



# MAGDEBURG SPHERE™

## Multi-CF™ FITTING

### UHV VACUUM CHAMBERS WITH 10, 8, 6, 4½, 2¾, AND 1⅓ CF PORTS FABRICATED USING PERIMETER WELD FLANGES

#### APPLICATIONS:

MEDIUM AND LARGER UHV VACUUM CHAMBERS  
SOURCE / DETECTOR MOUNTING CHAMBERS  
SPECIMEN TRANSFER CHAMBERS  
GENERAL UHV PLUMBING

#### FEATURES / OPTIONS:

HIGH PORT DENSITIES, POSSIBILITY OF MANY VERSIONS  
EXPANDED BORES WITH EXCEPTIONAL ACCESS  
REDUCED OVERALL SYSTEM SIZE  
GRABBER GROOVES ON ALL PORTS (EXCEPT 1⅓)  
ELIMINATION OF MOST NIPPLE-TUBE SECTIONS  
APPROXIMATELY HALF THE NORMALLY REQUIRED WELDS



Magdeburg Sphere MCF450-MS(6.0)20408-A

	MCF450-MS (4.439)10300-A	MCF450-MS (4.439)10300-B	MCF450-MS (4.439)10504-A	MCF450-MS (6.0)20400-A	MCF450-MS (6.0)20408-A
Multi-CF FITTING	Magdeburg Sphere				
COMMON APPLICATION	Medium and Larger UHV Chambers				
CONSTRUCTION / MATERIAL	Welded Stainless Steel 304 hemispheres and Perimeter Weld Flanges				
1⅓ CF SEALING SURFACES	None	None	Four with (12) 8-32 tapped bolt holes per sealing surface	None	Eight with (12) 8-32 tapped bolt holes per sealing surface
2¾ CF SEALING SURFACES	Three with (12) 1/4-28 tapped bolt holes plus one pair of Grabber Grooves per sealing surface	Three with (12) 1/4-28 tapped bolt holes plus one pair of Grabber Grooves per sealing surface, One Extended	Five with (12) 1/4-28 tapped bolt holes plus one pair of Grabber Grooves per sealing surface	Four with (12) 1/4-28 tapped bolt holes plus one pair of Grabber Grooves per sealing surface	Four with (12) 1/4-28 tapped bolt holes plus one pair of Grabber Grooves per sealing surface
4½ CF SEALING SURFACES	One with (16) 5/16-24 tapped bolt holes plus two pair of Grabber Grooves	One with (16) 5/16-24 tapped bolt holes plus two pair of Grabber Grooves	One with (16) 5/16-24 tapped bolt holes plus two pair of Grabber Grooves	Two with (16) 5/16-24 tapped bolt holes plus two pair of Grabber Grooves	Two with (16) 5/16-24 tapped bolt holes plus two pair of Grabber Grooves
INTERNAL WORK SPACE	4.200 in. Spherical I.D.	4.200 in. Spherical I.D.	4.200 in. Spherical I.D.	5.870 in. Spherical I.D.	5.870 in. Spherical I.D.

#### MAGDEBURG SPHERE

The Multi-CF Magdeburg Spheres are welded multi-port Multi-CF fittings. They consist of hollow spheres with various combinations of 1⅓, 2¾, 4½, 6.0, and 8.0 Perimeter Weld Flanges. Many of the CF sealing planes are close to being in the tangent planes of the spherical shell.

Each 2¾ or larger CF sealing surface has at least one pair of Grabber Grooves. The integration of Groove-Grabber / Grabber-Groove technology allows for very complex apparatus to be directly mounted in a chamber. The chambers have unmatched access and large volumes for their overall size. The result is smaller overall systems sizes.

An appropriate thin-walled chamber shell (usually spherical) is prepared for direct welding of Perimeter Weld Flanges by machining weld-lip-sized holes. Extension nipple-tube sections are normally not required.

Magdeburg Spheres can be fabricated in a large variety of configurations. At this point they are mostly made to order. Over a period of time, the most useful configurations will be stocked. Availability of larger sizes is partially limited by the availability of spherical shells.



Magdeburg Sphere MCF450-MS(6.0)20400-A

## LARGER CUSTOM Multi-CF Magdeburg Spheres 8 inch or 10 inch Outer Diameter

**MCF450-MS Series**  
**MCF600-MS Series**  
**MCF800-MS Series**

### THE CUSTOM MAGDEBURG SPHERE

The Custom Multi-CF Magdeburg Spheres are welded multi-port Multi-CF fittings that allow the customer flexibility in vacuum chamber design. They consist of either 8 inch or 10 inch O.D. hollow spheres with various combinations of 1½, 2¼, 4½, 6, and 8 Perimeter Weld Flanges. Magdeburg Spheres can be fabricated in a large variety of configurations specified by the customer. Each 2¼ or larger CF sealing surface has at least one pair of Grabber Grooves. The integration of Groove-Grabber / Grabber-Groove technology allows for very complex apparatus to be directly mounted in a chamber. The chambers have unmatched access and large volumes for their overall size. The result is smaller overall system sizes.



*Custom Magdeburg Sphere MCF450-MS(8.00)20.1200-A  
(An 8 inch sphere with two 4½ CF and twelve 2¼ CF ports)*

	MCF450-MS(8.00) MCF450-MS(10.00)	MCF600-MS(8.00) MCF600-MS(10.00)	MCF800-MS(10.00)
Multi-CF FITTING	Custom Magdeburg Sphere		
COMMON APPLICATION	UHV Vacuum Chamber		
CONSTRUCTION/ MATRL.	Unitary Stainless Steel 304		
BASE SPHERE SIZE	8.00 inch Spherical O.D. or 10.00 inch Spherical O.D.	8.00 inch Spherical O.D. or 10.00 inch Spherical O.D.	10.00 inch Spherical O.D.
1½ CF SEALING SURFACES	Specify number, with (12) 8-32 tapped bolt holes per sealing surface	Specify number, with (12) 8-32 tapped bolt holes per sealing surface	Specify number, with (12) 8-32 tapped bolt holes per sealing surface
2¼ CF SEALING SURFACES	Specify number, with (12) 1/4-28 tapped bolt holes, one pair of Grabber Grooves per sealing surface	Specify number, with (12) 1/4-28 tapped bolt holes, one pair of Grabber Grooves per sealing surface	Specify number, with (12) 1/4-28 tapped bolt holes, one pair of Grabber Grooves per sealing surface
4½ CF SEALING SURFACES	Two (on basic chamber) with (8) 5/16-24 tapped bolt holes, one pair of Grabber Grooves per sealing surface	None (or specify number)	None (or specify number)
6 CF SEALING SURFACES	None	Two (on basic chamber) with (16) 5/16-24 tapped bolt holes, two pairs of Grabber Grooves per sealing surface	None (or specify number)
8 CF SEALING SURFACES	None	None	Two (on basic chamber) with (40) 5/16-24 tapped bolt holes, two pairs of Grabber Grooves per sealing surface
INTERNAL WORK SPACE	7.75 inch Spherical I.D. or 9.75 inch Spherical I.D.	7.75 inch Spherical I.D. or 9.75 inch Spherical I.D.	9.75 inch Spherical I.D.