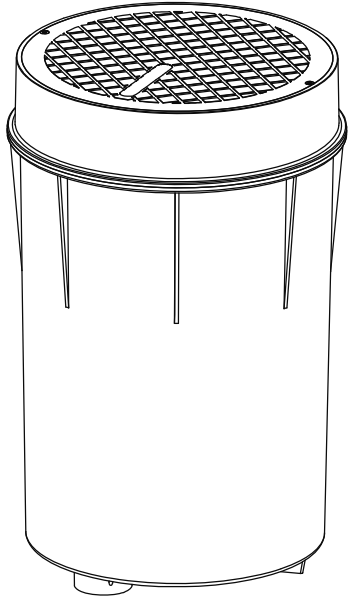




MAGICSTREAM® LAMINAR
FOR POOL AND SPA



INSTALLATION
AND
USER'S GUIDE

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

Technical Support

Phone: (800) 831-7133 - Fax: (800) 284-4151

Web sites: www.pentairpool.com and www.staritepool.com:

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IMPORTANT LAMINAR INSTALLATION INFORMATION: In an effort to stay in compliance with the latest updates for the UL 676 standard, regarding dead metal parts for wet niche luminaires (UL 676, Clause 21.1); The Laminar Jet units will no longer be shipped with the ground connector or the internal ground strap. Laminar Jet is a low voltage light with no ground wire, which according with the mentioned updated UL 676 standard, should not have any dead metal part. This will be a running change, starting on units shipped on or after February 2012.



READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL.

P/N 590033 Rev D - 6/3/13

MAGICSTREAM® Laminar Installation and User's Guide

IMPORTANT WARNING AND SAFETY INSTRUCTIONS



SERIOUS BODILY INJURY OR DEATH CAN RESULT IF THIS MAGICSTREAM LAMINAR IS NOT INSTALLED AND USED CORRECTLY. INSTALLERS, POOL OPERATORS AND POOL OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS BEFORE USING THE MAGICSTREAM® LAMINAR.



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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 your local building and health codes for more information.



IMPORTANT NOTICE - Attention Installer: This Installation and User's Guide ("Guide") contains important information about the installation, operation and safe use of this light fixture. This Guide should be given to the owner and/or operator of this equipment.



Before installing this product, read and follow all warning notices and instructions in this Guide. Failure to follow warnings and instructions can result in severe injury, death, or property damage. Call (800) 831-7133 for additional free copies of these instructions. Please refer to www.pentairpool.com for more information related to this products.



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION: THE MAGICSTREAM® LAMINAR. REQUIRES HIGH VOLTAGE WHICH CAN SHOCK, BURN, OR CAUSE DEATH.

BEFORE WORKING ON THIS DEVICE! Always disconnect power to the light fixture at the source circuit breaker from the light before servicing the light. Failure to do so could result in death or serious injury to service personnel, pool users or others due to electric shock. When installing and using this electrical equipment, basic safety precautions should always be followed, include the following:

This light must be installed by a licensed or certified electrician or a qualified pool professional in accordance with the current National Electrical Code (NEC), NFPA 70 or the Canadian Electrical Code (CEC), CSA C22.1. All applicable local installation codes and ordinances must also be adhered to. Improper installation will create an electrical hazard which could result in death or serious injury to pool users, installers or others due to electrical shock, and may also cause damage to power source. Always disconnect the power to the pool light at the circuit breaker before servicing the light. Failure to do so could result in death or serious injury to serviceman, pool users or others due to electrical shock.



For countries in compliance with International Electromechanical Commission (IEC) regulatory standards: The light fixture must be installed by a licensed or certified electrician or a qualified pool service person, in accordance with IEC 364-7-702 and all applicable local codes and ordinance. Improper installation will create an electrical hazard, which could result in death or serious injury to pool user, installer or other due to electrical shock and may also cause damage to the property.

IMPORTANT WARNING AND SAFETY INSTRUCTIONS

⚠ WARNING **Risk of Electrical Shock. Connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI.** This light fixture must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a GFCI should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test button. The GFCI should interrupt power. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the light without the test button being pushed, a ground current is following, indicating the possibility of an electric shock. Do not use this light. Disconnect the light fixture and have the problem corrected by a qualified service representative before using. Locate your pool so that the wall is at least 10 feet from all electrical receptacles and at least 20 feet from all receptacles not protected by a GFCI. It is also very important to locate the pool so that it is not under any electrical wiring, that is less than 18 feet vertically above the pool wall and within an area located 10 feet outside the pool walls. The pool must also never be located under any lighting fixture or within five (5) feet measured horizontally from any fixture mounted less than five (5) feet vertically above the pool water level.

NOTICE: The external flexible cable or cord of this luminaire cannot be replaced; if the cord is damaged, the luminaire shall be destroyed.

⚠ WARNING Under **no circumstances** replace lights by splicing wire under water.

⚠ DANGER MagicStream® Laminar is a 12 VAC system. **ONLY USE** an approved 12 volt AC transformer, sold separately. When using a Junction Box, connect 12 volt AC connections to junction box terminals. Never connect the light directly to high voltage lines.

INSTALLERS AND INSPECTORS: THE MAGICSTREAM LAMINAR AND PLASTIC HOUSING FORM A COMPLETE NON-METALLIC LOW VOLTAGE LIGHTING SYSTEM. THIS CONFIGURATION DOES NOT REQUIRE BONDING OR GROUNDING WHEN POWERED BY A LISTED 100 WATT OR 300 WATT 12 VAC TRANSFORMER AND INSTALLED IN COMPLIANCE WITH THE CURRENT NATIONAL ELECTRIC CODE (NEC). UN-BONDED LIGHTING NEC PROVISIONS.

WHEN THE UL LISTED NON-METALLIC MAGICSTREAM LAMINAR LOW VOLTAGE LIGHTS ARE USED WITH THE APPROVED HOUSING, THE CURRENT NEC PROVIDES AN EXCEPTION TO LUMINAIRE BONDING AND GROUNDING IN ARTICLE 680.6 AND 680.23 POOL WATER BONDING NEC PROVISIONS: FOR POOL WATER BONDING REQUIRED BY NEC ARTICLE 680.26C, CONCRETE POOLS ARE CONSIDERED CONDUCTIVE (REFER TO 680.26 (B)(1) DUE TO THE POROSITY OF CONCRETE AND THE BONDING OF REBAR. NO ADDITIONAL BONDING IS REQUIRED.

Introduction

The MagicStream® Laminar provides a clear, turbulence-free stream of water that can be lit for a dazzling nighttime effect. The 12 VAC powered LED light engine is capable of generating a series of multicolored light shows, or can be set to display a continuous, single color. If desired, the built-in solenoid “thumper” can create a random “wrinkle,” in the Laminar’s stream, causing it to display a brilliant spot of light that moves along the stream’s arc. The light enhancer can be adjusted to maximize the light in the arc. The MagicStream laminar comes equipped with an ABS deck housing for easy installation in a deck surface, or in the landscaping surrounding the pool, fountain, or spa.

Design Points

- The MagicStream laminar arc can reach a maximum height of seven feet and a distance of eight feet.
- To achieve the maximum laminar arc height, a water supply of 10 GPM with 16 ft of head (measured at the laminar) is required.
- Install the Laminar close to the edge of the pool to minimize water from splashing on the deck on windy days.
- Use a 20 micron cartridge filter to supply clean, filtered water to the Laminar. Do not use a DE or sand filter.
- Use 1” Sch40 PVC pipe to supply the Laminar. On long pipe runs, calculate the pressure drop and compensate by increasing the supply pressure.
- Install a throttling valve on the water supply to EACH Laminar. When installing more than one laminar, it is recommended to install a throttling valve on the main supply manifold.
- Install a 1-1/2” drain line to the bottom of the laminar deck housing and create a drain system to prevent standing water inside the deck housing.

Note: Proper drainage from the deck housing is critical to avoid damage to the laminar jet assembly. Do not install the Laminar Jet deck housing in an area prone to runoff or flooding.

- The deck housing electrical connection (marked “Electrical” on the housing) is designed for 1” PVC conduit.
- The LED light engine comes with a 100’ long 2-wire cable. Use a 120/12VAC-100 Watt or 300 Watt pool lighting transformer (purchased separately) powered with a GFCI breaker. Six Laminars can be powered with one 100 Watt transformer. Up to 14 laminars may be powered with one 300 Watt transformer. Follow all current National Electric Code (NEC) and local codes to determine the placement of the transformer.

MagicStream® Laminar Overview

This manual describes how to install and replace the MagicStream® Laminar. The MagicStream laminar provides brilliant vivid multi-colors with spectacular lighting effects for your pool and spa. The energy efficient colored LED array utilizes IntelliBrite® Color LED Light technology and can cycle through colors at varying speeds and in different sequences of colors. Choose one of the seven pre-programmed color light shows or select one of the five fixed colors to create virtually endless range of dramatic underwater lighting effects for a spectacular effect in your pool and spa.

The LED Light Engine controls the operation of the following features, and its built-in memory capability ensures that each time you turn the light engine on, it resumes operation with the same features in operation as when you last turned it off:

If multiple types of IntelliBrite LED lights are being used, all lights connected to the same transformer will be working together.

Note: For more information about setting up and operating the MagicStream Laminar, see page 23.

Operating Modes (Standard and IntelliBrite)

There are two operating settings built-in the MagicStream laminar, **Standard Mode** and **IntelliBrite Mode**. The default factory setting is IntelliBrite Mode. Use the Standard Mode setting if you wish to be compatible with legacy laminars without IntelliBrite Mode capability. If there is a MagicStream laminar model installed in your pool or spa that does not support the IntelliBrite Mode feature, reset the MagicStream laminar to Standard Mode to match the existing set up, see page 8. To access the Standard Mode setting, you must cycle the power to the MagicStream laminar with 16 off/on sequences. To return to the IntelliBrite Mode setting, cycle the power 17 off/on sequences.

Operating MagicStream® Laminars Using a Wall Switch

The MagicStream laminar can be controlled using a standard wall-mount light switch. Multiple MagicStream laminars can be connected via a junction box to a single switch so that all lights can be switched on and off together. The lights are controlled by cycling the AC power to the power supply and from there to the lights from a standard wall switch. By turning the switch OFF and ON a specific number of times, the light activates one of the seven light show modes, fixed colors, or enables the “Hold” and “Recall” feature.

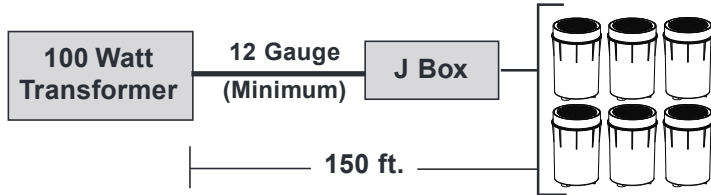
Note: Wall switch must be connected to the 120 VAC side of the transformer and never to the 12 VAC side.

Operating MagicStream® Laminars Using Automation Control System

MagicStream laminar can also be automatically controlled via Pentair IntelliTouch® and EasyTouch® Control Systems, utilizing the IntelliBrite “Circuit Function”. For more information refer to the IntelliTouch Control System User’s Guide (P/N 521075), EasyTouch Control System User’s Guide (P/N 521044). For more information, see page 16.

Using an External Transformer for Multiple 12 VAC MagicStream® Laminars

When using a 100 Watt transformer (set at 12 VAC) with multiple 12 VAC MagicStream® Laminars, it is recommended that no more than six (6) MagicStream laminars be used with a maximum of 50 feet 12 gauge cable run, between the transformer and the junction box. There should be no more than 100 feet of cable between the junction box and the MagicStream laminar. This will ensure that the MagicStream laminars receive a minimum operating power of 12 VAC. Note: For long cable lengths, set transformer to 14 VAC, see diagram below.



Maximum wattage when using multiple MagicStream® Laminars and IntelliBrite® Color LED lights (using a 300 Watt Transformer)

Note: A maximum of 14 laminars can be put on one 300 Watt Transformer

IMPORTANT! When using multiple 12 VAC Pentair® LED color pool and spa lights the total allowable light wattage is 300 Watts maximum. The individual light wattage is as follows:

- One MagicStream Laminar is 16 Watts maximum
- One GloBrite® Shallow Water LED Light is 23 Watts maximum
- One IntelliBrite Pool Light is 30 Watts maximum
- One IntelliBrite Spa Light is 18 Watts maximum
- One IntelliBrite Landscape Light is 15 Watts maximum
- One ColorCascade LED Bubbler Light is 16 Watts maximum
- One AmerBrite White LED Replacement Light is 51 Watts maximum
- One AmberBrite Color LED Replacement Light is 45 Watts maximum

Operating MagicStream® Laminars Using a Wall Switch

MagicStream Laminars can be controlled using a standard wall-mount light switch or by the IntelliBrite® Controller (see page 10). Multiple MagicStream laminars can be connected via a junction box and 12 VAC transformer to a single switch so that all lights can be switched on and off together. MagicStream laminars are controlled by cycling AC power to the 12 VAC transformer from a standard wall switch. By turning the switch Off and On a specific number of times, the light activates one of the seven light show modes, fixed colors, or enables the “Hold” and “Recall” feature, see page 10.

Note: Wall switch must be connected to the 120 VAC side of the transformer and never to the 12 VAC side.

Powering on the MagicStream Laminar

When the MagicStream laminar is powered on, the previously selected color show mode or fixed color is displayed.

Note: If power to the light is off for more than five (5) seconds, the last color show mode or fixed color that was saved will be displayed.

Selecting Color Show Mode or a Fixed Color using a Wall Switch

MagicStream Laminars are compatible with IntelliBrite light colors and shows and can be synchronized with IntelliBrite color lights. First switch power on to the light; the previously selected color show mode or fixed color is displayed. To select a color show mode (1-7) or fixed color (8-12), rapidly turn the wall switch Off/On a specific number of times. Each number (1-17) shown below corresponds to the number of times to power-cycle the switch to activate a color light show or fixed color. For details about saving color effects while in Show modes, see “Hold” and “Recall” feature on page 10.

- | | | |
|---------------------------------------|----|--|
| Number of times to cycle power (1-17) | 1 | SAM Mode: Cycles through white, magenta, blue and green colors (emulates the Pentair SAM® Color Light). |
| | 2 | Party Mode: Rapid color changing building energy and excitement. |
| | 3 | Romance Mode: Slow color transitions creating a mesmerizing and calming effect. |
| | 4 | Caribbean Mode: Transitions between a variety of blues and greens. |
| | 5 | American Mode: Patriotic red, white and blue transition. |
| | 6 | California Sunset Mode: Dramatic transitions of orange, red and magenta tones. |
| | 7 | Royal Mode: Richer, deeper color tones. |
| | 8 | Blue: Fixed color. |
| | 9 | Green: Fixed color. |
| | 10 | Red: Fixed color. |
| | 11 | White: Fixed color. |
| | 12 | Magenta: Fixed color. |
| | 13 | Hold: Save the current color effect during a color light show. |
| | 14 | Recall: Activate the last saved color effect. |
| | 15 | White |
| | 16 | Standard Mode |
| | 17 | IntelliBrite Mode |

Example: To select California Sunset Mode; First switch power on to the light; the previously selected color show mode or fixed color is displayed, then rapidly turn the switch off and on six (6) successive times. During the Off/On switching process, no illumination will occur.

Which Mode the Light is in? Turn the switch Off/On 17 times to reset the light to IntelliBrite Mode, fixed on white, Random Mode off and Thumper on.

From there you can set the desired mode. See page 6.

Random Mode

The MagicStream® Laminar has an additional Random Mode. In Random Mode the lights will randomly transition through the same color palette as in IntelliBrite Mode at a similar speed to the IntelliBrite Mode. As an example, lights in American Mode display a pattern of red, white and blue, while lights in IntelliBrite Random Mode and American Mode will display the same colors, but each light will display them in a random order. The speed of the transitions is also tied to the IntelliBrite Mode. Sam Mode will change colors slowly and Party Mode will change more rapidly.

Activating IntelliBrite Random Mode: To toggle IntelliBrite Random Mode On or Off you need to enter Party Mode(Off-On-Off-On), wait until the lights come on and then enter Party Mode a second time (Off-On-Off-On) with less than 30 seconds between them (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on).

Solenoid Thumper

The solenoid thumper feature creates a “wrinkle” in the laminar stream creating a brilliant spot of light in the laminar arc. Toggle the Thumper On or Off by entering Party Mode 3 times in less than 30 seconds...

(Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on)
(Off-On-Off-On) (Wait for light to come on)

All modes, except random, thump every 4 seconds except for Party Mode which thumps every 2 seconds. Random Mode thumps randomly every 1 to 3.5 seconds.

Resetting All Lights: To Reset all the lights you need to enter Party Mode four (4) times with less than 30 seconds between them. This will turn IntelliBrite Random Mode OFF. This is needed because should two lights ever get into different states, toggling their states will never fix the problem (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on).

Saving a color mode or fixed color

When power is switched off to the MagicStream laminars, the last color show mode or fixed color will be saved. The next time the light is powered on, the previously saved color show mode or fixed color will be displayed. For example, while in Party Mode switch the light off. Wait more than 10 seconds, switch the light back on to resume Party Mode.

Note: For more information about setting up and operating the MagicStream Laminar, see page 23.

Operating MagicStream® Laminars in Standard Mode

To access the Standard Mode setting, you must cycle the power to the MagicStream® Laminar with 16 Off/On sequences. To return to the IntelliBrite Mode, cycle the power Off/On with 17 sequences. When in Standard Mode, turning the switch Off and On a specific number of times, the light activates one of the three light show modes or locks a chosen color.

Selecting a color light show mode or fixed color

Switch power on to the MagicStream laminar. A random color will flash indicating the program you are in, followed by the previously selected program mode. To select a color show mode or fixed color, turn the wall switch off/on a specific number of times. Please review the chart below and follow the power cycle sequence to activate the various show feature effects while in “show” modes.

1. **Fixed Color:** Turn power off and then on to “Hold” the Light on that specific color (no matter what color show you are in). If you keep the unit on that color for at least five (5) seconds, the MagicStream laminar will “save” this color and keep it in that mode until you release it with an additional power off/on sequence. In “Fixed Color” mode the light when powered on, will not flash its program, but immediately go to the “Fixed Color” chosen.

2. **Color Show Mode:** Turn power off and then on twice (Off/On, Off/On) to cycle through the following three color modes. Turning the power on and off twice (Off/On, Off/On) will continue to cycle through the programs.

Synchronized Mode: All MagicStream laminars on the same circuit will synchronize and cycle on the same colors. When the units are in this mode, when powered up, the light will flash a random color one time and then turn all units on white and then start cycling through the eight colors. The single flash of a random color is the visual confirmation what color show you have activated. The light will stay in this mode each time the system is powered on until a program change is made. Colors will change at 10 sec intervals.

Random Mode: Turn the power on and then off twice (Off/On, Off/On) and the light will cycle to the next program, Random Mode. In this mode each of the MagicStream laminars will cycle together, but in random colors. When this mode is selected, the light will flash twice to indicate it is in random mode and then start up in a random color sequence. If multiple lights are on the same circuit, each light will display different random colors. Colors will change at about 10 sec intervals but in a completely random sequence. In this mode, multiple Laminars will NOT change colors together.

Party Mode: Turn the power on and then off twice (Off/On, Off/On) and the light will cycle to the next program, Party Mode. In this mode each of the MagicStream laminars will cycle together, but in random colors and in ever increasing cycle speeds until the last ten seconds at which time the MagicStream laminars will randomly flash different colors at different times. When this mode is selected, the light will flash three times to indicate it is in Party Mode and then start up in a random color sequence. If multiple lights are on the same circuit, each light will display different colors. Colors will change randomly and slowly at first, then speed up, until the sequence ends with quick flashes and strobes. The sequence then repeats, beginning with the slow changes. In this mode, multiple laminars will NOT change color together.

Control Summary (Standard Mode)

Start programming with the LED light engine ON. Change programs and modes by cycling the power ON and OFF rapidly (1 Sec). Wait 10 seconds between MODE changes.

PROGRAM /MODE	POWER CYCLE	DESCRIPTION	INDICATION
RESET	OFF/ON/OFF/ON/OFF/ON/OFF/ON	Resets Light Engine to Random mode and turns on the thumper.	Flashes Light 5 times
SOLENOID THUMPER	OFF/ON/OFF/ON/OFF/ON	Turns solenoid "thumper" ON or OFF	Flashes Light 4 times
LOCK COLOR	OFF/ON	Locks on any selected color. Returns to previous color change mode.	Color is fixed
LED LIGHT COLOR CHANGE	OFF/ON/OFF/ON	Switches from one color change mode to next. After a Reset, Random mode is running.	Sync Mode-1 flash Random Mode-2 flashes Party Mode-3 flashes

COLOR CHANGE MODE DESCRIPTION

Sync Mode - Colors will change at about 10 sec. intervals. In this mode, multiple Laminars will change colors together. If the solenoid thumper mode is turned on, the thumpers on multiple Laminars will thump together.

Random Mode - Colors will change at about 10 sec. intervals but in a completely random sequence. In this mode, multiple Laminars will NOT change colors together. If the solenoid thumper mode is turned on, the thumpers will thump at random intervals and multiple Laminars will NOT thump together.

Party Mode - Colors will change randomly and slowly at first, then speed up, until the sequence ends with quick flashes and stobes. Then the sequence starts again with slow changes. In this mode, multiple Laminars will NOT change colors together. If the solenoid thumper mode is turned on, the thumpers will thump at random intervals and multiple laminars will NOT thump together.

Solenoid Thumper

The solenoid thumper feature creates a "wrinkle" in the laminar stream, which creates a brilliant spot of light in the laminar arc. Cycle the power OFF/ON 3 times to turn the solenoid thumper ON and OFF.

In Sync Mode it thumps every 2 seconds. In Random and Party mode it thumps randomly every 1 to 3.5 seconds.

Reset

When you select the reset feature, the LED light engine reverts to the Random color changing mode with the solenoid thumper ON. Cycle the power OFF/ON 4 times to reset the LED light engine. The lights will flash 5 times, and then turn on in Random Mode with the thumper on.

NOTE: In the event of a power interruption or power loss and the units become out of sequence, turn the light switch on and then off four times (Off/On, Off/On, Off/On, Off/On). The unit will flash five (5) times then reset all of the lights and start them in Random Mode with the thumper on.

Selecting a MagicStream® Laminar show mode or fixed color using an IntelliBrite® Controller

Instead of using a wall switch, MagicStream® Laminars can be controlled with the IntelliBrite Controller (P/N 600054, sold separately). The IntelliBrite controller provides complete control of your MagicStream laminars when in IntelliBrite Mode. The IntelliBrite controller can control individual or multiple 12 VAC transformers to control MagicStream laminars. Multiple MagicStream laminars can be connected via a junction box to the Controller so that all lights can be switched on and off together. The IntelliBrite controller can also control multiple MagicStream laminars and IntelliBrite lights.



IntelliBrite® Controller

Using the IntelliBrite Controller: MagicStream laminars are compatible with IntelliBrite colors and shows and can be synchronized with IntelliBrite color pool/spa and landscape lights. To select a color light show mode or fixed color mode, rotate the dial so that it points to the desired selection. The color mode selections start in a clockwise direction from the 9 o'clock position.

Hold and Recall Feature

Note: When MagicStream laminars are powered on, the previously selected color show mode or fixed color is displayed.

Hold button/LED: Press this button (LED on) to capture and save a color effect while displaying one of the light show modes. When the button is pressed, the LED will be on, indicating that the color effect is captured.

Recall Button/LED: Use this button (LED on) to activate the last saved color effect. When the button is pressed, the LED will be on, indicating that the color effect is being displayed.

Activating IntelliBrite Random Mode: To toggle IntelliBrite Random Mode On or Off you need to enter Party Mode, wait until the lights come on turn the dial one notch and then enter Party Mode a second time with less than 30 seconds between them.

Activating Solenoid Thumper: The solenoid thumper feature creates a "wrinkle" in the laminar stream creating a brilliant spot of light in the laminar arc. Toggle the Thumper On or Off by entering Party Mode 3 times in less than 30 seconds. For example, turn the dial to Party Mode, wait until the lights come on, turn the dial one notch and then back to Party Mode and repeat a third time within 30 seconds.

Resetting All Lights: To Reset all the lights you need to enter Party Mode four (4) times with less than 30 seconds between them. This will turn IntelliBrite Random Mode OFF. This is needed because should two lights ever get into different states, toggling their states will never fix the problem.

There are two ways to issue the commands with an IntelliBrite controller. You can switch to Party Mode and then turn the lights on and off using the Green button the desired number of times or you can switch back and forth between Party Mode and Sam Mode the desired number of times. Both methods require you to wait until the lights come back on before repeating the procedure. If the lights are not within sight of the controller, waiting 10 seconds between each change also works.

INSTALLING MAGICSTREAM® LAMINAR (NEW POOL CONSTRUCTION)

The following describes how to install the MagicStream® Laminar.

Mechanical Installation

1. Dig a hole measuring 24" deep and 24" square and place the deck housing in it. This will allow enough room to connect the supply piping and electrical conduit.
2. Solvent weld the conduit and the drain and supply piping to the deck housing.
3. Anchor the deck housing so that the top of the housing cover collar is at the level of the finished deck (Figure 1). The adjustable collar should be angled so that it will align flush with the finished deck surface. Once you have made the final adjustments to the collar's angle, glue the collar to the deck housing.
4. Backfill around the deck housing with gravel to further stabilize the housing during deck placement. Leave cover in place during deck installation.

Note: The deck housing is made of ABS. Use a name brand ABS-PVC cement to glue Sch40 PVC.

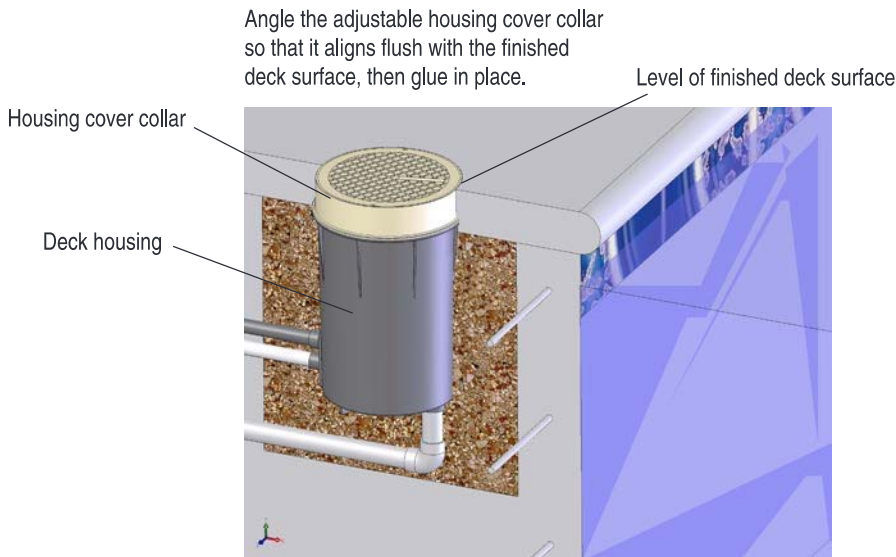


Figure 1.

Note: It is recommended that the system pressure test be performed after the deck housing is mounted to the supply piping.

5. Plug the flex line in the housing by disconnecting the union between the deck housing and the Laminar. Using one of the Laminar adjustment nuts, secure the winterization cap to the supply side of the union.

Note: The pressure on the piping/plumbing supplying the Laminar should not exceed 50 PSI.

6. Once the deck is finished, flush any debris from the supply pipe using the pump and filter system that supplies the Laminar.

Note: Any debris in the Laminar unit will hinder its ability to produce a turbulence-free stream.

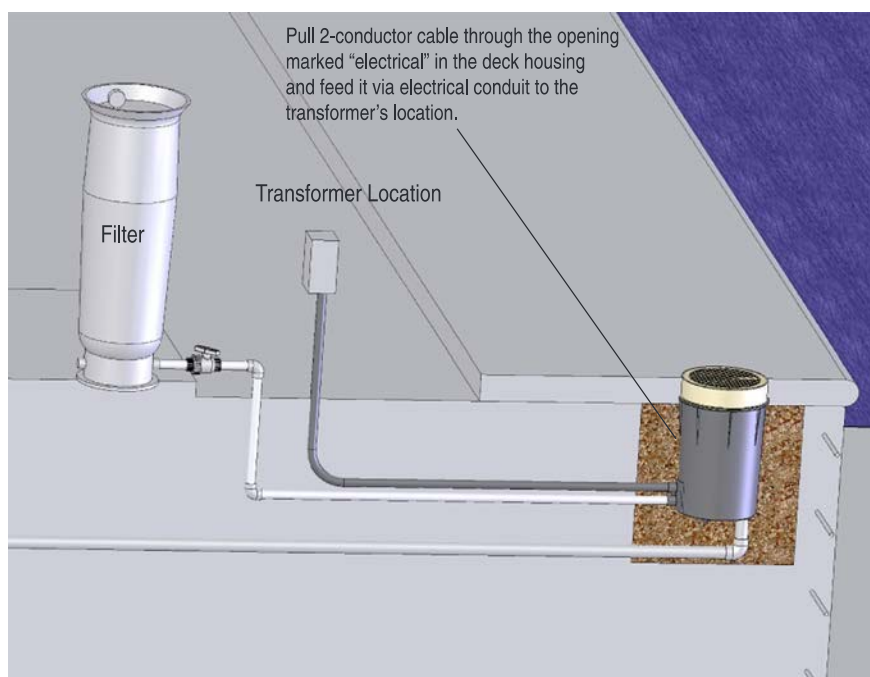


Figure 2.

⚠ DANGER**DANGER!****RISK OF ELECTRICAL SHOCK OR ELECTROCUTION**

Always disconnect power to the pool light at the circuit breaker before servicing the light. Failure to do so could result in death or serious injury to installer, serviceman, pool users, or others due to electrical shock.

⚠ WARNING

Be sure that the pool or spa meets the requirements of the current National Electrical Code (N.E.C.) Article 680-22 and all local codes and ordinances. A licensed or certified electrician must install the electrical system to meet or exceed those requirements before the underwater light is installed. Some of the requirements of the National Electrical Code which the pool's electrical system must meet are as follows:

- The lighting circuit has a Ground Fault Circuit Interrupter (GFCI) for 120VAC line voltage models, and has an appropriately rated circuit breaker. The conductors on the load side of the GFCI circuit shall not occupy conduit, boxes, or enclosures containing other conductors unless the additional conductors are also protected by a GFCI. Refer to local codes for complete details.
- The Junction Box (or, for 12 volt models, the low voltage transformer) is located at least eight (8) inches (20.3 cm) above water level and at least 48 inches (1.22 m) from the edge of the pool.
- To be certain that the pool's electrical system meets all applicable requirements, the electrician should also consult the local building department.

1. Turn off main electrical switch or circuit breaker.
2. Feed cord through housing and then through conduit to Junction Box or 12 Volt AC Transformer. The MagicStream® Laminar has no serviceable parts, so leave approximately 3 to 4 feet of cord to allow the light to be easily removed if replacement is required.



NOTE: This is a 12 Volt AC system *ONLY*. An approved 12 VAC transformer (sold separately) *must be used*. If a Junction Box is used, it would be for 12 VAC connections. Never wire the MagicStream light directly to high voltage lines.

3. Cut the cord at the Junction Box or 12 VAC transformer, leaving at least six (6) inches of cord to make connections.
4. Strip back three (3) inches of the outer cord jacket to expose the two insulated wires (be careful not to damage the insulation on the two (2) inner wires).
5. Connect both (2) wires to the corresponding circuit wires in the Junction Box or 12 Volt AC Transformer and secure the Junction Box cover in place.
6. Install the MagicStream laminar assembly into the MagicStream laminar housing and tighten the two screws provided.

REPLACING THE MAGICSTREAM® LAMINAR ASSEMBLY (IN AN EXISTING POOL OR SPA)



Risk of Electrical Shock or Electrocutation!

This light must be installed by a licensed or certified electrician or a qualified pool professional in accordance with the current National Electrical Code (NEC), NFPA 70 or the Canadian Electrical Code (CEC), CSA C22.1 and all applicable local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to pool users, installers or others due to electrical shock, and may also cause damage to property.

Always disconnect the power to the pool light at the circuit breaker before servicing the light. Failure to do so could result in death or serious injury to serviceman, pool users or others due to electrical shock.

Verify that the pool and spa meets the requirements of the current National Electrical Code and all local codes and ordinances. A licensed or certified electrician must install the electrical system to meet or exceed those requirements before the underwater light is installed. Some of the requirements of the National Electrical Code which the pool's electrical system must meet are as follows:

- The lighting circuit has a Ground Fault Circuit Interrupter (GFCI) for line voltage models, and has an appropriately rated circuit breaker.
- The Junction Box (low voltage transformer) is located at least eight (8) inches (20.3 cm) above ground level and at least 48 inches (1.219 m) from the edge of the pool.
- To be certain that the pool's electrical system meets all applicable requirements, the electrician should also consult the local building department.

REPLACING THE MAGICSTREAM® LAMINAR ASSEMBLY (AFTER ELECTRICAL REQUIREMENTS ARE MET)

The following removal and installation instructions describe how to remove and install the MagicStream® Laminar assembly. Also use these instructions after completing the following light replacement procedure.

WARNING

Failure to bring the pool or spa's electrical system up to code requirements before installing the light will create an electrical hazard which could result in death or serious injury to pool users, installers, or others due to electrical shock, and may also cause damage to property.

1. **Switch off electrical switch or circuit breaker at the source.**
2. Remove Junction Box or Transformer cover. Disconnect the light wires and attach a fish tape to the existing light power cord. This will assist in pulling the replacement light power cord through the conduit back to the junction box.
3. Remove the MagicStream laminar assembly from the housing.
4. Slowly pull the light and attached power cord (with attached fish tape) out of the housing. Pull the light's power cord and fish tape out of the housing and place the light on the deck.
5. Attach the new light power cord to the fish tape and carefully feed the fish tape and cable to the junction box.
6. Feed cord through housing then through conduit to Junction Box or 12 Volt AC Transformer. The MagicStream laminar has no serviceable parts, so leave approximately 3 to 4 feet of cord to allow the light to be easily removed if replacement is required.
7. Cut the cord at the Junction Box or 12 volt AC transformer, leaving at least six (6) inches of cord to make connections.
8. Strip back three (3) inches of the outer cord jacket to expose the two insulated wires (be careful not to damage the insulation on the two (2) inner wires).
9. Connect both (2) wires to the corresponding circuit wires in the Junction Box or 12 Volt AC Transformer and secure the Junction Box cover in place.
10. Install the MagicStream laminar assembly into the niche and tighten the two screws provided.

CONNECTING MAGICSTREAM® LAMINARS TO AN AUTOMATION CONTROL SYSTEM

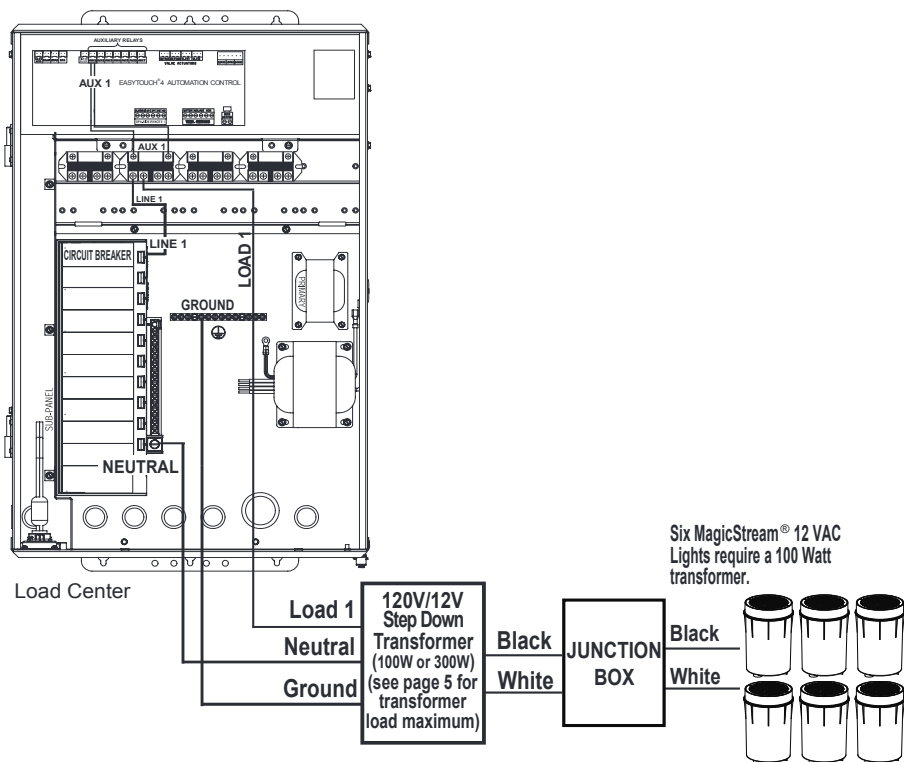
⚠ DANGER

D A N G E R !

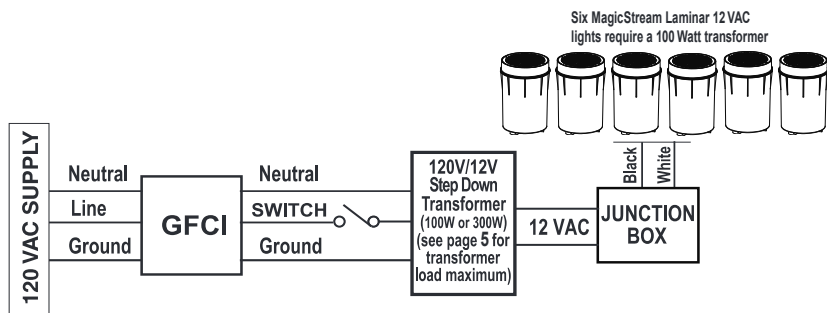
RISK OF ELECTRICAL SHOCK OR ELECTROCUTION

Always disconnect AC power to EasyTouch® and IntelliTouch® Control System load center at the circuit breaker before servicing, or removing the **HIGH VOLTAGE FRONT PANEL**. Failure to do so could result in death or serious injury to installer, service person, pool users, or others due to electrical shock.

1. **Load Center:** Unlatch the enclosure door spring latch, and open the door.
2. **Discharge Electrostatic energy before removing the cover by first touching the metal part of the enclosure.**
3. Loosen the two (2) retaining screws from the HIGH VOLTAGE FRONT PANEL. Remove the panel from the enclosure.
4. Connect the 120 Volt side of a 12 VAC transformer to the LOAD SIDE of one of the auxiliary (AUX) relays in the load center.
5. Connect the Neutral conductor from the 12 VAC transformer to the Neutral bus bar in the load center.
6. After the connection has been completed, close the control panel and secure it with the two (2) retaining screws.
7. Close the load center front door. Fasten the spring latch.



MagicStream® Laminar to EasyTouch or IntelliTouch Control System Load Center Wiring Connection Diagram



MagicStream Laminar Standard Wiring Connection Diagram

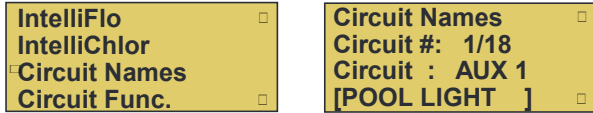
SETTING UP MAGICSTREAM® LAMINARS WITH AN AUTOMATION CONTROL SYSTEM

EasyTouch® Control System

The following describes how to setup the MagicStream® Laminars from the EasyTouch Control System indoor control panel or wireless control panel. From the EasyTouch control system control panel you can control the light shows.

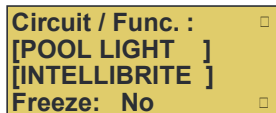
To set up a MagicStream laminar circuit; assign the “Light Circuit Name” to the relay circuit (example; AUX 3, as “Pool Light”) and “Function”: assign the name “Pool Light” circuit in the Circuit Func menu as a “light” circuit (IntelliBrite). After assigning the circuit name and function, the light circuit name “Pool Light” can be setup in the CONFIG menu for light position, color etc.

To assign a Circuit Name go to: MENU > SETTINGS > CIRCUIT NAMES



1. Press the **Up/Down button** to select a circuit number 1/18. Press the Up button two times to select **AUX 1** to choose this circuit for a light circuit On/Off button. The circuit number (1/18) corresponds to its assigned circuit name.
2. Press the **Up/Down button** to scroll through the list of preset names. Select a name such as “Pool Light.” AUX 1 has now been assigned the circuit name “Pool Light.”

To assign a Circuit Function go to: MENU > SETTINGS > CIRCUIT FUNC.



3. Press the Menu button to return to the Settings menu. Press the Down button to and select “Circuit Func.” Press the Right button to access the Circuit Func. menu.
4. Press the **Up/Down button** to select the already assigned circuit name “Pool Light.”
5. Press the **Right button** to view “Circuit Functions” to assign to light circuit “Pool Light.”
6. Press the **Up/Down button** to select the type of light circuit function to use. Select “INTELLIBRITE” for the MagicStream laminar circuit function.
7. Press the Menu button three times to return to the main screen.

Operating the MagicStream laminars: The MagicStream laminar is ready to operate using the EasyTouch control panel button 1 (auxiliary 1 circuit). To access the Lights menu screen (*special Light Features*), press **Menu > Lights**. The Lights menu settings are: MODES, COLORS, ALL ON, ALL OFF, SYNC, MAGICSTREAM, CONFIG: From the Modes screen you can control the color light shows. To access the Modes menu, press Menu > Lights > Modes. See page 6 for MagicStream light color shows.

IntelliTouch® Control System

The following describes how to setup the MagicStream® Laminar from the IntelliTouch Control System control panel. From the IntelliTouch control system control panel you can control the light shows. To access the MagicStream laminar screens, from the IntelliTouch control system indoor control panel or the wireless MobileTouch® Remote Control Panel.

Assigning a Circuit Name

To identify the MagicStream laminar connected to the auxiliary circuits (AUX 1, AUX 2) in the IntelliTouch control system load center, you need to assign the MagicStream laminar circuit name to the corresponding auxiliary circuits in the IntelliTouch control system indoor control panel. Choose a circuit name from the preset list of names for the MagicStream laminar connected to the auxiliary relay installed in the IntelliTouch load control system center.

Assigning a Circuit Name for the MagicStream Laminar: To assign a Circuit Name for the MagicStream laminar, go to: **MENU > SETUP > ADVANCED > CIRCUIT NAMES > ASSIGN CIRCUIT NAMES > DISPLAY.**

Selecting DISPLAY Screen 1, 2, 3, or 4: The auxiliary circuits that control the pool and spa equipment can be accessed from the “Display” screen on the Indoor Control Panel or MobileTouch wireless control panel. Selecting the button next to Display 1, 2, 3, or 4 displays the screen with circuits belonging to that particular expansion Load Center or Power Center. “Feature Circuits” can also be assigned from this screen.

To assign circuit names for a specific display screen:

Display #1 - This screen shows circuit names for the filter pump, pool and spa modes, and all high voltage auxiliary circuits connected to the main Load Center or Power Center. **Display #2** - This screen shows circuit names for the additional auxiliary circuits connected to the first expansion center (Load Center or Power Center).

Display #3 - This screen shows circuit names for the additional auxiliary circuits connected to the second expansion center (Load Center or Power Center)

Display #4 - This screen shows circuit names for the additional auxiliary circuits connected to the third expansion center (Load Center or Power Center).

To assign a MagicStream laminar circuit name for the MAIN SCREEN:

1. Select the button next to Display #1. These are the circuit names that will be displayed on the Main Screen. Note: If there is an expansion Load Center or Power Center installed, select the appropriate Display #2, #3, or #4 associated with that expansion Load Center or Power Center.
2. From the Main Display screen, press the button next to AUX 1. A small arrow pointing to AUX 1 is displayed.
3. Use the Up and Down buttons at the bottom of the screen to scroll through the alphabetical list of preset equipment names. Choose the equipment name that matches the label name for button number 1 on the Load Center Outdoor Control Panel.
4. Continue to name other auxiliary circuits (AUX2, AUX3, etc.): After selecting the equipment name you want to use for AUX 1, press the button next to the AUX 2 and choose a circuit name. The small arrow indicates which circuit is selected for naming.
5. Repeat the process to assign the other equipment to circuits on this screen.
6. When you have finished assigning equipment circuit names, press the Save button. Press the Exit button to return to the Main screen.
7. **CONTINUE TO NEXT PAGE to set up the MagicStream light “Function Circuit.”**

Set up a MagicStream® Laminar Circuit Function

To setup an AUX circuit to control the MagicStream laminar, assign the circuit light function an auxiliary relay circuit (AUX 1), then assign the circuit name for that light circuit. The light circuit name will appear on the main screen. Each MagicStream laminar must also be assigned a circuit function. **To assign a Circuit Name for the MagicStream laminar, go to: MENU > SETUP > ADVANCED > CIRCUIT FUNCTIONS**

Setup a MagicStream light function circuit: Assign each light auxiliary relay circuit a circuit name, then assign that light relay circuit in the “CIRCUIT FUNCTIONS” section, as “INTELLIBRITE.” To setup the MagicStream light circuit function (use the “IntelliBrite” circuit name):

1. Press the button next to the AUX button (the relay auxiliary circuit connected to the MagicStream laminar (IntelliBrite) light).
2. Press the right or left side (PREV/NEXT) button next to “INTELLIBRITE.” Scroll through the circuit functions until “INTELLIBRITE” is displayed.
3. Press the SAVE button on the bottom of the screen. Press the EXIT button to return to the main screen.

Assign the MagicStream laminar circuit to the Lights screen:

4. Press the Lights button on the bottom of the screen.
5. Press the right side button next to “CONFIGURE.”
6. Press the button next to “NONE” to assign an IntelliBrite light circuit to the selected button. Light names can be setup to display on the left side for “Spa” features and on the right side for the “Pool” features.
7. Press the top left or right side button to scroll through the available light circuits which can be used for the MagicStream laminar (IntelliBrite) lighting features. Select at the circuit name you wish to use. The displayed circuit names are circuit names that were previously assigned when assigning a circuit function.

Operating and Selecting MagicStream laminar (IntelliBrite) Color

From the “Modes” screen you can select various preset show color lighting effects, such as “American mode” and “Sunset mode,” and SAm Style (an emulation of the SAm color scheme). Using the “Hold” and “Recall” feature you can also capture and save a unique color effect to recall at a later time.

Modes screen: To access the IntelliBrite color show “Modes” features from the Lights screen, press the Lights button on the bottom of the screen, then press the left side button next to “MODES.”

Special Light Features: Up to twelve (12) IntelliBrite light circuits can be displayed on the main Lights screen (special light features). From the Lights screen you can activate the IntelliBrite lighting features (i.e., color swim, color set). Assuming each MagicStream laminar (IntelliBrite) light has its own relay and separate circuit.

Activating IntelliBrite Random Mode: To toggle IntelliBrite Random Mode On or Off you need to enter Party Mode(Off-On-Off-On), wait until the lights come on and then enter Party Mode a second time (Off-On-Off-On) with less than 30 seconds between them. **Activating Solenoid Thumper:** The solenoid thumper feature creates a “wrinkle” in the laminar stream creating a brilliant spot of light in the laminar arc. Toggle the Thumper On or Off by entering Party Mode 3 times in less than 30 seconds. (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on) (Off-On-Off-On) (Wait for light to come on).

Resetting All Lights: To Reset all the lights you need to enter Party Mode four (4) times with less than 30 seconds between them. This will turn IntelliBrite Random Mode OFF. This is needed because should two lights ever get into different states, toggling their states will never fix the problem.

CONNECTING MAGICSTREAM® LAMINAR TO AN INTELLIBRITE® CONTROLLER

⚠ DANGER



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION TURN power OFF at circuit breaker -

Always disconnect power to the pool light at the circuit breaker before servicing the light. Failure to do so could result in death or serious injury to installer, service person, pool users, or others due to electrical shock.

To wire multiple 12 Volt MagicStream® Laminar to an IntelliBrite Controller:

12 VAC MagicStream laminar and IntelliBrite Lights

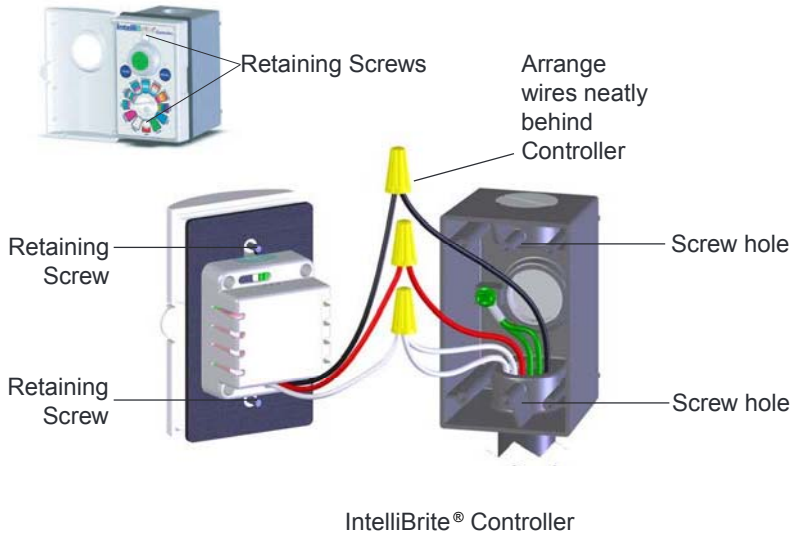
IMPORTANT! When installing 12 VAC MagicStream laminar, connect the lights to the **secondary 12 VAC output** of the safety isolation (step down) transformer, then connect the IntelliBrite controller to the **120 VAC primary input** of the step down transformer.

Installing the IntelliBrite Controller in the Outlet box

The IntelliBrite Controller mounts onto a standard outlet box (22.5 cubic inches minimum). After wiring the IntelliBrite Controller, check all wiring connections before mounting the controller into the outlet box.

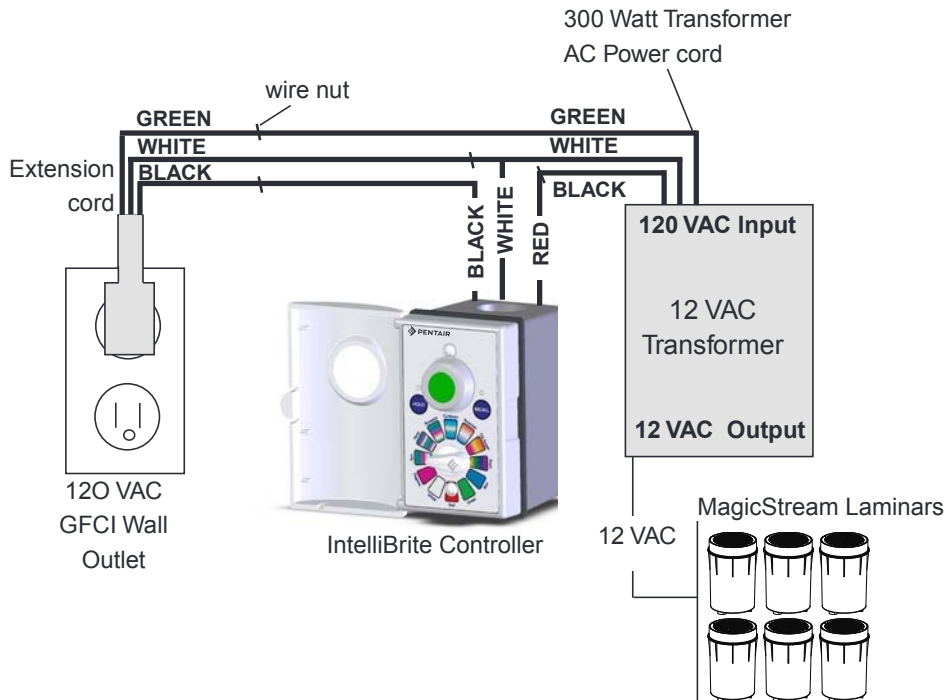
To install the IntelliBrite Controller:

1. Neatly arrange the wires in the back of the outlet box.
2. Align the controller with the screw holes of the outlet box. Secure the controller to the outlet box with the two (2) retaining screws.
3. Close the front door of the controller.



Wiring MagicStream® Laminar to IntelliBrite® Controller and 300 Watt Transformer

The following diagram shows how to connect MagicStream® Laminars to an IntelliBrite Controller using a 300 Watt transformer. Note: For MagicStream laminar operating instructions, see page 10.



MAGICSTREAM® LAMINAR SETUP AND OPERATION

This section describes how to set up and operate the MagicStream® Laminar.

Once the deck is finished, flush any debris from the supply pipe using the pump and filter system that supplies the laminar.

Note: Any debris in the laminar will hinder its ability to produce a turbulence-free stream.

Laminar Setup

Make sure the supply piping has been flushed clear as directed above.

1. Carefully spread the brackets and slide the laminar unit into the holes in the brackets (Figure 3), making sure the Laminar orifice is pointed out the top slot in the deck housing lid (Figure 4).

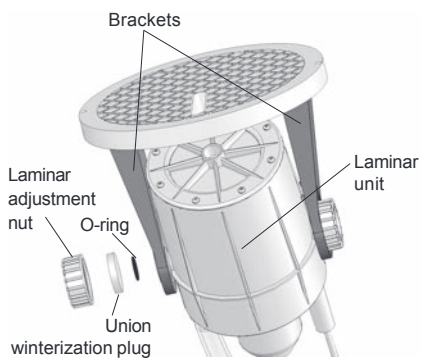


Figure 3.

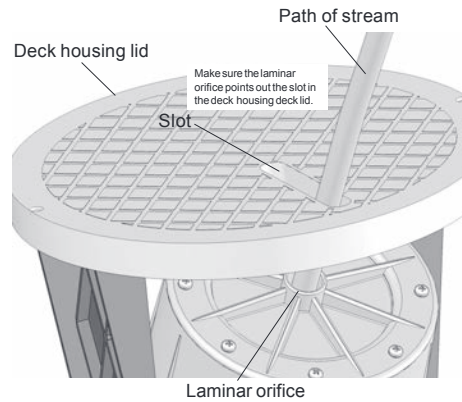


Figure 4.

2. Make sure the spare o-rings are in place. Place the union winterization plugs in the laminar adjustment nuts and screw them in place on the laminar body (Figure 5).
3. Connect the laminar to the supply pipe with the union connection (Figure 5). Make sure the o-ring stays in its groove.
4. Adjust the laminar so that the laminar orifice is visible through the slot in the deck housing lid.
5. Place the deck housing lid/laminar unit in the deck housing (Figure 5). If the hoses in the deck housing prevent the proper seating of the deck housing lid, you may have to loosen the union nut briefly and allow the hoses to twist, so that they spiral out of the way, into the deck housing.
6. Adjust the laminar throttling valve to $\frac{1}{4}$ open. Turn on the supply pump and let the laminar fill with water.
7. When a stream of water begins to flow from the laminar orifice, adjust the flow, elevation and direction as desired.

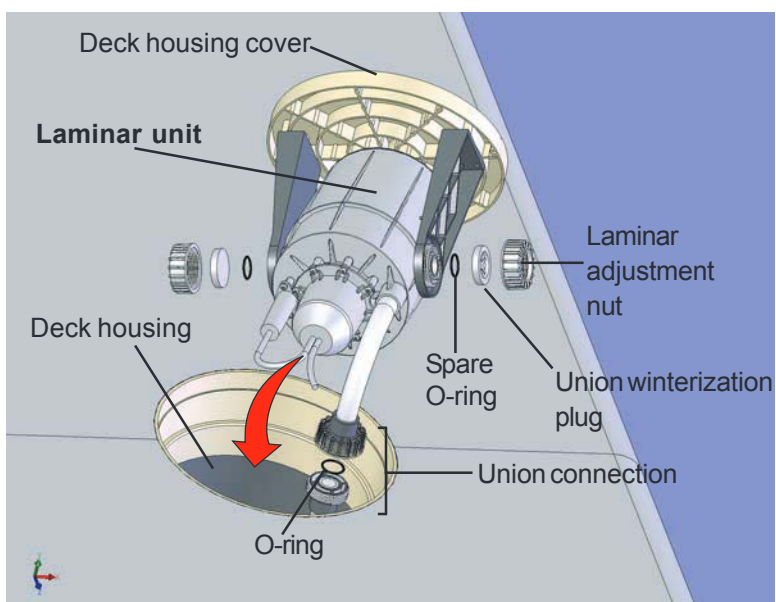


Figure 5.

Light Enhancer Setup (darkness required)

You may want to vary the intensity of the light when using the LED to light the laminar stream. You can adjust the light intensity by means of the light enhancer. The light enhancer uses a very small stream of water to add very small bubbles to the stream. The screw that controls the light enhancer is located on the laminar orifice plate (Figure 6).

There is no optimal setting for the light enhancer, and the intensity of the light emitting from the laminar stream is purely a matter of taste. We encourage you to experiment with the light enhancer to achieve the effect you desire.

NOTE: Laminars are sensitive to wind, earth movement and equipment vibration. Secure the laminar and deck housing to minimize vibration. Periodic stream distortion, caused by pump vibrations and motor electrical fluctuations, is normal and not indicative of a nozzle defect.

NOTE: A laminar may occasionally “burp” as a result of trapped air accumulating in the nozzle body. This phenomenon is normal and will occur until all air is purged from the piping system. Trapped air can also cause slight distortion in water action. It is imperative that all air is removed to ensure proper water feature operation.

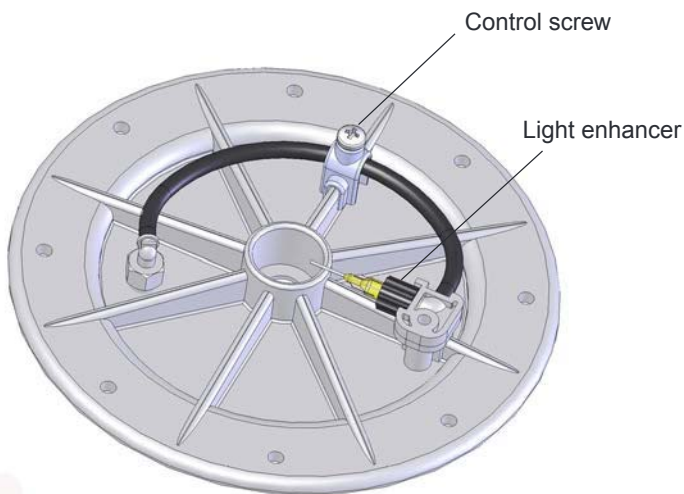


Figure 6

Maintenance and Troubleshooting

The following information describes how to service and maintain the MagicStream® Laminar.

Filter Cleaning

Perform routine maintenance on the filter to ensure trouble-free Laminar operation. Be careful to keep debris out of the discharge plumbing when cleaning the filter. If debris gets into the filter discharge line to the laminar, follow this procedure:

1. Remove the laminar by unscrewing the two deck housing lid retaining screws.
2. Remove the deck housing lid and laminar unit and place on the deck.
3. Disconnect the supply union and turn on the Laminar supply pump until the water runs clear.
4. Reattach the union, place the laminar back in the deck housing and check the alignment of the stream.
5. Replace the deck housing lid retaining screws.

Clogged Laminar (Poor Stream Quality)

If the laminar orifice becomes clogged with debris, follow this procedure:

1. Remove the Laminar by unscrewing the two deck housing lid retaining screws.
2. Remove the deck housing lid and Laminar unit and place on the deck. Disconnect the supply union.
3. Using a garden hose, place the hose over the jet nozzle and force water backward through the unit and out the 3/4" open union. This will clear most of the debris.

NOTE: Do not insert anything into the laminar orifice! This may permanently damage the laminar stream.

Troubleshooting (MagicStream® Laminar)

Symptom	Action
The light will not illuminate.	Check the GFCI ground fault wiring and reset if necessary.
Light does not function properly.	Check the light wiring connection to the junction box at the pool side and to the AC power switch. Be sure that there is proper AC power applied to the light.
What Mode is the light in?	Turn the switch Off/On 17 times. This will put the light in IntelliBrite Mode, fixed on white, Random Mode off and Thumper on. From there you can set the desired mode. See page 6.

Troubleshooting (IntelliBrite® Controller)

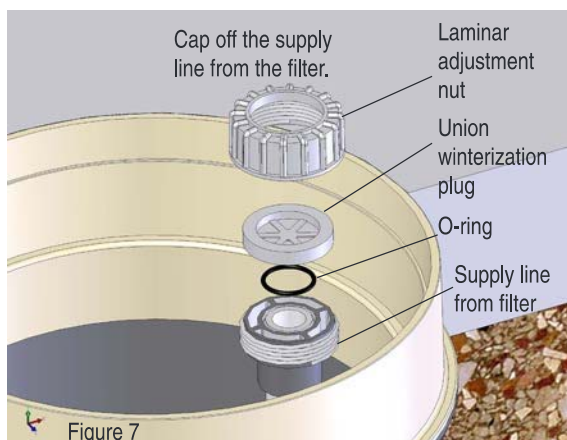
Symptom	Action
Both of the LEDs are flashing.	The IntelliBrite Controller has detected that the load has exceeded the maximum allowable wattage or the output is shorted out 1. Switch off the IntelliBrite Controller OFF. Remove excessive load or short. 2. Press the IntelliBrite Controller power switch to power on the unit. Ensure that the LEDs are no longer flashing.
The light will not illuminate.	Check the ground fault wiring and reset if necessary.
Light does not function properly.	Check the light wiring connection to the junction box at the pool side and to the main circuit breaker. Be sure that there is proper AC power applied to the light.

Winterization

Do not let the laminar freeze. This will void the warranty.

Take the following steps to winterize the laminar:

1. Remove the laminar by unscrewing the two deck housing lid retaining screws.
2. Remove the deck housing lid and laminar unit and place on the deck. Disconnect the supply union.
3. Remove both union nuts from the laminar brackets and take off the union plugs (don't lose the O-rings).
4. Spread the brackets carefully and separate the laminar unit from the brackets.
5. Drain the laminar by rotating the entire unit until most of the water runs out.
6. Drain the filter and blow out the supply line.
7. Use the union nut and plug to cap off the supply line from the filter (Figure 7).



8. Coil the deck housing supply hose and push it to the bottom of the housing.
9. Turn the laminar unit so the orifice faces down toward the bottom of the deck housing (be careful not to damage the light enhancer needle). Orienting the unit face down assures that water in the LED light engine does not freeze.
10. Replace the deck housing lid.
11. Wait for Spring.

Spare O-rings

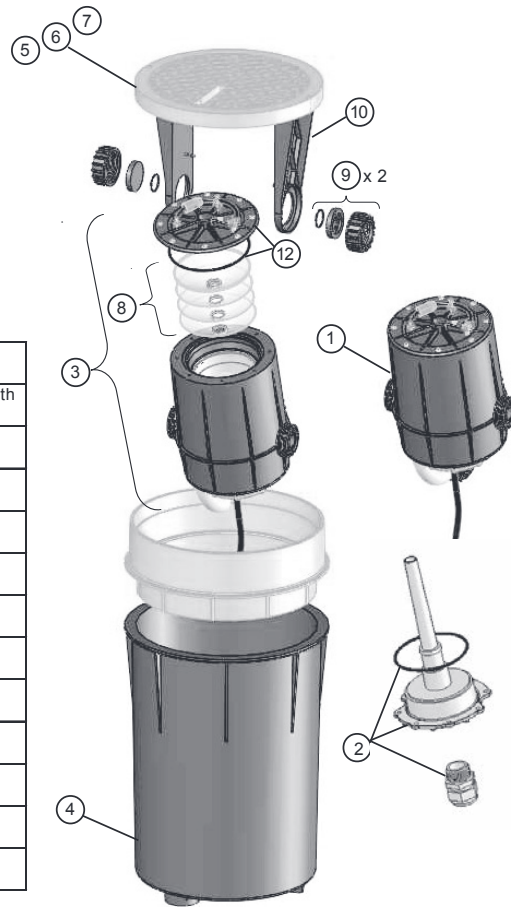
We included two spare O-rings with the laminar. They are intended as replacements for the water supply union O-ring when it is damaged or lost.

MagicStream® Laminar Parts List

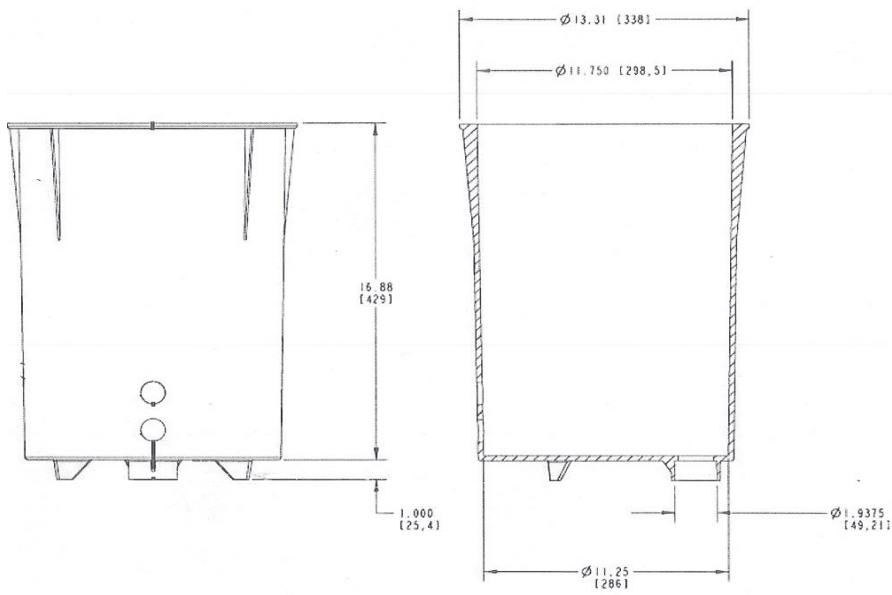
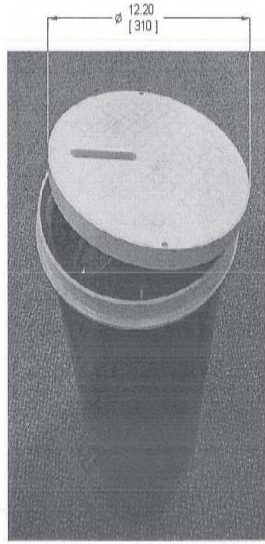
Illustrated Parts List

Item No.	Part No.	Description
1	590021	Laminar LED light engine with Laminar Body (complete)
2	590022	Laminar fiber optic adapter
3	590023	Laminar body no light
4	590024	Laminar housing-no cover
5	590025	Laminar cover black
6	590026	Laminar cover gray
7	590027	Laminar cover tan
8	590028	Laminar screen kit
9	590029	Laminar union nut kit
10	590030	Laminar bracket kit
11*	590031	Laminar hardware kit -all screws and o-rings
12	590032	Laminar orifice kit

*Not shown



MagicStream® Laminar Dimensions



Notes



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