

CHECK VALVES


CIRCLE SEAL CONTROLS

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

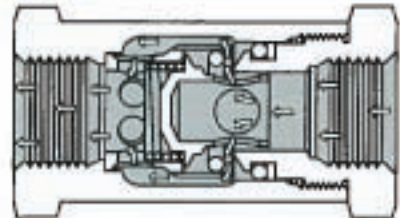
Temperature Range

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

Valve Sizes

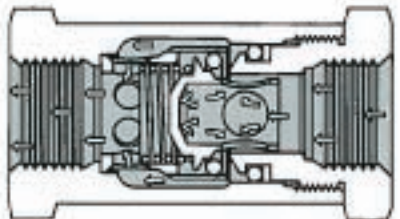
1/8" to 2"

How It Works



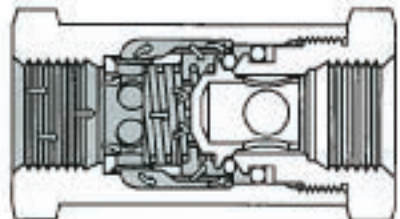
OPEN

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.

CIRCOR
AEROSPACE
Technology Takes Flight

Certified to ISO 9001

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)

VARIAION

- 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	Weights (lbs.)					
		A	C 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.) All Steel
					D	E	
3TT	3/16"	.97"	1.93"	.56"	—	—	.03
4TT	1/4"	1.53	2.63	.75	—	—	.07
5TT	5/16"	1.53	2.63	.81	—	—	.07
6TT	3/8"	1.53	2.64*	.81	—	—	.07
8TT	1/2"	1.81	3.12	1.00	—	—	.13
10TT	5/8"	2.06	3.58	1.12	—	—	.18
12TT	3/4"	2.50	4.23	1.50	1.75	1.50	.35
16TT	1"	2.87	4.69*	1.75	2.00	1.75	.53
20TT	1-1/4"	3.37	5.29	2.00	2.25	2.00	.79
24TT	1-1/2"	4.04	6.20*	2.75	2.75	2.25	1.80

*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

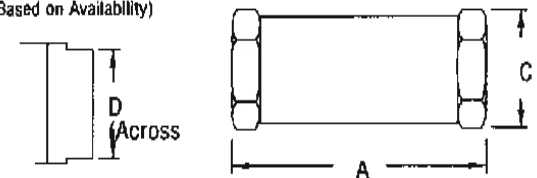
RR, BB — FEMALE TUBE							
Dash No.	Tube Size	A ±.030	B Ref.	C Hex.&Rd.	Optional Dimensions		Weights (lbs.) All Steel
					D	E	
4BB	1/4"	1.98	—	.75	—	—	.06
5BB	5/16"	2.07	—	.81	—	—	.08
6BB	3/8"	2.44	—	.81	—	—	.08
8BB	1/2"	3.06	—	1.00	—	—	.13
10BB	5/8"	3.42	—	1.12	—	—	.18
12BB	3/4"	3.83	—	1.50	1.75	1.50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

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.) All Steel
					D	E	
4BT	1/4"	1.53	2.08	.75	—	—	.08
6BT	3/8"	1.98	2.54	.81	—	—	.08
8BT	1/2"	2.37	3.04*	1.00	—	—	.12
12BT	3/4"	3.00	3.86	1.50	1.75	1.50	.32
16BT	1"	3.50	4.41	1.75	2.00	1.75	.50
20BT	1-1/4"	3.97	4.93	2.00	2.25	2.00	.68
24BT	1-1/2"	4.73	5.81	2.75	2.75	2.25	1.82
4TB	1/4"	1.98	2.53*	.75	—	—	.07
5TB	5/16"	1.98	2.53	.81	—	—	.07
6TB	3/8"	1.98	2.54	.81	—	—	.08
8TB	1/2"	2.49	3.15	1.00	—	—	.14
10TB	5/8"	2.80	3.56	1.12	—	—	.18
12TB	3/4"	3.38	4.19	1.50	1.75	1.50	.37
16TB	1"	3.74	4.65	1.75	2.00	1.75	.55
20TB	1-1/4"	4.39	5.35	2.00	2.25	2.00	.80
24TB	1-1/2"	5.06	6.14	2.75	2.75	2.25	2.03

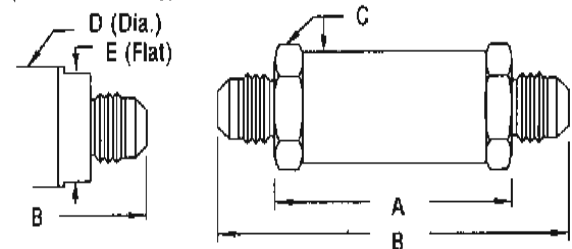
*Exceptions: B Dimensions — (200T-8BT) is 3.03; (200T-4TB) is 2.56

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	

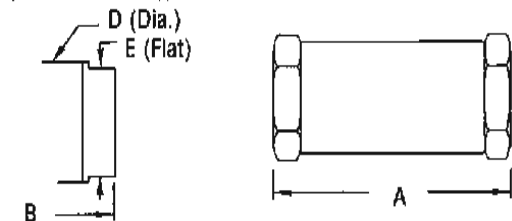
OPTIONAL
(Based on Availability)



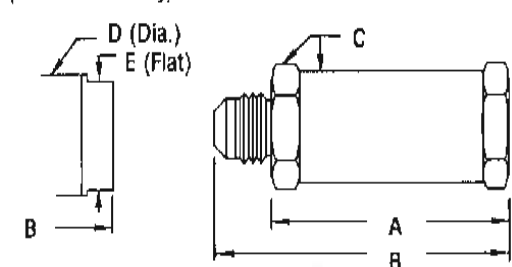
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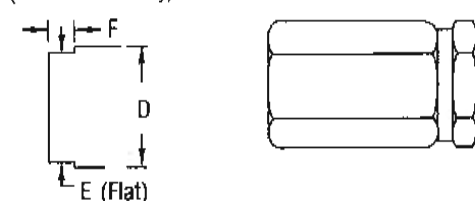
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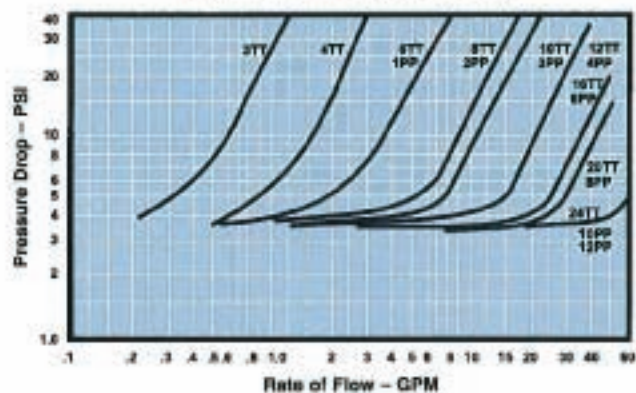


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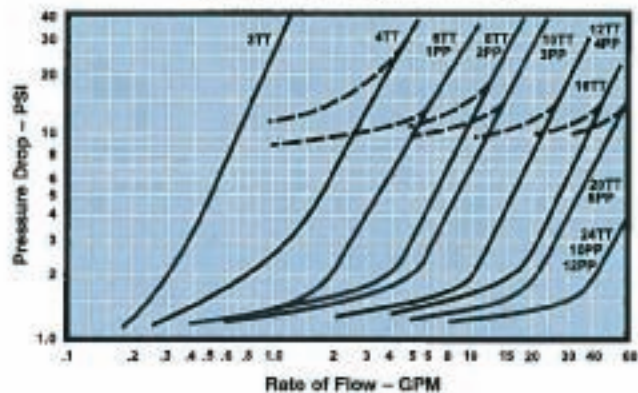


Flow Curves

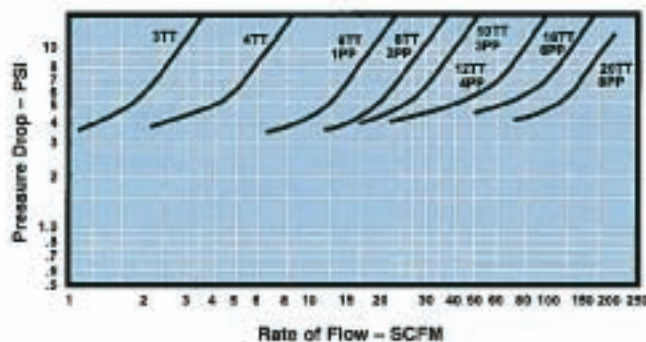
Model 249 299 223 233
Hydraulic Fluid (MIL-H-5606)



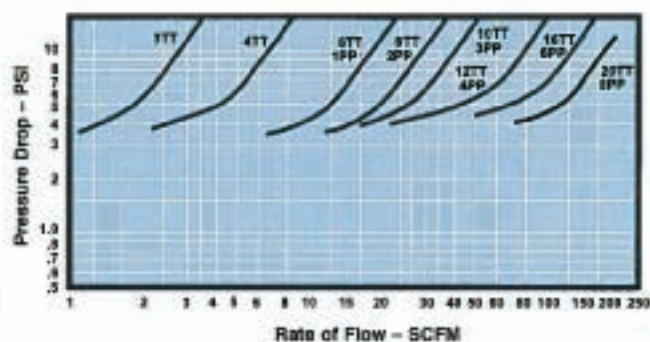
Model 259 279 220*
Hydraulic Fluid (MIL-H-5606)



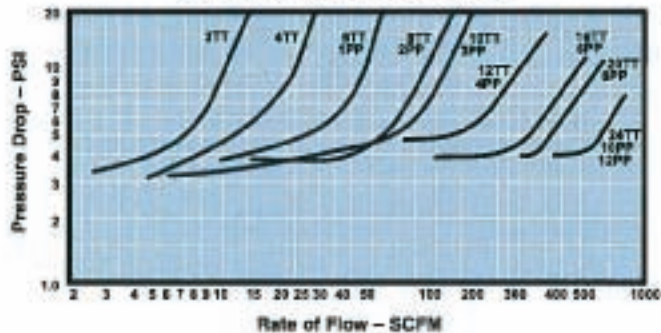
Model 249 299 223 233
Air (Discharge to Atmosphere)



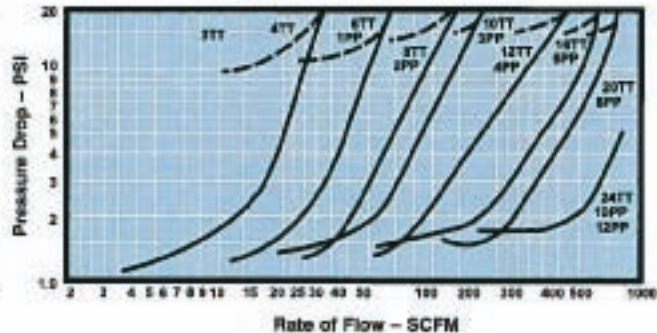
Model 259 279 220*
Air (Discharge to Atmosphere)



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	360