



**Pressure and Temperature Pilot
Operated Steam Regulators**

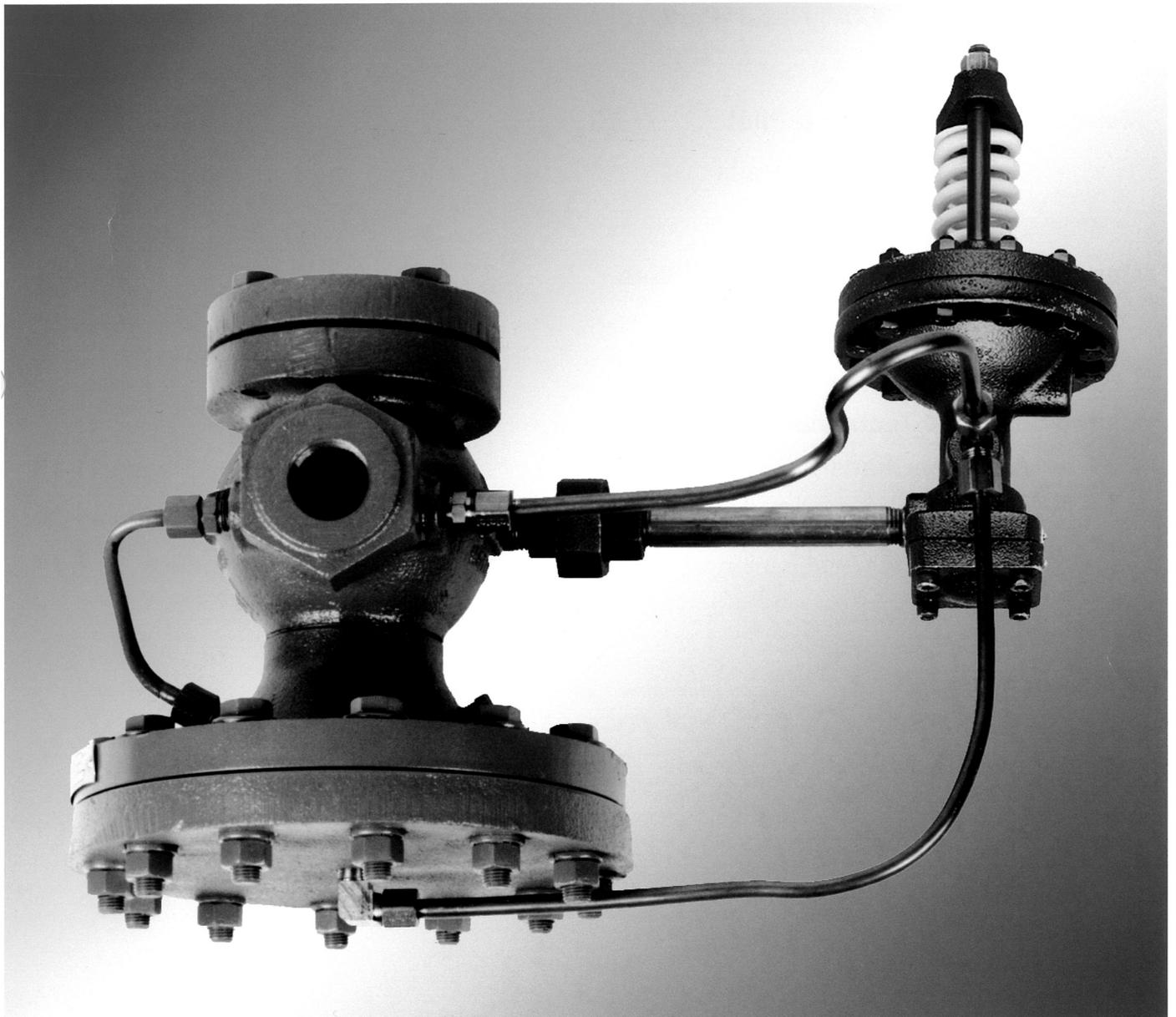


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Pressure and/or Temperature Pilot Operated Steam Regulators Series 50

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

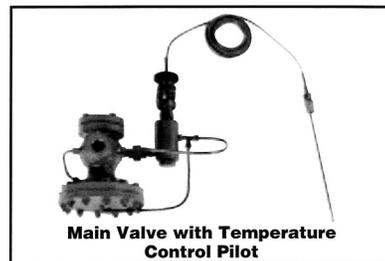
- Maximum differential pressure 150 psi.
A two stage reduction should be used for pressure drops greater than 150 psi.
- Maximum Temperature 450 deg F

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 |



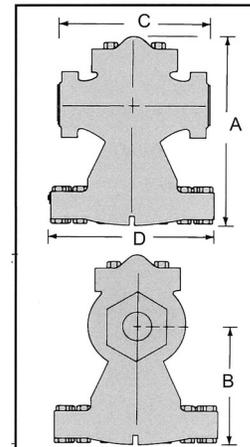
Pressure and/or Temperature Pilot Operated Steam Regulators (continued)

Series 50 Main Valves

Dimensions (Main Valves)

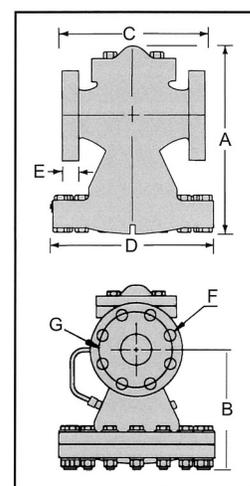
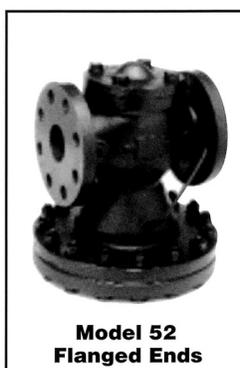
Model 51 Screwed NPT Ends — Maximum pressure 250 psig (17.3 bar)

| 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) |



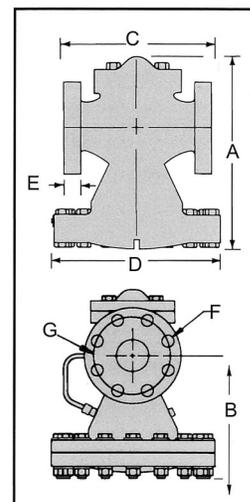
Model 52 — Maximum pressure 125 psig (8.6 bar)

| 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 3/8 (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 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) |



MAIN VALVE



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) |

MAIN VALVE

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)

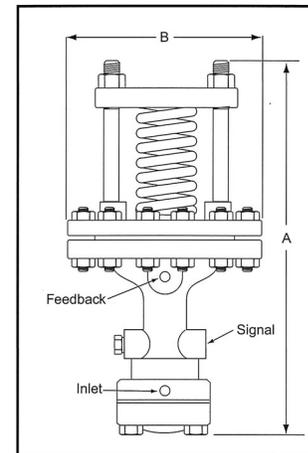
Series MPS Spring Pressure Control Pilots

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.

PILOTS

- 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)



| 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 |

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) |

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) |

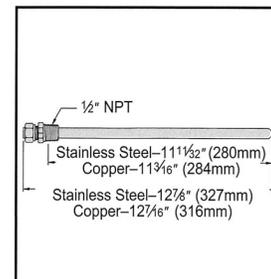
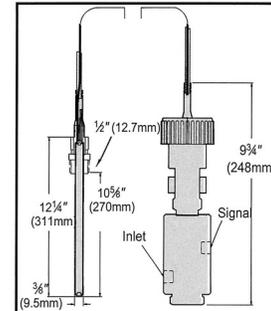
Note: When Spring pilots are used with Safety Relief valves, the Safety Relief valve must be at least 5 psi (.35 bar) higher than the desired steam operating pressure.

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 1/2" (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 |

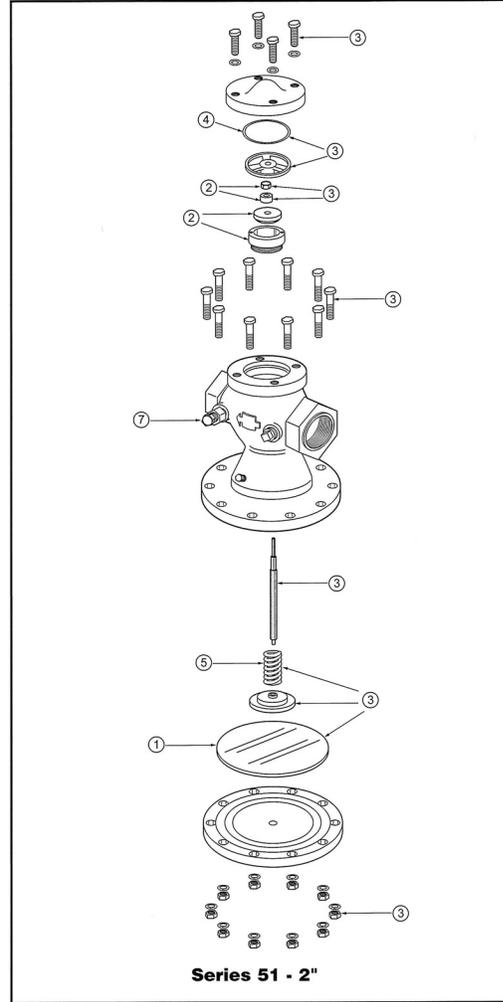
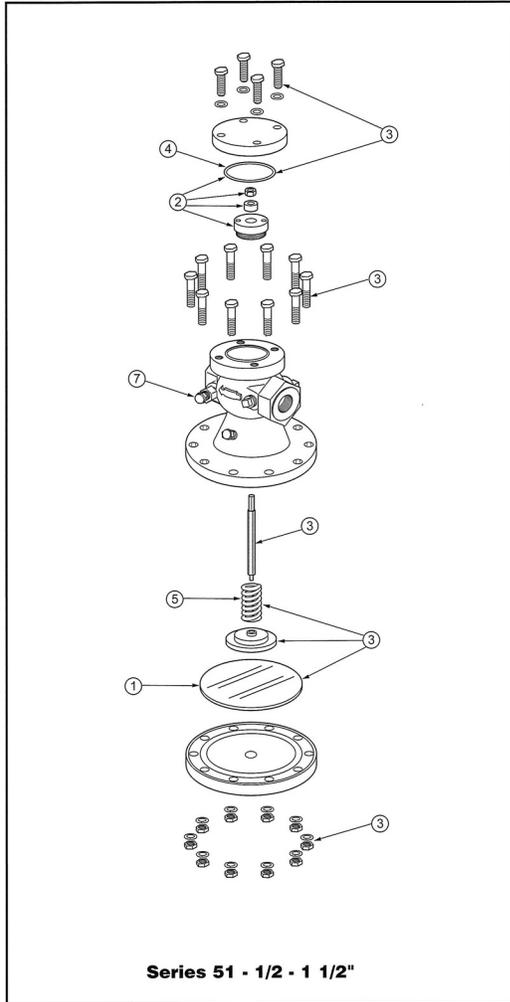
Ordering Information

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

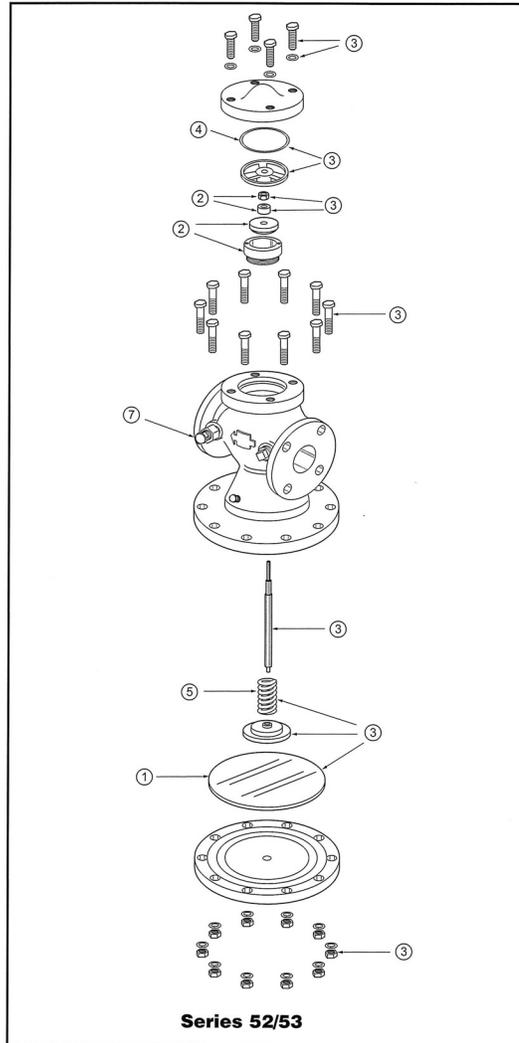


Service Kit Contents

| 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 |

REPAIR PARTS

REGULATOR SERVICE PARTS



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

Ordering Information

| Model Number | NPT | Item 1 | Item 2 | Item 3 | Item 4 | Item 5 | Item 6 | Item 7 |
|--------------|-------|------------------------|---------------------------|-------------------------|--------------------------|--------------------|-----------------------|---------------------------|
| | | Diaphragms Part Number | Plug and Seat Part Number | Rebuild Kit Part Number | Cover Gasket Part Number | Spring Part Number | Seat Tool Part Number | 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 |

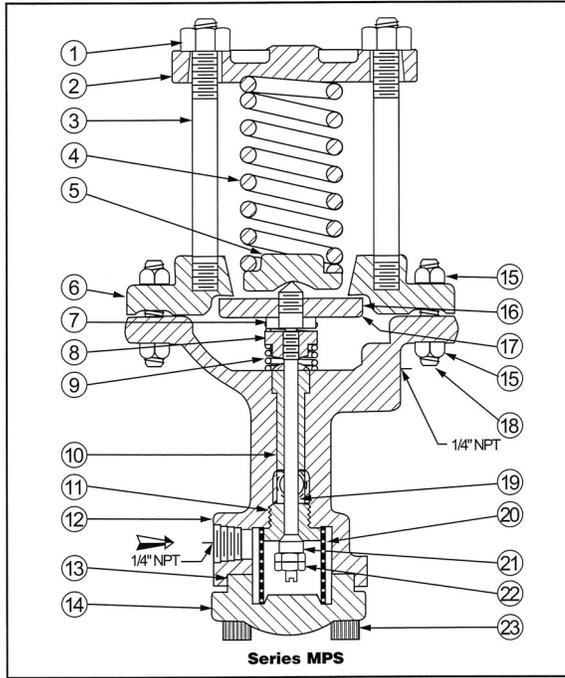
REPAIR PARTS

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 | Item 2 | Item 3 | Item 4 | Item 5 | Item 6 | Item 7 |
|-------------------------|-------------------------|---------------|------------------------|---------------------------|-------------------------|--------------------------|--------------------|-----------------------|---------------------------|
| | | | Diaphragms Part Number | Plug and Seat Part Number | Rebuild Kit Part Number | Cover Gasket Part Number | Spring Part Number | Seat Tool Part Number | 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 |

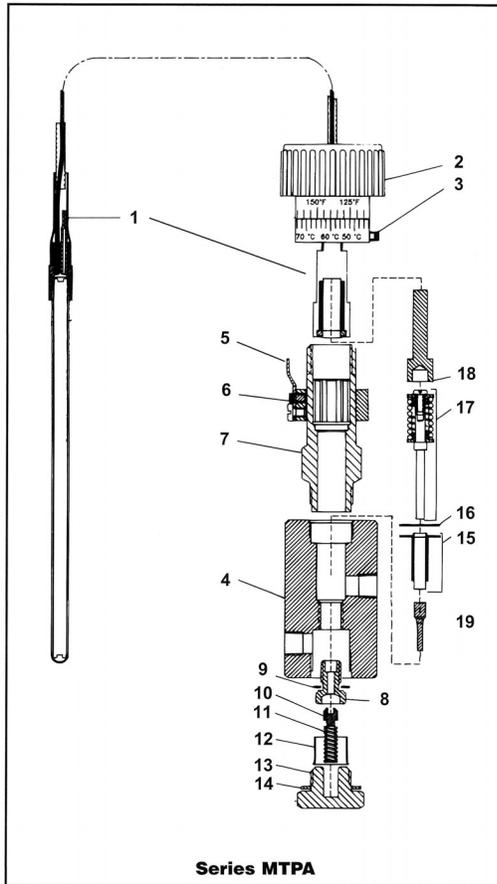
| Part Number | Description |
|-------------|--|
| GR0375 | MPS Adjusting Spring - 2 - 30 psig Blue |
| GR0376 | MPS Adjusting Spring - 5 - 60 psig Red |
| GR0377 | MPS Adjusting Spring - 20 - 175 psig Gold |
| GR0378 | 50 MPS Repair Kit (incl. 7,8,9,11,13,16,17,19 thru 22) |

| 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 | $\frac{11}{32}$ (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) |

REPAIR PARTS

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

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

| Pressure psig (bar) | | Main Valve Size | | | | | | | | | |
|---------------------|---------------|-----------------|-------------|-------------|-------------|-------------|--------------------------|--------------|---------------|---------------|----------------|
| | | 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.



Series 50 Main Valves

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

Models 51, 52, 53

CAPACITY CHART

| | | 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) | 1880 (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) |

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.



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) | 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:

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):

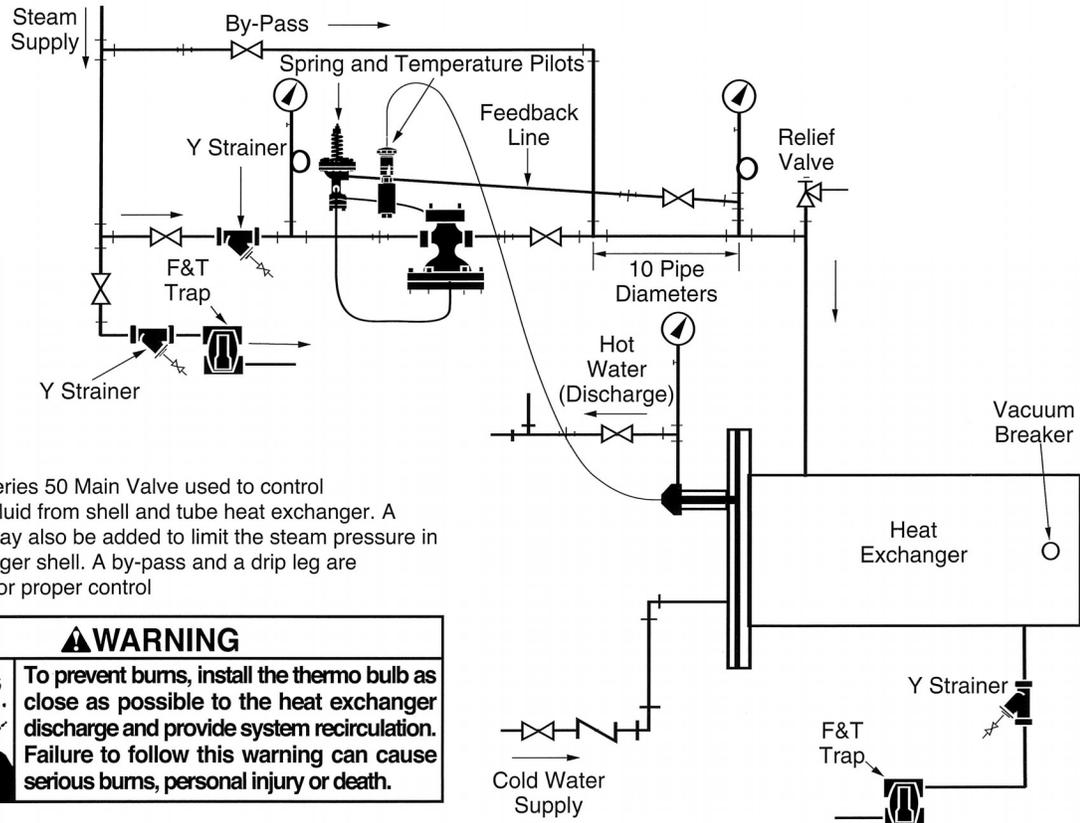
4. Be sure to review the recommendations for good practice in selecting pressure regulators.
5. Refer to the Full Port Capacity Table page 11 first for the selection. The normal and reduced trim capacity tables should be used if there is a possibility the system will be expanded in the future.
6. Select 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 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 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



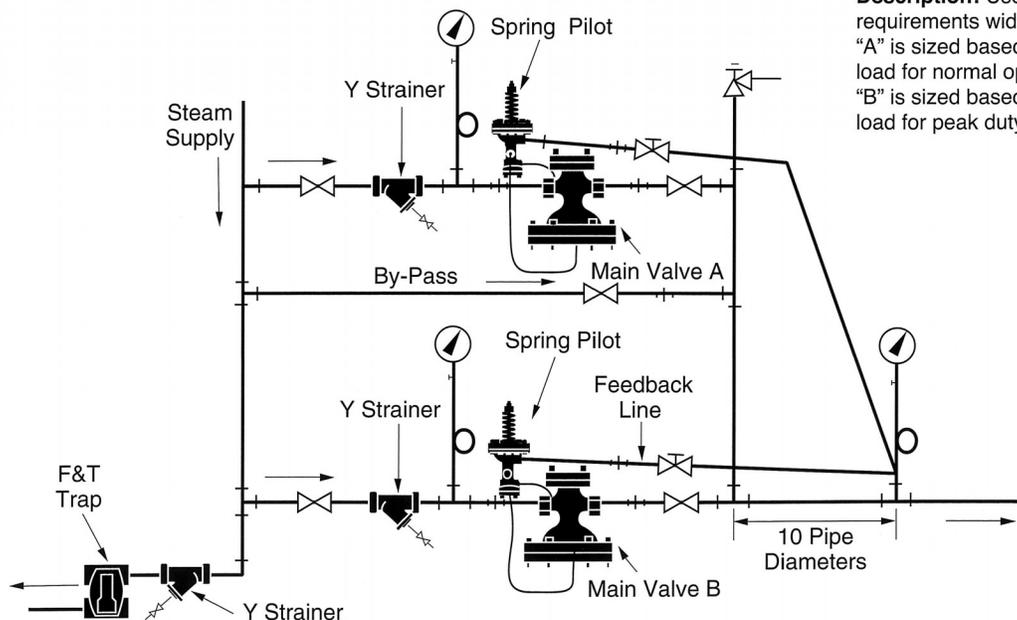
Description: Series 50 Main Valve used to control temperature of fluid from shell and tube heat exchanger. A pressure pilot may also be added to limit the steam pressure in the heat exchanger shell. A by-pass and a drip leg are recommended for proper control

⚠ WARNING



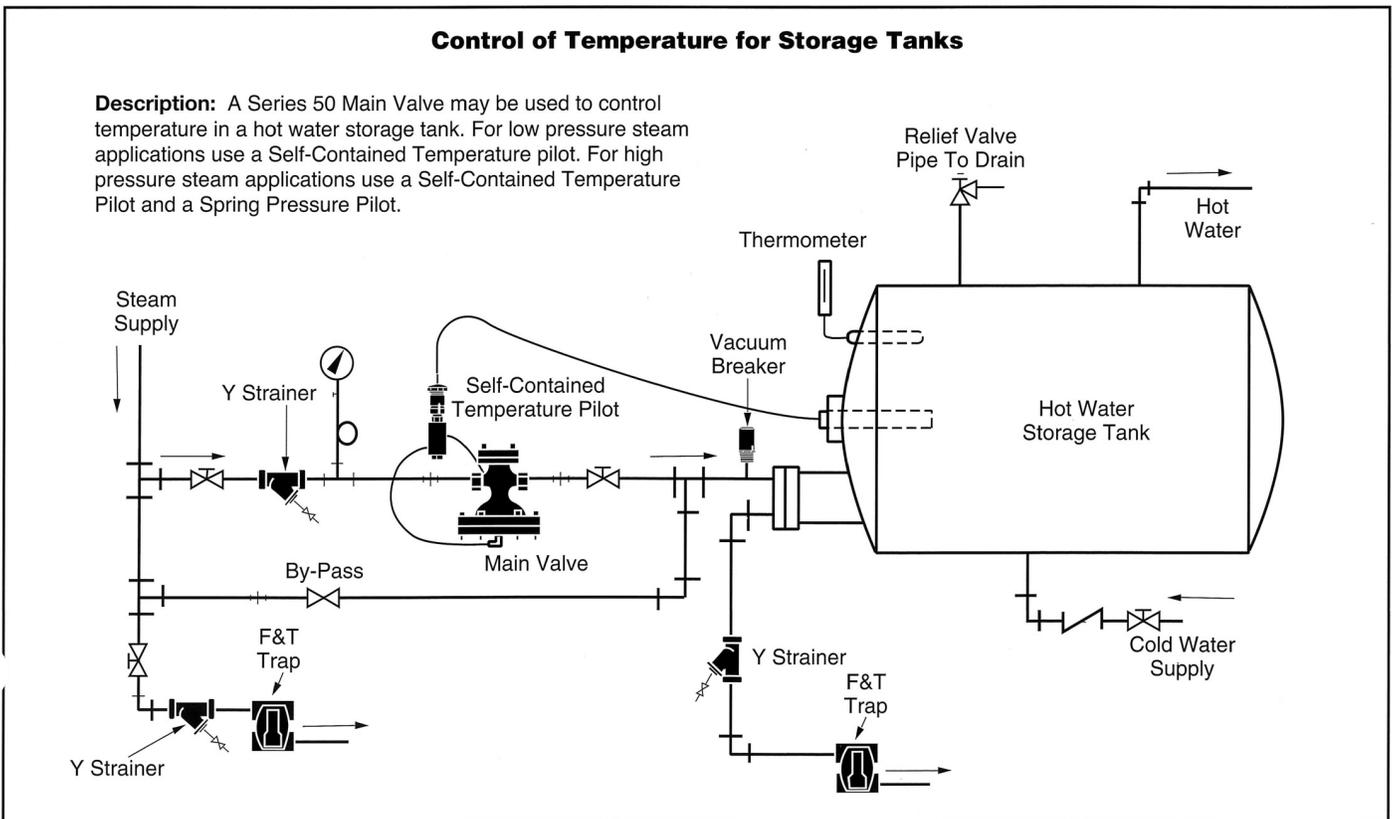
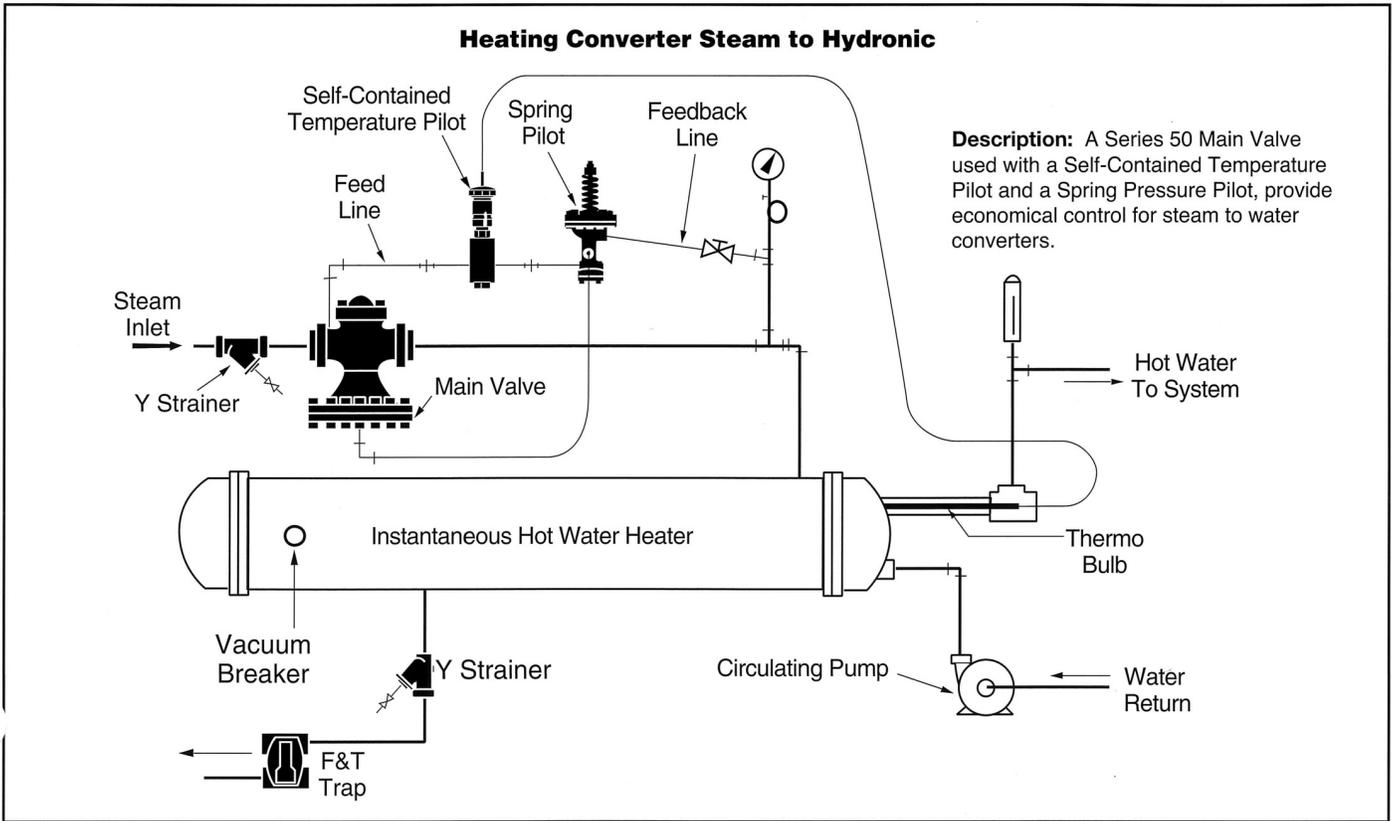
To prevent burns, install the thermo bulb as close as possible to the heat exchanger discharge and provide system recirculation. Failure to follow this warning can cause serious burns, personal injury or death.

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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