

LOSS CONTROL DATA GUIDE

Federal Swimming Pool & Spa Drain Cover Standard (CPSC Staff Interpretation of Section 1404*)

On June 18, 2008, U.S. Consumer Product Safety Commission issued a Staff Interpretation of Section 1404. Below are excerpts taken directly from that interpretation*.

On December 19, 2007, the President signed into law the Virginia Graeme Baker Pool and Spa Safety Act. The Act specifies that on or after December 19, 2008, swimming pool and spa drain covers available for purchase in the United States must meet specific performance requirements. Additionally, public swimming pools, wading pools, spas and hot must meet requirements for installation of compliant drain covers. New drain covers which meet the current standard are now beginning to make their way into the marketplace. Additionally, in certain instances, public pools and spas must have additional tubs devices or systems designed to prevent suction entrapment.

U.S. Consumer Product Safety Commission (CPSC) staff has prepared this guidance document that spells out the technical requirements of Section 1404 of the Act, along with CPSC staff's answers to certain enforcement and legal issues. Comments were provided by a member of the U.S. House of Representatives, state government officials, pool industry representatives, safety equipment manufacturers and representatives, consumer safety organizations, and others.

CPSC staff urges all public pool and spa owners/operators, state and local health and safety officials, and those in the pool and spa industry to carefully review this document as they work toward complying with Section 1404 of the Act prior to December 19, 2008.

Contact CPSC at info@cpsc.gov or 301.504.7908 if you need further assistance.

*** The interpretation, which was prepared by CPSC staff, has not been reviewed or approved by and may not necessarily represent the views of the Commission.**

1 The current approved version of this standard is A1 12.19.8-2007. There is an Addendum moving forward through the ASME/ANSI ballot process to correct errors in the test method for UV light exposure. The prior version of this standard is 1987 (reaffirmed in 1996) and addresses only hair entrapment potential.

ENGINEERING/MECHANICAL REQUIREMENTS

Note: italicized language is taken directly from the Pool & Spa Safety Act.

Drain Covers: ...each public pool and spa in the United States shall be equipped with anti-entrapment devices or systems that comply with the ASME/ANSI A112.19.8 performance standard, or any successor standard...

Staff interpretation: All public pools and spas must have ASME/ANSI A1 12.19.81 compliant Drain Covers on or after December 19, 2008. The basic requirements of the ASME/ANSI standard are:

- Cover material must be tested for structural integrity
- Cover must be tested for body entrapment and hair entrapment/entanglement
- Cover must display a flow value in gallons per minute (gpm) that indicates the maximum flow rate for which the cover has been approved.

Main Drain: The term "main drain" means a submerged suction outlet typically located at the bottom of a pool or spa to conduct water to a recirculating pump.

Single Main Drain: ...each public pool and spa in the United States with a single main drain other than an unblockable drain...

Staff interpretation: A main drain is a term usually referring to a plumbing fitting installed on the suction side of the pump in pools, spas and hot tubs (a suction outlet). Sometimes referred to as the drain, it is normally located

in the deepest part of the pool, spa or hot tub. It does not literally drain the pool, spa or hot tub as a sink drain would, but rather connects to the pump to allow water to be drawn from the pool, spa or hot tub for circulation and filtration.

Staff interpretation: The term “single main drain” means a submerged suction outlet, with or without a skimmer, connected to a dedicated pool pump. A pool may have more than one single main drain if it has multiple suction outlets that are each connected to a dedicated pump. A group of suction outlets connected together is considered a single main drain if the centers of the outlets are located within three feet of one another.

Staff interpretation: Pools and spas with multiple main drains are not subject to the requirements of Section 1404(c)(1)(A)(ii).

Staff interpretation: Multiple main drains consist of, at minimum, two fully submerged suction outlets per pump, with drain cover centers at least 3 feet apart. While no maximum separation is noted, the connections between the outlets and the pump are important for proper operation and should be certified by a design professional and inspected by a licensed inspector to ensure hydraulic balance between outlets and the main suction line to the pump.

Staff interpretation: Field Fabricated suction outlets are subject to the requirements of ASME/ANSI A112.19.8.

Unblockable Drain: (7) UNBLOCKABLE DRAIN - *The term unblockable drain means a drain of any size and shape that a human body cannot sufficiently block to create a suction entrapment hazard.*

Staff interpretation: An unblockable drain, to be consistent with the test procedures found in ASME/ANSI A112.19.8, would have minimum dimensions of 18” x 23”, which represent the shoulder to waist measurements of the 99th percentile adult male.

Staff interpretation: unblockable drain may include:

- Drain configurations that prevent a seal from occurring (large aspect cover, such as 18” x 23” or larger cover)
- Long channels that cannot be blocked by the body (conceptual Figure a. below)

- Large outlet grate (diagonal measure of 29” or more) (conceptual Figure b. below)
- Circulation designs that do not include fully submerged suction outlets

Grate type cover attached over the channels



Figure a. Long Channel

Long, narrow grate

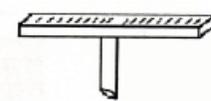


Figure b. Large Grate

Conceptual Unblockable Drain Configurations

Devices or Systems Designed to Prevent

Entrapment: *...each public pool and spa in the United States with a single main drain other than an unblockable drain shall be equipped, at a minimum, with 1 or more of the following devices or systems designed to prevent entrapment...*

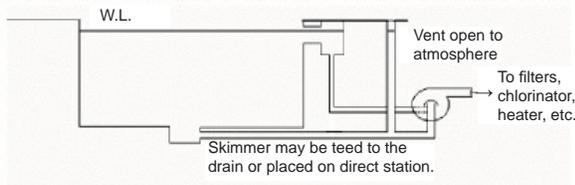
Staff Interpretation: In addition to having a drain cover or other anti-entrapments device that complies with ASME/ANSI A1 12.19.8, public pools and spas with single main drains must have one of the following additional systems or devices.

(I) SAFETY VACUUM RELEASE SYSTEM (SVRS)
- A safety vacuum release system which ceases operation of the pump, reverses the circulation flow, or otherwise provides a vacuum release at a suction outlet when a blockage is detected, that has been tested by an independent third party and found to conform to ASME/ANSI standard A1 12.19.17 or ASTM standard F2387.

STATUTORY DEFINITION OF A SVRS: *The term “safety vacuum release system” means a vacuum release system capable of providing vacuum release at a suction outlet caused by a high vacuum occurrence due to a suction outlet flow blockage.*

(II) SUCTION-LIMITING VENT SYSTEM - *A suction-limiting vent system with a tamper-resistant atmospheric opening.*

Staff interpretation: A suction-limiting vent system is also called an **atmospheric vent**. It is a pipe teed to the suction side of the circulation system on one end and open to the atmosphere on the opposite end. The pipe is normally full of water equal to the same height as the pool. When a blockage occurs at the main drain, air is introduced into the suction line thus causing the pump to lose prime and relieving the suction forces at the main drain (suction outlet).

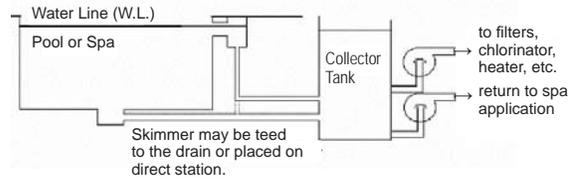


Conceptual Suction-Limiting Vent System to Relieve Main Drain Suction

Currently there are no approved voluntary standards for suction-limiting vent systems; however, an ASTM International voluntary standards task group was formed in March 2004 and is currently developing minimum requirements for field-fabricated vent pipes. The performance of the vent, the ability to prevent obstructions from occurring within the vent, and a test procedure to assess performance are being addressed. The correct design and construction of the suction-limiting vent system are important to the overall function and should be certified by a design professional and inspected by a licensed inspector.

(III) GRAVITY DRAINAGE SYSTEM - A gravity drainage system that utilizes a collector tank.

Staff interpretation: A gravity drainage system utilizing a collector tank is a swimming pool/ spa with a separate water storage vessel from which the pool circulation pump draws water. Water moves from the pool to the collector tank due to atmospheric pressure, gravity and the displacement of water by bathers which removes the need for direct suction at the pool. This type of system is also referred to as a reservoir, surge tank, or surge pit.



Conceptual Gravity Drainage System – Direct Suction Removed from the Pool

Currently there are no voluntary standards for gravity drainage systems or collector tank specifications.

(IV) AUTOMATIC PUMP SHUT-OFF SYSTEM - An automatic pump shut-off system.

Staff interpretation: An automatic pump shut-off system would be a device that could sense a drain blockage and shut off the pump system. Some safety vacuum release systems may meet this definition.

One pump motor manufacturer has developed a circuit board for its motors that monitors current to the motor and shuts the pump off when a noticeable change in current occurs, possibly caused by an entrapped bather.

The National Electrical Code (NEC) regulation number 680.40 has a requirement for an emergency stop switch for the pump to be located within 5 feet of a public spa in case of bather entrapment. However, this switch is manually operated and would require the presence of another person to activate the switch and therefore would not qualify as “an automatic pump shut-off system” under this Act.

Currently there are no voluntary standards for automatic pump shut-off systems, though the current SVRS standards provide release and response time performance criteria.

(V) DRAIN DISABLEMENT - A device or system that disables the drain.

Staff interpretation: Staff is not aware of a product that meets this description that is currently on the market. In the past, companies have developed products that sealed the suction outlet or shut off the pump when a cover is removed. Additional consideration can be given to physically removing the submerged suction outlet (drain) by filling the

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sump with concrete (effectively removing the suction outlet from the bottom of the pool) as long as another source(s) of water for the suction side of the pump is(are) available, such as skimmers, re-plumbing the suction outlet into a return inlet (permanently reversing flow), or permanently disabling the suction outlet plumbing at the pump (removing the suction outlet connection to the pump) to remove the suction entrapment potential at the submerged outlet (drain).

Currently there are no voluntary standards for disablement devices or instructions for filling or replumbing the suction outlet.

(VI) OTHER SYSTEMS - Any other system determined by the Commission to be equally effective as, or better than, the systems described in subclauses (I) through (V) of this clause at preventing or eliminating the risk of injury or death associated with pool drainage systems.

Staff interpretation: This will allow the development of future products. Currently, the Commission has not determined that any other system is equally effective as, or better than, the systems described in subclauses (I) through (V) of this clause. Further, there are no voluntary standards for such other systems.

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