



# SPHERICAL SQUARE Multi-CF™ Vacuum Chamber

## UHV Vacuum Chambers WITH 8, 6, 4½, 2¾ and 1⅓ CF Ports Large Diameter Internal Spherical Workspaces

### APPLICATIONS:

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

### FEATURES / OPTIONS:

- ▶ Unencumbered large diameter spherical workspace:  
3.600" for MCF450, 4.800" for MCF 600, AND 8.000" for MCF800
- ▶ Easy access UHV vacuum chamber
- ▶ Grabber Grooves on all sealing surfaces (except 1⅓ CF)
- ▶ 1⅓, 2¾, 4½, 6, or 8 CF sealing surfaces cut on a hollow sphere
- ▶ Unitary stainless steel 316L construction (except MCF450-SphSq-E2C3r1A4)
- ▶ No inside corners, highly polished
- ▶ Precise port alignment of < 0.1 degree



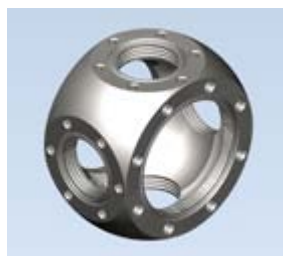
### THE 4½ Multi-CF SPHERICAL SQUARES

The MCF450 Spherical Squares are six to ten port small Multi-CF UHV vacuum chambers. Each chamber consists of a hollow sphere intersected by two 4½ CF sealing surfaces, four 2¾ CF sealing surfaces and zero to four 1⅓ CF sealing surfaces. Part MCF450-SphSq-E2C3r1A4 has an extended 2¾ CF sealing surface that is rotatable and is the only part listed that has a weld.

Interior space has been greatly increased over previous designs. Each 4½ CF sealing surface has one pair of Grabber Grooves, while each 2¾ CF sealing surface has one triplet of Grabber Grooves. The rotatable 2¾ CF has an additional pair located at the end of the extension tube next to the sealing surface

	MCF450-SphSq-E2C4	MCF450-SphSq-E2C3r1A4
Multi-CF FITTING	Spherical Square	
COMMON APPLICATION	UHV Vacuum Chamber	
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L	
1⅓ CF SEALING SURFACES	None	Four with (12) 8-32 tapped bolt holes per sealing surface
2¾ CF SEALING SURFACES	Four with (6) 1/4-28 tapped bolt holes, plus one triplet of Grabber Grooves per sealing surface	Four with (6) 1/4-28 tapped bolt holes; Three CF sealing surfaces with (1) triplet of Grabber Grooves; One rotatable CF with (1) pair and (1) triplet of Grabber Grooves
4½ CF SEALING SURFACES	Two with (8) 5/16-24 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface	Two with (8) 5/16-24 tapped bolt holes, plus (1) triplet of Grabber Grooves per sealing surface
EXTERNAL MOUNTING	No internal mounting holes. See External Mounting Brackets on website for mounting options	No internal mounting holes. See External Mounting Brackets on website for mounting options
INTERNAL WORK SPACE	3.600 inch Spherical ID. Internal volume 26.7 in³	3.600 inch Spherical ID. Internal volume 30.5 in³

See drawings on next page



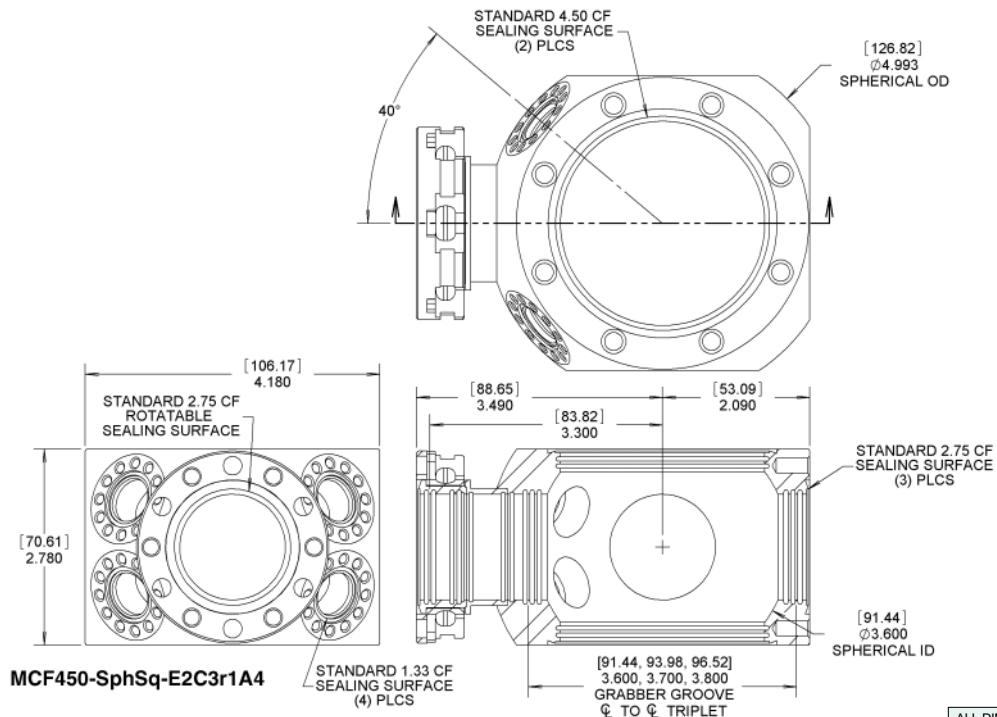
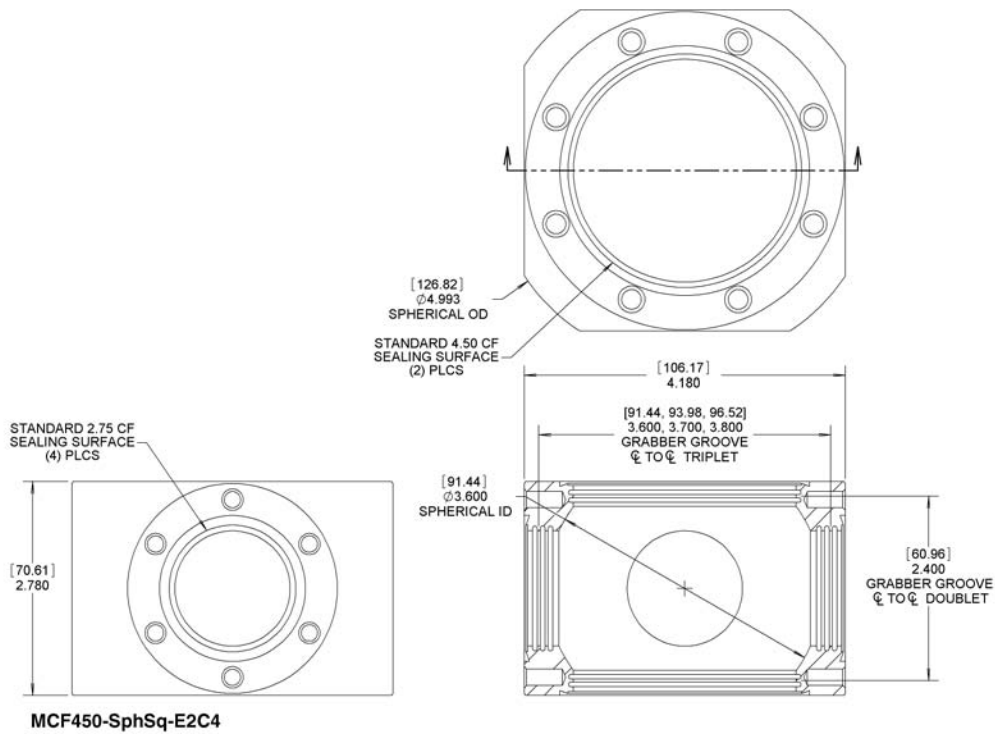
Spherical Square  
MCF450-SphSq-E2C4



Spherical Square  
MCF450-SphSq-E2C3r1A4

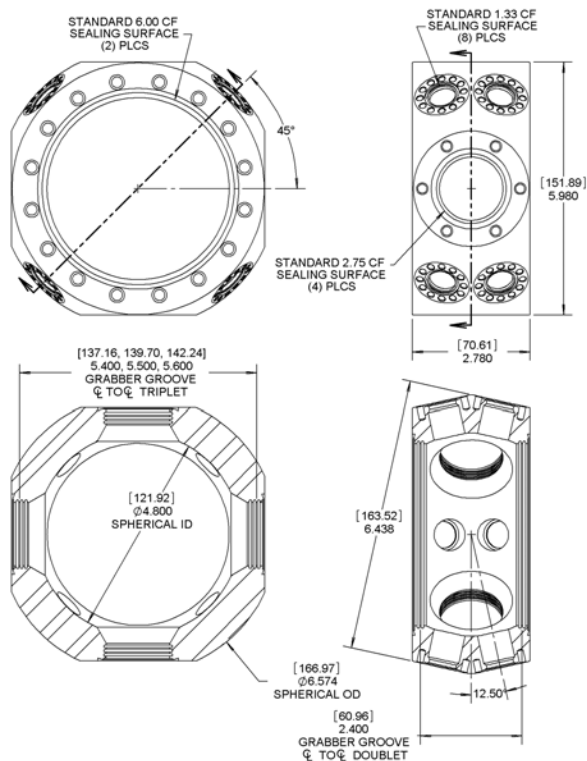
ALL DIMENSIONS ARE IN INCHES  
(MILLIMETERS IN PARENTHESES)

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



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**THE MCF600 SPHERICAL SQUARE**

The MCF600 Spherical Square is a fourteen port small Multi-CF UHV vacuum chamber. The chamber consists of a hollow sphere intersected by two 6 CF sealing surfaces, four 2¼ CF sealing surfaces and eight 1½ CF sealing surfaces. Each 2¼ CF sealing surface has one triplet of Grabber Grooves, and each 6 CF has one pair of Grabber Grooves



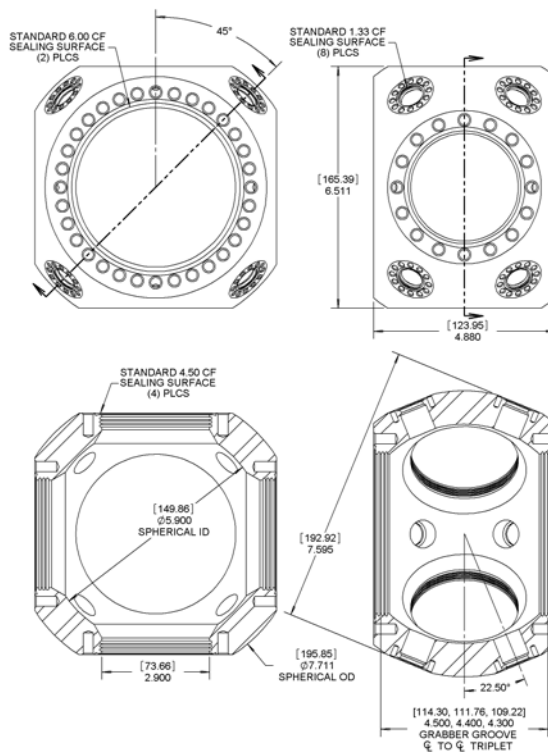
Spherical Square  
MCF600-SphSq-F2C4A8

**MCF600-SphSq-F2C4A8**

Multi-CF FITTING	Spherical Square
COMMON APPLICATION	Small UHV Vacuum Chamber
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L
1½ CF SEALING SURFACES	Eight with (12) 8-32 tapped bolt holes per sealing surface
2¼ CF SEALING SURFACES	Four with (6) 1/4-28 tapped bolt holes, plus one triplet of Grabber Grooves per sealing surface
6 CF SEALING SURFACES	Two with (16) 5/16-24 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface
EXTERNAL MOUNTING	No internal mounting holes. See External Mounting Brackets on website for mounting options
INTERNAL WORK SPACE	4.800 inch Spherical ID Internal volume 54.8 in <sup>3</sup>

**MCF600-SphSq-F2E4A8**

Multi-CF FITTING	Spherical Square
COMMON APPLICATION	Small UHV Vacuum Chamber
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316L
1½ CF SEALING SURFACES	Eight with (12) 8-32 tapped bolt holes per sealing surface
4½ CF SEALING SURFACES	Four with (16) 5/16-24 tapped bolt holes, plus one triplet of Grabber Grooves per sealing surface
6 CF SEALING SURFACES	Two with (32) 5/16-24 tapped bolt holes, plus one triplet of Grabber Grooves per sealing surface
EXTERNAL MOUNTING	No internal mounting holes. See External Mounting Brackets on website for mounting options
INTERNAL WORK SPACE	5.900 inch Spherical ID Internal volume 123.8 in <sup>3</sup>



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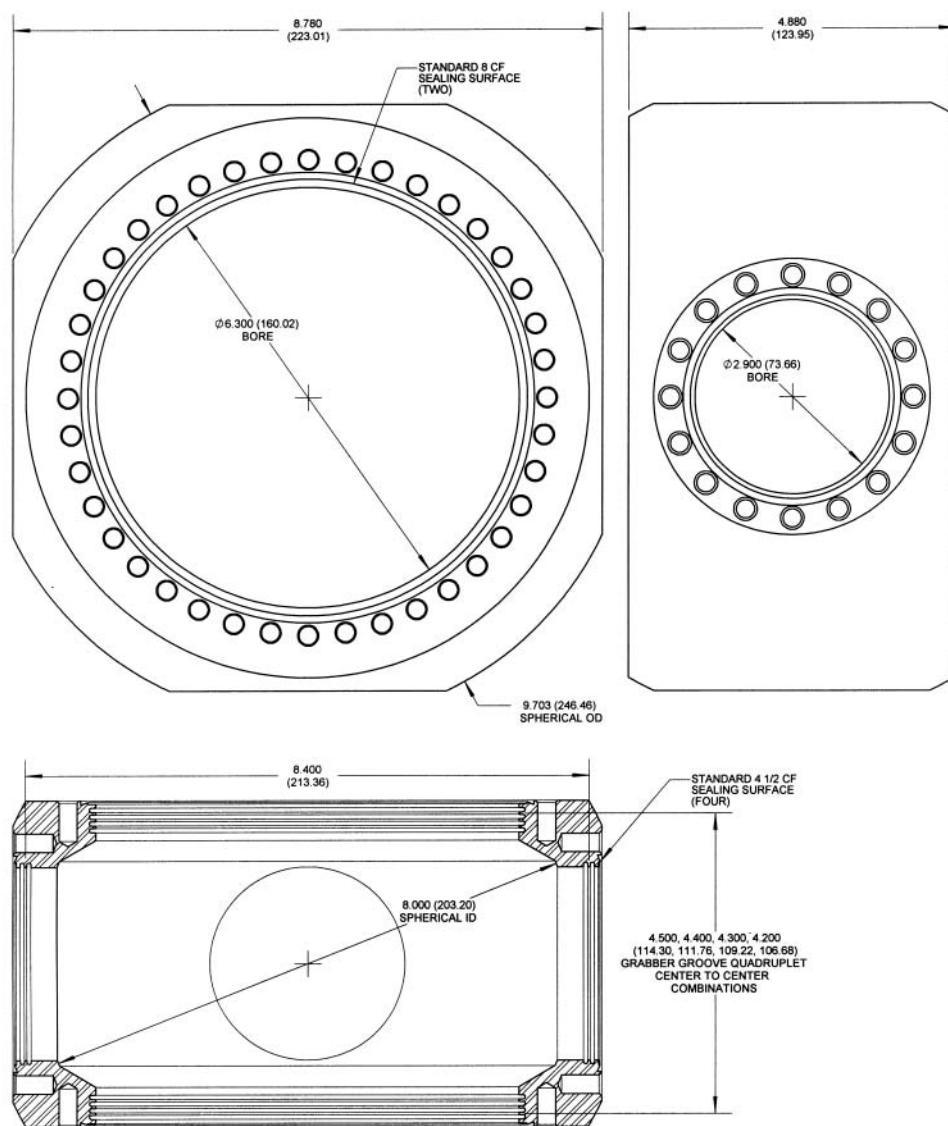
### THE 8 Multi-CF SPHERICAL SQUARE

The MCF800-SS2040000 Spherical Square is a six port Multi-CF UHV vacuum chamber consisting of a hollow sphere intersected by two 8 CF sealing surfaces and four 1/2 CF sealing surfaces. Each 8 CF sealing surface has one quadruplet of Grabber Grooves, and each 1/2 CF has one pair of Grabber Grooves.



Spherical Square  
MCF800-SphSq-G2E4

MCF800-SphSq-G2E4	
Multi-CF FITTING	Spherical Square
COMMON APPLICATION	UHV Vacuum Chamber
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316
4½ CF SEALING SURFACES	Four with (16) 5/16-24 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface
8 CF SEALING SURFACES	Two with (40) 5/16-24 tapped bolt holes, plus one quadruplet of Grabber Grooves per sealing surface
INTERNAL WORK SPACE	8.000 inch Spherical I.D. Internal volume 222.2 in <sup>3</sup>



MCF800-SphSq-G2E4

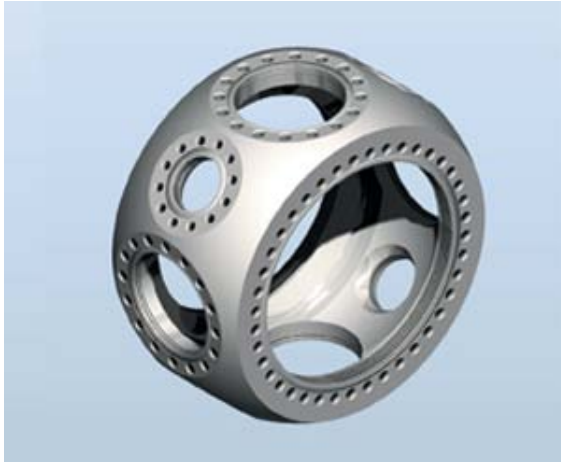
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### 8 Multi-CF SPHERICAL SQUARE

The MCF800-SphSq-G2E4C4 Spherical Square is a six port Multi-CF UHV vacuum chamber consisting of a hollow sphere intersected by two 8 CF sealing surfaces as well as four 4½ CF and four 2¾ CF sealing surfaces. Each 8 CF sealing surface has one quadruplet of Grabber Grooves; each 4½ CF and 2¾ CF sealing surface has one pair of Grabber Grooves.



Spherical Square MCF800-SphSq-G2E4C4

MCF800-SphSq-G2E4C4	
Multi-CF FITTING	Spherical Square
COMMON APPLICATION	UHV Vacuum Chamber
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316
2¾ CF SEALING SURFACES	Four with (12) 1/4-28 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface
4½ CF SEALING SURFACES	Four with (16) 5/16-24 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface
8 CF SEALING SURFACES	Two with (40) 5/16-24 tapped bolt holes, plus one quadruplet of Grabber Grooves per sealing surface
INTERNAL WORK SPACE	8.000 inch Spherical I.D. Internal volume 228.1 in <sup>3</sup>

### 8 Multi-CF SPHERICAL SQUARE (WITH 16 1½ CF)

The MCF800-SphSq-G2E4C4A16 Spherical Square is a six port Multi-CF UHV vacuum chamber consisting of a hollow sphere intersected by two 8 CF sealing surfaces as well as four 4½ CF, four 2¾ CF, and sixteen 1½ CF sealing surfaces. Each 8 CF sealing surface has one quadruplet of Grabber Grooves; each 4½ CF and 2¾ CF sealing surface has one pair of Grabber Grooves.

MCF800-SphSq-G2E4C4A16	
Multi-CF FITTING	Spherical Square
COMMON APPLICATION	UHV Vacuum Chamber
CONSTRUCTION / MATERIAL	Unitary Stainless Steel 316
1½ CF SEALING SURFACES	Sixteen with (12) 8-32 tapped bolt holes.
2¾ CF SEALING SURFACES	Four with (12) 1/4-28 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface
4½ CF SEALING SURFACES	Four with (16) 5/16-24 tapped bolt holes, plus one pair of Grabber Grooves per sealing surface
8 CF SEALING SURFACES	Two with (40) 5/16-24 tapped bolt holes, plus one quadruplet of Grabber Grooves per sealing surface
INTERNAL WORK SPACE	8.000 inch Spherical I.D. Internal volume 232.3 in <sup>3</sup>

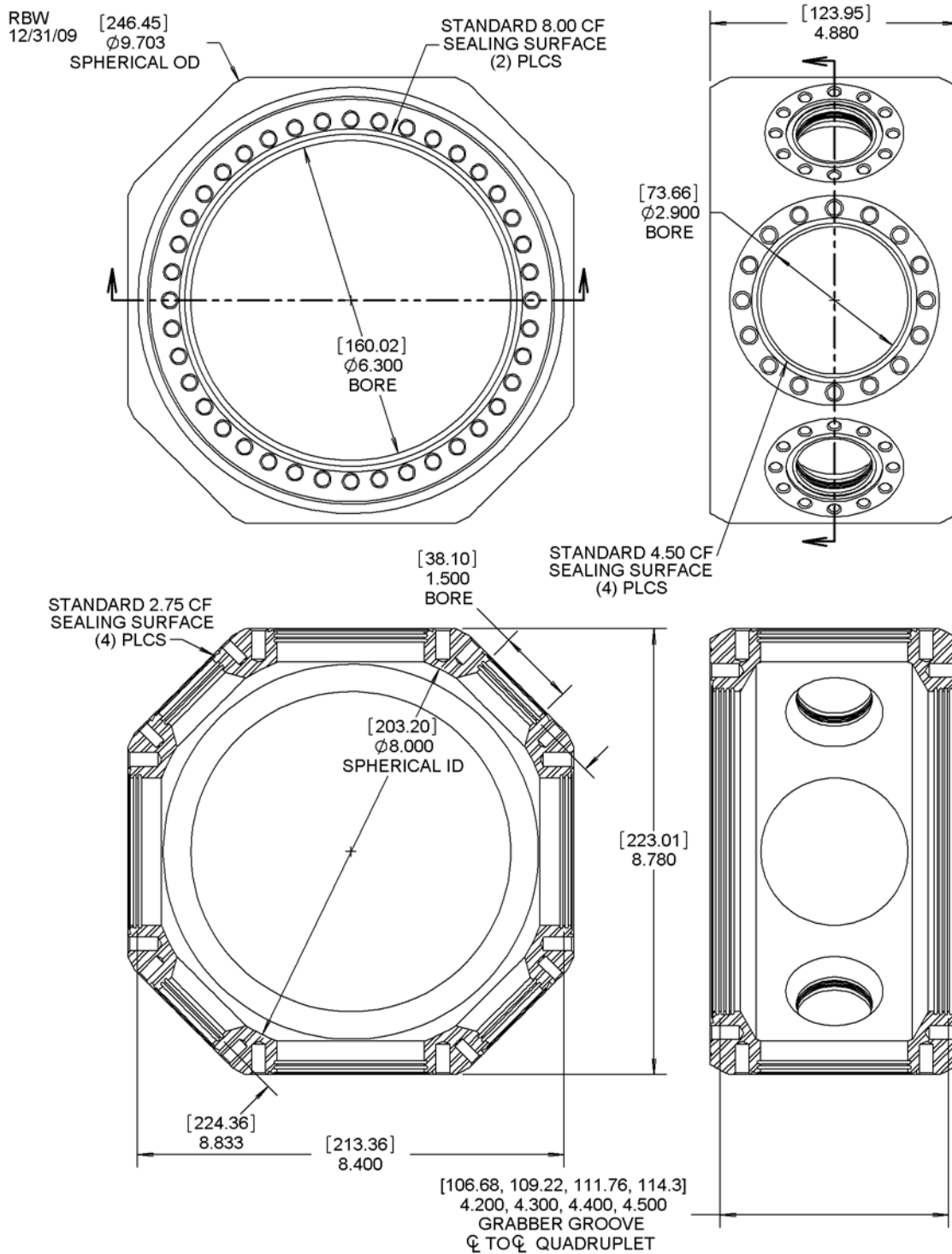


Spherical Square MCF800-SphSq-G2E4C4A16

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## 8 Multi-CF Spherical Square MCF-800-SphSq-G2E4C4



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