



Pool & Spa Safety Act Mandates SVRS Anti-Entrapment Technology

New Guardian® motor shuts down upon detection of entrapment

Suction entrapment is a dangerous situation created by a vacuum effect commonly associated with certain pool and spa drain systems. As water is drawn down the drain via the pump system, the resulting suction can generate a powerful vacuum capable of entrapping a person. In some instances, the suction vacuum can exceed 400 pounds of pressure - so powerful that many entrapment victims are unable to free themselves. Responders trying to free victims often report struggling to overcome the powerful force.

Suction entrapment can lead to serious injuries and even death. The five primary types of entrapment include full-body entrapment, hair entanglement, limb entrapment, mechanical entrapment and evisceration/disembowelment. According to the Consumer Product Safety Commission, from 1999 through 2008 there have been 11 reported entrapment fatalities and over 80 reported incidents. Experts tend to believe these figures are low given that many pool and spa related hospital visits and drowning deaths are not defined by exact cause. Even for those freed from full-body entrapment situations, the suction force can result in moderate to severe bruising and, in some instances, permanent scarring.

Suction entrapment can happen to anyone regardless of age, health, or swimming prowess; however, children are more vulnerable as they tend to play near or sit on drain covers. In June 2002, seven-year-old Virginia Graeme Baker, granddaughter to former Secretary of State James Baker III, drowned as a result of suction entrapment in a hot tub while attending a graduation party. Ultimately, federal legislation known as the Virginia Graeme Baker Pool & Spa Safety Act (VGB), was signed into law in 2008 requiring safety vacuum release systems (SVRS) and anti-entrapment drain covers on specific types of commercial and municipal pools and spas. Since then, numerous municipalities and even some states have eyed legal remedies that would extend the application of VGB standards to residential pools and spas.

While SVRS compliance inspections have been less than aggressive since the passage of the VGB Act for various reasons, additional funding from the federal level down to local municipalities across the country should result in more enforcement. Pools and spas found not in compliance could be closed, and operators could be fined. Some agencies are taking the added step of notifying the property owner's insurance carrier to report the non-compliance and potential safety hazard, which could negatively impact coverage and rates.

A.O. Smith's Guardian® replacement motors are specifically designed and equipped with e-Mod technology, which consists of a load-sensing electronic control module that shuts off the motor and pump automatically should a full-body suction entrapment be detected.





Suitable for both commercial and residential pool and spa use, Guardian replacement motors comply with the SVRS requirements for suction lift applications mandated by the VGB Act and are ETL Listed (Electrical Testing Lab) to the ASME/ANSI A112.19.17 standard.

According to Warren Doney, market manager for A. O. Smith Electrical Products Company, "The Guardian motor is a technologically superior approach to meeting government-mandated SVRS requirements because it is economical, easy to install, maintenance free, and automatic." Unlike a conventional SVRS, which is typically an add-on device, the Guardian motor's load-sensing electronics are fully integrated into the motor. With no external parts or connections to the existing plumbing or electrical system required, the installation of a Guardian motor is basically the same as that of a traditional replacement motor.

Once installed and upon start-up, the Guardian motor calibrates automatically to the specific hydraulic and filtration characteristics of the pool or spa. The electronics constantly monitor the input power of the motor and detect any changes in the operating conditions of the pool caused by such things as a clogged drain, a jammed pump or locked rotor, drops in input power – which could result in "dry running" and potential damage to the pump – or suction entrapment. Any time the Guardian detects such a condition, the motor and pump are shut off automatically to decrease the risk of harm to pool or spa occupants as well as to protect the pump, motor, and pool system itself.

"A pool or spa owner, whether in a commercial or residential setting, can upgrade their in-ground system simply by replacing their existing pump or motor with one equipped with Guardian technology," Doney notes. The motor is designed to fail in the 'off' position, meaning if the electronics are defeated or tampered with, the motor shuts off. An impact-resistant, high-density plastic housing protects the load-sensing circuitry. The protective compartment is attached directly to the motor and resists weathering, ultra-violet light, and is tamper-resistant.

The Guardian line of replacement motors offers an extra layer of affordable protection for pool and spa owners and operators and for those under their supervision. However, they do not solve the total entrapment issue by themselves. When utilized in conjunction with proper drain covers and other safeguards as prescribed by local regulations, the SVRS protection provided by Guardian can help lead to increased pool safety by limiting the potential for full-body entrapment. It is important to remember that no system can ever reduce or replace the need for adequate safety-conscious supervision. As a reminder, children should be supervised at all times when in or around swimming areas. Adults should never swim alone, regardless of skill or assumed swimming prowess.

Information courtesy of A. O. Smith Electrical Products Company

