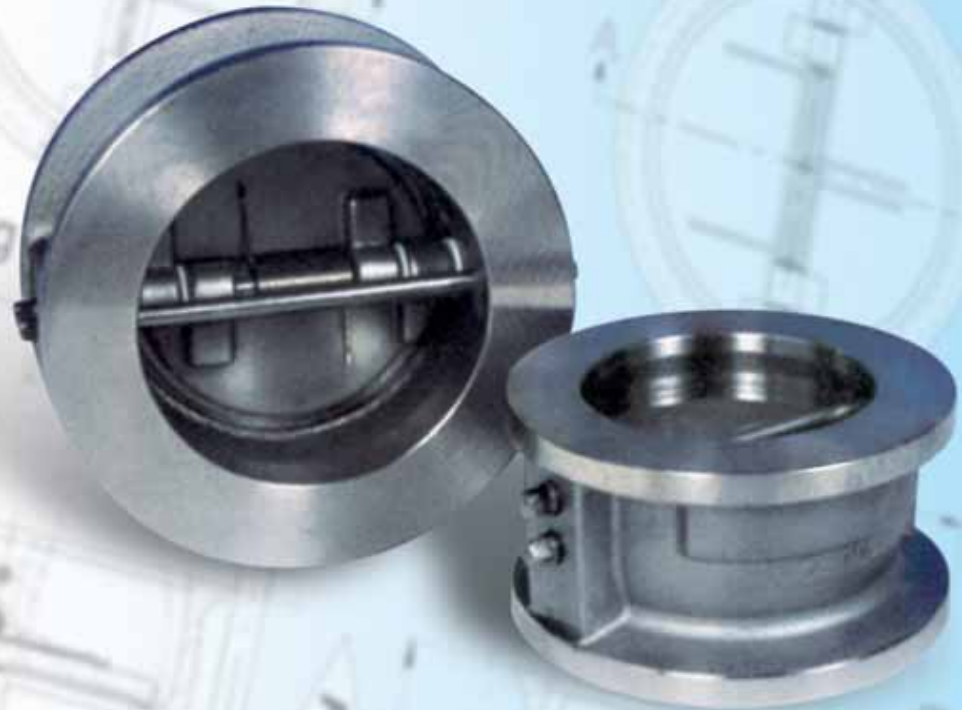


WAFER CHECK VALVES

VALSAR S.R.L.



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PRODUCT CHARACTERISTIC

Water Hammer of Prevention:

Because aided by a spring, before the flow reverses **Dual Plates Wafer Style Check Valve** was almost closed, so greatly reducing water hammer. If used a special high torsion spring and mounted horizontally, the **Dual Plates Wafer Style Check Valve** shall be such as “silent”.

Cheap to Install:

Traditional flanged **Swing Check Valves** are heavy and therefore requires special foundations or supports which are expensive. **Dual Plates Wafer Style Check Valve** on the other hand are relatively light and shall be hung directly on the pipe without any support whatever.

As the heavy disc of traditional **Swing Check Valves** hangs strictly in vertical position, when the valve isn't mounted on the plant perfectly in horizontal position, it might not close properly. The plates in the **Dual Plates Wafer Style Check Valve** are lighter and are maintained in the close position by a spring, so the valve may be mounted in any position from horizontal to vertical.

Low Pressure Drop:

The open area through **Dual Plates Wafer Style Check Valves** is about the same as through **Swing Check Valves**. The plates in most of **Swing Check Valves** doesn't open fully so the clear has a crescent shape. The bridge across **Dual Plates Wafer Style Check Valves** reduces the clear area by about the same amount. The big difference between the two styles is the amount of energy required to open them and keep them open.

No slamming:

Because of the spring, **Dual Plates Wafer Style Check Valves** plates start closing against the flow before it stops. The flow, therefore, cushions the plates and slows them down.

Seat Leakage:

Our products --- **Dual Plates Wafer Style Check Valve** is tested according to **API - 598** which has a metal to metal seat permitted seat leakage of 3 c.c./inch of bore/mm (when use hdro. test) And if we use pneu. test is according **API - 598** which has a metal to metal seal permitted seat leakage of 700 c.c./inch.



ORDERING INSTRUCTION

Example: TAS - 60 - A1 - F2 / W1 - O / W1 - O - S5
 TYPE SIZE PRESSURE RATING END CONNECT. BODY BODY SEAT PLATE PLATE SEAT SPRING

TYPE PRESSURE RATING

FIG.	Face to Face	Materials	Standard	FIG.	0	1	2	3	4	5	6	7	8	9
TAS	API-594	C.S. & S.S.	ASME	A	125 lb	150 lb	250 lb	300 lb	400 lb	600 lb	900 lb	1500 lb	2500 lb	-
TAC	API-594	C.I. & D.I.	ISO	D	PN 6	PN 10	PN 16	PN 25	PN 40	PN 50	PN110	PN150	PN260	PN420
TEC	EN558-1 Serial 50	C.I. & D.I.	JIS	J	5 K	7.5 K	10 K	16 K	20 K	30 K	40 K	63 K	-	-
TEBC	EN558-1 Serial 50	D.I.	BS/Table	T	-	A	D	E	F	-	-	-	-	-
TKC	EN558-1 Serial 1	All	API	P	-	150 lb	300 lb	-	-	2000 lb	3000 lb	5000 lb	-	-
TPSF	API-594	C.S. & S.S.												

BODY / PLATE MATERIALS

FIG.	C	D	W1	W2	L1	L2	L3	L4	I	J	S1	S2
ASTM	A126 Class B	A536 65-45-12	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A352 LC1	A350 LF2	A217 C5	A217 C12	A743 CA6NM	A743 CA-15
JIS	G5501 FC250	G5502 FCD450	G5151 SCPH2	G5151 SCPH21	G5152 SCPL1	-	G5152 SCPL11	-	G5151 SCPH61	-	-	G5121 SCS1
DIN	EN1561 EN-GJL 250	EN1563 EN-GJS 450-10	-	EN10213-2 G17CrMo 5-5	-	-	-	-	-	-	-	EN10213-4 GX12 Cr12
FIG.	S3	S4	S5	S6	S7	S8	G	H	T	B1	B2	X
ASTM	A351 CN7M	A351 CF8	A351 CF8M	A351 CF3M	A351 CG8M	A351 CF8C	A182 S31803	B649 N08904	B348 Gr. 2	B584 C83600	B148 C95800	Other
JIS	G5121 SCS23	G5121 SCS13A	G5121 SCS14A	G5121 SCS16A	-	G5121 SCS21	G4304 SUS329J3L	G4304 SUS890L	H4650 TB340	H5120 CAC406	H5120 CAC703	Other
DIN	-	EN10213-4 GX5CrNi 19-10	EN10213-4 GX5CrNiMo 19-11-12	-	-	EN10213-4 GX5CrNiNb 19-11	-	-	17862 3.7035	1705 CuSn5 ZnPb	1714 CuAl10Ni	Other

BODY / PLATE SEAT MATERIALS

FIG.	N	E	K	Z	U	V	O	S2	S4	S5	M	P	X
Materials	NBR (Buna-N)	EPDM (EPT)	Neoprene (C.R.)	Silicone	Butyl	Viton (FPM)	Metal to Metal	13% Cr Overlay	SUS304 Overlay	SUS316 Overlay	Monel Overlay	6# Stellite Overlay	Other
Temperature Range °C	0 to 80	-20 to 120	-30 to 120	-30 to 80	-30 to 150	-30 to 200	Same as Body & Plate	-25 to 530	-260 to 810	-260 to 810	-198 to 482	-260 to 810	Other

END CONNECTION

SPRING

FIG.	Type of Contact Faces		FIG.	S5	M	Q	X
F1	Flat Face	F.F. (63 AARH)	Materials	SUS316 WPA	Monel K-500	Inconel X-750	Other
F2	Raised Face	R.F. (125-250 AARH)					
F3	Ring Type Joint						



DESIGN STANDARD & CRACKING PRESSURE

Basic Design Standard	API - 594 Manufactures
Pressure Temperature Standard	ASME - B16.1 ASME - B16.34 ASME - B16.42 ISO - 7005 / 1~2 JIS - B 2201
Flanged Face Standard	MSS - SP 6 ASME - B16.1 ASME - B16.5 ISO - 468 JIS - B 2238 JIS - B 2239
Inspection Standard	API - 598 ASME - B16.34 ISO - 5208 JIS - B 2003 JPI - 7S - 39 - 96
Thickness Standard	API - 594 API - 600 Manufactures
Face To Face Standard	API - 594 API - 6D ISO - 5752 EN - 558 - 1 JIS - B 2002
Marking Standard	API - 594 MSS - SP 25 ISO - 5209 JIS - B 2004
Flanged Suit Standard	API - 605 MSS - SP 44 AWWA - C207 ASME - B16.1 ASME - B16.5 ASME - B16.42 ISO - 7005/1 ISO - 7005/2 BS10 - Table A/D/E/F JIS - B 2238 JIS - B B 2239 JPI - 7S - 15 - 93

Size	S.I. (MPa) System	Metric (kg/cm ²) System
1 - 1/2" & 2"	6.286*10 ⁻³	61.60*10 ⁻³
2-1/2"	5.319*10 ⁻³	52.42*10 ⁻³
3"	6.122*10 ⁻³	60.00*10 ⁻³
4"	3.204*10 ⁻³	31.40*10 ⁻³
5"	2.617*10 ⁻³	25.65*10 ⁻³
6"	1.628*10 ⁻³	15.95*10 ⁻³
8"	2.470*10 ⁻³	24.21*10 ⁻³
10"	1.656*10 ⁻³	16.23*10 ⁻³
12"	2.206*10 ⁻³	21.62*10 ⁻³
14"	1.423*10 ⁻³	13.95*10 ⁻³
16"	1.094*10 ⁻³	10.72*10 ⁻³
18"	0.690*10 ⁻³	6.76*10 ⁻³
20"	0.846*10 ⁻³	8.29*10 ⁻³
22"	0.754*10 ⁻³	7.39*10 ⁻³
24"	0.664*10 ⁻³	6.51*10 ⁻³
26"	0.809*10 ⁻³	7.93*10 ⁻³
28"	0.668*10 ⁻³	6.55*10 ⁻³
30"	0.571*10 ⁻³	5.60*10 ⁻³
32"	0.797*10 ⁻³	7.81*10 ⁻³
36"	0.619*10 ⁻³	6.07*10 ⁻³
40"	0.707*10 ⁻³	6.93*10 ⁻³
42"	0.750*10 ⁻³	7.35*10 ⁻³
44"	0.796*10 ⁻³	7.80*10 ⁻³
48"	0.610*10 ⁻³	5.98*10 ⁻³
54"	0.796*10 ⁻³	6.05*10 ⁻³
60"	0.596*10 ⁻³	5.84*10 ⁻³



CV FORMULA & CV, KV VALUES

* Cv Pressure Drop Formula

**Based upon ISA S75.01-1985
For turbulent flow**

For Liquids

$$Q = C_v \cdot (\Delta P / G_f)^{1/2}$$

Q max of R

$$0.7 \cdot C_v \cdot (P_1 - F_f P_v) / G_f^{1/2}$$

vaporising liquid

$$W = 63.3 \cdot C_v \cdot (\Delta P \cdot \alpha_1)^{1/2}$$

For Gases & Vapors

$$Q = 1360 \cdot C_v \cdot P_1 \cdot Y \cdot$$

$$[X / (G_g \cdot T_1 \cdot Z)]^{1/2}$$

$$W = 19.3 \cdot C_v \cdot P_1 \cdot Y \cdot$$

$$[(X \cdot M) / (T_1 \cdot Z)]^{1/2}$$

Q = Flow

Liquid = U.S. gall/minute

Gas = standard ft³/hour

C_v = Valve co-efficient

ΔP = (P₁-P₂) Pressure drop psi

P₁ = Inlet Pressure psi

P₂ = Outlet Pressure psi

G_f = Specific Gravity of fluid,
e.g. water = 1; @60°F; 1 atm

G_g = Specific Gravity of gas,
e.g. gas = 1; @60°F; 1 atm

T₁ = Absolute inlet temperature

W = Flow lbs/hour

Y = Expansion factor
(limits between 1 & 0.67)

X = Ratio of Pressure Drop ΔP
to absolute inlet Pressure 1P

Z = Gas compressibility factor
(=1 for sn ideal gas)

M = Molecular weight

α₁ = Specific weight, upstream
conditions (lb/ft³)

F_f = Liquid critical pressure
ratio factor

$$F_f = 0.96 - 0.28 (P_v / P_c)^{1/2}$$

P_v = Absolute vapor pressure
of liquid at inlet

temperature in psi

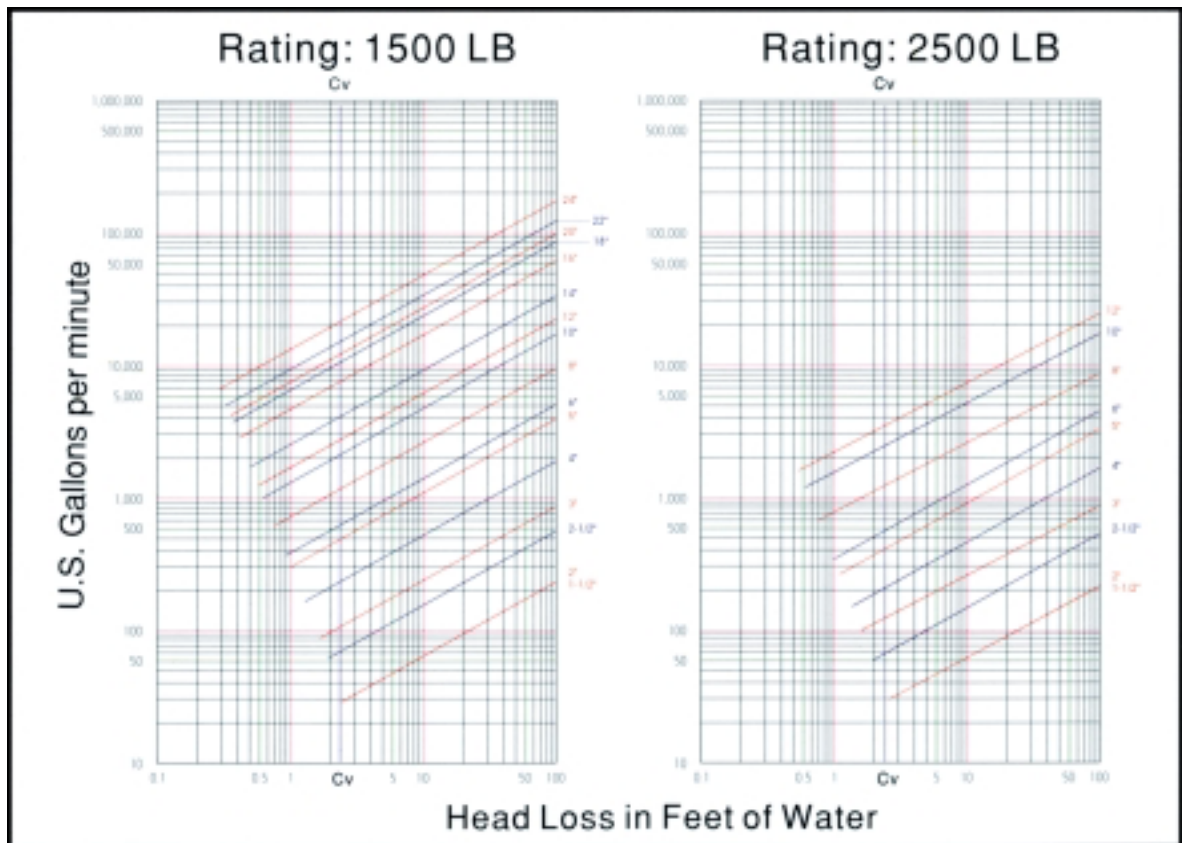
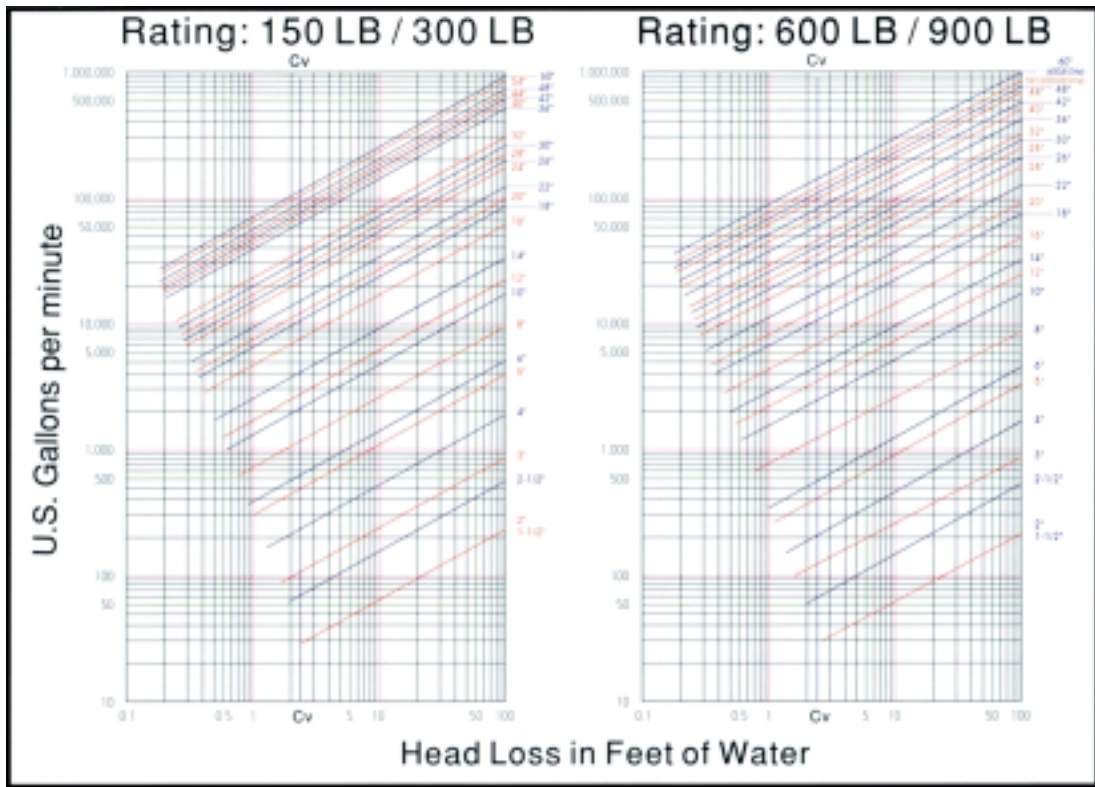
P_c = Absolute thermodynamic
critical pressure

* Cv & Kv Values (Cv = 1.17 * Kv)

SIZE	Cv	Kv
1 - 1/2" & 2"	54.5	46.6
2-1/2"	84.6	72.3
3"	137.5	117.5
4"	283.1	242.0
5"	491.3	419.9
6"	812.1	694.1
8"	1499.5	1281.6
10"	2587.3	2211.4
12"	4214.8	3602.3
14"	5547.3	4741.3
16"	7549.7	6452.7
18"	10548.7	9016.0
20"	13325.6	11390.0
22"	20150.0	17222.0
24"	21500.0	18376.0
26"	26400.0	22564.0
28"	29900.0	25555.0
30"	38400.0	32821.0
32"	46500.0	39744.0
36"	62000.0	52992.0
40"	84500.0	72222.0
42"	91300.0	78034.0
44"	114800.0	98120.0
48"	145.100.0	124017.0
54"	170500.0	145727.0
60"	215000.0	183760.0



HEAD LOSS CURVES



* When water at 15.5°C



ASME PRESSURE - TEMPERATURE RATING

*** ASME B16.34 MAXIMUM NON-SHOCK WORKING PRESSURE: PSI**

Temp.		150 lb							300 lb						
°F	°C	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A351 CF8	A351 CF8M	A351 CF3M	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A351 CF8	A351 CF8M	A351 CF3M
-20~100	-29~38	285	290	265	290	275	275	275	740	750	695	750	720	720	720
200	93	260	260	250	260	235	240	240	675	710	655	750	600	620	620
300	149	230	230	230	230	205	215	215	655	675	640	730	530	560	560
400	204	200	200	200	200	180	195	195	635	660	620	705	470	515	515
500	260	170	170	170	170	170	170	170	600	640	585	665	435	480	480
600	316	140	140	140	140	140	140	140	550	605	535	605	415	450	450
650	343	125	125	125	125	125	125	125	535	590	525	590	410	445	445
700	371	110	110	-	110	110	110	110	535	570	-	570	405	430	430
750	399	95	95	-	-	95	95	95	505	530	-	-	400	425	425
800	427	80	80	-	-	80	80	80	410	510	-	-	395	415	415
850	454	-	65	-	-	65	65	65	-	485	-	-	390	405	405
900	482	-	50	-	-	50	50	-	-	450	-	-	385	395	-
950	510	-	35	-	-	35	35	-	-	380	-	-	375	385	-
1000	538	-	20	-	-	20	20	-	-	225	-	-	325	365	-

Temp.		600 lb							900 lb						
°F	°C	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A351 CF8	A351 CF8M	A351 CF3M	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A351 CF8	A351 CF8M	A351 CF3M
-20~100	-29~38	1480	1500	1390	1150	1440	1440	1440	2220	2250	2085	2250	2160	2160	2160
200	93	1350	1425	1315	1150	1200	1240	1240	2025	2135	1970	2250	1800	1860	1860
300	149	1315	1345	1275	1455	1055	1120	1120	1970	2020	1915	2185	1585	1680	1680
400	204	1270	1315	1235	1410	940	1030	1030	1900	1975	1850	2115	1410	1540	1540
500	260	1200	1285	1165	1330	875	955	955	1795	1925	1745	1995	1310	1435	1435
600	316	1095	1210	1065	1210	830	905	905	1640	1815	1600	1825	1245	1355	1355
650	343	1075	1175	1045	1175	815	890	890	1610	1765	1570	1765	1225	1330	1330
700	371	1065	1135	-	1135	805	865	865	1600	1705	-	1705	1210	1295	1295
750	399	1010	1035	-	-	795	845	845	1510	1595	-	-	1195	1270	1270
800	427	825	1015	-	-	790	830	830	1235	1525	-	-	1180	1245	1245
850	454	-	975	-	-	780	810	810	-	1460	-	-	1165	1215	1215
900	482	-	900	-	-	770	790	-	-	1350	-	-	1150	1180	-
950	510	-	755	-	-	750	775	-	-	1130	-	-	1125	1160	-
1000	538	-	445	-	-	645	725	-	-	670	-	-	965	965	-

Temp.		1500 lb							2500 lb						
°F	°C	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A351 CF8	A351 CF8M	A351 CF3M	A216 WCB	A217 WC6	A352 LCB	A352 LCC	A351 CF8	A351 CF8M	A351 CF3M
-20~100	-29~38	3705	2250	3740	3750	3600	3600	3600	6170	6250	5785	6250	6000	6000	6000
200	93	3375	2135	3280	3750	3000	3095	3095	5625	5930	5470	6250	5000	5160	5160
300	149	3280	2020	3190	3640	2640	2795	2795	5470	5605	5315	6070	4400	4660	4660
400	204	3170	1975	3085	3530	2350	2570	2570	5280	5485	5145	5880	3920	4280	4280
500	260	2995	1925	2910	3325	2185	2390	2390	4990	5350	4850	5540	3640	3980	3980
600	316	2735	1815	2665	3025	2075	2255	2255	4560	5040	4440	5040	3460	3760	3760
650	343	2685	1765	-	2940	2040	2220	2220	4475	4905	4355	4905	3400	3700	3700
700	371	2665	1705	-	2840	2015	-	-	4440	4730	4320	4730	3360	3600	3600
750	399	2520	1595	-	-	1990	2110	2110	4200	4430	3945	4200	3320	3520	3520
800	427	2060	1525	-	-	1970	2075	2075	3430	4230	3260	3430	3280	3460	3460
850	454	-	1460	-	-	1945	2030	2030	2230	4060	2230	2230	3240	3380	3380
900	482	-	1350	-	-	1920	1970	-	1430	3745	1430	1430	3200	3280	-
950	510	-	1130	-	-	1870	1930	-	860	3145	860	860	3120	3220	-
1000	538	-	670	-	-	1610	1820	-	430	1860	430	430	2685	3030	-

*** ASME B16.1 Pressure-Temperature Rating: PSI**

*** ASME B16.1 Pressure-Temperature Rating: PSI**

Temp.		125 lb				250 lb				Temperature		ASTM A536 65-45-12	
°F	°C	A126 Class-A		A126 Class-B		A126 Class-A		A126 Class-B		°F	°C	150 lb	300 lb
		NPS	NPS	NPS	NPS	NPS	NPS	NPS	NPS				
		1,5~12	1,5~12	14~24	30~48	1,5~12	1,5~12	14~24	30~48				
-20~150	-29~66	175	200	150	150	400	500	300	300	-20~100	-29~38	250	640
200	93	165	190	135	115	370	460	280	250	200	93	235	600
225	107	155	180	125	100	355	440	270	225	300	149	215	565
250	121	150	175	120	85	340	415	260	200	-	-	-	-
275	135	145	170	110	65	325	395	250	175	400	204	200	525
300	149	140	165	105	50	310	375	240	150	500	260	170	495
325	163	130	155	100	-	295	355	230	125	-	-	-	-
350	176	125	150	-	-	280	335	220	100	600	316	140	465
375	191	-	145	-	-	265	315	210	-	-	-	-	-
400	204	-	140	-	-	250	290	200	-	650	343	125	450
425	218	-	130	-	-	-	270	-	-	-	-	-	-
450	232	-	125	-	-	-	250	-	-	-	-	-	-



ISO - 7005 PRESSURE - TEMPERATURE RATING

*** ASME B16.34 MAXIMUM NON-SHOCK WORKING PRESSURE: BAR (STEEL)**

Temperature °C	PN20								PN50							
	Material Groups								Material Groups							
	1A1	1A2	1A3	1A5	1A9	1A13	2A1	2A2	1A1	1A2	1A3	1A5	1A9	1A13	2A1	2A2
-29 to 38	19.6	20.0	18.4	18.4	20.0	20.0	19.0	19.0	51.1	51.7	47.9	47.9	51.7	51.7	49.6	49.6
50	19.2	19.2	18.1	18.3	19.2	19.2	18.4	18.4	50.1	51.7	47.3	47.6	51.1	51.7	47.8	48.1
100	17.7	17.7	17.3	17.7	17.7	17.7	15.7	16.2	46.4	51.5	45.1	46.6	48.8	51.5	40.9	42.2
150	15.8	15.8	15.8	15.8	15.8	15.8	13.9	14.8	45.2	50.2	44.0	45.0	46.4	50.2	36.3	38.5
200	14.0	14.0	14.0	14.0	14.0	14.0	12.6	13.7	43.8	48.8	42.7	44.2	45.5	48.8	32.8	35.7
250	12.1	12.1	12.1	12.1	12.1	12.1	11.7	12.1	41.7	46.3	40.6	43.1	44.5	46.3	30.5	33.4
300	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	38.7	42.4	37.7	42.0	42.4	42.4	29.1	31.6
350	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	37.0	40.2	36.0	40.2	40.2	40.2	28.1	30.4
375	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	36.5	38.8	35.3	38.8	38.8	38.8	27.8	29.7
400	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	34.5	34.5	32.4	36.6	36.6	36.6	27.5	29.1
425	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	28.8	28.8	27.3	35.1	35.1	34.5	27.2	28.7
450	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	20.0	20.0	19.8	33.8	33.8	30.9	26.9	28.1
475	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	13.5	13.5	13.5	31.7	31.7	25.9	26.6	27.4
500	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	8.8	8.8	8.8	24.1	27.8	20.3	26.1	26.8
525	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	5.2	5.2	5.2	15.0	20.3	15.4	23.9	25.8
540	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	3.3	3.3	3.3	10.7	-	-	-	-
550	-	-	-	-	-	-	-	-	-	-	-	-	12.8	11.7	21.8	25.0
575	-	-	-	-	-	-	-	-	-	-	-	-	8.5	8.8	20.1	24.1
600	-	-	-	-	-	-	-	-	-	-	-	-	5.9	6.5	16.7	21.4
625	-	-	-	-	-	-	-	-	-	-	-	-	3.4	4.5	13.1	18.3
650	-	-	-	-	-	-	-	-	-	-	-	-	2.3	3.0	10.5	14.1
675	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	12.6
700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	9.9
725	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	7.7
750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	5.9
775	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	4.6
800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1	3.5

NOTE 1. - Consult table D.2 and the notes to table D.2 for limitations on use.
NOTE 2. - The maximum non-shock working pressure is 1.3 bar at 540 °C for PN20

Temperature °C	PN110								PN150							
	Material Groups								Material Groups							
	1A1	1A2	1A3	1A5	1A9	1A13	2A1	2A2	1A1	1A2	1A3	1A5	1A9	1A13	2A1	2A2
-29 to 38	102.1	103.4	95.7	95.8	103.4	103.4	99.3	99.3	153.2	155.2	143.6	143.6	155.2	155.2	148.9	148.9
50	100.2	103.4	94.6	95.3	102.3	103.4	95.7	96.3	150.2	155.2	141.9	142.9	153.4	155.2	143.5	144.4
100	92.8	103.1	90.2	93.2	97.5	103.1	81.8	84.4	139.1	154.6	135.3	139.8	146.3	154.6	122.6	126.6
150	90.5	100.4	87.9	89.9	92.7	100.4	72.7	77.0	135.7	150.6	131.9	134.9	139.1	150.6	109.0	115.5
200	87.6	97.6	85.4	88.4	91.0	97.6	65.5	71.3	131.5	146.4	128.0	132.6	136.4	146.4	98.3	107.0
250	83.4	92.7	81.2	86.2	88.9	92.7	61.1	66.8	125.2	139.0	121.8	129.2	133.4	139.0	91.6	100.2
300	77.5	84.9	75.4	84.1	84.9	84.9	58.1	63.3	116.2	127.3	113.1	126.1	127.3	127.3	87.2	94.9
350	73.9	80.5	71.9	80.5	80.5	80.5	56.1	60.8	110.9	120.7	107.9	120.7	120.7	120.7	84.2	91.3
375	72.9	77.6	70.6	77.6	77.6	77.6	55.5	59.4	109.4	116.4	105.9	116.4	116.4	116.4	83.3	89.1
400	69.0	69.0	64.8	73.2	73.2	73.2	54.9	58.2	103.5	103.5	97.2	109.8	109.8	109.8	82.4	87.3
425	57.5	57.5	54.6	70.2	70.2	69.0	54.3	57.3	86.3	86.3	81.9	105.3	105.3	103.5	81.5	86.0
450	40.1	40.1	39.6	67.6	67.6	61.8	53.7	56.2	60.1	60.1	59.4	101.4	101.4	92.7	80.6	84.2
475	27.1	27.1	27.1	63.3	63.3	51.8	53.1	54.7	40.6	40.6	40.6	95.0	95.0	77.7	79.7	82.1
500	17.6	17.6	17.6	48.1	55.6	40.5	52.1	53.7	26.4	26.4	26.4	72.2	83.4	60.8	78.2	80.5
525	10.4	10.4	10.4	30.1	40.5	30.8	47.8	51.6	15.5	15.5	15.5	45.1	60.8	46.3	71.6	77.4
540	6.5	6.5	6.5	21.4	-	-	-	-	9.8	9.8	9.8	32.1	-	-	-	-
550	-	-	-	-	25.5	23.4	43.6	49.9	-	-	-	-	38.3	35.0	65.4	74.9
575	-	-	-	-	17.0	17.6	40.1	48.2	-	-	-	-	25.5	26.4	60.2	72.3
600	-	-	-	-	11.8	13.1	33.4	42.9	-	-	-	-	17.6	19.6	50.1	64.3
625	-	-	-	-	6.8	9.0	26.2	36.5	-	-	-	-	10.1	13.5	39.2	54.8
650	-	-	-	-	4.6	6.0	21.0	28.2	-	-	-	-	7.0	9.0	31.6	42.4
675	-	-	-	-	-	-	15.5	25.3	-	-	-	-	-	-	23.3	37.9
700	-	-	-	-	-	-	12.0	19.9	-	-	-	-	-	-	17.9	29.8
725	-	-	-	-	-	-	9.3	15.4	-	-	-	-	-	-	13.9	23.1
750	-	-	-	-	-	-	7.3	11.0	-	-	-	-	-	-	11.0	17.6
775	-	-	-	-	-	-	5.6	9.1	-	-	-	-	-	-	8.4	13.7
800	-	-	-	-	-	-	4.1	7.0	-	-	-	-	-	-	6.2	10.5

NOTE 1. - Consult table D.2 and the notes to table D.2 for limitations on use.
NOTE 2. - The maximum non-shock working pressure is 1.3 bar at 540 °C for PN20



ISO - 7005 PRESSURE - TEMPERATURE RATING

*ISO - 7005 / 1 MAXIMUM NON-SHOCK WORKING PRESSURE: BAR (STEEL)

Temperature °C	PN260								PN420							
	Material Groups								Material Groups							
	1A1	1A2	1A3	1A5	1A9	1A13	2A1	2A2	1A1	1A2	1A3	1A5	1A9	1A13	2A1	2A2
-29 to 38	255.3	258.6	239.4	239.4	258.6	258.6	248.2	248.2	425.5	431.0	398.9	399.0	431.0	431.0	413.6	413.6
50	250.4	258.6	236.5	238.2	255.7	258.6	239.2	240.6	417.3	431.0	394.2	397.1	426.2	431.0	398.6	401.0
100	231.9	257.7	225.5	233.0	243.8	257.7	204.4	211.0	386.5	429.5	375.9	388.3	406.4	429.5	340.7	351.7
150	226.1	251.0	219.8	224.8	231.9	251.0	181.7	192.5	376.9	418.3	366.3	374.6	386.4	418.3	302.8	320.9
200	219.1	243.9	213.4	221.0	227.4	243.9	163.8	178.4	365.2	406.6	355.6	368.3	379.0	406.6	273.0	297.3
250	208.6	231.7	202.9	215.4	222.3	231.7	152.7	166.9	347.7	386.1	338.2	359.0	370.6	386.1	254.5	278.2
300	193.7	212.1	188.5	210.1	212.1	212.1	145.3	158.1	322.8	353.5	314.2	350.2	353.5	353.5	242.1	263.6
350	184.8	201.2	179.8	201.2	201.2	201.2	140.3	152.1	308.8	335.3	299.7	335.3	335.3	335.3	233.8	253.8
375	182.3	194.0	176.6	194.0	194.0	194.0	138.8	148.5	303.9	323.4	294.3	323.4	323.4	323.4	231.3	247.5
400	172.5	172.5	162.0	182.9	182.9	182.9	137.3	145.6	287.5	287.5	270.0	304.9	304.9	304.9	228.9	242.6
425	143.8	143.8	136.5	175.5	175.5	172.5	135.8	143.3	239.6	239.6	227.5	292.5	292.5	287.5	226.4	238.9
450	100.2	100.2	99.0	169.0	169.0	154.5	134.3	140.4	166.9	166.9	165.0	281.7	281.7	257.6	223.9	234.0
475	67.7	67.7	67.7	158.3	158.3	129.5	132.8	136.8	112.9	112.9	112.9	263.8	263.8	215.8	221.4	228.0
500	44.0	44.0	44.0	120.3	139.0	101.3	130.3	134.1	73.3	73.3	73.3	200.6	231.6	168.9	217.2	223.6
525	25.9	25.9	25.9	75.2	101.3	77.1	119.4	129.0	43.2	43.2	43.2	125.4	168.9	128.5	199.0	214.9
540	16.3	16.3	16.3	53.5	-	-	-	-	27.2	27.2	27.2	89.2	-	-	-	-
550	-	-	-	-	63.8	58.4	109.1	124.8	-	-	-	-	106.4	97.3	181.8	208.0
575	-	-	-	-	42.5	44.1	100.4	120.5	-	-	-	-	70.8	73.4	167.3	200.8
600	-	-	-	-	29.4	32.6	83.6	107.2	-	-	-	-	49.0	54.4	139.3	178.6
625	-	-	-	-	16.9	22.5	65.4	91.3	-	-	-	-	28.2	37.5	109.0	152.1
650	-	-	-	-	11.6	15.0	52.6	70.6	-	-	-	-	19.3	25.1	87.6	117.7
675	-	-	-	-	-	-	38.8	63.2	-	-	-	-	-	-	64.6	105.3
700	-	-	-	-	-	-	29.9	49.7	-	-	-	-	-	-	49.8	82.9
725	-	-	-	-	-	-	23.1	38.5	-	-	-	-	-	-	38.5	64.2
750	-	-	-	-	-	-	18.3	29.4	-	-	-	-	-	-	30.4	49.0
775	-	-	-	-	-	-	14.0	22.8	-	-	-	-	-	-	23.3	38.0
800	-	-	-	-	-	-	10.3	17.5	-	-	-	-	-	-	17.1	29.2

NOTE 1. - Consult table D.2 and the notes to table D.2 for limitations on use.
 NOTE 2. - The maximum non-shock working pressure is 1.3 bar at 540 °C for PN20

*ISO - 7005 / 2 MAXIMUM NON-SHOCK WORKING PRESSURE: BAR (CAST IRON)

Nominal Pressure ISO PN	Material		Temperature °C							
	ISO	ASTM	-10 to 65	120	150	180	200	230	250	300
2.5	185	-	2.5	2.5	2.5	2.1	2.0	1.9	1.8	1.5
6	185	-	6.0	6.0	6.0	5.0	4.8	4.4	4.2	3.6
10	185	-	10.0	10.0	9.0	8.4	8.0	7.4	7.0	6.0
16	185	-	16.0	16.0	14.4	13.4	12.8	11.8	11.2	9.6
20: (- DN 300)	-	A126 Class A	12.1	10.3	9.6	8.6	-	-	-	-
(- DN 300)	185	A126 Class B	13.8	12.1	11.4	10.3	9.8	8.6	-	-
(300 < DN - 600)	185	A126 Class B	10.3	8.6	7.6	6.9	-	-	-	-
(600 < DN - 900)	185	A126 Class B	10.3	5.9	3.4	-	-	-	-	-
25	185	-	25.0	25.0	22.5	21.0	20.0	18.5	17.5	15.0
40	185	-	40.0	40.0	36.0	33.6	32.0	29.6	28.0	24.0
20: (- DN 300)	-	A126 Class A	27.6	23.4	21.4	18.3	17.7	-	-	-
(- DN 300)	185	A126 Class B	34.5	28.6	25.9	23.1	20.8	17.2	-	-
(300 < DN - 600)	185	A126 Class B	20.7	17.9	16.6	15.2	14.1	-	-	-
(600 < DN - 900)	185	A126 Class B	20.7	13.8	10.3	6.9	-	-	-	-

1. - 1 bar = 0,1 MPa
 2. - ISO PN25 and ISO PN40 flanges manufactured in grey cast iron are limited to ISO 185 grade 250.

*ISO - 7005 / 2 MAXIMUM NON-SHOCK WORKING PRESSURE: BAR (DUCTILE IRON)

Nominal Pressure ISO PN	Temperature °C					
	-10 to 120	150	200	250	300	350
10	6.0	5.8	5.5	5.2	4.8	4.2
16	10.0	9.7	9.2	8.7	8.0	7.0
20	16.0	15.5	14.7	13.9	12.8	11.2
25	25.0	24.3	23.0	21.8	20.8	17.5
40	40.0	38.8	36.8	34.8	32.0	28.0

1. - 1 bar = 0,1 MPa



INSPECTIONS STANDARD

* ASME B16.34: Shell Test

Materials	Pressure (PSI)					
	150 LB	300 LB	600 LB	900 LB	1500 LB	2500 LB
A216 Gr. WCB	450	1125	2225	3350	5575	9275
A217 Gr. WC6	450	1125	2250	3375	5625	9375
A352 Gr. LCB	400	1050	2100	3150	5225	8700
A352 Gr. LCC	450	1125	2250	3375	5625	9375
A351 Gr. CF8	425	1100	2175	3250	5400	9000
A351 Gr. CF8M	425	1100	2175	3250	5400	9000
A351 Gr. CF3M	425	1100	2175	3250	5400	9000

Seat Test

Materials	Pressure (PSI)					
	150 LB	300 LB	600 LB	900 LB	1500 LB	2500 LB
A216 Gr. WCB	325	825	1650	2450	4100	6800
A217 Gr. WC6	325	825	1650	2475	4125	6875
A352 Gr. LCB	300	775	1550	2300	3825	6375
A352 Gr. LCC	325	825	1650	2475	4125	6875
A351 Gr. CF8	325	800	1600	2400	3975	6600
A351 Gr. CF8M	325	800	1600	2400	3975	6600
A351 Gr. CF3M	325	800	1600	2400	3975	6600

* API 598: Cast & Ductile Iron Shell e Seat Test

A126 Class-B	Seat test (PSI)		A536 65-45-12	Seat test (PSI)		A126 Class-B	Seat test (PSI)		A536 65-45-12	Seat test (PSI)	
	125 LB	250 LB		150 LB	300 LB		125 LB	250 LB		150 LB	300 LB
2" ~ 12"	350	875	All Sizes	400	975	2" ~ 12"	200	500	All Sizes	250	640
14" ~ 24"	265	525				14" ~ 24"	150	300			
26" ~ 60"	265					26" ~ 60"	150				

Maximum Allowable Leakage Rates For Closure Test:

- 1). The maximum permissible leakage rate shall be 0.18 cubic inch (3 cubic centimeters) per minute per inch of nominal pipe size.
- 2). The maximum permissible leakage rate shall be 1.5 standard cubic feet (0.042 cubic meter) of gas per hour per inch of nominal pipe size.

* ISO 5208: Shell Test

A shell test using fluid shall be performed at a minimum pressure of 1.5 times the maximum permissible working pressure (MPWP) at 20°C, or, for valves up to and including DN 50 in the pressure range up to and including PN 50 using gas at a test pressure of 6 bar (600 kPa).

Seat Test

DN	PN	Seat Test
Up to and including	All	1.1* maximum permissible working pressure at 20°C Liquid or 6 bar (600 kPa) gas
DN 100 up to and including DN 200	Up to and including PN 50	
	PN 100 and greater	1.1* maximum permissible working
DN 250 and greater	All	pressure at 20°C Liquid

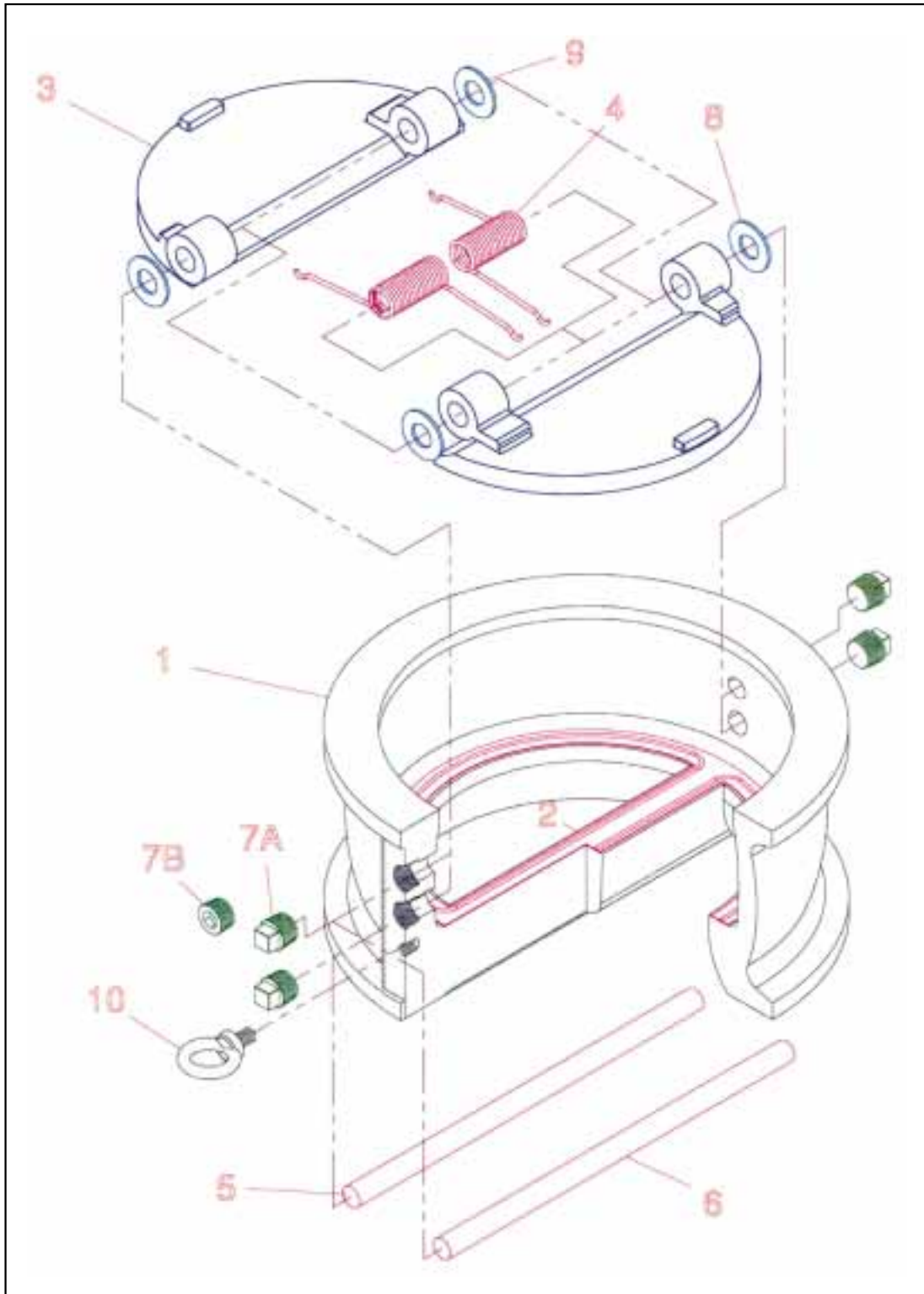
Maximum Allowable Seat Test Leakage Rate

Seat Test Leakage Rates ^{1) 2)}		
Rate 1 ³⁾	Rate 2 ⁴⁾	Rate 3 ⁵⁾
0.1 mm ³ /s*DN when testing with liquid	0.1 mm ³ /s*DN when testing with liquid	no visible leakage for the duration of the test
30 mm ³ /s*DN when testing with a gas	30 mm ³ /s*DN when testing with a gas	

- 1). The rate or rates of seat test leakage for each valve type shall be as specified in the valve product standard.
- 2). These leakage rates only apply when discharging to atmosphere.
- 3). Leakage rate 1 is intended to apply to metal seated valves produced for internal stock, sale via a stockist, or a warehousing operation.
- 4). Leakage rate 2 is intended to apply to metal seated valves on more critical services.
- 5). Leakage rate 3 is intended to apply, for example, to "elastomeric or polymeric" (soft seat) seated valves.



VALVE CONSTRUCTION

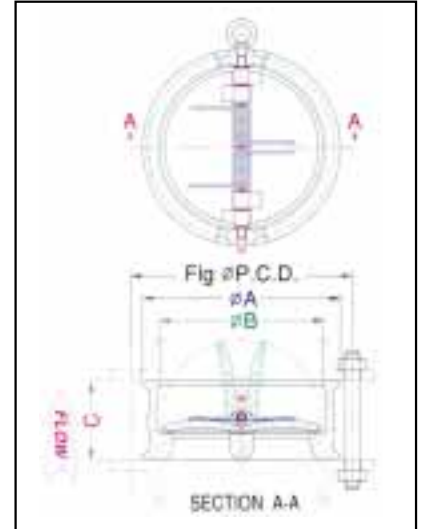


NO.	PART NAME	Q.TY	REMARK
1	BODY	1	
2	SEAT	1	
3	PLATE	2	
4	SPRING	1	1-1/2"~5"
		2	6"~ 22"
		4	24" and Larger Size
5	HINGE PIN	1	

NO.	PART NAME	Q.TY	REMARK
6	STOP PIN	1	
7A	RETAINER	4	A182
7B		4	A105
8	BODY BEARING	2	
9	PLATE BEARING	2	
10	EYE-BOLT	1	6"~ 22"
		2	24" and Larger Size



Carbon & Stainless Steel Materials Installation Dimensions Suit For ASME / MSS / API Flanges



Design: API - 594 - DUAL PLATE WAFER STYLE CHECK VALVE
Face To Face: API - 594 / API - 6D
Inspection: API - 598 / ASME - B16.34
Suit Flanged For: ASME - B16.5 / MSS SP - 44 / API - 605

Size (inches)	End Facing	Pressure Rating	Ø A inches	Ø B inches	C inches	Dia. of Bolt Circle	Stud Selection		Stud Length		Weight	
							Stud No.	Stud Dia.	RF	RJ	lbs	kgs
1-1/2"	RF	150	3.37"	2.36"	1.69"	3.88"	4	1/2"	4.44"	4.94"	3.3	1.5
	RF/RJ-20	300-600	3.75"		1.69"	4.50"	4	3/4"	6.19"	5.69"	4.0	1.8
	RF/RJ-20	900-1500	3.87"		2.12"	4.88"	4	1"	7.62"	7.62"	11.0	5.0
	RF/RJ-23	2500	4.62"		2.12"	5.75"	4	1-1/8"	8.87"	8.62"	22.0	10.0
2"	RF	150	4.12"	2.36"	2.37"	4.75"	4	5/8"	5.62"	6.12"	5.5	2.5
	RF/RJ-23	300-600	4.37"		2.37"	5.00"	8	5/8"	6.62"	6.37"	7.7	3.5
	RF/RJ-23	900-1500	5.37"		2.75"	6.50"	8	7/8"	8.50"	8.25"	14.3	6.5
	RF/RJ-26	2500	5.75"		2.75"	6.75"	8	1"	9.75"	9.50"	27.5	12.5
2-1/2"	RF	150	4.87"	2.87"	2.62"	5.50"	4	5/8"	6.12"	6.62"	5.5	3.0
	RF/RJ-26	300-600	5.12"		2.62"	5.88"	8	3/4"	7.37"	7.12"	8.8	4.0
	RF/RJ-27	900-1500	6.50"		3.25"	7.50"	8	1"	9.50"	9.25"	15.4	7.0
	RF/RJ-27	2500	6.62"		3.25"	7.75"	8	1-1/8"	11.00"	10.75"	38.5	17.5
3"	RF	150	5.37"	3.50"	2.87"	6.00"	4	5/8"	6.37"	6.87"	9.9	4.5
	RF/RJ-31	300-600	5.87"		2.87"	6.62"	8	3/4"	7.87"	7.62"	11.0	5.0
	RF/RJ-31	900	6.62"		3.25"	7.50"	8	7/8"	9.00"	8.75"	24.2	11.0
	RF/RJ-35	1500	6.87"		3.25"	8.00"	8	1-1/8"	10.25"	10.00"	26.4	12.0
RF-RJ-32	2500	7.75"	3.37"	9.00"	8	1-1/4"	12.12"	11.87"	46.3	21.0		
4"	RF	150	6.87"	4.49"	2.87"	7.50"	8	5/8"	6.37"	6.87"	17.6	8.0
	RF/RJ-37	300	7.12"		2.87"	7.88"	8	3/4"	7.37"	7.87"	19.8	9.0
	RF/RJ-37	600	7.62"		3.12"	8.50"	8	7/8"	8.87"	8.62"	24.2	11.0
	RF/RJ-37	900	8.12"		4.00"	9.25"	8	1-1/8"	10.75"	10.50"	37.4	17.0
	RF/RJ-39	1500	8.25"		4.00"	9.50"	8	1-1/4"	11.75"	11.50"	41.9	19.0
	RF/RJ-38	2500	9.25"		4.12"	10.75"	8	1-1/2"	14.12"	13.87"	87.0	39.5
5"	RF	150	7.75"	5.55"	3.37"	8.50"	8	3/4"	7.12"	7.62"	22.0	10.0
	RF/RJ-41	300	8.50"		3.37"	9.25"	8	3/4"	8.12"	8.62"	28.6	13.0
	RF/RJ-41	600	9.50"		4.12"	10.50"	8	1"	11.12"	11.62"	46.3	21.0
6"	RF	150	8.75"	6.61"	3.87"	9.50"	8	3/4"	7.87"	8.37"	28.6	13.0
	RF/RJ-45	300	9.87"		3.87"	10.62"	12	3/4"	8.75"	9.37"	50.7	23.0
	RF/RJ-45	600	10.50"		5.37"	11.50"	12	1"	12.12"	11.87"	70.5	32.0
	RF/RJ-45	900	11.37"		6.25"	12.50"	12	1-1/8"	13.75"	13.50"	112.3	51.0
	RF/RJ-46	1500	11.12"		6.25"	12.50"	12	1-3/8"	16.50"	16.25"	123.3	56.0
	RF/RJ-47	2500	12.50"		6.25"	14.50"	8	2"	19.75"	19.50"	187.2	85.0



Carbon & Stainless Steel Materials Installation Dimensions Suit For ASME / MSS / API Flanges

Size (inches)	End Facing	Pressure Rating	Ø A inches	Ø B inches	C inches	Dia. of Bolt Circle	Stud Selection		Stud Length		Weight	
							Stud No.	Stud Dia.	RF	RJ	lbs	kgs
8"	RF	150	11.00"	8.62"	5.00"	11.75"	8	3/4"	9.25"	9.75"	61.7	28.0
	RF/RJ-49	300	12.12"		5.00"	13.00"	12	7/8"	10.50"	11.00"	79.3	36.0
	RF/RJ-49	600	12.62"		6.50"	13.75"	12	1-1/8"	14.00"	13.75"	143.2	65.0
	RF/RJ-49	900	14.12"		8.12"	15.50"	12	1-3/8"	16.87"	16.62"	180.6	82.0
	RF/RJ-50	1500	13.87"		8.12"	15.50"	12	1-5/8"	19.62"	19.37"	200.4	91.0
	RF/RJ-51	2500	15.25"		8.12"	17.25"	12	2"	23.12"	22.87"	281.9	128.0
10"	RF	150	13.37"	10.79"	5.75"	14.25"	12	7/8"	10.25"	10.75"	99.1	45.0
	RF/RJ-53	300	14.25"		5.75"	15.25"	16	1"	12.00"	12.50"	132.2	60.0
	RF/RJ-53	600	15.75"		8.37"	17.00"	16	1-1/4"	16.87"	16.62"	215.9	98.0
	RF/RJ-53	900	17.12"		9.50"	18.50"	16	1-3/8"	18.75"	18.50"	277.5	126.0
	RF/RJ-54	1500	17.12"		9.75"	19.00"	12	1-7/8"	23.00"	22.75"	290.7	132.0
	RF/RJ-55	2500	18.75"		10.00"	21.25"	12	2-1/2"	29.25"	29.00"	440.5	200.0
12"	RF	150	16.12"	12.76"	7.12"	17.00"	12	7/8"	11.87"	12.37"	149.8	68.0
	RF/RJ-57	300	16.62"		7.12"	17.75"	16	1-1/8"	13.87"	14.37"	189.4	86.0
	RF/RJ-57	600	18.00"		9.00"	19.25"	20	1-1/4"	17.75"	17.50"	308.4	140.0
	RF/RJ-57	900	19.62"		11.50"	21.00"	20	1-3/4"	21.50"	21.25"	359.0	163.0
	RF/RJ-58	1500	20.50"		12.00"	22.50"	16	2"	26.75"	26.50"	383.3	174.0
	RF/RJ-60	2500	21.62"		12.00"	24.37"	12	2-3/4"	33.25"	33.00"	865.6	393.0
14"	RF	150	17.75"	14.02"	7.25"	18.75"	12	1"	12.50"	13.00"	209.3	95.0
	RF/RJ-61	300	19.12"		8.75"	20.25"	20	1-1/8"	15.75"	16.25"	374.4	170.0
	RF/RJ-61	600	19.37"		10.75"	20.75"	20	1-3/8"	20.00"	21.75"	407.5	185.0
	RF/RJ-62	900	20.50"		14.00"	22.00"	20	1-1/2"	24.75"	24.50"	960.4	436.0
	RF/RJ-63	1500	22.75"		14.00"	25.00"	16	2-1/4"	30.00"	29.75"	1057.3	480.0
16"	RF	150	20.25"	15.98"	7.50"	21.25"	16	1"	12.75"	13.25"	290.7	132.0
	RF/RJ-65	300	21.25"		9.12"	22.50"	20	1-1/4"	16.62"	17.12"	458.1	208.0
	RF/RJ-65	600	22.25"		12.00"	23.75"	20	1-1/2"	22.00"	21.75"	603.5	274.0
	RF/RJ-66	900	22.62"		15.12"	24.25"	20	1-5/8"	26.37"	26.12"	1180.6	536.0
	RF/RJ-67	1500	25.25"		15.12"	27.75"	16	2-1/2"	32.62"	32.37"	1284.1	583.0
18"	RF	150	21.62"	17.99"	8.00"	22.75"	16	1-1/8"	13.75"	14.25"	323.8	147.0
	RF/RJ-69	300	23.50"		10.37"	24.75"	24	1-1/4"	18.12"	18.62"	652.0	296.0
	RF/RJ-69	600	24.12"		14.25"	25.75"	20	1-5/8"	25.50"	25.25"	872.2	396.0
	RF/RJ-70	900	25.12"		17.75"	27.00"	20	1-7/8"	30.50"	30.25"	1442.7	655.0
	RF/RJ-71	1500	27.75"		18.43"	30.50"	16	2-3/4"	38.00"	37.62"	1735.7	788.0
20"	RF	150	23.87"	20.00"	8.62"	25.00"	20	1-1/8"	14.87"	15.37"	445.0	202.0
	RF/RJ-73	300	25.75"		11.50"	27.00"	24	1-1/4"	19.50"	20.25"	806.2	366.0
	RF/RJ-73	600	26.87"		14.50"	28.50"	24	1-5/8"	27.50"	27.25"	1427.3	648.0
	RF/RJ-74	900	27.50"		17.75"	29.50"	20	2"	31.50"	31.25"	2044.1	928.0
	RF/RJ-75	1500	29.75"		21.00"	32.75"	16	3"	42.25"	42.00"	2828.2	1284.0
22"	RF	150	26.00"	22.00"	8.62"	27.25"	20	1-1/4"	15.75"	16.25"	506.6	230.0
24"	RF	150	28.25"	24.02"	8.75"	29.50"	20	1-1/4"	15.50"	16.00"	583.7	265.0
	RF/RJ-77	300	30.50"		12.50"	32.00"	24	1-1/2"	21.50"	22.50"	1165.2	529.0
	RF/RJ-77	600	31.12"		17.25"	33.00"	24	1-7/8"	30.25"	30.00"	2004.4	910.0
	RF/RJ-78	900	33.00"		19.50"	35.50"	20	2-1/2"	36.75"	36.50"	2753.3	1250.0
	RF/RJ-79	1500	35.50"		22.00"	39.00"	16	3-1/2"	46.25"	46.00"	4213.7	1913.0
26" (MSS)	RF	150	30.50"	26.00"	14.00"	31.75"	24	1-1/4"	23.12"	23.12"	1300.0	590.0
	RF/RJ-93	300	32.87"		14.00"	34.50"	28	1-5/8"	24.75"	24.75"	1625.6	738.0
	RF/RJ-93	600	34.12"		18.00"	36.00"	28	1-7/8"	31.50"	31.50"	1865.6	847.0
	RF/RJ-100	900	34.75"		21.00"	37.50"	20	2-5/8"	38.75"	38.75"	2627.8	1193.0
26" (API-605)	RF	150	28.56"	26.00"	14.00"	29.31"	36	3/4"	20.00"	20.00"	1101.3	500.0
	RF	300	30.37"		14.00"	31.62"	32	1-1/4"	27.75"	27.75"	1376.7	625.0
	RF	600	30.12"		18.00"	31.75"	28	1-5/8"	29.00"	29.00"	1586.0	720.0
	RF	900	33.00"		21.00"	35.50"	20	2-1/2"	37.75"	37.75"	2233.4	1014.0
28" (MSS)	RF	150	32.75"	28.00"	15.00"	34.00"	28	1-1/4"	24.37"	24.37"	1134.4	515.0
	RF/RJ-94	300	35.37"		15.00"	37.00"	28	1-5/8"	26.25"	26.25"	1300.0	590.0
	RF/RJ-94	600	36.00"		19.00"	38.00"	28	2"	33.00"	33.00"	1938.3	880.0
	RF/RJ-101	900	37.25"		22.50"	40.25"	20	3"	41.00"	41.00"	3189.4	1448.0
28" (API-605)	RF	150	30.56"	28.00"	15.00"	31.31"	40	3/4"	21.50"	21.50"	962.6	437.0
	RF	300	32.50"		15.00"	33.75"	36	1-1/4"	25.75"	25.75"	1101.3	500.0
	RF	600	32.24"		19.00"	34.00"	28	1-3/4"	32.75"	32.75"	1751.1	795.0
	RF	900	35.51"		22.50"	38.25"	20	2-3/4"	41.00"	41.00"	2863.4	1300.0
30" (MSS)	RF	150	34.75"	30.00"	12.00"	36.00"	28	1-1/4"	21.00"	21.00"	1101.3	500.0
	RF/RJ-95	300	37.50"		14.50"	39.25"	28	1-3/4"	26.50"	26.50"	2110.1	958.0
	RF/RJ-95	600	38.25"		19.87"	40.25"	28	2"	34.12"	34.12"	3185.0	1446.0
30" (API-605)	RF/RJ-102	900	39.75"	25.00"	42.75"	20	3"	44.00"	44.00"	4052.9	1840.0	
	RF	150	32.56"	30.00"	12.00"	33.12"	44	3/4"	18.50"	18.50"	991.2	450.0
	RF	300	34.87"		14.50"	36.25"	36	1-3/8"	25.75"	25.75"	1894.3	860.0
	RF	600	34.61"		19.87"	36.50"	28	1-7/8"	34.62"	34.62"	2863.4	1300.0
RF	900	37.76"	25.00"		40.75"	20	3"	44.50"	44.50"	3634.4	1650.0	
32" (MSS)	RF	150	37.00"	32.00"	14.00"	38.50"	28	1-1/2"	24.62"	24.62"	1519.8	690.0
	RF/RJ-96	300	39.62"		16.00"	41.50"	28	1-7/8"	28.75"	28.75"	2026.4	920.0
	RF/RJ-96	600	40.25"		21.00"	42.50"	28	2-1/4"	36.00"	36.00"	3801.8	1726.0
RF/RJ-105	900	42.25"	26.00"	45.50"	20	3-1/4"	46.25"	46.25"	4361.2	1980.0		



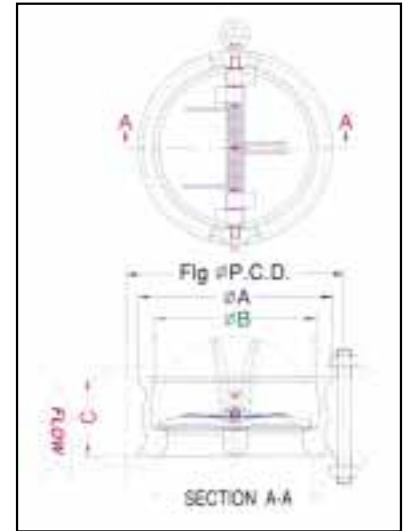
Carbon & Stainless Steel Materials Installation Dimensions Suit For ASME / MSS / API Flanges

Size (inches)	End Facing	Pressure Rating	Ø A inches	Ø B inches	C inches	Dia. of Bolt Circle	Stud Selection		Stud Length		Weight	
							Stud No.	Stud Dia.	RF	RJ	lbs	kgs
32" (API-605)	RF	150	34.69"	32.00"	14.00"	35.37"	48	3/4"	20.50"	1365.6	620.0	
	RF	300	37.00"		16.00"	38.50"	32	1-1/2"	29.25"	1839.2	835.0	
	RF	600	36.73"		21.00"	38.75"	28	2"	37.50"	3414.0	1550.0	
	RF	900	40.00"		26.00"	43.00"	20	3"	46.00"	3920.7	1780.0	
36" (MSS)	RF	150	41.25"	36.00"	14.50"	42.75"	32	1-1/2"	25.87"	1894.3	860.0	
	RF/RJ-98	300	44.00"		19.00"	46.00"	32	2"	32.50"	2731.3	1240.0	
	RF/RJ-98	600	44.50"		25.00"	47.00"	28	2-1/2"	45.00"	6132.2	2784.0	
	RF/RJ-105	900	47.25"		28.25"	50.75"	20	3-1/2"	50.75"	7075.0	3212.0	
36" (API-605)	RF	150	38.87"	36.00"	14.50"	39.75"	44	7/8"	21.50"	1718.1	780.0	
	RF	300	41.26"		19.00"	42.87"	32	1-5/8"	31.50"	2445.0	1110.0	
	RF	600	41.26"		25.00"	43.50"	28	2-1/4"	42.25"	5506.6	2500.0	
	RF	900	44.25"		28.25"	47.25"	24	3"	49.25"	6365.6	2890.0	
40" (MSS)	RF	150	45.75"	40.00"	16.00"	47.25"	36	1-1/2"	27.37"	2039.6	926.0	
	RF	300	43.87"		21.50"	45.50"	32	1-5/8"	35.00"	4251.1	1930.0	
	RF	600	45.50"		26.00"	47.75"	32	2-1/4"	44.25"	8334.8	3784.0	
	RF	900	49.25"		30.00"	52.75"	24	3-1/2"	53.75"	8784.1	3988.0	
40" (API-605)	RF	150	43.12"	40.00"	16.00"	44.12"	44	1"	24.00"	1828.2	830.0	
	RF	300	45.26"		21.50"	46.87"	40	1-5/8"	34.50"	3854.6	1750.0	
	RF	600	45.50"		26.00"	47.75"	32	2-1/4"	44.25"	8334.8	3784.0	
	RF	900	49.25"		30.00"	52.75"	24	3-1/2"	53.75"	8784.1	3988.0	
42" (MSS)	RF	150	48.00"	42.00"	17.00"	49.50"	36	1-1/2"	28.87"	2559.5	1162.0	
	RF	300	46.00"		22.37"	47.50"	32	1-5/8"	37.00"	5845.8	2654.0	
	RF	600	48.00"		27.62"	50.50"	28	2-1/2"	47.12"	6962.6	3161.0	
	RF	900	51.25"		31.00"	54.75"	24	3-1/2"	59.25"	8105.7	3680.0	
42" (API-605)	RF	150	45.12"	42.00"	17.00"	46.12"	48	1"	25.00"	2290.7	1040.0	
	RF	300	47.25"		22.37"	49.00"	36	1-3/4"	36.50"	5253.3	2385.0	
	RF	600	48.00"		27.62"	50.50"	28	2-1/2"	47.12"	6962.6	3161.0	
	RF	900	51.25"		31.00"	54.75"	24	3-1/2"	55.50"	8105.7	3680.0	
44" (MSS)	RF	150	50.25"	44.00"	18.19"	51.75"	40	1-1/2"	28.93"	3348.0	1520.0	
44" (API-605)	RF	150	47.12"	44.00"	18.19"	48.12"	52	1"	25.69"	3017.6	1370.0	
48" (MSS)	RF	150	54.50"	48.00"	20.62"	56.00"	44	1-1/2"	33.37"	4361.2	1980.0	
	RF	300	58.75"		24.75"	54.00"	32	1-7/8"	40.50"	6524.2	2962.0	
	RF	600	54.75"		31.00"	57.50"	32	2-5/8"	54.00"	7092.5	3220.0	
48" (API-605)	RF	150	51.44"	48.00"	20.62"	52.56"	44	1-1/8"	29.25"	3920.7	1780.0	
	RF	300	53.87"		24.75"	55.75"	40	1-7/8"	39.75"	5881.1	2670.0	
	RF	600	54.76"		31.00"	57.50"	32	2-3/4"	52.75"	7092.5	3220.0	
54" (MSS)	RF	150	61.00"	54.00"	23.25"	62.75"	44	1-3/4"	38.25"	6828.2	3100.0	
	RF	300	58.75"		28.75"	61.00"	28	2-1/4"	47.25"	9020.8	4100.0	
54" (API-605)	RF	150	57.63"	54.00"	23.75"	58.75"	56	1-1/8"	30.50"	6136.6	2786.0	
	RF	300	60.24"		28.75"	62.12"	48	1-7/8"	43.50"	9801.8	4450.0	
60" (MSS)	RF	150	67.50"	60.00"	26.00"	69.25"	52	1-3/4"	42.00"	8810.6	4000.0	
	RF	300	64.75"		33.00"	67.00"	32	2-1/4"	53.00"	11343.6	5150.0	
60" (API-605)	RF	150	64.19"	60.00"	26.00"	65.44"	52	1-1/4"	35.25"	8546.2	3880.0	
	RF	300	67.19"		33.00"	59.44"	40	2-1/4"	50.00"	11242.3	5104.0	

Size	1 1/2" 2" 2 1/2" 3" 4" 5" 6" 8" 10" 12" 14" 16" 18" 20" 24"	22" 26" 28" 30" 32" 26" 40" 42" 44" 48" 54" 60"	Larger (More Than 60")
Flange Standard	ASME B16.5	MSS SP - 44 Or API - 605	AWWA C207 (Class E275 PSI)



Carbon & Stainless Steel Materials Installation Dimensions: Suit For ISO Flanges



Design: API - 594 - DUAL PLATE WAFER STYLE CHECK VALVE
Face To Face: API - 594 / API - 6D
Inspection: API - 598 / ASME - B16.34
Suit Flanged For: ISO - 7005 - 1

Size (inches)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
DN40	RF	PN6	86	60	43	100.0	4	M12	110	1.5
	RF	PN10/16/25/40	92		43	110.0	4	M16	115	1.5
	RF/R-20	PN50	92		43	114.5	4	M20	160	1.8
	RF/R-20	PN110	92		43	114.5	4	M20	160	1.8
	RF/R-20	PN150/260	92		54	124.0	4	M27	195	5.0
	RF/R-23	PN240	113		54	146.0	4	M30	230	10.0
DN50	RF	PN6	96	60	60	110.0	4	M12	135	2.5
	RF	PN10/16/25/40	105		60	125.0	4	M16	145	2.5
	RF/R-23	PN50	109		60	127.0	8	M16	145	3.5
	RF/R-23	PN110	109		60	127.0	8	M16	145	3.5
	RF/R-24	PN150/260	139		70	165.0	8	M24	215	6.5
	RF/R-26	PN420	142		70	171.5	8	M27	250	12.5
DN65	RF	PN6	115	73	67	130.0	4	M12	140	2.7
	RF	PN10/16	124		67	145.0	8	M16	150	2.7
	RF	PN25/40	124		67	145.0	8	M16	155	2.7
	RF/R-26	PN50	124		67	149.0	8	M20	190	4.0
	RF/R-26	PN110	124		67	149.0	8	M20	190	4.0
	RF/R-27	PN150/260	161		83	190.5	8	M27	245	7.0
	RF/R-28	PN420	164		83	197.0	8	M30	280	17.5
DN80	RF	PN6	132	89	73	150.0	4	M16	145	4.5
	RF	PN10/16	137		73	160.0	8	M16	155	4.5
	RF	PN25/40	137		73	160.0	8	M16	165	4.5
	RF/R-31	PN50	146		73	168.5	8	M20	200	5.0
	RF/R-31	PN110	146		73	168.5	8	M20	200	5.0
	RF/R-31	PN150	164		83	190.5	8	M24	230	11.0
	RF/R-35	PN260	170		83	203.0	8	M30	260	12.0
	RF/R-32	PN420	193		86	228.5	8	M33	310	21.0
DN100	RF	PN6	146	114	73	170.0	4	M16	150	8.0
	RF	PN10/16	156		73	180.0	8	M16	160	8.0
	RF	PN25/40	168		73	190.0	8	M20	165	8.5
	RF/R-37	PN50	178		73	200.0	8	M20	190	9.5
	RF/R-37	PN110	190		79	216.0	8	M24	225	11.0



Carbon & Stainless Steel Materials Installation Dimensions Suit For ISO Flanges

Size (inches)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
DN100	RF/R-37	PN150	202	114	102	235.0	8	M30	275	17.0
	RF/R-39	PN260	206		102	241.0	8	M33	300	19.0
	RF/R-38	PN420	231		105	273.0	8	M39	360	39.5
DN125	RF	PN6	181	141	86	200.0	8	M16	160	10.0
	RF	PN10/16	187		86	210.0	8	M16	165	10.0
	RF	PN25/40	194		86	220.0	8	M24	180	13.0
	RF/R-41	PN50	213		86	235.0	8	M20	210	14.5
	RF/R-41	PN110	237		105	267.0	8	M27	285	21.0
DN150	RF	PN6	207	168	98	225.0	8	M16	175	13.0
	RF	PN10/16	217		98	240.0	8	M20	180	13.0
	RF	PN25/40	224		98	250.0	8	M24	200	23.0
	RF/R-45	PN50	248		98	270.0	12	M20	225	25.0
	RF/R-45	PN110	262		136	292.0	12	M27	310	32.0
	RF/R-45	PN150	285		159	317.5	12	M30	350	51.0
	RF/R-46	PN260	278		159	317.5	12	M36	420	56.0
	RF/R-47	PN420	313		159	368.5	8	M52	500	85.0
DN200	RF	PN6	257	219	127	280.0	8	M16	210	28.0
	RF	PN10	267		127	295.0	8	M20	215	28.0
	RF	PN16	267		127	295.0	12	M20	215	28.0
	RF	PN25	276		127	310.0	12	M24	235	28.0
	RF/R-49	PN40	290		127	320.0	12	M27	270	36.0
	RF/R-49	PN50	304		127	330.0	12	M24	270	39.0
	RF/R-49	PN110	312		165	292.0	12	M27	355	65.0
	RF/R-49	PN150	354		206	393.5	12	M36	430	82.0
	RF/R-50	PN260	345		206	393.5	12	M42	500	91.0
	RF/R-51	PN420	383		206	438.0	12	M52	590	128.0
DN250	RF	PN6	317	274	146	335.0	12	M16	230	45.0
	RF	PN10	330		146	350.0	12	M20	235	45.0
	RF	PN16	330		146	355.0	12	M24	235	45.0
	RF	PN25	340		146	370.0	12	M27	260	45.0
	RF/R-53	PN40	353		146	385.0	12	M30	305	60.0
	RF/R-53	PN50	353		146	387.5	16	M27	305	64.0
	RF/R-53	PN110	396		213	432.0	16	M33	430	98.0
	RF/R-53	PN150	430		241	470.0	16	M36	480	126.0
	RF/R-54	PN260	430		248	482.5	12	M48	585	132.0
	RF/R-55	PN420	525		254	593.5	12	M64	745	200.0
DN300	RF	PN6	367	324	181	395.0	12	M20	275	68.0
	RF	PN10	375		181	400.0	12	M20	280	68.0
	RF	PN16	375		181	410.0	12	M24	280	68.0
	RF	PN25	400		181	430.0	16	M27	300	68.0
	RF/R-57	PN40	417		181	450.0	16	M30	355	86.0
	RF/R-57	PN50	417		181	451.0	16	M30	355	90.0
	RF/R-57	PN110	454		229	489.0	20	M33	450	140.0
	RF/R-57	PN150	494		292	533.5	20	M36	550	163.0
	RF/R-58	PN260	517		305	571.5	16	M52	680	174.0
	RF/R-60	PN420	545		305	619.0	12	M70	845	393.0
DN350	RF	PN6	410	356	184	445.0	12	M20	285	95.0
	RF	PN10	438		184	460.0	16	M20	290	95.0
	RF	PN16	438		184	470.0	16	M24	290	95.0
	RF	PN25	457		184	490.0	16	M30	300	95.0
	RF/R-61	PN40	474		222	510.0	16	M33	400	170.0
	RF/R-61	PN50	482		222	514.5	20	M30	400	175.0
	RF/R-61	PN110	488		273	527.0	20	M36	510	225.0
	RF/R-62	PN150	517		356	559.0	20	M39	630	436.0
RF/R-63	PN260	575	356	635.0	16	M56	765	480.0		
DN400	RF	PN6	470	406	191	495.0	16	M20	285	132.0
	RF	PN10	483		191	515.0	16	M24	295	132.0
	RF	PN16	495		191	525.0	16	M27	305	132.0
	RF	PN25	507		191	550.0	16	M33	325	132.0
	RF/R-65	PN40	546		232	585.0	16	M36	425	208.0
	RF/R-65	PN50	531		232	571.5	20	M33	425	213.0
	RF/R-65	PN110	561		305	603.0	20	M39	560	274.0
	RF/R-66	PN150	571		384	616.0	20	M42	670	536.0
RF/R-67	PN260	637	384	705.0	16	M64	830	583.0		
DN450	RF	PN6	528	457	203	550.0	16	M20	310	147.0
	RF	PN10	538		203	565.0	20	M24	325	147.0
	RF	PN16	545		203	585.0	20	M27	325	147.0
	RF	PN25	565		203	600.0	20	M33	325	147.0
	RF/R-69	PN40	571		264	610.0	20	M36	460	296.0
	RF/R-69	PN50	593		264	628.5	24	M33	460	300.0
	RF/R-69	PN110	609		362	654.0	20	M42	650	396.0
	RF/R-70	PN150	635		451	686.0	20	M48	775	655.0
RF/R-71	PN260	700	468	774.5	16	M70	965	788.0		

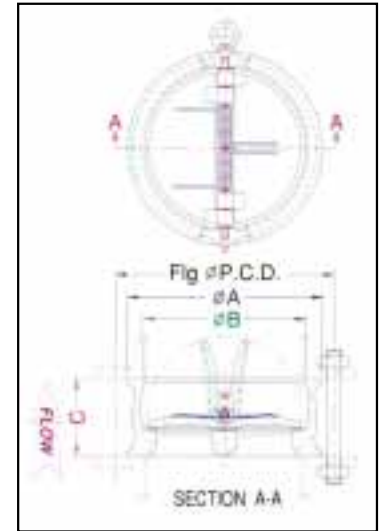


Carbon & Stainless Steel Materials Installation Dimensions Suit For ISO Flanges

Size (inches)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
DN500	RF	PN6	578	508	219	600.0	20	M20	335	202.0
	RF	PN10	592		219	620.0	20	M24	350	202.0
	RF	PN16	617		219	650.0	20	M30	350	202.0
	RF	PN25	625		219	660.0	20	M33	380	202.0
	RF/R-73	PN40	625		292	670.0	20	M39	495	366.0
	RF/R-73	PN50	650		292	686.0	24	M33	495	372.0
	RF/R-73	PN110	679		368	724.0	24	M42	700	648.0
	RF/R-74	PN150	695		451	749.0	20	M52	800	928.0
RF/R-75	PN260	752	533	832.0	16	M76	1075	1284.0		
DN600	RF	PN6	679	610	222	705.0	20	M24	345	265.0
	RF	PN10	695		222	725.0	20	M27	360	265.0
	RF	PN16	731		222	770.0	20	M33	360	265.0
	RF	PN25	731		222	770.0	20	M36	395	265.0
	RF/R-77	PN40	747		318	795.0	20	M45	550	529.0
	RF/R-77	PN50	771		318	813.0	24	M39	550	535.0
	RF/R-77	PN110	787		438	838.0	24	M48	770	910.0
	RF/R-78	PN150	833		495	901.5	20	M64	935	1250.0
RF/R-79	PN260	896	558	990.0	16	M90	1175	1913.0		
DN650	RF/R-93	PN50	831	660	356	876.0	28	M42	630	738.0
	RF/R-93	PN110	863		457	914.0	28	M48	800	847.0
	RF/R-100	PN150	878		533	952.0	20	M70	985	1193.0
DN700	RF	PN6	784	711	321	810.0	24	M24	470	515.0
	RF	PN10	804		321	840.0	24	M27	485	515.0
	RF	PN16	804		321	840.0	24	M33	485	515.0
	RF	PN25	833		321	875.0	24	M39	615	515.0
	RF/R-94	PN50	895		321	940.0	28	M42	670	590.0
	RF/R-94	PN110	910		483	965.0	28	M52	840	880.0
	RF/R-101	PN150	942		572	1022.0	20	M76	1045	1448.0
DN750	RF/R-95	PN50	949	762	368	997.0	28	M45	675	958.0
	RF/R-95	PN110	967		505	1022.0	28	M52	870	1446.0
	RF/R-102	PN150	1006		635	1086.0	20	M70	1120	1840.0
DN800	RF	PN6	890	813	356	920.0	24	M27	505	690.0
	RF	PN10	911		356	950.0	24	M30	520	690.0
	RF	PN16	911		356	950.0	24	M36	520	690.0
	RF	PN25	942		356	990.0	24	M45	720	690.0
	RF/R-96	PN50	1003		406	1054.0	28	M48	730	920.0
	RF/R-96	PN110	1020		533	1080.0	28	M56	915	1726.0
	RF/R-103	PN150	1070		660	1156.0	20	M82	1180	1980.0
DN900	RF	PN6	991	914	368	1020.0	24	M27	540	860.0
	RF	PN10	1011		368	1050.0	28	M30	555	860.0
	RF	PN16	1011		368	1050.0	28	M36	555	860.0
	RF	PN25	1042		368	1090.0	28	M45	790	860.0
	RF/R-98	PN50	1113		483	1168.0	32	M52	830	1240.0
	RF/R-98	PN110	1126		635	1194.0	28	M64	1145	2784.0
	RF/R-105	PN150	1195		718	1289.0	20	M90	1290	3212.0
DN1000	RF	PN6	1091	1016	419	1120.0	28	M27	600	926.0
	RF	PN10	1121		419	1160.0	28	M33	615	926.0
	RF	PN16	1121		419	1170.0	28	M39	615	926.0
	RF	PN25	1154		419	1210.0	28	M52	950	926.0
	RF	PN50	1111		546	1156.0	32	M42	890	1930.0
	RF	PN110	1153		660	1213.0	32	M56	1125	3784.0
	RF	PN150	1246		762	1340.0	24	M90	1370	3988.0
DN1050	RF	PN50	1161	1067	432	1206.0	32	M42	940	1162.0
	RF	PN110	1215		568	1283.0	28	M64	1200	2654.0
	RF	PN150	1246		701	1340.0	24	M90	1510	3161.0
DN1200	RF	PN6	1308	1219	524	1340.0	32	M30	800	1980.0
	RF	PN10	1341		524	1380.0	32	M36	820	1980.0
	RF	PN16	1341		524	1390.0	32	M45	720	1980.0
	RF	PN25	1364		524	1420.0	32	M52	1035	1980.0
	RF	PN50	1321		629	1372.0	32	M48	1030	2962.0
	RF	PN110	1386		787	1460.0	32	M70	1375	3220.0
DN1350	RF	PN50	1489	1371	730	1549.0	28	M56	1200	4100.0
DN1500	RF	PN50	1642	1524	838	1702.0	32	M56	1350	5500.0



Carbon & Stainless Steel Materials Installation Dimensions Suit For JIS & JPI Flanges



Design: API - 594 - DUAL PLATE WAFER STYLE CHECK VALVE
Face To Face: API - 594 / API - 6D / JID - B2002
Inspection: JIS - B2003 / JPI - 7S - 39 - 96 / API - 598
Suit Flanged For: JIS - B2238 / JPI - 7S - 15 - 93

Size (mm)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
40A (JIS)	RF	5K	80	60	43	95.0	4	M12	105	1.5
	RF	10K	86		43	105.0	4	M16	110	1.5
	RF/R-20	16/20K	86		43	105.0	4	M16	115	1.5
	RF/R-20	30/40K	97		43	120.0	4	M20	160	1.8
	RF/R-23	63K	105		54	130.0	4	M22	200	5.0
40A (JPI)	RF	150	82	60	98.6	4	0.50"-13UNC	130	1.8	
	RF/R-20	300-600	92	60	114.3	4	0.75"-10UNC	175	2.8	
	RF/R-20	900-1500	92	70	114.3	4	1.00"-8UNC	210	6.0	
50A (JIS)	RF	5K	90	60	60	105.0	4	M12	135	2.5
	RF	10K	101		60	120.0	4	M16	140	2.5
	RF/R-23	16/20K	101		60	120.0	8	M16	145	2.5
	RF/R-23	30/40K	111		60	130.0	8	M16	170	3.5
	RF/R-24	63K	122		70	145.0	8	M20	215	6.5
50A (JPI)	RF	150	101	60	120.6	4	0.62"-11UNC	145	2.5	
	RF/R-23	300-600	109	60	127.0	8	0.62"-11UNC	170	3.5	
	RF/R-24	900-1500	139	70	165.1	8	0.87"-9UNC	215	6.5	
65A (JIS)	RF	5K	115	73	67	130.0	4	M12	140	3.0
	RF	10K	121		67	140.0	4	M16	150	3.0
	RF/R-26	16/20K	121		67	140.0	8	M16	155	3.0
	RF/R-26	30/40K	137		67	160.0	8	M20	190	4.0
	RF/R-27	63K	150		83	175.0	8	M22	245	7.0
65A (JPI)	RF	150	121	67	139.7	4	0.62"-11UNC	155	3.0	
	RF/R-26	300-600	124	67	149.4	8	0.75"-10UNC	190	4.0	
	RF/R-27	900-1500	161	83	190.5	8	1.00"-8UNC	245	7.0	
80A (JIS)	RF	5K	126	89	73	145.0	4	M16	145	4.5
	RF	10K	131		73	150.0	8	M16	155	4.5
	RF/R-31	16/20K	137		73	160.0	8	M16	165	4.5
	RF/R-31	30/40K	147		73	170.0	8	M20	200	5.0
	RF/R-31	63K	170		83	185.0	8	M22	230	11.0
80A (JPI)	RF	150	131	73	152.4	4	0.62"-11UNC	165	4.5	
	RF/R-31	300-600	146	73	168.1	8	0.75"-10UNC	200	5.0	



Carbon & Stainless Steel Materials Installation Dimensions Suit For JIS & JPI Flanges

Size (mm)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
80A (JPI)	RF/R-31	900	164	89	83	190.5	8	087"-9UNC	230	11.0
	RF/R-35	1500	171		83	203.2	8	1.12"-8UNC	260	12.0
	RF/R-32	2500	193		86	228.6	8	1.25"-8UNC	310	21.0
100A (JIS)	RF	5K	146	114	73	165.0	8	M16	150	8.0
	RF	10K	156		73	175.0	8	M16	160	8.0
	RF/R-37	16/20K	162		73	185.0	8	M20	165	8.0
	RF/R-37	30K	168		79	195.0	8	M22	190	11.0
	RF/R-37	40K	178		79	205.0	8	M22	225	17.0
	RF/R-37	63K	190		102	220.0	8	M24	275	19.0
100A (JPI)	RF	150	171	114	73	190.5	8	0.62"-11UNC	165	8.0
	RF/R-37	300	178		73	200.2	8	0.75"-10UNC	190	9.0
	RF/R-37	600	190		79	215.9	8	0.87"-9UNC	225	11.0
	RF/R-37	900	202		102	235.0	8	1.12"-8UNC	275	17.0
	RF/R-39	1500	206		102	241.3	8	1.25"-8UNC	300	19.0
	RF/R-38	2500	231		105	273.0	8	1.50"-8UNC	360	39.5
125A (JIS)	RF	5K	181	141	86	200.0	8	M16	160	10.0
	RF	10K	187		86	210.0	8	M20	165	10.0
	RF/R-41	16/20K	194		86	225.0	8	M22	180	10.0
	RF/R-41	30K	205		105	230.0	8	M22	210	13.0
	RF/R-41	40K	223		105	250.0	8	M24	285	21.0
125A (JPI)	RF	150	194	141	86	215.9	8	0.75"-10UNC	180	10.0
	RF/R-41	300	213		86	235.0	8	0.75"-10UNC	210	13.0
	RF/R-41	600	237		105	266.7	8	1.00"-8UNC	285	21.0
150A (JIS)	RF	5K	207	168	98	230.0	8	M16	175	13.0
	RF	10K	217		98	240.0	8	M20	180	13.0
	RF/R-45	16/20K	235		98	260.0	12	M22	200	13.0
	RF/R-45	30K	248		136	275.0	12	M24	225	23.0
	RF/R-45	40K	262		136	295.0	12	M30*3	310	32.0
	RF/R-45	63K	272		159	305.0	12	M30*3	350	51.0
150A (JPI)	RF	150	217	168	98	241.3	8	0.75"-10UNC	200	13.0
	RF/R-45	300	248		98	269.7	12	0.75"-10UNC	225	23.0
	RF/R-45	600	262		136	292.1	12	1.00"-8UNC	310	32.0
	RF/R-45	900	285		136	317.5	12	1.12"-8UNC	350	51.0
	RF/R-46	1500	278		159	317.5	12	1.37"-8UNC	420	56.0
	RF/R-47	2500	313		159	368.3	8	2.00"-8UNC	500	85.0
200A (JIS)	RF	5K	257	219	127	280.0	8	M20	210	28.0
	RF	10K	267		127	290.0	12	M20	215	28.0
	RF/R-49	16/20K	276		127	305.0	12	M22	235	28.0
	RF/R-49	30K	290		165	320.0	12	M24	270	36.0
	RF/R-49	40K	312		165	345.0	12	M30*3	355	65.0
	RF/R-49	63K	327		206	360.0	12	M30*3	430	82.0
200A (JPI)	RF	150	276	219	127	298.4	8	0.75"-10UNC	235	28.0
	RF/R-49	300	304		127	330.2	12	0.87"-9UNC	270	36.0
	RF/R-49	600	312		165	349.2	12	1.12"-8UNC	355	65.0
	RF/R-49	900	354		206	393.7	12	1.37"-8UNC	430	82.0
	RF/R-50	1500	345		206	393.7	12	1.62"-8UNC	500	91.0
	RF/R-51	2500	383		206	438.2	12	2.00"-8UNC	590	128.0
250A (JIS)	RF	5K	317	274	146	345.0	12	M20	230	45.0
	RF	10K	330		146	355.0	12	M22	235	45.0
	RF/R-53	16/20K	353		146	380.0	12	M24	260	45.0
	RF/R-53	30K	357		213	390.0	12	M30*3	305	60.0
	RF/R-53	40K	377		213	410.0	12	M30*3	430	98.0
	RF/R-53	63K	391		241	430.0	12	M36*3	480	126.0
250A (JPI)	RF	150	330	274	146	362.0	12	0.87"-9UNC	260	45.0
	RF/R-53	300	353		146	387.4	16	1.00"-8UNC	305	60.0
	RF/R-53	600	396		213	431.8	16	1.25"-8UNC	430	98.0
	RF/R-53	900	430		241	469.9	16	1.37"-8UNC	480	126.0
	RF/R-54	1500	430		248	482.6	12	1.87"-8UNC	585	132.0
	RF/R-55	2500	525		254	539.8	12	2.50"-8UNC	745	200.0
300A (JIS)	RF	5K	367	324	181	390.0	12	M20	275	68.0
	RF	10K	375		181	400.0	16	M22	280	68.0
	RF/R-57	16/20K	400		181	430.0	16	M24	300	68.0
	RF/R-57	30K	417		229	450.0	16	M30*3	355	86.0
	RF/R-57	40K	431		229	470.0	16	M36*3	450	140.0
	RF/R-57	63K	446		292	485.0	16	M36*3	550	163.0
300A (JPI)	RF	150	400	324	181	431.8	12	0.87"-9UNC	300	68.0
	RF/R-57	300	417		181	450.8	16	1.12"-8UNC	355	86.0
	RF/R-57	600	454		229	489.0	20	1.25"-8UNC	450	140.0
	RF/R-57	900	494		292	533.4	20	1.37"-8UNC	550	163.0
	RF/R-58	1500	517		305	571.5	16	2.00"-8UNC	680	174.0
	RF/R-60	2500	545		305	619.3	12	2.75"-8UNC	845	393.0
350A (JIS)	RF	5K	410	356	184	435.0	12	M22	285	95.0
	RF	10K	420		184	445.0	16	M22	290	95.0
	RF/R-61	16/20K	447		184	480.0	16	M30*3	300	95.0
	RF/R-61	30K	456		222	495.0	16	M30*3	400	170.0
	RF/R-61	40K	474		273	515.0	16	M36*3	510	185.0
	RF/R-62	63K	482		356	530.0	16	M42*3	630	436.0

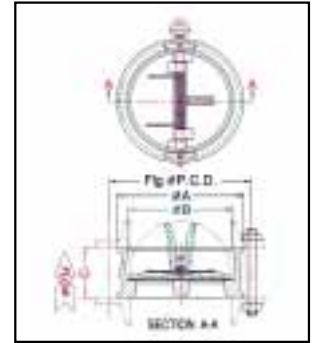


Carbon & Stainless Steel Materials Installation Dimensions Suit For JIS & JPI Flanges

Size (mm)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
350A (JPI)	RF	150	447	356	184	476.2	12	1.00"-8UNC	320	95.0
	RF/R-61	300	482		222	514.4	20	1.12"-8UNC	400	170.0
	RF/R-61	600	488		273	527.0	20	1.37"-8UNC	510	185.0
	RF/R-62	900	517		356	558.8	20	1.50"-8UNC	630	436.0
	RF/R-63	1500	575		356	635.0	16	2.25"-8UNC	765	480.0
400A (JIS)	RF	5K	470	406	191	495.0	16	M22	285	132.0
	RF	10K	483		191	510.0	16	M24	295	132.0
	RF/R-65	16/20K	507		191	540.0	16	M30*3	325	132.0
	RF/R-65	30K	521		232	560.0	16	M30*3	425	208.0
	RF/R-65	40K	531		305	570.0	16	M36*3	560	274.0
	RF/R-66	63K	544		384	590.0	16	M42*3	670	536.0
400A (JPI)	RF	150	507		191	539.8	16	1.00"-8UNC	325	132.0
	RF/R-65	300	531		232	571.5	20	1.25"-8UNC	425	208.0
	RF/R-65	600	561		305	603.2	20	1.50"-8UNC	560	274.0
	RF/R-66	900	571		384	616.0	20	1.62"-8UNC	670	536.0
	RF/R-67	1500	637		384	704.8	16	2.50"-8UNC	830	583.0
450A (JIS)	RF	5K	528		203	555.0	16	M22	310	147.0
	RF	10K	538		203	565.0	20	M24	325	147.0
	RF/R-69	16/20K	572		264	585.0	20	M30*3	435	296.0
450A (JPI)	RF	150	545	457	203	577.8	16	1.12"-8UNC	350	147.0
	RF/R-69	300	593		264	628.6	24	1.25"-8UNC	460	296.0
	RF/R-69	600	609		362	654.0	20	1.62"-8UNC	650	396.0
	RF/R-70	900	635		451	685.8	20	1.87"-8UNC	775	655.0
	RF/R-71	1500	700		468	774.7	16	2.75"-8UNC	965	788.0
500A (JIS)	RF	5K	578		219	605.0	20	M22	335	202.0
	RF	10K	592		219	620.0	20	M24	350	202.0
	RF/R-73	16/20K	625		292	660.0	20	M30*3	465	366.0
500A (JPI)	RF	150	603	508	219	635.0	20	1.12"-8UNC	380	202.0
	RF/R-73	300	650		292	685.8	24	1.25"-8UNC	495	366.0
	RF/R-73	600	679		368	723.9	24	1.62"-8UNC	700	648.0
	RF/R-74	900	695		368	749.3	20	2.00"-8UNC	800	928.0
	RF/R-75	1500	752		533	831.8	16	3.00"-8UNC	1075	1284.0
550A (JIS)	RF	5K	638	559	219	665.0	20	M24	365	230.0
	RF	10K	647		219	680.0	20	M30	380	230.0
600A (JIS)	RF	5K	679		222	715.0	20	M24	345	265.0
	RF	10K	695		222	730.0	24	M30	360	265.0
	RF/R-77	16/20K	731		318	770.0	24	M36*3	515	529.0
600A (JPI)	RF	150	714	610	222	749.3	20	1.25"-8UNC	395	265.0
	RF/R-77	300	771		318	812.8	24	1.50"-8UNC	550	529.0
	RF/R-77	600	787		438	838.2	24	1.87"-8UNC	770	910.0
	RF/R-78	900	833		495	901.7	20	2.50"-8UNC	935	1250.0
	RF/R-79	1500	896		558	990.6	16	3.50"-8UNC	1175	1913.0
650A (JIS)	RF	5K	743	660	356	770.0	24	M24	505	590.0
	RF	10K	747		356	780.0	24	M30	520	590.0
	RF/R-93	16K	781		356	820.0	24	M36*3	620	738.0
	RF/R-93	20K	802		356	850.0	24	M45*3	710	738.0
700A (JIS)	RF	5K	784	711	321	820.0	24	M24	470	515.0
	RF	10K	804		321	840.0	24	M30	485	515.0
	RF/R-94	16K	833		321	875.0	24	M39*3	615	590.0
	RF/R-94	20K	852		321	900.0	24	M45*3	700	590.0
750A (JIS)	RF	5K	847	762	305	880.0	24	M30	480	500.0
	RF	10K	867		305	900.0	24	M30	495	500.0
	RF/R-95	16K	893		368	935.0	24	M39*3	690	958.0
	RF/R-95	20K	914		368	970.0	24	M52*3	800	958.0
800A (JIS)	RF	5K	890	813	356	930.0	24	M30	505	690.0
	RF	10K	917		356	950.0	24	M30	520	690.0
	RF/R-96	16K	942		406	990.0	24	M45*3	720	920.0
	RF/R-96	20K	974		406	1030.0	24	M52*3	810	920.0
900A (JIS)	RF	5K	991	914	368	1030.0	24	M30	540	860.0
	RF	10K	1011		368	1050.0	28	M30	555	860.0
	RF/R-98	16K	1042		483	1090.0	28	M45*3	790	1240.0
	RF/R-98	20K	1084		483	1140.0	28	M52*3	880	1240.0
1000A (JIS)	RF	5K	1091	1016	419	1130.0	28	M30	600	926.0
	RF	10K	1121		419	1160.0	28	M36	615	926.0
	RF	16K	1154		546	1210.0	28	M52*3	950	1930.0
1100A (JIS)	RF	5K	1207	1118	462	1240.0	28	M30	650	1520.0
	RF	10K	1231		462	1270.0	28	M36	725	1520.0
1200A (JIS)	RF	5K	1308	1219	524	1350.0	32	M30	800	1980.0
	RF	10K	1341		524	1380.0	32	M36	820	1980.0
	RF	16K	1364		629	1310.0	32	M52*3	1035	3220.0
1350A (JIS)	RF	5K	1472	1371	590	1505.0	32	M30	900	3100.0
	RF	10K	1495		590	1540.0	36	M42	1020	3100.0
	RF	16K	1528		730	1590.0	32	M56*3	1340	4100.0
1500A (JIS)	RF	5K	1627	1524	660	1660.0	36	M30	980	4000.0
	RF	10K	1655		660	1700.0	40	M42	1150	4000.0
	RF	16K	1688		838	1750.0	36	M56*3	1600	5150.0



Carbon & Stainless Steel Materials Installation Dimensions Suit For ASME / MSS / API Flanges

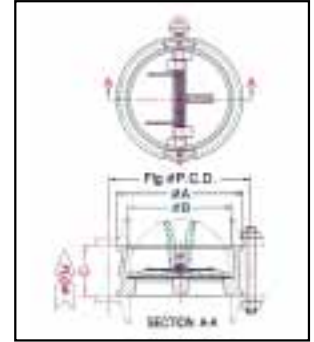


Design: API - 594
Face To Face: API - 594
Inspection Standard: API - 598
Suit For: ASME B16.1 & MSS - Sp44

Size (mm)	End Facing	Pressure Rating	Ø A inches	Ø B inches	C inches	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight	
							Stud No.	Stud Dia.		lbs	kgs
1-1/2"	FF	125-150	3.37"	2.36"	1.69"	3.88"	4	1/2"	4.37"	3.3	1.5
		250-300	3.75"		1.69"	4.50"	4	3/4"	5.12"	4.4	2.0
2"	FF	125-150	4.12"	2.36"	2.12"	4.75"	4	5/8"	4.62"	4.4	2.0
		250-300	4.37"		2.12"	5.00"	8	5/8"	5.12"	5.5	2.5
2-1/2"	FF	125-150	4.87"	2.87"	2.37"	5.50"	4	5/8"	4.87"	6.8	3.1
		250-300	5.12"		2.37"	5.88"	8	3/4"	5.87"	8.8	4.0
3"	FF	125-150	5.37"	3.50"	2.62"	6.00"	4	5/8"	5.12"	8.4	3.8
		250-300	5.87"		2.62"	6.62"	8	3/4"	6.12"	10.6	4.8
4"	FF	125-150	6.87"	4.49"	2.62"	7.50"	8	5/8"	5.62"	13.9	6.3
		250-300	7.12"		2.62"	7.88"	8	3/4"	6.62"	16.5	7.5
5"	FF	125-150	7.75"	5.55"	3.27"	8.50"	8	3/4"	6.27"	16.5	7.5
		250-300	8.50"		3.27"	9.25"	8	3/4"	7.27"	20.7	9.4
6"	FF	125-150	8.75"	6.61"	3.75"	9.50"	8	3/4"	7.25"	22.0	10.0
		250-300	9.87"		3.75"	10.62"	12	3/4"	7.75"	27.5	12.5
8"	FF	125-150	11.00"	8.62"	5.00"	11.75"	8	3/4"	8.50"	44.1	20.0
		250-300	12.12"		5.00"	13.00"	12	7/8"	9.50"	51.3	23.3
10"	FF	125-150	13.37"	10.79"	5.50"	14.25"	12	7/8"	9.50"	71.6	32.5
		250-300	14.25"		5.50"	15.25"	16	1"	11.00"	82.6	37.5
10"	FF	125-150	16.12"	12.76"	7.12"	17.00"	12	1"	11.12"	129.5	58.8
		250-300	16.62"		7.12"	17.25"	16	1-1/8"	12.62"	143.2	65.0
14"	FF	125-150	17.75"	14.02"	7.25"	18.75"	12	1"	11.75"	193.8	88.0
		250-300	19.12"		8.25"	20.25"	20	1-1/8"	14.75"	337.0	153.0
16"	FF	125-150	20.25"	15.98"	7.50"	21.25"	16	1"	12.00"	268.7	122.0
		250-300	21.25"		9.12"	22.50"	20	1-1/4"	15.62"	411.9	187.0
18"	FF	125-150	21.62"	17.99"	8.00"	22.75"	16	1-1/8"	13.00"	317.2	144.0
		250-300	23.50"		10.37"	24.75"	24	1-1/4"	16.87"	585.9	266.0
20"	FF	125-150	23.87"	20.00"	8.37"	25.00"	20	1-1/8"	13.37"	414.1	188.0
		250-300	25.85"		11.50"	27.00"	24	1-1/4"	18.50"	724.7	329.0
22"	FF	215-150	26.00"	22.00"	8.62"	27.25"	20	1-1/4"	14.00"	506.6	230.0
		125-150	28.25"		8.75"	29.50"	20	1-1/4"	14.25"	570.5	259.0
24"	FF	250-300	30.50"	24.02"	12.50"	32.00"	24	1-1/2"	21.50"	1048.5	476.0
		125-150	30.50"		9.85"	31.75"	24	1-1/4"	19.00"	1167.4	530.0
26"	FF	250-300	32.87"	26.00"	14.00"	34.50"	28	1-5/8"	24.75"	1255.5	570.0
		125-150	32.75"		10.62"	34.00"	28	1-1/4"	20.00"	863.4	392.0
28"	FF	250-300	35.37"	28.00"	15.00"	37.00"	28	1-5/8"	26.25"	991.2	450.0
		125-150	34.75"		12.00"	36.00"	28	1-1/4"	21.00"	975.8	443.0
30"	FF	250-300	37.50"	30.00"	14.50"	39.25"	28	1-3/4"	26.50"	1898.7	862.0
		125-150	37.00"		14.00"	38.50"	28	1-1/2"	24.62"	1268.7	576.0
32"	FF	250-300	39.62"	32.00"	16.00"	41.50"	28	1-7/8"	28.75"	1823.8	828.0
		125-150	41.25"		14.50"	42.75"	32	1-1/2"	25.75"	1720.3	781.0
36"	FF	250-300	44.00"	36.00"	19.00"	46.00"	32	2"	32.50"	2458.1	1116.0
		125-150	45.75"		16.50"	47.25"	36	1-1/2"	27.87"	1854.6	842.0
40"	FF	250-300	43.87"	40.00"	21.50"	45.50"	32	1-5/8"	35.00"	3627.8	1647.0
		125-150	48.00"		17.00"	49.50"	36	1-1/2"	28.87"	2326.0	1056.0
42"	FF	250-300	46.00"	42.00"	22.37"	47.50"	32	1-5/8"	37.00"	5260.0	2388.0
		125-300	50.25"		18.19"	51.75"	40	1-1/2"	28.93"	3105.7	1410.0
48"	FF	125-150	54.50"	48.00"	20.62"	56.00"	44	1-1/2"	33.37"	4185.0	1900.0
		250-300	58.75"		24.75"	54.00"	32	1-7/8"	40.50"	5870.0	2665.0
54"	FF	125-150	61.00"	54.00"	23.25"	62.75"	44	1-3/4"	38.25"	6167.4	2800.0
		250-300	58.75"		28.75"	61.00"	28	2-1/4"	47.25"	8149.8	3700.0
60"	FF	125-150	67.50"	60.00"	26.00"	69.25"	52	1-3/4"	42.00"	8326.0	3780.0
		250-300	64.75"		33.00"	67.00"	32	2-1/4"	53.00"	11013.2	5000.0



Cast & Ductile Iron Materials Installation Dimensions Suit For ASME & ISO & JIS Flanges



Design: API - 594
Face To Face: EN558 - 1 Serial 50
Inspection Standard: API - 598 & ISO - 5208
Suit For: ASME & ISO & JIS

Size (mm)	End Facing	Pressure Rating	Ø A mm.	Ø B mm.	C mm.	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight	
							Stud No.	Stud Dia.		lbs	kgs
1-1/2" (40A)	FF	5K	80	60	43	95.0	4	M12	110	3.3	1.5
		10K	86			105.0	4	M16	115	3.3	1.5
		125 LB	86			98.5	4	1/2"	3.94"	3.3	1.5
		PN6	86			100.0	4	M12	115	3.3	1.5
		PN10/16	92			110.0	4	M20	120	3.3	1.5
2" (50A)	FF	5K	90	60	54	105.0	4	M12	135	4.4	2.0
		10K	101			120.0	4	M16	140	4.4	2.0
		125 LB	105			120.6	4	5/8"	4.62"	4.4	2.0
		PN6	96			110.0	4	M12	135	4.4	2.0
		PN10/16	105			125.0	4	M16	140	4.4	2.0
2-1/2" (65A)	FF	5K	115	73	54	130.0	4	M12	140	5.5	2.5
		10K	121			140.0	4	M16	150	5.5	2.5
		125 LB	124			139.7	4	5/8"	4.62"	5.5	2.5
		PN6	115			130.0	4	M12	140	5.5	2.5
		PN10/16	124			145.0	8	M16	150	5.5	2.5
3" (80A)	FF	5K	126	89	57	145.0	4	M16	140	6.6	3.0
		10K	131			150.0	8	M16	150	6.6	3.0
		125 LB	137			152.0	4	5/8"	4.75"	6.6	3.0
		PN6	126			150.0	4	M16	145	6.6	3.0
		PN10/16	137			160.0	8	M16	155	6.6	3.0
4" (100A)	FF	5K	146	114	64	165.0	8	M16	150	8.8	4.0
		10K	156			175.0	8	M16	160	9.9	4.5
		125 LB	175			190.5	8	5/8"	5.50"	11.0	5.0
		PN6	146			170.0	4	M16	150	8.8	4.0
		PN10/16	156			180.0	8	M16	160	9.9	4.5
5" (125A)	FF	5K	181	141	70	200.0	8	M16	160	11.0	5.0
		10K	187			210.0	8	M20	165	12.1	5.5
		125 LB	197			215.9	8	3/4"	5.75"	13.2	6.0
		PN6	181			200.0	8	M16	160	11.0	5.0
		PN10/16	187			210.0	8	M16	165	12.1	6.0
6" (150A)	FF	5K	207	168	76	230.0	8	M16	175	14.3	6.5
		10K	217			240.0	8	M20	180	16.5	7.5
		125 LB	222			241.3	8	3/4"	6.50"	17.6	8.0
		PN6	207			225.0	8	M16	175	14.3	6.5
		PN10/16	217			240.0	8	M20	180	17.6	8.0
8" (200A)	FF	5K	257	219	95	280.0	8	M20	210	30.8	14.0
		10K	267			290.0	12	M20	215	33.0	15.0
		125 LB	279			298.4	8	3/4"	7.25"	35.2	16.0
		PN6	257			280.0	8	M16	210	30.8	14.0
		PN10	267			295.0	8	M20	215	35.2	16.0
PN16	267	295.0	12	M20	215	35.2	16.0				
10" (250A)	FF	5K	317	274	108	345.0	12	M20	230	52.9	24.0
		10K	330			355.0	12	M22	235	55.1	25.0
		125 LB	340			362.0	12	7/8"	8.25"	57.3	26.0
		PN6	317			335.0	12	M16	230	52.9	24.0
		PN10	330			350.0	12	M20	235	55.1	25.0
PN16	330	355.0	12	M24	235	55.1	25.0				
12" (300A)	FF	5K	367	324	143	390.0	12	M20	275	96.9	44.0
		10K	375			400.0	16	M22	280	99.1	45.0
		125 LB	410			431.8	12	7/8"	9.62"	103.5	47.0
		PN6	367			395.0	12	M20	275	96.9	44.0
		PN10	375			400.0	12	M20	280	99.1	45.0
PN16	375	410.0	12	M24	280	101.3	46.0				
14" (350A)	FF	5K	410	356	184	435.0	12	M22	285	182.8	83.0
		10K	420			445.0	16	M22	290	187.2	85.0

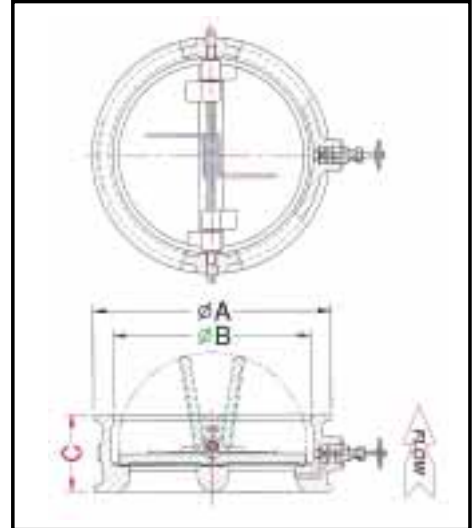


Cast & Ductile Iron Materials Installation Dimensions Suit For ASME & ISO & JIS Flanges

Size (mm)	End Facing	Pressure Rating	Ø A mm.	Ø B mm.	C mm.	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight	
							Stud No.	Stud Dia.		lbs	kgs
14" (350)	FF	125 LB	451	356	184	476.2	12	1"	11.75"	193.8	88.0
		PN6	410			445.0	12	M20	285	182.8	83.0
		PN10	438			460.0	16	M20	290	187.2	85.0
		PN16	438			470.0	16	M24	290	191.6	87.0
16" (400)	FF	5K	470	406	191	495.0	16	M22	285	253.3	115.0
		10K	483			510.0	16	M24	295	255.5	117.0
		125 LB	514			539.7	16	1"	12.00"	268.7	122.0
		PN6	470			495.0	16	M20	285	253.3	115.0
		PN10	483			515.0	16	M24	295	258.8	117.0
		PN16	495			525.0	16	M27	305	262.1	119.0
18" (450)	FF	5K	528	457	203	555.0	16	M22	310	304.0	138.0
		10K	538			565.0	20	M24	325	308.4	140.0
		125 LB	549			577.8	16	1"-1/8"	13.00"	317.2	144.0
		PN6	528			550.0	16	M20	310	304.0	138.0
		PN10	538			565.0	20	M24	325	313.9	140.0
		PN16	545			585.0	20	M27	325	319.4	144.0
20" (500)	FF	5K	578	508	213	605.0	20	M22	335	394.3	179.0
		10K	592			620.0	20	M24	350	398.7	181.0
		125 LB	606			635.0	20	1-1/8"	13.37"	414.1	188.0
		PN6	578			600.0	20	M20	335	394.3	179.0
		PN10	592			620.0	20	M24	350	400.9	181.0
		PN16	617			650.0	20	M27	350	418.5	190.0
22" (550)	FF	5K	638	559	219	665.0	20	M24	335	473.6	210.0
		10K	647			680.0	20	M30	350	473.6	215.0
		125 LB	660			692.1	20	1-1/4"	14.00"	495.6	225.0
		5K	679			715.0	20	M24	345	555.1	252.0
24" (600)	FF	10K	695	610	222	730.0	24	M30	360	555.1	263.0
		125 LB	718			749.3	20	1-1/4"	14.25"	570.5	269.0
		PN6	679			705.0	20	M24	345	555.1	252.0
		PN10	695			725.0	20	M27	360	579.3	263.0
		PN16	731			770.0	20	M33	360	579.3	265.0
		5K	743			770.0	24	M24	505	1141.0	505.0
26" (650)	FF	10K	747	660	356	780.0	24	M30	520	1141.0	518.0
		125 LB	774			806.4	24	1-1/4"	19.00"	1167.4	530.0
		5K	784			820.0	24	M24	470	837.0	380.0
		10K	804			840.0	24	M30	485	837.0	385.0
28" (700)	FF	125 LB	831	711	321	863.6	28	1-1/4"	20.00"	863.4	392.0
		PN6	784			810.0	24	M24	470	837.0	380.0
		PN10	804			840.0	24	M27	485	837.0	385.0
		PN16	804			840.0	24	M33	485	837.0	385.0
		5K	847			880.0	24	M30	480	825.1	420.0
		10K	867			900.0	24	M30	495	947.1	430.0
30" (750)	FF	125 LB	883	762	305	914.4	28	1-1/4"	21.00"	975.8	443.0
		5K	890			930.0	24	M30	505	1211.5	550.0
		10K	911			950.0	28	M30	520	1244.5	565.0
		125 LB	940			978.0	28	1-1/2"	24.62"	1268.7	576.0
		PN6	890			920.0	24	M27	505	1211.5	550.0
		PN10	911			950.0	24	M30	520	1244.5	565.0
32" (800)	FF	PN16	911	813	356	950.0	24	M36	520	1244.5	565.0
		5K	991			1030.0	24	M30	540	1585.9	720.0
		10K	1011			1050.0	28	M30	555	1630.0	740.0
		125 LB	1048			1085.8	32	1-1/2"	25.87"	1720.3	781.0
		PN6	991			1020.0	24	M27	540	1585.9	720.0
		PN10	1011			1050.0	28	M30	555	1630.0	740.0
36" (900)	FF	PN16	1011	914	368	1050.0	28	M36	555	1630.0	740.0
		5K	1091			1030.0	28	M30	600	1762.1	800.0
		10K	1121			1060.0	28	M36	615	1806.2	820.0
		125 LB	1162			1200.1	36	1-1/2"	27.87"	1854.6	842.0
		PN6	1091			1120.0	28	M27	600	1762.1	800.0
		PN10	1121			1160.0	28	M33	615	1806.2	820.0
40" (1000)	FF	PN16	1121	1016	419	1170.0	28	M39	615	1806.2	820.0
		125 LB	1219			1257.3	36	1-1/2"	28.87"	2326.0	1056.0
		5K	1207			1240.0	28	M30	650	2973.6	1350.0
		10K	1321			1270.0	28	M36	725	3039.6	1380.0
		125 LB	1276			1222.2	52	1"	28.93"	3105.7	1410.0
		5K	1308			1350.0	32	M30	800	3986.8	1810.0
48" (1200)	FF	10K	1341	1219	524	1380.0	32	M36	820	4141.0	1880.0
		125 LB	1384			1422.4	44	1-1/2"	33.37"	4185.0	1900.0
		PN6	1308			1340.0	32	M30	700	2986.8	1810.0
		PN10	1341			1380.0	32	M36	720	4141.0	1880.0
		PN16	1341			1390.0	32	M45	720	4141.0	1880.0
		5K	1472			1505.0	32	M30	900	5793.0	2630.0
54" (1350)	FF	10K	1495	1371	590	1540.0	36	M42	1020	5947.1	2700.0
		125 LB	1549			1593.8	44	1-3/4"	38.25"	6167.4	2800.0
		5K	1627			1660.0	36	M30	980	7709.3	3500.0
60" (1500)	FF	10K	1655	1524	660	1700.0	40	M42	1150	7819.4	3550.0
		125 LB	1714			1759.0	52	1-3/4"	42.00"	8149.8	3700.0
		5K	1627			1660.0	36	M30	980	7709.3	3500.0



Ductile Iron Materials Installation Dimensions Suit For JIS G5527 Flanges



Design: API - 594 - DUAL PLATE WAFER STYLE CHECK VALVE WITH BY-PASS
Face To Face: EN558-1 Serial 50 / JIS - B2002
Inspection: JIS-B2003 / API - 598
Suit Flanged For: JIS - G5527

Size (mm)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
50A	FF	7.5K	101	60	54	120.0	4	M16	140	2.5
		10K	101			120.0				
		16K	101			120.0				
65A	FF	10K	121	73	54	140.0	4	M16	150	2.7
75A	FF	7.5K	149	89	57	150.0	4	M16	145	4.0
		10K	131			168.0				
		16K	137			160.0				
100A	FF	7.5K	176	114	64	195.0	4	M16	160	5.0
		10K	156			175.0				
		16K	162			185.0				
125A	FF	10K	187	141	70	210.0	8	M20	165	5.5
150A	FF	7.5K	228	168	76	247.0	6	M16	180	8.0
		10K	217			240.0				
		16K	228			260.0				
200A	FF	7.5K	280	219	95	280.0	8	M16	215	16.0
		10K	267			267.0				
		16K	280			280.0				
250A	FF	7.5K	337	274	108	360.0	8	M20	235	26.0
		10K	330			355.0				
		16K	337			380.0				

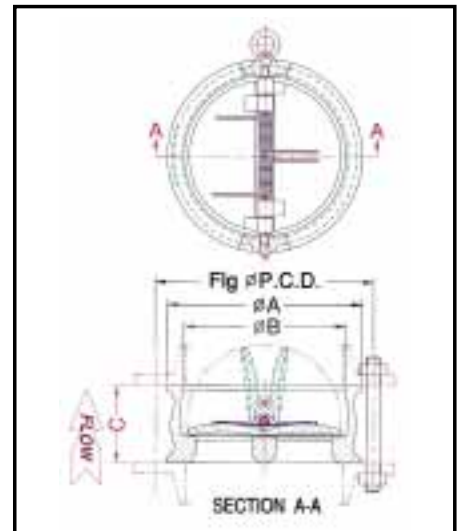


Ductile Iron Materials Installation Dimensions Suit For JIS G5527 Flanges

Size (mm)	End Facing	Pressure Rating	Ø A mm	Ø B mm	C mm	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight kgs
							Stud No.	Stud Dia.		
300A	FF	7.5K	391	324	143	414.0	10	M20	280	46.5
		10K	375			400.0	16	M22	280	45.0
		16K	391			430.0	16	M24	300	46.5
350A	FF	7.5K	447	356	184	472.0	10	M22	290	88.0
		10K	420			445.0	16	M22	290	85.0
		16K	447			480.0	16	M30	300	88.0
400A	FF	7.5K	499	406	191	524.0	12	M22	295	121.0
		10K	483			510.0	16	M24	295	116.0
		16K	499			540.0	16	M30	325	121.0
450A	FF	7.5K	558	457	203	585.0	12	M24	325	143.0
		10K	538		203	565.0	20	M24	325	140.0
		16K	572		264	605.0	20	M30	435	148.0
500A	FF	7.5K	612	508	219	639.0	12	M24	350	187.0
		10K	593		219	620.0	20	M24	350	181.0
		16K	612		292	660.0	20	M30	465	187.0
550A	FF	10K	647	559	219	680.0	20	M30	380	215.0
600A	FF	7.5K	716	610	222	743.0	16	M24	360	259.0
		10K	697		222	730.0	24	M30	360	252.0
		16K	716		318	770.0	24	M36	515	259.0
650A	FF	10K	747	660	250	780.0	24	M30	520	325.0
700A	FF	7.5K	821	711	321	854.0	16	M30	485	386.0
		10K	807			840.0	24	M30	485	375.0
		16K	833			875.0	28	M39	615	398.0
750A	FF	10K	867	762	305	900.0	24	M30	495	430.0
800A	FF	7.5K	927	813	356	960.0	20	M30	520	575.0
		10K	917		356	950.0	28	M30	520	565.0
		16K	942		406	990.0	24	M45	720	596.0
900A	FF	7.5K	1040	914	368	1073.0	20	M30	540	753.0
		10K	1017		368	1050.0	28	M30	540	740.0
		16K	1042		483	1090.0	28	M45	555	756.0
1000A	FF	7.5K	1146	1016	419	1179.0	24	M30	615	830.0
		10K	1121		419	1160.0	28	M30	615	820.0
		16K	1154		546	1210.0	28	M42	950	850.0
1100A	FF	7.5K	1250	1118	462	1283.0	24	M30	725	1400.0
		10K	1231			1270.0	28	M36	725	1380.0
1200A	FF	7.5K	1354	1219	524	1387.0	28	M30	820	1810.0
		10K	1341			1380.0	32	M36	820	1800.0
		16K	1364			1310.0	32	M52*3	1035	1850.0
1350A	FF	7.5K	1513	1371	590	1552.0	28	M36	1020	2700.0
		10K	1495		590	1540.0	36	M42	1020	2650.0
		16K	1528		730	1590.0	32	M56*3	1340	3500.0
1500A	FF	7.5K	1671	1524	660	1710.0	32	M36	1150	3600.0
		10K	1655		660	1700.0	40	M42	1150	3580.0
		16K	1688		838	1750.0	36	M56*3	1600	4800.0



Dual Plate Wafer Style Check Valve's Installation Dimensions Suit For BS10 Table A / D / E / F Flanges

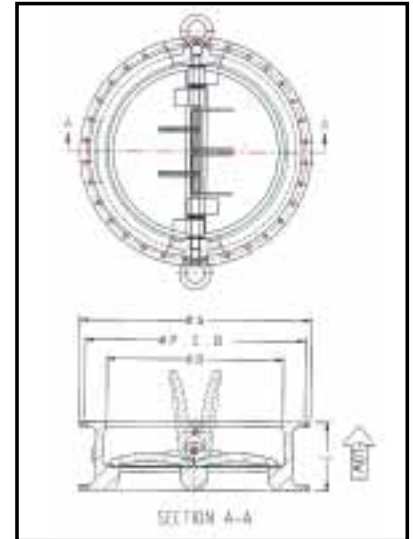


Design: API - 594
Face To Face: EN558-1 Serial 16
Inspection Standard: ISO-5208
Suit For: BS10 Table A / D / E / F

Size (mm)	Pressure Rating	Ø A mm	Ø B mm	C mm	Weight kgs	Size (mm)	Pressure Rating	Ø A mm	Ø B mm	C mm	Weight kgs
DN40	A/D/E/F	86	60	43	1.5	DN450	A/D/E/F	562 581	457	152	105.0
DN50	A/D/E/F	98	60	43	1.8	DN500	A/D/E/F	592 619 645	508	152	110.0
DN65	A/D/E/F	110	73	46	2.0	DN550	A/D/E/F	673 695	559	170	182.0
DN80	A/D/E/F	128	89	64	3.2	DN600	A/D/E/F	730 727 752	610	178	218.0
DN100	A/D/E/F	156	114	64	4.0	DN750	A/D/E	857 899 895	762	230	308.0
DN125	A/D/E/F	187	141	70	5.0	DN900	A/D/E	1016 1064 1060	914	241	584.0
DN150	A/D/E/F	223	168	76	6.5	DN1050	A/D/E	1168 1216	1067	320	886.0
DN200	A/D/E/F	267	219	89	14.0	DB1200	A/D/E	1327 1375	1219	350	1327.0
DN250	A/D/E/F	328	274	114	26.0	DN1350	A/D	1495	1371	390	2100.0
DN300	A/D/E/F	375	324	114	40.0	DN1500	A/D	1665	1524	440	2800.0



Carbon & Stainless Steel Materials Installation Dimensions Suit For ASME / MSS / API Flanges



Design: API - 594 - DUAL PLATE WAFER FLANGED STYLE CHECK VALVE
Face To Face: API - 594 / API - 6D
Inspection Standard: API - 598 / ASME - B16.34
Suit Flanged For: ASME - B16.5 / MSS SP - 44 / API - 605

Size (inches)	End Facing	Pressure Rating	Ø A inches	Ø B inches	C inches	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight	
							Stud No.	Stud Dia.		lbs	kgs
14"	RF	150	21.00"	14.02"	7.25"	18.75"	12	1"	6.00"	297.4	135.0
	RF	300	23.00"		8.75"	20.25"	20	1-1/8"	7.75"	396.5	180.0
	RF/RJ-61	600	23.75"		10.75"	20.75"	20	1-3/8"	9.50"	781.9	355.0
	RF/RJ-62	900	25.25"		14.00"	22.00"	20	1-1/2"	11.25"	1156.4	525.0
16"	RF	150	23.50"	15.98"	7.50"	21.25"	16	1"	6.00"	363.4	165.0
	RF	300	25.50"		9.12"	22.50"	20	1-1/4"	8.25"	616.7	280.0
	RF/RJ-65	600	27.00"		12.00"	23.75"	20	1-1/2"	10.25"	925.1	420.0
	RF/RJ-66	900	27.50"		15.12"	24.25"	20	1-5/8"	11.75"	1112.3	505.0
18"	RF	150	25.00"	17.99"	8.00"	22.75"	16	1-1/8"	6.50"	429.5	195.0
	RF	300	28.00"		10.37"	24.75"	24	1-1/4"	8.50"	627.8	285.0
	RF/RJ-69	600	29.25"		14.25"	25.75"	20	1-5/8"	11.00"	1211.5	550.0
	RF/RJ-70	900	31.00"		17.75"	27.00"	20	1-7/8"	13.50"	1707.0	775.0
20"	RF	150	27.50"	20.00"	8.62"	25.00"	20	1-1/8"	7.00"	550.7	250.0
	RF	300	30.50"		11.50"	27.00"	24	1-1/4"	9.00"	991.2	450.0
	RF/RJ-73	600	32.00"		14.50"	28.50"	24	1-5/8"	11.75"	1541.9	700.0
	RF/RJ-74	900	33.75"		17.75"	29.50"	20	2"	14.50"	2753.3	1250.0
24"	RF	150	28.25"	24.02"	8.75"	29.50"	20	1-1/4"	7.50"	781.9	355.0
	RF	300	30.50"		12.50"	32.00"	24	1-1/2"	10.25"	1652.0	750.0
	RF/RJ-77	600	31.12"		17.25"	33.00"	24	1-7/8"	13.50"	2147.6	975.0
	RF/RJ-78	900	33.00"		19.50"	35.50"	20	2-1/2"	18.25"	3524.2	1600.0
26" (MSS)	RF	150	34.25"	26.00"	14.00"	31.75"	24	1-1/4"	9.00"	1882.2	855.0
	RF	300	38.25"		14.00"	34.50"	28	1-5/8"	11.00"	2312.8	1050.0
	RF/RJ-73	600	40.00"		18.00"	36.00"	28	1-7/8"	14.62"	2665.2	1210.0
	RF/RJ-100	900	42.75"		21.00"	37.50"	20	2-5/8"	19.12"	3744.5	1700.0
26" (API-605)	RF	150	30.94"	26.00"	14.00"	29.31"	36	3/4"	5.50"	1883.3	855.0
	RF	300	34.12"		14.00"	31.62"	32	1-1/4"	10.25"	2313.8	1050.0
	RF	600	35.00"		18.00"	31.75"	28	1-5/8"	13.25"	2665.2	1210.0
	RF	900	40.25"		21.00"	35.50"	20	2-1/2"	16.75"	3744.5	1700.0
28" (MSS)	RF	150	36.50"	28.00"	15.00"	34.00"	28	1-1/4"	9.25"	1927.3	875.0
	RF	300	40.75"		15.00"	37.00"	28	1-5/8"	11.00"	2103.5	955.0
	RF/RJ-94	600	42.25"		19.00"	38.00"	28	2"	14.62"	2753.3	1250.0
	RF/RJ-101	900	46.00"		22.50"	40.25"	20	3"	19.12"	4515.4	2050.0



Carbon & Stainless Steel Materials Installation Dimensions Suit For ASME / MSS / API Flanges

Size (inches)	End Facing	Pressure Rating	Ø A inches	Ø B inches	C inches	Dia. of Bolt Circle	Stud Selection		Stud Length	Weight	
							Stud No	Stud Dia		lbs	kgs
28" (API-605)	RF	150	32.94"	28.00"	15.00"	31.31"	40	3/4"	95.75"	1927.3	875.0
	RF	300	36.25"		15.00"	33.75"	36	1-1/4"	10.25"	2103.5	955.0
	RF	600	37.50"		19.00"	34.00"	28	1-3/4"	13.75"	2753.3	1250.0
	RF	900	43.50"		22.50"	38.25"	20	2-3/4"	18.50"	4515.4	2050.0
30" (MSS)	RF	150	38.75"	30.00"	12.00"	36.00"	28	1-1/4"	9.50"	1486.8	675.0
	RF	300	43.00"		14.50"	39.25"	28	1-3/4"	12.00"	2995.6	1360.0
	RF/RJ-95	600	44.50"		19.87"	40.25"	28	2"	16.00"	4581.5	2080.0
	RF/RJ-102	900	48.50"		25.00"	42.75"	20	3"	21.37"	5726.9	2600.0
30" (API-605)	RF	150	34.94"	30.00"	12.00"	33.12"	44	3/4"	5.75"	1321.6	600.0
	RF	300	39.00"		14.50"	36.25"	36	1-3/8"	10.75"	2995.6	1360.0
	RF	600	40.25"		19.87"	36.50"	28	1-7/8"	14.75"	4581.5	2080.0
	RF	900	46.50"		25.00"	40.75"	20	3"	19.50"	5726.9	2600.0
32" (MSS)	RF	150	41.75"	32.00"	14.00"	38.50"	28	1-1/2"	10.50"	2533.0	1150.0
	RF	300	45.25"		16.00"	41.50"	28	1-7/8"	12.62"	3304.0	1500.0
	RF/RJ-96	600	47.00"		21.00"	42.50"	28	2-1/4"	17.12"	3964.8	1800.0
	RF/RJ-105	900	51.75"		26.00"	45.50"	20	3-1/4"	22.75"	6607.9	3000.0
32" (API-605)	RF	150	37.06"	32.00"	14.00"	35.37"	48	3/4"	5.75"	2312.8	1050.0
	RF	300	41.50"		16.00"	38.50"	32	1-1/2"	11.75"	3304.0	1500.0
	RF	600	42.75"		21.00"	38.75"	28	2"	16.75"	3946.8	1800.0
	RF	900	48.75"		26.00"	43.00"	20	3"	20.00"	6607.9	3000.0
36" (MSS)	RF	150	46.00"	36.00"	14.50"	42.75"	32	1-1/2"	11.25"	2731.3	1240.0
	RF	300	50.00"		19.00"	46.00"	32	2"	13.75"	4008.8	1820.0
	RF/RJ-98	600	51.75"		25.00"	47.00"	28	2-1/2"	18.75"	6607.9	3000.0
	RF/RJ-105	900	57.50"		28.25"	50.75"	20	3-1/2"	24.87"	9911.9	4500.0
36" (API-605)	RF	150	41.62"	36.00"	14.50"	39.75"	44	7/8"	6.50"	2422.9	1100.0
	RF	300	46.12"		19.00"	42.87"	32	1-5/8"	12.00"	4008.8	1820.0
	RF	600	47.75"		25.00"	43.50"	28	2-1/4"	17.25"	6607.9	3000.0
	RF	900	53.00"		28.25"	47.25"	24	3"	21.00"	9911.9	4500.0
40" (MSS)	RF	150	50.75"	40.00"	16.00"	47.25"	36	1-1/2"	11.25"	3304.0	1500.0
	RF	300	48.75"		21.50"	45.50"	32	1-5/8"	13.25"	6167.4	2800.0
	RF	600	52.00"		26.00"	47.75"	32	2-1/4"	18.25"	13215.9	6000.0
	RF	900	59.50"		30.00"	52.75"	24	3-1/2"	25.62"	14317.2	6500.0
40" (API-605)	RF	150	46.25"	40.00"	16.00"	44.12"	44	1"	11.25"	2973.6	1350.0
	RF	300	50.12"		21.50"	46.87"	40	1-5/8"	13.25"	6167.4	2800.0
	RF	600	52.00"		26.00"	47.75"	32	2-1/4"	18.25"	13215.9	6000.0
	RF	900	59.50"		30.00"	52.75"	24	3-1/2"	25.62"	14317.2	6500.0
42" (MSS)	RF	150	53.00"	42.00"	17.00"	49.50"	36	1-1/2"	11.62"	4074.9	1850.0
	RF	300	50.75"		22.37"	47.50"	32	1-5/8"	13.62"	8810.6	4000.0
	RF	600	55.25"		27.62"	50.50"	28	2-1/2"	19.50"	11013.2	5000.0
	RF	900	61.50"		31.00"	54.75"	24	3-1/2"	26.25"	12114.5	5500.0
42" (API-605)	RF	150	48.25"	42.00"	17.00"	46.12"	48	1"	7.25"	3744.5	1700.0
	RF	300	52.50"		22.37"	49.00"	36	1-3/4"	13.50"	8810.6	4000.0
	RF	600	55.25"		27.62"	50.50"	28	2-1/2"	19.50"	11013.2	5000.0
	RF	900	61.50"		31.00"	54.75"	24	3-1/2"	24.50"	12114.5	5500.0
44" (MSS)	RF	150	55.25"	44.00"	18.19"	51.75"	40	1-1/2"	7.50"	5506.6	2500.0
44" (API-605)	RF	150	50.25"	44.00"	18.19"	48.12"	52	1"	7.50"	5066.1	2300.0
48" (MSS)	RF	150	59.50"	48.00"	20.62"	56.00"	44	1-1/2"	12.50"	6607.9	3000.0
	RF	300	57.75"		24.75"	54.00"	32	1-7/8"	15.25"	9911.9	4500.0
	RF	600	62.75"		31.00"	57.50"	32	2-5/8"	22.00"	13215.9	6000.0
48" (API-605)	RF	150	54.81"	48.00"	20.62"	52.56"	44	1-1/8"	8.00"	5947.1	2700.0
	RF	300	59.50"		24.75"	55.75"	40	1-7/8"	14.50"	9911.9	4500.0
	RF	600	62.75"		31.00"	57.50"	32	2-3/4"	21.75"	13215.9	6000.0
54" (MSS)	RF	150	66.25"	54.00"	23.25"	62.75"	44	1-3/4"	14.00"	11013.2	5000.0
	RF	300	65.25"		28.75"	61.00"	28	2-1/4"	17.50"	16519.8	7500.0
54" (API-605)	RF	150	61.00"	54.00"	23.25"	58.75"	56	1-1/8"	8.50"	10352.4	4700.0
	RF	300	65.88"		28.75"	62.12"	48	1-7/8"	15.25"	16519.8	7500.0
60" (MSS)	RF	150	73.00"	60.00"	26.00"	69.25"	52	1-3/4"	15.00"	17180.6	7800.0
	RF	300	71.25"		33.00"	67.00"	32	2-1/4"	18.37"	23127.8	10500.0
60" (API-605)	RF	150	67.94"	60.00"	26.00"	65.44"	52	1-1/4"	9.25"	16409.7	7450.0
	RF	300	73.94"		33.00"	69.44"	40	2-1/4"	17.00"	23127.8	10500.0

