

Water Blade Lit Installation Instructions

- ⚠ WARNING** - Read and follow all instructions in this owner's manual and on the equipment. Failure to follow instructions may result in severe injury and/or death.
- ⚠ WARNING – Suction Entrapment Hazard:**
Suction inlets/outlets and/or suction inlet/outlet covers which are damaged, broken, cracked, missing, or unsecured can cause severe injury and/or death due to the following entrapment hazards:
Hair Entrapment - Hair can become entangled in suction outlet cover.
Limb Entrapment - A limb inserted into an opening of a suction inlet/outlet sump or suction inlet/outlet cover that is damaged, broken, cracked, missing, or not securely attached can result in a mechanical bind or swelling of the limb.
Body Suction Entrapment - A negative pressure applied to a large portion of the body or limbs can result in an entrapment.
Evisceration/ Disembowelment - A negative pressure applied directly to the intestines through an unprotected suction inlet/outlet sump or suction inlet/outlet cover which is, damaged, broken, cracked, missing, or unsecured can result in evisceration/disembowelment.
Mechanical Entrapment - Jewelry, swim-wear, hair decorations, finger, toe or knuckle can be caught in an opening of a suction inlet/outlet cover resulting in mechanical entrapment.
- ⚠ WARNING** - To Reduce the risk of Entrapment Hazards:
- When inlets/outlets are small enough to be blocked by a person, a minimum of two functioning suction outlets per pump must be installed. Suction inlets/outlets in the same plane (i.e. floor or wall), must be installed a minimum of three feet (3') [1 meter] apart, as measured from near point to near point.
 - Dual suction fittings must be placed in such locations and distances to avoid “dual blockage” by a user.
 - Dual suction fittings must not be located on seating areas or on the backrest for such seating areas.
 - The maximum system flow rate shall not exceed 6 ft/sec in the return main line.
 - Never use Pool or Spa if any suction inlet/outlet component is damaged, broken, cracked, missing, or not securely attached.
 - Replace damaged, broken, cracked, missing, or not securely attached suction outlet components immediately.
 - In addition two or more suction outlets per pump installed in accordance with latest ASME, APSP Standards and CPSC guidelines, follow all National, State, and Local codes applicable.
 - Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.
- ⚠ WARNING** - Failure to remove pressure test plugs and/or plugs used in winterization of the pool/spa from the suction outlets can result in an increase potential for suction entrapment as described above.
- ⚠ WARNING** - Failure to keep suction outlet components clear of debris, such as leaves, dirt, hair, paper and other material can result in an increase potential for suction entrapment as described above.
- ⚠ WARNING** - Suction outlet components have a finite life, the cover/grate should be inspected frequently and replaced at least every ten years or if found to be damaged, broken, cracked, missing, or not securely attached.
- ⚠ CAUTION** - Components such as the filtration system, pumps and heater must be positioned so as to prevent their being used as means of access to the pool by young children. To reduce risk of injury, do not permit children to use or climb on this product. Closely supervise children at all times. Components such as the filtration system, pumps, and heaters must be positioned to prevent children from using them as a means of access to the pool.
- ⚠ WARNING** - Hazardous Pressure. Pool and spa water circulation systems operate under hazardous pressure during start up, normal operation, and after pump shut off. Stand clear of circulation system equipment during pump start up. Failure to follow safety and operation instructions could result in violent separation of the pump housing and cover, and/or filter housing and clamp due to pressure in the system, which could cause property damage, severe personal injury, or death. Before servicing pool and spa water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before starting system pump, all system valves must be set in a position to allow system water to return back to the pool. Do not change filter control valve position while system pump is running. Before starting system pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water) is discharged.
- ⚠ WARNING** - Separation Hazard. Failure to follow safety and operation instructions could result in violent separation of pump and/or filter components. Strainer cover must be properly secured to pump housing with strainer cover lock ring. Before servicing pool and spa circulation system, filters manual air relief valve must be in open position. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless filter manual air relief valve body is in locked position in filter upper body. Never operate or test the circulation system at more than 50 PSI. Do not purge the system with compressed air. Purging the system with compressed air can cause components to explode, with risk of severe injury or death to anyone nearby. Use only a low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.
- ⚠ WARNING** - Risk of Electric Shock. All electrical wiring MUST be in conformance with applicable local codes, regulations, and the Canadian Electrical Code, ANSI/NFPA70). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do NOT use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. Before working on any electrical equipment, turn off power supply to the equipment. To reduce the risk of electric shock replace damaged wiring immediately. Locate conduit to prevent abuse from lawn mowers, hedge trimmers and other equipment. Do NOT ground to a gas supply line.
- ⚠ WARNING - Risk of Electric Shock** Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard. Electrical ground all electrical equipment before connecting to electrical power supply.

Water Blade Lit Installation Instructions

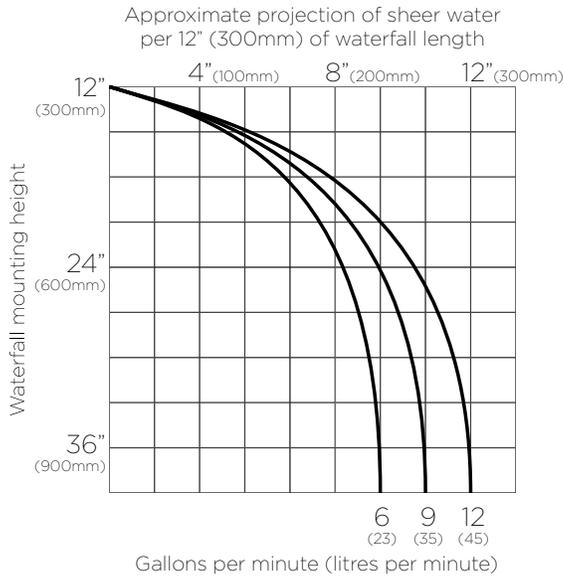
- ⚠ WARNING – Risk of Electric Shock** Failure to bond all electrical equipment to pool structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond all electrical equipment. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.
- ⚠ Notes to electrician:** Use a solid copper conductor, size 6 or larger. Run a continuous wire from external bonding lug to reinforcing rod or mesh. Connect a No. 6 AWG (13.3 mm²) solid copper bonding wire to the pressure wire connector provided on the electrical equipment and to all metal parts of swimming pool, spa, or hot tub, and metal piping (except gas piping), and conduit within 5 ft. (1.5 m) of inside walls of swimming pool, spa, or hot tub.
IMPORTANT - Reference Canadian Electrical Code, ANSI/NFPA70 codes for all wiring standards including, but not limited to, grounding, bonding and other general wiring procedures.
- ⚠ CAUTION** – PAL Lighting® pumps are intended for use with permanently-installed pools and may be used with hot tubs and spas if so marked. Do not use with storable pools. A permanently-installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it is capable of being readily disassembled for storage and reassembled to its original integrity.
- ⚠ WARNING** – Risk of Hyperthermia. To avoid hyperthermia the following “Safety Rules for Hot Tubs” are recommended by the U.S. Consumer Product Safety Commission.
1. Spa or hot tub water temperatures should never exceed 104°F [40°C]. A temperature of 100°F [38°C] is considered safe for a healthy adult. Special caution is suggested for young children. Prolonged immersion in hot water can induce hyperthermia.
 2. Drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness, which could lead to unconsciousness and subsequently result in drowning.
 3. Pregnant women beware! Soaking in water above 100°F [38°C] can cause fetal damage during the first three months of pregnancy (resulting in the birth of a brain-damaged or deformed child). Pregnant women should adhere to the 100°F [38°C] maximum rule.
 4. Before entering the spa or hot tub, users should check the water temperature with an accurate thermometer; spa or hot tub thermostats may err in regulating water temperatures by as much as 4°F (2.2°C).
 5. Persons taking medications, which induce drowsiness, such as tranquilizers, antihistamines or anti-coagulants, should not use spas or hot tubs.
 6. If the pool/spa is used for therapy, it should be done with the advice of a physician. Always stir pool/ spa water before entering the pool/spa to mix in any hot surface layer of water that might exceed healthful temperature limits and cause injury. Do not tamper with controls, because scalding can result if safety controls are not in proper working order.
 7. Persons with a medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain a physician’s advice before using spas or hot tubs.
 8. Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above normal body temperature of 98.6°F [37°C]. The symptoms of Hyperthermia include: drowsiness, lethargy, dizziness, fainting, and an increase in the internal temperature of the body.
- The effects of Hyperthermia include:**
1. Unawareness of impending danger.
 2. Failure to perceive heat.
 3. Failure to recognize the need to leave the spa.
 4. Physical inability to exit the spa.
 5. Fetal damage in pregnant women.
 6. Unconsciousness resulting in danger of drowning.
- ⚠ WARNING** –Risk of Electrical Shock, Opening the LED light section will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, do not open the LED light section. The light has no user serviceable parts inside.
- ⚠ WARNING** – Risk of Electric Shock . The electrical equipment 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 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 electrical equipment without the test button being pushed, a ground current is flowing, indicating the possibility of an electrical shock. Do not use this electrical equipment. Disconnect the electrical equipment and have the problem corrected by a qualified professional before using.
- ⚠ WARNING** –Risk of Electrical Shock, Use of any transformer other than the original model supplied with this unit will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, do not use anything other than the OEM transformer.
- ⚠ WARNING** –Risk of Electrical Shock, Use of any extension cord will increase risk for electrocution and could result in injury or death. Do Not use extension cords on this unit.

Water Blade Lit Installation Instructions

INSTALLATION INSTRUCTIONS:

Read through the instructions entirely, before beginning installation. The Waterblade® is available in standard widths from 300cm to 2.4 metres. This unit must be installed according to these instructions; otherwise the warranty may be void. Read and save these instructions. Check the illustrations to identify each individual part of the Waterblade® and use this manual to guide you through a trouble-free installation. It was developed with the aid of experienced installation contractors to ensure consistent and hassle-free installation.

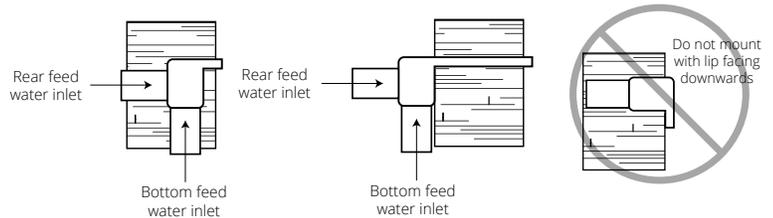
NOTICE: This waterfall unit, including the electrical components, includes no serviceable parts. In the event of a product failure, the entire unit must be removed and replaced.



IMPORTANT: Lay waterfall on flat surface in the original packaging until ready to install. Take care not to damage the Waterblade® during installation. It is best to keep it in its original packaging until you are ready to begin the actual installation. The Waterblade® is shipped complete with grout guard fitted in the opening of the waterfall to keep the spillway opening clean and to prevent damage. Do not remove the protective guard until you are ready to start up the pool equipment. Leave it in place throughout the installation, or damage may occur which will affect the ability of the Waterblade® to perform fully.

Protect the unit from direct sunlight until unit is installed.

See chart for approximate projection of the waterfall. Use this chart in planning the layout of your waterfall.

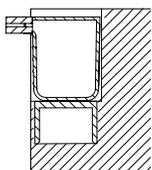
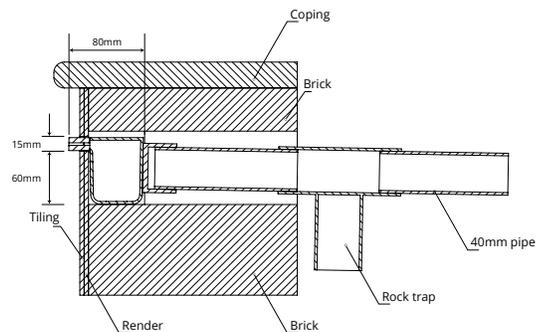
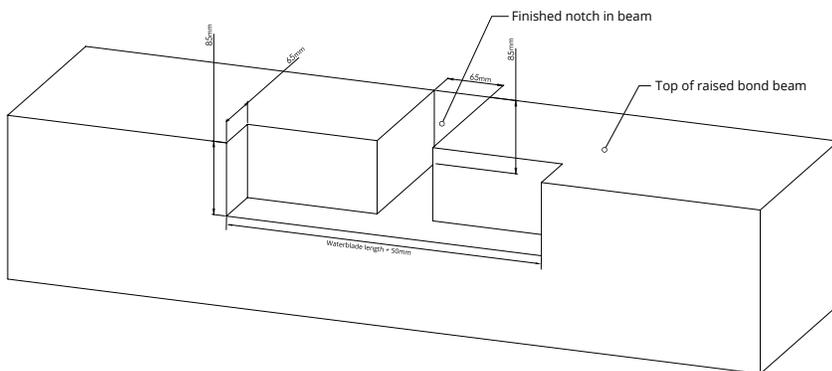


Installing the Waterfall

The pool tiler usually installs the Waterblade® waterfall. Be sure to install the waterfall before any decks and coping. Place the Waterblade® in the pre-cut notch in the brick work, then level the top of the unit to the top of the brick work using tile shims if necessary. Note: the opening and grout guard are located at the top of the Waterblade®

Fill the gaps around the unit with suitable mastic material. Cut tiles to fit beneath the lip of the unit and secure with tiling compound.

Installation of 25mm lip model Waterblade® only



Bottom-Feed Unit
A bottom-feed unit may be installed where space is limited.

Water Blade Lit Installation Instructions

Cutting the brick work

1. For Waterblade® models from 300mm to 2400 mm in width with 25mm lip.

Choose the exact place where you want to position the Waterblade®.

Cut a notch in the brick work 85mm deep by 65mm wide and 50mm longer than the length of the Waterblade® (i.e. 25mm each side). For example, if you are installing the 1200mm model cut the notch 1250mm (1200 + 25 + 25 mm) long. Then mark a single slot in the centre and on top of the brick 65mm wide by 85mm deep. Use this notch to plumb 40mm PVC pipe to the Waterblade®. Mark the brick work and cut it accordingly.

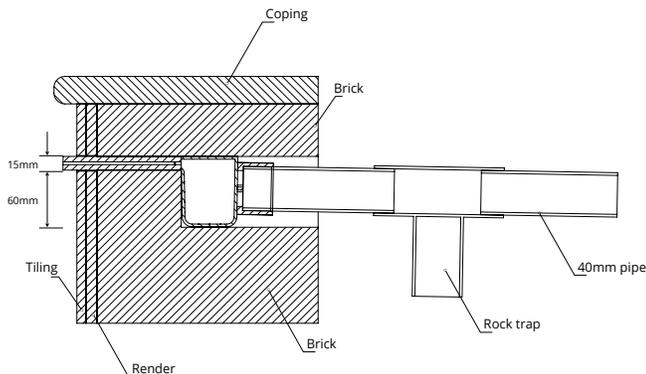
Do not apply torque to fittings. Keep all piping supported so as not to stress the rear of the unit or fitting.

2. For Waterblade® 1500, 1800 and 2400 mm wide.

Longer waterfalls need more water, therefore cut two plumbing lines. Mark and cut the brick as above, except that you now need two notches on the top of the brick for piping. Mark the top of the brick for these units as below.

Position of the plumbing in relation to the size of the Waterblade	
Length	Location of Plumbing
1500mm	375mm either side of the centre line
1800mm	450mm either side of the centre line
2400mm	600mm either side of the centre line

Complete the cuts in the brick before moving on to the next stage.



3. Installation of 150-230mm Lip Extension Unit

Place the Waterblade® unit on a flat, smooth, level surface in the correct location. Set it on a brick or concrete wall using cement or flexible adhesive. Keep the waterfall unit shielded from the sun until the finishing topping has been positioned. Do not apply torque to fittings. Support all the piping so that the rear of the unit or fitting is not stressed.

1. Install water blade into retaining wall



2. Render wall. NOTE: Allow a minimum amount of 32mm of the lip to protrude out of the face of the wall.



3. Tile or finish wall around waterblade lip.

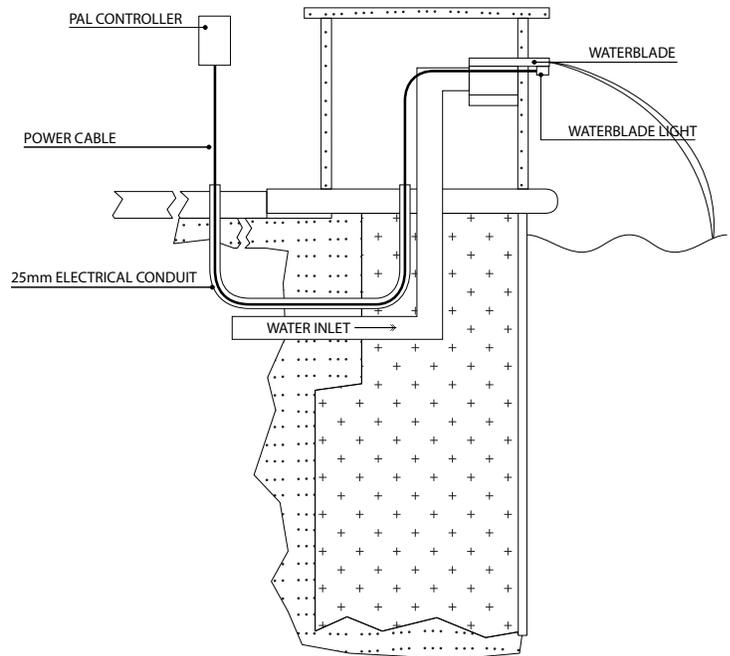
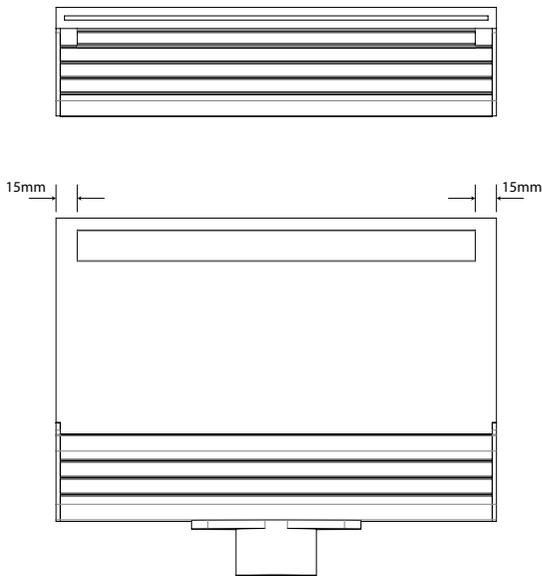


4

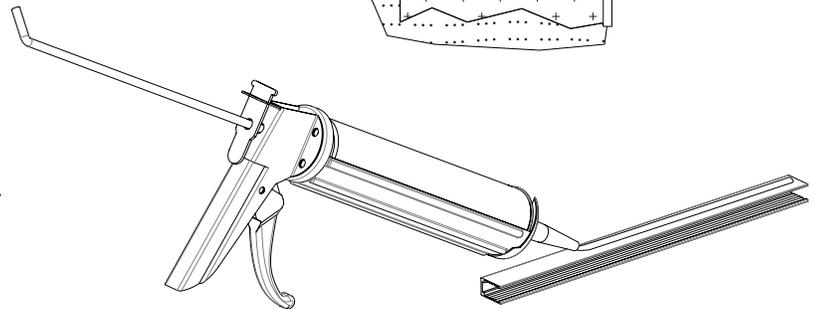
Water Blade Lit Installation Instructions

Installing the Waterblade Light.

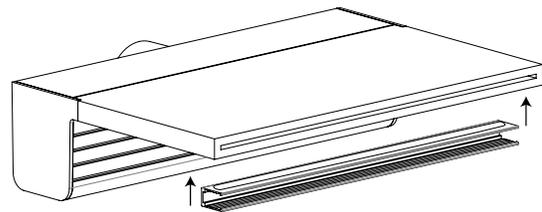
Cut the track 15mm short of each end of the waterblade's lip length.



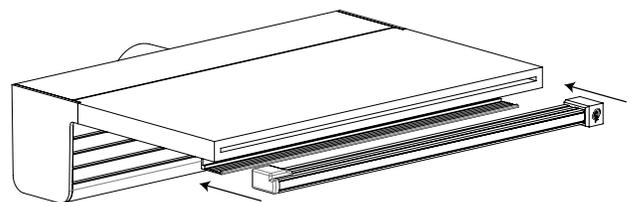
Apply a bead of silicone along the top of the track.



Attach the track to the underside front of the Waterblade lip ensuring a gap of 15mm is left on each end of the track to the edges of the lip.

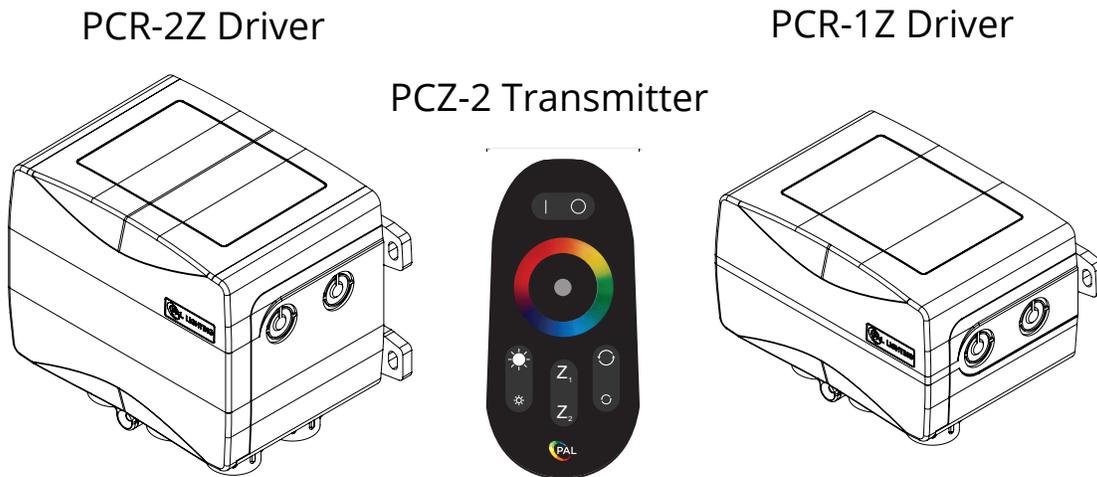


Once silicone has set, push light into track and feed cable into conduit. Connect cable to electrical supply.



CONNECTING TO DRIVER PAL COLOR TOUCH DRIVER

The PAL Treo Max is powered by the PAL PCR-1Z / PCR-2Z Class 2 LED Driver
Refer to PCR-1Z or PCR-2Z for Detailed Installation Instructions.



DIP 1	DIP 2	CLONING DIP SWITCH SETTING
OFF	ON	JANDY
OFF	OFF	PENTAIR
ON	OFF	HAYWARD
ON	ON	PAL

NOTE:

- Must turn off power before making DIP switch selection.
- When syncing PAL lights to other OEM lights, static colors will match but color change mode timing may vary.
- If the PAL Lights are to be used with Automation, do not use the handheld remote control and disconnect the Wi-Fi module from the board if so equipped.
- If the Automation does not turn the PAL lights on or off and there is power to the driver, press the S1 button one time to turn on the PAL Driver.
- Note that the PAL features of infinite color selection and dimmability are not available while in Cloned mode.

Water Blade Lit Installation Instructions

Starting Up Your Waterblade®

The Waterblade® is ready to be started as soon as the swimming pool is finished and filled with water. Remove the protective grout guard now and make sure the opening is clean and free from debris before diverting water into the waterfall.

Now switch the pump on. If you are using the main pool pump to supply the waterfall let it run for a few minutes to clear all debris out of the lines. Then slowly open the valve and allow water to flow to the Waterblade® unit. Use the three-way valve to adjust the water flow rate until the sheet of water reaches out on to the surface of the swimming pool.

After a few minutes all air should have been cleared from the lines and the Waterblade® should now provide a continuous sheet of water. If you have installed a separate pump, be certain to open all valves before starting the pump. Make sure all lines are clear of rubbish, then start the pump and let water circulate through the filter and return system. Open the valve to the waterfall slowly until it has reached your desired flow rate. Wait for a few minutes until all air has been forced out of the pipes.

Winterisation

In areas where a heavy frost is likely, drain water from the system during winter. In these areas, the plumbing should be designed for ease of draining the water. The Waterblade® is designed so that only a minimum of water stays in the unit when the plumbing is installed correctly.

For winterising, blow all lines clear of water and follow normal procedure such as covering the pool.

Options for pump size and installation

The Waterblade® can provide a continuous sheet of water with a minimum rate of water flow. A standard 1200mm model, for example, requires only 180 litres of water per minute.

To choose the correct pump size, refer to the Pump Performance Chart below. The diagram on page 3 shows the approximate projection of the water sheet at a range of flow rates.

A correctly sized swimming pool pump will normally operate the Waterblade® and the pool filter at the same time with little change in overall flow rate. As a rule of thumb, the Waterblade® requires about 45 litres per minute (L/min) per 300mm of width with little head loss. However, you can increase the water flow rate to make a more dramatic effect and to project the water sheet further out from the wall.

Note: When you are plumbing more than one waterfall, add the total length of waterfalls together to determine the flow rate required. E.g. When plumbing two 1800mm units, you now have 3600mm of waterfall, which needs 540 litres/min.

Pump performance at 15 metre head	
0.35 kW	120 Litres/min
0.50 kW	260 Litres/min
0.70	300 Litres/min
1.0 kW	420 Litres/min
1.5 kW	470 Litres/min
2 kW	620 Litres/min

Waterblade Size (Imperial/Metric)	Waterblade Model Number	Flow Rate (GalPM/LPM)
1'0" / 300mm	64-EFWBL-1-6N-R/B	12-14 / 45-53
1'6" / 450mm	64-EFWBL-1B-6N-R/B	18-21 / 67-80
2'0" / 600mm	64-EFWBL-2-6N-R/B	24-28 / 90-106
3'0" / 900mm	64-EFWBL-3-6N-R/B	36-42 / 135-159
4'0" / 1200mm	64-EFWBL-4-6N-R/B	48-56 / 180-212
5'0" / 1500mm	64-EFWBL-5-6N-R/B	60-70 / 225-265

Installing with existing pool filter pump in place

The most common plumbing system consists of using the existing main pool filter pump to supply the waterfall. This works well with a very small water flow.

Install a three-way valve on the line returning water from the filter to the pool and connect it to the waterfall feed line with 40mm PVC schedule 40 pipe. Waterfalls more than 1500mm wide require at least a 50mm PVC feed pipe. See Pipe Size Chart.

40mm	270 litres/min
50mm	450 litres/min
60mm	620 litres/min
70mm	1000 litres/min

Note:

- Use minimum of 40mm pipe.
- Use minimum of 50mm pipe for runs of more than 20m or if waterfall is more than 1500mm wide
- Use dedicated plumbing lines

Water Blade Lit Installation Instructions

When to install a separate pump for the Waterblade®

If you plan to install more than one Waterblade® or a waterfall wider than 1.8m, you will get better results by using a separate pump. For this you require a separate suction pipe of at least 50mm PVC.

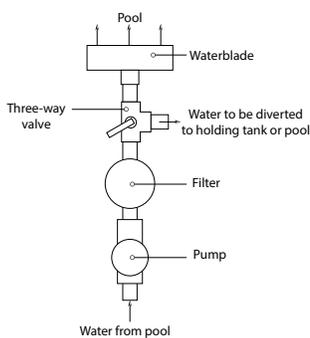
Install at least one anti-vortex safety suction cover, positioned 450mm above the floor of the pool, at the pool side as a safety precaution. Also plumb a Waterblade® filter/strainer, on the return side of the pump, between the pump and the waterfall.

If you are using a separate pump for the waterfall you will need to add a filter, to prevent large pieces of debris from entering the Waterblade® unit. Use one filter for a pump capacity up to 240L/min and two filters plumbed in parallel for higher water volumes.

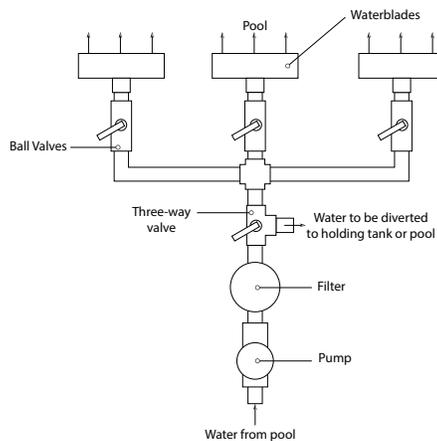
Also install a three-way valve to allow the operator to balance the flow between the Waterblade® and the pool return.

PLUMBING CONNECTIONS

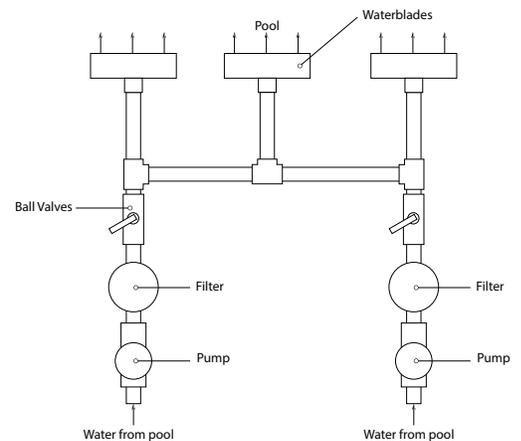
Single Pump, Single Waterblade



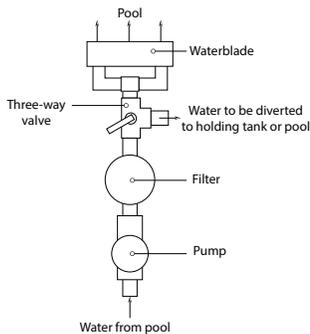
Single Pump, Multiple Waterblades



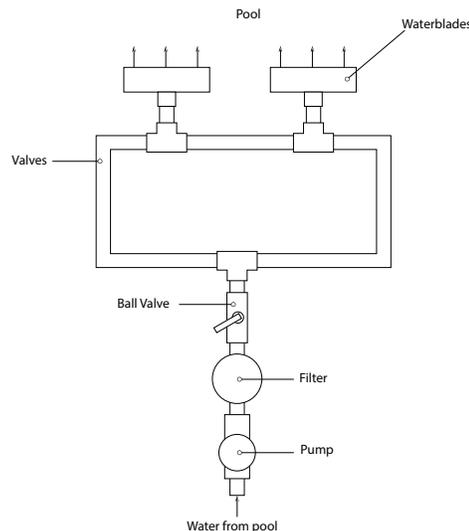
Multiple Pumps, Multiple Waterblades



Single Pump, Single Longer Waterblade



Single Pump, Multiple Waterblades



Plumbing in the Waterblade®

Return line: The feed line from either the main pump or a separate pump requires at least 40mm PVC pipe. Use a 50mm line for waterfalls wider than 1.5m. Place the end point of the feed line near the centre of the waterfall at the rear of the bond beam. Install a three-way valve as the "T" from the return line of the pool to the Waterblade®.

Place it in an accessible position on the feed line so that you can control the flow rate of water to the Waterblade® as well as to the rest of the pool. The best place for this valve is usually just after the filter near the equipment pad. See diagrams.

NB Filter all water supplied to the Waterblade®

If you have a dedicated pump for the Waterblade® you must use a separate filter to keep rubbish out of the unit.

Standard 40mm PVC fittings will fasten to the 40mm pipe provided on all Waterblade® units using standard PVC solvent cement. Make sure the fittings are properly fastened by cleaning both pipe and fittings before applying solvent cement, smear both parts with solvent cement and if possible slightly twist the pipe when pushing it into the fitting.

Install the rock trap as close to the waterfall as possible. See below for installation instructions.

Note: You should install a flow control valve in an accessible position on the supply line to regulate the water supply to the Waterblade®.

Installing multiple units

You can install multiple Waterblade® units in exactly the same way as for a single unit except that you will need to include a separate two-way valve for each unit. These valves are used to control the amount and distribution of water between each of the waterfall units. Use minimum 50mm PVC pipe with regulating valves for Waterblade® units 1.5 to 2.4m wide. See figure below.

Installing the rock trap (optional on some Waterblade® models)

- Install the rock trap close to the waterfall for maximum protection.
- Make sure the debris collection chamber is pointing down. If this is not possible do not install the rock trap.
- Before cementing the rock trap in place make sure the flow arrow is pointing in the right direction.

Waterblade® Radius Cut

Concave and convex cuts can be made to order. Contact Waterblade factory to discuss your requirements

Troubleshooting

1. Check that the pump system is switched on and working normally.
2. Make sure all air is purged from the lines

Problem	Cause	Solution
Waterfall is not completely smooth. There is a gap in the water sheet	Rubbish has collected where the input pipe opens into the Waterblade	Place a credit card or similar slim object inside the opening while the waterfall is running. Slide it along to where the rubbish is placed and gently pull it out
One waterfall is stronger than another (where there are more than one waterfall)	Water supply not correctly balanced	Adjust three-way valves until balance correct