TRIPLEX Series Filter

Installation
Operation
Maintenance
Manual

Triplex Filter
2510-2750 Series Valve

Models
FT150
FT200
FT250
FT350
FT500
FT600
FT750

Rev 1.0 29/05/01

CONTENTS

1.0 UNPACKING AND PARTS LIST

1.1 UNPACKING NOTES

The unpacking of the Filter is quite straightforward, and there are no 'hidden' items. It is advisable to keep the packages sealed until such time as they are used, to prevent dust or water entry.

1.2 BASIC PARTS LIST

1. VALVE (c/w flow controllers on outlet and drain)

2. FLECK MANUAL

3. INSTRUCTIONS

4. VESSEL (c/w riser and distribution system)

5. 4" - 2 1/2" REDUCER (if required)

6. TRIPLEX MEDIA (qty as specified)

7. GRAVEL (qty as specified)

8. VENTURI AND CONTACT ASSEMBLY

1.3 MISSING OR DAMAGED GOODS

Immediately on receipt of the goods, it is advisable to check that all items ordered have been received. If you have any doubt that goods have been supplied as requested, please contact your supplier immediately. If any items are missing or damaged, the carrier and your supplier must be notified within 2 days of receipt if a claim is to be made.

2.0 TEMPORARY STORAGE

If installation is not to start immediately after delivery, the equipment should be stored in a clean dry area, where it will not be damaged, or be subjected to temperatures below freezing.

3.0 GENERAL NOTES

These instructions cover the Triplex Range of filters, which includes model numbers from FT150 to FT750.

It is recommended that these instructions are read thoroughly before commencing any work on the unit, particularly if you have no previous experience of installing and using a filter.

3.1 Iron & Manganese Removal

Heavy metallic contaminants, and some non-metallic contaminants can be removed from water using specific media. These media can be mixed in a multi-layer bed which, when combined with an appropriate backwash or regeneration system, can be tailored to solve a wide range of specific contaminant problems.

Iron and manganese and sometimes aluminium and hydrogen sulphide can be removed with a catalytic filter media, which uses oxygen in the water to convert the metal ions from the soluble to an insoluble form. The insoluble precipitate is then filtered out onto the surface of the media. Depending on the composition of the raw water a choice of media can be used.

Triplex filter media blended from BIRM, pHlocrite and Filter AG is one of these medias and just requires backwashing with the raw water to clear the bed. The operating parameters for Triplex make it suitable for a number of water types, including water that is acidic in nature.

In addition the Triplex systems are supplied with aeration venturis and contact vessels saturate the raw water with oxygen and also remove some gaseous contaminants prior to filtration.

3.2 System Management

In order to remove accumulated deposits from the filter bed, the water flow through the filter is reversed (backwashed). Water is run to drain at a high rate to separate the filter media from the deposits. The control valve completes the backwash cycle automatically at the intervals and times set during installation. Backwash and fast rinse times are set for 20 minutes per cycle but can be altered to suit individual requirements.

Due to the open structure of the blended Triplex media a high service flow can be achieved with a lower backwash flow rate. Backwashing of Triplex media can therefore be achieved at the same flow as the service flow rate and still ensure a good lift of the bed and to allow all accumulated debris to be removed. All filter valves come complete with an additional volt free microswitch, which can be used to initiate a regen pump etc.

3.3 Triplex System Operation 'Frequently Asked Questions'

The twin-column Triplex filter system combines a high efficiency Aerator-degasser with a special filter media blend to give outstanding performance at removing or reducing a wide range of ground water contaminants.

The main uses are for domestic and light commercial removal of Iron, Manganese, Hydrogen Sulphide and general turbidity, along with raising pH to prevent corrosion.

The Aerator performs a number of functions. As water runs through the system, it is passed under pressure through a venturi, which draws in air and mixes it with the raw water. This air/water mixture then sparges into the vessel via the vortex head where it spins down through the vessel. Excess air is vented off through a float valve while Oxygen from the air that has been drawn in is dissolved and begins to convert clear water (ferrous) dissolved iron to insoluble (ferric) iron. At the same time the turbulence generated in the aerator assists the removal of Hydrogen Sulphide and Carbon Dioxide. The aerated water then flows under pressure to the control valve on the second vessel where it is directed through to the filtration media. During the periodic backwashing of the filter media the aerated water assists in cleaning the filter bed by increasing the turbulence at lower than usual backwash flows.

It is important that the water pressure feeding the inlet of the venturi is sufficient to draw in air and give approximately a 15 psi pressure drop across the system during flow to service. The Aerator should be installed prior to the accumulator on a pressurised system so that it can optimise the pressure over most of the pump cycle.

Iron that has been precipitated by the aeration is filtered out on an angular lightweight media in the filter bed. In addition, any Hydrogen Sulphide that has not been gassed off will be converted to elemental sulphur and filtered out. The filter bed also contains a sacrificial pH correction media to raise the pH above 7.0, which is needed for effective removal of Iron. The pH correction media provides high pH point sites that assist in the removal of Manganese. Any dissolved Iron or Manganese that is not removed by the first two media is then converted to the insoluble form on the third media, which has a catalytic action. In areas of very high Hydrogen Sulphide a slightly different filter blend is used with higher surface activity.

Naturally any general turbidity in the water is also removed during filtration, giving high quality product water.

Since the venturi is so efficient at introducing air to the system and causing dissolved Iron to precipitate, it also important that it is regularly removed and cleaned.

Treated water with air dissolved in it under pressure will initially appear 'cloudy' when drawn from a tap. This rapidly dissipates to give clear water.

The Triplex system must not be directly connected to a domestic supply using a pressurised hot water system without a header tank. The Triplex system introduces air into the raw water, some of which will remain in solution under pressure. If this water is not totally degassed prior to heating, there is a possibility that the heated water will spit and spurt from taps with a risk of scalding.

Triplex systems built with 2510 valves (all except FT750) will bypass raw water during backwash. For this reason the systems are set to backwash at 2:00 AM. A 'No Bypass' piston kit is available for the 2510 valve, which will prevent any raw water backwash. The 2750 valve fitted to the FT750 is supplied with a 'No Bypass' piston installed at the factory.

Maximum Iron levels: Triplex systems can be used on Iron levels of up to 20 ppm with certain reservations. There are a number of examples working satisfactory at higher levels.

Manganese removal: Manganese removal in a Triplex system is dependent on the level of Iron and other contaminants in the raw water. The greater the amount of Iron, the easier it is to remove the Manganese. With an Iron: Manganese ratio of 10:1, the Manganese is extracted very well at a pH of 7.0-7.5. When the ratio reaches 5:1 then the pH needs to be between 7.8-8.2. When the Manganese level exceeds the amount of Iron then a pH of above 8.3 is required. While the pH correction media in the Triplex blend will raise the pH of acid water, it cannot raise it above 8.0 consistently if the general level of dissolved solids is high and the Langellier index is saturated. A full water analysis is essential when considering using the Triplex system primarily for Manganese removal.

Hydrogen Sulphide: Hydrogen sulphide is removed at concentrations of up to 3 ppm.

Humic acid/tannins: Decaying organic matter in the raw water supply creates Humic acid or tannins, sometimes seen as light brown colour in low pH 'peaty' water supplies. These tannins can combine and complex with Iron and Sulphur, coating and blinding the pH correction and filter media reducing its effectiveness. The tannin level in the raw water should be less than 2 ppm and ideally less than 1 ppm to eliminate the need for frequent changes or rejuvenation of the filter media. With high tannin water supplies it will be necessary to oxidise the tannins to an insoluble floc that is filtered out with the other contaminants. The most effective oxidiser is Ozone, and an Ozone generator with injection venturi and off-gas valve has proved to be very successful at preventing tannin blinding. An alternative is to remove the tannins with an Organic Scavenger, but these are not simple to install and still operate the Triplex system satisfactorily. Moreover, Organic Scavengers need to be regenerated with Caustic Brine requiring the control and addition of two consumables, one of which is corrosive and difficult to handle.

Chlorides: Very high Chloride levels in the raw water can inhibit the performance of the Triplex system by preventing Iron and Manganese from precipitating and by reducing the uptake of pH correction

media. In normal circumstances the Chloride level in the raw water should be less than 100 ppm and ideally below 50 ppm.

Backwash: While the Triplex system is designed to operate and backwash at the same flow rate, it essential that there is sufficient pressure and volume of water at the recommended backwash flow. It may be necessary to fit a larger backwash flow button, or even a higher flow valve on larger systems if the pressure is low, just to achieve the required cleaning of the filter bed. Alternatively a longer backwash may be needed to achieve the same effect.

4.0 REGENERATION/BACKWASH

4.1 The Backwash Process

The backwash process consists of two stages:-

Backwash - Water flows upwards through the media bed, and out to a drain. As it does so it separates the deposits from the filter media and cleans off any particles of dirt or pipework corrosion products, which may have accumulated during the service cycle.

Fast Rinse - This follows the backwash cycle and entails rinsing away any residual deposits from the media and re-packing the media bed. This is carried out down flow with water flowing through the media in the direction of service.

4.2 TIME CLOCK CONTROL OF REGENERATION INITIATION

Most filter application systems are supplied with a time clock configuration valve, which initiate regeneration at a pre-set time (usually 2:00 AM) after a pre-set number of days. The frequency of regenerations is fully adjustable, but a minimum of once every 3 days is recommended.

5.0 PRE-INSTALLATION CHECKS

5.1 MECHANICAL

5.1.1 Foundation/Drainage

The filter will not require any special foundations, provided that a firm, level area, which is capable of supporting the working weight, is available. (See Engineering Data, Section 11.2)

Unwanted water from the backwash process must flow to drain, and so an open drain or gully, capable of passing the necessary flow is required (see Process and Operating Data, 11.1, for relevant flows). The total flow of water to drain depends on site conditions, but will be at least the same as the service flow. Preferably the drain should be level but no higher than 500mm above the filter valve.

5.1.2 Operating Space

The space occupied by the filter can be found in the Engineering Data (Section 11.2).

Access will be required to carry out adjustments or maintenance on the equipment. It is therefore recommended that a minimum of 500mm clearance be allowed around the unit for this purpose.

5.1.3 Incoming Water

The raw water to be fed to the filter must comply with the following:-

1. Maximum iron level = 20ppm
2. pH range = 6.0-9.0
3. Organic matter = less than 5ppm
4. Free chlorine = less than 0.5ppm
5. Chloride below 100 ppm
6. Temperature = 3 - 45°C (35 - 110°F)
7. No Oil or Polyphosphates
8. Backwash flow rate must be at least the same as the service flow rate available with a pressure of 3 bar

5.1.4 Pipework

Pipework to be connected to the filter should not have an excessive amount of deposits. Piping that is heavily built up with scale (or Iron deposits) should be replaced.

Make sure that the pipework can be connected to the filter in such a way as to impose no stresses on the control valve, and that it is properly aligned and supported.

A system for the complete by-passing and isolation of the filter should be installed.

5.1.5 Water Supply Company Requirements

During backwash the accumulated debris and oxidised iron and manganese is flushed to drain. Please contact your local Water Authority for advice on effluent issues if concerned with flow to drain.

5.2 ELECTRICAL

All filter valves are supplied as 24v complete with a transformer for 240v. A continuous supply of 240v, 5 VA is required which should be provided by an uninterrupted mains supply, which is separately 1 Amp fused, and does not have any additional switch.

A plug is not provided with this filter since the cable should be connected to fused spur outlet. However if that is not possible then a plug should be fitted to the cable with a 1 amp fuse. The socket used should be un-switched to prevent the filter from being inadvertently turned off.

6.0 ASSEMBLY/INSTALLATION

6.1 MECHANICAL

Check all the items against the parts list and shipping documents, and ensure you have them all before starting work. In addition to the filter you will require installation materials and basic tools, (i.e., spanners, screwdrivers etc., and PTFE tape)

6.1.1 Pipework

Pipework can be constructed from any normally acceptable material (Copper, Galvanised, Plastic), provided it is properly supported and aligned. Ensure that the pipe is sufficiently large to accommodate the flow of water required, making due allowance for the pressure drop between the filter and the point of discharge of treated water.

NOTE: IF BRAZED OR SOLDERED FITTINGS ARE TO BE USED, THE PIPEWORK MUST BE DISCONNECTED FROM THE VALVE DURING HEATING AND COOLING. EXCESS HEAT CAN CAUSE PERMANENT DAMAGE TO SOME OF THE VALVE COMPONENTS.

6.1.2 Drains and overflow connections

The drain connection from the backwash valves is a 1/2" hose spigot (up to FT250) or a 3/4" BSPF thread (FT350-FT750). Flexible tube should be run from this spigot to a drain capable of taking the maximum flow in regeneration (see Section 11.2), and leaving a similar gap above the drain edge. The drain must not be higher than 500mm above the control valve and preferably should have an air break at the same height as the control valve.

6.2 ASSEMBLY

Refer to the installation diagrams in Section 13 and note the direction of flow through the system. It is most important that the venturi and contact assembly are placed before the accumulator on a pressurised system to ensure that the air draw and contact times are adequate.

The Triplex system must not be directly connected to a domestic supply using a pressurised hot water system without a header tank. The Triplex system introduces air into the raw water, some of which will remain in solution under pressure. If this water is not totally degassed prior to heating, there is a possibility that the heated water will spit and spurt from taps with a risk of scalding.

Ensure the installation site is clear and level.

Ensure that the piping system in the building transfers the treated water into a vented header tank to feed any hot water systems.

Assemble the venturi and contact assembly and connect into the raw water pipework as close to the pump as possible and before the accumulator on a pressurised system.

If possible, place the filter vessel into its final location before filling. Check that the riser tube has the cap in place before commencing filling.

Using a hose 1/3 fill the vessel with water. This is to prevent damage to the bottom distributor when pouring in the media.

Using a funnel slowly pour in the support gravel. Next, slowly pour in the Triplex media, taking care not to spill any on the floor and that the riser remains central in the vessel during filling.

After pouring in all of the filter media, the vessel should be, at most, 70-75% full. This is to allow rising space for the media during the backwashing cycle. Once the vessel is filled, immediately sweep up any spilled filter media.

Remove the cap from the riser tube and brush any debris out of the threads in the neck of the filter vessel.

Unpack the valve and reducer (if used). Screw the reducer into the filter vessel, then slip the valve down onto the distributor tube. No top distributor is used on filter valves to allow the maximum amount of debris to be backwashed off the media.

Screw the valve into the filter vessel, taking extreme care not to cross the threads. As the valve is being run into the vessel excessive force should not be required. Finally tighten to approximately 20ft.lbs torque.

Adjust the position of the filter vessel to line up with the pipework connections, not the position of the valve on the vessel.

Connect the inlet and outlet pipework to the valve using flexible connections or plastic high pressure piping. Flexible pipework is essential to prevent stress on the vessel as it cycles during service since it will expand and contract longitudinally.

Connect the drain line to the outlet of the drain line flow controller on the valve.

Ensure that there is an air break in the drain at the same height as the valve to prevent negative pressure on the vessel.

Connect the power supply to the valve and the unit is now ready for commissioning.

7.0 COMMISSIONING

7.1 INTRODUCTION

It is recommended that the commissioning of the plant is undertaken by a trained service engineer, who will be able to put the plant into service quickly, and most efficiently. However, if the services of an experienced engineer are not available, following the steps outlined below will result in the system being properly commissioned.

7.2 COMMISSIONING

The objective of commissioning is to fill the filter with water, check for leaks and prepare it for service. The simplest way to commission the unit is to initiate a backwash. This will eliminate the air from the system and flush the media prior to use.

7.2.1 Before opening the inlet water supply or switching on the power supply, open the hinged valve cover, lift the timer assembly and turn the timer clockwise to the backwash position. This position is the first bank of pins on the program wheel where both microswitches have been lifted.

7.2.2 Switch on the power, which will activate the piston motor and the timer motor. When the piston motor has stopped, slowly open the inlet water supply. At first, air will be expelled from the drain line, followed by water once the vessel is full. Allow water to run to drain on the backwash cycle for 10-15 minutes in order to rinse the filter media and remove any fines.

7.2.3 Next, turn the timer to the first gap in the pins. Ensure that the motor has stopped before indexing to the next position.

7.2.4 Turn the timer to the fast rinse position (second bank of pins) and water will swiftly run to drain. When the motor has stopped, turn the timer to the second gap in the pins.

7.2.5 When the motor has stopped, index the timer to the last two pins and the main piston will now return to the service position.

7.2.6 Wait for the piston motor to stop before turning the timer to the standby position (back microswitch will drop into notch in program wheel and piston motor will momentarily move).

7.2.7 Set time of day by depressing red knob and spinning outer dial until the correct time is displayed next to the arrow with a green dot.

7.2.8 Set frequency of regenerations by pushing out the metal pins on the skipper wheel to the days you wish a regeneration to occur.

7.2.9 The filter is now commissioned.

8.0 ROUTINE MONITORING

The following recommendations are made to help the user of the filter confirm that it is performing as required, and to give early warning of possible problems. The operation of the filter is completely automatic, and should not require adjustment.

Weekly

Check the treated water quality with a test kit.

Monthly

Check raw water quality, and record. Compare with original quality and adjust frequency of backwash if required.

Six Monthly

Perform a chlorinated backwash to remove any organic build up on the media. Check filter media depth against original level and top up with pHlocrite media (this check should be made more frequently in areas with low pH raw water)

Annually

Inspect and clean/replace as necessary the piston and the internal seals. A competent engineer familiar with Fleck valves should perform this.

9.0 FAULT FINDING AND RECTIFICATION

9.1 NO FLOW TO SERVICE

Check mains pressure is above 1.7 bar.

Check inlet water supply

Check inlet and outlet isolating valves are open.

Check service outlet valve is open.

Check pressure drop across media. If excessive, media may be fouled, or internals blocked. Initiate a backwash. If this does not free up the media the filter will need to be inspected and serviced by a competent engineer.

Backwash with chlorine solution to remove organic build up

9.2 POOR TREATED WATER QUALITY

Check manual by-pass closed.

Check raw water pressure above minimum. If flow is less than design rate, channelling of water can occur in media, which results in inadequate treatment.

Check media as pH correction media may be exhausted.

Backwash with chlorine solution to remove organic build up

Increase frequency of backwash as media may be becoming overloaded.

Increase backwash flow.

Check piston and seals & spacers.

Check raw water analysis for changes

9.3 NO BACKWASH

Check electrical supply, fuses etc. satisfactory.

Check pins have been correctly set for regeneration.

Check timer motor is running.

Check drive motor runs, by manually initiating a backwash, and listening for drive motor as it advances between cycles. Replace if necessary.

9.4 UNSATISFACTORY CAPACITY BETWEEN BACKWASHES

Increase frequency of backwash

Check age of media and media level

Backwash with chlorine solution to remove organic build up

Increase backwash flow

10.0 WARRANTY AND SERVICE

10.1 AFTER SALE WARRANTY

Your filter is covered by a parts warranty for a period of one year from installation or 14 months from purchase.

Consumable filter media is excluded from this warranty

Should you have any problems with your filter or require a routine service, please contact your supplier.

11.0 TECHNICAL DATA

11.1 PROCESS AND OPERATING DATA

11.1.1 Triplex Series Filters FT120-FT250

MODEL		120	150	200	250
PARAMETER	**UNITS**				
Flow rate	m3/hr	0.90	1.08	1.32	1.56
Backwash Flow	m3/hr	0.90	1.08	1.32	1.56
Regeneration Time	mins	20	20	20	20
Max Operating Temperature	°C	45	45	45	45

11.1.2 Triplex Series Filters FT350-FT750

MODEL		350	500	600	750
PARAMETER	**UNITS**				
Flow Rate	m3/hr	1.86	2.46	3.00	4.20
Backwash Flow	m3/hr	1.86	2.46	3.00	4.20
Regeneration Time	mins	20	20	20	20
Max Operating	°C	45	45	45	45

11.2 ENGINEERING DATA

Triplex Series Filters

11.2.1 FT120-FT250

MODEL		120	150	200	250
VALVE (std)		2510	2510	2510	2510
FILTER VESSEL		1044	1054	1248	1354
CONTACT VESSEL		1044	1044	1044	1044
PARAMETER	UNITS				
Height of filter (approx)	mm	1360	1610	1460	1610
Diameter of filter vessel	mm	270	270	315	335
Height of valve	mm	170	170	170	170
Height of aerator from vessel	mm	1275	1275	1275	1275
Diameter of aerator	mm	270	270	270	270
Vessel Inlet Conn.	ins BSPM	1	1	1	1
Vessel Outlet Conn.	ins BSPM	1	1	1	1
Aerator Inlet Conn	ins BSPF	1	1	1	1
Aerator Outlet Conn	ins BSPM	1	1	1	1
Drain Conn.	ins	1/2	1/2	1/2	1/2
Qty of Gravel	25kg bags	0.5	1	1	1
Qty of Triplex Media	cu ft	1.2	1.5	2.0	2.5
Electrical Power	v	24	24	24	24
	Hz	50	50	50	50
	V/A	1.2	1.2	1.2	1.2

MAXIMUM OPERATING PRESSURE 8 Bar MINIMUM OPERATING PRESSURE 1.7 Bar MAXIMUM OPERATING TEMPERATURE 45.0C HEADROOM - Allow 100 mm greater than overall height.

11.2.2 FT350-FT750

MODEL		350	500	600	750
VALVE (std)		2510	2510	2510	2750
FILTER VESSEL		1465	1665	1865	2160
CONTACT VESSEL		1354	1354	1354	1354
PARAMETER	UNITS				
Height of filter (approx)	mm	1890	1895	2020	1850
Diameter of filter vessel	mm	370	410	510	560
Height of valve	mm	170	170	170	170
Height of aerator	mm	1520	1520	1520	1520
Diameter of aerator	mm	330	330	330	330
Inlet Conn.	ins BSP	1.0M	1.0M	1.0M	1.0M
Outlet Conn.	ins BSP	1.0F	1.0F	1.0F	1.0F
Aerator Inlet Conn	ins BSPF	1	1	1	1
Aerator Outlet Conn	ins BSPM	1	1	1	1
Drain Conn.	ins F	3/4"	3/4"	3/4"	3/4"
Qty of Gravel	25kg bags	2	2.25	2.5	4.0
Qty of Triplex Media	cu.ft	3.5	5.0	6.0	7.5
Electrical Power	v	24	24	24	24
	Hz	50	50	50	50
	V/A	1.2	1.2	1.2	1.2

MAXIMUM OPERATING PRESSURE 8 Bar MINIMUM OPERATING PRESSURE 1.7 Bar MAXIMUM OPERATING TEMPERATURE 45.0C HEADROOM - Allow 100 mm greater than overall height.

12.0 SAFETY DATA SHEETS

12.1 BIRM FILTER MEDIA SAFETY INFORMATION SHEET

MANUFACTURER: CLACK CORPORATION, WINDSOR, WI 53598, USA
EMERGENCY TEL NO. 001 608 262 3702

(A) PHYSICAL DATA

(a) Appearance and odour:	Black Granule; no odour
(b) Packaging type and size:	28 litre (1 cu ft) 20kg polyprop bag
(c) Markings/label:	BIRM Regular
(d) Boiling Point:	3806°F
(e) Solubility in water:	Insoluble
(f) Evaporation rate:	Not applicable
(g) pH:	Not applicable
(h) Percentage volatile by volume:	Not applicable
(I) Vapour density (air=1):	Not applicable

(B) FIRE & EXPLOSION DATA & REACTIVITY

(a) Flash point (oC):	Not applicable
(b) Minimum ignition temperature:	Not applicable
(c) Flammability limits in air (% Volume)	Not applicable
(d) Special fire fighting precaution or extinguisher:	None
(e) Unusual fire/explosion hazards:	Material can be a mild oxidiser
(f) Possible dangerous reactions:	None

(C) COMPOSITION

[Hazardous material to be indicated with an asterisk (*)]

3% Manganese Dioxide coating on amorphous and crystalline silica with bonding agents

(D) HEALTH HAZARD DATA

(a) Toxicity:	Non toxic either by external or internal contact
(b) Threshold Limit Value:	The dust falls into the category of nuisance and the TLV as recommended in Guidance Note EH15 issued by the Health and Safety Executive should not be exceeded.
(c) Effect on skin:	Temporary irritation, flush with water and soap.
(d) Effect on eyes:	Temporary irritation, flush with water for 15 minutes.
(e) Effects of inhalation (dust):	Temporary irritation. Long term inhalation of crystalline dust may cause lung disease (silicosis)
(f) Effects of inhalation (fumes):	Not applicable
(g) Effects of ingestion:	Dehydration. Give water and call physician.
(h) Carcinogenic effects:	None known. Ames test negative.

(E) EFFECT OF HEAT ON MATERIAL

(a) Does decomposition occur:	No
(b) Hazardous decomposition products:	None

(F) PROTECTIVE EQUIPMENT

(a) Ventilation requirements:	Normal dust collection apparatus
(b) Respiratory protection?:	Yes, Type BS.2091
(c) Gloves?:	Yes, Type - Rubber waterproof
(d) Eye protection?:	Yes, Type BS.2092 D
(e) Special first aid treatment?:	For dust in eyes, cold water douche

(G) STORAGE

Store in cool dry area.

(H) DISPOSAL AND SPILLAGE INSTRUCTIONS

Normal dust or powder handling equipment can be used to recover spillages. The material can be safely strewn on earth or placed in refuse pits.

12.2 PHLOCRITE SAFETY DATA SHEET

1) Identification of the substance/preparation and the company

pHlocrite™ Synthetic Semi-Calcined Dolomitic Limestone

pHlocrite Ltd, Fernash, Headley Heath Approach, Tadworth, Surrey, KT20 7LL

2) Composition/information on ingredients

Inorganic solid comprised predominantly of calcium carbonate and magnesium oxide in varying proportions and a variety of grades distinguished by particle size and the ratios of the two main ingredients. This product is used for water treatment and a wide range of industrial, chemical and agricultural applications.

3) Hazards identification

Respirable dust inhaled over a prolonged period of time could constitute a health hazard.

The Occupational Exposure Standard as recommended by HSE Guidance Note EH44 should not be exceeded.

The manual handling of bagged products should comply with the Manual Handling Operations Regulations 1992.

4) First Aid Measures

Eye contact:	Irrigate thoroughly with copious amounts of water.
Inhalation:	Remove to fresh air, give water to drink.
Skin contact:	Wash with water. Irritation may be caused by prolonged contact
Ingestion:	Wash out mouth with water, give water to drink. In severe cases seek medical attention.

5) Fire Fighting Measures

Special risks:	Not applicable
Suitable Extinguishing Media:	Not applicable

Special Exposure Hazards in Fire: Not applicable

6) Accidental release measures

In the event of spillage or leakage avoid breathing in the dust. Wear respirator (BS2091) and goggles (BS2092D). Carefully sweep or vacuum up and dispose of in accordance with local regulations. The material can be safely strewn on earth or placed in refuse pits provided that no strong acids are present. It can be used as a fertiliser of soil conditioner in place of slaked lime.

7) Handling and storage

Handling:	The product should be handled to minimise the creation of airborne dust particles. Approved dust masks and goggles should be worn.
Storage:	Bags should be palletised and kept dry. Bulk products should be stored in silos and kept dry. Dust collection systems should be utilised to minimise the creation of dust.

8) Exposure controls/personal protection

As appropriate to the situation and quantity handled. Utilise dust extraction if O.E.S (10mg/m3 total dust, 4 mg/m3 respirable dust).

Respiratory protection:	Dust masks, Airstream helmets to approved standard
Hand protection:	Gloves (rubber or plastic)
Skin protection:	Barrier cream
Eye protection:	Goggles to an approved standard

9) Physical and chemical properties

Appearance:	Grey/white angular granules
Odour:	Odourless
pH:	Not applicable
Melting point:	2500°C
Boiling point:	Not applicable
Flash point:	Not applicable
Flammability:	Not applicable
Auto flammability:	Not applicable
Explosive Properties:	Not applicable
Oxidising Properties:	Not applicable
Vapour Pressure:	Not applicable
Relative Density:	2.71
Solubility in Water:	Insoluble
Other:	

10) Stability and reactivity

Conditions to avoid:	None
Materials to avoid:	Halogen-halogen compounds, non-metallic halides
Hazardous decomposition products:	Carbon dioxide evolved on contact with acids and upon heating above 500°C.

11) Toxicological Information

Experience has shown no indications of any hazardous potential, but even inert fine powders if inhaled over a long period could constitute a health hazard due to impairment of respiratory functions.

Ames Test Negative: No evidence of mutagenic or teratogenic effects.

12) Ecological Information

No environmental hazard is anticipated provided the material is handled and disposed of with due care and attention.

13) Disposal considerations

An inert material it may be disposed of, with due care and attention, in an approved waste disposal or landfill site. The material should be buried to avoid dust becoming airborne.

14) Transport Information

Special carriage precautions:	None
	Material suitable for bulk tankers and sealed bags. Keep material dry Clean up spillages by industrial vacuum system.

15) Regulatory Information

Supply label information: Not classified

The following risk and safety phrases are recommended:

R. Phrases:	R.20	Harmful by inhalation
S. Phrases:	S.22	Do not breathe dust

EINECS number: All ingredients of this product are listed in EINECS or ELINCS unless specifically exempted under the EEC Directive 57/548/EEC

16) Other Information

Training advice:	Wear and use of PPE
Recommended uses and restrictions:	Chemical, Agricultural, Water Treatment and Industrial applications
Further information sources:	pHlocrite Ltd, Tadworth, KT20 7LL 01737 844627
Sources of key data used to compile Data Sheet	EH40, PPE Regulations 1992 EH44 'Dust in the Workplace' Manual Handling Operations Regulations 1992 Raw Material Suppliers' Safety Data Sheets

The information contained in this Safety Data Sheet is correct to the best of our knowledge but is given without warranty as to its accuracy, reliability or completeness. It is the responsibility of users to satisfy themselves with regard to the suitability and completeness of such information for their own particular use.

13.0 Drawings

13.1 Installation Layout

Fig 1 General Installation Layout FT150-FT250 Filters

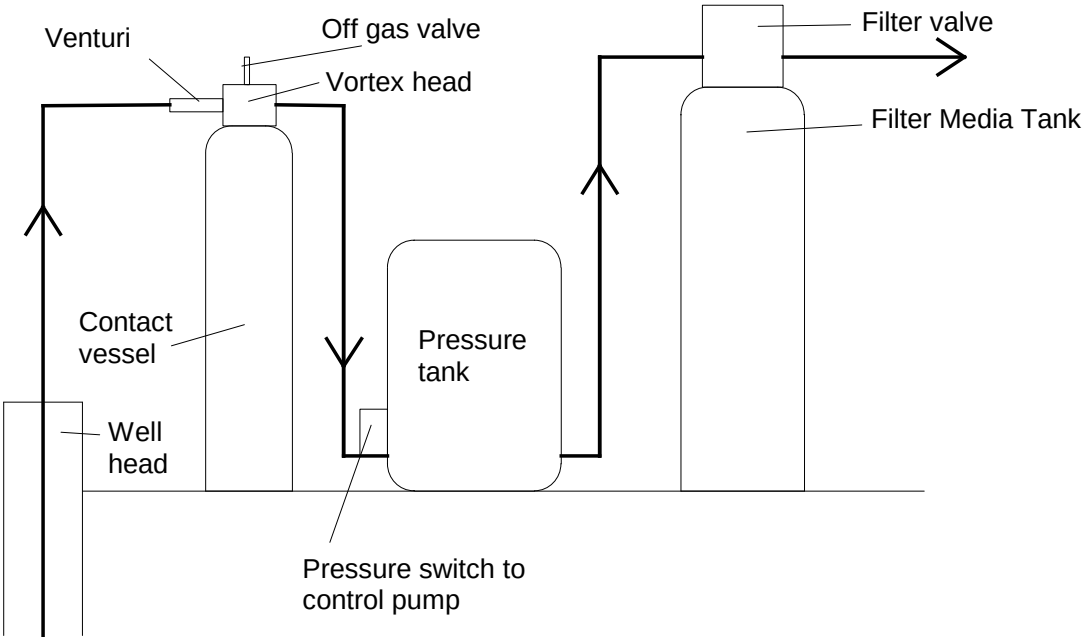
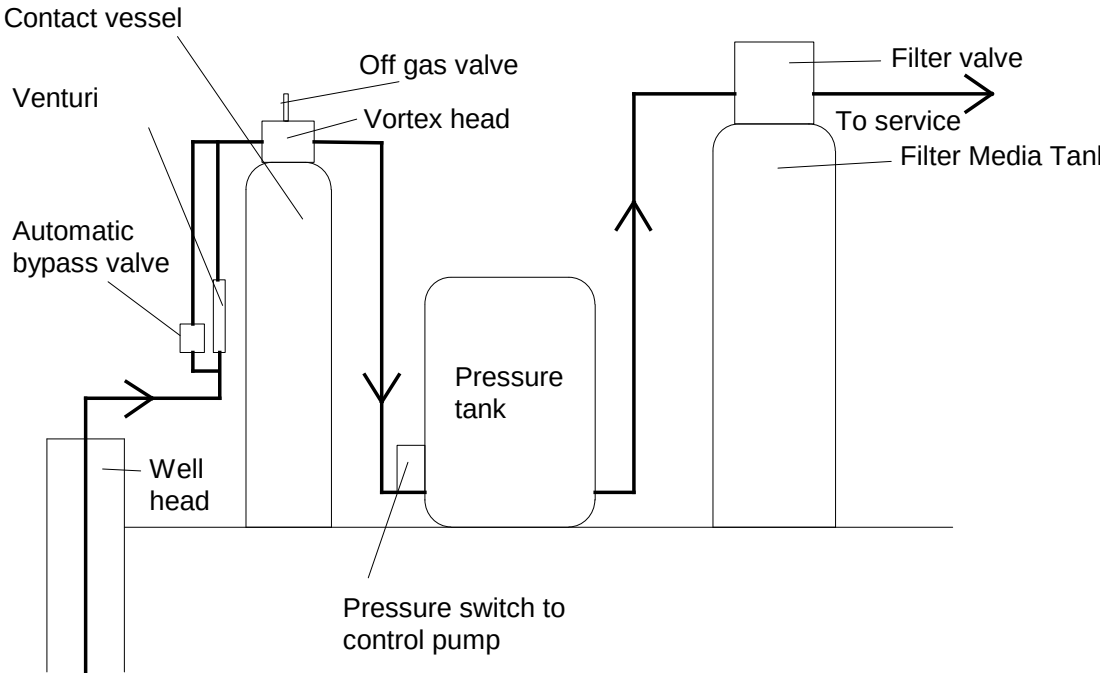


Fig 2 General Installation Layout FT350-FT750



14.0 SPARES LIST

14.1 2510 & 2750 Valves

PART NO.	DESCRIPTION
XF24067	Piston Assembly (WBP)
XF26495-00	Piston Assembly (NBP)
XFR1	Riser Tube c/w 1” Dist
XF24271	Seal & Spacer kit
XF18826	Timer Motor 24v
XF13381	Drive Motor 24v
XF24218/24	Timer Assy (7 day) 24v
XF24219/24	Timer Assy (12 day) 24v
VDLFC3	3/4” Brass flow controller (please specify)
VDLFC4	1” Brass flow controller (please specify)

15.0 CE Certificate

Manufacturer's Declaration of Conformity

We the undersigned

EURAQUA UK, HITCHIN, ENGLAND

Certify that the product

TYPE: TRIPLEX FILTER WITH FLECK 24 VOLT AC VALVE

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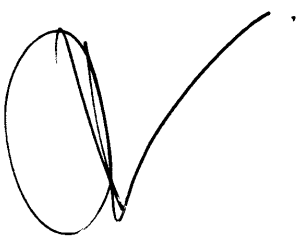
has been designed and manufactured in accordance with the specifications of the following:

Directive	**Standard**
Machinery Directive 89/392/EEC	EN 292-1, EN 292-2
Low Voltage Directive 73/23/EEC	EN 60 335-1
EMC-Directive 89/336/EEC	EN 55 014



RT Adam

Director

Hitchin, England 03/01/02

Issue place & date