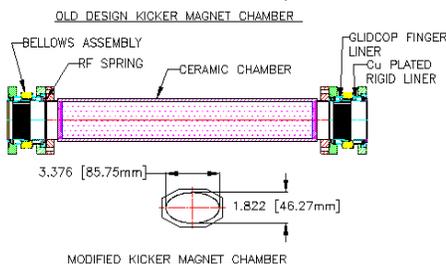
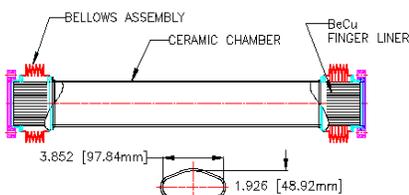


Old Design – Storage Ring Kicker Magnet



Old Design – Ceramic Vacuum Chamber

Older type ceramic vacuum chambers are designed with welded-bellows assemblies welded to both ends. The inside surfaces of the chambers were coated with a low-resistance conductive material. Resistance measurements of this coating indicate that the coatings were inadequate or damaged, which lead to an increase in temperatures on chamber walls during operations. Finger liners were ineffective in shielding the bellows as well as providing RF continuity.



Upgraded – Storage Ring Kicker Magnet

Upgrades:

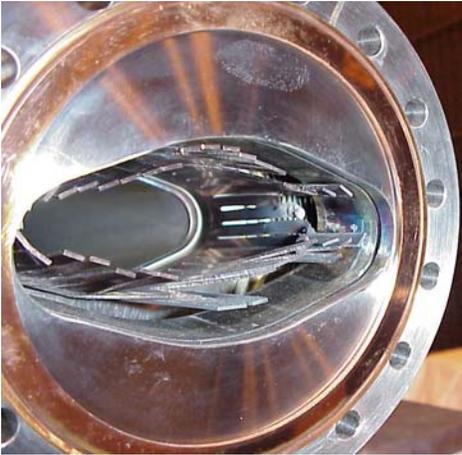
The ferrite support base was machined to within 0.005-inch flatness tolerance to ensure that all surfaces of the ferrite are in the same vertical plane when assembled. The ferrite was aligned, surveyed, and pinned with 0.125- diameter brass dowel pins allowing for repeatable positioning of the ferrite after reassembly. This was also fiducialized to the base plate to ensure a more accurate placement to the beam orbit when installed in the SR. The ceramic vacuum chamber was independently supported from the ferrite and ferrite housing so that it could be adjusted both vertically and horizontally. Its position was surveyed and locked within 0.003-inch of the ferrite aperture center. L-shaped brackets made in two pieces with slots for adjustment were added to the side of the ferrite housing to support and hold the coil in a fixed position.



Upgraded – Ceramic Vacuum Chamber

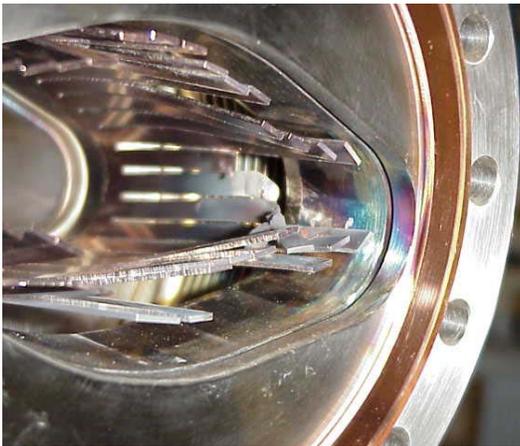
Upgrades:

Redesigned ceramic vacuum chamber with detached bellows. The chamber aperture, elliptical in shape, was reduced by 12.09mm on the major axis and 2.65mm on the minor axis, bringing it closer to the aperture of the storage ring vacuum chambers. The inside surfaces of the ceramic chambers were metallized with moly-manganese (Mo-Mn) to an average thickness of approximately 10µm. Bellows assemblies and bellows liners were redesigned.

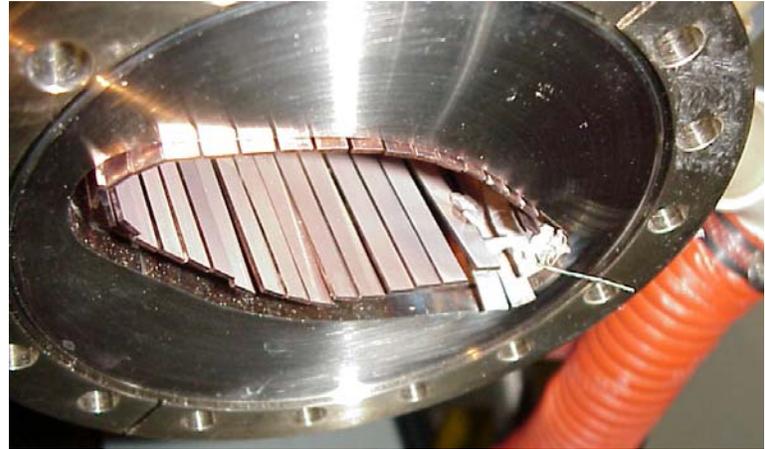


S38IK1 - Old Ceramic Chamber

Bellows are shielded with finger-type liners. Fingers at the outboard side of the downstream end of S38IK1 were damaged.

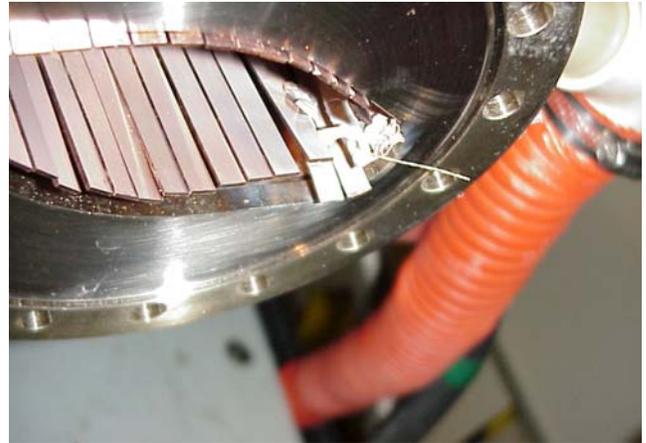


S38IK1 - Old Ceramic Chamber (Closeup)



S39IK2 - Old Ceramic Chamber

Similarly, fingers at the outboard side of the downstream end of S39IK2 were damaged.



S39IK2 - Old Ceramic Chamber (Closeup)