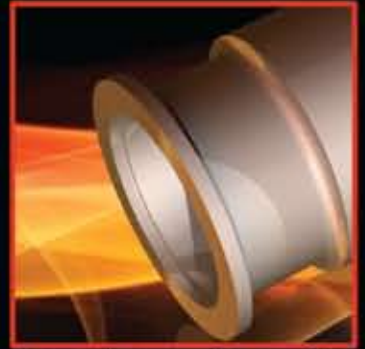


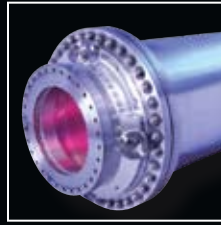
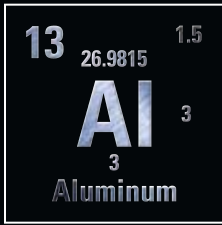
ATLAS FLANGES & FITTINGS

Bimetallic UHV CF Flanges & ATCR Fittings



Atlas Technologies / Catalog 08101

Atlas
TECHNOLOGIES



Atlas — the aluminum revolution

The Aluminum vacuum revolution has started — In a remote corner of Washington State, in the rain shadow of the Olympic Peninsula, nestled along Puget Sound, Atlas Technologies has been driven to think beyond the convention of stainless steel.

First with the invention of the robust all-metal-seal Atlas CF flange and the Atlas APCR fitting, Atlas made aluminum high and ultrahigh vacuum possible. Next, Atlas took on welding and surface preparation challenges. Now with Atlas' advanced UHV grade aluminum welds and surface oxide densification technology Atlas' aluminum vacuum chambers can easily outperform stainless chambers in any vacuum regime at a lower cost. It is time to say goodbye to stainless steel and *think in aluminum*.

Lower cost? Yes, the larger the chamber the better. Aluminum is half the price of stainless, machines 5 times faster and is 1/3 the weight. It also has lower outgassing and diffusion rates than stainless steel. This means better vacuum at lower prices when you *think in aluminum*.

Atlas Technologies — Aluminum Revolution Delivered

Atlas
TECHNOLOGIES

Atlas Vacuum Flanges and Fittings



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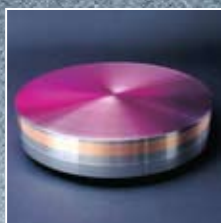
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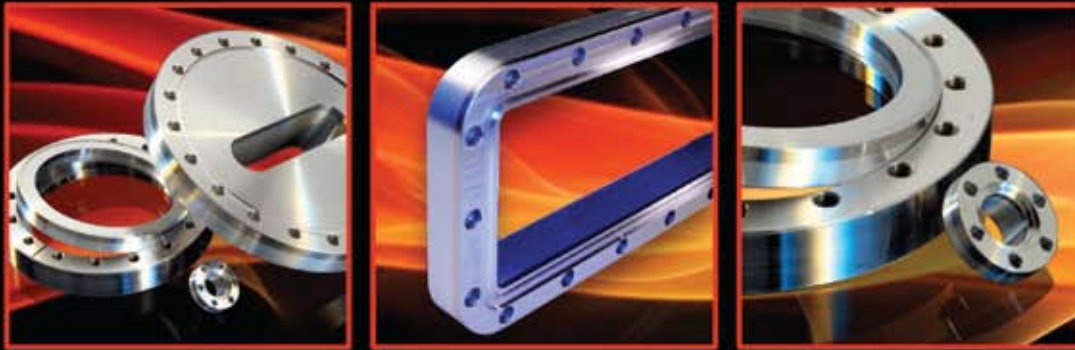
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Atlas
TECHNOLOGIES

UHV Bimetallic Atlas CF Flange™



The Atlas CF Flange™ brings together the time-tested reliability of all-metal-seal technology with the exceptional ultrahigh vacuum properties of aluminum.

The Atlas CF Flange™ — the aluminum flange with a stainless steel knife-edge seal — makes UHV aluminum vacuum systems a reality.

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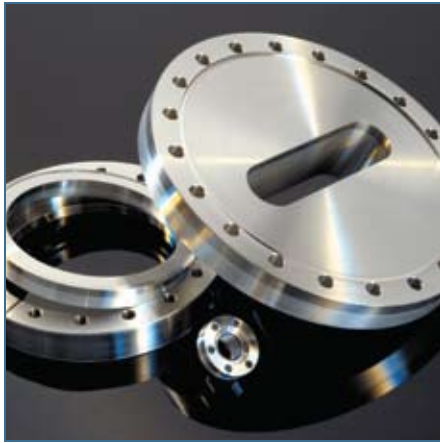
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| 2-3/4 | 70 DIN40 CF | 10 |
| 3-3/8 | 87 | 11 |
| 4-1/2 | 114 DIN63 CF | 12 |
| 4-5/8 | 117 | 13 |
| 6 | 152 DIN100 CF | 14 |
| 6-3/4 | 171 | 15 |
| 8 | 203 DIN160 CF | 16 |
| 10 | 254 DIN200 CF | 17 |
| 12 | 305 | 18 |
| 13-1/4 | 336 | 19 |
| 14 | 356 | 20 |
| 14-1/2 | 368 | 21 |
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| | |
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Atlas bimetallic CF flanges—the aluminum flange with a stainless steel knife-edge seal—make UHV aluminum vacuum systems a reality.

The Atlas CF Flange™ brings together the time-tested reliability of all-metal-seal technology with the exceptional ultrahigh vacuum properties of aluminum. The Atlas CF Flange™—the aluminum flange with a stainless steel knife-edge seal—make UHV aluminum vacuum systems a reality.

Using proprietary and state-of-the-art explosion bonding technology, our stainless to aluminum bimetallic flanges are fully compatible with the industry standard Conflat® flange interface. Employing CERN's innovative 20° back-bevel (90° included angle) knife-edge design, the Atlas CF Flange™ provides a longer service life than conventional CF flanges.

Atlas CF flanges are suitable for service in vacuum levels to 1×10^{-13} Torr and 250°C bake-out temperatures. Our flanges can be easily welded to aluminum vacuum vessels and are the key to successful integration of aluminum UHV technology in your application.

Our flanges are used in prominent high (HV), ultrahigh (UHV) and extreme high vacuum (EHV) applications around the world. They find extensive use with semiconductor fabrication OEMs where superior heat conduction, chemical resistance, manufacturing ease and the lower cost of aluminum vacuum systems translate into measurable productivity and cost of ownership advantages.

In UHV synchrotron and particle physics applications, where high magnetic permeability is detrimental to beam quality, Atlas CF flanges are central to non-magnetic beam tubes, wigglers, undulators and drift tubes.

In neutron applications such as the production of radioisotopes for medical imaging, aluminum vessels fitted with our flanges are replacing all stainless steel UHV systems—because residual, neutron induced, radiation in aluminum has a half-life orders of magnitude shorter than that of stainless steel. Our flanges enable aluminum UHV system use in cyclotrons and nuclear reactors.

Continued on Page-6...

Atlas CF Flange™ Features

- Patented UHV aluminum to stainless explosion welding technology (EXW) that is only available from Atlas
- UHV Rated to 1×10^{-13} Torr
- 1/3 The weight of stainless flanges
- 90° included angle long-life knife-edge design developed at CERN
- 100% Compatible with the industry standard Conflat® interface
- Standard and reduced stainless steel models available
- Cryogenic, non-magnetic, rectangular and other specialty flange solutions also available

Specifications

Atlas CF Flanges are fully compatible with the industry standard Conflat® flange. Atlas uses CERN's 20° back-bevel knife-edge design with a long-life 90° encompassed angle geometry. Atlas flanges are quality controlled using material batch monitoring processes.

Materials

| | |
|-----------------------------|---|
| Body / Weld Interface | Aluminum 6061 T-6 |
| Knife-Edge | Stainless Steel 316L |
| | Titanium (Commercially Pure) Optional |
| Rotatable Collar / Receiver | Aluminum 6061 T-6 304 Stainless Steel Optional |

Environmental

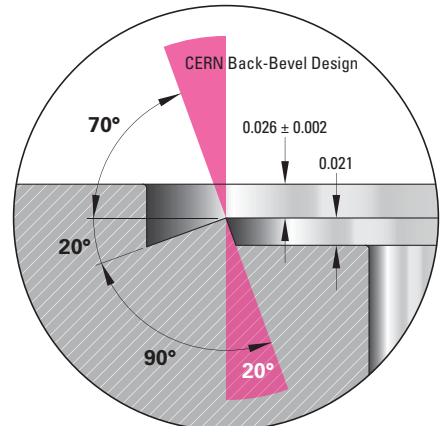
| | |
|--|-----------------------------------|
| Vacuum Leak Tested | < 1×10^{-9} cc/sec of He |
| Thermal | |
| Peak Temperature (< 2 Min. during weld-up) | 500°C |
| Operational Temperature | -200°C to 250°C |

Mechanical (EXW Interface)

| | |
|---------|-----------|
| Tensile | 15,000psi |
| Shear | 10,000psi |

Atlas CF Dimensional Table — Inches

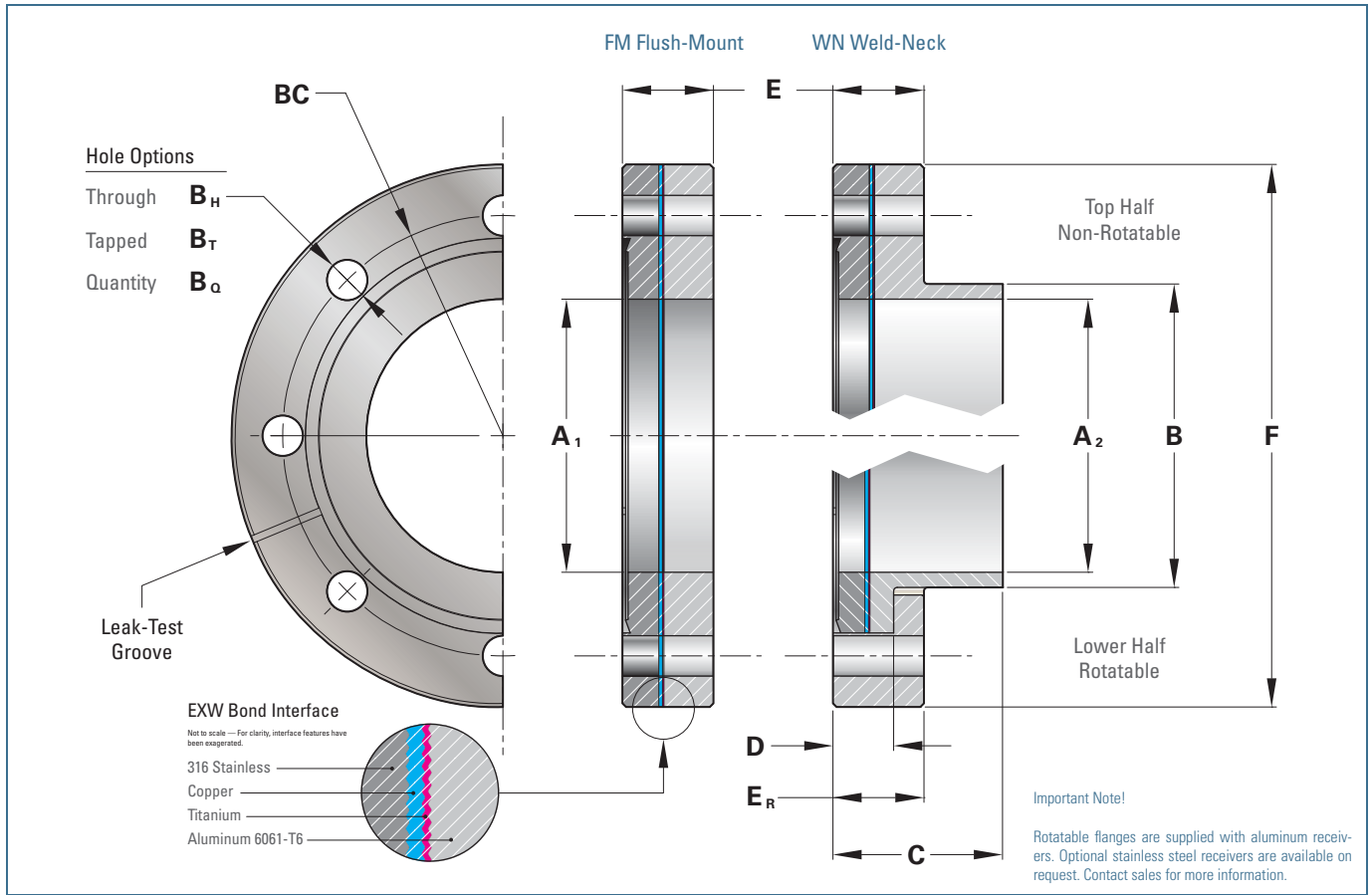
Upon close examination you'll note that the Atlas CF Flange™ knife-edge has a slightly different geometry from the traditional Conflat® design. Atlas' knife-edge geometry is modeled after CERN's innovative 20° back-bevel design—the 90° included angle knife-edge, accounts for added seal robustness and longer flange life.



Dimensional Specifications — Inches



Atlas CF Flange™ Specifications



| Flange Diameter | | | | | | | | | | | | |
|-----------------|-------|----------------|----------------|-------|--------|----------------|----------------|----------------|------|-------|-------|----------------|
| Nominal | F | A ₁ | A ₂ | B | BC | B _H | B _T | B _O | C | D | E | E _R |
| 1-1/3 | 1.33 | 0.600 | 0.50 | 0.75 | 1.062 | 0.172 | 8-32 | 6 | 1.30 | 0.230 | 0.35 | 0.285 |
| 2 1/8 | 2.12 | 0.750 | 0.75 | 1.00 | 1.625 | 0.265 | .250-28 | 4 | 1.40 | 0.236 | 0.470 | 0.470 |
| 2 3/4 | 2.73 | 1.500 | 1.25 | 1.50 | 2.312 | 0.265 | .250-28 | 6 | 1.30 | 0.300 | 0.510 | 0.500 |
| 3 3/8 | 3.37 | 1.750 | 1.75 | 2.00 | 2.850 | 0.332 | .312-24 | 8 | 1.40 | 0.376 | 0.620 | 0.620 |
| 4 1/2 | 4.47 | 2.500 | 2.25 | 2.50 | 3.628 | 0.332 | .312-24 | 8 | 1.40 | 0.500 | 0.750 | 0.750 |
| 4 5/8 | 4.62 | 2.750 | 2.75 | 3.00 | 4.030 | 0.332 | .312-24 | 10 | 1.40 | 0.505 | 0.750 | 0.810 |
| 6 | 5.97 | 3.750 | 3.75 | 4.00 | 5.128 | 0.332 | .312-24 | 16 | 1.40 | 0.563 | 0.840 | 0.840 |
| 6 3/4 | 6.75 | 4.870 | 4.87 | 5.12 | 5.969 | 0.332 | .312-24 | 18 | 1.40 | 0.563 | 0.840 | 0.840 |
| 8 | 7.97 | 5.750 | 5.75 | 6.00 | 7.128 | 0.332 | .312-24 | 20 | 1.40 | 0.624 | 0.880 | 0.940 |
| 10 | 9.97 | 7.750 | 7.75 | 8.00 | 9.128 | 0.332 | .312-24 | 24 | 1.40 | 0.675 | 0.970 | 0.970 |
| 12 | 12.00 | 9.750 | 9.75 | 10.00 | 11.181 | 0.332 | .312-24 | 32 | 1.40 | 0.709 | 1.125 | 1.120 |
| 13 1/4 | 13.25 | 10.020 | 10.02 | 10.75 | 12.058 | 0.390 | .375-24 | 30 | 1.40 | 0.775 | 1.125 | 1.120 |
| 14 | 14.00 | 11.750 | 11.75 | 12.00 | 12.810 | 0.390 | .375-24 | 30 | 1.40 | 0.775 | 1.125 | 1.120 |
| 14 1/2 | 14.50 | 11.750 | 11.75 | 12.00 | 13.310 | 0.390 | .375-24 | 32 | 1.40 | 0.775 | 1.125 | 1.120 |
| 16 1/2 | 16.50 | 13.750 | 13.75 | 14.00 | 15.310 | 0.390 | .375-24 | 36 | 1.40 | 0.775 | 1.125 | 1.120 |

Metric dimensional specifications can be found on page 7



Atlas bimetallic CF flanges—the aluminum flange with a stainless steel knife-edge seal, make UHV aluminum vacuum systems a reality.

Atlas CF Flange™ Features

- Patented UHV aluminum to stainless explosion welding technology (EXW) that is only available from Atlas
- UHV Rated to 1×10^{-13} Torr
- 1/3 The weight of stainless flanges
- 90° included angle long-life knife-edge design developed at CERN
- 100% Compatible with the industry standard Conflat® interface
- Standard and reduced stainless steel models available
- Cryogenic, non-magnetic, rectangular and other specialty flange solutions also available

Continued from Page-4

Atlas Technologies concentrates most of its efforts in the development of methods and processes specifically intended for bonding dissimilar metals for use in ultrahigh vacuum (UHV) scientific and industrial applications. Atlas holds various patents in this technology, including those for the Atlas CF Flange™ and the Atlas ATCR™ face seal fitting.

Explosion bonding or welding (EXW) is a solid state process by which dissimilar metals can be joined together at an atomic level. Preparation for bonding requires that plates lay flat to each other, a flyer plate on top of a base plate separated by a small gap. An explosive charge is placed on the flyer plate and detonated from a point at the edge of the plate. A controlled progressive ignition travels across the flyer plate like ripples in a pond. The explosion accelerates the plates together with impact velocities of 1800–2200 m/sec. A high energy surface plasma is formed between the plates, moving ahead of the collision point and stripping electrons from the two bonding surfaces. The electron-hungry metals are then

thrust together at extreme pressures forming an electron-sharing bond. Metals like copper and stainless steel can be readily bonded through the EXW process. However aluminum and stainless are incompatible and not directly bondable, because of the formation of brittle intermetallic compounds. Atlas has developed patented multi-layer composites technologies that provide the metallurgical compatibility required for joining aluminum to stainless and other exotic metals.

The Atlas CF Flange™ is manufactured using a multi-layered composition consisting of 316L stainless steel, copper, titanium and 6061 T6 aluminum (see EXW interface detail on page 5).

For maximum weight reduction and minimum neutron activation, Atlas CF Flanges are also available with reduced stainless steel content. Depending on size, reduced stainless flanges are produced with a stainless interface that's about 20% to 40% thinner than standard flanges. See Page-22 for more information on our custom bimetallic, high and ultrahigh vacuum solutions.

Specifications

Atlas CF Flanges are fully compatible with the industry standard Conflat® flange. Atlas uses CERN's 20° back-bevel knife-edge design with a long-life 90° encompassed angle geometry. Atlas flanges are quality controlled using material batch monitoring processes.

Materials

| | |
|-----------------------------|---|
| Body / Weld Interface | Aluminum 6061 T-6 |
| Knife-Edge | Stainless Steel 316L Titanium (Commercially Pure) Optional |
| Rotatable Collar / Receiver | Aluminum 6061 T-6 304 Stainless Steel Optional |

Environmental

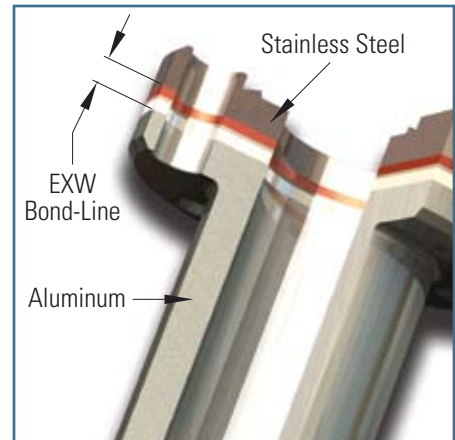
| | |
|--|-----------------------------------|
| Vacuum Leak Tested | < 1×10^{-9} cc/sec of He |
| Thermal | |
| Peak Temperature (< 2 Min. during weld-up) | 500°C |
| Operational Temperature | -200°C to 250°C |

Mechanical (EXW Interface)

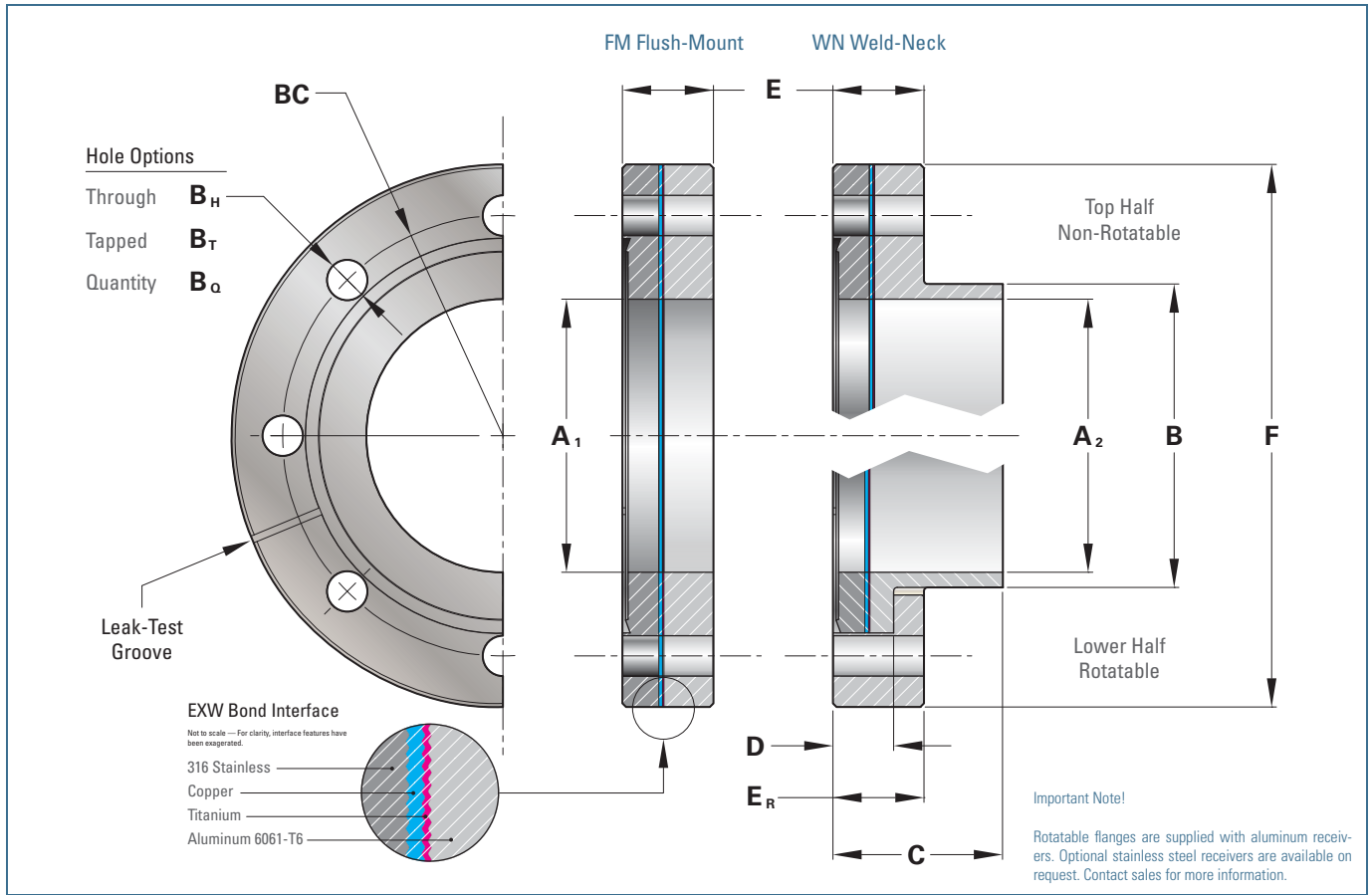
| | |
|---------|--------|
| Tensile | 103MPa |
| Shear | 69MPa |

Atlas CF Dimensional Table — Metric

Explosion welding is a violent process, resulting in plate deformation. Each Atlas flange is produced with careful attention to post-bond plate flattening and bond-line positioning. All flanges are dimensionally alike, but no two share the same bond-line position. Bond-line wander does not impact a flanges' UHV integrity or function. The Atlas CF Flange™ bond-line wander tolerance is ± 0.04 inches. Tighter tolerances are available on request.



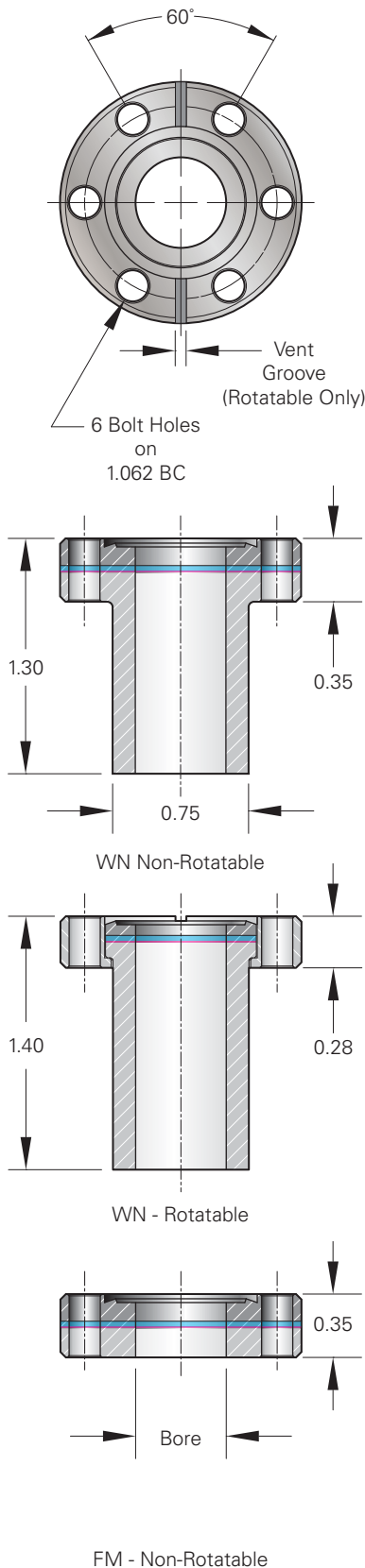
Dimensional Specifications — Metric



Atlas CF Flange™ Specifications

| Flange Size | | A_1 | A_2 | B | BC | B_H | B_T | B_Q | C | D | E | E_R | F |
|-------------|--------|-------|-------|-------|-------|-------|---------|-------|------|------|------|-------|-----|
| Nominal | DIN CF | | | | | | | | | | | | |
| 1-1/3 | 16 | 15.2 | 12.7 | 19 | 27 | 4.4 | M4x0.7 | 6 | 33 | 5.8 | 8.9 | 7.2 | 34 |
| 2 1/8 | - | 19 | 19 | 25.4 | 41.3 | 6.7 | M6x1.0 | 4 | 35.6 | 6.0 | 11.9 | 11.9 | 54 |
| 2 3/4 | 40 | 38 | 31.7 | 38.1 | 58.7 | 6.7 | M6x1.0 | 6 | 33 | 7.6 | 13.0 | 12.7 | 70 |
| 3 3/8 | - | 44.4 | 44.4 | 50.8 | 72.4 | 8.4 | M8x1.25 | 8 | 35.6 | 9.6 | 15.7 | 15.7 | 87 |
| 4 1/2 | 63 | 63.5 | 57 | 63.5 | 92.2 | 8.4 | M8x1.25 | 8 | 35.6 | 12.7 | 19.0 | 19.0 | 114 |
| 4 5/8 | - | 69.8 | 69.8 | 76.2 | 102.4 | 8.4 | M8x1.25 | 10 | 35.6 | 12.8 | 19.0 | 20.6 | 117 |
| 6 | 100 | 95.2 | 95.2 | 101.6 | 130.3 | 8.4 | M8x1.25 | 16 | 35.6 | 14.3 | 21.3 | 21.3 | 152 |
| 6 3/4 | - | 123.7 | 123.7 | 130 | 151.6 | 8.4 | M8x1.25 | 18 | 35.6 | 14.3 | 21.3 | 21.3 | 171 |
| 8 | 160 | 146 | 146 | 152.4 | 181.1 | 8.4 | M8x1.25 | 20 | 35.6 | 15.8 | 22.4 | 23.9 | 203 |
| 10 | 200 | 196.8 | 196.8 | 203.2 | 231.9 | 8.4 | M8x1.25 | 24 | 35.6 | 17.1 | 24.6 | 24.6 | 254 |
| 12 | - | 247.6 | 247.6 | 254 | 284 | 8.4 | M8x1.25 | 32 | 35.6 | 18.0 | 28.6 | 28.4 | 305 |
| 13 1/4 | - | 254.5 | 254.5 | 273 | 306.3 | 9.9 | M10x1.5 | 30 | 35.6 | 19.7 | 28.6 | 28.4 | 336 |
| 14 | - | 298.4 | 298.4 | 304.8 | 325.4 | 9.9 | M10x1.5 | 30 | 35.6 | 19.7 | 28.6 | 28.4 | 356 |
| 14 1/2 | - | 298.4 | 298.4 | 304.8 | 338.1 | 9.9 | M10x1.5 | 32 | 35.6 | 19.7 | 28.6 | 28.4 | 368 |
| 16 1/2 | - | 349.2 | 349.2 | 355.6 | 389 | 9.9 | M10x1.5 | 36 | 35.6 | 19.7 | 28.6 | 28.4 | 419 |

Inch dimensional specifications can be found on page 5



| 1-1/3 CF | | WN Weld-Neck Flange | | |
|--------------|------|---------------------|-----------------|----------|
| 34mm DN16 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | |
|---------------|-------|--------|---------------------|--------------|
| Non-Rotatable | Blank | 0.172 | 1.33ALSS-WNNRB | CFBI-0133-05 |
| | Blank | 8-32 | 1.33ALSS-WNNRB-US | CFBI-0133-15 |
| | Blank | M4x0.7 | 1.33ALSS-WNNRB-M | CFBI-0133-25 |
| | 0.500 | 0.172 | 1.33ALSS-WNNR.50 | CFBI-0133-02 |
| | 0.500 | 8-32 | 1.33ALSS-WNNR.50-US | CFBI-0133-12 |
| | 0.500 | M4x0.7 | 1.33ALSS-WNNR.50-M | CFBI-0133-22 |

| | | | | |
|-----------|-------|--------|--------------------|--------------|
| Rotatable | Blank | 0.172 | 1.33ALSS-WNRB | CFBI-0133-06 |
| | Blank | 8-32 | 1.33ALSS-WNRB-US | CFBI-0133-16 |
| | Blank | M4x0.7 | 1.33ALSS-WNRB-M | CFBI-0133-26 |
| | 0.500 | 0.172 | 1.33ALSS-WNR.50 | CFBI-0133-03 |
| | 0.500 | 8-32 | 1.33ALSS-WNR.50-US | CFBI-0133-13 |
| | 0.500 | M4x0.7 | 1.33ALSS-WNR.50-M | CFBI-0133-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 1-1/3 CF | | FM Flush-Mount Flange | | |
|--------------|------|-----------------------|-----------------|----------|
| 34mm DN16 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | |
|---------------|-------|--------|---------------------|--------------|
| Non-Rotatable | Blank | 0.172 | 1.33ALSS-FMNRB | CFBI-0133-04 |
| | Blank | 8-32 | 1.33ALSS-FMNRB-US | CFBI-0133-14 |
| | Blank | M4x0.7 | 1.33ALSS-FMNRB-M | CFBI-0133-24 |
| | 0.500 | 0.172 | 1.33ALSS-FMNR.50 | CFBI-0133-01 |
| | 0.500 | 8-32 | 1.33ALSS-FMNR.50-US | CFBI-0133-11 |
| | 0.500 | M4x0.7 | 1.33ALSS-FMNR.50-M | CFBI-0133-21 |

| 1-1/3 CF | | HW Flange Mounting Hardware | |
|--------------|-------------|-----------------------------|--|
| 34mm DN16 CF | Description | Part No. | |

| | | |
|--------------|--|--------------|
| Gaskets | Copper / 0.64 ID / 10 | CFHW-0133-01 |
| | Viton® / 0.64 ID / 5 | CFHW-0133-02 |
| Bolts Inch | 8-32 / Clearance / Nuts / Washers / 25 | CFHW-0133-10 |
| | 8-32 / Tapped / Washers / 25 | CFHW-0133-11 |
| Bolts Metric | M4x0.7 / Clearance / Nuts / Washers / 25 | CFHW-0133-20 |
| | M4x0.7 / Tapped / Washers / 25 | CFHW-0133-21 |

Aluminum gaskets are available on request, please call our sales department for more information

2.125" Atlas CF Flange / 54mm



2.125" Atlas CF Flange

| 2-1/8 CF | | WN Weld-Neck Flange | | |
|----------|------|---------------------|-----------------|----------|
| 54mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|-------|---------|----------------------|--------------|
| | Non-Rotatable | Blank | 0.265 | 2.125ALSS-WNNRB | CFBI-0212-05 |
| | | Blank | .250-28 | 2.125ALSS-WNNRB-US | CFBI-0212-15 |
| | | Blank | M6x1.0 | 2.125ALSS-WNNRB-M | CFBI-0212-25 |
| | | 0.750 | 0.265 | 2.125ALSS-WNNR.75 | CFBI-0212-02 |
| | | 0.750 | .250-28 | 2.125ALSS-WNNR.75-US | CFBI-0212-12 |
| | | 0.750 | M6x1.0 | 2.125ALSS-WNNR.75-M | CFBI-0212-22 |

| | | | | | |
|--|-----------|-------|---------|---------------------|--------------|
| | Rotatable | Blank | 0.265 | 2.125ALSS-WNRB | CFBI-0212-06 |
| | | Blank | .250-28 | 2.125ALSS-WNRB-US | CFBI-0212-16 |
| | | Blank | M6x1.0 | 2.125ALSS-WNRB-M | CFBI-0212-26 |
| | | 0.750 | 0.265 | 2.125ALSS-WNR.75 | CFBI-0212-03 |
| | | 0.750 | .250-28 | 2.125ALSS-WNR.75-US | CFBI-0212-13 |
| | | 0.750 | M6x1.0 | 2.125ALSS-WNR.75-M | CFBI-0212-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

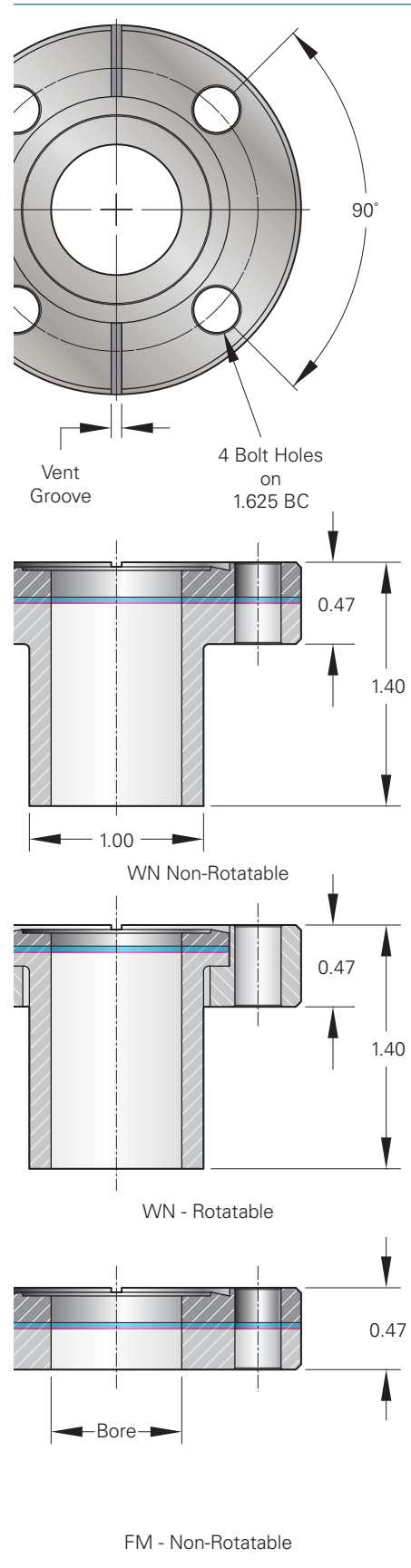
| 2-1/8 CF | | FM Flush-Mount Flange | | |
|----------|------|-----------------------|-----------------|----------|
| 54mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|-------|---------|----------------------|--------------|
| | Non-Rotatable | Blank | 0.265 | 2.125ALSS-FMNRB | CFBI-0212-04 |
| | | Blank | .250-28 | 2.125ALSS-FMNRB-US | CFBI-0212-14 |
| | | Blank | M6x1.0 | 2.125ALSS-FMNRB-M | CFBI-0212-24 |
| | | 0.750 | 0.265 | 2.125ALSS-FMNR.75 | CFBI-0212-01 |
| | | 0.750 | .250-28 | 2.125ALSS-FMNR.75-US | CFBI-0212-11 |
| | | 0.750 | M6x1.0 | 2.125ALSS-FMNR.75-M | CFBI-0212-21 |

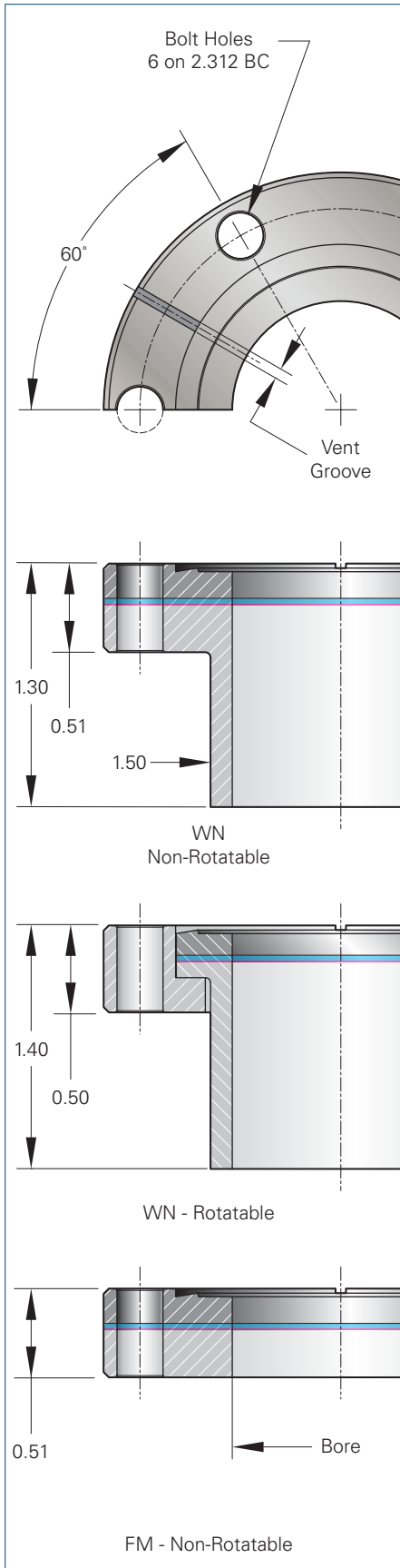
| 2-1/8 CF | | HW Flange Mounting Hardware | |
|----------|-------------|-----------------------------|--|
| 54mm | Description | Part No. | |

| | | | |
|--------------|---|--------------|--|
| Gaskets | Copper / 1.00 ID / 10 | CFHW-0212-01 | |
| | Viton® / 1.00 ID / 5 | CFHW-0212-02 | |
| Bolts Inch | .250-28 / Clearance / Nuts / Washers / 25 | CFHW-0212-10 | |
| | .250-28 / Tapped / Washers / 25 | CFHW-0212-11 | |
| Bolts Metric | M6x1.0 / Clearance / Nuts / Washers / 25 | CFHW-0212-20 | |
| | M6x1.0 / Tapped / Washers / 25 | CFHW-0212-21 | |

Aluminum gaskets are available on request, please call our sales department for more information



2.75" Atlas CF Flange



| 2-3/4 CF | | WN Weld-Neck Flange | | |
|--------------|------|---------------------|-----------------|----------|
| 70mm DN40 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | |
|---------------|-------|---------|----------------------|--------------|
| Non-Rotatable | Blank | 0.265 | 2.75ALSS-WNNRB | CFBI-0275-05 |
| | Blank | .250-28 | 2.75ALSS-WNNRB-US | CFBI-0275-15 |
| | Blank | M6x1.0 | 2.75ALSS-WNNRB-M | CFBI-0275-25 |
| | 1.250 | 0.265 | 2.75ALSS-WNNR1.25 | CFBI-0275-02 |
| | 1.250 | .250-28 | 2.75ALSS-WNNR1.25-US | CFBI-0275-12 |
| | 1.250 | M6x1.0 | 2.75ALSS-WNNR1.25-M | CFBI-0275-22 |

| | | | | |
|-----------|-------|---------|---------------------|--------------|
| Rotatable | Blank | 0.265 | 2.75ALSS-WNRB | CFBI-0275-06 |
| | Blank | .250-28 | 2.75ALSS-WNRB-US | CFBI-0275-16 |
| | Blank | M6x1.0 | 2.75ALSS-WNRB-M | CFBI-0275-26 |
| | 1.250 | 0.265 | 2.75ALSS-WNR1.25 | CFBI-0275-03 |
| | 1.250 | .250-28 | 2.75ALSS-WNR1.25-US | CFBI-0275-13 |
| | 1.250 | M6x1.0 | 2.75ALSS-WNR1.25-M | CFBI-0275-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 2-3/4 CF | | FM Flush-Mount Flange | | |
|--------------|------|-----------------------|-----------------|----------|
| 70mm DN40 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | |
|---------------|-------|---------|---------------------|--------------|
| Non-Rotatable | Blank | 0.265 | 2.75ALSS-FMNRB | CFBI-0275-04 |
| | Blank | .250-28 | 2.75ALSS-FMNRB-US | CFBI-0275-14 |
| | Blank | M6x1.0 | 2.75ALSS-FMNRB-M | CFBI-0275-24 |
| | 1.500 | 0.265 | 2.75ALSS-FMNR1.5 | CFBI-0275-01 |
| | 1.500 | .250-28 | 2.75ALSS-FMNR1.5-US | CFBI-0275-11 |
| | 1.500 | M6x1.0 | 2.75ALSS-FMNR1.5-M | CFBI-0275-21 |

| 2-3/4 CF | | HW Flange Mounting Hardware | |
|--------------|-------------|-----------------------------|--|
| 70mm DN40 CF | Description | Part No. | |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 1.45 ID / 10 | CFHW-0275-01 |
| | Viton® / 1.68 ID / 5 | CFHW-0275-02 |
| Bolts Inch | .250-28 / Clearance / Nuts / Washers / 10 | CFHW-0275-10 |
| | .250-28 / Tapped / Washers / 10 | CFHW-0275-11 |
| Bolts Metric | M6x1.0 / Clearance / Nuts / Washers / 10 | CFHW-0275-20 |
| | M6x1.0 / Tapped / Washers / 10 | CFHW-0275-21 |

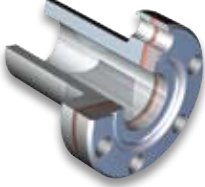
Aluminum gaskets are available on request, please call our sales department for more information

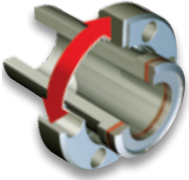
3.37" Atlas CF Flange / 87mm



3.37" Atlas CF Flange


| 3-3/8 CF | | WN Weld-Neck Flange | | | |
|----------|------|---------------------|-----------------|----------|--|
| 87mm | Bore | Bolt Holes | Model Reference | Part No. | |

| | | | | | |
|---|---------------|-------|---------|-----------------------|--------------|
|  | Non-Rotatable | Blank | 0.332 | 3.375ALSS-WNNRB | CFBI-0337-05 |
| | | Blank | .312-24 | 3.375ALSS-WNNRB-US | CFBI-0337-15 |
| | | Blank | M8x1.25 | 3.375ALSS-WNNRB-M | CFBI-0337-25 |
| | | 1.750 | 0.332 | 3.375ALSS-WNNR1.75 | CFBI-0337-02 |
| | | 1.750 | .312-24 | 3.375ALSS-WNNR1.75-US | CFBI-0337-12 |
| | | 1.750 | M8x1.25 | 3.375ALSS-WNNR1.75-M | CFBI-0337-22 |

| | | | | | |
|--|-----------|-------|---------|-----------------------|--------------|
|  | Rotatable | Blank | 0.332 | 3.375ALSS-WNNRB | CFBI-0337-06 |
| | | Blank | .312-24 | 3.375ALSS-WNNRB-US | CFBI-0337-16 |
| | | Blank | M8x1.25 | 3.375ALSS-WNNRB-M | CFBI-0337-26 |
| | | 1.750 | 0.332 | 3.375ALSS-WNNR1.75 | CFBI-0337-03 |
| | | 1.750 | .312-24 | 3.375ALSS-WNNR1.75-US | CFBI-0337-13 |
| | | 1.750 | M8x1.25 | 3.375ALSS-WNNR1.75-M | CFBI-0337-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

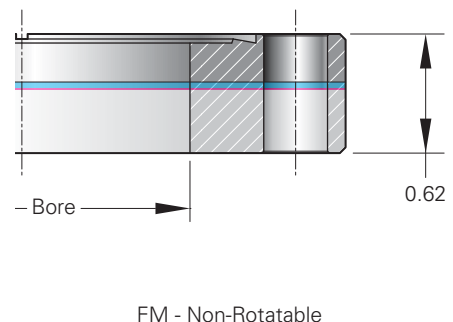
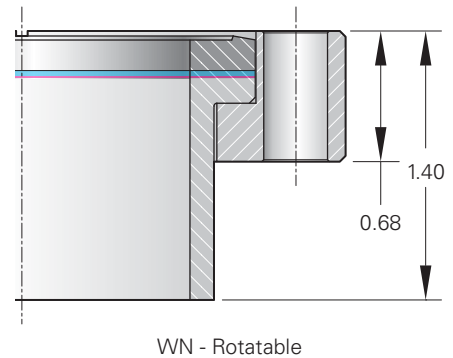
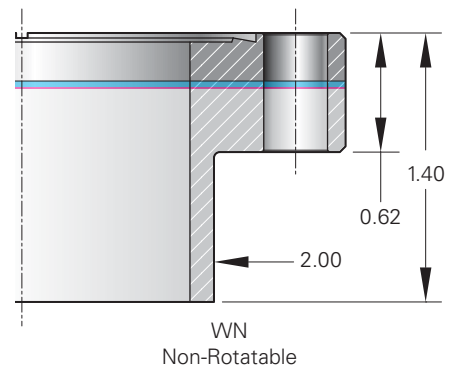
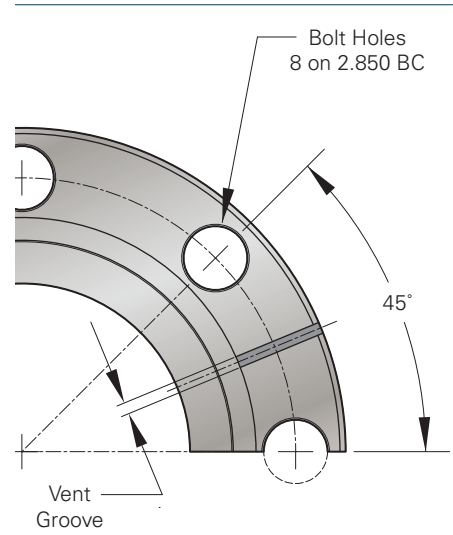
| 3-3/8 CF | | FM Flush-Mount Flange | | | |
|----------|------|-----------------------|-----------------|----------|--|
| 87mm | Bore | Bolt Holes | Model Reference | Part No. | |

| | | | | | |
|---|---------------|-------|---------|-----------------------|--------------|
|  | Non-Rotatable | Blank | 0.332 | 3.375ALSS-FMNRB | CFBI-0337-04 |
| | | Blank | .312-24 | 3.375ALSS-FMNRB-US | CFBI-0337-14 |
| | | Blank | M8x1.25 | 3.375ALSS-FMNRB-M | CFBI-0337-24 |
| | | 1.750 | 0.332 | 3.375ALSS-FMNR1.75 | CFBI-0337-01 |
| | | 1.750 | .312-24 | 3.375ALSS-FMNR1.75-US | CFBI-0337-11 |
| | | 1.750 | M8x1.25 | 3.375ALSS-FMNR1.75-M | CFBI-0337-21 |

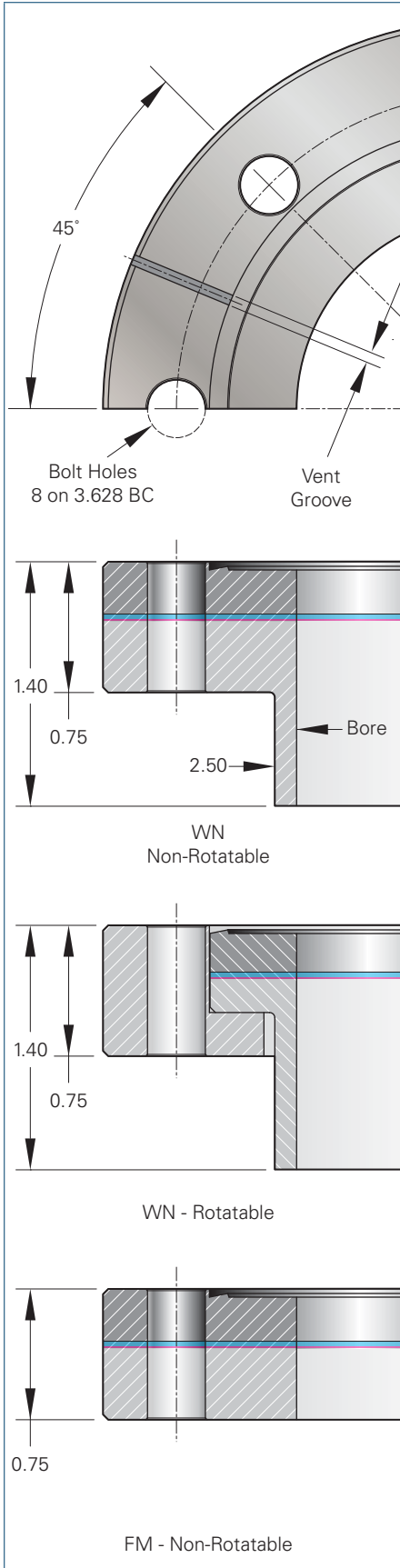
| 3-3/8 CF | | HW Flange Mounting Hardware | |
|----------|-------------|-----------------------------|--|
| 87mm | Description | Part No. | |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 2.01 ID / 10 | CFHW-0337-01 |
| | Viton® / 2.19 ID / 1 | CFHW-0337-02 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-0337-10 |
| | .312-24 / Tapped / Washers / 25 | CFHW-0337-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-0337-20 |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-0337-21 |

Aluminum gaskets are available on request, please call our sales department for more information



4.50" Atlas CF Flange



| 4-1/2 CF | | WN Weld-Neck Flange | | |
|---------------|------|---------------------|-----------------|----------|
| 114mm DN63 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|-------|---------|----------------------|--------------|
| | Non-Rotatable | Blank | 0.332 | 4.50ALSS-WNNRB | CFBI-0450-05 |
| | | Blank | .312-24 | 4.50ALSS-WNNRB-US | CFBI-0450-15 |
| | | Blank | M8x1.25 | 4.50ALSS-WNNRB-M | CFBI-0450-25 |
| | | 2.250 | 0.332 | 4.50ALSS-WNNR2.25 | CFBI-0450-02 |
| | | 2.250 | .312-24 | 4.50ALSS-WNNR2.25-US | CFBI-0450-12 |
| | | 2.250 | M8x1.25 | 4.50ALSS-WNNR2.25-M | CFBI-0450-22 |

| | | | | | |
|--|-----------|-------|---------|---------------------|--------------|
| | Rotatable | Blank | 0.332 | 4.50ALSS-WNRB | CFBI-0450-06 |
| | | Blank | .312-24 | 4.50ALSS-WNRB-US | CFBI-0450-16 |
| | | Blank | M8x1.25 | 4.50ALSS-WNRB-M | CFBI-0450-26 |
| | | 2.250 | 0.332 | 4.50ALSS-WNR2.25 | CFBI-0450-03 |
| | | 2.250 | .312-24 | 4.50ALSS-WNR2.25-US | CFBI-0450-13 |
| | | 2.250 | M8x1.25 | 4.50ALSS-WNR2.25-M | CFBI-0450-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 4-1/2 CF | | FM Flush-Mount Flange | | |
|---------------|------|-----------------------|-----------------|----------|
| 114mm DN63 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|-------|---------|---------------------|--------------|
| | Non-Rotatable | Blank | 0.332 | 4.50ALSS-FMNRB | CFBI-0450-04 |
| | | Blank | .312-24 | 4.50ALSS-FMNRB-US | CFBI-0450-14 |
| | | Blank | M8x1.25 | 4.50ALSS-FMNRB-M | CFBI-0450-24 |
| | | 2.500 | 0.332 | 4.50ALSS-FMNR2.5 | CFBI-0450-01 |
| | | 2.500 | .312-24 | 4.50ALSS-FMNR2.5-US | CFBI-0450-11 |
| | | 2.500 | M8x1.25 | 4.50ALSS-FMNR2.5-M | CFBI-0450-21 |

| 4-1/2 CF | | HW Flange Mounting Hardware | |
|---------------|-------------|-----------------------------|--|
| 114mm DN63 CF | Description | Part No. | |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 2.50 ID / 10 | CFHW-0450-01 |
| | Viton® / 3.02 ID / 1 | CFHW-0450-02 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-0450-10 |
| | .312-24 / Tapped / Washers / 25 | CFHW-0450-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-0450-20 |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-0450-21 |

Aluminum gaskets are available on request, please call our sales department for more information

4.625" Atlas CF Flange / 117mm

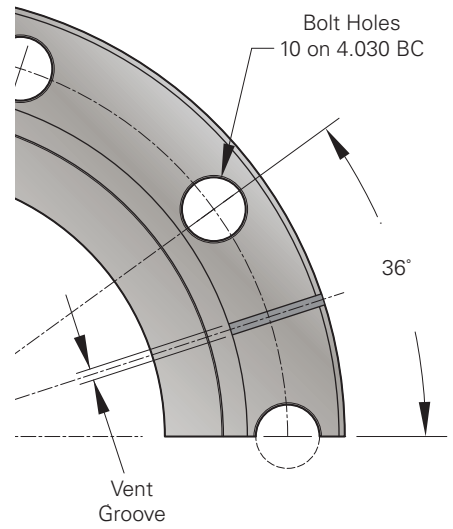


| 4-5/8 CF | WN Weld-Neck Flange | | | |
|----------|---------------------|------------|-----------------|----------|
| 117mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|-------|---------|-----------------------|--------------|
| | Non-Rotatable | Blank | 0.332 | 4.625ALSS-WNNRB | CFBI-0462-05 |
| | | Blank | .312-24 | 4.625ALSS-WNNRB-US | CFBI-0462-15 |
| | | Blank | M8x1.25 | 4.625ALSS-WNNRB-M | CFBI-0462-25 |
| | | 2.750 | 0.332 | 4.625ALSS-WNNR2.75 | CFBI-0462-02 |
| | | 2.750 | .312-24 | 4.625ALSS-WNNR2.75-US | CFBI-0462-12 |
| | | 2.750 | M8x1.25 | 4.625ALSS-WNNR2.75-M | CFBI-0462-22 |

| | | | | | |
|--|-----------|-------|---------|----------------------|--------------|
| | Rotatable | Blank | 0.332 | 4.625ALSS-WNRB | CFBI-0462-06 |
| | | Blank | .312-24 | 4.625ALSS-WNRB-US | CFBI-0462-16 |
| | | Blank | M8x1.25 | 4.625ALSS-WNRB-M | CFBI-0462-26 |
| | | 2.750 | 0.332 | 4.625ALSS-WNR2.75 | CFBI-0462-03 |
| | | 2.750 | .312-24 | 4.625ALSS-WNR2.75-US | CFBI-0462-13 |
| | | 2.750 | M8x1.25 | 4.625ALSS-WNR2.75-M | CFBI-0462-23 |

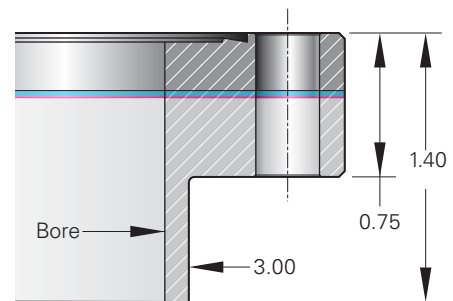
Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional



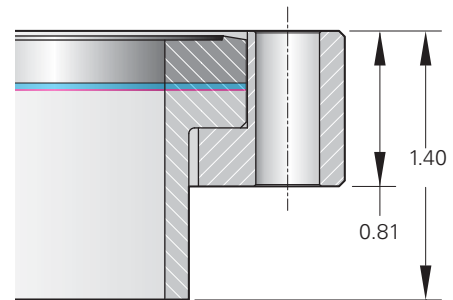
4.625" Atlas CF Flange

| 4-5/8 CF | FM Flush-Mount Flange | | | |
|----------|-----------------------|------------|-----------------|----------|
| 117mm | Bore | Bolt Holes | Model Reference | Part No. |

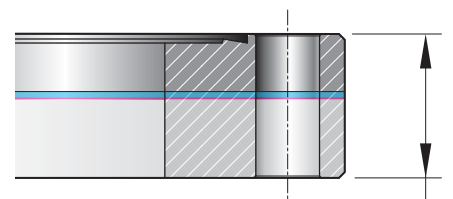
| | | | | | |
|--|---------------|-------|---------|-----------------------|--------------|
| | Non-Rotatable | Blank | 0.332 | 4.625ALSS-FMNRB | CFBI-0462-04 |
| | | Blank | .312-24 | 4.625ALSS-FMNRB-US | CFBI-0462-14 |
| | | Blank | M8x1.25 | 4.625ALSS-FMNRB-M | CFBI-0462-24 |
| | | 2.750 | 0.332 | 4.625ALSS-FMNR2.75 | CFBI-0462-01 |
| | | 2.750 | .312-24 | 4.625ALSS-FMNR2.75-US | CFBI-0462-11 |
| | | 2.750 | M8x1.25 | 4.625ALSS-FMNR2.75-M | CFBI-0462-21 |



WN Non-Rotatable



WN - Rotatable



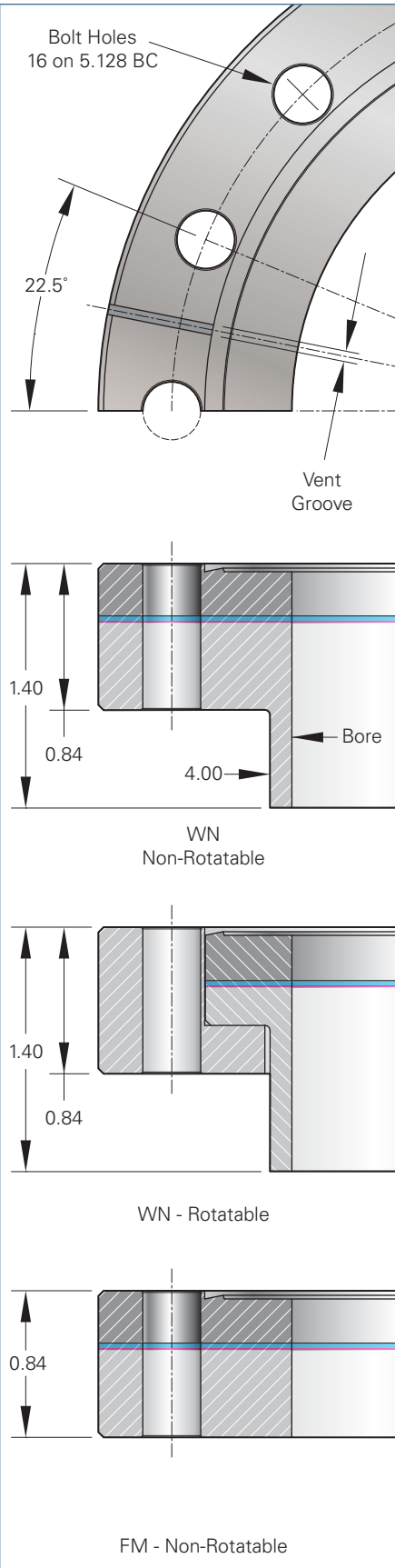
FM - Non-Rotatable

| 4-5/8 CF | HW Flange Mounting Hardware | |
|----------|-----------------------------|----------|
| 117mm | Description | Part No. |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 3.01 ID / 10 | CFHW-0462-01 |
| | Viton® / 3.36 ID / 1 | CFHW-0462-02 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-0462-10 |
| | .312-24 / Tapped / Washers / 25 | CFHW-0462-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-0462-20 |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-0462-21 |

Aluminum gaskets are available on request, please call our sales department for more information

6.00" Atlas CF Flange



| 6 CF 152mm DN100 CF | | WN Weld-Neck Flange | | |
|------------------------|------|---------------------|-----------------|----------|
| | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | |
|---------------|-------|---------|----------------------|--------------|
| Non-Rotatable | Blank | 0.332 | 6.00ALSS-WNNRB | CFBI-0600-05 |
| | Blank | .312-24 | 6.00ALSS-WNNRB-US | CFBI-0600-15 |
| | Blank | M8x1.25 | 6.00ALSS-WNNRB-M | CFBI-0600-25 |
| | 3.750 | 0.332 | 6.00ALSS-WNNR3.75 | CFBI-0600-02 |
| | 3.750 | .312-24 | 6.00ALSS-WNNR3.75-US | CFBI-0600-12 |
| | 3.750 | M8x1.25 | 6.00ALSS-WNNR3.75-M | CFBI-0600-22 |

| | | | | |
|-----------|-------|---------|---------------------|--------------|
| Rotatable | Blank | 0.332 | 6.00ALSS-WNRB | CFBI-0600-06 |
| | Blank | .312-24 | 6.00ALSS-WNRB-US | CFBI-0600-16 |
| | Blank | M8x1.25 | 6.00ALSS-WNRB-M | CFBI-0600-26 |
| | 3.750 | 0.332 | 6.00ALSS-WNR3.75 | CFBI-0600-03 |
| | 3.750 | .312-24 | 6.00ALSS-WNR3.75-US | CFBI-0600-13 |
| | 3.750 | M8x1.25 | 6.00ALSS-WNR3.75-M | CFBI-0600-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 6 CF 152mm DN100 CF | | FM Flush-Mount Flange | | |
|------------------------|------|-----------------------|-----------------|----------|
| | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | |
|---------------|-------|---------|----------------------|--------------|
| Non-Rotatable | Blank | 0.332 | 6.00ALSS-FMNRB | CFBI-0600-04 |
| | Blank | .312-24 | 6.00ALSS-FMNRB-US | CFBI-0600-14 |
| | Blank | M8x1.25 | 6.00ALSS-FMNRB-M | CFBI-0600-24 |
| | 3.750 | 0.332 | 6.00ALSS-FMNR3.75 | CFBI-0600-01 |
| | 3.750 | .312-24 | 6.00ALSS-FMNR3.75-US | CFBI-0600-11 |
| | 3.750 | M8x1.25 | 6.00ALSS-FMNR3.75-M | CFBI-0600-21 |

| 6 CF 152mm DN100 CF | | HW Flange Mounting Hardware | |
|------------------------|-------------|-----------------------------|----------|
| | Description | | Part No. |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 4.01 ID / 10 | CFHW-0600-01 |
| | Viton® / 4.51 ID / 1 | CFHW-0600-02 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-0600-10 |
| | .312-24 / Tapped / Washers / 25 | CFHW-0600-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-0600-20 |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-0600-21 |

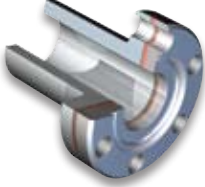
Aluminum gaskets are available on request, please call our sales department for more information

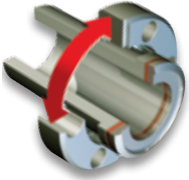
6.75" Atlas CF Flange / 171mm



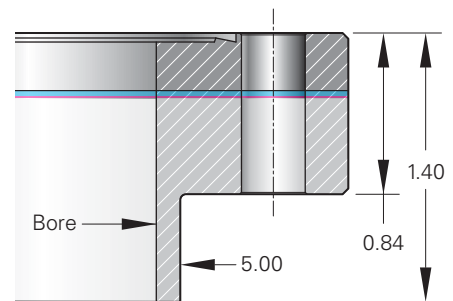
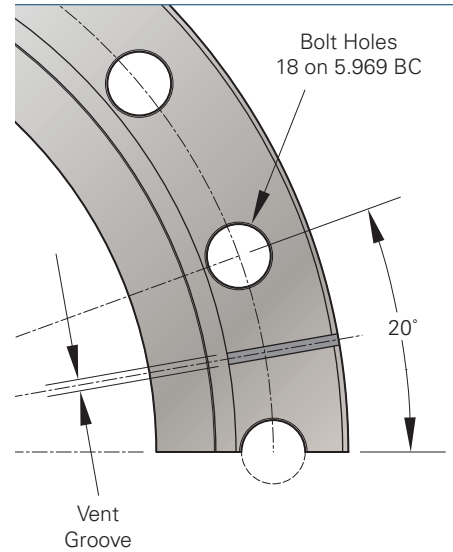
6.75" Atlas CF Flange

| 6-3/4 CF | WN Weld-Neck Flange | | | |
|----------|---------------------|------------|-----------------|----------|
| 171mm | Bore | Bolt Holes | Model Reference | Part No. |

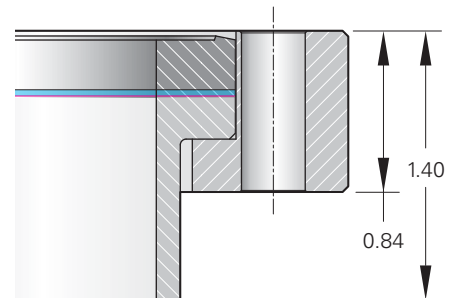
| | | | | | |
|---|---------------|-------|---------|----------------------|--------------|
|  | Non-Rotatable | Blank | 0.332 | 6.75ALSS-WNNRB | CFBI-0675-05 |
| | | Blank | .312-24 | 6.75ALSS-WNNRB-US | CFBI-0675-15 |
| | | Blank | M8x1.25 | 6.75ALSS-WNNRB-M | CFBI-0675-25 |
| | | 4.870 | 0.332 | 6.75ALSS-WNNR4.87 | CFBI-0675-02 |
| | | 4.870 | .312-24 | 6.75ALSS-WNNR4.87-US | CFBI-0675-12 |
| | | 4.870 | M8x1.25 | 6.75ALSS-WNNR4.87-M | CFBI-0675-22 |

| | | | | | |
|--|-----------|-------|---------|---------------------|--------------|
|  | Rotatable | Blank | 0.332 | 6.75ALSS-WNRB | CFBI-0675-06 |
| | | Blank | .312-24 | 6.75ALSS-WNRB-US | CFBI-0675-16 |
| | | Blank | M8x1.25 | 6.75ALSS-WNRB-M | CFBI-0675-26 |
| | | 4.870 | 0.332 | 6.75ALSS-WNR4.87 | CFBI-0675-03 |
| | | 4.870 | .312-24 | 6.75ALSS-WNR4.87-US | CFBI-0675-13 |
| | | 4.870 | M8x1.25 | 6.75ALSS-WNR4.87-M | CFBI-0675-23 |

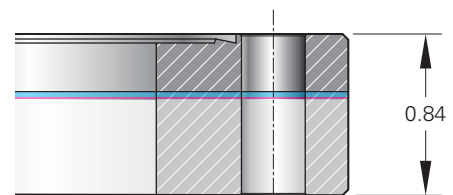
Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional



WN Non-Rotatable




WN - Rotatable



FM - Non-Rotatable

| 6-3/4 CF | FM Flush-Mount Flange | | | |
|----------|-----------------------|------------|-----------------|----------|
| 171mm | Bore | Bolt Holes | Model Reference | Part No. |

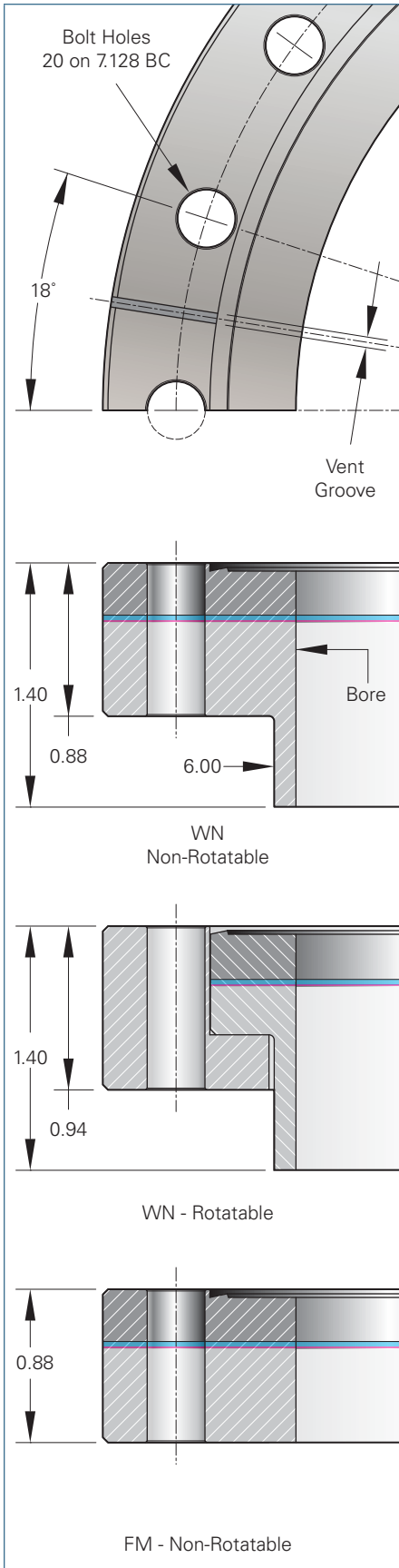
| | | | | | |
|---|---------------|-------|---------|----------------------|--------------|
|  | Non-Rotatable | Blank | 0.332 | 6.75ALSS-FMNRB | CFBI-0675-04 |
| | | Blank | .312-24 | 6.75ALSS-FMNRB-US | CFBI-0675-14 |
| | | Blank | M8x1.25 | 6.75ALSS-FMNRB-M | CFBI-0675-24 |
| | | 4.870 | 0.332 | 6.75ALSS-FMNR4.87 | CFBI-0675-01 |
| | | 4.870 | .312-24 | 6.75ALSS-FMNR4.87-US | CFBI-0675-11 |
| | | 4.870 | M8x1.25 | 6.75ALSS-FMNR4.87-M | CFBI-0675-21 |

| 6-3/4 CF | HW Flange Mounting Hardware | |
|----------|-----------------------------|----------|
| 171mm | Description | Part No. |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 5.01 ID / 10 | CFHW-0675-01 |
| | Viton® / 5.34 ID / 1 | CFHW-0675-02 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-0675-10 |
| | .312-24 / Tapped / Washers / 25 | CFHW-0675-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-0675-20 |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-0675-21 |

Aluminum gaskets are available on request, please call our sales department for more information

8.00" Atlas CF Flange



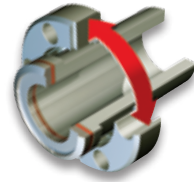
| 8 CF | WN Weld-Neck Flange | | | |
|----------------|---------------------|------------|-----------------|----------|
| 203mm DN160 CF | Bore | Bolt Holes | Model Reference | Part No. |

Non-Rotatable



| | | | |
|-------|---------|----------------------|--------------|
| Blank | 0.332 | 8.00ALSS-WNNRB | CFBI-0800-05 |
| Blank | .312-24 | 8.00ALSS-WNNRB-US | CFBI-0800-15 |
| Blank | M8x1.25 | 8.00ALSS-WNNRB-M | CFBI-0800-25 |
| 5.750 | 0.332 | 8.00ALSS-WNNR5.75 | CFBI-0800-02 |
| 5.750 | .312-24 | 8.00ALSS-WNNR5.75-US | CFBI-0800-12 |
| 5.750 | M8x1.25 | 8.00ALSS-WNNR5.75-M | CFBI-0800-22 |

Rotatable

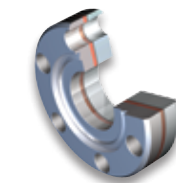


| | | | |
|-------|---------|---------------------|--------------|
| Blank | 0.332 | 8.00ALSS-WNRB | CFBI-0800-06 |
| Blank | .312-24 | 8.00ALSS-WNRB-US | CFBI-0800-16 |
| Blank | M8x1.25 | 8.00ALSS-WNRB-M | CFBI-0800-26 |
| 5.750 | 0.332 | 8.00ALSS-WNR5.75 | CFBI-0800-03 |
| 5.750 | .312-24 | 8.00ALSS-WNR5.75-US | CFBI-0800-13 |
| 5.750 | M8x1.25 | 8.00ALSS-WNR5.75-M | CFBI-0800-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 8 CF | FM Flush-Mount Flange | | | |
|----------------|-----------------------|------------|-----------------|----------|
| 203mm DN160 CF | Bore | Bolt Holes | Model Reference | Part No. |

Non-Rotatable



| | | | |
|-------|---------|----------------------|--------------|
| Blank | 0.332 | 8.00ALSS-FMNRB | CFBI-0800-04 |
| Blank | .312-24 | 8.00ALSS-FMNRB-US | CFBI-0800-14 |
| Blank | M8x1.25 | 8.00ALSS-FMNRB-M | CFBI-0800-24 |
| 5.750 | 0.332 | 8.00ALSS-FMNR5.75 | CFBI-0800-01 |
| 5.750 | .312-24 | 8.00ALSS-FMNR5.75-US | CFBI-0800-11 |
| 5.750 | M8x1.25 | 8.00ALSS-FMNR5.75-M | CFBI-0800-21 |

| 8 CF | HW Flange Mounting Hardware | | |
|----------------|-----------------------------|--|----------|
| 203mm DN160 CF | Description | | Part No. |


| | | |
|--------------|---|--------------|
| Gaskets | Copper / 6.01 ID / 10 | CFHW-0800-01 |
| | Viton® / 6.51 ID / 1 | CFHW-0800-02 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-0800-10 |
| | .312-24 / Tapped / Washers / 25 | CFHW-0800-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-0800-20 |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-0800-21 |

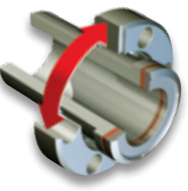
Aluminum gaskets are available on request, please call our sales department for more information

10.0" Atlas CF Flange / 254mm DN200 CF




| 10 CF | | WN Weld-Neck Flange | | |
|----------------|------|---------------------|-----------------|----------|
| 254mm DN200 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|---|---------------|-------|---------|-----------------------|--------------|
|  | Non-Rotatable | Blank | 0.332 | 10.00ALSS-WNNRB | CFBI-1000-05 |
| | | Blank | .312-24 | 10.00ALSS-WNNRB-US | CFBI-1000-15 |
| | | Blank | M8x1.25 | 10.00ALSS-WNNRB-M | CFBI-1000-25 |
| | | 7.750 | 0.332 | 10.00ALSS-WNNR7.75 | CFBI-1000-02 |
| | | 7.750 | .312-24 | 10.00ALSS-WNNR7.75-US | CFBI-1000-12 |
| | | 7.750 | M8x1.25 | 10.00ALSS-WNNR7.75-M | CFBI-1000-22 |

| | | | | | |
|--|-----------|-------|---------|-----------------------|--------------|
|  | Rotatable | Blank | 0.332 | 10.00ALSS-WNNRB | CFBI-1000-06 |
| | | Blank | .312-24 | 10.00ALSS-WNNRB-US | CFBI-1000-16 |
| | | Blank | M8x1.25 | 10.00ALSS-WNNRB-M | CFBI-1000-26 |
| | | 7.750 | 0.332 | 10.00ALSS-WNNR7.75 | CFBI-1000-03 |
| | | 7.750 | .312-24 | 10.00ALSS-WNNR7.75-US | CFBI-1000-13 |
| | | 7.750 | M8x1.25 | 10.00ALSS-WNNR7.75-M | CFBI-1000-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

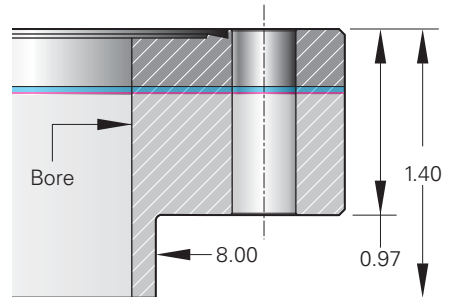
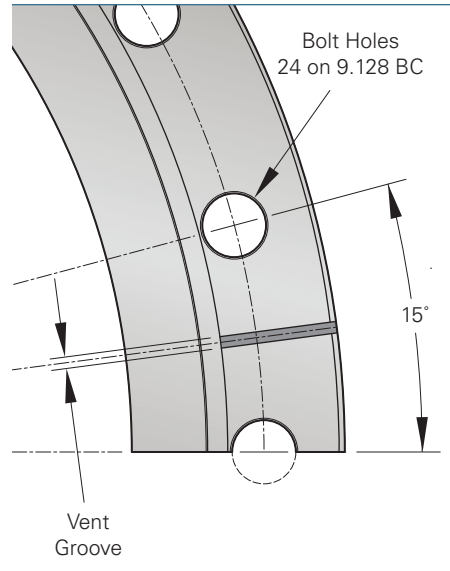
| 10 CF | | FM Flush-Mount Flange | | |
|----------------|------|-----------------------|-----------------|----------|
| 254mm DN200 CF | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|---|---------------|-------|---------|-----------------------|--------------|
|  | Non-Rotatable | Blank | 0.332 | 10.00ALSS-FMNRB | CFBI-1000-04 |
| | | Blank | .312-24 | 10.00ALSS-FMNRB-US | CFBI-1000-14 |
| | | Blank | M8x1.25 | 10.00ALSS-FMNRB-M | CFBI-1000-24 |
| | | 7.750 | 0.332 | 10.00ALSS-FMNR7.75 | CFBI-1000-01 |
| | | 7.750 | .312-24 | 10.00ALSS-FMNR7.75-US | CFBI-1000-11 |
| | | 7.750 | M8x1.25 | 10.00ALSS-FMNR7.75-M | CFBI-1000-21 |

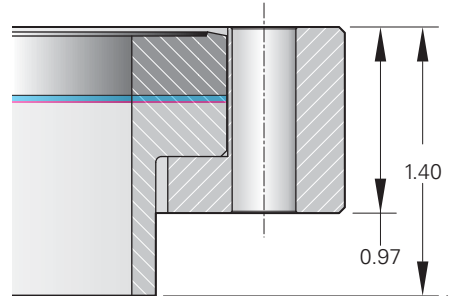
| 10 CF | | HW Flange Mounting Hardware | |
|----------------|-------------|-----------------------------|--|
| 254mm DN200 CF | Description | Part No. | |

| | | | |
|--------------|---|--------------|--|
| Gaskets | Copper / 8.00 ID / 10 | CFHW-1000-01 | |
| | Viton® / 8.47 ID / 1 | CFHW-1000-02 | |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 25 | CFHW-1000-10 | |
| | .312-24 / Tapped / Washers / 25 | CFHW-1000-11 | |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 25 | CFHW-1000-20 | |
| | M8x1.25 / Tapped / Washers / 25 | CFHW-1000-21 | |

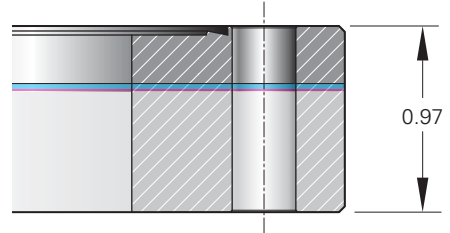
Aluminum gaskets are available on request, please call our sales department for more information



WN Non-Rotatable



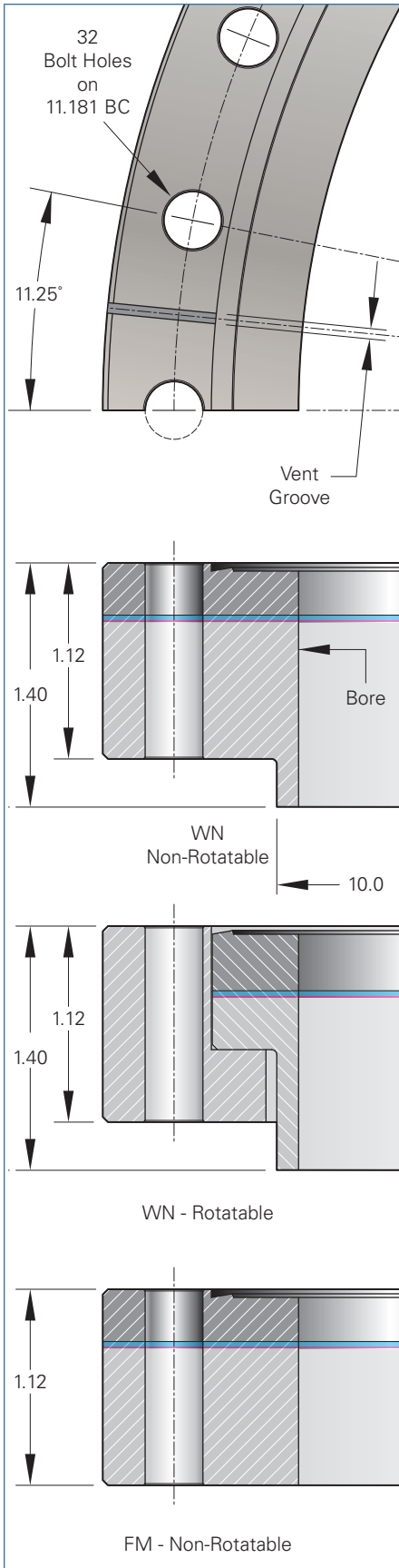
WN - Rotatable



FM - Non-Rotatable

10.0" Atlas CF Flange

12.0" Atlas CF Flange

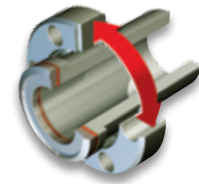


| 12 CF 305mm | WN Weld-Neck Flange | | | Part No. |
|----------------|---------------------|------------|-----------------|----------|
| | Bore | Bolt Holes | Model Reference | |

| Non-Rotatable | Bore | Bolt Holes | Model Reference | Part No. |
|---------------|-------|------------|-----------------------|--------------|
| | Blank | 0.332 | 12.00ALSS-WNNRB | CFBI-1200-05 |
| | Blank | .312-24 | 12.00ALSS-WNNRB-US | CFBI-1200-15 |
| | Blank | M8x1.25 | 12.00ALSS-WNNRB-M | CFBI-1200-25 |
| | 9.750 | 0.332 | 12.00ALSS-WNNR9.75 | CFBI-1200-02 |
| | 9.750 | .312-24 | 12.00ALSS-WNNR9.75-US | CFBI-1200-12 |
| | 9.750 | M8x1.25 | 12.00ALSS-WNNR9.75-M | CFBI-1200-22 |



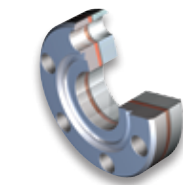
| Rotatable | Bore | Bolt Holes | Model Reference | Part No. |
|-----------|-------|------------|----------------------|--------------|
| | Blank | 0.332 | 12.00ALSS-WNRB | CFBI-1200-06 |
| | Blank | .312-24 | 12.00ALSS-WNRB-US | CFBI-1200-16 |
| | Blank | M8x1.25 | 12.00ALSS-WNRB-M | CFBI-1200-26 |
| | 9.750 | 0.332 | 12.00ALSS-WNR9.75 | CFBI-1200-03 |
| | 9.750 | .312-24 | 12.00ALSS-WNR9.75-US | CFBI-1200-13 |
| | 9.750 | M8x1.25 | 12.00ALSS-WNR9.75-M | CFBI-1200-23 |



Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 12 CF 305mm | FM Flush-Mount Flange | | | Part No. |
|----------------|-----------------------|------------|-----------------|----------|
| | Bore | Bolt Holes | Model Reference | |

| Non-Rotatable | Bore | Bolt Holes | Model Reference | Part No. |
|---------------|-------|------------|-----------------------|--------------|
| | Blank | 0.332 | 12.00ALSS-FMNRB | CFBI-1200-04 |
| | Blank | .312-24 | 12.00ALSS-FMNRB-US | CFBI-1200-14 |
| | Blank | M8x1.25 | 12.00ALSS-FMNRB-M | CFBI-1200-24 |
| | 9.750 | 0.332 | 12.00ALSS-FMNR9.75 | CFBI-1200-01 |
| | 9.750 | .312-24 | 12.00ALSS-FMNR9.75-US | CFBI-1200-11 |
| | 9.750 | M8x1.25 | 12.00ALSS-FMNR9.75-M | CFBI-1200-21 |



| 12 CF 305mm | HW Flange Mounting Hardware | | Part No. |
|----------------|-----------------------------|--|----------|
| | Description | | |


| | | |
|--------------|---|--------------|
| Gaskets | Copper / 10.00 ID / 1 | CFHW-1200-01 |
| | Copper / 10.00 ID / 1 | CFHW-1200-03 |
| Bolts Inch | .312-24 / Clearance / Nuts / Washers / 32 | CFHW-1200-10 |
| | .312-24 / Tapped / Washers / 32 | CFHW-1200-11 |
| Bolts Metric | M8x1.25 / Clearance / Nuts / Washers / 32 | CFHW-1200-20 |
| | M8x1.25 / Tapped / Washers / 32 | CFHW-1200-21 |

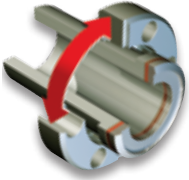
Aluminum gaskets are available on request, please call our sales department for more information

13.25" Atlas CF Flange / 336mm




| 13-1/4 CF | | WN Weld-Neck Flange | | |
|-----------|------|---------------------|-----------------|----------|
| 336mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|---|---------------|--------|---------|-----------------------|--------------|
|  | Non-Rotatable | Blank | 0.390 | 13.25ALSS-WNNRB | CFBI-1325-05 |
| | | Blank | .375-24 | 13.25ALSS-WNNRB-US | CFBI-1325-15 |
| | | Blank | M10x1.5 | 13.25ALSS-WNNRB-M | CFBI-1325-25 |
| | | 10.020 | 0.390 | 13.25ALSS-WNNR10.0 | CFBI-1325-02 |
| | | 10.020 | .375-24 | 13.25ALSS-WNNR10.0-US | CFBI-1325-12 |
| | | 10.020 | M10x1.5 | 13.25ALSS-WNNR10.0-M | CFBI-1325-22 |

| | | | | | |
|--|-----------|--------|---------|-----------------------|--------------|
|  | Rotatable | Blank | 0.390 | 13.25ALSS-WNNRB | CFBI-1325-06 |
| | | Blank | .375-24 | 13.25ALSS-WNNRB-US | CFBI-1325-16 |
| | | Blank | M10x1.5 | 13.25ALSS-WNNRB-M | CFBI-1325-26 |
| | | 10.020 | 0.390 | 13.25ALSS-WNNR10.0 | CFBI-1325-03 |
| | | 10.020 | .375-24 | 13.25ALSS-WNNR10.0-US | CFBI-1325-13 |
| | | 10.020 | M10x1.5 | 13.25ALSS-WNNR10.0-M | CFBI-1325-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

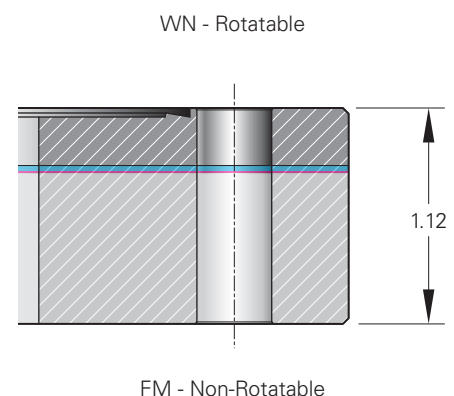
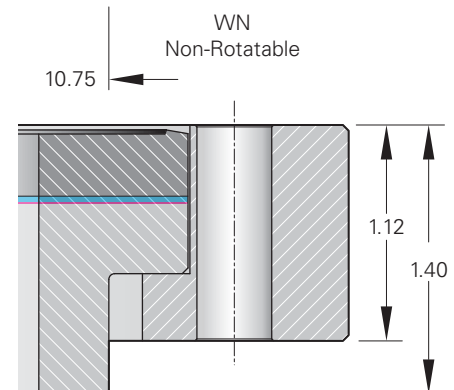
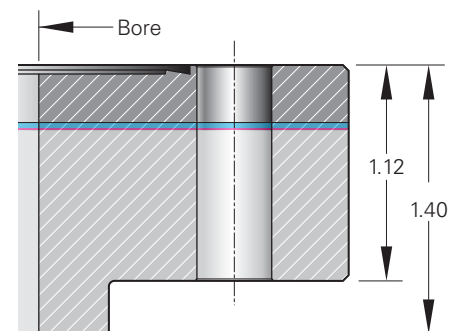
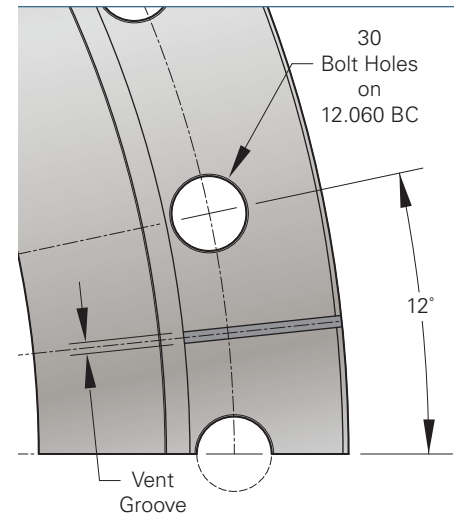
| 13-1/4 CF | | FM Flush-Mount Flange | | |
|-----------|------|-----------------------|-----------------|----------|
| 336mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|---|---------------|--------|---------|-----------------------|--------------|
|  | Non-Rotatable | Blank | 0.390 | 13.25ALSS-FMNRB | CFBI-1325-04 |
| | | Blank | .375-24 | 13.25ALSS-FMNRB-US | CFBI-1325-14 |
| | | Blank | M10x1.5 | 13.25ALSS-FMNRB-M | CFBI-1325-24 |
| | | 10.020 | 0.390 | 13.25ALSS-FMNR10.0 | CFBI-1325-01 |
| | | 10.020 | .375-24 | 13.25ALSS-FMNR10.0-US | CFBI-1325-11 |
| | | 10.020 | M10x1.5 | 13.25ALSS-FMNR10.0-M | CFBI-1325-21 |

| 13-1/4 CF | | HW Flange Mounting Hardware | |
|-----------|-------------|-----------------------------|--|
| 336mm | Description | Part No. | |

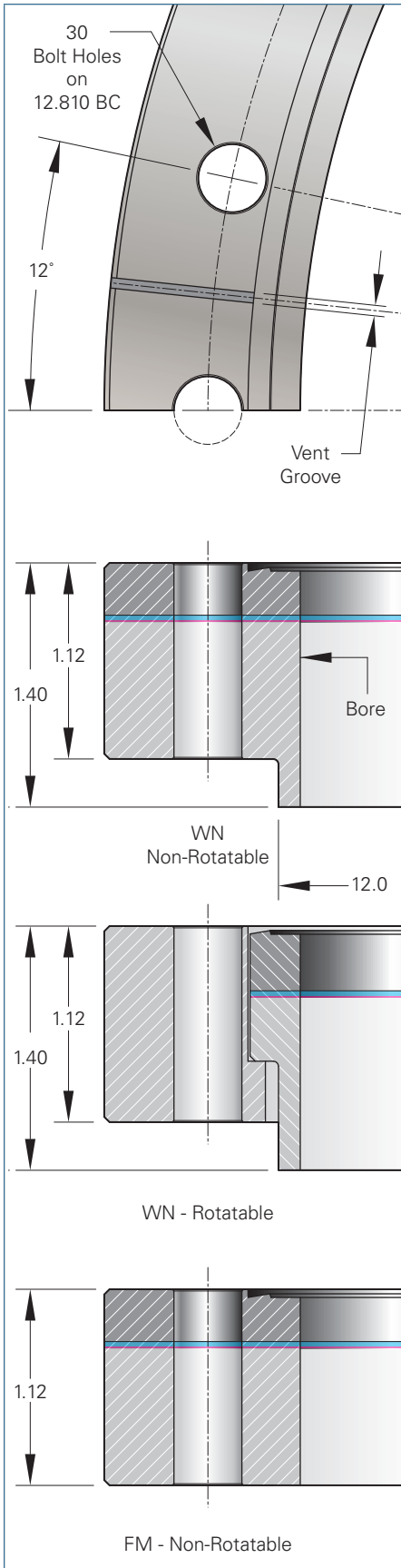
| | | | |
|--------------|---|--------------|--|
| Gaskets | Copper / 10.87 ID / 1 | CFHW-1325-01 | |
| | Viton® / 11.36 ID / 1 | CFHW-1325-02 | |
| Bolts Inch | .375-24 / Clearance / Nuts / Washers / 30 | CFHW-1325-10 | |
| | .375-24 / Tapped / Washers / 30 | CFHW-1325-11 | |
| Bolts Metric | M10x1.5 / Clearance / Nuts / Washers / 30 | CFHW-1325-20 | |
| | M10x1.5 / Tapped / Washers / 30 | CFHW-1325-21 | |

Aluminum gaskets are available on request, please call our sales department for more information



13.25" Atlas CF Flange

14.0" Atlas CF Flange



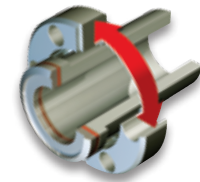
| 14 CF 356mm | WN Weld-Neck Flange | Bore | Bolt Holes | Model Reference | Part No. |
|----------------|---------------------|------|------------|-----------------|----------|
|----------------|---------------------|------|------------|-----------------|----------|

Non-Rotatable



| | | | |
|--------|---------|------------------------|--------------|
| Blank | 0.390 | 14.00ALSS-WNNRB | CFBI-1400-05 |
| Blank | .375-24 | 14.00ALSS-WNNRB-US | CFBI-1400-15 |
| Blank | M10x1.5 | 14.00ALSS-WNNRB-M | CFBI-1400-25 |
| 11.750 | 0.390 | 14.00ALSS-WNNR11.75 | CFBI-1400-02 |
| 11.750 | .375-24 | 14.00ALSS-WNNR11.75-US | CFBI-1400-12 |
| 11.750 | M10x1.5 | 14.00ALSS-WNNR11.75-M | CFBI-1400-22 |

Rotatable

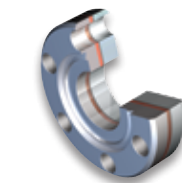


| | | | |
|--------|---------|-----------------------|--------------|
| Blank | 0.390 | 14.00ALSS-WNRB | CFBI-1400-06 |
| Blank | .375-24 | 14.00ALSS-WNRB-US | CFBI-1400-16 |
| Blank | M10x1.5 | 14.00ALSS-WNRB-M | CFBI-1400-26 |
| 11.750 | 0.390 | 14.00ALSS-WNR11.75 | CFBI-1400-03 |
| 11.750 | .375-24 | 14.00ALSS-WNR11.75-US | CFBI-1400-13 |
| 11.750 | M10x1.5 | 14.00ALSS-WNR11.75-M | CFBI-1400-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 14 CF 356mm | FM Flush-Mount Flange | Bore | Bolt Holes | Model Reference | Part No. |
|----------------|-----------------------|------|------------|-----------------|----------|
|----------------|-----------------------|------|------------|-----------------|----------|

Non-Rotatable



| | | | |
|--------|---------|------------------------|--------------|
| Blank | 0.390 | 14.00ALSS-FMNRB | CFBI-1400-04 |
| Blank | .375-24 | 14.00ALSS-FMNRB-US | CFBI-1400-14 |
| Blank | M10x1.5 | 14.00ALSS-FMNRB-M | CFBI-1400-24 |
| 11.750 | 0.390 | 14.00ALSS-FMNR11.75 | CFBI-1400-01 |
| 11.750 | .375-24 | 14.00ALSS-FMNR11.75-US | CFBI-1400-11 |
| 11.750 | M10x1.5 | 14.00ALSS-FMNR11.75-M | CFBI-1400-21 |

| 14 CF 356mm | HW Flange Mounting Hardware | Description | Part No. |
|----------------|-----------------------------|-------------|----------|
|----------------|-----------------------------|-------------|----------|

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 11.52 ID / 1 | CFHW-1400-01 |
| | Viton® / 12.11 ID / 1 | CFHW-1400-02 |
| Bolts Inch | .375-24 / Clearance / Nuts / Washers / 30 | CFHW-1400-10 |
| | .375-24 / Tapped / Washers / 30 | CFHW-1400-11 |
| Bolts Metric | M10x1.5 / Clearance / Nuts / Washers / 30 | CFHW-1400-20 |
| | M10x1.5 / Tapped / Washers / 30 | CFHW-1400-21 |

Aluminum gaskets are available on request, please call our sales department for more information

14.5" Atlas CF Flange / 368mm



| 14-1/2 CF | WN Weld-Neck Flange | | | |
|-----------|---------------------|------------|-----------------|----------|
| 368mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|--------|---------|------------------------|--------------|
| | Non-Rotatable | Blank | 0.390 | 14.50ALSS-WNNRB | CFBI-1450-05 |
| | | Blank | .375-24 | 14.50ALSS-WNNRB-US | CFBI-1450-15 |
| | | Blank | M10x1.5 | 14.50ALSS-WNNRB-M | CFBI-1450-25 |
| | | 11.750 | 0.390 | 14.50ALSS-WNNR11.75 | CFBI-1450-02 |
| | | 11.750 | .375-24 | 14.50ALSS-WNNR11.75-US | CFBI-1450-12 |
| | | 11.750 | M10x1.5 | 14.50ALSS-WNNR11.75-M | CFBI-1450-22 |

| | | | | | |
|--|-----------|--------|---------|------------------------|--------------|
| | Rotatable | Blank | 0.390 | 14.50ALSS-WNNRB | CFBI-1450-06 |
| | | Blank | .375-24 | 14.50ALSS-WNNRB-US | CFBI-1450-16 |
| | | Blank | M10x1.5 | 14.50ALSS-WNNRB-M | CFBI-1450-26 |
| | | 11.750 | 0.390 | 14.50ALSS-WNNR11.75 | CFBI-1450-03 |
| | | 11.750 | .375-24 | 14.50ALSS-WNNR11.75-US | CFBI-1450-13 |
| | | 11.750 | M10x1.5 | 14.50ALSS-WNNR11.75-M | CFBI-1450-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

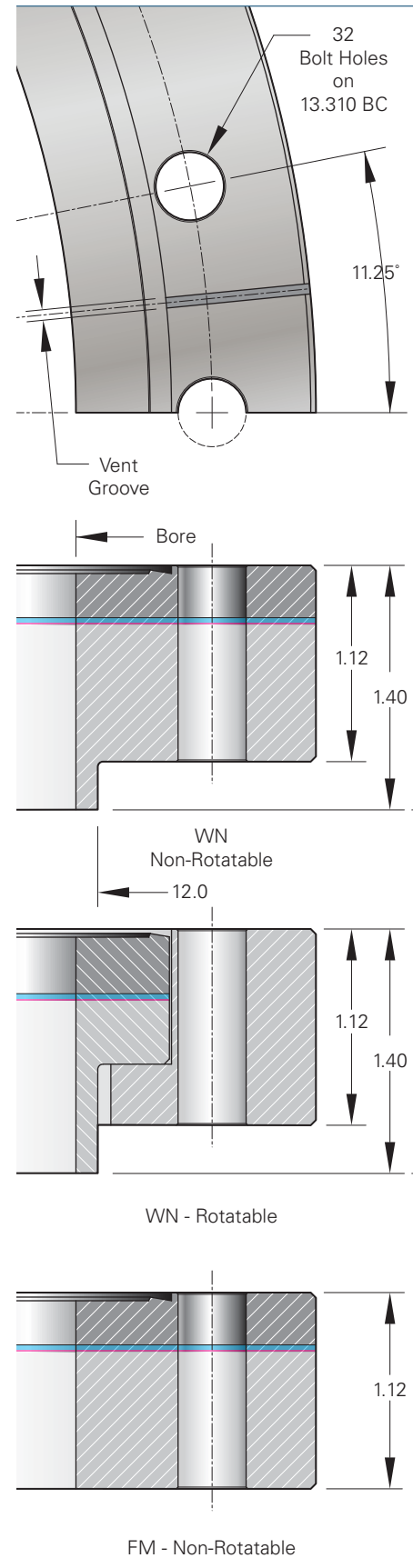
| 14-1/2 CF | FM Flush-Mount Flange | | | |
|-----------|-----------------------|------------|-----------------|----------|
| 368mm | Bore | Bolt Holes | Model Reference | Part No. |

| | | | | | |
|--|---------------|--------|---------|------------------------|--------------|
| | Non-Rotatable | Blank | 0.390 | 14.50ALSS-FMNRB | CFBI-1450-04 |
| | | Blank | .375-24 | 14.50ALSS-FMNRB-US | CFBI-1450-14 |
| | | Blank | M10x1.5 | 14.50ALSS-FMNRB-M | CFBI-1450-24 |
| | | 11.750 | 0.390 | 14.50ALSS-FMNR11.75 | CFBI-1450-01 |
| | | 11.750 | .375-24 | 14.50ALSS-FMNR11.75-US | CFBI-1450-11 |
| | | 11.750 | M10x1.5 | 14.50ALSS-FMNR11.75-M | CFBI-1450-21 |

| 14-1/2 CF | HW Flange Mounting Hardware | |
|-----------|-----------------------------|----------|
| 368mm | Description | Part No. |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 1 | CFHW-1450-01 |
| | Copper / 1 | CFHW-1450-03 |
| Bolts Inch | .375-24 / Clearance / Nuts / Washers / 36 | CFHW-1450-10 |
| | .375-24 / Tapped / Washers / 36 | CFHW-1450-11 |
| Bolts Metric | M10x1.5 / Clearance / Nuts / Washers / 36 | CFHW-1450-20 |
| | M10x1.5 / Tapped / Washers / 36 | CFHW-1450-21 |

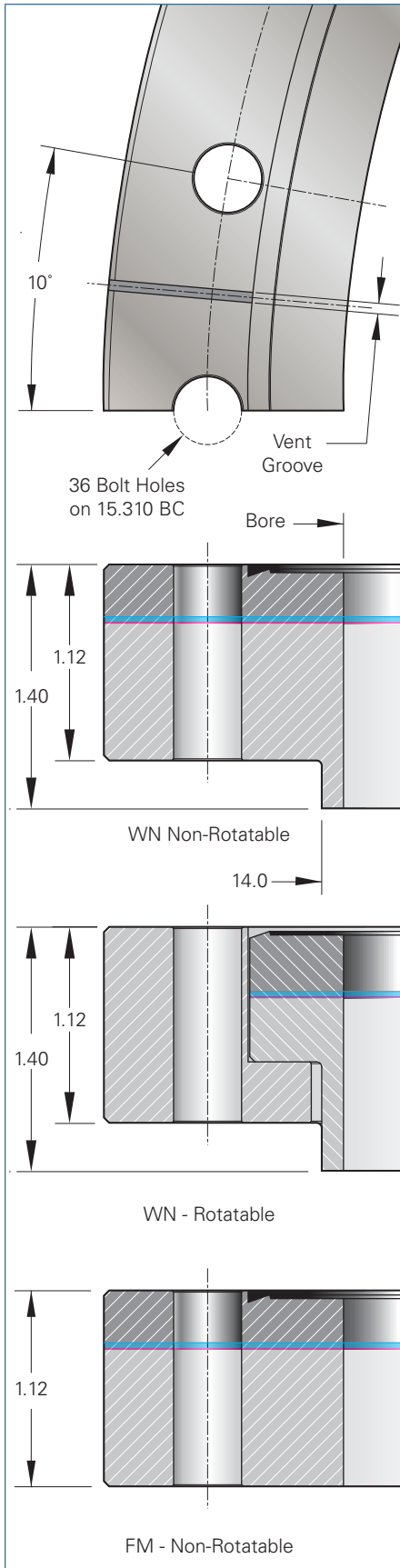
Aluminum gaskets are available on request, please call our sales department for more information



14.5" Atlas CF Flange

16.5" Atlas CF Flange / 419mm

16.5" Atlas CF Flange



| 16-1/2 CF | WN Weld-Neck Flange | | | |
|-----------|---------------------|------------|-----------------|----------|
| 419mm | Bore | Bolt Holes | Model Reference | Part No. |

| Non-Rotatable | | | | |
|---------------|--------|---------|------------------------|--------------|
| | Blank | 0.390 | 16.50ALSS-WNNRB | CFBI-1650-05 |
| | Blank | .375-24 | 16.50ALSS-WNNRB-US | CFBI-1650-15 |
| | Blank | M10x1.5 | 16.50ALSS-WNNRB-M | CFBI-1650-25 |
| | 13.750 | 0.390 | 16.50ALSS-WNNR13.75 | CFBI-1650-02 |
| | 13.750 | .375-24 | 16.50ALSS-WNNR13.75-US | CFBI-1650-12 |
| | 13.750 | M10x1.5 | 16.50ALSS-WNNR13.75-M | CFBI-1650-22 |

| Rotatable | | | | |
|-----------|--------|---------|-----------------------|--------------|
| | Blank | 0.390 | 16.50ALSS-WNRB | CFBI-1650-06 |
| | Blank | .375-24 | 16.50ALSS-WNRB-US | CFBI-1650-16 |
| | Blank | M10x1.5 | 16.50ALSS-WNRB-M | CFBI-1650-26 |
| | 13.750 | 0.390 | 16.50ALSS-WNR13.75 | CFBI-1650-03 |
| | 13.750 | .375-24 | 16.50ALSS-WNR13.75-US | CFBI-1650-13 |
| | 13.750 | M10x1.5 | 16.50ALSS-WNR13.75-M | CFBI-1650-23 |

Rotatable flanges are fitted with aluminum bolt receiver rings... Stainless steel optional

| 16-1/2 CF | FM Flush-Mount Flange | | | |
|-----------|-----------------------|------------|-----------------|----------|
| 419mm | Bore | Bolt Holes | Model Reference | Part No. |

| Non-Rotatable | | | | |
|---------------|--------|---------|------------------------|--------------|
| | Blank | 0.390 | 16.50ALSS-FMNRB | CFBI-1650-04 |
| | Blank | .375-24 | 16.50ALSS-FMNRB-US | CFBI-1650-14 |
| | Blank | M10x1.5 | 16.50ALSS-FMNRB-M | CFBI-1650-24 |
| | 13.750 | 0.390 | 16.50ALSS-FMNR13.75 | CFBI-1650-01 |
| | 13.750 | .375-24 | 16.50ALSS-FMNR13.75-US | CFBI-1650-11 |
| | 13.750 | M10x1.5 | 16.50ALSS-FMNR13.75-M | CFBI-1650-21 |

| 16-1/2 CF | HW Flange Mounting Hardware | |
|-----------|-----------------------------|----------|
| 419mm | Description | Part No. |

| | | |
|--------------|---|--------------|
| Gaskets | Copper / 14.11 ID / 1 | CFHW-1650-01 |
| | Viton® / 14.60 ID / 1 | CFHW-1650-02 |
| Bolts Inch | .375-24 / Clearance / Nuts / Washers / 36 | CFHW-1650-10 |
| | .375-24 / Tapped / Washers / 36 | CFHW-1650-11 |
| Bolts Metric | M10x1.5 / Clearance / Nuts / Washers / 36 | CFHW-1650-20 |
| | M10x1.5 / Tapped / Washers / 36 | CFHW-1650-21 |

Aluminum gaskets are available on request, please call our sales department for more information

Atlas Optional / Custom Flange Solutions



Optional Flange Solutions

Reduced Stainless Steel CF Flanges

For maximum weight reduction and minimum neutron activation, Atlas CF Flanges are also available with reduced stainless steel content. Depending on size, reduced stainless steel flanges are produced with a stainless steel interface that's about 20% to 40% thinner than standard flanges.

Custom Flange Solutions

Using Atlas' proprietary explosive welding process (EXW), many customized UHV bimetallic flange solutions are possible... including specialized bores, rectangular knife-edge, bimetal titanium and many more.

Rectangular Bore CF Flanges

Whether you need conventional (circular) CF flanges with custom apertures or unique rectangular or oval knife-edge geometry, Atlas can handle all of your custom CF flange requirements.

Exotic Material CF Flanges

Atlas Technologies has extensive experience in the design and fabrication of EXW flanges made from exotic material combinations for use in specialized environments and applications such as cryogenic, non-magnetic, etc. Materials include 316LN, Titanium, Copper...



Atlas Custom CF Flange Solutions

Conventional (circular seal interface) Atlas bimetallic CF flanges with rectangular aperture and tubulation.



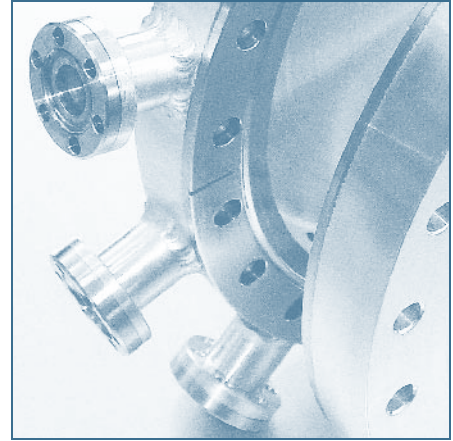
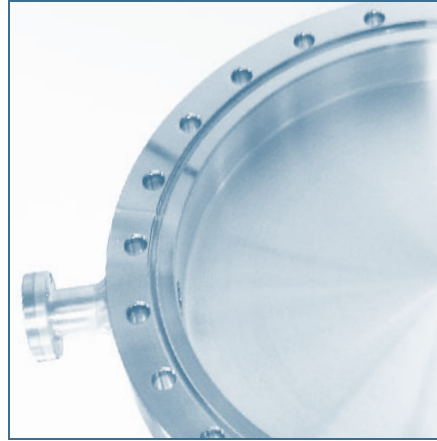
Atlas custom bimetallic CF flange with rectangular bore and knife-edge geometry provide maximum aperture and flexibility in UHV box-chamber applications.



Custom Atlas bimetallic CF flanges with oval knife-edge, aperture and tubulation.

Atlas CF Neutron Window Features

- Aluminum to stainless explosion welded (EXW) bimetallic construction
- UHV Rated to 1×10^{-13} Torr
- Long-life 90° included angle knife-edge design developed at CERN
- 100% Compatible with industry standard Conflat® interface
- 1-1/3 to 16 inch Flange Diameters
- Standard and reduced stainless steel models available
- Custom window thicknesses



Atlas bimetallic CF Neutron Window Assembly—Custom solution shown here with various radial instrumentation and differential pumping ports.

Atlas Neutron Windows are an integrated Atlas CF flange with a 316L sealing surface with an aluminum window in one flange body—with no welding or connections.

| Neutron Windows | NW Atlas CF Neutron Windows | | | |
|-----------------|-----------------------------|-----|-----------------|--------------|
| | Inch | DIN | Window Diameter | Part No. |
| | 1-1/3 | 16 | 0.60 | CFNW-0133-01 |
| | 2 1/8 | - | 0.75 | CFNW-0213-01 |
| | 2 3/4 | 40 | 1.50 | CFNW-0275-01 |
| | 3 3/8 | - | 1.75 | CFNW-0338-01 |
| | 4 1/2 | 63 | 2.50 | CFNW-0450-01 |
| | 4 5/8 | - | 2.75 | CFNW-0463-01 |
| | 6 | 100 | 3.75 | CFNW-0600-01 |
| | 6 3/4 | - | 4.87 | CFNW-0675-01 |
| | 8 | 160 | 5.75 | CFNW-0800-01 |
| | 10 | 200 | 7.75 | CFNW-1000-01 |
| | 12 | - | 9.75 | CFNW-1200-01 |
| | 13 1/4 | - | 10.02 | CFNW-1325-01 |
| | 14 | - | 11.75 | CFNW-1400-01 |
| | 14 1/2 | - | 11.75 | CFNW-1450-01 |
| | 16 1/2 | - | 13.75 | CFNW-1650-01 |



Standard windows are made from 6061 T6 aluminum machined to the thickness that you desire. Atlas offers engineering finite element analysis to assure you of the mechanical strength required. Dual neutron windows can offer an internal cavity that can be differential pumped or filled with a gas and analyzed through an array of optical ports mounted around the rim of the flange. All flanges are vacuum tested to a leak rate of 1×10^{-9} cc/sec of He prior to shipping.

Dimensional Specifications



Neutron Window Dimensions

Specifications

Atlas CF Neutron windows are fully compatible with the industry standard Conflat® flange. Atlas uses CERN's 20° back-bevel knife-edge design with a long-life 90° encompassed angle geometry. Atlas flanges are quality controlled using material batch monitoring processes.

Materials

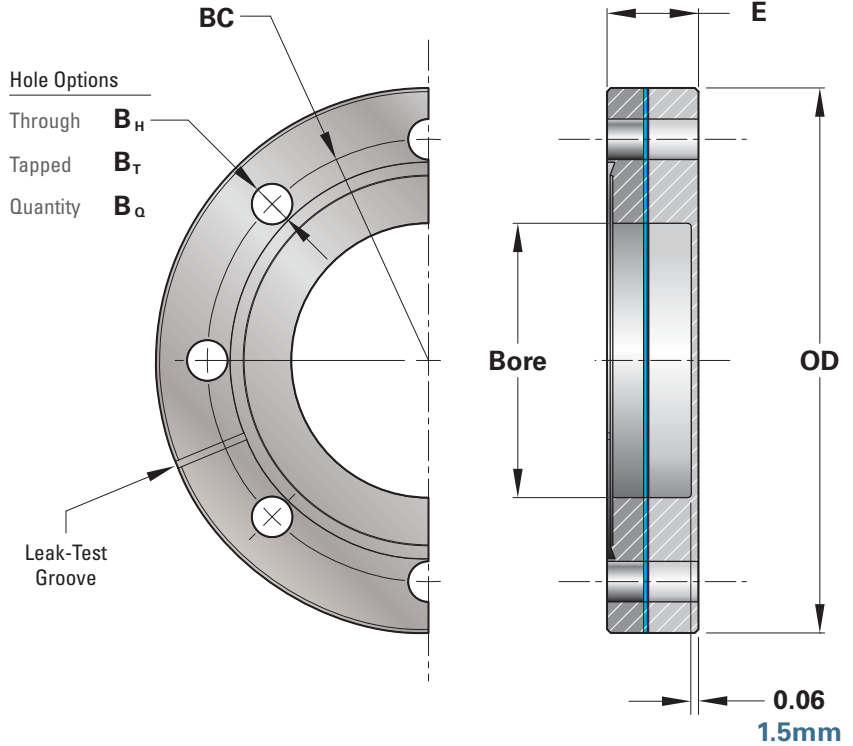
| | |
|-----------------------|---|
| Body / Weld Interface | Aluminum 6061 T-6 |
| Knife-Edge | Stainless Steel 316L Reduced Stainless Steel Optional Titanium (Commercially Pure) Optional |

Environmental

| | |
|--|-----------------------------------|
| Vacuum Leak Tested | < 1x10 ⁻⁹ cc/sec of He |
| Thermal | |
| Peak Temperature (< 2 Min. during weld-up) | 500°C |
| Operational Temperature | -200°C to 250°C |

Mechanical (EXW Interface)

| | |
|---------|-----------|
| Tensile | 15,000psi |
| Shear | 10,000psi |

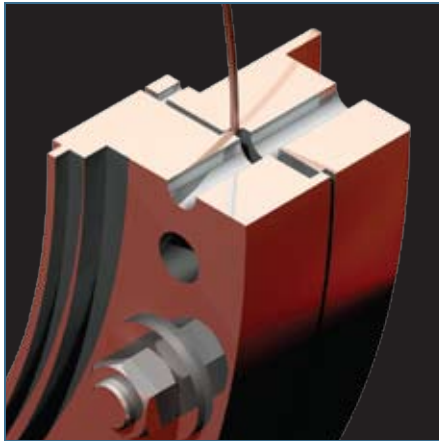


Atlas CF Neutron Windows

| Flange Size | | OD | | Bore | | BC | | BH | | BT | | BA | | E | |
|-------------|-----|-------|-----|-------|-----|--------|-------|-------|-----|---------|---------|----|-------|------|--|
| Inch | DIN | | | | | | | | | | | | | | |
| 1-1/3 | 16 | 1.33 | 34 | 0.60 | 15 | 1.062 | 27 | 0.172 | 4.4 | 8-32 | M4x0.7 | 6 | 0.35 | 7.2 | |
| 2 1/8 | - | 2.12 | 54 | 0.75 | 19 | 1.625 | 41.3 | 0.265 | 6.7 | .250-28 | M6x1.0 | 4 | 0.470 | 11.9 | |
| 2 3/4 | 40 | 2.73 | 69 | 1.50 | 38 | 2.312 | 58.7 | 0.265 | 6.7 | .250-28 | M6x1.0 | 6 | 0.510 | 12.7 | |
| 3 3/8 | - | 3.37 | 86 | 1.75 | 44 | 2.850 | 72.4 | 0.332 | 8.4 | .312-24 | M8x1.25 | 8 | 0.620 | 15.7 | |
| 4 1/2 | 63 | 4.47 | 114 | 2.50 | 64 | 3.628 | 92.2 | 0.332 | 8.4 | .312-24 | M8x1.25 | 8 | 0.750 | 19.0 | |
| 4 5/8 | - | 4.62 | 117 | 2.75 | 70 | 4.030 | 102.4 | 0.332 | 8.4 | .312-24 | M8x1.25 | 10 | 0.750 | 20.6 | |
| 6 | 100 | 5.97 | 152 | 3.75 | 95 | 5.128 | 130.3 | 0.332 | 8.4 | .312-24 | M8x1.25 | 16 | 0.840 | 21.3 | |
| 6 3/4 | - | 6.75 | 171 | 4.87 | 124 | 5.969 | 151.6 | 0.332 | 8.4 | .312-24 | M8x1.25 | 18 | 0.840 | 21.3 | |
| 8 | 160 | 7.97 | 202 | 5.75 | 146 | 7.128 | 181.1 | 0.332 | 8.4 | .312-24 | M8x1.25 | 20 | 0.880 | 23.9 | |
| 10 | 200 | 9.97 | 253 | 7.75 | 197 | 9.128 | 231.9 | 0.332 | 8.4 | .312-24 | M8x1.25 | 24 | 0.970 | 24.6 | |
| 12 | - | 12.00 | 305 | 9.75 | 248 | 11.181 | 284 | 0.332 | 8.4 | .312-24 | M8x1.25 | 32 | 1.125 | 28.4 | |
| 13 1/4 | - | 13.25 | 337 | 10.02 | 255 | 12.058 | 306.3 | 0.390 | 9.9 | .375-24 | M10x1.5 | 30 | 1.125 | 28.4 | |
| 14 | - | 14.00 | 356 | 11.75 | 298 | 12.810 | 325.4 | 0.390 | 9.9 | .375-24 | M10x1.5 | 30 | 1.125 | 28.4 | |
| 14 1/2 | - | 14.50 | 368 | 11.75 | 298 | 13.310 | 338.1 | 0.390 | 9.9 | .375-24 | M10x1.5 | 32 | 1.125 | 28.4 | |
| 16 1/2 | - | 16.50 | 419 | 13.75 | 349 | 15.310 | 389 | 0.390 | 9.9 | .375-24 | M10x1.5 | 36 | 1.125 | 28.4 | |

Equivalent metric units (mm) are displayed in blue

Atlas Wire-Seal Flanges

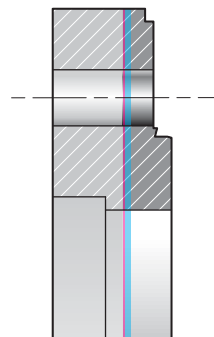


Cross sectional view of a customized Atlas bimetallic Wire-Seal WS flange. Circular section metal gasket is captured between tapered surfaces of mating flanges.

When the requirement for demountable flanges exceeds that of standard Atlas CF flanges Atlas Wire Seal flanges are the choice. These large lightweight flanges enable you to enjoy the many superior vacuum, physical, chemical and nuclear properties of UHV aluminum vacuum chambers. Atlas Wire Seal flanges are made from large-area Atlas bonded material. These flanges provide 316L stainless steel for the sealing surface to crush the wire gasket and 6061 T-6 aluminum flange body for weld-up to Atlas Plate-to-Plate, Cylindrical, Formed or Monocoque chambers. All Wire Seal flanges are vacuum tested to a leak rate of 1×10^{-9} cc/sec of He prior to shipping.

Atlas Wire-Seal Flange Features

- Aluminum to stainless explosion welded (EXW) bimetallic construction
- 1/3 The Weight of Stainless Flanges
- UHV Rated to 1×10^{-13} Torr
- 100% Compatible with third-party stainless Wire-Seal hardware



| Wire-Seal | WS Atlas Aluminum Wire-Seal Flanges | | | |
|-----------|-------------------------------------|------|-------------|----------|
| | OD | Tube | Description | Part No. |

| | | | | |
|-------------|---------|----|------------------------|--------------|
| Male Flange | 12-3/8 | 10 | Bored / Counter Bored | WSBI-1238-01 |
| | 14-5/8 | 12 | Bored / Counter Bored | WSBI-1463-01 |
| | 17-1/4 | 14 | Bored / Counter Bored | WSBI-1725-01 |
| | 19-9/16 | 16 | Bored / Counter Bored | WSBI-1956-01 |
| | 22-1/8 | 18 | Bored / Counter Bored | WSBI-2213-01 |
| | 27-1/8 | 24 | Bored / Counter Bored | WSBI-2713-01 |
| | 12-3/8 | 10 | Blank / Domed Geometry | WSBI-1238-02 |
| | 14-5/8 | 12 | Blank / Domed Geometry | WSBI-1463-02 |
| | 17-1/4 | 14 | Blank / Domed Geometry | WSBI-1725-02 |
| | 19-9/16 | 16 | Blank / Domed Geometry | WSBI-1956-02 |
| | 22-1/8 | 18 | Blank / Domed Geometry | WSBI-2213-02 |
| | 27-1/8 | 24 | Blank / Domed Geometry | WSBI-2713-02 |

Specifications

Atlas bimetallic flanges are quality controlled using material batch monitoring processes.

| | |
|-----------------------|---|
| Materials | |
| Body / Weld Interface | Aluminum 6061 T-6 |
| Knife-Edge | Stainless Steel 316L Titanium (Commercially Pure) Optional |

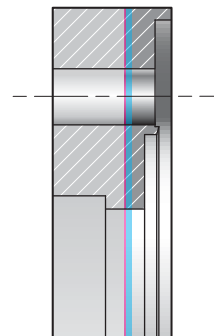
Environmental

| | |
|--|-----------------------------------|
| Vacuum Leak Tested | $< 1 \times 10^{-9}$ cc/sec of He |
| Thermal | |
| Peak Temperature (< 2 Min. during weld-up) | 500°C |
| Operational Temperature | -200°C to 250°C |

Mechanical (EXW Interface)

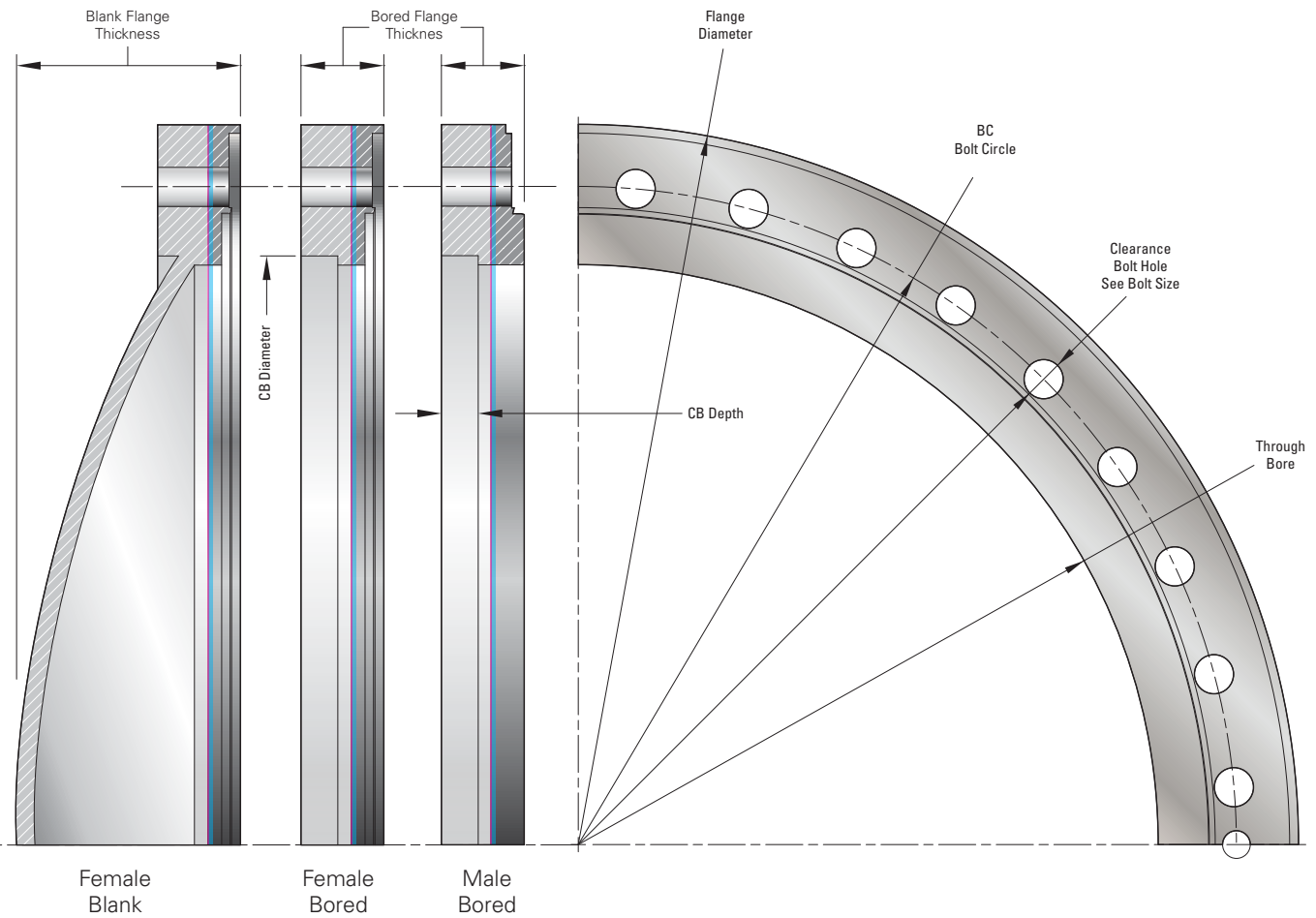
| | |
|---------|-----------|
| Tensile | 15,000psi |
| Shear | 10,000psi |

| | | | | |
|---------------|---------|----|------------------------|--------------|
| Female Flange | 12-3/8 | 10 | Bored / Counter Bored | WSBI-1238-03 |
| | 14-5/8 | 12 | Bored / Counter Bored | WSBI-1463-03 |
| | 17-1/4 | 14 | Bored / Counter Bored | WSBI-1725-03 |
| | 19-9/16 | 16 | Bored / Counter Bored | WSBI-1956-03 |
| | 22-1/8 | 18 | Bored / Counter Bored | WSBI-2213-03 |
| | 27-1/8 | 24 | Bored / Counter Bored | WSBI-2713-03 |
| | 12-3/8 | 10 | Blank / Domed Geometry | WSBI-1238-04 |
| | 14-5/8 | 12 | Blank / Domed Geometry | WSBI-1463-04 |
| | 17-1/4 | 14 | Blank / Domed Geometry | WSBI-1725-04 |
| | 19-9/16 | 16 | Blank / Domed Geometry | WSBI-1956-04 |
| | 22-1/8 | 18 | Blank / Domed Geometry | WSBI-2213-04 |
| | 27-1/8 | 24 | Blank / Domed Geometry | WSBI-2713-04 |



Dimensional Specifications

Wire-Seal Flange Dimensions



Atlas Wire-Seal Flanges

| Flange Diameter | | Bolt Hole Information | | | Tube Size Information | | | | | | Flange Thickness | | | | |
|-----------------|-----|-----------------------|-------|-----------|-----------------------|----------|--------------|------|------|-------|------------------|-------|-------|------|-----|
| Inch | mm | BC | Qty | Bolt Size | CB Diameter | CB Depth | Through Bore | | | | | Bored | Blank | | |
| 12-3/8 | 314 | 11.343 | 288.1 | 24 | .375-24 | 10.02 | 254.5 | 0.50 | 12.7 | 9.75 | 248 | 1.125 | 28.6 | 2.33 | 59 |
| 14-5/8 | 371 | 13.593 | 345.3 | 32 | .375-25 | 12.02 | 305.3 | 0.50 | 12.7 | 11.75 | 298 | 1.125 | 28.6 | 2.33 | 59 |
| 17-1/4 | 438 | 15.718 | 399.2 | 36 | .500-20 | 14.02 | 356.1 | 0.50 | 12.7 | 13.75 | 349 | 1.125 | 28.6 | 2.6 | 66 |
| 19-9/16 | 497 | 17.875 | 454.0 | 36 | .500-20 | 16.03 | 407.2 | 0.50 | 12.7 | 15.75 | 400 | 1.312 | 33.3 | 3.04 | 77 |
| 22-1/8 | 562 | 20.187 | 512.7 | 36 | .625-18 | 18.03 | 458.0 | 0.50 | 12.7 | 17.75 | 451 | 1.5 | 38.1 | 3.5 | 89 |
| 27-1/8 | 689 | 25.843 | 656.4 | 40 | .625-18 | 24.06 | 611.1 | 0.63 | 16.0 | 23.75 | 603 | 1.75 | 44.5 | 4.43 | 113 |

Equivalent metric units (mm) are displayed in blue

UHV Bimetallic Atlas ATRC Fitting™



Atlas bimetallic ATRC fittings—the aluminum tube fitting with a stainless steel face-seal—make UHV aluminum vacuum systems a reality.

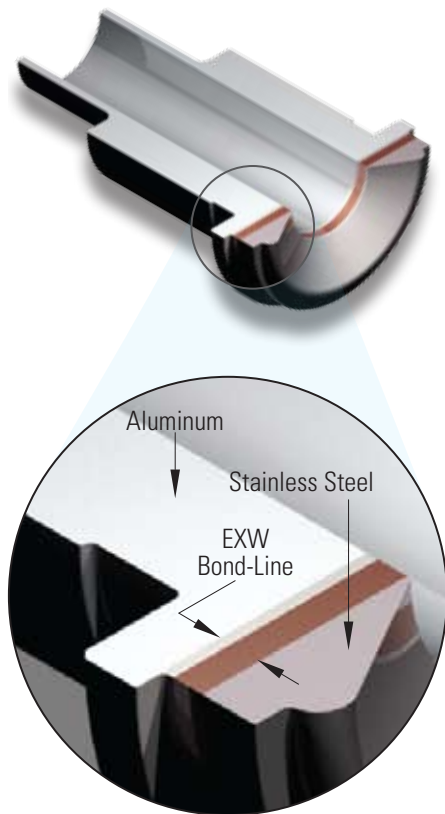
Section Contents

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| Inch / Metric Dimensional Specifications | |
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| 1/4, 3/8, 1/2, 3/4 and 1 Inch Diameters | |
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| Male Weld Installation | |
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Atlas ATCR Bimetallic Face-Seal Fittings



Atlas bimetallic ATCR fittings—the aluminum tube fitting with a stainless steel face-seal, make UHV aluminum vacuum systems a reality.



BW — Butt Weld ATCR Fitting



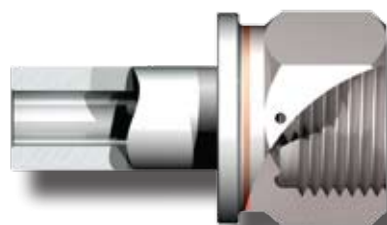
MW — Male Weld ATCR Fitting



SW — Socket Weld ATCR Fitting



CM — Chamber Mount ATCR Fitting



Specifications

Atlas aluminum ATCR™ face-seal fittings are fully compatible with Swagelok VCR® and Parker Hannifin VacuSeal™ fittings.

Materials

| | |
|-----------------------|-------------------------------|
| Body / Weld Interface | Aluminum 6061 T-6 |
| Seal-Face | Stainless Steel 316L |
| | Optional Ti Commercially Pure |

| | |
|---------------|-------------------------------|
| Rotatable Nut | Aluminum 6061-T6 |
| | Optional, Stainless Steel 304 |

Environmental

| | |
|--|-----------------------------------|
| Vacuum Leak Tested | < 1x10 ⁻⁹ cc/sec of He |
| Thermal | |
| Peak Temperature (< 2 Min. during weld-up) | 500°C |
| Operational Temperature | -200°C to 250°C |

Mechanical (EXW Interface)

| | |
|---------|-----------|
| Tensile | 15,000psi |
| Shear | 10,000psi |

Atlas Socket, Butt and Male weld ATCR face-seal fittings are fitted with a durable stainless steel sealing face that is explosive bonded to an aluminum body. The bond is extremely rugged. All face-seal fittings are helium leak tested for service in UHV environments in excess of 1x10⁻⁹ Torr. Atlas ATCR fittings enable robust demountable use of aluminum tubing and used extensively in cryogenic, physics and semiconductor applications worldwide.

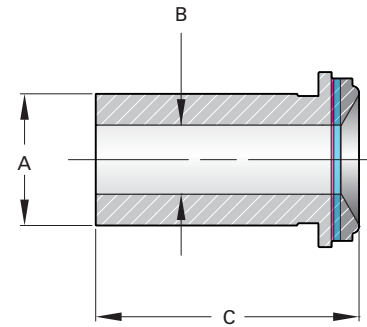
See page 32-33 for product ordering information.

Dimensional Specifications

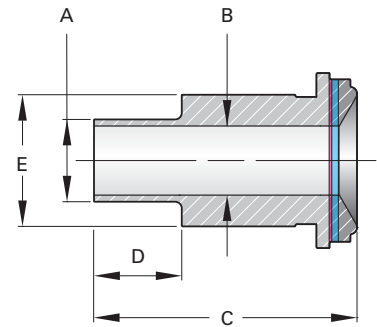


Atlas ATCR Bimetallic Face-Seal Fittings

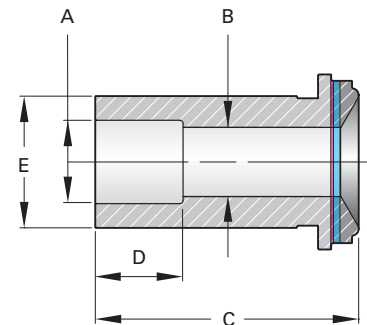
| Butt Weld | | BW ATCR Face-Seal Fitting Dimensions Inch (mm) | | |
|-----------|------|--|-------------|-------------|
| Inch | mm | A | B | C |
| 1/4 | 6.3 | 0.35 (8.9) | 0.18 (4.6) | 1.50 (38.1) |
| 3/8 | 9.5 | 0.60 (15.2) | 0.31 (8.0) | 1.50 (38.1) |
| 1/2 | 12.7 | 0.60 (15.2) | 0.40 (10.2) | 1.50 (38.1) |
| 3/4 | 19.1 | 0.88 (22.4) | 0.62 (15.7) | 1.70 (43.2) |
| 1 | 25.4 | 1.19 (30.2) | 0.87 (22.2) | 1.94 (49.3) |



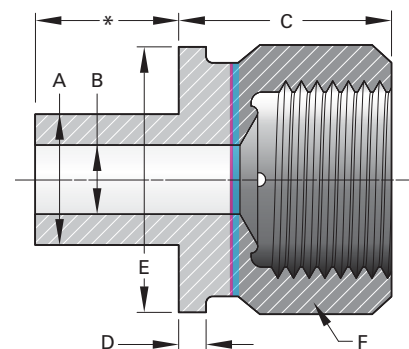
| Male Weld | | MW ATCR Face-Seal Fitting Dimensions Inch (mm) | | | | |
|-----------|------|--|-------------|-------------|-------------|-------------|
| Inch | mm | A | B | C | D | E |
| 1/4 | 6.3 | 0.25 (6.4) | 0.18 (4.6) | 1.50 (38.1) | 0.20 (5.0) | 0.35 (8.9) |
| 3/8 | 9.5 | 0.37 (9.5) | 0.31 (8.0) | 1.50 (38.1) | 0.40 (10.2) | 0.60 (15.2) |
| 1/2 | 12.7 | 0.50 (12.7) | 0.40 (10.2) | 1.50 (38.1) | 0.40 (10.2) | 0.60 (15.2) |
| 3/4 | 19.1 | 0.75 (19.1) | 0.62 (15.7) | 1.70 (43.2) | 0.40 (10.2) | 0.88 (22.4) |
| 1 | 25.4 | 1.00 (25.4) | 0.87 (22.2) | 1.94 (49.3) | 0.40 (10.2) | 1.19 (30.2) |



| Socket Weld | | SW ATCR Face-Seal Fitting Dimensions Inch (mm) | | | | |
|-------------|------|--|-------------|-------------|-------------|-------------|
| Inch | mm | A | B | C | D | E |
| 1/4 | 6.3 | 0.26 (6.5) | 0.18 (4.6) | 1.50 (38.1) | 0.20 (5.0) | 0.35 (8.9) |
| 3/8 | 9.5 | 0.38 (9.6) | 0.31 (8.0) | 1.50 (38.1) | 0.40 (10.2) | 0.60 (15.2) |
| 1/2 | 12.7 | 0.51 (12.8) | 0.40 (10.2) | 1.50 (38.1) | 0.40 (10.2) | 0.60 (15.2) |
| 3/4 | 19.1 | 0.76 (19.2) | 0.62 (15.7) | 1.70 (43.2) | 0.40 (10.2) | 0.88 (22.4) |
| 1 | 25.4 | 1.01 (25.5) | 0.87 (22.2) | 1.94 (49.3) | 0.40 (10.2) | 1.19 (30.2) |



| Chamber Mount | | CM ATCR Face-Seal Fitting Dimensions Inch (mm) | | | | | |
|---------------|------|--|-------------|-------------|-------------|-------------|-------------|
| Inch | mm | A | B | C | D | E | F (Hex) |
| 1/4 | 6.3 | 0.35 (8.9) | 0.18 (4.6) | 1.50 (38.1) | 0.25 (6.4) | 1.25 (31.8) | 0.75 (19.1) |
| 3/8 | 9.5 | 0.60 (15.2) | 0.31 (8.0) | 1.50 (38.1) | 0.37 (9.5) | 1.75 (44.4) | 1.06 (28.6) |
| 1/2 | 12.7 | 0.60 (15.2) | 0.40 (10.2) | 1.50 (38.1) | 0.37 (9.5) | 1.75 (44.4) | 1.06 (28.6) |
| 3/4 | 19.1 | 0.88 (22.4) | 0.62 (15.7) | 1.70 (43.2) | 0.50 (12.7) | 2.25 (57.2) | 1.50 (38.1) |
| 1 | 25.4 | 1.19 (30.2) | 0.87 (22.2) | 1.94 (49.3) | 0.50 (12.7) | 2.50 (63.5) | 1.75 (44.5) |

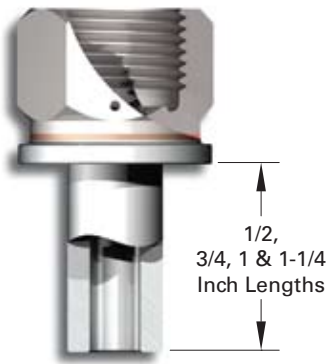


* Available in 1/2, 3/4, 1, and 1-1/4 inch weld-neck lengths — see page 32 for details

ATCR Bimetallic Face-Seal Fittings

Atlas ATCR Bimetallic Face-Seal Fittings

The Atlas bimetallic ATCR Fitting™—the weldable aluminum tube fitting with a stainless steel face-seal makes UHV aluminum vacuum systems a reality.



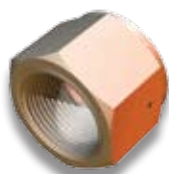
| ATCR Fittings | ATCR Atlas ATCR Face-Seal Fittings | | | | |
|----------------------|------------------------------------|------------|--------------------|------------------|------------------|
| | Inch | Millimeter | Description | Part No. | |
| Butt Weld | 1/4 | 6.4 | Zero clearance | ATCRBI-BW5010 | |
| | 3/8 | 9.5 | Zero clearance | ATCRBI-BW6010 | |
| | 1/2 | 12.7 | Zero clearance | ATCRBI-BW7010 | |
| | 3/4 | 19 | Zero clearance | ATCRBI-BW8010 | |
| | 1 | 25.4 | Zero clearance | ATCRBI-BW9010 | |
| Male Weld | 1/4 | 6.4 | Zero clearance | ATCRBI-MW5020 | |
| | 3/8 | 9.5 | Zero clearance | ATCRBI-MW6020 | |
| | 1/2 | 12.7 | Zero clearance | ATCRBI-MW7020 | |
| | 3/4 | 19 | Zero clearance | ATCRBI-MW8020 | |
| | 1 | 25.4 | Zero clearance | ATCRBI-MW9020 | |
| Socket Weld | 1/4 | 6.4 | Zero clearance | ATCRBI-SW5030 | |
| | 3/8 | 9.5 | Zero clearance | ATCRBI-SW6030 | |
| | 1/2 | 12.7 | Zero clearance | ATCRBI-SW7030 | |
| | 3/4 | 19 | Zero clearance | ATCRBI-SW8030 | |
| | 1 | 25.4 | Zero clearance | ATCRBI-SW9030 | |
| Chamber Mount | 1/2" | 1/4 | 6.4 | 1/2" Neck length | ATCRBI-CM5010-04 |
| | | 3/8 | 9.5 | 1/2" Neck length | ATCRBI-CM6010-04 |
| | | 1/2 | 12.7 | 1/2" Neck length | ATCRBI-CM7010-04 |
| | | 3/4 | 19 | 1/2" Neck length | ATCRBI-CM8010-04 |
| | | 1 | 25.4 | 1/2" Neck length | ATCRBI-CM9010-04 |
| | 3/4" | 1/4 | 6.4 | 3/4" Neck length | ATCRBI-CM5010-01 |
| | | 3/8 | 9.5 | 3/4" Neck length | ATCRBI-CM6010-01 |
| | | 1/2 | 12.7 | 3/4" Neck length | ATCRBI-CM7010-01 |
| | | 3/4 | 19 | 3/4" Neck length | ATCRBI-CM8010-01 |
| | | 1 | 25.4 | 3/4" Neck length | ATCRBI-CM9010-01 |
| | 1" | 1/4 | 6.4 | 1" Neck length | ATCRBI-CM5010-02 |
| | | 3/8 | 9.5 | 1" Neck length | ATCRBI-CM6010-02 |
| 1/2 | | 12.7 | 1" Neck length | ATCRBI-CM7010-02 | |
| 3/4 | | 19 | 1" Neck length | ATCRBI-CM8010-02 | |
| 1 | | 25.4 | 1" Neck length | ATCRBI-CM9010-02 | |
| 1-1/4" | 1/4 | 6.4 | 1-1/4" Neck length | ATCRBI-CM5010-03 | |
| | 3/8 | 9.5 | 1-1/4" Neck length | ATCRBI-CM6010-03 | |
| | 1/2 | 12.7 | 1-1/4" Neck length | ATCRBI-CM7010-03 | |
| | 3/4 | 19 | 1-1/4" Neck length | ATCRBI-CM8010-03 | |
| | 1 | 25.4 | 1-1/4" Neck length | ATCRBI-CM9010-03 | |

Chamber-Mount ATCR fittings are available in four different weld-neck lengths. Weld neck extends through chamber wall for easy vacuum-side welding.

ATCR Bimetallic Face-Seal Fittings



| Hardware | | HW Atlas ATCR Mounting Hardware | | | |
|-------------------|-----------------|---------------------------------|-----------------|-----------------|----------------|
| ATCR | Inch | Millimeter | Description | Part No. | |
| Gaskets | 1/4 | 6.4 | Copper | ATCRHW-5010-01 | |
| | 3/8 | 9.5 | Copper | ATCRHW-6010-01 | |
| | 1/2 | 12.7 | Copper | ATCRHW-7010-01 | |
| | 3/4 | 19 | Copper | ATCRHW-8010-01 | |
| | 1 | 25.4 | Copper | ATCRHW-9010-0 | |
| | 1/4 | 6.4 | Nickel | ATCRHW-5010-02 | |
| | 3/8 | 9.5 | Nickel | ATCRHW-6010-02 | |
| | 1/2 | 12.7 | Nickel | ATCRHW-7010-02 | |
| | 3/4 | 19 | Nickel | ATCRHW-8010-02 | |
| | 1 | 25.4 | Nickel | ATCRHW-9010-02 | |
| | 1/4 | 6.4 | Aluminum | ATCRHW-5010-03 | |
| | 3/8 | 9.5 | Aluminum | ATCRHW-6010-03 | |
| | 1/2 | 12.7 | Aluminum | ATCRHW-7010-03 | |
| | 3/4 | 19 | Aluminum | ATCRHW-8010-03 | |
| | 1 | 25.4 | Aluminum | ATCRHW-9010-03 | |
| | Male Nut | 1/4 | 6.4 | Stainless Steel | ATCRHW-5010-04 |
| 3/8 | | 9.5 | Stainless Steel | ATCRHW-6010-04 | |
| 1/2 | | 12.7 | Stainless Steel | ATCRHW-7010-04 | |
| 3/4 | | 19 | Stainless Steel | ATCRHW-8010-04 | |
| 1 | | 25.4 | Stainless Steel | ATCRHW-9010-04 | |
| 1/4 | | 6.4 | Aluminum | ATCRHW-5010-05 | |
| 3/8 | | 9.5 | Aluminum | ATCRHW-6010-05 | |
| 1/2 | | 12.7 | Aluminum | ATCRHW-7010-05 | |
| 3/4 | | 19 | Aluminum | ATCRHW-8010-05 | |
| 1 | | 25.4 | Aluminum | ATCRHW-9010-05 | |
| Female Nut | | 1/4 | 6.4 | Stainless Steel | ATCRHW-5010-06 |
| | | 3/8 | 9.5 | Stainless Steel | ATCRHW-6010-06 |
| | | 1/2 | 12.7 | Stainless Steel | ATCRHW-7010-06 |
| | | 3/4 | 19 | Stainless Steel | ATCRHW-8010-06 |
| | | 1 | 25.4 | Stainless Steel | ATCRHW-9010-06 |
| | | 1/4 | 6.4 | Aluminum | ATCRHW-5010-07 |
| | 3/8 | 9.5 | Aluminum | ATCRHW-6010-07 | |
| | 1/2 | 12.7 | Aluminum | ATCRHW-7010-07 | |
| | 3/4 | 19 | Aluminum | ATCRHW-8010-07 | |
| | 1 | 25.4 | Aluminum | ATCRHW-9010-07 | |



Top: Atlas ATCR Bimetallic fittings shown with optional male and female nuts. Bottom: Atlas Bimetallic ATCR fittings... socket and chamber-mount types depicted.

Atlas ATCR Bimetallic Face-Seal Fittings

Atlas ATCR face-seal fittings have durable stainless steel sealing faces that are explosion bonded to an aluminum body. The bond is extremely rugged and helium leak tested to better than 1×10^{-9} Torr. Standard socket, butt, male and chamber mount weld fitting geometries are available in 1/4, 3/8, 1/2, 3/4 and 1 inch tube diameters. Chamber mount fittings are available in four length configurations suitable for 1/2, 3/4, 1 and 1-1/4 inch chamber wall thicknesses. The Atlas ATCR face-seal fitting allows for robust UHV demountable use of aluminum tubing in cryogenic, physics and semiconductor applications.

Atlas ISO Aluminum Flanges



Atlas' ISO aluminum flanges and fittings provide a reusable, light-weight and economical high-vacuum system interface. Our product line includes ISO 10mm through 500mm Quick-Release / Claw & Bolt flanges along with all pertinent mounting hardware and accessories.

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Atlas Quick-Disconnects & Viewports 44

Quick-Disconnect Fittings / Pyrex® Glass Viewports

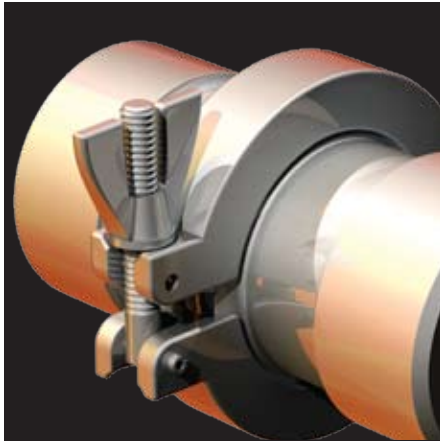
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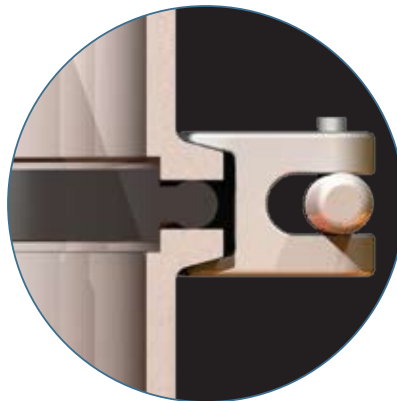
Contact, Terms & Conditions, Warranty

Quick-Release ISO Aluminum Flanges



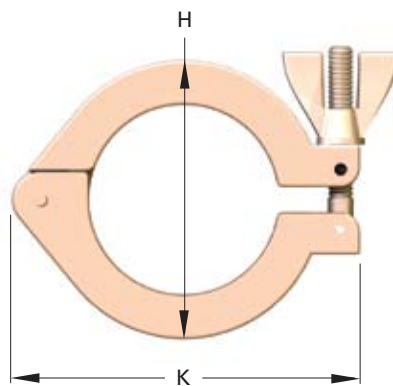
Above: Atlas Quick-Release aluminum ISO Flanges.
Below: Cross section close-up of Atlas Quick-Release ISO seal mechanism. O-ring is held in place by an internal centering ring while an external hinged clamp compresses O-ring by forcing tapered flange shoulders together.

ISO Quick-Release Flange Dimensions



Atlas aluminum ISO Quick-Release flanges are precision machined HV compatible components that offer superior vacuum performance in what has traditionally been a stainless steel market. These weldable flanges are rigorously tested to exceed HV standards, designed to ISO 2861/1 flange specifications... and are compatible with existing third party ISO flanges and components.

Atlas ISO Quick-Release flanges are ideally suited for high vacuum applications in semiconductor, magnetic, nuclear, medical and chemical resistance environments.



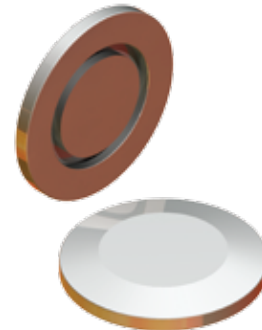
Specifications

Atlas aluminum ISO Quick-Release flanges are fully compatible with existing third-party ISO flanges and hardware.

Material
Body / Weld Interface Aluminum 6061 T-6

Environmental
Vacuum Leak Tested < 1x10⁻⁹ cc/sec of He
Thermal
Peak Temperature (Intermittent) 200°C
Operational Temperature (Viton®) -20°C to 150°C

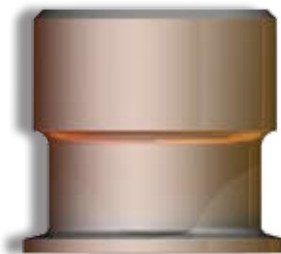
ISO Blank-Off



ISO Weld-Neck



ISO Chamber-Weld

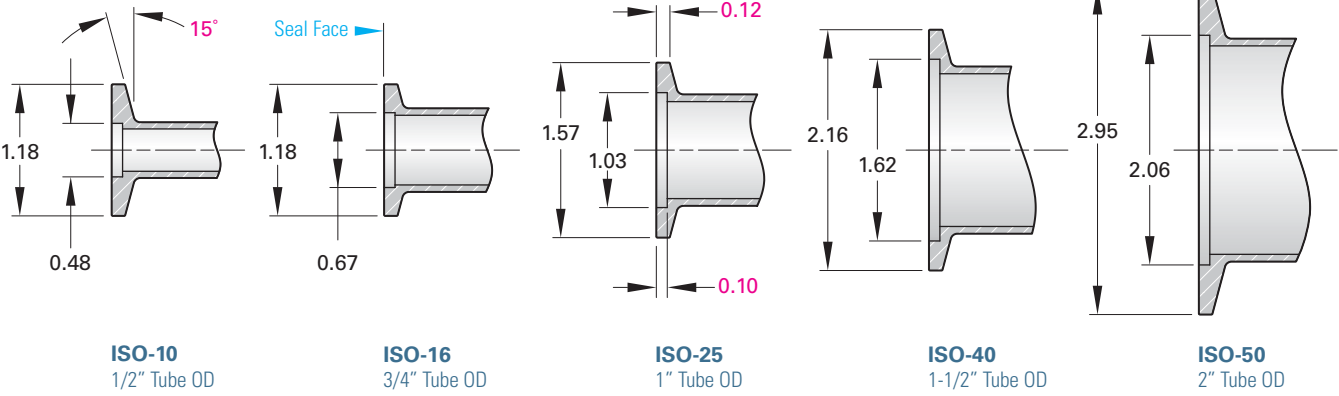


| Nominal Size | Inch | | ISO ¹ | | | | C ² | | | | | |
|--------------|------|------|------------------|------|------|-----|----------------|------|-----|---|----|--|
| | | | A | | B | | 1/2 | | 3/4 | | 1 | |
| 1/2 | 10 | 0.20 | 5.1 | 1.58 | 40.1 | 1.5 | 38 | 1.75 | 45 | 2 | 51 | |
| 3/4 | 16 | 0.20 | 5.1 | 1.58 | 40.1 | 1.5 | 38 | 1.75 | 45 | 2 | 51 | |
| 1 | 25 | 0.20 | 5.1 | 1.58 | 40.1 | 1.5 | 38 | 1.75 | 45 | 2 | 51 | |
| 1-1/2 | 40 | 0.20 | 5.1 | 1.58 | 40.1 | 1.5 | 38 | 1.75 | 45 | 2 | 51 | |
| 2 | 50 | 0.20 | 5.1 | 1.58 | 40.1 | 1.5 | 38 | 1.75 | 45 | 2 | 51 | |

1. Equivalent metric units (mm) are displayed in blue

Dimensional Specifications

ISO Quick-Release Flange Series — ◆ Color dimensions are typical for all sizes

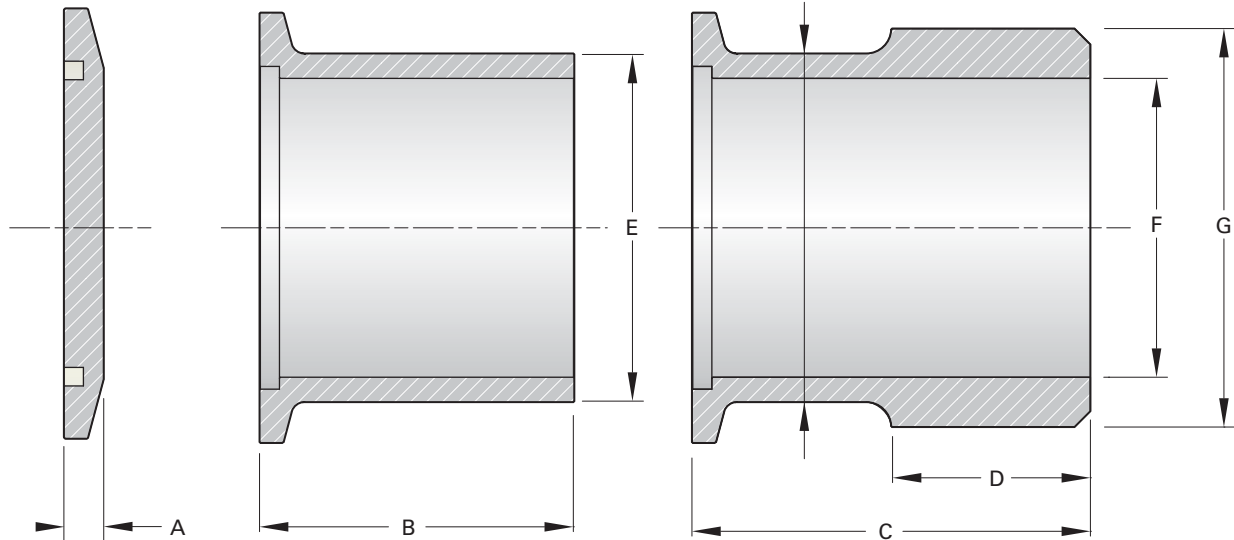


Quick-Release ISO Aluminum Flanges

ISO Blank-Off Flange

ISO Weld-Neck Flange

ISO Chamber-Weld Flange




| C ² | | D ² | | | | | | Clamp Dimensions | | | | | | | | | | | |
|----------------|----|----------------|-----|------|-------|---|----|------------------|----|------|----|------|----|------|----|------|----|------|-----|
| 1-1/4 | | 1/2 | 3/4 | 1 | 1-1/4 | E | F | G | H | K | | | | | | | | | |
| 2.25 | 57 | 0.5 | 13 | 0.75 | 19 | 1 | 25 | 1.25 | 32 | 0.63 | 16 | 0.38 | 10 | 0.88 | 22 | 1.63 | 41 | 2.77 | 70 |
| 2.25 | 57 | 0.5 | 13 | 0.75 | 19 | 1 | 25 | 1.25 | 32 | 0.88 | 22 | 0.63 | 16 | 1.13 | 29 | 1.63 | 41 | 2.77 | 70 |
| 2.25 | 57 | 0.5 | 13 | 0.75 | 19 | 1 | 25 | 1.25 | 32 | 1.25 | 32 | 1.00 | 25 | 1.50 | 38 | 2.00 | 51 | 3.14 | 80 |
| 2.25 | 57 | 0.5 | 13 | 0.75 | 19 | 1 | 25 | 1.25 | 32 | 1.75 | 45 | 1.50 | 38 | 2.00 | 51 | 2.66 | 68 | 3.78 | 96 |
| 2.25 | 57 | 0.5 | 13 | 0.75 | 19 | 1 | 25 | 1.25 | 32 | 2.00 | 51 | 1.75 | 45 | 2.25 | 57 | 3.44 | 87 | 4.54 | 115 |





2. Chamber-Weld ISO flanges are available in four (4) different lengths 'C' to accommodate 1/2, 3/4, 1 and 1-1/4 chamber wall thicknesses 'D'.

Quick-Release ISO Aluminum Flanges



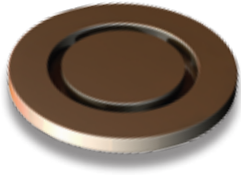
Atlas Quick-Release Chamber Weld aluminum flanges and hinged clamp.

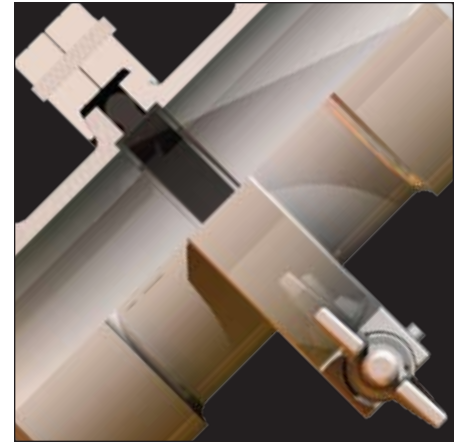
| Weld Neck | | WN Weld Neck ISO Aluminum Flanges | | | |
|---|--------|-----------------------------------|---------------------|-------------|--|
| 10–50mm | Metric | Inch | Description | Part No. | |
|  | 10 | 1/2 | 1/8" wall thickness | ISOAL-10-01 | |
| | 16 | 3/4 | 1/8" wall thickness | ISOAL-16-01 | |
| | 25 | 1 | 1/8" wall thickness | ISOAL-25-01 | |
| | 40 | 1-1/2 | 1/8" wall thickness | ISOAL-40-01 | |
| | 50 | 2 | 1/8" wall thickness | ISOAL-50-01 | |

| Chamber Weld | | CW Chamber Weld ISO Aluminum Flanges | | | | |
|---|-----------------|--------------------------------------|---------------------|-------------|---------------------|-------------|
| 10–50mm | Metric | Inch | Description | Part No. | | |
|  | 1/2 Weld-Neck | | 10 | 1/2 | 1/4" wall Thickness | ISOAL-10-02 |
| | 16 | 3/4 | 1/4" wall Thickness | ISOAL-16-02 | | |
| | 25 | 1 | 1/4" wall Thickness | ISOAL-25-02 | | |
| | 40 | 1-1/2 | 1/4" wall Thickness | ISOAL-40-02 | | |
| | 50 | 2 | 1/4" wall Thickness | ISOAL-50-02 | | |
|  | 3/4 Weld-Neck | | 10 | 1/2 | 1/4" wall Thickness | ISOAL-10-03 |
| | 16 | 3/4 | 1/4" wall Thickness | ISOAL-16-03 | | |
| | 25 | 1 | 1/4" wall Thickness | ISOAL-25-03 | | |
| | 40 | 1-1/2 | 1/4" wall Thickness | ISOAL-40-03 | | |
| | 50 | 2 | 1/4" wall Thickness | ISOAL-50-03 | | |
|  | 1 Weld-Neck | | 10 | 1/2 | 1/4" wall Thickness | ISOAL-10-04 |
| | 16 | 3/4 | 1/4" wall Thickness | ISOAL-16-04 | | |
| | 25 | 1 | 1/4" wall Thickness | ISOAL-25-04 | | |
| | 40 | 1-1/2 | 1/4" wall Thickness | ISOAL-40-04 | | |
| | 50 | 2 | 1/4" wall Thickness | ISOAL-50-04 | | |
|  | 1-1/4 Weld-Neck | | 10 | 1/2 | 1/4" wall Thickness | ISOAL-10-05 |
| | 16 | 3/4 | 1/4" wall Thickness | ISOAL-16-05 | | |
| | 25 | 1 | 1/4" wall Thickness | ISOAL-25-05 | | |
| | 40 | 1-1/2 | 1/4" wall Thickness | ISOAL-40-05 | | |
| | 50 | 2 | 1/4" wall Thickness | ISOAL-50-05 | | |

Quick-Release — ISO Aluminum Flanges





| Blank Off | | BO Blank ISO Aluminum Flanges | | | |
|---|--------|-------------------------------|--------------|-------------|--|
| 10—50mm | Metric | Inch | Description | Part No. | |
|  | 10 | 1/2 | Blank flange | ISOAL-10-06 | |
| | 16 | 3/4 | Blank flange | ISOAL-16-06 | |
| | 25 | 1 | Blank flange | ISOAL-25-06 | |
| | 40 | 1-1/2 | Blank flange | ISOAL-40-06 | |
| | 50 | 2 | Blank flange | ISOAL-50-06 | |




Cross section showing the Quick-Release flange, seal and clamp interface.

Quick-Release ISO Aluminum Flanges

| Hardware | | HW ISO Flange Mounting Hardware | | | |
|---|--------|---------------------------------|--------------------|-------------|--|
| 10—50mm | Metric | Inch | Description | Part No. | |
|  | 10 | 1/2 | Al / Viton® O-ring | ISOHW-10-01 | |
| | 16 | 3/4 | Al / Viton® O-ring | ISOHW-16-01 | |
| | 25 | 1 | Al / Viton® O-ring | ISOHW-25-01 | |
| | 40 | 1-1/2 | Al / Viton® O-ring | ISOHW-40-01 | |
| | 50 | 2 | Al / Viton® O-ring | ISOHW-50-01 | |

| | | | | |
|---|----|-------|---------------------------|-------------|
|  | 10 | 1/2 | Al / Hinged with Wing Nut | ISOHW-10-02 |
| | 16 | 3/4 | Al / Hinged with Wing Nut | ISOHW-16-02 |
| | 25 | 1 | Al / Hinged with Wing Nut | ISOHW-25-02 |
| | 40 | 1-1/2 | Al / Hinged with Wing Nut | ISOHW-40-02 |
| | 50 | 2 | Al / Hinged with Wing Nut | ISOHW-50-02 |

| | | | | |
|---|----|-------|----------------------------|-------------|
|  | 10 | 1/2 | Al / Bulkhead with 6-Bolts | ISOHW-10-03 |
| | 16 | 3/4 | Al / Bulkhead with 6-Bolts | ISOHW-16-03 |
| | 25 | 1 | Al / Bulkhead with 6-Bolts | ISOHW-25-03 |
| | 40 | 1-1/2 | Al / Bulkhead with 6-Bolts | ISOHW-40-03 |
| | 50 | 2 | Al / Bulkhead with 8-Bolts | ISOHW-50-03 |

Bulkhead clamp kits are supplied with 10-32UNF, 5/8 inch length socket-head bolts and mating washers in specified quantities. ISO 10, 16, 25, 40 and 50 clamp bolt-holes are equally spaced on 1.50, 1.50, 1.89, 2.44 and 3.25 inch bolt circles respectively. Note that ISO 50 clamp is fitted with eight (8) bolt-holes.

Claw & Bolt ISO Aluminum Flanges

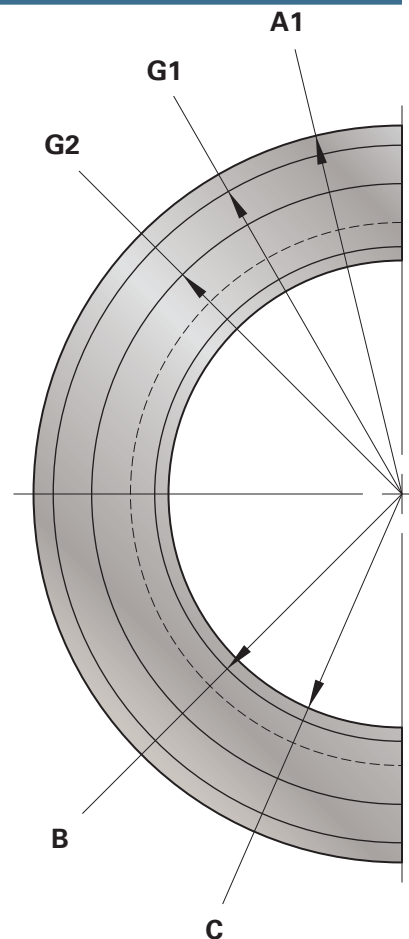


Atlas offers both aluminum single and double-Claw ISO Flanges.

Atlas aluminum ISO Claw and Bolt flanges are precision machined HV compatible components that offer superior vacuum performance in what has traditionally been a stainless steel market. These weldable flanges are rigorously tested to exceed HV standards, designed to ISO 1609 flange specifications... and are compatible with existing third party ISO flanges and components.

Atlas ISO Claw and Bolt flanges are ideally suited for high vacuum applications in semiconductor, magnetic, nuclear, medical and chemical resistance environments.

ISO Claw & Bolt Flange Dimensions



Specifications

Atlas aluminum ISO Claw and Bolt flanges are fully compatible with existing third-party ISO flanges and hardware.

Material

Body / Weld Interface Aluminum 6061 T-6

Environmental

Vacuum Leak Tested <math> < 1 \times 10^{-9}</math> cc/sec of He

Thermal

Peak Temperature (Intermittent) 200°C

Operational Temperature (Viton®) -20°C to 150°C

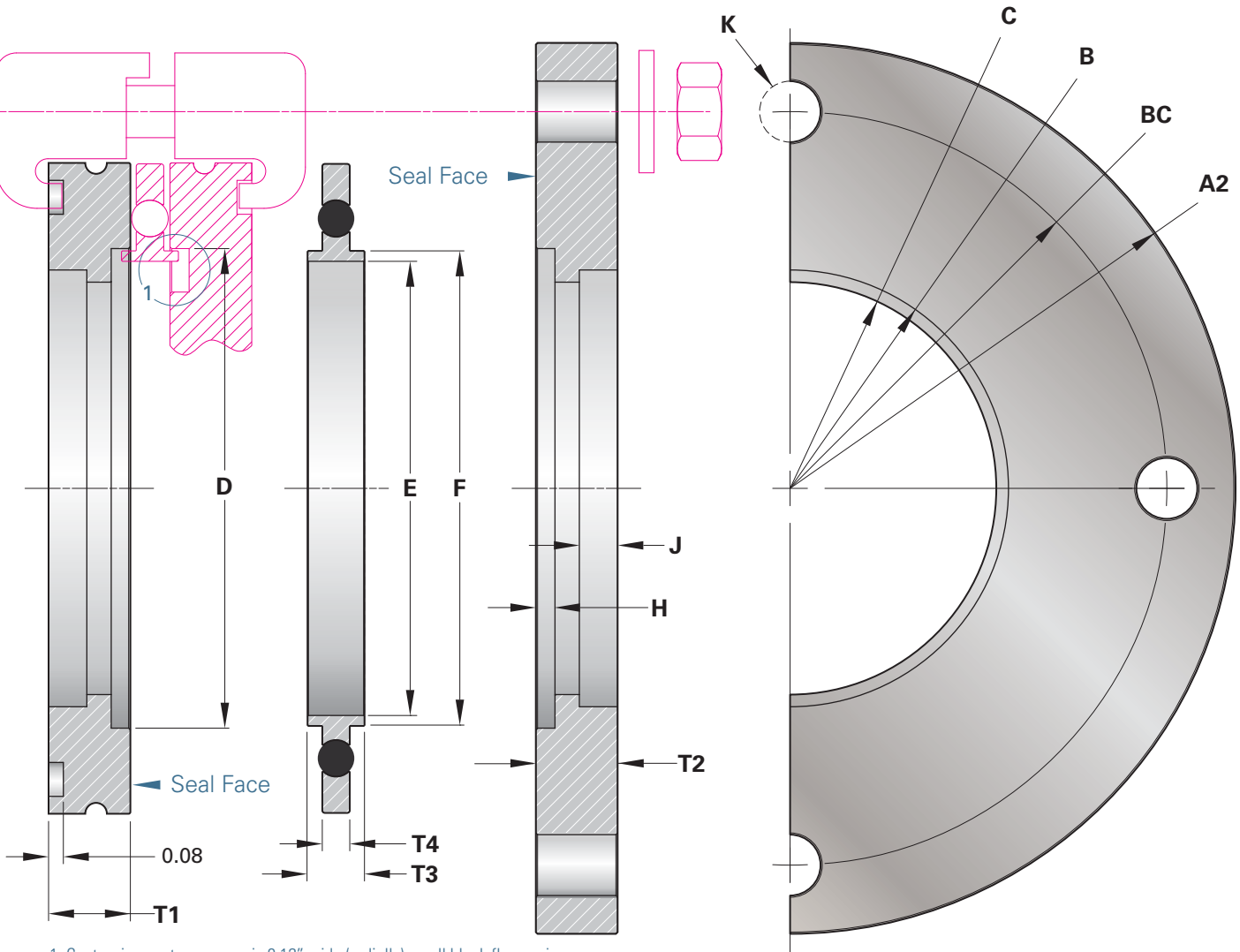


Cross section close-up of Atlas dual-clamp ISO seal mechanism. O-ring is held in place by an internal centering ring while an external containment ring guarantees even gasket compression.

| Nominal Size | | A1 | | A2 | | B | | BC | | C | | D | | E | | F | |
|--------------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|-----|
| Inch | ISO | | | | | | | | | | | | | | | | |
| 2-1/2 | 63 | 3.74 | 95 | 5.12 | 130 | 2.51 | 64 | 4.33 | 110 | 2.25 | 57 | 2.76 | 70 | 2.61 | 66 | 2.73 | 69 |
| 3 | 80 | 4.33 | 110 | 5.71 | 145 | 3.01 | 76 | 4.92 | 125 | 2.75 | 70 | 3.28 | 83 | 3.14 | 80 | 3.26 | 83 |
| 4 | 100 | 5.12 | 130 | 6.50 | 165 | 4.01 | 102 | 5.71 | 145 | 3.75 | 95 | 4.02 | 102 | 3.86 | 98 | 3.99 | 101 |
| 6 | 160 | 7.09 | 180 | 8.86 | 225 | 6.02 | 153 | 7.87 | 200 | 5.75 | 146 | 6.02 | 153 | 5.87 | 149 | 5.99 | 152 |
| 8 | 200 | 9.45 | 240 | 11.22 | 285 | 8.02 | 204 | 10.24 | 260 | 7.75 | 197 | 8.39 | 213 | 8.23 | 209 | 8.35 | 212 |
| 10 | 250 | 11.42 | 290 | 13.19 | 335 | 10.02 | 255 | 12.20 | 310 | 9.50 | 241 | 10.28 | 261 | 10.13 | 257 | 10.25 | 260 |
| 12-3/4 | 320 | 14.57 | 370 | 16.73 | 425 | 12.78 | 325 | 15.55 | 395 | 12.25 | 311 | 12.52 | 318 | 12.25 | 311 | 12.46 | 316 |
| 16 | 400 | 17.72 | 450 | 20.08 | 510 | 16.03 | 407 | 18.90 | 480 | 15.50 | 394 | 15.75 | 400 | 15.47 | 393 | 15.67 | 398 |
| 20 | 500 | 21.65 | 550 | 24.02 | 610 | 20.03 | 509 | 22.83 | 580 | 19.50 | 495 | 19.72 | 501 | 19.45 | 494 | 19.65 | 499 |

*Nominal' Inch refers to tube OD and Metric refers to tube ID.

Dimensional Specifications



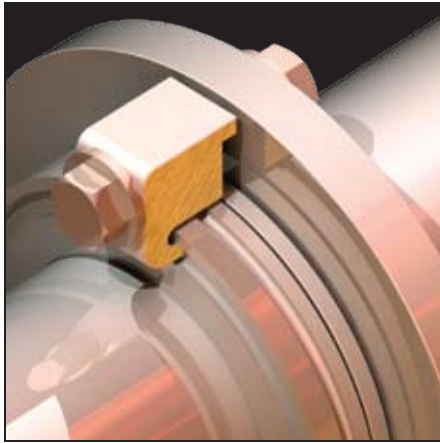
1. Center ring capture groove is 0.12" wide (radially) on all blank flange sizes

| G1 | | G2 | | H | | J | | K | | Bolt Holes | T1 | | T2 | | T3 | | T4 | |
|-------|-----|-------|-----|------|-----|------|-----|------|----|------------|------|----|------|----|------|-----|------|-----|
| 3.54 | 90 | 3.15 | 80 | 0.11 | 2.8 | 0.22 | 5.6 | 0.35 | 9 | 4 | 0.47 | 12 | 0.47 | 12 | 0.33 | 8.3 | 0.16 | 4.1 |
| 4.13 | 105 | 3.74 | 95 | 0.11 | 2.8 | 0.22 | 5.6 | 0.35 | 9 | 8 | 0.47 | 12 | 0.47 | 12 | 0.33 | 8.3 | 0.16 | 4.1 |
| 4.92 | 125 | 4.53 | 115 | 0.11 | 2.8 | 0.22 | 5.6 | 0.35 | 9 | 8 | 0.47 | 12 | 0.47 | 12 | 0.33 | 8.3 | 0.16 | 4.1 |
| 6.89 | 175 | 6.49 | 165 | 0.11 | 2.8 | 0.22 | 5.6 | 0.43 | 11 | 8 | 0.47 | 12 | 0.63 | 16 | 0.33 | 8.3 | 0.16 | 4.1 |
| 9.25 | 235 | 8.86 | 225 | 0.11 | 2.8 | 0.22 | 5.6 | 0.43 | 11 | 12 | 0.47 | 12 | 0.63 | 16 | 0.33 | 8.3 | 0.16 | 4.1 |
| 11.22 | 285 | 10.83 | 275 | 0.11 | 2.8 | 0.22 | 5.6 | 0.43 | 11 | 12 | 0.47 | 12 | 0.63 | 16 | 0.33 | 8.3 | 0.16 | 4.1 |
| 14.37 | 365 | 13.98 | 355 | 0.19 | 4.7 | 0.30 | 7.6 | 0.55 | 14 | 12 | 0.67 | 17 | 0.79 | 20 | 0.55 | 14 | 0.22 | 5.5 |
| 17.52 | 445 | 17.12 | 435 | 0.19 | 4.7 | 0.30 | 7.6 | 0.55 | 14 | 16 | 0.67 | 17 | 0.79 | 20 | 0.55 | 14 | 0.22 | 5.5 |
| 21.45 | 545 | 21.06 | 535 | 0.19 | 4.7 | 0.30 | 7.6 | 0.55 | 14 | 16 | 0.67 | 17 | 0.79 | 20 | 0.55 | 14 | 0.22 | 5.5 |

* Equivalent metric units (mm) are displayed in blue

Claw & Bolt — ISO Aluminum Flanges

Claw & Bolt ISO Aluminum Flanges



Atlas ISO single-claw / bolt flange assembly

| ISO Flange | Claw & Bolt ISO Aluminum Flanges | | | |
|------------|----------------------------------|------|-------------|----------|
| 63—500mm | ISO | Inch | Description | Part No. |

Claw Flange



| | | | |
|-----|--------|--------------|--------------|
| 63 | 2-1/2 | Bored flange | ISOAL-63-01 |
| 80 | 3 | Bored flange | ISOAL-80-01 |
| 100 | 4 | Bored flange | ISOAL-100-01 |
| 160 | 6 | Bored flange | ISOAL-160-01 |
| 200 | 8 | Bored flange | ISOAL-200-01 |
| 250 | 10 | Bored flange | ISOAL-250-01 |
| 320 | 12-3/4 | Bored flange | ISOAL-320-01 |
| 400 | 16 | Bored flange | ISOAL-400-01 |
| 500 | 20 | Bored flange | ISOAL-500-01 |
| 63 | 2-1/2 | Blank flange | ISOAL-63-02 |
| 80 | 3 | Blank flange | ISOAL-80-02 |
| 100 | 4 | Blank flange | ISOAL-100-02 |
| 160 | 6 | Blank flange | ISOAL-160-02 |
| 200 | 8 | Blank flange | ISOAL-200-02 |
| 250 | 10 | Blank flange | ISOAL-250-02 |
| 320 | 12-3/4 | Blank flange | ISOAL-320-02 |
| 400 | 16 | Blank flange | ISOAL-400-02 |
| 500 | 20 | Blank flange | ISOAL-500-02 |

Bolt Flange

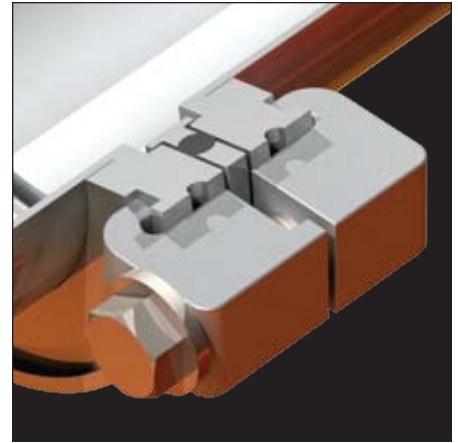


| | | | |
|-----|--------|--------------|--------------|
| 63 | 2-1/2 | Bored flange | ISOAL-63-03 |
| 80 | 3 | Bored flange | ISOAL-80-03 |
| 100 | 4 | Bored flange | ISOAL-100-03 |
| 160 | 6 | Bored flange | ISOAL-160-03 |
| 200 | 8 | Bored flange | ISOAL-200-03 |
| 250 | 10 | Bored flange | ISOAL-250-03 |
| 320 | 12-3/4 | Bored flange | ISOAL-320-03 |
| 400 | 16 | Bored flange | ISOAL-400-03 |
| 500 | 20 | Bored flange | ISOAL-500-03 |
| 63 | 2-1/2 | Blank | ISOAL-63-04 |
| 80 | 3 | Blank | ISOAL-80-04 |
| 100 | 4 | Blank | ISOAL-100-04 |
| 160 | 6 | Blank | ISOAL-160-04 |
| 200 | 8 | Blank | ISOAL-200-04 |
| 250 | 10 | Blank | ISOAL-250-04 |
| 320 | 12-3/4 | Blank | ISOAL-320-04 |
| 400 | 16 | Blank | ISOAL-400-04 |
| 500 | 20 | Blank | ISOAL-500-04 |

Claw & Bolt — ISO Flange Accessories



| Hardware | HW ISO Flange Mounting Hardware | | | |
|---|---------------------------------|--------|-----------------------------|--------------|
| | ISO | Inch | Description | Part No. |
| 63—500mm | | | | |
| Centering Ring  | 63 | 2-1/2 | Gasket / Inner, Outer Rings | ISOHW-63-01 |
| | 80 | 3 | Gasket / Inner, Outer Rings | ISOHW-80-01 |
| | 100 | 4 | Gasket / Inner, Outer Rings | ISOHW-100-01 |
| | 160 | 6 | Gasket / Inner, Outer Rings | ISOHW-160-01 |
| | 200 | 8 | Gasket / Inner, Outer Rings | ISOHW-200-01 |
| | 250 | 10 | Gasket / Inner, Outer Rings | ISOHW-250-01 |
| | 320 | 12-3/4 | Gasket / Inner, Outer Rings | ISOHW-320-01 |
| | 400 | 16 | Gasket / Inner, Outer Rings | ISOHW-400-01 |
| | 500 | 20 | Gasket / Inner, Outer Rings | ISOHW-500-01 |
| Double-Claw¹  | 63 | 2-1/2 | Claws / Bolt / Washer | ISOHW-63-02 |
| | 80 | 3 | Claws / Bolt / Washer | ISOHW-63-02 |
| | 100 | 4 | Claws / Bolt / Washer | ISOHW-63-02 |
| | 160 | 6 | Claws / Bolt / Washer | ISOHW-160-02 |
| | 200 | 8 | Claws / Bolt / Washer | ISOHW-160-02 |
| | 250 | 10 | Claws / Bolt / Washer | ISOHW-160-02 |
| | 320 | 12-3/4 | Claws / Bolt / Washer | ISOHW-320-02 |
| | 400 | 16 | Claws / Bolt / Washer | ISOHW-320-02 |
| | 500 | 20 | Claws / Bolt / Washer | ISOHW-320-02 |
| Single-Claw¹  | 63 | 2-1/2 | Claw / Bolt / Washers | ISOHW-63-03 |
| | 80 | 3 | Claw / Bolt / Washers | ISOHW-63-03 |
| | 100 | 4 | Claw / Bolt / Washers | ISOHW-63-03 |
| | 160 | 6 | Claw / Bolt / Washers | ISOHW-160-03 |
| | 200 | 8 | Claw / Bolt / Washers | ISOHW-160-03 |
| | 250 | 10 | Claw / Bolt / Washers | ISOHW-160-03 |
| | 320 | 12-3/4 | Claw / Bolt / Washers | ISOHW-320-03 |
| | 400 | 16 | Claw / Bolt / Washers | ISOHW-320-03 |
| | 500 | 20 | Claw / Bolt / Washers | ISOHW-320-03 |
| Bolt Kit  | 63 | 2-1/2 | 4 M8 / Bolt, Washer, Nut | ISOHW-63-04 |
| | 80 | 3 | 8 M8 / Bolt, Washer, Nut | ISOHW-80-04 |
| | 100 | 4 | 8 M8 / Bolt, Washer, Nut | ISOHW-80-04 |
| | 160 | 6 | 8 M10 / Bolt, Washer, Nut | ISOHW-160-04 |
| | 200 | 8 | 12 M10 / Bolt, Washer, Nut | ISOHW-200-04 |
| | 250 | 10 | 12 M10 / Bolt, Washer, Nut | ISOHW-200-04 |
| | 320 | 12-3/4 | 12 M12 / Bolt, Washer, Nut | ISOHW-320-04 |
| | 400 | 16 | 16 M12 / Bolt, Washer, Nut | ISOHW-400-04 |
| | 500 | 20 | 16 M12 / Bolt, Washer, Nut | ISOHW-400-04 |



Cross section of an Atlas ISO double-claw flange assembly depicting seal interface components.

Claw & Bolt ISO Aluminum Flanges

Notes

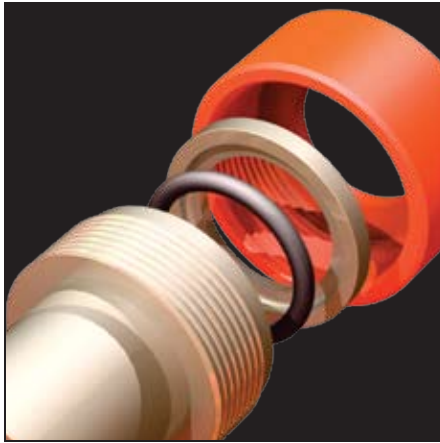
1. ISO 63, 80 and 100 share the same size single and double-claw hardware.

ISO 160, 200 and 250 share the same size single and double-claw hardware.

ISO 320, 400 and 500 share the same size single and double-claw hardware.

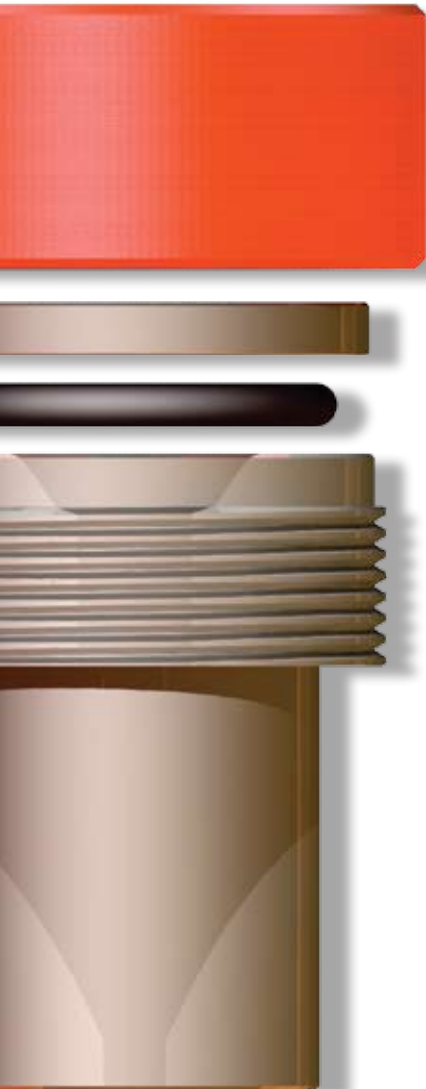
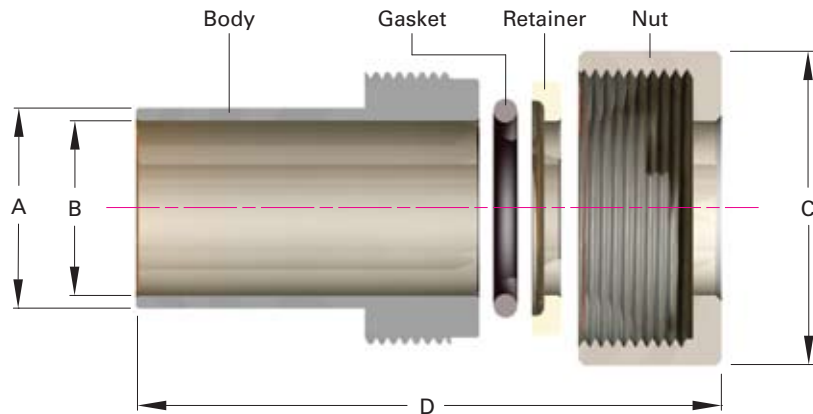
Atlas Quick-Disconnect Fittings

Atlas Quick Disconnect Aluminum Fittings



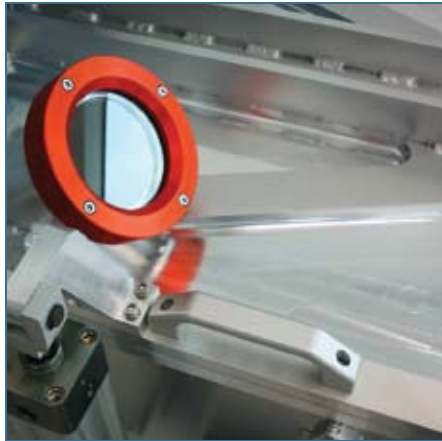
Atlas Quick-Disconnect fittings are the lighter and more economical solution for fast vacuum tube hookup.

Atlas Quick-Disconnect fittings are made of 6061-T6 aluminum and available for seventeen US standard tube sizes from 1/16 up to 2 inch diameters. Fittings are comprised of four basic parts... a body, gasket, retainer and nut. Standard gasket material is a Viton® elastomer, which is capable of sustained operation at temperatures to 150°C. With 1/3 the weight of competing stainless steel parts, Atlas Quick-Disconnect fittings are the light and economical alternative. Quick-Disconnect fittings are quick and easy means of connecting tubular vacuum components such as feedthroughs, gauges, glass tubing, etc.



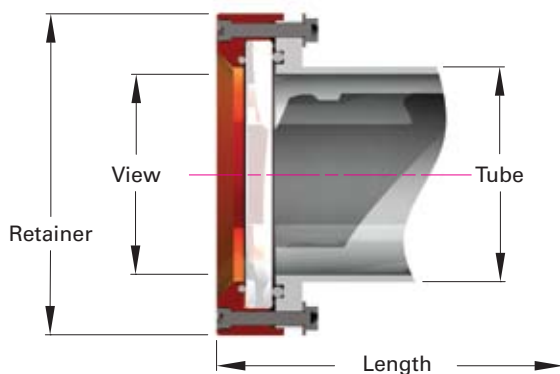
| Quick Disconnect | | QD Atlas Aluminum Quick Disconnect Fittings | | | | |
|------------------|----------|---|------|--------|------|--------------|
| Tube Size | Thread | A | B | C | D | Part No. |
| 1/16 | .375-20 | .375 | .07 | 1/2 | 1.31 | QDAL-0063-01 |
| 1/8 | .375-20 | .375 | .13 | 1/2 | 1.31 | QDAL-0125-01 |
| 3/16 | .500-20 | .375 | .19 | 5/8 | 1.31 | QDAL-0188-01 |
| 1/4 | .500-20 | .375 | .26 | 5/8 | 1.31 | QDAL-0250-01 |
| 5/16 | .688-20 | .500 | .32 | 7/8 | 1.31 | QDAL-0313-01 |
| 3/8 | .688-20 | .500 | .38 | 7/8 | 1.31 | QDAL-0375-01 |
| 1/2 | .750-20 | .625 | .51 | 7/8 | 1.38 | QDAL-0500-01 |
| 5/8 | 1-20 | .750 | .63 | 1-3/16 | 1.50 | QDAL-0625-01 |
| 3/4 | 1.188-20 | .875 | .76 | 1-3/8 | 1.63 | QDAL-0750-01 |
| 7/8 | 1.25-20 | 1.00 | .88 | 1-3/8 | 1.63 | QDAL-0875-01 |
| 1 | 1.375-20 | 1.125 | 1.01 | 1-5/8 | 1.88 | QDAL-1000-01 |
| 1-1/8 | 1.625-20 | 1.25 | 1.13 | 1-7/8 | 1.88 | QDAL-1125-01 |
| 1-1/4 | 1.688-20 | 1.50 | 1.26 | 1-7/8 | 2 | QDAL-1250-01 |
| 1-3/8 | 1.812-20 | 1.625 | 1.39 | 2 | 2.13 | QDAL-1375-01 |
| 1-1/2 | 2-20 | 1.75 | 1.51 | 2-1/4 | 2.25 | QDAL-1500-01 |
| 1-5/8 | 2.125-20 | 1.875 | 1.63 | 2-3/8 | 2.25 | QDAL-1625-01 |
| 2 | 2.5-20 | 2.25 | 2.01 | 2-3/4 | 2.25 | QDAL-2000-01 |

Atlas Pyrex® Glass Viewports



Close up of Atlas' demountable glass viewport

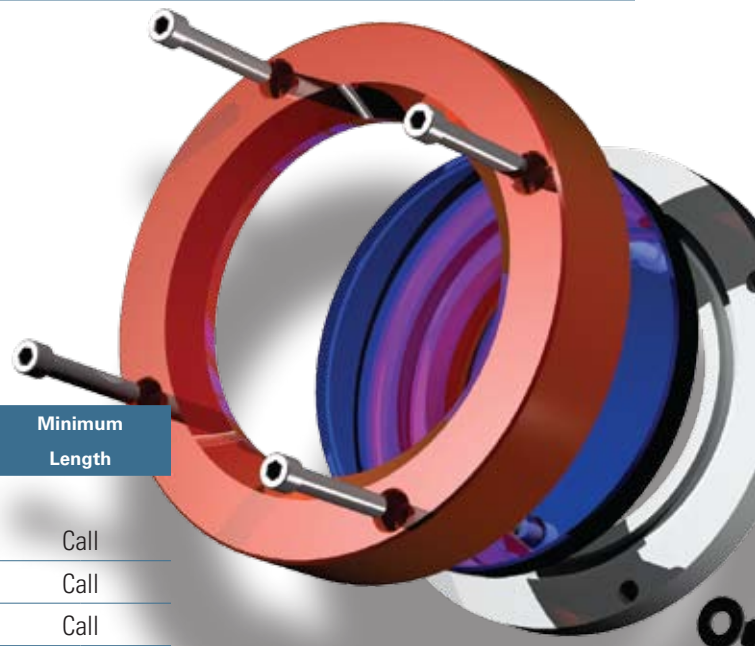
Atlas Pyrex® glass viewports are mounted on aluminum hardware and designed for welding directly into high vacuum aluminum chamber walls. Our viewports are lightweight and an economical alternative to comparable stainless steel solutions. The glass substrate is captured between two elastomer O-rings. One gasket provides a vacuum seal, while the other acts as a cushion to prevent direct glass-to-metal contact. Other standard sizes are available on request. Atlas also produces customized polycarbonate port covers of various sizes and shapes. Contact our sales department for more information.



| Window Size | | View | | Retainer | | Tube | | Minimum |
|-------------|-----|----------|----------|----------|----------|----------|----------|---------|
| Inch | mm | Diameter | Diameter | Diameter | Diameter | Diameter | Diameter | Length |
| 1 | 25 | 0.75 | 19 | 3.00 | 76 | 1.00 | 25 | Call |
| 2 | 51 | 1.75 | 44 | 4.00 | 102 | 2.00 | 51 | Call |
| 3 | 76 | 2.75 | 70 | 5.00 | 127 | 3.00 | 76 | Call |
| 4 | 102 | 3.75 | 95 | 6.00 | 152 | 4.00 | 102 | Call |

| Viewports | VPG Atlas Pyrex® Glass Viewports | |
|------------------------|--|-----------------|
| Pyrex® | Description | Part No. |
| 1-Inch Viewport | 3/4 Inch Aperture | VPG-0100 |
| | Glass, Replacement | VPGHW-0100-01 |
| | Bolts, Socket Head / Package of 4 | VPGHW-0100-02 |
| | O-ring, Viton® Elastomer / Glass to Flange | VPGHW-0100-03 |
| | O-ring Elastomer / Glass to Retainer | VPGHW-0100-04 |
| 2-Inch Viewport | 1-3/4 Inch Aperture | VPG-0200 |
| | Glass, Replacement | VPGHW-0200-01 |
| | Bolts, Socket Head / Package of 4 | VPGHW-0200-02 |
| | O-ring, Viton® Elastomer / Glass to Flange | VPGHW-0200-03 |
| | O-ring Elastomer / Glass to Retainer | VPGHW-0200-04 |
| 3-Inch Viewport | 2-3/4 Inch Aperture | VPG-0300 |
| | Glass, Replacement | VPGHW-0300-01 |
| | Bolts, Socket Head / Package of 4 | VPGHW-0300-02 |
| | O-ring, Viton® Elastomer / Glass to Flange | VPGHW-0300-03 |
| | O-ring Elastomer / Glass to Retainer | VPGHW-0300-04 |
| 4-Inch Viewport | 3-3/4 Inch Aperture | VPG-0400 |
| | Glass, Replacement | VPGHW-0400-01 |
| | Bolts, Socket Head / Package of 4 | VPGHW-0400-02 |
| | O-ring, Viton® Elastomer / Glass to Flange | VPGHW-0400-03 |
| | O-ring Elastomer / Glass to Retainer | VPGHW-0400-04 |

Atlas Glass Viewports





Atlas 90° aluminum elbow fitted with Atlas CF Flanges

Elbows, Tees and Crosses

Atlas aluminum elbows, tees and crosses are precision machined UHV compatible tube fittings. These compact weldable fittings are designed with smooth and polished internal surfaces, radiused to maximize conductance and facilitate flow. Atlas aluminum elbows, tees and crosses are rigorously tested to UHV standards and are compatible with Atlas CF flanges and ATRC face seal fittings.

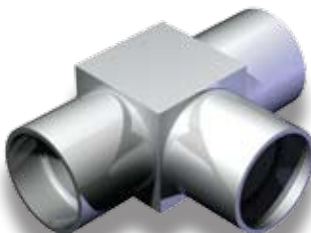
They are ideally suited for demanding ultrahigh vacuum applications in semiconductor, magnetic, nuclear, medical and chemical resistance environments.

Atlas aluminum fittings are available in standard tube sizes including 1/4, 3/8, 1/2, 3/4, 1, 1-1/2, 2, 2-1/2 and 3 inch diameters. Contact our sales department for more information.

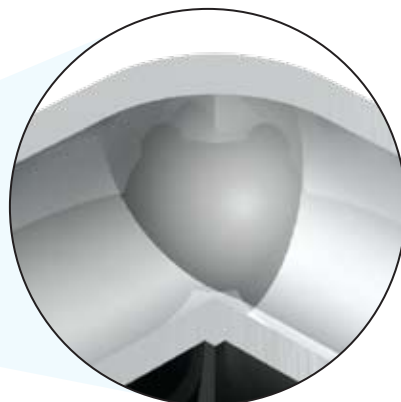
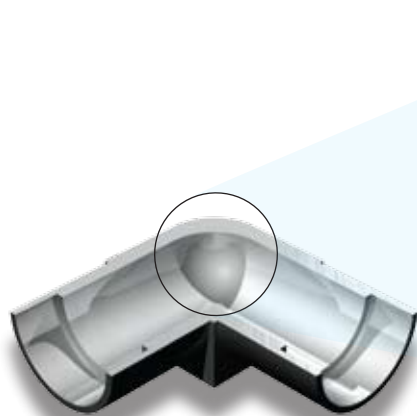
90° — Elbow Aluminum Fittings



90° — Tee Aluminum Fittings



90° — Cross Aluminum Fittings



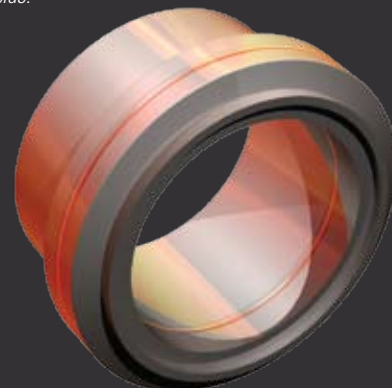
Radiused and polished internal corners provide improved conductance and flow.

Bimetallic Tube and Pipe Transitions

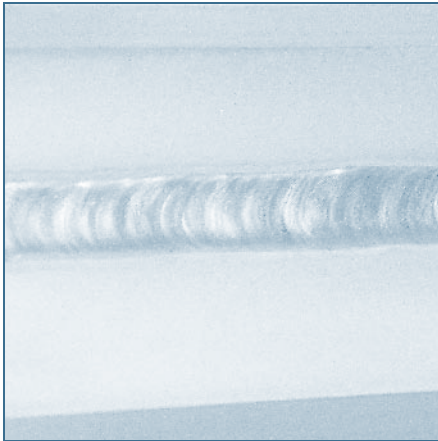
Atlas transitions are metallurgically bonded joints used for welding dissimilar metal tubes or pipes. Atlas stainless-aluminum bimetallic transitions are explosion bonded and engineered for cryogenic service to -196°C (-320°F); and in some cases to liquid helium temperatures. Our cryogenic transition joints have been serving scientific, medical, oil and gas, chemical, nuclear and semiconductor industries for over 15 years. Atlas tube and pipe transitions are available for all standard diameters, wall thicknesses and schedules in sizes ranging from 3/8 to 30 inches in diameter (DN10 to DN750). Custom transition material combinations such as titanium-aluminum are also produced. All joints are vacuum tested to 1×10^{-9} cc/sec of He. Certified low, medium and high pressure testing (<300, <600 and <1200 psi respectively) is also available.



Cross section of Atlas 2 inch diameter (DN50) bimetallic tube transition viewed from aluminum interface side.



Atlas 2 inch diameter (DN50) bimetallic tube transition viewed from stainless steel interface side.



Close-up of a typical Atlas Technologies UHV aluminum weld joint.



Atlas Technical Reference

Aluminum UHV Weld Design

- Mass
- Grooves
- Cleanliness
- Preheating

Aluminum UHV Weld Design

Most facilities familiar with ultrahigh vacuum (UHV) have experience welding stainless steel to UHV standards, however many have not had occasion to weld aluminum to meet these standards. This brief guide is offered for designing and welding aluminum and Atlas' aluminum-to-stainless bimetallic flanges, fittings and transitions.

Someone who has been welding stainless steel must learn an entirely new set of rules for welding aluminum.

Each welder will ultimately develop their own methods and techniques for welding aluminum. The following are some basic guidelines for getting started in this process.

Mass

Design aluminum weld geometries that have similar masses whenever possible. If a large mass differential exist between the com-

ponents being welded, say a chamber and a flange, the more massive of the two will be cooler leading the other to preferentially melt. If similar masses are not possible, thermal chokes can be machined into the more massive part to constrain heat loss. Burying a less massive component into its larger mate will also distribute heat in a more uniform manner and facilitate the welding process.

Weld Grooves

Machining 'V' shaped weld grooves into aluminum weld joints permits the liberal use of filler rod to reduce cracking. In the case of tube weld joints, 'V' grooves should be machined on a tube's inner diameter (ID) and penetrate about 2/3 of its wall thickness.

Cleanliness

Cleanliness is crucial to aluminum welding. Make sure that weld surfaces, including filler rods, are freshly cleaned and completely dry. Even though aluminum instantaneously forms an oxide in air, a freshly abraded surface can reduce thickness and contaminants present in that oxide. This is important, as aluminum melts between 580-650°C and its oxide around 1760°C. Its worth noting that this oxide can sink into a molten weld and interfere with its integrity.

Preheating

Because of aluminum's excellent thermal conductivity (5x that of stainless steel), vast amounts of heat are required when beginning a weld. Heat typically spreads ahead of a weld bead and begins to accumulate in a part reducing the amount of heat required during welding. Rather than stopping and starting a weld, which often lead to leaks, we recommend using a foot pedal current controller.

During welding, stainless steel glows red at welding temperature, aluminum however will not, it just melts. A welder must observe the molten aluminum weld puddle and use the TIG torch to control the melt and solidification process; thus controlling size, shape and porosity of the weld. Once a weld puddle has been established, welding must move along quickly otherwise the weld puddle will spread or melt through the weldment.

Aluminum Thickness Under 1/4" (6mm)

Ideal for tube to tube and Atlas CF Flanges fitted with weld-neck (WN) geometries.

| | |
|---------------------------------|---|
| Mode | AC (cleans oxides) |
| Current | 75-185A (foot-pedal control) |
| Gas | Thin sections, use 100% Argon Thick sections, use 25% Helium / 75% Argon |
| Gas Flow | 15 to 25 cfm |
| Gas Lens | Optional |
| Electrode Material | 2% Ceriated Tungsten (W) |
| Electrode Tip Geometry | 3/32" (2.38mm) (Sharpen electrode tip to short, blunt taper.) |
| Filler rod | 4043 1/16" (1.58mm) Diameter Filler rod 5356 if parts are to be anodized |
| Weld Appearance | Bright metallic with no soot (Yellow discoloration results from Oxygen contaminated Helium) |
| Maximum Temperature at EXW Bond | 300°C (Keep damp rag on EXW bimetallic bond joint to prevent overheating during welding) |
| Porosity | Tungsten sputter or dip into the weld joint may result in undesirable weld porosity. |

Aluminum Thickness Over 1/4" (6mm)

Ideal for flange to chamber and Atlas CF Flanges with flush-mount (FM) geometries.

| | |
|---------------------------------|--|
| Mode | AC (cleans oxides) |
| Current | 125-200A (foot-pedal control) |
| Gas | Thick sections, use 75% Helium / 25% Argon Thin sections, use 25% Helium / 75% Argon |
| Gas Lens | Optional |
| Gas Flow | 30 to 40 cfm (or more depending on weld bead size) |
| Electrode Material | 2% Ceriated Tungsten (W) |
| Electrode Tip | Small Bead, 3/32" (2.38mm) Large Bead, 1/8" (3.18mm) (Sharpen electrode tip to short, blunt taper) |
| Filler rod | 4043, 1/16 to 1/8 inch (1.58 to 3.18mm) Filler rod 5356 if parts are to be anodized |
| Weld Appearance | Bright metallic with no soot (Yellow discoloration results from Oxygen contaminated Helium) |
| Maximum Temperature at EXW Bond | 300°C (Keep damp rag on EXW bimetallic bond joint to prevent overheating during welding) |
| Porosity | Tungsten sputter or dip into the weld joint may result in undesirable weld porosity. |

Atlas Customers

The Atlas customer base consists of a wide and diverse grouping of industrial, government, academic and scientific entities located around the globe.

Our primary areas of business include Semiconductor, FAB, Solar, Particle Physics, Synchrotron, Nuclear Medicine, Cryogenic and Neutron Radiation disciplines, and many others. For your reference, the following is a partial list of Atlas customers:

Industrial Customers

- Applied Materials, USA
- Novellus Systems, USA
- Durex, USA
- General Atomics, USA
- General Electric, USA
- Lucent Technologies, USA
- Sencera Solar, USA
- Ovonic ECD, USA
- Tokyo Electron, USA
- Oxford Instruments, United Kingdom
- Ulvac, Japan
- Beneq, Finland
- Advanced Cyclotron, Canada

Government Customers

- ANL, Argonne National Lab
- BNL, Brookhaven National Lab
- CAMD, Louisiana State University
- FNL, Fermi National Lab
- JNL, Jefferson National Lab
- LANL, Los Alamos National Lab
- LBL, Lawrence Berkeley National Lab
- LLNL, Lawrence Livermore National Lab
- NASA, National Aeronautics & Space Administration
- SLAC, Stanford Linear Accelerator Center
- BESY, Germany
- CERN, Switzerland
- KEK, Japan
- ESRF, France
- DESY, Germany

Academic Customers

- Louisiana State University, CAMD
- Ohio State University
- University of Texas
- University of California, Berkeley
- Stanford University
- University of Rochester
- University of Wisconsin
- University of Washington

Customer Testimonials

"During my tenure at Ovonic ECD (United Solar) I was very pleased with the service and quality we received from Atlas Technologies.

Before working with Atlas all of our thin film photovoltaic production line was manufactured out of stainless steel. Atlas assisted us in converting the drive and transition chambers to aluminum; this created a substantial (50 to 60%) cost savings.

By using the standard weld-on bimetallic Atlas AT- CF flanges we were able to eliminate O-rings and reduce contamination. The quality of the chambers and equipment we have received from them has been exceptional. Furthermore when we commission their chambers it has become worry-free for our installation crews.

We maintain a very aggressive production schedule and they have always been accurate, up-front and on time with their delivery commitments. They also price themselves



aggressively. I strongly recommend Atlas Technologies for future work"

George Uzoni

*Formerly, Design Supervisor
Energy Conversion Devices (United Solar)*



"We have been working with Atlas for many years using their Atlas CF flanges and explosion bonding capability for assemblies such as beryllium windows. In 2005 we had a need for a dipole magnet vacuum chamber. Atlas competed with vacuum equipment manufacturers worldwide and won the bid, beating out stainless steel vendors in Europe and Russia by a large margin.

This is a large chamber ~2.9 m long with two 50 mrad acceptance aperture IR beamlines tangential to the synchrotron electron beam

orbit. All flanges including e-beam orbit, synchrotron radiation ports and pumping ports were fabricated from Atlas CF flanges. In addition to the demanding geometrical constraints of the dipole magnet the chamber was required to absorb all excess synchrotron radiation not entering the beamlines and resist any deformation due to forces incurred under vacuum. Atlas presented a preliminary design for approval before fabrication and conducted a complete FEA analysis of the chamber studying both the thermal loading and the vacuum deflection.

Atlas fabricated the chamber in two halves with each half having a water cooling surface machined into the chamber. The two halves were welded together and final machining brought the chamber overall thickness tolerance and chamber radius of curvature tolerance to less than 1mm. The chamber is presently installed in the CAMD synchrotron in bending magnet 2 and attains a base pressure less than 5×10^{-10} Torr without bakeout"

Research Associate Engineer
*Engineering Support Group
A USA Academic Synchrotron*



antiprotons at Fermilab. These UHV chambers enable the introduction of electrons to the antiproton beam and the extraction of the electrons from the beam after cooling. In electron cooling, beams of electrons and antiprotons circulate together at the same speed. The "colder" electrons interact with the "hotter" antiprotons and cool the beam of antiprotons in the same way that hot gas is cooled when it is mixed with cold gas. Fermilab was the first lab to demonstrate e-cooling at high energies, operating the electron beam at 4.3 MeV. Atlas made the chambers in two halves machined from thick plates of aluminum. Then they welded them together and attached Atlas CF flanges to the legs. All the chambers have performed very well, met our specifications and they were beautiful!"

"We worked with Atlas Technologies to build a series of X and Y-shaped aluminum bending magnet vacuum chambers for an electron cooling system, which cools relativistic

Sergei Nagaitsev
Deputy Director
Fermilab ILC Program

Atlas Company Information

Orders

To place an order, request literature or obtain product and services information, please call us at 360-385-3123, visit us on the web at www.AtlasUHV.com or send an e-mail to info@AtlasUHV.com

Payment Terms

Standard payment terms are net thirty (30) days from date of invoice (prior credit approval required). Non approved accounts will require COD terms. Atlas accepts VISA and Mastercard credit cards.

Discounts

OEM and quantity discounts may be available to qualified customers. Please contact Atlas sales department for more information.

Shipping Charges

All domestic shipments are via UPS/surface, FOB Port Townsend, Washington 98368, prepaid and added to invoice, unless quoted otherwise.

Return Policy

A return goods authorization number 'RGA' must be obtained from Atlas before returning any products. All return shipping charges must be prepaid by the customer—note that freight-collect shipments will be refused.

Prices & Specifications

Prices and specifications are subject to change at any time and without prior notice.

Warranty (Atlas Limited Warranty is applicable to all sales)

Atlas warrants that the product sold hereunder shall be free from defects in materials and workmanship for a period of one (1) year from date of sale, provided the user follows Atlas' operation instructions.

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