

# MVFUSE

MAGNETIC VACUUM RELEASE

## SAFETY VACUUM RELEASE SYSTEM (SVRS)

FOR DECK APPLICATIONS

OWNER'S MANUAL AND INSTALLATION GUIDE

### **WARNING**

#### **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 and SVRS devices.

The drain system and MVFUSE must be installed in accordance with Paramount's written instruction manual, and in conformity with applicable Federal, State, Local and swimming pool industry building safety codes.



Safety compliant according to the Virginia Graeme Baker Pool and Spa Safety Act ASME A112.19.17-2010 Listed

US and Foreign patents and patents pending see [www.1paramount.com/about/patents/](http://www.1paramount.com/about/patents/)

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## 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.

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# SUCTION ENTRAPMENT HAZARD:



**DANGER**

**Risk of severe injury or drowning if suction systems are not installed properly!**

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 fittings including fasteners for damage or tampering before each use of this facility.

**NOTICE**

Read, follow, and keep these safety instructions for future reference.

## MV FUSE INSTRUCTIONS & WARNINGS:



**WARNING**

The MVFUSE is designed and intended to be used as an additional "layer of protection" to protect against a sudden entrapment event. The MVFUSE is not a stand alone device and should only be used

in conjunction with an ASME a112.19.8 Listed suction fitting rated appropriately for the flow rate of the pump and plumbing system it is connected to.

In the incident of a sudden entrapment event all bathers should exit the pool and not be allowed to reenter until such time as the MVFUSE can be reset, the pump fully primed and the reason for the entrapment is determined and corrected!

The MVFUSE is designed to protect a fully primed pump and may not release vacuum during priming of the pump. No bathers should be allowed in the pool while the pumps are priming!

The MVFUSE is designed to protect against a completely blocked suction system and may not detect a partial blockage, limb or hair entrapment. The MVFUSE is not designed to protect against disembowelment. The only protection from these types of entrapment is a properly fastened and intact ASME a112.19.8 Listed suction cover.

This pool may have an MVFUSE SVRS system as a layer of anti-entrapment protection on the suction outlets! If an MVFUSE SVRS is installed on this system attach the enclosed warning labels to the control panel as instructed on page 10 of this manual. If this pool or spa has been winterized the MVFUSE SVRS must be inspected and tested when starting the pool for the season. Remove the winterizing plugs from the debris canister and install the MVFUSE SVRS before energizing the pump(s)! Test the MVFUSE SVRS by blocking the drain. Air should enter the pipe and cause the pump to cavitate releasing the suction on the drain block. The MVFUSE is not protecting the suction with the winterization plug in place!

The MVFUSE uses a strong magnetic device and care should be taken when handling the unit. To avoid close contact to items affected by magnetism.

**SVRS DEVICES ARE TESTED WITH A SINGLE FUNCTIONING SUCTION OUTLET.**



**DANGER**

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 proper filtration systems:

- 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, MDX2 and SDX, skimmers, gutters, and other products and piping designs known to professionals.
- Install only drains, suction covers and debris removal systems listed to the current published revision of the ASME A112.19.8. 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.

## NOTICE

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.



## WARNING

- **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.

### READ AND FOLLOW SAFETY INSTRUCTION BEFORE INSTALLING MVFUSE.

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 and SVRS devices.

- SVRS devices shall only be installed in conjunction with an ASME A112.19.8 suction fitting, or a 12 in. x 12 in. (305 mm x 305 mm) drain grate or larger, or an approved channel drain system at each suction outlet or drain outlet.
- Check valves and hydrostatic valves shall not be used in suction systems protected by SVRS devices.



## WARNING

The presence of a hydrostatic valve in the suction piping has been shown to prolong the high vacuum present at the drain, even though the drain was protected by an SVRS device.

- All SVRS devices shall be factory set or field adjusted to site-specific hydraulic conditions. Once installed, the system shall be tested by simulating an entrapment event.
- A test mat shall be used to cover the suction outlet to simulate an entrapment event. There shall be three simulated entrapment test conducted to verify proper adjustment and operation of the device.
- One SVRS device shall be installed for each circulating pump plumbed directly to the suction outlet(s) without the use of valves that could isolate the SVRS device from the suction system.

# SYSTEM DESIGN

The MVFUSE is an SVRS device listed by IAPMO to conform to the specifications of ASME A112.19.17-2010. It is factory set for specific design criteria. For use in Paramount's in deck canister the unit is factory set at setting #3 (9.5 +/- .5 in Hg). If adjustment is needed see Test and Adjustment Procedure page 11.

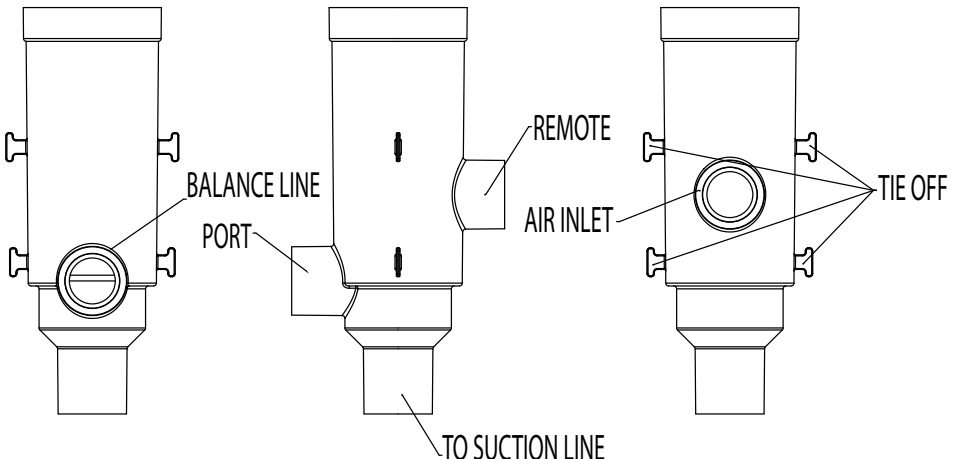


## WARNING

MVFUSE is a listed S.V.R.S. (Safety Vacuum Relief System) that is designed to break suction to prevent suction entrapment injuries and death. Removing, tampering with, modifying, and or changing the setting on the MV FUSE can result in serious injury or death. Please call your pool builder or 1.800.621.5886 for direction.

The following system design is important for nuisance free operation of factory set MVFUSE devices:

- The suction plumbing system should be designed to not exceed 6 feet per second.
- There should be dual ASME A112.19.8-2007 listed suction outlets a minimum of 3 feet apart at the suction inlet to the suction plumbing per one of the methods listed in ANSI/APSP-7 or other applicable building codes such as the IRC, IBC, Federal, State or Local which may be in force.
- The MVFUSE should be teed into the suction line as close to the drain as possible and mounted next to the pool in the deck. The MVFUSE may be installed on all pipe sizes up to 6" with any pump up to 15hp.
- The balance line port on the side of the MVFUSE must be stubbed through the side of the pool or the pump will cavitate.
- Plumbing the remote air line is recommended to avoid the lid of the MVFUSE in the deck being covered and blocked.



# PLUMBING - STANDARD IN-GROUND WALL

Both the canister and MV FUSE are packed together. Remove the MV FUSE and place in a safe area for installation during pool start up.



## WARNING

WARNING: This is a strong magnetic device, it should be kept away from anything that can be affected by magnets.

1. The MV FUSE housing should be plumbed as close to the pool as possible.
2. Tie the housing to the form board above where the suction line will come out of the pool excavation and turn to run across the yard to the equipment. Cut flap from box and fold double thick to use as spacer between form board and housing so lid will fit later.(Fig. 1)
3. Set the top of the housing level with the beam of the pool. If the pool is a negative edge basin set the housing at desired level in basin. The top of the housing is sized to receive 4" pipe and may be extended later when the deck is installed.(Fig. 3)
4. Tee into the main suction trunk line or one of the branch lines near the tee and connect to the bottom port of the MV FUSE. (Fig. 2) The MV FUSE may be connected to a suction pipe up to 6" in diameter and pumps up to 15hp.
5. Plumb the balance line to stub through the pool wall. Cap at rough in. (Fig. 2)



## WARNING

WARNING: The 1 1/2" balance line must be stubbed through the side of the pool or the pump will cavitate. There is no fix for this.

6. (Remote air line is optional) Plumb the remote air line to an inconspicuous location and stub up above water level. Cap at rough in to allow pressure test. (Fig. 1) Paramount recommends running this line for added safety in case the lid though the deck is covered. Cap this line if not used.
7. Install the 1 1/2" plug in the bottom of the housing to pressure test the plumbing system. The MV FUSE should remain under pressure until the pool is started up. (Fig. 4)

FIG. 1

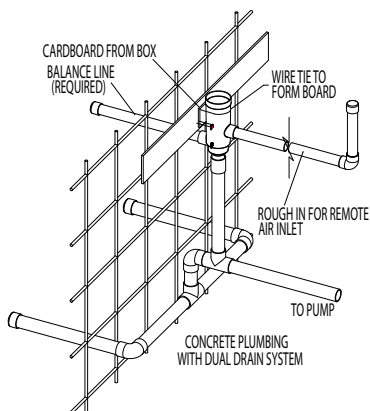


FIG. 2

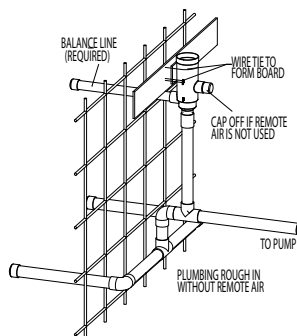


FIG. 3

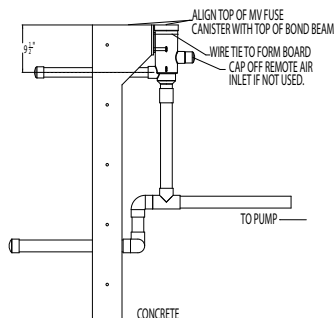
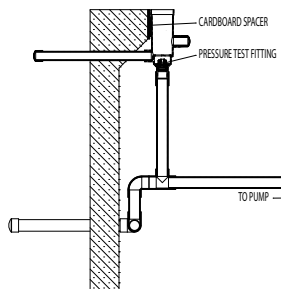


FIG. 4



# PLUMBING - RAISED SPA (WALL MIN. 12" THICK)

1. Set the MVFUSE housing inside the form board so that the inside edge of the pipe is 6" back from the finished concrete shell. Tie to stake so that concrete will fill around housing at form board. (Fig. 6)
2. Set the top of the housing level with the beam of the pool. If the pool is a negative edge basin set the housing at desired level in basin. The top of the housing is sized to receive 4" pipe and may be extended later when the deck is installed. (Fig. 7)
3. Tee into the main suction trunk line or one of the branch lines near the tee and connect to the bottom port of the MVFUSE. (Fig. 6)
4. Plumb the balance line to stub through the pool wall. Cap at rough in. (Fig. 6)



## WARNING

WARNING: The 1 1/2" balance line must be stubbed through the side of the pool or the pump will cavitate. There is no fix for this.

5. When shooting concrete make a 1" cutaway by 4" deep around housing. (Fig. 8)
6. (Remote air line is optional) Plumb the remote air line to an inconspicuous location and stub up above water level. Cap at rough in to allow pressure test. (Fig. 1) Paramount recommends running this line for added safety in case the lid though the deck is covered. Cap this line if not used. (Fig. 7) Minimum 18" wall to fit remote air line.
7. Install the 1 1/2" plug in the bottom of the housing to pressure test the plumbing system. The MVFUSE should remain under pressure until the pool is started up.

FIG. 6

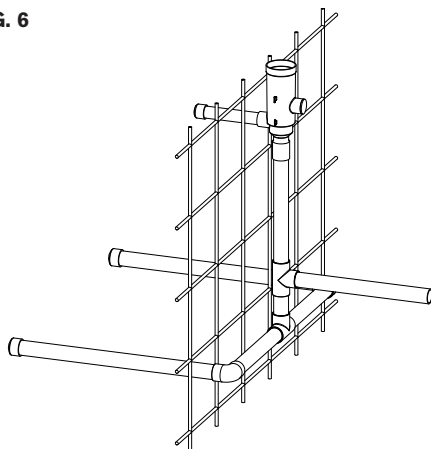


FIG. 7

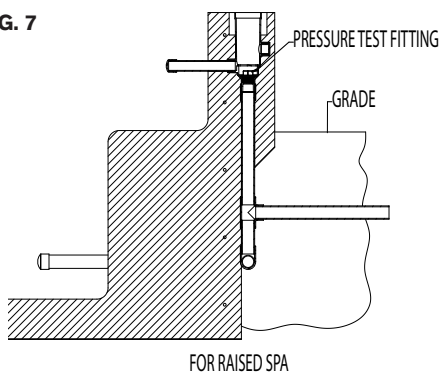
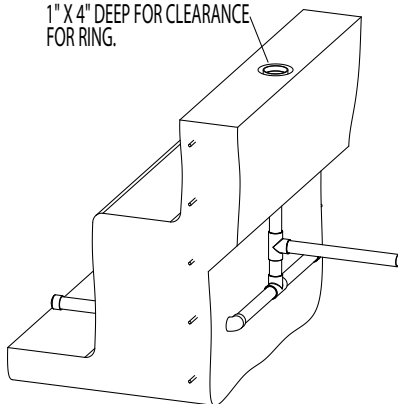


FIG. 8

CUT OUT AROUND HOUSING  
1" X 4" DEEP FOR CLEARANCE  
FOR RING.



# DECK

Use the provided deck ring and lid to provide access to the MVFUSE after the pool shell is completed.

1. The ring slides over the outside of the housing and may be slid up or down to desired deck thickness. Be sure it fits to desired deck thickness before pouring concrete. (Fig. 9)
2. If needed a piece of 4" pipe may be glued into the socket at the top of the housing to extend it raised deck or in the case of negative edge basin. (Fig. 10) Extension Kit (005-252-5522-00)
3. If remote air line is used remove the cap from the end of the line and install double nineties. (Fig. 11)

**DO NOT ALLOW CONCRETE OR GROUT TO FALL INSIDE HOUSING**

FIG. 9

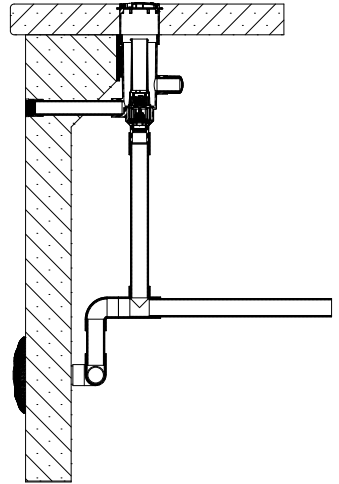


FIG. 10

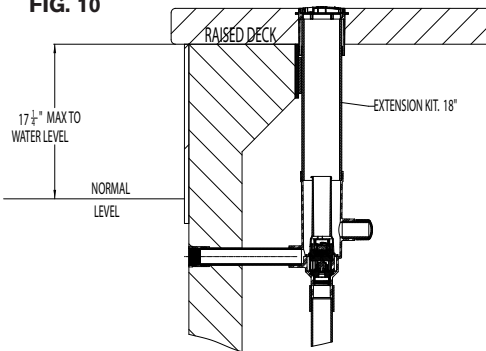
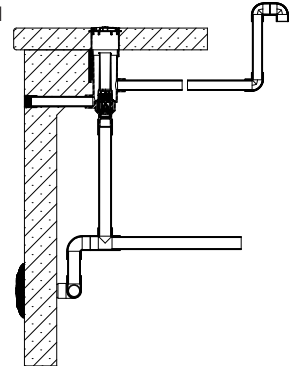
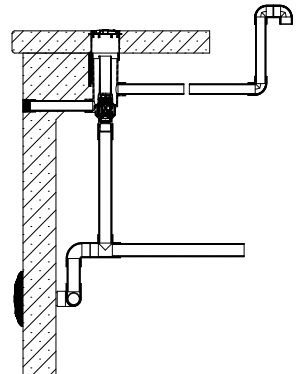


FIG. 11



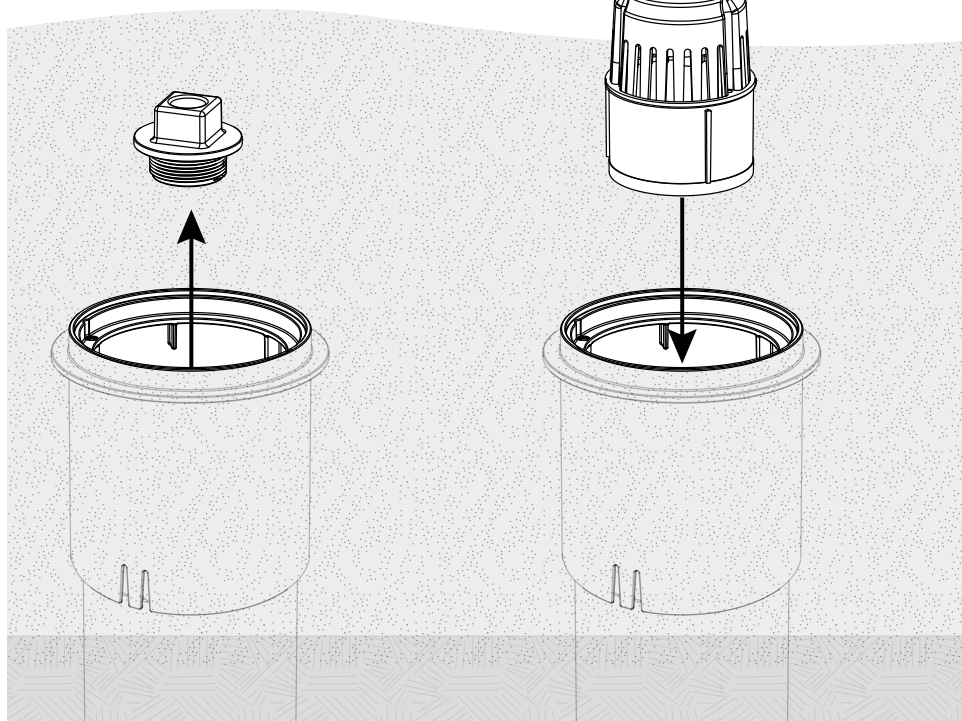
# PLASTER

Cut balance line stub flush with final interior finish of pool. A 1 1/2" fitting may be used to finish end of pipe.



# START UP

1. Remove the pressure plug from the bottom of the MVFUSE housing.
2. Insert MVFUSE assembly into the housing.
3. Turn MVFUSE assembly clockwise until it clicks into place on the retention stops.
4. If the MVFUSE assembly is not held securely it will back out or bounce on startup causing the MVFUSE mechanism to open and cavitate the pump.



# TESTING



## WARNING

**WARNING:** The MVFUSE must be tested at the initial startup of the pool after installation. The MVFUSE should be retested for proper operation once every month or every time the pool filter is cleaned.

To test operation of the MVFUSE with a skimmer in the suction system.

1. Start the pump and ensure full prime then proceed to testing the MVFUSE.
2. If the pool has a skimmer attached to the pump open the skimmer valve all the way.
3. Turn off the pump.
4. Remove the MVFUSE from the canister and install a 2" threaded plug or rubber expansion plug into the drain line inside the canister.
5. Replace the MVFUSE into the canister, turn on the pump and close skimmer valve.
6. The MVFUSE should open within three seconds and allow air into the plumbing causing the pump to cavitate.
7. Turn off the pump, remove the MVFUSE and push the reset plunger on the bottom and replace the MVFUSE in the canister.
8. Open the skimmer valve and re-prime the pump. This test must be done three times to ensure proper operation of the MVFUSE.
9. Once you have determined the MVFUSE is functioning properly remove the plug from the canister and reset the skimmer valve.

Alternate MVFUSE test for plumbing system with no skimmer.

1. Start the pump and ensure full prime then proceed to testing the MVFUSE.
2. Block all drains on the plumbing system with a rubber or vinyl mat.
3. The MVFUSE should open within three seconds and allow air into the plumbing causing the pump to cavitate.
4. Turn off the pump, remove the MVFUSE and push the reset plunger on the bottom and replace the MVFUSE in the canister.
5. Remove the mat and re-prime the pump. This test must be done three times to ensure proper operation of the MVFUSE.
6. Once you have determined the MVFUSE is functioning properly remove all mats.

If the MVFUSE trips when the pump is started before the blockage is applied or the MVFUSE does not open and relieve suction when the valve is closed in step 7 or the mat is applied in alternate step 2, the setting is not correct for your suction system and the MVFUSE must be field adjusted. Please call your pool builder or 1.800.621.5886 for direction or for a trained technician in your area.

### **Troubleshooting: Resetting the MV FUSE after it has been triggered by a high vacuum condition.**

The MV FUSE is designed as a safety device and when a high vacuum is detected the magnet will be pulled open and air will be pulled into the suction line of the the pump causing a release of the vacuum. If this happens, turn off the pump and check the drain for blockage. Once cleared remove the MV FUSE from the canister and push reset plunger on the bottom to an upward position to reset the magnet. Replace the MV FUSE in the canister and restart pump. The pump may need to be primed.



## WARNING

**Warning:** MVFUSE is a listed S.V.R.S. (Safety Vacuum Relief System) that is designed to break suction to prevent suction entrapment injuries and death. Removing, tampering with, modifying, and or changing the setting on the MVFUSE can result in serious injury or death.

# MV FUSE ADJUSTMENT

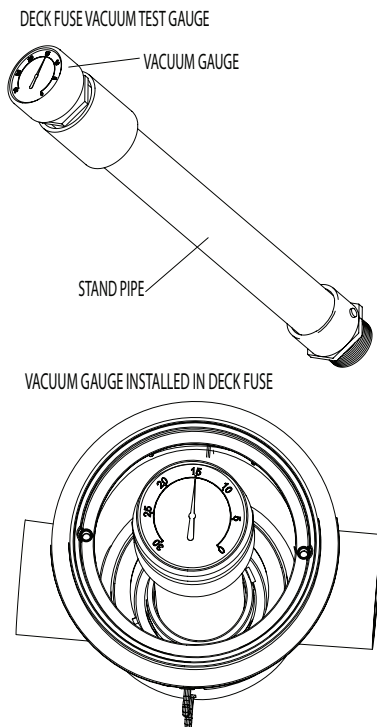
Sometimes improperly built plumbing systems may cause an elevated suction condition at the suction outlet. This can cause the MVFuse to trip when the pump is started. This condition will require the MVFuse to be adjusted to on-site field conditions. MVFuse can be adjusted by the following steps.

## Field Adjustment for Site Specific Conditions

- First clear all baskets and clean the filter. Make sure the pump is on its highest setting and the returns are wide open. This will ensure the maximum suction load at pump startup.
- Second test for the current static vacuum level.
  1. Turn off the pump, remove the MVFUSE
  2. Install the standpipe with the vacuum gauge in the deck canister (Fig1).
  3. Turn on the pump, read the vacuum gauge
- Match the reading from the vacuum gauge with the chart (Fig2). The setting should be 5 inches above the reading to allow for startup surge.

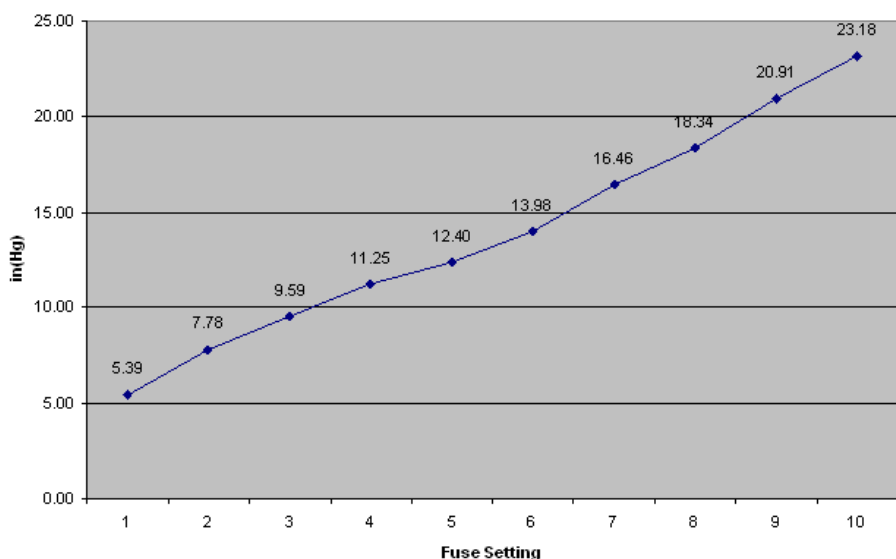
**NOTE WHICH SETTING THIS IS FROM THE CHART BELOW.**

**Fig. 1**



**Fig. 2**

**Fuse Release Points**



- You will need a Torx #10 screwdriver and pliers.
- Change the Setting Deck version
- Using a Torx #10 driver remove the three screws in the handle of the unit. (Fig3)
- Remove the handle. (Fig4)
- Look inside at the magnet housing hanging from a pin in a series of steps. (Fig5) The highest step is the lightest or most sensitive setting shown in the picture. This setting will give the quickest response to an entrapment event. The 3rd step down from the top is the factory setting in the deck version. (Fig6)

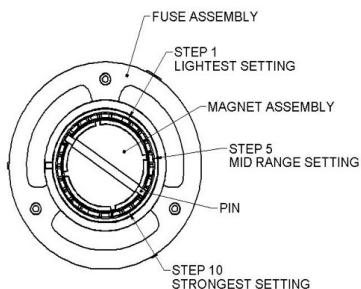


## WARNING

Warning! The closer to the lightest setting (highest step) the MVFuse is set on the more protection you have.

- Grasp the top of the magnet assembly with the pliers and pull it out of the groove it sits in. (Fig7)
- Rotate to the setting selected from the chart. (Fig8)
- Roll the pliers off the part. If you try to pull them off the magnet assembly may come out of the housing assembly. (Fig9)
- Push the magnet assembly into the seat. (Fig10)
- This will slightly increase the magnetic clamping.
- Reassemble unit. The fuse assembly key must be lined up with the slot in the handle or they will not fit together.
- Install the MVFUSE in the canister.
- Turn on the pump.

**Fig. 7**



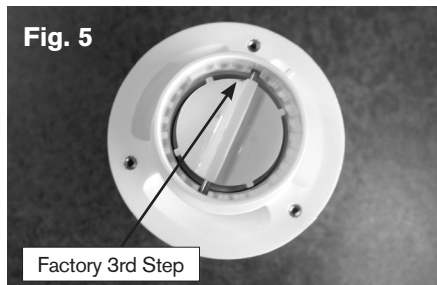
**Fig. 3**



**Fig. 4**



**Fig. 5**



**Fig. 8**



**Fig. 10**



**Fig. 9**



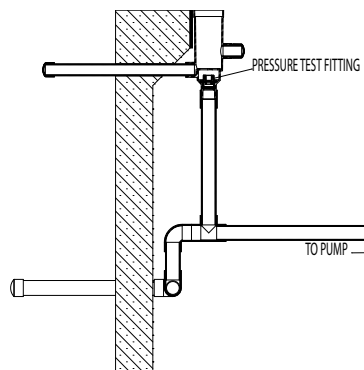
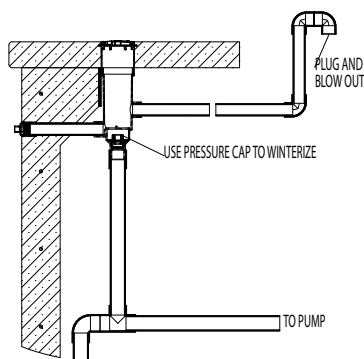
# WINTERIZING INSTRUCTIONS

1. Remove the MVFUSE device from the housing and store inside.
2. Install winter plug in bottom port of housing.
3. Install expansion plug in balance line in pool wall.
4. Plug and blow remote air line if installed from vent end of pipe.
5. Vacuum out housing and pour in small amount of antifreeze if needed.
6. Blow drain line like normal.



## WARNING

WARNING: When opening the pool after being winterized the MVFUSE must be checked for proper operation. Go to Test Section for instructions on page 11.



## NOTICE

### MVFUSE Warning Label

Included in each MVFUSE is one warning label that needs to be placed on the pool equipment if the pool is to be winterized and has a MVFUSE on any of the drains plumbed on the pool.

Attach the label to the control panel next to the controller for the pump with the MVFUSE plumbed to it.

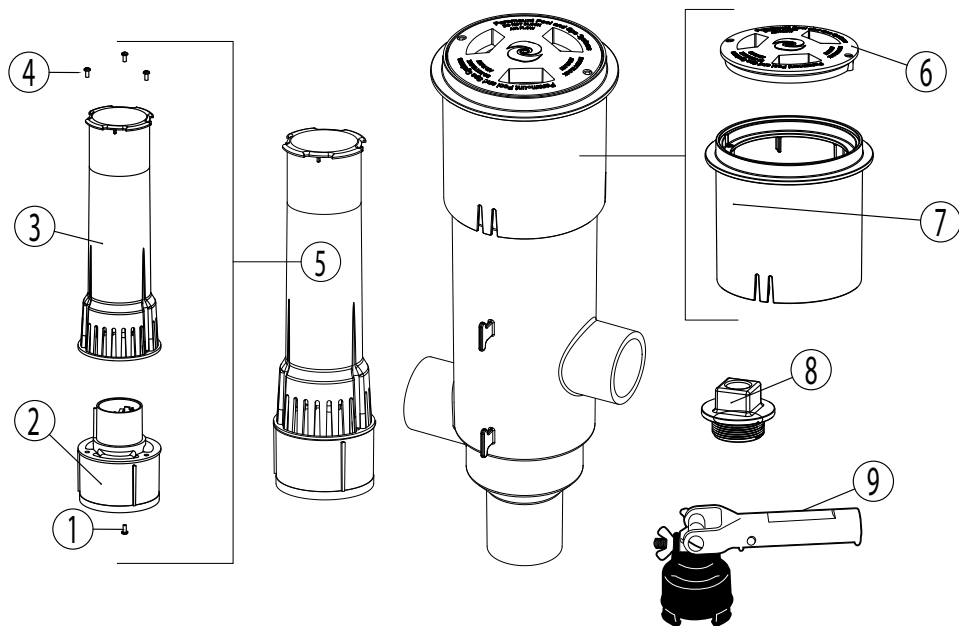
## WARNING!

This pool is protected by an MVFUSE SVRS device. When starting pool after winterization, remove Plugs and reinstall MVFUSE into deck side canister before energizing pumps.

Test MVFUSE blocking drain three (3) times. Refer to manual for complete test instructions. Air should enter the pipe and cause the pump to cavitate releasing the suction on the drain block.

001-025-8250-00 REV11/09

# MV FUSE DECK COMPLETE - #004-672-0002-XX



Item	Part Number	Description
1	*	Screw 4-40 x 1/4" Mach #10 Torx Pn Hd 316 SS
2	*	MVFUSE Assembly
3	*	MVFUSE Handle
4	*	Same as (1)
5		MVFUSE Deck Mount Complete
6	005-670-4352-XX	MVFUSE Deck Lid
7	005-670-6190-XX	MVFUSE Deck Ring
8	005-670-5610-00	Pressure/Winter Plug 1 1/2" with O Ring
9	004-627-5452-00	Install Tool (not included in MVFUSE)

01 - White 02 - Gray 03 - Beige

\* Not Available Separately

