FOR SUMP, EFFLUENT AND SEWAGE PUMPS

RECOMMENDED STANDARDS

SSPMA Certified PUMP®

SUMP & SEWAGE PUMP MANUFACTURERS ASSOCIATION • P.O. BOX 44071 • INDIANAPOLIS, IN 46244

INDEX

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

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 definitions of equipment terminology, and a description of standard performance testing and rating protocol, in order 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 their product conforms to the requirements of these specifications and that the quality, performance 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. Solids-handling sizes of Sump Pumps are typically less than ½" in diameter.

2. Effluent Pump:

A pump powered by an electric motor for the transfer or removal of natural or artificial pretreated liquid waste discharge from an onsite sewage treatment device or system. Solids-handling sizes of Effluent Pumps are typically ½" to less than 1" in diameter.

3. High Head Filtered Effluent Pump (Multi-Stage):

A pump powered by an electric motor for the transfer or removal of natural or artificial pretreated liquid waste discharge from an onsite sewage treatment device or filtered S.T.E.P. (Septic Tank Effluent Pump) system. Solids-handling sizes of HHFE Pumps are typically less than ½" in diameter.

4. Sewage Pump:

A pump powered by an electric motor for the transfer or removal of wastewater from a sealed basin to a sewage treatment device or collection system. Solids-handling sizes of Sewage Pumps are typically 1" through 2" diameter.

5. Solids-handling Capability:

For purposes of these ratings, 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.

6. Grinder and Macerator Pumps (Sewage):

A pump powered by an electric motor that incorporates a cutting mechanism to reduce or cut the sewage particulate size to a slurry that can be pumped through small diameter pipe to a sewage collection system.

7. Utility Pump:

A submersible pump powered by an electric motor for transfer or dewatering applications. Utility Pumps are manually operated and handle small solids, typically less that ¼" in diameter

8. Emergency Back-up Pumps:

Emergency Back-up Pumps are systems or packages that are supplemental to, and work in conjunction with, a sump pump. They provide a means to evacuate water in the event that primary electrical power supply has been lost or the primary pump has failed to operate. Three types of back-up systems are typically found:

(a) Low Voltage Back-up System
This system consists of a DC battery-powered pump connected to a control system which maintains the charge on the battery and is activated by a level control.

(b) Standard Voltage Back-up System
This system uses an inverter or power supply and controller to power an AC pump, using a battery as the back-up power source. Some systems may be set up to serve as both the primary and back-up pump.

(c) Water Powered Back-up Pump
This system uses water pressure and flow to create hydraulic energy, typically through a venturi, to "draw" water from the sump basin. These systems can be used only when pressurized water is available from a municipal supply or a functioning water well pump.

9. 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.

10. Typical Materials of Construction for Pumps (wetted components which are submerged):

(a) Brass or Bronze
(b) Cast Iron
(c) Aluminum
(d) Stainless Steel
(d) Molded Material (plastic, rubber, etc.)

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:

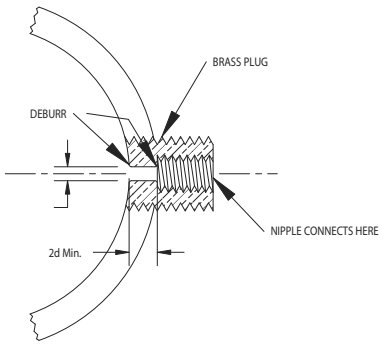
Total head is defined as the actual pressure gauge reading in feet or meters of water taken on the discharge pipe with the gauge connection located as outlined under "Head Measurement", and corrected by the vertical distance in feet or meters from the water level in the sump to the center line of the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

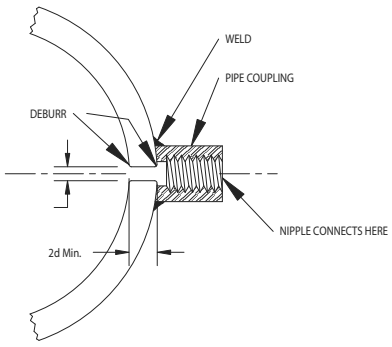
4. Head Measurement:

Note: Discharge and suction gauges should be placed as close to the tested unit with as few fittings (elbows, tees, strainers, etc.) between the gauge and pump as practical to minimize friction and velocity losses.

(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 connection shall be located a distance equal to or greater than 5 pipe diameters from pump discharge. If suction gauge is used, there shall be length equal to at least 5 pipe diameters of straight pipe preceding the suction gauge connection.





Head Measurement (cont.)

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

(c) Measurement Reference
All readings shall be referenced to the centerline of pump on horizontal pumps, and to the entrance eye or screen of the inlet on vertically configured units.

5. Flow Rate:

Flow rate 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. Electrical:

Pump shall be tested at nameplate voltage rating and phase rating. Amps should not be greater than +10% of rated nameplate full load amps (FLA) of the published performance data.

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 or turbulent liquid supply.

(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 zero to maximum flow rate to define the characteristics.

10. Rating:

(a) The pumps covered by this Standard shall be rated as capable of delivering a stated flow rate 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 or metric units (cm or mm).

11. Tolerances:

The performance of any new production pump shall not be less than 90 percent of rated flow rate 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 strength 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.

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) Frequency (Hz.).
(e) Full load amps (FLA).
(f) Thermally protected or impedance protected (unless multi-phase, where overload protection is provided in the control panel).

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, or according to a timed schedule in conjunction with a minimum liquid level. 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. Advanced control systems are evolving and may vary in configuration and operation.

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.

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) Pumps ½ horsepower and over shall withstand, without breakdown, a dielectric strength test by the application of a high potential A. C. voltage of twice rated voltage plus 1000 volts at a frequency of 60 hertz applied between live parts and exposed non-current-carrying metal parts. The high potential shall be applied for one minute at the above levels or for one second if increased by 20%.

(c) Pumps rated less than ½ horsepower and less than 250 volts shall withstand, without breakdown, the application of 1000 volts at a frequency of 60 hertz applied between live parts and exposed non-current-carrying metal parts. The high potential shall be applied for one minute at the above levels, or for one second if increased by 20%.

(d) Cord connected single phase pumps of 120/240 volts shall have a leakage current not to exceed 0.5 milliamperes between the live parts and ground at test voltage as outlined in parts (b) and (c).

Sump and Sewage Pump Manufacturers Association

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