KIMRAY INC.

PRESSURE PILOTS

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 gas operated pressure pilot produces a pneumatic signal when the monitored pressure deviates from the desired set pressure. The pilot may be remotely installed to operate a control valve, and the two working together function as a pressure regulator.

When the pilot spring is compressed with an adjusting screw. This places a force against a thick diaphragm which is in contact with the controlled pressure on the side opposite the spring. As the two forces work against each other, they continually reposition a small three-way pressure pilot (pilot plug and seats) which modulates the output pressure.

This is most often used to control diaphragm pressure in a pressure control valve. Proper function can best be accomplished when the gas flowing through the pilot is clean and free of liquid.

Installation

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

Verify all pressure connections are tight before pressurizing the system.

Over pressure protection should also be provided if the regulator inlet pressure may exceed the safe working pressure of the equipment downstream.

To avoid injury or damage, install pressure-relieving or pressure limiting devices to prevent service conditions from exceeding those limits. Consult the appropriate code, regulations, or standards.

Consideration should be given to the potential risk of injury or property damage due to escaping fluid. To avoid such risks, install the regulator in a safe location.

Remove the plastic plugs from the 1/4" NPT openings. 1/4" or 3/8" tubing (not provided) must be installed:

1. From process being controlled, designated sense line.
2. From the source of instrument gas, designated instrument supply.
3. To the diaphragm housing on the control valve being operated, designated output.

Supply Pressure

Diaphragm controlled low pressure 0-20 psig (Figure 4,5)
Equal to or not less than 60% of maximum upstream pressure when used to operate low pressure control valves.
20 to 30 psig when used to operate high pressure control valves.

Diaphragm controlled high pressure 5-300 psig. (Figure 1-3)
Equal to or not less than 60% of maximum upstream pressure when used to operate low pressure control valves.
20 to 30 psig when used to operate high pressure control valves.

Bellows controlled high pressure 75-2500 psig (Figure 6)
5 to 30 psig

CAUTION

When ordered, the pressure 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 pressure pilot to any other conditions without first contacting the Kimray Inc. sales office or a sales / applications representative.

Figure 1

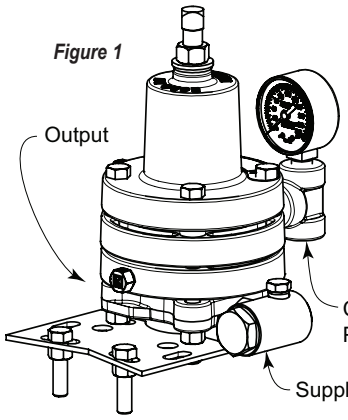


Figure 4

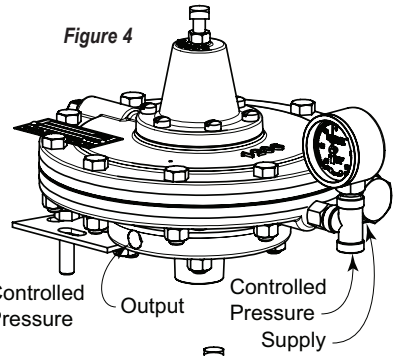


Figure 2

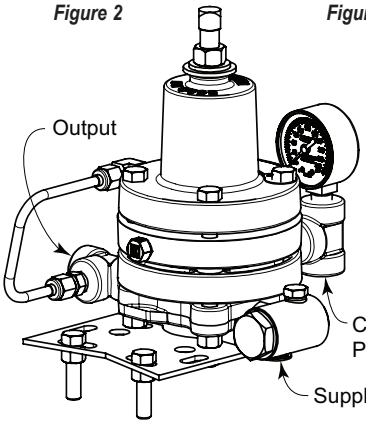


Figure 5

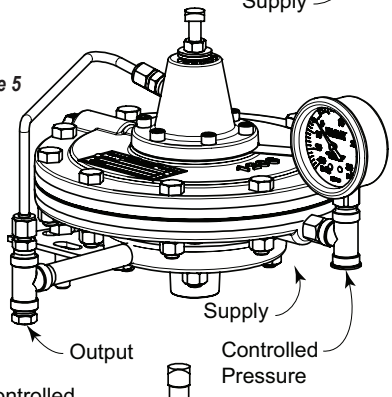


Figure 3

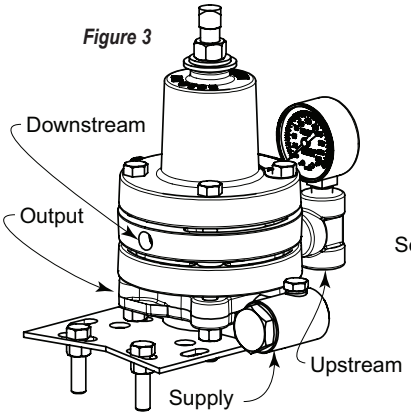
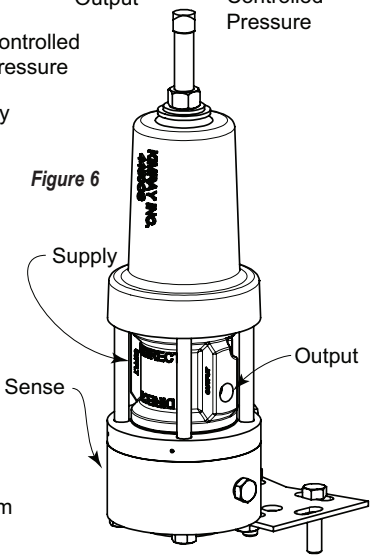


Figure 6



As you turn the adjusting screw **counterclockwise**, the set point pressure will **decrease**. At this point a valve operated by the pilot will be positioned as shown below.

Pilot	Output	Valve Action	Valve Position
Indirect	No	Pressure Opening	Closed
Indirect	No	Pressure Closing	Open
Direct	Yes	Pressure Opening	Open
Direct	Yes	Pressure Closing	Closed

As you turn the adjusting screw **clockwise**, the set point pressure will **increase**. At this point a valve operated by the pilot will be positioned as shown below.

Pilot	Output	Valve Action	Valve Position
Indirect	Yes	Pressure Opening	Open
Indirect	Yes	Pressure Closing	Closed
Direct	No	Pressure Opening	Closed
Direct	No	Pressure Closing	Open

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.

Start-up and Test

With the installation completed and appropriate relief and check valves installed and set, slowly open the upstream and downstream shutoff valves. With a small amount of pressure on the sense line (10 to 20 psig)., turn the adjusting screw out so it does not engage the spring. At this point a valve operated by the pilot will be positioned accordingly.

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 valve.

Visit www.kimray.com or contact your Kimray authorized distributor for additional product information and / or literature.

Inspection Schedule	
Seals	Should be replaced as needed. Check for cracks, swelling or if the seals feel hard, replace.
Pilot	Inspect spring, stem, and diaphragms once a year.
Bolts and Fittings	Make sure they are still tight.
Breather Plug	Verify that vent holes are facing down and clear of any obstruction.
*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**
Regulator leaks through to downstream.	Over tightened seat nut can cause seat to bulge and leak.	DO NOT OVER TIGHTEN seat.
Pilot bleeds gas continuously.	The pilot plug seat may be dirty.	Clean pilot plug seat.
Minimum set point cannot be set to zero.	Bonnet screws are over tightened.	DO NOT OVER TIGHTEN bonnet screws.
Constant output when none should be present.	A pilot seat may be loose. Instrument supply is above 30 psig (direct acting pilots only).	Tighten the pilot seat.

WARNING

Before beginning installation:
- Read and follow instructions.
- Make sure the valve cannot operate during installation.

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

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

WARNING

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

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

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

WARNING

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

NOTE

If conditions indicate the possibility of backward flow you may wish to install check valves.

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

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

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