

UHV VACUUM CHAMBERS WITH 6, 4½, 2¾ AND 1⅓ CF PORTS

MAXIMUM NUMBER OF PORTS IN A CUBICAL SYMMETRY

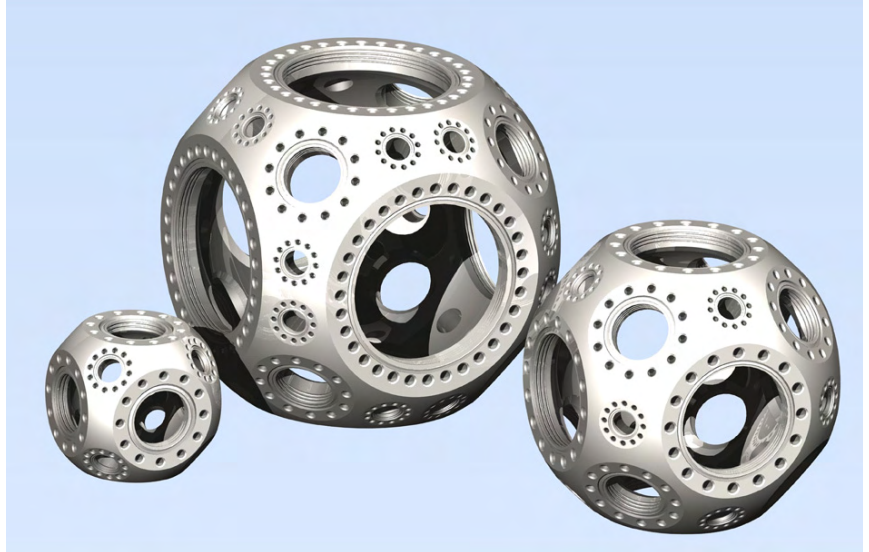
(other custom port configurations available)

APPLICATIONS:

- ▶ Compact UHV chamber
- ▶ Portable Low-Cost UHV Systems
- ▶ High-Complexity UHV SubSystems
- ▶ UHV Vacuum Manipulator Systems
- ▶ UHV Specimen Transfer Systems
- ▶ General UHV Vacuum Plumbing

FEATURES / OPTIONS:

- ▶ Easy access UHV chambers
- ▶ Unencumbered large diameter spherical workspace
- ▶ Maximum number of ports in a cubical symmetry cut on a hollow sphere
- ▶ Grabber Grooves on 2¾ CF, 4½ CF and 6 CF sealing surfaces
- ▶ Unitary stainless steel 316L construction
- ▶ Double-density bolt holes
- ▶ No welds, highly polished
- ▶ Precise port alignment of < 0.1 deg.



Various Expanded Spherical Cubes, with 6 CF, 4½ CF, 2¾ CF, and 1⅓ CF ports (approximately 0.25x scale)

THE EXPANDED SPHERICAL CUBES

The Expanded Spherical Cubes are similar to Spherical Cubes but with an expanded diameter to provide a larger number of ports in a cubical symmetry and a larger internal workspace. They consist of hollow spheres intersected by six sealing surfaces forming the cubical faces, with additional optional smaller sealing surfaces on the corners and edges. Each 6 CF, 4½ CF, or 2¾ CF sealing surface has Grabber Grooves for internal mounting of apparatus.

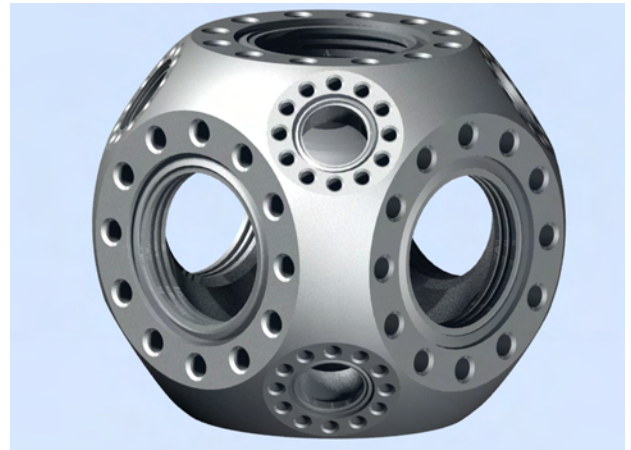
CUSTOM EXPANDED SPHERICAL CUBES with custom port configurations are available, consult Kimball Physics Engineering.

2¾ Multi-CF Expanded Spherical Cube

MCF275-SphCube-C6A8

THE 2¾ CF EXPANDED SPHERICAL CUBE

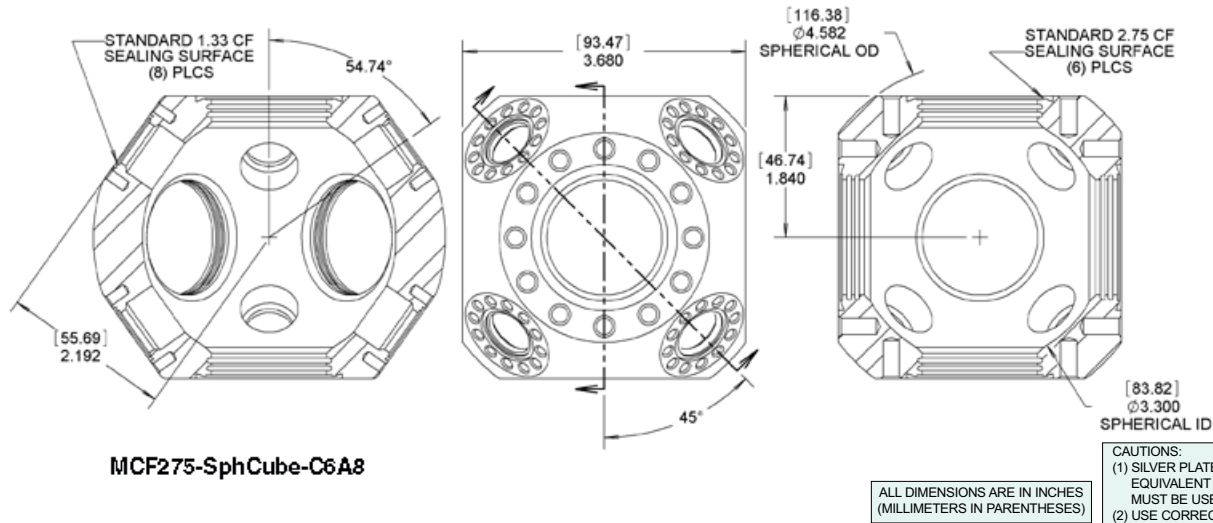
The 2¾ CF Expanded Spherical Cube is a small Multi-CF UHV chamber with a maximum of 14 ports in a cubical symmetry. It consists of a hollow sphere intersected by six 2¾ CF sealing surfaces and eight 1⅓ CF sealing surfaces on the corners. Each 2¾ CF sealing surface has a pair of Grabber Grooves. The 2¾ Expanded Spherical Cube has a 3.300 inch spherical inner diameter and a 4.582 inch outer diameter (3.680 inch between the 2¾ CF ports).



Expanded Spherical Cube MCF275-SphCube-C6A8
Total of 14 ports (0.5x scale)

MCF275-SphCube-C6A8	
Multi-CF FITTING	Expanded Spherical Cube
COMMON APPLICATION	Miniature UHV Chamber
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L
1⅓ SEALING SURFACES	Eight with (12) 8-32 tapped bolt holes per sealing surface
2¾ SEALING SURFACES	Six with (12) 1/4-28 tapped bolt holes plus one pair of Grabber Grooves per sealing surface
EXTERNAL MOUNTING	None
PUMPING VOLUME	24.2 in ³ (397 cc) 3.300 in. Spherical ID
WEIGHT	4.53 lbs. (2.05 kg)

2³/₄ Multi-CF Expanded Spherical Cube MCF275-SphCube-C6A8 14 ports in a cubical symmetry



4¹/₂ Multi-CF Expanded Spherical Cubes MCF450-SphCube-E6C8 MCF450-SphCube-E6C8A12



Expanded Spherical Cube MCF450-SphCube-E6C8A12
Total of 26 ports (custom configurations available)

FEATURES / OPTIONS:

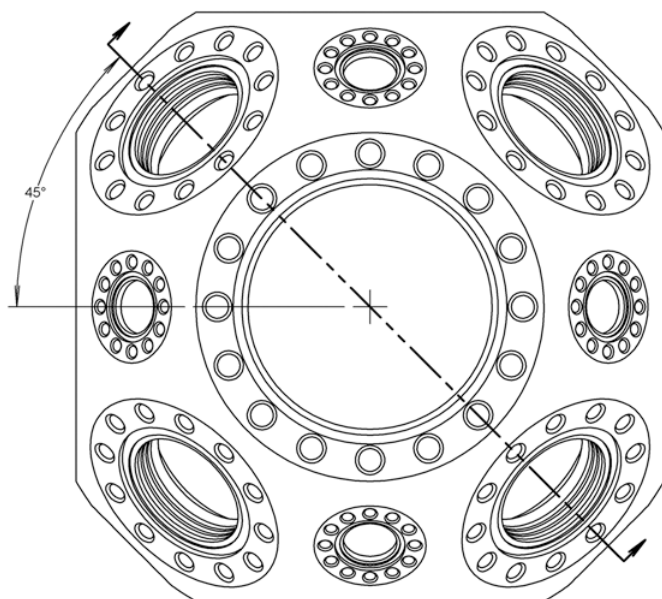
- ▶ Easy access larger UHV chambers
- ▶ Max 26 ports on sphere
- ▶ Unencumbered 6.5 inch diameter spherical workspace
- ▶ 4¹/₂ CF sealing surfaces, 2³/₄ CFs and optional 1¹/₃ CFs cut on a hollow sphere
- ▶ Grabber Grooves on 4¹/₂ CF and 2³/₄ CF sealing surfaces
- ▶ Unitary stainless steel 316L construction
- ▶ Double-density bolt holes
- ▶ No welds, highly polished
- ▶ Precise port alignment of < 0.1 deg.

THE 4¹/₂ CF EXPANDED SPHERICAL CUBE

The 4¹/₂ CF Expanded Spherical Cubes are Multi-CF UHV chambers with a maximum of 26 ports in a cubical symmetry. They consist of hollow spheres intersected by six 4¹/₂ CF sealing surfaces and eight 2³/₄ CF sealing surfaces on the corners, with either zero or twelve 1¹/₃ CF sealing surfaces on the edges. Each 4¹/₂ CF or 2³/₄ CF sealing surface has Grabber Grooves. All 4¹/₂ CF Spherical Cubes have a 6.500 inch spherical inner diameter and a 8.110 inch outer diameter (6.980 inch between the 4¹/₂ CF ports).

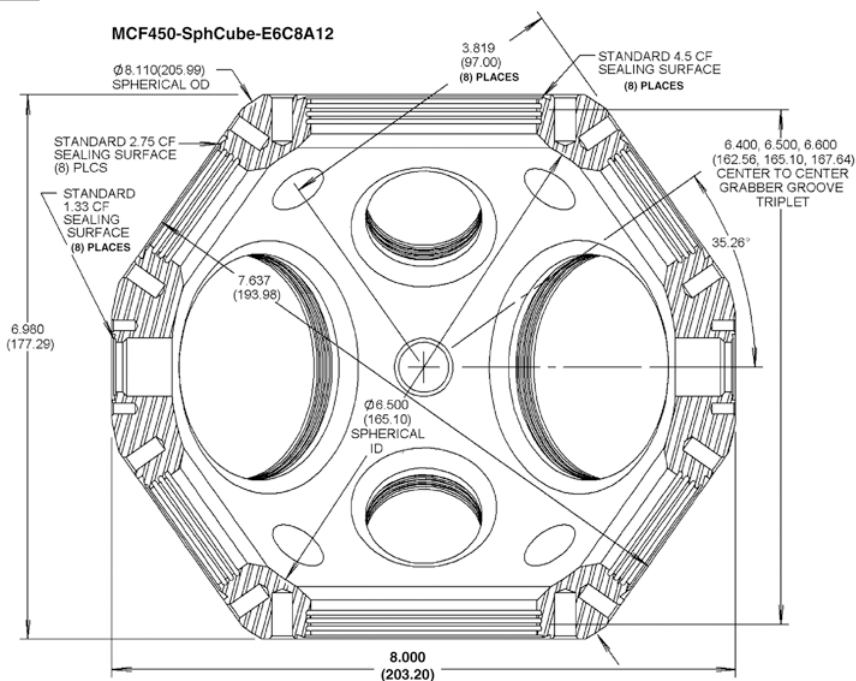
4½ Multi-CF Expanded Spherical Cubes

	MCF450-SphCube-E6C8	MCF450-SphCube-E6C8A12
Multi-CF FITTING	Expanded Spherical Cube	
COMMON APPLICATION	UHV Vacuum Chamber	
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L	
1⅓ SEALING SURFACES	None	Twelve with (12) 8-32 tapped bolt holes per sealing surface
2¼ SEALING SURFACES	Eight with (12) 1/4-28 tapped bolt holes, plus one triplet of Grabber Grooves per sealing surface	Eight with (12) 1/4-28 tapped bolt holes, plus one triplet of Grabber Grooves per sealing surface
4½ CF SEALING SURFACES	Six with (16) 5/16-24 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface	Six with (16) 5/16-24 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface
EXTERNAL MOUNTING	None	None
PUMPING VOLUME	169.3 in ³ (2,774 cc) 6.500 in. Spherical ID	173.2 in ³ (2,838 cc) 6.500 in. Spherical ID
WEIGHT	21.4 lbs. (9.76 kg)	19.9 lbs. (9.01 kg)



MCF450-SphCube-E6C8A12 26 ports in a cubical symmetry

NOTE: MCF450-SphCube-E6C8 is the same in all dimensions, but does not include the 1⅓ CF ports on the edges.



ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS IN PARENTHESES)

CAUTIONS:
(1) SILVER PLATED BOLTS OR EQUIVALENT LUBRICATION MUST BE USED
(2) USE CORRECT BOLT LENGTH

6 Multi-CF Expanded Spherical Cubes

MCF600-SphCube-F6

MCF600-SphCube-F6C8

MCF600-SphCube-F6C8A24

FEATURES / OPTIONS:

- ▶ Easy access larger UHV chambers
- ▶ Max 38 ports on sphere
- ▶ Unencumbered 8.4 inch diameter spherical workspace
- ▶ 6 CF sealing surfaces, optional $\frac{3}{4}$ CFs and $1\frac{1}{8}$ CFs cut on a hollow sphere
- ▶ Grabber Grooves on 6 CF and $2\frac{3}{4}$ CF sealing surfaces
- ▶ Unitary stainless steel 316L construction
- ▶ Double-density bolt holes



Expanded Spherical Cube MCF600-SphCube-F6C8A24
Total of 38 ports (models with fewer ports or custom configurations available)

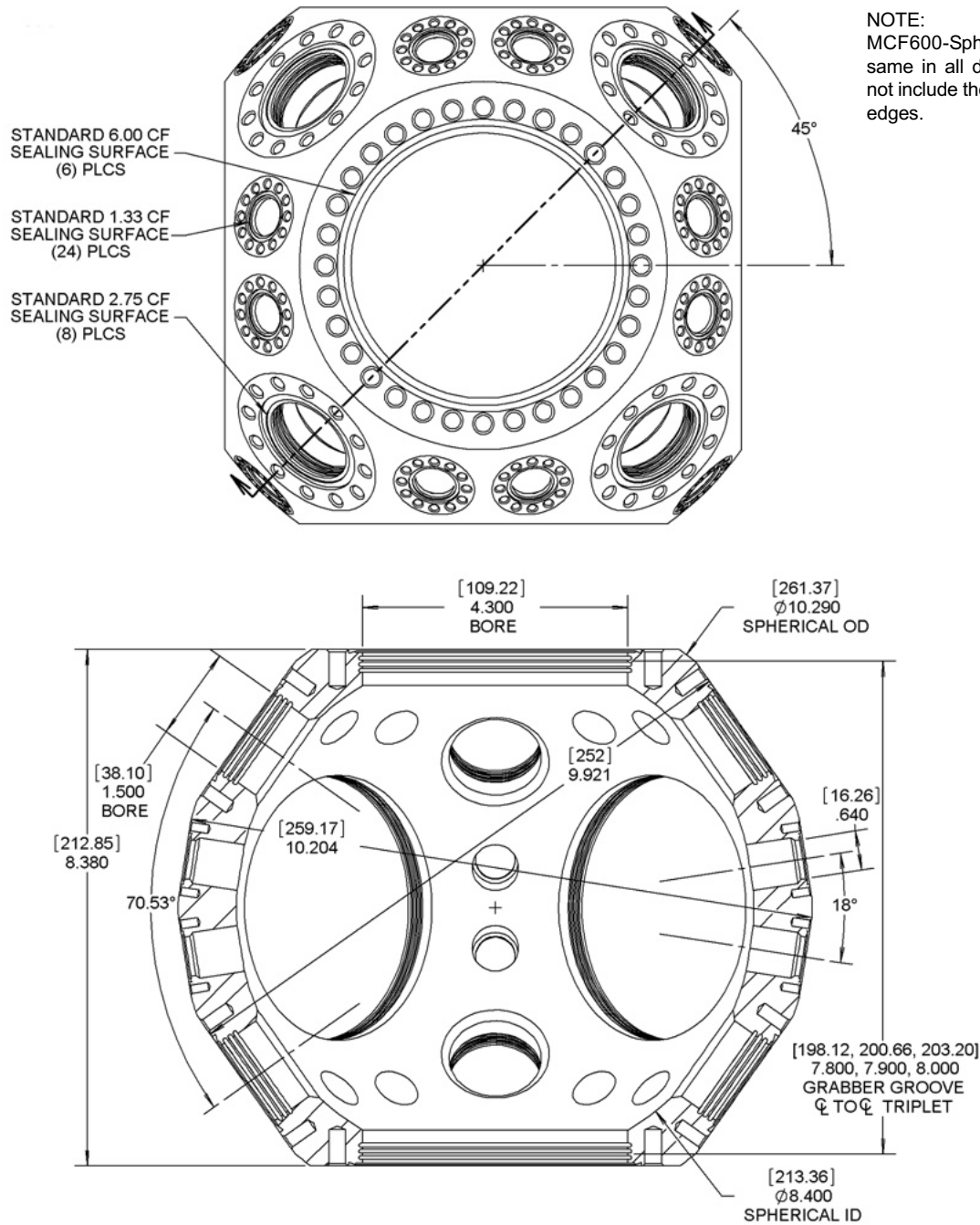
THE 6 CF EXPANDED SPHERICAL CUBE

The 6 CF Expanded Spherical Cubes are Multi-CF UHV chambers with a maximum of 38 ports in a cubical symmetry. They consist of hollow spheres intersected by six 6 CF sealing surfaces and either zero or eight $2\frac{3}{4}$ CF sealing surfaces on the corners, with zero or twenty-four $1\frac{1}{8}$ CF sealing surfaces on the edges. Each 6 CF or $2\frac{3}{4}$ CF sealing surface has Grabber Grooves. All 6 CF Spherical Cubes have an 8.400 inch spherical inner diameter and a 10.290 inch outer diameter (8.380 inch between the 6 CF ports).

CUSTOM EXPANDED SPHERICAL CUBES with custom port configurations are available. Consult Kimball Physics Engineering.

	MCF600-SphCube-F6	MCF600-SphCube-F6C8	MCF600-SphCube-F6C8A24
Multi-CF FITTING	Expanded Spherical Cube		
COMMON APPLICATION	UHV Vacuum Chamber		
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L		
$1\frac{1}{8}$ CF SEALING SURFACES	None	None	Twenty-four with (12) 8-32 tapped bolt holes per sealing surface
$2\frac{3}{4}$ CF SEALING SURFACES	None	Eight with (12) 1/4-28 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface	Eight with (12) 1/4-28 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface
6 CF SEALING SURFACES	Six with (32) 5/16-24 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface	Six with (32) 5/16-24 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface	Six with (32) 5/16-24 tapped bolt holes plus one triplet of Grabber Grooves per sealing surface
EXTERNAL MOUNTING	None	None	None
PUMPING VOLUME	336.4 in ³ (5,512 cc) 8.400 inch Spherical ID	348.7 in ³ (5,714 cc) 8.400 inch Spherical ID	360.2 in ³ (5,902 cc) 8.400 inch Spherical ID
WEIGHT	41.8 lbs. (19.0 kg)	36.5 lbs. (16.5 kg)	33.1 lbs. (15.0 kg)

6 Multi-CF Expanded Spherical Cube
MCF600-SphCube-F6C8A24
38 maximum number of ports in a cubical symmetry



ALL DIMENSIONS ARE IN INCHES
(MILLIMETERS IN PARENTHESES)

CAUTIONS:
(1) SILVER PLATED BOLTS OR
EQUIVALENT LUBRICATION
MUST BE USED
(2) USE CORRECT BOLT LENGTH