

### Temperature Regulating with PT Temperature Pilot

Pilot-Operated REGULATORS

Temperature Pilot	<b>PT</b>
Pilot Body Material	<b>Ductile Iron</b>
Max Inlet Pressure	<b>300 PSIG</b>
Temperature Control Range	<b>60-300°F</b>
Steam Inlet Pressure Range (Standard) (when Standard Temperature Pilot is used with <b>HD Standard</b> main valve)	<b>15-300 PSIG</b>
Steam Inlet Pressure Range (Low) (when Low-Pressure Temperature Pilot is used with <b>HD-LP</b> Low-Pressure main valve)	<b>5-20 PSIG</b>

#### Typical Applications

The PT-Temperature Pilots are used with the HD regulator to control temperature in various processes and systems. Some examples are: oil heaters, ovens, process heaters, vats, dryers and jacketed kettles. Thermostatic sensing bulb comes with standard 8-ft. or 15-ft. capillary lengths. Temperature adjustment is accomplished by rotating an adjustment knob to the desired temperature setting.

The **HD** Regulator can be used with both the **PP-Pressure Pilot** and **PT-Temperature Pilot** simultaneously to limit pressure and control temperature in process applications.

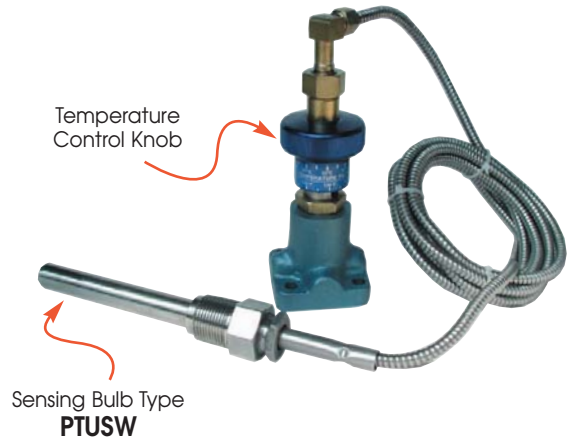
Using both the temperature and pressure pilots on the same regulator eliminates the need for two separate regulators to control temperature and pressure.

#### Features

- Temperature adjustment made simple and easy by rotating an adjustment knob to the desired temperature setting
- Thermostatic sensing bulb comes with an 8-ft. or 15-ft. length capillary
- Capillary is armor-protected to resist damage
- Overheat protection bellows is incorporated into sensing bulb; 200°F overheat protection up to 350°F
- Full port strainer and blowdown valve on pilot adapter for protection of pilot from dirt and scale

#### Options

- Temperature Pilot can be combined with Pressure and Solenoid pilots
- Capillary lengths up to 25-ft. maximum
- Thermowells\* for isolating sensing bulb from process liquid are available in brass or 316 stainless steel
- Extended length wells available for increased insertion depth of sensing bulb
- 316 Stainless Steel Sensing Bulb



#### LOW PRESSURE PT Pilot (pressures under 15 PSIG)

Use Code **LP**: Low pressure Temperature Pilot is required for steam pressure under 15 PSI. (Range 5 - 20)

**PILOT:** Example Model Code: **PTU-12-8-LP**

#### LOW PRESSURE HD Main Valve (pressures under 15 PSIG)

Use Code **LP**: A Low Pressure Main Valve must be used in conjunction with a Low Pressure Temperature Pilot for steam pressure under 15 PSIG

**MAIN VALVE:** Example Model Code: **HD-13-N-LP** (Range 5 - 20)

#### Options & Adders:

Code **LP** - Low Pressure Pilot

Code **20** 20 ft. Capillary Length

Code **25** 25 ft. Capillary Length

Example: **PTU-29-8** (with standard 8 ft capillary) is changed to 20 ft of capillary. Model code becomes **PTU-29-20**

Code **SSBBAC** - \*SS bulb, bushing & 8 ft. armored capillary

\*Note: The standard sensing bulb is copper. A 316 SS Bulb and bushing with 8 ft. armored capillary is available for corrosive applications or to meet SWDA requirements. Use code **SSBBAC**

#### For Temperature Pilot

Temperature Ranges
<b>60 - 120°F</b> (16 - 49°C)
<b>100 - 160°F</b> (38 - 71°C)
<b>120 - 180°F</b> (49 - 82°C)
<b>160 - 220°F</b> (71 - 104°C)
<b>200 - 260°F</b> (93 - 127°C)
<b>240 - 300°F</b> (116 - 149°C)

#### Model Codes for Individual Thermowells for PT & PTU Pilots

Model Code	Description of Thermowell
<b>WELL-TU-BR</b>	Brass Thermowell for PTU pilot
<b>WELL-TU-SS</b>	Stainless steel Thermowell for PTU pilot
<b>WELL-T-BR-EXT</b>	Extended brass Thermowell for PT pilot
<b>WELL-T-SS-EXT</b>	Extended stainless steel Thermowell for PT pilot

#### \* Thermowells:

Wells isolate sensing bulb from the process liquid and are available in Brass or Stainless Steel. When placed on the side of a tank or vessel, the sensing bulb can be removed without having to drain the process fluid.

**Temperature Regulating with PT Temperature Pilot**

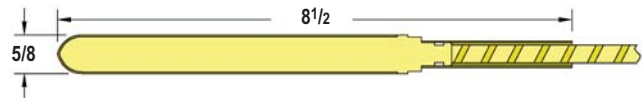
**PT Pilots with 8 Ft. Capillary & Sensing Bulbs**

Bulb Type	Temperature Range	Pilot Model Code
PT	60°F-120°F	PT-12-8
	100°F-160°F	PT-14-8
	120°F-180°F	PT-29-8
	160°F-220°F	PT-30-8
	200°F-260°F	PT-31-8
	240°F-300°F	PT-32-8
PTU	60°F-120°F	PTU-12-8
	100°F-160°F	PTU-14-8
	120°F-180°F	PTU-29-8
	160°F-220°F	PTU-30-8
	200°F-260°F	PTU-31-8
	240°F-300°F	PTU-32-8
PTUBW Brass Well	60°F-120°F	PTUBW-12-8
	100°F-160°F	PTUBW-14-8
	120°F-180°F	PTUBW-29-8
	160°F-220°F	PTUBW-30-8
	200°F-260°F	PTUBW-31-8
	240°F-300°F	PTUBW-32-8
PTUSW SS Well	60°F-120°F	PTUSW-12-8
	100°F-160°F	PTUSW-14-8
	120°F-180°F	PTUSW-29-8
	160°F-220°F	PTUSW-30-8
	200°F-260°F	PTUSW-31-8
	240°F-300°F	PTUSW-32-8
PTBW Brass Well	60°F-120°F	PTBW-12-8
	100°F-160°F	PTBW-14-8
	120°F-180°F	PTBW-29-8
	160°F-220°F	PTBW-30-8
	200°F-260°F	PTBW-31-8
	240°F-300°F	PTBW-32-8
PTSW SS Well	60°F-120°F	PTSW-12-8
	100°F-160°F	PTSW-14-8
	120°F-180°F	PTSW-29-8
	160°F-220°F	PTSW-30-8
	200°F-260°F	PTSW-31-8
	240°F-300°F	PTSW-32-8

**All Sensing Bulbs are Copper**

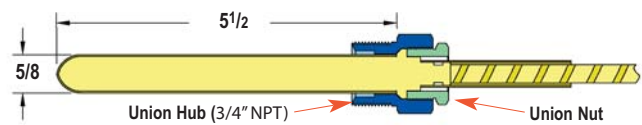
Dimension (inches)

**PT**



Plain copper sensing bulb that is directly immersed into the fluid. Normally the PT bulb type is lowered down vertically into the top of a tank or vat to a desired vertical insertion depth.

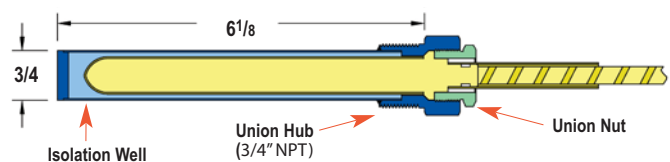
**PTU**



Copper sensing bulb with Union connection allowing it to be screwed into the side of a tank or pipe. The sensing bulb is in direct contact with the process fluid. Sensing bulb can be removed by unscrewing union nut (union hub remains in place).

**PTUBW & PTUSW (PTU style copper sensing bulb with Thermowell)**

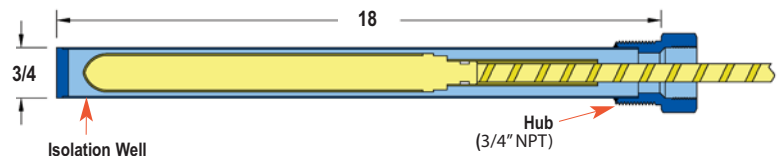
PTUBW: Brass Well  
PTUSW: 316L SS Well



The Isolation Well, which isolates the copper sensing bulb from the process fluid, is available in either Brass or 316L Stainless Steel. Sensing bulb can be removed by unscrewing union nut. Union Hub & Isolation Well remain in place which allows the removal of the sensing bulb without having to drain the tank. Stainless Steel Isolation Wells are used to protect the copper sensing bulb from corrosive fluids. Brass wells have better heat transfer.

**PTBW & PTSW (PT style copper sensing bulb with Extended Length Thermowell)**

PTBW: Brass Well  
PTSW: 316L SS Well



**For deeper & variable insertion depths into tanks or vats; up to 18" deep.** The extended length Isolation Well isolates the copper sensing bulb from the liquid and allows the copper sensing bulb insertion depth to be adjusted to a depth of up to 18". They are available in either Brass or 316L Stainless Steel. Isolation Well remains in place which allows the removal of the sensing bulb without having to drain the tank.

**Example Model Codes:**

<b>PT-14-15</b>	PT Plain Sensing Bulb (no threaded connection), 100-160 °F, 15 Ft. Capillary Length
<b>PTUBW-30-8</b>	PTUBW Sensing Bulb with Threaded Union Connection & Brass Well, 160-220 °F, 8 Ft. Capillary Length
<b>PTBW-31-20-LP</b>	PTBW Plain Sensing Bulb with Extended Brass Well, 200-260 °F, 20 Ft. Capillary Length with Low Pressure Option

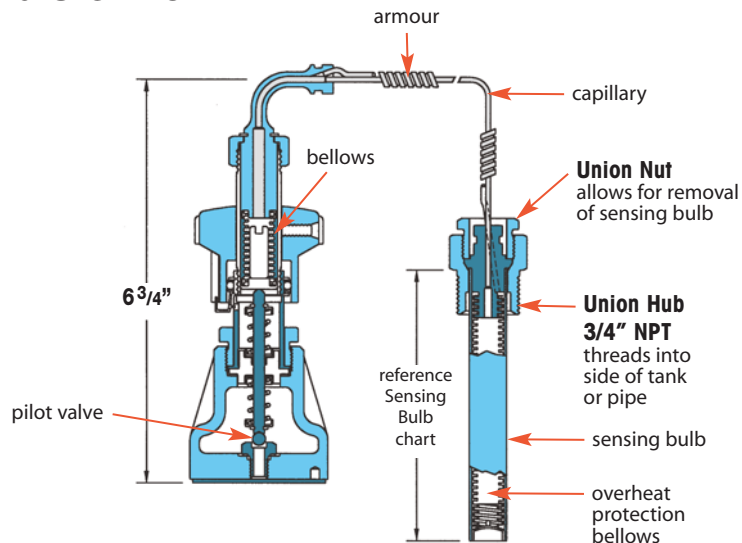
**Model Code Configuration for Temperature Pilot**

Example Model: **PTBW-31-8-LP**

Bulb Type		Code	Temperature Range	Code	Capillary Length	Code	Options (Suffix)
PT	Plain Sensing Bulb (no threaded connection)	12	60°F - 120°F	8	8 Feet	LP	Low Pressure (required under 15 PSI)
PTU	Sensing Bulb with Threaded Union Connection	14	100°F - 160°F	15	15 Feet	SSBAC	SS bulb, bushing & armored capillary
PTUBW	Sensing Bulb with Threaded Union Connection & Brass Well	29	120°F - 180°F	20	20 Feet		
PTUSW	Sensing Bulb with Threaded Union Connection & 316L SS Well	30	160°F - 220°F	25	25 Feet		
PTBW	Plain Sensing Bulb with Extended Length Brass Well	31	200°F - 260°F				
PTSW	Plain Sensing Bulb with Extended Length 316L SS Well	32	240°F - 300°F				

### Temperature Regulating with PT Temperature Pilot

#### PT Pilot Dimensions



Pilot-Operated REGULATORS

### Controlling Temperature of a large Tank of Water using PT-Temperature Pilot

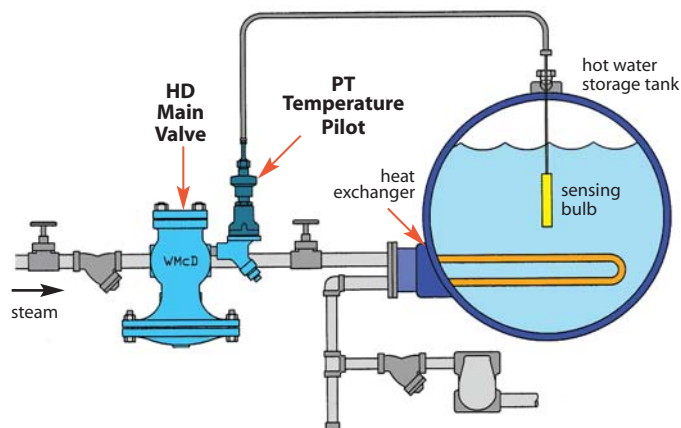
#### HD Main Valve

with  
PT-Temperature Pilot

#### Controlling Temperature

PT-pilot is used for temperature control when steam is used on heating applications. The PT style pilot is a "solid liquid fill" design made up of a temperature probe connected by a length of capillary tubing to a bellows in the pilot valve. When the temperature bulb is heated the liquid inside the probe expands the bellows and closes off the pilot valve. The opening and closing of the pilot controls the flow of steam thru the main valve; which maintains system temperature. PT-pilot controls temperature through a range of 60-300°F.

An overheat protection bellows is incorporated into sensing bulb.



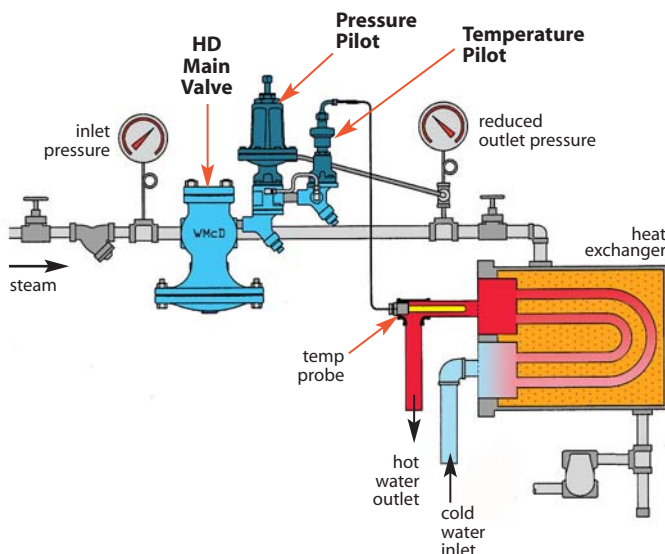
### Controlling Temperature and Limiting Pressure using PT-Temperature Pilot & PP-Pressure Pilot

#### HD Main Valve

with  
• PP-Pressure Pilot  
• PT-Temperature Pilot

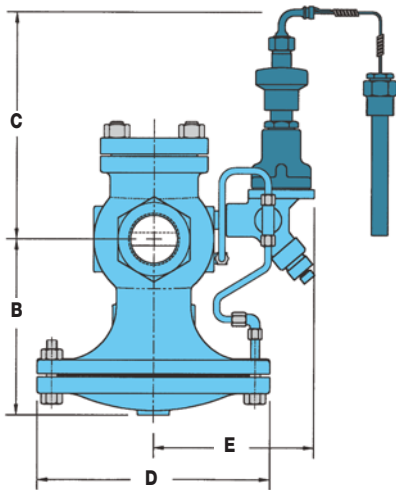
#### Controlling Temperature & Limiting Pressure to a Maximum Value

The PT & PP Pilots combination is used when it's required to control temperature while limiting downstream pressure to a maximum value. When the PT & PP Pilots combination is used, the downstream pressure is limited to a maximum setting by the pressure pilot, while the temperature pilot maintains the correct temperature of the process. This eliminates the need for a separate pressure reducing valve.

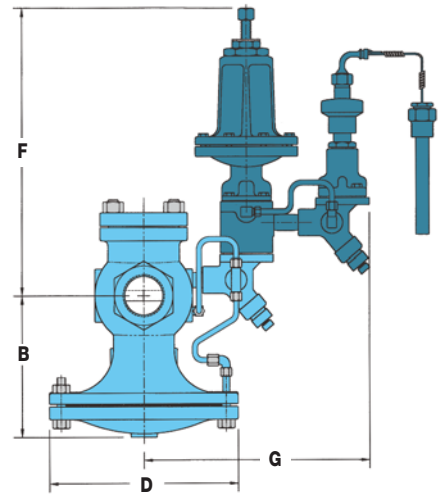


### Temperature Regulating with PT Temperature Pilot

HD Valve with Temperature Pilot



HD Valve with Temperature & Pressure Pilot



Pilot-Operated REGULATORS

#### DIMENSIONS HD-Series – inches

Size	Face-To-Face				B	C	D	E	F	G	Weight (lbs)	
	NPT	150#	300#								NPT	FLG
1/2"	4 <sup>3</sup> / <sub>8</sub>	–	–	–	5 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>4</sub>	18	–
3/4"	4 <sup>3</sup> / <sub>8</sub>	–	–	–	5 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>4</sub>	18	–
1"	5 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	6	–	6 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	7	8 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>4</sub>	23	35
1 <sup>1</sup> / <sub>4</sub> "	6 <sup>1</sup> / <sub>2</sub>	–	–	–	7 <sup>3</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	43	–
1 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>8</sub>	–	7 <sup>3</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	43	60
2"	7 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>2</sub>	9	–	8 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	65	85
2 <sup>1</sup> / <sub>2</sub> "	–	9 <sup>3</sup> / <sub>8</sub>	10	–	9	9 <sup>1</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	–	105
3"	–	10	10 <sup>3</sup> / <sub>4</sub>	–	8 <sup>7</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	12	–	145
4"	–	11 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	–	10 <sup>7</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>	13	–	235
6"	–	15 <sup>1</sup> / <sub>8</sub>	16	–	14 <sup>1</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	19 <sup>3</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>4</sub>	15	14 <sup>1</sup> / <sub>4</sub>	–	470

#### For Pressure Pilot

Pressure Ranges	Model
3-25 PSIG	PP-Y
20-100 PSIG	PP-B
80-200 PSIG	PP-R

HD Main Valve with PT-Temperature Pilot



Model Code for Main Valve: **HD-17-F150**  
(2" HD Series Valve with 150# Flanges)

Model Code for Pilot: **PTU-14-8**  
(Temperature Pilot (100-160° F) with 8 Ft. Capillary)

HD Main Valve with  
• PP-Pressure Pilot  
• PT-Temperature Pilot



Model Code for Main Valve: **HD-17-F150**  
(2" HD Series Valve with 150# Flanges)

Model Code for Pilot: **PP-B**  
(Pressure Pilot with 20-100 PSIG Range)

Model Code for Pilot: **PTU-14-8**  
(Temperature Pilot (100-160° F) with 8 Ft. Capillary)

Model Code for Secondary Pilot Adapter\*: **BADAPTER**

\* If 2 Pilots are used on the same valve, a Secondary Pilot Adapter is required.

#### MATERIALS for PT Temperature Pilot

Pilot Body	Ductile Iron
Bellows	Phosphor Bronze
Head & Seat Assembly	Hardened SST (55 Rc)

#### MATERIALS for PP Pressure Pilot

Pilot Body & Cover	Ductile Iron or Cast Steel
Head & Seat Gasket	302 SS
Diaphragm	Phosphor Bronze
Head & Seat Assembly	Hardened SST (55 Rc)

#### MATERIALS for HD Main Valve

Body	Ductile Iron
Cover	Ductile Iron
Gasket	Grafoil/Garlock
Cover Screws	Steel
Pilot Adapter	Ductile Iron/Cast Steel
Screen	Stainless Steel
Tubing	Copper
Valve Seat	Hardened SST (55 Rc)
Valve Disc	Hardened SST (55 Rc)
Diaphragm	Phosphor Bronze