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.

Installation

Before installing the temperature controller, inspect it for shipment damage and for foreign material that may have collected during shipment. Before starting the installation of a burner control system, it is important to understand what the equipment is for and why it will be installed. Figure 1 shows a configuration using all temperature controller options.

Verify all pressure connections are tight before pressurizing the system.

1. Supply Gas - is required to operate the pilots and valves in the system. At any time, interrupting the flow of supply gas will shut the entire system down.
2. Pilot Guard - Everything starts with monitoring the pilot flame. Supply gas to the entire system must run through the pilot guard. If the pilot guard detects the flame, it will allow supply gas to pass to the T-12M. If the flame goes out, the pilot will block supply gas to the entire system and shut it down.
3. T-12M - Monitors the high temperature set point of the system. When the temperature of the system is in operating range, supply gas is allowed to pass through to the T-12 and the first pressure open valve. If the temperature climbs above set point of T-12-M, it will stop supply gas to the T-12 and also to the first valve on the burner main line, causing the entire system to shut down.
4. T-12 - When the system is within operating range, the T-12 will have supply gas to operate from the T-12, then the T-12 will throttle the valve that controls the burner flame to maintain a constant temperature.

Separable Socket:

1. Inspect the openings in the vessel for foreign material and clean the connection ports to remove scale, chips, and debris.
2. Kimray always recommends installing thermostats with separable socket using good piping practice. Be sure to use TFE tape or pipe thread sealant on external pipe threads.
3. Make sure that separable socket is completely submerged in liquid or flow stream. Partial submersion will give erratic temperature transfer to thermostat.
4. Pack separable socket full with high - temp bearing grease. This helps in heat transfer and prevents air space.

Thermostat:

1. Remove plastic stopper from the 1/4" NPT opening. Tubing (not provided) must be installed.
2. Install thermostat into separable socket (recommended) being sure to use proper piping practices. Be sure to use TFE tape or pipe thread sealant on external pipe threads.
3. Install tubing from source of instrument gas, designated instrument supply.
4. Install tubing to the diaphragm housing of the control valve being operated.

Pilot Guard:

1. Remove plastic stopper from the 1/4" NPT opening. Tubing (not provided) must be installed.
2. Install pilot guard into the proper opening so that the tip of the sense rod will be in the pilot flame. Be sure to use TFE tape or pipe thread sealant on external pipe threads.
3. Install tubing from source of instrument gas, designated instrument supply.
4. Install tubing to the diaphragm housing of the control valve being operated or when applicable the next controller, designated output.

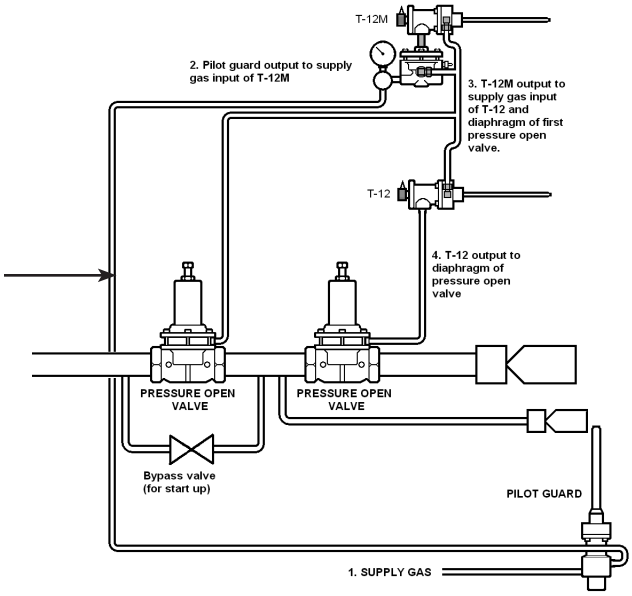

Figure 1

Description

The temperature controllers are designed to control set temperature in indirect heaters, emulsion treaters, reboilers, steam generators, heat exchangers, cooler shutter controls, and salt bath heaters. The pilot guard is designed to monitor the pilot flame to a burner in case the flame is extinguished.

A name tag is attached to the upper bonnet housing on each thermostat. The name tag lists the serial number, model number, and pressure rating.

WARNING

Temperature controllers and other devices should be installed and maintained in accordance with international codes and regulations, manufacturer's instructions, and proven best practices.

CAUTION

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

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.

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

Start-up and Test

1. Open the bypass valve around the safety valve. If the bypass valve is omitted, proceed to step 2.
2. Adjust the pilot guard for an output gauge pressure reading of approximately 50% of the supply pressure. (Counterclockwise to increase pressure and clockwise to decrease pressure).
3. Light the pilot according to operator procedures taking all the necessary safety precautions.
4. Watch the output gauge. As the temperature increases, the pressure on the output gauge will rise upward. As this occurs, readjust the pilot guard control knob to maintain an output pressure of approximate 50% of the supply pressure. (Adjust the knob clockwise to decrease the output pressure).
5. Continue the process in step 4 until little change in the pressure reading on the output gauge is observed. (This time interval could be 15--20 minutes or longer). This process adjusts the pilot guard to the maximum pilot flame temperature and ensures a rapid system shutdown if the pilot flame goes out.
6. When the output pressure stabilizes, the control knob can be turned counterclockwise for the 100% output pressured. The output pressure guard is now set. Close the bypass valve.
7. The burner system should now be cycled. Occasionally, drafting occurs during the burner cycle and cools down the pilot guard enough for shutdown. If this occurs, turn the control knob counterclockwise approximately 1/8" of a turn, until drafting will not cause a system shutdown.
8. Should the system ever shutdown, it is necessary to determine what caused the shutdown. If a cooling effect, due to drafting, occurred re-adjust the control knob counterclockwise approximately 1/8" of a turn at a time, until drafting will not cause a system shutdown.
9. To restart after shutdown, open the bypass valve and light the pilot. When the output pressure of the pilot guard reaches 100% of the supply pressure, the system is operating and the bypass valve must be closed. If the bypass valve has been omitted, repeat steps 2-8.
10. Once the pilot guard is stable, proceed to the T-12M. The next steps require that a temperature gauge be installed in the system.
11. On the T-12M and T-12 turn the control knobs clockwise until they stop. On the T-12M turn control knob counterclockwise to desired shut down temperature. (Turning more than 1 1/4 revolutions will take the thermostat out of calibration).
12. Making sure the T-12 is set to a higher temperature than the T-12M, push up on the reset lever of the T-12M. At this time the burner valves should open and ignite the burner flame.
13. Monitor burner temperature until it reaches your required safety shut off temperature. Turn T-12M control knob counterclockwise until output pressure to T-12 and first control valve stops. This will be your shut off temperature. Make sure the temperature on your temperature gauge matches the temperature indicator on the T-12M.
14. At this time all valves should be closed and the entire system shut down. The system will need to cool below T-12M set point before setting the T-12 thermostat.
15. Once the system has cooled down, pilot light start up procedure has been repeated and burner flame is lighted. The T-12 thermostat can be set.
16. The T-12 thermostat will control the main burner valve and maintain a constant temperature in the vessel. Once the burner flame is active, the temperature can be increased by turning the control knob clockwise to increase temperature or counterclockwise to decrease temperature. (Turning T-12 thermostat more than 1 1/4" turn counterclockwise will take it out of calibration).

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 valve, the inspection interval may be decreased or increased.

Trouble Shooting		
Problem	**Possible Cause(s)**	**Possible Solution**
Erratic temperature changes	Bent sensing element (The element should be centered in base). Incomplete immersion of probe. Oversized burner valve.	Replace sensing element if badly bent. Make the correct adjustments for stability.
Continuous venting	Dirty pilot plug seat. Hole in diaphragm. Weak pilot plug spring. Faulty O-ring.	Clean pilot seat and re-use. Replace diaphragm. Replace spring. Replace o-ring.

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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