



CHANNEL DRAIN INSTALLATION INSTRUCTIONS

VGB SERIES SINGLE, UNBLOCKABLE SUCTION OUTLET INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS FOR

32CDAVxxx, 32CDAVACxxx, 32CDAVFGxxx, 32CDAVFRxxx, 32CDAVVxxx, 32CDBTxxx, 32CDBTFRxxx,
32CDFLxxx, 32CDFLFGxxx, 32CDFLFRxxx, 32CDFLVxxx, 32CDLTxxx, 32CDLTFGxxx, 32CDLTFRxxx,
32CDLTVxxx, 32CDPHxxx, 32CDPHFGxxx, 32CDPHFRxxx, 32CDPHVxxx, 32PDxxx

(xxx = COLOR SUFFIX)

MEETS OR EXCEEDS NSF-50 2008 & ANSI/APSP-16 2011
ANTI-ENTRAPMENT/ANTI-VORTEX



READ AND FOLLOW ALL INSTRUCTIONS

▲ 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 AquaStar Pool Products and intended to be used with this product may result in improper positioning or functioning of suction outlet and may cause severe injury or death.

SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE

- If not a single, unblockable outlet, in the event of one suction outlet being completely blocked, the remaining suction outlets serving the system shall have a flow rating capable of the full flow of the pump(s) or the specific suction system. If in doubt about the rating and/or head loss curve of your system, consult a qualified pool or spa professional and/or your respective equipment manufacturer(s). Also, double-check with your local building/health authorities regarding single vs. multiple drain installations, etc.
- All sizes of connecting pipe are acceptable, pending velocity and GPM calculations. The larger the pipe, the better! (But **do not** exceed maximum GPM ratings marked on the top of the cover or per installation instructions.)
- Replace cover and screws within five years.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS



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

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 AquaStar 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.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS



⚠ 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 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, a finger, a toe or a 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. Failure to do so can result in hair or body entrapment, which can cause severe injury or death. If in doubt about the rating of your system, consult a qualified pool or spa professional.

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. The drain cover must be replaced within five years from installation (or earlier if the cover becomes damaged in any way).

⚠ WARNING A VGB 2008 approved anti-entrapment drain cover must be used for each drain. 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. You may also refer to www.aquastarpoolproducts.com for all warnings and instructions related to 32" channel drains.



⚠ 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 877.768.2717 or visit our website at www.aquastarpoolproducts.com 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.

WARNINGS AND IMPORTANT SAFETY PRECAUTIONS

⚠ 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.

HYDROSTATIC RELIEF VALVE

For installations utilizing a hydrostatic relief valve, using a collector tube will maintain a clear path to the hydrostatic valve. At least one hydrostatic relief valve in a set of suction outlets will allow hydrostatic uplift pressure caused by ground water to be relieved into the pool or spa.

ENTRAPMENT AVOIDANCE NOTICE

The covers used on suction outlets should be approved and listed as conforming to the currently published edition of ANSI/APSP-16 2011 Standard. These covers should be inspected regularly and replaced if cracked, broken or older than the design lifetime indicated on them by the manufacturer. The maximum possible flow rate of the pump should be less than or equal to the maximum approved flow rate indicated on the suction outlet cover by the manufacturer. The use of unapproved covers or allowing use of the pool or spa when covers are missing, cracked or broken can result in body or limb entrapment, hair entanglement, evisceration or death.

⚠ WARNING Pumps improperly sized or installed or used in applications other than for which the pump was intended can result in severe personal injury or death. These risks may include but are not limited to electric shock, fire, flooding, suction entrapment or severe injury or property damage caused by a structural failure of the pump or other system component.

⚠ WARNING The use of alcohol, drugs or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.

⚠ WARNING To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

⚠ WARNING When setting up pool water turnovers or flow rates, the operator must consider local codes governing turnover as well as disinfectant feed ratios.

⚠ WARNING DO NOT increase pump size; this will increase the flow rate through the system and exceed the maximum flow rate stated on the drain cover.

⚠ WARNING Most states and local codes regulate the construction, installation and operation of public pools and spas, and the construction of residential pools and spas. It is important to comply with these codes, many of which directly regulate the installation and use of this product. Consult the local building and health codes for more information.

- All types of suction fittings shall not be located on seating areas or on the back rests for such seating areas.
- An approved anti-entrapment suction outlet cover must be used for each drain.
- Never exceed the maximum flow rate stated on the drain cover.
- Regularly inspect drain covers for cracks and signs of advanced weathering.
- Close the pool or spa if any suction outlet component is loose, cracked, broken, missing or not securely attached. Replace loose, cracked, damaged, broken or missing drain covers.
- Install in accordance with the latest APSP standards and CPSC guidelines, follow all applicable national, state and local codes.

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.

ACTS, CODES AND STANDARDS

All AquaStar suction outlet fittings (drain covers) are federally regulated by the U.S. Consumer Product Safety Commission (CPSC). This authority was given to the CPSC in 2007 as part of the Virginia Graeme Baker Pool and Spa Safety Act. Visit www.cpsc.org for more information.

ANSI/APSP-16 2011 Certification

All AquaStar suction outlets are certified by IAPMO in accordance with ANSI/APSP-16 2011 Standard for submerged suction fittings for use in swimming pools, wading pools, spas and hot tubs. To download a current copy of the IAPMO certification, go to www.IAPMORT.org.

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ACTS, CODES AND STANDARDS (continued)

NSF-50 2008

All AquaStar suction outlets are certified to comply with NSF-50 2008 circulation system components and related materials for swimming pools, spas and hot tubs. To download a current copy of the IAPMO certification, go to www.IAPMORT.org

Virginia Graeme Baker Pool and Spa Safety Act

All AquaStar suction outlets comply with the Virginia Graeme Baker Pool and Spa Safety Act, Section 1404(b). This section requires all suction outlet fittings (drain covers) to conform to **ANSI/APSP-16 2011 current standard**.

International Code Council

AquaStar is an approved component as required by the International Code Council (ICC) building codes, which include the International Residential Code (IRC) and the International Building Code (IBC), collectively known as the iCodes. The ICC updates the iCodes every three years. Visit www.iccsafe.org for more information.

International Residential Code (IRC)

Many states and local jurisdictions have adopted the IRC, including Appendix G. Section AG106 addresses suction entrapment avoidance requirements that regulate residential swimming pools and spas. It is important to know if these codes are in effect where the residential pool or spa is being built and which version is being required. Effective in the 2009 version of the IRC is the requirement to build in accordance with ANSI/APSP 7-2006 American National Standard for suction entrapment avoidance in swimming pools, wading pools, spas, hot tubs and catch basins. The 2003 and 2006 versions do not include a reference to the ANSI/APSP 7 standard. Visit www.iccsafe.org for more information.

International Building Code (IBC)

Many states and local jurisdictions have adopted the International Building Code which regulates commercial building projects, including public swimming pools and spas. Section 3109.5 addresses suction entrapment avoidance requirements that regulate public swimming pools and spas. It is important to know if these codes are in effect where the public pool or spa is being built and which version is being required. Effective in the 2009 version of the IBC is the requirement to build in accordance with ANSI/APSP 7-2006 American National Standard for suction entrapment avoidance in swimming pools, wading pools, spas, hot tubs and catch basins. The 2003 and 2006 versions do not include a reference to the ANSI/APSP 7 standard. Visit www.iccsafe.org for more information.

ANSI/APSP-7 Suction Entrapment Avoidance Standard

The Association of Pool and Spa Professionals publishes many swimming pool and spa related standards, including ANSI/APSP 7-2006 American National Standard for suction entrapment avoidance in swimming pools, wading pools, spas, hot tubs and catch basins. ANSI/APSP 7 is referenced by the iCodes and is required by some states and local jurisdictions. It requires all suction outlet fittings (drain covers) to be tested and listed by a nationally recognized testing laboratory as conforming to the most recent version of ASME/ANSI A112.19.8 or **ANSI/APSP-16 2011**. Visit www.apsp.org for more information.

VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT

The **Virginia Graeme Baker Pool and Spa Safety Act** raises certain new requirements on owners and operators of swimming pools and spas.

Pools or spas constructed on or after December 19, 2008, shall utilize:

- A. No submerged suction outlets, a gravity drainage system with ASME/ANSI cover(s), one or more unblockable outlets, or
- B. A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANSI A112.19.8 suction fittings for use in swimming pools, wading pools, spas and hot tubs, and either:
 - i. A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 manufactured safety vacuum release systems (SVRS) for residential and commercial swimming pool, spa, hot tub, and wading pool suction systems and/or ASTM F2387 standard specification for manufactured safety vacuum release systems (SVRS) for swimming pools, spas and hot tubs, or
 - ii. A properly designed and tested suction-limiting vent system, or
 - iii. An automatic pump shut-off system.

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VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT (continued)

Pools and spas construction prior to December 19, 2008, with a single submerged suction outlet shall use a suction outlet cover that meets **ANSI/APSP-16 2011** and either:

- A. A multiple main drain system without isolation capability or a single (VGB 2008 compliant) unblockable, or
- B. A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or
- C. A properly designed and tested suction-limiting vent system, or
- D. An automatic pump shut-off system, or
- E. Disabled submerged outlets, or
- F. Suction outlets shall be reconfigured into return inlets.

For more information about the Virginia Graeme Baker Pool and Spa Safety Act, contact the U.S. 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.

HYDRAULIC SYSTEM SPECIFICATIONS

POOL PUMP SUCTION REQUIREMENTS

Pump suction is hazardous and can trap and drown or disembowel bathers. Do not use or allow anyone else to use a pool, spa or hot tub unless it has at least two suction outlets, or an approved single, unblockable suction outlet to each pump suction line. Do not use or operate swimming pools, spas or hot tubs if a suction outlet cover is missing, broken or loose.

ENTRAPMENT PROTECTION

The pump suction system must provide protection against the hazard of suction entrapment or hair entrapment/entanglement.

SUCTION OUTLET COVERS

All suction outlet covers must be maintained. They must be replaced if cracked, broken or missing. See page 5 for outlet cover certification requirements. All suction outlets must have correctly installed, screw-fastened covers in place.

WATER VELOCITY AND FLOW RATES

The maximum water velocity through drain covers is limited by some local regulations, for example some state health departments limit the velocity through public pool drain covers to 1½ feet per second. This velocity limit is lower than the flow rating provided by the **ANSI/APSP-16 2011** certification, therefore the local limit applies and must be followed. Never exceed the flow rating listed on the cover even if the local code does not provide a velocity limit.

PIPING – GENERAL

For new installations, the piping between drains must be sized to limit the velocity to six feet per second. This limit applies to the branch piping and all fittings between multiple outlets and the tee leading back to the pump. If code requires a lower water velocity, comply with the code. See the chart below for information on pipe size flow ratings at six feet per second.

ACCEPTABLE PIPE SIZE FOR MAXIMUM RECOMMENDED SYSTEM FLOW RATE PER APSP-7 (6 feet/second in the branch line)

Pipe Size	1½"	2"	2½"	3"
Flow Rate in GPM	45	80	110	160

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HYDRAULIC SYSTEM SPECIFICATIONS (continued)

ALL MODELS LISTED BELOW = ANTI-ENTRAPMENT/ANTI-VORTEX AND FOR SINGLE OR MULTIPLE USE

MAX FLOW RATES (PER OUTLET) MOUNTING POSITIONS (xxx=COLOR SUFFIX)

Model	32CDFLxxx 32CDFLFGxxx 32CDFLFRxxx 32CDFLVxxx 32CDFLACxxx	32CDLTxxx 32CDLTFGxxx 32CDLTFRxxx 32CDLTVxxx	32CDAVxxx 32CDAVFGxxx 32CDAVFRxxx 32CDAVVxxx 32CDAVACxxx	32PDxxx	32CDBTxxx 32CDBTFRxxx	32CDPHxxx 32CDPHFGxxx 32CDPHFRxxx 32CDPHVxxx
Floor	316 GPM @ 3.9 fps	196 GPM @ 1.3 fps	236 GPM @ 3.4 fps	196 GPM @ 2.3 fps	120 GPM @ 1.2 fps	268 GPM @ 3.1 fps
Wall	208 GPM @ 2.6 fps	192 GPM @ 1.2 fps	136 GPM @ 1.9 fps	88 GPM @ 1.0 fps	N.A.	172 GPM @ 1.0 fps

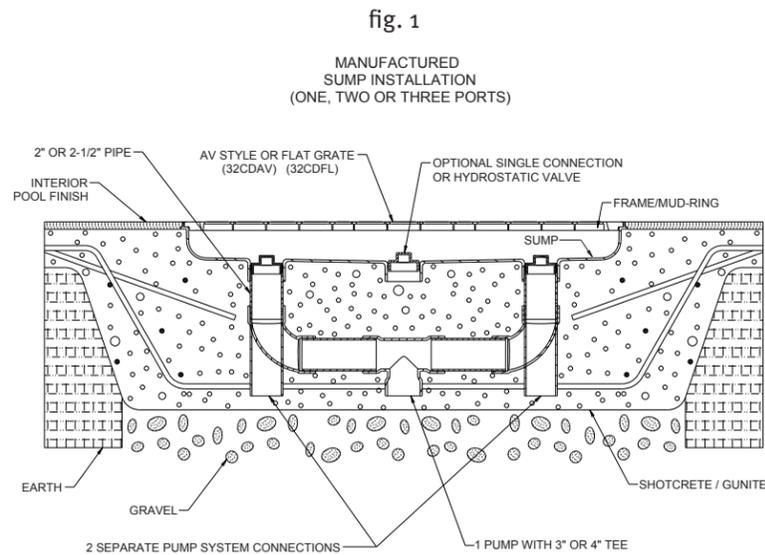
SPECIAL NOTE ON CHANNEL DRAINS TO BUILDER, INSTALLER, PLAN CHECKER AND/OR INSPECTOR! INSTALLATION LAYOUTS

- See fig. 1-5 on pages 7-9 for installation layout with manufactured sump.
- See fig. 6-7 on pages 9-10 for installation layout without sump (field-fabricated sump).
- Requires Phillips screwdriver. Hand tighten only. Do not use electrical or air drills.
- SPECIAL NOTE** : When installing vinyl or fiberglass sump use only ABS to PVC transition cement (all other 32" sumps are PVC). Do not use fast set, clear or "hot" blue glues.
- Measure from underside of high point of the cover to the top of pipe(s) to determine proper sump depth.
- SPECIAL NOTE** : When installing vinyl/fiberglass versions, add a flexible adhesive to fasteners and holes for extra leak and tamper proofing.

MANUFACTURED SUMP INSTALLATION (ONE, TWO or THREE PORTS)

IMPORTANT

- Models: 32CDFLxxx, 32CDAVxxx, 32CDAVFGxxx, 32CDFLFGxxx, 32CDFLVxxx, 32FLACxxx, 32CDAVVxxx, 32CDAVACxxx, 32CDBTxxx, 32CDLTxxx, 32CDLTFGxxx, 32CDLTVxxx, 32CDPHxxx, 32CDPHFGxxx, 32CDPHVxxx (AV=Anti-Vortex)
- Single or multiple drain or pipe use
- At IAPMO (a nationally recognized testing lab), all AquaStar channel drains have been tested to three inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- Any plumbing configuration is approved but do not exceed maximum flow rate!

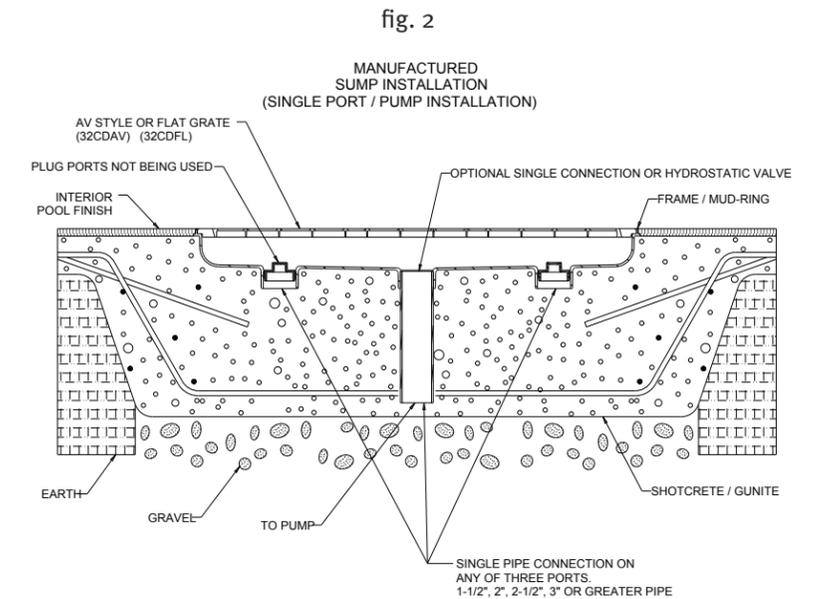


For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

MANUFACTURED SUMP INSTALLATION (SINGLE PORT / PUMP INSTALLATION)

IMPORTANT

- Models: 32CDFLxxx, 32CDAVxxx, 32CDAVFGxxx, 32CDFLFGxxx, 32CDFLVxxx, 32FLACxxx, 32CDAVVxxx, 32CDAVACxxx, 32CDBTxxx, 32CDLTxxx, 32CDLTFGxxx, 32CDLTVxxx, 32CDPHxxx, 32CDPHFGxxx, 32CDPHVxxx (AV=Anti-Vortex)
- Single or multiple drain or pipe use
- At IAPMO (a nationally recognized testing lab), all AquaStar channel drains have been tested to three inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- Any plumbing configuration is approved but do not exceed maximum flow rate

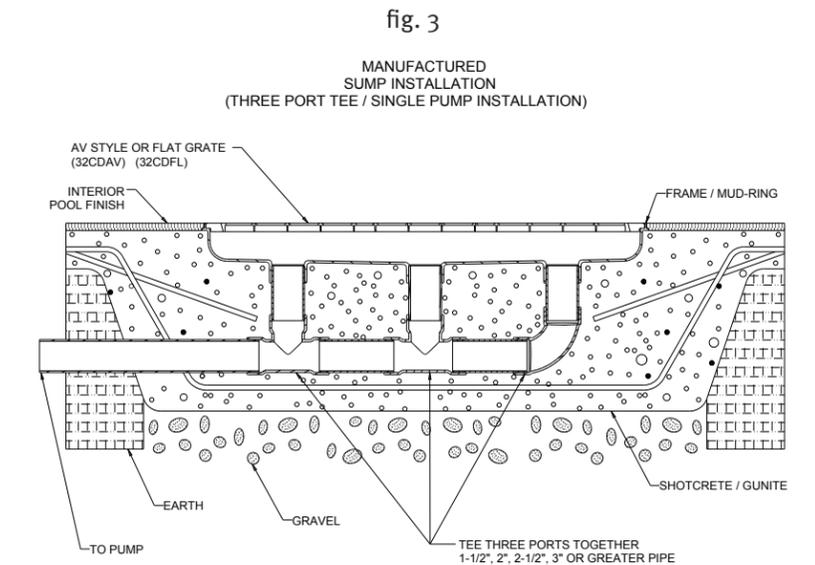


For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

MANUFACTURED SUMP INSTALLATION (THREE-PORT TEE / SINGLE PUMP INSTALLATION)

IMPORTANT

- Models: 32CDFLxxx, 32CDAVxxx, 32CDAVFGxxx, 32CDFLFGxxx, 32CDFLVxxx, 32FLACxxx, 32CDAVVxxx, 32CDAVACxxx, 32CDBTxxx, 32CDLTxxx, 32CDLTFGxxx, 32CDLTVxxx, 32CDPHxxx, 32CDPHFGxxx, 32CDPHVxxx (AV=Anti-Vortex)
- At IAPMO (a nationally recognized testing lab), all AquaStar channel drains have been tested to three inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- Any plumbing configuration is approved but do not exceed maximum flow rate

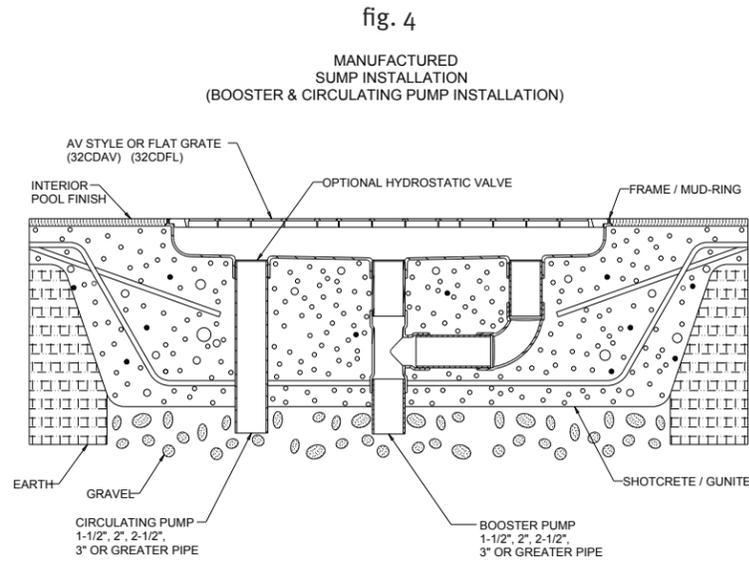


For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

MANUFACTURED SUMP INSTALLATION (BOOSTER & CIRCULATING PUMP INSTALLATION)

IMPORTANT

- Models: 32CDLxxx, 32CAVxxx, 32CAVFGxxx, 32CDLFGxxx, 32CDLVxxx, 32FLACxxx, 32CAVVxxx, 32CAVACxxx, 32CDBTxxx, 32CDLTxxx, 32CDLTFGxxx, 32CDLTVxxx, 32CDPHxxx, 32CDPHFGxxx, 32CDPHVxxx (AV=Anti-Vortex)
- Single or multiple drain or pipe use
- At IAPMO (a nationally recognized testing lab), all AquaStar channel drains have been tested to three inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- Any plumbing configuration is approved but do not exceed maximum flow rate

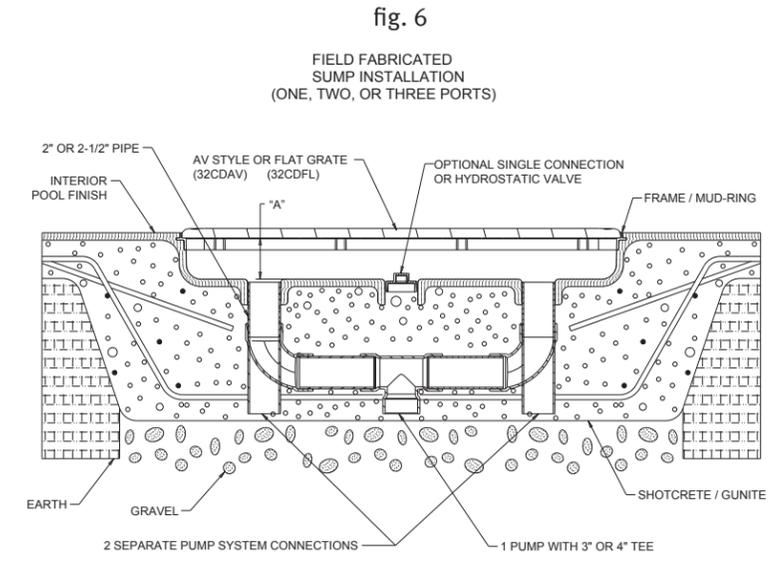


For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

FIELD FABRICATED SUMP INSTALLATION (ONE, TWO or THREE PORTS)

IMPORTANT

- Models: 32CDLFRxxx, 32CDLTFRxxx or 32CAVFRxxx, 32CDBTFRxxx, 32CDPHFRxxx (AV=Anti-Vortex)
- Single or multiple drain use
- At IAPMO (a nationally recognized testing lab), all AquaStar channel drains have been tested to three inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- “A” should be a minimum of three inches to the bottom of cover
- Any plumbing configuration is approved but do not exceed maximum flow rate

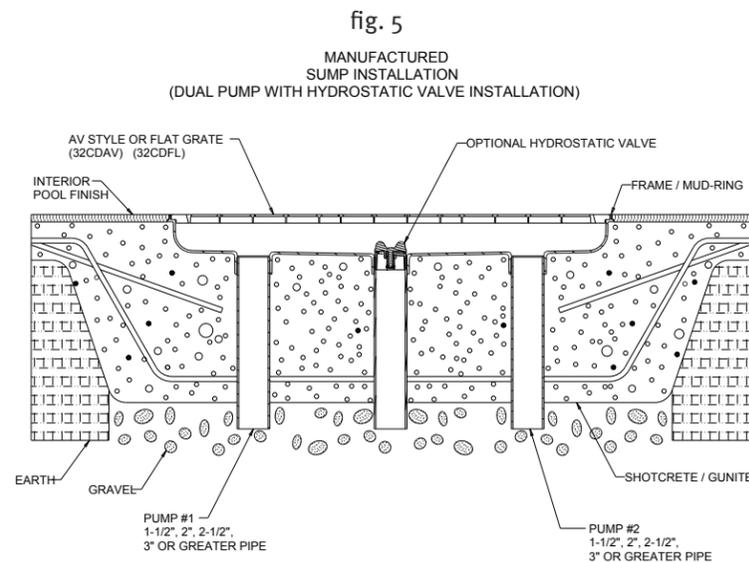


For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

MANUFACTURED SUMP INSTALLATION (DUAL PUMP WITH HYDROSTATIC VALVE INSTALLATION)

IMPORTANT

- Models: 32CDLxxx, 32CAVxxx, 32CAVFGxxx, 32CDLFGxxx, 32CDLVxxx, 32FLACxxx, 32CAVVxxx, 32CAVACxxx, 32CDBTxxx, 32CDLTxxx, 32CDLTFGxxx, 32CDLTVxxx, 32CDPHxxx, 32CDPHFGxxx, 32CDPHVxxx (AV=Anti-Vortex)
- Single or multiple drain or pipe use
- At IAPMO (a nationally recognized testing lab), all AquaStar channel drains have been tested to three inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- Any plumbing configuration is approved but do not exceed maximum flow rate

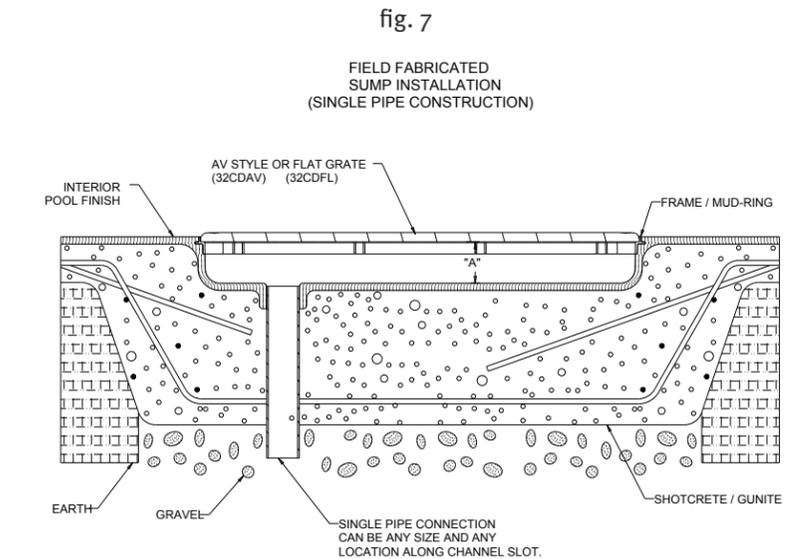


For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

FIELD FABRICATED SUMP INSTALLATION (SINGLE PIPE CONSTRUCTION)

IMPORTANT

- Models: 32CDLFRxxx, 32CDLTFRxxx, or 32CAVFRxxx, 32CDBTFRxxx, 32CDPHFRxxx (AV=Anti-Vortex)
- Single or multiple drain use
- At IAPMO (a nationally recognized testing lab), all AquaStar Channel Drains have been tested to 3 inches in sump depth – field-fabricated or manufactured
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-, two- or three-pipe connections are approved at any port or configuration under manufactured sump or field-fabricated sump
- “A” should be a minimum of three inches to the bottom of cover
- Any plumbing configuration is approved but do not exceed maximum flow rate



IMPORTANT

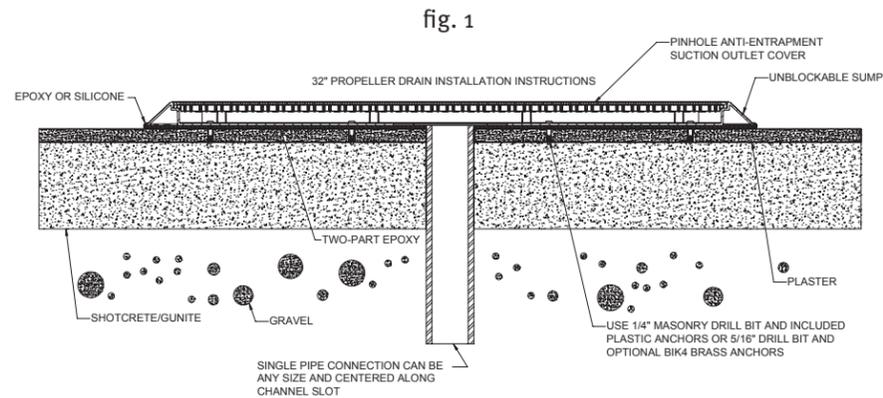
* AT IAPMO (A NATIONALLY RECOGNIZED TESTING LAB), ALL AQUASTAR SUCTION OUTLET COVERS HAVE BEEN TESTED WITH 3" DEEP SUMPS (UNLESS OTHERWISE INDICATED).

For additional information on proper drain installation refer to The Association of Pool & Spa Professionals ANSI/APSP-7 Standard and the U.S. Consumer Product Safety Commission Guidelines for Entrapment Hazard.

32" PINHOLE ANTI-ENTRAPMENT SUCTION OUTLET COVER AND PROPELLER MANUFACTURED SUMP – 32PDxxx INSTALLATION

IMPORTANT

- Model: 32PDxxx
- Single or multiple drain use
- At IAPMO (a nationally recognized testing lab), the Propeller™ drain sump and cover was tested at zero inch sump depth
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-pipe connection can be any size and centered along channel slot in sump
- Any plumbing configuration is approved but do not exceed maximum flow rate
- **IMPORTANT:** The unblockable Propeller™ drain sump must be permanently and securely affixed to the pool floor using epoxy around the entire edge and the enclosed plastic anchors or optional brass anchors.



The sump must be permanently and securely affixed to the pool floor using epoxy around the entire edge and the enclosed plastic anchors or optional brass anchors. Once this is completed, the sump becomes a permanent part of the pool structure, creating an unblockable drain. The drain cover is then affixed to the sump using the designated screws.

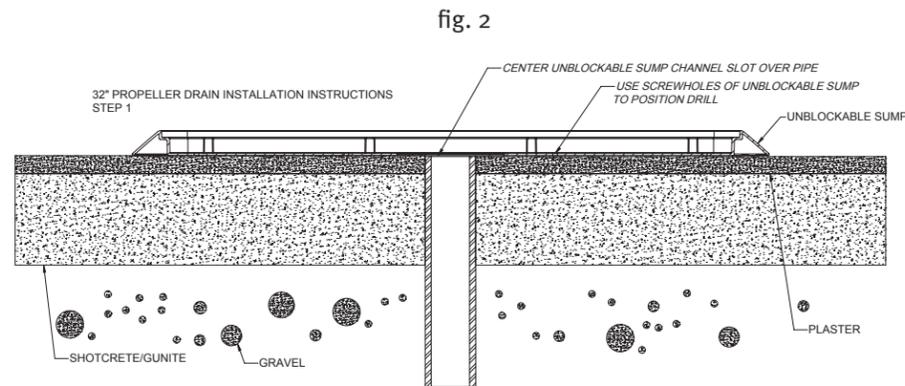
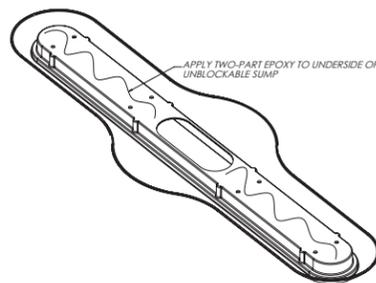
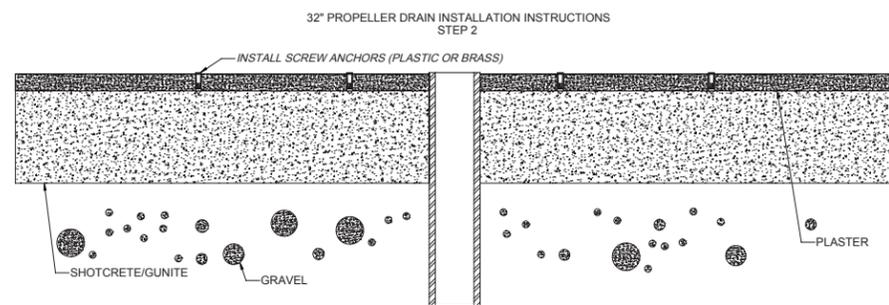


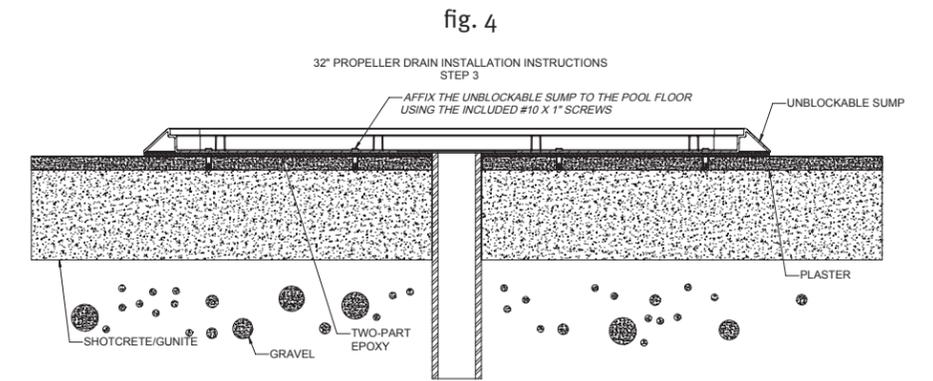
fig. 3



32PDxxx INSTALLATION CONTINUED

IMPORTANT

- Model: 32PDxxx
- Single or multiple drain use
- At IAPMO (a nationally recognized testing lab), the Propeller™ drain sump and cover was tested at zero inch sump depth
- All AquaStar channel drains are VGB 2008 compliant
- Plumbing to one or two pumps plus skimmer equalizer are approved – DO NOT exceed maximum flow rate of outlet cover for total system
- One-pipe connection can be any size and centered along channel slot in sump
- Any plumbing configuration is approved but do not exceed maximum flow rate
- **IMPORTANT:** The unblockable Propeller™ drain sump must be permanently and securely affixed to the pool floor using epoxy around the entire edge and the enclosed plastic anchors or optional brass anchors.



The sump must be permanently and securely affixed to the pool floor using epoxy around the entire edge and the enclosed plastic anchors or optional brass anchors. Once this is completed, the sump becomes a permanent part of the pool structure, creating an unblockable drain. The drain cover is then affixed to the sump using the designated screws.

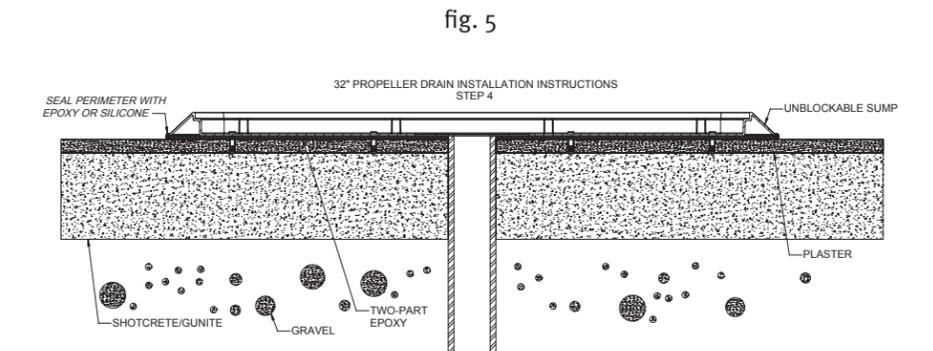
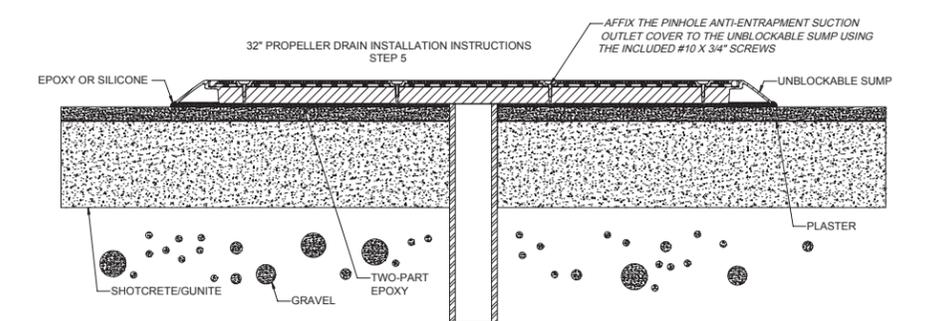
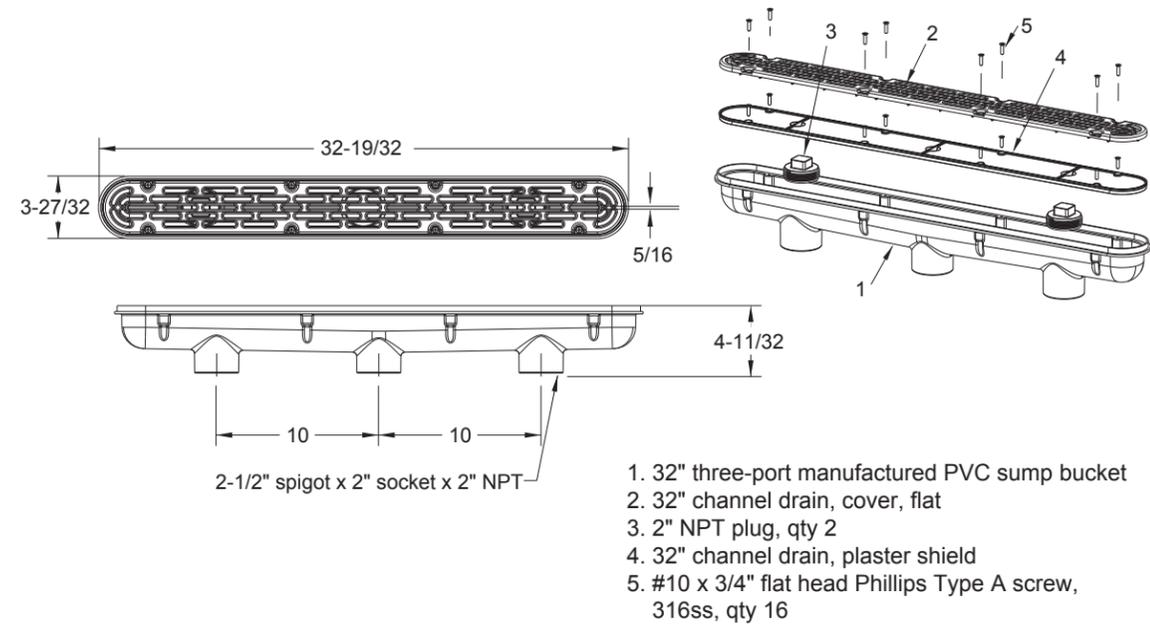


fig. 6



32CDFLxxx

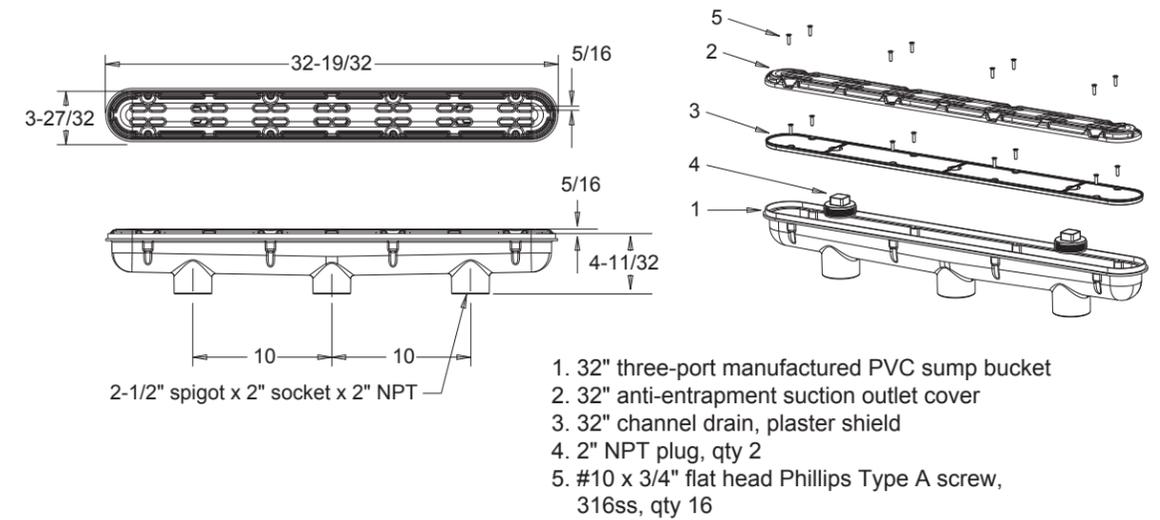


2-1/2" spigot x 2" socket x 2" NPT

1. 32" three-port manufactured PVC sump bucket
2. 32" channel drain, cover, flat
3. 2" NPT plug, qty 2
4. 32" channel drain, plaster shield
5. #10 x 3/4" flat head Phillips Type A screw, 316ss, qty 16

Note: unless otherwise specified, plaster shield and screws to be removed after installation.

32CDAVxxx

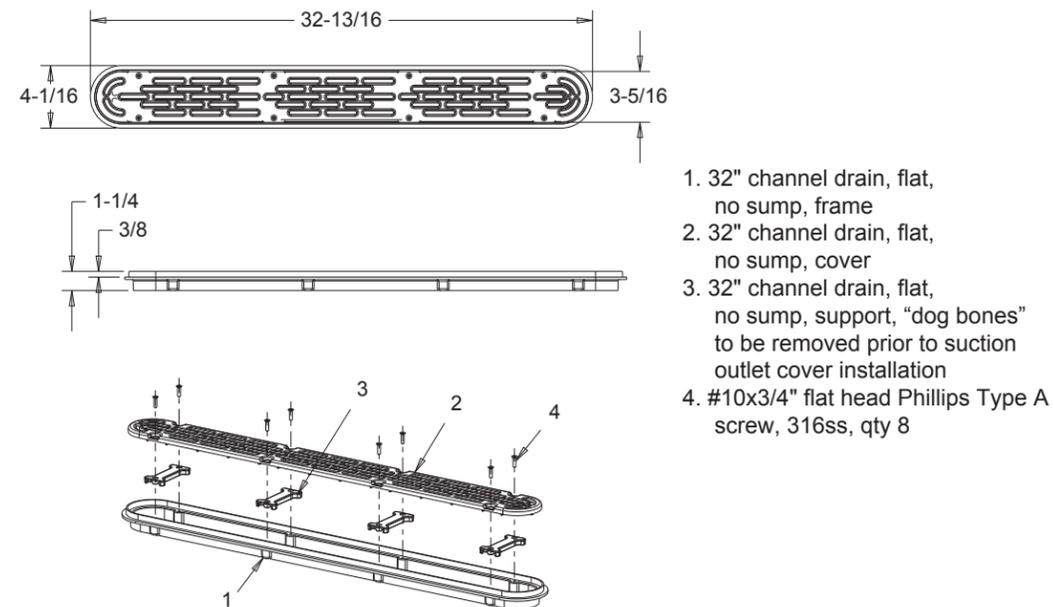


2-1/2" spigot x 2" socket x 2" NPT

1. 32" three-port manufactured PVC sump bucket
2. 32" anti-entrapment suction outlet cover
3. 32" channel drain, plaster shield
4. 2" NPT plug, qty 2
5. #10 x 3/4" flat head Phillips Type A screw, 316ss, qty 16

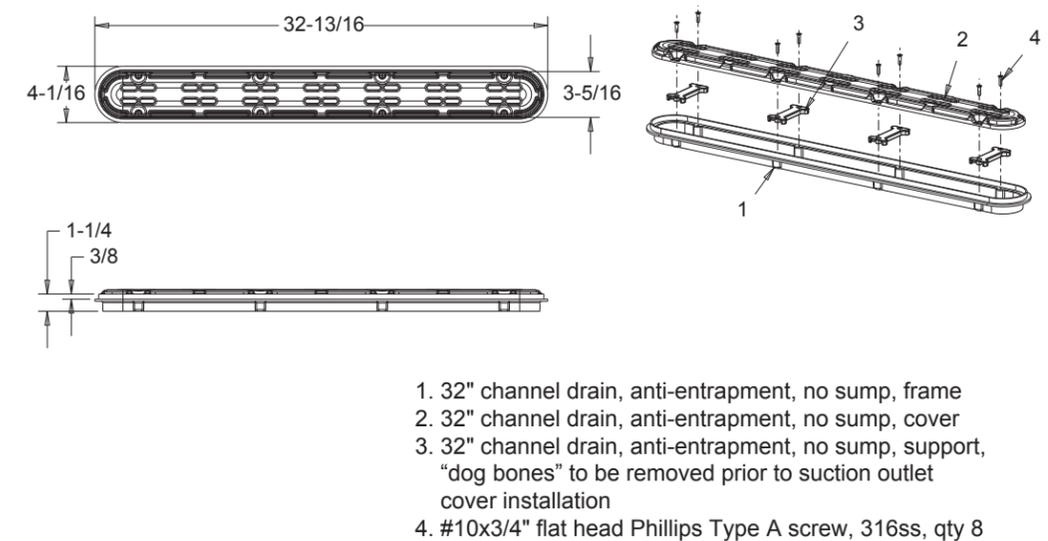
Note: unless otherwise specified, plaster shield and screws to be removed after installation.

32CDFLFRxxx



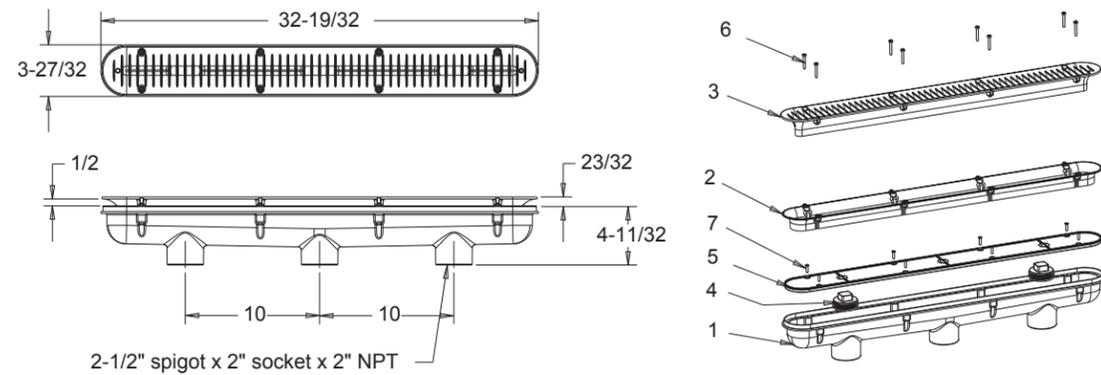
1. 32" channel drain, flat, no sump, frame
2. 32" channel drain, flat, no sump, cover
3. 32" channel drain, flat, no sump, support, "dog bones" to be removed prior to suction outlet cover installation
4. #10x3/4" flat head Phillips Type A screw, 316ss, qty 8

32CDAVFRxxx



1. 32" channel drain, anti-entrapment, no sump, frame
2. 32" channel drain, anti-entrapment, no sump, cover
3. 32" channel drain, anti-entrapment, no sump, support, "dog bones" to be removed prior to suction outlet cover installation
4. #10x3/4" flat head Phillips Type A screw, 316ss, qty 8

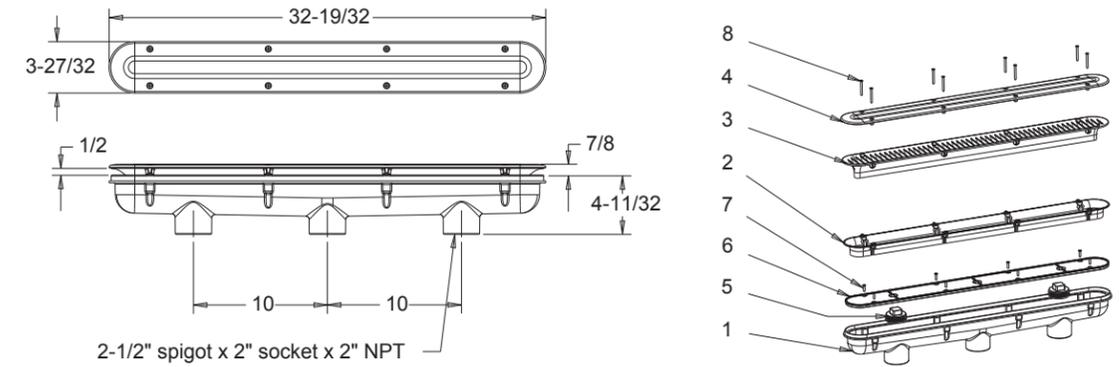
32CDLTxxx



1. 32" three-port manufactured PVC sump bucket
2. 32" leaf trap insert
3. 32" leaf trap cover
4. 2" NPT plug, qty 2
5. 32" channel drain, plaster shield
6. #10 x 3/4" pan head Phillips hi-lo screw, 316 ss, qty 8
7. #10 x 3/4" flat head Phillips type-a screw, 316 ss, qty 8

Note: unless otherwise specified, plaster shield and screws to be removed after installation.

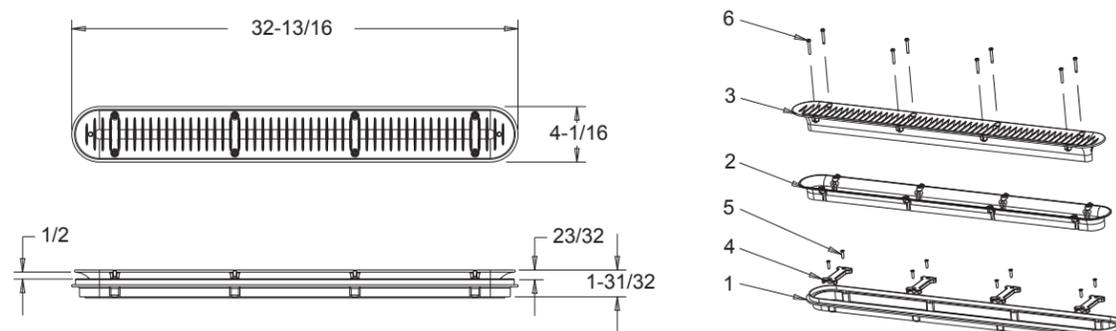
32CDBTxxx



1. 32" three-port manufactured PVC sump bucket
2. 32" leaf trap insert
3. 32" leaf trap cover
4. 32" channel drain "buzz top" cover
5. 2" NPT plug, qty 2
6. 32" channel drain, plaster shield
7. #10 x 3/4" flat head Phillips Type A screw, 316 ss, qty 8
8. #10 x 1-3/4" flat head Phillips Type A screw, 316 ss, qty 8

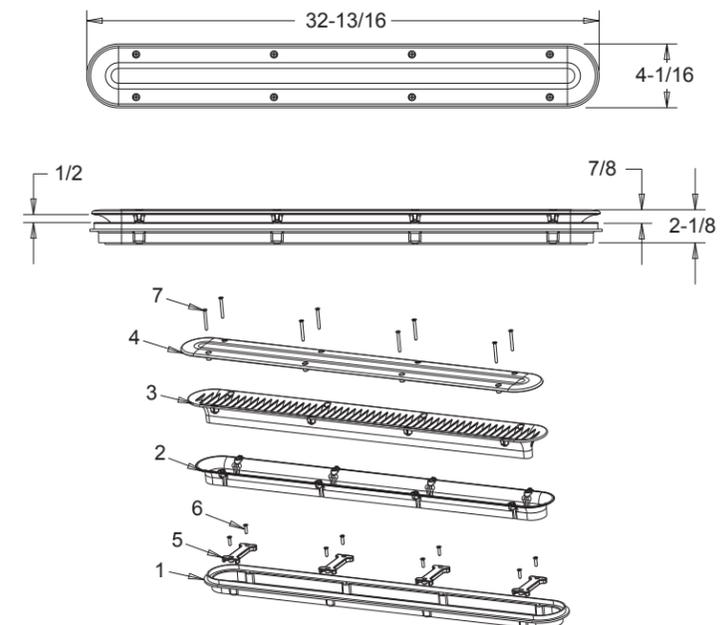
Note: unless otherwise specified, plaster shield and screws to be removed after installation.

32CDLTFRxxx



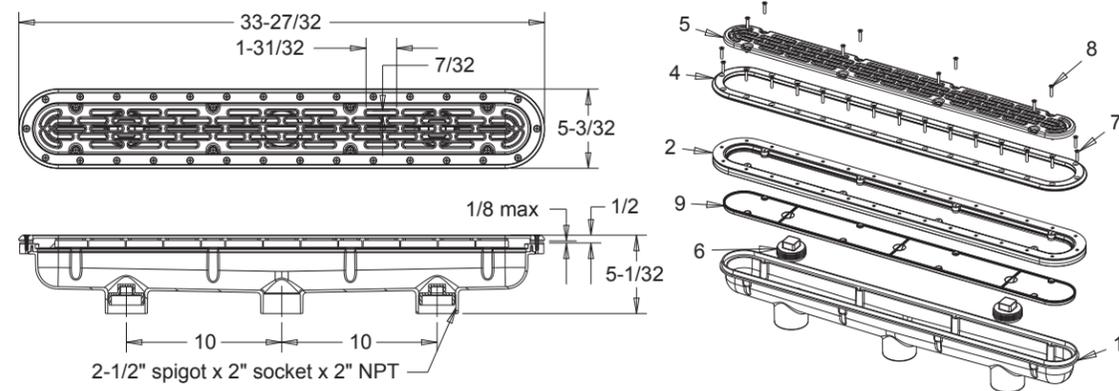
1. 32" channel drain, no sump, frame
2. 32" leaf trap insert
3. 32" leaf trap cover
4. 32" channel drain, frame support "dog bones", qty 4
5. #10 x 3/4" flat head Phillips type-a screw, 316 ss, qty 8
6. #10 x 3/4" pan head Phillips hi-lo screw, 316 ss, qty 8

32CDBTFRxxx



1. 32" channel drain, no sump, frame
2. 32" leaf trap insert
3. 32" leaf trap cover
4. 32" channel drain "buzz top" cover
5. 32" channel drain, frame support "dog bones"
6. #10 x 3/4" flat head Phillips Type A screw, 316 ss, qty 8
7. #10 x 1-3/4" flat head Phillips Type A screw, 316 ss, qty 8

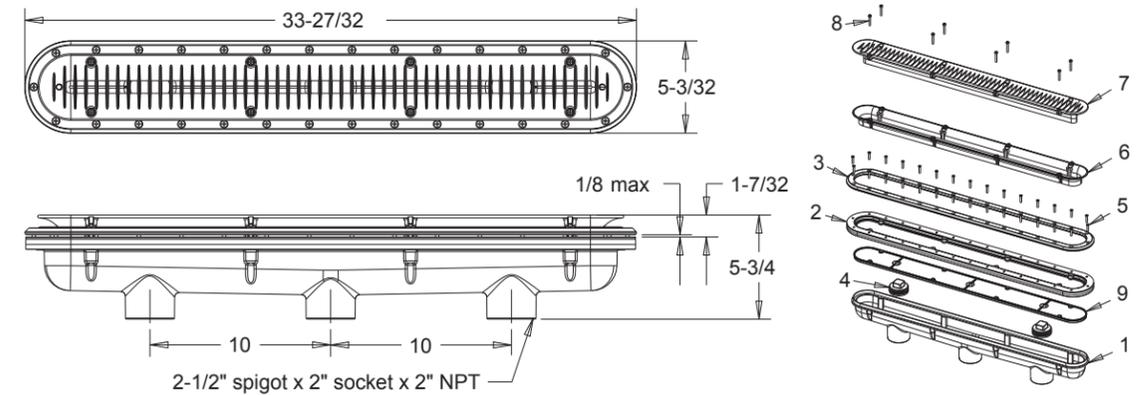
32CDLVxxx VINYL / 32CDLFGxxx FIBERGLASS



- | | |
|--|--|
| 1. 32" three-port manufactured ABS sump bucket | 5. 32" channel drain, plug |
| 2. 32" vinyl clamping frame | 6. #10 x 1" flat head phillips screw, ss |
| 3. 32" vinyl clamping ring | 7. #10 x 1-1/4" flat head Phillips screw, ss |
| 4. 32" channel drain, cover, flat | 8. 32" channel drain, installation plate |

Note: unless otherwise specified, plaster shield and screws to be removed after installation.

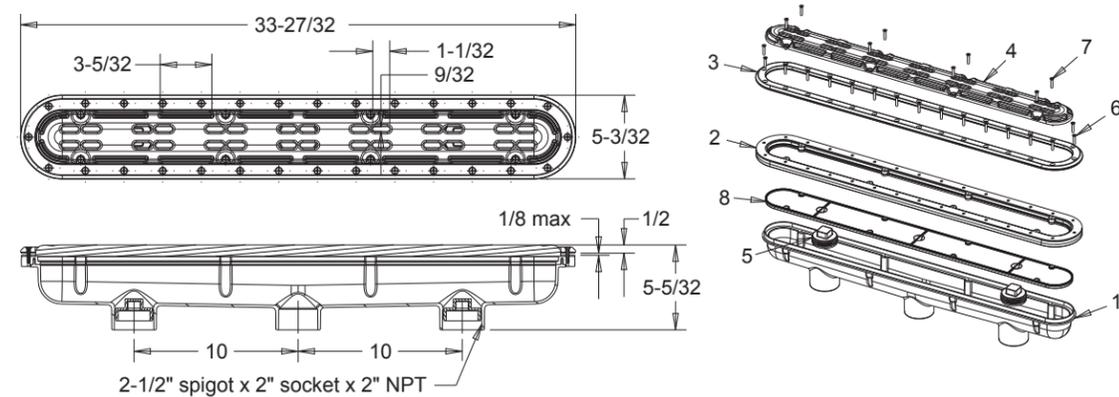
32CDLTVxxx VINYL / 32CDLTFGxxx FIBERGLASS



- | | |
|--|--|
| 1. 32" three-port manufactured ABS sump bucket | 6. 32" leaf trap insert |
| 2. 32" vinyl clamping frame | 7. 32" leaf trap cover |
| 3. 32" vinyl clamping ring | 8. #10 pan head Phillips screw |
| 4. 32" channel drain, plug | 9. 32" channel drain, installation plate |
| 5. #10 x 1" flat head Phillips screw, ss | |

Note: unless otherwise specified, plaster shield and screws to be removed after installation.

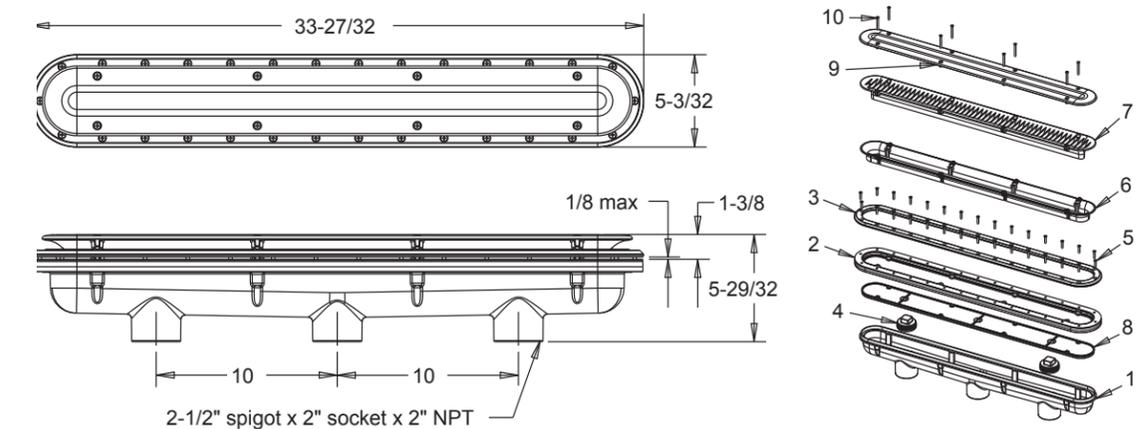
32CDAVVxxx VINYL / 32CDAVFGxxx FIBERGLASS



- | | |
|--|--|
| 1. 32" three-port manufactured ABS sump bucket | 5. 32" channel drain, plug |
| 2. 32" vinyl clamping frame | 6. #10 x 1" flat head Phillips screw, ss |
| 3. 32" vinyl clamping ring | 7. #10 x 1-1/4" flat head Phillips screw, ss |
| 4. 32" anti-entrapment suction outlet cover | 8. 32" channel drain, installation plate |

Note: unless otherwise specified, plaster shield and screws to be removed after installation.

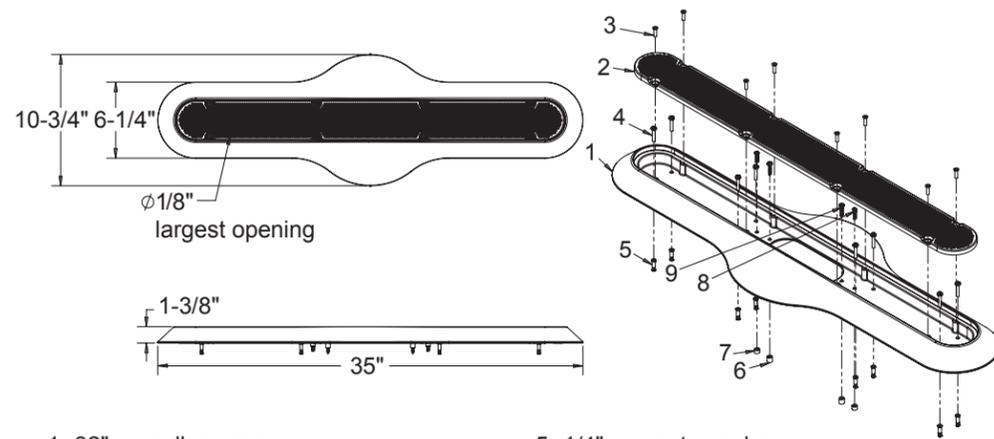
32CDBTVxxx VINYL / 32CDBTFGxxx FIBERGLASS



- | | |
|--|--|
| 1. 32" three-port manufactured ABS sump bucket | 6. 32" leaf trap insert |
| 2. 32" vinyl clamping frame | 7. 32" leaf trap cover |
| 3. 32" vinyl clamping ring | 8. 32" channel drain, installation plate |
| 4. 32" channel drain, plug | 9. 32" debris catcher channel drain cover |
| 5. #10 x 1" flat head Phillips screw, ss | 10. #10 x 1-3/4 flat head Phillips screw, ss |

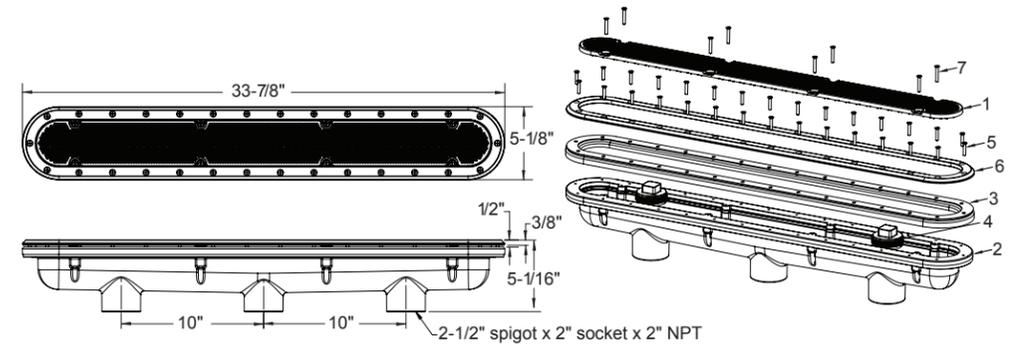
Note: unless otherwise specified, plaster shield and screws to be removed after installation.

32PDxxx



- | | |
|---|---|
| 1. 32" propellor sump | 5. 1/4" concrete anchor |
| 2. 32" channel drain anti-entrapment suction outlet "pinhole" cover | 6. 3/8" bushing |
| 3. #10 x 3/4" flat head Phillips Type A screw, 316 ss | 7. 1/4" bushing |
| 4. #10 x 1" pan head Phillips screw, 316 ss | 8. 8-32 x 3/4" lg pan head Phillips, 316 ss |
| | 9. #10 x 1" lg pan head Phillips, 316 ss |

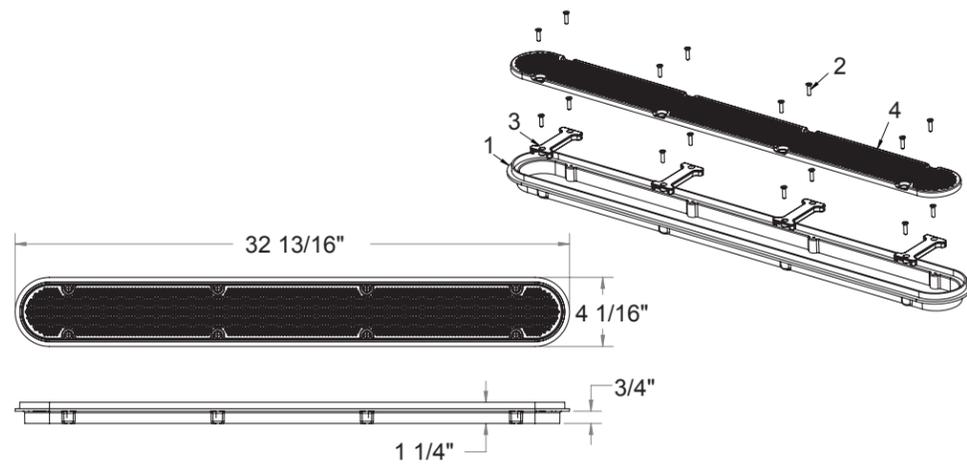
32CDPHVxxx VINYL / 32CDPHFGxxx FIBERGLASS



1. 32" channel drain anti-entrapment suction outlet "pinhole" cover
2. 32" three-port manufactured ABS sump bucket
3. 32" channel drain vinyl clamping gasket
4. 2" NPT plug
5. #10 x 1-1/4" flat head Phillips Type A screw, 316 ss
6. 32" channel drain vinyl clamping ring with gasket
7. #10 x 1" flat head Phillips Type A screw, 316 ss

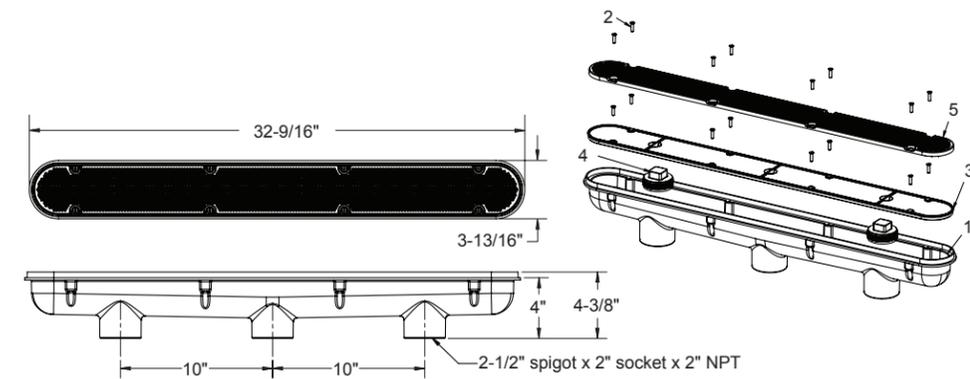
Note: unless otherwise specified, plaster shield and screws to be removed after installation.

32CDPHFRxxx



1. 32" channel drain, no sump, frame
2. #10 x 3/4" flat head phillips type-a screw, 316 ss
3. 32" channel drain, frame support "dog bones"
4. 32" channel drain anti-entrapment suction outlet "pinhole" cover

32CDPHxxx



1. 32" three-port manufactured PVC sump bucket
2. #10 x 3/4" flat head Phillips Type A screw, 316 ss
3. 32" channel drain, plaster shield
4. 2" NPT plug
5. 32" channel drain anti-entrapment suction outlet "pinhole" cover

Note: unless otherwise specified, plaster shield and screws to be removed after installation.

▲ WARNING! SUCTION ENTRAPMENT HAZARD

Increasing pump size will increase flow. When in doubt, consult your pool and spa professional.

Never use a pool or spa that has a missing or broken suction outlet cover.

Using a pool or spa with a missing or broken suction outlet cover can result in hair or body entrapment which can cause severe bodily injury or death. The vacuum in suction outlets and/or suction outlet covers that are damaged, broken, cracked, missing or unsecured can cause severe injury and/or death due to the following entrapment hazards:

HAIR ENTRAPMENT – Hair can become entangled in suction outlet cover.

LIMB ENTRAPMENT – A limb inserted into an opening of a suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing or not securely attached can result in a mechanical bind or swelling of the limb.

BODY SUCTION ENTRAPMENT – A negative pressure applied to a large portion of the body or limbs can result in an entrapment.

EIVISCERATION/DISEMBOWELMENT ENTRAPMENT – A negative pressure applied directly to the intestines through an unprotected suction outlet sump or suction outlet cover which is damaged, broken, cracked, missing or unsecured can result in evisceration/disebowelment entrapment.

MECHANICAL ENTRAPMENT – There is a potential for jewelry, swimsuit, hair decorations, a finger, a toe or a knuckle to be caught in an opening of a suction outlet cover resulting in mechanical entrapment.

▲ WARNING! TO REDUCE THE RISK OF ENTRAPMENT HAZARD

If not an approved single, unblockable outlet, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall) must be installed a minimum of three feet (1 meter) apart, as measured from near point to near point. Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas. If any suction outlets are located closer they shall be located on two different planes (i.e. one on the bottom and one on the vertical wall, or one each on two separate vertical walls). The maximum system flow rate shall not exceed the flow rating of any listed (per ASME/ANSI A112.19.8-2007) suction outlet cover installed. Never use pool or spa if any suction outlet component is damaged, broken, cracked, missing or not securely attached. Replace damaged, broken, cracked, missing or not securely attached suction outlet components immediately. In addition to two or more suction outlets per pump installed in accordance with latest APSP, IAF Standards and CPSC guidelines, follow all national, state and local codes applicable. Use only transitional (typically green) glues when attaching PVC pipe to ABS fittings. Use gray medium set glue when attaching PVC pipe to our PVC based skimmers and double-deep sump buckets. In both cases, do not ever use blue glue or related hot glues, clear glues or any fast-setting cement.

WARNING! – Failure to remove pressure test plugs and/or plugs used in winterization of the pool/spa from the suction outlets can result in increased potential for suction entrapment as described above.

WARNING! – Failure to keep suction outlet components clear of debris such as leaves, dirt, hair, paper and other material can result in increased potential for suction entrapment as described above.

WARNING! – Suction outlet components have a finite life; the cover/grate should be inspected before each use of facility and replaced at least every five years or if found to be damaged, broken, cracked, missing, not securely attached or missing screws. **DO NOT** use facility until corrected!

As the manufacturer, AquaStar Pool Products, Inc., hereby certifies that its suction outlet and drain covers meet or exceed the requirements of the Virginia Graeme Baker Pool & Spa Safety Act, VGB 2008 and ANSI/APSP-16 2011 standards and safety regulations as set forth by the U.S. Consumer Products Safety Commission.

A copy of this certificate is available on our website under Info/FAQ: www.aquastarpoolproducts.com

A Safe Drain is No Accident™



PHONE: 877.768.2717 FAX: 877.276.POOL