



STAINLESS STEEL PRODUCTS AND SERVICES

- Sheet 2B · CFF No. 4 · CFF No. 6 · CFF 240 · CFF 320
· CFF "S" Blend
- Plate HRAP · 2B (¼") · CFF No. 4 · CFF No. 6 · CFF 240
· CFF 320 · CFF "S" Blend
- CFF Structural/Ornamental Tube · Mill Finish · 180
· CFF No. 4 · CFF No. 6 · CFF 240 · CFF 320
· CFF "S" Blend
- Diamond (Checker) Plate
- True HRAP Flat Bar · CFF No. 4 · CFF No. 6 · CFF 240
· CFF 320 · CFF "S" Blend
- Processed Flat Bar
- Round Bar · Smooth Turned · Centreless Ground Shaft
- Channel/Beam/Tee HRAP · Extruded · Laser-Fused
- Equal/Unequal Angle HRAP · Extruded · Laser-Fused
- Square Bar HRAP · Cold Drawn · CFF No. 4 · CFF No. 6
· CFF 240 · CFF 320 · CFF "S" Blend
- BPE Tubing
- Diamond Grip/Safety Grip
- Expand/Perforated Sheet
- CFF SS-Series Valves and Actuation
- CFF CRN Registered Sanitary Fittings
- A270 Sanitary Tube (3A)
- Welded Pipe and Fittings
- Flanges
- Instrumentation and General Purpose Tube
- 150 lb/3000 lb Fittings
- Domestic Pipe Nipples
- CFF Quick-Lock Fittings
- U-Bolts · Hangers · Threaded Rod



STAINLESS STEEL PROCESSING AND ARCHITECTURAL SERVICES

- Arku Flatmaster 120
Levelled plates and parts .120 — 1 $\frac{3}{8}$ " thick up
to 2M wide
- Plasma cutting to 3" thick
- Lasers cutting up to $\frac{3}{4}$ " thick 2M x 4M bed
- 4 Flow Water-jets cutting to 6" thick with new bevel
cutting capabilities
- 1 Sheering up to 12" thick x 144" long any width
- Polishing tube and pipe up to 14" od
- Sheet polishing up to 64" wide
- Plate grinding and polishing 4" thick up to 64" wide
- 2 37" lines for HSS Square and flat bar polishing
- Automatic billet saw cutting up to 14" od pipe, tube
and round bar
- HSS square and rectangle polishing up to
8" square / 8" x 12" rectangle
- Flat bar polishing up to 12" wide all faces and edges



**We are the source for Processed
and Architectural Stainless Steels**



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SHEET

Finishes: 2B • CFF No.4 • CFF No.6 • CFF 240 • CFF 320 • CFF "S" BLEND

Processing Options: Waterjet • Conventional Plasma • Laser • Saw Cutting
• Shearing • Polishing

In-Stock Grades with Colour Codes: Type 304 Black • Type 304/304L Dark Green • Type 316/316L Brown

Specifications: ASTM - A - 240 • ASME - SA - 240

U.S.S Gauge and Thickness	Theo. Wt. per Sq.Ft.	Size Inches	Sq.Ft.	Theo. Wt. per Sheet
7 .180	8.579	48 x 96	32	275.0
		48 x 120	40	343.0
		48 x 240	80	686.0
		48 x 144	48	411.8
		60 x 120	50	429.0
		60 x 240	100	859.0
10 .140	5.906	36 x 96	24	141.7
		36 x 120	30	177.2
		48 x 96	32	189.0
		48 x 120	40	236.2
		48 x 144	48	283.5
		60 x 120	50	295.3
11 .125	5.25	72 x 120	60	355.0
		36 x 96	24	126.0
		36 x 120	30	157.5
		48 x 96	32	168.0
		48 x 120	40	210.0
		48 x 144	48	252.0
12 .109	4.594	60 x 120	50	262.5
		72 x 120	60	315.0
		36 x 96	24	110.3
		36 x 120	30	137.8
		48 x 96	32	147.0
		48 x 120	40	183.7
14 .078	3.281	48 x 144	48	220.5
		60 x 120	50	229.7
		72 x 120	60	276.0
		36 x 96	24	78.8
		36 x 120	30	98.4
		48 x 96	32	105.0
16 .0625	2.625	48 x 120	40	131.2
		48 x 144	48	157.4
		60 x 120	50	164.1
		72 x 120	60	197.0
		36 x 96	24	63.0
		36 x 120	30	78.8
18 .050	2.1	48 x 96	32	84.0
		48 x 120	40	105.0
		48 x 144	48	126.0
		60 x 120	50	131.3
		36 x 96	24	50.4
		36 x 120	30	63.0
20 .0375	1.575	48 x 96	32	67.2
		48 x 120	40	84.0
		48 x 144	48	100.8
		60 x 120	50	105.0
		36 x 96	24	37.8
		36 x 120	30	47.3
22 .030	1.313	48 x 96	32	50.4
		48 x 120	40	63.0
		48 x 144	48	75.6
		60 x 120	50	78.9
		36 x 96	24	32.0
		36 x 120	30	40.0
24 .024	1.050	48 x 96	32	42.0
		48 x 120	40	53.0
		48 x 144	48	63.0
		36 x 96	24	25.0
		36 x 120	30	32.0
		48 x 96	32	34.0
		48 x 120	40	42.0
		48 x 144	48	51.0

CFF can Shear, Polish, High Speed Precision Cut, Waterjet or Laser Cut your Sheet.

PLATE

Finishes: HRAP • 2B Custom Finishes: CFF No. 4 • CFF No. 6 • CFF 240 • CFF 320 • CFF "S" Blend

In-House Cutting Capabilities: Waterjet, Laser, Plasma, Shearing

ASTM - A - 240 • ASME - SA - 240 • EN102043.1

In-Stock Grades with Colour Codes: 304 Black • 304L Dark Green • 316/316L Brown

Thickness Inches	Size Inches	Theo. Wt. per Sq.Ft.	Theo. Wt. per Plate
.1875	48 x 96	8.579	275
	48 x 120		343
	48 x 240		686
	60 x 120		429
	60 x 240		858
	72 x 240		1030
	78,741 x 240		1126
	96 x 240		1373
.250	48 x 96	11.162	357
	48 x 120		446
	48 x 240		893
	60 x 120		558
	60 x 240		1116
	72 x 240		1340
	78,741 x 240		1465
	96 x 240		1786
.3125	48 x 96	13.746	440
	48 x 120		550
	48 x 240		1100
	60 x 120		687
	60 x 240		1375
	72 x 240		1650
	78,741 x 240		1804
	96 x 240		2200
.375	48 x 96	16.496	528
	48 x 120		660
	48 x 240		1320
	60 x 120		825
	60 x 240		1650
	72 x 240		1980
	78,741 x 240		2165
	96 x 240		2639
.500	48 x 96	21.663	693
	48 x 120		867
	48 x 240		1733
	60 x 120		1083
	60 x 240		2166
	72 x 240		2600
	78,741 x 240		2843
	96 x 240		3466
.625	48 x 96	26.831	859
	48 x 120		1073
	48 x 240		2146
	60 x 120		1342
	60 x 240		2684
	72 x 240		3220
	78,741 x 240		3521
	96 x 240		4293
.750	48 x 96	32.123	1028
	48 x 120		1285
	48 x 240		2570
	60 x 120		1606
	60 x 240		3212
	72 x 240		3855
	78,741 x 240		4216
	96 x 240		5140
.875	48 x 240	37.291	2983
	60 x 240		3729
	72 x 240		4475
	78,741 x 240		4894
	96 x 240		5967
	48 x 240		3413
1.00	60 x 240	42.665	4267
	72 x 240		5120
	78,741 x 240		5600
	96 x 240		6826

CFF can Shear, Polish, High Speed Precision Cut, Waterjet or Laser Cut your Sheet.

PLATE

Finishes: HRAP • 2B Custom Finishes: CFF No. 4 • CFF No. 6 • CFF 240 • CFF 320 • CFF "S" Blend
 In-House Cutting Capabilities: Waterjet, Laser, Plasma, Shearing
 ASTM - A - 240 • ASME - SA - 240 • EN102043.1
 In-Stock Grades with Colour Codes: 304 Black • 304L Dark Green • 316/316L Brown

Thickness Inches	Size Inches	Theo. Wt. per Sq.Ft.	Theo. Wt. per Plate
1.125	48 x 240	47.940	3835
	60 x 240		4794
	72 x 240		5753
	78.741 x 240		6292
	96 x 240		7670
1.250	48 x 240	53.226	4258
	60 x 240		5323
	72 x 240		6388
	78.741 x 240		6985
	96 x 240		8516
1.375	48 x 240	58.549	4684
	60 x 240		5855
	72 x 240		7062
	78.741 x 240		7684
	96 x 240		9368
1.500	48 x 240	63.871	5110
	60 x 240		6387
	72 x 240		7665
	78.741 x 240		8382
	96 x 240		10219
1.750	48 x 240	74.517	5961
	60 x 240		7452
	72 x 240		8942
	78.741 x 240		9779
	96 x 240		11923
2.00	48 x 240	85.162	6813
	60 x 240		8516
	72 x 240		10219
	78.741 x 240		11176
	96 x 240		13626
2.125	78.741 x 240	90.49	11875
	96 x 240		14478
2.250	48 x 240	95.810	7665
	60 x 240		9581
	72 x 240		11498
	78.741 x 196.88		10315
	96 x 240		15330
2.500	48 x 240	106.560	8525
	60 x 240		10656
	72 x 240		12788
	78.741 x 196.88		11472
	96 x 240		17050
2.750	48 x 240	117.100	9368
	60 x 240		11710
	72 x 240		14052
	78.741 x 196.88		12607
	96 x 240		18736
3.000	48 x 240	127.150	10220
	60 x 240		12715
	72 x 240		15258
	78.741 x 157.50		10951
	96 x 240		20440
3.250	48 x 240	138.670	11094
	60 x 240		13867
	72 x 240		16641
	78.741 x 157.50		11943
	96 x 240		22187
3.500	48 x 240	149.330	11946
	60 x 240		14933
	72 x 240		17920
	78.741 x 157.50		12861
	96 x 240		23893

CFF can Shear, Polish, High Speed Precision Cut, Waterjet or Laser Cut your Sheet.

PLATE

Finishes: HRAP • 2B

Custom Finishes: • 180 GRIT • 240 GRIT • 320 GRIT • 600 GRIT • GRIT CFF "S" BLEND • NO. 6 • NO. 4

In-House Cutting Capabilities: Waterjet, Laser, Plasma, Shearing

ASTM - A - 240 • ASME - SA - 240 • EN102043.1

In-Stock Grades with Colour Codes: 304 Black • 304L Dark Green • 316/316L Brown

Thickness Inches	Size Inches	Theo. Wt. per Sq.Ft.	Theo. Wt. per Plate
4.00	78.741 x 240	170.32	22352
4.50	78.741 x 240	191.72	25160
5.00	78.741 x 240	213.12	27969
5.50	78.741 x 240	234.20	30735
6.00	78.741 x 240	254.30	33373

TUBE - STRUCTURAL AND ORNAMENTAL SQUARES

ASTM - A - 554

Type 304 Black • 304/304L Dark Green • Type 316/316L Brown • #6 Green

FINISHES: MILL • 180 GRIT • 240 GRIT • 320 GRIT • 600 GRIT • GRIT CFF "S" BLEND • NO. 6 • NO. 4

Size & Weight			
Gauge In.	18 .049	16 .062	14 .083
1/2"	0.30	0.39	
5/8"	0.38	0.49	
3/4"	0.50	0.65	0.81
7/8"	0.56	0.74	0.92
1"	0.63	0.83	1.03
1 1/4"	0.82	1.08	1.37
1 1/2"	0.97	1.27	1.61
1 3/4"	1.13	1.49	1.88
2"	1.30	1.69	2.14
2 1/2"			2.72
3"		2.59	3.29
3 1/2"			3.91

Size & Weight				
Gauge In.	11 .120	7 .180	1/4 .250	3/8 .375
1/2"				
5/8"				
3/4"	1.13			
7/8"	1.29			
1"	1.45	2.17		
1 1/4"	1.93	2.99		
1 1/2"	2.26	3.63		
1 3/4"	2.66	3.75		
2"	3.06	4.46	6.01	
2 1/2"	3.88	5.68	7.67	
3"	4.97	6.90	9.35	
3 1/2"	5.67	8.06	10.89	
4"	6.26	9.27	12.68	18.52
5"	8.02	11.90	16.35	23.53
6"	9.46	14.07	18.77	28.53
8"			26.03	38.55
10"			32.71	46.38
12"				

CFF can Saw Cut or Custom Polish your Tube.

TUBE - STRUCTURAL AND ORNAMENTAL RECTANGULAR

ASTM - A - 554

Type 304 Black • 304/304L Dark Green • Type 316/316L Brown • #6 Green

FINISHES: MILL • 180 GRIT • 240 GRIT • 320 GRIT • 600 GRIT • GRIT CFF "S" BLEND • NO. 6 • NO. 4

Size & Weight			
Gauge In.	18 .049	16 .062	14 .083
1/2" x 1"	0.50	0.65	0.82
1/2" x 1 1/2"	0.63	0.83	1.03
1/2" x 2"	0.82	1.08	1.37
3/4" x 1"	0.56	0.74	0.92
3/4" x 1 1/2"		0.99	1.25
3/4" x 2"	0.89	1.17	1.48
1" x 1 1/2"	0.82	1.08	1.37
1" x 2"	0.97	1.27	1.61
1" x 2 1/2"		1.49	1.88
1" x 3"	1.30	1.69	2.14
1" x 4"			2.72
1 1/2" x 2"		1.49	1.88
1 1/2" x 2 1/2"	1.30	1.69	2.14
1 1/2" x 3"		1.93	2.45
2" x 3"			2.72
2" x 4"			3.29

FINISHES (ROUNDS): 180, 240, 320, 600, "S" Blend, No. 6, No. 4

TOLERANCES

Normal Round	Wall Thickness	O.D. Tolerance	Wall Tolerance
5/8" to 1" inc.	.035 to .062	+ or - .005"	+ or - 10%
5/8" to 1" inc.	Over .062	+ or - .010"	+ or - 10%
Over 1" to 1 1/2" incl.	.035 to .062	+ or - .008"	+ or - 10%
Over 1" to 1 1/2" incl.	Over .062	+ or - .010"	+ or - 10%
Over 1 1/2" to 2 1/2" incl.	Over .035	+ or - .012"	+ or - 10%
Over 2 1/2" to 3 1/2" incl.	Over .049	+ or - .020"	+ or - 10%
Over 3 1/2" to 5" incl.	Over .049	+ or - .025"	+ or - 10%
Over 5"	Over .083	+ or - .030"	+ or - 10%

FINISHES (SQUARES AND RECTANGLES): 180, 240, 320, 600, "S" Blend, No. 6, No. 4

TOLERANCES

Largest Nominal Outside Diameter	O.D. Tolerance	Concavity or Convexity	Wall Tolerance
To 1 1/4" incl.		+ or - .015"	+ or - 10%
Over 1 1/4" to 2 1/2" incl.		+ or - .020"	+ or - 10%
Over 2 1/2" to 5 1/2" incl.		+ or - .030"	+ or - 10%
Over 5 1/2"		+ or - .060"	+ or - 10%

CFF can Saw Cut or Custom Polish your Tube.

TUBE - STRUCTURAL AND ORNAMENTAL RECTANGULAR

ASTM - A - 554

Type 304 Black • 304/304L Dark Green • Type 316/316L Brown • #6 Green

FINISHES: MILL • 180 GRIT • 240 GRIT • 320 GRIT • 600 GRIT • GRIT CFF "S" BLEND • NO. 6 • NO. 4

Size & Weight				
Gauge In.	11 .120	7 .180	¼ .250	⅜ .375
½" x ¾"				
½" x 1"	1.13			
½" x 1½"	1.45			
½" x 2"	1.93	2.99		
¾" x 1"	1.29			
¾" x 1¼"	1.45	2.17		
¾" x 1½"	1.77			
¾" x 1¾"	1.93	2.99		
¾" x 2"	2.09			
1" x 1¼"	1.77			
1" x 1½"	1.93			
1" x 2"	2.26	3.63		
1" x 2½"	2.66			
1" x 3"	3.06	4.46	6.01	
1" x 4"	3.88	5.68	7.67	
1¼" x 1¾"	2.26	3.63		
1¼" x 2"	2.41		3.50	
1¼" x 2½"	2.89		3.65	
1½" x 2"	2.66			
1½" x 2½"	3.06	4.46	6.01	
1½" x 3"	3.48	5.28		
1½" x 4"	4.33	5.30	7.58	
2" x 3"	3.88	5.68	7.67	
2" x 4"	4.97	6.90	9.35	
2" x 5"	5.67	8.06	10.89	
2" x 6"	6.28	9.27	12.68	18.52
2" x 8"	8.02	11.90	16.35	23.53
2" x 10"	9.46	14.07	18.77	28.53
3" x 4"	5.67	8.06	10.89	
3" x 5"	6.26	9.27	12.68	18.52
3" x 6"	7.22	10.52	13.80	21.03
4" x 6"	8.02	11.90	16.35	23.53
4" x 8"	9.46	14.07	18.77	28.53
4" x 10"			22.71	33.54
4" x 12"			26.03	38.55
6" x 10"			26.03	38.55
6" x 12"			29.37	43.55
8" x 10"			29.37	43.55
8" x 12"			32.71	46.38

CFF can Saw Cut or Custom Polish your Tube.

TUBE - STRUCTURAL AND ORNAMENTAL ROUNDS

ASTM - A - 554

Type 304 Black • 304/304L Dark Green • Type 316/316L Brown • #6 Green

FINISHES: MILL • 180 GRIT • 240 GRIT • 320 GRIT • 600 GRIT • GRIT CFF "S" BLEND • NO. 6 • NO. 4

Gauge In.	Size & Weight				
	18 .049	16 .062	14 .083	11 .120	9 wall .148
½"	0.23	0.30			
⅝"	0.30	0.39	0.48		
¾"	0.37	0.48	0.59		
⅞"	0.43	0.56	0.70		
1"	0.49	0.65	0.81	1.13	
1⅛"	0.56	0.74	0.92	1.29	
1¼"	0.63	0.83	1.03	1.45	
1⅝"	0.69	0.91	1.15	1.61	
1½"	0.76	0.99	1.25	1.77	
1⅞"	0.82	1.08	1.37	1.93	
1.660"		1.12	1.40	1.99	2.29
1¾"	0.89	1.17	1.48	2.09	
1.900"	0.97	1.27	1.61	2.26	2.72
2"	1.02	1.34	1.70	2.41	
2¼"		1.49	1.88	2.66	
2½"	1.28	1.69	2.14	3.05	
3"	1.54	2.04	2.59	3.70	
3⅞"		2.15	2.72	3.88	
3½"	1.81	2.38	3.03	4.33	
3¾"			3.29	4.78	
4"			3.47	4.97	

CFF can Saw Cut or Custom Polish your Tube.

ROUND BAR

BEARING QUALITY CENTRELESS GROUND, HOT ROLLED, ANNEALED AND ROUGH TURNED
ASTM - A - 276/479 • ASME - SA - 276/479

Stock Lengths: 12'-14' (ft.)
Type 303 Blue • 304 Black • Type 304/304L Green • 316/316L Brown

Size Inches	Est. Wt. per ft.
1/8	.042
5/32	.065
3/16	.094
1/4	.167
5/16	.261
3/8	.376
7/16	.511
1/2	.668
9/16	.854
5/8	1.04
11/16	1.26
3/4	1.50
13/16	1.76
7/8	2.04
15/16	2.35
1	2.67
1 1/16	3.01
1 1/8	3.38
1 3/16	3.77
1 1/4	4.17
1 5/16	4.60
1 3/8	5.05
1 7/16	5.52
1 1/2	6.01
1 9/16	6.52
1 5/8	7.05
1 11/16	7.60
1 3/4	8.18
1 7/8	9.39
1 15/16	10.02
2	10.68
2 1/16	11.36
2 1/8	12.06
2 3/16	12.78
2 1/4	13.52

Size Inches	Est. Wt. per ft.
2 3/8	15.06
2 1/2	16.69
2 3/4	20.20
3	24.03
3 1/4	28.21
3 1/2	32.71
3 3/4	37.55
4	42.83
4 1/4	48.23
4 1/2	54.08
4 5/8	57.00
4 3/4	60.25
5	66.76
5 1/4	73.60
5 1/2	80.78
5 3/4	88.29
6	96.13
6 1/4	105.00
6 1/2	112.82
6 3/4	121.67
7	130.85
7 1/4	140.36
7 1/2	150.21
7 3/4	160.39
8	170.90
8 1/4	181.75
8 1/2	192.93
8 3/4	204.45
9	216.30
9 1/4	228.48
9 3/4	253.85
10	267.00
10 1/2	295.00
11	323.00
12	384.00

ANGLE

ANNEALED AND PICKLED, HOT ROLLED, EXTRUDED, LASER FUSED*
 ASTM - A - 276/479 · ASME - SA - 276/479

Stock Lengths: 20'-24' (ft.) Random
 Type 304/304L Dark Green · 316/316L Brown

Size Inches	Est. Wt. per ft.
1/2 x 1/2 x 1/8	0.40
3/4 x 3/4 x 1/8	0.59
1 x 1 x 1/8	0.80
1 1/4 x 1 1/4 x 1/8	1.01
1 1/2 x 1 1/2 x 1/8	1.23
2 x 2 x 1/8	1.65
1 x 1 x 3/16	1.16
1 1/4 x 1 1/4 x 3/16	1.48
1 1/2 x 1 1/2 x 3/16	1.80
2 x 2 x 3/16	2.44
2 1/2 x 2 1/2 x 3/16	3.10
3 x 1 1/2 x 3/16	2.80
3 x 2 x 3/16	3.10
3 x 3 x 3/16	3.71
1 x 1 x 1/4	1.49
1 1/4 x 1 1/4 x 1/4	1.92
1 1/2 x 1 1/2 x 1/4	2.34
2 x 1 x 1/4	2.40
2 x 1/2 x 1/4	2.76
2 x 2 x 1/4	3.19
2 1/2 x 2 1/2 x 1/4	4.10
3 x 1 1/2 x 1/4	3.60
3 x 2 x 1/4	4.10
3 x 3 x 1/4	4.90

Size Inches	Est. Wt. per ft.
3 1/2 x 3 1/2 x 1/4	5.98
4 x 3 x 1/4	5.80
4 x 4 x 1/4	6.60
5 x 3 x 1/4	6.60
5 x 5 x 1/4	9.10*
6 x 3 x 1/4	7.50*
6 x 4 x 1/4	8.30*
2 x 2 x 3/8	4.70
2 1/2 x 2 1/2 x 3/8	5.90
3 x 2 x 3/8	5.90
3 x 3 x 3/8	7.20
3 1/2 x 3 1/2 x 3/8	8.67*
4 x 3 x 3/8	8.50
4 x 4 x 3/8	9.80
5 x 3 x 3/8	9.80
5 x 5 x 3/8	12.40
6 x 3 x 3/8	11.10
6 x 4 x 3/8	12.40
6 x 6 x 3/8	14.90
3 x 3 x 1/2	9.55
4 x 4 x 1/2	12.80
5 x 5 x 1/2	16.30
6 x 4 x 1/2	19.70
8 x 8 x 1/2	26.50*

EDGED PROCESSED FLAT BAR

HOT ROLLED, ANNEALED AND PICKLED (TRUE BAR)
ASTM - A - 276/479 • ASME - SA - 276/479

PROCESSED AND EDGE CONDITIONED
ASTM - A - 240 • ASME - SA - 240

Stock Lengths: 12'-14' (ft.)
Type 304 Black • Type 304/304L Dark Green • 316/316L Brown

Size Inches	Est. Wt. per ft.
1/8 x 1/2	0.22
1/8 x 3/4	0.32
1/8 x 1	0.43
1/8 x 1 1/4	0.54
1/8 x 1 1/2	0.64
1/8 x 1 3/4	0.75
1/8 x 2	0.86
1/8 x 2 1/2	1.08
1/8 x 3	1.29
1/8 x 3 1/2	1.50
1/8 x 4	1.72
1/8 x 5	2.15
1/8 x 6	2.57
3/16 x 1/2	0.32
3/16 x 3/4	0.48
3/16 x 1	0.64
3/16 x 1 1/4	0.80
3/16 x 1 1/2	0.97
3/16 x 1 3/4	1.13
3/16 x 2	1.29
3/16 x 2 1/2	1.61

Size Inches	Est. Wt. per ft.
3/16 x 3	1.93
3/16 x 3 1/2	2.25
3/16 x 4	2.57
3/16 x 5	3.22
3/16 x 6	3.86
3/16 x 8	5.15
1/4 x 1/2	0.43
1/4 x 3/4	0.64
1/4 x 1	0.86
1/4 x 1 1/4	1.07
1/4 x 1 1/2	1.29
1/4 x 1 3/4	1.50
1/4 x 2	1.72
1/4 x 2 1/2	2.15
1/4 x 3	2.57
1/4 x 3 1/2	3.00
1/4 x 4	3.43
1/4 x 5	4.29
1/4 x 6	5.15
1/4 x 8	6.86

For additional thicknesses and widths let CFF waterjet cut your special requirement.



EDGED PROCESSED FLAT BAR

HOT ROLLED, ANNEALED AND PICKLED (TRUE BAR)

ASTM - A - 276/479 • ASME - SA - 276/479

PROCESSED AND EDGE CONDITIONED

ASTM - A - 240 • ASME - SA - 240

Stock Lengths: 12'-14' (ft.)

Type 304 Black • Type 304/304L Dark Green • 316/316L Brown

Size Inches	Est. Wt. per ft.
3/8 x 1/2	0.64
3/8 x 3/4	0.97
3/8 x 1	1.29
3/8 x 1 1/4	1.61
3/8 x 1 1/2	1.93
3/8 x 1 3/4	2.25
3/8 x 2	2.57
3/8 x 2 1/2	3.22
3/8 x 3	3.86
3/8 x 3 1/2	4.51
3/8 x 4	5.15
3/8 x 5	6.44
3/8 x 6	7.72
3/8 x 8	10.30
1/2 x 3/4	1.29
1/2 x 1	1.72
1/2 x 1 1/4	2.15
1/2 x 1 1/2	2.57
1/2 x 1 3/4	3.00
1/2 x 2	3.43
1/2 x 2 1/2	4.29

Size Inches	Est. Wt. per ft.
1/2 x 3	5.15
1/2 x 3 1/2	6.01
1/2 x 4	6.86
1/2 x 5	8.58
1/2 x 6	10.30
1/2 x 8	13.73



TRUE MILL FLAT BAR

HOT ROLLED, ANNEALED AND PICKLED, AVAILABLE COLD DRAWN*
 ASTM - A - 276/479 • ASME - SA - 276/479

Stock Lengths: 12' (ft.) Random
 Type 304/304L Dark Green • 316/316L Brown

Exact length quotes on request.

Size Inches	Est. Wt. per ft.
¼ x ¾*	.64
¼ x 1*	.86
¼ x 1¼*	1.07
¼ x 1½*	1.29
¼ x 1¾*	1.50
¼ x 2*	1.72
¼ x 2½*	2.15
¼ x 3*	2.57
¼ x 3½	3.00
¼ x 4	3.43
¼ x 5	4.29
⅜ x ¾*	.97
⅜ x 1*	1.29
⅜ x 1¼*	1.61
⅜ x 1½*	1.93
⅜ x 1¾*	2.25
⅜ x 2*	2.57
⅜ x 2½	3.22
⅜ x 3*	3.86
⅜ x 3½*	4.51
⅜ x 4	5.15
⅜ x 5	6.44

Size Inches	Est. Wt. per ft.
½ x ¾*	1.29
½ x 1*	1.72
½ x 1¼*	2.15
½ x 1½*	2.57
½ x 1¾*	3.00
½ x 2	3.43
½ x 2½	4.29
½ x 3	5.15
½ x 3½	6.01
½ x 4	6.86
½ x 5	8.58
⅝ x 1*	2.12
⅝ x 1¼*	2.66
⅝ x 1½*	3.19
⅝ x 2*	4.25
⅝ x 2½*	5.31
⅝ x 3*	6.38
⅝ x 4	8.50
⅝ x 5	10.63

TRUE MILL FLAT BAR

HOT ROLLED, ANNEALED AND PICKLED, AVAILABLE COLD DRAWN*
 ASTM - A - 276/479 · ASME - SA - 276/479

Stock Lengths: 12' (ft.) Random
 Type 304/304L Dark Green · 316/316L Brown

Exact length quotes on request.

Size Inches	Est. Wt. per ft.
¾ x 1	2.55
¾ x 1¼	3.19
¾ x 1½	3.83
¾ x 1¾	4.46
¾ x 2	5.10
¾ x 2½	6.37
¾ x 3	7.65
¾ x 4	10.20
¾ x 5	12.74
1 x 1¼*	4.25
1 x 1½*	5.10
1 x 2*	6.80
1 x 2½*	8.50
1 x 3*	10.20
1 x 4	13.60
1 x 5	17.00
1¼ x 2*	8.50
1¼ x 2½	10.63
1¼ x 3	12.75
1¼ x 4	17.00

Size Inches	Est. Wt. per ft.
1½ x 2*	10.20
1½ x 2½	12.75
1½ x 3	15.30
1½ x 4	20.40
2 x 2½	17.00
2 x 3	20.40
2 x 4	27.20

For additional thicknesses and widths let CFF waterjet cut your special requirement.

DO YOU REQUIRE POLISHING? LET CFF, WE SHINE FOR YOU!

SQUARE BAR

ANNEALED AND COLD DRAWN*, HOT ROLLED ANNEALED, PICKLED
ASTM - A - 276/479 • ASME - SA - 276/479

Stock Lengths: 12'-14' (ft.)
Type 303 Blue • Type 304/304L Dark Green • 316/316L Brown

Size Inches	Est. Wt. per ft.
3/16	.120
1/4	.213
5/16	.332
3/8	.478
7/16	.651
1/2	.850
9/16	1.08
5/8	1.33
11/16	1.61
3/4	1.91

Size Inches	Est. Wt. per ft.
7/8*	2.60
1*	3.40
1 1/4*	5.31
1 3/8*	6.43
1 1/2*	7.65
1 5/8*	11.95
2*	13.60
2 1/2*	21.25
3	31.45

CFF can polish or saw cut your Square or Bar.

HEXAGON BAR

ANNEALED AND COLD DRAWN, HOT ROLLED ANNEALED, PICKLED
ASTM - A - 276/479 • ASME - SA - 276/479

Stock Lengths: 12'-14' (ft.)
Type 303 Blue • Type 304/304L Dark Green • 316/316L Brown

Size Inches	Est. Wt. per ft.
3/16	.104
1/4	.184
5/16	.288
3/8	.414
7/16	.564
1/2	.736
9/16	.932
5/8	1.150
11/16	1.393
3/4	1.656
13/16	1.944
7/8	2.254
15/16	2.588

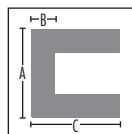
Size Inches	Est. Wt. per ft.
1	2.945
1 1/16	3.324
1 1/8	3.727
1 1/4	4.601
1 3/16	5.072
1 3/8	5.567
1 1/2	6.625
1 5/8	7.775
1 3/4	9.018
2	11.778

CHANNELS (BAR SIZE)

ANNEALED AND PICKLED, HOT ROLLED
ASTM - A - 276/479 · ASME - SA - 276/479

Stock Lengths: 20'-24' (ft.) Random
Type 304/304L Dark Green · 316/316L Brown

Tapered (T) Not Tapered (NT)

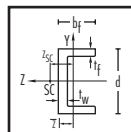


	(A) Depth in Inches	(B) Web Thickness in Inches	(C) Flange Width in Inches	Weight per Foot
BS (T)	1½	¾	⅛	1.17
BS (T)	2	1	⅛	0.59
BS (T)	2	1	¾	2.32
BS (NT) (C)	2	1	¼	2.88

CHANNELS (STANDARD)

EXTRUDED, ANNEALED AND PICKLED
ASTM - A - 276/479

Stock Lengths: 18'-24' (ft.)
Type 304/304L Dark Green · 316/316L Brown



Product	h	b	tw	tf	Est Weight	Production
C 3 x 4.1	3.00	1.41	0.170	0.273	4.10	Hot Rolled
C 3 x 5	3.00	1.50	0.258	0.273	5.00	Laser Fused
C 3 x 6	3.00	1.60	0.356	0.273	6.00	Laser Fused
C 4 x 5.4	4.00	1.58	0.184	0.296	5.40	Hot Rolled
C 4 x 6.25	4.00	1.65	0.247	0.272	6.25	Laser Fused
C 4 x 7.25	4.00	1.72	0.321	0.296	7.25	Hot Rolled
C 5 x 6.7	5.00	1.75	0.190	0.320	6.70	Hot Rolled
C 5 x 9	5.00	1.89	0.325	0.320	9.00	Hot Rolled
C 6 x 8.2	6.00				8.20	Hot Rolled
C 6 x 10.5	6.00				10.50	Hot Rolled
C 6 x 13	6.00	2.16	0.437	0.343	13.00	Laser Fused

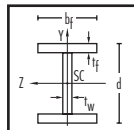
CHANNELS (STANDARD) CONT'D

Product	h	b	tw	tf	Est Weight	Production
C 8 x 11.5	8.00	2.26	0.220	0.390	11.50	Laser Fused
C 8 x 13.75	8.00	2.34	0.303	0.390	13.75	Laser Fused
C 10 x 15.3	10.00	2.60	0.240	0.436	15.30	Laser Fused
C 10 x 20	10.00	2.74	0.379	0.436	20.00	Laser Fused
C 10 x 25	10.00	2.89	0.526	0.436	25.00	Laser Fused

BEAMS

EXTRUDED, ANNEALED AND PICKLED
ASTM - A - 276/479

Stock Lengths: 18'-24' (ft.)
Type 304/304L Dark Green • 316/316L Brown



"W" BEAM

Product	h	b	tw	tf	Est Weight	Production
W 4 x 13	4.16	4.06	0.280	0.345	13.00	Laser Fused
W 5 x 16	5.01	5.00	0.240	0.360	16.00	Laser Fused
W 5 x 19	5.15	5.03	0.270	0.430	19.00	Laser Fused
W 6 x 9	5.90	3.94	0.170	0.215	9.00	Laser Fused
W 6 x 12	6.03	4.00	0.230	0.280	12.00	Laser Fused
W 6 x 15	5.99	5.99	0.230	0.260	15.00	Laser Fused
W 6 x 16	6.28	4.03	0.260	0.405	16.00	Laser Fused
W 6 x 20	6.20	6.02	0.260	0.365	20.00	Laser Fused
W 6 x 25	6.38	6.08	0.320	0.455	25.00	Laser Fused
W 8 x 10	7.89	3.94	0.170	0.205	10.00	Laser Fused
W 8 x 13	7.99	4.00	0.230	0.255	13.00	Laser Fused
W 8 x 15	8.11	4.02	0.245	0.315	15.00	Laser Fused
W 8 x 18	8.14	5.25	0.230	0.330	18.00	Laser Fused
W 8 x 21	8.28	5.27	0.250	0.400	21.00	Laser Fused
W 8 x 24	7.93	6.50	0.245	0.400	24.00	Laser Fused
W 8 x 28	8.06	6.54	0.285	0.465	28.00	Laser Fused
W 8 x 31	8.00	8.00	0.285	0.435	31.00	Laser Fused
W 8 x 35	8.12	8.02	0.310	0.495	35.00	Laser Fused
W 8 x 40	8.25	8.07	0.360	0.560	40.00	Laser Fused
W 8 x 48	8.50	8.11	0.400	0.685	48.00	Laser Fused

BEAMS CONT'D

"S" BEAM

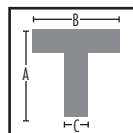
Product	h	b	tw	tf	Est Weight	Production
S 3 x 5.7	3.00	2.33	0.170	0.260	5.70	Hot Rolled
S 3 x 7.5	3.00	2.51	0.349	0.260	7.50	Laser Fused
S 4 x 7.7	4.00	2.66	0.193	0.293	7.70	Hot Rolled
S 4 x 9.5	4.00	2.80	0.326	0.293	9.50	Laser Fused
S 5 x 10	5.00	3.00	0.214	0.326	10.00	Hot Rolled
S 6 x 12.5	6.00	-	-	-	12.50	-
S 6 x 17.25	6.00	3.57	0.465	0.359	17.25	Laser Fused
S 8 x 18.4	8.00	4.00	0.271	0.425	18.40	Laser Fused
S 8 x 23	8.00	4.17	0.441	0.425	23.00	Laser Fused
S 10 x 25.4	10.00	4.66	0.311	0.491	25.40	Laser Fused
S 10 x 35	10.00	4.94	0.594	0.491	35.00	Laser Fused

BAR AND STRUCTURAL

ANNEALED AND PICKLED, HOT ROLLED, LASER FUSED*
ASTM - A - 276/479 • ASME - SA - 276/479

Stock Lengths: 20'-23' (ft.) Random

Tapered (T) Not Tapered (NT)



(A) Stem in Inches	(B) Flange Width in Inches	(C) Flange Width in Inches	Weight per Foot
¾ (NT)*	¾	⅜	.080*
1 (NT)*	1	⅜	1.20*
1½ (NT)*	1½	⅜	1.90*
1½ (NT)*	1½	¼	2.43*
2 (NT)*	2	⅜	2.44*
2 (NT) (C)*	2	¼	3.62*
2 (NT)*	2	¼	3.20*
2½ (NT)*	2½	¼	4.60*
3 (NT)*	3	¼	4.97*
3 (NT)*	3	⅜	7.30*
4 (NT)*	4	¼	6.70*
4 (NT)*	4	⅜	9.74*

(CHECKER - FLOOR) DIAMOND PLATE

Type 304/304L Dark Green • 316/316L Brown

Thickness Inches	Size Inches	Wt. per Sq. ft.	Wt. per Piece
.125	48 x 96	6.15	197
.125	48 x 120	6.15	246
.1875	48 x 96	8.70	279
.1875	48 x 120	8.70	348
.1875	60 x 120	8.70	435
.250	48 x 96	11.25	360
.250	48 x 120	11.25	450
.250	60 x 120	11.25	563
.3125	48 x 120	13.88	555
.375	48 x 120	16.50	660

THREADED ROD

Stock Lengths: 3' • 6' • 12'
Type 304/304L Dark Green • 316/316L Brown

Size Inches	Size Inches	Size Inches	Size Inches
1/4-20	3/8-16	3/8-11	7/8-9
5/16-18	1/2-13	3/4-10	1-8

HALF ROUND

ANNEALED AND COLD DRAWN
ASTM - A - 276/479/582

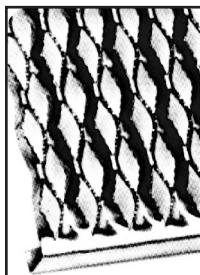
Stock Lengths: 12' • 20'
Type 304/304L Dark Green

Size Inches	Est. Wt. per ft.
1/2	.334
5/8	.522
3/4	.751

DIAMOND GRIP

FEATURES

- Maximum skid resistance in all directions under slippery conditions of snow, ice, oil, etc
- Light weight
- Self cleaning resilient walking surface
- Easily and economically installed without the use of expensive machinery
- One-piece metal constructionally maintenance free



SPECIFICATIONS

Safely grating planks shall be manufactured from one-piece material with serrated edges on top and bottom of diamond shaped openings. Safety grating planks shall have integral side channels and be manufactured from:

- Pre-galvanized steel
- Aluminum alloy 5052 H32
- Stainless steel type 304 or 316

PRODUCT STANDARDS

MATERIALS

- Steel - 14 gauge or 12 gauge, physical properties equivalent to A446 grade A
- Aluminum - 0.080" thickness, alloy 5052 H32
- Stainless steel - type 304 or 316

STOCK LENGTHS

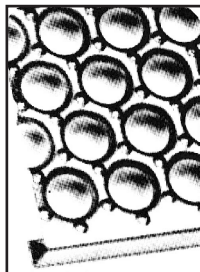
- Nominal 12"0"
- Special cut sizes available upon request

Widths Available in Stock	Material Thickness/Channel Depth		
	Steel	Aluminum	Stainless Steel
4¾"	14 ga / 1½"	.080 / 2"	
	12 ga / 1½"		
7"	14 ga / 1½" - 2" - 2½"	.080 / 2"	.060 / 2" .075 / 2"
	12 ga / 1½" - 2" - 3"		
9½"	14 ga / 1½" - 2" - 2½"	.080 / 2"	.060 / 2" .075 / 2"
	12 ga / 1½" - 2" - 3"		
11¾"	14 ga / 1½" - 2" - 2½"	.080 / 2"	.060 / 2" .075 / 2"
	12 ga / 1½" - 2" - 3"		
18¾"	14 ga / 1½" - 2" - 2½"	.100 / 2"	
	12 ga / 1½" - 2" - 3"		
24"	14 ga / 1½" - 2" - 2½"		
	12 ga / 1½" - 2" - 3"		

SAFETY GRIP

FEATURES

- Large debossed holes provide at least 50% free air opening
- Smooth continuous edge of debossed holes prevents debris from adhering to walking surface
- Walking surface offers slip resistance without excessive abrasive characteristics
- Light weight
- One-piece metal construction



SPECIFICATIONS

Safety grating planks shall be manufactured from one-piece material having debossed holes each surrounded by 6 perforated buttons. Safety grating planks shall have integral side channels and be manufactured from:

- Pre-galvanized steel
- Aluminum alloy 5052 H32
- Stainless steel type 304 or 316

PRODUCT STANDARDS

MATERIALS

- Steel - 13 gauge or 11 gauge, Z275 galvanized (H.R.P.O.) or hot dipped galvanized by special order
- Aluminum - 0.125" thickness, alloy 5052 H32
- Stainless steel - type 304 or 316

STOCK LENGTHS

- Nominal 12'0"
- Special cut sizes available upon request

Widths Available in Stock	Material Thickness/Channel Depth		
	Steel	Aluminum	Stainless Steel
5"	13 ga / 1½" - 2"	.125 / 2"	14 ga / 2"
7"	13 ga / 1½" - 2"	.125 / 2"	14 ga / 2"
	11 ga / 1½" - 2" - 3"		
10"	13 ga / 1½" - 2"	.125 / 2"	14 ga / 2"
	11 ga / 1½" - 2" - 3"		
12"	13 ga / 1½" - 2"	.125 / 2"	14 ga / 2"
	11 ga / 1½" - 2" - 3"		

Also stocking ladder rung.

Available in Stainless Steel, Aluminum & Galvanized Steel

EXPANDED METAL FLATTENED

Type 304/304L Dark Green · 316/316L Brown

Style	Lbs. per 100 S.F.	Standard Sheet Size		Design Size (Inches)		Opening Size (Inches)		Standard Size (Inches)		Overall Thickness (Inches)	Open Area %
		SWD	LWD	SWD	LWD	SWD	LWD	Width	Thickness		
1/2" - #20F	48	8 4	4 8	.500	1.26	.312	1.000	.091	.033	.033	60
1/2" - #18F	65	8 4	4 8	.500	1.26	.312	1.000	.091	.040	.040	60
1/2" - #16F	81	8 4	4 8 & 10	.500	1.26	.312	1.000	.091	.050	.050	60
1/2" - #13F	178	8 4	4 8 & 10	.500	1.26	.240	.915	.132	.080	.080	57
3/4" - #16F	57	8 4	4 8	.923	2.10	.750	1.812	.118	.050	.050	75
3/4" - #13F	86	8 4	4 8 & 10	.923	2.10	.625	1.750	.120	.070	.070	75
3/4" - #9(10)F	183	8 4	4 8 & 10	.923	2.10	.562	1.687	.155	.119	.119	61
1 1/2" - #16F	39	8 4	4 8 & 10	1.33	3.15	1.062	2.750	.119	.050	.050	80
1 1/2" - #13F	59	8 4	4 8	1.33	3.15	1.000	2.625	.121	.079	.079	80
1 1/2" - #9(10)F	131	8 4	4 8	1.33	3.15	.937	2.625	.165	.119	.119	75

EXPANDED METAL REGULAR

Type 304/304L Dark Green • 316/316L Brown

Style	Lbs. per 100 S.F.	Standard Sheet Size		Design Size (Inches)		Opening Size (Inches)		Standard Size (Inches)		Overall Thickness (Inches)	Open Area %
		SWD	LWD	SWD	LWD	SWD	LWD	Width	Thickness		
1/2" - #20F	50	8 4	4 8	.500	1.200	.437	.937	.080	.037	.164	70
1/2" - #18F	67	8 4	4 8	.500	1.200	.437	.937	.080	.050	.164	70
1/2" - #16F	84	8 4	4 8 & 10	.500	1.200	.437	.937	.080	.062	.164	70
1/2" - #13F	187	8 4	4 8 & 10	.500	1.200	.325	.875	.119	.093	.225	65
3/4" - #16F	60	8 4	4 8	.923	2.000	.812	1.750	.106	.062	.202	83
3/4" - #13F	91	8 4	4 8 & 10	.923	2.000	.750	1.687	1.07	.093	.202	80
3/4" - #9(10)F	193	8 4	4 8 & 10	.923	2.000	.687	1.562	.150	.140	.308	67
1 1/2" - #16F	41	8 4	4 8	1.33	3.000	1.250	2.750	.106	.062	.222	85
1 1/2" - #13F	62	8 4	4 8	1.33	3.000	1.250	2.625	.106	.093	.222	83
1 1/2" - #9(10)F	137	8 4	4 8 & 10	1.33	3.000	1.125	2.500	.155	.140	.280	77

WELDED LINK CHAIN

Type 304/304L Dark Green - 316/316L Brown

Stock #	Thick.	Inside Lg.	Inside Width	S.L.W.	Proof Test	Ultim. B/S	Links Ft.	Wt/Ft 100
5coil	.105	----	----	----	150	----	----	7
5-B	.197	1.06	.275	550	1100	2200	11	29
1/8	.158	.89	.29	410	826	1650	13	22
3/16	.217	.95	.41	830	1800	3750	12	42
1/4	.280	1.00	.50	1450	3000	6060	12	74
5/16	.335	1.10	.50	2200	4600	9260	10	105
3/8	.394	1.23	.63	3000	6500	13200	9	150
1/2	.512	1.50	.81	4600	10000	22000	8	255
5/8	.623	1.87	1.00	6900	13800	28700	6	395
3/4	.750	2.12	1.12	9750	19500	39700	5	555



3/8"

5/16"

1/4"

3/16"

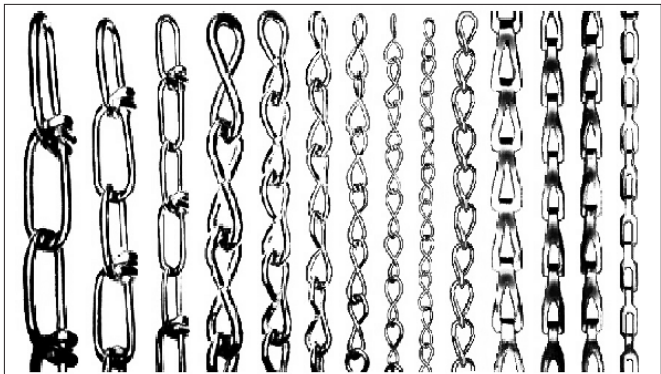
1/8"

5 coil

WELDED LINK CHAIN

Type 304/304L Dark Green • 316/316L Brown

Stock #	Thickness	Std. Length	Weight
2/0 Bowtye	.135	100 ft.	18#/CFT
#1 Bowtye	.105	100 ft.	11#/CFT
#3 Bowtye	.080	100 ft.	6.5#/CFT
10 S/J	.135	50 ft.	15#/CFT
12 S/J	.105	100 ft.	10#/CFT
14 S/J	.080	100 ft.	5.5#/CFT
16 S/J	.062	100 ft.	3.5#/CFT
18 S/J	.047	100 ft.	2.25#/CFT
19 S/J	.041	100 ft.	2#/CFT
17 D/J	.054	100 ft.	3.5#/CFT
35 Sash	.035	100 ft.	6#/CFT
26 Sash	.042	100 ft.	5#/CFT
8 Sash	.035	100 ft.	4#/CFT
2/0 Safety	.018	100 ft.	1.25#/CFT



2/0 No. 1 No. 3 10 S/J 12 S/J 14 S/J 16 S/J 18 S/J 19 S/J 17 D/J No. 35 No. 25 No. 8 2/0 Safety

PIPE

WELDED AND SEAMLESS
ASTM - A - 312/358 • ASME - SA - 312/358

Stock Lengths: 20'-24' (ft.)
Type 304/304L Dark Green • 316/316L Brown

PIPE SCHEDULES							
Pipe Size	O.D. in Inches	5	10s	10	20	40s & STD	40
1/8	.405	.035 .1383	.049 .1863			.068 .2447	
1/4	.540	.049 .2570	.065 .3297			.088 .4248	
3/8	.675	.049 .3276	.065 .4235			.091 .5676	
1/2	.840	.065 .5383	.083 .6710			.109 .8510	
3/4	1.050	.065 .6838	.083 .8572			.113 1.131	
1	1.315	.065 .8678	.109 1.404			.133 1.679	
1 1/4	1.660	.065 1.107	.109 1.806			.140 2.273	
1 1/2	1.900	.065 1.274	.109 2.085			.145 2.718	
2	2.375	.065 1.604	.109 2.638			.154 3.653	
2 1/2	2.875	.083 2.475	.120 3.531			.203 5.793	
3	3.500	.083 3.029	.120 4.332			.216 7.576	
3 1/2	4.000	.083 3.472	.120 4.937			.226 9.109	
4	4.500	.083 3.915	.120 5.613			.237 10.79	
4 1/2	5.000					.247 12.54	
5	5.563	.109 6.349	.134 7.770			.258 14.62	
6	6.625	.109 7.585	.134 9.290			.280 18.97	
8	8.625	.109 9.914	.148 13.40		.250 22.36	.322 28.55	
10	10.75	.134 15.19	.165 18.65		.250 28.04	.365 40.48	

CFF can Saw Cut or Polish your Pipe.

PIPE

WELDED AND SEAMLESS
 ASTM - A - 312/358 • ASME - SA - 312/358
 Stock Lengths: 20'-24' (ft.)
 Type 304/304L Dark Green • 316/316L Brown

PIPE SCHEDULES						
Pipe Size	O.D. in Inches	80s & XH	80	120	160	DBL XXH
1/8	.405	.095 .3145				
1/4	.540	.119 .5351				
3/8	.675	.126 .7388				.294 1.714
1/2	.840	.147 1.088			.187 1.304	.308 2.441
3/4	1.050	.154 1.474			.218 1.937	.358 3.659
1	1.315	.179 2.172			.250 2.844	.382 5.214
1 1/4	1.660	.191 2.997			.250 3.765	
1 1/2	1.900	.200 3.631			.281 4.859	.400 6.408
2	2.375	.218 5.022			.344 7.462	.436 9.029
2 1/2	2.875	.276 7.661			.375 10.01	.552 13.70
3	3.500	.300 10.25			.438 14.32	.600 18.58
3 1/2	4.000	.318 12.51				.636 22.85
4	4.500	.337 14.98		.438 19.00	.531 22.51	.674 27.54
4 1/2	5.000	3.55 17.61				
5	5.563	.375 20.78		.500 27.04	.625 32.96	.750 38.55
6	6.625	.432 28.57		.562 36.39	.719 43.35	.864 53.16
8	8.625	.500 43.39		.719 60.71	.906 74.79	.875 72.42
10	10.75	.500 54.74	.549 64.43	.844 82.29	1.125 115.6	1.000 104.1

ASTM-A-778 O.D. TUBE

3"-36" (in.)
Type 304/304L Dark Green · 316/316L Brown

Nom. Tube Size	Dim.	APPROXIMATE WEIGHT PER FOOT (LBS/FT)								
	OD	16 GA. (.062)	14 GA. (.078)	12 GA. (.109)	11 GA. (.125)	10 GA. (.140)	8 GA. (.172)	3/16" (.188)	1/4" (.250)	3/8" (.375)
4	4.000	3.0	3.4	4.6	5.0					
5	5.000	3.8	4.3	5.9	6.7	7.5				
6	6.000	4.5	5.2	6.9	8.1	9.0				
8	8.000	6.0	6.9	9.3	10.8	12.1				
10	10.000	7.5	8.6	11.6	13.6	15.2	18.8			
12	12.000	8.7	10.4	14.0	16.3	18.3	22.7	24.8	34.8	
14	14.000	10.1	12.1	16.9	19.1	21.4	23.6	28.4	37.7	56.0
16	16.000	11.6	13.8	19.3	21.8	24.5	28.5	32.5	43.2	64.3
18	18.000	13.0	15.6	21.7	24.6	27.6	32.1	36.6	48.7	72.5
20	20.000	14.5	17.3	24.1	27.3	30.7	40.7	40.9	54.2	80.8
24	24.000	17.4	20.8	29.0	32.8	36.9	45.7	49.1	65.3	97.3
30	36.000	21.7	26.0	36.2	41.1	46.1	57.2	61.6	81.7	122.0
36	36.000	26.1	31.2	43.5	49.3	55.4	68.7	74.0	97.2	146.7

C.F.F. 316 QUICK-LOCK FITTINGS



TYPE A
Adapter Female Thread
1/2" through 6"



TYPE B
Coupler Male Thread
1/2" through 6"



TYPE C
Hose Shank Coupler
1/2" through 6"



TYPE D
Coupler Female Thread
1/2" through 6"



TYPE E
Hose Shank Adapter
1/2" through 6"



TYPE F
Adapter Male Thread
1/2" through 6"



TYPE DC
Dust Cap
1/2" through 6"

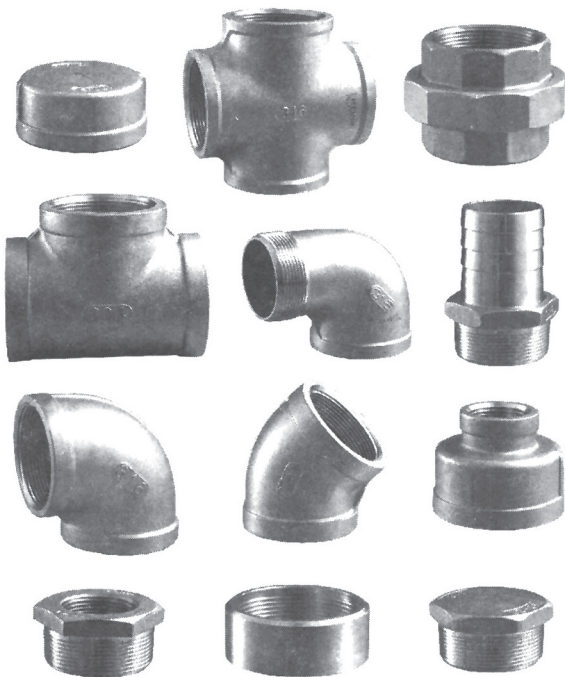


TYPE DP
Dust Plug
1/2" through 6"

* Completely interchangeable with all similar products

C.F.F. 150 LB. FITTINGS

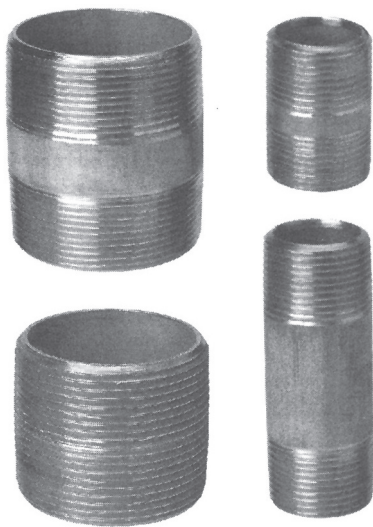
THREADED OR SOCKET WELD



304 • 316

Size I.P.S.	90° Elbows	45° Elbows	90° Street Elbows	Tees	Crosses	Couplings	Half Couplings	Hex Bushings	Caps	Square Head Plug	Hex Head Plug	Unions	Hose Barb	Reducing Coupling
1/8	•	•	•	•	•	•	•		•	•	•	•	•	
1/4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3/8	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1/2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3/4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1 1/4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1 1/2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2 1/2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	•	•	•	•	•	•	•

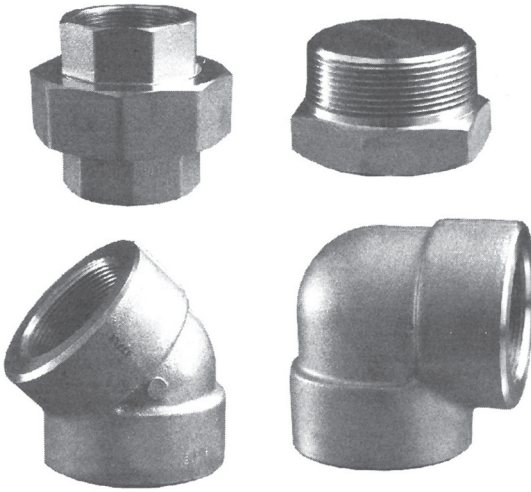
C.F.F. SCH. 40/80 THREADED PIPE NIPPLES



304/304L · 316/316L

Diameter Inches	Length of Close	LENGTH IN INCHES															
		1½"	2"	2½"	3"	3½"	4"	4½"	5"	5½"	6"	7"	8"	9"	10"	11"	12"
1/8"	¾"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
¼"	7/8"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3/8"	1"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
½"	1½"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
¾"	1¾"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1"	1½"		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1¼"	1¾"		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1½"	1¾"		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2"	2"			•	•	•	•	•	•	•	•	•	•	•	•	•	•
2½"	2½"				•	•	•	•	•	•	•	•	•	•	•	•	•
3"	2⅝"				•	•	•	•	•	•	•	•	•	•	•	•	•
4"	2⅞"						•	•	•	•	•	•	•	•	•	•	•

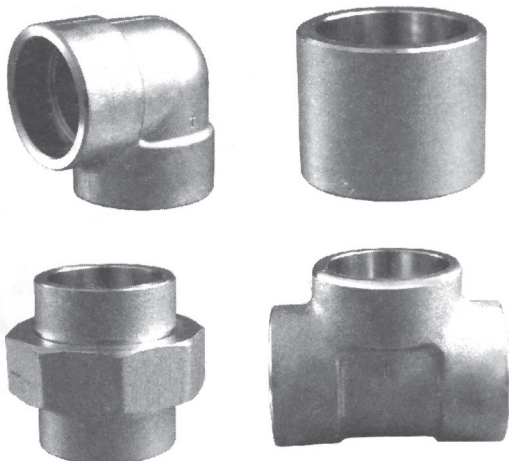
C.F.F. 3000 LB. THREADED PIPE FITTINGS



304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Size I.P.S.	90° Elbows	45° Elbows	90° Street Elbows	Tees	Crosses	Couplings	Half Couplings	Reducing Coupling	Caps	Square Head Plug	Hex Head Plug	Unions
1/8	•	•	•	•	•	•	•		•	•	•	•
1/4	•	•	•	•	•	•	•	•	•	•	•	•
3/8	•	•	•	•	•	•	•	•	•	•	•	•
1/2	•	•	•	•	•	•	•	•	•	•	•	•
3/4	•	•	•	•	•	•	•	•	•	•	•	•
1	•	•	•	•	•	•	•	•	•	•	•	•
1 1/4	•	•	•	•	•	•	•	•	•	•	•	•
1 1/2	•	•	•	•	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•	•	•	•	•
2 1/2	•	•	•	•	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	•	•	•	•	•

C.F.F. 3000 LB. SOCKET WELD FITTING



304/304L • 316/316L
ASTM - A - 182 • ASME - SA - 182

Size I.P.S.	90° Elbows	45° Elbows	Tees	Couplings	Inserts	Reducing Coupling	Caps	Unions
1/8	•	•	•	•	•		•	•
1/4	•	•	•	•	•	•	•	•
3/8	•	•	•	•	•	•	•	•
1/2	•	•	•	•	•	•	•	•
3/4	•	•	•	•	•	•	•	•
1	•	•	•	•	•	•	•	•
1 1/4	•	•	•	•	•	•	•	•
1 1/2	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•
2 1/2	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	•

C.F.F. BUTT WELD FITTINGS

SCHEDULE 10
ASTM - A - 403 - WP · ASTM - SA - 403 WP

Type 304/304L Dark Green · 316/316L Brown

NOMINAL PIPE SIZE	GRADE	90° LONG RADIUS ELBOWS	45° LONG RADIUS ELBOWS	90° SHORT RADIUS ELBOWS	CAPS	TEES	TYPE A STUB ENDS SHORT (MSS)	TYPE C STUB ENDS SHORT (MSS)
½"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
¾"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
1"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
1¼"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
1½"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
2"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
2½"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
3"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
3½"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
4"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
5"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
6"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
8"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•
10"	304L	•	•	•	•	•	•	•
	316L	•	•	•	•	•	•	•

Schedules 10 · 40 · 80 Available

C.F.F. BUTT WELD FITTINGS

SCHEDULE 10
ASTM - A - 403 - WP • ASTM - SA - 403 WP

Type 304/304L Dark Green • 316/316L Brown

GRADE	NOMINAL PIPE SIZE	REDUCERS		TEES, REDUCING OUTLET	NOMINAL PIPE SIZE	REDUCERS		TEES, REDUCING OUTLET	NOMINAL PIPE SIZE	REDUCERS		TEES, REDUCING OUTLET
		CONCENTRIC	ECCENTRIC			CONCENTRIC	ECCENTRIC			CONCENTRIC	ECCENTRIC	
304L	¾" x 1.2"	•	•	•	2½" x 1"	•	•	•	6" x 2"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1" x ½"	•	•	•	2½" x 1½"	•	•	•	6" x 2½"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1" x ¾"	•	•	•	2½" x 2"	•	•	•	6" x 3"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1¼" x ¾"	•	•	•	3" x 1"	•	•	•	6" x 4"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1¼" x 1"	•	•	•	3" x 1¼"	•	•	•	6" x 5"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x ½"	•	•	•	3" x 1½"	•	•	•	8" x 3"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x ¾"	•	•	•	3" x 2"	•	•	•	8" x 4"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x 1"	•	•	•	3" x 2½"	•	•	•	8" x 6"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x 1¼"	•	•	•	4" x 1½"	•	•	•	10" x 4"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	2" x ½"	•	•	•	4" x 2"	•	•	•	10" x 6"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	2" x ¾"	•	•	•	4" x 2½"	•	•	•	10" x 8"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	2" x 1"	•	•	•	4" x 3"	•	•	•				
316L		•	•	•		•	•	•	•			
304L	2" x 1¼"	•	•	•	5" x 3"	•	•	•				
316L		•	•	•		•	•	•	•			
304L	2" x 1½"	•	•	•	5" x 4"	•	•	•				
316L		•	•	•		•	•	•	•			

Schedules 10 • 40 • 80 Available

C.F.F. BUTT WELD FITTINGS

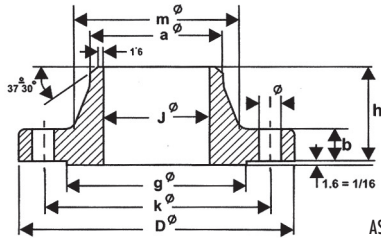
SCHEDULE 40
ASTM - A - 403 - WP • ASTM - SA - 403 WP

Type 304/304L Dark Green • 316/316L Brown

GRADE	NOMINAL PIPE SIZE	REDUCERS		TEES REDUCING OUTLET	NOMINAL PIPE SIZE	REDUCERS		TEES REDUCING OUTLET	NOMINAL PIPE SIZE	REDUCERS		TEES REDUCING OUTLET
		ECCENTRIC	ECCENTRIC			ECCENTRIC	ECCENTRIC			ECCENTRIC	ECCENTRIC	
304L	¾" x 1.2"	•	•	•	2½" x 1"	•	•	•	6" x 2"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1" x ½"	•	•	•	2½" x 1½"	•	•	•	6" x 2½"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1" x ¾"	•	•	•	2½" x 2"	•	•	•	6" x 3"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1¼" x ¾"	•	•	•	3" x 1"	•	•	•	6" x 4"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1¼" x 1"	•	•	•	3" x 1¼"	•	•	•	6" x 5"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x ½"	•	•	•	3" x 1½"	•	•	•	8" x 3"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x ¾"	•	•	•	3" x 2"	•	•	•	8" x 4"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x 1"	•	•	•	3" x 2½"	•	•	•	8" x 6"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	1½" x 1¼"	•	•	•	4" x 1½"	•	•	•	10" x 4"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	2" x ½"	•	•	•	4" x 2"	•	•	•	10" x 6"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	2" x ¾"	•	•	•	4" x 2½"	•	•	•	10" x 8"	•	•	•
316L		•	•	•		•	•	•		•	•	•
304L	2" x 1"	•	•	•	4" x 3"	•	•	•				
316L		•	•	•		•	•	•	•			
304L	2" x 1¼"	•	•	•	5" x 3"	•	•	•				
316L		•	•	•		•	•	•	•			
304L	2" x 1½"	•	•	•	5" x 4"	•	•	•				
316L		•	•	•		•	•	•	•			

Schedules 10 • 40 • 80 Available

C.F.F. 150 LB. WELD NECK FLANGES

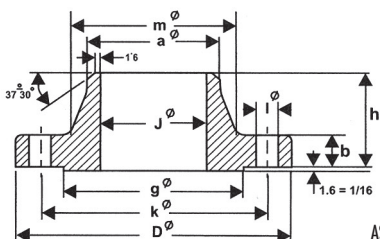


ASME B 16.5 - a - 1998

304/304L • 316/316L
ASTM - A - 182 • ASME - SA - 182

Nominal Pipe Size	Flange				Hub		Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches	a mm. inches	m mm. inches		Number	I mm. inches	K mm. inches	
1/2"	88.9 3 1/2	15.75 0.62	11.1 7/16	47.6 1 7/8	21.3 0.84	30.2 1 1/8	34.9 1 3/8	4	15.9 5/8	60.3 2 3/8	0.9 2
3/4"	98.4 3 7/8	20.8 0.82	12.7 1/2	52.4 2 1/16	26.7 1.05	38.1 1 1/2	42.9 1 15/16	4	15.9 5/8	69.8 2 3/4	0.9 2
1"	107.9 4 1/4	26.7 1.05	14.3 9/16	55.6 2 3/16	33.5 1.32	49.2 1 15/16	50.8 2	4	15.9 5/8	79.4 3 1/8	1.4 3
1 1/4"	117.5 4 5/8	35.05 1.38	15.9 5/8	57.1 2 1/4	42.2 1.66	58.7 2 2/16	63.5 2 1/2	4	15.9 5/8	86.9 3 1/2	1.4 3
1 1/2"	127.0 5	40.9 1.61	17.5 1 1/16	61.9 2 1/16	48.3 1.90	65.1 2 2/16	73.0 2 7/8	4	15.9 5/8	98.4 3 7/8	1.8 4
2"	152.4 6	52.6 2.07	19.1 3/4	63.5 2 1/2	60.4 2.38	77.8 3 1/16	92.1 3 3/8	4	19.05 3/4	120.6 2 1/2	2.7 6
2 1/2"	177.8 7	62.7 2.47	22.2 7/8	69.8 2 3/4	73.1 2.88	90.5 3 3/16	104.8 4 1/8	4	19.0 3/4	139.7 5 1/2	3.6 8
3"	190.5 7 1/2	78.0 3.07	23.8 1 5/16	69.8 2 3/4	88.9 3.50	107.9 4 1/4	127.0 5	4	19.05 3/4	152.4 6	4.5 10
3 1/2"	215.9 8 1/2	90.2 3.55	23.8 1 5/16	71.4 2 7/16	101.6 4.00	122.2 4 7/16	139.7 5 1/2	8	19.05 3/4	177.8 7	5.4 12
4"	228.6 9	102.4 4.03	23.8 1 5/16	76.2 3	114.3 4.50	134.9 5 1/16	157.2 6 1/16	8	19.05 3/4	190.5 7 1/2	6.8 15
5"	254.0 10	128.3 5.05	23.8 1 5/16	88.9 3 1/2	141.2 5.56	163.5 6 1/16	185.7 7 1/16	8	22.2 7/8	215.5 8 1/2	8.6 19
6"	279.4 11	154.2 6.07	25.4 1	88.9 3 1/2	168.4 6.63	229.1 7 1/16	215.9 8 1/2	8	22.2 7/8	241.3 9 1/2	10.9 24
8"	342.9 13 1/2	202.7 7.98	28.6 1 1/8	101.6 4	219.2 8.63	246.1 9 1/16	269.9 10 5/8	8	22.2 7/8	298.4 11 3/4	17.7 39
10"	406.4 16	254.5 10.02	30.2 1 15/16	101.6 4	273.0 10.75	304.8 12	323.8 12 3/4	12	25.4 1	361.9 14 1/4	23.6 52

C.F.F. 300 LB. WELD NECK FLANGES

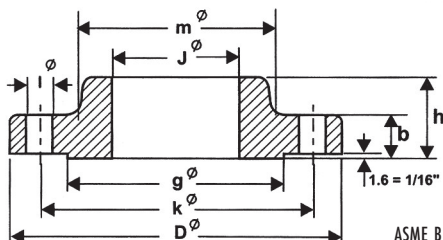


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange				Hub		Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches	a mm. inches	m mm. inches		Number	l mm. inches	K mm. inches	
1/2"	95.2 3 3/4	15.75 0.62	14.3 5/16	52.4 2 1/16	21.3 0.84	38.1 1 1/2	34.9 1 3/8	4	15.9 5/8	66.7 2 5/8	0.9 2
3/4"	117.5 4 5/8	20.8 0.82	15.9 5/8	57.1 2 1/4	26.7 1.05	47.6 1 7/8	42.9 1 11/16	4	19.05 3/4	82.5 3 1/4	1.4 3
1"	123.8 4 7/8	26.7 1.05	17.5 11/16	61.9 2 7/16	33.5 1.32	54.0 2 1/8	50.8 2	4	19.05 3/4	88.9 3 1/2	1.8 4
1 1/4"	133.35 5 1/4	35.05 1.38	19.05 3/4	65.1 2 7/16	42.2 1.66	63.5 2 1/2	63.5 2 1/2	4	19.05 3/4	98.4 3 7/8	2.3 5
1 1/2"	155.6 6 1/8	40.9 1.61	20.6 13/16	68.3 2 7/16	48.3 1.90	69.8 2 3/4	73.0 2 7/8	4	22.2 7/8	114.3 4 1/2	3.2 7
2"	165.1 6 1/2	52.6 2.07	22.2 7/8	69.8 2 3/4	60.45 2.38	84.1 3 3/16	92.1 3 3/8	8	19.05 3/4	127.0 5	4.1 9
2 1/2"	190.5 7 1/2	62.7 2.47	25.4 1	76.2 3	73.15 2.88	100.0 3 15/16	104.8 4 1/8	8	22.2 7/8	149.2 5 7/8	5.4 12
3"	209.55 8 1/4	78.0 3.07	28.6 1 1/8	79.4 3 1/8	88.9 3.50	117.5 4 3/8	127.0 5	8	22.2 7/8	168.3 6 5/8	6.8 15
3 1/2"	228.6 9	90.2 3.55	30.2 1 1/16	81.0 3 1/16	101.6 4	133.5 5 1/4	139.7 5 1/2	8	22.2 7/8	184.15 7 1/4	8.2 18
4"	254.0 10	102.4 4.03	31.8 1 1/4	85.7 3 3/8	114.3 4.50	146.05 5 3/4	157.2 6 1/16	8	22.2 7/8	200.0 7 7/8	11.3 25
5"	279.4 11	128.3 5.05	34.9 1 3/8	98.4 3 7/8	141.2 5.56	177.8 7	185.7 7 1/16	8	22.2 7/8	234.95 9 1/4	14.5 32
6"	317.5 12 1/2	154.2 6.07	36.5 1 1/16	98.4 3 7/8	168.4 6.63	206.4 8 1/8	215.9 8 1/2	12	22.2 7/8	269.9 10 5/8	19.0 42
8"	381.0 15	202.7 7.98	41.3 1 5/8	111.1 4 3/8	219.2 8.63	260.35 10 1/4	269.9 10 5/8	12	25.4 1	330.2 13	30.4 67
10"	444.5 17 1/2	254.5 10.02	47.6 1 7/8	117.5 4 5/8	273.0 10.75	320.7 12 5/8	323.8 12 3/4	16	28.6 1 1/8	387.3 15 1/4	41.3 91

C.F.F. 150 LB. SLIP ON FLANGES

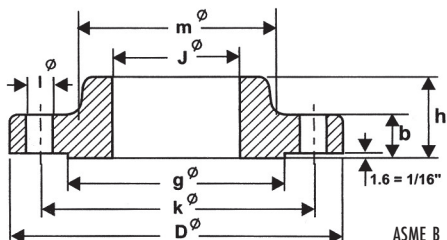


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange				Hub m mm. inches	Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches			Number	l mm. inches	K mm. inches	
1/2"	88.9 3 1/2	22.3 0.88	11.1 1/16	15.9 5/8	30.2 1 1/16	34.9 1 3/8	4	15.9 5/8	60.3 2 3/8	0.5 1
3/4"	98.4 3 7/8	27.7 1.09	12.7 1/2	15.9 5/8	38.1 1 1/2	42.9 1 11/16	4	15.9 5/8	69.8 2 3/4	0.9 2
1"	107.9 4 1/4	34.5 1.36	14.3 9/16	17.5 11/16	49.2 1 15/16	50.8 2	4	15.9 5/8	79.4 3 1/8	0.9 2
1 1/4"	117.5 4 5/8	43.2 1.70	15.9 5/8	20.6 19/16	58.7 2 1/16	63.5 2 1/2	4	15.9 5/8	88.9 3 1/2	1.4 3
1 1/2"	127.0 5	49.5 1.95	17.5 11/16	22.2 7/8	65.1 2 1/16	73.0 2 7/8	4	15.9 5/8	98.4 3 3/8	1.4 3
2"	152.4 6	62.0 2.44	19.1 3/4	25.4 1	77.8 3 1/16	92.1 3 3/8	4	19.0 3/4	120.6 4 3/4	2.3 5
2 1/2"	177.8 7	74.7 2.94	22.2 7/8	28.6 1 1/8	90.5 3 3/16	104.8 4 1/8	4	19.0 3/4	139.7 5 1/2	3.2 7
3"	190.5 7 1/2	90.7 3.57	23.8 15/16	30.2 1 1/16	107.9 4 1/4	127.0 5	4	19.0 3/4	152.4 6	3.6 8
3 1/2"	215.9 8 1/2	103.4 4.07	23.8 15/16	31.7 1 1/4	122.2 4 13/16	139.7 5 1/2	8	19.0 3/4	177.8 7	5.0 11
4"	228.6 9	116.1 4.57	23.8 15/16	33.3 1 1/16	134.9 5 1/16	157.2 6 3/16	8	19.0 3/4	190.5 7 1/2	5.9 13
5"	254 10	143.8 5.66	23.8 15/16	36.5 1 1/16	163.5 6 1/16	185.7 7 3/16	8	22.2 7/8	215.9 8 1/2	6.8 15
6"	279.4 11	170.7 6.72	25.4 1	39.7 1 1/16	192.1 7 7/16	215.9 8 1/2	8	22.2 7/8	241.3 9 1/2	8.6 19
8"	342.9 13 1/2	221.5 8.72	28.6 1 1/8	44.4 1 3/4	246.1 9 9/16	269.9 10 5/8	8	22.2 7/8	298.4 11 3/4	13.6 30
10"	406.4 16	276.35 10.88	30.2 1 3/16	49.2 1 15/16	304.8 12	323.8 12 3/4	12	25.4 1	361.9 14 1/4	19.5 43

C.F.F. 300 LB. SLIP ON FLANGES

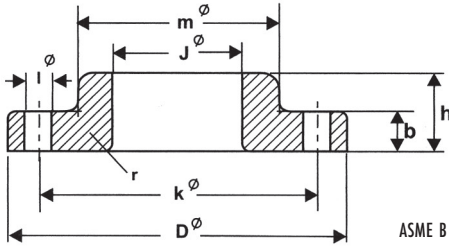


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange				Hub m mm. inches	Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches			Number	I mm. inches	K mm. inches	
1/2"	95.2 3 3/4	22.3 0.88	14.3 9/16	22.2 7/8	38.1 1 1/2	34.9 1 3/8	4	15.9 5/8	66.7 2 5/8	0.9 2
3/4"	117.5 4 5/8	27.7 1.09	15.9 5/8	25.4 1	47.6 1 7/8	42.9 1 11/16	4	19.0 3/4	82.5 3 1/4	1.4 3
1"	123.8 4 7/8	34.5 1.36	17.5 11/16	27.0 1 1/16	54.0 2 1/8	50.8 2	4	19.0 3/4	88.9 3 1/2	1.4 3
1 1/4"	133.3 5 1/4	43.2 1.70	19.0 3/4	27.0 1 1/16	63.5 2 1/2	63.5 2 1/2	4	19.0 3/4	98.4 3 3/8	1.8 4
1 1/2"	155.6 6 1/8	49.5 1.95	20.6 13/16	30.2 1 1/8	69.8 2 3/4	73.0 2 7/8	4	22.2 7/8	114.3 4 1/2	2.7 6
2"	165.1 6 1/2	62.0 2.44	22.2 7/8	33.3 1 3/16	84.1 3 3/16	92.1 3 5/8	8	19.0 3/4	127.5 5	3.2 7
2 1/2"	190.5 7 1/2	74.7 2.94	25.4 1	38.1 1 1/2	100.0 3 5/16	104.8 4 1/8	8	22.2 7/8	149.2 5 5/8	4.5 10
3"	209.5 8 1/4	90.7 3.57	28.6 1 1/8	42.9 1 7/16	117.5 4 5/8	127.0 5	8	22.2 7/8	168.3 6 5/8	5.9 13
3 1/2"	228.5 9	103.4 4.07	30.2 1 3/16	44.4 1 3/4	133.4 5 1/4	139.7 5 1/2	8	22.2 7/8	184.1 7 1/4	7.7 17
4"	254.0 10	116.1 4.57	31.8 1 1/4	47.6 1 7/8	146.0 5 3/4	157.2 6 3/16	8	22.2 7/8	200.0 7 7/8	10.0 22
5"	279.4 11	143.8 5.66	34.9 1 3/8	50.8 2	177.8 7	185.7 7 1/16	8	22.2 7/8	234.9 9 1/4	12.7 28
6"	317.5 12 1/2	170.7 6.72	36.5 1 1/16	52.4 2 1/16	206.4 8 1/8	215.9 8 1/2	12	22.2 7/8	269.9 10 5/8	17.7 39
8"	381.0 15	221.5 8.72	41.3 1 5/8	61.9 2 1/2	260.3 10 1/4	269.9 10 5/8	12	25.1 1	330.2 13	26.3 58
10"	444.5 17 1/2	276.35 10.88	47.6 1 7/8	66.7 2 5/8	320.7 12 5/8	323.8 12 3/4	16	28.6 1 1/8	387.3 15 1/4	36.7 81

C.F.F. 150 LB. LAP JOINT FLANGES

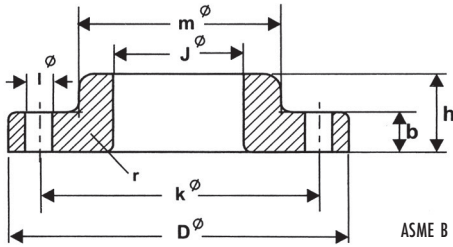


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange					Hub m mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches	r mm. inches		Number	l mm. inches	K mm. inches	
1/2"	88.9 3 1/2	22.9 0.90	11.1 1/16	15.9 5/8	3.2 1/8	30.2 1 3/16	4	15.9 5/8	60.3 2 3/8	0.5 1
3/4"	98.4 3 3/8	28.2 1.11	12.7 1/2	15.9 5/8	3.2 1/8	38.1 1 1/2	4	15.9 5/8	69.8 2 3/4	0.9 2
1"	107.9 4 1/4	35.05 1.38	14.3 9/16	17.5 11/16	3.2 1/8	49.2 1 9/16	4	15.9 5/8	79.4 3 1/8	0.9 2
1 1/4"	117.5 4 5/8	43.7 1.72	15.9 5/8	20.6 13/16	4.8 3/16	58.7 2 9/16	4	15.9 5/8	88.9 3 1/2	1.4 3
1 1/2"	127.0 5	50.0 1.97	17.5 11/16	22.2 7/8	6.35 1/4	65.1 2 9/16	4	15.9 5/8	98.4 3 3/8	1.4 3
2"	152.4 6	62.5 2.46	19.1 3/4	25.4 1	7.9 5/16	77.8 3 1/16	4	19.0 3/4	120.6 4 3/4	2.3 5
2 1/2"	177.8 7	75.4 2.97	22.2 7/8	28.6 1 1/8	7.9 5/16	90.5 3 3/16	4	19.0 3/4	139.7 5 1/2	3.2 7
3"	190.5 7 1/2	91.4 3.60	23.8 15/16	30.2 1 3/16	9.5 3/8	107.9 4 1/4	4	19.0 3/4	152.4 6	3.6 8
3 1/2"	215.9 8 1/2	104.1 4.10	23.8 15/16	31.7 1 1/4	9.5 3/8	122.2 4 13/16	8	19.0 3/4	177.8 7	5.0 11
4"	228.6 9	116.8 4.60	23.8 15/16	33.3 1 1/16	11.1 7/16	134.9 5 1/16	8	19.0 3/4	190.5 7 1/2	5.9 13
5"	254 10	144.5 5.69	23.8 15/16	36.5 1 1/16	11.1 7/16	163.5 6 1/16	8	22.2 7/8	215.9 8 1/2	6.8 15
6"	279.4 11	171.45 6.75	25.4 1	39.7 1 1/16	12.7 1/2	192.1 7 7/16	8	22.2 7/8	241.3 9 1/2	8.6 19
8"	342.9 13 1/2	222.25 8.75	28.6 1 1/8	44.4 1 3/4	12.7 1/2	246.1 9 1/16	8	22.2 7/8	298.4 11 3/4	13.6 30
10"	406.4 16	277.4 10.92	30.2 1 3/16	49.2 1 15/16	12.7 1/2	304.8 12	12	25.4 1	361.9 14 1/4	19.5 43

C.F.F. 300 LB. LAP JOINT FLANGES

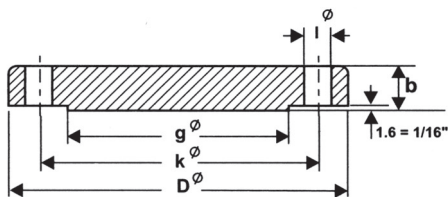


ASME B 16.5 - a - 1998

304/304L • 316/316L
ASTM - A - 182 • ASME - SA - 182

Nominal Pipe Size	Flange					Hub m mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches	r mm. inches		Number	l mm. inches	K mm. inches	
1/2"	95.2 3 3/4	22.9 0.90	14.3 9/16	22.2 7/8	3.2 1/8	38.1 1 1/2	4	15.9 5/8	66.7 2 5/8	0.9 2
3/4"	117.5 4 5/8	28.2 1.11	15.9 5/8	25.4 1	3.2 1/8	47.6 1 7/8	4	19.0 3/4	82.5 3 1/4	1.4 3
1"	123.8 4 7/8	35.05 1.38	17.5 11/16	27.0 1 1/16	3.2 1/8	54.0 2 1/16	4	19.0 3/4	88.9 3 1/2	1.4 3
1 1/4"	133.3 5 1/4	43.7 1.72	19.0 3/4	27.0 1 1/16	4.8 3/16	63.5 2 1/2	4	19.0 3/4	98.4 3 7/8	1.8 4
1 1/2"	155.6 6 1/8	50.0 1.97	20.6 13/16	30.2 1 1/16	6.35 1/4	69.8 2 3/4	4	22.2 7/8	114.3 4 1/2	2.7 6
2"	165.1 6 1/2	62.5 2.46	22.2 7/8	33.3 1 3/16	7.9 5/16	84.1 3 3/16	8	19.0 3/4	127.5 5	3.2 7
2 1/2"	190.5 7 1/2	75.4 2.97	25.4 1	38.1 1 1/2	7.9 5/16	100.0 3 5/16	8	22.2 7/8	149.2 5 7/8	4.5 10
3"	209.5 8 1/4	91.4 3.60	28.6 1 1/8	42.9 1 11/16	9.5 3/8	117.5 4 5/8	8	22.2 7/8	168.3 6 5/8	5.9 13
3 1/2"	228.5 9	104.1 4.10	30.2 1 3/16	44.4 1 3/4	9.5 3/8	133.4 5 1/4	8	22.2 7/8	184.1 7 1/4	7.7 17
4"	254.0 10	116.8 4.60	31.8 1 1/4	47.6 1 7/8	11.1 7/16	146.0 5 3/4	8	22.2 7/8	200.0 7 7/8	10.0 22
5"	279.4 11	144.5 5.69	34.9 1 3/8	50.8 2	11.1 7/16	177.8 7	8	22.2 7/8	234.9 9 1/4	12.7 28
6"	317.5 12 1/2	171.45 6.75	36.5 1 1/16	52.4 2 1/16	12.7 1/2	206.4 8 1/8	12	22.2 7/8	269.9 10 5/8	17.7 39
8"	381.0 15	222.25 8.75	41.3 1 5/8	61.9 2 1/16	12.7 1/2	260.3 10 1/4	12	25.4 1	330.2 13	26.3 58
10"	444.5 17 1/2	277.4 10.92	47.6 1 7/8	95.2 3 3/4	12.7 1/2	320.7 12 5/8	16	28.6 1 1/8	387.3 15 1/4	41.3 91

C.F.F. 150 LB. BLIND FLANGES

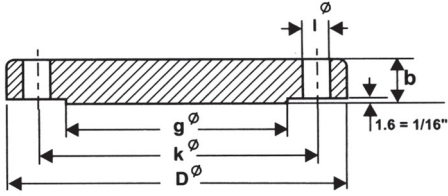


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange		Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	b mm. inches		Number	l mm. inches	K mm. inches	
1/2"	88.9 3 1/2	11.1 7/16	34.9 1 3/8	4	15.9 5/8	60.3 2 3/8	0.5 1
3/4"	98.4 3 7/8	12.7 1/2	42.9 1 11/16	4	15.9 5/8	69.8 2 3/4	0.9 2
1"	108.0 4 1/4	14.3 9/16	50.8 2	4	15.9 5/8	79.4 3 1/8	0.9 2
1 1/4"	117.5 4 5/8	15.9 5/8	63.5 2 1/2	4	15.9 5/8	88.9 3 1/2	1.4 3
1 1/2"	127.0 5	17.5 1 1/16	73.0 2 7/8	4	15.9 5/8	98.4 3 7/8	1.8 4
2"	152.4 6	19.1 3/4	92.1 3 5/8	4	19.0 3/4	120.6 4 3/4	2.3 5
2 1/2"	177.8 7	22.2 7/8	104.8 4 1/8	4	19.0 3/4	139.7 5 1/2	3.2 7
3"	190.5 7 1/2	23.8 15/16	127.0 5	4	19.0 3/4	152.4 6	4.1 9
3 1/2"	215.9 8 1/2	23.8 15/16	139.7 5 1/2	8	19.0 3/4	177.8 7	5.9 13
4"	228.6 9	23.8 15/16	157.2 6 1/16	8	19.0 3/4	190.5 7 1/2	7.7 17
5"	254 10	23.8 15/16	185.7 7 1/16	8	22.2 7/8	215.9 8 1/2	9.1 20
6"	279.4 11	25.4 1	215.9 8 1/2	8	22.2 7/8	241.3 9 1/2	11.8 26
8"	342.9 13 1/2	28.6 1 1/8	269.9 10 5/8	8	22.2 7/8	298.4 11 3/4	21 46.2
10"	406.4 16	30.2 1 3/16	323.8 12 3/4	12	25.4 1	361.9 14 1/4	31.8 70

C.F.F. 300 LB. BLIND FLANGES

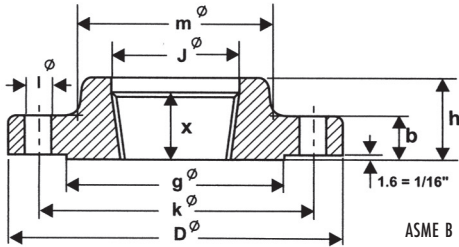


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange		Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	b mm. inches		Number	l mm. inches	K mm. inches	
1/2"	95.2 3 3/4	14.3 9/16	34.9 1 3/8	4	15.9 5/8	66.7 2 5/8	0.9 2
3/4"	117.5 4 5/8	15.9 5/8	42.9 1 11/16	4	19.0 3/4	82.5 3 1/4	1.4 3
1"	123.8 4 7/8	17.5 11/16	50.8 2	4	19.0 3/4	88.9 3 1/2	1.4 3
1 1/4"	133.3 5 1/4	19.0 3/4	63.5 2 1/2	4	19.0 3/4	98.4 3 7/8	1.8 4
1 1/2"	155.6 6 1/8	20.6 13/16	73.0 2 7/8	4	22.2 7/8	114.3 4 1/2	2.7 6
2"	165.1 6 1/2	22.2 7/8	92.1 3 3/8	8	19.0 3/4	127.5 5	3.6 8
2 1/2"	190.5 7 1/2	25.4 1	104.8 4 1/8	8	22.2 7/8	149.2 5 7/8	5.4 12
3"	209.5 8 1/4	28.6 1 1/8	127.0 5	8	22.2 7/8	168.3 6 5/8	7.3 16
3 1/2"	228.5 9	30.2 1 3/16	139.7 5 1/2	8	22.2 7/8	184.1 7 1/4	9.5 21
4"	254.0 10	31.8 1 1/4	157.2 6 3/16	8	22.2 7/8	200.0 7 7/8	12.2 27
5"	279.4 11	34.9 1 3/8	185.7 7 1/16	8	22.2 7/8	234.9 9 1/4	15.9 35
6"	317.5 12 1/2	36.5 1 1/16	215.9 8 1/2	12	22.2 7/8	269.9 10 5/8	22.7 50
8"	381.0 15	41.3 1 5/8	269.9 10 5/8	12	25.4 1	330.2 13	36.7 81
10"	444.5 17 1/2	47.6 1 7/8	323.8 12 3/4	16	28.6 1 1/8	387.3 15 1/4	57 125

C.F.F. 150 LB. THREADED FLANGES



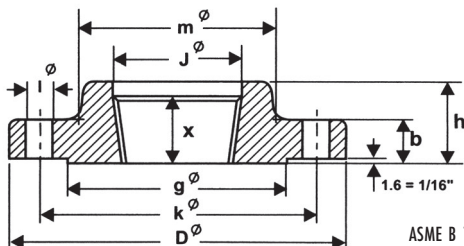
ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange				Hub m mm. inches	Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches			Number	I mm. inches	K mm. inches	
1/2"	88.9	3 1/2	11.1	15.9	30.2	34.9	4	15.9	60.3	0.5
	3 1/2		7/16	5/8	1 3/16	1 3/8		5/8	2 9/8	1
3/4"	98.4	3 3/8	12.7	15.9	38.1	42.9	4	15.9	69.8	0.9
	3 3/8		1/2	5/8	1 1/2	1 11/16		5/8	2 3/4	2
1"	107.9	4 1/4	14.3	17.5	49.2	50.8	4	15.9	79.4	0.9
	4 1/4		9/16	11/16	1 5/16	2		5/8	3 3/8	2
1 1/4"	117.5	4 5/8	15.9	20.6	58.7	63.5	4	15.9	88.9	1.4
	4 5/8		5/8	13/16	2 1/16	2 1/2		5/8	3 1/2	3
1 1/2"	127.0	5	17.5	22.2	65.1	73.0	4	15.9	98.4	1.5
	5		11/16	7/8	2 1/16	2 7/8		5/8	3 3/8	3.3
2"	152.4	6	19.1	25.4	77.8	92.1	4	19.0	120.6	2.3
	6		3/4	1	3 1/16	3 5/8		3/4	4 3/4	5.1
2 1/2"	177.8	7	22.2	28.6	90.5	104.8	4	19.0	139.7	3.7
	7		7/8	1 1/8	3 3/16	4 7/8		3/4	5 1/2	8.1
3"	190.5	7 1/2	23.8	30.2	107.9	127.0	4	19.0	152.4	4.2
	7 1/2		15/16	1 3/16	4 1/4	5		3/4	6	9.2
3 1/2"	215.9	8 1/2	23.8	31.7	122.2	139.7	8	19.0	177.8	5.3
	8 1/2		15/16	1 1/4	4 13/16	5 1/2		3/4	7	11.7
4"	228.6	9	23.8	33.3	134.9	157.2	8	19.0	190.5	5.9
	9		15/16	1 5/16	5 5/16	6 3/16		3/4	7 1/2	13
5"	254.0	10	23.8	36.5	163.5	185.7	8	22.2	215.9	7
	10		15/16	1 7/16	6 7/16	7 5/16		7/8	8 1/2	15.4
6"	279.4	11	25.4	39.7	192.1	215.9	8	22.2	241.3	8.4
	11		1	1 1/16	7 7/16	8 1/2		7/8	9 1/2	18.5

No counter bore required in 150 lb. Threaded Flanges

C.F.F. 300 LB. THREADED FLANGES

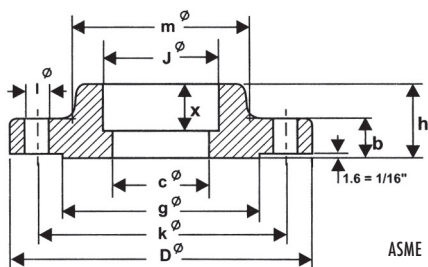


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange					Hub m mm. inches	Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	J mm. inches	b mm. inches	h mm. inches	x mm. inches			Number	l mm. inches	K mm. inches	
½"	95.2	23.6	14.3	22.2	15.9	38.1	34.9	4	15.9	66.7	0.9
	3¾	0.93	⅞	⅞	⅝	1½	1⅞		⅝	2⅞	2
¾"	117.5	28.95	15.9	25.4	15.9	47.6	42.9	4	19.05	82.5	1.4
	4⅝	1.14	⅝	1	⅝	1⅞	1⅞		¾	3¼	3
1"	123.8	35.8	17.5	27.0	17.5	54.0	50.8	4	19.05	88.9	1.4
	4⅞	1.41	⅞	1⅞	⅞	2⅞	2		¾	3½	3
1¼"	133.3	44.45	19.0	27.0	20.6	63.5	63.5	4	19.05	98.4	1.9
	5¼	1.75	¾	1⅞	1⅜	2½	2½		¾	3⅞	4.2
1½"	155.6	50.5	20.6	30.2	22.2	69.8	73.0	4	22.2	114.3	2.8
	6⅞	1.99	⅞	1⅞	⅞	2¾	2⅞		⅞	4½	6.2
2"	165.1	63.5	22.2	33.3	28.6	84.1	92.1	8	19.05	127.5	3.3
	6½	2.50	⅞	1⅞	1⅞	3⅞	3⅞		¾	5	7.3
2½"	190.5	76.2	25.4	38.1	31.7	100.0	104.8	8	22.2	192.2	4.6
	7½	3.00	1	1½	1¼	3⅞	4⅞		⅞	5⅞	10.1
3"	209.5	92.2	28.6	42.9	31.7	117.5	127.0	8	22.2	168.3	6.3
	8¼	3.63	1⅞	1⅞	1¼	4⅞	5		⅞	6⅞	13.9
3½"	228.5	104.9	30.2	44.4	36.5	133.4	139.7	8	22.2	184.1	7.8
	9	4.13	1⅞	1¾	1⅞	5¼	5½		⅞	7¼	17.2
4"	254.0	117.6	31.8	47.6	36.5	146.0	157.2	8	22.2	200.0	10.2
	10	4.63	1¼	1⅞	1⅞	5¾	6⅞		⅞	7⅞	22.4
5"	279.4	144.5	34.9	50.8	42.9	177.8	185.7	8	22.2	234.95	12.9
	11	5.69	1⅞	2	1⅞	7	7⅞		⅞	9¼	28.4
6"	317.5	171.45	36.5	52.4	46	206.4	215.9	12	22.2	269.9	17.7
	12½	6.75	1⅞	2⅞	1⅞	8⅞	8½		⅞	10⅞	39

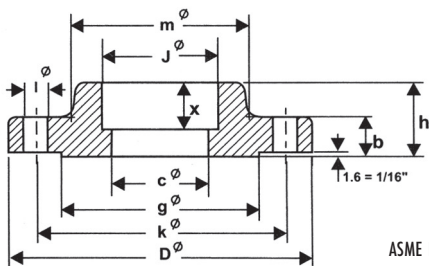
C.F.F. 150 LB. SOCKET WELD FLANGES



304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange						Hub m mm. inches	Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	c mm. inches	J mm. inches	x mm. inches	b mm. inches	h mm. inches			Number	I mm. inches	K mm. inches	
1/2"	88.9	15.7	22.35	9.5	11.1	15.9	30.2	34.9	4	15.9	60.3	0.4
	3 1/2	0.62	0.88	3/8	7/16	5/8	1 3/16	1 3/8					5/8	2 3/8	0.9
3/4"	98.4	20.8	27.7	11.1	12.7	15.9	38.1	42.9	4	15.9	69.8	0.7
	3 3/8	0.82	1.09	7/16	1/2	5/8	1 1/2	1 11/16					5/8	2 3/4	1.5
1"	107.9	26.7	34.5	12.7	14.3	17.5	49.2	50.8	4	15.9	79.4	0.9
	4 1/4	1.05	1.36	1/2	9/16	1 1/16	1 15/16	2					5/8	3 1/8	2
1 1/4"	117.5	35.05	43.2	14.3	15.9	20.6	58.7	63.5	4	15.9	88.9	1.2
	4 5/8	1.38	1.70	9/16	5/8	13/16	2 5/16	2 1/2					5/8	3 1/2	2.6
1 1/2"	127.0	40.9	49.5	15.9	17.5	22.2	65.1	73.0	4	15.9	98.4	1.5
	5	1.61	1.95	5/8	1 1/16	7/8	2 7/16	2 7/8					5/8	3 3/8	3.3
2"	152.4	52.6	62.0	17.5	19.1	25.4	77.8	92.1	4	19.0	120.6	2.3
	6	2.07	2.44	1 1/16	3/4	1	3 1/16	3 3/8					3/4	4 3/4	5.1
2 1/2"	177.8	62.7	74.7	19.05	22.3	28.6	90.5	104.8	4	19.0	139.7	3.7
	7	2.47	2.94	3/4	7/8	1 1/8	3 3/16	4 1/8				
3"	190.5	78.0	90.7	20.6	23.8	30.2	107.9	127.0	4	19.0	152.4	4.2
	7 1/2	3.07	3.57	3/4	15/16	1 3/16	4 1/4	5					3/4	6	9.2

C.F.F. 300 LB. SOCKET WELD FLANGES

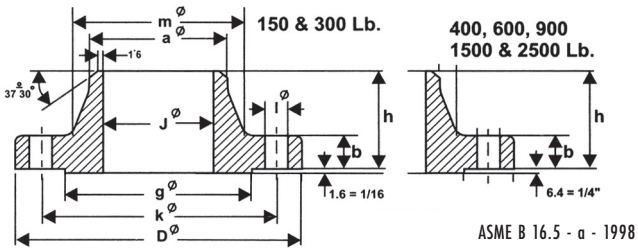


ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

Nominal Pipe Size	Flange						Hub m mm. inches	Raised Face g mm. inches	Drilling Template			Approx. Weight Kg. Pounds
	D mm. inches	c mm. inches	J mm. inches	x mm. inches	b mm. inches	h mm. inches			Number	l mm. inches	K mm. inches	
1/2"	95.2	15.7	22.35	9.5	14.3	22.2	38.1	34.9	4	15.9	66.7	0.7
	3/4	0.62	0.88	3/8	1/4	7/8	1 1/2	1 3/8		5/8	2 3/8	1.5
3/4"	117.5	20.8	27.7	11.1	15.9	25.4	47.6	42.9	4	19.05	82.5	1.2
	4 5/8	0.82	1.09	7/16	5/8	1	1 7/8	1 11/16		3/4	3 1/4	2.6
1"	123.8	26.7	34.5	12.7	17.5	27.0	54.0	50.8	4	19.05	88.9	1.4
	4 7/8	1.05	1.36	1/2	1 1/4	1 1/8	2 1/8	2		3/4	3 1/2	3.1
1 1/4"	133.3	35.05	43.2	14.3	19.0	27.0	63.5	63.5	4	19.05	98.4	1.9
	5 1/4	1.38	1.70	9/16	3/4	1 1/8	2 1/2	2 1/2		3/4	3 3/8	4.2
1 1/2"	155.6	40.9	49.5	15.9	20.6	30.2	69.8	73.0	4	22.2	114.3	2.8
	6 1/8	1.61	1.95	5/8	13/16	1 3/8	2 3/4	2 7/8		7/8	4 1/2	6.2
2"	165.1	52.6	62.0	17.5	22.2	33.3	84.1	92.1	8	19.05	127.5	3.3
	6 1/2	2.07	2.44	1 1/16	7/8	1 5/8	3 5/8	3 3/8		3/4	5	7.3
2 1/2"	190.5	62.7	74.7	19.05	25.4	38.1	100.0	104.8	8	22.2	192.2	4.6
	7 1/2	2.47	2.94	3/4	1	1 1/2	3 15/16	4 1/8		7/8	5 5/8	10.1
3"	209.5	78.0	90.7	20.6	28.6	42.9	117.5	127.0	8	22.2	168.3	6.3
	8 1/4	3.07	3.57	3/8	1 1/8	1 11/16	4 5/8	5		7/8	6 5/8	13.9

C.F.F. FLANGE SPECIFICATIONS



304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

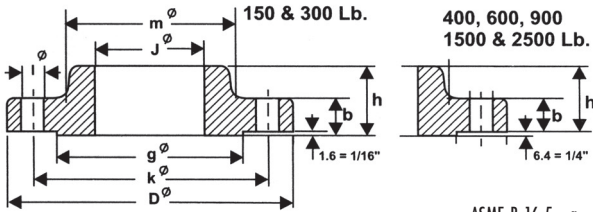
FLANGE TOLERANCES Weld Neck Flanges

DIMENSIONS	CLASS	TOLERANCES	
		inches	mm
D Outside Diameter*	$D \leq 610\text{mm}/OD \leq 24"$	$\pm 0.06"$	$\pm 1.60\text{mm}$
	$D > 610\text{mm}/OD > 24"$	$\pm 0.12"$	$\pm 3.20\text{mm}$
J Inside Diameter	NPS $\leq 10"$	$\pm 0.03"$	$\pm 0.80\text{mm}$
	$12" \leq \text{NPS} \leq 18"$	$\pm 0.06"$	$\pm 1.60\text{mm}$
	NPS $\geq 20"$	$+ 0.12", - 0.06"$	$+ 3.20\text{mm}, - 0.06\text{mm}$
g Diameter of Contact Face	1.60mm (0.06") Raised Face	$\pm 0.03"$	$\pm 0.80\text{mm}$
	6.40mm (0.25") Raised Face Tongue & Groove, Male & Female	$\pm 0.02"$	$\pm 0.50\text{mm}$
m Outside Diameter of Hub at Base*	$m \leq 610\text{mm} (24")$	$\pm 0.06"$	$\pm 1.60\text{mm}$
	$m > 610\text{mm} (24")$	$\pm 0.12"$	$\pm 3.20\text{mm}$
a Diameter of Hub at Point of Welding	NPS $\leq 5"$	$+ 0.09", - 0.03"$	$+ 2.40\text{mm}, - 0.80\text{mm}$
	NPS $\geq 6"$	$+ 0.16", - 0.03"$	$+ 4.00\text{mm}, - 0.80\text{mm}$
k Bolt Circle Diameter		$\pm 0.06"$	$\pm 1.60\text{mm}$
Center to Center of Adjacent Bolt Holes		$\pm 0.03"$	$\pm 0.80\text{mm}$
Excentricity Between Bolt Circle Diameter and Machined Facing Diameters	NPS $\leq 2\frac{1}{2}"$	$\pm 0.03"$	$\pm 0.80\text{mm}$
	NPS $\geq 3"$	$\pm 0.06"$	$\pm 1.60\text{mm}$
l Drilling*		$\pm 0.03"$	$\pm 0.80\text{mm}$
h Overall Length through Hub	NPS $\leq 4"$	$\pm 0.06"$	$\pm 1.60\text{mm}$
	$5" \leq \text{NPS} \leq 10"$	$+ 0.06", - 0.12"$	$+ 1.60\text{mm}, - 3.20\text{mm}$
	NPS $\geq 12"$	$+ 0.12", - 0.18"$	$+ 3.20\text{mm}, - 4.80\text{mm}$
b Thickness	NPS $\leq 18"$	$+ 0.12", - 0"$	$+ 3.20\text{mm}, - 0.0\text{mm}$
	NPS $\geq 20"$	$+ 0.19", - 0"$	$+ 4.80\text{mm}, - 0.0\text{mm}$

* This tolerance is not covered by ASME B 16.5 - a - 1998

(NPS - Nominal Pipe Size)

C.F.F. FLANGE SPECIFICATIONS



ASME B 16.5 - a - 1998

304/304L · 316/316L
ASTM - A - 182 · ASME - SA - 182

FLANGE TOLERANCES Slip On, Lap Joint, Blind, Threaded and Socket Weld

DIMENSIONS		CLASS		TOLERANCES	
				inches	mm
D	Outside Diameter*	D ≤ 610mm/OD ≤ 24"		± 0.06"	± 1.60mm
		D > 610mm/OD > 24"		± 0.12"	± 3.20mm
J	Inside Diameter	Threaded	NPS ≤ 10"	+ 0.03", - 0"	+ 0.80mm, - 0.0mm
			NPS ≥ 12"	+ 0.06", - 0"	+ 1.60mm, - 0.0mm
		Slip-On Lap Joint Socket Weld	NPS ≤ 10"	+ 0.03", - 0"	+ 0.80mm, - 0.0mm
			NPS ≥ 12"	+ 0.06", - 0"	+ 1.60mm, - 0.0mm
c	Smaller Bore Diameter of Socket Weld	NPS ≤ 10"		± 0.03"	± 0.80mm
		12" ≤ NPS ≤ 18"		± 0.06"	± 1.60mm
		NPS ≥ 20"		+ 0.12", - 0.06"	+ 3.20mm, - 1.60mm
g	Diameter of Contact Face	1.60mm (0.06") Raised Face		± 0.03"	± 0.80mm
		6.40mm (0.25") Raised Face Tongue & Groove, Male & Female		± 0.02"	± 0.50mm
m	Outside Diameter of Hub at Base*	NPS ≤ 12"		+ 0.09", - 0.03"	+ 2.40mm, - 1.60mm
		NPS ≥ 14"		± 0.12"	± 3.20mm
k	Bolt Circle Diameter			± 0.06"	± 1.60mm
	Center to Center of Adjacent Bolt Holes			± 0.03"	± 0.80mm
	Excentricity Between Bolt Circle Diameter and Machined Facing Diameters	NPS ≤ 2½"		± 0.03"	± 0.80mm
		NPS ≥ 3"		± 0.06"	± 1.60mm
l	Drilling*			± 0.03"	± 0.80mm
h	Overall Length through Hub	NPS ≤ 4"		± 0.06"	± 1.60mm
		5" ≤ NPS ≤ 10"		+ 0.06", - 0.12"	+ 1.60mm, - 3.20mm
		NPS ≥ 12"		+ 0.12", - 0.18"	+ 3.20mm, - 4.80mm
b	Thickness	NPS ≤ 18"		+ 0.12", - 0"	+ 3.20mm, - 0.0mm
		NPS ≥ 20"		+ 0.19", - 0"	+ 4.80mm, - 0.0mm

* This tolerance is not covered by ASME B 16.5 - a - 1998

(NPS - Nominal Pipe Size)

SEAMLESS AND WELDED PRESSURE TUBE

ASTM - A - 249/269/213 • ASME - SA - 249/269/213

Stock Lengths: 20' (ft.)
Type 304/304L Dark Green • 316/316L Brown

O.D. Inches	Wall Inches
1/8	.010
	.016
	.020
	.025
	.028
	.035
	.049
	.049
3/16	.010
	.016
	.020
	.028
	.035
	.049
	.065
	.065
1/4	.010
	.016
	.020
	.028
	.035
	.049
	.065
	.083
5/16	.020
	.028
	.035
	.049
	.058
	.065
	.083
	.095
3/8	.020
	.028
	.035
	.049
	.065
	.083
	.095
	.120
7/16	.035
	.065
	.083
	.083

O.D. Inches	Wall Inches
1/2	.010
	.020
	.028
	.035
	.049
	.065
	.083
	.095
	.120
	.120
5/8	.028
	.035
	.049
	.083
3/4	.020
	.035
	.042
	.049
	.065
	.083
	.095
	.120
7/8	.016
	.020
	.028
	.035
	.049
	.058
	.065
	.083
1	.035
	.049
	.065
	.083
	.083
	.095
	.120
	.120

SANITARY TUBE

ASTM - A - 270

Stock Lengths: ½" - 8"
304L Dark Green • 316L Brown

AVAILABLE FINISHES: #7. Polished O.D./I.D.

Dairy and Pharmaceutical Quality

O.D./Wall	Stock Lengths
½ x .065	20 ft.
¾ x .065	20 ft.
1 x .049	20 ft.
1 x .065	20 ft.
1½ x .049	20 ft.
1½ x .065	20 ft.
2 x .049	20 ft.
2 x .065	20 ft.
2½ x .065	20 ft.
3 x .065	20 ft.
4 x .083	20 ft.
6 x .109	20 ft.
8 x .109	20 ft.

AUTHORIZED BY



ASTM & SA

C.F.F. SS · SERIES BPE TUBING

BPE TUBING



A270 Sanitary Stainless Steel Tubing
For Dairy, Food, Beverage, and Other
Sanitary Processes

RathGibson's sanitary tubing exceeds
ASTM A270 S2 and 3A specifications
and most user specifications. sizes are
available in 1/2" to 8" OD in stock
20' lengths.

Specification:

RathGibson, and exceeds the requirements of ASME-BPE SF1 and ASTM A270 S2. All tubing is 100% boroscoped and certified to 20 μ -in Ra (0.5 μ m) inner diameter (ID) maximum, and 30 μ -in Ra (0.8 μ m) outer diameter (OD) maximum surface roughness. Surface finishes are measured per ASME/ANSI B46.1, with the profilometer reading at 90 degrees to major polishing pattern.

316L available from stock

SP1 – mechanically polished to 20 Ra ID

SP4 - electropolished with 15 Ra ID

Size OD	Nominal Wall Thickness	Finishes Available
1/2"	0.065	SP1&SP4
3/4"		
1"	0.06	
1 1/2"	0.065	
2"		
2 1/2"		
3"	0.083	
4"		
6"	0.109	
8"		

C.F.F. CRN REGISTERED SANITARY VALVES AND FITTINGS



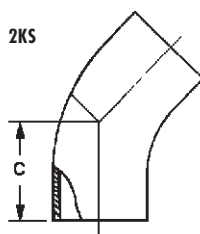
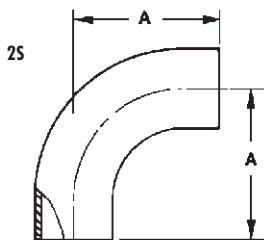
3A SANITARY STANDARD



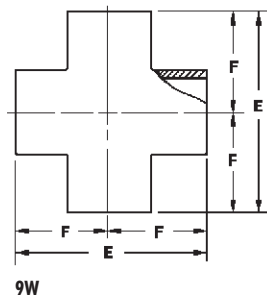
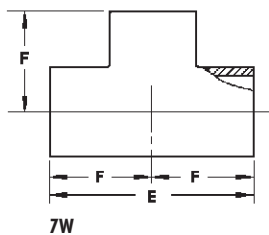
C.F.F. SS · SERIES SANITARY BUTT WELD FITTINGS

GENERAL DIMENSIONS						
Size (Tube O.D.)	A		C		E	F
1	2 ¹ / ₁₆		1 ³ / ₁₆			1 ⁷ / ₈
1½	2 ¹⁵ / ₁₆		1 ⁵ / ₈		4½	2¼
2	4 ¹ / ₁₆		2 ⁵ / ₁₆		6	3
2½	5 ³ / ₁₆		3		6	3
3	6 ⁵ / ₁₆		3 ¹ / ₁₆		6½	3¼
4	8 ⁵ / ₁₆		4 ¹ / ₁₆		7¾	3 ³ / ₈

NOTE: ANY COMBINATION OF ENDS YOU DESIRE ARE AVAILABLE

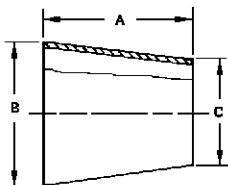


NOTE: REDUCING TEES AND CROSSES ARE AVAILABLE ON REQUEST

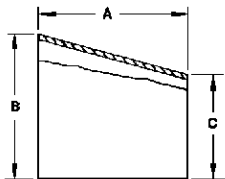


C.F.F. SS • SERIES SANITARY BUTT WELD FITTINGS

31				
Size (Tube O.D.)	A	B	C	Nom. Wall Thickness
1½ x 1	2	1½	1	.065
2 x 1½	2	2	1½	.065
2½ x 1½	4	2½	1½	.065
2½ x 2	2	2½	2	.065
3 x 1½	6	3	1½	.065
3 x 2	4	3	2	.065
3 x 2½	2	3	2½	.065
4 x 1½	10	4	1½	.083
4 x 2	8	4	2	.083
4 x 2½	6	4	2½	.083
4 x 3	4	4	3	.083



32				
Size (Tube O.D.)	A	B	C	Nom. Wall Thickness
1½ x 1	2	1½	1	.065
2 x 1½	2	2	1½	.065
2½ x 1½	4	2½	1½	.065
2½ x 2	2	2½	2	.065
3 x 1½	6	3	1½	.065
3 x 2	4	3	2	.065
3 x 2½	2	3	2½	.065
4 x 1½	10	4	1½	.083
4 x 2	8	4	2	.083
4 x 2½	6	4	2½	.083
4 x 3	4	4	3	.083



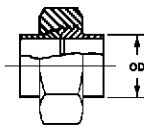
NOTE: ANY TYPE END CONNECTION YOU DESIRE ARE AVAILABLE



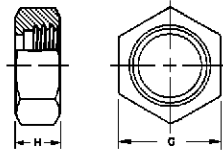
GENERAL DIMENSIONS					
Size (Tube O.D.)	L	M	N	O	P
1	1 ³ / ₈	2 ³ / ₈	1 ¹ / ₂	1 ¹ / ₁₆	4 ¹ / ₁₆
1 ¹ / ₂	1 ¹ / ₂	2 ¹⁷ / ₃₂	1 ⁵ / ₈	1 ¹ / ₁₆	4 ²³ / ₃₂
2	1 ¹ / ₂	2 ²⁵ / ₃₂	1 ³ / ₄	2 ⁵ / ₁₆	4 ²³ / ₃₂
2 ¹ / ₂	1 ³ / ₄	3 ¹ / ₁₆	1 ³ / ₄	2 ¹¹ / ₃₂	4 ²⁷ / ₃₂
3	1 ³ / ₄	3 ¹⁷ / ₃₂	1 ¹³ / ₁₆	3 ¹ / ₂	4 ²⁹ / ₃₂
4	1 ³ / ₄	4 ⁵ / ₁₆	2 ⁷ / ₈	4	5 ¹ / ₄

GENERAL DIMENSIONS					
Size (Tube O.D.)	Q	R	S	T	U
1	2 ¹ / ₂	2 ²⁹ / ₃₂	3 ¹ / ₂	⁷ / ₈	1 ¹ / ₃₂
1 ¹ / ₂	2 ¹³ / ₁₆	2 ¹⁵ / ₁₆	3 ¹ / ₂	1 ³ / ₈	1 ⁵ / ₈
2	2 ²³ / ₃₂	3	4 ¹ / ₂	1 ¹ / ₈	2 ¹ / ₈
2 ¹ / ₂	3 ¹ / ₄	3 ⁵ / ₈	4 ¹ / ₂	2 ³ / ₈	2 ⁵ / ₈
3	3 ²⁷ / ₃₂	4 ²⁵ / ₃₂	4 ¹ / ₂	2 ¹ / ₈	3 ¹ / ₈
4	4 ⁷ / ₃₂	4 ¹⁷ / ₃₂	6 ¹ / ₄	3 ⁵ / ₆₄	4 ¹ / ₈

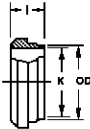
12H ACME UNION (3A)



13H HEX NUT (3A)



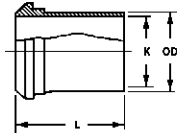
14WF PLAIN SHORT WELD FERRULE (3A)



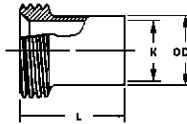
15WF THREADED SHORT WELD FERRULE (3A)



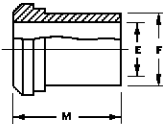
14A PLAIN TUBE FERRULE (3A)



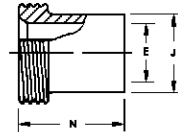
15A THREADED TUBE FERRULE (3A)



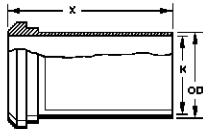
14W PLAIN FERRULE TANK SPUD (HEAVY) (3A)



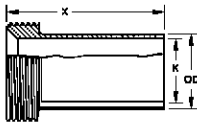
15W THREADED FERRULE TANK SPUD (HEAVY) (3A)



14WL PLAIN FERRULE TANK SPUD (LIGHT) (3A)



15WL THREADED FERRULE TANK SPUD (LIGHT) (3A)



NOTE: ALL ACME FITTINGS AVAILABLE IN JOHN PERRY, FLATT FACE AND ISS

ASK US ABOUT 6" - 12" O.D.'S



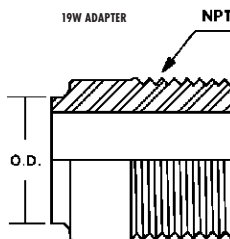
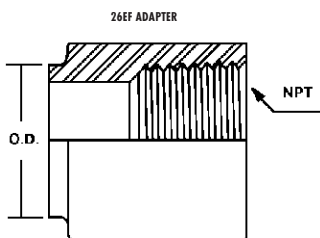
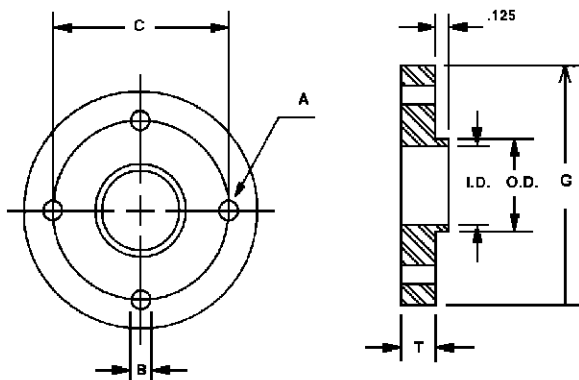
C.F.F. SS • SERIES SANITARY TUBE O.D. BUTT WELD FITTINGS

304/304L Dark Green • 316/316L Brown

FINISHES: #1. Bright - Annealed, #7 Polished O.D./I.D.

38W/26EF/19W						
Size (Tube O.D.)	I.D.	G	T	A	B	C
1	$\frac{7}{8}$	4 $\frac{1}{4}$	$\frac{3}{8}$	4	$\frac{3}{8}$	3 $\frac{3}{8}$
1 $\frac{1}{2}$	1 $\frac{3}{8}$	5	$\frac{3}{8}$	4	$\frac{3}{8}$	3 $\frac{3}{8}$
2	1 $\frac{7}{8}$	6	$\frac{1}{2}$	4	$\frac{3}{4}$	4 $\frac{3}{4}$
2 $\frac{1}{2}$	2 $\frac{3}{8}$	7	$\frac{1}{2}$	4	$\frac{3}{4}$	5 $\frac{1}{2}$
3	2 $\frac{7}{8}$	7 $\frac{1}{2}$	$\frac{1}{2}$	4	$\frac{3}{4}$	6
4	3 $\frac{7}{32}$	9	$\frac{1}{2}$	8	$\frac{3}{4}$	7 $\frac{1}{2}$
6	5 $\frac{25}{32}$	11	$\frac{1}{2}$	8	$\frac{7}{8}$	9 $\frac{1}{2}$

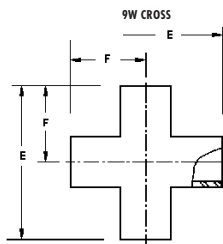
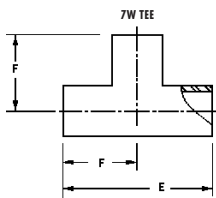
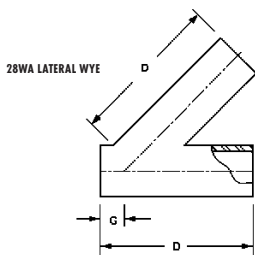
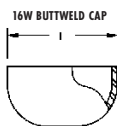
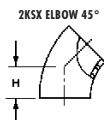
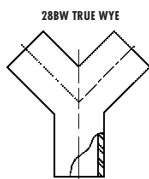
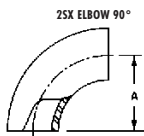
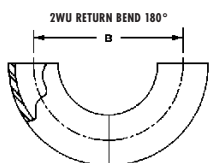
38W WELD NECK LIGHT-TYPE FLANGE



ASK US ABOUT 6" - 12" O.D.'S

C.F.F. SS · SERIES SANITARY TUBE O.D. BUTT WELD FITTINGS

2WU/2SX/2KXS/28BW/28WA/16W/7W/9W									
Size (Tube O.D.)	A	B	C	D	E	F	G	H	I
1	1½	3	3	5	3¾	1⅞	1	⅝	1
1½	2¼	4½	3	6⅜	4½	2¼	1⅜	1⅜	1½
2	3	6	4	7⅞	6	3	1⅞	1¼	2
2½	3¾	7½	5	8½	6	3	1½	1⅞	2½
3	4½	9	6	8⅞	6½	3¼	1⅞	1⅞	3
4	6	12	8	10¾	7¾	3⅞	2⅞	2½	4
6	9	18	-	14½	10	5	3½	3¾	6



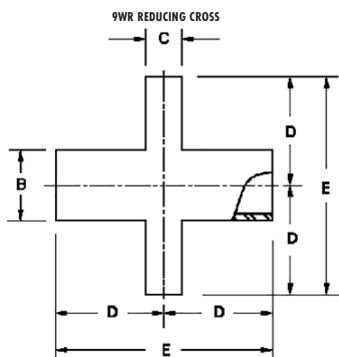
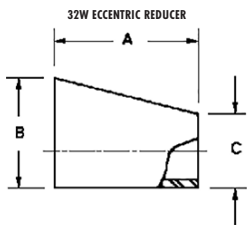
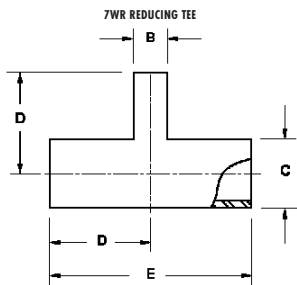
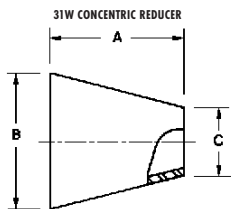
ASK US ABOUT 6" - 12" O.D.'S

cffstainless.com

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C.F.F. SS · SERIES SANITARY CLAMP END FITTINGS

31W/32W/7WR/9WR					
Size (Tube O.D.)	A	B	C	D	E
1½ x 1	2	1½	1	2¼	4½
2 x 1½	2	2	1½	3	6
2½ x 1½	4	2½	1½	3	6
2½ x 2	2	2½	2	3	6
3 x 1½	6	3	1½	3¼	6½
3 x 2	4	3	2	3¼	6½
2 x 2½	2	3	2½	3¼	6½
4 x 1½	10	4	1½	3⅞	7¾
4 x 2	8	4	2	3⅞	7¾
4 x 2½	6	4	2½	3⅞	7¾
4 x 3	4	4	3	3⅞	7¾
6 x 3	6	6	3	5	10
6 x 4	6	6	4	5	10

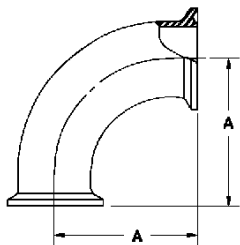


ASK US ABOUT 6" - 12" O.D.'S

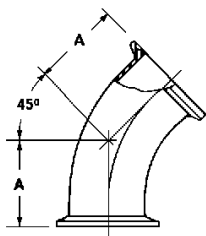
C.F.F. SS • SERIES SANITARY CLAMP END FITTINGS

304/304L Dark Green • 316/316L Brown

AVAILABLE FINISHES: #1. Bright - Annealed, #7. Polished O.D./I.D.



C2 90° ELL (3A)	
Size (Tube O.D.)	A
1	2
1½	2¾
2	3½
2½	4¼
3	5
4	6⅝



C2K 45° ELL (3A)	
Size (Tube O.D.)	A
1	1½
1½	1⅞
2	1¾
2½	2⅞
3	2⅞
4	3⅞

ASK US ABOUT 6" - 12" O.D.'S

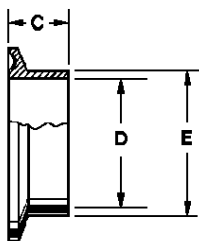
cffstainless.com

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C.F.F. SS · SERIES SANITARY CLAMP END FITTINGS

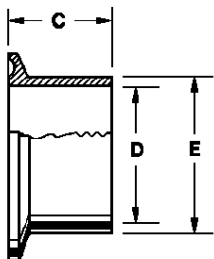
SHORT WELDING FERRULE

C14X (3A)			
Size (Tube O.D.)	C	D	E
1	½	.856	1.000
1½	½	1.356	1.500
2	½	1.856	2.000
2½	½	2.356	2.500
3	½	2.856	3.000
4	⅝	3.810	4.000



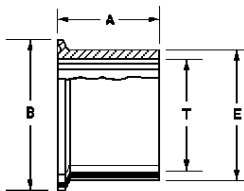
BUTT WELDING FERRULE

C14AM7 (3A)			
Size (Tube O.D.)	C	D	E
1	1⅛	.856	1.000
1½	1⅛	1.356	1.500
2	1⅛	1.856	2.000
2½	1⅛	2.356	2.500
3	1⅛	2.856	3.000
4	1⅛	3.810	4.000



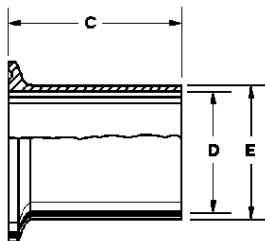
TANK WELDING FERRULE

C14-H (3A)				
Size (Tube O.D.)	A	B	T	E
1½	1⅛	1.984	1.400	1.676
2	1¾	2.516	1.868	2.192
2½	1¾	3.047	2.368	2.708
3	1⅞	3.579	2.868	3.224
4	2⅞	4.682	3.832	4.256



TANK WELDING SPUD (LIGHT)

C14 (3A)			
Size (Tube O.D.)	C	D	E
1	3	.856	1.000
1½	3	1.356	1.500
2	3	1.856	2.000
2½	3	2.356	2.500
3	4	2.856	3.000
4	4	3.810	4.000

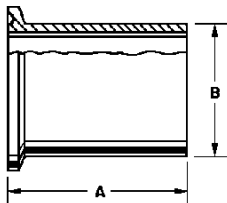
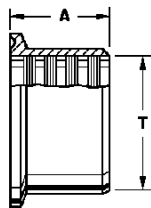


ASK US ABOUT 6" - 12" O.D.'S

C.F.F. SS • SERIES STAINLESS STEEL SANITARY FITTINGS CLAMP END

RECESSLESS FERRULE (3A) (FOR EXPANDING)

C14EX		
Size (Tube O.D.)	A	T
1½	1⅛	1½
2	1⅜	2
2½	1⅝	2½
3	1⅞	3
4	2	4

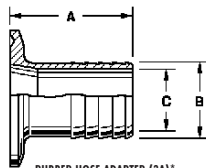
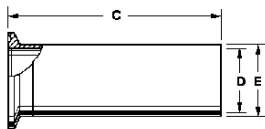


EXTENDED TANGENT FERRULE (3A)

TL14AM7		
Size (Tube O.D.)	A	B
1	2	1.00
1½	2	1.50
2	2½	2.00
2½	2½	2.50
3	2½	3.00
4	2½	4.00

TYGON HOSE ADAPTER (3A)*

C14AHT			
Size (Tube O.D.)	C	D	E
1	4½	.870	1.000
1½	4½	1.370	1.500
2	4½	1.856	2.000
2½	4½	2.356	2.500
3	4½	2.810	3.000
4	4⅝	3.810	4.000



RUBBER HOSE ADAPTER (3A)*

BREWERY STYLE LONG

C14AHR			
Size (Tube O.D.)	A	B	C
1	3½	1⅜	⅞
1½	3½	1⅝	1⅞
2	4½	2⅞	1⅞
2½	4½	2⅞	2⅞
3	4½	3⅞	2⅞
4	6¼	4⅞	3⅞

C14AHR			
Size (Tube O.D.)	A	B	C
1	1⅞	1.000	.812
1½	1⅞	1.500	1.312
2	2⅞	2.000	1.810
2½	2	2.500	2.312
3	3⅞	3.000	2.834
4	3⅞	4.000	3.834

NOTE: WHEN ORDERING SPECIFY I.D. SIZE OF HOSE BEING USED.

*Extending Length Rubber & Tygon Hose Adapters are Available on Request.

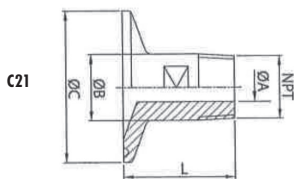
*Reducing Rubber Hose Adapters/Tygon Hose Adapters Available Upon Request.

ASK US ABOUT 6" - 12" O.D.'S

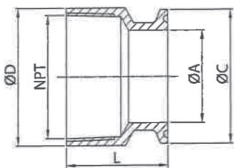
C.F.F. SS · SERIES SANITARY CLAMP END FITTINGS

FERRULE ADAPTER (CLAMP STYLE END)

C21	
Size	L
1/2"×1/2"	45
3/4"×1/2"	45
3/4"×3/4"	45
1"×1.5"×1/4"	40
1"×1.5"×3/8"	40
1"×1.5"×1/2"	40
1"×1.5"×3/4"	45
1"×1.5"×1"	50
1"×1.5"×1.25"	50
1"×1.5"×1.5"	50
1"×1.5"×2"	55
2"×1/4"	40
2"×3/8"	40
2"×1/2"	40
2"×3/4"	50
2"×1"	50
2"×1.5"	50
2"×2"	55
2"×2.5"	60
2"×3"	70



C22



FERRULE ADAPTER

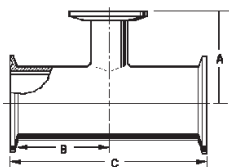
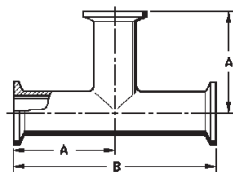
C21	
Size	L
1/2"×1/2"	33
3/4"×3/4"	33
1"×1.5"×1.2"	39
1"×1.5"×1.5"	39
1"×1.5"×2"	39
2"×2"	39
2.5"×2.5"	50
3"×2.5"	50
3"×3"	52
4"×4"	54

ASK US ABOUT 6" - 12" O.D.'S

C.F.F. SS · SERIES SANITARY CLAMP END FITTINGS

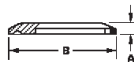
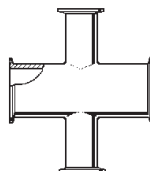
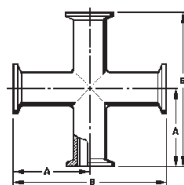
TEE (3A)

C7		
Size (Tube O.D.)	A	B
1	2 ³ / ₈	4 ³ / ₄
1½	2 ³ / ₄	5½
2	3½	7
2½	3½	7
3	3¾	7½
4	4½	9



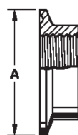
REDUCING TEE* (3A)

C7 R			
Size (Tube O.D.)	A	B	C
2 x 1	2 ¹ / ₈	2 ¹ / ₁₆	5 ¹ / ₈
2 x 1½	2 ³ / ₃₂	2 ¹ / ₁₆	5 ¹ / ₈
2½ x 2	2 ¹³ / ₁₆	2 ²¹ / ₃₂	5 ¹¹ / ₁₆
3 x 2	3 ¹ / ₁₆	3 ³ / ₃₂	6 ³ / ₁₆
3 x 2½	3 ³ / ₃₂	3 ³ / ₃₂	6 ³ / ₁₆



CROSS (3A)

C9		
Size (Tube O.D.)	A	B
1	2 ³ / ₈	4 ³ / ₄
1½	2 ³ / ₄	5½
2	3½	7
2½	3½	7
3	3¾	7½
4	4½	9



THERMOMETER CAP (3A)

C23 B	
Size (Tube O.D.)	A
1 & 1½	1.984
2	2.516
2½	3.047
3	3.579
4	4.682

SOLID END CAP (3A)

C16	
A	B
.250	1.984
.250	2.516
.250	3.047
.250	3.579
.312	4.682

*OTHER SIZES AVAILABLE ON REQUEST

C23B - 1" TAPPED, ½", NPT.

ALL OTHERS ¾"

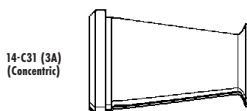
ASK US ABOUT 6" - 12" O.D.'S

cffstainless.com

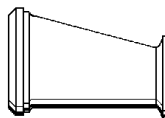
69

C.F.F. SS · SERIES SANITARY CLAMP END FITTINGS

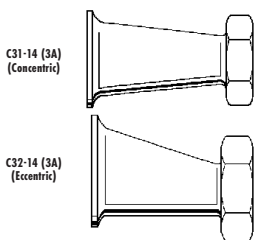
Size	Overall Length
1½ x 1	3 ³ / ₃₂
2 x 1	5 ⁷ / ₃₂
2 x 1½	3 ³ / ₃₂
2½ x 1½	5 ¹¹ / ₃₂
2½ x 2	3 ¹¹ / ₃₂
3 x 2	5 ¹³ / ₃₂
3 x 2½	3 ¹³ / ₃₂
4 x 2½	7 ²³ / ₃₂
4 x 3	5 ²³ / ₃₂



14-C31 (3A)
(Concentric)



14-C32 (3A)
(Eccentric)

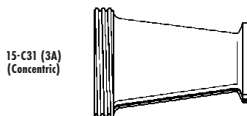


C31-14 (3A)
(Concentric)

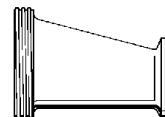
C32-14 (3A)
(Eccentric)

Size	Overall Length
1½ x 1	4 ¹ / ₈
2 x 1	6 ¹ / ₈
2 x 1½	4 ⁷ / ₃₂
2½ x 1½	6 ⁷ / ₃₂
2½ x 2	4 ¹³ / ₃₂
3 x 2	6 ¹³ / ₃₂
3 x 2½	4 ²¹ / ₃₂
4 x 2½	8 ²³ / ₃₂
4 x 3	6 ¹⁵ / ₁₆

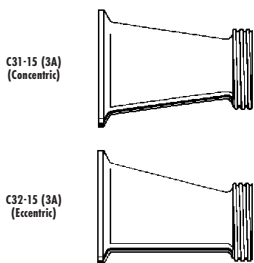
Size	Overall Length
1½ x 1	3 ³ / ₃₂
2 x 1	5 ⁷ / ₃₂
2 x 1½	3 ³ / ₃₂
2½ x 1½	5 ¹¹ / ₃₂
2½ x 2	3 ¹¹ / ₃₂
3 x 2	5 ¹³ / ₃₂
3 x 2½	3 ¹³ / ₃₂
4 x 2½	7 ²³ / ₃₂
4 x 3	5 ²³ / ₃₂



15-C31 (3A)
(Concentric)



15-C32 (3A)
(Eccentric)



C31-15 (3A)
(Concentric)

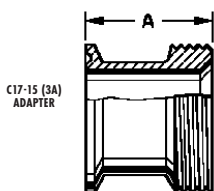
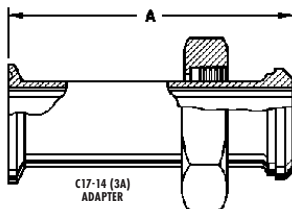
C32-15 (3A)
(Eccentric)

Size	Overall Length
1½ x 1	3 ³ / ₁₆
2 x 1	5 ³ / ₁₆
2 x 1½	3 ⁷ / ₃₂
2½ x 1½	5 ⁷ / ₃₂
2½ x 2	3 ⁷ / ₃₂
3 x 1½	7 ⁷ / ₃₂
3 x 2	5 ⁷ / ₃₂
3 x 2½	3 ¹¹ / ₃₂
4 x 2	9 ¹¹ / ₃₂
4 x 2½	7 ¹⁵ / ₃₂
4 x 3	5 ¹⁷ / ₃₂

ASK US ABOUT 6" - 12" O.D.'S

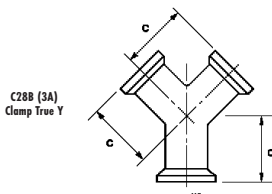
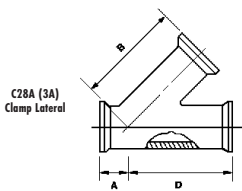
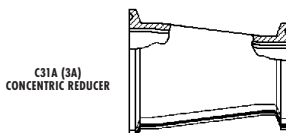
C.F.F. SS · SERIES SANITARY CLAMP END FITTINGS

Size (Tube O.D.)	A
1	3
1½	3
2	3
2½	3½
3	3½
4	4



Size (Tube O.D.)	A
1	1 1/16
1½	1 23/32
2	1 23/32
2½	1 27/32
3	1 29/32
4	2 1/32

Size	Overall Length
1½ x 1	3
2 x 1	5
2 x 1½	3
2½ x 1	7
2½ x 1½	5
2½ x 2	3
3 x 1½	7
3 x 2	5
3 x 2½	3
4 x 2	9 1/8
4 x 2½	7 1/8
4 x 3	5 1/8

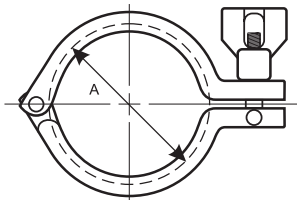


Size (Tube O.D.)	A	B	C	D
1½	1 3/8	5 1/16	3 1/2	4
2	1 5/8	5 1/2	4 1/2	4 1/2
2½	2 1/8	6 7/8	5 1/2	5 1/2
3	2 1/2	8 1/4	6 1/2	7
4	3	10	8 5/8	8 3/4

ASK US ABOUT 6" - 12" O.D.'S

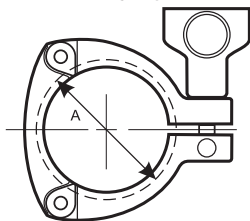
C.F.F. SS · SERIES SANITARY CLAMPS AND GASKETS

**C13 HD 2 Piece
HEAVY DUTY CLAMP**



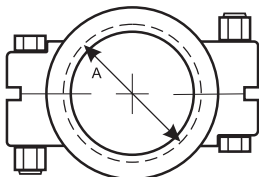
Size (in)	A (mm)
¾"	28
1½"	53.6
2"	67
2½"	80.6
3"	94
4"	122
6"	170
8"	221

**C133 HD 3 Piece
HEAVY DUTY CLAMP**



Size (in)	A (mm)
1½"	54
2"	67.4
2½"	81
3"	94
4"	122

**C13 HP 2 Piece
HEAVY DUTY CLAMP**



Size (in)	A (mm)
1½"	52
2"	65.5
2½"	79
3"	92.4
4"	120.5

ASK US ABOUT 6" - 12" O.D.'S



GASKETS

Clamp Gaskets

Standard - Molded,
One Piece O-Ring Gasket

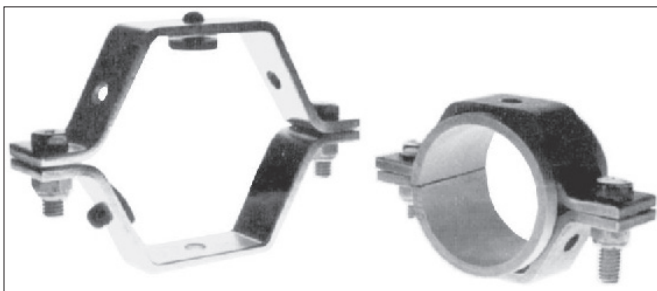
C40N BUNA-N RUBBER
C40T WHITE TEFLON
C40S SILICONE
C40V VITON



C.F.F. SS · SERIES SANITARY HANGERS

Type 304

Polished

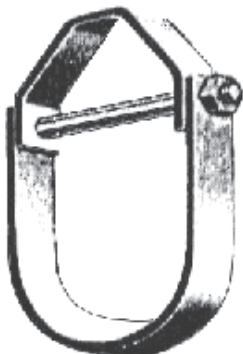


3-Point EDPM Grommet Support
TH-Style

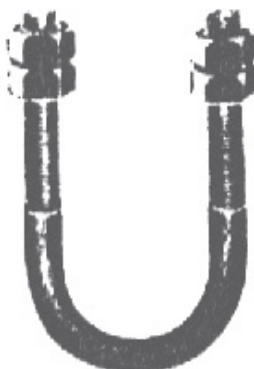
PVC Insert Support
TPW-Style

- Two-piece design provides maximum strength at minimum cost
- Easily installed with standard wrenches
- SS bolts fasten to SS lock nut with nylon insert eliminating lock washers
- Support rods are welded to hanger at time of installation for maximum strength

Other sizes are available upon request



CLEVIS HANGERS

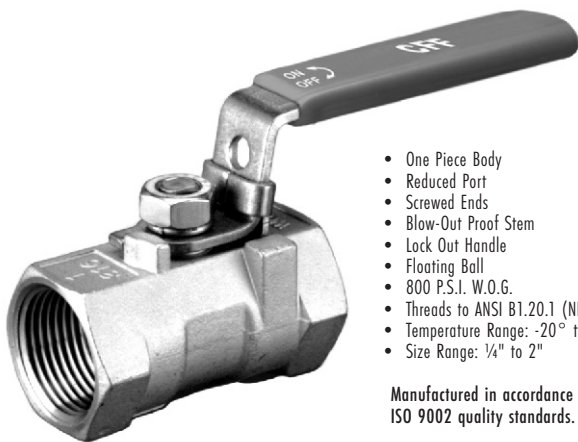


U-BOLTS

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

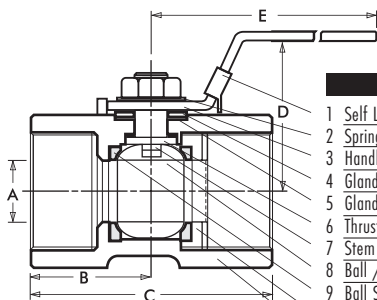
SS · 1

BALL



- One Piece Body
- Reduced Port
- Screwed Ends
- Blow-Out Proof Stem
- Lock Out Handle
- Floating Ball
- 800 P.S.I. W.O.G.
- Threads to ANSI B1.20.1 (NPT)
- Temperature Range: -20° to 450°F
- Size Range: 1/4" to 2"

Manufactured in accordance with
ISO 9002 quality standards.



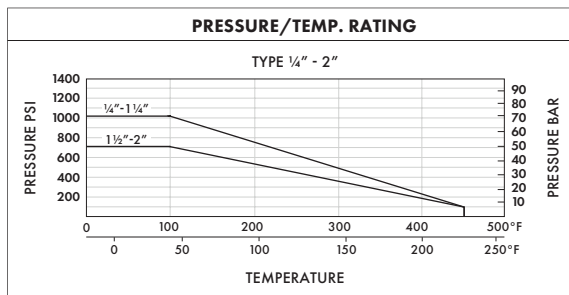
NAME/MATERIAL

- | | |
|----|--|
| 1 | Self Locking Nut / Stainless Steel 304 |
| 2 | Spring Washer / Stainless Steel 304 |
| 3 | Handle / Stainless Steel 316 |
| 4 | Gland / Stainless Steel 316 |
| 5 | Gland Packing / GF- PTFE |
| 6 | Thrust Gland Washer / 15% GF- PTFE |
| 7 | Stem / Stainless Steel 316 |
| 8 | Ball / Stainless Steel 316 |
| 9 | Ball Seat / PTFE + 15% GF- PTFE |
| 10 | Insert / Stainless Steel 316 |
| 11 | Body / Stainless Steel 316 |

SS · 1 BALL VALVE

DIMENSIONS						
Nominal Size	(mm/in) A	(mm/in) B	(mm/in) C	(mm/in) D	(mm/in) E	(kg/lb) WT
¼	5	19.5	39	31	78	0.06
	0.197	0.768	1.535	1.220	3.071	0.13
⅜	7	22	44	36	80	0.1
	0.276	0.866	1.732	1.417	3.150	0.22
½	9.2	28	56.5	41	99	0.17
	0.362	1.102	2.224	1.614	3.898	0.37
¾	12.5	29.5	59	44	99	0.26
	0.492	1.161	2.323	1.732	3.898	0.57
1	16	35.5	71	48	112	0.42
	0.630	1.398	2.795	1.890	4.409	0.92
1¼	20	39	78	54	112	0.71
	0.787	1.535	3.071	2.126	4.409	1.56
1½	24.5	41.5	83	65	140	0.82
	0.965	1.634	3.268	2.559	5.512	1.80
2	32	50	100	72	140	1.97
	1.260	1.969	3.937	2.835	5.512	4.33

Design and materials are subject to change without notice.

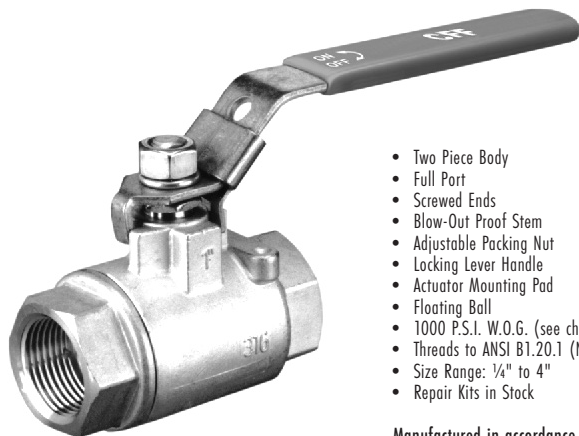


FLOW COEFFICIENT CV								
Size (in.)	¼	⅜	½	¾	1	1¼	1½	2
Cv G.P.M.	2.5	4.5	7	9.0	16	24	37	68

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

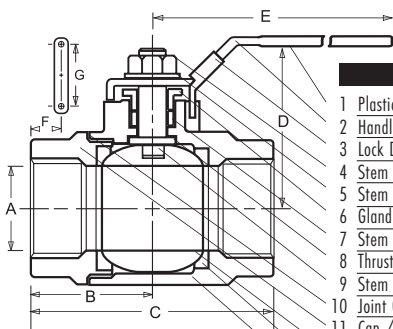
SS · 2

BALL



- Two Piece Body
- Full Port
- Screwed Ends
- Blow-Out Proof Stem
- Adjustable Packing Nut
- Locking Lever Handle
- Actuator Mounting Pad
- Floating Ball
- 1000 P.S.I. W.O.G. (see chart)
- Threads to ANSI B1.20.1 (NPT)
- Size Range: 1/4" to 4"
- Repair Kits in Stock

Manufactured in accordance with
ISO 9002 quality standards.

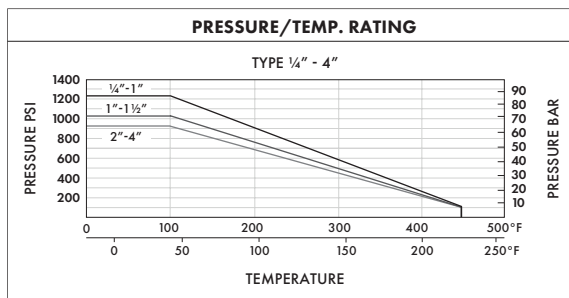


NAME/MATERIAL	
1	Plastic Cover / Plastic
2	Handle / Stainless Steel 304
3	Lock Device / Stainless Steel 304
4	Stem Nut / Stainless Steel 304
5	Stem Washer / Stainless Steel 304
6	Gland Nut / Stainless Steel 304
7	Stem Packing / Teflon
8	Thrust Washer / Rein. Teflon 15% GFT
9	Stem / Stainless Steel 316
10	Joint Gasket / Teflon
11	Cap / Stainless Steel 316; CF 8M
12	Ball / Stainless Steel 316
13	Seat / Rein. Teflon 15% GFT
14	Body / Stainless Steel 316; CF 8M

SS · 2 BALL VALVE

DIMENSIONS							
Nominal Size	(mm/in) A	(mm/in) B	(mm/in) C	(mm/in) D	(mm/in) E	(mm/in) F	(mm/in) G
¼	11.6	30	60	45	110	12.7	28.45
	0.457	1.181	2.362	1.772	433.1	0.50	1.120
⅜	12.7	30	60	45	110	12.7	28.45
	0.50	1.181	2.362	1.772	433.1	0.50	1.120
½	15	32	64	45	130	12.7	28.45
	0.591	1.260	2.520	1.772	5.118	0.50	1.120
¾	20	38.5	77	50	130	22.10	34.80
	0.787	1.516	3.032	1.969	5.118	0.87	1.37
1	25.4	45	90	65	155	22.10	38.10
	1.00	1.772	3.543	2.559	6.102	0.87	1.37
1¼	32	50	100	70	155	23.62	38.10
	1.260	1.967	3.937	2.756	6.102	0.93	1.50
1½	38.1	59	118	75	185	23.62	38.10
	1.50	2.323	4.646	2.953	7.283	0.93	1.50
2	50.8	68.5	137	85	185	23.62	38.10
	2.00	2.697	5.398	3.346	7.283	0.93	1.50
2½	65	82.5	165	136	250	----	70
	2.561	3.248	6.496	5.364	9.843	----	2.756
3	80	97.5	195	149	250	----	70
	3.152	3.839	7.677	5.866	9.843	----	2.756

Design and materials are subject to change without notice.



FLOW COEFFICIENT CV										
Size (in.)	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Cv	6	7	10	25	35	46	80	110	310	360
Operating Torques (lbs.)	36	36	43	65	101	158	187	230	430	1380

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

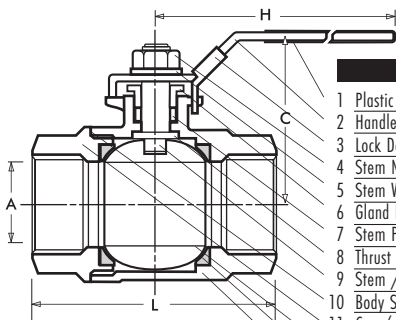
SS · 2B

BALL



- Two Piece Body
- Full Port
- Screwed Ends
- Blow-Out Proof Stem
- Adjustable Packing Nut
- Locking Lever Handle
- Actuator Mounting Pad
- 2000 P.S.I. W.O.G. (see chart)
- Threads to ANSI B1.20.1 (NPT)
- Size Range: 1/4" to 4"

Manufactured in accordance with
ISO 9002 quality standards.



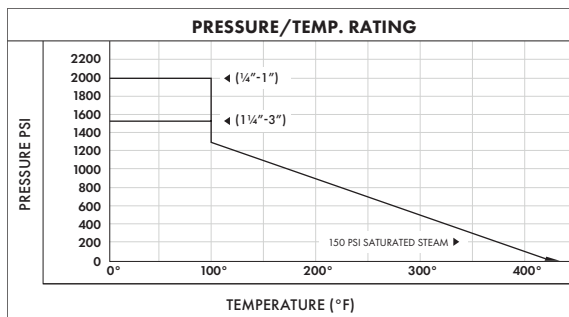
NAME/MATERIAL

1	Plastic Cover / Plastic
2	Handle / AISI 304
3	Lock Device / AISI 304
4	Stem Nut / AISI 304
5	Stem Washer / AISI 304
6	Gland Nut / AISI 304
7	Stem Packing / PTFE
8	Thrust Washer / PTFE
9	Stem / AISI 316
10	Body Seal / PTFE
11	Cap / A351 CF8M
12	Ball / AISI 316
13	Seat / PTFE 15% Glassfiber Reinforced
14	Body / A351 CF8M

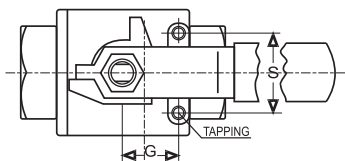
SS · 2B BALL VALVE

DIMENSIONS									
Size	D	L	C	H	G	S	CV Factor	Torque N/M	KG
¼	11.6	55	48	120	12.7	28.5	6	2.0	0.3
⅜	12.7	55	48	120	12.7	28.5	7	2.5	0.3
½	15	61	49	120	12.7	28.5	10	3.0	0.3
¾	20	80	55	130	22.1	35	25	5.5	0.58
1	25.4	89	69	155	22.1	35	35	7.0	1.04
1¼	32	96	77	155	23.6	38	46	15	1.54
1½	39	117	84	185	23.6	38	80	20	2.26
2	50.8	140	93	185	23.6	38	110	25	3.80
2½	65	165	138	250	35.0	55	310	43	6.80
3	80	192	155	280	35.0	55	360	45	11.58

Design and materials are subject to change without notice.



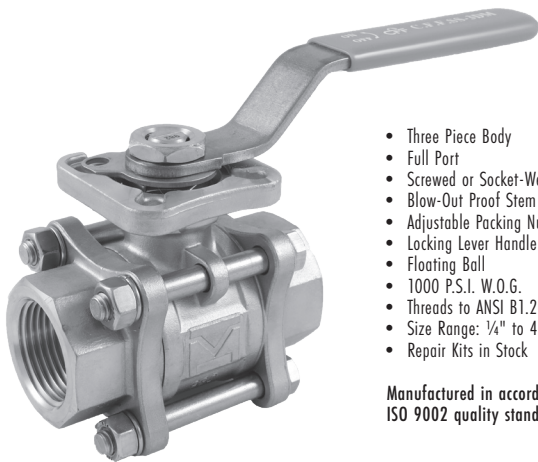
FLOW COEFFICIENT CV										
Size (in.)	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Cv	6	7	10	25	35	46	80	110	310	360
Operating Torques (lbs)	36	36	43	65	101	158	187	230	430	1380



C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

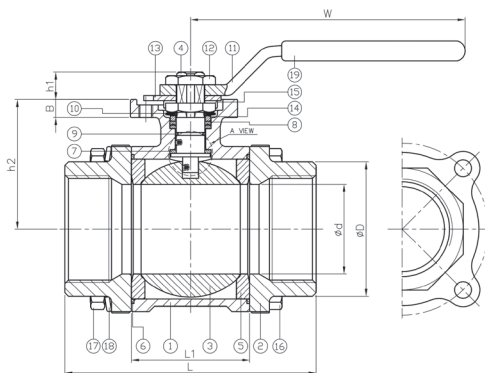
SS · 3DM

BALL



- Three Piece Body
- Full Port
- Screwed or Socket-Weld Ends
- Blow-Out Proof Stem
- Adjustable Packing Nut
- Locking Lever Handle
- Floating Ball
- 1000 P.S.I. W.O.G.
- Threads to ANSI B1.20.1 (NPT)
- Size Range: ¼" to 4"
- Repair Kits in Stock

Manufactured in accordance with ISO 9002 quality standards.

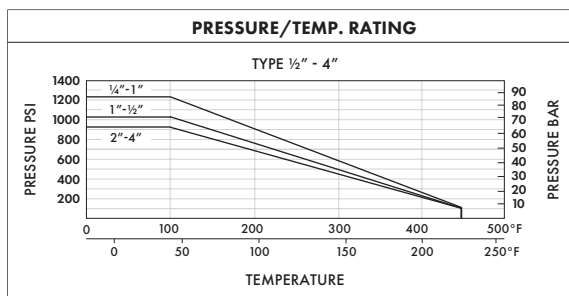


Name/Material	Stainless Steel		
1 Body	ASTM A351-CF8M, ASTM A216-WCB	10 Disk Spring	SS 310
2 Cap		11 Handle	ASTM A351-CF8
3 Ball	ASTM A351-CF8M	12 Stem Nut	AISI 304
4 Stem	ASTM A276-316	13 Stopper	
5 Ball Seat	RTFE	14 Gland Ring	
6 Gasket	PTFE	15 Lock Device	
7 Thrust Washer		16 Bolt	
8 Packing		17 Nut	
9 O-Ring	Viton	18 Spring Washer	PVC
		19 Handle Sleeve	

SS • 3DM BALL VALVE

DIMENSIONS						
Nominal Size	(mm/in) A	(mm/in) B	(mm/in) C	(mm/in) D	(mm/in) E	(mm/in) F
¼	11.6	32.5	65	48	110	¼NPT:PT
	0.457	1.280	2.559	1.890	433.1	
¾	12.7	32.5	65	48	110	¾NPT:PT
	0.50	1.280	2.559	1.890	433.1	
½	15	35	70	54	130	½NPT:PT
	0.591	1.378	2.756	2.165	5.118	
¾	20	42.5	85	59	130	¾NPT:PT
	0.787	1.673	3.346	2.362	5.118	
1	25.4	47.5	95	75	155	1NPT:PT
	1.00	1.870	3.740	2.953	6.102	
1¼	32	55	110	80	155	1¼NPT:PT
	1.260	2.165	4.331	3.150	6.102	
1½	38.1	65	130	85	185	1½NPT:PT
	1.50	2.559	5.118	3.346	7.283	
2	50.8	75	150	95	195	2NPT:PT
	2.00	2.953	5.906	3.740	7.283	
2½	65	93	186	133	250	2½NPT:PT
	2.561	3.661	7.323	5.236	9.843	
3	80	106	212	143	250	3NPT:PT
	3.152	4.173	8.346	5.630	9.843	

Design and materials are subject to change without notice.



FLOW COEFFICIENT CV										
Size (in.)	¼	¾	½	¾	1	1¼	1½	2	2½	3
Cv	6	7	10	25	35	46	80	110	310	360
Operating Torques (lbs.)	36	36	43	65	101	158	187	230	430	1380

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

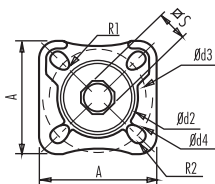
SS · 3DM

ACTIVATED

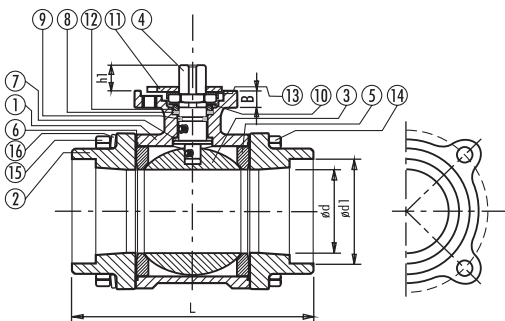


- Three Piece Body
- Full Port
- Screwed Socket-Weld or Butt-Weld Ends
- Blow-Out Proof Stem
- ISO 5211 Direct Mounting Pad
- Anti-Static Device
- Threads to ANSI B1.20.1 (NPT)
- Size Range: 1/4" to 4"

Manufactured in accordance with
ISO 9002 quality standards.



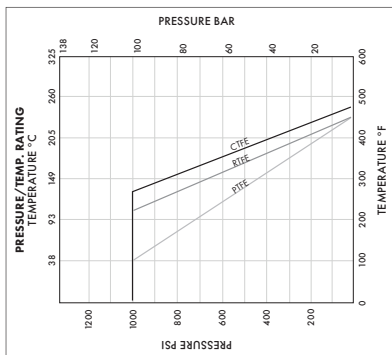
Name/Material	Stainless Steel
1 Body	ASTM A351-CF8M, 14408
2 Cap	
3 Ball	
4 Stem	ASTM A276-316
5 Ball Seat	PTFE/RTFE/CTFE
6 Gasket	PTFE
7 Thrust Washer	
8 Packing	Viton
9 O-Ring	
10 Belleville Washer	50CrV4
11 Stopper (Lock Pad)	AISI 304
12 Gland Ring	
13 Lock Device	
14 Bolt	
15 Nut	
16 Spring Washer	



SS · 3DM BALL VALVE

DIMENSIONS																
NPS	d	D	L	LI	W	ISO 5211	A	B	S	R1	R2	H	R	Torque in-lb Action Breakaway	Weight LB	
1/4"	0.31	0.83	2.17													
3/8"	0.39	0.83	2.36	0.91	4.72	F03/F04	1.65	0.24	0.35		0.11			21.9	32.2	1.3
1/2"	0.59	1.1	2.95							0.11						
3/4"	0.79	1.38	3.15	1.1										35.4	54.1	1.8
1"	0.98	1.65	3.54	1.38										38	87.4	2.4
1 1/4"	1.26	2.05	4.32	1.76	5.83	F04/F05	1.97	0.3	0.43		0.14			103.6	138.1	3.7
1 1/2"	1.5	2.32	4.7	2.15										123.9	194.7	6.4
2"	1.97	2.83	5.51	2.6	7.01	F05/F07	2.76	0.33	0.55	0.14	0.18			168.2	237	8.6
2-2 1/2"	2.56	3.62	7.28	3.46										270.4	789.3	21.6
3"	2.99	4.09	8.07	3.86	12.8	F07/F10	3.94	0.39	0.67			0.18	0.22	575.3	858.5	28.4
4"	3.94	5.51	9.45	4.72		F10/F12	4.92	0.47	0.87					619.5	1026.7	52

1000 WOG

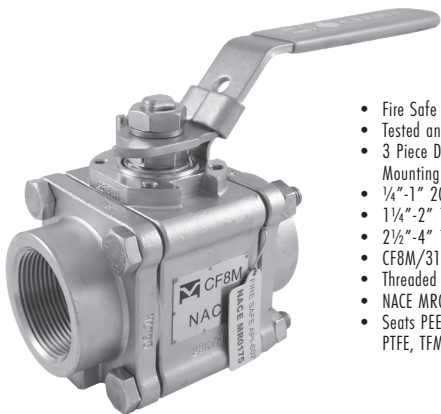


Design and materials are subject to change without notice.

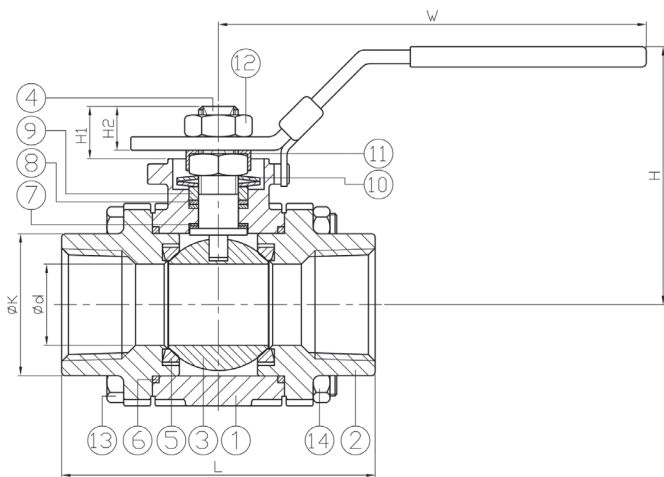
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 4DM

BALL



- Fire Safe Valve
- Tested and Certified to API 607 4th Edition
- 3 Piece Design c/w ISO 5211 Direct Mounting Pad
- ¼"-1" 2000 WOG
- 1¼"-2" 1500 WOG
- 2½"-4" 1000 WOG
- CF8M/316 Stainless Steel
- Threaded Ends (Socket-Weld Available)
- NACE MR0175
- Seats PEEK(DELRIN, TFE-25% Carbon, RTFE, PTFE, TFM1600 Available)



SS · 4DM BALL VALVE

NPS	d	K	L	W	T	A	Weight (lb)	Torque (in-lb)
½"	0.59	1.2	2.94	4.5	0.22	1.42	1.7	33.8
¾"	0.79	1.42	3.16	4.5	0.22	1.42	1.9	45.1
1"	0.94	1.76	3.66	5.75	0.3	1.65	3.9	90.2
1¼"	1.18	2.13	4.35	5.75	0.3	1.65	6	141
1½"	1.5	2.44	4.72	7.09	0.34	1.97	8.4	186
2"	1.97	2.99	5.51	7.09	0.34	1.97	13.5	284.1

Design and materials are subject to change without notice.

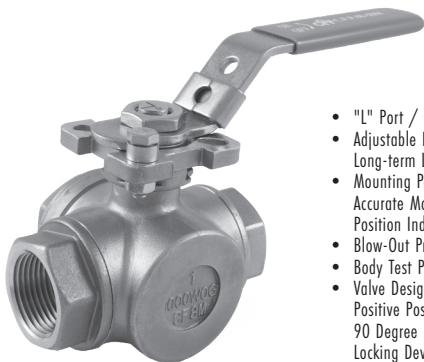
Name/Material	Stainless Steel
1 Body	ASTM A351-CF8M
2 Cap	ASTM A351-CF3M
3 Ball	ASTM A351-CF8M
4 Stem	ASTM A276-316
5 Ball Seat	PEEK
6 Gasket	Graphite
7 Thrust Washer	CTFE
8 Packing	Graphite
9 Gland-Ring	AISI 304
10 Disk Spring	AISI 301
11 Lock Pad	ASTM A167-304
12 Stem Nut	ASTM A194-8A
13 Bolt	ASTM A193-B8A
14 Nut	ASTM A194-8A
15 Stop Pin	AISI 304
16 Handle	ASTM A167-304
17 Handle Sleeve	PVC

SS4DM	
Size	Cv (gallon/min)
½"	37
¾"	68
1"	101
1-¼"	162
1-½"	268
2	486
2-½"	843
3	1120

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 5DM

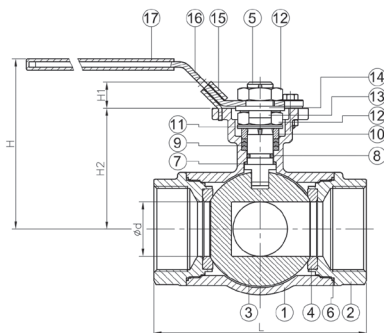
BALL



STANDARD PORT 1/2" - 2"

Manufactured in accordance with
ISO 9002 quality standards.

- "L" Port / "T" Port
- Adjustable Rotary Stem Seals Provide Long-term Leak Free Operation
- Mounting Pad, Allows Easy and Accurate Mounting of Actuators and Position Indicating Devices
- Blow-Out Proof Stem Design
- Body Test Pressure: 1500 PSIG Hydrostatic
- Valve Design Allows 360 Degree Rotation, Positive Position Location is Available at 90 Degree Increments by the Valve Locking Device
- Pressure Rating: 1000 P.S.I. W.O.G.
- Temperature Range: -60° to 450°F
- End Types: Threaded
- Threads to ANSI B1.20.1 (NPT)

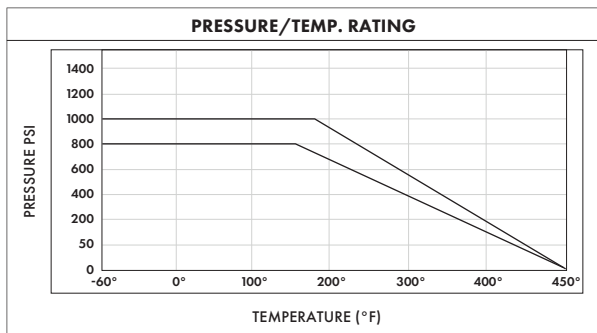
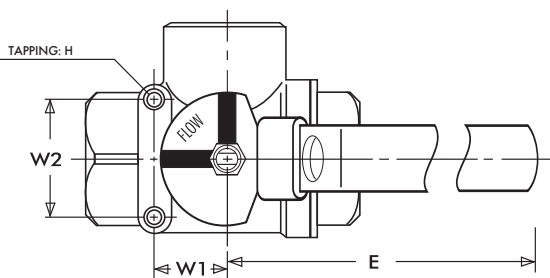


Name/Material	Stainless Steel
1 Body	ASTM A351-CF8M
2 CAP-A	
3 Ball	
4 Seat	PTFE
5 Stem	SUS 316
6 Gasket	PTFE
7 Thrust Washer	PEEK+PTFE
8 O-Ring	Viton
9 Packing	PFTE
10 Gland	SUS 304
11 Spring Washer	
12 Stem Nut	
13 Stop Washer	
14 Handle Washer	
15 Locking Device	
16 Handle	PLASTIC
17 Plastic Cover	
18 CAP-B	ASTM A351-CF8M
19 Gasket	PTFE
20 Stop Pin	SUS 304

SS · 5DM BALL VALVE

DIMENSIONS									
Nominal Size	(mm) A	(mm) B	(mm) C	(mm) D	(mm) E	(mm) W1	(mm) W2	(mm) H	(mm) F
½"	12.7	30	60	56	96	12.7	28.7	10-24 UNC	½ NPT or BSP
¾"	16.0	37	74	64	125	22.4	35.0	10-24 UNC	¾ NPT or BSP
1"	20.0	41	82	66	125	22.4	35.0	10-24 UNC	1 NPT or BSP
1½"	32.0	62	114	83	145	25.4	38.1	¼-20 UNC	1½ NPT or BSP
2"	38.1	71	142	88	205	25.4	38.1	¼-20 UNC	2 NPT or BSP

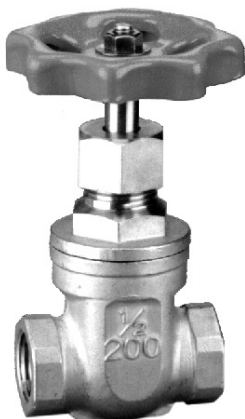
Design and materials are subject to change without notice.



C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

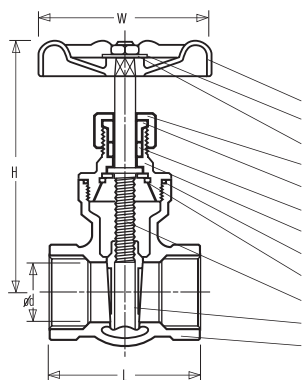
SS · 6

GATE



- Full Port
- Threads to ANSI B1.20.1 (NPT)
- 200 P.S.I. W.O.G.
- Investment Cast
- Non-Rising Stem and Handwheel

Manufactured in accordance with ISO 9002 quality standards.



NAME/MATERIAL

- | | |
|----|-------------------------|
| 1 | Hand Wheel / FCD 45 |
| 2 | Name Plate / Aluminum |
| 3 | Stem Washer / AISI 316 |
| 4 | Packing Nut / AISI 316 |
| 5 | Gland / AISI 304 |
| 6 | Gland Packing / PTFE |
| 7 | Bonnet / ASTM A351-CF8M |
| 8 | Gasket / PTFE |
| 9 | Snap Ring / AISI 304 |
| 10 | Stem / AISI 316 |
| 11 | Disc / ASTM A351-CF8M |
| 12 | Body / ASTM A351-CF8M |

DIMENSIONS

Nominal Size	(mm / in) Ød	(mm / in) L	(mm / in) H	(mm / in) W	(mm / in) Cv
½"	12 / 0.039	68 / 2.677	110 / 4.330	70 / 2.755	17.6
¾"	15 / 0.590	75 / 2.952	114 / 4.488	70 / 2.755	32
1"	20 / 0.787	86 / 3.385	129 / 5.078	76.5 / 3.001	54
1¼"	25 / 0.984	94 / 3.700	152 / 5.984	103.5 / 4.074	97
1½"	33 / 1.299	112 / 4.409	168 / 6.614	103.5 / 4.074	135
2"	40 / 1.574	126 / 4.960	203 / 7.992	121 / 4.763	230

Design and materials are subject to change without notice.

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

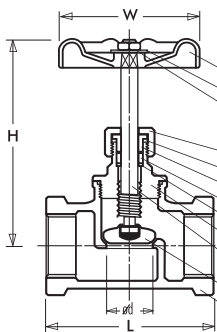
SS · 7

GLOBE



- Full Port
- Threads to ANSI B1.20.1 (NPT)
- 200 P.S.I. W.O.G.
- Investment Cast
- Non-Rising Stem and Handwheel

Manufactured in accordance with ISO 9002 quality standards.



NAME/MATERIAL

- 1 Hand Wheel / FCD 45
- 2 Name Plate / Aluminum
- 3 Stem Washer / AISI 316
- 4 Packing Nut / AISI 316
- 5 Gasket / PTFE
- 6 Gland / AISI 304
- 7 Gland Packing / PTFE
- 8 Snap Ring / AISI 304
- 9 Bonnet / ASTM A351-CF8M
- 10 Stem / AISI 316
- 11 Disc / ASTM A351-CF8M
- 12 Body / ASTM A351-CF8M

DIMENSIONS

Nominal Size	(mm / in) Ød	(mm / in) L	(mm / in) H OPEN	(mm / in) W	(mm / in) Cv
½"	16.1 / 0.636	55 / 2.165	98 / 3.858	70 / 2.755	3.8
¾"	20.3 / 0.799	60.5 / 2.381	110 / 4.330	70 / 2.755	7
1"	26 / 1.023	66 / 2.598	121 / 4.763	76.5 / 3.001	11
1¼"	31.8 / 1.251	76 / 2.992	130 / 5.118	103.5 / 4.074	21
1½"	40 / 1.574	87 / 3.425	173 / 6.811	103.5 / 4.074	29
2"	50.3 / 1.980	96 / 3.779	207 / 8.149	121 / 4.763	50

Design and materials are subject to change without notice.

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

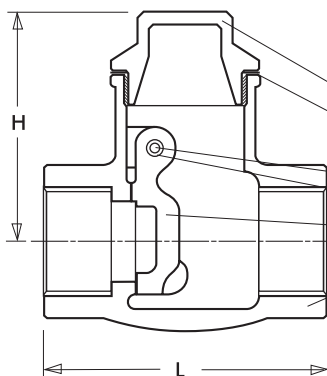
SS · 8

CHECK



- Full Port
- Thread to ANSI B1.20.1 (NPT)
- 200 P.S.I. W.O.G.
- Temperature Rating: 350°F
- Stainless Steel Class 200 Screwed Cap
- Swing Type Disc
- Integral Seat

Manufactured in accordance with ISO 9002 quality standards.



NAME/MATERIAL

- | | |
|---|--------------------|
| 1 | Cap / CF 8M |
| 2 | Gasket / Teflon |
| 3 | Hinge Pin / SS 316 |
| 4 | Plug / SS 316 |
| 5 | Disc / CF 8M |
| 6 | Body / CF 8M |

DIMENSIONS		
Size	(mm) L	(mm) H
½"	65	45
¾"	80	54
1"	90	57
1¼"	105	62
1½"	120	72
2"	140	78

Design and materials are subject to change without notice.

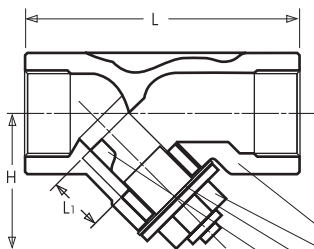
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 9

Y-STRAINER

- Investment Cast Body 600 P.S.I. (20 BAR) W.O.G.
- Max Pressure Max Working Temperature 230°C
- End-to-End Length Conforms to DIN 3202, Part 4, M8 Series
- (PN16, PN40)
- Screens; ¼" to 2" - 20 Mesh
- Threads to ANSI B1.20.1 (NPT)

Manufactured in accordance with ISO 9002 quality standards.



NAME / MATERIAL

- 1 Body / ASTM-CF8M-A351
- 2 Cap / ASTM-CF8M-A351
- 3 Joint Gasket / PTFE
- 4 Screen / AISI 316

DIMENSIONS

Size	(mm) L	(mm) H	(mm) L ₁
¼"	65	43	14
⅜"	65	43	14
½"	65	43	14
¾"	75	53	19
1"	90	60	23
1¼"	110	72	27.5
1½"	120	90	32.5
2"	150	110	40

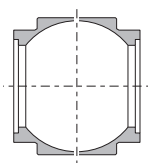
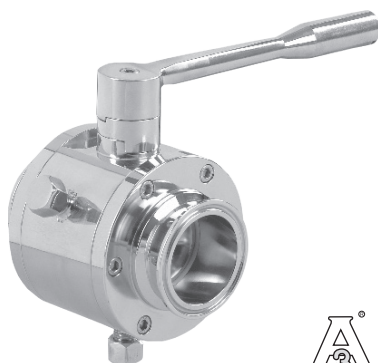
Design and materials are subject to change without notice.

(¼" and ⅜" Factory Order)

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 10

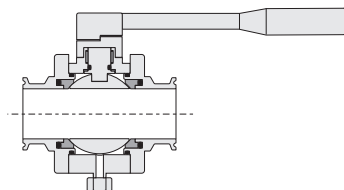
BALL



- Full Port
- Clamp Ends
- Easily Disassembled
- Cleanable in Place. Steam or C.I.P. Liquid can be Injected Through Passage at Stem Level or Drain at Bottom of Valve
- No Threaded Parts in Contact with Product
- 90° Smooth Opening and Closing, Both Manually or by Air
- Connections: Inside Diameters of Valve Match the Pipe Dimensions for Sanitary Stainless Steel Installations
- 220 P.S.I. W.O.G.
- Temperature Range: -40° to 350°F

Cavity fillers on request

* Consult the factory for torque values with cavity fillers.

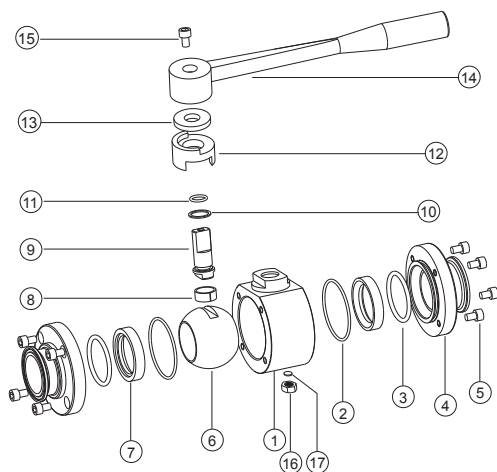


SS · 10 BALL VALVE

TORQUE VALUES (for rotating valve stem)

SIZE	ft.lb	Nm	Cv GPM	Kv m ³ /hr
1"	6	8	66	56.4
1½"	15	20	192	164
2"	20	27	434	370
2½"	28	38	723	618
3"	38	52	1124	960
4"	54	84	2100	1795

Design and materials are subject to change without notice.



NO.	PART NO.	DESCRIPTION	MATERIAL
1	5201	Body	AISI 316L / AISI 304L
2	5202	O-Ring	EPDM
3	5203	O-Ring	EPDM
4	5204	Flange	AISI 316L / AISI 304L
5	5205	Cap Screw	AISI 304
6	5206	Ball	AISI 316L / AISI 304L
7	5207	Seat	TFM PTFE
8	5208	Bushing	PTFE
9	5209	Stem	AISI 316L / AISI 304L
10	5210	Thrust Ring	PTFE
11	5211	O-Ring	EPDM
12	5212	Index Base	AISI 304
13	5213	Thrust Washer	PTFE
14	5214	Handle	AISI 304
15	5215	Cap Screw	AISI 304
16	5216	Drain Cap	AISI 316L / AISI 304L
17	5217	Washer	PTFE

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

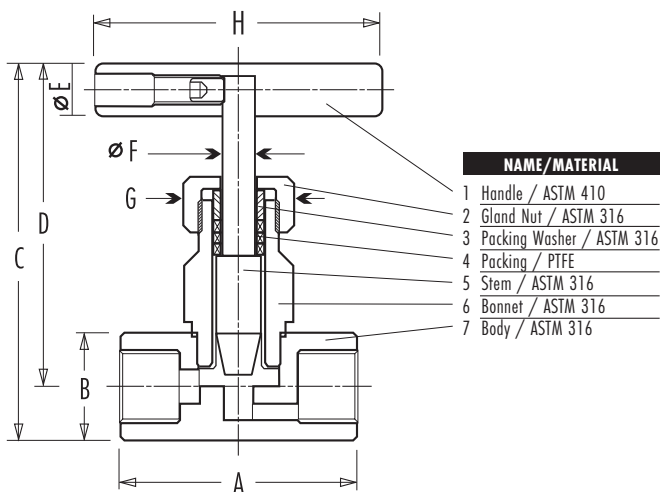
SS · 12

NEEDLE



- 6000 P.S.I. W.O.G.
- Threads to ANSI B1.20.1 (NPT)
- Size Range: 1/4" to 1"

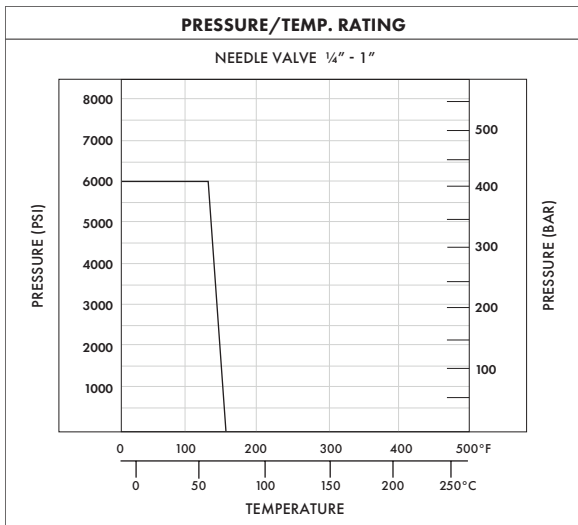
Manufactured in accordance with ISO 9002 quality standards.



SS · 12 NEEDLE VALVE

DIMENSIONS								
Nominal Size	(mm) A	(mm) B	(mm) C	(mm) D	(mm) E	(mm) F	(mm) G	(mm) H
¼"	45	22	80	70	13	7	21	60
⅜"	50	25	85	73	13	7	21	60
½"	60	30	110	95	16	8	24	65
¾"	65	35	115	100	16	8	24	65
1"	83	46	129	105	19	10	30	80

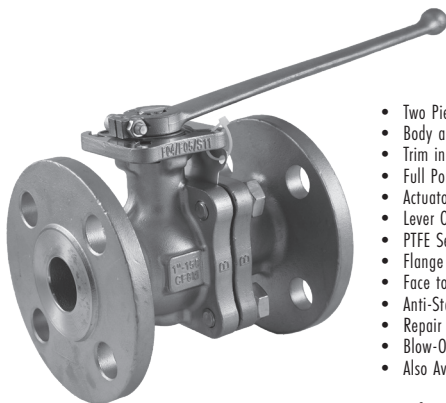
Design and materials are subject to change without notice.



C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 13DM

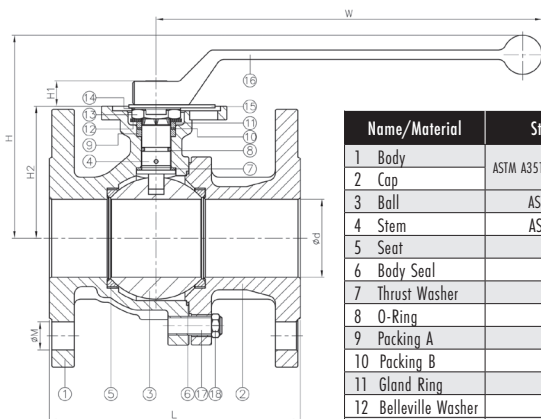
FLANGED BALL



- Two Piece Body
- Body and Cap ASTM A351-CF8M
- Trim in ASTM 316
- Full Port, Solid Ball
- Actuator Mounting Pad
- Lever Operated
- PTFE Seats
- Flange to ANSI B16.5 Class 150
- Face to Face ANSI B16.10
- Anti-Static Device
- Repair Kits in Stock
- Blow-Out Proof Stem
- Also Available in a Class 300 Version

Manufactured in accordance with
ISO 9002 quality standards.

API607 File Safe Approved



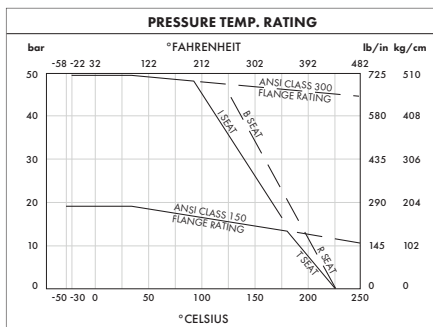
Name/Material	Stainless Steel
1 Body	ASTM A351-CF8M, ASTM A216-WCB
2 Cap	
3 Ball	ASTM A351-CF8M
4 Stem	ASTM A276-316
5 Seat	PTFE/RTFE
6 Body Seal	Graphite
7 Thrust Washer	CTFE
8 O-Ring	Viton
9 Packing A	Graphite
10 Packing B	CTFE
11 Gland Ring	AISI 304
12 Belleville Washer	AISI 301
13 Nut	AISI 304
14 Lock Washer	
15 Stopper	
16 Handle	
17 Stud	
18 Nut	
19 Socket Set Screw	

SS · 13DM FLANGED BALL VALVE

DIMENSIONS								
Nominal Size	d	D	H	L	W	S	U x V x R Mounting Pad Dimension Holes x Circle x Size	Torque KGF/CM ²
Inch								
½	0.59	3.50	0.62	4.25	5.12	0.32	4 x 1.654 x 0.2500	25
¾	0.79	3.88	0.62	4.63	5.12	0.32	4 x 1.654 x 0.2500	25
1	0.98	4.25	0.62	5.00	5.12	0.32	4 x 1.654 x 0.2500	25
1¼	1.26	4.62	0.62	5.50	8.86	0.47	4 x 1.969 x 0.2500	45
1½	1.57	5.00	0.62	6.50	8.86	0.47	4 x 2.756 x 0.3125	85
2	1.97	6.00	0.75	7.00	8.86	0.47	4 x 2.756 x 0.3125	145
2½	2.56	7.00	0.75	7.50	13.11	0.67	4 x 4.016 x 0.4375	195
3	3.15	7.50	0.75	8.00	13.11	0.67	4 x 4.016 x 0.4375	315
4	3.94	9.00	0.75	9.00	15.55	0.67	4 x 4.016 x 0.4375	440
5	4.92	10.00	0.88	14.00	23.62	1.06	4 x 4.921 x 0.5000	635
6	5.91	11.00	0.88	15.50	31.50	1.06	4 x 4.921 x 0.5000	833
8	7.87	13.50	0.88	18.00	43.31	1.06	4 x 4.921 x 0.5000	1225
10	9.84	16.00	1.00	21.00	43.31	1.06	4 x 5.512 x 0.6250	1395

Design and materials are subject to change without notice.

TEST PRES.	SHELL	SEAT
AIR	80 PSIG	80 PSIG
HYDROSTATIC	425 PSIG	300 PSIG
FACE TO FACE		ANSI B16 10-150
DIM OF FLANGE		ANSI B16 5-150
WALL THICKNESS		ANSI B16 34-150



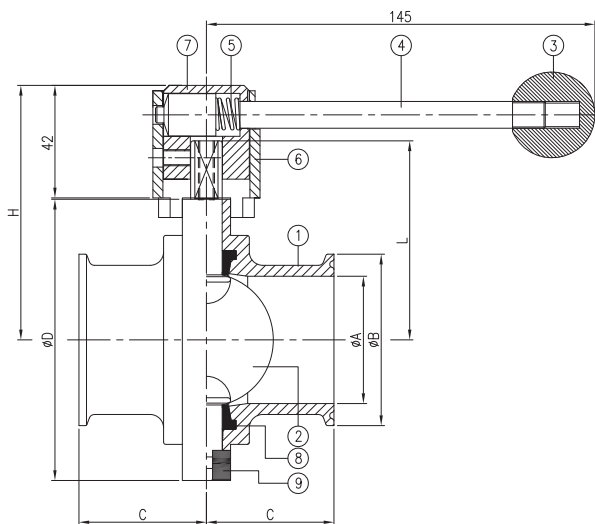
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 14M

SANITARY BUTTERFLY



- Polished 316L Construction
- EPDM Seats
- Silicone Viton Seats Available
- Easily Disassembled
- Multi Position Handle
- Clamp, Weld or Bevel Seat End Connections
- Easily Adapts to Automation
- Pressure Rating to 140 P.S.I. at 200°F



DIMENSIONS

SIZE	A	B	C	D	L	H	Weight (Kg)
1.0"	22.1	50.5	33	79	61	81.7	1.7
1.5"	34.8	50.5	33	85	64.3	85	1.8
2.0"	47.5	64	35	105	74.3	95	1.9
2.5"	60.2	77.5	35	112	77.6	98.3	2.2
3.0"	72.2	91	38	125	84.3	105	2.4
4.0"	97.6	119	38	157	101.6	122.3	3.5

Design and materials are subject to change without notice.

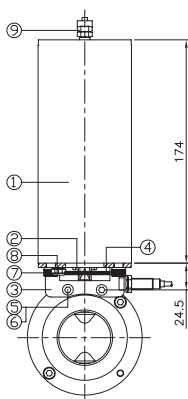
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 14A

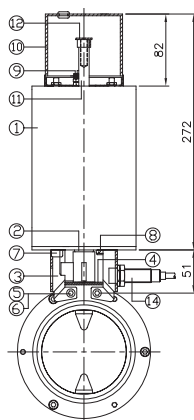
BUTTERFLY



- Polished 316L Construction
- Actuator Polished 304 Const.
- Epdm Seats Standard
- Silicone, Viton Seats Available
- Easily Disassembled for Cleaning
- Clamp, Weld or Bevel Seat End Connections
- Pressure Rating to 140 P.S.I. at 200°F
- Complete with Stainless Spring Return Air Actuator
- Easy Drop on Installation
- Actuator Available Separately



For Butterfly Valve 1"~3"



For Butterfly Valve 4"

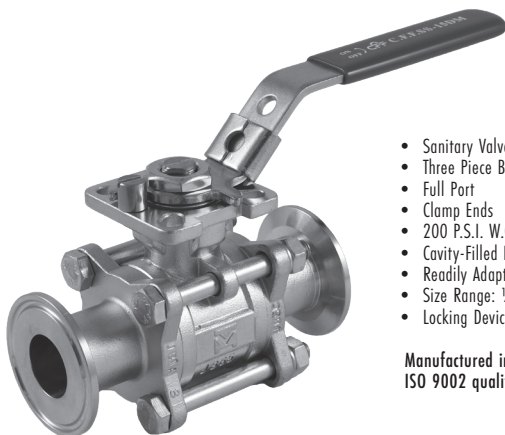
Weight (lb)	
FOR BUTTERFLY VALVE 1" ~ 3"	FOR BUTTERFLY VALVE 4"
8.2	15.2

ITEM	DESIGNATION	MATERIAL
1	BODY	SS 304
2	WORM GEAR	
3	MOUNTING BRACKET	
4	PLASTIC POSITIONING RING	TEFLON
5	M6x35 OR 40 STAINLESS STEEL SCREW	SS 304
6	M6 STAINLESS STEEL NYLON NUT	
7	M8x12 OR 16 STAINLESS STEEL SCREW	
8	AIR OUTLET FILTER	CUPPER
9	AIR CONNECTION	
10	COVER	SS 304
11	INOX PISTON STEM	
12	PLUG TO PROTECT STEM	
13	PROXIMITY DETECTOR	

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

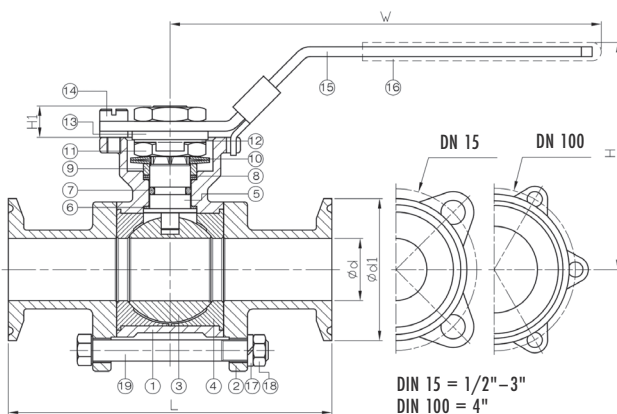
SS · 15DM

BALL



- Sanitary Valve
- Three Piece Body
- Full Port
- Clamp Ends
- 200 P.S.I. W.O.G.
- Cavity-Filled Fully Encapsulated Ball
- Readily Adaptable to Automation
- Size Range: ½" to 4"
- Locking Device

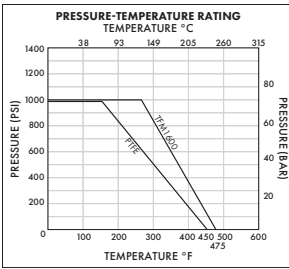
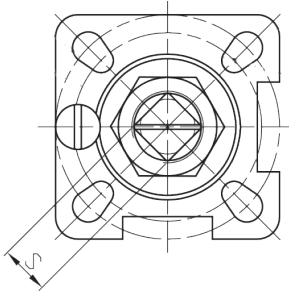
Manufactured in accordance with ISO 9002 quality standards.



Name/Material	Stainless Steel
1 Body	ASTM A351-CF8M, ASTM A351-CF3M
2 Cap	
3 Ball	ASTM A276-316
4 Seat	PTFE/TFM 1600
5 Stem	ASTM A276-316
6 Thrust Washer	PTFE
7 O-Ring	Viton
8 Packing	PTFE
9 Gland-Ring	AISI 304

10 Belleville Washer	AISI 301
11 Nut	AISI 304
12 Lock Washer	
13 Flat Washer	
14 Stop Pin	PVC
15 Handle	
16 Handle Sleeve	AISI 304
17 Spring Washer	
18 Nut	
19 Bolt	

SS • 15DM SANITARY BALL VALVE



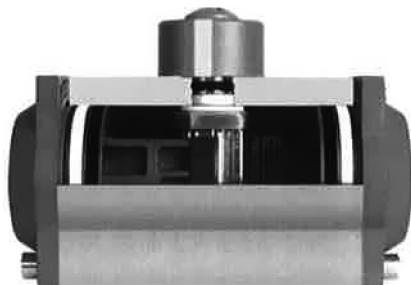
NPS	D	D1	D2	d	d1	R	R1	S	L	H	H1	W	Torque (in-lb)		Weight (lb)
													Breakaway	Action	
1/2"	1.65	1.42	1.79	0.38	1	0.11	0.11	0.35	3.57	4.78	0.35	2.55	44.25	22.13	1.4
3/4"	1.65	1.42	1.85	0.62	1	0.11	0.11	0.35	4.06	4.78	0.43	2.55	66.38	30.98	1.5
1"	1.97	1.65	2.26	0.87	1.99	0.14	0.11	0.43	4.53	5.91	0.43	3.11	97.36	53.1	2.6
1 1/2"	2.76	1.97	3.27	1.37	1.99	0.18	0.14	0.55	5.47	5.91	0.55	3.8	141.61	97.36	5.5
2"	2.76	1.97	3.94	1.88	2.52	0.18	0.14	0.55	6.22	7.09	0.55	4.09	177.01	115.06	7.9
2 1/2"	4.02	2.76	4.96	2.37	3.05	0.22	0.18	0.67	7.76	7.09	0.67	5.59	354.03	221.27	15.4
3"	4.02	2.76	5.83	2.87	3.58	0.22	0.18	0.67	8.98	9.59	0.67	5.91	442.54	265.52	21.8
4"	4.92	4.02	7.2	3.84	4.69	0.26	0.22	0.87	9.52	11.22	0.87	7.28	531.04	354.03	37.7

Design and materials are subject to change without notice.

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

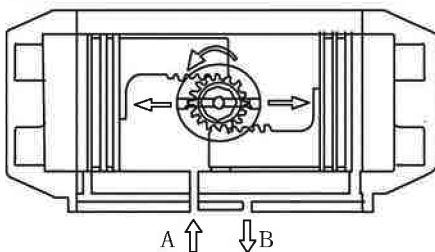
SS · 16

DOUBLE ACTING



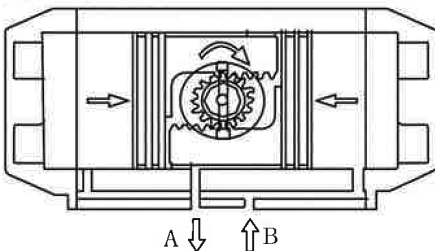
The operating principle of double acting actuator.

CCW-counter-clockwise



Air to port A the pistons outwards, causing the piston to turn counter-clockwise while the air is being exhausted from port B.

CW-clockwise



Air to port B forces the pistons inwards, causing the piston to turn clockwise while air is being exhausted from port A.

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

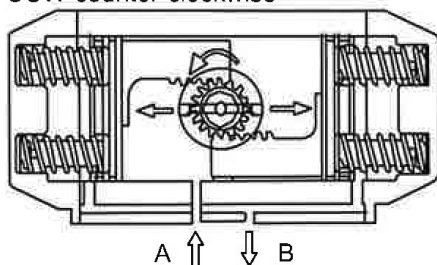
SS · 17

SPRING RETURN (FAIL SAFE)



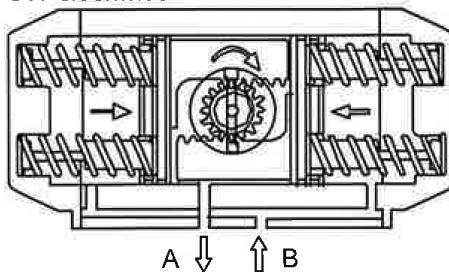
The operating principle of single acting spring return actuator.

CCW-counter-clockwise



Air to port A forces the pistons outwards, causing the springs to compress. The pinion turns counter-clockwise while air is being exhausted through port B.

CW-clockwise



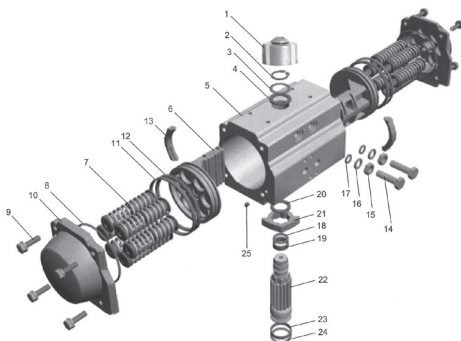
Loss of air pressure through port A allows the springs to force the pistons inwards. The pinion turns clockwise while air is being exhausted through port A.

C.F.F. SS · SERIES

316 STAINLESS STEEL VALVES

SS · 16-17

The C.F.F. double and spring return pneumatic rack and pinion actuators offer excellence in standards of safety, reliability and value. Our rack and pinion actuators are designed to operate "quarter turn valves". The wide torque range capabilities ensure that our units are more than suitable for ball, plug, and butterfly valve applications.



ITEM	DESCRIPTION	MATERIAL	PROTECTION	QTY.	OPTIONAL
1	Indicator	Plastic		1	
2	Spring Clip	Stainless Steel		1	
3	Thrust Washer (Pinion)	Stainless Steel		1	
4	Thrust Bearing (Pinion)	PTFE+15%Graphite		1	
5	Actuator Body	Extruded Aluminum Alloy	Hard Anodized (over 30um)	1	Nickel or PTFE Plated
6	Piston	Die Cast Aluminum Alloy	Hard Anodized (over 30um)	2	
7	Spring (Cartridge)	High Performance Spring Steel	Zinc Phosphate Coated	0-12	
8*	End Cap Seals	NBR		2	Viton | Silicone
9	End Cap Bolts	Stainless Steel		8	
10	End Cap	Die Cast Aluminum	Epoxy Coated (over 200um)	2	Nickel or PTFE Plated
11*	Piston Bearing	Nylon 46		2	
12*	Piston Seal	NBR		2	Viton | Silicone
13*	Piston Guide	Nylon 46		2	
14	Stroke Bolt	Stainless Steel		2	
15	Stroke Bolt Retaining Nut	Stainless Steel		2	
16	Stroke Bolt Washer	Stainless Steel		2	
17*	Stroke Bolt O-Ring	NBR		2	Viton | Silicone
18*	O-Ring (Top Pinion)	NBR		1	Viton | Silicone
19*	Bearing (Top Pinion)	Nylon 46		1	
20*	Thrust Bearing (Pinion)	PTFE+15%Graphite		1	
21	Stroke Cam	Stainless Steel		1	
22	Pinion	Alloy Steel	Nickel Plated (over 25um)	1	S.S. or Alu.Alloy
23*	Bearing (Lower Pinion)	Nylon 46		1	
24*	O-Ring (Lower Pinion)	NBR		1	Viton | Silicone
25*	Plug	NBR		2	Viton | Silicone

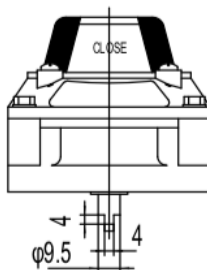
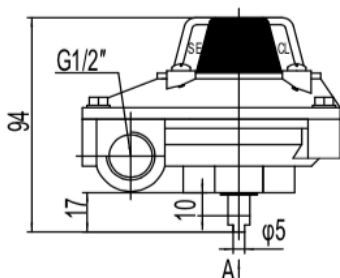
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 18

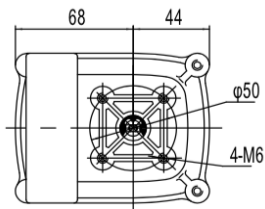
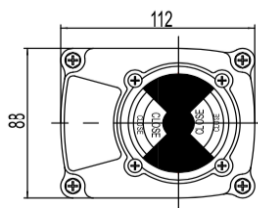
LIMIT SWITCH/POSITION INDICATOR



ALS series IP67 limit switch boxes include ALS200 and ALS300 which is primary rotary position indication device both for local and remote. The ALS products were designed to integrate valve and rotary pneumatic actuator with a variety of mounting options, internal switches or sensors and/or analog output 4-20mA. This kind of limit switch box was designed through advance and state-of-the-art engineering technology which have the product to be solid, beautiful and with high-level quality. The product also fully meets IP67 specs and the bracket is designed in light of ISO5211 and NAMUR standard.



Weather Proof	CSA IP67 NEMA 4, 4X
Temperature Range	-25°C ~ 85°C
Cable Entry	G1/2" | 1/2"NPT | M20x1.5, M16x1.5
Terminal Stripe	8 ~ 14
Position Indicator	0-90° Open-Yellow Close-Red
(Mech. Switches) Type	5A/16A 125 ~ 250VAC
	M2:2SPDT M5:2SPDT MG2:2SPDT (Gilded)
(Proximity Sensor) Type	DC 24V (10-30VDC), <=150mA
	PP:P&F (NAMUR) Exia || CT6 PA:2 (wires) or 3 (wires)
(Magnet Sensor) Type	5 ~ 240VAC/DC, <=300mA
	QA:PA:2(wires) or 3(wires)



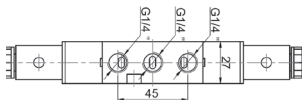
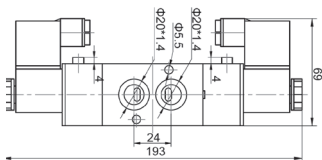
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · SOLINOID

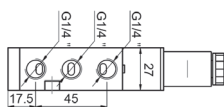
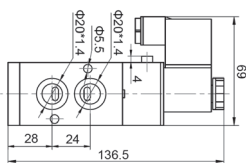
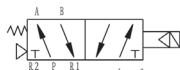


- Directly mounting on actuator (1/4" or 1/2" BSPP or NPT)
- Armed with adaptor, easy mounting to change from 5/2 to 3/2
- Working Medium: less than 40 μ m filtered and dried air
- Coil Voltage: VDC - 12, 24, 48,120 (2.8W)
VAC - 24, 48, 110, 210, 220, 230, 240 (4VA)
- Operating Temperature: -5 $^{\circ}$ C~50 $^{\circ}$ C
- Working Pressure: 1.5~8Bar
- Highest Acting Frequency: 5 Cycle/Sec
- Shortest Excitation Time: 0.05 Second
- Double coils are available

SVAC-ALV-120VAC



SVAC-ALV-24VDC



C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · SOLINOID

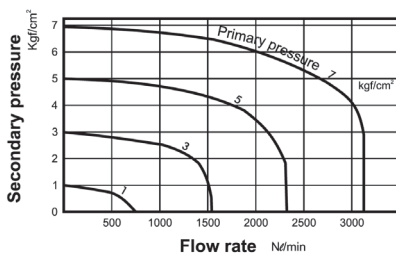
Specification

Model	HSV310-08	HSV320-08
Medium	Air	
Operating	Internal Piloted	
Valve Type	5 Port 2 Position	
Orifice Size	35mm ²	
Port Size	Inlet & Exhaust Port:PF1/4"	
Lubrication	Not Required	
Pressure Range	0.15 ~ 0.8 Mpa	
Proof Pressure	12bar	
Temp. Range	-5 ~ 60°C (23 ~ 140°F)	
Voltage Range	-15% ~ 10%	
Power Consumption	AC=2.0~3.5VA, DC=2.5W	
Insulation Class	Class F	
Protection	IP65(DIN40050)	
Connector	Socket with Plug	
Max Frequency	5 cycle/second	

Note: Port thread PT and NPT are also available.

Specification of Explosion-Proof Type

Protection	EExmIIT4
Voltage Range	±10%
Power Consumption	AC = 4.4VA, DC = 5W
Insulation Class	Class F



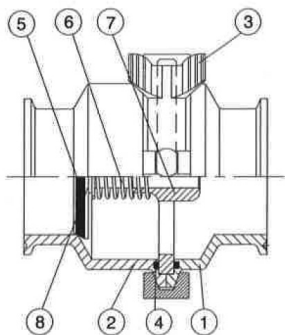
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 19

DISK TYPE CHECK VALVE



- Max. product pressure: 1 000kpa(1 Obar)
- Max. temperature: 140°C (EPDM)
- Min. temperature: -10°C
- Material grade: 316



Name/Material	Stainless Steel
1 Short Body	316
2 Long Body	
3 Clamp	
4 O-ring	
5 Seal-Ring	
6 ST. ST Spring	
7 Flow Support Plate	
8 Disc	

unit:bar

1/2"	3/4"	1"	1.5"	2"	2.5"	3"	4"
0.09	0.23	0.75	1.3	0.44	0.68	0.33	0.42

open pressure

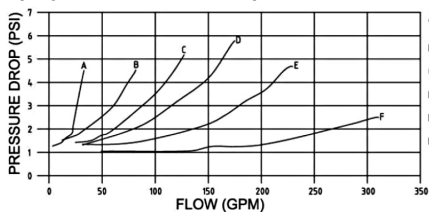
SS · 19 BALL VALVE

ITEM	PARTS	MATERIAL
1	SHORT BODY	316L
2	LONG BODY	
3	CLAMP	304
4	13 PG	EPDM
5	SEAL RING	
6	ST.ST SPRING	316
7	FLOW SUPPORT PLATE	316L
8	DISC	

SIZE	A	B	C	D	Weight (kg)
½"	9.5	25.2	28.5	39.5	0.4
¾"	15.8	25.2	28.5	39.5	0.5
1"	22.1	50.5	34	48	1.1
1½"	34.8	50.5	36	48	1.2
2"	47.5	64	36	48	1.4
2½"	60.2	77.5	36	48	1.8
3"	72.9	91	36	48	2.3
4"	97.6	119	47	54	4.7

Design and materials are subject to change without notice.

Spring Check Valve Pressure Drop



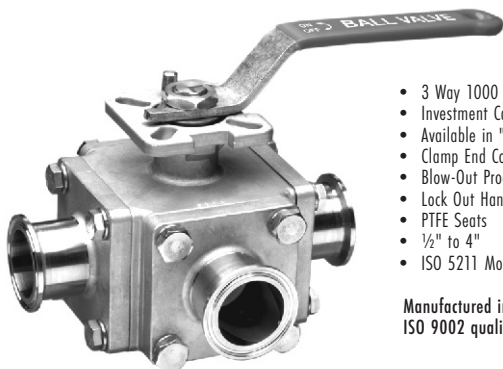
A- ½"
¾"
B- 1"-15"
C- 2"
D- 2.5"
E- 3"
F- 4"

For the diagram the following applies:
Medium: Water(20°C)

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

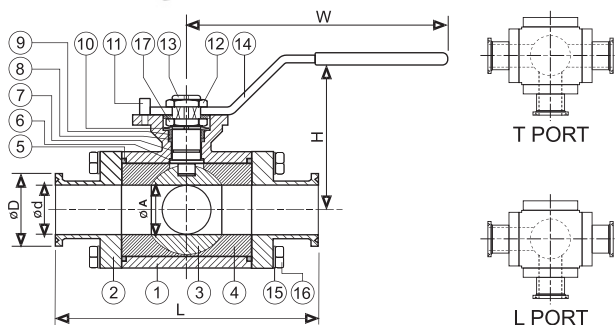
SS · 20DM

BALL



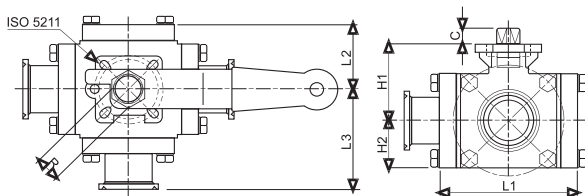
- 3 Way 1000 P.S.I. W.O.G.
- Investment Cast 316
- Available in "T" or "L" Ports
- Clamp End Connections
- Blow-Out Proof Stem
- Lock Out Handle
- PTFE Seats
- ½" to 4"
- ISO 5211 Mounting Pad

Manufactured in accordance with ISO 9002 quality standards.



NAME	MATERIAL		
1 Body	ASTM A351-CF8M	ASTM A351-CF3M	ASTM A216-WCB
2 Cap			ASTM A216-316
3 Ball			
4 Seat	PTFE	TEM-1600	PTFE
5 Gasket		PTFE	
6 Thrust Washer		PTFE	
7 O-Ring	VITON	VITON	VITON
8 Packing	PTFE	PTFE	PTFE
9 Ring	AISI 316	AISI 316	AISI 316
10 Disc Spring	AISI 301	AISI 301	AISI 301
11 Stop Pin	AISI 316	AISI 316	AISI 316
12 Nut	AISI 304	AISI 304	AISI 304
13 Stem	AISI 316	AISI 316	AISI 316
14 Handle	AISI 304	AISI 304	AISI 304
15 Spring Washer	AISI 304	AISI 304	AISI 304
16 Bolt	AISI 304	AISI 304	AISI 304
17 Prevailing Nut	PVEICE	AISI 304	AISI 304

SS · 20DM BALL VALVE



Nominal Size	(mm/in)	A	(mm/in)	W	(mm/in)	H	(mm/in)	H1	(mm/in)	H2	(mm/in)	C	(mm/in)	R	(mm/in)	L	(mm/in)	D	(mm/in)	Ø	(mm/in)	L1	(mm/in)	L2	(mm/in)	L3	(mm/in)	Torque (N·M)	ISO 5211
½	9.5	121	78	44.5	23.5	9	9	118	9.5	25.4	70	35	59	8.93	F03/F04														
¾	15	121	82	48	26	9	9	127	15.8	25.4	77	38.5	63.5	9.60	F03/F04														
1	20	137	90	59	30.5	11	11	152.4	22.2	50.4	86	43	76.2	12.43	F04/F05														
1½	32	182	110	72	40	14	14	175	35	50.4	111	55.5	85.7	32.77	F05/F07														
2	40	182	114.7	82	50	14	14	190	47.6	63.9	124	62	95	76.83	F05/F07														
2½	50	370	108	100	61	17	17	228	60	77.5	125	62.5	107	145.41	F07/F10														
3	65.3	400	134	125.5	74	23	22	260	73	90.9	151	75.5	122	199.98	F10/F12														
4	80	400	156	135.5	62.5	23	22	318	97.4	118.9	190	80.5	144.5	230	F10/F12														

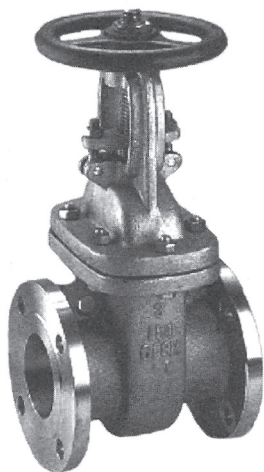
Design and materials are subject to change without notice.

The Pressure/Temp Chart for the SS20 is the same as the SS11 chart on page 101.

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

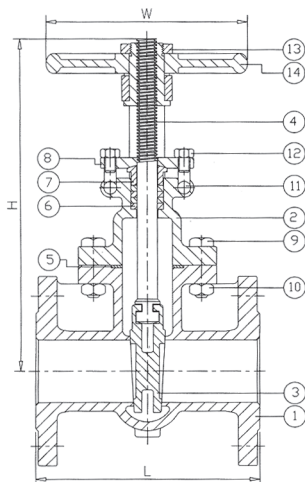
SS · 21

FLANGED GATE VALVE



- ANSI CLASS 150/300
- The Flange Ends Conform to ASME B16.5
- Face to Face: ANSI B16.10
- Wall Thickness: ANSI B16.34
- Investment Casting 2"
- Sand Cast 3" and Larger
- Graphoil Packing for Long Valve Life and High Temperature Applications
- Raised Stem
- Size Range 1½" to 12"

Manufactured in accordance with ISO 9002 quality standards.



NAME/MATERIAL

1	Body / ASTM A351-CF8M / 1.4408
2	Bonnet / AISI 316
3	Disc / ASTM A351-CF8M / 1.4408
4	Stem / ASTM A276-316
5	Gasket / PTFE
6	Packing / PTFE
7	Packing Gland / AISI 316
8	Gland Flange / A351-CF8M / 1.4408
9	Bonnet Bolt / ASTM A193-B8
10	Bonnet Nut / ASTM A194-8
11	Gland Stud / ASTM A193-B8
12	Gland Nut / ASTM A194-8
13	Wheel Nut / AISI 304
14	Hand Wheel / ASTM A536

SS · 21 FLANGED GATE VALVE

Applicable Standard	
Wall Thickness	ASME B16.34
Test and Inspection	API 598

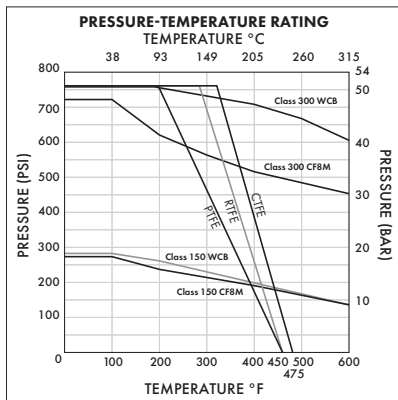
DIMENSIONS											
SIZE		1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"
L	in	6.5	7	7.5	8	9	10.5	11.5	13	14	15
H	in	13	15	15.5	17.25	21	26	36	42	49	61.2
W	in	8	8	8	10	10	12	14	18	20	22
Weight	in	9	17	20	29	42	65	98	134	234	

CLASS 150

SIZE		1½"	2"	2½"	3"	4"	6"	8"	10"	12"
L	in	7.5	8.5	9.5	11.13	12	15.88	16.5	18	19.75
H	in	14.75	17	18.25	20.38	23.5	32.63	42.38	48.88	55.56
W	in	8	8	8	10	10	356	18	22	24

CLASS 300

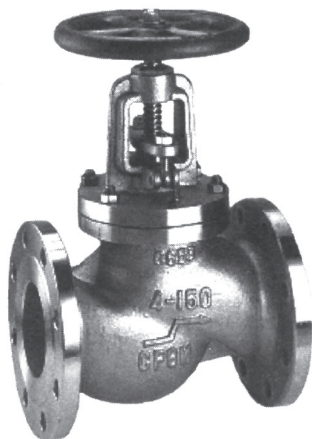
Design and materials are subject to change without notice.



C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

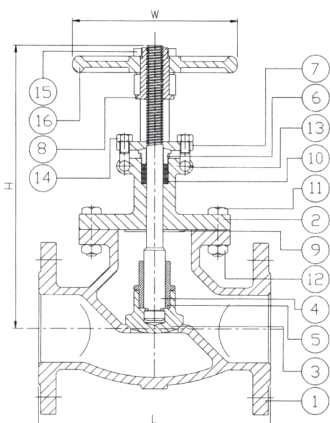
SS · 22

FLANGED GLOBE VALVE



- ANSI CLASS 150/300
- The Flange Ends Conform to ASME B16.5
- Face to Face: ANSI B16.10
- Wall Thickness: ANSI B16.34
- Investment Casting 2"
- Sand Cast 3" and Larger
- Graphoil Packing for Long Valve Life and High Temperature Applications
- Raised Stem
- Size Range ½" to 12"

Manufactured in accordance with ISO 9002 quality standards.



NAME/MATERIAL

1	Body / ASTM A351-CF8M / 1.4408
2	Bonnet / A351-CF8M / 1.4408
3	Disc / ASTM A351-CF8M / 1.4408
4	Stem / ASTM A276-316
5	Disc Nut / A351-CF8M / 1.4408
6	Packing Gland / ASTM A276 304
7	Gland Flange / A351-CF8M / 1.4408
8	Yoke Sleeve / ASTM A439-D2C
9	Gasket / PTFE
10	Packing / PTFE
11	Bonnet Bolt / ASTM A193-B8
12	Bonnet Nut / ASTM A194-6
13	Gland Stud / ASTM A193-B8
14	Gland Nut / ASTM A194-8
15	Hand Wheel Nut / ASTM A194-8
16	Hand Wheel / ASTM A536

SS · 22 FLANGED GLOBE VALVE

Applicable Standard	
Wall Thickness	ASME B16.34
Test and Inspection	API 598

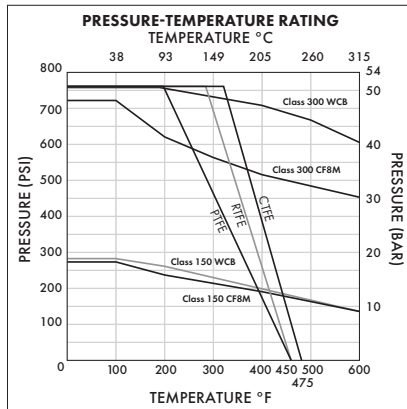
DIMENSIONS														
SIZE		½"	¾"	1"	1½"	2"	2½"	3"	4"	5"	6"	8"	10"	12"
L	in	4.25	4.26	5	6.5	8	8.5	9.5	11.5	14	16	19.5	24.5	27.5
H	in	7	7.37	8.5	9.87	10	11.8	13	14.8	17	19.5	22.5	25.3	34.8
W	in	4	4	5	6.5	6.75	7.87	9.87	9.87	11.8	13.8	15.5	17	483
Weight	in					12		21	41		65	120	215	

CLASS 150

SIZE		1½"	2"	2½"	3"	4"	6"	8"	10"	12"
L	in	9	10.5	11.5	12.5	14	17.5	22	24.5	28
H	in	13.3	14.3	15	16.5	17.8	20.5	26	29.5	34.5
W	in	8	8	10	10	14	18	22	24	23.6

CLASS 300

Design and materials are subject to change without notice.



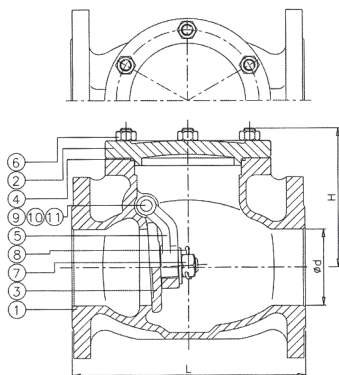
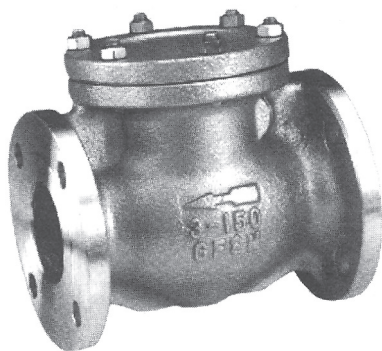
C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 23

FLANGED SWING CHECK VALVE

- ANSI CLASS 150
- The Flange Ends Conform to ANSI B16.5
- Face to Face: ANSI B16.10
- Wall Thickness: ANSI B16.34
- TEST to API598
- METAL to METAL SEATS
- Size Range 2" to 12"

Manufactured in accordance with ISO 9002 quality standards.



NAME/MATERIAL

1	Body / ASTM A351-CF8M / 1.4408
2	Cap / ASTM A351-CF8M / 1.4408
3	Disc Nut / ASTM A351-CF8M / 1.4408
4	Gasket / PTFE
5	Arm / ASTM A351-CF8M / 1.4408
6	Cover Stud / ASTM A193-B8
7	Nut / ASTM A194-8
8	Split Pin / AISI 316
9	Hinge Pin / AISI 316
10	Plug Gasket / PTFE
11	Plug / AISI 316

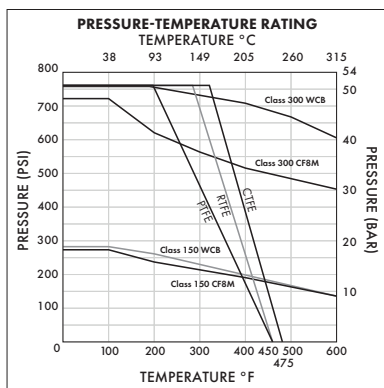
SS · 23

FLANGED SWING CHECK VALVE

Applicable Standard	
Wall Thickness	ASME B16.34
Test and Inspection	API 598

NPS	d	L	H	Weight (lb)
1"	0.98	5.31	2.76	6.6
1½"	1.57	6.50	4.09	15.4
2"	1.97	7.99	5.31	23.4
2½"	2.56	8.50	6.50	30.9
3"	3.15	9.49	7.09	44.5
4"	3.94	11.50	8.27	67.2
6"	5.91	14.02	10.43	119.0
8"	7.87	19.49	12.60	180.8
10"	9.84	24.49	13.98	304.2
12"	11.81	27.48	16.14	549.0

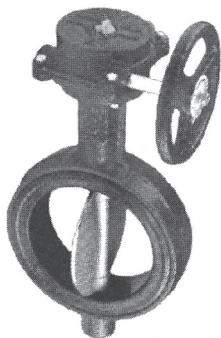
Design and materials are subject to change without notice.



C.F.F. SS · SERIES C.I. VALVES

SS · 24

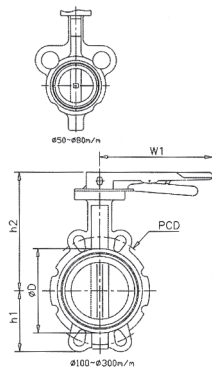
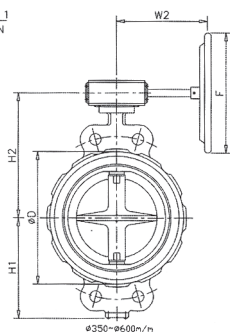
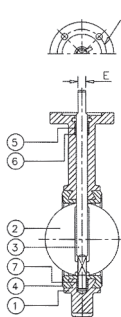
CAST IRON BUTTERFLY



- ANSI CLASS 150
- Wafer Body
- Fluid Application: Air, Oil, Water, Sea Water, Powder, Gas, Etc.
- Working Pressure: 150psi
- Face to Face: ISO 5752 Table 5-Short
- Flange: ANSI B16.5 Class 150 BS 10 Table E PN10/16
- Lever Operator
- Gear Operator (Option)
- Size Range 2" to 24"

Manufactured in accordance with ISO 9002 quality standards.

	NAME	MATERIAL	SPECIFICATION	
			JIS	ASTM
1	BODY	CAST IRON	FC200	A126-B
		DUCTILE IRON	FCD 450	A-536-65-45-12
2	DISC	DUCTILE IRON	FCD 450	A-536-65-45-12
		STAINLESS STEEL	SCS 13	A351 CF8
		STAINLESS STEEL	SCS 14	A351 CF8M
		BRONZE	BC6	B62
3	STEM	STAINLESS STEEL	SUS 410	A182F410
			SUS 304	A182F304
			SUS 316	A182F316
4	SEAT	NBR (NITRILE)		
		EPDM		
		NEOPRENE (CR)		
		SILICON		
		HYPALON (CSM)		
		VITON		
5	BOTTOM BUSH	BRONZE	BC6	B62
6	O-RING	NBR (NITRILE)		
7	UPPER BUSH	DELIN (ACETAL)		



SS · 24 C.I. BUTTERFLY VALVE

Applicable Standard

Test and Inspection API 598

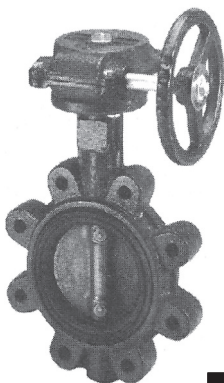
VALVE SIZE	DIMENSIONS (m/m)											PCD					TORQUE (N·M)		
	h1	h2	W1	H1	H2	W2	D	E	F	PCD1	M x N	150 LB	JIS 10K	PN 10	PN 16	50PSI	100PSI	150PSI	
inch																			
2	85	174	200	85	169	125	96	13	150	70	10 x 4	120.7	120	-	-	9	14	17	
2½	90	186	200	90	181	125	110	13	150	70	10 x 4	139.7	140	-	-	13	18	22	
3	98	193	200	98	188	125	126	13	150	70	10 x 4	152.4	150	160	-	20	27	33	
4	107	212	260	107	207	125	153	16	150	70	10 x 4	190.5	175	180	180	34	40	56	
5	125	228	260	125	223	125	180	16	150	70	10 x 4	215.9	210	-	-	51	62	78	
6	140	241	260	140	236	125	206	16	150	70	10 x 4	241.3	240	240	240	85	88	103	
8	170	273	355	170	270	230	256	19	250	102	10 x 4	298.5	290	295	295	130	169	208	
10	207	319	355	207	316	230	325	22	250	102	12 x 4	361.9	355	350	355	234	260	312	
12	244	342	355	244	339	230	373	28	250	102	12 x 4	431.8	400	400	410	312	390	468	

Design and materials are subject to change without notice.

C.F.F. SS · SERIES C.I. VALVES

SS · 25

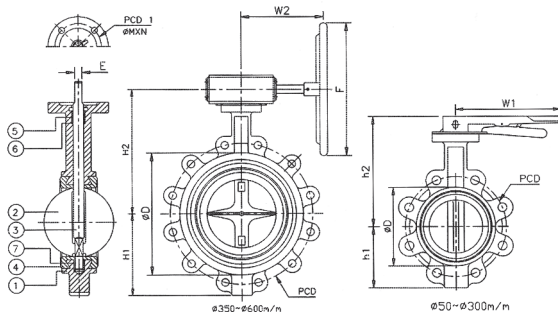
CAST IRON BUTTERFLY



- ANSI CLASS 150
- Lug Body
- Fluid Application: Air, Oil, Water, Sea Water, Powder, Gas, Etc.
- Working Pressure: 150psi
- Face to Face: ISO 5752 Table 5-Short
- Flange: ANSI B16.5 Class 150 BS 10 Table E PN10/16
- Lever Operator
- Gear Operator (Option)
- Size Range 2" to 30"

Manufactured in accordance with ISO 9002 quality standards.

	NAME	MATERIAL	SPECIFICATION	
			JIS	ASTM
1	BODY	CAST IRON	FC200	A126-B
		DUCTILE IRON	FCD 450	A-536-65-45-12
2	DISC	DUCTILE IRON	FCD 450	A-536-65-45-12
		STAINLESS STEEL	SCS 13	A351 CF8
		STEEL	SCS 14	A351 CF8M
3	STEM	BRONZE	BC6	B62
		STAINLESS STEEL	SUS 410	A182F410
4	SEAT	STAINLESS STEEL	SUS 304	A182F304
			SUS 316	A182F316
4	SEAT	NBR (NITRILE)		
		EPDM		
		NEOPRENE (CR)		
		SILICON		
		HYPALON (CSM)		
5	BOTTOM BUSH	VITON		
6	O-RING	BRONZE	BC6	B62
7	UPPER BUSH	NBR (NITRILE)		
		DELIN (ACETAL)		



SS · 25 C.I. BUTTERFLY VALVE

Applicable Standard

Test and Inspection API 598

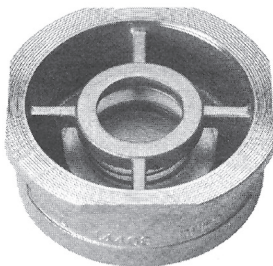
VALVE SIZE	DIMENSIONS (m/m)										JIS 5K		JIS 10K		WEIGHT (kg)			TORQUE (N-m)		
	h1	h2	W1	H1	H2	W2	D	E	F	PCD1	M x N	PCD	M x N	PCD	M x N	Lever Operated	Gear Operated	50PSI	100PSI	150PSI
2	85	174	200	85	169	125	96	13	150	70	10 x 4	105	M12 x 4	120	M16 x 4	4.4	7	9	14	17
2½	90	186	200	90	181	125	110	13	150	70	10 x 4	130	M12 x 4	140	M16 x 4	5	7.5	13	18	22
3	98	193	200	98	188	125	126	13	150	70	10 x 4	145	M16 x 4	150	M16 x 8	5.5	8.2	20	27	33
4	107	212	260	107	207	125	153	16	150	70	10 x 4	165	M16 x 8	175	M16 x 8	8.3	11.5	34	40	56
5	125	228	260	125	223	125	180	16	150	70	10 x 4	200	M16 x 8	210	M20 x 8	9.5	12.5	51	62	78
6	140	241	260	140	236	125	206	16	150	70	10 x 4	230	M16 x 8	240	M20 x 8	11	14.4	85	88	103
8	170	273	355	170	270	230	256	19	250	102	12 x 4	280	M20 x 8	290	M20 x 12	19.6	25	130	169	208
10	207	319	355	207	316	230	325	22	250	102	12 x 4	345	M20 x 12	355	M22 x 12	28	32	234	260	312

Design and materials are subject to change without notice.

C.F.F. SS • SERIES 316 STAINLESS STEEL VALVES

SS • 26

DISC CHECK VALVE



- ANSI CLASS 150
- Investment Cast
- Max Working Temp. 480°F
- Pressure Rating 150lb
- Size Range ½" to 4"

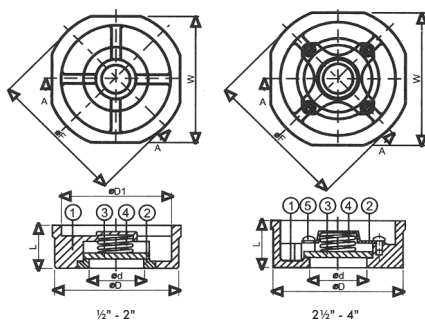
Manufactured in accordance with
ISO 9002 quality standards.

Applicable Standard

Test and Inspection API 598

NPS	d	D	F	W	L	Weight (lb)
½"	0.59	1.77	2.09	1.77	0.63	0.22
¾"	0.79	2.17	2.48	2.17	0.75	0.35
1"	0.98	2.56	2.87	2.56	0.87	0.62
1¼"	1.26	3.07	3.31	3.07	1.1	1.15
1½"	1.5	3.5	3.7	3.5	1.26	1.54
2"	1.97	3.86	4.21	3.86	1.57	2.43
2½"	2.44	4.65	4.96	4.65	1.81	3.48
3"	3.01	5.28	5.67	5.28	1.97	3.92
4"	3.78	6.06	6.38	6.06	2.36	7.28

Design and materials are subject to change without notice.

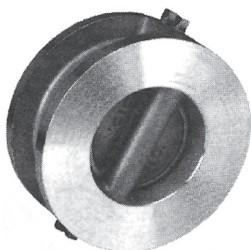


NAME/MATERIAL	
1	Body / ASTM A351-CF8M / 1.4408
2	Retainer / AISI 316
3	Disc / AISI 316
4	Spring / AISI 316
5	Screw / AISI 316

C.F.F. SS · SERIES 316 STAINLESS STEEL VALVES

SS · 27

DUAL PLATE CHECK VALVE



- ANSI CLASS 150/300
- Alleviates Water Hammer
- Metal to Metal Seats
- Size Range ½" to 4"

Manufactured in accordance with ISO 9002 quality standards.

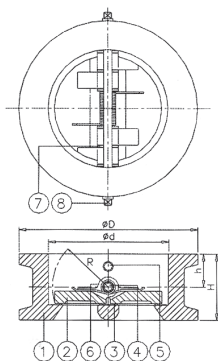
Applicable Standard

Test and Inspection API 598

Class 300

NPS	D	d	H	h	R radius
½"	4.37	2.36	2.36	1.06	27
¾"	5.12	2.87	2.64	1.26	33
1"	5.87	3.50	2.87	1.42	41
1-¼"	7.13	4.49	2.87	1.50	54
1-½"	8.50	5.55	3.39	1.61	65
2"	9.88	6.61	3.86	1.73	79
2-½"	12.13	8.62	5.00	1.89	102
3"	14.25	10.75	5.75	2.20	126
4"	16.61	12.76	7.13	2.76	152

Design and materials are subject to change without notice.



NAME/MATERIAL	
1 Body /	ASTM A126 Class B ASTM A536 65-45-12 ASTM A216-WCB ASTM A351-CF8 ASTM A351-CF8M / 1.4408 ASTM A351-CF3M
2 Plate /	ASTM B584-C836 ASTM B148-C958 ASTM A216-WCB / 1.0619 ASTM A351-CF8 ASTM A351-CF8M / 1.4408 ASTM A351-CF3M
3 Seat /	NBR EPDM VITON METAL to METAL
4 Stop Pin /	AISI 304 AISI 316
5 Hing Pin /	AISI 304 AISI 316
6 Spring /	AISI 316 INCONEL X-750 MONEL
7 Bearing /	PTFE
8 Plug /	AISI 316 S25C

NUMERICAL EQUIVALENTS OF FRACTIONS AND DECIMALS

Inch Fractions	Inch Decimals
$\frac{1}{64}$	.0156
$\frac{1}{32}$	.0312
$\frac{3}{64}$	.0469
$\frac{1}{16}$	.0625
$\frac{5}{64}$	.0781
$\frac{3}{32}$	.0937
$\frac{7}{64}$	.1093
$\frac{1}{8}$	.1250
$\frac{9}{64}$	.1406
$\frac{5}{32}$	.1562
$\frac{11}{64}$	.1719
$\frac{3}{16}$	.1875
$\frac{13}{64}$	.2031
$\frac{7}{32}$	.2187
$\frac{15}{64}$	.2344
$\frac{1}{4}$	.2500
$\frac{17}{64}$	.2656
$\frac{9}{32}$	.2812
$\frac{19}{64}$	.2969
$\frac{5}{16}$	.3125
$\frac{21}{64}$	.3281
$\frac{11}{32}$	.3437
$\frac{23}{64}$	.3594
$\frac{3}{8}$	.3750
$\frac{25}{64}$	.3906
$\frac{13}{32}$	.4062
$\frac{27}{64}$	.4219
$\frac{7}{16}$	.4375
$\frac{29}{64}$	.4531
$\frac{15}{32}$	.4687
$\frac{31}{64}$	.4844
$\frac{1}{2}$	.5000

Inch Fractions	Inch Decimals
$\frac{33}{64}$	.5156
$\frac{17}{32}$	.5312
$\frac{35}{64}$	.5469
$\frac{9}{16}$	.5625
$\frac{37}{64}$	.5781
$\frac{19}{32}$.5937
$\frac{39}{64}$.6094
$\frac{5}{8}$.6250
$\frac{41}{64}$.6406
$\frac{21}{32}$.6562
$\frac{43}{64}$.6719
$\frac{11}{16}$.6875
$\frac{45}{64}$.7031
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$\frac{47}{64}$.7344
$\frac{3}{4}$.7500
$\frac{49}{64}$.7656
$\frac{25}{32}$.7812
$\frac{51}{64}$.7969
$\frac{13}{16}$.8125
$\frac{53}{64}$.8281
$\frac{27}{32}$.8437
$\frac{55}{64}$.8594
$\frac{7}{8}$.8750
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$\frac{29}{32}$.9062
$\frac{59}{64}$.9219
$\frac{15}{16}$.9375
$\frac{61}{64}$.9531
$\frac{31}{32}$.9687
$\frac{63}{64}$.9844
1	1.0000

C.F.F. STAINLESS STEEL COLOUR CODING

The following colour coding is the CFF Standard.

- 17-4PH Pink
- 2205 Purple
- 254SMO Gold
- 303 Blue
- 304 Black
- 304H Yellow
- 304/304L Dark Green
- 309/309S Pink and Black
- 310/310S Orange
- 316 Red
- 316/316L Brown
- 317L White
- 321 Burgundy
- LDX 2101 Lime Green



CONDITIONS AND TERMS OF SALE

The Following terms of sale shall be applicable to all sales made by C.F.F. STAINLESS STEELS INC. and C.F.F. STAINLESS STEELS (QUEBEC) INC./ACIER INOXYDABLES C.F.F. (QUÉBEC) INC., C.F.F. STAINLESS STEELS LLC.

Except where it is otherwise expressly agreed in writing.

Acceptance of delivery of any or all goods by a purchaser shall constitute assent by the purchaser to these terms of sale.

Quotations - All quotations are subject to change without notice. Subject to prior sale and unless otherwise agreed are binding only for immediate acceptance. All sales are made subject to strikes, accidents or other causes of any kind.

Prices - Prices are subject to change without notice. All orders will be invoiced at prices in effect at time of shipment. Possession of a price list or quotation is not accepted by us as an obligation to sell, or offer goods listed therein to anyone.

Credit Approval - Orders are subject to approval by our credit department.

Suspension of Performance - If in our judgement reasonable doubt exists as to your financial responsibility or if you are past due in payment of any amount owing to us, we reserve the right, without liability and without prejudice to any other remedies, to suspend performance, decline to ship, to stop any material in transit, until we receive payment of all amounts owing to us, or adequate assurance of such payment whether or not due.

Terms of Payment - Unless otherwise expressly provided, payment shall be due 30 days from the date of each invoice, without discount. Any cash discount which may be expressly provided for, applies only to the sale price of the goods at the shipping point, and does not apply to any charges made for taxes, storage, loading and transportation.

Taxes - Any taxes which, under any existing or future law, we may be required to pay or collect with respect to the sale, purchase, delivery, storage, processing, use, consumption or transportation of any of the goods or services covered shall, if not separately shown, be added as a separate item to the quoted price, and shall be paid by you to us on demand. The foregoing shall not apply to any taxes, the payment of collection of which by us is excused by reason of delivery to us of valid tax exemption certificates.

Title - Title of goods does not pass to purchaser until goods are paid for in full.

Setoff - You authorize us to apply toward payment of any moneys that become due us hereunder any sums which may now or hereafter be owed to you by us, or by any subsidiary or affiliated company of either of us.

Cancellation - A contract may be canceled or modified only by written agreement between us. Your insistence upon canceling or suspending fabrication or shipment, or your failure to furnish specifications when required, may be treated by us as a breach of contract by you, and we may cancel any unshipped balance without prejudice to any other remedies we may have.

Claims - If any goods received by you are damaged, or if the quantities received by you do not agree with the quantities indicated on the shipping documents, and if you intend to assert any claim against us on this account, you shall mark an exception on your receipt to the carrier and shall, within 15 days after receipt of such goods, furnish us detailed written information as to any damage or shortage. You shall advise us in writing within 30 days after receipt of any goods, of any other claim you may have against us with respect to such goods. If you have claims against us with respect to any goods, you shall afford us a reasonable opportunity to inspect such goods. Any action for our breach of this contract must be commenced within one year after the cause of action shall accrue, and no such action may be maintained by you which is not commenced within such period.

Quantities - If it is indicated that any item is to be shipped from a producing mill, the producing mill may, on certain commodities reserve the privilege of shipping over or under the ordered quantity in accordance with established percentages which will constitute full and complete shipment of the material specified.





CONDITIONS AND TERMS OF SALE

Deliveries - Any delivery schedule indicated is based on our present estimate of the time required to ship after receipt of your order and in case of any item which it is indicated is to be shipped from a producing mill upon current production schedules of the producing mill. In the event of any delay in our performance due in whole or in part to any cause beyond our reasonable control, we shall have such additional time for our performance as may be reasonably necessary under the circumstances. Acceptance by you or any goods shall constitute a waiver by you of any claim for damages on account of any delay in delivery of such goods.

Compliance with Laws - Any clause required to be included in a contract by any applicable law, or by any administrative regulations having the effect of law, is hereby incorporated herein.

Patent Infringement - If any of the goods are to be furnished to your specifications, you agree to indemnify us and our successors and assigns, against all liabilities and expenses resulting from any claim of infringement of any patent in connection with the production of such goods.

Tools, Dies and Fixtures - Unless otherwise expressly provided, any tools, dies or fixtures which may be developed for use in the production of the goods covered shall be owned by us or any producing mill, as we may elect, even though you are charged in whole or in part for the cost of such tools, dies and fixtures.

Shipments - Unless otherwise expressly stated, shipment may be by carrier or other means selected by us.

Returned Goods - Written permission and a Return Goods Authorization number must be obtained before returning any materials. CFF reserves the right to deny issuing a Return Goods Authorization after 60 days of the product being invoiced. All material returned is subject to inspection upon return to CFF. If the material is not in saleable condition upon inspection, it will be returned to the customer at the customer's expense. All saleable condition material will be returned to stock and a credit will be issued. Material returned in saleable condition will be subject to a restocking charge of (25%) twenty five percent minimum. Special items as well as non-stock items are not subject to return.

Tolerances and Variations - All goods shall be subject to tolerances and variations consistent with usual trade practices regarding dimensions, straightness, section, composition and mechanical properties and normal variations in surface and internal conditions and quality and shall also be subject to deviations from tolerances and variations consistent with practical testing and inspection methods.

Limited Warranty - We warrant only that the goods will conform to their description as herein stated, subject to tolerances and variations described in the following paragraph. **WE MAKE NO OTHER WARRANTY. EXPRESS OR IMPLIED AND SPECIFICALLY DISCLAIM AND EXCLUDE ANY AND ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

Limitation of Liability - Your exclusive remedy for breach of contract as to any term hereof, and our only liability for any such breach, shall be replacement or repair of such goods, or repayment to you of the purchase price paid by you for such goods, whichever such remedy we shall select, and if we elect to repay, the purchase price of any such goods and so advise you, you must return such goods to us immediately. In no event will we be liable for incidental or consequential damages, including but not limited to loss of revenue or profits or any other special damages.

Entire Agreement - The terms set forth herein constitute the sole terms and conditions upon which we offer goods for sale. No other term, condition or understanding, whether oral or written shall be binding upon us, unless hereafter made in writing and signed by our authorized representative. Any purchase order you issue to us shall constitute your unconditional agreement to be bound exclusively by the foregoing Conditions and Terms of Sale. We hereby specifically object to any different or additional terms that might be contained in your purchase order.

