

Public Pool Suction Entrapment Prevention

RESOURCE

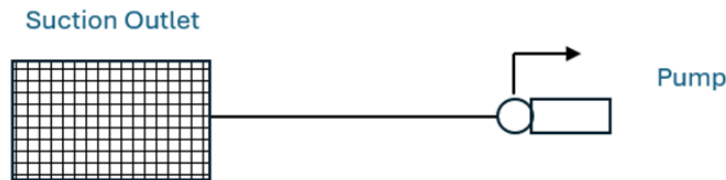
Suction entrapment prevention is a critical element to public pool safety. This resource provides an overview of suction outlets, suction outlet fitting assemblies (SOFAs), and regulatory compliance.

Suction outlets

Suction outlets move water from a pool and can pose a risk of entrapment to bathers. Types of suction entrapment include body entrapment, limb entrapment (e.g. finger, arm), hair entrapment, mechanical entrapment (e.g. swimwear, jewelry), and evisceration (e.g. disembowelment).

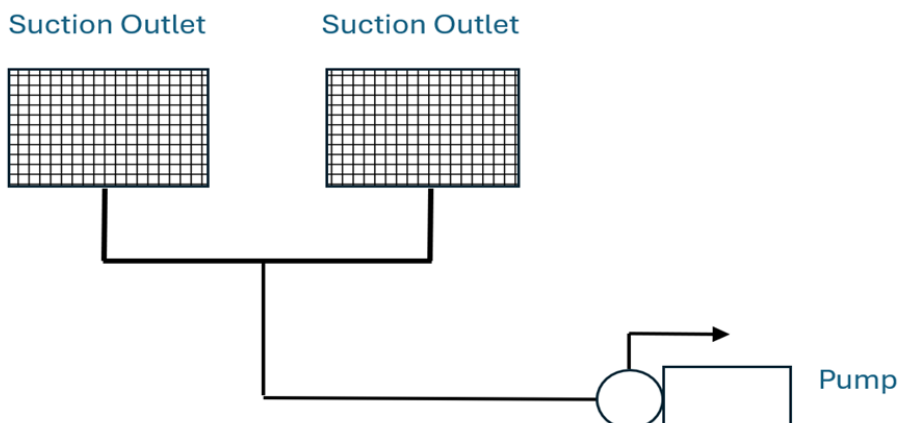
Single suction outlet

A suction outlet connected to a pump(s).



In parallel suction outlets

Two or more suction outlets connected to a pump(s). Below is one example of a compliant in parallel configuration.



Suction outlet fitting assemblies (SOFAs)

SOFAs have three basic parts: cover/grate, sump, and piping. The cover/grate separates the bather from the suction outlet. The sump is the vessel between the cover/grate and piping. The piping connects the suction outlet to a pump(s).

Unblockable and blockable SOFAs

SOFAs are either unblockable or blockable. An unblockable SOFA is one that a human body cannot block and meets American Society of Mechanical Engineers/American National Standards Institute (ASME/ANSI) standards.

The American National Standard for Suction Outlet Fitting Assemblies for Use in Pools, Spas and Hot Tubs (ANSI/APSP/ICC-16 2017) defines an unblockable SOFA as one that:

- When installed according to the manufacturer's instructions, cannot be shadowed by an 18 in. x 23 in. Body Blocking Element, and
- Has a rated flow through the remaining open area beyond the shadowed portion that does not exceed the standard's calculation for suction removal force

SOFAs that do not meet these criteria are blockable.

Regulatory compliance

Minnesota Statutes, section 144.1222 incorporates ASME/ANSI standards by reference. ANSI standards are therefore enforceable by the Minnesota Department of Health (MDH) and its delegated agencies. ANSI standards address the materials, testing, use, installation, markings, and instructions related to SOFAs.

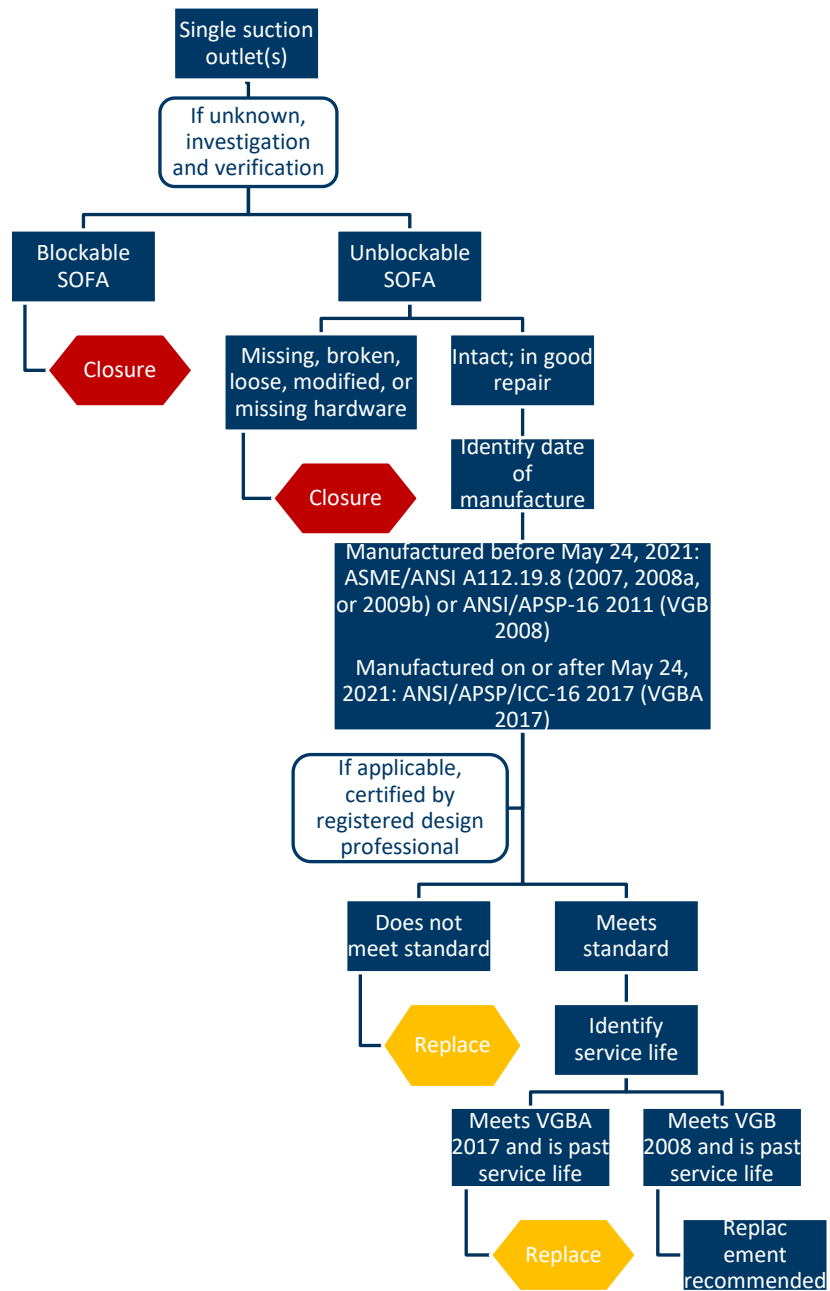
Significant ANSI standards

ASME/ANSI A112.19.8 (2007, 2008a, or 2009b) and ANSI/APSP-16 2011 (collectively VGB 2008). Apply to SOFAs manufactured before May 24, 2021.

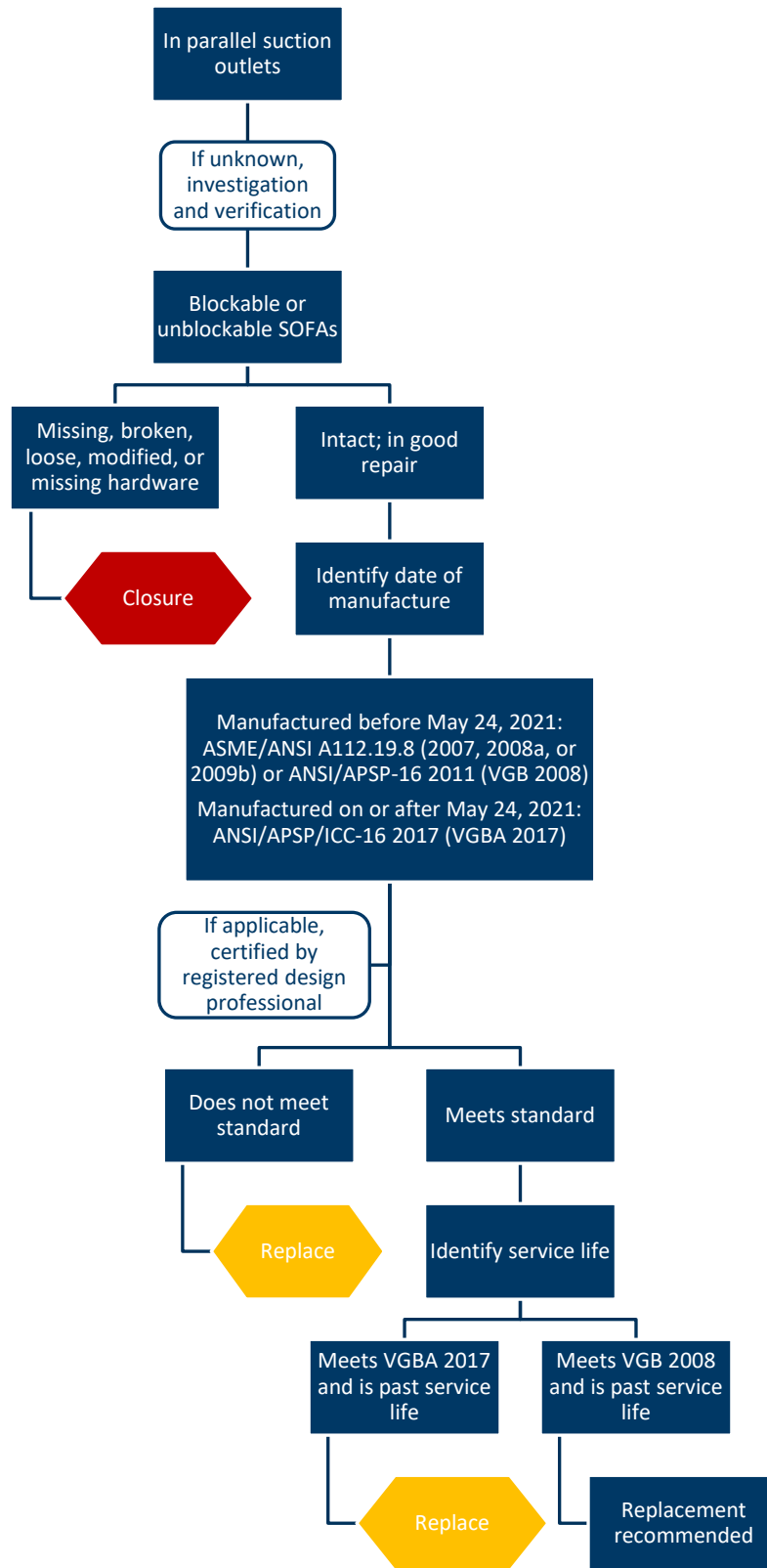
ANSI/APSP/ICC-16 2017 (VGBA 2017). Applies to SOFAs manufactured on or after May 24, 2021.

Compliance flow charts

Single suction outlet(s) flow chart



In parallel suction outlets flow chart



Flow chart notes

- SOFAs and SOFA components must be installed according to the manufacturer's installation instructions, including minimum sump depth, pipe size(s), adapters, frames, structural supports, and fasteners. The SOFA suction system's flow rating must be greater than the pumping system's maximum flow rate. Installers of SOFAs and SOFA components must follow the manufacturer's instructions to ensure proper installation.
- When investigation and verification of non-visible components (e.g. piping) is needed to determine single suction outlet(s) or in parallel suction outlets, MDH recommends public pool owners/operators consult with a commercial pool professional. The presence of more than one suction outlet does not confirm a compliant in parallel configuration.
- Registered design professional SOFAs must be designed, installed, and certified as conforming to all applicable standard requirements by a registered design professional (e.g. engineer).
- The compliance flow charts do not apply to skimmer equalizer lines. However, the Minnesota pool code requires skimmer equalizer lines to have ASME/ANSI VGB approved suction fittings or be permanently plugged.
- Some work related to SOFAs requires plan review. Visit the MDH [public pool plan review webpage](#) for a list of projects that require plan review.

Resources

Public Pool Plan Review

www.health.state.mn.us/communities/environment/recreation/pools/poolprinsp.html

Public Pool Plan Review Application

www.health.state.mn.us/communities/environment/recreation/pools/docs/poolprappnew.pdf

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