



HIGH FLOW SAFETY DRAIN

**SDX2 HIGH FLOW SAFETY DRAIN  
FOR CONCRETE**

**OWNER'S MANUAL  
MAINTENANCE & INSTALLATION GUIDE**



VGB 2008  
Compliant



SUBMERGED SUCTION OUTLET  
FOR SINGLE OR MULTIPLE DRAIN USE  
FOR USE ON WALL OR FLOOR

**NOTICE**

Read and follow these instructions. Give these instructions to the facility owner to keep for future reference. Follow all codes and regulations that apply to the design, installation, maintenance and use of suction outlet fittings.



**WARNING**

SDX2 and SDX2 Retro must be installed in accordance with Paramount's written instruction & maintenance manual, and in conformity with applicable Federal, State, Local and Swimming pool industry building and safety codes.



**DANGER**

PROPER INSTALLATION OF THE SDX2 RETRO IS ESSENTIAL. IF YOU HAVE ANY QUESTIONS, PLEASE CALL PARAMOUNT AT 1.800.621.5886 OR CONTACT YOUR REGIONAL REPRESENTATIVE. PLEASE FOLLOW ALL LOCAL CODES AND POOL SAFETY GUIDELINES. 1300634v2/15700-0001

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**Paramount**  
Pool Life. Simplified.

## Signal Words and Symbols Used In This Manual

This Owner's Manual and Installation Guide contains specific precautions and symbols to identify safety-related information. You will find DANGER, CAUTION, WARNING and NOTICE symbols which require special attention. Please read them carefully and follow these precautions as indicated! They will explain how to avoid hazards that may endanger you or persons using or maintaining your pool or spa.



### DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



### WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



### CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

### NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE REVIEW THE OWNER'S MANUAL AND INSTALLATION GUIDE IN ITS ENTIRETY AND HEED ALL SAFETY INFORMATION. Failure to follow these instructions and warnings can result in DEATH OR SERIOUS INJURY.

## SUCTION ENTRAPMENT HAZARD:



### DANGER

**DEATH or SERIOUS INJURY will result if a drain cover or grate is not installed and used correctly.**

- Pool and spa pumps produce high levels of suction and move high volumes of water, which can cause death or serious injury if a person comes in close proximity to pool or spa drains.
- Keep clear of pool and spa drains to avoid death or serious injury from suction.



### DANGER

**DEATH or SERIOUS INJURY will result from hair entanglement or limb entrapment.**



- Keep clear of pool and spa drains.
- Hair sucked into pool or spa drains will tangle and knot trapping the swimmer underwater. Avoid placing your hair near a pool or spa drain.
- Avoid sitting on pool or spa drains because the suction can cause severe intestinal damage, evisceration, and/or disembowelment.



### DANGER

**DEATH or SERIOUS INJURY will result from pool or spa drain covers or grates that are improperly installed, missing, clogged, or broken.**

- Inspect pool and spa before each use to ensure that drain covers and grates are properly in place and secured.
- Ensure that drain covers are not damaged, cracked, broken, loose, clogged, not properly secured, or missing because these conditions increase the chance of death or serious injury from entrapment.
- If a drain cover is discovered damaged, cracked, broken, loose, clogged, not properly secured, or missing, you should:
  - Close the pool or spa immediately; and,
  - Post a closure notice and keep the pool or spa closed until an appropriate ANSI/APSP -16-2011 certified drain cover is properly installed.



### DANGER

**DEATH or SERIOUS INJURY will result from contact with a damaged, loose, or missing drain cover.**



- Do not allow limbs to contact or be inserted into a drain pipe with a damaged, loose, or missing drain cover. This could result in swelling of the limb and/or trapping a swimmer underwater.
- Avoid mechanical entrapment of jewelry, swimsuit, hair decorations, finger, toe, or knuckle in a drain pipe with damaged, loose, or missing drain cover. This may result in trapping a swimmer underwater.
- Do not allow body to come into contact with a drain pipe that has a damaged, loose, or missing drain cover. This may result in trapping a swimmer underwater.

# MAINTENANCE INSTRUCTIONS & WARNINGS:



## WARNING

**DEATH or SERIOUS INJURY** can result from pool or spa drain covers or grates that are clogged by debris.

- All pool and spa drain covers may become obstructed by debris and should be cleaned periodically due to clogging from debris, such as pieces of plastic, hair, fabric, twigs, leaves, seeds, etc.
- The frequency of periodic cleaning will vary depending on the amount and type of debris introduced into the pool or spa
- Clogging of the drain cover will increase the suction effect and increase the likelihood of death or serious injury from those hazards listed above.
- A clogged drain can negatively affect the safety of the drain.
- It is advisable to have a qualified pool or spa professional perform this inspection and debris removal from the pool and spa drain covers.
- When servicing the drain cover, the pump connected to the suction must be turned off.
- Do not perform any service of the drain cover in water level above your waist.
- Use drain covers only with a pumping system rated for the corresponding flow or less. Failure to do so can result in hair or body entrapment which can cause death or serious injury. If in doubt about the rating of your system, consult a qualified pool or spa professional.
- Use only the supplied stainless-steel screws with the drain cover. Screws put into the frame anywhere except in the original screw holes will not hold and will allow the drain cover to come off the main drain, causing an entrapment hazard. If a screw hole(s) is stripped, inserts missing, loose, or damaged, consult your owner's manual and installation guide for proper steps to replace, correct, or reattach the compromised drain or drain component.



## WARNING

Suction can pose a serious hazard to swimmers just as electricity can be a hazard. Both are important for proper water filtration and both must be treated with respect. Suction safety begins with a professional design that includes a

quality suction system installed by a certified contractor.

Certified builders will address the following issues when designing and installing a proper filtration system:

- Properly bond-grounded pumps, time clocks, switches and any other metal in or near water. This is required to address Electrical Shock Hazards.
- Design the suction piping so there are no single-point suction hazards; single-point suction (one drain) is a leading cause of Body Suction Entrapment Hazards. Note: your certified builder has many effective options for addressing this hazard; they may include dual-drain systems, like MDX-R3, skimmers, gutters, negative edge features and many more products and piping designs known to professionals.
- Install ANSI/APSP - 16 - 2011 listed drains, suction covers and debris removal systems. This is the **ONLY** approved option for preventing Hair Entrapment Hazards, the leading cause of suction related injuries.
- Design and install an effective circulation system (including optional cleaning systems), to direct filtered water to all areas and interior surfaces. **NOTE:** Suction fittings can **NOT** clean or direct filtered water for proper sanitation; that can only be done on the pressure (return) side of the filtration system.

While suction injuries are extremely rare, drowning and diving injuries are far too common and there is little your certified builder can do to eliminate these hazards. You must educate yourself and your guests. Below are some important safety issues every swimmer must know and recognize.

- **PREVENT DROWNING:** Watch children at all times, no swimming alone.
- **NO DIVING IN SHALLOW WATER:** You can be permanently injured.
- **PREVENT SUCTION ENTRAPMENT:** Inspect suction covers before swimming, keep swimmers away from suction fittings, protect long hair, don't swim with loose clothing or large and dangling jewelry.

For more information about the Virginia Graeme Baker Pool and Spa Safety Act, contact the Consumer Product Safety Commission at (301) 504-7908 or visit [www.cpsc.gov](http://www.cpsc.gov).



## WARNING

Always turn off all power to the pool pump before installing the cover or working on any suction outlet.

## HOW SDX2 RETRO WORKS BETTER

The SDX2 RETRO high flow drain system is a dual-drain system designed and tested to safely deliver water to modern high flow pumps.

### Each Drain Addresses All Entrapment Hazards

**Hair Entrapment Avoidance.** At the heart of the Patented design is a cover that acts much like sixty self-regulating drains. This is significant because as some of the 'little' drains are covered, excessive suction does not transfer to the remaining openings. When excessive suction is transferred to unblocked openings in a traditional drain grate, the suction causes hair to enter multiple openings, creating a potential entrapment hazard if the hair tangles or puffs up inside the drain, making it impossible to pull free.

**Body Entrapment Avoidance.** The same self-regulating openings that protect against hair entrapment hazards, also provides body entrapment protection. When the self-regulating openings built into the SDX2 RETRO cover are combined with it's domed, anti-vortex shape, forming a seal with the cover is difficult.

**Security.** The SDX2 RETRO cover is held firmly in place with three recessed security screws which are made from top quality 316 Stainless Steel. And behind the SDX2 RETRO cover are at least three more screws to hold the whole assembly in place, providing multiple layers of anti-entrapment protection.

**Durability.** The SDX2 RETRO cover and support materials are far more durable than ABS, the typical plastic used in swimming pool drain covers. In addition to fading, the Buna in ABS is prone to UV degradation resulting in structural failures which contribute significantly to suction entrapment hazards.

### Dual-Drain System

**Vacuum Breaker Backup.** As with any dual-drain system, one drain is intended to be a vacuum breaker for the other in the unlikely event a swimmer completely blocks one of the SDX2 RETRO drains. If this were to happen, the pump is able to safely draw water from the second drain.

**Dual-Drain Spacing.** Most suction safety codes require dual-drains to be installed three feet apart, pipe to pipe, however some codes require three feet between drain covers. For this reason, Dual SDX2 RETRO piping is spaced three (3) feet, ten (10) inches apart.

**Vertical Dual-Drain Installation.** The purpose of the vertical dual-drain installation is to make it less likely two people can approach two drains at once. Effectively, the second drain would be at an individual's feet.

# SDX2 RETRO HIGH FLOW SAFETY DRAIN SYSTEM DESIGN

SDX2 RETRO is a circulation drain, not intended to remove debris. For this reason it is suggested SDX2 RETRO be installed on walls whenever possible. SDX2 RETRO is a high flow safety drain system submerged suction outlet suitable for Single or Multiple Drain use on the wall and floor. This is to keep debris and sand from collecting on and around the low velocity SDX2 RETRO cover. Do not locate suction outlets on seating areas or on the backrest of such seating areas.

The maximum flow rate for each pair of SDX2 RETRO drains is 188 gpm on the floor --154 gpm on the wall. This flow rating allows for pumps up to 3 hp to operate efficiently. For pumps with higher flow rates or systems with multiple pumps on a common manifold, additional SDX2 RETRO drains may be added. Do not exceed the maximum allowable flow rate stated on the suction fitting. The velocity at the opening to the SDX2 RETRO drain at the maximum rated flow of 188 GPM is 1.396 feet per second. For multiple drain systems where more than two drains are used, the maximum flow rate is calculated per ANSI/APSP-7 Section 4.6 as shown in the following chart.

DESCRIPTION	MAXIMUM SYSTEM FLOW FLOOR	MAXIMUM SYSTEM FLOW WALL	MINIMUM FLOW RATING OF EACH COVER % MAXIMUM SYSTEM FLOW RATE
*One SDX2 High Flow Safety Drain	188 gpm (711 lpm)	154 gpm (582 lpm)	100%
Two SDX2 High Flow Safety Drains	188 gpm (711 lpm)	154 gpm (582 lpm)	100%
Three SDX2 High Flow Safety Drains	282 gpm (1066 lpm)	231 gpm (873 lpm)	66.7%
Four SDX2 High Flow Safety Drains	376 gpm (1422 lpm)	308 gpm (1164 lpm)	50%

\*The addition of an approved SVRS is required when a single SDX2 is being used.  
Table derived from ANSI/APSP-7 Section 4.6 Table 1

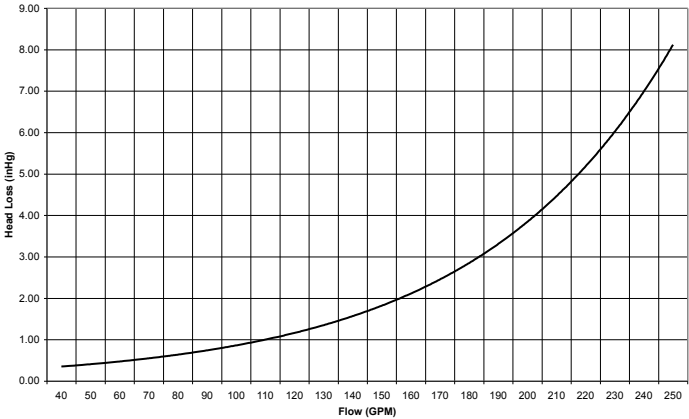
**Pipe size.** To design an efficient suction system in accordance with national swimming pool standards, the following pipe sizing guideline should be followed:

SUCTION PIPE SIZE	MAX RESIDENTIAL GPM	MAX PUBLIC GPM
1½"	50	37
2"	82	62
2½"	117	88
3"	181	136
4"	313 (200 Max GPM)	234 (200 Max GPM)

\*minimum pipe size 1 1/2

Flow vs Head Loss

## HEAD LOSS CURVE



SDX2 RETRO is an underwater suction drain cover system intended to replace any drain cover up to 10 inches in diameter. SDX2 is approved for single or multiple drain use. When retrofitting a SDX2 to an existing installation with a single suction outlet that is not listed and approved for use as a single suction outlet one of the following must be added in accordance with ANSI/APSP-7

**Excerpt ANSI/APSP-7 Appendix B options for single suction backup:**

**One of these options must be installed on any single suction outlet.**

- Install additional ASME/ANSI A112.19.8 Outlet with the center to center distance between the suction pipes at least 36-inches, or on a separate plane. (see Sections 4.5 & 4.6)
- Convert Suction Outlet to Return Inlet by Changing the piping, provided the system piping and skimmer(s) shall be capable of handling the full system flow.
- Convert to Gravity Flow System in accordance with Section 5.8
- Engineered Vent System in accordance with Section 7.2
- Install & Test. Manufactured Safety Vacuum Release System (SVRS) Tested and Listed for the purpose by a Nationally Recognized Testing Laboratory in accordance with Section 7.1.
- Permanently Disable the Single Outlet, provided the system piping and skimmer(s) shall be capable of handling the full system flow and minimum turnover rates are achieved.

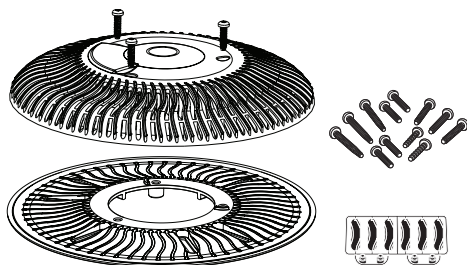
The maximum flow rate for SDX2 RETRO is 188 gallons per minute (gpm) or 711 liters per minute (lpm) Floor and 154 (gpm) or 582 (lpm) Wall. SDX2 RETRO should operate best when used with residential pumps of up to 3HP. Please ensure your pool or spa pump system meets this specification.

**NOTICE**

Suction Safety Standards require that main drain grates used to cover concrete sumps, must have the suction pipe cut at least 1 ½ times the pipe diameter behind the drain cover. This is to allow room for even water flow through all drain cover holes. This is not necessary with the SDX2 drain because the Patented design provides uniform suction regardless of pipe location. However, if the pipe is too close to the surface and off center, this may restrict water flow to the pump, reducing hydraulic efficiency, but this does not pose a suction safety hazard.

Your SDX2 RETRO includes five important components; all of components 1-4 below must be used for proper installation. These components are as follows:

1. Drain cover
2. Black drain cover support plate
3. Six black plastic oval slot plugs that must be installed in the drain cover support plate after it is affixed to the pool or spa surface
4. Three 10x7/8 security screws to secure drain cover to drain cover support plate, together with a tool for installing these screws
5. Assorted screws, fasteners, and plastic spacers for attaching drain cover support plate to pool or spa surface. See Installation Instructions to determine which components you will need to use.



**Fig. 1**

1. Turn off all power to pool or spa and pump systems. Installation is easiest when pool or spa is drained.

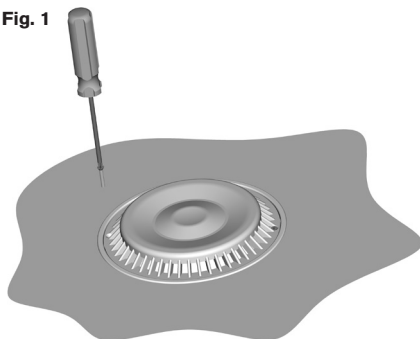


**CAUTION**

Draining a pool or spa may cause structural damage.

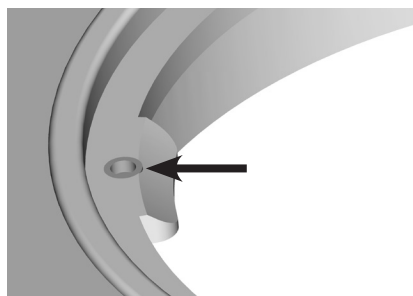
Before draining contact your local licensed pool builder or remodeler.

2. Remove existing drain cover (Fig. 1).
3. Determine from the following choices which provided screws, fasteners, and spacers to use to attach the drain cover support plate to the pool or spa surface.



3a. If the pool or spa surface has an embedded ring around the suction pipe, which ring has threaded screw hole inserts, use the provided two 8-32x3/4 screws (Fig. 2). Use the appropriate provided spacers A or B (Fig. 9 pg. 9 small end up) to close the gap between the drain cover support plate and the embedded ring. For example, if you are replacing a Pentair drain cover use spacer B.275; if you are replacing a Waterway drain cover use spacer A.250. If you have an AFRAS ABF Series drain (See steps 1-3 on page 8 for instructions on how to cut screws) then use spacer A.250. Use a knife and cut off small end of the spacer (Fig. 3) and use around the screw between the support plate and embedded ring.

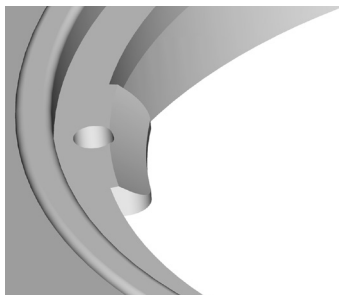
**Fig. 2**



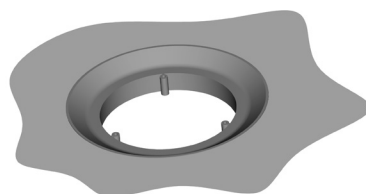
**Fig. 3**



**Fig. 4**



**Fig. 5**



3b. If the pool or spa surface has an embedded ring around the suction pipe, which ring does not have threaded screw hole inserts, or the pool or spa surface has an indented sump without threaded screw hole inserts, and the distance between the pool or spa surface and the tops of the screw holes is shallower than 1/4", use the two provided 10x5/8 self threading screws. No spacers will be needed (Fig. 4).

3c. If the pool or spa has an embedded ring around the suction pipe, which the ring does not have threaded screw hole inserts or has an indented sump without threaded screw hole inserts, and the distance between pool and spa surface and the tops of the screw holes is greater than 1/4" but less than 1/2" use the two provided 10x7/8 self threading screws (Fig. 4). No spacers will be needed.

3d. If the pool or spa surface has an embedded ring around the suction pipe, which ring does not have threaded screw hole inserts, or the pool or spa surface has an indented sump without threaded screw hole inserts, and the distance between pool or spa surface and the tops of the screw holes is deeper than 1/2", use the two provided 10x1-1/4 self-threading screws. No spacers will be needed (Fig. 5).

3e. If the pool or spa surface has no usable holes around the suction pipe that will hold the support plate securely, drill new .160 diameter holes in the plastic ring or drill .250 diameter holes in the concrete and use the plastic anchors to make holes to accept the screws. Then use the correct length #10 self threading screws provided from the instructions above to secure the drain to the pool or spa surface. No spacers will be needed (Fig. 6).

3f. If you have a Jacuzzi MO series drain use the long 10-24 pan hd screw. This screw may need to be cut to fit the application.

**CAUTION**

FAILURE TO USE THE CORRECT SPACERS MAY CAUSE THE POOL COVER SUPPORT PLATE TO BE PULLED FROM THE POOL OR SPA SURFACE.

If the spacers provided do not properly fill the gap because of pool interior surface level in relation to the sump or embedded ring stop. Do not use the threaded inserts go to method described in step 3F to complete the installation.

## Cutting Screws

1. Install the screw into the support plate and measure the distance between the bottom of the screw head and the notch in the support plate.
2. Remove the screw. Using a screw cutter (typically found in the handle of wire strippers) cut screw to the correct length.
3. Install screw through the support plate into the sump until the support plate is snug to the pool surface and there is no gap behind the support plate.

## Installing Support Plate

1. Align the drain cover support plate over the ring or sump (Fig 7). If pipe cannot be centered under plate then a 1" deep sump will give optimum water flow to the pump. If the pipe can be relatively centered NO SUMP is required.

### NOTICE

Suction Safety Standards require that main drain grates used to cover concrete sumps, must have the suction pipe cut at least 1½ times the pipe diameter behind the drain cover. This is to allow room for even water flow through all drain cover holes. This is not necessary with the SDX2 drain because the Patented design provides uniform suction regardless of pipe location. However, if the pipe is too close to the surface and off center, this may restrict water flow to the pump, reducing hydraulic efficiency, but this does not pose a suction safety hazard.

2. Attach the drain cover support plate to the pool or spa surface with the appropriate screws, fasteners, and spacers as described in 3a on page 7.

**Completely hand tighten screws. Do not use power tools.**

Once installed, be sure that the drain cover support plate is firmly in place and cannot be pulled out of the pool or spa surface. If the drain cover support plate is not firmly in place, re-read these instructions and try another installation method (perhaps 3e) (Fig. 6).

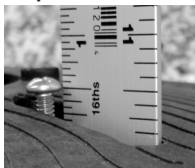


### WARNING

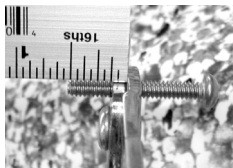
Failure to securely fasten black support plate can result in injury or death.

3. Securely snap all six oval slot plugs provided into the six slots in the drain cover support plate. Use the plugs without tabs (marked C) over screws (tabs may be broken off if necessary). When tabs are broken off the tree the attachment points at each end must be trimmed flush for the part to fit snugly in the support plate.  
**CAUTION: FAILURE TO PROPERLY INSTALL THE PLUGS COULD DISABLE THE SAFETY FEATURES OF THE SDX2 RETRO (Fig. 10).**

Step 1.



Step 2.



Step 3.

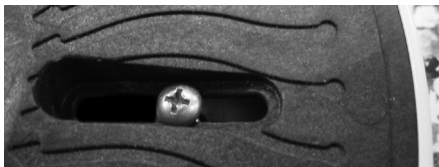


Fig. 6



Fig 7

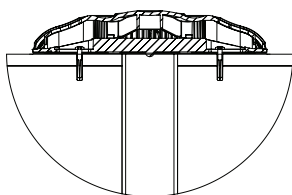
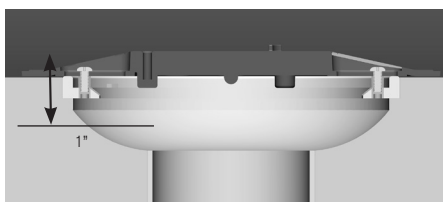


Fig. 8



If pipe cannot be centered under plate then a 1" deep sump will give optimum water flow to the pump. If the pipe can be relatively centered NO SUMP is required.



- Attach the drain cover to the drain cover support plate using the tool and the three 10x7/8 security screws provided (Fig. 11). Paramount requires the use of security screws to secure the cover. **Completely hand tighten screws. Do not use power tools.**
- If the SDX2 Retro is on a curved wall such as a spa, or the wall/floor of the pool is uneven, then the gap between the back plate of the SDX2 and the pool finish must be filled. An under water epoxy such as AB epoxy putty may be used or if the pool is empty then silicon glue may be used. Allow for drying time in both cases before suction is applied to the drain cover.

Fig. 10

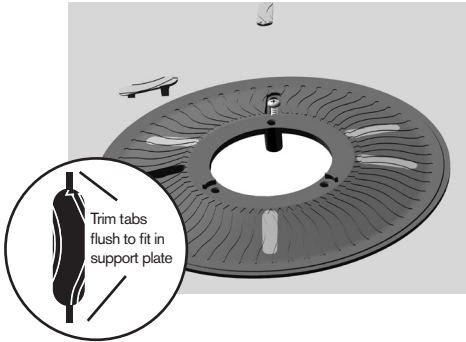


Fig. 9

Attached without spacers and threaded inserts

Attached with both spacers and threaded inserts

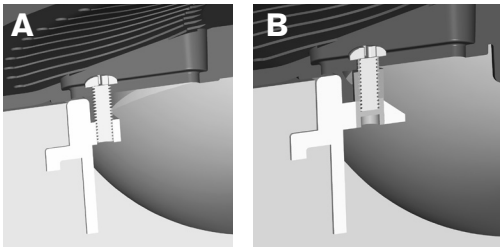
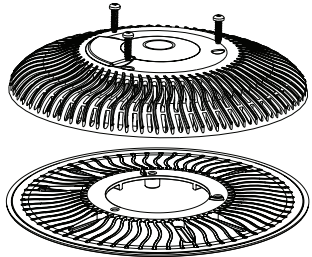
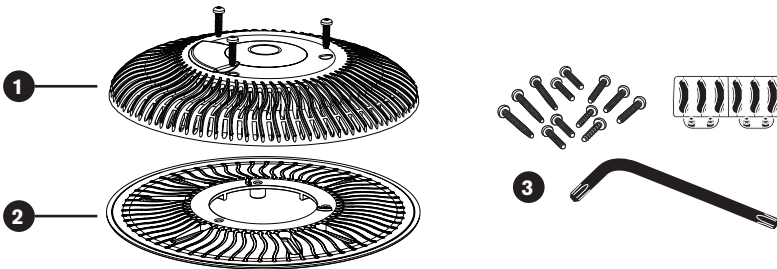


Fig. 11



**Replace cover within 05 installed years**

## SDX2 RETRO CONCRETE PART NUMBERS



Item	Part Number	Description
1	005-252-2099-XX	SDX2 Retro Cover with screws
2	005-252-2067-00	SDX2 Retro Support
3	005-252-0886-00	SDX2 Retro Screw Pack for Concrete Includes: Screws, trim pack, TORX Wrench T-25 Security

Please indicate your color choice by placing the appropriate color code in place of the "XX" at the end of the part number.  
Colors are provided on the inside of the back cover.

White-01   Gray-02   Black-03   Taupe-04   Blue-05   Light Blue-06   Beige-07   Light Gray-08

For technical assistance call 1.800.621.5886 or contact your regional representative

