

Title: **FABRICATION PLAN FOR CRYOPUMPS**

**FABRICATION PLAN
FOR
80K CRYOPUMPS
LIGO VACUUM EQUIPMENT
Hanford, Washington
and
Livingston, Louisiana**

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Information contained in this specification and its attachments is proprietary in nature and shall be kept confidential. It shall be used only as required to respond to the specification requirements, and shall not be disclosed to any other party.

6	PF 5/1/96	REV 5/2/96	ISSUED PER DEC 0/61 FOR EDR
REV LTR.	BY-DATE	APPD. DATE	DESCRIPTION OF CHANGE

PROCESS SYSTEMS INTERNATIONAL, INC.				SPECIFICATION	
INITIAL APPROVALS	PREPARED	DATE	APPROVED	DATE	Number A V049-2-082
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1.0 PURPOSE

The purpose of this procedure is to define design guidelines, specifications, and procedures to enable PSI to specify, purchase, inspect, fabricate, test and ship the 80K Cryopumps per LIGO requirements.

2.0 GENERAL

All Cryopumps shall be fabricated per this fabrication plan. Each fabrication process shall be controlled via a written procedure. A "first article" approach will be used to validate all fabrication processes prior to release of the full vessel lot.

All vessels will be fabricated in accordance with the Quality Plan. Key points in the fabrication process shall be verified to ensure consistent results.

All vacuum equipment shall be fabricated in accordance with LIGO Project Contract PC175730 dated September 12, 1995, and subsequent change orders.

3.0 RESPONSIBILITY

The Manufacturing Department is responsible for the execution of this procedure, with input and monitoring by the Project Engineer, the Quality Assurance Department, and the Project Manager.

4.0 FABRICATION PLAN

4.1 A first article approach will be used to start the Cryopump manufacturing cycle to validate the manufacturing procedures and technique prior to the full production release.

4.2 The Cryopumps will be fabricated at PSI. PSI will perform vessel cleaning, leak checking, bakeout and preparation for shipment.

4.3 The Cryopumps will be fabricated and tested per documents listed in Attachment I "Fabrication Documents".

4.4 The Cryopumps will be fabricated and tested per Attachment 2 Cryopump Fabrication Flow Chart.

4.5 The Cryopumps will be fabricated according to the Fabrication Priority List Attachment 3.

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4.6 Procurement

PSI will procure all S.S. plate and flange material.

PSI will purchase vessel heads.

4.7 Quality Assurance

The Cryopump Fabrication Process shall be monitored and control via the Quality Plan V049-2-098.

PSI will inspect all incoming materials to the purchase documents.

4.8 Shop Conditioning/Testing

The Cryopumps will be shop conditioned (cleaned, bakeout, etc.) per PSI Procedure V049-2-047.

4.9 Preparation For Shipment

The Cryopumps will be prepared and shipped per PSI Procedure V049-2-123.

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ATTACHMENT 1

CRYOPUMP DOCUMENTS

1.	Spec. For Cryopump Fabrication	V049-2-096
2.	Cryopump Quality Plan	V049-2-098
3.	Bill of Material	V049-4-004, V049-4-005
4.	Flanges	V049-2-040 & V049-2-042
5.	Heads	V049-2-039
6.	Raw Material Handling Procedure	V049-2-120
7.	Weld Data Sheet Spec.	V049-2-084
8.	Weld Procedures	V049-2-070, V049-2-071, V049-2-072, V049-2-073
9.	Weld Repair Procedure	V049-2-074
10.	Cleaning Procedures	V049-2-015
11.	Painting Procedures	V049-2-077
12.	Components Shop Conditioning/Test Plan	V049-2-047
13.	Bakeout Procedure	V049-2-019
14.	Leak Test Procedure	V049-2-014
15.	Dimensional Verification Procedure	V049-2-121
16.	Component Packaging, Handling, and Shipping Procedure	V049-2-123
17.	PSI Drawing	
	80K Cryopump - Long	V049-4-004
	80K Cryopump - Short	V049-4-005
	44 5/8" ID Flange Detail (Grooved)	V049-4-017

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ATTACHMENT 3

80K CRYOPUMP FABRICATION PRIORITY LIST

WCP1	(CS)
WCP2	(CS)
WCP3	(LMS)
WCP4	(LMS)
WCP7	(LES)
WCP5	(RMS)
WCP6	(RMS)
WCP8	(RES)
LCP1	(CS)
LCP2	(CS)
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