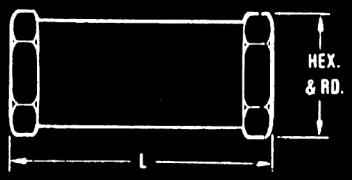
PP-FEMALE PIPE



OPTIONAL*

DIMENSIONS
Female Pipe Inlet and Outlet

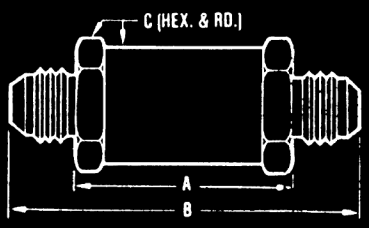
PIPE SIZE	L	HEX. & RD.	F*
1/8	1-11/16	13/16	–
1/4	2-1/4	1	–
3/8	2-7/16	1-1/8	–
1/2	2-15/16	1-1/2	1-1/4"
3/4	3-3/8	1-3/4	1-1/2"
1	4	2	1-3/4"
1-1/4	4-1/2	2-3/4	–
1-1/2	5-3/8	2-3/4	2-1/4"
2	6-1/8	3-1/2	2-3/4"

*Across Flats—optional design based on stock availability.

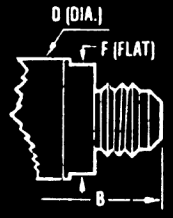
VALVE WEIGHTS
(in pounds)

PIPE SIZE	ALUMINUM	BRASS	STEEL (Including Stainless)
1/8	.05	.15	.14
1/4	.12	.36	.34
3/8	.15	.46	.43
1/2	.32	.98	.92
3/4	.49	1.50	1.41
1	.73	2.25	2.11
1-1/4	1.60	5.00	4.80
1-1/2	1.73	5.34	4.97
2	2.60	8.00	7.50

TT-MALE TUBE



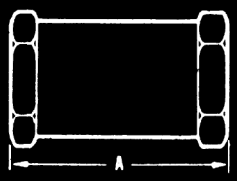
200-*TT SHOWN

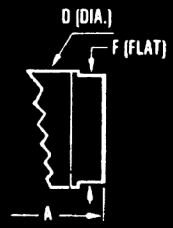


	TUBE SIZE	A ±.030	B (ref.)	C	OPTIONAL DIMENSIONS D	OPTIONAL DIMENSIONS F	WEIGHT (lbs.) ALUMINUM	WEIGHT (lbs.) STEEL
200-TT	3/16	.97*	1.93*	.56*	–	–	.03	.08
	1/4	1.53	2.63	.75	–	–	.07	.18
	5/16	1.53	2.63	.813	–	–	.07	.20
	3/8	1.53	2.64*	.813	–	–	.07	.20
	1/2	1.81	3.12	1.00	–	–	.13	.35
	5/8	2.06	3.58	1.12	–	–	.18	.49
	3/4	2.50	4.23	1.50	1.75	1.50	.35	1.00
	1	2.87	4.69*	1.75	2.00	1.75	.53	1.50
	1-1/4	3.37	5.29	2.00	2.25	2.00	.79	2.30
	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.

BB-FEMALE TUBE

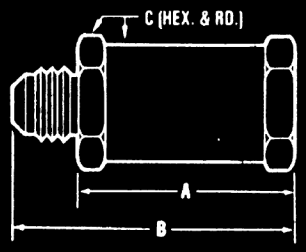


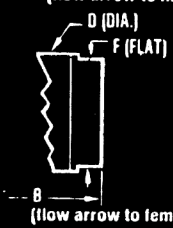


OPTIONAL*

	TUBE SIZE	A ±.030	B (ref.)	C	OPTIONAL DIMENSIONS D	OPTIONAL DIMENSIONS F	WEIGHT (lbs.) ALUMINUM	WEIGHT (lbs.) STEEL
200-BB	1/4	1.98	–	.75	–	–	.06	.16
	5/16	2.07	–	.81	–	–	.08	.22
	3/8	2.44	–	.81	–	–	.08	.22
	1/2	3.06	–	1.00	–	–	.13	.37
	5/8	3.42	–	1.12	–	–	.18	.50
	3/4	3.83	–	1.50	1.75	1.50	.34	.88
	1	4.37	–	1.75	2.00	1.75	.52	1.50
	1-1/4	4.99	–	2.00	2.25	2.00	.68	2.18
	1-1/2	5.75	–	2.75	2.75	2.25	2.05	5.95

SPECIAL END CONNECTION





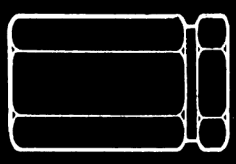
OPTIONAL*

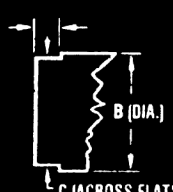
	TUBE SIZE	A .030	B (ref.)	C	OPTIONAL DIMENSIONS D	OPTIONAL DIMENSIONS F	WEIGHT (lbs.) ALUMINUM	WEIGHT (lbs.) STEEL
200-BT (flow arrow to male end)	1/4	1.53	2.08	.75	–	–	.06	.15
	3/8	1.98	2.54	.81	–	–	.08	.21
	1/2	2.37	3.04*	1.00	–	–	.12	.34
	3/4	3.00	3.86	1.50	1.75	1.50	.32	.96
	1	3.50	4.41	1.75	2.00	1.75	.50	1.46
	1-1/4	3.97	4.93	2.00	2.25	2.00	.68	1.90
	1-1/2	4.73	5.81	2.75	2.75	2.25	1.82	5.31

*Exceptions: "B" dimensions: (200T-8BT) is 3.03; (200T-4TB) is 2.56.

	TUBE SIZE	A .030	B (ref.)	C	OPTIONAL DIMENSIONS D	OPTIONAL DIMENSIONS F	WEIGHT (lbs.) ALUMINUM	WEIGHT (lbs.) STEEL
200-TB (flow arrow to female end)	1/4	1.98	2.53*	.75	–	–	.07	.20
	5/16	1.98	2.53	.81	–	–	.07	.20
	3/8	1.98	2.54	.81	–	–	.08	.21
	1/2	2.49	3.15	1.00	–	–	.14	.37
	5/8	2.80	3.56	1.12	–	–	.18	.50
	3/4	3.33	4.19	1.50	1.75	1.50	.37	1.07
	1	3.74	4.65	1.75	2.00	1.75	.55	1.60
	1-1/4	4.39	5.35	2.00	2.25	2.00	.80	2.30
	1-1/2	5.06	6.14	2.75	2.75	2.25	2.03	5.90

H200 SERIES





OPTIONAL* CONFIGURATION

H200 SERIES DIMENSION

Refer to 200 Series Pipe or Tube dimensions for overall length

MATERIAL	ALUMINUM	BRASS	STAINLESS STEEL	STEEL		
END CONNECTION	STOCK SIZE HEX	STOCK SIZE HEX	STOCK SIZE HEX	"B" DIA.	"C" ACROSS FLATS ±.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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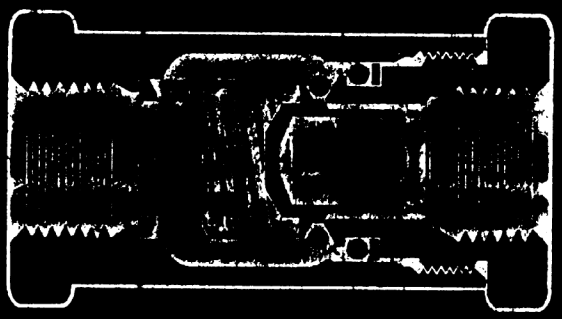
Wherever precision controls are required, the proven reliability of Circle Seal Controls provides one complete answer for a multitude of fluid flow management problems.



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DESIGNED TO PROVIDE PERFECT SEALING WITH VIRTUALLY ANY LIQUID OR GAS SERVICE

The principle of the Circle Seal Check Valve is outstanding in its simplicity—unequaled in its dependability. The wide range of adaptability of Circle Seal Check Valves provides in one check valve all of the qualities which are of primary importance in modern concepts of fluid systems. The patented sealing principle effects complete leakproof closing under all pressure conditions.

OPERATING CHARACTERISTICS

NO LEAKAGE WHATSOEVER AT ANY DIFFERENTIAL PRESSURE—Circle Seal Check Valves are absolutely bubble tight in leakage tests.

QUICK OPENING—POSITIVE CLOSING—Even at extremely low pressure differential. Opening pressures are as low as .1 psi. The poppet closes at zero flow before the return flow starts.

MAINTENANCE FREE DEPENDABILITY—The resilient "O" Ring absorbs the shock and automatically compensates for normal wear. There are no special seats which require replacing or refacing.

EXCELLENT FLOW CHARACTERISTICS—The streamlined poppet and full ports offer minimum restriction to flow. The spring retainer has ample ports to allow full flow even when surge pressure forces the poppet against the stop.

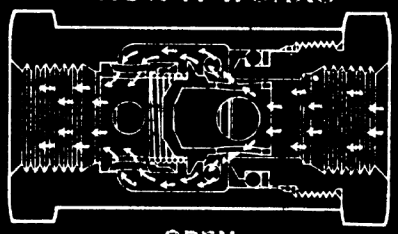
NO CHATTER OR HAMMER—The pulsating action of shock waves and hammer is absorbed by minor expansion and contraction of the "O" Ring. The use of the resilient "O" Ring seal together with the careful poppet design insures cushioned, quiet closing.

SATISFACTORY PERFORMANCE UNDER ADVERSE CONDITIONS—Foreign particles in the fluid stream do not prevent proper seating. Temperature variations do not affect proper functioning of the valves. Can be supplied to withstand temperatures from –320° to 500°F.

ADAPTABLE TO MOST FLUIDS—Metallic and non-metallic parts can be supplied to withstand the action of most commonly used exotic fluids. No special wear resisting materials are required, eliminating the problems of differential expansion and electrolytic action from dissimilar metals.

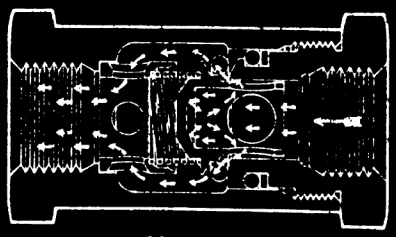
COMPACT, EASILY INSTALLED—Efficient straight line design reduces weight and size. Permits mounting in any position. All valves are marked with an arrow to indicate direction of flow.

HOW IT WORKS



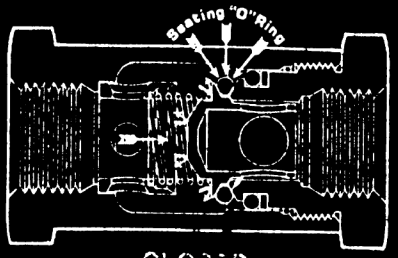
OPEN

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.

FORM CSP-C-L-SM 2/78

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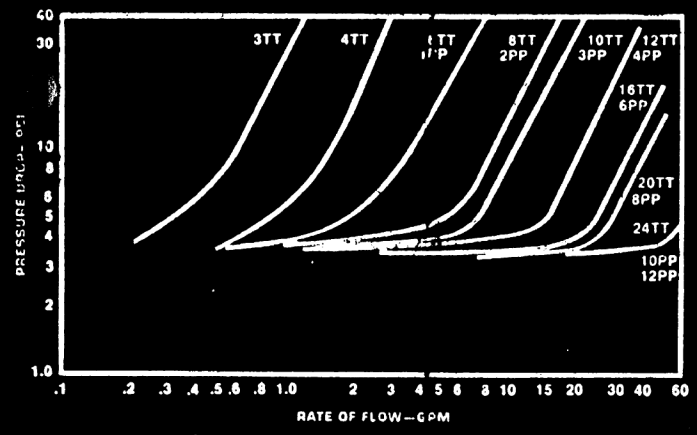
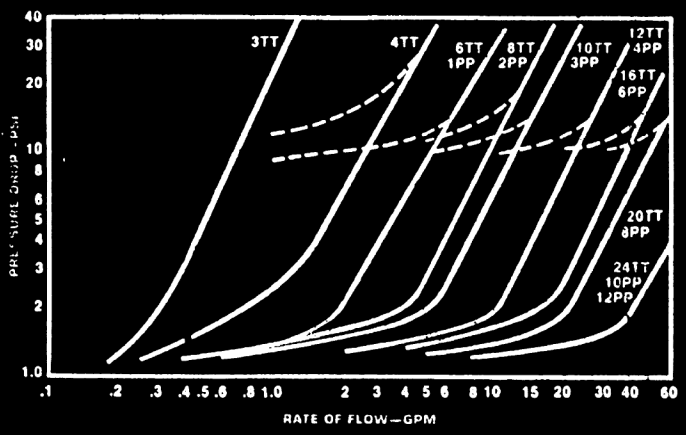
TYPICAL FLOW CURVES

HYDRAULIC FLUID (MIL-H-5606)

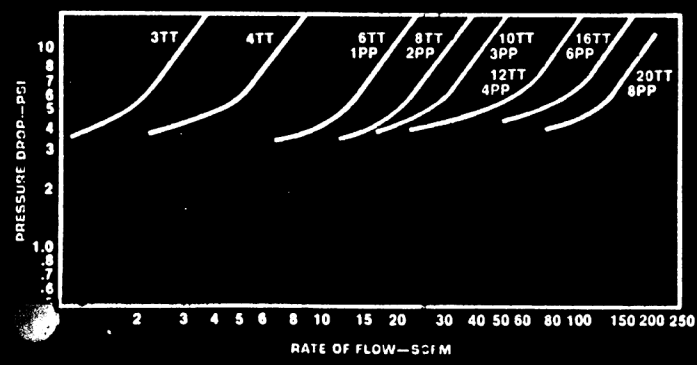


HYDRAULIC FLUID (MIL-H-5606)

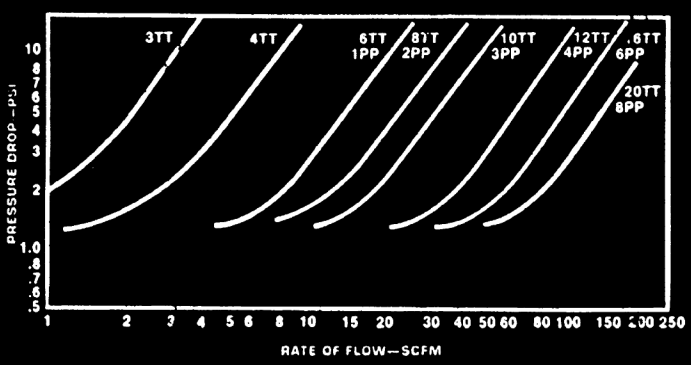


——————220 APPROXIMATELY 6 PSI HIGHER AT LOW FLOWS.

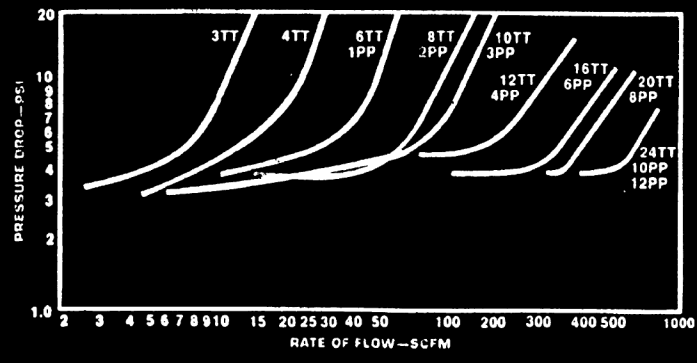
AIR (DISCHARGE TO ATMOSPHERE)



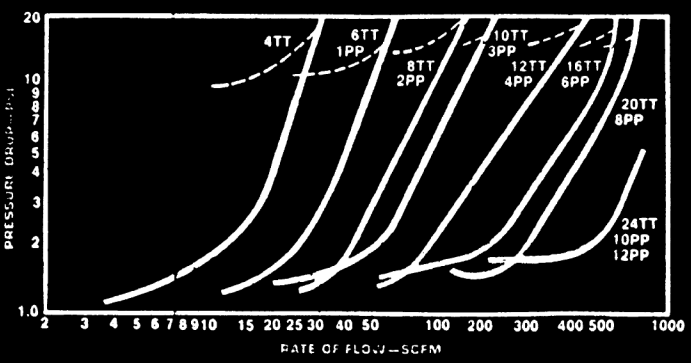
AIR (DISCHARGE TO ATMOSPHERE)



AIR (100 PSI INLET PRESSURE)



AIR (100 PSI INLET PRESSURE)



——————220 APPROXIMATELY 6 PSI HIGHER AT LOW FLOWS.

RATED FLOWS						
PIPE SIZE	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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FORM CSP-6-L-5M-2-73

TECHNICAL DATA

200 Series OPERATING PRESSURE

ALUMINUM 1/8" to 1-1/2"	0-3000 psi (to 200°F)
BRASS 1/8" to 1-1/2"	0-3000 psi (to 300°F)
BRASS 2"	0-1500 psi (to 300°F)
STEEL 1/8" to 2"	0-3000 psi (to 300°F)
STAINLESS STEEL ¼" to 2"	0-3000 psi (to 450°F)

H200 Series OPERATING PRESSURE

ALUMINUM–	
(Pipe) 1/8"-1"	0-6000 psi (to 200°F)
BRASS–	
(Pipe) 1/8"-1"	0-5000 psi (to 300°F)
STEEL–	
(Pipe) 1/8"-1"	0-5000 psi (to 300°F)
STAINLESS STEEL–	
(Pipe 1/8"-1"	0-6000 psi (to 450°F)

PROOF PRESSURE	1-1/2 times operating pressure
BURST PRESSURE	2-1/2 to 4 times operating pressure
LEAKAGE from Zero Pressure to max. operating pressure	Zero

(Exception: 220A, 220B and 220S with gases–5 cc/min. Max. @ 0 to 50 psi; 1 cc/min. above 50 psi.)

CONSTRUCTION

BODY	Bar stock
SPRING	302 Cres.
S	Synthetic Rubber or Teflon

SPECIAL MATERIALS, END CONNECTIONS, "O" RINGS AND SPRINGS

200 Series Check Valves can be manufactured of materials other than those shown in tables, or with special end connections (in production quantities only).

Special "O" Rings may be required for service not shown in the Model Number and Service Recommendations Table.

Consult local representative or the factory for service not shown or for valves of special materials or with special end connections.

VALVES WITH SPECIAL SPRINGS CAN BE FURNISHED TO ORDER

MINIMUM CRACKING PRESSURE AVAILABLE .01 psi
MAXIMUM STANDARD CRACKING PRESSURE 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: 279A-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 in the Service Recommendations Table C.P. tolerance will be ± 10%. Example: 299A-4TT-5.

Cracking pressures over 8 psi should not be specified without consulting the factory. Where 200 Series [illegible] are supplied with higher cracking pressures, a shrouded ring may be used to confine the "O" Ring.

Circle Seal

SERVICE RECOMMENDATIONS

MODEL NUMBER	O-RING MATERIALS	OPERATING TEMPERATURES	STANDARD RANGE	SERVICE
249	Buna N	- 40° to 250°F	2-4 psi	Air, Acetylene, Alcohol, Ammonia, Carbon Dioxide, Gasoline, Helium, Hydrogen, Hydraulic Fluid (Mineral Base), Natural Gas, Nitrogen, Water.
259	Buna N	- 40° to 250°F	.5-1 psi	Same as 249. Specify when cracking pressure is required. Not for use with surge or heavy pulsating flow.
233	Neoprene	- 40° to 240°F	2-4 psi	Oxygen, Acetylene, Freon 12, Freon 22.
213	Neoprene	- 40° to 240°F	.5-1 psi	Same as 233—for low pressure service.
224	Silicone (AMS3304C)	- 70° to 480°F	.5-1 psi	Air, Lube Oil, Vacuum, Water.
232	Viton A	- 20° to 400°F	.5-1 psi	Aircraft & Jet Fuels, Aromatics, Carbon Tet.
220	Teflon	-100° to 500°F	8 psi max.	Chemically inert. Suitable for nearly all fluids.
K220T	Teflon	-320° to 165°F	8 psi max.	Especially assembled & LOX cleaned for cryogenic service.
280	Teflon	-320° to 165°F	7 psi max.	No cryogenic processing.

HOW TO ORDER

PART NUMBER DESIGNATION — 249 S-4PP–

VARIATION
- H—Modified construction for 6000 psi service (1-1/4" tube & 1/8"-1" pipe size)
- K—Cryogenic service (stainless steel valves only) (Specially manufactured, cleaned and tested for cryogenic temperatures)
- P—Modified construction for high pressure gas or liquid service where surge flows are encountered. (Models 249, or 233 standard)

BASIC MODEL NUMBER

MATERIAL
- A —Aluminum 2024-T351
- B —Brass
- S —Steel
- T —Stainless Steel 303
- T1—Stainless Steel 316

END CONNECTIONS—Inlet/Outlet
(Pipe in 1/8's, Tube in 1/16's)
- P—Pipe, Female
- A—Tube, Flareless, High Pressure
- B—Tube, Female AND 10050*
- D—Straight Thread (MS33656 w/o cone point)
- E—Tube, Male, MS33514
- T—Tube, Male MS33656
- U—Bulkhead, MS33657
- Y—Tube, Male MS24385

(Female tube inlet and outlet not available in Aluminum H200 Series)
*Female tube per MS33644 Designated by the Letter "J."

NON-STANDARD CRACKING PRESSURE

STANDARD SIZES AVAILABLE

Aluminum	⅛" through 1" Female Pipe
Brass & Steel	⅛" through 2" Female Pipe
303 Stainless Steel	⅛" through 1" Female Pipe
316 Stainless Steel	¼", ½", ¾" & 1" Female Pipe

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