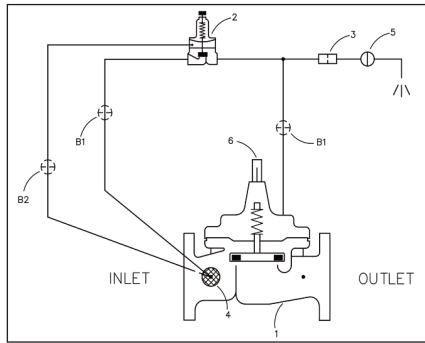
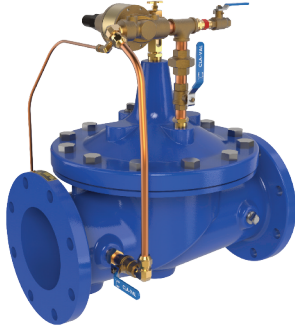




— MODEL — **650-33**

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

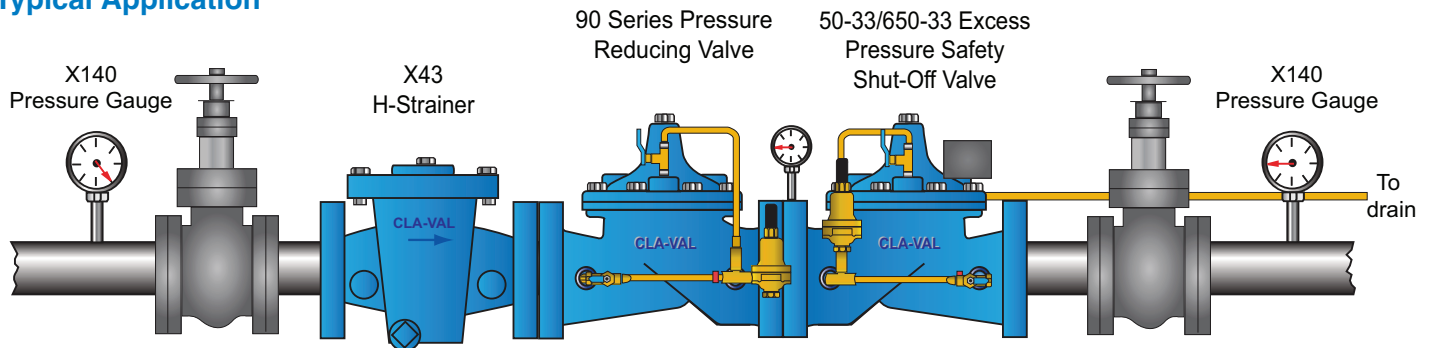
- B CK2 Isolation Valve

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

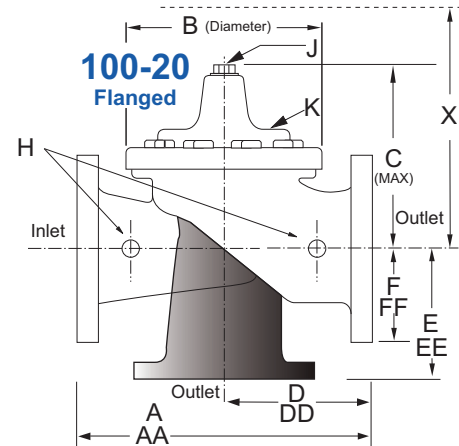
- Discharge to atmosphere or to contractor supplied drain piping
- Redundant design with parallel installation is suggested for commercial applications where uninterrupted service is required
- For larger sizes, please consult the factory at 800.942.6326 or info@cla-val.com

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

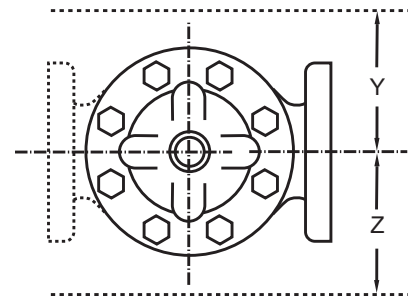
Note: * ANSI standards are for flange dimensions only.
 Flanged valves are available faced but not drilled.
 ‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details



Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	80 - 250mm	80 - 250mm	80 - 250mm
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 mm)

Valve Size (mm)	80	100	150	200	250
A 150 ANSI	260	353	451	543	660
AA 300 ANSI	279	368	473	568	695
B Diameter	168	232	292	400	508
C Maximum	178	219	295	381	454
D 150 ANSI	—	176	226	272	324
DD 300 ANSI	—	184	238	284	—
E 150 ANSI	—	140	171	184	205
EE 300 ANSI	—	148	184	197	—
F 150 ANSI	95	114	140	171	203
FF 300 ANSI	105	127	159	191	222
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	15	20	28	43	58
Approx. Ship Weight (kgs)	20	39	89	150	284
Approx. X Pilot System	331	381	686	762	839
Approx. Y Pilot System	254	280	458	508	559
Approx. Z Pilot System	254	280	458	508	559

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](http://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	
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
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed