Can Assemblies for POWGEN Sample Environments

Purpose and Scope: The purpose of this document is to specify the types of sample cans, lids, hardware and other accessories appropriate for each sample environment used at BL-11A (POWGEN).

Discussion: Beamline 11a employs multiple sample environments, covering temperatures ranging from 2K with a cryostat to 1473K with a vacuum furnace. Care must be taken to select can types appropriate to the temperature range of the equipment. The materials incompatible with the full temperature range of the sample environment should be avoided, if possible, even if the intended range of operation is less. For details, see PCS Procedure SIO-0751.

Sample Environment (SE):	**POWGEN Auto-Changer PAC (AC-005)**
Temp Range:	10 – 300 K
Can Style:	PAC
Can Body:	vanadium with 3-, 6-, 8- or 10-mm nominal diameter
Inner Diameter:	2.7, 6.0, 7.6 or 9.2 mm
Maximum Sample Height:	50 mm
Sample Volume:	0.29, 1.4, 2.3 or 3.3 cm^3
Can Collar:	titanium with barcode and threads
Can Gasket:	copper disk
Can Lid:	aluminum with threads to match collar
Can Hardware:	none
Stick Adapter:	none

Sample Environment (SE):	**50mm Orange Cryostat with V tail (CRYO-004)**
Temp Range:	2 – 300 K
Can Style:	PAC
Can Body:	vanadium with 3-, 6-, 8- or 10-mm nominal diameter
Inner Diameter:	2.7, 6.0, 7.6 or 9.2 mm
Maximum Sample Height:	50 mm
Sample Volume:	0.29, 1.4, 2.3 or 3.3 cm^3
Can Collar:	titanium with barcode and threads
Can Gasket:	copper disk
Can Lid:	aluminum with threads to match collar
Can Hardware:	none
Stick Adapter:	none

Sample Environment (SE):	**ILL Vacuum Furnace (HOT-001)**
Temp Range:	300 – 1473 K
Can Style:	NIST
Can Body:	vanadium with 6-, 8- or 10-mm nominal diameter
Inner Diameter:	6.0, 7.6 or 9.1 mm
Maximum Sample Height:	47 mm (6mm ID) or 50 mm (8 and 10mm ID)
Sample Volume:	1.3 cm^3 (6mm ID), 2.3 cm^3 (8mm ID) or 3.3 cm^3 (10mm ID)
Can Collar:	titanium with six holes
Can Gasket:	none
Can Lid:	boron nitride with six through holes and M8-1.25 screw hole
Can Hardware:	molybdenum #4-40 threaded rods, washers and nuts
Stick Adapter:	niobium screw M8-1.25 with welded nut

Sample Environment (SE):	**AGES Gas Flow Insert (HOT-003) with HOT-001**
Temp Range:	300 – 1123 K
Can Style:	baskets
Can Body:	quartz with frit bottom
Inner Diameter:	approximately 10.7 mm
Maximum Sample Height:	50 mm
Sample Volume:	4.5 cm^3
Can Collar:	none
Can Gasket:	none
Can Lid:	quartz wool
Can Hardware:	none
Stick Adapter:	Macor glass-ceramic pins

Sample Environment (SE):	**Janis Cryofurnace (CCR-17) – Low Temp Stick**
Temp Range:	5 – 500 K
Can Style:	PAC
Can Body:	vanadium with 3-, 6-, 8- or 10-mm nominal diameter
Can Collar:	titanium with barcode and threads
Inner Diameter:	2.7, 6.0, 7.6 or 9.2 mm
Maximum Sample Height:	50 mm
Sample Volume:	0.29, 1.4, 2.3 or 3.3 cm^3
Can Gasket:	copper disk
Can Lid:	aluminum with threads to match collar
Can Hardware:	none
Stick Adapter:	stainless steel PAC adapter

Sample Environment (SE):	**Janis Cryofurnace (CCR-17) – High Temp Stick**
Temp Range:	30 – 750 K
Can Style:	NIST
Can Body:	vanadium with 6-, 8- or 10-mm nominal diameter
Can Collar:	titanium with six 1/8”-32 holes
Inner Diameter:	6.0, 7.6 or 9.1 mm
Maximum Sample Height:	47 mm (6mm ID) or 50 mm (8 and 10mm ID)
Sample Volume:	1.3 cm^3 (6mm ID), 2.3 cm^3 (8mm ID) or 3.3 cm^3 (10mm ID)
Can Gasket:	copper ring or none
Can Lid:	titanium or stainless with six through-holes and 5/16”-18 post
Can Hardware:	stainless steel socket cap #6-32 screws
Stick Adapter:	none

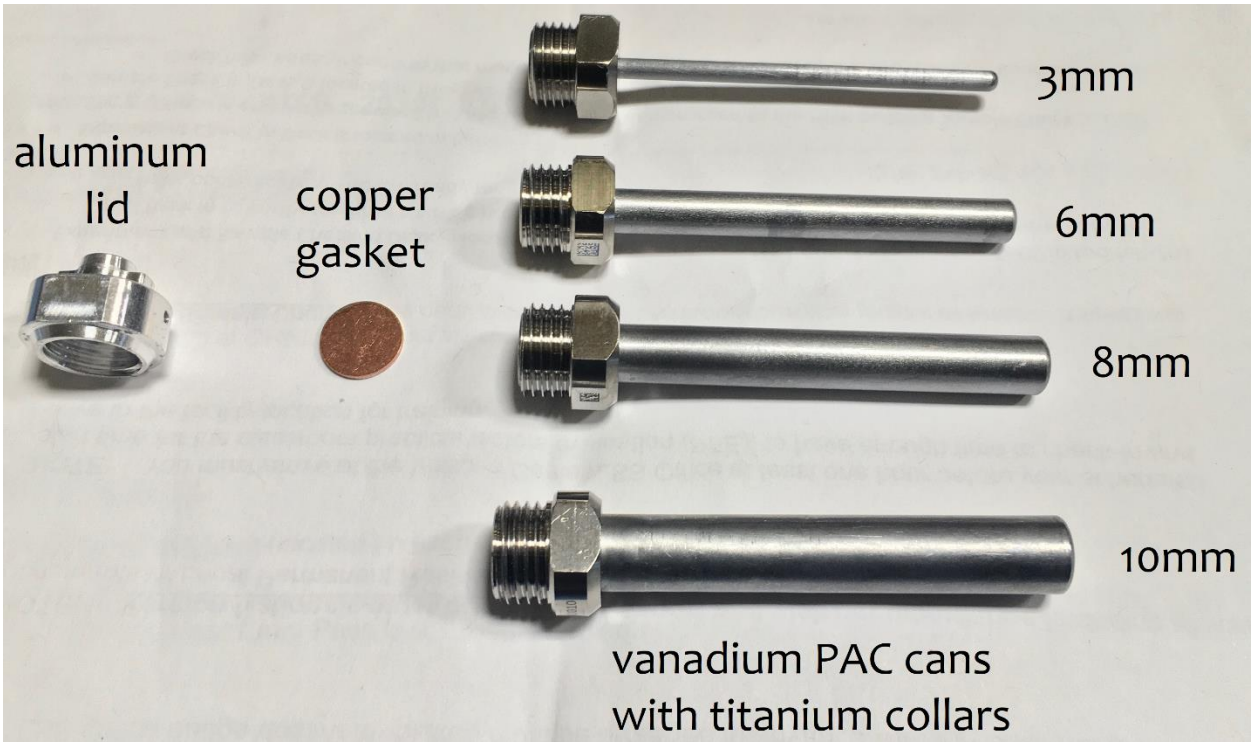

Figure 1. PAC can assembly for Powgen AutoChanger (PAC), Orange Cryostat and Janis Cryofurnace with low temperature stick

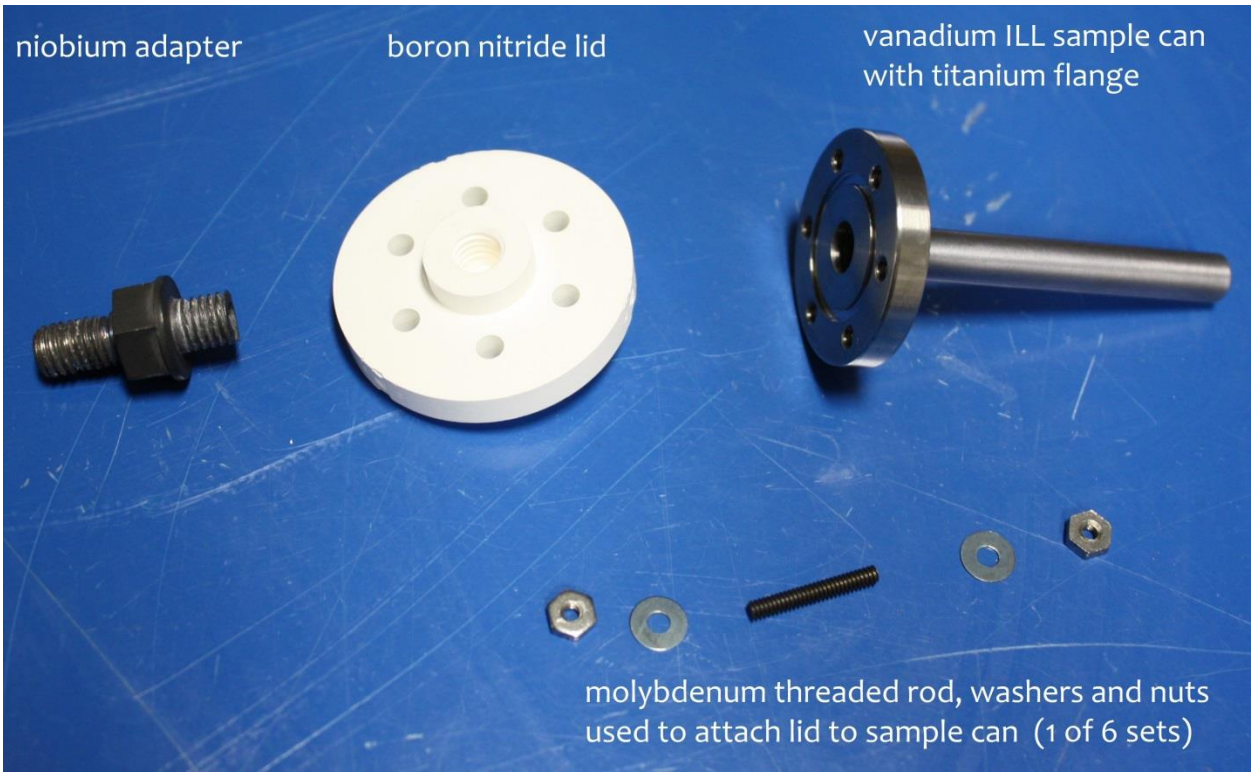

Figure 2. Can assembly for ILL Vacuum Furnace.

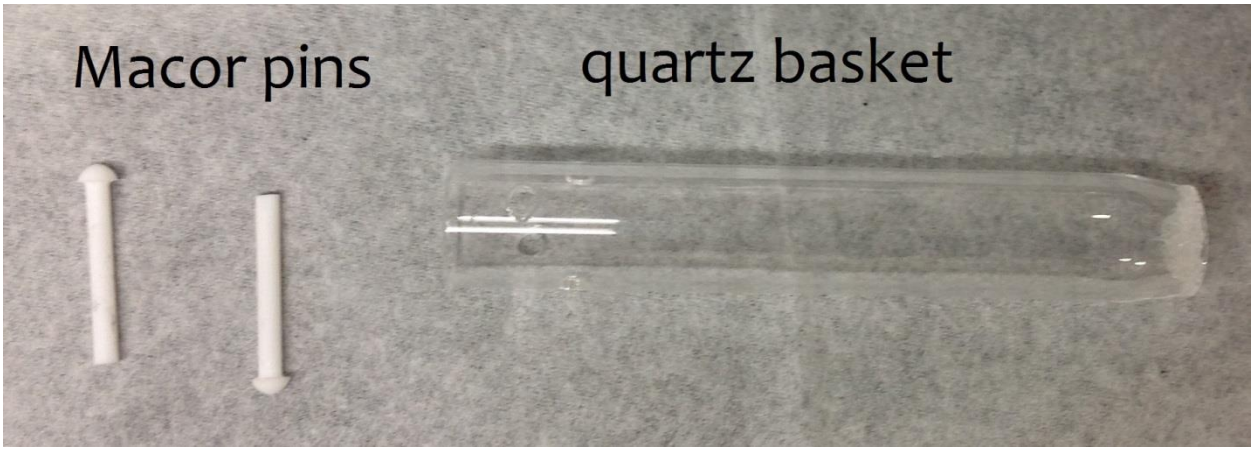

Figure 3. Quartz basket and Macor pins for AGES with ILL vacuum furnace.

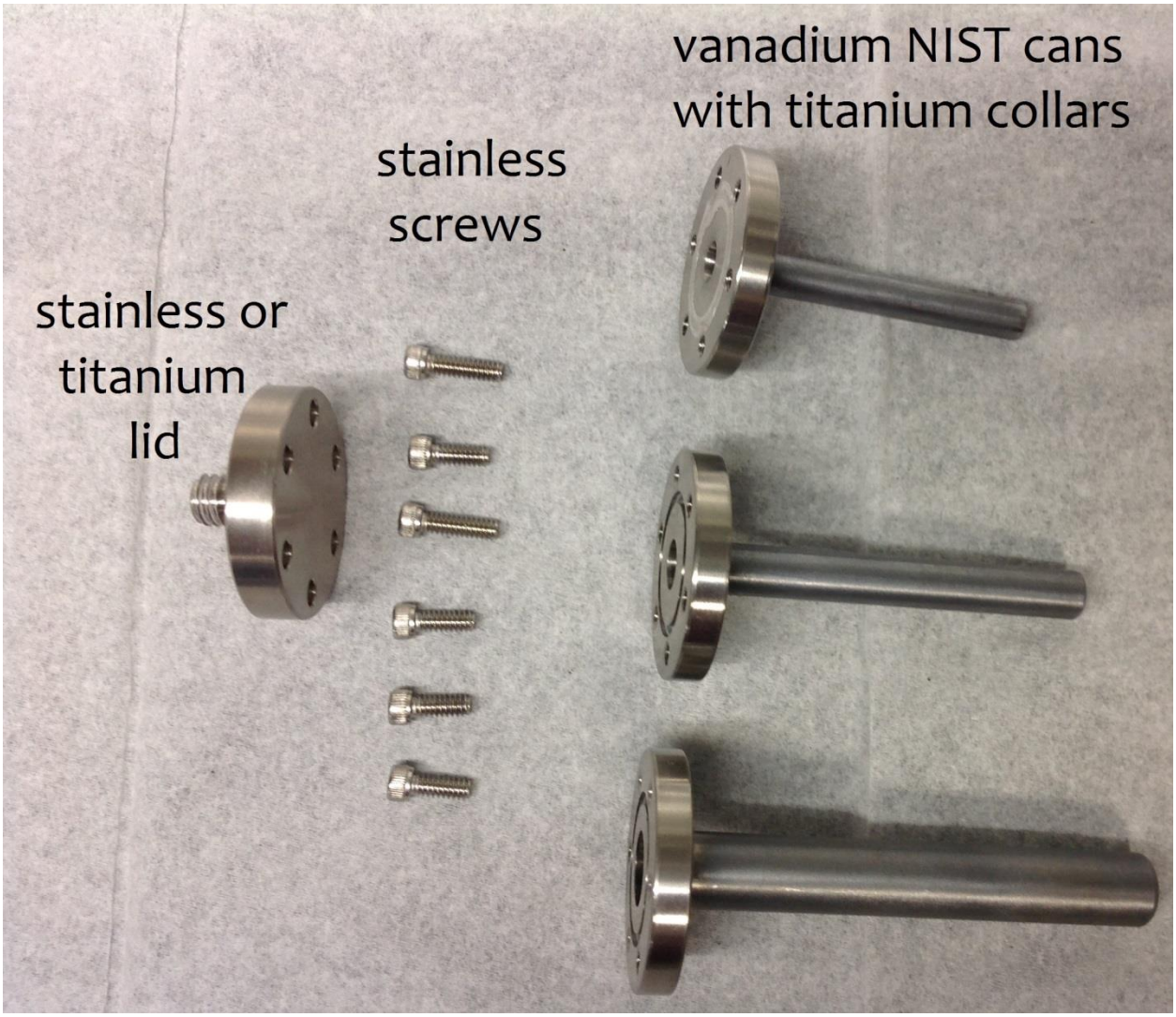

Figure 4. Can assembly for Janis Cryofurnace with high temperature stick.