



## **Cyrus Shank Company**

### **Product Catalog**

**Relief Valves**

**Manifolds**

**Hand Valves**

**a Shank Manufacturing Company**

## ***Cyrus Shank Company has what you're looking for:***

- ***NEW!*** 800QR quick release, 800QRW weldable quick release, and 803QC quick connect relief valves
- ***NEW!*** Pressure range of the 800 and 803 valve has been extended down to 50 psi
- ***NEW!*** Replacement in Kind valves: 801 DHC, CS5602A, CS5602B, 804R, 805R, and 850R
- Custom Set Pressures at no extra charge
- Low, medium, and high capacity relief valves
- Liquid relief valves
- Relief valves that comply with the ASHRAE Addendum 15c-2000 code
- Relief valves available from 50 psi to 400 psi
- Manifolds with threaded or non-threaded inlets (for welding)
- Great customer service
- Excellent delivery service
- 100% American made



## ***What Should You Expect from Your Safety Pressure Relief Valve?***

### **1. Safety Relief Valves Should Not Leak.**

Consider the present regulations impacting refrigeration, embracing OSHA and EPA process safety regulations, and the Greenhouse Gas curtailments now under discussion. It is obvious that the first expectation should be that the valve will not leak. In a recent comparison test, the Shank #900 valve mounted on the discharge line of a 250 hp R-22 screw compressor proved to have a tight seal, while another manufacturer's product leaked.

***Shank Relief Valves have multiple concentric seat rings, unique in the industry, which, when mated with Teflon seat rings, provide extra insurance against leakage.***

### **2. Safety Relief Valves Should Release at the Set Point.**

1. Exposure to atmospheric moisture and corrosive effects on the working parts are a severe test for Safety Relief Valves. Tests conducted in an independent Relief Valve assembler's shop, authorized by an insurance company, confirmed that after years of use Shank Relief Valves tested repeatedly within the original certified specification and reseated tightly.

***The springs in Shank Relief Valves are heat-treated stainless steel. The Shank long spring design assures better set point accuracy, performance, and durability over the competitors' products. This design reduces the stress on the spring.***

### **3. Safety Relief Valves Should Reset Tightly After Releasing.**

A widely held opinion is that Safety Relief Valves only need to operate once. That, after a release of one valve in a dual assembly, the valve can be easily replaced. Recent repeated tests to determine which makes of valves reseated tightly were performed by a refrigeration contractor. The Shank valves with 1/2", 3/4", and 1" inlets discharged within 3 psi of set point and reseated without leaking after 5 to 7 tests. All of the other makers tested lost 5 to 15 psi from the set point on the second test. The next best performing valve reseated only 3 to 4 times before leaking. All other makes leaked after the first test.

***The Shank Relief Valves involved in these tests have seat-guided valve pieces, unique in the industry, which provide for reliable reseating.***

## Design Features of Shank Safety Relief Valves

**BODIES:** Relief valve bodies for the 800D, 801D, 801DHC, 803, 812, 813, 804, 804R, 814, 805, 805R, 815, CS5602A, and CS5602B ( $\frac{1}{2}$ ",  $\frac{3}{4}$ ", and 1" FNPT inlet size) are ductile iron primer painted. Relief valve bodies for the 850, 850R, 851, and 851R ( $\frac{3}{4}$ ", 1", and  $1\frac{1}{4}$ " MNPT inlet size) and the 901 and 903 ( $1\frac{1}{4}$ " and 1  $\frac{1}{2}$ " FNPT inlet size) are available in anodized aluminum or ductile iron primer painted. The low capacity 800 and 801 ( $\frac{1}{2}$ " MNPT inlet size) have a one piece steel body, black oxidized. Bodies for the 800QR, 800QRW, 800SS, 801SS and 803QC are stainless steel.

**INTERNALS:** Lower seats, upper seats, spring guides, and springs are stainless steel.

**SEAT MATERIAL:** Seat inserts in upper seats are Teflon.

**TEMPERATURE AND PRESSURE RATING:**  $-20^{\circ}\text{ F } (-29^{\circ}\text{ C})$  to  $+275^{\circ}\text{ F } (+135^{\circ}\text{ C})$ . The allowable working pressure is 500psig for all relief valves.

**Application:** Suitable for ammonia, refrigerants, and other industrial fluids that are not corrosive or deleterious to ductile iron, aluminum, steel, and Teflon.

**Location:** Valves relieving to atmosphere may be installed on systems operating as low as  $-150^{\circ}\text{ F } (-101^{\circ}\text{ C})$  provided location is in ambient temperatures that are normally above  $32^{\circ}\text{ F } (0^{\circ}\text{ C})$ .

**STANDARD SETTINGS:** The 801 series, 801DHC, 812, 813, 804, 804R, 814, 805, 805R, and 815 valves are available in 25 psi intervals at set points from 75 psi to 400 psi. The 800 series, 800QR, 800QRW, 803, and 803QC valves are available in 25 psi intervals from 50 psi to 400 psi. The 850, 850R, 851, 851R, 901, and 903 valves are available in 25 psi intervals at set points of 150 psi to 400 psi. Relief valves are 100% set, tested, and sealed at our factory, and are furnished with a nameplate stamped with catalog number, date code, size, set point, capacity, and ASME Certification Mark with UV designator, indicating National Board-certified. Cyrus Shank will do custom pressure settings, in the certified range, at no extra charge.

**PIPING:** Cyrus Shank safety relief valves have machined male and female outlet pipe threads that satisfy the requirements of the ASHRAE addendum 15c-2000 piping for new installations.

**REPLACEMENT IN KIND:** A replacement which satisfies the design specification. (*OSHA 1910.119(b)*)



## Design Features of Shank Manifolds



**BODIES:** 843, 843F, 844, 844F, 845, and 845F manifolds are ductile iron, primer painted. The 843B, 844B, and 845B manifold bodies are brass. The "M" series three-way manifolds are steel with black oxide coating.

**TRIM:** Stainless steel stems are in 843, 843F, 844, 844F, 845, and 845F manifolds. All manifolds have Teflon 'O' rings.

**MAXIMUM PRESSURE:** 843, 843F, 844, 844F, 845, and 845F manifolds are 400 psig. The "M" series manifolds are 500 psig.

**TEMPERATURE RATING:** 843, 843F, 844, 844F, 845, and 845F manifolds are -20° F (-29° C) to +300° F (+149° C). The "M" series manifolds are -20° F (-29° C) to +500° F (+260° C).

**Application:** Suitable for ammonia, refrigerants, and other industrial fluids that are not corrosive or deleterious to ductile iron, steel, or Teflon. The "F" and "M" series with seal caps are suitable for Freon.

**Location:** Manifolds used with atmospheric relief valves may be installed on systems with temperatures to -150° F (-101° C) provided location is in ambient temperatures that are normally above 32° F (0° C).



## Design Features of Shank Hand Valves

**BOLTED BONNET SHUT-OFF VALVES:** We offer our bolted bonnet shut-off valves in a globe or angle design from 1 ¼" to 2". This sturdy valve body is made from cast iron and valves are pressure tested for leakage after assembly. The shut-off disc is held in place on the stem by a spring ring, allowing free swivel action. Valve ports are full size, insuring maximum flow. These valves are back seating.

**SHUT-OFF VALVES:** Our shut-off valves are available in a globe design to work with pipe sizes from ¼" to 1 ¼" and in an angle design to work with pipe sizes from ¼" to 1". They come with zinc-plated carbon steel (-CS) or stainless steel (-SS) stems.

The valve body materials are ductile iron or C.I. 40 and are pressure-tested for leakage after assembly. Valve ports are full size, insuring maximum flow. This is a two-piece design: the convex base fits into the shut-off disc and permits swivel action which maintains perfect alignment at all times. The shut-off disc is held in place on the stem by a spring ring, allowing free swivel action. The packing ring chamber is of special design: It is machined so that sealing is necessary only around the stem proper. The composition packing ring is impregnated with graphite for ease of operation and will not deteriorate in service. These valves are back seating.

**HAND EXPANSION VALVES:** Our hand expansion valves are available in a globe design from ¼" to 1 ¼" pipe size and in an angle design from ¼" to 1" pipe size. They come with zinc-plated carbon steel (-CS) or stainless steel (-SS) stems. The valve body materials are ductile iron or C.I. 40, and valves are pressure-tested for leakage after assembly. The valve body has a tapered orifice through a raised seat. Needle point and fine pitch stem threads allow close regulation of flow. All expansion valves are equipped with T-handles to distinguish them from shut-off valves. The packing ring chamber is of special design: It is machined so that sealing is necessary only around the stem proper. The composition packing ring is impregnated with graphite for ease of operation and will not deteriorate in service.

**PURGE VALVES:** Our purge valves are of all steel construction and all parts are zinc plated. They are used for purging purposes and are supplied with male and female thread combinations. Thread combinations range in size from 1/4" to 1/2" MNPT and 1/4" to 3/8" FNPT. Purge valves are equipped with round malleable handles. This valve can be used for gauge mounting, as an oil drain, or any place where a small shut-off valve can be used.

**NEEDLE POINT VALVES:** Our needle point valves are of all steel construction and all parts are zinc plated. They are available in angle or tee style from ¼" to ¾". The valves are equipped with a tapered orifice through the seat and a corresponding taper on the stem, thus assuring a measured flow through the valve. The stems are machined with a fine pitch thread which permits close regulation. The handles are Tee-shaped so that the valves can be easily recognized from regular shut-off valves.

**LINE VALVES:** Our line valves are made of all steel construction and all parts are zinc plated. They are available in angle or tee valves from ¼" to ¾" and have a compact design. The packing seal ring is of highest grade material, providing smooth, easy operation and a leak-proof, long life seal.

**GAUGE SETS:** Our gauge set assembly is of all steel construction and all parts are zinc plated. Gauge valves have safety ball seats which automatically shut off liquid in case of glass breakage. Valve stems are packed with composition packing rings, providing a leak-proof, long life seal.



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# RELIEF VALVES... FLOW IN LBS PER MINUTE

Note: In the following table, values are rounded. Refer to the individual valve specs and their tables for actual values.

Flow of Air @ 60 °F in lbs. per minute															
Set Pressure (PSIG)	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
800, 800SS, 800D, 800QR 1/2" x 3/4"	2	3	4	5	6	7	8	8	9	10	11	12	13	14	15
801, 801SS, 801D 1/2" x 3/4"	—	5	7	8	10	12	13	15	16	18	19	21	22	24	25
801DHC 1/2" x 3/4"	—	6	7	9	11	12	14	15	17	19	20	22	23	25	27
812 1/2" x 1"	—	10	13	16	18	21	24	27	30	32	35	38	41	44	46
804R 3/4" x 1"	—	12	16	19	22	25	29	32	36	39	42	46	49	53	56
803 , 803QC 1/2" x 3/4"	10	15	19	23	27	31	35	40	44	48	52	56	60	65	69
813 1/2" x 1"	—	15	19	23	27	31	36	40	44	48	52	57	61	65	69
805R 1" x 1 1/4"	—	16	20	24	28	33	37	41	46	50	54	59	63	68	72
CS5602A 1/2" x 3/4"	—	17	22	27	31	36	41	46	51	55	60	65	70	74	79
CS5602B 1/2" x 1"	—	19	25	30	36	41	47	52	58	63	69	74	80	85	91
804 3/4" x 1"	—	23	29	35	42	48	54	61	67	74	80	86	93	99	106
814 3/4" x 1 1/4"	—	24	31	38	45	52	59	66	73	80	87	94	100	107	114
805 1" x 1 1/4"	—	30	39	48	56	65	73	82	90	99	108	116	125	133	142
815 1" x 1 1/2"	—	30	39	48	56	65	73	82	90	99	108	116	125	133	142
850 3/4", 1" or 1 1/4" x 1 1/2" 851 3/4", 1" or 1 1/4" x 2"	—	—	—	—	85	98	111	124	136	149	162	175	188	201	214
850R 3/4", 1", or 1 1/4" x 1 1/2" 851R 3/4", 1" or 1 1/4" x 2"	—	—	—	—	34	39	44	49	54	60	65	70	75	81	85
901 1 1/4" x 2" x 3" 903 1 1/2" x 2" x 3"	—	—	—	—	208	240	272	304	336	368	400	431	463	495	527

# RELIEF VALVES... FLOW in SCFM

Note: In the following table, values are rounded. Refer to the individual valve specs and their tables for actual values.

Flow of Air @ 60 °F in SCFM															
Set Pressure (PSIG)	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400
800, 800SS, 800D, 800QR 1/2" x 3/4"	29	41	52	64	75	87	99	110	122	133	145	156	168	179	191
801, 801SS, 801D 1/2" x 3/4"	—	71	91	111	131	151	171	191	211	232	252	272	292	312	332
801DHC 1/2" x 3/4"	—	76	97	119	140	162	183	205	226	248	269	290	312	333	355
812 1/2" x 1"	—	130	167	204	241	277	314	351	388	425	462	498	535	572	609
804R 3/4" x 1"	—	158	203	248	292	337	382	427	472	517	561	606	651	695	741
803, 803QC 1/2" x 3/4"	138	192	247	301	355	410	464	519	573	627	682	736	791	845	899
813 1/2" x 1"	—	193	248	303	358	412	467	522	577	631	686	741	795	850	905
805R 1" x 1 1/4"	—	204	262	319	377	435	492	550	608	665	723	781	839	896	954
CS5602A 1/2" x 3/4"	—	225	289	353	417	480	544	608	672	736	799	863	927	991	1055
CS5602B 1/2" x 1"	—	258	330	403	476	549	622	695	768	841	913	986	1059	1132	1205
804 3/4" x 1"	—	295	379	463	546	630	713	797	881	964	1048	1131	1215	1299	1382
814 3/4" x 1 1/4"	--	320	410	501	591	682	772	863	953	1044	1134	1225	1315	1405	1496
805 1" x 1 1/4"	—	398	510	622	735	847	960	1072	1185	1297	1410	1522	1635	1747	1860
815 1" x 1 1/2"	—	398	510	622	735	847	960	1072	1185	1297	1410	1522	1635	1747	1860
850 3/4", 1" or 1 1/4" x 1 1/2" 851 3/4", 1" or 1 1/4" x 2"	—	—	—	—	1109	1278	1448	1618	1787	1957	2127	2296	2466	2636	2805
850R 3/4", 1", or 1 1/4" x 1 1/2" 851R 3/4", 1" or 1 1/4" x 2"	—	—	—	—	449	518	586	655	724	793	861	930	999	1067	1136
901 1 1/4" x 2" x 3" 903 1 1/2" x 2" x 3"	—	—	—	—	2728	3145	3563	3980	4398	4815	5233	5650	6067	6485	6902

# RELIEF VALVES... 800 SERIES (LOWEST CAPACITY)

## 800, 800D, 800SS

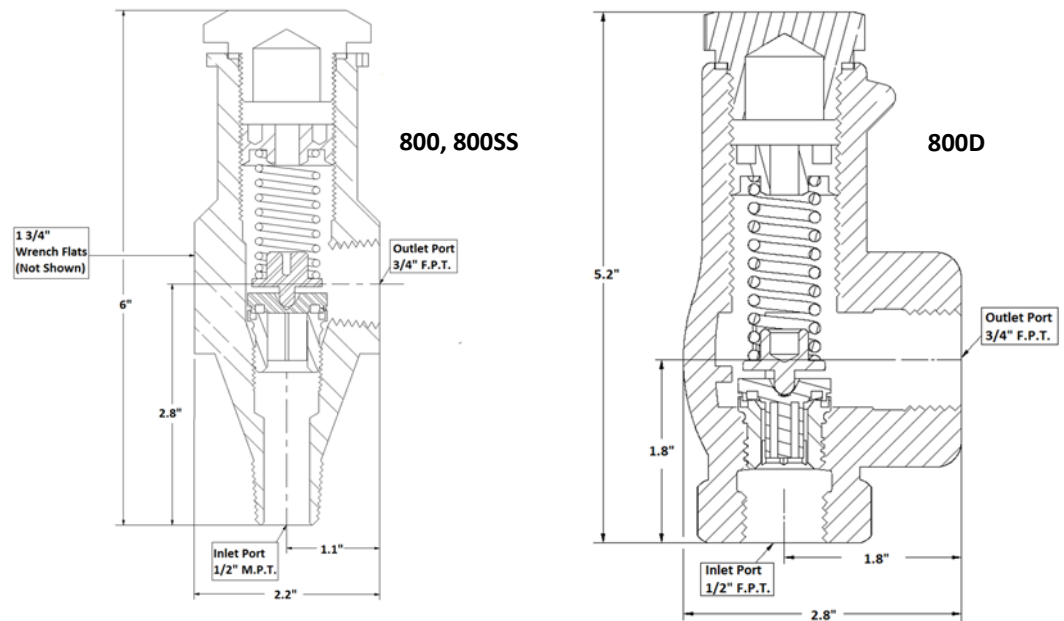


This low capacity relief valve has been designed for use in small pressure vessels. The ASME certified slope of 0.42 yields, for example, a capacity of 9.29 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
800	51163	Black Oxidized A36 steel	½" MNPT inlet x ¾" FNPT outlet
800D	51163	60-14-40 Ductile Iron Casting	½" FNPT inlet x ¾" FNPT outlet
800SS	51163	304 Stainless Steel	½" MNPT inlet x ¾" FNPT outlet



#800 safety relief valve can be mounted on the following manifolds:	
#843 ½" x ½" x ½" FNPT (hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M ½" x ½" x ½" FNPT (seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 800 series of relief valves is available in set pressures from 50 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**800 Series Relief Valve Capacity Chart on Next Page**

## RELIEF VALVES... 800 SERIES CAPACITY CHART

800 1/2" x 3/4" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
50	29.27	2.24	134.12	102.83	1.71	274.00	4.57	231.73	3.86	263.28	4.39
75	40.82	3.12	187.04	143.41	2.39	382.10	6.37	323.17	5.39	367.16	6.12
100	52.37	4.00	239.96	183.98	3.07	490.21	8.17	414.60	6.91	471.04	7.85
125	63.92	4.88	292.88	224.55	3.74	598.31	9.97	506.03	8.43	574.92	9.58
150	75.47	5.76	345.80	265.13	4.42	706.42	11.77	597.46	9.96	678.80	11.31
175	87.02	6.65	398.72	305.70	5.10	814.52	13.58	688.89	11.48	782.67	13.04
200	98.57	7.53	451.64	346.27	5.77	922.63	15.38	780.32	13.01	886.55	14.78
225	110.12	8.41	504.55	386.85	6.45	1030.73	17.18	871.75	14.53	990.43	16.51
250	121.67	9.29	557.47	427.42	7.12	1138.84	18.98	963.18	16.05	1094.31	18.24
275	133.22	10.17	610.39	467.99	7.80	1246.94	20.78	1054.61	17.58	1198.19	19.97
300	144.77	11.06	663.31	508.57	8.48	1355.05	22.58	1146.04	19.10	1302.06	21.70
325	156.32	11.94	716.23	549.14	9.15	1463.15	24.39	1237.47	20.62	1405.94	23.43
350	167.87	12.82	769.15	589.71	9.83	1571.26	26.19	1328.90	22.15	1509.82	25.16
375	179.42	13.70	822.06	630.29	10.50	1679.36	27.99	1420.33	23.67	1613.70	26.89
400	190.97	14.58	874.98	670.86	11.18	1787.47	29.79	1511.76	25.20	1717.58	28.63

Slope on Air: 0.42

# RELIEF VALVES... 800QR (QUICK RELEASE, LOWEST CAPACITY)

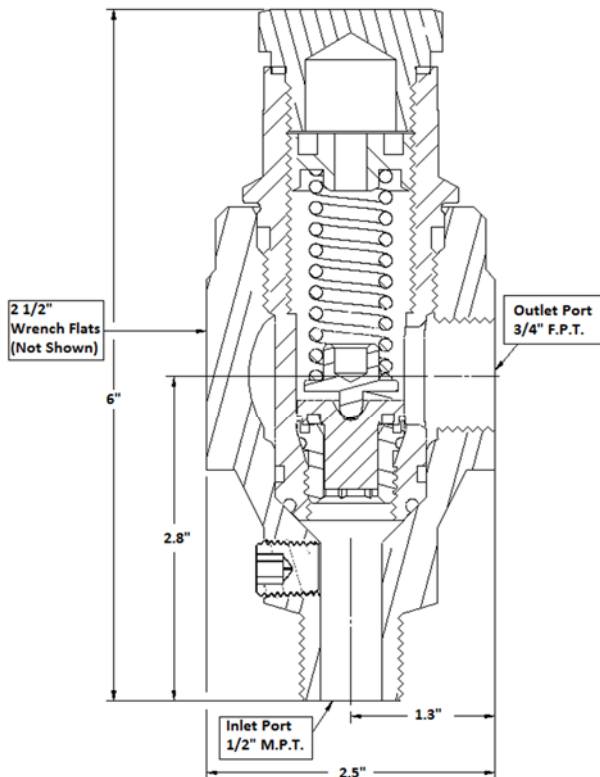
## 800QR



This new generation valve allows the piping to remain in place, while only the insert is replaced. This makes replacement of the valves faster and less costly than the standard valve. The ASME certified slope of 0.42 yields, for example, a capacity of 9.29 lbs. per minute of air @ 250# set pressure. Stainless steel housing for durability and performance.

Part #	NB Cert. #	Body Material	Size
800QR	51163	304 Stainless Steel	½" MNPT inlet x ¾" FNPT outlet

#800QR safety relief valve can be mounted on the following manifolds:			
#843	½" x ½" x ½" FNPT	(hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT	(seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each body has a 1/4" FNPT port for gauges or service valves.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 800QR relief valve is available in set pressures from 50 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**800QR Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 800QR CAPACITY CHART

<b>800QR 1/2" x 3/4" Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
50	29.27	2.24	134.12	102.83	1.71	274.00	4.57	231.73	3.86	263.28	4.39
75	40.82	3.12	187.04	143.41	2.39	382.10	6.37	323.17	5.39	367.16	6.12
100	52.37	4.00	239.96	183.98	3.07	490.21	8.17	414.60	6.91	471.04	7.85
125	63.92	4.88	292.88	224.55	3.74	598.31	9.97	506.03	8.43	574.92	9.58
150	75.47	5.76	345.80	265.13	4.42	706.42	11.77	597.46	9.96	678.80	11.31
175	87.02	6.65	398.72	305.70	5.10	814.52	13.58	688.89	11.48	782.67	13.04
200	98.57	7.53	451.64	346.27	5.77	922.63	15.38	780.32	13.01	886.55	14.78
225	110.12	8.41	504.55	386.85	6.45	1030.73	17.18	871.75	14.53	990.43	16.51
250	121.67	9.29	557.47	427.42	7.12	1138.84	18.98	963.18	16.05	1094.31	18.24
275	133.22	10.17	610.39	467.99	7.80	1246.94	20.78	1054.61	17.58	1198.19	19.97
300	144.77	11.06	663.31	508.57	8.48	1355.05	22.58	1146.04	19.10	1302.06	21.70
325	156.32	11.94	716.23	549.14	9.15	1463.15	24.39	1237.47	20.62	1405.94	23.43
350	167.87	12.82	769.15	589.71	9.83	1571.26	26.19	1328.90	22.15	1509.82	25.16
375	179.42	13.70	822.06	630.29	10.50	1679.36	27.99	1420.33	23.67	1613.70	26.89
400	190.97	14.58	874.98	670.86	11.18	1787.47	29.79	1511.76	25.20	1717.58	28.63

Slope on Air: 0.42

# RELIEF VALVES... 800QRW (QUICK RELEASE, LOWEST CAPACITY)

## 800QRW

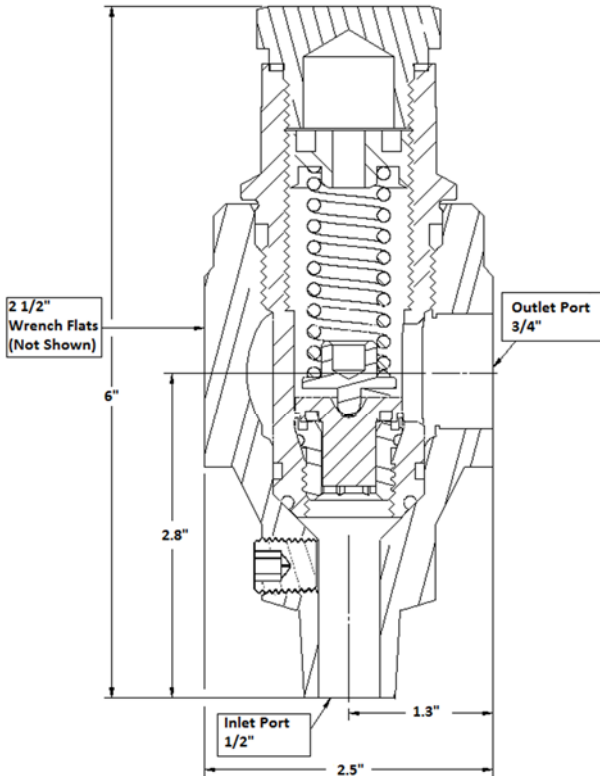


This new generation valve allows the piping to remain in place, while only the insert is replaced. This makes replacement of the valves faster and less costly than the standard valve. The ASME certified slope of 0.42 yields, for example, a capacity of 9.29 lbs. per minute of air @ 250# set pressure. Stainless steel housing for durability and performance.

Part #	NB Cert. #	Body Material	Size
800QRW	51163	304 Stainless Steel	½" Male Socket Weld inlet x ¾" Female Socket Weld outlet



**#800QRW safety relief valve can be mounted on the following manifolds:**  
 Custom orders Only



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each body has a 1/4" FNPT port for gauges or service valves.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 800QRW relief valve is available in set pressures from 50 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**800QRW Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 800QRW CAPACITY CHART

<b>800QRW 1/2" x 3/4" Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
50	29.27	2.24	134.12	102.83	1.71	274.00	4.57	231.73	3.86	263.28	4.39
75	40.82	3.12	187.04	143.41	2.39	382.10	6.37	323.17	5.39	367.16	6.12
100	52.37	4.00	239.96	183.98	3.07	490.21	8.17	414.60	6.91	471.04	7.85
125	63.92	4.88	292.88	224.55	3.74	598.31	9.97	506.03	8.43	574.92	9.58
150	75.47	5.76	345.80	265.13	4.42	706.42	11.77	597.46	9.96	678.80	11.31
175	87.02	6.65	398.72	305.70	5.10	814.52	13.58	688.89	11.48	782.67	13.04
200	98.57	7.53	451.64	346.27	5.77	922.63	15.38	780.32	13.01	886.55	14.78
225	110.12	8.41	504.55	386.85	6.45	1030.73	17.18	871.75	14.53	990.43	16.51
250	121.67	9.29	557.47	427.42	7.12	1138.84	18.98	963.18	16.05	1094.31	18.24
275	133.22	10.17	610.39	467.99	7.80	1246.94	20.78	1054.61	17.58	1198.19	19.97
300	144.77	11.06	663.31	508.57	8.48	1355.05	22.58	1146.04	19.10	1302.06	21.70
325	156.32	11.94	716.23	549.14	9.15	1463.15	24.39	1237.47	20.62	1405.94	23.43
350	167.87	12.82	769.15	589.71	9.83	1571.26	26.19	1328.90	22.15	1509.82	25.16
375	179.42	13.70	822.06	630.29	10.50	1679.36	27.99	1420.33	23.67	1613.70	26.89
400	190.97	14.58	874.98	670.86	11.18	1787.47	29.79	1511.76	25.20	1717.58	28.63

Slope on Air: 0.42



# RELIEF VALVES... 801 SERIES (LOW CAPACITY)

## 801, 801D, 801SS

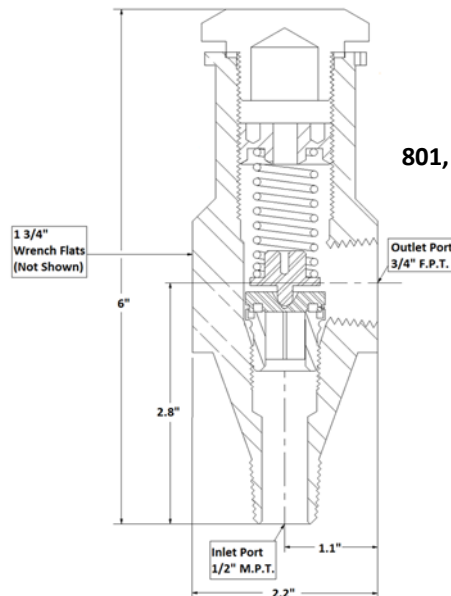
This low capacity relief valve has been designed for use in small pressure vessels. The ASME certified slope of 0.73 yields, for example, a capacity of 16.2 lbs per minute of air @ 250# set pressure



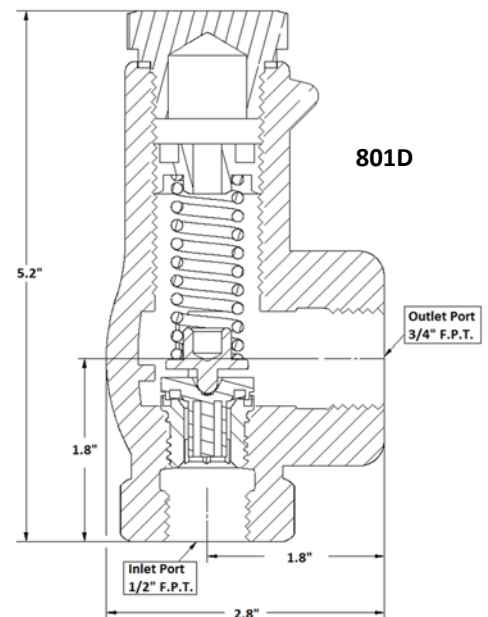
Part #	NB Cert. #	Body Material	Size
801	51152	Black Oxidized A36 steel	1/2" MNPT inlet x 3/4" FNPT outlet
801D	51152	60-14-40 Ductile Iron Casting	1/2" FNPT inlet x 3/4" FNPT outlet
801SS	51152	304 Stainless Steel	1/2" MNPT inlet x 3/4" FNPT outlet

### #801 safety relief valve can be mounted on the following manifolds:

#843	1/2" x 1/2" x 1/2" FNPT (hand wheel)	#843F	1/2" x 1/2" x 1/2" FNPT (seal cap)
#846M	1/2" x 1/2" x 1/2" FNPT (seal cap)	#848M	3/4" x 1/2" x 1/2" FNPT (seal cap)



801, 801SS



801D

- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 800 series of relief valves is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**801 Series Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 801 SERIES CAPACITY CHART

<b>801</b> <b>1/2" x 3/4"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM	Air lb/min	Air lb/hr	NH3 lb/hr	NH3 lb/min	R-12 lb/hr	R-12 lb/min	R-22 lb/hr	R-22 lb/min	R-502 lb/hr	R-502 lb/min
	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm	60 F 1 Atm
75	71.0	5.4	325.1	249.3	4.2	664.1	11.1	561.7	9.4	638.2	10.6
100	91.0	7.0	417.1	319.8	5.3	852.0	14.2	720.6	12.0	818.7	13.6
125	111.1	8.5	509.1	390.3	6.5	1039.9	17.3	879.5	14.7	999.3	16.7
150	131.2	10.0	601.0	460.8	7.7	1227.8	20.5	1038.4	17.3	1179.8	19.7
175	151.3	11.6	693.0	531.3	8.9	1415.7	23.6	1197.4	20.0	1360.4	22.7
200	171.3	13.1	785.0	601.9	10.0	1603.6	26.7	1356.3	22.6	1540.9	25.7
225	191.4	14.6	877.0	672.4	11.2	1791.5	29.9	1515.2	25.3	1721.5	28.7
250	211.5	16.1	968.9	742.9	12.4	1979.4	33.0	1674.1	27.9	1902.0	31.7
275	231.6	17.7	1060.9	813.4	13.6	2167.3	36.1	1833.0	30.6	2082.6	34.7
300	251.6	19.2	1152.9	883.9	14.7	2355.2	39.3	1991.9	33.2	2263.1	37.7
325	271.7	20.7	1244.9	954.5	15.9	2543.1	42.4	2150.8	35.8	2443.7	40.7
350	291.8	22.3	1336.8	1025.0	17.1	2731.0	45.5	2309.8	38.5	2624.2	43.7
375	311.9	23.8	1428.8	1095.5	18.3	2918.9	48.6	2468.7	41.1	2804.8	46.7
400	331.9	25.3	1520.8	1166.0	19.4	3106.8	51.8	2627.6	43.8	2985.3	49.8

Slope on Air: 0.73

# RELIEF VALVES... 801QR (QUICK RELEASE, LOWEST CAPACITY)

## 801QR

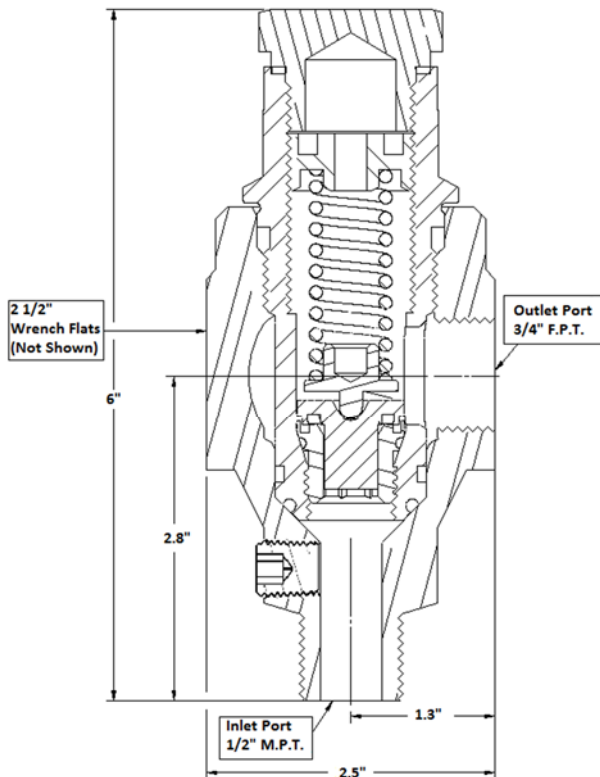


This new generation valve allows the piping to remain in place, while only the insert is replaced. This makes replacement of the valves faster and less costly than the standard valve. The ASME certified slope of 0.73 yields, for example, a capacity of 16.2 lbs. per minute of air @ 250# set pressure. Stainless steel housing for durability and performance.

Part #	NB Cert. #	Body Material	Size
801QR	51152	304 Stainless Steel	½" MNPT inlet x ¾" FNPT outlet



#800QR safety relief valve can be mounted on the following manifolds:			
#843	½" x ½" x ½" FNPT	(hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT	(seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each body has a 1/4" FNPT port for gauges or service valves.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 800QR relief valve is available in set pressures from 50 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**801QR Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 801 SERIES CAPACITY CHART

<b>801QR</b> <b>1/2" x 3/4"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air	Air	Air	NH3	NH3	R-12	R-12	R-22	R-22	R-502	R-502
	SCFM 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm
75	71.0	5.4	325.1	249.3	4.2	664.1	11.1	561.7	9.4	638.2	10.6
100	91.0	7.0	417.1	319.8	5.3	852.0	14.2	720.6	12.0	818.7	13.6
125	111.1	8.5	509.1	390.3	6.5	1039.9	17.3	879.5	14.7	999.3	16.7
150	131.2	10.0	601.0	460.8	7.7	1227.8	20.5	1038.4	17.3	1179.8	19.7
175	151.3	11.6	693.0	531.3	8.9	1415.7	23.6	1197.4	20.0	1360.4	22.7
200	171.3	13.1	785.0	601.9	10.0	1603.6	26.7	1356.3	22.6	1540.9	25.7
225	191.4	14.6	877.0	672.4	11.2	1791.5	29.9	1515.2	25.3	1721.5	28.7
250	211.5	16.1	968.9	742.9	12.4	1979.4	33.0	1674.1	27.9	1902.0	31.7
275	231.6	17.7	1060.9	813.4	13.6	2167.3	36.1	1833.0	30.6	2082.6	34.7
300	251.6	19.2	1152.9	883.9	14.7	2355.2	39.3	1991.9	33.2	2263.1	37.7
325	271.7	20.7	1244.9	954.5	15.9	2543.1	42.4	2150.8	35.8	2443.7	40.7
350	291.8	22.3	1336.8	1025.0	17.1	2731.0	45.5	2309.8	38.5	2624.2	43.7
375	311.9	23.8	1428.8	1095.5	18.3	2918.9	48.6	2468.7	41.1	2804.8	46.7
400	331.9	25.3	1520.8	1166.0	19.4	3106.8	51.8	2627.6	43.8	2985.3	49.8

Slope on Air: 0.73

# RELIEF VALVES... 801DHC (HIGHER CAPACITY)

## 801DHC (H5600R Replacement in Kind)

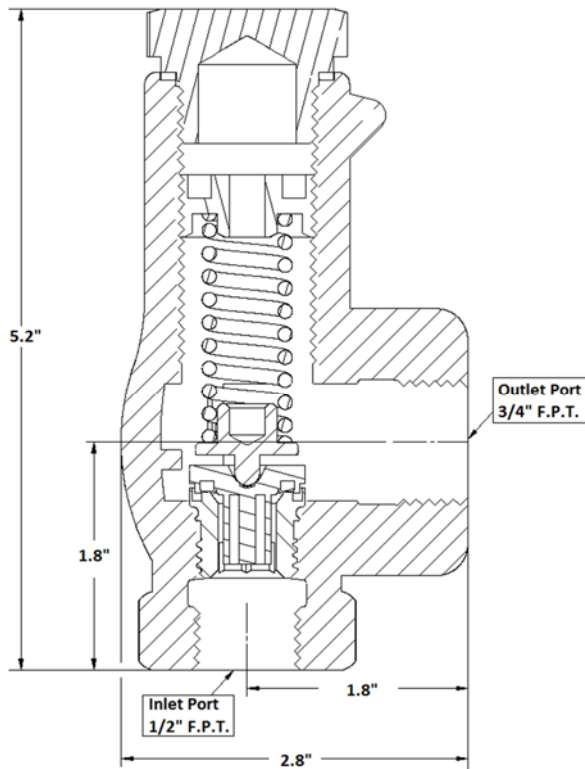


This higher capacity relief valve has been designed for use in small pressure vessels. The ASME certified slope of .781 yields, for example, a capacity of 17.0 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
801DHC	51208	60-14-40 Ductile Iron Casting	½" FNPT inlet x ¾" FNPT outlet



#801DHC safety relief valve can be mounted on the following manifolds:			
#843	½" x ½" x ½" FNPT (hand wheel)	#843F	½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT (seal cap)	#848M	¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 801DHC relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.

**801DHC Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 801DHC CAPACITY CHART

801DHC 1/2" x 3/4" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	75.9	5.7	342.2	266.5	4.4	710.0	11.8	600.5	10.0	682.2	11.4
100	97.3	7.3	439.0	341.9	5.7	910.9	15.2	770.4	12.8	875.2	14.6
125	118.8	8.9	535.8	417.2	7.0	1111.7	18.5	940.2	15.7	1068.3	17.8
150	140.2	10.5	632.7	492.6	8.2	1312.6	21.9	1110.1	18.5	1261.3	21.0
175	161.7	12.2	729.5	568.0	9.5	1513.5	25.2	1280.0	21.3	1454.3	24.2
200	183.2	13.8	826.3	643.4	10.7	1714.3	28.6	1449.9	24.2	1647.3	27.5
225	204.6	15.4	923.1	718.8	12.0	1915.2	31.9	1619.8	27.0	1840.3	30.7
250	226.1	17.0	1019.9	794.2	13.2	2116.1	35.3	1789.7	29.8	2033.3	33.9
275	247.5	18.6	1116.7	869.6	14.5	2316.9	38.6	1959.6	32.7	2226.3	37.1
300	269.0	20.2	1213.6	945.0	15.7	2517.8	42.0	2129.5	35.5	2419.4	40.3
325	290.5	21.8	1310.4	1020.4	17.0	2718.7	45.3	2299.3	38.3	2612.4	43.5
350	311.9	23.5	1407.2	1095.7	18.3	2919.5	48.7	2469.2	41.2	2805.4	46.8
375	333.4	25.1	1504.0	1171.1	19.5	3120.4	52.0	2639.1	44.0	2998.4	50.0
400	354.8	26.7	1600.8	1246.5	20.8	3321.3	55.4	2809.0	46.8	3191.4	53.2

Slope on Air: 0.781

# RELIEF VALVES... 812 (MEDIUM CAPACITY)

## 812

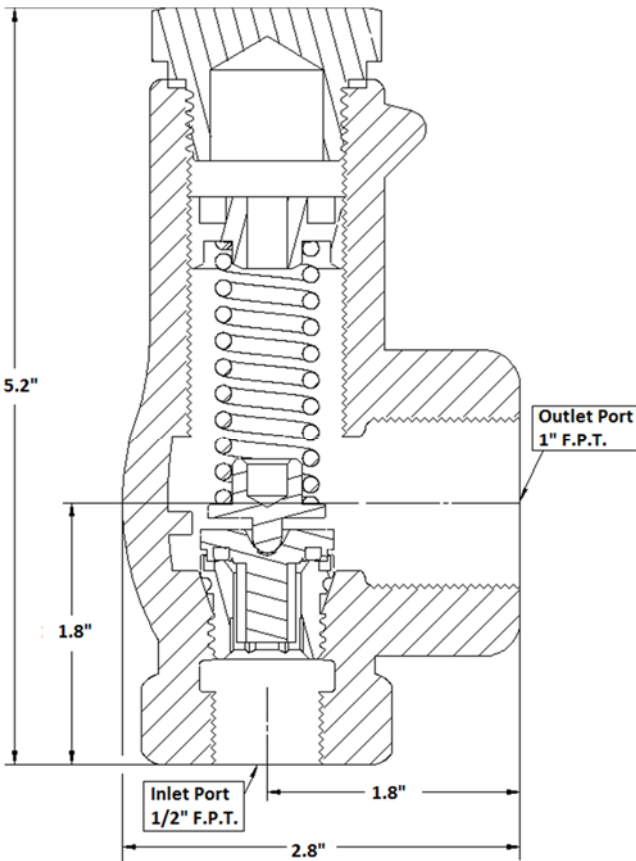


This medium capacity relief valve fills the gap between our 801 and 803 relief valves. The ASME certified slope of 1.339 yields, for example, a capacity of 30 lbs per minute of air @ 250# set pressure. Except for the upper seat, the #812 shares the casting body and other internal working parts as the #803.



Part #	NB Cert. #	Body Material	Size
812	51174	Ductile Iron Casting 60- 40-18	½" FNPT inlet x 1" FNPT outlet

#812 safety relief valve can be mounted on the following manifolds:			
#843	½" x ½" x ½" FNPT	(hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT	(seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 812 relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**812 Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 812 CAPACITY CHART

<b>812</b> <b>1/2" x 1"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	130	10	596	457	8	1218	20	1030	17	1171	20
100	167	13	765	587	10	1563	26	1322	22	1502	25
125	204	16	934	716	12	1907	32	1613	27	1833	31
150	241	18	1102	845	14	2252	38	1905	32	2164	36
175	277	21	1271	975	16	2597	43	2196	37	2495	42
200	314	24	1440	1104	18	2941	49	2488	41	2826	47
225	351	27	1609	1233	21	3286	55	2779	46	3158	53
250	388	30	1777	1363	23	3631	61	3071	51	3489	58
275	425	32	1946	1492	25	3975	66	3362	56	3820	64
300	462	35	2115	1621	27	4320	72	3654	61	4151	69
325	498	38	2283	1751	29	4665	78	3945	66	4482	75
350	535	41	2452	1880	31	5009	83	4237	71	4813	80
375	572	44	2621	2009	33	5354	89	4528	75	5145	86
400	609	46	2790	2139	36	5699	95	4820	80	5476	91

**Slope on Air: 1.339**



## 803

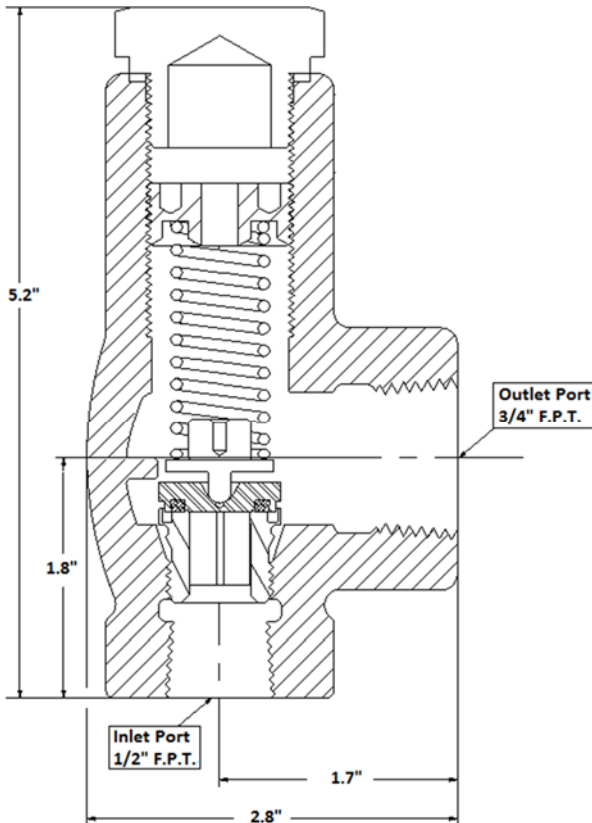


The 803 relief valve has an angle style and a larger outlet size. The ASME certified slope of 1.978 yields, for example, a capacity of 43.8 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
803	51129	Ductile Iron Casting 60- 40-18	½" FNPT inlet x ¾" FNPT outlet



#803 safety relief valve can be mounted on the following manifolds:			
#843	½" x ½" x ½" FNPT	(hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT	(seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 803 relief valve is available in set pressures from 50 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**803 Relief Valve Capacity Chart on Next Page**

## RELIEF VALVES... 803 CAPACITY CHART

803 1/2" x 3/4" Relief Valve capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
50	137.9	10.5	631.7	484.3	8.1	1290.4	21.5	1091.4	18.2	1239.9	20.7
75	192.3	14.7	880.9	675.4	11.3	1799.5	30.0	1522.0	25.4	1729.2	28.8
100	246.7	18.8	1130.1	866.5	14.4	2308.6	38.5	1952.5	32.5	2218.4	37.0
125	301.1	23.0	1379.3	1057.5	17.6	2817.8	47.0	2383.1	39.7	2707.6	45.1
150	355.4	27.1	1628.5	1248.6	20.8	3326.9	55.4	2813.7	46.9	3196.8	53.3
175	409.8	31.3	1877.8	1439.7	24.0	3836.0	63.9	3244.3	54.1	3686.0	61.4
200	464.2	35.4	2127.0	1630.8	27.2	4345.1	72.4	3674.9	61.2	4175.2	69.6
225	518.6	39.6	2376.2	1821.9	30.4	4854.3	80.9	4105.5	68.4	4664.5	77.7
250	573.0	43.8	2625.4	2013.0	33.5	5363.4	89.4	4536.1	75.6	5153.7	85.9
275	627.4	47.9	2874.6	2204.0	36.7	5872.5	97.9	4966.7	82.8	5642.9	94.0
300	681.8	52.1	3123.9	2395.1	39.9	6381.6	106.4	5397.3	90.0	6132.1	102.2
325	736.2	56.2	3373.1	2586.2	43.1	6890.8	114.8	5827.9	97.1	6621.3	110.4
350	790.6	60.4	3622.3	2777.3	46.3	7399.9	123.3	6258.5	104.3	7110.5	118.5
375	845.0	64.5	3871.5	2968.4	49.5	7909.0	131.8	6689.1	111.5	7599.7	126.7
400	899.4	68.7	4120.8	3159.4	52.7	8418.1	140.3	7119.7	118.7	8089.0	134.8

Slope on Air: 1.978

# RELIEF VALVES... 803QC (QUICK CONNECT)

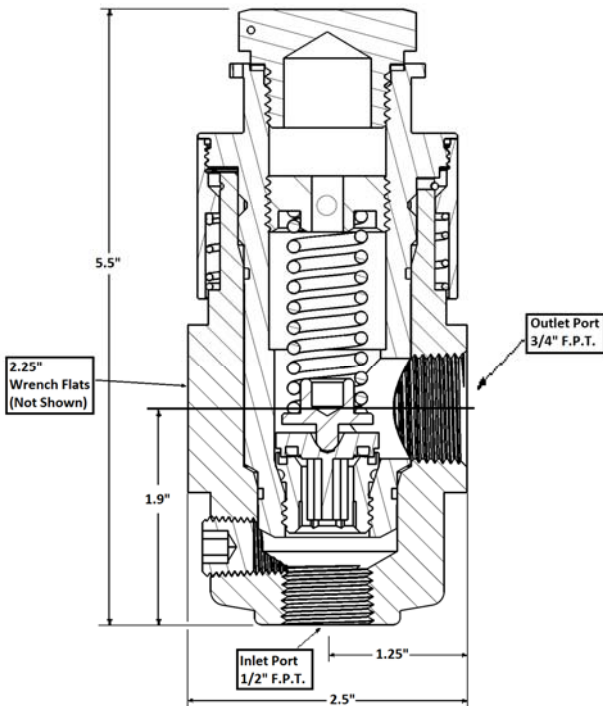
## 803QC

This new generation valve allows the piping to remain in place, while only the insert is replaced. This makes replacement of the valves faster and less costly than the standard valve. The ASME certified slope of 1.978 yields, for example, a capacity of 43.8 lbs. per minute of air @ 250# set pressure. Stainless steel housing for durability and performance.



Part #	NB Cert. #	Body Material	Size
803QC	51129	304 Stainless Steel	1/2" FNPT inlet x 3/4" FNPT outlet

#803QC safety relief valve can be mounted on the following manifolds:			
#843	1/2" x 1/2" x 1/2" FNPT	(hand wheel)	#843F 1/2" x 1/2" x 1/2" FNPT (seal cap)
#846M	1/2" x 1/2" x 1/2" FNPT	(seal cap)	#848M 3/4" x 1/2" x 1/2" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each body has a 1/4" FNPT port for gauges or service valves.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 803QC relief valve is available in set pressures from 50 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**803QC Relief Valve Capacity Chart on Next Page**

## RELIEF VALVES... 803QC CAPACITY CHART

<b>803QC</b> <b>1/2" x 3/4"</b> <b>Relief Valve capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
50	137.9	10.5	631.7	484.3	8.1	1290.4	21.5	1091.4	18.2	1239.9	20.7
75	192.3	14.7	880.9	675.4	11.3	1799.5	30.0	1522.0	25.4	1729.2	28.8
100	246.7	18.8	1130.1	866.5	14.4	2308.6	38.5	1952.5	32.5	2218.4	37.0
125	301.1	23.0	1379.3	1057.5	17.6	2817.8	47.0	2383.1	39.7	2707.6	45.1
150	355.4	27.1	1628.5	1248.6	20.8	3326.9	55.4	2813.7	46.9	3196.8	53.3
175	409.8	31.3	1877.8	1439.7	24.0	3836.0	63.9	3244.3	54.1	3686.0	61.4
200	464.2	35.4	2127.0	1630.8	27.2	4345.1	72.4	3674.9	61.2	4175.2	69.6
225	518.6	39.6	2376.2	1821.9	30.4	4854.3	80.9	4105.5	68.4	4664.5	77.7
250	573.0	43.8	2625.4	2013.0	33.5	5363.4	89.4	4536.1	75.6	5153.7	85.9
275	627.4	47.9	2874.6	2204.0	36.7	5872.5	97.9	4966.7	82.8	5642.9	94.0
300	681.8	52.1	3123.9	2395.1	39.9	6381.6	106.4	5397.3	90.0	6132.1	102.2
325	736.2	56.2	3373.1	2586.2	43.1	6890.8	114.8	5827.9	97.1	6621.3	110.4
350	790.6	60.4	3622.3	2777.3	46.3	7399.9	123.3	6258.5	104.3	7110.5	118.5
375	845.0	64.5	3871.5	2968.4	49.5	7909.0	131.8	6689.1	111.5	7599.7	126.7
400	899.4	68.7	4120.8	3159.4	52.7	8418.1	140.3	7119.7	118.7	8089.0	134.8

Slope on Air: 1.978

## 813

The 813 relief valve has an angle style and a larger outlet size. The ASME certified slope of 1.99 yields, for example, a capacity of 44.0 lbs per minute of air @ 250# set pressure.

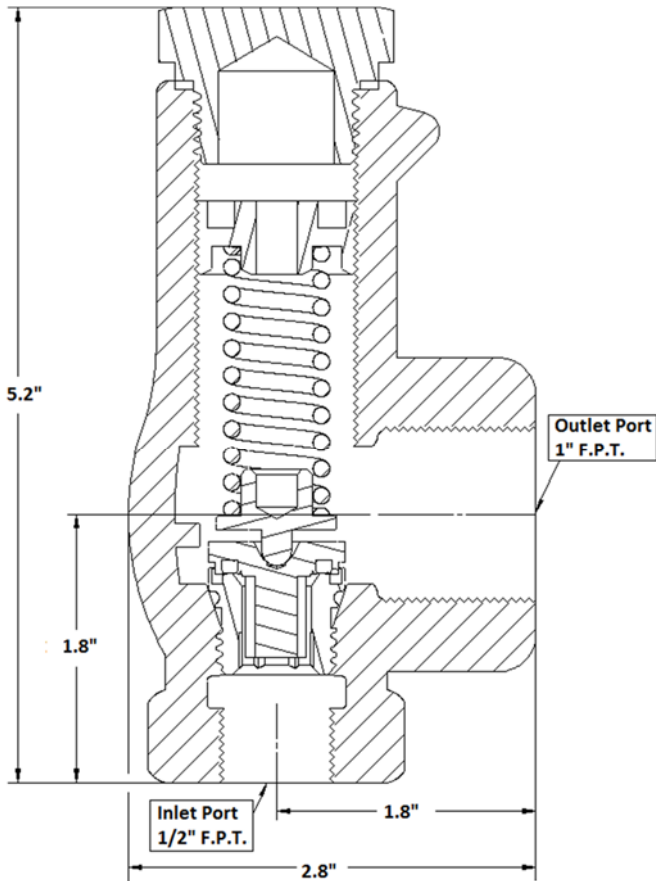


Part #	NB Cert. #	Body Material	Size
813	51141	Ductile Iron Casting 60- 40-18	½" FNPT inlet x 1" FNPT outlet

### 813 safety relief valve can be mounted on the following manifolds:

#843	½" x ½" x ½" FNPT (hand wheel)	#843F	½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT (seal cap)	#848M	¾" x ½" x ½" FNPT (seal cap)

- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 813 relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.



**813 Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 813 CAPACITY CHART

<b>813</b> <b>1/2" x 1"</b> <b>Relief Valve Capacity Chart</b>											
Set or Re- lease Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	193.4	14.8	886.2	679.5	11.3	1810.4	30.2	1531.2	25.5	1739.6	29.0
100	248.2	18.9	1137.0	871.7	14.5	2322.7	38.7	1964.4	32.7	2231.8	37.2
125	302.9	23.1	1387.7	1064.0	17.7	2834.9	47.2	2397.6	40.0	2724.0	45.4
150	357.6	27.3	1638.4	1256.2	20.9	3347.1	55.8	2830.8	47.2	3216.2	53.6
175	412.3	31.5	1889.2	1448.4	24.1	3859.3	64.3	3264.0	54.4	3708.4	61.8
200	467.1	35.7	2139.9	1640.7	27.3	4371.5	72.9	3697.2	61.6	4200.6	70.0
225	521.8	39.8	2390.6	1832.9	30.5	4883.7	81.4	4130.4	68.8	4692.7	78.2
250	576.5	44.0	2641.4	2025.2	33.8	5395.9	89.9	4563.6	76.1	5184.9	86.4
275	631.2	48.2	2892.1	2217.4	37.0	5908.1	98.5	4996.8	83.3	5677.1	94.6
300	686.0	52.4	3142.8	2409.6	40.2	6420.3	107.0	5430.0	90.5	6169.3	102.8
325	740.7	56.6	3393.6	2601.9	43.4	6932.6	115.5	5863.2	97.7	6661.5	111.0
350	795.4	60.7	3644.3	2794.1	46.6	7444.8	124.1	6296.5	104.9	7153.7	119.2
375	850.1	64.9	3895.0	2986.4	49.8	7957.0	132.6	6729.7	112.2	7645.9	127.4
400	904.9	69.1	4145.8	3178.6	53.0	8469.2	141.2	7162.9	119.4	8138.0	135.6

Slope on Air: 1.99

## 804

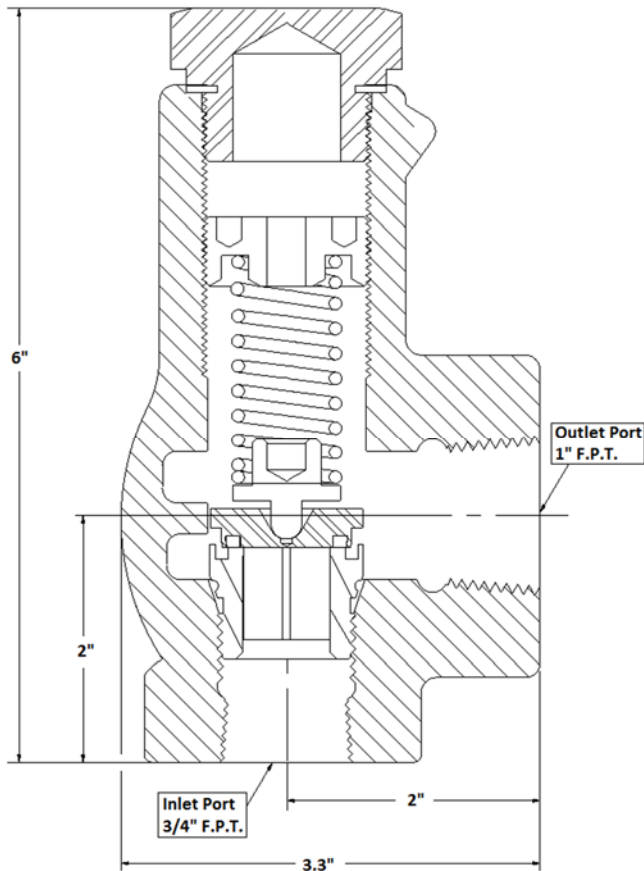


This relief valve has an angle style and larger inlet and outlet size. The ASME certified slope of 3.04 yields, for example, a capacity of 67.25 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
804	51017	Ductile Iron Casting 60-40-18	3/4" FNPT inlet x 1" FNPT outlet

### #804 safety relief valve can be mounted on the following manifolds:

#844	3/4" x 3/4" x 3/4" FNPT (hand wheel)	#844F	3/4" x 3/4" x 3/4" FNPT (seal cap)
#847M	3/4" x 3/4" x 3/4" FNPT (seal cap)	#849M	1" x 3/4" x 3/4" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 804 relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**804 Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 804 CAPACITY CHART

## 804 3/4" x 1" Relief Valve Capacity Chart

Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	295.49	22.56	1353.83	1038.00	17.30	2765.69	46.09	2339.10	38.99	2657.55	44.29
100	379.09	28.95	1736.86	1331.68	22.19	3548.17	59.14	3000.88	50.01	3409.43	56.82
125	462.69	35.33	2119.89	1625.35	27.09	4330.64	72.18	3662.66	61.04	4161.31	69.36
150	546.29	41.72	2502.92	1919.02	31.98	5113.12	85.22	4324.45	72.07	4913.19	81.89
175	629.89	48.10	2885.95	2212.70	36.88	5895.59	98.26	4986.23	83.10	5665.07	94.42
200	713.49	54.48	3268.98	2506.37	41.77	6678.07	111.30	5648.01	94.13	6416.94	106.95
225	797.09	60.87	3652.01	2800.04	46.67	7460.54	124.34	6309.79	105.16	7168.82	119.48
250	880.69	67.25	4035.04	3093.72	51.56	8243.02	137.38	6971.58	116.19	7920.70	132.01
275	964.29	73.63	4418.07	3387.39	56.46	9025.49	150.42	7633.36	127.22	8672.58	144.54
300	1047.89	80.02	4801.09	3681.06	61.35	9807.97	163.47	8295.14	138.25	9424.46	157.07
325	1131.49	86.40	5184.12	3974.74	66.25	10590.45	176.51	8956.92	149.28	10176.34	169.61
350	1215.09	92.79	5567.15	4268.41	71.14	11372.92	189.55	9618.71	160.31	10928.22	182.14
375	1298.69	99.17	5950.18	4562.08	76.03	12155.40	202.59	10280.49	171.34	11680.10	194.67
400	1382.29	105.55	6333.21	4855.76	80.93	12937.87	215.63	10942.27	182.37	12431.97	207.20

**Slope on Air: 3.04**



# RELIEF VALVES... 804R (REDUCED CAPACITY)

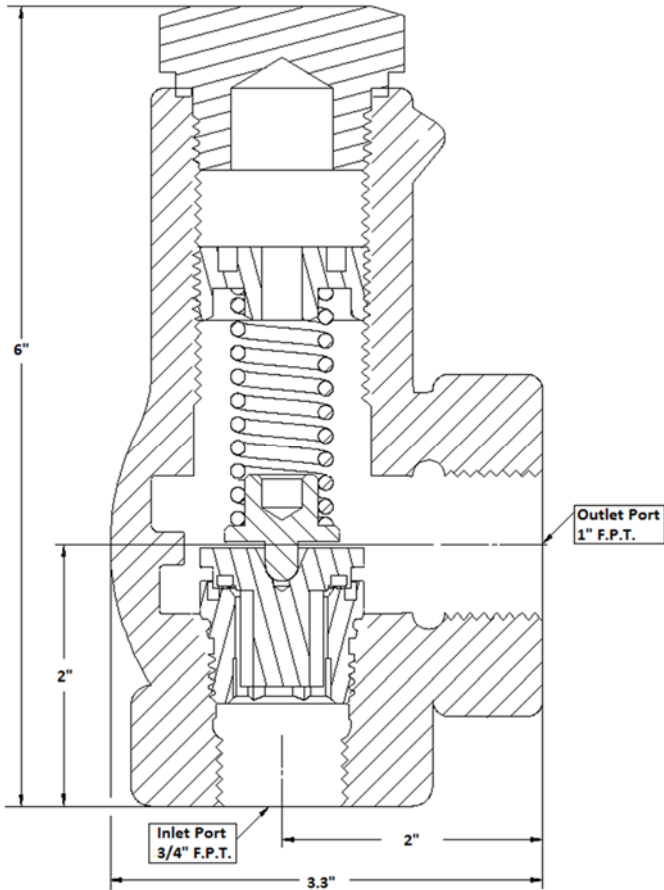
## 804R (H5632R Replacement in Kind)



This reduced capacity relief valve has an angle style and larger inlet and outlet size. The ASME certified slope of 1.63 yields, for example, a capacity of 36 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
804R	51219	Ductile Iron Casting 60-40-18	3/4" FNPT inlet x 1" FNPT outlet

#804R safety relief valve can be mounted on the following manifolds:			
#844	3/4" x 3/4" x 3/4" FNPT	(hand wheel)	#844F 3/4" x 3/4" x 3/4" FNPT (seal cap)
#847M	3/4" x 3/4" x 3/4" FNPT	(seal cap)	#849M 1" x 3/4" x 3/4" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 804R relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.

**804R Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 804R CAPACITY CHART

804R 3/4" x 1" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	158	12	725	556	9	1481	25	1253	21	1423	24
100	203	16	930	713	12	1900	32	1607	27	1826	30
125	248	19	1135	870	15	2319	39	1961	33	2228	37
150	292	22	1338	1026	17	2733	46	2311	39	2626	44
175	337	25	1500	1185	20	3157	53	2670	45	3034	51
200	382	29	1751	1342	22	3576	60	3025	50	3436	57
225	427	32	1920	1499	25	3995	67	3379	56	3839	64
250	472	36	2161	1657	28	4414	74	3733	62	4242	71
275	517	39	2369	1816	30	4839	81	4093	68	4650	77
300	561	42	2520	1971	33	5252	88	4442	74	5047	84
325	606	46	2776	2129	35	5671	95	4797	80	5450	91
350	651	49	2940	2286	38	6090	102	5151	86	5852	98
375	695	53	3186	2443	41	6510	108	5505	92	6255	104
400	741	56	3360	2603	43	6936	116	5866	98	6664	111

Slope on Air: 1.63

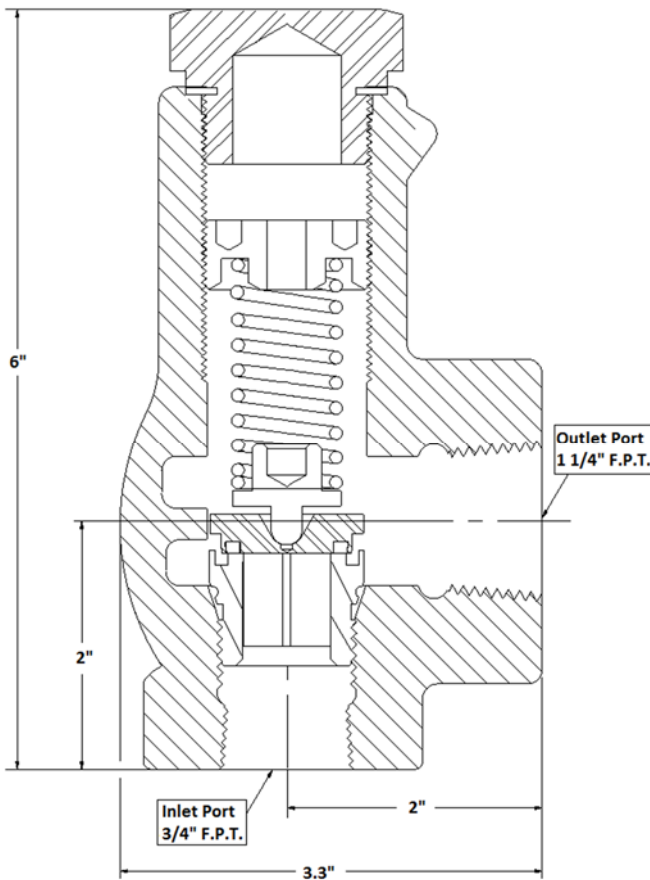
## 814

This relief valve has an angle style and larger inlet and outlet size. The ASME certified slope of 3.29 yields, for example, a capacity of 72.82 lbs per minute of air @ 250# set pressure.



Part #	NB Cert. #	Body Material	Size
814	51130	Ductile Iron Casting 60-40-18	3/4" FNPT inlet x 1 1/4" FNPT outlet

#814 safety relief valve can be mounted on the following manifolds:			
#844	3/4" x 3/4" x 3/4" FNPT (hand wheel)	#844F	3/4" x 3/4" x 3/4" FNPT (seal cap)
#847M	3/4" x 3/4" x 3/4" FNPT (seal cap)	#849M	1" x 3/4" x 3/4" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 814 relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**814 Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 814 CAPACITY CHART

814 3/4" x 1 1/4" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	319.79	24.42	1465.17	1123.36	18.72	2993.14	49.89	2531.46	42.19	2876.10	47.93
100	410.26	31.33	1879.70	1441.19	24.02	3839.96	64.00	3247.67	54.13	3689.81	61.50
125	500.74	38.24	2294.22	1759.01	29.32	4686.78	78.11	3963.87	66.06	4503.52	75.06
150	591.21	45.15	2708.75	2076.84	34.61	5533.61	92.23	4680.08	78.00	5317.23	88.62
175	681.69	52.05	3123.28	2394.66	39.91	6380.43	106.34	5396.28	89.94	6130.94	102.18
200	772.16	58.96	3537.81	2712.49	45.21	7227.25	120.45	6112.49	101.87	6944.65	115.74
225	862.64	65.87	3952.34	3030.31	50.51	8074.08	134.57	6828.69	113.81	7758.36	129.31
250	953.11	72.78	4366.86	3348.13	55.80	8920.90	148.68	7544.90	125.75	8572.08	142.87
275	1043.59	79.69	4781.39	3665.96	61.10	9767.72	162.80	8261.10	137.69	9385.79	156.43
300	1134.06	86.60	5195.92	3983.78	66.40	10614.55	176.91	8977.31	149.62	10199.50	169.99
325	1224.54	93.51	5610.45	4301.61	71.69	11461.37	191.02	9693.51	161.56	11013.21	183.55
350	1315.01	100.42	6024.98	4619.43	76.99	12308.19	205.14	10409.72	173.50	11826.92	197.12
375	1405.49	107.33	6439.51	4937.26	82.29	13155.02	219.25	11125.92	185.43	12640.63	210.68
400	1495.96	114.23	6854.03	5255.08	87.58	14001.84	233.36	11842.13	197.37	13454.34	224.24

Slope on Air: 3.29

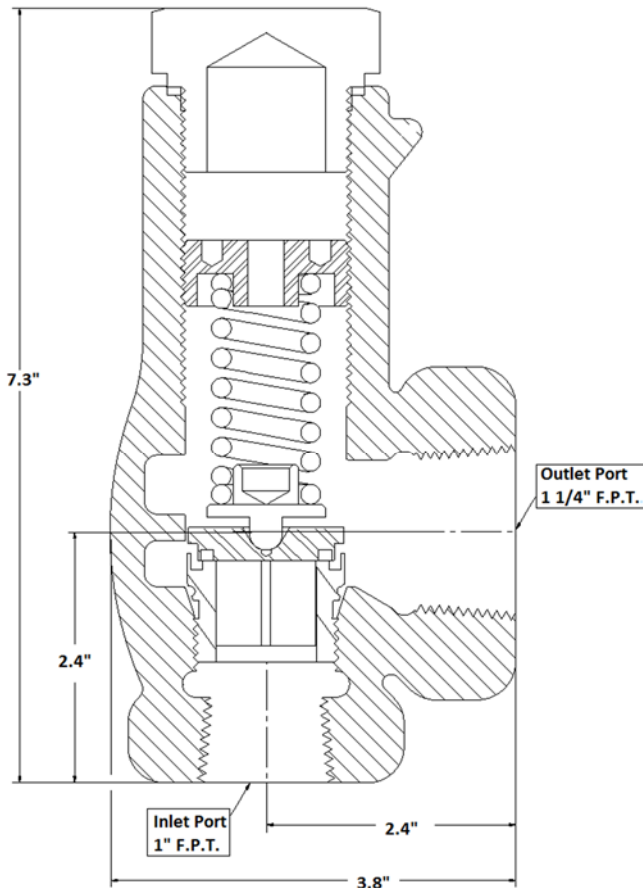
## 805



The 805 series relief valve has an angle style and larger inlet and outlet size. The ASME certified slope of 4.09 yields, for example, a capacity of 90.5 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
<b>805</b>	51028	Ductile Iron Casting 60-40-18	1" FNPT inlet x 1 1/4" FNPT outlet

<b>#805 series safety relief valves can be mounted on the following manifolds:</b>			
#845	1" x 1" x 1" FNPT (hand wheel)	#845F	1" x 1" x 1" FNPT (seal cap)
#850MW-1"	1 1/4" male x 3/4" x 3/4" FNPT (seal cap)	#875M	1" x 1" x 1" FNPT (seal cap)
#876M	1 1/4" x 1" x 1" FNPT (seal cap)		



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 805 relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**805 Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 805 CAPACITY CHART

805 1" x 1 1/4" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	397.5	30.4	1821.4	1396.5	23.3	3721.0	62.0	3147.0	52.5	3575.5	59.6
100	510.0	38.9	2336.8	1791.6	29.9	4773.7	79.6	4037.4	67.3	4587.0	76.5
125	622.5	47.5	2852.1	2186.7	36.4	5826.4	97.1	4927.7	82.1	5598.6	93.3
150	735.0	56.1	3367.4	2581.8	43.0	6879.2	114.7	5818.1	97.0	6610.2	110.2
175	847.4	64.7	3882.7	2976.9	49.6	7931.9	132.2	6708.4	111.8	7621.7	127.0
200	959.9	73.3	4398.1	3372.1	56.2	8984.6	149.7	7598.8	126.6	8633.3	143.9
225	1072.4	81.9	4913.4	3767.2	62.8	10037.4	167.3	8489.2	141.5	9644.9	160.7
250	1184.9	90.5	5428.7	4162.3	69.4	11090.1	184.8	9379.5	156.3	10656.5	177.6
275	1297.3	99.1	5944.0	4557.4	76.0	12142.9	202.4	10269.9	171.2	11668.0	194.5
300	1409.8	107.7	6459.4	4952.5	82.5	13195.6	219.9	11160.2	186.0	12679.6	211.3
325	1522.3	116.2	6974.7	5347.6	89.1	14248.3	237.5	12050.6	200.8	13691.2	228.2
350	1634.8	124.8	7490.0	5742.7	95.7	15301.1	255.0	12941.0	215.7	14702.8	245.0
375	1747.2	133.4	8005.3	6137.8	102.3	16353.8	272.6	13831.3	230.5	15714.3	261.9
400	1859.7	142.0	8520.7	6532.9	108.9	17406.5	290.1	14721.7	245.4	16725.9	278.8

Slope on Air: 4.09

# RELIEF VALVES... 805R (REDUCED CAPACITY)

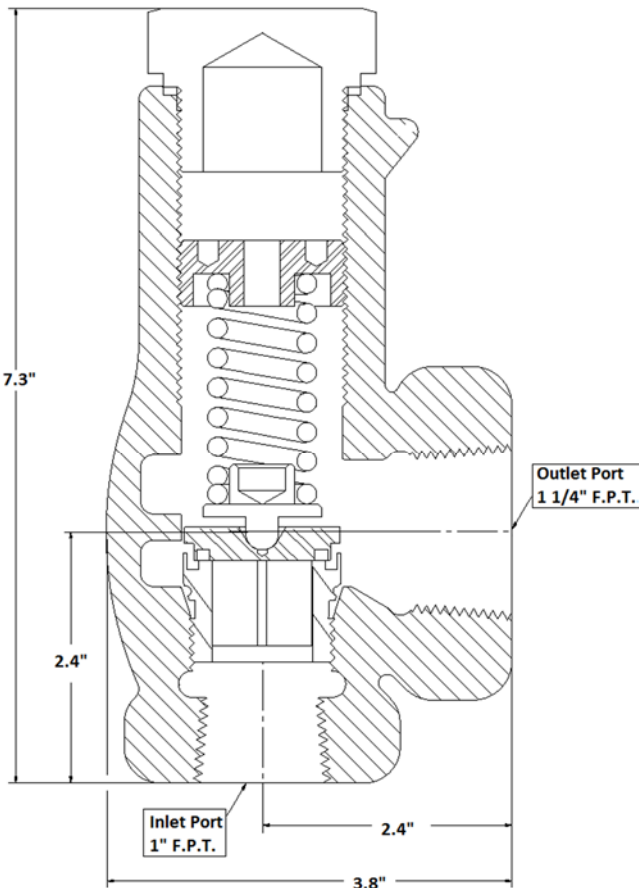
## 805R (H5633R Replacement in Kind)



This reduced capacity relief valve has an angle style and larger inlet and outlet size. The ASME certified slope of 2.1 yields, for example, a capacity of 46 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
805R	51220	Ductile Iron Casting 60-40-18	1" FNPT inlet x 1 1/4" FNPT outlet

#805R series safety relief valves can be mounted on the following manifolds:			
#845	1" x 1" x 1" FNPT (hand wheel)	#845F	1" x 1" x 1" FNPT (seal cap)
#850MW-1"	1 1/4" male x 3/4" x 3/4" FNPT (seal cap)	#875M	1" x 1" x 1" FNPT (seal cap)
#876M	1 1/4" x 1" x 1" FNPT (seal cap)		



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 804R relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.

**805R Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 805R CAPACITY CHART

805R 1" x 1 1/4" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	204	16	934	716	12	1909	32	1614	27	1834	31
100	262	20	1199	919	15	2449	41	2071	35	2353	39
125	319	24	1463	1122	19	2989	50	2528	42	2872	48
150	377	28	1680	1324	22	3529	59	2984	50	3391	57
175	435	33	1992	1527	25	4069	68	3441	57	3910	65
200	492	37	2220	1730	29	4609	77	3898	65	4429	74
225	550	41	2460	1932	32	5149	86	4355	73	4947	82
250	608	46	2785	2135	36	5689	95	4811	80	5466	91
275	665	50	3000	2338	39	6229	104	5268	88	5985	100
300	723	54	3240	2540	42	6769	113	5725	95	6504	108
325	781	59	3540	2743	46	7309	122	6181	103	7023	117
350	839	63	3780	2946	49	7849	131	6638	111	7542	126
375	896	68	4106	3148	52	8389	140	7095	118	8061	134
400	954	72	4320	3351	56	8929	149	7552	126	8580	143

Slope on Air: 2.1



## 815

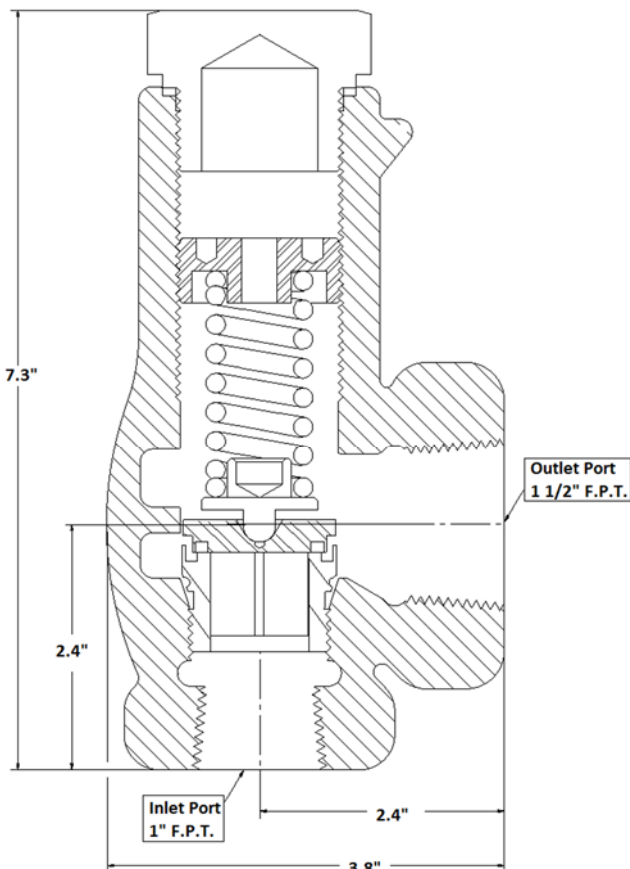


The 815 relief valve has an angle style and larger inlet and outlet size. The ASME certified slope of 4.09 yields, for example, a capacity of 90.5 lbs per minute of air @ 250# set pressure.

Part #	NB Cert. #	Body Material	Size
815	51028	Ductile Iron Casting 60-40-18	1" FNPT inlet x 1 1/2" FNPT outlet



#815 series safety relief valves can be mounted on the following manifolds:	
#845 1" x 1" x 1" FNPT (hand wheel)	#845F 1" x 1" x 1" FNPT (seal cap)
#850MW-1" 1 1/4" male x 3/4" x 3/4" FNPT (seal cap)	#875M 1" x 1" x 1" FNPT (seal cap)
#876M 1 1/4"x1"x1" FNPT (seal cap)	



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 815 relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**815 Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 815 CAPACITY CHART

<b>815</b> <b>1" x 1 1/2"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	397.5	30.4	1821.4	1396.5	23.3	3721.0	62.0	3147.0	52.5	3575.5	59.6
100	510.0	38.9	2336.8	1791.6	29.9	4773.7	79.6	4037.4	67.3	4587.0	76.5
125	622.5	47.5	2852.1	2186.7	36.4	5826.4	97.1	4927.7	82.1	5598.6	93.3
150	735.0	56.1	3367.4	2581.8	43.0	6879.2	114.7	5818.1	97.0	6610.2	110.2
175	847.4	64.7	3882.7	2976.9	49.6	7931.9	132.2	6708.4	111.8	7621.7	127.0
200	959.9	73.3	4398.1	3372.1	56.2	8984.6	149.7	7598.8	126.6	8633.3	143.9
225	1072.4	81.9	4913.4	3767.2	62.8	10037.4	167.3	8489.2	141.5	9644.9	160.7
250	1184.9	90.5	5428.7	4162.3	69.4	11090.1	184.8	9379.5	156.3	10656.5	177.6
275	1297.3	99.1	5944.0	4557.4	76.0	12142.9	202.4	10269.9	171.2	11668.0	194.5
300	1409.8	107.7	6459.4	4952.5	82.5	13195.6	219.9	11160.2	186.0	12679.6	211.3
325	1522.3	116.2	6974.7	5347.6	89.1	14248.3	237.5	12050.6	200.8	13691.2	228.2
350	1634.8	124.8	7490.0	5742.7	95.7	15301.1	255.0	12941.0	215.7	14702.8	245.0
375	1747.2	133.4	8005.3	6137.8	102.3	16353.8	272.6	13831.3	230.5	15714.3	261.9
400	1859.7	142.0	8520.7	6532.9	108.9	17406.5	290.1	14721.7	245.4	16725.9	278.8

**Slope on Air: 4.09**

# RELIEF VALVES... 850 SERIES

## 850D, 850A



This high capacity relief valve has been designed for use in large-sized pressure vessels. The ASME certified slope of 6.17 yields, for example, a capacity of 136.56 lbs per minute of air @ 250# set pressure.

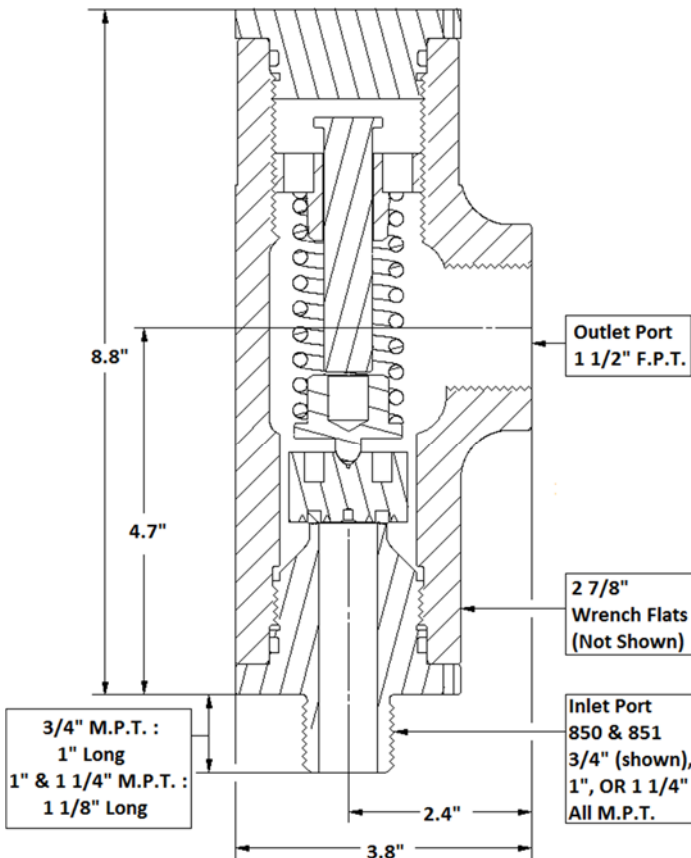
Part #	NB Cert #	Body Material	Size
850 D	51051	Ductile Iron Casting 60-40-18	3/4", 1", or 1 1/4" MNPT inlet x 1 1/2" FNPT outlet
850 A	51051	Anodize 356-T6 Aluminum	3/4", 1", or 1 1/4" MNPT inlet x 1 1/2" FNPT outlet



### #850 safety relief valve can be mounted on the following manifolds:

#850 MW- 3/4" (for 3/4" MNPT)	#850 MW-1" (for 1" MNPT)
#875 M (for 1" MNPT)	#876 M (for 1" MNPT)
#900 MW-1 1/4" (for 1 1/4" MNPT)	#901 M (for 1 1/4" MNPT)

- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 850 series of relief valves is available in set pressures from 150 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.



**850 Series Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 850 SERIES CAPACITY CHART

<b>850</b> <b>3/4", 1", or 1-1/4" x 1 1/2"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
150	1108.75	84.67	5079.94	3894.86	64.91	10377.61	172.96	8776.92	146.28	9971.83	166.20
175	1278.42	97.62	5857.34	4490.90	74.85	11965.73	199.43	10120.08	168.67	11497.85	191.63
200	1448.10	110.58	6634.74	5086.94	84.78	13553.85	225.90	11463.24	191.05	13023.86	217.06
225	1617.77	123.54	7412.13	5682.98	94.72	15141.96	252.37	12806.39	213.44	14549.88	242.50
250	1787.45	136.49	8189.53	6279.02	104.65	16730.08	278.83	14149.55	235.83	16075.90	267.93
275	1957.12	149.45	8966.93	6875.06	114.58	18318.19	305.30	15492.71	258.21	17601.92	293.37
300	2126.80	162.41	9744.33	7471.11	124.52	19906.31	331.77	16835.86	280.60	19127.93	318.80
325	2296.47	175.36	10521.72	8067.15	134.45	21494.42	358.24	18179.02	302.98	20653.95	344.23
350	2466.15	188.32	11299.12	8663.19	144.39	23082.54	384.71	19522.18	325.37	22179.97	369.67
375	2635.82	201.28	12076.52	9259.23	154.32	24670.65	411.18	20865.34	347.76	23705.98	395.10
400	2805.50	214.23	12853.92	9855.27	164.25	26258.77	437.65	22208.49	370.14	25232.00	420.53

**Slope on Air: 6.17**

# RELIEF VALVES... 850R (REDUCED CAPACITY)

## 850RD, 850RA (H5634R Replacement in Kind: 1 1/4" Inlet, Ductile Iron Casting)



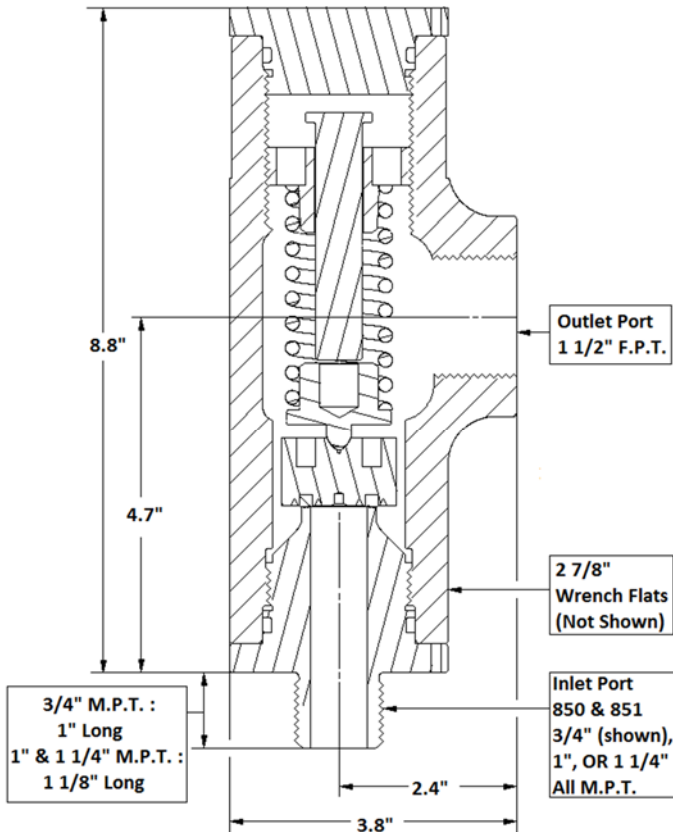
This reduced capacity relief valve has been designed for use in large-sized pressure vessels. The ASME certified slope of 2.5 yields, for example, a capacity of 54 lbs per minute of air @ 250# set pressure.

Part #	NB Cert #	Body Material	Size
850RD	51231	Ductile Iron Casting 60-40-18	3/4", 1", or 1 1/4" MNPT inlet x 1 1/2" FNPT outlet
850RA	51231	Anodize 356-T6 Aluminum	3/4", 1", or 1 1/4" MNPT inlet x 1 1/2" FNPT outlet



#850R safety relief valve can be mounted on the following manifolds:	
#850 MW- 3/4" (for 3/4" MNPT)	#850 MW-1" (for 1" MNPT)
#875 M (for 1" MNPT)	#876 M (for 1" MNPT)
#900 MW-1 1/4" (for 1 1/4" MNPT)	#901 M (for 1 1/4" MNPT)

- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 850R relief valve is available in set pressures from 150 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.



**850R Relief Valve Capacity Chart on Next Page**

## RELIEF VALVES... 850R CAPACITY CHART

850R 3/4", 1", or 1 1/4" x 1 1/2" Relief Valve Capacity Chart											
Set or Release Pressure (PSIG)	Air	Air	Air	NH3	NH3	R-12	R-12	R-22	R-22	R-502	R-502
	SCFM 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm
150	449	34	2057	1577	26	4202	70	3553	59	4037	67
175	518	39	2340	1818	30	4844	81	4097	68	4655	78
200	586	44	2640	2060	34	5487	91	4641	77	5273	88
225	655	49	2940	2301	38	6130	102	5185	86	5891	98
250	724	54	3240	2542	42	6773	113	5729	95	6509	108
275	793	60	3600	2786	46	7422	124	6277	105	7132	119
300	861	65	3900	3025	50	8059	134	6816	114	7744	129
325	930	70	4200	3266	54	8702	145	7360	123	8362	139
350	999	75	4500	3509	58	9350	156	7908	132	8985	150
375	1067	81	4889	3749	62	9988	166	8448	141	9598	160
400	1136	85	5100	3990	67	10631	177	8991	150	10215	170

Slope on Air: 2.5

# RELIEF VALVES... 851 SERIES

## 851D, 851A

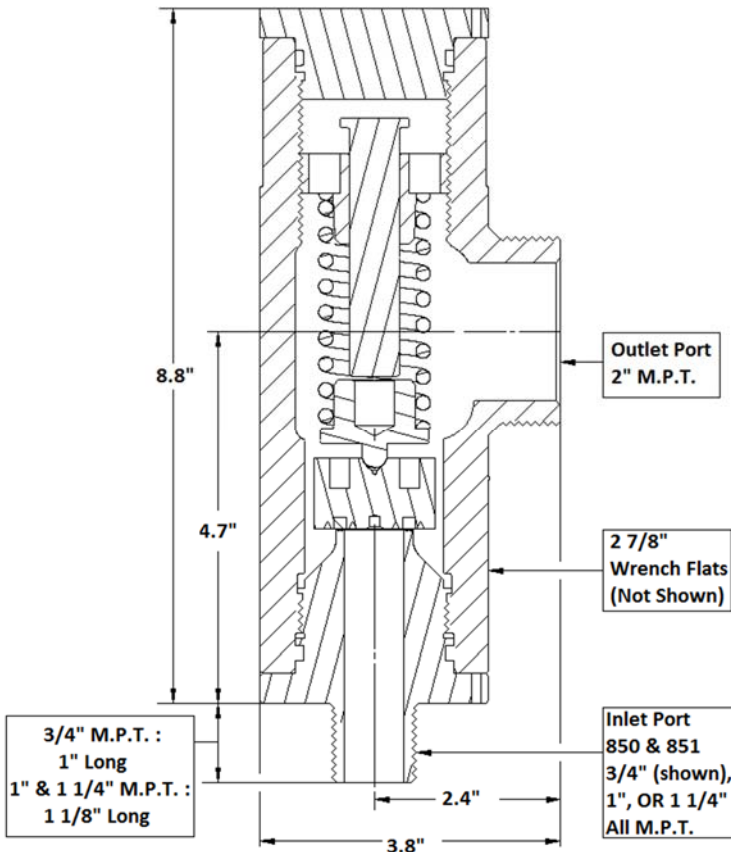
This high capacity relief valve has been designed for use in large-sized pressure vessels. The ASME certified slope of 6.17 yields, for example, a capacity of 136.56 lbs per minute of air @ 250# set pressure.



Part #	NB Cert #	Body Material	Size
851 D	51051	Ductile Iron Casting 60-40-18	¾", 1", or 1 ¼" FNPT inlet x 2" FNPT outlet
851 A	51051	Anodize 356-T6 Aluminum	¾", 1", or 1 ¼" FNPT inlet x 2" FNPT outlet

#851 safety relief valve can be mounted on the following manifolds:	
#850 MW- ¾" (for ¾" MNPT)	#850 MW-1" (for 1" MNPT)
#875 M (for 1" MNPT)	#876 M (for 1" MNPT)
#900 MW-1 ¼" (for 1 ¼" MNPT)	#901 M (for 1 ¼" MNPT)

- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 851 series of relief valves is available in set pressures from 150 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.



**851 Series Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 851 SERIES CAPACITY CHART

<b>851</b> <b>3/4", 1", or 1 1/4" x 2"</b> <b>Relief Valve Capacity Chart</b>												
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm	
150	1108.75	84.67	5079.94	3894.86	64.91	10377.61	172.96	8776.92	146.28	9971.83	166.20	
175	1278.42	97.62	5857.34	4490.90	74.85	11965.73	199.43	10120.08	168.67	11497.85	191.63	
200	1448.10	110.58	6634.74	5086.94	84.78	13553.85	225.90	11463.24	191.05	13023.86	217.06	
225	1617.77	123.54	7412.13	5682.98	94.72	15141.96	252.37	12806.39	213.44	14549.88	242.50	
250	1787.45	136.49	8189.53	6279.02	104.65	16730.08	278.83	14149.55	235.83	16075.90	267.93	
275	1957.12	149.45	8966.93	6875.06	114.58	18318.19	305.30	15492.71	258.21	17601.92	293.37	
300	2126.80	162.41	9744.33	7471.11	124.52	19906.31	331.77	16835.86	280.60	19127.93	318.80	
325	2296.47	175.36	10521.72	8067.15	134.45	21494.42	358.24	18179.02	302.98	20653.95	344.23	
350	2466.15	188.32	11299.12	8663.19	144.39	23082.54	384.71	19522.18	325.37	22179.97	369.67	
375	2635.82	201.28	12076.52	9259.23	154.32	24670.65	411.18	20865.34	347.76	23705.98	395.10	
400	2805.50	214.23	12853.92	9855.27	164.25	26258.77	437.65	22208.49	370.14	25232.00	420.53	

Slope on Air: 6.17



# RELIEF VALVES... 851R (REDUCED CAPACITY)

## 851RD, 851RA

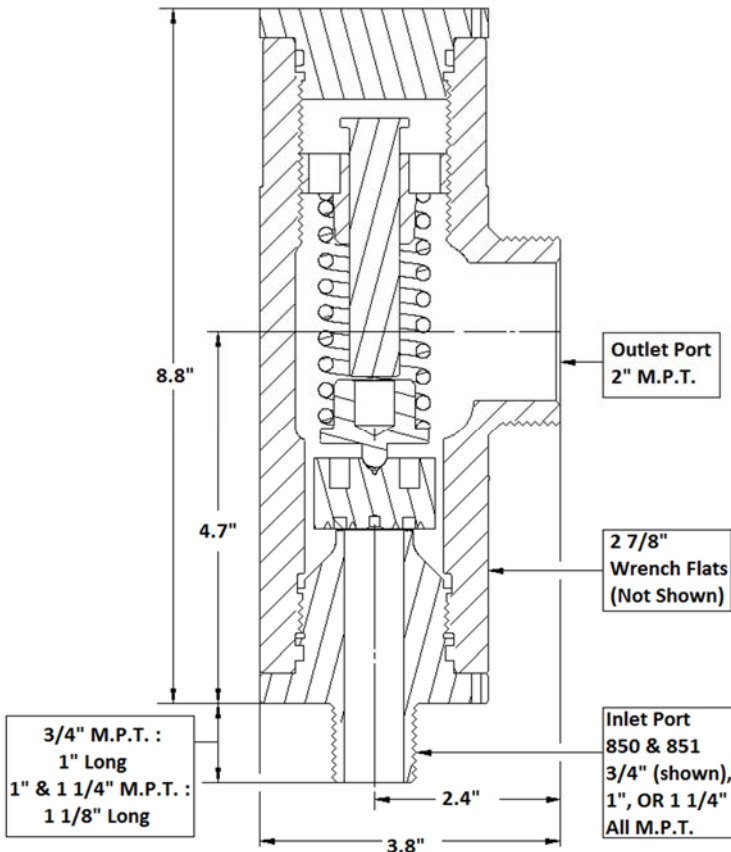
This reduced capacity relief valve has been designed for use in large-sized pressure vessels. The ASME certified slope of 2.5 yields, for example, a capacity of 54 lbs per minute of air @ 250# set pressure.



Part #	NB Cert #	Body Material	Size
851RD	51231	Ductile Iron Casting 60-40-18	¾", 1", or 1 ¼" FNPT inlet x 2" FNPT outlet
851RA	51231	Anodize 356-T6 Aluminum	¾", 1", or 1 ¼" FNPT inlet x 2" FNPT outlet

#851 safety relief valve can be mounted on the following manifolds:	
#850 MW- ¾" (for ¾" MNPT)	#850 MW-1" (for 1" MNPT)
#875 M (for 1" MNPT)	#876 M (for 1" MNPT)
#900 MW-1 ¼" (for 1 ¼" MNPT)	#901 M (for 1 ¼" MNPT)

- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 851 series of relief valves is available in set pressures from 150 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.



**851 Series Relief Valve Capacity Chart on Next Page**

## RELIEF VALVES... 851R CAPACITY CHART

<b>851R</b> <b>3/4", 1", or 1 1/4" x 1 1/2"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air	Air	Air	NH3	NH3	R-12	R-12	R-22	R-22	R-502	R-502
	SCFM 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm	lb/hr 60 F 1 Atm	lb/min 60 F 1 Atm
150	449	34	2057	1577	26	4202	70	3553	59	4037	67
175	518	39	2340	1818	30	4844	81	4097	68	4655	78
200	586	44	2640	2060	34	5487	91	4641	77	5273	88
225	655	49	2940	2301	38	6130	102	5185	86	5891	98
250	724	54	3240	2542	42	6773	113	5729	95	6509	108
275	793	60	3600	2786	46	7422	124	6277	105	7132	119
300	861	65	3900	3025	50	8059	134	6816	114	7744	129
325	930	70	4200	3266	54	8702	145	7360	123	8362	139
350	999	75	4500	3509	58	9350	156	7908	132	8985	150
375	1067	81	4889	3749	62	9988	166	8448	141	9598	160
400	1136	85	5100	3990	67	10631	177	8991	150	10215	170

Slope on Air: 2.5

# RELIEF VALVES... 901 SERIES and 903 SERIES

## 901D, 901A, 903D, 903A

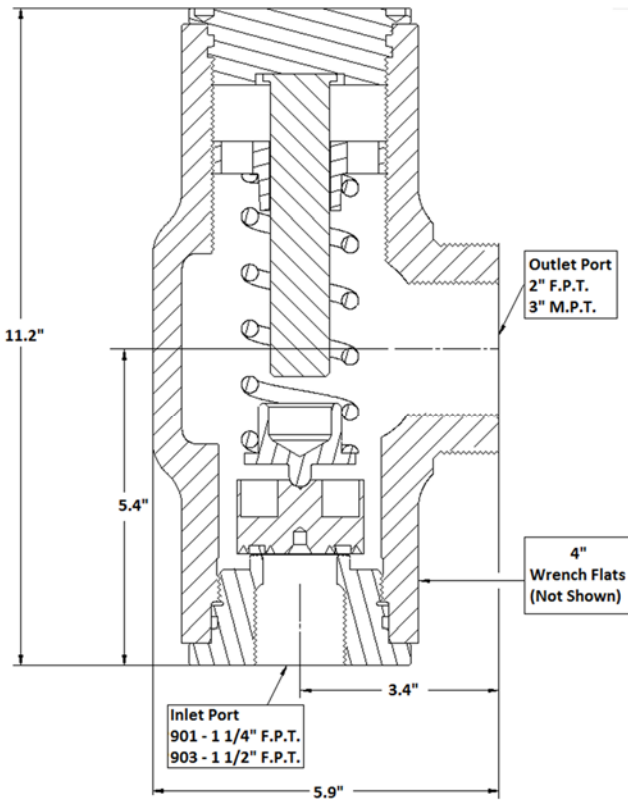


This high capacity relief valve has been designed for use in large-sized pressure vessels. The ASME certified slope of 15.18 yields, for example, a capacity of 335.93 lbs per minute of air @ 250# set pressure.

Part #	NB Cert #	Body Material	Size
901 D	51040	Ductile Iron Casting 60-40-18	1 ¼" FNPT inlet x 2" FNPT & 3" MNPT outlet
901 A	51040	Cast Aluminum per ASME SB-26B	1 ¼" FNPT inlet x 2" FNPT & 3" MNPT outlet
903 D	51040	Ductile Iron Casting 60-40-18	1 ½" FNPT inlet x 2" FNPT & 3" MNPT outlet
903 A	51040	Cast Aluminum per ASME SB-26B	1 ½" FNPT inlet x 2" FNPT & 3" MNPT outlet



#901 and #903 safety relief valves can be mounted on the following manifolds:	
#900 MW-1 ¼" (for 1 ¼" MNPT)	#901 M (for 1 ¼" MNPT)
#900 MW-1 1/2" (for 1 1/2" MNPT)	#903 M (for 1 ¼" MNPT)



- Can be used for ammonia.
- Very accurate lift off and blow down make it ideal for Freon use.
- Can be mounted on a dual manifold with a center distance as low as 5", making it a possible substitute for the Frick AF valve.
- Has a 3" MNPT thread on the outlet which meets the ASHRAE Addendum 15c-2000 code.
- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion.
- Sealing surface is encapsulated Teflon.
- All springs are stainless steel.
- Each valve carries required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The 901 and 903 relief valves are available in set pressures from 150 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors. They are also certified in Canada.

**901Series and 903 Series Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... 901 SERIES AND 903 SERIES CAPACITY CHART

**901**  
**1 1/4" x 2" x 3"**  
**Relief Valve Capacity Chart**

**903**  
**1 1/2" x 2" x 3"**  
**Relief Valve Capacity Chart**

Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
150	2727.85	208.30	12498.13	9582.49	159.71	25531.96	425.53	21593.79	359.90	24533.61	408.89
175	3145.30	240.18	14410.76	11048.92	184.15	29439.19	490.65	24898.34	414.97	28288.06	471.47
200	3562.75	272.06	16323.38	12515.36	208.59	33346.41	555.77	28202.90	470.05	32042.50	534.04
225	3980.20	303.93	18236.01	13981.79	233.03	37253.64	620.89	31507.46	525.12	35796.95	596.62
250	4397.65	335.81	20148.63	15448.23	257.47	41160.87	686.01	34812.02	580.20	39551.40	659.19
275	4815.10	367.69	22061.26	16914.66	281.91	45068.10	751.13	38116.58	635.28	43305.85	721.76
300	5232.55	399.56	23973.88	18381.10	306.35	48975.32	816.26	41421.14	690.35	47060.29	784.34
325	5650.00	431.44	25886.51	19847.54	330.79	52882.55	881.38	44725.69	745.43	50814.74	846.91
350	6067.45	463.32	27799.13	21313.97	355.23	56789.78	946.50	48030.25	800.50	54569.19	909.49
375	6484.90	495.20	29711.76	22780.41	379.67	60697.01	1011.62	51334.81	855.58	58323.64	972.06
400	6902.35	527.07	31624.38	24246.84	404.11	64604.24	1076.74	54639.37	910.66	62078.08	1034.63

Slope on Air: 15.18

# RELIEF VALVES... CS5602A

## CS5602A (H5600A Replacement in Kind)

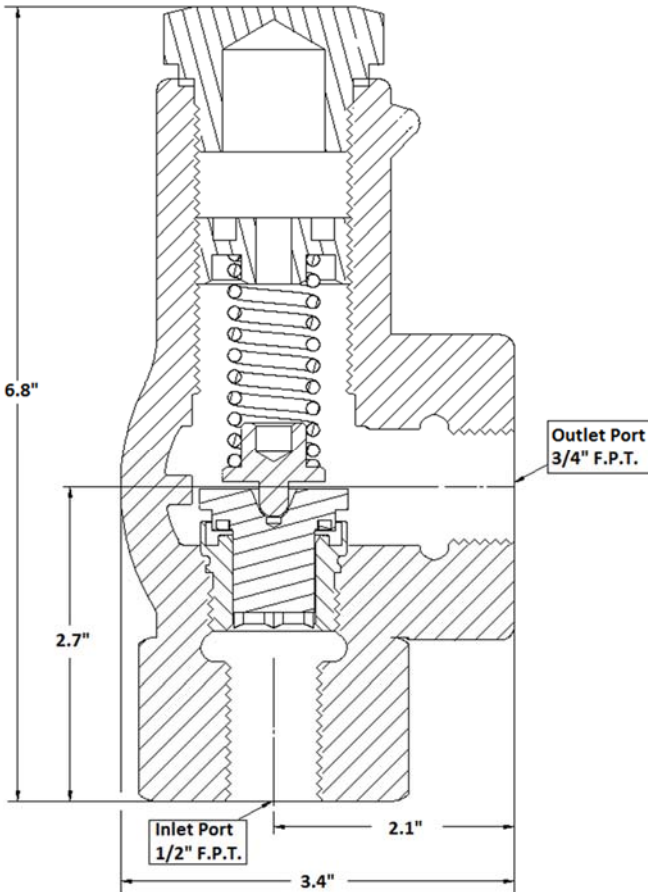


This pressure relief valve has the same inlet and outlet size as the 800 through 803 series, yet has a higher capacity. The ASME certified slope of 2.32 yields, for example, a capacity of 50.5 lbs per minute of air @ 250# set pressure.

Part #	NB Cert #	Body Material	Size
CS5602A	51185	60-14-40 Ductile Iron Casting	1/2" FNPT inlet x 3/4" FNPT outlet



#CS5602A safety relief valve can be mounted on the following manifolds:			
#843	1/2" x 1/2" x 1/2" FNPT	(hand wheel)	#843F 1/2" x 1/2" x 1/2" FNPT (seal cap)
#846M	1/2" x 1/2" x 1/2" FNPT	(seal cap)	#848M 3/4" x 1/2" x 1/2" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The CS5602A relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.

**CS5602A Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... CS5602A CAPACITY CHART

<b>CS5602A</b> <b>1/2" x 3/4"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	225	16.9	1017	791.8	13.20	2110	35.16	1784	29.74	2027	33.79
100	289	21.7	1305	1016	16.93	2707	45.11	2289	38.15	2601	43.35
125	353	26.5	1592	1240	20.66	3304	55.06	2794	46.57	3174	52.91
150	417	31.3	1880	1464	24.40	3900	65.01	3299	54.98	3748	62.47
175	480	36.1	2168	1688	28.13	4497	74.96	3804	63.39	4321	72.02
200	544	40.9	2455	1912	31.87	5094	84.90	4308	71.81	4895	81.58
225	608	45.7	2743	2136	35.60	5691	94.9	4813	80.22	5469	91.1
250	672	50.5	3031	2360	39.33	6288	104.8	5318	88.64	6042	100.7
275	736	55.3	3318	2584	43.07	6885	114.7	5823	97.0	6616	110.3
300	799	60.1	3606	2808	46.80	7482	124.7	6328	105.5	7189	119.8
325	863	64.9	3894	3032	50.53	8079	134.6	6833	113.9	7763	129.4
350	927	69.7	4182	3256	54.27	8676	144.6	7337	122.3	8336	138.9
375	991	74.5	4469	3480	58.00	9272	154.5	7842	130.7	8910	148.5
400	1055	79.3	4757	3704	61.74	9870	164.5	8348	139.1	9484	158.1

**Slope on Air: 2.32**

# RELIEF VALVES... CS5602B

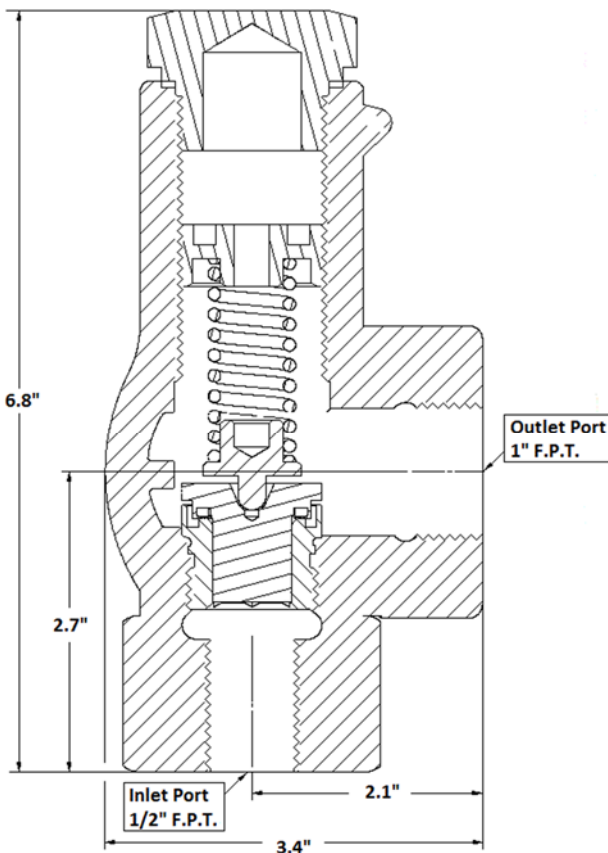
## CS5602B (H5601 Replacement in Kind)

This pressure relief valve has the same inlet and outlet size as the 812 and 813 valves, yet has a higher capacity. The ASME certified slope of 2.65 yields, for example, a capacity of 57.7 lbs per minute of air @ 250# set pressure.



Part #	NB Cert. #	Body Material	Size
CS5602B	51196	Ductile Iron Casting 60-40-18	½" FNPT inlet x 1" FNPT outlet

#CS5602B safety relief valve can be mounted on the following manifolds:			
#843	½" x ½" x ½" FNPT	(hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M	½" x ½" x ½" FNPT	(seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)



- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for AIR in units of SCFM.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- The CS5602B relief valve is available in set pressures from 75 to 400 psi. All relief valve common set pressures are in stock. Special settings can be made up at no extra charge and usually take 1 to 2 days.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.

**CS5602B Relief Valve Capacity Chart on Next Page**

# RELIEF VALVES... CS5602B CAPACITY CHART

<b>CS5602B</b> <b>1/2" x 1"</b> <b>Relief Valve Capacity Chart</b>											
Set or Release Pressure (PSIG)	Air SCFM 60 F 1 Atm	Air lb/min 60 F 1 Atm	Air lb/hr 60 F 1 Atm	NH3 lb/hr 60 F 1 Atm	NH3 lb/min 60 F 1 Atm	R-12 lb/hr 60 F 1 Atm	R-12 lb/min 60 F 1 Atm	R-22 lb/hr 60 F 1 Atm	R-22 lb/min 60 F 1 Atm	R-502 lb/hr 60 F 1 Atm	R-502 lb/min 60 F 1 Atm
75	258	19.4	1162	904.8	15.08	2411	40.18	2039	33.98	2317	38.61
100	330	24.8	1491	1161	19.35	3093	51.55	2616	43.60	2972	49.53
125	403	30.3	1819	1417	23.61	3775	62.91	3193	53.21	3627	60.45
150	476	35.8	2148	1673	27.88	4457	74.28	3769	62.82	4283	71.38
175	549	41.3	2477	1929	32.15	5139	85.65	4346	72.44	4938	82.30
200	622	46.8	2806	2185	36.41	5821	97.0	4923	82.05	5593	93.2
225	695	52.2	3134	2441	40.68	6503	108.4	5500	91.67	6249	104.1
250	768	57.7	3463	2697	44.95	7185	119.8	6077	101.3	6904	115.1
275	841	63.2	3792	2953	49.21	7867	131.1	6654	110.9	7560	126.0
300	913	68.6	4119	3209	53.48	8549	142.5	7231	120.5	8215	136.9
325	986	74.1	4449	3465	57.74	9231	153.9	7807	130.1	8870	147.8
350	1059	79.6	4778	3721	62.01	9913	165.2	8384	139.7	9526	158.8
375	1132	85.1	5107	3977	66.28	10596	176.6	8961	149.4	10181	169.7
400	1205	90.6	5436	4233	70.54	11278	188.0	9538	159.0	10837	180.6

Slope on Air: 2.65



# RELIEF VALVES... LIQUID (LQ) SERIES

## 803LQ 75, 803LQ 100, 805LQ 100



803LQ



805LQ

The 803LQ and 805LQ are for liquid use only.

Part #	NB Cert. #	Body Material	Size
803LQ 75	51039	Ductile Iron Casting 60- 40-18	½" FNPT inlet x ¾" FNPT outlet
803LQ 100	51073	Ductile Iron Casting 60- 40-18	½" FNPT inlet x ¾" FNPT outlet
805LQ 100	51062	Ductile Iron Casting 60- 40-18	1" FNPT inlet x 1 ¼" FNPT outlet

### #803LQ safety relief valve can be mounted on the following manifolds:

#843 ½" x ½" x ½" FNPT (hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M ½" x ½" x ½" FNPT (seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)

### #805LQ safety relief valve can be mounted on the following manifolds:

#843 ½" x ½" x ½" FNPT (hand wheel)	#843F ½" x ½" x ½" FNPT (seal cap)
#846M ½" x ½" x ½" FNPT (seal cap)	#848M ¾" x ½" x ½" FNPT (seal cap)

803LQ and 805LQ engineering drawings on reverse side

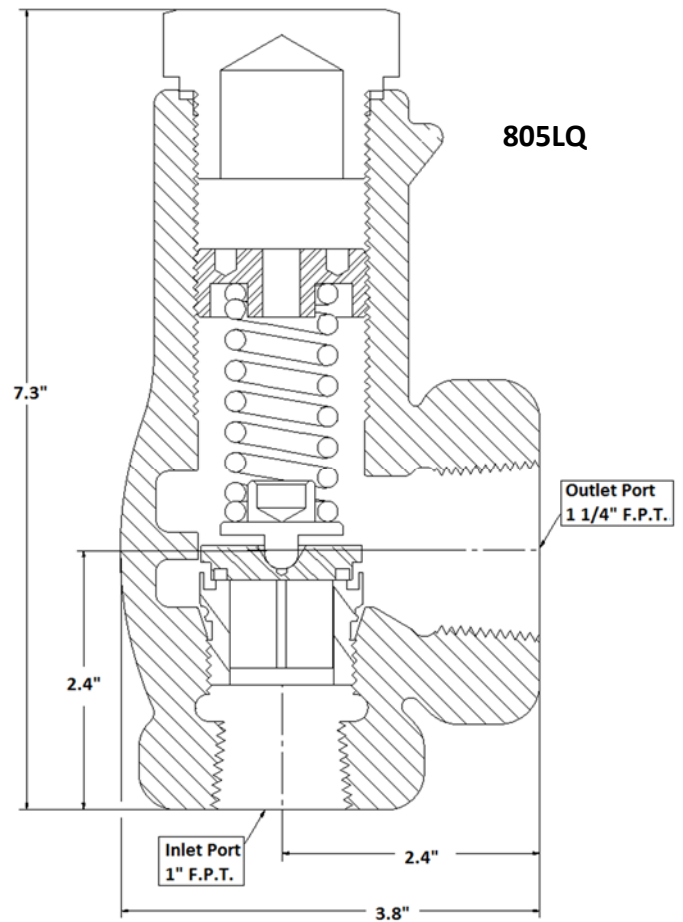
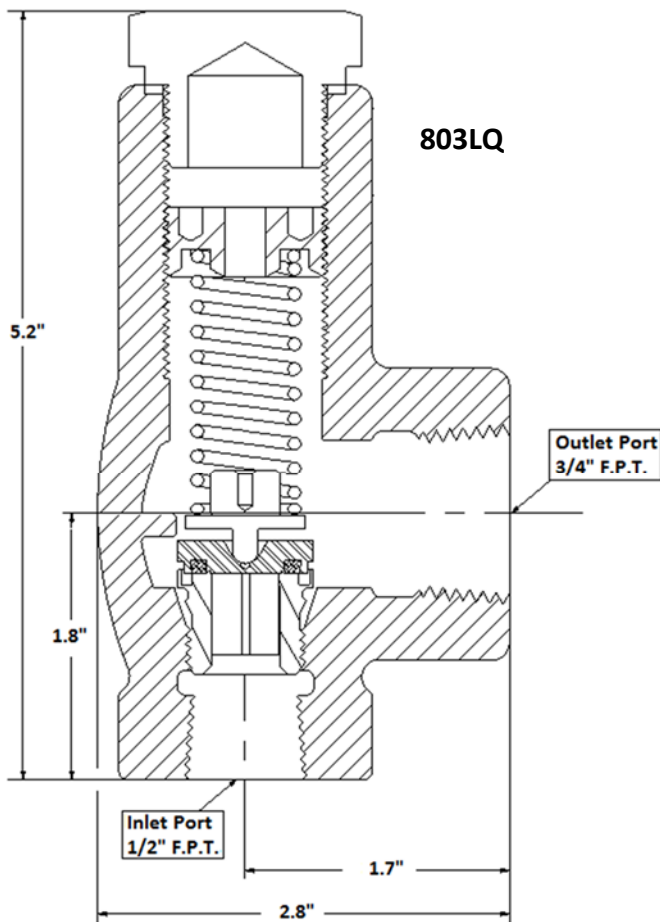
- For liquid use only.
- The 803LQ series of relief valves is available in set pressures of 75 and 100 psi.
- The 805LQ series of relief valves is available in set pressure of 100 psi.
- Body is painted blue.
- There is no seat leakage of 803LQ up to 85% of set pressure.
- All upper and lower seats are constructed from 304 stainless steel to prevent corrosion and embedded with a Teflon ring.
- All springs are stainless steel.
- All relief valves come with an installation tag and cable tie.
- Each valve's identification tag has the required information of catalog number, month and year of manufacture with lot number, set pressure, inlet pipe size, and capacity for WATER in units of GMP.
- Each valve undergoes 3 separate test sequences to verify quality and set pressure, and then is sealed for security.
- All Shank Relief Valves are manufactured in accordance with ASME Quality Control Procedures and stamped with the ASME Certification Mark with UV designator.
- They are certified by the National Board of Boiler & Pressure Vessel Inspectors.

***LQ Series Relief Valve Capacity Charts on Next Page***

# RELIEF VALVES... LIQUID (LQ) SERIES CAPACITY CHARTS

803LQ Relief Valve Capacity Chart		
VALVE ASSEMBLY NUMBER	SET OR RELEASE PRESSURE (PSIG)	VALVE CAPACITY GPM
803LQ 75	75	20.7
803LQ 100	100	25.9

805LQ Relief Valve Capacity Chart		
VALVE ASSEMBLY NUMBER	SET OR RELEASE PRESSURE (PSIG)	VALVE CAPACITY GPM
805LQ 100	100	36.5

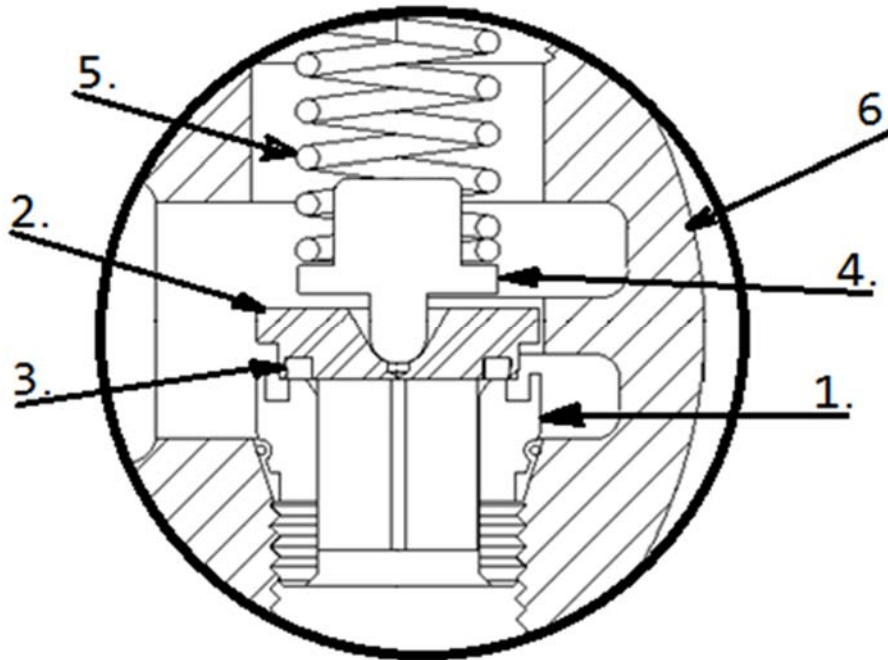


# RELIEF VALVES... TECHNICAL INFORMATION

## DESIGN INFORMATON

Our safety valve design features the most reliable method of safely relieving pressure. The virgin Teflon seal, mated with the stainless steel multiple crown ring, provides an outstanding sealing action. This combination assures a non-stick and accurate pop-off pressure release. The design incorporates a special extra lift, pop-open feature for high relieving capacity.

1. **LOWER SEAT.** Our highly polished stainless steel lower seat has triple crown sealing rings that are located at slightly different heights to provide compound sealing ability with the mating Teflon ring. This assures for a positive and leak-proof seal at any set pressure.
2. **UPPER SEAT.** A wing guided, stainless steel upper seat provides an excellent guidance for the high lift and reseating action.
3. **VIRGIN TEFLON RING.** A high quality virgin Teflon ring is locked positively into place in the upper seat by crimping the upper seat inward from both inside and outside to seal the ring. The ring is then machined smooth for an accurate seating surface.
4. **STAINLESS STEEL SPRING GUIDE.** The stainless steel uniform load spring guide has a spherical tip together with a spherical pit in the upper seat which provides for a concentric and axial spring force that will load the upper seat uniformly for a tight seal.
5. **STAINLESS STEEL SPRING.** The high quality, stainless steel wire springs have extra coils and a low pitch to provide a very uniform and concentric spring rate performance.
6. **VALVE BODY DESIGN.** Our valve body is designed with heavy thickness sections to withstand the stresses of the pressure chamber area. It is cast from ductile iron which meets the ASME—SA 395 grade 60-40-18 requirements.



# RELIEF VALVES... TECHNICAL INFORMATION

## REQUIRED VALVE CAPACITY FOR PRESSURE VESSELS

The ANSI/ASHRAE 15-1994 Safety Code give the following formula for determining the necessary relief valve capacity for a given pressure vessel. The minimum required discharge capacity of the safety relief valve shall be:  $C = 13.1(f)(D)(L)$  where:



Relief Valve Capacity Formula	
C	= Minimum required discharge capacity of the relief valve in SCFM of AIR
13.1	= Constant to convert AIR, LB/MIN to SCFM
f	= Factor dependent upon kind of refrigerant:
	Ammonia (Refrigerant 717) f = 0.5
	Refrigerant 12, 22, & 500 f = 1.6
D	= Outside Diameter of vessel in ft.
L	= Length of vessel in ft.

## SIZES and WEIGHTS

The sizes below are normal for cast surfaces. The weight is approximate for the median pressure setting spring unit used.

Size and Weight Specifications											
	800 <sup>2</sup> , 801 <sup>2</sup> , 800SS <sup>2</sup> , 801SS <sup>2</sup>	800QR <sup>2</sup> , 800QRW <sup>1</sup>	800D, 801D, 801DHC, 803	803QC	812 & 813	804, 804R	814	805, 805R	815	CS5602A	CS5602B
Inlet Port FNPT	1/2"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	1"	1"	1/2"	1/2"
Outlet Port FNPT	3/4"	3/4"	3/4"	3/4"	1"	1"	1 1/4"	1 1/4"	1 1/2"	3/4"	1"
L—Inlet Pipe C/L to Outlet Face	1.1"	1.3"	1.7"	1.25"	1.7"	2.0"	2.0"	2.4"	2.4"	2.1"	2.1"
M—Back of Body to Outlet Face	2.2"	2.4"	2.8"	2.5"	2.8"	3.3"	3.3"	3.8"	3.8"	3.4"	3.4"
N— Outlet Pipe C/L to Top of Cap	3.2"	3.2"	3.4"	3.6"	3.4"	4.0"	4.0"	4.9"	4.9"	4.1"	4.1"
P—Outlet Pipe C/L to Inlet Face	2.8"	2.8"	1.8"	1.9"	1.8"	2.0"	2.0"	2.4"	2.4"	2.7"	2.7"
Weight approx. (LBS)	3.2	3.8	3.2	4.4	3.2	5.3	5.3	7.9	7.9	6.25	6.2

<sup>1</sup> Socket Weld instead of NPT

<sup>2</sup> MNPT inlet port

## ***Piping Relief Valves Back Into the System***

Refrigeration systems containing large ammonia charges (>10,000 pounds) can benefit by piping relief valves back into the system. Safety pressure relief valves are subject to "inspection and testing" periodically under the Mechanical Integrity provisions of OSHA Professional Safety management and EPA Risk Management Programs. Relief valves that are piped back into the system can be expected to perform over much longer periods between inspections than relief valves exposed to contaminants and corrosion from exposure to the atmosphere. Another benefit of discharging back into the system is the avoidance of liquid spills from oil pots, liquid coolers, and other liquid filled components.

When piping relief valves back into the system, the total of the set points of relief valves in series should not exceed the allowed working pressure of upstream components. Following are a few examples of suitable application of piping relief valves back into the system:

- 400 psi Oil Coolers on screw compress:  
Use 75 psi or 100 psi set point liquid relief valves discharging into 300 psi oil separator.
- 250 psi Surge drums on evaporators:  
Use 75 psi or 100 psi set point valves discharging to suction line downstream of the suction stop valve, using 250 psi set point valves on the main house accumulator.
- 250 psi Evaporative condensers:  
A relief valve is not required on evaporative condenser coils, however, when desired, use 75 psi or 100 psi set point valve discharging to the condenser drain downstream of the condenser outlet stop valve.
- 250 psi Oil drain drum:  
Use 75 psi or 100 psi set point valve discharging to 250 psi accumulator.
- 250 psi Shell and tube or boudelot plate evaporator.  
Use 75 psi or 100 psi set point valve discharging to 250 psi suction downstream of evaporator outlet stop valve.
- 300 psi Screw compressor:  
Use 250 psi set point valve discharging to suction line upstream of suction stop valve. This valve is primarily to protect motor from overload in case screw is started with a closed discharge valve.

The effect of the potential from discharges of upstream relief valves should be considered in sizing downstream atmospheric safety relief valves

## ***To Maintain Tight Seating Relief Valves***

Manufacturers of Safety Relief valves cannot guarantee that your valves will reseal, because of the potential for particulate matter within the system that may become embedded on the seat ring during a release.

To prevent operational releases, high pressure cut-out switches should be calibrated annually.

To insure tight closing Safety Relief Valves, the high pressure cut-out switch should stop the compressors at 80% of the set point of the Safety Relief Valve.

In the event of an accidental higher pressure excursion, it is comforting to know that your Shank Safety Relief Valves have the best chance of reseating after a release. However, industry practices, as reflected in trade association recommendations such as IIAR Bulletin 110, suggest that Relief Valves which have discharged in service due to temporary excessive over pressure should be replaced at the first opportunity even though they may be, temporarily, maintaining a pressure-tight seal.

# RELIEF VALVES... TECHNICAL INFORMATION

## Safety Relief Valve Slope on Air

Safety Relief Valve Slope on Air				
Valve	Inlet	Outlet	Flow Area	Slope
800, 800QR, 800QRW*, 800SS	1/2" MNPT	3/4" FNPT	0.02771	0.42
800D	1/2" FNPT	3/4" FNPT	0.02771	0.42
801, 801SS	1/2" MNPT	3/4" FNPT	0.0487	0.73
801D	1/2" FNPT	3/4" FNPT	0.0487	0.73
801DHC	1/2" FNPT	3/4" FNPT	—	0.781
812	1/2" FNPT	1" FNPT	0.1312	1.339
803, 803QC	1/2" FNPT	3/4" FNPT	0.1312	1.978
813	1/2" FNPT	1" FNPT	0.1312	1.99
804	3/4" FNPT	1" FNPT	0.2821	3.05
804R	3/4" FNPT	1" FNPT	0.452	1.63
814	3/4" FNPT	1 1/4" FNPT	0.2821	3.29
805	1" FNPT	1 1/4" FNPT	0.866	4.09
805R	1" FNPT	1 1/4" FNPT	0.168	2.1
815	1" FNPT	1 1/2" FNPT	0.866	4.09
850D,850A	3/4", 1", or 1 1/4" MNPT	1 1/2" FNPT	0.442	6.17
850RD, 850RA	3/4", 1", or 1 1/4" MNPT	1 1/2" FNPT	—	2.5
851D,851A	3/4", 1", or 1 1/4" MNPT	2" MNPT	0.442	6.17
851D,851A	3/4", 1", or 1 1/4" MNPT	2" MNPT	—	6.17
901D,901A	1 1/4" FNPT	2"FNPT, 3"MNPT	1.2275	15.18
903D,903A	1 1/2" FNPT	2"FNPT, 3"MNPT	1.2275	15.18
CS5602A	1/2" FNPT	3/4" FNPT	0.282	2.32
CS5602B	1/2" FNPT	1" FNPT	—	2.65

Capacity Formula on Air:

$[(\text{Set Pressure} \times 1.1) + 14.7] \times \text{Slope} = \text{S.C.F.M.}$

$\text{S.C.F.M.} \times .0764 = \text{Lbs/Min/Air}$

\*Socket Weld instead of NPT

# RELIEF VALVES... TECHNICAL INFORMATION

## *Safety Relief Valve Tests— Acceptable Range of Pop-off and Blow Down Pressures*

ACCEPTABLE RANGE OF POP-OFF PRESSURES AND BLOWDOWN (CLOSE) PRESSURES							
NOTE: VALVES MUST EXHIBIT A DEFINITE OPEN AND CLOSE PRESSURE							
SET PRESSURE	ACCEPTABLE POP-OFF PRESSURE RANGE PSIG	ACCEPTABLE BLOWDOWN OF CLOSE PRESSURE RANGE PSIG					
		800 , 800QR, 800QRW, 801, & 801DHC	803, 803QC, 812, & 813	804 & 814	804R	805 & 815	805R
50	49-51	36-44	28-33				
75	73.5 - 76.5	54 - 66	41 - 49	56 - 64	52-60	56 - 62	61-67
100	98 - 102	72 - 88	55 - 65	75 - 85	69-79	75 - 83	81-89
125	122.5 - 127.5	90 - 110	69 - 81	94 - 106	87-99	94 - 104	102-112
150	147 - 153	108 - 132	82 - 98	112 - 127	104-119	112 - 124	122-134
175	171.5 - 178.5	126 - 154	96 - 114	131 - 148	122-139	131 - 145	142-156
200	196 - 204	144 - 177	110 - 130	150 - 170	139-159	150 - 166	163-179
225	220.5 - 229.5	161 - 199	124 - 146	168 - 191	156-179	168 - 186	183-201
250	245 - 255	179 - 221	137 - 163	187 - 212	174-199	187 - 207	203-223
275	269.5 - 280.5	197 - 243	151 - 179	206 - 233	191-219	206 - 228	223-245
300	294 - 306	215 - 265	165 - 195	225 - 255	208-238	225 - 249	244-268
325	318.5 - 331.5	233 - 287	179 - 211	243 - 276	226-258	243 - 269	264-290
350	343 - 357	251 - 309	192 - 228	262 - 297	243-278	262 - 290	284-312
375	367.5 - 382.5	269 - 331	206 - 244	281 - 318	261-298	281 - 311	305-335
400	392 - 408	287 - 353	220 - 260	299 - 339	278-318	299 - 331	325-357

NOTE: POP-OFF PRESSURE MAXIMUM VARIANCE IS +2%

BLOWDOWN (CLOSE) PRESSURE RANGE IS APPROX. BETWEEN 35% AND 45%

**Note:** Valves must exhibit a definite open and close pressure.

# RELIEF VALVES... TECHNICAL INFORMATION

## *Safety Relief Valve Tests— Acceptable Range of Pop-off and Blow Down Pressures (Continued)*

ACCEPTABLE RANGE OF POP-OFF PRESSURES AND BLOWDOWN (CLOSE) PRESSURES					
NOTE: VALVES MUST EXHIBIT A DEFINITE OPEN AND CLOSE PRESSURE					
SET PRESSURE	ACCEPTABLE BLOWDOWN OF CLOSE PRESSURE RANGE PSIG				
	CS5602A	CS5602B	850 & 851	850R & 851R	901 & 903
50					
75	50-58	53-61			
100	67-77	71-81			
125	83-96	89-102			
150	100-115	107-122	81 - 102	69-90	105 - 125
175	116-134	125-142	95 - 119	81-105	123 - 145
200	133-153	142-163	108 - 136	92-120	140 - 166
225	150-173	160-183	122 - 153	104-135	158 - 187
250	166-192	178-203	135 - 170	115-150	175 - 208
275	183-211	196-224	149 - 187	127-165	193 - 229
300	200-230	214-244	162 - 204	138-180	210 - 249
325	216-249	231-264	176 - 221	150-195	228 - 270
350	233-269	249-285	189 - 238	161-210	245 - 291
375	250-288	267-305	203 - 255	173-225	263 - 312
400	266-307	285-325	216 - 272	184-240	280 - 332

NOTE: POP-OFF PRESSURE MAXIMUM VARIANCE IS +2%

BLOWDOWN (CLOSE) PRESSURE RANGE IS APPROX. BETWEEN 35% AND 45%

Note: Valves must exhibit a definite open and close pressure.



# RELIEF VALVES...



# MANIFOLDS... SHUT-OFF, HAND WHEEL OR SEAL CAP

## 843, 844, 845; 843F, 844F, 845F; 843B, 844B, 845B



Manifold shut-off valves are designed for use in dual relief valve installations. This valve operates with the intake and one outlet port open at all times.

- Valve bodies are compact in design.
- Stem is made of stainless steel.
- Valve ports are full sized and marked for ease of installation.
- Packing and gasket are made of Teflon.
- Each valve comes with instructions for use attached. DO NOT DISCARD.



Part #	Trimmings	Body Material	Max Pressure	Temp. Ratings	Use	Location
<b>843</b> <b>844</b> <b>845</b>	Stainless steel stem, hand wheel	Ductile Iron Casting, painted	400	-20°F (-29° C) to +300° F (+149°C)	Ammonia, refrigerants, industrial fluids not deleterious to cast iron or steel.	Manifolds used with atmospheric relief valves may be installed on systems w/temps to -150°F (-101°C) if ambient temperatures are normally above 32°F (0°C)

Part #	Trimmings	Body Material	Max Pressure	Temp. Ratings	Use	Location
<b>843F</b> <b>844F</b> <b>845F</b>	Stainless steel stem, seal cap	Ductile Iron Casting, painted	400	-20°F (-29° C) to +300° F (+149°C)	Ammonia, refrigerants, industrial fluids not deleterious to cast iron or steel. Also suitable for Freon.	Manifolds used with atmospheric relief valves may be installed on systems w/temps to -150°F (-101°C) if ambient temperatures are normally above 32°F (0°C)

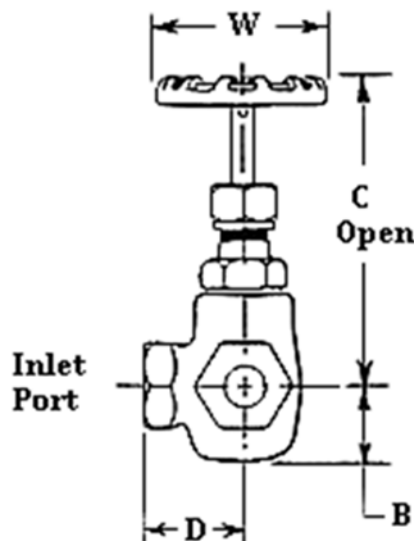
Part #	Trimmings	Body Material	Max Pressure	Temp. Ratings	Use	Location
<b>843B</b> <b>844B</b> <b>845B</b>	Stainless steel stem, brass internal seats, hand wheel	Brass	400	—	LOX (Liquid oxygen) or Freon	—

*Specifications for Manifold Shut-off Valves on Reverse Side*

# MANIFOLDS... SHUT-OFF, HAND WHEEL OR SEAL CAP SPECS

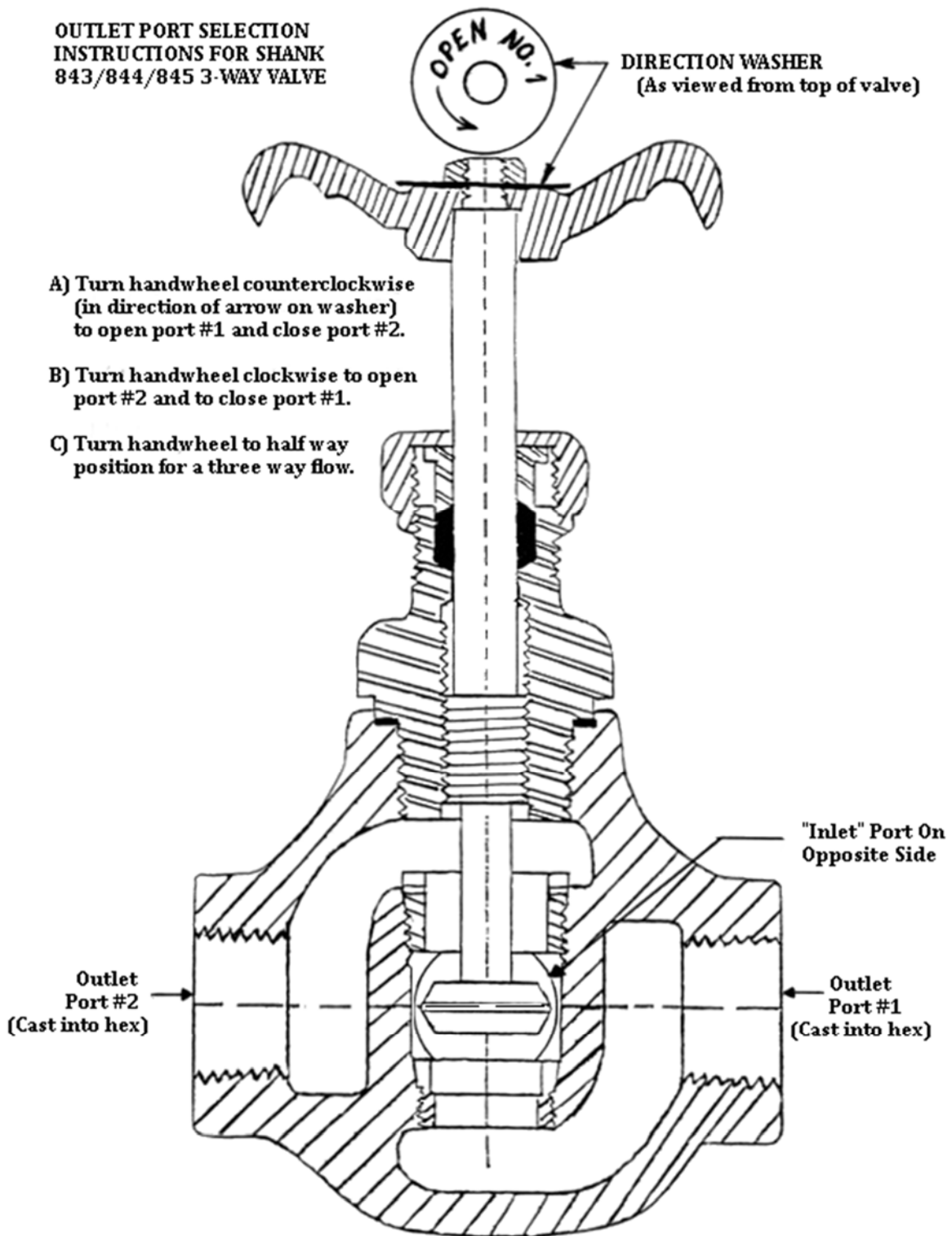
Specifications for Ductile Manifold Shut-off Valves (hand wheel and seal cap)						
Catalog Number	<b>843</b>	<b>843F</b>	<b>844</b>	<b>844F</b>	<b>845</b>	<b>845F</b>
Pipe Size	½"	½"	¾"	¾"	1"	1"
Port Sizes	½" x ½" x ½"	½" x ½" x ½"	¾" x ¾" x ¾"	¾" x ¾" x ¾"	1" x 1" x 1"	1" x 1" x 1"
Weight, lbs.	3 ¾	3 ¾	6 ½	7	8	10 1/4
Cv Values (both Ports)	3.6	3.6	6.8	6.8	11.5	11.5
Face to Face on Outlet Ports	3 ½"	3 ½"	4"	4"	5"	5"
B: Center to Bottom	1 ½"	1 ½"	1 ¾"	1 ¾"	1 7/8"	1 7/8"
C: Center to Top of Wheel (Open) or Seal Cap	5 ½"	6"	7 1/8"	7 ¾"	7 ½"	8"
D: Center to Face of Inlet Port	1 ¾"	1 ¾"	2"	2"	2 ¼"	2 ¼"
W: Diameter of Wheel	3 1/6"	N/A	4"	N/A	4 ½"	N/A

Specifications for Brass (LOX applications) Manifold Shut-off Valve (hand wheel)			
Catalog Number	<b>843B</b>	<b>844B</b>	<b>845B</b>
Pipe Size	½"	¾"	1"
Port Sizes	½" x ½" x ½"	¾" x ¾" x ¾"	1" x 1" x 1"
Weight, lbs.	3 ¾	6 ½	8 ½
Cv Values (both Ports)	3.6	6.8	11.5
Face to Face on Outlet Ports	3 ½"	4"	5"
B: Center to Bottom	1 ½"	1 ¾"	1 7/8"
C: Center to Top of Wheel (Open)	5 ½"	7 1/8"	7 ½"
D: Center to Face of Inlet Port	1 ¾"	2"	2 ¼"
W: Diameter of Wheel	3 1/6"	4"	4 ½"



# MANIFOLDS... SHUT-OFF, HAND WHEEL INSTRUCTIONS

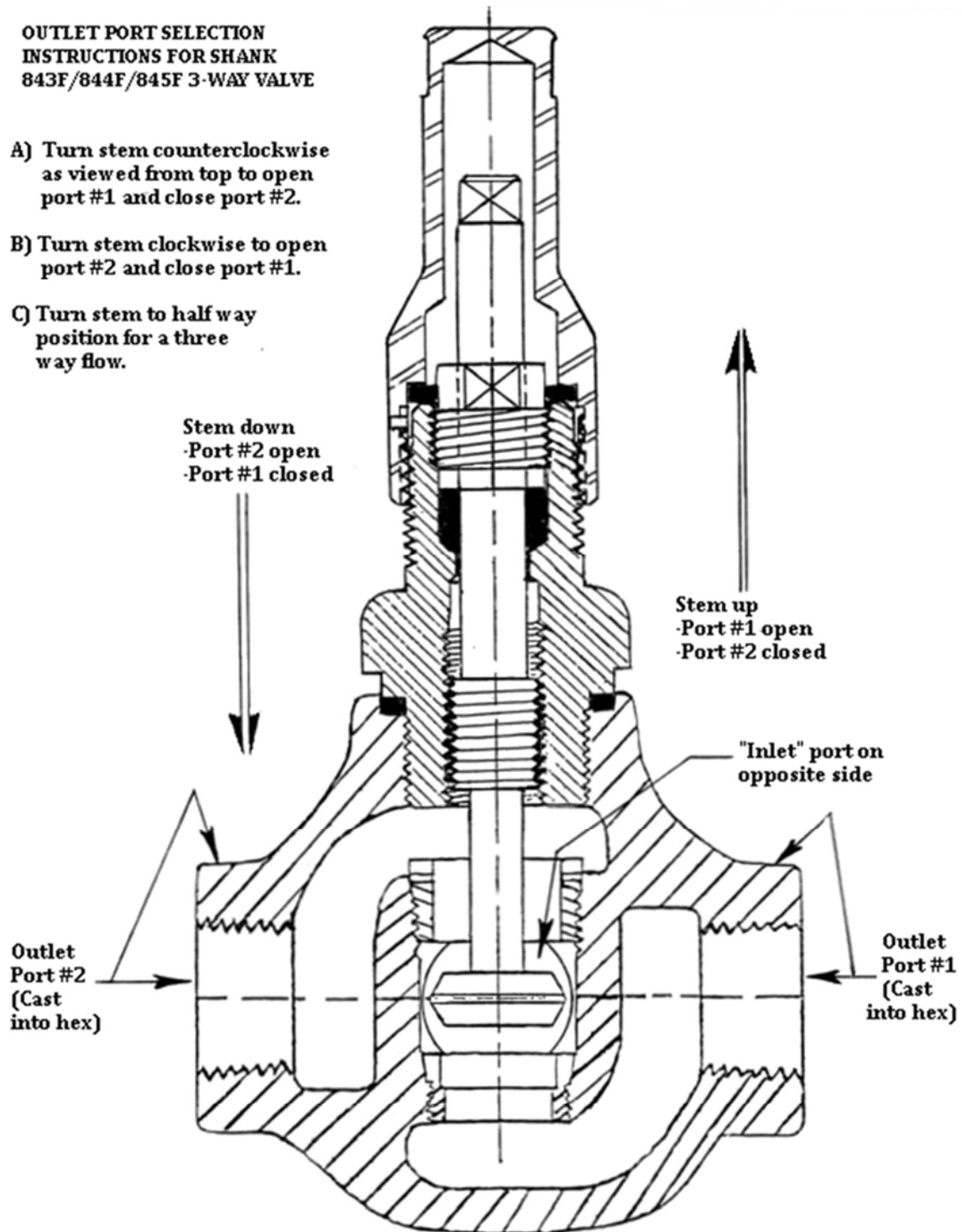
**OUTLET PORT SELECTION  
INSTRUCTIONS FOR SHANK  
843/844/845 3-WAY VALVE**



# MANIFOLDS... SHUT-OFF, SEAL CAP INSTRUCTIONS

## OUTLET PORT SELECTION INSTRUCTIONS FOR SHANK 843F/844F/845F 3-WAY VALVE

- A) Turn stem counterclockwise as viewed from top to open port #1 and close port #2.
- B) Turn stem clockwise to open port #2 and close port #1.
- C) Turn stem to half way position for a three way flow.



## MANIFOLDS... DUAL ASSEMBLY REQUIREMENTS

### Dual Relief Valve Assembly Requirements for:

**800, 800SS, 800QR, 801, 801SS, 801DHC, 803, 803QC, 812, 813, 804, 804R, 814, 805, 805R, 815, CS5602A, and CS5602B Relief Valves**

The Safety Code for Mechanical Refrigeration ANSI/ASHRAE 1994 requires a refrigeration system that incorporates pressure vessels that are 10 cubic feet internal volume or over to have a pressure relieving device, and must have a relief device system consisting of two (2) pressure relief valves in parallel on a three-way manifold.

The Shank dual assembly meets the requirements of this code which requires that one (1) relief valve must remain in an operable mode at all times while the other is serviced.

All Shank dual assemblies are assembled using high strength fittings, nipples, elbows, and unions. These fittings are rated for 300 psi at 550°F (287°C) or 2000 psi at 60°F (15.5°C).

**DUAL ASSEMBLY LESS UNIONS (DS):** Includes two (2) relief valves, one (1) three-way manifold shut-off valve, two (2) 90° elbows, and four (4) nipples. (Assemblies using 800, 800SS, 801, 801SS, 800QR, or 803QC valves have only two (2) nipples.) Only one side of the three-way valve can be closed at any time.



**DUAL ASSEMBLY WITH UNIONS (DU):** Includes two (2) relief valves, one (1) three-way manifold shut-off valve, four (4) 90° elbows, four (4) unions, one “tee” and twelve (12) nipples. (Assemblies using 800, 800SS, 801, 801SS, 800QR, or 803QC valves have only ten (10) nipples.) Only one side of the three-way valve can be closed at any time. This assembly will allow either valve to be changed without disturbing the piping.

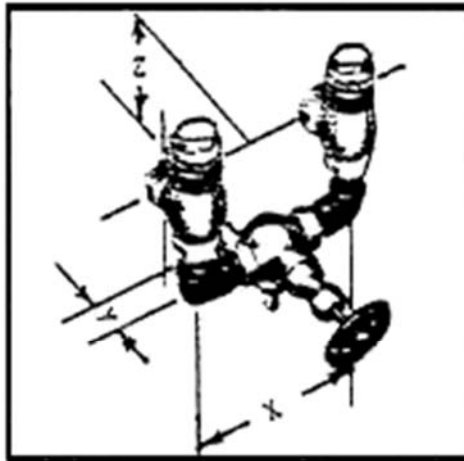


***Specifications for Dual Relief Valve Assemblies on Reverse Side***

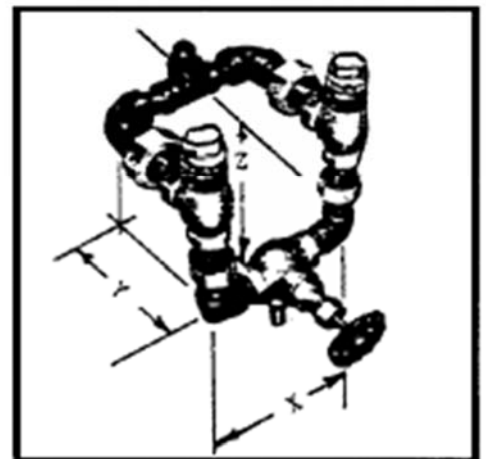
# MANIFOLDS... DUAL ASSEMBLIES SPECIFICATIONS

Size Specifications for Dual Assemblies																		
	800, 801, 800SS, 801SS		800QR		800D, 801D, 801DHC, 803		803QC		812, 813		804, 804R		814		805, 805R		815	
	DS	DU	DS	DU	DS	DU	DS	DU	DS	DU	DS	DU	DS	DU	DS	DU	DS	DU
Inlet port	½"	½"	½"	½"	½"	½"	½"	½"	½"	½"	¾"	¾"	¾"	¾"	1"	1"	1"	1"
Outlet port	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	1"	1"	1"	1"	1 ¼"	1 ¼"	1 ¼"	1 ¼"	1 ½"	1 ½"
X – width between valves at pipe C/L	6.8"	6.8"	6.8"	6.8"	6.8"	6.8"	6.8"	6.8"	6.8"	7.4"	8.0"	8.0"	8.0"	8.8"	9.5"	9.5"	9.5"	10.0"
Y – depth from inlet to outlet at pipe C/L	1.1"	5.5"	1.3"	5.3"	1.8"	5.8"	1.35"	5.35"	1.8"	7.0"	2.0"	6.8"	2.0"	8.0"	2.1"	8.0"	2.1"	8.5"
Z – inlet to outlet height at fitting face	5.5"	6.8"	5.5"	6.8"	5.0"	6.3"	5.1"	6.4"	5.0"	6.3"	5.8"	7.4"	5.8"	7.4"	7.0"	10.0"	7.0"	10.0"

Size Specs for Dual Assemblies, cont.				
	CS5602A		CS5602B	
	DS	DU	DS	DU
Inlet port	½"	½"	½"	½"
Outlet port	¾"	¾"	1"	1"
X – width between valves at pipe C/L	6.8"	6.8"	6.8"	7.4"
Y – depth from inlet to outlet at pipe C/L	2.1"	6.1"	2.1"	6.9"
Z – inlet to outlet height at fitting face	6.5"	8.1"	6.5"	8.1"



**DS (less unions)**



**DU (with unions)**

# MANIFOLDS... INLINE, ALL STEEL, WITHOUT COUPLINGS

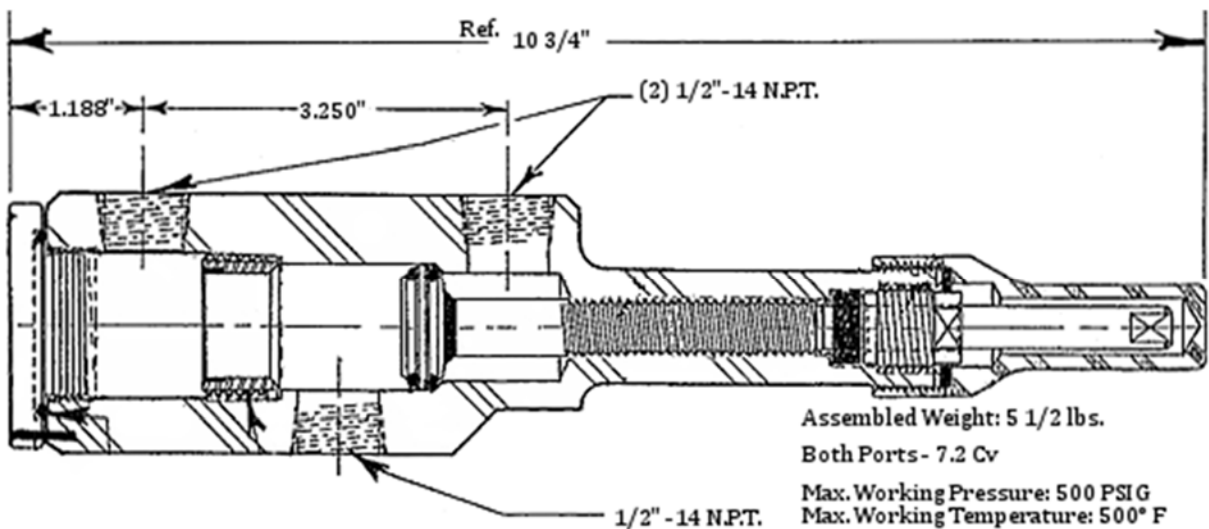
## 846M

The 846M manifold is a compact alternative to the 843 manifold. All steel and stainless steel construction. Both ports have a Cv rating of 7.2. The assembled weight is 5 1/2 lbs. (For heavy wall inlet pipe, see the 848M manifold.)



846M Port Sizes: 1/2" x 1/2" x 1/2" FNPT

846M manifold can be used with the following relief valves
#800, 800D, 800SS series 1/2" x 3/4" (lowest capacity – oil pots)
#800QR 1/2" MNPT inlet x 3/4" FNPT outlet (lowest capacity – quick release valve)
#801, 801D, 801SS series 1/2" x 3/4" (low capacity – small vessels)
#801DHC 1/2" FNPT inlet x 3/4" FNPT outlet (high capacity)
#803 1/2" FNPT x 3/4" FNPT (standard )
#803QC 1/2" FNPT inlet x 3/4" FNPT outlet (standard – quick connect valve)
#812 1/2" FNPT x 1" FNPT (medium capacity)
#813 1/2" FNPT x 1" FNPT (for ASHRAE piping tables)
#CS5602A 1/2" FNPT x 3/4" FNPT (high capacity)
#CS5602B 1/2" FNPT x 1" FNPT (high capacity)





# MANIFOLDS... INLINE, ALL STEEL, WITHOUT COUPLINGS

## 847M

The 847M manifold is a compact alternative to the 844 manifold. All steel and stainless steel construction. Both ports have a Cv rating of 13.7. (For heavy wall inlet pipe, see the 849M manifold.) The assembled weight is 6 lbs.



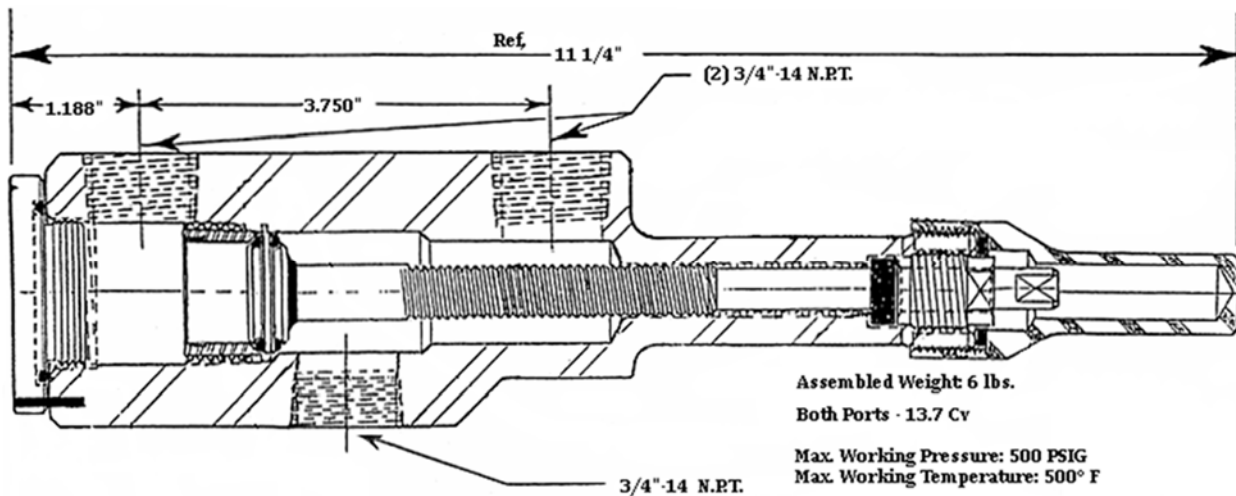
847M Port Sizes: 3/4" x 3/4" x 3/4" FNPT

847M manifold can be used with the following relief valves

#804 3/4" x 1" (standard)

#804R 3/4" x 1" (low capacity)

#814 3/4" x 1 1/4" (for ASHRAE piping tables)



# MANIFOLDS... INLINE, ALL STEEL, WITHOUT COUPLINGS

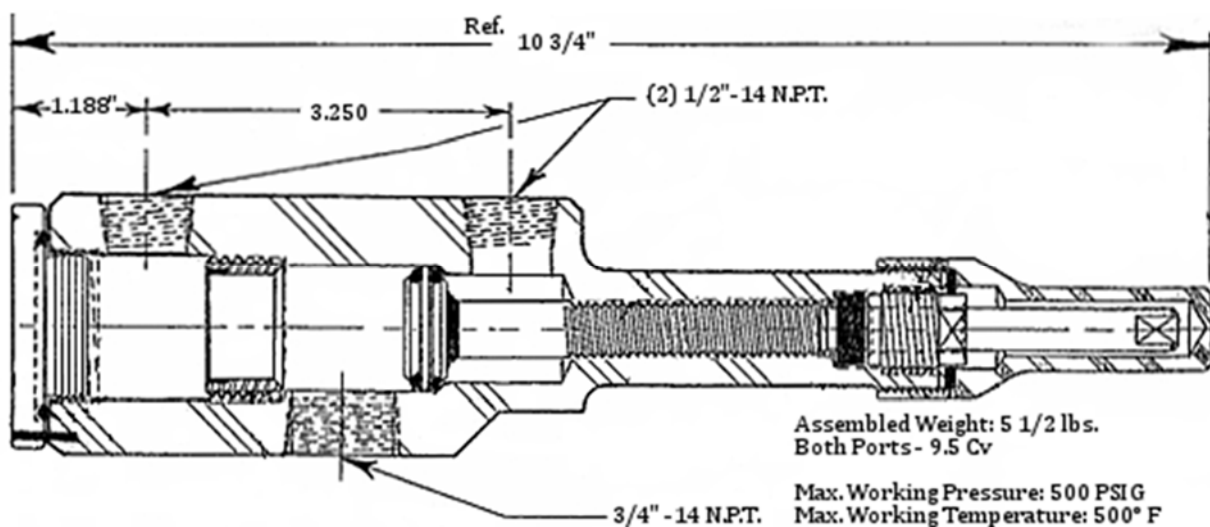
## 848M

The 848M manifold is a compact alternative to the 843 manifold. All steel and stainless steel construction. Both ports have a Cv rating of 9.5. The 848M has a 3/4" NPT inlet to allow use of schedule 80 pipe without pressure drop. (For standard 1/2" x 1/2" x 1/2" see the 846M manifold) The assembled weight is 6 lbs.



848M Port Sizes: 3/4" x 1/2" x 1/2" FNPT

848M manifold can be used with the following relief valves
#800, 800D, 800SS series 1/2" x 3/4" (lowest capacity – oil pots)
#800QR 1/2" MNPT inlet x 3/4" FNPT outlet (lowest capacity— quick release valve)
#801, 801D, 801SS series 1/2" x 3/4" (low capacity – small vessels)
#801DHC 1/2" FNPT inlet x 3/4" FNPT outlet (high capacity)
#803 1/2" FNPT x 3/4" FNPT (standard )
#803QC 1/2" FNPT inlet x 3/4" FNPT outlet (standard — quick connect valve)
#812 1/2" FNPT x 1" FNPT (medium capacity)
#813 1/2" FNPT x 1" FNPT (for ASHRAE piping tables)
#CS5602A 1/2" FNPT x 3/4" FNPT (high capacity)
#CS5602B 1/2" FNPT x 1" FNPT (high capacity)



# MANIFOLDS... INLINE, ALL STEEL, WITHOUT COUPLINGS

## 849M

The 849M manifold is a compact alternative to the 844 manifold. All steel and stainless steel construction. Both ports have a Cv rating of 16. The 849M has a 1" NPT inlet to allow use of schedule 80 pipe without pressure drop. (For standard 3/4" x 3/4" x 3/4" see the 847M manifold.) The assembled weight is 6 lbs.



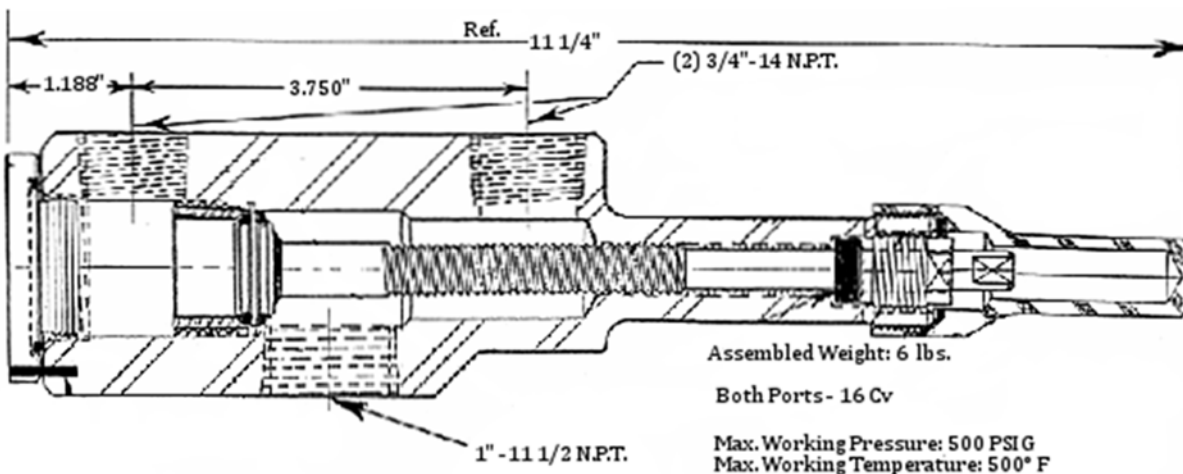
849M Port Sizes: 1" x 3/4" x 3/4" FNPT

849M manifold can be used with the following relief valves

#804 3/4" x 1" (standard)

#804R 3/4" x 1" (low capacity)

#814 3/4" x 1 1/4" (for ASHRAE piping tables)



# MANIFOLDS... INLINE, ALL STEEL, WITH COUPLINGS

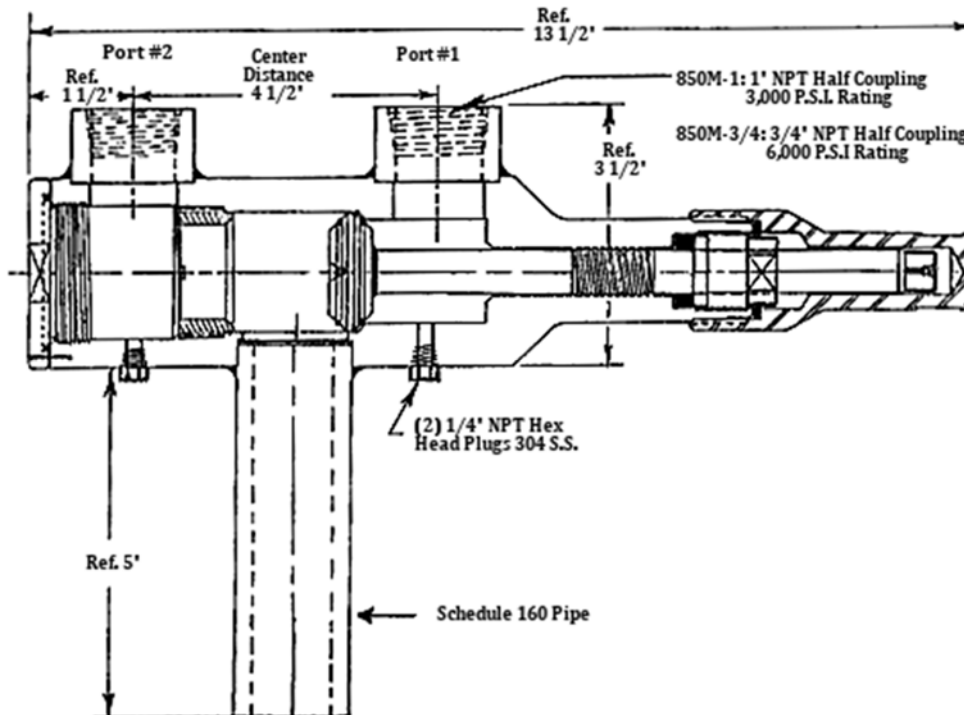
## 850MW-3/4" and 850MW-1"

High capacity manifolds, all steel and stainless steel construction with Teflon O-rings on the stem. Due to Teflon sealing surfaces, these manifolds are rated for 500°F and 500# pressure. Cv rating for both ports is 18.2 (for the 850MW-3/4"), and 25.6 (for the 850MW-1"). Inlet port is schedule 160 seamless pipe welded to manifold body for mounting on insulated vessels. Manifold weight is 12 1/2 lbs.



850MW-3/4" Port Sizes:	1 1/4" x 3/4" FNPT x 3/4" FNPT
850MW-1" Port Sizes:	1 1/4" x 1" FNPT x 1" FNPT

850MW manifolds can be used with the following relief valves		
Part #	Relief Valve	Assembly Weight (lb.)
850MW- 3/4"	804 3/4" x 1" FNPT	23
	804R 3/4" x 1" FNPT	23
	814 3/4" x 1 1/4" FNPT	23
	850D-3/4" & 850RD-3/4" 3/4" MNPT x 1 1/2" FNPT	37 1/2
	850A-3/4" & 850RA-3/4" 3/4" MNPT x 1 1/2" FNPT	26 1/2"
	851D-3/4" & 851RD-3/4" 3/4" MNPT x 2" FNPT	37 1/2
850MW-1"	851A-3/4" & 851RA-3/4" 3/4" MNPT x 2" FNPT	26 1/2"
	805 1" x 1 1/4" FNPT	28 1/2
	805R 1" x 1 1/4" FNPT	28 1/2
	815 1" x 1 1/2" FNPT	28 1/2
	850D-1" & 850RD-1" 1" MNPT x 1 1/2" FNPT	37 1/2
	850A-1" & 850RA-1" 1" MNPT x 1 1/2" FNPT	26 1/2"
851D-1" & 851RD-1" 1" MNPT x 2" FNPT	37 1/2	
851A-1" & 851RA-1" 1" MNPT x 2" FNPT	26 1/2"	



# MANIFOLDS... INLINE, ALL STEEL, WITH COUPLINGS

## 875M and 876M

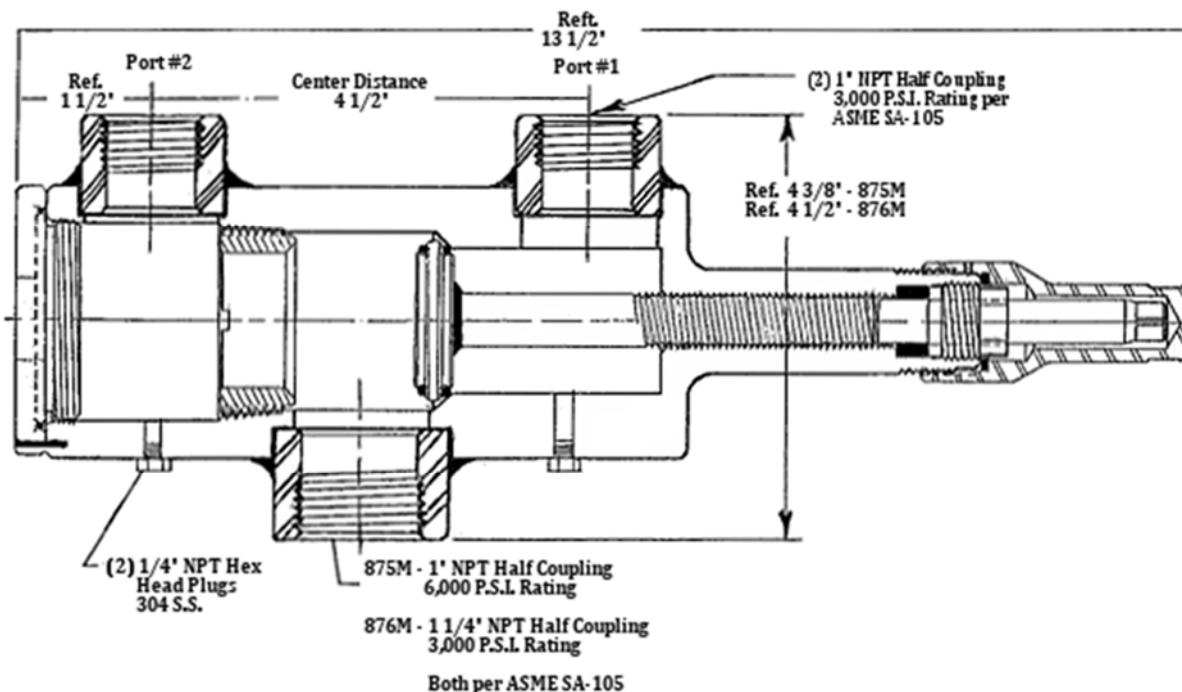
High capacity manifolds, all steel and stainless steel construction with Teflon O-rings on the stem. Due to Teflon sealing surfaces, these manifolds are rated for 500°F and 500# pressure. These manifolds have couplings welded on the inlet instead of a schedule 160 pipe. Cv rating for both ports is 25.0 (for the 875M), and 26.6 (for the 876M). Manifold weight is 12 lbs.



875M Port Sizes: 1" x 1" FNPT x 1" FNPT

876M Port Sizes: 1 1/4" x 1" FNPT x 1" FNPT

875M and 876M manifolds can be used with the following relief valves		
Relief Valve		Assembly Weight (lb.)
805	1" x 1 1/4" FNPT	28
805R	1" x 1 1/4" FNPT	28
815	1" x 1 1/2" FNPT	28
850D- 1" & 850RD-1"	1" MNPT x 1 1/2" FNPT	37
850A- 1" & 850RA-1"	1" MNPT x 1 1/2" FNPT	26
851D- 1" & 851RD-1"	1" MNPT x 2" FNPT	37
851A- 1" & 851RA-1"	1" MNPT x 2" FNPT	26



# MANIFOLDS... INLINE, ALL STEEL, WITH COUPLINGS

## 900ME-1 1/4" and 900ME-1 1/2"



High capacity manifolds intended for use with Shank 901 and 903 relief valves. All steel and stainless steel construction with Teflon O-rings on the stem. Due to Teflon sealing surfaces, these manifolds are rated for 500°F and 500# pressure. These manifolds have schedule 160 pipe with MNPT threading welded to the inlet. Cv rating for both ports is 47.5 (for the 900ME 1 1/4"), and 66 (for the 900ME 1 1/2"). Manifold weight is 31 lbs.

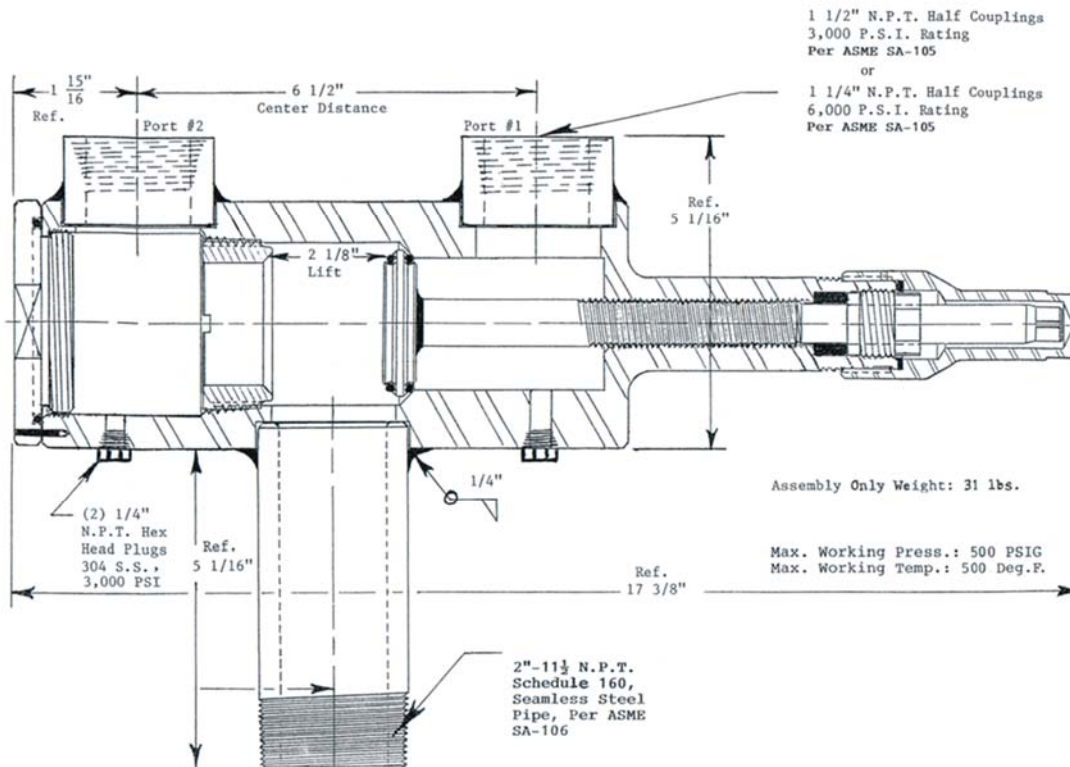
900ME-1 1/4" Port Sizes: 2" MNPT x 1 1/4" FNPT x 1 1/4" FNPT

900ME-1 1/2" Port Sizes: 2" MNPT x 1 1/2" FNPT x 1 1/2" FNPT

900ME-1 1/4" and 900ME-1 1/2" manifolds can be used with the following relief valves	
Relief Valve	Assembly Weight (lb.)
901D 1 1/4" x 2" x 3"	81
901A 1 1/4" x 2" x 3"	56
903D 1 1/2" x 2" x 3"	81
903A 1 1/2" x 2" x 3"	56

900ME-1 1/4" manifold can be used with the following relief valves	
Relief Valve	Assembly Weight (lb.)
850D & 850RD 1 1/4" MNPT x 1 1/2" FNPT	56
850A & 850RA 1 1/4" MNPT x 1 1/2" FNPT	45
851D & 851RD 1 1/4" MNPT x 1 1/2" FNPT	56
851A & 851RA 1 1/4" MNPT x 1 1/2" FNPT	45



# MANIFOLDS... INLINE, ALL STEEL, WITH COUPLINGS

## 900MW-1 1/4" and 900MW-1 1/2"

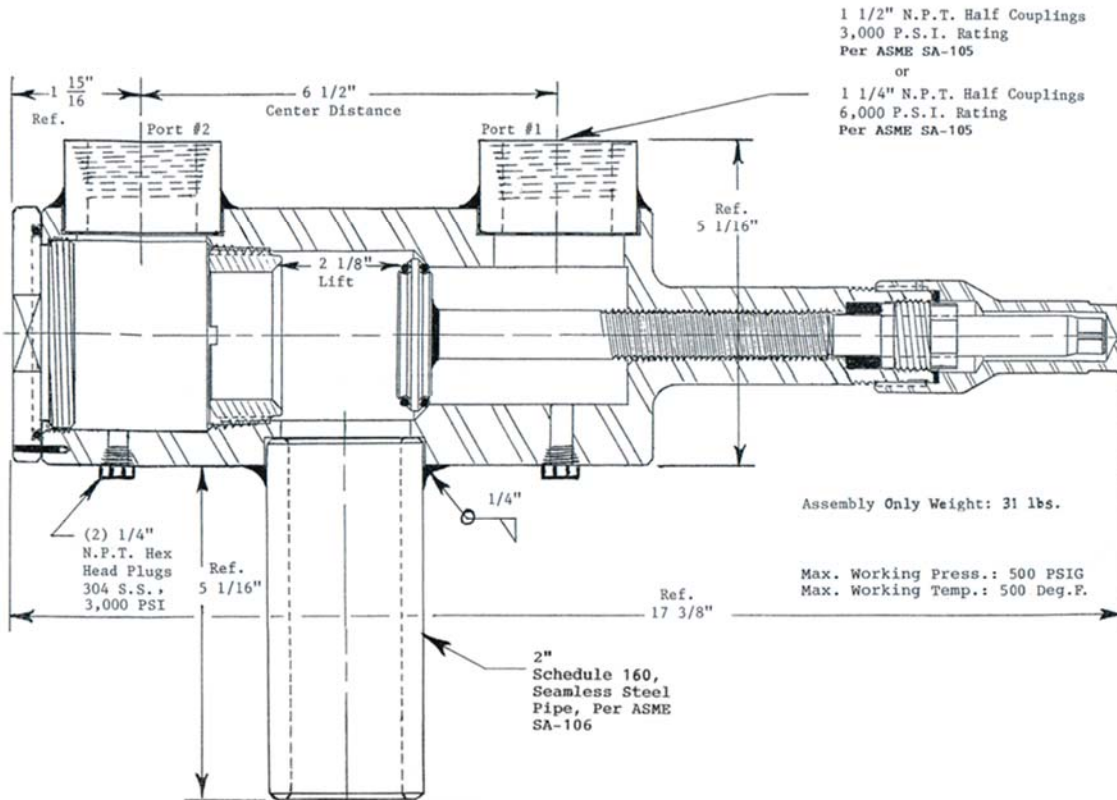
High capacity manifolds intended for use with Shank 901 and 903 relief valves. All steel and stainless steel construction with Teflon O-rings on the stem. Due to Teflon sealing surfaces, these manifolds are rated for 500°F and 500# pressure. Inlet port is schedule 160 seamless pipe welded to manifold body for mounting on insulated vessels. Cv rating for both ports is 47.5 (for the 900MW 1 1/4"), and 66 (for the 900MW 1 1/2"). Manifold weight is 31 lbs.



900MW-1 1/4" Port Sizes: 2" x 1 1/4" FNPT x 1 1/4" FNPT

900MW-1 1/2" Port Sizes: 2" x 1 1/2" FNPT x 1 1/2" FNPT

900ME-1 1/4" and 900ME-1 1/2" manifolds can be used with the following relief valves	
Relief Valve	Assembly Weight (lb.)
901D 1 1/4" x 2" x 3"	81
901A 1 1/4" x 2" x 3"	56
903D 1 1/2" x 2" x 3"	81
903A 1 1/2" x 2" x 3"	56
900ME-1 1/4" manifold can be used with the following relief valves	
Relief Valve	Assembly Weight (lb.)
850D & 850RD 1 1/4" MNPT x 1 1/2" FNPT	56
850A & 850RA 1 1/4" MNPT x 1 1/2" FNPT	45
851D & 851RD 1 1/4" MNPT x 1 1/2" FNPT	56
851A & 851RA 1 1/4" MNPT x 1 1/2" FNPT	45



# MANIFOLDS... INLINE, ALL STEEL, WITH COUPLINGS

## 901M and 903M

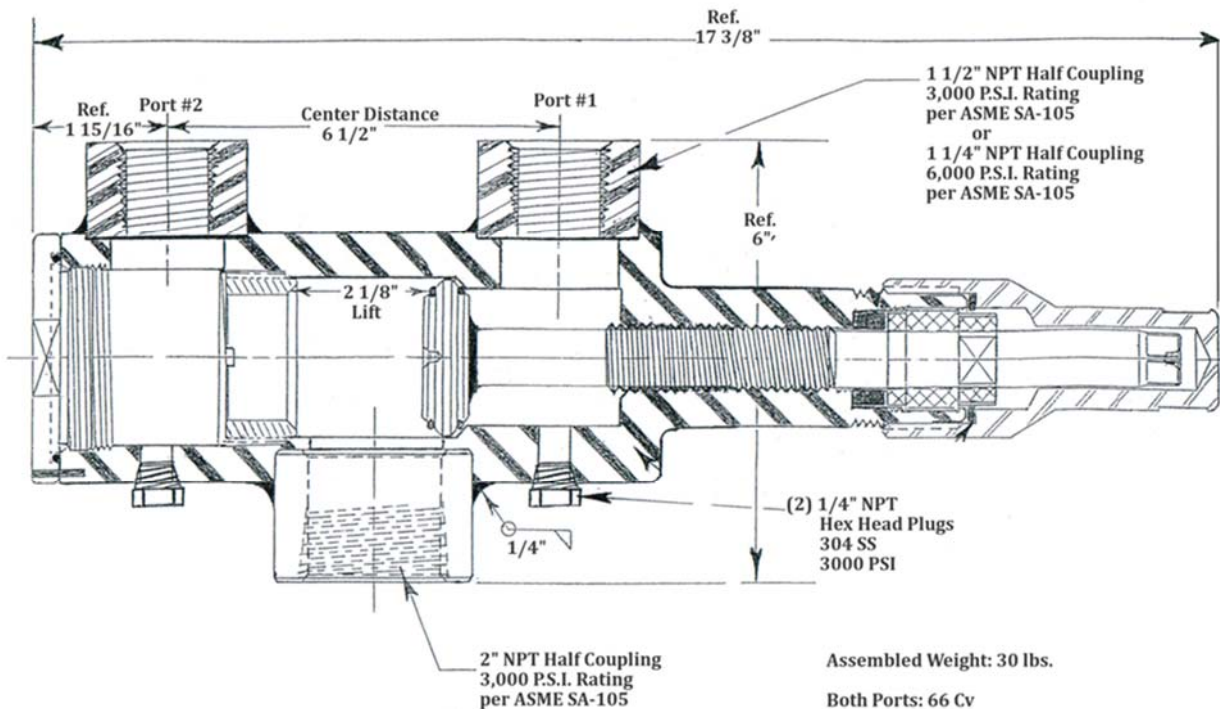
High capacity manifolds intended for use with Shank 901 and 903 relief valves. All steel and stainless steel construction with Teflon O-rings on the stem. Due to Teflon sealing surfaces, these manifolds are rated for 500°F and 500# pressure. Construction is the same as the 900MW manifold except the 2" Schedule 160 pipe is replaced by a 2" FNPT half coupling. Cv rating for both ports is 47.5 (for the 901M), and 66 (for the 903M). Manifold weight is 30 lbs.



901M Port Sizes: 2" x 1 1/4" x 1 1/4" FNPT

903M Port Sizes: 2" x 1 1/2" x 1 1/2" FNPT

901M and 903M manifolds can be used with the following relief valves	
Relief Valve	Assembly Weight (lb.)
901D 1 1/4" x 2" x 3"	81
901A 1 1/4" x 2" x 3"	56
903D 1 1/2" x 2" x 3"	81
903A 1 1/2" x 2" x 3"	56
901M manifold can be used with the following relief valves	
Relief Valve	Assembly Weight (lb.)
850D & 850RD 1 1/4" MNPT x 1 1/2" FNPT	56
850A & 850RA 1 1/4" MNPT x 1 1/2" FNPT	45
851D & 851RD 1 1/4" MNPT x 1 1/2" FNPT	56
851A & 851RA 1 1/4" MNPT x 1 1/2" FNPT	45





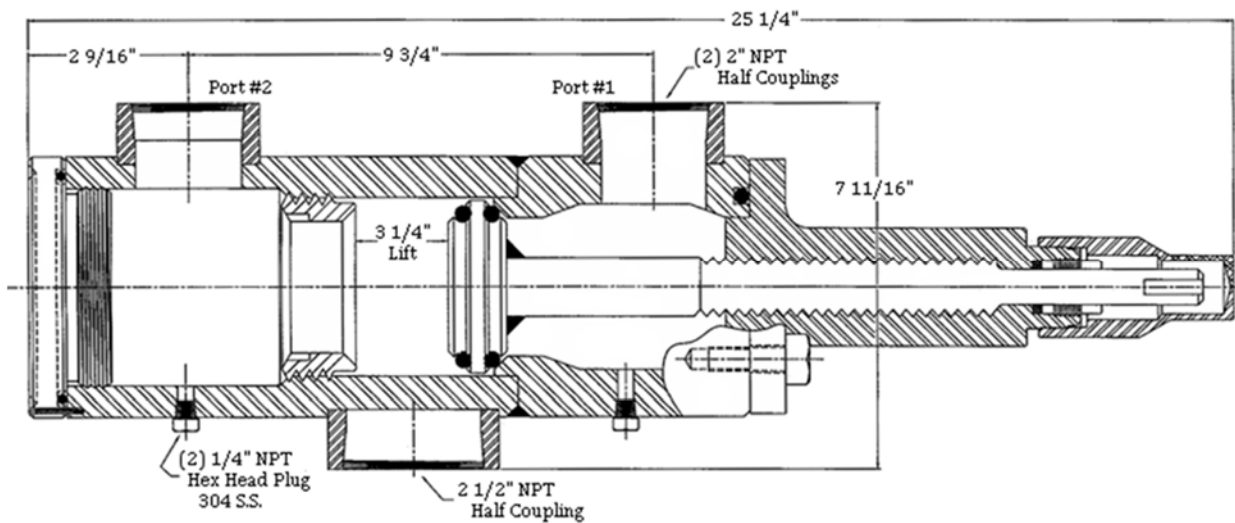
# MANIFOLDS... INLINE, ALL STEEL, WITH COUPLINGS

## 950ME

High capacity manifold, all steel and stainless steel construction with Teflon O-rings on the stem. Due to Teflon sealing surfaces, these manifolds are rated for 500°F and 500# pressure. Cv rating for both ports is 104.6. Manifold weight is 71 lbs.



950ME Port Sizes: 2 1/2" x 2" x 2" FNPT



## Manifold Cv Values (both ports)

<b>Manifold Cv Values (both ports)</b>		
<b>All female ports tested with schedule 8 nipples</b>		
<b>Part # - Casting</b>	<b>Size</b>	<b>Cv Value</b>
843, 843B (hand wheel)	$\frac{1}{2}'' \times \frac{1}{2}'' \times \frac{1}{2}''$	3.6
843F (seal cap)	$\frac{1}{2}'' \times \frac{1}{2}'' \times \frac{1}{2}''$	3.6
844, 844B (hand wheel)	$\frac{3}{4}'' \times \frac{3}{4}'' \times \frac{3}{4}''$	6.8
844F (seal cap)	$\frac{3}{4}'' \times \frac{3}{4}'' \times \frac{3}{4}''$	6.8
845, 845B (hand wheel)	$1'' \times 1'' \times 1''$	11.5
845F (seal cap)	$1'' \times 1'' \times 1''$	11.5

<b>Part # - All Steel</b>	<b>Size</b>	<b>Cv Value</b>
846M (seal cap)	$\frac{1}{2}'' \times \frac{1}{2}'' \times \frac{1}{2}''$	7.2
847M (seal cap)	$\frac{3}{4}'' \times \frac{3}{4}'' \times \frac{3}{4}''$	13.7
848M (seal cap)	$\frac{3}{4}'' \times \frac{1}{2}'' \times \frac{1}{2}''$	9.5
849M (seal cap)	$1'' \times \frac{3}{4}'' \times \frac{3}{4}''$	16.0
*850MW – $\frac{3}{4}''$ (seal cap)	$1 \frac{1}{4}'' \times \frac{3}{4}'' \times \frac{3}{4}''$	18.2
*850MW-1" (seal cap)	$1 \frac{1}{4}'' \times 1'' \times 1''$	25.6
875M (seal cap)	$1'' \times 1'' \times 1''$	25.0
876M (seal cap)	$1 \frac{1}{4}'' \times 1'' \times 1''$	26.6
**900ME- $1 \frac{1}{4}''$	$2'' \times 1 \frac{1}{4}'' \times 1 \frac{1}{4}''$	47.5
**900ME- $1 \frac{1}{2}''$	$2'' \times 1 \frac{1}{2}'' \times 1 \frac{1}{2}''$	66.0
*900MW- $1 \frac{1}{4}''$ (seal cap)	$2'' \times 1 \frac{1}{4}'' \times 1 \frac{1}{4}''$	47.5
*900MW- $1 \frac{1}{2}''$ (seal cap)	$2'' \times 1 \frac{1}{2}'' \times 1 \frac{1}{2}''$	66.0
901M	$2'' \times 1 \frac{1}{4}'' \times 1 \frac{1}{4}''$	47.5
903M	$2'' \times 1 \frac{1}{2}'' \times 1 \frac{1}{2}''$	66.0
950M (seal cap)	$2 \frac{1}{2}'' \times 2'' \times 2''$	104.6

\* Inlet port is schedule 160 seamless pipe welded to manifold body for mounting on insulated vessels.

\*\* Inlet port is schedule 160 seamless pipe with MNPT threading welded to manifold body, may be for mounting on insulated vessels.

# MANIFOLDS



# HAND VALVES... SHUT-OFF (GLOBE AND ANGLE)

**GLOBE SHUT-OFF: 201, 202, 203, 204, 205, 211**

**ANGLE SHUT-OFF: 206, 207, 208, 209, 210**

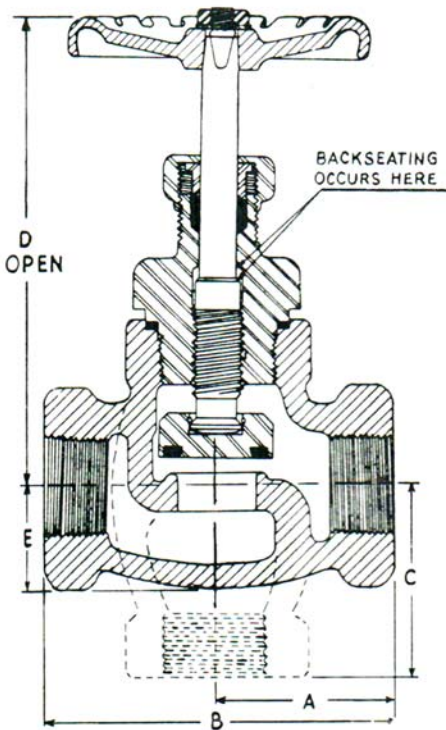


Shut-off valves are available in a globe design to work with pipe sizes from 1/4" up to 1 1/4" and in an angle design to work with pipe sizes from 1/4" up to 1". They come with zinc-plated carbon steel (-CS) or stainless steel (-SS) stems. The valve body materials are ductile iron or C.I. 40 and are pressure-tested for leakage after assembly.

Globe Shut-off Valve Specifications						
Catalog Number	<b>201</b>	<b>202</b>	<b>203</b>	<b>204</b>	<b>205</b>	<b>211</b>
Pipe Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"
Weight, lbs	1	2	3	5	7.25	11.25
B – Face to Face	2 1/2"	3"	3 1/2"	4"	4 3/8"	5 1/2"
D – Center to Top of Wheel (open)	4 1/4"	5 1/8"	5 1/2"	6 5/8"	7 1/2"	8 1/8"
E – Center to Bottom Face	13/16"	13/16"	1"	1 1/4"	1 3/8"	1 5/8"



Angle Shut-off Valve Specifications					
Catalog Number	<b>206</b>	<b>207</b>	<b>208</b>	<b>209</b>	<b>210</b>
Pipe Size	1/4"	3/8"	1/2"	3/4"	1"
Weight, lbs	1	2	3	5	7.25
A – Center to Side Face	1 1/4"	1 1/2"	1 3/4"	2"	2 3/8"
C – Center to Bottom Face	1 1/4"	1 1/2"	1 3/4"	2"	2 3/8"
D – Center to Top of Wheel (open)	4 1/4"	5 1/8"	5 1/2"	6 5/8"	7 1/2"



- Valve ports are full size, insuring maximum flow.
- This is a two-piece design: the convex base fits into the shut-off disc and permits swivel action which maintains perfect alignment at all times.
- The shut-off disc is held in place on the stem by a spring ring, allowing free swivel action.
- The packing ring chamber is of special design: It is machined so that sealing is necessary only around the stem proper.
- The composition packing ring is impregnated with graphite for ease of operation and will not deteriorate in service.
- These valves are back seating.

# HAND VALVES... HAND EXPANSION (GLOBE AND ANGLE)

**GLOBE EXPANSION: 201-E, 202-E, 203-E, 204E-, 205-E**

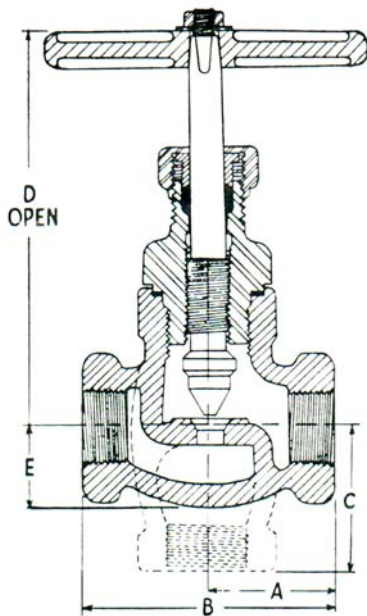
**ANGLE EXPANSION: 206-E, 207-E, 208-E, 209-E, 210-E, 211-E**



Our hand expansion valves are available in a globe design to work with pipe sizes from 1/4" to 1 1/4" and in an angle design to work with pipe sizes from 1/4" to 1". They come with zinc-plated carbon steel (-CS) or stainless steel (-SS) stems. The valve body materials are ductile iron or C.I. 40 and are pressure tested for leakage after assembly.

Globe Hand Expansion Valve Specifications						
Catalog Number	201-E	202-E	203-E	204-E	205-E	211-E
Pipe Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"
Orifice	9/64"	3/16"	1/4"	5/16"	3/8"	1/2"
Weight, lbs	1	2	3	5	7.5	11 1/2
B – Face to Face,	3"	3"	3 1/2"	3 7/8"	4 3/8"	5 3/8"
D – Center to Top of Wheel (open)	5"	5"	5 1/2"	6 3/8"	7 3/8"	9 1/4"
E – Center to Bottom Face	13/16"	13/16"	1"	1 1/4"	1 3/8"	1 5/8"

Angle Hand Expansion Valve Specifications					
Catalog Number	206-E	207-E	208-E	209-E	210-E
Pipe Size	1/4"	3/8"	1/2"	3/4"	1"
Orifice	9/64"	3/16"	1/4"	5/16"	3/8"
Weight, lbs	2	2	3	5	7.25
A – Center to Side Face	1 3/8"	1 3/8"	1 1/2"	1 15/16"	2 3/8"
D – Center to Top of Wheel (open)	1 1/2"	1 1/2"	1 7/8"	2 1/8"	2 3/8"
E – Center to Bottom Face	5"	5"	5 5/8"	6 3/8"	7 3/8"



- The valve body has a tapered orifice through a raised seat. Needle point and fine pitch stem threads allow close regulation of flow.
- All expansion valves are equipped with T-handles to distinguish them from shut-off valves.
- The packing ring chamber is of special design: It is machined so that sealing is necessary only around the stem proper.
- The composition packing ring is impregnated with graphite for ease of operation and will not deteriorate in service.

# HAND VALVES... BOLTED BONNET SHUT-OFF (GLOBE AND ANGLE)

**GLOBE BOLTED BONNET SHUT-OFF: 101, 102, 103**

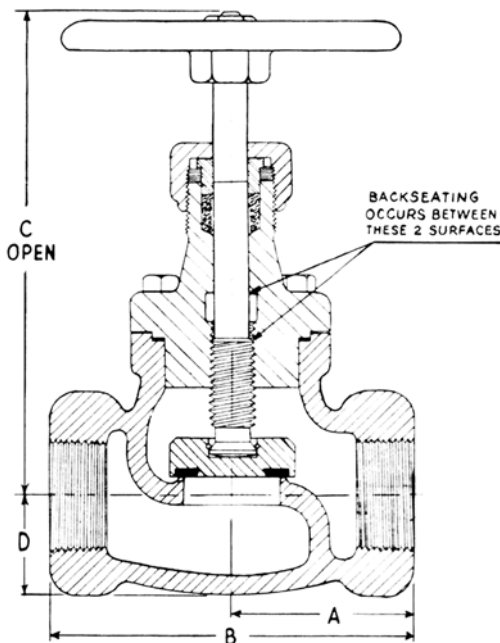
**ANGLE BOLTED BONNET SHUT-OFF: 111, 112, 113**

Bolted bonnet shut-off valves in a globe or angle design to work with pipe sizes from 1 ¼" to 2". This sturdy valve body is made from cast iron and is pressure tested for leakage after assembly.



Bolted Bonnet Globe Shut-off Valve Specifications			
Catalog Number	<b>101</b>	<b>102</b>	<b>103</b>
Pipe Size	1 ¼"	1 ½"	2"
Weight, lbs	15.5	21	27
A – Center to Side Outlet	3 1/8"	3 ½"	4 ¼"
B – Face to Face, Rim	6 ¼"	7"	8 ½"
C – Center to Top (open)	10"	10 ¾"	11 ½"
D – Center to Bottom	1 ¾"	2"	2 ¼"

Bolted Bonnet Angle Shut-off Valve Specifications			
Catalog Number	<b>111</b>	<b>112</b>	<b>113</b>
Pipe Size	1 ¼"	1 ½"	2"
Weight, lbs	15.5	21	27
A – Center to Side Outlet	3 1/8"	3 ½"	4 ¼"
C – Center to Top (open)	10"	10 ¾"	11 ½"
Center to Bottom Port	3 1/8"	3 ½"	4 ¼"



- Back seating is provided for re-packing while valve is under pressure.
- Uses a swivel and self-aligning seat.
- Hand wheels are proportioned for easy operation.

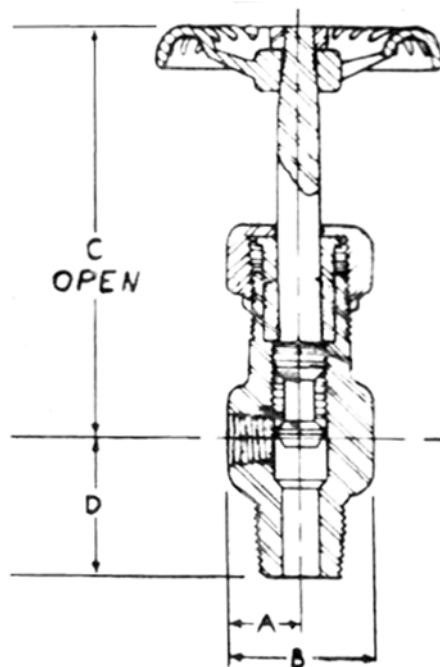
# HAND VALVES... PURGE

## PURGE VALVES: 451, 452, 453, 462, 463



Purge valves are made of all steel and all parts are zinc plated. They are used for purging purposes and are supplied with male and female thread combinations. They are equipped with round malleable handles. This valve can be used for gauge mounting, as an oil drain, or any place where a small shut-off valve can be used.

Purge Valve Specifications					
Catalog Number	451	452	453	462	463
Bottom Thread	1/4" male	3/8" male	1/2" male	3/8" male	1/2" male
Side Opening	1/4" female	1/4" female	1/4" female	3/8" female	3/8" female
Weight, lbs.	3/4	3/4	3/4	1	1
A – Center to Side Outlet	5/8"	5/8"	5/8"	23/32"	23/32"
B – Body Diameter	1 1/4"	1 1/4"	1 1/4"	1 7/16"	1 7/16"
C – Side Outlet to Top (open)	3 3/4"	3 3/4"	3 3/4"	3 7/8"	3 7/8"
D – Side Outlet to Bottom Face	1 1/8"	1 3/16"	1 1/4"	1 1/4"	1 3/8"



# HAND VALVES... NEEDLEPOINT (ANGLE OR TEE)

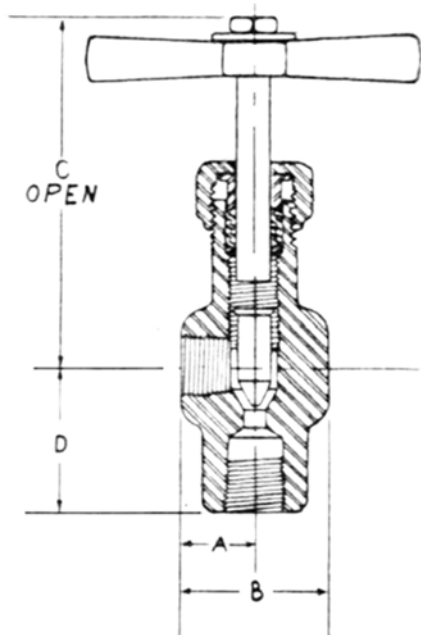
## ANGLE NEEDLE POINT VALVES: 421, 422, 423, 424

## TEE NEEDLE POINT VALVES: 425, 426, 427, 428



Needle point valves are of all steel construction and all parts are zinc plated. They are available in angle or tee design to work with pipe sizes from  $\frac{1}{4}$ " to  $\frac{3}{4}$ ". The valves are equipped with a tapered orifice through the seat and a corresponding taper on the stem, thus assuring a measured flow through the valve. The stems are machined with a fine pitch thread which permits close regulation. The handles used are Tee-shaped so that the valves can be easily distinguished from regular shut-off valves.

Needle Point Valve Specifications								
	Angle	Tee	Angle	Tee	Angle	Tee	Angle	Tee
Catalog Number	421	425	422	426	423	427	424	428
Pipe Size	$\frac{1}{4}$ "		$\frac{3}{8}$ "		$\frac{1}{2}$ "		$\frac{3}{4}$ "	
Weight, lbs	1		1		1 $\frac{3}{4}$		2 $\frac{3}{4}$	
A – Center to Side Outlet	$\frac{5}{8}$ "		$\frac{23}{32}$ "		$\frac{13}{16}$ "		1"	
B – Face to Face	1 $\frac{1}{4}$ "		1 $\frac{7}{16}$ "		1 $\frac{5}{8}$ "		2"	
C – Center Side Outlet to Top (open)	3 $\frac{3}{4}$ "		3 $\frac{7}{8}$ "		4 $\frac{3}{8}$ "		5 $\frac{3}{8}$ "	
D – Center Outlet to Bottom Face	1 $\frac{1}{4}$ "		1 $\frac{3}{8}$ "		1 $\frac{3}{4}$ "		1 $\frac{13}{16}$ "	





# HAND VALVES... LINE (ANGLE OR TEE)

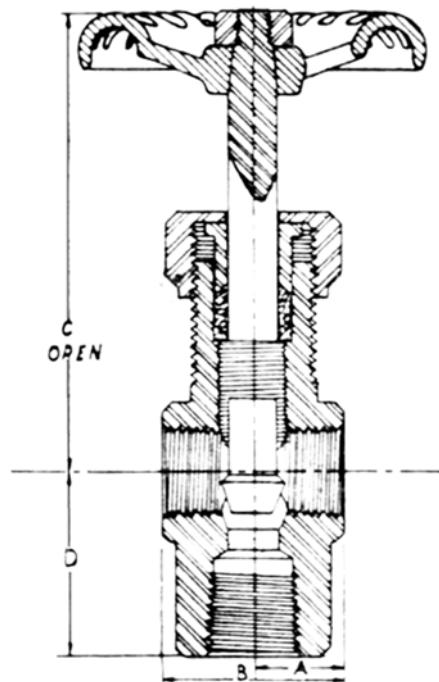
**ANGLE LINE VALVES: 401, 402, 403, 404**

**TEE LINE VALVES: 405, 406, 407, 408**



Line valves are made of all steel construction and all parts are zinc plated. They are available in angle or tee style to work with pipe sizes from ¼" to ¾" and have a compact design. The packing seal ring is of highest grade material, providing smooth, easy operation and a leak-proof, long life seal.

Line Valve Specifications								
	Angle	Tee	Angle	Tee	Angle	Tee	Angle	Tee
Catalog Number	401	405	402	406	403	407	404	408
Pipe Size	¼"		3/8"		½"		¾"	
Weight, lbs	1		1		1 ¾		2 ¾	
A – Center to Side Outlet	5/8"		23/32"		13/16"		1"	
B – Face to Face	1 ¼"		1 3/8"		1 5/8"		2"	
C – Center Side Outlet to Top (open)	3 3/8"		3 3/4"		4 1/4"		5 1/4"	
D – Center to Bottom Face	1 3/8"		1 7/16"		1 5/8"		1 15/16"	



# HAND VALVES... GAUGE SETS (AMMONIA OR FREON)

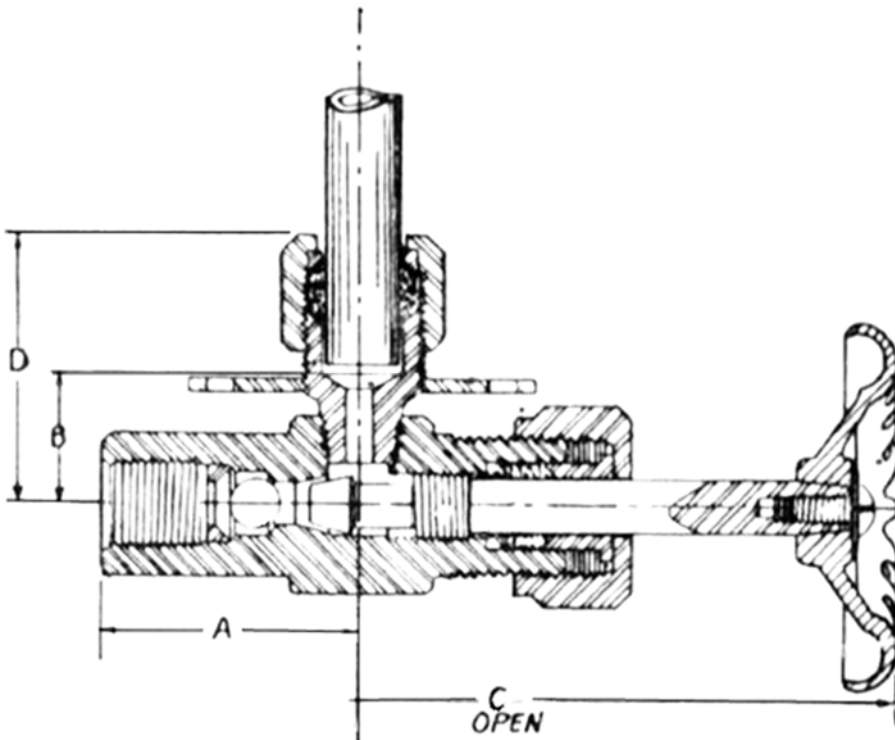
## GAUGE SETS



Gauge set assembly is of all steel construction and all parts are zinc plated. Gauge valves have safety ball seats which automatically shut off liquid in case of glass breakage. Valve stems are packed with composition packing rings, providing a leak-proof, long life seal.

Available Gauge Sets			
	301	302	303
Pipe Size	3/8"	1/2"	3/4"
Glass Diameter	1/2"	5/8"	3/4"
Weight Per Set in lbs	3	4	6

Gauge Sets Specifications			
Pipe Size	3/8"	1/2"	3/4"
A – Center to Face at Inlet End	1 3/4"	1 15/16"	2 1/16"
B – Center to Inside Bottom of Upper Glass Well	3/4"	7/8"	1 1/8"
B – Center to Inside Bottom of Lower Glass Well	1"	1 1/4"	1 3/8"
C – Center to Top of Wheel (open)	3"	3 7/8"	4"
D – Center to Top of Glass Packing Nut	1 3/4"	2 1/16"	2 1/16"



*Assembly and Ordering Instructions for Gauge Sets on Reverse Side*

## ***GAUGE SETS ASSEMBLY INSTRUCTIONS***

**STEP 1:** Locate flange with “T” for TOP (this side has a deeper well).

**STEP 2:** Assemble glass into “T” side with nut and neoprene seal in place on glass for both ends.

**STEP 3:** Push glass up into deep well, swing glass over insert in flange marked “B”, then slide into flange “B” well.

**STEP 4:** Slide nut and seal along the glass and screw into position on flanges.

**STEP 5:** Check for leaks.

## ***GAUGE SETS ORDERING INFORMATION***

When you order a gauge set, you will receive 2 gauge valves, 1 piece of glass, and 4 rods. For example, a 301 gauge set would include the 2 gauges, 1 piece of 12” glass, and 4 rods. The set can be purchase without the glass and rods (-WO), or with any length of glass you require.

To custom order a glass length other than the standard 12” length, order the gauge set you need without glass (e.g., 301 (-WO)) and then specify the glass length and rods you want (**SEE NOTE BELOW**).

Custom glass and rod prices vary: contact us for a quote. Red line glass is also available.

**NOTE:** To figure length of glass required, subtract 2 3/8” from the distance of the centers. Order rods lengths 3” longer than the glass required.

# HAND VALVES



# SAFETY INFORMATION...

**Warning:** Ammonia gas or liquid produces potentially hazardous mist that can irritate skin, eyes, nose, and throat, and can cause temporary or permanent respiratory injury. Permanent respiratory injury can lead to disability or death.

- Use local ventilation and respiratory protection when installing. See *ASHRAE 15 Safety Code and OSHA Standard 1910.133A*.
- Avoid breathing of and prolonged skin contact with ammonia.
- Use goggles and a gas mask when gas is in the area.
- Maintain ammonia levels below OSHA and ACGIH levels.
- Wash hands after handling, before eating, or smoking.
- Dispose of materials according to local, state, and /or federal regulations.

Ammonia relief valves or any ammonia valve installation should only be done by trained personnel and in accordance with the ASME Boiler & Pressure Vessel Code, Section VIII.

**The purpose of a spring loaded relief valve is to relieve excess vapor or liquid pressure. Back pressure or pressure on the upper relief valve seat can change the valve's popping or opening pressure setting. In applications of excess pressure or back pressure on the upper relief valve seat, add the back pressure to relief valve setting to arrive at the actual setting where the valve will open.**

## **When Ammonia Relief Valves Discharge into Water:**

**CORROSION:** There is a concern about corrosion in relief valves when the discharge is piped into a tank of water. This corrosion is due to exposure to water vapor and air in the piping. Shank safety relief valves use ductile iron, steel, or aluminum for bodies, and stainless steel and Teflon for internal parts. Since these materials resist corrosion, the accepted industry practice of inspecting or replacing safety relief valves every five (5) years should provide adequate protection from corrosion in the valves.

**BACK PRESSURE:** Another concern is the reduction of relief valve capacity caused by the head of water over the discharge pipe outlet when it is submerged. The various codes do not provide methods to address this subject except to require "due allowance for pressure drop in the downstream section."

**VACUUM SERVICE 1:** When safety relief valves are connected to systems that operate below atmospheric pressure, a reasonable precaution is to install a check valve in the discharge line before it enters the water tank. This will prevent a vacuum from sucking water into the system should a relief valve leak or not reseat after a release. The check valve may also prevent the migration of water vapor so as to reduce the potential for corrosion in the relief valve. The pressure drop in the check valve must be considered within the allowable back pressure, at the outlet of the relief valve, that is developed by the flow in the event of a release.

**VACUUM SERVICE 2:** An alternative is to use a check valve mounted in a "tee" in the run of the discharge piping. This will not affect the pressure drop in the discharge, but will act as a "vacuum breaker." Either of these two suggested methods will protect against diluting the ammonia with water should the relief valve leak after operating.

**WHERE WATER TANKS ARE REQUIRED:** The requirement for discharge into a tank of water appears in the Uniform Mechanical Code, published by ICBO, Section 1119 for ammonia systems. The International Mechanical Code, now used by BOCA and SBCCI, does not have this provision, but does require that refrigerating systems in an industrial occupancy conform to IAR-2 Equipment, Design and Installation of Ammonia Mechanical Refrigerating Systems. ASHRAE-15 offers three methods for ammonia discharge (i.e., into the atmosphere, into a tank of water, or into other approved treatment systems). Appendix B therein provides guidelines for emergency discharge of refrigerants when required by local codes. In IAR-2, the preferred discharge of safety and emergency relief valves is to the atmosphere. The optional method is to discharge into a tank of water. When local mechanical codes require the use of a water tank for absorbing the discharge from ammonia relief valves, refer to ASHRAE 15-1994 paragraph 9.7.8.2(b) for details. NOTE: IAR-2 is in the process of revision to conform to the specifications now in ASHRAE-15.

ICBO - International Conference Building Officials Located in California  
BOCA—Building Owners Code Association located in Chicago, Illinois  
SBCCI—Southern Building Code Conference International

## ORDERING INFORMATION...

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### Placing Your Order:

- FAX your purchase order to Cyrus Shank Company at 331-212-5260. Confirmation of your order will be sent via fax or email.
- EMAIL your purchase order to [shank@cyrusshank.com](mailto:shank@cyrusshank.com) Confirmation of your order will be sent via email.

### Payment Terms:

- Due upon receipt of invoice with credit approval.
- VISA, MasterCard, Discover, or American Express are accepted.
- Payment in advance accepted.

### Shipping:

Standard Shipping is via UPS Ground. All orders are subject to applicable shipping, freight, taxes, and processing charges. Shipping charges for ground service on all stocking orders are determined by using UPS standard rates. Additional options are available upon request.

### Return Policy:

Valves needing to be returned MUST have an RMA# attached to the outside of the box. Valves returned within 30 days of their initial shipment will have a 15% restocking fee; valves returned between 30-60 days of their initial shipment will have a 30% restocking fee. After 60 days valves are non-returnable.

**If you have questions about ordering and receiving products from Cyrus Shank Company, please contact Customer Service:**

**Phone: 1-331-212-5488**

**Fax: 1-331-212-5260**

**Email: [shank@cyrusshank.com](mailto:shank@cyrusshank.com)**

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