

ACL

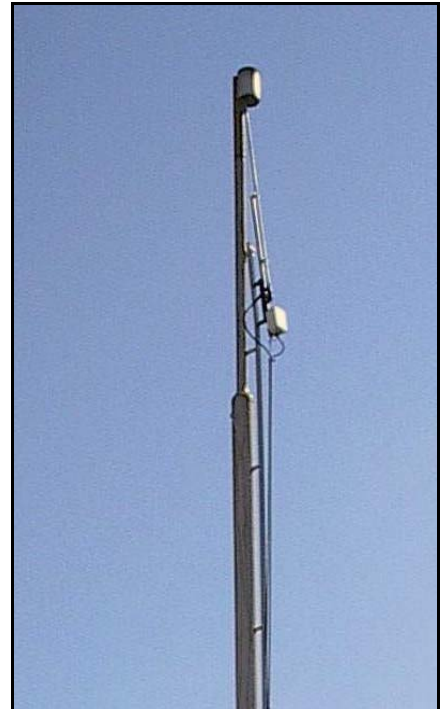
Manufacturing Inc.

ACL 3000

Flare Stack Ignition System

Features

- Fully retractable ignition systems
- Continuous pilot with electronic automatic re-light system
- Solar, 12 VDC, 24 VDC or 120/240 VAC
- Unique design provides for a pilot and ignition in a single unit
- Flame sensing and control provided by flame rod technology
- Extremely low fuel consumption
- CSA approved Class 1 Div 2 location
- CSA approved C22.2 No 199-M89. Combustion safety controls and solid state ignitors for Gas & Oil burning equipment.



The ACL Model 3000 comes in 3 models., which provides a versatile and reliable system for igniting all types of flare stacks in all types of flaring conditions.

MODELS	
ACL 3000-P	Retractable continuous pilot. Pilot consumption 6scfh @ 5psi
ACL 3000-I	Retractable continuous spark ignitor, 30 sparks per second.
ACL 3000-PI	Retractable continuous pilot and automatic pilot re-light, with alarm capabilities.

Features

- Pilot ignitor and ignition coil all mounted on retractable trolley system
- Pilot gas is ignited inside pilot nozzle by electrode
- Cable & pilot gas line secured inside 1 5/8" rail system
- 1400 lb winch and 5/32 SST aircraft hoisting cable
- Ignitor constructed of SST for extreme operating conditions
- Solid state ignition delivers 30 sparks per second
- Flame rod technology utilized to sense pilot flame, ignition resumes immediately upon loss of pilot flame.



The ACL 3000's versatility allows you to change between all three models without changing the ignition controller. eg. The continuous spark ignitor can be upgraded to a continuous pilot automatic re-light simply by changing the ignitor rod assembly.

Theory of Operation

The ACL 3000 utilizes a single ignitor/flame rod to provide both flame acknowledgement and ignition at the pilot tip. When the ACL 3000 starts its ignition sequence, fuel gas travels to the pilot tip where the ignitor/flame rod is located and sparking. Once the gas is lit, the flame becomes a current path for the ignitor/flame rod for flame acknowledgement and the unit stops sparking. If this flame is ever to blow out, the current path is broken and the ignitor/flame rod starts sparking within 1 second.

Sequence of Operation

	System On Light	Pilot Light	(Optional Solenoid)	Alarm Light/ Alarm Contacts	Ignition	Run Status Contacts
Stop/reset Pressed	OFF	OFF	OFF	OFF	OFF	OPEN
Push start 5 second trial for ignition	ON	ON	ON	OFF	ON	CLOSED
Pilot flame lit	ON	ON	ON	OFF	OFF	CLOSED
Pilot flame blows out	ON	ON	ON	OFF	ON	CLOSED
Fails to light after 5 seconds	ON	OFF	OFF	OFF	OFF	OPEN
5 seconds later (T2 adjustable)	ON	OFF	OFF	ON	OFF	OPEN
15 seconds later (T3 adjustable) sequence restarts 5 second trial for ignition (Note 1)	ON	ON	ON	OFF	ON	CLOSED

Note 1: Restart cycle is continuous until pilot flame is established and acknowledged.

Setting Spark Gap

Spark gap should be approximately 1/8" and is factory preset.

Ignitor Rod Adjustment

There are three ignitor rod adjustments that can be made in order to achieve correct positioning of the pilot tip for reliable light off.

- Ignitor rod can be adjusted up or down on the trolley arm by loosening the 4 bolts, which hold the ignitor rod itself.
- The trolley arm can be adjusted up or down by loosening the (2) two bolts on the trolley assembly.
- The angle at which the ignitor rod tips into the shroud can be adjusted by changing the hole patterns on the trolley wheels.

Electrical Connection

The electrical drawing provided with each unit mounted in the control box will provide enough information for connection of the unit and troubleshooting if required. The ignitor box mounted on trolley is already connected to the cabtire. The only connections required are the power supply hook-up and the cabtire wire from the ignitor box into the control box.

Piping Connections

The ACL 3000 comes with a regulator, gauge and 1/4" flexible hose. The 1/4" hose is to be directly connected to the output of the regulator. Gauge to be also mounted on regulator. A clean, dry fuel gas supply is to be piped to inlet of the regulator and not to exceed 150 psi. Regulator can be mounted close to the bottom of stack approximately 3 to 4 feet above the ground.

Start-Up

After electrical connections and piping connections are completed, ensure supply gas is purged of any solid particles as they may get caught in the pilot orifice. Install trolley into rail system and hoist with hand winch. The pilot line should be fed into the rail portion to protect it from the elements and wind. Once the ignitor and trolley have been hoisted, press the start button and then turn on fuel gas (5-10 psi). The unit will now be in normal operating service.

Alarm Output

Alarm output status provides the user with a normally closed and normally open set of dry contacts. The only time these contacts change state is when the controller has been unsuccessful in lighting the pilot assembly after 1 try.

Run Status

This output provides a run status of the controller. These contacts are a normally open set of dry contacts when the controller is off or in alarm state. When the controller is running normally, these contacts are closed.

Restart Timer

The ACL 3000 comes with a restart timer so that when the controller goes into alarm mode the restart timer (T3) is activated and will clear the alarm and begin start sequence again. The time increments are 15 seconds, 1 minute 15 seconds, 2 minutes 15 seconds, and so on.

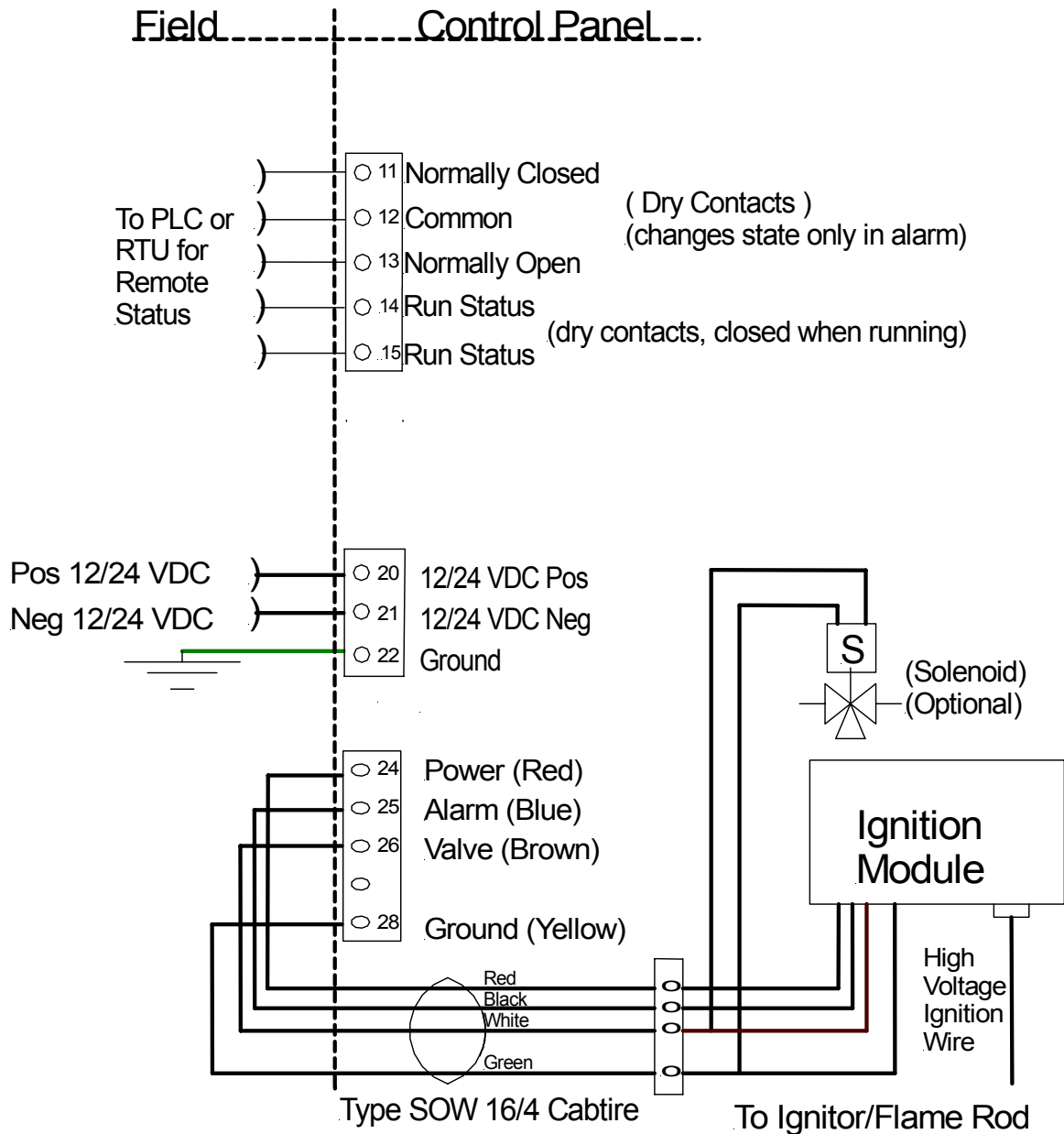
Re-Setting the Controller

Re-setting of the controller is required when:

- Power outage occurs
- Stop button is pushed inadvertently
- Pilot gas is lit from a source other than the ignition module.

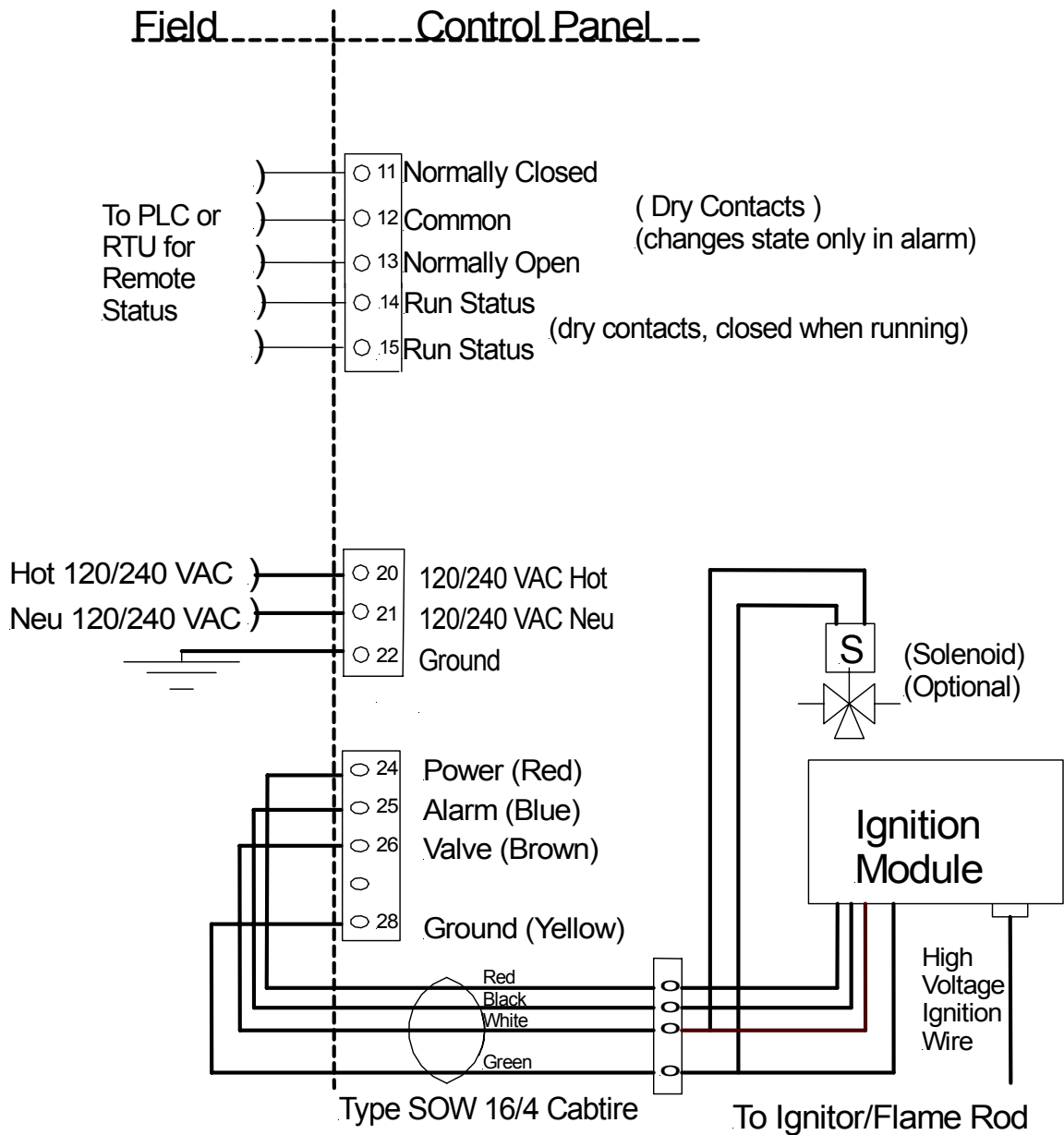
To reset, the operator must turn off the fuel gas and press the stop button of the controller. Wait 1 minute, then press the start button, then turn on fuel gas while in ignition mode.

ACL 3000 12/24 VDC



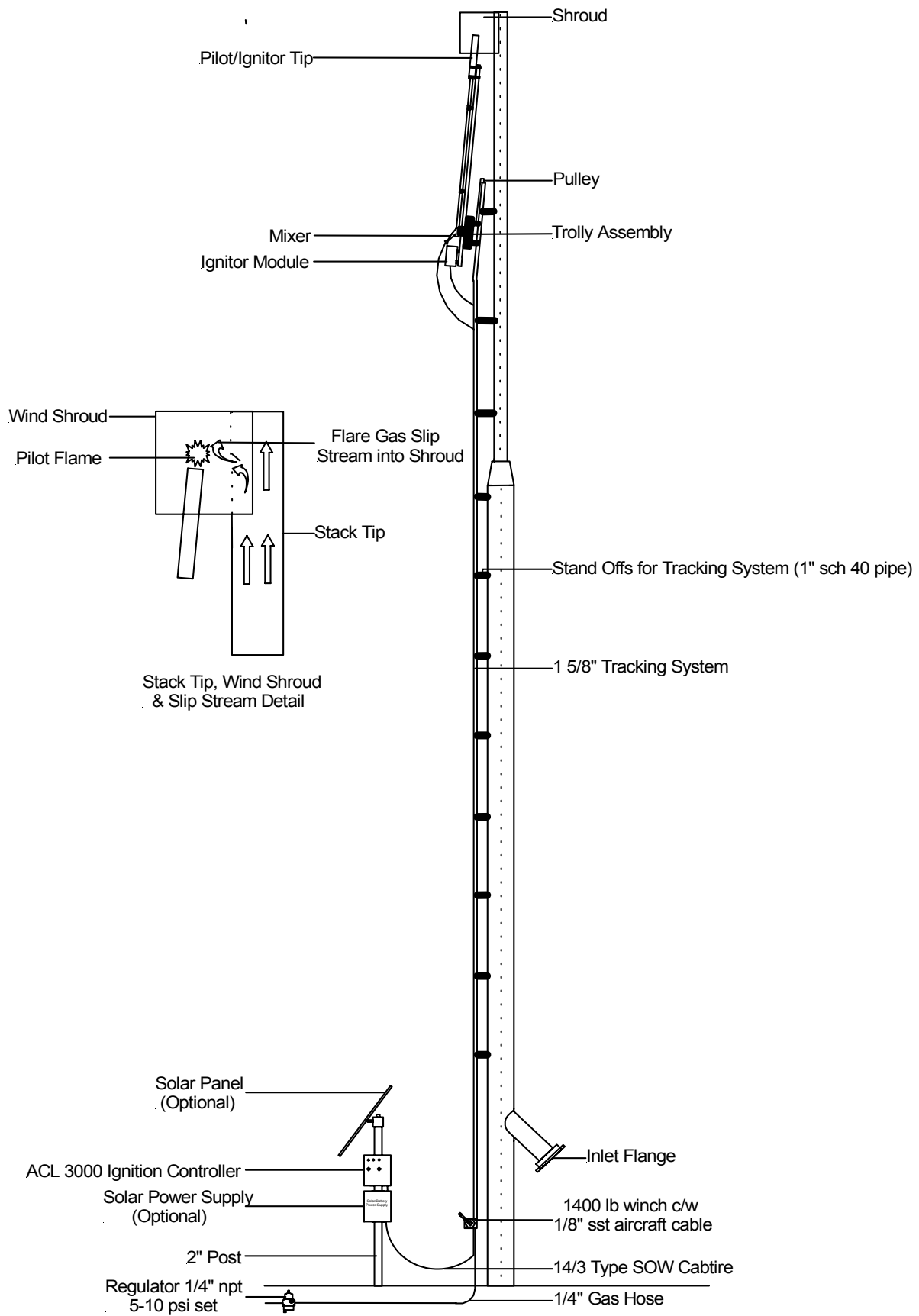
Specifications	
Voltage	12-24 VDC
Current	.204/.102 amps
Power	2.45 watts
Operating temperature	-40 C to 60 C
Flame sensitivity	1 micro amp minimum
Flame failure response time	0.8 seconds maximum
Spark rate	25 sparks/second

ACL 3000 120/240 VAC 50/60 Hz



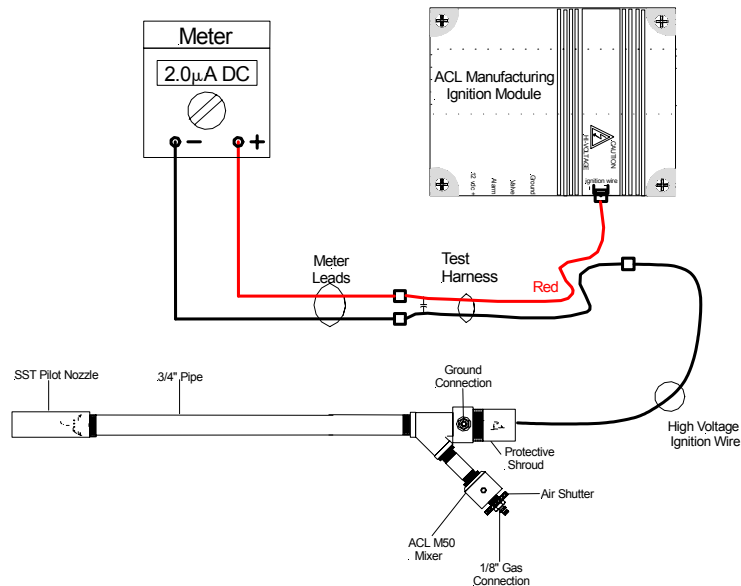
Specifications	
Voltage	120/240 VAC
Current	.058/.029 amps
Power	7 watts
Frequency	50/60 Hertz
Operating temperature	-40 C to 60 C
Flame sensitivity	1 micro amp minimum
Flame failure response time	0.8 seconds maximum
Spark rate	25 sparks/second

ACL 3000 Flare Stack Ignition System



Flame Signal Test Procedure

1. Turn Power off to ACL Controller
2. Remove high-voltage ignition wire from ignition module and insert meter leads w/test harness as shown.
3. Turn on power and initiate start sequence.
4. Meter will give erratic readings during ignition period but should settle down between 1-2 μA reading on meter.
5. Adjust air shutter on pilot mixer and adjust pressure on regulator to achieve a flame signal close to 2 μA which is optimum.



Troubleshooting Guide

Fails to attempt ignition

Blown fuse	Replace fuse 4 amp max-F1,F2 on circuit board
Battery voltage low (solar pkg. Only)	Charge battery to minimum of 11.5 volts. Check solar panel connections.
Poor power connections	Check connections on terminal strips
Defective ignition module	Remove module and send for repair/replace
Defective control board	Remove control board & send for repair

Attempts ignition but doesn't light

Fuel gas supply to pilot may be too high or too low	Pilot fuel gas supply should be set at 5 pounds, adjust air/fuel mix on pilot, and adjust regulator
Gap setting on ignitor/flame rod not correct	Gap should be approximately 1/8"
Poor ground	Ensure ground connections are good in control box and at pilot assembly on trolley
Pilot solenoid failure (if applicable)	Replace solenoid
Plugged orifice on pilot	Clean out pilot orifice

Weak or erratic spark

Gap setting too wide	Shorten gap setting 1/8" 0 1/4" max
Ignition cable defective or insulation worn	Replace cable
Poor ground	Check ground at both ends (control box & ignitor end)
Contaminated electrode	Remove electrode, clean & swab 3/4" pipe

Alarm rings in but pilot still lit

Controller microprocessor locked up	Remove power to controller for 10 seconds Perform restart sequence as in manual
Poor ground	Tighten all ground connections
Flame not ionizing properly	Check orifice, adjust fuel gas pressure
Faulty ignition module	Remove module and send for repair/replace
Defective control board	Remove control board & send for repair