150# FLANGED VALVES WITH 1/16" RAISED FACE

FOR RTJ FACE-TO-FACE: ADD 1/2" (ALL SIZES)

SIZE	FLG OD	GATE V	GATE O	GATE H	GLOBE G	GLOBE O	GLOBE H	CHECK C	SIZE
1	4 1/4	5	9	6	5	9	6	5	1
1 1/2	5	6 1/2	11	7	6 1/2	11	7	6 1/2	1 1/2
2	6	7	17	8	8	14	8	8	2
3	7 1/2	8	21	9	9 1/2	17	9	9 1/2	3
4	9	9	26	10	11 1/2	20	10	11 1/2	4
6	11	10 1/2	36	14	16	25	12	14	6
8	13 1/2	11 1/2	44	16	19 1/2	26	16	19 1/2	8
10	16	13	53	18	–	–	–	24 1/2	10
12	19	14	61	18	–	–	–	27 1/2	12
14	21	15	71	22	–	–	–	–	14
16	23 1/2	16	80	26	–	–	–	–	16
18	25	17	84	26	–	–	–	–	18
20	27 1/2	18	93	16	–	–	–	–	20

300# FLANGED VALVES WITH 1/16" RAISED FACE

FOR RTJ FACE-TO-FACE: 1" ADD 7/16"; 1 1/2" ADD 1/2";
2"-18" ADD 5/8"; 20" ADD 3/4"

SIZE	FLG OD	GATE V	GATE O	GATE H	GLOBE G	GLOBE O	GLOBE H	CHECK C	SIZE
1	4 7/8	6 1/2	9	6	8	9	6	8	1
1 1/2	6 1/8	7 1/2	11	7	9	11	7	9	1 1/2
2	6 1/2	8 1/2	18	8	10 1/2	18	9	10 1/2	2
3	8 1/4	11 1/8	24	10	12 1/2	21	10	12 1/2	3
4	10	12	29	12	14	25	14	14	4
6	12 1/2	15 7/8	39	15	17 1/2	31	18	17 1/2	6
8	15	16 1/2	47	17	22	37	24	21	8
10	17 1/2	18	57	22	–	–	–	24 1/2	10
12	20 1/2	19 3/4	65	22	–	–	–	28	12
14	23	30	75	27	–	–	–	–	14
16	25 1/2	33	81	27	–	–	–	–	16
18	28	36	92	30	–	–	–	–	18
20	30 1/2	39	100	30	–	–	–	–	20

600# FLANGED VALVES WITH 1/4" RAISED FACE

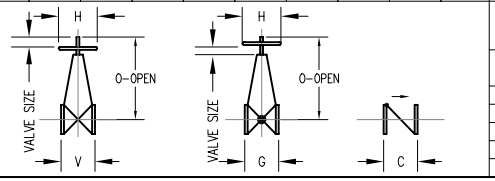
FOR RTJ FACE-TO-FACE: 1" AND 1 1/2" NO CHANGE;
2"-18" ADD 1/8"; 20" ADD 1/4"

SIZE	FLG OD	GATE V	GATE O	GATE H	GLOBE G	GLOBE O	GLOBE H	CHECK C	SIZE
1	4 7/8	8 1/2	9	6	8 1/2	9	6	8 1/2	1
1 1/2	6 1/8	9 1/2	11	7	9 1/2	11	7	9 1/2	1 1/2
2	6 1/2	11 1/2	20	9	11 1/2	19	10	11 1/2	2
3	8 1/4	14	26	12	14	24	12	14	3
4	10 3/4	17	32	14	17	28	18	17	4
6	14	22	43	22	22	37	24	22	6
8	16 1/2	26	53	24	26	44	30	26	8
10	20	31	63	27	–	–	–	31	10
12	22	33	71	30	–	–	–	33	12
14	23 3/4	35	78	30	–	–	–	–	14
16	27	39	84	36	–	–	–	–	16
18	29 1/4	43	94	36	–	–	–	–	18
20	32	47	113	36	–	–	–	–	20

900# FLANGED VALVES WITH 1/4" RAISED FACE

FOR RTJ FACE-TO-FACE: 1" AND 1 1/2" NO CHANGE;
2"-12" ADD 1/8"; 14"-16" ADD 3/8";18"-20" ADD 1/2"

SIZE	FLG OD	GATE V	GATE O	GATE H	GLOBE G	GLOBE O	GLOBE H	CHECK C	SIZE
1	5 7/8	10	18	8	10	17	8	10	1
1 1/2	7	12	21	12	12	21	12	12	1 1/2
2	8 1/2	14 1/2	24	12	14 1/2	25	14	14 1/2	2
3	9 1/2	15	28	14	15	27	14	15	3
4	11 1/2	18	33	17	18	30	20	18	4
6	15	24	46	22	24	40	27	24	6
8	18 1/2	29	53	26	–	–	–	29	8
10	21 1/2	33	64	30	–	–	–	33	10
12	24	38	74	30	–	–	–	38	12
14	25 1/4	40 1/2	81	32	–	–	–	–	14
16	27 3/4	44 1/2	86	36	–	–	–	–	16
18	31	48	97	36	–	–	–	–	18
20	33 3/4	52	108	36	–	–	–	–	20



SOCKET WELD AND SCREWED VALVES

FOR LAYOUT PURPOSES ONLY-DIMENSIONS VARY BY MANUFACTURER

SIZE	GATE V	GATE O	GATE H	GLOBE G	GLOBE O	GLOBE H	CHECK C	SIZE
1/2	2 3/4	7	4	2 3/4	7	4	2 3/4	1/2
3/4	3 3/8	7	4	3 3/8	8	5	3 3/8	3/4
1	4	9	5	4	9	6	4	1
1 1/2	4 3/4	10	6	5 1/2	11	7	5 1/2	1 1/2
2	5 1/4	11	7	6 1/4	13	8	6 1/4	2

FLANGE LENGTH THRU HUB

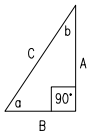
SIZE	RF WELD NECK 150#	RF WELD NECK 300#	RF WELD NECK 600#	RF WELD NECK 900#	RTJ WELD NECK 150#	RTJ WELD NECK 300#	RTJ WELD NECK 600#	RTJ WELD NECK 900#	SIZE
1/2	1 7/8	2 1/16	2 5/16	2 7/8	–	2 5/16	2 5/16	2 7/8	1/2
3/4	2 3/4	2 1/4	2 1/2	3	–	2 1/2	2 1/2	3	3/4
1	2 3/16	2 7/16	2 11/16	3 1/8	2 7/16	2 11/16	2 11/16	3 1/8	1
1 1/2	2 7/16	2 11/16	3	3 1/2	2 11/16	2 15/16	3	3 1/2	1 1/2
2	2 1/2	2 3/4	3 1/8	4 1/4	2 3/4	3 1/16	3 3/16	4 5/16	2
3	2 3/4	3 1/8	3 1/2	4 1/4	3	3 7/16	3 9/16	4 5/16	3
4	3	3 3/8	4 1/4	4 3/4	3 1/4	3 11/16	4 5/16	4 13/16	4
6	3 1/2	3 7/8	4 7/8	5 3/4	3 3/4	4 3/16	4 15/16	5 13/16	6
8	4	4 3/8	5 1/2	6 5/8	4 1/4	4 11/16	5 9/16	6 11/16	8
10	4	4 5/8	6 1/4	7 1/2	4 1/4	4 15/16	6 5/16	7 9/16	10
12	4 1/2	5 1/8	6 3/8	8 1/8	4 3/4	5 7/16	6 7/16	8 3/16	12
14	5	5 5/8	6 3/4	8 5/8	5 1/4	5 15/16	6 13/16	8 13/16	14
16	5	5 3/4	7 1/4	8 3/4	5 1/4	6 1/16	7 5/16	8 15/16	16
18	5 1/2	6 1/4	7 1/2	9 1/4	5 3/4	6 9/16	7 9/16	9 1/2	18
20	5 11/16	6 3/8	7 3/4	10	5 15/16	6 3/4	7 7/8	10 1/4	20

SIZE	RF THRD/SW/SLIP-ON 150#	RF THRD/SW/SLIP-ON 300#	RF THRD/SW/SLIP-ON 600#	RF THRD/SW/SLIP-ON 900#	SIZE
1/2	5/8	7/8	1 1/8	1 1/2	1/2
3/4	5/8	1	1 1/4	1 5/8	3/4
1	11/16	1 1/16	1 5/16	1 7/8	1
1 1/2	7/8	1 3/16	1 1/2	2	1 1/2
2	1	1 5/16	1 11/16	2 1/2	2
3	1 3/16	1 11/16	2 1/16	2 3/8	3
4	1 5/16	1 7/8	2 3/8	3	4
6	1 9/16	2 1/16	2 7/8	3 7/8	6
8	1 3/4	2 7/16	3 1/4	4 1/4	8
10	1 15/16	2 5/8	3 5/8	4 1/2	10
12	2 3/16	2 7/8	3 7/8	4 7/8	12
14	2 1/4	3	3 15/16	5 3/8	14
16	2 1/2	3 1/4	4 7/16	5 1/2	16
18	2 11/16	3 1/2	5 1/8	6 1/4	18
20	2 7/8	3 3/4	5 1/4	6 1/2	20

FLANGE DRILLING

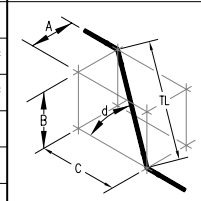
SIZE	QTY-HOLE ø 150#	QTY-HOLE ø 300#	QTY-HOLE ø 600#	QTY-HOLE ø 900#	SIZE
1/2	4-5/8	4-5/8	4-5/8	4-7/8	1/2
3/4	4-5/8	4-3/4	4-3/4	4-7/8	3/4
1	4-5/8	4-3/4	4-3/4	4-1	1
1 1/2	4-5/8	4-7/8	4-7/8	4-1 1/8	1 1/2
2	4-3/4	8-3/4	8-3/4	8-1	2
3	4-3/4	8-7/8	8-7/8	8-1	3
4	8-3/4	8-7/8	8-1	8-1 1/4	4
6	8-7/8	12-7/8	12-1 1/8	12-1 1/4	6
8	8-7/8	12-1	12-1 1/4	12-1 1/2	8
10	12-1	16-1 1/8	16-1 3/8	16-1 1/2	10
12	12-1	16-1 1/4	20-1 3/8	20-1 1/2	12
14	12-1 1/8	20-1 1/4	20-1 1/2	20-1 5/8	14
16	16-1 1/8	20-1 3/8	20-1 5/8	20-1 3/4	16
18	16-1 1/4	24-1 3/8	20-1 3/4	20-2	18
20	20-1 1/4	24-1 3/8	24-1 3/4	20-2 1/8	20

TRIGONOMETRIC SOLUTIONS OF RIGHT TRIANGLES



KNOWN	SOUGHT	FORMULAE		
A,C	a,b,B	$\sin a = \frac{A}{C}$	$\cos b = \frac{A}{C}$	$B = \sqrt{C^2 - A^2}$
A,B	a,b,C	$\tan a = \frac{A}{B}$	$\tan b = \frac{B}{A}$	$C = \sqrt{A^2 + B^2}$
A,a	b,B,C	$b = 90° - a$	$B = \frac{A}{\tan a}$	$C = \frac{A}{\sin a}$
B,a	b,A,C	$b = 90° - a$	$A = B \tan a$	$C = \frac{B}{\cos a}$
C,a	b,A,B	$b = 90° - a$	$A = C \sin a$	$B = C \cos a$

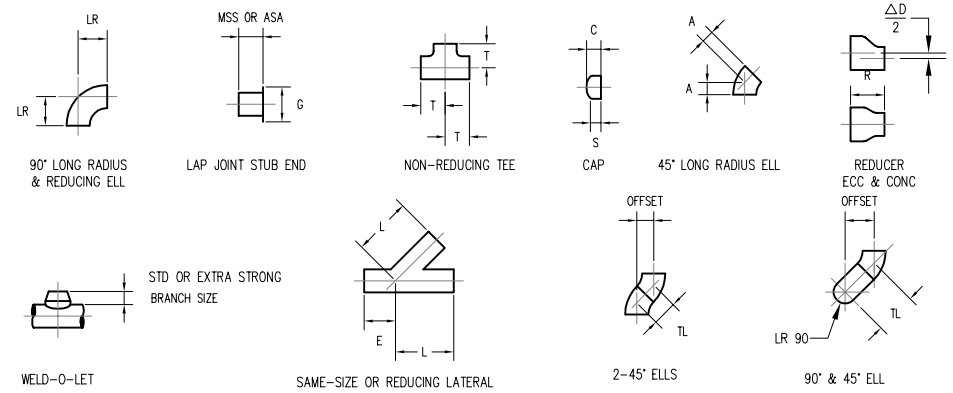
ROLLING OFFSETS IN TWO PLANES



GIVEN	FORMULAE
A, B, C	$TL = \sqrt{A^2 + B^2 + C^2}$
	$\tan d = \frac{\sqrt{A^2 + B^2}}{C}$
A, B, 2-45° ELLS	$C = \sqrt{A^2 + B^2}$
	$TL = \sqrt{2\,(B^2 + C^2)}$
	(d = 45°)

BUTT WELD FITTINGS

SIZE	FITTINGS ASA	LR	MSS	STD	XSTRNG	A	C	E	G	L	R	S	T	2-45° ELLS OFFSET	2-45° ELLS TL	90°-45° ELL OFFSET	90°-45° ELL TL	SIZE
1/2	3	1 1/2	2	3/4	3/4	5/8	1	–	1 3/8	–	–	3/4	1	7/8	1 1/4	1 1/2	2 1/8	1/2
3/4	3	1 1/8	2	7/8	7/8	7/16	1	–	1 11/16	–	1 1/2	11/16	1 1/8	5/8	7/8	1 1/8	1 9/16	3/4
1	4	1 1/2	2	1 1/16	1	7/8	1 1/2	1 3/4	2	3 1/2	2	1 1/8	1 1/2	1 1/4	1 3/4	1 11/16	2 3/8	1
1 1/2	4	2 1/4	2	1 5/16	1 1/4	1 1/8	1 1/2	2 1/2	2 7/8	5	2 1/2	15/16	2 1/4	1 9/16	2 1/4	2 3/8	3 3/8	1 1/2
2	6	3	2 1/2	1 1/2	1 1/2	1 3/8	1 1/2	3 1/4	3 5/8	6	3	13/16	2 1/2	1 15/16	2 3/4	3 1/16	4 3/8	2
3	6	4 1/2	2 1/2	1 3/4	1 3/4	2	2	3 3/4	5	7 3/4	3 1/2	1	3 3/8	2 13/16	4	4 5/8	6 1/2	3
4	6	6	3	2	2	2 1/2	2 1/2	4 1/2	6 3/16	8 1/2	4	1 1/4	4 1/8	3 9/16	5	6	8 1/2	4
6	8	9	3 1/2	2 3/8	3 1/16	3 3/4	3 1/2	5 1/4	8 1/2	12 1/2	5 1/2	1 11/16	5 5/8	5 5/16	7 1/2	9	12 3/4	6
8	8	12	4	2 3/4	3 7/8	5	4	6 1/4	10 5/8	15 1/4	6	1 11/16	7	7 1/16	10	12	17	8
10	10	15	5	3 1/16	3 3/4	6 1/4	5	7	12 3/4	18	7	2 1/8	8 1/2	8 13/16	12 1/2	15	21 1/4	10
12	10	18	6	3 3/8	3 15/16	7 1/2	6	8	15	21 1/2	8	2 5/8	10	10 5/8	15	18	25 1/2	12
14	12	21	–	3 1/2	4 1/8	8 3/4	6 1/2	10	16 1/4	25	13	2 13/16	11	12 3/8	17 1/2	21 1/16	29 3/4	14
16	12	24	–	3 11/16	4 7/16	10	7	12	18 1/2	28 1/2	14	2 13/16	12	14 1/8	20	24 1/16	34	16
18	12	27	–	4 1/16	4 11/16	11 1/4	8	13	21	32	15	3 5/16	13 1/2	15 15/16	22 1/2	27 1/16	38 1/4	18
20	12	30	–	4 5/8	5	12 1/2	9	14	23	35	20	3 13/16	15	17 11/16	25	30 1/16	42 1/2	20

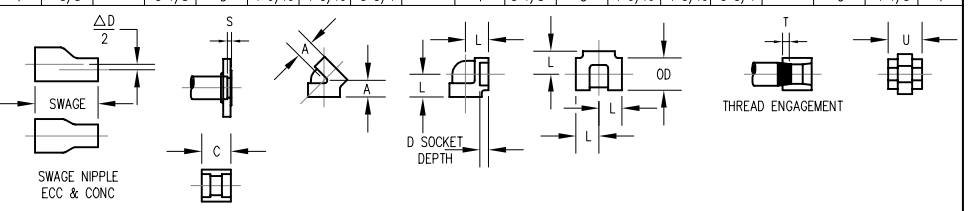


3000# SW FITTINGS

SIZE	S ADD FOR SW FLG 150#	S ADD FOR SW FLG 300#	A	C	D	L	OD	U	SIZE
1/2	1/4	1/2	7/8	1 3/8	1/2	1 1/8	1 5/16	2 3/8	1/2
3/4	3/16	9/16	1	1 1/2	9/16	1 5/16	1 1/2	2 7/16	3/4
1	3/16	9/16	1 1/8	1 3/4	5/8	1 1/2	1 13/16	2 3/4	1
1 1/2	1/4	9/16	1 3/8	2	3/4	2	2 7/16	3 3/16	1 1/2
2	5/16	5/8	1 11/16	2 1/2	7/8	2 3/8	2 5/8	3 7/16	2
3	3/8	7/8	2 1/2	2 3/4	1 1/8	3 3/8	4 5/16	4 1/2	3
4	3/8	–	3 1/8	3	1 9/16	4 3/16	5 3/4	–	4

6000# SW FITTINGS

SIZE	A	C	D	L	OD	U	SWAGE	T THREAD ENGMT	SIZE
1/2	1	1 3/8	9/16	1 5/16	1 1/2	2 1/2	2 3/4	1/2	1/2
3/4	1 1/8	1 1/2	5/8	1 1/2	1 13/16	2 9/16	3	9/16	3/4
1	1 5/16	1 3/4	11/16	1 3/4	2 3/16	3 1/8	3 1/2	11/16	1
1 1/2	1 11/16	2	7/8	2 3/8	3	3 7/16	4 1/2	11/16	1 1/2
2	1 3/4	2 1/2	7/8	2 1/2	3 5/16	4	6 1/2	3/4	2
3	2 1/2	2 3/4	1 1/4	3 3/4	4 3/4	–	8	1	3
4	3 1/8	3	1 9/16	4 3/16	5 3/4	–	9	1 1/8	4



SIZE	RTJ GAP 150#	RTJ GAP 300#	RTJ GAP 600#	RTJ GAP 900#
1/2	1/8" EACH	1/8" EACH		
3/4				
1		1/8" FOR ONE 5/16" FOR TWO		
1 1/2				
2				1/8" EA
3		3/16" FOR ONE 7/16" FOR TWO	3/16" EACH	
4				
6				
8				
10				
12				
14	1/8" EACH			
16				
18				
20				

PIPE OD (DEC.)	PIPE OD (FRACT.)	PIPE OD/2 (FRACT.)	150# FLANGE OD/2 (FRACT.)	300# FLANGE OD/2 (FRACT.)	600# FLANGE OD/2 (FRACT.)	900# FLANGE OD/2 (FRACT.)	SIZE
.840	13/16	7/16	1 3/4	1 7/8	1 7/8	2 3/8	1/2
1.050	1 1/16	1/2	1 15/16	2 5/16	2 5/16	2 9/16	3/4
1.315	1 5/16	11/16	2 1/8	2 7/16	2 7/16	2 15/16	1
1.900	1 7/8	15/16	2 1/2	3 1/16	3 1/16	3 1/2	1 1/2
2.375	2 3/8	1 3/16	3	3 1/4	3 1/4	4 1/4	2
3.500	3 1/2	1 3/4	3 3/4	4 1/8	4 1/8	4 3/4	3
4.500	4 1/2	2 1/4	4 1/2	5	5 3/8	5 3/4	4
6.625	6 5/8	3 5/16	5 1/2	6 1/4	7	7 1/2	6
8.625	8 5/8	4 5/16	6 3/4	7 1/2	8 1/4	9 1/4	8
10.750	10 3/4	5 3/8	8	8 3/4	10	10 3/4	10
12.750	12 3/4	6 3/8	9 1/2	10 1/4	11	12	12
14.000	14	7	10 1/2	11 1/2	11 7/8	12 5/8	14
16.000	16	8	11 3/4	12 3/4	13 1/2	13 7/8	16
18.000	18	9	12 1/2	14	14 5/8	15 1/2	18
20.000	20	10	13 3/4	15 1/4	16	16 7/8	20

PSI X 2.31 = FT OF WATER
FT OF WATER X .433 = PSI
GAL WATER X 8.34 = LB
CU.FT. X 7.48 = GAL
LITERS X .264 = GAL
LBS WATER X .119 = GAL
GAL X 3.785 = LITERS
FT^3 WATER X 62.4 = LB
PSIG = PSIA – 14.7
INCHES Hg X 1.113 = FT WATER
MILLIMETERS X .0394 = INCHES
INCHES X 2.54 = CM
METERS X 3.281 = FT
°C = (°F–32) X 0.5556
°F = (1.8 X °C) + 32

novotek, inc.
1164 Division St. Suite 205 Elgin, IL 60120-5516
847.742-1921 847.742-4727 fax novotek@wwc.net