HIGH TEMPERATURE PILOT GUARD

APPLICATIONS:

Used as a Pilot safety shutdown or as a high stack temperature shutdown.

ACTION:

Direct action; Pilot Output Pressure (Yellow) increases with temperature rise. As long as the temperature is above the set point, the output will remain at supply pressure. If the pilot flame goes out, the pressure decreases and drops to zero.

TEMPERATURE RANGE:

-30°F minimum to 2100°F maximum
-34°C minimum to 1149°C maximum

SUPPLY PRESSURE:

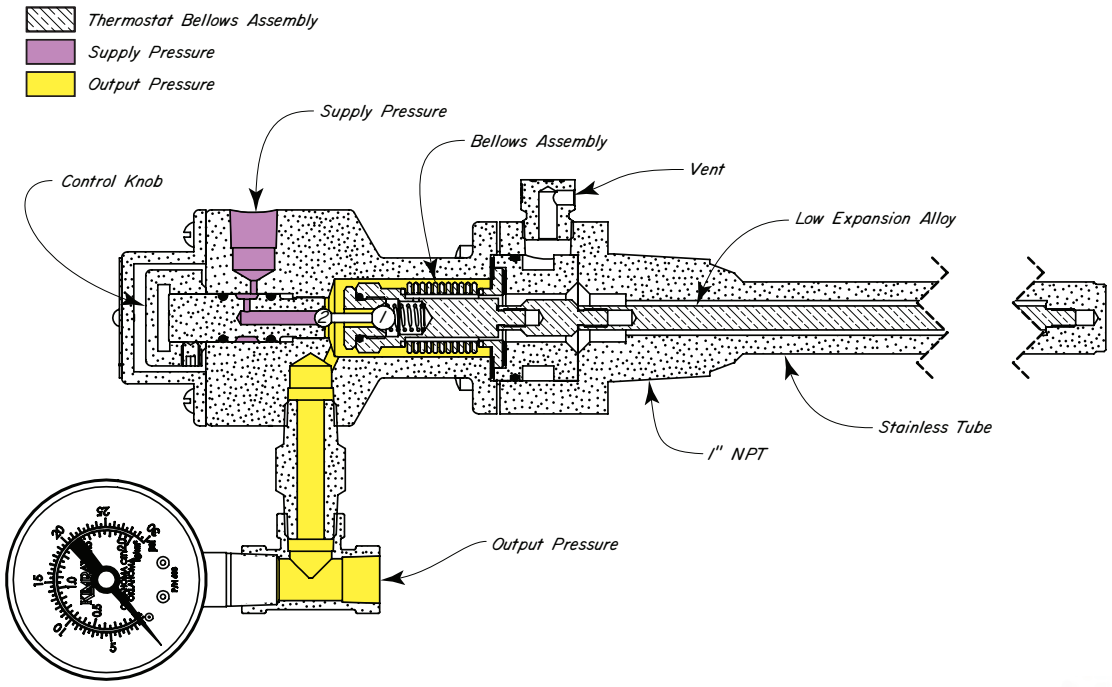
5 psig minimum to 30 psig maximum

OPERATION:

This Thermostat consists of a STAINLESS TUBE for monitoring the pilot flame, which is connected by a Low Expansion Alloy Rod to a BELLOWS ASSEMBLY. The changes in the length of the STAINLESS TUBE operate a PILOT PLUG seat. The PILOT PLUG consists of two stainless balls rigidly connected together. The seat at BALL 1 is the Output Pressure vent (Yellow to Atmosphere). The seat at BALL 2 is the Supply Pressure inlet (Violet to Yellow).

Assume the set point on the HT 12PG is above the temperature of the system. The vent at BALL 1 is open and the inlet at BALL 2 is closed. Output Pressure (Yellow) is at 0 psig or vented.

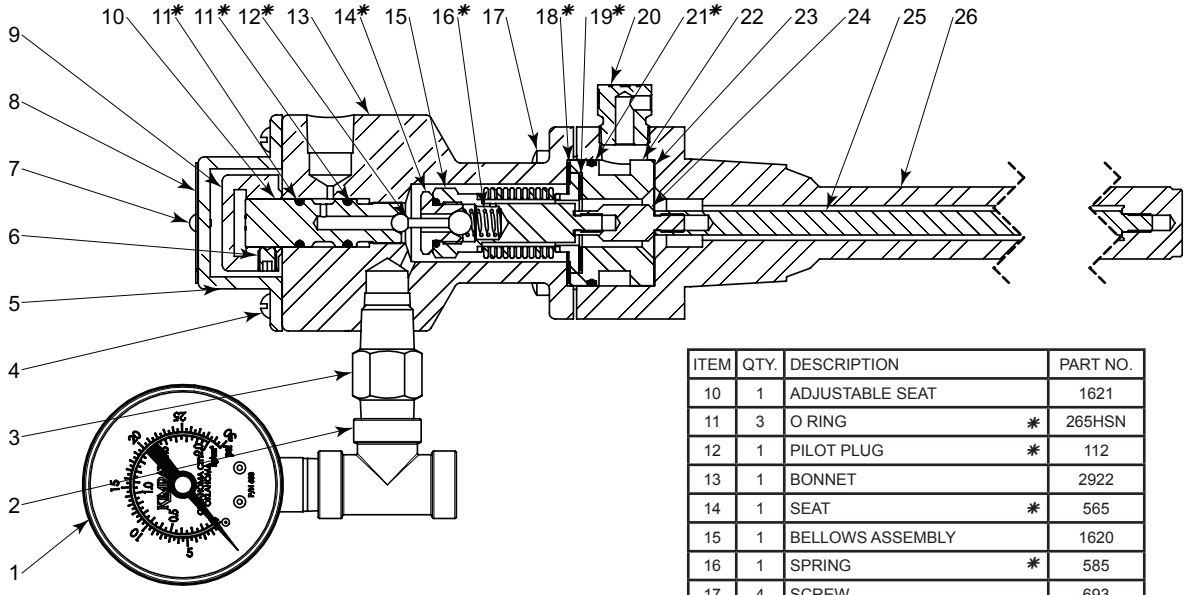
As the temperature rises in the system, the STAINLESS TUBE or outer tube increases in length to move the Thermostat Bellows Assembly in a direction to first close the seat at BALL 1 (Yellow to Atmosphere) and open the seat at Ball 2 (Violet to Yellow). Output Pressure (Yellow) increases, opening a safety valve which was blocking gas supply for the burner and pilot light system.



Kimray is an ISO 9001- certified manufacturer.

KIMRAY INC.®

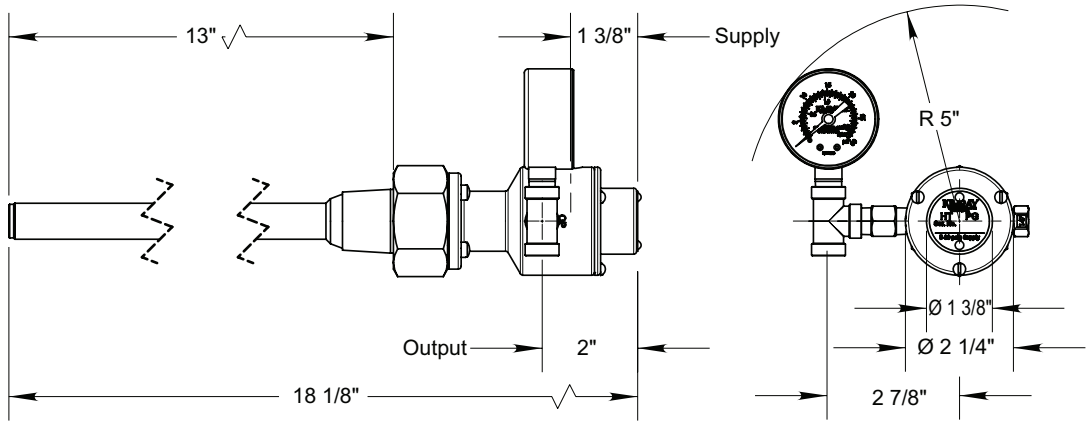
HIGH TEMPERATURE PILOT GUARD STEEL



ITEM	QTY.	DESCRIPTION	PART NO.
1	1	GAUGE	603
2	1	TEE	219
3	1	NIPPLE	648
4	3	SCREW	1085
5	1	CAP	2921
6	1	SET SCREW	264
7	2	DRIVE SCREW	602
8	1	NAME PLATE	2920
9	1	ADJUSTING KNOB	2919

ITEM	QTY.	DESCRIPTION	PART NO.
10	1	ADJUSTABLE SEAT	1621
11	3	O RING *	265HSN
12	1	PILOT PLUG *	112
13	1	BONNET	2922
14	1	SEAT *	565
15	1	BELLOWS ASSEMBLY	1620
16	1	SPRING *	585
17	4	SCREW	693
18	1	GASKET *	1623
19	1	GASKET *	1624
20	1	VENT PLUG	147
21	1	O RING *	4638HSN
22	1	SPOOL	4478
23	1	METAL DIAPHRAGM	4422
24	1	SENSING ROD EXTENSION	4481
25	1	12 INCH SENSING ROD	4479
		18 INCH SENSING ROD	4482
26	1	12 INCH BASE ASSEMBLY	4485
		18 INCH BASE ASSEMBLY	4486

DIMENSIONS



PILOT GUARDS AVAILABLE:

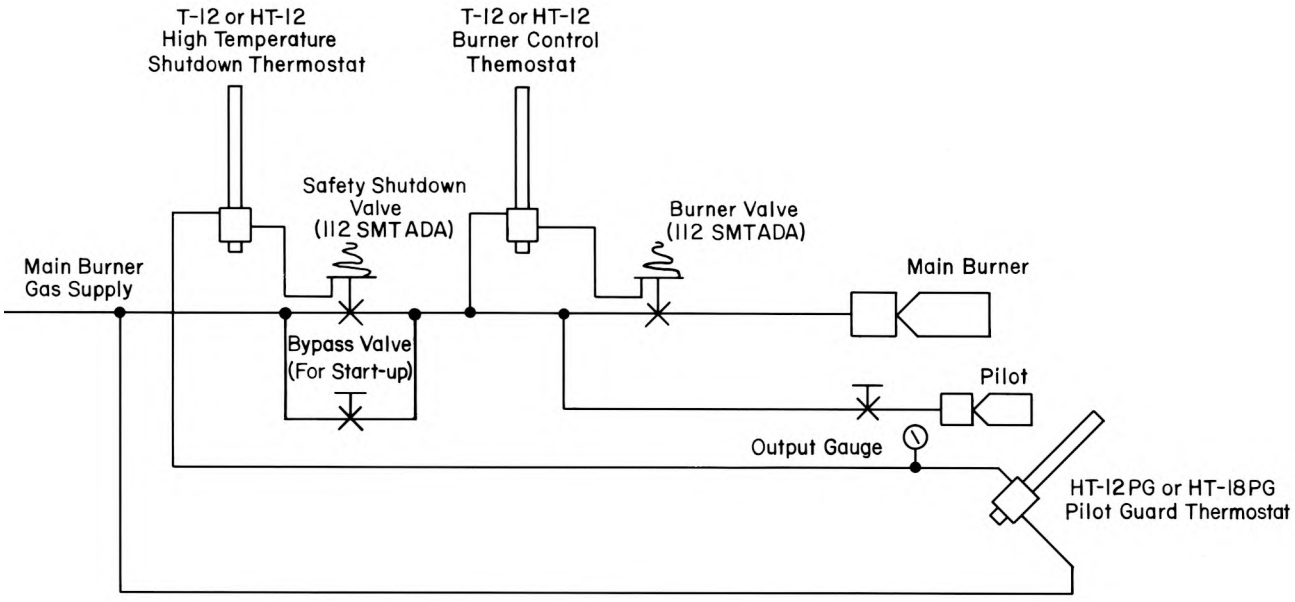
CAT. NO.	BASE ASSEMBLY	MAX. TEMP. °F	MAX. TEMP. °C	REPAIR KIT
HBT	HT 12 PG	2100	1149	RXX
HBU	HT 18 PG	2100	1149	RXX

NOTES:

*These are recommended spare parts and are stocked as repair kits.

A 1" NPT mounted collet for adjusting the HT 12 PG pilot guard for optimum sensing of the pilot flame is available. To order specify Cat. No. "YDE".

HIGH TEMPERATURE PILOT GUARD SCHEMATIC INSTALLATION



INSTALLATION:

It is recommended that a separate (Pressure Opening) safety (burner and pilot shutdown) valve be controlled by the HT 12PG. A bypass valve around this safety valve is recommended to assist during start up and restart. The bypass valve allows pilot lighting with no output from the pilot guard (cold start). After the pilot has heated the thermostat, the HT 12PG output pressure will hold the safety valve open and the bypass should be closed. If the bypass valve is omitted, the HT 12PG must be reset each time the unit is restarted.

Because of the high temperature of the pilot flame, the probe should only be placed in the outer most region of the pilot flame. The probe should not be put in the main burner flame.

Once the pilot guard has been installed, it is necessary to fine tune the set point to allow for rapid shutdown. Since each system's heat losses, mounting positions, etc, are different, there is not preset set point. By following the Start-up & Adjustment Procedure, the pilot guard can be tuned to each system for rapid system shutdown in the event of flame loss.

START UP & ADJUSTMENT PROCEDURE:

1. Open the bypass valve around the safety valve. If the bypass valve is omitted, proceed to step 2.

2. Adust the HT 12PG 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 light according to the standard procedures taking all 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 HT 12PG control knob to maintain an output pressure of approximately 50% of the supply pressure. (Adjust the control 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 HT 12PG to the maximum pilot flame temperature and insures a rapid system shutdown if the pilot flame goes out.

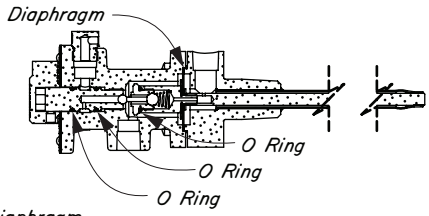
6. When the output pressure stabilizes, the control knob can be turned counterclockwise for 100% output pressure. The HT 12PG is now set. Close the bypass valve.

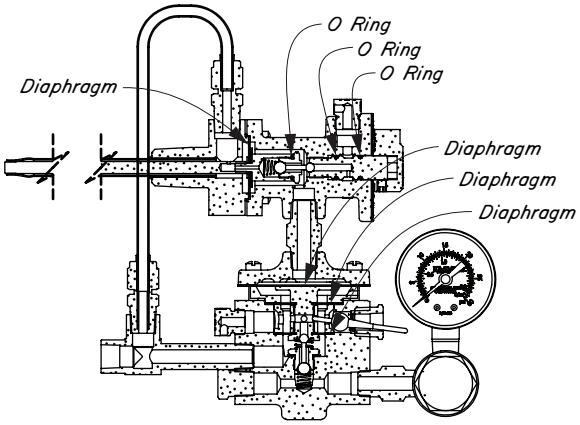
7. The burner system should now be cycled. Occasionally, drafting occurs during the burner cycle and cools down the HT 12PG enough for shutdown. If this occurs, turn the control knob counterclockwise approximately 1/8 of a turn at a time, until drafting will not cause a system shutdown.

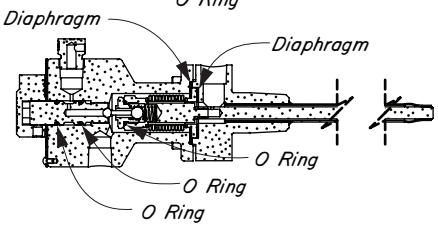
8. Should the system ever shutdown, it is necessary to determine what caused the shutdown. If a cooling effect, due to drafting occurred, readjust the control knob counterclockwise approximately 1/8 of a turn at a time, until drafting will not cause a system shutdown.

9. To restart after shutdown, open the bypass valve and light the pilot. When the output pressure of the HT 12PG 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.

Table 1 - Seal Options Temperature Controllers		
Part	**Standard Material**	**Optional Material**
O-rings	HSN	FKM
Diaphragm	HSN	FKM







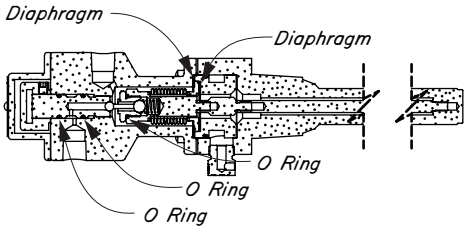
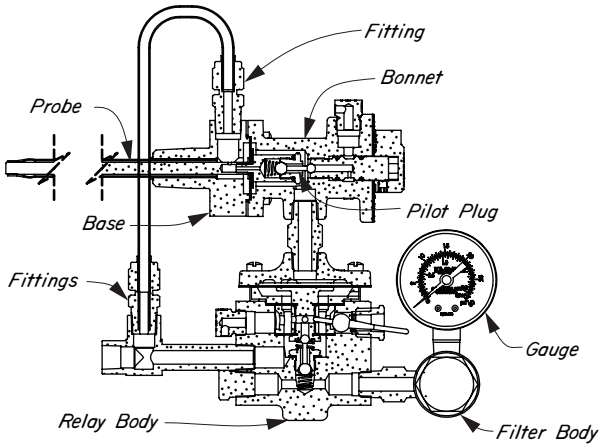


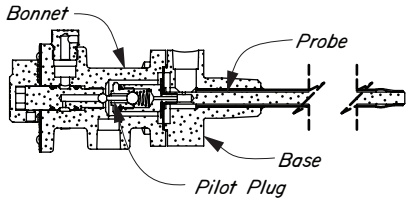
Table 2 - Seal Specifications							
		NITRILE	HIGHLY SATURATED NITRILE	FKM	AFLAS®	POLY-URETHANE	GYLON
	Kimray Suffix	-	HSN	V	AF	P	GY
Resistance	**Abrasion**	G	G-E	G	G	E	E
	Acid	F	G-E	G-E	E	P	E
	Chemical	F	F	E	E	F	E
	Cold	G	G	P	P	G	E
	Flame	P	P	E	E	P	P
	Heat	G	E	E	E	F	E
	Oil	G-E	E	E	E	G	E
	Ozone	P	G	G-E	E	E	E
	Set	G	G	G-E	P	F	P
	Tear	F	F	F	P	G-E	E
	Water/Steam	F	E	P	G	P	E
	Weather	F	G	E	E	E	E
	CO2	F-G	G	G	G	G	E
	H2S	P	F	P	E	G	E
	Methanol	F	E	P	P	P	E
Properties	**Dynamic**	G	G	G	G	E	P
	Electrical	F	F	F	G-E	F	E
	Impermeability	G	G	G	G	G	E
	Tensile Strength	G	G-E	G	F	G-E	E
	Temp. Range (°F)	-20° to +225°F	-20° to +250°F	-15° to +400°F	+15° to +450°F	-40° to +180°F	-450° to +500°F
	Temp. Range (°C)	-29° to +107°C	-29° to +121°C	-26° to +204°C	-9° to +232°C	-40° to +82°C	-268° to +260°C
	Form	O,S,D	O,S,D	O,S,D	O,S,D	S,D	S,D
RATINGS: P-POOR, F-FAIR, G-GOOD, E-EXCELLENT							

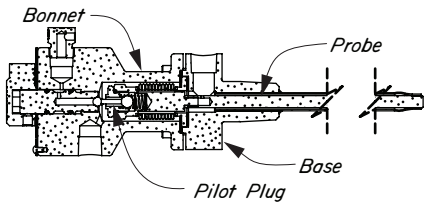
MATERIAL SPECIFICATION

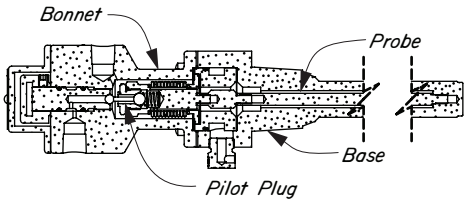
Table 3 - Thermostat Materials of Construction		
Part Description	**Standard Material**	**Optional Material(s)**
Bonnet	ASTM A-395	
Base	C 12L14 CFS	
Probe	304 Stainless / Low Expansion Alloy	
Pilot Plug	316 Stainless	
Interior Parts	C 12L14 CFS	

Table 4 - Pilot Guard Materials of Construction		
Part Description	**Standard Material**	**Optional Material(s)**
Bonnet	ASTM A-395	
Base	C 12L14 CFS	
Probe	304 Stainless / Low Expansion Alloy	
Pilot Plug	Silver Brazed 303 / 316 SS	
Relay Body	ASTM A-395	
Filter Body	C 12L14 CFS	
Filter Screens	304 Stainless	
Fittings	Steel	
Guage	Brass Base and Bourdon Tube	
Internal Parts	C 12L14 CFS	









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

www.kimray.com

Current Revision:
Remove chart