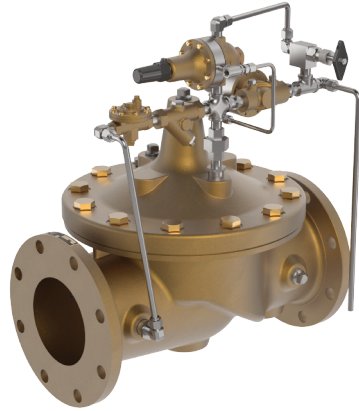


Seawater Service Pump Start Pressure Relief Valve



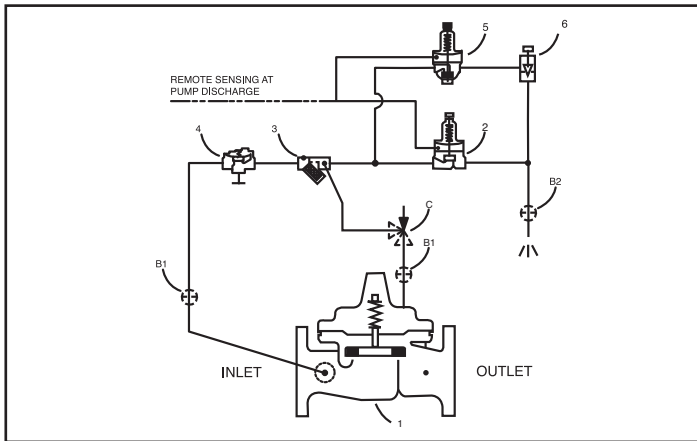
Type Approved



- Seawater Service Materials
- Reduced Cavitation Design
- Drip-tight, Positive Seating Action
- Globe or Angle Pattern for Model 50-49
- Every Valve Factory-Tested
- Three Year Warranty

Model 50-49 Pump Start / Pressure Relief Valve provides pump and pipeline protection during pump start sequence and pump operation when discharge pressure rises to unsafe levels.

Model 50-49 Pump Start / Pressure Relief Valve available in sizes 2" - 36" in both globe and angle pattern.



Operation:

The Model 50-49 has both a normally open and normally closed pilot controls. The valve mounts on a pipe tee at the pump discharge and provides pipeline protection at pump start-up through the normally open pilot control. This pilot will be open to vent the relief valve cover chamber and enable the relief valve to be open at pump start. When the pump first starts, the relief valve relieves both air and start-up water pressure to atmosphere and protects the pump discharge piping from accelerated pressure spikes. The spring loaded pilot with adjustable spring range will slowly close and divert the system pressure into system eliminating unsafe pressure spikes which can damage or rupture discharge piping.

Should the discharge pump pressure continue to rise due to little or no system demand, the normally closed pilot provides overpressure protection by relieving excess pressure to atmosphere as long as the relief valve inlet pressure is greater than the pilot pressure setting. This pilot has various adjustable spring ranges to meet the system pressure requirements.

Materials:

Main Valve Body & Cover:

- Ductile Iron ASTM A-536
- Cast Steel ASTM A216-WCB
- Naval Bronze ASTM B61
- Stainless Steel ASTM A743-CF-8M
- Ni. AL. Bronze ASTM B148

Main Valve Trim:

ASTM B61 Bronze Seat, Monel Trim

Pilot Control System:

- Cast Bronze with Monel Trim
- Monel, Super Duplex Stainless Steel Optional
- Stainless Steel 316 Tubing & Fittings

Schematic Diagram

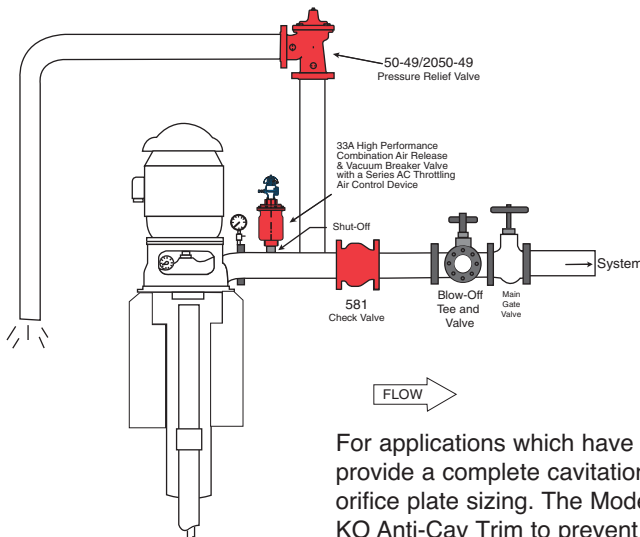
Item Description

- 100S/2100S Hytrol (Main Valve)
- CRL Pressure Relief Control
- X44A Strainer & Orifice Assy
- 81-01 Check Valve
- CRA Pressure Reducing Control
- CNA Needle Valve (Opening)

Optional Features

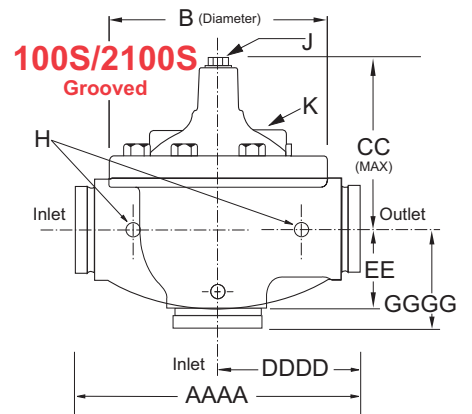
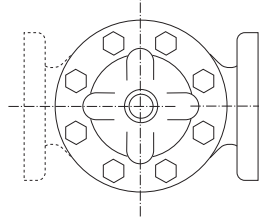
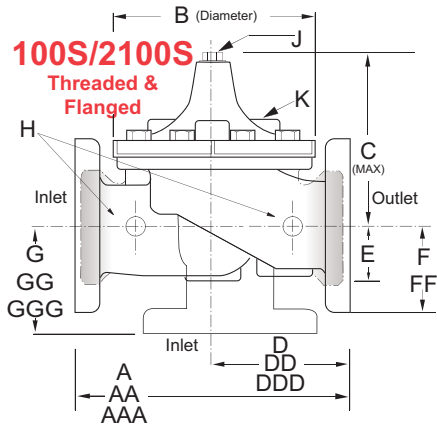
Item Description

- B CK2 (Isolation Valves)
- C CV Flow Control (Closing)



For applications which have cavitation issues, we can provide a complete cavitation analysis and recommend orifice plate sizing. The Model 50-49 can be fitted with KO Anti-Cav Trim to prevent cavitation.

Model 50-49 Dimensions



| Valve Size (Inches) | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 |
|-------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A Threaded | 7.25 | 7.25 | 7.25 | 9.38 | 11.00 | 12.50 | — | — | — | — | — | — | — | — | — | — | — | — |
| AA 150 ANSI | — | — | 8.50 | 9.38 | 11.00 | 12.00 | 15.00 | 20.00 | 25.38 | 29.75 | 34.00 | 39.00 | 41.38 | 46.00 | 52.00 | 61.50 | 63.00 | 76.00 |
| AAA 300 ANSI | — | — | 9.00 | 10.00 | 11.62 | 13.25 | 15.62 | 21.00 | 26.38 | 31.12 | 35.50 | 40.50 | 43.50 | 47.64 | 53.62 | 63.24 | 64.50 | 76.00 |
| AAAA Grooved End | — | — | 8.50 | 9.00 | 11.00 | 12.50 | 15.00 | 20.00 | 25.38 | — | — | — | — | — | — | — | — | — |
| B Dia. | 5.62 | 5.62 | 5.62 | 6.62 | 8.00 | 9.12 | 11.50 | 15.75 | 20.00 | 23.62 | 28.00 | 32.75 | 35.50 | 41.50 | 45.00 | 53.16 | 56.00 | 66.00 |
| C Max. | 5.50 | 5.50 | 5.50 | 6.50 | 7.56 | 8.19 | 10.62 | 13.38 | 16.00 | 17.12 | 20.88 | 24.19 | 25.00 | 39.06 | 41.90 | 43.93 | 54.60 | 61.50 |
| CC Max. Grooved End | — | — | 4.75 | 5.75 | 6.88 | 7.25 | 9.31 | 12.12 | 14.62 | — | — | — | — | — | — | — | — | — |
| D Threaded | 3.25 | 3.25 | 3.25 | 4.75 | 5.50 | 6.25 | — | — | — | — | — | — | — | — | — | — | — | — |
| DD 150 ANSI | — | — | 4.00 | 4.75 | 5.50 | 6.00 | 7.50 | 10.00 | 12.69 | 14.88 | 17.00 | 19.50 | 20.81 | — | — | 30.75 | — | — |
| DDD 300 ANSI | — | — | 4.25 | 5.00 | 5.88 | 6.38 | 7.88 | 10.50 | 13.25 | 15.56 | 17.75 | 20.25 | 21.62 | — | — | 31.62 | — | — |
| DDDD Grooved End | — | — | — | 4.75 | — | 6.00 | 7.50 | — | — | — | — | — | — | — | — | — | — | — |
| E | 1.12 | 1.12 | 1.12 | 1.50 | 1.69 | 2.06 | 3.19 | 4.31 | 5.31 | 9.25 | 10.75 | 12.62 | 15.50 | 12.95 | 15.00 | 17.75 | 21.31 | 24.56 |
| EE Grooved End | — | — | 2.00 | 2.50 | 2.88 | 3.12 | 4.25 | 6.00 | 7.56 | — | — | — | — | — | — | — | — | — |
| F 150 ANSI | — | — | 2.50 | 3.00 | 3.50 | 3.75 | 4.50 | 5.50 | 6.75 | 8.00 | 9.50 | 10.50 | 11.75 | 15.00 | 16.50 | 19.25 | 22.50 | 25.60 |
| FF 300 ANSI | — | — | 3.06 | 3.25 | 3.75 | 4.13 | 5.00 | 6.25 | 7.50 | 8.75 | 10.25 | 11.50 | 12.75 | 15.00 | 16.50 | 19.25 | 24.00 | 25.60 |
| G Threaded | 1.88 | 1.88 | 1.88 | 3.25 | 4.00 | 4.50 | — | — | — | — | — | — | — | — | — | — | — | — |
| GG 150 ANSI | — | — | 4.00 | 3.25 | 4.00 | 4.00 | 5.00 | 6.00 | 8.00 | 8.62 | 13.75 | 14.88 | 15.69 | — | — | 22.06 | — | — |
| GGG 300 ANSI | — | — | 4.25 | 3.50 | 4.31 | 4.38 | 5.31 | 6.50 | 8.50 | 9.31 | 14.50 | 15.62 | 16.50 | — | — | 22.90 | — | — |
| GGGG Grooved End | — | — | — | 3.25 | — | 4.25 | 5.00 | — | — | — | — | — | — | — | — | — | — | — |
| H NPT Body Tapping | .375 | .375 | .375 | .375 | .50 | .50 | .75 | .75 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| J NPT Cover Center Plug | .25 | .25 | .25 | .50 | .50 | .50 | .75 | .75 | 1 | 1 | 1.25 | 1.5 | 2 | 1.5 | 1.5 | 1.5 | 2 | 2 |
| K NPT Cover Tapping | .375 | .375 | .375 | .375 | .50 | .50 | .75 | .75 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| Stem Travel | 0.4 | 0.4 | 0.4 | 0.6 | 0.7 | 0.8 | 1.1 | 1.7 | 2.3 | 2.8 | 3.4 | 4.0 | 4.5 | 5.1 | 5.63 | 6.75 | 7.5 | 8.5 |
| Approx. Ship Wt. Lbs. | 15 | 15 | 15 | 35 | 50 | 70 | 140 | 285 | 500 | 780 | 1165 | 1600 | 2265 | 2982 | 3900 | 6200 | 7703 | 11720 |

Model 50-49 Functional Data (Uses Basic Valve Model 100-01)

| Valve Size | Inches | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 | |
|--|--------------------|-----------------|-------|-------|-----|-------|-----|-----|-----|------|------|-------|-------|-------|------|------|-------|------|-------|-------|
| | mm. | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 600 | 750 | 900 | |
| C _v Factor | Globe Pattern | Gal./Min.(gpm.) | 13.3 | 30 | 32 | 54 | 85 | 115 | 200 | 440 | 770 | 1245 | 1725 | 2300 | 3130 | 3725 | 5345 | 7655 | 10150 | 14020 |
| | Litres/Sec. (l/s.) | 3.2 | 7.2 | 7.7 | 13 | 20 | 28 | 48 | 106 | 185 | 299 | 414 | 552 | 752 | 894 | 1286 | 1837 | 2436 | 3200 | |
| Angle Pattern | Gal./Min.(gpm.) | 27 | 27 | 29 | 61 | 101 | 139 | 240 | 541 | 990 | 1575 | 2500* | 3060* | 4200* | — | — | — | — | — | |
| | Litres/Sec. (l/s.) | 6.5 | 6.5 | 7 | 15 | 24 | 33 | 58 | 130 | 238 | 378 | 600 | 734 | 1008 | — | — | — | — | — | |
| Equivalent Length of Pipe | Globe Pattern | Feet (ft.) | 23 | 19 | 37 | 51 | 53 | 85 | 116 | 211 | 291 | 347 | 467 | 422 | 503 | 612 | 595 | 628 | 1181 | 2285 |
| | | Meters (m.) | 7.1 | 5.7 | 12 | 15.5 | 16 | 26 | 35 | 64 | 89 | 106 | 142 | 129 | 154 | 187 | 181 | 192 | 552 | 569 |
| | Angle Pattern | Feet (ft.) | 28 | 28 | 46 | 40 | 37 | 58 | 80 | 139 | 176 | 217 | 222* | 238* | 247* | — | — | — | — | — |
| | | Meters (m.) | 8.7 | 8.7 | 14 | 12 | 11 | 18 | 25 | 43 | 54 | 66 | 68 | 73 | 75 | — | — | — | — | — |
| K Factor | Globe Pattern | 6.1 | 3.6 | 5.9 | 5.6 | 4.6 | 6.0 | 5.9 | 6.2 | 6.1 | 5.8 | 6.1 | 5.0 | 5.2 | 5.2 | 4.6 | 4.0 | 5.3 | 7.8 | |
| | Angle Pattern | 4.4 | 4.4 | 7.1 | 4.4 | 3.3 | 4.1 | 4.1 | 4.1 | 3.7 | 3.6 | 2.9 | 2.8 | 2.6 | — | — | — | — | — | |
| Liquid Displaced from Cover Chamber When Valve Opens | Fl. Oz | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| | U.S. Gal. | .02 | .02 | .02 | .03 | .04 | .08 | .17 | .53 | 1.26 | 2.51 | 4.0 | 6.5 | 9.6 | 11 | 12 | 29 | 42 | 90 | |
| | ml | 20.7 | 75.7 | 75.7 | 121 | 163 | 303 | 643 | — | — | — | — | — | — | — | — | — | — | — | |
| | Litres | — | — | — | — | — | — | — | 2.0 | 4.8 | 9.5 | 15.1 | 24.6 | 36.2 | 41.6 | 45.4 | 109.8 | 197 | 340 | |

Valve Capacity

| Valve Size (inches) | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 24 | 30 | 36 |
|---------------------|-----|-------|-------|-----|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Max. Continuous GPM | 55 | 93 | 125 | 210 | 300 | 460 | 800 | 1800 | 3100 | 4900 | 7000 | 8400 | 11000 | 14000 | 17000 | 25000 | 42000 | 50000 |
| Max Surge GPM | 120 | 210 | 280 | 470 | 670 | 1000 | 1800 | 4000 | 7000 | 11000 | 16000 | 19000 | 25000 | 31000 | 39000 | 56500 | 63000 | 85000 |



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