End Station Optics Vacuum Chamber
Beamline 12.3.2

1.0 General Description

1.1 This specification describes the fabrication of a vacuum chamber for synchrotron radiation.

1.2 A complete drawing set will be provided and parts shall be fabricated as shown on the drawings. Fabrication details may be modified in circumstances where documented vendor experience suggests improvements, with LBNL/ALS approval, on a case-by-case basis.

1.3 Fabrication of this vacuum chamber is to include clean welding and leak testing for the entire assembly.

1.4 A complete set of drawings and a parts list is provided with this specification. Drawings referenced on assembly drawing **26D165B** provide all details for all parts except mounting plate **26D179A**.

1.5 The vendor shall fabricate a complete mirror vacuum chamber and perform all appropriate leak checks. The leak check rate shall not exceed 2 $x10^{-9}$ std atm cc/sec, Helium.

2.0 Design Features

2.1 The Sample Vacuum Chamber assembly **26D182B** is comprised of one welded vacuum chamber body assembly **26D165B**, sealing cover plates **26D176A, 26D177A and 26D178A,** and one chamber mounting plate **26D179A**.

3.0 Components to be Provided

3.1 Vendor shall provide vacuum chamber assembly as described on drawings **26D165B** and **26D182B**.

Quantity = **see purchase order**

3.2 The vacuum chamber assembly **26D165B** is comprised of the following fabricated parts:

3.2.1 **26D165B:** Chamber Weldment Assembly

- 3.2.1.1 26D166A: Chamber Base Plate
- 3.2.1.2 26D167A: Chamber Long Top Plate
- 3.2.1.3 26D168A: Chamber Long Side Plate
- 3.2.1.4 26D169A: Chamber Short Side Plate
- 3.2.1.5 26D170A: Chamber Front Plate
- 3.2.1.6 26D171A: Chamber Angled Top Plate
- 3.2.1.7 26D172A: Chamber Short Top Plate
- 3.2.1.8 26D173A: Chamber Exit Plate Upper
- 3.2.1.9 26D174A: Chamber Exit Plate Lower
- 3.2.1.10 26D175A: Chamber Angled Side Plate

3.2.1.11 26D176A: Short Side Cover Plate

3.2.1.12 26D177A: Long Side Cover Plate

3.2.1.13 26D17A: Long Side Cover Plate – 2

3.2.1.14 26D179A: Chamber Mounting Plate

4.0 Vacuum Seals

4.1 The chamber body assembly **26D165B** is a welded assembly. All ports are sealed using an o-ring gasket.

4.2 Vacuum seals and flanges for all open ports will be supplied by vendor as required for vacuum checking.

5.0 Materials

5.1 Material for this assembly is aluminum alloy 6061-T6. Materials are also called out on each detailed fabrication drawing.

5.2 Surface treatments are called out on the detailed fabrication drawings.

6.0 Assembly, Testing and Preparation for Vacuum Service

6.1 The vendor shall provide the facilities and instrumentation, unless otherwise specified, to perform all specified tests to ensure compliance with this specification.

6.2 Cleaning for HV service shall follow LBNL specification M20013 that is appended to this specification. This cleaning specification supersedes cleaning specifications referred to on all drawings.

6.3 The vendor shall clean the interior of the vacuum vessel and the vessel flanges by scrubbing and washing with solvent suitable for HV cleaning. Any internal tapped holes shall also be cleaned. See LBNL specification M20013.

6.4 The vendor shall assemble all parts of the vacuum chamber assembly. Parts shall be assembled with clean gloves in a clean assembly area.

6.5 The vendor shall perform helium leak checks on welded assemblies as well as the final, full assembly. Acceptance criteria shall be less than 2×10^{-9} std atm cc/sec.

7.0 Shipping

7.1 Vendor shall communicate test results verifying that acceptance criteria have been met and photographic evidence that all specified procedures have been followed prior to shipment.

7.2 Vendor shall supply all shipping containers and packaging. Vendor shall assume responsibility for packing and for safe shipment to LBNL in Berkeley, California.

7.3 The assemblies shall be shipped on pallets and all assemblies shall have suitable lifting points for removal from their packaging.

8.0 Additional Information

8.1 For additional information or technical questions regarding this specification, please contact:

Dave Plate at (510) 486-7232, FAX (510) 486-4873, E-mail: DWPlate@lbl.gov