



Standard Safety Performance Specification for Safe Design and Installation of Field Fabricated Suction-Limiting Vent Systems for Suction Entrapment Prevention in Swimming Pools, Spas, Hot Tubs, and Wading Pools¹

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1. Scope

1.1 This safety performance specification provides requirements for safety in design and installation when using a suction-limiting vent system for suction entrapment prevention in swimming pools, spas, hot tubs, or wading pools.

1.2 The purpose of the vent is to relieve the vacuum at the suction outlet(s) caused by any blockage of the suction outlet(s). The vent is intended to prevent body entrapment at the suction outlet(s) and may also mitigate limb entrapment. It is not intended to prevent other injuries caused by the suction outlet(s) such as hair entrapment, mechanical entrapment, or evisceration.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ANSI Standards:²

ANSI Z535.2 Environmental and facility safety signs

ANSI Z535.4 Product safety signs and labels

ASME/ANSI A112.19.8 Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs

3. Terminology

3.1 Definitions:

3.1.1 *allowable drawdown, n*—drawdown depth corresponding to the acceptable removal effort for a particular uncovered sump; it is physically built into the system.

3.1.2 *engineer, n*—registered professional engineer.

3.1.3 *field-fabricated vent (FFV), n*—open-to-atmosphere vent installed between the pool suction outlet(s) and the suction side of the pump in such a way as to relieve the vacuum caused by a blockage of the suction outlet(s).

3.1.4 *operating drawdown, n*—lowering of the water level in the vent from the static condition caused by normal operation.

3.1.5 *purge test, n*—placing a blocking element over the sump to ensure that air enters the vent system.

3.1.6 *startup surge, n*—transient lowering of the water level in the vent during pump startup.

3.1.6.1 *Discussion*—If excessive, the pump may lose prime.

4. Significance and Use

4.1 This performance specification outlines the requirements needed to design and install a field-fabricated vent for safety purposes. Vents only address suction outlet body and may mitigate limb entrapment. Vents have proven effective when installed correctly. It is not intended to prevent other injuries caused by suction outlet(s) such as hair entrapment, mechanical entrapment, or evisceration.

5. General Requirements

5.1 Design and installation instructions for field-fabricated vents (FFV) shall be certified only by a registered professional engineer. Multiple systems may be built to the same “vent design drawings and specifications” with the approval of the engineer.

5.2 The design and installation of the vent is specific to each piping system and shall consider all relevant parameters including but not limited to: elevations, flow rate, startup surge, minimum and maximum water operating levels, water depth at the suction outlet(s), pipe fittings, spacing between fittings, atmospheric vent fitting, and suction outlet configurations.

¹ This test method is under the jurisdiction of ASTM Committee F15 on Consumer Products and is the direct responsibility of Subcommittee F15.51 on Safety Vacuum Release Systems for Swimming Pools, Spas and Hot Tubs.

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² Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.