

Quad Vacuum Chamber Design Requirements

Vacuum Chamber to be as shown in D040481-02, Quad Vacuum Chamber/Oven, with added details as shown below. Note that the fittings, related hardware and oven are not part of this task, but are shown to describe the vacuum chamber's environment.

Internal Diameter: 40"

Overall Length: 77" maximum

Inside cylindrical length of chamber: 60"

Type Heads: ASME Flanged & Dished

Saddle Type Chamber Supports, with doubler plates at shell welds

Shell Ports: 2 ea, 1 1/2" OD tube with 2 3/4" OD Conflat-type flange, covered with blank flange

3 ea, 4" OD tube with 6" OD Conflat-type flange, covered with blank flange

Door Flanges: forged, 1.82" wide x 1.75" thick cross section, with shell weld at neutral axis

Door Bolts: 36 ea, 5/8-11 NC with Nitronic 60 nuts (quantity divisible by 2, 3, and 4 for choosing optimum sealing vs. labor expended)

5 spare nuts for door bolts to be furnished with chamber

Door Seal: Helicoflex HN208A

20 unused, undamaged door seals to be furnished with chamber

Door Port: 24" OD tube with UHV wire seal flange, covered with blank flange (this will be used when the load is only small parts)

Door Lift Clevis: 3/4" dia hole, centered above door CG such that plane of door flange hangs within 1/4" of vertical

Door Port Cover Lift Clevis: same as Door Lift Clevis

Door Positioning Pins: Shoulderless, Press-Fit, steel, diamond and round cross sections, located at 3:00 and 9:00

Chamber, Tube & Flange Material: Type 304L Stainless Steel

Type Welds: full penetration internal welds, stitch external welds

Finish, heads & shell: cold rolled plate

Maximum Mass, assembled: 1150 lb

Internal Features: 2 support rails, 60.5" long

Design Standard Used: ASME Code, but not certified as a Code vessel

Complete chamber to be confirmed to be leak tight to 1E-9 tl/s, helium hood test

Statement of Work

Quad Vacuum Chamber

In performance of this contract, the Contractor shall be required to:

- Design a Quad Vacuum Chamber per the design requirements shown in the attached file
- Submit the fabrication drawings to the LIGO Project for approval, within 3 weeks after receipt of purchase order. Note: drawings are purchased under this contract, and become the property of the LIGO Project.
- The LIGO Project will respond within 2 weeks of receipt of drawings
- Fabricate the Quad Vacuum Chamber per the drawings, within 3 months of approval
- Test the Quad Vacuum Chamber to confirm compliance with the requirements
- Ship the Quad Vacuum Chamber to Quad Oven manufacturer by YYYY for oven testing.