PRESSURE DIFFERENTIAL CONTROLLER

QUICK START GUIDE

CAUTION

Prior to installing, the instructions provided herein should be completely reviewed and understood before operating or repairing this equipment. All CAUTION and WARNING notes must be strictly observed to prevent personal injury or equipment damage.

Description

The Kimray pressure differential controller (PDC) connects across the orifice plate of a meter run to maintain a constant stable pressure differential across the meter run. This relates to a constant flow rate when the upstream pressure is constant. This pilot adjusts the flow rate to maintain the pressure differential by positioning a pressure opening control valve that has characterized equal percentage valve trim for precise flow control.

A typical PDC pilot installation is mounted so that the pressure differential across an orifice plate is applied across the diaphragm. The output signal from the PDC pilot operates a diaphragm control valve to maintain the desired pressure differential across the orifice plate.

Installation

Before installing the PDC level controller, inspect it for shipment damage and for foreign material that may have collected during shipment. Inspect the openings in the controller and clean the pipe lines to remove scale, chips and debris.

Verify all pressure connections are tight before pressurizing the system.

1. Locate the motor valve conveniently upstream or downstream of the meter run.
2. Size and install the proper orifice plate for flow conditions. Determine the pressure differential set point desired and install the proper spring for the maximum pressure differential to be controlled. (See Fig. 3)
3. A metering valve or adjustable orifice can be installed to take part of the pressure drop to provide better control conditions for the valve.
4. Mount the controller so that it is accessible and level. Connect the 1" connector upstream of the orifice plate and the 1/4" NPT connector downstream. Install isolation valve manifold if desired.
5. Connect a dry instrument gas source (20-30 psig) to the pilot supply and connect the control tubing to the valve. A needle valve on this line is sometimes helpful in stabilizing the motor valve / controller system. (See Fig.1)

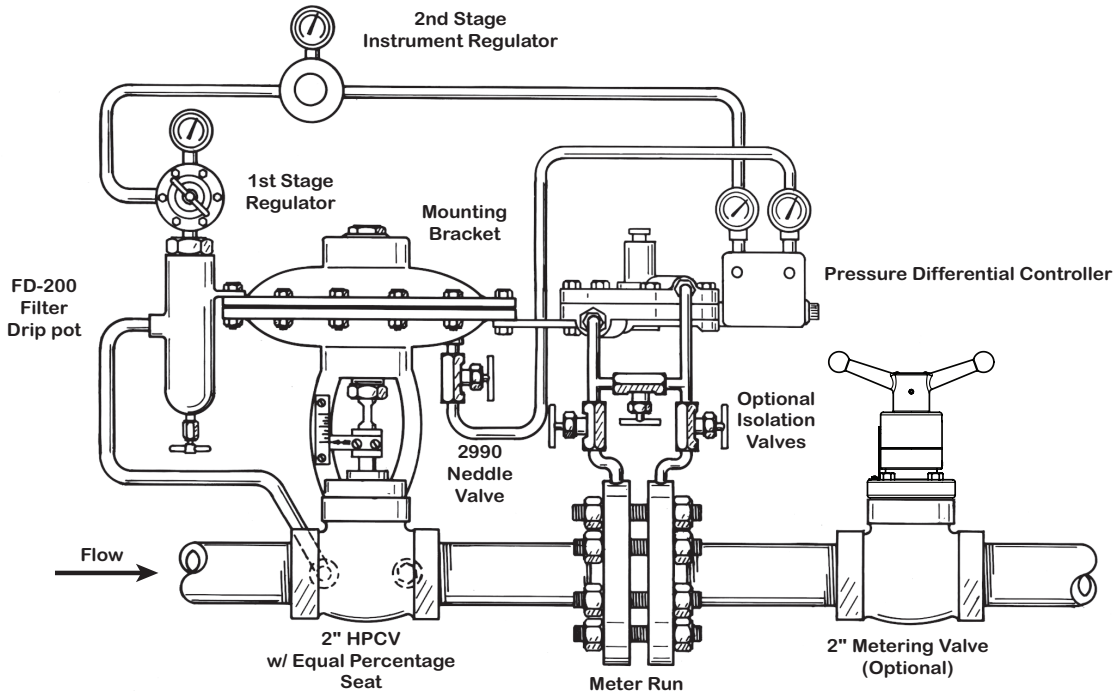

Figure 1

CAUTION

When ordered, the pilot configuration and construction materials were selected to meet specific pressure, temperature, pressure drop and fluid conditions. Since some body/trim material combinations are limited in their pressure drop and temperature ranges, do not subject the high pressure pilot to any other conditions without first contacting the Kimray Inc. sales office or a sales / applications representative.

Start-up procedure:

1. Open the isolation valves and close the equalizing valve (if used) prior to applying pressure to the meter run to prevent an excessive pressure drop across the diaphragm. Excessive pressure drops across diaphragm will cause the diaphragm to rupture.
2. Turn the control knob fully counterclockwise.
3. Open the gas stream to the meter run.
4. Adjust the control knob until the motor valve begins to open.
5. Continue to adjust the control knob until the desired pressure differential is obtained. If the valve is fully open and the pressure differential is not obtained, recheck flow conditions, pressure, valve sizing and orifice sizing.
6. If the valve hunts (moves open and closed excessively), close the needle valve in the motor valve supply gas line until the positioning becomes stable or replace the motor valve trim with a smaller inner valve.
7. The Controller can now be set for the maximum limit or adjusted to control the desired pressure differential.

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KIMRAY INC.®

Start-up and Test
With the installation completed and appropriate relief and check pilots installed and set, slowly open the upstream and downstream shutoff pilots. In order to test the functionality of the pilot, allow only a small amount of upstream pressure through the upstream shutoff pilot. Check for proper pilot operation by cycling the source of instrument gas several times.

Maintenance
Maintenance should be performed on a regular basis. An initial inspection interval of 12 months is recommended. Depending on the service conditions of the pressure pilot, the inspection interval may be decreased or increased.
The pressure pilot can be repaired without being removed from the piping.

Repair Tips
- If pilot bleeds gas continuously, the pilot plug seat may be dirty.
- Evenly tighten the screws which hold the bonnet on.
- Diaphragms will harden with age.

Only use genuine Kimray replacement parts.

Repair kits and detailed repair instructions are available for each pilot.

Visit www.kimray.com or
contact your Kimray authorized distributor for more information.

Inspection Schedule	
Body	Under normal conditions, the body will last for years. Severe conditions will require inspection more frequently. The body should be inspected every time valve trim is inspected.
*Under severe operating conditions, the maintenance schedule described will not be adequate and a shorter maintenance interval may be required.	

Troubleshooting		
Problem	**Possible Cause(s)**	**Possible Solution**
Leaks between upper and lower flanges.	Check for any damage to flange o-ring.	Clean the lower flange groove so it is free of debris.

WARNING
Before beginning installation:
• Read and follow instructions.
• Make sure the pilot cannot operate during installation.

Do not exceed the maximum supply pressure specified on the pilot nameplate.

Never tighten any fitting or the main connections to the pilot while there is pressure on the line.

WARNING
Before any service, be certain that the pilot is fully isolated and that all pressure upstream and downstream has been relieved. Use bypass pilots or fully shut off the process.

Be sure that any operating or instrument gas lines have been disconnected.

Never assume that a check pilot is fully blocking the downstream line.

WARNING
A leaking pilot is an indication that service is required. Failure to take pilot out of service immediately may cause a hazardous condition.

NOTE
Never stand directly in front of or over a pilot when the system is pressurized. The pilot could suddenly open, blowing debris into the person's face and eyes.

NOTE
If conditions indicate the possibility of backward flow you may wish to install check pilots

For questions or comments, contact your local Kimray authorized distributor, or visit www.kimray.com.

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