



American National Standard for

# Reciprocating Pump Tests

ANSI/HI 6.6-2000



6 Campus Drive  
First Floor North  
Parsippany, New Jersey  
07054-4406  
[www.Pumps.org](http://www.Pumps.org)

This page intentionally blank.

**ANSI/HI 6.6-2000**

American National Standard for  
**Reciprocating Pump Tests**

Secretariat  
**Hydraulic Institute**  
[www.Pumps.org](http://www.Pumps.org)

Approved February 25, 2000  
**American National Standards Institute, Inc.**

## American National Standard

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgement of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

**CAUTION NOTICE:** This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published By

**Hydraulic Institute**  
**6 Campus Drive, First Floor North**  
**Parsippany, NJ 07054-4406**

**[www.Pumps.org](http://www.Pumps.org)**

Copyright © 2000 Hydraulic Institute  
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher.

Printed in the United States of America

ISBN 1-880952-40-8



Recycled  
paper

## Contents

	Page
Foreword .....	v
6.6 Test .....	1
6.6.1 Scope .....	1
6.6.2 Types of tests .....	1
6.6.3 Terminology .....	1
6.6.4 Performance test .....	5
6.6.5 Hydrostatic test of pressure-retaining components .....	10
6.6.6 Net positive suction head required (NPSHR) test .....	11
6.6.7 Measurement of rate of flow .....	13
6.6.8 Pressure measurement .....	15
6.6.9 Power measurements .....	17
6.6.10 Speed measurement .....	18
6.6.11 Temperature measurement .....	18
6.6.12 Instrument calibration interval .....	18
Appendix A Index .....	20
Figures	
6.65 — Open or closed tank .....	7
6.66 — Plotting test results .....	10
6.67 — Level control NPSH test with deep sump supply .....	11
6.68 — Vacuum and/or heat control NPSH test with closed loop .....	12
6.69 — NPSHR test results .....	13
6.70 — Pressure tap opening .....	14
6.71 — Welded-on pressure tap opening .....	14
6.72 — Gauge connections .....	17
Tables	
6.15 — Symbols .....	2
6.16 — Subscripts .....	3
6.17 — Straight pipe required preceding and following any fitting before nozzle in diameters of pipe .....	15
6.18 — Straight pipe required following any fitting before orifice in diameters of pipe .....	16
6.19 — Straight pipe required after downstream pressure tap of a nozzle or orifice plate before any fitting in diameters of pipe .....	16
6.20 — Recommended instrument calibration interval .....	19

This page intentionally blank.

## **Foreword (Not part of Standard)**

### **Purpose and aims of the Hydraulic Institute**

The purpose and aims of the Institute are to promote the continued growth and well-being of pump manufacturers and further the interests of the public in such matters as are involved in manufacturing, engineering, distribution, safety, transportation and other problems of the industry, and to this end, among other things:

- a) To develop and publish standards for pumps;
- b) To collect and disseminate information of value to its members and to the public;
- c) To appear for its members before governmental departments and agencies and other bodies in regard to matters affecting the industry;
- d) To increase the amount and to improve the quality of pump service to the public;
- e) To support educational and research activities;
- f) To promote the business interests of its members but not to engage in business of the kind ordinarily carried on for profit or to perform particular services for its members or individual persons as distinguished from activities to improve the business conditions and lawful interests of all of its members.

### **Purpose of Standards**

- 1) Hydraulic Institute Standards are adopted in the public interest and are designed to help eliminate misunderstandings between the manufacturer, the purchaser and/or the user and to assist the purchaser in selecting and obtaining the proper product for a particular need.
- 2) Use of Hydraulic Institute Standards is completely voluntary. Existence of Hydraulic Institute Standards does not in any respect preclude a member from manufacturing or selling products not conforming to the Standards.

### **Definition of a Standard of the Hydraulic Institute**

Quoting from Article XV, Standards, of the By-Laws of the Institute, Section B:

“An Institute Standard defines the product, material, process or procedure with reference to one or more of the following: nomenclature, composition, construction, dimensions, tolerances, safety, operating characteristics, performance, quality, rating, testing and service for which designed.”

### **Comments from users**

Comments from users of this Standard will be appreciated, to help the Hydraulic Institute prepare even more useful future editions. Questions arising from the content of this Standard may be directed to the Hydraulic Institute. It will direct all such questions to the appropriate technical committee for provision of a suitable answer.

If a dispute arises regarding contents of an Institute publication or an answer provided by the Institute to a question such as indicated above, the point in question shall be referred to the Executive Committee of the Hydraulic Institute, which then shall act as a Board of Appeals.