



# SDX<sub>2</sub>

HIGH FLOW SAFETY DRAIN

## SDX2 HIGH FLOW SAFETY DRAIN

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



VGB 2008  
Compliant



## OWNER'S MANUAL MAINTENANCE & INSTALLATION GUIDE

### 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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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 WORKS BETTER

The SDX2 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 cover are combined with it's domed, anti-vortex shape, forming a seal with the cover is difficult.

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

**Durability.** The SDX2 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 drains. In the event of one suction outlet is being completely blocked, the remaining suction outlets is capable of the full flow of the pump(s).

**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 piping is spaced three (3) feet, ten (10) inches apart. If the drains are located closer than 3 feet, the drains must be located on two different planes (i.e. one on the bottom and one on the vertical wall, or one each on to separate vertical walls), to make it unlikely both drains could be blocked simultaneously.

**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 HIGH FLOW SAFETY DRAIN SYSTEM DESIGN



Check the SDX2 drain cover, fittings and fasteners for damage or tampering before installation and use.

SDX2 is a circulation drain, not intended to remove debris. For this reason it is suggested SDX2 be installed on walls whenever possible. SDX2 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 cover. Do not locate suction outlets on seating areas or on the backrest of such seating areas.

**⚠ WARNING**

The maximum flow rate for each pair of SDX2 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 drains may be added. Do not exceed the maximum allowable flow rate stated on the suction fitting.

**⚠ CAUTION**

Increasing pump size may increase flow

The velocity at the opening to the SDX2 drain at the maximum rated flow of 188GPM 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.

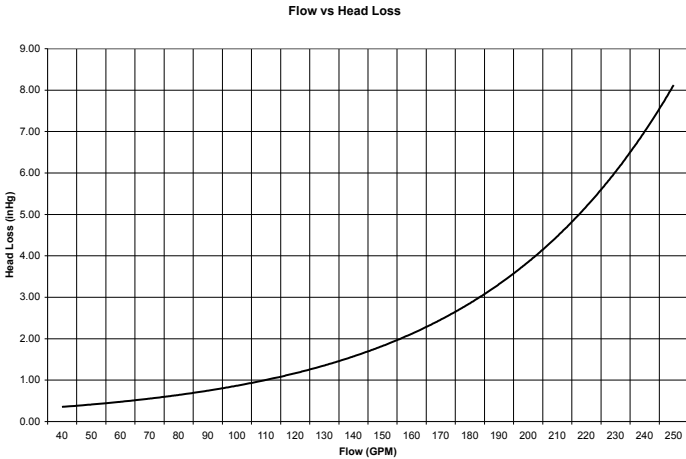
DESCRIPTION	MAXIMUM SYSTEM FLOW FLOOR	MAXIMUM SYSTEM FLOW WALL	MINIMUM FLOW RATING OF EACH COVER % MAXIMUM SYSTEM FLOW RATE
*One SDX2 High Flow Safety Drain	188 gpm (711 lpm)	154 gpm (582 lpm)	100%
Two SDX2 High Flow Safety Drains	188 gpm (711 lpm)	154 gpm (582 lpm)	100%
Three SDX2 High Flow Safety Drains	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 (188 Max GPM)	234 (188 Max GPM)

\*minimum pipe size 1½"

**HEAD LOSS CURVE**

# CONCRETE INSTALLATION

SDX2 installed in a concrete shell utilizes a small cutout in the concrete to form the sump which is sometimes made of plastic or fiberglass. This concrete sump provides superior shell strength by eliminating the large hole associated with plastic sumps. The water seal is formed against the suction pipe in the same way a watertight seal is formed with return pipes. The concrete cutout is typically eleven (11) inches wide, by two (2) inches deep, with a finger size cutout around the pipe to allow room for a watertight seal. "Fig. 1"

## Concrete Plumbing "Fig. 2"

1. Select the installation location for the dual SDX2 drains.
2. Choose the dual-drain orientation, vertical (preferred) or horizontal.
3. Fabricate the dual-drain pipe tree prior to installation.
4. Position at the desired depth before connecting to pump suction pipe.

## Rebar Steel

Concrete reinforcing steel should be kept 3" away from all pipe and fittings.

## Concrete Shell Sump

Form a concrete sump around each suction pipe. "Fig. 3"

### NOTICE

The pipe size must be appropriate for the maximum anticipated system flow rate per chart on page 5. The diameter of branch lines shall be equal and shall not be less than the pipe diameter marked on the cover.

## Concrete Shell Preparation (Fig. 4)

Prior to installing the interior finish, cut each SDX2 riser pipe approximately 1" behind the concrete shell's surface.

**Note:** Suction Safety Standards require that main drain grates used to cover concrete sumps, must have the suction pipe cut at least 1 1/2 times the pipe diameter behind the drain cover. 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, it may restrict water flow to the pump, reducing hydraulic efficiency, but this does not pose a suction safety hazard.

Fig. 1

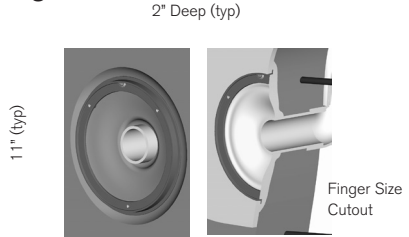


Fig. 2

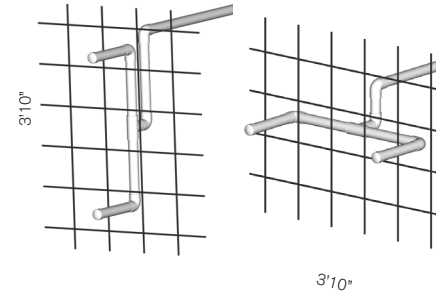


Fig. 3

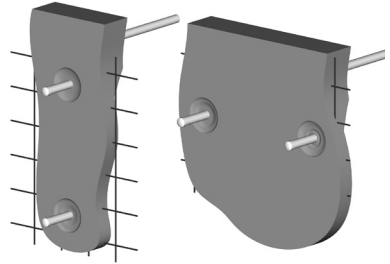
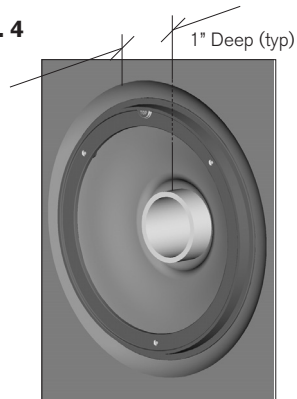


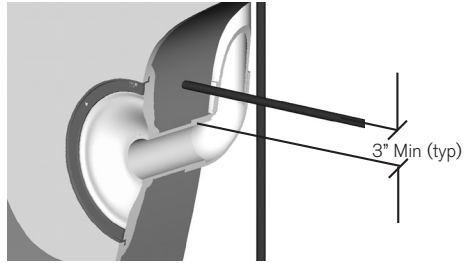
Fig. 4



## Concrete Ring Installation (Fig. 5)

1. Apply interior finishing material.
2. Position the SDX2 Concrete Ring with the semi-circle tab located at the top and then press the ring into finishing material.
3. Trowel the finishing material around outside and inside of the SDX2 Concrete Ring.
4. Form a watertight seal around the suction pipe.
5. Wipe clean any finishing material that remains on the SDX2 Concrete Ring's top edge and mounting surface.

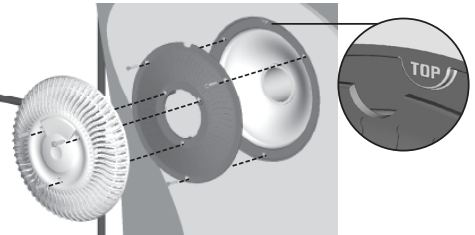
Fig. 5



## Concrete Cover Assembly (Fig. 6)

1. Align the SDX2 Concrete Support with the alignment tab located on the SDX2 Concrete Ring.
2. Install three (3) machine screws through the SDX2 Concrete Support. Secure the screws without over tightening.
3. Align the SDX2 Cover with the SDX2 Support holes.
4. Install three (3) security screws through the SDX2 cover. Secure the screws without over tightening.

Fig. 6



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

# VINYL INSTALLATION

1. Select the installation location for the dual SDX2 drains. (Additional SDX2 drains may be used.)
2. Choose the dual-drain orientation, vertical or horizontal. "Fig. 2" pg. 6
3. For Steel Wall: Make two 4 1/2" holes 46" apart using a Greenlee® Standard Round Knockout Punch (Greenlee.com - Cat. No. 742BB / UPC No. 19978)

## For Plastic Wall:

Cut two 4 1/2" holes 46" apart using a 4 1/2" hole saw.

## For Concrete Wall:

Embed two SDX2 Bulkhead fittings 46" apart. Protect vinyl liner mounting surface from concrete and align the back of the flange with the interior surface to allow room for rolled foam around the fitting.

1. Install the SDX2 Bulkhead Fittings with the "UP" arrow located at the top. (Fig. 7)
  - a. Discard the solid gasket used for fiberglass shells.
  - b. Mount the SDX2 bulkhead fittings in the wall with the UP arrows at the top.
  - c. Secure with the SDX2 nut. (Not needed for concrete walls.)

2. Connect the suction piping. (Fig. 8)

## Vinyl Cover Assembly (Fig. 9)

1. Prior to installing the Vinyl Liner, apply adhesive to the non-ribbed side of the two notched gaskets.
2. Align the gaskets with the alignment tabs and screw holes, then press the gaskets onto the Bulkhead Fitting and the Bulkhead Support.
3. After installing the Vinyl Liner, align the SDX2 Vinyl/Fiberglass Support with the alignment tab located at the top of the SDX2 Bulkhead Fitting. (Fig. 10)
4. Install five(5) self-tapping screws (Fig. 11) through the SDX2 Bulkhead Support with the T25 Security Screw Driver (Fig. 12). Secure the screws without over tightening.
5. Cut the Vinyl Liner out of the center of the SDX2 Bulkhead Supports to expose the suction piping.
6. Align the SDX2 Cover with the SDX2 Support holes.
7. Install three(3) security screws through the SDX2 cover. Secure the screws without over tightening.

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

Fig. 7

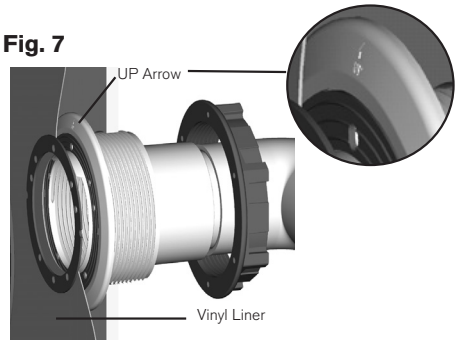


Fig. 8

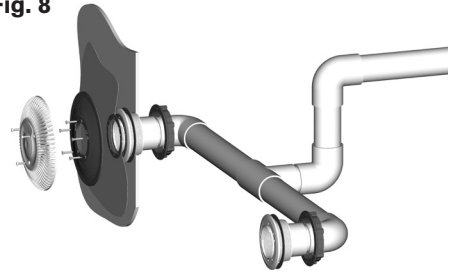


Fig. 9

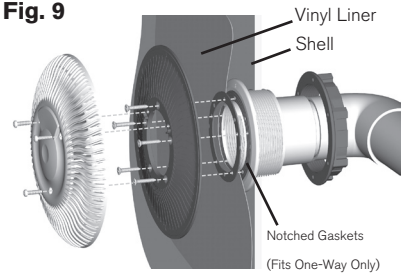


Fig. 10

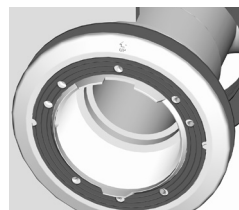


Fig. 11



Fig. 12

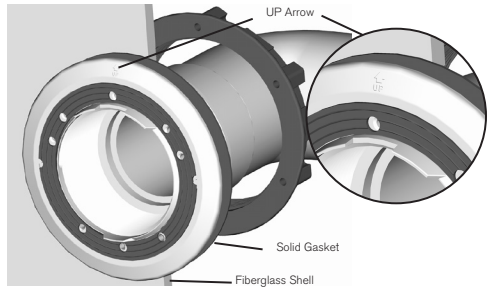




# FIBERGLASS INSTALLATION

1. Select the installation location for the dual SDX2 drains. (Additional SDX2 drains may be used.)
2. Choose the dual-drain orientation, vertical or horizontal. "Fig. 2" pg. 6
- 3. For Fiberglass Wall:** Cut two 4 1/2" holes 46" apart using a 4 1/2" hole saw.
4. Install the SDX2 Bulkhead Fittings with the "UP" arrow located at the top.

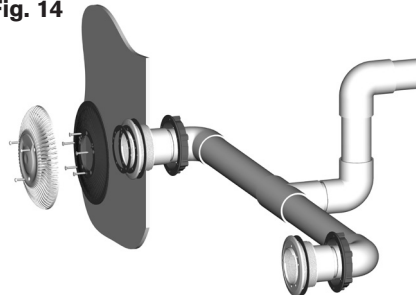
**Fig. 13**



## For Fiberglass Shells: (Fig. 13)

- a. Place the solid Gasket with the smooth side against the Bulkhead Fitting flange. (Silicone adhesive may be substituted for the Gasket if preferred.)
  - b. Mount the SDX2 Bulkhead Fittings in the hole with the UP arrow at the top of each fitting.
  - c. Secure with the SDX2 Nut.
5. Connect the suction piping. (Fig. 14)

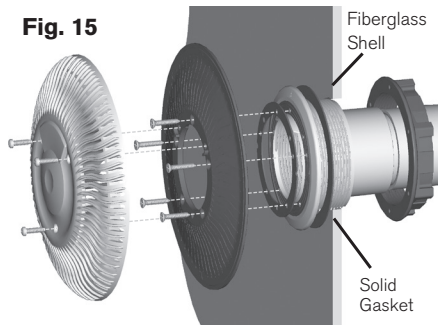
**Fig. 14**



## Fiberglass Cover Assembly (Fig. 15)

1. Prior to installing the support, apply adhesive to the non-ribbed side of the two notched gaskets.
2. Align the gaskets with the alignment tabs and screw holes, then press the gaskets onto the Bulkhead Fitting and the Bulkhead Support.
3. Align the SDX2 Vinyl/Fiberglass support with the alignment tab located at the top of the SDX2 Bulkhead Fitting. (Fig. 16)
4. Install five (5) self-tapping screws (Fig. 17) through the SDX2 Bulkhead Support with the T25 Security Screw Driver (Fig. 18). Secure the screws without over tightening.
5. Align the SDX2 Cover with the SDX2 Support holes.
6. Install three(3) security screws through the SDX2 cover. Secure the screws without over tightening.

**Fig. 15**



**Fig. 16**



**Fig. 17**



**Fig. 18**



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

# SDX2 WINTERIZATION PROCEDURE

## Vertical Installation

1. Remove grate from upper SDX2 and install blow through plug and blow line until air comes from lower grate.
2. Install blow through plug in pump and blow line to achieve airlock to lower SDX2.

## Horizontal Installation

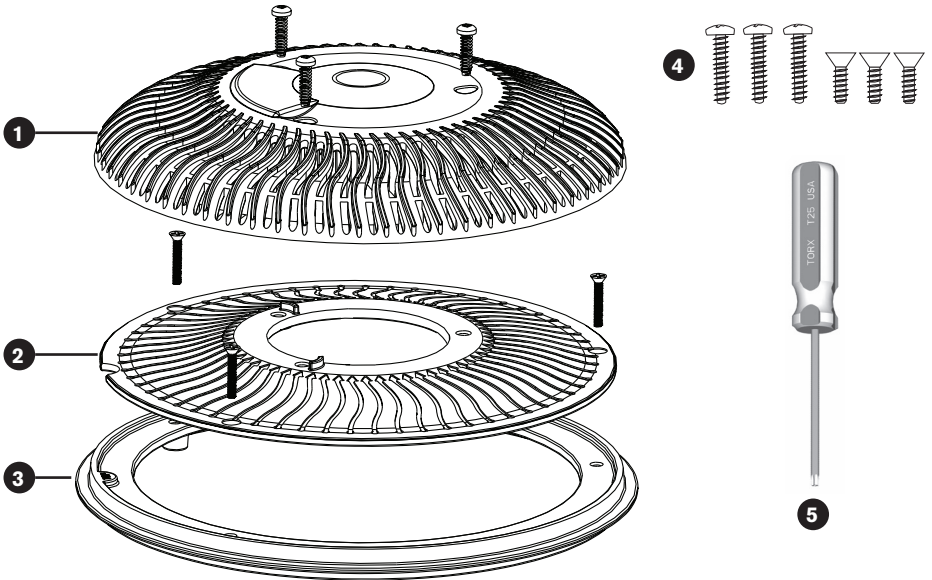
1. Install blow through plug in pump and blow line to achieve airlock to SDX2.

This may not be the only means to winterize and may not be the best option in all environments. It is up to the service professional to provide adequate winterization.

Winterization anti-freeze is to be used as necessary or when required.

# SDX2 CONCRETE PART NUMBERS

## Replace within 05 installed years



Item	Part Number	Description
1	005-252-2097-XX	SDX2 Cover w/ Screws Concrete
2	005-252-2066-00	SDX2 Support Concrete
3	005-252-2050-00	SDX2 Ring Concrete
4	005-252-0810-00	SDX2 Screw Pack Complete
5*	005-252-0895-00	T25 Security Screwdriver

XX = Color Code

\* Not Part of SDX2

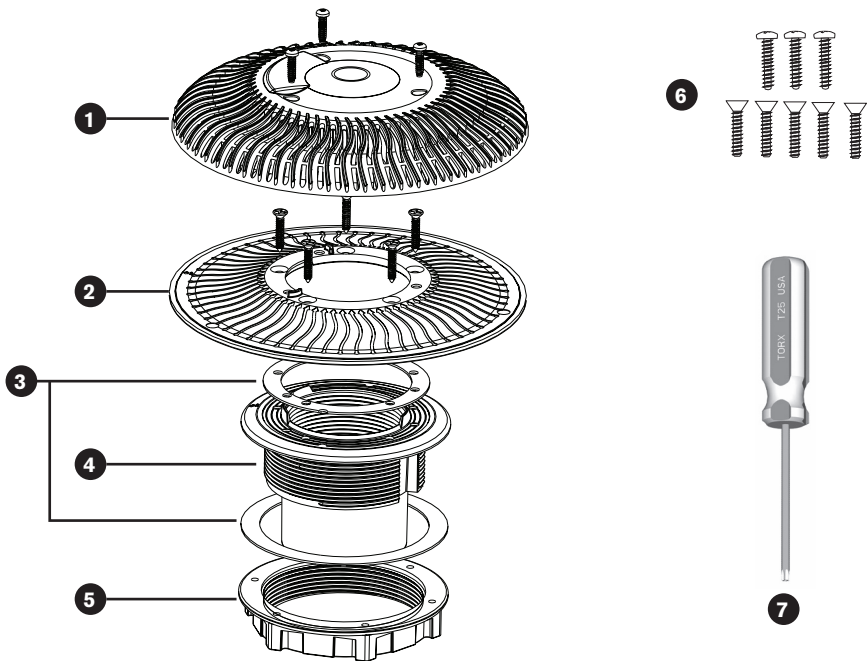
**PROPER INSTALLATION OF THE SDX2 IS ESSENTIAL. PLEASE FOLLOW ALL LOCAL CODES AND POOL SAFETY GUIDELINES.**

### NOTICE

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

# SDX2 VINYL/FIBERGLASS PART NUMBERS

## Replace within 05 installed years



Item	Part Number	Description
1	005-252-2098-XX	SDX2 Cover w/ Screws Vinyl/Fiberglass
2	005-252-2061-00	SDX2 Support Vinyl/Fiberglass
3	005-252-0072-00	SDX2 Gasket Set Vinyl/Fiberglass
4	005-252-2035-00	SDX2 Bulkhead Vinyl/Fiberglass 2 1/2\"/>

XX = Color Code

\* Not Part of SDX2

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