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Custom Fabrication & Vacuum Chambers





Custom Fabrication

For over 50 years, **ANCORP** has fabricated high and ultra-high vacuum components and chambers. Our fabricated chambers range from one-of-a-kind chambers for research applications to production quantity chambers for OEM's.

In 2012, we opened a 6,500 square foot expansion to our factory to meet the growing demand for our Custom Fabrication division. The state-of-the-art facility is equipped with the latest manufacturing technology for CNC mills, lathes, and welding tools.

The expansion includes on-site offices for Engineering and Project Management staff - ensuring you receive the highest quality chamber on schedule. Our welders and Vacuum Welding Program have been certified by AWS and ASME. Our Quality Control procedures include dimensional checks using a Coordinate Measuring Machine (CMM) and leak checks using state-of-the-art helium mass spectrometer leak detectors.

High and ultra-high vacuum chambers are engineered products that require a specialized set of materials and fabrication processes. To help designers and practitioners better understand system specifications, a brief overview of **ANCORP's** capabilities and practices follows:

Engineering and Project Support

From your initial inquiry to when your finished chamber ships out of our factory, **ANCORP** engineers and project support staff are working to ensure your custom project meets your highest quality standards and is

Custom Fabrication



delivered on schedule. Before manufacturing begins, engineers trained in vacuum technology and chamber design review design drawings. Project support staff ensures the manufacturing schedule is kept and drawing specifications and tolerances are met. **ANCORP** can work with customer-supplied drawings or create drawings from simple, free hand sketches.

MATERIALS

Standard Materials: Because of its high corrosion resistance, low outgassing rates, wide range of applicable temperatures, machinability, weldability, and relative cost, **ANCORP's** standard material for tube sections,



spheres and roll-ups is 304L stainless steel. **ANCORP** routinely works with 304L and 316L stainless steel as well as 6061 T6 aluminum.

ANCORP specifies a magnetic permeability not to exceed 1.02µ when ordering raw 304 stainless materials. Welding and machining processes may result in heat affected or cold-worked zones that may increase magnetic permeability in these zones. Minimizing seams, joints, and bends in areas of high magnetic sensitivity should be considered during the design process. For applications that require superior magnetic flux shielding, mumetal can also be supplied.

Flanges: ANCORP's flanges are made from specially



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manufactured raw stock that is designed to maximize the vacuum capabilities of 304 stainless. These processes minimize impurities and inclusions that could adversely impact the steel's ability to maintain vacuum. Grain size, orientation, and density are also engineered to maximize the vacuum performance of the raw stock.

FABRICATION

Welding: ANCORP uses tungsten inert gas (TIG/ GTAW) welding techniques with high purity argon as the backfill/purge gas. Both manual and automated orbital welding machines are employed. In accordance with good UHV fabrication practices, non-filler material, internal fusion weld joints are utilized wherever possible.

In those instances where geometries preclude internal welds, 100% full penetration welds are provided. To minimize sources of virtual leaks, external welds are only used when required for structural reinforcement and are limited to stitch, skip, span, or spot weld configurations.

Machining: State-of-the-art, multi-axis, CNC machine centers are at the heart of **ANCORP**'s operations. Our work processes are built upon the dual goals of high quality and rapid turnaround. Our machining coolants are sufur free, biodegradable, and recycled.

Surface Finishes: The following finishing techniques are available: Glass Bead Blasted, Machine Polished, and Electropolished. Flanges and machined components (faced, turned or bored) come standard with a 32 micro-inch surface finish and a 16 microinch sealing surface. For a machined finish better than 32 micro-inch speak to one of our design engineers.

QUALITY CONTROL

All weld joints and sealing surfaces are certified with





state-of-the-art helium mass spectrometer leak detectors to a maximum rate of 1×10^{-9} std. cc helium. Leak testing is typically conducted in an "outside-in" or tracer-probe configuration. Helium (gas) bag tests are conducted as needed.

The highest standards of quality control inform every aspect of our operational practices. We welcome customer audits. Dimensional checks are confirmed with a computer controlled Coordinate Measuring Machine (CMM). Material and CMM certifications can be provided upon request.

CLEANING AND PACKAGING

Upon final machining, most components are washed in

a heated, ultrasonic, detergent bath followed by multiple ultrasonic, deionized water rinses to remove all residual machining lubricants. After final rinse, parts are blown dry with dry, heated, filtered air and packaged.

After cleaning and testing, flanges and small components are hermetically sealed in vacuum board packaging and are ready for UHV installation. Larger flanges are covered with a layer of foil and protective plastic shields. Weldments and assemblies are then bagged, bubble-wrapped, and inserted into a shipping container surrounded by void filling "pillow" wrap. Custom crating is available.





Are you in the market for a custom vacuum chamber? If so, you likely understand by now that the process for procuring such an item is not as cut-and-dry as buying off-the-shelf vacuum components. Relative to catalog parts, vacuum chambers are often complex, bespoke, and expensive. Though some drivers of complexity and price are unavoidable when it comes to chambers, there are steps you can take when preparing your Request for Quote (RFQ) to reduce quote turnaround, optimize your design for manufacture, and, ultimately, save time and money.

At **ANCORP**, we're proud to manufacture world-class vacuum chambers right here in the United States. Our cylindrical, spherical, and box chambers serve a variety of industries and applications including ultrahigh-vacuum (UHV), and each chamber is made-toorder here in Florida by our team of master machinists, welders, and fabricators.

Read on for 3 Vacuum Chamber RFQ Tips that will help you get faster responses, reduced lead times, and lower prices.

1. Eliminate Unnecessary Complexity

CAD software gives engineers and designers the freedom to come up with all manner of complex part geometries. But, when it comes time to actually cut steel, simplicity is a manufacturer's (and therefore a customer's) friend.

Increasingly complex part geometries require increasingly special machining capabilities. The more that specific machinery is required to make your chamber, the higher your price climbs and the longer your lead time becomes. When functionality and practicality allow it, reduce part complexity wherever you can. Even the elimination of something seemingly simple like an angled or offset port can simplify your chamber to the point that the machining options for making it double or triple. When a manufacturer has multiple options for fabricating your chamber, both price and lead time will drop.

2. Avoid Excessive Geometric Dimensioning & Tolerancing (GD&T)

Understanding your true GD&T "must haves" is critical to getting both a price and lead time that are reflective of your needs. Applying unnecessary constraints (or making the magnitude of necessary constraints lower than required) will significantly impact the cost of fabricating a chamber.

For example, let's say a customer has specified a flatness tolerance on their chamber's top flange of 0.005". Practically speaking, they really only need a flatness of 0.020", but they've over-specified to be safe (or, perhaps their CAD software defaulted to 0.005" and they didn't change it). This seemingly small difference on paper could require an entire additional manufacturing step since, to achieve a top flange flatness of 0.005" on most chambers, a post-welding machining pass is required. The result is additional set up and machine time that is ultimately unnecessary to achieve what the customer really wants.

To ensure your quote is reflective of your actual needs, specify only the GD&T constraints that you truly require, and make the magnitudes of those constraints only as small as is functionally necessary.



Three Main Chamber Body Types



3. Provide a Set of Drawings that Fully Defines the Chamber

Even if your application requires you to keep tight GD&T constraints and complex part geometries, you can save yourself valuable time by providing the manufacturer with a set of RFQ drawings that fully define your chamber (PDFs are typically best).

Drawings that lack critical dimensions, don't specify tolerances, exclude a bill of materials, or don't provide enough views to fully understand the part typically provide more questions than answers to estimators. The process of compiling these questions and communicating back and forth to resolve them delays quote turnaround and costs all parties involved both time and effort. If you don't have the bandwidth to generate a fully defined set of 2D drawings, a fully defined 3D model of your chamber in STP format will usually get the job done.

These 3 simple steps will go a long way in gaining you faster quote turnaround, favorable prices, and shorter lead times.



Applications:

- Thin Film Deposition
- High Energy Physics
- Mass Spectrometry
- Surface Analysis
- Space Simulation
- Metrology
- and more



2.05



EBAPOWERING DSCOVERING HIGH PRECISION CUSTOM UHV MANUFACTURING

CHAMBERS | WELDMENTS | MANIFOLDS | FITTINGS | FLANGES

ANCORP has been building high and ultra-high vacuum components since 1965. When your research is ready for new discoveries, our UHV chambers, weldments and fittings will help you reach your goal. Call our engineers today for a quote on your next UHV System.

PROUD TO BE A U.S. MANUFACTURER

ANCORP

Empowering Science and Technology Since 1965

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CUSTOM CONFIGURATORS

CUSTOM FEEDTHROUGH CONFIGURATOR

Create a customized feedthrough to your tailored specifications.



Connection 1 Flange Style

Select your flange and flange size for Connection 1 from the chart below.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

2 Connection 2 Vacuum Side

Select your flange and flange size for Connection 2 from the chart below.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

3 Connection 3 Atmosphere Side

If customizing a hybrid feedthrough, select your flange and flange size for Connection 3 from the chart below.

CF133xBP100xTE-025-FTST-3.00-304-304-VT

| CODE | STYLE | SIZES |
|------|------------------|---|
| BP | Baseplate | 100 |
| SWG | Swagelok | 06, 12, 18, 25, 31, 38, 50, 62, 75, 87, 100 |
| TE | Tube End | (Leave Size Blank) |
| MVCR | Male VCR | 06, 12, 18, 25, 31, 38, 50, 62, 75, 87, 100 |
| FVCR | Female VCR | 06, 12, 18, 25, 31, 38, 50, 62, 75, 87, 100 |
| MNPT | Male NPT | 06, 12, 18, 25, 31, 38, 50, 62, 75, 87, 100 |
| FNPT | Female NPT | 06, 12, 18, 25, 31, 38, 50, 62, 75, 87, 100 |
| QD | Quick Disconnect | 06, 12, 18, 25, 31, 38, 50, 62, 75, 87, 100 |
| CF* | ConFlat | 133, 212, 275, 338, 450, 462, 600, 675, 800, 1000, 1200, 1325, 1400, 1450, 1650 |
| QF* | Quick Flange | 10 ,16, 25, 40, 50 |

*Can only be used for Connnection 1

4 Shaft/ Connector O.D.

If it exists, select the outer diameter for your shaft/connector.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

| CODE | SIZE |
|------|-------------|
| 025 | 0.25 inches |
| 038 | 0.38 inches |
| 050 | 0.50 inches |
| 075 | 0.75 inches |



Select the type of feedthrough. If selecting a baseplate, leave this blank.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

| CODE | SIZE |
|------|---------------------------|
| FTHC | High Current |
| FTRE | Rotary Elastomer |
| FTRF | Rotary Ferro Sealed |
| FTST | Non-Cryogenic Single Tube |
| FTDT | Non-Cryogenic Double Tube |
| FTCS | Cryogenic Single Tube |
| FTCD | Cryogenic Double Tube |



Select the overall length for your feedthrough. The default length is 3.00 inches.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

7 Material

Select the material for your feedthrough. CF133xBP100xTE-025-FTST-3.00-304-50-VT

| CODE | MATERIAL |
|------|-------------------------------|
| 304 | 304 Stainless Steel (Default) |
| 316 | 316 Stainless Steel |
| BR | Buna-N |
| AL | Aluminum |

8 Voltage/Torque

If needed, select the voltage/torque for your feedthrough. Leave blank if not.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

| CODE | VOLTAGE / TORQUE |
|------|------------------|
| 50 | 50 Torque |
| 160 | 160 Torque |
| 400 | 400 Amp |
| 1000 | 1000 Amp |

9 Elastomer Ring Material

If needed, select the material for your elastomer ring.

CF133xBP100xTE-025-FTST-3.00-304-50-VT

| CODE | MATERIAL |
|------|----------|
| VT | Viton |
| BN | Buna-N |
| SN | Silicon |



\$\$ MONEY SAVING TIP \$\$

Some options can add significant costs to manufacturing. If you're not sure exactly what you need, call one of our trained technicians for money saving tips.



NEED ASSISTANCE? Call one of our trained customer service representatives at 1-800-352-6431

CUSTOM FLANGE CONFIGURATOR

Create a customized flange tailored to your specifications.



CF133RT-075-SF-316-0.75-EP

1 FLANGE STYLE

Choose a flange style.

| CODE | FLANGE STYLE | VACUUM RATING | TEMPERATURE RANGE | SEAL(S) |
|------|--------------------------|--------------------------|-------------------|-------------------------------------|
| CF | Conflat | 1X10 ⁻¹³ Torr | -200°C to 450°C | OFHC Copper for UHV, Viton® |
| WF | Wire-Sealed | 1X10 ⁻¹³ Torr | -200°C to 450°C | OFHC Copper for Wire Seal, Viton® |
| QF | ISO-Quick Flange (KF/NW) | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton [®] , Buna, silicone |
| LF | ISO-Large Flange | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton®, Buna, silicone |
| LFB | ISO-Large Flange Bolted | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton [®] , Buna, silicone |
| ASA | ASA | 1X10 ⁻⁸ Torr | -20°C to 200°C | Viton® |

2 FLANGE SIZE

Next, select a **Flange Size** based on the **Flange Code** you chose in Step 1.

CF133RT-075-SF-316-0.75- EP

| CODE | FLANGE SIZES |
|------|---|
| CF | 133, 212, 275, 338, 450, 462, 600, 675, 800, 1000, 1200, 1325, 1400, 1450, 1650 |
| WF | 1200, 1400, 1700, 1900, 2200, 2700 |
| QF | 10 ,16, 25, 40, 50, 63, 80, 100, 160, 200 |
| LF | 63, 80, 100, 160, 200, 250, 320, 400, 500 |
| LFB | 63, 80, 100, 150, 200, 250, 320, 400, 500 |
| ASA | 100, 150, 200, 300, 400, 600, 800, 1000 |

3 FLANGE ATTRIBUTES

Customize your flange with different attributes. CF133RT-075-SF-316-0.75-EP

| CODE | ATTRIBUTE | CODE | ATTRIBUTE |
|------|---------------------|------|---------------------|
| | Fixed (Default) | G | Grooved (ASA only) |
| | Clearance (Default) | F | Female (WF only) |
| R | Rotatable | | |
| т | Tapped | м | Male (WF only) |
| | Tenned Metric | D | Dish-Head (WF only) |
| ТM | Tapped Metric | | |
| BT | Blind Tapped | | |

4 TUBE O.D.

Choose the outer diameter (inches) for your tube. Add **000** (0.0 in.) if blank.

CF133RT-075-SF-316-0.75-EP

| CODE | O.D. (in) | CODE | O.D. (in) |
|------|-----------|------|-----------|
| 050 | 0.50 | 300 | 3.00 |
| 075 | 0.75 | 400 | 4.00 |
| 100 | 1.00 | 600 | 6.00 |
| 125 | 1.25 | 800 | 8.00 |
| 150 | 1.50 | 1000 | 10.00 |
| 200 | 2.00 | 1200 | 12.00 |

Custom Flange Configurator

FLANGE TYPE

Specify the type of flange needed.

CF133RT-075-SF-316-0.75-EP

| CODE | FLANGE TYPE | | |
|------|----------------------------------|--|--|
| SF | Socket Weld | | |
| RF | Weld Ring | | |
| US | Unbored Stub | | |
| HNM | Half Nipple Machined (Stub Weld) | | |
| BW | Bored Weld | | |
| FNPT | Female National Pipe Thread | | |
| MNPT | Male National Pipe Thread | | |
| DS | Double Sided | | |
| WN | Weld Neck | | |
| WNB | Weld Neck Butt Weld | | |



TECH TIP

Though a Zero Length Reducer is technically a flange, it follows the format of the nipple configurator.

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Some options can add significant costs to manufacturing. If you're not sure exactly what you need, call one of our trained technicians for money saving tips.

6 MATERIAL

Choose from one of our different flange materials. The default material is 304, leave blank if default.

CF133RT-075-SF-316-0.75-EP

| CODE | TYPE OF MATERIAL |
|------|-------------------------------|
| 304 | 304 Stainless Steel (Default) |
| 316 | 316 Stainless Steel |
| AL | Aluminum |

7 THICKNESS

If you chose a double-sided flange in Step 3, specify the thickness you would like for your flange here.

CF133RT-075-SF-316-0.75-EP

B POLISH

This is an optional step. If you would like your flange electro-polished, you can write "EP", otherwise leave this blank.

CF133RT-075-SF-316-0.75-EP



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CUSTOM NIPPLE CONFIGURATOR

Create a customized nipple to your tailored to your specifications.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------|------------|--------------|-----------------------------|------|--------|----------|----------------------|
| FLANGE 1 | FLANGE 2 | TUBE O.D. | TUBE 2 O.D. (IF CONICAL) | TYPE | LENGTH | MATERIAL | POLISH (OPTIONAL) |
| CF275 | × CF133R - | 075 | x 050 | - N | - 4.00 | - 316 - | EP |

1 FLANGE 1

Follow steps **A**, **B**, and **C** to customize flange 1. If flange 1 and flange 2 are different sizes, this will be the larger flange.

CF275XCF133R-075X050-N-4.00-316-EP

075X050-N-4.00-316-F

A. Choose from one of our different flange styles.

| CODE | STYLE | VACUUM RATING | TEMPERATURE RANGE | SEAL(S) |
|------|--------------------------|--------------------------|-------------------|---|
| CF | Conflat | 1X10 ⁻¹³ Torr | -200°C to 450°C | OFHC Copper for UHV Viton [®] |
| QF | ISO-Quick Flange (KF/NW) | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton [®] , Buna, silicone |
| LF | ISO-Large Flange | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton [®] , Buna, silicone |
| LFB | ISO-Large Flange Bolted | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton [®] , Buna, silicone |
| ASA | ASA | 1X10 ⁻⁸ Torr | -20°C to 200°C | Fluoroelastomer |

2 FLANGE 2

Repeat A, B, and C from Step 1 for flange 2. If flange

smaller flange. Leave blank if configuring a half nipple.

1 and flange 2 are different sizes, this will be the

CF275XCF133R-075X050-N-4.00-316-EP

B. Select a flange size based on the flange style you chose in step A.

| STYLE | FLANGE SIZES |
|-------|---|
| CF | 133, 212, 275, 338, 450, 462, 600, 675, 800, 1000, 1200, 1325, 1400, 1450, 1650 |
| QF | 10 ,16, 25, 40, 50 |
| LF | 63, 80, 100, 160, 200, 250, 320, 400, 500 |
| LFB | 63, 80, 100, 150, 200, 250, 320, 400, 500 |
| ASA | 100, 150, 200, 300, 400, 600, 800, 1000 |

C. Select a flange attribute based on the flange style and size you chose.

| CODE | ATTRIBUTE | CODE | ATTRIBUTE |
|------|---------------------|------|---------------------|
| | Fixed (Default) | G | Grooved (ASA only) |
| | Clearance (Default) | F | Female (WF only) |
| R | Rotatable | м | Male (M/E only) |
| т | Tapped | IVI | Male (WF Only) |
| ТМ | Tapped Metric | D | Dish-Head (WF only) |
| вт | Blind Tapped | DS | Double-Side |

If one flange is rotatable and the other is fixed, it is simply called by the fixed variant.

Example.: CF133-075-N-3.00 is one fixed and one rotatable flange Example: CF133XCF133-075-N-3.00 is two fixed flanges

ANCORP

3 TUBE O.D.

Choose the outer diameter (inches) for your first tube.

CF275XCF133R-075X050-N-4.00-316-EP

4 TUBE 2 O.D.

If configuring a conical nipple, choose the outer diameter (inches) for your second tube. Leave blank if not.

CF275XCF133R-075X050-N-4.00-316-EP



CF275XCF133R-075X050-N-4.00-316-EP

| CODE | ТҮРЕ |
|------|---------------------|
| N | Nipple |
| HN | Half Nipple Welded |
| CR | Conical Reducer |
| ZLR | Zero Length Reducer |

6 NIPPLE LENGTH

Specify the overall length (inches) of your nipple.

CF275XCF133R-075X050-N-4.00-316-EP



Choose from one of our different nipple materials.

CF275XCF133R-075X050-N-4.00-316-EP

| CODE | ТҮРЕ |
|------|-------------------------------|
| 304 | 304 Stainless Steel (Default) |
| 316 | 316 Stainless Steel |
| AL | Aluminum |

8 POLISH (optional)

This is an optional step. If you would like your flange electropolished, you can write "EP", otherwise leave blank.

CF275XCF133R-075X050-N-4.00-316-EP

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NEED ASSISTANCE: Call one of our trained customer service representatives at 1-800-352-6431

METAL HOSE & BELLOWS CONFIGURATOR

Create a customized metal hose to your specifications.





Follow steps A, B, and C to customize flange 1. If flange 1 and flange 2 are different sizes, this will be the larger flange.

FLANGE 1

FLANGE 2

Repeat A, B, and C from Step 1 for flange 2. If flange 1 and flange 2 are different sizes, this will be the smaller flange. Leave blank if configuring a half nipple.

METAL HOSE & BELLOWS CONFIGURATOR

Α. First. choose from one of fiv different Flang Styles. Example: "CF"

| | Family Code | FLANGE FAMILY | VACUUM RATING | TEMPERATURE RANGE | SEAL(S) |
|----|----------------|--------------------------|--------------------------|----------------------|--------------------------------------|
| e | CF | Conflat | 1X10 ⁻¹³ Torr | -200°C to 450°C | OFHC Copper for UHV or Viton® gasket |
| je | QF | ISO-Quick Flange (KF/NW) | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton [®] , Buna, silicone |
| | LF | ISO-Large Flange | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton®, Buna, silicone |
| | LFB | ISO-Large Flange Bolted | 1X10 ⁻⁸ Torr | -50°C to 200°C | Viton®, Buna, silicone |
| | ASA | ASA | 1X10 ⁻⁸ Torr | -20°C to 200°C | Fluoroelastomer |
| | TE | Tube Ends | - | - | Plain Cut Tube Ends |

R

| Next, select a Flange | FAMILY CODE | FLANGE SIZES |
|------------------------------|----------------|--|
| Size based on the Flange | CF | 133, 212, 275, 338, 450, 462, 600, 675, 800, 1000, 1200, 1325, 1400, 1450, 1650 |
| in Step A | QF | 10 ,16, 25, 40, 50 |
| Evample "CE132" | LF | 63, 80, 100, 160, 200, 250, 320, 400, 500 |
| Ex.ample CF155 | LFB | 63, 80, 100, 160, 200, 250, 320, 400, 500 |
| | ASA | 100(4.2), 150(5.0), 200(6.0), 300(7.5), 400(9.0), 600(11.0), 800(13.5), 1000(16.0) |

C.

Finally, select a Flange Attribute based on the Flange Family Code and Flange Size chosen in Step A and B.

Example: "CF133T"

| CODE | ATTRIBUTE | If one flange is rotatable a | |
|------|----------------------|------------------------------|--|
| | Fixed (Default) | simply called by the fixed v | |
| | Clearnance (Default) | | |
| R | Rotatable | Example.: | |
| Т | Tapped | CF133-075-N-3.00 is one t | |
| ТМ | Tapped Metric | Example: | |
| G | Grooved | CF133XCF133-075-N-3.00 | |

nd the other is fixed. it is variant.

fixed and one rotatable flange

0 is two fixed flanges

3 TUBE O.D.

Choose the outer Diameter of your hose or bellows.

Example: "CF133TXCF133R-075"

| CODE | O.D. (in) | CODE | O.D. (in) |
|------|-----------|------|-----------|
| 050 | 0.50 | 300 | 3.00 |
| 075 | 0.75 | 400 | 4.00 |
| 100 | 1.00 | 600 | 6.00 |
| 125 | 1.25 | 800 | 8.00 |
| 150 | 1.50 | 1000 | 10.00 |
| 200 | 2.00 | 1200 | 12.00 |



Choose a Hose Type

Example: "CF133TXCF133R-075-MH"

| CODE HOSE TYPE | | DESCRIPTION | |
|----------------|------------|-------------|--|
| МН | Metal Hose | Medium Wall | |
| В | Bellows | Thin Wall | |

Standard Thicknesses for Tube O.D.'s

Custom thicknesses available.

| O.D. (in) | BELLOWS THIN WALL | METAL HOSE MEDIUM WALL |
|-----------|----------------------|---------------------------|
| 075 | 0.006 | 0.008 |
| 100 | 0.006 | 0.008 |
| 150 | 0.006 | 0.010 |
| 200 | 0.006 | 0.012 |
| 250 | 0.006 | 0.012 |
| 300 | 0.008 | 0.016 |
| 400 | 0.008 | 0.016 |
| 600 | 0.010 | 0.016 |

LENGTH

Specify the length of your metal hose or bellows in inches.

Example: "CF133TXCF133R-075-MH-4.00"

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RELIABLE UNDER ALL CONDITIONS.





ANCORP is proud to announce that we are now an official distributor of a wide range of VAT vacuum valves. Order your next VAT valve from ANCORP today at sales@ancorp.com or call us at 1-800-352-6431 (1-800-FLANGE1)