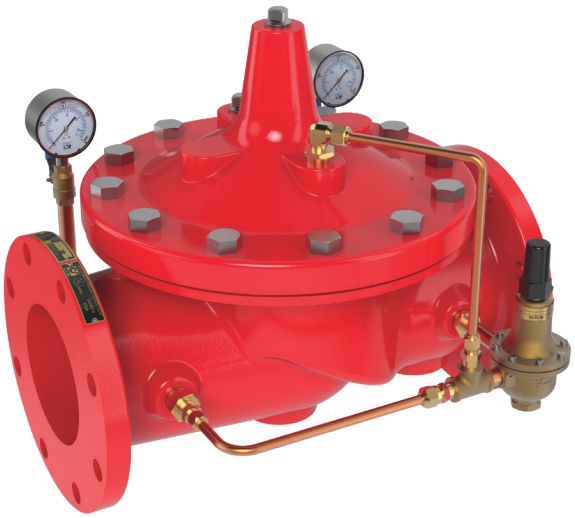
Model 90G-21 (Globe)
90A-21 (Angle)
FIRE PROTECTION PRESSURE REDUCING VALVE

ENGINEERING DATA SHEET



- 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

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.

Typical Applications

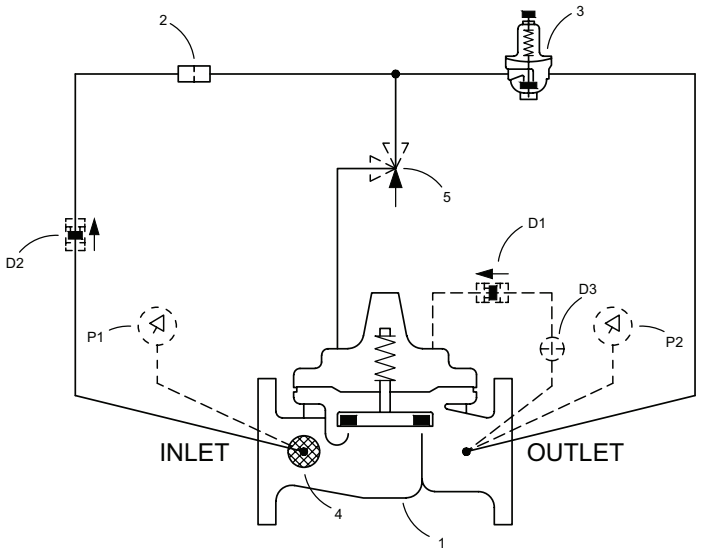
- Fire Pump Regulation
- System Pressure Regulation
- Foam Applications

90-21 Schematic

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.

Basic Components	
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)**
	**1.5", 3" and 4"

Optional Features	
Item	**Description**
D	Check Valves Option
P	Gauge Option



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Specifications

Approved Sizes
Flanged: 1.5” - 12”
Grooved: 1.5” - 10” (1.5” - 8” 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 Listed 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

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

Pressure Adjustment Ranges	
Size	UL/ULC
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

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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 Model 90-21 may be installed in either vertical or horizontal positions.

Single Stage



Dual Stage

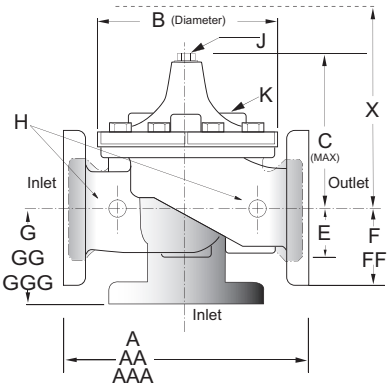


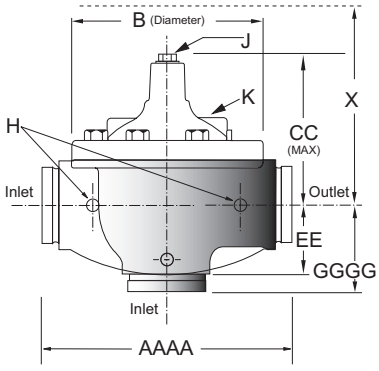
Standpipe

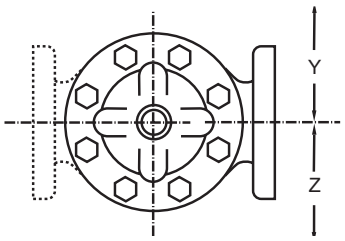


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Dimensions







Valve Size	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
	1 1/2	40	2	50	2 1/2	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	29.75	756	—	—
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	17.12	435	—	—
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	14.88	378	—	—
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	8.00	203	—	—	—	—
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
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
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/kg)	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

	90		21			

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

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