

NOTE: The APSS are to be tested and certified in accordance with one of the SVRS standards.

NOTICE: Operating conditions. Systems are tested for operation, in accordance with current standards, at room temperature. For substantially varying environmental conditions, including freezing, heat, salt spray, and humidity, confirm suitability with the SVRS manufacturer prior to installation and use.

CAUTION: Incompatible configurations. Some suction vacuum release systems may be incompatible with certain system configurations. The designer or installer shall confirm suitability with the SVRS manufacturer prior to installation and use. Incompatible configurations may include check valves, two or more suction outlets, hydrostatic relief valves, skimmers, solar systems, elevated or submerged pump suction, multilevel bodies of water, and water features.

4.4 Performance requirements for suction outlets and suction-limiting systems.

NOTE: Suction-limiting systems protect against body entrapment but are not considered “backup” systems, as there is no known suction-limiting system that will completely protect against the remaining four (evisceration, limb, hair, mechanical) of the five known hazards; presenting suction-limiting systems as “backup” systems would promote a false sense of security among the users of these devices/systems.

4.4.1 Submerged suction outlets are optional. Fully submerged suction outlets (SOFA) are not required in pools and spas. When SOFAs are not used, surface skimming or overflow systems shall be provided and capable of handling 100 percent of the design flow.

4.4.2 Field-built sumps. Field-built sumps shall be built in accordance with manufactured SOFA or RDP SOFA installation instructions.

4.4.3 Flow ratings. SOFA system flow ratings shall be calculated as follows:

4.4.3.1 Blockable SOFA systems. The sum of the installation-specific SOFA flow ratings minus the flow rating of a SOFA with the highest installed flow rating.

4.4.3.2 Unblockable SOFA systems. The sum of the installation-specific SOFA flow rating(s).

4.4.4 Blockable outlets—multiple separation. For new construction, see Section 5.3. For existing pools, see Section 6.9.

4.4.5 Maximum system flow rate. The maximum system flow rate shall be determined according to control system type, where facilities with unsecured control systems use the options in Section 4.4.5.1, and facilities with secured control systems use the options in Section 4.4.5.2:

4.4.5.1 Maximum system flow rate—unsecured control systems residential and public pools. The maximum system flow rate is the pump’s flow rate at the highest user selectable speed (maximum rpm) while the system is configured to operate at the lowest achievable system TDH when all flow is from the submerged suction system (skimmers off), the filter(s) are clean (when

included), and all pressure-side valves are in the open (maximum) flow position. This operating point is determined by one of the following:

- Measuring an existing residential pool with a flow meter accurate to $\pm 5\%$ and installed according to the manufacturer’s specifications.
- Measuring a public pool with a flow meter accurate to $\pm 5\%$ and installed according to the manufacturer’s specifications. The flow meter must be certified in accordance with NSF 50.
- Computing total head loss for a new residential or public pool using complete system TDH calculations and then looking up the flow rate using the manufacturer’s certified pump curve, or
- **Computing total loss for a new residential or public pool using the Simplified Method TDH calculation, or**
- **Using the maximum flow capacity of a new or replacement pump using the manufacturer’s certified pump curve.**
- Measuring an existing pool system TDH at the pump’s drain plugs using a pressure and vacuum gauge reading and then looking up the flow rate using the manufacturer’s certified pump curve.

After the maximum system flow rate is determined, that flow rate must be equal to or less than the SOFA system flow rating, as determined in accordance with Section 4.4.3.

For existing or new construction and renovations using new piping, the design flow rate shall be used to determine the needed pipe size using the velocity requirements as required by the ANSI/APSP/ICC-5 *Standard for Residential Inground Swimming Pools* or the ANSI/APSP/ICC-1 2014 *Standard for Public Swimming Pools* for pipe velocity in all cases.

When completed, calculated maximum flow rate shall be verified by using a vacuum gauge and a pressure gauge to determine the Total Dynamic Head (TDH) loss. That value is applied to the installed manufacturer’s pump curve to validate the maximum flow rate value, or by using a flow meter accurate to $\pm 5\%$.

4.4.5.2 Maximum system flow rate—secured control systems for public pools. The maximum system flow rate is the flow rate for the pump(s) at its highest operating speed (maximum rpm) with the lowest operating system resistance (TDH) as defined by the Registered Design Professional.

- For new construction and renovations using new piping, the designed flow rate shall be used to determine the needed pipe size using the velocity requirements as required in the ANSI/APSP/ICC-1 2014 *Standard for Public Swimming Pools* for pipe velocity in all cases.

The intended SOFA system flow rating shall be equal to or greater than the maximum system flow rate determined by the design professional.

- When completed, the calculated maximum system flow rate shall be verified by using a vacuum gauge and a pressure gauge to determine the Total Dynamic Head (TDH) loss. That value is applied to the installed manufacturer’s pump curve