

STA-RITE®



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U-3 Skimmer



Installation Guide

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

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READ, THEN KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

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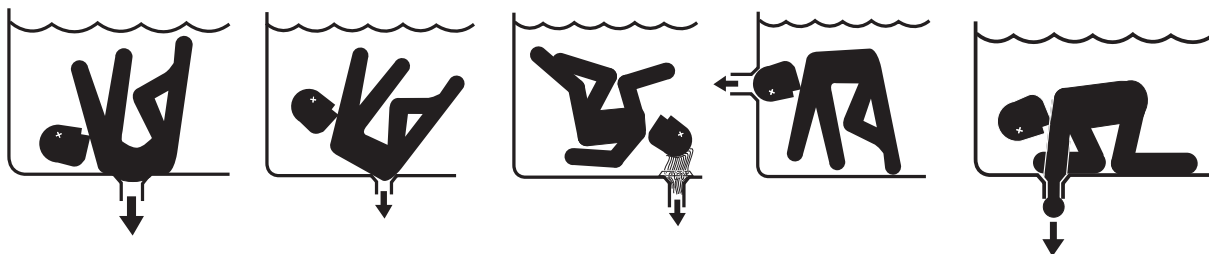
IMPORTANT WARNINGS AND SAFETY INSTRUCTIONS

⚠ WARNING INSTALLERS, POOL OPERATORS AND POOL OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS BEFORE USING THIS PRODUCT!

⚠ DANGER SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THIS PRODUCT IS NOT INSTALLED AND USED CORRECTLY.

⚠ WARNING FOR USE WITH MULTIPLE SUBMERGED SUCTION OUTLETS OR A SINGLE SUBMERGED SUCTION OUTLET. IF ONLY A SINGLE SUCTION OUTLET OR MAIN DRAIN EXISTS, A SAFETY VACUUM RELEASE SYSTEM (SVRS) SUCH AS THE PENTAIR WATER POOL AND SPA INTELLIFLO® VS+ SVRS PUMP, A GRAVITY DRAINAGE SYSTEM, AN AUTOMATIC SHUT-OFF SYSTEM OR A SUCTION-LIMITING VENT SYSTEM MUST BE USED.

⚠ WARNING IMPROPER INSTALLATION OR USE OF THIS PRODUCT MAY PRESENT A RISK OF HAIR OR BODY ENTRAPMENT AND DROWNING. INSTALL THIS EQUIPMENT IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED. USE ONLY WITH THE COMPONENTS AND MOUNTING HARDWARE PROVIDED. FAILURE TO FOLLOW THESE INSTRUCTIONS AND/OR USE WITH COMPONENTS NOT PROVIDED BY PENTAIR POOL PRODUCTS® AND INTENDED TO BE USED WITH THIS PRODUCT MAY RESULT IN IMPROPER POSITIONING OR FUNCTIONING OF DRAIN COVER AND MAY CAUSE SEVERE PERSONAL INJURY OR DEATH.



⚠ DANGER SUCTION ENTRAPMENT HAZARD

Pool and spa pumps produce high levels of suction, which can pose extreme danger if a person comes in close proximity to an open pool or spa drain or if a drain cover is loose, cracked, broken or missing.

Pool and spa pumps move large volumes of water, which can pose extreme danger if a person's hair comes in close proximity to a drain that is not the proper size for the pump or pumps.

Suction entrapment dangers include:

Hair Entanglement – When the hair tangles or knots in the drain cover, trapping the swimmer underwater. This hazard is present when the flow rating of the cover is too small for the pump or pumps.

Limb Entrapment – When a limb is sucked or inserted into an opening resulting in a mechanical bind or swelling. This hazard is present when a drain cover is missing, broken, loose, cracked or not properly secured.

Body Entrapment – When a portion of the body is held against the drain cover trapping the swimmer underwater. This hazard is present when the drain cover is missing, broken or the cover flow rating is not high enough for the pump or pumps.

Evisceration/Disembowelment – When a person sits on an open pool (particularly a child wading pool) or spa outlet and suction is applied directly to the intestines, causing severe intestinal damage. This hazard is present when the drain cover is missing, loose, cracked, or not properly secured.

Mechanical Entrapment – When jewelry, swimsuit, hair decorations, finger, toe or knuckle is caught in an opening of an outlet or drain cover. This hazard is present when the drain cover is missing, broken, loose, cracked, or not properly secured.

⚠ WARNING Use these fittings only with a pumping system rated for the corresponding flow or less for two (2) inch plumbing. FAILURE TO DO SO CAN RESULT IN HAIR OR BODY ENTRAPMENT WHICH CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. If in doubt about the rating of your system, consult a qualified pool or spa professional.

IMPORTANT WARNINGS AND SAFETY INSTRUCTIONS

IMPORTANT NOTICE

Regularly inspect all drain covers for cracks, damage and advanced weathering. If a drain cover becomes loose, cracked, damaged, broken or is missing, close the pool or spa immediately, post a notice and keep the pool or spa closed until an appropriate VGB 2008 certified drain cover is properly installed. Drain covers deteriorate over time due to exposure to sunlight and pool chemicals. This drain cover must be replaced within seven (7) years from installation (or earlier if the cover becomes damaged in any way).

⚠ WARNING An ANSI/ASME A112.19.8a approved anti-entrapment drain cover must be used for each drain. Pools and spas should utilize two drains per pump. If a drain cover becomes loose, broken or is missing, close the pool or spa immediately and shut off the pump until an approved anti-entrapment drain cover is properly installed with the supplied stainless steel screws. Only the supplied 316 stainless-steel screws should be used with the drain cover. Substitute screws such as masonry screws, sheet rock screws or other types of screws should never be used. 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, including possible limb and body entrapment or evisceration/disembowelment. If the screw holes of the frame are stripped or the brass inserts are missing, loose, or damaged, replace the frame. **DO NOT DRILL NEW SCREW HOLES IN THE FRAME AS THIS WILL DAMAGE AND WEAKEN THE FRAME.**



IMPORTANT NOTICE

Attention Installer: This manual contains important information about the installation, operation and safe use of this product. This information should be given to the owner and/or operator of this equipment.

⚠ WARNING Before installing this product, read and follow all warning notices and instructions which are included. Failure to follow safety warnings and instructions can result in severe injury, death or property damage. Call (800) 831-7133 for additional free copies of these instructions. It is absolutely critical that the suction plumbing be installed in accordance with the latest national and local codes for swimming pools.

⚠ DANGER A pool/spa pump produces high levels of suction, which can pose extreme danger if a person comes in close proximity to an open pool or spa drain or a loose or broken drain cover or grate.

If you have any questions about installation or maintenance of this drain cover, please contact your pool professional. Never attempt to alter or repair the cover or frame on your own.

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.

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

Operation



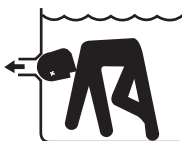
WARNING Keep the skimmer lid properly secured at all times. Failure to keep the lid secured can cause the lid to become dislodged when stepped on, resulting in risk of serious injury.



WARNING Replace the skimmer lid if it is worn or damaged. Failure to replace a worn or damaged skimmer lid can cause the lid to break when stepped on, resulting in risk of serious injury.



Hazardous Suction: Risk of hair or body entrapment, drowning or disembowelment.



Wall fitting on equalizer line must be non-entrapping of hair or body and must conform to ANSI/ASME A112.19.8.

Note: Skimmer is not equivalent to a main drain. All pools, spas, and hot tubs must have at least two main drains besides skimmer(s).

CAUTION! Blocking pump suction can cause pressure surges and water hammer, which can damage pump or piping and may cause flooding.

OPERATION

Pump suction pulls water through skimmer. Water flow into skimmer carries floating leaves, bugs, etc., into skimmer where they are trapped in skimmer basket. (Dust, body oils, etc., go on through to be removed by pool filter.) Floating weir in skimmer opening enhances surface flow and skimming action.

Water level: Keep pool, spa, or hot tub water level at least 1½ inch to 2 inch above bottom of skimmer opening for proper operation.

Float Valve: Float valve protects pump from loss of prime if skimmer clogs or flow through skimmer is restricted. Trimmer valve plate on bottom of float valve balances flow between skimmer and main drains.

Flow adjustment: Balance flow between skimmer and main drain.

a. **Skimmers without float:** Adjust shut-off valves in pump suction line from skimmer and pool main drain line. (See Figure 1, below.)

b. **Skimmers with float:** If skimmer is equipped with float valve, adjust trimmer plate on bottom of float. To reach trimmer plate, remove cover, basket, and float valve (See Figure 2, below). Swing trimmer plate to one side to increase trimmer port size (more flow through skimmer, less flow through main drains); reduce port size for less flow through skimmer and more flow through main drains.

Sweeping pool: For installation without equalizer line, hold weir up to starve skimmer of water and close float valve. This directs all flow through main drains. To return to normal skimming operation, turn pump off 10-15 seconds, allowing skimmer to fill and float valve to return to open position. Skimmer will now operate normally as long as pool water level is high enough to allow normal flow over weir.

Typical Public Pool Skimmer Installation with Equalizer Line Installed

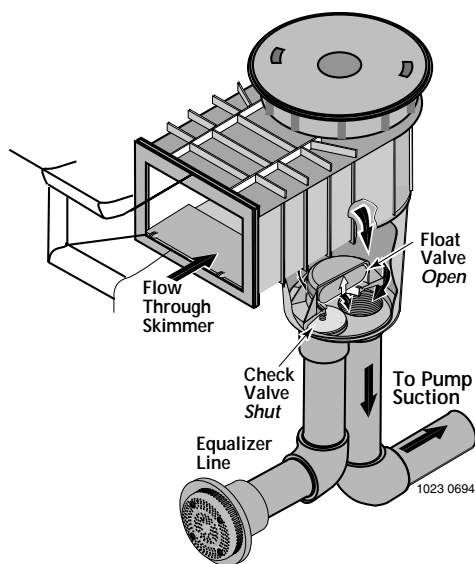


Figure 1: Normal operation: float valve open, check valve shut.

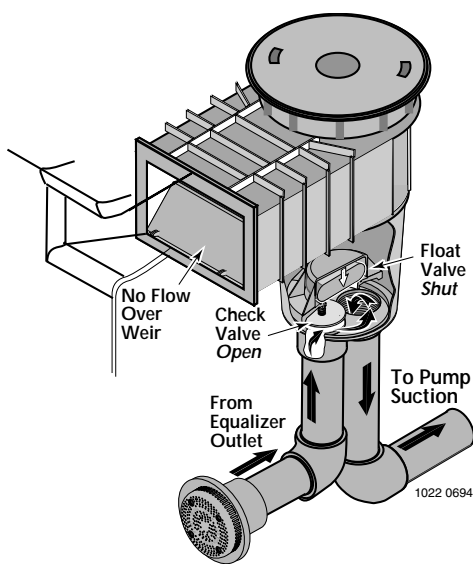


Figure 2: Equalizer operation; float valve shut, check valve open.

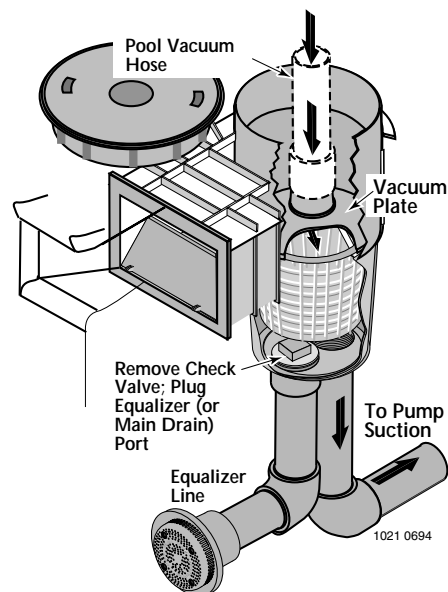


Figure 3: Vacuuming pool; float and check valves removed, equalizer (check valve) port plugged.

Vacuuming pool (Figure 5): Remove cover, basket (and float valve and check valve if skimmer has them). Plug equalizer inlet. Replace basket and place vacuum plate on top of basket. Fill the vacuum hose with water, bring it in over coping or through skimmer throat, and attach the vacuum hose directly to the vacuum plate. Follow instructions in vacuum attachment or filter owner's manual for vacuuming operation. After vacuuming, remove hose and vacuum plate, unplug equalizer port, and reinstall check valve, float, basket, and cover. Be sure cover is solidly in the frame to prevent accidentally dislodging it. Fasten cover with screws provided if children use pool.

Public pool models:

Check Valve (Public Pool Models): Check valve is threaded into equalizer inlet port in skimmer. When closed, check valve prevents flow through equalizer line. If flow through skimmer decreases enough to let float valve drop, check valve opens to allow flow to pump from main drain/equalizer line (which prevents starving the pump).

Inspect equalizer regularly. During normal operation (with float valve open) the skimmer check valve prevents detectable flow through the equalizer wall fitting. There should be no flow through the wall fitting unless the skimmer float valve is closed. If you can feel suction into the equalizer wall fitting while the float valve is in normal (or up) position, the check valve is leaking; replace it.

NOTICE: The skimmer check valve is factory pre-set and not adjustable. If check valve appears worn or deteriorated, or if spring tension is loose, do not try to fix it; replace the check valve.

Equalizer: If flow over weir is restricted, Float valve closes, diverting pump suction to equalizer (or main drain) line and preventing loss of prime in pump. Seal normally remains until pump stops, when float valve will rise. If pump starts again before stoppage is cleared, float will close again and remain closed until pump stops, blockage is cleared, or pool water level returns to normal.

Hazardous Suction. Risk of hair or body entrapment, drowning or disembowelment. Wall fitting on equalizer line must be non-entraping of hair or body and must conform to ANSI/ASME A112.19.8 requirements. P/N 08655-0017 check valve is required when skimmer is installed with equalizer. Check valve is not used when skimmer is installed without equalizer.

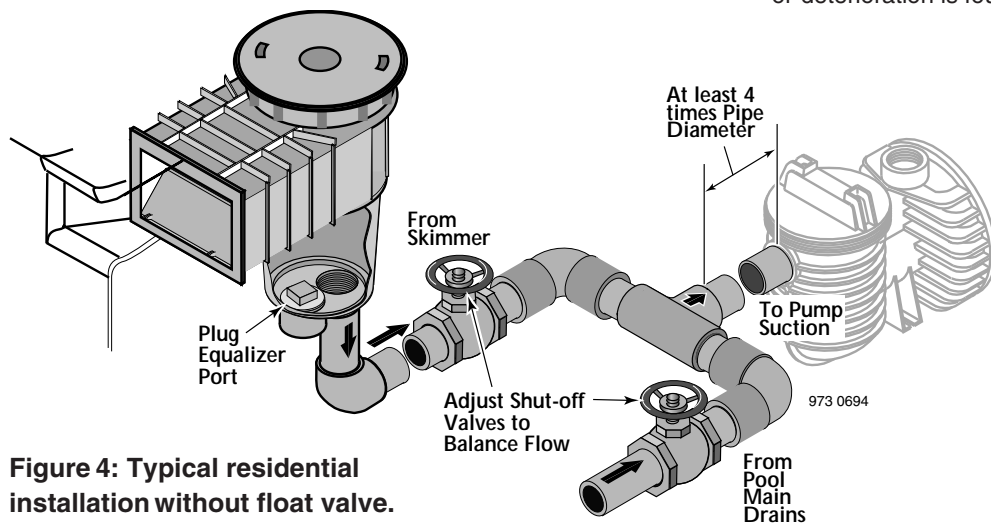


Figure 4: Typical residential installation without float valve. Use with at least two main drains.

NOTICE: The equalizer is an emergency bypass intended to prevent damage to the pump when pool water level is low or skimmer basket is blocked. Do not allow flow through equalizer for extended time periods.

Equalizer: If flow over weir is restricted, Float valve closes, diverting pump suction to equalizer (or main drain) line and preventing loss of prime in pump. Seal normally remains until pump stops, when float valve will rise. If pump starts again before stoppage is cleared, float will close again and remain closed until pump stops, blockage is cleared, or pool water level returns to normal.

MAINTENANCE

Weir: Periodically check weir for free operation. Replace if damaged or worn.

Strainer Basket: Check strainer basket every few days for accumulated leaves, debris, etc. Empty basket as required. Reset float valve if it closed.

Float Valve: Periodically check that float valve is operating freely and is not waterlogged. If necessary, tighten trimmer plate pivot screw to maintain desired flow balance.

Check Valve (Public Pool Models): Inspect for wear or deterioration. Make sure that screw is tight in check valve body. If you can detect flow through equalizer with float valve open, replace check valve.

Equalizer (Wall) Fittings: Periodically check that wall fittings are correctly installed and that covers are tight to fittings.

Water Level: Maintain water level at least 1½ inch to 2 inch above bottom of skimmer opening for proper operation. Adjust trimmer plate if necessary. Make sure set screw is tight.

Winterizing: Drain pool until level is below skimmer inlet. Remove cover, basket and float. Plug both bottom ports with standard 1½ inch or 2 inch pipe plugs. Cover skimmer to prevent rainwater or snow accumulation. Falling and tripping hazard. Skimmer grate may deteriorate with prolonged use. Cover must be flush with pool, spa, or hot tub deck level. Skimmer is made of impact and weather resistant materials, but extended use (5-7 years) may lead to reduced strength. Regularly check condition of skimmer cover. Look for cracks, chips, deterioration of plastic, etc. If any sign of damage or deterioration is found in the cover, replace it.

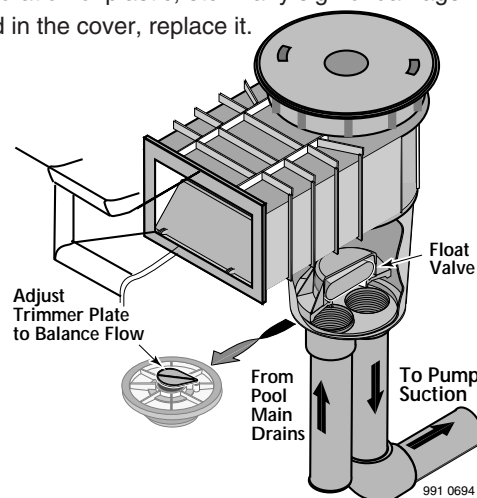


Figure 5: Typical residential installation with float valve. Use with at least two main drains.

Multi-Skimmer Installation and Pipe Sizing

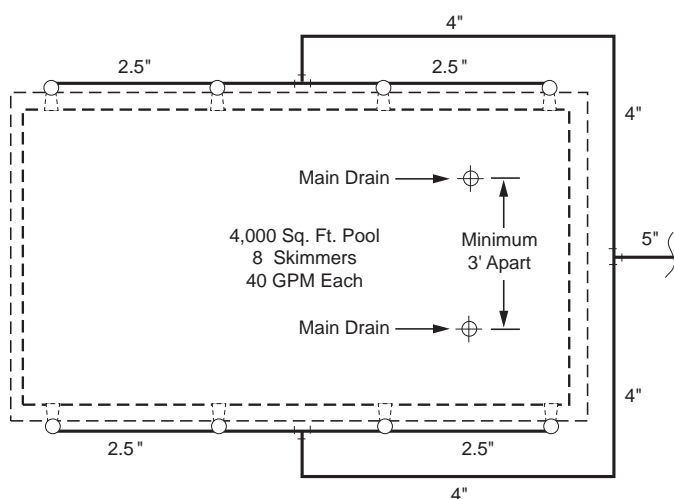
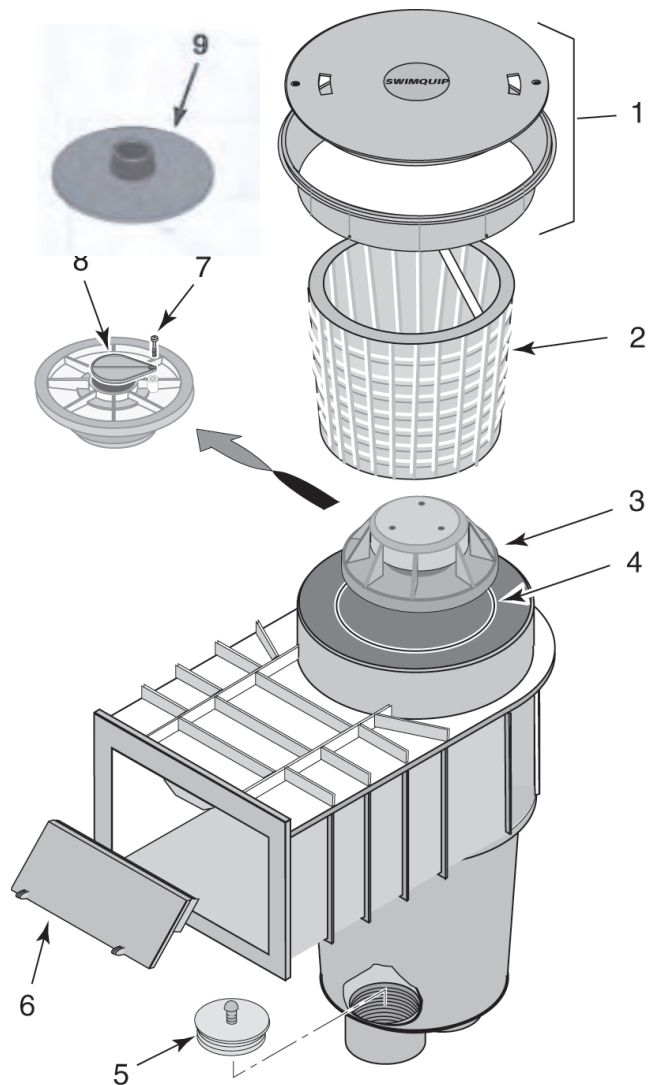


Figure 6: Multi-Skimmer Installation with pipe sizing. Note multiple main drains.

Pool Surface Area In Square Ft	No. of Skimmers Req.	Skimmer Rated Flow (GPM)				
		30	35	40	45	50
Up to 600	1	2"	2"	2"	2"	2"
1,000	2	2.5	2.5	2.5	2.5	3
1,500	3	3	3	3	4	4
2,000	4	4	4	4	4	4
2,500	5	4	4	4	4	5
3,000	6	4	4	5	5	5
3,500	7	4	5	5	5	5
4,000	8	5	5	5	5	6
4,500	9	5	5	5	6	6
5,000	10	5	5	6	6	6

Table 1: Suction Pipe Sizing by Surface Area of Pool and Rated flow Capacity of Skimmers.

Parts List



Key No.	Public Pool Part Description	Residential Pool U-3 Models	U-3 Models
	White, w/2 x 11/2 NPT Reducers	08650-1403	08650-4403
	White, w/2 x 11/2 Slip Reducers	08650-1404	08650-4404
	Tan, w/2 x 11/2 NPT Reducers	08650-2403	08650-5403
	Tan, w/2 x 11/2 Slip Reducers	08650-2404	08650-5404
	Tan/Gray, w/2x11/2 NPT Reducers	08650-3403E	—
	Tan/Gray, w/2x11/2 Slip Reducers	08650-3404E	—
	Tan/Gray, w/2x11/2 NPT Reducers	08650-6403E	—
	Gray, w/2x11/2 NPT Reducers	08650-3403	—
	Gray, w/2x11/2 Slip Reducers	08650-3404	—
1	Frame and Grate Kit (Tan)	08650-0159	08650-0159
1	Frame and Grate Kit (White)	08650-0169	08650-0169
2	Basket and Handle	08650-0007	08650-0007
•	Basket Handle Only	08650-0067	08650-0067
3	Float Assembly w/O-Ring	08650-0079	—
4	Float O-Ring Only	35505-1273	—
5	Check Valve	08655-0017	—
6	Hinged Weir Assembly	08650-0022A	08650-0022A
•	Weir Bumper	08650-0018	08650-0018
•	Screw #8 x 3/8"	37207-0825	37207-0825
7	Screw #8 x 1/2"	37207-0027	—
8	Trimmer Plate	08650-0048	—
9	Vacuum Plate	08650-0042	—

Skimmer Layout and Suction Line Sizing

NOTE: In any installation, there should be at least two main drains at least three feet apart in addition to any skimmers installed. A pool may use more than two, but should never have less than two main drains.

NOTICE: Installation must comply with all applicable codes, including NSF Standard 50 (if required). Equalizer lines may be required on public pool or commercial pool installations.

1. Use one skimmer per 500 square feet of pool surface area. Suction line sizes are based on a water velocity of less than seven feet per second. Since building codes vary, check your local building code before installing pool and skimmers.
2. Suction line sizes for each section of piping must allow for the total number of skimmers feeding that section of the line. Suction line sizing in Chart I allows for this.
3. See Figures 5 and 6, Pages 2 and 3, for piping layout. See Table I, Page 3, for suction pipe sizing.
4. For good hydraulic balance, divide skimmers as equally as possible between the main branches of the piping layout.
5. For long pipe runs (in which friction can reduce flow and pressure), refer to your friction/flow chart for proper pipe sizes.
6. When planning location of skimmers on one and two skimmer outdoor pools, locate skimmers so that the prevailing wind blows into the skimmers.

INSTALLATION

All installation instructions in this manual are general guidelines. Actual skimmer installations may vary by local practices and codes.

NOTICE: Skimmer should be surrounded by at least 4 inches of structural concrete in a monolithic pour, using a cold joint as shown in installation drawings. **Concrete:** See Figure 7 for dimensions.

Line Connections and Testing: Connect pump inlet line to rear port in bottom manifold (Figure 7). Skimmer is ABS plastic; manifold connections are 1½ inch or 2 inch threaded or 1½ inch slip. For threaded connections, do not use pipe dope; to seal joint use RTV Silastic #732* (preferred), Teflon® tape, or Plasto-Joint Stik®. For slip connections, apply PVC primer to PVC pipe only. Then apply ABS to PVC solvent cement to both pipe and slip connections. Consult dealer for correct solvent cement for pipe used. Assemble joint per cement manufacturer's instructions. Allow at least three (3) hours before pressure testing.

Plastic cements and primers can be flammable, poisonous, or both. Closely follow cement manufacturer's instructions when using plastic cement. For residential installations where equalizers are not required and where the main drain lines do not connect to the skimmer equalizer port, low water levels in the pool, spa, or hot tub or clogged skimmer baskets may damage the pump due to loss of prime (if skimmer sucks air) or cavitation (if skimmer clogs). Air pulled in by skimmer(s) can be trapped in filter tanks, which may be a safety hazard. If skimmer regularly vortexes or sucks air, raise water level or contact your pool service representative for advice.

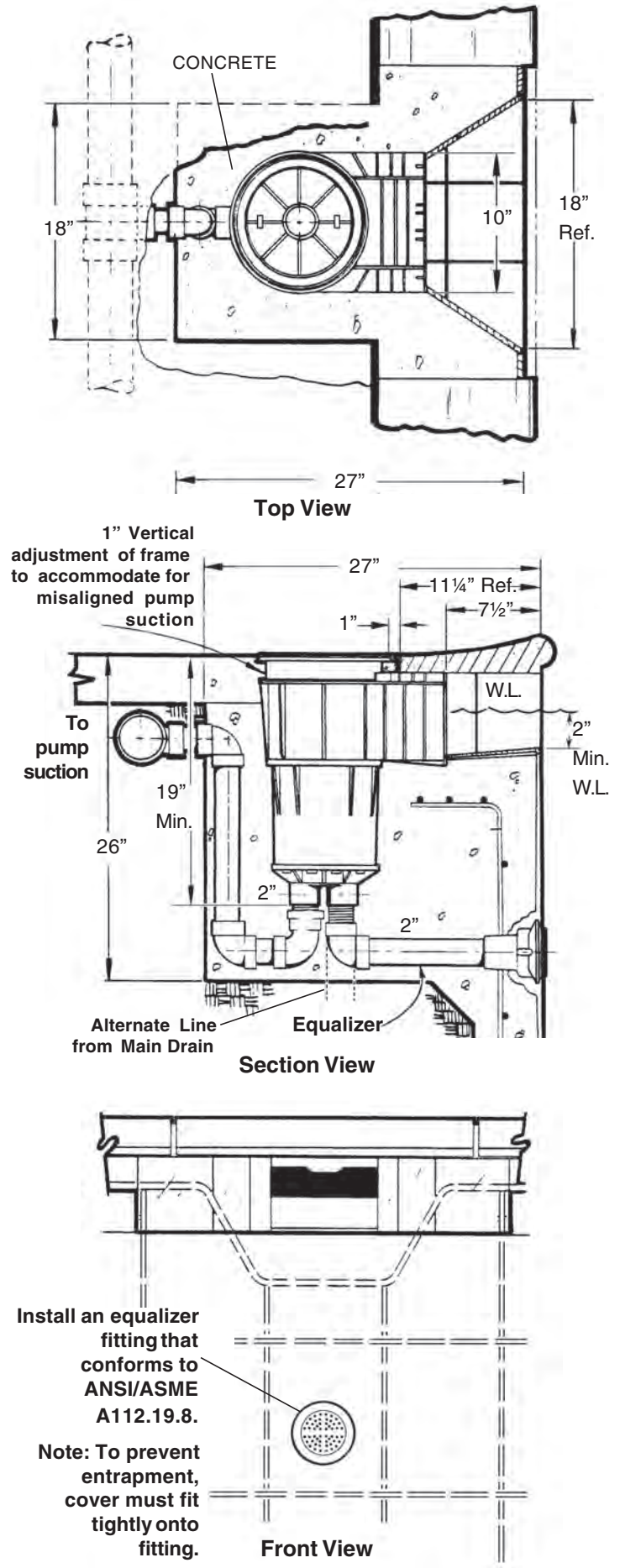


Figure 7: U-3 Skimmer Installation Illustration

Notes

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