Modifications to the HS Safkeg 3977A for Molybdenum 99 Contents

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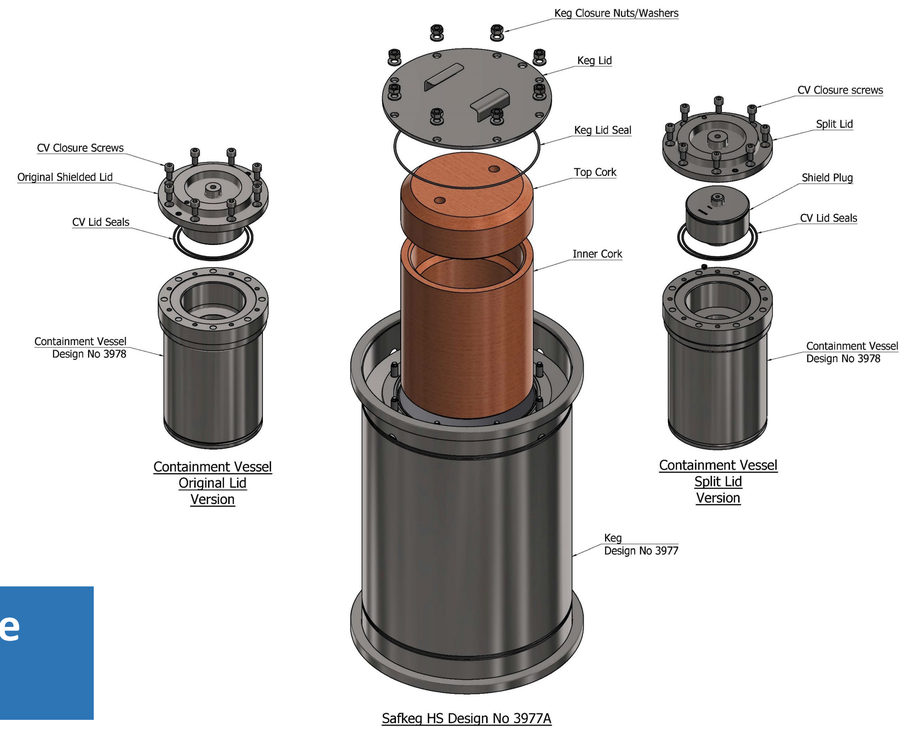
HS 3977A Package Configuration



Safkeg HS Design No 3977A

Original HS 3977A Package (solid and gaseous contents)

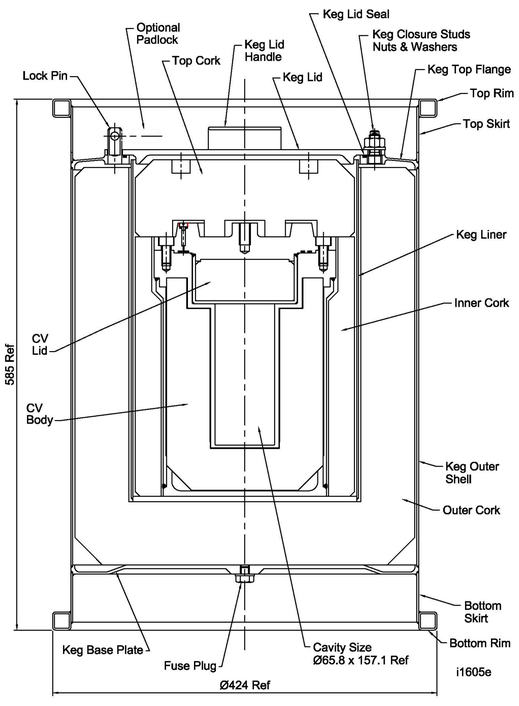
The HS 3977A was originally conceived in 2008 to meet the need of US and international operators for a general-purpose Type B(U) container able to transport a wide array of radionuclides. The design development led to a full prototype and test programme commencing in 2010, which culminated in an initial issue of Certificate of Compliance by the NRC in early 2014

CV Body with integral DU shielding

One piece CV lid with integral DU shielding plug

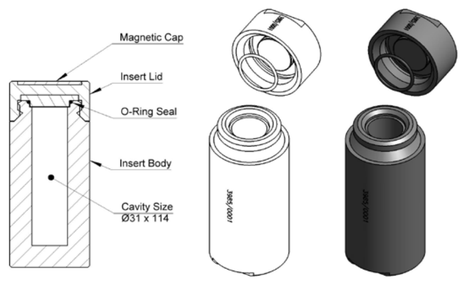
Original HS CV

CV Design No 3978



Original HS Package Design No 3977A

CV Tungsten Insert Design No 3982



CV Tungsten Insert Design No 3985

With either the 3982 or 3985 insert the original HS is licensed for multiple radionuclides in solid and gaseous form

Ac 225	Ac 227	Ac 228	Am 241	As 77	Au 198
Ba 131	C 14	Co 60	Cs 131	Cs 134	Cs 137
Cu 67	Hg 203	Ho 166	I 125	I 129	I 131
In 111	Ir 192	Ir 194	Lu 177	Mo 99	Na 24
Np 237	P 32	P 33	Pb 203	Pb 210	Pd 109
Ra 223	Ra 226	Re 186	Re 188	Rh 105	Se 75
Sm 153	Sr 89	Sr 90	Tb 161	Th 227	Th 228
Ti 201	W 187	W 188	Y 90	Yb 169	Yb 175
Kr 79	Xe 133				

Kr-79 and Xe-133 in gaseous form only, within 3985 insert, confined within sealed product container

HS 3977A Design Modifications (addition of liquid contents)

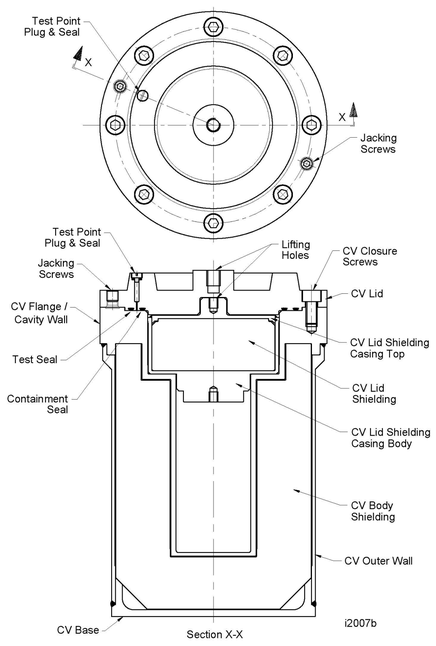
Following the HS 3977A introduction in 2014, in the original configuration as described above, it quickly became apparent from client feedback and further market engagement that the package was ideally suited to the transportation of additional radionuclides such as I-131 and Mo-99. These isotopes are commonly transported in liquid solution form to service the rapidly expanding medical radioisotopes market. The Containment Vessel (CV) and inserts were therefore subject to design modifications, with the outer container unchanged from the original design, to allow transportation of Mo-99 and I-131 in liquid form

CV body design unmodified, integral DU shielding

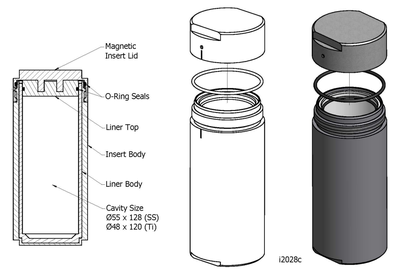
Two piece CV lid with separate DU shielding plug

Split Lid HS CV

CV Design No 3978



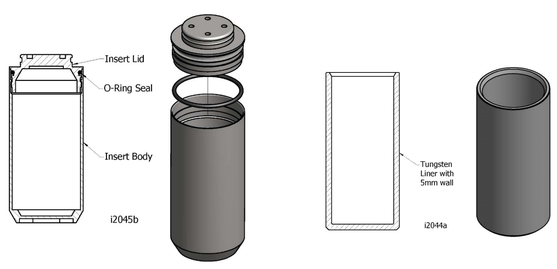
Split Lid HS CV Design No 3978



CV St Steel / Titanium Insert Design No 3987

I 131

The 3987 insert, coupled with a suitable product container, is licenced to transport I-131 in liquid form. This insert may only be utilised with the original CV design



CV St Steel Insert and Tungsten Liner Design No 4081

Mo 99

The 4081 insert, coupled with a suitable product container, is licenced to transport Mo-99 in liquid form. This insert may only be utilised within the modified split lid CV