

Title

ACCEPTANCE TEST PROCEDURE FOR 6", 10" & 14" GATE VALVES

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Attachment Acceptance Test Data Sheet

Number

Rev.

SPECIFICATION

Number **A** L190-E960175-00-V Rev. **0**
V049-2-108

1.0 PURPOSE

The purpose of this Acceptance Test Procedure (ATP) is to define the overall plan for acceptance testing of this component in order to demonstrate that it meets the requirements of the LIGO Vacuum Equipment Specification, LIGO-E940002-02-V, Revision 2, dated August 31, 1995.

2.0 GENERAL

- 2.1 The procedure applies to all of the stations. Differences between the stations will be due to different vacuum equipment, size of the isolatable sections, surfaces, volumes and quantities of instrumentation and equipment.
- 2.2 Tests will be performed by PSI personnel, and will be witnessed by an agent (with sign-off authority) designated by LIGO.

3.0 REFERENCE DOCUMENTS

The following documents shall be used in conjunction with this one for performing the ATP:

PSI Specification V049-2-006, 6", 10" and 14" Gate Valves

4.0 RESPONSIBILITY

It shall be the responsibility of the project engineer assigned to this component or subsystem to ensure that all of the procedures required by this ATP are performed and that the LIGO witness signs the data sheet/test certification (attached to this procedure) verifying that the procedures have been performed. The data sheet shall also be signed by the project engineer, or other PSI person designated by the project manager. Any test listed in the data sheet which is not applicable to this component or subsystem shall be noted by writing "NA" in the appropriate space. Any deviations from the test procedures or parameters shall be noted on the data sheet.

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5.0 TEST

5.1 Each valve shall be inspected for cleanliness by black light. Valves will be recleaned if any contamination is found.

5.2 All 6", 10" and 14" gate valves shall be leak tested (using oil-free pumping equipment and leak detector). An RGA with calibrated leak shall be used in performing the leak testing. Leak checking procedures shall conform to ASTM E498. Valve body and flange total leakage shall be measured to be less than 10^{-10} torr liter/sec of helium before shipment. Gate seal leakage shall be shown to be less than 1×10^{-9} torr liter/sec of helium.

5.3 One valve of each size and type of actuation shall be tested for shock. The valve shall be tested in the vertical position resting on a pad that deflects at least 0.1" under the static load of the valve, so as not to simulate a "hard mount". Testing shall be done both at atmospheric pressure and with the valve under vacuum. An accelerometer shall be mounted near a connecting flange on the valve housing or near the edge of one of the flange covers. Separate measurements shall be taken in each of the three axes. Valve actuation shall be shown to induce no more than 0.01g peak-to-peak acceleration at any point on the valve mounting flanges.

5.4 Final acceptance will occur in the field. The field test will consist of a valve functional check and the leak test of the associated isolatable section of equipment.

6.0 DOCUMENTATION

The following documentation shall be provided prior to shipment:

- Leak test procedure and report (including data).
- Shock test procedure and report (including data).
- Manufacturer's standard QA reports (including final functional test reports)

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LIGO VACUUM EQUIPMENT ACCEPTANCE TEST DATA/TEST VERIFICATION

Equip. Tag _____ S/N _____

Type of Test	ATP Para.	ATP Req'ment/ Actual Data	Comments	LIGO Witness Sign./date	PSI Sign./date
Visual Inspection	5.1				
Labelling Verification					
Bakeout	NA				
Leak rate	5.2	1×10^{-10} torr 1/sec He			
Factory Endurance Test	NA				
Factory Speed Test	NA				
Functional Test	NA				
RGA Test	5.2				
Particle Count	NA				
Pumpdown	NA				