

# GLASS PEARLS

## Superior filter media

### Installation Manual

Waterco's Glass Pearls deliver outstanding water clarity.



#### **⚠ WARNING**

This Glass Pearl Media must be installed and serviced by a qualified technician. Improper installation can create electrical hazards which could result in property damage, serious injury or death. Improper installation will void the warranty.



#### **Notice to Installer**

This manual contains important information about the installation, operation and safe use of this product. Once the product has been installed **this manual must be given to the owner/operator of this equipment.**

# GLASS PEARL MEDIA

Waterco's Glass Pearls are manufactured from 100% pure glass and offer much finer filtration than conventional filter media.



## SUPERIOR PURITY

Whereas other filter media may contain a variety of contaminants, Waterco's Glass Pearls are chemically inert for superior purity. In fact, Glass Pearls have been independently lab tested for leaching contaminants and found to be well within Australian Drinking Water Guidelines.

Their superior purity greatly reduces its initial backwashing requirements, prior to commissioning a filter, enabling a rapid start up of media filters.



## SAFE

Glass Pearls are safe to handle & safe to service in comparison to other glass media options as crushed glass. Glass Pearls are spherical and do not have sharp edges, making them really safe to use. And if there's ever a failure, of the filter's laterals and Glass Pearls flow into the swimming pool, they pose no risk of injury to swimmers.

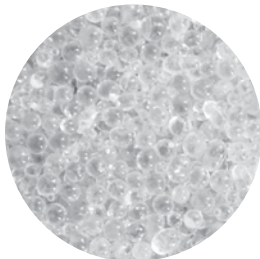
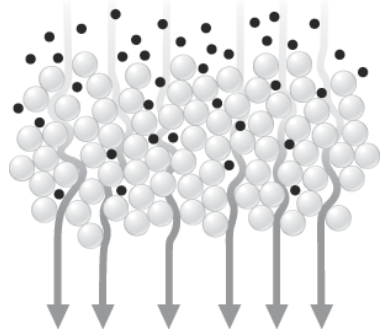
## SUPERIOR DEPTH FILTRATION

Glass Pearls operate on the basis of "depth filtration"; dirt is driven through the filter bed and trapped in minute spaces between the particles of filter media allowing the cleansed water to pass through.

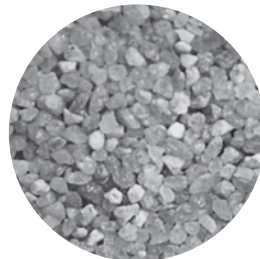
Conventional media such as sand is crushed and sieved; they generally have an irregular structure and a larger variation in particle size. A conventional media filter bed is more porous and unable to trap fine particles.

Glass Pearls are man-made to specific geometrical shapes providing an extremely narrow particle size range of 0.6mm to 0.8mm, enabling the creation of a dense homogeneous filter media bed, capable of filtering particles down to 3 microns.

A micron is equivalent to one millionth of a metre.



Glass Pearl Media



Sand Media

# CAUTION

## Emergency & First Aid Procedures:

If Glass Pearls or dust causes eye irritation, flush the affected eye(s) with water or commercial eye wash. If existing respiratory conditions are aggravated in your use of this product, get to a well-ventilated area. Seek medical attention if condition is not alleviated.

<b>Fires Risks</b>	:
<b>Flammable Limits</b>	: Does not ignite
<b>Extinguishing Media</b>	: Not a fire hazard
<b>Unusual Fire &amp; Explosion Hazards</b>	: None
<b>Special Fire Fighting Procedures</b>	: None
<b>Accidental Release Measures</b>	:
<b>Minor Spills</b>	: Vacuum or sweep up excess material to avoid a possible slipping hazard.
<b>Waste Disposal Method</b>	: Glass Pearls may be disposed of in a solid waste landfill if permitted by Applicable Federal, State and Local Regulations.
<b>HANDLING AND STORAGE</b>	:
<b>Protective Gloves</b>	: As required per job.
<b>Eye Protection</b>	: Safety glasses or goggles.
<b>Other Protective Equipment</b>	: None
<b>Personal Protective Equipment</b>	: All personal protective equipment should be selected, used, maintained and decontaminated in accordance with manufacturers' instructions and applicable standards.
<b>Personal Hygiene</b>	: Always wash hands after using this product. Always wash hands before eating, drinking, smoking or using the toilet. Work clothes should be washed regularly.
<b>Physical &amp; Chemical Properties</b>	:
<b>Flash Point</b>	: N/A.
<b>Appearance/Odour</b>	: Transparent / Odorless.
<b>Softening Point</b>	: 730°C.
<b>Specific Gravity</b>	: 1.55 - 1.65 g/cc.
<b>Solubility in Water</b>	: Insoluble.
<b>Lower Flammability Limit</b>	: Non flammable.
<b>Upper Flammability Limit</b>	: Non flammable.
<b>Stability &amp; Reactivity</b>	:
<b>Chemical Stability</b>	: Stable.
<b>Incompatibility</b>	: Hydrofluoric Acid.
<b>Hazardous Polymerization</b>	: None.
<b>Toxicological Information</b>	:
<b>Health Hazards</b>	: None.
<b>Carcinogenic</b>	: Not listed under NTP, IARC Monographs, or OSHA.
<b>Work/Hygienic Practices</b>	: Wash hands after handling beads and before eating.
<b>Effects of Overexposure</b>	: May cause temporary respiratory and eye irritation.
<b>Disposal Considerations</b>	: Recycle wherever possible or consult manufacturer for recycling options. Consult State Land Waste Management Authority for disposal. Bury residue in an authorized landfill.

# MEDIA APPLICATION RATE BY WEIGHT

All media filters require a particular volume of actual media to enable efficient filtering.

To enable a correct calculation of the right quantity of media required for any filter vessel you will need from the manufacture of the filter vessel a recommended weight (kg) of media.

To complete the calculation of required media by weight you will need to be converted the recommended required vessel volume (litre) of media, this is the multiplied by the Glass Pearl media bulk density.

## BULK DENSITY

The chart below demonstrates that Glass Pearls have a higher bulk density than crushed glass and sand.

Media	Bulk density, g/cm <sup>3</sup>
Glass Pearls	1.61
Sand	1.47
Crushed Glass	1.33

Bulk density is a measure of mass per volume.

## Why a Difference in Bulk Density?

Glass Pearl media has an effective size between 0.6mm to 0.8mm. This narrow range in particle size and the smooth spherical shape results in a closer compaction of Pearls as a filter bed whereas sand generally has a larger range of particle size 0.6mm to 1.2mm and irregular in shape results in large porosity or air gaps between particles reducing its ability to provide finer filtration.

Please note that the required Glass Pearl filter media weights differ, but the media volume is constant.

## Calculation

Filter Vessel Media Volume (Litres) x Glass Pearl Media Bulk Density = Required Glass Pearl Media 0.6 – 0.8mm (kg).

Example: The Waterco S600 media filter requires 106lts of media to operate efficiently, hence the following calculation:

106lt x 1.61 (Glass Pearl Bulk Density) = **171kg** of Glass Pearl Media.

In comparison to 106lt x 1.47 (Sand Bulk Density) = **155kg** of Sand 16/30 Media.

Alternatively, in some cases it may be known what the actual media weight in Kilograms required using a Sand 16/30 media. This weight can simply divided by / **0.904** to gain the correct quantity (weight) of Glass Pearl Media required, refer the following calculation example:

The Waterco S600 media filter requires 155kgs Sand 16/30 media to operate efficiently, hence the following calculation:

155 lt / 0.904 = **171kg** of Glass Pearl Media.

All Waterco Media filter brochures list the required media by weight for several types of media, but particularly Glass Pearl Media.

If you are unsure contact your local Waterco Customer Support team for confirmation.

If you are using the Waterco Glass Pearl Media in an alternate brand of media filter, refer to that manufactures operating manual for the required media volumes.

## INSTALLING GLASS PEARL MEDIA

1. Before filling the filter media into the filter vessel ensure the vessel is totally clean of the old media and do a visual check of the laterals. Look for broken or loose laterals. Replace if necessary.
2. To eliminate stress on the laterals, fill the filter vessel half full of water to provide a cushioning effect when the filter media is poured.
3. (a) Top Mount Fibreglass filters – Waterco Top Mount Fibreglass Filters are supplied with a perforated plastic locator, which centers the stem and prevents media from entering the stem pipe. Place the perforated plastic locator on the centre stem of the filter and carefully pour in the filter media via the perforated holes of the plastic locator. Remove the plastic locator once completed.

NOTE: If a template is no longer available or another branded filter you must center the stem and cover the stem opening to prevent non-alignment and media entering the stem pipe.

(b) Side Mount Fibreglass Filters (Waterco SM600) – Remove the top diffuser from the internal diffuser pipe and place the flexible air relief tube to the side, out of the way, inside the filter vessel. Cap the internal diffuser pipe with the filter media shield provided to prevent filter media from entering it. **DO NOT MOVE DIFFUSER PIPE** as this can affect the integrity of the bulkhead seal.

NOTE: The above instructions do not apply to Side Mount Fibreglass Filters larger than a Waterco SM600 filters. Any filter media entering the diffusers will be removed during normal operation.

4. Wash all the filter media and debris away from the threads and sealing surfaces of the filter vessel.
5. Lubricate the o-ring or gasket (bolt down type) MPV and thread to the filter. Lubricant should be silicon based and not petrochemical based.
6. Thread the Multiport Valve or Top Cap onto the filter tank and hand tighten.

## INITIAL STARTUP OF FILTER AFTER GLASS PEARL MEDIA IS INSTALLED

Be sure correct amount of filter media is in the filter vessel and that all connections are hand tightened.

1. Depress Multiport Valve handle and rotate to the BACKWASH position and open the air release valve on the filter or Multiport Valve.

NOTE: To prevent damage to control valve seal, always depress handle before turning.

2. Switch on the Pump/Open the Inlet Valve allowing the filter vessel to fill with water.
3. Once a steady flow of water is running through the waste line, close the air release valve and let the pump run until the waste water is clear. The initial backwashing of the filter is recommended to remove any impurities or fine particles from the filter media until the sight glass is clear. This process may take up to 3 minutes.
4. Turn the pump off, Multiport Valve to the RINSE position. Switch on the Pump/Open the Inlet Valve until water in sight glass is clear – approximately 10 to 15 seconds
5. Switch off the Pump/Close the Inlet Valve, set the Multiport Valve to the FILTER position and Switch on the Pump/Open the Inlet. The filter is now operating in its normal filter mode.
6. Adjust pool suction and return valves to achieve desired flow. Check the plumbing and filter for water leaks and tighten connections, bolts, and nuts, as required.

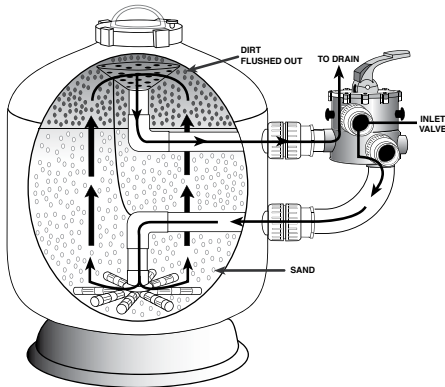
- Record the pressure gauge reading (start up pressure) during initial operation. After a period of time the accumulated dirt and debris in the filter causes a resistance to flow, and the flow diminishes.

The pressure will start to rise and the flow of water will start diminishing. When the pressure gauge reading is 50 kPa (7.2 psi) higher than the initial “Start up” pressure, it is time to backwash (clean) the filter (see Backwashing).

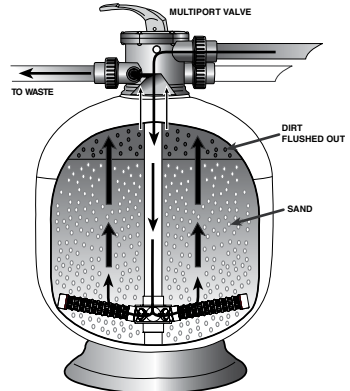
**NOTE:** If the filter is connected to mains water, it is not necessary to record the “Start up” pressure, as mains pressure tends to fluctuate.

## BACKWASHING

The function of backwashing is to separate the deposited particles from the filter media grains and flush them from the filter bed. Backwashing is achieved by reversing the flow of water through the filter bed at a fairly high flow rate. This high flow rate expands the filter bed and the water flow carries the debris out to waste.



Waterco Sidemount Fibreglass Filters



Waterco Top Mount Fibreglass Filters

### Conditions for Backwashing:-

Time for backwashing is determined by the following conditions:

- The flow rate through the filter bed decreases until it is insufficient to meet the demand.
- The removal efficiency of the filter bed decreases to the point where filter water quality deteriorates or results in dirt or debris returning to the pool.
- When the pressure gauge reading is 50 kPa (7.2 psi) higher than the start up pressure.
- If the filter is connected to mains water, pressure rise is not an accurate indicator as mains pressure tends to fluctuate. It is best to rely on the actual flow rate.

### Backwashing Instructions:-

- Switch off the Pump/Close the Inlet Valve.

2. Release the filter's pressure by loosening Pressure Release Valve until the Pressure Gauge needle drops to zero <0>.
3. Retighten Pressure Release Valve.
4. Depress and turn Handle 180° to the BACKWASH position. In the BACKWASH position, the water flow is automatically reversed through the filter so that it is directed to the bottom of the filter vessel, up through the filter bed, flushing the previously trapped dirt and debris out the waste line.
5. Switch on the Pump/Open the Inlet Valve. Backwash water will flow out through filter bed drain pipez
6. When the backwash water in the sight glass appears clear, Switch off the Pump/Close the Inlet Valve.
7. Depress and turn the handle to the RINSE position. In the RINSE position water flow is directed through the filter bed as normal filter mode but out through the waste outlet. This process settles the filter media bed into place and ensures any dirt or debris is rinsed out of the filter, preventing possible return to the pool.
8. Switch on the Pump/Open the Inlet Valve. Rinse water will flow out through the drain pipe.
9. When the rinse water in the sight glass appears clear. Switch off the Pump/Close the Inlet Valve.
10. Depress and turn the handle to the Filter position and Switch on the Pump/Open the Inlet Valve for normal operation.

## MAINTENANCE

The filter media will only require replacement once it has reached the limits of its designated life. Refer to the product information of the particular filter media used.

To ensure the maximum life of the selected filter media, please follow the procedures below:

1. Backwash the filter regularly according to the instructions set under "Backwashing".
2. Maintain a correct chemical balance of your pool/spa water. The chemical balance of water is a relationship between its pH, total alkalinity, calcium hardness and water temperature. The water must be maintained at all times to the following:

PH LEVEL	: BETWEEN 7.2 & 7.8.
TOTAL ALKALINITY	: BETWEEN 80 & 150ppm.
CALCIUM HARDNESS	: BETWEEN 150 & 300ppm.

And within these tolerances be balanced to the Langelier Saturation Index within a range of -0.2 to +0.2.

NOTE: Testing kits are available to test the water yourself or alternately bring a sample of the water to a professional pool and spa shop.

3. Mains water and rural water supplies need to be monitored. Saturation (life) in mains water or bore (rural) will vary depending on water quality.

## RECOMMENDATION

The above Glass Pearl Media Manual uses many general terms, specifications & details. However, most examples refer to Waterco pool equipment that may vary from other pool equipment manufactures. It is recommended if you are using the Waterco Glass Pearl Media in an alternate brand of media filter, refer to that manufactures operating manual for the required media volumes, installation and maintenance procedures.

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# **WATERCO**

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