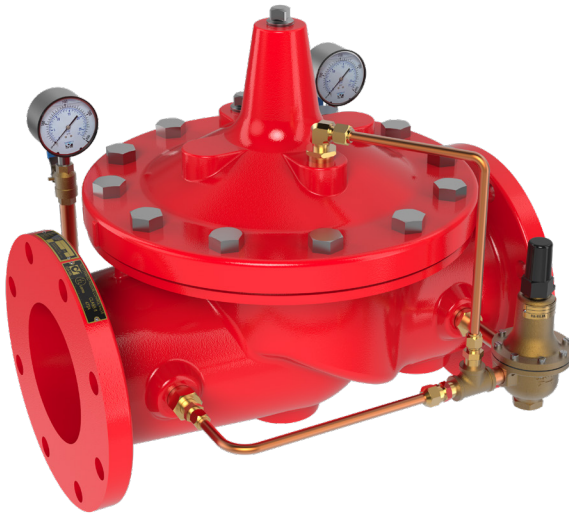




Models **90G-21 (Globe)**  
**90A-21 (Angle)**

## Fire Protection Pressure Reducing Valve

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### Description

The Cla-Val Model 90-21 Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure. This valve is an accurate, pilot-operated regulator capable of holding downstream pressure to a pre-determined limit. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve close drip-tight.

If a check feature is added, and a pressure reversal occurs, the downstream pressure is admitted into the main valve cover chamber, which closes the valve to prevent return flow.

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### Main Valve Features

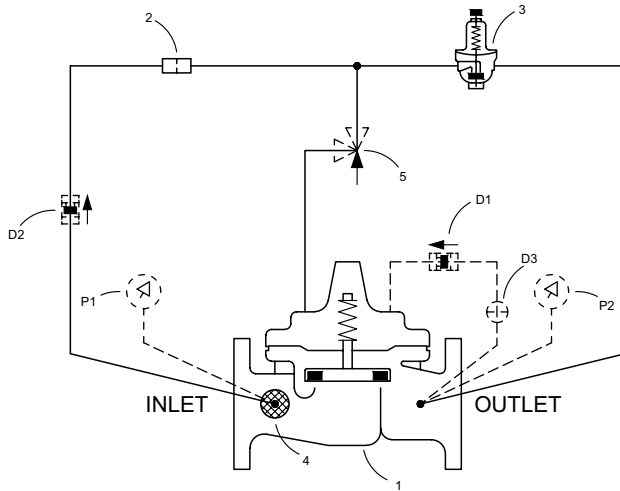
- Dual Guided Stem Internal for Reliable Seating
- Tapered Metal Seat for Drip Tight Shut-off
- Replaceable 316 Stainless Steel Seat
- Single Internal Guided Assembly
- Proven Repeat Functionality in Harsh Conditions
- In-Line Maintenance

### Listings and Approvals



### Typical Applications

- Fire Pump Regulation
  - System Pressure Regulation
  - Foam Applications
-



**Schematic Diagram**

- | Item | Description                                      |
|------|--|
| 1    | 100-01 Hytrol Main Valve                         |
| 2    | X58C Restriction Assembly                        |
| 3    | CRD Pressure Reducing Control                    |
| 4    | X46A Flow Clean Strainer                         |
| 5    | CV Flow Control (opening)**<br>**1.5", 3" and 4" |

**Optional Features**

- | Item | Description        |
|------|--------------------|
| D    | Check Valve Option |
| P    | Gauge Option       |

The Cla-Val Model 90-21 Pressure Reducing Valve pilot control system is very sensitive to slight downstream pressure fluctuations and will automatically modulate to maintain the desired pressure setting. The CRD (Item 3) pilot can be easily field adjusted to a wide range of pressure settings. While monitoring the system's downstream pressure gauge (P2), the CRD adjustment screw can be turned clockwise to INCREASE pressure or counterclockwise to DECREASE pressure. The CRD adjustment screw is protected by a screw-on cover, which can be sealed to discourage tampering.

**Main Valve Specifications**

**APPROVED SIZES**

- Flanged: 1.5" - 12"
- Grooved: 1.5" - 8" (1.5" - 6" Angle)
- Threaded: 1.5" - 3"

**PRESSURE RATINGS**

- 150 class, 250 psi maximum (Ductile Iron)
- 150 class, 285 psi maximum (All other materials)
- 300 class, 300 psi maximum (All materials)

**TEMPERATURE RANGE**

Water: to 180° F. Max

**FLUIDS**

Water

**Materials**

**Main Valve Body & Cover:**

Standard Epoxy Coated Ductile Iron  
ASTM A-536\*

**Main Valve Trim:**

Stainless Steel

**Pilot Control System:**

Cast Bronze

**Rubber Parts:**

Buna-N® Synthetic Rubber

**Optional Materials for Seawater and Severe Service Applications:**

- **Nickel Aluminum Bronze (NAB)**  
ASTM B148 Alloy C95800
- **Monel - QQ-N-288 Comp B**  
ASTM A494 Grade M30H
- **Cast Steel**  
ASTM A216 Grade WCB
- **316 Stainless Steel**  
ASTM A743 Grades CF3M and CF8M
- **Super Austenitic Stainless Steel**  
ASTM A351 Grade CK3MCuN (SMO 254)
- **Super Duplex Stainless Steel** ASTM A890  
Grade 5A (CE3MN)

**Functional Data**

Valve Size	Inches	1.5	2	2.5	3	4	6	8	10	12
	mm	40	50	65	80	100	150	200	250	300
Globe Pattern	Cv	32	50	85	115	200	440	770	1245	1725
	Kv	28	43	73	99	173	380	665	1076	1490
Angle Pattern	Cv	29	61	101	139	240	541	990	1575	2500
	Kv	25	53	87	120	207	467	855	1361	2160
Max Flow Rate	Gal./Min. (gpm)	110	196	306	441	783	1763	3133	4896	7050

**Pressure Adjustment Ranges**

Size	UL/JLC
1.5", 2.5"- 12"	50-175
2"	30-165

**Minimum Pressure Differential (at Max Flow)**

Size	PSI
1.5", 2.5"- 12"	20 psi
2"	10 psi

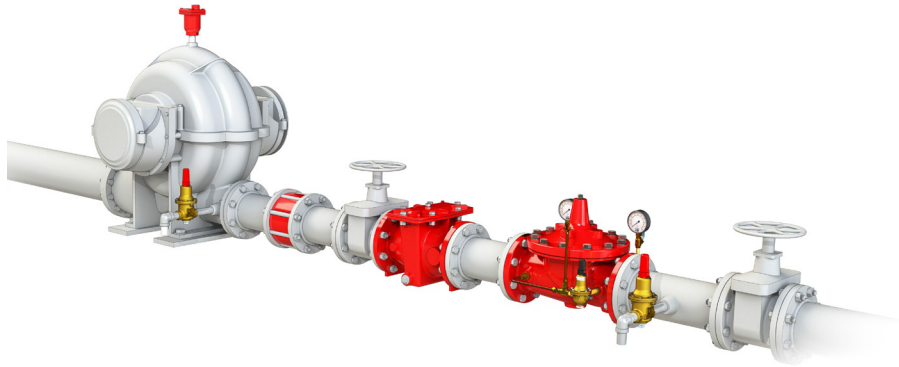
Note: (1) Minimum Pressure Differential decreases as flow rates decrease.  
(2) All sizes are designed to meet minimum flow of system components.



### System Parameters

- Underwriters Laboratories requires the installation of pressure gauges upstream and downstream of Pressure Reducing Valves.
- A relief valve of not less than 1/2 inch in size must be installed on the downstream side of pressure reducing valves. Adequate drainage for the relief valve discharge must be provided.
- The 90-21 may be installed in either vertical or horizontal positions.

### Single Stage



### Dual Stage



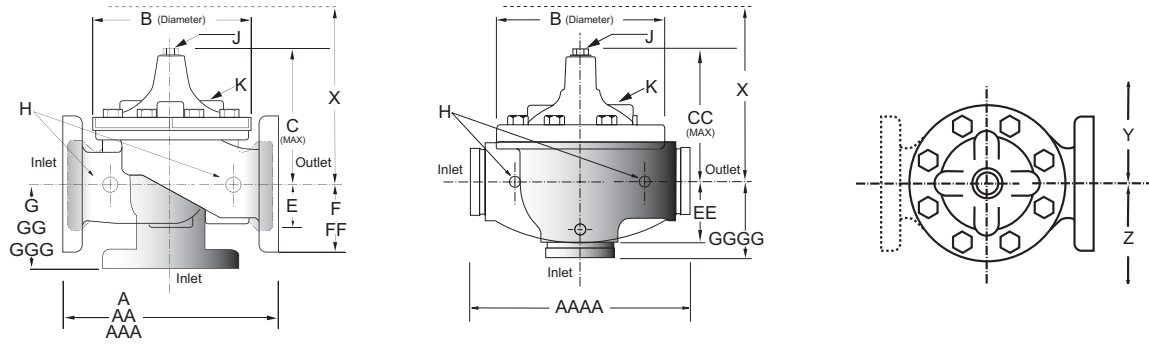
### Standpipe





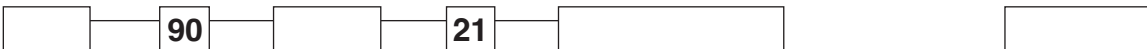
# Fire Protection Pressure Reducing Valve

## Dimensions



Valve Size	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
	1½	40	2	50	2½	65	3	80	4	100	6	150	8	200	10	250	12	300	
A Threaded	7.25	184	9.38	238	11.00	279	12.50	318	—	—	—	—	—	—	—	—	—	—	—
AA 150 ANSI	8.50	216	9.38	238	11.00	279	12.00	305	15.00	381	20.00	508	25.38	645	29.75	756	34.00	864	—
AAA 300 ANSI	9.00	229	10.00	254	11.62	295	13.25	337	15.62	397	21.00	533	26.38	670	31.12	790	35.50	902	—
AAAA Grooved End	8.50	216	9.00	228	11.00	279	12.50	318	15.00	381	20.00	508	25.38	645	—	—	—	—	—
B Diameter	5.62	143	6.62	168	8.00	203	9.12	232	11.50	292	15.75	400	20.00	508	23.62	600	28.00	711	—
C Maximum	5.50	140	6.50	165	7.56	192	8.19	208	10.62	270	13.38	340	16.00	406	17.12	435	20.88	530	—
CC Maximum Grooved End	4.75	120	5.75	146	6.88	175	7.25	184	9.31	236	12.12	308	14.62	371	—	—	—	—	—
E	1.12	29	1.50	38	1.69	43	2.06	52	3.19	81	4.31	110	5.31	135	9.25	235	10.75	273	—
EE Grooved End	2.00	52	2.50	64	2.88	73	3.12	79	4.25	108	6.00	152	7.56	192	—	—	—	—	—
F 150 ANSI	2.50	64	3.00	76	3.50	89	3.75	95	4.50	114	5.50	140	6.75	171	8.00	203	9.50	241	—
FF 300 ANSI	3.06	78	3.25	83	3.75	95	4.13	105	5.00	127	6.25	159	7.50	191	8.75	222	10.25	260	—
G Threaded	1.88	48	3.25	83	4.00	102	4.50	114	—	—	—	—	—	—	—	—	—	—	—
GG 150 ANSI	4.00	102	3.25	83	4.00	102	4.00	102	5.00	127	6.00	152	8.00	203	8.62	219	13.75	349	—
GGG 300 ANSI	4.25	102	3.50	89	4.31	110	4.38	111	5.31	135	6.50	165	8.50	216	9.31	236	14.50	368	—
GGGG Grooved End	3.00	76	3.25	83	4.31	110	4.25	108	5.00	127	6.00	152	—	—	—	—	—	—	—
H NPT Body Tapping	0.375	0.375	0.375	0.375	0.50	0.50	0.50	0.50	0.75	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00
J NPT Cover Center Plug	0.25	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.75	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.25	1.25	—
K NPT Cover Tapping	0.375	0.375	0.375	0.375	0.50	0.50	0.50	0.50	0.75	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Stem Travel	0.40	10	0.60	15	0.70	18	0.80	20	1.10	28	1.70	43	2.30	58	2.80	71	3.40	86	—
Approx. Ship Weight (lbs)	15	7	35	16	50	23	70	32	140	64	285	129	500	227	780	354	1165	528	—
Approx. X Pilot System	11	280	13	331	14	356	15	381	17	432	29	737	31	788	33	839	36	915	—
Approx. Y Pilot System	9	229	9	229	10	254	11	280	12	305	20	508	22	559	24	610	26	661	—
Approx. Z Pilot System	9	229	9	229	10	254	11	280	12	305	20	508	22	559	24	610	26	661	—

## Model Number Codes



Size
1.5"
2"
2.5"
3"
4"
6"
8"
10"
12"

Main Valve	
G	Globe
A	Angle

Options	
Y	Y Strainer
D	Check Valve
P	Pressure Gauges
X105	Limit Switch
V	Position Indicator
PT	Pressure Transmitter

Orientation	
H	Horizontal
V	Vertical



Body	
D	Ductile Iron
C	Cast Steel
T	316 SS
N	N.A.B.
U	Super Duplex
X	Other

Trim	
S	Stainless Steel
T	316 SS
M	Bronze/Monel
U	Super Duplex
X	Other

Pilots	
B	Bronze w/SST
BM	Bronze with Monel Internals
T	316 SS (F)
M	Monel
U	Super Duplex
X	Other

Tubing & Fittings	
B	Copper with Brass Fittings
T	316 SS
M	Monel
U	2507
X	Other

Elastomer	
B	Buna

Connection	
ANSI 150#	
ANSI 300#	
ISO PN10	
ISO PN16	
ISO PN25	
V	Grooved 300#
S	NPT

Face	
	RF
	FF
X	Other