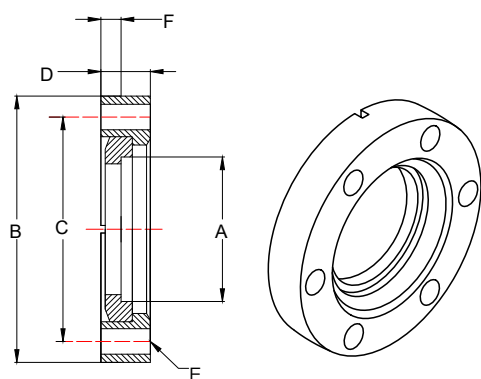


# Ordering Information

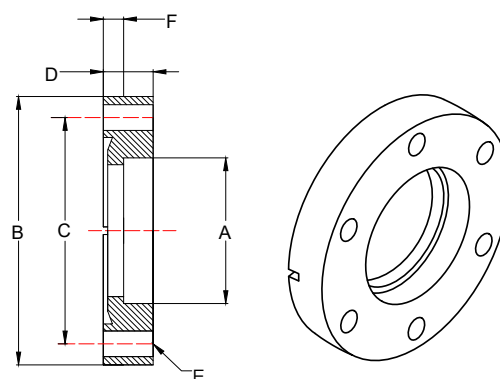
## CF Flange Dimensions

in/(mm)

Flange Size	A Nominal Tube Diameter	B Flange Outside Diameter	C Bolt Circle Diameter	D Thickness	E Number of Holes	Tapped Holes Thread	Thru Holes Diameter	F Face to Counter Bore
1 1/3	.75 (19)	1.33 (34)	1.06 (27)	.30 (8)	6	8-32	.172 (4.3)	.18 (4.6)
2 1/8	1.00 (25)	2.12 (54)	1.62 (41)	.50 (13)	4	1/4-28	.265 (6.7)	.17 (4.3)
2 3/4	1.50 (38)	2.75 (70)	2.31 (59)	.50 (13)	6	1/4-28	.265 (6.7)	.21 (5.3)
3 3/8	2.00 (51)	3.38 (86)	2.85 (72)	.69 (18)	8	5/16-24	.332 (8.4)	.22 (5.6)
4 1/2	2.50 (64)	4.50 (114)	3.63 (92)	.69 (18)	8	5/16-24	.332 (8.4)	.38 (9.6)
4 5/8	3.01 (76)	4.61 (118)	4.03 (102)	.75 (19)	10	5/16-24	.332 (8.4)	.38 (9.6)



Rotatable



Non-Rotatable

## CF Flanges

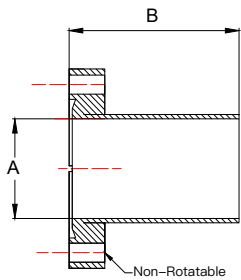
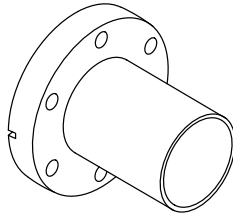
in/(mm)

Flange Size	For Tubing OD	Rotatable / Non-Rotatable	Bolt Holes	Part Number
1 1/3	Blank	Rotatable	Thru	100881014
1 1/3	Blank	Rotatable	Tapped	100881021
1 1/3	Blank	Non-Rotatable	Thru	100881000
1 1/3	Blank	Non-Rotatable	Tapped	100881007
1 1/3	.75 (19)	Rotatable	Thru	100881018
1 1/3	.75 (19)	Rotatable	Tapped	100881025
1 1/3	.75 (19)	Non-Rotatable	Thru	100881004
1 1/3	.75 (19)	Non-Rotatable	Tapped	100881011
2 1/8	Blank	Rotatable	Thru	100882010
2 1/8	Blank	Rotatable	Tapped	100882015
2 1/8	Blank	Non-Rotatable	Thru	100882000
2 1/8	Blank	Non-Rotatable	Tapped	100882005
2 1/8	.25 (6)	Rotatable	Thru	100882011
2 1/8	.25 (6)	Rotatable	Tapped	100882016
2 1/8	.25 (6)	Non-Rotatable	Thru	100882001
2 1/8	.25 (6)	Non-Rotatable	Tapped	100882006
2 1/8	.50 (13)	Rotatable	Thru	100882012
2 1/8	.50 (13)	Rotatable	Tapped	100882017
2 1/8	.50 (13)	Non-Rotatable	Thru	100882002
2 1/8	.50 (13)	Non-Rotatable	Tapped	100882007
2 1/8	.75 (19)	Rotatable	Thru	100882013
2 1/8	.75 (19)	Rotatable	Tapped	100882018
2 1/8	.75 (19)	Non-Rotatable	Thru	100882003
2 1/8	.75 (19)	Non-Rotatable	Tapped	100882008
2 1/8	1.00 (25)	Rotatable	Thru	100882014
2 1/8	1.00 (25)	Rotatable	Tapped	100882019
2 1/8	1.00 (25)	Non-Rotatable	Thru	100882004
2 1/8	1.00 (25)	Non-Rotatable	Tapped	100882009
2 3/4	Blank	Rotatable	Thru	100883014
2 3/4	Blank	Rotatable	Tapped	100883021

**CF Flanges**

in/(mm)

Flange Size	For Tubing OD	Rotatable / Non-Rotatable	Bolt Holes	Part Number
2 3/4	Blank	Non-Rotatable	Thru	100883000
2 3/4	Blank	Non-Rotatable	Tapped	100883007
2 3/4	.25 (6)	Rotatable	Thru	100883015
2 3/4	.25 (6)	Rotatable	Tapped	100883022
2 3/4	.25 (6)	Non-Rotatable	Thru	100883001
2 3/4	.25 (6)	Non-Rotatable	Tapped	100883008
2 3/4	.50 (13)	Rotatable	Thru	100883016
2 3/4	.50 (13)	Rotatable	Tapped	100883023
2 3/4	.50 (13)	Non-Rotatable	Thru	100883002
2 3/4	.50 (13)	Non-Rotatable	Tapped	100883009
2 3/4	.75 (19)	Rotatable	Thru	100883017
2 3/4	.75 (19)	Rotatable	Tapped	100883024
2 3/4	.75 (19)	Non-Rotatable	Thru	100883003
2 3/4	.75 (19)	Non-Rotatable	Tapped	100883010
2 3/4	1.00 (25)	Rotatable	Thru	100883018
2 3/4	1.00 (25)	Rotatable	Tapped	100883025
2 3/4	1.00 (25)	Non-Rotatable	Thru	100883004
2 3/4	1.00 (25)	Non-Rotatable	Tapped	100883011
2 3/4	1.25 (32)	Rotatable	Thru	100883019
2 3/4	1.25 (32)	Rotatable	Tapped	100883026
2 3/4	1.25 (32)	Non-Rotatable	Thru	100883005
2 3/4	1.25 (32)	Non-Rotatable	Tapped	100883012
2 3/4	1.50 (38)	Rotatable	Thru	100883020
2 3/4	1.50 (38)	Rotatable	Tapped	100883027
2 3/4	1.50 (38)	Non-Rotatable	Thru	100883006
2 3/4	1.50 (38)	Non-Rotatable	Tapped	100883013
2 3/4	1.75 (45)	Rotatable	Thru	100883065
2 3/4	1.75 (45)	Rotatable	Tapped	100883067
2 3/4	1.75 (45)	Non-Rotatable	Thru	100883064
2 3/4	1.75 (45)	Non-Rotatable	Tapped	100883066
3 3/8	Blank	Rotatable	Thru	100884006
3 3/8	Blank	Rotatable	Tapped	100884009
3 3/8	Blank	Non-Rotatable	Thru	100884000
3 3/8	Blank	Non-Rotatable	Tapped	100884003
3 3/8	1.50 (38)	Rotatable	Thru	100884007
3 3/8	1.50 (38)	Rotatable	Tapped	100884010
3 3/8	1.50 (38)	Non-Rotatable	Thru	100884001
3 3/8	1.50 (38)	Non-Rotatable	Tapped	100884004
3 3/8	2.00 (51)	Rotatable	Thru	100884008
3 3/8	2.00 (51)	Rotatable	Tapped	100884011
3 3/8	2.00 (51)	Non-Rotatable	Thru	100884002
3 3/8	2.00 (51)	Non-Rotatable	Tapped	100884005
4 1/2	Blank	Rotatable	Thru	100885008
4 1/2	Blank	Rotatable	Tapped	100885012
4 1/2	Blank	Non-Rotatable	Thru	100885000
4 1/2	Blank	Non-Rotatable	Tapped	100885004
4 1/2	1.50 (38)	Rotatable	Thru	100885009
4 1/2	1.50 (38)	Rotatable	Tapped	100885013
4 1/2	1.50 (38)	Non-Rotatable	Thru	100885001
4 1/2	1.50 (38)	Non-Rotatable	Tapped	100885005
4 1/2	2.00 (51)	Rotatable	Thru	100885010
4 1/2	2.00 (51)	Rotatable	Tapped	100885014
4 1/2	2.00 (51)	Non-Rotatable	Thru	100885002
4 1/2	2.00 (51)	Non-Rotatable	Tapped	100885006
4 1/2	2.50 (64)	Rotatable	Thru	100885011
4 1/2	2.50 (64)	Rotatable	Tapped	100885015
4 1/2	2.50 (64)	Non-Rotatable	Thru	100885003
4 1/2	2.50 (64)	Non-Rotatable	Tapped	100885007
4 5/8	Blank	Rotatable	Thru	100885504
4 5/8	Blank	Rotatable	Tapped	100885506
4 5/8	Blank	Non-Rotatable	Thru	100885500
4 5/8	Blank	Non-Rotatable	Tapped	100885502
4 5/8	3.00 (76)	Rotatable	Thru	100885505
4 5/8	3.00 (76)	Rotatable	Tapped	100885507
4 5/8	3.00 (76)	Non-Rotatable	Thru	100885501
4 5/8	3.00 (76)	Non-Rotatable	Tapped	100885503

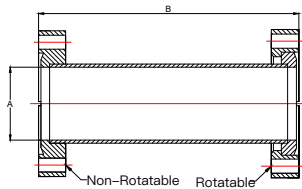
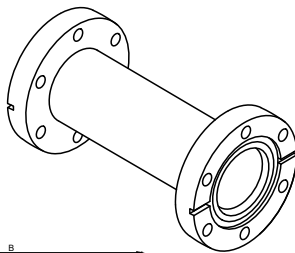


- Butt weld
- For use with orbital welders
- Thru holes

### CF Half Nipple

in./(mm)

Flange Size	For Tubing Size (OD)	A	B	Part Number
1 1/3	.75 (19)	.62 (16)	1.50 (38)	100881046
2 1/8	1.00 (25)	.87 (22)	2.05 (52)	100882040
2 3/4	1.50 (38)	1.37 (35)	2.43 (62)	100883049
3 3/8	2.00 (51)	1.87 (47)	3.21 (82)	100884027
4 1/2	2.50 (64)	2.37 (60)	4.13 (105)	100885032
4 5/8	3.00 (76)	2.87 (73)	4.93 (125)	100885531

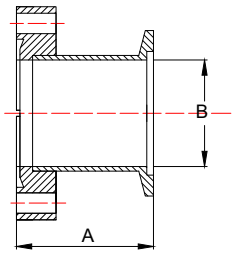
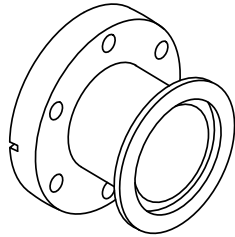


- Special lengths to order
  - Thru holes
- \* Includes 12 mesh screen, 1/2" in from rotatable port

### CF Full Nipple

in./(mm)

Flange Size	For Tubing Size (OD)	A	B	Part Number
1 1/3	.75 (19)	.62 (16)	3.00 (76)	100881047
2 1/8	1.00 (25)	.87 (22)	4.10 (104)	100882041
2 3/4	1.50 (38)	1.37 (35)	4.92 (125)	100883050
2 3/4*	1.50 (38)	1.37 (35)	4.00 (102)	100883069
3 3/8	2.00 (51)	1.87 (47)	6.42 (163)	100884028
4 1/2	2.50 (64)	2.37 (60)	8.26 (210)	100885033
4 5/8	3.00 (76)	2.87 (73)	9.88 (250)	100885532

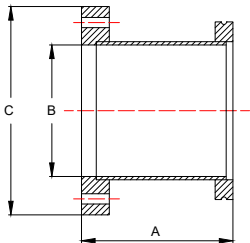
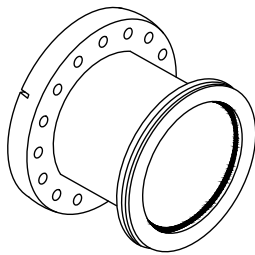


- Stainless steel type 304

### Adapter, ISO-KF to CF

in./(mm)

Flange Size (KF)	Flange Size (CF)	A	B	Part Number
NW 16	Mini 1 1/3	2.08 (53)	0.62 (16)	100315601
NW 16	2 3/4	1.78 (45)	0.62 (16)	100315611
NW 25	2 1/8	1.89 (48)	0.87 (22)	100319812
NW 25	2 3/4	1.78 (45)	0.87 (22)	100315603
NW 40	2 3/4	1.78 (45)	1.33 (34)	100315605
NW 50	2 3/4	2.11 (54)	1.37 (35)	100319813
NW 50	4 1/2	1.95 (50)	1.83 (46)	100315606



- Stainless steel type 304
- Special adapters available upon request

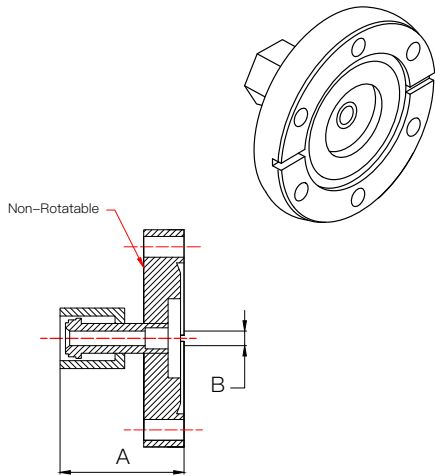
### Adapter, ISO-MF Flange to CF Flange

in./(mm)

Flange Size	A	B	C	Part Number
NW 63 to 4 1/2" CF	4.33 (110)	2.37 (60)	4.50 (114)	100762206

### Adapter, CF to VCR® Female\*

in./(mm)

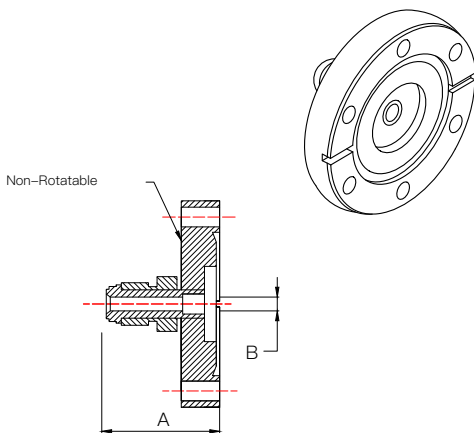


- Thru holes
- VCR-compatible parts may be used

Flange Size	A	B	VCR Size	Part Number
1 1/3 to 4 VCR	1.43 (36)	.19 (5)	1/4	100881049
2 1/8 to 4 VCR	1.50 (38)	.19 (5)	1/4	100882032
2 1/8 to 8 VCR	1.69 (43)	.41 (10)	1/2	100882033
2 1/8 to 12 VCR	2.19 (56)	.62 (16)	3/4	100882036
2 3/4 to 4 VCR	1.50 (38)	.19 (5)	1/4	100883054
2 3/4 to 8 VCR	1.69 (43)	.41 (10)	1/2	100883057
2 3/4 to 12 VCR	2.19 (56)	.62 (16)	3/4	100883058
3 3/8 to 4 VCR	1.80 (46)	.19 (5)	1/4	100884033
3 3/8 to 8 VCR	1.88 (48)	.41 (10)	1/2	100884035
3 3/8 to 12 VCR	2.38 (60)	.62 (16)	3/4	100884037

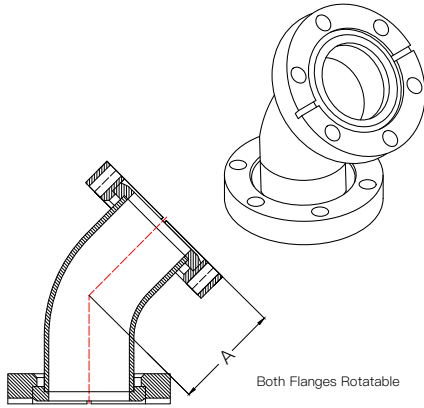
### Adapter, CF to VCR® Male\*

in./(mm)



- Thru holes
- VCR-compatible parts may be used

Flange Size	A	B	VCR Size	Part Number
1 1/3 to 4 VCR	1.43 (36)	.19 (5)	1/4	100881050
2 1/8 to 4 VCR	1.50 (38)	.19 (5)	1/4	100882031
2 1/8 to 8 VCR	1.69 (43)	.41 (10)	1/2	100882034
2 1/8 to 12 VCR	2.19 (56)	.62 (16)	3/4	100882035
2 3/4 to 4 VCR	1.50 (38)	.19 (5)	1/4	100883055
2 3/4 to 8 VCR	1.69 (43)	.41 (10)	1/2	100883056
2 3/4 to 12 VCR	2.19 (56)	.62 (16)	3/4	100883059
3 3/8 to 4 VCR	1.80 (46)	.19 (5)	1/4	100884032
3 3/8 to 8 VCR	1.88 (48)	.41 (10)	1/2	100884034
3 3/8 to 12 VCR	2.38 (60)	.62 (16)	3/4	100884036

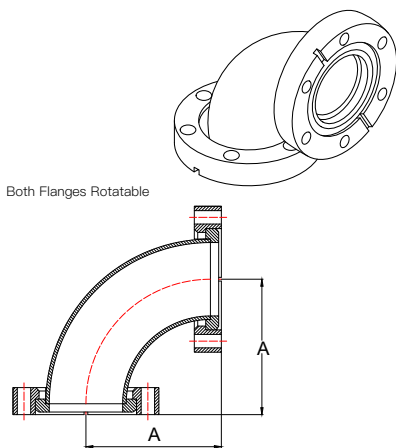


- Flanges same size on both sides

### CF Elbow 45° Smooth Radius

in./mm)

Flange Size	For Tubing OD	A	Part Number
1 1/3	.75 (19)	.81 (21)	100881052
2 1/8	1.00 (25)	1.35 (34)	100882038
2 3/4	1.50 (38)	1.82 (46)	100883061
3 3/8	2.00 (51)	2.53 (64)	100884039
4 1/2	2.50 (64)	3.37 (86)	100885037
4 5/8	3.00 (76)	4.05 (103)	100885528

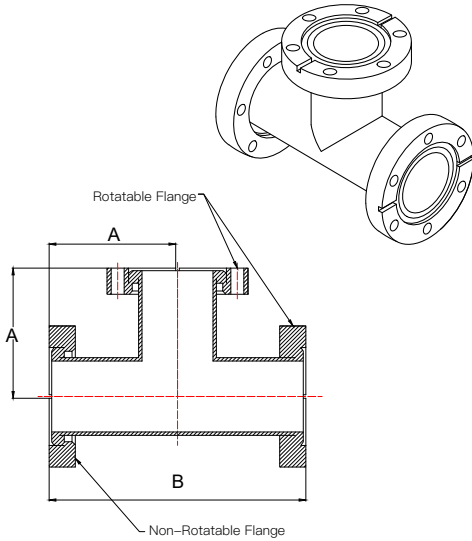


- Flanges same size on both sides

### CF Elbow 90° Smooth Radius

in./mm)

Flange Size	For Tubing OD	A	Part Number
1 1/3	.75 (19)	1.50 (38)	100881030
2 1/8	1.00 (25)	2.22 (56)	100882039
2 3/4	1.50 (38)	2.46 (63)	100883030
3 3/8	2.00 (51)	3.21 (82)	100884014
4 1/2	2.50 (64)	4.13 (105)	100885018
4 5/8	3.00 (76)	4.86 (123)	100885529

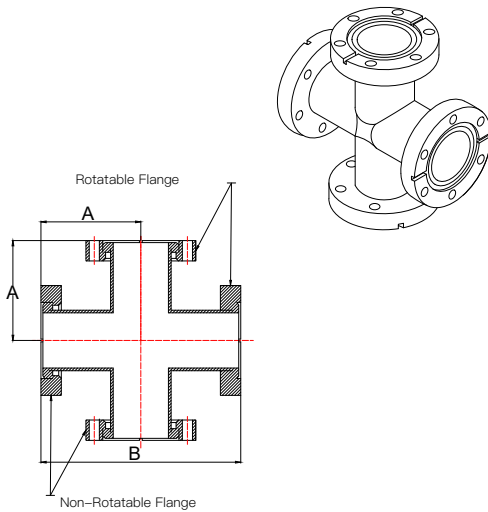


- Flanges same size on all sides

### CF Tee

in./(mm)

Flange Size	For Tubing OD	A	B	Part Number
1 1/3	.75 (19)	1.50 (38)	3.00 (76)	100881028
2 1/8	1.00 (25)	2.06 (52)	4.12 (105)	100882042
2 3/4	1.50 (38)	2.46 (63)	4.92 (125)	100883028
3 3/8	2.00 (51)	3.21 (82)	6.42 (166)	100884012

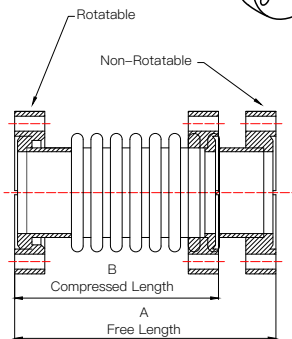
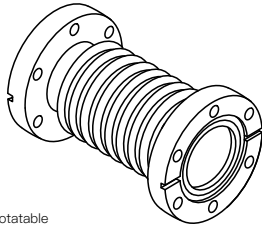


- Flanges same size on all sides

### CF Cross

in./(mm)

Flange Size	For Tubing OD	A	B	Part Number
1 1/3	.75 (19)	1.50 (38)	3.00 (76)	100881029
2 1/8	1.00 (25)	2.06 (52)	4.12 (105)	100882043
2 3/4	1.50 (38)	2.46 (63)	4.92 (125)	100883029
3 3/8	2.00 (51)	3.21 (82)	6.42 (166)	100884013

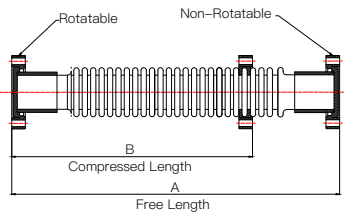
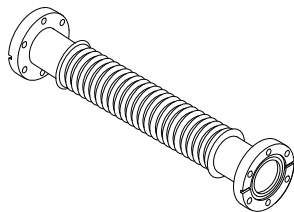


- Type 321 stainless steel
- Flexible coupling for vibrations and alignment
- Thru holes

### Bellows Section

in./(mm)

Flange Size	Static Bend Radius	A	B	Spring Rate (lb/in)	Part Number
1 1/3	3.0 (76)	4.15 (105)	3.80 (97)	70	100881045
2 1/8	4.0 (102)	3.41 (86)	3.20 (81)	58	100882028
2 3/4	5.5 (140)	4.15 (105)	3.20 (81)	61	100883047
3 3/8	8.0 (203)	4.29 (109)	3.20 (81)	58	100884025



- Type 321 stainless steel
- Special lengths to order
- Both ends must be supported for the 4 1/2 and 6 inch sizes

### Thin Wall Metal Hose

in./(mm)

Flange Size	Static Bend Radius	A	B	Wall Thickness	Spring Rate (lb/in)	Part Number
1 1/3	1.63 (41)	11.3 (287)	7.8 (198)	.006 (.152)	27	100881032
1 1/3	1.63 (41)	21.2 (539)	13.8 (351)	.006 (.152)	12	100881033
1 1/3	1.63 (41)	40.9 (1039)	25.6 (650)	.006 (.152)	9	100881034
2 1/8	1.38 (35)	11.3 (287)	7.8 (198)	.006 (.152)	16	100882020
2 1/8	1.38 (35)	22.1 (561)	14.7 (373)	.006 (.152)	7	100882021
2 1/8	1.38 (35)	41.8 (1062)	26.5 (673)	.006 (.152)	3	100882022
2 3/4	2.50 (64)	12.3 (312)	8.7 (221)	.006 (.152)	9	100883032
2 3/4	2.50 (64)	22.1 (561)	14.1 (358)	.006 (.152)	4	100883033
2 3/4	2.50 (64)	41.9 (1064)	25.0 (635)	.006 (.152)	2	100883034
3 3/8	3.25 (83)	13.3 (338)	10.5 (267)	.006 (.152)	13	100884016
3 3/8	3.25 (83)	23.2 (589)	17.0 (432)	.006 (.152)	6	100884017
3 3/8	3.25 (83)	42.9 (1090)	29.8 (757)	.006 (.152)	3	100884018
4 1/2	6.75 (172)	13.8 (351)	9.1 (231)	.006 (.152)	15	100885020
4 1/2	6.75 (172)	23.7 (602)	16.2 (412)	.006 (.152)	7	100885021
4 1/2	6.75 (172)	43.4 (1102)	30.3 (770)	.006 (.152)	3	100885022

### Flange Protector Caps

Flange Size	Description	Part Number
1 1/3	Flange protector cap, plastic	100003050
2 1/8	Flange protector cap, plastic	100005285
2 3/4	Flange protector cap, plastic	100003049
3 3/8	Flange protector cap, plastic	100003048



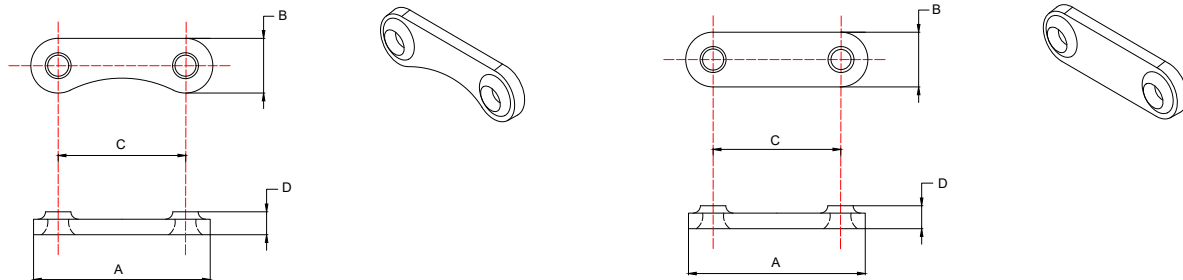
## CF Hardware

Flange Size	Description	Quantity	Part Number
1 1/3	Bolt Set, Tapped, 8-32 x 0.56	25	100889029
1 1/3	Bolt Set, Tapped, 8-32 x 0.62	25	100889030
1 1/3	Bolt Set, Tapped, 8-32 x 0.75	25	100889031
1 1/3	Bolt Set, Tapped, 8-32 x 0.50	25	100889032
2 1/8, 2 3/4	Bolt Set, Tapped, 1/4-28 x 1.00	25	100889033
3 3/8, 4 1/2, 4 5/8	Bolt Set, Tapped, 5/16-24 x 1.25	25	100889035
1 1/3	Bolt/Nut Set, Thru, 8-32 x 0.75	25	100889047
1 1/3	Bolt/Nut Set, Thru, 8-32 x 0.87	25	100889147
1 1/3	Bolt/Nut Set, Thru, 8-32 x 0.75, Ag	25	100889048
1 1/3	Bolt/Nut Set, Thru, 8-32 x 0.87, Ag	25	100889148
2 1/8, 2 3/4	Bolt/Nut Set, Thru, 1/4-28 x 1.25	25	100889049
2 1/8, 2 3/4	Bolt/Nut Set, Thru, 1/4-28 x 1.38	25	100889150
3 3/8	Bolt/Nut Set, Thru, 5/16-24 x 1.75	25	100889051
4 1/2	Bolt/Nut Set, Thru, 5/16-24 x 2.00	25	100889053
4 5/8	Bolt/Nut Set, Thru, 5/16-24 x 2.25	25	100889055
1 1/3	Bolt/Nut Set, Double-Sided, 8-32 x 1.25	25	100889123
1 1/3	Bolt/Nut Set, Double-Sided, 8-32 x 1.25, Ag	25	100889124
2 1/8, 2 3/4	Bolt/Nut Set, Double-Sided, 1/4-28 x 1.75	25	100889125
2 3/4	Bolt/Nut Set, Double-Sided, 1/4-28 x 2.00	25	100889126
2 3/4	Bolt/Nut Set, Double-Sided, 1/4-28 x 2.50	25	100889153
3 3/8	Bolt/Nut Set, Double-Sided, 5/16-24 x 2.50	25	100889130
4 1/2	Bolt/Nut Set, Double-Sided, 5/16-24 x 2.75	25	100889127
4 5/8	Bolt/Nut Set, Double-Sided, 5/16-24 x 3.00	25	100889128
1 1/3	Viton Seal, Beveled Edge	5	100889020
2 1/8	Viton Seal, Beveled Edge	5	100889021
2 3/4	Viton Seal, Beveled Edge	5	100889022
3 3/8	Viton Seal, Beveled Edge	5	100889023
4 1/2	Viton Seal, Beveled Edge	5	100889024
4 5/8	Viton Seal, Beveled Edge	5	100889025

## CF Hardware

Flange Size	Description	Quantity	Part Number
1 1/3	Silver-Plated Copper Gasket	1	100889181
2 1/8	Silver-Plated Copper Gasket	1	100889182
2 3/4	Silver-Plated Copper Gasket	1	100889183
3 3/8	Silver-Plated Copper Gasket	1	100889184
4 1/2	Silver-Plated Copper Gasket	1	100889185
4 5/8	Silver-Plated Copper Gasket	1	100889186
1 1/3	Copper Gasket, Etched, Individually Sealed	10	100889103
2 1/8	Copper Gasket, Etched, Individually Sealed	10	100889104
2 3/4	Copper Gasket, Etched, Individually Sealed	10	100889105
3 3/8	Copper Gasket, Etched, Individually Sealed	10	100889106
4 1/2	Copper Gasket, Etched, Individually Sealed	10	100889107
4 5/8	Copper Gasket, Etched, Individually Sealed	10	100889108

## Plate Nut Sets



### Plate Nut (24 per package)

Flange Size	Thread Size	A	B	C	D	Part Number
1 1/3	8-32	.80"	.30"	.53"	.15"	100889071
2 3/4	1/4-28	1.41"	.50"	1.16"	.18"	100889072
3 3/8	5/16-24	1.75"	.50"	1.09"	.22"	100889073
4 1/2	5/16-24	2.03"	.50"	1.39"	.22"	100889074

### Plate Nut and Bolt Sets

Flange Size	Description	Part Number
1 1/3	Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 8-32 x 0.75	100889077
2 3/4	Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 1/4-28 x 1.25	100889079
3 3/8	Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24 x 1.75	100889081
4 1/2	Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24 x 2.00	100889083

### Plate Nut and Dodecagon (12 pt) Silver Plated Bolt Sets

Flange Size	Description	Part Number
1 1/3	Dodecagon Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 8-32 x 0.75	100889090
2 3/4	Dodecagon Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 1/4-28 x 1.25	100889092
3 3/8	Dodecagon Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24 x 1.75	100889094
4 1/2	Dodecagon Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24 x 2.00	100889096

### Dodecagon (12 pt) Bolts with Nuts and Washers\*

Flange Size	Description	Part Number
2 1/8, 2 3/4	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Tapped, 1/4-28 x 1.00	100889042
2 1/8, 2 3/4	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Thru, 1/4-28 x 1.25	100889062
2 1/8, 2 3/4	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Thru, 1/4-28 x 1.38	100889151
3 3/8, 4 1/2, 4 5/8	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Tapped, 5/16-24 x 1.25	100889044
4 1/2	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Thru, 5/16-24 x 2.00	100889066
3 3/8	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Thru, 5/16-24 x 1.75	100889064
4 5/8	Dodecagon Bolt/Nut/Washer Set, Silver Plated, Thru, 5/16-24 x 2.25	100889068

\* Note: There are 25 bolts, nuts, and washers per package.

## Part Number/Description

100003048	Flange Protector Cap, 3 3/8"
100003049	Flange Protector Cap, 2 3/4"
100003050	Flange Protector Cap, 1 1/3"
100005285	Flange Protector Cap, 2 1/8"
100315601	Adapter, ISO-KF to CF, NW 16 to 1-1/3" CF
100315603	Adapter, ISO-KF to CF, NW 25 to 2-3/4" CF
100315605	Adapter, ISO-KF to CF, NW 40 to 2-3/4" CF
100315606	Adapter, ISO-KF to CF, NW 50 to 4-1/2" CF
100315611	Adapter, ISO-KF to CF, NW 16 to 2-3/4" CF
100319812	Adapter, ISO-KF to CF, NW 25 to 2 1/8" CF
100319813	Adapter, ISO-KF to CF, NW 50 to 2 3/4" CF
100762206	Adapter, MF to CF, NW 63 to 4.5" CF
100881000	Flange, 1 1/3", Blank, Nonrotatable
100881004	Flange, 1 1/3", 0.75", Nonrotatable, Thru
100881007	Flange, 1 1/3", Blank, Nonrotatable, Tapped
100881011	Flange, 1 1/3", 0.75", Nonrotatable, Tapped
100881014	Flange, 1 1/3", Blank, Rotatable, Thru
100881018	Flange, 1 1/3", 0.75", Rotatable, Thru
100881021	Flange, 1 1/3", Blank, Rotatable, Tapped
100881025	Flange, 1 1/3", 0.75", Rotatable, Tapped
100881028	Tee, 1 1/3"
100881029	Cross, 1 1/3"
100881030	90° Elbow, 1 1/3"
100881032	Thin Wall Metal Hose, 1.63", 1 1/3"
100881033	Thin Wall Metal Hose, 1.63", 1 1/3"
100881034	Thin Wall Metal Hose, 1.63", 1 1/3"
100881045	Bellows Section, 1 1/3"
100881046	Half Nipple, 1 1/3", .75"
100881047	Full Nipple, 1 1/3", 0.75"
100881049	Adapter, 1 1/3" to 4 VCR-F
100881050	Adapter, 1 1/3" to 4 VCR-M
100881052	45° Elbow, 1 1/3"

100882000	Flange, 2 1/8", Blank, Nonrotatable, Thru
100882001	Flange, 2 1/8", 0.25", Nonrotatable, Thru
100882002	Flange, 2 1/8", 0.50", Nonrotatable, Thru
100882003	Flange, 2 1/8", 0.75", Nonrotatable, Thru
100882004	Flange, 2 1/8", 1.00", Nonrotatable, Thru
100882005	Flange, 2 1/8", Blank, Nonrotatable, Tapped
100882006	Flange, 2 1/8", 0.25", Nonrotatable, Tapped
100882007	Flange, 2 1/8", 0.50", Nonrotatable, Tapped
100882008	Flange, 2 1/8", 0.75", Nonrotatable, Tapped
100882009	Flange, 2 1/8", 1.00", Nonrotatable, Tapped
100882010	Flange, 2 1/8", Blank, Rotatable, Thru
100882011	Flange, 2 1/8", 0.25", Rotatable, Thru
100882012	Flange, 2 1/8", 0.50", Rotatable, Thru
100882013	Flange, 2 1/8", 0.75", Rotatable, Thru
100882014	Flange, 2 1/8", 1.00", Rotatable, Thru
100882015	Flange, 2 1/8", Blank, Rotatable, Tapped
100882016	Flange, 2 1/8", 0.25", Rotatable, Tapped
100882017	Flange, 2 1/8", 0.50", Rotatable, Tapped
100882018	Flange, 2 1/8", 0.75", Rotatable, Tapped
100882019	Flange, 2 1/8", 1.00", Rotatable, Tapped
100882020	Thin Wall Metal Hose, 1.38", 2 1/8"
100882021	Thin Wall Metal Hose, 1.38", 2 1/8"
100882022	Thin Wall Metal Hose, 1.38", 2 1/8"
100882028	Bellows Section, 2 1/8"
100882031	Adapter, 2 1/8" to 4 VCR-M
100882032	Adapter, 2 1/8" to 4 VCR-F
100882033	Adapter, 2 1/8" to 8 VCR-F
100882034	Adapter, 2 1/8" to 8 VCR-M
100882035	Adapter, 2 1/8" to 12 VCR-M
100882036	Adapter, 2 1/8" to 12 VCR-F
100882038	45° Elbow, 2 1/8"
100882039	90° Elbow, 2 1/8"
100882040	Half Nipple, 2 1/8", 1.00"
100882041	Full Nipple, 2 1/8", 1.00"
100882042	Tee, 2 1/8"
100882043	Cross, 2 1/8"

100883000	Flange, 2 3/4", Blank, Nonrotatable, Thru
100883001	Flange, 2 3/4", 0.25", Nonrotatable, Thru
100883002	Flange, 2 3/4", 0.50", Nonrotatable, Thru
100883003	Flange, 2 3/4", 0.75", Nonrotatable, Thru
100883004	Flange, 2 3/4", 1.00", Nonrotatable, Thru
100883005	Flange, 2 3/4", 1.25", Nonrotatable, Thru
100883006	Flange, 2 3/4", 1.50", Nonrotatable, Thru
100883007	Flange, 2 3/4", Blank, Nonrotatable, Tapped
100883008	Flange, 2 3/4", 0.25", Nonrotatable, Tapped
100883009	Flange, 2 3/4", 0.50", Nonrotatable, Tapped
100883010	Flange, 2 3/4", 0.75", Nonrotatable, Tapped
100883011	Flange, 2 3/4", 1.00", Nonrotatable, Tapped
100883012	Flange, 2 3/4", 1.25", Nonrotatable, Tapped
100883013	Flange, 2 3/4", 1.50", Nonrotatable, Tapped
100883014	Flange, 2 3/4", Blank, Rotatable, Thru
100883015	Flange, 2 3/4", 0.25", Rotatable, Thru
100883016	Flange, 2 3/4", 0.50", Rotatable, Thru
100883017	Flange, 2 3/4", 0.75", Rotatable, Thru
100883018	Flange, 2 3/4", 1.00", Rotatable, Thru
100883019	Flange, 2 3/4", 1.25", Rotatable, Thru
100883020	Flange, 2 3/4", 1.50", Rotatable, Thru
100883021	Flange, 2 3/4", Blank, Rotatable, Tapped
100883022	Flange, 2 3/4", 0.25", Rotatable, Tapped
100883023	Flange, 2 3/4", 0.50", Rotatable, Tapped
100883024	Flange, 2 3/4", 0.75", Rotatable, Tapped
100883025	Flange, 2 3/4", 1.00", Rotatable, Tapped
100883026	Flange, 2 3/4", 1.25", Rotatable, Tapped
100883027	Flange, 2 3/4", 1.50", Rotatable, Tapped
100883028	Tee, 2 3/4"
100883029	Cross, 2 3/4"
100883030	90° Elbow, 2 3/4"
100883032	Thin Wall Metal Hose, 2.50", 2 3/4"
100883033	Thin Wall Metal Hose, 2.50", 2 3/4"
100883034	Thin Wall Metal Hose, 2.50", 2 3/4"
100883047	Bellows Section, 2 3/4"

100883049	Half Nipple, 2 3/4", 1.50"
100883050	Full Nipple, 2 3/4", 1.50"
100883054	Adapter, 2 3/4" to 4 VCR-F
100883055	Adapter, 2 3/4" to 4 VCR-M
100883056	Adapter, 2 3/4" to 8 VCR-M
100883057	Adapter, 2 3/4" to 8 VCR-F
100883058	Adapter, 2 3/4" to 12 VCR-F
100883059	Adapter, 2 3/4" to 12 VCR-M
100883061	45° Elbow, 2 3/4"
100883064	Flange, 2 3/4", 1.75", Nonrotatable, Thru
100883065	Flange, 2 3/4", 1.75", Rotatable, Thru
100883066	Flange, 2 3/4", 1.75", Nonrotatable, Tapped
100883067	Flange, 2 3/4", 1.75", Rotatable, Tapped
100883069	Full Nipple w/ Screen, 2 3/4", 1.50"
100884000	Flange, 3 3/8", Blank, Nonrotatable, Thru
100884001	Flange, 3 3/8", 1.50", Nonrotatable, Thru
100884002	Flange, 3 3/8", 2.00", Nonrotatable, Thru
100884003	Flange, 3 3/8", Blank, Nonrotatable, Tapped
100884004	Flange, 3 3/8", 1.50", Nonrotatable, Tapped
100884005	Flange, 3 3/8", 2.00", Nonrotatable, Tapped
100884006	Flange, 3 3/8", Blank, Rotatable, Thru
100884007	Flange, 3 3/8", 1.50", Rotatable, Thru
100884008	Flange, 3 3/8", 2.00", Rotatable, Thru
100884009	Flange, 3 3/8", Blank, Rotatable, Tapped
100884010	Flange, 3 3/8", 1.50", Rotatable, Tapped
100884011	Flange, 3 3/8", 2.00", Rotatable, Tapped
100884012	Tee, 3 3/8"
100884013	Cross, 3 3/8"
100884014	90° Elbow, 3 3/8"
100884016	Thin Wall Metal Hose, 3.25", 3 3/8"
100884017	Thin Wall Metal Hose, 3.25", 3 3/8"
100884018	Thin Wall Metal Hose, 3.25", 3 3/8"
100884025	Bellows Section, 3 3/8"

100884027	Half Nipple, 3 3/8", 2.00"
100884028	Full Nipple, 3 3/8", 2.00"
100884032	Adapter, 3 3/8" to 4 VCR-M
100884033	Adapter, 3 3/8" to 4 VCR-F
100884034	Adapter, 3 3/8" to 8 VCR-M
100884035	Adapter, 3 3/8" to 8 VCR-F
100884036	Adapter, 3 3/8" to 12 VCR-M
100884037	Adapter, 3 3/8" to 12 VCR-F
100884039	45° Elbow, 3 3/8"
100885000	Flange, 4 1/2", Blank, Nonrotatable, Thru
100885001	Flange, 4 1/2", 1.50", Nonrotatable, Thru
100885002	Flange, 4 1/2", 2.00", Nonrotatable, Thru
100885003	Flange, 4 1/2", 2.50", Nonrotatable, Thru
100885004	Flange, 4 1/2", Blank, Nonrotatable, Tapped
100885005	Flange, 4 1/2", 1.50", Nonrotatable, Tapped
100885006	Flange, 4 1/2", 2.00", Nonrotatable, Tapped
100885007	Flange, 4 1/2", 2.50", Nonrotatable, Tapped
100885008	Flange, 4 1/2", Blank, Rotatable, Thru
100885009	Flange, 4 1/2", 1.50", Rotatable, Thru
100885010	Flange, 4 1/2", 2.00", Rotatable, Thru
100885011	Flange, 4 1/2", 2.50", Rotatable, Thru
100885012	Flange, 4 1/2", Blank, Rotatable, Tapped
100885013	Flange, 4 1/2", 1.50", Rotatable, Tapped
100885014	Flange, 4 1/2", 2.00", Rotatable, Tapped
100885015	Flange, 4 1/2", 2.50", Rotatable, Tapped
100885018	90° Elbow, 4 1/2"
100885020	Thin Wall Metal Hose, 6.75", 4 1/2"
100885021	Thin Wall Metal Hose, 6.75", 4 1/2"
100885022	Thin Wall Metal Hose, 6.75", 4 1/2"
100885032	Half Nipple, 4 1/2", 2.50"
100885033	Full Nipple, 4 1/2", 2.50"
100885037	45° Elbow, 4 1/2"
100885500	Flange, 4 5/8", Blank, Nonrotatable, Thru
100885501	Flange, 4 5/8", 3.00", Nonrotatable, Thru
100885502	Flange, 4 5/8", Blank, Nonrotatable, Tapped
100885503	Flange, 4 5/8", 3.00", Nonrotatable, Tapped
100885504	Flange, 4 5/8", Blank, Rotatable, Thru

100885505	Flange, 4 5/8", 3.00", Rotatable, Thru
100885506	Flange, 4 5/8", Blank, Rotatable, Tapped
100885507	Flange, 4 5/8", 3.00", Rotatable, Tapped
100885528	45° Elbow, 4 5/8"
100885529	90° Elbow, 4 5/8"
100885531	Half Nipple, 4 5/8", 3.00"
100885532	Full Nipple 4 5/8", 3.00"
100889020	Viton Seal, Beveled Edge (5), 1 1/3"
100889021	Viton Seal, Beveled Edge (5), 2 1/8"
100889022	Viton Seal, Beveled Edge (5), 2 3/4"
100889023	Viton Seal, Beveled Edge (5), 3 3/8"
100889024	Viton Seal, Beveled Edge (5), 4 1/2"
100889025	Viton Seal, Beveled Edge (5), 4 5/8"
100889029	Bolt Set, Tapped, 8-32x0.56, 1 1/3"
100889030	Bolt Set, Tapped, 8-32x0.62, 1 1/3"
100889031	Bolt Set, Tapped, 8-32x0.75, 1 1/3"
100889032	Bolt Set, Tapped, 8-32x0.50, 1 1/3"
100889033	Bolt Set, Tapped, 1/4-28x1.00, 2 1/8", 2 3/4"
100889035	Bolt Set, Tapped, 5/16-24x1.25, 3 3/8", 4 1/2", 4 5/8"
100889042	Dodecagon Bolt/Nut/Washer Set, Tapped, 1/4-28x1.00, 2 1/8", 2 3/4"
100889044	Dodecagon Bolt/Nut/Washer Set, Tapped, 5/16-24x1.75, 3 3/8", 4 1/2", 4 5/8"
100889047	Bolt/Nut Set, Thru, 8-32x0.75, 1 1/3"
100889048	Bolt/Nut Set, Thru, 8-32x0.75, 1 1/3"
100889049	Bolt/Nut Set, Thru, 1/4-28x1.25, 2 1/8", 2 3/4"
100889051	Bolt/Nut Set, Thru, 5/16-24x1.75, 3 3/8"
100889053	Bolt/Nut Set, Thru, 5/16-24x 2.00, 4 1/2"
100889055	Bolt/Nut Set, Thru, 5/16-24x2.25, 4 5/8"
100889062	Dodecagon Bolt/Nut/Washer Set, Thru, 1/4-28x1.25, 2 1/8", 2 3/4"
100889064	Dodecagon Bolt/Nut/Washer Set, Thru, 5/16-24x1.75, 3 3/8"
100889066	Dodecagon Bolt/Nut/Washer Set, Thru, 5/16-24x2.00, 4 1/2"
100889068	Dodecagon Bolt/Nut/Washer Set, Thru, 5/16-24x2.25, 4 5/8"
100889071	Plate Nut Set, 8-32, 1 1/3"
100889072	Plate Nut Set, 1/4-28, 2 3/4"
100889073	Plate Nut Set, 5/16-24, 3 3/8"
100889074	Plate Nut Set, 5/16-24, 4 1/2"





100889077	Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 8-32x0.75, 1 1/3"
100889079	Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 1/4-28x1.25, 2 3/4"
100889081	Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24x1.75, 3 3/8"
100889083	Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24x2.00, 4 1/2"
100889090	Dodecagon Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 8-32x0.75, 1 1/3"
100889092	Dodecagon Plate Nut/Bolt Set: 12 Plate Nuts, 24 Bolts/Washers, 1/4-28x1.25, 2 3/4"
100889094	Dodecagon Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24x1.75, 3 3/8"
100889096	Dodecagon Plate Nut/Bolt Set: 16 Plate Nuts, 32 Bolts/Washers, 5/16-24x2.00, 4 1/2"
100889103	Copper Gasket, Etched, 1 1/3"
100889104	Copper Gasket, Etched, 2 1/8"
100889105	Copper Gasket, Etched, 2 3/4"
100889106	Copper Gasket, Etched, 3 3/8"
100889107	Copper Gasket, Etched, 4 1/2"
100889108	Copper Gasket, Etched, 4 5/8"
100889123	Bolt/Nut Set, Double-Sided, 8-32x1.25, 1 1/3"
100889124	Bolt/Nut Set, Double-Sided, 8-32x1.25, 1 1/3"
100889125	Bolt/Nut Set, Double-Sided, 1/4-28x1.75, 2 1/8", 2 3/4"
100889126	Bolt/Nut Set, Double-Sided, 1/4-28x2.00, 2 3/4"
100889127	Bolt/Nut Set, Double-Sided, 5/16-24x2.75, 4 1/2"
100889128	Bolt/Nut Set, Double-Sided, 5/16-24x3.00, 4 5/8"
100889130	Bolt/Nut Set, Double-Sided, 5/16-24x2.50, 3 3/8"
100889147	Bolt/Nut Set, Thru, 8-32x0.87, 1 1/3"
100889148	Bolt/Nut Set, Thru, 8-32x0.87, 1 1/3"
100889150	Bolt/Nut Set, Thru, 1/4-28x1.38, 2 1/8", 2 3/4"
100889151	Dodecagon Bolt/Nut/Washer Set, Thru, 1/4-28x1.38, 2 1/8", 2 3/4"
100889153	Bolt/Nut Set, Double-Sided, 1/4-28x2.50, 2 3/4"
100889181	Silver-Plated Copper Gasket (1), 1 1/3"
100889182	Silver-Plated Copper Gasket (1), 2 1/8"
100889183	Silver-Plated Copper Gasket (1), 2 3/4"
100889184	Silver-Plated Copper Gasket (1), 3 3/8"
100889185	Silver-Plated Copper Gasket (1), 4 1/2"
100889186	Silver-Plated Copper Gasket (1), 4 5/8"