DAVEY

Original Instruction

Fibreglass Media Filters

DCM2440, DCM2450, DCM2850

Installation and Operating Instructions

DAVEY CrystalClear®ER SERIES

IMPORTANT
Please read carefully

daveywater.com

Please pass these instructions on to the owner of this equipment once the product has been installed.

Contents:

This equipment must be installed and serviced by a qualified technician. Improper installation may result in property damage, serious injury or death. Improper installation and/or operation will void the warranty.

This manual contains important information about the installation, operation and safe use of this product.

SAFETY INFORMATION

1. Davey Crystal Clear ER Series filters are designed to work with water temperature range: 1°C – 39°C. The filter should never be operated outside of these temperatures or damage may occur.
2. The installation should be carried out in accordance to local safety standards and by laws.
3. The user should make sure that the installation is carried out by qualified authorized persons and that these persons have first carefully read the following instructions.
4. The operating safety of the filter is only guaranteed if the installation and operation instructions are correctly followed.
5. In the event of defective operation or fault, contact Davey or its nearest authorised service agent.
6. To reduce the risk of injury, do not permit children to use this product.
7. Incorrectly installed equipment may fail, causing severe injury or property damage.
8. Chemical spills and fumes can weaken Swimming Pool / Spa equipment. Corrosion can cause filters and other equipment to fail, resulting in severe injury or property damage. Do not store pool chemicals near your equipment.

KIT CONTENTS

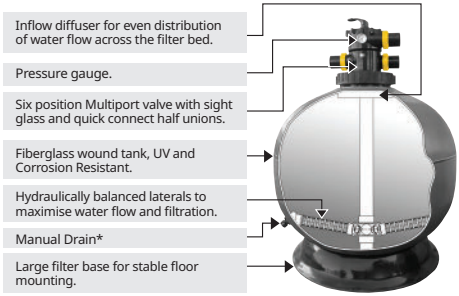
DAVEY CRYSTAL CLEAR ER SERIES DIFFERENCE

Davey Crystal Clear ER Series filters embody the latest in fiberglass winding technology. The vessels consist of an inner shell of fiberglass reinforced polyester resin wound over with fiberglass filament.

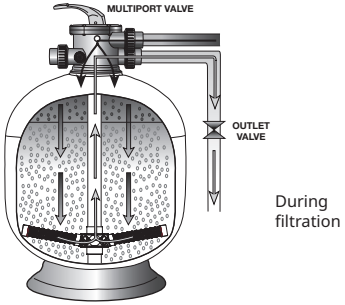
It is a superior quality and seamless one-piece vessel which has been manufactured with precision filament winding machine and continuous strands of high quality fiberglass filament.

It is designed and manufactured in superior standard and quality.

There are no welds or seams or special tank linings which can corrode or electrolyse.



Davey Crystal Clear ER Series filters
* Optional manual drain



Davey Crystal Clear ER Series filters

Filtration

Davey Crystal Clear ER Series filters 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 filtered water to pass through the filter's laterals and exit via the filter's Multiport valve.

INSTALLATION

Davey Media Filter tanks are made from UV stabilised materials. However to ensure years of reliable service, it is recommended that every effort be made to ensure the filtration system is adequately protected from the weather.

1. Position the filter as close to the Swimming Pool / Spa as possible.
2. Position the filter so that it is free from flooding, away from sumps, guttering, garden hollows, etc.
3. Position the filter so that the piping connections, Multiport Valve and winter drain is convenient and accessible for operation, servicing and winterising.
4. Ensure that the compliance label is facing the front to allow easy identification.
5. The filter should be placed on a level concrete slab, very firm ground, or equivalent.

   Ensure that the ground will not subside, preventing any strain from the attached plumbing.
6. Ensure all glues are suitable for use on PVC and ABS plastics
7. Ensure that there is no movement of the filter during operation of the Multiport Valve.
8. Allow sufficient clearance around the filter to permit visual inspection of the entire system.

ASSEMBLY

Filling the Filter Media

1. Before filling the filter media into the filter vessel, do a visual check of the laterals. Look to ensure all laterals are correctly in place.
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 in.

   NOTE: Refer to chart for media volumes required.
3. Davey Crystal Clear ER Series filters are supplied with a perforated plastic locator, which centers the stem and prevents media from entering the stem pipe.

   a. Place the perforated plastic locator on the center stem of the filter and carefully pour in the filter media via the perforated holes of the plastic locator.

   b. Remove the plastic locator once completed.

   NOTE: If a template is not provided or is lost, please place the stem in centre and cover the stem opening. This is to prevent misalignment and media entering the stem pipe.
4. Wash all the filter media and debris away from the threads and sealing surfaces of the filter vessel.
5. Ensure the closure o-ring is clean and in the correct position.
6. Lubricate the o-ring (Clamp Type Multiport Valve) or gasket (Bolt Down Type Multiport Valve) and thread to the filter.

   Position the gasket align to bolts on the filter.

   Lubricant should be silicon based and not petrochemical based.
6. Assemble the Multiport Valve to the tank (refer to next section).

Installation of the Multiport Valve

Davey Crystal Clear ER series Fibreglass Filters are supplied with either a Bolt Type/Top Mount Screw down Multiport valve or Clamp Type/ Clamp down Multiport valve.

Each Multiport Valve is supplied three threaded barrel unions:

1. Check that the top of the filter is free from any filter media or debris and if there is a valve o-ring, please check that the valve o-ring is in place.
2. Check the label of each valve port and position the valve accordingly.
   – Pump port must be plumbed to the pump discharge
   – Waste port must be plumbed to the waste line
   – Return port must be plumbed to the return line

3a. **Bolt Type/Top Mount Screw Down Multiport Valve (MPV)**
   – Rotate the Multiport valve into the filter vessel's threaded connection and hand tighten.
   – Align the valve with the top of the tank flange, aligning the ports to the appropriate plumbing.
   – Position and align the Multiport Valve to each of bolts of filter.
   – Place each nut to the bolt to secure the valve in position.
   – Make sure all the nuts are located securely on all the bolts.
   – Hand tighten all the nuts on the bolts firmly
   – Check the valve and clamp are assembled correctly.

3b. **Clamp Type/Top Mount Clamp Down Multiport Valve (MPV)**
   – Position the Multiport Valve (MPV) on the top opening of filter.
   – Align the MPV with the top of the tank flange, aligning the ports to the appropriate plumbing.
   – Place the clamp half over the valve flange and the tank flange.
   – Insert the clamp screws and nuts in the clamp.
   – Make sure the nuts are located in the retainer slots on the clamps.
   – Tighten the clamp screws firmly
   – Check the valve and clamp are assembled correctly.

4. Screw the Multiport Valve barrel unions onto the threaded connection ports of Multiport Valve and hand tighten. The barrel union should be firmly threaded into the Multiport Valve and there should be no play between the thread. Do not over tighten the barrel unions as this can lead to damage and void warranty.
5. Glue the PVC pipe to the barrel unions and Allow 24 hours for glue (solvent) to set before starting the filter.
6. Test the filter and check for leaks around the threads.
7. Connect the pressure gauge to the air bleed port utilising the supplied o-ring on the air bleed plug.

PLUMBING

1a. Check that the incoming water pressure is within the filter's recommended working pressure

1b. Ensure that a pressure limiting valve is installed if using high pressure pump.

2. Ensure to install a foot valve/non return valve if the pump is installed 500mm/20"above the water level.
3. If the filter is installed below the water level, isolation valves should be installed at the inlet and outlet of the filter. This will prevent water flow during any routine maintenance.
4. Minimize the length of pipe and the number of fittings to minimize restrictions to water flow.
5. Connect all plumbing to the Multiport Valve taking care that all plumbing connections are glued and tightened securely to prevent leaking. Ensure all glues are suitable for use on PVC and ABS plastics
6. Ensure solvents are not excessively applied to fittings as this could run into o-rings and create sealing problems.
7. Do not over tighten fittings or adapters.

MULTIPORT (6 WAY) VALVE OPERATION

1. **Filter - Position for filtration.**
   - Incoming water from the piping system is automatically directed by the Multiport Valve to the top of the filter bed.
   - As the water is pumped through the filter bed, dirt and debris are trapped by the filter bed.
   - The filtered water is returned from the bottom of the filter vessel, through the Multiport Valve and back through the piping system.
2. **Backwash - Position for cleaning the filter media.**
   Water flow is reversed by the Multiport Valve through the filter bed so that water flow is directed to the bottom of the filter vessel and up through the filter bed, flushing the previously trapped dirt and debris out the waste line.
3. **Rinse - Position for flushing the filter system.**
   - The water flow is directed by the Multiport Valve through the filter bed and out.
   - This process settles the filter media bed into place and ensures any dirt or debris is rinsed out of the filter, preventing dirt or debris returning to the Swimming Pool / Spa.

   NOTE: This position is not available on 4-Way Multiport Valves.
4. **Waste - Position for bypassing the filter bed to waste.**
   - The water flow is directed by the Multiport Valve straight to the backwash outlet, bypassing the entire filter bed.
   - This Multiport Valve position is used lower the water level or for vacuuming water with high dirt loads.
5. **Re-circulate - Position for bypassing the filter bed to the Swimming Pool / Spa.**
   The Mulitport valve recirculates water flow directly back to the Swimming Pool / Spa, bypassing the filter.
6. **Closed – Position for closing all flow to the filter.**
   - The Multiport Valve can be closed to enable servicing of pump without draining the water from the filter.
   - **This position is not to be used with the pump operating.**

   NOTE: This position is not available on 4-Way Multiport Valves.

SWITCH OFF Pump before change/shift the operation and position of Multiport Valve!

INITIAL START-UP OF MULTIPORT VALVE

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 and open the Inlet Valve allowing the filter vessel to fill with water.

   NOTE: If a pump is installed, switch the pump on and off, instead of closing and opening the Inlet Valve.

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 and open the Inlet Valve until water in sight glass is **clear** — approximately 10 to 15 seconds .

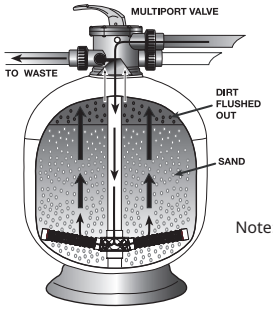
5. – Switch OFF the Pump and close the Inlet Valve
   – Set Multiport Valve to FILTER position
   – Switch ON the Pump and open the Inlet Valve.
   – The filter is now operating in its normal filter mode.

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.

7. – 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).

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.



Davey Crystal Clear ER Series filters

Conditions for Backwashing

Time for backwashing is determined by the following conditions:

1. When the pressure gauge reading is 50 kPa (7.2 psi) higher than the start up pressure.
2. 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.
3. The flow rate through the filter bed decreases until it is insufficient to meet the demand.

Importance of Backwashing

The importance of backwashing cannot be overstated. Dense filter media can become "packed" without proper and frequent enough backwashing. Debris will remain trapped and create channeling within the filter bed. This will result in the filter bed exhausting early. Moreover, if debris is not flushed from the media grains, the filter bed will become dirtier and dirtier as time goes on until the filter operation fails.

Backwashing Instructions

1. Switch OFF the Pump and CLOSE the Inlet Valve.
2. Release the filter's pressure by loosening Pressure Release Valve until the Pressure Gauge needle drops to zero 0 PSI.
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 pipe.
6. When the backwash water in the sight glass appears CLEAR, Switch OFF the Pump and 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 and 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 and CLOSE the Inlet Valve.
10. Depress and turn the handle to the Filter position and Switch ON the Pump and 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. Refer to the specifications of the filter media used and implement regeneration procedures accordingly.
3. 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:

	Concrete & Tiled pools	Other surfaces
pH Level	7.4 - 7.6	7.2 - 7.4
Total Alkalinity (TA)	80 ppm - 150 ppm	
Calcium Hardness	200 - 275ppm	100 - 225ppm

   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.

4. To prevent damage to the pump and filter and for proper operation of the system, clean pump strainer and skimmer baskets regularly.
5. Replace the pressure gauge if faulty readings are observed.

WINTERISING

Proper winterising procedures should always be taken in order to protect your filter in cold climates (temperatures below freezing point)

1. Switch OFF the Pump and CLOSE the Inlet Valve.
2. Open the air release valve and move the MPV handle to the winterise position [between Filter and Waste] This will allow air to through to all ports.
3. Remove any drain plugs from the filter.
4. Drain water from the pipework.

TROUBLESHOOTING GUIDE

Above normal or excessive force to operate the Multiport Valve	Scoring or jamming with foreign matter or debris. If this condition persists after rinsing, disassemble the valve to clear dirt and debris. Continued operation of the valve may result in a non-sealing condition (damage to spider gasket). This will lead to water loss to the backwash line or to inefficient filtration. Note: A filter sock is recommended during pool vacuuming, to prevent dirt and debris lodging between the spider gasket and MPV body.
Water is not clear	1. Insufficient filtration time. 2. Heavy bathing or dirt load. Pool must be floculated and vacuumed directly to waste. 3. Filter is dirty, requiring a thorough backwash. 4. Air leaking on suction (influent line). 5. Pump impeller vanes blocked. 6. In sufficient water supply (water level low, blockage). 7. Pump not primed. 8. In correct water chemistry. 9. Excessive flow of water for filter size. Foreign matter or debris forced through filter bed and through the under drain. 10. Other restrictions including (pool suction cleaners) resistance from other inline equipment such as strainers. Operating the filter on recirculate will determine if the restriction is in the filter. 11. Clogged or channeled filter media. Perform thorough backwash or regeneration.
Filter media flushed out to waste during backwash	1. Excessive quantity of media in the filter. 2. Excessive water flow. 3. Incorrect sized or grade of filter media.
Filter Media returning to Swimming Pool/ Spa	1. Filter is on recirculate. 2. Verify it is the filter media and not from another source. 3. Damage to the under-drain laterals. 4. Damaged or incorrect connections to the Multiport Valve. 5. Incorrect sized or grade of filter media.
Short filtration cycles	1. Presence of algae or a scale build up. 2. Check water chemistry. 3. Excessive water flow, check pump size / mains water flow. 4. Filter blocked through calcium etc. clean filter media. 5. Ineffective backwash, perform thorough backwash.
High pressure on start-up.	1. Small eyeball fitting in Pool / Spa. 2. Partially closed valve on return line. 3. Pump size is too large for the filter.

Davey Warranty

Media fibre glass tank	**10 years full warranty**
Media fibre glass tank (commercial)	**5 years full warranty**
MPV (waterco)	3 years
All components (gauges, fittings... etc.)	1 year

Please see below for conditions:

Davey Water Products Pty Ltd (Davey) warrants all products sold will be (under normal use and service) free of defects in material and workmanship for a minimum period of one (1) year from the date of original purchase by the customer as marked on the invoice, for specific warranty periods for all Davey products visit daveywater.com.

- Commercial* applications, include but are not bound to motels, hotels, caravan parks and venues that cater for public bathing.
- Davey Crystal Clear ER filters are not designed for use on Aqua Culture, Septic systems or potable water filtration systems, use for this application may void your warranty.

This warranty does not cover normal wear and tear or apply to a product that has:

- been subject to misuse, neglect, negligence, damage or accident
- been used, operated or maintained other than in accordance with Davey's instructions
- not been installed in accordance with the Installation Instructions or by suitably qualified personnel
- been modified or altered from original specifications or in any way not approved by Davey
- had repairs attempted or made by other than Davey or its authorised dealers
- been subject to abnormal conditions such as incorrect voltage supply, lightning or high voltage spikes, or damages from electrolytic action, cavitation, sand, corrosive, saline or abrasive liquids,

The Davey warranty does not cover replacement of any product consumables or defects in products and components that have been supplied to Davey by third parties (however Davey will provide reasonable assistance to obtain the benefit of any third-party warranty).

To make a warranty claim:

- If the product is suspected of being defective, stop using it and contact the original place of purchase. Alternatively, phone Davey Customer Service or send a letter to Davey as per the contact details below
- Provide evidence or proof of date of original purchase
- If requested, return the product and/or provide further information with respect to the claim. Returning the product to the place of purchase is at your cost and is your responsibility.
- The warranty claim will be assessed by Davey on the basis of their product knowledge and reasonable judgement and will be accepted if:
  - a relevant defect is found
  - the warranty claim is made during the relevant warranty period; and
  - none of the excluded conditions listed above apply
- The customer will be notified of the warranty decision in writing and if found to be invalid the customer must organise collection of the product at their expense or authorise its disposal.

If the claim is found to be valid Davey will, at its option, repair or replace the product free of charge.

The Davey warranty is in addition to rights provided by local consumer law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

For any internet connected products the consumer is responsible for ensuring a stable internet connection. In the event of a network failure the consumer will need to address the concern with the service provider. Use of an App is not a substitute for the User's own vigilance in ensuring the product is working to expectation. Use of a Smart Product App is at the User's own risk. To the fullest extent permitted by law Davey disclaims any warranties regarding the accuracy, completeness or reliability of App data. Davey is not responsible for any direct or indirect loss, damage or costs to the User arising from its reliance on internet connectivity. The User indemnifies Davey against any claims or legal actions from them or others relying on internet connectivity or App data may bring in this regard.

Products presented for repair may be replaced by refurbished products of the same type rather than being repaired. Refurbished parts may be used to repair the products. The repair of your products may result in the loss of any user-generated data. Please ensure that you have made a copy of any data saved on your products.

To the fullest extent permitted by law or statute, Davey shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Davey products. This limitation does not apply to any liability of Davey for failure to comply with a consumer guarantee applicable to your Davey product under local laws and does not affect any rights or remedies that may be available to you under local laws.

For a complete list of Davey Dealers visit our website (daveywater.com).

DAVEY

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