



PROCESS  
INDUSTRY  
PRACTICES

COMPLETE REVISION  
January 2020

**Machinery**

**PIP RESP003S**  
**Specification for High Power Vertical Submerged**  
**Motor Centrifugal Pumps for Water Service**

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In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

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### **PUBLICATION HISTORY**

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# PIP RESP003S Specification for High Power Vertical Submerged Motor Centrifugal Pumps for Water Service

## Table of Contents

<b>1. Scope .....</b>	<b>2</b>
<b>2. References .....</b>	<b>2</b>
2.1 Process Industry Practices .....	2
2.2 Industry Codes and Standards .....	
<b>3. Definitions .....</b>	<b>4</b>
<b>4. Requirements .....</b>	<b>6</b>
4.1 Basic Design .....	6
4.2 Motor Design .....	18
4.3 Accessories .....	19
4.4 Inspection and Testing .....	20
4.5 Preparation for Shipment .....	21
4.6 Documentation .....	22
Table 1. Recommended Spare Parts .....	23
Table 2. Minimum Uninterrupted Operation for Pumps and Auxiliaries .....	23
Table 3. Bearing Selection .....	24
<b>Appendix A – Selection of Pump Materials of Construction .....</b>	<b>25</b>
Table A. Application of Material Classes to Water Services .....	25
<b>Appendix B – Pump Material Classes Designations .....</b>	<b>27</b>
Table B – Material Classes .....	27

## Data Sheets

RESP003S-D – Vertical Submerged Motor  
Centrifugal Pumps for Water Service (U.S.  
Customary Units)

RESP003S-DM – Vertical Submerged Motor  
Centrifugal Pumps for Water Service (SI Units)

## 1. Scope

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This Practice provides requirements for design and manufacture of vertical submerged motor centrifugal pumps of 150 kW (200 HP) or greater used for water services.

*Comment:* Water services include condensate, cooling water, demineralized water, utility water, produced water, treated water, etc.

*Comment:* General water services include condensate, cooling water, demineralized water, utility water, produced water, treated water, etc.

This Practice describes manufacturing and performance requirements for vertical submerged motor centrifugal pumps and their accessories.

This Practice covers pumps with service conditions within the following limits:

- |                                |                    |
|--------------------------------|--------------------|
| a. Maximum discharge pressure  | 35 Barg (500 psig) |
| b. Minimum pumping temperature | 0°C (32°F)         |
| c. Maximum pumping temperature | 120°C (300°F)      |
| d. Maximum rotational speed    | 3,600 rpm          |

*Comment:* For services within the capabilities of ANSI/ASME pumps, use *PIP RESP73S*.

## 2. References

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Applicable parts of the following Practices and industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

### 2.1 Process Industry Practices (PIP)

- PIP REDP003 - *Documentation Requirements for Centrifugal Pumps for Water Service*
- PIP REDP005 - *Guidelines for General Purpose Non-Lubricated Flexible Couplings*
- PIP REEP006 - *Pump Selection Guidelines*
- PIP REIE686A - *Machinery Installation and Installation Design Annex*
- PIP RESP002 - *Design of ASME B73.1 and General Purpose Pump Baseplates*

### 2.2 Industry Codes and Standards

- American Gear Manufacturers Association (AGMA)
  - AGMA 9002 - *Bores and Keyways for Flexible Couplings (Inch Series)*
- American National Standards Institute (ANSI)
  - ANSI B11.19 - *Performance Criteria for Safe Guarding*
  - ANSI S2.19 - *Mechanical Vibration - Balance Quality Requirement of Rigid Rotors, Part 1: Determination of Permissible Residual Unbalance*