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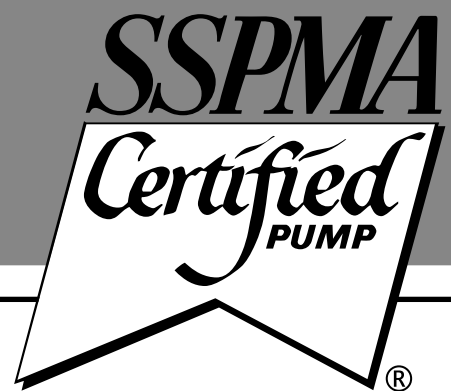
*FOR SUMP,  
EFFLUENT AND  
SEWAGE PUMPS*

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**RECOMMENDED  
STANDARDS**

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## **PURPOSE OF SSPMA**

These Recommended Standards have been established to assure users and all interested parties that sump, effluent and sewage pumps bearing the “SSPMA-Certified” seal will perform as stated by the manufacturer of the particular equipment involved.

The Sump and Sewage Pump Manufacturers Association is composed of leading equipment manufacturers. The purpose of SSPMA is to expand the applications of sump, effluent and sewage pumps, and to promote their proper use.

A list of SSPMA member companies and of certified pumps is available on SSPMA’s web site: [www.sspma.org](http://www.sspma.org) or is available, via mail or fax, upon request.



# Sump, Effluent and Sewage Pump Standards

## Part I General

### 1. Objective:

The Sump, Effluent and Sewage Pump Standards, adopted by the Sump and Sewage Pump Manufacturers Association, have been established in the public interest. They are designed to supply the specifier, purchaser and/or user of sump, effluent and sewage pumping equipment with accurate performance data and to assist in the determination of proper application and selection of this equipment.

These Standards are published only for the purpose of establishing an accurate and uniform method of presenting performance data without restrictive intent or effect upon any manufacturer of sump, effluent and sewage pumping equipment. These Standards do not preclude any member of the Sump and Sewage Pump Manufacturers Association from producing equipment that does not conform. However, non-conforming products must not carry the "SSPMA Certified" seal.

Manufacturers of sump, effluent and sewage pumping equipment may indicate adherence to these Standards by stating in specifications and product description: "Tested and rated in accordance with SSPMA Standards." Manufacturers that are licensed through the Association may also affix the "SSPMA Certified" seal to products bearing their name or brand name, or incorporate the seal design in the description of any product to indicate adherence to these Standards and procedures.

### 2. Scope:

These Standards provide a uniform method of testing sump, effluent and sewage pumps, as defined in Part III.

### 3. Marking:

Sump, effluent and sewage pumps that meet or exceed these Recommended Standards may be identified by the "SSPMA Certified" label.

### 4. Certification:

The complying manufacturer shall be prepared to certify upon request of the purchaser that his product conforms to the requirements of these specifications and that the quality or material specifications have not been otherwise misrepresented.

## **Part II**

### **Definitions and Nomenclature**

#### **1. Sump Pump:**

A pump powered by an electric motor for the removal of clear and/or ground water drainage from a sump, pit or low point in a residential, commercial or industrial property.

#### **2. Effluent Pump:**

A pump powered by an electric motor for the removal of natural or artificial pretreated liquid waste discharge from an onsite sewage treatment system.

#### **3. Sewage Pump:**

A pump powered by an electric motor for the removal of wastewater from a sealed basin containing solids of up to 2" diameter.

A solid is a sphere of a stated size, plus 0.000 or minus 0.020 on the diameter, that will freely pass through the strainer and inlet of the pump or the inlet of the pump with no strainer, through or under the impeller vanes or a combination of both without interference with the surrounding volute housing, and out the discharge opening.

#### **4. Pump Types:**

##### (a) Pedestal Type

A pump in which the pumping element is located in the sump, pit or low point, and in which the motor is mounted on a tube or column extending vertically upward from the pumping element.

##### (b) Submersible Type

A pump in which the entire pumping unit is located in the sump, pit or low point, and in which the motor and pumping element can be submerged.

##### (c) Horizontal Type

A pump comprised of a horizontally mounted self-priming pumping unit located at or above the floor level adjacent to a sump, pit or low point.

#### **5. Materials:**

##### (a) Brass or Bronze

Solid brass or bronze, as used in housing for pump, motor, and/or switch, and column.

##### (b) Cast Iron

Solid cast iron, as used in housing for pump, motor, and/or switch.

##### (c) Aluminum

Solid aluminum, as used in housing for pump, motor, and/or switch, and column.

##### (d) Molded Material

Molded non-metallic polymeric, as used in housing for pump, motor, and/or switch, and column.

(e) Corrosion-Resistant

Rubber, stainless steel, and other corrosion-resistant materials not listed in “a”, “c” and “d” above, used in housing for motor and/or switch and in miscellaneous other components.

(f) Other Material

Any material including steel not listed in “a” through “e” above, used in housing for motor and/or switch, and in other components.

**6. Wetted Parts:**

Those parts which are submerged or in contact with the liquid being pumped.

**7. Specification Numbers:**

Pumps shall be classified with reference to the wetted parts (see Para. 6) and shall consist of the component materials as outlined below:

Type	Pump Housing (Class)	Component Materials
P – Pedestal	B – Bronze	1
S – Submersible	C – Cast Iron	2
H – Horizontal	A – Aluminum	3
	P – Polymer	4
	S – Stainless Steel	5
	X – Unlisted Materials	6

The specification number for a particular pump shall be listed in the following manner:

**Submersible**

Type	Pump Housing	Impeller	Control Housing	Motor Housing	Other Wetted Components
S	B	4	6	2	6

“SB-4626” means:

S	Type	Submersible
B	Class	Bronze
4	Impeller	Molded Material
6	Control Housing	Unlisted Material
2	Motor Housing	Cast Iron
6	Other Components	Unlisted Material

**Pedestal**

Type	Pump Housing	Impeller	Shaft at Journal	Column	Other Wetted Components
P	A	5	5	3	6

“PA-5536” means:

P	Type	Pedestal
A	Class	Aluminum
5	Impeller	Corrosion-Resistant Materials
5	Shaft at Journal	Corrosion-Resistant Materials
3	Column	Aluminum
6	Other Components	Unlisted Materials

**Horizontal**

Type	Pump Housing	Impeller	Shaft	Control Housing	Other Wetted Components
H	C	2	6	1	6

“HC2616” means:

H	Type	Horizontal
C	Class	Cast Iron
2	Impeller	Cast Iron
6	Shaft	Unlisted Materials
1	Control Housing	Bronze
6	Other Components	Unlisted Materials

## Part III Testing and Rating

### 1. Objective:

This section is intended to provide a uniform method of testing pumps for rating purposes.

### 2. Types of Test:

#### (a) Rating Performance Test

The rating performance test shall be conducted under controlled conditions as outlined hereafter. It is intended to be the test on which manufacturers' ratings will be based.

#### (b) Factory Performance Test

The factory performance test is the responsibility of the manufacturer in order to insure that production units are within acceptable tolerance from the rating tests.

#### (c) Field Test

The field test will not be used as indication of conformance to rating unless test conditions conform to (a).

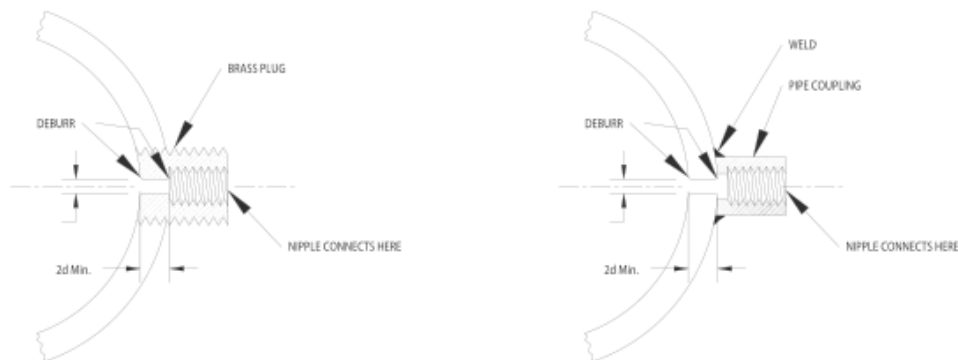
### 3. Total Head:

Total head is defined as the actual pressure gauge reading in feet or meters of water taken on the discharge pipe with the gauge connection located as outlined under "Head Measurement", and corrected by the vertical distance in feet or meters from the water level in the sump to the center line of the gauge.

### 4. Head Measurement:

#### (a) Connections

Gauge connection(s) will be as shown on sketch. Pipe size shall be the same size as pump tapping(s) or larger. Gauge(s) shall be located a distance equal to not less than 5 pipe diameters from tapping. If suction gauge is used, there shall be length equal to at least 5 pipe diameters of straight pipe preceding the suction gauge connection.



#### (b) Gauges

Discharge pressures shall be measured by a gauge or manometer of a type and size to obtain results accurate to  $\pm 2\%$ . Suction lift shall be measured by a manometer or gauge sufficiently accurate to obtain results within  $\pm 1/2$  ft. ( $\pm 0.15$  meters) of water.

- (c) All readings shall be referenced to the centerline of pump on horizontal pumps, and to the entrance eye of the first stage impeller on vertical units.

**5. Capacity:**

Capacity will be measured in U. S. gallons per hour or per minute or liters per hour or per minute.

**6. Static Sphere Size Test:**

A sphere as described in the definition and made of steel is to be placed in the discharge of a pump and must freely pass from the outlet to the inlet and out the strainer if present with the pump not running. The pump may be moved from the normally installed position only enough to allow the sphere to roll to the inlet and out the strainer if present. The pump orientation from the normally installed position may be changed during the test only if doing so will not increase the clearance between the volute housing and case. The pump shaft may be rotated by hand during the test.

**7. Power:**

Pump shall be tested at nameplate voltage rating. Power will be measured as brake horsepower input to the pump.

**8. Test Setup:**

- (a) Test shall be conducted using clear water at temperatures between 50° F (10° C) and 80° F (27° C).
- (b) The liquid around the pump shall be relatively quiet and not filled with entrained air whirls, etc., from recirculated discharge.
- (c) Manometer lines, if used, shall be arranged for venting to keep them full of water.

**9. Test Procedure:**

- (a) The test shall not be conducted until test conditions have stabilized.
- (b) Sufficient observations shall be made from 0 to maximum capacity to define the characteristics.

**10. Rating:**

- (a) The pumps covered by this Standard shall be rated as capable of delivering a stated capacity in U. S. gallons per hour or gallons per minute, at a stated head in feet, or liters per hour or liters per minute, at a standard head in meters, based on sea level performance.
- (b) It is recommended that total head be listed in increments of 5 feet starting at 5 feet and/or the metric equivalent (1.524 meters).
- (c) Solids-handling capability of pumps will be stated in inches and metric in parenthesis.

**11. Tolerances:**

The capacity of any new production pump shall not be less than 90 percent of rated capacity at stated total heads.

## **Part IV Design and Electrical**

### **1. Objective:**

This section is intended to define the recommended minimum specifications of the electric components of pumps and the applicable regulations regarding their use.

### **2. Motor:**

All motors used on SSPMA-Certified pumping units will have a sufficient capacity to adequately and safely power the pumps.

The maximum temperature of the motor windings shall not exceed the temperature rating of the Class of insulation used under conditions of maximum normal load. Change of resistance or thermocouple may be used to determine winding temperature. The maximum pump load is that obtained when the pump is operated continuously under any conditions shown in the manufacturer's published ratings.

The temperature test may be conducted at any room ambient temperature within the range 50° F (10° C) to 104° F (40° C). A submersible pump shall be tested completely submerged in water at 68° F (20° C) to 86° F (30° C). Motors shall be tested at nameplate voltage rating.

The temperature test may be at a higher temperature if stated in manufacturer's literature but the temperature shall not exceed the temperature rating for the class of insulation used.

Any reference to horsepower ratings shall be optional. However, if the horsepower rating is indicated, it shall be based on NEMA MG 1-10.33 for all pump motors.

Pumps shall be suitably marked to indicate clearly at least the following:

- (a) Maker's or warrantor's name, trade name or trademark.
- (b) Voltage.
- (c) Phase.
- (d) Hertz (Hz.).
- (e) Maximum running amperes.
- (f) Thermally protected, or impedance protected.

### **3. Power Supply Cord/Conductor:**

This cord, when supplied, must include a separate grounding conductor. The cord shall be not less than 6 ft. (1.82 meters) long for pedestal and horizontal pumps, and not less than 8 ft. (2.43 meters) long for submersible pumps.

### **4. Ground Wire Attachment:**

The grounding conductor in a power supply cord shall be attached in accordance with the National Electrical Code.

## **5. Switches:**

Switches, when furnished, must control the operation of pumping units in response to the level of the water in the sump or pit. They shall be rated equal to or greater than the requirements of the motor if used in the motor circuit, or of the control circuit if used as a pilot device only

## **6. Motor Overload Protection:**

Overload protection, with the pump mounted in its normal environment, must protect the motor against the possibility of overheating due to overload or failure to start.

A "Thermally Protected" motor is defined as a motor having a protective device which is responsive to motor current and temperature and whose purpose is to protect the motor against excessive overheating due to overload or failure to start.

The term "Impedance Protected" means that the impedance of the motor winding is sufficiently high to limit the current in the winding to a low enough value so that even at a locked rotor condition the winding will not overheat.

## **7. Production Test Requirements:**

- (a) All pumps shall be subjected to a continuity test between the exposed metal of the pump and/or motor case and the ground conductor at the grounding blade or equivalent attachment point to the electrical system. The resistance between these two points must not exceed 0.1 ohm.
- (b) Each unit shall withstand, without breakdown, a dielectric strength test by the application of a high potential A. C. voltage of twice rated plus 1000 volts at a frequency of 60 hertz applied between live parts and exposed non-current-carrying metal parts, except, if the motor is rated less than 1/2 horsepower and less than 250 volts the applied voltage shall be 1000 volts. The high potential shall be applied for one minute at the above levels or for one second if increased by 20%.
- (c) Cord connected single phase pumps of 120/240 volts shall have a leakage current not to exceed 0.5 millamperes between the live parts and ground at rated voltage.

# **Sump and Sewage Pump Manufacturers Association**

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