

SureSpark™

BD-5 HIGH ENERGY IGNITION SYSTEM Installation and Operation Manual



PN C7778000

**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.

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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.

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 attached or the igniter port appropriately capped.

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 applicable local and national codes, standards, and ordinances.

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

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.

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 connecté ou le port d'allumage correctement fermé.

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 aux codes locaux et nationaux applicables, 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.

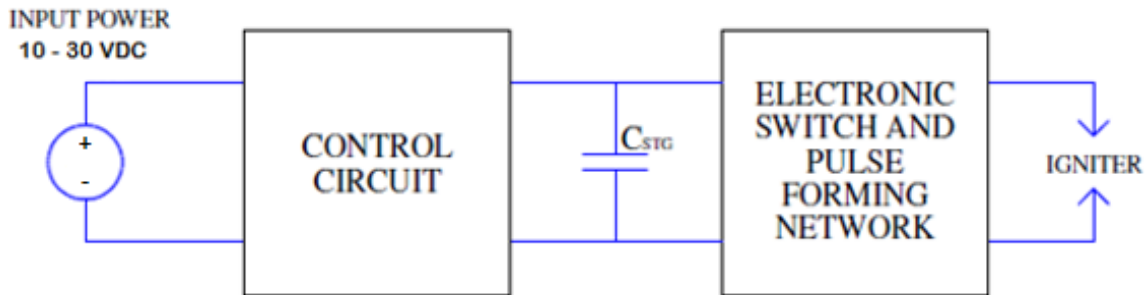


Figure 1: High Energy Exciter basic schematic.

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™** BD-5 is a high Energy Ignition System for use with Biodiesel fuels directly while operating in a wide range of environmental conditions.

4.2 General Arrangement

The **SureSpark™** BD-5 system model number has a high voltage output connector (ARP 670 TYPE 2F) and the input connector is a DC conxall connector. The output and input connectors are supplied separately.

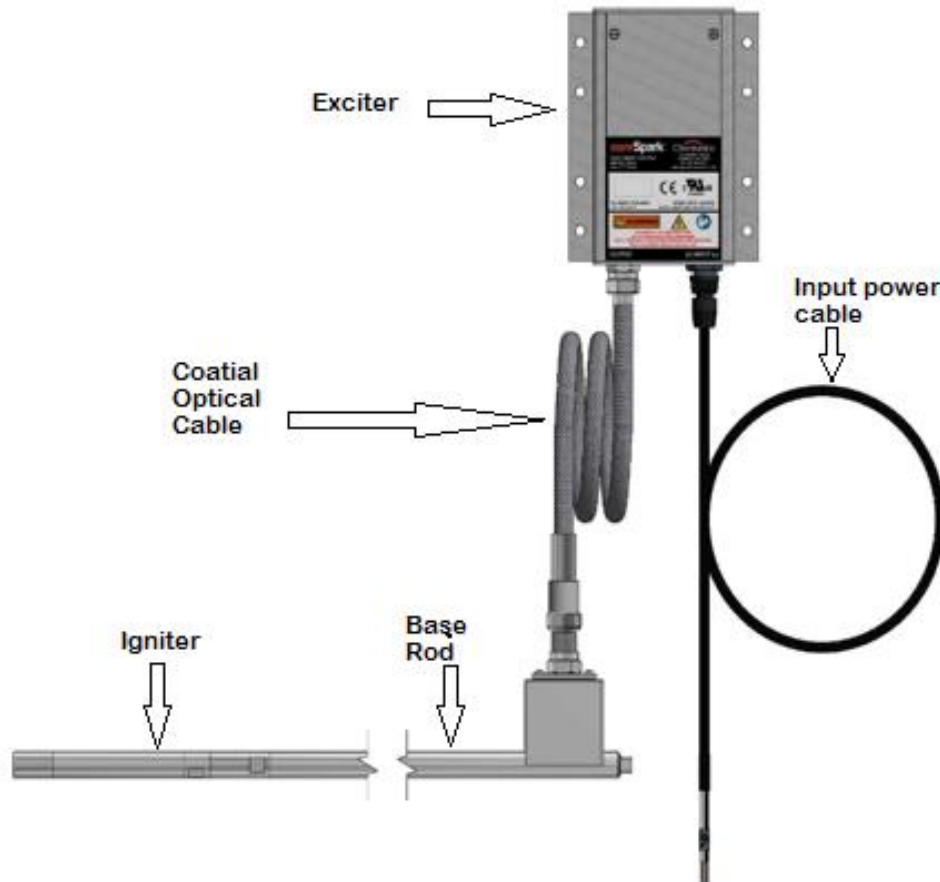


Figure 3: System general arrangement.

4.3 Description of Equipment Protective System

The internal electronics assembly is silicone encapsulated inside an aluminum enclosure.

4.4 Equipment Conditions of Use

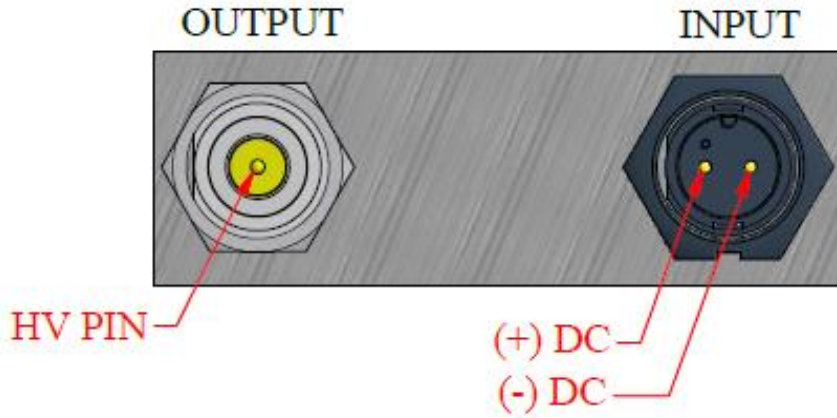
The **SureSpark™** BD-5 system equipment is subject to the following conditions of use and limitations:

1. The equipment shall not be subjected to source of heating or cooling (process temperature) greater than +85°C, or less than -25°C.
2. A switch, fuse, 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 equipment's power connections shall not be joined or separated when the equipment is in use (powered).
4. The equipment's igniter connections shall not be joined or separated when the equipment is in use (powered).
5. The equipment shall not be operated without an igniter attached.
6. The igniter, extension rod, or base rod must be secured to the grounded building frame or chassis using a metal fixture.

4.5 System Electrical and Physical Specifications

Application:	Direct Spark Ignition of Gas and Light oil Fuels
Input Power:	10-30VDC, 1.5A MAX
Exciter Type:	High Energy Ignition
Exciter Duty Cycle:	30 sec ON / 1 min OFF
Exciter Spark Command:	Switch on the DC input to begin sparking
Exciter Power:	2J per Spark at 5 Sparks per Second Nominal
Operating Temperature Limits:	-25°C to 85°C
Storage Temperature Limits:	-50°C to 105°C
Enclosure:	Aluminum, encapsulated internal assembly
Electronics Assembly Weight:	Approximately 3lb
Dimensions:	Approximately 3.07 x 6.00 x 4.80 inches.

5.0 Installation Instructions



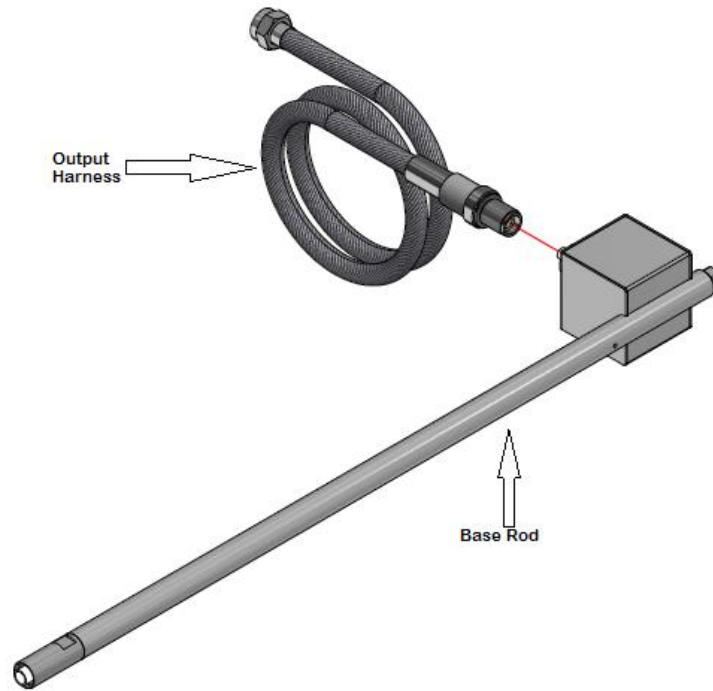
5.1 Harness Installation

The SureSpark™ BD-5 system has an easy installation procedure. Thread the male end of the harness into the output connector (ARP 670 TYPE 2F) on the exciter tighten to 150in-lb.



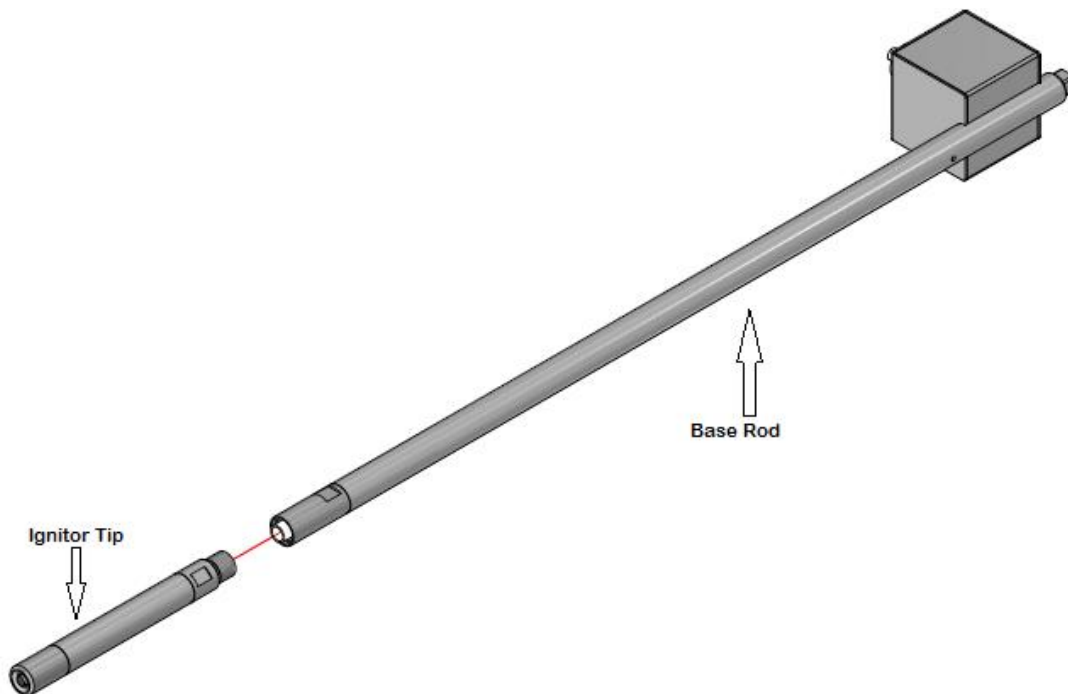
5.2 Base Rod Installation

Thread the other end of the harness into the base rod and tighten to 150in-lb. The base rod will be in between the harness and the ignitor, which will be shown in the next step.



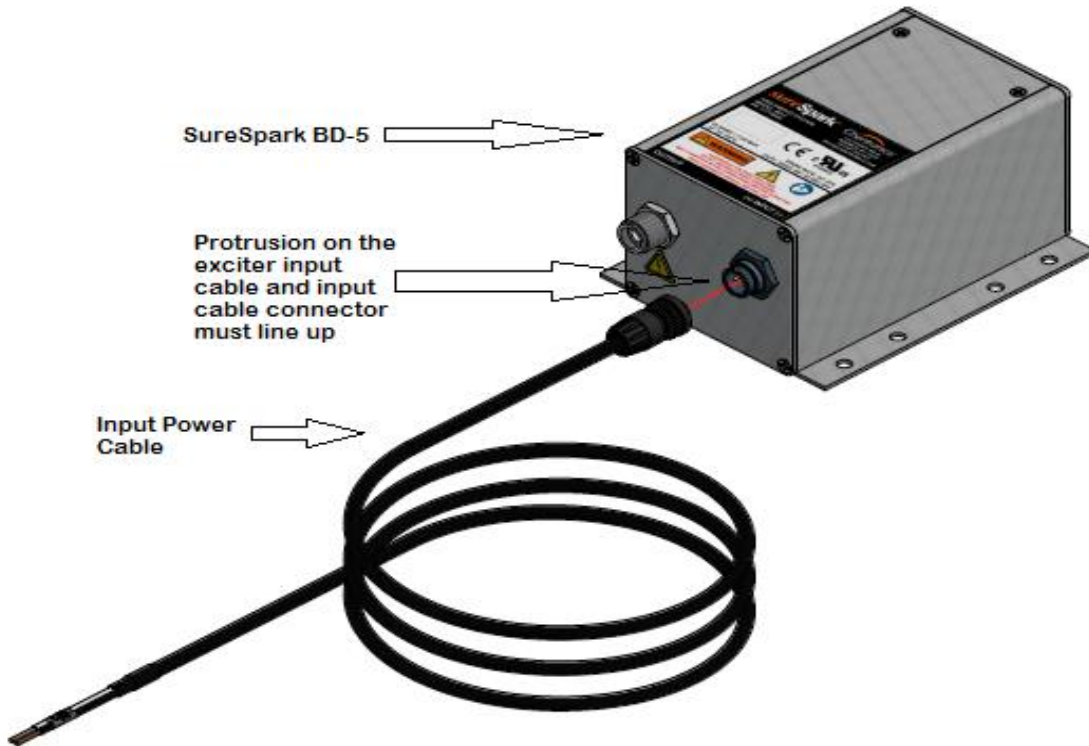
5.3 Ignitor Tip Installation

Thread the base rod in to the ignitor and use the flats to wrench tighten.



5.4 Power Cable Installation

The input power connection utilizes a keyed ¼-turn connection. Align the key, press the connector into place, then turn the connector outer shell ¼-turn to engage.



⚠ CAUTION

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.

⚠ CAUTION

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.

6.0 Standard Components and Accessories

The following are a sample of standard parts available for use with the **SureSpark™** BD-5 system. For additional parts and technical drawings please contact Chentronics®.

6.1 Standard System Components

Harness - E7700000-Z-02M, HARNESS, ARP670 TYPE 2M TO 2F, 2M [6.6'] LONG

Igniter Tip - E90258, IGNITER TIP, 0.625" OD, 5.00" LONG

Input Power Cable - CBD07070130-6.00, MATES TO CONXALL 7832-2PG-300, 6.00' (1.8M) LONG

Base Rod - E3000003-1.00, BASE ROD, 0.625" OD, E-SERIES, 1.00' LONG

7.0 Warranty Instructions

For warranty related inquires please contact Chentronics® at TEL: +1.607.334.5531 or info@chentronics.com

8.0 Technical Support

For technical support related inquires beyond the scope of this Installation and Operation Manual, please contact Chentronics® at TEL: +1.607.334.5531 or info@chentronics.com