

# **IGNITOR/BSL®**

## **MODEL #PSP-12110-4X-01**

### **NATURAL DRAFT PILOT GAS IGNITOR MONITOR**



P.O. Box 12107; New Iberia, LA 70562-2107 - 3408 E. Old Spanish Trail; New Iberia, LA 70560-8280  
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**NOTE:**

**THIS EQUIPMENT SHOULD BE OPERATED BY TRAINED PERSONNEL ONLY.**

**\*\*CAUTION\*\***

**THIS UNIT PRODUCES HIGH VOLTAGE ELECTRICAL CURRENTS AND MAY CAUSE SERIOUS INJURY AND/OR DEATH BY ELECTROCUTION IF OPERATED IN ANY MANNER IN WHICH IT WAS NOT INTENDED FOR. ALWAYS FOLLOW THE SIMPLE 1 THROUGH 6 OPERATING PROCEDURES TAG LOCATED ON THE FRONT DOOR OF THE IGNITOR/BSL®.**

**PLEASE READ THE FOLLOWING:**

1. READ ALL INSTALLATION AND OPERATING INSTRUCTIONS PRIOR TO INSTALLING OR OPERATING THE **IGNITOR/BSL®**.
2. REVIEW WORK AND INSTALLATION AREAS. OBTAIN NECESSARY WORK PERMITS FOR THE AREA THAT THE WORK WILL BE PERFORMED IN.
3. COMPLETED INSTALLATION SHALL MEET AND/OR EXCEED ANY AND ALL APPLICABLE ELECTRICAL CODES, GOVERNMENTAL LAWS AND COMPANY POLICIES.
4. ANY PERSON INSTALLING THE **IGNITOR/BSL®** SHOULD BE ELECTRICALLY, PNEUMATICALLY AND PROCESS EQUIPMENT QUALIFIED.

# PSP-IGNITOR/BSL®

Model Number: PSP-12110-4X-01  
Natural Draft Pilot Ignitor Monitor

## Specifications:

Input Voltage: 110/220 VAC 60 HZ AND/OR 12 VDC  
Output Voltage: 6000 volts on 25ft. line  
Input current: .250 ampere  
Enclosure size: 8" W x 10' H x 4" D  
Enclosure material: 316 S.S.  
Shipping weight: 17 lbs.

## A. INSTALLATION INSTRUCTIONS

1. This unit to be installed by qualified personnel.
2. Locate area and mount **IGNITOR/BSL®** PSP-12110-4X-01 Control Box within 5-7 feet of Burner/Flame Arrestor housing. (installation kits are available)
3. Shutdown any and all utilities (i.e., gas, electricity) to Burner/Pilot and allow Burner/Pilot components to cool to ambient temperature.
4. Remove access cover of Flame Arrestor housing.
5. Remove Pilot Assembly from Burner/Flame Arrestor housing.
6. Install ½" electrical seal on Flame Arrestor housing at a convenient location.
7. Install and connect ½" flexible conduit from PSP-12110-4X-01 **IGNITOR/BSL®** Unit to Burner/Flame Arrestor housing using flexible conduit connectors provided with unit.
8. Using electrical tape, connect high temperature ignition wire to green ground wire and feed into flexible conduit. Pull these two wires through flexible conduit leaving excess wire lengths at each end.
9. Strip ½" of insulation from ground wire and connect to brass lug inside PSP **IGNITOR/BSL®** enclosure.
10. Unplug the crimp connector that is plugged into PSP **IGNITOR/BSL®** Module.
11. Strip 5/16" of insulation from high voltage wire.
12. Insert high temperature ignition wire fully into the crimp connector and crimp.

13. Inside the Burner/Flame Arrestor housing pull the excess high temperature wire and ground wire leaving a small excess of wire remaining inside **IGNITOR/BSL®** enclosure.
14. Remove pilot tip and pilot orifice from pilot assembly. **Drill the pilot orifice to 1/16" diameter and re-assemble.** Install the ignitor rod assembly onto pilot nipple. Install new pilot tip supplied with unit using Teflon tape.
15. Adjust ignitor rod on pilot nipple so that the tip of ignitor rod is near the end of the flat cover plate on the 3 bladed pilot tip and the gap is approximately 1/4". Secure locking screw to pilot nipple.

**\*\*Note:** The ignitor rod can be cut and bent to achieve appropriate positioning. Take care not to damage ceramic insulator.

16. Strip 3/8" of insulation from green ground wire and crimp ring terminal to ground wire.
17. Connect ground wire to ignitor rod set screw.
18. Strip 5/16" insulation from high temperature ignition wire.
19. Unplug Rajah connection from ignitor rod and unscrew the knurled end from the female connector. Insert the ignition wire fully into the knurled end and re-assemble Rajah connection crimping the high temperature ignition wire by tightening the Rajah connector.
20. Plug the Rajah connector to the ignition rod.
21. Re-install pilot assembly into Burner/Arrestor housing.

**\*\*Note:** The end of the Pilot tip should be 1/2" shorter than the burner tip and should be positioned so that the pilot flame is as close as possible to the main burner tip for main burner ignition. (Pilot is usually best if placed on underside of Main Burner)

22. Connect pneumatic instrumentation to the 3-way N.C. solenoid valve as per diagram. Port 1 is N.C. port, 2 is common and port 3 is N.O.
23. Connect 220/110 VAC 60 HZ and/or 12 VDC power to the **IGNITOR/BSL®**.
24. Review all connections and installation. Check for tightness of all connections. Close door to **IGNITOR/BSL®** and tighten door clamps.

After reading the operation instructions and testing the unit, refer to Crouse Hines Electrical Seal Installation Manual and proceed as instructed. Installation will then be complete.

# OPERATING INSTRUCTIONS

## FOR INSTALLATION ASSISTANCE CONTACT

### PROCESS SOLUTIONS & PRODUCTS

1. Verify installation instructions have been followed.
2. Turn **IGNITOR/BSL®** switch to the OFF position.
3. Make certain that the Main Burner Gas and Pilot Gas Block Valves are closed and there are no flammables in the area or in the Firetube.
4. Verify that AC power provided by others is 220/110 VAC 60 HZ and/or 12 VDC.
5. Close the AC and/or DC Power Breaker.
6. The Flame Arrestor Housing should still be dis-assembled from the installation process.
7. Again, be certain that there are no flammables in the area or inside of the Firetube.
8. Turn the **IGNITOR/BSL®** to the ON position. Sparking will occur within 1 second and continue for approximately six seconds. After six seconds the **IGNITOR/BSL®** will switch to the tripped mode, meaning there is no voltage to Ignitor Rod, no voltage to the Solenoid Valve (failsafe) and the Alarm Lamp is illuminated.
9. If sparking did not occur in step 9 or the sparking was intermittent, this would be an indication of the gap of the Ignitor Rod to the 3 bladed pilot tip is too great and adjustments should be made after the **IGNITOR/BSL®** switch is turned to the OFF position AC and/or DC power is disconnected.
10. After final adjustments are made to the Ignitor Rod steps, to adjust the Pilot Gas Pressure should be made.
12. Adjust the Pilot Gas Regulator to approximately **0.5 PSI**.
13. Close the AC breaker.

14. Turn the **IGNITOR/BSL®** switch to the ON position. Sparking will occur immediately. Slowly open the Pilot Gas Block Valve, gas is now flowing to the pilot tip. This step may require 2 or 3 attempts to ignite the Pilot Gas until all of the air is purged from the pilot system. **Always allow two minutes** before trying to re-ignite pilot so that gas is not allowed to accumulate in the Firetube section. Once pilot flame is established, adjustments may be needed to the Pilot Gas Pressure Regulator and/or adjustments to the Ignitor Rod so that the Ignitor Rod is constantly in the pilot flame.
15. The Ignitor Rod must be in the pilot flame for the **IGNITOR/BSL®** to remain "In Service". If the pilot gas ignites but burns away from the Ignitor Rod and pilot tip, the **IGNITOR/BSL®** will not sense the flame present and begin sparking for six seconds. If the pilot flame is established within the six seconds on the pilot tip and the Ignitor Rod is in the flame, the **IGNITOR/BSL®** will remain "In Service". If the pilot flame is not established within the six seconds the **IGNITOR/BSL®** will trip to the fail mode. To reset the Ignitor/BSL® from the fail/trip mode, turn the **IGNITOR/BSL®** switch to the OFF position and wait five seconds. Then switch to the START position.

**THE IDEAL PILOT FLAME IS A LAZY BLUE FLAME WITH YELLOW FINGERS.**

16. After final adjustments have been made, turn off the **IGNITOR/BSL®** and close the Pilot Gas Block Valve.
17. Reassemble the Burner/Flame Arrestor Housing.
18. Allow two minutes for Firetube to purge with air.
19. Turn **IGNITOR/BSL®** switch to ON position. Slowly open the Pilot Gas Block Valve. After pilot flame is established, fully open the Pilot Gas Block Valve. Put all control panel selectors in the "In Service" position or any devices that have been placed in the "In Bypass" position should now be in the "In Service" position.
20. Slowly open the Main Burner Block Valve and monitor the flames inside the Firetube through the Observation View Port. If the Main Burner does not light instantly, quickly close the Main Burner Block Valve to prevent the accumulation of gas in the Firetube. This is an indication that the pilot is not properly positioned and the pilot assembly should be moved to allow the pilot flame to light the Main Burner as soon as there is gas present at the main burner tip. When the pilot adjustments are completed and the Main Flame lights instantly when the Main Burner Block Valve is opened, the unit is in full operation.

**Testing your IGNITOR/BSL®:**

1. With the unit in full operation and all devices in the "In Service" position, close the Pilot Gas Block Valve. The **IGNITOR/BSL®** should trip to the fail mode within **ten seconds** of the flame extinguishing.

# 8F Condulet® Sealing Fittings

## Chico Sealing Compound and Fiber Page 196

Cl. I, Div. 1 & 2, Groups A,B,C,D  
 Cl. II, Div. 1, Groups E,F,G  
 Cl. II, Div. 2, Groups F,G  
 Cl. III

Explosionproof  
 Dust-Ignitionproof

### Application:

EYS and EZS sealing fittings:  
 • restrict the passage of gases, vapors or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures  
 • limit explosions to the sealed-off enclosure  
 • limit precompression or "pressure piling" in conduit systems

Sealing fittings are required:  
 • at each entrance to an enclosure housing an arcing or sparking device when used in Class I, Division 1 and 2 hazardous locations. To be located as close as practicable and, in no case, more than 18" from such enclosures  
 • at each conduit entrance of 2" size or larger to an enclosure or fitting housing terminals, splices or taps when used in Class I, Division 1 hazardous locations. To be located as close as practicable and, in no case, more than 18" from such enclosures  
 • in conduit systems when leaving Class I, Division 1 or Division 2 hazardous locations  
 • in cable systems when the cables either do not have a gas/vaportight continuous sheath or are capable of transmitting gases or vapors through the cable core when those cables leave the Class I, Division 1 or Division 2 hazardous locations

### Features:

EYS and EZS sealing fittings include:  
 • minimum turning radius  
 • large openings with threaded closures to provide easy access to conduit hubs for making dams  
 • integral bushings in conduit hubs to protect conductor insulation from damage  
 • taper-tapped hubs to ensure ground continuity  
 EYS sealing fittings are available for installation in either vertical only or in both horizontal or vertical positions.

EZS sealing fittings for installation at any angle; the covers with opening for sealing compound can be properly positioned to accept the compound.

### Standard Materials:

- Bodies – *Feraloy*® iron alloy and/or ductile iron
- Plugs – *Feraloy* iron alloy and/or steel
- Removable nipples – steel

### Standard Finishes:

- *Feraloy* iron alloy and ductile iron – electrogalvanized and aluminum acrylic paint
- Steel – electrogalvanized

### Options:

- Copper-free aluminum bodies, nipples and enclosures – add suffix - SA\*

### Size Ranges:

- ½" – 6"

### Certifications and Compliances:

NEC/CEC:

- **EYS1-3, 11-31, 16-36, 116-316**  
 Class I, Division 1 & 2, Groups A,B,C,D  
 Class II, Division 1, Groups E,F,G  
 Class II, Division 2, Groups F,G  
 Class III
- **EYS41-101, 416-1016**  
 Class I, Division 1 & 2, Groups B,C,D  
 Class II, Division 1, Groups E,F,G  
 Class II, Division 2, Groups F,G  
 Class III
- **EYS29, 4-014, 46-0146**  
**EZS1-8, 16-86**  
 Class I, Division 1 & 2, Groups C,D  
 Class II, Division 1, Groups F,G  
 Class II, Division 2, Groups F,G  
 Class III

- UL Standard: 886
- CSA Standard: C22.2

### Dimensions

#### EYS 16 Series

Size	a	b	Turning Radius
½	3 <sup>9</sup> / <sub>32</sub>	1¼	1 <sup>5</sup> / <sub>8</sub>
¾	3 <sup>12</sup> / <sub>16</sub>	1½	1 <sup>29</sup> / <sub>32</sub>
1	4 <sup>5</sup> / <sub>16</sub>	1¾	2 <sup>3</sup> / <sub>8</sub>

#### EYS 46 Series

Size	a	b	Turning Radius
1¼	5 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	1 <sup>23</sup> / <sub>32</sub>
1½	5½	2 <sup>7</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>
2	6¼	3	2 <sup>5</sup> / <sub>16</sub>
2½	7½	3½	2 <sup>11</sup> / <sub>16</sub>
3	8½	4¼	3 <sup>5</sup> / <sub>16</sub>
3½	9 <sup>3</sup> / <sub>16</sub>	4¾	3 <sup>7</sup> / <sub>16</sub> ‡
4	9¾	5¼	3 <sup>11</sup> / <sub>16</sub> ‡
5	11 <sup>1</sup> / <sub>16</sub>	6½	4 <sup>19</sup> / <sub>32</sub> ‡
6	12½	7 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub> ‡

Vertical female



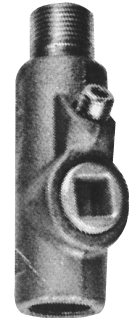
Vertical male & female



Vertical or horizontal female



Vertical or horizontal male & female



### EYS

#### For Sealing in Vertical Positions Only

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches
½	EYS1*	EYS16*	1
¾	EYS2*	EYS26*	2
1	EYS3*	EYS36*	3¾

#### For Sealing in Vertical or Horizontal Positions

Hub Size	Female Hub Cat. #	Male & Female Hub Cat. #	Approximate Internal Volume in Cubic Inches	
			Vertical	Horizontal
½	EYS11*	EYS116*	1	1
¾	EYS21*	EYS216*	2	2
1	EYS31*	EYS316*	3	3¾
1¼	EYS41	EYS416	6	8
1½	EYS51	EYS516	10¾	12¼
2	EYS61	EYS616	19	22¾
2½	EYS71	EYS716	25½	30
3	EYS81	EYS816	56	64½
3½	EYS91	EYS916	72	82
4	EYS101	EYS1016	95	110

**NOTE:** Sealing fittings are approved for use in hazardous locations only when *Chico*® X fiber and *Chico A* sealing compound are used to make the seal.

#### EYS 116 Series

a	b	Turning Radius
3 <sup>11</sup> / <sub>16</sub>	1¼	1 <sup>5</sup> / <sub>32</sub>
3 <sup>11</sup> / <sub>16</sub>	1½	1¼
4 <sup>5</sup> / <sub>16</sub>	1¾	1¾

a	b	Turning Radius
5 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	1 <sup>23</sup> / <sub>32</sub>
5½	2 <sup>7</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>
6¼	3	2 <sup>5</sup> / <sub>16</sub>
7½	3½	2 <sup>11</sup> / <sub>16</sub>
8½	4¼	3 <sup>5</sup> / <sub>16</sub>
9 <sup>3</sup> / <sub>16</sub>	4¾	3 <sup>7</sup> / <sub>16</sub> ‡
9¾	5¼	3 <sup>11</sup> / <sub>16</sub> ‡

\* Available in copper-free aluminum – to order, add suffix SA to Cat. No.  
 ‡ With cover removed.



MATERIAL SAFETY DATA SHEET

Product Name: Sealed Maintenance Free Lead-Acid Batteries	
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DATE:	1/3/2006	ISSUED BY	ENGINEERING	TELEPHONE NO.	(619) 661-2030
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HAZARDOUS COMPONENTS

COMPONENTS	WEIGHT %	TLV	LD50	LC50	LC50
			ORAL	INHALATION	CONTACT
Lead (Pb, PbO <sub>2</sub> , PbSO <sub>4</sub> )	about 70%	N/A	(500) mg/kg	N/A	N/A
Sulfuric Acid	about 20%	1mg/m <sup>3</sup>	(2,140) mg/kg	N/A	N/A
Fiberglass Separator	about 5%	N/A	N/A	N/A	N/A
ABS Plastic	about 5%	N/A	N/A	N/A	N/A

PHYSICAL DATA

COMPONENTS	DENSITY	MELTING POINTS	SOLLUBILITY (H <sub>2</sub> O)	ODOR	APPEARANCE
Lead	11.34	327.4° C (Boiling)	None	None	Silver-Gray Metal
Lead Sulfate	6.2	1070° C (Boiling)	40 mg/l(15° C)	None	White Powder
Lead Dioxide	9.4	290° C (Boiling)	None	None	Brown Powder
Sulfuric Acid	about 1.3	about 114° C (Boiling)	100%	Acidic	Clear Colorless Liquid
Fiberglass Separator	N/A	N/A	Slight	Toxic	White Fibrous Glass
ABS Plastic	N/A	N/A	None	No Odor	Solid

FLAMMABILITY DATA

COMPONENTS	FLASHPOINT	EXPLOSIVE LIMIT	COMMENTS
Lead	None	None	
Sulfuric Acid	None	None	
Hydrogen		4% - 72.4%	Sealed batteries can emit hydrogen if over charged (float voltage > 2.40 VPC).
Fiberglass Separator	N/A	N/A	Toxic vapors may be released. In case of fire, wear self-contained breathing apparatus.
ABS Plastic	None	N/A	Temp. over 300° C (572° F) may release combustibile gases. In case of fire: wear positive pressure self-contained breathing apparatus.

FIRST AID

SULFURIC ACID PRECAUTIONS	
Skin Contact:	Flush with water, see physician if contact area is large or if blisters form.
Eye Contact:	Call physician immediately and flush with water until physician arrives.
Ingestion:	Call physician. If patient is conscious, flush mouth with water, have patient drink milk or sodium bicarbonate solution.
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**MATERIAL SAFETY DATA SHEET**

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REACTIVITY DATA

COMPONENT	Sulfuric Acid
STABILITY	Stable at all temperatures
COLYMERIZATION	Will not polymerize
INCOMPATIBILITY	Reactive metals, strong bases, most organic compounds
DECOMPOSITION PRODUCTS	Sulfuric dioxide, trioxide, hydrogen sulfide, hydrogen
CONDITIONS TO AVOID	Prohibit smoking, sparks, etc. from battery charging area. Avoid mixing acid with other chemicals

SPILL OR LEAK PROCEDURES

Steps to take in case of leak or spill:	If sulfuric acid is spilled from a battery, neutralize acid with bicarbonate (baking soda), sodium carbon (soda ash), or calcium oxide (lime). Flush area with water and discard to the sewage system. Do not allow unneutralized acid into sewage system.
Waste disposal method:	Neutralized acid may be flushed down the sewer. Spent batteries must be treated as hazardous waste and disposed of according to local, state, and federal guidelines. A copy of this MSDS must be supplied to any scrap dealer or secondary lead smelter with battery.

PROTECTION

EXPOSURE SITE	PROTECTION	COMMENTS
SKIN	Rubber gloves, Apron	Protective equipment must be worn if the battery is cracked or otherwise damaged. A respirator should be worn during reclaim operations if the TLV is exceeded.
RESPIRATORY	Respirator (for lead)	
EYES	Safety goggles, Face Shield	

ELECTRICAL SAFETY

Due to the battery's low internal resistance and high power density, high levels of short circuit current can be developed across the battery terminals. Do not rest tools or cables on the battery. Use insulated tools only. Follow all installation instructions and diagrams when installing or maintaining battery systems.

HEALTH HAZARD DATA

LEAD: The toxic effects of lead are accumulative and slow to appear. It affects the kidneys, reproductive, and central nervous systems. The symptoms of lead overexposure are anemia, vomiting, headache, stomach pain (lead colic), dizziness, loss of appetite, and muscle and joint pain. Exposure to lead from a battery most often occurs during lead reclaim operations through the breathing or ingestion of lead dust or fumes.
SULFURIC ACID: Sulfuric acid is a strong corrosive. Contact with acid can casue severe burns on the skin and in eyes. Ingestion of sulfuric acid will cause GI tract burns. Acid can be released if the battery case is damaged or if vents are tampered with.
FIBERGLASS SEPARATOR: Fibrou glass is an irritant of the upper respiratory tract, skin and eyes. For exposure up to 10F/CC use MSA Comfoll with type H filter. Above 10F/CC up to 50F/CC use Ultra-Twin with type H filter. This product is not considered carcinogenic by NTP or OSHA.
ALL DATA MUST BE PASSED TO ANY SCRAP DEALER OR SMELTER WHEN BATTERY IS RESOLD.

**Power-Sonic Corporation**

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