



# AGILENT VACUUM COMPONENTS

The Measure of Confidence



**Agilent Technologies**

# FLANGES

## Agilent Vacuum Flanges and Fittings

- Superior Quality Construction
- High Reliability
- Immediate Delivery



### ConFlat Flanges & Fittings

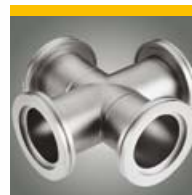
Agilent's ConFlat Flanges have set the industry standard for vacuum flange performance. These flanges are available in rotatable and non-rotatable models, and in sizes from 1.33 in. to 13.25 in. OD.

Agilent utilizes unique manufacturing processes and techniques to ensure leak-free performance in ConFlat Flanges. Our unbending commitment to quality assures you of trouble-free vacuum performance of the Agilent ConFlat Flange.



### Klamp Flanges & Fittings

Designed in accordance with ISO standards the Agilent KF flange can be used in a variety of applications from atmospheric pressure to high vacuum. The KF flange is manufactured from 304 stainless steel and has a leak rate less than  $1\text{E}^{-9}$  std cc/sec and can be baked to 150 °C when using a Viton O-Ring.



### ISO Flanges & Fittings

ISO flanges and fittings are designed for applications requiring frequent disassembly and where tubing requirements generally exceed 2 in. OD. All ISO flanges and fittings listed are made of 304L stainless steel. These flanges can be used in a variety of applications from atmospheric to  $\text{E}^{-8}$  Torr. They can sustain a bakeout temperature of 150 °C when using Viton o-rings.



### Feedthroughs

Rotary motion feedthrough.  
High voltage feedthrough.



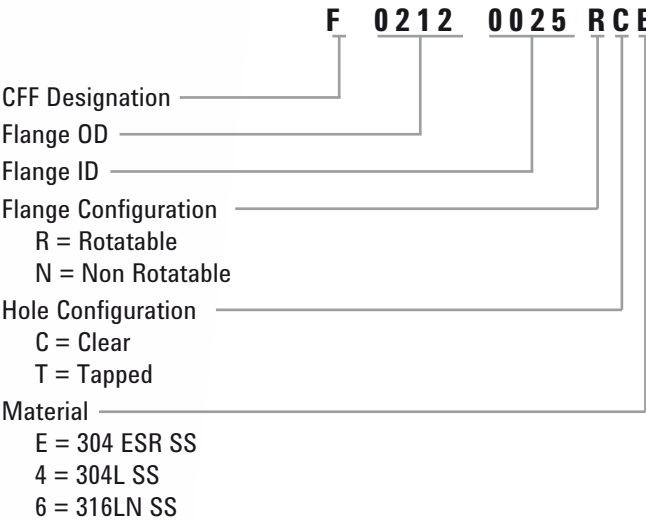
### Supplies

Greases and lubricants.  
Diffusion and mechanical pump fluids.

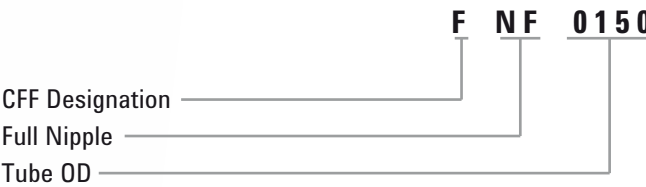
# CONFLAT FLANGES

Agilent’s extensive offering in vacuum flanges and fittings features an intuitive part numbering format. These part numbering format allows the customer to identify the product by the characters contained within the part number. Depending on the product, the number and format of the characters in the part number will vary. Please see the examples below:

## CFF Example



## CFF Nipple Example



# VACUUM COMPONENTS

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## CONFLAT FLANGES

### ▶ 1 1/3 in. (NW16CF) Non-Rotatable

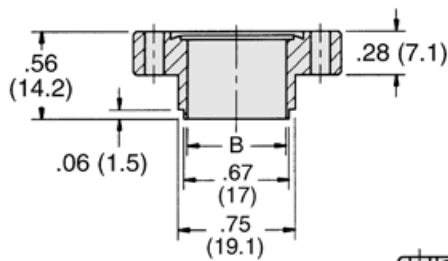


Fig. 3

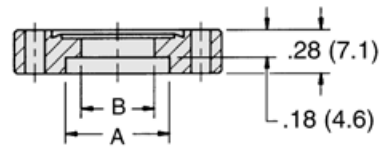


Fig. 4

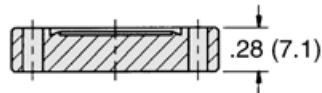


Fig. 1

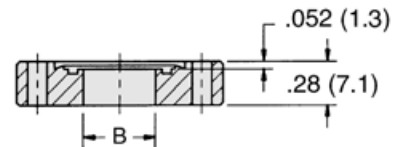


Fig. 2

Thru holes: 6 holes 0.172 (4.4) dia. thru, eq. spaced on 1.062 (26.9) dia. B.C.

Tapped holes: 6 holes tapped 8-32 thru, eq. spaced on 1.062 (26.9) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type                    | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions   |              | Weight    |
|-------------------------|------------------------|---------------------------|----------------|--------------|--------------|-----------|
|                         |                        |                           |                | A in. (mm)   | B in. (mm)   | lbs (kg)  |
| Non-Rotatable           | F01330000NC4           | F01330000NCE              | 1              | —            | —            | 0.5 (0.2) |
|                         | F01330025NC4           | F01330025NCE              | 2              | —            | 0.26 (6.48)  | 0.5 (0.2) |
|                         | F01330038NC4           | F01330038NCE              | 2              | —            | 0.38 (9.70)  | 0.5 (0.2) |
|                         | F01330050NC4           | N/A                       | 2              | —            | 0.51 (12.82) | 0.5 (0.2) |
|                         | F01330075NC4W          | F01330075NCEW             | 3              | —            | 0.63 (16.00) | 0.5 (0.2) |
|                         | F01330075NC4B          | F01330075NCEB             | 4              | 0.76 (19.20) | 0.63 (16.00) | 0.5 (0.2) |
| Non-Rotatable<br>Tapped | F01330000NT4           | F01330000NTE              | 1              | —            | —            | 0.5 (0.2) |
|                         | F01330038NT4           | N/A                       | 2              | —            | 0.38 (9.70)  | 0.5 (0.2) |
|                         | F01330050NT4           | N/A                       | 2              | —            | 0.51 (12.82) | 0.5 (0.2) |
|                         | F01330075NT4W          | N/A                       | 3              | —            | 0.63 (16.00) | 0.5 (0.2) |
|                         | F01330075NT4B          | F01330075NTEB             | 4              | 0.76 (19.20) | 0.63 (16.00) | 0.5 (0.2) |

### Accessories

| Description                  | Copper<br>Part Number | Silver Plated Copper<br>Part Number | Viton<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|------------------------------|-----------------------|-------------------------------------|----------------------|---------|--------------------|
| <b>Gaskets</b>               |                       |                                     |                      |         |                    |
| 10-pack, individually sealed | FG0133CI              | FG0133CIS                           | N/A                  | 10      | 1.0 (0.5)          |
| Package set                  | N/A                   | N/A                                 | FG0133VU             | 5       | 0.5 (0.2)          |
| Gasket clip set              | GC0275S               | N/A                                 | N/A                  | 10      | 0.5 (0.2)          |

# VACUUM COMPONENTS

## ► 1 1/3 in. (NW16CF) Rotatable

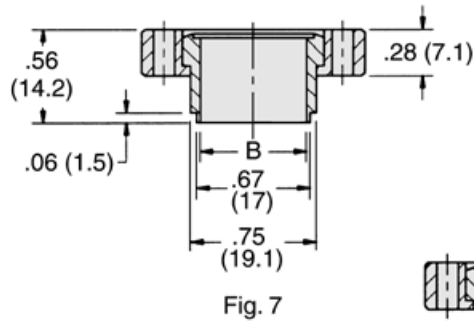


Fig. 7

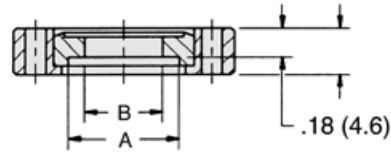


Fig. 8

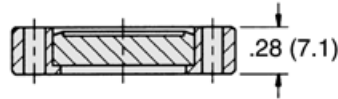


Fig. 5

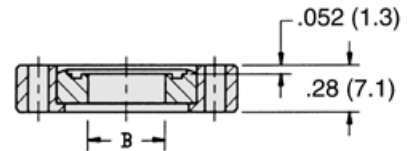


Fig. 6

Dimensions: inches (millimeters)

Thru holes: 6 holes 0.172 (4.4) dia. thru, eq. spaced on 1.062 (26.9) dia. B.C.  
Tapped holes: 6 holes tapped 8-32 thru, eq. spaced on 1.062 (26.9) dia. B.C.

## Ordering Information

| Type      | 304L SS       | 304 ESR SS    | Fig. Number | Dimensions   |              | Weight    |
|-----------|---------------|---------------|-------------|--------------|--------------|-----------|
|           | Part Number   | Part Number   |             | A in. (mm)   | B in. (mm)   |           |
| Rotatable | F01330000RC4  | F01330000RCE  | 5           | —            | —            | 0.5 (0.2) |
|           | F01330025RC4  | N/A           | 6           | —            | 0.26 (6.48)  | 0.5 (0.2) |
|           | F01330038RC4  | F01330038RCE  | 6           | —            | 0.38 (9.70)  | 0.5 (0.2) |
|           | F01330050RC4  | F01330050RCE  | 6           | —            | 0.51 (12.82) | 0.5 (0.2) |
|           | F01330075RC4W | F01330075RCEW | 7           | —            | 0.63 (16.00) | 0.5 (0.2) |
|           | F01330075RC4B | F01330075RCEB | 8           | 0.76 (19.20) | 0.63 (16.00) | 0.5 (0.2) |

## Accessories

| Description                    | Thread/Length | Socket Head Part Number | Silver Plated Socket Head Part Number | Qty/Pkg | Weight lbs (kg) |
|--------------------------------|---------------|-------------------------|---------------------------------------|---------|-----------------|
| <b>Nut and Bolt Sets</b>       |               |                         |                                       |         |                 |
| Clear hole flanges*            | 8-32 x 3/4    | FB0133C                 | FB0133CS                              | 25      | 2.0 (0.9)       |
| Tapped hole flanges**          | 8-32 x 1/2    | FB0133T                 | FB0133TS                              | 25      | 1.0 (0.5)       |
| <b>Plate Nut Sets</b>          |               |                         |                                       |         |                 |
| 12 plate nuts/24 bolts/washers |               | FP0133K                 | N/A                                   | 12/24   | 2.0 (0.9)       |
| 24 plate nuts only             |               | FP0133N                 | N/A                                   | 24      | 1.0 (0.5)       |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

## CONFLAT FLANGES

### ▶ 2 3/4 in. (NW35CF) Non-Rotatable

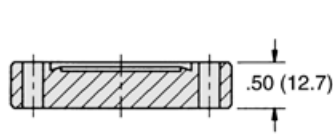


Fig. 1

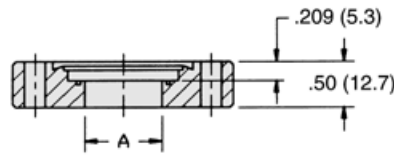


Fig. 2

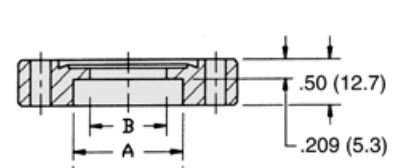


Fig. 3

Thru holes: 6 holes 0.265 (6.7) dia. thru, eq. spaced on 2.312 (58.7) dia. B.C.

Tapped holes: 6 holes tapped 1/4-28 thru, eq. spaced on 2.312 (58.7) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type                    | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions   |              | Weight    |
|-------------------------|------------------------|---------------------------|----------------|--------------|--------------|-----------|
|                         |                        |                           |                | A in. (mm)   | B in. (mm)   | lbs (kg)  |
| Non-Rotatable           | F02750000NC4           | F02750000NCE              | 1              | —            | —            | 0.8 (0.4) |
|                         | F02750025NC4W          | N/A                       | 2              | 0.26 (6.48)  | —            | 0.8 (0.4) |
|                         | F02750050NC4W          | N/A                       | 2              | 0.51 (12.83) | —            | 0.8 (0.4) |
|                         | F02750075NC4B          | N/A                       | 3              | 0.76 (19.30) | 0.69 (17.53) | 0.8 (0.4) |
|                         | F02750075NC4W          | F02750075NCEW             | 2              | 0.76 (19.30) | —            | 0.8 (0.4) |
|                         | F02750100NC4B          | F02750075NCEB             | 3              | 1.01 (25.65) | 0.88 (22.23) | 0.5 (0.2) |
|                         | F02750100NC4W          | F02750100NCEW             | 2              | 1.01 (25.65) | —            | 0.8 (0.4) |
|                         | F02750125NC4           | F02750125NCE              | 3              | 1.26 (32.00) | 1.13 (28.56) | 0.5 (0.2) |
|                         | F02750150NC4           | F02750150NCE              | 3              | 1.51 (38.35) | 1.38 (34.93) | 0.5 (0.2) |
|                         | F02750162NC4           | N/A                       | 3              | 1.64 (41.53) | 1.50 (38.10) | 0.5 (0.2) |
|                         | F02750175NC4           | F02750175NCE              | 3              | 1.76 (44.70) | 1.63 (41.28) | 0.5 (0.2) |
| Non-Rotatable<br>Tapped | F02750000NT4           | F02750000NTE              | 1              | —            | —            | 0.8 (0.4) |
|                         | F02750075NT4B          | N/A                       | 3              | 0.76 (19.30) | 0.69 (17.53) | 0.8 (0.4) |
|                         | F02750100NT4W          | N/A                       | 2              | 1.01 (25.65) | —            | 0.8 (0.4) |
|                         | F02750125NT4           | F02750125NTE              | 3              | 1.26 (32.00) | 1.13 (28.56) | 0.5 (0.2) |
|                         | F02750150NT4           | F02750150NTE              | 3              | 1.51 (38.35) | 1.38 (34.93) | 0.5 (0.2) |
|                         | F02750162NT4           | N/A                       | 3              | 1.64 (41.53) | 1.50 (38.10) | 0.5 (0.2) |
|                         | F02750175NT4           | N/A                       | 3              | 1.76 (44.70) | 1.63 (41.28) | 0.5 (0.2) |

### Accessories

| Description                  | Copper<br>Part Number | Silver Plated Copper<br>Part Number | Viton<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|------------------------------|-----------------------|-------------------------------------|----------------------|---------|--------------------|
| <b>Gaskets</b>               |                       |                                     |                      |         |                    |
| 10-pack, individually sealed | FG0275CI              | FG0275CIS                           | N/A                  | 10      | 0.5 (0.2)          |
| 10-pack, solid blank-off     | FG0275CUB             | N/A                                 | N/A                  | 10      | 1.0 (0.5)          |
| Package set                  | N/A                   | N/A                                 | FG0275VU             | 5       | 0.5 (0.2)          |
| Gasket clip set              | GC0275S               | N/A                                 | N/A                  | 10      | 0.5 (0.2)          |

# VACUUM COMPONENTS

## ▶ 2 3/4 in. (NW35CF) Rotatable

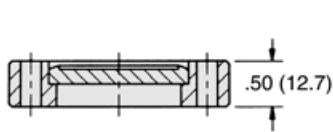


Fig. 4

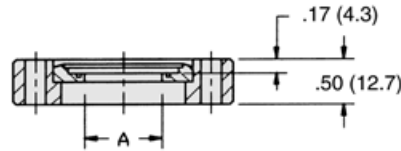


Fig. 5

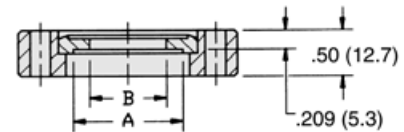


Fig. 6

Thru holes: 6 holes 0.265 (6.7) dia. thru, eq. spaced on 2.312 (58.7) dia. B.C.

Tapped holes: 6 holes tapped 1/4-28 thru, eq. spaced on 2.312 (58.7) dia. B.C.

Dimensions: inches (millimeters)

## Ordering Information

| Type      | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions   |              | Weight<br>lbs (kg) |
|-----------|------------------------|---------------------------|----------------|--------------|--------------|--------------------|
|           |                        |                           |                | A in. (mm)   | B in. (mm)   |                    |
| Rotatable | F02750000RC4           | F02750000RCE              | 4              | —            | —            | 0.8 (0.4)          |
|           | F02750025RC4           | N/A                       | 5              | .26 (6.48)   | —            | 0.8 (0.4)          |
|           | F02750050RC4           | N/A                       | 5              | .51 (12.83)  | —            | 0.8 (0.4)          |
|           | F02750075RC4           | N/A                       | 6              | .76 (19.30)  | .63 (16.00)  | 0.8 (0.4)          |
|           | F02750100RC4           | F02750100RCEB             | 6              | 1.01 (25.65) | .88 (22.23)  | 0.5 (0.2)          |
|           | N/A                    | F02750100RCEW             | 5              | 1.01 (25.65) | —            | 0.8 (0.4)          |
|           | F02750125RC4           | F02750125RCE              | 6              | 1.26 (32.00) | 1.13 (28.56) | 0.5 (0.2)          |
|           | F02750150RC4           | F02750150RCE              | 6              | 1.51 (38.35) | 1.38 (34.93) | 0.5 (0.2)          |
|           | F02750162RC4           | N/A                       | 6              | 1.65 (41.53) | 1.50 (38.10) | 0.5 (0.2)          |
|           | F02750175RC4           | N/A                       | 6              | 1.76 (44.70) | 1.63 (41.28) | 0.5 (0.2)          |

See page 13 for Accessories Ordering Information

## Accessories

| Description                       | Thread/Length  | Hex Head<br>Part Number | 12-Point Bolt<br>Part Number | Silver Plated 12-Point Bolt<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|-----------------------------------|----------------|-------------------------|------------------------------|--------------------------------------------|---------|--------------------|
| <b>Nut and Bolt Sets</b>          |                |                         |                              |                                            |         |                    |
| Clear hole flanges*               | 1/4-28 x 1 1/4 | FB0275C06               | FB0275C12                    | FB0275C12S                                 | 25      | 1.0 (0.5)          |
| Tapped hole flanges**             | 1/4-28 x 7/8   | FB0275T06               | FB0275T12                    | FB0275T12S                                 | 25      | 0.5 (0.2)          |
| <b>Plate Nut Sets</b>             |                |                         |                              |                                            |         |                    |
| 12 plate nuts/24 bolts/24 washers |                | FP0275K06               | FP0275K12                    | N/A                                        | 12/24   | 2.0 (0.9)          |
| 24 plate nuts only                |                | FP0275N                 | N/A                          | N/A                                        | 12/24   | 2.0 (0.9)          |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

CONFLAT FLANGES

▶ 3<sup>3</sup>/<sub>8</sub> in. (NW50CF) Non-Rotatable

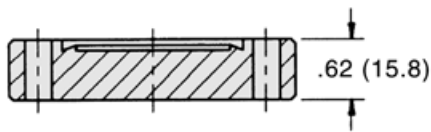


Fig. 1

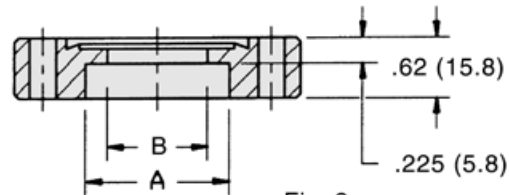


Fig. 2

Dimensions: inches (millimeters)

Thru holes: 8 holes 0.332 (8.4) dia. thru, eq. spaced on 2.850 (72.4) dia. B.C.  
Tapped holes: 8 holes tapped 5/16-24 thru, eq. spaced on 2.850 (72.4) dia. B.C.

Ordering Information

| Type                    | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions   |              | Weight<br>lbs (kg) |
|-------------------------|------------------------|---------------------------|----------------|--------------|--------------|--------------------|
|                         |                        |                           |                | A in. (mm)   | B in. (mm)   |                    |
| Non-Rotatable           | F03380000NC4           | N/A                       | 1              | —            | —            | 2.0 (0.9)          |
|                         | F03380200NC4           | N/A                       | 2              | 2.01 (51.18) | 1.88 (47.63) | 1.5 (0.7)          |
| Non-Rotatable<br>Tapped | F03380000NT4           | N/A                       | 1              | —            | —            | 2.0 (0.9)          |
|                         | F03380200NT4           | N/A                       | 2              | 2.01 (51.18) | 1.88 (47.63) | 1.5 (0.7)          |

# VACUUM COMPONENTS

## ▶ 3<sup>3</sup>/<sub>8</sub> in. (NW50CF) Rotatable

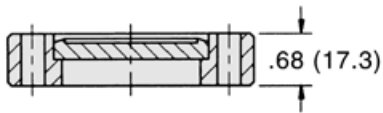


Fig. 3

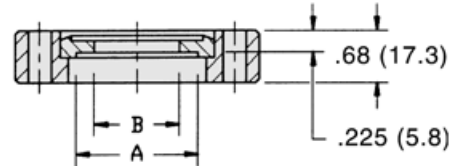


Fig. 4

Thru holes: 8 holes 0.332 (8.4) dia. thru, eq. spaced on 2.850 (72.4) dia. B.C.

Tapped holes: 8 holes tapped 5/16-24 thru, eq. spaced on 2.850 (72.4) dia. B.C.

Dimensions: inches (millimeters)

## Ordering Information

| Type      | 304L SS      | 304 ESR SS  | Fig. Number | Dimensions   |              | Weight<br>lbs (kg) |
|-----------|--------------|-------------|-------------|--------------|--------------|--------------------|
|           | Part Number  | Part Number |             | A in. (mm)   | B in. (mm)   |                    |
| Rotatable | F03380000RC4 | N/A         | 3           | —            | —            | 2.0 (0.9)          |
|           | F03380150RC4 | N/A         | 4           | 1.51 (38.35) | 1.38 (34.93) | 1.5 (0.7)          |
|           | F03380200RC4 | N/A         | 4           | 2.02 (51.18) | 1.88 (47.63) | 1.5 (0.7)          |

## Accessories

| Description                  | Copper<br>Part Number | Silver Plated Copper<br>Part Number | Viton<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|------------------------------|-----------------------|-------------------------------------|----------------------|---------|--------------------|
| <b>Gaskets</b>               |                       |                                     |                      |         |                    |
| 10-pack, individually sealed | FG0338CI              | FG0338CIS                           | N/A                  | 10      | 1.0 (0.5)          |
| 1-pack                       | N/A                   | N/A                                 | FG0338VU             | 1       | 0.5 (0.2)          |
| Gasket clip set              | GC0275S               | N/A                                 | N/A                  | 10      | 0.5 (0.2)          |

| Description              | Thread/Length   | Hex Head<br>Part Number | 12-Point Bolt<br>Part Number | Silver Plated 12-Point Bolt<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|--------------------------|-----------------|-------------------------|------------------------------|--------------------------------------------|---------|--------------------|
| <b>Nut and Bolt Sets</b> |                 |                         |                              |                                            |         |                    |
| Clear hole flanges*      | 5/16-24 x 1 3/4 | FB0338C06               | FB0338C12                    | FB0338C12S                                 | 25      | 2.0 (0.9)          |
| Tapped hole flanges**    | 5/16-24 x 1 1/4 | FB0450T06               | FB0450T12                    | FB0450T12S                                 | 25      | 2.0 (0.9)          |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

# CONFLAT FLANGES

## ▶ 4 ½ in. (NW63CF) Non-Rotatable

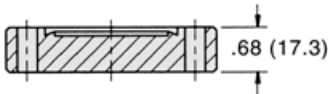


Fig. 1

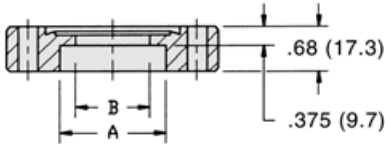


Fig. 2

Dimensions: inches (millimeters)

Thru holes: 8 holes 0.332 (8.4) dia. thru, eq. spaced on 3.628 (92.2) dia. B.C.  
Tapped holes: 8 holes tapped 5/16-24 thru, eq. spaced on 3.628 (92.2) dia. B.C.

### Ordering Information

| Type                    | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions   |              | Weight<br>lbs (kg) |
|-------------------------|------------------------|---------------------------|----------------|--------------|--------------|--------------------|
|                         |                        |                           |                | A in. (mm)   | B in. (mm)   |                    |
| Non-Rotatable           | F04500000NC4           | F04500000NCE              | 1              | —            | —            | 3.0 (1.4)          |
|                         | F04500150NC4           | N/A                       | 2              | 1.51 (38.35) | 1.38 (34.93) | 2.5 (1.1)          |
|                         | F04500200NC4           | N/A                       | 2              | 2.01 (51.05) | 1.88 (47.63) | 2.5 (1.1)          |
|                         | F04500250NC4           | F04500250NCE              | 2              | 2.51 (63.75) | 2.38 (60.33) | 2.5 (1.1)          |
| Non-Rotatable<br>Tapped | F04500000NT4           | F04500000NTE              | 1              | —            | —            | 3.0 (1.4)          |
|                         | F04500150NT4           | N/A                       | 2              | 1.51 (38.35) | 1.38 (34.93) | 2.5 (1.1)          |
|                         | F04500200NT4           | N/A                       | 2              | 2.01 (51.05) | 1.88 (47.63) | 2.5 (1.1)          |
|                         | F04500250NT4           | N/A                       | 2              | 2.51 (63.75) | 2.38 (60.33) | 2.5 (1.1)          |

# VACUUM COMPONENTS

## ▶ 4 ½ in. (NW63CF) Rotatable

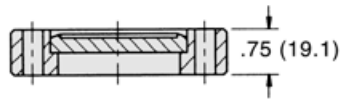


Fig. 3

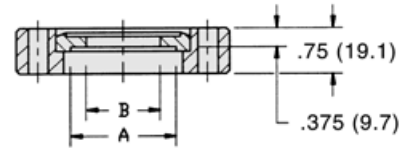


Fig. 4

Thru holes: 8 holes 0.332 (8.4) dia. thru, eq. spaced on 3.628 (92.2) dia. B.C.

Tapped holes: 8 holes tapped 5/16-24 thru, eq. spaced on 3.628 (92.2) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type      | 304L SS      | 304 ESR SS  | Fig. Number | Dimensions   |              | Weight<br>lbs (kg) |
|-----------|--------------|-------------|-------------|--------------|--------------|--------------------|
|           | Part Number  | Part Number |             | A in. (mm)   | B in. (mm)   |                    |
| Rotatable | F04500000RC4 | N/A         | 3           | —            | —            | 3.0 (1.4)          |
|           | F04500200RC4 | N/A         | 4           | 2.01 (51.05) | 1.88 (47.63) | 2.5 (1.1)          |
|           | F04500250RC4 | N/A         | 4           | 2.51 (63.75) | 2.38 (60.33) | 2.5 (1.1)          |

### Accessories

| Description                  | Copper<br>Part Number | Silver Plated Copper<br>Part Number | Viton<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|------------------------------|-----------------------|-------------------------------------|----------------------|---------|--------------------|
| <b>Gaskets</b>               |                       |                                     |                      |         |                    |
| 10-pack, individually sealed | FG0450CI              | FG0450CIS                           | N/A                  | 10      | 2.0 (0.9)          |
| 1-pack                       | N/A                   | N/A                                 | FG0450VU             | 1       | 0.5 (0.2)          |
| Gasket clip set              | GC0275S               | N/A                                 | N/A                  | 10      | 0.5 (0.2)          |

| Description              | Thread/Length | Hex Head<br>Part Number | 12-Point Bolt<br>Part Number | Silver Plated 12-Point Bolt<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|--------------------------|---------------|-------------------------|------------------------------|--------------------------------------------|---------|--------------------|
| <b>Nut and Bolt Sets</b> |               |                         |                              |                                            |         |                    |
| Clear hole flanges*      | 5/16-24 x 2   | FB0450C06               | FB0450C12                    | FB0450C12S                                 | 25      | 1.5 (0.7)          |
| Tapped hole flanges**    | 5/16-24 x 1 ¼ | FB0450T06               | FB0450T12                    | FB0450T12S                                 | 25      | 1.5 (0.7)          |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

## CONFLAT FLANGES

### ► 6 in. (NW100CF) Non-Rotatable

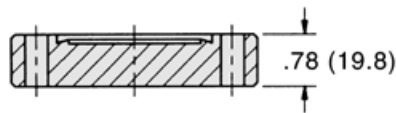


Fig. 1

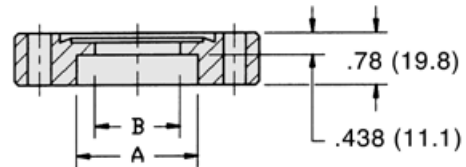


Fig. 2

Thru holes: 16 holes 0.332 (8.4) dia. thru, eq. spaced on 5.128 (130.3) dia. B.C.

Tapped holes: 16 holes tapped  $\frac{5}{16}$ -24 thru, eq. spaced on 5.128 (130.3) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type          | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions    |              | Weight<br>lbs (kg) |
|---------------|------------------------|---------------------------|----------------|---------------|--------------|--------------------|
|               |                        |                           |                | A in. (mm)    | B in. (mm)   |                    |
| Non-Rotatable | F06000000NC4           | F06000000NCE              | 1              | —             | —            | 6.5 (2.9)          |
|               | F06000400NC4           | F06000400NCE              | 2              | 4.01 (101.85) | 3.81 (96.77) | 4.5 (2.0)          |
| Non-Rotatable | F06000000NT4           | N/A                       | 1              | —             | —            | 6.5 (2.9)          |
| Tapped        | F06000400NT4           | F06000400NTE              | 2              | 4.01 (101.85) | 3.81 (96.77) | 4.5 (2.0)          |

### ► 6 in. (NW100CF) Rotatable

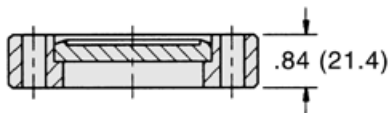


Fig. 3

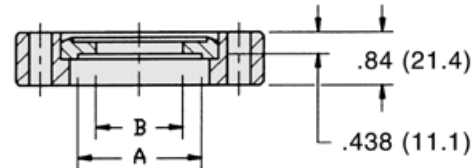


Fig. 4

Thru holes: 16 holes 0.332 (8.4) dia. thru, eq. spaced on 5.128 (130.3) dia. B.C.

Tapped holes: 16 holes tapped  $\frac{5}{16}$ -24 thru, eq. spaced on 5.128 (130.3) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type      | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions    |              | Weight<br>lbs (kg) |
|-----------|------------------------|---------------------------|----------------|---------------|--------------|--------------------|
|           |                        |                           |                | A in. (mm)    | B in. (mm)   |                    |
| Rotatable | F06000000RC4           | F06000000RCE              | 3              | —             | —            | 6.5 (2.9)          |
|           | F06000400RC4           | N/A                       | 4              | 4.01 (101.85) | 3.81 (96.77) | 4.5 (2.0)          |

### Accessories

| Description                  | Copper<br>Part Number | Silver Plated Copper<br>Part Number | Viton<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|------------------------------|-----------------------|-------------------------------------|----------------------|---------|--------------------|
| <b>Gaskets</b>               |                       |                                     |                      |         |                    |
| 10-pack, individually sealed | FG0600CI              | FG0600CIS                           | N/A                  | 10      | 1.5 (0.7)          |
| 1-pack                       | N/A                   | N/A                                 | FG0600VU             | 1       | 1.0 (0.5)          |
| Gasket clip set              | GC0275S               | N/A                                 | N/A                  | 10      | .5 (0.2)           |

# VACUUM COMPONENTS

## Accessories (Cont'd)

| Description              | Thread/Length                        | Hex Head Part Number | 12-Point Bolt Part Number | Silver Plated 12-Point Bolt Part Number | Qty/Pkg | Weight lbs (kg) |
|--------------------------|--------------------------------------|----------------------|---------------------------|-----------------------------------------|---------|-----------------|
| <b>Nut and Bolt Sets</b> |                                      |                      |                           |                                         |         |                 |
| Clear hole flanges       |                                      |                      |                           |                                         |         |                 |
| Non-rotatable*           | $\frac{5}{16}$ -24 x 2               | FB0450C06            | FB0450C12                 | FB0450C12S                              | 25      | 2.0 (0.9)       |
| Clear hole flanges       |                                      |                      |                           |                                         |         |                 |
| Rotatable*               | $\frac{5}{16}$ -24 x 2 $\frac{1}{4}$ | FB0600C06            | FB0600C12                 | FB0600C12S                              | 25      | 2.0 (0.9)       |
| Tapped hole flanges**    | $\frac{5}{16}$ -24 x 1 $\frac{1}{4}$ | FB0450T06            | FB0450T12                 | FB0450T12S                              | 25      | 1.5 (0.7)       |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

## ► 6 $\frac{3}{4}$ in. (NW130CF) Non-Rotatable

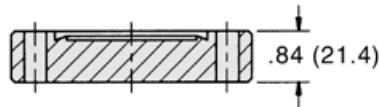


Fig. 1

Dimensions: inches (millimeters)

Thru holes: 18 holes 0.332 (8.4) dia. thru, eq. spaced on 5.969 (151.6) dia. B.C.

Tapped holes: 18 holes tapped  $\frac{5}{16}$ -24 thru, eq. spaced on 5.969 (151.6) dia. B.C.

## Ordering Information

| Type          | 304L SS Part Number | 304 ESR SS Part Number | Fig. Number | Dimensions |            | Weight lbs (kg) |
|---------------|---------------------|------------------------|-------------|------------|------------|-----------------|
|               |                     |                        |             | A in. (mm) | B in. (mm) |                 |
| Non-Rotatable | F06750000NC4        | F06750000NCE           | 1           | —          | —          | 8.0 (3.6)       |

## Accessories

| Description                  | Copper Part Number | Silver Plated Copper Part Number | Viton Part Number | Qty/Pkg | Weight lbs (kg) |
|------------------------------|--------------------|----------------------------------|-------------------|---------|-----------------|
| <b>Gaskets</b>               |                    |                                  |                   |         |                 |
| 10-Pack, individually sealed | FG0675CI           | FG0675CIS                        | N/A               | 10      | 2.0 (0.9)       |
| 1-pack                       | N/A                | N/A                              | FG0675VU          | 1       | 1.0 (0.5)       |
| Gasket clip set              | GC0275S            | N/A                              | N/A               | 10      | 0.5 (0.2)       |

| Description              | Thread/Length                        | Hex Head Part Number | 12-Point Bolt Part Number | Silver Plated 12-Point Bolt Part Number | Qty/Pkg | Weight lbs (kg) |
|--------------------------|--------------------------------------|----------------------|---------------------------|-----------------------------------------|---------|-----------------|
| <b>Nut and Bolt Sets</b> |                                      |                      |                           |                                         |         |                 |
| Clear hole flanges*      | $\frac{5}{16}$ -24 x 2 $\frac{1}{4}$ | FB0600C06            | FB0600C12                 | FB0600C12S                              | 25      | 2.0 (0.9)       |
| Tapped hole flanges**    | $\frac{5}{16}$ -24 x 1 $\frac{3}{4}$ | FB0800T06            | FB0800T12                 | FB0800T12S                              | 25      | 2.0 (0.9)       |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

CONFLAT FLANGES

► 8 in. (NW150CF) Non-Rotatable

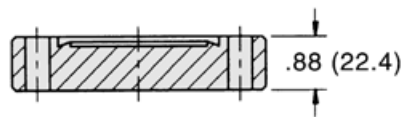


Fig. 1

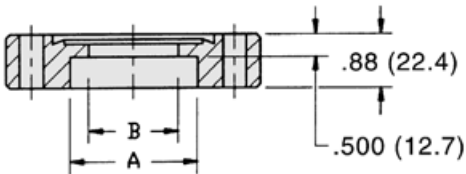


Fig. 2

Dimensions: inches (millimeters)

Thru holes: 20 holes 0.332 (8.4) dia. thru, eq. spaced on 7.128 (181.1) dia. B.C.  
Tapped holes: 20 holes tapped 5/16-24 thru, eq. spaced on 7.128 (181.1) dia. B.C.

Ordering Information

| Type                    | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions    |               | Weight<br>lbs (kg) |
|-------------------------|------------------------|---------------------------|----------------|---------------|---------------|--------------------|
|                         |                        |                           |                | A in. (mm)    | B in. (mm)    |                    |
| Non-Rotatable           | F08000000NC4           | F08000000NCE              | 1              | —             | —             | 12.5 (5.6)         |
|                         | F08000600NC4           | F08000600NCE              | 2              | 6.02 (152.91) | 5.81 (147.57) | 5.8 (2.6)          |
| Non-Rotatable<br>Tapped | F08000000NT4           | N/A                       | 1              | —             | —             | 12.5 (5.6)         |
|                         | F08000600NT4           | N/A                       | 2              | 6.02 (152.91) | 5.81 (147.57) | 5.8 (2.6)          |

# VACUUM COMPONENTS

## ► 8 in. (NW150CF) Rotatable

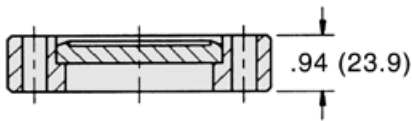


Fig. 3

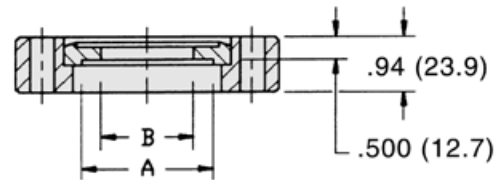


Fig. 4

Dimensions: inches (millimeters)

Thru holes: 20 holes 0.332 (8.4) dia. thru, eq. spaced on 7.128 (181.1) dia. B.C.  
Tapped holes: 20 holes tapped  $\frac{5}{16}$ -24 thru, eq. spaced on 7.128 (181.1) dia. B.C.

### Ordering Information

| Type      | 304L SS      | 304 ESR SS   | Fig. Number | Dimensions    |               | Weight     |
|-----------|--------------|--------------|-------------|---------------|---------------|------------|
|           | Part Number  | Part Number  |             | A in. (mm)    | B in. (mm)    |            |
| Rotatable | F08000000RC4 | N/A          | 3           | —             | —             | 10.0 (4.5) |
|           | F08000600RC4 | F08000600RCE | 4           | 6.02 (152.91) | 5.81 (147.57) | 7.0 (3.2)  |

### Accessories

| Description                  | Copper Part Number | Silver Plated Copper Part Number | Viton Part Number | Qty/Pkg | Weight lbs (kg) |
|------------------------------|--------------------|----------------------------------|-------------------|---------|-----------------|
| <b>Gaskets</b>               |                    |                                  |                   |         |                 |
| 10-pack, individually sealed | FG0800CI           | FG0800CIS                        | N/A               | 10      | 2.5 (1.1)       |
| 1-pack                       | N/A                | N/A                              | FG0800VU          | 1       | 1.0 (0.5)       |
| Gasket clip set              | GC0275S            | N/A                              | N/A               | 10      | 0.5 (0.2)       |

| Description              | Thread/Length                        | Hex Head Part Number | 12-Point Bolt Part Number | Silver Plated 12-Point Bolt Part Number | Qty/Pkg | Weight lbs (kg) |
|--------------------------|--------------------------------------|----------------------|---------------------------|-----------------------------------------|---------|-----------------|
| <b>Nut and Bolt Sets</b> |                                      |                      |                           |                                         |         |                 |
| Clear hole flanges*      | $\frac{5}{16}$ -24 x 2 $\frac{1}{4}$ | FB0600C06            | FB0600C12                 | FB0600C12S                              | 25      | 2.0 (0.9)       |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

## CONFLAT FLANGES

### ▶ 10 in. (NW200CF) Non-Rotatable

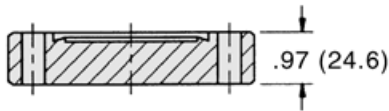


Fig. 1

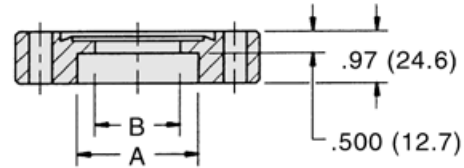


Fig. 2

Thru holes: 24 holes 0.332 (8.4) dia. thru, eq. spaced on 9.128 (231.9) dia. B.C.  
Tapped holes: 24 holes tapped  $\frac{5}{16}$ -24 thru, eq. spaced on 9.128 (231.9) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type                    | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions    |               | Weight<br>lbs (kg) |
|-------------------------|------------------------|---------------------------|----------------|---------------|---------------|--------------------|
|                         |                        |                           |                | A in. (mm)    | B in. (mm)    |                    |
| Non-Rotatable           | F10000000NC4           | F10000000NCE              | 1              | —             | —             | 21.0 (9.5)         |
|                         | F10000800NC4           | F10000800NCE              | 2              | 8.04 (204.22) | 7.81 (198.37) | 8.0 (3.6)          |
| Non-Rotatable<br>Tapped | F10000000NT4           | N/A                       | 1              | —             | —             | 21.0 (9.5)         |

### Accessories

| Description                  | Copper<br>Part Number | Silver Plated Copper<br>Part Number | Viton<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|------------------------------|-----------------------|-------------------------------------|----------------------|---------|--------------------|
| <b>Gaskets</b>               |                       |                                     |                      |         |                    |
| 10-pack, individually sealed | FG1000CI              | FG1000CIS                           | N/A                  | 10      | 3.0 (1.3)          |
| 1-pack                       | N/A                   | N/A                                 | FG1000VU             | 1       | 1.0 (0.5)          |
| Gasket clip set              | GC0275S               | N/A                                 | N/A                  | 10      | 0.5 (0.2)          |

| Description              | Thread/Length                        | Hex Head<br>Part Number | 12-Point Bolt<br>Part Number | Silver Plated 12-Point Bolt<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|--------------------------|--------------------------------------|-------------------------|------------------------------|--------------------------------------------|---------|--------------------|
| <b>Nut and Bolt Sets</b> |                                      |                         |                              |                                            |         |                    |
| Clear hole flanges*      | $\frac{5}{16}$ -24 x 2 $\frac{1}{2}$ | FB1000C06               | FB1000C12                    | FB1000C12S                                 | 25      | 2.0 (0.9)          |
| Tapped hole flanges**    | $\frac{5}{16}$ -24 x 1 $\frac{3}{4}$ | FB0800T06               | FB0800T12                    | FB0800T12S                                 | 25      | 1.5 (0.7)          |

\* Includes nuts, washers, and bolts

\*\* Includes washers and bolts only

# VACUUM COMPONENTS

## ▶ 13 1/4 in. (NW275CF) Non-Rotatable

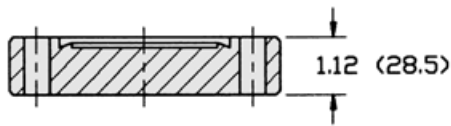


FIG. 1

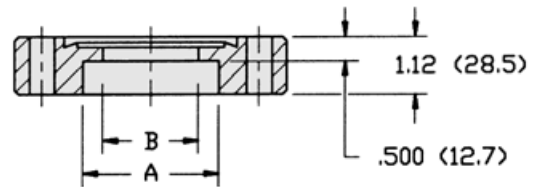


FIG. 2

Thru holes: 30 holes 0.390 (9.9) dia. thru, eq. spaced on 12.060 (306.3) dia. B.C.  
Tapped holes: 30 holes tapped 3/8-24 thru, eq. spaced on 12.060 (306.3) dia. B.C.

Dimensions: inches (millimeters)

### Ordering Information

| Type          | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Fig.<br>Number | Dimensions     |               | Weight<br>lbs (kg) |
|---------------|------------------------|---------------------------|----------------|----------------|---------------|--------------------|
|               |                        |                           |                | A in. (mm)     | B in. (mm)    |                    |
| Non-Rotatable | F13250000NC4           | F13250000NCE              | 1              | —              | —             | 41.0 (18.6)        |
|               | F13251000NC4           | N/A                       | 2              | 10.03 (254.76) | 9.86 (250.44) | 18.0 (8.2)         |

### Accessories

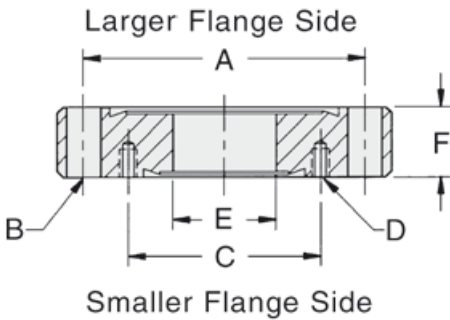
| Description                 | Copper<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|-----------------------------|-----------------------|---------|--------------------|
| <b>Gaskets</b>              |                       |         |                    |
| 1-pack, individually sealed | FG1325CI              | 1       | 0.5 (0.2)          |
| Gasket clip set             | GC0275S               | 10      | 0.5 (0.2)          |

| Description              | Thread/Length | Hex Head<br>Part Number | Qty/Pkg | Weight<br>lbs (kg) |
|--------------------------|---------------|-------------------------|---------|--------------------|
| <b>Nut and Bolt Sets</b> |               |                         |         |                    |
| Clear hole flanges*      | 3/8-24 x 3    | FB1325C06               | 30      | 2.0 (0.9)          |

\* Includes nuts, washers, and bolts

# CONFLAT FLANGES

▶ 2¾ in. - 10 in. Reducing



## Ordering Information

| Size   | 304L SS<br>Part Number | 304 ESR SS<br>Part Number | Larger Flange Dimensions  |               |                                     |
|--------|------------------------|---------------------------|---------------------------|---------------|-------------------------------------|
|        |                        |                           | Bolt Circle A<br>in. (mm) | # of<br>Holes | Hole Diam. B<br>in. (mm)            |
| 2¾ in. | N/A                    | FR02750133E               | 2.31 (58.72)              | 6             | 0.27 (6.73)                         |
| 4½ in. | N/A                    | FR04500133E               | 3.63 (92.15)              | 8             | 0.33 (8.43)                         |
|        | N/A                    | FR04500275E               | 3.63 (92.15)              | 8             | 0.33 (8.43)                         |
| 6 in.  | FR060001334            | N/A                       | 5.13 (130.25)             | 16            | 0.33 (8.43)                         |
|        | FR060002124            | N/A                       | 5.13 (130.25)             | 16            | 0.33 (8.43)                         |
|        | FR060002754            | FR06000275E               | 5.13 (130.25)             | 16            | 0.33 (8.43)                         |
|        | FR060003384            | N/A                       | 5.13 (130.25)             | 16            | 0.33 (8.43)                         |
|        | FR060004504            | FR06000450E               | 5.13 (130.25)             | 16            | 0.33 (8.43)                         |
| 8 in.  | FR080001334            | N/A                       | 7.13 (181.05)             | 20            | 0.33 (8.43)                         |
|        | FR080002754            | FR08000275E               | 7.13 (181.05)             | 20            | 0.33 (8.43)                         |
|        | FR080003384            | N/A                       | 7.13 (181.05)             | 20            | 0.33 (8.43)                         |
|        | FR080004504            | FR08000450E               | 7.13 (181.05)             | 20            | 0.33 (8.43)                         |
|        | FR080006004            | FR08000600E               | 7.13 (181.05)             | 20            | 0.33 (8.43)                         |
|        | FR080006754T*          | N/A                       | 7.13 (181.05)             | 20            | ( <sup>5</sup> / <sub>16</sub> -24) |
| 10 in. | FR100001334            | N/A                       | 9.13 (231.85)             | 24            | 0.33 (8.43)                         |
|        | FR100002754            | N/A                       | 9.13 (231.85)             | 24            | 0.33 (8.43)                         |
|        | FR100003384            | N/A                       | 9.13 (231.85)             | 24            | 0.33 (8.43)                         |
|        | FR100004504            | N/A                       | 9.13 (231.85)             | 24            | 0.33 (8.43)                         |
|        | FR100006004            | N/A                       | 9.13 (231.85)             | 24            | 0.33 (8.43)                         |
|        | FR100008004            | N/A                       | 9.13 (231.85)             | 24            | 0.33 (8.43)                         |

\* Both sets of bolt holes are tapped.

# VACUUM COMPONENTS

| Smaller Flange Dimensions |               |  | Thread D | ID E<br>in. (mm) | Thickness F<br>in. (mm) | Weight<br>lbs (kg) |
|---------------------------|---------------|--|----------|------------------|-------------------------|--------------------|
| Bolt Circle C<br>in. (mm) | # of<br>Holes |  |          |                  |                         |                    |
| 1.06 (27.00)              | 6             |  | 8-32     | 0.62 (15.75)     | 0.50 (12.70)            | 0.8 (0.3)          |
| 1.06 (26.98)              | 6             |  | 8-32     | 0.62 (15.75)     | 0.68 (17.27)            | 3.0 (1.4)          |
| 2.31 (58.73)              | 6             |  | ¼-28     | 1.50 (38.10)     | 0.68 (17.27)            | 2.5 (1.1)          |
| 1.06 (26.98)              | 6             |  | 8-32     | 0.62 (15.75)     | 0.78 (19.81)            | 6.0 (2.7)          |
| 1.63 (41.40)              | 4             |  | ¼-28     | 1.00 (25.40)     | 0.78 (19.81)            | 5.5 (2.5)          |
| 2.31 (58.73)              | 6             |  | ¼-28     | 1.50 (38.10)     | 0.78 (19.81)            | 5.5 (2.5)          |
| 2.85 (72.39)              | 8             |  | ⅝-24     | 1.88 (47.63)     | 0.78 (19.81)            | 5.0 (2.3)          |
| 3.63 (92.15)              | 8             |  | ⅝-24     | 2.50 (63.50)     | 0.78 (19.81)            | 4.5 (2.0)          |
| 1.06 (26.98)              | 6             |  | 8-32     | 0.62 (15.75)     | 0.88 (22.35)            | 12.0 (5.4)         |
| 2.31 (58.73)              | 6             |  | ¼-28     | 1.50 (38.10)     | 0.88 (22.35)            | 12.0 (5.4)         |
| 2.85 (72.39)              | 8             |  | ⅝-24     | 2.00 (50.80)     | 0.88 (22.35)            | 11.0 (5.0)         |
| 3.63 (92.15)              | 8             |  | ⅝-24     | 2.50 (63.50)     | 0.88 (22.35)            | 11.0 (5.0)         |
| 5.13 (130.25)             | 16            |  | ⅝-24     | 4.00 (101.60)    | 0.88 (22.35)            | 10.0 (4.5)         |
| 5.97 (151.61)             | 18            |  | ⅝-24     | 5.00 (127.00)    | 0.88 (22.35)            | 10.0 (4.5)         |
| 1.06 (26.98)              | 6             |  | 8-32     | 0.62 (15.75)     | 0.97 (24.64)            | 20.0 (9.0)         |
| 2.31 (58.73)              | 6             |  | ¼-28     | 1.50 (38.10)     | 0.97 (24.64)            | 20.0 (9.0)         |
| 2.85 (72.40)              | 8             |  | ⅝-24     | 2.00 (50.80)     | 0.97 (24.64)            | 20.0 (9.0)         |
| 3.63 (92.11)              | 8             |  | ⅝-24     | 2.50 (63.50)     | 0.97 (24.64)            | 20.0 (9.0)         |
| 5.13 (130.25)             | 16            |  | ⅝-24     | 4.00 (101.60)    | 0.97 (24.64)            | 17.0 (7.7)         |
| 7.13 (181.05)             | 20            |  | ⅝-24     | 6.00 (152.40)    | 0.97 (24.64)            | 17.0 (7.7)         |

## CONFLAT FLANGES

### Accessories

#### Accessories – Gaskets

| Size       | Gasket Material      | Description         | Part Number | Qty/Pkg | Weight lbs (kg) |
|------------|----------------------|---------------------|-------------|---------|-----------------|
| 1 1/8 in.  | Copper               | Individually sealed | FG0133CI    | 10      | 1.0 (0.5)       |
|            | Viton                | Packaged together   | FG0133VU    | 5       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0133CIS   | 10      | 1.0 (0.5)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 2 1/8 in.  | Copper               | Individually sealed | FG0212CI    | 10      | 1.0 (0.5)       |
|            | Viton                | Packaged together   | FG0212VU    | 5       | 0.5 (0.2)       |
|            | Silver plated copper | Individually sealed | FG0212CIS   | 10      | 1.0 (0.5)       |
|            |                      | Clip set            | GC0275S     | 10      | 0.5 (0.2)       |
| 2 3/8 in.  | Copper               | Individually sealed | FG0275CI    | 10      | 1.0 (0.5)       |
|            | Viton                | Packaged together   | FG0275VU    | 5       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0275CIS   | 10      | 1.0 (0.5)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 3 3/8 in.  | Copper               | Individually sealed | FG0338CI    | 10      | 1.0 (0.5)       |
|            | Viton                | Individually sealed | FG0338VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0338CIS   | 10      | 1.0 (0.5)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 4 1/2 in.  | Copper               | Individually sealed | FG0450CI    | 10      | 1.0 (0.5)       |
|            | Viton                | Individually sealed | FG0450VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0450CIS   | 10      | 1.0 (0.5)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 4 5/8 in.  | Copper               | Individually sealed | FG0462CI    | 10      | 1.0 (0.5)       |
|            | Viton                | Individually sealed | FG0462VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Individually sealed | FG0462CIS   | 10      | 2.0 (0.9)       |
|            |                      | Clip set            | GC0275S     | 10      | 0.5 (0.2)       |
| 6 in.      | Copper               | Individually sealed | FG0600CI    | 10      | 2.0 (0.9)       |
|            | Viton                | Individually sealed | FG0600VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0600CIS   | 10      | 2.0 (0.9)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 6 3/8 in.  | Copper               | Individually sealed | FG0675CI    | 10      | 2.0 (0.9)       |
|            | Viton                | Individually sealed | FG0675VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0675CIS   | 10      | 2.0 (0.9)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 8 in.      | Copper               | Individually sealed | FG0800CI    | 10      | 2.0 (0.9)       |
|            | Viton                | Individually sealed | FG0800VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG0800CIS   | 10      | 2.0 (0.9)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 10 in.     | Copper               | Individually sealed | FG1000CI    | 10      | 2.5 (1.1)       |
|            | Viton                | Individually sealed | FG1000VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Packaged together   | FG1000CIS   | 10      | 2.5 (1.1)       |
|            |                      | Clip set            | GC0275S     | 10      | 1.0 (0.5)       |
| 12 in.     | Copper               | Individually sealed | FG1200CI    | 1       | 2.5 (1.1)       |
|            | Viton                | Individually sealed | FG1200VU    | 1       | 0.5 (0.2)       |
|            | Silver plated copper | Individually sealed | FG1200CIS   | 1       | 2.0 (0.9)       |
|            |                      | Clip set            | GC0275S     | 10      | 0.5 (0.2)       |
| 13 1/4 in. | Copper               | Individually sealed | FG1325CI    | 1       | 3.5 (1.6)       |

#### Recommended Torque Specifications for Tightening ConFlat Bolts

| Flange Size                          | Size/Thread | Torque – inch lbs |
|--------------------------------------|-------------|-------------------|
| For ConFlats 1 1/8 in.               | (8-32)      | 51                |
| For ConFlats 2 1/8 in. and 2 3/8 in. | (1/4-28)    | 96                |
| For ConFlats 3 3/8 in. to 12 in.     | (5/16-24)   | 192               |
| For ConFlats 13 1/4 in.              | (3/8-24)    | 345               |

# VACUUM COMPONENTS

## Accessories – Bolt Sets for Double-Sided Flanges

| Size     | Nut and Bolt Sets   | Thread/Length | Hex Head Part Number | 12-Point Bolt Part Number | Qty/Pkg | Shipping Weight lbs (kg) |
|----------|---------------------|---------------|----------------------|---------------------------|---------|--------------------------|
| 2 ¾ in.  | Clear hole flanges* | ¼-28 x 2 ¼    | FB0275CD06           | FB0275CD12                | 6       | 1.0 (0.5)                |
| 4 ½ in.  | Clear hole flanges* | ⅝-24 x 2 ½    | FB0450CD06           | FB0450CD12                | 10      | 1.0 (0.5)                |
| 6 in.    | Clear hole flanges* | ⅝-24 x 2 ¾    | FB0600CD06           | N/A                       | 16      | 2.0 (0.9)                |
| 8 in.    | Clear hole flanges* | ⅝-24 x 3 ¼    | FB0800CD06           | N/A                       | 20      | 3.0 (1.4)                |
| 10 in.   | Clear hole flanges* | ⅝-24 x 3 ½    | FB1000CD06           | N/A                       | 24      | 3.5 (1.6)                |
| 13 ¼ in. | Clear hole flanges* | ¾-24 x 4      | FB1325CD06           | N/A                       | 30      | 4.0 (1.8)                |

\* Includes nuts, washers, and bolts

## Accessories – Bolt Sets for CF to KF Adapters

| Size    | Nut and Bolt Sets           | Hex Head Part Number | 12-Point Bolt Part Number | Qty/Pkg | Shipping Weight lbs (kg) |
|---------|-----------------------------|----------------------|---------------------------|---------|--------------------------|
| 1 ⅓ in. | Clear hole flanges          | N/A                  | FB0133C**                 | 25      | 0.5 (0.2)                |
|         | Tapped hole flanges         | N/A                  | FB0133T**                 | 25      | 0.5 (0.2)                |
| 2 ⅝ in. | Clear hole flanges          | FB0275C06            | FB0275C12                 | 25      | 1.0 (0.5)                |
|         | Tapped hole flanges         | FB0275T06            | FB0275T12                 | 25      | 1.0 (0.5)                |
| 2 ¾ in. | Clear hole flanges          | FB0275C06            | FB0275C12                 | 25      | 1.0 (0.5)                |
|         | Tapped hole flanges         | FB0275T06            | FB0275T12                 | 25      | 1.0 (0.5)                |
| 3 ⅝ in. | Clear hole flanges          | FB0338C06            | FB0338C12                 | 25      | 2.0 (0.9)                |
|         | Tapped hole flanges         | FB0450T06            | FB0450T12                 | 25      | 2.0 (0.9)                |
| 4 ½ in. | Clear hole flanges          | FB0450C06            | FB0450C12                 | 25      | 2.0 (0.9)                |
|         | Tapped hole flanges         | FB0450T06            | FB0450T12                 | 25      | 2.0 (0.9)                |
| 4 ⅞ in. | Clear hole flanges non rot. | FB0450C06            | FB0450C12                 | 25      | 1.5 (0.7)                |
|         | Clear hole flanges rot.     | FB0600C06            | FB0600C12                 | 25      | 1.5 (0.7)                |
|         | Tapped hole flanges         | FB0450T06            | FB0450T12                 | 25      | 1.5 (0.7)                |

\* Includes nuts, washers, and bolts

\*\* Only available in socket head

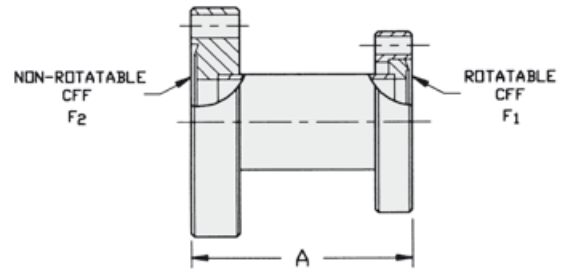
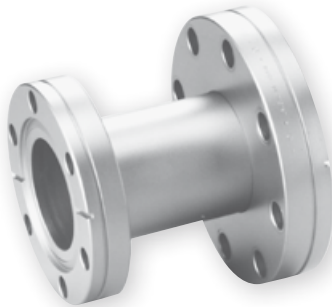
## Accessories – Bolt Sets for Reducing Flanges

| Flange Size        | Part Number    | Small Flange     | Large Flange          | Weight lbs (kg) |
|--------------------|----------------|------------------|-----------------------|-----------------|
| 2 ¾ in. to 1 ⅓ in. | FB02750133CR12 | 6 bolts/washers  | 6 bolts/washers       | 2.0 (0.9)       |
| 3 ⅝ in. to 2 ¾ in. | FB03380275CR12 | 6 bolts          | 8 bolts               | 3.0 (1.4)       |
| 4 ½ in. to 2 ¾ in. | FB04500275CR12 | 6 bolts/washers  | 8 bolts/washers/nuts  | 3.0 (1.4)       |
| 6 in. to 2 ¾ in.   | FB06000275CR12 | 6 bolts/washers  | 16 bolts/washers/nuts | 4.0 (1.8)       |
| 6 in. to 3 ⅝ in.   | FB06000338CR12 | 8 bolts/washers  | 16 bolts/washers/nuts | 4.0 (1.8)       |
| 6 in. to 4 ½ in.   | FB06000450CR12 | 8 bolts/washers  | 16 bolts/washers/nuts | 4.0 (1.8)       |
| 8 in. to 2 ¾ in.   | FB08000275CR12 | 6 bolts/washers  | 20 bolts/washers/nuts | 4.0 (1.8)       |
| 8 in. to 4 ½ in.   | FB08000450CR12 | 8 bolts/washers  | 20 bolts/washers/nuts | 4.0 (1.8)       |
| 10 in. to 2 ¾ in.  | FB10000275CR12 | 6 bolts/washers  | 24 bolts/washers/nuts | 5.0 (2.3)       |
| 10 in. to 8 in.    | FB10000800CR12 | 20 bolts/washers | 24 bolts/washers/nuts | 5.0 (2.3)       |

**NOTE** • Reducing flange bolt sets include sockets, 6 point and 12 point bolts dependent on size:  
1.33 bolts are socket keyed (SH), 6.75 in. and 13.25 in. bolts are hex head.  
All other sizes are 12 point heads.

# CONFLAT FITTINGS

## ▶ Reducing Nipples - 304 Stainless Steel



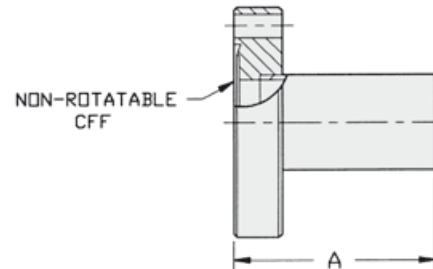
### Ordering Information

| Flange Size | Part Number | Length A<br>in. (mm) | Non-Rotatable<br>F2 | Rotatable<br>F1 | Shipping Weight<br>lbs (kg) |
|-------------|-------------|----------------------|---------------------|-----------------|-----------------------------|
| 2 ¾ in.     | FA02750133  | 2.50 (63.50)         | 2 ¾                 | 1 ⅓             | 1.5 (0.7)                   |
|             | FA02750212  | 2.75 (69.85)         | 2 ¾                 | 2 ⅞             | 1.5 (0.7)                   |
| 4 ½ in.     | FA04500133  | 2.50 (63.50)         | 4 ½                 | 1 ⅓             | 4.0 (1.8)                   |
|             | FA04500275  | 2.50 (63.50)         | 4 ½                 | 2 ¾             | 4.0 (1.8)                   |
|             | FA04500275L | 3.00 (76.20)         | 4 ½                 | 2 ¾             | 4.0 (1.8)                   |
|             | FA06000133  | 2.50 (63.50)         | 6                   | 1 ⅓             | 8.0 (3.6)                   |
| 6 in.       | FA06000275  | 3.25 (82.55)         | 6                   | 2 ¾             | 8.0 (3.6)                   |
|             | FA06000450  | 2.50 (63.50)         | 6                   | 4 ½             | 10.0 (4.5)                  |
|             | FA08000275L | 4.00 (101.60)        | 8                   | 2 ¾             | 14.0 (6.3)                  |
| 8 in.       | FA08000450  | 2.50 (63.50)         | 8                   | 4 ½             | 16.0 (7.2)                  |
|             | FA08000600  | 2.50 (63.50)         | 8                   | 6               | 18.0 (8.1)                  |
|             | FA08000600L | 4.50 (114.30)        | 8                   | 6               | 16.0 (7.2)                  |
| 10 in.      | FA10000800  | 4.75 (120.65)        | 10                  | 8               | 20.0 (9.0)                  |

**NOTE** • Clear Hole ConFlat Flange

# VACUUM COMPONENTS

## ► Half Nipples



### Ordering Information – Half Nipples, Standard Tube Size

| Tube Size | Part Number | Flange OD | Overall Length<br>A in. (mm) | Tube OD<br>in. (mm) | Tube ID<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|-----------|-------------|-----------|------------------------------|---------------------|---------------------|-----------------------------|
| ¾ in.     | FNH0075     | 1 ⅛       | 1.50 (38.10)                 | 0.75 (19.05)        | 0.68 (17.27)        | 0.8 (0.3)                   |
| 1 in.     | FNH01000275 | 2 ¾       | 2.46 (62.48)                 | 1.00 (25.40)        | 0.87 (19.81)        | 1.0 (0.5)                   |
| 1 ½ in.   | FNH0150S    | 2 ¾       | 2.46 (62.48)                 | 1.50 (38.10)        | 1.37 (34.80)        | 1.0 (0.5)                   |
|           | FNH0150     | 2 ¾       | 4.71 (119.63)                | 1.50 (38.10)        | 1.37 (34.80)        | 1.0 (0.5)                   |
| 2 in.     | FNH0200     | 3 ⅝       | 3.21 (81.53)                 | 2.00 (50.80)        | 1.87 (47.50)        | 2.0 (0.9)                   |
| 2 ½ in.   | FNH0250S    | 4 ½       | 3.38 (85.85)                 | 2.50 (63.50)        | 2.37 (60.20)        | 6.0 (2.7)                   |
|           | FNH0250     | 4 ½       | 4.12 (104.65)                | 2.50 (63.50)        | 2.37 (60.20)        | 6.0 (2.7)                   |
| 3 in.     | FNH0300S    | 4 ⅝       | 3.53 (89.66)                 | 3.00 (76.20)        | 2.87 (72.90)        | 7.0 (3.2)                   |
| 4 in.     | FNH0400S    | 6         | 4.32 (109.73)                | 4.00 (101.60)       | 3.83 (97.28)        | 11.0 (4.9)                  |
| 6 in.     | FNH0600S    | 8         | 5.50 (139.70)                | 6.00 (152.40)       | 5.83 (148.08)       | 19.0 (8.6)                  |
|           | FNH0600     | 8         | 6.56 (166.62)                | 6.00 (152.40)       | 5.83 (148.08)       | 19.0 (8.6)                  |
| 8 in.     | FNH0800     | 10        | 8.00 (203.20)                | 8.00 (203.20)       | 7.83 (198.88)       | 26.0 (11.8)                 |

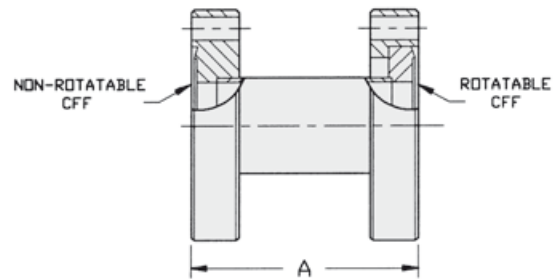
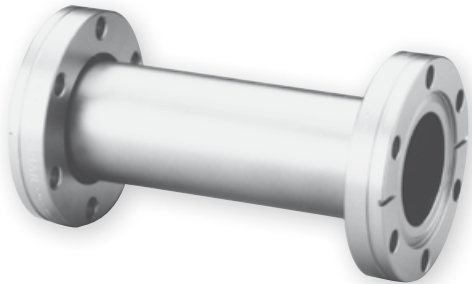
### Ordering Information – Half Nipples, Rotatable Flanges

| Tube Size | Part Number | Flange OD | Overall Length<br>A in. (mm) | Tube OD<br>in. (mm) | Tube ID<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|-----------|-------------|-----------|------------------------------|---------------------|---------------------|-----------------------------|
| 1 ½ in.   | FNH0150R    | 2 ¾       | 2.36 (60.00)                 | 1.50 (38.10)        | 1.37 (34.80)        | 1.0 (0.5)                   |

**NOTE** • Clear Hole ConFlat Flange

# CONFLAT FITTINGS

## Nipples



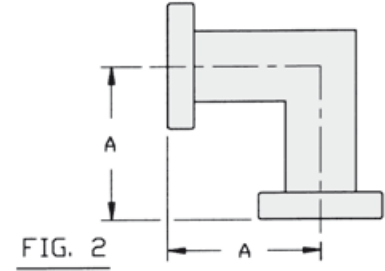
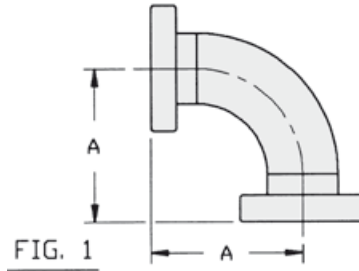
### Ordering Information

| Tube Size | Part Number | Flange OD | Overall Length<br>A in. (mm) | Tube OD<br>in. (mm) | Tube ID<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|-----------|-------------|-----------|------------------------------|---------------------|---------------------|-----------------------------|
| ¾ in.     | FNF0075     | 1 ⅛       | 3.00 (76.20)                 | 0.75 (19.05)        | 0.62 (17.27)        | 1.5 (0.7)                   |
| 1 ½ in.   | FNF0150     | 2 ¾       | 4.93 (125.22)                | 1.50 (38.10)        | 1.37 (34.80)        | 2.0 (0.9)                   |
| 2 in.     | FNF0200     | 3 ⅜       | 6.43 (163.32)                | 2.00 (50.80)        | 1.87 (47.50)        | 4.0 (1.8)                   |
| 2 ½ in.   | FNF0250     | 4 ½       | 8.25 (209.55)                | 2.50 (63.50)        | 2.37 (60.20)        | 8.0 (3.6)                   |
|           | FNF0250S    | 4 ½       | 6.76 (171.70)                | 2.50 (63.50)        | 2.37 (60.20)        | 8.0 (3.6)                   |
| 4 in.     | FNF0400     | 6         | 10.63 (270.00)               | 4.00 (101.60)       | 3.83 (97.28)        | 15.0 (6.8)                  |
|           | FNF0400S    | 6         | 8.64 (219.46)                | 4.00 (101.60)       | 3.83 (97.28)        | 13.0 (5.9)                  |
| 6 in.     | FNF0600     | 8         | 13.13 (333.50)               | 6.00 (152.40)       | 5.83 (148.08)       | 24.0 (10.8)                 |
|           | FNF0600S    | 8         | 11.00 (279.40)               | 6.00 (152.40)       | 5.83 (148.08)       | 24.0 (10.8)                 |
| 8 in.     | FNF0800     | 10        | 16.00 (406.40)               | 8.00 (203.20)       | 7.83 (198.88)       | 30.0 (13.5)                 |

**NOTE** • Clear Hole ConFlat Flange

# VACUUM COMPONENTS

## ► Elbows (90°)



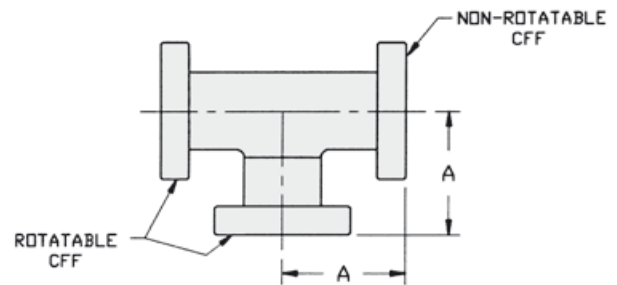
### Ordering Information

| Nominal<br>Tube Size | Part<br>Number | Flange<br>Size | Fig.<br>Number | Dimension<br>A in. (mm) | Shipping Weight<br>lbs (kg) |
|----------------------|----------------|----------------|----------------|-------------------------|-----------------------------|
| ¼ in.                | FE0075         | 1 ⅓            | 1              | 1.50 (38.10)            | 1.5 (0.7)                   |
| 1 ½ in.              | FE0150         | 2 ¾            | 1              | 2.46 (62.48)            | 2.0 (0.9)                   |
| 2 ½ in.              | FE0250         | 4 ½            | 2              | 4.13 (104.90)           | 8.0 (3.6)                   |
| 4 in.                | FE0400         | 6              | 2              | 5.31 (134.87)           | 15.0 (6.8)                  |
| 6 in.                | FE0600         | 8              | 2              | 6.56 (166.62)           | 24.0 (10.8)                 |

**NOTE** • All flanges are rotatable  
• Clear Hole ConFlat Flange

## CONFLAT FITTINGS

### ► Tees

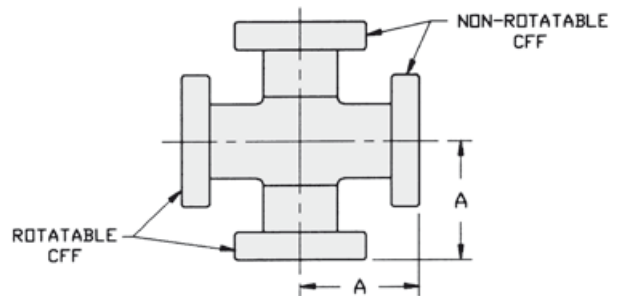
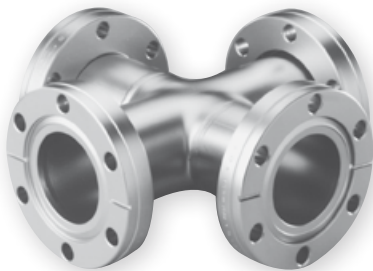


#### Ordering Information

| Nominal Tube Size | Part Number | Flange Size | Dimension A in. (mm) | Shipping Weight lbs (kg) |
|-------------------|-------------|-------------|----------------------|--------------------------|
| ¾ in.             | FT0075      | 1 ⅓         | 1.50 (38.10)         | 2.0 (0.9)                |
| 1 ½ in.           | FT0150      | 2 ¾         | 2.46 (62.50)         | 4.0 (1.8)                |
| 2 ½ in.           | FT0250      | 4 ½         | 4.13 (104.90)        | 11.0 (4.9)               |
| 4 in.             | FT0400      | 6           | 5.31 (134.87)        | 21.0 (9.5)               |
| 6 in.             | FT0600      | 8           | 6.56 (166.62)        | 34.0 (15.4)              |

**NOTE** • Clear Hole ConFlat Flange

### ► Crosses (4-Way)



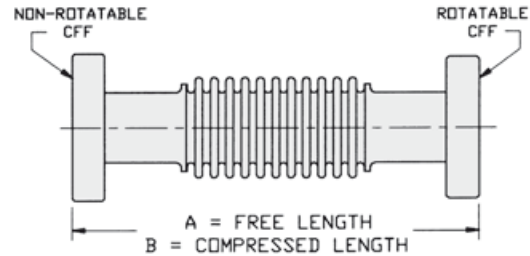
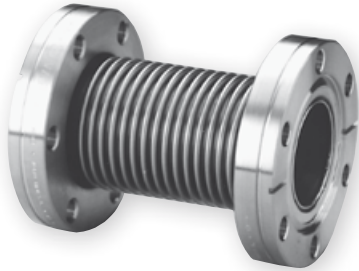
#### Ordering Information

| Nominal Tube Size | Part Number | Flange Size | Dimension A in. (mm) | Shipping Weight lbs (kg) |
|-------------------|-------------|-------------|----------------------|--------------------------|
| ¾ in.             | FC0075      | 1 ⅓         | 1.50 (38.10)         | 2.3 (1.0)                |
| 1 ½ in.           | FC0150      | 2 ¾         | 2.46 (62.50)         | 4.0 (1.8)                |
| 2 in.             | FC0200      | 3 ¾         | 3.21 (81.53)         | 9.0 (4.1)                |
| 2 ½ in.           | FC0250      | 4 ½         | 4.13 (104.90)        | 14.0 (6.3)               |
| 4 in.             | FC0400      | 6           | 5.31 (134.87)        | 26.0 (11.8)              |
| 6 in.             | FC0600      | 8           | 6.56 (166.62)        | 44.0 (19.9)              |

**NOTE** • Clear Hole ConFlat Flange

# VACUUM COMPONENTS

## ► Flexible Couplings (Non-Braided)



### Specifications

- Vacuum-compatible stainless steel
- Sizes ¼ in. – 6 in.
- Full penetration vacuum welds

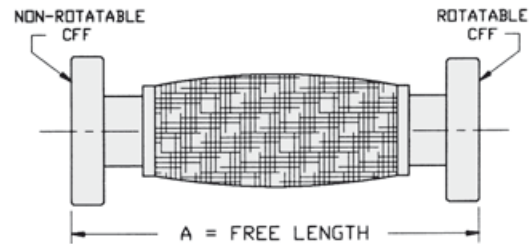
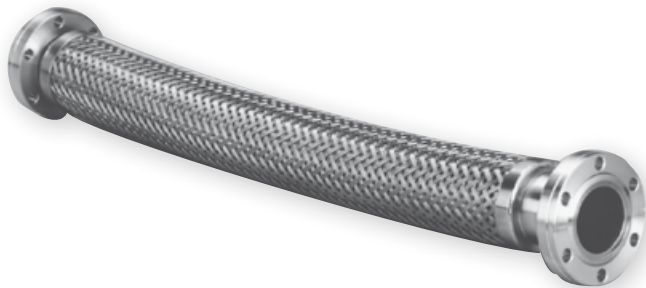
### Ordering Information

| Nominal O.D. | Part Number | Flange Size | Length Free<br>A in. (mm) | Length Compressed<br>B in. (mm) | Static Bend<br>Radius in. (mm) | Bellows Wall<br>Thickness in. | Nominal ID<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|--------------|-------------|-------------|---------------------------|---------------------------------|--------------------------------|-------------------------------|------------------------|-----------------------------|
| ¾ in.        | FL00750300  | 1 ⅓         | 3.0 (76)                  | 2.8 (71)                        | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 1.5 (0.7)                   |
|              | FL00750600  | 1 ⅓         | 6.0 (152)                 | 5.5 (140)                       | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 1.5 (0.7)                   |
|              | FL00751000  | 1 ⅓         | 10.0 (254)                | 9.1 (231)                       | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 2.0 (0.9)                   |
|              | FL00751200  | 1 ⅓         | 12.0 (305)                | 10.9 (271)                      | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 2.0 (0.9)                   |
|              | FL00751800  | 1 ⅓         | 18.0 (457)                | 16.3 (414)                      | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 3.0 (1.4)                   |
|              | FL00752000  | 1 ⅓         | 20.0 (508)                | 18.1 (460)                      | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 4.0 (1.8)                   |
|              | FL00752400  | 1 ⅓         | 24.0 (610)                | 21.7 (551)                      | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 4.0 (1.8)                   |
|              | FL00753600  | 1 ⅓         | 36.0 (914)                | 32.5 (826)                      | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 5.0 (2.3)                   |
|              | FL00754800  | 1 ⅓         | 48.0 (1219)               | 43.3 (1100)                     | 0.8 (20)                       | 0.008                         | 0.5 (12.7)             | 5.0 (2.3)                   |
| 1 ½ in.      | FL01500334  | 2 ¾         | 3.3 (85)                  | 3.2 (80)                        | 6.0 (152)                      | 0.006                         | 1.5 (38.1)             | 2.0 (0.9)                   |
|              | FL01500400  | 2 ¾         | 4.0 (102)                 | 3.7 (95)                        | 6.0 (152)                      | 0.006                         | 1.5 (38.1)             | 2.0 (0.9)                   |
|              | FL01501200  | 2 ¾         | 12.0 (305)                | 10.9 (278)                      | 2.2 (56)                       | 0.010                         | 1.5 (38.1)             | 3.0 (1.4)                   |
|              | FL01501800  | 2 ¾         | 18.0 (457)                | 16.3 (415)                      | 2.2 (56)                       | 0.010                         | 1.5 (38.1)             | 4.0 (1.8)                   |
|              | FL01502000  | 2 ¾         | 20.0 (508)                | 18.1 (461)                      | 2.2 (56)                       | 0.010                         | 1.5 (38.1)             | 4.0 (1.8)                   |
|              | FL01502400  | 2 ¾         | 24.0 (610)                | 21.7 (552)                      | 2.3 (56)                       | 0.010                         | 1.5 (38.1)             | 5.0 (2.3)                   |
|              | FL01503600  | 2 ¾         | 36.0 (914)                | 32.5 (827)                      | 2.2 (56)                       | 0.010                         | 1.5 (38.1)             | 6.0 (2.7)                   |
|              | FL01504800  | 2 ¾         | 48.0 (1220)               | 43.3 (1101)                     | 2.2 (56)                       | 0.010                         | 1.5 (38.1)             | 6.0 (2.7)                   |
|              |             |             |                           |                                 |                                |                               |                        |                             |
| 2 in.        | FL02000600  | 3 ⅞         | 6.0 (152)                 | 5.6 (142)                       | 7.5 (191)                      | 0.006                         | 2.0 (50.8)             | 2.0 (0.9)                   |
|              | FL02001200  | 3 ⅞         | 12.0 (305)                | 11.0 (279)                      | 2.6 (66)                       | 0.012                         | 2.0 (50.8)             | 5.0 (2.3)                   |
| 2 ½ in.      | FL02500625  | 4 ½         | 6.3 (159)                 | 5.9 (149)                       | 10.0 (254)                     | 0.006                         | 2.5 (63.5)             | 7.0 (3.2)                   |
|              | FL02501200  | 4 ½         | 12.0 (305)                | 11.0 (280)                      | 3.2 (81)                       | 0.012                         | 2.5 (63.5)             | 8.0 (3.6)                   |
|              | FL02502400  | 4 ½         | 24.0 (610)                | 21.8 (554)                      | 3.2 (81)                       | 0.012                         | 2.5 (63.5)             | 9.0 (4.1)                   |
|              | FL02503600  | 4 ½         | 36.0 (914)                | 32.6 (829)                      | 3.2 (81)                       | 0.012                         | 2.5 (63.5)             | 10.0 (4.5)                  |
| 4 in.        | FL04000763  | 6           | 7.6 (194)                 | 7.1 (180)                       | 19.0 (483)                     | 0.010                         | 4.0 (101.6)            | 14.0 (6.4)                  |

**NOTE** • Clear Hole ConFlat Flange

# CONFLAT FITTINGS

## Flexible Couplings (Braided)



### Specifications

- Vacuum-compatible stainless steel
- Sizes ¼ in. – 6 in.
- Full penetration vacuum welds

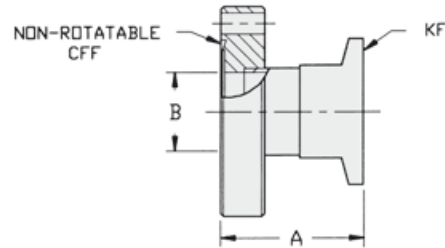
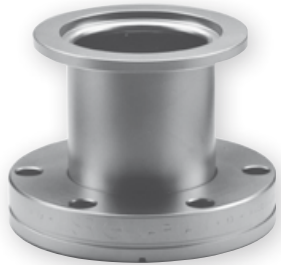
### Ordering Information

| Nominal O.D. | Part Number | Flange Size | Length Free A in. (mm) | Static Bend Radius in. (mm) | Bellows Wall Thickness in. | Nominal ID in. (mm) | Shipping Weight lbs (kg) |
|--------------|-------------|-------------|------------------------|-----------------------------|----------------------------|---------------------|--------------------------|
| ¾ in.        | FLB00751200 | 1 ⅓         | 12.0 (305)             | 2.1 (53)                    | 0.008                      | 0.75 (19.1)         | 2.0 (0.9)                |
|              | FLB00751800 | 1 ⅓         | 18.0 (457)             | 2.1 (53)                    | 0.008                      | 0.75 (19.1)         | 3.0 (1.4)                |
|              | FLB00753600 | 1 ⅓         | 36.0 (914)             | 2.1 (53)                    | 0.008                      | 0.75 (19.1)         | 5.0 (2.3)                |
|              | FLB00754800 | 1 ⅓         | 48.0 (1219)            | 2.1 (53)                    | 0.008                      | 0.75 (19.1)         | 5.0 (2.3)                |
| 1 ½ in.      | FLB01500600 | 2 ¾         | 6.0 (152)              | 3.9 (99)                    | 0.010                      | 1.50 (38.1)         | 2.0 (0.9)                |
|              | FLB01501200 | 2 ¾         | 12.0 (305)             | 3.9 (99)                    | 0.010                      | 1.50 (38.1)         | 3.0 (1.4)                |
|              | FLB01501875 | 2 ¾         | 18.8 (478)             | 3.9 (99)                    | 0.010                      | 1.50 (38.1)         | 4.0 (1.8)                |
|              | FLB01502400 | 2 ¾         | 24.0 (610)             | 3.9 (99)                    | 0.010                      | 1.50 (38.1)         | 5.0 (2.3)                |
|              | FLB01503600 | 2 ¾         | 36.0 (914)             | 3.9 (99)                    | 0.010                      | 1.50 (38.1)         | 6.0 (2.7)                |
|              | FLB01504800 | 2 ¾         | 48.0 (1219)            | 3.9 (99)                    | 0.010                      | 1.50 (38.1)         | 6.0 (2.7)                |
| 2 ½ in.      | FLB02502400 | 4 ½         | 24.0 (610)             | 5.9 (150)                   | 0.012                      | 2.50 (63.5)         | 9.0 (4.1)                |
|              | FLB02503600 | 4 ½         | 36.0 (914)             | 5.9 (150)                   | 0.012                      | 2.50 (63.5)         | 10.0 (4.5)               |

**NOTE** • Clear Hole ConFlat Flange

# VACUUM COMPONENTS

## ► CFF to KF Adapters



### Ordering Information

| CFF Size  | Part Number | CFF OD | KF Flange NW | Size OD | Overall Length A in. (mm) | Tube ID B in. (mm) | Weight lbs (kg) |
|-----------|-------------|--------|--------------|---------|---------------------------|--------------------|-----------------|
| 1 1/8 in. | FA0133NW16S | 1.33   | NW16         | 1.18    | 1.57 (39.88)              | 0.68 (17.27)       | 1.0 (0.5)       |
|           | FA0133NW16  | 1.33   | NW16         | 1.18    | 2.00 (50.80)              | 0.68 (17.27)       | 1.0 (0.5)       |
|           | FA0133NW16L | 1.33   | NW16         | 1.18    | 2.07 (52.70)              | 0.68 (17.27)       | 1.0 (0.5)       |
|           | FA0133NW25  | 1.33   | NW25         | 1.57    | 2.00 (50.80)              | 0.68 (17.27)       | 1.5 (0.7)       |
|           | FA0133NW40  | 1.33   | NW40         | 2.16    | 1.57 (39.88)              | 0.68 (17.27)       | 1.5 (0.7)       |
| 2 3/4 in. | FA0275NW16S | 2.73   | NW16         | 1.18    | 1.78 (45.21)              | 0.68 (17.27)       | 1.5 (0.7)       |
|           | FA0275NW16  | 2.73   | NW16         | 1.18    | 2.00 (50.80)              | 0.68 (17.27)       | 1.5 (0.7)       |
|           | FA0275NW16L | 2.73   | NW16         | 1.18    | 2.36 (59.94)              | 0.68 (17.27)       | 1.5 (0.7)       |
|           | FA0275NW25S | 2.73   | NW25         | 1.57    | 1.78 (45.21)              | 0.87 (22.10)       | 1.5 (0.7)       |
|           | FA0275NW25  | 2.73   | NW25         | 1.57    | 2.00 (50.80)              | 0.87 (22.10)       | 1.5 (0.7)       |
|           | FA0275NW25L | 2.73   | NW25         | 1.57    | 2.36 (59.94)              | 0.87 (22.10)       | 1.5 (0.7)       |
|           | FA0275NW40S | 2.73   | NW40         | 2.16    | 1.78 (45.21)              | 1.37 (34.80)       | 2.0 (0.9)       |
|           | FA0275NW40  | 2.73   | NW40         | 2.16    | 2.00 (50.80)              | 1.37 (34.80)       | 2.0 (0.9)       |
|           | FA0275NW40L | 2.73   | NW40         | 2.16    | 2.55 (64.77)              | 1.37 (34.80)       | 2.0 (0.9)       |
| 4 1/2 in. | FA0450NW40  | 4.47   | NW40         | 2.16    | 2.00 (50.80)              | 1.37 (34.80)       | 3.0 (1.4)       |
|           | FA0450NW50L | 4.47   | NW50         | 2.95    | 2.00 (50.80)              | 1.87 (47.50)       | 3.0 (1.4)       |
|           | FA0450NW50  | 4.47   | NW50         | 2.95    | 1.95 (49.53)              | 1.87 (34.80)       | 3.0 (1.4)       |

### Accessories

| Size | Description          | Part Number | Qty/Pkg | Shipping Weight lbs (kg) |
|------|----------------------|-------------|---------|--------------------------|
| NW16 | Viton centering ring | KC16SV      | 1       | 0.5 (0.2)                |
| NW25 | Viton centering ring | KC25SV      | 1       | 0.5 (0.2)                |
| NW40 | Viton centering ring | KC40SV      | 1       | 0.5 (0.2)                |
| NW50 | Viton centering ring | KC50SV      | 1       | 0.5 (0.2)                |
| NW16 | KF clamp             | KQ16AR      | 1       | 0.5 (0.2)                |
| NW25 | KF clamp             | KQ25AR      | 1       | 0.5 (0.2)                |
| NW40 | KF clamp             | KQ40AR      | 1       | 1.0 (0.5)                |
| NW50 | KF clamp             | KQ50AR      | 1       | 1.0 (0.5)                |

**NOTE** • Clear Hole ConFlat Flange

CONFLAT FITTINGS

► **Adapters: ConFlat to Swagelok**



**Ordering Information**

| Flange Size | Tube Size | Part Number | Length<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|-------------|-----------|-------------|--------------------|-----------------------------|
| 1 1/3 in.   | 1/4 in.   | FASW0250133 | 1.37 (34.8)        | 0.5 (0.22)                  |
| 2 3/4 in.   | 1/4 in.   | FASW0250275 | 1.53 (38.9)        | 1.0 (0.45)                  |
| 1 1/3 in.   | 3/8 in.   | FASW0375133 | 1.66 (42.2)        | 0.5 (0.22)                  |
| 2 3/4 in.   | 3/8 in.   | FASW0375275 | 1.69 (42.9)        | 1.0 (0.45)                  |
| 2 3/4 in.   | 1/2 in.   | FASW0500275 | 1.83 (46.5)        | 1.0 (0.45)                  |
| 2 3/4 in.   | 3/4 in.   | FASW0750275 | 2.20 (55.9)        | 1.0 (0.45)                  |

**NOTE** • Clear Hole ConFlat Flange

# VACUUM COMPONENTS

## ► Adapters: ConFlat to VCR - Male & Female



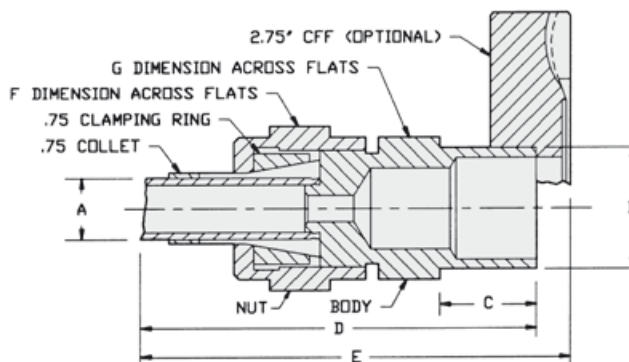
### Ordering Information

| Flange Size   | Tube Size | Part Number | Length<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|---------------|-----------|-------------|--------------------|-----------------------------|
| <b>Male</b>   |           |             |                    |                             |
| 1 1/8 in.     | 1/4 in.   | FAVM0250133 | 1.36 (34.5)        | 0.5 (0.22)                  |
| 2 3/4 in.     | 1/4 in.   | FAVM0250275 | 1.52 (38.6)        | 1.0 (0.45)                  |
| 1 1/8 in.     | 1/2 in.   | FAVM0500133 | 1.55 (39.4)        | 0.5 (0.22)                  |
| 2 3/4 in.     | 1/2 in.   | FAVM0500275 | 1.71 (43.4)        | 1.0 (0.45)                  |
| 2 3/4 in.     | 1 in.     | FAVM1000275 | 2.43 (61.7)        | 1.0 (0.45)                  |
| <b>Female</b> |           |             |                    |                             |
| 1 1/8 in.     | 1/4 in.   | FAVF0250133 | 1.36 (34.5)        | 0.5 (0.22)                  |
| 2 3/4 in.     | 1/4 in.   | FAVF0250275 | 1.52 (38.6)        | 1.0 (0.45)                  |
| 2 3/4 in.     | 3/8 in.   | FAVF0375275 | 1.71 (43.4)        | 1.0 (0.45)                  |
| 1 1/8 in.     | 1/2 in.   | FAVF0500133 | 1.55 (39.4)        | 0.5 (0.22)                  |
| 2 3/4 in.     | 1/2 in.   | FAVF0500275 | 1.71 (43.4)        | 1.0 (0.45)                  |
| 2 3/4 in.     | 1 in.     | FAVF1000275 | 2.43 (61.7)        | 1.0 (0.45)                  |

**NOTE** • Clear Hole ConFlat Flange

## CONFLAT FITTINGS

### ► UHV Compression Ports



|           | A           | B           | C           | D           | E           | F           | G           |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 3/8" assy | 0.75 (19.1) | 1.00 (24.5) | 0.66 (16.7) | 2.63 (66.8) | 3.00 (76.2) | 1.38 (35.0) | 1.19 (30.2) |
| 3/8" assy | 0.38 (9.7)  | 0.75 (19.1) | 0.63 (16.0) | 2.31 (55.7) | 2.53 (64.3) | 0.88 (22.4) | 0.77 (19.6) |
| 1/2" assy | 0.50 (12.7) | 0.75 (19.1) | 0.65 (16.5) | 2.63 (66.8) | 2.81 (71.4) | 1.13 (28.7) | 1.00 (25.4) |

Dimensions: inches (millimeters)

### Specifications

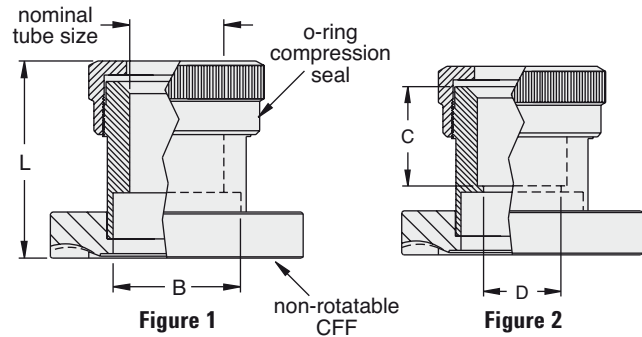
- Vacuum range:  $10^{-11}$  Torr (mbar)
- Bakeout Temperature: 500 °C

### Ordering Information

| Description                                                                | Part Number  | Shipping Weight<br>lbs (kg) |
|----------------------------------------------------------------------------|--------------|-----------------------------|
| <b>Compression Port with Felpro Lubricant</b>                              |              |                             |
| 3/8 in. (9.9 mm) port on 2.75 (NW35) ConFlat                               | FCP0038UHV   | 3.0 (1.3)                   |
| 1/2 in. (12.7 mm) port                                                     | CP0050UHV    | 2.0 (0.9)                   |
| 1/2 in. (12.7 mm) port on 2.75 (NW35) ConFlat                              | FCP0050UHV   | 3.0 (1.3)                   |
| 3/4 in. (19 mm) port                                                       | CP0075UHV    | 2.0 (0.9)                   |
| 3/4 in. (19 mm) port on 2.75 (NW35) ConFlat                                | FCP0075UHV   | 3.0 (1.3)                   |
| <b>Combination Compression Port Body and Nut</b>                           |              |                             |
| 3/4 in. (19 mm) Assembly                                                   |              |                             |
| Includes collet, clamping ring, and Felpro lubricant                       | CP0075UHVVA  | 1.0 (0.5)                   |
| <b>Compression Port Rebuild Kits</b>                                       |              |                             |
| 3/8 in. (9.9 mm) ports                                                     | CP0038RK     | 1.0 (0.5)                   |
| 1/2 in. (12.7 mm) ports                                                    | CP0050RK     | 1.0 (0.5)                   |
| <b>OFHC Copper Tubulations 6 in. (152.4 mm) Long</b>                       |              |                             |
| 3/8 in. (9.9 mm) OD, .032 wall thickness                                   | CP0038CT     | 1.0 (0.5)                   |
| 1/2 in. (12.7 mm) OD, .035 wall thickness                                  | CP0050CT     | 1.0 (0.5)                   |
| 3/4 in. (19 mm) OD, .035 wall thickness                                    | CP0075CT     | 2.0 (0.9)                   |
| <b>OFHC Copper Adapters</b>                                                |              |                             |
| 3/8 in. (9.9 mm) port adapter with 1.33 (NW16) ConFlat gasket/package of 4 | CP00380133CA | 1.5 (0.7)                   |
| 3/8 in. (9.9 mm) port adapter with 2.75 (NW35) ConFlat gasket/package of 4 | CP00380275CA | 1.5 (0.7)                   |

# VACUUM COMPONENTS

## ► ConFlat to Compression Port Adapters



### Specifications

- Stainless steel
- Viton o-ring
- Use with glass gauges or standard metal tubing
- Hand-tightened compression fitting

### Ordering Information

| Nominal Tube Size | Part Number | Bore ID<br>B in. (mm) | Length<br>L in. (mm) | Flange Size | ID<br>C in. (mm) | Tube Stop<br>D in. (mm) | Fig. Number | Weight<br>lbs (kg) |
|-------------------|-------------|-----------------------|----------------------|-------------|------------------|-------------------------|-------------|--------------------|
| 3/16 in.          | FCP01900275 | 0.63 (16.00)          | 1.71 (43.43)         | 2.75        | —                | —                       | 1           | 2.0 (0.9)          |
| 1/4 in.           | FCP02500133 | 0.63 (16.00)          | 1.67 (42.67)         | 1.33        | —                | —                       | 1           | 2.0 (0.9)          |
|                   | FCP02500275 | 0.63 (16.00)          | 1.71 (43.43)         | 2.75        | —                | —                       | 1           | 2.0 (0.9)          |
| 3/8 in.           | FCP03750133 | 0.63 (16.00)          | 1.67 (42.67)         | 1.33        | —                | —                       | 1           | 2.0 (0.9)          |
|                   | FCP03750275 | 0.63 (16.00)          | 1.71 (43.43)         | 2.75        | —                | —                       | 1           | 2.0 (0.9)          |
| 1/2 in.           | FCP05000133 | 0.63 (16.00)          | 1.67 (42.67)         | 1.33        | —                | —                       | 1           | 2.0 (0.9)          |
|                   | FCP05000275 | 0.63 (16.00)          | 1.71 (43.43)         | 2.75        | —                | —                       | 1           | 2.0 (0.9)          |
| 3/4 in.           | FCP07500275 | 1.38 (35.05)          | 2.02 (51.31)         | 2.75        | 0.63 (16.00)     | 1.13 (28.70)            | 2           | 2.0 (0.9)          |
| 1 in.             | FCP10000275 | 1.38 (35.05)          | 2.08 (52.83)         | 2.75        | 0.88 (22.35)     | 1.13 (28.70)            | 2           | 2.0 (0.9)          |
| 1 1/8 in.         | FCP11250275 | 1.38 (35.05)          | 2.08 (52.83)         | 2.75        | —                | —                       | 1           | 2.0 (0.9)          |

**NOTE** • Clear Hole ConFlat Flange

# CONFLAT FITTINGS

## ► O-Ring Sealed Vacuum Compression Ports and Blank-offs

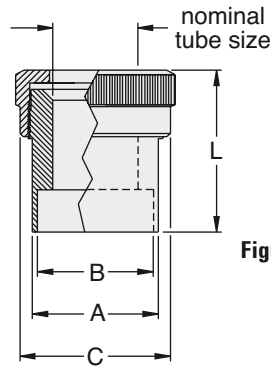


Figure 1

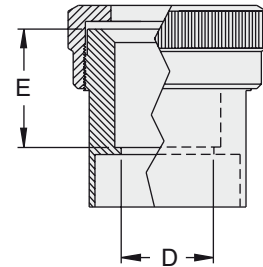


Figure 2

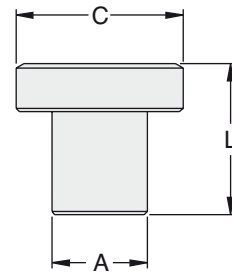


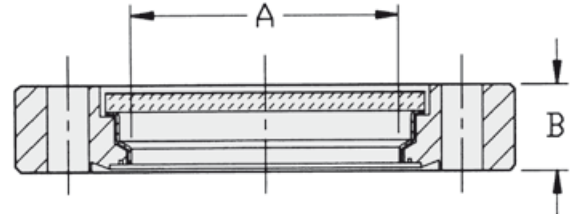
Figure 3

### Ordering Information

| Nominal<br>Tube Size | Part<br>Number | Fig.<br>Number | Body OD<br>A in. (mm) | Bore ID<br>B in. (mm) | OD<br>C in. (mm) | Length<br>L in. (mm) | I.D.<br>D in. (mm) | Tube Stop<br>E in. (mm) | Weight<br>lbs (kg) |
|----------------------|----------------|----------------|-----------------------|-----------------------|------------------|----------------------|--------------------|-------------------------|--------------------|
| ¼ in.                | CP0250S        | 1              | 0.75 (19.05)          | 0.63 (16.00)          | 1.14 (28.96)     | 1.50 (38.10)         | —                  | —                       | 1.0 (0.5)          |
| ⅝ in.                | CP0312S        | 1              | 0.75 (19.05)          | 0.63 (16.00)          | 1.14 (28.96)     | 1.50 (38.10)         | —                  | —                       | 1.0 (0.5)          |
| ¾ in.                | CP0375S        | 1              | 0.75 (19.05)          | 0.63 (16.00)          | 1.14 (28.96)     | 1.50 (38.10)         | —                  | —                       | 1.0 (0.5)          |
| ½ in.                | CP0500S        | 1              | 0.75 (19.05)          | 0.63 (16.00)          | 1.14 (28.96)     | 1.50 (38.10)         | —                  | —                       | 1.0 (0.5)          |
| ⅝ in.                | CP0625S        | 1              | 0.75 (19.05)          | 0.63 (16.00)          | 1.14 (28.96)     | 1.50 (38.10)         | —                  | —                       | 1.0 (0.5)          |
| ¾ in.                | CP0750S        | 1              | 1.50 (38.10)          | 1.38 (35.05)          | 1.89 (48.01)     | 1.88 (47.75)         | —                  | —                       | 1.0 (0.5)          |
| 1 in.                | CP1000S        | 2              | 1.50 (38.10)          | 1.38 (35.05)          | 1.89 (48.01)     | 1.88 (47.75)         | 0.88 (22.35)       | 1.13 (28.70)            | 1.0 (0.5)          |
| 1 ⅝ in.              | CP1125S        | 1              | 1.50 (38.10)          | 1.38 (35.05)          | 1.89 (48.01)     | 1.88 (47.75)         | —                  | —                       | 1.0 (0.5)          |
| 1 ¼ in.              | CP1250S        | 1              | 1.50 (38.10)          | 1.38 (35.05)          | 1.89 (48.01)     | 1.88 (47.75)         | —                  | —                       | 1.0 (0.5)          |

# VACUUM COMPONENTS

## ► Zero-Length Glass Viewports



### Specifications

- Transmission Range: 0.32 to 2.7 microns (approx.)
- Vacuum Range: To below  $10^{-11}$  Torr (mbar)
- Viewport Type: 7056 Glass
- Bakeout Temperature: 400 °C

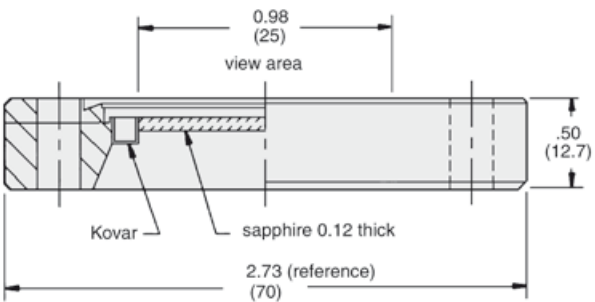
### Ordering Information

| Description                       | ConFlat Size    | Part Number | Nominal Port Diameter in. (mm) | A in. (mm) | B in. (mm)   | Weight lbs (kg) |
|-----------------------------------|-----------------|-------------|--------------------------------|------------|--------------|-----------------|
| <b>¾ in. (14 mm) Viewport</b>     | 1.33 in. (NW16) | FVG0075     | 0.75 (19.05)                   | 0.63 (16)  | 0.29 (7.37)  | 1.0 (0.5)       |
| <b>1 ½ in. (36 mm) Viewport</b>   | 2.75 in. (NW35) | FVG0150     | 1.50 (38.10)                   | 1.50 (38)  | 0.50 (12.70) | 2.0 (0.9)       |
| <b>2 ½ in. (63.5 mm) Viewport</b> | 4.50 in. (NW63) | FVG0250     | 2.50 (63.50)                   | 2.48 (63)  | 0.68 (17.40) | 5.0 (2.3)       |
| <b>4 in. (98 mm) Viewport</b>     | 6 in. (NW100)   | FVG0400     | 4.00 (101.60)                  | 3.50 (89)  | 0.78 (19.90) | 6.0 (2.7)       |
| <b>6 in. (137 mm) Viewport</b>    | 8 in. (NW150)   | FVG0600     | 6.00 (152.40)                  | 5.35 (136) | 0.92 (23.37) | 9.0 (4.0)       |

**NOTE** • Clear Hole ConFlat Flange

# CONFLAT FITTINGS

## Sapphire Viewports - Zero Length



Dimensions: inches (millimeters)

### Specifications

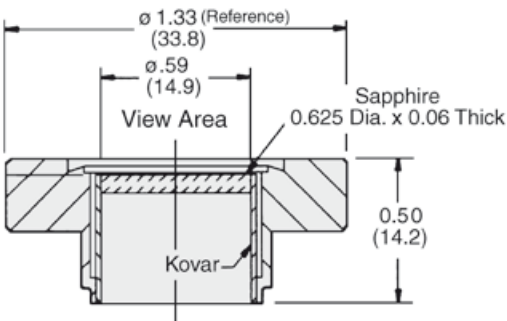
- Transmission Range: 0.25 to 5.5 microns (approx.)
- Vacuum Range: To below  $10^{-11}$  Torr (mbar)
- Bakeout Temperature: 450 °C

### Ordering Information

| Description                                                                                 | Part Number | Weight lbs (kg) |
|---------------------------------------------------------------------------------------------|-------------|-----------------|
| <b>1 in. (25.4 mm) Zero Length Sapphire/Kovar Viewport</b><br>on 2.75 (NW35) ConFlat flange | FVS0100     | 2.0 (0.9)       |

**NOTE** • Clear Hole ConFlat Flange

## Sapphire Viewports - Standard Length



Dimensions: inches (millimeters)

### Specifications

- Transmission Range: .25 to 5.5 microns (approx.)
- Vacuum Range: To below  $10^{-11}$  Torr (mbar)
- Bakeout Temperature: 450 °C

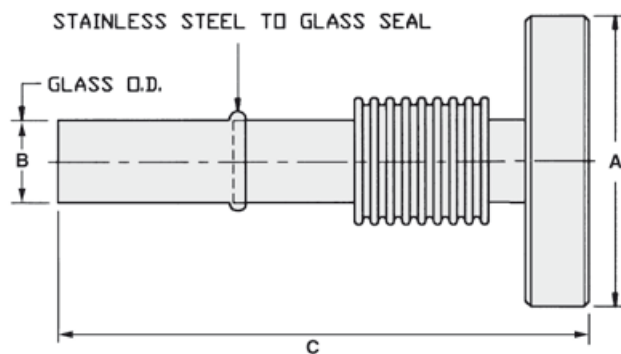
### Ordering Information

| Description                                                                                       | Part Number | Shipping Weight lbs (kg) |
|---------------------------------------------------------------------------------------------------|-------------|--------------------------|
| <b>5/8 in. (15.8 mm) Standard Length Sapphire/Kovar Viewport</b><br>on 1.33 (NW13) ConFlat flange | FVS0062     | 1.0 (0.5)                |

**NOTE** • Clear Hole ConFlat Flange

# VACUUM COMPONENTS

## ► Glass Adapters with Bellows



### Specifications

- Vacuum Range: To below  $10^{-11}$  Torr (mbar)
- Bakeout Temperature: 400 °C
- Pyrex 7740 Glass

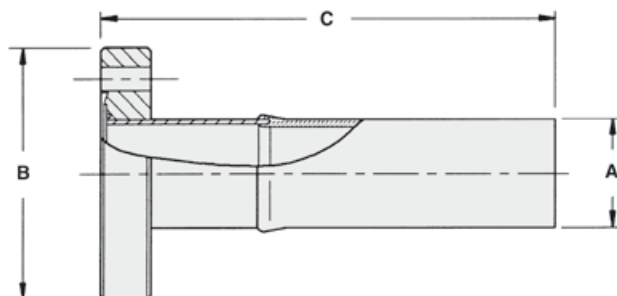
### Ordering Information

| Description                          | Part Number | A<br>in. (mm) | B<br>in. (mm)<br>(Reference) | C<br>in. (mm) | Shipping Weight<br>lbs (kg) |
|--------------------------------------|-------------|---------------|------------------------------|---------------|-----------------------------|
| <b>6 mm OD Glass Adapter</b>         |             |               |                              |               |                             |
| with bellows and mini ConFlat flange | FGAB7       | 1.33 (34.0)   | 0.24 (6.0)                   | 6.69 (170.0)  | 1.0 (0.5)                   |
| <b>10 mm OD Glass Adapter</b>        |             |               |                              |               |                             |
| with bellows and mini ConFlat flange | FGAB10      | 1.33 (34.0)   | 0.39 (10.0)                  | 5.50 (140.0)  | 1.0 (0.5)                   |
| <b>13 mm OD Glass Adapter</b>        |             |               |                              |               |                             |
| with bellows and mini ConFlat flange | FGAB13      | 1.33 (34.0)   | 0.51 (13.0)                  | 6.69 (170.0)  | 2.0 (0.9)                   |
| <b>19 mm OD Glass Adapter</b>        |             |               |                              |               |                             |
| with bellows and 2.75 ConFlat flange | FGAB19      | 2.75 (70.0)   | 0.75 (19.0)                  | 7.48 (190.0)  | 2.0 (0.9)                   |

**NOTE** • Clear Hole ConFlat Flange

## CONFLAT FITTINGS

### ► Glass Adapters



### Specifications

- Vacuum Range: To below  $10^{-11}$  Torr (mbar)
- Bakeout Temperature: 400 °C
- Glass Type: see ordering information table

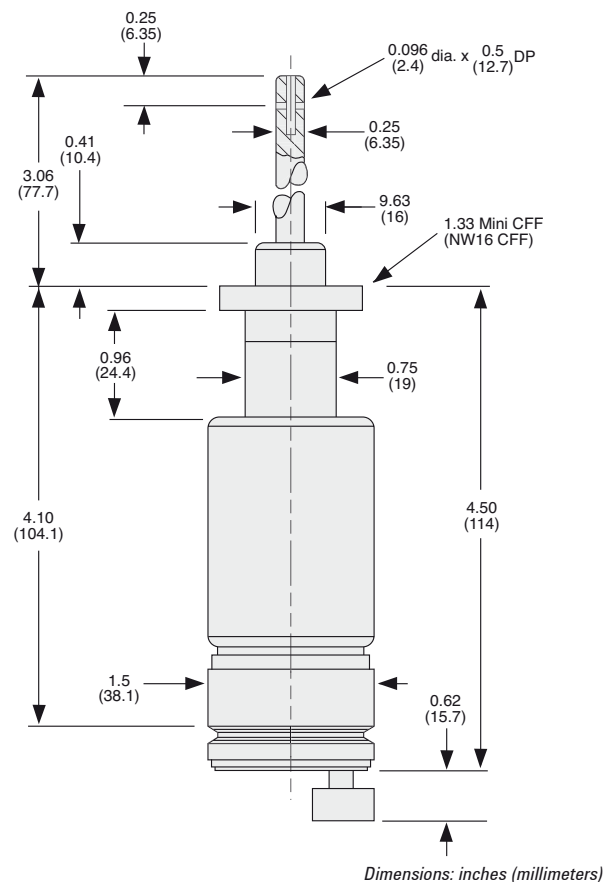
### Ordering Information

| Description                                                                    | Part Number | A<br>in. (mm)<br>Nom. | B<br>in. (mm)<br>(Reference) | C<br>in. (mm) | Weight<br>lbs (kg) |
|--------------------------------------------------------------------------------|-------------|-----------------------|------------------------------|---------------|--------------------|
| <b>¼ in. Kovar to Pyrex Glass Adapter</b><br>on 1.33 (NW16) ConFlat            | FGA0025KP   | 0.24 (6.0)            | 1.33 (34.0)                  | 3.94 (100.0)  | 1.5 (0.7)          |
| <b>¼ in. Stainless Steel to Pyrex Glass Adapter</b><br>on 1.33 (NW16) ConFlat  | FGA0025SP   | 0.24 (6.0)            | 1.33 (34.0)                  | 4.88 (124.0)  | 1.5 (0.7)          |
| <b>½ in. Kovar to Pyrex Glass Adapter</b><br>on 1.33 (NW16) ConFlat            | FGA0050KP   | 0.51 (13.0)           | 1.33 (34.0)                  | 3.94 (100.0)  | 1.5 (0.7)          |
| <b>½ in. Stainless Steel to Pyrex Glass Adapter</b><br>on 1.33 (NW16) ConFlat  | FGA0050SP   | 0.51 (13.0)           | 1.33 (34.0)                  | 4.88 (124.0)  | 1.5 (0.7)          |
| <b>¾ in. Kovar to Pyrex Glass Adapter</b><br>on 1.33 (NW16) ConFlat            | FGA0075KP   | 0.75 (19.0)           | 1.33 (34.0)                  | 5.38 (137.0)  | 1.5 (0.7)          |
| <b>¾ in. Stainless Steel to Pyrex Glass Adapter</b><br>on 1.33 (NW16) ConFlat  | FGA0075SP   | 0.75 (19.0)           | 1.33 (34.0)                  | 4.88 (124.0)  | 1.5 (0.7)          |
| <b>1 in. Kovar to Pyrex Glass Adapter</b><br>on 2.75 (NW35) ConFlat            | FGA0100KP   | 1.00 (25.0)           | 2.75 (70.0)                  | 3.94 (100.0)  | 3.0 (1.4)          |
| <b>1 in. Stainless Steel to Pyrex Glass Adapter</b><br>on 2.75 (NW35) ConFlat  | FGA0100SP   | 1.00 (25.0)           | 2.75 (70.0)                  | 4.88 (124.0)  | 3.0 (1.4)          |
| <b>1½ in. Kovar to Pyrex Glass Adapter</b><br>on 2.75 (NW35) ConFlat           | FGA0150KP   | 1.57 (40.0)           | 2.75 (70.0)                  | 3.94 (100.0)  | 4.0 (1.8)          |
| <b>1½ in. Stainless Steel to Pyrex Glass Adapter</b><br>on 2.75 (NW35) ConFlat | FGA0150SP   | 1.50 (38.0)           | 2.75 (70.0)                  | 4.88 (124.0)  | 4.0 (1.8)          |
| <b>2½ in. Stainless Steel to Pyrex Glass Adapter</b><br>on 4.5 (NW63) ConFlat  | FGA0250SP   | 2.50 (64.0)           | 4.50 (114.0)                 | 5.33 (137.0)  | 5.0 (2.3)          |

**NOTE** • Clear Hole ConFlat Flange

FEEDTHROUGHS

▶ Rotary Motion Feedthrough



Especially well-suited for bakeable ultra-high vacuum applications, this rotary motion feedthrough is bellows-sealed and has a built-in lock. It is mounted on a 1.33 in. OD Mini-ConFlat flange (NW16 CFF).

Technical Specifications

|                     |                                                     |
|---------------------|-----------------------------------------------------|
| Vacuum Range        | Atmosphere to 10 <sup>-11</sup> Torr (mbar)         |
| Torque Rating       | 150 inch-ounces                                     |
| Speed               | 200 RPM maximum                                     |
| Runout at Shaft Tip | 0.006" maximum (0.15 mm)                            |
| Life                | 50,000 total turns nominal 300 °C maximum (bakeout) |
| Temperature         | −196 °C to +150 °C (operating)                      |
| Rotation            | Continuously rotatable in either direction          |

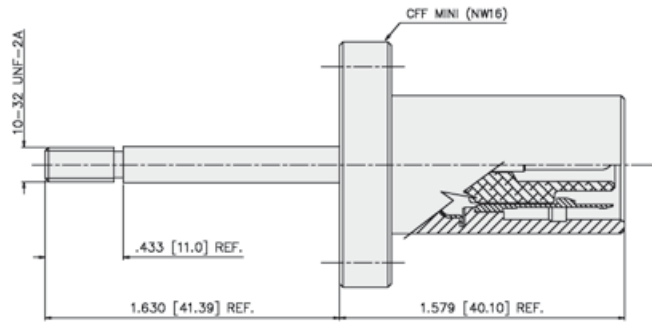
Ordering Information

| Description                                        | Part Number | Shipping Weight lbs (kg) |
|----------------------------------------------------|-------------|--------------------------|
| <b>Rotary motion feedthrough</b>                   |             |                          |
| On 1 1/2 in. mini ConFlat flange (NW16 CFF)        | L6691301    | 5.0 (2.3)                |
| Gaskets for mini ConFlat flange (NW16 CFF), 10/pkg | FG0133CI    | 1.0 (0.5)                |

# VACUUM COMPONENTS

## ► 12 kV Fischer Feedthrough on Mini-ConFlat Flange

This high voltage feedthrough is rated at up to 12 kV (below  $10^{-4}$  Torr/mbar) and is provided with a Mini (1.33 in.) ConFlat flange (NW16 CFF).



Dimensions: inches (millimeters)

### Technical Specifications

|                                                              |                            |
|--------------------------------------------------------------|----------------------------|
| <b>Voltage Rating (below <math>10^{-4}</math> Torr/mbar)</b> | 12 kV F/T Fischer          |
| <b>Current Rating</b>                                        | 1A maximum                 |
| <b>Temperature Range</b>                                     | -196 °C to +450 °C         |
| <b>Body Material</b>                                         | Stainless Steel            |
| <b>Mounting Flange</b>                                       | 1.33 in. O.D. mini (NW 16) |

### Ordering Information

| Description                                                                       | Part Number | Shipping Weight lbs (kg) |
|-----------------------------------------------------------------------------------|-------------|--------------------------|
| <b>High voltage feedthrough, vacuum side mating connector.</b>                    |             |                          |
| With 1 1/2 in. Mini-ConFlat flange (NW16 CFF)                                     | 9595125     | 1.0 (0.5)                |
| (for Star-Cell Ion pumps, cables and connectors please see the Ion Pumps section) |             |                          |
| (external connector not included, please order separately)                        |             |                          |
| Gaskets for Mini-ConFlat flange (NW16 CFF) 10/pkg                                 | FG0133CI    | 1.0 (0.5)                |

## SUPPLIES, GREASES AND LUBRICANTS

### ▶ Torr Seal Low Vapor Pressure Resin Sealant



Torr Seal epoxy resin quickly seals leaks on any type of vacuum system or component. Provided in convenient tubes, Torr Seal is solvent-free and can be used at pressures of  $10^{-9}$  Torr (mbar) and below, at temperatures from  $-45^{\circ}\text{C}$  to  $120^{\circ}\text{C}$  (bakeable temperature). Additionally, Torr Seal permits leak checking immediately after curing and bonds with many materials including metal, ceramic, and glass.

#### Ordering Information

| Description                                                      | Part Number | Weight lbs (kg) |
|------------------------------------------------------------------|-------------|-----------------|
| Torr Seal base resin, 82 grams, and Torr Seal hardener, 36 grams | 9530001     | 1.0 (0.45)      |

### ▶ Torr Seal Mixing System



The Torr Seal Mixing System includes an applicator gun, a premeasured Torr Seal cartridge, and an epoxy/resin mixer. The system uses the same low vapor pressure resin sealant as standard Torr Seal, while providing a systematic and scientific way of mixing the Torr Seal epoxy and resin. The applicator gun dispenses premeasured epoxy and resin from the cartridge through the mixer so that a uniform Torr Seal bead can be placed on any surface. As with the standard Torr Seal tubes, the mixing system can be used at pressures of  $10^{-9}$  Torr and below, and at temperatures from  $-45^{\circ}\text{C}$  to  $120^{\circ}\text{C}$  (bakeable temperature).

#### Ordering Information

| Description                                                      | Part Number | Weight lbs (kg) |
|------------------------------------------------------------------|-------------|-----------------|
| Applicator gun with Torr Seal cartridge (2 oz.) and three mixers | 9530002     | 2.00 (0.91)     |
| Applicator gun only                                              | 9530003     | 1.50 (0.68)     |
| Torr Seal cartridge (2 oz.) and three mixers                     | 9530004     | 0.75 (0.34)     |
| Mixers only (six to a package)                                   | 9530005     | 0.25 (0.11)     |

### ▶ Fel-Pro Heavy Duty Anti-Seize

Fel-Pro Heavy Duty Anti-Seize is a high-temperature, anti-galling lubricant designed for screw threads and other mated components of all types. Generally used in applications that are external to vacuum systems, Fel-Pro is useful in temperature ranges of  $70^{\circ}\text{C}$  to  $+1315^{\circ}\text{C}$ .

#### Ordering Information

| Description                             | Part Number | Weight lbs (kg) |
|-----------------------------------------|-------------|-----------------|
| Fel-Pro Heavy Duty Anti-Seize Lubricant | 9530031     | 0.3 (0.13)      |

### ▶ Apiezon Vacuum Grease, Type L

Apiezon L is a general vacuum grease that has a vapor pressure from  $10^{-11}$  Torr (mbar) at  $20^{\circ}\text{C}$  to  $10^{-3}$  Torr (mbar) at  $300^{\circ}\text{C}$ , and has a melting point of  $< 50^{\circ}\text{C}$ .

#### Ordering Information

| Description                    | Part Number | Weight lbs (kg) |
|--------------------------------|-------------|-----------------|
| Apiezon L vacuum grease, 1 oz. | 695400004   | 1.0 (0.45)      |

### ▶ Agilent Vacuum Grease

This is a general purpose grease with a vapor pressure in the  $10^{-6}$  Torr range. It is a non-silicone grease that comes in two viscosities and two sizes.

#### Ordering Information

| Description                                                 | Part Number | Weight lbs (kg) |
|-------------------------------------------------------------|-------------|-----------------|
| Agilent Vacuum grease, Medium Weight, $\frac{1}{4}$ lb size | LGCMID025   | 1.0 (0.45)      |
| Agilent Vacuum grease, Medium Weight, 1 lb size             | LGCMID100   | 1.0 (0.45)      |
| Agilent Vacuum grease, Heavy Weight, $\frac{1}{4}$ lb size  | LGCHEV025   | 1.0 (0.45)      |
| Agilent Vacuum grease, Heavy Weight, 1 lb size              | LGCHEV100   | 1.0 (0.45)      |