



BLUE SQUARE®

Valve Installation and Maintenance Guide



IMPORTANT SAFETY INFORMATION

When installing and using this equipment, basic safety precautions should always be followed.

****READ AND FOLLOW ALL INSTRUCTIONS****

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

Swimming Pool equipment can generate high pressures capable of causing injury. Always use caution when manipulating valves associated with the pool equipment and turn off the pump if pressures exceed manufacturer's specification. Always turn off the pool equipment when disassembling or servicing your circulation system.

Swimming Pool equipment can create suction sufficient to entrap even adults. If pool fittings are broken or missing, turn off your equipment and contact a certified swimming pool expert to make the needed repairs.

To ensure proper cleaning and to qualify the warranty, fax or email a System Design Form provided by Blue Square along with a scaled pool plan for a FREE certified In-Floor Design. (New pool construction only.)

Email: plans@bluesquaremfg.com
Fax: (888) 282-6955

If the pool plan design or dimensions change during excavation, a revised plan must be submitted to Blue Square in order to maintain warranties.

Install the valve above ground at finished pool water level. **Do not bury top of clear lid and inlet of valve after installation.**

Install cleaning heads and nozzles according to the Design Plan.

If pool includes an elevated spa, install a check valve on the line feeding the spa heads to avoid spa draining. Install other check valves (as normal) to avoid spa return jets and suction lines from draining. For multiple elevation changes in bodies of water and/or negative edge water features, please contact our design centre. (800) 277-4150.

SAVE THESE INSTRUCTIONS AND LEAVE WITH POOL OWNER

For customer service or support:

For on-line support: www.bluesquaremfg.com
To contact Blue Square: Customer Service
231 East Chilton Drive
Chandler, AZ 85225
(800) 277-4150

Australia / New Zealand distributor

Waterco Limited
36 South Street
Rydalmere NSW 2116
Phone 02 9898 8600
www.waterco.com

INTRODUCTION

The Q360 In-Floor Cleaning system is designed to give years of service. The benefits of deep circulation are well documented and scientifically proven to give the most efficient swimming pool circulation available. This superior circulation delivers substantial chemical, electrical and heat savings to the pool owner while offering outstanding cleaning benefits as well.

The unique engineering of the Q360 System smoothly transfers power from the turbine to the ports or outlets with minimal friction loss and back pressure, allowing the maximum possible flow rate to the in-floor cleaning jets. The open gear design allows for effective pass-through of debris, greatly minimizing annoying cleaning system disruptions and lowering maintenance costs even further over other in-floor systems.

The Innovative pressure-safe valve design protects your system by ensuring that one port is always open. Large 50mm inlet and (6) 50mm ports maximize flow rate. Reinforced space-age moulded construction weathers the elements and is saltwater/chemical friendly. See-through lid design allows for inspection of turbine and gears without the need for disassembly.

Failure to follow recommended installation methods could void warranties and cause injury.

COMPONENTS

The Q360 High Performance Water Valve:

A. Valve Housing or Body



A. Cassette



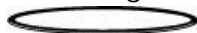
B. Turbine



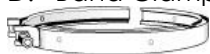
B. Clear Lid



C. O-Ring



D. Band Clamp w/ nut



The Q360 Jet Complete:

A. Jet (High Flow & Low Flow)



B. Collar



C. Protective Cap



INSTALLATION

1. Site Planning

Verify that the excavated pool matches the Blue Square Certified Pool Plan. Check the break, width, depth and designated step/bench locations. Blue Square design dimensions are from **finished** pool edge. They are not taken from the excavation edge. Allowances will need to be made for the thickness of the shell according to your pool company's specifications and local codes.

If any aspects of the pool design change during the construction process, please resubmit an updated plan with the changes for a new Factory Authorized Plan to ensure proper cleaning and circulation. Failure to follow the FREE factory authorized design and to ensure that the pool is built to the plan specifications may void the warranty.

In order to save on plumbing costs, position the valve as close as possible to the swimming pool or water feature. The valve should be at least five feet away from the water's edge. (Check the bonding codes in your area.) The low profile design, the quiet and smooth operation of the Q360 Water Valve allows for the valve to be inconspicuously hidden by an irrigation box or landscaping.

Although servicing the valve is very rare, the valve should be placed in a location where it may be easily accessible.

Install the valve so that the lid and band clamp are above grade and the top of the valve housing is 50-76mm above the water level of the main body of water. If a below water level installation is necessary, serviceable check valves or manual valves on all of the inlet and outlet ports will be required to prevent flooding when servicing the valve.

In order to reduce plumbing costs; layout the system so the feed pipes enter the pool close to the centre of the pool nearest the pool equipment. See Fig. A 1-1 & Fig. A -1-2

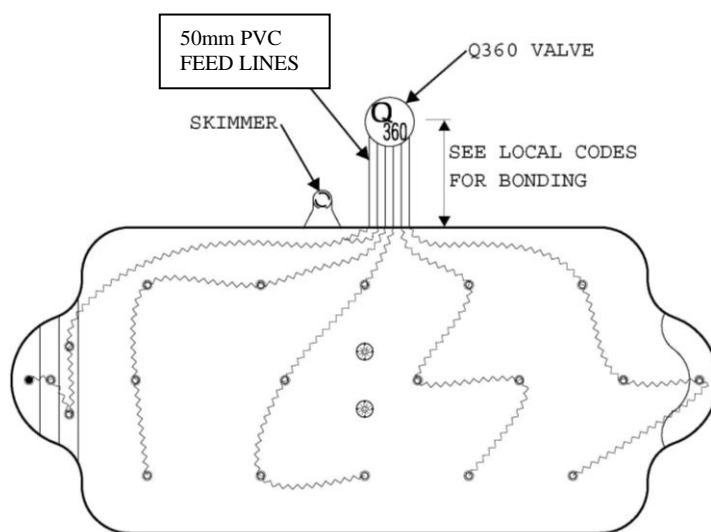


Fig. A 1-1

2. Plumbing the System

The Blue Square certified plan indicates which cleaning heads will be plumbed together to form a bank. Run all feed lines to the top of the bond beam to facilitate easy valve hook up. Number the lines according to the design plan. Keep in mind that the valve cycles counter clockwise from the top view.

- Excavate niche in pool wall, 152 x 609mm down to the pool floor
- Make line trench depth sufficient to cover all pipes
- Do not cross lines in floor
- Use 50mm Class 12 PVC pipe
- Position so jet feed lines are perpendicular to the slope of the finished pool floor.

See Fig. A 1-4

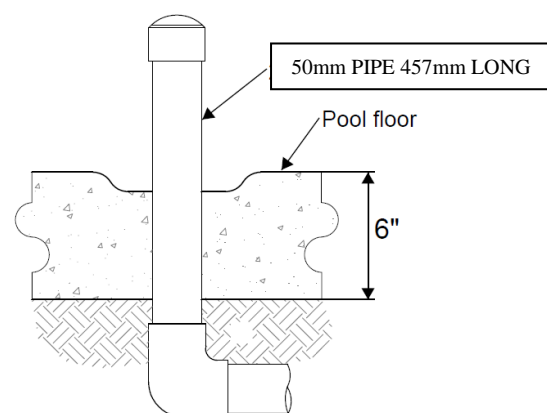


Fig. A 1-4

Cleaning Head Risers / Stub-ups

The cleaning head collars require a 50mm Class 12 PVC riser. *These stub-ups should be perpendicular to the slope of the pool floor.

Plumbing the Valve (see Plumbing the System Diagram)

Remove the Cassette / Gears during pressure testing to allow for equal distribution of pressure down all 6 ports or zones. Store the Cassette with the jets for reinstallation at start-up.

Position the O-ring on the valve housing in the O-ring groove. Align the center hole on the clear lid with the guide pin in the lid and use the band clamp to secure the clear lid to the valve housing. If the lid does not sit firmly on the O-ring the cassette is not in the full down position. Replace (re-drop) the cassette into the valve to make sure the outer gears engage with the gear train on the interior perimeter of the valve housing.

When plumbing the valve housing use heavy bodied PVC glue with a compatible primer. It is best to prime the housing heavily to ensure a good glue joint.

Discharge or Feed Lines

The Q360 valve uses 50mm Class 12 PVC pipe. Use a 76mm stagger when cutting pipes to provide enough clearance. See detail. See Fig. A 1-5

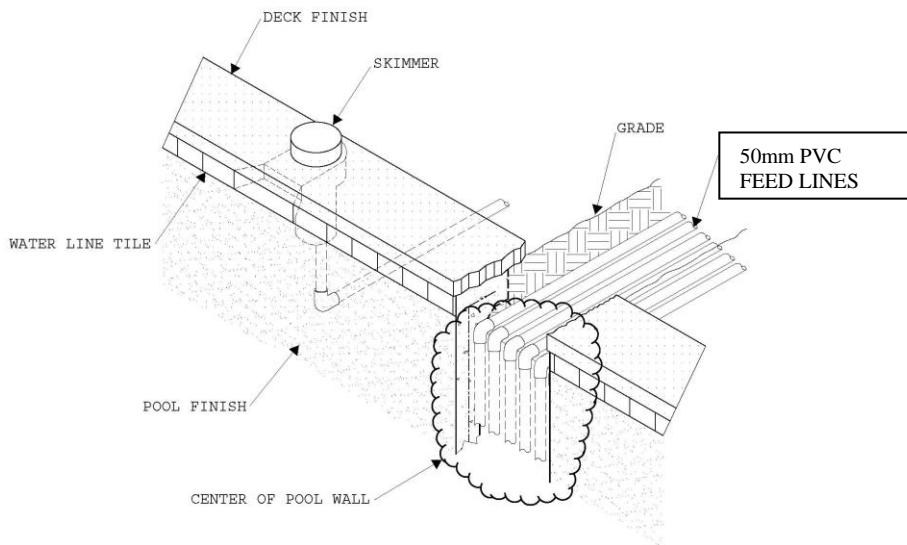


Fig. A 1-2

Just like any other plumbing, a check valve is needed on the feed line running to an elevated spa or a different elevation body of water to prevent drain-back or equalization. See Fig. A1-3 for integrated with filtration or A1-3a & b for independent of filtration examples.

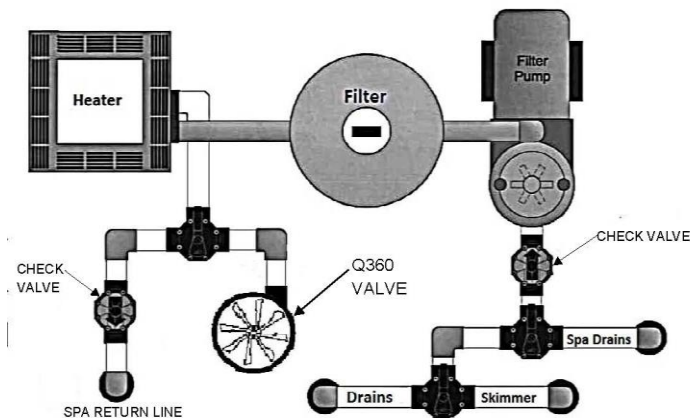


Fig A1-3

An independently plumbed Bluesquare infloor pool cleaning system is the preferred method of installation to ensure optimal cleaning effect. Waterco requires the installation of a Multicyclone and / or filtration on independently plumbed infloor cleaning system circuits to allow clean / filtered water to pass through the Q360 valve and pop up jets to ensure reliable operation. Failure to ensure filtered / clean water is supplied to the system will void the product warranty.

Fig A1-3a

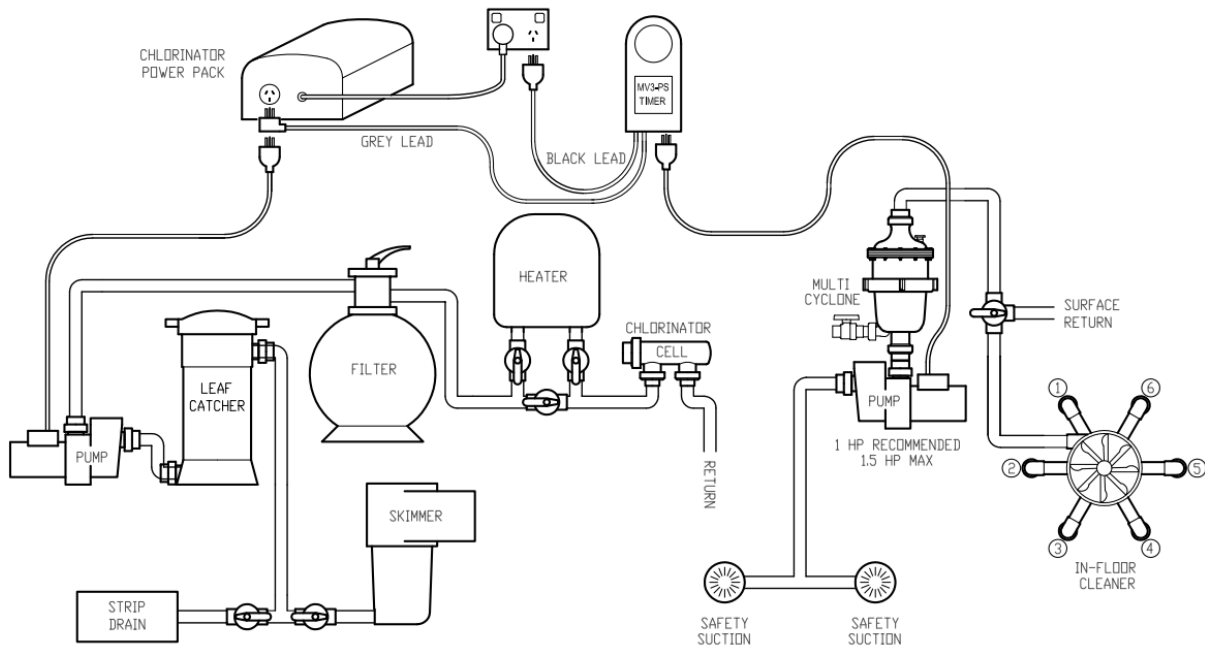
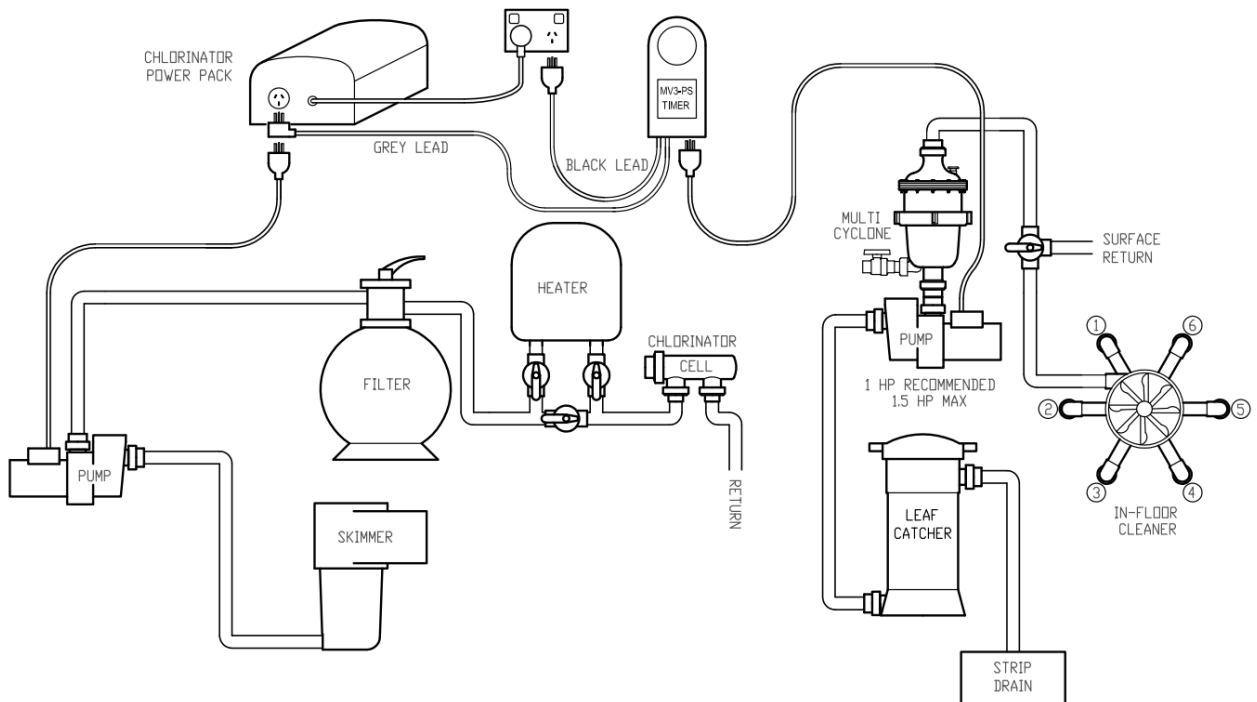


Fig A1-3b Recommended Layout



Follow the design plan to position and stake the cleaning head locations.

Each head has a designated nozzle that has a precise cleaning radius. Perimeter heads have a one foot overlap. Mark the cleaning radius around each stake with a 1.5m arch to verify cleaning coverage. Keep in mind that the jets clean much further. The design allows for overlap to prevent debris accumulation in-between filter cleaning cycles.

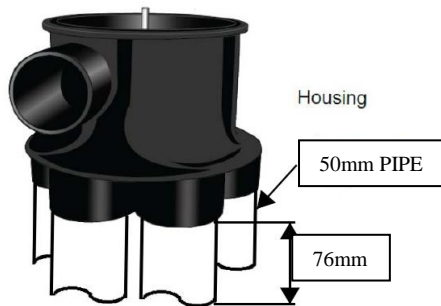


Fig. A 1-5

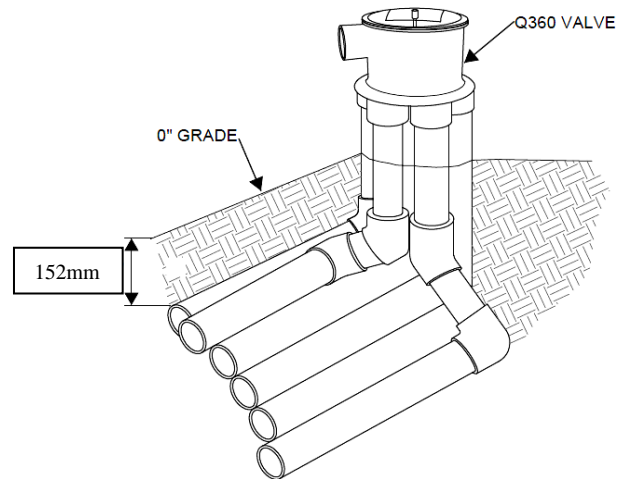


Fig. A 1-6

Install the discharge lines from the valve in a stacked or flat configuration. See Fig. A 1-6

- Use heavy bodied PVC glue to connect PVC fittings to the valve housing. Do not get glue inside the housing as it will void the warranty.
- Install lines a minimum of 152mm below grade or in accordance with local codes.
- *Ensure pipework is perpendicular when entering the 6 x discharge ports to ensure there is no stress placed on the housing. This may cause the housing to warp and not allow the gear plate in the valve to operate correctly.*
- The distribution system is usually designed to rotate from shallow to deep, following your factory design. Looking down on the valve, it rotates counter-clockwise.
- If a spa is included in the application, it will require a dedicated line from the valve and a check valve if it is a raised spa.
- If all outlet ports on the valve are not needed, use the Y-Pipe as noted in the plan to aid in efficiency and reduce plumbing costs.
- *Note: Surface returns can be applied to the unused port.
- Never tie a raised spa bank with any plumbing from a lower body of water and drain down.

Consult the design plan for correct connections.

Auxiliary Equipment

Heaters

To compensate for heater system pressure drops, plumb heaters in a bypass line before the water valve. The heater bypass valve should be adjusted to $\frac{3}{4}$ open. See Fig. A 1-7

Chlorinators

In-floor systems can be used with erosion feeders, ozone generators and in-line salt converters. Consult manufactures instructions for proper installation to protect water valve and other pool equipment. Any chlorinator with a venturi or restrictive channels should be plumbed with a bypass. See Fig. A 1-7

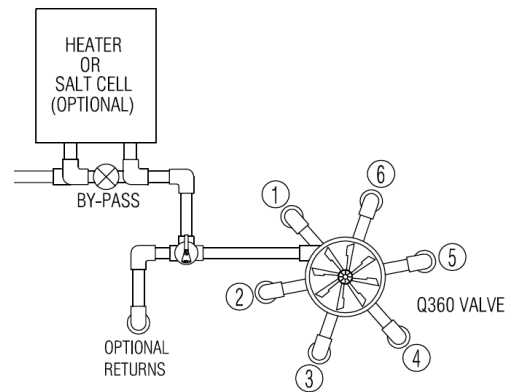


Fig. A 1-7

Pressure Testing

Pressure-test the system at a minimum of 35 psi (240kPa) or follow local code requirements. Keep the water valve secure and under pressure throughout the construction process. **Remember to remove the cassette and turbine** in order to allow for equal distribution of pressure down all 6 lines and store the cassette and turbine for reinstallation at start-up.

3. Preparing the System

Cut cleaning Jet Stub-ups and Clear Debris from System (Concrete Pools)

After inspection, clear the system lines of debris using a combination of air and water. (see inspection steps below)

1. Verify that the system is holding pressure (minimum of 35 psi (240kPa)), then relieve system pressure at filter gauge.
2. Cut each stub-up ensuring collars sit at a height to accommodate approximately 12mm of final finish material. Clean off all burrs and debris.
3. Insert test plug in each stub up.
4. Attach a blower assembly unit (blower, check valve, air/water supply and connectors; call Blue Square for assembly instructions) to the blower plate or directly to the valve.

All Pools

5. Turn on blower and water supply to fill the lines.
6. Starting at the cleaning head farthest from the valve, remove test plug and flush the pipe, blocking and releasing pressure several times to ensure a clear line.

Installing Cleaning Collars in concrete pools

- Use an inside pipe cutter to cut pipe 12mm below pool concrete floor.
- Slide and cement one half of the adaptor ring onto the collar.
- Internal pipe sizes may vary. It may be necessary to ream the inside of the pipe to create a snug fit for the collar with adaptor ring.
- Apply an appropriate amount of cement to the primed collar and pipe surfaces.
- Slide the collar into the riser ensuring correct height to finished floor level.

Ensure all surfaces to be joined use Hydraulic cement over and around pipe and up to bottom of flange (See Fig, 1-A).

Reference:

1. In floor collar
2. Interior pool finish
3. Hydraulic cement
4. 50mm Class 12 PVC Pipe
5. Pool Shotcrete / Gunite
6. Top of Supply pipe 12mm below flange
7. Bottom of flange

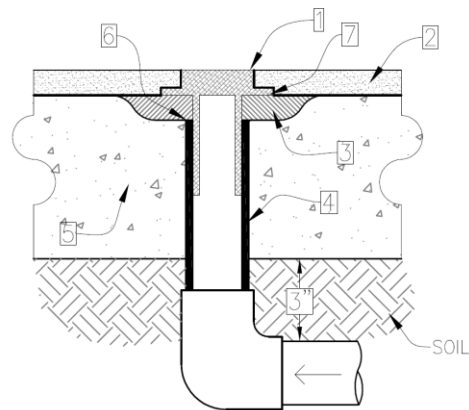


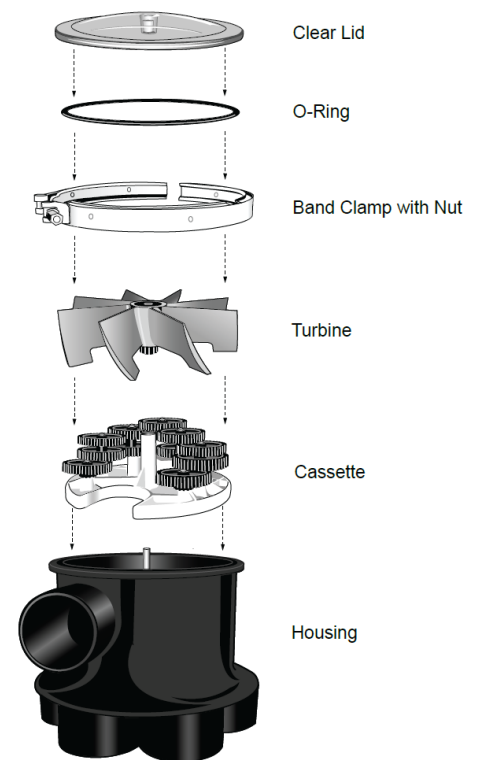
FIG. 1 - A

Installing the Pop up cleaning heads

- Ensure all debris from the construction phase is completely flushed from the piping feeding the banks of pop up jets prior to initial pop up installation.
- Follow the Bluesquare issued plan on jet placement and ensure the correct jet insert (small, medium, large) is used in each position as indicated. As a general rule, the large aperture insert is used on the floor of the pool, medium on lower steps and small on the top step.
- When installing the jets into the jet collar, ensure all pop up jet apertures are facing the same direction to improve the cleaning effect.
- Check the pool water level is correct when operating the system as low water level may tend to allow top step jets to spurt water out of the pool.

Install Working Valve for Start-up (after the pool is filled)

1. Turn pump off at the pool pump.
2. Loosen the bolt on band clamp and remove the band clamp and clear lid.
3. Clean any construction debris from the interior and top edge of the valve housing.
4. Install the cassette (Gear Train) by sliding it onto the centre shaft. Spin the gears and make sure the cassette drops all the way down and the lower gear engages with the gear train on the housing perimeter.
5. Place the turbine on the centre shaft gear side down. Make sure the gear on the turbine engages the upper gear on the cassette. Spin the turbine several times and observe that the white bottom plate is slowly turning. If it does not the cassette is not in the full "down" position and the lower gear is above the gear train on the housing perimeter. Push the cassette down into the gear train if necessary.
6. Check the positioning of large O-ring and make sure it is in the groove on the top of the valve housing. Remove any debris.
7. Align the centre shaft on the guide pin hole in the centre of the clear lid and gently push the lid down. The lid should sit firmly on the top of the valve housing with no wobble. If it does not sit firmly remove the turbine and press the cassette down into the gear train.
8. Replace the band clamp and tighten the bolt firmly. Do not over tighten.
9. Turn on the system and allow it to cycle until all of the protective caps are blown free from the collar and to allow any additional construction debris to be blown out of the pipes.
10. After the interior finish has properly cured (see the interior finish manufacturer's specifications) install the jets in the collars. Make sure to follow the design plan for correct locations of High Flow Jets and Low Flow Jets 6mm nozzle. Improper nozzle sizes in the wrong location can cause high pressures and water to be forced out of the pool onto the deck.
11. There may be debris resting on the pool floor due to construction and system flushing. Ensure all debris is removed from the pool floor prior to operating the system for the first time.
12. Note:- Install the jet nozzle outlets facing the same direction throughout the pool.



OPERATION AND ROUTINE MAINTENANCE

The Blue Square Q360 cleaning heads are designed to operate at a specific flow rate and pressure. To ensure proper circulation and or cleaning, run the system whenever the pump is on. Ensure the pool water balance is within normal ranges for pH, alkalinity, calcium hardness & chlorine or sanitiser.

Recommended pool water chemistry tolerances are as outlined below:

pH - minimum 7.2 - maximum 7.6

Total alkalinity - minimum 100 - maximum 150 ppm

Calcium Hardness – minimum 200 – maximum 250 ppm

Sunscreen – minimum 20 – maximum 70 ppm

Langelier SI – ideal is 0 - plus / minus 0.2

The Langelier Index is an approximate indicator of the degree of saturation of calcium carbonate in water. It is calculated using the pH, alkalinity, calcium concentration, total dissolved solids, and water temperature of a water sample. If the;

- Langelier Index is negative, then the water is under saturated with calcium carbonate and will tend to be corrosive in the distribution system
- Langelier Index is positive, then the water is over saturated with calcium carbonate and will tend to deposit calcium carbonate forming scales in the distribution system
- If Langelier Index is close to zero, then the water is just saturated with calcium carbonate and will neither be strongly corrosive or scale forming.

Water Flow Rate and Pressure

The system flow rate is determined by the number of nozzles and nozzle sizes installed. Bluesquare typically design a system to operate between or 225-280 LPM (60-80 GPM) range. The suggested pressure for maximum cleaning effect is approximately 103 kPa or (15 psi). The installation of a three way valve to a surface return between the system pump and Q360 valve during installation may be used to control the water volume and speed to the Q360 valve as shown in figure 1-3a & b.

The recommended plumbing method is figure 1-3b where the infloor system operates independently to the filtration system with suction through the infloor drain. This method should allow maximum suction through the infloor drain if the installed three way valve is adjusted to allow excess water through the surface return. A good method to ensure correct flow range through the infloor system is to install a **Flowvis** valve prior to the Q360 valve. The Bluesquare Eclipse drain for concrete pools and A&A AVSC Channel Drains for fiberglass pools are certified for use as single suction drains / outlet covers as per ANSI/APSP 16 / ANSI/ASME A112.19.8.

Note:- When two suction outlets are required, normally in a pool / spa layout the plumbing for both drains should be run back to the equipment pad separately. To balance the suction through each drain a three way valve should be installed prior to the leaf trapper if it is one water body. A larger size pump may be required to provide enough suction when two drains are fitted.



System Run Times

Cleaning times will vary according to application and environment. To determine the optimum cleaning time, run the system 24 hours a day after initial start-up. Reduce run times by four hours every two days until minimum cleaning time is determined. Four - six hours a day is recommended as a minimum, but pools with high debris conditions may need longer cleaning cycles.

Independent systems should be run with the filtration system to ensure any debris rising to the water surface is captured by the skimmer.

CLEANING THE FILTRATION SYSTEM

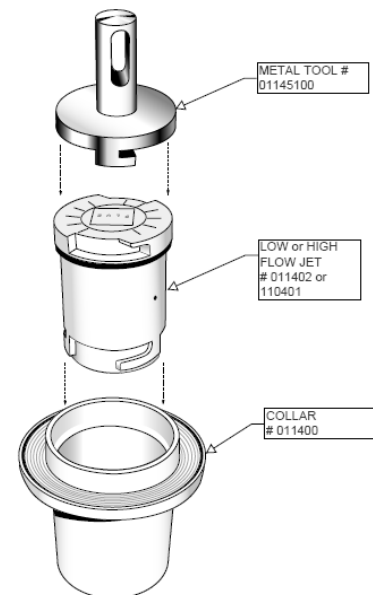
For optimum cleaning efficiency, routinely clean the leaf trapper bag, pump basket, skimmer and filter screens. Backwash or clean the pool filter whenever pressure increases 5-10 psi (35 – 70 kPa) above normal clean-filter operating pressure or if you notice dirty spots between the jets. For independently plumbed systems, ensure filtered / clean water is used. **Failure to ensure filtered / clean water is supplied to the system will void the product warranty.**

CHANGING CLEANING HEADS

The cleaning jets must be in the full down position before removal.

1. Attach the Jet Removal Tool to the pool pole
2. Snap tool into the jet
3. Turn counter-clockwise to release head from collar
4. Pull and lift the jet out of the collar

To reinstall, simply insert head into collar and turn clockwise to lock into position.



TROUBLESHOOTING

If the Blue Square Q360 cleaning system displays the following actions, adjustments may be necessary to restore performance. Refer to exploded parts diagram for part references.

Action: Dirty Spots appear

Solution: Clean the pool filter, pump basket and skimmer baskets.

Make sure all auxiliary valves (surface returns, waterfall, spa overflow, etc.) are closed.

If you have a variable speed pump, check to make sure the pump is running at a sufficient RPM as recommended by your pool builder.

Action: Dirt is trapped between heads

Solution: Verify that the water flows from the jet nozzle on each side of dirty spot are not apposing one another. To change the cleaning jet flow direction, press the jet down 5-6 times while it is in the up position and the water is flowing out of the nozzle.

Actions: Cleaning jet advances, but is not cleaning, (dirt remains near the jet.)

Solution: Remove the cleaning jet with the jet removal tool. Check for debris lodged in the nozzle. Make sure the jet freely travels up and down and ratchets slightly each time. If the jet does not, hold the jet in the up position and rinse with water to dislodge internal debris. Run the pump, while the jet is removed, a full cycle until you see water flow out of the opening on the problem bank. Let the system run without the jet until you are certain that all of the debris is blown out of the pipe. Re-insert the cleaning jet with the jet removal tool.

Action: Cleaning jet will not go down

Solution: Try to gently touch the jet with the pool pole to see if it will retract, if the jet retracts let the system run and see if the problem is solved. If the problem recurs, remove the jet with the jet removal tool. Inspect the cleaning head and collar for or debris. Run the pump, while the jet is removed, a full cycle through the problem bank, to blow out any debris. Re-insert the cleaning jet. On variable speed pump applications, you may need to increase RPM's to ensure jet fully ratchets to next position.

To replace the Cassette in the water valve:

1. Turn pump off
2. Loosen the bolt on band clamp and remove the band clamp and clear lid.
3. Remove the turbine and old cassette by sliding them off of the centre shaft.
4. Install the new cassette by sliding it onto the centre shaft. Spin the gears and make sure the cassette drops all the way down and the lower gears engage with the gear train on the housing perimeter.
5. Place the turbine on the centre shaft gear side down. Make sure the gear on the turbine engages the upper gear on the cassette. Spin the turbine several times and observe the white bottom plate is slowly turning. If it does not the cassette is not in the full "down" position and the lower gear is above the gear train on the housing perimeter.
6. Check positioning of large O-ring on the clear lid.
7. Align the centre shaft on the guide pin hole in the centre of the clear lid and gently push the lid down. The lid should seat firmly seat on the top of the valve housing with no wobble.
8. Replace the band clamp and tighten the bolt firmly. Do not over tighten.

Thank you for purchasing a Blue Square Q360 In-Floor Cleaning System! With over 20 years of pool building and in-floor knowledge, this system was designed with you and the homeowner in mind. This cost effective and efficient system is truly innovative with a very simple approach to installation and repair; making it easy for the homeowner to keep their pool clean and, should there be a problem to arise, easy to fix. We are here to answer questions, resolve issues and provide exceptional customer service.

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