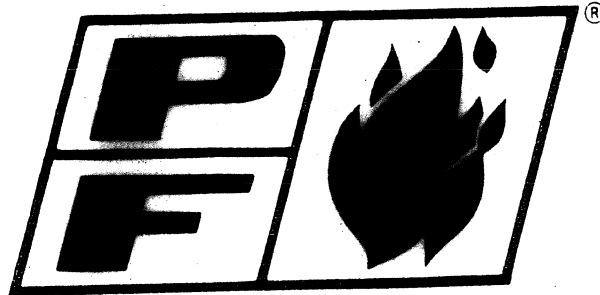


Power Flame Incorporated



**SYSTEMS DG-1R AND DG-2R
COMBINATION DRAFT GAUGE
AND LOW DRAFT CUTOFF
WITH PUFF DELAY
OPERATING AND MAINTENANCE
MANUAL**

THE POWER TO MANAGE ENERGY
2001 South 21st Street, Parsons, Kansas 67357

Purpose of System

The DG-1R and DG-2R systems are designed to monitor and indicate combustion chamber draft pressure, and if necessary, automatically shutdown the burner if inadequate draft is sensed for a preset period of time. For example, the DG-1R or DG-2R system could be used on a boiler equipped with an induced draft fan with a design combustion chamber pressure of -0.5 in. w.c. draft. The DG-1R system is equipped with a 0.0-1.0 in. w.c. draft analog gauge and a low draft switch with an adjustment range of 0.07-0.15 in. w.c., other ranges are available if required, consult factory.

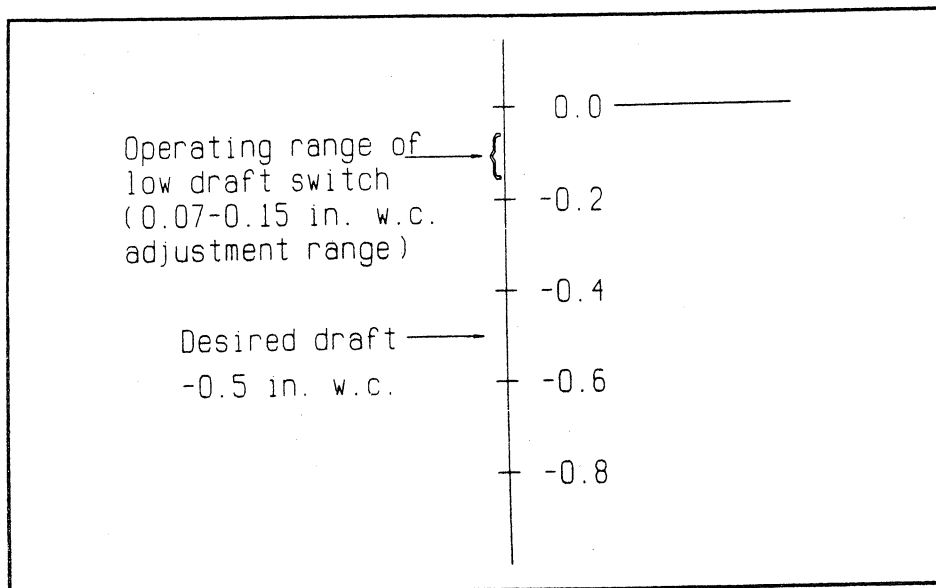


Figure 1. Setpoint relationship of system DG-1 or DG-2.

The draft gauge will indicate any combustion chamber draft conditions between 0.0 and -1.0 in. w.c. The draft switch will interrupt the burner air switch circuit if the draft in the combustion chamber decreases below the setpoint of the switch for a period of time equal to the delay on break time period of the puff delay relay.

The DG-2R is identical in operation to the DG-1R except that the DG-2R is equipped with an electronic digital draft gauge for indicating the combustion chamber draft condition.

Another optional feature for either the DG-1 or DG-2 system is the use of a large diaphragm draft sensing switch with a visual setpoint scale (Dwyer model 1638). This device is provided in lieu of the standard draft sensing switch. Note also that different operating ranges for the draft gauge and low draft cutoff are available. Please consult factory.

Installation

The DG-1 and DG-2 are shipped in a Power Flame panel box equipped with wall mount brackets. Mount the box in an area free from vibration and where the ambient temperature will remain between 20 and 120 degrees Fahrenheit. Note that the draft sensing line may be as long as required without affecting the accuracy of the system components. Long sensing lines will cause pressure fluctuations to be dampened and may slightly increase the response time of the system.

The DG-1R analog draft gauge was zeroed at the factory, but may need to be reset to zero again. To reset the gauge to zero:

1. Turn the zero adjusting cock to the "VENT" position.
2. Remove the front cover of the gauge by turning the front of the gauge with the palm of your hand.
3. Using a 0.05" hex allen wrench, adjust the zeroing screw (located behind the gauge dial near the bottom center of the gauge) until the pointer is at the zero position.
4. Replace the cover of the gauge and set the zeroing cock to the "LINE" position.

The DG-2R digital draft indicator was zeroed at the factory, but may need to be reset to zero again. To reset the gauge to zero:

1. Turn the zero adjusting cock to the "VENT" position.
2. Remove the front cover of the indicator by carefully prying the bezel off of the front of the instrument. Then remove the red lens that covers the front of the instrument.
3. Using a small screwdriver, adjust the zeroing potentiometer in the extreme lower left hand corner of the indicator until the display reads 0.000.
4. Replace the cover of the gauge and set the zeroing cock to the "LINE" position.

To adjust the setpoint of the low draft cutoff switch (Dwyer Model 1910):

1. Set the low draft switch so that it is made under normal operating conditions. If the system includes an induced draft fan, ensure that the fan is running, and observe the draft reading on the draft gauge.
2. Connect one lead of the voltmeter to terminal "2" on the nylon terminal in strip. Connect the other lead to the normally open terminal of the low draft switch. When the low draft switch is made the voltmeter will indicate 120 volts. Slowly turn the three way vent cock to the "VENT" position, and watch the indicator on the draft gauge move towards zero. As the three way gauge cock opens the sensing line to the atmosphere, the draft gauge indication will decrease. At the setpoint of the low draft switch, the switch will open. The voltmeter will indicate 0 volts. Note the indication on the draft gauge when the voltage drops to 0 volts. If the setpoint is above the desired low draft setpoint, turn the adjustment screw counterclockwise. If the setpoint is below the desired low draft setpoint, turn the adjustment screw clockwise. Repeat this procedure until the desired setpoint is achieved.

To adjust the setpoint of the optional low draft cutoff switch (Dwyer Model 1638):

1. Remove the protective cover located on the end of the indicating scale of the low draft switch. Also remove the plastic plug from the side of the panel box.
2. Set the draft switch to the desired setting on the transparent housing of the draft switch.

To adjust the delay on break timer:

1. First adjust the set point of the low draft switch as noted above.
2. Connect a voltmeter to terminal "2" on the nylon terminal strip and the normally open terminal of the low draft switch.
3. Set the pointer on the three way vent cock to the "LINE" position. Start the induced draft fan.

POWER FLAME, INCORPORATED

4. After the induced draft fan has run for a period of time, note the draft indicated on the gauge.

5. Connect one lead of the voltmeter to terminal "2" on the nylon terminal strip. Connect the other lead to the normally open terminal of the low draft switch. When the low draft switch is made the voltmeter will indicate 120 volts. Slowly turn the three way vent cock to the "VENT" position, and watch the indicator on the draft gauge move towards zero. As the three way gauge cock opens the sensing line to the atmosphere, the draft gauge indication will decrease. At the setpoint of the low draft switch, the switch will open. The voltmeter will indicate 0 volts. When the draft switch opens the puff delay timer delay on break time period will begin. After the time delay has lapsed, the low draft light will be energized. Count the seconds between the opening of the draft switch and the energizing of low draft light. If the time period is too long, turn the adjustment knob on the timer counterclockwise. If the time delay period is too short turn the adjustment knob on the timer clockwise. Repeat the procedure until the desired time delay is achieved.

