



Liquid Drain Traps Selection and Sizing

The discharge rate depends on the differential pressure across the trap (that is, the pressure at the trap inlet minus the pressure at the outlet). The capacity charts show the maximum cold water discharge rate versus the differential pressure. Note: Although the differential pressure is used for sizing, the trap body must be designed for the full maximum system pressure.

Operation Against Return

Line Back-Pressure

If the pressure in the return line (the "back-pressure") is above atmospheric at all times, the maximum operating pressure (PMO) of the trap is increased by the amount of the back-pressure. (But the increased PMO must never be higher than the PMA — the maximum allowable pressure.)

Example:

If the nameplate PMO is 100 psi g, and the back-pressure is always at least 25 psi g, the drain trap may be used at a working pressure of up to 125 psi g, provided that the nameplate PMA is at least 125 psi g at the operating temperature. The excess pressure will not hold the valve closed because the differential pressure is not greater than the nameplate PMO.

Safety Factors

Both the amount of liquid to be discharged and the differential pressure may fluctuate. To ensure continuous drainage during periods of high load and/or low pressure, the liquid drain trap should be selected to handle the estimated load times a safety factor of 1.5 at the lowest expected differential pressure. If the capacity requirements or operating conditions cannot be predicted accurately, the safety factor should be increased accordingly. If the maximum peak load and minimum differential pressure are accurately known, the safety factor may be reduced or eliminated.

Liquids other than cold water

For liquids heavier than cold water (that is, liquids with a specific gravity less than 1.0), both the discharge capacity and the maximum operating pressure will be reduced. The required capacity of the light liquid (including the safety factor) must be multiplied by the appropriate conversion factor from figure 1. The resulting equivalent cold water capacity is used to select a trap using the cold water capacity charts. Table 1 must be consulted to ensure that the reduced PMO of the selected trap is higher than the expected maximum system pressure. If there is a back-pressure in the return line, the PMO of the trap may be increased (see above).

Flashing Liquids

The capacity charts are based on single-phase (liquid only) flow. If the pressure/temperature conditions upstream and downstream of the trap are such that a portion of the liquid will re-evaporate, or "flash" as it passes through the valve, the resulting two-phase (liquid and gas) flow will reduce the capacity of the trap. If two-phase flow is expected, the safety factor should be increased by 1-1/2 to 2 times.

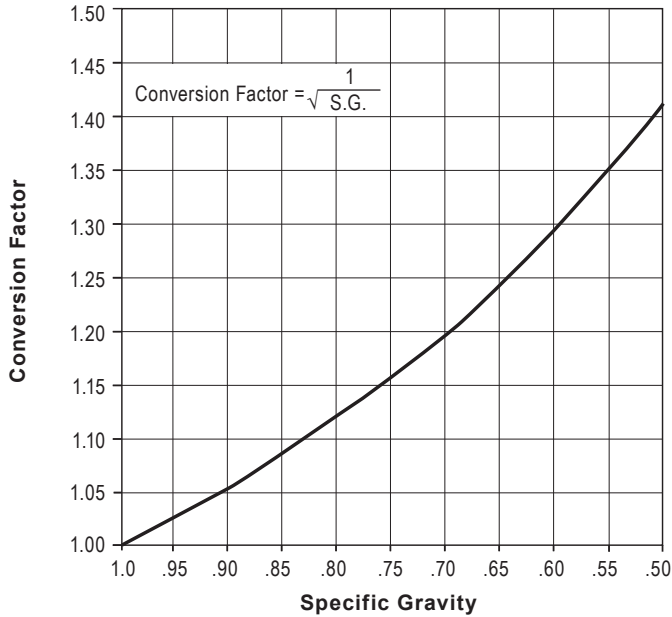
Table 1: Maximum Operating Pressure with Light Liquids

Model(s)*	Size(s)	Maximum Operating Pressure, psi g (bar g)											
		s.g. 1.00	.99 to .95	.94 to .90	.89 to .85	.84 to .80	.79 to .75	.74 to .70	.69 to .65	.64 to .60	.59 to .55	.54 to .50	
FA/FAI-30	½",¾",1"	35	31	28	24	21	17	14	10	7	3	—	
	1½",2"	34	31	28	25	22	20	17	14	11	8	6	
FA/FAI-75	½",¾",1"	90	81	73	65	57	49	41	33	25	16	8	
	1½"	88	81	73	66	58	51	43	36	28	21	13	
	2"	75	60	54	49	44	38	33	28	23	17	12	
FA/FAI-150	½",¾",1"	150	142	128	114	100	86	71	57	43	29	15	
	1½"	150	140	127	115	103	90	78	65	53	40	28	
	2"	150	139	127	115	103	91	79	67	55	43	31	
FAI-200	½",¾",1"	200	184	168	152	135	119	103	87	71	54	38	
FA-200	1"	200	200	200	190	164	139	113	88	62	37	11	
	1½"	200	200	200	191	168	145	122	99	76	53	30	
FAB-10	2"	10	9	8	7.5	7	6	5.5	5	4	3.5	3	
FAB150	1½"	150	138	126	114	100	88	74	62	50	38	26	
FAB-75	2½"	75	69	63	57	50	44	37	31	25	19	13	
FAB-175	2"	175	163	150	137	124	111	98	85	72	59	46	
CA-14	½",¾"	200	198	195	173	152	130	110	87	65	45	26	
CAS14	½", ¾", 1"	250	200	200	200	200	160	130	97	72	—	—	
FA450 CA46S	-4.5	½",¾"	65	65	65	65	65	55	50	38	26	16	7
		1"	65	65	65	65	65	57	50	39	29	20	11
		1½",2"	65	59	53	47	42	36	30	24	18	12	6
	-10**	½",¾"	145	145	145	125	108	94	80	60	43	30	19
		1"	145	145	145	125	107	93	80	65	50	35	21
		1½",2"	145	132	119	105	92	79	66	53	40	26	13
	-14	½",¾"	203	198	195	173	152	130	110	87	65	45	26
		1"	203	203	203	180	160	135	113	92	72	50	29
		1½",2"	203	203	203	203	203	203	203	165	99	54	27
-21	½",¾"	304	304	304	280	261	225	165	155	116	75	36	
	1"	304	290	275	245	217	187	159	130	100	66	36	
	1½",2"	304	304	304	304	295	253	211	165	99	54	27	
-32	¾"	465	464	464	440	420	350	300	240	185	125	65	
	1"	465	450	435	385	340	290	246	195	145	100	55	
	1½",2"	465	422	380	337	295	253	211	165	99	54	27	
FA450	3" (DN80), 4" (DN100)	450 (31)	450 (31)	450 (31)	450 (31)	450 (31)	450 (31)	390 (27)	275 (19)	158 (11)	40 (2.8)	—	
FA-150	¼"	150	135	119	104	89	73	58	43	25	12	—	
F-150V	½"	150	150	150	150	138	119	100	80	61	42	23	
F-300V	½"	300	300	300	300	282	243	203	164	125	86	46	

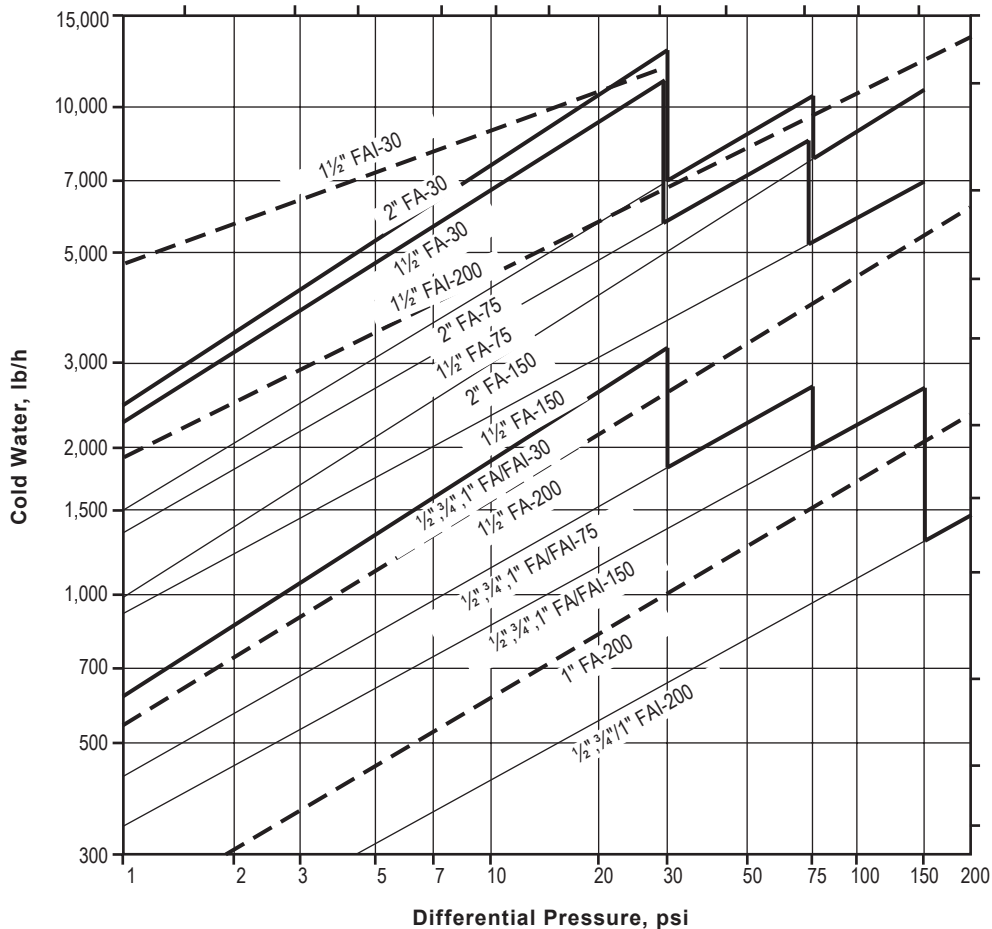
*Some models are not available in all of the listed sizes. For liquids with a specific gravity less than 0.5, please consult factory.

** FA450 Only

Figure 1: Capacity Conversion Factors



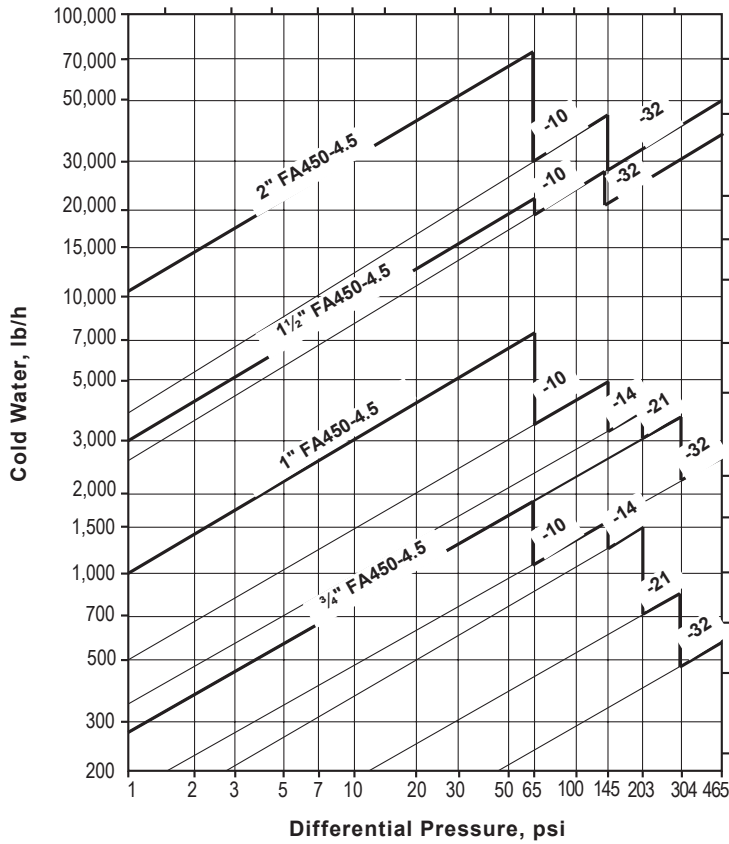
½" to 2" FA/FAI Capacities



Trap	Orifice
½", ¾", 1" FA/FA 130	.218"
1½" FA30	.390"
2" FA30	.500"
½", ¾", 1" FA/FA 175	.166"
1½" FA 75	.312"
2" FA 75	.421"
½", ¾", 1" FA/FAI 150	.125"
1½" FA 150	.246"
2" FA 150	.332"
½", ¾", 1" FAI 200	.100"
1" FA 200	.128"
1½" FA 200	.203"
1½" FAI 30	.500"
1½" FAI 200	.332"

Cold water capacity for single-phase flow of liquids with a specific gravity of 1.0

3/4" to 2" FA450 Capacities



Trap	Orifice (inches)
3/4", FA 450-4.5	.157
3/4" FA 450-10	.126
3/4", FA 450-14	.106
3/4" FA 450-21	.079
3/4" FA 450-32	.063
1", FA 450-4.5	.276
1", FA 450-10	.205
1", FA 450-14	.185
1", FA 450-21	.157
1", FA 450-32	.126
1 1/2", FA 450-4.5	.689*
1 1/2", FA 450-10	.591*
1 1/2", FA 450-14	.531*
1 1/2", FA 450-21	.531*
1 1/2", FA 450-32	.531*
2", FA 450-4.5	1.112*
2", FA 450-10	.807*
2", FA 450-14	.657*
2", FA 450-21	.657*
2", FA 450-32	.657*

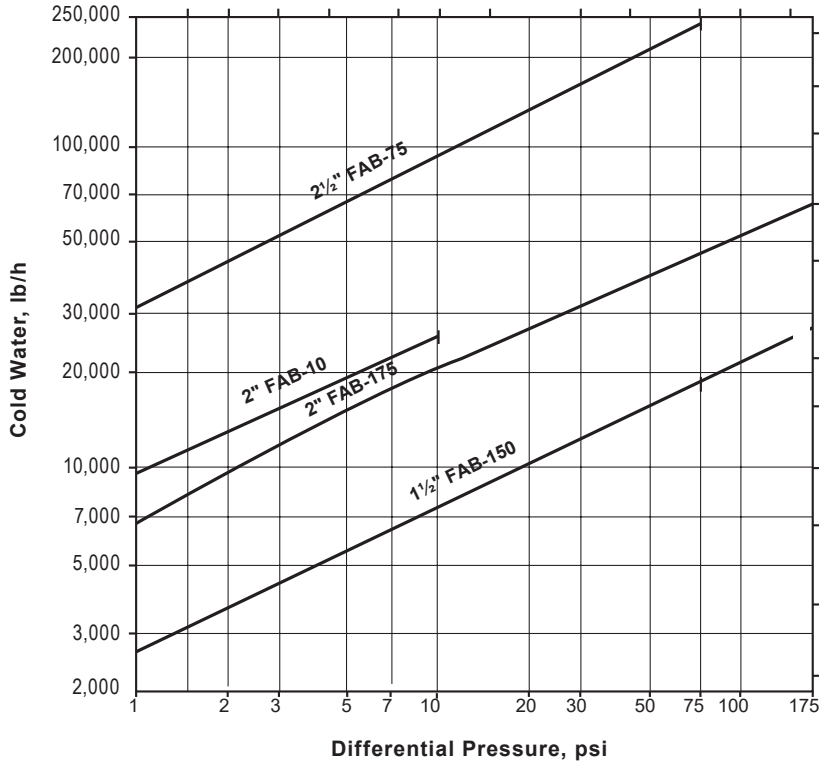
* Double Seated (2 valve orifices)

Cold water capacity for single-phase flow of liquids with a specific gravity of 1.0

Note:

1 1/2" and 2" FA450 traps have double-seated valves which may not close tight under no-load conditions. Normally, the liquid load will always be greater than the small residual leakage.

1½" to 2½" FAB Capacities



Trap	Orifice (inches)
2½", FAB-75	1.500*
2", FAB-10	.937
2", FAB-175	.750*
1½", FAB-150	.375*

* Double Seated (2 valve orifices)

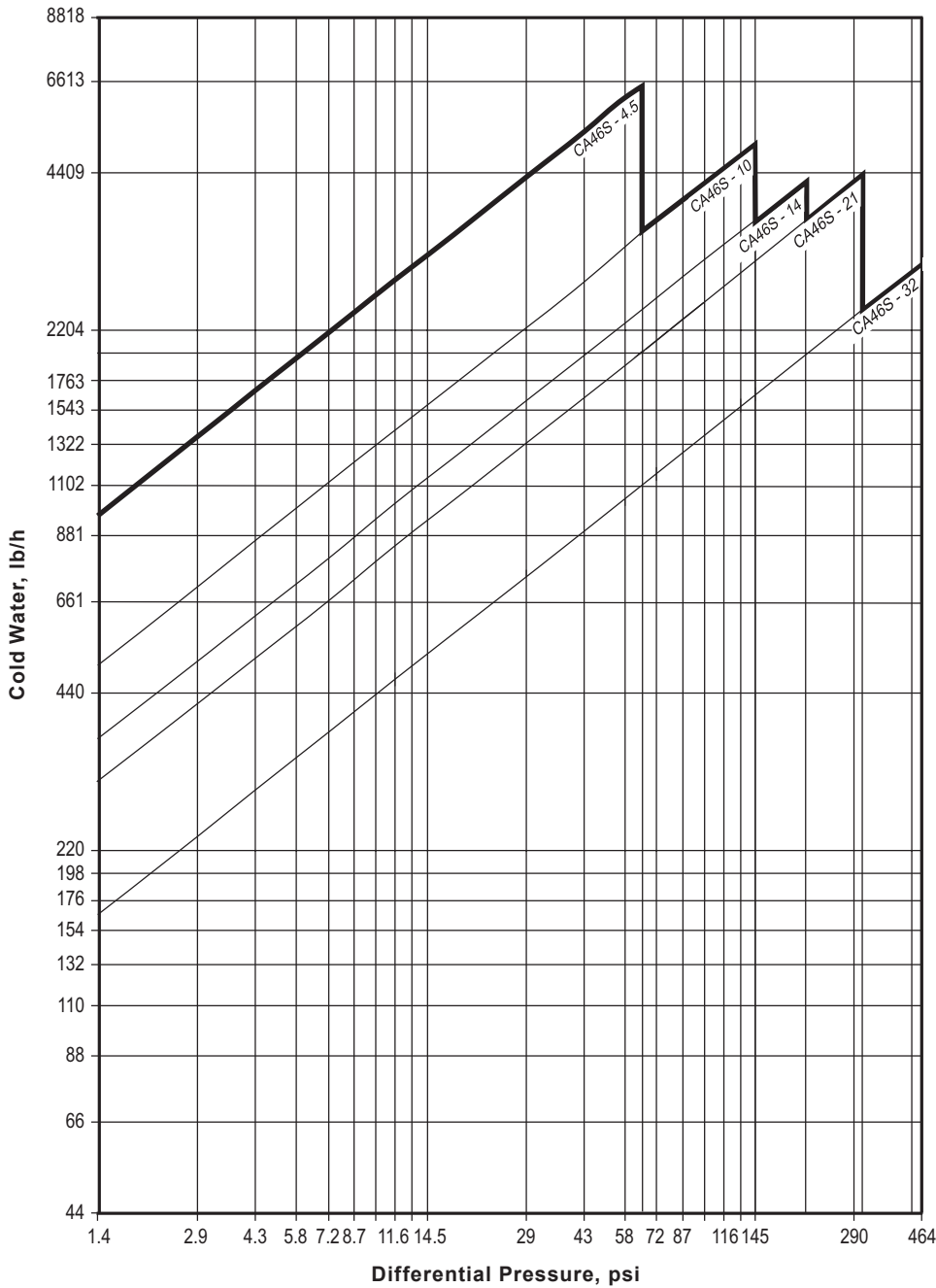
Cold water capacity for single-phase flow of liquids with a specific gravity of 1.0

Note:

FAB-75, FAB-150 and FAB-175 traps have double-seated valves which may not close tight under no-load conditions.

Normally, the liquid load will always be greater than the small residual leakage.

CA46S Capacities



Liquid drainer	Size	Orifice diameter (inches)
CA14	All	0.079
CAS14	1/2", 3/4"	0.079
CA46S-4.5	1/2", 3/4"	0.157
CA46S-10	1/2", 3/4"	0.126
CA46S-14	1/2", 3/4"	0.106
CA46S-21	1/2", 3/4"	0.079
CA46S-4.5	1"	0.276
CA46S-10	1"	0.205
CA46S-14	1"	0.185
CA46S-21	1"	0.157
CA46S-4.5	1 1/2" **	0.689
CA46S-21	1 1/2" **	0.531
CA46S-4.5	2" **	1.122
CA46S-21	2" **	0.657
FA-150	1/4"	0.100

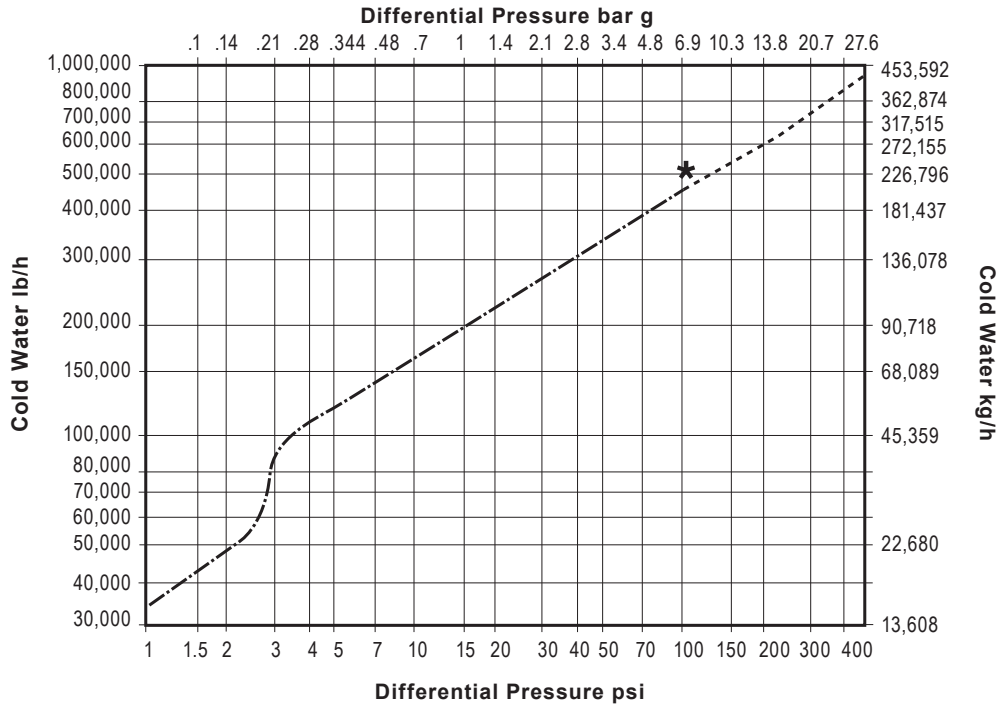
** Double seated (2 valve orifices)

Cold water capacity for single-phase flow of liquids with a specific gravity of 1.0

Note:

1 1/2" and 2" traps have double-seated valves which may not close tight under no-load conditions. Normally, the liquid load will always be greater than the small residual leakage.

3", (DN80) 4" (DN100) FA450 Capacities



Trap	Orifice inches(mm)
3" (DN80) & 4" (DN100) FA450	2.063 (52.4)

** Double Seated (2 Valve Orifices)

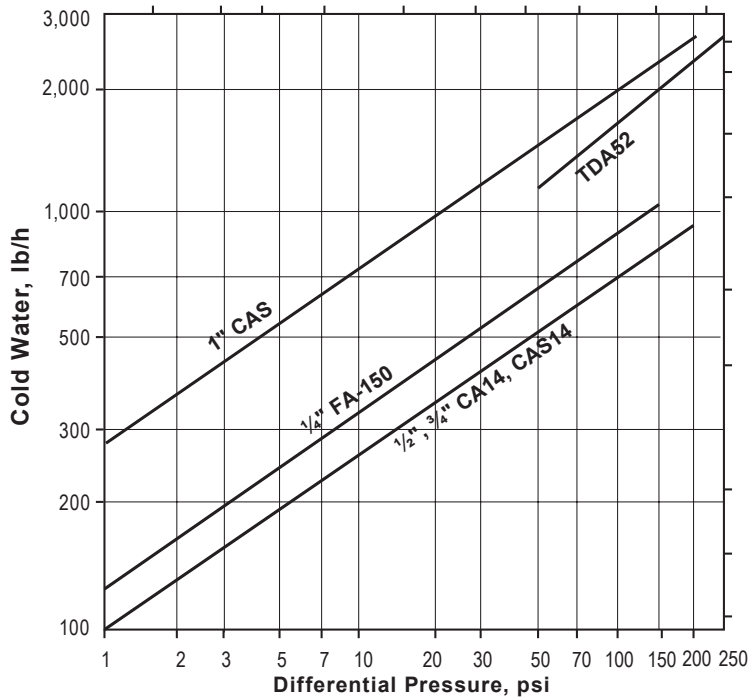
Cold water capacity for single-phase flow of liquids with a specific gravity of 1.0

Note:

This trap has a double-seated valve which may not close tight under no-load conditions. Normally, the liquid load will always be greater than the small residual leakage.

* In this region the trap capacity may exceed the flow capacity of the connection piping.

CA14, CAS14 1/4" FA-150, TDA52 Capacities



Cold water capacity for single-phase flow of liquids with a specific gravity of 1.0