



— MODEL — **650-33**

Excess Pressure Safety Shut-Off Valve

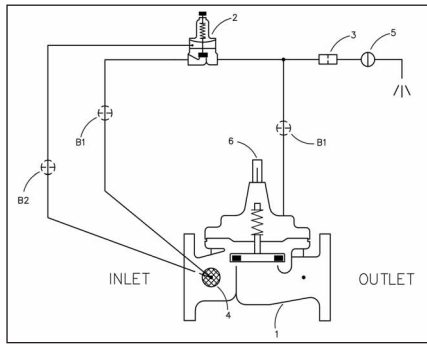


- **Automatic Operation Adds Safety to Pressure Reducing Valve (PRV) Rigs**
- **Easy Adjustment and Maintenance**
- **Optional BMS Fail Signal**
- **Manual Reset Feature**

The Cla-Val 650-33 Excess Pressure Safety Shut-Off Valve (XPSV) automatically protects the downstream distribution piping and fixtures or municipal systems from experiencing excess unsafe pressures in the event that outlet pressure of the high flow PRV rises above an acceptable level. Typically, the XPSV is set 10-15 psi higher than the PRV setpoint.

In operation, when the PRV discharge pressure is as set, the XPSV is fully open. When the PRV outlet pressure rises above normal, the XPSV will begin close to isolate the excess pressure from the downstream piping. Operation is completely automatic and may be easily field adjusted.

For full port valve applications, use Cla-Val Model 50-33.



Schematic Diagram

Item Description

- 1 Hytrol 100-20 Main Valve Reverse Flow
- 2 CRL/CRL-60 Pressure Relief Control
- 3 X58A Restriction Assembly
- 4 X46A Flow Clean Strainer
- 5 CK2 Manual Reset Control
- 6 X101 Valve Position Indicator

Optional Features

Item Description

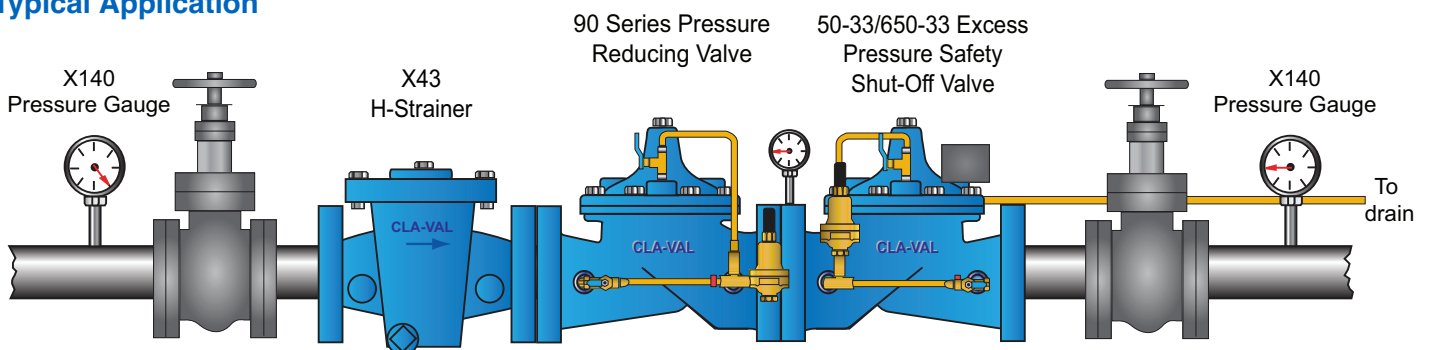
- B CK2 Isolation Valve

Application Overview

Water systems that serve critical fixtures and require uninterrupted water service should be designed with the added security of the Excess Pressure Safety Shut-Off Valve. Careful review of the system flow requirements, and need for PRV redundancy, should be considered when determining the optimum PRV Station design. When seeking the highest reliability for the PRV Station, careful consideration of the valve construction materials is important.

A Fail Switch Option provides contact closure for remote (BMS) indication of an event that requires operator attention. If the PRV Station is located in an area where an adequate drain is not available, a Dry Drain option should be considered. The hydraulic conditions must be taken into account when specifying the Model 650-33 Excess Pressure Safety Shut-Off Valve.

Typical Application



Application Details

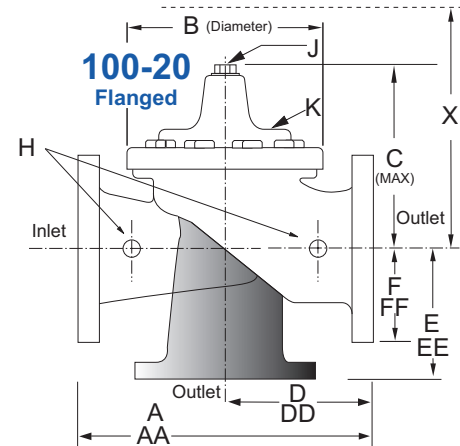
- For use in high rise building applications, not recommended for water distribution system installations
- Discharge to atmosphere or to contractor supplied drain piping
- Redundant design with parallel installation is suggested for commercial applications where uninterrupted service is required
- For larger sizes, please consult the factory at 800.942.6326 or info@cla-val.com

Model 650-33 (Uses Main Valve Model 100-20)

Pressure Ratings (Recommended Maximum Pressure - psi)

| Valve Body & Cover | | Pressure Class | | | | |
|--------------------|--------------|-----------------|-----------|-----------|-----------|--------------|
| | | Flanged | | | Grooved | Threaded |
| Grade | Material | ANSI Standards* | 150 Class | 300 Class | 300 Class | End‡ Details |
| ASTM A536 | Ductile Iron | B16.42 | 250 | 400 | 400 | 400 |
| ASTM A216-WCB | Cast Steel | B16.5 | 285 | 400 | 400 | 400 |
| UNS 87850 | Bronze | B16.24 | 225 | 400 | 400 | 400 |

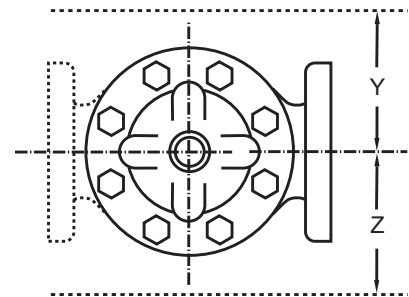
Note: * ANSI standards are for flange dimensions only.
 Flanged valves are available faced but not drilled.
 ‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details



Materials

| Component | Standard Material Combinations | | |
|--|---|------------|----------|
| Body & Cover | Ductile Iron | Cast Steel | Bronze |
| Available Sizes | 1" - 10" | 1" - 10" | 1" - 10" |
| Disc Retainer & Diaphragm Washer | Cast Iron | Cast Steel | Bronze |
| Trim: Disc Guide, Seat & Cover Bearing | Bronze is Standard Stainless Steel is Optional | | |
| Disc | Buna-N® Rubber | | |
| Diaphragm | Nylon Reinforced Buna-N® Rubber | | |
| Stem, Nut & Spring | Stainless Steel | | |

For material options not listed, consult factory.
 Cla-Val manufactures valves in more than 50 different alloys.



Model 650-33 Dimensions (In Inches)

| Valve Size (Inches) | 3 | 4 | 6 | 8 | 10 |
|---------------------------|-------|-------|-------|-------|-------|
| A 150 ANSI | 10.25 | 13.88 | 17.75 | 21.38 | 26.00 |
| AA 300 ANSI | 11.00 | 14.50 | 18.62 | 22.38 | 27.38 |
| B Diameter | 6.62 | 9.12 | 11.50 | 15.75 | 20.00 |
| C Maximum | 7.00 | 8.62 | 11.62 | 15.00 | 17.88 |
| D 150 ANSI | — | 6.94 | 8.88 | 10.69 | 12.75 |
| DD 300 ANSI | — | 7.25 | 9.38 | 11.19 | — |
| E 150 ANSI | — | 5.50 | 6.75 | 7.25 | 8.06 |
| EE 300 ANSI | — | 5.81 | 7.25 | 7.75 | — |
| F 150 ANSI | 3.75 | 4.50 | 5.50 | 6.75 | 8.00 |
| FF 300 ANSI | 4.12 | 5.00 | 6.25 | 7.50 | 8.75 |
| H NPT Body Tapping | 0.375 | 0.50 | 0.75 | 0.75 | 1.00 |
| J NPT Cover Center Plug | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| K NPT Cover Tapping | 0.375 | 0.50 | 0.75 | 0.75 | 1.00 |
| Stem Travel | 0.60 | 0.80 | 1.10 | 1.70 | 2.30 |
| Approx. Ship Weight (lbs) | 45 | 85 | 195 | 330 | 625 |
| Approx. X Pilot System | 13 | 15 | 27 | 30 | 33 |
| Approx. Y Pilot System | 10 | 11 | 18 | 20 | 22 |
| Approx. Z Pilot System | 10 | 11 | 18 | 20 | 22 |

Valve Selection Guide

| | | | | | | | | | | |
|----------------------------------|------------|------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| 650-33 Valve Selection | Inches | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 |
| | mm | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 150 | 200 |
| Main Valve 100-01 | Pattern | G, A | G, A | G, A | G, A | G, A | G, A | G, A | G, A | G, A |
| | End Detail | T | T | T, F, GR* | T, F, GR* | T, F, GR* | T, F, GR* | T, F, GR* | T, F, GR* | F, Gr* |
| Suggested Flow (gpm) | Maximum | 55 | 93 | 125 | 210 | 300 | 460 | 800 | 1800 | 3100 |
| Suggested Flow (Liters/Sec) | Maximum | 3.5 | 6 | 8 | 13 | 19 | 29 | 50 | 113 | 195 |

Notes

Reduced Port Valves:

- 100-20 Pattern: Globe, Angle

End Connections:

- * Flanged • Threaded • Grooved (Globe only)

Pressure Classes:

- 150 and 300

Pilot System Specifications

Adjustment Ranges

- 0 to 75 psi Max.
- 20 to 105 psi
- 20 to 200 psi *
- 100 to 300 psi

*Supplied unless otherwise specified.
Other ranges available, consult factory.

Temperature Range

Water: to 180°F

Materials

Standard Pilot System Materials

Pilot Control: Low Lead Bronze
Trim: Stainless Steel Type 303
Rubber: Buna-N® Synthetic Rubber

Tubing & Fitting: Copper and Bronze

Optional Pilot System Materials

Pilot Systems are available with optional Aluminum, Stainless Steel or Monel materials.

Pilot Control Operation



CRL Pilot

The Model CRL is normally held closed by the force of the compression spring above the diaphragm. Control pressure is applied under the diaphragm. When the controlling pressure exceeds the spring setting, the disc is lifted off its seat, permitting flow through the control. When control pressure drops below the spring setting, the spring forces the control back to its normally closed position. The controlling pressure is applied to the chamber beneath the diaphragm through a sensing port on the CRL Pilot Control.



CRL-60 Pilot

The CRL-60 is normally held closed by the force of the compression spring above the diaphragm. Control pressure is applied under the diaphragm. When the controlling pressure exceeds the spring setting, the disc is lifted off its seat, permitting flow through the control. When control pressure drops below the spring setting, the spring forces the control back to its normally closed position. The controlling pressure is applied to the chamber beneath the diaphragm through a sensing port on the CRL-60 Pilot Control.

Model 650-33 Purchase Specification Summary*

INTRODUCTION

This specification covers the design, manufacture, and testing of 1 in. (25 mm) through 8 in. (200 mm) Control Valves

GENERAL

1. Standard products - use the same manufacturer for multiple units of same type.
2. "Tying" of equipment into packages for the purpose of thwarting competition shall be considered to be in non-compliance with these specifications.
3. Manufacturers shall price items under different subsections or sections separately.

EXCESS PRESSURE SAFETY SHUT-OFF CONTROL VALVE FUNCTION

The Excess Pressure Safety Shut-Off Valve shall automatically protect critical downstream distribution piping, fixtures or municipal systems from experiencing excess and unsafe pressures; in the event that outlet pressure of the high flowing Pressure Reducing Control Valve rises above an acceptable level. The Excess Pressure Safety Shut-Off Valve shall be installed downstream from and is typically set 10-15 psi higher than the set point of the Pressure Reducing Control Valve. When the Pressure Reducing Control Valve discharge pressure is maintaining its set point, the Excess Pressure Safety Shut-Off Valve shall remain fully open. When the Pressure Reducing Control Valve outlet pressure rises above normal, the Excess Pressure Safety Shut-Off Valve will begin closing to isolate the excess pressure from the downstream piping. Excess Pressure Safety Shut-Off Valve shall be easily field adjusted.

* Please visit www.cla-val.com for the complete 650-33 Purchase Specification.

| Component | Material | Options |
|---------------------------------|--|---------------------------|
| Body & Cover | Ductile Iron-ASTM A536 | Cast Steel or Bronze |
| Main Valve Trim | Stainless Steel | Other Materials Available |
| Seat | Stainless Steel | Other Materials Available |
| Stem, Nut & Spring | Stainless Steel | - - - |
| Seal Disc | Buna-N [®] Rubber | - - - |
| Diaphragm | Nylon Reinforced Buna-N [®] Rubber | Other Materials Available |
| Internal Trim Parts | Stainless Steel • Bronze • Brass | |
| End Detail | Flanged (1-1/2" - 36") | |
| | Threaded (1" - 3") | |
| | Grooved (1-1/2" - 8") | |
| Pressure Rating | Class 150 lb. (250 psi Max) • Class 300 lb. (400 psi Max) | |
| Temperature Range | Water to 180° F <i>Consult factory for hot water applications.</i> | |
| Any other wetted metallic parts | Stainless Steel • Bronze • Brass | |
| Coating | NSF/ANSI 61 Fusion Bonded Epoxy (Interior and Exterior) | |
| Optional Accessories | Position Indicator; Limit Switch; Opening & Closing Speed Controls; Check Feature; Isolation Valves; Gauges; Anti-Cavitation Trim, etc. | |

When Ordering, Please Specify:

- | | |
|-----------------------------|------------------------------|
| 1. Catalog No. 50-33 | 6. Trim Material |
| 2. Valve Size | 7. Adjustment Range |
| 3. Pattern - Globe or Angle | 8. Desired Options |
| 4. Pressure Class | 9. When Vertically Installed |
| 5. Threaded or Flanged | |