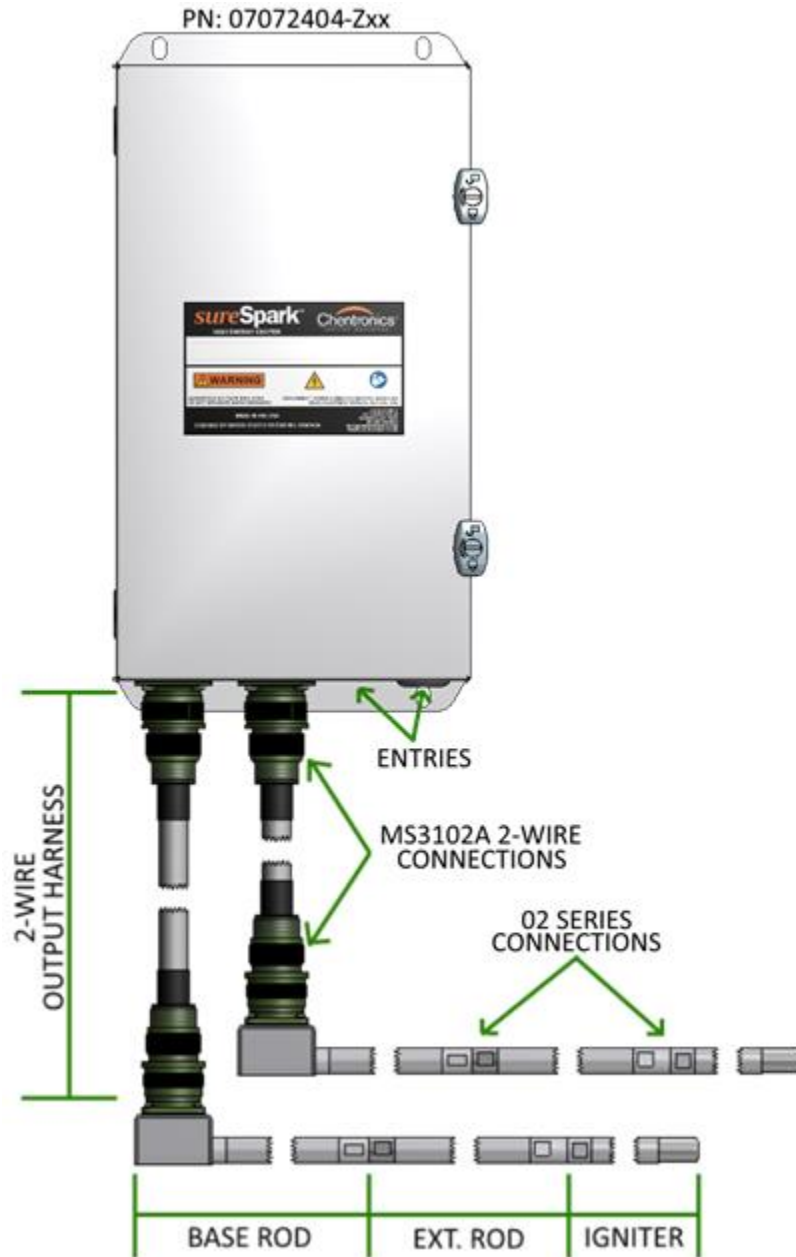
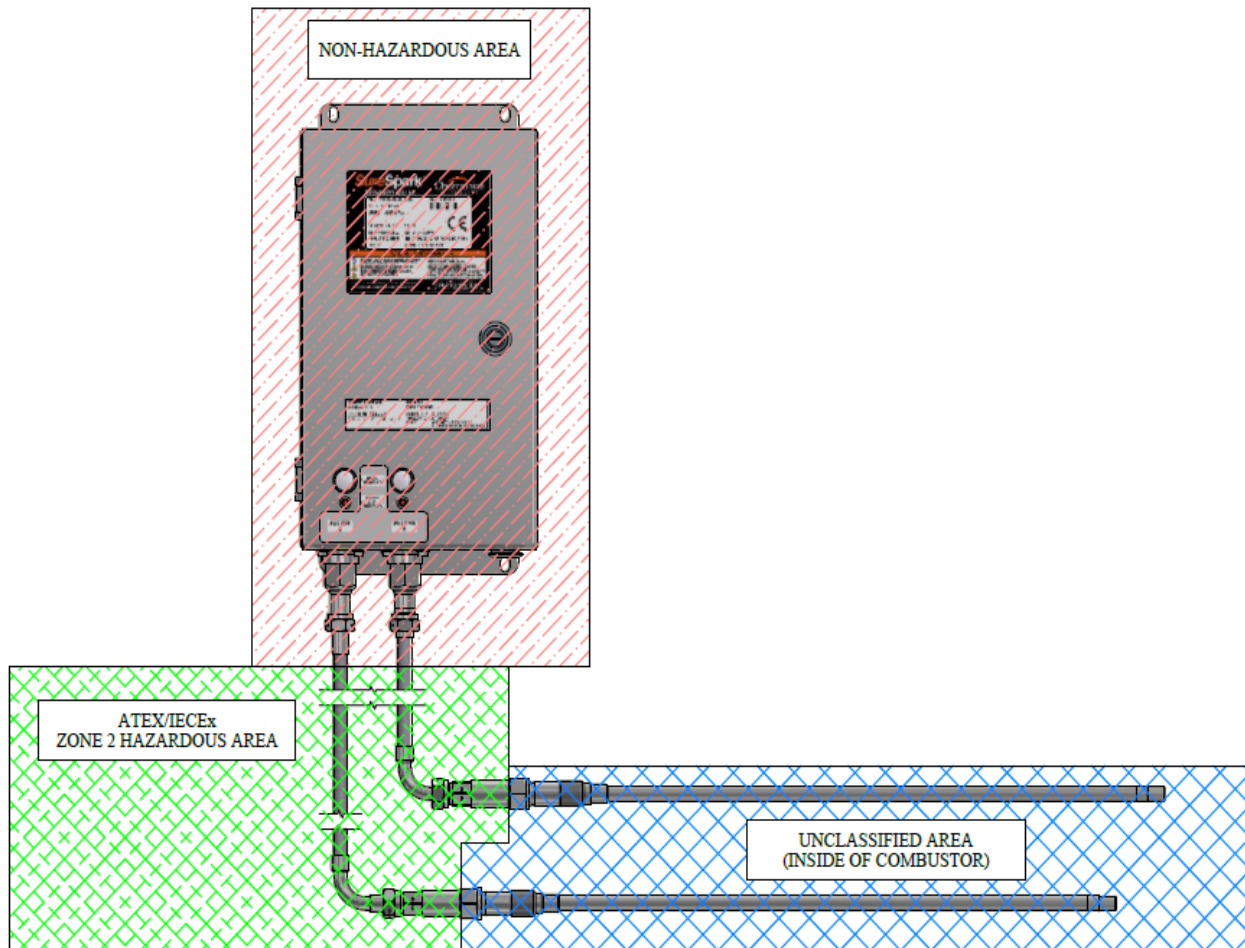


Figure 7: SureSpark 2-Wire Dual Output ignition system general arrangement.

**NOTE:** Harnesses, base rods, extensions rods (optional), and igniters are sold separately.

#### 4.2.6 Coaxial Dual Output LOTS system



**Figure 8: SureSpark LOTS system general arrangement.**

**NOTE:** Harnesses and igniters are sold separately.

#### 4.3 Enclosure Configurations:

The SureSpark LO-2, LO-4, and LO-6 systems are available in the enclosure configurations as described below:

- **07070x04-xxx** – Plate-metal enclosure with painted mild steel, 304 stainless steel or 316 stainless steel options. Available with optional spark switch.



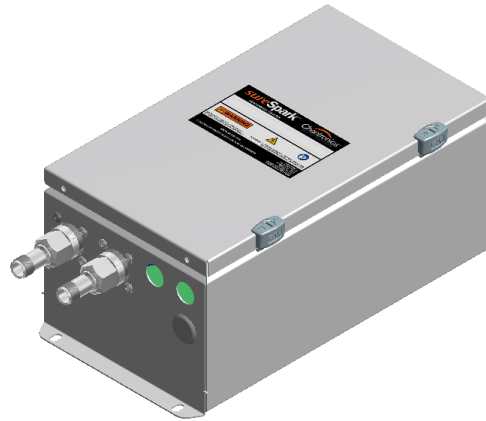
- **07070x14-xxx** – Fiberglass enclosure with optional spark switch.



- **07670x04-xxx** – Explosion proof enclosure with optional spark switch.



- **07072404-xxx** – Dual-Output, Plate-metal enclosure with painted mild steel, 304 stainless steel or 316 stainless steel options. Available with optional spark switch.



#### **4.4 Description of Equipment**

The equipment is sealed in an enclosure which has an IP66 rating. The 304/316 stainless steel or fiberglass enclosure options provide NEMA Type 4X rating.

#### **4.5 Equipment Conditions of Use**

The SureSpark system equipment is subject to the following conditions of use and limitations:

1. All wiring must be rated at or above 90°C. The installation must use conduit or an entry hub to protect the wiring from damage.
2. A switch or circuit-breaker to separate the device from mains must be included in the installation. The switch or circuit-breaker must be suitably located and easily reached. It is recommended that it be located near the exciter enclosure.
3. The lid shall not be unlocked or opened until the power has been turned off for at least 5 minutes.
4. The equipment shall not be subjected to ambient temperatures greater than +75°C, or less than -25°C while operating. For the LO-2 series, +60°C shall not be exceeded.
5. The equipment's igniter connections shall not be joined or separated when the equipment is in use (powered).
6. The equipment shall not be operated without an igniter attached.
7. Equipment shall be properly grounded. Please see Section 5.7 regarding earth bond requirements in this manual.
8. The igniter, extension rod, or base rod must be secured to the grounded building frame using a metal fixture.

## 4.6 System Electrical and Physical Specifications

### 4.6.1 LO-2 Specifications:

Application:	High-energy, direct-spark ignition system
Input Power:	100-240VAC 50/60Hz, 0.5A MAX
Exciter Type:	High Energy Ignition
Exciter Duty Cycle:	100% Continuous
Exciter Spark Command:	With jumper, apply power to begin sparking. Without jumper, apply 24V DC, close contacts, or push-button switch (optional) to begin sparking.
Exciter Spark Indicator:	When powered and in standby, LED is on solid <b>Yellow</b> . When attempting to spark, LED turns <b>Blue</b> and flashes off at steady rate when successful spark output currents detected.
Igniter Wear Indicator:	When an igniter fault is detected, LED turns on solid <b>Red</b> and remains on until spark signal is removed and reapplied.
Exciter Energy:	12J min per Spark
Exciter Spark Rate:	2 SPS min
Operating Temperature Limits:	-25°C to 60°C
Storage Temperature Limits:	-40°C to 105°C
Humidity:	0 to 100% condensing
Enclosure:	
07070204:	Brushed Stainless Steel (304 or 316) or Gray Painted Mild Steel
07070214:	Fiberglass
07670204:	Copper Free Cast Aluminum
Weight:	
07070204:	Approximately 15lb (7 kg)
07070214:	Approximately 11lb (5 kg)
07670204:	Approximately 35lb (16 kg)
Dimensions:	
07070204:	8.4 x 6.6 x 10 in
07070214:	7.6 x 6.2 x 9.6 in
07670204:	11.6 x 8.0 x 10.5 in

**4.6.2 LO-4 Specifications:**

Application:	High-energy, direct-spark ignition system
Input Power:	100-240VAC 50/60Hz, 1A MAX
Exciter Type:	High Energy Ignition
Exciter Duty Cycle:	5 min on, 10 min off
Exciter Spark Command:	With jumper, apply power to begin sparking. Without jumper, apply 24V DC, close contacts, or push-button switch (optional) to spark.
Exciter Spark Indicator:	When powered and in standby, LED is on solid <b>Yellow</b> . When attempting to spark, LED turns <b>Blue</b> and flashes off at steady rate when successful spark output currents detected.
Igniter Wear Indicator:	When an igniter fault is detected, LED turns on solid <b>Red</b> and remains on until spark signal is removed and reapplied.
Exciter Energy:	12J min per Spark
Exciter Spark Rate:	4 SPS min
Operating Temperature Limits:	-25°C to 75°C
Storage Temperature Limits:	-40°C to 105°C
Humidity:	0 to 100% condensing
Enclosure:	
07070404:	Brushed Stainless Steel (304 or 316) or Gray Painted Mild Steel
07070414:	Fiberglass
07670404:	Copper Free Cast Aluminum
Weight:	
07070404:	Approximately 15lb (7 kg)
07070414:	Approximately 11lb (5 kg)
07670404:	Approximately 35lb (16 kg)
Dimensions:	
07070404:	8.4 x 6.6 x 10 in
07070414:	7.6 x 6.2 x 9.6 in
07670404:	11.6 x 8.0 x 10.5 in

**4.6.3 LO-6 Specifications:**

Application:	High-energy, direct-spark ignition system
Input Power:	100-240VAC 50/60Hz, 1.5A MAX
Exciter Type:	High Energy Ignition
Exciter Duty Cycle:	5 min on, 10 min off
Exciter Spark Command:	With jumper, apply power to begin sparking. Without jumper, apply 24V DC, close contacts, or push-button switch (optional) to spark.
Exciter Spark Indicator:	When powered and in standby, LED is on solid <b>Yellow</b> . When attempting to spark, LED turns <b>Blue</b> and flashes off at steady rate when successful spark output currents detected.
Igniter Wear Indicator:	When an igniter fault is detected, LED turns on solid <b>Red</b> and remains on until spark signal is removed and reapplied.
Exciter Energy:	12J min per Spark
Exciter Spark Rate:	6 SPS min
Operating Temperature Limits:	-25°C to 75°C
Storage Temperature Limits:	-40°C to 105°C
Humidity:	0 to 100% condensing
Enclosure:	
07070604:	Brushed Stainless Steel (304 or 316) or Gray Painted Mild Steel
07070614:	Fiberglass
07670604:	Copper Free Cast Aluminum
Weight:	
07070604:	Approximately 15lb (7 kg)
07070614:	Approximately 11lb (5 kg)
07670604:	Approximately 35lb (16 kg)
Dimensions:	
07070604:	8.4 x 6.6 x 10 in
07070614:	7.6 x 6.2 x 9.6 in
07670604:	11.6 x 8.0 x 10.5 in

#### 4.6.4 **Dual Output LO-4 Specifications:**

Application:	High-energy, direct-spark ignition system
Input Power:	100-240VAC 50/60Hz, 2A MAX
Exciter Type:	High Energy Ignition
Exciter Duty Cycle:	5 min on, 10 min off
Exciter Spark Command:	With jumper, apply power to begin sparking. Without jumper, apply 24V DC, close contacts, or push-button switch (optional) to spark.
Exciter Spark Indicator:	When powered and in standby, LED is on solid <b>Yellow</b> . When attempting to spark, LED turns <b>Blue</b> and flashes off at steady rate when successful spark output currents detected.
Igniter Wear Indicator:	When an igniter fault is detected, LED turns on solid <b>Red</b> and remains on until spark signal is removed and reapplied.
Exciter Energy:	2x 12J min per Spark
Exciter Spark Rate:	2x 4 SPS min
Operating Temperature Limits:	-25°C to 75°C
Storage Temperature Limits:	-40°C to 105°C
Humidity:	0 to 100% condensing
Enclosure:	Brushed Stainless Steel (304 or 316) or Gray Painted Mild Steel
Weight:	Approximately 30lb (14 kg)
Dimensions:	10.0 x 7.0 x 17.3 in

## 5.0 Installation Instructions

### 5.1 Instructions for Lifting

The exciter should be carried only by someone who is capable of safely lifting 35lb.

### 5.2 Mounting

For mounting dimensions, refer to the equipment datasheet. The exciter should be mounted to a firm structure.

### 5.3 2-Wire Harness and Base Rod Installation

The exciter output is characterized as a high current transient pulse. Typical discharge currents are an exponential decay with peaks of approximately 1000 amps that last less than 1ms. Although the coaxial construction and outer shielding suppresses much of the electromagnetic field, it is good practice to separate ignition cables from signal cables to prevent noise coupling. However, the ignition circuit is unaffected by other (nearby) ignition sources and multiple output cables can share the same tray.

Insert the male end of the harness into the connector on the exciter and fully hand-tighten. Next connect the female end of the harness to the base rod and fully hand-tighten.

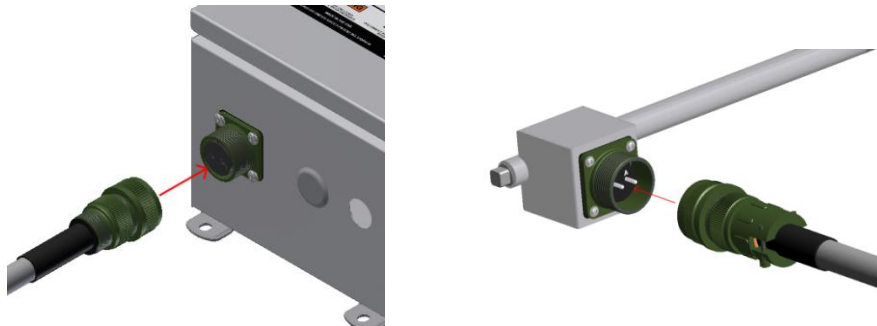
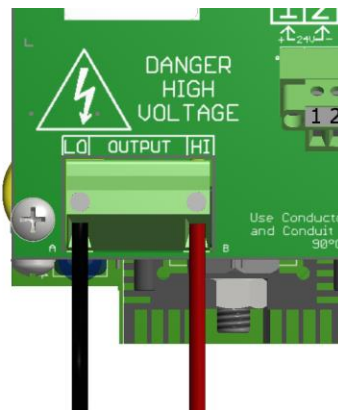


Figure 8: Output Harness and Base Rod installation for units with 2-wire connectors.

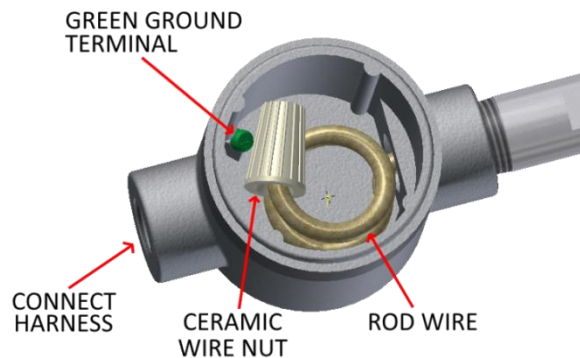
### 5.4 ½in NPT Male Harness and Base Rod Installation

Install one end of the harness to the exciter enclosure by following the provided manufacturer instructions for cable-gland installation. Next connect the **black** harness wire to the terminal marked “LO” and connect the remaining harness wire (**red** or **white**) to the terminal marked “HI” on the exciter top board. A correct connection is shown in Figure 5 below.



**Figure 9: Correct connection of output harness wires with ½in NPT Male Harness.**

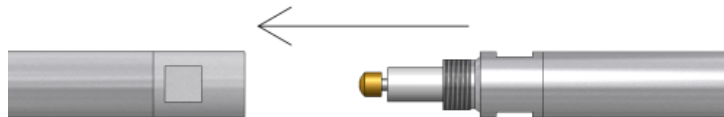
Next, unscrew the cover on the base rod and install the other end of the harness to the base rod by following the provided manufacturer instructions for cable-gland installation. Connect the **black** harness wire to the green ground terminal (Figure 10) and tighten. Next connect the remaining harness wire (**red** or **white**) to the rod wire using either the provided ceramic wire nut or the brass inline connector. For the ceramic wire nut option, twist the wires together and terminate the connection by inserting the twisted pair into the ceramic wire nut and tightening by hand. For the brass inline connector option, pull back the white sleeve on the base rod wire to reveal the brass inline connector, make the connection, and **pull the sleeve back to insulate the connector.**

**Figure 10: The case of the base rod.**

**NOTICE:** Verify the rod wire is fully connected to the harness wire (RED or WHITE).

### 5.5 02 Series Igniter and Extension Rod Installation

To install the extension rod or igniter, press the male connector into the female connector and fully hand tighten.

**Figure 11: Series 02 igniter/extension rod connection.**

### 5.6 Coaxial Output Harness and Igniter Installation

The exciter output is characterized as a high current transient pulse. It is good practice to separate ignition cables from signal cables to prevent noise coupling. However, the ignition circuit is unaffected by other (nearby) ignition sources and multiple ignition cables can share the same tray.

Connect the harness to the output connector on the enclosure and wrench-tighten. Repeat this process on the other end of the harness to connect the harness to the igniter. See Figure 12.

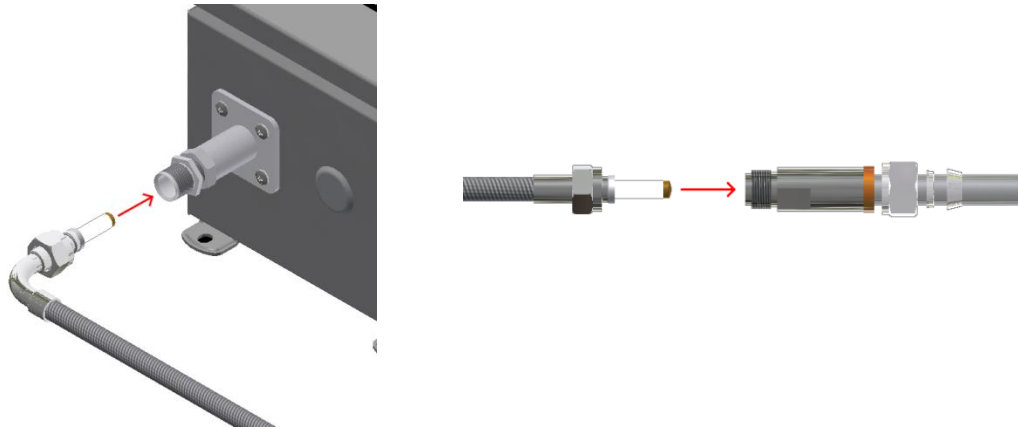


Figure 12: ARP 670 Coaxial Harness connections.

#### 5.6.1 Safety Wire Installation (Optional)

For applications in which electrical connections may be exposed to vibration, Chentronics recommends that the customer further secure ARP connections with safety wire. This is a common practice in Aerospace as it helps prevent ARP connections from loosening during use. Please follow installation instructions as stated in Figure 13 & Figure 14.

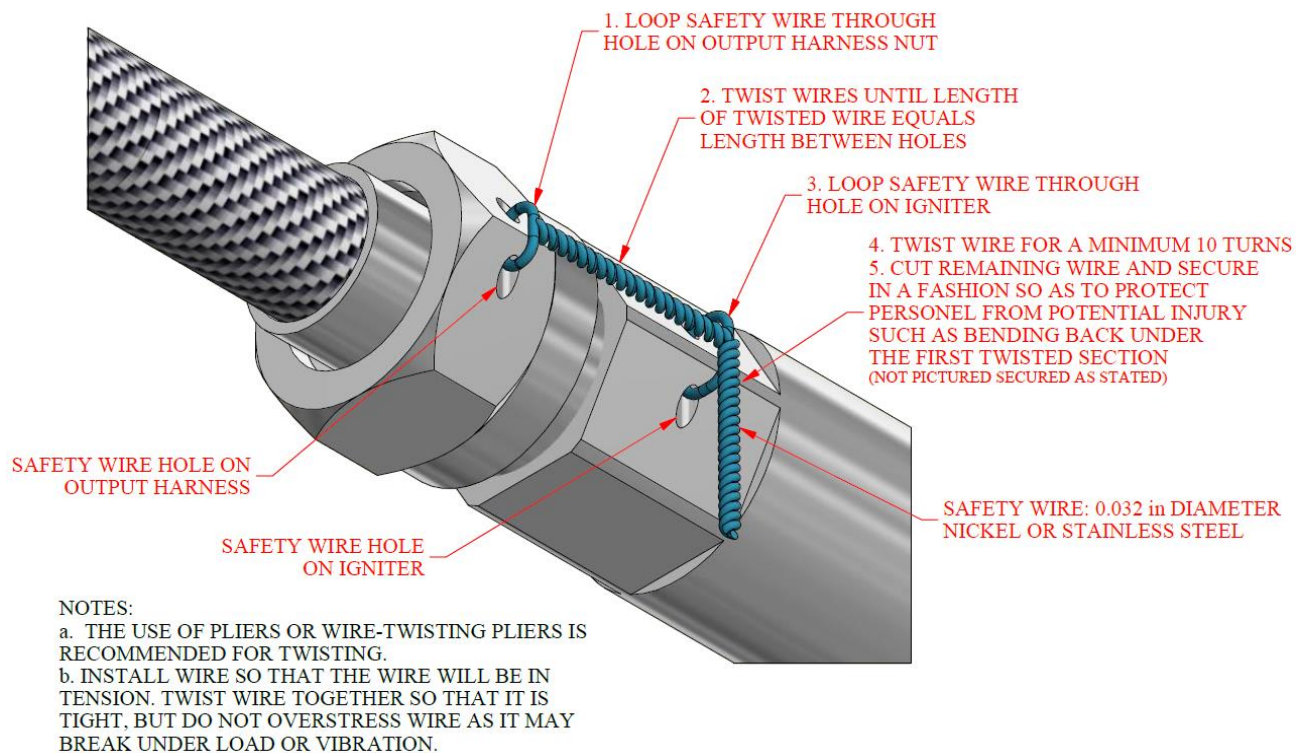


Figure 13: Safety Wire Installation – Output Harness to Igniter

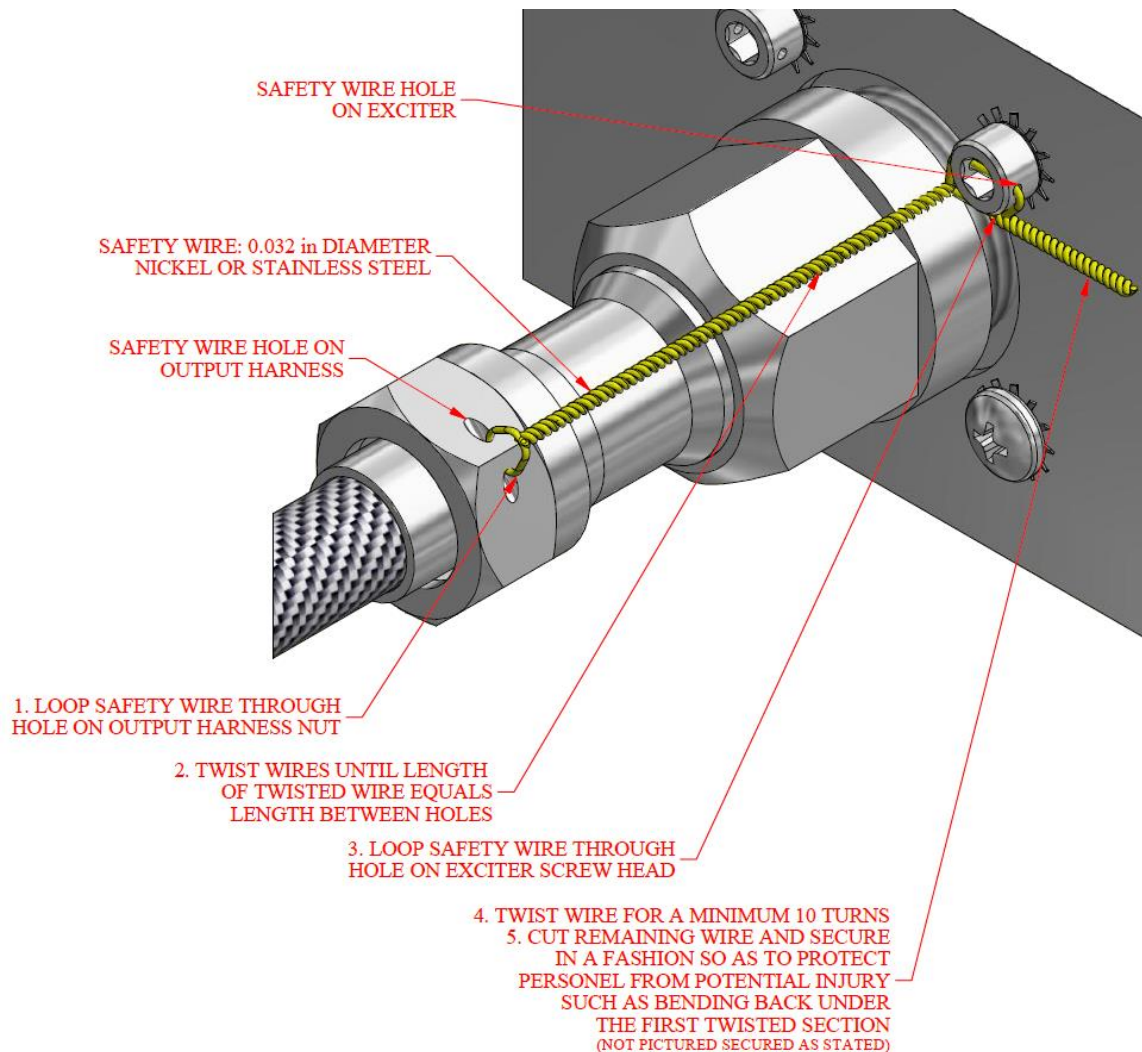


Figure 14: Safety Wire Installation – Output Harness to Exciter

## 5.7 Wiring Installation

### 5.7.1 Single unit exciter wiring

The SureSpark includes two enclosure entries for power/control. Wiring must be rated at least 90°C. Connections should be made only when the equipment and wiring are not energized. Once connected, the wiring should not be removed from the exciter until it has been de-energized for at least 5 minutes.

The ignition circuit is unaffected by other (nearby) ignition sources and multiple ignition cables can share the same tray.

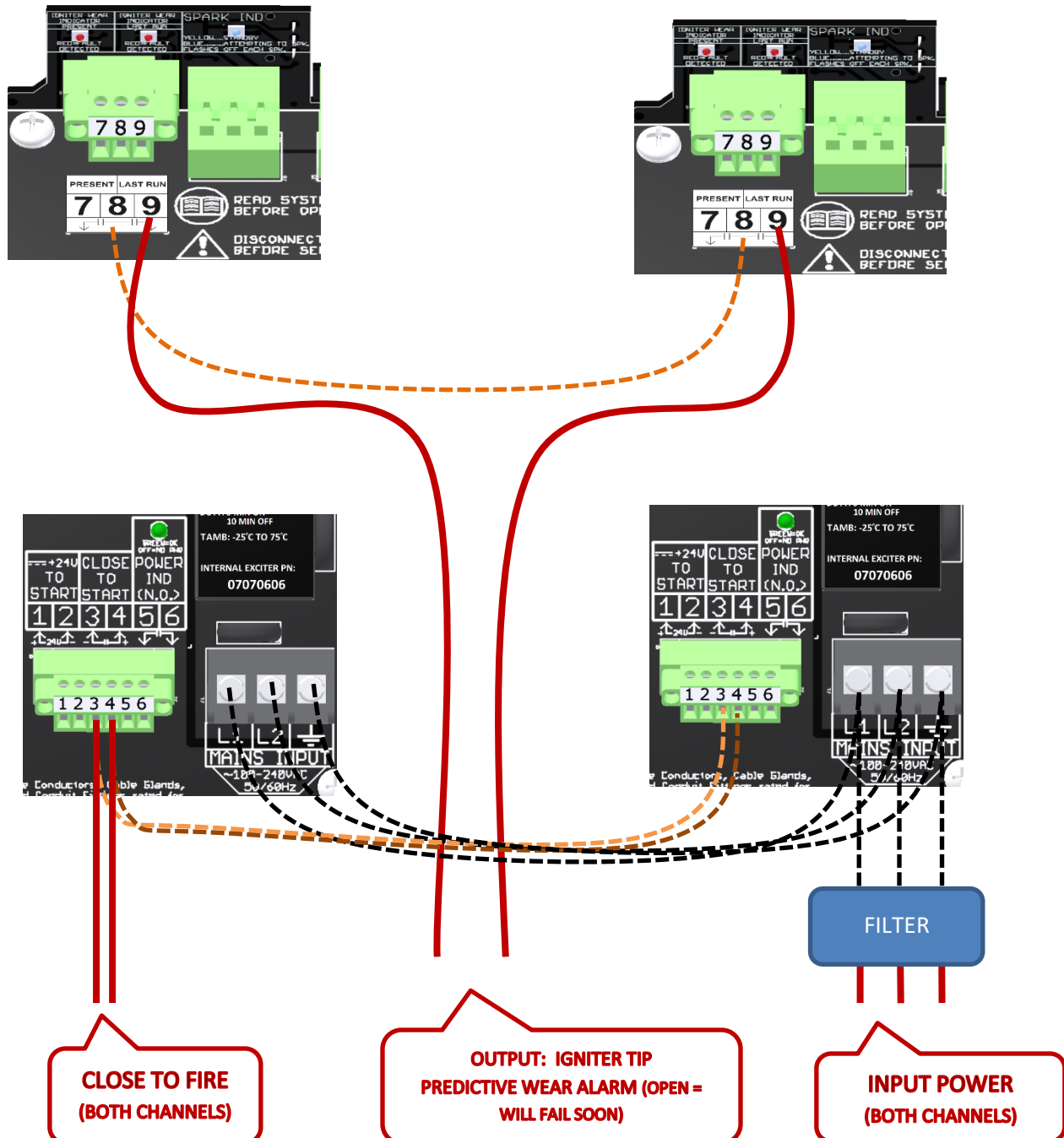
To power the exciters, apply 100-240VAC at 50/60 Hz between terminals L1 and L2, and connect the terminals marked with the ground symbol  $\perp$  to earth ground.

### 5.7.2 Dual unit exciter internal wiring

One set of contacts is used to fire both exciters, wear indicator (fault) contacts for both exciters are wired in series.

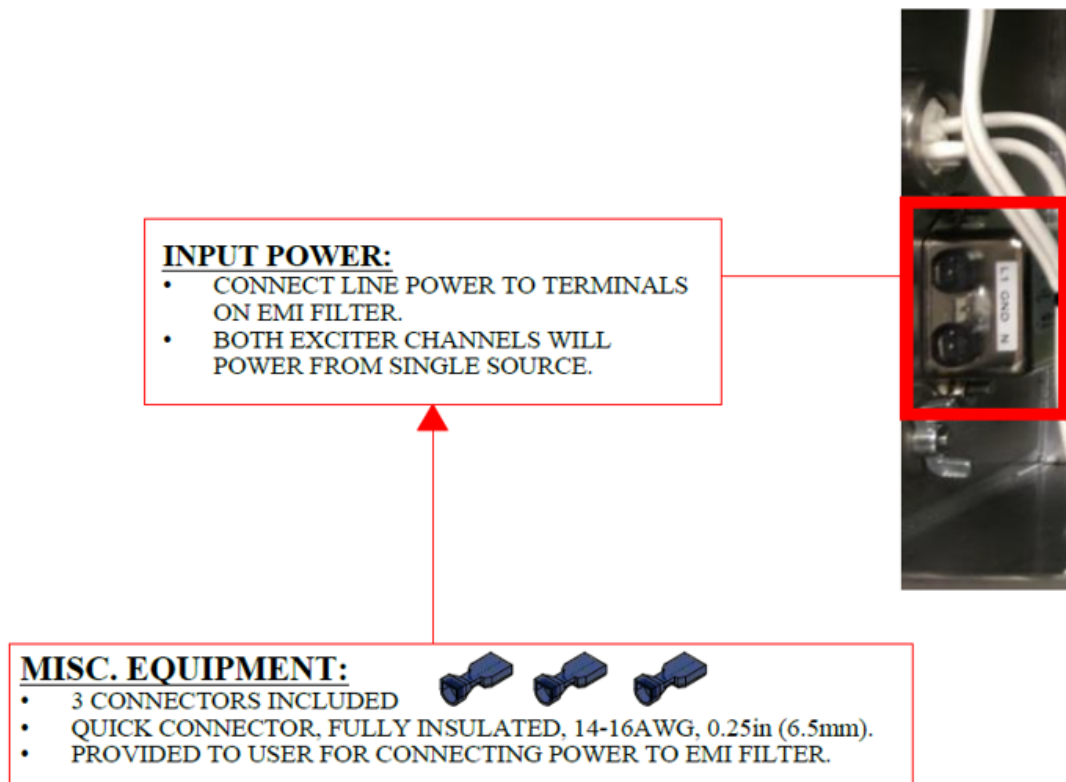
CUSTOMER WIRING: ———

CHENTRONICS PRE- WIRING: - - - - -



### 5.7.3 Dual unit exciter input power wiring

There is an EMI filter located at the bottom of the enclosure. Both exciters are already wired into the EMI filter. Crimp the 3 provided connectors to Line wire (L1), Neutral (N) and Ground (G) and attach connectors to the EMI filter.



### 5.8 Installing the Igniter into a Burner

Consult the burner manufacturer's instruction manual for igniter installation into your specific burner. Clamp the igniter rod or metal harness in place using metal fixtures/clamps.

### 5.9 Equipment Earth Bond

Main earth bond is located at the input power terminal for each module (see below).

All modules should connect separately to a single earth ground. For example, an enclosure with two modules should have individual wires from each earth terminal to the earth ground.

Provide additional enclosure earth bonds per local electrical installation code, if required.

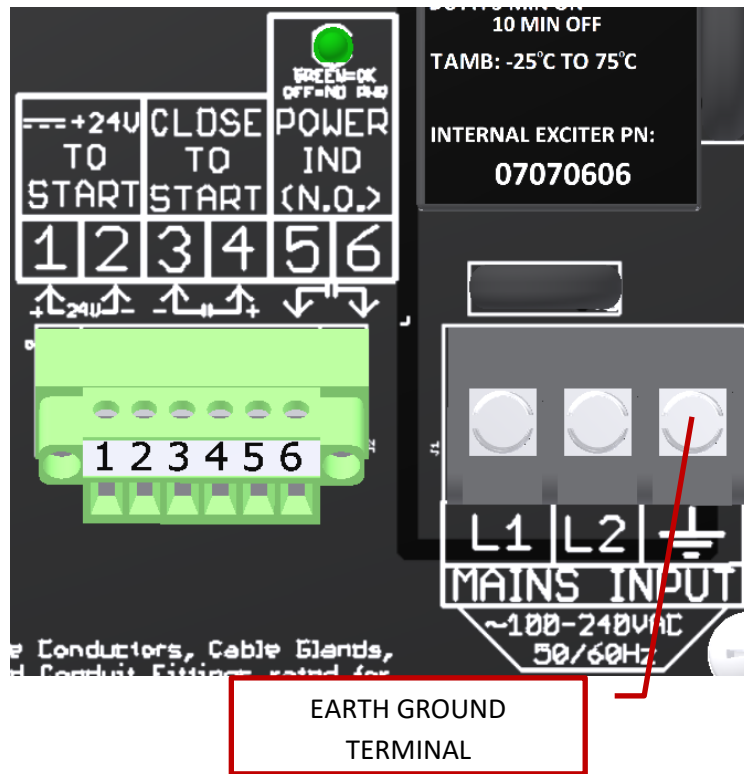


Figure 16: Earth grounding terminal

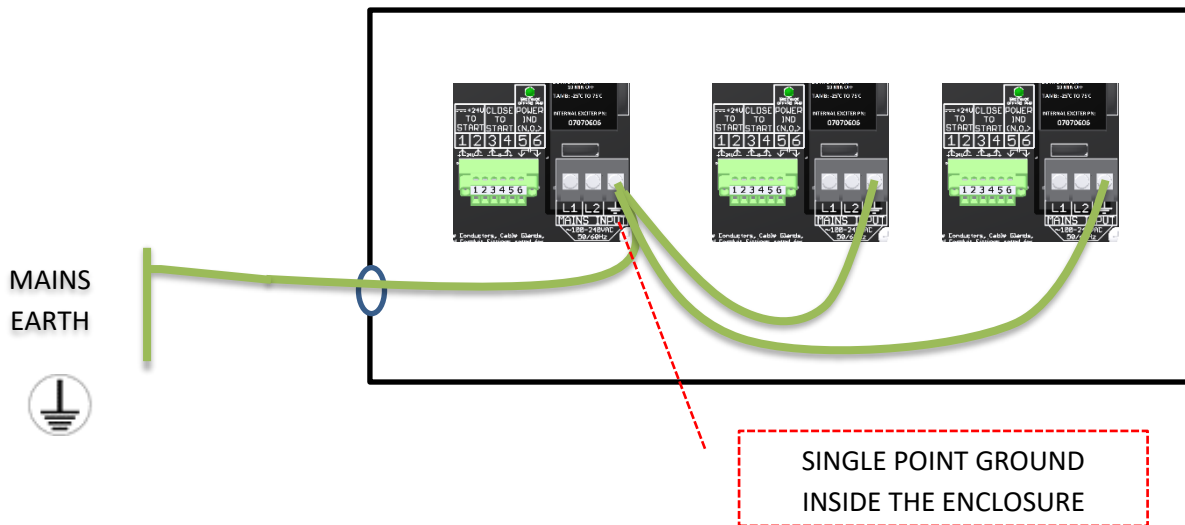


Figure 17: Earthing example (Single point ground)

## 6.0 System Operational Inputs and Outputs

### 6.1 Terminal Key

The following functions illustrate the input and output functionality of the exciter.

#### MAINS TERMINAL

L1

L2



#### TERMINAL DESCRIPTION

Input power (L1/HOT) wire, 14AWG min., 300V min.

Input power (L2/NEUTRAL) wire, 14AWG min., 300V min.

Input (EARTH GROUND) wire, 14AWG, 300V min.

#### OUTPUT TERMINAL

HI

LO

#### TERMINAL DESCRIPTION

Output, Igniter center wire, 14AWG min., 2400V min.

Output, Igniter shell return, 14AWG min., 2400V min.

Return wire must connect directly from this output to harness/igniter shell, NOT to enclosure chassis.

**NOTE:** Chentronics harnesses and igniters are designed to operate with Chentronics exciters.

#### +24V TO START

1-2

#### TERMINAL DESCRIPTION

Input Spark Control – Applying a 24V<sub>DC</sub> signal to these terminals will energize the exciter to spark. Current draw is approximately 6mA.

#### CLOSE TO START

3-4

#### TERMINAL DESCRIPTION

Input Spark Control – Closing terminals 3-4 using a ZVC signal or a jumper wire will energize the exciter to spark. Relay must be able to withstand 24V<sub>DC</sub> when open and 40mA when closed.

**NOTICE:** Do not connect to the +24V TO START terminals and the CLOSE TO START terminals at the same time.

#### POWER INDICATOR

5-6

#### TERMINAL DESCRIPTION

Provides a closed contact output signal when proper input voltage is applied.

Contact rating: 250VAC / 355VDC max; 240mA max; 16-22 AWG

#### IGNITER WEAR: PRESENT

7-8

#### TERMINAL DESCRIPTION

Provides a closed contact output signal when spark rate is greater than the minimum spark rate.

Provides an open contact output signal when spark rate is less than the minimum spark rate.

Contact rating: 250VAC / 355VDC max; 240mA max; 16-22 AWG

#### IGNITER WEAR: LAST RUN

8-9

#### TERMINAL DESCRIPTION

Provides a latched open contact output signal when igniter wear is detected. Contacts will remain open until a start signal is re-applied, at which point they will reset closed until another fault is found. Pin 8 is common between terminals 7 and 9.

Contact rating: 250VAC / 355VDC max; 240mA max; 16-22 AWG



## **HAZARDOUS VOLTAGE**

Do not separate any cables from the enclosure until the power has been disconnected for 5 minutes, and do not energize the cable while it is disconnected from the enclosure.

## **TENSION DANGEREUSE**

Ne pas séparer les câbles du boîtier jusqu'à ce que le courant a été coupé pendant 5 minutes, et ne pas alimenter le câble tandis qu'il est déconnecté du boîtier.



## **STARTLING NOISE**

Igniters can make a loud "snapping" or "popping" noise when fired. Anticipate this noise and warn others to expect it before operating the equipment. Alert others in area before operating equipment.

## **BRUITS SAISSANTS/SURPRENANTS**

Les allumeurs peuvent faire un fort bruit de « claquement » ou un bruit « sec » lors de l'allumage. Anticipez ce bruit et avertissez les autres de s'attendre à ce bruit avant de faire fonctionner l'équipement. Alerte tout individu dans la zone avant de faire fonctionner l'équipement.

## 6.2 System Schematic Diagram

The following schematic block diagram describes equipment functionality.

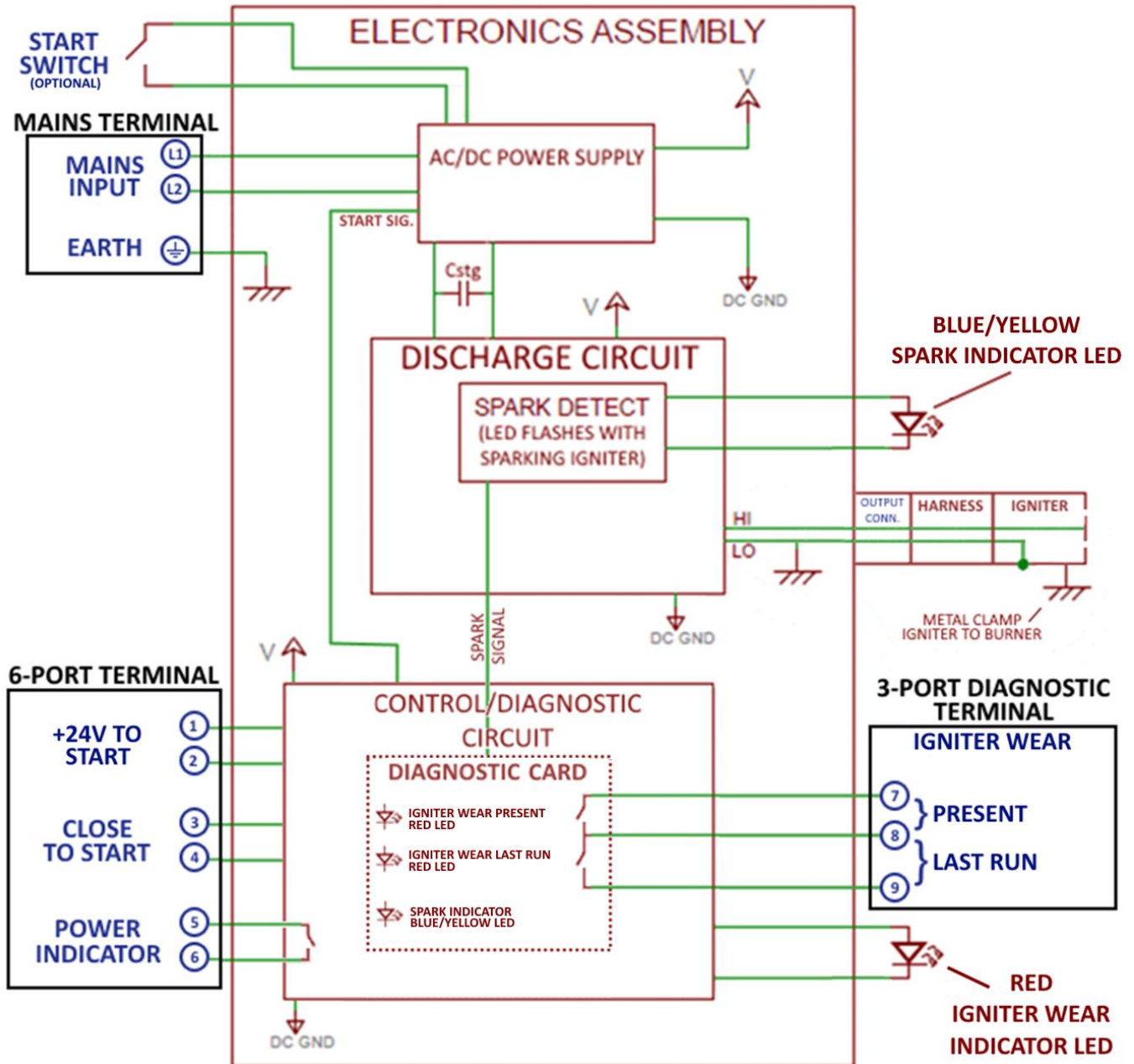


Figure 15: System schematic diagram.

### 6.3 Firing the Igniter

If a jumper is connected between pins 3 and 4 on the top board (CLOSE TO START Terminal), applying mains power to the input power terminals will begin sparking the igniter immediately. If a jumper is not used, the unit will power up in standby mode and can be fired using one of the following methods:

- Apply 24 V<sub>DC</sub> between terminals 1 and 2 (+24V TO START) to spark the igniter.
- Close (apply a ZVC signal) between terminals 3 and 4 (CLOSE TO START) to spark the igniter.
- If included, use the switch on the enclosure to fire the exciter.

**NOTICE:** Enclosure switches come in momentary (hold to fire) and sustained (push on/push off) varieties.

**NOTICE:** Do not connect to the +24V TO START terminals and the CLOSE TO START terminals at the same time. See Section 6.0.

### 6.4 Spark Indicator

The SureSpark system is equipped with a yellow/blue LED enclosure spark indicator which will visually represent the functionality of the Exciter circuit. The LED indicator is on the front of the enclosure and flashes off steadily whenever a spark occurs. If the LED is off, it means that power is not being applied to the exciter. If the LED is on solid yellow, it means the exciter is in standby mode and is ready to fire. If the LED is on blue and flashing at a constant rate, it means the igniter is firing correctly. If the LED is on blue and flashing at an intermittent rate, it means the igniter tip is failing and needs to be replaced. Finally, if the LED is on solid blue, it means the igniter tip has failed and must be replaced. See Table 1 for a quick reference.

Table 1: LED Indicator Key

Flash Rate	Color	Meaning
Always Off	OFF	Device Not Powered
Solid	YELLOW	Ready to Fire (Standby)
Steady Rate	BLUE	Normal Operation
Intermittent	BLUE	Igniter tip near end of life (replace soon)
Solid	BLUE	Igniter tip end of life (replace now)

### 6.5 Igniter Wear Detection

There is a spark diagnostic feature which gives the exciter the ability to detect igniter faults. See Section 6.0 for a description of the IGNITER WEAR: PRESENT and IGNITER WEAR: LAST RUN terminals. There are also LEDs that correspond to these terminals. The IGNITER WEAR: PRESENT LED turns on when the spark rate drops below threshold. The IGNITER WEAR: LAST RUN LED turns on when the spark rate drops below threshold and stays off until the next start signal is applied, at which point it resets on. This LED is located both on the exciter and on the front panel of the enclosure. The diagnostic card also includes a blue/yellow Spark Indicator LED which serves the same function as the external Spark Indicator (See Section 6.4).

## 7.0 Maintenance

### 7.1 Service

The unit is not field-repairable. The exciter internal electronic assembly may be replaced on-site, but the power must be disconnected for at least five minutes before the cover is unlocked and/or removed.

**NOTICE:** *Be sure to take careful note of all connections before removing the exciter internal assembly. Reconnect new internal assembly in the same manner. Incorrect connections or failure to connect all leads can result in damage to equipment.*

### 7.2 Cleaning

- 7.2.1 **EXCITER** – Remove debris that may have accumulated inside the exciter enclosure with a vacuum or non-metallic brush.
- 7.2.2 **HARNESS** – Do not use acid or carbon tetrachloride as cleaning agents on conduit or harness. Clean the exterior with a stiff non-metallic brush moistened in cleaning solvents. Protect cable terminations from solvent contamination during cleaning. Heat or oil stains, which persist on the conduit after cleaning, are permissible.
- 7.2.3 **BASE ROD** – The ceramic well at the Base Rod end of the rod should be sprayed with a cleaning solvent or alcohol and if necessary, cleaned with a lint free rag.
- 7.2.4 **EXTENSION ROD** – The ceramic well at the igniter end of the rod should be sprayed with a cleaning solvent or alcohol and if necessary, cleaned with a lint free rag. The ceramic terminal end should be cleaned with a cleaning solvent or alcohol.
- 7.2.5 **IGNITER TIP** – The ceramic terminal end should be cleaned with a cleaning solvent or alcohol. The tip should be sprayed to remove oil or other hydrocarbons that may contaminate the ceramic surface. Do not clean with a wire brush.



## HAZARDOUS VOLTAGE

Disconnect power before servicing the equipment.

The equipment must be installed and serviced by qualified personnel in accordance with this manual and applicable local and national codes, standards, and ordinances.

The equipment is not field-repairable. Do not attempt to disassemble or repair the equipment.

## TENSION DANGEREUSE

Coupez l'alimentation avant l'entretien du matériel.

L'équipement doit être installé et entretenu par du personnel qualifié, conformément à ce manuel, aux codes locaux et nationaux applicables, et aux normes et règlements en vigueur.

L'appareil n'est pas réparable sur site. Ne tentez pas de démonter ou de réparer l'équipement.

## **8.0 Standard Components and Accessories**

The following is a sample of standard parts available for use with the SureSpark system. For additional parts and technical drawings please contact Chentronics.

### **8.1 Standard 2-Wire Output System Components**

Harnesses – 2-Wire MS3102A Connection PN: 03000300

Base Rods – 2-Wire MS3102A to 02 Series PN: 02000300

Extension Rods – 02 Series connection PN: 02000400

Igniters – 02 Series connection PN: 02000500

**NOTE:** Contact Chentronics for additional component selection.

### **8.2 Standard ARP 670 Coaxial System Components**

Harnesses – ARP 670 connection PN: RP44613NI

Igniters – ARP 670 connection PN: 09002233

**NOTE:** Contact Chentronics for additional component selection.

### **8.3 Standard Explosion Proof Enclosure System Components**

Harnesses – 2-Wire Male Barrier-Gland PN: 06000115

Base Rods – Barrier Gland to 02 Series PN: 02600300

Extension Rods – 02 Series connection PN: 02000400

Igniters – 02 Series connection PN: 02000500

**NOTE:** Contact Chentronics for additional component selection.

## **9.0 Warranty Instructions**

For warranty related inquiries please contact Chentronics at TEL: +1.607.334.5531 or [info@chentronics.com](mailto:info@chentronics.com).

## **10.0 Technical Support**

For technical support related inquiries beyond the scope of this Installation and Operation Manual, please contact Chentronics at TEL: +1.607.334.5531 or [info@chentronics.com](mailto:info@chentronics.com).