

# CRYOGENIC SAFETY RELIEF VALVES

CRYOGENIC  
SAFETY VALVES



# FIGURE 710 SERIES RXSO BRONZE

SIZES 1/2" - 2"  
PRESSURES to 400 psig at 400°F

## APPLICATION DATA

- Especially recommended where noxious or expensive liquids or gases place a premium on seal quality.
- Stationary Cryogenic storage tanks
- Dual Safety relief systems
- Overpressure relief of tanks, pipelines, vessels, pumps
- Air and gas compressors
- Corrosive industrial applications

## APPLICABLE CODES

- V-4301 (Cryogenic Non-Oxygen)
- V-4401 (Oxygen)
- API 527
- CRN 0G0591.9C
- CGA S-1.2 and S-1.3.
- ASME sec.VIII, "UV"
- AD-Merkblatt A2
- PED

- **Special Teflon® seat, making bubble-tight seals possible to over 90% of set pressures per spec API 527; not applicable to steam.**
- **Adjustable blowdown ring**
- **PED certified**
- **Cleaned and packaged for use in O<sub>2</sub> service in compliance with the CGA specification G-4.1**  
Additional cleaning specifications:
  - 4WPI-SW70003
  - ES.660.503
  - GS-38
  - GS-40

## OPTIONS

- Large and Extra Large Capacity (Consult factory for flow rates)
- BSP threads are available on most sizes
- Lever operation
- Test Reports available

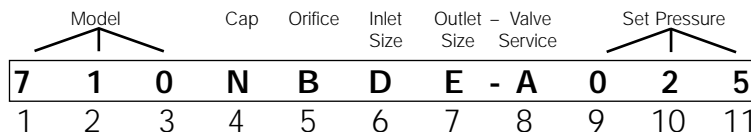
## DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Inlet	Orifice	Outlet	Part #	Max Psi	Dimensions			Wt.
					A	B	C	
1/2 (15)	A	3/4 (20)	710NACD	400 (27.6)	5 7/8 (150)	2 1/8 (65)	1 1/8 (34)	2 (.91)
3/4 (20)	A	3/4 (20)	710NADD	400 (27.6)	5 7/8 (150)	2 1/8 (65)	1 1/8 (34)	2 (.91)
1/2 (15)	A	1 (25)	710NACE	400 (27.6)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
3/4 (20)	A	1 (25)	710NADE	400 (27.6)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
1/2 (15)	B	1 (25)	710NBCE	400 (27.6)	7 7/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
3/4 (20)	B	1 (25)	710NBDE	400 (27.6)	7 7/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1 (25)	B	1 (25)	710NBEE	400 (27.6)	7 7/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1/2 (25)	B	1 1/4 (32)	710NBCF	400 (27.6)	7 7/8 (190)	3 (76)	1 7/8 (48)	5 (2.27)
3/4 (20)	B	1 1/4 (32)	710NBDF	400 (27.6)	7 7/8 (190)	3 (76)	1 7/8 (48)	5 (2.27)
1 (25)	B	1 1/4 (32)	710NBEF	400 (27.6)	7 7/8 (190)	3 (76)	1 7/8 (48)	5 (2.27)
3/4 (20)	C	1 1/4 (32)	710NCDF	300 (20.7)	8 11/16 (220)	3 1/2 (90)	2 1/4 (57)	6 (2.72)
1 (25)	C	1 1/4 (32)	710NCEF	300 (20.7)	8 7/8 (220)	3 1/2 (89)	2 1/4 (57)	6 (2.72)
1 1/4 (32)	C	1 1/4 (32)	710NCFF	300 (20.7)	8 7/8 (220)	3 1/2 (89)	2 1/4 (57)	6 (2.72)

Inlet	Orifice	Outlet	Part #	Max Psi	Dimensions			Wt.
					A	B	C	
3/4 (20)	C	1 1/2 (40)	710NCDG	400 (27.6)	9 7/8 (251)	3 3/8 (91)	2 5/8 (66)	7 (3.18)
1 (25)	C	1 1/2 (40)	710NCEG	400 (27.6)	9 7/8 (251)	3 3/8 (91)	2 5/8 (66)	7 (3.18)
1 1/4 (32)	C	1 1/2 (40)	710NCFG	400 (27.6)	9 7/8 (251)	3 3/8 (91)	2 5/8 (66)	7 (3.18)
1 (25)	D	1 1/2 (40)	710NDEG	350 (24.1)	9 13/16 (250)	3 3/8 (90)	2 5/8 (66)	7 (3.18)
1 1/4 (32)	D	1 1/2 (40)	710NDFG	350 (24.1)	9 13/16 (250)	3 3/8 (90)	2 5/8 (66)	7 (3.18)
1 1/2 (40)	D	1 1/2 (40)	710NDGG	350 (24.1)	9 13/16 (250)	3 3/8 (90)	2 5/8 (66)	7 (3.18)
1 (25)	D	2 (50)	710NDEH	400 (27.6)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	8 (3.63)
1 1/4 (32)	D	2 (50)	710NDFH	400 (27.6)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	8 (3.63)
1 1/2 (40)	D	2 (50)	710NDGH	400 (27.6)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	8 (3.63)
1 1/2 (40)	E	2 (50)	710NEGH	400 (27.6)	9 11/16 (247)	3 11/16 (94)	2 3/4 (70)	9 (4.09)
2 (50)	E	2 (50)	710NEHH	400 (27.6)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	9 (4.09)
1 1/2 (40)	E	2 1/2 (65)	710NEGJ	400 (27.6)	9 11/16 (247)	4 (102)	2 5/8 (75)	10 (4.54)
2 (50)	E	2 1/2 (65)	710NEHJ	400 (27.6)	9 11/16 (246)	4 (102)	2 5/8 (75)	10 (4.54)

NOTE: 1. 715 (PED) Valve Combinations are the same as the 710's listed above.  
2. For open lever, replace "N" in model number with "E".

## CODE SELECTION CHART



<b>Model -</b> Position 1, 2 & 3 710 = Bronze ASME w/O <sub>2</sub> cleaning 715 = Bronze PED w/O <sub>2</sub> cleaning
<b>Cap -</b> Position 4 N = Plain Cap E = Open Lever

<b>Orifice -</b> Position 5 A B C D E
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<b>Inlet Size -</b> Position 6 C = 1/2 D = 3/4 E = 1 F = 1 1/4 G = 1 1/2 H = 2
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<b>Outlet Size -</b> Position 7 D = 3/4 E = 1 F = 1 1/4 G = 1 1/2 J = 2 1/2
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<b>Valve Service -</b> Position 8 A = Air/Gas Sect. VIII E = Air / Gas PED Z = Other
<b>Set Pressure -</b> Position 9, 10 & 11 _ _ _ = Actual Setting

FIGURE 710/715  
SERIES



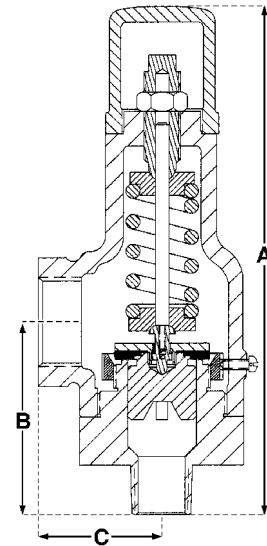
# FIGURE 710 SERIES RXSO BRONZE

## SPECIFICATION

The valve shall meet the ASME Section VIII code for air and gas services. It shall be "UV" National Board Certified. The valve shall have an adjustable blowdown ring. The valve shall have a Teflon(r) seat and conform to API 527. The valve shall be cleaned and packaged for use in Oxygen service in compliance with CGA specification G-4.1. The spring shall be of stainless steel.

## MATERIALS OF CONSTRUCTION

Shell .....Cast Bronze, ASME SB-62  
 Base .....Forged Brass, Alloy C37700  
 Trim .....Copper Alloy  
 Spring .....Stainless Steel  
 17-7 PH ASTM, A-313, Type 631



## MODELS

- 710 - Bronze ASME w/O<sub>2</sub> cleaning
- 715 - Bronze PED w/O<sub>2</sub> cleaning

## AIR CAPACITY TABLE

Discharge capacities in cubic feet per minute of air at 10% or 3 PSI, whichever is greater, overpressure. (SCFM) Ambient

Inlet Sizes Inches		1/2	3/4	1	1-1/4	1-1/2
Outlet Sizes		3/4	1	1-1/4	1-1/2	2
Seat Diameter		A	B	C	D	E
Flow Area		0.750	1.000	1.250	1.500	2.000
Set Pressure		0.118	0.204	0.326	0.424	0.628
10	36	63	100	130	193	
15	43	74	118	154	227	
20	48	85	136	177	262	
25	55	96	154	200	297	
30	62	108	172	224	332	
35	70	120	192	250	370	
40	77	133	212	276	408	
45	84	145	232	301	446	
50	91	157	252	327	485	
55	98	170	271	353	523	
60	105	182	291	379	561	
65	113	195	311	405	599	
70	120	207	331	430	638	
75	127	220	351	456	676	
80	134	232	371	482	714	
85	141	244	391	508	752	
90	149	257	410	534	791	
95	156	269	430	560	829	
100	163	282	450	585	867	
105	170	294	470	611	905	
110	177	307	490	637	944	
115	184	319	510	663	982	
120	192	331	530	689	1020	
125	199	344	549	715	1058	
130	206	356	569	740	1097	
135	213	369	589	766	1135	
140	220	381	609	792	1173	
145	228	393	629	818	1211	
150	235	406	649	844	1249	
155	242	418	668	869	1288	
160	249	431	688	895	1326	
165	256	443	708	921	1364	
170	264	456	728	947	1402	
175	271	468	748	973	1441	
180	278	480	768	999	1479	
185	285	493	788	1024	1517	
190	292	505	807	1050	1555	
195	299	518	827	1076	1594	
200	307	530	847	1102	1632	
205	314	543	867	1128	1670	

Inlet Sizes Inches		1/2	3/4	1	1-1/4	1-1/2
Outlet Sizes		3/4	1	1-1/4	1-1/2	2
Seat Diameter		A	B	C	D	E
Flow Area		0.750	1.000	1.250	1.500	2.000
Set Pressure		0.118	0.204	0.326	0.424	0.628
210	321	555	887	1153	1708	
215	328	567	907	1179	1747	
220	335	580	927	1205	1785	
225	343	592	946	1231	1823	
230	350	605	966	1257	1861	
235	357	617	986	1283	1900	
240	364	629	1006	1308	1938	
245	371	642	1026	1334	1976	
250	378	654	1046	1360	2014	
255	386	667	1066	1386	2053	
260	393	679	1085	1412	2091	
265	400	692	1105	1437	2129	
270	407	704	1125	1463	2167	
275	414	716	1145	1489	2206	
280	422	729	1165	1515	2244	
285	429	741	1185	1541	2282	
290	436	754	1204	1567	2320	
295	443	766	1224	1592	2359	
300	450	779	1244	1618	2397	
305	458	791	1264	1644	2435	
310	465	803	1284	1670	2473	
315	472	816	1304	1696	2511	
320	479	828	1324	1721	2550	
325	486	841	1343	1747	2588	
330	493	853	1363	1773	2626	
335	501	866	1383	1799	2664	
340	508	878	1403	1825	2703	
345	515	890	1423	1851	2741	
350	522	903	1443	1876	2779	
355	529	915	1463	1902	2817	
360	537	928	1482	1928	2856	
365	544	940	1502	1954	2894	
370	551	952	1522	1980	2932	
375	558	965	1542	2005	2970	
380	565	977	1562	2031	3009	
385	590	989	1582	2057	3047	
390	580	1002	1602	2083	3085	
395	587	1015	1621	2109	3123	
400	594	1027	1641	2135	3162	

FIGURE 710/715  
SERIES

# FIGURE 760/765 SERIES RXSO-S STAINLESS STEEL

SIZES ½" – 1"

PRESSURES to 400 PSIG at 400°F



- Special Teflon® seat, making bubble-tight seals possible to over 90% of set pressures per spec API 527; not applicable to steam.

- Adjustable blowdown ring
- Cleaned and packaged for use in O<sub>2</sub> service in compliance with the CGA specification G-4.1

Additional cleaning specifications:

4WPI-SW70003 ● ES.660.503

● GS-38 ● GS-40

## APPLICATION DATA

- Especially recommended where corrosive or expensive gases benefit from stainless steel construction.
- Overpressure relief of tanks, pipelines, vessels, pumps
- Stationary Cryogenic storage tanks
- Dual Safety relief systems
- Air and gas compressors

## APPLICABLE CODES

- CGA S-1.2 and S-1.3.
- V-4301 (Cryogenic Non-Oxygen)
- V-4401 (Oxygen)
- ASME sec.VIII
- API 527
- AD-Merkblatt A2
- CRN 0G0591.9C

## OPTIONS

- Large and Extra Large Capacity
- BSP threads are available on most sizes.
- Lever operation
- Electropolish
- Test Reports available

## MODELS

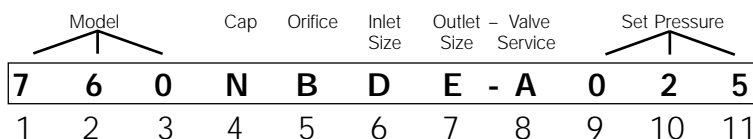
- 760 Stainless Steel ASME w/O<sub>2</sub> cleaning
- 765 Stainless Steel PED w/O<sub>2</sub> cleaning

## DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Inlet	Orifice	Outlet	Part #	Max PSI (barg)	Dimensions			Wgt.
					A	B	C	
1/2 (15)	A	3/4 (20)	760NACD	400 (27.6)	5 7/8 (150)	2 7/8 (65)	1 5/8 (34)	2 (.91)
3/4 (20)	A	3/4 (20)	760NADD	400 (27.6)	5 7/8 (150)	2 7/8 (65)	1 5/8 (34)	2 (.91)
1/2 (15)	A	1 (25)	760NACE	400 (27.6)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
3/4 (20)	A	1 (25)	760NADE	400 (27.6)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
1/2 (15)	B	1 (25)	760NBCE	400 (27.6)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
3/4 (20)	B	1 (25)	760NBDE	400 (27.6)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1 (25)	B	1 (25)	760NBEE	400 (27.6)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1/2 (25)	B	1 1/4 (32)	760NBCF	400 (27.6)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
3/4 (20)	B	1 1/4 (32)	760NBDF	400 (27.6)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
1 (25)	B	1 1/4 (32)	760NBEF	400 (27.6)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)

NOTE: 765 (PED) Valve Combinations are the same as the 760's listed above.

## CODE SELECTION CHART



**Model** - Position 1, 2 & 3  
760 = ASME w/O<sub>2</sub> cleaning  
765 = PED w/O<sub>2</sub> cleaning

**Cap** - Position 4  
N = Plain Cap  
E = Open Lever

**Orifice** - Position 5  
A  
B

**Inlet Size** - Position 6  
C = 1/2  
D = 3/4  
E = 1

**Outlet Size** - Position 7  
D = 3/4  
E = 1  
F = 1 1/4

**Valve Service** - Position 8  
A = Air/Gas Sect. VIII  
E = Air/Gas PED  
Z = Other

**Set Pressure** - Position 9, 10 & 11  
\_ \_ \_ = Actual Setting

FIGURE 760/765  
SERIES

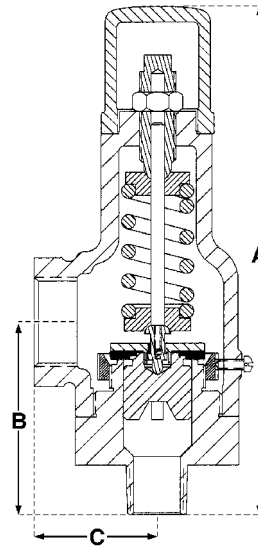
# FIGURE 760/765 SERIES RXSO-S STAINLESS STEEL

## SPECIFICATION

The valve shall meet the ASME Section VIII code for air and gas services. It shall be "UV" National Board Certified. The valve shall have an adjustable blowdown ring. The valve shall have a Teflon(r) seat and conform to API 527. The valve shall be cleaned and packaged for use in Oxygen service in compliance with CGA specification G-4.1. The valve shall be 316SS except the spring (17-7 PH SS).

## MATERIALS OF CONSTRUCTION

Shell .....Investment Cast 316SS, ASME SA-351  
 Base .....Investment Cast 316SS, ASME SA-351  
 Trim .....316SS, ASME SA-479  
 Spring .....StainlessSteel  
 17-7 PH ASTM A-313, Type 631



## AIR CAPACITY TABLE

Discharge capacities in cubic feet per minute of air at 10% or 3 PSI, whichever is greater, overpressure.

Inlet Sizes Inches	1/2	3/4	1
Outlet Sizes Inches	3/4	1	1 1/4
Seat Diameter Inches	A	B	
Flow Area	0.118	0.204	
Set Pressure			
10	36	63	
15	43	74	
20	48	85	
25	55	96	
30	62	108	
35	70	120	
40	77	133	
45	84	145	
50	91	157	
55	98	170	
60	105	182	
65	113	195	
70	120	207	
75	127	220	
80	134	232	
85	141	244	
90	149	257	
95	156	269	
100	163	282	
105	170	294	
110	177	307	
115	184	319	
120	192	331	
125	199	344	
130	206	356	
135	213	369	

Inlet Sizes Inches	1/2	3/4	1
Outlet Sizes Inches	3/4	1	1 1/4
Seat Diameter Inches	A	B	
Flow Area	0.118	0.204	
Set Pressure			
140	220	381	
145	228	393	
150	235	406	
155	242	418	
160	249	431	
165	256	443	
170	264	456	
175	271	468	
180	278	480	
185	285	493	
190	292	505	
195	299	518	
200	307	530	
205	314	543	
210	321	555	
215	328	567	
220	335	580	
225	343	592	
230	350	605	
235	357	617	
240	364	629	
245	371	642	
250	378	654	
255	386	667	
260	393	679	
265	400	692	

Inlet Sizes Inches	1/2	3/4	1
Outlet Sizes Inches	3/4	1	1 1/4
Seat Diameter Inches	A	B	
Flow Area	0.118	0.204	
Set Pressure			
270	407	704	
275	414	716	
280	422	729	
285	429	741	
290	436	754	
295	443	766	
300	450	779	
305	458	791	
310	465	803	
315	472	816	
320	479	828	
325	486	841	
330	493	853	
335	501	866	
340	508	878	
345	515	890	
350	522	903	
355	529	915	
360	537	928	
365	544	940	
370	551	952	
375	558	965	
380	565	977	
385	572	989	
390	580	1002	
395	587	1015	
400	594	1027	

FIGURE 760/765  
SERIES



### APPLICATIONS DATA

- Tanks, pumps, pipe lines and other vessels containing non-corrosive liquid, and where large relieving capacities are not required.

## FIGURE 770/775 SERIES RSL/RSL-S

770 BRONZE SIZES 1/2" – 2"  
775 STAINLESS STEEL SIZES 1/2" – 1"  
PRESSURES to 300 psig at 300°F

- Teflon® seat for improved seat tightness
- Cleaned and packaged for use in O<sub>2</sub> service in compliance with the CGA specification G-4.1

### Additional cleaning specifications:

- 4WPI-SW 7003
- GS-38
- GS-40
- ES.660.503

### OPTIONS

- BSP threads available on most sizes
- Lever operation
- Test reports available

### MODELS

- 770 - Bronze Non ASME w/O<sub>2</sub> cleaning
- 775 - Stainless Steel Non ASME w/O<sub>2</sub> cleaning (1/2" x 3/4" through 1" x 1-1/4" Only)

### CODE SELECTION CHART

Model			Cap	Orifice	Inlet Size	Outlet Size	Valve Service	Set Pressure		
7	7	0	N	B	D	E	- N	0	2	5
1	2	3	4	5	6	7	8	9	10	11

<b>Model -</b> Position 1, 2 & 3 770 = Bronze Non ASME w/O <sub>2</sub> cleaning 775 = S.S. Non ASME w/O <sub>2</sub> cleaning
<b>Cap -</b> Position 4 N = Plain Cap E = Open Lever

<b>Orifice -</b> Position 5 A B C D E
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<b>Inlet Size -</b> Position 6 C = 1/2 D = 3/4 E = 1 F = 1 1/4 G = 1 1/2 H = 2
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<b>Outlet Size -</b> Position 7 C = 1/2 D = 3/4 E = 1 F = 1 1/4 G = 1 1/2 H = 2 J = 2 1/2
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<b>Valve Service -</b> Position 8 N = Air/Gas/Liquid Non Code Z = Other
<b>Set Pressure -</b> Position 9, 10 & 11 _ _ _ = Actual Setting

# FIGURE 770/775 SERIES

## RSL/RSL-S

### SPECIFICATION

The valve shall be used for liquid services. The valve shall have an adjustable blowdown ring. The valve shall have a Teflon<sup>®</sup> seat. The valve shall be cleaned and packaged for use in Oxygen service in compliance with CGA specification G-4.1. The spring shall be of stainless steel.

### MATERIALS OF CONSTRUCTION

#### BRONZE

Shell ..... Cast Bronze, ASME SB-62  
 Base.....Forged Brass, Alloy C37700  
 Trim.....Copper Alloy  
 Spring .....Stainless Steel  
 17-7 PH ASTM, A-313, Type 631

#### STAINLESS STEEL

Shell .....Investment Cast 316SS, ASME SA-351  
 Base .....Investment Cast 316SS, ASME SA-351  
 Trim .....316SS, ASME SA-479  
 Spring .....Stainless Steel  
 17-7 PH, ASTM, A-313, Type 631

### WATER CAPACITY TABLE

Rate of discharge in gallons of water per minute at set pressure plus 25% accumulation or overpressure.

Inlet Sizes Inches	1/2	3/4	1	1 1/4	1 1/2
	3/4	1	1 1/4	1 1/2	2
Outlet Sizes	3/4	1	1 1/4	1 1/2	2
Seat Diameter Inches	A	B	C	D	E
Flow Area	.118	0.204	0.326	0.424	0.628
Set Pressure					
5	10.5	17.6	28.1	36.5	54.1
10	12.0	20.0	32.0	41.6	61.6
15	13.3	22.2	35.5	46.1	68.3
20	14.5	24.2	38.6	50.3	74.4
25	15.6	26.0	41.6	54.1	80.1
30	16.6	27.7	44.3	57.6	85.3
35	17.6	29.3	46.9	61.0	90.3
40	18.5	30.9	49.3	64.1	95.0
45	19.4	32.3	51.6	67.2	99.5
50	20.2	33.7	53.9	70.1	103.8
55	21.0	35.1	56.0	72.9	107.9
60	21.8	36.3	58.1	75.5	111.9
65	22.5	37.6	60.1	78.1	115.7
70	23.3	38.8	62.0	80.6	119.4
75	24.0	40.0	63.9	83.1	123.0
80	24.6	41.1	65.7	85.4	126.5
85	25.3	42.2	67.4	87.7	129.9
90	25.9	43.3	69.2	89.9	133.2
95	26.6	44.3	70.8	92.1	136.5
100	27.2	45.4	72.5	94.3	139.6
105	27.8	46.4	74.1	96.3	142.7
110	28.4	47.3	75.6	98.4	145.7
115	29.0	48.3	77.2	100.4	148.7
120	29.5	49.2	78.7	102.4	151.6
125	30.1	50.2	80.2	104.3	154.4
130	30.6	51.1	81.6	106.2	157.2
135	31.2	52.0	83.1	108.0	160.0
140	31.7	52.8	84.5	109.8	162.7
145	32.2	53.7	85.8	111.6	165.4
150	32.7	54.6	87.2	113.4	168.0

Inlet Sizes Inches	1/2	3/4	1	1 1/4	1 1/2
	3/4	1	1 1/4	1 1/2	2
Outlet Sizes	3/4	1	1 1/4	1 1/2	2
Seat Diameter Inches	A	B	C	D	E
Flow Area	.118	0.204	0.326	0.424	0.628
Set Pressure					
155	33.2	55.4	88.5	115.1	170.5
160	33.7	56.2	89.8	116.9	173.1
165	34.2	57.0	91.1	118.5	175.6
170	34.7	57.8	92.4	120.2	178.0
175	35.1	58.6	93.7	121.9	180.5
180	35.6	59.4	94.9	123.5	182.9
185	36.1	60.2	96.2	125.1	185.3
190	36.5	60.9	97.4	126.7	187.6
195	37.0	61.7	98.6	128.2	189.9
200	37.4	62.4	99.8	129.8	192.2
205	37.9	63.2	100.9	131.3	194.4
210	38.3	63.9	102.1	132.8	196.7
215	38.7	64.6	103.2	134.3	196.9
220	39.2	65.3	104.4	135.7	201.1
225	39.6	66.0	105.5	137.2	203.2
230	40.0	66.7	106.6	138.6	205.3
235	40.4	67.4	107.7	140.1	207.5
240	40.8	68.1	108.8	141.5	209.5
245	41.2	68.7	109.9	142.9	211.6
250	41.6	69.4	110.9	144.3	213.7
255	42.0	70.1	112.0	145.6	215.7
260	42.4	70.7	113.0	147.0	217.7
265	42.8	71.4	114.1	148.3	219.7
270	43.2	72.0	115.1	149.7	221.7
275	43.5	72.6	116.1	151.0	223.6
280	43.9	73.3	117.7	152.3	225.6
285	44.3	73.9	118.1	153.6	227.5
290	44.7	74.5	119.1	154.9	229.4
295	45.0	75.1	120.1	156.2	231.3
300	45.4	75.7	121.0	157.4	233.2

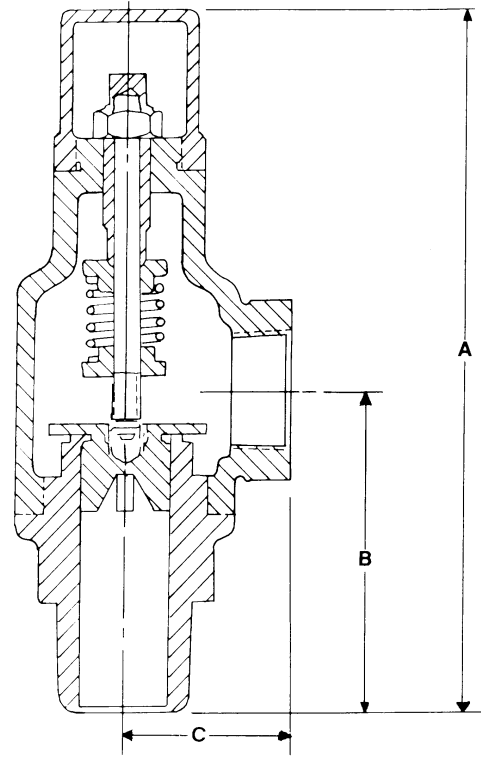
FIGURE 770/775  
SERIES

# DIMENSIONS AND WEIGHTS

## RSL FIGURE 770 SERIES

DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Inlet	Orifice	Outlet	Part #	Max PSI (barg)	Dimensions			Wgt.
					A	B	C	
1/2 (15)	A	1/2 (20)	770NACC	300 (20.7)	5 7/8 (150)	2 5/8 (65)	1 5/8 (34)	2 (.91)
1/2 (15)	A	3/4 (20)	770NACD	300 (20.7)	5 7/8 (150)	2 5/8 (65)	1 5/8 (34)	2 (.91)
3/4 (20)	A	3/4 (20)	770NADD	300 (20.7)	5 7/8 (150)	2 5/8 (65)	1 5/8 (34)	2 (.91)
1/2 (15)	A	1 (25)	770NACE	300 (20.7)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
3/4 (20)	A	1 (25)	770NADE	300 (20.7)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
1/2 (15)	B	1 (25)	770NBCE	300 (20.7)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
3/4 (20)	B	1 (25)	770NBDE	300 (20.7)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1 (25)	B	1 (25)	770NBEE	300 (20.7)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1/2 (25)	B	1 1/4 (32)	770NBCF	300 (20.7)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
3/4 (20)	B	1 1/4 (32)	770NBDF	300 (20.7)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
1 (25)	B	1 1/4 (32)	770NBEF	300 (20.7)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
3/4 (20)	C	1 1/4 (32)	770NCDF	300 (20.7)	8 11/16 (220)	3 1/2 (90)	2 1/4 (57)	6 (2.72)
1 (25)	C	1 1/4 (32)	770NCEF	300 (20.7)	8 5/8 (220)	3 1/2 (89)	2 1/4 (57)	6 (2.72)
1 1/4 (32)	C	1 1/4 (32)	770NCFE	300 (20.7)	8 5/8 (220)	3 1/2 (89)	2 1/4 (57)	6 (2.72)
3/4 (20)	C	1 1/2 (40)	770NCDG	300 (20.7)	9 1/8 (251)	3 3/8 (91)	2 5/8 (66)	7 (3.18)
1 (25)	C	1 1/2 (40)	770NCEG	300 (20.7)	9 1/8 (251)	3 3/8 (91)	2 5/8 (66)	7 (3.18)
1 1/4 (32)	C	1 1/2 (40)	770NCFG	300 (20.7)	9 1/8 (251)	3 3/8 (91)	2 5/8 (66)	7 (3.18)
1 (25)	D	1 1/2 (40)	770NDEG	300 (20.7)	9 13/16 (250)	3 3/8 (90)	2 5/8 (66)	7 (3.18)
1 1/4 (32)	D	1 1/2 (40)	770NDFG	300 (20.7)	9 13/16 (250)	3 3/8 (90)	2 5/8 (66)	7 (3.18)
1 1/2 (40)	D	1 1/2 (40)	770NDGG	300 (20.7)	9 13/16 (250)	3 3/8 (90)	2 5/8 (66)	7 (3.18)
1 (25)	D	2 (50)	770NDEH	300 (20.7)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	8 (3.63)
1 1/4 (32)	D	2 (50)	770NDFH	300 (20.7)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	8 (3.63)
1 1/2 (40)	D	2 (50)	770NDGH	300 (20.7)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	8 (3.63)
1 1/2 (40)	E	2 (50)	770NEGH	300 (20.7)	9 11/16 (247)	3 11/16 (94)	2 3/4 (70)	9 (4.09)
2 (50)	E	2 (50)	770NEHH	300 (20.7)	9 11/16 (246)	3 11/16 (94)	2 3/4 (70)	9 (4.09)
1 1/2 (40)	E	2 1/2 (65)	770NEGJ	300 (20.7)	9 11/16 (247)	4 (102)	2 15/16 (75)	10 (4.54)
2 (50)	E	2 1/2 (65)	770NEHJ	300 (20.7)	9 11/16 (246)	4 (102)	2 15/16 (75)	10 (4.54)



SAFETY RELIEF VALVES



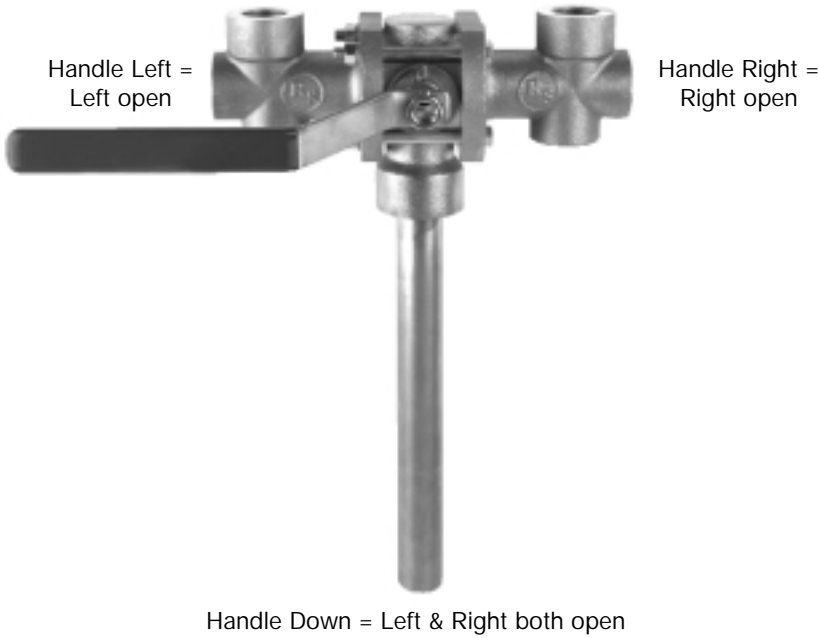
# DIMENSIONS AND WEIGHTS

## RSL-S FIGURE 775 SERIES

**DIMENSIONS** inches (mm) **AND WEIGHTS** pounds (kg)

Inlet	Orifice	Outlet	Part #	Max PSI (barg)	Dimensions			Wgt.
					A	B	C	
1/2 (15)	A	3/4 (20)	775NACD	300 (20.7)	5 7/8 (150)	2 5/8 (65)	1 5/8 (34)	2 (.91)
3/4 (20)	A	3/4 (20)	775NADD	300 (20.7)	5 7/8 (150)	2 5/8 (65)	1 5/8 (34)	2 (.91)
1/2 (15)	A	1 (25)	775NACE	300 (20.7)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
3/4 (20)	A	1 (25)	775NADE	300 (20.7)	6 1/2 (166)	2 13/16 (71)	1 11/16 (43)	3 (1.36)
1/2 (15)	B	1 (25)	775NBCE	300 (20.7)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
3/4 (20)	B	1 (25)	775NBDE	300 (20.7)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1 (25)	B	1 (25)	775NBEE	300 (20.7)	7 3/8 (188)	2 7/8 (74)	1 11/16 (42)	4 (1.82)
1/2 (25)	B	1 1/4 (32)	775NBCF	300 (20.7)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
3/4 (20)	B	1 1/4 (32)	775NBDF	300 (20.7)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)
1 (25)	B	1 1/4 (32)	775NBEF	300 (20.7)	7 1/2 (190)	3 (76)	1 7/8 (48)	5 (2.27)

**SAFETY RELIEF  
VALVES**



# FIGURE 780 DIVERTER VALVE

SIZES  $\frac{3}{4}$ " to  $1\frac{1}{2}$ "  
PRESSURES to 400 PSIG at 400°F

- Engineered for maximum safety and reliability
- Full flow manifold ends
- Cleaned and packaged for use in O<sub>2</sub> service in compliance with the CGA specification G-4.1
- 180 degree operation
- Handle indicates flow direction
- Low maintenance
- Blow out proof stem
- V-ring stem packing
- All stainless externals

## APPLICATIONS DATA

- Dual safety relief systems
- Stationary cryogenic tanks
- Manifolding
- Distribution systems
- Process systems
- Liquid and Gaseous Cryogenic Applications

## APPLICABLE CODES

- ANSI B31.1
- API 527
- ANSI B16.18
- ASME Sec. VIII
- CRN: 0C0945.9087YTN

## MODELS

- 780 - Bronze Diverter Valve

## CODE SELECTION CHART

	Model			Valve Size	Orifice	Top Port	Bottom Port	Side Port	Mat'l
	7	8	0	G	E	D	E	B	B
	1	2	3	4	5	6	7	8	9
<b>Model -</b> Position 1, 2 & 3 780 = Diverter Valve				<b>Orifice -</b> Position 5 F = Full	<b>Bottom Port -</b> Position 7 A = $\frac{1}{4}$ B = $\frac{3}{8}$ C = $\frac{1}{2}$ D = $\frac{3}{4}$ E = 1 F = $1\frac{1}{4}$			<b>Side Port -</b> Position 8 A = $\frac{1}{4}$ B = $\frac{3}{8}$ C = $\frac{1}{2}$ D = $\frac{3}{4}$ E = 1 F = $1\frac{1}{4}$	<b>Material -</b> Position 9 B = Bronze w/316 Stem
<b>Valve Size -</b> Position 4 D = $\frac{3}{4}$ E = 1 G = $1\frac{1}{2}$				<b>Top Port -</b> Position 6 D = $\frac{3}{4}$ E = 1 F = $1\frac{1}{4}$ G = $1\frac{1}{2}$					

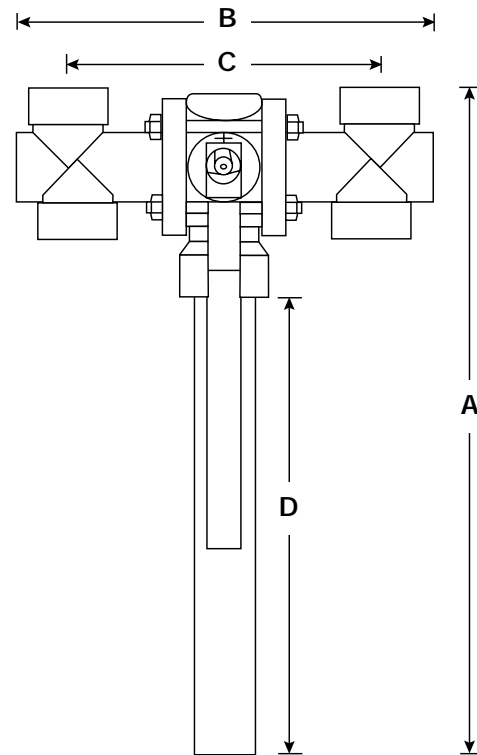
# FIGURE 780 DIVERTER VALVE

## SPECIFICATION

The valve shall be utilized for applications that requires full flow manifolds. The valve shall have 180 degrees of operation. The handle shall indicate the direction of flow. The stem shall be blow out proof and contain V-ring packing material. The valve shall be cleaned to CGA G-4.1.

## MATERIALS OF CONSTRUCTION

Body.....	Bronze B61
End Plate .....	Bronze B61
Ball .....	Bronze
Stem .....	316SS
Seats .....	MTFE
Body Seals .....	TFE
Stem Seals.....	CTFE
Stem Bearing .....	TFE
Bellville Wsh .....	17-7 SS
External Hdwe .....	300 Series SS
Inlet Pipe .....	304SS ASTM A312 Schedule 10
Bolts .....	304SS A193



### High Flow Diverter Valve CV Values\*

Sizes (inches)	Safety Relief Valve Outlet		Rupture Disc Outlet		Torque
	CV@ mid position (90°)	CV@ full open (180°)	CV@ mid position (90°)	CV@ full open (180°)	Max. Value
¾F	9.2	8.2	10.7	8.1	200 in. lbs.
1F	25.3	18.3	16.4	14.0	300 in. lbs.
1½F	40.0	30.4	23.8	22.2	340 in. lbs.

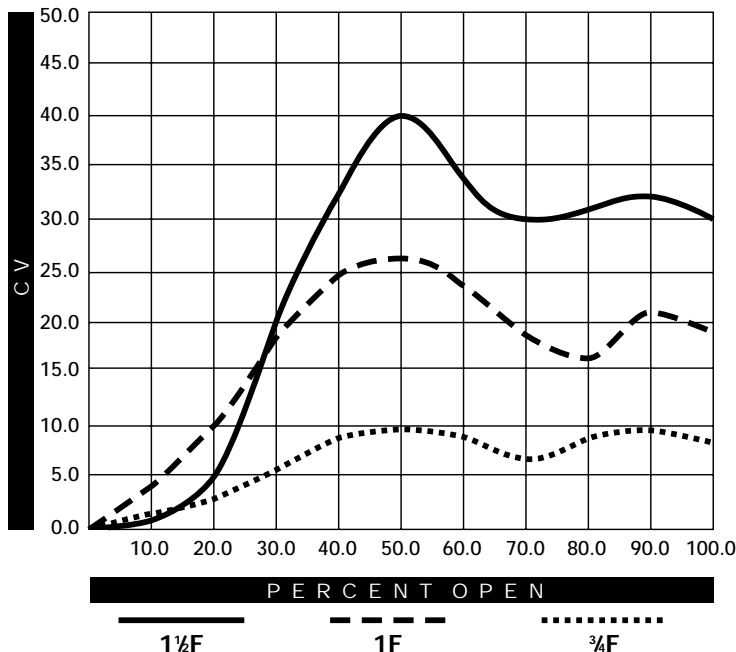
\* Flows may vary slightly due to outlet connection sizes.

### DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	A	B	C	D	WEIGHT
¾F (20)	13.00 (330.2)	9.38 (238.3)	7.25 (184.2)	7.75 (196.9)	11.5 (5.21)
1F (25)	17.66 (448.6)	11.61 (294.9)	8.73 (221.7)	12.00 (304.8)	24.5 (11.11)
1½F (40)	19.70 (500.4)	13.6 (345.4)	10.15 (257.8)	12.00 (304.8)	36.5 (16.56)

Dimensions for reference only

### HIGH FLOW DIVERTER VALVE Cv GRAPH



### Diverter Valve Configuration Chart

<b>780DFxxxB</b> <b>¾" Diverter Valve</b> Largest Configuration Possible = 780DFDCDB Top = ¾" NPT Max Bottom = ½" NPT Max Side = ¾" NPT Max
<b>780EFxxxB</b> <b>1" Diverter Valve</b> Largest Configuration Possible = 780EFFEEB Top = 1¼" NPT Max Bottom = 1" NPT Max Side = 1" NPT Max
<b>780GFxxxB</b> <b>1½" Diverter Valve</b> Largest Configuration Possible = 780GFGFFB Top = 1½" NPT Max Bottom = 1¼" NPT Max Side = 1¼" NPT Max

FIGURE 780  
DIVERTER VALVE



# FIGURE 790 CRYOTREE™ ASSEMBLY

SIZES 3/4" to 1 1/2"  
PRESSURES to 400 psig at 400°F

- Dual safety relief systems engineered for maximum safety and reliability
- Easy system installation
- Includes high capacity safety relief valves, full flow diverting valve, rupture discs, bleed valves, and related piping assembled
- Standardized components
- Low maintenance
- Eliminates the need to shut down and evacuate the tank for service
- Minimizes pressure drop in system
- Cleaned and packaged for use in O<sub>2</sub> service in compliance with the CGA specification G-4.1
- Sealed in 6 mil poly bags to eliminate contamination prior to installation
- Handle indicates flow direction

### APPLICATIONS DATA

- On stationary cryogenic storage tanks to isolate safety relief valves and rupture discs in the event they need to be serviced

### APPLICABLE CODES

- CGA S-1.2 and S-1.3.
- ASME Sec.VIII
- API 527
- ANSI B16.18
- ANSI B31.1

Our CryoTree™ assemblies are manufactured for use on stationary cryogenic storage tanks to isolate safety relief valves and rupture discs in the event they need to be serviced. Utilizing this system eliminates the need to shut down and evacuate the tank for service. This modular assembly provides for just a single connection to the internal tank piping.

### MODELS

- 790 - Bronze CryoTree™

### CODE SELECTION CHART

Model			Valve Size	Orifice	Top Port	Bottom Port	Side Port	Mat'l	SRV Outlet	SRV Orifice	Set Pressure		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>7</b>	<b>9</b>	<b>0</b>	<b>G</b>	<b>F</b>	<b>D</b>	<b>E</b>	<b>A</b>	<b>B - E</b>	<b>B</b>	<b>2</b>	<b>5</b>	<b>0</b>	
<b>Model -</b> Position 1, 2 & 3 790 = CryoTree™			<b>Orifice -</b> Position 5 F = Full		<b>Bottom Port -</b> Position 7 A = 1/4 B = 3/8 C = 1/2 D = 3/4 E = 1 F = 1 1/4		<b>Side Port -</b> Position 8 A = 1/4	<b>Material -</b> Position 9 B = Bronze w/316 Stem			<b>SRV Orifice -</b> Position 11 A B C D E		
<b>Valve Size -</b> Position 4 D = 3/4 E = 1 G = 1 1/2			<b>Top Port -</b> Position 6 D = 3/4 E = 1 F = 1 1/4 G = 1 1/2					<b>SRV Outlet -</b> Position 10 D = 3/4 E = 1 F = 1 1/4 G = 1 1/2 H = 2			<b>Set Pressure -</b> Position 12, 13 & 14 ___ = Actual Setting		

# FIGURE 790 CRYOTREE™ ASSEMBLY

## SPECIFICATION

The valve shall be utilized for applications that requires full flow manifolds. The valve shall have 180 degrees of operation. The valve shall contain two safety relief valves, two rupture discs and two bleed valves. The handle shall indicate the direction of flow. The stem shall be blow out proof and contain V-ring packing material. The valve shall be cleaned to CGA G-4.1.

## MATERIALS

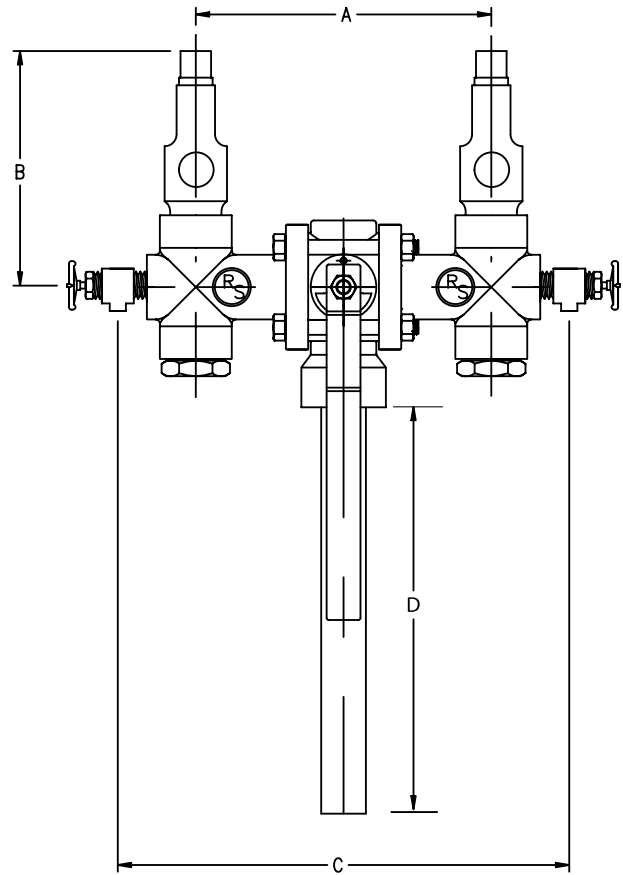
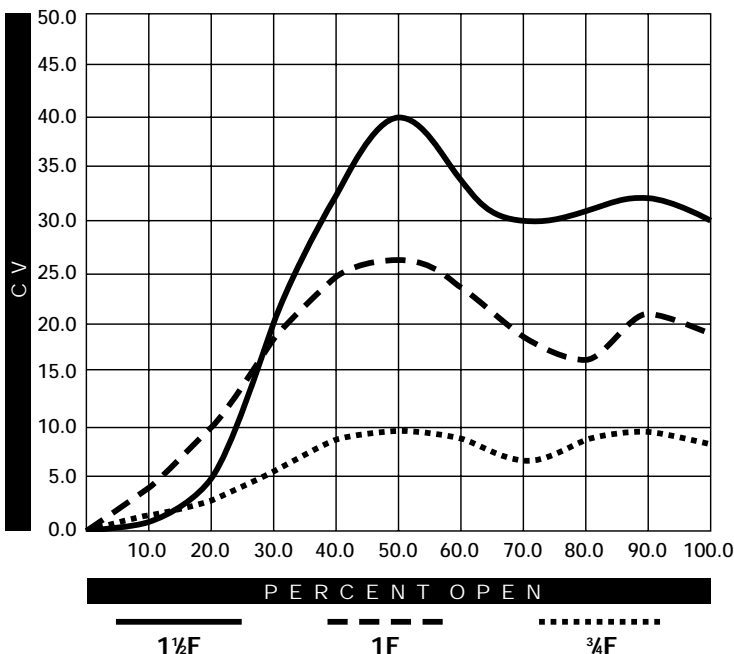
Body .....	Bronze B62
End Plate .....	Bronze B62
Ball .....	Bronze
Stem .....	316SS
Inlet Pipe.....	304SS ASTM 312 Schedule
Bleed Port Valve .....	Brass
Rupture Disk .....	Brass/Monel
Bolts .....	304SS A193

High Flow Diverter Valve C<sub>v</sub> Values\*

Size (inches)	Safety Relief Valve Outlet		Rupture Disc Outlet	
	C <sub>v</sub> @ mid position (90°)	C <sub>v</sub> @ full open (180°)	C <sub>v</sub> @ mid position (90°)	C <sub>v</sub> @ full open (180°)
¾F	9.2	8.2	10.7	8.1
1F	25.3	18.3	16.4	14.0
1½F	40.0	30.4	23.8	22.2

Flows may vary slightly due to outlet connection sizes.

High Flow Diverter Valve C<sub>v</sub> Graph



DIMENSIONS inches (mm)

SIZE	A	B*	C	D
¾F (20)	7.3 (185.4)	22.5 (571.5)	14.8 (375.9)	7.75 (196.9)
1F (25)	8.7 (221.0)	25.7 (652.8)	16.5 (419.1)	12.00 (304.8)
1½F (40)	10.2 (259.1)	27.3 (693.4)	18.3 (464.8)	12.00 (304.8)

Dimensions for reference only.

\* Height varies depending on valve.

FIGURE 790  
CRYOTREE™

## CryoTree Configuration Chart

### 790DFxxxB-xx ¾" CryoTree

Largest Configuration Possible = 790DFDCDB-GC  
 Top = ¾" NPT Max  
 Bottom = ½" NPT Max  
 Side = ¾" NPT Max (¼" recommended)  
 SRV Outlet = ½" Max  
 SRV Orifice = C Max

### 790EFxxxB-xx 1" CryoTree

Largest Configuration Possible = 790EFFEEB-HD  
 Top = 1" NPT Max  
 Bottom = 1" NPT Max  
 Side = 1" NPT Max (¼" recommended)  
 SRV Outlet = 2" Max  
 SRV Orifice = D Max

### 790GFxxxB-xx 1½" CryoTree

Largest Configuration Possible = 790GFGFFB-JE  
 Top = 1½" NPT Max  
 Bottom = 1½" NPT Max  
 Side = 1½" NPT Max (¼" recommended)  
 SRV Outlet = 2½" Max  
 SRV Orifice = E Max

Refer to valve information for maximum set pressure.

**SAFETY RELIEF  
VALVES**