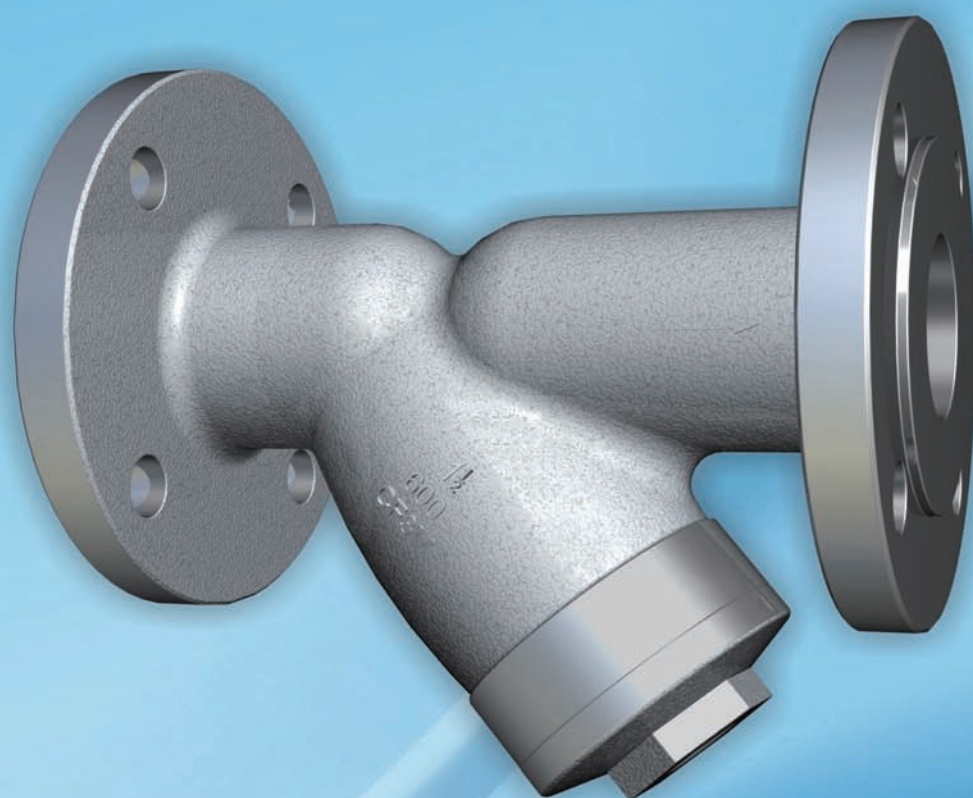




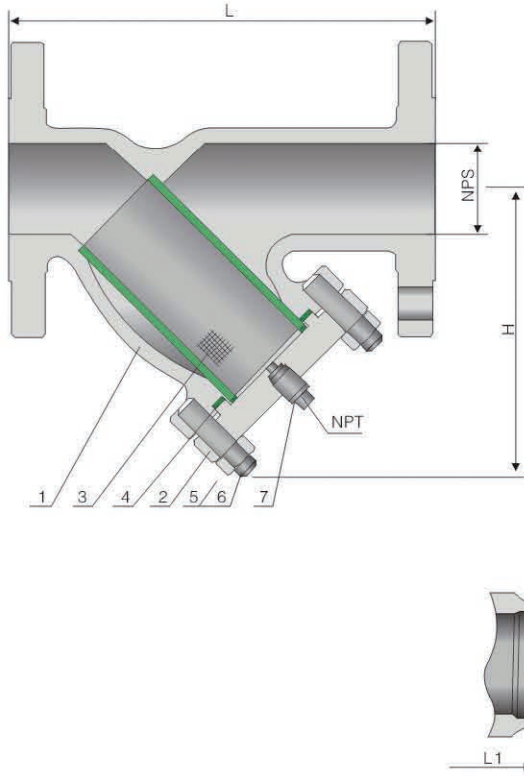
Strainer

Applicable Standards:

- STEEL STRAINER, ASME B16.34
- FACE TO FACE, ASME B16.10
- END FLANGES, ASME B16.5
- BUTTWELDING ENDS, ASME B16.25
- INSPECTION AND TEST, API 598

Design descriptions:

- Y-PATTERN TYPE
- BOLTED BONNET CAP WITH DRAIN PLUG
- PERFORATED STAINLESS STEEL SCREEN
- STRAINER DENSITY 100 MESH DESIGN
- FULL RANGE OF STRAINER DENSITY
- RENEWABLE STRAINER DENSITY
- FLANGED OR BUTTWELDING ENDS



Materials of parts

No	Part Name	ASTM Materials		
		Carbon Steel	18Cr-9Ni-2Mo	Carbon Steel
1	Body	A216-WCB	A351-CF8M	A352-LCB
2	Bonnet Cap	A216-WCB	A351-CF8M	A350-LCB
3	Screen	A240-304	A240-316	A240-304
4	Bonnet Gasket	Graphite+304 ⁽¹⁾	PTFE	Graphite+304 ⁽¹⁾
5	Bonnet Stud	A193-B7	A193-B8	A320-L7
6	Bonnet Stud Nut	A194-2H	A194-8	A194-7
7	Drain Plug	A276-410	A276-316	A276-410

Note:1)spiral wound construction

Percentage of open area

MESH	A SWG	B m/m	C m/m	D %
5	20	0.914	4.166	67.3
10	22	0.711	1.829	51.8
20	28	0.356	0.914	51.8
30	32	0.274	0.572	45.7
40	36	0.193	0.442	48.4
50	37	0.172	0.336	43.6
60	38	0.152	0.271	41.0
80	40	0.122	0.195	37.8
100	42	0.102	0.152	35.8
120	43	0.092	0.119	31.8
150	45 1/2	0.066	0.103	37.1
180	46 1/2	0.053	0.088	38.9
200	47	0.051	0.076	35.8
250	48	0.040	0.062	37.7
300	48	0.039	0.044	27.6

Even the mesh*is same:
open area is not always same
due to the diameter of wire.
The details of wire as follows:

A: Number of Wire
B: Diameter of Wire
C: Width of Opening
D: Percentage of OPEN AREA

Dimensional datas

NPS	DN	L/L1 (RF/BW)		H		PLUG (NPT)		WT (KG)	L/L1 (RF/BW)		H		PLUG (NPT)		WT (KG)
		ANSI Class 150Lb							ANSI Class 300Lb						
1/2	15	5.50	140	3.38	87	1/8	2.1	0.8	5.50	140	3.38	87	1/8	2.5	1.2
3/4	20	6.00	152	4.12	105	1/2	2.3	1.2	6.00	152	4.12	105	1/2	3.4	1.8
1	25	6.50	165	4.50	114	1/2	3.1	1.4	6.50	165	4.50	114	1/2	4.2	2.6
1½	40	8.00	203	6.12	156	1/2	6.2	3.7	8.00	203	6.12	156	1/2	8.6	4.8
2	50	9.00	229	7.12	181	1/2	9.7	6.7	9.00	229	7.12	181	1/2	11.12	8.2
2½	65	11.00	279	10.25	259	¾	23.5	16.5	11.00	279	10.25	259	¾	29	20
3	80	12.50	318	11.50	293	¾	28	22	12.50	318	11.50	293	¾	38	27
4	100	14.50	368	12.75	324	¾	37	28	14.50	368	12.75	324	¾	57	39
6	150	18.50	470	17.62	448	¾	67	59	18.50	470	17.62	448	¾	105	74
8	200	23.50	597	21.00	535	¾	91	78	23.50	597	21.00	535	¾	176	131
10	250	26.50	673	27.12	690	1	135	113	26.50	673	27.12	690	1	230	164
12	300	30.50	775	30.75	780	1	168	151	30.50	775	30.75	780	1	360	268
in	mm	in	mm	in	mm	in	RF	BW	in	mm	in	mm	in	RF	BW

Basket Strainer 150Lb/300Lb

KOSEN

Applicable Standards:

DESIGN & MANUFACTURE CONFORM WITH: ASME B16.34

CONNECTION DIMENTION CONFORMS WITH: ASME B16.5、ASME B16.11、EN 1092

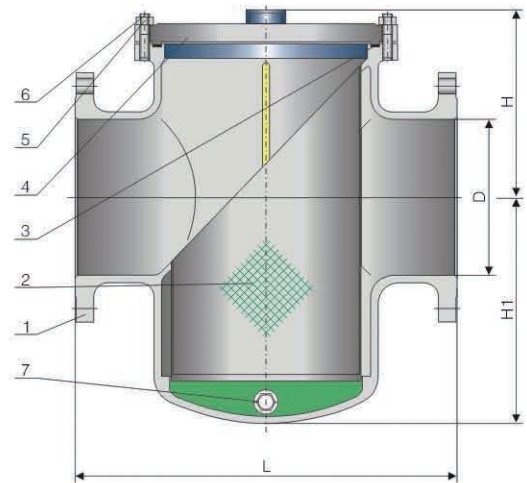
STRUCTURE AND LENGTH CONFORMS WITH THE TERMS OF THE CONTRACT

MATERIAL CONFORMS WITH: ISO 5208、API 598

No	Part Name	No	Part Name
1	Body	5	Bottom End Cover
2	Disc	6	Gasket
3	Gasket	7	NPT Screw Plug
4	Seat		

Materials of parts

Body	WCB/CF8M/CF8/CF3M/CF3/CD3MN
Strainer	316/304/316L/304L/S31803
Bonnet	F316/F304/F316L/F304L/F51
Bolt	B7M/B8M/L7M/B16M
Nut	2HM/8M/7M/4M
Gasket	Flexible graphite+304/Flexible graphite+316
Screw Plug	410/316/304/316L/304L/S31803
Materials could be choosed according to customers' requirement & working condition.	



Features and Application:

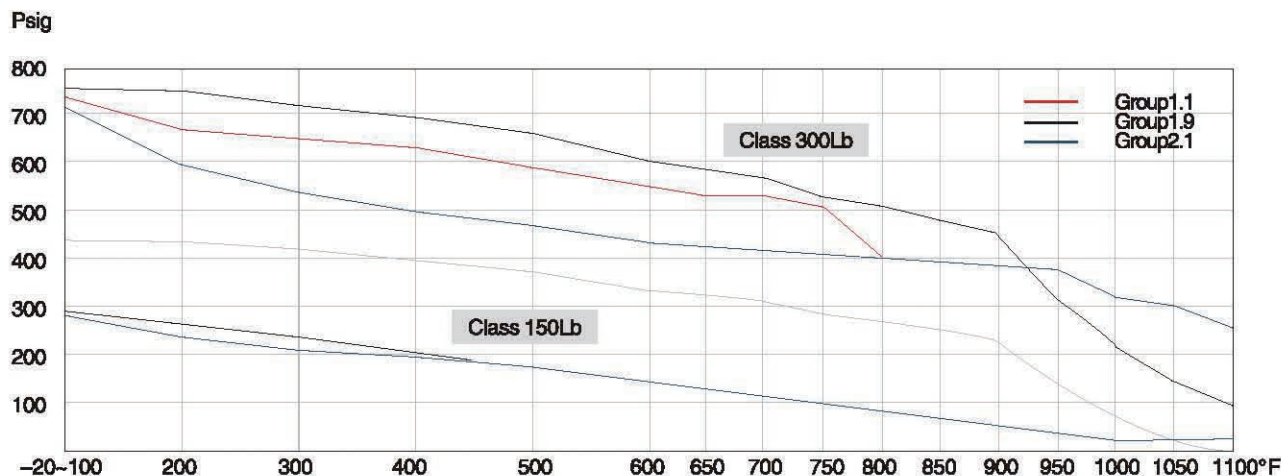
The strainer is used to improve the purity of products, insure the facilities (compressor pump water) working secure. It's widely used in the production of petrochemical industry material such as weak corrosive, low-temperature, Grains & food, pharmacy.

Dimensional datas

NPS DN	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100	6 150	8 200	10 250	12 300	in mm
ANSI Class 150Lb												
L	180	180	260	260	330	340	400	500	560	660	750	in
H	105	112	130	130	145	150	175	210	260	300	350	mm
H1	165	170	175	175	210	255	300	425	525	600	680	in
WT(kg)	6	7	8	10	14	16	27	55	78	118	158	BW

Dimensional datas

NPS DN	1 25	1 1/4 32	1 1/2 40	2 50	2 1/2 65	3 80	4 100	6 150	8 200	10 250	12 300	in mm
ANSI Class 300Lb												
L	180	180	260	260	330	340	400	500	560	660	750	in
H	105	112	130	130	145	150	175	210	260	300	350	mm
H1	165	170	175	175	210	255	300	425	525	600	680	in
WT(kg)	8	9	10	14	20	38	55	90	120	160	216	BW



ASME B16.34 Maximum Allowable Non-Shock Pressure

Psig

TEMPERATURE		ASTM MATERIALS															
		ANSI Class 150Lb								ANSI Class 300Lb							
°F	°C	Group 1.1	Group 1.2	Group 1.3	Group 1.9	Group 1.10	Group 1.13	Group 2.1	Group 2.2	Group 1.1	Group 1.2	Group 1.3	Group 1.9	Group 1.10	Group 1.13	Group 2.1	Group 2.2
-20~100	-20~38	285	290	265	290	290	290	275	275	740	750	695	750	750	750	720	720
200	93	260	260	250	230	260	260	230	235	670	750	655	750	750	745	600	620
300	149	230	230	230	230	230	230	205	215	655	730	640	720	720	715	540	560
400	204	200	200	200	200	200	200	190	195	635	705	620	695	695	705	495	515
500	260	170	170	170	170	170	170	170	170	600	665	585	665	665	665	465	480
600	316	140	140	140	140	140	140	140	140	550	605	535	605	605	605	435	450
650	343	125	125	125	125	125	125	125	125	535	590	525	590	590	590	430	445
700	371	110	110		110	110	110	110	110	535	570		570	570	570	425	430
750	399	95	95		95	95	95	95	95	505	505		530	530	530	415	425
800	427	80	80		80	80	80	80	80	410	410		510	510	510	405	420
850	454				65	65	65	65	65				485	485	485	395	420
900	482				50	50	50	50	50				450	450	370	390	415
950	510				35	35	35	35	35				320	375	275	380	385
1000	538				20	20	20	20	20				215	260	200	320	350
1050	566				20 ^{a)}	20 ^{a)}	20 ^{a)}	20 ^{a)}	20 ^{a)}				145	175	145	310	345
1100	593				20 ^{a)}	20 ^{a)}	20 ^{a)}	20 ^{a)}	20 ^{a)}				95	110	100	255	305

TEST PRESSURE BY API 598

Hydrostatic shell test	450	450	400	450	450	450	425	425	1125	1125	1050	1125	1125	1125	1125	1100	1100
Hydrostatic seal test	315	320	295	320	320	320	305	305	815	825	765	825	825	825	825	795	795
Air seat test	80 ± 20								80 ± 20								

Metric conversions by API STD 2564 pressure: 1 pound per square inch (psig)=0.06894757 bar=0.006894757 MPa temperature: °C=(5/9)*°F-32

ASME B16.34 Materials Group			
Group 1.1	A105 ^{a)}	A216-WCB ^{a)}	
Group 1.2	A216-WCC ^{a)}	A352-LCC ^{a)}	
Group 1.3	A352-LCB ^{a)}		
Group 1.9	A217-WC6 ^{d)}		
Group 1.10	A217-WC9 ^{d)}		
Group 1.13	A217-C5		
Group 2.1	A182-F304	A351-CF8	A351-CF3 ^{b)}
Group 2.2	A182-F316	A352-CF8M	A351-CF3M ^{c)}

a). Not to be used over 650° F(343°C).

b). Not to be used over 650° F(427°C).

c). Not to be used over 650° F(538°C).

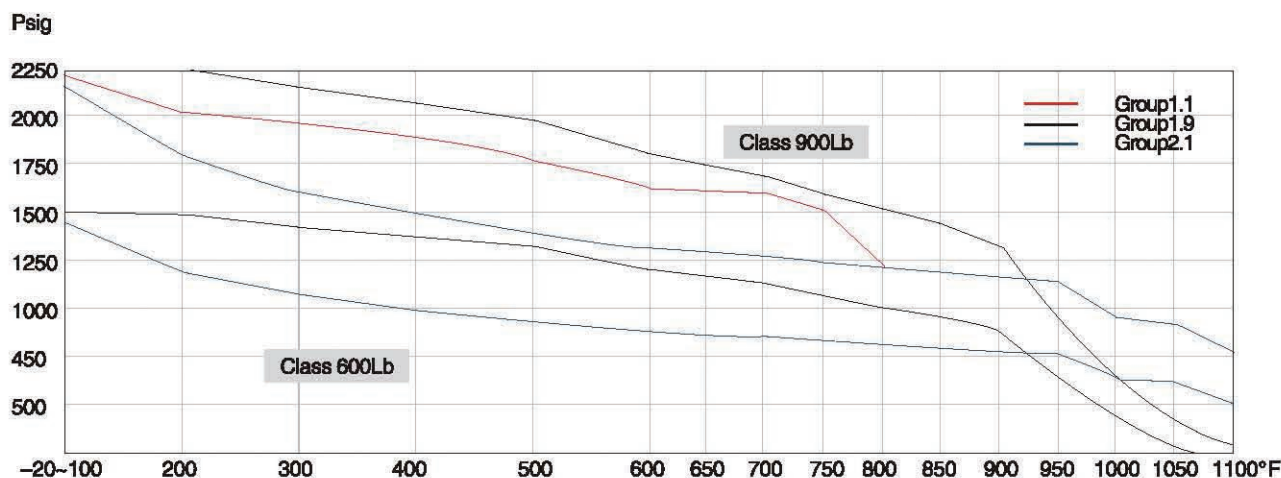
b). Not to be used over 650° F(593°C).

e). Permissible, but not recommended for prolonged use above 800° F(427°C).

f). For welding end valve only, flanged end rating terminates at 1000° F(538°C).

ANSI Class Pressure–Temperature Ratings 600Lb/900Lb

KOSEN



ASME B16.34 Maximum Allowable Non-Shock Pressure

Psig

TEMPERATURE		ASTM MATERIALS															
		ANSI Class 600Lb								ANSI Class 900Lb							
°F	°C	Group 1.1	Group 1.2	Group 1.3	Group 1.9	Group 1.10	Group 1.13	Group 2.1	Group 2.2	Group 1.1	Group 1.2	Group 1.3	Group 1.9	Group 1.10	Group 1.13	Group 2.1	Group 2.2
-20~-100	-20~-38	1480	1500	1390	1500	1500	1500	1440	1440	2220	2250	2085	2250	2250	2250	2160	2160
200	93	1350	1500	1315	1500	1500	1490	1200	1240	2025	2250	1970	2250	2250	2235	1800	1860
300	149	1315	1455	1275	1445	1455	1430	1080	1120	1970	2185	1915	2165	2185	2150	1620	1680
400	204	1270	1410	1235	1385	1410	1410	995	1025	1900	2115	1850	2080	2115	2115	1490	1540
500	260	1200	1330	1165	1330	1330	1330	930	955	1795	1995	1745	1995	1995	1995	1395	1435
600	316	1095	1210	1065	1210	1210	1210	875	1640	1640	1815	1600	1815	1815	1815	1310	1355
650	343	1075	1175	1045	1175	1175	1175	860	1610	1610	1765	1570	1765	1765	1765	1290	1330
700	371	1065	1135		1135	1135	1135	850	1600	1600	1705		1705	1705	1705	1275	1305
750	399	1010	1010		1065	1065	1055	830	1510	1510	1510		1595	1595	1585	1245	1280
800	427	825	825		1015	1015	1015	805	1235	1235	1235		1525	1525	1525	1210	1265
850	454				975	975	965	790					1460	1460	1450	1190	1255
900	482				900	900	740	780					1350	1350	1110	1165	1245
950	510				640	755	550	765					955	1130	825	1145	1160
1000	538				430	520	400	640					650	780	595	965	1050
1050	566				290	350	290	615					430	525	430	925	1030
1100	593				190	220	200	515					290	330	300	770	915

TEST PRESSURE BY API 598

Hydrostatic shell test	2225	2250	2100	2250	2250	2250	2175	3350	3350	3375	3150	3375	3375	3250	3250	3250
Hydrostatic seal test	1630	1650	1530	1650	1650	1650	1585	2445	2445	2475	2295	2475	2475	2380	2380	2380
Air seat test	80 ± 20															

Metric conversions by API STD 2564 pressure: 1 pound per square inch (psig) = 0.06894757 bar = 0.006894757 MPa temperature: °C = (5/9)°F - 32

ASME B16.34 Materials Group			
Group 1.1	A105 ^{a)}	A216-WCB ^{a)}	
Group 1.2	A216-WCC ^{a)}	A352-LCC ^{a)}	
Group 1.3	A352-LCB ^{a)}		
Group 1.9	A217-WC6 ^{d)}		
Group 1.10	A217-WC9 ^{d)}		
Group 1.13	A217-C5		
Group 2.1	A182-F304	A351-CF8	A351-CF3 ^{b)}
Group 2.2	A182-F316	A352-CF8M	A351-CF3M ^{c)}

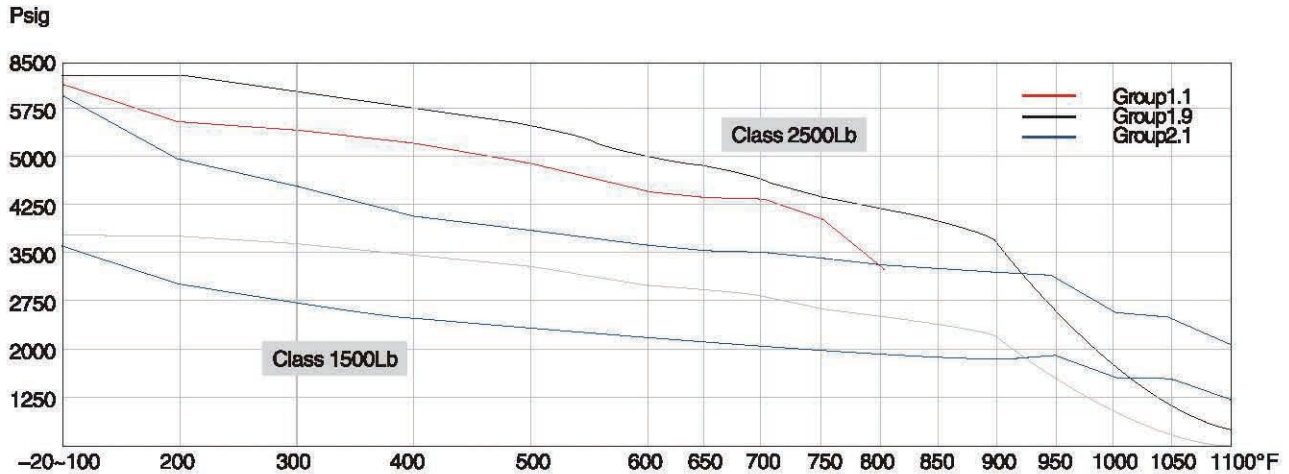
a). Not to be used over 650°F (343°C).

b). Not to be used over 650°F (427°C).

c). Not to be used over 650°F (538°C).

b). Not to be used over 650°F (593°C).

e). Permissible, but not recommended for prolonged use above 800°F (427°C).



ASME B16.34 Maximum Allowable Non-Shock Pressure

Psig

TEMPERATURE		ASTM MATERIALS															
		ANSI Class 1500Lb								ANSI Class 2500Lb							
°F	°C	Group 1.1	Group 1.2	Group 1.3	Group 1.9	Group 1.10	Group 1.13	Group 2.1	Group 2.2	Group 1.1	Group 1.2	Group 1.3	Group 1.9	Group 1.10	Group 1.13	Group 2.1	Group 2.2
-20~100	-20~38	3705	3750	3470	3750	3750	3750	3600	3600	6170	6250	5785	6250	6250	6250	6000	6000
200	93	3375	3750	3280	3750	3750	3725	3000	3095	5625	6250	5470	6250	6250	6205	5000	5160
300	149	3280	3640	3190	3610	3640	3580	2700	2795	5470	6070	5315	6015	6070	5965	4500	4660
400	204	3170	3530	3085	3465	3530	3530	2485	2570	5280	5880	5145	5775	5880	5880	4140	4280
500	260	2995	3325	2910	3325	3325	3325	2330	2390	4990	5540	4850	5540	5540	5540	3880	3980
600	316	2735	3025	2665	3025	3025	3025	2185	2255	4560	5040	4440	5040	5040	5040	3640	3760
650	343	2685	2940	2615	2940	2940	2940	2150	2220	4475	4905	4355	4905	4905	4905	3580	3700
700	371	2665	2840		2840	2840	2840	2125	2170	4440	4730		4730	4730	4730	3540	3620
750	399	2520	2520		2660	2660	2640	2075	2135	4200	4200		4430	4430	4400	3460	3560
800	427	2060	2060		2540	2540	2540	2015	2110	3430	3430		4230	4230	4230	3360	3520
850	454				2435	2435	2415	1980	2090				4060	4060	4030	3300	3480
900	482				2245	2245	1850	1945	2075				3745	3745	3085	3240	3460
950	510				1595	1885	1370	1910	1930				2655	3145	2285	3180	3220
1000	538				1080	1305	995	1605	1750				1800	2170	1655	2675	2915
1050	566				720	875	720	1545	1720				1200	1455	1200	2570	2865
1100	593				480	550	495	1285	1525				800	915	830	2145	2545

TEST PRESSURE BY API 598

Hydrostatic shell test	5575	5625	5225	5625	5625	5625	5400	5400	9275	9375	8700	9375	9375	9375	9000	9000
Hydrostatic seal test	4080	4125	3820	4125	4125	4125	2960	3960	6790	6875	6365	6875	6875	6875	6600	6600
Air seat test	80 ± 20															

Metric conversions by API STD 2564 pressure: 1 pound per square inch (psig) = 0.06894757 bar = 0.006894757 MPa temperature: °C = (5/9)°F - 32

ASME B16.34 Materials Group			
Group 1.1	A105 ^{a)}	A216-WCB ^{a)}	
Group 1.2	A216-WCC ^{a)}	A352-LCC ^{a)}	
Group 1.3	A352-LCB ^{a)}		
Group 1.9	A217-WC6 ^{d)}		
Group 1.10	A217-WC9 ^{d)}		
Group 1.13	A217-C5		
Group 2.1	A182-F304	A351-CF8	A351-CF3 ^{b)}
Group 2.2	A182-F316	A352-CF8M	A351-CF3M ^{c)}

a). Not to be used over 650°F (343°C).

b). Not to be used over 650°F (427°C).

c). Not to be used over 650°F (538°C).

b). Not to be used over 650°F (593°C).

e). Permissible, but not recommended for prolonged use above 800°F (427°C).

Materials Characteristic

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ASTM Specification		Chemical Analysis										Mechanical Properties				
		C	Mn	Si	P	S	Cr	Ni	Mo	Cu	V	Tensile	Yield	Elongation	Reduction	Hardness
		Carbon	Manganese	Silicon	Phosphorus	Sulfur	Chromium	Nickel	Molybdenum	Copper	Vanadium	Mpa	Mpa	%	of area,%	HB
		Nominal or maximum, %										Min				Max
Cast steel																
Carbon steel	A216-WCA	0.25	0.70	0.60	0.040	0.045	0.50	0.50	0.20	0.30	0.03	415-585	205	24	35	-
	A216-WCB	0.30	1.00	0.60	0.040	0.045	0.50	0.50	0.20	0.30	0.03	485-655	250	22	35	-
	A216-WCC	0.25	1.20	0.60	0.040	0.045	0.50	0.50	0.20	0.30	0.03	485-655	275	22	35	-
Cast steel																
Chromium-molybdenum steel	A217-WC1	0.25	0.50-0.80	0.60	0.040	0.045	0.35	0.45-0.65	0.45-0.65	0.50	-	450-620	240	24	35	-
	A217-WC8	0.05-0.20	0.50-0.80	0.60	0.040	0.045	1.00-1.50	0.50	0.45-0.65	0.50	-	485-655	275	20	35	-
	A217-WC9	0.02-0.18	0.40-0.70	0.60	0.040	0.045	2.00-2.75	0.50	0.90-1.20	0.50	-	485-655	275	20	35	-
	A217-C5	0.20	0.40-0.70	0.75	0.040	0.045	4.00-6.50	0.50	0.45-0.65	0.50	-	620-795	415	18	35	-
	A217-C12	0.20	0.35-0.65	1.00	0.040	0.045	8.00-10.0	0.50	0.90-1.20	0.50	-	620-795	415	18	35	-
Cast steel																
Ni alloy steel	A494 M-35-1	0.35	1.50	1.25	0.030	0.030	-	Allowance	-	26.0-33.0	Fe ≤ 3.50	450	170	25	-	-
	A494 CW-6M	0.07	1.00	1.00	0.040	0.030	17.0-20.0	Allowance	17.0-20.0	-	Fe ≤ 3.00	485	275	25	-	-
	A494 CY-40	0.40	1.50	3.00	0.030	0.030	14.0-17.0	Allowance	-	-	Fe ≤ 11.0	185	195	30	-	-
Cast steel																
Stainless steel	A351-CF8	0.08	1.50	2.00	0.040	0.040	18.0-21.0	8.0-11.0	0.50	-	-	485	205	35	35	-
	A351-CF8M	0.08	1.50	1.50	0.040	0.040	18.0-21.0	9.0-12.0	2.0-3.0	-	-	485	205	30	30	-
	A351-CF3	0.03	1.50	2.00	0.040	0.040	17.0-21.0	8.0-12.0	0.50	-	-	485	205	35	35	-
	A351-CF3M	0.03	1.50	1.50	0.040	0.040	17.0-21.0	9.0-13.0	2.0-3.0	-	-	485	205	30	30	-
	A351-CN7M	0.07	1.50	1.50	0.040	0.040	19.0-22.0	27.5-30.5	2.0-3.0	3.0-4.0	-	450	170	35	35	-
Cast steel																
Carbon steel	A352-LCB	0.30	1.00	0.60	0.040	0.045	0.50	0.50	0.20	0.30	0.03	450-650	240	24	35	-
	A352-LCC	0.25	1.20	0.60	0.040	0.045	0.50	0.50	0.20	0.30	0.03	485-655	275	22	35	-
	A352-LC1	0.25	0.50-0.80	0.60	0.040	0.045	-	-	0.45-0.65	-	-	450-620	240	24	35	-
	A352-LC2	0.25	0.50-0.80	0.60	0.040	0.045	-	2.00-3.00	-	-	-	485-655	275	24	35	-
	A352-LC3	0.15	0.50-0.80	0.60	0.040	0.045	-	3.00-4.00	-	-	-	485-655	275	24	35	-
Forged steel																
Carbon steel	A105(N)	0.35	0.60-1.05	0.35	0.040	0.050	0.30	0.40	0.12	0.40	0.03	485	250	30	30	187
	A350-LF1	0.30	1.35	0.15-0.3	0.035	0.040	0.30	0.40	0.12	0.40	0.03	415-585	205	25	38	-
	A350-LF2	0.30	1.35	0.15-0.30	0.035	0.040	0.30	0.40	0.12	0.40	0.03	485-655	252	22	30	-
	A350-LF3	0.20	0.90	0.20-0.35	0.035	0.040	0.30	3.25-3.7	0.12	0.40	0.03	485-655	260	22	35	-
	A350-LF9	0.20	0.40-1.06	-	0.035	0.040	0.30	1.60-2.24	0.12	0.75-1.25	0.03	435-605	315	25	38	-
Forged steel																
Stainless steel	A182-F304	0.08	2.00	1.00	0.040	0.030	18.0-20.0	8.0-11.0	-	-	-	515	205	30	50	-
	A182-F316	0.08	2.00	1.00	0.040	0.030	16.0-18.0	10.0-14.0	2.0-3.0	-	-	515	205	30	50	-
	A182-F304L	0.03	2.00	1.00	0.045	0.030	18.0-20.0	8.0-13.0	-	-	-	485	170	30	50	-
	A182-F316L	0.03	2.00	1.00	0.045	0.030	16.0-18.0	10.0-15.0	2.0-3.0	-	-	485	170	30	50	-
Component part																
Trim	A276-304	0.08	2.00	1.00	0.045	0.030	18.0-20.0	8.0-10.5	-	-	-	515	205	40	50	-
	A276-316	0.05	2.00	1.00	0.045	0.030	16.0-18.0	10.0-14.0	2.0-3.0	-	-	485	170	40	50	-
	A276-410	0.15	1.00	1.00	0.040	0.030	11.5-13.5	-	-	-	-	480	275	20	45	-
	A276-420	0.15	1.00	1.00	0.040	0.030	12.0-14.0	-	-	-	-	-	-	-	-	241
	A182-F6A	0.15	1.00	1.00	0.040	0.030	11.5-13.5	0.50	-	-	-	585	380	18	35	167-229
Fastening piece																
Stud	A193-B7	0.37-0.49	0.65-1.10	0.15-0.35	0.035	0.040	0.75-1.20	-	0.15-0.25	-	-	860	720	16	50	-
	A193-B7M	0.37-0.49	0.65-1.10	0.15-0.35	0.035	0.040	0.75-1.20	-	0.15-0.25	-	-	690	550	18	50	235
	A193-B8	0.08	2.00	1.00	0.045	0.030	18.0-20.0	8.0-10.50	-	-	-	515	205	30	50	223
	A193-B8A	0.08	2.00	1.00	0.045	0.030	18.0-20.0	8.0-10.50	-	-	-	515	205	30	50	192
	A193-B8M	0.08	2.00	1.00	0.045	0.030	16.0-18.0	10.0-14.0	2.0-3.0	-	-	515	205	30	50	192
	A320-L7	0.38-0.48	0.75-1.00	0.15-0.35	0.035	0.040	0.80-1.10	-	0.15-0.25	-	-	860	725	16	50	-
Nut	A194-2H	≥ 0.40	1.00	0.40	0.040	0.050	-	-	-	-	-	-	-	-	-	248-352
	A194-2HM	≥ 0.40	1.00	0.40	0.040	0.050	-	-	-	-	-	-	-	-	-	159-237
	A194-7	0.37-0.49	0.65-1.00	0.15-0.35	0.040	0.040	0.75-1.20	-	0.15-0.25	-	-	-	-	-	-	248-352
	A197-8	0.08	2.00	1.00	0.045	0.030	18.0-1.20	8.0-10.5	-	-	-	-	-	-	-	126-300
	A194-8M	0.08	2.00	1.00	0.045	0.030	16.0-18.0	10.0-14.0	2.0-3.0	-	-	-	-	-	-	126-300

NACE Valves:

For service four gases of other hydrogen sulfide bearing hydrocarbon fluids, KOSEN offers NACE valves made of component materials specially heat treated and hardness-controlled in conformity with NACE MR 0175 standard. Typical NACE material configuration is shown. Below for KOSEN cast steel valve, a note should be taken as the fact that NACE hardness requirement conflicts with the one of valve seating surface specified by API600, Table13. KOSEN steel valves are available only at user option.

The Demands About Resistant SSC(Sulfur Stress Crack)Material That Be Used For The Equipment That The Working Medium Include H₂S Carbon-HYdride Compound

No	Part Name	ASTM Material	NACE Hardness	API600 Hardness
1	Body	A216-WCB	≤ HRC 22 (237 HB)	—
2	Bonnet/yoke	A216-WCB		—
3	Seat ring	A105 With 13cr overlay		≥ 250 HB*
4	Wedge/disc	A216-WCB/ A105 with 13cr overlay		≥ 250HB*
5	Stem	ANSI type410/A182-F6a	≤ HRC 22 (237 HB)	≥ 200HB
6	Backseat bushing			≥ 250HB
7	Lantern ring			—
8	Gland			—
9	Bonnet gasket	316SS+Graphite	—	—
		316SS(RTJ)	≤ HRC 22	—
10	Bonnet bolt	A193-B7	—	—
		A194-B7M	≤ HRC 22	—
11	Bonnet nut	A194-2H	—	—
		A194-2HM	≤ HRC 22	—

Minimum hardness differential of 50 HB between the seats.

All the cast steel valves in this catalogue can be manufactured according to NACE MR 0175 specification for sour oil and gas service.

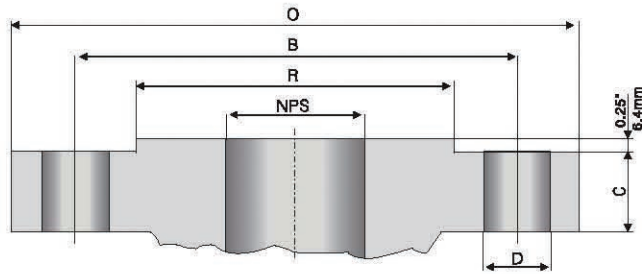
- a).All NACE valves meet API standard, except as modified to meet a HRC 22 maximum hardness requirements of NACE specification.
- b).Standard body and bonnet ASTM A216-WCB have the maximum carbon equivalent 0.43%.
- c).Seat rings are screwed in to eliminate potential hardness problem with welds and HAZ(HEAT AFFECTED ZONES).
- d).Bonnet gasket for ANSI class 150Lb gate valve only, bonnet gasket in flexible graphite with stainless steel 316 sheet reinforcement, for ANSI class 300Lb gate valve and ANSI class 150Lb and 300Lb globe and check valve, bonnet gasket in stainless steel 316 spiral wound with graphite filler.
- e).Standard trim is hardness controlled 13%cr steel with hard faced seats(api trim no.8).
- f).Standard bonnet bolting is class II nut and bolt.
- G).All NACE valves are further identified by additional works"NACE MR 0175" shown on the nameplate for traceability and certification of conformance.

Typical NACE Material Specifications are Shown In Above Table And Other Material Application Are Available At Customer's Option.

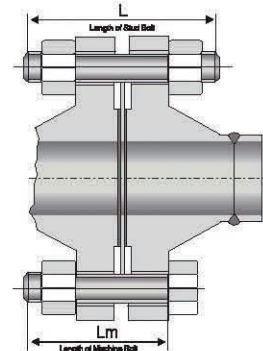
Spectrum test, Portable And Mobile On-Site Metal Analysers

International Materials Standards

Materials		United states	Germany			Great Britain		China
		ASTM/AISI/SAE/ASME	DIN NO	DIN TYPE	MATERIAL NUMBER	BS NUMBER	BS GRADE	GB
Cast steel								
Carbon steel	A216-WCA	ASTM A216-WCA	1681	GS-38	1.042	1504-161	430	WCA
	A216-WCB	ASTM A216-WCB	17245	GS-C25	1.0619	1504-161	480	WCB
	A216-WCC							WCC
Cast steel								
Chrome-molybdenum steel	A217-WC1	ASTM A217-WC1	17245	GS-22Mo4	1.5419			ZG20Mo
	A217-WC6	ASTM A217-WC6	17245	GS-17CrMo55	1.7357			15CrMo
	A217-WC9	ASTM A217-WC9	17245	GS-18CrMo810	1.7379			12Cr1Mo1V
	A217-C5	ASTM A217-C5	VDeh SPW 595	GS-12CrMo195	17363	1504	625E	1Cr5Mo
	A217-C12	ASTM A217-C12	VDeh SPW 595	G-X120CrMo101	17389	1504	629E	9Cr1Mo
Ni alloy steel	A494 M-35-1							
	A494 CW-6M							
	A494 CY-40							
Cast steel								
Stainless steel	A351-CF8	ASTM A351-CF8	17445	G-X6CrNi189	1.4308	1504-304	C15	0Cr18Ni9
	A351-CF8M	ASTM A351-CF8M	17445	G-X6CrNiMo1810	1.4408	1504-316	C16	1Cr18Ni12Mo2Ti
	A351-CF3	ASTM A351-CF3	17440	G-X2CrNi189	1.4306	970/1	304S 11	00Cr18Ni10
	A351-CF3M	ASTM A351-CS3M	17440	G-X2CrNiMo1810	1.4404	2056	316S11	00Cr17Ni14Mo2
	A351-CN7M	ASTM A351-CN7M				1504	332C11E	
Cast steel								
Carbon steel	A352-LCB	ASTM A352-LCB	SFW 685	GS+21Mo5	1.1138			LCB
	A352-LCC	ASTM A352-LCC	17173	GS-26CrMo4	1.7219			LCC
	A352-LC1	ASTM A352-LC1				1504	245LT50	
	A352-LC2	ASTM A352-LC2						ZG0CRMNVA1
	A352-LC3	ASTM A352-LC3	SEW 685	GS10Ni14	1.5638	1504-503	Li60	
Forged steel								
Carbon steel	A105(N)	ASTM A105	17100	St50-2	1.005	1503	221-490	25
	A350-LF1	ASTM A350-LF1	SEW 680	TTSt41	1.0437			
	A350-LF2	ASTM A350-LF2	17155	19Mn5	1.0482			
	A350-LF3	ASTM A350-LF3	17173	10Ni14	1.5367	1503	50Gr.490	
	A350-LF9	ASTM A350-LF9						
Forged steel								
Stainless steel	A182-F304	ASTM A182-F304	17440	X5CrNi189	1.4301	1503	304S31	0Cr18Ni9
	A182-F316	ASTM A182-F316	17440	X5CrNiMo1810	1.4401	1503	316S31	0Cr17Ni12Mo2
	A182-F304L	ASTM A182-F304L	17440	X2CrNi810	1.4311			00Cr18Ni10
	A182-F316L	ASTM A182-F316L	17440	X2CrNiMo1810	1.4404	1503	316S11	00Cr17Ni14Mo2
Component part								
Trim	A276-304	ASTM A276-304						0Cr18Ni9
	A276-316	ASTM A276-316						0Cr17Ni12Mo2
	A276-410	ASTM A276-410						1Cr13
	A276-420	ASTM A276-420						2Cr13
	A182-F6A	ASTM A182-F6A						2Cr13
Fastening piece								
Stud	A193-B7	ASTM A193-GRAD B7	17240	40CrMoV47	1.7711	1506-630	790	35CrMoA
	A193-B7M	ASTM A193 GRAD B7M						
	A193-B8	ASTM A193 GRAD B8	17440	X5CrNi189	1.4301			0Cr18Ni9
	A193-B8A							
	A193-B8M	ASTM A193 GRAD B8M	17245	X6CrNiMoTi17 12 2	1.4571	1506-316	S31	0Cr17Ni12Mo2
	A320-L7	ASTM A320 GR L7	17200	42CrMo4	1.7225	4882		42CrMo
Nut	A194-2H	ASTM A194 GRAD 2H	17400	CK35	1.1181	1506-162		45
	A194-2HM	ASTM A194 GRAD 2HM						
	A194-7	ASTM A194 GRAD7	17200	24CrMo5	1.7258	1506-162		20CrMo
	A197-8	ASTM A194 GRAD8	17245	X6CrNiMo17 12 2	1.4571	1506-316	S31	0Cr18Ni9
	A194-8M	ASTM A194-GR8M	17440	X5CrNiMo1810	1.4401			0Cr17Ni12Mo



ANSI Class 150Lb/300Lb
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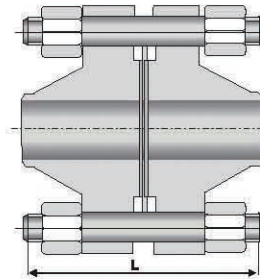
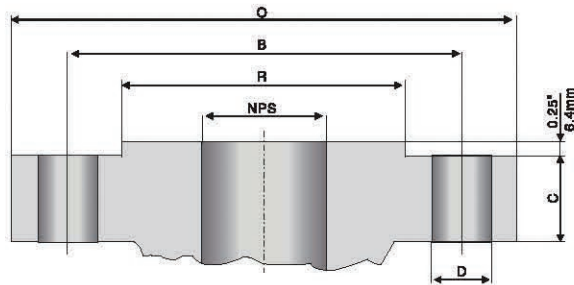
Class150Lb

NPS		O		C		R		B		D		Bolt		L		Lm	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diam	in	mm	in	mm
2	50	6.00	152.4	0.75	19.1	3.62	91.9	4.75	120.7	0.75	19.1	4	5/8	3.25	82.6	2.75	69.9
2 1/2	65	7.00	177.8	0.88	22.4	4.12	104.6	5.50	139.7	0.75	19.1	4	5/8	3.50	88.9	3.00	76.2
3	80	7.50	190.5	0.94	23.9	5.00	127.0	6.00	152.4	0.75	19.1	4	5/8	3.50	88.9	3.00	76.2
4	100	9.00	228.6	0.94	23.9	6.19	157.2	7.50	190.5	0.75	19.1	8	5/8	3.50	88.9	3.00	76.2
5	125	10.00	254.0	0.94	23.9	7.31	185.7	8.50	215.9	0.88	22.4	8	3/4	3.75	95.3	3.25	82.6
6	150	11.00	279.4	1.00	25.4	8.50	215.9	9.50	241.3	0.88	22.4	8	3/4	4.00	101.6	3.25	82.6
8	200	13.50	342.9	1.12	28.4	10.62	269.7	11.75	298.5	0.88	22.4	8	3/4	4.25	108.0	3.50	88.9
10	250	16.00	406.4	1.19	30.2	12.75	323.9	14.25	362.0	1.00	25.4	12	7/8	4.50	114.3	4.00	101.6
12	300	19.00	482.6	1.25	31.8	15.00	381.0	17.00	431.8	1.00	25.4	12	7/8	4.75	120.7	4.00	101.6
14	350	21.00	533.4	1.38	35.1	16.25	412.8	18.75	476.3	1.12	28.4	12	1	5.25	133.4	4.50	114.3
16	400	23.50	596.9	1.44	36.6	18.50	469.9	21.25	539.8	1.12	28.4	16	1	5.25	133.4	4.50	114.3
18	450	25.00	635.0	1.56	39.6	21.00	533.4	22.75	577.9	1.25	31.8	16	1 1/8	5.75	146.1	5.00	127.0
20	500	27.50	698.5	1.69	42.9	23.00	584.2	25.00	635.0	1.25	31.8	20	1 1/8	6.25	158.8	5.50	139.7
24	600	32.00	812.8	1.88	47.8	27.25	692.2	39.50	749.3	1.38	35.1	20	1 1/4	6.75	171.5	6.00	152.4
26	650	34.25	870.7	2.00	50.8	29.50	749.3	41.75	806.5	1.38	35.1	24	1 1/4	8.25	209.6	7.50	190.5
28	700	36.50	927.1	2.25	57.2	31.50	800.1	43.75	863.6	1.38	35.1	28	1 1/4	8.50	215.9	7.75	196.9
30	750	38.75	984.3	2.50	63.5	33.75	857.3	46.00	914.4	1.38	35.1	28	1 1/4	9.00	228.6	8.00	203.2
32	800	41.75	1060.5	3.18	80.8	36.00	914.4	48.50	977.9	1.62	41.1	28	1 1/2	9.75	247.7	8.75	222.3
34	850	43.75	1111.3	3.25	82.6	38.00	965.2	50.00	1028.7	1.62	41.1	32	1 1/2	10.00	254.0	9.00	228.6
36	900	46.00	1168.4	3.56	90.4	40.25	1022.4	52.75	1085.9	1.62	41.1	32	1 1/2	10.50	266.7	9.50	241.3

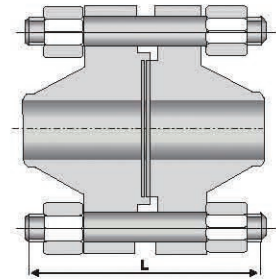
Class300Lb

NPS		O		C		R		B		D		Bolt		L		Lm	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diam	in	mm	in	mm
2	50	6.50	165.1	0.88	22.4	3.62	91.9	5.00	127.0	0.75	19.1	8	5/8	3.50	88.9	3.00	76.2
2 1/2	65	7.50	190.5	1.00	25.4	4.12	104.6	5.88	149.4	0.88	22.4	8	3/4	4.00	101.6	3.25	82.6
3	80	8.25	209.6	1.12	28.4	5.00	127.0	6.62	168.1	0.88	22.4	8	3/4	4.25	108.0	3.50	88.9
4	100	10.00	254.0	1.25	31.8	6.19	157.2	7.88	200.2	0.88	22.4	8	3/4	4.50	114.3	3.75	95.3
5	125	11.00	279.4	1.38	35.1	7.31	185.7	9.25	235.0	0.88	22.4	8	3/4	4.75	120.7	4.00	101.6
6	150	12.50	317.5	1.44	36.6	8.50	215.9	10.62	269.7	0.88	22.4	12	3/4	4.75	120.7	4.25	108.0
8	200	15.00	381.0	1.62	41.1	10.62	269.7	13.00	330.2	1.00	25.4	12	7/8	5.50	139.7	4.75	120.7
10	250	17.50	444.5	1.88	47.8	12.75	323.9	15.25	387.4	1.12	28.4	16	1	6.25	158.8	5.50	139.7
12	300	20.50	520.7	2.00	50.8	15.00	381.0	17.75	450.9	1.25	31.8	16	1 1/8	6.75	171.5	5.75	146.1
14	350	23.00	584.2	2.12	53.8	16.25	412.8	20.25	514.4	1.25	31.8	20	1 1/8	7.00	177.8	6.25	158.8
16	400	25.50	647.7	2.25	57.2	18.50	469.9	22.50	571.5	1.38	35.1	20	1 1/4	7.50	190.5	6.50	165.1
18	450	28.00	711.2	2.38	60.5	21.00	533.4	24.75	628.7	1.38	35.1	24	1 1/4	7.75	196.9	6.75	171.5
20	500	30.50	774.7	2.50	63.5	23.00	584.2	27.00	685.8	1.38	35.1	24	1 1/4	8.00	203.2	7.25	184.2
24	600	36.00	914.4	2.75	69.9	27.25	692.2	32.00	812.8	1.62	41.1	24	1 1/2	9.00	228.6	8.00	203.2
26	650	38.25	971.6	3.12	79.2	29.50	749.3	34.50	876.3	1.75	44.5	28	1 5/8	10.25	260.3	9.25	235.0
28	700	40.75	1035.1	3.38	85.9	31.50	800.1	37.00	939.8	1.75	44.5	28	1 5/8	10.75	273.0	9.75	247.7
30	750	43.00	1092.2	3.62	91.9	33.75	857.3	39.25	997.0	1.88	47.8	28	1 3/4	11.50	291.8	10.50	266.7
32	800	45.25	1149.4	3.88	98.6	36.00	914.4	41.50	1054.1	2.00	50.8	28	1 7/8	12.25	311.3	11.25	285.8
34	850	47.50	1206.5	4.00	101.6	38.00	965.2	43.50	1104.9	2.00	50.8	28	1 7/8	12.75	323.9	11.75	298.5
36	900	50.00	1270.0	4.12	104.6	40.25	1022.4	46.00	1168.4	2.12	53.8	32	2	13.25	336.7	12.25	311.2

- a). NPS 24" and smaller flanged ends by ANSI B16.5, NPS 26" and larger by MSS SP-44.
b). Flange of 150Lb and 300Lb with the raised face of 0.06(1.6mm) is included in the smallest flange of thickness C.
c). The length L of the double-end bolt doesn't include the terminal length.
d). Flange gasket of the matching flange ASME B16.20.



ANSI Class600Lb/900Lb
0.25\"/>



ANSI Class600Lb/900Lb
Male & female

Class600Lb

NPS		O		C		R		B		D		Bolt		L		LRTJ		Lm	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diam	in	mm	in	mm	in	mm
2	50	6.50	165.1	1.00	25.4	3.62	91.9	5.00	127.0	0.75	19.1	8	5/8	4.25	108.0	4.25	108.0	4.00	101.6
2 1/2	65	7.50	190.5	1.12	28.4	4.12	104.6	5.88	149.4	0.88	22.4	8	3/4	4.75	120.7	4.75	120.7	4.50	114.3
3	80	8.25	209.6	1.25	31.8	5.00	127.0	6.62	168.1	0.88	22.4	8	3/4	5.00	127.0	5.00	127.0	4.75	120.7
4	100	10.75	273.1	1.50	38.1	6.19	157.2	8.50	215.9	1.00	25.4	8	7/8	5.75	146.1	5.75	146.1	5.50	139.7
5	25	13.00	330.2	1.75	44.5	7.31	185.7	10.50	266.7	1.12	28.4	8	1	6.50	165.1	6.50	165.1	6.25	158.8
6	150	14.00	355.6	1.88	47.8	8.50	215.9	11.50	292.1	1.12	28.4	12	1	6.75	171.5	6.75	171.5	6.50	165.1
8	200	16.50	419.1	2.19	55.6	10.62	269.7	13.75	349.3	1.25	31.8	12	1 1/8	7.50	190.5	7.50	190.5	7.25	184.2
10	250	20.00	508.8	2.50	63.5	12.75	323.9	17.00	431.8	1.38	35.1	16	1 1/4	8.50	215.9	8.50	215.9	8.25	209.6
12	300	22.00	558.8	2.62	66.5	15.00	381.0	19.25	489.0	1.38	35.1	20	1 1/4	8.75	222.3	8.75	222.3	8.50	215.9
14	350	23.75	603.3	2.75	69.9	16.25	412.8	20.75	527.1	1.50	38.1	230	1 3/8	9.25	235.0	9.25	235.0	9.00	228.6
16	400	27.00	685.8	3.00	76.2	18.50	469.9	23.75	603.3	1.62	41.1	20	1 1/2	10.00	254.0	10.00	254.0	9.75	247.7
18	450	29.25	743.0	3.25	82.6	21.00	533.4	25.75	654.1	1.75	44.5	20	1 5/8	10.75	273.1	10.75	273.1	10.50	266.7
20	500	32.00	812.8	3.50	88.9	23.00	584.2	28.50	723.9	1.75	44.5	24	1 5/8	11.25	285.8	11.25	285.8	11.00	279.4
24	600	37.00	939.8	4.00	101.6	27.25	692.2	33.00	838.2	2.00	50.8	24	1 7/8	13.00	330.2	13.25	336.6	12.75	323.9
26	650	40.00	1016.0	4.25	108.0	29.50	749.3	36.00	914.4	2.00	50.8	28	1 7/8	14.00	355.6	14.00	355.6	13.75	349.3
28	700	42.25	1073.2	4.38	111.3	31.50	800.1	38.00	965.2	2.12	53.8	28	2	14.50	368.3	14.50	368.3	14.25	362.0
30	750	44.50	1130.3	4.50	114.3	33.75	857.3	40.25	1022.4	2.12	53.8	28	2	15.00	381.0	14.75	375.4	14.75	374.7
32	800	47.00	1193.8	4.62	117.3	36.00	914.4	42.50	1079.5	2.38	60.5	28	2 1/4	15.50	393.7	15.75	400.1	15.25	387.4
34	850	49.00	1244.6	4.75	120.7	38.00	965.2	44.50	1130.3	2.38	60.5	28	2 1/4	16.25	412.8	16.25	412.8	16.00	406.4
36	900	51.75	1314.5	4.88	124.0	40.25	1022.4	47.00	1193.8	2.62	66.5	28	2 1/2	15.75	400.1	16.75	425.5	15.50	393.7

Class900Lb

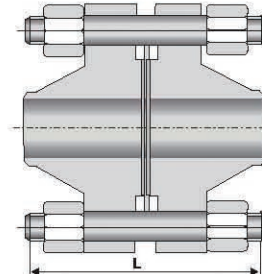
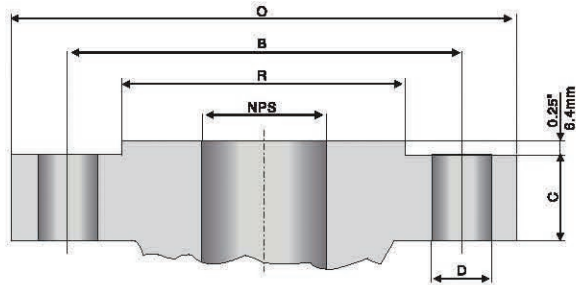
NPS		O		C		R		B		D		Bolt		L		LRTJ		Lm	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diam	in	mm	in	mm	in	mm
2	50	8.50	215.9	1.50	38.1	3.62	91.9	6.50	165.1	1.00	25.4	8	7/8	5.75	146.1	5.75	146.1	5.50	139.7
2 1/2	65	9.62	244.3	1.62	41.1	4.12	104.6	7.50	190.5	1.12	28.4	8	1	6.25	158.8	6.25	158.8	6.00	152.4
3	80	9.50	241.3	1.50	38.1	5.00	127.0	7.50	190.5	1.00	25.4	8	7/8	5.75	146.1	5.75	146.1	5.50	139.7
4	100	11.50	292.1	1.75	44.5	6.19	157.2	9.25	235.0	1.25	31.8	8	1 1/8	6.75	171.5	6.75	171.5	6.50	165.1
5	25	13.75	349.3	2.00	50.8	7.31	185.7	11.00	279.4	1.38	35.1	8	1 1/4	7.50	190.5	7.50	190.5	7.25	184.2
6	150	15.00	381.0	2.19	55.6	8.50	215.9	12.50	317.5	1.25	31.8	12	1 1/8	7.50	190.5	7.75	196.9	7.25	184.2
8	200	18.50	469.9	2.50	63.5	10.62	269.7	15.50	393.7	1.50	38.1	12	1 3/8	8.75	222.3	8.75	222.3	8.50	215.9
10	250	21.50	546.1	2.75	69.9	12.75	323.9	18.50	469.9	1.50	38.1	16	1 3/8	9.25	235.0	9.25	235.0	9.00	228.6
12	300	24.00	609.6	3.12	79.2	15.00	381.0	21.00	533.4	1.50	38.1	20	1 3/8	10.00	254.0	10.00	254.0	9.75	247.7
14	350	25.25	641.4	3.38	85.9	16.25	412.8	22.00	558.8	1.62	41.1	20	1 1/2	10.75	273.1	11.00	279.4	10.50	266.7
16	400	27.75	704.9	3.50	88.9	18.50	469.9	24.25	616.0	1.75	44.5	20	1 5/8	11.25	285.8	11.50	292.1	11.00	279.4
18	450	31.00	787.4	4.00	101.6	21.00	533.4	27.00	685.8	2.00	50.8	20	1 7/8	12.75	323.9	13.25	336.6	12.50	317.5
20	500	33.75	857.3	4.25	108.0	23.00	584.2	29.50	749.3	2.12	53.8	20	2	13.75	349.3	14.25	362.0	13.50	342.9
24	600	41.00	1041.4	5.50	139.7	27.25	692.2	35.50	901.7	2.62	66.5	20	2 1/2	17.25	438.2	18.00	457.2	17.00	431.8

a). NPS24" and smaller flanged ends by ANSI B16.5, NPS26" and larger by MSS SP-44.

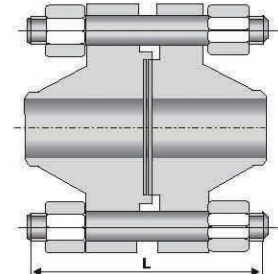
b). Flange of 600Lb and 900Lb with the raised face of 0.06(1.6mm) is included in the smallest flange of thickness C.

c). The length L of the double -end bolt doesn't include the terminal length.

d). Flange gasket of the matching flange ASME B16.20.



ANSI Class 600Lb/900Lb
0.25\"/>



ANSI Class 600Lb/900Lb
male & female

Class1500Lb

NPS		O		C		R		B		D		Bolt		L		LRTJ		Lm	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diam	in	mm	in	mm	in	mm
2	50	8.50	215.9	1.50	38.1	3.62	91.9	6.50	165.1	1.00	25.4	8	7/8	5.75	146.1	5.75	146.1	5.50	139.7
2 1/2	65	9.62	244.3	1.62	41.1	4.12	104.6	7.50	190.5	1.012	28.4	8	1	6.25	158.8	6.25	158.8	6.00	152.4
3	80	10.50	266.7	1.88	47.8	5.00	127.0	8.00	203.2	1.25	31.8	8	1 1/8	7.00	177.8	7.00	177.8	6.75	171.5
4	100	12.25	311.2	2.12	53.8	6.19	157.2	9.50	241.3	1.38	35.1	8	1 1/4	7.75	196.9	7.75	196.9	7.50	190.5
5	125	14.75	374.7	2.88	73.2	7.31	185.7	11.50	292.1	1.62	41.1	8	1 1/2	9.75	247.7	9.75	247.7	9.50	241.3
6	150	15.50	393.7	3.25	82.6	8.50	215.9	12.50	317.5	1.50	38.1	12	1 3/8	10.25	260.4	10.50	266.7	10.00	254.0
8	200	19.00	482.6	3.62	91.9	10.62	269.7	15.50	393.7	1.75	44.5	12	1 5/8	11.50	292.1	12.75	323.9	11.25	285.8
10	250	23.00	584.2	4.25	108.0	12.75	323.9	19.00	482.6	2.00	50.8	12	1 7/8	13.25	336.6	13.50	342.9	13.00	330.2
12	300	26.50	673.1	4.88	124.0	15.00	381.0	22.50	571.5	2.12	53.8	16	2	14.75	374.7	15.25	387.4	14.50	368.3
14	350	29.50	749.3	5.25	133.4	16.25	412.8	25.00	635.0	2.38	60.5	16	2 1/4	16.00	406.4	16.75	425.5	15.75	400.1
16	400	32.50	825.5	5.75	146.1	18.50	469.9	27.50	704.9	2.62	66.5	16	2 1/2	17.50	444.5	18.50	469.9	17.25	438.2
18	450	36.00	914.4	6.38	162.1	21.00	533.4	30.50	774.7	2.88	73.2	16	2 3/4	19.50	495.3	20.75	527.1	19.25	489.0
20	500	38.75	984.3	7.00	177.8	23.00	584.2	32.75	831.9	3.12	79.2	16	2	21.25	539.8	22.25	565.2	21.00	533.4
24	600	46.00	1168.4	8.00	203.2	27.25	692.2	39.00	990.6	3.62	91.9	16	3 1/2	24.25	616.0	25.50	647.7	24.00	609.6

Class2500Lb

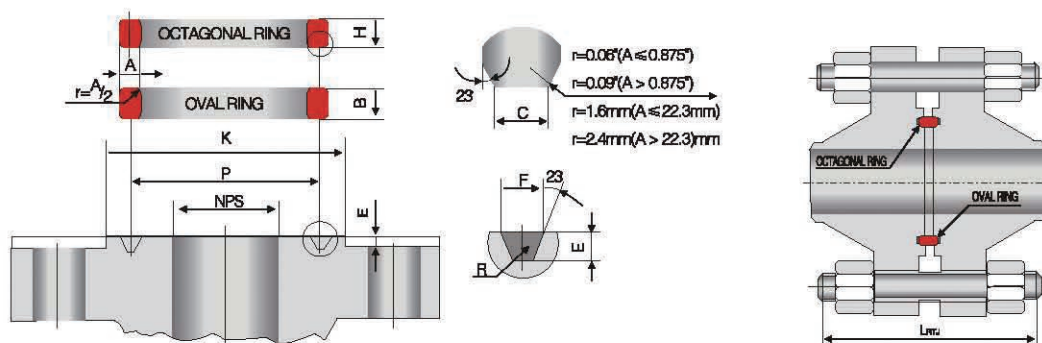
NPS		O		C		R		B		D		Bolt		L		LRTJ		Lm	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	QTY	Diam	in	mm	in	mm	in	mm
2	50	9.25	235.0	2.00	50.8	3.62	91.9	6.75	171.5	1.12	28.4	8	1	7.00	177.8	7.00	177.8	6.75	171.5
2 1/2	65	10.50	266.7	2.25	57.2	4.12	104.6	7.75	196.9	1.25	31.8	8	1 1/8	7.75	196.9	8.00	203.2	7.50	190.5
3	80	12.00	304.8	2.62	66.5	5.00	127.0	9.00	228.6	1.38	35.1	8	1 1/4	8.75	222.3	9.00	228.6	8.50	215.9
4	100	14.00	355.6	3.00	76.2	6.19	157.2	10.75	273.1	1.62	41.1	8	1 1/2	10.00	254.0	10.25	260.4	9.75	247.7
5	125	16.50	419.1	3.62	91.9	7.31	185.7	12.75	323.9	1.88	47.8	8	1 3/4	11.75	298.5	12.25	311.2	11.50	292.1
6	150	19.00	482.6	4.25	108.0	8.50	215.9	14.50	368.3	2.12	53.8	8	2	13.50	342.9	14.00	355.6	13.25	336.6
8	200	21.75	552.5	5.00	127.0	10.62	269.7	17.25	438.2	2.12	53.8	12	2	15.00	381.0	15.50	393.7	14.75	374.7
10	250	26.50	673.1	6.50	165.1	12.75	323.9	21.25	539.8	2.12	53.8	12	2 1/2	19.25	489.0	20.00	508.0	19.00	482.6
12	300	30.00	762.0	7.25	184.2	15.00	381.0	24.38	619.3	2.88	73.2	12	2 3/4	21.25	539.8	22.00	558.8	21.00	533.4

A). NPS 24" and smaller flanged ends by ANSI B16.5, NPS 26" and larger by MSS SP-44.

b). Flange of 1500Lb and 2500Lb with the raised face of 0.06\"/>

c). The length L of the double-end bolt doesn't include the terminal length.

d). Flange gasket of the matching flange ASME B16.20.



Ring-Joint Flanged Ends

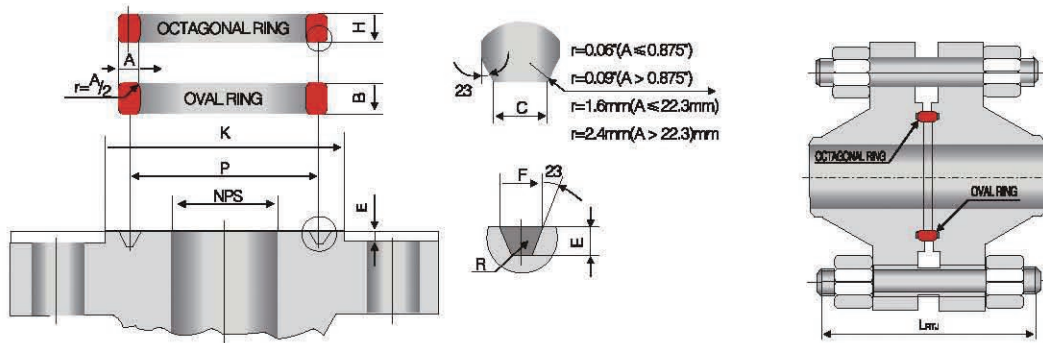
1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17										
ANSI Class-Lb						Annular Groove								150Lb		300Lb 600Lb		900Lb		1500Lb		2500Lb			
150	300	600	900	1500	2500	No	P		E		F		R		K										
NPS							in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm			
2						R22	3.250	82.55	0.250	6.35	0.344	8.74	0.03	0.76	4.00	101.60									
	2	2				R23	3.250	82.55	0.312	7.92	0.469	11.91	0.03	0.76			4.25	107.95					4.50	114.30	
				2		R24	3.750	95.25	0.312	7.92	0.469	11.91	0.03	0.76							4.88	123.95			
					2	R26	4.000	101.60	0.312	7.92	0.469	11.91	0.03	0.76			5.00	127.00					5.25	133.35	
2½						R25	4.000	101.60	0.250	6.35	0.344	8.74	0.03	0.76	4.75	120.65									
	2½	2½				R26	4.000	101.60	0.312	7.92	0.469	11.91	0.03	0.76			5.00	127.00					5.25	133.35	
				2½		R27	4.250	107.95	0.312	7.92	0.469	11.91	0.03	0.76							5.38	136.65			
					2½	R28	4.375	111.13	0.375	9.53	0.531	13.49	0.03	0.76									5.88	149.35	
3						R29	4.500	114.30	0.250	6.35	0.344	8.74	0.03	0.76	5.25	133.35									
	3	3	3			R31	4.875	123.83	0.312	7.92	0.469	11.91	0.03	0.76			5.75	146.05	6.12	155.45					
					3	R32	5.000	127.00	0.375	9.53	0.531	13.49	0.06	1.52									6.62	168.15	
4						R36	5.875	149.23	0.250	6.35	0.344	8.74	0.03	0.76	6.75	171.45									
	4	4	4			R37	5.875	149.23	0.312	7.92	0.469	11.91	0.03	0.76			6.88	174.75	7.12	180.85					
					4	R38	6.188	157.18	0.438	11.13	0.656	16.66	0.06	1.52									8.00	203.20	
					4	R39	6.375	161.93	0.312	7.92	0.469	11.91	0.03	0.76							7.62	193.55			
5						R40	6.750	171.45	0.250	6.35	0.344	8.74	0.03	0.76	7.62	193.55									
	5	5	5			R41	7.125	180.98	0.312	7.92	0.469	11.91	0.03	0.76			8.25	209.55	8.50	215.90					
					5	R42	7.500	190.50	0.500	12.70	0.781	19.84	0.06	1.52									9.50	241.30	
					5	R44	7.625	193.68	0.312	7.92	0.469	11.91	0.03	0.76							9.00	228.60			
6						R43	7.625	193.68	0.250	6.35	0.344	8.74	0.03	0.76	8.62	218.95									
	6	6	6			R45	8.312	211.12	0.312	7.92	0.469	11.91	0.03	0.76			9.50	241.30	9.50	241.30					
					6	R46	8.312	211.12	0.375	9.53	0.531	13.49	0.06	1.52							9.75	247.65			
					6	R47	9.000	228.60	0.500	12.70	0.781	19.84	0.06	1.52									11.00	279.40	
8						R48	9.750	247.65	0.250	6.35	0.344	8.74	0.03	0.76	10.75	273.05									
	8	8	8			R49	10.625	269.88	0.312	7.92	0.469	11.91	0.03	0.76			11.88	301.75	12.12	307.85					
					8	R50	10.625	269.88	0.438	11.13	0.656	16.66	0.06	1.52							12.50				
					8	R51	11.000	279.40	0.562	14.27	0.906	23.01	0.06	1.52									13.38	339.85	

A) please to see FLANGED ENDS for other connection dimension.

B) flange metal ring gasket of the matching flange ASME B16.20

C) For the specification of NPS 2-2 1/2" of 900Lb will adopt the dimensions of 1500Lb.

D) the length LRTJ of the double-end bolt don't include the terminal length.



Ring-Joint Flanged Ends

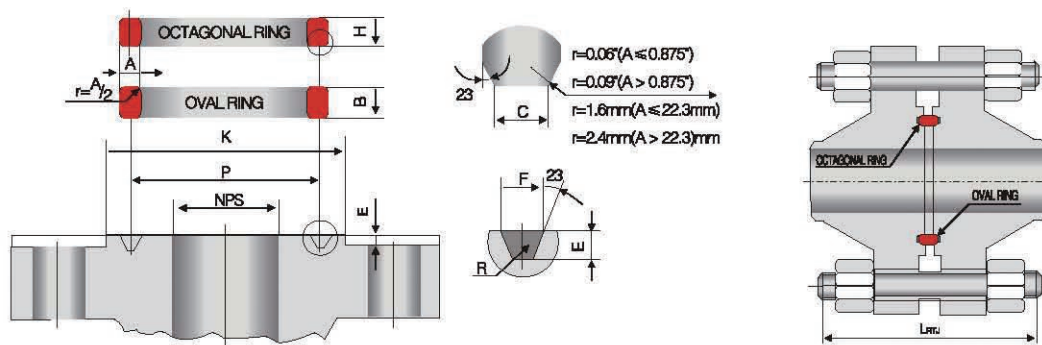
1	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17								
ANSI Class-Lb						Annular Groove								150Lb	300Lb 600Lb	900Lb	1500Lb	2500Lb					
150	300	600	900	1500	2500	No	P		E		F		R		K								
NPS							in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm			
10						R52	12.00	304.80	0.250	6.35	0.344	8.74	0.03	0.76	13.00	330.20							
	10	10	10			R53	12.750	323.85	0.312	7.92	0.469	11.91	0.03	0.76			14.00	355.60	14.25	361.95			
				10		R54	12.750	323.85	0.438	11.13	0.656	16.66	0.06	1.52							4.62	371.35	
					10	R55	13.500	342.90	0.688	17.48	1.188	30.18	0.09	2.29									16.75 425.45
12						R56	15.000	381.00	0.250	6.35	0.344	8.74	0.03	0.76	16.00	406.40							
	12	12	12			R57	15.000	381.00	.312	7.92	0.469	11.91	0.03	0.76			16.25	412.75	16.50	49.10			
				12		R58	15.000	381.00	0.562	14.27	0.906	23.01	0.06	1.52							17.25	438.15	
					12	R60	16.000	406.00	0.688	17.48	1.312	33.32	0.09	2.29									19.50 495.30
14						R59	15.625	396.88	0.250	6.35	0.344	8.74	0.03	0.76	16.75	425.45							
	14	14				R61	16.500	419.10	0.312	7.92	0.469	11.91	0.03	0.76			18.00	457.20					
			14			R62	16.500	419.10	0.438	11.13	0.656	16.66	0.06	1.52					18.38	466.85			
				14		R63	16.500	419.10	0.625	15.88	1.062	26.97	0.09	2.29							19.25	488.95	
16						R64	17.785	454.03	0.250	6.35	0.344	8.74	0.03	0.76	19.00	482.60							
	16	16				R65	18.500	469.90	0.312	7.92	0.469	11.91	0.03	0.76			20.00	508.00					
			16			R66	18.500	469.90	0.438	11.13	0.656	16.66	0.06	1.52					20.62	523.75			
				16		R67	18.500	469.90	0.688	17.48	1.188	30.18	0.09	2.29							21.50	546.10	
18						R68	20.375	517.53	0.250	6.35	0.344	8.74	0.03	0.76	21.50	546.10							
	18	18				R69	21.000	533.40	0.312	7.92	0.469	11.91	0.03	0.76			22.62	574.55					
			18			R70	21.000	533.40	0.500	12.70	0.781	19.84	0.06	1.52					23.38	593.85			
				18		R71	21.000	533.40	0.688	17.48	1.188	30.18	0.09	2.29							24.12	612.65	
20						R72	22.000	558.80	0.250	6.35	0.344	8.74	0.03	0.76	23.50	596.90							
	20	20				R73	23.000	584.20	0.375	9.53	0.531	13.49	0.06	1.52			25.00	635.00					
			20			R74	23.000	584.20	0.500	12.70	0.781	19.84	0.06	1.52					25.50	647.70			
				20		R75	23.000	584.20	0.688	17.48	1.312	33.32	0.09	2.29							26.50	673.10	
24						R76	26.500	673.10	0.250	6.35	0.344	8.74	0.03	0.76	28.00	711.20							
	24	24				R77	27.250	692.15	0.438	11.13	0.656	16.66	0.06	1.52			29.50	749.30					
			24			R78	27.250	692.15	0.625	15.88	1.062	26.97	0.09	2.29					30.38	771.65			
				24		R79	27.250	692.15	0.812	20.62	1.438	36.53	0.09	2.29							31.25	793.75	

A). Please to see FLANGED ENDS for other connection dimension.

b). Flange metal ring gasket of the matching flange ASME B16.20

c). For the specification of NPS 2~21/2" of 900Lb will adopt the dimensions of 1500Lb.

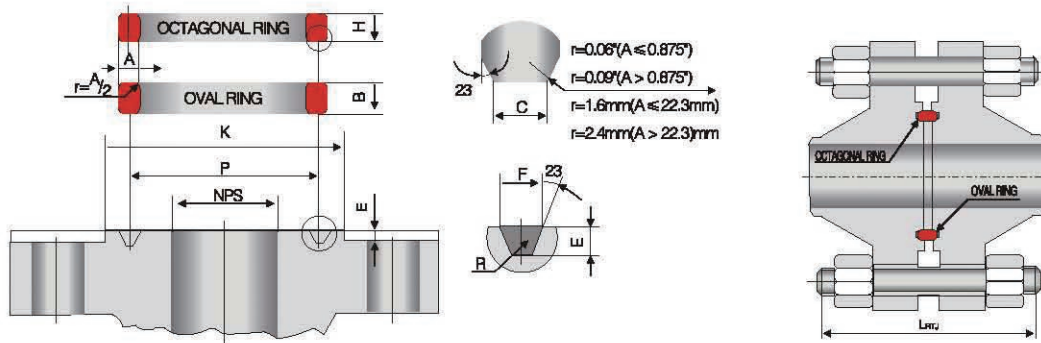
d). The length LRTJ of the double-end bolt don't include the terminal length.



Ring-Joint Flanged Ends

1	2	4	5	6	7	8	25	26	27	28	29	30	31	32	33	34										
ANSI Class-Lb						Metal joint ring								150Lb		300Lb		600Lb		900Lb		1500Lb		2500Lb		
150	300	600	900	1500	2500	No	A		B		H		C		LRTJ											
NPS							in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		
2						R22	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	3.75	95.25										
	2	2				R23	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			4.00	101.60	4.25	107.95						
				2		R24	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75								5.75	146.05			
					2	R26	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75										7.00	177.80	
2½						R25	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	4.00	101.60										
	2½	2½				R26	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			4.50	114.30	4.75	120.65				7.00	177.80	
				2½		R27	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75								6.25	158.75			
					2½	R28	0.500	12.70	0.56	14.22	0.69	17.53	0.341	8.66										8.00	203.20	
3						R29	0.313	7.95	0.69	17.53	0.50	12.70	0.206	5.23	4.00	101.60										
	3	3	3			R31	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			4.75	120.65	5.00	127.00	5.75	146.05				
					3	R32	0.500	12.70	0.75	19.05	0.69	17.53	0.341	8.66										9.00	228.60	
					3	R35	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75								7.00	177.80			
4						R36	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	4.00	101.60										
	4	4	4			R37	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			5.00	127.50	5.75	146.05	6.75	171.45				
					4	R38	0.625	15.88	0.88	22.35	0.81	20.57	0.413	10.49										10.25	260.35	
					4	R39	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75								7.75	196.85			
5						R40	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	4.25	107.95										
	5	5	5			R41	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			5.25	133.35	6.50	165.10	7.50	190.50				
					5	R42	0.750	19.05	1.00	25.40	0.94	23.88	0.485	12.32										12.25	311.15	
					5	R44	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75								9.75	247.65			
6						R43	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	4.50	114.30										
	6	6	6			R45	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			5.50	139.70	6.75	171.45	7.75	196.85				
					6	R46	0.500	12.70	0.75	19.05	0.69	17.53	0.341	8.66										14.00	355.60	
					6	R47	0.750	19.05	1.00	25.40	0.94	23.88	0.485	12.32								10.50	266.70			
8						R48	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	4.75	120.65										
	8	8	8			R49	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			6.00	152.40	7.75	196.85	8.75	222.25				
					8	R50	0.625	15.88	0.88	22.35	0.81	20.57	0.413	10.49									12.75	323.85		
					8	R51	0.875	22.23	1.13	28.70	1.06	26.92	0.583	14.81										15.50	393.70	

A). Please to see FLANGED ENDS for other connection dimension.
 b). Flange metal ring gasket of the matching flange ASME B16.20
 c). For the specification of NPS 2-21/2" of 900Lb will adopt the dimensions of 1500Lb.
 d). The length LRTJ of the double-end bolt don't include the terminal length.



Ring-Joint Flanged Ends

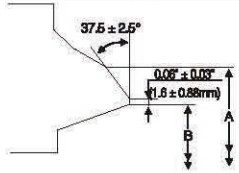
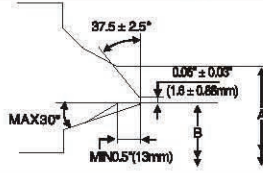
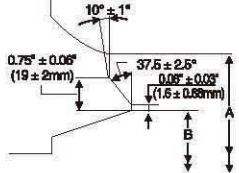
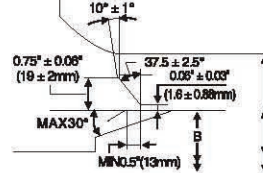
1	2	4	5	6	7	8	25	26	27	28	29	30	31	32	33	34											
ANSI Class-Lb						Metal joint ring								150Lb		300Lb		600Lb		900Lb		1500Lb		2500Lb			
150	300	600	900	1500	2500	No	A		B		H		C		LRTJ												
NPS							in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm			
10						R52	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	5.00	127.00											
	10	10	10			R53	0.438	11.13	0.69	17.53	0.63	16.00	.305	7.75			6.75	171.45	8.50	215.90	9.25	234.95					
				10		R54	0.625	15.88	0.88	22.35	0.81	20.57	0.413	10.49									13.50				
					10	R55	1.125	28.58	1.44	36.58	1.38	35.05	0.780	19.81											20.00	508.00	
12						R56	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	5.25	133.35											
	12	12	12			R57	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			7.25	184.15	8.75	222.25	10.00	254.00					
				12		R57	0.875	22.23	1.13	28.70	1.06	26.392	0.583	14.81									15.25	387.35			
					12	R60	1.250	31.75	1.56	39.62	1.50	38.10	0.879	22.33											22.00	558.80	
14						R59	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	5.75	146.05											
	14	14				R61	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			7.50	190.50	9.25	234.95							
			14			R62	0.625	15.88	0.88	22.35	0.81	20.57	0.413	10.49							11.00	279.40					
				14		R63	1.000	25.40	1.44	33.27	1.25	31.75	0.681	17.30									16.75	425.45			
16						R64	0.313	7.95	0.56	14.22	0.50	12.70	0.205	5.21	5.75	146.05											
	16	16				R65	0.438	11.13	0.69	17.53	0.63	16.00	0.305	7.75			8.00	203.20	10.00	254.00							
			16			R66	0.625	15.88	1.00	22.35	0.81	20.57	0.413	10.49							11.50	292.10					
				16		R67	1.125	28.58	1.44	36.58	1.38	36.05	0.780	19.81									18.50	469.90			
18						R68	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	6.25	158.75											
	18	18				R69	0.438	11.13	0.75	17.53	0.63	16.00	0.305	7.75			8.25	209.55	10.75	273.05							
			18			R70	0.750	19.05	1.00	25.40	0.94	23.88	0.485	12.32							13.25	336.55					
				18		R71	1.125	28.58	1.44	36.58	1.38	35.05	0.780	19.81									20.75	527.05			
20						R72	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	6.75	171.45											
	20	20				R73	0.500	12.70	0.75	19.05	0.63	17.53	0.341	8.66			8.75	222.25	11.50	292.10							
			20			R74	0.750	19.05	1.00	25.40	0.94	23.88	0.485	12.32							14.25	361.95					
				20		R75	1.250	31.75	1.56	39.62	1.38	38.10	0.879	22.33									22.25	565.15			
24						R76	0.313	7.95	0.56	14.22	0.50	12.70	0.206	5.23	7.25	184.15											
	24	24				R77	0.625	15.88	0.88	22.35	0.69	20.57	0.413	10.49			10.0	254.00	13.25	336.55							
			24			R78	1.000	25.40	1.31	33.27	0.94	31.75	0.681	17.30							18.00	457.20					
				24		R79	1.375	34.93	1.75	44.45	1.50	41.40	0.977	24.82									25.50	647.70			

A). Please to see FLANGED ENDS for other connection dimension.

b). Flange metal ring gasket of the matching flange ASME B16.20

c). For the specification of NPS 2~21/2" of 900Lb will adopt the dimensions of 1500Lb.

d). The length LRTJ of the double-end bolt don't include the terminal length.

Nominal wall thickness	Use without backing ring	Use with continuous rectangular backing ring
$\leq 0.88"$ (22.5mm)		
$> 0.88"$ (22.5mm)		

Class 150 and 300 valve which size equal to 12 inch and smaller and 12 inch valves which contract with standard wall pipe (0.375" thickness) are regularly machined. Unless there is other requirement.

Order for class 150 and 300 butt-welding valves which size equal to 14 and larger and class 400 and higher valve for all sizes, it should be specified the diameter of the pipe that contract with valves. If need backing ring, indicate specification.

Other types of weld end preparation would be furnished if specified.

ASME B16.25–Butt–Welding Ends

1		2	3		4		5		6		7	
Nominal Pipe Diameter		Wall Thickness of pipe Number	Outside Diameter of Welding End				Nominal Inside Diameter of Pipe		Machined Inside Diameter of Pipe		Nominal Wall Thickness	
NPS	DN		Steel Valves		Forged ¹⁾							
			A		A ₁		B		C		t	
in	mm		in	mm	in	mm	in	mm	in	mm	in	mm
2½	65	40	2.96	75	2.88	73.0	2.469	62.5	2.479	62.93	0.203	5.16
		80	2.96	75	2.88	73.0	2.323	59	2.351	59.69	0.276	7.01
		160	2.96	75	2.88	73.0	2.125	54	2.178	55.28	0.375	9.53
3	80	xxs	2.96	75	2.88	73.0	1.771	45	1.868	47.43	0.552	14.02
		40	3.59	91	3.50	88.9	3.068	78	3.081	78.25	0.216	5.49
		80	3.59	91	3.50	88.9	2.900	73.5	2.934	74.53	0.300	7.62
		160	3.59	91	3.50	88.9	2.624	66.5	2.692	68.38	0.438	11.13
3½	90	xxs	3.59	91	3.50	88.9	2.300	58.5	2.409	61.19	0.600	15.24
		40	4.12	105	4.00	101.6	3.548	90	3.564	90.52	0.226	5.74
		80	4.12	105	4.00	101.6	3.364	85.5	3.402	86.42	0.318	8.08
4	100	40	4.62	117	4.50	114.3	4.026	102	4.044	102.73	0.237	6.02
		80	4.62	117	4.50	114.3	3.826	97	3.869	98.28	0.337	8.56
		120	4.62	117	4.50	114.3	3.624	92	3.692	93.78	0.438	11.13
		160	4.62	117	4.50	114.3	3.438	87.5	3.530	89.65	0.531	13.49
5	125	xxs	4.62	117	4.50	114.3	3.152	80	3.279	83.30	0.674	17.12
		40	5.69	144	5.56	141.3	5.047	128	5.070	128.80	0.258	6.55
		80	5.69	144	5.56	141.3	4.813	122	4.866	123.58	0.375	9.53
		120	5.69	144	5.56	141.3	4.563	116	4.647	118.04	0.500	12.70
6	150	160	5.69	144	5.56	141.3	4.313	109.5	4.428	112.47	0.625	15.88
		xxs	5.69	144	5.56	141.3	4.063	103	4.209	106.92	0.750	19.05
		40	6.78	172	6.62	168.3	6.065	154	6.094	154.82	0.280	7.11
		80	6.78	172	6.62	168.3	5.761	146.5	5.828	148.06	0.432	10.97
8	200	120	6.78	172	6.62	168.3	5.501	140	5.600	142.29	0.562	14.27
		160	6.78	172	6.62	168.3	5.187	132	5.326	135.31	0.719	18.26
		xxs	8.78	223	8.62	219.1	4.897	124.5	5.072	128.85	0.864	21.95
		40	8.78	223	8.62	219.1	7.981	203	8.020	203.75	0.322	8.18
		60	8.78	223	8.62	219.1	7.813	198.5	7.873	200.02	0.406	10.31
		80	8.78	223	8.62	219.1	7.625	193.5	7.709	195.84	0.500	12.70
		100	8.78	223	8.62	219.1	7.437	189	7.544	191.65	0.594	15.09
		120	8.78	223	8.62	219.1	7.187	182.5	7.326	186.11	0.719	18.26
10	250	140	8.78	223	8.62	219.1	7.001	178	7.163	181.98	0.812	20.62
		xxs	8.78	223	8.62	219.1	6.875	174.5	7.053	179.16	0.875	22.23
		160	8.78	223	8.62	219.1	6.813	173	6.998	177.79	0.906	23.01
		40	10.94	278	10.75	273.0	10.020	254.5	10.070	255.74	0.365	9.27
		60	10.94	278	10.75	273.0	9.750	247.5	9.384	249.74	0.500	12.70
		80	10.94	278	10.75	273.0	9.562	243	9.670	245.55	0.594	15.09
		100	10.94	278	10.75	273.0	9.312	236.5	9.451	240.01	0.719	18.26
10	250	120	10.94	278	10.75	273.0	9.062	230	9.232	234.44	0.844	21.44
		140	10.94	278	10.75	273.0	8.750	222	8.959	227.51	1.000	25.40
		160	10.94	278	10.75	273.0	8.500	216	8.740	221.95	1.125	28.58

ASME B16.25–Butt–Welding Ends

1		2	3		4		5		6		7	
Nominal Pipe Diameter		Wall Thickness of pipe Number	Outside Diameter of Welding End				Nominal Inside Diameter of Pipe	Machined Inside Diameter of Pipe	Nominal Wall Thickness			
			Steel Valves		Forged ¹⁾							
NPS	DN		A	A ₁	B	C	t					
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	
12	300	STD	12.97	329	12.75	323.8	12.000	305	12.053	306.08	0.375	9.53
		40	12.97	329	12.75	323.8	11.938	303	11.999	304.72	0.406	10.31
		XS	12.97	329	12.75	323.8	11.750	298.5	11.834	300.54	0.500	12.70
		60	12.97	329	12.75	323.8	11.626	295	11.725	297.79	0.562	14.27
		80	12.97	329	12.75	323.8	11.374	289	11.505	292.17	0.688	17.48
		100	12.97	329	12.75	323.8	11.062	281	11.232	285.24	0.844	21.44
		120	12.97	329	12.75	323.8	10.750	273	10.959	278.31	1.00	25.40
		140	12.97	329	12.75	323.8	10.500	266.5	10.740	272.75	1.125	28.58
14	350	160	12.97	329	12.75	323.8	10.126	257	10.413	264.45	1.312	33.32
		STD	14.25	362	14.00	355.6	13.250	336.5	13.303	337.88	0.375	9.53
		40	14.25	362	14.00	355.6	13.124	333.5	13.192	335.08	0.438	11.13
		XS	14.25	362	14.00	355.6	13.000	330	13.084	332.34	0.500	12.70
		60	14.25	362	14.00	355.6	12.812	325.5	12.920	328.15	0.594	15.09
		80	14.25	362	14.00	355.6	12.500	317.5	12.646	321.22	0.750	19.05
		100	14.25	362	14.00	355.6	12.124	308	12.318	312.86	0.938	23.83
		120	14.25	362	14.00	355.6	11.812	300	12.044	305.93	1.094	27.79
16	400	140	14.25	362	14.00	355.6	11.500	292	11.771	299.00	1.250	31.75
		160	14.25	362	14.00	355.6	11.188	284	11.498	292.07	1.406	35.71
		STD	16.25	413	16.00	406.4	15.250	387.5	15.303	388.68	0.375	9.53
		40	16.25	413	16.00	406.4	15.000	381	15.084	383.14	0.500	12.70
		60	16.25	413	16.00	406.4	14.688	373	14.811	376.21	0.656	16.66
		80	16.25	413	16.00	406.4	14.312	363.5	14.482	367.84	0.844	21.44
		100	16.25	413	16.00	406.4	13.938	354	14.155	359.53	1.031	26.19
		120	16.25	413	16.00	406.4	13.562	344.5	13.826	351.18	1.219	30.96
18	450	140	16.25	413	16.00	406.4	13.124	333.5	13.442	341.43	1.438	36.53
		160	16.25	413	16.00	406.4	12.812	325.5	13.170	334.50	1.594	40.49
		STD	18.28	464	18.00	457.2	17.250	438	17.303	439.48	0.375	9.53
		XS	18.28	464	18.00	457.2	17.000	432	17.084	433.94	0.500	12.70
		40	18.28	464	18.00	457.2	16.876	428.5	16.975	431.19	0.562	14.27
		60	18.28	464	18.00	457.2	16.500	419	16.646	422.82	0.750	19.05
		80	18.28	464	18.00	457.2	16.124	409.5	16.318	414.46	0.938	23.83
		100	18.28	464	18.00	457.2	15.688	398.5	15.936	404.78	1.156	29.36
20	500	120	18.28	464	18.00	457.2	15.250	387.5	15.553	395.03	1.375	34.93
		140	18.28	464	18.00	457.2	14.876	378	15.225	386.77	1.562	39.67
		160	18.28	464	18.00	457.2	14.438	366.5	14.842	376.99	1.781	45.24
		STD	20.31	516	20.00	508.0	19.250	489	19.303	490.28	0.375	9.53
		XS	20.31	516	20.00	508.0	19.000	482.5	19.084	484.74	0.500	12.70
		40	20.31	516	20.00	508.0	18.812	478	18.920	480.55	0.594	15.09
		60	20.31	516	20.00	508.0	18.376	467	18.538	470.88	0.812	20.62
		80	20.31	516	20.00	508.0	17.938	455.5	18.155	461.13	1.031	26.19
22	550	100	20.31	516	20.00	508.0	17.438	443	17.717	450.02	1.281	32.54
		120	20.31	516	20.00	508.0	17.000	432	17.334	440.29	1.500	38.10
		140	20.31	516	20.00	508.0	16.500	419	16.896	429.17	1.750	44.45
		160	20.31	516	20.00	508.0	16.062	408	16.513	419.44	1.969	50.01
		STD	22.34	567	22.00	558.8	21.250	520	21.303	541.08	0.375	9.53
		XS	22.34	567	22.00	558.8	21.000	533	21.084	535.54	0.500	12.70
		60	22.34	567	22.00	558.8	20.250	514	20.428	518.86	0.875	22.23
		80	22.34	567	22.00	558.8	19.750	502	19.990	507.75	1.125	28.58
22	550	100	22.34	567	22.00	558.8	19.250	488.5	19.553	496.63	1.375	34.93
		120	22.34	567	22.00	558.8	18.750	476	19.115	485.52	1.625	41.28
		140	22.34	567	22.00	558.8	18.250	464	18.678	474.41	1.875	47.63
		160	22.34	567	22.0	558.8	17.750	450.5	18.240	463.30	2.215	53.98

Note: 1) Forged or machined component part
a. STD=standard wall thickness.
b. XS=intensifying wall thickness.
c. XXS=double intensifying wall thickness.

Nominal wall thickness	Use without backing ring	Use with continuous rectangular backing ring
$\leq 0.88"$ (22.5mm)		
$> 0.88"$ (22.5mm)		

Class 150 and 300 valve which size equal to 12 inch and smaller and 12 inch valves which contract with standard wall pipe (0.375" thickness) are regularly machined. Unless there is other requirement.

Order for class 150 and 300 butt-welding valves which size equal to 14 and larger and class 400 and higher valve for all sizes, it should be specified the diameter of the pipe that contract with valves. If need backing ring, indicate specification.

Other types of weld end preparation would be furnished if specified.

ASME B16.25–Butt–Welding Ends

1		2	3		4		5		6		7	
Nominal Pipe Diameter		Wall Thickness of pipe Number	Outside Diameter of Welding End				Nominal Inside Diameter of Pipe	Machined Inside Diameter of Pipe	Nominal Wall Thickness			
NPS	DN		Steel Valves		Forged ¹⁾							
in	mm		A	A ₁	B	C	t					
		in	mm	in	mm	in	mm	in	mm	in	mm	
24	600	STD	24.38	619	24.00	609.6	23.250	590.5	23.303	591.88	0.375	9.53
		XS	24.38	619	24.00	609.6	23.000	584	23.084	586.34	0.500	12.70
		30	24.38	619	24.00	609.6	22.876	581	22.975	583.59	0.562	14.27
		40	24.38	619	24.00	609.6	22.624	574.5	22.755	577.97	0.688	17.48
		60	24.38	619	24.00	609.6	22.062	560.5	22.263	565.49	0.969	24.61
		80	24.38	619	24.00	609.6	21.562	547.5	21.826	554.38	1.219	30.96
		100	24.38	619	24.00	609.6	20.938	532	21.280	540.49	1.531	38.89
		120	24.38	619	24.00	609.6	20.376	517.5	20.788	528.03	1.812	46.02
		140	24.38	619	24.00	609.6	19.876	505	20.350	516.91	2.062	52.37
		160	24.38	619	24.00	609.6	19.312	490.5	19.857	504.37	2.344	59.54
26	650	10	26.38	670	26.00	660.4	25.376	645.5	25.413	645.50	0.312	7.92
		20	26.38	670	26.00	660.4	25.000	635	25.084	637.14	0.500	12.70
28	700	10	28.38	721	28.00	711.2	27.376	695.5	27.413	696.30	0.312	7.92
		20	28.38	721	28.00	711.2	27.000	686	27.084	687.94	0.500	12.70
		30	28.38	721	28.00	711.2	26.750	679.5	26.865	682.37	0.625	15.88
30	750	10	30.38	772	30.00	762.0	29.376	746	29.413	747.10	0.312	7.92
		20	30.38	772	30.00	762.0	29.000	736.5	29.084	738.74	0.500	12.70
		30	30.38	772	30.00	762.0	28.750	730	28.865	733.17	0.625	15.88
32	800	10	32.50	825	32.00	812.8	31.376	797	31.413	797.90	0.312	7.92
		20	32.50	825	32.00	812.8	31.000	787.5	31.084	789.54	0.500	12.70
		30	32.50	825	32.00	812.8	30.750	781	30.865	783.97	0.625	15.88
		40	32.50	825	32.00	812.8	30.624	778	30.755	781.17	0.688	17.48
34	850	10	34.50	876	34.00	863.6	33.376	848	33.413	848.70	0.312	7.92
		20	34.50	876	34.00	863.6	33.000	838	33.084	840.34	0.500	12.70
		30	34.50	876	34.00	863.6	32.750	832	32.865	834.77	0.625	15.88
		40	34.50	876	34.00	863.6	32.624	828.5	32.755	831.97	0.688	17.48
36	900	10	36.50	927	36.00	914.4	35.376	898.5	35.413	899.50	0.312	7.92
		20	36.50	927	36.00	914.4	35.000	889	35.084	891.14	0.500	12.70
		30	36.50	927	36.00	914.4	34.750	882.5	34.865	885.57	0.625	15.88
		40	36.50	927	36.00	914.4	34.500	876.5	34.646	880.02	0.750	19.05

Note: 1) Forged or machined component part
a. STD=standard wall thickness.
b. XS=intensifying wall thickness.
c. XXS=double intensifying wall thickness.

Size of Connection	Valve Type	Pressure Rating	Body/Bonnet Type	Type of Connection	Body Material	Operator	Trim Material
A 	B   —  	C	D 	E  —  	F	G 	H  
e.g.: 6"	G G — 0 3		A	R — 0 5		H	0 2

Example: Flanged 6" class 300 cast stainless steel full bore gate valve with trim 02.

The figure numbers shown on this key are designed to cover essential features of RAKO valves.

Please use figure numbers to ensure prompt and accurate processing of your order.

A detailed description must accompany any special orders.

A Size of Connection				
2"(50mm)	8"(200mm)	20"(500mm)	32"(800mm)	
21/2"(65mm)	10"(250mm)	22"(550mm)	34"(850mm)	
3"(80mm)	12"(300mm)	24"(600mm)	36"(900mm)	
4"(100mm)	14"(350mm)	26"(650mm)	40"(950mm)	
5"(125mm)	16"(400mm)	28"(700mm)	42"(1050mm)	
6"(150mm)	18"(450mm)	30"(750mm)	48"(1200mm)	
B Valve Type				
GG—Gate Valve		GL—Globe Valve	YG—Y—Globe Valve	
BG—Bellows Globe Valve		SC—Swing Check Valve		
LC—Lift Check Valve		WC—Water Check Valve		
C Pressure Rating				
01—ANSI 150		03—ANSI 300	06—ANSI 600	
09—ANSI 900		15—ANSI 1500	25—ANSI 2500	
D Body/Bonnet Style				
A—Bolted bonnet(cast)			B—Extended bonnet	
C—Cast bolted bonnet bellows seal				
D—Pressure seal bonnet				
E Type of Connection				
B—butt welding end		F—flat face flange end		
J—ring joint flange end		N—screwed end		
R—raised face flange end		S—socket welding end		
w—wafer				
F Body Material				
01—WCB	02—WC6	03—WC9	04—C5	05—CF8
06—CF8M	07—CF3	08—CF3M	09—CG8M	10—CG3M
11—LCB	12—LCC	13—Monel	14—Hastelloy C	
15—Alloy 20	16—Tiannium		17—Special	

G	Operator		
H—Handwheel		G—Gear operator	P—Pneumatic actuator
E—Electric actuator		S—Special	
H	Trim material		
Trim No.	Seat Ring or Surface	Wedge/Disc or Surface	Stem
01	13Cr	13Cr	ASTM A 182 F6a
02	18Cr—8Ni	18Cr—8Ni	ASTM A 182 F304
03	Stellite	18Cr—8Ni	ASTM A 182 F304
04	Stellite	13Cr	ASTM A 182 F6a
05	Stellite	Stellite	ASTM A 182 F6a
06	18Cr—8Ni—Mo	18Cr—8Ni—Mo	ASTM A 182 F316
07	Stellite	18Cr—8Ni—Mo	ASTM A 182 F316
08	Stellite	Stellite	ASTM A 182 F316
09	Monel	Monel	Ni Cu Alloy Monel
10	Alloy 20	Alloy 20	ASTM B473
11	Special	Special	Special