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Catalog No. H-700T
May 2014

Check Valves

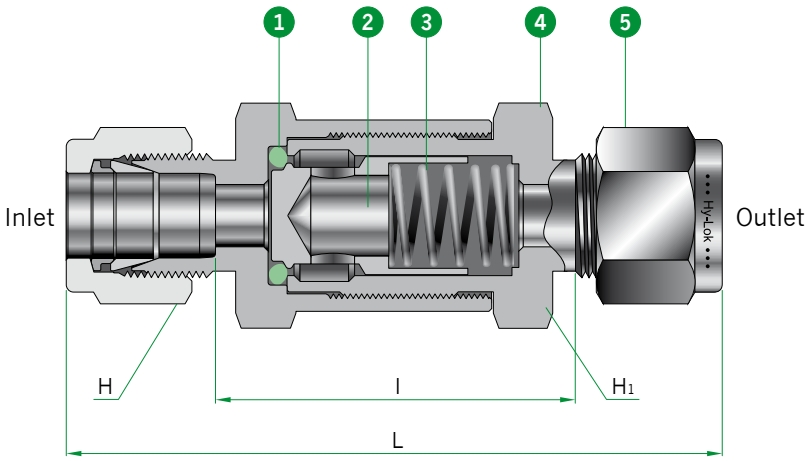
700, 700H, 701, 700A, CVL Series

Feature

- Pressure rating up to 6000psig(413bar) @ 70°F(21°C) · 700H, CVL Series
  3000psig(206bar) @ 70°F(21°C) · 700, 701, 700A Series
- Temperature rating up to 375°F(191°C) with FKM seal
  900°F(482°C) · CVL Series
- Suitable for gas and liquid
- SS316 body material as standard
- 100% factory tested for cracking and reseal

HY-LOK CORPORATION

General



1. **O-Ring**
   - provides leak tight shut - off.
2. **Back Stopped Poppet**
   - prevents the spring from being overstressed.
3. **Variety of Springs**
   - are available for the cracking pressure in the range from 1/3 psig to IOOpsig.
4. **Wide Range of Body Sizes**
   - allow Cv choices from 0.16 to 8.0
5. **Variety of End Connections**
   - include Hy-Lok tube fittings, male/female NPT tapered threads, male/female ISO tapered threads.

Technical Data

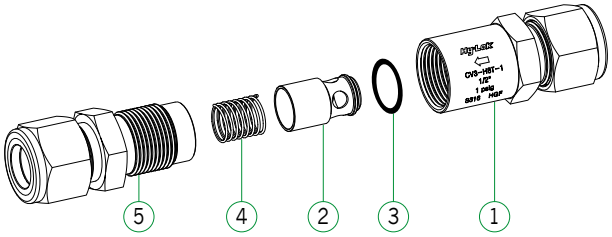
Series	CV1	CV2 CV3 CV4	CV5 CV6
Max. Working Pressure @ 70 °F (21°C)	3000 psig (206 barg)		2000 psig (137 barg)
Operating Temperature Range	FKM : -10 °F to 375 °F (-23 °C to 191 °C) NBR : -10 °F to 250 °F (-23 °C to 121 °C)		
Nominal Cracking Pressure	1/3, 1, 3, 10, 25, 100 psig		1/3, 1, 3, 10, 25 psig

Table of Dimensions

Basic Part No.		Orifice	Cv	End Connections		Dimensions			
				Inlet	Outlet	L	I	H (Nut Hex)	H1 (Body Hex)
CV1	-H -2T	4.8	0.16	1/8" Hy-Lok	1/8" Hy-Lok	55.6	30.2	11.1	15.9
	-M -2N		0.47	1/8" Male NPT	1/8" Male NPT	44.4	-	-	
	-F -2N			1/8" Female NPT	1/8" Female NPT	46.6			
	-H -4T			1/4" Hy-Lok	1/4" Hy-Lok	60.0	29.5	14.3	
	-H -6M			6mm Hy-Lok	6mm Hy-Lok		29.4	14.0	
	-MH -4N4T			1/4" Male NPT	1/4" Hy-Lok	56.4	-	14.3	
	-M -4N			1/4" Male NPT	1/4" Male NPT	53.4		-	
	-F -4N			1/4" Female NPT	1/4" Female NPT	54.6			19.1
CV2	-H -6T	7.1	1.48	3/8" Hy-Lok	3/8" Hy-Lok	74.8	41.3	17.5	22.2
	-H -10M			10mm Hy-Lok	10mm Hy-Lok		40.4	19.0	
	-M -6N			3/8" Male NPT	3/8" Male NPT	64.6	-	-	
CV3	-F -6N	10.0	1.70	3/8" Female NPT	3/8" Female NPT	63.8	-	-	22.2
	-H -8T			1/2" Hy-Lok	1/2" Hy-Lok	80.2	34.5	22.2	
	-H -12M			12mm Hy-Lok	12mm Hy-Lok		34.6	22.0	
	-M -8N			1/2" Male NPT	1/2" Male NPT	74.4	-	-	
CV4	-F -8N	13.5	2.60	1/2" Female NPT	1/2" Female NPT	84.7	-	-	28.6
	-H -10T			5/8" Hy-Lok	5/8" Hy-Lok	91.8	48.1	25.4	
CV5	-H -12T	16.0	5.20	3/4" Hy-Lok	3/4" Hy-Lok	110.7	61.9	28.6	31.8
	-M -12N			3/4" Male NPT	3/4" Male NPT	105.3	-	-	
	-F -12N			3/4" Female NPT	3/4" Female NPT	103.0			
CV6	-H -16T	18.0	8.00	1" Hy-Lok	1" Hy-Lok	121.2	58.7	38.1	34.9
	-M -16N			1" Male NPT	1" Male NPT	116.2	-	-	
	-F -16N			1" Female NPT	1" Female NPT	111.4			41.3

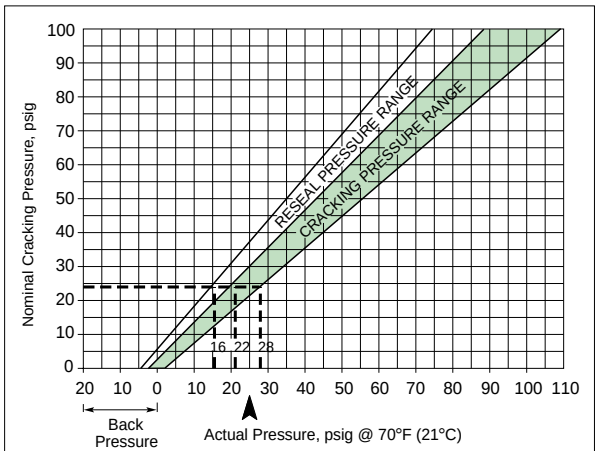
All dimensions in millimeters. Dimensions shown with Hy-Lok nuts in finger - tight position, where applicable.

Materials of Construction



No.	Component	Valve Body Materials	
		Material Grade / ASTM Specification	
1	Inlet Body	TP316 / A479 or A276	BRASS
2	Poppet	TP316 / A479 or A276	BRASS
3	O-Ring	FKM	
4	Spring	SS302	
5	Outlet Body	TP316 / A479 or A276	BRASS

Molybdenum dry film lubricant is used for outer body made of 316SS Silicone based lubricant is used for poppet.



Cracking and Reseal Pressure

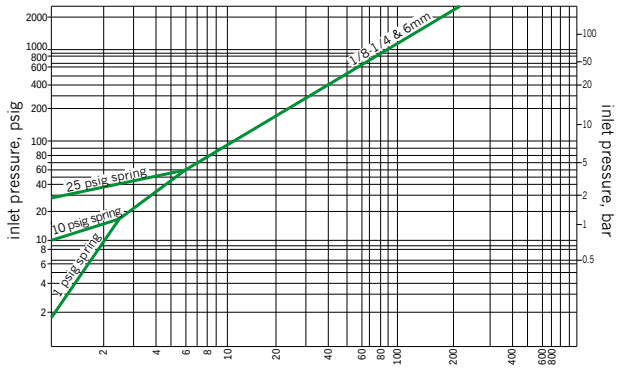
- From the graph, the actual cracking pressure of nominal 25psi is shown to range between 22psi to 28psi, and the reseal pressure 16psi to 22psi.

Back pressure may be required to reseal the valves with nominal cracking pressure of 5psi or lower.

1. Cracking pressure : The upstream pressure at which the first indication of flow occurs.
2. Reseal pressure : The upstream pressure at which there is no indication of flow.

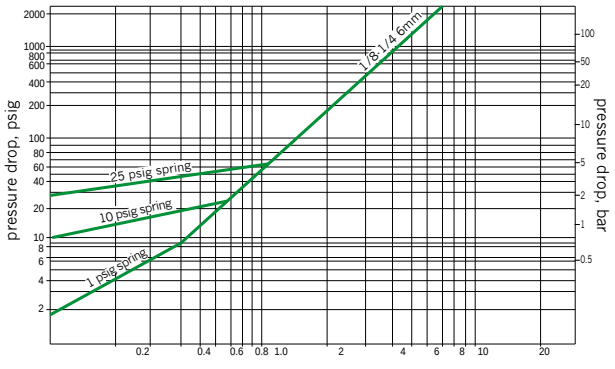
Flow Rate at 70°F (20°C)

Air End Connection Size 1/8 -1/4 & 6mm



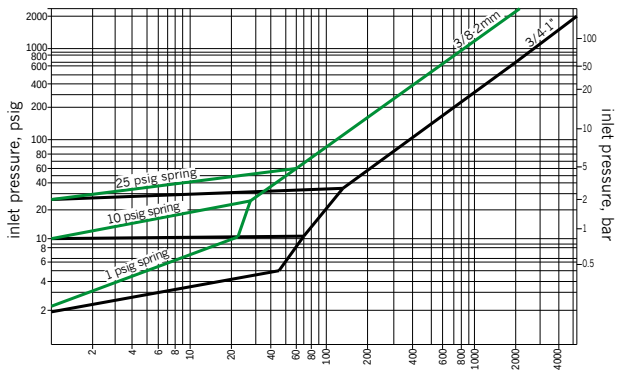
Air Flow S.C.F.M. @ 70°F (21°C) (Discharge to Atmosphere)

Water End Connection Size 1/8 -1/4 & 6mm



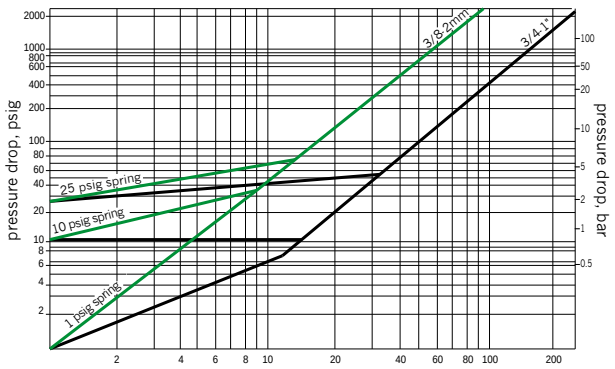
Water Flow G.P.M. @ 70°F(21°C)

Air End Connection Size 3/8 -1" 10 & 12mm

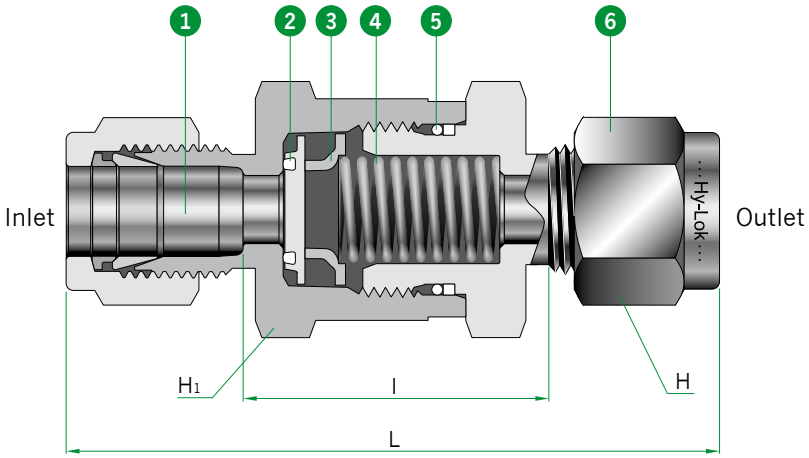


Air Flow S.C.F.M. @ 70°F(21°C) (Discharege to Atmosphere)

Water End Connection Size 3/8 -1" 10 & 12mm



Water Flow G.P.M. @ 70°F(21°C)



1. **Orifice**
   - is max. flow design for min. pressure drop. Includes flow dia from 4.8mm to 15. mm
2. **Poppet**
   - provides leak tight shut-off with elastomer seal
3. **Poppet Stopper**
   - provides minimizes spring stress.
4. **Springs**
   - are available for the cracking pressure in the range from 1/3psig to 25psig
5. **O-ring and Back Up Rings**
   - are halves for ensures closure to the rated pressure
6. **Variety of End Connection**
   - include Hy-Lok tube fittings, male and female NPT, ISO tapered threads, ZCO ends and Matal Gasket Seal ends.

Technical Data

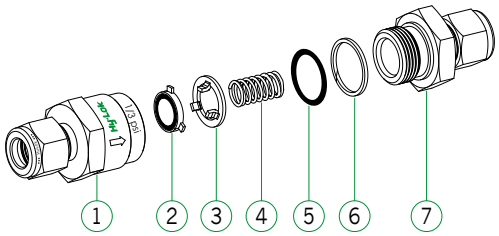
Series	CVH1	CVH2	CVH3
Max. Working Pressure	6000 psig (413bar)		5000 psig (344bar)
Operating Temperature Range	FKM : -10°F to 375°F (-23°C to 191°C) NBR : -10°F to 250°F (-23°C to 121°C)		
Nominal Cracking Pressure	1/3,1,5,10, 25 psig		

Table of Dimensions

Basic Part No.		Flow Dia.	Cv	End Connection		Pressure Rating psig (bar)			Dimensions			
				Inlet	Outlet	SS316	Carbon Steel	Alloy 400	L	I	H (Nut Hex)	H1 (Body Hex)
CVH1	-H -2T	4,8	0.67	1/8" Hy-Lok		6000 (413)	·	5000 (345)	57.7	32.1	11.1	17.5
	-H -4T			1/4" Hy-Lok					61.7	31.2	14.2	
	-H -6M			6mm Male NPT						31.1	14.0	
	-F -4N			1/4" Female NPT					54.1	·	·	
	-M -2N			1/8" Male NPT					45.5			
	-M -4N			1/4" Male NPT					55.1			
	-ZCR -4			1/4" Metal Gasket Seal				·	57.9			
	-ZCO -4			1/4" O-Ring Face Seal					50.3			
CVH2	-H -6T	7.8	1.80	3/8" Hy-Lok		6000 (413)		5000 (345)	69.9	36.1	17.5	25.4
	-H -8T			1/2" Hy-Lok					75.2	29.5	22.2	
	-H -8M			8mm Hy-Lok					68.6	36.2	16.0	
	-H -10M			10mm Hy-Lok					71.1	36.7	19.0	
	-H -12M			12mm Hy-Lok					75.2	29.6	22.0	
	-F -6N			3/8" Female NPT		5000 (345)	5300 (365)	5000 (345)	64.8	·	·	
	-F -8N			1/2" Female NPT		4600 (316)	4900 (337)	4600 (316)	77.0			26.9
	-M -6N			3/8" Male NPT		6000 (413)		5000 (345)	59.9			25.4
	-M -8N			1/2" Male NPT					69.3			
	-ZCR -8			1/2" Metal Gasket Seal		3500 (241)	·	·	69.3			
	-ZCO -8			1/2" O-RIng Face Seal		6000 (413)	·	·	59.7			
CVH3	-H -12T	15.0	4.70	3/4" Hy-Lok		5000 (345)		4700 (323)	89.4	40.6	28.6	41.3
	-H -16T			1" Hy-Lok					98.6	36.1	38.1	
	-H -22M			22mm Hy-Lok					88.4	36.4	32.0	
	-H -25M			25mm Hy-Lok					98.6	36.0	40.0	
	-F -12N			3/4" Female NPT		4300 (296)			82.0	·	·	
	-F -16N			1" Female NPT		4100 (282)			97.3			
	-M -12N			3/4" Male NPT		5000 (345)		4700 (323)	83.6			
	-M -16N			1" Male NPT					93.2			
	-ZCR -12			3/4" Metal Gasket Seal		3000 (206)	·	·	96.0			
	-ZCO -12			3/4" O-Ring Face Seal		5000 (345)	·	·	73.7			
	-ZCO -16			1" O-Ring Face Seal								

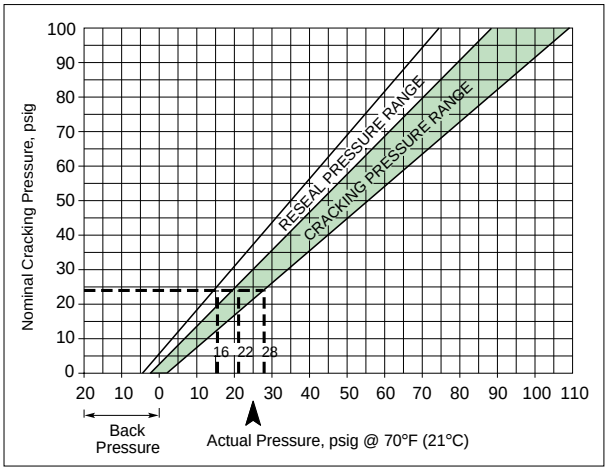
All dimensions in milimeters, reference only subject to change. Dimensions shown with Hy-Lok nuts in finger-tight position, where applicalble. (·) blank is not applicable

Materials of Construction



No.	Component	Valve Body Materials
		Material Grade / ASTM Specification
1	Inlet Body	TP316 / A479 or A276
2	Poppet ①	FKM-bonded TP316 / A479
3	Poppet Stopper	TP316 / A479 or A276
4	Spring	TP302 / A313
5	O-Ring ①	FKM
6	Back Up Ring	PTFE
7	Outlet Body ②	TP316 / A479 or A276

① Fluorocarbon-Based.
② Molybdenum dry film lubricaut on thread.



Cracking and Reseal Pressure

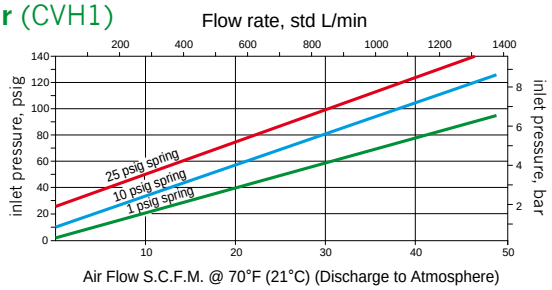
- From the graph, the actual cracking pressure of nominal 25psi is shown to range between 22psi to 28psi, and the reseal pressure 16psi to 22psi.

Back pressure may be required to reseal the valves with nominal cracking pressure of 5psi or lower.

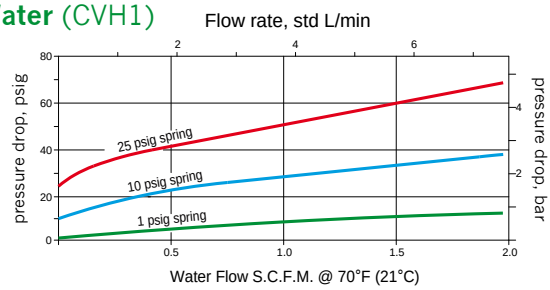
1. Cracking pressure : The upstream pressure at which the first indication of flow occurs.
2. Reseal pressure : The upstream pressure at which there is no indication of flow.

Flow Rate at 70°F (20°C)

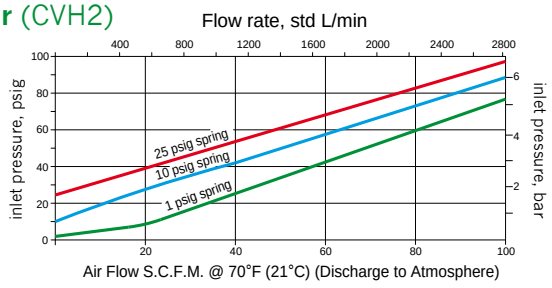
Air (CVH1)



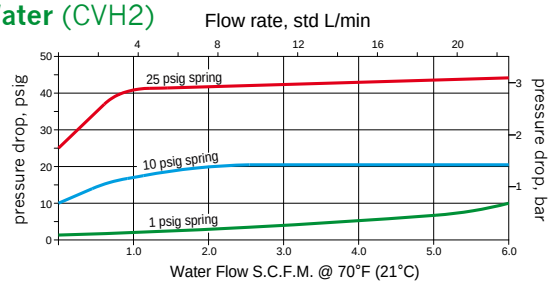
Water (CVH1)



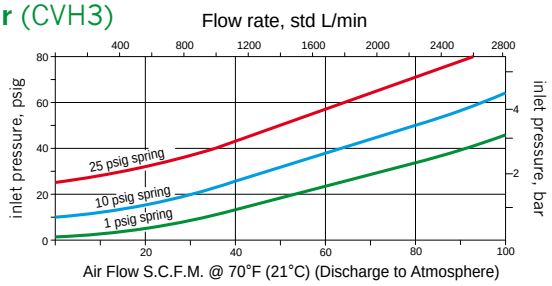
Air (CVH2)



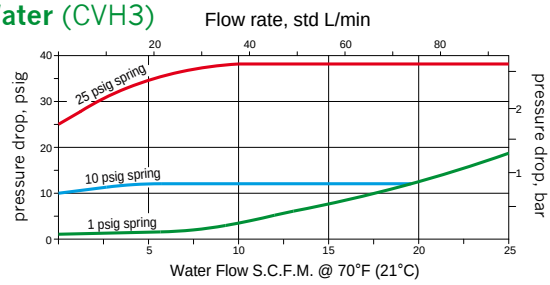
Water (CVH2)

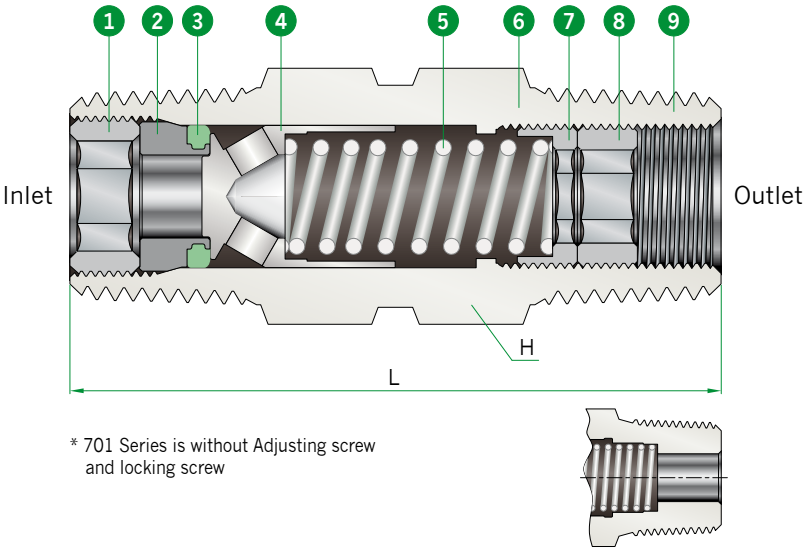


Air (CVH3)



Water (CVH3)





* 701 Series is without Adjusting screw and locking screw

1. **Stop nut**
   - helps to contain the insert.
2. **Insert**
   - prevents blow-out of o-ring.
3. **O-Ring**
   - provides leak tight shut-off.
4. **Back Stopped Poppet**
   - prevents the spring from being over stressed
5. **Spring**
   - a wide range of adjustable springs are available for the cracking pressure in the range from 3psig to 600psig.
6. **One-piece Body**
   - made from bar stock.
7. **Adjusting screw (700A Series Only)**
   - sets desired cracking pressure.
8. **Locking screw (700A Series Only)**
   - maintains setting.
9. **End Connections**
   - Male & Female ISO tapered threads, Male & Female NPT.

Technical Data

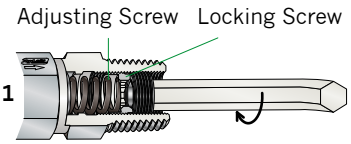
Series	701	700A
Max. Working Pressure	3000 psig (206bar)	
Operating Temperature Range	FKM : -10°F to 375°F (-23°C to 191°C) NBR : -10°F to 250°F (-23°C to 121°C)	
Nominal Cracking Pressure	1/3,1,3,5,10, 25 psig	3 to 50 psig 50 to 150 psig 150 to 350 psig 350 to 600 psig

Table of Dimensions

Basic Part No.		Flow Dia.	End Connection		Dimensions			
			Inlet	Outlet	L		H	
					mm	in.	mm	in.
Stationary Cracking Pressure								
CV (701 Series)	-M4N	4.8	1/4" Male NPT	1/4" Male NPT	41.1	1.62	14.2	9/16
	-M8N	10.0	1/2" Male NPT	1/2" Male NPT	57.9	2.28	22.2	7/8
	-F4N	4.8	1/4" Female NPT	1/4" Female NPT	61.2	2.41	19.1	3/4
	-F8N	10.0	1/2" Female NPT	1/2" Female NPT	94.2	3.71	26.9	1 1/16
	-FM4N	4.8	1/4" Female NPT	1/4" Male NPT	58.2	2.29	19.1	3/4
	-MF4N		1/4" Male NPT	1/4" Female NPT	44.4	1.75		
	-MF8N	10.0	1/2" Male NPT	1/2" Female NPT	71.9	2.83	26.9	1 1/16
Adjustable Cracking Pressure								
CVA (700A Series)	-M4N	4.8	1/4" Male NPT	1/4" Male NPT	41.1	1.62	14.2	9/16
	-M4R		1/4" Male ISO Tapered	1/4" Male ISO Tapered				
	-F4N		1/4" Female NPT	1/4" Female NPT	75.7	2.98	19.1	3/4
	-M8N	10.0	1/2" Male NPT	1/2" Male NPT	65.0	2.55	22.2	7/8
	-M8R		1/2" Male ISO Tapered	1/2" Male ISO Tapered				

All dimensions in milimeters. Dimensions are for reference only, subject to change.

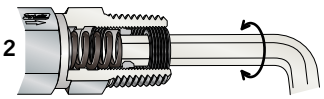
Cracking Pressure Adjustment



Step. 1

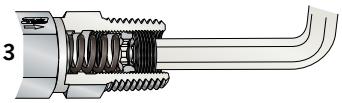
Insert the hex wrench into the lock screw.

Loosen the lock screw by rotating the hex wrench 2 to 3 full turns in the counterclockwise direction.



Step. 2

After loosening the lock screw, align the hex wrench os it will enter into the adjustment screw. To establish the desired cracking pressure, rotate the hex wrench in a clockwise direction to increase the cracking pressure or rotate the hex wrench in a counterclockwise directi-on to decrease the craking presure.

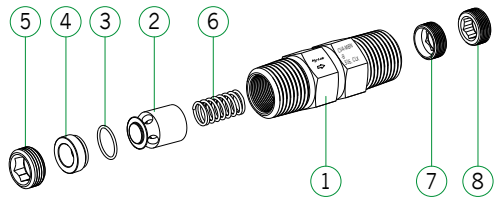


Step. 3

After adjusting the adjustment screw to reach the desired cracking presking pressure, withdraw the hex wrench from the adjustment screw.Tighten the lock screw against the adjustment screw firmly by rotating the hex wrench in a clockwise direction.

After testing for the desired cracking pressure, if addi-tional adjusting is required, repeat steps 1 through 3.

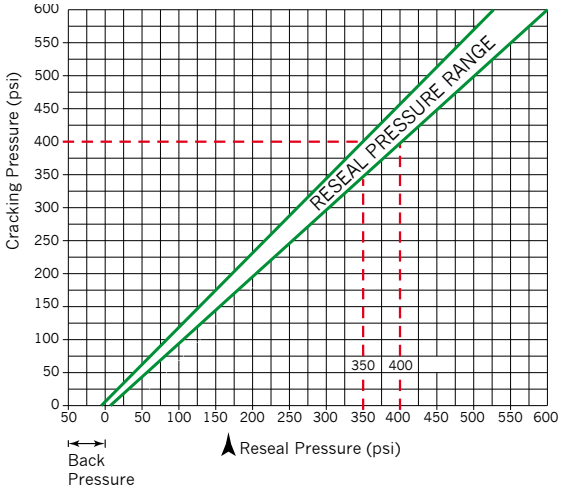
Materials of Construction



No.	Component	Valve Body Materials		
		316 Stainless Steel	Brass	
			1/4“	1/2“
		Material Grade / ASTM Specification		
1	Body ①	TP316/A479 or A276	Brass	
2	Poppet	TP316/A479 or A276	Brass	
3	O-Ring ①	FKM	NBR	
4	Insert	TP316/A479 or A276	Brass	
5	Stop nut	TP316/A479 or A276	Brass	
6	Spring	SS302/A313		
7	Ajusting screw ②*	TP316/A479 or A276	TP316/A479 or A276	Brass
8	Locking screw ②*			

① Silicone-based lubricant.
② Molybdenum disulfide-based dry film lubricant.
③ Adjusting screw in brass valve with „C“ or“D“ (150-600 psig) spring is 316SS.
* 700A Series only.

Cracking and Reseal Pressure at 70°F (20°C)



Cracking and Reseal Pressure

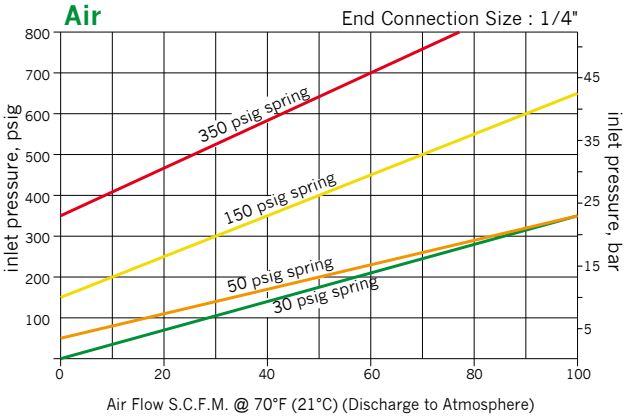
Example : For a valve set to crack at 400 psi, the minimum reseal pressure would be 350psi.

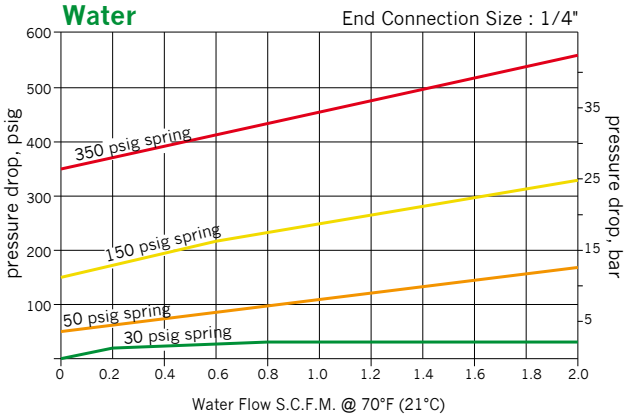
Valves that are not actuated for a period of time may crack initially at higher than subsequent cracking pressure.

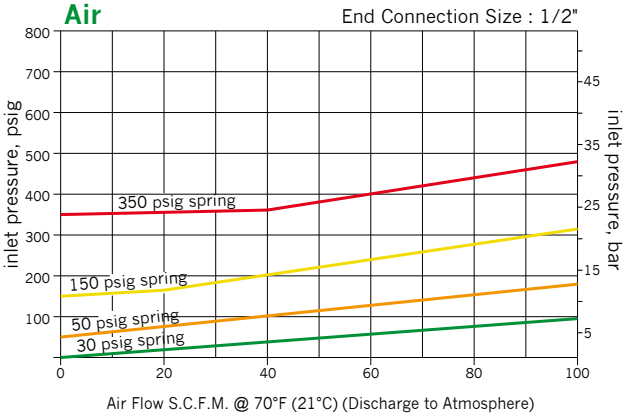
701, 700A series check valves set to crack at 20psi or lower may require back pressure to reseal bubble-tight.

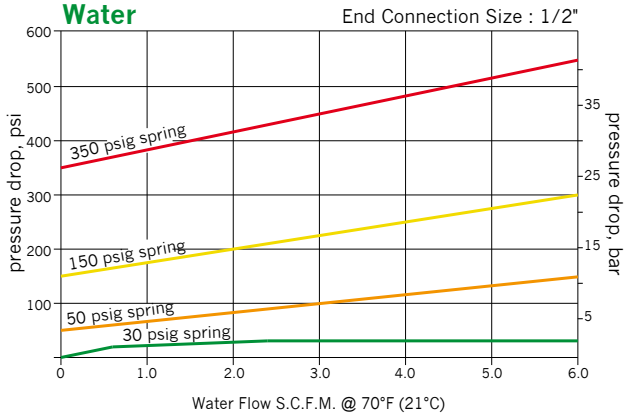
1. Cracking pressure : The upstream pressure at which the first indication of flow occurs.
2. Reseal pressure : The upstream pressure at which there is no indication of flow.

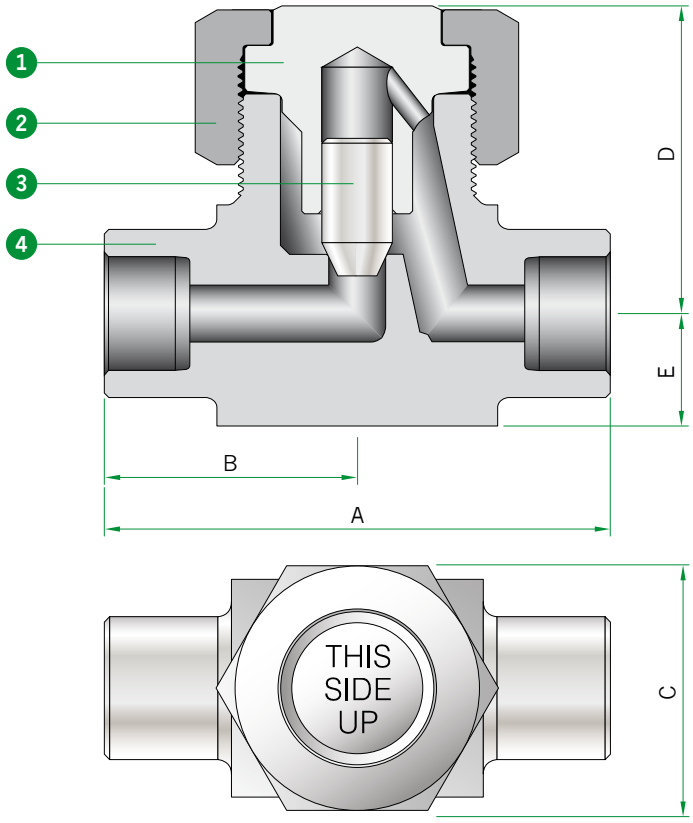
Flow Rate at 70°F (20°C)











1. **Bonnet**
   - Union Bonnet Design For Safety
2. **Bonnet Nut**
3. **Poppet**
   - Metal to Metal Seal
4. **Body**
   - Compact Size & Rugged Construction

Technical Data

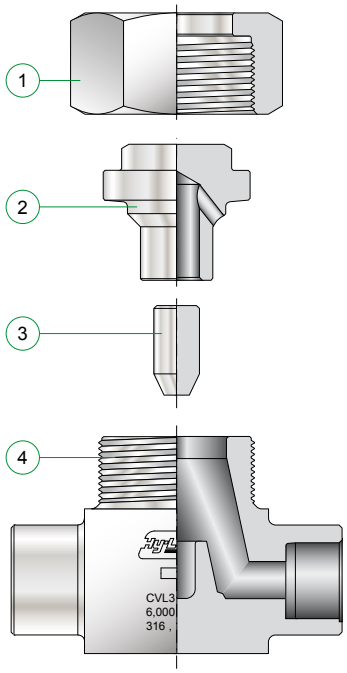
Series	Offrice		Cv	Pressure Rating @ 70 °F (21 °C)	Temperature Rating
	mm	in.			
CVL1	4.0	0.157	Max. 0.28	6000 psig (413 bar)	-65°F to 900 °F (-53 °C to 482 °C)
CVL2	6.4	0.252	Max. 0.60		
CVL3	11.1	0.437	Max. 2.30		

Table of Dimensions

Basic Part No.		End Connection		Cv	Office mm (in.)	Dimensions, mm (in.)				
Series	Part. No.	Inlet	Outlet			A	B	C	D	E
CVL1	H-4T	1/4" Hy-Lok	1/4" Hy-Lok	0.28	4.0 (0.157)	61.9(2.44)	31.0(1.22)	22.2 (7/8)	37.3. (1.47)	9.6 (0.38)
	H-6M	6mm Hy-Lok	6mm Hy-Lok							
	F-2N	1/8" Female NPT	1/8" Female NPT			50.8(2.00)	25.4(1.00)			
	F-4N	1/4" Female NPT	1/4" Female NPT			52.4(2.06)	26.2(1.03)			
	SW-4T	1/4" Tube Weld	1/4" Tube Weld			46.0(1.80)	23.0(0.90)			
CVL2	F-4N	1/4" Female NPT	1/4" Female NPT	0.60	6.4 (0.252)	57.2(2.24)	28.6(1.12)	31.8 (1 1/4)	47.0 (1.85)	12.7 (0.50)
	F-6N	3/8" Female NPT	3/8" Female NPT							
	H-6T	3/8" Hy-Lok	3/8" Hy-Lok			73.0(2.25)	36.5(1.25)			
	SW-6T	3/8" Tube Weld	3/8" Tube Weld			57.2(2.25)	2.6(1.125)			
	SW-8T	1/2" Tube Weld	1/2" Tube Weld							
CVL3	H-8T	1/2" Hy-Lok	1/2" Hy-Lok	2.30	11.1 (0.437)	100.0(3.94)	50.0(1.97)	38.1 (1 1/2)	62.0 (2.44)	20.0 (0.79)
	H-12T	3/4" Hy-Lok	3/4" Hy-Lok							
	F-8N	1/2" Female NPT	1/2" Female NPT			79.4(3.12)	39.7(1.56)			15.9 (0.63)
	F-12N	3/4" Female NPT	3/4" Female NPT			82.6(3.26)	41.3(1.63)			
	SW-8T	1/2" Tube Weld	1/2" Tube Weld			79.4(3.12)	39.7(1.56)			

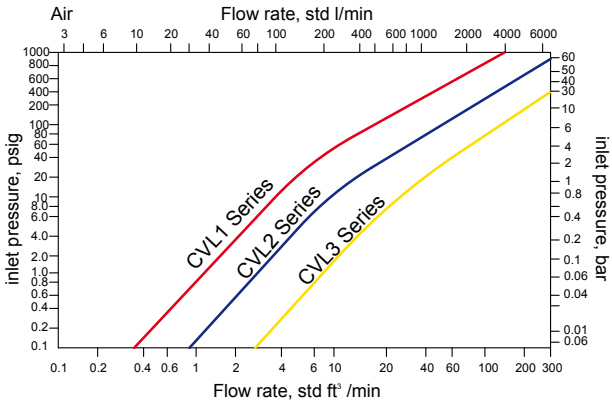
All dimensions in milimeters, reference only subject to change. Dimensions shown with Hy-Lok nuts finger-tight position, where applicable.

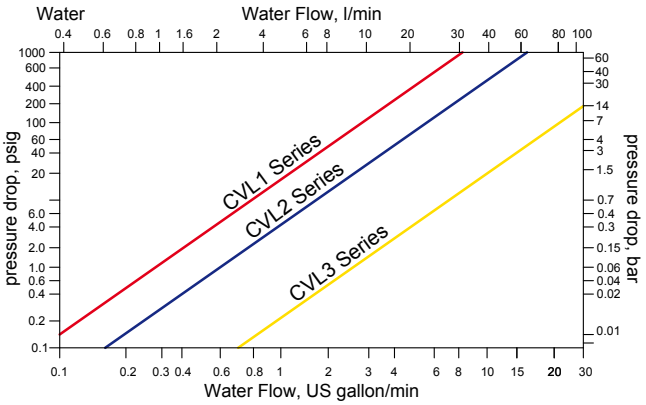
Materials of Construction



No.	Component	Material
1	Bonnet nut	ASTM A276/A479 TYPE 316
2	Bonnet	
2	Poppet	ASTMA564 TYPE 630
4	Body	ASTM A276/A182 TYPE 316

Flow Rate at 100°F (37°C)





Cleaning

- Each valve is cleaned and packaged according to the company standard cleaning procedures.

Testing

- Each valve is tested with nitrogen for cracking and reseal performance.
- Optional tests are available upon request.

O-Ring Materials

- Available are various O - ring materials, whose temperature ratings are shown below

Material	Temperature Rating
FKM	-23°C to 191 °C (-10°F to 375°F)
NBR	-23°C to 121°C (-10°F to 250°F)
FFKM (Kalrez®)	-23°C to 315°C (-10°F to 600°F)
PTFE	-46°C to 232°C (-50°F to 450°F)
Neoprene	-40°C to 121°C (-40°F to 250°F)
Ethylene Propylene	-46°C to 149°C (-50°F to 300°F)

* High back pressure Is required for PTFE to seal leak - tight.

Ordering Information

CV1 — MH — 4N4T — 1/3 — EP* — PS* — SOG* — S316

Series Designator
- 700 : CV1, CV2, CV3, CV4, CV5, CV6
- 700H : CVH1, CVH2, CVH3
- 701 : CV
- 700A : CVA
- CVL : CVL1, CVL2, CVL3

Cracking Pressure Designator
- 1/3 : 1/3 psig
- 1 : 1 psig
- 3 : 3 psig
- 5 : 5 psig
- 10 : 10 psig
- 25 : 25 psig

700A Series Only
- A : 3~ 50 psig
- B : 50~150 psig
- C : 150~350 psig
- D : 350~600 psig

CVL Series except

700A Series Only
- PS : Presetting for Cracking Pressure

Sour Gas Service
- Nil : Without (Standard)
- SOG : NACE MR-01-75

Material Designator
- S316 : 316 Stainless Steel
- BRAS : Brass

700H Series only apply to S316

End Connection Designator
- H : Both Ends Hy-Lok Tube Fitting
- M : Both Ends Male Pipe Thread
- F : Both Ends Female Pipe Thread
- MH : Male Pipe Thread & Hy-Lok Tube Fitting
- MF : Male Pipe Thread & Female Pipe Thread
- ZCR : Both Male Gasket Face Seal Fitting
- ZCO : O-ring Face Seal Fitting

701, 700A Series only apply to M, F, MF, FM type

O-ring Material Designator
- Nil : FKM (Standard) NBR (Standard for Brass 700A Series Body)
- BU : NBR
- KA : Kalrez
- EP : Ethylene Propylene
- PE : PTFE
- NE : Neoprene

700H Series only apply to Nil, BU, EP

• Pipe Thread NPT (ISO / BSP)

Thread(NPS)	1/8	1/4	3/8	1/2	3/4	1
Designator	2N(R)	4N(R)	6N(R)	8N(R)	12N(R)	16N(R)

• Tube

Fractional Tube	O.D.	1/8"	1/4"	3/8"	1/2"	3/4"	1"
	Designator	2T	4T	6T	8T	12T	16T
Metric Tube	O.D.	3mm	6mm	10mm	12mm	20mm	25mm
	Designator	3M	6M	10M	12M	20M	25M

Note * : No designator is reguired for standard.
e.g CVH1H - 4T - 1/3 - S316

701, 700A Series only apply to 1/2" & 1/4"

SAFETY in VALVE SELECTION

Proper installation, materials compatibility, operation and maintenance of these valves are the responsibility of the user. The total system design must be taken into consideration to ensure optimal performance and safety.

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