

**SPECIFICATION FOR
STAINLESS STEEL VESSEL HEADS
FOR
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.

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0	D. M. (4)		ISSUE PER DEO 0021 (MAT'L PROCUREMENT)
REV LTR.	BY-DATE	APPD. DATE	DESCRIPTION OF CHANGE
PROCESS SYSTEMS INTERNATIONAL, INC.			SPECIFICATION
INITIAL APPROVALS	PREPARED	DATE	APPROVED
	<i>REB</i>	<i>11/21/95</i>	<i>REB</i>
			DATE
			<i>11/27/95</i>
			Number
			V049-2-039
			Rev.
			0

SPECIFICATION TABLE OF CONTENTS

- 1.0 Scope
- 2.0 Material Requirements
- 3.0 Manufacture Requirements
- 4.0 Material Testing
- 5.0 Inspection/Witness
- 6.0 Rejections and Repair of Defects
- 7.0 Identification
- 8.0 Documentation
- 9.0 Packaging, Storing and Shipping
- 10.0 Non-escort Privileges and Inspection Right

Attachment A LIGO Quality Assurance Requirements Summary

Number
Rev.

SPECIFICATION

Number	A	V049-2-039	Rev.	0
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3.0 MANUFACTURE REQUIREMENTS**3.1 Thickness Tolerance**

The heads shall be furnished in the minimum thickness(es) specified in the purchase order.

3.2 Circumference Tolerance $\pm 1/8$ "**3.3 Out of Round Tolerance $\pm 1/4$ " For 105 in. I.D. Heads, $\pm 1/8$ " for 30.5 in. I.D. to 84.5 in. Heads.****3.4 Heads to be square trimmed by manufacturer to a flatness tolerance of $\pm 1/8$ ".****3.5 Head to be manufactured without center holes. Welding not permitted.****3.6 Surface Finish**

Cold rolled, and Pickled surface finish is acceptable.

3.7 No grinding with abrasive wheels, cloth or stones is permitted. No iron, carbon steel or other contaminants (such as grease, oil, hydrocarbons) to come in contact with the heads after the pickle process. Machining fluids shall be water soluble and free of oil and sulfur.**3.8 Cleanliness**

The heads are intended for use in a high vacuum application. Potential hydrocarbon contamination shall be eliminated. Also, the material shall be wrapped and covered at all times the material is not being processed to minimize possible exposure to contaminants. Heads to be covered with Polyethylene sheet for shipment.

Number

Rev.

SPECIFICATION

Number

A

Rev.

0

V049-2-039

Page 4 of 7

4.0 MATERIAL TESTING

- 4.1 2" x 2" material coupons must be supplied to PSI for approval prior to release for shipment. The coupons are to be cut from the same heat number, lot and thickness of material to be supplied.

5.0 INSPECTION/WITNESS

- 5.1 The purchaser shall have the right to witness all manufacturing processes.
- 5.2 The purchaser shall be informed 5 working days before the head material is formed.

6.0 REJECTIONS AND REPAIR OF DEFECTS

- 6.1 No weld splices or repair welding is permitted to the material or formed heads.

7.0 IDENTIFICATION

- 7.1 Identification of the material and heads shall be maintained through all manufacturing processes.
- 7.2 If material identity of the heads is lost, they shall be requalified by making all tests that were required for the material or as indicated in this specification.
- 7.3 Marking the finished heads with marking fluids, die stamps, and/or electro-etching is not permitted. A vibratory tool with a minimum tip radius of .005" is acceptable for marking the outside only of the finished materials. All other marking methods must be approved by the purchaser prior to use. All heads shall be marked in the straight flange area 2" up from the edge.

8.0 DOCUMENTATION

- 8.1 The Certified Material Test Report (CMTR) shall be provided to the purchaser a minimum of 48 hours prior to shipment of the material.
- 8.2 A record of the material thickness for each head is required. Thickness shall be measured and recorded at both the knuckle and the center of the head.

SPECIFICATION

Number

A

V049-2-039

Rev.

0

Title

SPECIFICATION FOR STAINLESS STEEL VESSEL HEADS

9.0 PACKAGING, STORING AND SHIPPING

- 9.1 The material shall be packaged for shipment as described in ASTM A700-94, Section 12.4.9 and 12.4.10 with the additional supplementary requirements as described herein.
- 9.2 The head material shall be wrapped in waterproof polyethylene and covered with a tarp immediately after all steel processing operations have been completed to minimize contamination. The material shall remain packaged and covered until it is necessary to remove the covering and packaging material for further processing.
- 9.3 The heads shall be shipped as specified in the purchase order.

10.0 NON-ESCORT PRIVILEGES AND INSPECTION RIGHT

Non-escort privileges for Buyer, Owner, Government and Owner representatives to all areas of the facilities where the work is being performed shall be arranged. This will include access to fabrication, assembly, cleaning and test areas for the purpose of monitoring activities.

Number
Rev.

SPECIFICATION	
Number A	Rev. 0

ATTACHMENT "A"
LIGO QUALITY ASSURANCE REQUIREMENTS SUMMARY

LIGO VACUUM EQUIPMENT	VENDOR: V59049					JOB.NO.: V59049
EQUIPMENT: Vacuum Vessel Heads	VENDOR ENG. OFFICE:					DWG. NO.:
PSI P.O. NO:	VENDOR FACTORY:					SPECNO: V049-2-039
TESTING INSPECTION AND DOCUMENTATION RECORD	Submittal After P.O.	Witnessed by PSI	Approval by PSI	Copies Req'd for PSI Files	Record in Mfr's File	Remarks: Inspector: Date:
MILESTONE SCHEDULE			X	2	X	
VENDOR Q.A. PLAN			X	2	X	
CLEANING PROCEDURE			X	2	X	
PREP FOR SHIPMENT PROCEDURE			X	2	X	
WELDING PROCEDURES						
ASSEMBLY DRAWINGS						
DESIGN REVIEW						
CERTIFIED MATERIAL TEST REPORTS			X	2	X	
IN-PROCESS INSPECTIONS		X		2	X	
OPERATION & MAINTENANCE MANUALS						
SHOP TEST PLAN						
SHOP TEST (WITH REPORT)						
SHOP DIMENSIONAL INSPECTION		X		2	X	

REV. 0
Pg 7 of 7