

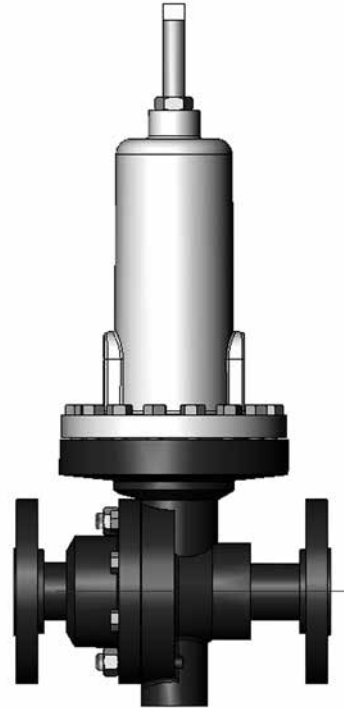
Mark 60HP Series

Self Operated Pressure Regulators

The Mark 60HP Sliding Gate Pressure Regulator is used to regulate the downstream pressure to a predetermined setpoint. The spring in the Mark 60 holds the sliding gate seats in their normally open position to allow the process media to pass through the seats.

The downstream pressure is sensed beneath the diaphragm. **(A sensing line is required on sizes: 2-1/2", 3", and 4")**. As the downstream pressure exceeds the setpoint, pressure is exerted on the diaphragm which raises the stem to modulate the disc (the moveable component on the sliding gate seat set) toward the closed position. As the seats close, downstream pressure will be reduced to the required setpoint. A decrease in pressure relaxes the spring and diaphragm to move the seats toward the open position.

The MK60H features a handwheel that replaces the adjusting screw for easy changes to the setpoint



Mark 60HP Features

- **Sliding Gate Trim** – unique seat design for unsurpassed trim life and accuracy
- **Jorcote Seat Coating** – ceramic composite for liquids, gases and especially steam. Very low friction with outstanding wear resistance and a temperature rating of up to 550°F. Steam tested to 1,000,000 cycles and still maintained Class IV leakage.
- **Jorlon Diaphragm** – extremely durable, virtually universally applicable up to 450°F. Tested without failure to over 1,000,000 full stroke cycles. Ideal for steam, gases and liquids. 316SST diaphragm applicable up to 550°F.
- **Straight-through Flow** – The flow is straight through the valve seats and body. Direction of the disc travel is perpendicular to the flow, not opposed to the direction of the flow. Thus, the flow does not unbalance the seats. The MK60 can use a wider range of its stroke to give accurate control; less offset
- **Quiet Operation** – typically 5-10 dB less than conventional globe style regulators. The disc and plate are always in contact, which eliminates chattering. Straight-through flow minimizes turbulence. Multiple orifices in the plate and disc divide the flow stream into smaller flow components
- **Minimum Maintenance** – The MK60 sliding gate seats require no special tools for disassembly. The seats are pre-lapped at the factory and are self-lapping while in operation ensuring a continual tight shutoff



Jordan Valve a division of Richards Industries
3170 Wasson Road • Cincinnati, OH 45209
513.533.5600 • 800.543.7311 • 513.871.0105 (f)
jordan@richardsind.com • www.jordanvalve.com

SPECIFICATIONS

Sizes: (note: 1/4" & 3/8" sizes use 1/2" body with reducers)

- Mark 60HP: 1/4" – 4" (DN8 – DN100)

End Connections:

- Threaded – FNPT, BSPT, BSPP (1/2" – 2" only)
- ANSI Flanges (150#, 300#)
- DIN Flanges (PN 10/16, PN 25/40)

Spring Housing:

- DI – 1/4" – 2" (DN8 – DN50)
- DI/Steel – 2-1/2" – 4" (DN65 – DN100)

Body Materials:

- Ductile Iron
- Bronze (1/2" – 2"; DN15 – DN50)
- Carbon Steel (A216 WCB)
- Stainless Steel (A351/CF8M)

Trim Materials:

- 303SST – Standard on Ductile Iron, Bronze, Carbon Steel valves
- 316SST – Standard on Stainless Steel valves
- Monel, Hastelloy and other Alloys available

Reduced Pressure Control Ranges: Select a range to match your setpoint. For optimal performance, your setpoint should fall in the upper portion of the selected range.

| Model | Size (DN) | Spring Ranges | |
|-------|-------------------------------|---------------|-------------|
| | | PSI | Bar |
| 60HP | 1/2" – 2" (DN15 – DN40) | 75 – 190 | 5,2 – 13,1 |
| | | 100 – 320 | 6,9 – 22,1 |
| | | 150 – 450 | 10,3 – 31,0 |
| | 2-1/2" – 4" (DN65 – DN100) | 30 – 75 | 2,07 – 5,17 |
| | | 65 – 110 | 4,5 – 7,6 |

MAXIMUM WORKING PRESSURE, PSI

- Mark 60HP Size Range: 1/2" – 2"

| Temp °F | CS Body | SS Body |
|---------|--------------------|--------------------|
| | 600# Flange or NPT | 600# Flange or NPT |
| 100 | 1480 | 1440 |
| 200 | 1355 | 1240 |
| 300 | 1315 | 1120 |
| 400 | 1270 | 1030 |
| 500 | 1208 | 955 |
| 600 | 1098 | 905 |
| 650 | 1075 | 890 |

Notes:

1. Consult factory for maximum working pressure on 2-1/2" - 4" (DN65 - DN100) Mark 60HP Series

Seat Materials:

- Jorcote on SST – Standard
- Other materials available – Consult factory

Diaphragm Materials:

- Jorlon - Standard
- Stainless Steel - Standard
- Buna-N - Standard
- Viton – Optional

Service: Steam, water, oil, gas, air and chemicals

Shutoff: ANSI Class IV

CV Values & Maximum Differential Pressures

| Cv (Kv) | Size (DN) | Seat Material | Max. ΔP PSI (bar) |
|-------------|------------------------------|---------------|-------------------|
| 0.84 (0,74) | 1/4" (DN8) | Jorcote | 400 (27,6) |
| 1.6 (1,4) | 3/8" (DN12) | Jorcote | 400 (27,6) |
| 2.5 (2,2) | 1/2" & 3/4" (DN15 & DN20) | Jorcote | 400 (27,6) |
| 4.4 (3,8) | | | |
| 6.4 (5,5) | 1" & 1-1/4" (DN25 & DN32) | Jorcote | 400 (27,6) |
| 9.5 (8,2) | | | |
| 15 (12,9) | 1-1/2" (DN40) | Jorcote | 325 (22,4) |
| 25 (21,5) | 2" (DN50) | Jorcote | 325 (22,4) |
| 30 (25,8) | | | |
| 55 (47,3) | 2-1/2" (DN65) | Jorcote | 150 (10,34) |
| 115 (99) | 3" (DN75) | Jorcote | 150 (10,34) |
| 200 (172) | 4" (DN100) | Jorcote | 150 (10,34) |

Low Flow Cv's: reduced Cv's (Kv's) are available. Cv (Kv) ratings of smaller sized valves can be supplied in a larger valve size

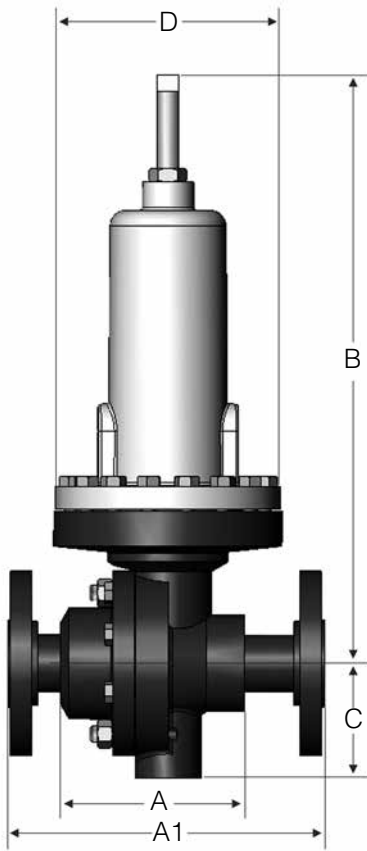
| | | | | |
|---------------|---------------|---------------|----------------|-------------|
| 0.42 (0,36) | 0.21 (0,18) | 0.08 (0,07) | 0.04 (0,03) | 0.02 (0,02) |
| 0.008 (0,007) | 0.004 (0,003) | 0.002 (0,002) | 0.0008 (0,007) | |

MAXIMUM WORKING PRESSURE, BAR

- Mark 60HP Size Range: DN15 – DN50

| Temp °C | CS Body | SS Body |
|---------|--------------------|--------------------|
| | 600# Flange or NPT | 600# Flange or NPT |
| 38 | 102 | 99 |
| 93 | 93 | 85 |
| 149 | 91 | 77 |
| 204 | 88 | 71 |
| 260 | 83 | 66 |
| 316 | 75 | 62 |
| 343 | 74 | 61 |

DIMENSIONS



• Flanged Ends, Inches

| Size | ANSI Flange | A1 | | B | C | D | Weight (lbs) |
|--------|-------------|--------|-------|-------|------|------|--------------|
| | | DI/BRZ | CS/SS | ALL | ALL | ALL | |
| 1/2" | 150# | 7.25 | 7.25 | 12.75 | 1.69 | 5.20 | 21 • |
| | 300# | 7.50 | 7.50 | 12.75 | 1.69 | 5.20 | |
| | • 600# | 8.00 | 8.00 | 12.25 | 1.69 | 5.20 | |
| 3/4" | 150# | 7.25 | 7.25 | 12.75 | 1.69 | 5.20 | 22 • |
| | 300# | 7.62 | 7.62 | 12.75 | 1.69 | 5.20 | |
| | • 600# | 8.12 | 8.12 | 12.25 | 1.69 | 5.20 | |
| 1" | 150# | 7.25 | 7.25 | 13.25 | 2.62 | 5.20 | 37 |
| | 300# | 7.75 | 7.75 | 13.25 | 2.62 | 5.20 | |
| | • 600# | 8.25 | 8.25 | 12.75 | 2.62 | 5.20 | |
| 1-1/4" | 150# | 7.87 | — | 12.75 | 2.62 | 5.20 | 37 |
| | 300# | 8.37 | — | 12.75 | 2.62 | 5.20 | |
| 1-1/2" | 150# | 8.75 | 8.75 | 13.75 | 2.31 | 5.20 | 45 |
| | 300# | 9.25 | 9.25 | 13.75 | 2.31 | 5.20 | |
| | • 600# | 9.87 | 9.87 | 13.25 | 2.31 | 5.20 | |
| 2" | 150# | 10.00 | 10.00 | 14.00 | 2.75 | 5.20 | 49 |
| | 300# | 10.50 | 10.50 | 14.00 | 2.75 | 5.20 | |
| | • 600# | 11.25 | 11.25 | 13.50 | 2.75 | 5.20 | |

- 600# are not IFE
- For IFE, add 1" to all "B" dimensions (1" – 2" sizes only)

• Threaded & FSW Ends, Inches

| Size | Material | A | B | C | D | Weight (lbs) |
|-------------|----------|------|-------|------|------|--------------|
| 1/2" - 3/4" | DI/BRZ | 3.62 | 12.75 | 1.75 | 5.12 | 15 |
| | CS/SS | 3.62 | 12.75 | 1.75 | 5.12 | 17 |
| 1" | DI/BRZ | 4.12 | 13.00 | 2.12 | 5.20 | 21 |
| | CS/SS | 4.18 | 13.25 | 2.12 | 5.20 | 25 |
| 1-1/4" | DI/BRZ | 4.12 | 13.00 | 2.12 | 5.20 | 21 |
| 1-1/2" | DI/BRZ | 4.50 | 13.25 | 2.31 | 5.20 | 23 |
| | CS/SS | 4.81 | 13.75 | 2.50 | 5.20 | 31 |
| 2" | DI/BRZ | 4.50 | 13.25 | 2.50 | 5.20 | 26 |
| | CS/SS | 5.50 | 14.00 | 2.50 | 5.20 | 35 |

• Threaded & FSW Ends, Metric

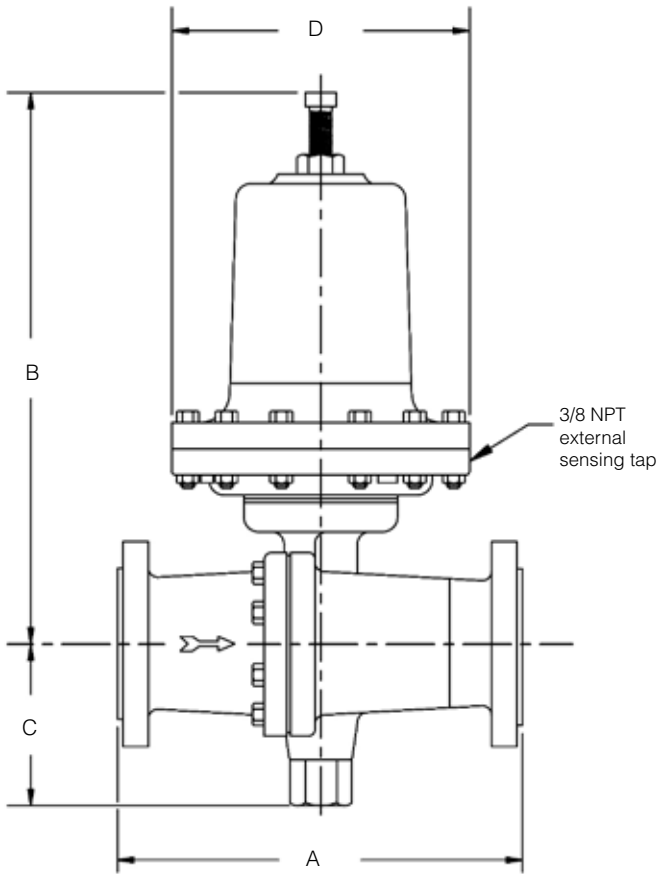
| Size | Material | A | B | C | D | Weight (lbs) |
|-----------|----------|-----|-----|----|-----|--------------|
| DN15 & 20 | DI/BRZ | 92 | 324 | 45 | 130 | 6,8 |
| | CS/SS | 92 | 324 | 45 | 130 | 7,7 |
| DN25 | DI/BRZ | 105 | 330 | 54 | 132 | 9,5 |
| | CS/SS | 106 | 337 | 54 | 132 | 11,3 |
| DN32 | DI/BRZ | 105 | 330 | 54 | 132 | 9,5 |
| DN40 | DI/BRZ | 114 | 337 | 59 | 132 | 10,4 |
| | CS/SS | 122 | 349 | 64 | 132 | 14,1 |
| DN50 | DI/BRZ | 114 | 337 | 64 | 132 | 11,8 |
| | CS/SS | 140 | 356 | 64 | 132 | 15,9 |

• Flanged Ends, Metric³

| Size | ANSI Flange | A1 | | B ² | C | D | Weight (kgs) |
|------|-------------|---------------------|-------|----------------|-----|-----|--------------|
| | | DI/BRZ ¹ | CS/SS | ALL | ALL | ALL | |
| 15 | 10/16 | 184 | 130 | 324 | 43 | 132 | 9,5 |
| | 25/40 | 184 | 130 | 324 | 43 | 132 | |
| 20 | 10/16 | 184 | 150 | 324 | 43 | 132 | 10 |
| | 25/40 | 184 | 150 | 324 | 43 | 132 | |
| 25 | 10/16 | 184 | 160 | 337 | 67 | 132 | 17 |
| | 25/40 | 184 | 160 | 337 | 67 | 132 | |
| 32 | 10/16 | 200 | — | 324 | 67 | 132 | 17 |
| | 25/40 | 200 | — | 324 | 67 | 132 | |
| 40 | 10/16 | 222 | 200 | 349 | 59 | 132 | 20 |
| | 25/40 | 222 | 200 | 349 | 59 | 132 | |
| 50 | 10/16 | 254 | 230 | 356 | 70 | 132 | 22 |
| | 25/40 | 254 | 230 | 356 | 70 | 132 | |

- ¹ Not IFE and not per DIN3202
- ² For IFE, add 25,4 mm
- ³ For all DIN flanges, please consult factory

DIMENSIONS



• Mark 60HP: Flanged Ends

| Size | Flange Rating | Dimensions (inches) | | | | Weight (lbs.) |
|--------|---------------|---------------------|-------|------|-------|---------------|
| | | A | B | C | D | |
| 2-1/2" | 125-150# | 10.88 | 22.25 | 6.95 | 10.65 | 165 |
| | 250-300# | 11.50 | | | | |
| 3" | 125-150# | 11.75 | 22.25 | 6.95 | 10.65 | 185 |
| | 250-300# | 12.50 | | | | |
| 4" | 125-150# | 13.88 | 23.45 | 8.00 | 10.65 | 215 |
| | 250-300# | 14.50 | | | | |

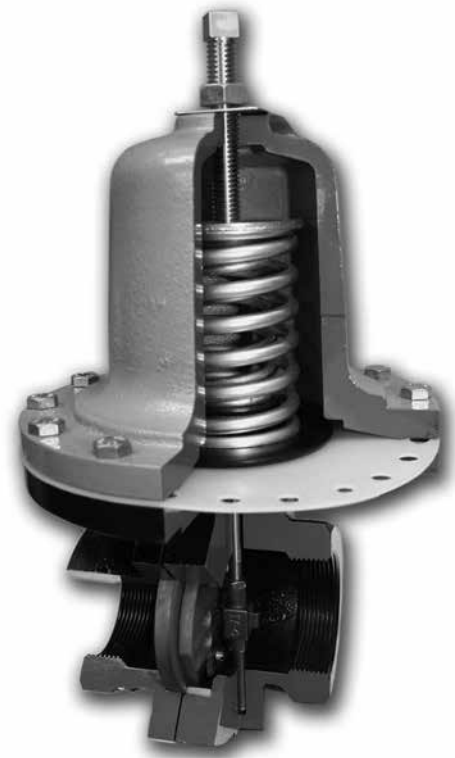
• Mark 60HP: Flanged Ends, Metric

| Size (DN) | Flange PN | Dimensions (mm) | | | | Weight (kg) |
|-----------|-----------|-----------------|-----|-----|-----|-------------|
| | | A ¹ | B | C | D | |
| DN65 | 10/16 | 287 | 565 | 177 | 270 | 75 |
| | 25/40 | 293 | | | | |
| DN80 | 10/16 | 313 | 565 | 177 | 270 | 84 |
| | 25/40 | 313 | | | | |
| DN100 | 10/16 | 353 | 595 | 203 | 270 | 98 |
| | 25/40 | 353 | | | | |

1. Not per DIN 3202

JORLON DIAPHRAGM - REVOLUTIONARY DIAPHRAGM SETS NEW STANDARD

- Easily retrofitted – Jorlon can be easily retrofitted in the field with no additional parts. For regulators purchased after the fall of 1991, only the diaphragm needs to be changed to retrofit either SST or elastomer diaphragms.
- Chemical compatibility – Jorlon is PTFE based, so it is compatible with most media except fluorinated gases and halogenated fluorocarbons. Whether the application is steam, process gases or fluids, Jorlon should be your choice.
- High pressure limits – The Mark 60HP has been pressure tested well in excess of the maximum allowable pressures of the valve. For the smaller MK60 2" (DN50) and below, it is fully rated to ANSI 300 Class pressure of 720 psi (50 bar) @ 100°F (38°C). The outstanding performance is a combination of Jorlon and sliding gate seat technology.
- Improved droop performance – A metal diaphragm is much more rigid than an elastomer diaphragm. As such, metal diaphragms have decreased sensitivity thereby diminishing performance and accuracy in a self-operated regulator. Jorlon will improve droop performance when used instead of a SST diaphragm as its properties are more similar to those of elastomer materials.
- Less expensive – Jorlon is less expensive than many other diaphragm materials, further increasing its customer value.
- High steam pressure capability – Extensive steam testing of Jorlon in the Mark 60 pressure regulator has shown this material is ideal for high pressure steam service. For Mark 60 2" (DN50) and below, Jorlon may be used in saturated steam service up to 405 psi (28 bar) @ 450°F (232°C). For steam service in larger Mark 60s, up to 125 psi (8,6 bar) saturated steam.
- Fast delivery – Rely on our 36 hour delivery with Jorlon as the diaphragm material.
- Extremely long life – Under 300 psi air, Jorlon surpasses 1,000,000 full stroke cycles without failure. The harshest test was on 450°F saturated steam, where Jorlon exceeded the cycle count for stainless steel by over 150 times - the test was stopped and the Jorlon diaphragm had yet to fail.
- Lower cost of ownership – Less droop provides more accuracy, improving efficiency and productivity. Extremely long life results in more production up-time, fewer spare parts expenses and less repair labor.



ORDERING SCHEMATIC

| Model No | Size | Body Mat'l | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------|------|------------|---|---|---|---|---|---|---|---|---|----|----|----|
| | | | | | | | | | | | | | | |

| | Model |
|------|---------------|
| 60HP | High Pressure |

| | Size |
|-----|---------------|
| 025 | 1/4" (DN8) |
| 038 | 3/8" (DN10) |
| 050 | 1/2" (DN15) |
| 075 | 3/4" (DN20) |
| 100 | 1" (DN25) |
| 125 | 1-1/4" (DN32) |
| 150 | 1-1/2" (DN40) |
| 200 | 2" (DN50) |
| 250 | 2-1/2" (DN65) |
| 300 | 3" (DN80) |
| 400 | 4" (DN100) |

| | Body Material |
|----|-------------------------|
| DI | Ductile Iron |
| BR | Bronze (1/4" - 2") |
| CS | Carbon Steel |
| S6 | Stainless Steel |
| CI | Cast Iron (2-1/2" - 4') |

| 1 & 2 | End Connections |
|-------|--------------------------------|
| | 1/4" - 2" MK60/61 |
| PT | NPT |
| BT | BSPT |
| BP | BSPP |
| SW | FSW |
| F1 | 125# IFE (Except IFE) |
| I5 | 150# IFE |
| F5 | 150# FE (Except IFE) |
| F2 | 250#FE (Except IFE) |
| I3 | 300# IFE |
| F3 | 300# FE (Except IFE) |
| | 2-1/2" - 4" MK60 |
| I1 | 125# IFE |
| I5 | 150# IFE |
| I2 | 250# IFE |
| I3 | 300# IFE |
| I7 | PN10 DIN IFE (CS/S6) DN15-150 |
| I6 | PN16 DIN IFE (CS/S6) DN15-150 |
| I8 | PN25 DIN IFE (CS/S6) DN15-150 |
| I4 | PN 40 DIN IFE (CS/S6) DN15-150 |

| 3 & 4 | Trim |
|-------|------------------------|
| S3 | 303SS |
| S6 | 316SS |
| I3 | 303SSF/IFE (1/2" - 2") |
| I6 | 316SSF/IFE (1/2" - 2") |

| 5 | Seat Material |
|---|----------------------|
| A | 303SST (1/4" - 2") |
| B | 316SST (1/4" - 2") |
| Q | 303SST/Teflon Coated |
| R | 316SST/Teflon Coated |
| V | 303SS/Jorcote |
| W | 316SS/Jorcote |

| 6 | Cv (Kv) | | |
|---|-------------|--------------------|------------|
| 1 | 0.21 (0,28) | 9 | 15 (12,9) |
| 2 | 0.42 (0,36) | A | 25 (21,6) |
| 3 | 0.84 (0,72) | B | 30 (25,9) |
| 4 | 1.6 (1,4) | D* | 55 (47,4) |
| 5 | 2.5 (2,2) | F* | 85 (73,3) |
| 6 | 4.4 (3,8) | G* | 115 (99,1) |
| 7 | 6.4 (5,5) | I* | 200 (172) |
| 8 | 9.5 (8,2) | * 2-1/2" - 4" only | |

| 7 & 8 | MK60HP Spring Range PSI (Bar) | | |
|-------|-------------------------------|-------------|--------------|
| | 1/2" - 2" | 2-1/2" - 4" | |
| A1 | 75-190 (5-13) | 71 | 30-75 (2-5) |
| A7 | 100-320 (7-22) | 98 | 65-110 (4-8) |
| A9 | 150-450 (10-31) | | |

| 9 & 10 | Diaphragm |
|--------|----------------------------|
| S6 | 316SST |
| VI | Viton |
| BN | Buna-N (standard above 2") |
| JL | Jorlon |

| 11 & 12 | Actuator |
|---------|-----------------------------|
| MD | DI for Metal Diaphragm |
| ED | DI for Elastomer Diaphragm |
| SM | 316 for Metal Diaphragm |
| SE | 316 for Elastomer Diaphragm |

MARK 60HP HIGH PRESSURE SELF-OPERATED PRESSURE REGULATORS

Jordan Valve offers a full range of pressure regulators in addition to the Mark 60 Self-Operated Pressure Regulator

Mark 62 Internally Piloted Pressure Regulator

The Mark 62 is a specialty valve designed for critical application regulation in locations where space is limited. Small and lightweight in design, the Mark 62 valve provides the accuracy of a piloted valve with the size, weight, and appearance of a single, self-operated valve.



Mark 63/64 Differential Pressure Regulators

The Mark 63 is designed to maintain a constant differential between the pressure on the discharge side of the regulator and the signal pressure loaded on the diaphragm. The Mark 64 provides the same flow capacity as the Mark 63 but with less offset in controlled pressure due to a larger diaphragm.



Mark 65 Vacuum Regulators

The Mark 65 vacuum regulators control very accurately and shutoff tightly to maintain the proper vacuum setting. They are used to maintain vacuums at predetermined settings and to regulate vacuums on evaporators, cookers, grinding fixtures, milking machines, altitude chambers and other vacuum systems.



Mark 66 Air-Loaded Pressure Regulators

The Mark 66 is a highly accurate and economical air loaded pressure regulator that provides regulation from a local station or from a remote station. The operation of the MK66 requires no control spring or pilot. Instead, a static signal is applied to the top of the diaphragm to determine the setpoint.



Mark 67 Pilot-Operated Pressure Regulators

The Mark 67 is for critical pressure reducing applications and provides a greater accuracy and lower offset than can be achieved with a self-operated regulator. Because of its versatility in control, and its accuracy, the Mark 67 can be used in a wide variety of applications including: controlling the pressure of gaseous oxygen to furnaces at steel mills, controlling pressure of sealing oil on turbines, and pressure control on steam mains and distribution lines.



Mark 68G Pressure Regulator

The Mark 68G is a globe-style pressure reducing regulating valve that offers high capacity, accurate regulation, and easy servicing, making it the ideal choice for your industrial-grade pressure reducing applications.



Mark 68HP High Pressure Regulating Valve

The Mark 68HP is designed primarily for high pressure steam service as commonly found in power plants, refineries, pulp & paper mills, and other high pressure process applications.



Jordan Valve a division of Richards Industries
 3170 Wasson Road • Cincinnati, OH 45209
 513.533.5600 • 800.543.7311 • 513.871.0105 (f)
 jordan@richardsind.com • www.jordanvalve.com