

Multi-CF™ UHV Flange Multiplexer: 2.75" and 1.33" CF Ports

APPLICATIONS:

- Electron Gun / Ion Source Mounting
- Detector Sub-Systems
- High-complexity UHV subsystems
- UHV Manipulator Systems
- Feedthrough Clusters
- Compact Instrument Housings for Mounting Sub-systems

Multi-CF™ Flange Multiplexers

The original multiplexer design (unpatented) was developed at Kimball Physics in 1983. The basic goal of the multiplexer is to cost-effectively increase the number of ports available to interface the vacuum system.



Various Flange Multiplexers with 2.75" and 1.33" CF sealing surface ports.

The **MCF275-FlgMplxr-Cr1A5** multiplexer, since the original design in 1983, has evolved to now include 1) rigid unitary stainless steel 316L precision CNC construction with reduction in the number of welds from eight to only one (the rotatable flange), 2) the ability to use arbitrary bolt lengths (two sets of bolt holes, either threaded and clear provide user flexibility in the mode of attachment), 3) inclusion of internal mounting annular grooves (Grabber Grooves), and 4) better ultra-high vacuum (UHV) cleanliness. The bolt ring is confined such that it cannot slide axially back from the sealing surface. Thus, the sealing surface is not exposed to potential damage (as is the normal with ordinary rotatable flanges). These design features are included in all our multiplexer designs.

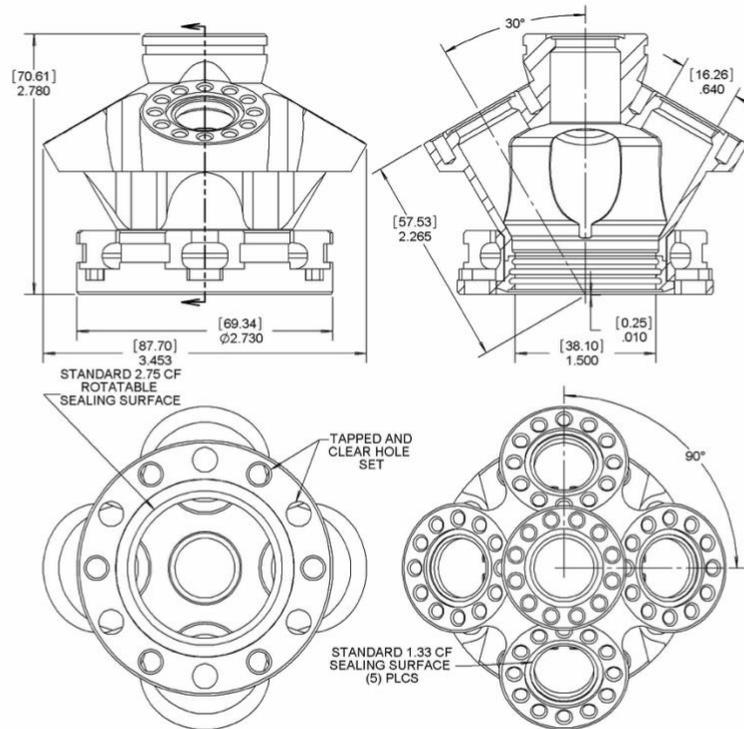
The MCF275-FlgMplxr-Cr1A5 includes six (6) total sealing surface ports, with one (1) 2.75" CF (C) rotatable base port, and five (5) 1.33" CF (A) auxiliary ports to easily increase from one original 2.75" CF port to five welcomed 1.33" CF ports. Annular internal mounting grooves (Grabber Grooves) are present on the 2.75" CF ports.

Please reach out to Kimball Physics to engage our specialists if you need a custom system for your specific application.



Flange Multiplexer MCF275-FlgMplxr-Cr1A5 with (1) 2.75" CF (C) rotatable sealing surface port and (5) 1.33" CF Sealing Surface Ports

MCF275-FlgMplxr-C1rA5	
Multi-CF™ Fitting	Flange Multiplexer
COMMON APPLICATION	Multi-Port Flange, Instrument Housing
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L with one weld
1.33" CF SEALING SURFACES	Five (5) CF (A) ports on axis with (12) #8-32 tapped bolt holes per sealing surface. No Grabber Grooves available. Four (4) CF (A) port off-axis with (12) #8-32 tapped bolt holes per sealing surface. No Grabber Grooves available.
2.75" CF SEALING SURFACES	One (1) Rotatable Flange with (6) 1/4-28 <i>tapped</i> bolt holes and six (6) 1/4-28 <i>clear</i> holes. Grabber Grooves (internal annular mounting grooves) are present.
INTERNAL WORKSPACE	Internal Volume: 4.9 in ³ (79 cc)
WEIGHT	Weight 1.25 lbs (0.57 kg)



All Dimensions are in inches.
(Millimeters are in parentheses)

MCF275-FlgMplxr-Cr1A5

The **MCF275-FlgMplxr-C1r1A4** includes six (6) total sealing surface ports, with two (2) axially oriented 2.75" CF (C) ports with one rotatable base port and the other port axially aligned and offset, and four (4) 1.33" CF (A) auxiliary ports to easily increase from one original 2.75" CF port to four additional 1.33" CF ports while still retaining the 2.75" port. Annular internal mounting grooves (Grabber Grooves) are present on the 2.75" CF ports, with two pairs of grooves on the base port, and one pair of grooves on the axially offset port.

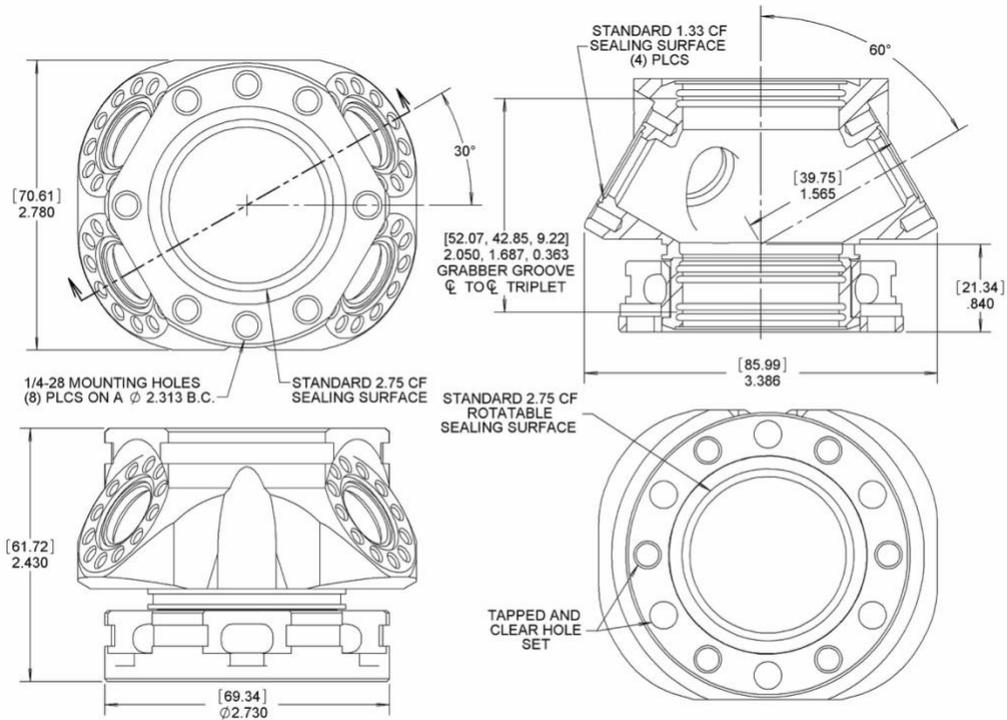
The design is perfect for a compact UHV instrument housing, although it can also be used in numerous other applications. Its compressed axial format offers versatility and easy access. The axes of all the auxiliary 1.33" CF ports pass through the main axis 1.575" (40.64 mm) from the flange gasket center plane.

The rotatable base 2.75" CF port with both clear and tapped flange holes allows versatility of attachment and capacity for arbitrary length 1/4-20 bolts.



Flange Multiplexer MCF275-FlgMplxr-C1r1A4 with (1) 2.75" CF (C) rotatable sealing surface port , one (1) axially offset 2.75" CF port, and (4) 1.33" CF Sealing Surface Ports

	MCF275-FlgMplxr-C1r1A4
Multi-CF™ Fitting	Flange Multiplexer
COMMON APPLICATION	Multi-Port Flange, Multiplexer, Instrument Housing
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L with one weld
1.33"CF SEALING SURFACES	Four (4) Auxiliary CF (A) ports with (12) #8-32 tapped bolt holes per sealing surface. No Grabber Grooves available. The axes of all the auxiliary 1.33" CF ports pass through the main axis 1.575"(40.64 mm) from the flange gasket center plane
2.75" CF SEALING SURFACES	Two (2) CF (C) sealing surfaces: 1) with one rotatable with (6) 1/4-28 <i>tapped</i> bolt holes and six (6) 1/4-28 <i>clear</i> holes, 2) one axially offset with eight (8) 1/4-28 tapped holes. Two sets of Grabber Grooves (internal annular mounting grooves) are present on the base sealing surface port, and one set of Grabber Grooves on the axially offset port.
WEIGHT	Weight 1.98 lbs (0.90 kg)



MCF275-FlgMplxr-C1r1A4

All Dimensions are in inches.
(Millimeters are in parentheses)

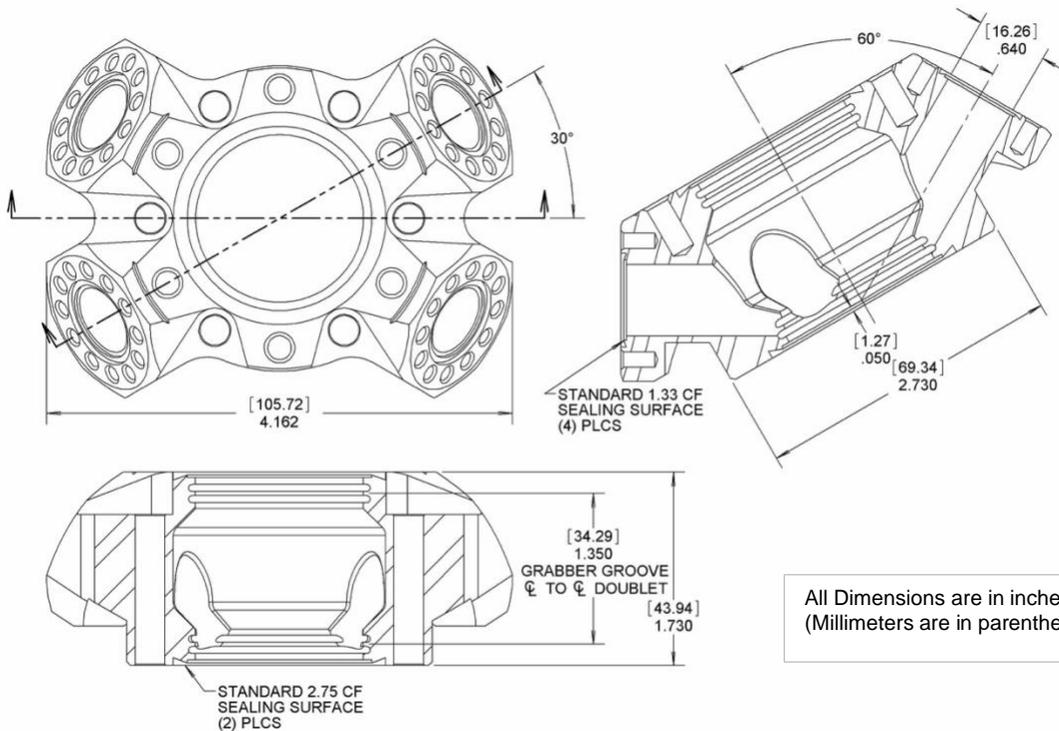
The **MCF275-TestFlgMplxr-C2A4** is designed mainly as an Ultra-High Vacuum instrument housing, though it may be used in numerous other ways with its versatile form.

The fitting includes six (6) total sealing surface ports, with two axially aligned 2.75" (C) CF sealing surface ports and (4) 1.33" CF (A) sealing surface ports. The four 1.33" are oriented such that their long axes intersect through the center of the main base 2.75" CF flange gasket plane. Annular internal mounting grooves (Grabber Grooves) are present on the 2.75" CF ports, with two pairs of grooves on the base port, and one pair of grooves on the axially offset port.



Flange Multiplexer MCF275-TestFlgMplxr-C2A4 with (2) 2.75" CF (C) sealing surface ports, and (4) 1.33" CF sealing surface ports

MCF275-FlgMplx-C2A4	
Multi-CF™ Fitting	Flange Multiplexer
COMMON APPLICATION	Instrument Housing, Multi-Port Flange
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L
1.33" CF SEALING SURFACES	Four (4) CF (A) port off-axis with (12) #8-32 tapped bolt holes per sealing surface. No Grabber Grooves available.
2.75" CF SEALING SURFACES	Two (2) non-rotatable Flanges on axis with (6) 1/4-28 <i>tapped</i> bolt holes and six (6) 1/4-28 <i>clear</i> holes Grabber Grooves (internal annular mounting grooves) are present.
INTERNAL WORKSPACE	Internal Volume: 5.7 in ³ (93 cc) Part Length- 1.730" inch Gasket Plane to Gasket Plane 1.750" inch
WEIGHT	Weight 2.03 lbs (0.92 kg)



MCF275-TestFigMplx-C2A4

The **MCF275-FlgMplxr-C1r2A4** is designed as a compact instrument housing for mounting sub-systems, though it may be used in numerous other ways with its versatile form. They are precision CNC fabricated from unitary pieces of 316L stainless steel with only one weld per rotatable flange.

The fitting includes seven (7) total sealing surface ports, with three (3) 2.75" (C) CF sealing surface ports and (4) auxiliary 1.33" CF (A) sealing surface ports.

The base 2.75" CF port is rotatable, with both tapped and clear holes and includes internal annular mounting grooves (Grabber Grooves). The rotatable flange also has an external groove to interface with external mounting brackets.

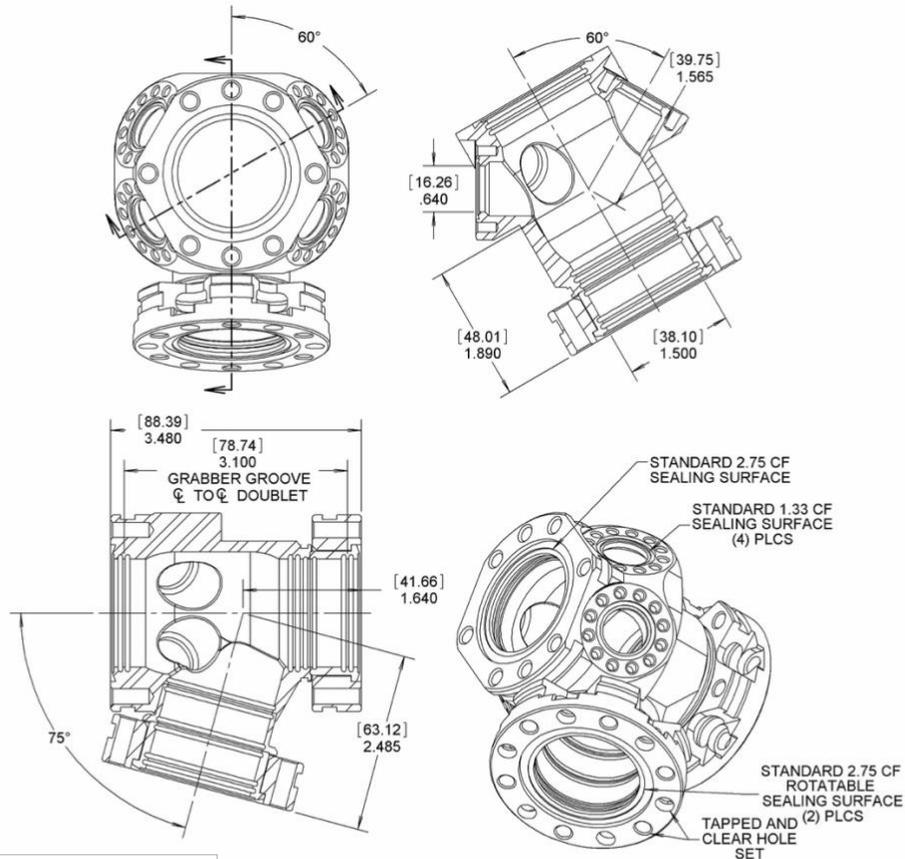
There are an additional two (2) 2.75" ports that are axially aligned, with one of them rotatable with both tapped and clear holes, and with the other fixed with tapped holes. The rotatable flange has an external groove to interface with external mounting brackets. Both ports have internal annular mounting grooves (Grabber Grooves) for mounting various instruments, devices and prototypes.

The four (4) 1.33" CF sealing surface ports are equipped with double density bolt holes. Because of their small, size, they *do not* include grabber grooves.



Flange Multiplexer MCF275-FlgMplxr-C1r2A4 with (3) 2.75" CF (C) sealing surface ports, and (4) 1.33" CF sealing surface ports.

	MCF275-FlgMplxr-C1r2A4
Multi-CFT™ Fitting	Flange Multiplexer
COMMON APPLICATION	Instrument Housing, Multi-Port Flange
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L, weld only with rotatable flanges
1.33"CF SEALING SURFACES	Four (4) 1.33"CF (A) auxiliary ports with (12) #8-32 tapped bolt holes per sealing surface. No Grabber Grooves available.
2.75" CF SEALING SURFACES	One (1) 2.75" CF (C) base port that including a rotatable flange (with (6) 1/4-28 <i>tapped</i> bolt holes and six (6) 1/4-28 <i>clear</i> holes). Two (2) axially aligned ports with one fixed port with six (6) 1/4-28 tapped holes, with the other port including a rotatable flange (with (6) 1/4-28 <i>tapped</i> bolt holes and six (6) 1/4-28 <i>clear</i> holes). Grabber Grooves (internal annular mounting grooves) are present on all ports.
EXTERNAL MOUNTING	External mounting grooves are present on the 2.75" CF rotatable port flange.
WEIGHT	Weight 2.78 lbs (1.26 kg)



All Dimensions are in inches.
(Millimeters are in parentheses)

MCF275-FlgMplx-C1r2A4

References

For more information about Multi-Port CF (MCF™) Vacuum Chambers and Accessories, visit our website at: Multi-CF Hardware.

Other References:

[MCF Vacuum Hardware Overview](#)

Notes:

1. Cautions:

- Silver Plated Bolts or Equivalent Lubrication must be used.
- Please measure the hole depth and other flange / copper ring / part thicknesses
- Choose a correct bolt length such that the bolt doesn't bottom in the tapped hole prior to tightening the structure.

2. 3D Solid Models of all parts shown are available as STEP files.

They can be downloaded from Kimball Physics Website for interactive visualization and measurements in your CAD software environment.

3. Specifications Subject to Change Without Notice.

4. Images are not to scale

5. DE Altobelli, DT Taylor 3/13/2023

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