



MARSHALL ENGINEERED PRODUCTS CO.

FORM 15806

Pressure and Temperature Pilot Operated Steam Regulators

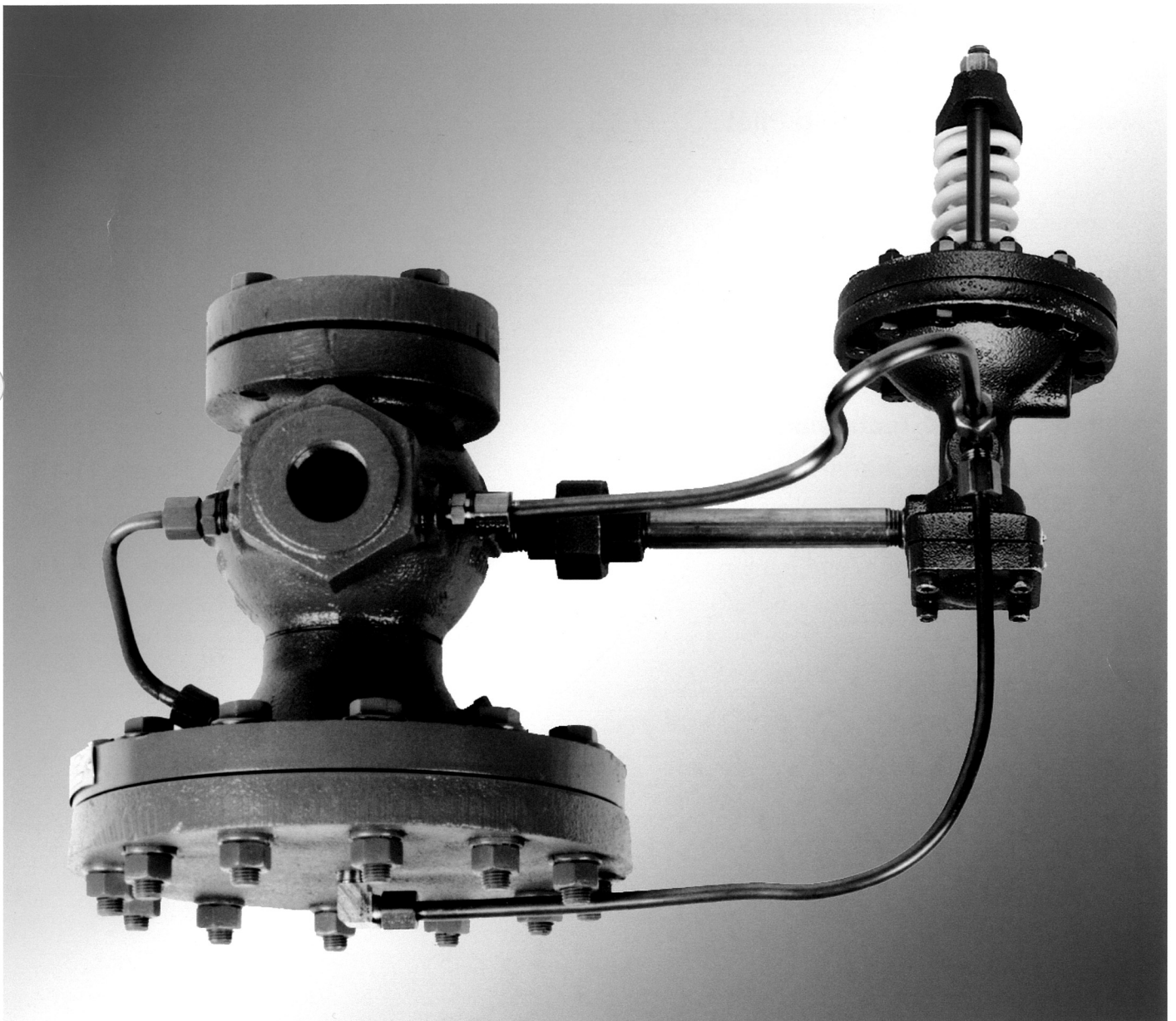


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Pressure and/or Temperature Pilot Operated Steam Regulators Series 50

The MEPCO Series 50 regulator is the leader in Pressure and Temperature Regulators. It is one of the few regulators in the market to offer three different ranges of ports for each connection size. This feature allows field changeout of all ports for future expansions, load changes, etc. This regulator is the most versatile and dependable over a wide range of conditions and applications. Key features include:

- For continuous or dead end service within .01% leakage of the valve's rated capacity.
- Packless construction
- Complete range of port sizes:
 - Full
 - Normal
 - Reduced
- Positive travel stop and back up of diaphragm prevents over pressurizing from low pressure side.
- Maintains accurate and stable control of pressure and/or temperature.
- Two-ply stainless steel diaphragm provides greater accuracy of control over the entire capacity range giving the valve longer life.

The MEPCO Series 50 regulator consists of a main valve, pilot, hardware kit, and optional thermowell. They are designed to meet a wide range of temperature, pressure, and capacity requirements and provide accurate, dependable, low maintenance operation. The Series 50 Regulators meet MIL Spec MIL-V-16733D (Type IV) and MIL-V-18433B (Type I, Style A, Class 2).

Main Valves

- Sizes ½" - 6"
- Cast iron body with 30,000 tensile
- Maximum rating 250 psig at 450 deg F
- Minimum differential pressure:
- 15 psig

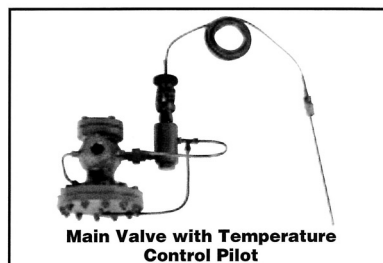
- Maximum differential pressure 150 psi.
A two stage reduction should be used for pressure drops greater than 150 psi.
- Maximum Temperature 450 deg F

Pilots

- Pressure (spring)
- Temperature

Materials of Construction Table.

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
Tubing	ASTM B75 Alloy 122



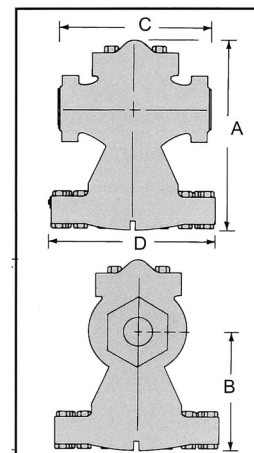
Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Series 50 Main Valves

Dimensions (Main Valves)

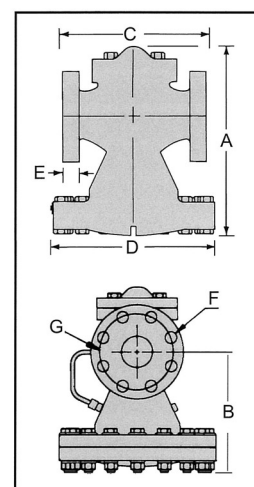
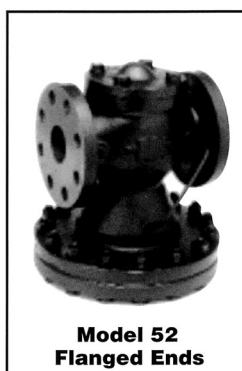
Model 51 Screwed NPT Ends — Maximum pressure 250 psig (17.3 bar)

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)



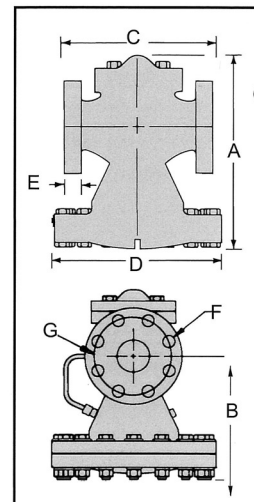
Model 52 — Maximum pressure 125 psig (8.6 bar)

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 3/4 (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)	15/16 (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 53 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 (25)	7/8 (22)	12	10 5/8 (270)





Series 50 Main Valve Ordering Information

Series 50 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)
51	GR2440	1/2 NPT	Full	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2437	1/2 NPT	Normal	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2434	1/2 NPT	Reduced	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2443	3/4 NPT	Full	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2458	3/4 NPT	Normal	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2461	3/4 NPT	Reduced	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2446	1 NPT	Full	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2464	1 NPT	Normal	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2467	1 NPT	Reduced	Screwed NPT	250 (17.3)	23 (10.4)
51	GR2410	1-1/4 NPT	Full	Screwed NPT	250 (17.3)	44 (20)
51	GR2470	1-1/4 NPT	Normal	Screwed NPT	250 (17.3)	44 (20)
51	GR2473	1-1/4 NPT	Reduced	Screwed NPT	250 (17.3)	44 (20)
51	GR2413	1-1/2 NPT	Full	Screwed NPT	250 (17.3)	44 (20)
51	GR2476	1-1/2 NPT	Normal	Screwed NPT	250 (17.3)	44 (20)
51	GR2479	1-1/2 NPT	Reduced	Screwed NPT	250 (17.3)	44 (20)
51	GR2449	2 NPT	Full	Screwed NPT	250 (17.3)	64 (29)
51	GR2452	2 NPT	Normal	Screwed NPT	250 (17.3)	64 (29)
51	GR2455	2 NPT	Reduced	Screwed NPT	250 (17.3)	64 (29)
52	GR2592	2 (50)	Full	Flanged	125 (8.6)	67 (30)
52	GR2596	2 (50)	Normal	Flanged	125 (8.6)	67 (30)
52	GR2599	2 (50)	Reduced	Flanged	125 (8.6)	67 (30)
52	GR2542	2-1/2 (65)	Full	Flanged	125 (8.6)	175 (79)
52	GR2545	2-1/2 (65)	Normal	Flanged	125 (8.6)	175 (79)
52	GR2548	2-1/2 (65)	Reduced	Flanged	125 (8.6)	175 (79)
52	GR2524	3 (80)	Full	Flanged	125 (8.6)	215 (98)
52	GR2526	3 (80)	Normal	Flanged	125 (8.6)	215 (98)
52	GR2530	3 (80)	Reduced	Flanged	125 (8.6)	215 (98)
52	GR2506	4 (100)	Full	Flanged	125 (8.6)	297 (135)
52	GR2509	4 (100)	Normal	Flanged	125 (8.6)	297 (135)
52	GR2513	4 (100)	Reduced	Flanged	125 (8.6)	297 (135)
52	GR2488	6 (150)	Full	Flanged	125 (8.6)	535 (243)
52	GR2491	6 (150)	Normal	Flanged	125 (8.6)	535 (243)
52	GR2494	6 (150)	Reduced	Flanged	125 (8.6)	535 (243)
53	GR2602	2 (50)	Full	Flanged	250 (17.3)	70 (32)
53	GR2605	2 (50)	Normal	Flanged	250 (17.3)	70 (32)
53	GR2608	2 (50)	Reduced	Flanged	250 (17.3)	70 (32)
53	GR2533	2-1/2 (65)	Full	Flanged	250 (17.3)	181 (82)
53	GR2536	2-1/2 (65)	Normal	Flanged	250 (17.3)	181 (82)
53	GR2539	2-1/2 (65)	Reduced	Flanged	250 (17.3)	181 (82)
53	GR2515	3 (80)	Full	Flanged	250 (17.3)	221 (100)
53	GR2518	3 (80)	Normal	Flanged	250 (17.3)	221 (100)
53	GR2521	3 (80)	Reduced	Flanged	250 (17.3)	221 (100)
53	GR2497	4 (100)	Full	Flanged	250 (17.3)	305 (138)
53	GR2500	4 (100)	Normal	Flanged	250 (17.3)	305 (138)
53	GR2503	4 (100)	Reduced	Flanged	250 (17.3)	305 (138)
53	GR2482	6 (150)	Full	Flanged	250 (17.3)	552 (250)
53	GR2432	6 (150)	Normal	Flanged	250 (17.3)	552 (250)
53	GR2485	6 (150)	Reduced	Flanged	250 (17.3)	552 (250)

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)
GR0629	Kit used when main valve has temperature only.	1/2 - 2 NPT and 2" (50mm)	2 (1.0)
GR0631	Kit used when main valve has temperature pilots only.	2-1/2 - 6 (65-150mm)	4 (2.0)
GR0637	Kit used when main valve has a spring or in combination with temperature pilots.	1/2 - 2 NPT and 2" (50mm)	1 (0.5)
GR0656	Kit used when main valve has a spring or in combination with temperature pilots.	2-1/2 - 6 (65-150mm)	2 (1.0)

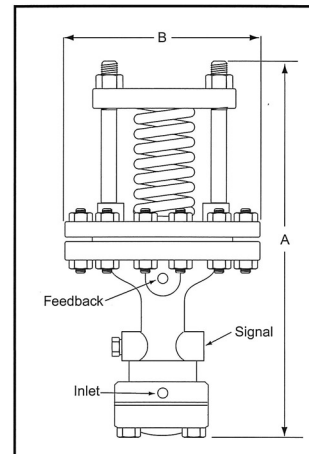
Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Series MPS Spring Pressure Control Pilots

The MEPCO Spring pilot valves are designed for applications such as steam to hydronic converters, domestic hot water, manufacturing process, or

others that require constant outlet pressure. The Series MPS can also be used in conjunction with a series MTPA Temperature pilot as a pressure limiter.

- Tight shut-off provided by hardened stainless steel disc and seat
- Packless construction eliminates seals that wear out and leak
- Travel stop and cover on diaphragm helps prevent over pressurization damage
- Removable strainer helps prevent debris from entering pilot
- Maximum temperature 450°F (232°C)
- Maximum inlet operating pressure 250 psig (17.3 bar)
- Outlet Pressure:
 - Minimum 2 psig (0.1 bar)
 - Maximum 175 psig (11.9 bar)
- Normal accuracy ± 1 psig (0.07 bar)



Dimensions in. (mm)

Model	A	B
MPS-30	8 $\frac{3}{4}$ (222)	4 $\frac{5}{8}$ (117)
MPS-60	8 $\frac{3}{4}$ (222)	4 $\frac{5}{8}$ (117)
MPS-175	8 $\frac{3}{4}$ (222)	4 $\frac{5}{8}$ (117)

Materials of Construction	
Part	Specifications
Body	Cast Iron ASTM A126
Stem	Stainless Steel ASTM A582
Seat Ring	Stainless Steel ASTM A582
Diaphragm Screw	Steel ASTM A108
Pusher Plate	Steel ASTM A108
Adjusting Spring	Steel ASTM A229
Strainer	Stainless Steel ASTM A167
Diaphragm	Stainless Steel ASTM A666
Gaskets	Grafoil
Disc	Stainless Steel ASTM A276

Ordering Information Spring Pilots

Model Number	Part Number	Outlet Pressure Range psig (bar)	Maximum Pressure psig (bar)	Weight (Approx.) lbs. (kg)
MPS-30	GR1132	2 - 30 (0.1-2.0)	250 (17.3)	7 (3.2)
MPS-60	GR1133	5 - 60 (0.3-4.1)	250 (17.3)	7 (3.2)
MPS-175	GR1135	20 - 175 (1.4-11.9)	250 (17.3)	7 (3.2)

Note: When Spring pilots are used with Safety Relief valves, the Safety Relief valve must be at least 5 psi (.35 bar) higher than the desired steam operating pressure.

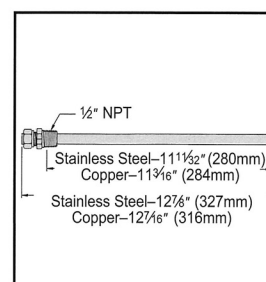
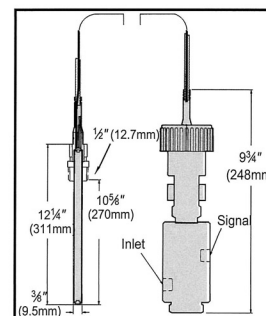
Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Series MTPA Self-Contained Temperature Control Pilots

The Series MTPA Self-Contained Temperature pilot valves are designed for applications such as steam to water converters, domestic hot water, manufacturing

process, or others that require accurate temperature control of heated fluids.

- Lightweight, compact size prevents strain on mounting pipes
- Easy temperature adjustment with calibrated dial
- Fast, easy installation
- Non-metallic, lockable temperature adjustment knob
- Tight shut-off provided by hardened stainless steel plug and seat
- Packless construction eliminates seals that wear out and leak
- Removable strainer helps prevent debris from entering pilot
- Bulb overhear protection up to 100°F (55.6°C)
- Durable ½" (15mm) NPT copper bulb with standard 10 ft. (3m) armored capillary (other lengths available)
- Optional Wells:
 - Copper
 - Stainless Steel
- Accuracy of control ± 10°F (± 5.6°C) with system recirculation
- Maximum temperature 450°F (232°C)
- Maximum operating pressure 250 psig (17.3 bar)



Materials of Construction	
Part	Specifications
Body	Steel ASTM A108
Plug	Stainless Steel ASTM A582
Seat	Stainless Steel ASTM A582
Brass Components	CDA 360 ASTM B16
Tubing	Copper ASTM B75
Springs	Stainless Steel ASTM A313
Strainer	Stainless Steel ASTM A240
Gasket	Copper ASTM B152

Ordering Information

Wells

Model	Part Number	Weight (Approx.) lbs. (kg)	
Well, Copper	GR5530	1	(.5)
Well, SS	GR5533	3	(1.4)

Note: These wells are only for use with Self-Contained Temperature Pilots.

Ordering Information

Self-Contained Temperature Pilots (Optional wells must be ordered separately)

Model Number	Part Number	Temperature Range F	Capillary Length ft.	Maximum Pressure psig	Weight lbs.
MPTA-200	GR3028	50-200	10	250	6
MPTA-200	GR3029	50-200	15	250	6
MPTA-200	GR3030	50-200	20	250	6
MPTA-200	GR3031	50-200	25	250	6
MPTA-200	GR3032	50-200	30	250	6
MPTA-300	GR3033	150-300	10	250	6
MPTA-300	GR3034	150-300	15	250	6
MPTA-300	GR3035	150-300	20	250	6
MPTA-300	GR3036	150-300	25	250	6
MPTA-300	GR3037	150-300	30	250	6
MPTA-400	GR3038	250-400	10	250	6

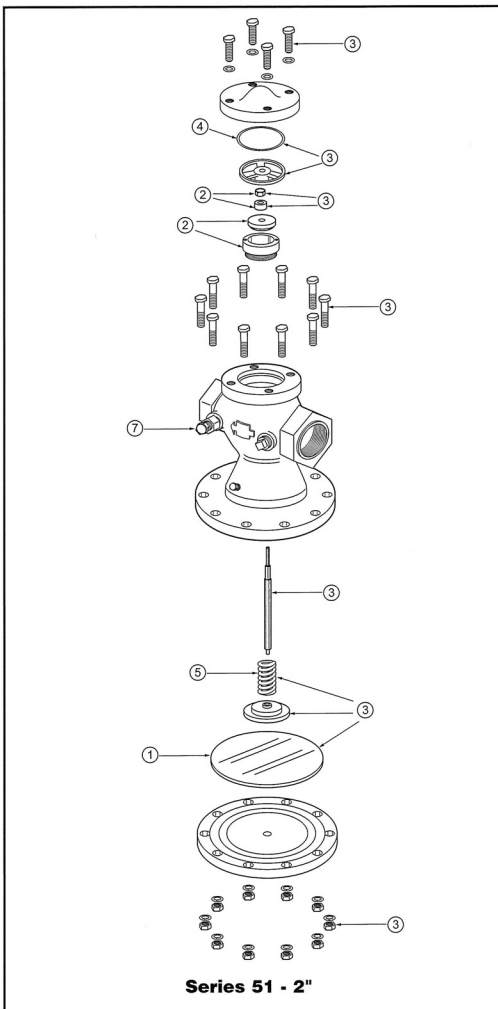
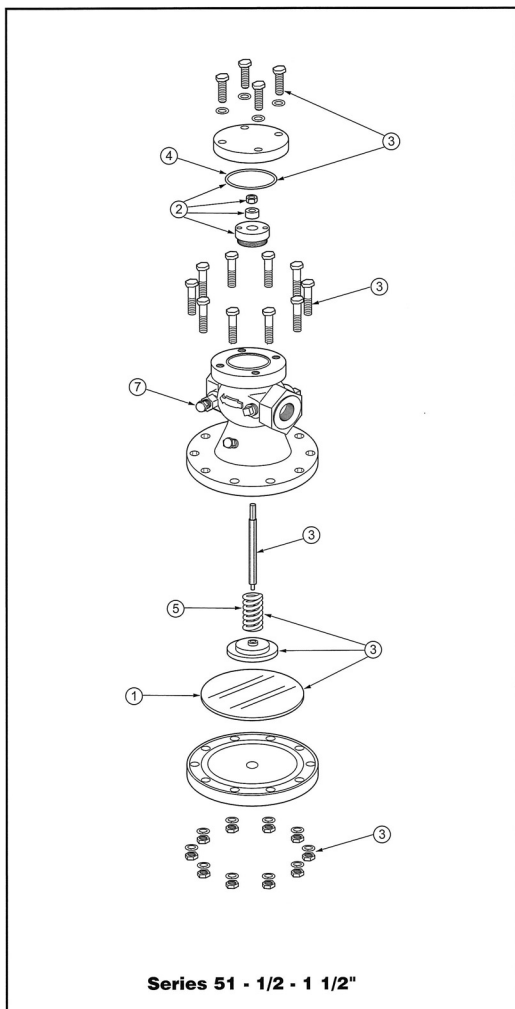
Ordering Information

Actuator Assemblies (includes actuator, knob, and set screw)

Model Number	Part Number	Temperature Range F	Capillary Length ft.	Weight lbs.
MPTA-200	GR3039	50-200	10	3
MPTA-200	GR3040	50-200	15	3
MPTA-200	GR3041	50-200	20	3
MPTA-200	GR3042	50-200	25	3
MPTA-200	GR3043	50-200	30	3
MPTA-300	GR3044	150-300	10	3
MPTA-300	GR3045	150-300	15	3
MPTA-300	GR3046	150-300	20	3
MPTA-300	GR3047	150-300	25	3
MPTA-300	GR3048	150-300	30	3
MPTA-400	GR3049	250-400	10	3

Pressure/Temperature Regulators, Pilot-Operated Series 51 Main Valve

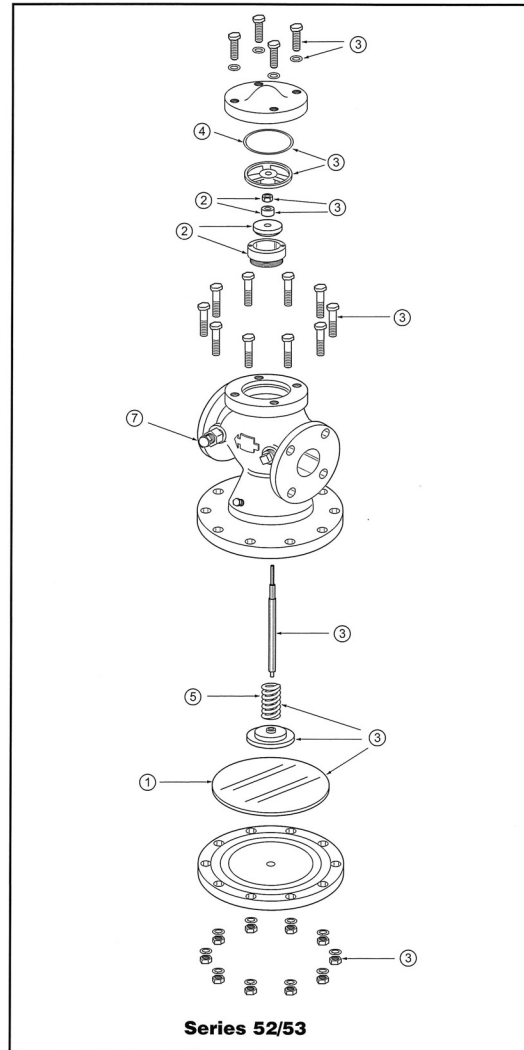
REPAIR PARTS



Service Kit Contents

Item	Description
1	Diaphragms
2	Plug & Seat Kit
3	Rebuild Kit
4	Cover Gasket
5	Spring
6	Seat Tool (to remove seat from main valve body)
7	Bleed Orifice

Pressure/Temperature Regulators, Pilot-Operated Series 52 Main Valve Series 53 Main Valve



Service Kit Contents

Item	Description
1	Diaphragms
2	Plug & Seat Kit
3	Rebuild Kit
4	Cover Gasket
5	Spring
6	Seat Tool (to remove seat from main valve body)
7	Bleed Orifice

Pressure/Temperature Regulators, Pilot-Operated Series 51 Main Valve with Threaded NPT Connections

Ordering Information

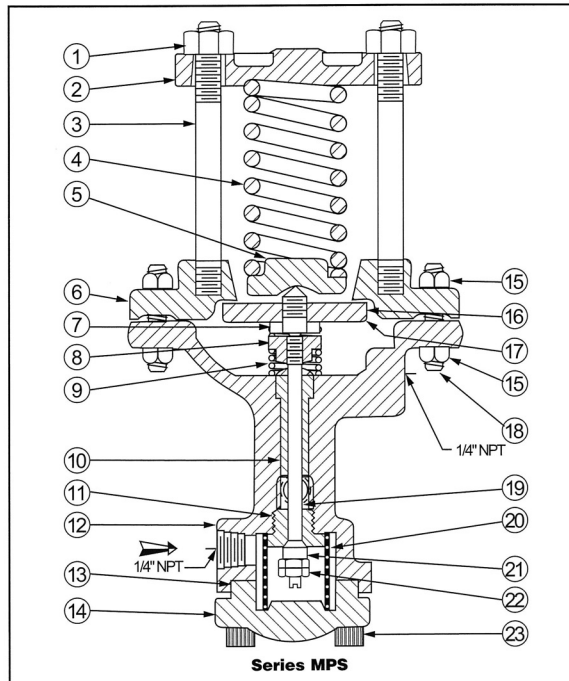
Model Number	NPT	Item 1 Diaphragms Part Number	Item 2 Plug and Seat Part Number	Item 3 Rebuild Kit Part Number	Item 4 Cover Gasket Part Number	Item 5 Spring Part Number	Item 6 Seat Tool Part Number	Item 7 Bleed Orifice Part Number
51 FP	1/2	GR0508	GR0473	GR0518	GR0399	GR0385	GR0379	GR0365
51 NP	1/2	GR0508	GR0474	GR0518	GR0399	GR0385	GR0379	GR0365
51 RP	1/2	GR0508	GR0475	GR0518	GR0399	GR0385	GR0379	GR0365
51 FP	3/4	GR0508	GR0476	GR0518	GR0399	GR0385	GR0379	GR0365
51 NP	3/4	GR0508	GR0477	GR0518	GR0399	GR0385	GR0379	GR0365
51 RP	3/4	GR0508	GR0473	GR0518	GR0399	GR0385	GR0379	GR0365
51 FP	1	GR0508	GR0478	GR0518	GR0399	GR0385	GR0379	GR0365
51 NP	1	GR0508	GR0476	GR0518	GR0399	GR0385	GR0379	GR0365
51 RP	1	GR0508	GR0477	GR0518	GR0399	GR0385	GR0379	GR0365
51 FP	1 1/4	GR0510	GR0479	GR0519	GR0400	GR0387	GR0380	GR0365
51 NP	1 1/4	GR0510	GR0480	GR0519	GR0400	GR0387	GR0380	GR0365
51 RP	1 1/4	GR0510	GR0481	GR0519	GR0400	GR0387	GR0380	GR0365
51 FP	1 1/2	GR0510	GR0482	GR0519	GR0400	GR0387	GR0380	GR0365
51 NP	1 1/2	GR0510	GR0479	GR0519	GR0400	GR0387	GR0380	GR0365
51 RP	1 1/2	GR0510	GR0480	GR0519	GR0400	GR0387	GR0380	GR0365
51 FP	2	GR0512	GR0483	GR0520	GR0401	GR0389	GR0380	GR0365
51 NP	2	GR0512	GR0482	GR0520	GR0401	GR0389	GR0380	GR0365
51 RP	2	GR0512	GR0479	GR0520	GR0401	GR0389	GR0380	GR0365

Pressure/Temperature Regulators, Pilot-Operated Series 52 Main Valve with 125 psi Flange Connection Series 53 Main Valve with 250 psi Flange Connection

Ordering Information

Model Number 125 Flange	Model Number 250 Flange	Size in. (mm)	Item 1 Diaphragms Part Number	Item 2 Plug and Seat Part Number	Item 3 Rebuild Kit Part Number	Item 4 Cover Gasket Part Number	Item 5 Spring Part Number	Item 6 Seat Tool Part Number	Item 7 Bleed Orifice Part Number
52 FP	53 FP	2 (50)	GR0512	GR0483	GR0520	GR0401	GR0389	GR0380	GR0365
52 NP	53 NP	2 (50)	GR0512	GR0482	GR0520	GR0401	GR0389	GR0380	GR0365
52 RP	53 RP	2 (50)	GR0512	GR0479	GR0520	GR0401	GR0389	GR0380	GR0365
52 FP	53 FP	2-1/2 (65)	GR0514	GR0487	GR0521	GR0402	GR0391	GR0382	GR0365
52 NP	53 NP	2-1/2 (65)	GR0514	GR0488	GR0521	GR0402	GR0391	GR0382	GR0365
52 RP	53 RP	2-1/2 (65)	GR0514	GR0489	GR0521	GR0402	GR0391	GR0382	GR0365
52 FP	53 FP	3 (80)	GR0515	GR0490	GR0522	GR0404	GR0393	GR0382	GR0365
52 NP	53 NP	3 (80)	GR0515	GR0487	GR0522	GR0404	GR0393	GR0382	GR0365
52 RP	53 RP	3 (80)	GR0515	GR0488	GR0522	GR0404	GR0393	GR0382	GR0365
52 FP	53 FP	4 (100)	GR0516	GR0491	GR0523	GR0405	GR0395	GR0383	GR0365
52 NP	53 NP	4 (100)	GR0516	GR0492	GR0523	GR0405	GR0395	GR0383	GR0365
52 RP	53 RP	4 (100)	GR0516	GR0493	GR0523	GR0405	GR0395	GR0383	GR0365
52 FP	53 FP	6 (150)	GR0517	GR0494	GR0524	GR0407	GR0397	GR0384	GR0365
52 NP	53 NP	6 (150)	GR0517	GR0495	GR0524	GR0407	GR0397	GR0384	GR0365
52 RP	53 RP	6 (150)	GR0517	GR0496	GR0524	GR0407	GR0397	GR0384	GR0365

Series MPS Spring Pressure Control Pilots For Series 50 Regulators



Pilot Contents

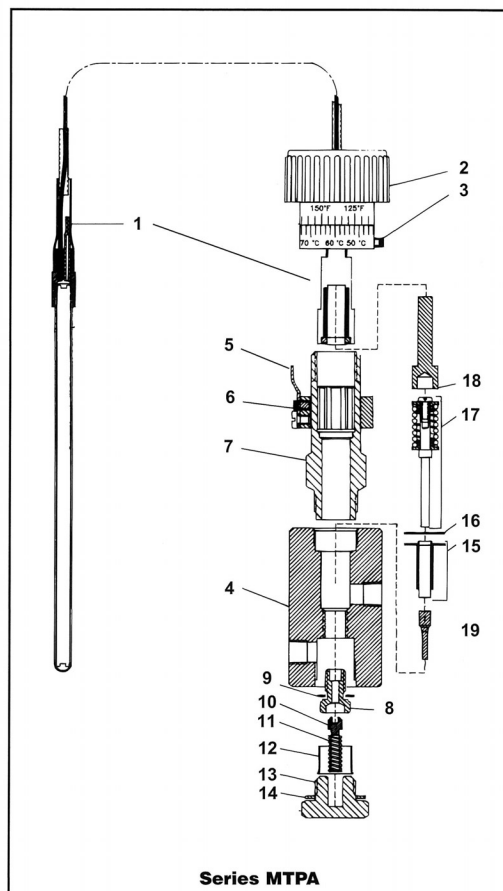
Item	Description
1	Adjusting Nut
2	Spring Yoke
3	Standard
4	Adjusting Spring
5	Spring Button
6	Cowl
7	* Diaphragm Screw
8	* Pusher Plate
9	* Valve Spring
10	Bushing
11	* Seat Ring
12	Body, Bushing, Plug
13	* Gasket
14	Blind Flange
15	Diaphragm Nut
16	* Pressure Plate
17	* Diaphragm
18	Diaphragm Bolt
19	* Stem
20	* Screen
21	* Disc
22	* Stem Nut
23	Blind Flange Bolt

Part Number	Description
GR0375	MPS Adjusting Spring - 2 - 30 psig Blue
GR0376	MPS Adjusting Spring - 5 - 60 psig Red
GR0377	MPS Adjusting Spring - 20 - 175 psig Gold
GR0378	50 MPS Repair Kit (incl. 7,8,9,11,13,16,17,19 thru 22)

Pressure Range psig (bar)	Spring Color	Wire Diameter in. (mm)
2-30 (0.1-2.0)	Blue	$\frac{3}{16}$ (4)
5-60 (0.3-4.1)	Red	$\frac{1}{4}$ (6)
20-175 (1.4-11.9)	Gold	$1\frac{1}{32}$ (9)

Item	* MPS Repair Kit Consists of:
7	Diaphragm Screw (1)
8	Pusher Plate (1)
9	Valve Spring (1)
11	Seat Ring (1)
13	Gasket (1)
16	Pressure Plate (1)
17	Diaphragm (3) (use only 2 pcs on MPS-30 and MPS-60)
19	Stem (1)
20	Screen (1)
21	Disc (1)
22	Stem Nut (2)

Series 50 Pilot Operated Temperature Control Pilots Series MTPA



Item	Description	Item	Description
1	Actuator Assembly	11	Spring
2	Knob	12	Screen
3	Set Screw	13	Cap
4	Body	14	Gasket
5	Pointer	15	Seal Bellows
6	Set Screw	16	Gasket
7	Adjustment Sleeve	17	Over Heat Assembly
8	Seat	18	Push Rod
9	Gasket	19	Plug
10	Button, Spring		

Repair Parts

Description	Part Number
Complete Body Assembly (Includes items 4 thru 19)	GR0841
Seal Bellows Kit includes items 15, 16 & 17	GR00127
Rebuild Kit includes items 8 thru 17 & 19	GR00130
Bottom Repair Kit includes items 10 thru 14	GR00128

Actuator Assemblies (includes actuator, knob, and set screw)

Model Number	Part Number	Temperature Range F	Capillary Length ft.	Weight lbs.
MPTA-200 GR3039		50-200	10	3
MPTA-200 GR3040		50-200	15	3
MPTA-200 GR3041		50-200	20	3
MPTA-200 GR3042		50-200	25	3
MPTA-200 GR3043		50-200	30	3
MPTA-300 GR3044		150-300	10	3
MPTA-300 GR3045		150-300	15	3
MPTA-300 GR3046		150-300	20	3
MPTA-300 GR3047		150-300	25	3
MPTA-300 GR3048		150-300	30	3
MPTA-400 GR3049		250-400	10	3



TECHNICAL INFORMATION AND SELECTION GUIDELINES

Series 50 Main Valves

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

Models 51, 52, 53

		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)
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)

CAPACITY CHART

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

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

TECHNICAL INFORMATION AND SELECTION GUIDELINES



Series 50 Main Valves

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

Models 51, 52, 53

		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)
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.

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



TECHNICAL INFORMATION AND SELECTION GUIDELINES

Series 50 Main Valves

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

Models 51, 52, 53

		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)
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.

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

CAPACITY CHART



Series 50

Pressure and/or Temperature Pilot Operated Steam Regulators

How To Size Series 50 Main Valves

Selecting the proper Series 50 Pilot-Operated Regulator provides accuracy and efficiency in the control and operation of steam systems and their components. Series 50 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 50 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) Consult Factory.

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 50 Main Valve may be used for pressure drops up to 150 psi (10.4 bar).
- 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). Page 3.
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.)
8. Install drip traps ahead of regulators to drain condensate from steam lines.
9. Strainers should always be installed ahead of Regulators with outlet/blowdown off to side NOT pointed downward.

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 direct control of temperature in heated fluids.

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.

How to Select Series 50 Pilots

Series MPS 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 MTPA 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).

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 50

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 50 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 50 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	Equipment				
	Operating Pressure psi (bar)	Maximum Pressure psi (bar)	Steam Loads Requirements lbs./hr. (kg/hr.)	Pipe Size in.	
A	20 (1.4)	40 (2.8)	300 (136)	1/2	
B	20 (1.4)	30 (2.1)	600 (272)	3/4	
C	20 (1.4)	25 (1.75)	400 (181)	3/4	
D	20 (1.4)	25 (1.75)	800 (363)	1	
E	20 (1.4)	25 (1.75)	500 (227)	1/2	
F	20 (1.4)	50 (2.5)	600 (272)	3/4	
Total Capacity 3200 lbs./hr. (1453 kg/hr.)					

Procedure:

The steps to size a Series 50 pressure regulator are listed on page 14. 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):

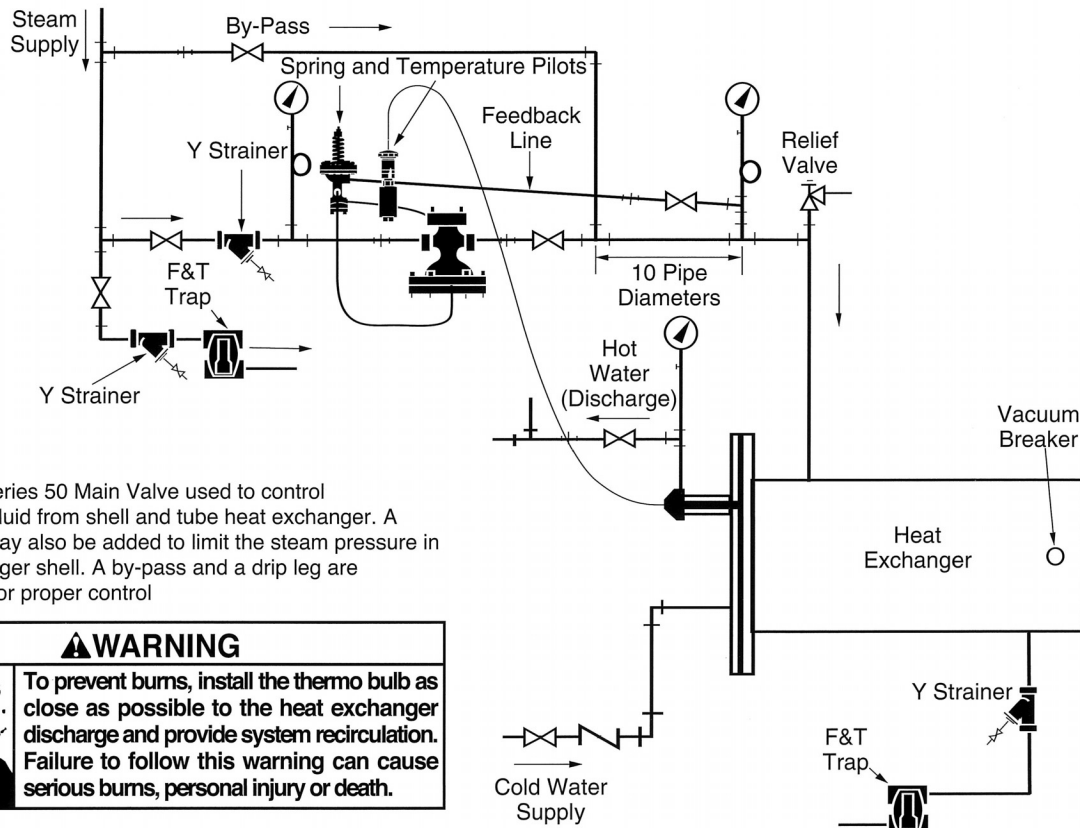
4. Be sure to review the recommendations for good practice in selecting pressure regulators.
5. Refer to the Full Port Capacity Table page 11 first for the selection. The normal and reduced trim capacity tables should be used if there is a possibility the system will be expanded in the future.
6. Select 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 51 1 1/2" 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 MPS-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 MPS-60 pilot with an adjustable range of 5 to 60 psi (0.3 to 4.1 bar) could also be used.

Series 50 Typical Applications

Typical Series 50 Combination Pressure-Temperature Pilot to Control Water Heater Exchanger



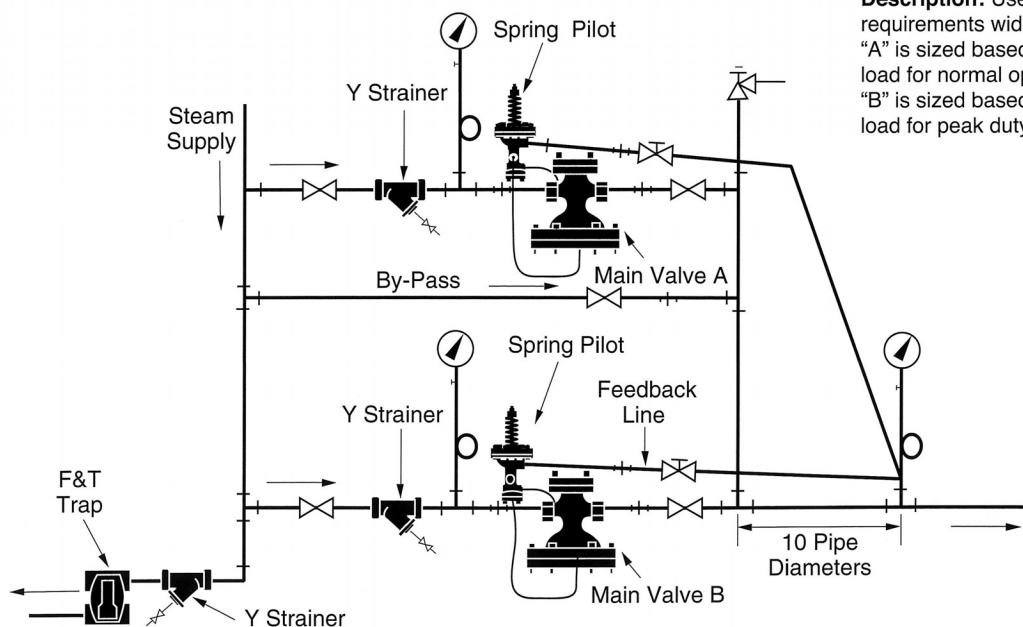
Description: Series 50 Main Valve used to control temperature of fluid from shell and tube heat exchanger. A pressure pilot may also be added to limit the steam pressure in the heat exchanger shell. A by-pass and a drip leg are recommended for proper control

⚠ WARNING



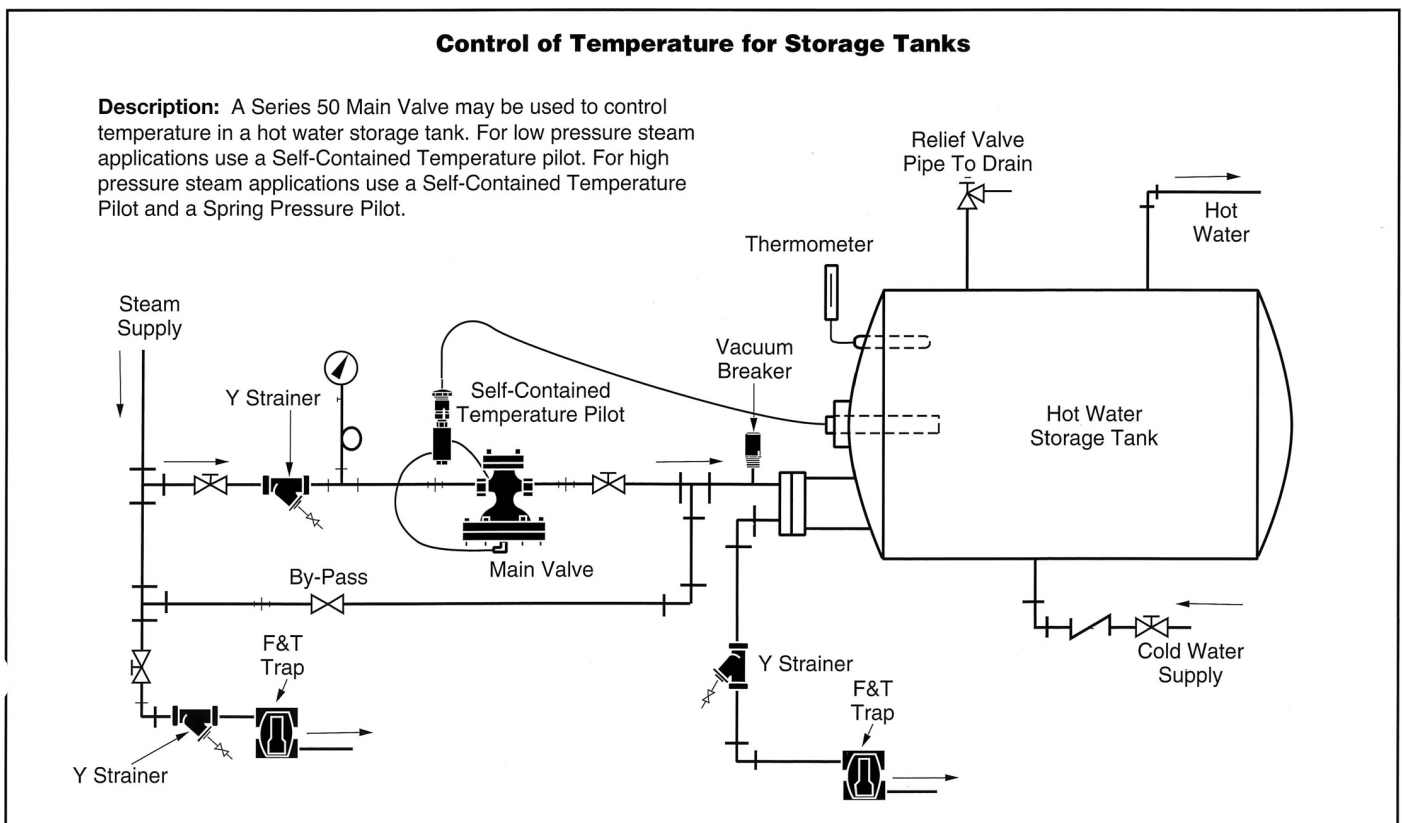
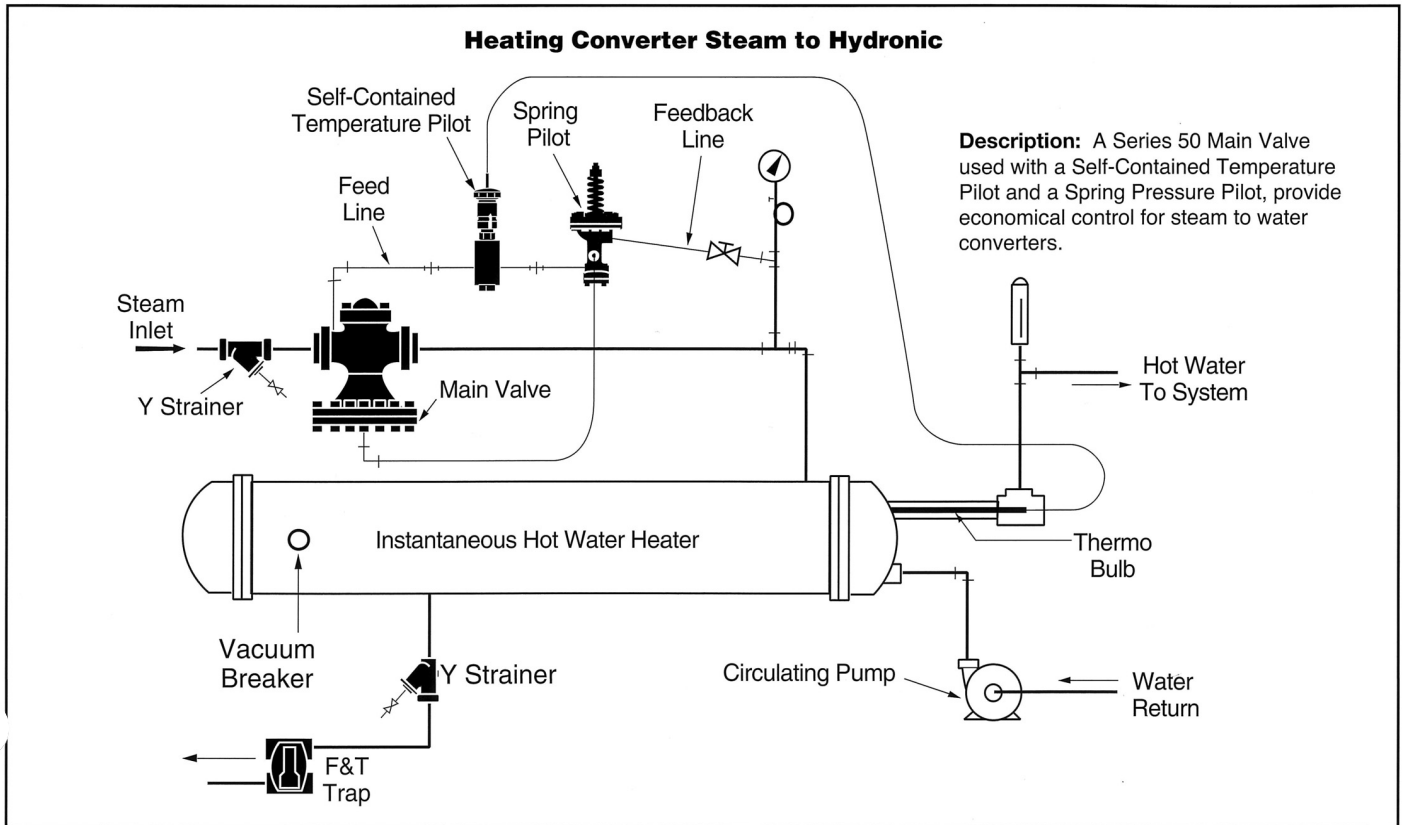
To prevent burns, install the thermo bulb as close as possible to the heat exchanger discharge and provide system recirculation. Failure to follow this warning can cause serious burns, personal injury or death.

Typical Parallel Pressure Regulator Station



Description: Used when the load requirements widely vary. Main valve "A" is sized based on 1/3 the total load for normal operation. Main valve "B" is sized based on 2/3 the total load for peak duty operation.

Series 50 Typical Applications (continued)





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