# SINGER VALVE

## FULL PRODUCT GUIDE – WATERWORKS

**Real Solutions for Real Applications**

SINGERVALVE.COM

## MAIN VALVES



## MAIN VALVES – OPTIONS



## PRESSURE REDUCING



## RELIEF / SUSTAINING / SURGE



Please refer to singervalve.com for up-to-date information

## PUMP CONTROL



## LEVEL CONTROL



## FLOW CONTROL



## ELECTRONIC CONTROL



## PILOTS & ACCESSORIES

# WATER IS ESSENTIAL FOR LIFE.

According to the International Water Association's 2010 World Water Congress, 60 per cent of the world's population within the next generation will live in cities or urban areas, requiring massive water and energy services and infrastructure. Water loss in potable water distribution systems is also a significant issue. In the United States, for example, the associated cost of lost water is estimated at $15 billion (US) per year. System losses are influenced by a variety of factors including transmission line material and the age of the piping infrastructure with resulting water losses between 15 to 70 per cent being quite common worldwide. Another key challenge is sanitation and waste water management in developed and developing countries.

Because water is essential for life, water conservation, water loss management and waste water management are absolutely critical to help quench the world's demand for water.

Singer Valve is committed to conserving water. Since 1957, our pilot operated diaphragm control valves have been installed on virtually every continent around the world. Whether it is water loss management in Southeast Asia, water conservation concerns in Saudi Arabia or urban distribution demands in the United States, we provide water loss management solutions to governments, cities, companies and contractors around the world.

Many of the innovative products we offer are ones that have been born out of our inherent desire to solve unique water loss challenges. Presented with a problem, our team of electronic, instrumentation and control valve specialists are relentless in their research and design until they know a solution works.

Some of our innovative water loss management valves include:

**Model 106 / 206-PR** – Standard Pilot Operated Pressure Reducing Valve (refer to page 98)
- One adjustable set-point
- Ideal for most pressure ranges
- Virtually stable low flow

**Model 420-DC / 420-AC** – SCADA Operated Control Valve (refer to page 206)
- Allows remote adjustment of pilot
- Fail safe operation
- Predictable, repeatable accuracy

**Model 2PR-630** – Pressure Management Valve (refer to page 93)
- Substantially reduces water loss
- Decreases downstream pipe bursts and associated repair costs
- A simple package that saves water loss and money

**Model 2PR-SC-BT** – Dual Adjustable Set-Point Pressure Reducing Valve (refer to singervalve.com)
- Two adjustable set-points for high and low pressure
- Time-based selection via latching solenoid and timer

**Model PR-8761A** – Extremely Low Supply Pressure Reducing Valve (refer to singervalve.com)
- Maintains virtually constant downstream pressure regardless of fluctuations in supply pressure or flow
- High capacity pilot provides optimum modulation as required
- Hydraulically operated – no electrical requirements

## OUR VISION

To be the preferred provider of the most innovative, reliable water control solutions in the world.

## OUR MISSION

We are innovative designers and manufacturers of high quality differentiated control valves with excellent technical support and service to our customers.

## OUR COMMITMENT TO THE ENVIRONMENT

At Singer Valve, we care about the environment. After all, we're in the water conservation business, assisting water utilities worldwide to reduce water loss and leakage. But, our concern goes beyond our products and solutions. We are committed to implementing sustainable manufacturing processes and environmentally-friendly office practices on a daily basis. Why? Just as every drop of water counts toward conservation, the way we handle every piece of paper, every ounce of metal and every litre of oil counts toward preserving and protecting the environment. For us, being green means staying green.

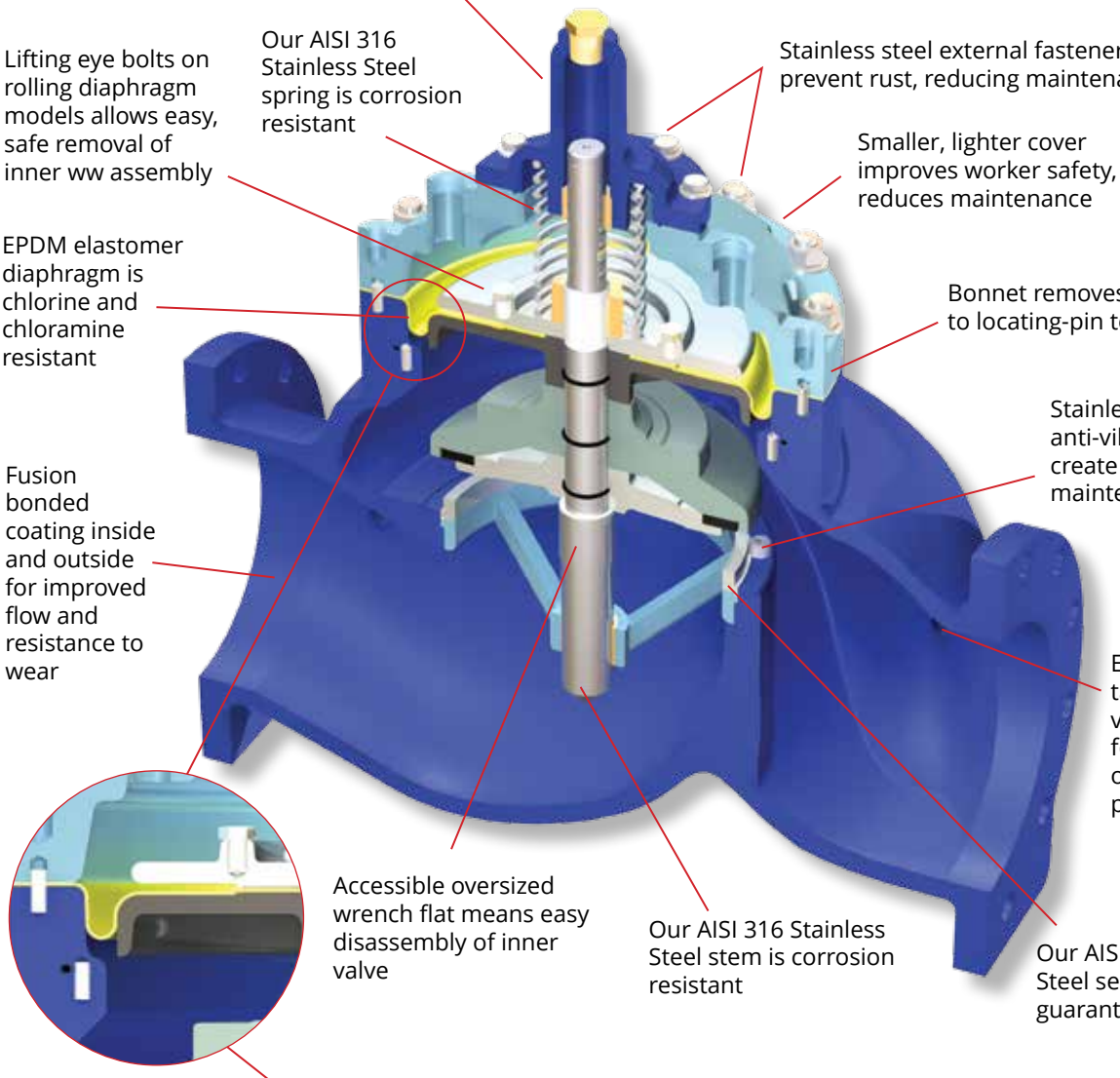
Our efforts include:

- recycling target materials
- a separating, recovering process of waste fluids
- reducing, reusing and recycling programs

## ABOUT OUR CATALOGUE

This catalogue is printed on paper certified by the Forest Stewardship Council® (FSC®).

FSC® is an independent, non-governmental, not-for-profit organization established in 1993 to promote the responsible management of the world's forest.


Valve Sizes: 1/2" to 40" / 15 mm to 1000 mm
Flows from: 0.5 to 55,470 USGPM / 0.03 to 3,500 L/s
*Not available in all size/model combinations. Consult with Singer Valve.

All 3D graphics done by: SCS WWW.SOLIDUSCAD.CA

Singer Valve is proud to hold a wide range of regulatory approvals to meet the requirements of your application.

Not all regulatory requirements are available in all sizes and model combinations. Singer Valve will provide approval details upon request.

Regulatory requirements must be specified at time of order for correct processing and labelling. Processing fees may apply.

Singer Valve castings are based on ANSI Class 150 or 300 standards and drilled as per ANSI B16.42 or threaded NPT. Class 150 are machined flat faced while class 300 are machined raised face. ANSI standard dimension are presented in this catalogue in US Units (inches) and Metric Units (millimeters). Also available are ANSI flanges drilled to ISO 7005-2 / BS4504 PN10, PN16, PN25, PN40, or threaded BSPT. ISO standard dimensions are presented in this catalogue in US Units (inches) and Metric Units (millimeters). Australian Standard AS4087 machined to Class 16 or Class 35.

ISO 9001:2008 CERTIFICATION
Intertek

FM APPROVED

This limited warranty replaces and supersedes all other warranties previously given. All products (the "Products") manufactured by Singer Valve Inc. ("Singer") are warranted for THREE YEARS (the "Warranty Period") from date of purchase (as confirmed by invoice) against manufacturing defects in material and workmanship which develop in the service for which the Products are designed, provided the Products were installed and used in accordance with all applicable instructions and limitations issued by Singer. Singer will, at its sole discretion, repair or replace defective material, free of charge, if returned to Singer's factory, transportation charges prepaid, provided that, after Singer's inspection and review, the material is found to have been defective at time of shipment to the Purchaser. Singer is not under any circumstances liable in any respect for any defective Products beyond the Warranty Period.

This warranty is conditional upon the Purchaser giving Singer immediate written notice of discovery of the defect.

Repairs or parts replaced under this warranty are warranted only throughout the remainder of the Warranty Period.

This warranty is in the nature of liquidated damages to which the Purchaser might otherwise be entitled at law or in equity. The Purchaser hereby agrees that, in lieu of any action for fundamental breach of contract or breach of a fundamental term of a contract, it will rely solely on this warranty.

This warranty does not apply to any Product modified or changed in design or function after shipment to the Purchaser, nor to components which are subject to the warranty conditions of another manufacturer. Electronic components used by Singer, manufactured by others, are warranted by their manufacturer for ONE YEAR from date of purchase.

Singer is not under any circumstances, including without limitation, any default, negligence or breach of whatsoever nature by Singer, liable, whether during the Warranty Period or after the Warranty Period, for any claims for labour, installation costs, damages or other special or consequential damages including, but not limited to, loss of revenue or profits, or any other expenses incurred by reason of any Products found to be defective. Singer is not liable for any incidental or consequential loss, damages or expenses (including loss of use) caused by any defects in the Product, by repair of it or arising directly or indirectly from its use. Singer is not liable for any damage or charge for labour or expense in making unauthorized repairs or adjustments to any Product. Singer is not liable for any damage or charges sustained in the adaptation or use of its engineering data and services.

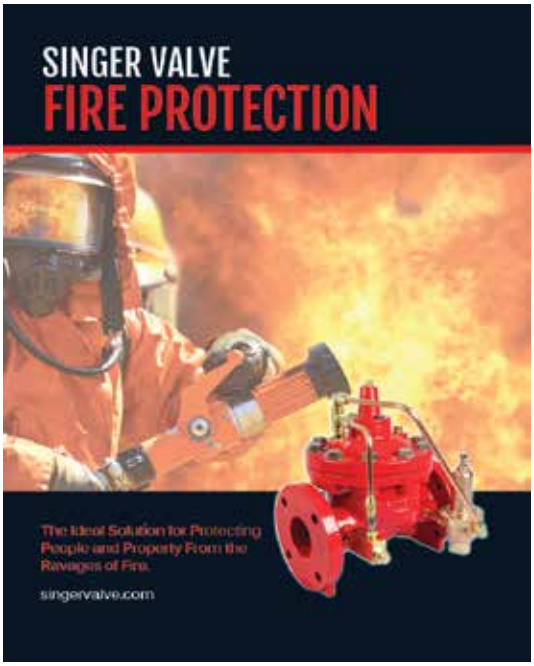
This warranty does not apply if the Product has been altered or repaired by others. Singer will make no allowances or credit for such repairs or alterations unless first authorized in writing by Singer.

No representative of Singer has authority to change any of the foregoing terms or to assume on behalf of Singer any additional liability or responsibility in connection with any Product.

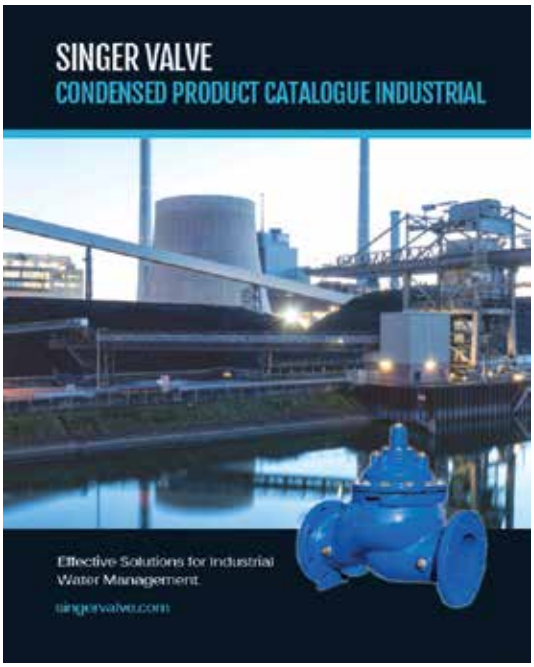
THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, CONDITIONS AND REPRESENTATIONS, WHETHER EXPRESS OR IMPLIED, ORAL OR WRITTEN, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR DURABILITY. ALL OTHER WARRANTIES, CONDITIONS AND REPRESENTATIONS ARE HEREBY CANCELLED.

## CHECK OUT OTHER PRODUCT CATALOGUES AND BROCHURES, AVAILABLE THROUGH YOUR SINGER VALVE SALES REPRESENTATIVE.

### FIRE PROTECTION CATALOGUE




### INDUSTRIAL CONDENSED CATALOGUE



# EXPERIENCE SINGER VALVES IN ACTION. EXPLORE OUR INTERACTIVE APP.


## Discover MetroH2O on our website: SINGERVALVE.COM

- Interactive software player
- Take a closer look at water systems
- See how valves work in applications
- A great tool for engineers
- Available for download

**Everything you've ever wanted in an automatic control valve. At Singer Valve, we design and manufacture control valves that can handle extreme pressure, sense the slightest danger or call for back-up in emergencies.**

**Our innovative, patented technology translates into proven solutions for real life applications such as water loss, high pressure drops and inaccurate pressure management. Plagued with cavitation noise and damage? Our double cage anti-cavitation control valve solves both. For precise pressure management, our single rolling diaphragm PR valve is the answer.**

# Main Valves

SINGER VALVE
Result-Based Solutions. Globally.

# MODELS 106-PG / S106-PG SINGLE CHAMBER, HYDRAULICALLY OPERATED VALVE

## KEY FEATURES

- Anti-cavitation option is ideal for high pressure drop situations
- Available in globe and angle style

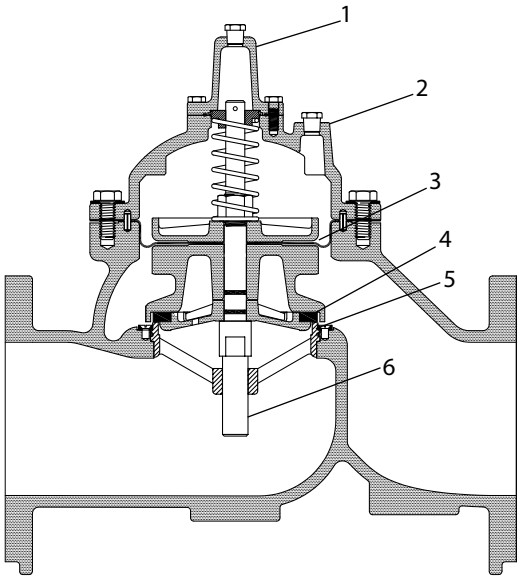
## PRODUCT OVERVIEW

The 106-PG series control valve is designed to suit a large variety of applications such as pressure, flow or level control. This hydraulically operated valve introduces or releases water from the control chamber above the diaphragm to effectively maintain accurate water control

Refer to Main Valve Options on page 62 and Pilots & Accessories on page 207 to further customize the valve to suit specific applications.

## PRODUCT LINE DRAWING

1. Removable Stem Cap
2. ASTM A536 Ductile Iron Construction
3. Diaphragm EPDM
4. EPDM Resilient Disc
5. AISI 316 Stainless Steel Seat
6. AISI 316 Stainless Steel Stem
7. NSF 61 Fusion Bonded Epoxy Coating




## ALTERNATIVE MODELS

A106-PG Angle

106-PG Threaded

## SELECTION

Automatic control valves operate by introducing or exhausting water from above the diaphragm at controlled rates. A pressure differential is required and is either inlet to outlet or inlet to atmosphere, depending on the application. Valves are sized to provide an appropriate pressure drop for each application. Most valves require a minimum of 10 psi / 0.7 bar pressure drop to operate. This applies mostly to valves that have the bonnet vented to downstream. With minimum of 5 psi / 0.35 bar downstream pressure, many valves can be made to open fully by venting the bonnet to atmosphere.

Singer control valves are designed for use with clean potable water. Applications for other media are possible. Consult with Singer Valve.

# VALVE SIZES & MATERIALS

| Valve Styles | | | | |
|---|---|---|---|---|
| | Ductile | | Stainless Steel | |
| **Available Sizes** | **Threaded** | **Flanged** | **Threaded** | **Flanged** |
| Globe | 1 in to 3 in (25-80 mm) | 1-1/2 in to 36 in (40-900 mm) | 1/2 in to 2 in (15-50 mm) | 1-1/2 in to 6 in (40-150 mm) |
| Angle | 1 in to 3 in (25-80 mm) | 2 in to 12 in, 16 in (50-300 mm, 400 mm) | N/A | N/A |

| Valve Components | | | | |
|---|---|---|---|---|
| | Ductile | | Stainless Steel | |
| | **Standard** | **Optional** | **Standard** | **Optional** |
| 1. Valve Body, Cover | 65-45-12 Ductile Iron | - | 316 Stainless Steel | - |
| 2. Seat Ring | 316 Stainless Steel | - | 316 Stainless Steel | - |
| 3. Disc Retainer | B16 Brass / B62 Bronze / A536 Ductile Iron | 316 Stainless Steel | 316 Stainless Steel | - |
| 4. Stem | 316 Stainless Steel | - | 316 Stainless Steel | - |
| 5. Stem Nut | B16 Brass | 316 Stainless Steel | 316 Stainless Steel | - |
| 6. Spring | 316 Stainless Steel | - | 316 Stainless Steel | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | 316 Stainless Steel | 316 Stainless Steel | - |
| 8. Diaphragm | EPDM | Buna-N / Viton (limited sizes) | EPDM | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | Buna-N / Viton (limited sizes) | EPDM | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy Thickness 10-14 mils (250 – 350 microns) | Consult factory | - | - |
| 11. Fasteners | 18-8 Stainless Steel | 316 Stainless Steel | 18-8 Stainless Steel | 316 Stainless Steel |

Careful consideration of the possibility of cavitation must be given. Anti-cavitation trim is available to control the cavitation, reduce noise and prevent damage. Refer to 106-AC (page 78) or consult with Singer Valve.

The 106-PG single chambered valve is the basic valve used in practically every model bearing the 106 description. The pilot systems are designed to meet the functional and performance requirements of specific applications. Sizing is ultimately determined by the specific application.

## AVAILABLE OPTIONS

Further customize the valve by adding any of the available options below.

## MAIN VALVE OPTIONS, REFER TO PAGE 62

**Position Indicators (Available for install at Singer Valve or as a field modification)**

- Model X107 stem mounted position indicators
- Model X129 limit switch assembly with Single Pole Double Throw limit switch (Double Pole Double Throw optional)
- Model X156 position transmitter (4 to 20 mA)

**Oxy-Nitride Stem**

**Internal Drop Check**

**External Spring Lift**

**Grooved Ends**

**Reclaim Water**

## PILOTS & ACCESSORIES, REFER TO PG. 207 MATERIALS OF CONSTRUCTION

Individual components can be upgraded from ductile iron, bronze and brass to stainless steel, for most sizes. Consult with Singer Valve.

## MODEL PGM

Provides a fully operational back-up system in the event of a diaphragm or pilot failure. See page 46.

## ANTI-CAVITATION TRIM

Model 106-AC allows very high pressure drops in one valve, while retaining the standard 106 valve features. See page 78.

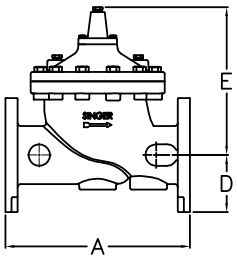
## ORDERING INSTRUCTIONS

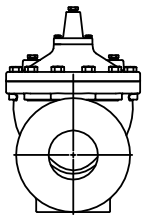
Refer to page 244 for the order form and ordering instructions.

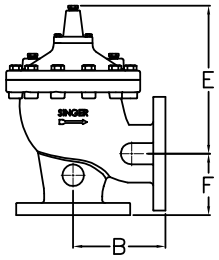
## ANSI VALVE DATA (US UNITS)

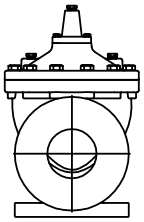
| Size | DWG | Standard | Flat Diaphragm System | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **1/2 in** | **3/4 in** | **1 in** | **1-1/4 in** | **1-1/2 in** | **2 in** | **2-1/2 in** | **3 in** | **4 in** | **6 in** | **8 in** |
| **Globe Dimensions** | | | All figures shown in inches unless otherwise stated | | | | | | | | | | |
| Lay Length | A | FNPT | Available in Stainless Steel only. See page 65. | Available in Stainless Steel only. See page 65. | 6.75 | 6.75 | 6.75 | 9.38 | 11.00 | 13.50 | - | - | - |
| Centerline to Bottom | D | FNPT | | | 2.50 | 2.50 | 2.50 | 2.75 | 3.38 | 3.68 | - | - | - |
| Lay Length | A | 150F | | | - | - | 8.50 | 9.38 | 11.00 | 12.00 | 15.00 | 20.00 | 25.38 |
| Centerline to Bottom | D | 150F | | | - | - | 2.75 | 3.00 | 3.50 | 3.75 | 4.60 | 5.60 | 7.63 |
| Lay Length | A | 300F | | | - | - | 9.00 | 10.00 | 11.63 | 13.25 | 15.63 | 21.00 | 26.38 |
| Centerline to Bottom | D | 300F | | | - | - | 3.25 | 3.25 | 3.75 | 4.13 | 5.09 | 6.34 | 7.88 |
| **Angle Dimensions** | | | | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | | | 3.38 | 3.38 | 3.38 | 4.69 | 5.50 | 6.63 | - | - | - |
| Center Discharge to Inlet | F | FNPT | | | 3.00 | 3.00 | 3.00 | 3.25 | 4.00 | 4.63 | - | - | - |
| Center Inlet to Discharge | B | 150F | | | - | - | - | 4.75 | 5.50 | 6.06 | 7.50 | 10.00 | 12.75 |
| Center Discharge to Inlet | F | 150F | | | - | - | - | 3.25 | 4.00 | 4.06 | 5.00 | 6.00 | 8.00 |
| Center Inlet to Discharge | B | 300F | | | - | - | - | 5.00 | 5.88 | 6.43 | 7.88 | 10.50 | 13.25 |
| Center Discharge to Inlet | F | 300F | | | - | - | - | 3.50 | 4.31 | 4.43 | 5.31 | 6.50 | 8.50 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | | | |
| Width | C | | | | 4.88 | 4.88 | 6.13 | 6.50 | 8.19 | 9.25 | 10.88 | 16.75 | 21.63 |
| Height (To Stem Cap) Globe | E | | | | 4.38 | 4.38 | 4.38 | 4.75 | 7.50 | 8.00 | 9.15 | 11.75 | 14.91 |
| Height (To Stem Cap) Angle | E | | | | 4.38 | 4.38 | 4.38 | 4.75 | 7.50 | 8.00 | 9.15 | 11.75 | 14.91 |
| Body Port Tapping | | FNPT | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | | MNPT | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | | | 1/2 | 1/2 | 1/2 | 9/16 | 15/16 | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | | | 0.007 | 0.007 | 0.007 | 0.02 | 0.1 | 0.1 | 0.2 | 0.6 | 1.7 |
| Approximate Shipping Weight (Lbs) | | | | | 20 | 20 | 20 | 40 | 65 | 100 | 175 | 400 | 650 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | | | | |
| $C_v$ - Globe | | | | | 28 | 30 | 32 | 55 | 80 | 110 | 200 | 460 | 800 |
| $C_v$ - Angle | | | | | 24 | 24 | 26 | 63 | 90 | 135 | 230 | 535 | 950 |
| Continuous (Globe) | | | | | 49 | 93 | 125 | 210 | 300 | 460 | 800 | 1800 | 3100 |
| Intermittent (Globe) | | | | | 61 | 120 | 160 | 260 | 375 | 575 | 1000 | 2250 | 3875 |
| Momentary (Globe) | | | | | 110 | 170 | 250 | 470 | 670 | 1030 | 1800 | 4000 | 7000 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | | | |
| PSI[1] | | FNPT | | | 400 | 400 | 400 | 400 | 400 | 400 | - | - | - |
| PSI | | 150F | | | - | - | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | | | - | - | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | | | | |
| Fahrenheit | | | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

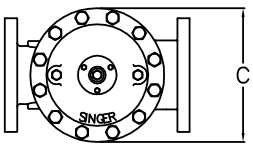
[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.





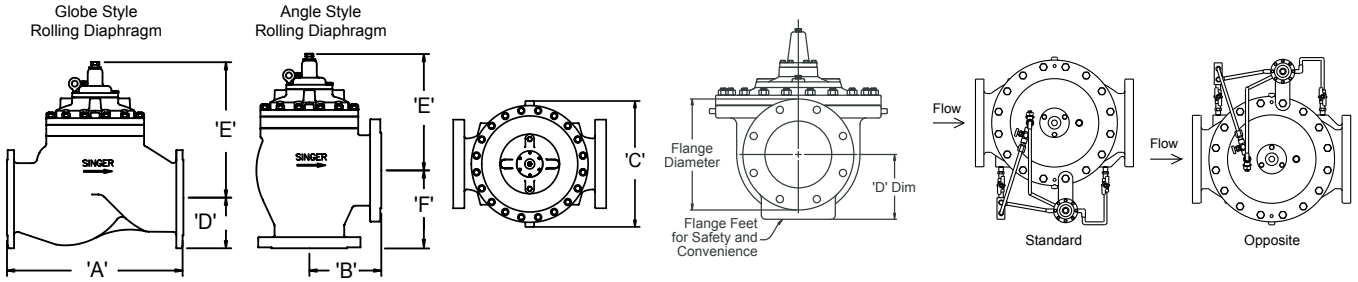



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **6 in** | **8 in** | **10 in** | **12 in** | **14 in** | **16 in** | **20 in** | **24 in** | **36 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated.** | | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 20.00 | 25.38 | 29.75 | 34.00 | 31.00 | 41.38 | 52.00 | 61.50 | 76.00 |
| Centerline to Bottom | D | 150F | 5.60 | 7.63 | 8.56 | 9.50 | 10.50 | 11.75 | 14.43 | 17.13 | 23.50 |
| Lay Length | A | 300F | 21.00 | 26.38 | 31.12 | 35.50 | 32.50 | 43.50 | 53.62 | 63.25 | 78.00 |
| Centerline to Bottom | D | 300F | 6.34 | 7.88 | 9.31 | 10.25 | 11.50 | 12.75 | 15.75 | 19.65 | 25.50 |
| **Angle Dimensions** | | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 11.50 | 13.75 | - | 18.00 | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 12.50 | 12.50 | - | 15.69 | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 12.19 | 14.50 | - | 18.81 | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 13.19 | 13.25 | - | 16.50 | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | |
| Width | C | | 12.75 | 16.09 | 22.13 | 26 | 26 | 32 | 35 | 49.68 | 64.5 |
| Height (To Stem Cap) Globe | E | | 15.43 | 20.19 | 23.31 | 26.75 | 26.8 | 31.4 | 35.5 | 45.75 | 61 |
| Height (To Stem Cap) Angle | E | | - | - | 20 | 23.75 | - | 28.5 | - | - | - |
| Body Port Tapping | | FNPT | 3/8 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | | FNPT | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | | 1-11/16 | 2-7/8 | 3-1/4 | 3-3/4 | 3-3/4 | 4-3/4 | 5-9/16 | 6 | 9 |
| Displaced Bonnet Volume (Gallons) | | | 0.50 | 1.00 | 1.50 | 2.30 | 2.30 | 6.75 | 9.00 | 14.75 | 43.00 |
| Approximate Shipping Weight (Lbs) | | | 350 | 650 | 900 | 1300 | 1400 | 2300 | 3450 | 5000 | 13500 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | | |
| $C_v$ - Globe | | | 460 | 800 | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 | 16340 |
| $C_v$ - Angle | | | - | - | 1400 | 2450 | - | 4000 | - | - | - |
| Continuous (Globe) | | | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Intermittent (Globe) | | | 2250 | 3875 | 6100 | 8800 | 11500 | 14250 | 21700 | 31200 | 69338 |
| Momentary (Globe) | | | 4000 | 7000 | 11000 | 16000 | 19000 | 25000 | 39000 | 56200 | 124700 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | |
| PSI[1] | | FNPT | - | - | - | - | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

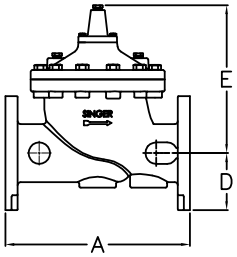


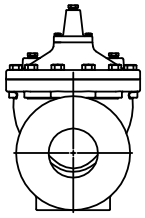

See pilot system information, page 207.
For additional Engineering notes, see page 242.

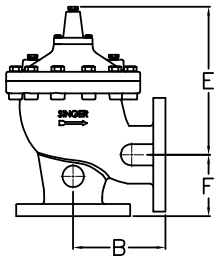
## ANSI VALVE DATA (METRIC UNITS)

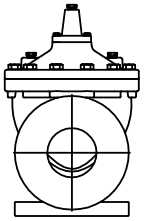
| Size | DWG | Stnd | Flat Diaphragm System | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 15 mm | 20 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm |
| **Globe Dimensions** | | | All figures show in mm unless otherwise stated | | | | | | | | | | |
| Lay Length | A | FNPT | Available in Stainless Steel only. See page 65. | Available in Stainless Steel only. See page 65. | 171 | 171 | 171 | 238 | 279 | 343 | - | - | - |
| Centerline to Bottom | D | FNPT | | | 64 | 64 | 64 | 70 | 86 | 93 | - | - | - |
| Lay Length | A | 150F | | | - | - | 216 | 238 | 279 | 305 | 381 | 508 | 645 |
| Centerline to Bottom | D | 150F | | | - | - | 70 | 76 | 89 | 95 | 117 | 142 | 200 |
| Lay Length | A | 300F | | | - | - | 229 | 254 | 295 | 337 | 397 | 533 | 670 |
| Centerline to Bottom | D | 300F | | | - | - | 83 | 83 | 95 | 105 | 129 | 161 | 200 |
| **Angle Dimensions** | | | | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | | | 86 | 86 | 86 | 119 | 140 | 168 | - | - | - |
| Center Discharge to Inlet | F | FNPT | | | 76 | 76 | 76 | 83 | 102 | 118 | - | - | - |
| Center Inlet to Discharge | B | 150F | | | - | - | - | 121 | 140 | 154 | 191 | 254 | 324 |
| Center Discharge to Inlet | F | 150F | | | - | - | - | 83 | 102 | 103 | 127 | 152 | 203 |
| Center Inlet to Discharge | B | 300F | | | - | - | - | 127 | 149 | 163 | 200 | 267 | 337 |
| Center Discharge to Inlet | F | 300F | | | - | - | - | 89 | 109 | 113 | 135 | 165 | 216 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | | | |
| Width | C | | | | 124 | 124 | 156 | 165 | 208 | 235 | 276 | 425 | 549 |
| Height (to stem cap) Globe | E | | | | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 | 379 |
| Height (to stem cap) Angle | E | | | | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 | 379 |
| Body Port Tapping | FNPT | in | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | in | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | in | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | | | 13 | 13 | 13 | 14 | 25 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | | | 0.03 | 0.03 | 0.03 | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | | | 9 | 9 | 9 | 18 | 29 | 45 | 79 | 181 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | | | | |
| Kv - Globe | | | | | 6.6 | 7.1 | 7.6 | 13 | 19 | 26 | 47 | 110 | 190 |
| Kv - Angle | | | | | 5.7 | 5.7 | 6.2 | 15 | 21 | 32 | 55 | 127 | 225 |
| Continuous (Globe) | | | | | 3 | 6 | 8 | 13 | 19 | 29 | 50 | 114 | 196 |
| Intermittent (Globe) | | | | | 4 | 8 | 10 | 16 | 24 | 36 | 63 | 142 | 244 |
| Momentary (Globe) | | | | | 7 | 11 | 16 | 30 | 42 | 65 | 114 | 252 | 442 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | | | |
| Bar[1] | | FNPT | | | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | - | - | - |
| Bar | | 150F | | | - | - | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | | | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | | | | |
| Celcius | | | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

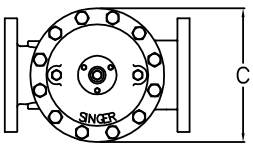
[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request





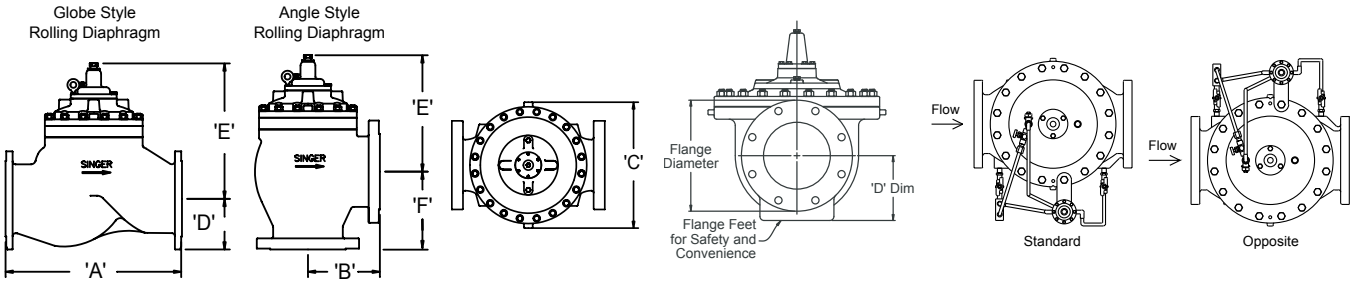



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated. | | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 508 | 645 | 756 | 864 | 787 | 1051 | 1321 | 1562 | 1930 |
| Centerline to Bottom | D | 150F | 142 | 200 | 217 | 241 | 267 | 298 | 367 | 435 | 597 |
| Lay Length | A | 300F | 533 | 670 | 790 | 902 | 826 | 1105 | 1362 | 1607 | 1981 |
| Centerline to Bottom | D | 300F | 161 | 200 | 236 | 260 | 292 | 324 | 400 | 499 | 648 |
| **Angle Dimensions** | | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 292 | 349 | - | 457 | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 318 | 318 | - | 399 | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 310 | 368 | - | 478 | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 335 | 337 | - | 419 | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | |
| Width | C | | 324 | 409 | 562 | 660 | 660 | 813 | 889 | 1262 | 1623 |
| Height (To Stem Cap) Globe | E | | 392 | 513 | 592 | 679 | 681 | 798 | 902 | 1162 | 1550 |
| Height (To Stem Cap) Angle | E | | - | - | 508 | 603 | - | 724 | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | FNPT | Inches | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | mm | 43 | 73 | 83 | 95 | 95 | 120 | 141 | 150 | 229 |
| Displaced Bonnet Volume (Litres) | | | 2 | 4 | 6 | 9 | 9 | 26 | 34 | 56 | 163 |
| Approximate Shipping Weight (Kilograms) | | | 160 | 250 | 480 | 590 | 635 | 1043 | 1565 | 2268 | 6124 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | | |
| $K_v$ - Globe | | | 110 | 190 | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |
| $K_v$ - Angle | | | - | - | 332 | 581 | - | 948 | - | - | - |
| Continuous (Globe) | | | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |
| Intermittent (Globe) | | | 142 | 244 | 385 | 555 | 726 | 899 | 1370 | 1968 | 4375 |
| Momentary (Globe) | | | 252 | 442 | 694 | 1009 | 1199 | 1577 | 2460 | 3546 | 7867 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | |
| Bar[1] | | FNPT | - | - | - | - | - | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

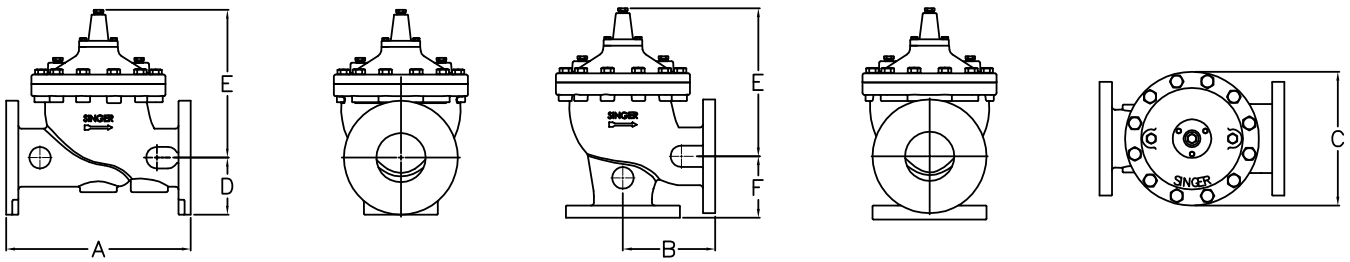
[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request




See pilot system information, page 207.
For additional Engineering notes, see page 242.

| Size | DWG | Stnd | Flat Diaphragm System | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ISO | 15 mm | 20 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm |
| **Globe Dimensions** | | | All figures show in mm unless otherwise stated | | | | | | | | | | |
| Lay Length | A | BSPT | Available in Stainless Steel only. See page 65. | Available in Stainless Steel only. See page 65. | 171 | 171 | 171 | 238 | 279 | 343 | - | - | - |
| Centerline to Bottom | D | BSPT | | | 64 | 64 | 64 | 70 | 86 | 93 | - | - | - |
| Lay Length | A | PN10 / PN16 | | | - | - | 229 | 238 | 279 | 318 | 381 | 508 | 645 |
| Centerline to Bottom | D | PN10 / PN16 | | | - | - | 83 | 76 | 89 | 100 | 117 | 142 | 200 |
| Lay Length | A | PN25 / PN40 | | | - | - | 229 | 238 | 279 | 318 | 397 | 533 | 670 |
| Centerline to Bottom | D | PN25 / PN40 | | | - | - | 83 | 76 | 89 | 100 | 129 | 161 | 200 |
| **Angle Dimensions** | | | | | | | | | | | | | |
| Center Inlet to Discharge | B | BSPT | | | 86 | 86 | 86 | 119 | 140 | 168 | - | - | - |
| Center Discharge to Inlet | F | BSPT | | | 76 | 76 | 76 | 83 | 102 | 118 | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | | | - | - | - | 121 | 140 | 163 | 191 | 254 | 324 |
| Center Discharge to Inlet | F | PN10 / PN16 | | | - | - | - | 83 | 102 | 113 | 127 | 152 | 203 |
| Center Inlet to Discharge | B | PN25 / PN40 | | | - | - | - | 121 | 140 | 163 | 200 | 267 | 337 |
| Center Discharge to Inlet | F | PN25 / PN40 | | | - | - | - | 83 | 102 | 113 | 135 | 165 | 216 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | | | |
| Width | C | | | | 124 | 124 | 156 | 165 | 208 | 235 | 276 | 425 | 549 |
| Height (To Stem Cap) Globe | E | | | | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 | 379 |
| Height (To Stem Cap) Angle | E | | | | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 | 379 |
| Body Port Tapping | FNPT | Inches | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | | | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | | | 13 | 13 | 13 | 14 | 25 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | | | 0.03 | 0.03 | 0.03 | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | | | 9 | 9 | 9 | 18 | 29 | 45 | 79 | 181 | 295 |
| Flow Capacities (L/s) Globe & Angle | | | | | | | | | | | | | |
| $K_v$ - Globe | | | | | 6.6 | 7.1 | 7.6 | 13 | 19 | 26 | 47 | 110 | 190 |
| $K_v$ - Angle | | | | | 5.7 | 5.7 | 6.2 | 15 | 21 | 32 | 55 | 123 | 225 |
| Continuous (Globe) | | | | | 3 | 6 | 8 | 13 | 19 | 29 | 50 | 114 | 196 |
| Intermittent (Globe) | | | | | 4 | 8 | 10 | 16 | 24 | 36 | 63 | 142 | 244 |
| Momentary (Globe) | | | | | 7 | 11 | 16 | 30 | 42 | 65 | 114 | 252 | 442 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | | | |
| Bar[1] | | BSPT | | | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | - | - | - |
| Bar | | PN16 | | | - | - | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar[1] | | PN25 | | | - | - | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | | | | | | | |
| Celcius | | | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

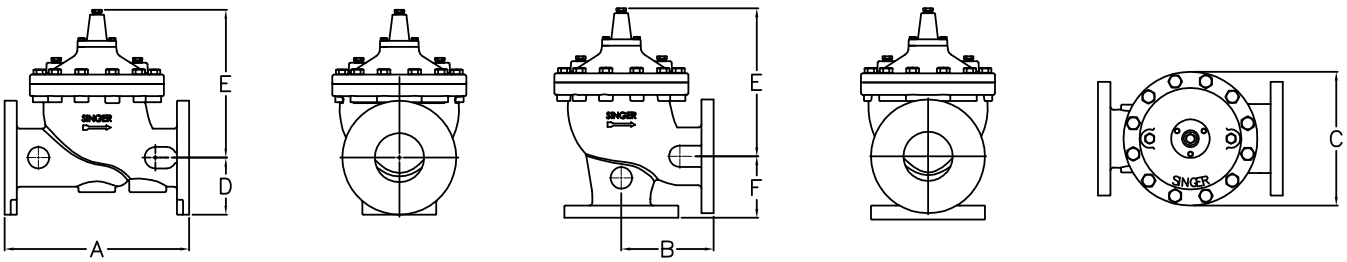
[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request




See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MM | REF | ISO | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Globe Dimensions | | | All figures shown in mm unless otherwise stated | | | | | | | | |
| Lay Length | A | BSPT | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | BSPT | - | - | - | - | - | | - | - | - |
| Lay Length | A | PN10 / PN16 | 508 | 645 | 756 | 864 | 787 | 1051 | 1321 | 1562 | 1930 |
| Centerline to Bottom | D | PN10 / PN16 | 142 | 200 | 217 | 241 | 267 | 298 | 367 | 435 | 597 |
| Lay Length | A | PN25 / PN40 | 533 | 670 | 790 | 864 | 826 | 1105 | 1362 | 1607 | 1981 |
| Centerline to Bottom | D | PN25 / PN40 | 161 | 200 | 243 | 241 | 292 | 324 | 400 | 499 | 648 |
| Angle Dimensions | | | | | | | | | | | |
| Center Inlet to Discharge | B | BSPT | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | BSPT | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | - | - | 292 | 349 | - | 457 | - | - | - |
| Center Discharge to Inlet | F | PN10 / PN16 | - | - | 318 | 318 | - | 399 | - | - | - |
| Center Inlet to Discharge | B | PN25 / PN40 | - | - | 310 | 349 | - | 478 | - | - | - |
| Center Discharge to Inlet | F | PN25 / PN40 | - | - | 335 | 318 | - | 419 | - | - | - |
| Common Dimensions (Globe & Angle) | | | | | | | | | | | |
| Width | C | | 324 | 409 | 562 | 660 | 660 | 813 | 889 | 1262 | 1422 |
| Height (To Stem Cap) Globe | E | | 346 | 455 | 592 | 679 | 681 | 798 | 902 | 1162 | 1550 |
| Height (To Stem Cap) Angle | E | | - | - | 508 | 603 | - | 724 | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | FNPT | Inches | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | mm | 43 | 73 | 83 | 95 | 95 | 120 | 141 | 150 | 229 |
| Displaced Bonnet Volume (Litres) | | | 2 | 4 | 6 | 9 | 9 | 26 | 34 | 56 | 163 |
| Approximate Shipping Weight (Kilograms) | | | 160 | 250 | 480 | 590 | 635 | 1043 | 1565 | 2268 | 6124 |
| Flow Capacities (L/s) Globe & Angle | | | | | | | | | | | |
| Kv - Globe | | | 110 | 190 | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |
| Kv - Angle | | | - | - | 332 | 581 | - | 948 | - | - | - |
| Continuous (Globe) | | | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |
| Intermittent (Globe) | | | 142 | 244 | 385 | 555 | 726 | 899 | 1370 | 1968 | 4375 |
| Momentary (Globe) | | | 252 | 442 | 694 | 1009 | 1199 | 1577 | 2460 | 3546 | 7867 |
| Maximum Pressure Ratings (Ductile Only) | | | | | | | | | | | |
| Bar | | BSPT | - | - | - | - | - | - | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar | | PN25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Maximum Temperature | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |




See pilot system information, page 207.
For additional Engineering notes, see page 242.

# MODEL 206-PG / S206-PG
# SINGLE CHAMBER, HYDRAULICALLY OPERATED VALVE

## KEY FEATURES

- Available in globe and angle style

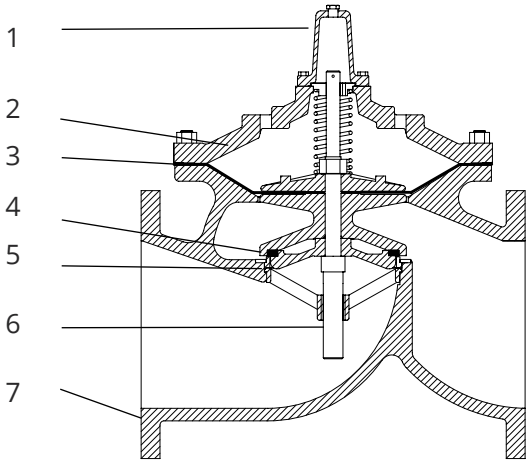
## PRODUCT OVERVIEW

The 206-PG series control valve is the preferred choice for pressure reducing valves, flow control valves, relief valves and applications with lower to medium flows. This hydraulically operated valve introduces or releases water from the control chamber above the diaphragm to effectively maintain water control.

Further adapt the valve to provide control for a wide range of functions by selecting from Singer Valve's wide range of pilot and accessories options. Customize for functions like controlling pressure, flow or level or in almost limitless combinations to suit specific applications.

## PRODUCT LINE DRAWING

1. Removable Stem Cap
2. ASTM A536 Ductile Iron Construction
3. Diaphragm Buna-N or EPDM
4. Buna-N or EPDM Resilient Disc
5. AISI 316 Stainless Steel Seat
6. AISI 316 Stainless Steel Stem
7. NSF 61 Fusion Bonded Epoxy Coating




## ALTERNATIVE MODELS

A206-PG Angle

## SELECTION

Automatic control valves operate by introducing or exhausting water from above the diaphragm at controlled rates. A pressure differential is required and is either inlet to outlet or inlet to atmosphere, depending on the application. Valves are sized to provide an appropriate pressure drop for each application. Most valves require a minimum of 10 psi / 0.7 bar pressure drop to operate. This applies mostly to valves that have the bonnet vented to downstream. With minimum of 5 psi / 0.35 bar downstream pressure, many valves can be made to open fully by venting the bonnet to atmosphere.

Singer Valve control valves are designed for use with clean potable water. Applications for other media are possible. Consult with Singer Valve.

## VALVE SIZES & MATERIALS

| Valve Materials | | |
|---|---|---|
| | **Standard** | **Optional** |
| Available Sizes | Flanged | - |
| Globe | 3 in to 48 in (80-1200 mm) | - |
| Angle | 4 in to 8 in (100-200 mm) | - |
| **Valve Components** | | |
| 1.Valve Body, Cover | 65-45-12 Ductile Iron | - |
| 2. Seat Ring | 316 Stainless Steel | - |
| 3. Disc Retainer | B16 Brass / B62 Bronze / A536 Ductile Iron | 316 Stainless Steel |
| 4. Stem | 316 Stainless Steel | - |
| 5. Stem Nut | B16 Brass | 316 Stainless Steel |
| 6. Spring | 316 Stainless Steel | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | 316 Stainless Steel |
| 8. Diaphragm | EPDM | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-300 microns) | Consult factory |
| 11. Fasteners | AISI 18-8 Stainless Steel | AISI 316 Stainless Steel |

Careful consideration of the possibility of cavitation must be given. Anti-cavitation trim is available to control the cavitation, reduce noise and prevent damage. Refer to 106-AC (page 80) or consult with Singer Valve.

The Singer Model 206-PG single chambered valve is the basic valve used in practically every model bearing the 206 description. The pilot systems are designed to meet the functional and performance requirements of specific applications. Sizing is ultimately determined by the specific application.

## AVAILABLE OPTIONS

**Further customize the valve by adding any of the available options below.**

## MAIN VALVE OPTIONS, REFER TO PAGE 62

**Position Indicators (Available for install at Singer Valve or as a field modification)**

- Model X107 stem mounted position indicators
- Model X129 limit switch assembly with Single Pole Double Throw limit switch (Double Pole Double Throw optional)
- Model X156 position transmitter (4 to 20 mA)

**Oxy-Nitride Stem**

**Internal Drop Check**

**External Spring Lift**

**Grooved Ends**

**Reclaimed Water**

## PILOTS & ACCESSORIES, REFER TO PG. 207

## MATERIALS OF CONSTRUCTION

Individual components can be upgraded from ductile iron, bronze and brass to stainless steel, for most sizes. Consult with Singer Valve.

## MODEL PGM

Provides a fully operational back-up system in the event of a diaphragm or pilot failure. See page 46.

## ORDERING INSTRUCTIONS

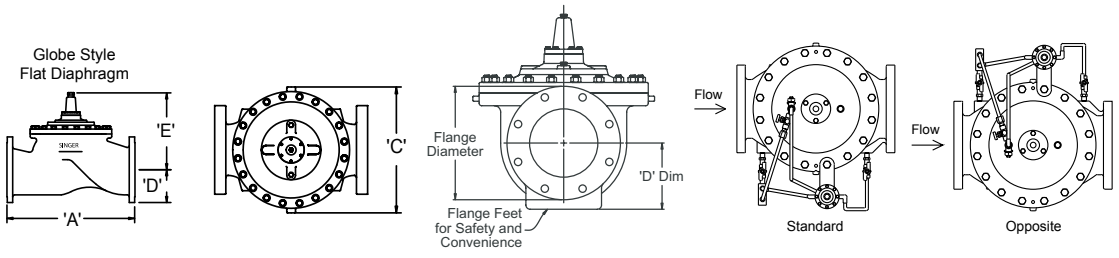
Refer to page 244 for the order form and ordering instructions.

## ENGINEERING NOTES, REFER TO PAGE 242

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | |
|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **3 in** | **4 in** | **6 in** | **8 in** | **10 in** |
| **Globe Dimensions** | | | **All figures show in inches unless otherwise stated** | | | | |
| Lay Length | A | NPT | - | - | - | - | - |
| Centerline to Bottom | D | NPT | - | - | - | - | - |
| Lay Length | A | 150F | 12.00 | 15.00 | 20.13 | 25.00 | 24.50 |
| Centerline to Bottom | D | 150F | 4.00 | 4.60 | 5.62 | 6.75 | 8.56 |
| Lay Length | A | 300F | - | 15.63 | 21.00 | 26.00 | 25.88 |
| Centerline to Bottom | D | 300F | - | 5.00 | 6.34 | 7.50 | 9.31 |
| **Angle Dimensions** | | | | | | | |
| Center Inlet to Discharge | B | NPT | - | - | - | - | - |
| Center Discharge to Inlet | F | NPT | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | 7.56 | 10.19 | 12.50 | - |
| Center Discharge to Inlet | F | 150F | - | 5.94 | 6.19 | 9.00 | - |
| Center Inlet to Discharge | B | 300F | - | 7.88 | 10.63 | 13.00 | - |
| Center Discharge to Inlet | F | 300F | - | 6.25 | 6.81 | 9.50 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | |
| Width | C | | 8.19 | 10.00 | 12.50 | 16.00 | 20.00 |
| Height (To Stem Cap) Globe | E | | 7.50 | 9.62 | 10.50 | 14.13 | 18.63 |
| Height (To Stem Cap) Angle | E | | - | 7.75 | 8.82 | 11.30 | - |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 9/16 | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | 0.02 | 0.1 | 0.2 | 0.6 | 2 |
| Approximate Shipping Weight (Lbs) | | | 75 | 100 | 250 | 500 | 650 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | |
| $C_v$ - Globe | | | 60 | 150 | 250 | 505 | 985 |
| $C_v$ - Angle | | | - | 150 | 250 | 560 | - |
| Continuous (Globe) | | | 300 | 580 | 1025 | 2300 | 4100 |
| Intermittent (Globe) | | | 373 | 690 | 1190 | 2700 | 4670 |
| Momentary (Globe) | | | 564 | 1236 | 2160 | 4800 | 8400 |
| **Maximum Pressure Ratings** | | | | | | | |
| PSI[1] | | FNPT | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

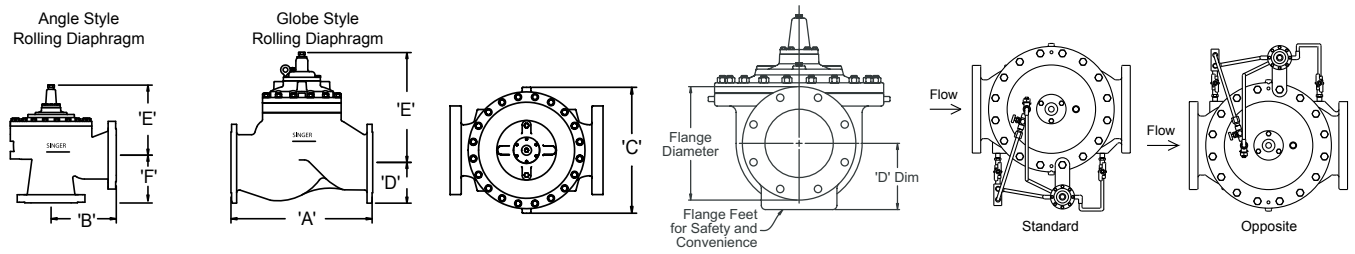



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standar | Rolling Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inches | REF | ANSI | 12 in | 16 in | 18 in | 20 in | 24 in x 16 in | 24 in x 20 in | 30 in | 36 in | 48 in |
| **Globe Dimensions** | | | All figures shown in inches unless otherwise stated. | | | | | | | | |
| Lay Length | A | NPT | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | NPT | - | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 27.50 | 36.00 | 42.00 | 45.00 | 50.50 | 61.50 | 69.93 | 69.93 | 79.75 |
| Centerline to Bottom | D | 150F | 9.50 | 11.75 | 12.50 | 13.75 | 16.50 | 17.13 | 20.68 | 23.75 | 30.75 |
| Lay Length | A | 300F | 29.00 | 37.63 | 43.63 | 46.63 | 52.25 | 63.25 | - | - | - |
| Centerline to Bottom | D | 300F | 10.25 | 12.75 | 14.00 | 15.25 | 18.00 | 19.65 | - | - | - |
| **Angle Dimensions** | | | | | | | | | | | |
| Center Inlet to Discharge | B | NPT | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | NPT | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | |
| Width | C | | 22.13 | 26.00 | 30.31 | 31.50 | 36.00 | 36.00 | 49.75 | 49.75 | 64.50 |
| Height (To Stem Cap) Globe | E | | 23.31 | 26.75 | 31.38 | 31.38 | 31.38 | 34.46 | 45.75 | 45.75 | 61.00 |
| Height (To Stem Cap) Angle | E | | - | - | - | - | - | - | - | - | - |
| Body Port Tapping | | FNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | | MNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | | FNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | | 3-1/4 | 3-3/4 | 4-3/4 | 4-3/4 | 4-3/4 | 5-9/16 | 6 | 6 | 9 |
| Displaced Bonnet Volume (Gallons) | | | 1.5 | 2.3 | 6.8 | 6.8 | 6.8 | 9.0 | 14.8 | 14.8 | 43.0 |
| Approximate Shipping Weight (Lbs) | | | 900 | 1400 | 2400 | 2600 | 2800 | 4500 | 6200 | 7000 | 18000 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | | |
| $C_v$ - Globe | | | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 8000 | 16340 |
| $C_v$ - Angle | | | - | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33650 | 33800 | 55470 |
| Intermittent (Globe) | | | 7320 | 10470 | 20915 | 20915 | 20915 | 26000 | 37490 | 37640 | 69338 |
| Momentary (Globe) | | | 13200 | 19200 | 30000 | 30050 | 30100 | 39000 | 67490 | 67640 | 124700 |
| **Maximum Pressure Ratings** | | | | | | | | | | | |
| PSI[1] | | FNPT | - | - | - | - | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

1Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

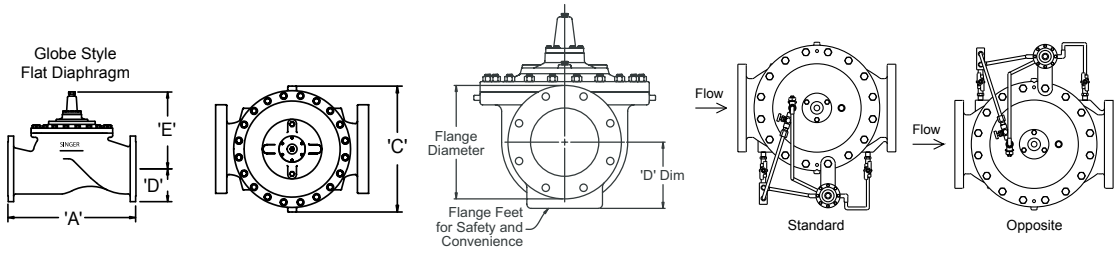



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | |
|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **80 mm** | **100 mm** | **150 mm** | **200 mm** | **250 mm** |
| **Globe Dimensions** | | | **All figures show in mm unless otherwise stated** | | | | |
| Lay Length | A | FNPT | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - |
| Lay Length | A | 150F | 305 | 381 | 511 | 635 | 622 |
| Centerline to Bottom | D | 150F | 102 | 117 | 143 | 171 | 217 |
| Lay Length | A | 300F | - | 397 | 533 | 660 | 657 |
| Centerline to Bottom | D | 300F | - | 127 | 161 | 191 | 236 |
| **Angle Dimensions** | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | 192 | 259 | 318 | - |
| Center Discharge to Inlet | F | 150F | - | 151 | 157 | 229 | - |
| Center Inlet to Discharge | B | 300F | - | 200 | 270 | 330 | - |
| Center Discharge to Inlet | F | 300F | - | 159 | 173 | 241 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | |
| Width | C | | 208 | 254 | 318 | 406 | 508 |
| Height (To Stem Cap) Globe | E | | 191 | 244 | 267 | 359 | 473 |
| Height (To Stem Cap) Angle | E | | - | 197 | 224 | 287 | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.1 | 0.3 | 0.8 | 2 | 6 |
| Approximate Shipping Weight (Kilograms) | | | 34 | 45 | 113 | 227 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | |
| $K_v$ - Globe | | | 14 | 36 | 60 | 120 | 230 |
| $K_v$ - Angle | | | - | 36 | 60 | 133 | - |
| Continuous (Globe) | | | 19 | 37 | 65 | 145 | 259 |
| Intermittent (Globe) | | | 24 | 44 | 75 | 170 | 295 |
| Momentary (Globe) | | | 36 | 78 | 136 | 303 | 530 |
| **Maximum Pressure Ratings** | | | | | | | |
| Bar | | FNPT | - | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

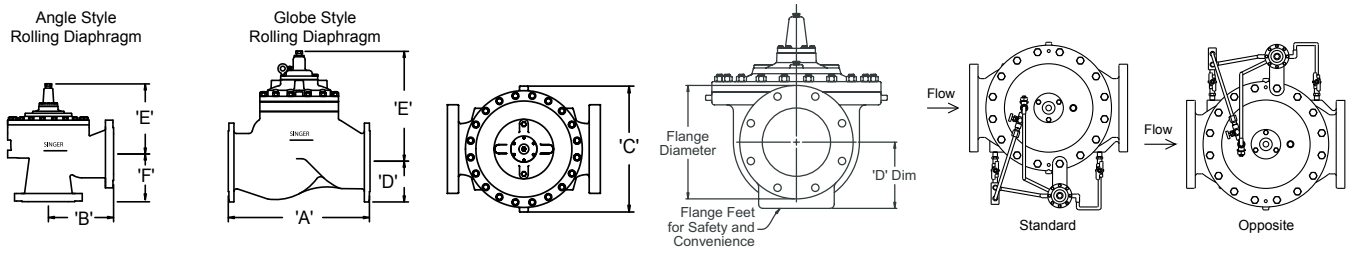



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 | 600 x 500 | 750 mm | 900 mm | 1200 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated. | | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 699 | 914 | 1067 | 1143 | 1283 | 1562 | 1776 | 1776 | 2026 |
| Centerline to Bottom | D | 150F | 241 | 298 | 318 | 354 | 419 | 435 | 525 | 603 | 781 |
| Lay Length | A | 300F | 737 | 956 | 1108 | 1184 | 1327 | 1607 | - | - | - |
| Centerline to Bottom | D | 300F | 260 | 324 | 356 | 387 | 457 | 499 | - | - | - |
| **Angle Dimensions** | | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | |
| Width | C | | 562 | 660 | 795 | 800 | 914 | 914 | 1264 | 1264 | 1638 |
| Height (To Stem Cap) Globe | E | | 592 | 679 | 797 | 797 | 797 | 875 | 1162 | 1162 | 1550 |
| Height (To Stem Cap) Angle | E | | - | - | - | - | - | - | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | MNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | mm | 83 | 95 | 120 | 120 | 120 | 141 | 150 | 150 | 229 |
| Displaced Bonnet Volume (Litres) | | | 6 | 9 | 26 | 26 | 26 | 34 | 56 | 56 | 163 |
| Approximate Shipping Weight (Kilograms) | | | 408 | 635 | 1089 | 1179 | 1270 | 2155 | 2812 | 3175 | 8165 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | | |
| $K_v$ - Globe | | | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1870 | 3875 |
| $K_v$ - Angle | | | - | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2120 | 2132 | 3500 |
| Intermittent (Globe) | | | 465 | 661 | 1320 | 1320 | 1320 | 1640 | 2362 | 2375 | 4375 |
| Momentary (Globe) | | | 833 | 1211 | 1893 | 1896 | 1899 | 2460 | 4255 | 4267 | 7867 |
| **Maximum Pressure Ratings** | | | | | | | | | | | |
| Bar | | FNPT | - | - | - | - | | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.5 | 27.5 | - |
| **Maximum Temperature** | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41bar on request

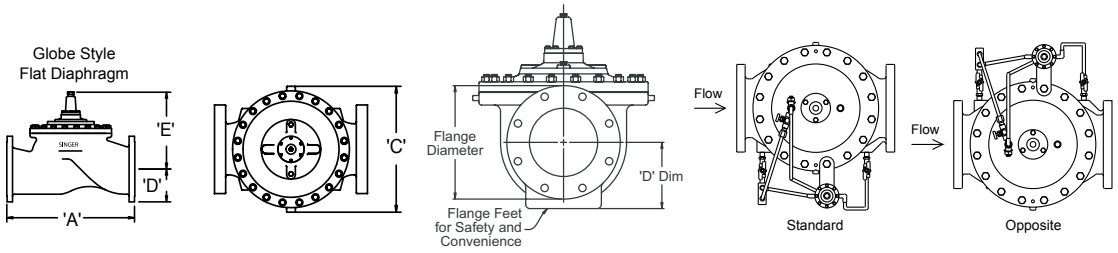



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | |
|---|---|---|---|---|---|---|---|
| mm | REF | ISO | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm |
| **Globe Dimensions** | | BS4504 | All figures show in mm unless otherwise stated | | | | |
| Lay Length | A | BSPT | - | - | - | - | - |
| Centerline to Bottom | D | BSPT | - | - | - | - | - |
| Lay Length | A | PN10 / PN16 | 305 | 381 | 511 | 635 | 622 |
| Centerline to Bottom | D | PN10 / PN16 | 102 | 117 | 142 | 171 | 217 |
| Lay Length | A | PN25 / PN40 | - | 397 | 533 | 660 | 657 |
| Centerline to Bottom | D | PN25 / PN40 | - | 127 | 161 | 191 | 236 |
| **Angle Dimensions** | | | | | | | |
| Center Inlet to Discharge | B | BSPT | - | - | - | - | - |
| Center Discharge to Inlet | F | BSPT | - | - | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | - | 192 | 259 | 318 | - |
| Center Discharge to Inlet | F | PN10 / PN16 | - | 151 | 157 | 229 | - |
| Center Inlet to Discharge | B | PN25 / PN40 | - | 200 | 270 | 330 | - |
| Center Discharge to Inlet | F | PN25 / PN40 | - | 159 | 173 | 241 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | |
| Width | C | | 208 | 238 | 318 | 406 | 508 |
| Height (To Stem Cap) Globe | E | | 191 | 244 | 267 | 359 | 473 |
| Height (To Stem Cap) Angle | E | | - | 197 | 224 | 287 | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.08 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 34 | 45 | 113 | 227 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | |
| $K_v$ - Globe | | | 14 | 36 | 60 | 120 | 230 |
| $K_v$ - Angle | | | - | 36 | 60 | 133 | - |
| Continuous (Globe) | | | 19 | 37 | 65 | 145 | 259 |
| Intermittent (Globe) | | | 24 | 44 | 75 | 170 | 295 |
| Momentary (Globe) | | | 36 | 78 | 136 | 303 | 530 |
| **Maximum Pressure Ratings** | | | | | | | |
| Bar | | BSPT | - | - | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 | 16 |
| Bar | | PN25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° |

*Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

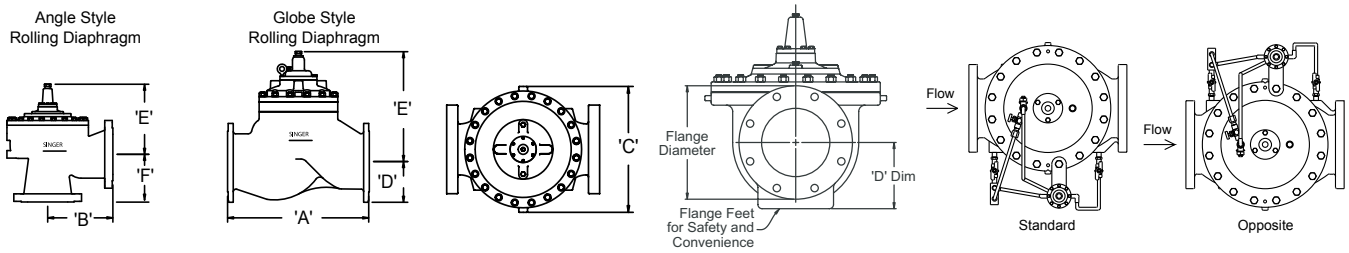



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ISO | 200mm | 250mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 800 mm | 900 mm | 1000 mm |
| **Globe Dimensions** | | BS4504 | All figures shown in mm unless otherwise stated. | | | | | | | | | | | |
| Lay Length | A | BSPT | - | - | - | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | BSPT | - | - | - | - | - | - | - | - | - | - | - | - |
| Lay Length | A | PN10 / PN16 | 635 | 660 | 699 | 914 | 1067 | 1143 | 1283 | 1562 | 1607 | 1776 | 1776 | 1890 / 1911 |
| Centerline to Bottom | D | PN10 / PN16 | 178 | 217 | 241 | 298 | 318 | 354 | 419 | 435 | 499 | 526 | 603 | 629 / 641 |
| Lay Length | A | PN25 / PN40 | 660 | 695 | 699 | 956 | 1108 | 1184 | 1327 | 1607 | - | - | - | 1930 / --- |
| Centerline to Bottom | D | PN25 / PN40 | 197 | 236 | 241 | 324 | 356 | 387 | 457 | 499 | - | - | - | 673 / --- |
| **Angle Dimensions** | | | | | | | | | | | | | | |
| Center Inlet to Discharge | B | BSPT | - | - | - | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | BSPT | - | - | - | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | - | - | - | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | PN10 / PN16 | - | - | - | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | PN25 / PN40 | - | - | - | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | PN25 / PN40 | - | - | - | - | - | - | - | - | - | - | - | - |
| **Common Dimensions Globe** | | | | | | | | | | | | | | |
| Width | C | | 381 | 450 | 562 | 660 | 800 | 775 | 914 | 914 | 1262 | 1262 | 1262 | 1624 |
| Height (To Stem Cap) Globe | E | | 368 | 480 | 592 | 679 | 797 | 797 | 797 | 875 | 1162 | 1162 | 1162 | 1550 |
| Height (To Stem Cap) Angle | E | | - | - | - | - | - | - | - | - | - | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | FNPT | Inches | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | mm | 43 | 48 | 83 | 95 | 120 | 120 | 120 | 141 | 150 | 150 | 150 | 229 |
| Displaced Bonnet Volume (Litres) | | | 2 | 5 | 6 | 9 | 26 | 26 | 26 | 34 | 56 | 56 | 56 | 163 |
| Approximate Shipping Weight (Kilograms) | | | 180 | 324 | 408 | 635 | 1089 | 1179 | 1270 | 2155 | 2721 | 2993 | 3175 | 6350 |
| **Flow Capacities (L/s) Globe** | | | | | | | | | | | | | | |
| $K_v$ - Globe | | | 120 | 230 | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1870 | 1900 | 3875 |
| $K_v$ - Angle | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 145 | 259 | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2120 | 2126 | 2132 | 3500 |
| Intermittent (Globe) | | | 170 | 295 | 465 | 661 | 1320 | 1320 | 1320 | 1640 | 2362 | 2368 | 2375 | 4375 |
| Momentary (Globe) | | | 303 | 530 | 833 | 1211 | 1893 | 1896 | 1899 | 2460 | 4255 | 4261 | 4267 | 7867 |
| **Maximum Pressure Ratings** | | | | | | | | | | | | | | |
| Bar | | BSPT | - | - | - | - | - | - | | - | - | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar | | PN25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| **Maximum Temperature** | | | | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

*Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request




See pilot system information, page 207.
For additional Engineering notes, see page 242.

# MODEL 106-PT / 106-PTC / S106-PT / S106-PTC DOUBLE CHAMBER HYDRAULICALLY OPERATED VALVE

## KEY FEATURES

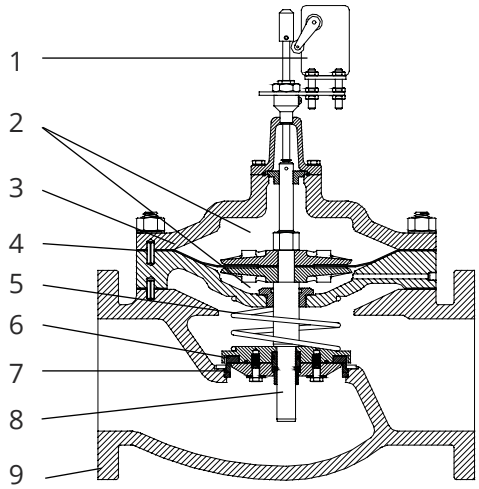
- Maintains positive control under all operating pressures
- Precise positioning
- Internal drop check option included on the PTC model
- Available in globe and angle style

## PRODUCT OVERVIEW

The 106-PT and 106-PTC series control valves are hydraulically operated by introducing or releasing water from the control chambers. PT and PTC valves have two operating chambers that are divided from each other by the diaphragm, and are separated from the flowing media by an adaptor plate. 106-PTC is an enhancement of the 106-PT and includes an internal drop check feature. This mechanical check provides non-slam closure on reverse flow, independently of the stem position or the pilot operation.
PT and PTC valves are usually combined with Singer Valve specific purpose pilots and accessories to provide control for a wide range of functions: typically pump control and solenoid control applications. Refer to Main Valve Options on page 62 and Pilots & Accessories on page 207 to further customize the valve to suit specific applications.and accessories options. Customize for functions like controlling pressure, flow or level or in almost limitless combinations to suit specific applications.

## PRODUCT LINE DRAWING

1. Optional Model X129 Limit Switch Assembly
2. Double Chambers Separated From The Flowing Media
3. ASTM A536 Ductile Iron Construction
4. Diaphragm Buna-N or EPDM
5. Optional Internal Check Feature (for PT series)
6. Buna-N or EPDM Resilient Disc
7. AISI 316 Stainless Steel Seat
8. AISI 316 Stainless Steel Stem
9. NSF 61 Fusion Bonded Epoxy Coating




## ALTERNATIVE MODELS

A106-PT Angle

## SELECTION

The 106-PT and 106-PTC valves operate by introducing or exhausting water from the upper and lower chambers at controlled rates. Since the operating chambers are separated from the flowing media, a positive and precise differential pressure can be established across the diaphragm. Valves are sized to provide an appropriate pressure drop for each application. Valves usually exhaust to atmosphere

Sizing is ultimately determined by the specific application. Refer to the capacity charts for general guidelines.

# VALVE SIZES & MATERIALS

| Valve Materials | | | |
|---|---|---|---|
| | **Standard** | | **Optional** |
| Available Sizes | Threaded | Flanged | - |
| Globe | 2 in to 3 in (50-80 mm) | 2 in to 24 in (50-600 mm) | - |
| Angle | 2 in to 3 in (50 mm-80 mm) | 2 in to 12 in, 16 in (50-300 mm, 400 mm) | - |
| **Valve Components** | | | |
| 1. Valve Body, Cover | 65-45-12 Ductile Iron | | 316 Stainless Steel (limited sizes) |
| 2. Seat Ring | 316 Stainless Steel | | - |
| 3. Disc Retainer | B16 Brass / B62 Bronze / A536 Ductile Iron | | 316 Stainless Steel |
| 4. Stem | 316 Stainless Steel | | - |
| 5. Stem Nut | B16 Brass | | 316 Stainless Steel |
| 6. Spring | 316 Stainless Steel | | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | | 316 Stainless Steel |
| 8. Diaphragm | EPDM | | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-350 microns) | | Consult factory |
| 11. Fasteners | 18-8 Stainless Steel | | 316 Stainless Steel |

Double-chambered automatic control valves are typically used for pump control. Other uses would include but not be limited to low-pressure differential applications. 106-PT and 106-PTC valves are particularly well suited for applications that require valves to open fully regardless of flow or pressure drop or any application where more relatively constant, controlled speed is required.

## AVAILABLE OPTIONS

**Further customize the valve by adding any of the available options below.**

## MAIN VALVE OPTIONS, REFER TO PAGE 62

**Position Indicators (Available for install at Singer Valve or as a field modification)**

- Model X107 stem mounted position indicators
- Model X129 limit switch assembly with Single Pole Double Throw limit switch (Double Pole Double Throw optional)
- Model X156 analog position transmitters (4 - 20 mA)

**Oxy-Nitride Stem**

**Internal Drop Check**

**Grooved Ends**

**Reclaimed Water**

## PILOTS & ACCESSORIES, REFER TO PG. 207

## MATERIALS OF CONSTRUCTION

Individual components can be upgraded from ductile iron, bronze and brass to stainless steel, for most sizes. Consult with Singer Valve.

## ANTI-CAVITATION TRIM

Model 106-AC allows very high pressure drops in one valve, while retaining the standard 106 valve features. See page 78.

Not available on PTC valves.

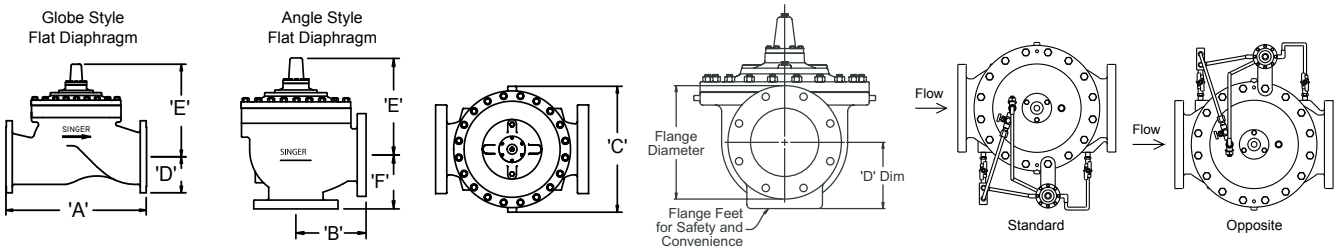
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **2 in** | **2-1/2 in** | **3 in** | **4 in** | **6 in** | **8 in** |
| **Globe Dimensions** | | | **All figures show in inches unless otherwise stated** | | | | | |
| Lay Length | A | FNPT | 9.38 | 11.00 | 13.50 | - | - | - |
| Centerline to Bottom | D | FNPT | 2.75 | 3.38 | 3.68 | - | - | - |
| Lay Length | A | 150F | 9.38 | 11.00 | 12.00 | 15.00 | 20.00 | 25.38 |
| Centerline to Bottom | D | 150F | 3.00 | 3.50 | 3.75 | 4.60 | 5.60 | 7.88 |
| Lay Length | A | 300F | 10.00 | 11.63 | 13.25 | 15.63 | 21.00 | 26.38 |
| Centerline to Bottom | D | 300F | 3.25 | 3.75 | 4.13 | 5.09 | 6.34 | 7.88 |
| **Angle Dimensions** | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | 4.69 | 5.50 | 6.63 | - | - | - |
| Center Discharge to Inlet | F | FNPT | 3.25 | 4.00 | 4.63 | - | - | - |
| Center Inlet to Discharge | B | 150F | 4.75 | 5.50 | 6.06 | 7.50 | 10.00 | 12.75 |
| Center Discharge to Inlet | F | 150F | 3.25 | 4.00 | 4.06 | 5.00 | 6.00 | 8.00 |
| Center Inlet to Discharge | B | 300F | 5.00 | 5.88 | 6.43 | 7.88 | 10.50 | 13.25 |
| Center Discharge to Inlet | F | 300F | 3.50 | 4.31 | 4.43 | 5.31 | 6.50 | 8.50 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | |
| Width | C | | 6.50 | 8.19 | 9.25 | 10.88 | 16.75 | 21.63 |
| Height (To Stem Cap) Globe | E | | 6.13 | 8.93 | 9.75 | 10.88 | 13.88 | 17.75 |
| Height (To Stem Cap) Angle | E | | 6.13 | 8.93 | 9.75 | 10.88 | 13.88 | 17.75 |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 9/16 | 1 | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | 0.02 | 0.1 | 0.1 | 0.2 | 0.6 | 1.7 |
| Approximate Shipping Weight (Lbs) | | | 40 | 65 | 100 | 175 | 400 | 650 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | |
| $C_v$ - Globe | | | 55 | 80 | 110 | 200 | 460 | 800 |
| $C_v$ - Angle | | | 63 | 90 | 135 | 230 | 535 | 950 |
| Continuous (Globe) | | | 210 | 300 | 460 | 800 | 1800 | 3100 |
| Intermittent (Globe) | | | 260 | 375 | 575 | 1000 | 2250 | 3875 |
| Momentary (Globe) | | | 470 | 670 | 1030 | 1800 | 4000 | 7000 |
| **Maximum Pressure Ratings** (Ductile Only) | | | | | | | | |
| PSI[1] | | FNPT | 400 | 400 | 400 | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

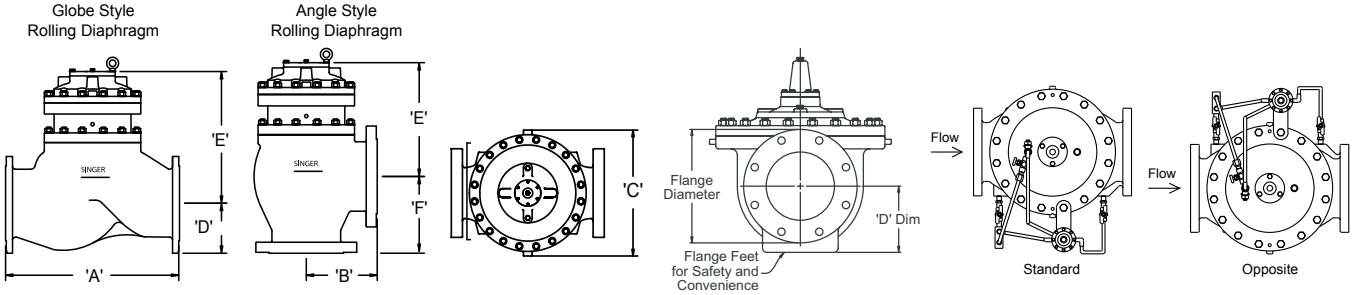



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **6 in** | **8 in** | **10 in** | **12 in** | **14 in** | **16 in** | **20 in** | **24 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | Consult with Singer Valve for availability | | 29.75 | 34.00 | 31.00 | 41.38 | 52.00 | 61.50 |
| Centerline to Bottom | D | 150F | | | 8.56 | 9.50 | 10.50 | 11.75 | 14.43 | 17.13 |
| Lay Length | A | 300F | | | 31.12 | 35.50 | 32.50 | 43.50 | 53.62 | 63.25 |
| Centerline to Bottom | D | 300F | | | 9.31 | 10.25 | 11.50 | 12.75 | 15.75 | 19.65 |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 11.50 | 13.75 | - | 18.00 | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 12.50 | 12.50 | - | 15.69 | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 12.19 | 14.50 | - | 18.81 | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 13.19 | 13.25 | - | 16.50 | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | - | - | 22.13 | 26.00 | 26.00 | 32.00 | 35.00 | 49.68 |
| Height (To Stem Cap) Globe | E | | - | - | 22.63 | 27.00 | 27.00 | 32.50 | 41.75 | 44.30 |
| Height (To Stem Cap) Angle | E | | - | - | 19.34 | 24.00 | - | 29.50 | - | - |
| Body Port Tapping | | FNPT | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | | MNPT | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | | FNPT | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | | - | - | 3-1/4 | 3-3/4 | 3-3/4 | 4-3/4 | 5-9/16 | 6 |
| Displaced Bonnet Volume (Gallons) | | | - | - | 1.5 | 2.3 | 2.3 | 6.8 | 9.0 | 14.8 |
| Approximate Shipping Weight (Lbs) | | | - | - | 900 | 1300 | 1400 | 2300 | 3670 | 5000 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | |
| $C_v$ - Globe | | | - | - | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 |
| $C_v$ - Angle | | | - | - | 1400 | 2450 | - | 4000 | - | - |
| Continuous (Globe) | | | - | - | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 |
| Intermittent (Globe) | | | - | - | 6100 | 8800 | 11500 | 14250 | 21700 | 31200 |
| Momentary (Globe) | | | - | - | 11000 | 16000 | 19000 | 25000 | 39000 | 56200 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| PSI[1] | | FNPT | - | - | - | - | - | - | - | - |
| PSI | | 150F | - | - | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | - | - | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | |
| Fahrenheit | | | - | - | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

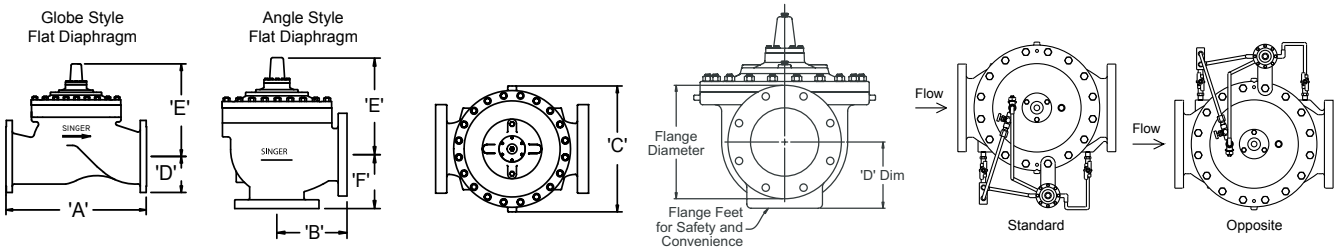



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | |
|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm |
| **Globe Dimensions** | | | All figures show in mm unless otherwise stated | | | | | |
| Lay Length | A | FNPT | 238 | 279 | 343 | - | - | - |
| Centerline to Bottom | D | FNPT | 70 | 86 | 93 | - | - | - |
| Lay Length | A | 150F | 238 | 279 | 305 | 381 | 508 | 645 |
| Centerline to Bottom | D | 150F | 76 | 89 | 95 | 117 | 142 | 200 |
| Lay Length | A | 300F | 254 | 295 | 337 | 397 | 533 | 670 |
| Centerline to Bottom | D | 300F | 83 | 95 | 105 | 129 | 161 | 200 |
| **Angle Dimensions** | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | 119 | 140 | 168 | - | - | - |
| Center Discharge to Inlet | F | FNPT | 83 | 102 | 118 | - | - | - |
| Center Inlet to Discharge | B | 150F | 121 | 140 | 154 | 191 | 254 | 324 |
| Center Discharge to Inlet | F | 150F | 83 | 102 | 103 | 127 | 152 | 203 |
| Center Inlet to Discharge | B | 300F | 127 | 149 | 163 | 200 | 267 | 337 |
| Center Discharge to Inlet | F | 300F | 89 | 109 | 113 | 135 | 165 | 216 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | |
| Width | C | | 165 | 208 | 235 | 276 | 425 | 549 |
| Height (To Stem Cap) Globe | E | | 156 | 227 | 248 | 276 | 353 | 451 |
| Height (To Stem Cap) Angle | E | | 156 | 227 | 248 | 276 | 353 | 451 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 25 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 18 | 29 | 45 | 79 | 181 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | |
| $K_v$ - Globe | | | 13 | 19 | 26 | 47 | 110 | 190 |
| $K_v$ - Angle | | | 15 | 21 | 32 | 55 | 123 | 225 |
| Continuous (Globe) | | | 13 | 19 | 29 | 50 | 114 | 196 |
| Intermittent (Globe) | | | 16 | 24 | 36 | 63 | 142 | 244 |
| Momentary (Globe) | | | 30 | 42 | 65 | 114 | 252 | 442 |
| **Maximum Pressure Ratings** | | | | | | | | |
| Bar[1] | | FNPT | 27.6 | 27.6 | 27.6 | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

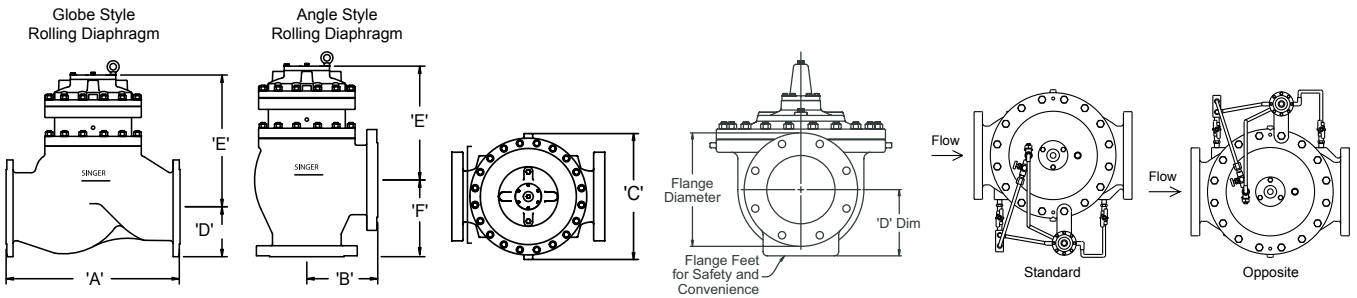



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated | | | | | | | |
| Lay Length | A | FNPT | Consult with Singer Valve for availability | | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | | | - | - | - | - | - | - |
| Lay Length | A | 150F | | | 756 | 864 | 787 | 1051 | 1321 | 1562 |
| Centerline to Bottom | D | 150F | | | 217 | 241 | 267 | 298 | 367 | 435 |
| Lay Length | A | 300F | | | 790 | 902 | 826 | 1105 | 1362 | 1607 |
| Centerline to Bottom | D | 300F | | | 243 | 260 | 292 | 324 | 400 | 499 |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 292 | 349 | - | 457 | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 318 | 318 | - | 399 | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 310 | 368 | - | 478 | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 335 | 337 | - | 419 | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | - | - | 562 | 660 | 660 | 813 | 889 | 1262 |
| Height (To Stem Cap) Globe | E | | - | - | 575 | 686 | 686 | 826 | 1060 | 1125 |
| Height (To Stem Cap) Angle | E | | - | - | 491 | 610 | - | 749 | - | - |
| Body Port Tapping | FNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | - | - | 83 | 95 | 95 | 120 | 141 | 150 |
| Displaced Bonnet Volume (Litres) | | | - | - | 6 | 9 | 9 | 26 | 34 | 56 |
| Approximate Shipping Weight (Kilograms) | | | - | - | 480 | 590 | 635 | 1043 | 1665 | 2268 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | |
| $K_v$ - Globe | | | - | - | 310 | 500 | 610 | 780 | 1210 | 1800 |
| $K_v$ - Angle | | | - | - | 332 | 581 | - | 948 | - | - |
| Continuous (Globe) | | | - | - | 309 | 442 | 536 | 694 | 1104 | 1577 |
| Intermittent (Globe) | | | - | - | 385 | 555 | 726 | 899 | 1370 | 1968 |
| Momentary (Globe) | | | - | - | 694 | 1009 | 1199 | 1577 | 2460 | 3546 |
| **Maximum Pressure Ratings** | | | | | | | | | | |
| Bar[1] | | FNPT | - | - | - | - | - | - | - | - |
| Bar | | 150F | - | - | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | - | - | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 Bar as standard. Valves rated and stamped 41 Bar on request.

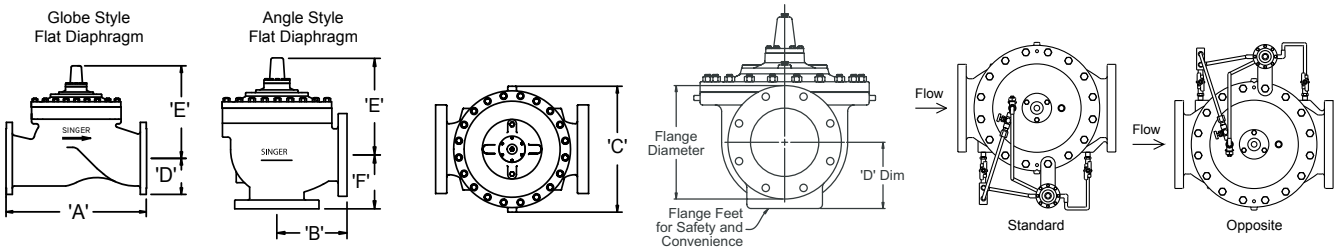



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | |
|---|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ISO** | **50 mm** | **65 mm** | **80 mm** | **100 mm** | **150 mm** | **200 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | | | |
| Lay Length | A | BSPT | 238 | 279 | 343 | - | - | - |
| Centerline to Bottom | D | BSPT | 70 | 86 | 93 | - | - | - |
| Lay Length | A | PN10 / PN16 | 238 | 279 | 318 | 381 | 508 | 645 |
| Centerline to Bottom | D | PN10 / PN16 | 76 | 89 | 100 | 117 | 142 | 200 |
| Lay Length | A | PN25 / PN40 | 238 | 279 | 318 | 397 | 533 | 670 |
| Centerline to Bottom | D | PN25 / PN40 | 76 | 89 | 100 | 129 | 161 | 200 |
| **Angle Dimensions** | | | | | | | | |
| Center Inlet to Discharge | B | BSPT | 119 | 140 | 168 | - | - | - |
| Center Discharge to Inlet | F | BSPT | 83 | 102 | 118 | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | 121 | 140 | 163 | 191 | 254 | 324 |
| Center Discharge to Inlet | F | PN10 / PN16 | 83 | 102 | 113 | 127 | 152 | 203 |
| Center Inlet to Discharge | B | PN25 / PN40 | 121 | 140 | 163 | 200 | 267 | 337 |
| Center Discharge to Inlet | F | PN25 / PN40 | 83 | 102 | 113 | 135 | 165 | 216 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | |
| Width | C | | 165 | 208 | 235 | 276 | 425 | 549 |
| Height (To Stem Cap) Globe | E | | 156 | 227 | 248 | 276 | 353 | 451 |
| Height (To Stem Cap) Angle | E | | 156 | 227 | 248 | 276 | 353 | 451 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 25 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 18 | 29 | 45 | 79 | 181 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | |
| $K_v$ - Globe | | | 13 | 19 | 26 | 47 | 110 | 190 |
| $K_v$ - Angle | | | 15 | 21 | 32 | 55 | 123 | 225 |
| Continuous (Globe) | | | 13 | 19 | 29 | 50 | 114 | 196 |
| Intermittent (Globe) | | | 16 | 24 | 36 | 63 | 142 | 244 |
| Momentary (Globe) | | | 30 | 42 | 65 | 114 | 252 | 442 |
| **Maximum Pressure Ratings** | | | | | | | | |
| Bar | | BSPT | 27.6 | 27.6 | 27.6 | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar | | PN25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° |

*Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

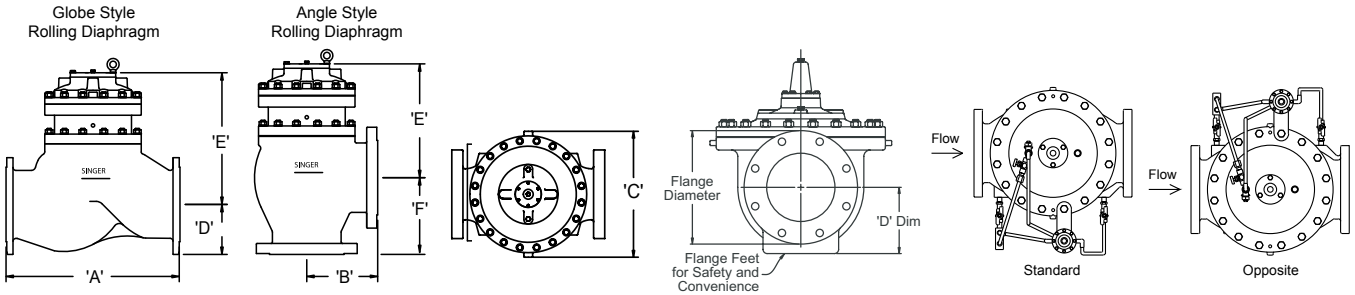



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated | | | | | | | |
| Lay Length | A | FNPT | Consult with Singer Valve for availability | | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | | | - | - | - | - | - | - |
| Lay Length | A | 150F | | | 756 | 864 | 787 | 1051 | 1321 | 1562 |
| Centerline to Bottom | D | 150F | | | 217 | 241 | 267 | 298 | 367 | 435 |
| Lay Length | A | 300F | | | 790 | 902 | 826 | 1105 | 1362 | 1607 |
| Centerline to Bottom | D | 300F | | | 243 | 260 | 292 | 324 | 400 | 499 |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 292 | 349 | - | 457 | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 318 | 318 | - | 399 | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 310 | 368 | - | 478 | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 335 | 337 | - | 419 | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | - | - | 562 | 660 | 660 | 813 | 889 | 1262 |
| Height (To Stem Cap) Globe | E | | - | - | 575 | 686 | 686 | 826 | 1060 | 1125 |
| Height (To Stem Cap) Angle | E | | - | - | 491 | 610 | - | 749 | - | - |
| Body Port Tapping | FNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | - | - | 83 | 95 | 95 | 120 | 141 | 150 |
| Displaced Bonnet Volume (Litres) | | | - | - | 6 | 9 | 9 | 26 | 34 | 56 |
| Approximate Shipping Weight (Kilograms) | | | - | - | 480 | 590 | 635 | 1043 | 1665 | 2268 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | |
| $K_v$ - Globe | | | - | - | 310 | 500 | 610 | 780 | 1210 | 1800 |
| $K_v$ - Angle | | | - | - | 332 | 581 | - | 948 | - | - |
| Continuous (Globe) | | | - | - | 309 | 442 | 536 | 694 | 1104 | 1577 |
| Intermittent (Globe) | | | - | - | 385 | 555 | 726 | 899 | 1370 | 1968 |
| Momentary (Globe) | | | - | - | 694 | 1009 | 1199 | 1577 | 2460 | 3546 |
| **Maximum Pressure Ratings** | | | | | | | | | | |
| Bar[1] | | FNPT | - | - | - | - | - | - | - | - |
| Bar | | 150F | - | - | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | - | - | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 Bar as standard. Valves rated and stamped 41 Bar on request.




See pilot system information, page 207.
For additional Engineering notes, see page 242.

# MODEL 206-PT / 206-PTC / S206-PT / S206-PTC DOUBLE CHAMBER HYDRAULICALLY OPERATED VALVE

## KEY FEATURES

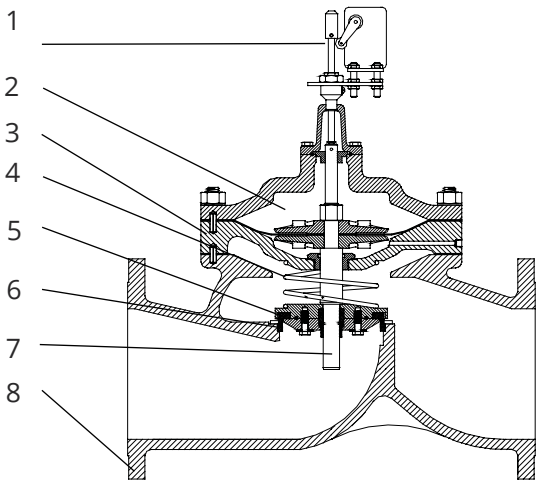
- Positive control, even with low operating pressure
- Precise positioning
- Internal drop check included on the PTC model
- Available in globe and angle style

## PRODUCT OVERVIEW

The 206-PT and 206-PTC series control valves are hydraulically operated by introducing or releasing water from the control chambers. PT and PTC valves have two operating chambers which are divided from each other by the diaphragm, and are separated from the flowing media by an adaptor plate.
206-PTC is an enhancement of the 206-PT and includes an internal drop check feature. This mechanical check provides non-slam closure on reverse flow, independently of the stem position or the pilot operation.
PT and PTC valves are usually combined with Singer Valve specific purpose pilots and accessories to provide control for a wide range of functions: typically pump control and solenoid control applications.
Refer to Main Valve Options on page 62 and Pilots & Accessories on page 207 to further customize the valve to suit specific applications.

## PRODUCT LINE DRAWING

1. Optional Model X129 Limit Switch Assembly
2. Double Chambers Separated From The Flowing Media
3. ASTM A536 Ductile Iron Construction
4. Optional Internal Check Feature (PT)
5. EPDM Resilient Disc
6. AISI 316 Stainless Steel Seat
7. AISI 316 Stainless Steel Stem
8. NSF 61 Fusion Bonded Epoxy Coating




## ALTERNATIVE MODELS

A206-PT Angle

## SELECTION

The 206-PT and 206-PTC valves operate by introducing or exhausting water from the upper and lower chambers at controlled rates. Since the operating chambers are separated from the flowing media, a positive and precise differential pressure can be established across the diaphragm. Valves are sized to provide an appropriate pressure drop for each application. Valves usually exhaust to atmosphere. Sizing is ultimately determined by the specific application. Refer to the capacity charts for general guidelines.

# VALVE SIZES & MATERIALS:

| Valve Materials | | |
|---|---|---|
| | **Standard** | **Optional** |
| Available Sizes | Flanged | - |
| Globe | 3 in to 36 in (80-900 mm) | - |
| Angle | 4 in to 8 in (100 mm-200 mm) | - |
| **Valve Components** | | |
| 1. Valve Body, Cover | 65-45-12 Ductile Iron | 316 Stainless Steel (limited sizes) |
| 2. Seat Ring | 316 Stainless Steel | - |
| 3. Disc Retainer | B16 Brass / B62 Bronze / A536 Ductile Iron | 316 Stainless Steel |
| 4. Stem | 316 Stainless Steel | - |
| 5. Stem Nut | B16 Brass | 316 Stainless Steel |
| 6. Spring | 316 Stainless Steel | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | 316 Stainless Steel |
| 8. Diaphragm | EPDM | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-350 microns) | Consult factory |
| 11. Fasteners | 18-8 Stainless Steel | 316 Stainless Steel |

Double-chambered automatic control valves are typically used for pump control. Other uses would include but not be limited to low-pressure differential applications. 206-PT and 206-PTC valves are particularly well suited for applications that require valves to open fully regardless of flow or pressure drop or any application where more relatively constant, controlled speed is required.

## AVAILABLE OPTIONS

**Further customize the valve by adding any of the available options below.**

## MAIN VALVE OPTIONS, REFER TO PAGE 62

**Position Indicators (Available for install at Singer Valve or as a field modification)**

- Model X107 stem mounted position indicators
- Model X129 limit switch assembly with Single Pole Double Throw limit switch (Double Pole Double Throw optional)
- Model X156 analog position transmitters (4 - 20 mA)

**Oxy-Nitride Stem**

**Grooved Ends**

**Reclaimed Water**

## PILOTS & ACCESSORIES, REFER TO PG. 207

## MATERIALS OF CONSTRUCTION

Individual components can be upgraded from ductile iron, bronze and brass to stainless steel, for most sizes. Consult with Singer Valve.

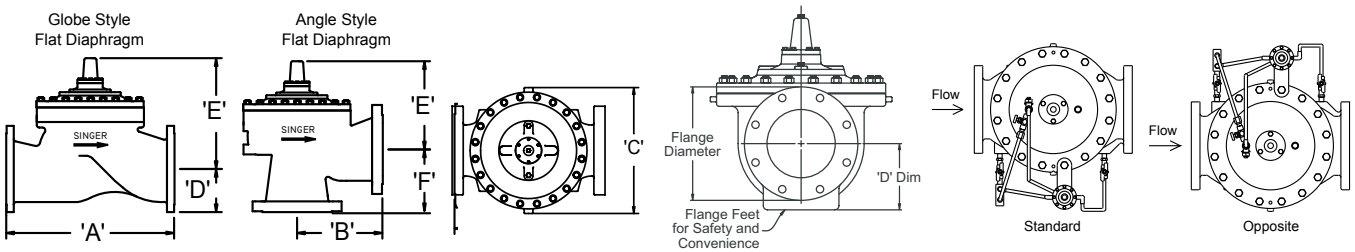
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

## VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | |
|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **3 in** | **4 in** | **6 in** | **8 in** | **10 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | | |
| Lay Length | A | FNPT | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - |
| Lay Length | A | 150F | 12.00 | 15.00 | 20.13 | 25.00 | 24.50 |
| Centerline to Bottom | D | 150F | 4.00 | 4.60 | 5.62 | 6.75 | 8.56 |
| Lay Length | A | 300F | - | 15.63 | 21.00 | 26.00 | 25.88 |
| Centerline to Bottom | D | 300F | - | 5.00 | 6.34 | 7.50 | 9.31 |
| **Angle Dimensions** | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | 7.56 | 10.19 | 12.50 | - |
| Center Discharge to Inlet | F | 150F | - | 5.94 | 6.19 | 9.00 | - |
| Center Inlet to Discharge | B | 300F | - | 7.88 | 10.63 | 13.00 | - |
| Center Discharge to Inlet | F | 300F | - | 6.25 | 6.81 | 9.50 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | |
| Width | C | | 8.19 | 10.00 | 12.50 | 16.00 | 20.00 |
| Height (To Stem Cap) Globe | E | | 8.93 | 11.28 | 12.25 | 16.25 | 21.38 |
| Height (To Stem Cap) Angle | E | | - | 9.50 | 10.50 | 13.43 | - |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 15/16 | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | 0.02 | 0.1 | 0.2 | 0.6 | 1.7 |
| Approximate Shipping Weight (Lbs) | | | 75 | 100 | 250 | 500 | 650 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | |
| $C_v$ - Globe | | | 60 | 150 | 250 | 505 | 985 |
| $C_v$ - Angle | | | - | 150 | 250 | 560 | - |
| Continuous (Globe) | | | 300 | 580 | 1025 | 2300 | 4100 |
| Intermittent (Globe) | | | 373 | 690 | 1190 | 2700 | 4670 |
| Momentary (Globe) | | | 564 | 1236 | 2160 | 4800 | 8400 |
| **Maximum Pressure Ratings** (Ductile Only) | | | | | | | |
| PSI | | FNPT | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

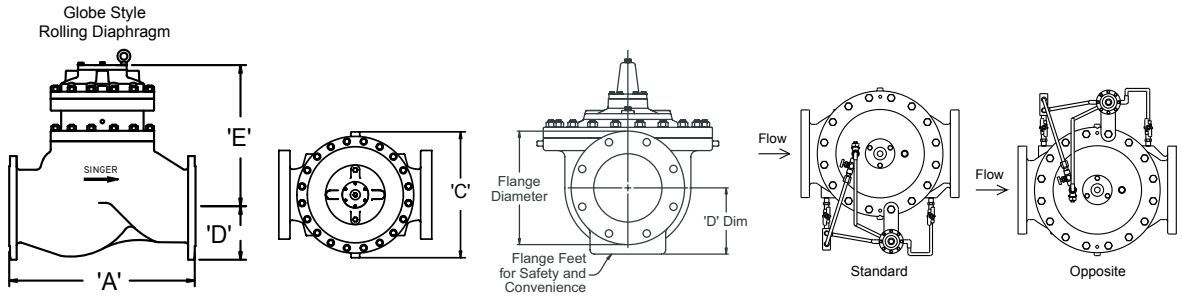



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## VALVE DATA (US UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **12 in** | **16 in** | **18 in** | **20 in** | **24 in x 16 in** | **24 in x 20 in** | **30 in** | **36 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated.** | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 27.50 | 36.00 | 42.00 | 45.00 | 50.50 | 61.50 | 69.93 | 69.93 |
| Centerline to Bottom | D | 150F | 9.50 | 11.75 | 12.50 | 13.93 | 16.50 | 17.13 | 20.69 | 23.75 |
| Lay Length | A | 300F | 29.00 | 37.63 | 43.63 | 46.63 | 52.25 | 63.25 | - | - |
| Centerline to Bottom | D | 300F | 10.50 | 12.75 | 14.00 | 15.25 | 18.00 | 19.65 | - | - |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | 22.13 | 26.00 | 31.31 | 31.50 | 36.00 | 36.00 | 49.75 | 49.75 |
| Height (To Stem Cap) Globe | E | | 22.63 | 27.00 | 32.38 | 32.38 | 32.38 | 41.75 | 45.75 | 45.75 |
| Height (To Stem Cap) Angle | E | | - | - | - | - | - | - | - | - |
| Body Port Tapping | | FNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | | MNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | | FNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | | 3-1/4 | 3-3/4 | 4-3/4 | 4-3/4 | 4-3/4 | 5-9/16 | 6 | 6 |
| Displaced Bonnet Volume (Gallons) | | | 1.5 | 2.3 | 6.8 | 6.8 | 14.8 | 9.0 | 14.8 | 14.8 |
| Approximate Shipping Weight (Lbs) | | | 900 | 1400 | 2400 | 2600 | 2800 | 3240 | 6200 | 7000 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | |
| $C_v$ - Globe | | | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 8000 |
| $C_v$ - Angle | | | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33650 | 33800 |
| Intermittent (Globe) | | | 7320 | 10470 | 20915 | 20915 | 20915 | 26000 | 37490 | 37640 |
| Momentary (Globe) | | | 13200 | 19200 | 30000 | 30050 | 30100 | 39000 | 67490 | 67640 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| PSI | | FNPT | - | - | - | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

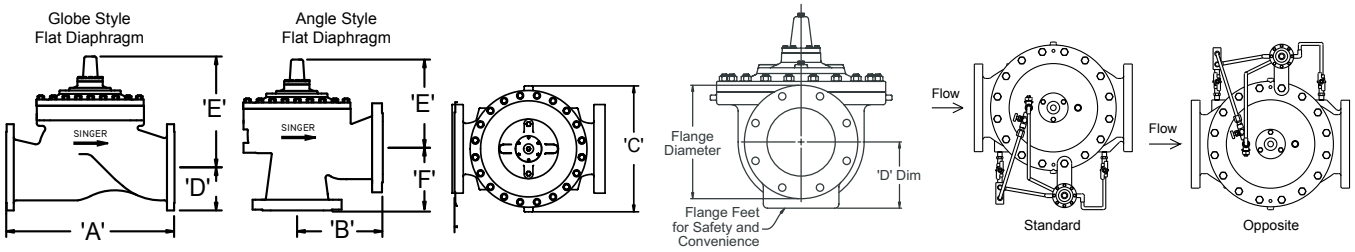



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | |
|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **80 mm** | **100 mm** | **150 mm** | **200 mm** | **250 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | | |
| Lay Length | A | FNPT | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - |
| Lay Length | A | 150F | 305 | 381 | 511 | 635 | 622 |
| Centerline to Bottom | D | 150F | 102 | 117 | 143 | 171 | 217 |
| Lay Length | A | 300F | - | 397 | 533 | 660 | 657 |
| Centerline to Bottom | D | 300F | - | 127 | 161 | 191 | 236 |
| **Angle Dimensions** | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | 192 | 259 | 318 | - |
| Center Discharge to Inlet | F | 150F | - | 151 | 157 | 229 | - |
| Center Inlet to Discharge | B | 300F | - | 200 | 270 | 330 | - |
| Center Discharge to Inlet | F | 300F | - | 159 | 173 | 241 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | |
| Width | C | | 208 | 254 | 318 | 406 | 508 |
| Height (To Stem Cap) Globe | E | | 227 | 287 | 311 | 413 | 543 |
| Height (To Stem Cap) Angle | E | | - | 241 | 267 | 341 | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.1 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 34 | 45 | 113 | 227 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | |
| $K_v$ - Globe | | | 14 | 36 | 60 | 120 | 230 |
| $K_v$ - Angle | | | - | 36 | 59 | 138 | - |
| Continuous (Globe) | | | 19 | 37 | 65 | 145 | 259 |
| Intermittent (Globe) | | | 24 | 44 | 75 | 170 | 295 |
| Momentary (Globe) | | | 36 | 78 | 136 | 303 | 530 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | |
| Bar | | FNPT | - | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

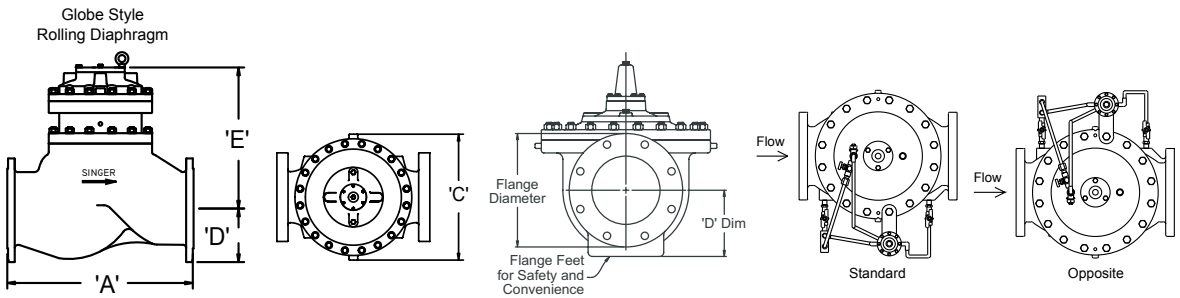



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **300 mm** | **400 mm** | **450 mm** | **500 mm** | **600 x 400 mm** | **600 x 500 mm** | **900 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated.** | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | | - | - |
| Lay Length | A | 150F | 699 | 914 | 1067 | 1143 | 1283 | 1562 | 1776 |
| Centerline to Bottom | D | 150F | 241 | 298 | 318 | 354 | 419 | 435 | 588 |
| Lay Length | A | 300F | 737 | 956 | 1108 | 1184 | 1327 | 1607 | - |
| Centerline to Bottom | D | 300F | 267 | 324 | 356 | 387 | 457 | 499 | - |
| **Angle Dimensions** | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - |
| **Common Dimensions Globe** | | | | | | | | | |
| Width | C | | 562 | 660 | 795 | 800 | 914 | 914 | 1262 |
| Height (To Stem Cap) Globe | E | | 575 | 686 | 822 | 822 | 822 | 1060 | 1162 |
| Height (To Stem Cap) Angle | E | | - | - | - | - | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | 83 | 95 | 120 | 120 | 120 | 141 | 150 |
| Displaced Bonnet Volume (Litres) | | | 6 | 9 | 26 | 26 | 26 | 34 | 56 |
| Approximate Shipping Weight (Kilograms) | | | 408 | 635 | 1089 | 1179 | 1270 | 1470 | 3175 |
| **Flow Capacities (L/s) Globe** | | | | | | | | | |
| $K_v$ - Globe | | | 370 | 520 | 780 | 810 | 830 | 1210 | 1870 |
| $K_v$ - Angle | | | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2132 |
| Intermittent (Globe) | | | 465 | 661 | 1320 | 1320 | 1320 | 1640 | 2375 |
| Momentary (Globe) | | | 833 | 1211 | 1893 | 1896 | 1899 | 2460 | 4267 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | |
| Bar | | FNPT | - | - | - | - | | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar* | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

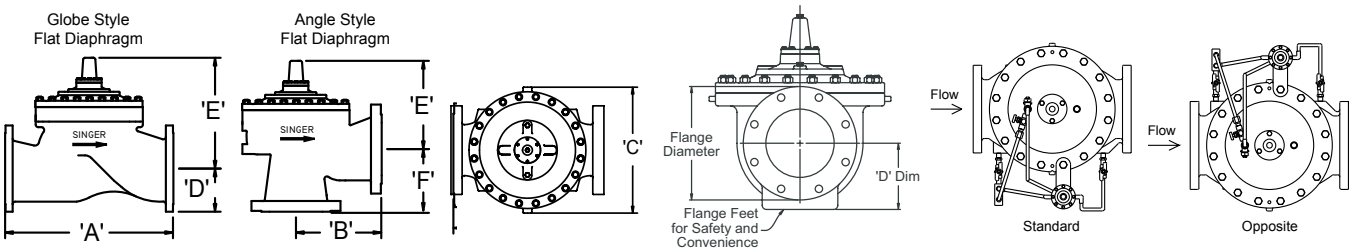



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | |
|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **80 mm** | **100 mm** | **150 mm** | **200 mm** | **250 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | | |
| Lay Length | A | FNPT | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - |
| Lay Length | A | 150F | 305 | 381 | 511 | 635 | 622 |
| Centerline to Bottom | D | 150F | 102 | 117 | 143 | 171 | 217 |
| Lay Length | A | 300F | - | 397 | 533 | 660 | 657 |
| Centerline to Bottom | D | 300F | - | 127 | 161 | 191 | 236 |
| **Angle Dimensions** | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | 192 | 259 | 318 | - |
| Center Discharge to Inlet | F | 150F | - | 151 | 157 | 229 | - |
| Center Inlet to Discharge | B | 300F | - | 200 | 270 | 330 | - |
| Center Discharge to Inlet | F | 300F | - | 159 | 173 | 241 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | |
| Width | C | | 208 | 254 | 318 | 406 | 508 |
| Height (To Stem Cap) Globe | E | | 227 | 287 | 311 | 413 | 543 |
| Height (To Stem Cap) Angle | E | | - | 241 | 267 | 341 | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.1 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 34 | 45 | 113 | 227 | 295 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | |
| $K_v$ - Globe | | | 14 | 36 | 60 | 120 | 230 |
| $K_v$ - Angle | | | - | 36 | 59 | 138 | - |
| Continuous (Globe) | | | 19 | 37 | 65 | 145 | 259 |
| Intermittent (Globe) | | | 24 | 44 | 75 | 170 | 295 |
| Momentary (Globe) | | | 36 | 78 | 136 | 303 | 530 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | |
| Bar | | FNPT | - | - | - | - | - |
| Bar | | PN16 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | PN25 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

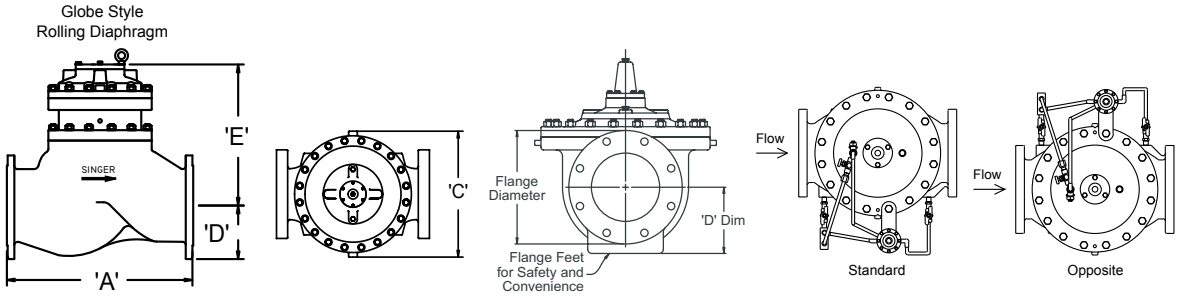



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **300 mm** | **400 mm** | **450 mm** | **500 mm** | **600 x 400 mm** | **600 x 500 mm** | **900 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated.** | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | | - | - |
| Lay Length | A | 150F | 699 | 914 | 1067 | 1143 | 1283 | 1562 | 1776 |
| Centerline to Bottom | D | 150F | 241 | 298 | 318 | 354 | 419 | 435 | 588 |
| Lay Length | A | 300F | 737 | 956 | 1108 | 1184 | 1327 | 1607 | - |
| Centerline to Bottom | D | 300F | 267 | 324 | 356 | 387 | 457 | 499 | - |
| **Angle Dimensions** | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - |
| **Common Dimensions Globe** | | | | | | | | | |
| Width | C | | 562 | 660 | 795 | 800 | 914 | 914 | 1262 |
| Height (To Stem Cap) Globe | E | | 575 | 686 | 822 | 822 | 822 | 1060 | 1162 |
| Height (To Stem Cap) Angle | E | | - | - | - | - | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | 83 | 95 | 120 | 120 | 120 | 141 | 150 |
| Displaced Bonnet Volume (Litres) | | | 6 | 9 | 26 | 26 | 26 | 34 | 56 |
| Approximate Shipping Weight (Kilograms) | | | 408 | 635 | 1089 | 1179 | 1270 | 1470 | 3175 |
| **Flow Capacities (L/s) Globe** | | | | | | | | | |
| $K_v$ - Globe | | | 370 | 520 | 780 | 810 | 830 | 1210 | 1870 |
| $K_v$ - Angle | | | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2132 |
| Intermittent (Globe) | | | 465 | 661 | 1320 | 1320 | 1320 | 1640 | 2375 |
| Momentary (Globe) | | | 833 | 1211 | 1893 | 1896 | 1899 | 2460 | 4267 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | |
| Bar | | FNPT | - | - | - | - | | - | - |
| Bar | | PN16 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar* | | PN25 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request




See pilot system information, page 207.
For additional Engineering notes, see page 242.

# MODEL 106-PGM / S106-PGM INTEGRAL BACK-UP, DUAL DIAPHRAGM, HYDRAULICALLY OPERATED VALVE

## KEY FEATURES

- Ideal for applications requiring redundant and back-up security
- Virtually uninterrupted control under a variety of system failures
- Remote annunciation option available
- Available in globe and angle style

## PRODUCT OVERVIEW

The 106-PGM and S106-PGM series valves are designed for particularly sensitive applications or situations where valves are difficult to access and maintain.

The PGM series valves provide integral back-up control and the ability to signal should the desired function move off limits. It can also provide an independent and very positive override.

It is a variation of the standard single chamber 106-PG valve with modifications that add the following features:

- Back-up diaphragm
- Completely self-contained
- Modulating or emergency close back-up
- Back-up components kept out of the main stream until required
- Extremely positive shut-off
- Emergency close for security breach or earthquake

With SRD technology the valve becomes incredibly steady throughout a complete range of flows and eradicates the need of additional low flow bypass valves.

The PGM series valves may be combined with additional Singer Valve specific accessories to add further customization such as:

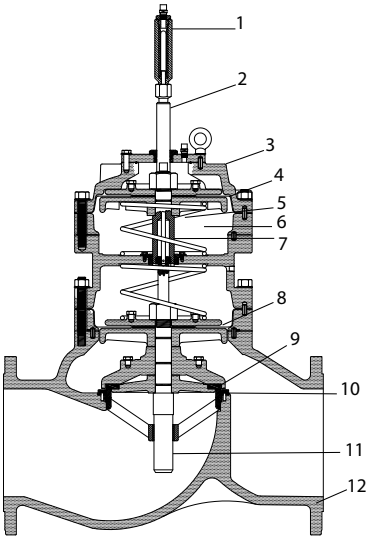
- Back-up pilot system
- Annunciation with an Single Pole Double Throw Limit Switch

Refer to Main Valve Options on page 62 and Pilots & Accessories on page 207 to customize the valve to suit specific applications.

## ALTERNATIVE MODELS

106-PGM Angle

## PRODUCT LINE DRAWING




1. Primary Stem / Position Indicator
2. Secondary Stem
3. ASTM A536 Ductile Iron Construction
4. Buna-N or EPDM Secondary Diaphragm
5. Back-up Secondary Assembly
6. Open to Atmosphere
7. Sliding guide
8. Buna-N / EPDM Primary Diaphragm
9. Buna-N or EPDM Resilient Disc
10. AISI 316 Stainless Steel Seat
11. AISI 316 Stainless Steel Stem
12. NSF 61 Fusion Bonded Epoxy Coating

## VALVE SIZES & MATERIALS

| Valve Materials | | | |
|---|---|---|---|
| | Standard | | Optional |
| Available Sizes | Threaded | Flanged | - |
| Globe | 3 in (80 mm) | 3 in to 24 in (80-600 mm) | - |
| Angle | 3 in (80 mm) | 3 in to 12 in, 16 in (80-300 mm, 400 mm) | - |
| **Valve Components** | | | |
| 1. Valve Body, Cover | 65-45-12 Ductile Iron | | 316 Stainless Steel (limited sizes) |
| 2. Seat Ring | 316 Stainless Steel | | - |
| 3. Disc Retainer | B16 Brass / B62 Bronze / A536 Ductile Iron | | 316 Stainless Steel |
| 4. Stem | 316 Stainless Steel | | - |
| 5. Stem Nut | B16 Brass | | 316 Stainless Steel |
| 6. Spring | 316 Stainless Steel | | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | | 316 Stainless Steel |
| 8. Diaphragm | EPDM | | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-350 microns) | | Consult factory |
| 11. Fasteners | 18-8 Stainless Steel | | 316 Stainless Steel |

## SELECTION

The Singer Model 106-PGM incorporates a second actuator. If the primary system and / or the main valve fails then the back-up pilot system takes over. Under normal operating conditions, there is no external discharge from the PGM. In modulating applications, when the back-up pilot system operates, there is a small (less than 1 USGPM / 0.06 L/s) continuous discharge that should be taken to drain.

The primary pilot function can be duplicated in the secondary pilot system to provide continuing back-up operations or the secondary system can be used for override functions. Consult with Singer Valve with your specific application requirements.

Sizing of PGM valves are based on the same criteria as standard PG models.

## AVAILABLE OPTIONS

**Further customize the valve by adding any of the available options below.**

## MAIN VALVE OPTIONS, REFER TO PAGE 62

**Position Indicators (Available for install at Singer Valve or as a field modification)**

- Model X129 limit switch assembly with Single Pole Double Throw limit switch (Double Pole Double Throw optional)
- Model X156 analog position transmitters (4-20 mA)

**Oxy-Nitride Stem**

**Internal Drop Check**

**Grooved Ends**

**Reclaimed Water**

## PILOTS & ACCESSORIES, REFER TO PG. 207

## MATERIALS OF CONSTRUCTION

Individual components can be upgraded from ductile iron, bronze and brass to stainless steel, for most sizes. Consult with Singer Valve.

## ANTI-CAVITATION TRIM

Model 106-AC allows very high pressure drops in one valve, while retaining the standard 106 valve features. See page 78.

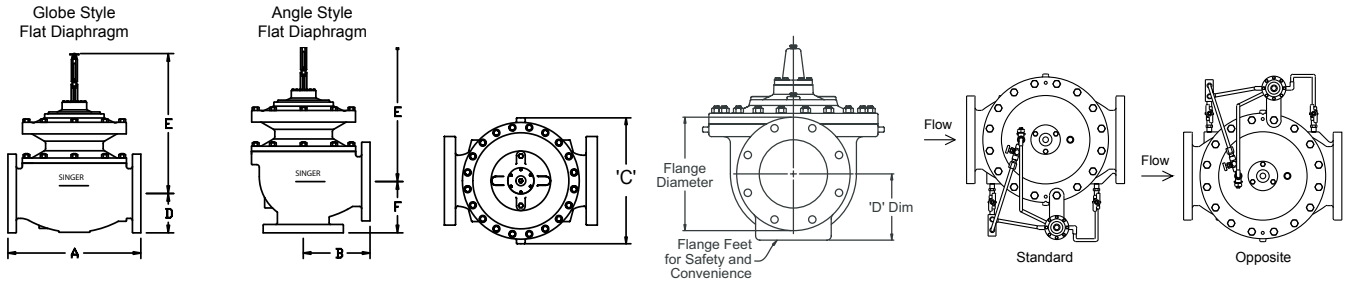
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | |
|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **3 in** | **4 in** | **6 in** | **8 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | |
| Lay Length | A | FNPT | 13.50 | - | - | - |
| Centerline to Bottom | D | FNPT | 3.68 | - | - | - |
| Lay Length | A | 150F | 12.00 | 15.00 | 20.00 | 25.38 |
| Centerline to Bottom | D | 150F | 3.75 | 4.60 | 5.60 | 7.88 |
| Lay Length | A | 300F | 13.25 | 15.63 | 21.00 | 26.38 |
| Centerline to Bottom | D | 300F | 4.13 | 5.09 | 6.34 | 7.88 |
| **Angle Dimensions** | | | | | | |
| Center Inlet to Discharge | B | FNPT | 6.63 | - | - | - |
| Center Discharge to Inlet | F | FNPT | 4.63 | - | - | - |
| Center Inlet to Discharge | B | 150F | 6.06 | 7.50 | 10.00 | 12.75 |
| Center Discharge to Inlet | F | 150F | 4.06 | 5.00 | 6.00 | 8.00 |
| Center Inlet to Discharge | B | 300F | 6.43 | 7.88 | 10.50 | 13.25 |
| Center Discharge to Inlet | F | 300F | 4.43 | 5.31 | 6.50 | 8.50 |
| **Common Dimensions (Globe & Angle)** | | | | | | |
| Width | C | | 9.25 | 10.88 | 16.75 | 21.63 |
| Height (To Indicator) Globe | E | | 17.63 | 19.43 | 21.00 | 26.88 |
| Height (To Indicator) Angle | E | | 17.63 | 19.13 | 20.63 | 27.38 |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | 0.1 | 0.2 | 0.6 | 1.7 |
| Approximate Shipping Weight (Lbs) | | | 150 | 210 | 450 | 705 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | |
| $C_v$ - Globe | | | 110 | 200 | 460 | 800 |
| $C_v$ - Angle | | | 135 | 230 | 535 | 950 |
| Continuous (Globe) | | | 460 | 800 | 1800 | 3100 |
| Intermittent (Globe) | | | 575 | 1000 | 2250 | 3875 |
| Momentary (Globe) | | | 1030 | 1800 | 4000 | 7000 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | |
| PSI[1] | | FNPT | 400 | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

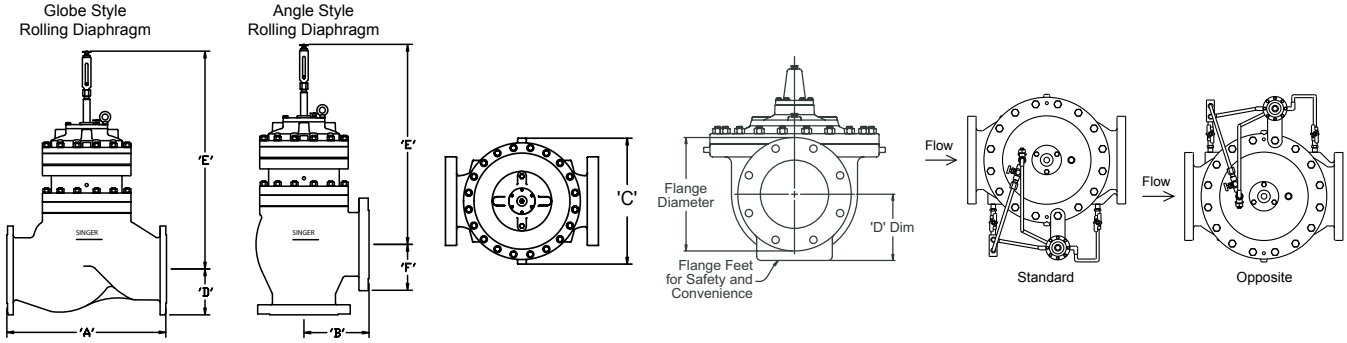



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **6 in** | **8 in** | **10 in** | **12 in** | **14 in** | **16 in** | **20 in** | **24 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated.** | | | | | | | |
| Lay Length | A | FNPT | Consult with Singer Valve for availability | | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | | | - | - | - | - | - | - |
| Lay Length | A | 150F | | | 29.75 | 34.00 | 31.00 | 41.38 | 52.00 | 61.50 |
| Centerline to Bottom | D | 150F | | | 8.56 | 9.50 | 10.50 | 11.75 | 14.43 | 17.13 |
| Lay Length | A | 300F | | | 31.12 | 35.50 | 32.50 | 43.50 | 53.62 | 63.25 |
| Centerline to Bottom | D | 300F | | | 9.31 | 10.25 | 11.50 | 12.75 | 15.75 | 19.65 |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 11.50 | 13.75 | - | 18.00 | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 12.50 | 12.50 | - | 15.69 | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 12.19 | 14.50 | - | 18.81 | - | - |
| Center Discharge to Inlet | F | 300F | - | | 13.19 | 13.25 | - | 16.50 | - | - |
| **Common Dimensions (Globe and Angle)** | | | | | | | | | | |
| Width | C | | - | - | 22.13 | 26.00 | 26.00 | 32.00 | 35.00 | 49.68 |
| Height (To Indicator) Globe | E | | - | - | 39.38 | 44.50 | 44.63 | 52.13 | 59.50 | 61.50 |
| Height (To Indicator) Angle | E | | - | - | 36.00 | 41.50 | - | 49.13 | - | - |
| Body Port Tapping | | FNPT | - | - | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | | MNPT | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | | FNPT | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | | - | - | 3-1/4 | 3-3/4 | 3-3/4 | 4-3/4 | 5-9/16 | 6 |
| Displaced Bonnet Volume (Gallons) | | | - | - | 1.5 | 2.3 | 2.3 | 6.8 | 9.0 | 14.8 |
| Approximate Shipping Weight (Lbs) | | | - | - | 1000 | 1365 | 1500 | 2600 | 4315 | 7500 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | |
| $C_v$ - Globe | | | - | - | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 |
| $C_v$ - Angle | | | - | - | 1400 | 2450 | - | 4000 | - | - |
| Continuous (Globe) | | | - | - | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 |
| Intermittent (Globe) | | | - | - | 6100 | 8800 | 11500 | 14250 | 21700 | 31200 |
| Momentary (Globe) | | | - | - | 11000 | 16000 | 19000 | 25000 | 39000 | 56200 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| PSI[1] | | FNPT | - | - | - | - | - | - | - | - |
| PSI | | 150F | - | - | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | - | - | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | |
| Fahrenheit | | | - | - | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

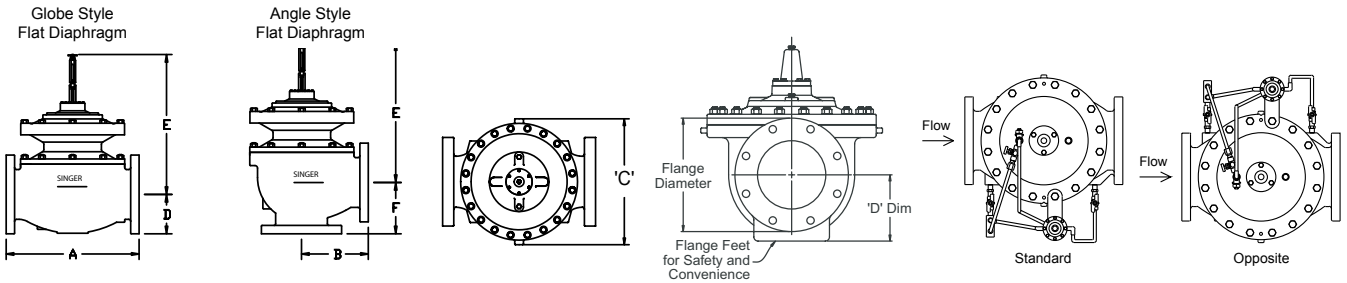



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | |
|---|---|---|---|---|---|---|
| mm | REF | ANSI | 80 mm | 100 mm | 150 mm | 200 mm |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | |
| Lay Length | A | FNPT | 343 | - | - | - |
| Centerline to Bottom | D | FNPT | 93 | - | - | - |
| Lay Length | A | 150F | 305 | 381 | 508 | 645 |
| Centerline to Bottom | D | 150F | 95 | 117 | 142 | 200 |
| Lay Length | A | 300F | 337 | 397 | 533 | 670 |
| Centerline to Bottom | D | 300F | 105 | 129 | 161 | 200 |
| **Angle Dimensions** | | | | | | |
| Center Inlet to Discharge | B | FNPT | 168 | - | - | - |
| Center Discharge to Inlet | F | FNPT | 118 | - | - | - |
| Center Inlet to Discharge | B | 150F | 154 | 191 | 254 | 324 |
| Center Discharge to Inlet | F | 150F | 103 | 127 | 152 | 203 |
| Center Inlet to Discharge | B | 300F | 163 | 200 | 267 | 337 |
| Center Discharge to Inlet | F | 300F | 113 | 135 | 165 | 216 |
| **Common Dimensions (Globe & Angle)** | | | | | | |
| Width | C | | 235 | 276 | 425 | 549 |
| Height (To Indicator) Globe | E | | 448 | 494 | 533 | 683 |
| Height (To Indicator) Angle | E | | 448 | 486 | 524 | 695 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 68 | 95 | 204 | 320 |
| **Flow Capacities (L/s) (Globe &Angle)** | | | | | | |
| $K_v$ - Globe | | | 26 | 47 | 110 | 190 |
| $K_v$ - Angle | | | 32 | 55 | 123 | 225 |
| Continuous (Globe) | | | 29 | 50 | 114 | 196 |
| Intermittent (Globe) | | | 36 | 63 | 142 | 244 |
| Momentary (Globe) | | | 65 | 114 | 252 | 442 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | |
| Bar[1] | | FNPT | 27.6 | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

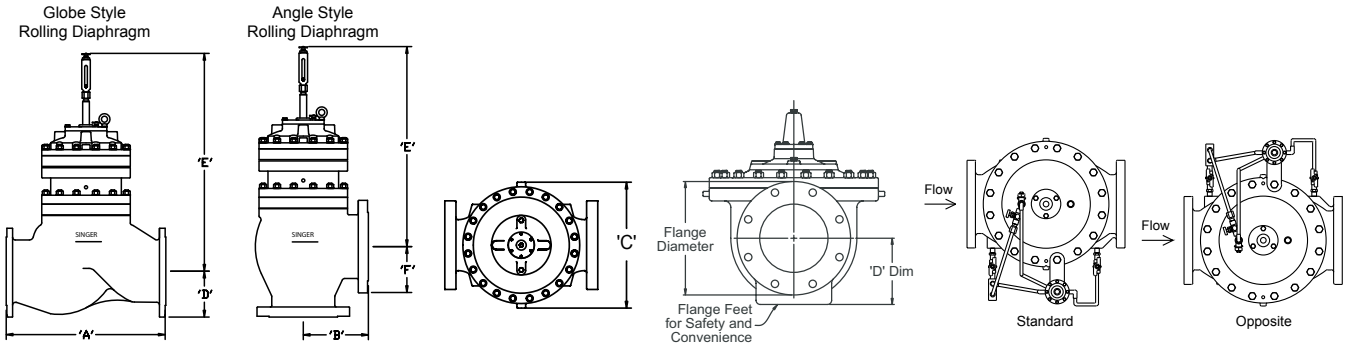



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated | | | | | | | |
| Lay Length | A | FNPT | Consult with Singer Valve for availability | | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | | | - | - | - | - | - | - |
| Lay Length | A | 150F | | | 756 | 864 | 787 | 1051 | 1321 | 1562 |
| Centerline to Bottom | D | 150F | | | 217 | 241 | 267 | 298 | 367 | 435 |
| Lay Length | A | 300F | | | 790 | 902 | 826 | 1105 | 1362 | 1607 |
| Centerline to Bottom | D | 300F | | | 236 | 260 | 292 | 324 | 400 | 499 |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 292 | 349 | - | 457 | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 318 | 318 | - | 399 | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 310 | 368 | - | 478 | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 335 | 337 | - | 419 | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | - | - | 562 | 660 | 660 | 813 | 889 | 1262 |
| Height (To Indicator) Globe | E | | - | - | 1000 | 1130 | 1134 | 1324 | 1551 | 1562 |
| Height (To Indicator) Angle | E | | - | - | 914 | 1054 | - | 1248 | - | - |
| Body Port Tapping | FNPT | Inches | - | - | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | - | - | 83 | 95 | 95 | 120 | 141 | 150 |
| Displaced Bonnet Volume (Litres) | | | - | - | 6 | 9 | 9 | 26 | 34 | 56 |
| Approximate Shipping Weight (Kilograms) | | | - | - | 454 | 619 | 680 | 1179 | 1957 | 3400 |
| **Flow Capacities (L/s) (Globe &Angle)** | | | | | | | | | | |
| $K_v$ - Globe | | | - | - | 310 | 500 | 610 | 780 | 1210 | 1800 |
| $K_v$ - Angle | | | - | - | 332 | 581 | - | 948 | - | - |
| Continuous (Globe) | | | - | - | 309 | 442 | 536 | 694 | 1104 | 1577 |
| Intermittent (Globe) | | | - | - | 385 | 555 | 726 | 899 | 1370 | 1968 |
| Momentary (Globe) | | | - | - | 694 | 1009 | 1199 | 1577 | 2460 | 3546 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| Bar[1] | | FNPT | - | - | - | - | | - | - | - |
| Bar | | 150F | - | - | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | - | - | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

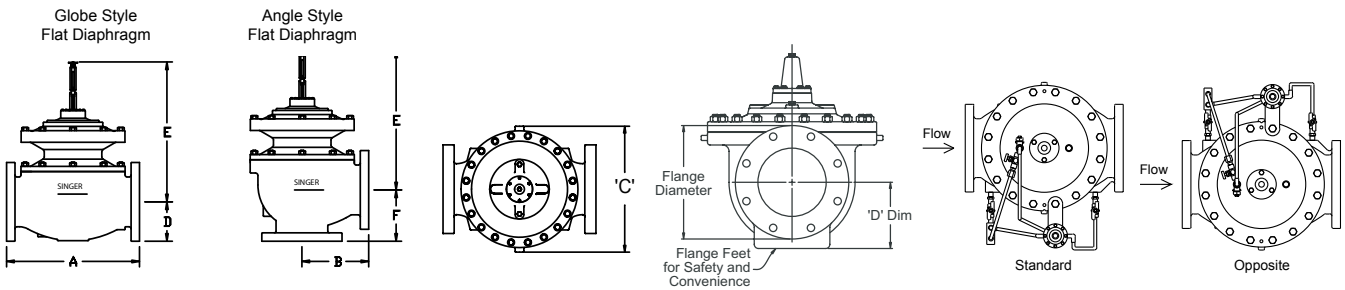



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | |
|---|---|---|---|---|---|---|
| mm | REF | ANSI | 80 mm | 100 mm | 150 mm | 200 mm |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | |
| Lay Length | A | FNPT | 343 | - | - | - |
| Centerline to Bottom | D | FNPT | 93 | - | - | - |
| Lay Length | A | 150F | 305 | 381 | 508 | 645 |
| Centerline to Bottom | D | 150F | 95 | 117 | 142 | 200 |
| Lay Length | A | 300F | 337 | 397 | 533 | 670 |
| Centerline to Bottom | D | 300F | 105 | 129 | 161 | 200 |
| **Angle Dimensions** | | | | | | |
| Center Inlet to Discharge | B | FNPT | 168 | - | - | - |
| Center Discharge to Inlet | F | FNPT | 118 | - | - | - |
| Center Inlet to Discharge | B | 150F | 154 | 191 | 254 | 324 |
| Center Discharge to Inlet | F | 150F | 103 | 127 | 152 | 203 |
| Center Inlet to Discharge | B | 300F | 163 | 200 | 267 | 337 |
| Center Discharge to Inlet | F | 300F | 113 | 135 | 165 | 216 |
| **Common Dimensions (Globe & Angle)** | | | | | | |
| Width | C | | 235 | 276 | 425 | 549 |
| Height (To Indicator) Globe | E | | 448 | 494 | 533 | 683 |
| Height (To Indicator) Angle | E | | 448 | 486 | 524 | 695 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 68 | 95 | 204 | 320 |
| **Flow Capacities (L/s) (Globe &Angle)** | | | | | | |
| $K_v$ - Globe | | | 26 | 47 | 110 | 190 |
| $K_v$ - Angle | | | 32 | 55 | 123 | 225 |
| Continuous (Globe) | | | 29 | 50 | 114 | 196 |
| Intermittent (Globe) | | | 36 | 63 | 142 | 244 |
| Momentary (Globe) | | | 65 | 114 | 252 | 442 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | |
| Bar[1] | | FNPT | 27.6 | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request



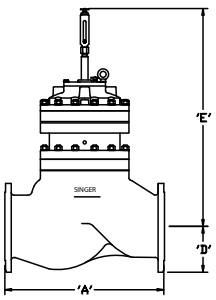

See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

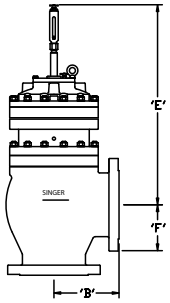
| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated | | | | | | | |
| Lay Length | A | FNPT | Consult with Singer Valve for availability | | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | | | - | - | - | - | - | - |
| Lay Length | A | 150F | | | 756 | 864 | 787 | 1051 | 1321 | 1562 |
| Centerline to Bottom | D | 150F | | | 217 | 241 | 267 | 298 | 367 | 435 |
| Lay Length | A | 300F | | | 790 | 902 | 826 | 1105 | 1362 | 1607 |
| Centerline to Bottom | D | 300F | | | 236 | 260 | 292 | 324 | 400 | 499 |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | 292 | 349 | - | 457 | - | - |
| Center Discharge to Inlet | F | 150F | - | - | 318 | 318 | - | 399 | - | - |
| Center Inlet to Discharge | B | 300F | - | - | 310 | 368 | - | 478 | - | - |
| Center Discharge to Inlet | F | 300F | - | - | 335 | 337 | - | 419 | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | - | - | 562 | 660 | 660 | 813 | 889 | 1262 |
| Height (To Indicator) Globe | E | | - | - | 1000 | 1130 | 1134 | 1324 | 1551 | 1562 |
| Height (To Indicator) Angle | E | | - | - | 914 | 1054 | - | 1248 | - | - |
| Body Port Tapping | FNPT | Inches | - | - | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | - | - | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | - | - | 83 | 95 | 95 | 120 | 141 | 150 |
| Displaced Bonnet Volume (Litres) | | | - | - | 6 | 9 | 9 | 26 | 34 | 56 |
| Approximate Shipping Weight (Kilograms) | | | - | - | 454 | 619 | 680 | 1179 | 1957 | 3400 |
| **Flow Capacities (L/s) (Globe &Angle)** | | | | | | | | | | |
| $K_v$ - Globe | | | - | - | 310 | 500 | 610 | 780 | 1210 | 1800 |
| $K_v$ - Angle | | | - | - | 332 | 581 | - | 948 | - | - |
| Continuous (Globe) | | | - | - | 309 | 442 | 536 | 694 | 1104 | 1577 |
| Intermittent (Globe) | | | - | - | 385 | 555 | 726 | 899 | 1370 | 1968 |
| Momentary (Globe) | | | - | - | 694 | 1009 | 1199 | 1577 | 2460 | 3546 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| Bar[1] | | FNPT | - | - | - | - | | - | - | - |
| Bar | | 150F | - | - | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | - | - | 82° | 82° | 82° | 82° | 82° | 82° |

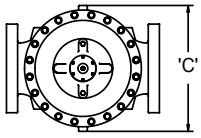
[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

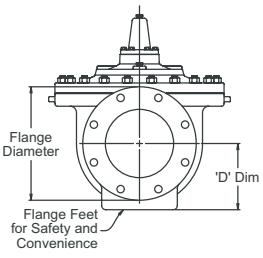
Globe Style
Rolling Diaphragm

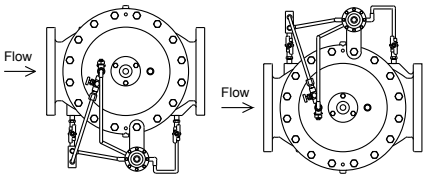



Angle Style
Rolling Diaphragm




See pilot system information, page 207.
For additional Engineering notes, see page 242.

# MODEL 206-PGM / S206-PGM INTEGRAL BACK-UP, DUAL DIAPHRAGM, HYDRAULICALLY ACTUATED VALVE

## KEY FEATURES

- Ideal for applications requiring redundant and back-up security
- Virtually uninterrupted control under a variety of system failures
- Remote annunciation option available
- Available in globe and angle style

## PRODUCT OVERVIEW

The 206-PGM and S206-PGM valves are designed for particularly sensitive applications or situations where valves are difficult to access and maintain.

The PGM series valves provide integral back-up control and the ability to signal should the desired function move off limits. It can also provide an independent and very positive override.

It is a variation of the standard single chamber 206-PG valve with modifications that add the following features:

- Back-up diaphragm
- Completely self-contained
- Modulating or emergency close back-up
- Back-up components kept out of the main stream until required
- Extremely positive shut-off
- Emergency close for security breach or earthquake

The PGM series valves may be combined with additional Singer Valve specific accessories to add further customization such as:

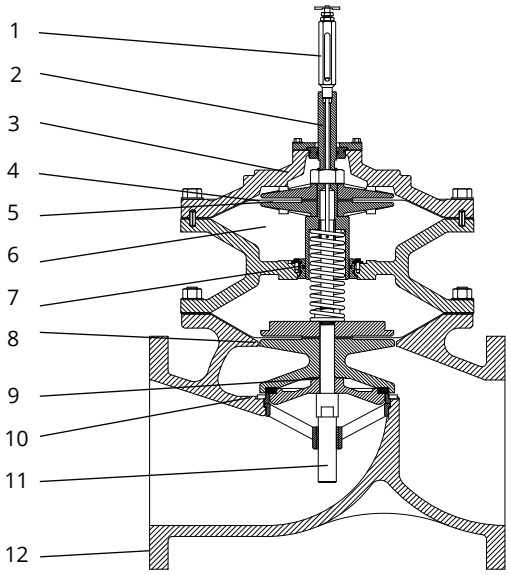
- Back-up pilot system
- Annunciation with a Single Pole Double Throw Limit Switch

Refer to Main Valve Options on page 62 and Pilots & Accessories on page 207 to customize the valve to suit specific applications.

## ALTERNATIVE MODELS

A206-PGM Angle

## PRODUCT LINE DRAWING




1. Primary Stem / Position Indicator
2. Secondary Stem
3. ASTM A536 Ductile Iron Construction
4. Buna-N or EPDM Secondary Diaphragm
5. Back-Up Secondary Assembly
6. Atmosphere
7. Sliding Guide
8. Buna-N or EPDM Primary Diaphragm
9. Buna-N or EPDM Resilient Disc
10. AISI 316 Stainless Steel Seat
11. AISI 316 Stainless Steel Stem
12. NSF 61 Fusion Bonded Epoxy Coating

## VALVE SIZES & MATERIALS

| Valve Materials | | |
|---|---|---|
| | **Standard** | **Optional** |
| Available Sizes | Flanged | - |
| Globe | 4 in to 36 in (100-900 mm) | - |
| Angle | 4 in to 8 in (100 mm-200 mm) | - |
| **Valve Components** | | |
| 1. Valve Body, Cover | 65-45-12 Ductile Iron | - |
| 2. Seat Ring | 316 Stainless Steel | - |
| 3. Disc Retainer | B16 Brass / B62 Bronze / A536 Ductile Iron | 316 Stainless Steel |
| 4. Stem | 316 Stainless Steel | - |
| 5. Stem Nut | B16 Brass | 316 Stainless Steel |
| 6. Spring | 316 Stainless Steel | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | 316 Stainless Steel |
| 8. Diaphragm | EPDM | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-350 microns) | - |
| 11. Fasteners | 18-8 Stainless Steel | 316 Stainless Steel |

## SELECTION

The Singer Model 206-PGM incorporates a second actuator. If the primary system and/or the main valve fails then the back-up pilot system takes over. Under normal operating conditions, there is no external discharge from the PGM. In modulating applications, when the back-up pilot system operates, there is a small (less than 1 USGPM / 0.06 L/s) continuous discharge that should be taken to drain.

The primary pilot function can be duplicated in the secondary pilot system to provide continuing back-up operations or the secondary system can be used for override functions. Consult with Singer Valve with your specific application requirements.

Sizing of PGM valves is based on the same criteria as standard PG models.

## AVAILABLE OPTIONS

**Further customize the valve by adding any of the available options below.**

## MAIN VALVE OPTIONS, REFER TO PAGE 62

**Position Indicators (Available for install at Singer Valve or as a field modification)**

- Model X129 limit switch assembly with Single Pole Double Throw limit switch (Double Pole Double Throw optional)
- Model X156 analog position transmitters (4 - 20 mA)

**Oxy-Nitride Stem**

**Internal Drop Check**

**Grooved Ends**

**Reclaimed Water**

## PILOTS & ACCESSORIES, REFER TO PG. 207

## MATERIALS OF CONSTRUCTION

Most individual components can be upgraded from ductile iron, bronze and brass to stainless steel. Consult with Singer Valve.

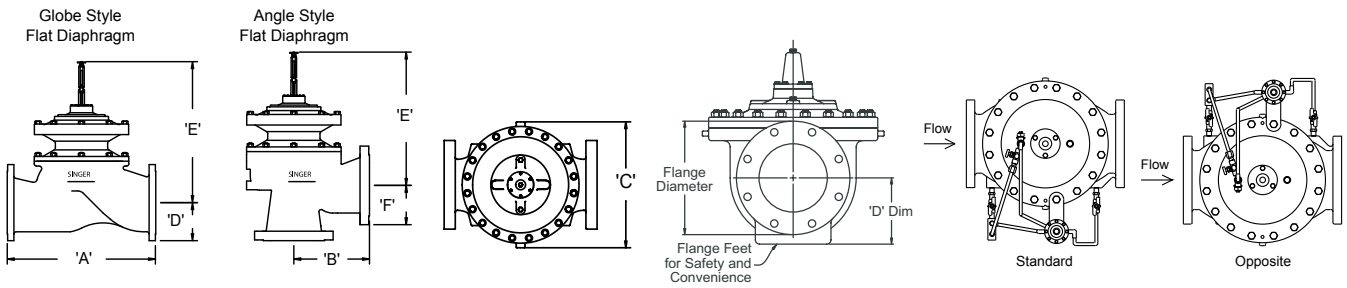
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | |
|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **4 in** | **6 in** | **8 in** | **10 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | |
| Lay Length | A | FNPT | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - |
| Lay Length | A | 150F | 15.00 | 20.13 | 25.00 | 24.50 |
| Centerline to Bottom | D | 150F | 4.60 | 5.60 | 6.75 | 8.56 |
| Lay Length | A | 300F | 15.63 | 21.00 | 26.00 | 25.88 |
| Centerline to Bottom | D | 300F | 5.00 | 6.25 | 7.50 | 9.31 |
| **Angle Dimensions** | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - |
| Center Inlet to Discharge | B | 150F | 7.56 | 10.19 | 12.50 | - |
| Center Discharge to Inlet | F | 150F | 5.94 | 6.19 | 9.00 | - |
| Center Inlet to Discharge | B | 300F | 7.88 | 10.63 | 13.00 | - |
| Center Discharge to Inlet | F | 300F | 6.25 | 6.81 | 9.50 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | |
| Width | C | | 10.00 | 12.50 | 16.00 | 20.00 |
| Height (To Indicator) Globe | E | | 19.13 | 20.88 | 23.38 | 30.63 |
| Height (To Indicator) Angle | E | | 17.38 | 19.25 | 20.50 | - |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | 0.1 | 0.2 | 0.6 | 1.7 |
| Approximate Shipping Weight (Lbs) | | | 150.0 | 210.0 | 385.0 | 585.0 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | |
| $C_v$ - Globe | | | 150 | 250 | 505 | 985 |
| $C_v$ - Angle | | | 150 | 250 | 560 | - |
| Continuous (Globe) | | | 580 | 1025 | 2300 | 4100 |
| Intermittent (Globe) | | | 690 | 1190 | 2700 | 4670 |
| Momentary (Globe) | | | 1236 | 2160 | 4800 | 8400 |
| **Maximum Pressure Ratings** (Ductile Only) | | | | | | |
| PSI | | FNPT | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

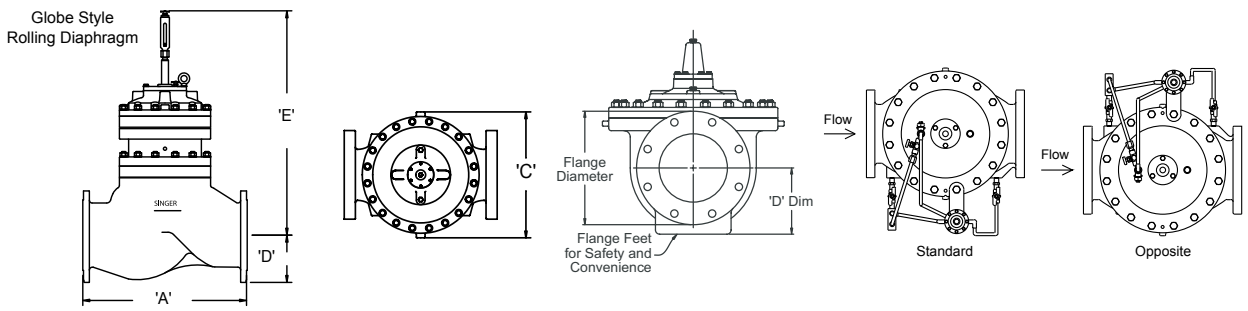



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **12 in** | **16 in** | **18 in** | **20 in** | **24 in x 16 in** | **24 in x 20 in** | **30 in** | **36 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated.** | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 27.50 | 36.00 | 42.00 | 45.00 | 50.50 | 61.50 | 69.93 | 69.93 |
| Centerline to Bottom | D | 150F | 9.50 | 11.75 | 12.50 | 13.93 | 16.50 | 17.13 | 20.68 | 23.75 |
| Lay Length | A | 300F | 29.00 | 37.63 | 43.63 | 46.63 | 52.25 | 63.25 | - | - |
| Centerline to Bottom | D | 300F | 10.25 | 12.75 | 14.00 | 15.25 | 18.00 | 19.65 | - | - |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - | - |
| **Common Dimensions (Globe and Angle)** | | | | | | | | | | |
| Width | C | | 22.13 | 26.00 | 31.50 | 31.50 | 36.00 | 36.00 | 49.75 | 49.75 |
| Height (To Indicator) Globe | E | | 39.38 | 44.56 | 53.00 | 53.00 | 53.00 | 59.50 | 61.50 | 61.50 |
| Height (To Indicator) Angle | E | | - | - | - | - | - | - | - | - |
| Body Port Tapping | | FNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | | MNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | | FNPT | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | | 3-1/4 | 3-3/4 | 4-3/4 | 4-3/4 | 4-3/4 | 5-9/16 | 6 | 6 |
| Displaced Bonnet Volume (Gallons) | | | 1.5 | 2.3 | 6.8 | 6.8 | 6.8 | 9.0 | 14.8 | 14.8 |
| Approximate Shipping Weight (Lbs) | | | 880 | 1540 | 2530 | 2730 | 2980 | 4750 | 7300 | 7500 |
| **Flow Capacities (USGPM) Globe & Angle** | | | | | | | | | | |
| $C_v$ - Globe | | | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 8000 |
| $C_v$ - Angle | | | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33650 | 33800 |
| Intermittent (Globe) | | | 7370 | 10470 | 20915 | 20915 | 20915 | 26000 | 37490 | 37640 |
| Momentary (Globe) | | | 13200 | 19200 | 30000 | 30050 | 30100 | 39000 | 67490 | 67640 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| PSI | | FNPT | - | - | - | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

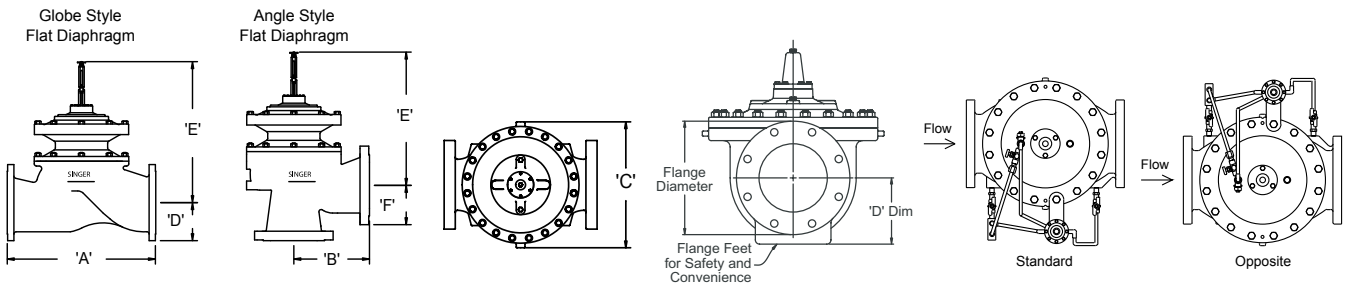



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | |
|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **100 mm** | **150 mm** | **200 mm** | **250 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | |
| Lay Length | A | FNPT | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - |
| Lay Length | A | 150F | 381 | 511 | 635 | 622 |
| Centerline to Bottom | D | 150F | 117 | 142 | 171 | 217 |
| Lay Length | A | 300F | 397 | 533 | 660 | 657 |
| Centerline to Bottom | D | 300F | 127 | 159 | 191 | 236 |
| **Angle Dimensions** | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - |
| Center Inlet to Discharge | B | 150F | 192 | 259 | 318 | - |
| Center Discharge to Inlet | F | 150F | 151 | 157 | 229 | - |
| Center Inlet to Discharge | B | 300F | 200 | 270 | 330 | - |
| Center Discharge to Inlet | F | 300F | 159 | 173 | 241 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | |
| Width | C | | 254 | 318 | 406 | 508 |
| Height (To Indicator) Globe | E | | 486 | 530 | 594 | 778 |
| Height (To Indicator) Angle | E | | 441 | 489 | 521 | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 68 | 95 | 175 | 265 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | |
| $K_v$ - Globe | | | 36 | 60 | 120 | 230 |
| $K_v$ - Angle | | | 36 | 60 | 133 | - |
| Continuous (Globe) | | | 37 | 65 | 145 | 259 |
| Intermittent (Globe) | | | 44 | 75 | 170 | 295 |
| Momentary (Globe) | | | 78 | 136 | 303 | 530 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | |
| Bar | | FNPT | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

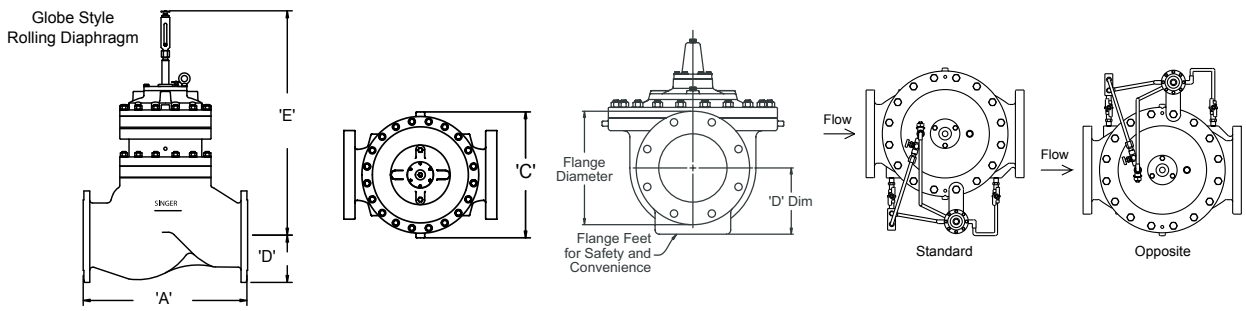



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **MM** | **REF** | **ANSI** | **300 mm** | **400 mm** | **450 mm** | **500 mm** | **600 x 400 mm** | **600 x 500 mm** | **750 mm** | **900 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated.** | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 699 | 914 | 1067 | 1143 | 1283 | 1562 | 1776 | 1776 |
| Centerline to Bottom | D | 150F | 241 | 298 | 318 | 354 | 419 | 435 | 525 | 603 |
| Lay Length | A | 300F | 737 | 956 | 1108 | 1184 | 1327 | 1607 | - | - |
| Centerline to Bottom | D | 300F | 260 | 324 | 356 | 387 | 457 | 499 | - | - |
| **Angle Dimensions** | | | | | | | | | | |
| Center Inlet to Discharge | B | FNPT | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | FNPT | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 150F | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 150F | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | 300F | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | 300F | - | - | - | - | - | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | 562 | 660 | 800 | 800 | 914 | 914 | 1264 | 1264 |
| Height (To Indicator) Globe | E | | 1000 | 1132 | 1346 | 1346 | 1346 | 1511 | 1162 | 1562 |
| Height (To Indicator) Angle | E | | - | - | - | - | - | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | 83 | 95 | 120 | 120 | 120 | 141 | 150 | 150 |
| Displaced Bonnet Volume (Litres) | | | 5.67 | 8.69 | 25.55 | 25.55 | 25.55 | 34.00 | 55.76 | 55.83 |
| Approximate Shipping Weight (Kilograms) | | | 399 | 699 | 1148 | 1238 | 1352 | 2155 | 2812 | 3400 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | |
| $K_v$ - Globe | | | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1870 |
| $K_v$ - Angle | | | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2120 | 2132 |
| Intermittent (Globe) | | | 465 | 661 | 1320 | 1320 | 1320 | 1640 | 2362 | 2375 |
| Momentary (Globe) | | | 833 | 1211 | 1893 | 1896 | 1899 | 2460 | 4255 | 4267 |
| **Maximum Pressure Ratings** (Ductile Only) | | | | | | | | | | |
| Bar | | FNPT | - | - | - | - | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 Bar as standard. Valves rated and stamped 41 Bar on request.

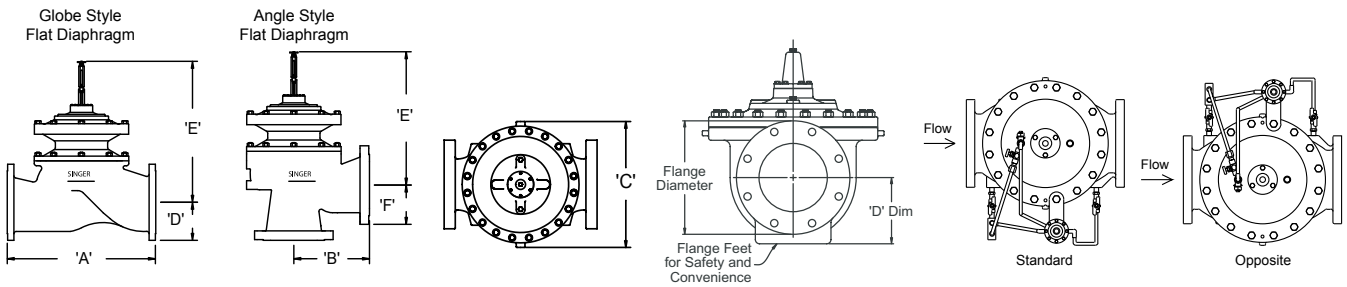



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | |
|---|---|---|---|---|---|---|
| mm | REF | ISO | 100 mm | 150 mm | 200 mm | 250 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated | | | |
| Lay Length | A | BSPT | - | - | - | - |
| Centerline to Bottom | D | BSPT | - | - | - | - |
| Lay Length | A | PN10 / PN16 | 381 | 511 | 635 | 622 |
| Centerline to Bottom | D | PN10 / PN16 | 117 | 143 | 171 | 217 |
| Lay Length | A | PN25 / PN40 | 397 | 533 | 660 | 657 |
| Centerline to Bottom | D | PN25 / PN40 | 127 | 161 | 191 | 236 |
| **Angle Dimensions** | | | | | | |
| Center Inlet to Discharge | B | BSPT | - | - | - | - |
| Center Discharge to Inlet | F | BSPT | - | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | 192 | 259 | 318 | - |
| Center Discharge to Inlet | F | PN10 / PN16 | 151 | 157 | 229 | - |
| Center Inlet to Discharge | B | PN25 / PN40 | 200 | 270 | 330 | - |
| Center Discharge to Inlet | F | PN25 / PN40 | 159 | 173 | 241 | - |
| **Common Dimensions (Globe & Angle)** | | | | | | |
| Width | C | | 254 | 318 | 406 | 508 |
| Height (To Indicator) Globe | E | | 486 | 530 | 594 | 778 |
| Height (To Indicator) Angle | E | | 441 | 489 | 521 | - |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 68 | 95 | 175 | 265 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | |
| $K_v$ - Globe | | | 36 | 60 | 120 | 230 |
| $K_v$ - Angle | | | 36 | 60 | 133 | - |
| Continuous (Globe) | | | 37 | 65 | 145 | 259 |
| Intermittent (Globe) | | | 44 | 75 | 170 | 295 |
| Momentary (Globe) | | | 78 | 136 | 303 | 530 |
| **Maximum Pressure Ratings** | | | | | | |
| Bar | | BSPT | - | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 |
| Bar* | | PN25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° |

*Valves rated and stamped 27.6 Bar as standard. Valves rated and stamped 41 Bar upon request

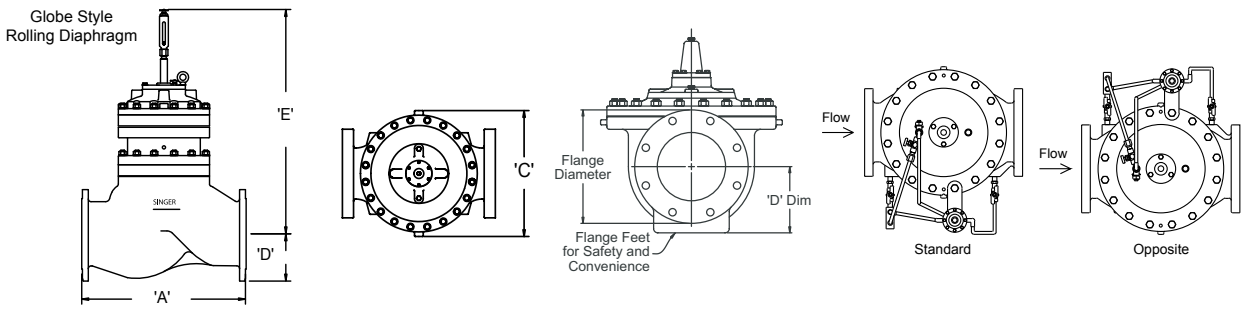



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MM** | **REF** | **ISO** | **300 mm** | **400 mm** | **450 mm** | **500 mm** | **600 x 400 mm** | **600 x 500 mm** | **700 mm** | **800 mm** | **900 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated.** | | | | | | | | |
| Lay Length | A | BSPT | - | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | BSPT | - | - | - | - | - | - | - | - | - |
| Lay Length | A | PN10 / PN16 | 699 | 914 | 1067 | 1143 | 1283 | 1562 | 1607 | 1776 | 1776 |
| Centerline to Bottom | D | PN10 / PN16 | 241 | 298 | 318 | 354 | 419 | 435 | 499 | 526 | 603 |
| Lay Length | A | PN25 / PN40 | 737 | 956 | 1108 | 1184 | 1327 | 1607 | - | - | - |
| Centerline to Bottom | D | PN25 / PN40 | 267 | 324 | 356 | 387 | 457 | 499 | - | - | - |
| **Angle Dimensions** | | | | | | | | | | | |
| Center Inlet to Discharge | B | BSPT | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | BSPT | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | PN10 / PN16 | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | PN10 / PN16 | - | - | - | - | - | - | - | - | - |
| Center Inlet to Discharge | B | PN25 / PN40 | - | - | - | - | - | - | - | - | - |
| Center Discharge to Inlet | F | PN25 / PN40 | - | - | - | - | - | - | - | - | - |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | |
| Width | C | | 562 | 660 | 795 | 800 | 914 | 914 | 1262 | 1262 | 1262 |
| Height (To Indicator) Globe | E | | 1000 | 1132 | 1346 | 1346 | 1346 | 1511 | 1562 | 1562 | 1562 |
| Height (To Indicator) Angle | E | | - | - | - | - | - | - | - | - | - |
| Body Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Stem Cap Plug | MNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Cover Port Tapping | FNPT | Inches | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 |
| Valve Stroke | | mm | 83 | 95 | 120 | 120 | 120 | 141 | 150 | 150 | 150 |
| Displaced Bonnet Volume (Litres) | | | 6 | 9 | 26 | 26 | 26 | 34 | 56 | 56 | 56 |
| Approximate Shipping Weight (Kilograms) | | | 399 | 699 | 1148 | 1238 | 1352 | 2155 | 2812 | 2993 | 3175 |
| **Flow Capacities (L/s) Globe & Angle** | | | | | | | | | | | |
| $K_v$ - Globe | | | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1870 | 1900 |
| $K_v$ - Angle | | | - | - | - | - | - | - | - | - | - |
| Continuous (Globe) | | | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2120 | 2126 | 2132 |
| Intermittent (Globe) | | | 465 | 661 | 1320 | 1320 | 1320 | 1640 | 2362 | 2368 | 2375 |
| Momentary (Globe) | | | 833 | 1211 | 1893 | 1896 | 1899 | 2460 | 4255 | 4261 | 4267 |
| **Maximum Pressure Ratings** | | | | | | | | | | | |
| Bar | | BSPT | - | - | - | - | - | - | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar* | | PN25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | | | | | |
| Celcius | | | 82º | 82º | 82º | 82º | 82º | 82º | 82º | 82º | 82º |

*Valves rated and stamped 27.6 Bar as standard. Valves rated and stamped 41 Bar on request.




See pilot system information, page 207.
For additional Engineering notes, see page 242.

# MODEL 106-GE / 206-GE GROOVED ENDS

## KEY FEATURES

- Convenient system and equipment access for ease of alignment and installation
- Improved flexibility with expansion, contraction and deflection
- Seismic stress absorption
- Eliminates unions

## PRODUCT OVERVIEW

For use with grooved Iron Pipe Size (IPS) Pipe Coupling Products, grooved ends allows you to benefit from the simplicity and convenience of grooved end piping and fittings in an automatic control valve. There are a wide range of applications where grooved ends are relevant, but typical applications include municipal water, waste water, fire protection and plumbing.

Grooved ends come in the following size ranges:

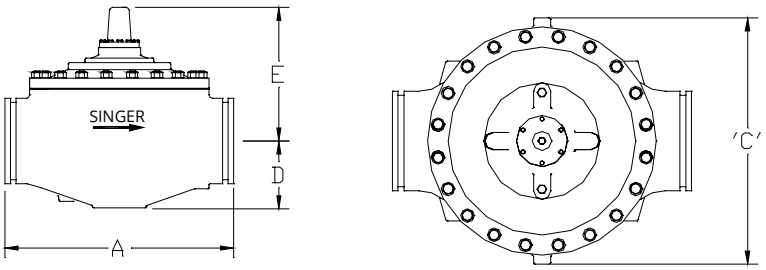
- 2 in / 50 mm – 8 in / 200 mm
- Angle ranges from 2 in / 50 mm – 3 in / 80 mm

Standard cut groove specifications for steel and other IPS pipe will apply, unless otherwise specified

## VALVE DATA (US UNITS)

| | DWG | Standard | Flat Diaphragm System | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **Grooved Ends** | **2 in** | **2-1/2 in** | **3 in** | **4 in** | **6 in** | **8 in** | **8 in (206)** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | | | | |
| Lay Length | A | | 9.38 | 11.63 | 13.25 | 15.00 | 20.00 | 25.38 | 26.00 |
| Centerline to Bottom | D | | 2.75 | 3.25 | 3.68 | 4.00 | 5.60 | 7.50 | 4.63 |
| **Common Dimensions (Globe)** | | | | | | | | | |
| Width | C | | 6.00 | 8.19 | 9.25 | 10.88 | 16.75 | 21.63 | 16.00 |
| Height (To Stem Cap) Globe | E | | 4.75 | 7.50 | 8.00 | 9.15 | 11.75 | 14.91 | 14.13 |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 3/8 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 9/16 | 15/16 | 1 1/8 | 1 7/16 | 1 11/16 | 2 7/8 | 1 11/16 |
| Displaced Bonnet Volume (Gallons) | | | 0.02 | 0.07 | 0.1 | 0.2 | 0.6 | 1.7 | 0.6 |
| Approximate Shipping Weight (Lbs) | | | 40 | 65 | 100 | 175 | 400 | 650 | 500 |
| **Flow Capacities (USGPM) Globe** | | | | | | | | | |
| $C_v$ | | | 55 | 80 | 110 | 200 | 460 | 800 | 505 |
| Continuous (Globe) | | | 210 | 300 | 460 | 800 | 1800 | 3100 | 2300 |
| Intermittent (Globe) | | | 260 | 375 | 575 | 1000 | 2250 | 3875 | 2700 |
| Momentary (Globe) | | | 470 | 670 | 1030 | 1800 | 4000 | 7000 | 4800 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | |
| PSI[1] | | Grooved Ends | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | |
| **Fahrenheit** | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

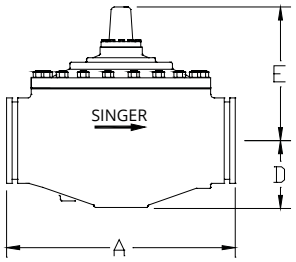
[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

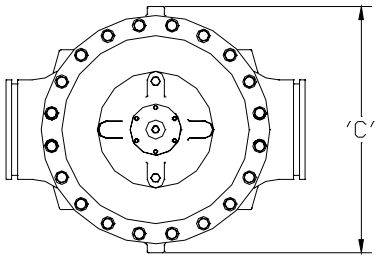


## VALVE DATA (METRIC UNITS)

| | DWG | Standard | Flat Diaphragm System | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **MM** | **REF** | **Grooved Ends** | **50 mm** | **65 mm** | **80 mm** | **100 mm** | **150 mm** | **200 mm** | **200 mm (206)** |
| **Globe Dimensions** | | | **All figures shown in millimeters unless otherwise stated** | | | | | | |
| Lay Length | A | | 238 | 295 | 337 | 381 | 508 | 645 | 660 |
| Centerline to Bottom | D | | 70 | 83 | 93 | 102 | 142 | 191 | 118 |
| **Common Dimensions (Globe)** | | | | | | | | | |
| Width | C | | 152 | 208 | 235 | 276 | 425 | 549 | 406 |
| Height (To Stem Cap) Globe | E | | 121 | 191 | 203 | 232 | 298 | 379 | 359 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 3/8 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 25 | 29 | 37 | 43 | 73 | 43 |
| Displaced Bonnet Volume (Litres) | | | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 | 2.1 |
| Approximate Shipping Weight (Kilograms) | | | 18 | 29 | 45 | 79 | 181 | 295 | 227 |
| **Flow Capacities (L/s) Globe** | | | | | | | | | |
| $K_v$ (Globe) | | | 13 | 19 | 26 | 47 | 110 | 190 | 120 |
| Continuous (Globe) | | | 13 | 19 | 29 | 50 | 114 | 196 | 145 |
| Intermittent (Globe) | | | 16 | 24 | 36 | 63 | 142 | 244 | 170 |
| Momentary (Globe) | | | 30 | 42 | 65 | 114 | 252 | 442 | 300 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | |
| Bar[1] | | Grooved Ends | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 Bar as standard. Valves rated and stamped 41 Bar on request.




# ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

# MODEL 106-PG
# STAINLESS STEEL, SINGLE CHAMBER, HYDRAULICALLY OPERATED VALVE

## KEY FEATURES

- Anti-cavitation option is ideal for high pressure drop situations
- Available in globe style

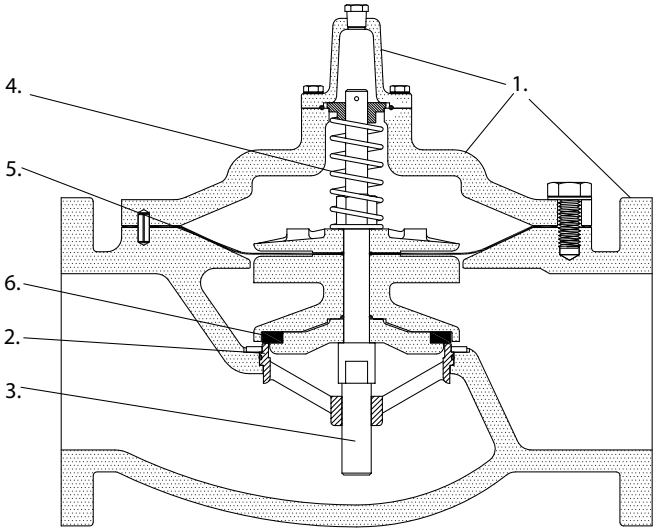
## PRODUCT OVERVIEW

The 106-PG series control valve is designed to suit a large variety of applications such as pressure, flow or level control. This hydraulically operated valve introduces or releases water from the control chamber above the diaphragm to effectively maintain accurate water control.

Refer to Main Valve Options on page 62 and Pilots & Accessories on page 207 to further customize the valve to suit specific applications.

## PRODUCT LINE DRAWING

1. AISI 316 Stainless Steel Construction Valve Body, Cover
2. 316 Stainless Steel Seat Ring
3. 316 Stainless Steel Stem
4. 316 Stainless Steel Spring
5. Diaphragm Buna-N or EPDM
6. Buna-N or EPDM Resilient Disc



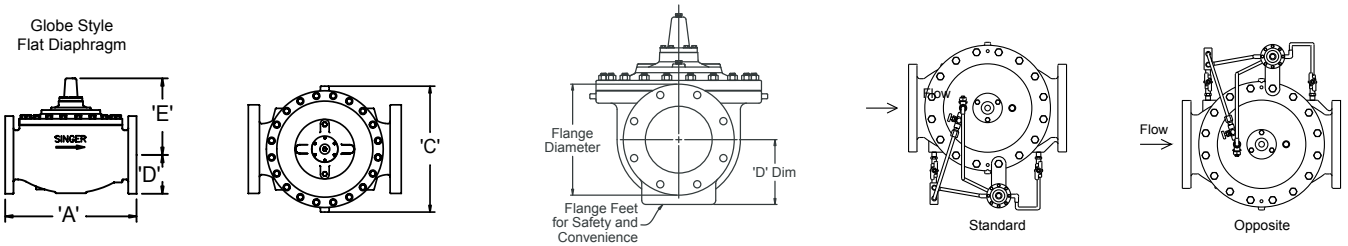
# VALVE SIZES & MATERIALS

| Valve Materials | | | |
|---|---|---|---|
| | **Standard** | | **Optional** |
| Available Sizes | Threaded | Flanged | - |
| Globe | 1/2 in to 1-1/2 in (15-40 mm) | 1-1/2 in to 6 in (40-150 mm) | - |
| **Valve Components** | | | |
| 1. Valve Body, Cover | 316 Stainless Steel | | - |
| 2. Seat Ring | 316 Stainless Steel | | - |
| 3. Disc Retainer | 316 Stainless Steel | | - |
| 4. Stem | 316 Stainless Steel | | - |
| 5. Stem Nut | 316 Stainless Steel | | - |
| 6. Spring | 316 Stainless Steel | | - |
| 7. Guide Bushings | 316 Stainless Steel | | - |
| 8. Diaphragm | EPDM | | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | | Buna-N / Viton (limited sizes) |
| 10. Fasteners | 18-8 Stainless Steel | | 316 Stainless Steel |

## ANSI VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **1/2 in** | **3/4 in** | **1 in** | **1 1/4 in** | **1 1/2 in** | **2 in** | **2 1/2 in** | **3 in** | **4 in** | **6 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | | | | | | | |
| Lay Length | A | FNPT | 4.25 | 4.25 | 6.75 | 6.75 | 6.75 | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | 0.83 | 0.83 | 2.50 | 2.50 | 2.50 | - | - | - | - | - |
| Lay Length | A | 150F | - | - | - | - | 8.50 | 9.38 | 11.00 | 12.00 | 15.00 | 20.00 |
| Centerline to Bottom | D | 150F | - | - | - | - | 2.75 | 3.00 | 3.50 | 3.75 | 4.60 | 5.60 |
| Lay Length | A | 300F | - | - | - | - | 9.00 | 10.00 | 11.63 | 13.25 | 15.63 | 21.00 |
| Centerline to Bottom | D | 300F | - | - | - | - | 3.25 | 3.25 | 3.75 | 4.13 | 5.09 | 6.34 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | | |
| Width | C | | 3.00 | 3.00 | 4.88 | 4.88 | 6.13 | 6.50 | 8.19 | 9.25 | 10.88 | 16.75 |
| Height (To Stem Cap) Globe | E | | 3.06 | 3.06 | 4.38 | 4.38 | 4.38 | 4.75 | 7.50 | 8.00 | 9.15 | 11.75 |
| Height (To Stem Cap) Angle | E | | - | - | 4.38 | 4.38 | 4.38 | 4.75 | 7.50 | 8.00 | 9.15 | 11.75 |
| Body Port Tapping | | FNPT | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Stem Cap Plug | | MNPT | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | - | - | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Valve Stroke | | | 1/4 | 1/4 | 1/2 | 1/2 | 1/2 | 9/16 | 15/16 | 1 1/8 | 1 7/16 | 1 11/16 |
| Displaced Bonnet Volume (Gallons) | | | 0.002 | 0.002 | 0.007 | 0.007 | 0.007 | 0.018 | 0.066 | 0.090 | 0.20 | 0.56 |
| Approximate Shipping Weight (Lbs) | | | 10 | 10 | 20 | 20 | 20 | 40 | 65 | 100 | 175 | 400 |
| Capacities (USPGM) Globe & Angle | | | | | | | | | | | | |
| $C_v$ - Globe | | | 6.4 | 6.4 | 28 | 30 | 32 | 55 | 80 | 110 | 200 | 460 |
| $C_v$ - Angle | | | - | - | 24 | 24 | 26 | 63 | 90 | 135 | 230 | 535 |
| Continuous (Globe) | | | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 | 1800 |
| Intermittent (Globe) | | | 15 | 20 | 61 | 120 | 160 | 260 | 375 | 575 | 1000 | 2250 |
| Momentary (Globe) | | | 28 | 43 | 110 | 170 | 250 | 470 | 670 | 1030 | 1800 | 4000 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | | |
| PSI[1] | | FNPT | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | - | - |
| PSI | | 150F | - | - | - | - | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | - | - | - | - | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

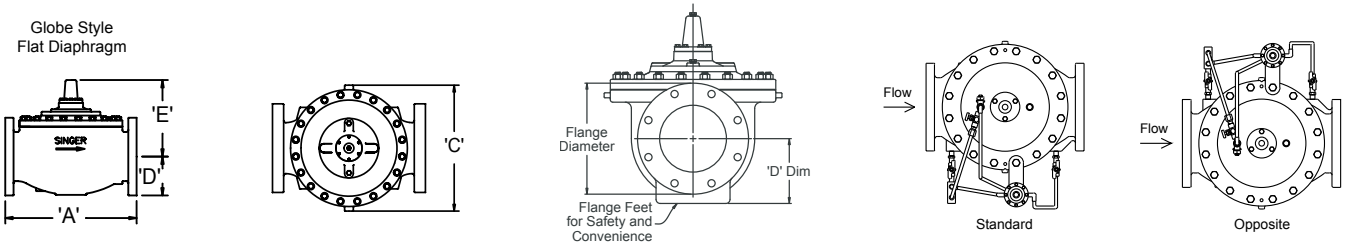



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ANSI VALVE DATA (METRIC UNITS)

| Size | DWG | Stnd | Flat Diaphragm System | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ANSI | 15 mm | 20 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm |
| **Globe Dimensions** | | | All figures show in mm unless otherwise stated | | | | | | | | | |
| Lay Length | A | FNPT | 108 | 108 | 171 | 171 | 171 | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | 21 | 21 | 64 | 64 | 64 | - | - | - | - | - |
| Lay Length | A | 150F | - | - | - | - | 216 | 238 | 279 | 305 | 381 | 508 |
| Centerline to Bottom | D | 150F | - | - | - | - | 70 | 76 | 89 | 95 | 117 | 142 |
| Lay Length | A | 300F | - | - | - | - | 229 | 254 | 295 | 337 | 397 | 533 |
| Centerline to Bottom | D | 300F | - | - | - | - | 83 | 83 | 95 | 105 | 129 | 161 |
| Common Dimensions (Globe & Angle) | | | | | | | | | | | | |
| Width | C | | 76 | 76 | 124 | 124 | 156 | 165 | 208 | 235 | 276 | 425 |
| Height (to stem cap) Globe | E | | 78 | 78 | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 |
| Height (to stem cap) Angle | E | | - | - | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 |
| Body Port Tapping | FNPT | in | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Stem Cap Plug | MNPT | in | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | in | - | - | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Valve Stroke | | mm | 6.4 | 6.4 | 13 | 13 | 13 | 14 | 25 | 29 | 37 | 43 |
| Displaced Bonnet Volume (Litres) | | | 0.01 | 0.01 | 0.03 | 0.03 | 0.03 | 0.07 | 0.25 | 0.34 | 0.76 | 2.12 |
| Approximate Shipping Weight (Kilograms) | | | 5.00 | 5.00 | 9.00 | 9.00 | 9.00 | 18.00 | 29.00 | 45.00 | 79.00 | 181.00 |
| Capacities (L/s) Globe & Angle | | | | | | | | | | | | |
| $K_v$ - Globe | | | 1.5 | 1.5 | 6.6 | 7.1 | 7.6 | 13.0 | 19.0 | 26.1 | 47.4 | 109.0 |
| $K_v$ - Angle | | | - | - | 5.7 | 5.7 | 6.2 | 14.9 | 21.3 | 32.0 | 54.5 | 126.8 |
| Continuous (Globe) | | | 0.76 | 1.20 | 3.09 | 5.87 | 7.89 | 13.25 | 18.93 | 29.02 | 50.47 | 113.56 |
| Intermittent (Globe) | | | 0.95 | 1.26 | 3.85 | 7.57 | 10.09 | 16.40 | 23.66 | 36.28 | 63.09 | 141.95 |
| Momentary (Globe) | | | 1.77 | 2.71 | 6.94 | 10.73 | 15.77 | 29.65 | 42.27 | 64.98 | 113.56 | 252.36 |
| Maximum Pressure Ratings (Ductile Only) | | | | | | | | | | | | |
| Bar[1] | | FNPT | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | - | - |
| Bar | | 150F | - | - | - | - | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | - | - | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| Maximum Temperature | | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request




See pilot system information, page 207.
For additional Engineering notes, see page 242.

## ISO VALVE DATA (METRIC UNITS)

| Size | DWG | Stnd | Flat Diaphragm System | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ISO | 15 mm | 20 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm |
| **Globe Dimensions** | | | **All figures show in mm unless otherwise stated** | | | | | | | | | |
| Lay Length | A | BSPT | 108 | 108 | 171 | 171 | 171 | - | - | - | - | - |
| Centerline to Bottom | D | BSPT | 21 | 21 | 64 | 64 | 64 | - | - | - | - | - |
| Lay Length | A | PN10 / PN16 | - | - | - | - | 229 | 238 | 279 | 318 | 381 | 508 |
| Centerline to Bottom | D | PN10 / PN16 | - | - | - | - | 83 | 76 | 89 | 100 | 117 | 142 |
| Lay Length | A | PN25 / PN40 | - | - | - | - | 229 | 238 | 279 | 318 | 397 | 533 |
| Centerline to Bottom | D | PN25 / PN40 | - | - | - | - | 83 | 76 | 89 | 100 | 129 | 161 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | | | |
| Width | C | | 76 | 76 | 124 | 124 | 156 | 165 | 208 | 235 | 276 | 425 |
| Height (To Stem Cap) Globe | E | | 78 | 78 | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 |
| Height (To Stem Cap) Angle | E | | - | - | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 |
| Body Port Tapping | FNPT | Inches | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Stem Cap Plug | MNPT | Inches | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | - | - | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Valve Stroke | | mm | 6.4 | 6.4 | 13 | 13 | 13 | 14 | 25 | 29 | 37 | 43 |
| Displaced Bonnet Volume (Litres) | | | 0.01 | 0.01 | 0.03 | 0.03 | 0.03 | 0.07 | 0.25 | 0.34 | 0.76 | 2.12 |
| Approximate Shipping Weight (Kilograms) | | | 5 | 5 | 9 | 9 | 9 | 18 | 29 | 45 | 79 | 181 |
| **Capacities (L/s) Globe & Angle** | | | | | | | | | | | | |
| $K_v$ - Globe | | | 1.5 | 1.5 | 6.6 | 7.1 | 7.6 | 13.0 | 19.0 | 26.1 | 47.4 | 109.0 |
| $K_v$ - Angle | | | - | - | 5.7 | 5.7 | 6.2 | 14.9 | 21.3 | 32.0 | 54.5 | 126.8 |
| Continuous (Globe) | | | 0.76 | 1.20 | 3.09 | 5.87 | 7.89 | 13.25 | 18.93 | 29.02 | 50.47 | 113.56 |
| Intermittent (Globe) | | | 0.95 | 1.26 | 3.85 | 7.57 | 10.09 | 16.40 | 23.66 | 36.28 | 63.09 | 141.95 |
| Momentary (Globe) | | | 1.77 | 2.71 | 6.94 | 10.73 | 15.77 | 29.65 | 42.27 | 64.98 | 113.56 | 252.36 |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | | |
| Bar[1] | | BSPT | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | - | - |
| Bar | | PN16 | - | - | - | - | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar[1] | | PN25 | - | - | - | - | 25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

# MODEL 106-IDC / 206-IDC INTERNAL DROP CHECK

## KEY FEATURES

- Prevents reverse flow and reduces surges
- Completely mechanical and has no dependency on the pilot system
- Silent operation

## PRODUCT OVERVIEW

The Internal Drop Check (IDC) ensures quick positive shut-off whenever normal forward flow stops, this action will prevent reverse flow while reducing surge events.

The IDC assembly is a spring assisted, silent, mechanical check option for standard Singer main valves and comes in sizes ranging from 2 in / 50 mm – 36 in / 900 mm.

The IDC is a standard feature on the 106-PTC and 206-PTC series control valves and is available as on optional add-on for control valves larger than 2 in / 50 mm.

## STANDARD MATERIAL

Inner Valve: ASTM A536 Ductile Iron

Inner Valve Sleeve: B-62 Bronze or AISI 316 Stainless Steel

Stem: AISI 316 Stainless Steel

O-Ring Seals: Buna-N

Spring is optional on 106 series valves larger than 10 in / 250 mm and 206 series valves larger than 12 in / 300 mm. (On all other sizes, the spring is included.)

## ORDERING INSTRUCTIONS

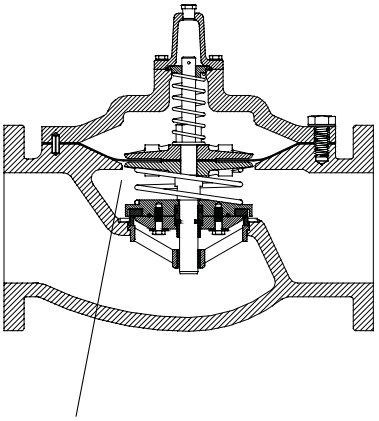
Refer to page 244 for the order form and ordering instructions.

Note:

- PTC valves include the IDC
- this IDC may be included as standard with some products

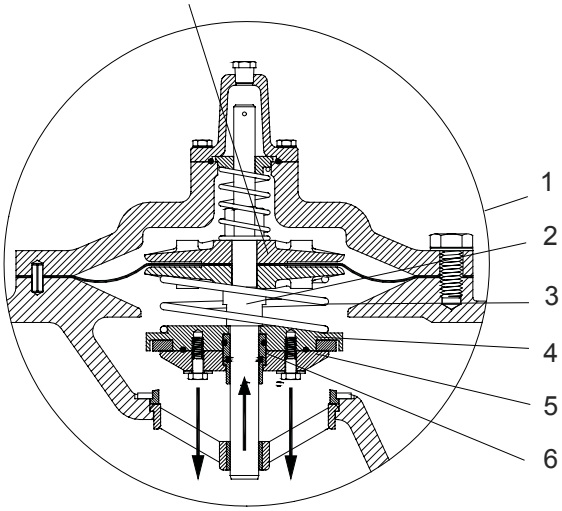
## PRODUCT LINE DRAWING

1. IDC - Internal Drop Check
2. IDC Stem
3. Spring (optional) in sizes 10 in / 250 mm and larger 106
4. Inner Valve
5. Disc Retainer
6. Inner Valve Sleeve



Valve fully closed:
Pressure above diaphragm drives diaphragm assembly and IDC down to seal the valve.

Main valve fully open:
Diaphragm and inner valve assembly controlled by the pilot system.




Should forward flow stop for any reason, the IDC moves down to seal against reverse flow, regardless of the valve position.

MAIN VALVES - OPTIONS

# MODEL 106-NYM / 206-NYM INTERNAL DROP CHECK NO YELLOW METAL

## NO YELLOW METAL UPGRADE OPTION

Yellow metal components such as Brass, Bronze and Copper may not be acceptable materials in harsh water conditions or in specific specifications for a variety of reasons. All or any portion of yellow metals in the internals of main valves may be upgraded to stainless steel. All or any portion of yellow metals on pilots or pilot tubing and fittings may also be upgraded to stainless steel.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Note: The -NYM option may be included as standard with some products.

Include -NYM addendum to main valve order.

# MODELS 106-RW / 206-RW RECLAIMED WATER VALVE

## KEY FEATURES

- Resists corrosion from chlorine chloramine and other corrosive elements typically found in grey or reclaimed water
- Can be used in all standard and special applications

## PRODUCT OVERVIEW

The 106-RW and 206-RW series control valves offer superior corrosion resistance performance in grey or reclaimed water applications and can be used in all standard and special applications.

It's constructed from materials which are selected specifically to address corrosion concerns from chlorine, chloramine, and other corrosive elements typically found in grey or reclaimed water.

MAIN VALVES - OPTIONS

# MODELS X107 POSITION INDICATOR

## KEY FEATURES

- Manually purge trapped air through the pet cock
- Simple and safe retrofit installation through the main valve stem cap
- Stainless steel indicator rod and pin for longevity

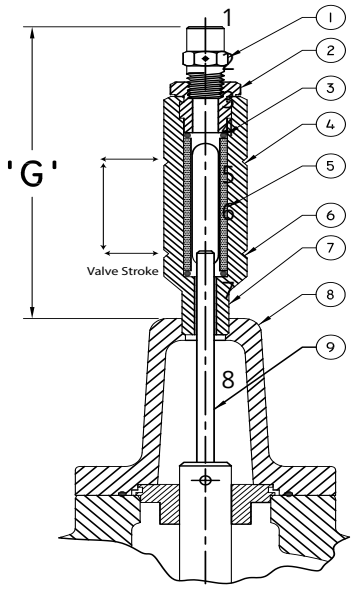
## PRODUCT OVERVIEW

The X107 position indicator stem is designed to provide direct indication of the diaphragm / inner valve position. The indicator stem moves up and down within its protective hexagonal brass housing. Within the housing is clear Pyrex sight glass, which allows viewing from both sides.

Singer main control valves are designed with a separate stem cap that makes installation of the X107 safe and simple to do in the field.

## PRODUCT LINE DRAWING

1. Cap and Bleed Valve (SST)
2. O Ring Seal (Buna-N)
3. Buna/EPDM
4. Open Notch Sight
5. Tube (Pyrex)
6. Closed Notch
7. Indicator Body (Brass)
8. Main Valve Stem Cap (Ductile Iron)
9. Indicator Pin and Retaining Pin (Stainless Steel)




## STANDARD MATERIALS

Body: Brass

Bleed Valve: SST

Indicator Rod: SST

O ring Seals: Buna-N

Indicator Body: Brass

Sight Tube: PYREX

Indicator Pin: SST

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Note: this X107 may be included as standard with some products

## SIZES & HEIGHTS

| 106-X107 | Dimension 'G' Height | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sizes (in) | 1 in | 1-1/4 in | 1-1/2 in | 2' | 2-1/2 in | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Sizes (mm) | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Height (in) | 3.5 in | 3.5 in | 3.5 in | 3.5 in | 4.75 in | 4.75 in | 4.75 in | 4.75 in | 6 in | 6.88 in | 6.88 in | 6.88 in | 7.93 in | 9.75 in | 9.75 in | 13.0 in |
| Height (mm) | 89 mm | 89 mm | 89 mm | 89 mm | 121 mm | 121 mm | 121 mm | 121 mm | 153 mm | 175 mm | 175 mm | 175 mm | 201 mm | 248 mm | 248 mm | 330 mm |

| 206-X107 | Dimension 'G' Height | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sizes (in) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Sizes (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Height (in) | 4.75 in | 4.75 in | 4.75 in | 4.75 in | 6 in | 6.88 in | 6.88 in | 7.93 in | 7.93 in | 7.93 in | 9.75 in | 9.75 in | 9.75 | 9.75 in | 13.0 in |
| Height (mm) | 121 mm | 121 mm | 121 mm | 121 mm | 153 mm | 175 mm | 175 mm | 201 mm | 201 mm | 201 mm | 248 mm | 248 mm | 248 mm | 248 mm | 330 mm |

CF = Consult Factory

# MODEL X156
# LINEAR INDUCTIVE VALVE POSITION TRANSMITTER

## KEY FEATURES

- The stainless steel actuator stem is pinned directly to the main valve stem
- Stems on main valves larger than 2 1/2 in / 65 mm are pre-drilled for easy installation
- Separate stem cap permits easy field installation
- Combination water-tight rated enclosure to NEMA 4X and NEMA 6


## PRODUCT OVERVIEW

The X156 Linear Inductive Valve Position Transmitter electronically indicates the position of the valve and is ideal for applications where precision and accuracy is required. It is mounted directly to the main valve stem and uses an external source of 24VDC power, a 4 to 20mA signal proportional to valve stroke is generated and transmitted. The zero and span are fully adjustable over the complete range of stroke.

## STANDARD MATERIALS

Adapter: ASTM B-16

Target: AISI 416 stainless steel

Actuator Stem: AISI 316 stainless steel

O ring Seals: Buna-N

Seal Bushing: ASTM B-16 brass

Mounting Plate: Coated steel

Actuator Stem Pin: 18-8 stainless steel

## SIZES & HEIGHTS

Dimension G in the above image is the height added to the valve by the assembly.

| 106-X156 | Dimension 'G' Height | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sizes (in) | 2 1/2 in | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Sizes ( mm) | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Height (in) | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 12.5 in | 12.5 in | 31 in |
| Height ( mm) | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 318 mm | 318 mm | 788 mm |

| 206-X156 | Dimension 'G' Height | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sizes (in) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Sizes ( mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Height (in) | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 9 in | 12.5 in | 12.5 in | 12.5 in | 12.5 in | 31 in |
| Height ( mm) | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 230 mm | 318 mm | 318 mm | 318 mm | 318 mm | 788 mm |

## ORDERING INSTRUCTIONS

- Available without 4-20mA rescaler
- Available with optional external limit switches

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

- Integrated discrete switch output (optional)

MAIN VALVES - OPTIONS

# MODEL OXY-NITRIDE STEM

## PRODUCT OVERVIEW

The Oxy-Nitride stem is ideally suited to reclaimed water applications and a wide range of other applications where mineral-build up is a concern. When minerals build-up on stems, it can cause potential maintenance problems and operational malfunctions. The Oxy-Nitride treated stainless steel stem is the perfect solution. Its specialized proprietary aerated salt bath treatment will reduce or prevent mineral build-up allowing the stem to stroke freely as it passes through the guide bushing. The Oxy-Nitride stem also increases surface hardness for wear, fatigue and lubricity.

## ORDERING INSTRUCTIONS

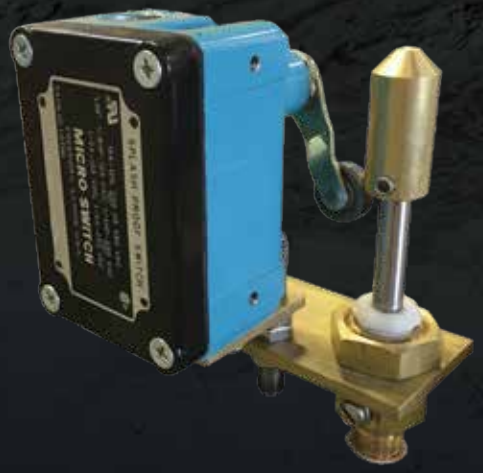
Refer to page 244 for the order form and ordering instructions.

Note: this Oxy-Nitride Stem may be included as standard with some products

# MODEL X129
# LIMIT SWITCH INDICATOR

## KEY FEATURES

- All main valve stems are pre-drilled ready to accept this option
- The Single Pole Double Throw limit switch is rated up to 10A, 250V, NEMA 4 enclosure with UL and CSA listings.
- Maximum Working Pressure: 400 psi / 27.6 bar



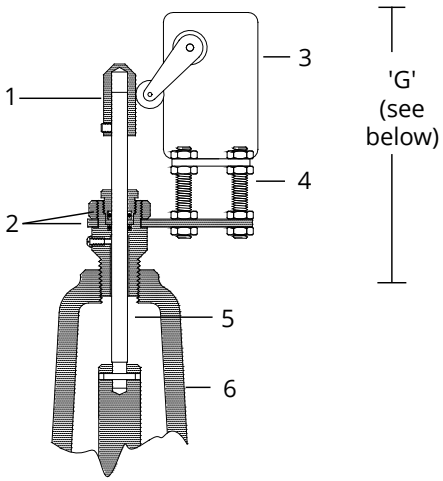

## PRODUCT OVERVIEW

The X129 limit switch is actuated by the opening and closing of a main valve. The assembly is fully adjustable over the entire valve stroke. Layout variations allow up to four separate switches to be mounted and actuated off the same stem.

## PRODUCT LINE DRAWING

1. Stem Hat
2. Adapter and Seal Bushing Bleed Screw (vent air)
3. Limit Switch
4. Limit Switch Mounting Assembly
5. Actuator Stem and Retaining Pin
6. Main Valve Stem Cap (separate and removable)

Model X129 Limit Switch Assembly




## STANDARD MATERIALS

Adapter: Brass

Stem Hat: Brass

Actuator Stem: SST

O'ring Seals: Buna-N

Seal Bushing: Brass

Mounting Plate: Brass

Actuator Pin: SST

## OPTIONAL

- Stainless Steel
- Double Pole Double Throw (DPDT)
- Up to 4 Switches
- Explosion proof housing
- Nema 6/6P rating

## SIZES & HEIGHTS

Dimension G is the height added to the valve by the assembly.

| 106-X129 | Dimension 'G' Height | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sizes (inches) | 2 in | 2-1/2 in | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Sizes (mm) | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Height (inches) | 7 | 7 | 7 | 7.38 | 7.75 | 8.75 | 9.63 | 9.63 | 9.63 | 11.06 | 12.25 | 12.25 | 15.25 |
| Height (mm) | 178 | 178 | 178 | 187 | 197 | 222 | 245 | 245 | 245 | 281 | 311 | 311 | 387 |

| 206-X129 | Dimension 'G' Height | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sizes (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 in | 28 in | 30 in | 32 in | 36 in |
| Sizes (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 mm | 700 mm | 750 mm | 800 mm | 900 mm |
| Height (inches) | 7 | 7 | 7.38 | 7.75 | 8.75 | 9.63 | 9.63 | 11.06 | 11.06 | 11.06 | 12.25 | 12.25 | 12.25 | 12.25 |
| Height (mm) | 178 | 178 | 187 | 197 | 222 | 245 | 245 | 281 | 281 | 281 | 311 | 311 | 311 | 311 |

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Quantity of Limit Switches
2. Actuation positions
3. SPDT or DPDT contacts
4. Optional explosion proof housing

Note:

- For retrofit, please include serial number
- This may be included as standard with some products

# MODEL 106-AC
# ANTI-CAVITATION CONTROL VALVE

## KEY FEATURES

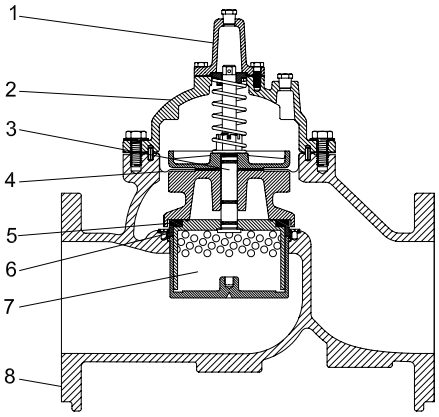
- Solves cavitation problems
- Controls variable flows and vibration
- Reduces noise significantly
- Every valve optimized for actual operating conditions

## PRODUCT OVERVIEW

The 106-AC series control valve solves cavitation problems by taking the pressure drop in two stages and at higher pressure drops allowing and containing cavitation inside the Recovery Chamber. Reduced velocity out of the Recovery Chamber prevents cavitation and reduces noise and vibration.

## PRODUCT LINE DRAWING

1. Removable Stem Cap
2. ASTM A536 Ductile Iron Construction
3. 316 Stainless Steel Stem
4. Buna-N / EPDM Diaphragm
5. Buna-N / EPDM Resilient Disc
6. 316 Stainless Steel Seat
7. Cavitation Recovery Chamber - AISI 316
8. NSF 61 Fusion Bonded Epoxy Coating



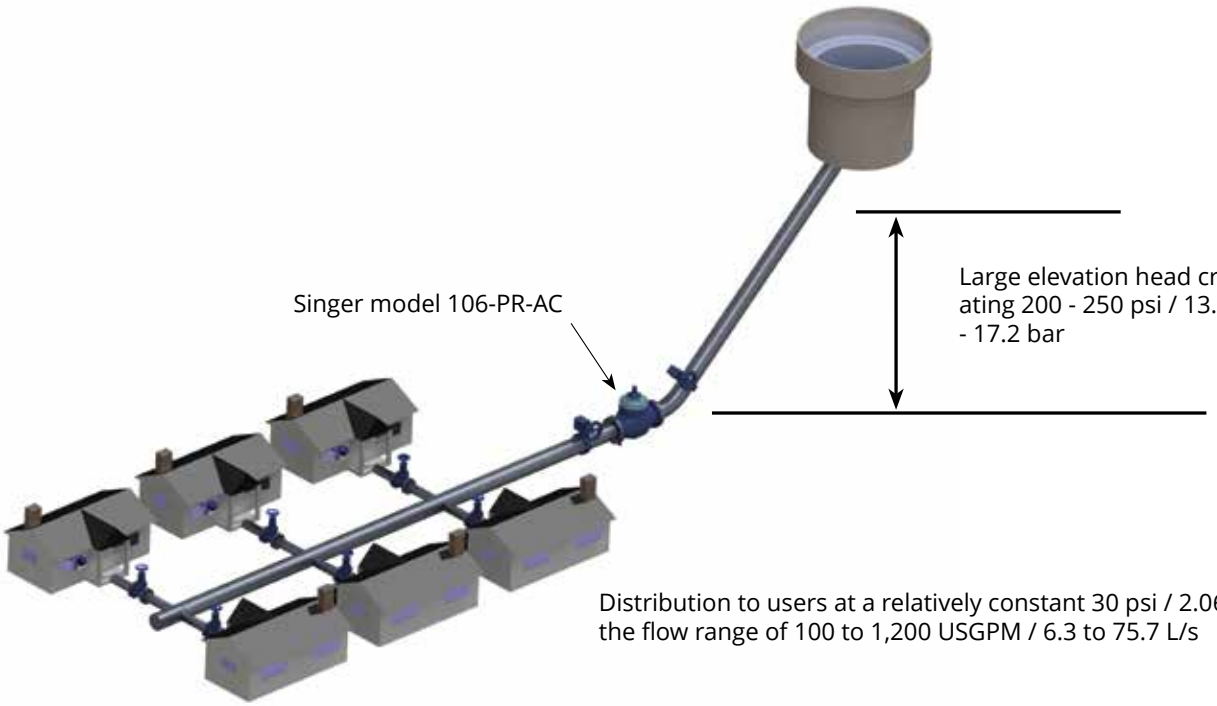
## TYPICAL APPLICATION

## PRESSURE REDUCING

Your application has a maximum continuous design flow of 1200 USGPM (76 l/s) and a minimum of 100 USGPM (6.3 l/s). Inlet pressure ranges from 200 psi (13.8 bar) at maximum flow to 250 psi (17.2 bar) at minimum flow. You need a relatively constant outlet pressure of 30 psi (2 bar). There is a possibility of demand for 2000 USGPM (130 l/s).

## SELECTION

Pressure Reducing: 6 in / 150 mm Singer model 106-PR-AC, ANSI Class 150 flange, range 10 – 80 psi / 0.7 bar – 5.5 bar, set at 30 psi / 2 bar




Distribution to users at a relatively constant 30 psi / 2.06 bar over the flow range of 100 to 1,200 USGPM / 6.3 to 75.7 L/s

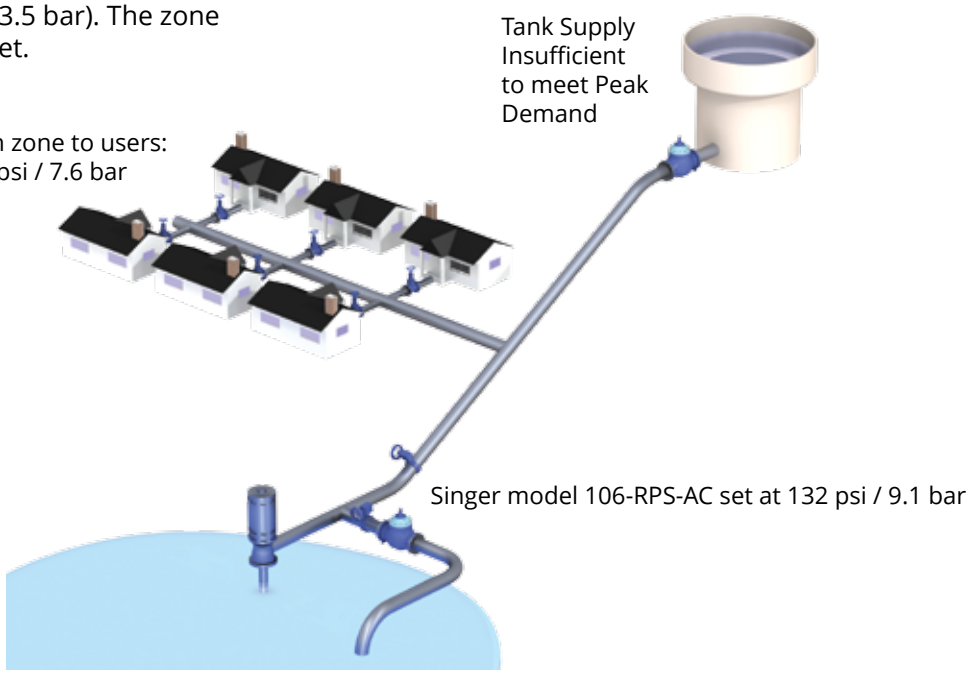
## SELECTION AND SIZING

1. Referring to page 240 Cavitation Chart, 250 psi (17.2 bar) to 30 psi (2 bar) is deep in the severe cavitation zone. Anti-Cavitation valve is required.
2. There seems to be no reason for the downstream pressure to go sub-atmospheric. Application is OK.
3. 200 psi (13.8 bar) is 80% of 250 psi (17.2 bar). Application is OK.
4. 220 psi (15 bar) pressure drop is acceptable for an outlet pressure of 30 psi (2 bar).
5. Referring to Graph 106-415 on page 82 or 239, intersection of minimum pressure drop of 170 psi (11.7 bar) and maximum flow of 1200 GPM (76 l/s) is right on the line for 4" (100mm) valve. If a capacity of 2000 GPM (130 l/s) is required, a 6" valve would be selected.
6. Referring to pages 14 to 19, maximum recommended continuous flow for a 4" 106 valve is 800 GPM (50 l/s). If it is expected that flows of more than 800 GPM (50 l/s) will take place more than intermittently, a 6" valve should be selected. Referring to page 100, 100 GPM (6.3 l/s) is higher than minimum recommended flow for 4" (100mm) or 6" (150mm) pressure reducing valve.

## TYPICAL APPLICATION

## CONTINUOUS SUSTAINING

Your application requires the discharge pressure of a fixed speed pump to be limited to a pressure that keeps the pressure in an old distribution zone to a maximum of 110 psi (7.6 bar). The pump is designed for 1200 USGPM (76 l/s) at 140 psi (9.6 bar) Shut-off head is 450 ft (137 m) or 195 psi (13.5 bar). The zone is 55 ft (34m) above the pump outlet.




## SELECTION AND SIZING

To keep the pressure in the distribution zone to a maximum of 110 psi (7.6 bar), we must limit the pressure on the pump discharge header to 110 psi (7.6 bar) + 50 ft (34m) or 132 psi (9.1 bar).

1. Referring to Cavitation Chart on page 240, 132 psi (9.1 bar) is in the very severe cavitation zone. Anti-Cavitation valve is a must.

2. It is likely that sub-atmospheric pressure will develop on the outlet of the valve. A vacuum breaker is required.

3. Pressure drop is constant. Application is OK.

4. 132 psi (9.1 bar) to atmosphere is OK.

5. Referring to Graph 106-415 on page 82 or 239, intersection of 132 psi (9.1 bar) and 1200 GPM (76 l/s) is above the line for 4" (100mm) valve but below the line for 6" (150mm) line. Select a 6" (150mm) valve.

6. Referring to pages 11 to 19, recommended continuous flow for 6" (150mm) valve is 1800 GPM (114 l/s). 6" (150mm) valve is OK. Referring to page 120, minimum recommended flow for 6" (150mm) 106-RPS pressure sustaining valve is 20 USGPM (1.3 l/s) for flat diaphragm valve and 1 USGPM (0.06 l/s) for rolling diaphragm valve. Low flow should not be a problem.

## 106-AC VALVE SIZES AND MATERIALS

| Valve Materials | | | |
|---|---|---|---|
| | Standard | | Optional |
| **Available Sizes** | Threaded | Flanged | - |
| Globe | 1 in to 3 in (25-80 mm) | 1-1/2 in to 36 in (40-900 mm) | - |
| **Valve Components** | | | |
| 1. Valve Body, Cover | 65-45-12 Ductile Iron | | 316 Stainless Steel (limited sizes) |
| 2. Seat Ring | 316 Stainless Steel | | - |
| 4. Stem | 316 Stainless Steel | | - |
| 5. Stem Nut | B16 Brass | | 316 Stainless Steel |
| 6. Spring | 316 Stainless Steel | | - |
| 7. Guide Bushings | B16 Brass or SAE 660 Bronze | | AISI 316 Stainless Steel |
| 8. Diaphragm | EPDM | | Buna-N / Viton (limited sizes) |
| 9. Resilient Disc | EPDM | | Buna-N / Viton (limited sizes) |
| 10. Coating | NSF61 Approved Fusion Bonded Epoxy - Thickness 10-14 mils (250-350 microns) | | Consult factory |
| 11. Fasteners | 18-8 Stainless Steel | | 316 Stainless Steel |
| 12. Anti-Cavitation Cage | 316 Stainless Steel | | - |

## SELECTION AND SIZING

1. Check Cavitation Chart on page 240. If the intersection of inlet pressure and outlet pressure is inside the cavitation zone, Anti-Cavitation valve is recommended. As a guide, if the pressure drop is more that 2/3 of the inlet pressure, cavitation may occur.
2. If there is any possibility that the outlet pressure can be sub-atmospheric even occasionally, consult with Singer Valve or one of our representatives for a possible solution.
3. If the pressure drop varies more than 25%, consult Singer Valve or one of our representatives for a solution.
4. If the outlet pressure is less than 20 psi (1.38 bar), pressure drop should be limited to 200 psi (13.8 bar) for continuous service.
5. Refer to Graph 106-415 on pages 82 or 239. Locate intersection of minimum pressure drop on the horizontal axis and maximum flow on the vertical axis. Select the next valve size above this intersection.
6. Refer to pages 14 to 19 for recommended limitations for Continuous and Intermittent flows and description of standard valve for minimum stable flow where applicable.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

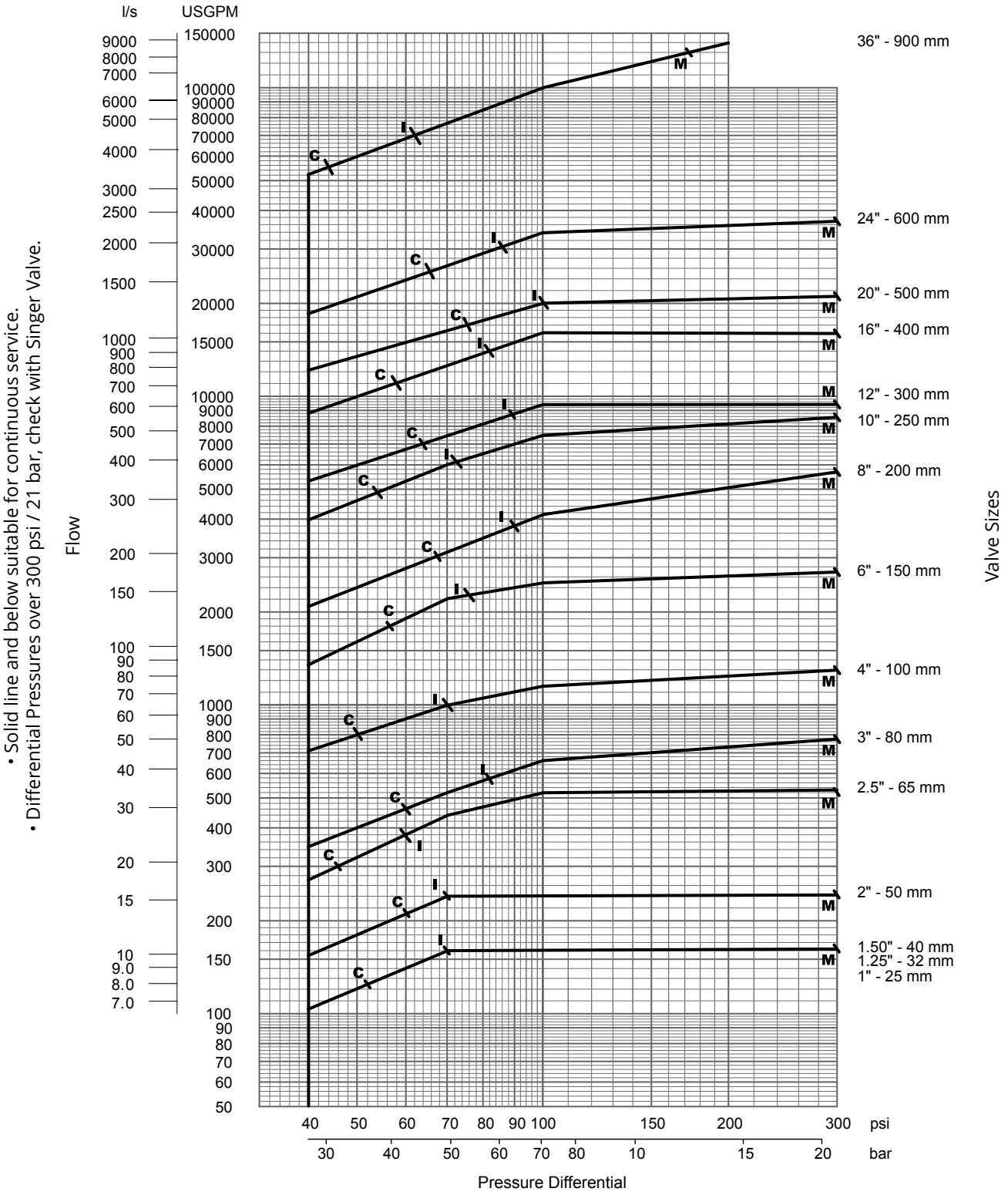
Inlet / outlet pressure range

Minimum / maximum differential pressure

Minimum / maximum flow rate

**Flow vs. Pressure Differential**

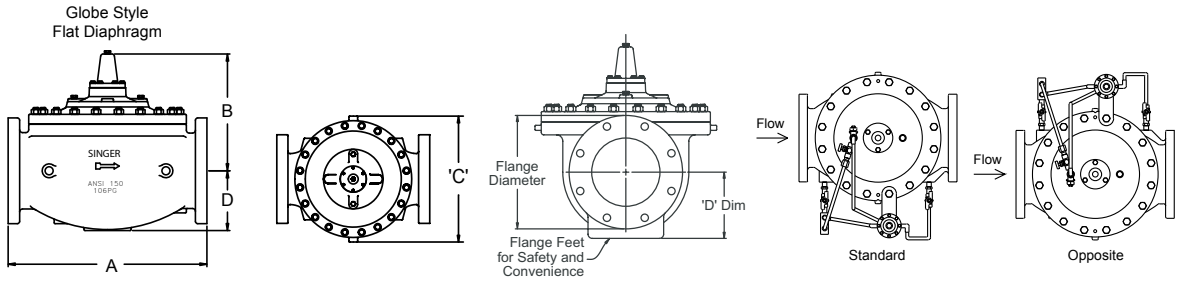
**Model 106 Series (PG-AC, PGX-AC, PT-AC, PGM-AC)** – Full Port, Globe Body, Flat / Rolling Diaphragm
Anti-Cavitation Valve Curve 106-415 (1 in / 25 mm – 36 in / 900 mm)



## VALVE DATA (US UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **1 in** | **1-1/4 in** | **1-1/2 in** | **2 in** | **2-1/2 in** | **3 in** | **4 in** | **6 in** | **8 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | | | | | | |
| Lay Length | A | FNPT | 6.75 | 6.75 | 6.75 | 9.38 | 11.00 | 13.50 | - | - | - |
| Centerline to Bottom | D | FNPT | 2.50 | 2.50 | 2.50 | 2.75 | 3.38 | 3.68 | - | - | - |
| Lay Length | A | 150F | - | - | 8.50 | 9.38 | 11.00 | 12.00 | 15.00 | 20.00 | 25.38 |
| Centerline to Bottom | D | 150F | - | - | 2.75 | 3.00 | 3.50 | 3.75 | 4.60 | 5.60 | 7.88 |
| Lay Length | A | 300F | - | - | 9.00 | 10.00 | 11.63 | 13.25 | 15.63 | 21.00 | 26.38 |
| Centerline to Bottom | D | 300F | - | - | 3.25 | 3.25 | 3.75 | 4.13 | 5.09 | 6.34 | 7.88 |
| **Common Dimensions (Globe)** | | | | | | | | | | | |
| Width | C | | 4.88 | 4.88 | 6.13 | 6.50 | 8.19 | 9.25 | 10.88 | 16.75 | 21.63 |
| Height (To Stem Cap) Globe | E | | 4.38 | 4.38 | 4.38 | 4.75 | 7.50 | 8.00 | 9.15 | 11.75 | 14.91 |
| Body Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | | FNPT | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | | 9/16 | 9/16 | 9/16 | 9/16 | 15/16 | 1-1/8 | 1-7/16 | 1-11/16 | 2-7/8 |
| Displaced Bonnet Volume (Gallons) | | | 0.007 | 0.007 | 0.007 | 0.02 | 0.07 | 0.09 | 0.20 | 0.56 | 1.67 |
| Approximate Shipping Weight (Lbs) | | | 25 | 25 | 25 | 45 | 80 | 125 | 250 | 400 | 700 |
| Capacities | | | Please consult Singer Valve | | | | | | | | |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | |
| PSI[1] | | FNPT | 400 | 400 | 400 | 400 | 400 | 400 | - | - | - |
| PSI | | 150F | - | - | - | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | - | - | - | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | | |
| Fahrenheit | | | 180º | 180º | 180º | 180º | 180º | 180º | 180º | 180º | 180º |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

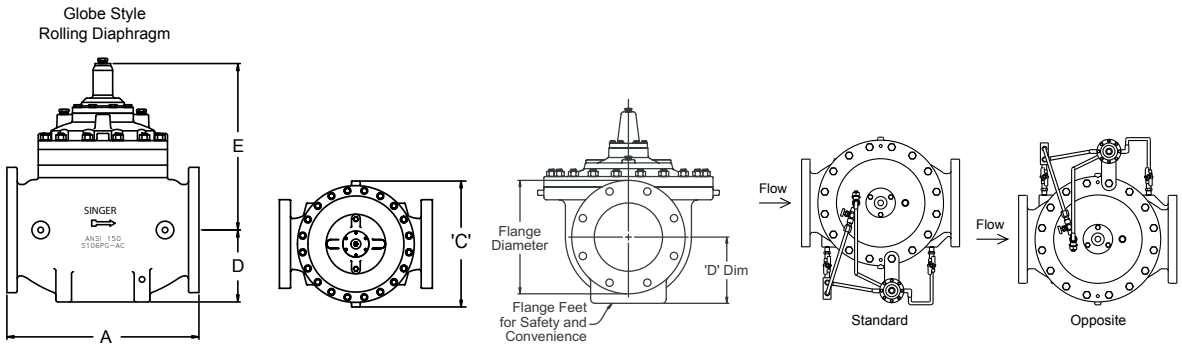



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## VALVE DATA (US UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Inches** | **REF** | **ANSI** | **6 in** | **8 in** | **10 in** | **12 in** | **16 in** | **20 in** | **24 in** | **36 in** |
| **Globe Dimensions** | | | **All figures shown in inches unless otherwise stated** | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 20.00 | 25.38 | 29.75 | 34.00 | 41.38 | 52.00 | 61.50 | 76.00 |
| Centerline to Bottom | D | 150F | 5.60 | 7.63 | 8.25 | 9.62 | 12.13 | 14.43 | 17.13 | 23.50 |
| Lay Length | A | 300F | 21.00 | 26.38 | 31.13 | 35.50 | 43.50 | 53.62 | 63.25 | 78.00 |
| Centerline to Bottom | D | 300F | 6.34 | 7.88 | 9.00 | 10.38 | 13.13 | 15.75 | 19.65 | 25.50 |
| **Common Dimensions (Globe & Angle)** | | | | | | | | | | |
| Width | C | | 12.75 | 16.09 | 18.00 | 21.25 | 27.06 | 35.00 | 49.68 | 64.50 |
| Height (To Stem Cap) Globe | E | | 15.43 | 20.19 | 22.13 | 23.75 | 30.31 | 35.50 | 45.75 | 61.00 |
| Body Port Tapping | | FNPT | 3/8 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | | MNPT | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | | FNPT | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | | 1-11/16 | 2-7/8 | 3-1/4 | 3-3/4 | 4-3/4 | 5-9/16 | 6 | 9 |
| Displaced Bonnet Volume (Gallons) | | | 0.5 | 1.0 | 1.5 | 2.3 | 6.8 | 9.0 | 14.8 | 43.0 |
| Approximate Shipping Weight (Lbs) | | | 360 | 660 | 900 | 1400 | 2400 | 3450 | 5300 | 13500 |
| Flow Capacities | | | Please consult Singer Valve | | | | | | | |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| PSI[1] | | FNPT | - | - | - | - | - | - | - | - |
| PSI | | 150F | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| PSI[1] | | 300F | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| **Maximum Temperature** | | | | | | | | | | |
| Fahrenheit | | | 180° | 180° | 180° | 180° | 180° | 180° | 180° | 180° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

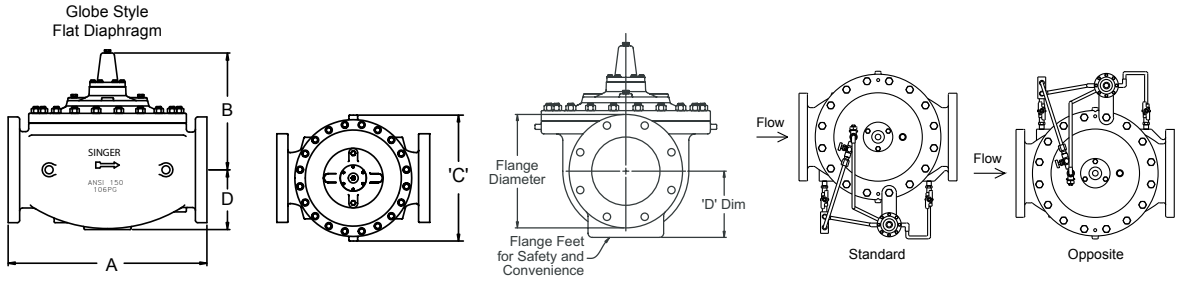



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MM** | **REF** | **ANSI** | **25 mm** | **32 mm** | **40 mm** | **50 mm** | **65 mm** | **80 mm** | **100 mm** | **150 mm** | **200 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | | | | | | |
| Lay Length | A | FNPT | 171 | 171 | 171 | 238 | 279 | 343 | - | - | - |
| Centerline to Bottom | D | FNPT | 64 | 64 | 64 | 70 | 86 | 93 | - | - | - |
| Lay Length | A | 150F | - | - | 216 | 238 | 279 | 305 | 381 | 508 | 645 |
| Centerline to Bottom | D | 150F | - | - | 70 | 76 | 89 | 95 | 117 | 142 | 200 |
| Lay Length | A | 300F | - | - | 229 | 254 | 295 | 337 | 397 | 533 | 670 |
| Centerline to Bottom | D | 300F | - | - | 83 | 83 | 95 | 105 | 129 | 161 | 200 |
| **Common Dimensions (Globe)** | | | | | | | | | | | |
| Width | C | | 124 | 124 | 156 | 165 | 208 | 235 | 276 | 425 | 549 |
| Height (To Stem Cap) Globe | E | | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 | 379 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 14 | 14 | 14 | 25 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.03 | 0.03 | 0.03 | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 11 | 11 | 11 | 20 | 36 | 57 | 113 | 181 | 317 |
| Capacities | | | Please consult Singer Valve | | | | | | | | |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | |
| Bar[1] | | FNPT | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | - | - | - |
| Bar | | 150F | - | - | - | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar[1] | | 300F | - | - | - | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request

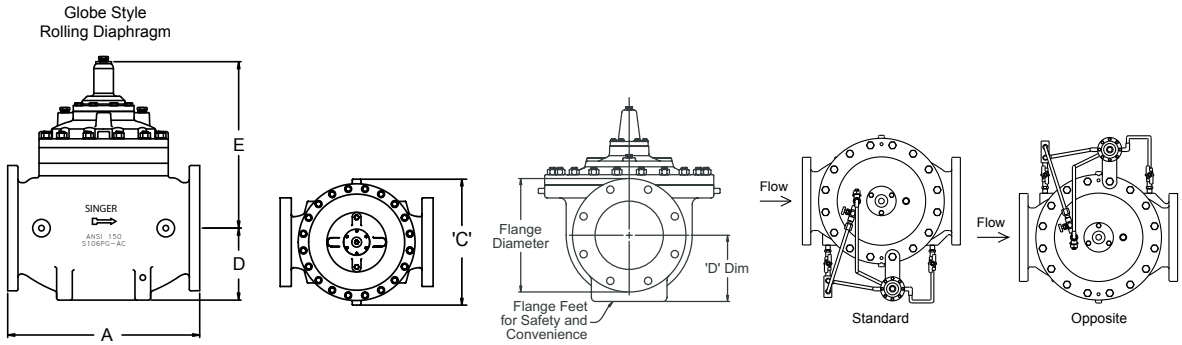



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## VALVE DATA (METRIC UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **mm** | **REF** | **ANSI** | **150 mm** | **200 mm** | **250 mm** | **300 mm** | **400 mm** | **500 mm** | **600 mm** | **900 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated.** | | | | | | | |
| Lay Length | A | FNPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | FNPT | - | - | - | - | - | - | - | - |
| Lay Length | A | 150F | 508 | 645 | 756 | 864 | 1051 | 1321 | 1562 | 1930 |
| Centerline to Bottom | D | 150F | 142 | 194 | 210 | 244 | 308 | 367 | 435 | 597 |
| Lay Length | A | 300F | 533 | 670 | 791 | 902 | 1105 | 1362 | 1607 | 1981 |
| Centerline to Bottom | D | 300F | 161 | 200 | 229 | 264 | 334 | 400 | 499 | 648 |
| **Common Dimensions (Globe)** | | | | | | | | | | |
| Width | C | | 324 | 409 | 460 | 540 | 687 | 889 | 1262 | 1422 |
| Height (To Stem Cap) Globe | E | | 346 | 455 | 562 | 603 | 770 | 902 | 1162 | 1550 |
| Body Port Tapping | FNPT | Inches | 3/8 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | FNPT | Inches | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | mm | 43 | 73 | 83 | 95 | 120 | 141 | 150 | 229 |
| Displaced Bonnet Volume (Litres) | | | 2 | 4 | 6 | 9 | 26 | 34 | 56 | 163 |
| Approximate Shipping Weight (Kilograms) | | | 163 | 300 | 408 | 635 | 1089 | 1565 | 2268 | 6124 |
| Flow Capacities | | | Please consult Singer Valve | | | | | | | |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| Bar* | | FNPT | - | - | - | - | - | - | - | - |
| Bar | | 150F | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 |
| Bar* | | 300F | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

[1]Valves rated and stamped 400 psi as standard. Valves rated and stamped 600 psi on request.

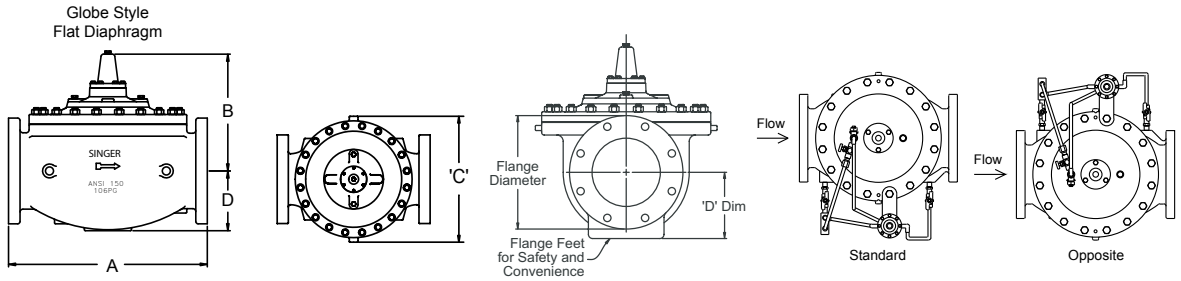



See pilot system information, page 207.
For additional Engineering notes, see page 242.

## AC VALVE DATA (ISO UNITS)

| Size | DWG | Standard | Flat Diaphragm System | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MM** | **REF** | **ISO** | **25 mm** | **32 mm** | **40 mm** | **50 mm** | **65 mm** | **80 mm** | **100 mm** | **150 mm** | **200 mm** |
| **Globe Dimensions** | | | **All figures shown in mm unless otherwise stated** | | | | | | | | |
| Lay Length | A | BSPT | 171 | 171 | 171 | 238 | 279 | 343 | - | - | - |
| Centerline to Bottom | D | BSPT | 64 | 64 | 64 | 70 | 86 | 93 | - | - | - |
| Lay Length | A | PN10 / PN16 | - | - | 229 | 238 | 279 | 318 | 381 | 508 | 645 |
| Centerline to Bottom | D | PN10 / PN16 | - | - | 83 | 76 | 89 | 100 | 117 | 142 | 200 |
| Lay Length | A | PN25 / PN40 | - | - | 229 | 238 | 295 | 318 | 397 | 533 | 670 |
| Centerline to Bottom | D | PN25 / PN40 | - | - | 83 | 76 | 89 | 100 | 129 | 161 | 200 |
| **Common Dimensions (Globe)** | | | | | | | | | | | |
| Width | C | | 124 | 124 | 156 | 152 | 208 | 235 | 276 | 425 | 549 |
| Height (To Stem Cap) Globe | E | | 111 | 111 | 111 | 121 | 191 | 203 | 232 | 298 | 379 |
| Body Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| Cover Port Tapping | FNPT | Inches | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 1/2 | 1/2 |
| Valve Stroke | | mm | 14 | 14 | 14 | 14 | 25 | 29 | 37 | 43 | 73 |
| Displaced Bonnet Volume (Litres) | | | 0.03 | 0.03 | 0.03 | 0.1 | 0.3 | 0.3 | 0.8 | 2.1 | 6.3 |
| Approximate Shipping Weight (Kilograms) | | | 11 | 11 | 11 | 20 | 36 | 57 | 113 | 181 | 317 |
| Capacities | | | Please consult Singer Valve | | | | | | | | |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | | |
| Bar | | BSPT | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | 27.6 | - | - | - |
| Bar | | PN16 | - | - | - | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar | | PN25 | - | - | - | 25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | | | | | |
| Celcius | | | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° | 82° |

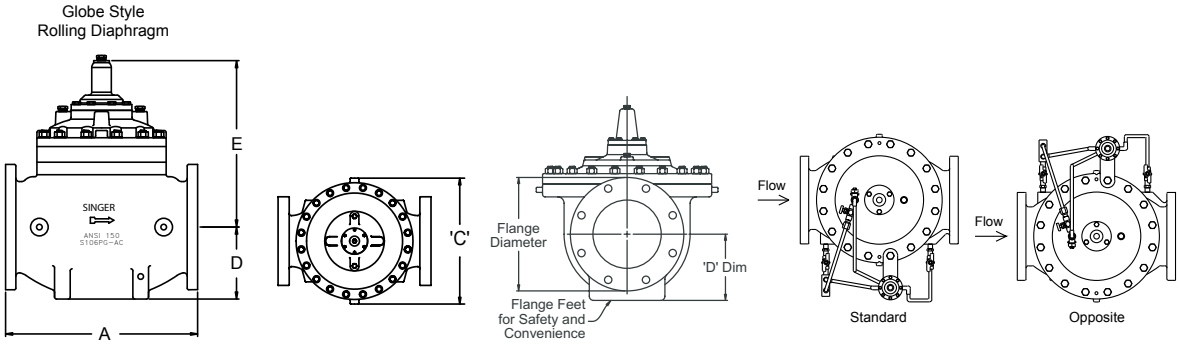
*Valves rated and stamped 27.6 bar as standard. Valves rated and stamped 41 bar on request




See pilot system information, page 207.
For additional Engineering notes, see page 242.

## AC VALVE DATA (ISO UNITS)

| Size | DWG | Standard | Rolling Diaphragm System | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | REF | ISO | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| **Globe Dimensions** | | | All figures shown in mm unless otherwise stated | | | | | | | |
| Lay Length | A | BSPT | - | - | - | - | - | - | - | - |
| Centerline to Bottom | D | BSPT | - | - | - | - | - | - | - | - |
| Lay Length | A | PN10 / PN16 | 508 | 645 | 756 | 864 | 1051 | 1321 | 1562 | 1930 |
| Centerline to Bottom | D | PN10 / PN16 | 142 | 200 | 210 | 244 | 308 | 367 | 435 | 597 |
| Lay Length | A | PN25 / PN40 | 533 | 670 | 791 | 902 | 1105 | 1362 | 1607 | 1981 |
| Centerline to Bottom | D | PN25 / PN40 | 161 | 200 | 229 | 264 | 334 | 400 | 499 | 648 |
| **Common Dimensions (Globe)** | | | | | | | | | | |
| Width | C | | 324 | 409 | 460 | 540 | 687 | 889 | 1262 | 1422 |
| Height (To Stem Cap) Globe | E | | 346 | 455 | 562 | 603 | 770 | 902 | 1162 | 1550 |
| Body Port Tapping | FNPT | Inches | 3/8 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Stem Cap Plug | MNPT | Inches | 3/8 | 3/8 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Cover Port Tapping | FNPT | Inches | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 | 3/4 | 3/4 | 1 |
| Valve Stroke | | mm | 43 | 73 | 83 | 95 | 120 | 141 | 150 | 229 |
| Displaced Bonnet Volume (Litres) | | | 2 | 4 | 6 | 9 | 26 | 34 | 56 | 163 |
| Approximate Shipping Weight (Kilograms) | | | 163 | 300 | 408 | 635 | 1089 | 1565 | 2268 | 6124 |
| Flow Capacities | | | Please consult Singer Valve | | | | | | | |
| **Maximum Pressure Ratings (Ductile Only)** | | | | | | | | | | |
| Bar | | BSPT | - | - | - | - | - | - | - | - |
| Bar | | PN16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Bar | | PN25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Maximum Temperature** | | | | | | | | | | |
| Celcius | | | 82º | 82º | 82º | 82º | 82º | 82º | 82º | 82º |




See pilot system information, page 207.
For additional Engineering notes, see page 242.

**When faced with extreme pressures or anything in between, our pressure reducing valves maintain a uniform downstream pressure. Regardless of the problem, regardless of the application, our valves perform under pressure.**

**Want extra security? That's a job for our PR-SM, a PR valve fitted with an integral back-up system. Need to reduce high nighttime pressure? Our Pressure/Flow Control valve works wonders. Do you have a tricky application without a reliable solution in sight? Contact us. We welcome the challenge.**

# Pressure Reducing Valves

SINGER VALVE
Result-Based Solutions. Globally.™

# MODELS 106-PR-SM / 206-PR-SM
# PRESSURE REDUCING CONTROL VALVE WITH INTEGRAL BACK-UP

## KEY FEATURES

- Ideal for applications where failure is not an option
- Includes a back-up system to protect against diaphragm or pilot failure
- Reduces requirement for immediate service
- Provides downstream surge protection

## PRODUCT OVERVIEW

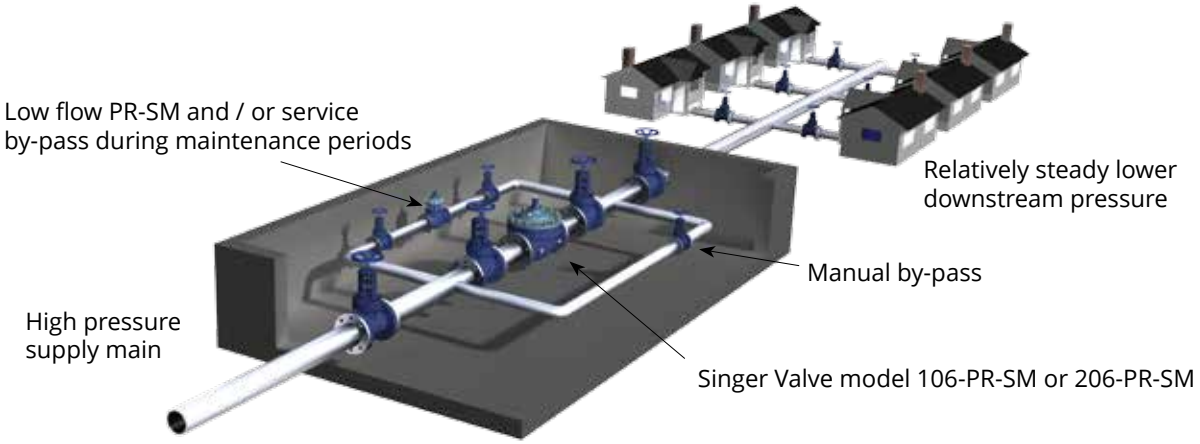
The 106-PR-SM and 206-PR-SM series control valves are engineered to be used anywhere pressure reducing valve failure is unacceptable. These valves have a second and independent operating system superimposed upon the standard primary system. With the assurance of a back-up system, maintenance schedules may be extended as pressures will continue to be controlled even in the event of failure with the primary system.

Under normal pressure reducing conditions, the primary pilot senses the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm in the lower operating chamber. The downstream pressure is maintained virtually steady at the pilot set-point that is adjustable.

Should the primary pilot system and / or main valve fail to control the downstream pressure, the independent back-up pilot system will begin to operate. It controls the pressure above the diaphragm in the second operating chamber. The back-up pilot is set slightly higher than the primary pilot. The forces now operating in the top chamber assume control of the inner valve assembly and maintain pressure reducing control. During back-up operation only, there is a small (1 USGPM / 0.063 L/s) continuous discharge that should be taken to drain.

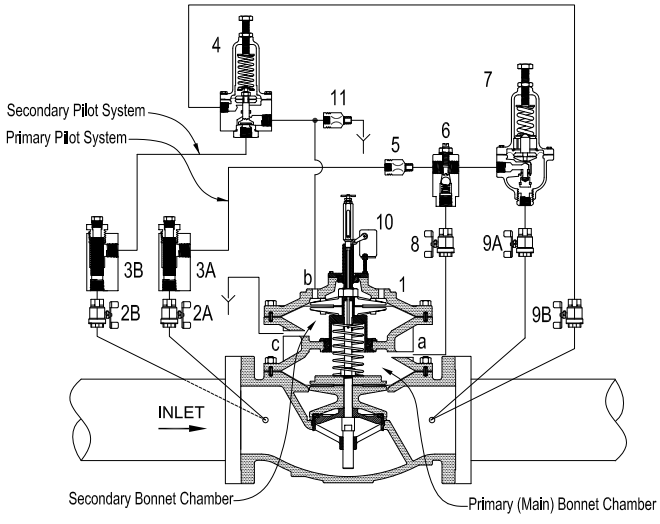
The secondary pilot continually senses the downstream pressure. Should there be a rapid rise in downstream pressure for any reason, the secondary pilot will respond quickly, and will pressurize the top chamber. This will compliment the primary pressure reducing controls and provide faster response.

## TYPICAL APPLICATION




## SCHEMATIC DRAWING

1. Main Valve - 106-PGM or 206-PGM
2, 8, 9. Isolation Valves - (2A, 2B, 8, 9A, 9B)
3. Strainer - 40 mesh stainless steel screen (3A, 3B)
4. Model 81-RP Pilot (Back-up)
5, 11. Fixed Restriction
6. Model 26 Flow Stabilizer (sizes 8 in / 200 mm 106, 10 in / 250 mm 206 and smaller is included)
7. Model 160 PR Pilot (Primary)
10. Limit Switch Assembly - SPDT - Optional




Schematic A-7697D

## STANDARD MATERIALS

Standard materials for pilot system components are:

ASTM B-62 bronze or ASTM B-16 brass

AISI 303 / 316 stainless steel trim

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity
2. Check the operating flow against valve minimum.
3. Provide a smaller valve in parallel to facilitate maintenance and low flow capability, if required.
4. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
5. Ensure that the valve and flange working pressure rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Outlet pressure range

| 106-PR-SM | Flow Capacity (See 106-PGM in Main Valve section for other valve data) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 10 | 20 | 40 | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.32 | 0.63 | 1.26 | 2.52 | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | 0.06 | 0.06 | 0.19 | 0.19 | 0.19 | 0.19 | 0.63 | 0.63 |
| Maximum Continuous (USGPM) | 460 | 800 | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 |
| Maximum Continuous (L/s) | 29 | 50 | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 |

| 206-PR-SM | Flow Capacity (See 206-PGM in Main Valve section for other valve data) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in |
| Size (mm) | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 10 | 20 | 40 | - | - | - | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 10 | 10 | 10 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.32 | 0.63 | 1.26 | 2.52 | - | - | - | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.63 | 0.63 | 0.63 | 0.63 |
| Maximum Continuous (USGPM) | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 |
| Maximum Continuous (L/s) | 37 | 65 | 145 | 259 | 404 | 582 | 1041 | 1041 | 1041 | 1370 | 2120 | 2123 | 2126 | 2132 |

# MODELS 106-PFC / 206-PFC PRESSURE FLOW CONTROL (MODULATION) VALVE

## KEY FEATURES

- Reduces downstream pressure when demand is low to reduce leakage and pipe breaks.
- Compensates for pressure loss in the pipe to keep a fairly constant pressure at a distant point. This reduces the pressure during low flow in most of the system.
- Simple to set-up and adjust.
- Maximum pressure increase can be limited by simple adjustment.
- Pressure increase is adjustable.

## PRODUCT OVERVIEW

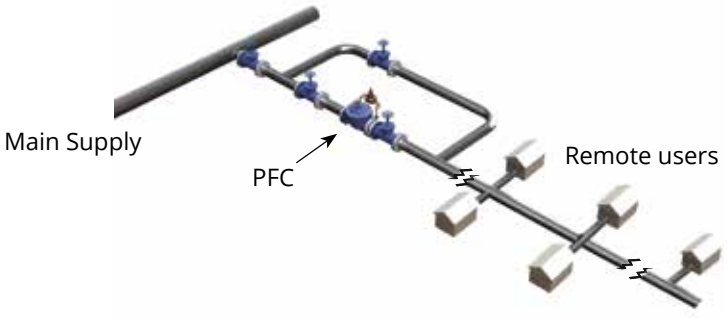
The 106-PFC / 206-PFC Pressure Flow Control Valve is a pressure reducing valve with a special (Patented) pilot that increases downstream pressure as flow increases.

The PFC valve controls the downstream pressure as a function of flow. This increased downstream pressure compensates partially for pipe friction and therefore maintains a relatively constant pressure at some remote location. The PFC valve will deliver consistent performance without any electrical components and is not affected by flooding. The valve can be used wherever a standard PRV is installed.

Please note that the downstream (controlled) pressure increases from low flow to selected maximum flow but reduces at flows higher than the selected maximum. This is due to the increased pressure drop of the orifice plate. If this reduction of the controlled pressure past the design maximum flow is a problem, contact Singer Valve or your Singer Valve representative for an engineered solution.

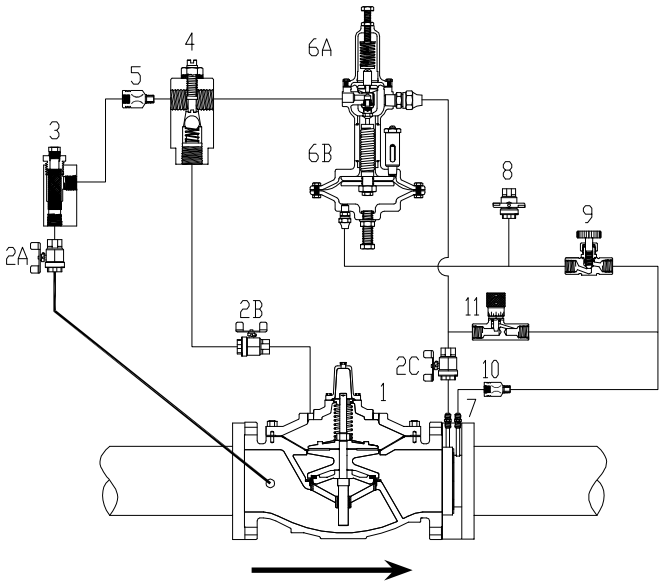
## TYPICAL APPLICATION

An orifice plate immediately downstream of the PFC Control Valve produces 3 psi / 0.2 bar pressure drop, at maximum flow. This pressure differential is applied to each side of an actuating diaphragm which is connected to the yoke of the pressure reducing pilot. Increasing the differential raises the pilot setting and raises downstream pressure to maintain virtually steady pressure on a critical distance user.



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve (2A, 2B, 2C)
3. Strainer - 40 Mesh
4. Model 26 Flow Stabilizer / Opening speed Control
   - Standard on 8" (200 mm) 106 / 10" (250 mm) 206 and smaller
   - Optional on 10" (250 mm) 106 / 12" (300 mm) 206 and larger
5. Fixed Restriction
6. Model 160-PFC Pressure/Flow Control Pilot
7. Orifice housing and plate
8. Test Valve
9. Speed Control
10. Fixed Restriction
11. PIP Adjustment - Model 852-B




**Schematic A-8270D12**

## SELECTION SUMMARY

1. The Singer model 106-PFC / 206-PFC should be sized as a normal pressure reducing valve. Refer to section 106-PR / 206-PR, page 96, for size selection and main pilot spring ranges.
2. Installation is the same as a standard pressure reducing valve. See section 106-PR / 206-PR, page 96.
3. Maximum pressure increase over base setting: 35 psi / 2.4 bar.
4. For correct application provide

   i. Maximum & minimum inlet pressure and base (minimum) outlet pressure setting

   ii. Maximum & minimum flow rates

   iii. Pressure increase _____ psi / _____ bar at _____ USGPM / L/s

   iv. Maximum pressure increase at any flow _____ psi / _____ bar.
5. Ensure the flange ratings exceed the maximum working pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Outlet pressure range
3. Minimum / maximum flow rate
4. Pressure increase at high flow

| 106-PFC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum Continuous (USGPM) Flat Diaphragm | 5 | 10 | 20 | 40 | - | - | - | - | - | - | - |
| Minimum Continuous (USGPM) Rolling Diaphragm | - | - | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum Continuous (L/s) Flat Diaphragm | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum Continuous (L/s) Rolling Diaphragm | - | - | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 |
| Maximum Continuous (USGPM) | 460 | 800 | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 29 | 50 | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-PFC | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 6 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum Continuous (USGPM) Flat Diaphragm | 5 | 10 | 20 | 40 | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Continuous (USGPM) Rolling Diaphragm | - | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum Continuous (L/s) Flat Diaphragm | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Continuous (L/s) Rolling Diaphragm | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Maximum Continuous (USGPM) | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 37 | 65 | 145 | 259 | 404 | 582 | 1040 | 1040 | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-PR / 206-PR PRESSURE REDUCING VALVE

## KEY FEATURES

- Ideal for maintaining accurate downstream pressure
- Responds quickly and effectively

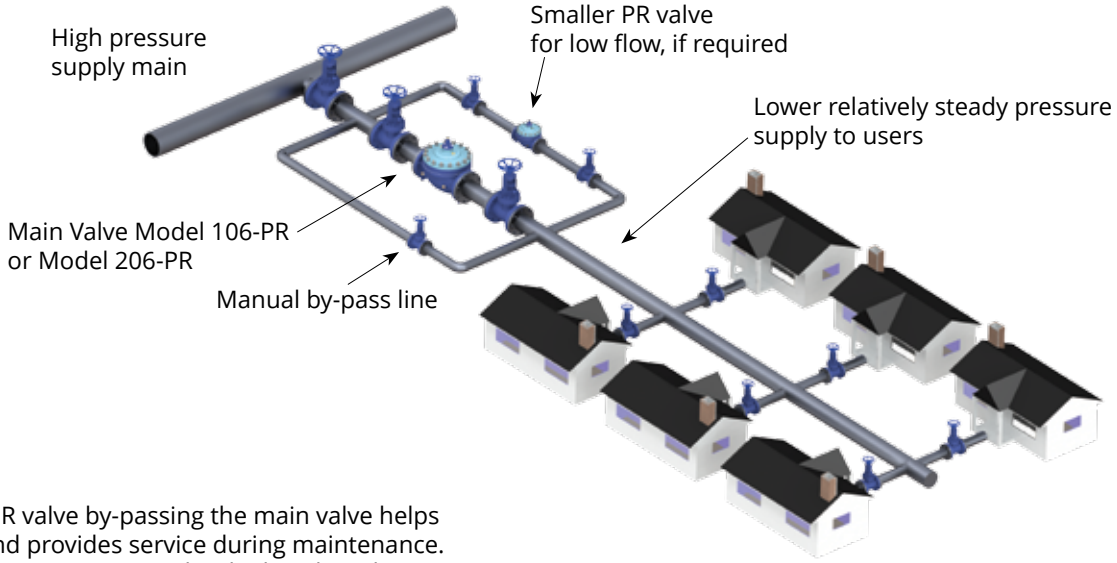
## PRODUCT OVERVIEW

The 106-PR and 206-PR series pressure reducing valves are based on the 106-PG or 206-PG main valves.

The pilot valves sense the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm. The downstream pressure is maintained virtually steady at the pilot set-point.

In typical pressure reducing applications, the standard port model 206-PR is often the best selection.

## TYPICAL APPLICATION




Note: The smaller PR valve by-passing the main valve helps control low flows and provides service during maintenance. It should be set 3 – 5 psi / 0.2 – 0.35 bar higher than the larger valve setting.

Singer Valve single rolling diaphragm technology 6 in / 150 mm and larger have extremely precise control, even at low flows, making smaller by-pass valves unnecessary except for possible bypass during maintenance.

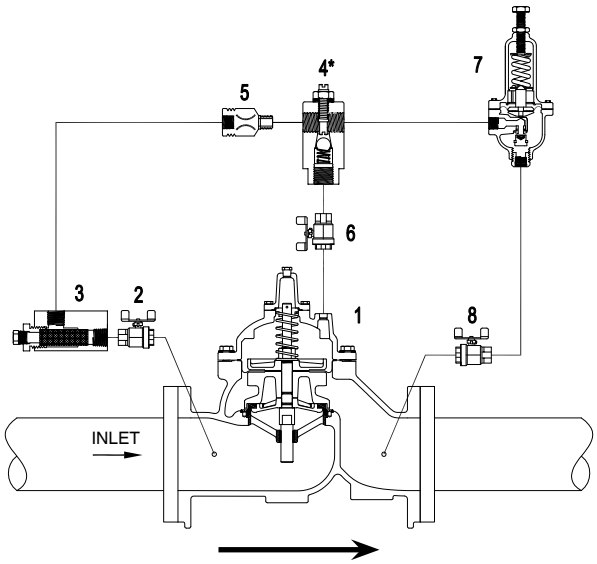
## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger

4*. Model 26 Flow Stabilizer / Opening Speed Control
- Standard on valves 8 in / 200 mm 106, 10" / 250 mm 206 and smaller

5. Fixed Restriction
6. Isolation Valve - standard 4 in / 100 mm and larger
7. Model 160 pilot
   - Specify for 5 to 50 psi / 0.35 to 3.5 bar,
     10 to 80 psi / 0.70 to 5.5 bar,
     20 to 200 psi / 1.38 to 13.8 bar,
     100 to 300 psi / 6.9 to 20.7 bar.
8. Isolation Valve - standard all sizes

Note: SRD shown is available for 6" 106-PG and larger.




Schematic A-0306C

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B16 brass
- AISI 303 / 316 stainless steel trim
- Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity
2. Check the operating flow against valve minimum.
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Ensure that the flange rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. 106 or 206
2. Pilot range

| 106-PR | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-PR | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-PR | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-PR | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphram | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1041 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-PR-48 / 206-PR-48
# PRESSURE REDUCING VALVE WITH LOW FLOW BY-PASS

## KEY FEATURES

- Maintains stable flow right down to zero
- Precise and reliable pressure setting
- By-pass piped in parallel to reduce space requirements

## PRODUCT OVERVIEW

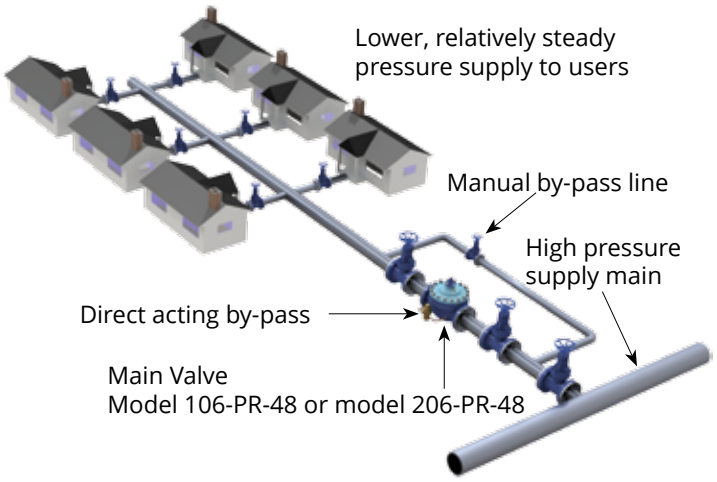
The 106-PR-48 and 206-PR-48 series pressure reducing valves with low flow by-pass are based on the 106-PG or 206-PG main valve. In addition, a direct acting pressure reducing valve is piped in parallel, using the main valve back port connections.

The pilot valve senses the downstream pressure through a connection at the main valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the main valve position by modulating the pressure above the diaphragm. The downstream pressure is maintained virtually steady at the pilot set-point.

The by-pass valve is set 5 psi / 0.35 bar higher than the main valve. Under low flow conditions, the main PR valve closes and the by-pass stays open, controlling the pressure at very low flows without seat chatter.

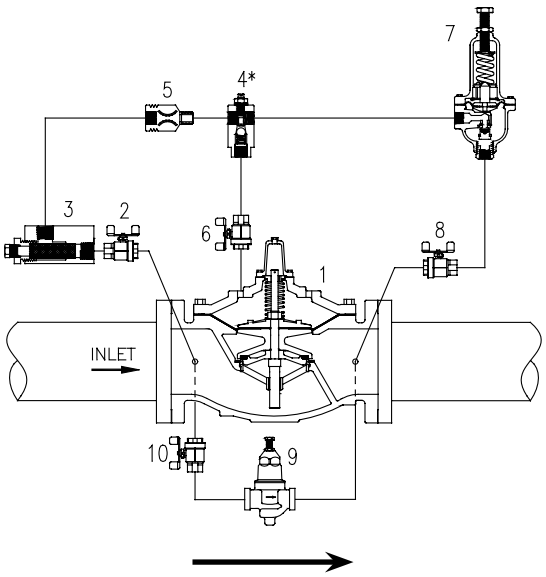
In typical pressure reducing applications, the standard port Model 206-PR-48 is often the best selection.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valves - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4.* Model 26 Flow Stabilizer / Opening Speed Control
   • Standard on valves 8 in / 200 mm 106, 10" / 250 mm 206 and smaller
5. Fixed Restriction
6. Isolation Valves - standard 4 in / 100 mm and larger
7. Model 160 Pilot
   • Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
8. Isolation Valve - standard all sizes
9. Direct Acting by-pass - range 30 – 145 psi / 2.07 – 10 bar
10. Isolation Valve - standard all sizes




**Schematic A-8063E**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass;
- AISI 303 / 316 stainless steel trim

## SELECTION SUMMARY

1. Select the main PR valve series and size with sufficient capacity. Note that large Singer valves (6 in / 150 mm 106 & 12 in / 300 mm 206 and up) have extremely precise control, even at low flows, making by-pass valves generally unnecessary for stable control, due to Single Rolling Diaphragm technology. Model PR-48 valves are usually required only for valve sizes with significant minimum flows. (3 in / 80 mm to 8 in / 200 mm 106 and 4 in / 100 mm to 10 in / 250 mm 206).
2. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
3. Ensure that the flange rating exceeds the maximum operating pressure.
4. Consider using a manual main by-pass line if necessary for service during maintenance periods

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-PR-48 | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| Minimum (USGPM) Flat Diaphragm | 0 | 0 | 0 | 0 |
| Minimum (L/s) Flat Diaphragm | 0 | 0 | 0 | 0 |
| Maximum Continuous (USGPM) Flat Diaphragm | 460 | 800 | 1800 | 3100 |
| Maximum Continuous (L/s) Flat Diaphragm | 29 | 50 | 114 | 196 |

| 206-PR-48 | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 4 in | 6 in | 8 in | 10 in |
| Size (mm) | 100 mm | 150 mm | 200 mm | 250 mm |
| Minimum (USGPM) Flat Diaphragm | 0 | 0 | 0 | 0 |
| Minimum (L/s) Flat Diaphragm | 0 | 0 | 0 | 0 |
| Maximum Continuous (USGPM) Flat Diaphragm | 580 | 1025 | 2300 | 4100 |
| Maximum Continuous (L/s) Flat Diaphragm | 37 | 65 | 145 | 259 |

# MODELS 106-PR-C / 206-PR-C PRESSURE REDUCING AND CHECK VALVE

## KEY FEATURES

- Excellent low flow stability
- Drip-tight closing on return flow
- Easily and precisely set downstream pressure

## PRODUCT OVERVIEW

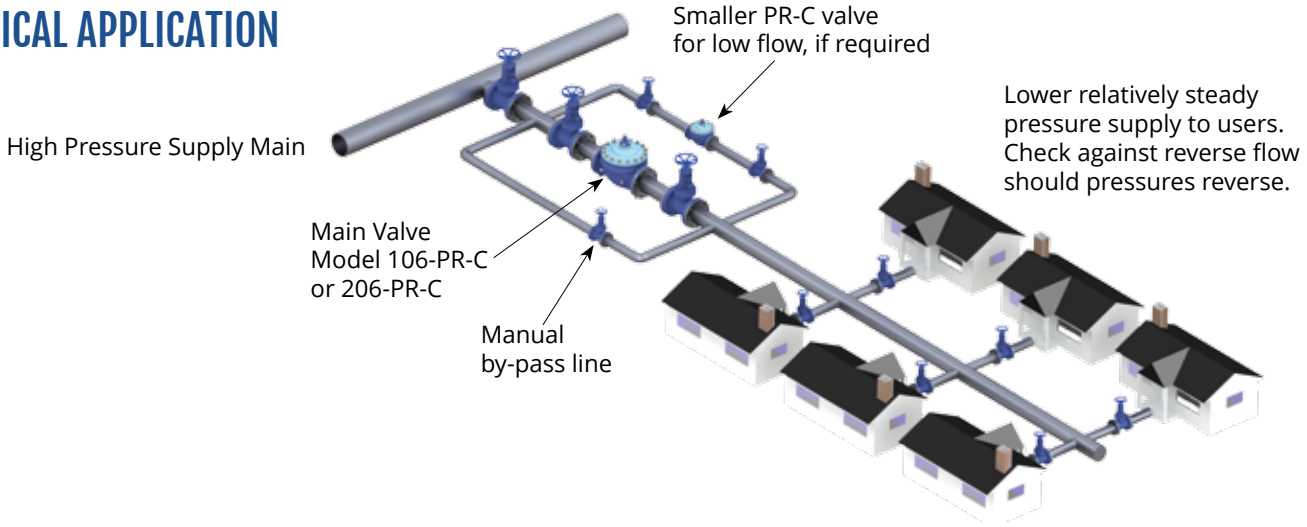
The 106-PR-C and 206-PR-C pressure reducing and check valves are based on the 106-PG or 206-PG main control valve.

The pilot valve senses the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm. The downstream pressure is maintained relatively steady at the pilot set-point.

The pilot check valves direct downstream pressure above the diaphragm to close the valve when the system pressures reverse (when the downstream pressure is higher than the upstream).

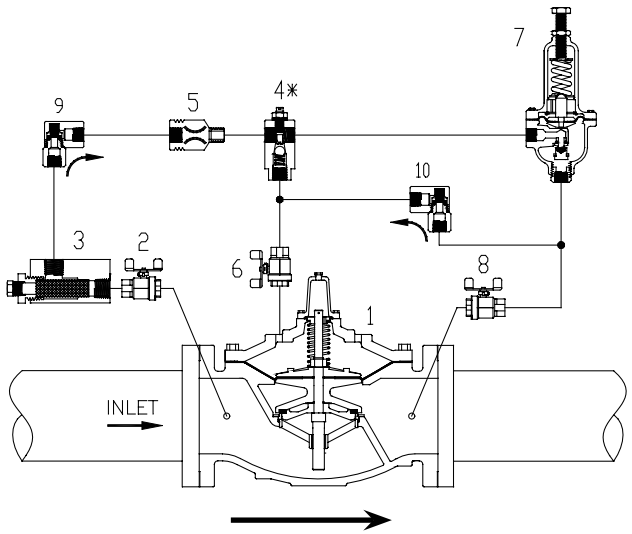
In typical pressure reducing applications, the standard port model 206-PR-C is often the best selection.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4.* Model 26 Flow Stabilizer / Opening Speed Control
   • Standard on valves 8 in / 200 mm 106, 10" / 250 mm 206 and smaller
5. Fixed Restriction
6. Isolation Valve - standard 4 in / 100 mm and larger
7. Model 160 pilot
   • Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
8. Isolation Valve - standard all sizes
9. Check valve - model 10
10. Check valve - model 10




**Schematic A-0309A**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B16 brass
- AISI 303/316 stainless steel trim
- Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity
2. Check the operating flow against valve minimum
3. Provide a smaller valve in parallel to facilitate maintenance and low flow capability, if required.
4. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
5. Ensure that the flange rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Full port (106) or standard port (206)
2. Pilot range

| 106-PR-C | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-PR-C | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-PR-C | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-PR-C | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1041 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-PR-R / 206-PR-R
# PRESSURE REDUCING AND PRESSURE SUSTAINING VALVE

## KEY FEATURES

- Excellent low flow stability
- Ensures minimum upstream pressure
- Easily and precisely set downstream pressure

## PRODUCT OVERVIEW

The 106-PR-R and 206-PR-R pressure reducing and pressure sustaining valves are based on the 106-PG or 206-PG main valve with the addition of the sustaining pilot 81-RP and pressure reducing 160 PR.

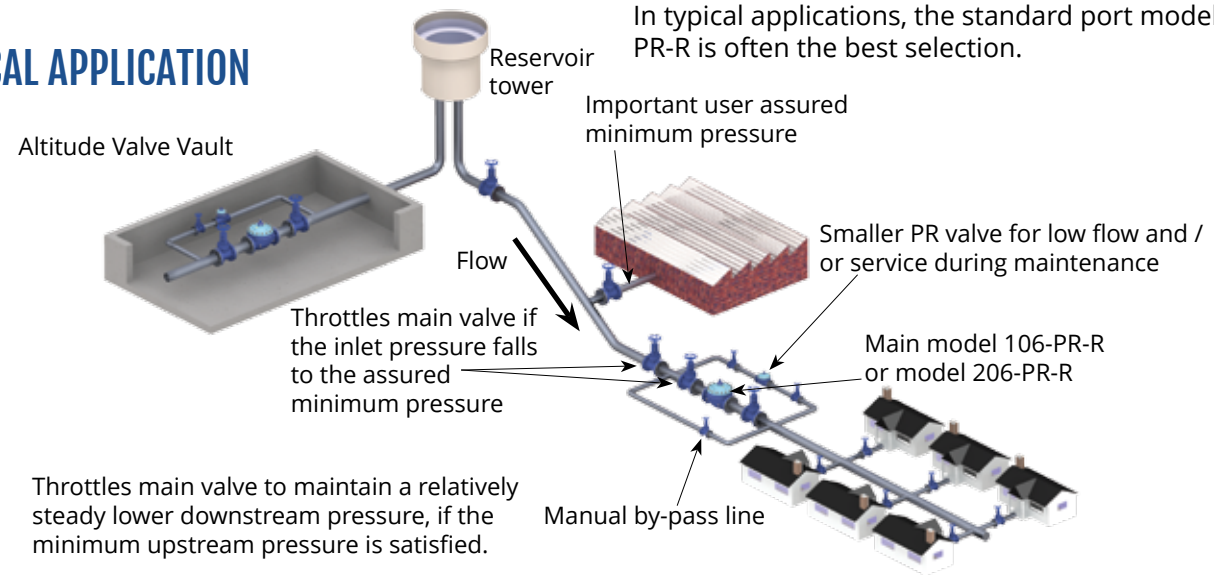
Provided the upstream pressure setting is satisfied, the 81-RP pilot is kept open, permitting the valve to be controlled by the 160 pilot. The 160 pilot senses downstream pressure and under flowing conditions, it reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm.

Should high demand cause the inlet pressure to fall to the 81-RP pilot setting, the upstream pressure has priority and the valve will modulate to prevent the upstream pressures from dropping below the set-point.

When the valve is modulating to sustain upstream pressure above the minimum 81-RP pilot set-point, the downstream 160 PR pilot may try to open the valve to maintain its set-point, but upstream has priority and downstream pressures will fall below expectations.

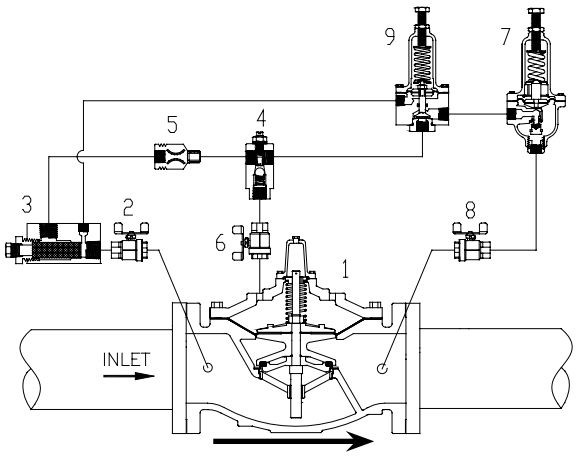
In typical applications, the standard port model 206-PR-R is often the best selection.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4. Model 26 Flow Stabilizer / Opening Speed Control
   • Standard on valves 8 in / 200 mm 106, 10” / 250 mm 206 and smaller
5. Fixed Restriction
6. Isolation Valve - standard 4 in / 100 mm and larger
7. Model 160 PR pilot
   • Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
8. Isolation Valve - standard all sizes
9. Model 81-RP pilot - specify for 5 to 50 psi / 0.35 to 3.5 bar; 10 to 80 psi / 0.7 to 5.5 bar; 100 to 300 psi / 6.9 to 20.7 bar; 20 to 200 psi / 1.38 to 13.8 bar standard.




**Schematic A-0332C**

## STANDARD MATERIALS

Standard materials for pilot system components are:

ASTM B62 bronze or ASTM B16 brass

AISI 303/316 stainless trim

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity
2. Check the operating flow against valve minimum.
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Ensure that the flange rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot ranges

| 106-PR-R | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-PR-R | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-PR-R | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-PR-R | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 mm | 600 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-PR-S / 206-PR-S
# PRESSURE REDUCING VALVE WITH DOWNSTREAM SURGE PROTECTION

## KEY FEATURES

- Excellent low flow stability
- Automatically reduces downstream surges during sudden demand reductions
- Easily and precisely set downstream pressure

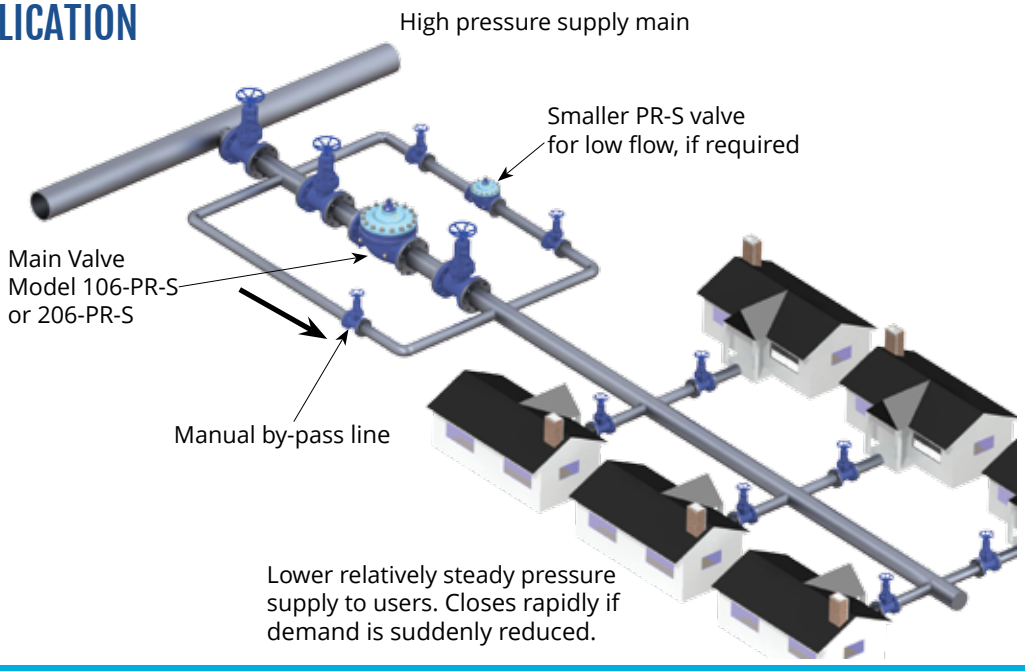
## PRODUCT OVERVIEW

The 106-PR-S and 206-PR-S pressure reducing valves with downstream surge control are based on the 106-PG or 206-PG main valve.

Pressure reducing pilot valve senses the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm. The downstream pressure is maintained relatively steady at the pilot set-point.

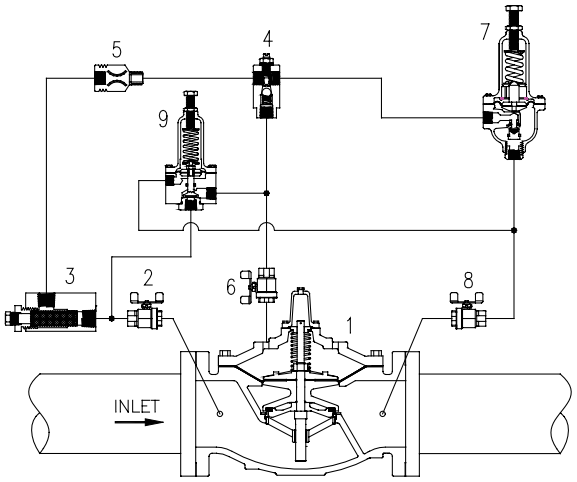
The surge pilot senses the downstream pressure. If the pressure rises above the pressure reducing pilot setting and reaches the surge pilot setting, the surge pilot opens in order to close the main valve rapidly.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4. Model 26 Flow Stabilizer (sizes 8 in / 200 mm 106, 10 in / 250 mm 206 and smaller)
5. Fixed Restriction
6. Isolation Valve - standard 4 in / 100 mm and larger
7. Model 160 pilot
   - Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
8. Isolation Valve - standard all sizes
9. Model 81 RP Surge Pilot - standard spring 20 to 200 psi / 1.38 to 13.8 bar -specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.7 to 5.5 bar, 100 to 300 psi / 6.9 to 20.7 bar.




Schematic A-0336D

## STANDARD MATERIALS

Standard materials for pilot system components are:

ASTM B62 bronze or ASTM B16 brass

AISI 303/316 stainless steel trim

Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity
2. Check the operating flow against valve minimum.
3. Surge pilot typically set 5 psi / 0.35 bar higher than reducing pilot.
4. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
5. Ensure that the flange rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot ranges

| 106-PR-S | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-PR-S | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-PR-S | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 259 | 404 | 582 | 1041 | 1041 |

| 206-PR-S | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 mm | 600 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-PR-SC / 206-PR-SC
# PRESSURE REDUCING VALVE WITH SOLENOID SHUT-OFF

## KEY FEATURES

- Excellent low flow stability
- Fast-acting solenoid override
- Operates as normally open or closed
- Easily and precisely set downstream pressure

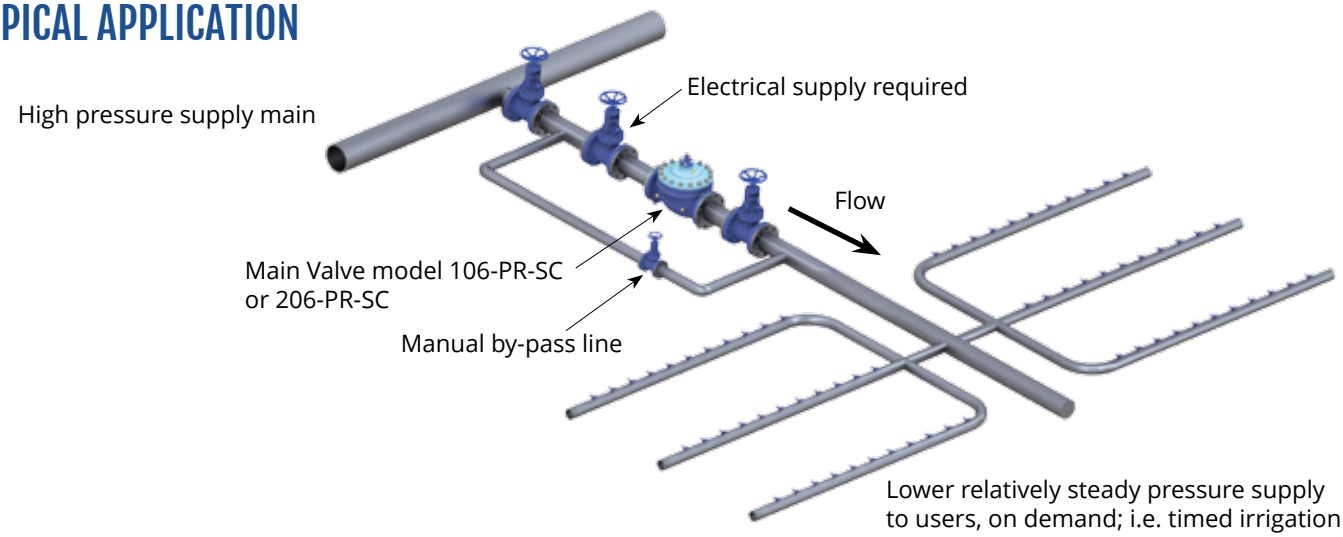
## PRODUCT OVERVIEW

The 106-PR-SC and 206-PR-SC pressure reducing valves with solenoid shut-off are based on the 106-PG or 206-PG main valve.

The pilot valve senses the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm. The downstream pressure is maintained relatively steady at the pilot set-point.

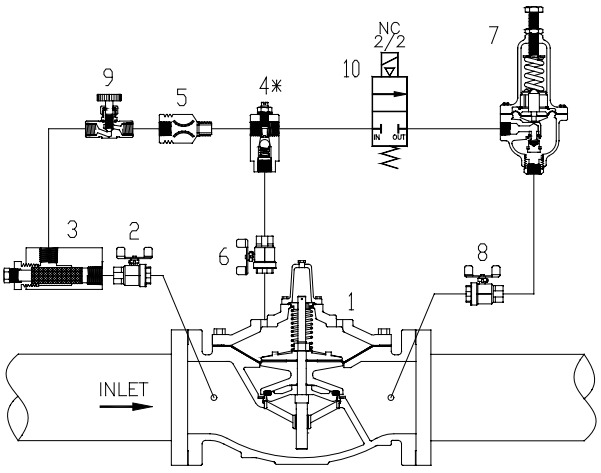
The solenoid shut-off / override interrupts the PR function to close off the main valve. The valve is available as either normally open where the solenoid is energized to close the main valve or as normally closed where the solenoid is de-energized to close the main valve.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm) and larger
3. Strainer - standard 4 in / 100 mm and larger
4.* Model 26 Flow Stabilizer
   - Standard on valves 8 in / 200 mm 106, 10" / 250 mm 206 and smaller
5. Fixed Restriction
6. Isolation Valve - standard 4 in / 100 mm and larger
7. Model 160 pilot
   - Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
8. Isolation Valve - standard all sizes
9. Closing Speed Control - model 852-B
10. Solenoid Valve - 2 way




Schematic A-0335C

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B16 brass
- AISI 303/316 stainless steel trim
- Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity.
2. Check the operating flow against valve minimum.
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Determine whether operation is energized or de-energized to close the main valve.
5. Select the voltage (120VAC standard) for solenoid and advise maximum operating differential pressure.
6. Ensure that the flange rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-PR-SC | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-PR-SC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-PR-SC | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.19 | 0.19 | 0.19 | 0.19 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-PR-SC | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODEL 106-2PR-630 / 206-2PR-630 PRESSURE MANAGEMENT VALVE

## KEY FEATURES

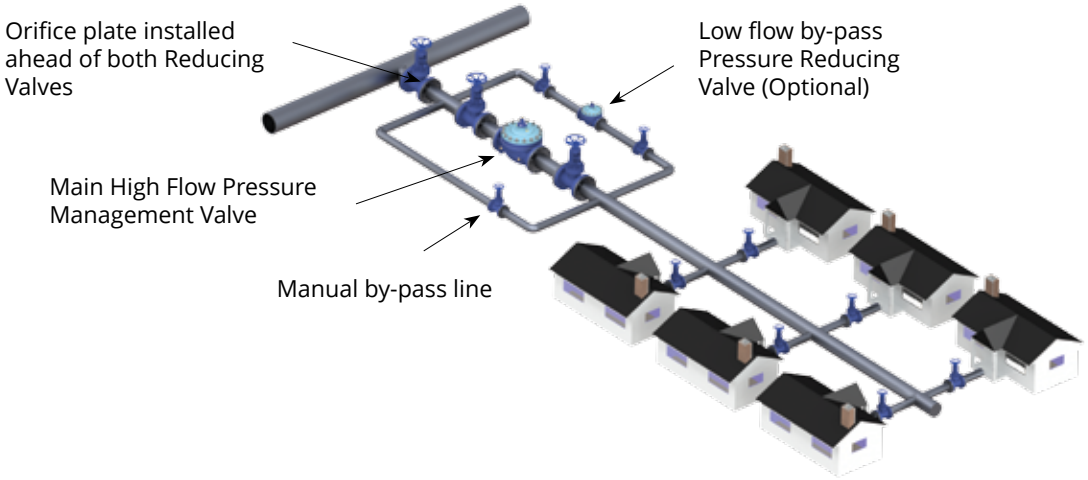
- Valve switches between high and low pressure pilots based on flow rate.
- Pressure reducing pilots independently adjustable to suit the desired downstream pressure.
- Orifice is upstream of control valve so downstream pressure setting is unaffected by flow.
- Standard components completely submersible - no electrical power required.
- Simple field retrofit is possible using the paddle style orifice plate.

## PRODUCT OVERVIEW

The Singer 106/206-2PR-630 Pressure Management Valve is a simple package to save water loss and money. It meets system needs by providing higher pressure when called for 24/7 and reduced pressure to save water leakage (and money) at all other times.

An orifice with a low pressure drop 1.0 psi, (0.07 Bar) is installed upstream of a standard pressure reducing valve fitted with an extra pressure reducing pilot and a sensitive differential pilot which switches between 2 pressure reducing pilots to suit the system flow demand. High flow demand or fire flow will cause the differential pilot to automatically switch control from the low pressure to the higher pressure pilot. The action is then reversed when flow demand falls below the differential pilot set point.valve position by modulating the pressure above the diaphragm. The downstream pressure is maintained relatively steady at the pilot set-point.

## TYPICAL APPLICATION



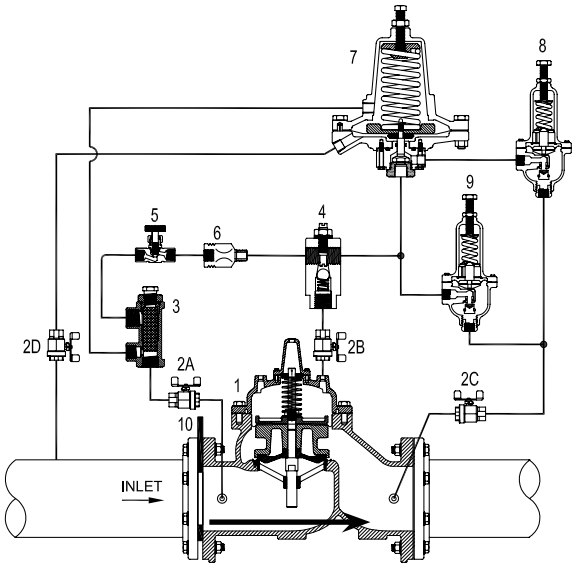
## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve
3. Strainer - 40 mesh

4*. Model 26 Flow Stabilizer / Opening Speed Control

5. Closing Speed Control
6. Fixed Restriction
7. Differential Pilot – Normal Closed – Model 630-RPD
8. Pressure Reducing Pilot – Model 160 Higher Setting
9. Pressure Reducing Pilot – Model 160 Lower Setting
10. Orifice Plate – Paddle style standard – optional with housing

An optional differential gauge is available to indicate flow and simplify adjustment.




**Schematic A-10496A2**

## BENEFITS

- Substantially reduces water loss (non-revenue water) due to leakage
- Decreases downstream pipe bursts and associated repair costs
- Allows constant reliable pressure to users, minimizing over pressure at off peak (flow) periods.

## SELECTION SUMMARY

1. Sizes: 4 - 12" (100mm -300mm) for other sizes please consult factory

2. Pressures: Minimum pressure of 29 psi (2 Bar) at valve inlet, (Consult factory for lower pressure applications).

3. Differential required across Orifice plate: 1.45 – 2 psi (0.1 – 0.14 Bar)

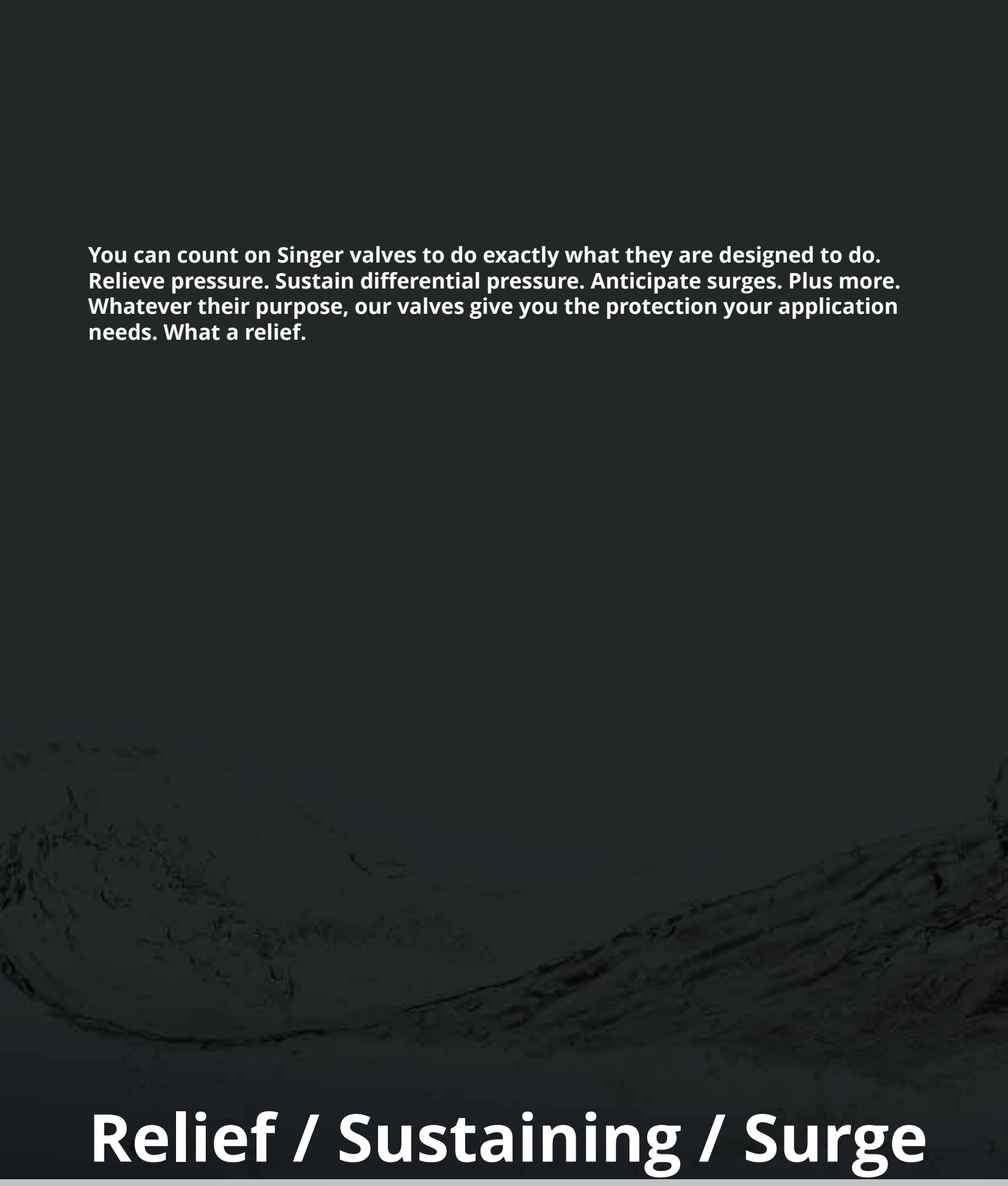
4. Fire Flow: if fire flow is greater than twice the normal high flow rate set point, please consult factory.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range



You can count on Singer valves to do exactly what they are designed to do. Relieve pressure. Sustain differential pressure. Anticipate surges. Plus more. Whatever their purpose, our valves give you the protection your application needs. What a relief.

# Relief / Sustaining / Surge

SINGER VALVE
Result-Based Solutions. Globally.

# MODELS 106-RPS / 206-RPS PRESSURE RELIEF VALVE

## KEY FEATURES

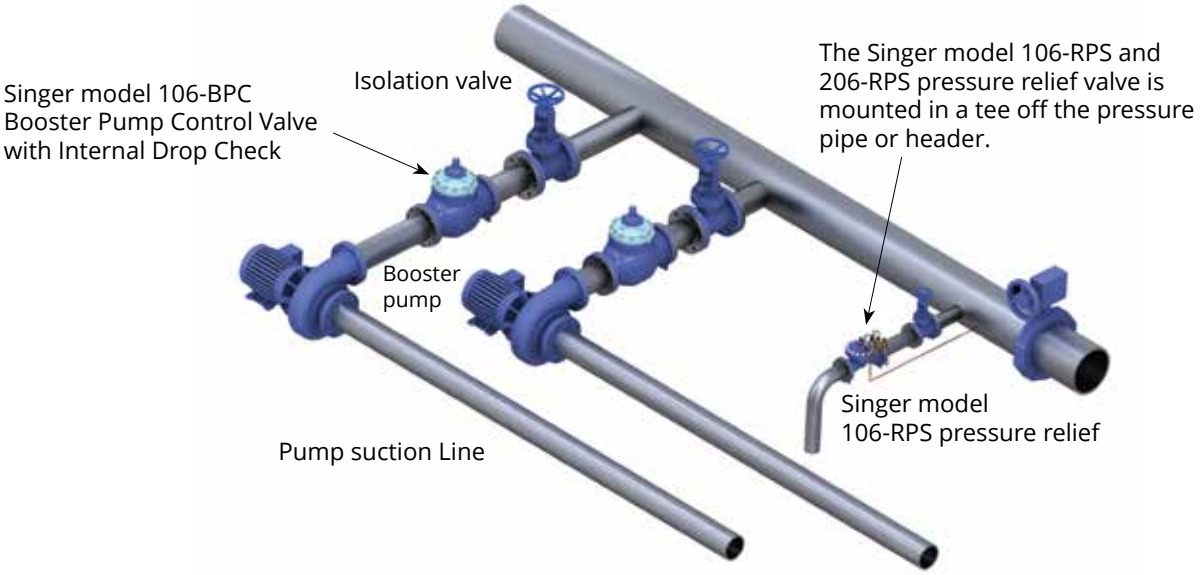
- Limits system pressure by relieving excess flow
- Quick opening relief
- Easily adjustable pressure setting

## PRODUCT OVERVIEW

The 106-RPS and 206-RPS pressure relief valves are based on the 106-PG and 206-PG main valves.

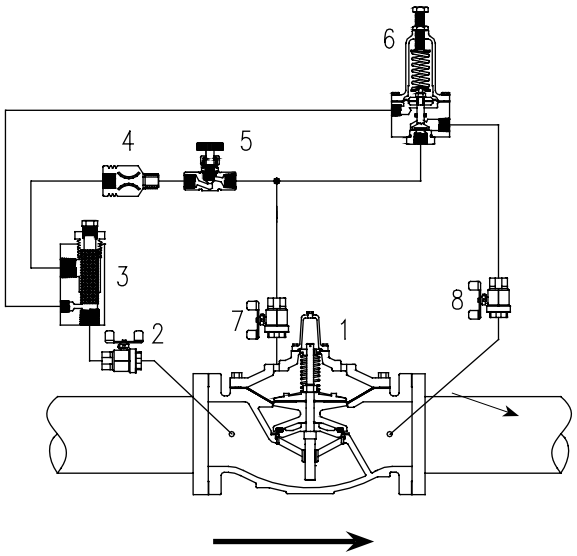
The 81-RP pilot senses the upstream pressure through a connection to the valve inlet. The valve and pilot remain closed until the inlet pressure exceeds the pilot setting. The valve opens rapidly to relieve damaging overpressure and closes smoothly at an adjustable speed, when the pressure returns below the set-point. The upstream pressure is limited to the pilot set-point.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4. Fixed Restriction- 1/8 in / 3.2 mm
5. Model 852-B Closing Speed Control
6. Model 81-RP pilot
   - Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
7. Isolation Valve - standard 4 in / 100 mm and larger
8. Isolation Valve - standard all sizes




**Schematic A-0423F**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B16 brass
- AISI 303/316 stainless steel trim
- Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve with sufficient capacity using the available pressure drop across the valve.
2. Usually operating in the momentary “M” service range.
3. For extended or continuous relief applications, use model 106-RPS-AC: Pressure Relief with Anti-Cavitation Cages.
4. Ensure that the maximum working pressure rating for the valve and for the flanges exceeds the maximum operating pressure.
5. Select a standard globe style body or the optional angle style body.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Relief pressure range
3. Outlet pressure

# FLOW CAPACITY - RELIEF

| 106-RPS | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Momentary (USGPM) | 28 | 43 | 110 | 170 | 250 | 470 | 670 | 1030 | 1800 |
| Momentary (L/s) | 2 | 3 | 7 | 11 | 16 | 30 | 42 | 65 | 114 |

| 106-RPS | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Momentary (USGPM) | 4000 | 7000 | 11000 | 16000 | 19000 | 25000 | 39000 | 56200 | 124700 |
| Momentary (L/s) | 252 | 442 | 694 | 1009 | 1199 | 1577 | 2461 | 3546 | 7868 |

| 206-RPS | Flow Capacity 45 ft / s or 14 m / s (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Momentary (USGPM) | 564 | 1236 | 2160 | 4800 | 8400 | 13200 | 19200 | 30000 | 30050 |
| Momentary (L/s) | 36 | 78 | 136 | 303 | 530 | 833 | 1211 | 1893 | 1896 |

| 206-RPS | Flow Capacity 45 ft / s or 14 m / s (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Momentary (USGPM) | 30100 | 39000 | 67440 | 67490 | 67540 | 67640 | 62000 |
| Momentary (L/s) | 1899 | 2461 | 4255 | 4258 | 4261 | 4268 | 3912 |

# MODELS 106-RPS / 206-RPS PRESSURE SUSTAINING VALVES

## KEY FEATURES

- Ensures minimum upstream pressure for critical use
- Easily adjustable pressure setting
- Closes if inlet pressure drops below set-point

## PRODUCT OVERVIEW

The 106-RPS and 206-RPS pressure sustaining valves are based on the model 106-PG or 206-PG main valve.

The 81-RP pilot senses the upstream pressure through a connection to the valve inlet. The valve and pilot remain closed until the inlet pressure exceeds the pilot setting.

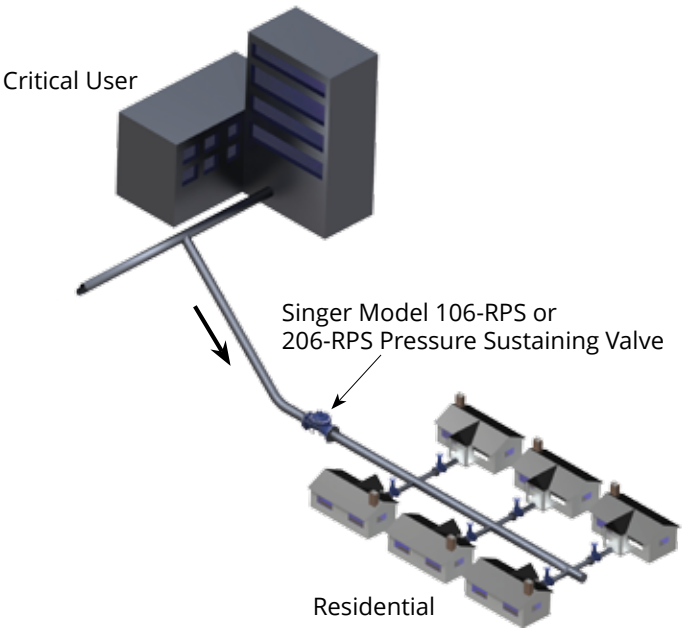
Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm.

Should the upstream pressure fall below the set-point, the valve will close or modulate to ensure that the set-point is maintained.

## TYPICAL APPLICATION

The 106-RPS or 206-RPS valve prevents high demand in the residential area from dropping the pressure available to the critical user.

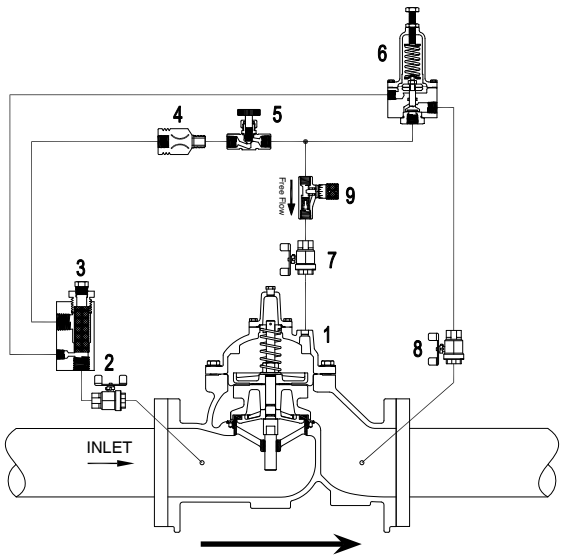
Valve modulates to assure minimum upstream pressure and if need be, closes tight.



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4. Fixed Restriction- 1/8 in / 3.2 mm
5. Model 852-B Closing Speed Control
6. Model 81-RP pilot
   • Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
7. Isolation Valve - standard 4 in / 100 mm and larger
8. Isolation Valve - standard all sizes
9. Opening Speed Control, optional

Note: SRD shown is available for 6" 106-PG and larger.




Schematic A-0423F

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B16 brass
- AISI 303/316 stainless steel trim
- Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve with sufficient capacity using the minimum available pressure drop across the valve.
2. Usually operating in the continuous "C" service range up to 20 ft/s / 6 m/s - see below and/or performance curves (see Technical & Sizing Information section, page 231).
3. If the outlet pressure is less than 35% of the inlet pressure and operating for extended periods, check for cavitation.
4. For sustaining applications with high pressure drops, a model 106-RPS-AC: Pressure Sustaining with anti-cavitation cages may be required. Refer to 106-AC section (page 78) and consult Singer Valve.
5. Ensure that the maximum working pressure rating for the valve and for the flanges exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Outlet pressure
3. Inlet pressure pilot range

| 106-RPS-Sustaining | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-RPS-Sustaining | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-RPS-Sustaining | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-RPS-Sustaining | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1041 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-RPS-D / 206-RPS-D PRESSURE DIFFERENTIAL SUSTAINING VALVE

## KEY FEATURES

- Maintains a minimum differential pressure
- Easily adjustable differential pressure setting
- Valve closes drip-tight when the pressure differential is less than the pilot setting

## PRODUCT OVERVIEW

TThe 106-RPS-D and 206-RPS-D pressure differential sustaining valves are based on the 106-PG or 206-PG main valve.

The RPS-D uses the 81-RPD pilot valve and has two sensing connections. The valve and pilot remain closed until the difference between the two pressures exceeds the pilot setting.

Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm. The pilot setting establishes a differential pressure that is held relatively steady despite changes in system pressure or flow.

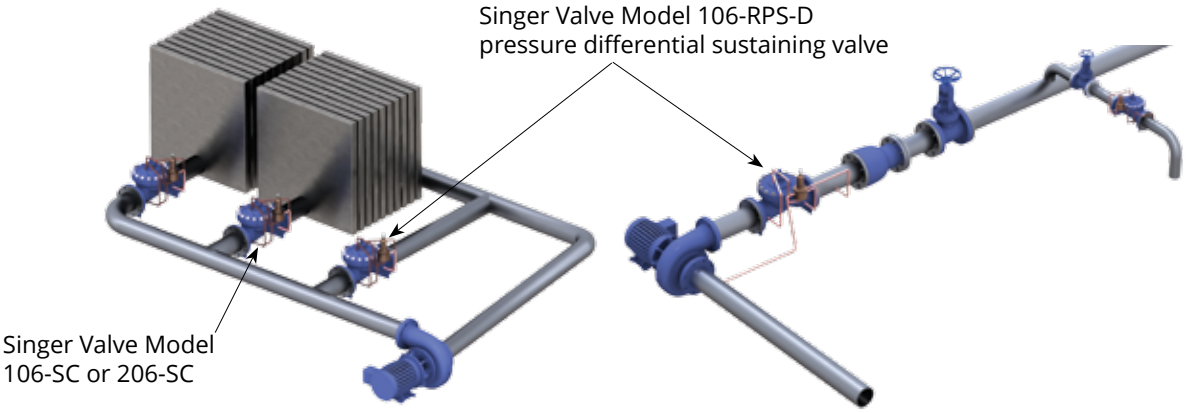
## TYPICAL APPLICATIONS

### Parallel Application

As the number of operating heat exchangers in the circuit vary, the Singer RPS-D maintains a relatively steady differential for maximum chiller efficiency.

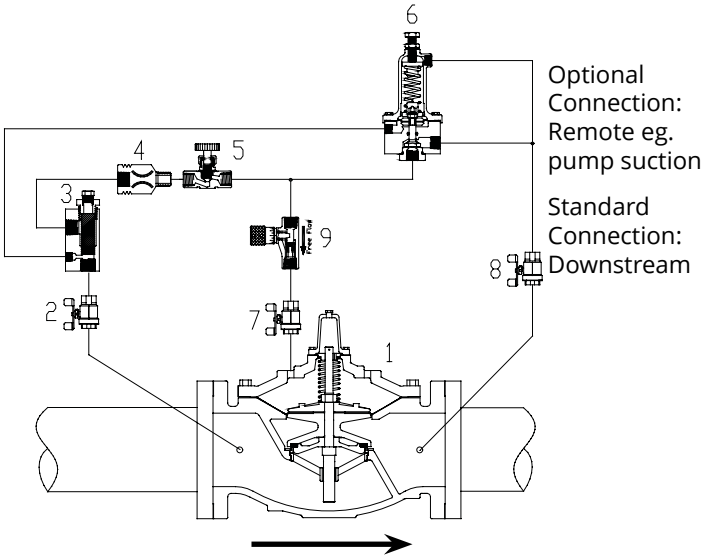
### Series Application

In a booster pump application, the Singer RPS-D ensures the pump operates near its best efficiency and without cavitation or overload, should the suction conditions vary.



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve - standard 4 in / 100 mm and larger
3. Strainer - standard 4 in / 100 mm and larger
4. Fixed Restriction - 1/8 in / 3.2 mm
5. Model 852-B Closing Speed Control
6. Model 81-RPD Pilot
   • Specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.70 to 5.5 bar, 20 to 200 psi / 1.38 to 13.8 bar, 100 to 300 psi / 6.9 to 20.7 bar.
7. Isolation Valve - standard 4 in / 100 mm and larger
8. Isolation Valve - standard all sizes
9. Opening Speed Control (optional)




Schematic A-0428B

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- AISI 316 stainless steel trim

## SELECTION SUMMARY

1. Select the valve with sufficient capacity using the available pressure drop.
2. Usually operating in the continuous, “C”, service range up to 20 ft/s / 6 m/s
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Ensure that the maximum working pressure rating of the valve and of the flange exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-RPS-D | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-RPS-D | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| 206-RPS-D | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-RPS-D | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-RPS-L&H / 206-RPS-L&H SURGE ANTICIPATING RELIEF VALVE

## KEY FEATURES

- Protects against power failure surges or pressure waves caused by velocity changes
- Quick opening relief
- Easily adjustable pressure setting
- No electrical services required

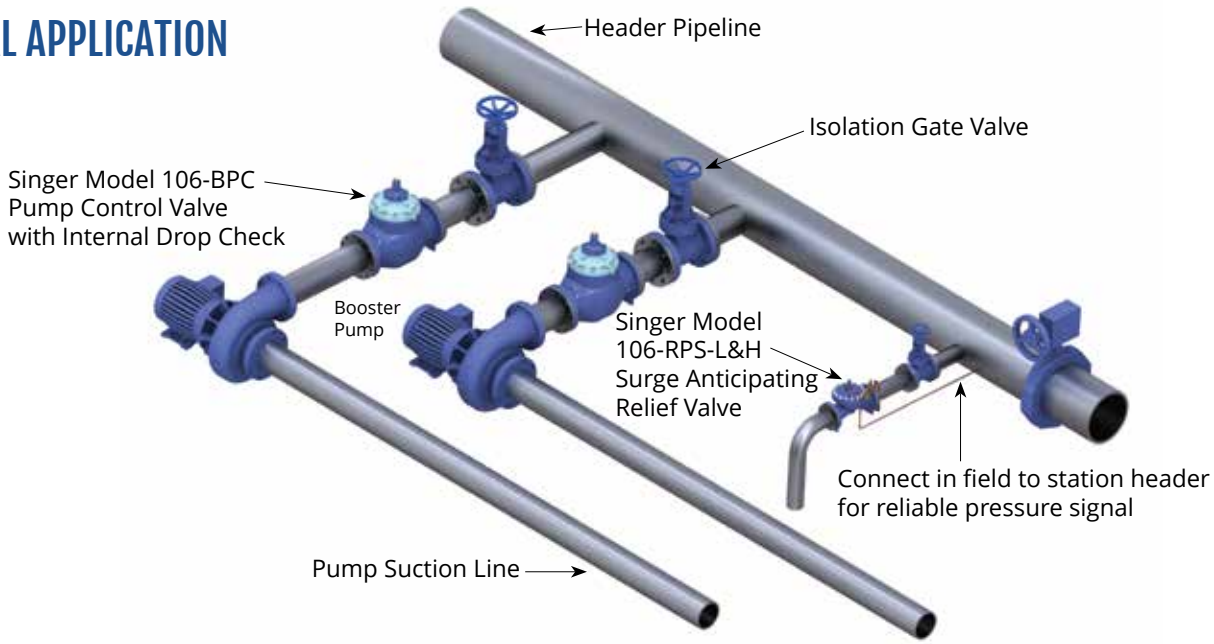
## PRODUCT OVERVIEW

The 106-RPS-L&H and 206-RPS-L&H anticipating surge relief valves are based on the 106-PG or 206-PG main valve.

The valve is mounted in a tee, downstream of the pump check valve(s). It is designed to anticipate surges to avoid the severe water hammer often associated with power failure surges.

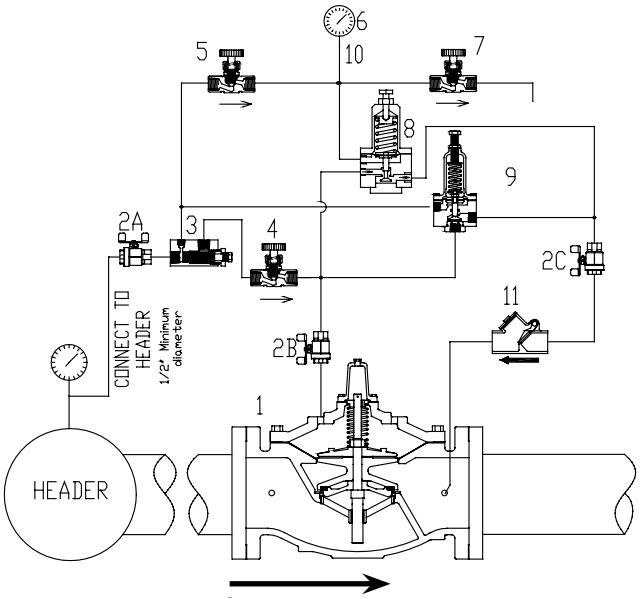
The RPS-L&H pilot system is comprised of two pilots, the 81-RP and the 82-PR. Both pilots sense pressure through a connection to the header pipe. The 81-RP high pressure pilot opens the valve to relieve excess pressure. The model 82-PR low pressure pilot opens quickly on below normal pressures prior to the return of a surge wave, initiating the opening of the main valve in anticipation of the high pressure wave's arrival.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve (2A, 2B, 2C), standard all sizes
3. Strainer - 40 mesh screen
4. Closing Speed Control - model 852-B
5. Test Needle Valve - normal position fully open
6. Pressure Gauge - 1/4 in / 6.35 mm, NPT - By Others
7. Test Needle Valve - normal position fully closed
8. Model 82-PR - Low Surge pilot
   - Specify for 7 to 50 / 0.48 to 3.5 bar, 45 to 200 psi / 3.1 to 13.8 bar or 100 to 300 psi / 6.9 to 20.7 bar
9. Model 81-RP - High Surge Pressure pilot
   - specify for 5 to 50 psi / 0.35 to 3.5 bar, 10 to 80 psi / 0.7 to 5.5 bar, 100 to 300 psi / 6.9 to 20.7 bar. Standard 20 to 200 psi / 1.38 to 13.8 bar.
10. Pipe Plug for Gauge Connection
11. Swing Check Valve - 1/2 in / 15 mm




**Schematic A-0400C**

Note: Schematic shown is for 2 in / 50 mm to 6 in / 150 mm
For 8 in / 200 mm and higher refer to Schematic A-0401C

## STANDARD MATERIALS

Standard materials for pilot system components are:

ASTM B-62 bronze or ASTM B-16 brass

AISI 303 / 316 stainless steel trim

## SELECTION SUMMARY

1. Anticipating surge relief valves should be sized from information provided by an engineer's surge analysis of the system.
2. In the absence of such information, as a general guide, a valve selected to pass 25% of the maximum normal flow when the valve is fully open, calculated with the static pressure as the pressure drop across the valve, has been successful in practice. Over sizing may cause problems. Valve may not close if oversized.
3. Ensure that the recovered header pressure (static) exceeds the low pressure relief pilot setting, otherwise the valve will not close. As a guide, a setting at 60% of static pressure has been suitable.
4. Ensure the maximum working pressure rating of the valve and flanges exceeds the maximum operating pressure.
5. Select either a standard globe style body or the optional angle style body.
6. If the RPS-L&H is sized properly, a hydraulic travel limiter is unnecessary. Should an engineer insist that the travel limiter be included, then it will be offered as an option (add HFL to model number).
7. Should only be used on static pressures greater than 100 ft / 30 m / 43.5 psi.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot ranges
3. HFL – Hydraulic Flow Limiter available

| 106-RPS-L&H | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Momentary (USGPM) | - | - | - | - | - | 470 | 670 | 1030 | 1800 |
| Momentary (L/s) | - | - | - | - | - | 30 | 42 | 65 | 114 |

| 106-RPS-L&H | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Momentary (USGPM) | 4000 | 7000 | 11000 | 16000 | 19000 | 25000 | 39000 | 56200 | 124700 |
| Momentary (L/s) | 252 | 442 | 694 | 1009 | 1199 | 1577 | 2461 | 3546 | 7868 |

| 206-RPS-L&H | Flow Capacity 45 ft / s or 14 m / s (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Momentary (USGPM) | 564 | 1236 | 2160 | 4800 | 8400 | 13200 | 19200 | 30000 | 30050 |
| Momentary (L/s) | 36 | 78 | 136 | 303 | 530 | 833 | 1211 | 1893 | 1896 |

| 206-RPS-L&H | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Momentary (USGPM) | 30100 | 39000 | 67440 | 67490 | 67540 | 67640 | 62000 |
| Momentary (L/s) | 1899 | 2461 | 4255 | 4258 | 4261 | 4268 | 3912 |

# MODELS 106-RPS-RR / 206-RPS-RR
# SURGE ANTICIPATING ON RATE OF RISE OF PRESSURE RELIEF VALVE

## KEY FEATURES

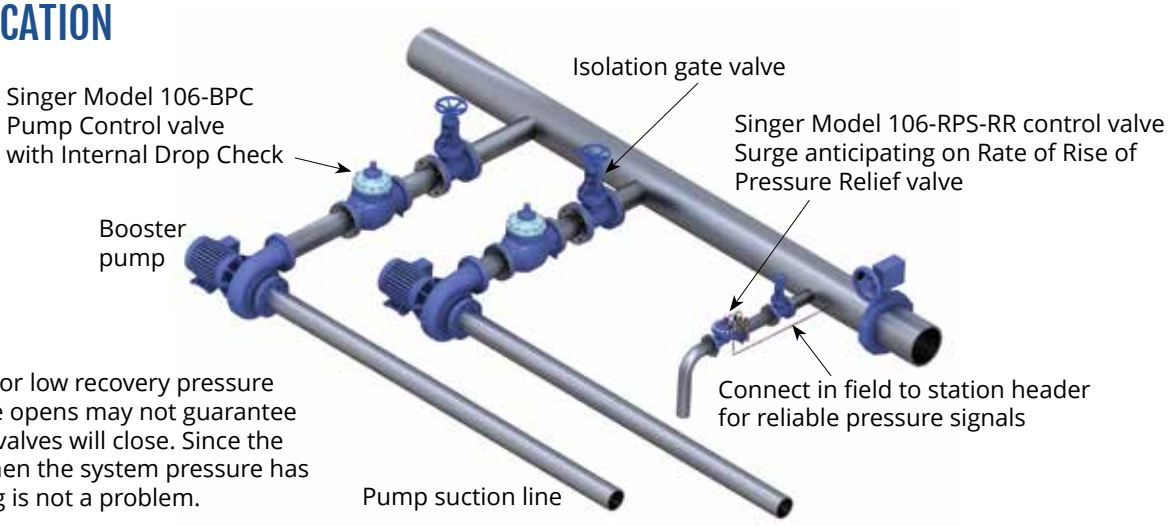
- Protects against power failure surges or pressure waves caused by velocity changes
- Unaffected by header pressure and over sizing
- Quick opening relief
- Easily adjustable pressure setting
- No electrical services required

## PRODUCT OVERVIEW

The 106-RPS-RR and 206-RPS-RR surge anticipating relief on rate of rise valves are based on the 106-PG or 206-PG main valve.

The valve is installed downstream of the pump check valve(s) and has two pilots, the 81-RP and the 81-RPD. Both pilots sense pressure through a connection to the header pipe. The 81-RP high pressure pilot acts as a standard relief pilot, opening on excessive pressure. The 81-RPD differential pilot responds to the pressure differential across its diaphragm. A pressure differential is created when there is a system pressure increase. The flow into the accumulator creates a pressure drop across the fixed restriction, which lowers the pressure in the connection between the fixed restriction and the pilot. The pilot senses the pressure difference between this lower pressure and the header pressure. This difference occurs at the initiation of the pressure surge, providing the time necessary for the valve to open in anticipation of the high pressure.

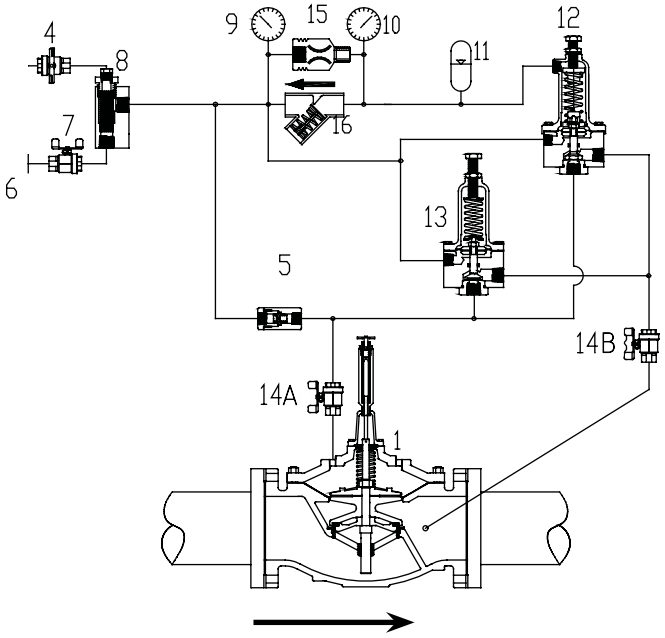
## TYPICAL APPLICATION




Long pipe lines and or low recovery pressure after the surge valve opens may not guarantee conventional surge valves will close. Since the RPS-RR is closing when the system pressure has stabilized, oversizing is not a problem.

## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG, complete with X107 Position Indicator
4. Strainer Flush Valve - Normal Position Closed
5. Flow Control - J0077A
6. Connection To Header
7. Isolating Valve - Normal Position Open
8. Strainer - 40 Mesh - J0098A
9. Pressure Gauge
10. Pressure Gauge
11. Bladder Accumulator - M1408A
12. Differential Pilot - Model 81-RPD - Normally Closed
13. Relief Pilot - Model 81-RP
14. Isolating Valve (14A, 14B) - Normal Position Open
15. Fixed Restriction - 1/16 in / 1.58 mm
16. Check Valve - J0040A




**Schematic A-7340F**

**Note: Schematic shown is for 2 in / 50 mm to 6 in / 150 mm 106, and 3 in / 80 mm to 8 in / 200 mm 206**
**For 8 in / 200 mm and higher, refer to Schematic A-7340F1**

## SELECTION SUMMARY

1. Anticipating surge relief valves should be sized from information provided by an engineer's surge analysis of the system.
2. In the absence of such information, as a general guide, a valve selected to pass 25% of the maximum normal flow when the valve is fully open, calculated with the static pressure as the pressure drop across the valve, has been successful in practice.
3. Ensure the maximum working pressure rating of the valve and flanges exceeds the maximum operating pressure.
4. Select either a standard globe style body or the optional angle style body.
5. Surge anticipating valves usually relieve to atmosphere which ensures high operating differential pressure and rapid response times. Momentary, "M", service range up to 45 ft/s / 14 m/s is suitable for sizing selection. Other supplementary functions are available, consult with Singer Valve.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-RPS-RR | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Momentary (USGPM) | - | - | - | - | - | 470 | 670 | 1030 | 1800 |
| Momentary (L/s) | - | - | - | - | - | 30 | 42 | 65 | 114 |

| 106-RPS-RR | Flow Capacity 45 ft / s or 14 m / s (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Momentary (USGPM) | 4000 | 7000 | 11000 | 16000 | 19000 | 25000 | 39000 | 56200 | 124700 |
| Momentary (L/s) | 252 | 442 | 694 | 1009 | 1199 | 1577 | 2461 | 3546 | 7868 |

| 206-RPS-RR | Flow Capacity 45 ft / s or 14 m / s (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Momentary (USGPM) | 564 | 1236 | 2160 | 4800 | 8400 | 13200 | 19200 | 30000 | 30050 |
| Momentary (L/s) | 36 | 78 | 136 | 303 | 530 | 833 | 1211 | 1893 | 1896 |

| 206-RPS-RR | Flow Capacity 45 ft / s or 14 m / s (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Momentary (USGPM) | 30100 | 39000 | 67440 | 67490 | 67540 | 67640 | 62000 |
| Momentary (L/s) | 1899 | 2461 | 4255 | 4258 | 4261 | 4268 | 3912 |

# MODEL A106-DL
# DYNAMIC LIFTER® SPRING PRESSURE RELIEF VALVE

## KEY FEATURES

- Low maintenance
- Hygienic and minimal time to flush and test operations
- Premium materials reduce maintenance, providing the lowest long-term cost of ownership

## PRODUCT OVERVIEW

The A106-Dynamic Lifter (DL) sewage/dirty water pressure relief valve is a direct acting spring loaded relief valve. The valve is adjusted to open when the pressure exceeds the set-point, which is approximately 10% above the normal operating pressure. The valve closes drip-tight when pressure falls below the set-point.

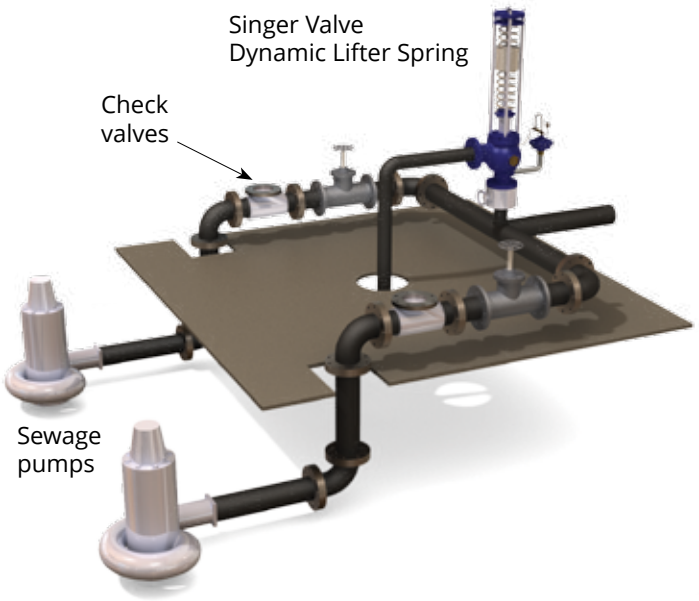
The DL is connected on a tee off the main line and usually discharges relief flow back to the main sump to reduce the surge over-pressure. A speed control permits adjustment of the closing speed.

The opening force is boosted by the line pressure operating, via the separation chamber, on the piston. By applying external pressure to the test connection, the valve may be cycled open for routine maintenance.

**Ideal for:**

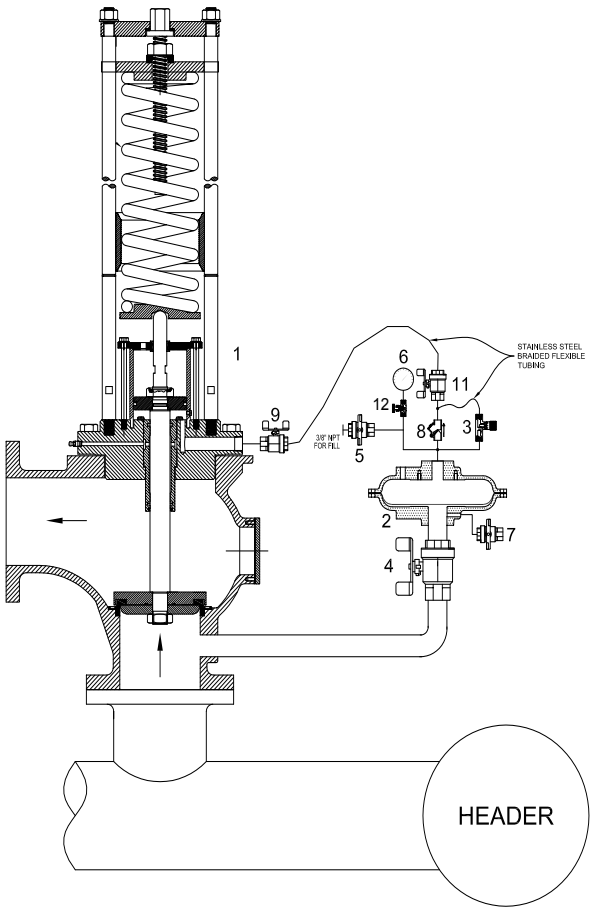
- raw water that contains organics
- lower pressure sewage lift stations
- booster sewage stations

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Model A106-DL - Body
2. Diaphragm isolator
3. Closing speed control
4. Isolating valve
5. Oil filled isolating valve
6. Pressure gauge
7. Isolating valve
8. Teflon seated swing check valve
9. Isolating valve – external pressure for test and flush cycle
10. 3/8 NPT flexible hose
11. Isolating valve
12. Gauge cock




A-8640C

## SCHEMATIC DRAWING – OPERATIONAL DETAILS

- Operating oil is separated from sewage by the chamber and diaphragm isolator (2).
- System pressure is applied to piston by mineral oil and isolator (2).
  – Piston and closing speed controls operate in clean non-contaminating environment
- System (over) pressure is applied to the opening piston throughout the full stroke.
  – Allows more relief flow as it does not lose opening force as the inner valve leaves the seat.
- By closing valve (4), external pressure may be applied through port and on to piston by the mineral oil opening of the Dynamic Lifter (1).
  – A tire pump or compressed air may be used to open the valve and check the relief setting or flush stringy material from the seat.
- Where conventional spring operated valves allow build-up of waste-water residue (dry pack) on the valve's downstream and exhaust pipe to sump, Singer's A106-DL can easily be opened fully, through the actuator, to flush out these unwanted build-ups.
- Heat fused, heavy epoxy coating inside and out, 316 stainless steel seat and stem. The stem is also Oxy-Nitride coated to reduce mineral or debris build-up

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

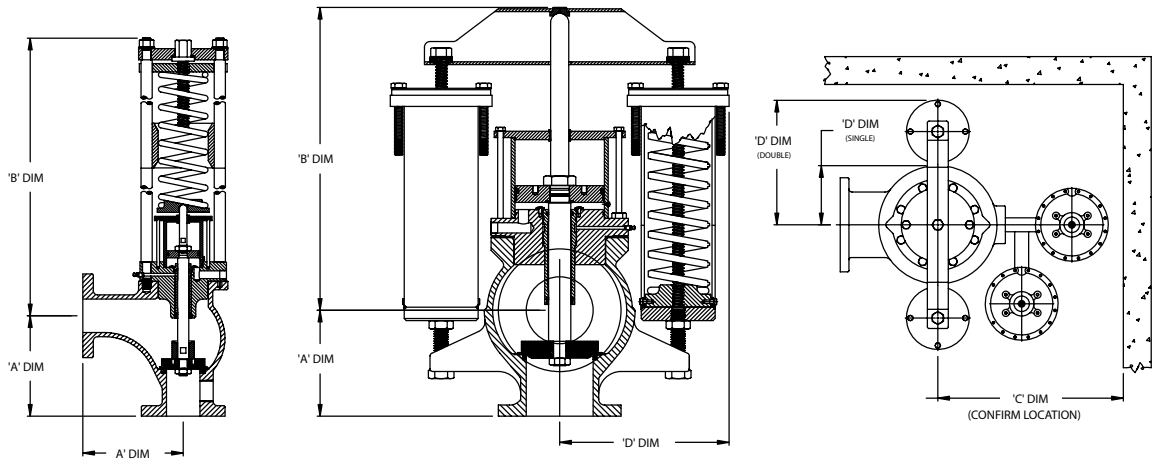
Additionally, include the following information for this product:

• Inlet / outlet pressure range

# VALVE SIZING & MEASUREMENTS

| A106-DL ANSI DATA (US UNITS) | SINGLE SPRING STACK | | | | | | | | DOUBLE SPRING STACK | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Size** | **3 in** | | **4 in** | | **6 in** | | **8 in** | | **6 in** | | **8 in** | |
| | **Relief Setings (psi)** | | | | | | | | | | | |
| Spring Specific Ranges | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| | 25 | 90 | 20 | 65 | 15 | 30 | 10 | 15 | 40 | 90 | 30 | 50 |
| | 70 | 200 | 60 | 145 | 25 | 60 | 15 | 30 | 90 | 160 | 50 | 80 |
| | **Other ranges available, consult with Singer Valve** | | | | | | | | | | | |
| **Lift / Opening** | **2 in** | | **2 in** | | **2 1/2 in** | | **3 in** | | **2 1/2 in** | | **3 in** | |
| Dimension A | 9 in | | 10 in | | 11.5 in | | 14 in | | 11.5 in | | 14 in | |
| Dimension B | 38.5 in | | 39.5 in | | 43.75 in | | 45.75 in | | 25.25 in | | 26.75 in | |
| Dimension C | 30.5 in | | 30.5 in | | 32" | | 32 in | | 32" | | 32 in | |
| Dimension D | 4.75 in | | 5.75 in | | 7.5 in | | 10 in | | 15.25 in | | 18.25 in | |

| A106-DL ANSI DATA (METRIC UNITS) | SINGLE SPRING STACK | | | | | | | | DOUBLE SPRING STACK | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Size** | **80 mm** | | **100 mm** | | **150 mm** | | **200 mm** | | **150 mm** | | **200 mm** | |
| | **Relief Setings (bar)** | | | | | | | | | | | |
| Spring Specific Ranges | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| | 1.72 | 6.21 | 1.38 | 4.48 | 1.03 | 2.07 | 0.69 | 1.03 | 2.76 | 6.21 | 2.07 | 3.45 |
| | 4.83 | 13.79 | 4.14 | 10.00 | 1.72 | 4.14 | 1.03 | 2.07 | 6.21 | 11.03 | 3.45 | 5.52 |
| | **Other ranges available, consult with Singer Valve** | | | | | | | | | | | |
| **Lift / Opening** | **50 mm** | | **50 mm** | | **64 mm** | | **76 mm** | | **64 mm** | | **76 mm** | |
| Dimension A | 229 mm | | 254 mm | | 292 mm | | 356 mm | | 292 mm | | 356 mm | |
| Dimension B | 978 mm | | 1004 mm | | 1112 mm | | 1162 mm | | 641 mm | | 680 mm | |
| Dimension C | 775 mm | | 775 mm | | 813 mm | | 813 mm | | 813 mm | | 813 mm | |
| Dimension D | 121 mm | | 146 mm | | 191 mm | | 254 mm | | 387 mm | | 464 mm | |



# MODELS A106-DL-AIR / A106-DL-AIR-ET
# DYNAMIC LIFTER® AIR OPERATED PRESSURE RELIEF VALVE
# SURGE ANTICIPATING ELECTRONICALLY TIMED DL PRESSURE RELIEF VALVE

## KEY FEATURES

### A106-DL-AIR:

- Eliminates surges and prolongs pipe life
- Adjustable closing speed
- Utilizes compress air or plant air
- Smaller profile allows installation into limited space
- Ideal for higher pressures

### A106-DL-AIR-ET:

- All key features of the A106-DL-Air
- Solenoid valve anticipates surges resulting from power failures

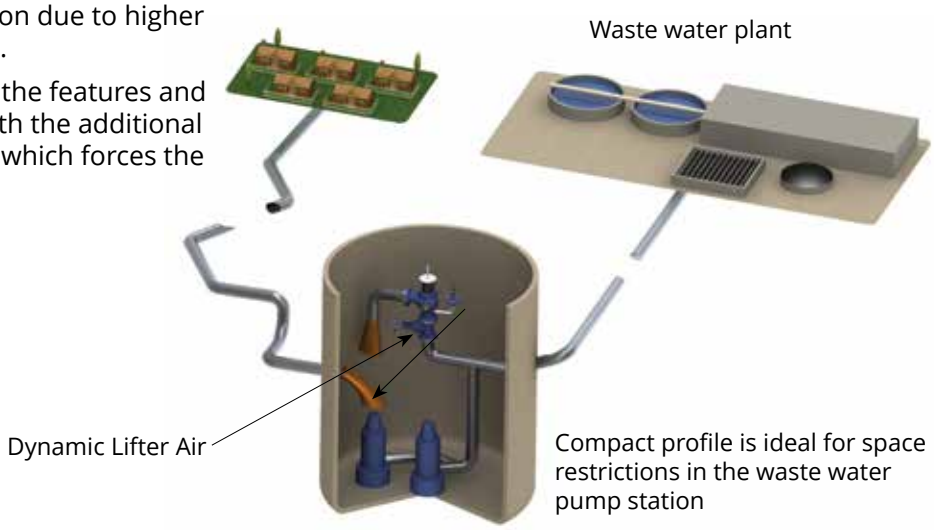
## PRODUCT OVERVIEW

The Model A106-DL-Air is a compact sewage relief valve that is suitable for high pressures up to 200 psi / 13.8 bar, responds very quickly and retains all the features and benefits of the Model A106-DL Spring–Hydraulic version. It is an attractive solution to what may be otherwise a difficult application due to higher pressures or space height limitations.

The Model A106-DL-Air-ET retains all the features and benefits of the Model A106-DL-Air with the additional feature of two 3-way solenoid valves which forces the valve open upon power failure.

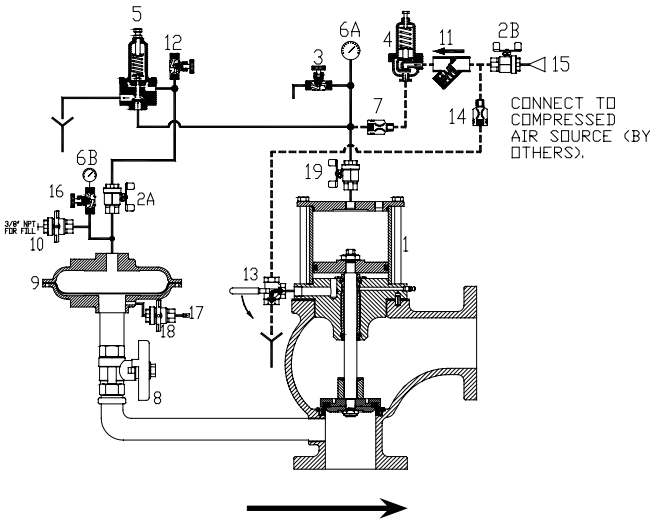
## TYPICAL APPLICATION

Application drawing is applicable to both A-106-DL-Air and A-106-DL-Air-ET.



## SCHEMATIC DRAWING A106-DL-AIR

1. Model A106-DL-Air
2. Isolating Valve (2A, 2B)
3. Needle Valve
4. Pressure Reducing Pilot - Model 160
5. Relief Pilot - Model 81-RP
6. Pressure Gauge (6A, 6B)
7. Fixed Restriction
8. Isolating Valve
9. Diaphragm Isolator
10. Bleed Valve
11. Check Valve, J0040A
12. Bleed Valve
13. Manual Override Valve
14. Fixed Restriction
15. Air Supply
16. 852B Needle Valve
17. Air Charge Valve
18. Isolating Valve
19. Isolating Valve




Schematic A-8736A

## SCHEMATIC DRAWING A106-DL-AIR – OPERATION DETAILS

Operates using separate compressed air supply
- An inexpensive 120 psi / 8.3 bar air compressor may be used for 200 psi / 13.8 bar or higher relief pressures by using a large diameter closing piston.

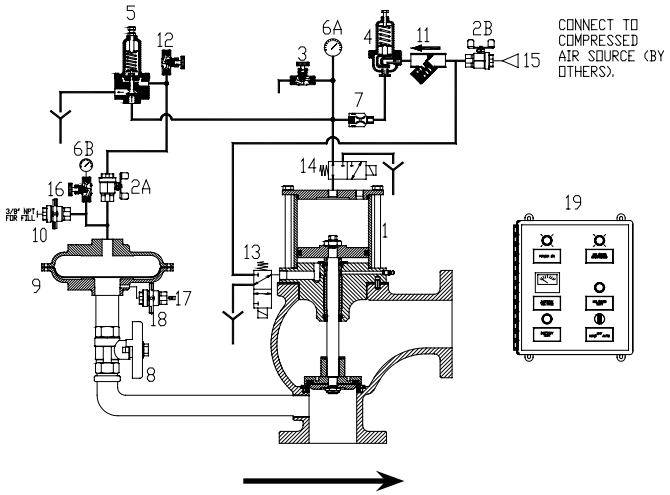
Using a chamber and diaphragm isolator (9), an accurate hydraulic pilot (5) opens reliably and repeatedly at its set pressure (gauge 6A)
- Full operational (including pilot) check is quickly and cleanly performed by closing valve (8) and applying pressure at (18). For quick flush open (3).

The check valve (11) maintains air in the operating cylinder should the air supply fail.
- Provided the air supply is above minimum, variations in pressure do not affect the valve operation, which is controlled independently by the accurate pilot (5).

The main valve (1) is constructed of the same premium materials as the Hydraulic Dynamic Lifter for long life and minimum maintenance.

## SCHEMATIC DRAWING A106-DL-AIR-ET

1. Model A106-DL-Air
2. Isolating Valve (2A, 2B)
3. Needle Valve
4. Pressure Reducing Pilot - Model 160
5. Relief Pilot - Model 81-RP
6. Pressure Gauge (6A, 6B)
7. Fixed Restriction
8. Isolating Valve
9. Diaphragm Isolator
10. Bleed Valve
11. Check Valve, J0040A
12. Bleed Valve
13. Solenoid Valve - 3 way - NC
14. Solenoid Valve - 3 way - NO
15. Air Supply
16. 852B Needle Valve
17. Air Charge Valve
18. Isolating Valve
19. Optional SAP control panel




**A106-DL-Air-ET**
**Schematic A-8809A**

## SCHEMATIC DRAWING A106-DL-AIR-ET – OPERATION DETAILS

Operates using separate compressed air supply
- An inexpensive 120 psi / 8.3 bar air compressor may be used for 200 psi / 13.8 bar or higher relief pressures by using a large diameter closing piston.

Using a chamber and diaphragm isolator (9), an accurate hydraulic pilot (5) opens reliably and repeatedly at its set pressure (gauge 6A)
- Full operational (including pilot) check is quickly and cleanly performed by closing valve (8) and applying pressure at (18). For quick flush open (3).

The check valve (11) maintains air in the operating cylinder should the air supply fail.
- Provided the air supply is above minimum, variations in pressure do not affect the valve operation, which is controlled independently by the accurate pilot.The main valve (1) is constructed of the same premium materials as the Hydraulic Dynamic Lifter for long life and minimum maintenance.

Two 3-way solenoids are included to force the valve open on power failure. A backup control panel is required to time the reclosure.

The solenoids convert the relief valve function to a surge anticipating valve if needed, particularly if there is a risk of the system going sub-atmospheric. Air pressure through solenoid holds the valve open until closed by the electrical controls

## ORDERING INSTRUCTIONS

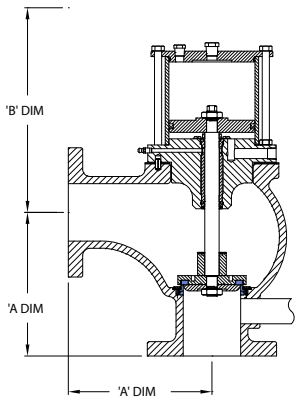
Refer to page 244 for the order form and ordering instructions.

| A106-DL ANSI DATA (US UNITS) | AIR OPERATED | | | |
|---|---|---|---|---|
| **Size** | **3 in** | **4 in** | **6 in** | **8 in** |
| | **Relief Setings (psi)** | | | |
| **Pressure Ranges** | **Options Available up to 200 PSI, consult with Singer Valve** | | | |
| **Lift / Opening** | **2 in** | **2 in** | **2 1/2 in** | **3 in** |
| Dimension A | 9 in | 10 in | 11.5 in | 14 in |
| Dimension B* | 22.5 in | 23.5 in | 25.5 in | 28.88 in |
| Dimension C | 30.5 in | 30.5 in | 32 in | 32 in |
| Dimension D | 4.75 in | 5.75 in | 7.5 in | 10 in |

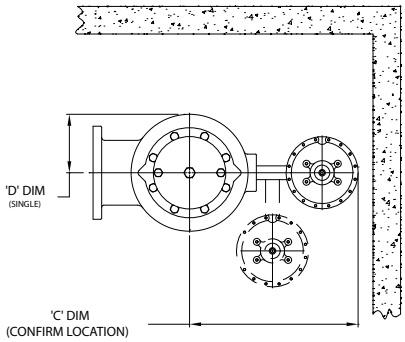
| A106-DL ANSI DATA (METRIC UNITS) | AIR OPERATED | | | |
|---|---|---|---|---|
| **Size** | **80 mm** | **100 mm** | **150 mm** | **200 mm** |
| | **Relief Setings (bar)** | | | |
| **Pressure Ranges** | **Options Available up to 13.8 Bar, consult with Singer Valve** | | | |
| **Lift / Opening** | **50 mm** | **50 mm** | **64 mm** | **76 mm** |
| Dimension A | 229 mm | 254 mm | 292 mm | 356 mm |
| Dimension B* | 572 mm | 597 mm | 648 mm | 734 mm |
| Dimension C | 775 mm | 775 mm | 813m | 813 mm |
| Dimension D | 121 mm | 146 mm | 191 mm | 254 mm |

Pneumatic operational ranges up to 200 psi / 13.8 bar.
Consult Singer Valve for more information on higher pressures.

*Dimension B reflects clearance allowed for pilot system and accessories



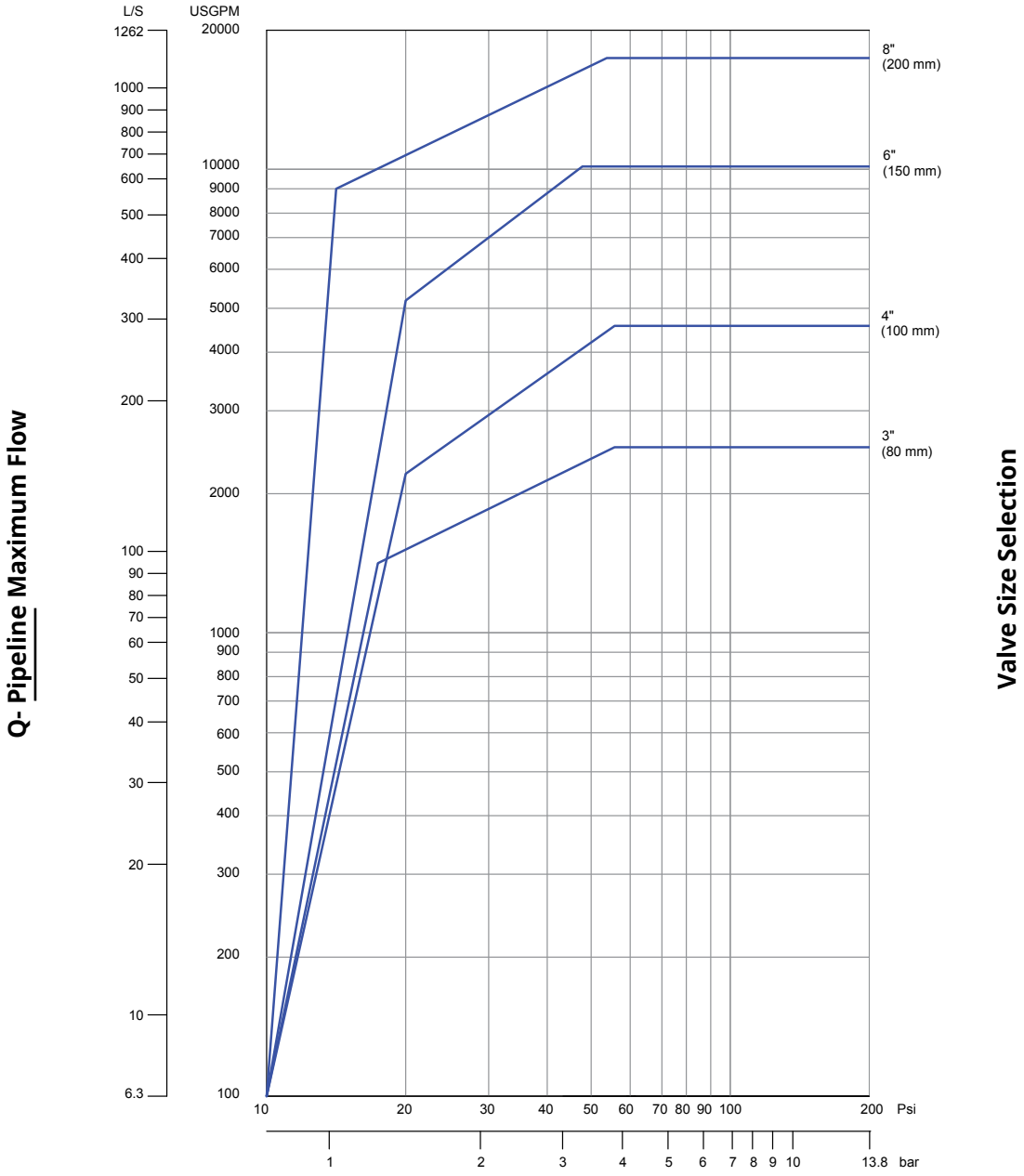

AIR OPERATED




ASSEMBLY CLEARANCE

## Dynamic Lifter Sizing Graph Curve: 3 in / 80 mm – 8 in / 200 mm

**Conventional relief valves for sewage are typically sized "larger" than a Singer Valve Dynamic Lifter due to opening forces being lost as the inner valve leaves the seat.**




∆P - Minimum pressure drop across dynamic lifter.

**Examples of valve size selection:**

1) Relief setting 80 psi / 5.5 bar - discharge to atmosphere: Max. flow in main pipeline 1,200 USGPM / 75.7 l/s - Find intersect of 80 psi / 5.5 bar ∆P and 1200 USGPM / 75.7 l/s flow. Select next larger size Dynamic Lifter, for example, 3 in / 80 mm size.

2) Relief setting 55 psi / 3.8 bar - discharge 20 psi / 1.38 bar back pressure: Max. flow in main pipeline 4,000 USGPM / 252.4 l/s Find intersect of 55 psi – 20 = 35 psi / 2.4 bar ∆P and 4000 USGPM / 252.4 l/s flow. Select next larger size Dynamic Lifter, for example, 6 in / 150 mm size.

Note:

if the discharge was to atmosphere, ∆P = 55 psi / 3.8 bar and 4 in / 100 mm size would be selected.

this graph is based on current practice for standard applications. It is intended to be a guide only and no selection guarantee is implied or intended.

**Our pump control valves substantially reduces surges that occur when a pump starts or stops. How? Because they're smart and they're smooth. They know when to open, when to close and they do it effortlessly.**

# Pump Control Valves

SINGER VALVE
Result-Based Solutions. Globally.™

# MODELS 106-PG-BPC / 206-PG-BPC
# BOOSTER PUMP CONTROL VALVE – SINGLE CHAMBER

## KEY FEATURES

- Substantially reduces pump starting and stopping surges
- Separate opening and closing speed controls
- Cost effective pump control system
- Optional internal mechanical drop check reduces power failure surge

## PRODUCT OVERVIEW

The 106-PG-BPC or 206-PG-BPC booster pump control valve is installed in-line directly downstream of the pump discharge.

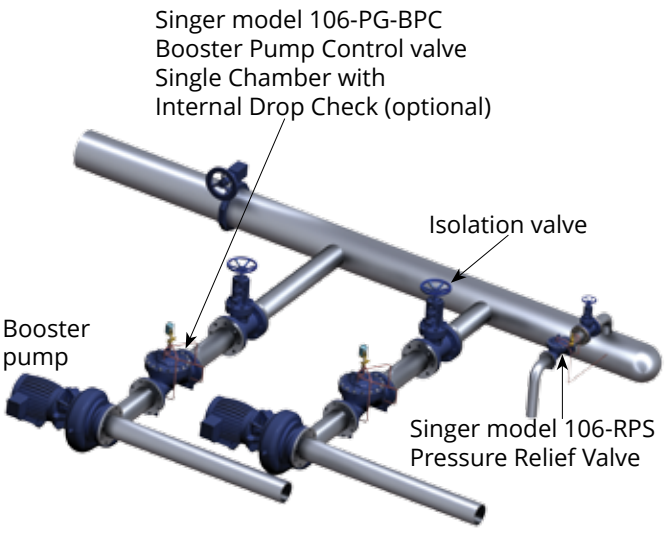
The valve is normally closed, and, on pump start-up, a pilot solenoid is energized to slowly open the valve, at a rate governed by the opening speed control. The pipeline flow is gradually increased.

When shut-down is required, the pilot solenoid is de-energized to close the main valve and reduce the flow. The pump is kept running while the booster pump control valve slowly closes. When the valve is almost fully closed and flow is virtually stopped, a cam triggers the limit switch to stop the pump.

With the internal drop check option, the built-in mechanical drop check closes immediately when the flow stops, regardless of the valve position. Whether due to a control malfunction, normal operation or a pump motor power failure, by closing before flow reverses, surges are minimized.

The single chamber construction facilitates supplemental modulating functions such as pressure sustaining, pressure reducing, rate of flow control. Being a single chamber design, the control forces are generated by the differential across the valve. When a modulating function is included there are more positive initial closing results.

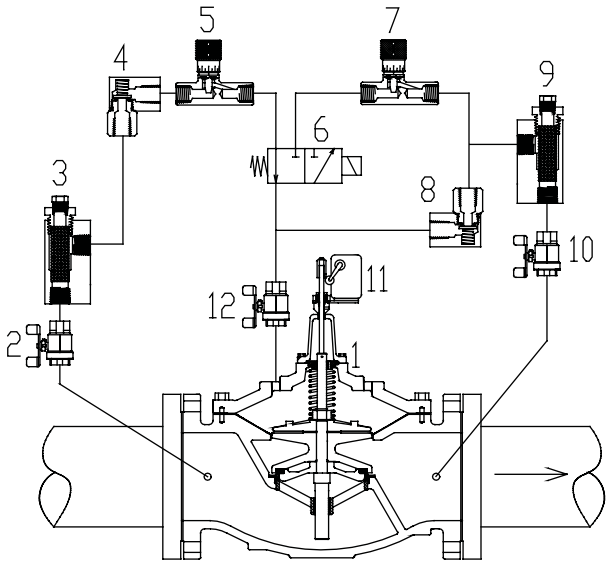
## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve
3. Strainer - 40 mesh stainless steel screen
4. Check Valve - model 10
5. Micrometer Needle Valve - closing speed
6. Solenoid Valve - three way, NEMA 4
7. Micrometer Needle Valve - opening speed
8. Check Valve - model 10
9. Strainer - 40 mesh stainless steel screen
10. Isolation Valve
11. Model X129 Limit Switch Assembly - NEMA 4, SPDT
12. Isolation Valve

Internal Drop Check Feature (optional, not shown)




Schematic A-7254C

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze and ASTM B-16 brass
- AISI 303 / 316 stainless steel trim

Refer to Electronic Control section (SPC product), see page 203, and consult Singer Valve for pump control panel options.

## SELECTION SUMMARY

1. The model PG-BPC, booster pump control valve incurs continuous head loss while the pump is operating. Refer to the 106 or 206 performance curves (see Technical & Sizing Information section, page 231). Use drooping portion of curve. Select the smallest size with a pressure drop that is acceptable.
2. With no modulating pilot functions added, care should be exercised not to oversize the valve, especially if pumps are operating in parallel. With very low differential across the valve, initial closing speed will be slow. Sections 106-PG and 206-PG (Main Valve section, page 11), provide specifications and details of construction of the standard main valves while bulletin IDC - Internal Drop Check (see Main Valve Options section, page 70) provides details on the internal mechanical check option.
3. Standard configuration provides for NEMA 4 watertight enclosures for the Honeywell model OP-AR, Single Pole Double Throw limit switch and the ASCO solenoid with 120VAC / 60Hz (or 220VAC / 50HZ or 240VAC / 60Hz) coil. For other electrical service or higher pressure ratings consult with Singer Valve. A manual override is available upon request.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Solenoid voltage
3. Maximum inlet pressure

| 106-PG-BPC | Flow Coefficient $C_v$ (See 106-PG in Main Valve Section for other Valve Data) | | | |
|---|---|---|---|---|
| Size (inches) | 2 in | 2-1/2 in | 3 in | 4 in |
| Size ( mm) | 50 mm | 65 mm | 80 mm | 100 mm |
| $C_v$[1] | 55 | 80 | 110 | 200 |
| $K_v$[2] | 13 | 19 | 26 | 47 |

| 106-PG-BPC | Flow Coefficient $C_v$ (See 106-PTC in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| $C_v$[1] | 460 | 800 | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 | 16340 |
| $K_v$[2] | 110 | 190 | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |

| 206-PG-BPC | Flow Coefficient $C_v$ (See 206-PG in Main Valve Section for other Valve Data) | | | |
|---|---|---|---|---|
| Size (inches) | 4 in | 6 in | 8 in | 10 in |
| Size ( mm) | 100 mm | 150 mm | 200 mm | 250 mm |
| $C_v$[1] | 150 | 250 | 505 | 985 |
| $K_v$[2] | 36 | 60 | 120 | 230 |

| 206-PG-BPC | Flow Coefficient $C_v$ (See 206-PTC in Main Valve section for other valve data) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size (inches) | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 36 x 24 in | 40 x 36 in |
| Size (mm) | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 900 x 600 mm | 1000 x 900 mm |
| $C_v$[1] | 1550 | 2200 | 3300 | 3400 | 3500 | 5300 | 7800 | 18000 |
| $K_v$[2] | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 4265 |

*$C_V$ = USGPM at 1 psi pressure drop

**$K_V$ = L / s at 1 bar pressure drop

($Q=C_V\sqrt{\Delta P}$)

# MODELS 106-BPC / 206-BPC
# BOOSTER PUMP CONTROL VALVE – DOUBLE CHAMBER

## KEY FEATURES

- Suitable for most pumping applications including suction lift and low differential head
- Prevents pump starting and stopping surges
- Built-in non-slam mechanical check reduces surges on loss of power
- Separate opening and closing speed controls

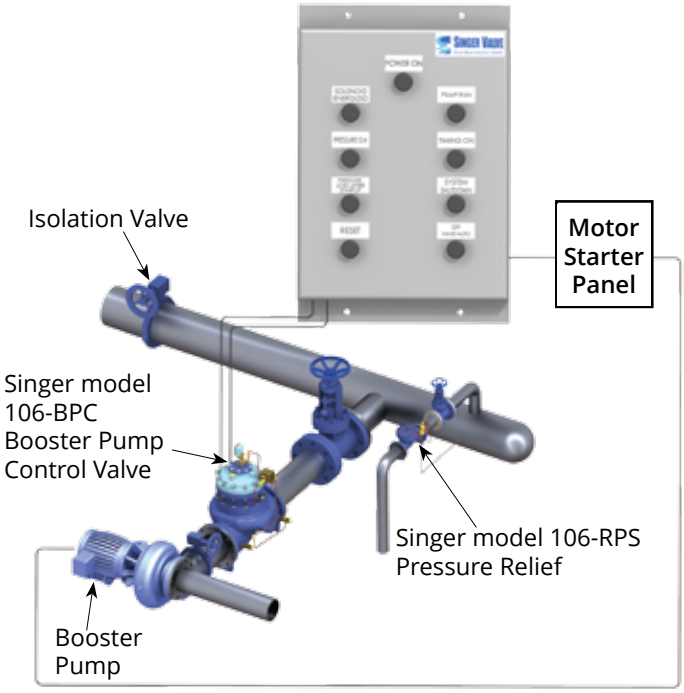
## PRODUCT OVERVIEW

The 106-BPC and 206-BPC booster pump control valves are installed in-line, directly downstream of the pump discharge.

The pump control valve is normally closed and on pump start-up, a pilot solenoid is energized to open the valve, at a rate governed by the opening speed control. When shut-down is required the pilot solenoid on the valve is de-energized to commence closing. The pump is kept running while the valve slowly closes. When the valve is almost fully closed and flow is virtually zero, a stem mounted cam triggers the limit switch to stop the pump.

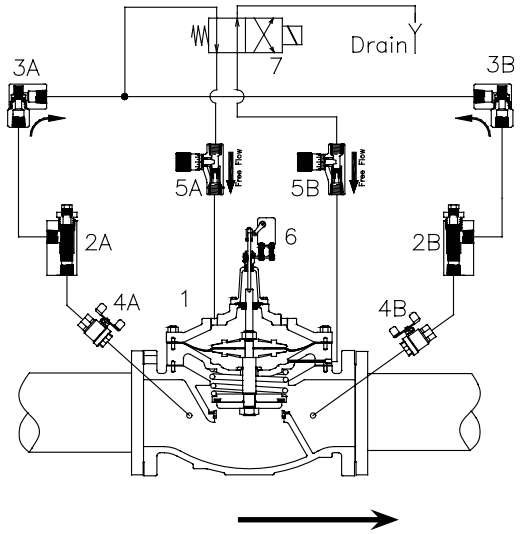
In the event of a power failure, the built-in mechanical drop check closes immediately when the flow stops, independently of the valve position. Surges are minimized by closing the valve before reverse flow occurs.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PTC or 206-PTC
2. Strainer - (2A,2B) - 40 mesh stainless steel
3. Check Valves - (3A,3B)
4. Isolation Valves - (4A,4B)
5. Micrometer Flow Control Valves - (5A Opening Speed Control, 5B Closing Speed Control)
6. Model X129 Limit Switch Assembly - NEMA 4, SPDT
7. Solenoid Valve - four way, NEMA 4




**Schematic A-0426H**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- AISI 303 / 316 stainless steel trim

Refer to Electronic Control section (SPC product), see page 203, and consult Singer Valve for pump control panel options.

## SELECTION SUMMARY

1. In-line pump control valves incur continuous head loss while the pump is running. Refer to the 106 or 206 performance curves (straight line) (See Technical and Sizing section, page 231). Select the smallest size meeting the capacity requirements, with a pressure drop that is acceptable.
2. Standard configuration provides for NEMA 4 watertight enclosures for the Honeywell model OP-AR, SPDT limit switch and the ASCO solenoid with 120 VAC / 60 Hz (or 220 VAC/ 50 Hz or 240 VAC / 60 Hz) coil. For other electrical service or higher pressure ratings consult Singer Valve. A manual override is available upon request.
3. Other functions may be combined with Booster Pump Control valves, usually in conjunction with single chamber main valves, e.g. model 106-BPC-R, pump control with pressure sustaining feature.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Double chamber (106) or (206)
2. Solenoid voltage
3. Maximum inlet pressure

| 106-BPC | Flow Coefficient $C_v$ (See 106-PTC in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (in) | 2 in | 2-1/2 in | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in |
| Size (mm) | 50 mm | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm |
| $C_v$[1] | 55 | 80 | 110 | 200 | 460 | 800 | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 |
| $K_v$[2] | 13 | 19 | 26 | 47 | 110 | 190 | 310 | 500 | 610 | 780 | 1210 | 1800 |

| 206-BPC | Flow Coefficient $C_v$ (See 206-PTC in Main Valve section for other valve data) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (in) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm |
| $C_v$[1] | 60 | 150 | 250 | 505 | 985 | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 7800 | 7900 | 8000 |
| $K_v$[2] | 14 | 36 | 60 | 120 | 230 | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1850 | 1870 | 1900 |

*$C_V$ = USGPM at 1 psi pressure drop

**$K_V$ = L / s at 1 bar pressure drop

$(Q=C_V\sqrt{\Delta P})$

# MODELS 106-DW / 206-DW
# DEEP WELL PUMP CONTROL VALVE – DOUBLE CHAMBER

## KEY FEATURES

- Prevents pump starting and stopping surges
- No energy loss while pump is running
- Separate opening and closing speed controls
- Discharges initial air/water silt to waste, on well applications
- Discharges stagnant water at start-up from dormant wells

## PRODUCT OVERVIEW

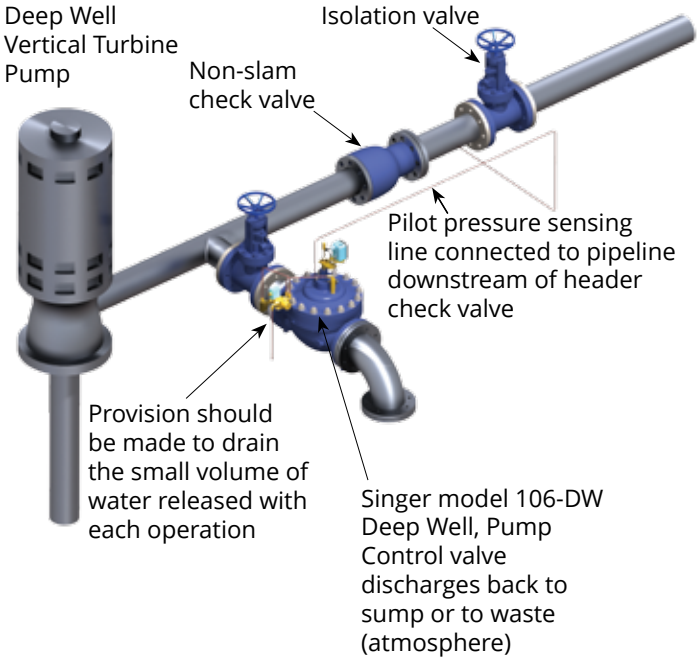
The 106-DW and 206-DW deep well pump control valves are installed in a tee between the pump discharge and the check valve.

The valve is normally open, and, on pump start-up, a pilot solenoid is energized to start closing the valve at a rate governed by the closing speed control.

Initially, the valve discharges air, water and sand to waste. The open valve discharges all pump flow. As the valve closes slowly, flow is transferred to the main line smoothly, increasing the pipeline flow without surges. When the valve is fully closed, all pump flow is in the pipeline, with no control valve losses.

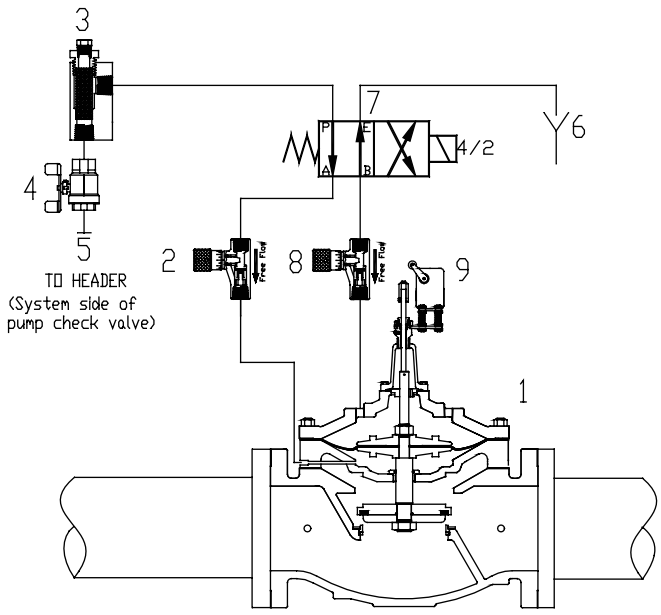
When shut-down is required, the pilot solenoid on the valve is de-energized to commence opening. The pump is kept running while the valve slowly opens. Increasing proportion of the flow is diverted to waste with less passing through the check valve, until all flow is diverted through the nearly fully open DW valve. The pipeline check valve closes quietly without surges. When the DW valve is almost fully open, a stem mounted cam triggers the limit switch to stop the pump.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PT or 206-PT
2. Closing speed control
3. Strainer - 40 mesh stainless steel screen
4. Isolation Valve
5. Connection to the pipeline system side of header check valve - complete in the field
6. Exhaust to drain - complete in the field
7. Solenoid Valve - four way, NEMA 4
8. Opening speed control
9. Model X129 Limit Switch Assembly - NEMA 4, SPDT




**Schematic A-7514C**

## SELECTION SUMMARY

1. The Singer model DW deep well pump control valve is sized to ensure that the pump discharge pressure is less than the system static pressure when the pump starts; that the main check valve will remain closed and no surges will be generated.
2. From the pump performance curve, determine the pump flow when the pressure at the pump discharge is 80% of the static pressure against the check valve. When the pump is discharging at full start-up flow, the combined losses of the DW control valve, the piping and the discharge losses must be less than 80% of the static pressure.
3. For pump control other than deep well applications - by-pass control - the discharge from the DW control valve can be returned to the wet well, tank or even the pump suction header. Providing there is sufficient static differential pressure (e.g., 70 to 80% of the pumping differential pressure) the DW control valve should be considered preferable to a BPC, in-line booster pump control valve because of reduced sizing and operating benefits.
4. Refer to the 106 and 206 performance curves, page 231, angle or globe style (straight lines) (see Technical & Sizing Information section, page 231) and select the smallest size with the pressure drop that is acceptable. Bulletins 106-PT(C) and 206-PT(C) (see Main Valves section, page 28) provide / specifications and details of construction of the main valves. Standard configuration provides for NEMA 4 watertight enclosures for the Honeywell model OP-AR, SPDT limit switch and the ASCO solenoid with 120 VAC / 60 Hz (or 220 VAC / 50 Hz or 240 VAC / 60 Hz) coil. For other electrical service or higher pressure ratings consult with Singer Valve. A manual override is available upon request. Other functions may be combined with DW valves, e.g. model 106-DW-RPS, pump control with pressure sustaining feature.

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- AISI 303 /316 stainless steel trim

Refer to Electronic Control section (SPC product), see page 203, and consult Singer Valve for pump control panel options.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Double chamber (106) or (206)
2. Solenoid voltage
3. Maximum inlet pressure

| 106-DW | Flow Coefficient $C_v$ (See 106-PT in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 2 in | 2-1/2 in | 3 in | 4 in |
| Size ( mm) | 50 mm | 65 mm | 80 mm | 100 mm |
| $C_v$[1] - Globe | 55 | 80 | 110 | 200 |
| $K_v$[2] - Globe | 13 | 19 | 26 | 47 |
| $C_v$[1] - Angle | 61 | 90 | 135 | 230 |
| $K_v$[2] - Angle | 15 | 21 | 32 | 55 |

| 106-DW | Flow Coefficient $C_v$ (See 106-PT in Main Valve section for other valve data) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in |
| Size ( mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 50 mm | 600 mm |
| $C_v$[1] - Globe | 460 | 800 | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 |
| $K_v$[2] - Globe | 110 | 190 | 310 | 500 | 610 | 780 | 1210 | 1800 |
| $C_v$[1] - Angle | 520 | 950 | 1400 | 2400 | - | 3000 | - | - |
| $K_v$[2] - Angle | 123 | 225 | 332 | 570 | - | 710 | - | - |

| 206-DW | Flow Coefficient $C_v$ (See 206-PT in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 4 in | 6 in | 8 in | 10 in |
| Size ( mm) | 100 mm | 150 mm | 200 mm | 250 mm |
| $C_v$[1] - Globe | 150 | 250 | 505 | 985 |
| $K_v$[2] - Globe | 36 | 60 | 120 | 230 |
| $C_v$[1] - Angle | 150 | 250 | 580 | - |
| $K_v$[2] - Angle | 36 | 60 | 138 | - |

| 206-DW | Flow Coefficient $C_v$ (See 206-PT in Main Valve section for other valve data) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in |
| Size ( mm) | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm |
| $C_v$[1] - Globe | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 7800 | 7900 | 8000 |
| $K_v$[2] - Globe | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1850 | 1870 | 1900 |
| $C_v$[1] - Angle | - | - | - | - | - | - | - | - | - | - |
| $K_v$[2] - Angle | - | - | - | - | - | - | - | - | - | - |

*$C_v$ = USGPM at 1 psi pressure drop

**$K_v$ = L / s at 1 bar pressure drop

($Q=C_v\sqrt{\Delta P}$)

# MODELS 106-HC / 206-HC HYDRAULIC CHECK VALVE

## KEY FEATURES

- Drip-tight seat
- Independently adjustable opening and closing speed controls

## PRODUCT OVERVIEW

The 106-HC and 206-HC hydraulic check valves are based on the 106-PG or 206-PG main valve. The valve functions as a two position valve - either fully open or fully closed.

The HC allows one way flow only. Under normal forward flow, the valve opens as the higher inlet pressure lifts the inner valve assembly and the fluid in the upper chamber is discharged to the lower pressure, downstream side of the valve.

When pressure is reversed, the now higher downstream pressure is applied to the upper operating chamber as flow reversal occurs.

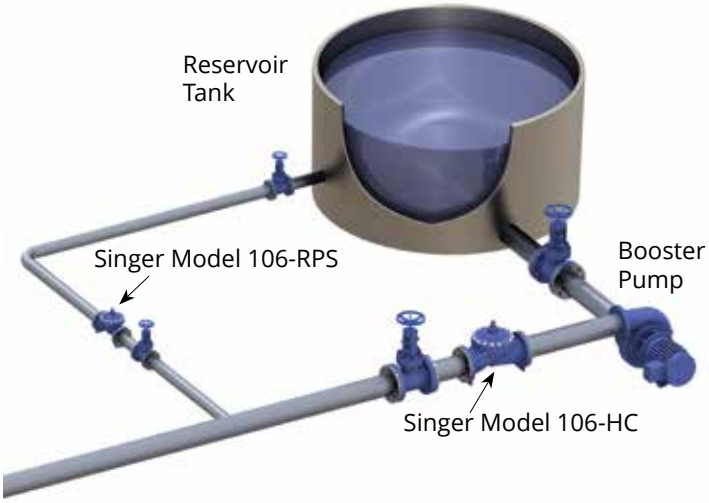
The diaphragm / inner valve assembly moves down and the valve closes tightly.

## TYPICAL APPLICATION

Primary use as a simple, effective way to start and stop pumps without surges. No electrical supply or interconnections required. Power failure shutdown is the same as normal operation. Best used when the pump is electric motor driven and has positive suction head. A system relief valve is recommended for sizes 6 in / 150 mm and larger or when velocities exceed 6 ft/s / 2 m/s.

**Important Note:**

To provide smooth "non-slam" shutdown when the pump stops, the flow reverses for a short period. Install with forward flow over the seat. Most pumps and motors can accept reverse rotation (consult with pump manufacturer before selecting hydraulic check valves). Engine drivers will be damaged by reverse rotation - include a non-reverse clutch or similar device. No other check or foot valves should be installed to prevent reverse flow. When there is suction lift on the pump inlet, a separate form of priming is necessary. See BPC or DW valves for alternate methods of starting or stopping flows exceeding 13 f/s / 4 m/s).



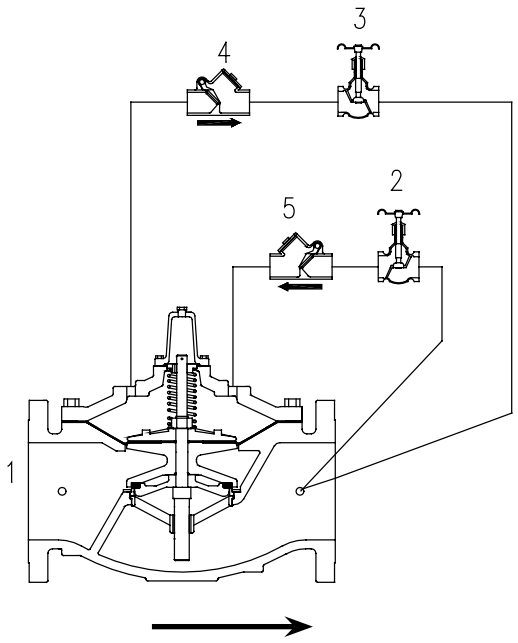
## SCHEMATIC DRAWING

1. Main Valve 106-PG or 206-PG - "Flow Over Seat"
2. Closing Speed Control
3. Opening Speed Control
4. Swing Check Valve - opening
5. Swing Check Valve - closing

The standard valve is normally installed in a horizontal pipeline with the stem oriented vertically up. Confirm other orientations before ordering.

| Type | Pressure Rating* |
|---|---|
| 300 SCR. | 200 psi / 13.8 bar |
| 150 FLG. | 200 psi / 13.8 bar |
| 300 FLG. | 300 psi / 20.7 bar |

* Pressure ratings are limited by the choice of pilot components.




**Schematic A-0422D**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- AISI 303 / 316 stainless steel trim

## SELECTION SUMMARY

1. Generally select size to minimize losses during normal forward flow.
2. Use the performance curves and sizing bulletin (see Technical and Sizing Information Section page 231) to check the pressure drop across the valve at normal flow rate. Use the same performance curves for flow over the seat or flow under the seat.
3. Check the maximum operating pressure. The pilot system limits the rating.
4. Standard construction provides: 200 psi / 13.8 bar
5. Rating for ANSI 150 flanged and NPT screwed ends; 300 psi / 20.7 bar rating for ANSI 300 flanged. Consult Singer Valve for applications requiring higher pressure ratings.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

Single chamber (106) or (206)

| 106-HC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Max. Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Max. Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-HC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Max. Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Max. Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |

| 206-HC | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Max. Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Max. Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-HC | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Max. Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Max. Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

**Our level control valves are the ideal solution for preventing overflow in tanks, towers and reservoirs. Repeatable, reliable operation each and every time! Our float valves directly control the maximum water level and our altitude valves control water levels from ground level. Because we hate overflow as much as you do.**

# Level Control Valves

SINGER VALVE
Result-Based Solutions. Globally.

# MODELS 106-A-TYPE 1 / 206-A-TYPE 1 TWO-WAY FLOW ALTITUDE CONTROL VALVE

## KEY FEATURES

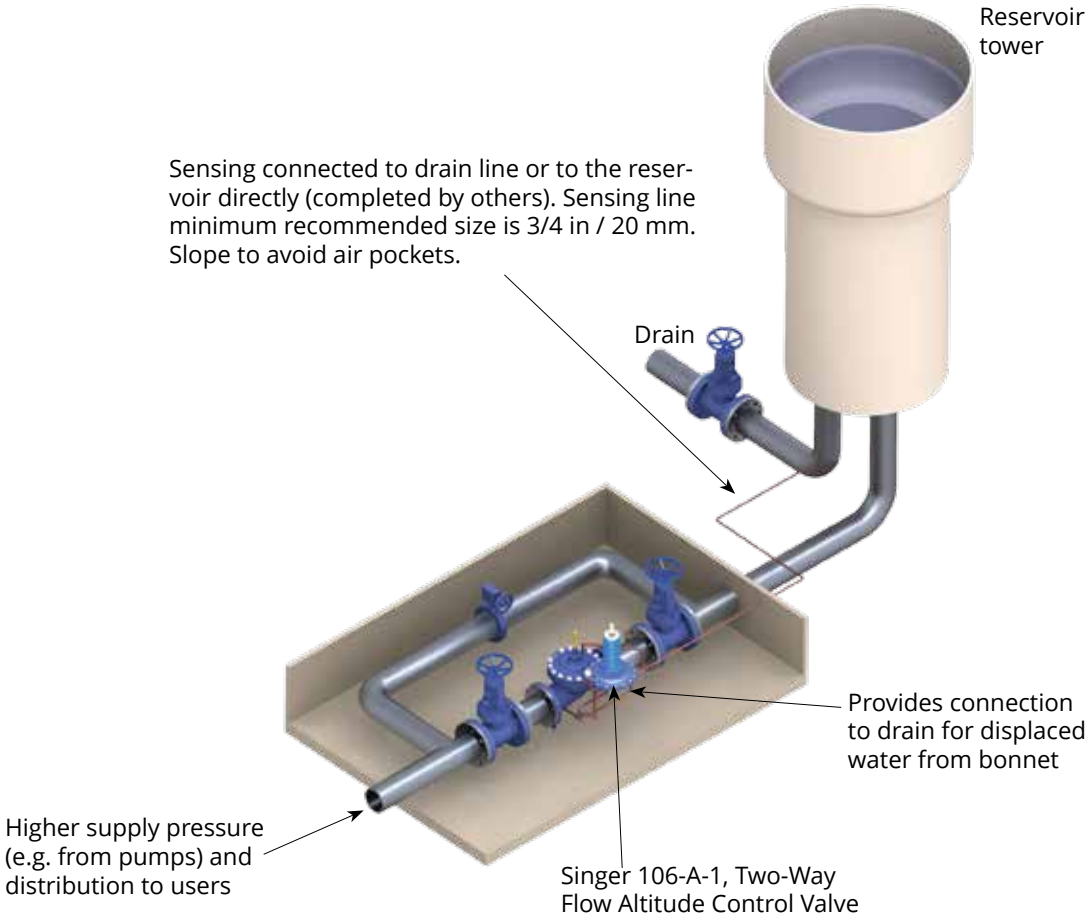
- No overflows
- Superior repeatability
- Positive shut-off
- Easily serviceable at ground level

## PRODUCT OVERVIEW

The 106-A-Type 1 and 206-A-Type 1 altitude control valves are based on the 106-PG or 206-PG main valve and are ideal for maintaining a preset maximum water level.

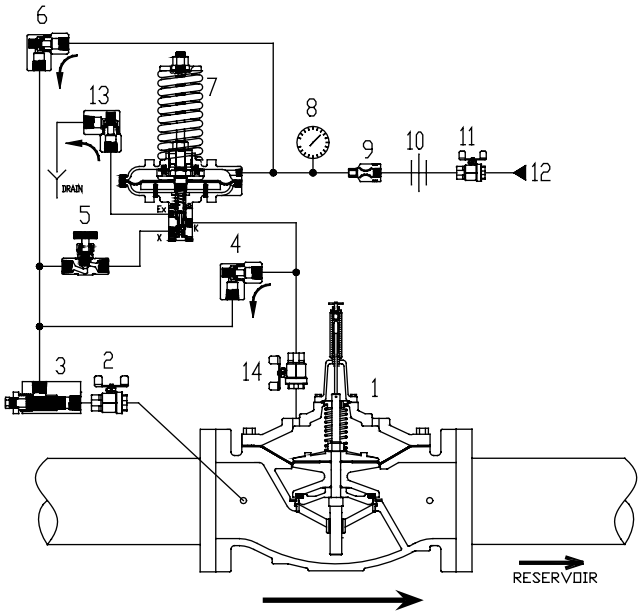
The valve functions as a two position control valve, either fully open or fully closed. The Type 1 allows normal forward flow to fill the reservoir to the maximum level and then closes drip-tight at the set-point. It opens to allow reverse flow through the valve when the supply pressure drops a fixed amount below the reservoir head. When a higher supply pressure is restored, the Type 1 valve will then allow normal forward flow to refill the tank to the maximum level.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG - with X107 position indicator
2. Isolation Valve
3. Strainer - 40 mesh stainless steel screen
4. Model 10 Check Valve
5. Closing Speed Control
6. Model 12 Check Valve
7. Model 301-4 Altitude Pilot
8. Altitude Gauge
9. Fixed Restriction - 1/8 in / 3.2 mm, 1/16 in / 1.58 mm
10. Union
11. Isolation Valve
12. Connection to Reservoir - complete in field
13. Model 12 Check Valve
14. Isolation Valve




**Schematic A-0412D**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- Ductile Iron
- Stainless Steel
- Brass
- Copper

## SELECTION SUMMARY

1. Generally select line size to minimize losses during normal forward flow.
2. Use the performance curves and sizing bulletin to determine the pressure drop across the valve.
3. Limit maximum continuous flow velocity to 20 ft/s / 6 m/s for 106 and 16 ft/s / 5 m/s for 206. Consult Singer Valve if higher flows are expected.
4. The pilot system exhausts to atmosphere, ensuring the valve opens fully; requires that the displaced volume of water be taken to drain with each opening.
5. Select pilot spring range: 4 to 20 ft / 1 to 6 m; 10 to 60 ft / 3 to 18 m; 40 to 125 ft / 12 to 38 m; 60 to 220 ft / 18 to 67 m.
6. There is a non-adjustable differential required between the reservoir head and the supply pressure in order for the valve to open. It ranges from 1 ft / 0.3 m to 3 ft / 0.90 m for the pilot spring ranges listed.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-A-Type 1 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 110 | 200 | 460 | 800 |
| $K_v$[2] | 26 | 47 | 110 | 190 |

| 106-A-Type 1 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| $C_v$[1] | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 | 16340 |
| $K_v$[2] | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |

| 206-A-Type 1 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 60 | 150 | 250 | 505 |
| $K_v$[2] | 14 | 36 | 60 | 120 |

| 206-A-Type 1 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| $C_v$[1] | 985 | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 7800 | 7900 | 8000 | 18000 |
| $K_v$[2] | 230 | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1850 | 1870 | 1900 | 4265 |

*$C_V$ = USGPM at 1 psi pressure drop

**$K_V$ = L / s at 1 bar pressure drop

($Q=C_V\sqrt{\Delta P}$)

Note: based on fully open valve

# MODELS 106-A-TYPE 2 / 206-A-TYPE 2 ONE-WAY FLOW ALTITUDE CONTROL VALVE

## KEY FEATURES

- No overflows - high level shut-off maintained to close tolerances
- Superior repeatability
- Positive shut-off
- Easily serviceable at ground level

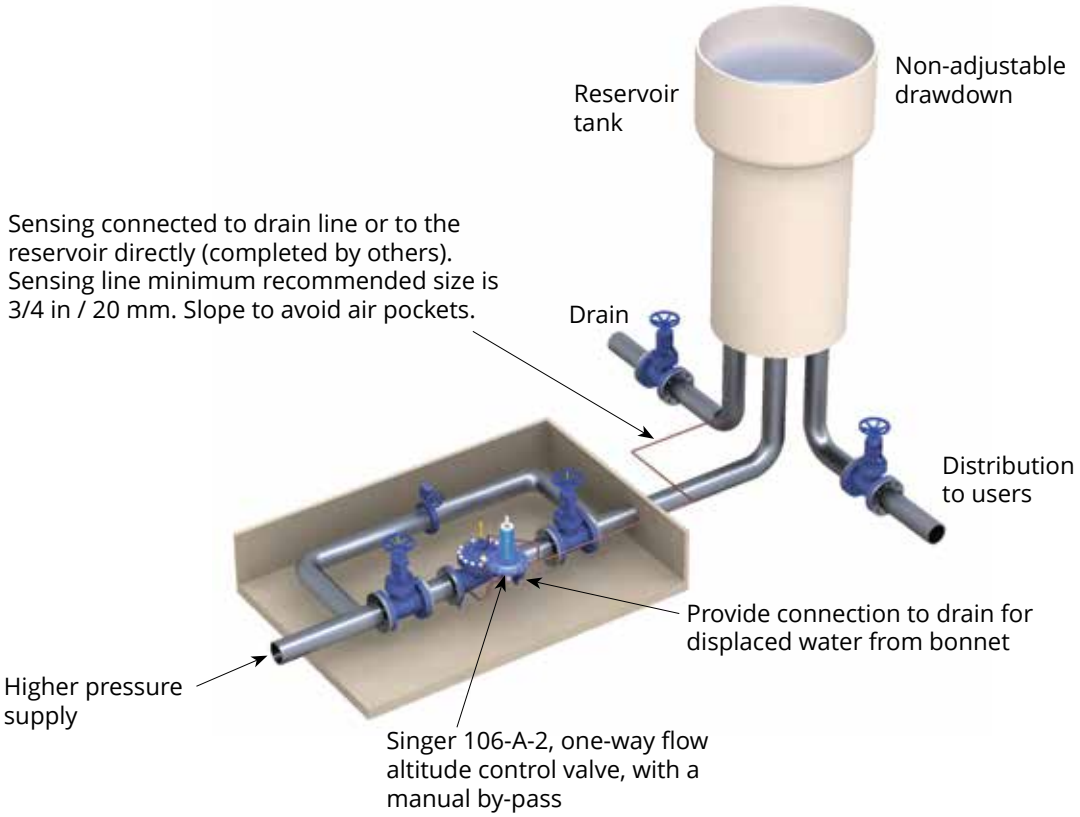
## PRODUCT OVERVIEW

The 106-A-Type 2 and 206-A-Type 2 altitude control valves are based on the 106-PG or 206-PG main valve and are ideal for maintaining a preset maximum water level.

The valve functions as a two position control valve, either fully open or fully closed. The Type 2 valve allows normal forward flow to fill the reservoir to the maximum level and then closes drip-tight at the set-point. It opens to refill the tank once the level drops a fixed distance below the high water level.

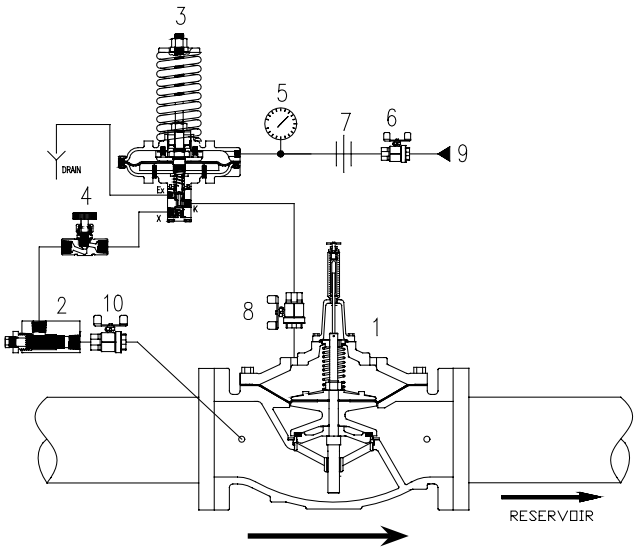
Note: This valve does not operate as a check valve to prevent reverse flow.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG - with X107 position indicator
2. Strainer - 40 mesh stainless steel screen
3. Model 301-4 Altitude Pilot
4. Closing Speed Control
5. Altitude Gauge
6. Isolation Valve
7. Union
8. Isolation Valve
9. Sensing connection to reservoir (complete in field by others)
10. Isolation Valve




**Schematic A-0413C**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- Ductile Iron
- Stainless Steel
- Brass
- Copper

## SELECTION SUMMARY

1. Generally select line size to minimize losses during normal forward flow.
2. Use the performance curves and sizing bulletin to determine the pressure drop across the valve.
3. Maximum continuous flow - 106 is 20 ft/s / 6 m/s, 206 is 16 ft/s / 5 m/s. Consult Singer Valve if higher flows are expected.
4. The pilot system exhausts to atmosphere ensuring the valve opens fully; requires that the displaced volume of water be taken to drain with each opening.
5. Select pilot spring range. Standard (301-4) is 10 to 60 ft / 3 to 18 m. Specify for 301-4 ranges 4 to 20 ft / 1 to 6 m, 40 to 125 ft / 12 to 38 m, 60 to 220 ft / 18 to 67 m.
6. Level drop required to open: 1 ft to 3 ft / 0.3 m to 0.91 m approximate.

7 If the fill line discharges below the reservoir surface, an internal drop check or separate check valve is suggested. This prevents return flow on loss of supply pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-A-Type2 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 110 | 200 | 460 | 800 |
| $K_v$[2] | 26 | 47 | 110 | 190 |

| 106-A-Type2 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| $C_v$[1] | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 | 16340 |
| $K_v$[2] | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |

| 206-A-Type 2 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 60 | 150 | 250 | 505 |
| $K_v$[2] | 14 | 36 | 60 | 120 |

| 206-A-Type 2 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| $C_v$[1] | 985 | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 7800 | 7900 | 8000 | 18000 |
| $K_v$[2] | 230 | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1850 | 1870 | 1900 | 4265 |

*$C_V$ = USGPM at 1 psi pressure drop

**$K_V$ = L / s at 1 bar pressure drop

($Q=C_V\sqrt{\Delta P}$)

Note: based on fully open valve

# MODELS 106-A-TYPE 3 / 206-A-TYPE 3
# TWO-WAY FLOW ALTITUDE CONTROL VALVE WITH DIFFERENTIAL CONTROL

## KEY FEATURES

- No overflows
- Superior repeatability while operating within close limits
- Positive shut-off

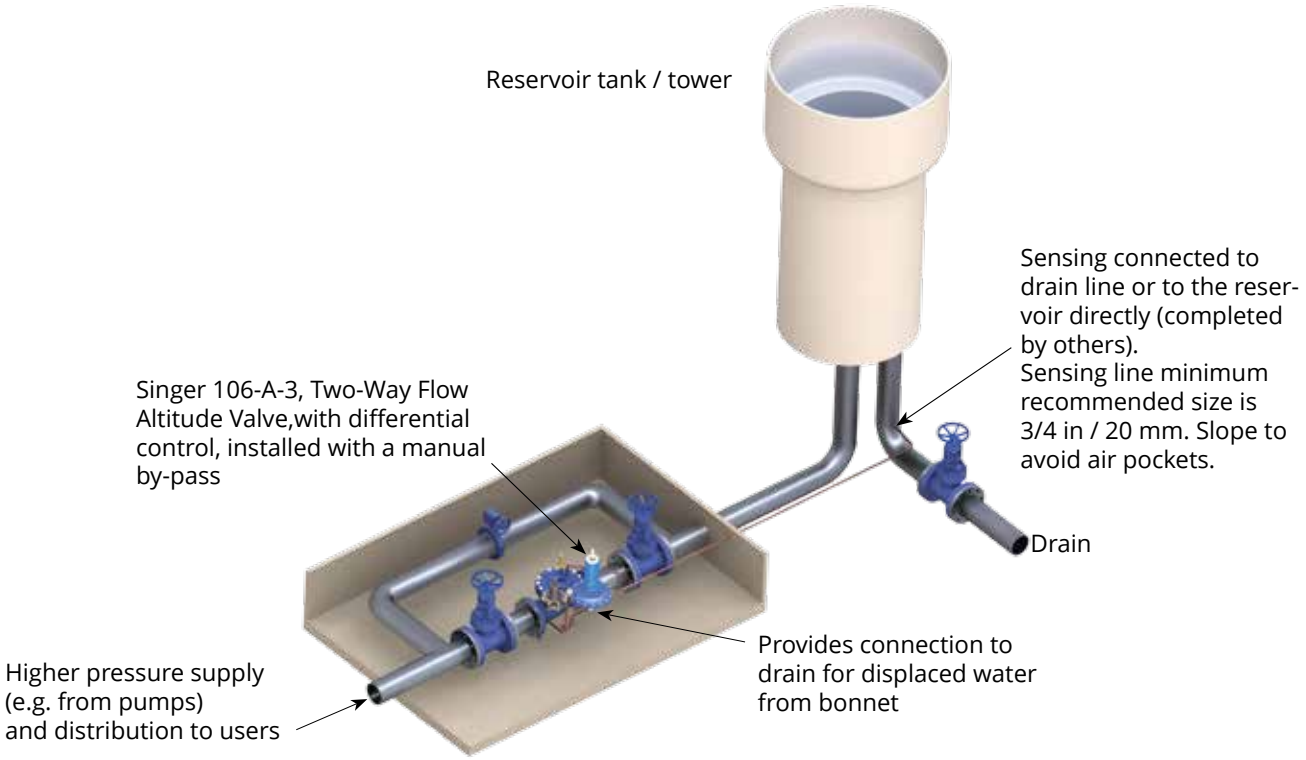
## PRODUCT OVERVIEW

The 106-A-Type 3 and 206-A-Type 3 altitude control valves are based on the 106-PG or 206-PG main valve, and are ideal for maintaining preset maximum level.

The Type 3 allows normal forward flow to fill the reservoir to the maximum level, then closes drip-tight at the set-point. The valve opens to permit reverse flow through the valve when the supply pressure drops an adjustable amount below the reservoir head.

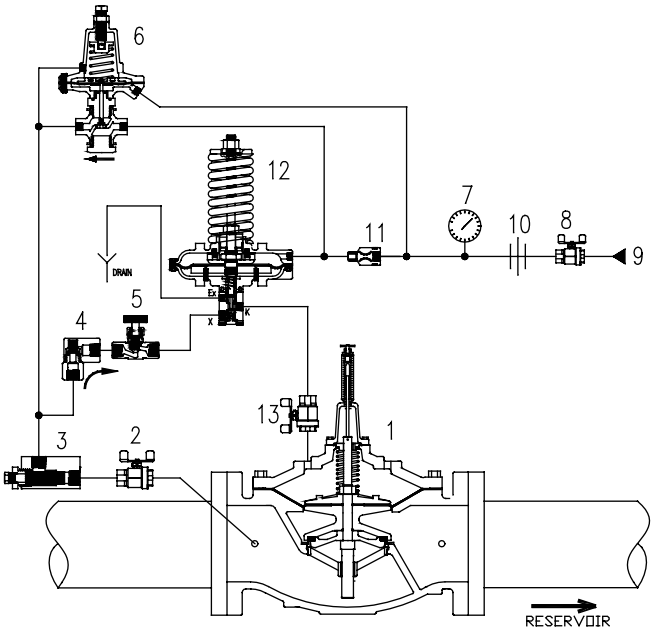
The Type 3 will then allow normal forward flow to refill the tank to the maximum level, when a higher supply pressure is restored.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG - with X107 position indicator
2. Isolation Valve
3. Strainer - 40 mesh stainless steel screen
4. Model 10 Check Valve
5. Closing Speed Control
6. Model 625-RPD Differential Relief Pilot
7. Altitude Gauge
8. Isolation Valve
9. Sensing connection to reservoir - complete in field
10. Union
11. Fixed Restriction - 1/8 in / 3.2 mm
12. Model 301-4 Altitude Pilot;
13. Isolation Valve




Schematic A-0414D

## STANDARD MATERIALS

Standard materials for pilot system components are:

- Ductile Iron
- Stainless Steel

## SELECTION SUMMARY

1. Generally select line size to minimize losses during normal forward flow.
2. Use the performance curves to determine the pressure drop across the valve.
3. Limit maximum continuous flow velocity to less than 20 ft/s / 6 m/s for 106 and less than 16 ft/s / 5 m/s for 206.
4. The pilot system exhausts to atmosphere ensuring the valve opens fully; requires that the displaced volume of water be taken to drain with each opening - refer to section 106-PG or 206-PG, page 12, for displaced volume
5. Select pilot spring range. Standard (301-4) is 10 to 60 ft / 3 to 18 m. Specify for 301-4 ranges 4 to 20 ft / 1 to 6 m, 40 to 125 ft / 12 to 38 m, 60 to 220 ft / 18 to 67 m.
6. Select the adjustable differential pilot spring range. Standard is 5 to 15 ft / 2 to 5 m. Specify for 12 to 30 ft / 3.7 to 9.1 m or 25 to 50 / 8 to 15 m. The total differential includes the non-adjustable differential of the altitude pilot.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot ranges

| 106-A-Type3 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 110 | 200 | 460 | 800 |
| $K_v$[2] | 26 | 47 | 110 | 190 |

| 106-A-Type3 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (in) | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| $C_v$[1] | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 | 16340 |
| $K_v$[2] | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |

| 206-A-Type 3 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 60 | 150 | 250 | 505 |
| $K_v$[2] | 14 | 36 | 60 | 120 |

| 206-A-Type 3 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (in) | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| $C_v$[1] | 985 | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 7800 | 7900 | 8000 | 18000 |
| $K_v$[2] | 230 | 370 | 520 | 780 | 810 | 830 | 1210 | 1850 | 1850 | 1870 | 1900 | 4265 |

*$C_V$ = USGPM at 1 psi pressure drop

**$K_V$ = L / s at 1 bar pressure drop

($Q=C_V\sqrt{\Delta P}$)

Note: based on fully open valve

# MODELS 106-A-TYPE 4 / 206-A-TYPE 4
# ONE-WAY FLOW ALTITUDE CONTROL VALVE WITH DIFFERENTIAL CONTROL

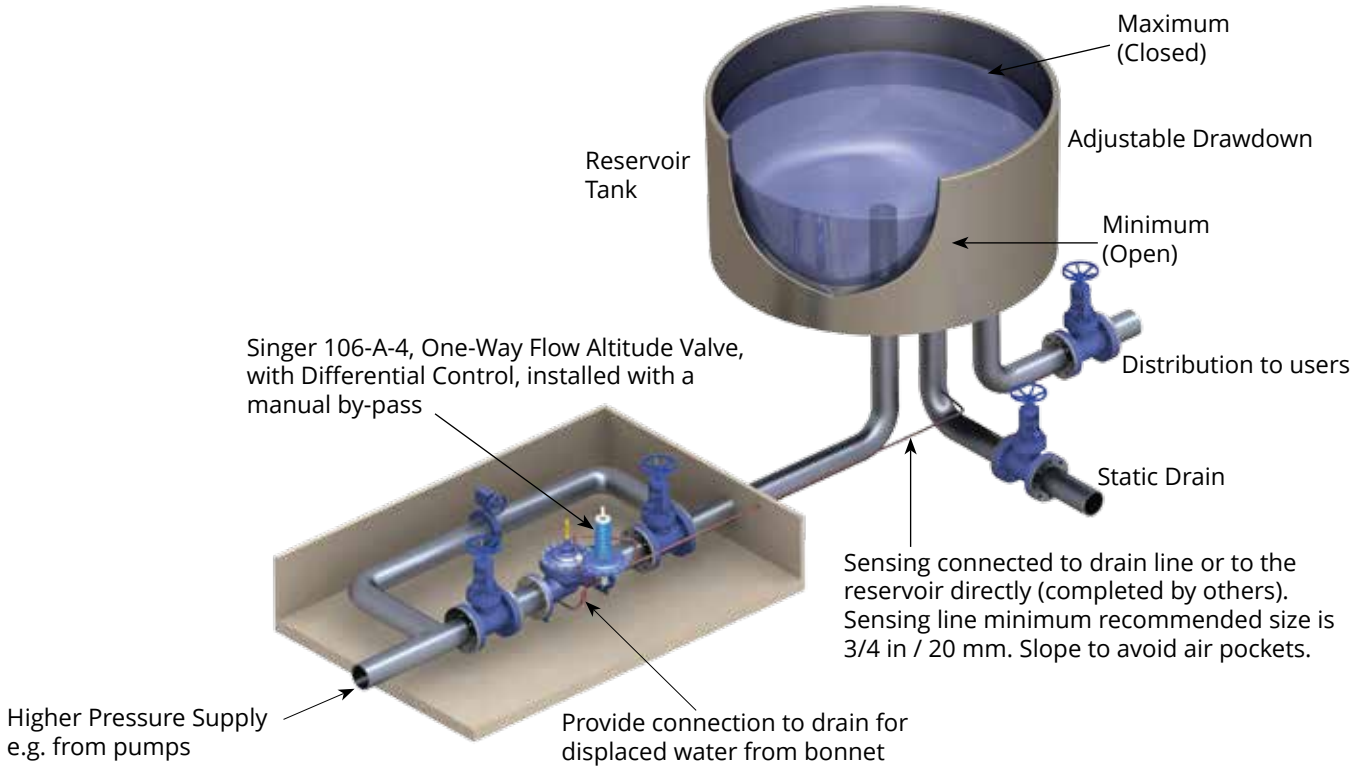
## KEY FEATURES

- No overflows
- Adjustable draw-down level (differential) set-point
- Superior repeatability
- Positive shut-off
- Adjustable draw-down for improved water cycling

## PRODUCT OVERVIEW

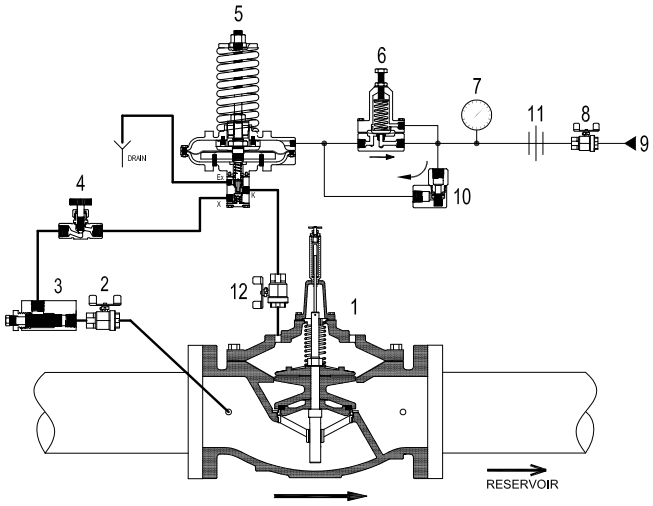
**The 106-A-Type 4 and 206-A-Type 4 altitude control valves are based on the 106-PG or 206-PG main valve, and are ideal for maintaining a preset maximum water level. The valve functions as a two position control valve, either fully open or fully closed.**
**The Type 4 allows normal forward flow to fill the reservoir to the maximum level, then closes drip-tight at the set-point. It opens to refill the tank once the level drops an adjustable amount below the high water level.**
**Distribution from the reservoir is through a separate pipeline.**
**Note: This valve does not operate as a check valve to prevent reverse flow.**

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG - with X107 position indicator
2. Isolation Valve
3. Strainer - 40 mesh stainless steel screen
4. Closing Speed Control
5. Model 301-4 Altitude Pilot
6. Model 106-RD Differential Pilot
7. Altitude Gauge - dual scale - feet and meter
8. Isolation Valve
9. Sensing connection to reservoir - complete in field
10. Model 10 Check Valve
11. Union
12. Isolation Valve




**Schematic A-0415C**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- Ductile Iron
- Stainless Steel
- Brass
- Copper

## SELECTION SUMMARY

1. Generally select line size to minimize losses during normal forward flow.
2. Use the performance curves to determine the pressure drop across the valve.
3. Limit maximum continuous flow velocity to less than 20 ft/s / 6 m/s for 106 and less than 16 ft/s / 5 m/s for 206.
4. The pilot system exhausts to atmosphere ensuring the valve opens fully; requires that the displaced volume of water be taken to drain with each opening. Refer to section 106-PG or 206-PG, page 12, for the displaced volume.
5. Select pilot spring range. Standard (301-4) is 10 to 60 ft / 3 to 18 m. Specify for 301-4 ranges 4 to 20 ft / 1 to 6 m, 40 to 125 ft / 12 to 38 m), 60 to 220 ft / 18 to 67 m.
6. Select differential pilot spring range. Standard is 5 to 15 ft / 1.5 to 4.6 m and 10 to 50 ft / 3 to 15 m. Specify for 12 to 50 ft / 3.7 to 15 m. The total differential includes the non-adjustable differential of the altitude pilot.
7. If the fill line discharges below the reservoir surface, an internal drop check or separate check valve is suggested. This prevents return flow on loss of supply pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-A-Type 4 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 110 | 200 | 460 | 800 |
| $K_v$[2] | 26 | 47 | 110 | 190 |

| 106-A-Type 4 | Flow Coefficient $C_v$ (See 106-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| $C_v$[1] | 1300 | 2100 | 2575 | 3300 | 5100 | 7600 | 16340 |
| $K_v$[2] | 310 | 500 | 610 | 780 | 1210 | 1800 | 3875 |

| 206-A-Type 4 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | |
|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm |
| $C_v$[1] | 60 | 150 | 250 | 505 |
| $K_v$[2] | 14 | 36 | 60 | 120 |

| 206-A-Type 4 | Flow Coefficient $C_v$ (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| $C_v$[1] | 985 | 1550 | 2200 | 3300 | 3400 | 3500 | 5100 | 7800 | 7800 | 7900 | 8000 | 18000 |
| $K_v$[2] | 230.0 | 370.0 | 520.0 | 780.0 | 810.0 | 830.0 | 1210.0 | 1850.0 | 1850.0 | 1870.0 | 1900.0 | 4265 |

*$C_V$ = USGPM at 1 psi pressure drop

**$K_V$ = L / s at 1 bar pressure drop

($Q=C_V\sqrt{\Delta P}$)

Note: based on fully open valve

# MODELS 106-F-TYPE 4 / 206-F-TYPE 4 MODULATING FLOAT VALVE

## KEY FEATURES

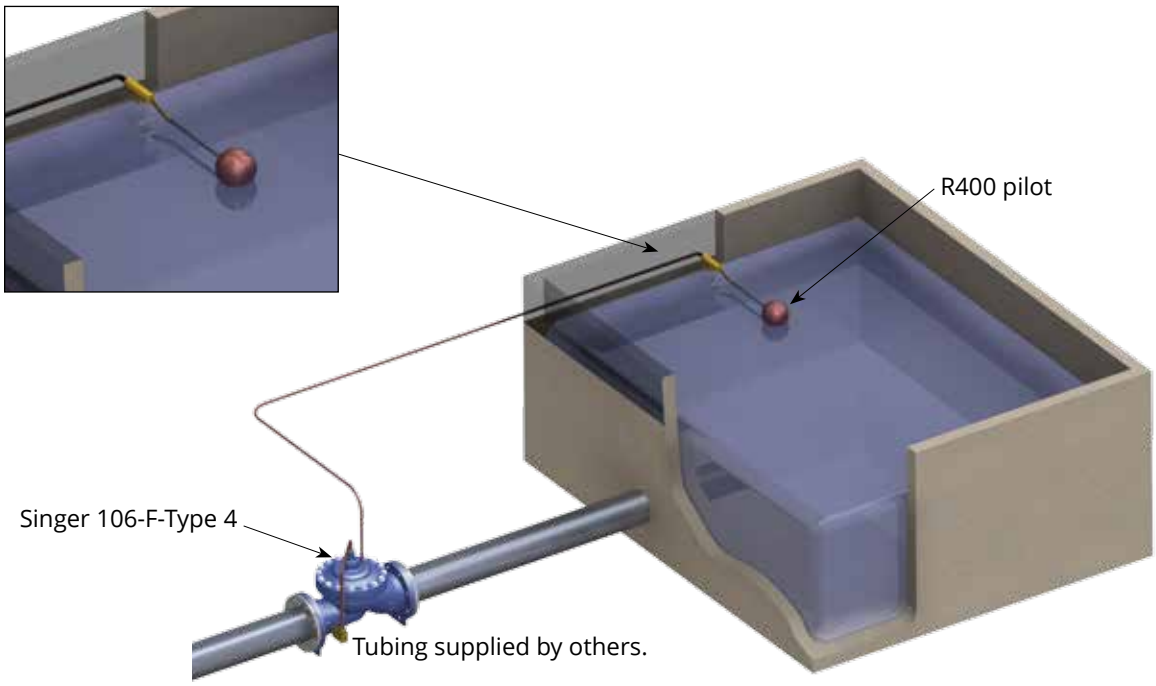
- Maintains relatively constant level
- Automatic compensation for level draw-down
- Standard integral damping reduces hunting
- Drip-tight at high level shut-off
- Low supply pressure options

## PRODUCT OVERVIEW

The Singer model 106-F-Type 4 and 206-F-Type 4 modulating float valves are based on the 106-PG or 206-PG main valve. They are ideal for balancing the inflow and outflow demand into the reservoir and maintaining level at the designated maximum.

The valve closes drip-tight at the maximum level and modulates to maintain the tank level. The float pilot is remotely installed at the high level in the reservoir tank. Pilot connections to the main valve are connected in the field. As the reservoir level drops the main valve is opened proportionally to increase the filling rate. Movement of the main stem alters the size of the closing restriction, interrupting the tendency of the valve to hunt.

## TYPICAL APPLICATION

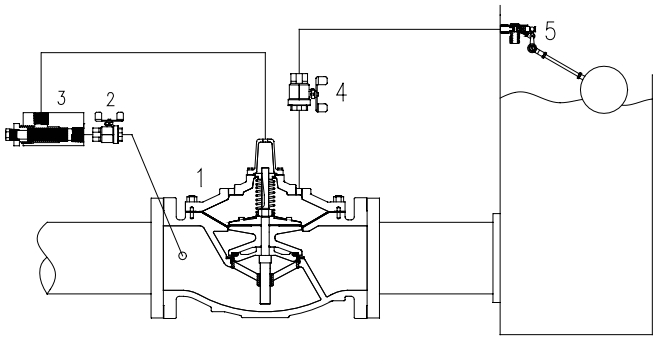


## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG, Internal Needle Stem Valve (INSV) built into stem
2. Isolation Valve
3. Strainer - 40 mesh stainless steel screen
4. Isolation Valve
5. R400 Float Pilot comes with plastic float

Note: Schematic shown for 2.5 in / 65 mm and larger

For 2 in / 50 mm and smaller, refer to Schematic A-0399C.




**Schematic A-0608D**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- Stainless Steel
- Plastic float
- Brass, Copper, Iron

Note: The stilling well and the connections between the main valve and the R-400 pilot are provided by others.

## SELECTION SUMMARY

1. Generally select line size to minimize losses during normal forward flow.
2. Use the performance curves and sizing bulletin to check the pressure drop across the valve at normal flow rate.
3. Check the maximum operating pressure against the maximum working pressure rating of the flanges.
4. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
5. If the inlet pressure is less than 10 psi / 0.7 bar higher than the maximum reservoir head, consult with Singer Valve.
6. Assisted opening may be required for full flow.
   - for non-modulating (on-off) service, refer to model 106-F-Type 5 / 206-F-Type 5 float valve
   - for high tower reservoir, refer to models 106-A-Type 1 / 206-A-Type 1, or 2, or 3, or 4 Altitude Control valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

Single chamber (106) or (206)

| 106-F-Type 4 | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |
| Pressure Drop (PSI) | 20 | 20 | 20 | 15 | 15 | 20 | 15 | 16 | 15 |
| Pressure Drop (Bar) | 1.4 | 1.4 | 1.4 | 1.0 | 1.0 | 1.4 | 1 | 1.1 | 1.0 |

| 106-F-Type 4 | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |
| Pressure Drop (PSI) | 15 | 15 | 15 | 16 | 11 | 17 | 8.6 | 9.6 | 8.6 |
| Pressure Drop (Bar) | 1.0 | 1.0 | 1.0 | 1.1 | 0.8 | 1.2 | 0.6 | 0.7 | 0.6 |

| 206-F-Type 4 | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |
| Pressure Drop (PSI) | 19 | 15 | 17 | 21 | 17 | 17 | 18 | 23 | 22 |
| Pressure Drop (Bar) | 1.3 | 1.0 | 1.2 | 1.4 | 1.2 | 1.2 | 1.2 | 1.6 | 1.5 |

| 206-F-Type 4 | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 55470 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3500 |
| Pressure Drop (PSI) | 21 | 21 | 17 | 17 | 17 | 17 | 17 |
| Pressure Drop (Bar) | 1.4 | 1.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |

# MODELS 106-F-TYPE 5 / 206-F-TYPE 5 NON-MODULATING FLOAT VALVE

## KEY FEATURES

- No overflow, drip-tight close
- Adjustable draw down
- Easily adjustable level settings
- Low supply pressure options

## PRODUCT OVERVIEW

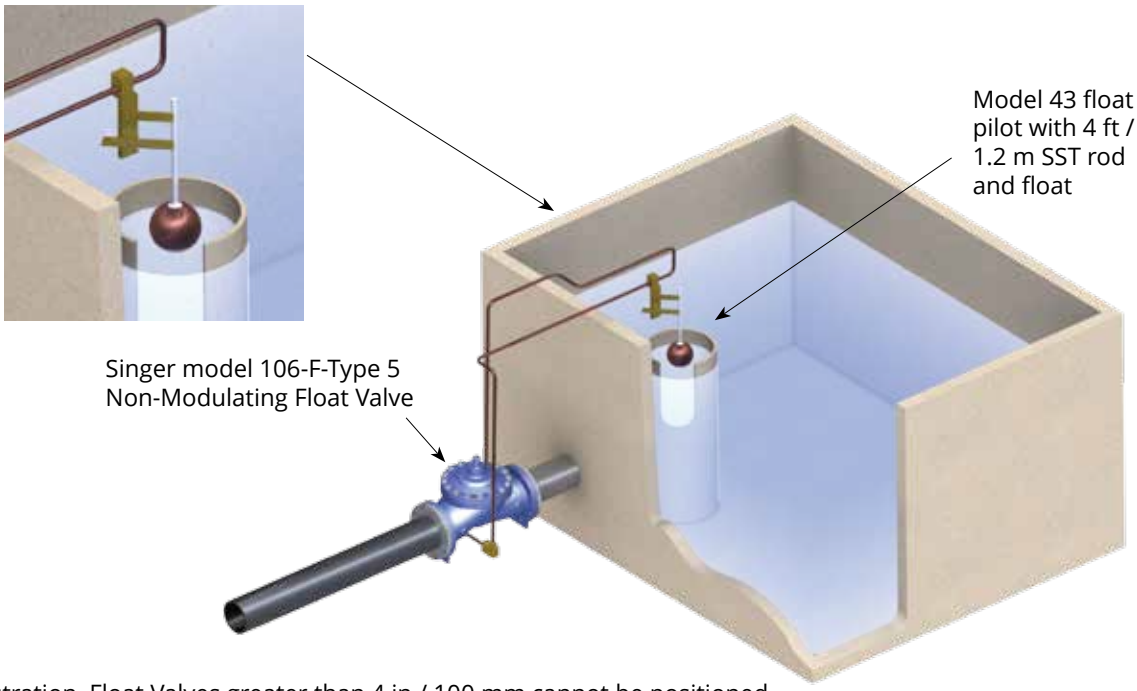
The 106-F-Type 5 and 206-F-Type 5 non-modulating float valves are based on the 106-PG or 206-PG main valve. It is ideal for allowing normal forward flow to fill water reservoirs to a desired high level and where the pilot and valve of the reservoirs are easily accessible.

The valve functions as a two position valve, either open or closed. The valve remains closed when the reservoir level drops, until the float reaches the pre-determined adjustable minimum reservoir level. The F-Type 5 valve then opens to refill the reservoir and closes tightly when high water level is achieved.

## TYPICAL APPLICATION

Non-modulating float valves are typically used in buildings with reservoir tanks or installations where the valve and pilot are readily accessible.

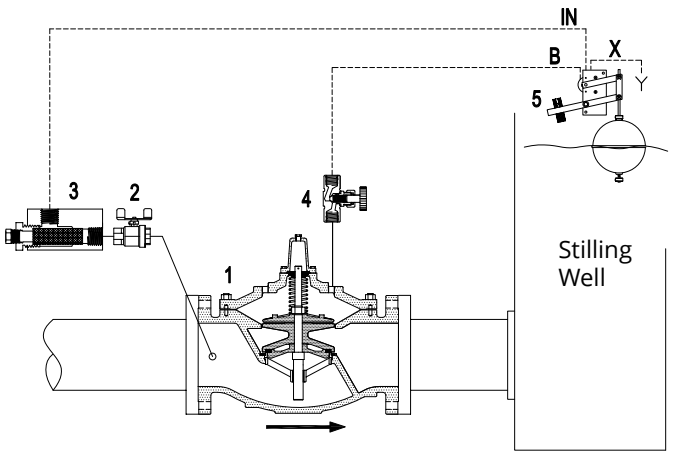
The on / off service ensures that the reservoir contents are cycled. It will also prevent over cycling of the supply pumps as the minimum quantity per cycle is adjustable.




Note:
Per illustration, Float Valves greater than 4 in / 100 mm cannot be positioned on its side.

## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolation Valve
3. Strainer - 40 mesh stainless steel screen
4. Opening / Closing Speed Control
5. Model 43 Float Pilot c/w SST float, 4 ft / 1.2 m SST rod




**Schematic A-0421C**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-62 bronze or ASTM B-16 brass
- Copper float

Note: The stilling well and the connections between main valve and pilot completed by others.

## SELECTION SUMMARY

1. Generally select line size to minimize losses during normal forward flow - see chart of maximum continuous flow below.
2. Use the performance curves and sizing bulletin to determine the pressure drop across the valve at normal flow rate.
3. Check the maximum operating pressure against the maximum working pressure rating of the flanges.
4. For pressures greater than 80 psi / 5.5 bar, consult factory
5. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
6. If the inlet pressure is less than 10 psi / 0.70 bar higher than the reservoir head, consult with Singer Valve. Assisted opening may be required for full flow.
   - To maintain a relatively steady tank level, refer to model 106-F-Type 4 / 206-F-Type 4: Modulating Float Valve, see page 166.
   - for SCADA or electronic level control, refer to model 106-2SC-PCO / 206-2SC-PCO Dual Solenoid Control Valve

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-F-Type 5 | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |
| Pressure Drop (PSI) | 20 | 20 | 20 | 15 | 15 | 20 | 15 | 16 | 15 |
| Pressure Drop (Bar) | 1.4 | 1.4 | 1.4 | 1.0 | 1.0 | 1.4 | 1 | 1.1 | 1.0 |

| 106-F-Type 5 | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |
| Pressure Drop (PSI) | 15 | 15 | 15 | 16 | 11 | 17 | 8.6 | 9.6 | 8.6 |
| Pressure Drop (Bar) | 1.0 | 1.0 | 1.0 | 1.1 | 0.8 | 1.2 | 0.6 | 0.7 | 0.6 |

| 206-F-Type 5 | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |
| Pressure Drop (PSI) | 19 | 15 | 17 | 21 | 17 | 17 | 18 | 23 | 22 |
| Pressure Drop (Bar) | 1.3 | 1.0 | 1.2 | 1.4 | 1.2 | 1.2 | 1.2 | 1.6 | 1.5 |

| 206-F-Type 5 | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 55470 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3500 |
| Pressure Drop (PSI) | 21 | 21 | 17 | 17 | 17 | 17 | 17 |
| Pressure Drop (Bar) | 1.4 | 1.4 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |

Want to allow flow to meet a predetermined demand? How about limiting the flow to a pre-set maximum? Or, preventing water loss from a catastrophic downstream pipe break? Never fear. Our flow control valves are here.

# Flow Control Valves

SINGER VALVE
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# MODELS 106-RF / 206-RF FLOW LIMITING CONTROL VALVE

## KEY FEATURES

- Accurately limits flow to a pre-set maximum
- Easily adjustable flow limit
- Paddle-style orifice plate included
- Optional orifice plate housing

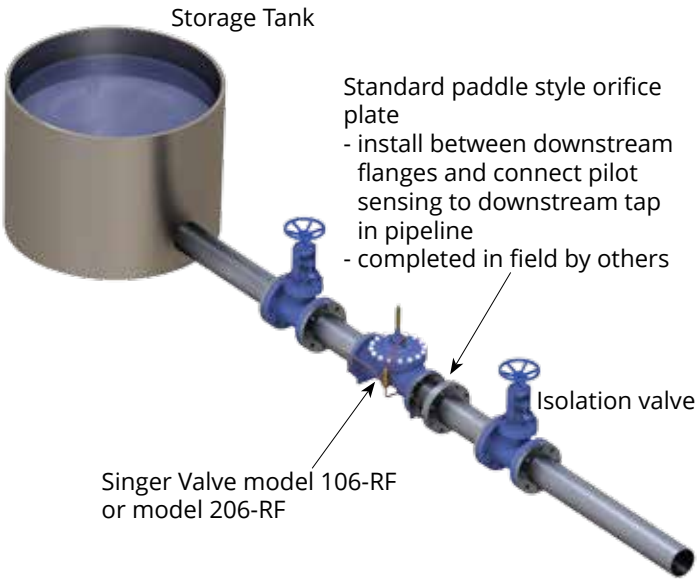
## PRODUCT OVERVIEW

The 106-RF and 206-RF flow limiting control valves are based on the 106-PG or 206-PG main valves. The valve is ideal for limiting the flow to a pre-determined maximum (via maintaining a continuous pressure differential across an orifice).

When the pressure differential is less than the set-point, the valve opens, allowing flow to meet pre-determined demand. At the desired maximum set-point, the pilot reacts to small changes in sensing pressure and controls the main valve position by modulating the pressure above the diaphragm.

When the pressure drop across the orifice exceeds the set-point, the valve closes slightly, limiting the flow to the pre-set maximum. The orifice is usually sized to generate a pressure differential of 3 to 5 psi / 0.2 to 0.35 bar at the desired flow. Adjusting the pilot setting permits the maximum flow to be changed in the field above or below the original point.

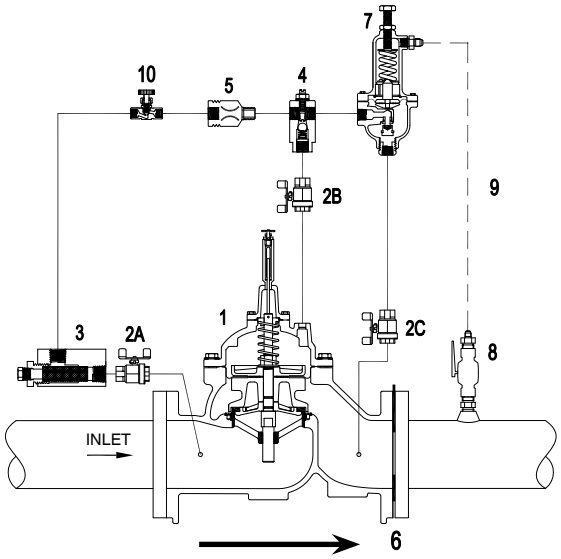
## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG with X107 position indicator
2. Isolation Valves (2A, 2B, 2C) standard
3. Strainer - 40 mesh - standard on all sizes
4. Model 26 Flow Stabilizer
   - Standard on valves 8 in / 200 mm 106, 10" / 250 mm 206
5. Fixed Restriction
6. Orifice Plate - paddle style - fits inside bolt pattern
7. Model 160-RF Rate of Flow Pilot - specify for 2 to 20 psi / 0.138 to 1.38 bar; 25 to 50 psi / 1.72 to 3.4 bar
8. 1/2 in / 15 mm Ball valve and Flare fittings - for downstream connection of sensing line to header - field install
9. 3/8 in / 10 mm Sensing Tubing - supply and installation by others
10. Optional: Closing Speed Control - model 852-B
11. Optional: Orifice Plate and Housing Assembly (not shown)

Note: SRD shown is available for 6" 106-PG and larger.




Schematic A-7427C

When the optional orifice plate and housing assembly (item 11) is included, the overall laying length of the valve assembly increases. Add 1 1/4 in / 32 mm to the published 'A' dimension for the valve model and size. The assembly is provided with a full face gasket, but bolts, nuts and washers are to be provided by others.

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B-16 brass
- Stainless steel
- Copper

## SELECTION SUMMARY

1. Determine the flow range and limit (setting) for the application - standard range 2:1 - maximum to minimum.
2. Determine the pressure drop available to provide control at the flow limit - valve plus orifice losses.
3. For the most positive control, the orifice is sized in combination with the valve to use the full pressure drop available at the maximum flow setting.
4. To calculate the pressure drop across the orifice, use the formula $P = 3 \text{ psi } (Q_{max}/Q_{min})^2$. 3 psi / 0.2 bar is a standard minimum but 2 psi / 0.138 bar is acceptable if necessary. With the orifice plate designed for a 2:1 flow adjustment range, the orifice loss would then range from 3 to 12 psi / 0.2 to 0.8 bar.
5. Use the performance curves (see Technical & Sizing Information section, page 231, and / or the chart above, to determine the valve size with sufficient capacity, with the pressure drop available. Consult with Singer Valve for precise orifice plate calculations.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| 106-RF | Flow Coefficient (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Maximum Continuous (USGPM) | Not available in these sizes | | | | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | | | | | 8 | 13 | 19 | 29 | 50 |

| 206-RF | Flow Coefficient Cv (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 106-RF | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |

| 206-RF | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-EF-8837BX / 206-EF-8837BX EXCESS FLOW (BURST CONTROL) VALVE

## KEY FEATURES

- Tight shut-off when flow exceeds a pre-determined amount
- Manual re-activation required after failure
- "Failure Signal" options available

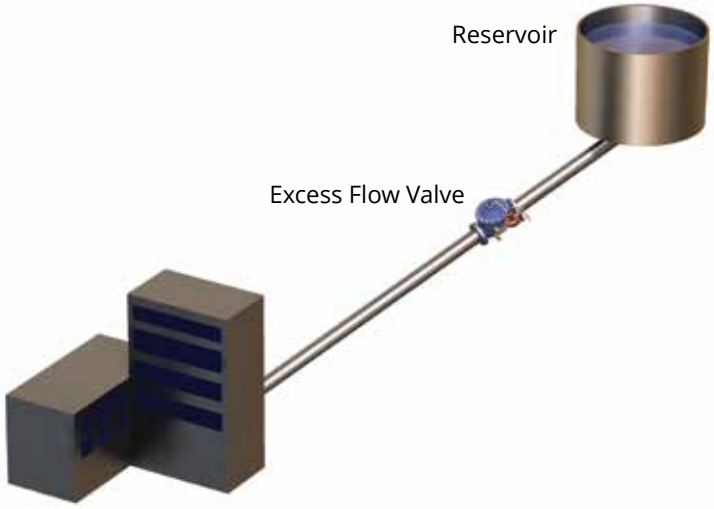
## PRODUCT OVERVIEW

The 106-EF-8837BX and 206-EF-8837BX excess flow valves are based on the 106-PT and 206-PT Double Chamber main valves. The valve is designed to shut-off tightly when flow exceeds a pre-determined amount.

The 625-RPD pilot senses the pressure drop of the valve and closes the valve when the tripping flow is reached. Typical pressure drop at tripping is 5 psi / 0.35 bar.

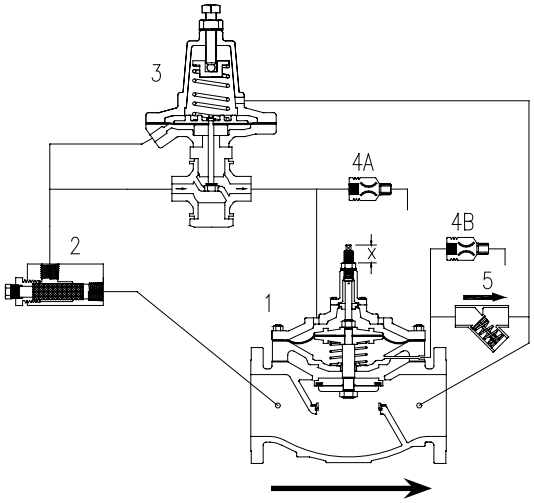
Tripping flow is adjusted by limiting the valve opening with the X102 Stroke Limiter. 10 psi / 0.7 bar inlet pressure must be maintained at the valve inlet when the valve has tripped to prevent self re-setting. This valve closes fast and from a significant velocity. If the upstream pipe is longer than 2,000 ft / 600 m, closing speed control should be included. When tripped (closed), this valve has a continuous exhaust of about 1 GPM / 0.063 L/sec to drain.

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Model 106-PT-EF / 206-PT-EF Main Valve c/w X102 Stroke Limiter
2. Strainer
3. Model 625-RPD Normally Closed Pilot
4. Fixed Restriction - 1/16 in / 1.6 mm (4A, 4B)
5. Check Valve




**Schematic A-8837BX**

## SELECTION SUMMARY

1. Confirm that the application calls for a valve that closes and remains closed if the flow momentarily exceeds the set-point, regardless of what the cause of the high flow is.
2. Using sizing charts for fully open valves, select a valve size and model that has a higher flow at 5 psi / 0.345 bar pressure drop than any anticipated tripping flow. Consider both 106 and 206 style valves. Avoid over-sizing.
3. Remember that this valve closes fast and from a significant velocity. Closing Speed Control may be required.
4. A drain may be required in chamber due to continuous exhaust when valve has tripped.
5. Ensure that flange pressure rating exceeds maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

Tripping flow

| 106-EF | Flow Capacity (See 106-PT in Main Valve section for other valve data) | | | | |
|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm |
| Maximum tripping (USGPM) | 250 | 440 | 1000 | 1700 | 2700 |
| Maximum tripping (L/s) | 16 | 28 | 63 | 107 | 170 |

| 206-EF | Flow Capacity (See 206-PT in Main Valve section for other valve data) | | | | | |
|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm |
| Maximum tripping (USGPM) | 135 | 320 | 560 | 1100 | 2200 | 3400 |
| Maximum tripping (L/s) | 9 | 20 | 35 | 69 | 139 | 215 |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**For complete specifications on electronics products, please refer to the Electronic Control Solutions Catalogue.**

# Electronic Control

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# MODELS 106-SC / 206-SC SOLENOID CONTROL VALVE

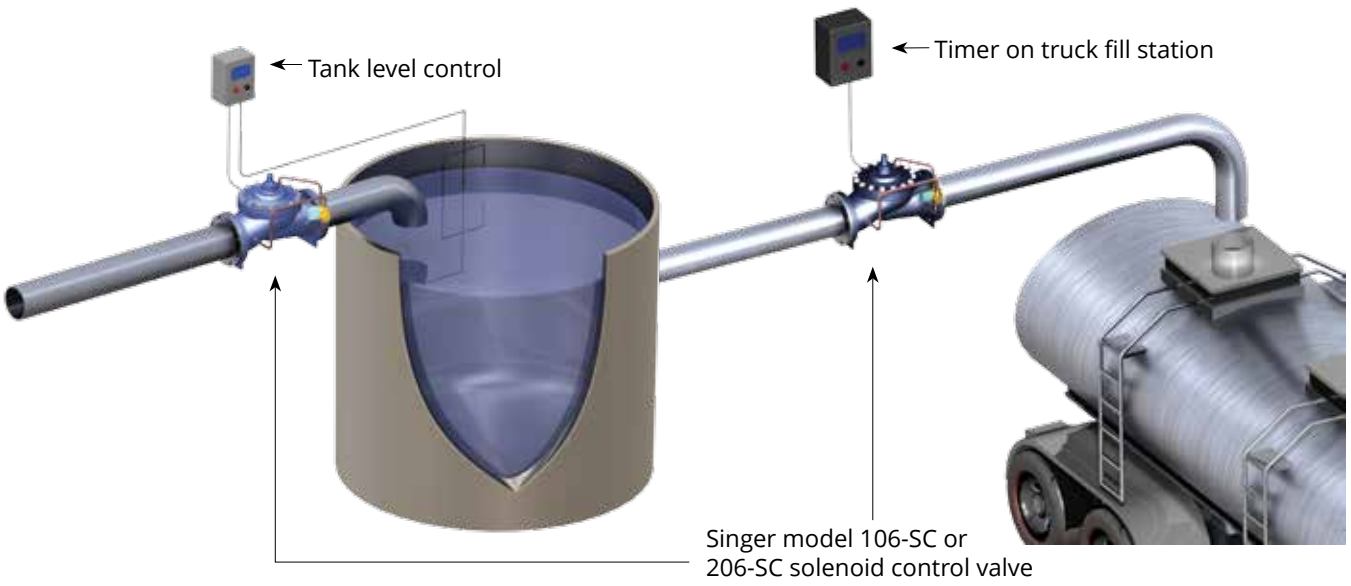
## KEY FEATURES

- Positive, drip-tight shut-off
- Simple, on-off operation
- Globe or angle style body

## PRODUCT OVERVIEW

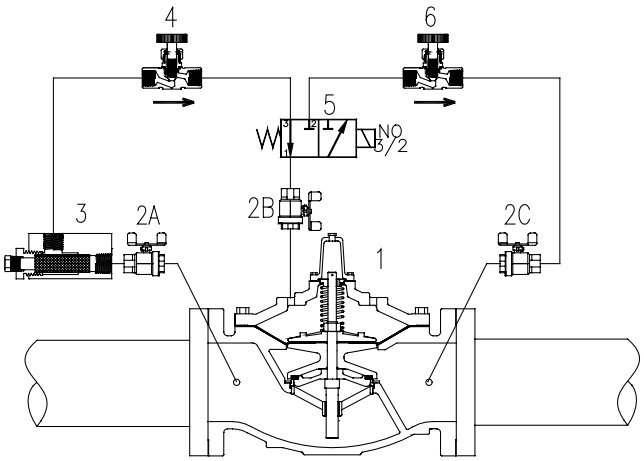
Singer models 106-SC and 206-SC solenoid control valves are based on the Singer model 106-PG or 206-PG main valve. The solenoid control valve provides on-off position operation. The solenoid either admits inlet pressure into the main valve operating chamber or releases pressure from the operating chamber. The pilot system is usually piped to discharge at the valve outlet, but can be piped to discharge to drain (atmosphere). This valve is available either with the main valve closed when the solenoid is de-energized (NC - Normally Closed) or with the main valve open when the solenoid is de-energized (NO- Normally Open). (NC or NO refers to the main valve, not the solenoid.)

## TYPICAL APPLICATION



## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolating Valves - (2A, 2B, 2C - (optional on 3 in / 80 mm and smaller).
3. Strainer - 40 mesh stainless steel screen
4. Closing Speed Control - model 852-B (optional on 3 in / 80 mm and smaller).
5. Solenoid Pilot Valve - 3 way - 120 VAC / 60 Hz standard, other voltages available
6. Opening Speed Control - model 852-B (optional on 3 in / 80 mm and smaller).




**Schematic A-0593C**

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B-16 brass
- Stainless steel trim
- Standard solenoid coil is rated as NEMA 1, 2, 3, 3S, 4 and 4X, combination general purpose and watertight
- Other voltages, ratings and constructions are available, consult with Singer Valve.

## SELECTION SUMMARY

1. Select the valve with sufficient capacity, using the allowable operating pressure drop across the valve.
2. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
3. Ensure the maximum working pressure rating of the valve exceeds the maximum operating pressure.
4. Continuous, “C”, service up to 20 ft /s / 6 m/s is generally suitable. Refer to chart and/or performance curves (see Technical & Sizing Information section, page 231).
5. Provide system maximum and minimum operating pressures, electrical voltage, etc for correct solenoid selection.
6. If control fluid is from a separate source, provide Singer Valve with details.
   - For valve positioning - process control, see section 2SC-PCO, Dual Solenoid Control Valve, page 185.
   - For two (2) stage opening or closing, consult with Singer Valve.
   - Most pilot functions may be combined with the model SC, consult Singer Valve.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

1 Single chamber (106) or (206)

2. Solenoid voltage
3. Energize or de-energize solenoid to close main valve

| 106-SC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 75 mm | 100 mm |
| Minimum (USGPM) Fflat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-SC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |

| 206-SC | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphrgam | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphrgam | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| 206-SC | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODELS 106-2SC-PCO / 206-2SC-PCO
# DUAL SOLENOID CONTROL FOR POSITIONING AND SCADA CONTROLS

## KEY FEATURES

- Precise control from remote locations
- Process controller compatible
- Minimal power needed for stand-by operation
- Complete service in-line
- Manual controls for emergencies

## PRODUCT OVERVIEW

The Singer models 106-2SC-PCO and 206-2SC-PCO dual solenoid electronic valves are based on the Singer model 106-PG or 206-PG main valve.

The flow into and out of the upper operating chamber is controlled by the two pilot solenoids. The electronic control determines whether the opening solenoid or the closing solenoid is operated. The change in valve position is dependent upon which solenoid is operated and the duration of the energized period.

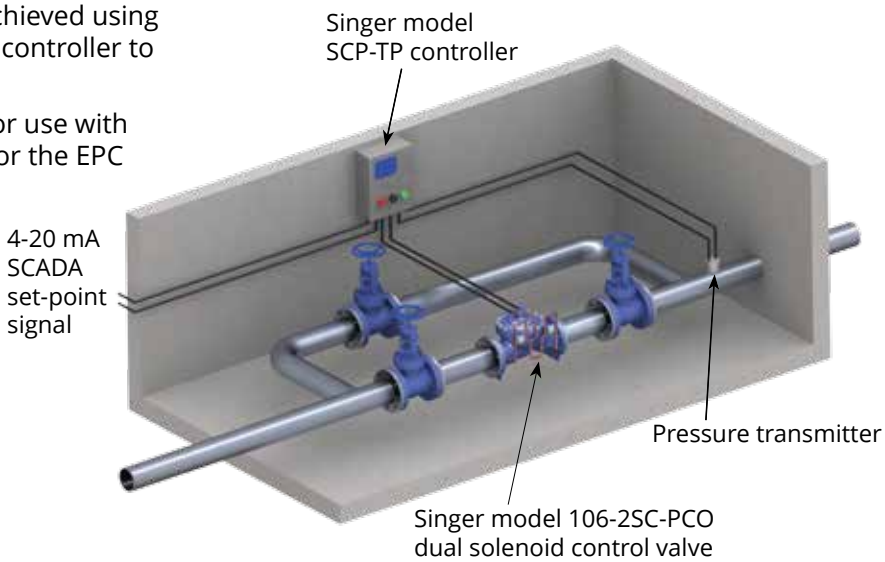
The electronic control determines the valve function. Virtually any hydraulic function can be achieved using the "open-close" output from the SCADA controller to the valve.

The Singer Model 2SC-PCO is designed for use with Singer MCP Multi-Process Control Panel or the EPC Single-Process Control Panel.

## TYPICAL APPLICATION

The two pilot solenoids are operated to keep two independent signals matched. In this case, the valve is operated to ensure the "process variable signal" follows the "SCADA set-point command signal".

Typically this mode is used when the process variable signal is from a flow meter, pressure sensor or similarly quick changing process. This is referred to as "set-point control".



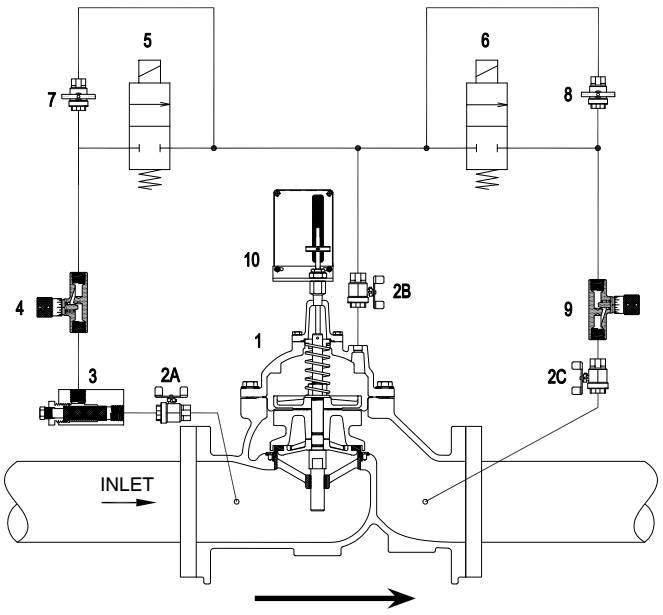
## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolating Valves - (2A, 2B, 2C)
3. Strainer - 40 mesh stainless steel screen
4. Closing Speed Control - micrometer needle valve
5. Closing Solenoid Pilot Valve - 120 VAC / 60 Hz standard, other voltages available
6. Opening Solenoid Pilot Valve - 120 VAC / 60 Hz standard, other voltages available
7. Manual Closing Bypass
8. Manual Opening Bypass
9. Opening Speed Control - micrometer needle valve

10*. Optional X156 Analog Position Transmitter (4 to 20 mA)

*Note*: All 106 series 2 1/2 in / 65 mm to 4 in / 100 mm and all 206 series 4 in / 100 mm to 6 in / 150 mm will be fitted with heavy springs.

Note: SRD shown is available for 6" 106-PG and larger.




Schematic A-7637A

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-16 brass
- AISI 316 or 18-8 stainless steel trim
- NEMA 4X rated solenoid coils

## SELECTION SUMMARY

1. Select a valve with sufficient capacity, using the allowable operating pressure drop across the valve.
2. Usually operating in the continuous, "C", service range up to 20 ft /s / 6 m / s - (refer Technical & Sizing Section, page 231).
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Ensure the max working pressure rating of the valve exceeds the max operating pressure.
5. Ensure the solenoid coils are compatible with the electronic controllers - 120 VAC / 60 Hz standard.
6. Verify that the electronic controls are properly configured to provide the functions required.
   - for compatible electronic controls, refer to Singer Process Control Panels, pages 203, 204
   - for applications requiring high pressure drops, refer to Singer model 106-AC, page 78.
   - standard hydraulic pilots can provide back-up control should the system go off limits
   - for applications where electric service and electronic controls are unsuitable, refer to the standard hydraulic model
   - addition of Position Transmitter and Differential Pressure Transmitter or SPI-MV are required for metering function.

# ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Inlet / outlet pressure range
3. Solenoid voltage
4. Standard power failure mode is fail at last position – specify options
   a. Fail open on power failure
   b. Fail close on power failure

| 106-2SC-PCO | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 2-1/2 in | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | CF | CF | 10 | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | CF | CF | 0.63 | 1.26 | 2.52 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | CF | CF | 800 | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Maximum Continuous (L/s) | CF | CF | 50 | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |

| 206-2SC-PCO | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Flat Diaphragm | CF | 5 | 10 | 20 | 40 | - | - | - | - | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | CF | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.63 | 0.63 | 0.63 | 0.63 | 1.3 |
| Maximum Continuous (USGPM) | CF | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | CF | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

Note: CF = Consult Singer Valve on all sizes 3" (80 mm) and under

# MODELS 106 2PR-SC-BT / 206 2PR-SC-BT DUAL ADJUSTABLE SET POINT PRESSURE REDUCING VALVE USING SOLENOID CONTROL

## KEY FEATURES

- Two Adjustable Outlet Pressure Set Points (Daytime / Night)
- Selectable Using Battery Operated Control
- Pressure Reducing Valve with two set points, high pressure and low pressure
- Time-based selection via latching solenoid and timer
- Self-contained, powered by a 9-volt battery (1 controller, 1 programmer)
- 24/7 time settings (can skip days)
- Multiple time selection possible (up to 10 time settings per 24 hour period)
- Reduces system pressure when not needed (low flow demand or night time), supplies increased pressure when required (high flow demand or day time)
- Recommended for systems where no external power source is available

## PRODUCT OVERVIEW

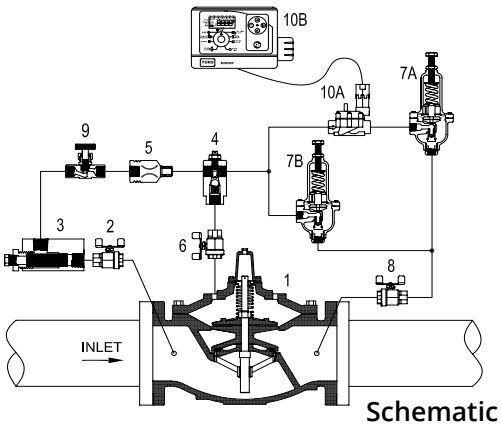
The 106 2PR-SC-BT and 206 2PR-SC-BT dual adjustable set point pressure reducing valve using solenoid control is based on the 106-PG or 206-PG valve.

The valve is installed with two PR pressure reducing pilots, one set to low pressure, the other to high pressure. The pilot senses the downstream pressure through a connection to the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating relatively steady as the pilot set points.

The high pressure pilot can be isolated by means of a battery operated latching solenoid. This solenoid is controlled using a fully programmable controlled which is user set to give higher and lower pressure based on time. The solenoid is energized to open and switch to the high pressure pilot from the normal low pressure pilot setting.

## SCHEMATIC DRAWING

1. Main Valve – 106-PG or 206-PG
2. Isolation Valve
3. Strainer
4. Model 26 Flow Stabilizer / Opening speed control
- Standard (106 or 206) on flat diaphragm
- Optional on rolling (S106 or S206) diaphragm valves
5. Fixed Restriction
6. Isolation Valve
7. Pressure Reducing Pilot – 160 model
7A. High setting
7B. Low setting
8. Isolation Valve
9. Closing speed control – Model 852-B – Optional
10. Solenoid Valve and Controller
10A. Low Flow valve with Potted Latching Solenoid
10B. Control module with bracket, 9VDC




Schematic A-8487A51

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B62 bronze or ASTM B16 brass
- AISI 303/316 stainless steel trim
- Buna-N / EPDM diaphragm and seals

## SELECTION SUMMARY

1. Select the valve series and size with sufficient capacity.
2. Check the operating flow against valve minimum.
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Ensure that the flange rating exceeds the maximum operating pressure.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Single chamber (106) or (206)
2. Pilot range

| **106-PR-SC** | **Flow Capacity** (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 1/2 in | 3/4 in | 1 in | 1-1/4 in | 1-1/2 in | 2 in | 2-1/2 in | 3 in | 4 in |
| Size (mm) | 15 mm | 19 mm | 25 mm | 32 mm | 40 mm | 50 mm | 65 mm | 80 mm | 100 mm |
| Minimum (USGPM) Flat Diaphragm | 1 | 1 | 1 | 1 | 1 | 5 | 5 | 5 | 10 |
| Minimum (L/s) Flat Diaphragm | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.6 |
| Maximum Continuous (USGPM) | 12 | 19 | 49 | 93 | 125 | 210 | 300 | 460 | 800 |
| Maximum Continuous (L/s) | 0.8 | 1 | 3 | 6 | 8 | 13 | 19 | 29 | 50 |

| 106-PR-SC | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25800 | 55470 |
| Maximum Continuous (L/s) | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1628 | 3500 |

| **206-PR-SC** | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 5 | 10 | 20 | 40 | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.19 | 0.19 | 0.19 | 0.19 |
| Maximum Continuous (USGPM) | 300 | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 |
| Maximum Continuous (L/s) | 19 | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 |

| **206-PR-SC** | **Flow Capacity** (See 206-PG in Main Valve section for other valve data) | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (inches) | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in | 40 in |
| Size (mm) | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm | 1000 mm |
| Minimum (USGPM) Rolling Diaphragm | 3 | 3 | 10 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Rolling Diaphragm | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 | 62000 |
| Maximum Continuous (L/s) | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 | 3912 |

# MODEL 106-SPI-MV
# SINGLE POINT INSERTION FLOW METERING VALVE

## KEY FEATURES

- Accurate flow metering, combined with control valve to save space/cost
- Supplied with Flow Convertor for local display with 4-20mA output measurement or can be combined with PLC-based control panel for flow control applications
- +/- 2% of rate accuracy, NIST traceable

## PRODUCT OVERVIEW

The Singer Model 106-SPI-MV is a Single Point Insertion Electromagnetic Flow Meter, installed and calibrated in conjunction with a Singer Valve to provide an accurate flow rate that can be utilized with the metering valve as a stand alone option or built into a 106-2SC-PCO pilot system to provide complete flow-based valve control.

The sensor is available for one-inch taps, depending upon valve size and application.

The compact insertion design fits in confined spaces and offers complete accessibility. The flow meter can be removed for easy inspection, cleaning, calibrating or verification.

This cost effective flow meter option is available for valve sizes from 3" (80mm) to 36" (900mm) inches. The flow sensor comes pre-calibrated from McCrometer's NIST traceable Calibration Lab and requires no recalibration in the field. With no moving parts and a single-piece design, the SPI Mag's sensor contains nothing to wear or break, and it is generally immune to clogging by sand, grit or other debris.

The 106-SPI-MV Mag is profiled for the valve body, further enhancing its measurement accuracy by allowing precise determination of mean velocities.

## SCHEMATIC DRAWING

1. Main Valve - Model 106-PG
2. Model SPI - Single Point Insertion Meter
3. Local Converter - Flow Indicating Transmitter

Note: Local IP67 Converter is standard.

**Optional enclosures are:**

- Stainless Steel IP66 - NEMA 4 - Panel Mounted (optional)
- Fibreglass NEMA 4X - Panel Mounted (optional)
- SS IP66 - NEMA 4X - Panel Mounted (optional)
- Polycarbonate IP67 NEMA 6 - Panel Mounted (optional)

## STANDARD MATERIALS

Standard materials for converter enclosures are:

- IP67 Die cast aluminum - Local
- SS IP66 - NEMA 4 - Panel Mounted (optional)
- Fibreglass NEMA 4X - Panel Mounted (optional)
- Polycarbonate IP67 NEMA 6 - Panel Mounted (optional)

## SELECTION SUMMARY

1. Allow 3 pipe diameters minimum upstream of sensor
2. These units can be installed with Singer AC (Anti-Cav) cages
3. Sensor can be installed on either side of valve - inlet only

## ORDERING INSTRUCTIONS

Refer to page 245 for the order form. Please be prepared to provide the following information:

- Valve size
- Pressure
- Minimum flow
- Fluid
- Cable length
- Temperature

| 106-SPI-MV | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 20 in | 24 in | 28 in | 36 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 500 mm | 600 mm | 700 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | 5 | 10 | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | 0.5 | 1 | 3 | 3 | 3 | 10 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | 0.3 | 0.6 | - | - | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | 0.03 | 0.06 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | 460 | 800 | 1,800 | 3,100 | 4,900 | 7,000 | 11,000 | 17,500 | 25,000 | 33,600 | 55,470 |
| Maximum Continuous (L/s) | 29 | 50 | 114 | 196 | 309 | 442 | 694 | 1,104 | 1,577 | 2,120 | 3,500 |

# MODELS 106-2SC-MV / 206-2SC-MV ELECTRONIC FLOW CONTROL AND METERING VALVE

## KEY FEATURES

- Combines precise flow control with relatively accurate flow metering, save space / cost
- PLC-based control panel is compatible with your SCADA system
- Manual control is available in case of emergencies
- Re-transmission capabilities
- Can be field retrofitted to existing valves
- +/- 3% accuracy, certified by NIST approved testing laboratory (on select sizes)

## PRODUCT OVERVIEW

The Singer models 106-2SC-MV and 206-2SC-MV electronic flow control and metering valves are based on the 106-PG or 206-PG main valve.

The pressure in the upper operating chamber is controlled by operating the pilot solenoids. The PLC within the MV1-TP control panel determines whether the opening solenoid or the closing solenoid is operated. The change in valve position is dependent upon which solenoid is operated and the duration of the energized period.

The Singer MV1-TP control panel computes the flow rate based on valve differential pressure and position and operates the pilot solenoids to match the flow rate to the customer's pre-determined (adjustable) set-point. Flow is totalized and displayed via panel readout. In addition, the MV1-TP panel includes a pre-programmed logic controller, touch screen display, labelled wiring and terminal strip.

## TYPICAL APPLICATION

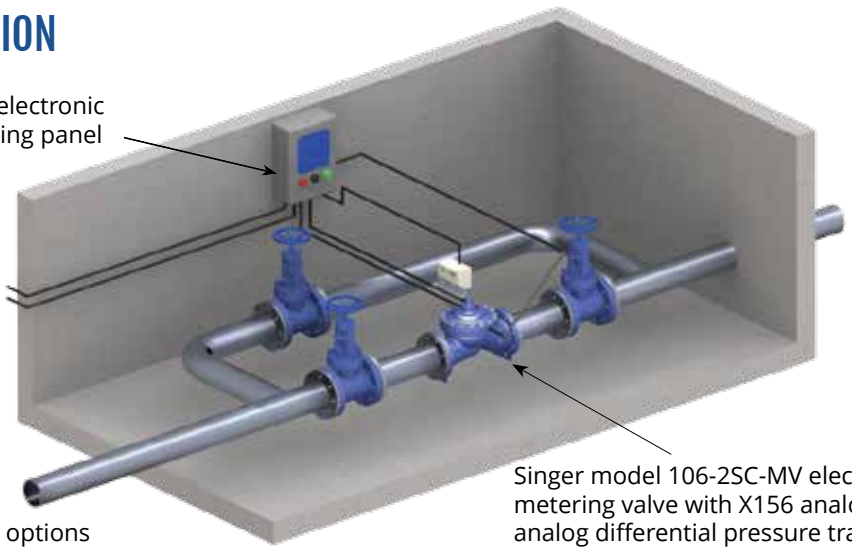
Singer model MV1 -TP electronic flow control and metering panel

Power supply: 120 VAC / 60 Hz

Set-point signal: local or remote

To and from SCADA.

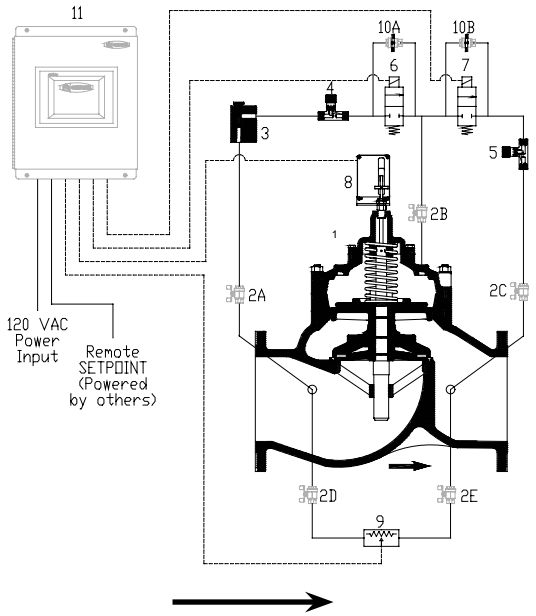
See available SCADA interface options (page 197)



Singer model 106-2SC-MV electronic flow control and metering valve with X156 analog position transmitter, analog differential pressure transmitter, MV1-TP flow limiting and metering panel, dual solenoid control pilot system.

## SCHEMATIC DRAWING

1. Main Valve - 106-PG or 206-PG
2. Isolating Valves - (2A, 2B, 2C, 2D, 2E)
3. Strainer - 40 mesh stainless steel screen
4. Closing Speed Control
5. Opening Speed Control
6. Closing Solenoid Pilot Valve - 120 VAC / 60 Hz standard, other voltages available
7. Opening Solenoid Pilot Valve - 120 VAC / 60 Hz standard, other voltages available
8. Model X156 Analog (4-20 mA) Position Transmitter
9. Differential Pressure Transmitter
10. Manual By-Pass Valves - (10A, 10B) - normally closed
11. Model MV1-TP Electronic Flow Control Panel




Schematic A-8450C

## STANDARD MATERIALS

Standard materials for pilot system components are:

- ASTM B-16 brass fittings, copper tubing
- NEMA 4X solenoid coils
- NEMA panel enclosure

## SELECTION SUMMARY

1. Select a valve with sufficient capacity, using the allowable operating pressure drop across the valve. Usually line size.
2. Usually operating in the continuous “C”, service range up to 20 ft /s / 6 m/s - refer to chart and/or performance curves (see Technical and Sizing Information section, page 231).
3. If the outlet pressure is less than 35% of the inlet pressure, check for cavitation.
4. Ensure the maximum working pressure rating of the valve exceeds the maximum operating pressure.
5. Ensure the solenoid coils are compatible with the electronic controllers - 120 VAC / 60 Hz standard.
6. If the operating pressure differential across the valve will exceed 100 psi / 6.9 bar, consult Singer Valve. For applications requiring high pressure drops, refer to Singer model PG-AC (see page 78).

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

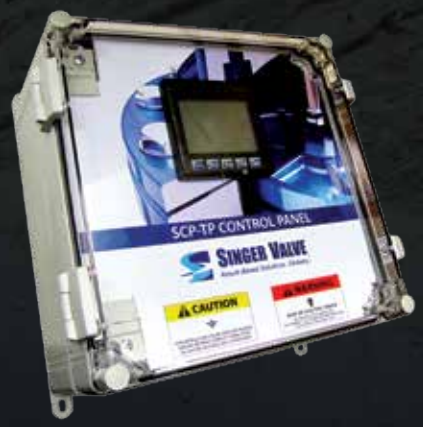
1. Single chamber (106) or (206)
2. Inlet / outlet pressure range
3. Solenoid voltage
4. Optional NEMA 4x control panel enclosure

| 106-2SC-MV | Flow Capacity (See 106-PG in Main Valve section for other valve data) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 2-1/2 in | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 14 in | 16 in | 20 in | 24 in | 36 in |
| Size (mm) | 65 mm | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 350 mm | 400 mm | 500 mm | 600 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | CF | CF | 10 | 20 | 40 | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | 1 | 1 | 3 | 3 | 3 | 3 | 10 | 10 | 20 |
| Minimum (L/s) Flat Diaphragm | CF | CF | 0.6 | 1.3 | 2.5 | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 1.3 |
| Maximum Continuous (USGPM) | CF | CF | 800 | 1800 | 3100 | 4900 | 7000 | 8500 | 11000 | 17500 | 25000 | 55470 |
| Maximum Continuous (L/s) | CF | CF | 50 | 114 | 196 | 309 | 442 | 536 | 694 | 1104 | 1577 | 3500 |

| 206-2SC-MV | Flow Capacity (See 206-PG in Main Valve section for other valve data) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Size (inches) | 3 in | 4 in | 6 in | 8 in | 10 in | 12 in | 16 in | 18 in | 20 in | 24 x 16 in | 24 x 20 in | 28 in | 30 in | 32 in | 36 in |
| Size (mm) | 80 mm | 100 mm | 150 mm | 200 mm | 250 mm | 300 mm | 400 mm | 450 mm | 500 mm | 600 x 400 mm | 600 x 500 mm | 700 mm | 750 mm | 800 mm | 900 mm |
| Minimum (USGPM) Flat Diaphragm | CF | 5 | 10 | 20 | 40 | - | - | - | - | - | - | - | - | - | - |
| Minimum (USGPM) Rolling Diaphragm | - | - | - | - | - | 3 | 3 | 3 | 3 | 3 | 3 | 10 | 10 | 10 | 10 |
| Minimum (L/s) Flat Diaphragm | CF | 0.3 | 0.6 | 1.3 | 2.5 | - | - | - | - | - | - | - | - | - | - |
| Minimum (L/s) Rolling Diaphragm | - | - | - | - | - | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.6 | 0.6 | 0.6 |
| Maximum Continuous (USGPM) | CF | 580 | 1025 | 2300 | 4100 | 6400 | 9230 | 16500 | 16500 | 16500 | 21700 | 33600 | 33650 | 33700 | 33800 |
| Maximum Continuous (L/s) | CF | 37 | 65 | 145 | 260 | 404 | 582 | 1040 | 1040 | 1040 | 1370 | 2120 | 2123 | 2126 | 2132 |

Note: CF = Consult Singer Valve on all sizes 3" (80 mm) and under

# SCP-TP
# SINGLE-PROCESS CONTROL PANEL




## KEY FEATURES

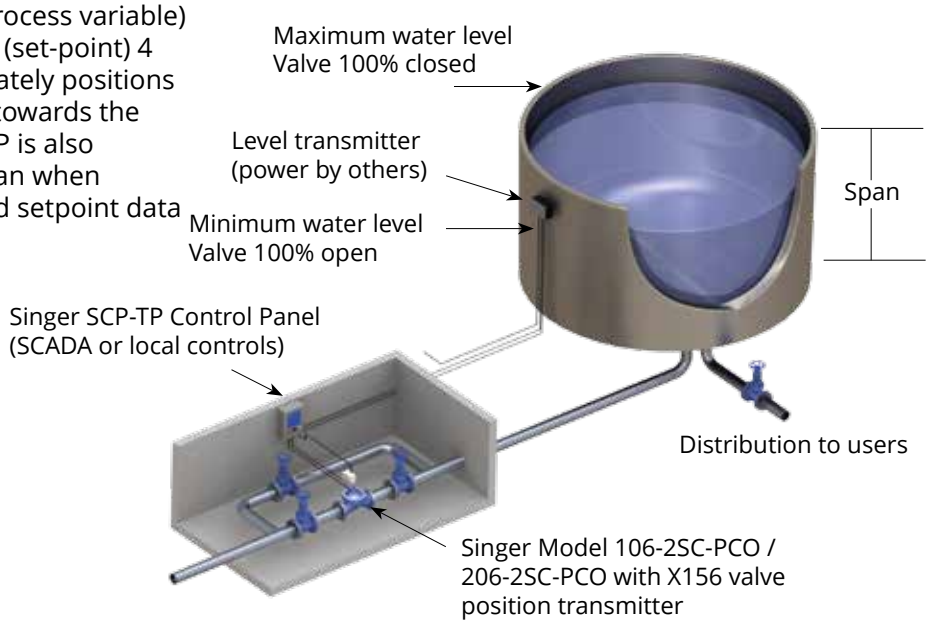
- Compatibility with remote SCADA Modbus, Hardwired 4 to 20 mA or local set-pointadjustment
- Simplified single loop process controller with P.I.D. implementation, ON/OFF or 4-20mA motor control
- Selectable input controls and output alarms
- IP 66, 67 NEMA 4X rated panel
- Colour touch screen interface display
- Equipped with data logging features
- For indoor use only. For outdoor applications, consult factory.

## PRODUCT OVERVIEW

The SCP-TP Controller is a simplified process controller designed to complement the Dual Solenoid Control Valve. It offers quick and easy configuration for any single process application as well as on/off applications. The SCP-TP is also equipped to be configured to control the Singer 420DC Motor. Range of application is dependent on the process variable (feedback) transmitter used, which includes (but not limited to) common automatic control valve functions with conventional pilots. The SCP-TP Controller reads and compares the process feedback (process variable) 4 to 20 mA signal to the desired setting (set-point) 4 to 20 mA signal. The SCP-TP then accurately positions the valve to bring the process variable towards the set-point until they coincide. The SCP-TP is also equipped with data logging features than when enabled can log all sensor feedback and setpoint data with a time stamp.

## IDEAL FOR

- Level control
- Pressure control
- Flow control
- Position control
- Data logging
- 420-DC/AC Control



# LCP–TP
# LEVEL CONTROL PANEL

## KEY FEATURES

- Compatibility with remote SCADA Modbus, Hardwired 4 to 20 mA or local set-point adjustment
- Simplified ON/OFF level controller for 4-20mA sensor or high/low level switch implementation
- Selectable input controls and output alarms
- IP 66, 67 NEMA 4X rated panel
- Black and white interactive button display screen
- Equipped with data logging features


## PRODUCT OVERVIEW

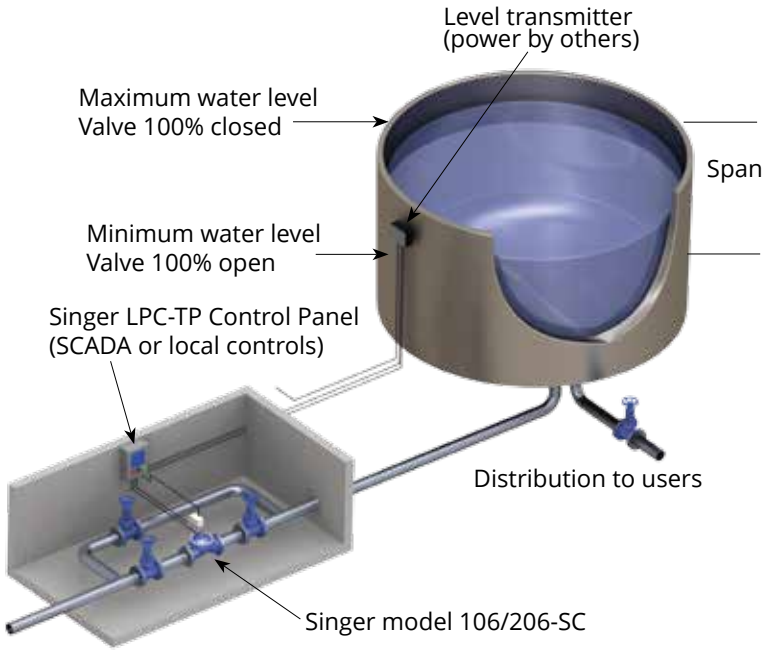
The LCP-TP Level Controller is a single process level controller designed to complement Singer's Single Solenoid Operated/Override Control Valves and 4-20mA level sensor or High/Low Level Switches. This combination package is ideal for filling any kind of tank with water that requires filling to a level setpoint and then drawing down the level of the tank to a secondary setpoint before activating the fill cycle again thus ensuring tank turnover.

The LCP-TP offers quick and easy configuration that allows the LCP-TP Controller to read and compare the level 4 to 20 mA signal to the desired setpoint. The LCP-TP then opens or closes the Singer control valve to achieve the desired level setpoint. If a High/Low level switch system is preferred the LCP-TP can easily switch configuration to allow for level switch inputs and control the Singer Valve accordingly. Additionally the LCP-TP is also equipped with data logging features than when enabled can log all sensor feedback and setpoint data with a time stamp allowing for system analysis.

## IDEAL FOR

- Level control
- Data logging

## TYPICAL APPLICATION



# MODEL MCP-TP
# MULTI PROCESS CONTROL PANEL SERIES

## KEY FEATURES

- Compatibility with remote SCADA , Hardwired 4 to 20 mA or local set-point(s) adjustment
- Flexibility of single or multiple process monitoring and control
- Optional 1 panel for multi- valve application
- Precise valve positioning and visual status indication
- Robust and self-contained in NEMA 4X rated panel
- Colour touch screen interface display


For indoor use only. For outdoor applications, consult factory.

## PRODUCT OVERVIEW

The MCP-TP Series is a multiple process loop control panel designed to complement the Singer Model 2SC-PCO Dual Solenoid Control Valve. Range of application is dependent on the feedback (process variables) transmitters used, which is similar to (but not limited to) combination automatic control valve functions with conventional pilots. The MCP-TP control panel has the ability to monitor multiple processes and remotely control the dual solenoid control valve based on system conditions. The MCP-TP control panel can function as a simple single loop controller (eg. pressure reducing, flow control, level control) or as a multiple loop controller (eg. flow and pressure, or reducing and sustaining).

The MCP-TP reads transmitted signals and energizes the dual solenoid pilots on the Singer control valve. The MCP-TP can react to any change in conditions by monitoring the system continuously and comparing actual process values to desired set-point values.

The Multi-Process Control Panel incorporates a high performance PLC-based control with P.I.D. optimization to provide control of multiple processes, such as pressure reducing, flow control, level and sustaining. Singer will customize the program to match your specific application needs. Optional alarm outputs for SCADA is available.

## TOUCH PANEL

Model (MCP-TP) touch panel screen is a user-friendly operator interface that enables intuitive control and monitoring. Model (MCP-TP) touch panel screen eliminates the need for mechanical push buttons, switches, and indicator lights and readouts. The screen is custom tailored to customer-specific application requirements.

**Touch Panel Details**

Dimensions: 7 in / 175 mm W x 5 in / 125 mm L

Display: 256 Color TFT

Protection: NEMA 4X rain-tight (indoor use only)

Screen can be customized to application

## ORDERING INSTRUCTIONS

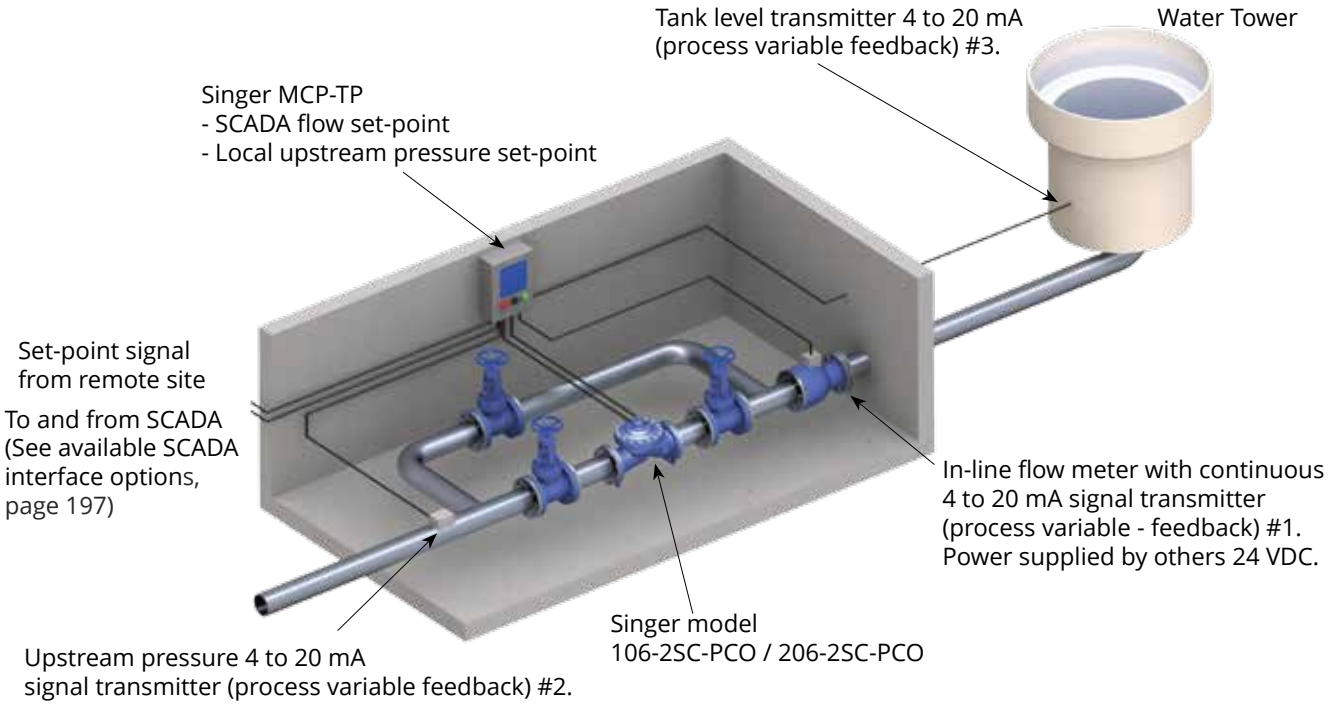
Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Application details
2. Solenoid voltage
3. Source of set-point signal (4-20 mA)
4. Source of process variable signal(s)
5. Number of processes to be controlled

## TYPICAL APPLICATION

MCP-TP monitors inlet pressure while filling tank at a relatively steady flow rate. If tank is full, valve closes. If inlet pressure drop below normal, valve will modulate to close to keep inlet pressure from dropping further.



# SAP PANEL FOR MODEL RPS-L&H-ET SURGE ANTICIPATOR PANEL

## KEY FEATURES

- Automatically interfaces pressure switch and control valve to protect system from destructive pressure surges
- Visual indication of operational status
- Simple to install
- Minimizes field wiring costs

For indoor use only. For outdoor applications, consult factory.

## PRODUCT OVERVIEW

The SAP Surge Anticipator Panel provides the interface between a customer supplied, system pressure switch and the Singer Surge Anticipating control valve. Together they provide protection against destructive pressure surges.

The SAP panel energizes the control valve pilot solenoid on an abnormally low pressure reading and/or power failure of pumps. The 12 VDC pilot solenoid is energized to open the main valve and relieve the surge pressure from the system. The RPS-L&H-ET (ET - Electronically Timed) valve is equipped with a hydraulic pilot to relieve on abnormally high pressures.

The SAP panel is equipped with adjustable digital delay timers that permit coordination of valve operation with pump start-ups, shutdowns, power failures and down surges.

The SAP panel comes equipped with a long life, high capacity 12 VDC battery, industrial grade battery charger with over current and polarity protection, door mounted volt meter, and battery test feature.

The logical arrangement of indicator lights and the volt meter provide easy supervision of the sequencing and the operating status.

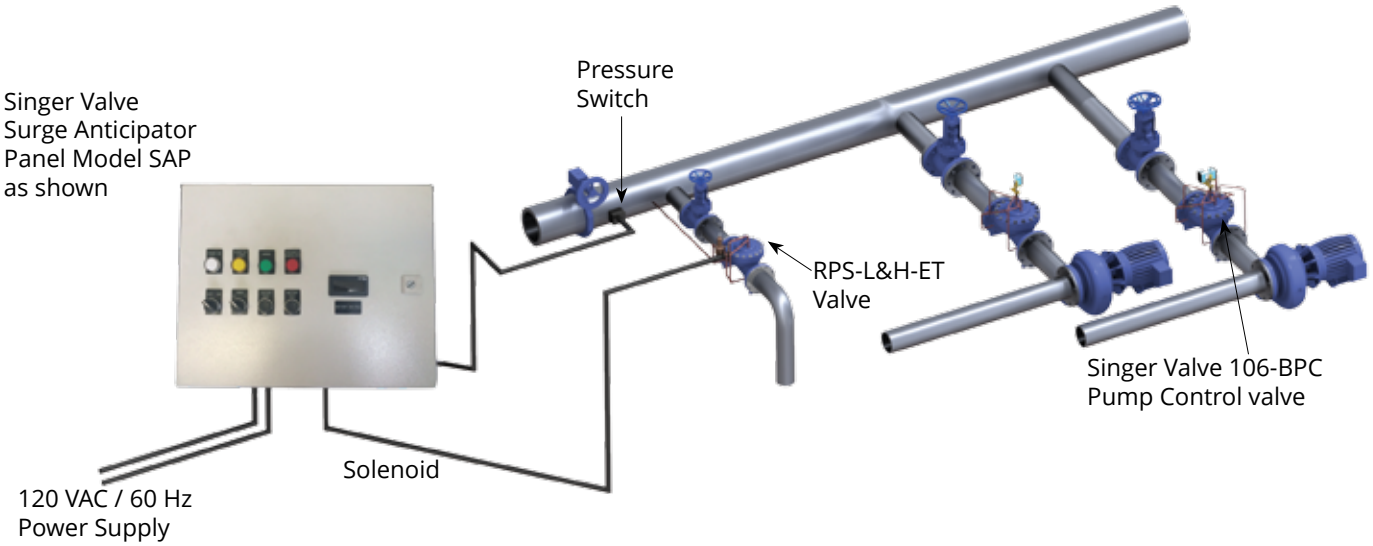
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

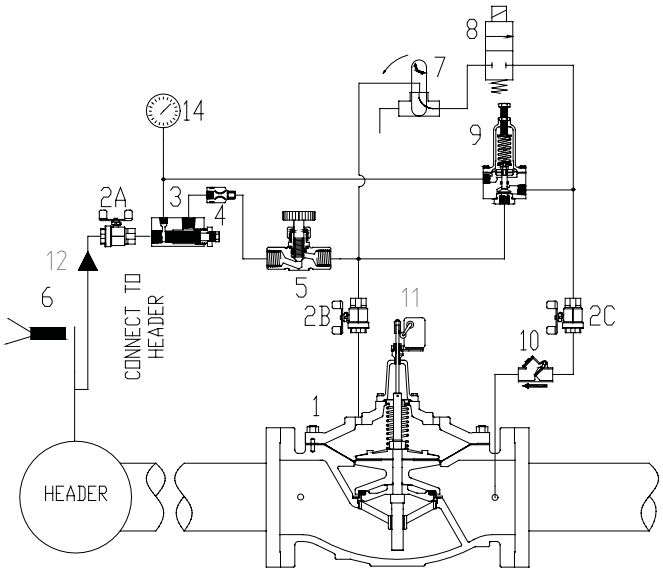
- Optional pressure switch

## TYPICAL APPLICATION




## SCHEMATIC DRAWING

1. Main Valve - 106 / 206-PG
2. Isolating Valve (2A, 2B, 2C)
3. Strainer - 40 mesh, J0097A
4. Fixed Restriction - 3/32 in / 2.4 mm
5. Closing Speed Control - 852-B
6. Pressure Switch - supplied by others
7. Manual Test Valve - 3-way ball valve with lockable handle
8. Solenoid Valve - 12 VDC Normally Closed
9. Model 81-RP, Relief Pilot
10. Swing Check Valve - 1/2 in / 15 mm
11. Limit Switch Assembly - optional
12. Connection to Header by others
14. Pressure Gauge 1/4 in / 6 mm NPT




**Schematic A-7606C**

**Note:**

Singer Surge Anticipator Control Panel - not shown in schematic but shown in above typical application

# SPC
# SINGER PUMP CONTROL PANEL

## KEY FEATURES

- Simple to install and reduces field wiring costs
- Automatically interfaces pump and control valve to avoid starting and stopping surges
- Suitable for use with either in-line booster or deep well by pass pump control valves
- Control switches for easy system operational execution


For indoor use only. For outdoor applications, consult factory.

## PRODUCT OVERVIEW

The SPC Pump Control Panel provides the interface between the pump motor starter and the Singer pump control valve. The SPC ensures that the pump starts and stops without causing line surges.

The SPC Pump Control Panel energizes the control valve pilot solenoid simultaneously with pump start. When pump shut-down is required the panel keeps the pump running while the pilot solenoid is de-energized. The panel turns the pump off just as the control valve completes its full stroke travel. It is equipped with delay timers and emergency fault contacts to provide the customer with local and remote indication for various operational failure conditions.

The SPC Pump Control Panel is connected to the pilot solenoid and limit switch that are standard components in the control valve pilot system. The panel is also connected to the customer supplied pump discharge pressure switch and the pump motor starter. A second limit switch and emergency shutdown solenoid are optional components for the control valve pilot system.

The logical arrangement of indicator lights with the Hand Off Automatic (HOA) selector switch provides easy supervision of the sequencing and the operating status.

The logical arrangement of Hand/Automatic selector, start, stop and emergency stop switches make the operating simple and easy to execute.

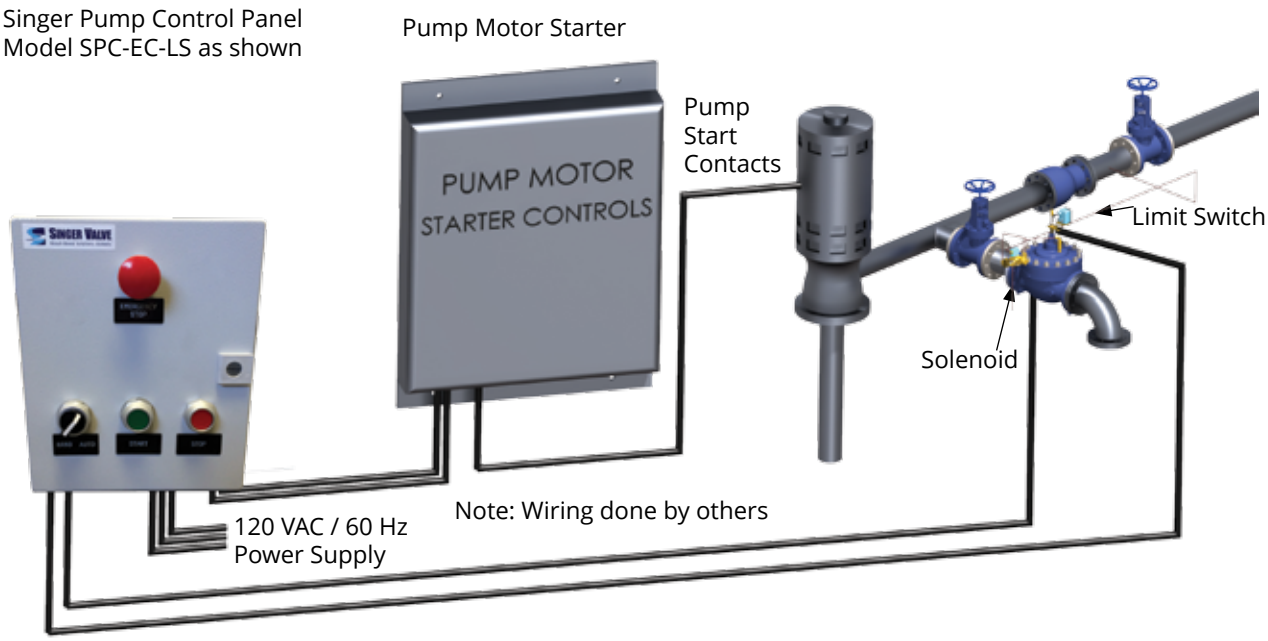
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

- Solenoid voltage
- SPC-IDC-2LS or SPC-EC-LS configuration

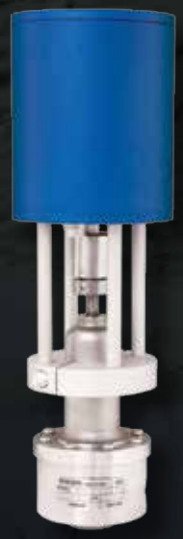
# TYPICAL APPLICATION



# MODEL 420-DC / 420-AC AUTOMATED PILOT CONTROL

## KEY FEATURES

- Easily programmable range via USB cable and custom software
- Built in surge suppression and reverse polarity protection
- IP68, 7 ft/24 hours (2.134 m/24 hours)
- High-torque motors increase actuator's operational life
- Downstream pressure follows the control signal within +/- 1 psi / 0.068 bar
- 4 -20 mA setpoint input and 4 – 20mA position feedback



## PRODUCT OVERVIEW

The 420DC/AC provides a reliable, simple and cost efficient way to automate today's water systems. A sturdy slow speed 24 VDC motor actuator drive can be installed on a variety of Singer pilots. The motor actuator responds to a 4-20 mA signal, rotating the pilot adjusting screw corresponding to the change in signal. The number of turns is adjustable and may be programmed to suit the pressure changes required for the application. The 420-DC or 420-AC requires less than 2 amps of power to operate, controlled by the 4-20 mA signals from the water distribution SCADA system. The very low power requirement lends itself well to a solar powered self-contained station. Extended power failure would result in relatively steady pressure at the last setting. Optional freeze or default to high or low pressure is available on loss of signal.

## IDEAL FOR

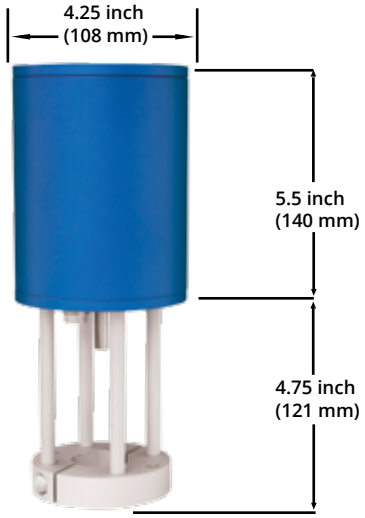
- Pressure Management Systems – utilizing pressure reducing pilot to give adjustable pressure settings based on system demand.
- Remote or difficult to reach control valves where adjustments need to be made, and using SCADA is the best option.

## ORDERING INSTRUCTIONS

Refer to page 246 for the order form and ordering instructions.

Additionally, include the following information for this product:

1. Application (Singer Valve Model #)
2. Pilot utilized
3. Pilot spring range
4. Required adjustable operating pressure range



## Customize. Accessorize. Specialize.

At Singer Valve, our pilots and accessories offer you options and choices. Like customizing a Singer float valve with our rotary float pilot or adding a Singer internal drop check assembly to a main valve for quick, positive shut-off when normal forward flow stops. To resist corrosion, you can upgrade components to stainless steel or to prevent mineral build-up and premature valve failure, you can choose our flexible stainless steel braided hose. Pilots. Needles. Tubing. Strainers. Options we design. Accessories you specify.

## Oxy-Nitride Stem – Main Valve Option

### *Prevents build-up. Resists corrosion. Reduces maintenance.*

Our proprietary oxy-nitride treated 316 stainless steel stem is ideal when mineral build-up on stems may cause maintenance problems or operational malfunctions. The stem is treated in an aerated salt bath so it reduces or prevents mineral build-up, allowing the stem to stroke freely as it passes through the guide bushing.

Ideal for:

- Reclaimed water applications

## Pressure Reducing Pilot PR-160

### *Self-cleaning. Self-flushing. Non-clogging.*

This normally open pilot is spring and diaphragm operated. It has a non-clogging pilot guide stem above the diaphragm, which is removed from the flow of water in the main pilot chamber. Because the outlet is located in the bottom of the pilot, 90 degrees to the inlet, the pilot is self-cleaning and self-flushing, thereby eliminating debris build-up. It also minimizes turbulence and false readings. This is the standard pressure reducing pilot for all our pressure reducing valves.

Ideal for:

- Regulating water pressure

# Pilots and Accessories

# MODEL 160
# PRESSURE REDUCING PILOT (NORMALLY OPEN)

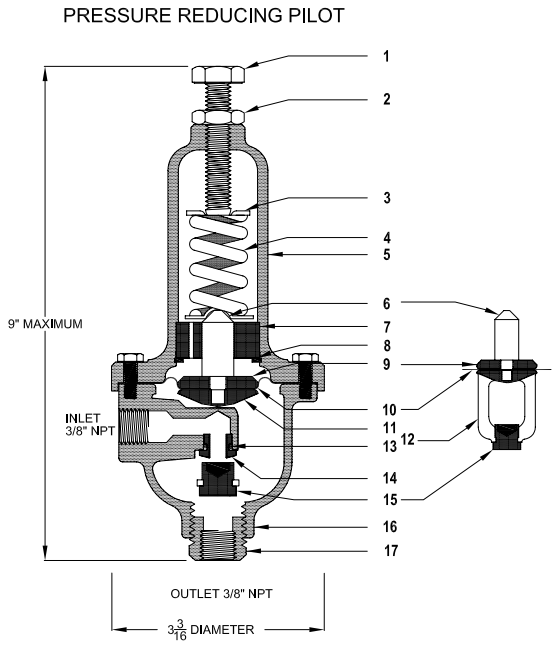
## PRODUCT OVERVIEW

The 160 Pressure Reducing Pilot is a spring and diaphragm operated, normally open pilot. The inner valve is held open by the spring and when the control pressure below the diaphragm exceeds the force of the spring, the pilot valve closes.

Model 160 is the standard pressure reducing pilot on all 106 and 206 series valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




**SCHEMATIC A0708E**

1. Adjusting Screw (Stainless Steel)
2. Locknut (Stainless Steel)
3. Spring Step (Stainless Steel)
4. Spring (Steel)
5. Spring Casing Stem (Bronze)
6. Stem (Stainless Steel)
7. Guide Bushing (Delrin)
8. Retaining Ring (Stainless Steel)
9. Clamp Plate Seal (Brass)
10. Diaphragm (EPDM)
12. Yoke (Stainless Steel)
13. Seat Ring Seal (Buna-N)
14. Seat Ring (Stainless Steel)
15. Inner Valve (Stainless Steel and EPDM)
16. Body (Bronze)
17. Outlet Connector (Brass)

Available in all Stainless Steel construction. Viton or Buna-N Elastomers

| | Spring Ranges | Approximate psi per turn |
|---|---|---|
| **Standard** | 20 to 200 psi (1.38 to 13.8 bar) | 30 psi (2 bar) per turn |
| **Optional** | 5 to 50 psi (0.345 to 3.45 bar) | 9 psi (0.62 bar) per turn |
| | 10 to 80 psi (0.7 to 5.5 bar) | 14 psi (0.96 bar) per turn |
| | 100 to 300 psi (6.9 to 20.7 bar) | 42 psi (2.9 bar) per turn |

# MODEL 160 RF
# RATE OF FLOW PILOT (NORMALLY OPEN)

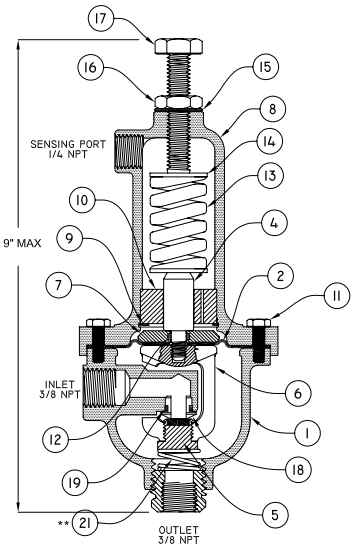
## PRODUCT OVERVIEW

The 160-RF pilot is a spring and diaphragm operated pilot designed to sense a differential across an external orifice plate. It is a normally open pilot that also has a sensing port is in the spring casing, above the diaphragm and is available in stainless steel.

The inner valve is held open by the spring and when the control pressure below the diaphragm exceeds the combined forces of the spring and the sensing pressure, the pilot valve closes. The 160-RF is the standard rate of flow control pilot on all 106 and 206 series valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




*Recommended Spare Parts - supplied in Parts KIT
**Range 2- 20 psid only

1. Body (Bronze)
*2. Diaphragm (EPDM)
4. Stem (Stainless Steel)
*5. Inner Valve (Stainless Steel & EPDM)
6. Yoke (Stainless Steel)
7. Clamp Plate (Brass)
8. Spring Casing (Bronze)
9. Retaining Ring (Stainless Steel)
10. Guide Bushing (DELRIN)
11, 16, 17. Fasteners (Stainless Steel)
*12, 19. Seal (Buna-N)
13, 21. Spring (Spring Steel)
14, 20. Spring Step (Stainless Steel)
15. Thread Seal (Steel & Buna-N)
18. Seat Ring (Stainless Steel)
**21. Bucking Spring (Stainless Steel)
**22. Bleed Screw (Stainless Steel)
**23. Bleed Screw Seal (Stainless Steel and Neoprene)

| | Spring Ranges | Approximate psi per turn |
|---|---|---|
| **Standard** | 25 to 50 psi (1.72 to 3.45 bar) | 2 psi (0.138 bar) per turn |
| **Optional** | 5 to 50 psi (0.345 to 3.45 bar) | 3.4 psi (0.23 bar) per turn |

# MODEL 81-RP
# PRESSURE RELIEF PILOT (NORMALLY CLOSED)

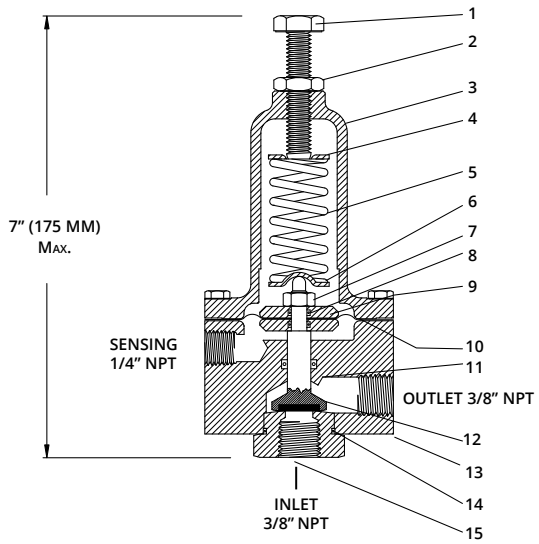
## PRODUCT OVERVIEW

The 81-RP is a remote sensing, high capacity, spring and diaphragm operated, normally closed pilot. The inner valve is held closed by the spring. When the sensed pressure increases above the spring setting, the pilot opens.

Model 81-RP pilot is used as the standard pressure relief/sustaining pilot on all 106 and 206 series valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0661C

**Options:** All Stainless Steel construction. Viton or Buna-N Elastomers

1. Adjusting Screw (Stainless Steel)
2. Lock Nut (Stainless Steel)
3. Spring Casing (Bronze)
4. Upper Spring Step (Stainless Steel)
5. Spring (Steel)
6. Lower Spring Step (Stainless Steel)
7. Stem Locknut (Stainless Steel)
8. Clamp Plate Seal (Buna-N)
9. Clamp Plate (Brass)
10. Diaphragm (EPDM)
11. Body Seal (Buna-N)
12. Inner Valve (Stainless Steel and EPDM)
13. Body (Brass)
14. Seat Ring Seal (Buna-N)
15. Seat (Stainless Steel)

| | Spring Ranges | Approximate psi per turn |
|---|---|---|
| **Standard** | 20 to 200 psi (1.38 to 13.8 bar) | 25 psi (1.7 bar) per turn |
| **Optional** | 5 to 50 psi (0.345 to 3.45 bar) | 9 psi (0.62 bar) per turn |
| | 10 to 80 psi (0.7 to 5.5 bar) | 14 psi (0.96 bar) per turn |
| | 100 to 300 psi (6.9 to 20.7 bar) | 42 psi (2.9 bar) per turn |

# MODEL 83-RP
# HIGH PRESSURE RELIEF PILOT (NORMALLY CLOSED)

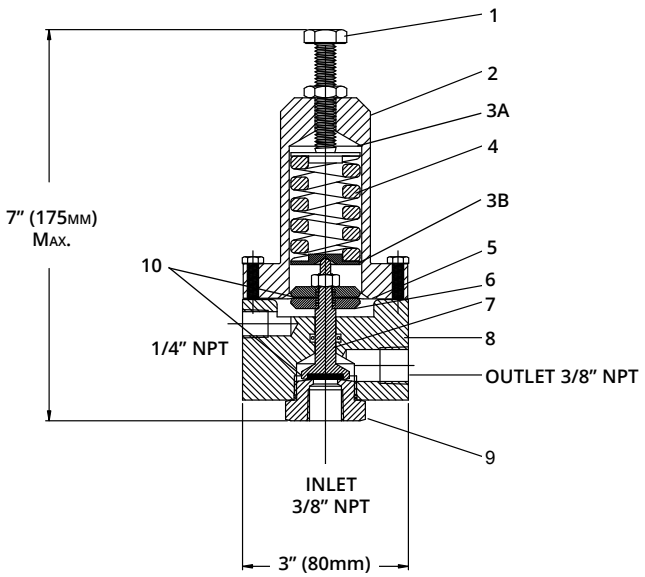
## PRODUCT OVERVIEW

The 83-RP is a spring and diaphragm operated, normally closed pilot specifically designed for high pressure applications. The inner valve is held closed by the spring. When the control sensed pressure below the diaphragm exceeds the force of the spring, the pilot valve opens.

Model 83-RP pilot is used as the standard pressure relief pilot where the operating pressures are excessive, such as a 300 psi / 20.7 bar level.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0781A

1. Adjusting Screw (Stainless Steel)
2. Spring Casing (Brass)
3. Spring Steps (3A, 3B) (Stainless Steel)
4. Spring (Steel)
5. Diaphragm (EPDM)
6. Clamp Plates (Brass)
7. Inner Valve ((Stainless Steel and EPDM)
8. Body (Brass)
9. Seat (Stainless Steel)
10. O Ring Seals (Buna-N)

**Options:** Available in all Stainless Steel construction

| | Spring Ranges | Approximate psi per turn |
|---|---|---|
| **Standard** | 200 to 500 psi (13.8 to 34.5 bar) | 80 psi (5.5 bar) per turn |

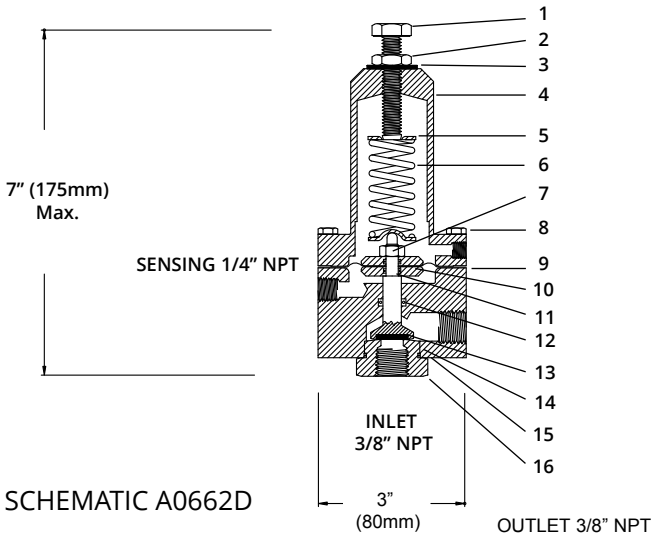
# MODEL 81-RPD
# DIFFERENTIAL PRESSURE RELIEF PILOT (NORMALLY CLOSED)

## PRODUCT OVERVIEW

The 81-RPD is a remote sensing, high capacity, spring and diaphragm operated, normally closed, differential pilot. The inner valve is held closed by the spring. When the pressure under the diaphragm overcomes the combined forces of the spring setting and the pressure above the diaphragm, the pilot opens. The 81-RPD valve is used for remote sensing of a differential pressure for normally closed applications.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0662D

1. Adjusting Screw (Stainless Steel)
2. Lock Nut (Stainless Steel)
3. Thread Seal (Steel and Buna-N)
4. Spring Casing (Brass)
5. Spring Step (Stainless Steel)
6. Spring (Stainless Steel)
7. Stem Lock Nut (Stainless Steel)
8. Spring Casing Capscrew (Stainless Steel)
9. Diaphragm (EPDM)
10. Clamp Plate (Brass)
11. Clamp Plate Seal (Buna-N)
12. Stem Seal (Buna-N)
13. Inner Valve (Stainless Steel and EPDM)
14. Seat Ring Seal (Buna-N)
15. Body (Brass)
16. Seal (Stainless Steel)

**Options:** Available in all Stainless Steel construction.

| | Spring Ranges | Approximate psi per turn |
|---|---|---|
| **Standard** | 20 to 200 psi (1.38 to 13.8 bar) | 30 psi (2 bar) per turn |
| **Optional** | 5 to 25 psi (0.345 to 1.72 bar) | 3 psi (0.2 bar) per turn |
| | 10 to 80 psi (0.7 to 5.5 bar) | 10 psi (0.7 bar) per turn |
| | 100 to 350 psi (6.9 to 24 bar) | 41 psi (2.82 bar) per turn |

# MODEL 301-4
# ALTITUDE PILOT VALVE

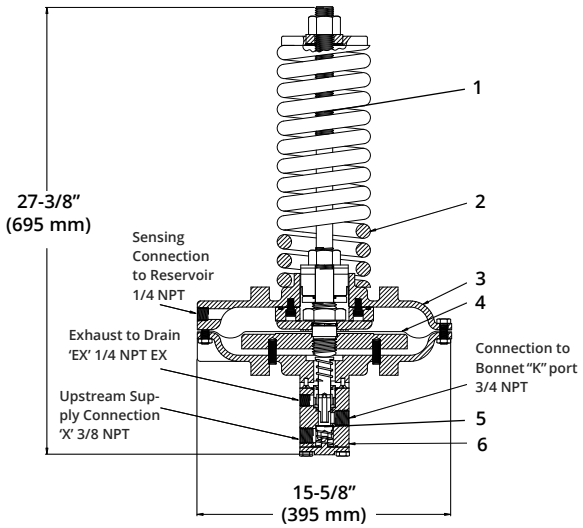
## PRODUCT OVERVIEW

An altitude pilot valve is spring and diaphragm operated; it controls the water level in a reservoir by sensing the hydrostatic head. When the hydrostatic head equals the spring force, the pilot connects port "X" (connection to main valve inlet ) to port "K" (connection to main valve bonnet). The main valve closes. When the hydrostatic pressure decreases slightly, the port "X to K" connection is closed by the inner valve. When the hydrostatic pressure is reduced even further, the pilot connects port "K" (main valve bonnet) to "EX" (exhaust to atmosphere). Then the main valve opens.

Model 301-4 pilot is used as the standard pilot on all 106 and 206 series altitude valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0847A

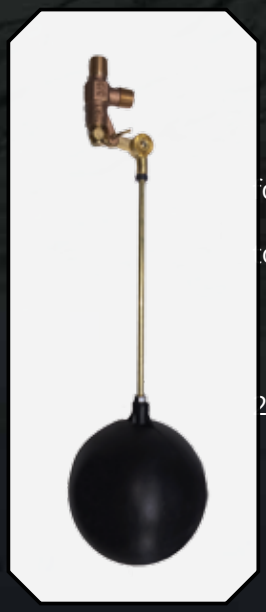
1. Stem (Stainless Steel)
2. Spring (Steel)
3. Diaphragm Casing (Ductile Iron)
4. Diaphragm (Buna-N)
5. Inner Valve (Stainless Steel and EPDM)
6. Body (Stainless Steel)

**Standard Materials:**

Other standard material of the pilot construction include brass, aluminum, stainless steel, Buna-N

| | | Approximate fixed differential | |
|---|---|---|---|
| **Model** | **Spring Range / Elevation** | **Delayed opening** | **Approximate feet per turn** |
| **301-4** | 4 to 20 ft (1 to 6 m) | 1 ft (0.3 m) | 1 ft (0.3 m) per turn |
| **301-4** | 10 to 60 ft (3 to 18 m) | 1 ft (0.3 m) | 2 ft (0.6 m) per turn |
| **301-4** | 40 to 125 ft (12 to 38 m) | 2 ft (0.6 m) | 3 ft (0.9 m) per turn |
| **301-5** | 60 to 225 ft (18 to 69 m) | 3 ft (0.9 m) | 6 ft (1.8 m) per turn |

# MODEL R-400
# MODULATING FLOAT PILOT



## PRODUCT OVERVIEW

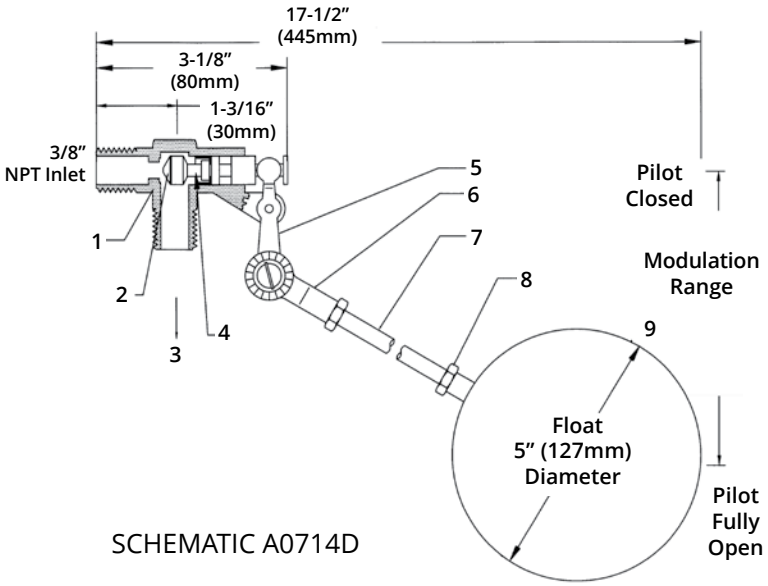
The R-400 is a modulating float pilot with a plastic float, suitable for remote installation on a tank or reservoir. It positions the main valve in proportion to the reservoir level. Standard configuration is for the pilot to close on rising level.

Specify "Reverse Acting" for the pilot to open on rising level. The polypropylene float connects to the pilot on a 10 in / 250 mm brass rod.

The R-400 pilot is used as the standard float pilot on all 106 and 206 series modulating float valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0714D

1. Body (Bronze)
2. Inner Valve (Buna-N)
3. 3 / 8 in NPT Outlet
4. Stem (Brass)
5. Lever (Brass)
6. Serrated Arm (Brass)
7. Float Rod (Brass)
8. Lock Nut (Stainless Steel)
9. Float (Polypropylene)

**Options:** Copper float; Stainless Steel Rod.

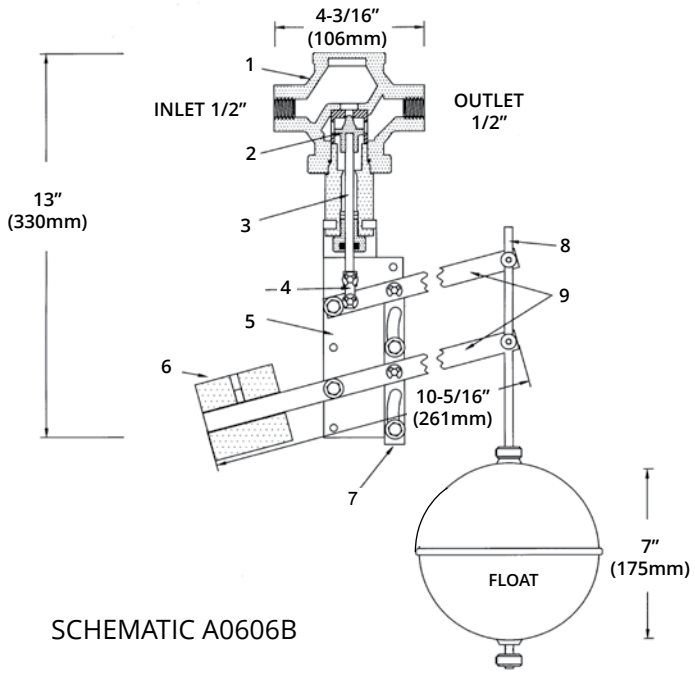
# MODEL 34
# MODULATING FLOAT PILOT WITH VERTICAL ROD

## PRODUCT OVERVIEW

The 34 modulating float pilot is comprised of a copper float and brass rod assembly which moves vertically. As the level rises, the float lifts and the valve closes. The 34 pilot is optional pilot, available for modulating applications where the float and rod are installed in a still well and / or vertical action is preferred.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.



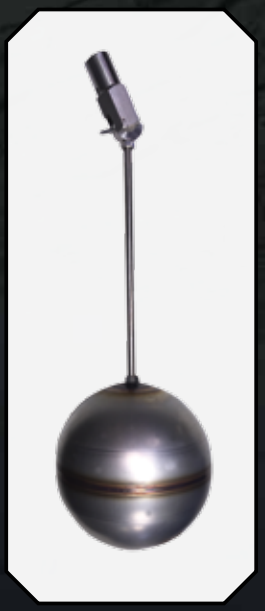

SCHEMATIC A0606B

1. Body (Bronze)
2. Inner Valve (Stainless Steel)
3. Valve Stem (Stainless Steel)
4. Connector Bar (Brass)
5. Mounting Bracket (Brass)
6. Counter Weight (Cast Iron)
7. Guide Bar (Brass)
8. Float Rod (Brass)
9. Lever Arm (Brass)

**Options:** Available with stainless steel float and rod

**Note:** When ordered as a part and/or when shipping via air freight, the 1/4 in / 6.35 mm)diameter x 4 ft / 1.2 m round brass rod is not included.

# MODEL 35
# MODULATING FLOAT PILOT



## PRODUCT OVERVIEW

Model 35 is a Stainless Steel modulating float pilot with a Stainless Steel float, suitable for remote installation on a tank or reservoir.

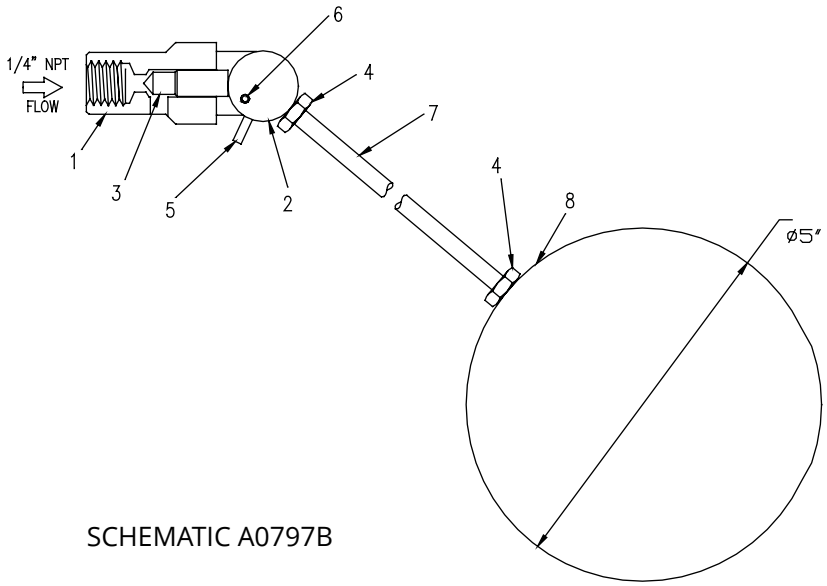
It positions the main valve in proportion to the Reservoir level. Standard configuration is for the pilot to close on rising level.

Specify reverse acting for the pilot to open on rising level. Reverse acting Inlet pressure on pilot is a minimum of 60 psi with main valve inlet press maximum of 10 psi. Consult Singer staff for installations outside these parameters.

The Stainless Steel float connects to the pilot using a 10 in / 250 mm Stainless Steel rod.

## ORDERING INSTRUCTIONS

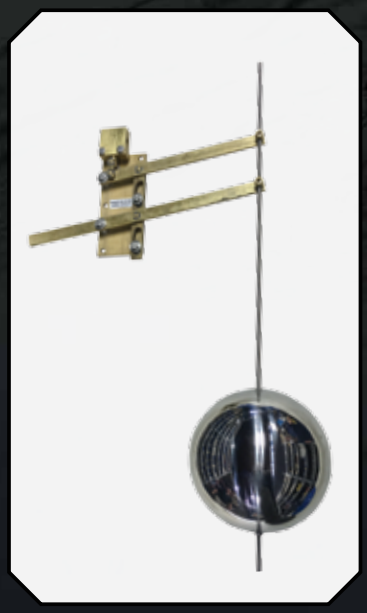
Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0797B

1. Body (Stainless Steel AISI 303)
2. Cam (Stainless Steel AISI 303)
3. Inner valve (Stainless Steel AISI 303)
4. Locknut (2) (Stainless Steel 18-8)
5. Stop pin (Stainless Steel AISI 302)
6. Pivot pin (Stainless Steel AISI 302)
7. Float rod (Stainless Steel AISI 303)
8. (Stainless Steel 18-8)

# MODEL 39
# NON-MODULATING FLOAT PILOT WITH VERTICAL ROD



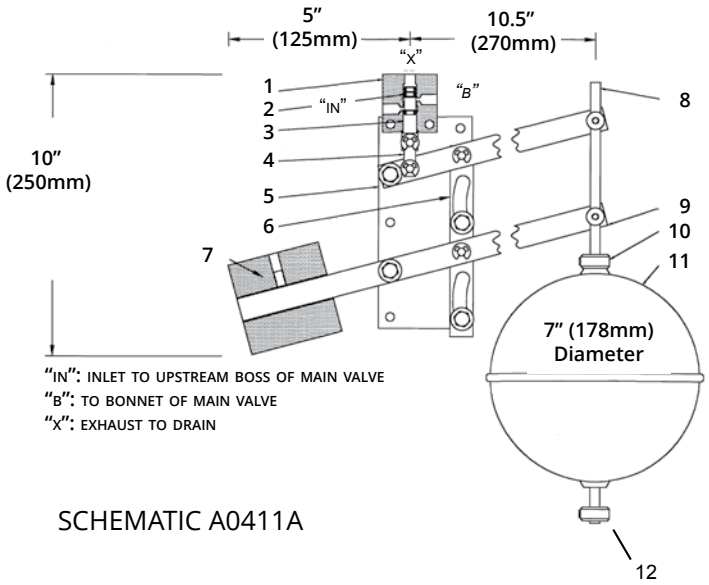
## PRODUCT OVERVIEW

The 39 non-modulating float pilot is designed to operate an On-Off float valve. The differential between the level where the valve opens and the level where the valve closes, is adjustable. The standard configuration is for the pilot valve to close on high level and open at a low level.

The 39 pilot is used as the standard pilot on all non-modulating F-Type 5, 106 and 206 series
float valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0411A

1. Body (Brass)
2. Inner Valve O-rings (Buna-N)
3. Inner Valve (Brass)
4. Connector Bar
5. Mounting Bracket (Brass)
6. Guide Bar (Brass)
7. Counter Weight (Cast Iron - Epoxy Coating)
8. Float Rod (Brass)
9. Lever Arm (Brass)
10. Adjustable Stop (Brass)
11. Float (Copper)
12. Adjustable Stop Opening (Brass)

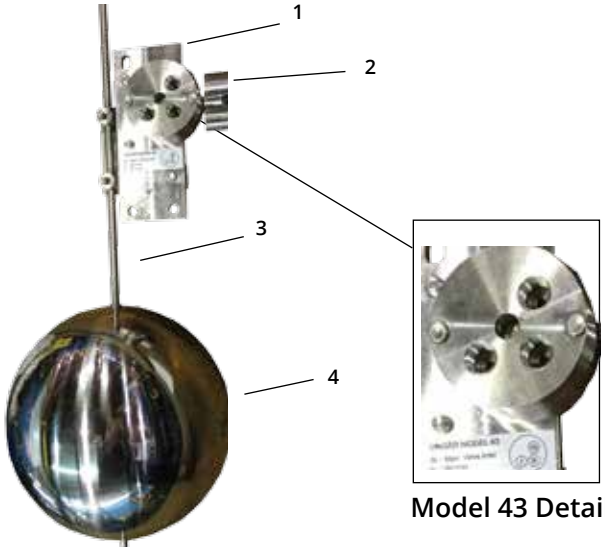
**Options:** Available in Stainless Steel construction.

# MODEL 43
# ROTARY FLOAT PILOT (ON/OFF)

## PRODUCT OVERVIEW

The 43 stainless steel float actuated pilot with non-modulating rotary motion, provides non-modulating On-Off operation of the main valve. It has higher capacity and faster response time than other non-modulating float pilots. The differential between the level where the main valve opens and the level where the main valve closes, is adjustable. The 43 pilot allows for faster operation of the main valve over traditional float pilots, due to increased port size. The standard configuration is for the pilot to close the main valve on high level and open the main valve on low level. The 43 pilot is used on all non-modulating model F-Type 5, 106 and 206 series float valves.

The 43 pilot has a higher pressure rating 150 psi / 10.35 bar as compared to Model 39 (80 psi / 5.5 bar).

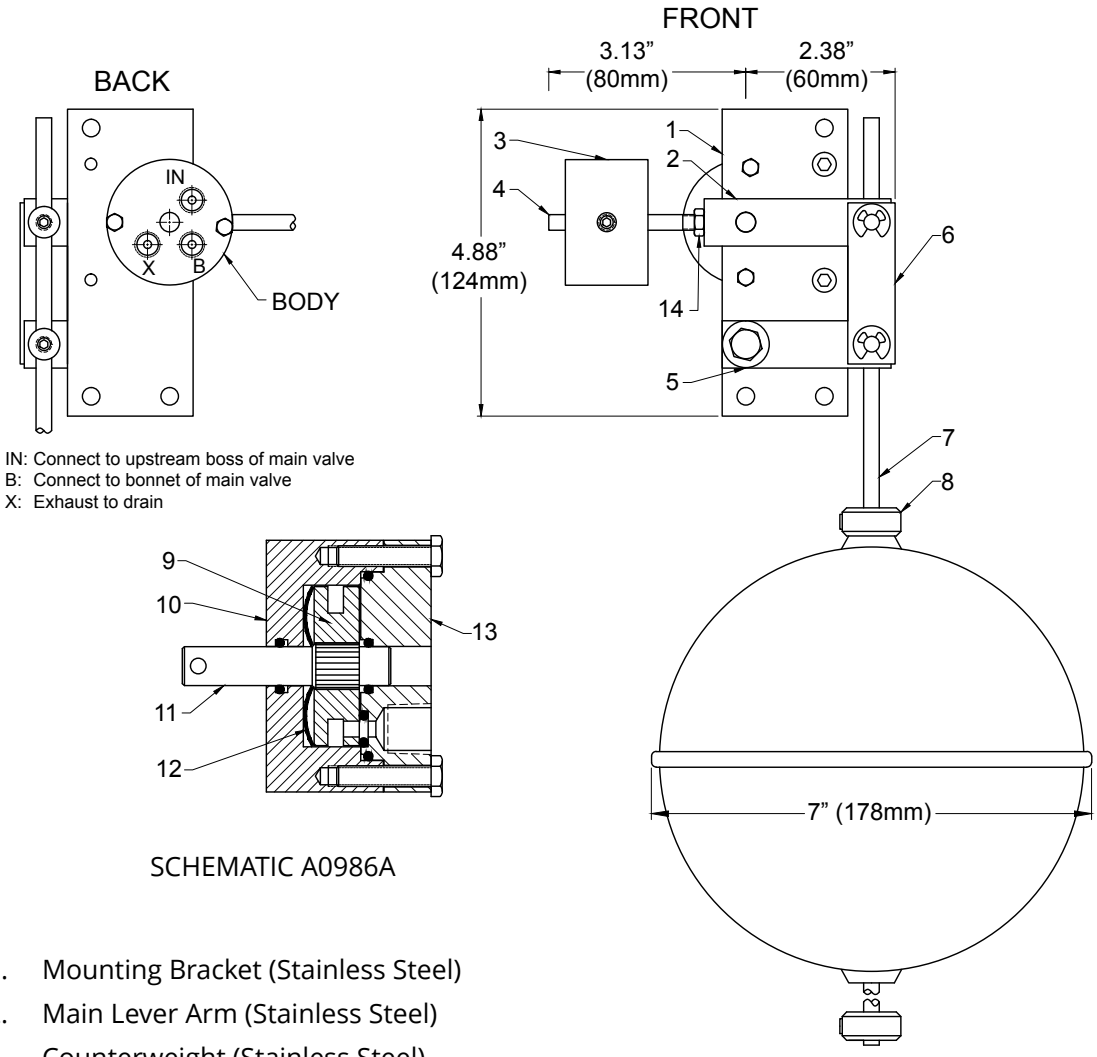



Model 43 Detail

1. Mounting Bracket (Brass)
2. Counter Weight (Stainless Steel)
3. Float Rod (SST)
4. Float (SST)

**Standard Materials:** SST pilot, inner valve, SST float, 4 ft / 1.2 m SST rod.

## SCHEMATIC DRAWING




IN: Connect to upstream boss of main valve
B: Connect to bonnet of main valve
X: Exhaust to drain

SCHEMATIC A0986A

1. Mounting Bracket (Stainless Steel)
2. Main Lever Arm (Stainless Steel)
3. Counterweight (Stainless Steel)
4. Counterweight Rod (Stainless Steel)
5. Lower Lever Arm (Stainless Steel
6. Space Bar (Stainless Steel)
7. Float Rod (Stainless Steel)
8. Adjustable Stop (Stainless Steel)
9. Inner Valve (Teflon)
10. Casing (Stainless Steel)
11. Stem (Stainless Steel)
12. Wave Spring Washer (Stainless Steel)
13. Body (Stainless Steel)
14. Lock Nut (Stainless Steel)

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

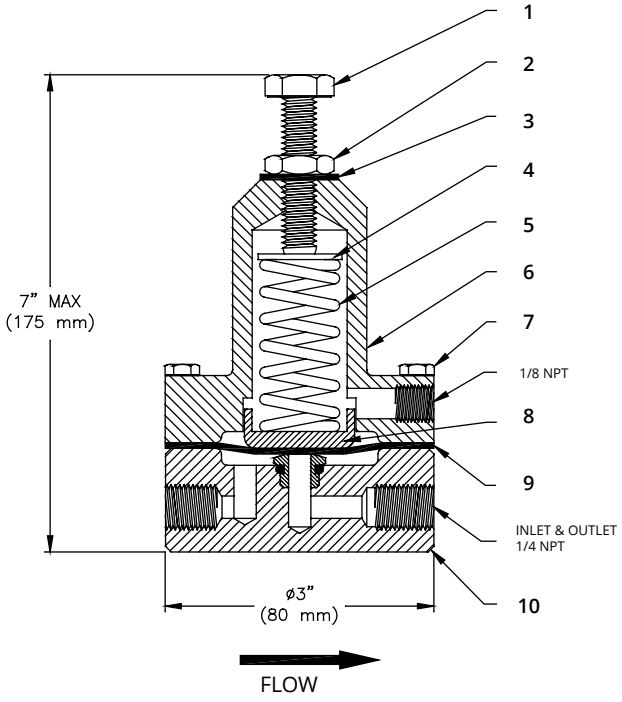
# MODEL 106-RD
# DIFFERENTIAL RELIEF PILOT (NORMALLY CLOSED)

## PRODUCT OVERVIEW

The model 106-RD is a spring and diaphragm operated, normally closed pilot designed to allow flow when the inlet pressure exceeds the outlet pressure by a predetermined amount. The model 106-RD is used as a differential control valve on Singer model 106-A-Type 4 altitude control valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0556B

1. Adjusting Screw (Stainless Steel)
2. Locknut (Stainless Steel)
3. Thread Seal (Stainless Steel & Buna-N)
4. Spring Step (Brass)
5. Spring (Stainless Steel)
6. Spring Casing (Brass)
7. Spring Casing Screws (Stainless Steel)
8. Spring Cup (Brass)
9. Diaphragm (EPDM)
10. Body (Brass)

# MODEL 625-RPD
# DIFFERENTIAL PILOT (NORMALLY CLOSED)

## PRODUCT OVERVIEW

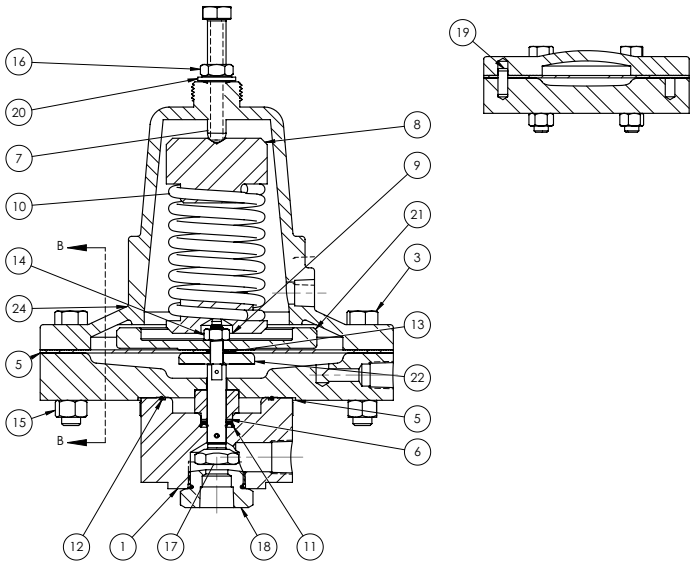
The model 625-RPD is a remote sensing, spring and diaphragm operated, normally closed pilot with large diaphragm area for increased sensitivity.

The pilot opens when the control pressure exceeds the spring force or the differential established by the spring.

The model 625 is used for special applications where a low pressure set point or highly sensitive and responsive pilot is required.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




1. Adjusting Screw (Stainless Steel)
2. Locknut (Stainless Steel)
3. Thread Seal (Steel & Buna-N)
4. Spring Step (Brass)
5. Spring (Stainless Steel)
6. Clamp Plate Nut (Stainless Steel)
7. Clamp Plates (Brass)
8. Diaphragm Flange (Ductile Iron)
9. Bonnet (Brass)
10. Body (Bronze)
11. Seat Ring (Stainless Steel)
12. Bottom Cap (Brass)
13. Spring Casing (Ductile Iron)

**Standard Materials:**
Other standard material of the pilot construction include stainless steel, Buna-N, and brass

X - RPD High Pressure Sensing Connection - 1/4 in NPT
Y - RPD Low Pressure Sensing Connection - 1/4 in NPT

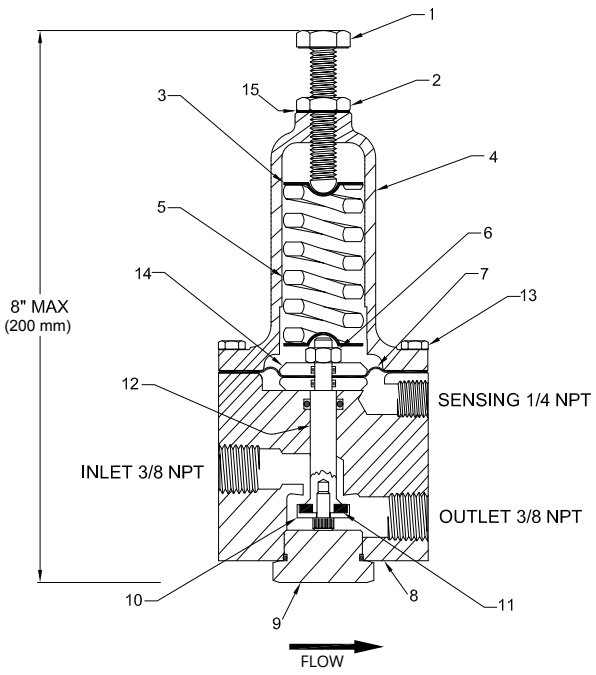
# MODEL 82-PR
# PILOT (NORMALLY OPEN)

## PRODUCT OVERVIEW

The model 82-PR is a spring and diaphragm operated, normally open pilot valve, with the sensing chamber(s) separated from the operating chambers. It closes when the control pressure below the diaphragm exceeds the force of the spring. The model 82-PR is used as the standard low pressure pilot on model RPS-L&H anticipating surge valves.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




SCHEMATIC A0667C

1. Adjusting Screw (Stainless Steel)
2. Locknut (Stainless Steel)
3. Spring Step (Stainless Steel)
4. Spring Casing (Brass)
5. Spring (Stainless Steel)
6. Stem Locknut (Stainless Steel)
7. Diaphragm (EPDM)
8. Body (Brass)
9. Bottom Cap (Brass)
10. Disc Retainer (Stainless)
11. Resilient Disc (Buna-N)
12. Inner Valve (Stainless Steel)
13. Spring Casing Screws (Stainless Steel)
14. Clamp Plate (Brass)
15. O-Ring Seals (Buna-N)

**Standard Materials:**
Other standard material of the pilot construction include stainless steel, Buna-N, and brass

# MODEL 167
# PROPORTIONAL PILOT

## PRODUCT OVERVIEW

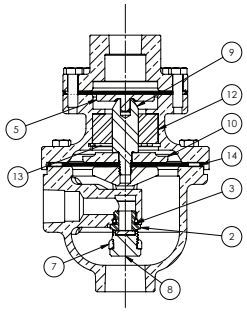
The 167 Proportional Pilot is a direct acting, diaphragm operated pressure reducing valve. The valve is held open by the lower diaphragm, opposes the force of the upper diaphragm to close the valve.

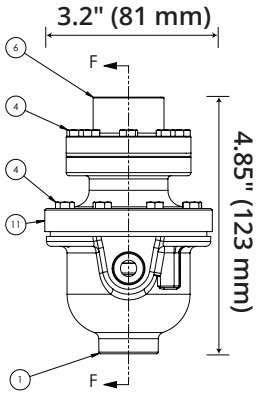
## SPECIFICATIONS

- Pilot is available in four models: 16%, 30%, 42% and 60% (outlet pressure vs inlet pressure)
- Max pressure: 400 psi (27.6 bar)
- Max temperature: 180° F (82° C)

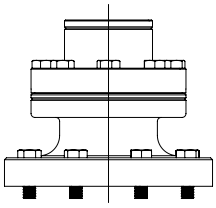
## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

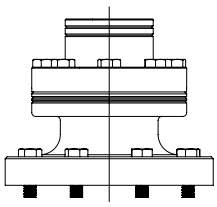




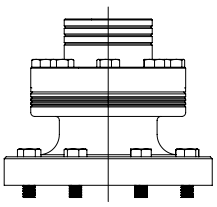

Model 167



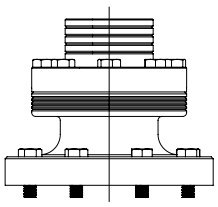
16% ONE GROOVE



30% TWO GROOVES



42% THREE GROOVES



60% FOUR GROOVES

1. Body Pilot 167 Stainless Steel
2. Seat 167 Stainless Steel Pilot
3. EPDM O-Ring
4. Screw HEX HD 10-32 X 5/8 SST 18-8
5. Poppet 167 Stainless Steel
6. Cap 167 Brass
7. Yoke Pilot 167 316 Stainless Steel
8. Seat Inner Valve Pilot EPDM / 167 Stainless Steel
9. Stem 167 Stainless Steel
10. Clamp Plate 167 PR Brass
11. Adaptor 167
12. Guide Bushing 167
13. Snap Ring
14. EPDM Diaphragm Upper

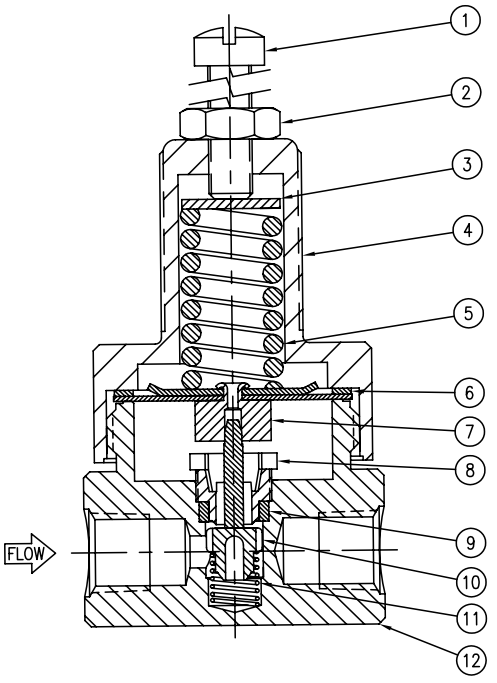
# MODEL J0223A
# BUILDING TRADES REDUCING PILOT

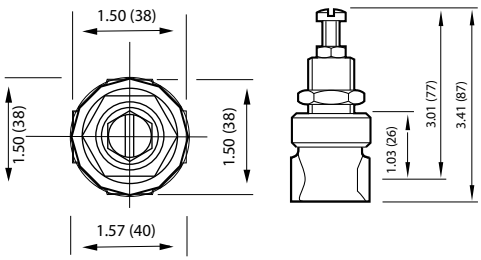
## PRODUCT OVERVIEW

- Compact design, corrosion resistant construction
- Brass body with brass bonnet
- Miniature brass 1/8", 1/4" PTF
- Brass bonnet equipped with pressure adjusting screw
- Indoor applications only
- For use on 3" pressure reducing valves & smaller

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




1. Adjusting Screw (Steel)
2. Nut, lock (Brass)
3. Springrest (Steel)
4. Bonnet (Brass)
5. Spring (Steel)
6. Slip ring (Polyethylene)
7. Diaphragm ASSY (Buna-N, Brass, Stainless)
8. Seat-Valve (Acetal)
9. Gasket-Seat (Nitrile)
10. Valve ASSY (Brass, Buna-N)
11. Spring-Valve (Stainless)
12. Body, 1/4 PTF (Brass)
13. Pipe Plug (Brass) *Not shown

### Specifications

Fluid: Water  Maximum pressure: 400 psig (27 bar)
Gauge Ports: 1/8" PTF
Operating temperature: Water service 35° to 175° F (2° to 80° C) Typical flow for water service at 100 psig (7 bar) inlet pressure, 60 psig (4 bar) set pressure and a drop of 15 psig (1 bar) from set 1.3 gpm (4.9 lpm)

### Materials

Body: Brass  Bonnet: Brass  Valve: Brass/nitrile
Valve seat: Acetal resin  Elastomers: Nitrile
Warranty 2 years  Range: 0-125 psig (0-8 bar)

# STAINLESS STEEL HOSE
# STAINLESS STEEL BRAIDED HOSE

## COPPER
Standard material for tubing
Corrosion resistant
Reliable and long-term performance

## STAINLESS STEEL
Optional upgrade
Significantly stronger and more durable
Corrosion and oxidation resistant

## STAINLESS STEEL BRAIDED HOSE
Optional upgrade
Completely flexible
Significantly stronger and more durable
Corrosion and oxidation resistant

- Available with stainless or brass ends

| | | Size | Working Pressure | Lengths | Connection Type |
|---|---|---|---|---|---|
| **Copper** | Standard | 1/4 in / 6 mm<br>3/8 in / 9.5 mm<br>1/2 in / 12.7 mm<br>3/4 in / 19 mm | 1/4 in: 1,406 psi / 96.9 bar<br>3/8 in: 984 psi / 67.8 bar<br>1/2 in: 727 psi / 50.1 bar<br>3/4 in: 511 psi / 35.2 bar | Any | SAE |
| **Stainless Steel** | Optional Upgrade | 1/4 in / 6 mm<br>3/8 in / 9.5 mm<br>1/2 in / 12.7 mm<br>3/4 in / 19 mm | 1/4 in: 21,000 psi / 1,447.3 bar<br>3/8 in: 14,000 psi / 965.5 bar<br>1/2 in: 10,500 psi / 724.1 bar<br>3/4 in: 7,000 psi / 482.8 bar | Any | Compression |
| **Braided Hose** | Optional Upgrade | 1/4 in / 6 mm<br>3/8 in / 9.5 mm<br>1/2 in / 12.7 mm<br>3/4 in / 19 mm | 1/4 in: 3,000 psi / 206.8 bar<br>3/8 in: 2,500 psi / 172.4 bar<br>1/2 in: 2,000 psi / 137.9 bar<br>3/4 in: 1,500 psi / 103.4 bar | Any | SAE / JIC |

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

- Material(s)

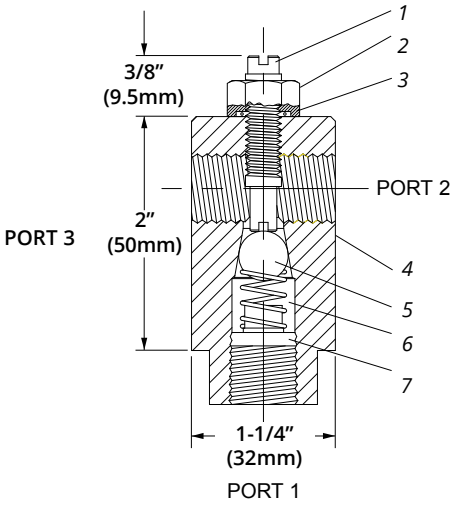
# MODEL 26
# OPERATING SPEED CONTROL

## PRODUCT OVERVIEW

The 26 Opening Speed Control is a self-cleaning, opening speed control. It is used in conjunction with a fixed restriction orifice that is usually threaded into port 3. The 26 stabilizer allows free flow down to the bonnet (port 1) and restricts flow up from port 1.

The 26 Opening Speed Control is used as the standard flow stabilizer (opening speed control) on model 106-PR or 206-PR pressure reducing valves or any other model that requires low flow stabilization.


## PRODUCT LINE DRAWING




1. Adjusting Screw
2. Locknut
3. Screw Seal
4. Body
5. Inner Valve
6. Spring
7. Spring Retainer

## STANDARD MATERIALS

Body: AISI 303 SST

Spring Retainer: ASTM B16 Brass

Locknut: ASTM B16 Brass

Adjusting Screw: AISI 303 SST

Inner Valve: AISI 303 SST

Spring: AISI 303 SST

Screw Seal: Buna-N

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

# FIXED RESTRICTION

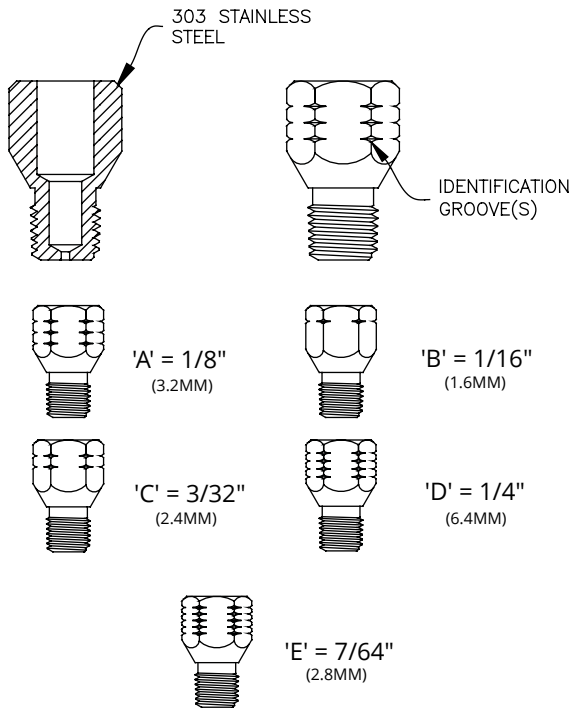
## PRODUCT OVERVIEW

The fixed restriction is a 303 stainless steel bodied fitting with a stainless steel orifice plug. The fixed restriction controls the flow rate in the pilot system.

The orifices are sized to provide the proper control to a select series of valve sizes only. This all-stainless steel version replaces all previous versions of the brass body, with stainless steel insert.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




## SIZES

'A' 1 / 8 in / 3.2 mm orifice
'B' 1 / 16 in / 1.6 mm orifice
'C' 3 / 32 in / 2.4 mm orifice
'D' 1 / 4 in / 6.35 mm orifice
'E' 7 / 64 in / 2.8 mm orifice

## MODEL 852-B NEEDLE VALVE

The 852-B needle valve is a pilot speed control valve. The body is brass and the stem is stainless steel with a fine thread for controlling flow. O ring packing assures leak proof, trouble free service. 1/4 in / 6.35 mm NPT female to female end connections.

**Specifications**

- Maximum operating temperature: 180° F / 82° C
- Maximum working pressure: 400 psi / 27.6 bar

## MODEL MICROMETER NEEDLE VALVES

Micrometer needle valves allow for precise speed control. There is virtually infinite flow adjustment in both directions. Standard end connections are female-to-female 1/4 in / 6.35 mm NPT.

**Standard Materials**

Forged brass body, Buna-N seals and stainless steel stem

**Specifications**

- Maximum fluid temperature: 180° F / 82° C
- Maximum pressure rating: 2000 psi / 138 bar

## MODEL MICROMETER FLOW CONTROL VALVES

Micrometer flow control valves allow for precise flow control. There is full flow in one direction and adjustable restricted flow in the opposite direction. They are standard on certain models, such as BPC pump control valves and available as an option for other applications. Standard end connections are female-to-female 1/4 in / 6.35 mm NPT.

**Standard Materials**

| | | |
|---|---|---|
| Forged brass body | Urethane disc | |
| Stainless steel stem | Stainless Retaining Ring | Buna-N seals |

**Specifications**

- Maximum fluid temperature: 140° F / 60° C
- Maximum pressure rating: 2000 psi / 138 bar

## MODEL 10 &12 PILOT CHECK VALVES

The 10 pilot check valve is standard on all 106 and 206 series valves requiring a pilot check function such as BPC, PR-C, RPS-C types. It is designed to require a low “cracking” differential pressure to open. The 12 has a higher “cracking” pressure and requires more differential pressure to open.


**Standard Materials:**

| | |
|---|---|
| Body: ASTM B16 brass | Seat Ring: ASTM B-16 brass |
| Inner Valve: Lexan | Seals: Buna-N |

**Specifications:**

- Maximum working temperature: 180° F / 82° C
- Maximum working pressure: 400 psi / 27.6 bar

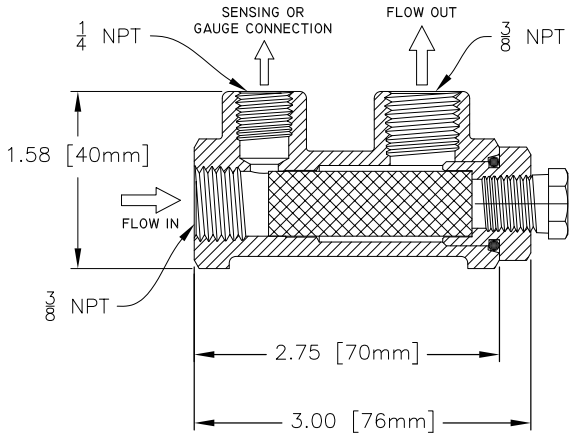
# MODELS J0098B & J0097B STRAINERS

## PRODUCT OVERVIEW

There are two versions of the standard AISI 316 stainless steel strainer with 40 mesh stainless steel screens. The standard strainer J0098B has a 3/8 in / 9.5 mm blowdown/maintenance port for access to the screen and the 3/8 in / 10 mm NPT inlet and outlet connections. The J0097B strainer provides a standard 1/4 in / 6.35 mm sensing / gauge connection.

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.




**Model J0097B**

## STANDARD MATERIALS

Body: Stainless Steel 316

Screen Retainer: Stainless Steel 316

Screen (40 Mesh): Stainless Steel 316

Screen Retainer Seal: Buna

Blow Down Plug: Stainless Steel 316

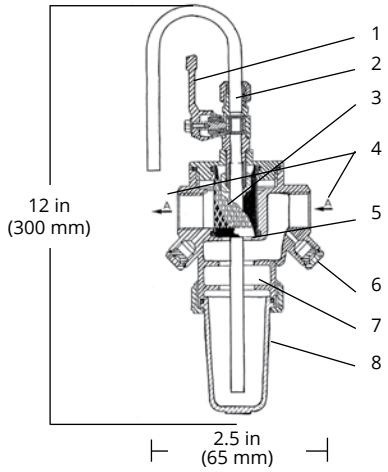
# MODELS J1521G & J1521M ARION STRAINERS

## PRODUCT OVERVIEW

The Arion series strainers are more suited to dirty water applications. The dirt is trapped on the inside of the double mesh screens and collects in the bowl. The double port construction of the housing prevents the particles from re-entering the flow stream.

The collected dirt can be flushed directly out to drain by opening the blowdown. The J1521G strainer has a glass collection bowl, while the J1521M strainer has a metal bowl. Standard pressure rating for the strainer is 232 psi / 16 bar. Body connections are 1/2 in / 15 mm NPT and it comes complete with a 3/8 in / 9.5 mm blowdown valve and a discharge tube.

## PRODUCT LINE DRAWING




1. Blowdown (drain) valve
2. Discharge Tube
3. Double Mesh 18-8 Stainless Steel Screens
4. 'A' 1/2 in NPT Inlet and Outlet Connections
5. Low Velocity Settling Zone
6. 1/4 in NPT Gauge Connections
7. Double Neck, Housing Directs Particles Onwards
8. Collection Bowl - Glass (Optional Brass)

## STANDARD MATERIALS

Body: Brass

Cap: Brass

Screens: 18-8 SST

(40 mesh optional;

80 mesh optional)

Seals: Buna-N

Packing: P.T.F.E.

Bowls: Standard - Trogamid T (Glass)

Optional - brass

Nuts: Brass

Drain Valve: Brass

## ORDERING INSTRUCTIONS

Refer to page 244 for the order form and ordering instructions.

Additionally, include the following information for this product:

Metal or glass bowl

May be included as standard with some products

# Technical Sizing & Information

SINGER VALVE
Result-Based Solutions. Globally.™

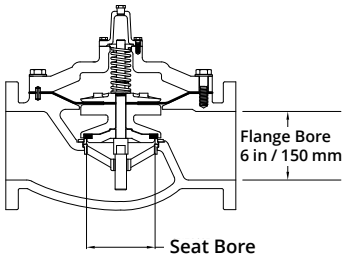
# INTRODUCTION

Sizing and selection of the automatic control valve that will meet all of your system design and performance requirements is critically important. Singer Valve offers the following guidelines and notes to provide a basic understanding of the operating principals and to assist in the selection process.

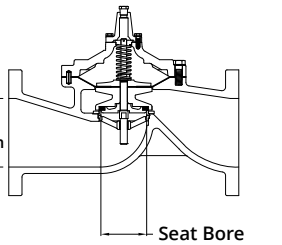
# FULL AND STANDARD PORTS

Singer Valve manufactures two distinct model series – 106 Full Port and 206 Standard Port valves. Model 206 series valves are similar to Model 106 series except that the seats are one standard pipe size smaller than the flange sizes. For example, a 6 in / 150 mm 206-PG valve has a 4 in / 100 mm seat diameter. The Model 206 is often a preferred selection when the flow ranges are suitable. Most sizes are also available in angle (A) pattern and valves larger than 6 in / 150 mm are also available with the Single Rolling Diaphragm (S) technology.

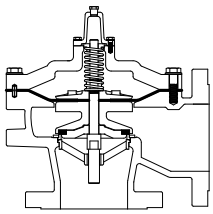
**S106 Series Full Port**
**(6 in / 150 mm PG model shown)**




**S206 Series Standard Port**
**(6 in / 150 mm PG model shown)**




**SA106 Series Full Port**
**(4 in / 100 mm PG model shown)**



Guidelines for using the flow versus pressure drop curves:

| | | |
|---|---|---|
| 106-412 | 106 Series | Full Port, Globe Style Valves |
| 106-413 | A106 Series | Full Port, Angle Style Valves |
| 206-414 | 206 Series | Standard Port , Globe Style Valves |
| 206-414 | A206 Series | Standard Port , Angle Style Valves |

## Cv AND Kv FACTOR & THE STRAIGHT LINE

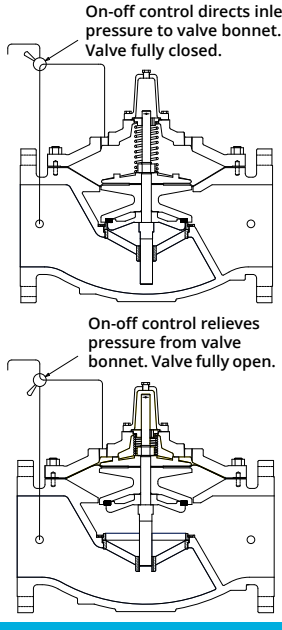
The flow through a fully open valve may be calculated using the formula:

**Imperial Measure**

Q (USGPM) = Cv (Valve Constant) *$\sqrt{\Delta P}$ (psi)

where the Cv is the flow in USGPM when there is a 1 psi pressure drop across a fully open valve.

From the Singer performance curves, the straight lines indicate the flow vs. pressure drop through a fully open valve. The Y axis is drawn at the 1 psi pressure drop value. Consequently, the intersection between the flow curve and the Y axis represents the Cv factor for each valve size.

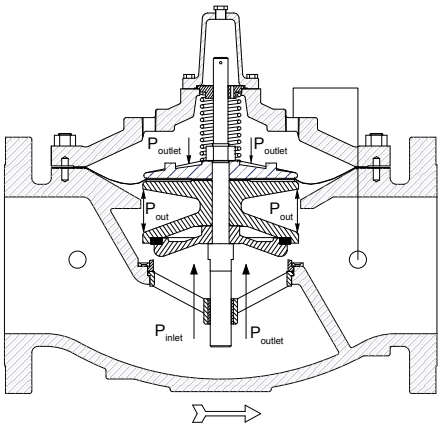



**Metric Measure**

Q (L / s) = Kv (Valve Constant) *$\sqrt{\Delta P}$(bar)

where the Kv is the flow in l / s when there is a 1 bar pressure drop across a fully open valve.

Valves that open fully on low pressure drop require their control chambers (bonnets) to be vented to atmosphere. Commonly, altitude and pump control valves (BPC and DW) are vented to atmosphere and may be selected from the straight line performance curves.



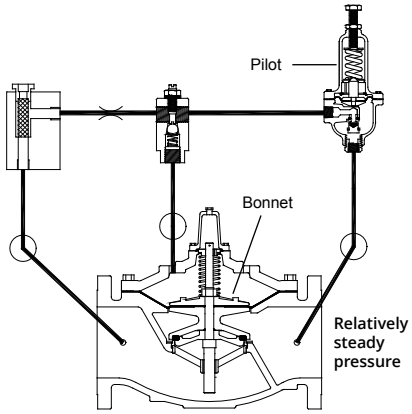

## DROOPING PORTION OF THE CURVES

As mentioned in the previous section, Cv and Kv Factor & the Straight Line, the straight lines represent the pressure drop for fully open valves.

Should the pressure drop across the valve be low (less than 10 psi / 0.7 bar) and the control chamber be connected to downstream, the flow through the valve will be less than when the control chamber is venting to atmosphere and the valve is fully open.

When the bonnet is at the same pressure as the downstream (e.g. the same pressure is on both sides of the diaphragm) there is no resulting opening force from the diaphragm. The force of the main spring and the weight of the inner valve (stem vertical) tend to close the valve.

The opening force results from the pressure drop (between upstream and downstream) acting on the seat area. Flow commences when the pressure drop is sufficient to overcome the force of the spring and the weight of the inner valve assembly. Increasing the pressure drop increases the opening force on the inner valve, permitting greater flow; at approximately 10 psi / 0.7 bar pressure drop the valve is fully open. The drooping portion of the curves represent how the flow increases as the pressure drop increases from zero.




Singer Model 106-PR / 206-PR Pressure Reducing Valve

- Relatively steady pressure downstream
- Varying inlet pressure
- Varying flow demand

## WHEN ACTUAL FLOW IS LESS THAN THE VALUE SHOWN BY THE GRAPH

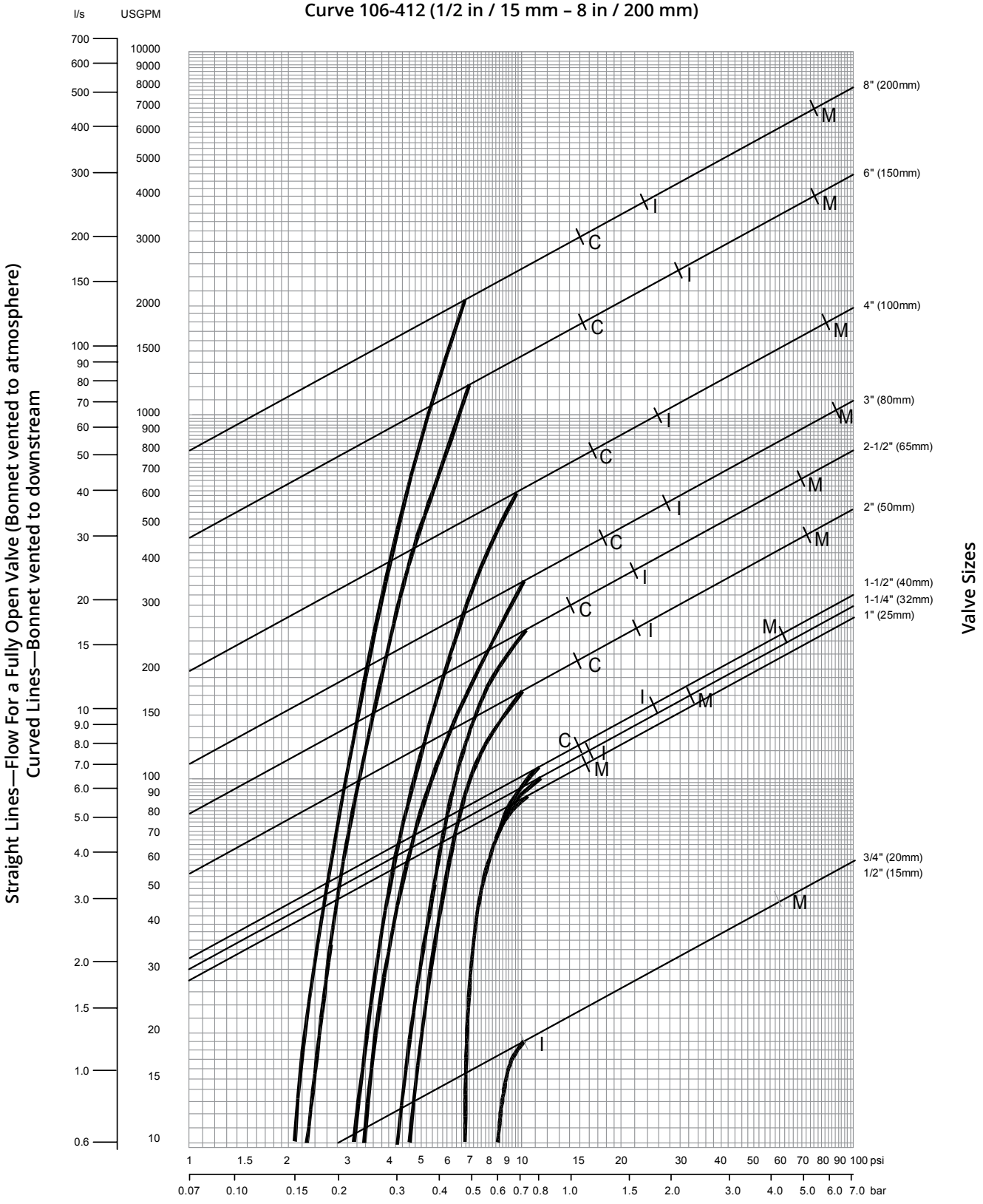
Usually, required flow is less than that shown on the curves—typically, pressure reducing valves. The curves show only the maximum flow available under a given pressure drop. When less than maximum flow is required, the valve will automatically open the required amount.

## OPERATING RANGES

The letters C, I and M are industry standard designations for continuous, intermittent and momentary flows.

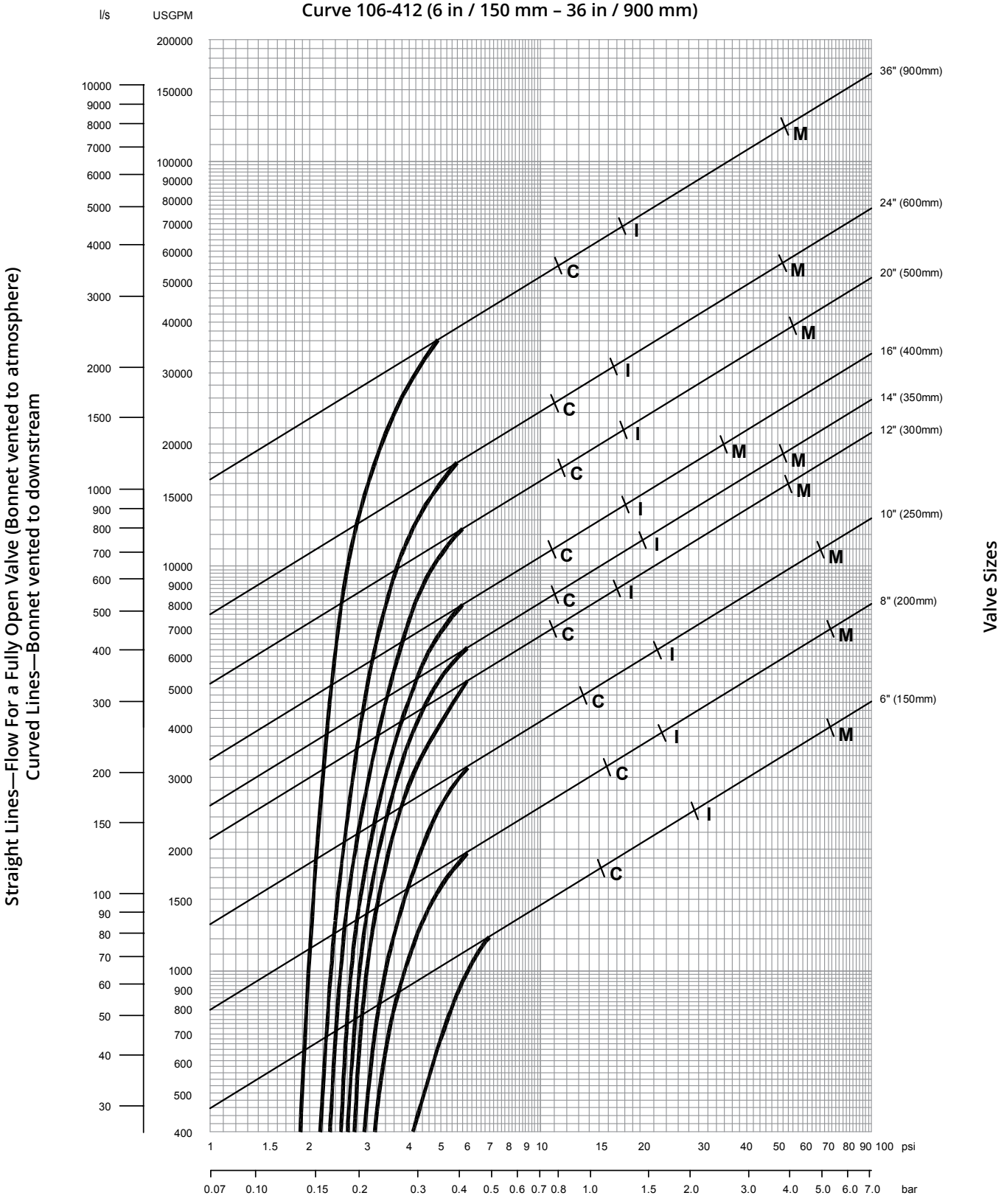
| | |
|---|---|
| C | maximum for continuous flow |
| I | maximum for intermittent flow (peak flow for short duration) |
| M | maximum for momentary flow (such as relief valve) |

**Flow vs. Minimum Pressure Drop – 106 Series (PG, PGX, PT / PTC, PGM)**
Globe Body, Flat Diaphragm
Curve 106-412 (1/2 in / 15 mm – 8 in / 200 mm)



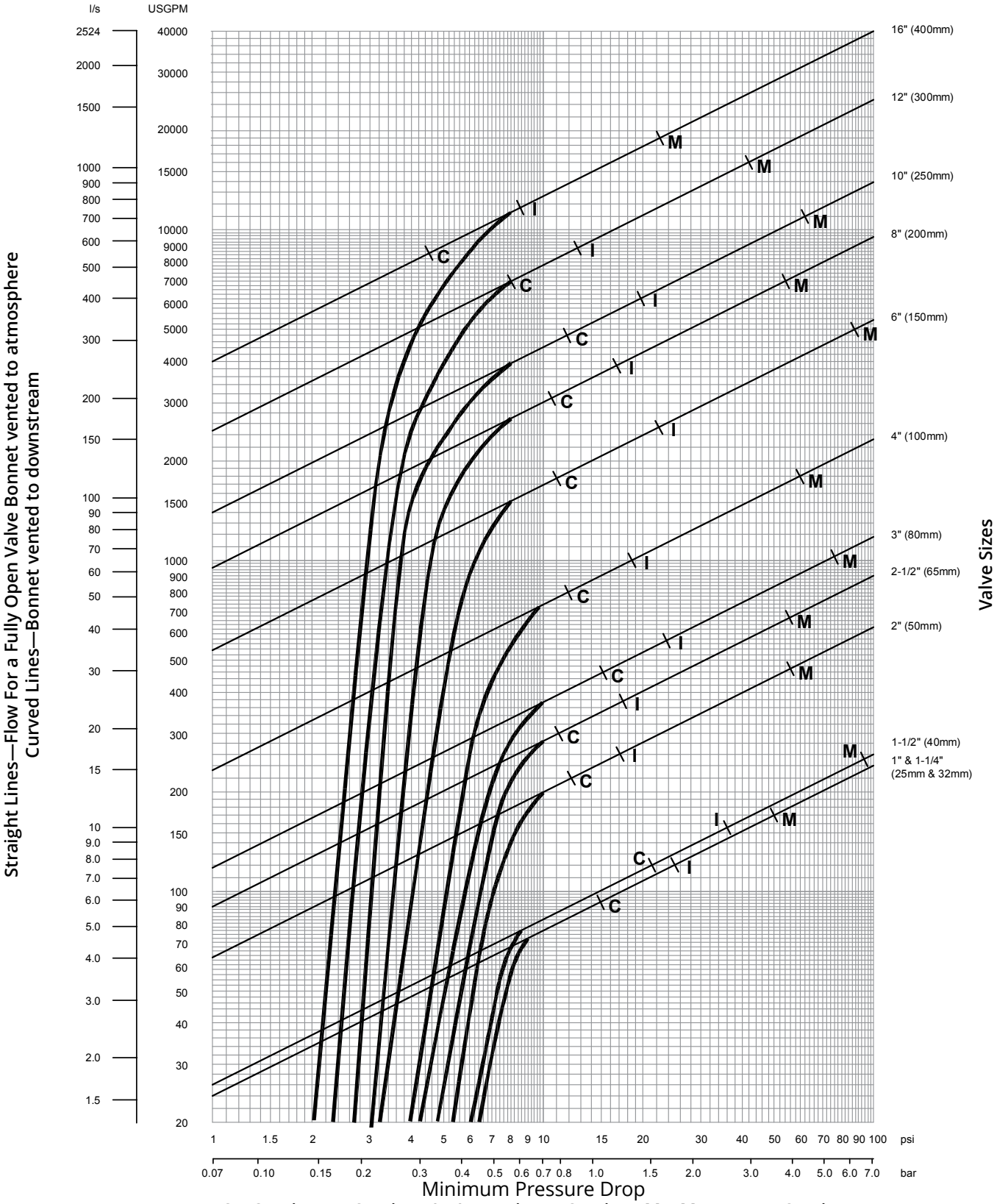

**C = Continuous Service** 20 ft/s / 6 m/s
**I = Intermittent Service** 25 ft/s / 7.5 m/s
**M = Momentary Service** 45 ft/s / 14 m/s

**Flow vs. Minimum Pressure Drop – 106 Series (PG, PGX, PT / PTC, PGM)**
Globe Body, Rolling Diaphragm
Curve 106-412 (6 in / 150 mm – 36 in / 900 mm)



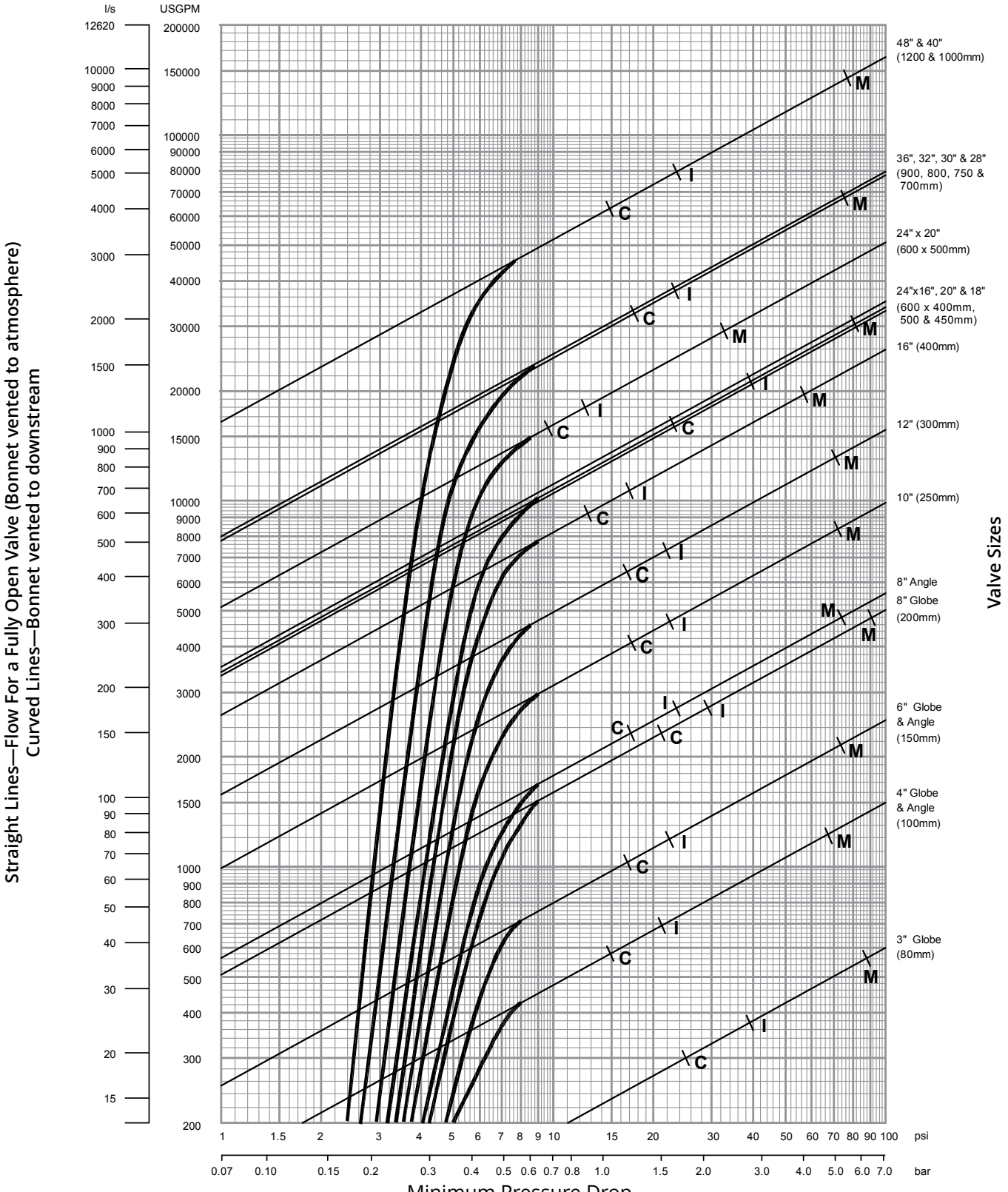

**C = Continuous Service** 20 ft/s / 6 m/s
**I = Intermittent Service** 25 ft/s / 7.5 m/s
**M = Momentary Service** 45 ft/s / 14 m/s

**Flow vs. Pressure Drop – 106 Series (PG, PGX, PT/PTC, PGM)**
Angle Body, Flat & Rolling Diaphragm
Curve 106-413 (1 in / 25 mm – 20 in / 500 mm)




**C = Continuous Service** 20 ft/s / 6 m/s
**I = Intermittent Service** 25 ft/s / 7.5 m/s
**M = Momentary Service** 45 ft/s / 14 m/s

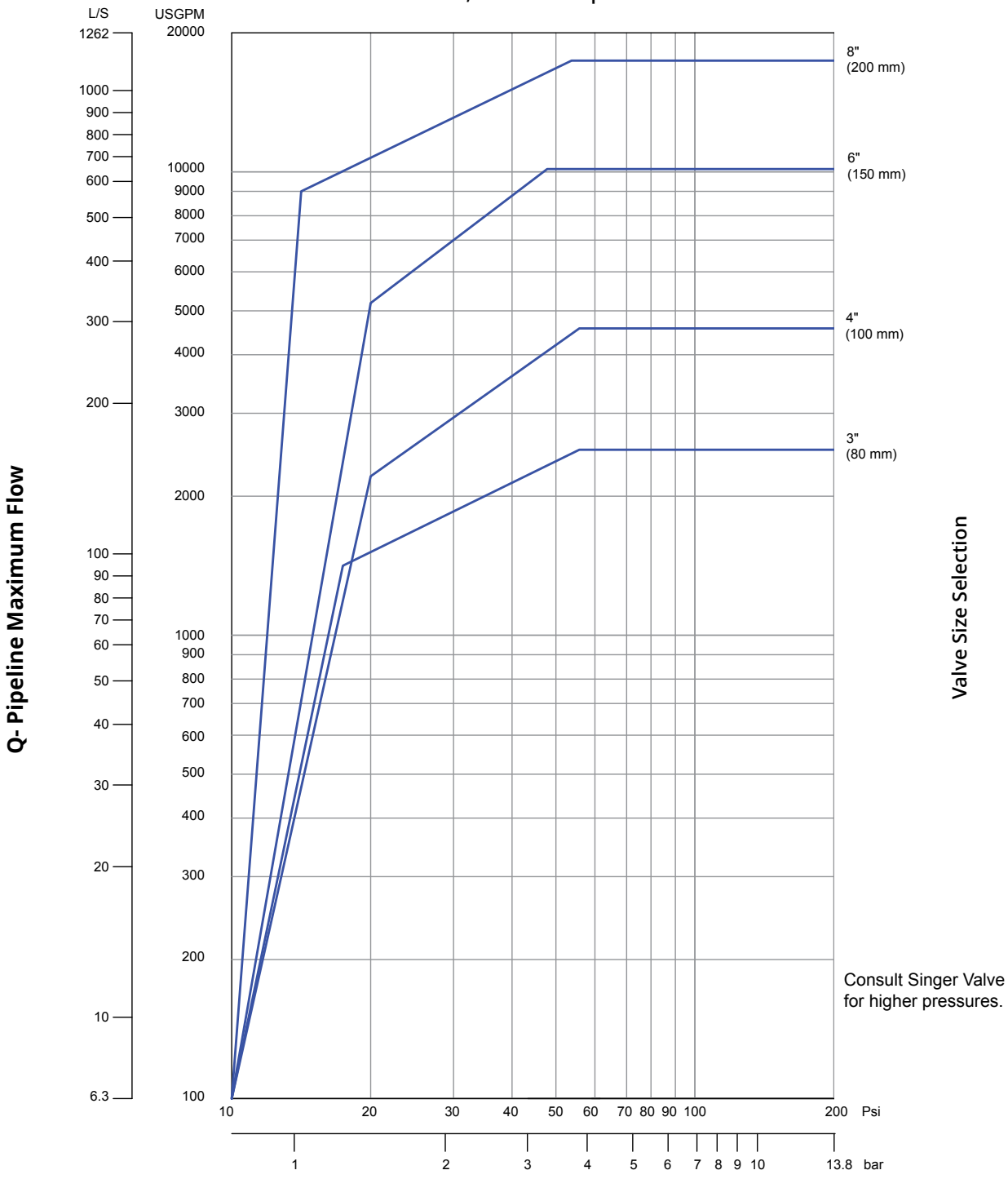
**Flow vs. Pressure Drop – 206 Series (PG, PGX, PT / PTC, PGM)**
Globe & Angle, Flat & Rolling Diaphragm
Bodies Curve 206-414 (3 in / 80 mm – 40 in / 1000 mm)




**C = Continuous Service** 20 ft/s / 6 m/s
**I = Intermittent Service** 25 ft/s / 7.5 m/s
**M = Momentary Service** 45 ft/s / 14 m/s

**Dynamic Lifter Sizing Graph Curve: 3 in / 80 mm – 8 in / 200 mm**

Traditional relief valves for sewage are typically sized larger than a Singer Dynamic Lifter due to opening forces being lost as the inner valve leaves the seat.
Benefits: Smaller size, smaller footprint and reduced cost




**Examples of valve size selection**

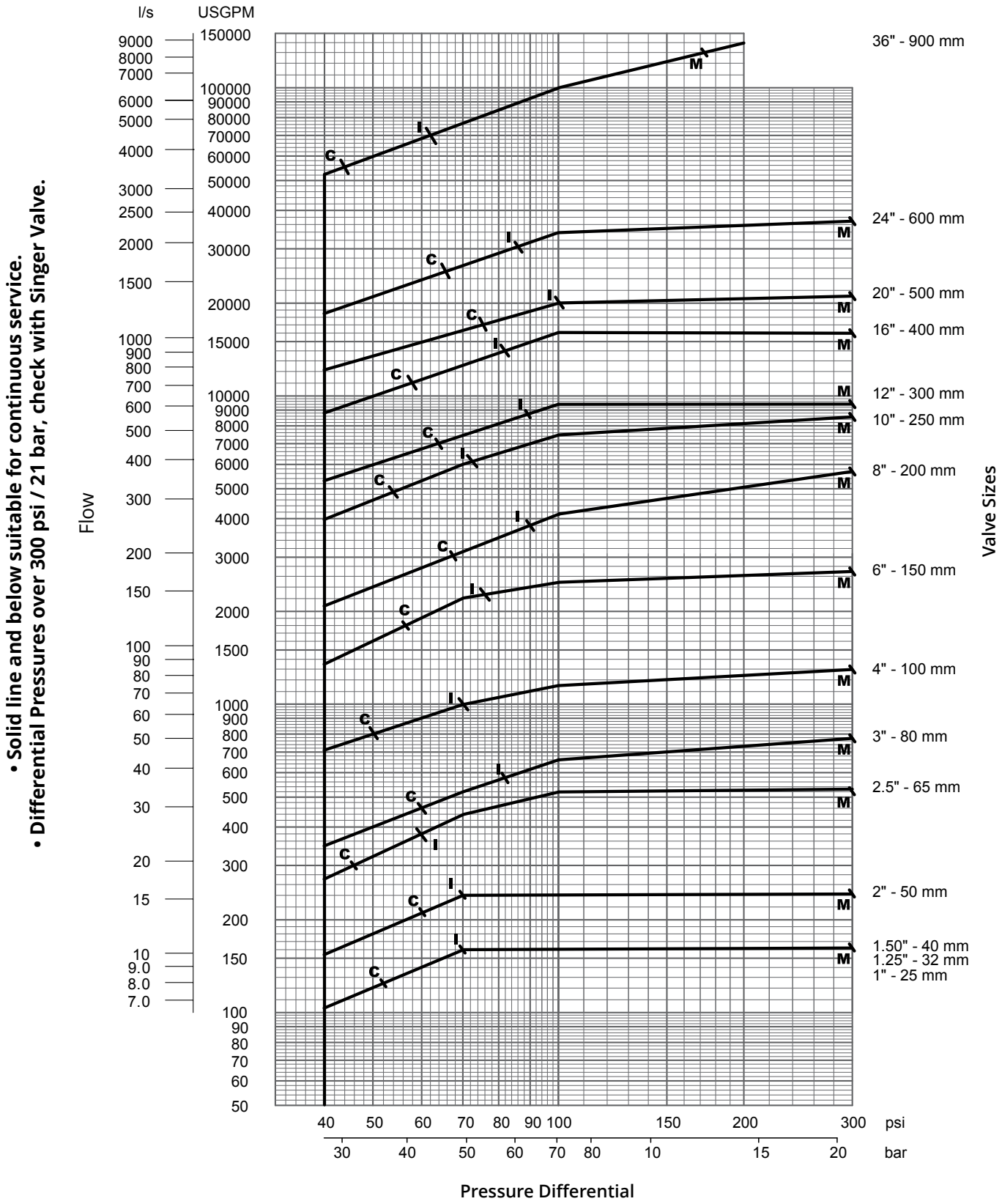
1) Relief setting 80 psi / 5.5 bar - discharge to atmosphere: Max. flow in main pipeline 1,200 USGPM / 75.7 l / s - Find intersect of 80 psi / 5.5 bar ΔP and 1200 USGPM / 75.7 l / s flow. Select next larger size Dynamic Lifter, e.g., 3 in / 80 mm size.

2) Relief setting 55 psi / 3.8 bar - discharge 20 psi / 1.38 bar back pressure: Max. flow in main pipeline 4,000 USGPM / 252.4 l / s
Find intersect of 55 psi – 20 = 35 psi / 2.4 bar ΔP and 4000 USGPM / 252.4 l / s flow. Select next larger size Dynamic Lifter, e.g., 6 in / 150 mm size.

**Note:**

- If the discharge was to atmosphere, ΔP = 55 psi / 3.8 bar and 4 in / 100 mm size would be selected.
- This graph is based on current practice for standard applications. It is intended to be a guide only and no selection guarantee is implied or intended

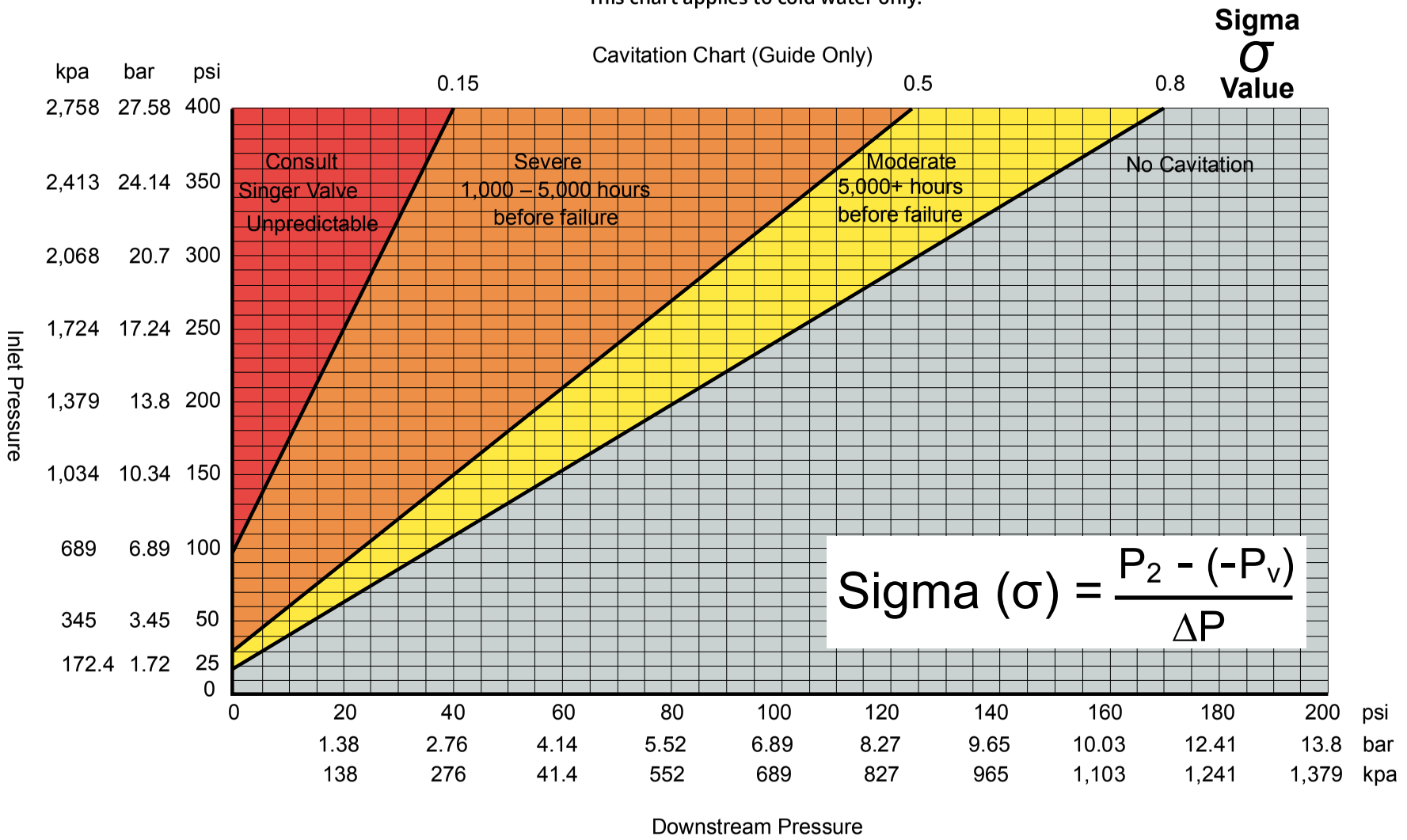
**Flow vs. Pressure Differential**
**Model 106 Series (PG-AC, PGX-AC, PT-AC, PGM-AC)** – Full Port, Globe Body, Flat / Rolling Diaphragm
Anti-Cavitation Valve Curve 106-415 (1 in / 25 mm – 36 in / 900 mm)




- **Solid line and below suitable for continuous service.**
- **Differential Pressures over 300 psi / 21 bar, check with Singer Valve.**

This chart applies to cold water only.

Cavitation Chart (Guide Only)



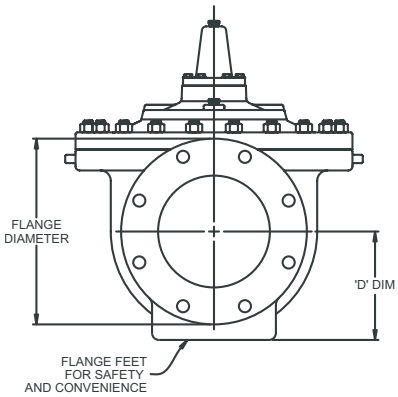

Failure times are for non-AC valves

Where $P_2$ = Downstream pressure
$\Delta P$ = Differential pressure
$P_v$ = 14.4 Psi / 1 Bar / 103 KPa

## STANDARD: ANSI B16.42 – 1998 – CLASS 150 AND 300

| Nominal Pipe Size | Diameter of Flange | | Diameter of Bolt Circle | | Number of Bolts | | Diameter of Bolt Holes | |
|---|---|---|---|---|---|---|---|---|
| Pressure Class | 150# | 300# | 150# | 300# | 150# | 300# | 150# | 300# |
| 1.5 | 5.00 | 6.12 | 3.88 | 4.50 | 4 | 4 | 5/8" | 7/8" |
| 2 | 6.00 | 6.50 | 4.75 | 5.00 | 4 | 8 | 3/4" | 3/4" |
| 2.5 | 7.00 | 7.50 | 5.50 | 5.88 | 4 | 8 | 3/4" | 7/8" |
| 3 | 7.50 | 8.25 | 6.00 | 6.62 | 4 | 8 | 3/4" | 7/8" |
| 4 | 9.19 | 10.19 | 7.50 | 7.88 | 8 | 8 | 3/4" | 7/8" |
| 6 | 11.19 | 12.69 | 9.50 | 10.62 | 8 | 12 | 7/8" | 7/8" |
| 8 | 13.50 | 15.00 | 11.75 | 13.00 | 8 | 12 | 7/8" | 1" |
| 10 | 16.00 | 17.50 | 14.25 | 15.25 | 12 | 16 | 1" | 1-1/8" |
| 12 | 19.00 | 20.50 | 17.00 | 17.75 | 12 | 16 | 1" | 1-1/4" |
| 14 | 21.00 | 23.00 | 18.75 | 20.25 | 12 | 20 | 1-1/8" | 1-1/4" |
| 16 | 23.50 | 25.50 | 21.25 | 22.50 | 16 | 20 | 1-1/8" | 1-3/8" |
| 18 | 25.00 | 28.00 | 22.75 | 24.75 | 16 | 24 | 1-1/4" | 1-3/8" |
| 20 | 27.50 | 30.50 | 25.00 | 27.00 | 20 | 24 | 1-1/4" | 1-3/8" |
| 24 | 33.00 | 36.00 | 29.50 | 32.00 | 20 | 24 | 1-3/8" | 1-5/8" |
| 30 | 38.75 | 43.00 | 36.00 | 39.25 | 28 | 28 | 1-3/8" | 2" |
| 36 | 46.50 | 50.00 | 42.75 | 46.00 | 32 | 32 | 1-5/8" | 2-1/4" |

Dimension in (inches)




## STANDARD: ISO 7005-2 – 1998

| Nominal Pipe Size | Diameter of Flange | | | | Diameter of Bolt Circle | | | | Diameter of Bolt Holes | | | | Number of Bolts | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PN-10 | PN-16 | PN-25 | PN-40 | PN-10 | PN-16 | PN-25 | PN-40 | PN-10 | PN-16 | PN-25 | PN-40 | PN-10 | PN-16 | PN-25 | PN-40 |
| 40 | 155 | 155 | 155 | 155 | 110 | 110 | 110 | 110 | 19 | 19 | 19 | 19 | 4 | 4 | 4 | 4 |
| 50 | 152 | 152 | 152 | 152 | 125 | 125 | 125 | 125 | 19 | 19 | 19 | 19 | 4 | 4 | 4 | 4 |
| 65 | 178 | 178 | 178 | 178 | 145 | 145 | 145 | 145 | 19 | 19 | 19 | 19 | 4 | 4 | 8 | 8 |
| 80 | 200 | 200 | 200 | 200 | 160 | 160 | 160 | 160 | 19 | 19 | 19 | 19 | 8 | 8 | 8 | 8 |
| 100 | 233 | 233 | 260 | 260 | 180 | 180 | 190 | 190 | 19 | 19 | 23 | 23 | 8 | 8 | 8 | 8 |
| 150 | 285 | 285 | 310 | 310 | 240 | 240 | 250 | 250 | 23 | 23 | 28 | 28 | 8 | 8 | 8 | 8 |
| 200 | 343 | 343 | 381 | 381 | 295 | 295 | 310 | 320 | 23 | 23 | 28 | 31 | 8 | 12 | 12 | 12 |
| 250 | 406 | 406 | 445 | 445 | 350 | 355 | 370 | 385 | 23 | 28 | 31 | 34 | 12 | 12 | 12 | 12 |
| 300 | 483 | 483 | 483 | 520 | 400 | 410 | 430 | 450 | 23 | 28 | 31 | 34 | 12 | 12 | 16 | 16 |
| 350 | 533 | 533 | 584 | 584 | 460 | 470 | 490 | 510 | 23 | 28 | 34 | 37 | 16 | 16 | 16 | 16 |
| 400 | 597 | 597 | 648 | 648 | 515 | 525 | 550 | 585 | 28 | 31 | 37 | 40 | 16 | 16 | 16 | 16 |
| 500 | 699 | 699 | 775 | 775 | 620 | 650 | 660 | 670 | 28 | 34 | 37 | 43 | 20 | 20 | 20 | 20 |
| 600 | 838 | 838 | 838 | 915 | 725 | 770 | 770 | 795 | 31 | 37 | 40 | 49 | 20 | 20 | 20 | 20 |
| 700 | 895 | 910 | 960 | 995 | 840 | 840 | 875 | 900 | 31 | 37 | 43 | 48 | 24 | 24 | 24 | 24 |
| 800 | 1,015 | 1,025 | 1,085 | 1,140 | 950 | 950 | 990 | 1,030 | 34 | 40 | 49 | 56 | 24 | 24 | 24 | 24 |
| 900 | 1,115 | 1,125 | 1,185 | 1,285 | 1,050 | 1,050 | 1,090 | 1,170 | 34 | 40 | 49 | 56 | 28 | 28 | 28 | 28 |

Dimension in (mm)

**Note:**

ISO flange diameters may vary slightly from the standard, as the flange bolt pattern is drilled on an ANSI valve flange.

In this section, you will find additional engineering notes for the main valves and also the anti-cavitation valve.

## MAIN VALVES DATA (US & METRIC UNITS & ISO)

**Engineering Notes:**

- Drilled as per ANSI B16.42 or threaded as per ANSI B1.20.1
- ANSI flanges drilled to ISO 7005-2 - 1998 / BS54504 PN 10, 16, 25, or 40, or threaded BSPT
- Class 150 machined flat faced / Class 300 machined raised faced.
- Castings are based on ANSI Class 150 or Class 300 standards.
- For conditions where working pressures exceed 300 psi / 20.7 bar, consult with Singer Valve
- Allow 1/8 in / 3 mm for machining tolerance.
- Allow one to three feet for installation and maintenance clearances. Consult Singer Valve for certified dimensions.
- Preferred method of stem installation is vertically; on valves 10 in / 250 mm and larger the vertical installation method is mandatory.
- Add a minimum 6 in / 150 mm on one side, for Pilot System.

## ANTI-CAVITATION DATA

## 106-AC / 206-AC (206 IN LARGE VALVE SIZES ONLY)

**As a guide, if downstream pressure of an automatic control valve is less than 35% of the inlet pressure, there is a risk of cavitation damage occurring. Use 106-415 to select the valve size.**

Cavitation chart on page 240 can also be used to determine if a valve is cavitating. Plot the maximum inlet pressure against the minimum outlet pressure.

- If this plotted point is to the right of the 0.8 line (e.g. you are in the “No Cavitation” zone) then use performance curves from chart 106-412, 106-413 and 106-414 on pages 234 - 237 to select the valve size.
- If this plotted point is to the left of the 0.8 line then use performance curves 106-415 to select the valve size.

Refer to Singer Performance Curves and Cavitation Charts in the Technical & Sizing Information section page 231 or contact Singer Valve.

# HOW TO ORDER

Order forms can be found on page 244-246.

**FAX/EMAIL: Complete the order form, and fax OR email it to your local Singer Valve Sales Representative. Refer to *singervalve.com/find-a-rep* for sales representative contact information.**

**WEBSITE: Complete a *Request a Quote* form on singervalve.com AND attach a scanned PDF copy of the completed order form.**

**When completing your order form, please include as much detail as possible.**

Specifically, always include the following:

- Product model number
- Globe or angle pattern
- End connections
- Valve size

Please note that some products will require additional information, refer to the specific product page sheet for clarification.

# PARTS AND REPAIR KITS

To order Parts and Repair Kits, please complete the order form and include the following information:

- Valve model
- Revision
- Valve size (inches or millimeters)
- Maximum inlet pressure (psi or bar)
- Serial number

This information can be found on the identification plate on the product.

| SINGER VALVE INC. | | | REV. |
|---|---|---|---|
| MODEL | | | |
| SIZE | IN. | MAX INLET | PSI |
| SER. NO | | | |

Identification Plate Sample

Essential information required includes valve function, material, pressure rating, end connections, pilot controls and control adjustment ranges.

# TO SPECIFY SINGER PRODUCTS

Singer Specifications are set up in a modular fashion.

1. Select the product you require. Refer to the specification which accompanies that product.
2. Refer to the Main Valves section (page 11). Add the specification for the Singer Main Valve Body selected.
3. Refer to the Main Valves Options section (page 62). Add the addendum to your Main Valve specification (if applicable).
4. Refer to the Pilots & Accessories section (page 207). Add the specification for the Singer pilot and/or accessory selected (if applicable).

## ORDER/QUOTATION INFORMATION

PROJECT NAME: _____
REFERENCE #: _____
SINGER REP: _____
P O #: _____

ITEM NO. ON PO: _____
QUANTITY: _____
DATE APPROVED: _____
DATE ORDERED: _____
REQUESTED DELIVERY: _____

## ORDER DESCRIPTION

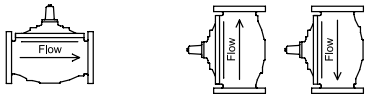
MODEL# (I.E. PR, RPS): _____
SERIES ☐ 106 ☐ 206
VALVE SIZE: _____ ☐ INCHES ☐ MM
FLUID BEING HANDLED: _____

### END CONNECTIONS

ANSI FNPT ☐ ANSI 150 ☐ ANSI 300 ☐ BSPT ☐
ANSI DRILLED TO PN10 ☐ ANSI DRILLED TO PN16 ☐
ANSI DRILLED TO PN25 ☐ ANSI DRILLED TO PN40 ☐
OTHER - PLEASE SPECIFY: _____

### VALVE PATTERN

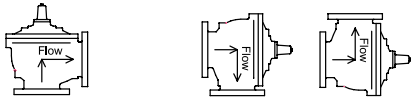
GLOBE PATTERN ORIENTATION (SIDE VIEWS SHOWN)




☐ ☐ ☐

NOTE: HORIZONTAL STEM -106 AVAILABLE UP TO 8" ONLY.
206 AVAILABLE UP TO 10" ONLY. CONSULT FACTORY.

ANGLE PATTERN ORIENTATION (SIDE VIEWS SHOWN)

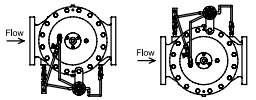



☐ ☐ ☐

NOTE: HORIZONTAL STEM -106 AVAILABLE UP TO 8" ONLY.
206 AVAILABLE UP TO 10" ONLY. CONSULT FACTORY.

### PILOT SYSTEM ORIENTATION

STANDARD OPPOSITE (TOP VIEWS SHOWN)




☐ ☐

### APPLICATION DETAILS

USGPM ☐ *OR* L/S ☐
PSI ☐ *OR* BAR (KG/CM$^2$) ☐
OTHER - PLEASE SPECIFY: _____

### FLOW RATE

MINIMUM: _____
NORMAL: _____
MAXIMUM: _____

### DIFFERENTIAL PRESSURE RANGE

INLET: _____ OUTLET: _____
INLET: _____ OUTLET: _____
INLET: _____ OUTLET: _____

### FLUID TEMPERATURE RANGE

MINIMUM: _____
NORMAL: _____
MAXIMUM: _____

### ELECTRICAL (WHERE APPLICABLE)

SOLENOID VOLTAGE: _____
PILOT RANGE(S): _____
ENERGIZE TO: ☐ OPEN *OR* ☐ CLOSE MAIN VALVE
NUMBER OF LIMIT SWITCHES: _____
ACTUATION POSITIONS: _____
CONTACTS: ☐ SPDT *OR* ☐ DPDT
STANDARD POWER-FAILURE MODE IS FAIL AT LAST POSITION ☐
*OR* FAIL OPEN ON POWER FAILURE ☐
*OR* FAIL CLOSED ON POWER FAILURE ☐
SOURCE OF SETPOINT SIGNAL (4-20MA): _____
SOURCE OF SET PROCESS VARIABLE SIGNAL: _____
OPTIONAL EXPLOSION PROOF HOUSING ☐
OPTIONAL NEMA 4X CONTROL PANEL ENCLOSURE ☐
OPTIONAL TOUCH SCREEN OPERATOR INTERFACE ☐

### MAIN VALVE OPTIONS

RECLAIMED WATER ☐
EXTERNAL SPRING LIFT ☐
GROOVED ENDS ☐
INTERNAL DROP CHECK ☐
ANTI CAVITATION TRIM ☐
X107 POSITION INDICATOR ☐
X129 LIMIT SWITCH INDICATOR ☐
X156 ANALOG POSITION TRANSMITTER ☐
NO YELLOW METAL UPGRADE ☐
DELRIN STEM SLEEVE ☐
OXY NITRIDE STEM ☐

### OTHER

CONTROLS FLOW
IN ☐ OUT ☐ OF RESERVOIR

### PILOTS AND ACCESSORIES

PILOT SPRING RANGE: _____
REQUIRED OPERATING RANGE: _____
PILOT UTILIZED: _____

MODEL J0097A STRAINER ☐
MODEL J0098A STRAINER ☐
ARION MODEL J1521G STRAINER ☐
ARION MODEL J1521M STRAINER ☐

### OTHER INFORMATION

_____
_____
_____
_____

### SPECIAL NOTES _____

CONTROL VALVE & ACCESSORIES ORDER FORM
EMAIL OR FAX TO YOUR LOCAL SINGER VALVE SALES REPRESENTATIVE.
REFER TO SINGERVALVE.COM/FIND-A-REP FOR CONTACT INFORMATION.

SINGER VALVE
Result-Based Solutions. Globally.™

# SINGER VALVE

*Result-Based Solutions. Globally.*™

## SPI-MV ORDER FORM

**MODEL NUMBER:**

SINGLE POINT INSERTION
ELECTROMAGNETIC FLOW METER
IOM: A-0985A-SPI-MV

SPI - MV -____ -____ -____-____-____

**SELECTION AND CONFIGURATION**

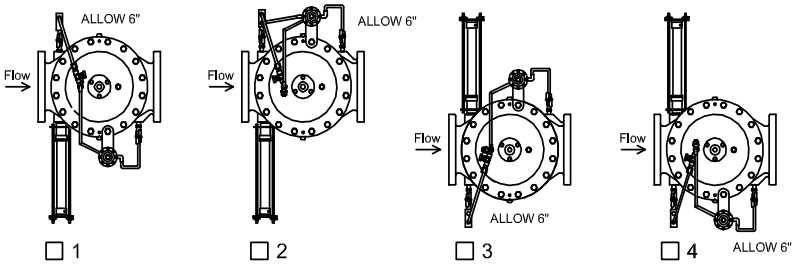
SPI-MV- XXX - XX - X - X - X

VALVE SIZE
003 - 3" 106
004 - 4" 106
006 - 6" S106
008 - 8" S106
010 - 10" S106
012 - 12" S106
016 - 16" S106
020 - 20" S106
024 - 24" S106
028 - 28" S206
036 - 36" S106

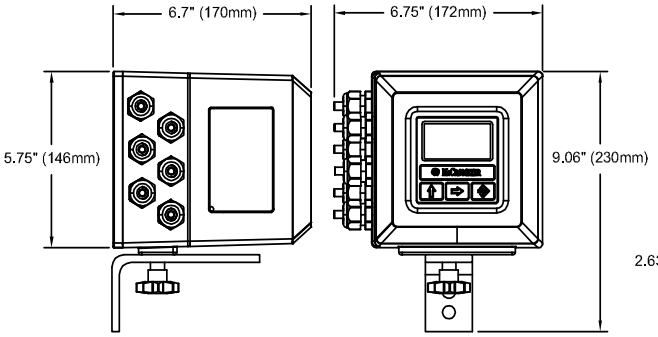
SUPPLY VOLTAGE
AC - 90-265VAC, 45-66 Hz (25VA)
DC - 10-35 VDC (21W)
BT - BATTERY POWER (0.5W)
**NOTE: BATTERY ONLY AVAILABLE IN LOCAL CONVERTOR

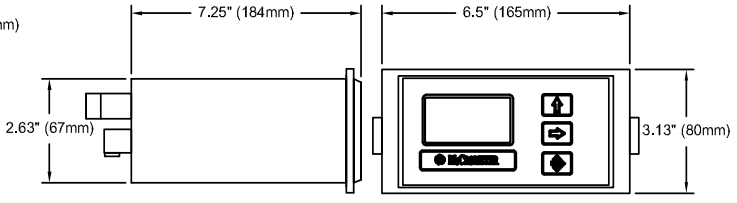
CONVERTER
L - LOCAL CONVERTER (IP67)
P - PANEL-MOUNTABLE CONVERTER (IP65)

PILOT SYSTEM ORIENTATION




CABLE LENGTH
A - 5 FEET
B - 10 FEET
C - 20 FEET (STANDARD)
D - OTHERS: _____




**TRANSMITTER/CONVERTER CONFIGURATION** * OPTIONAL

☐ 1 Flow Output Range: _____

☐ 2 Display Units: _____

* ☐ 3 Totalizer Pulse Output: _____

* ☐ 4 Alarms: _____

**AVALIABLE ALARM OUTPUTS**

SIGN (S): Indicates Flow Direction

EMPTY PIPE (EP): Indicated Empty Pipe

OVERFLOW (O): Indicated Out of Range

HARDWARE ALARM (H): Cumulative Alarm Output; Interrupt Coils, Empty Pipe, Measure Error

**ADDITIONAL NOTES:**

This quotation/submittal is for valve(s) described above and reflects our understanding of functions required. We assume no responsibility for meeting all stated or implied requirements beyond functions listed above. If above does not adequately describe functions/operation of above products, please ask for a more comprehensive description and mention areas where above description is deficient.

# SINGER VALVE
Result-Based Solutions. Globally.™

# 420-DC / 420-AC ORDER FORM

**MODEL NUMBER:**

SINGER MODEL 420DC
MOTORIZED PILOT ACTUATOR
IOM: A-0984E

420 - DC - ___ - ___ - ___ - ___

**SELECTION AND CONFIGURATION**

420-DC- XXX - XX - XX - XX

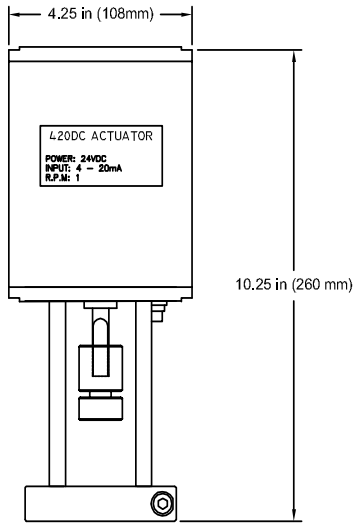
SUPPLY VOLTAGE
DC - 24 VDC (50W MINIMUM)

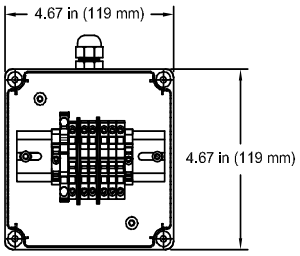
CONTROL
CABLE LENGTH
002 - 2 M (STANDARD)
XXX - SPECIFY LENGTH

ACCESSORIES
00 - NONE
CB - COMMUNICATION BOX WITH TERMINAL STRIP
PS - POWER SUPPLY PANEL
120-240VAC TO 24VDC CONVERTER
WITH TERMINAL STRIP

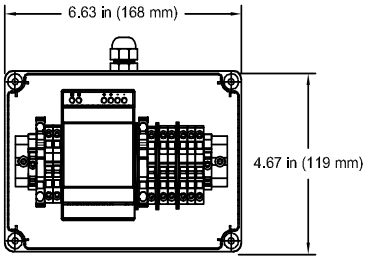
SOFTWARE
00 - NONE
PK - PROGRAMMING KIT
(PROGRAMMING SOFTWARE WITH USB CABLE)

PILOT
00 - NONE
01 - 160-PR
02 - 81-RP
03 - 160-RF
04 - OTHERS:_____

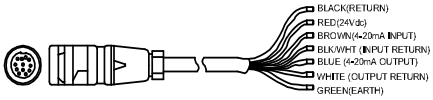



CB - COMMUNICATION BOX
FULLY WIRED WITH CONTROL CABLE
ENVIRONMENTAL RATING: IP67 (NEMA 4,4X,6)




PS - POWER SUPPLY PANEL
120-240VAC TO 24VDC CONVERTER
FULLY WIRED WITH CONTROL CABLE
ENVIRONMENTAL RATING: IP67 (NEMA 4,4X,6)




CONTROL CABLE
STANDARD 2-METER MULTI-CONDUCTOR CABLE
WITH CIRCULAR CONNECTOR AND FLYING LEADS

ENVIRONMENTAL RATING: IP68 (NEMA 4,4X,6,6P)

**FACTORY CALIBRATION SERVICE** ***OPTIONAL**

☐ 1 Pilot Range: _____

* ☐ 2 Calibration Range:

Minimum setpoint at 4.0 mA: _____

Maximum setpoint at 20.0 mA: _____

* ☐ 3 Failure Mode: (on loss of signal) ☐ STOP ☐ FAIL TO MINIMUM SETPOINT ☐ FAIL TO MAXIMUM SETPOINT

NOTE: IF A CALIBRATION RANGE IS NOT SPECIFIED, THE ACTUATOR WILL BE FACTORY CALIBRATED TO THE FULL PILOT SPRING RANGE.

**ADDITIONAL NOTES:**

_____
_____
_____
_____
_____
_____
_____

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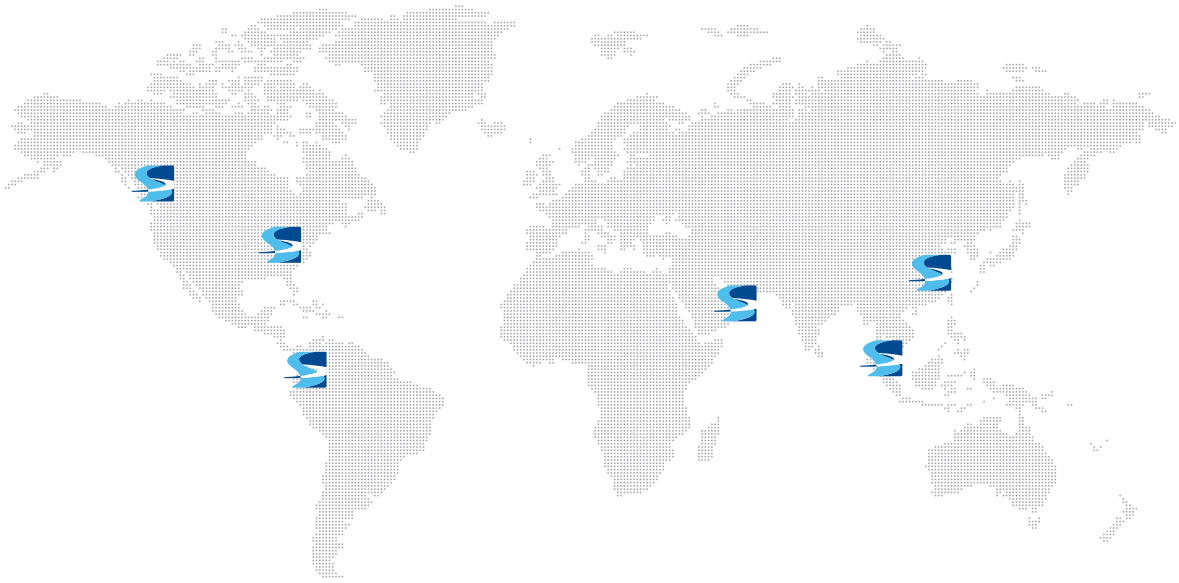
# SINGER VALVE INC. GLOBAL OFFICES



## CANADA HEAD OFFICE

12850 – 87th Avenue
Surrey, BC V3W 3H9
Canada

Tel: (604) 594 5404
Fax: (604) 594 8845
Toll Free Fax (Canada & USA):
1 800 663 7266
✉ singer@singervalve.com

## USA OFFICE

Singer Valve LLC
1873 Scott Futrell Drive
Charlotte, NC 28208

Tel: (704) 391 5785
Fax: (704) 391 5768
Toll Free (USA):
1 888 764 7858
✉ mark@singervalve.com

## UNITED ARAB EMIRATES OFFICE

Singer Valve Middle East FZE
PO Box 121326
SAIF Free Zone, Q3 – Unit 94
Sharjah International Airport
FREE ZONE
Sharjah, UAE

Tel: +971 6 557 8116
Fax: +971 6 557 8117
✉ canadian@singervalve.com

## COLOMBIA OFFICE

Singer Valve Latin America
Carrera 45, No. 16 Sur 190
Opalo 1105 – El Poblado
Medellin, Colombia

Tel: +57 310 4194165
✉ pegan@singervalve.com

## MALAYSIA OFFICE

SVM Water Controls Sdn. Bhd.
No 6, Jalan MJ 4, Medan Maju Jaya,
Batu 7, Jalan Kelang Lama
46200 Petaling Jaya
Selangor Darul Ehsan,
Malaysia

Tel: 603 7784 4043 / 7784 4044
Fax: 603 7781 8312
✉ svmwc@svm.com.my

## CHINA OFFICE

Singer Valve (Taicang)
Company Ltd.
No.88 East Dalian Road,
Taicang, Jiangsu, China

Tel: 86 512 5320 6188
Fax: 86 512 5320 6099
✉ lijun@singervalve.com

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