

Mallard Control Control Valves



Excellence In
Flow Control

Mallard Model 5100 Freezeless Control (Dump) Valve

Features

- > Compact valve size
- > Stainless steel trim
- > Threaded process connections
- > NACE MR0175 compliance option

Specifications

- Process connections
 1" MNPT x 1/2" FNPT
 1" MNPT x 1" FNPT
 2" MNPT x 1" FNPT
- Body Style: "Freezeless" angle
- Maximum operating pressure
 2220 psig at 100°F (38°C)
- Operating temperature range
 -40° to 200°F (-40° to 93°C)
- Actuator
 Air supply connection: 1/4" FNPT
 Action: Reverse (fail close)
 Effective area: 35 sq. in.
 Maximum supply pressure
 50 psig
- Trim characteristic
 Quick opening (on/off)
- Port diameter / Flow coefficient (C_v)
 0.38"/4.8 C_v 0.50"/8.3 C_v

The model 5100 "freezeless" dump valve is perfectly suited for fluid control in oil and gas separators and other process vessels. The valve body

design allows the plug and seat to be constantly submerged in the process media, thus giving the valve its "freezeless" characteristic.

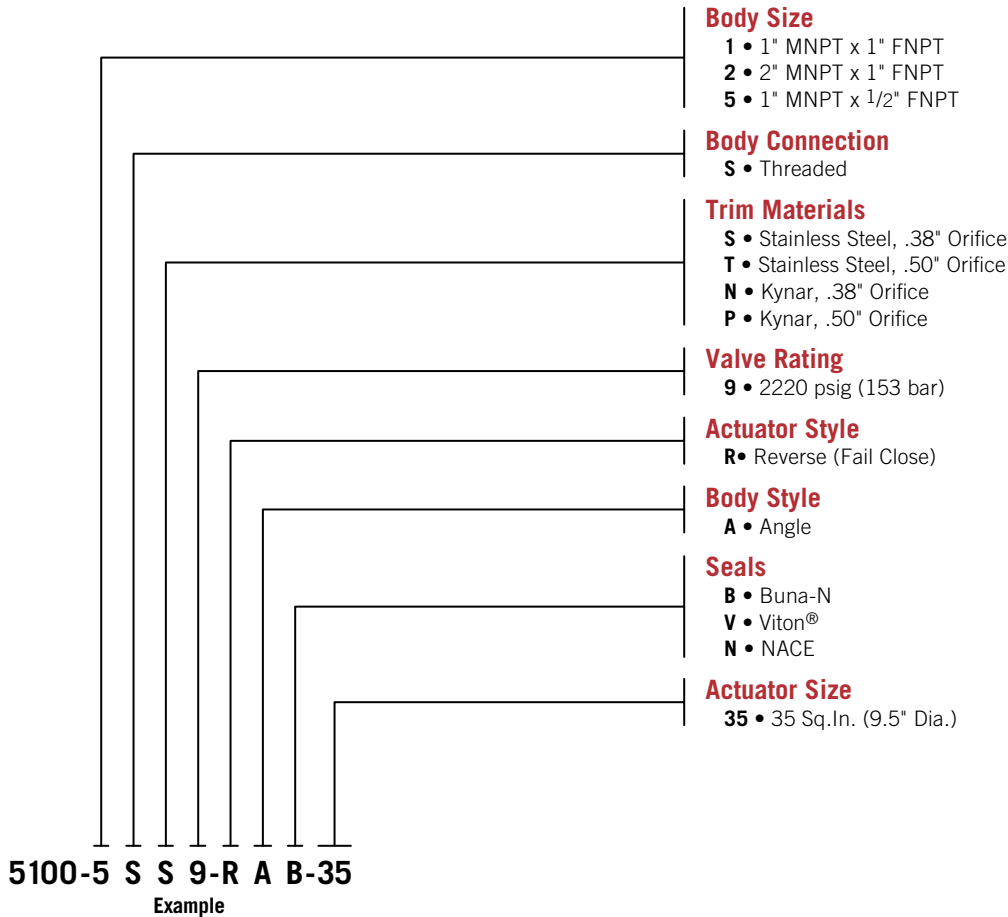


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Mallard Model 5100 Freezeless Control (Dump) Valve

Part Number Codes



Materials of Construction

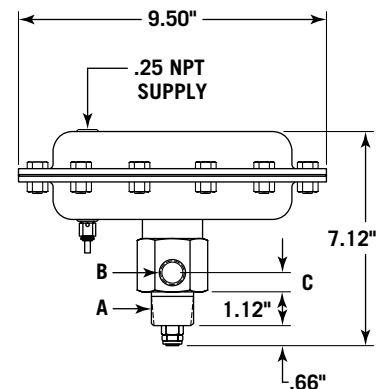
| Description | Material |
|------------------|--|
| Liquid Chamber | Carbon Steel (Std.) |
| Cover | Carbon Steel |
| Body | Low Temp Carbon Steel |
| Plug | 302 Stainless Steel |
| Seat | 304 Stainless Steel Kynar (Opt.) |
| Valve Stem | 303 Stainless Steel, 316 Stainless Steel (Opt.) |
| Seals | Buna-N, Viton® (Optional) |
| Actuator Housing | Steel |

Approximate Weight (lbs., kg)

| Process Connection | Weight | |
|-----------------------|--------|------|
| | (lbs.) | (kg) |
| 1.00 MNPT x 0.50 FNPT | 13.5 | 6.1 |
| 1.00 MNPT x 1.00 FNPT | 14.5 | 6.6 |
| 2.00 MNPT x 1.00 FNPT | 14.5 | 6.6 |

Dimensional Data (in., mm)

| Body Size Code | Dimension (in.) | | | Dimension (mm) | | |
|----------------|-----------------|----------|------|----------------|----------|------|
| | A (MNPT) | B (FNPT) | C | A (MNPT) | B (FNPT) | C |
| 1 | 1.00 | 1.00 | 0.75 | 25.4 | 25.4 | 19.1 |
| 2 | 2.00 | 1.00 | 0.75 | 50.8 | 25.4 | 19.1 |
| 5 | 1.00 | 0.50 | 0.63 | 25.4 | 12.7 | 16.0 |



Mallard Model 5126/5127 “Freezeless” Control (Dump) Valve

Features

- > Simple maintenance: Valve trim or the complete actuator assembly can be quickly changed by simply removing the hammer nut and lifting the actuator assembly off the valve body. Disassembly of the actuator or removal of the valve from the line is not required. No special tools are required.
- > Simple installation: Compact, lightweight design enables quick, easy installation with minimal labor requirements.
- > Variety of valve trims: Available in stainless steel (standard) or tungsten carbide (optional) trim material, size 1/4", 3/8" or 1/2".
- > Bonnet safety pressure relief: Special design of hammer nut provides warning indication if an attempt is made to remove the actuator while the valve body is still under pressure.
- > Variety of actuators: The spring-opposed diaphragm actuator is available in adjustable and non-adjustable configurations for either reverse (fail close) or direct (fail open) acting applications.
- > Marine option: Makes this dump valve ideally suited for harsh marine environments where corrosion and salt build-up are a problem. A combination of stainless steel parts and special actuator preparation makes the “marine option” a valuable feature.
- > Materials of construction that comply with NACE MR0175 specifications are available upon request.

The model 5126/5127 "freezeless" dump valve is designed for fluid control in oil and gas separators and other process vessels. The valve

body design allows the plug and seat to be constantly submerged in the process media, thus giving the valve its "freezeless" characteristic.



Specifications

Body style: Angle
 Process connections: 2" MNPT x 1" FNPT
 Pressure rating: 1500 psig at 100°F (38°C)
 Maximum differential pressure: 1500 psig
 Assembled valve temperature range
 -40 to 200°F (-40° to 93°C)
 ANSI leakage rating: Class IV

Model 5126 Flow Coefficients (C_v)

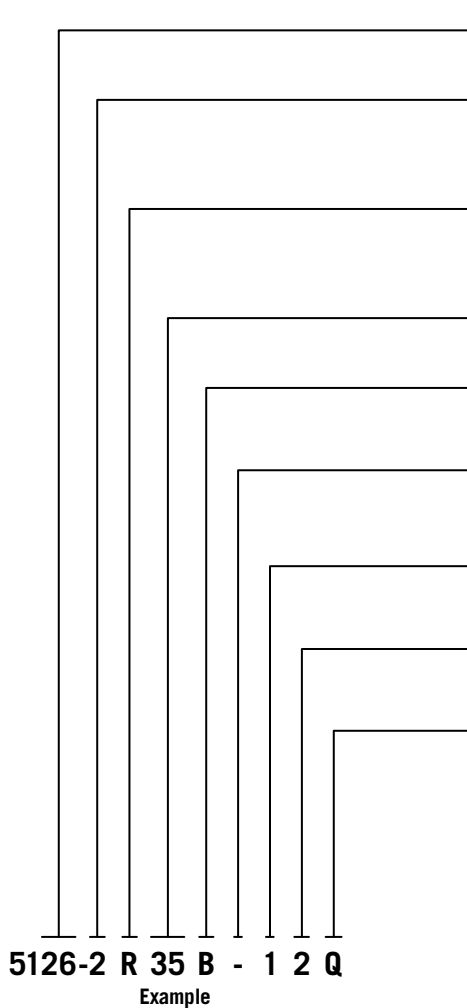
| Trim Size (in.) | Trim Characteristic | |
|-----------------|---------------------|--------------|
| | Quick Opening | Mod. Percent |
| 1/4 | 1.4 | 1.3 |
| 3/8 | 2.0 | 1.9 |
| 1/2 | 2.3 | 2.2 |

Approx. Weight w/Actuator (lbs., kg)

| Actuator Size | Weight | |
|---------------|--------|------|
| | (lbs.) | (kg) |
| No. 35 | 25 | 11.3 |
| No. 70 | 35 | 15.8 |

Mallard Model 5126/5127 "Freezeless" Control (Dump) Valve

Part Number Codes



5126-2 R 35 B - 1 2 Q
Example

Threads

26 • Internal & External Threads **27** • External Threads

Process Connection

2 • 2" MNPT x 1" FNPT

Actuator Type

B • Direct Acting (Fail Open) Non-adjustable
C • Reverse Acting (Fail Close) Non-adjustable
D • Direct Acting (Fail Open) Adjustable (5126 Only)
R • Reverse Acting (Fail Close) Adjustable

Actuator Size

35 • No. 35 **70** • No. 70

Seal Material

B • Buna **V** • Viton®

Materials of Construction

– • CS, Std. Service **N** • CS, NACE Option
M • CS, Marine Option **R** • CS, Marine, NACE Options

Trim Material

1 • 17-4PH SS (5126 Only) **3** • 316SS (5127 Only)
2 • Tungsten Carbide

Trim Size

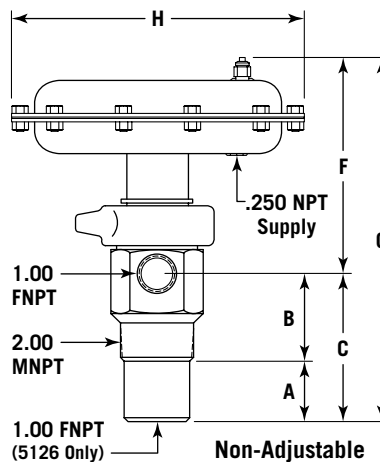
2 • 1/4" **3** • 3/8" **4** • 1/2"

Trim Characteristic

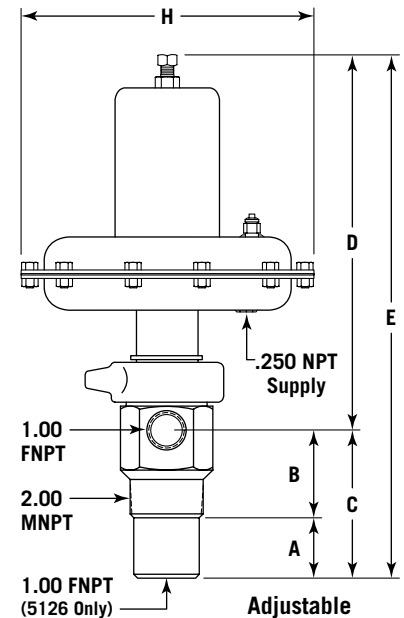
Q • Quick Opening (On/Off)
M • Modified Percent (Throttling, 5126 Only)

Materials of Construction

| Description | Material |
|-----------------|---|
| Valve Body | Low Temp Carbon Steel |
| Bonnet | Carbon Steel |
| Hammer Nut | Carbon Steel |
| Trim | 17-4PH Stainless Steel, Tungsten Carbide (Opt.) |
| Valve Stem | 303 Stainless Steel, 316 Stainless Steel (Opt.) |
| Packing | PTFE V-Ring |
| Seals | Buna, Viton® (Opt.) |
| Diaphragm | Steel |
| Housings | |
| Diaphragm | Buna Reinforced with Nylon Fabric |
| Actuator Spring | Steel |



Non-Adjustable



Adjustable

Dimensional Data (in., mm)

| Model | Dimension (in.) | | | | | | | |
|----------------|-----------------|--------|--------|--------|--------|--------|--------|-------|
| | A | B | C | D Max. | E Max. | F Max. | G Max. | H |
| 5126 | 3.00 | 2.88 | 5.88 | 13.5 | 19.38 | 9.25 | 15.13 | 9.5 |
| 5127 | 1.75 | 2.88 | 4.62 | 14.0 | 18.62 | 9.25 | 13.87 | 9.5 |
| Dimension (mm) | | | | | | | | |
| 5126 | 76.20 | 731.15 | 149.35 | 342.9 | 492.25 | 234.95 | 384.3 | 241.3 |
| 5127 | 44.45 | 731.15 | 117.35 | 356.0 | 472.95 | 234.95 | 352.3 | 241.3 |

Mallard Model 5300 3-Way Control Valve

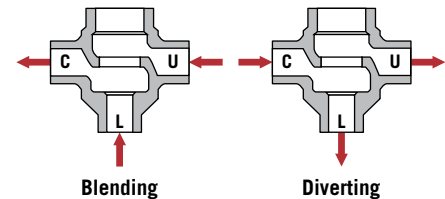
Features

- > Variety of end connections: Available with female NPT threaded connections, or flanged connections from ANSI 150 to ANSI 1500. ANSI ratings above class 600 are available in either raised face (RF) or ring joint (RTJ) style flange facing.
- > Simple maintenance: Valve trim or the complete actuator assembly can be quickly changed by simply removing the hammer nut and lifting the actuator assembly off the valve body. Disassembly of the actuator or removing the valve from the line is not required. No special tools are required.
- > Valve trim is available in solid 316 stainless steel or 316 stainless steel with TFE plug inserts for positive shut-off.
- > Comes complete with a spring opposed diaphragm actuator which can be set up to fail to the lower or upper port.

Specifications

- Body style: 1"
- End connections: FNPT
- Available trim sizes
 - 1" full port
 - 3/4" x 3/8" blow case
- Flow characteristic
 - Quick opening (on/off)
- Pressure rating
 - 4000 psig at 100°F (38°C)
- Assembled valve temperature range
 - 20 to 200°F (-29 to 93°C)

The model 5300 is designed to withstand the severe service applications common to the oil and gas industry. It can be installed in converging (blender) or diverging (diverter) flow configurations. The ease of maintenance and rugged steel construction make the model 5300 a perfect choice for a wide variety of 3-way valve applications.



Materials of Construction

| Description | Material |
|------------------|---------------------------------------|
| Valve Body | Carbon Steel |
| Bonnet | Carbon Steel |
| Hammer Nut | Carbon Steel |
| Seat/Cage | 316 Stainless Steel |
| Plug | Solid 316 Stainless Steel |
| Valve Stem | 303 Stainless Steel, 316SS (Optional) |
| Packing | PTFE V-Ring |
| Seals | Buna-N, Viton® (Optional) |
| Actuator Housing | Steel |
| Diaphragm | Nylon-Reinforced Nitrile |
| Actuator Spring | Steel |

Max. Allowable Shutoff Pressure Drops

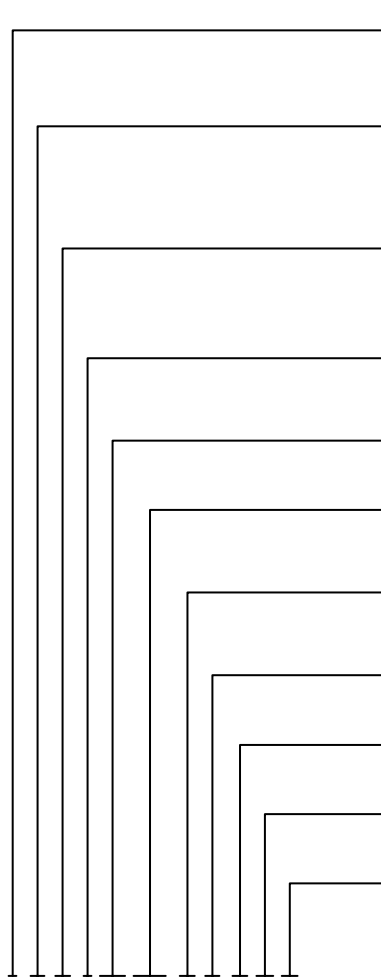
| Trim Size (in.) | Actuator Size | Max. Press. Drop (psid) 1" Valve Body | |
|-----------------|---------------|---------------------------------------|----------|
| | | Diverting | Blending |
| 1 | No. 35 | 800 | 400 |
| 3/4 x 3/8 | | 1300 | 1300 |
| 1 | No. 70 | 1000 | 800 |

Flow Coefficients (C_v)

| Trim Size (in.) | Flow Direction | Flow Co. (C _v) 1" Valve Body |
|-----------------|----------------|--|
| 1 | C-U | 9.0 |
| | C-L | 12.5 |
| 3/4 x 3/8 | C-U | 7.7 |
| | C-L | 3.2 |

Mallard Model 5300 3-Way Control Valve

Part Number Codes



5300-1 S 5 - W 70 R B-3 A Q
Example

Body Size

1 • 1"

End Connections

S • Female NPT
F • Raised Face (RF) Flange
J • Ring Type Joint (RTJ) Flange

ANSI Class (Pressure Rating)

1 • ANSI 150 6 • ANSI 600
3 • ANSI 300 9 • ANSI 900
5 • ANSI 1500 FNPT Ends (4000 psi @ 200°F)

Materials of Construction

– • WCC Steel, Standard Service
N • WCC Steel, NACE MR0175

Body Style

W • 3-Way

Actuator Size

35 • No. 35 70 • No. 70

Actuator Type

D • Direct Acting (Fails to Lower Port)
R • Reverse Acting (Fails to Upper Port)

Seal Material

B • Buna-N V • Viton®

Trim Material

3 • Solid 316 Stainless Steel

Trim Size

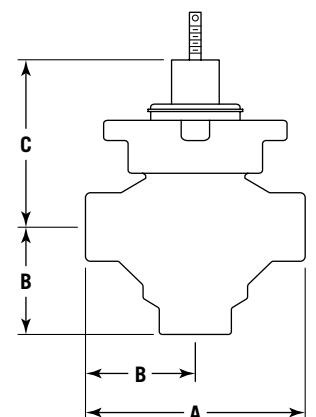
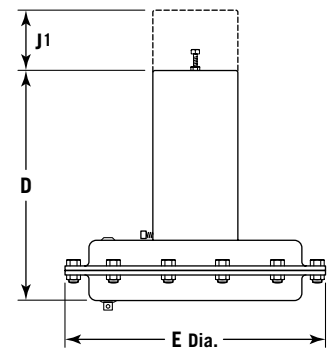
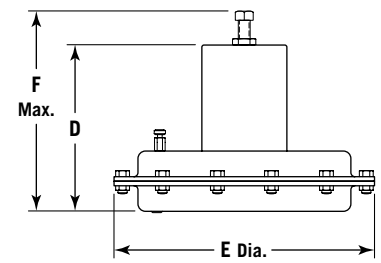
A • Full Port C • 3/4" x 3/8" Blow Case Trim

Trim Characteristic

Q • Quick Opening (On/Off)

Diaphragm Effective Area & Housing Max. Pressure

| Actuator Size | Diaphragm Effective Area | Housing Max. Pressure |
|---------------|--------------------------|-----------------------|
| No. 35 | 35 in. ² | 50 psig |
| No. 70 | 70 in. ² | 35 psig |



Valve & Actuator Dimensional Data (in., mm)

| End Connection | Dimension (in.) 1" Valve Body | | |
|----------------|----------------------------------|--------|--------|
| | A | B | C |
| NPT | 6.25 | 3.12 | 4.62 |
| 150 RF | 7.25 | 3.62 | 4.62 |
| 300 RF | 7.75 | 3.88 | 4.62 |
| 600 RF/RTJ | 8.25 | 4.12 | 4.62 |
| 900 RF/RTJ | 9.38 | 4.69 | 4.62 |
| 1500 RF/RTJ | 9.38 | 4.69 | 4.62 |
| Dimension (mm) | | | |
| NPT | 158.75 | 79.25 | 117.35 |
| 150 RF | 184.15 | 91.95 | 117.35 |
| 300 RF | 196.85 | 98.55 | 117.35 |
| 600 RF/RTJ | 209.55 | 104.65 | 117.35 |
| 900 RF/RTJ | 238.25 | 119.13 | 117.35 |
| 1500 RF/RTJ | 238.25 | 119.13 | 117.35 |

| Actuator Size | Dimension (in.) Direct Acting | | |
|---------------------------------|----------------------------------|-------|-------|
| | D | E | J1 |
| No. 35 | 11.25 | 9.50 | 5.50 |
| No. 70 | 13.75 | 12.50 | 7.00 |
| Reverse Acting (in.) | | | |
| No. 35 | 9.25 | 9.50 | 11.25 |
| No. 70 | 11.50 | 12.50 | 13.50 |
| Dimension (mm) Direct Acting | | | |
| No. 35 | 285.75 | 241.3 | 139.7 |
| No. 70 | 349.25 | 317.5 | 177.8 |
| Reverse Acting (mm) | | | |
| No. 35 | 234.95 | 241.3 | 285.8 |
| No. 70 | 292.10 | 317.5 | 342.9 |

¹ Clearance required for spring removal.

Mallard Open Yoke & Close-Coupled Control (Dump) Valves

Features

- > Simple maintenance: Valve trim or the complete actuator assembly can be quickly changed by simply removing the hammer nut and lifting the actuator assembly off the valve body. Disassembly of the actuator or removing the valve from the line is not required. No special tools are required.
- > Compact, lightweight design enables quick, easy installation with minimum labor requirements.
- > Bonnet safety pressure relief: Special design of hammer nut provides warning indication if an attempt is made to remove the actuator while the valve body is still under pressure.
- > Hardened trim: Control valve trim is available in stainless steel or tungsten carbide to handle the most difficult applications.
- > Bi-directional flow: Valve can be installed for either "flow up" or "flow down" operation, whichever best suits the application.
- > Marine and/or sour gas service option: For harsh marine environments where corrosion and salt build-up are a problem, select "marine service" material option in the valve's model code. Ideal for offshore or coastal production facilities. For sour gas applications, materials are available that comply with NACE MRO175 specifications.

Models 5400 open yoke and 5450 close-coupled control (dump) valves are designed to meet the high pressure and erosive applications common to the oil and gas industry. These valves are ideally suited for pressure, level, temperature, and flow control applications on

separators, scrubbers, wellheads and other oilfield equipment. The ease of maintenance, rugged steel construction, flexibility to meet a wide variety of applications, and safety features make models 5400/5450 control valves the preferred choice of production operators worldwide.



Model 5450
w/tee body

Shown in "straight-through" flow configuration



Model 5400
w/globe body

Specifications

Available configurations

- Open yoke (model 5400)
- Fail-open or fail-close
- Close-coupled (model 5450)
- Fail-open or fail-close

Flow characteristic

- Modified percent (throttling)
- Quick opening (on/off)

Body styles

- Globe (1" & 2"), angle (2" only)
- & tee (1" only)

End connections

- FNPT, flanged, socket weld & butt weld

Pressure ratings

- 4000 psig from -40 to 200°F (-40 to 93°C)
- 3540 psig at 500°F (260°C)

Assembled valve temperature range

- Model 5400/5450: -40 to 500°F (-40 to 260°C)

Available trim sizes: 1/4", 3/8", 1/2", 3/4" & 1"

Shutoff classification: ANSI class IV

(Stainless steel or tungsten carbide trim)

Flow direction

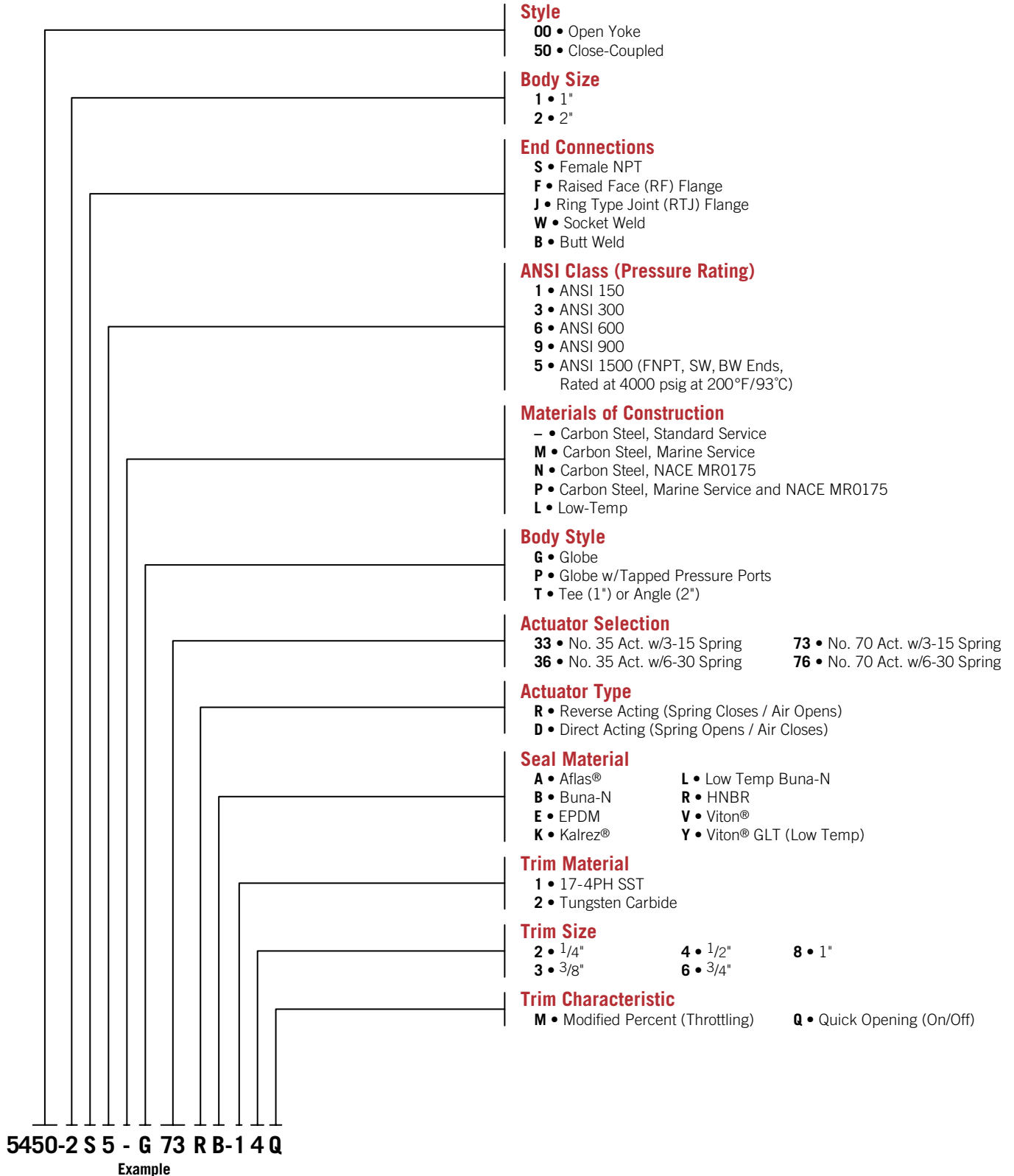
- Either direction, to suit the application
- Flow up (under the seat) recommended for throttling applications

Air pressure to actuator

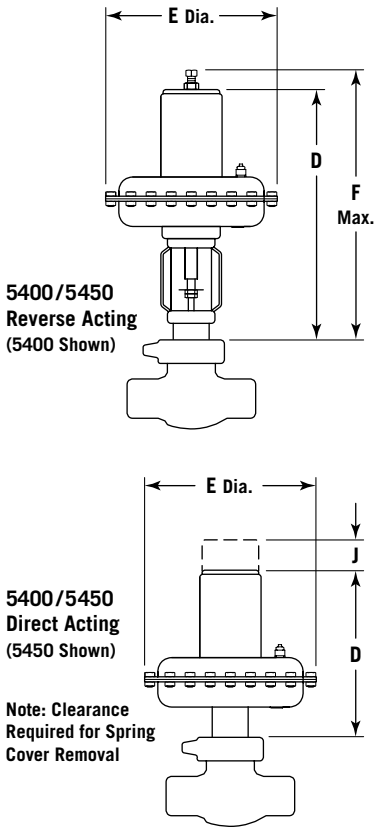
- 3-15 spring
- 0 to 20 psig control signal recommended
- 6-30 spring
- 0 to 35 psig control signal recommended

Model 5400/5450 Open Yoke & Close-Coupled Control (Dump) Valves

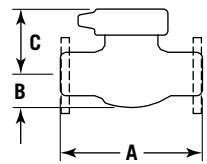
Part Number Codes



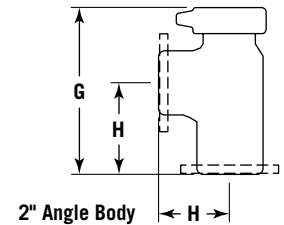
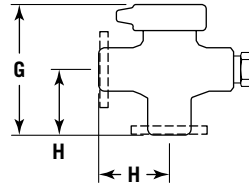
Model 5400/5450 Open Yoke & Close-Coupled Control (Dump) Valves



1" & 2" Globe Body



1" Tee Body



Valve & Actuator Dimensional Data (in., mm)

| End Connection | Dimension (in.) | | | | | | | | | |
|----------------|-----------------|------|------|---------------|------|------|-------------|------|---------------|------|
| | 1" Globe Body | | | 2" Globe Body | | | 1" Tee Body | | 2" Angle Body | |
| | A | B | C | A | B | C | G | H | G | H |
| NPT | 6.25 | 1.56 | 3.69 | 7.50 | 1.69 | 3.69 | 6.82 | 3.13 | 7.44 | 3.75 |
| 150RF | 7.25 | 1.56 | 3.69 | 10.00 | 1.69 | 3.69 | 7.32 | 3.63 | 8.69 | 5.00 |
| 300RF | 7.75 | 1.56 | 3.69 | 10.50 | 1.69 | 3.69 | 7.57 | 3.88 | 8.94 | 5.25 |
| 600RF | 8.25 | 1.56 | 3.69 | 11.25 | 1.69 | 3.69 | 7.82 | 4.13 | 9.31 | 5.63 |
| 600RTJ | 8.25 | 1.56 | 3.69 | 11.38 | 1.69 | 3.69 | 7.82 | 4.13 | 9.38 | 5.69 |
| 900/1500RF | 9.38 | 1.56 | 3.69 | 12.88 | 1.69 | 3.69 | 8.38 | 4.69 | 10.13 | 6.44 |
| 900/1500RTJ | 9.38 | 1.56 | 3.69 | 13.00 | 1.69 | 3.69 | 8.38 | 4.69 | 10.19 | 6.50 |

| End Connection | Dimension (mm) | | | | | | | | | |
|----------------|----------------|------|------|---------------|------|------|-------------|-------|---------------|-------|
| | 1" Globe Body | | | 2" Globe Body | | | 1" Tee Body | | 2" Angle Body | |
| | A | B | C | A | B | C | G | H | G | H |
| NPT | 158.8 | 39.6 | 93.7 | 190.5 | 42.9 | 93.7 | 173.2 | 79.5 | 189.0 | 95.3 |
| 150RF | 184.2 | 39.6 | 93.7 | 254.0 | 42.9 | 93.7 | 185.9 | 92.2 | 220.7 | 127.0 |
| 300RF | 196.9 | 39.6 | 93.7 | 266.7 | 42.9 | 93.7 | 192.3 | 98.6 | 227.1 | 133.4 |
| 600RF | 209.6 | 39.6 | 93.7 | 285.8 | 42.9 | 93.7 | 198.6 | 104.9 | 236.5 | 143.0 |
| 600RTJ | 209.6 | 39.6 | 93.7 | 289.1 | 42.9 | 93.7 | 198.6 | 104.9 | 238.3 | 144.5 |
| 900/1500RF | 238.3 | 39.6 | 93.7 | 327.2 | 42.9 | 93.7 | 212.9 | 119.1 | 257.3 | 163.6 |
| 900/1500RTJ | 238.3 | 39.6 | 93.7 | 330.2 | 42.9 | 93.7 | 212.9 | 119.1 | 258.8 | 165.1 |

Diaphragm Effective Area & Housing Max. Pressure

| Actuator Size | Diaphragm Effective Area | Housing Max. Pressure |
|---------------|--------------------------|-----------------------|
| No. 35 | 35 in. ² | 50 psig |
| No. 70 | 70 in. ² | 35 psig |

| Actuator Size | Dimension (in.) | | | | | | | | | | | |
|---------------|-----------------|-------|----------------|--------------|-------|-------|-------------|-------|----------------|--------------|-------|-------|
| | 5400 Direct | | | 5400 Reverse | | | 5450 Direct | | | 5450 Reverse | | |
| | D | E | J ¹ | D | E | F | D | E | J ¹ | D | E | F |
| No. 35 | 17.06 | 9.50 | 5.50 | 14.31 | 9.50 | 16.31 | 11.44 | 9.50 | 5.50 | 8.69 | 9.50 | 10.69 |
| No. 70 | 18.56 | 12.50 | 7.00 | 15.44 | 12.50 | 17.44 | 12.94 | 12.50 | 7.00 | 9.81 | 12.50 | 11.81 |

| Actuator Size | Dimension (mm) | | | | | | | | | | | |
|---------------|----------------|-------|----------------|--------------|-------|-------|-------------|-------|----------------|--------------|-------|-------|
| | 5400 Direct | | | 5400 Reverse | | | 5450 Direct | | | 5450 Reverse | | |
| | D | E | J ¹ | D | E | F | D | E | J ¹ | D | E | F |
| No. 35 | 433.3 | 241.3 | 139.7 | 363.5 | 241.3 | 414.3 | 290.6 | 241.3 | 139.7 | 220.7 | 241.3 | 271.5 |
| No. 70 | 471.4 | 317.5 | 177.8 | 392.2 | 317.5 | 443.0 | 328.7 | 317.5 | 177.8 | 249.2 | 317.5 | 300.0 |

¹Clearance required for spring removal.

Approximate Weights (lbs., kg)

| End Connection | Model 5400 / Weights (lbs., kg) | | | | | | | | | | | | | | | |
|----------------|---------------------------------|------|--------|------|----------|------|----------|------|-----------------|------|--------|------|----------|------|----------|------|
| | No. 35 Actuator | | | | | | | | No. 70 Actuator | | | | | | | |
| | 1" Globe | | 1" Tee | | 2" Globe | | 2" Angle | | 1" Globe | | 1" Tee | | 2" Globe | | 2" Angle | |
| | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg |
| NPT | 29 | 13.2 | 32 | 14.5 | 36 | 16.3 | 36 | 16.3 | 44 | 20.0 | 47 | 21.3 | 51 | 23.1 | 51 | 23.1 |
| ANSI 150 | 34 | 15.4 | 38 | 17.2 | 46 | 20.9 | 46 | 20.9 | 49 | 22.2 | 53 | 24.0 | 61 | 27.7 | 61 | 27.7 |
| ANSI 300 | 37 | 16.8 | 41 | 18.6 | 50 | 22.7 | 50 | 22.7 | 52 | 23.6 | 56 | 25.4 | 65 | 29.5 | 65 | 29.5 |
| ANSI 600 | 39 | 17.7 | 43 | 19.5 | 52 | 23.6 | 52 | 23.6 | 54 | 24.5 | 58 | 26.3 | 67 | 30.4 | 67 | 30.4 |
| ANSI 900/1500 | 46 | 20.9 | 51 | 23.1 | 80 | 36.3 | 80 | 36.3 | 61 | 27.7 | 66 | 29.9 | 95 | 43.1 | 95 | 43.1 |

| End Connection | Model 5450 / Weights (lbs., kg) | | | | | | | | | | | | | | | |
|----------------|---------------------------------|------|--------|------|----------|------|----------|------|----------|------|--------|------|----------|------|----------|------|
| | 1" Globe | | 1" Tee | | 2" Globe | | 2" Angle | | 1" Globe | | 1" Tee | | 2" Globe | | 2" Angle | |
| | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg | lbs. | kg |
| NPT | 25 | 11.3 | 28 | 12.7 | 32 | 14.5 | 32 | 14.5 | 40 | 18.1 | 43 | 19.6 | 47 | 21.3 | 47 | 21.3 |
| ANSI 150 | 30 | 13.6 | 34 | 15.4 | 42 | 19.1 | 42 | 19.1 | 45 | 20.4 | 49 | 22.2 | 57 | 25.9 | 57 | 25.9 |
| ANSI 300 | 33 | 15.0 | 37 | 16.8 | 46 | 20.9 | 46 | 20.9 | 48 | 21.8 | 52 | 23.6 | 61 | 27.7 | 61 | 27.7 |
| ANSI 600 | 35 | 15.9 | 39 | 17.7 | 48 | 21.8 | 48 | 21.8 | 50 | 22.7 | 54 | 24.5 | 63 | 28.6 | 63 | 28.6 |
| ANSI 900/1500 | 42 | 19.1 | 47 | 21.3 | 76 | 34.5 | 76 | 34.5 | 57 | 25.9 | 62 | 28.1 | 91 | 41.3 | 91 | 41.3 |

Model 5400/5450 Open Yoke & Close-Coupled Control (Dump) Valves

Actuator Maximum Allowable Shutoff Pressure Drops, Reverse Acting (Fail Close)

| Trim Size (in.) | Flow Direction | Signal to No. 35 Actuator | | | | Signal to No. 70 Actuator | | | |
|-----------------|----------------|---------------------------|-----------|-------------|-----------|---------------------------|-----------|-------------|-----------|
| | | 3-15 Spring | | 6-30 Spring | | 3-15 Spring | | 6-30 Spring | |
| | | 3-15 psig | 0-20 psig | 6-30 psig | 0-35 psig | 3-15 psig | 0-20 psig | 6-30 psig | 0-35 psig |
| .25 | Up | 3800 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| .38 | | 2050 | 3280 | 3410 | 4000 | 3210 | 4000 | 4000 | 4000 |
| .50 | | 1100 | 1680 | 1830 | 2300 | 1650 | 3190 | 4000 | 4000 |
| .75 | | 320 | 560 | 690 | 950 | 530 | 940 | 2020 | 2800 |
| 1 | | 110 | 220 | 320 | 490 | 230 | 420 | 960 | 1460 |
| .25 | Down | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| .38 | | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| .50 | | 3350 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |
| .75 | | 1580 | 2300 | 2530 | 3270 | 2080 | 2800 | 3780 | 4000 |
| 1 | | 770 | 1100 | 1240 | 1680 | 970 | 1460 | 2510 | 2950 |

Actuator Maximum Allowable Shutoff Pressure Drops, Direct Acting (Fail Open)

| Trim Size (in.) | Flow Direction | Signal to No. 35 Act. ¹ | | Signal to No. 70 Act. ¹ | | Flow Direction | Signal to No. 35 Act. ¹ | | Signal to No. 70 Act. ¹ | |
|-----------------|----------------|------------------------------------|-------------|------------------------------------|-------------|----------------|------------------------------------|-------------|------------------------------------|-------------|
| | | 3-15 Spring | 6-30 Spring | 3-15 Spring | 6-30 Spring | | 3-15 Spring | 6-30 Spring | 3-15 Spring | 6-30 Spring |
| .25 | Up | 4000 | 4000 | 4000 | 4000 | Down | 4000 | 4000 | 4000 | 4000 |
| .38 | | 2700 | 4000 | 4000 | 4000 | | 4000 | 4000 | 4000 | 4000 |
| .50 | | 1370 | 2880 | 2540 | 4000 | | 3800 | 4000 | 4000 | 4000 |
| .75 | | 410 | 1080 | 730 | 2020 | | 1750 | 1940 | 4000 | 4000 |
| 1 | | 140 | 520 | 230 | 960 | | 860 | 940 | 1840 | 2790 |

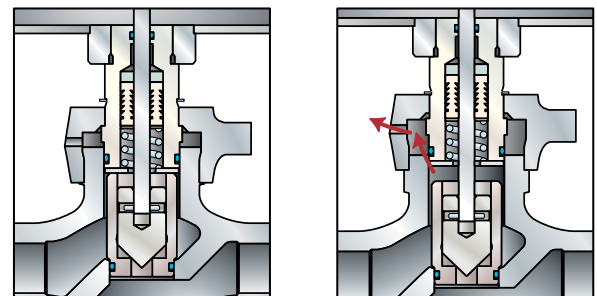
¹Actual signal pressure to actuator includes an additional 5 psig (0.3 bar) of supply pressure to the controller.

Flow Coefficients (C_v), Modified Percent & Quick Opening

| Body Size (in.) | Orifice Size (in.) | Body Style / Valve Opening (% Travel) | | | | | | | | | | | | |
|-----------------|--------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|---------------|-----------|-----------|
| | | Modified Percent Globe | | | | | | | | | | Quick Opening | | |
| | | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | Angle 100 | Globe 100 | Angle 100 |
| 1 | 0.25 | .284 | .506 | .657 | .767 | .875 | .989 | 1.10 | 1.20 | 1.32 | 1.40 | 1.64 | 1.68 | 1.92 |
| | 0.38 | .311 | .621 | .942 | 1.28 | 1.64 | 2.07 | 2.51 | 2.93 | 3.35 | 3.70 | 4.23 | 3.82 | 4.34 |
| | 0.50 | .502 | 1.05 | 1.59 | 2.09 | 2.61 | 3.14 | 3.72 | 4.27 | 4.96 | 5.62 | 6.61 | 5.70 | 6.72 |
| | 0.75 | .882 | 1.76 | 2.76 | 3.82 | 4.93 | 6.17 | 7.49 | 8.85 | 10.0 | 11.0 | 15.1 | 11.6 | 15.2 |
| | 1.00 | 1.01 | 2.02 | 3.44 | 5.07 | 6.78 | 8.42 | 10.3 | 12.4 | 14.3 | 15.4 | 20.8 | 15.5 | 20.9 |
| 2 | 0.25 | .284 | .506 | .657 | .767 | .875 | .989 | 1.10 | 1.20 | 1.32 | 1.40 | 1.66 | 1.68 | 1.98 |
| | 0.38 | .311 | .621 | .942 | 1.28 | 1.64 | 2.07 | 2.51 | 2.93 | 3.35 | 3.70 | 4.35 | 3.82 | 4.47 |
| | 0.50 | .592 | 1.17 | 1.76 | 2.34 | 2.95 | 3.70 | 4.57 | 5.50 | 5.95 | 6.08 | 6.90 | 6.19 | 7.00 |
| | 0.75 | .882 | 1.81 | 2.98 | 4.11 | 5.74 | 7.03 | 8.49 | 10.1 | 11.5 | 12.9 | 15.2 | 13.0 | 15.8 |
| | 1.00 | 1.08 | 2.12 | 3.58 | 5.43 | 7.46 | 9.27 | 11.4 | 13.7 | 15.8 | 17.1 | 21.1 | 18.0 | 22.0 |

Bonnet Safety Pressure Relief

The valve on the left shows the hammer nut in the “locked” position during normal operation. The valve on the right illustrates “Bonnet Safety Pressure Relief”. The O-Ring clears the packing plug while the hammer nut is still engaged (threaded) onto the valve body. At this point, if the valve assembly is under pressure, process fluid will escape through the weep hole to indicate a warning to the service person that the valve is still under pressure, thereby prompting him to remove line pressure before proceeding, thus preventing the actuator assembly from blowing out.



Mallard Model 3300 and 3350/3360 Pressure Controllers

The model 3300 pressure controller used in conjunction with a control valve make up a complete control loop, which reacts automatically to

changes occurring in a process and provides precise control within a set range.



Model 3300
Pressure Controller



Model 3350/3360
Pressure Controller

The model 3350/3360 design is preferred by production operators and technicians worldwide for pressure control requirements, due to its simple construction, versatility

and reliable performance in the most demanding applications. The controller is offered in proportional (model 3350) and proportional-plus-reset (model 3360) configurations.

Features

- **Wide Range of Bourdon Tubes:** Pressure ranges from 0-30 psig to 0-5000 psig are available. Two interchangeable ranges of output bellows and gauges, 3-15 psi and 6-30 psi, are also available.
- **Simple Adjustments:** High-visibility dials are provided to assure accuracy of pressure setpoint, proportional band and reset settings.
- **Easy Maintenance:** Simple controller design allows fast, easy maintenance and minimal spare parts inventory.
- **Field Reversible:** Controller action can be switched with a few simple steps. No additional parts required.
- **Easy Mode Conversion:** Add reset action to a proportional controller by simply adding a single module and three pieces of tubing.
- **Flexible Mounting Options:** Available with brackets for mounting on actuator yoke, diaphragm housing, panel surface or 2" pipestand.
- **Vibration Resistance:** Simple design and low mass of internal parts allow the controller to withstand vibration encountered in most industrial environments.
- **Low Air (Gas) Consumption:** Relay and nozzle design reduces steady-state air (gas) consumption to as low as 4.2 scfh, reducing operating costs.
- **Sour Service Capability:** Materials are available for applications handling sour gasses. These constructions comply with NACE MR0175 recommendations.

Mallard Model 3300 and 3350/3360 Pressure Controllers

Specifications,

Pressure Controllers

Maximum working pressure
Same as bourdon tube rating

Input, supply & output connections
1/4" FNPT

Controller output signal
3-15 psig, 6-30 psig

Mounting
Actuator yoke, actuator housing,
Panel & 2" pipestand

Normal operating supply pressure
3-15 psig output: 20 psig
6-30 psig output: 35 psig

Maximum allowable supply pressure
3-15 psig output: 40 psig
6-30 psig output: 40 psig

Note: If the supply gas is flammable or noxious, the controller must be located in a well ventilated, non-hazardous area. If supply pressure is exceeded, control performance may be impaired.

Supply pressure requirements
Clean dry air or non-corrosive gas

Options
NACE MR0175 compliance for H₂S service

Model 3300

Input signal (bourdon tube ranges)

| | |
|------------|-------------|
| 0-50 psig | 0-1000 psig |
| 0-100 psig | 0-1500 psig |
| 0-250 psig | 0-2500 psig |
| 0-500 psig | 0-5000 psig |

Setpoint adjustment
Internal manual adjusting knob

Controller mode
Proportional

Steady-state Air (gas) consumption
20 psig Supply: 35 scfh
35 psig Supply: 50 scfh

Model 3350/3360

Controller configurations
Proportional: Model 3350
Proportional-plus-reset: Model 3360

Input signal (bourdon tube ranges)

| | |
|------------|-------------|
| 0-30 psig | 0-600 psig |
| 0-60 psig | 0-1000 psig |
| 0-100 psig | 0-1500 psig |
| 0-200 psig | 0-3000 psig |
| 0-300 psig | 0-5000 psig |

Steady-state Air (gas) consumption

Minimum
(proportional band setting of 0 or 10)
3-15 psig output: 4.2 scfh
6-30 psig output: 7 scfh

Maximum
(proportional band setting of 5)
3-15 psig output: 27 scfh
6-30 psig output: 42 scfh

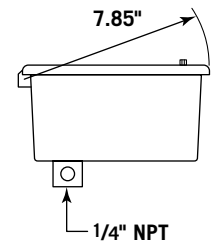
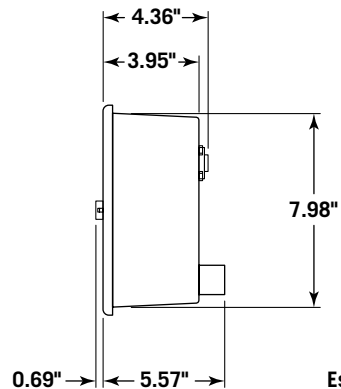
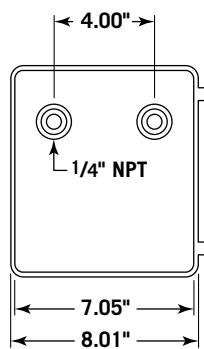
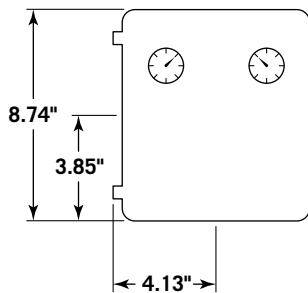
Performance
Repeatability: 0.5% of bourdon tube range
Deadband: 0.1% of output span

Controller tuning adjustment ranges
Proportional - full output

Pressure change
3-15 psig output: 6-100% of input range
6-30 psig output: 6-100% of input range

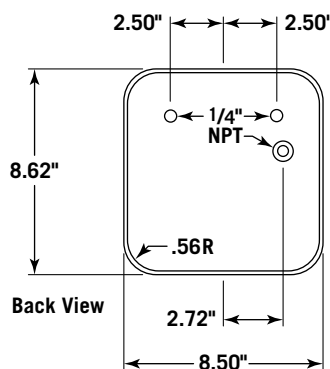
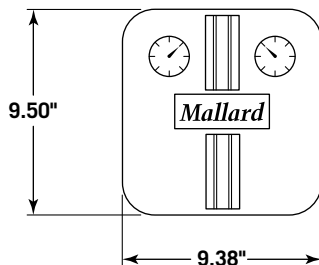
Reset:
Adjustable from 0.01 to 74 min. per repeat
(100-0.01 repeats per minute)

Mallard Model 3300



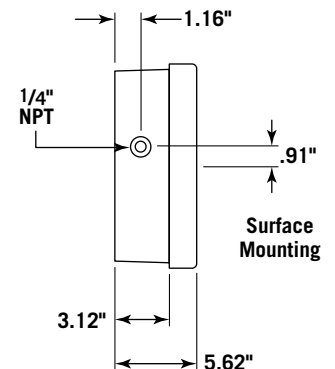
Estimated Shipping Weight 11 lbs.

Mallard Model 3350/3360



Panel Cutout Dimensions for Panel Mounting 2.50

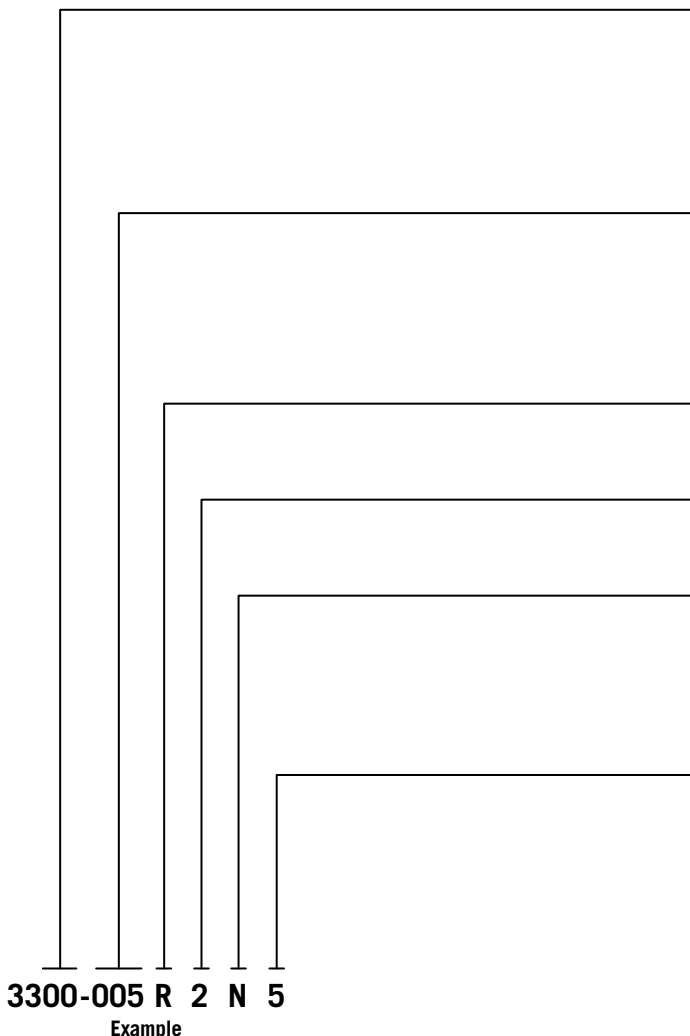
Estimated Shipping Weight 13 lbs.



Mallard Control

Mallard Pressure Controllers

Part Number Codes & Unit Action



Controller Mode

- 00 • Proportional
- 50 • Proportional
- 60 • Proportional - Plus - Reset

Input Signal Range

- | | | |
|------------------------|-----------------------------|-------------------|
| Model 3300 Only | Model 3350/3360 Only | |
| 005 • 0-50 psig | 003 • 0-30 psig | 300 • 0-3000 psig |
| 010 • 0-100 psig | 006 • 0-60 psig | 500 • 0-5000 psig |
| 025 • 0-250 psig | 010 • 0-100 psig | |
| 050 • 0-500 psig | 020 • 0-200 psig | |
| 100 • 0-1000 psig | 030 • 0-300 psig | |
| 150 • 0-1500 psig | 060 • 0-600 psig | |
| 250 • 0-2500 psig | 100 • 0-1000 psig | |
| 500 • 0-5000 psig | 150 • 0-1500 psig | |

Controller Action

- D • Direct (Increase Output on Increasing Pressure)
- R • Reverse (Decrease Output on Increasing Pressure)

Controller Output

- 1 • 3-15 psig
- 2 • 6-30 psig

Options

- • None
- N • NACE Compliant for Sour Gas Service

Mounting

- | | |
|----------------------|--------------------|
| 0 • None | 3 • Panel |
| 1 • Actuator Yoke | 4 • 2" Pipestand |
| 2 • Actuator Housing | 5 • Surface (Wall) |

Note: The panel mount cutout recommendation is 7 15/16" - 8" tall x 6 15/16" - 7" wide. With these dimensions, the brackets must be removed and the controller inserted from the front of the panel. After inserting the controller, reattach the brackets and mount the controller to the panel from the back.

Installation

Mallard pressure controllers can be installed a number of different ways. The most common method is mounting the controller on a control valve yoke. When the controller is mounted in this manner, a supply regulator (Mallard Model 5602 recommended) is typically mounted on the opposite side of the actuator yoke. Alternatively, the supply regulator can be nipple-mounted to the controller. When the opposite side of the actuator yoke is occupied by a positioner or other device, nipple-mounting of the supply regulator is required.

Temperature Limits

| Model 3300 | Model 3350/3360 |
|----------------------------|----------------------------|
| -40 to 150°F (-40 to 66°C) | -40 to 160°F (-40 to 71°C) |

Materials of Construction

| Description | Material |
|------------------------|--|
| Case & Cover | Die Cast Aluminum |
| Bourdon Tube | Stainless Steel |
| Pressure Block | Stainless Steel |
| Supply & Output Tubing | Stainless Steel |
| Input Pressure Tubing | Stainless Steel |
| Nozzle | Stainless Steel |
| Orifice Block | Aluminum |
| Mounting Bracket | Plated Steel, Stainless Steel (Optional) |



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