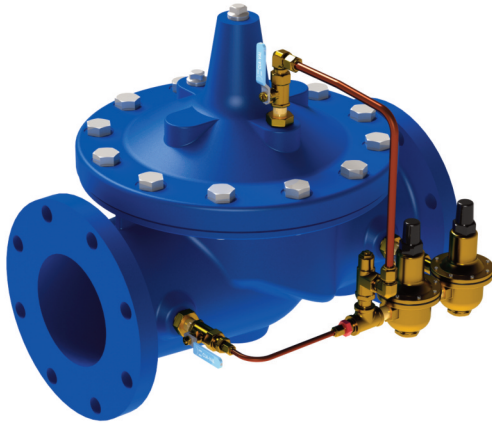




MODEL **90-AU • 690-AU**

(Full Internal Port) (Reduced Internal Port)

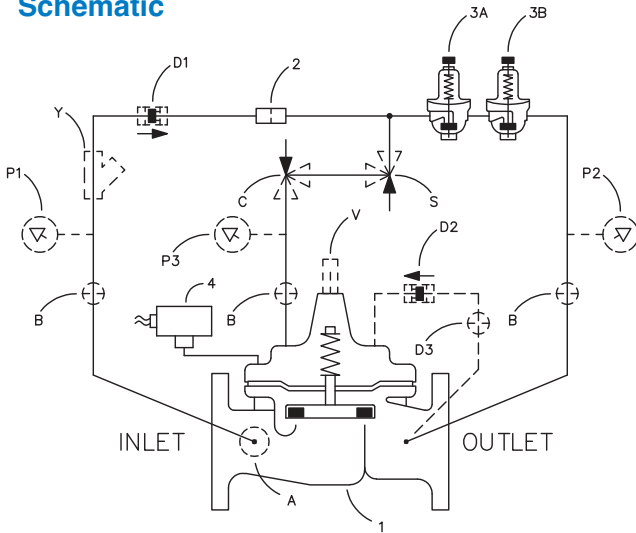
# Pressure Reducing Valve with Secondary Protection



- Sensitive and Accurate Pressure Control
- Secondary Protection for Critical Applications
- Optional Check Feature
- Easy Adjustment and Maintenance

The Cla-Val Model 90-AU/690-AU Pressure Reducing Valve with Secondary Protection 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 a pilot-operated regulator capable of maintaining downstream pressure to a pre-determined setpoint. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve close. In the event of failure of the primary diaphragm, a second diaphragm is automatically brought into service, keeping the valve operational. Additional protection is provided by a secondary CRD pilot control for back-up in the event of primary pilot control failure.

## Schematic



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

## Schematic Diagram

Item	Description
1	100-52 Hytrol Main Valve
2	X58 Restriction Fitting
3A	CRD Pressure Reducing Pilot Control
3B	CRD Pressure Reducing Pilot Control
4	Pressure Switch (NC or NO)

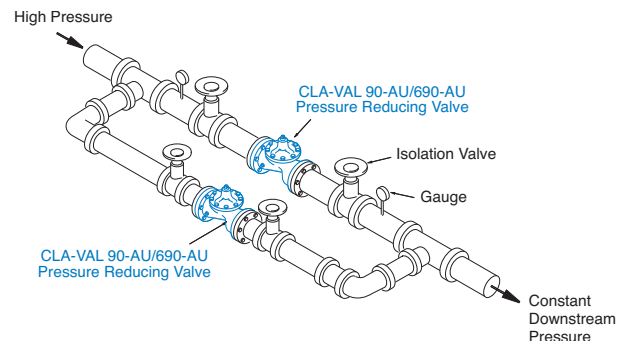
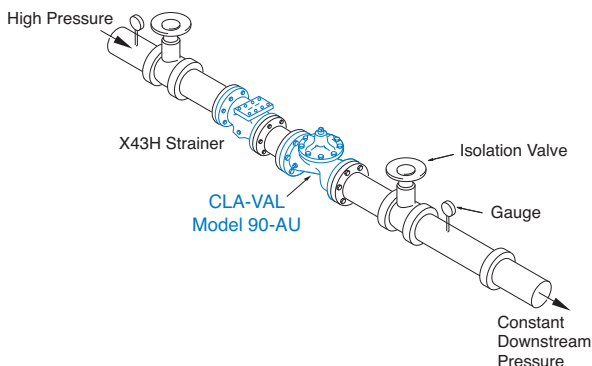
## Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 (Isolation Valve)
C	CV Flow Control (Closing)
D	Check Valves with Isolation Valve
P	X141 Pressure Gauge
S	CV Flow Control (Opening)
V	X101 Valve Position Indicator
Y	X43 "Y" Strainer

## Typical Applications

For critical applications, Cla-Val recommends installation of X43 H-Strainer ahead of main valve to prevent large debris from entering flow path of valve.

Typical applications include pressure reducing valve station using Model 90-AU in parallel to handle wide range of flow rates. Larger Model 90-AU/690-AU valve meets requirements of peak loads and smaller Model 90-AU/690-AU handles low flows.



## Model 90-AU (Uses Basic Valve Model 100-52)

### 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**

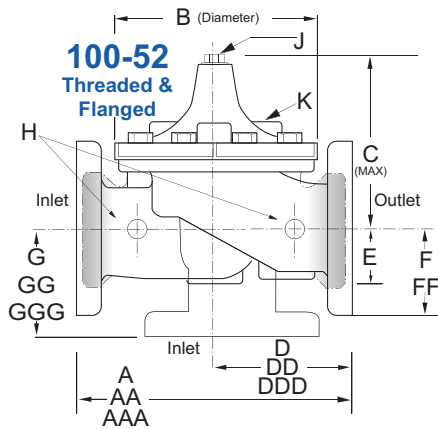
### Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 12" 80 - 300mm	3" - 12" 80 - 300mm	3" - 12" 80 - 300mm
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		
Double Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

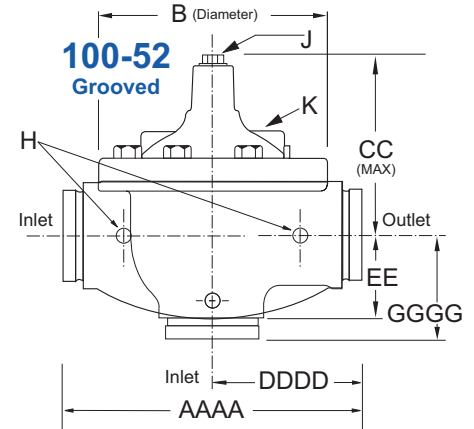
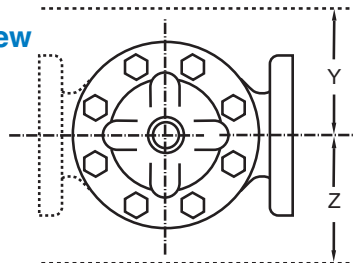
For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.

See E-100-52 for available options.

### Dimensions



Top View



### Model 90-AU Dimensions (Inches)

Valve Size (Inches)	3	4	6	8	10	12
A Threaded	12.50	—	—	—	—	—
AA 150 ANSI	12.00	15.00	20.00	25.38	29.75	34.00
AAA 300 ANSI	13.25	15.62	21.00	26.38	31.12	35.50
AAAA Grooved End	12.50	15.00	20.00	25.38	—	—
B Diameter	9.12	11.50	15.75	20.00	23.62	28.00
C Maximum	8.19	10.62	13.38	16.00	17.12	20.88
CC Maximum Grooved End	7.25	9.31	12.12	14.62	—	—
D Threaded	6.25	—	—	—	—	—
DD 150 ANSI	6.00	7.50	10.00	12.69	14.88	17.00
DDD 300 ANSI	6.38	7.88	10.50	13.25	15.56	17.75
DDDD Grooved End	6.00	7.50	—	—	—	—
E	2.06	3.19	4.31	5.31	9.25	10.75
EE Grooved End	3.12	4.25	6.00	7.56	—	—
F 150 ANSI	3.75	4.50	5.50	6.75	8.00	9.50
FF 300 ANSI	4.13	5.00	6.25	7.50	8.75	10.25
G Threaded	4.50	—	—	—	—	—
GG 150 ANSI	4.00	5.00	6.00	8.00	8.62	13.75
GGG 300 ANSI	4.38	5.31	6.50	8.50	9.31	14.50
GGGG Grooved End	4.25	5.00	—	—	—	—
H NPT Body Tapping	0.50	0.75	0.75	1.00	1.00	1.00
J NPT Cover Center Plug	0.50	0.75	0.75	1.00	1.00	1.25
K NPT Cover Tapping	0.50	0.75	0.75	1.00	1.00	1.00
Stem Travel	0.80	1.10	1.70	2.30	2.80	3.40
Approx. Ship Weight (lbs)	70	140	285	500	780	1165
Approx. X Pilot System	15	17	29	31	33	36
Approx. Y Pilot System	11	12	20	22	24	26
Approx. Z Pilot System	11	12	20	22	24	26

### Model 90-AU Dimensions (mm)

Valve Size (mm)	80	100	150	200	250	300
A Threaded	318	—	—	—	—	—
AA 150 ANSI	305	381	508	645	756	864
AAA 300 ANSI	337	397	533	670	790	902
AAAA Grooved End	318	381	508	645	—	—
B Diameter	232	292	400	508	600	711
C Maximum	208	270	340	406	435	530
CC Maximum Grooved End	184	236	308	371	—	—
D Threaded	159	—	—	—	—	—
DD 150 ANSI	152	191	254	322	378	432
DDD 300 ANSI	162	200	267	337	395	451
DDDD Grooved End	152	191	—	—	—	—
E	52	81	110	135	235	273
EE Grooved End	79	108	152	192	—	—
F 150 ANSI	95	114	140	171	203	241
FF 300 ANSI	105	127	159	191	222	260
G Threaded	114	—	—	—	—	—
GG 150 ANSI	102	127	152	203	219	349
GGG 300 ANSI	111	135	165	216	236	368
GGGG Grooved End	108	127	—	—	—	—
H NPT Body Tapping	0.50	0.75	0.75	1.00	1.00	1.00
J NPT Cover Center Plug	0.50	0.75	0.75	1.00	1.00	1.25
K NPT Cover Tapping	0.50	0.75	0.75	1.00	1.00	1.00
Stem Travel	20	28	43	58	71	86
Approx. Ship Weight (kgs)	32	64	129	227	354	528
Approx. X Pilot System	381	432	737	788	839	915
Approx. Y Pilot System	280	305	508	559	610	661
Approx. Z Pilot System	280	305	508	559	610	661

## Model 690-AU (Uses Basic Valve Model 100-53)

### Pressure Ratings (Recommended Maximum Pressure - psi)

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

Note: \* ANSI standards are for flange dimensions only.  
Flanged valves are available faced but not drilled.  
**Valves for higher pressure are available; consult factory for details**

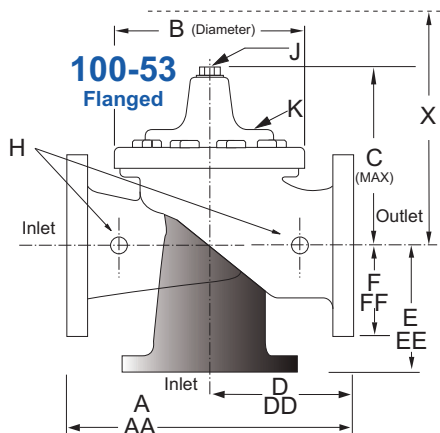
### Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	4" - 14" 100 - 350mm	4" - 14" 100 - 350mm	4" - 14" 100 - 350mm
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		
Double Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

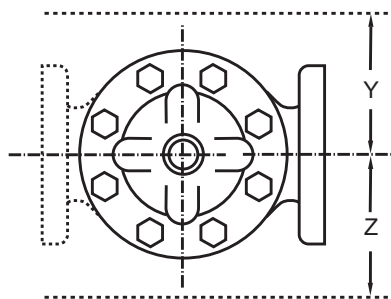
For material options not listed, consult factory.  
Cla-Val manufactures valves in more than 50 different alloys.

See E-100-53 for available options.

### Dimensions



### Top View



### Model 690-AU Dimensions (Inches)

Valve Size (Inches)	4	6	8	10	12	14
A 150 ANSI	13.88	17.75	21.38	26.00	30.00	34.25
AA 300 ANSI	14.50	18.62	22.38	27.38	31.50	35.75
B Diameter	9.12	11.50	15.75	20.00	23.62	27.47
C Maximum	8.62	11.62	15.00	17.88	21.00	20.88
D 150 ANSI	6.94	8.88	10.69	CF*	17.00	CF*
DD 300 ANSI	7.25	9.38	11.19	CF*	17.75	CF*
E 150 ANSI	5.50	6.75	7.25	CF*	13.75	CF*
EE 300 ANSI	5.81	7.25	7.75	CF*	14.75	CF*
F 150 ANSI	4.50	5.50	6.75	8.00	9.50	11.00
FF 300 ANSI	5.00	6.25	7.50	8.75	10.25	11.50
H NPT Body Tapping	0.50	0.75	0.75	1.00	1.00	1.00
J NPT Cover Center Plug	0.50	0.75	0.75	1.00	1.00	1.25
K NPT Cover Tapping	0.50	0.75	0.75	1.00	1.00	1.00
Stem Travel	0.80	1.10	1.70	2.30	2.80	3.40
Approx. Ship Weight (lbs)	85	195	330	625	900	1250
Approx. X Pilot System	15	27	30	33	36	36
Approx. Y Pilot System	11	18	20	22	24	26
Approx. Z Pilot System	11	18	20	22	24	26

### Model 690-AU Dimensions (mm)

Valve Size (mm)	100	150	200	250	300	350
A 150 ANSI	353	451	543	660	762	870
AA 300 ANSI	368	473	568	695	800	908
B Diameter	232	292	400	508	600	698
C Maximum	219	295	381	454	533	530
D 150 ANSI	176	226	272	CF*	432	CF*
DD 300 ANSI	184	238	284	CF*	451	CF*
E 150 ANSI	140	171	184	CF*	349	CF*
EE 300 ANSI	148	184	197	CF*	368	CF*
F 150 ANSI	114	140	171	203	241	279
FF 300 ANSI	127	159	191	222	260	292
H NPT Body Tapping	0.50	0.75	0.75	1.00	1.00	1.00
J NPT Cover Center Plug	0.50	0.75	0.75	1.00	1.00	1.25
K NPT Cover Tapping	0.50	0.75	0.75	1.00	1.00	1.00
Stem Travel	20	28	43	58	71	86
Approx. Ship Weight (kgs)	39	89	150	284	409	568
Approx. X Pilot System	381	686	762	839	915	915
Approx. Y Pilot System	280	458	508	559	610	661
Approx. Z Pilot System	280	458	508	559	610	661

<b>90-AU</b> Valve Selection	<b>100-52 Pattern:</b> Globe (G), Angle (A), <b>End Connections:</b> Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes						
	Inches	3	4	6	8	10	12
	mm	80	100	150	200	250	300
Basic Valve 100-52	Pattern	G, A	G, A	G, A	G, A	G, A	G, A
	End Detail	T, F, Gr	F, Gr	F, Gr*	F, Gr*	F	F
Suggested Flow (gpm)	Maximum	460	800	1800	3100	4900	7000
	Maximum Intermittent	580	990	2250	3900	6150	8720
	Minimum	2	4	10	15	35	50
Suggested Flow (Liters/Sec)	Maximum	29	50	113	195	309	442
	Maximum Intermittent	37	62	142	246	387	549
	Minimum	0.13	0.25	0.63	0.95	2.2	3.2

**100-52 Series is the full internal port Double Diaphragm Hytrol** • **For Lower Flows Consult Factory** \*Globe Grooved Only

<b>690-AU</b> Valve Selection	<b>100-53 Pattern:</b> Globe (G), Angle (A), <b>End Connections:</b> Flanged (F) Indicate Available Sizes						
	Inches	4	6	8	10	12	14
	mm	100	150	200	250	300	350
Basic Valve 100-53	Pattern	G, A	G, A	G, A	G	G	G
	End Detail	F	F	F	F	F	F
Suggested Flow (gpm)	Maximum	580	1025	2300	4100	6400	9230
	Minimum	2	4	10	15	35	50
Suggested Flow (Liters/Sec)	Maximum	37	65	145	258	403	581
	Minimum	.13	.25	.63	.95	2.2	3.2

**100-53 Hytrol is the reduced internal port size version of the 100-52 Double Diaphragm Hytrol 100-52** • **For Lower Flows Consult Factory**

Many factors should be considered in sizing pressure reducing valves including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

<h3>Pilot System Specifications</h3> <p><b>Adjustment Ranges</b></p> <p>2 to 30 psi 15 to 75 psi 20 to 105 psi 30 to 300 psi</p> <p><b>Temperature Range</b> Water: to 180°F</p>	<p><b>Materials</b></p> <p><u>Standard Pilot System Materials</u> Pilot Control: Low Lead Bronze Trim: Stainless Steel Type 303 Rubber: Buna-N® Synthetic Rubber</p> <p><u>Optional Pilot System Materials</u> Pilot Systems are available with optional Stainless Steel or Monel materials.</p> <p>Note: Available with remote sensing control.</p>	<p><b>When Ordering, Please Specify</b></p> <ol style="list-style-type: none"> <li>Catalog No. 90-AU or No. 690-AU</li> <li>Valve Size</li> <li>Pattern - Globe or Angle</li> <li>Pressure Class</li> <li>Threaded, Flanged or Grooved</li> <li>Trim Material</li> <li>Adjustment Range</li> <li>Desired Options</li> <li>When Vertically Installed</li> <li>Product Enhancements</li> </ol>
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