ANSI/HI 10.6-2021

American National Standard for

Air-Operated Pump Tests

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Air-Operated Pump Tests

Sponsor
Hydraulic Institute, Inc.
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Foreword [Not part of American National Standard (ANSI)]

Purpose and aims of the Hydraulic Institute

The purpose and aims of the Hydraulic Institute are to drive all Pump System stakeholders towards a sustainable future by:

a) Advancing Solutions for Pump System Performance and Efficiency

b) Developing Standards and Technical Resources

c) Educating the Global Marketplace

d) Advocating for the Industry

Purpose of Document:

Hydraulic Institute Standards and Guidelines may be published as American National Standards, and are adopted in the public interest 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. Use is completely voluntary and does not in any respect preclude a member from manufacturing or selling products which are not conforming.

Definition of Hydraulic Institute Standard

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."

Definition of Hydraulic Institute Guideline

A Hydraulic Institute Guideline is not normative. The guideline is tutorial in nature, to help the reader better understand the subject matter.

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 Technical Director of the Hydraulic Institute. If appropriate, the inquiry will then be directed to the appropriate technical committee for provision of a suitable answer.

Revisions

American National Standards of the Hydraulic Institute are subject to constant review, and revisions are undertaken whenever it is found necessary because of new developments and progress in the art. Errata or addenda may be issued to address limited changes. If no revisions are made for five years, the standards are reaffirmed using the ANSI canvass procedure.

Disclaimer

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This document does not contain a complete statement of all requirements, analyses, and procedures necessary to ensure safe or appropriate selection, installation, testing, inspection, and operation of any pump or associated products. Each application, service, and selection is unique with process requirements that shall be determined by the owner, operator, or its designated representative.

Units of measurement

Metric units of measurement are used, and corresponding US customary units appear in parentheses. Charts, graphs, and sample calculations are also shown in both metric and US customary units. Because values given in metric units are not exact equivalents to values given in US customary units, it is important that the selected units of measure to be applied be stated in reference to this standard. If no such statement is provided, metric units shall govern.

Consensus

Consensus for this American National Standard was achieved by use of the canvass method. The following organizations, recognized as having an interest in the standardization of pumps, were contacted prior to the approval of this revision of the standard. Inclusion in this list does not necessarily imply that the organization concurred with the submittal of the proposed standard to ANSI.

Pentair
Summit Pump
Chemours
Peerless Pumps
William Livoti
Ken Burkhardt

Committee list

Although this standard was processed and approved for submittal to ANSI by the canvass method, a working committee met many times to facilitate its development. At the time it was developed, the committee had the following members:

Chair – Rex Beach, PSG, a Dover Company
Vice-chair – Audrey Mills, ARO Fluid Products

Committee Members	Company
John Armitage	Price Pump Company
Chris Distaso (Alternate)	PSG, a Dover Company
Dennis Hall	Warren Rupp, Inc.
Luis Ornelas	Blacoh Fluid Control, Inc.

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10.6 Air-operated pump tests

10.6.1 Introduction

10.6.1.1 Purpose

This standard provides uniform procedures for mechanical and other pump performance testing and for recording of the test results of air-operated diaphragm and bellows pumps.

10.6.1.2 Scope

This standard applies to the testing of air-operated diaphragm and bellows pumps only. Unless otherwise stated, all tests are conducted using water at ambient temperature.

Air-operated rotodynamic and rotary pumps are not included in this test standard.

It is not the intent to limit or restrict tests to only those described herein. Variations in test procedures may exist without violating the intent of this standard. Exceptions may be taken if agreed upon by the parties involved without sacrificing the validity of the applicable parts of the standard.

10.6.1.3 Units, symbols and subscripts

10.6.1.3.1 Symbols

See Table 10.6.1.3.1.

10.6.1.3.2 Subscripts

See Table 10.6.1.3.2.

10.6.2 Types of tests

This standard contains procedures for the following tests:

a) Mechanical integrity testing; see Section 10.6.6.

b) Performance testing; see Section 10.6.7.

c) Net positive suction head testing; see Section 10.6.9.

d) Suction lift testing; see Section 10.6.10.

e) Hydrostatic testing of pressure-retaining components; see Section 10.6.11.

f) Noise measurement; see Section 10.6.12.

10.6.3 Definitions

The following terms and symbols are used to designate test parameters used in connection with pump tests.

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