

Pressure and/or Temperature Pilot Operated Steam Regulators Series 2000

The Hoffman Specialty Series 2000 consists of main valves, pilot valves, wells and hardware kits. They are designed to meet a wide range of temperature, pressure and capacity requirements and provide accurate, dependable, low maintenance operation. The Series 2000 Regulators meet MIL Spec MIL-V-16733D (Type IV) and MIL-V-18433B (Type I, Style A, Class 2).

Main Valves

- Sizes available: 1/2" - 6" (150mm)
- Cast iron body with 30,000 tensile
- Maximum rating 250 psig (17.3 bar) at 450°F (232°C)
- Full, normal and reduced ports available

Pilots

- Spring
- Temperature
- Air
- Solenoid
- Electro-Pneumatic Transducer

Basic Selection Data

Select main valve based on required sizing information.

Select type of pilots required.

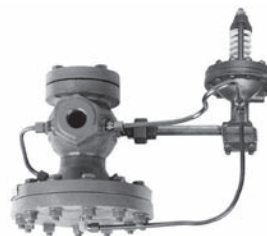
Select hardware package based on main valve size and type of pilots used.

Example

For a 1½" Full Port Valve using a combination of temperature pilot for 50-200°F (10-93°C) range and a spring pilot with 5-60 psig (0.14-4.1 bar) range and a Normally Closed solenoid pilot...

Specify on purchase order

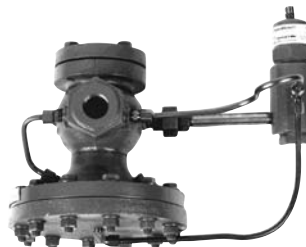
- 402412 Main Valve Full Port
- 400866 STPA-200 Temperature Pilot
- 400278 SPS-60 Spring Pilot
- 402255 Normally Closed Solenoid Pilot
- 400641 Hardware Kit



Main Valve with Pressure
Control Spring Pilot



Main Valve with Temperature
Control Pilot



Main Valve with Pressure
Control Air Pilot



Main Valve with Electric on/off Solenoid Pilot
and Pressure Control Spring Pilots

***Contact your local Hoffman Specialty representative for information
on Noise Silencers for Steam Regulators.**

Series 2000 Main Valves

The Series 2000 Main valve is rugged and stable in response for trouble free, dependable operation over a wide range of conditions and applications.

- For continuous or dead end service within .01% leakage of the valve's rated capacity
- Packless construction eliminates many service problems
- Complete range of port sizes:
 - Full
 - Normal
 - Reduced
 - Low pressure {Models 2150 & 2250}
 } High Pressure Models
 2100, 2200 & 2300
- Positive travel stop and back up of diaphragm prevents over pressurizing from low pressure side
- Maintains accurate and stable control of pressure or temperature
- Two-ply stainless steel diaphragm provides greater accuracy of control over the entire capacity range and a longer life
- Minimum differential pressure:
 - Model 2100, 2200 & 230015 psi (1.0 bar)
 - Model 2150, 22503 psi (.2 bar)
- Maximum differential pressure 150 psi (10.3 bar). A two stage reduction should be used for pressure drops greater than 150 psi (10.3 bar). Models 2150 & 2250 have maximum 30 psi differential pressure
- Maximum temperature 450°F (232°C)

Materials of Construction	
Part	Specifications
Body	Cast Iron ASTM A126-71
Stem	Stainless Steel ASTM A581, A582
Seat	Stainless Steel ASTM A582
Plug	Stainless Steel ASTM A582
Diaphragm	Stainless Steel ASTM A240
Gaskets	Non-asbestos ASTM F-104
Nuts/Bolts	ASTM A325 GRADE 5
Copper Tubing	ASTM B75 ALLOY 122

Selection Guide

Main Valve Body Styles					
Size in.	Model Number				
	2100 Screw NPT max. pressure 250 psig (17.3 bar)	2150 Screw NPT max. pressure 30 psig (2.1 bar)	2200 ANSI 125 Flanged max. pressure 125 psig (8.6 bar)	2250 ANSI 125 Flanged max. pressure 30 psig (2.1 bar)	2300 ANSI 250 Flanged max. pressure 250 psig (17.3 bar)
1/2	X				
3/4	X	X			
1	X	X			
1 1/4	X	X			
1 1/2	X	X			
2	X	X	X	X	X
2 1/2			X	X	X
3			X	X	X
4			X	X	X
6			X	X	X

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Series 2000 Main Valves

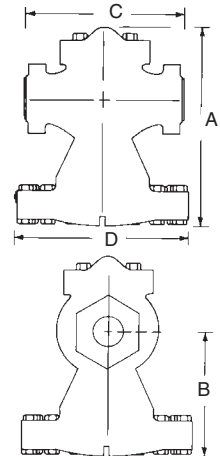
Dimensions (Main Valves)

Model 2100 and 2150 Screwed NPT Ends — Maximum pressure 250 psig (17.3 bar)

NPT Valve Size in.	Dimensions in. (mm)			
	A	B	C	D
1/2	7 7/8 (200)	4 3/4 (121)	5 1/8 (130)	7 (178)
3/4	7 7/8 (200)	4 3/4 (121)	5 1/8 (130)	7 (178)
1	7 7/8 (200)	4 3/4 (121)	5 1/8 (130)	7 (178)
1 1/4	9 1/2 (241)	5 3/4 (146)	7 1/2 (191)	8 3/4 (222)
1 1/2	9 1/2 (241)	5 3/4 (146)	7 1/2 (191)	8 3/4 (222)
2	11 3/4 (298)	7 5/8 (194)	9 1/4 (235)	10 (254)



**Model 2100 & 2150
Screwed NPT Ends**

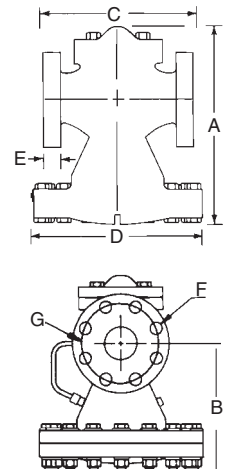


Model 2200 and 2250 Flanged Ends — Maximum pressure 125 psig (8.6 bar)

Valve Size in. (mm)	Dimensions in. (mm)					Bolt Holes		
	A	B	C	D	E	Hole Dia. in. (mm) F	No. of holes	Bolt Circ. in. (mm) G
2 (50)	11 3/4 (298)	7 5/8 (194)	8 (203)	10 (254)	5/8 (16)	3/4 (19)	4	4 3/4 (121)
2 1/2 (65)	15 5/8 (397)	9 5/8 (244)	9 5/8 (238)	12 (305)	1 1/16 (17)	3/4 (19)	4	5 1/2 (140)
3 (80)	16 9/16 (421)	10 3/16 (259)	10 (254)	13 1/8 (333)	3/4 (19)	3/4 (19)	4	6 (152)
4 (100)	19 (483)	12 (305)	11 7/8 (302)	16 5/8 (422)	1 5/16 (23.8)	3/4 (19)	8	7 1/2 (191)
6 (150)	24 3/16 (614)	15 5/8 (397)	15 1/8 (384)	22 3/4 (578)	1 (25)	7/8 (22)	8	9 1/2 (241)



**Model 2200 & 2250
Flanged Ends**

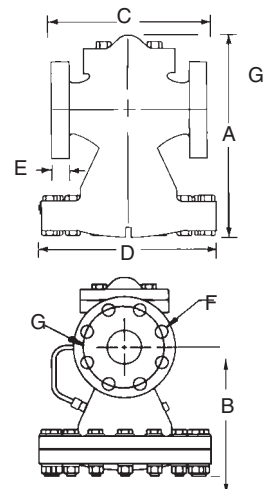


Model 2300 Flanged Ends — Maximum pressure 250 psig (17.3 bar)

Valve Size in. (mm)	Dimensions in. (mm)					Bolt Holes		
	A	B	C	D	E	Hole Dia. in. (mm) F	No. of holes	Bolt Circ. in. (mm) G
2 (50)	11 3/4 (298)	7 5/8 (194)	8 1/2 (216)	10 (254)	7/8 (22)	3/4 (19)	8	5 (127)
2 1/2 (65)	15 5/8 (397)	9 5/8 (244)	10 (254)	12 (305)	1 (25)	7/8 (22)	8	5 7/8 (149)
3 (80)	16 9/16 (421)	10 3/16 (259)	10 3/4 (273)	13 1/8 (333)	1 1/8 (29)	7/8 (22)	8	6 5/8 (168)
4 (100)	19 (483)	12 (305)	12 1/2 (318)	16 5/8 (422)	1 1/4 (32)	7/8 (22)	8	7 7/8 (200)
6 (150)	24 3/16 (614)	15 5/8 (397)	16 (406)	22 3/4 (578)	1 7/16 (37)	7/8 (22)	12	10 5/8 (270)



**Model 2300
Flanged Ends**



Series 2000 Main Valves

Steam Capacities — Full Port lbs./hr. (kg/hr.)

Models 2100, 2200, 2300

		Main Valve Size									
Pressure psig (bar)		NPT Size, in.						Flanged Valves, in. (mm)			
IN	OUT††	½"NPT	¾"NPT	1"NPT	1¼"NPT	1½"NPT	2"NPT/Flange	2½"(65)	3"(80)	4"(100)	6"(150)
Cv		3.9	8.3	10.6	20.2	24.2	34.2	50.3	78.7	139.6	302.2
20† (1.4)	0-5 (0-0.34)	220 (100)	260 (118)	360 (163)	660 (299)	850 (386)	1200 (544)	2020 (916)	3000 (1361)	5160 (2341)	11870 (5384)
25† (1.7)	10 (0.7)	250 (113)	300 (136)	410 (186)	800 (363)	1000 (454)	1420 (644)	2300 (1043)	3300 (1497)	6200 (2812)	14000 (6350)
	0-5 (0-0.34)	260 (118)	410 (186)	470 (213)	900 (408)	1100 (499)	1730 (785)	2900 (1315)	4000 (1814)	7000 (3175)	16300 (7394)
30† (2.1)	15 (1.0)	290 (132)	320 (145)	460 (209)	950 (431)	1100 (499)	1900 (862)	3000 (1361)	3500 (1588)	6800 (3084)	14500 (6577)
	0-10 (0-0.7)	300 (136)	460 (209)	530 (240)	1100 (499)	1240 (562)	2060 (934)	3450 (1565)	4600 (2087)	8300 (3765)	18500 (8392)
40 (2.8)	25 (1.7)	320 (145)	410 (186)	650 (295)	1200 (544)	1150 (522)	1300 (590)	3250 (1474)	3800 (1724)	7500 (3402)	17200 (7802)
	0-20 (0-1.4)	370 (168)	480 (218)	720 (327)	1250 (567)	1500 (680)	2120 (962)	3800 (1724)	4800 (2177)	9400 (4264)	19650 (8913)
50 (3.5)	35 (2.4)	370 (168)	700 (318)	770 (349)	1250 (567)	1500 (680)	2500 (1134)	3500 (1588)	4800 (2177)	9500 (4309)	20000 (9072)
	30 (2.1)	410 (186)	760 (345)	850 (386)	1550 (703)	1850 (839)	2900 (1315)	4500 (2041)	5700 (2586)	11500 (5216)	23500 (10660)
	0-25 (0-1.7)	420 (191)	800 (363)	890 (404)	1650 (748)	2050 (930)	3050 (1383)	4900 (2223)	6500 (2948)	11900 (5398)	24200 (10977)
60 (4.2)	45 (3.1)	420 (191)	760 (345)	840 (381)	1350 (612)	1700 (771)	2700 (1225)	4400 (1996)	5800 (2631)	11000 (4990)	25800 (11703)
	40 (2.8)	450 (204)	850 (386)	1000 (454)	1650 (748)	2000 (907)	3050 (1383)	4800 (2177)	6800 (3084)	13500 (6124)	27500 (12474)
	35 (2.4)	470 (213)	920 (417)	1100 (499)	1750 (794)	2200 (998)	3250 (1474)	5600 (2540)	7400 (3357)	14000 (6350)	29000 (13154)
	0-30 (0-2.1)	480 (218)	980 (445)	1140 (517)	1850 (839)	2350 (1066)	3600 (1633)	5950 (2699)	8400 (3810)	14700 (6668)	30500 (13835)
75 (5.2)	55 (3.8)	550 (249)	830 (376)	1200 (544)	2000 (907)	2300 (1043)	3750 (1701)	5800 (2631)	8500 (3856)	15100 (6849)	31000 (14062)
	50 (3.5)	570 (259)	1060 (481)	1320 (599)	2250 (1021)	2560 (1161)	3900 (1769)	6100 (2767)	8900 (4037)	16300 (7394)	34000 (15422)
	45 (3.1)	580 (263)	1120 (508)	1380 (626)	2400 (1089)	2800 (1270)	4300 (1950)	6450 (2926)	9500 (4309)	17800 (8074)	37000 (16783)
	0-40 (0-2.8)	590 (268)	1200 (544)	1400 (635)	2600 (1179)	3200 (1452)	4500 (2041)	6750 (3062)	10000 (4536)	18100 (8210)	38800 (17600)
100 (6.9)	75 (5.2)	600 (272)	1150 (522)	1480 (671)	2400 (1089)	3100 (1406)	4900 (2223)	7800 (3538)	10800 (4899)	20500 (9299)	40800 (18507)
	60 (4.2)	670 (304)	1300 (590)	1800 (816)	3000 (1361)	3900 (1769)	5350 (2427)	8900 (4037)	12200 (5534)	21750 (9866)	48000 (21773)
	0-50 (0-3.5)	690 (313)	1480 (671)	1850 (839)	3400 (1542)	4400 (1996)	5850 (2654)	9100 (4128)	13500 (6124)	22960 (10415)	50000 (22680)
125 (8.6)	100 (6.9)	650 (295)	1300 (590)	1700 (771)	3150 (1429)	3550 (1610)	5300 (2404)	8650 (3924)	12200 (5534)	22000 (9979)	49200 (22317)
	75 (5.2)	750 (340)	1700 (771)	2000 (907)	4000 (1814)	4600 (2087)	6750 (3062)	10500 (4763)	15400 (6985)	26800 (12156)	61350 (27828)
	0-50 (0-3.5)	800 (363)	1770 (803)	2100 (953)	4200 (1905)	5600 (2540)	7500 (3402)	11400 (5171)	16800 (7620)	27720 (12574)	62600 (28395)
150 (10.3)	125 (8.6)	810 (367)	1600 (726)	2050 (930)	3800 (1724)	4450 (2019)	6200 (2812)	9900 (4491)	15000 (6804)	26200 (11884)	56700 (25719)
	100 (6.9)	930 (422)	1860 (844)	2450 (1111)	4500 (2041)	5350 (2427)	7500 (3402)	11900 (5398)	17800 (8074)	31000 (14061)	69300 (31434)
	0-75 (0-5.2)	950 (431)	2100 (953)	2700 (1225)	4900 (2223)	6150 (2790)	8000 (3629)	13200 (5988)	18600 (8437)	32950 (14946)	73800 (33475)
175 (12.1)	150 (10.3)	920 (417)	1850 (839)	2250 (1021)	4100 (1860)	5000 (2268)	6900 (3130)	11400 (5171)	16100 (7303)	28940 (13127)	63600 (28849)
	125 (8.6)	1050 (476)	2150 (975)	2700 (1225)	5000 (2268)	6200 (2812)	8600 (3901)	13300 (6033)	20220 (9172)	34800 (15785)	77000 (24927)
	100 (6.9)	1100 (499)	2280 (1034)	3000 (1361)	5500 (2495)	6900 (3130)	9500 (4309)	14700 (6668)	21900 (9934)	37500 (17010)	85000 (38556)
	0-75 (0-5.2)	1150 (522)	2400 (1089)	3100 (1406)	5800 (2631)	7400 (3357)	9750 (4423)	15600 (7076)	22070 (10011)	38000 (17237)	86000 (39010)
200 (13.8)	150 (10.3)	1130 (513)	2400 (1089)	2850 (1293)	5500 (2495)	6700 (3039)	9200 (4173)	14400 (6532)	22440 (10179)	38000 (17237)	84600 (38375)
	125 (8.6)	1200 (544)	2600 (1179)	3200 (1452)	6000 (2722)	7600 (3447)	10450 (4740)	15600 (7076)	25170 (11417)	43000 (19505)	95900 (43500)
	0-100 (0-6.9)	1250 (567)	2680 (1216)	3400 (1542)	6500 (2948)	7800 (3538)	11000 (4990)	16200 (7348)	25340 (11494)	43350 (19664)	97330 (44149)
225 (15.5)	175 (12.1)	1260 (572)	2480 (1125)	3080 (1397)	5980 (2713)	7180 (3257)	10150 (4604)	15850 (7189)	24300 (11022)	41221 (18697)	91600 (41549)
	150 (10.3)	1370 (621)	2790 (1266)	3540 (1606)	6840 (3103)	8370 (3797)	11600 (5262)	17770 (8060)	27250 (12360)	46200 (20956)	104600 (47446)
	0-125 (0-8.6)	1430 (649)	3000 (1361)	3770 (1710)	7200 (3266)	9120 (4137)	12200 (5534)	18450 (8368)	28300 (12836)	47980 (21763)	108600 (49260)
250 (17.3)	200 (13.8)	1350 (612)	2670 (1211)	3250 (1474)	6480 (2939)	7340 (3329)	10920 (4953)	17050 (7734)	20400 (9253)	44330 (20108)	98500 (44680)
	175 (12.1)	1480 (671)	3000 (1361)	3700 (1678)	7350 (3334)	8650 (3924)	12370 (5611)	19100 (8664)	29250 (13268)	49600 (22499)	112400 (50985)
	150 (10.3)	1550 (703)	3250 (1474)	4150 (1882)	7970 (3615)	9650 (4377)	13360 (6060)	20400 (9253)	31250 (14175)	53000 (24041)	120000 (54432)
	0-125 (0-8.6)	1550 (703)	3280 (1488)	4300 (1950)	8050 (3651)	9960 (4518)	13720 (6223)	20400 (9253)	31250 (14175)	53000 (24041)	120000 (54432)

Note: Capacity based on saturated steam at valve inlet. Pressure differential must be at least 15 psi (6.9 bar) for valve to operate.

†For inlet pressures below 30 psig (2.1 bar), refer to the Low Pressure Steam Capacity Chart, Models 2150 and 2250, page 48.

††When the outlet steam pressure is 50% or less of the inlet pressure, always use the lowest outlet pressure shown in the capacity table.

Series 2000 Main Valves

Steam Capacities — Normal Port lbs./hr. (kg/hr.)

Models 2100, 2200, 2300

		Main Valve Size									
Pressure psig (bar)		NPT Size, in.						Flanged Valves, in. (mm)			
IN	OUT††	½"NPT	¾"NPT	1"NPT	1¼"NPT	1½"NPT	2"NPT/Flange	2½"(65)	3"(80)	4"(100)	6"(150)
Cv		2.7	5.9	8.3	16.2	20.2	26.7	38.5	66.7	95.8	239.4
20† (1.4)	0-5 (0-0.34)	140 (64)	260 (118)	280 (127)	620 (281)	660 (299)	980 (445)	1480 (671)	2370 (1075)	3860 (1751)	9500 (4309)
25† (1.7)	10 (0.7)	160 (73)	300 (136)	300 (136)	700 (318)	800 (363)	1140 (517)	1700 (771)	2750 (1247)	4500 (2041)	10930 (4958)
	0-5 (0-0.34)	165 (75)	400 (181)	410 (186)	780 (354)	900 (408)	1290 (585)	1900 (862)	3600 (1633)	5100 (2313)	12900 (5851)
30† (2.1)	15 (1.0)	175 (79)	320 (145)	430 (195)	800 (363)	950 (431)	1250 (567)	1950 (885)	3100 (1406)	4800 (2177)	12500 (5670)
	0-10 (0-0.7)	185 (84)	460 (209)	460 (209)	920 (417)	1100 (499)	1530 (694)	2450 (1111)	4200 (1905)	5800 (2631)	14700 (6668)
40 (2.8)	25 (1.7)	200 (91)	360 (163)	410 (186)	950 (431)	1200 (544)	1550 (703)	2200 (998)	3650 (1656)	5600 (2540)	14000 (6350)
	0-20 (0-1.4)	221 (100)	480 (218)	480 (218)	1150 (522)	1250 (567)	1750 (794)	2600 (1179)	4100 (1860)	7000 (3175)	17500 (7938)
50 (3.5)	35 (2.4)	238 (108)	480 (218)	700 (318)	1150 (522)	1250 (567)	1950 (885)	2350 (1066)	4500 (2041)	5900 (2676)	16300 (7394)
	30 (2.1)	250 (113)	530 (240)	760 (345)	1400 (635)	1550 (703)	2100 (953)	2900 (1315)	5300 (2404)	7300 (3311)	19500 (8845)
	0-25 (0-1.7)	266 (121)	580 (263)	800 (363)	1460 (662)	1650 (748)	2400 (1089)	3500 (1588)	5600 (2540)	8400 (3810)	21200 (9616)
60 (4.2)	45 (3.1)	275 (125)	530 (240)	760 (345)	1300 (590)	1350 (612)	2100 (953)	3150 (1429)	4750 (2155)	8200 (3720)	18600 (8437)
	40 (2.8)	288 (131)	610 (277)	850 (386)	1600 (726)	1650 (748)	2300 (1043)	3600 (1633)	5500 (2495)	8700 (3946)	21500 (9752)
	35 (2.4)	310 (141)	660 (299)	920 (417)	1720 (780)	1750 (794)	2600 (1179)	3800 (1724)	6300 (2858)	9300 (4218)	22800 (10342)
	0-30 (0-2.1)	320 (145)	680 (308)	980 (445)	1820 (826)	1850 (839)	2700 (1225)	4200 (1905)	6900 (3130)	9900 (4491)	25500 (11567)
75 (5.2)	55 (3.8)	335 (152)	720 (327)	830 (376)	1990 (903)	2000 (907)	2850 (1293)	4150 (1882)	6700 (3039)	10200 (4627)	26200 (11884)
	50 (3.5)	351 (159)	750 (340)	1060 (481)	2030 (921)	2250 (1021)	3100 (1406)	4450 (2019)	7500 (3402)	10800 (4899)	28000 (12701)
	45 (3.1)	370 (168)	800 (363)	1120 (508)	2120 (962)	2400 (1089)	3350 (1520)	4700 (2132)	7800 (3538)	11900 (5398)	29000 (13154)
	0-40 (0-2.8)	385 (175)	860 (390)	1300 (590)	2200 (998)	2600 (1179)	3550 (1610)	4900 (2223)	8000 (3629)	12100 (5489)	31450 (14266)
100 (6.9)	75 (5.2)	440 (200)	900 (408)	1150 (522)	2450 (1111)	2500 (1134)	3700 (1678)	5300 (2404)	8700 (3946)	13200 (5988)	33000 (14969)
	60 (4.2)	460 (209)	980 (445)	1300 (590)	2750 (1247)	3000 (1361)	4650 (2109)	6000 (2722)	10000 (4536)	15200 (6895)	38000 (17237)
	0-50 (0-3.5)	475 (215)	1000 (454)	1480 (671)	2880 (1306)	3400 (1542)	4700 (2132)	6550 (2971)	10700 (4854)	16000 (7258)	39300 (17826)
125 (8.6)	100 (6.9)	525 (238)	1000 (454)	1300 (590)	2700 (1225)	3150 (1429)	4200 (1905)	6250 (2835)	10200 (4627)	15000 (6804)	38300 (17373)
	75 (5.2)	545 (247)	1200 (544)	1700 (771)	3250 (1474)	4000 (1814)	5400 (2449)	7600 (3447)	12500 (5670)	18300 (8301)	48900 (22181)
	0-50 (0-3.5)	570 (259)	1230 (558)	1770 (803)	3400 (1542)	4200 (1905)	5850 (2654)	8350 (3788)	13400 (6078)	19700 (8936)	50200 (22771)
150 (10.3)	125 (8.6)	565 (256)	1200 (544)	1600 (726)	3250 (1474)	3800 (1724)	5150 (2336)	7500 (3402)	11800 (5352)	17200 (7802)	44000 (19958)
	100 (6.9)	660 (299)	1400 (635)	1860 (844)	3850 (1746)	4500 (2041)	6300 (2858)	8650 (3924)	14400 (6532)	20800 (9435)	55600 (25220)
	0-75 (0-5.2)	680 (308)	1480 (671)	2100 (953)	4000 (1814)	4900 (2223)	6800 (3084)	9500 (4309)	15600 (7076)	22800 (10342)	59200 (26853)
175 (12.1)	150 (10.3)	636 (288)	1400 (635)	1850 (839)	3600 (1633)	4100 (1860)	5900 (2676)	8250 (3742)	13600 (6169)	18800 (8528)	49500 (22453)
	125 (8.6)	755 (342)	1570 (712)	2150 (975)	4360 (1978)	5000 (2268)	7000 (3175)	9700 (4400)	16650 (7552)	23200 (10524)	61000 (27670)
	100 (6.9)	800 (363)	1640 (744)	2280 (1034)	4600 (2087)	5500 (2495)	7600 (3447)	10600 (4808)	18500 (8392)	26000 (11794)	68000 (30845)
	0-75 (0-5.2)	810 (367)	1680 (762)	2400 (1089)	4650 (2109)	5800 (2631)	7900 (3583)	11250 (5103)	18820 (8537)	27200 (12338)	68300 (30981)
200 (13.8)	150 (10.3)	815 (370)	1650 (748)	2400 (1089)	4600 (2087)	5500 (2495)	7700 (3493)	10700 (4854)	18540 (8410)	25700 (11658)	66700 (30255)
	125 (8.6)	865 (392)	1850 (839)	2600 (1179)	5000 (2268)	6000 (2722)	8400 (3810)	11800 (5352)	21150 (9594)	29900 (13563)	76600 (34746)
	0-100 (0-6.9)	880 (399)	1900 (862)	2680 (1216)	5200 (2359)	6500 (2948)	8600 (3901)	12400 (5625)	21490 (9748)	30850 (13994)	77100 (34973)
225 (15.5)	175 (12.1)	910 (413)	1750 (794)	2480 (1125)	5150 (2336)	5980 (2713)	8260 (3747)	11800 (5352)	20080 (9108)	28200 (12792)	72220 (32759)
	150 (10.3)	983 (446)	2000 (907)	2790 (1266)	5730 (2599)	6840 (3103)	9250 (4196)	13420 (6087)	22900 (10387)	32370 (14683)	81700 (37059)
	0-125 (0-8.6)	1020 (463)	2050 (930)	3000 (1361)	5950 (2699)	7200 (3266)	9640 (4373)	14150 (6418)	24000 (10886)	34440 (15622)	86100 (39055)
250 (17.3)	200 (13.8)	980 (445)	1520 (689)	2670 (1211)	5500 (2495)	6480 (2939)	8850 (4014)	12890 (5947)	21970 (9966)	30300 (13744)	77660 (35227)
	175 (12.1)	1080 (490)	1880 (853)	3000 (1361)	6150 (2790)	7350 (3334)	9900 (4491)	14600 (6623)	25600 (11612)	34760 (15767)	87750 (39803)
	150 (10.3)	1130 (513)	2150 (975)	3250 (1474)	6600 (2994)	7970 (3615)	10640 (4826)	15620 (7085)	26250 (11907)	37500 (17010)	94600 (42911)
	0-125 (0-8.6)	1140 (517)	2250 (1021)	3280 (1488)	6650 (3016)	8050 (3651)	10680 (4844)	15750 (7144)	26500 (12020)	38000 (17237)	95000 (43092)

Note: Capacity based on saturated steam at valve inlet. Pressure differential must be at least 15 psi (6.9 bar) for valve to operate.

†For inlet pressures below 30 psig (2.1 bar), refer to the Low Pressure Steam Capacity Chart, Models 2150 and 2250, page 48.

††When the outlet steam pressure is 50% or less of the inlet pressure, always use the lowest outlet pressure shown in the capacity table.

Series 2000 Main Valves

Steam Capacities — Reduced Port lbs./hr. (kg/hr.)

Models 2100, 2200, 2300

		Main Valve Size									
Pressure psig (bar)		NPT Size, in.						Flanged Valves, in. (mm)			
IN	OUT††	½"NPT	¾"NPT	1"NPT	1¼"NPT	1½"NPT	2"NPT/Flange	2½"(65)	3"(80)	4"(100)	6"(150)
Cv		1.0	3.9	5.9	10.6	16.2	21.1	28.3	41.3	70.2	163
20† (1.4)	0-5 (0-0.34)	50 (23)	220 (100)	280 (127)	480 (218)	620 (281)	860 (390)	1360 (617)	1840 (835)	3090 (1402)	7120 (3230)
25† (1.7)	10 (0.7)	57 (26)	250 (113)	300 (136)	550 (249)	700 (317)	970 (439)	1560 (708)	2100 (953)	3670 (1665)	8200 (3720)
	0-5 (0-0.34)	58 (26)	260 (118)	400 (181)	620 (281)	780 (353)	1080 (489)	1630 (739)	2240 (1016)	3940 (1787)	8500 (3856)
30† (2.1)	15 (1.0)	62 (28)	290 (132)	430 (195)	700 (318)	800 (363)	1100 (499)	1710 (776)	2400 (1089)	4000 (1814)	9500 (4309)
	0-10 (0-0.7)	65 (29)	300 (136)	460 (209)	780 (354)	920 (417)	1180 (535)	1835 (832)	2520 (1143)	4500 (2041)	10170 (4613)
40 (2.8)	25 (1.7)	72 (33)	320 (145)	360 (163)	730 (331)	950 (431)	1260 (572)	2050 (930)	2500 (1134)	4650 (2109)	10000 (4536)
	0-20 (0-1.4)	78 (35)	370 (168)	480 (218)	840 (381)	1150 (522)	1380 (626)	2250 (1021)	3000 (1361)	5400 (2449)	11500 (5216)
50 (3.5)	35 (2.4)	81 (37)	370 (168)	480 (218)	900 (408)	1150 (522)	1450 (658)	2300 (1043)	3200 (1452)	5200 (2359)	11100 (5035)
	30 (2.1)	93 (42)	410 (185)	530 (240)	1050 (476)	1400 (635)	1680 (762)	2700 (1225)	3520 (1597)	6100 (2767)	13000 (5897)
	0-25 (0-1.7)	100 (45)	420 (190)	580 (263)	1100 (499)	1460 (662)	1800 (816)	2800 (1270)	3700 (1678)	6640 (3012)	14000 (6350)
60 (4.2)	45 (3.1)	95 (43)	420 (191)	530 (240)	1000 (453)	1300 (590)	1650 (748)	2650 (1202)	3350 (1520)	5800 (2631)	14000 (6350)
	40 (2.8)	104 (47)	450 (204)	610 (277)	1100 (499)	1600 (726)	1850 (839)	3000 (1361)	3860 (1751)	6800 (3084)	15200 (6895)
	35 (2.4)	111 (50)	470 (213)	660 (299)	1150 (522)	1720 (780)	1970 (894)	3150 (1429)	4200 (1905)	7300 (3311)	15800 (7167)
	0-30 (0-2.1)	115 (52)	480 (218)	680 (308)	1200 (544)	1820 (826)	2200 (998)	3300 (1497)	4450 (2019)	7800 (3538)	17100 (7757)
75 (5.2)	55 (3.8)	118 (53)	550 (249)	720 (327)	1350 (612)	1900 (862)	2150 (975)	3400 (1542)	4800 (2177)	8000 (3629)	16200 (7348)
	50 (3.5)	127 (57)	570 (259)	750 (340)	1400 (635)	2030 (921)	2400 (1089)	3500 (1588)	5050 (2291)	8500 (3856)	16700 (7575)
	45 (3.1)	134 (60)	580 (264)	800 (363)	1430 (649)	2120 (962)	2550 (1157)	3650 (1656)	5300 (2404)	9100 (4128)	17800 (8074)
	0-40 (0-2.8)	138 (62)	590 (268)	860 (390)	1450 (658)	2200 (998)	2650 (1202)	3750 (1701)	5520 (2504)	9300 (4218)	20000 (9072)
100 (6.9)	75 (5.2)	151 (68)	600 (272)	900 (408)	1740 (789)	2450 (1111)	3100 (1406)	4300 (1950)	6200 (2812)	10400 (4717)	21200 (9616)
	60 (4.2)	174 (78)	670 (304)	990 (449)	1830 (830)	2750 (1247)	3450 (1565)	5000 (2268)	7000 (3175)	11300 (5126)	25000 (11340)
	0-50 (0-3.5)	177 (80)	690 (312)	1000 (454)	1870 (848)	2880 (1306)	3600 (1633)	5100 (2313)	7300 (3311)	11970 (5430)	27000 (12247)
125 (8.6)	100 (6.9)	175 (79)	650 (295)	1000 (453)	1900 (862)	2700 (1225)	3350 (1520)	4950 (2245)	7000 (3175)	12000 (5443)	24000 (10886)
	75 (5.2)	213 (97)	750 (340)	1200 (544)	2150 (975)	3250 (1474)	4300 (1950)	6000 (2722)	8350 (3788)	14000 (6350)	30000 (13608)
	0-50 (0-3.5)	215 (98)	800 (363)	1230 (558)	2200 (998)	3400 (1542)	4400 (1996)	6100 (2767)	8700 (3946)	14600 (6623)	32200 (14606)
150 (10.3)	125 (8.6)	198 (90)	810 (367)	1200 (544)	2300 (1043)	3250 (1474)	4100 (1860)	5750 (2608)	8000 (3629)	13600 (6169)	27800 (12610)
	100 (6.9)	240 (109)	930 (422)	1400 (635)	2750 (1247)	3850 (1746)	4800 (2177)	6900 (3130)	9500 (4309)	16300 (7399)	35700 (16194)
	0-75 (0-5.2)	254 (115)	950 (431)	1480 (671)	2760 (1252)	4000 (1814)	5200 (2359)	7100 (3221)	10400 (4717)	17200 (7802)	39500 (17917)
175 (12.1)	150 (10.3)	220 (100)	920 (417)	1400 (635)	2600 (1179)	3600 (1633)	4500 (2041)	6600 (2994)	9300 (4218)	15300 (6940)	31150 (14129)
	125 (8.6)	226 (103)	1050 (476)	1570 (712)	3000 (1361)	4360 (1978)	5320 (2413)	7600 (3447)	10800 (4898)	18200 (8255)	40150 (18212)
	100 (6.9)	290 (132)	1100 (499)	1640 (744)	3100 (1406)	4600 (2087)	5800 (2631)	7900 (3583)	11700 (5307)	19960 (9053)	45700 (20729)
	0-75 (0-5.2)	295 (134)	1150 (522)	1680 (762)	3200 (1452)	4650 (2109)	5800 (2631)	8000 (3629)	11750 (5329)	20100 (9117)	46400 (21047)
200 (13.8)	150 (10.3)	291 (132)	1130 (513)	1650 (748)	3100 (1406)	4600 (2087)	5800 (2630)	8400 (3810)	11380 (5162)	16900 (7666)	44500 (20185)
	125 (8.6)	327 (148)	1200 (544)	1850 (839)	3250 (1474)	5000 (2268)	6500 (2948)	9100 (4128)	13100 (5942)	20100 (9117)	52200 (23678)
	0-100 (0-6.9)	330 (150)	1250 (567)	1900 (862)	3300 (1497)	5200 (2359)	6800 (3084)	9100 (4128)	13300 (6033)	22600 (10251)	52500 (23814)
225 (15.5)	175 (12.1)	315 (143)	1260 (572)	1750 (794)	3150 (1429)	5150 (2336)	6400 (2903)	8800 (3992)	12330 (5593)	21500 (9752)	45800 (20775)
	150 (10.3)	355 (161)	1370 (621)	2000 (907)	3650 (1656)	5730 (2599)	7150 (3243)	9870 (4477)	14000 (6350)	24080 (10923)	53300 (24177)
	0-125 (0-8.6)	370 (168)	1430 (649)	2050 (930)	4020 (1823)	5950 (2699)	7500 (3402)	10300 (4672)	14760 (6695)	25400 (11521)	58640 (26599)
250 (17.2)	200 (13.8)	339 (154)	1350 (612)	1880 (853)	3400 (1542)	5500 (2495)	6850 (3107)	9090 (4123)	13260 (6015)	23110 (10483)	50400 (22861)
	175 (12.1)	380 (172)	1480 (671)	2150 (975)	3970 (1801)	6150 (2799)	7680 (3483)	10400 (4717)	15050 (6827)	25860 (11730)	58500 (26536)
	150 (10.3)	405 (184)	1550 (703)	2250 (1021)	4440 (2014)	6600 (2994)	8300 (3765)	11300 (5126)	16300 (7394)	27800 (12610)	63400 (28758)
	0-125 (0-8.6)	410 (186)	1550 (703)	2250 (1021)	4500 (2041)	6650 (3016)	8330 (3778)	11360 (5153)	16400 (7439)	28100 (12746)	64300 (29166)

Note: Capacity based on saturated steam at valve inlet. Pressure differential must be at least 15 psi (6.9 bar) for valve to operate.

†For inlet pressures below 30 psig (2.1 bar), refer to the Low Pressure Steam Capacity Chart, Models 2150 and 2250, page 48.

††When the outlet steam pressure is 50% or less of the inlet pressure, always use the lowest outlet pressure shown in the capacity table.

Series 2000 Main Valves

Steam Capacities – Low Pressure lbs./hr. (kg/hr.)

Models 2150, 2250

		Main Valve Size								
Pressure psig (bar)		NPT Size, in.					Flanged Valves, in. (mm)			
IN	OUT††	¾"NPT	1"NPT	1¼"NPT	1½"NPT	2"NPT/Flange	2½"(65)	3"(80)	4"(100)	6"(150)
Cv		6.1	10.5	21.5	26.8	43	53.2	63.8	127.1	347.9
5 (.35)	2 (.14)	100 (45)	200 (91)	450 (204)	500 (227)	750 (340)	950 (431)	1050 (476)	2350 (1066)	7600 (3447)
	0-1 (0-.07)	140 (64)	240 (109)	490 (222)	550 (249)	850 (386)	1075 (488)	1200 (544)	2500 (1134)	7700 (3493)
6 (.42)	3 (.21)	105 (48)	210 (95)	470 (213)	540 (245)	800 (363)	1075 (488)	1150 (522)	2400 (1089)	7700 (3493)
	0-1 (0-.07)	160 (73)	295 (134)	540 (245)	660 (299)	1050 (476)	1200 (544)	1350 (612)	2600 (1179)	8000 (3629)
7 (.49)	4 (.28)	115 (52)	215 (98)	485 (220)	570 (259)	870 (395)	1150 (522)	1300 (590)	2450 (1111)	7900 (3583)
	0-2 (0-.14)	175 (79)	325 (147)	560 (254)	760 (345)	1200 (544)	1300 (590)	1500 (680)	2800 (1270)	8300 (3765)
8 (.56)	5 (.35)	120 (54)	220 (100)	500 (227)	600 (272)	940 (426)	1200 (544)	1400 (635)	2550 (1157)	8150 (3697)
	0-3 (0-.21)	180 (82)	340 (154)	630 (286)	800 (363)	1250 (567)	1350 (612)	1550 (703)	3250 (1474)	9243 (4192)
9 (.62)	6 (.42)	125 (57)	230 (104)	520 (236)	630 (286)	1000 (454)	1350 (612)	1550 (703)	2800 (1270)	8400 (3810)
	4 (.28)	190 (86)	350 (159)	650 (295)	815 (370)	1320 (599)	1500 (680)	1800 (816)	3350 (1520)	9600 (4355)
	0-2 (0-.14)	230 (104)	405 (184)	720 (327)	940 (426)	1500 (680)	1600 (726)	1900 (862)	3550 (1610)	9700 (4400)
10 (0.7)	7 (.49)	130 (59)	240 (109)	540 (245)	670 (304)	1050 (476)	1500 (680)	1650 (748)	3000 (1361)	10300 (4672)
	5 (.35)	200 (91)	350 (159)	730 (331)	860 (390)	1400 (635)	1750 (794)	1900 (862)	3450 (1565)	11300 (5126)
	0-2 (0-.14)	250 (113)	420 (191)	820 (372)	1040 (472)	1600 (726)	1800 (816)	2100 (953)	3600 (1633)	12000 (5443)
12 (.83)	9 (.62)	140 (64)	250 (113)	570 (259)	700 (318)	1100 (499)	1750 (794)	1800 (816)	3300 (1497)	10700 (4854)
	7 (.49)	210 (95)	360 (163)	750 (340)	800 (363)	1460 (662)	2000 (907)	2300 (1043)	3600 (1633)	11200 (5080)
	5 (.35)	250 (113)	410 (186)	900 (408)	1050 (476)	1700 (771)	2150 (975)	2650 (1202)	4000 (1814)	12000 (5443)
	0-2 (0-.14)	300 (136)	480 (218)	940 (426)	1200 (544)	1850 (839)	2300 (1043)	2700 (1225)	4400 (1996)	12500 (5670)
15 (6.9)	12 (.83)	150 (68)	270 (122)	600 (272)	740 (336)	1170 (531)	1800 (816)	1900 (862)	3600 (1633)	11000 (4990)
	10 (.7)	215 (98)	385 (175)	800 (363)	920 (417)	1500 (680)	2250 (1021)	2550 (1157)	4200 (1905)	12500 (5670)
	8 (.56)	260 (118)	450 (204)	940 (426)	1100 (499)	1750 (794)	2400 (1089)	2900 (1315)	4800 (2177)	14000 (6350)
	5 (.35)	315 (143)	510 (231)	1000 (454)	1250 (567)	2020 (916)	2550 (1157)	3200 (1452)	5400 (2449)	14300 (6486)
	0-2.5 (0-.17)	345 (156)	540 (245)	1040 (472)	1360 (617)	2200 (998)	2600 (1179)	3300 (1497)	6000 (2722)	14500 (6577)
20 (1.4)	17 (1.2)	160 (73)	290 (132)	640 (290)	800 (363)	1300 (590)	1450 (658)	2000 (907)	3800 (1724)	14000 (6350)
	15 (1.0)	220 (100)	400 (181)	835 (379)	1140 (517)	1850 (839)	2000 (907)	3100 (1406)	5000 (2268)	16000 (7258)
	10 (.7)	360 (163)	600 (272)	1150 (522)	1420 (644)	2300 (1043)	2500 (1134)	3950 (1792)	7200 (3266)	16500 (7484)
	0-5 (0-.35)	400 (181)	670 (304)	1250 (567)	1630 (739)	2650 (1202)	2650 (1202)	4550 (2064)	7300 (3311)	17000 (7711)
25 (1.7)	22 (1.5)	170 (77)	320 (145)	670 (304)	870 (395)	1400 (635)	1750 (794)	2200 (998)	4000 (1814)	12000 (5443)
	20 (1.4)	230 (104)	420 (191)	865 (392)	1100 (499)	1800 (816)	2400 (1089)	3300 (1497)	6000 (2722)	14000 (6350)
	15 (1.0)	335 (160)	650 (295)	1215 (551)	1490 (676)	2400 (1089)	2700 (1225)	4000 (1814)	8200 (3720)	16500 (7484)
	10 (.7)	430 (195)	720 (327)	1325 (601)	1700 (771)	2800 (1270)	3000 (1361)	4600 (2087)	8300 (3765)	19500 (8845)
	0-5 (0-.35)	460 (209)	770 (349)	1380 (626)	1900 (862)	3100 (1406)	3200 (1452)	5000 (2268)	8300 (3765)	20000 (9072)
30 (2.1)	27 (1.9)	180 (82)	330 (150)	690 (313)	935 (424)	1500 (680)	2000 (907)	2200 (998)	4200 (1905)	12500 (5670)
	25 (1.7)	240 (109)	430 (195)	885 (401)	1225 (556)	1900 (862)	2450 (1111)	3380 (1533)	7020 (3184)	14700 (6668)
	20 (1.4)	375 (170)	670 (304)	1250 (567)	1550 (703)	2500 (1134)	2750 (1247)	4070 (1846)	8800 (3992)	17300 (7847)
	15 (1.0)	450 (204)	760 (345)	1375 (624)	1770 (803)	2950 (1338)	3150 (1429)	4660 (2114)	9080 (4119)	20000 (9072)
	0-10 (0-.7)	520 (236)	870 (395)	1575 (714)	2100 (953)	3400 (1542)	3600 (1633)	5480 (2486)	9300 (4218)	21300 (9662)

Capacity based on saturated steam at valve inlet. Maximum inlet pressure 30 psi (2.1 bar).

Capacity based on 1 psi (.07 bar) accuracy of control. Pressure differential must be at least 3 psi (.21 bar) in order for valve to operate.

Series 2000 Main Valve Ordering Information

Series 2000 main valves, pilots, wells, and hardware kits **MUST BE ORDERED** as separate line items.

Model Number	Part Number	Size in. (mm)	Port	End Connections	Maximum Pressure psig (bar)	Weight lbs. (kg)
2100	402439	½ NPT	Full	Screwed NPT	250 (17.3)	23 (10.4)
2100	402436	½ NPT	Normal	Screwed NPT	250 (17.3)	23 (10.4)
2100	402433	½ NPT	Reduced	Screwed NPT	250 (17.3)	23 (10.4)
2100	402442	¾ NPT	Full	Screwed NPT	250 (17.3)	23 (10.4)
2100	402457	¾ NPT	Normal	Screwed NPT	250 (17.3)	23 (10.4)
2100	402460	¾ NPT	Reduced	Screwed NPT	250 (17.3)	23 (10.4)
2100	402445	1 NPT	Full	Screwed NPT	250 (17.3)	23 (10.4)
2100	402463	1 NPT	Normal	Screwed NPT	250 (17.3)	23 (10.4)
2100	402466	1 NPT	Reduced	Screwed NPT	250 (17.3)	23 (10.4)
2100	402409	1¼ NPT	Full	Screwed NPT	250 (17.3)	44 (20)
2100	402469	1¼ NPT	Normal	Screwed NPT	250 (17.3)	44 (20)
2100	402472	1¼ NPT	Reduced	Screwed NPT	250 (17.3)	44 (20)
2100	402412	1½ NPT	Full	Screwed NPT	250 (17.3)	44 (20)
2100	402475	1½ NPT	Normal	Screwed NPT	250 (17.3)	44 (20)
2100	402478	1½ NPT	Reduced	Screwed NPT	250 (17.3)	44 (20)
2100	402448	2 NPT	Full	Screwed NPT	250 (17.3)	64 (29)
2100	402451	2 NPT	Normal	Screwed NPT	250 (17.3)	64 (29)
2100	402454	2 NPT	Reduced	Screwed NPT	250 (17.3)	64 (29)
2200	402592	2 (50)	Full	Flanged	125 (8.6)	67 (30)
2200	402595	2 (50)	Normal	Flanged	125 (8.6)	67 (30)
2200	402598	2 (50)	Reduced	Flanged	125 (8.6)	67 (30)
2200	402541	2½ (65)	Full	Flanged	125 (8.6)	175 (79)
2200	402544	2½ (65)	Normal	Flanged	125 (8.6)	175 (79)
2200	402547	2½ (65)	Reduced	Flanged	125 (8.6)	175 (79)
2200	402523	3 (80)	Full	Flanged	125 (8.6)	215 (98)
2200	402526	3 (80)	Normal	Flanged	125 (8.6)	215 (98)
2200	402529	3 (80)	Reduced	Flanged	125 (8.6)	215 (98)
2200	402505	4 (100)	Full	Flanged	125 (8.6)	297 (135)
2200	402508	4 (100)	Normal	Flanged	125 (8.6)	297 (135)
2200	402511	4 (100)	Reduced	Flanged	125 (8.6)	297 (135)
2200	402487	6 (150)	Full	Flanged	125 (8.6)	535 (243)
2200	402490	6 (150)	Normal	Flanged	125 (8.6)	535 (243)
2200	402493	6 (150)	Reduced	Flanged	125 (8.6)	535 (243)
2300	402601	2 (50)	Full	Flanged	250 (17.3)	70 (32)
2300	402604	2 (50)	Normal	Flanged	250 (17.3)	70 (32)
2300	402607	2 (50)	Reduced	Flanged	250 (17.3)	70 (32)
2300	402532	2½ (65)	Full	Flanged	250 (17.3)	181 (82)
2300	402535	2½ (65)	Normal	Flanged	250 (17.3)	181 (82)
2300	402538	2½ (65)	Reduced	Flanged	250 (17.3)	181 (82)
2300	402514	3 (80)	Full	Flanged	250 (17.3)	221 (100)
2300	402517	3 (80)	Normal	Flanged	250 (17.3)	221 (100)
2300	402520	3 (80)	Reduced	Flanged	250 (17.3)	221 (100)
2300	402496	4 (100)	Full	Flanged	250 (17.3)	305 (138)
2300	402499	4 (100)	Normal	Flanged	250 (17.3)	305 (138)
2300	402502	4 (100)	Reduced	Flanged	250 (17.3)	305 (138)
2300	402481	6 (150)	Full	Flanged	250 (17.3)	552 (250)
2300	400185	6 (150)	Normal	Flanged	250 (17.3)	552 (250)
2300	402484	6 (150)	Reduced	Flanged	250 (17.3)	552 (250)
2150	402664	¾ NPT	NA	Screwed NPT	30 (2.1)	22.5 (10.2)
2150	402667	1 NPT	NA	Screwed NPT	30 (2.1)	22.5 (10.2)
2150	402649	1¼ NPT	NA	Screwed NPT	30 (2.1)	42 (19)
2150	402652	1½ NPT	NA	Screwed NPT	30 (2.1)	42 (19)
2150	402655	2 NPT	NA	Screwed NPT	30 (2.1)	62 (28)
2250	402658	2 (50)	NA	Flanged	30 (2.1)	67 (30)
2250	400751	2½ (65)	NA	Flanged	30 (2.1)	175 (79)
2250	400752	3 (80)	NA	Flanged	30 (2.1)	215 (98)
2250	400754	4 (100)	NA	Flanged	30 (2.1)	297 (135)
2250	400757	6 (150)	NA	Flanged	30 (2.1)	535 (243)

Hardware Kit Ordering Information

One kit per main valve is required to connect the pilot valve(s).

Part Number	Description	Size in.	Wt. (Approx.) lbs. (kg)
400638	Kit used when main valve has temperature or solenoid pilots only	½ - 2 NPT and 2" (50mm)	2 (1.0)
400640	Kit used when main valve has temperature or solenoid pilots only	2½ - 6 (65 - 150mm)	4 (2.0)
400641	Kit used when main valve has a spring or air pressure pilot or in combination with temperature or solenoid pilots	½ - 2 NPT and 2" (50mm)	1 (0.5)
400643	Kit used when main valve has a spring or air pressure pilot or in combination with temperature or solenoid pilots	2½ - 6 (65 - 150mm)	2 (1.0)

Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators

Series 2000 Pilot-Operated Regulators consist of a main valve that is controlled by a single or combination of pilot control valves.

There are a number of types of pilot control valves available:

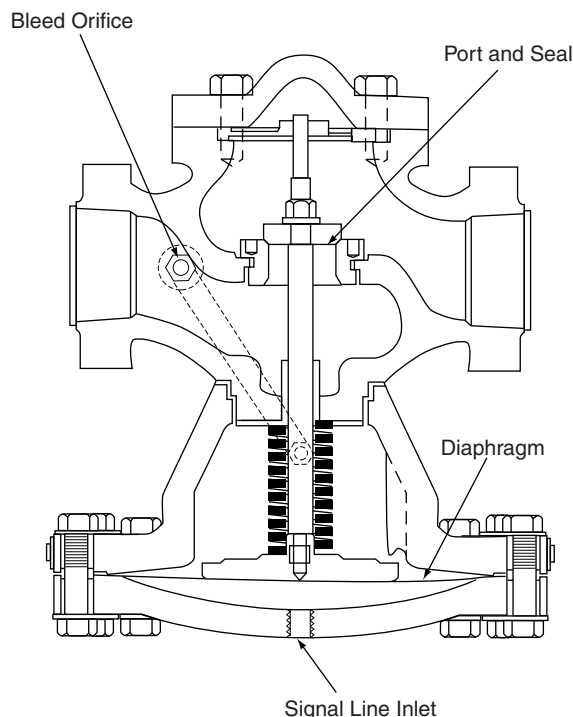
- Series SPS Spring Pressure Control Pilots – for self-contained pressure regulation
- Series STPA Self-Contained Temperature Control Pilots – for control of heated fluids
- Series AP Air Pressure Control Pilots – for remote pressure control using air pressure
- Series 315 PNT and Series 240 PNT Pneumatic Temperature Control Pilots – for rapidly changing load requirement applications

Different types of pilot valves can be used in combination to control more than one function or as a safety override. For example, a temperature pilot may be used in conjunction with a spring pressure pilot to control both temperature and pressure. Or, a temperature pilot may be used with a solenoid pilot to provide automatic shutdown when an over-temperature condition occurs.

Operation of Series 2000 Pilot-Operated Regulator Main Valve

The regulator main valve is held closed by the pressure on the diaphragm from an internal main spring. Pilot control valves control steam flow from the upstream supply side of the main valve to the underside of the diaphragm of the main valve. When the pilot valve opens, steam flows through the pilot and pressure builds in the signal line, applying pressure under the main valve diaphragm. This pressure force compresses the main valve spring and the main valve opens.

Under constant steam demand, the pilot and main valve remain relatively motionless. As the system approaches the pilot set point, the pilot valve begins to close. Less steam passes through the pilot and through the signal line. Pressure in the signal line decreases as steam passes through a small bleed orifice on the main valve. With lower steam pressure under the main valve diaphragm, the main valve spring forces the main valve to close.



Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators

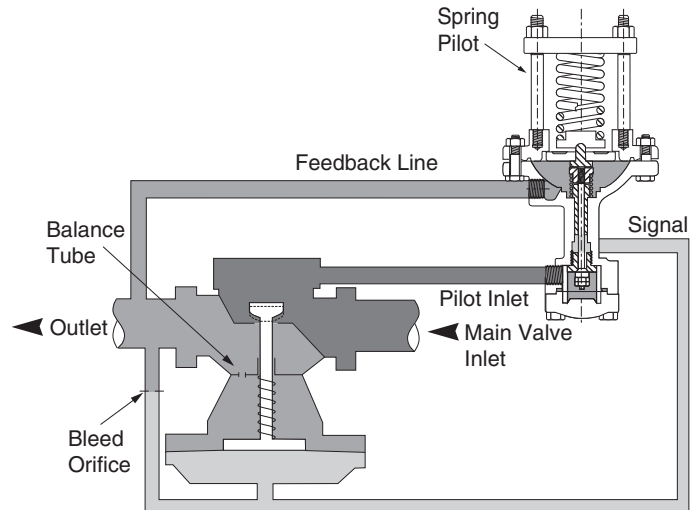
Operation - Main Valve with a Spring or Air Pilot

Pressure may be controlled by use of either a spring pilot or an air pilot. The only functional difference is that a spring pilot uses a spring to apply loading force to the pilot diaphragm and the air pilot uses air pressure.

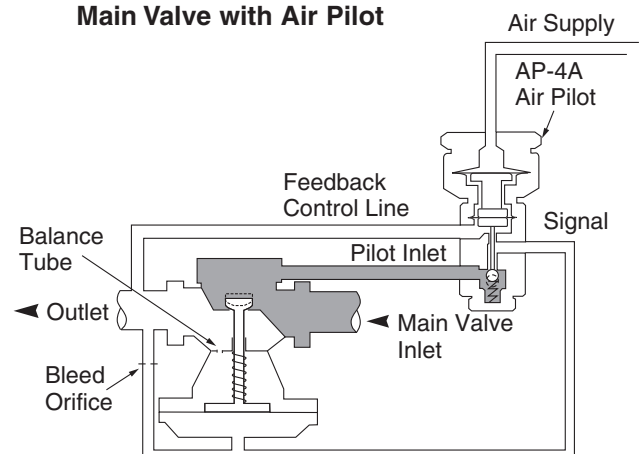
Downstream pressure is sensed and fed back to the pilot through the feedback line to the underside of the pilot diaphragm. The downstream pressure balances against the spring (or air pressure) force in the pilot, causing the pilot valve to move. This movement opens or closes the pilot valve. When the downstream pressure is below the pilot set point, the force from the spring or air opens the pilot valve and inlet steam flows through the pilot. The open pilot valve allows the flow of steam through the pilot seat and signal line, and on to the underside of the main valve diaphragm. The force from the steam pressure pushes against the main valve spring to control the main valve position. The main valve opens or closes in response to its diaphragm movement.

Under constant steam demand, the pilot and main valve remain relatively motionless. As steam demand decreases, the downstream pressure will rise. When the downstream pressure rises, the pilot valve senses the change relative to the spring or air loading force and the pilot begins to close. Less steam flows through the pilot and signal line to the underside of the main valve diaphragm. The steam trapped under the main valve diaphragm bleeds off through an orifice, allowing the main valve to close.

Main Valve with Spring Pilot



Main Valve with Air Pilot



Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

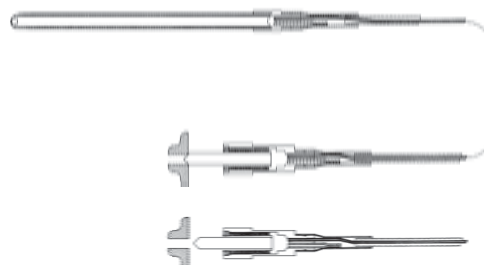
Operation - Main valve with a Self Contained Temperature Pilot

Self-contained temperature control pilots use a liquid-filled bulb and bellows. The actuating force for the pilot results from the volumetric expansion of the liquid as the bulb temperature increases. The expansion or contraction of the liquid controls the position of the pilot seat.

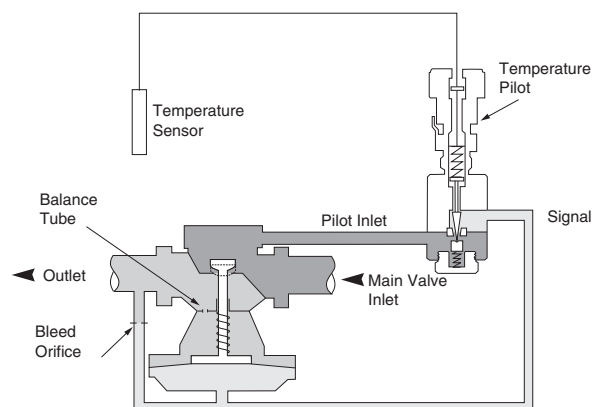
The sensing bulb is completely inserted into a downstream heated fluid to sense the fluid temperature. The sensing bulb is connected to a bellows by a capillary tube. When the bulb temperature is below the set point, a spring in the pilot keeps the pilot valve open and allows steam to flow from the pilot inlet through the signal line, and on to the underside of the main valve diaphragm. The force from the steam pressure pushes against the main valve spring to control the main valve position. The main valve opens or closes in response to its diaphragm movement.

Under constant steam demand, the pilot and main valve remain relatively motionless. As the bulb temperature increases and the liquid expands, the expansion is transmitted through the capillary tube, creating an actuating force on the bellows. The bellows expand to close the pilot valve, shutting down the flow of steam through the pilot seat and signal line to the underside of the main valve diaphragm. The steam trapped under the main valve diaphragm bleeds off through an orifice, allowing the main valve to close.

Temperature Pilot Operation



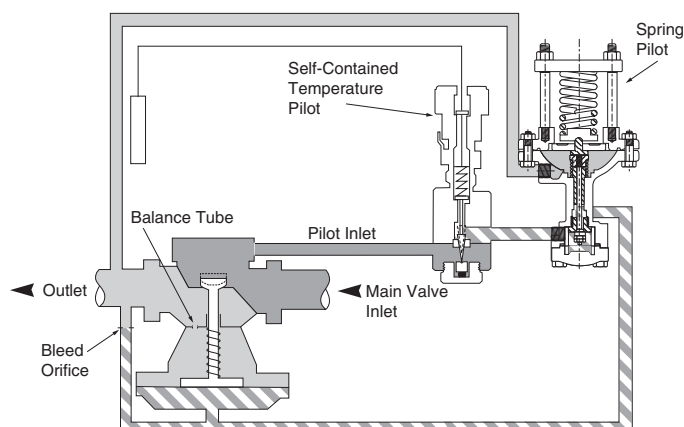
Main Valve with Temperature Pilot



Operation - Main Valve with a Combination of Pilots

When a temperature pilot is installed in series with a pressure pilot, the pilots perform their functions separately and concurrently. Each pilot regulation cycle is exactly the same as if used alone. When both pilots are open, the main valve will open, if either pilot closes, the main valve will close. The pressure pilot essentially acts to limit the maximum pressure as the temperature pilot cycles to control temperature.

Main Valve with Temperature and Pressure Pilot



Series 2000 (continued)

Operation - Main Valves with Pneumatic Temperature Pilots

The air pilot and pneumatic temperature pilot combination is used to control temperature in systems with rapid changes in the required heat load. An air PRV is used to limit the pressure of air supplied to the pneumatic temperature pilot. Limiting this supply pressure limits the air pilot loading force and hence the main valve downstream pressure.

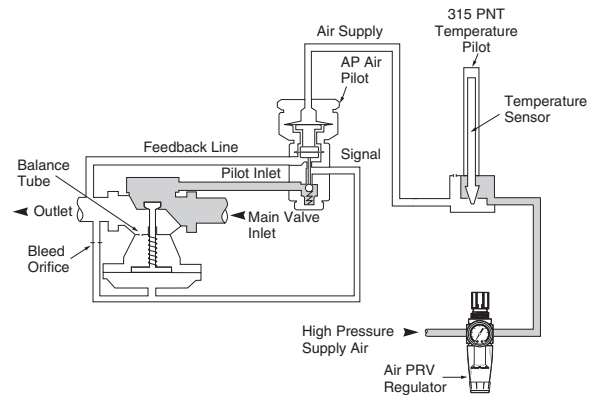
When the pneumatic temperature pilot senses a temperature below the set point, it delivers an air signal to the air pilot based on the sensed temperature. This air signal becomes the air pilot loading force. If the pressure downstream from the main valve is below the air pilot loading force, the pilot valve diaphragm pressure is no longer balanced. The pilot valve opens and inlet steam is passed through the air pilot to the signal line. Steam flowing through applies pressure on the lower side of the main valve diaphragm. This force from the steam compresses the main valve spring and the main valve opens.

Under constant steam demand, the pilot and main valve remain relatively motionless. As temperature rises to the pneumatic temperature pilot set point, the temperature pilot lowers the loading force to the air pilot. When the loading force decreases below the force produced by the downstream pressure, the air pilot begins to close. Less steam flows through the air pilot and signal line to the underside of the main valve diaphragm. The steam trapped under the main valve diaphragm bleeds off through an orifice, allowing the main valve to close.

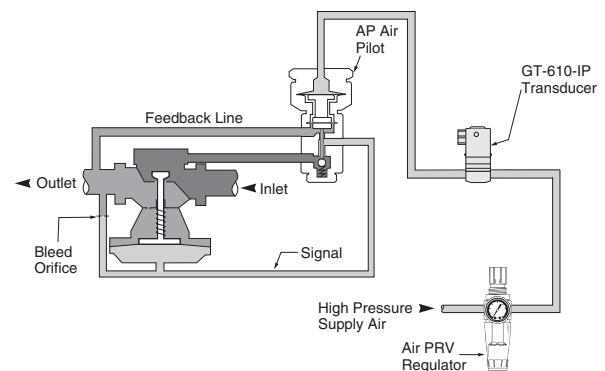
Operation with the GT610-IP Electro-Pneumatic Transducer is similar with the exception that the sensed temperature is represented by an electronic signal which the transducer converts to a pneumatic control signal for the air pilot.

These arrangements give rapid response for heat load changes and it also limits main valve downstream pressure.

Main Valve with Pneumatic Temperature Pilot and Air Pilot



Main Valve with Electro-Pneumatic Transducer and Air Pilot

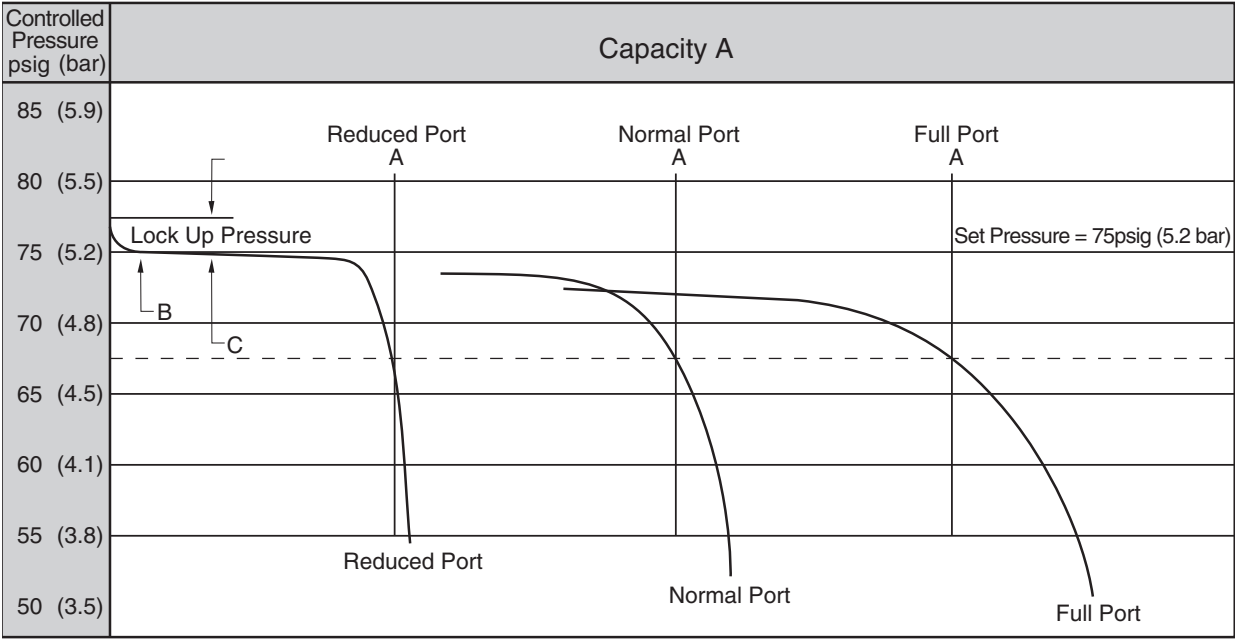


Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Accuracy of Control—Regulator Steam Capacities

Hoffman Specialty Series 2000 Regulator capacities, shown in the flow capacity charts on pages 45 - 48 in the Series 2000 Ordering Information section, are based on test data. The chart data indicates flow capacity values derived from plots of test data that show the drop away (droop) from the set pressure as shown in the graph below. The rated flow capacity (A) is where the curve passes a pressure droop of 10% of set pressure below the set pressure (B) [i.e., 75 psi x 0.1 = 7.5 psi (5.2 bar x 0.1 = .52 bar) below the set pressure of 75 psig (5.2 bar)]. The curves in the graph below demonstrate how the reduction in trim size affects performance. As a general rule it is best to use the smallest valve and trim possible that provides adequate flow capacity.



Capacity units are not shown. Curves are typical for all Main Valve sizes.

A. Flow at which port will be rated 10% droop [i.e. 75 psig x .1 = 7.5 psig (5.2 bar x .1 = .52)] from set pressure.

B. Minimum controllable flow.

C. Pressure rise above set pressure upon closing.

Capacity vs Controlled Pressure for Typical Main Valve with Spring Pilot

Regulator saturated steam capacities are tabulated in charts on pages near the Series 2000 Regulator Ordering Information. Note that all valves are available in several trim sizes to allow flexible selections. These capacities have been determined as outlined in PTC 19.5; 4-1959 “Chapter 4 Flow Measurement, ASME Power test Code.” The capacities conform to Fluid Controls Institute, Inc. specification FCI-58-1, “Definitions of Regulator Capacities.” The capacities are based on a 10% accuracy of regulation [2 psig (.14 bar) minimum] with the set point at minimum controllable flow, defined as 2% of maximum flow. Capacities are the same for whichever pilot is utilized.

When using the capacity tables remember:

- Values shown are maximum flow with minimum piping restriction.
- Maximum single stage reduction 150 psi (10.3 bar) (100 psi (6.9 bar) recommended).
- Values are for saturated steam; superheated steam requires a correction factor.
- Outlet pressures lower than the lowest shown will have a capacity equal to the lowest shown.
- All valves have 3 capacity ports available.
- Multi-stage reductions will have a flow capacity equal to the lower flow capacity of the two.

Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

How To Size Series 2000 Main Valves

Selecting the proper Series 2000 Pilot-Operated Regulator provides accuracy and efficiency in the control and operation of steam systems and their components. Series 2000 Regulator main valves are controlled by pilot valves. Pilot valves of different types can be used individually or in combination to:

- Control downstream steam pressure
- Control process temperature
- Control both downstream pressure and process temperatures in system components
- Provide a safety override.

A complete Series 2000 Regulator consists of:

- Main valve
- Control pilot or combination of pilots
- Hardware kit

Main Valve Sizing

1. Determine the available steam inlet pressure.
2. Determine the reduced steam outlet pressure.
3. Determine the capacity required by referring to the manufacturer's specifications for your equipment.
4. Apply the specifications (as determined in steps 1-3) to the Full Port Steam Capacity Table to determine the main valve size. If steam inlet pressure is below 30 psig (2.1 bar) use the Low Pressure Steam Capacity Table for Models 2150 or 2250 Main Valves.

Guidelines:

- To prevent seat damage and maintain control and accuracy, do not oversize the main valve. Select a regulator main valve that will operate between 50 - 100% of its capacity rating. If necessary, use Normal or Reduced Port Steam Capacity Tables.
- A Normal or Reduced Port Main Valve is recommended for systems that will expand in the future.
- The maximum recommended pressure drop across a single valve is 100 psig (6.9 bar). Operating with more than a 100 psig (6.9 bar) pressure drop may cause wire draw in the seat and excessive noise.

- Although not recommended, a Series 2000 Main Valve may be used for pressure drops up to 150 psi (10.4 bar).
- Main Valve noise data is available through "Steam Specialty Component Selectors" on the Hoffman Specialty website, ESP-Plus or upon request.
- To prevent excessive relief valve popping, the relief valve set point pressure must be capable of being set as follows:

Downstream system pressure at no load pressure	Relief valve set point pressure = downstream pressure plus
≤ 35 psig	5 psig
> 36 psig	10 psig

5. Use the Main Valve Body Style Chart to select a model number (based on size and pressure).
6. Use the Ordering Information Chart to determine the part number (based on the model number).
7. Size inlet and outlet piping for velocity:
 For heating or indoor applications –
 4,000-6,000 ft./min. (1,219-1,828 m/min.)
 For industrial or outdoor applications –
 8,000-12,000 ft./min. (2,438-3,657 m/min.)

Note: Main valve noise data available through ESP-Plus, or upon request.

8. Install drip traps ahead of regulators to drain condensate from steam lines.

Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Sizing Examples

Example 1.

Conditions:

In this example, the steam supply to the process equipment in the installation (system) will be regulated by one Series 2000 pressure regulator. Assume all equipment will be operating at the same time at a constant load.

Problem:

Calculate the steam load requirements for all of the equipment in the process system by referring to the equipment name plate. Then select a Series 2000 pressure regulator from the Steam Capacity Tables to determine the specific model pressure regulator and valve size needed.

Known Data

Inlet pressure 75 psi (5.3 bar)

Equipment Identification	Operating Pressure psi (bar)	Maximum Pressure psi (bar)	Equipment Steam Loads Requirements lbs./hr. (kg/hr.)	Pipe Size in.
A	20 (1.4)	40 (2.8)	300 (136)	½
B	20 (1.4)	30 (2.1)	600 (272)	¾
C	20 (1.4)	25 (1.75)	400 (181)	¾
D	20 (1.4)	25 (1.75)	800 (363)	1
E	20 (1.4)	25 (1.75)	500 (227)	½
F	20 (1.4)	50 (2.5)	600 (272)	¾
Total Capacity 3200 lbs./hr. (1453 kg/hr.)				

Procedure:

For this problem assume :

1. An inlet pressure of 75 psi (5.2 bar).
2. An outlet pressure of 20 psi (1.4 bar).
3. The steam load adds up to 3200 lbs./hr. (1453 kg/hr.) as shown to the left.

Procedure (continued):

4. Be sure to review the recommendations for good practice in selecting pressure regulators.
5. Refer to the Full Port Capacity Table page 45 first for the selection. The normal and reduced trim capacity tables should be used if there is a possibility the system will be expanded in the future.
6. Select the smallest regulator possible that will handle the steam load requirements. Typically it can be found in the Full Port Capacity Table.
7. When the outlet steam pressure is 50% or less of the inlet pressure, use the lowest outlet pressure shown in the capacity table.

Answer:

1. Referring to the Full Port Capacity Table, with the conditions given above under procedure, the correct valve to select would be a Model 2100 1½" Main Valve-Full Port.
2. Since in this example there is no supply of compressed air in the plant nor a need to also control temperature, a spring pilot would be selected to handle the outlet pressure requirements. This would be a Model SPS-30 with an adjustable range of 2 to 30 psi (.14 to 2.0 bar). Adjust the pilot to 20 psi (1.4 bar). A model SPS-60 pilot with an adjustable range of 5 to 60 psi (0.3 to 4.1 bar) could also be used.

Example 2.

Conditions:

In this example, a pressure/temperature regulator has to be selected to regulate the steam going into a steam to water heat exchanger. Due to a planned plant addition in the next 5 years, the steam system will be enlarged.

Problem:

The exchanger heats water from 50°F to 150°F (10-65°C) and has an assumed water flow of 50 gpm (189 lpm). The heat exchanger is limited to a 20 psi (1.4 bar) steam pressure. Assume the steam supply pressure is 100 psi (6.9 bar).

Known Data:

Temperature Rise — 150°F - 50°F = 100°F (66 - 10 = 56°C)
 Water Flow — 50 gpm (189 lpm) = 3000 gph (11,356 lph)
 Steam Inlet — 100 psi (6.9 bar)
 Steam Outlet — 20 psi (1.4 bar) (heat exchanger limit)

Procedure:

1. Refer to page 104 to obtain the steam required to satisfy the above conditions. This would be 2500 lbs./hr. (1134 kg/hr.) according to the tables.
2. Since it is planned to enlarge this system at a later date, refer to the steam capacity tables for a normal port to obtain the regulator size .

Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Sizing Examples

Example 2. (continued)

3. When the outlet steam pressure is 50% or less of the inlet pressure, use the lowest outlet pressure shown in the capacity table.

Answer:

1. Using the above data and referring to the Normal Port Capacity Table page 46, a 1 1/4" NPT main valve with a normal port that passes 2880 lbs./hr. (1306 kg/hr.) of steam would be selected.

The order would be for:

One, Model 2100, 1 1/4" NPT Main Valve-Normal Port.

2. Since temperature must be controlled, a combination of spring and temperature pilots should be selected. This would be:

One Model SPS-60 with adjustable range of 5 to 60 psi. (0.3 to 4.1 bar) or one Model SPS-30 with adjustable range of 2 to 30 psi (0.1 to 2.0 bar). The pilot would be adjusted to the required 20 psi (1.4 bar).

One Model STPA-200 with a temperature range of 50-200°F (10-93°C) would be selected and adjusted to 150°F (65°C) to maintain the desired temperature of water leaving the heat exchanger.

NOTE: An alternate option is to use a pneumatic temperature pilot with an air pressure pilot and an air regulator. This would be:

One Model 315 PNT with a temperature range of 50-300°F (10-149°C) adjusted to 150°F (65°C) to maintain the desired temperature of water leaving the heat exchanger.

One Model AP-1A Air Pressure pilot to receive the control signal from the pneumatic temperature pilot.

One Air PRV Regulator, adjusted to maintain a maximum 20 psi (1.4 bar) outlet pressure.

Typical Guidelines for Selection of Temperature Regulators

The degree of temperature variation depends on load change. The chart below is based on 0% through 100% load change.

Type of Heater	Application	Type of Regulator
Instantaneous Heater	Domestic Hot Water	Series 2000 with pneumatic pilot for $\pm 4^{\circ}\text{F}$ ($\pm 2.2^{\circ}\text{C}$). (must be used with anti-scald protection)
	Process fluids	Series 2000 with pneumatic pilot for $\pm 4^{\circ}\text{F}$ ($\pm 2.2^{\circ}\text{C}$). Series 2000 with STPA pilot for $\pm 10^{\circ}\text{F}$ ($\pm 5.6^{\circ}\text{C}$). (System recirculation is recommended)
	Wash down stations	Same as process fluids (Pneumatic recommended if available)
	Steam to water converters	Series 2000 with either direct or pneumatic operated pilots. $\pm 10^{\circ}\text{F}$ ($\pm 5.6^{\circ}\text{C}$) accuracy.
Semi-instantaneous Heater or Storage Heater	Domestic hot water	Series 2000 with pneumatic temperature pilot $\pm 4^{\circ}\text{F}$ ($\pm 2.2^{\circ}\text{C}$) accuracy (must be used with anti-scald protection)
	Process fluids	Series 2000 with pneumatic temperature pilot $\pm 4^{\circ}\text{F}$ ($\pm 2.2^{\circ}\text{C}$) accuracy. Direct-operated pilots $\pm 10^{\circ}\text{F}$ ($\pm 5.6^{\circ}\text{C}$) accuracy.
	Wash down stations	Same as process fluids

Series 2000

Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

A complete Series 2000 Regulator consists of:

- Main valve
- Control pilot or combination of pilots
- Hardware kit

There are a number of types of pilot control valves available:

- **Series SPS Spring Pressure Control Pilots** – for self-contained pressure regulation.
- **Series AP Air Pressure Control Pilots** – for remote pressure control using air pressure (requires an air pressure signal).
- **Series STPA Self-Contained Temperature Control Pilots** – for direct control of temperature in heated fluids.
- **Series 315 PNT and Series 240 PNT Pneumatic Temperature Control Pilots** – for rapidly changing load requirement applications (requires an air pressure signal and an AP Air pressure Control Pilot).
- **Series SLD Solenoid Pilots** – for remote control or safety overrides.

Different types of pilot valves can be used in combination to control more than one function or as a safety override. For example, a temperature pilot may be used in conjunction with a spring pressure pilot to control both temperature and pressure. Or, a temperature pilot may be used with a solenoid pilot to provide automatic shutdown when an over-temperature condition occurs.

How to Select Series 2000 Pilots

Series SPS Spring Pressure Control Pilots

– for self-contained pressure regulation.

1. Determine the reduced steam outlet pressure to be maintained downstream of main valve.
2. Use the Spring Pilot Ordering Information Chart to:
 - a) Select a model number (based on the outlet pressure determined above).
 - b) Determine the part number (based on the model number).

Series AP Air Pressure Control Pilots – for remote pressure control using air pressure (Air PRV Regulator is also required)

1. Determine the reduced steam outlet pressure to be maintained downstream of main valve.
2. Determine the air loading pressure available from the Air PRV or Pneumatic Temperature Pilot.
3. Use the Air Loading Data Graph to select a model number that meets the requirements of the outlet steam pressure and available air loading pressure as determined above.
4. Use the Air Pilot Ordering Information Chart to determine the part number (based on the model number).
5. Use the Air PRV Regulator Ordering Information Chart to determine the part number.

Series STPA Self-Contained Temperature Control Pilots

– for direct control of temperature in heated fluids.

1. Determine the process temperature of the fluid whose temperature is being controlled.
2. Determine the length of capillary tube required between the main valve and the temperature monitoring point.
3. Use the Self-Contained Temperature Pilot Ordering Information Chart to:
 - (a) Select a model number (based on the temperature range and capillary range as determined above).
 - (b) Determine the part number (based on the model number).
4. (Optional) Use the Well Ordering Information Chart to:
 - (a) Select a model number (based on desired bulb material).
 - (b) Determine the part number (based on the model number).

How to Select Series 2000 Pilots (continued)

Series 315 PNT Pneumatic Temperature Pilot – For Shop Quality Air

1. Determine the process temperature of the fluid whose temperature is being controlled.
2. Determine bulb material compatible with process fluid.
3. Use Model 315 PNT Pneumatic Temperature Pilot Ordering Information to select model (based on temperature range and bulb material as determined above).
4. (Optional) Use the Well Ordering Information Chart to:
 - (a) Select a model number (based on bulb material).
 - (b) Determine the part number (based on the model number).
5. Determine the reduced steam outlet pressure to be maintained downstream of main valve.
6. Determine the air loading pressure available from the Air PRV or Pneumatic Temperature Pilot.
7. Use the Air Loading Data Graph to select a model number that meets the requirements of the outlet steam pressure and available air loading pressure as determined above.
8. Use the Air Pilot Ordering Information Chart to determine the part number (based on the model number).
9. Use the Air PRV Regulator Ordering Information Chart to determine the part number.

Series 240 PNT Pneumatic Temperature Control Pilot – For Control Quality Air

1. Use Model 240 PNT Pneumatic Temperature Pilot Ordering Information to determine part number.
2. Determine the reduced steam outlet pressure to be maintained downstream of main valve.
3. Determine the air loading pressure available from the Air PRV or Pneumatic Temperature Pilot.
4. Use the Air Loading Data Graph to select a model number that meets the requirements of the outlet steam pressure and available air loading pressure as determined above.
5. Use the Air Pilot Ordering Information Chart to determine the part number (based on the model number).
6. Use the Air PRV Regulator Ordering Information Chart to determine the part number.

Electro-Pneumatic Transducer

1. Use the Electro-Pneumatic Transducer Ordering Information Chart to determine the part number.
2. Use the Air Loading Graph to select a model number that meets your desired outlet steam pressure (based on your available air loading pressure).
3. Use the Air PRV Regulator Ordering Information Chart to determine the part number.

Solenoid Pilots for on/off control

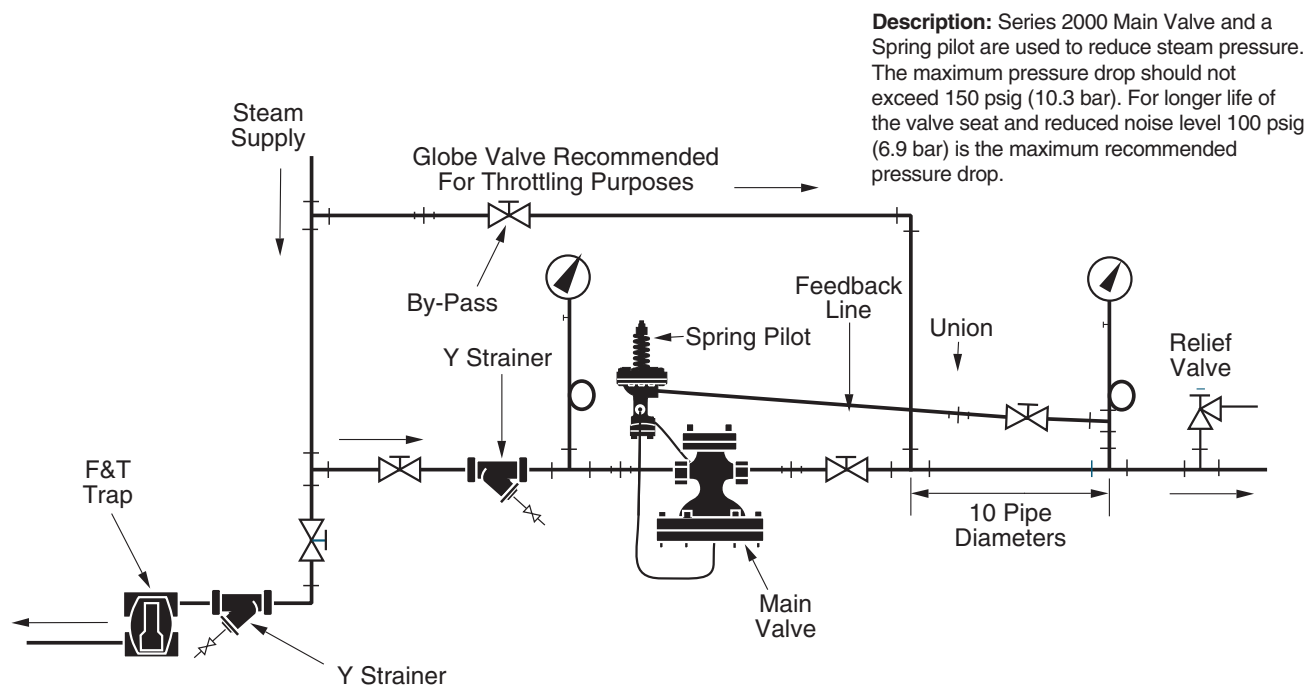
1. Determine which operating mode, "Normally Open" or "Normally Closed", is better suited for your application by reading the descriptive information.
2. Use the Ordering Information Chart to:
 - (a) Select a model number (based on the operating mode and the inlet steam pressure operating range).
 - (b) Determine the part number (based on the model number).

Hardware Kits

1. Use the Hardware Kit Ordering Information Chart to:
 - (a) Select a kit (based on the main valve size and the type of pilot(s) used).
 - (b) Determine the part number (based on the kit selected).

Series 2000 Typical Applications

Typical Series 2000 Pressure Pilot Installation

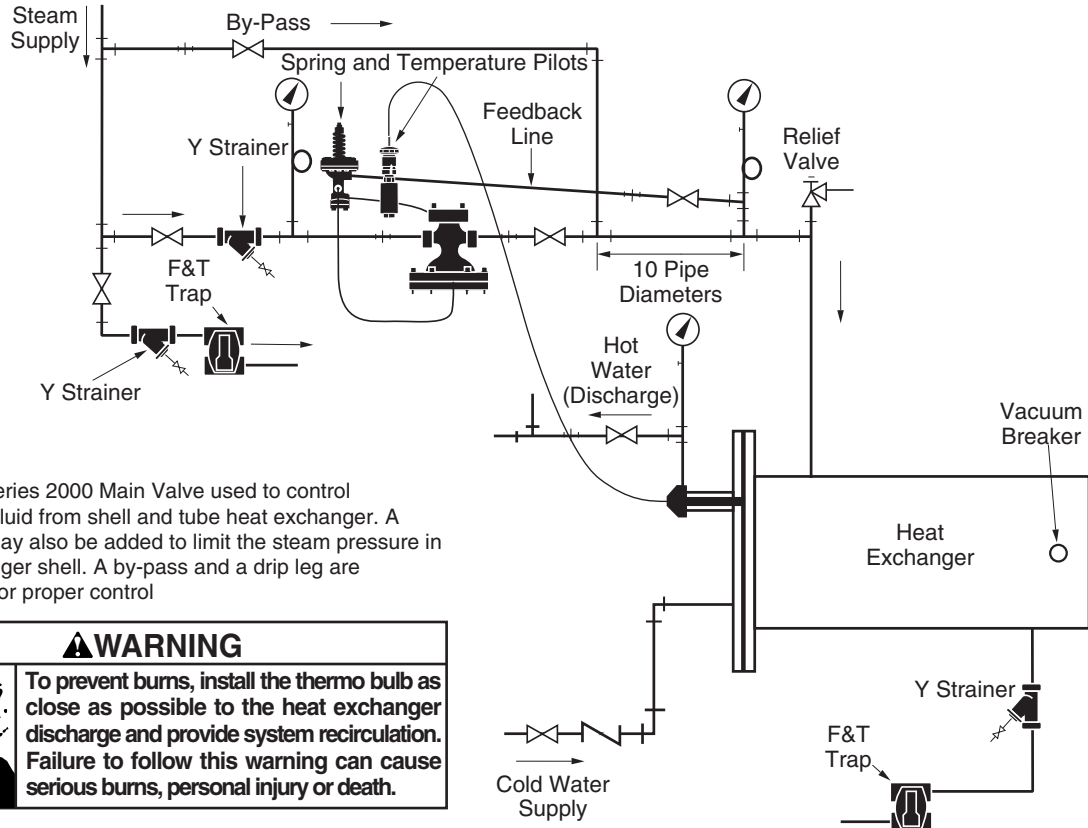


The relief valve should be sized for maximum capacity. A by-pass line and drip trap are always recommended for

pressure regulator installations. The sensing line should be at least 10 pipe diameters downstream from the gate valve.

Series 2000 Typical Applications (continued)

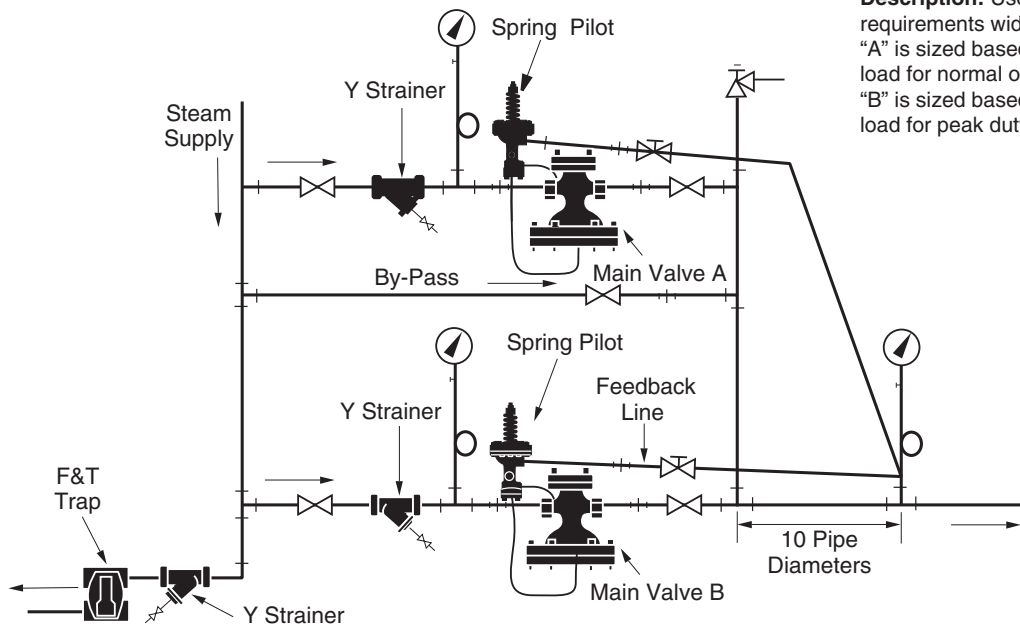
Typical Series 2000 Combination Pressure-Temperature Pilot to Control Water Heater Exchanger



⚠ WARNING

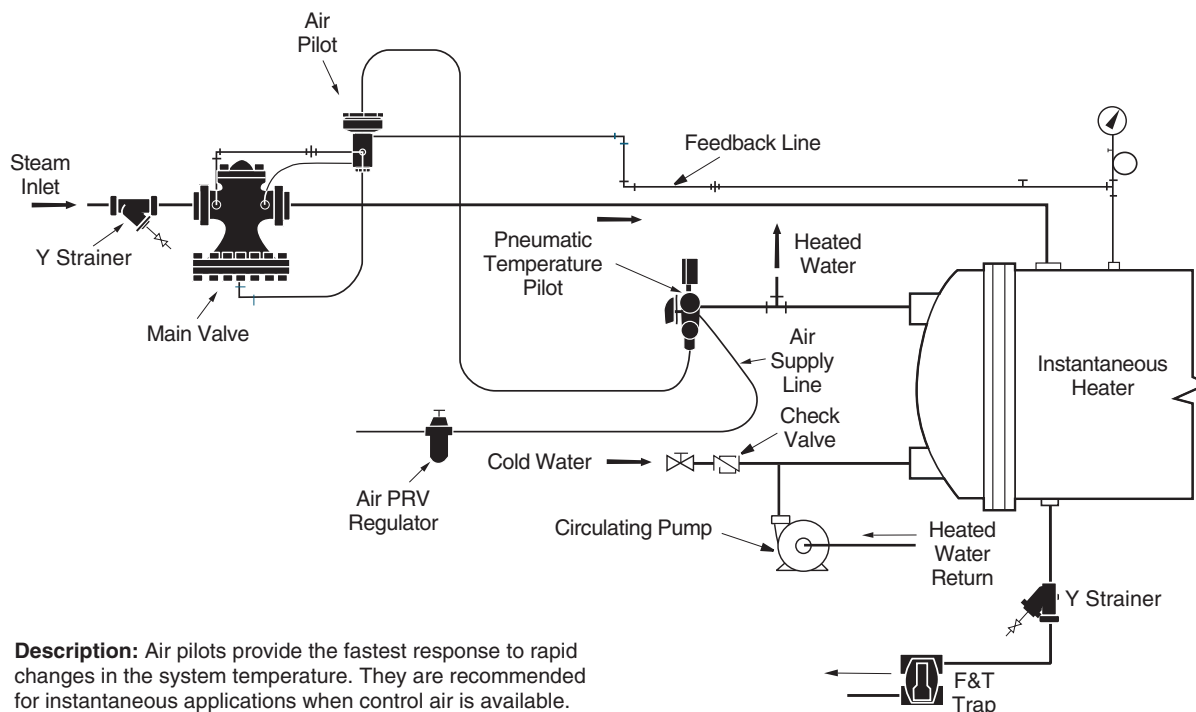
To prevent burns, install the thermo bulb as close as possible to the heat exchanger discharge and provide system recirculation. Failure to follow this warning can cause serious burns, personal injury or death.

Typical Parallel Pressure Regulator Station



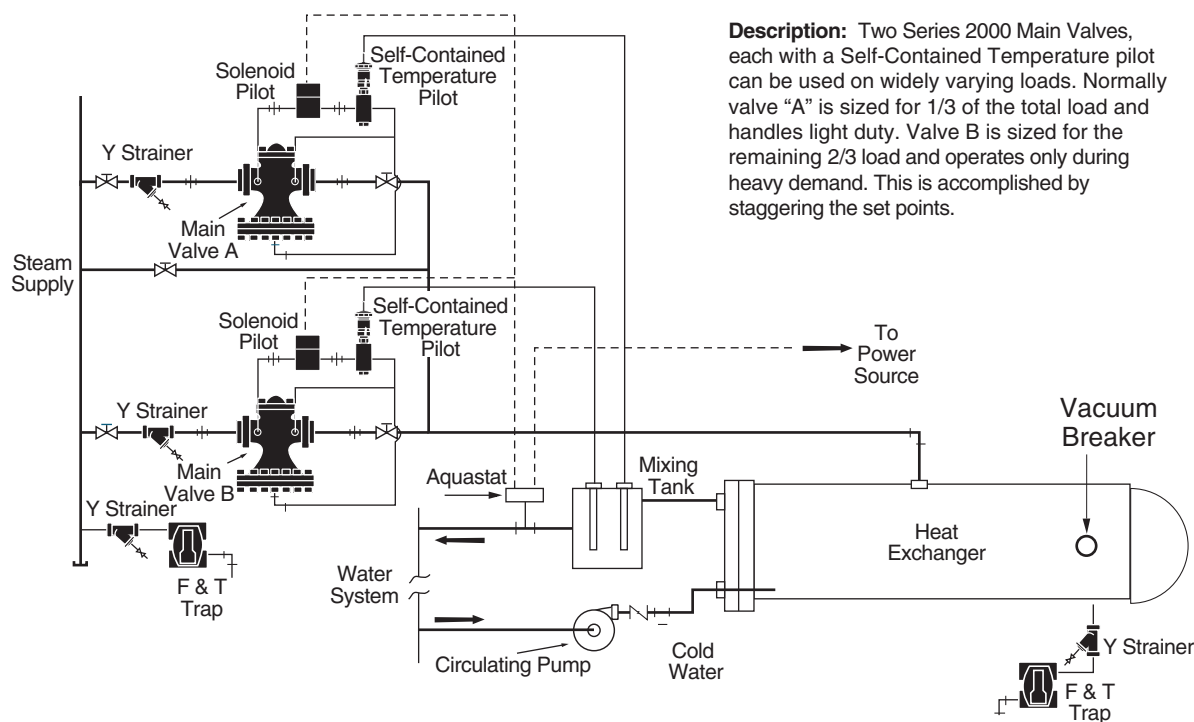
Series 2000 Typical Applications (continued)

Pneumatic Temperature Control on Instantaneous Heater



Description: Air pilots provide the fastest response to rapid changes in the system temperature. They are recommended for instantaneous applications when control air is available.

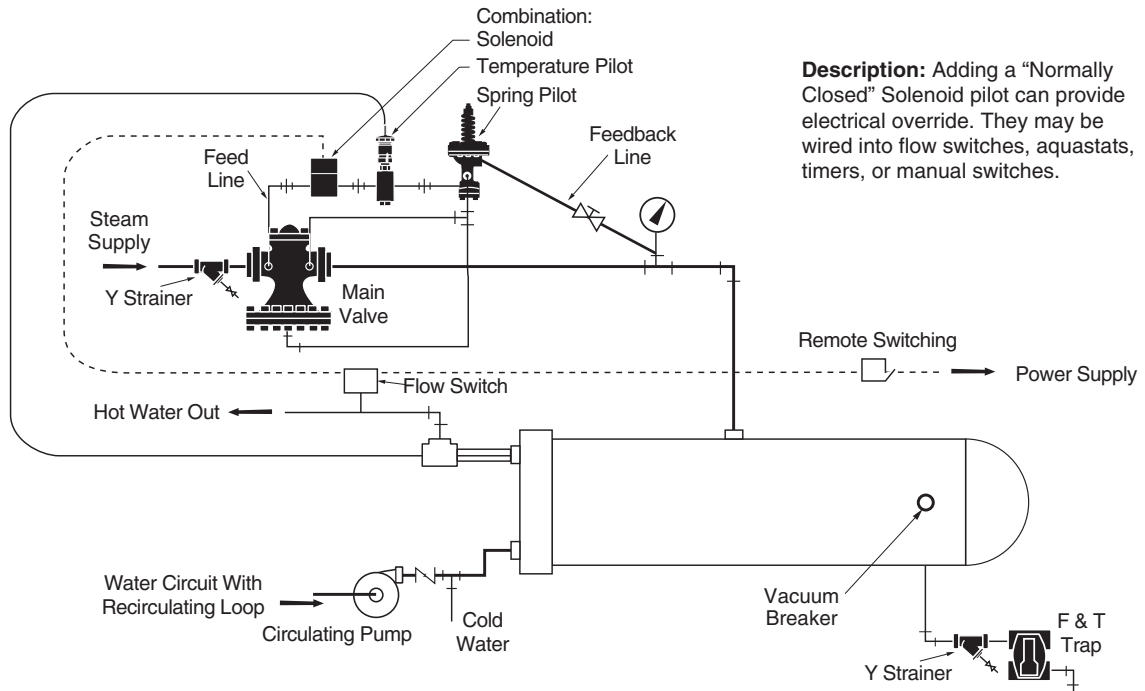
Temperature Regulators Used in Parallel to Control Widely Varying Flow Rates



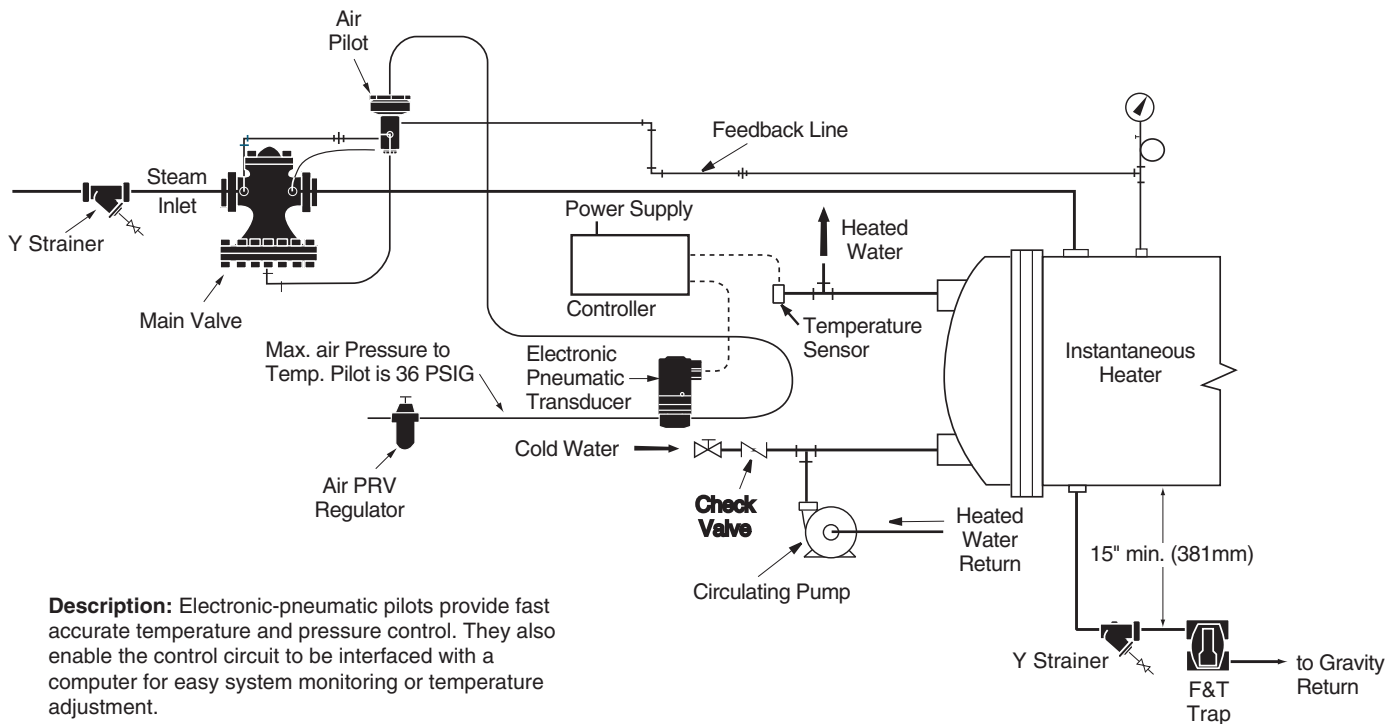
Description: Two Series 2000 Main Valves, each with a Self-Contained Temperature pilot can be used on widely varying loads. Normally valve "A" is sized for 1/3 of the total load and handles light duty. Valve B is sized for the remaining 2/3 load and operates only during heavy demand. This is accomplished by staggering the set points.

Series 2000 Typical Applications (continued)

Automatic Control of Heat Exchanger with High Limit Safety Control

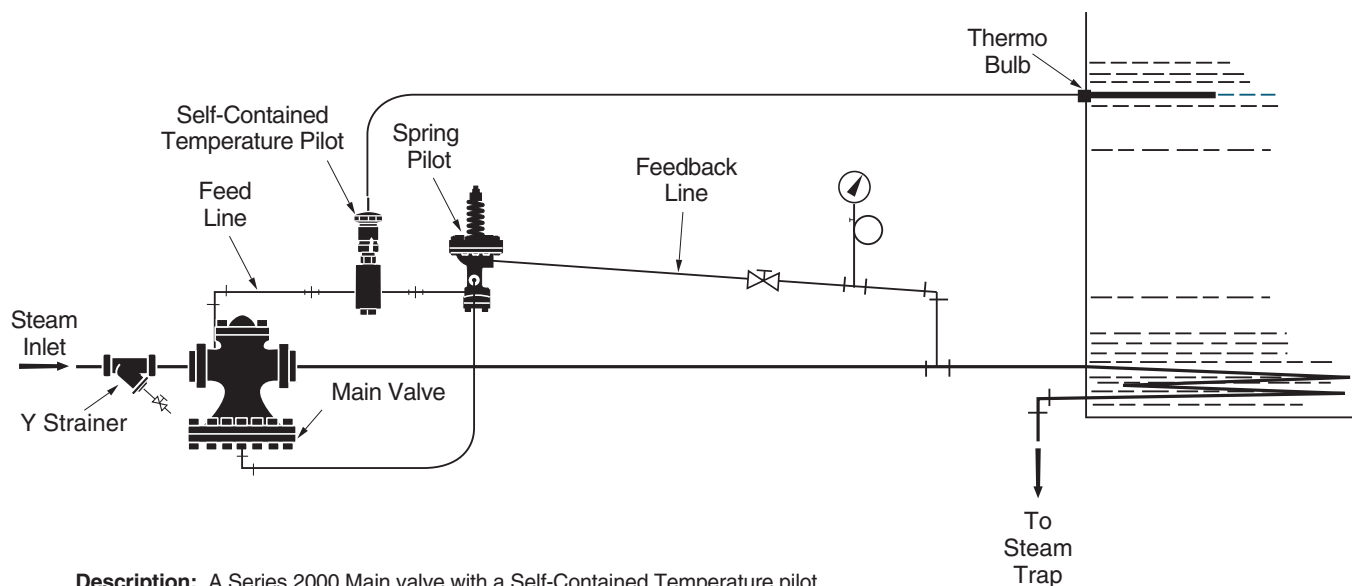


Electronic-Pneumatic Temperature Pilot for Instantaneous Heater Recirculation System



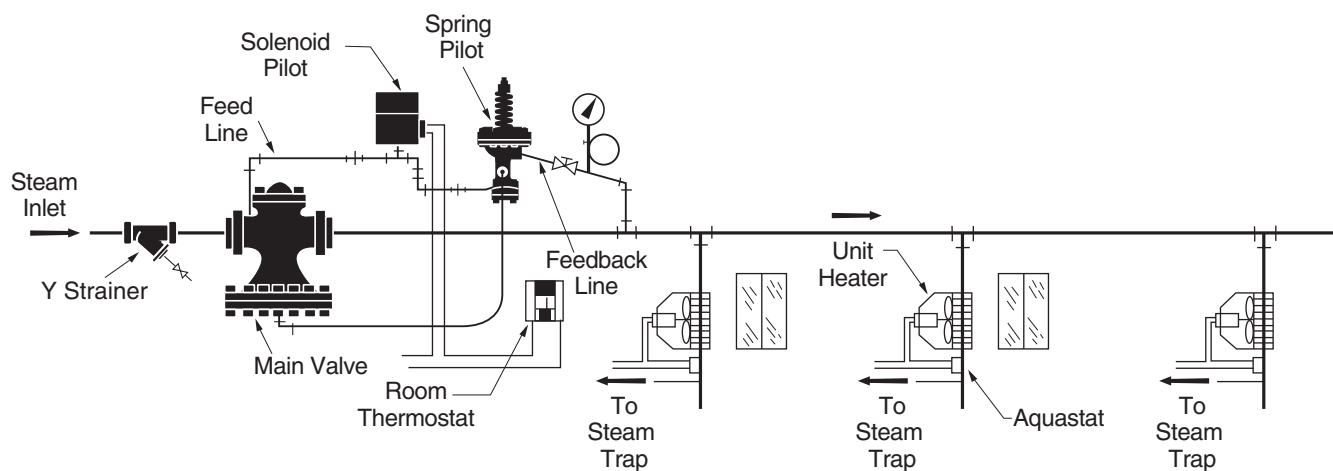
Series 2000 Typical Applications (continued)

Temperature Control for Tank Farm Fuel Oil Storage



Description: A Series 2000 Main valve with a Self-Contained Temperature pilot and a Spring pressure pilot are used to control the temperature in a oil storage tank.

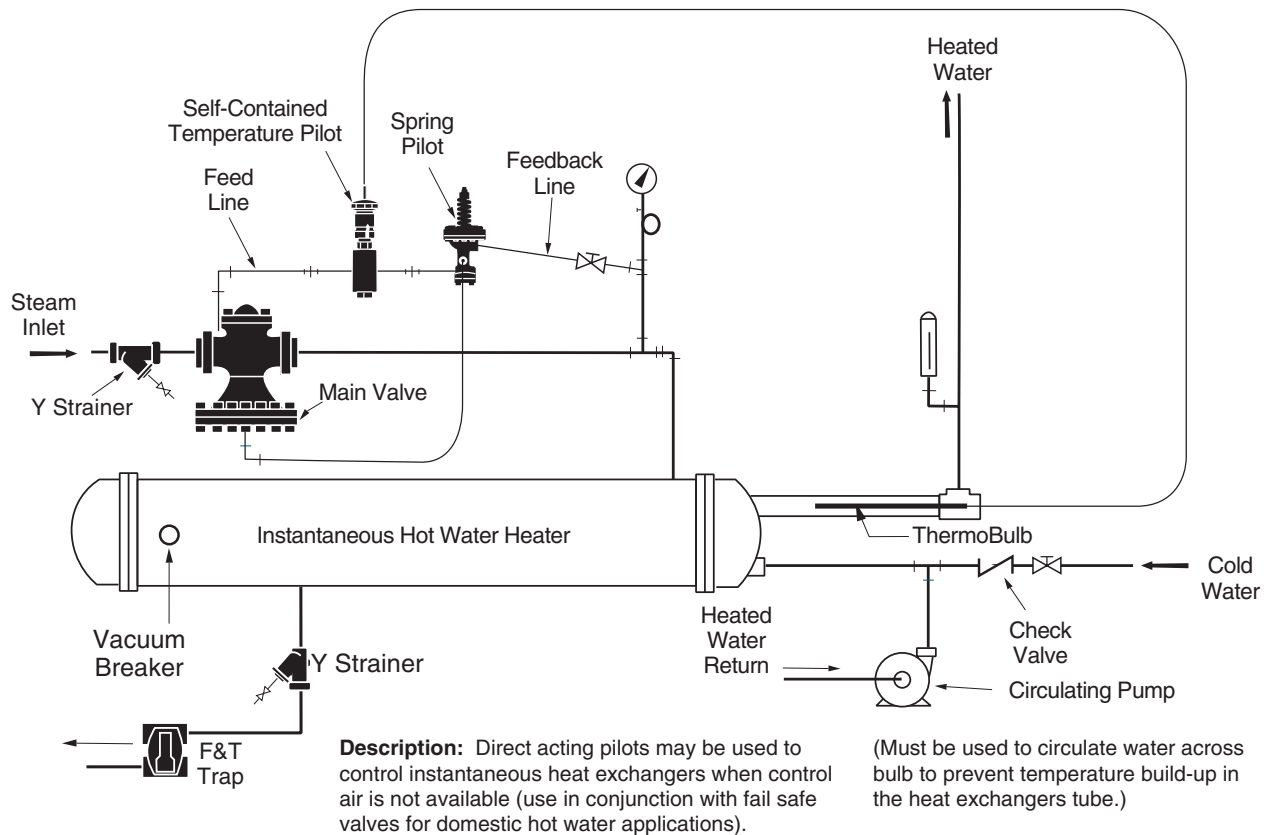
Pressure and Temperature Control for Unit Heaters



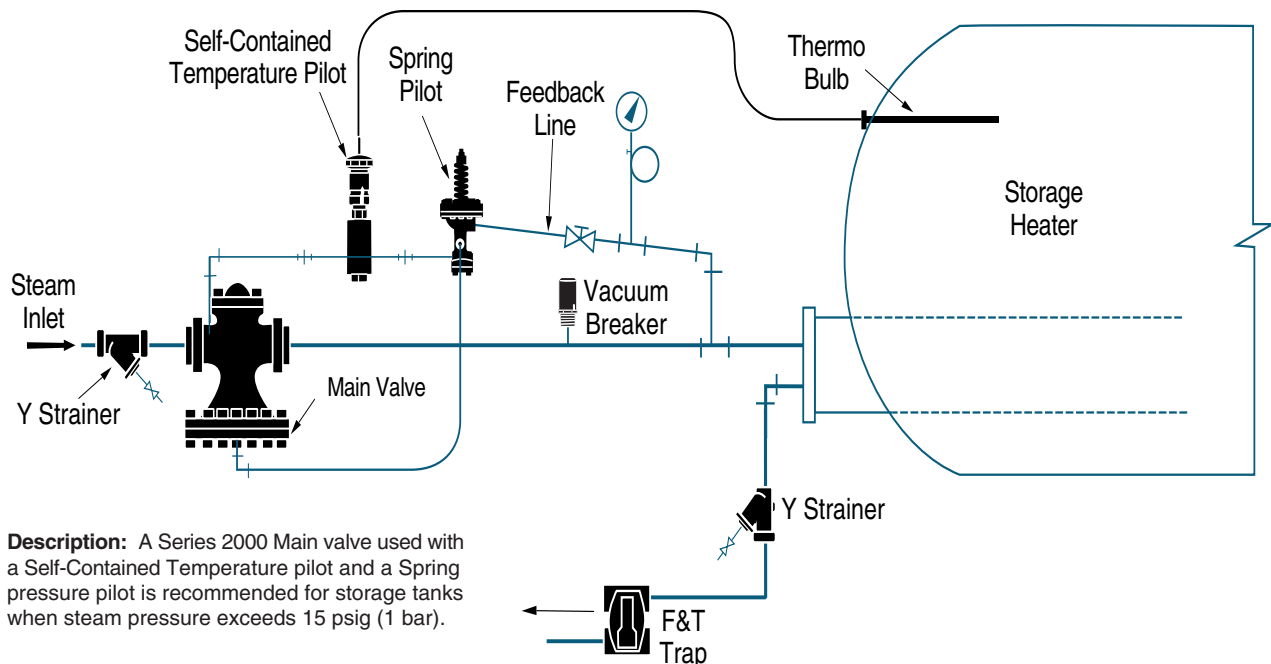
Description: Unit heaters will radiate approximately 7% of their capacity when the fan is off, use of a solenoid pilot controlled by a room thermostat eliminates energy waste when heat is not required.

Series 2000 Typical Applications (continued)

Instantaneous Heater Domestic Hot Water



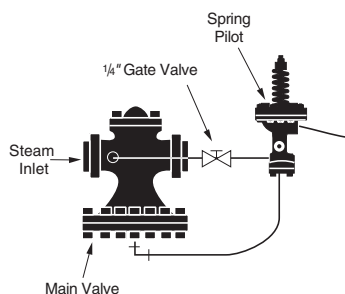
Storage Heater for Domestic Hot Water



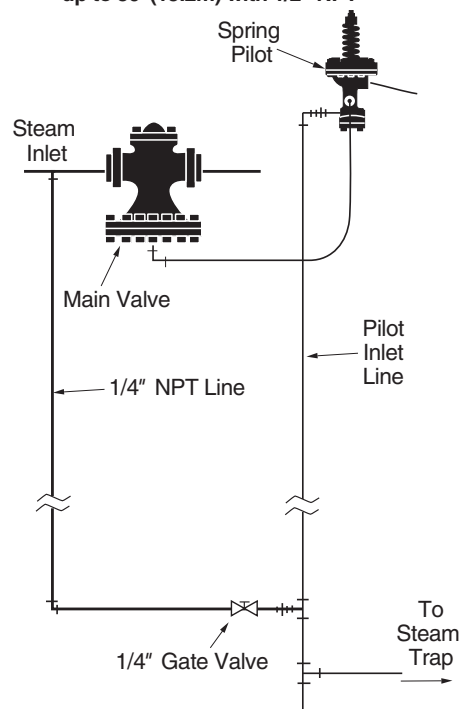
Series 2000 Typical Applications (continued)

Manual System Shut-off

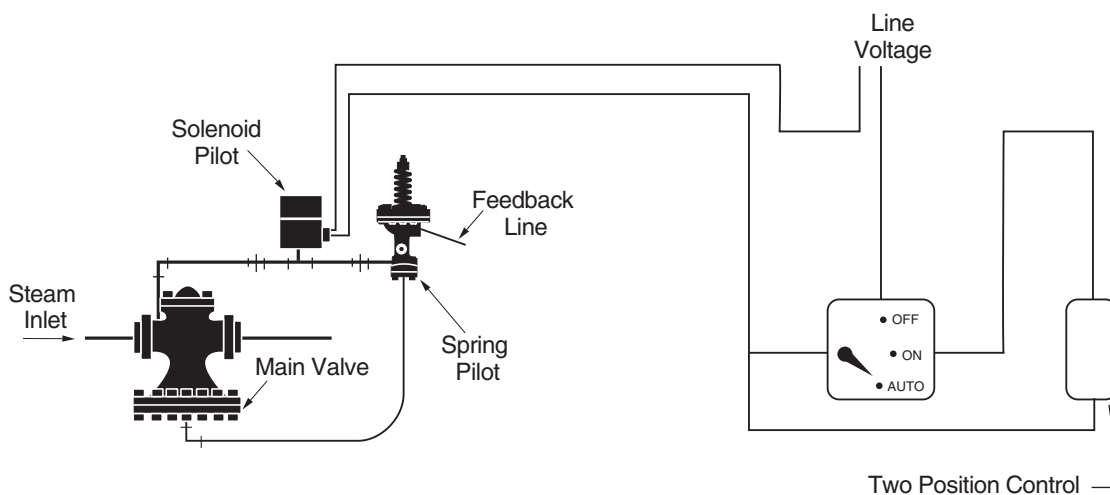
For Operation at Regulator



Description: A 1/4" NPT Gate valve may be added in the feed line to allow manual shutdown of the Main valve.

 For Remote Operation
 up to 50' (15.2m) with 1/2" NPT


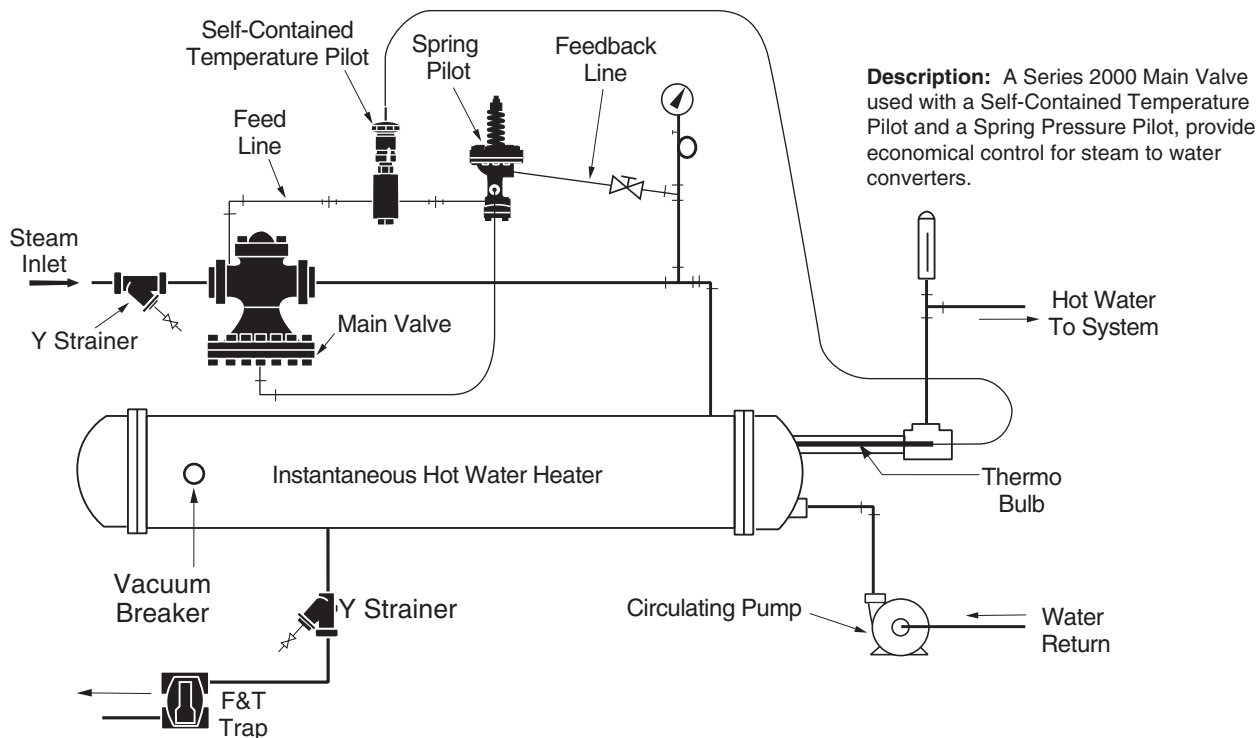
Remote Electrical Shut-off



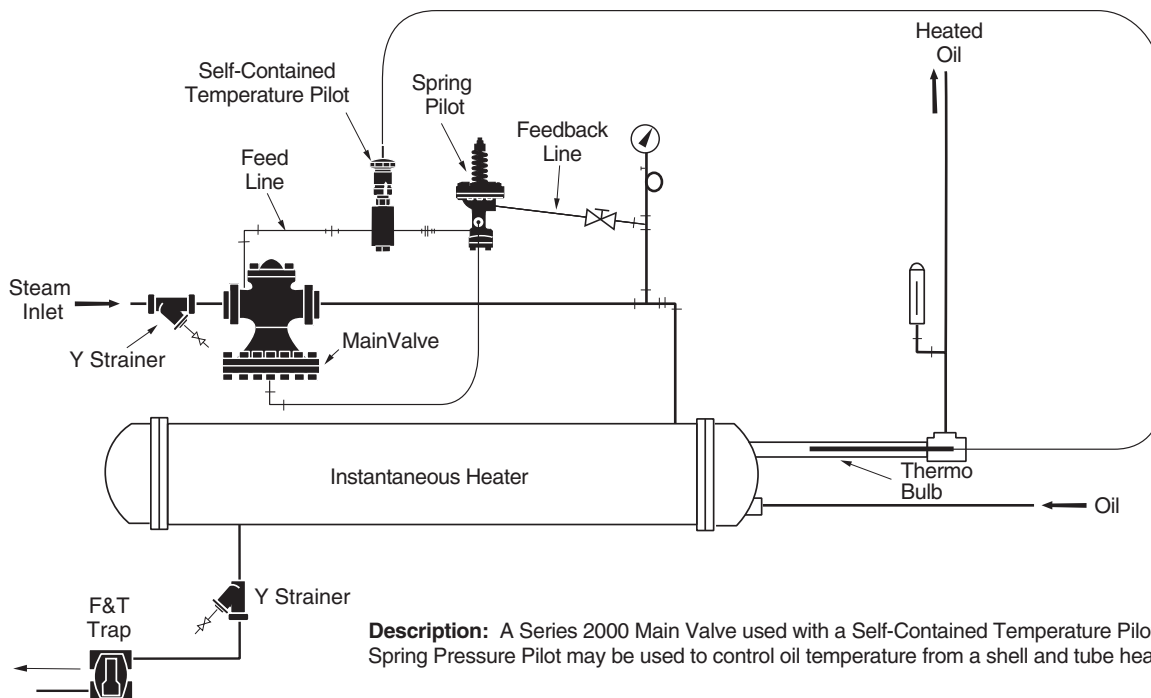
Description: A Solenoid pilot is used to electronically shutdown the flow of steam to the pilot, which will close the Main valve.

Series 2000 Typical Applications (continued)

Heating Converter Steam to Hydronic

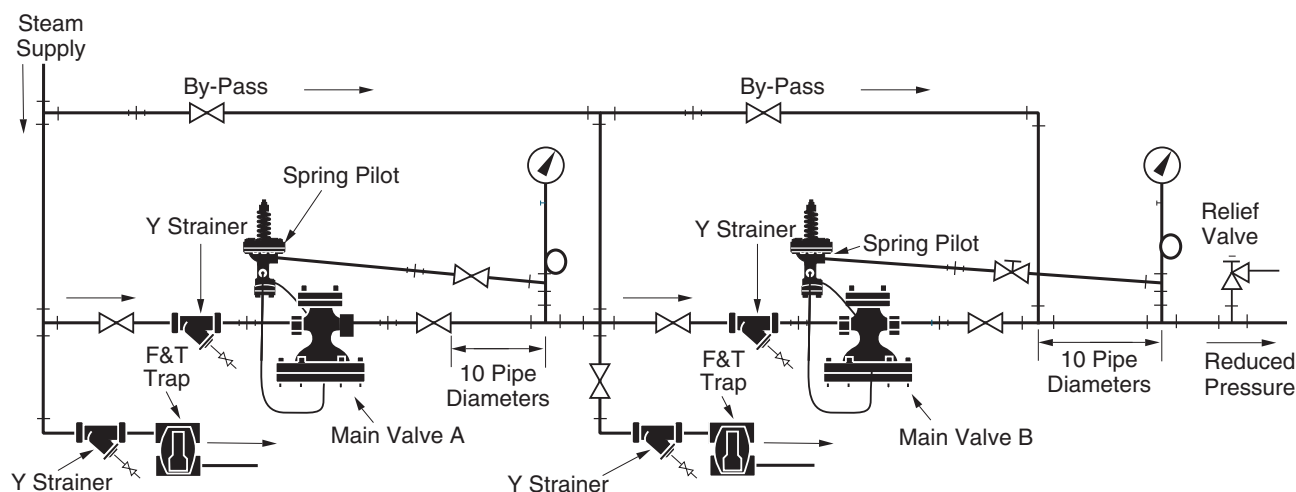


Oil Pre-heater Temperature Control



Series 2000 Typical Applications (continued)

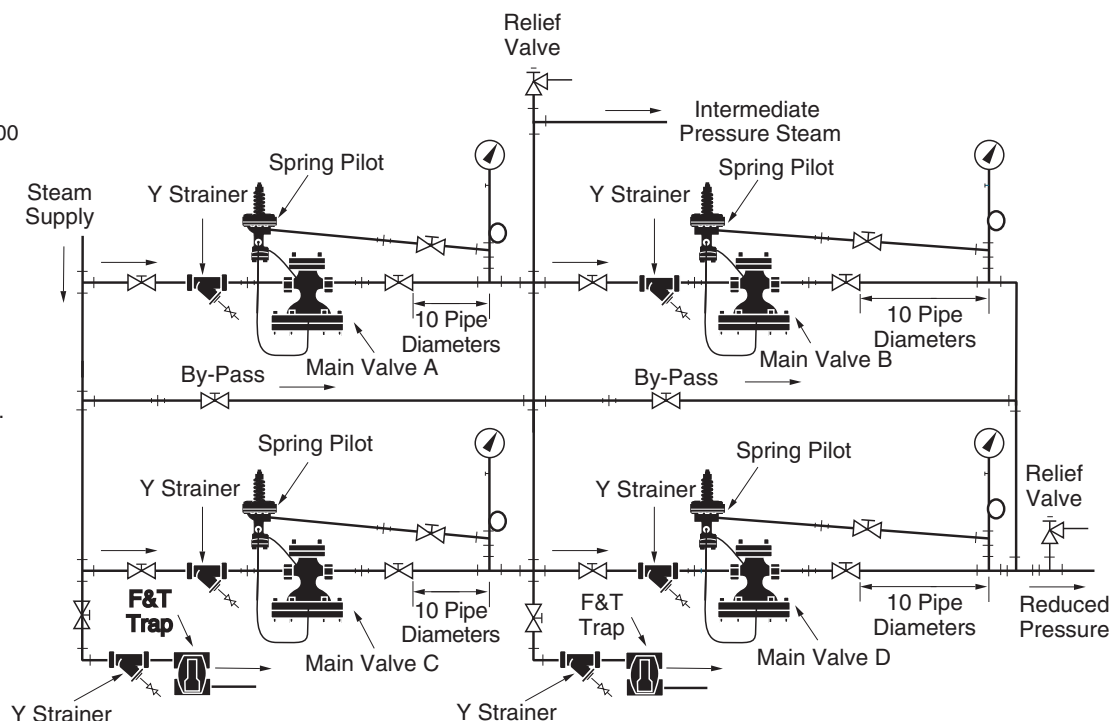
Typical Two Stage Pressure Regulating Station with By-Pass



Description: The maximum pressure reduction for one valve is 150 psig (10.3 bar) although 100 psig (6.9 bar) is recommended. Two stage reduction should be used for pressure drops greater than 100 psig (6.9 bar).

Typical Two Stage Parallel Pressure Reduction with Intermediate Pressure Available

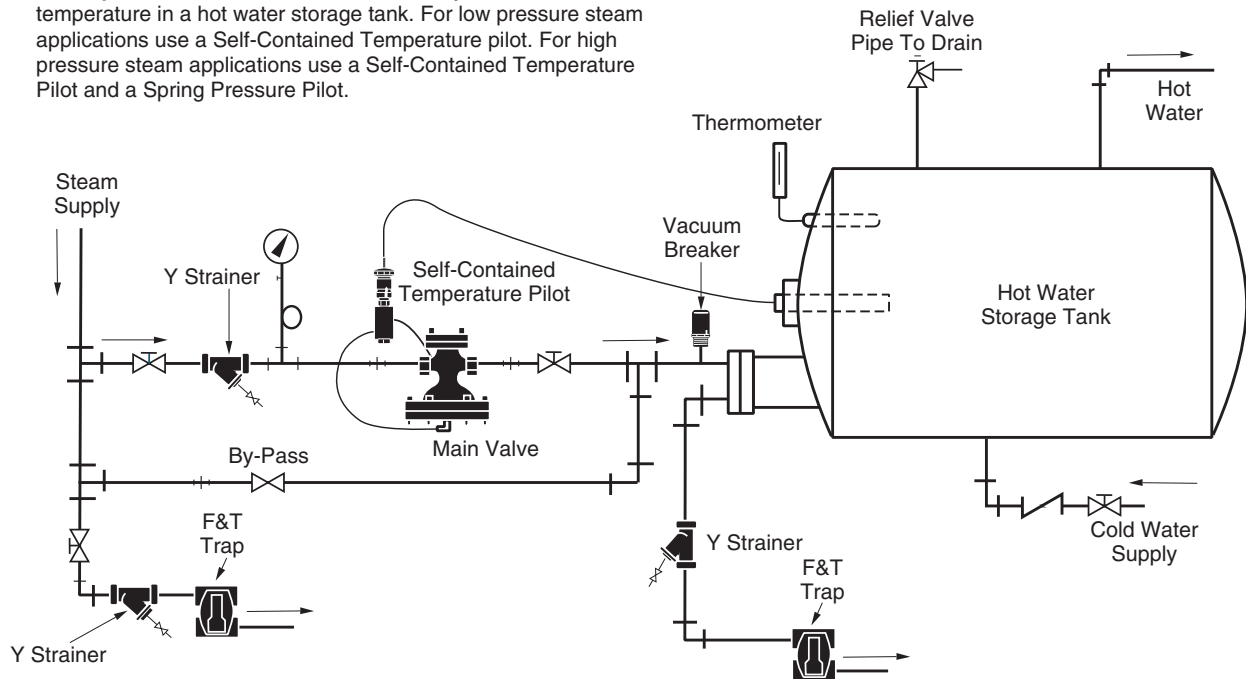
Description: Used when the load varies and the maximum pressure reduction is greater than 150 psig (10.3 bar) and 100 psig (6.9 bar) is the maximum recommended pressure reduction. Main valve A is sized for $\frac{1}{2}$ the load $\frac{1}{2}$ of the pressure reduction. Main valve B is sized for $\frac{1}{3}$ the load and the other $\frac{1}{2}$ of the pressure reduction. Main valves C and D are sized for the remaining $\frac{2}{3}$ load.



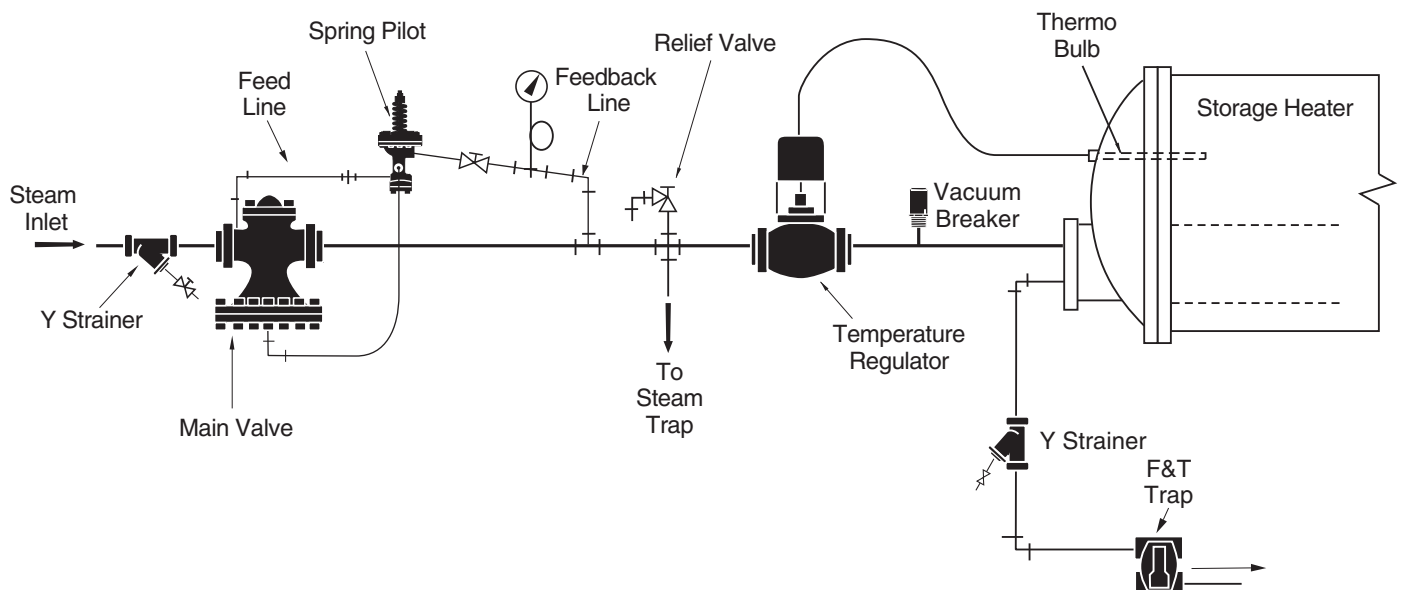
Series 2000 Typical Applications (continued)

Control of Temperature for Storage Tanks

Description: A Series 2000 Main Valve may be used to control temperature in a hot water storage tank. For low pressure steam applications use a Self-Contained Temperature Pilot. For high pressure steam applications use a Self-Contained Temperature Pilot and a Spring Pressure Pilot.



Control of Temperature for Storage Tanks



Description: A Series 2000 Main Valve and a Spring Pressure Pilot may be used to reduce steam pressure to a Direct-Acting Temperature Regulator.