MDX² INSTALLATION MANUAL

CONCRETE POOLS

SUBMERGED SUCTION OUTLET
FOR MULTIPLE DRAIN USE
FOR USE ON FLOOR

SEE SPECIAL INSTRUCTIONS
FOR CALIFORNIA AND
FLORIDA ON PAGES
4 AND 5

Safety compliant according to the Virginia Graeme Baker
Pool and Spa Safety Act ASME A112.19.8 - 2007

U.S. Patent No.: 6,810,537, 7,089,607, 7,178,179

Notice to Installers:
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 and use
of suction outlet fittings.

WARNING: MDX² and SDX must be installed in accordance
with Paramount’s written instruction manual, and in conformi-
ty with applicable Federal, State, Local and Swimming pool
industry building and safety codes.
WARNING
KNOW DROWNING HAZARD.
DO NOT GO NEAR THE SUCTION FITTINGS OR DRAINS OF YOUR POOL OR SPA. YOUR HAIR OR BODY
MAY BECOME TRAPPED CAUSING PERMANENT INJURY OR DROWNING.

DO NOT ENTER THE POOL OR SPA IF SUCTION FITTINGS OR DRAIN COVERS ARE LOOSE, BROKEN, OR
MISSING. INSPECT SUCTION FITTING INCLUDING FASTENERS FOR DAMAGE ON TAMPERING BEFORE
EACH USE OF THIS FACILITY.

WARNING
RISK OF SEVERE INJURY OR DROWNING IF SUCTION SYSTEMS ARE NOT INSTALLED PROPERLY!

NOTICE TO OWNER:
READ, FOLLOW, AND KEEP THESE SAFETY INSTRUCTIONS FOR FUTURE REFERENCE.

WARNING
THIS POOL MAY HAVE VENT TUBES AS A LAYER OF ENTRAPMENT AVOIDANCE ON THE SUCTION OUTLETS!
IF A VENT TUBE IS INSTALLED ON THIS SYSTEM ATTACH THE ENCLOSED WARNING LABELS TO THE VENT
PIPE AND CONTROL PANEL AS INSTRUCTED ON PAGE 9 OF THIS MANUAL. IF THIS POOL HAS BEEN
WINTERIZED THE VENT MUST BE INSPECTED WHEN STARTING THE POOL FOR THE SEASON. REMOVE THE PLUG FROM
THE ATMOSPHERIC VENT PIPE BEFORE ENERGIZING THE POOL PUMP(S)! TEST THE VENT BY BLOCKING THE DRAIN.
AIR SHOULD ENTER THE PIPE AND CAUSE THE PUMP TO CAVITATE RELEASING THE SUCTION ON THE DRAIN BLOCK.

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.
The MDX² Anti-Entrapment Debris Drain is only available to certified contractors for the same reason certified
electricians are required to connect filtration pumps to public utilities; both require proper training and certification to
assure no hidden hazards are built into the project.
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 MDX², skimmers, gutters, negative edge features and many
  more products and piping designs known to professionals.
- Install ASME A112.19.8 - 2007 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.

WARNING: MDX² and SDX 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.

For technical assistance call 1-800-621-5886 or contact your regional representative.

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System Design:

NOTICE: MDX² and SDX 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. These MDX² instructions provide two methods to choose from, with additional methods for specific jurisdictions, (California and Florida specifically but not limited to those states). Your local codes may require additional safety measures. Paramount Pool & Spa Systems and its representatives cannot recommend or endorse installation methods other than those provided in these MDX² instructions.

NOTICE – Maximum Pump Size:
MDX² is rated for a maximum of 90 GPM (340 LPM). While system flow rate will vary with pump size and the Total Head Loss for a given system, virtually any modern pump is capable of exceeding this limit, therefore it is the responsibility of the system designer to make sure it is not possible to exceed 90 GPM (340 LPM). In the event of one suction outlet being completely blocked, the remaining suction outlets serving that system shall have a flow rating capable of the full flow of the pump(s) for the specific suction system.

NOTICE:
18 inches of 2½" pipe is required to be connected to the center outlet of the MDX². After the 18 inches of 2½" pipe you may reduce to a smaller pipe size, although it is not recommended. Use of 2½" pipe throughout the suction side of the system is strongly encouraged for optimum performance. For your convenience, Paramount Pool & Spa Systems includes the 18 inches of 2½" pipe plus tee with the MDX². To order separately, please see page 10 for the part number.

Design Flow Rate = 90 GPM
Maximum GPM = 90
Velocity at 90 GPM = 1.368 FPS

For technical assistance call 1-800-621-5886 or contact your regional representative.
Installation Method 1:

**WITH CANISTER**

1. **METHOD 1 WITH CANISTER, WITH VENT**
   - 2 1/2" 2 1/2" 2 1/2" X 18"
   - SDX 2ND SUCTION OUTLET
   - PLUG 2 1/2" SIDE PORT (IF NOT USING HYDROSTAT, PLUG 2" PORT)
   - Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

2. **METHOD 1 WITH CANISTER, WITHOUT VENT**
   - 2 1/2" TO PUMP
   - 2 1/2" 2 1/2" X 18"
   - SDX 2ND SUCTION OUTLET
   - PLUG 2 1/2" SIDE PORT (IF NOT USING HYDROSTAT, PLUG 2" PORT)
   - Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

**WITHOUT CANISTER**

1. **METHOD 1 WITHOUT CANISTER, WITH VENT**
   - 2 1/2" TO PUMP
   - 2 1/2" 2 1/2" X 18"
   - SDX 2ND SUCTION OUTLET
   - VACUUM BREAKER (VENT TO AIR)
   - PLUG 2 1/2" SIDE PORT (IF NOT USING HYDROSTAT, PLUG 2" PORT)
   - Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

2. **METHOD 1 WITHOUT CANISTER, WITHOUT VENT**
   - 2 1/2" TO PUMP
   - 2 1/2" 2 1/2" X 18"
   - SDX 2ND SUCTION OUTLET
   - PLUG 2 1/2" SIDE PORT (IF NOT USING HYDROSTAT, PLUG 2" PORT)
   - Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

*Note: Canister requires 1½" equalizer line through pool wall. (Not Shown)*

For technical assistance call 1-800-621-5886 or contact your regional representative.
**Installation Method 2:**

**WITH CANISTER**

1. Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

**WITHOUT CANISTER**

1. Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

*Note: Canister requires 1½" equalizer line through pool wall. (Not Shown)*

For technical assistance call 1-800-621-5886 or contact your regional representative.
Installation Method 1 (California):

**WITH CANISTER**

**WITHOUT CANISTER**

*Note: Canister requires 1½” equalizer line through pool wall. (Not Shown)*

Installation Method 2 (California):

*Note: Canister requires 1½” equalizer line through pool wall. (Not Shown)*

For technical assistance call 1-800-621-5886 or contact your regional representative.
Installation Method 1 (Florida):

**WITH CANISTER**

*Note: Canister requires 1½” equalizer line through pool wall. (Not Shown)*

**WITHOUT CANISTER**

Trunk line must be sized to meet maximum velocity requirements for suction plumbing per local code.

**NOTE:** As of March 1, 2009 builders in Florida may use Installation Methods 1 and 2 on Page 2 and 3.
MDX² INSTALLATION

Plumbing:
1. Position the MDX² Sump 1" below the finished depth of the interior surface of the pool, spa or basin. (Page 8, Fig. 5) Orientate the Sump so the sweep elbow is perpendicular to a side wall or endwall of pool.
2. Position the REQUIRED SDX High Flow Safety Drain™ on a sidewall of the pool, spa or basin. The 2nd Suction Outlet may be positioned on the floor a MINIMUM of three (3) feet away from any other Suction Outlet.

HYDROSTATIC FITTING: The hydrostatic port inside the MDX² Sump is equivalent to a 2" Threaded Female Adapter and a 2" Slip Fitting Outside the MDX² Sump. This port is for the purpose of a hydrostat only. Paramount recommends the use of the 2" thread plug provided. Do not use check valves here that are prone to sticking open causing the need to open the drain cover exposing a suction risk. If a hydrostat is not used, plug this port from bottom with pipe and cap. Do not install any suction equipment (pump) to this port!

MDX² PRESSURE TESTING

Pressure Test-READ BEFORE INSTALLATION:
New Style Test Plug
The 2 1/2" pressure test plugs (005-252-1611-00) use an o-ring to make the seal.

Wrap once with Teflon tape to prevent plastic threads from binding. Insert plug into threaded socket. Set plug wrench on lug and tighten by hand until snug. Over tightening may cause parts to break.

Pressure should remain on the system through construction until interior cleanup.

Notice:
Release pressure on the system before removing plugs
*Key can be removed for desired plaster ring alignment.

For technical assistance call 1-800-621-5886 or contact your regional representative.
The SDX High Flow Safety Drain™ 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 water tight 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)*

**Rebar Steel (Fig. 3)**
Concrete reinforcing steel should be kept 3" away from all pipe and fittings.

**Concrete Shell Sump (Fig. 1)**
Form a concrete sump around each suction pipe.

**Concrete Shell Preparation (Fig. 2)**
Prior to installing the interior finish, cut each SDX 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 ½ times the pipe diameter behind the drain cover. This is to allow room for even water flow through all drain cover holes. This is not necessary with the SDX 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.

For technical assistance call 1-800-621-5886 or contact your regional representative.
Concrete Ring Installation (Fig. 3)
1. Apply interior finishing material.
2. Position the SDX 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 SDX Concrete Ring.
4. Form a watertight seal around the suction pipe.
5. Wipe clean any finishing material that remains on the SDX Concrete Ring’s top edge and mounting surface.

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

For technical assistance call 1-800-621-5886 or contact your regional representative.
STEEL & CONCRETE INSTRUCTIONS

Keep rebar 3” away from MDX² sump.
1. To allow the sump to be fully encased in concrete, clear dirt to completely expose the sweep elbow. (Fig. 5)
2. Pack concrete around and under sump (Fig. 5) to ensure seal and strength of shell.
3. Angle shell down to MDX² sump. (Fig. 5) (Flatten area around Sump 24X24).
4. Make cut-out around MDX² sump. 24” round by 1¼” deep. (Fig. 6 & 8)

Plaster Ring Installation:
Set the plaster ring at final finish.
1. Align the Plaster Ring Keyway with the Sump Alignment Key. (Fig. 7)
   Note: Sump alignment key can be removed if desired allowing 360° of plaster ring alignment.
2. Adjust the elevation and the angle of the Plaster Ring to align it with the finished interior surface of the pool, spa, or basin.
3. Press into finish material and trowel surface flush with to edge of plaster ring.

Assemble the drain PRIOR TO ADDING WATER (see illustration on page 10 for reference):
1. Install upper support (#5) onto plaster ring (#4) and secure with 8 (eight) security screws (#6) with screw driver security T25 (#20).
2. Install the cover (#7) onto the upper support (#5) and secure with 6 (six) phillips screws (#8) and 2 (two) phillips screws (#9).

For technical assistance call 1-800-621-5886 or contact your regional representative.
MDX² WINTERIZATION

WITH CANISTER

If vacuum relief suction outlets are located below freeze line skip steps 1 and 2.
1. Remove grate from wall drain and install a 13-¾ blow through plug and blow line to achieve airlock.
2. If 3rd suction line is installed remove grate, install a 13-¾ blow-through plug and blow line to achieve airlock.
3. Go to canister instructions step 1 - 4 below.
4. If vent line is installed in main suction line, plug vent line and install blow through plug in pump inlet and blow line to achieve airlock.
5.Lastly, blow vent line to achieve airlock.

PARAMOUNT CANISTER WINTERIZATION

1. Remove outer lid, inner lid and basket, clean and dry off, and store in same area as modules
2. Install and secure regular winterization plug in equalizer line of canister to pool at poolside.
3. Install and secure Schrader plug or blow out plug from canister to main drain. Blow out and obtain air lock as previously described, if skimmer is tied into canister, repeat procedure to skimmer.
4. Bottom port of canister to pump may require an extended pipe for ease of blowing out. Install and blow out line from canister to pump. Install and secure plug in pump. Using shop vac, remove all water from within canister components.
5. Extension pipe can be removed and replaced with plug or Gizmo type container if Gizmo not used. Be sure to install device to absorb ice expansion in canister area. Failure to do this may result in potential ice freeze damage to canister.

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

Additional questions should be forwarded to Paramount’s corporate office at 1.800.621.5886.

VENT TUBE WARNING LABELS

Included in each MDX² are two warning labels that need to be placed on the pool equipment if the pool is to be winterized and has a vent tube on any of the drains plumbed on the pool. Attach the smaller label to the vent pipe where it terminates to atmosphere. (See Fig. 9)

Attach the larger label to the control panel next to the controller for the pump with the vent pipe plumbed to it. (See Fig. 10)

For technical assistance call 1-800-621-5886 or contact your regional representative.
### Available Construction Caps

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<tr>
<th>Item</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
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<td>Cap not used.</td>
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<tr>
<td>1</td>
<td>005-202-2013-00</td>
<td>Sump MDX Concrete - 2½&quot;</td>
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<tr>
<td>2</td>
<td>005-252-1611-00</td>
<td>Plug Pressure Test 2½&quot; w/ O-Ring (4 pk)</td>
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<tr>
<td>3</td>
<td>005-252-1605-00</td>
<td>Plug 2&quot; (6 pk)</td>
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<tr>
<td>4</td>
<td>005-252-2208-00</td>
<td>Plaster Ring</td>
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<td>5</td>
<td>005-202-2206-00</td>
<td>Upper Support</td>
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<td>005-252-0891-00</td>
<td>Screw: No. 10x3/4&quot; Security Head (12 pk)</td>
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<tr>
<td>7</td>
<td>005-252-2204-XX</td>
<td>Cover</td>
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<tr>
<td>8</td>
<td>005-252-0892-00</td>
<td>Screw: No. 8x3/4&quot; Security Head (12 pk)</td>
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<td>9</td>
<td>005-252-0872-00</td>
<td>Screw: No. 8x3/8&quot; Security Head (12 pk)</td>
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<td>*10</td>
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<td>Plaster Cap</td>
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<td>*11</td>
<td>005-202-1148-00</td>
<td>Sump Construction Cap</td>
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<td>006-202-6180-00</td>
<td>Sump Adaptor Kit Required to Reduce Pipe Size</td>
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<td>14</td>
<td>004-162-2212-XX</td>
<td>SDX High Flow Safety Drain (2pk) (XX = Color Code)</td>
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<td>15</td>
<td>005-252-0828-00</td>
<td>Screw: 10x7/8 TORX W/ PIN SS B (12 pcs)</td>
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<td>SDX Cover w/ Screws</td>
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<td>005-252-2050-00</td>
<td>SDX Ring Concrete</td>
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<td>20*</td>
<td>005-252-0895-00</td>
<td>T25 Security Screwdriver</td>
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<tr>
<td>*</td>
<td>004-252-5476-00</td>
<td>Plug Wrench</td>
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</table>

* Not part of MDX²

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