

## CHECK VALVES

### Features

- Quick Opening / Positive Closing
- Large Flow Capacity
- Zero Leakage

### Technical Data

#### Materials of Construction

- Body – 2024-T4/T351 or  
6061-T6/T651 Aluminum,  
Brass, Steel,  
303 or 316 Stainless Steel
- O-Rings – Buna N, EPR, Fluorosilicone,  
Neoprene, Teflon® and Viton®

#### Pressure Ratings

- Operating Pressure  
200 Series – to 3,000 PSIG (207 BAR)  
H200 Series – to 6,000 PSIG (414 BAR)  
See Operating Pressures for Materials, Page 2

- Proof Pressure  
1-1/2 times Operating Pressure

- Burst Pressure  
2-1/2 to 4 times Operation Pressure

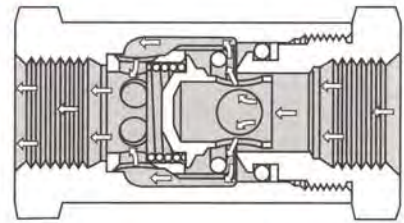
#### Temperature Range

- 320°F to +550°F  
-212°C to +232°C  
Based On O-Ring Material,  
See Page 2

#### Valve Sizes

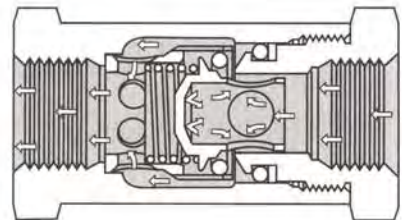
1/8" to 2"

### How It Works



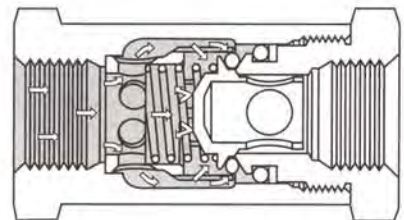
#### OPEN

Full flow passages offer minimum restriction to flow. Spring is completely removed from flow path.



#### CLOSING

Floating O-Ring automatically establishes line contact with conical metal surfaces of poppet and seat to cushion closing and insure perfect sealing.



#### CLOSED

O-Ring only seals. Full pressure load is carried by metal-to-metal seat. Increasing pressure increases sealing efficiency — metal seat prevents any possibility of deformation or extrusion of O-Ring.



**CIRCLE SEAL CONTROLS, INC.**

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# 200 SERIES

0 to 6,000 PSIG

## How To Order

Two Examples:

**2 33 S - 4 T4T4 - 2**

(200 Series with Neoprene O-ring, Steel Body, 1/4" JIC 37° Flare Ends & 2 psi C. P.)

**H 2 49 T1 - 4 TT (L) - 1**

(Modified 6,000 psi 200 Series with Buna N O-ring, 316SS Body, 1/4" Male Tube Ends, Lockwire, and 1 psi Cracking Pressure)

### VARIATION

- H - Modified Construction for 6,000 PSIG Service (1/4" to 1-1/2" Tube, 1/8" to 1-1/4" Pipe & larger)
- K - Cryogenic Cleaning/Testing (Stainless Steel Valves Only)
- P - Modified Construction for High Pressure Gas or Liquid Service where Surge Flows occur (Std. on 299 or 262)

### BASIC MODEL NUMBER

200 Series

### O-RING MATERIAL, TEMPERATURE & CRACKING PRESSURE RANGE

49	- Buna N	-40°F to +250°F	2 - 4 PSIG
59	- Buna N	-40°F to +250°F	.5 - 1 PSIG
69	- Buna N	-65°F to +180°F	.5 - 1 PSIG
62	- Ethylene Propylene	-65°F to +300°F	2 - 4 PSIG
64	- Fluorosilicone	-80°F to +350°F	.5 - 1 PSIG
65	- Kalrez®	-40°F to +550°F	.5 - 1 PSIG
33	- Neoprene	-40°F to +240°F	2 - 4 PSIG
53	- Neoprene	-40°F to +300°F	.5 - 1 PSIG
24*	- Silicone	-70°F to +450°F	.5 - 1 PSIG
20*	- Teflon®	-100°F to +400°F	8 PSIG
20*	- Teflon® (K220T)	-320°F to +165°F	8 PSIG
80*	- Teflon®	-320°F to +165°F	8 PSIG
32	- Viton®	-20°F to +400°F	.5 - 1 PSIG

\* Specify steel (T) for body material at temperatures of -100°F and below.

Teflon®, Kalrez® and Viton® are registered trademarks of DuPont.

Please consult your Circle Seal Controls Distributor or the factory for information on special connections, operating pressures and temperature ranges.

### CRACKING PRESSURE

Call Out Dash Number If Not Standard

1 - 1 PSIG

### SPECIAL CHARACTERISTICS

(030) - Hole In Poppet Head, Thousandth of an Inch

(L) - Lockwire

### SIZE & END CONNECTIONS - Inlet/Outlet

Pipe Sizes in 1/8" Increments; Tube Sizes in 1/16" Increments

- P - Female Pipe
- T - Male Tube, AS4395(MS33656)
- T4 - JIC 37° Flare / SAE J514B
- B - Female Tube, AND10050
- C - Instrument Fittings
- D - Male Straight Thread, AS4395(MS33656) with Cone Point Removed
- D4 - Male SAE O-Ring Boss
- E - Flareless Male Tube, MS33514
- E4 - Flareless / SAE J514B
- F - Male Tube, SAE Flare 45°
- H - Hose, MS33658
- J - Female Tube, MS33649
- K - British Parallel Pipe (Male)
- L - British Parallel Pipe (Female)
- R - Female Tube, SAE Straight Thread, MS16142
- R4 - Female SAE O-Ring Boss
- S - British Taper Pipe (Male)
- U - Bulkhead Tube, MS33657
- X - British Taper Pipe (Female)
- Y - Male Tube, MS24385

### MATERIAL

- A - 2024-T4/T351 Aluminum
- B - Brass
- A1 - 6061-T6/T651 Aluminum
- S - Steel
- T - 303 Stainless Steel
- T1 - 316 Stainless Steel

### CRACKING PRESSURE —

MINIMUM CRACKING PRESSURE AVAILABLE - 0.1 PSI MAXIMUM CRACKING PRESSURE AVAILABLE - 8.0 PSI

NOTE: Cracking pressure is defined as pressure at which flow is 5cc/min., except for 220 Series for which flow is approximately .02 cfm. When ordering a cracking pressure within the standard range or below the standard range of cracking pressure, the dash number is a "maximum." Example: 259A-4TT-3 (C.P. tolerance will be +0%, -50%). When ordering a cracking pressure equal to or greater than the upper limit of the standard C.P. shown above, C.P. tolerance will be ±10%. Example: 259A-4TT-5. Cracking pressures over 8 psi should not be specified without consulting the factory. Where 200 Series valves are supplied with higher cracking pressures, a shroud ring may be used to confine the O-ring.

### LEAKAGE —

From Zero Pressure to Max. Operating Pressure - Zero. Exception: O-Rings of Teflon® when used with gases - 5cc/min. Max. at zero to 50 psi; 0.5cc min. Max. above 50 psi.

### OPERATING PRESSURE 200 SERIES —

Aluminum	Tube 3/16" to 1-1/2"	0 - 3,000 PSIG	to 200°F
	Pipe 1/8" to 1-1/2"	0 - 3,000 PSIG	to 200°F
Brass	Tube 3/16" to 1-1/2"	0 - 3,000 PSIG	to 300°F
	Pipe 1/8" to 1-1/2"	0 - 3,000 PSIG	to 300°F
Brass	Pipe 2"	0 - 1,500 PSIG	to 300°F
Steel	Tube 3/16" to 1-1/2"	0 - 3,000 PSIG	to 300°F
	Pipe 1/8" to 2"	0 - 3,000 PSIG	to 300°F
St. Steel	Tube 3/16" to 1-1/2"	0 - 3,000 PSIG	to 450°F
	Pipe 1/8" to 2"	0 - 3,000 PSIG	to 450°F

### OPERATING PRESSURE H200 SERIES —

Aluminum	Tube 3/16" to 1-1/4"	0 - 6,000 PSIG	to 200°F
	Pipe 1/8" to 1-1/2"	0 - 6,000 PSIG	to 200°F
Brass	Tube 3/16" to 1-1/4"	0 - 5,000 PSIG	to 300°F
	Pipe 1/8" to 1-1/2"	0 - 5,000 PSIG	to 300°F
Steel	Tube 3/16" to 1-1/4"	0 - 5,000 PSIG	to 300°F
	Pipe 1/8" to 1-1/2"	0 - 5,000 PSIG	to 300°F
St. Steel	Tube 3/16" to 2"	0 - 6,000 PSIG	to 450°F
	Pipe 1/8" to 2"	0 - 6,000 PSIG	to 450°F



## End Connections, Dimensions & Weights

PP — FEMALE PIPE							
Dash No.	Pipe Size	C			Weights (lbs.)		
		A	Hex.&Rd.	D	Alum.	Brass	All Steel
1PP	1/8"	1.70	.81	.62	.05	.15	.14
2PP	1/4"	2.25	1.00	.75	.12	.36	.34
3PP	3/8"	2.43	1.12	.88	.15	.46	.43
4PP	1/2"	2.93	1.50	1.25	.32	.98	.92
6PP	3/4"	3.37	1.75	1.50	.49	1.50	1.41
8PP	1"	3.99	2.00	1.75	.73	2.25	2.11
10PP	1-1/4"	4.50	2.75	2.25	1.60	5.00	4.80
12PP	1-1/2"	5.35	2.75	2.25	1.73	5.34	4.97
16PP	2"	6.10	3.50	2.75	2.60	8.00	7.50

TT, T4T4 — MALE TUBE								
Dash No.	Tube Size	A ± .030	B Ref.	C Hex.&Rd.	Optional Dimensions		Weights (lbs.)	
					D	E	Alum.	All Steel
3TT	3/16"	.97*	1.93*	.56*	—	—	.07	.08
4TT	1/4"	1.53	2.63	.75	—	—	.07	.18
5TT	5/16"	1.53	2.63	.81	—	—	.07	.20
6TT	3/8"	1.53	2.64*	.81	—	—	.07	.20
8TT	1/2"	1.81	3.12	1.00	—	—	.13	.35
10TT	5/8"	2.06	3.58	1.12	—	—	.18	.49
12TT	3/4"	2.50	4.23	1.50	1.75	1.50	.35	1.00
16TT	1"	2.87	4.69*	1.75	2.00	1.75	.53	1.50
20TT	1-1/4"	3.37	5.29	2.00	2.25	2.00	.79	2.30
24TT	1-1/2"	4.04	6.20*	2.75	2.75	2.25	1.80	5.22

\*Exceptions: 200T-3TT - (A Dim.) is 1.00; (B Dim.) is 1.96; (C Dim.) is .625  
B Dimensions - (200T-6TT) is 2.63; (200T-16TT) is 4.70; (200T-24TT) is 6.21

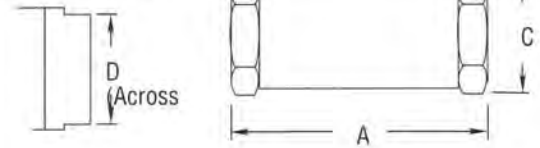
RR, BB — FEMALE TUBE								
Dash No.	Tube Size	A ± .030	B Ref.	C Hex.&Rd.	Optional Dimensions		Weights (lbs.)	
					D	E	Alum.	All Steel
4BB	1/4"	1.98	—	.75	—	—	.06	.16
5BB	5/16"	2.07	—	.81	—	—	.08	.22
6BB	3/8"	2.44	—	.81	—	—	.08	.22
8BB	1/2"	3.06	—	1.00	—	—	.13	.37
10BB	5/8"	3.42	—	1.12	—	—	.18	.50
12BB	3/4"	3.83	—	1.50	1.75	1.50	.34	.88
16BB	1"	4.37	—	1.75	2.00	1.75	.52	1.50
20BB	1-1/4"	4.99	—	2.00	2.25	2.00	.68	2.18
24BB	1-1/2"	5.75	—	2.75	2.75	2.25	2.05	5.95

BT — FEMALE TUBE > MALE TUBE or TB — MALE TUBE > FEMALE TUBE								
Dash No.	Tube Size	A ± .030	B Ref.	C Hex.&Rd.	Optional Dimensions		Weights (lbs.)	
					D	E	Alum.	All Steel
4BT	1/4"	1.53	2.08	.75	—	—	.06	.15
6BT	3/8"	1.98	2.54	.81	—	—	.08	.21
8BT	1/2"	2.37	3.04*	1.00	—	—	.12	.34
12BT	3/4"	3.00	3.86	1.50	1.75	1.50	.32	.96
16BT	1"	3.50	4.41	1.75	2.00	1.75	.50	1.46
20BT	1-1/4"	3.97	4.93	2.00	2.25	2.00	.68	1.90
24BT	1-1/2"	4.73	5.81	2.75	2.75	2.25	1.82	5.31
4TB	1/4"	1.98	2.53*	.75	—	—	.07	.20
5TB	5/16"	1.98	2.53	.81	—	—	.07	.20
6TB	3/8"	1.98	2.54	.81	—	—	.08	.21
8TB	1/2"	2.49	3.15	1.00	—	—	.14	.37
10TB	5/8"	2.80	3.56	1.12	—	—	.18	.50
12TB	3/4"	3.33	4.19	1.50	1.75	1.50	.37	1.07
16TB	1"	3.74	4.65	1.75	2.00	1.75	.55	1.60
20TB	1-1/4"	4.39	5.35	2.00	2.25	2.00	.80	2.30
24TB	1-1/2"	5.06	6.14	2.75	2.75	2.25	2.03	5.90

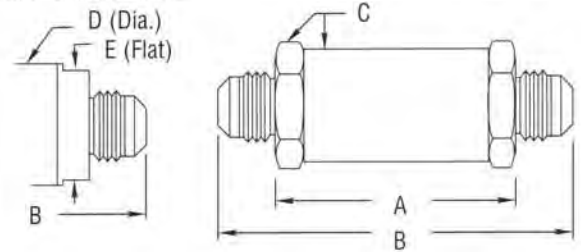
\*Exceptions: B Dimensions - (200T-8BT) is 3.03; (200T-4TB) is 2.56

H200 SERIES DIMENSIONS						
End Connection	Alum.	Brass	Stainless	D Dia.	Steel	
					E ±.015	F ±.015
3T&3C	.625	.625	.625	.650	.560	.220
4T,4B	.875	.875	.812	.875	.750	.280
1P:5&6T,6B:1M	.937	.937	.875	.960	.813	.280
2P:8T,8B:2M	1.125	1.250	1.125	1.250	1.000	.300
3P:10T,10B:3M	1.375	1.375	1.250	1.375	1.125	.350
4P:12T,12B:4M	1.750	1.875	1.750	1.875	1.625	.450
6P:16T,16B:6M	2.000	2.250	2.000	2.125	1.875	.500
8P:20T,20B:8M	2.250	2.500	2.250	2.500	2.125	.620

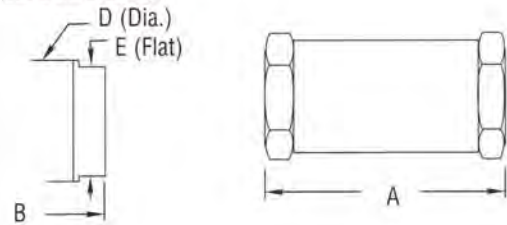
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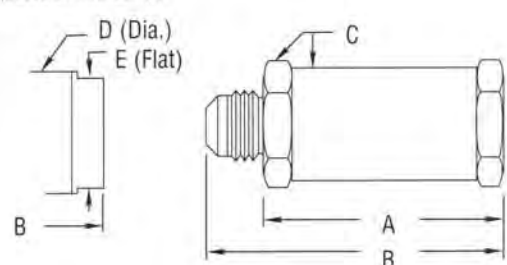
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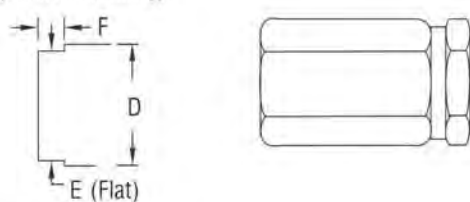
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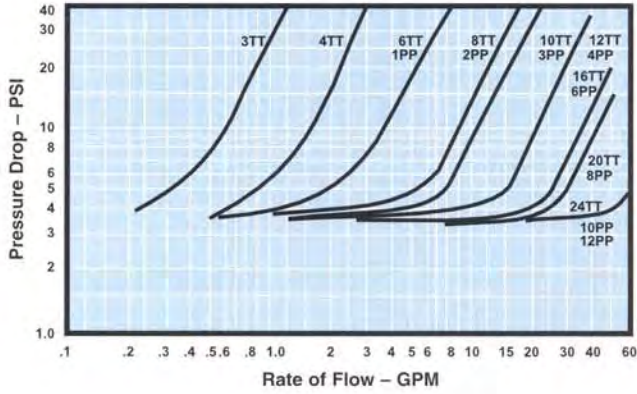


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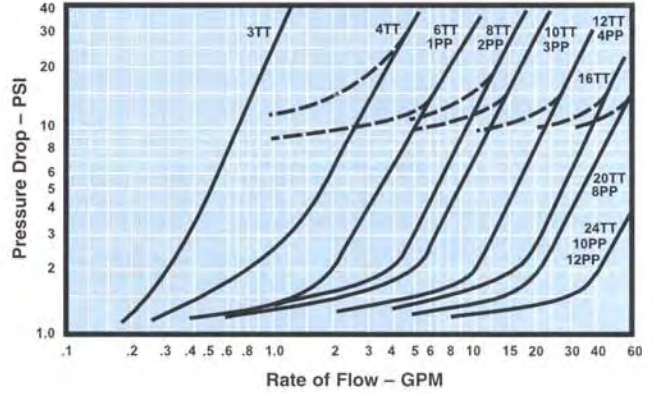


## Flow Curves

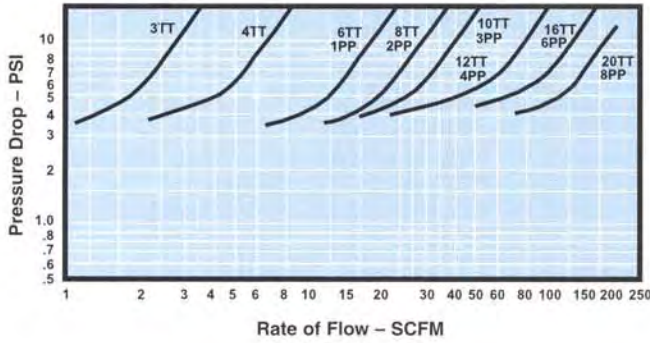
Model 249 299 223 233  
Hydraulic Fluid (MIL-H-5606)



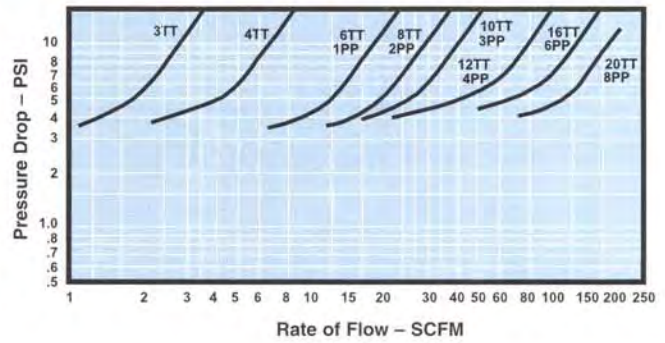
Model 259 279 220\*  
Hydraulic Fluid (MIL-H-5606)



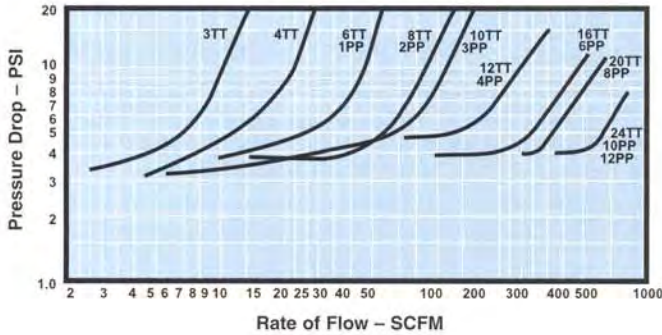
Model 249 299 223 233  
Air (Discharge to Atmosphere)



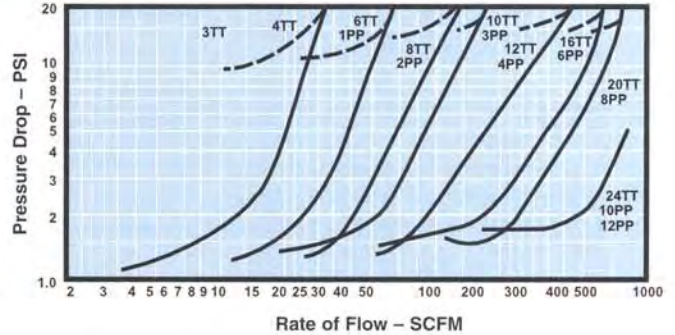
Model 259 279 220\*  
Air (Discharge to Atmosphere)



Model 249 299 223 233  
Air (100 PSI Inlet Pressure)



Model 259 279 220\*  
Air (100 PSI Inlet Pressure)



\* 220 approximately 6 psi higher at low flows.

Pipe Size	RATED FLOWS					
	1PP	2PP	3PP	4PP	6PP	8PP
Hydraulic Fluid, GPM	2.5	5.0	7.0	14.0	24.0	30.0
Air @ 100 PSI Inlet, SCFM	35	60	80	150	280	380

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