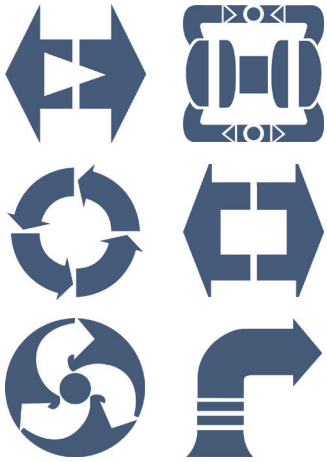
ANSI/HI 9.1-9.5-2021

American National Standard for

Pumps
General Guidelines

for Materials, Sound Testing, and Decontamination



HYDRAULIC INSTITUTE™

ANSI/HI 9.1–9.5-2021

American National Standard for

Pumps – General Guidelines for Materials, Sound Testing, and Decontamination

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www.Pumps.org

Approved September 28, 2021
American National Standards Institute, Inc.

American National Standard

Approval of an American National Standard requires verification by the American National Standards Institute (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.

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Foreword (Not part of Standard)

Purpose and aims of the Hydraulic Institute

The purpose and aims of the Hydraulic Institute (HI) are to promote the advancement of the pump manufacturing industry and further the interests of the public and to this end, among other things:

a) Develop and publish standards.

b) Address pump systems.

c) Expand knowledge and resources.

d) Educate the marketplace.

e) Advocate for the industry.

Purpose of Standards and Guidelines

a) HI Standards and Guidelines 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.

b) Use of HI Standards and Guidelines is completely voluntary. Existence of HI 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."

Definition of a Hydraulic Institute Guideline

A HI 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 are appreciated, to help HI prepare even more useful future editions. Questions arising from the content of this standard may be directed to the HI 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 HI are subject to constant review, and revisions are undertaken whenever it is found necessary because of new developments and progress in the art. If no revisions are made for five years, the standards are reaffirmed using the ANSI canvass procedure.

Disclaimer

This document was prepared by an HI committee and approved by following ANSI essential requirements. Neither the HI, HI committees, nor any person acting on behalf of the HI: 1) makes any warranty, expressed or implied, with respect to the use of any information, apparatus, method, or process disclosed in this document or guarantees that such may not infringe privately owned rights; 2) assumes any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method, or process disclosed in this guideline. The HI is in no way responsible for any consequences to an owner, operator, user, or anyone else resulting from reference to the content of this document, its application, or use.

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 appear 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.

Hydraulic, Measurement, & Inspection Consulting
Parametrix, Inc.
Hidrostal
Intelliquip, Inc.
Stantec
West Yost Associates
Moving Water Industries (MWI)
Sulzer Pumps Solutions Inc.
Patterson Pump Company
Summit Pump, Inc.
Xylem Inc. - Applied Water Systems
Peerless Pump Company
Leistritz Advanced Technologies Corp.
CB&I
Irving Oil
LVVWD- Las Vegas Valley Water District
Lincus Inc.
TRWD - Tarrant Regional Water District

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 – Michael Mueller, Flowserve Corporation
Vice-chair – Randy Bennett, Leistritz Advanced Technologies

Committee members	**Company**
Michael Coussens	Peerless Pump Company
Frank Ennenbach	Sulzer Pumps
Benjamin Madison	Grundfos USA
Aleksander Roudnev	Weir Minerals
Paul Ruzicka	Xylem Applied Water Systems
David Skinner	ITT - Industrial Process
Robert Slattery	Kop-Flex Inc., Regal Beloit America
Andrew Wolf	TACO, Inc.

9 Pumps – general guidelines for materials, sound testing, and decontamination

9.0 Introduction

9.0.1 Purpose

This standard provides general guidelines for rotodynamic and positive displacement pump type classifications, materials of construction, airborne sound measurement, and procedures for decontamination of returned product.

9.0.2 Scope

This standard applies to all industrial/commercial pumps of positive displacement and rotodynamic types. This document covers pump type classifications, materials of construction, airborne sound measurement, and decontamination. Refer to ANSI/HI 14.1 – 14.2 *Rotodynamic Pumps for Nomenclature and Definitions*, ANSI/HI 3.1 – 3.5 *Rotary Pumps for Nomenclature, Definitions, Application, and Operation*, ANSI/HI 6.1 – 6.5 *Reciprocating Power Pumps for Nomenclature, Definitions, Application, and Operation*, ANSI/HI 7.1 – 7.5 *Controlled-volume Metering Pumps*, and ANSI/HI 8.1 – 8.5 *Direct Acting (Steam) Pumps* for the pumps covered in the scope of this document. Figures 9.0.a through 9.0.k show pump type tree diagrams.

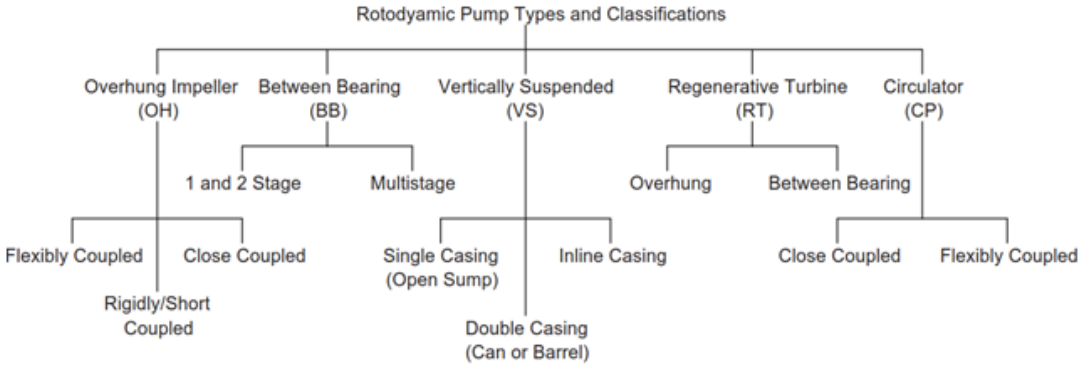

Figure 9.0.a – Rotodynamic pump types

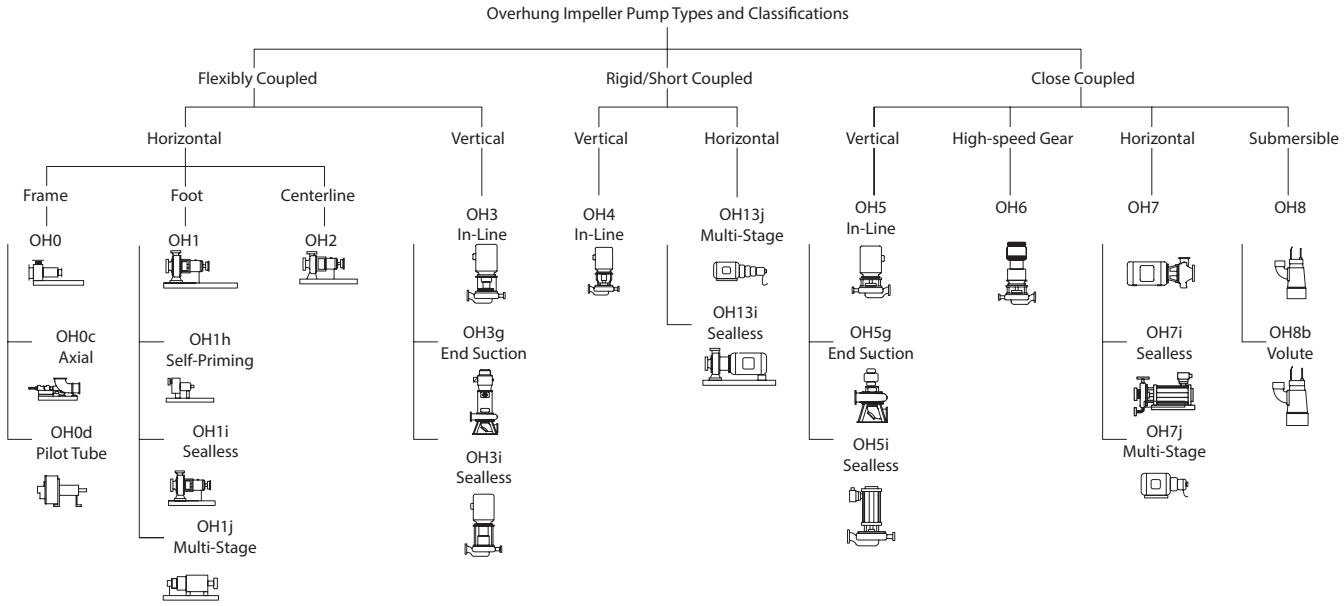

Figure 9.0.b — Rotodynamic pump types – overhung impeller