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FAILSAFE PILOT CONTROLLER/BSL

Model # FC-12110-4X-01

NATURAL DRAFT PILOT GAS IGNITER MONITOR

Created on August 9, 2006

NOTE: **THIS EQUIPMENT SHOULD BE OPERATED BY TRAINED PERSONEL 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 FAILSAFE PILOT CONTROLLER/BSL.

PLEASE READ THE FOLLOWING:

1. READ ALL INSTALLATION AND OPERATING INSTRUCTIONS PRIOR TO INSTALLING OR OPERATING THE FAILSAFE PILOT CONTROLLER/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 FAILSAFE PILOT CONTROLLER/BSL SHOULD BE ELECTRICALLY, PNEUMATICALLY AND PROCESS EQUIPMENT QUALIFIED.

FAILSAFE PILOT CONTROLLER /BSL

Model Number: FC-12110-4X-01
Natural Draft Pilot Igniter 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.
Mounting holes: 4-11/32" dia. Holes 6" W x 11-3/4" H c/c
Permissive Pressure switch (optional)
Hardware Installation Kits (optional)

A. INSTALLATION INSTRUCTIONS

1. This unit to be installed by qualified personnel.

2. Locate area and mount the PILOT CONTROLLER/BSL 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 the PILOT CONTROLLER/BSL 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 the PILOT CONTROLLER/BSL enclosure.

10. Unplug the crimp connector that is plugged into the PILOT CONTROLLER/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 the PILOT CONTROLLER/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 igniter rod assembly onto pilot nipple. Install new pilot tip supplied with unit using Teflon tape.

15. Adjust igniter rod on pilot nipple so that the tip of igniter 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 igniter 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 igniter rod set screw.

18. Strip 5/16” insulation from high temperature ignition wire.

19. Unplug Rajah connection from igniter 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 ½” 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 PILOT CONTROLLER/BSL.

24. Review all connections and installation. Check for tightness of all connections. Close door to the PILOT CONTROLLER/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 FAILSAFE CONTROLS, LLC

1. Verify installation instructions have been followed.

2. Turn the PILOT CONTROLLER/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 FAILSAFE PILOT CONTROLLER/BSL to the RESET/ON position Sparking will occur within 1 second and continue for approximately six seconds. After six seconds the FAILSAFE PILOT CONTROLLER/BSL will switch to the tripped mode, meaning there is no voltage to Igniter Rod, no voltage to the Solenoid Valve (failsafe) and the Alarm Lamp is illuminated.

9. If sparking did not occurr in step 8 or the sparking was intermittent, this would be and indication of the gap of the Igniter Rod to the 3 bladed pilot tip is too great and adjustments should be made after AC and/or DC power is disconnected.

10. After final adjustments are made to the Igniter Rod steps to adjust the Pilot Gas Pressure should be made.

11. Adjust the Pilot Gas Regulator to approximately **0.5 PSI**.

12. Close the AC breaker.

13. Turn the PILOT CONTROLLER/BSL switch to RESET/ON. 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 Igniter Rod so that the Igniter Rod is constantly in the pilot flame.

14. The Igniter Rod must be in the pilot flame for the PILOT CONTROLLER/BSL to remain "In Service". If the pilot gas ignites but burns away from the Igniter Rod and pilot tip, the PILOT CONTROLLER/BSL will not sense the flame present and begin sparking for six seconds. If the pilot flame is established on the pilot tip and the Igniter Rod is in the flame, the PILOT CONTROLLER/BSL will remain "In Service". If the pilot flame is not established within the six seconds the PILOT CONTROLLER/BSL will switch to the fail mode. To reset the PILOT CONTROLLER/BSL from the fail/trip mode, turn the PILOT CONTROLLER/BSL switch to the OFF position and wait five seconds. Then switch to the ON/RESET position.

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

15. After final adjustments have been made, turn off the PILOT CONTROLLER/BSL and close the Pilot Gas Block Valve.

16. Reassemble the Burner/Flame Arrestor Housing.

17. Allow two minutes for Firetube to purge with air.

18. Turn the PILOT CONTROLLER/BSL switch to RESET/ON. 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.

19. 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.

20. Testing your FAILSAFE PILOT CONTROLLER/BSL:

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