



Installation
and Operation
Instruction
Manual
FWINSMAN304

Yardney - Filtaworx
FW10EX - FW12

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Introduction

We thank you for your purchase of a Filtaworx® automatic self-cleaning filter manufactured in Australia by Triangle Waterquip Pty. Ltd. Triangle has over 34 years of experience with fully automatic self-cleaning screen filters. In this time we have gained a vast amount of experience and knowledge in this field, which we have used in designing the Filtaworx® product range.

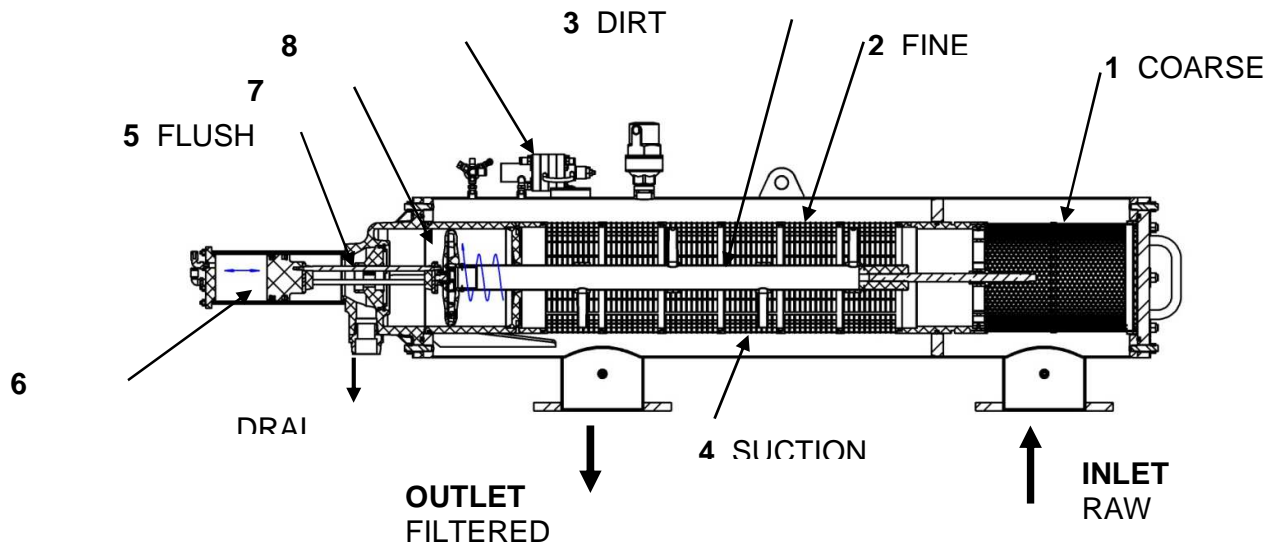
To enable **you** to achieve the best performance and trouble free life from your filter we suggest that you carefully read and follow these instructions.

FILTAWORX® range of fully automatic self-cleaning filters have been designed and built in Australia by an experienced team of engineers using the latest 3D CAD software. FILTAWORX® filters are one of the most technically innovative self-cleaning filters available on the market, combining high performance, reliability and economy in a compact robust design. The filter is simple to install and will give years of trouble free service if sized, maintained and operated correctly.

Features include:

- ▲ Stainless steel body as standard (304 grade).
- ▲ All parts are made of corrosion resistant engineering plastics or metal materials.
- ▲ Fully automatic back flush operation.
- ▲ Available with hydraulic or electric controls.
- ▲ Large filtration area.
- ▲ Wide range of fine screen sizes, 20 – 250 mesh (50 to 800 micron).
- ▲ Standard sizes from 2” – 14”.
- ▲ 150 psi pressure rating as standard.
- ▲ Simple and quick installation.
- ▲ Full support and after sales service.
- ▲ Designed, built, and tested in Australia.

Operating Principal

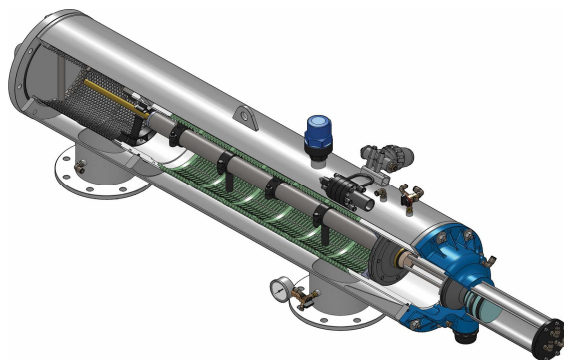


Put simply the Filtaworx filter cleaning cycle works in a similar way to a vacuum cleaner, cleaning the solids off the inside of the fine screen with suction nozzles that rotate and spiral up and down to clean the whole fine screen area.

During normal filtering mode the raw water enters the Inlet of the filter, passes through the Coarse Screen (1), (the $\frac{1}{4}$ " perforations remove large debris that may obstruct the lower mechanism). Water then travels to the inside and through the Fine Screen (2) to the Outlet.

The solids in the water are trapped on the Fine Screen (2), eventually causing a pressure drop (DP) across the filter. At a pressure drop of 7 psi the Controller (8) activates the cleaning cycle by opening the Flush Valve (5) to drain (atmosphere). The interconnection of the Suction Nozzles (4) via the Dirt Collector (3) to the Drain causes a back flushing or 'vacuum clean' effect on the Fine Screen (2) with a high velocity suction jet of water from the clean side of the screen, removing the dirt on the screen as it passes through.

The water escaping via the Rotor (7) causes the Dirt Collector and Suction Nozzle assembly (3 & 4) to rotate. The Piston (6) moves this assembly down the length of the Fine Screen (2) in a spiraling motion, cleaning the entire screen surface area in approximately 15 seconds. The Flushing Valve (5) closes, and the Piston (6) is returned to its original position, ready for the next cycle. Cleaning also occurs on the return stroke.



Technical Specification

Model No.	FW10EX	FW12
Inlet / Outlet Nominal size (inch)	10"	12"
Nominal Max Flow Rate	1760 GPM *	2640 GPM *
Connections	ANSI 150 flanged, or as required	
Min. operating pressure	30 psi at all times, especially during flush cycle	
Max. operating pressure	150 psi standard, higher available on request	
Filter Area	1614 inch ²	
Max. working temp	150° F	
Flushing Data		
Drain line size (inch)	2" male threaded	
Flush cycle duration	15 – 20 seconds (depending on pressure)	
Flush cycle volume	40 gallons approximately (depending on pressure)	
Min. flow for backwash	120 GPM @ 30 psi	
Materials of Construction		
Filter body	304 grade stainless steel *	
Cover lid assy.	GRN (glass reinforced nylon), St/St, brass	
Cleaning mechanism assy.	St/St, brass, GRN	
Fine screen	316 St/St mesh, GRN	
Coarse screen	GRN	
Seals	NBR, EPDM	
Controller	St/St, brass, Acetyl, PVC,	
Control tubing	Polyethylene	

* Depending on dirt loading and particulate size.

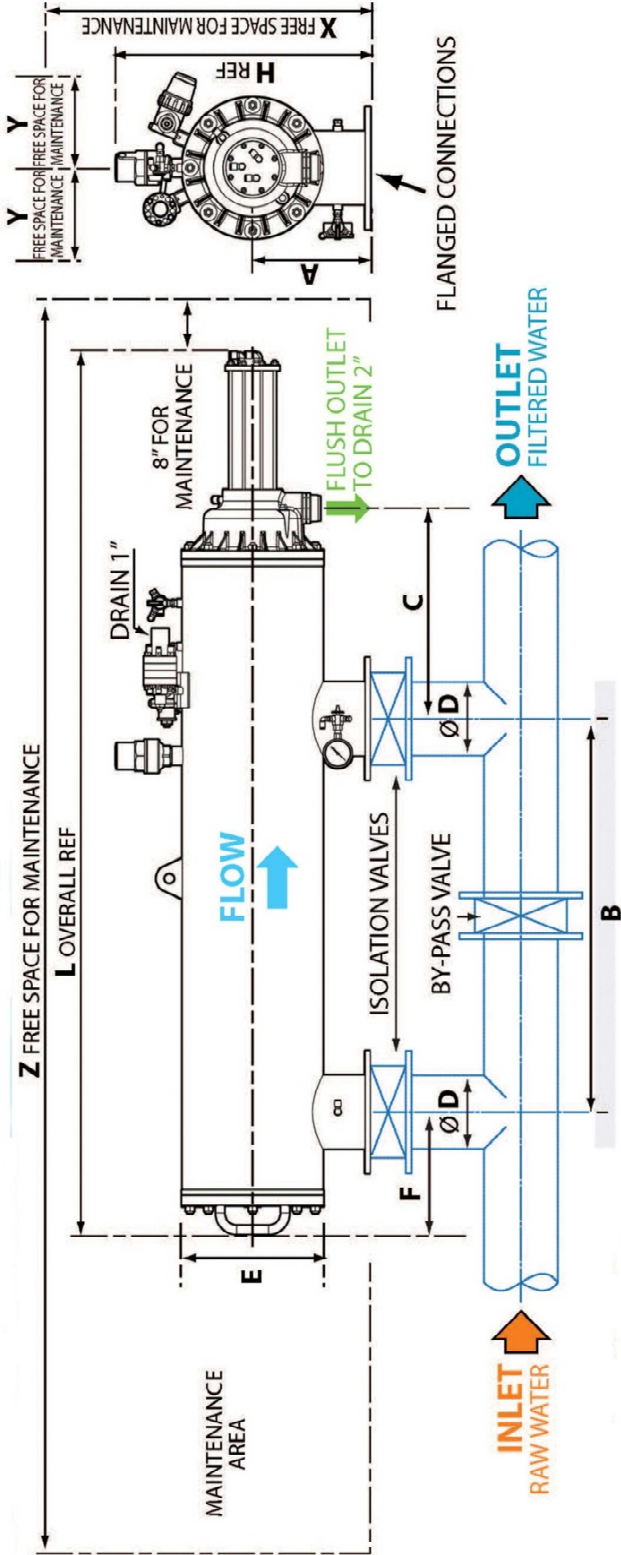
* Other materials of construction 316 St/St etc. are available on request.

Filtration Apertures Available

micron (µm)	50	80	100	120*	150	200*	400	800
mm	0.05	0.08	0.10	0.12	0.15	0.20	0.4	0.8
Mesh	250	200	150	120	100	80	40	20
Aperture (inches)	0.002"	0.003"	0.004"	0.005"	0.006"	0.008"	0.016"	0.031"

* Most common sizes used.

Dimensional Details



MODEL NO.	INLET/OUTLET ØD" SIZE	NOMINAL FLOW GPM / M ³ /HR	FILTER AREA Inch ²	A	B	C	E	F	H	L	X	Y	Z	WEIGHT LBS EMPTY / FULL
FW04EX	4"	440	870	9 1/4"	35 7/16"	18 3/8"	10 3/4"	9"	20 5/8"	76 7/8"	28 3/4"	14 1/4"	143 3/4"	187 / 363
FW06	6"	790	870	10 5/8"	35 7/16"	19"	12 3/4"	11"	23"	79 3/8"	30 3/4"	14 1/4"	146 1/2"	231 / 473
FW06EX	6"	790	1258	10 5/8"	35 7/16"	33 1/4"	12 3/4"	11"	23"	93 3/4"	30 3/4"	14 1/4"	174 1/2"	253 / 583
FW08	8"	1400	1258	10 5/8"	35 7/16"	38"	12 3/4"	15 1/4"	23"	102 7/8"	30 3/4"	15"	183 1/2"	286 / 704
FW10	10"	1760	1258	12 1/4"	35 7/16"	38"	14"	15 1/4"	23 1/2"	102 7/8"	31 1/2"	15 3/4"	183 1/2"	341 / 759
FW10EX	10"	400	1614	12 1/4"	43 5/16"	38"	16"	26 7/8"	26 1/4"	122 1/4"	34 1/4"	16 1/2"	209"	517 / 1188
FW12	12"	600	1614	12 1/4"	43 5/16"	38"	16"	26 7/8"	26 1/4"	122 1/4"	34 1/4"	16 1/2"	209"	528 / 1210
FW14	14"	3960	1886	12 1/4"	50"	38"	16"	20 1/8"	26 1/4"	122 1/4"	34 1/4"	17 3/4"	209"	627 / 1310

* All sizes are in inches

Safety Instructions

Your safety and that of your co-workers and work environment is critical! We recommend that you do the following:

- Follow all on-site safety procedures, instructions and restrictions whilst working on, installing, operating and maintaining the filter.
- Follow all on-site requirements for safety/protective clothing such as hard hats, eye wear, hearing protection, steel capped boots etc.
- If using lifting equipment ensure that it is operated by suitably qualified personnel using approved slings.
- Ensure that the filter can be safely accessed, isolated and maintained during and after installation.
- Ensure that the back flush drain line is securely fixed on installation.
- When the filter is pressurised do not attempt to remove any part of the filter.
- Ensure that any leaks are fixed immediately and that the area around the filter remains dry at all times to avoid and danger of slipping or electrocution.
- Do not modify or change the structure of any part of the filter.

Installation

Correct installation of your filter is critical to be able to get the best result from it! You will need to check and do the following:

- a) The filter can be installed in any orientation or position.
- b) Fit a manual isolating valve immediately after the filter.
- c) Ensure that no back flow can occur through the filter, as this can damage the fine screen.
- d) Do not tamper or play with the Rinse Controller! This has been factory set and tested.
- e) Ensure that there will be enough service and access space around the filter to be able to operate, service, dismantle and maintain the filter easily in years to come. Check the drawing for your particular model.
- f) Ensure that you will have enough flow and pressure to backflush the filter at ALL times (120 GPM @ 30 psi). If not the line pressure will drop too low and the filter will not clean itself effectively. If you do not have enough flow/pressure available you may need to restrict the flow after the filter during the backflush cycle.
- g) For full flow industrial or critical installations, always install a manual by-pass around the filter is essential. This is so that the filter can be isolated and serviced without disrupting any downstream plant or equipment.
- h) The backflush drain line must be at least 2" size to prevent any back pressure on the filter. It must drain downhill. Avoid or eliminate any elbows and restrictions in the line. If the drain line is longer than 25 feet use a 3" line.

- i) Fit a barrel union at or near the filter on the backflush drain line so that the Cover Lid can be easily removed.
- j) Ensure that the backflush line is secured solidly and will not move or flex when high pressure water comes out of the flush valve.
- k) The Rinse Control has a 1" threaded drain line connection that will bleed water during every backflush cycle. This will need to be piped away from the filter to drain.
- l) Fit a barrel union at the Rinse Controller if you are piping this away, so that the Rinse Controller can be easily removed if required.
- m) If there is extensive pipe work after the filter, or if the downstream system runs downhill after the filter, you may need to install a pressure sustaining valve (PSV) on the downstream side of the filter. This will restrict the flow during start-up and maintain pressure at the filter until pressure builds up in the system so that the filter will not block.
- n) When the filter is installed ensure that all connections are tightened and secure.
- o) The filter is delivered with all control tube connections in place. Do not remove or change any of these.

Commissioning

Before proceeding with the commissioning process double check that the inlet, outlet and drain pipe work is securely fastened.

- a) Ensure that the small 3-way tap for automatic/manual operation is in the automatic position.
- b) Open the inlet valve (if fitted) slightly to allow water pressure into the filter and start pump if necessary. Check for leaks and fix now if any are found.
- c) Once the filter is pressurized, open the inlet valve fully.
- d) Flush the filter manually by rotating the automatic/manual 3-way tap to the **OPEN** position for 3 seconds then return to the **AUTO** position. This will cause the filter to go through a full backflush cycle. Do this at least 3 times to remove all the air from the control system.
- e) Whilst doing this check the line pressure on the inlet side of the filter during the backflush cycle and ensure it remains above 30 psi.
- f) Now slowly open the isolating valve after the filter. If you are filling empty pipelines you will need to do this gradually and in stages so that the pressure stays at around the normal



operating pressure of the system. Once the system is filled you will then be able to open the valve fully.

- g) Check the inlet and outlet pressures to make sure they are equal or near to equal.
- h) Once the system has stabilized to its normal operating conditions with flow and pressure, manually back flush again via the 3-way tap again and check the inlet pressure again to make sure it does not drop below 30 psi at any time.
- i) If all appears to be in order and if possible wait for the filter to reach a back flush cycle caused by a build-up of DP (differential pressure).
- j) Your filter should now be ready to leave online and is commissioned. Make sure the 3-way manually flushing tap is in the **AUTO** position.

Operation

Once your filter has been commissioned it should operate without any external input or control. We suggest that you check the filter on a regular basis, say weekly or monthly, checking the DP and making sure the flush cycle is functioning correctly. Make sure the 3-way tap for manual flushing is in the **AUTO** position.

Maintenance

Generally your Filtaworx filter should be trouble-free, however you may need to do the following on a regular basis:

- a) Remove the Coarse Screen on a regular basis to remove any large debris that has come into the system. The frequency of this will vary from site-to-site depending on conditions. We suggest initially that you remove this after 2 weeks of operation and if it is clear, then extend this time out to suit.
- b) Clean the Mini-filter on the side of the filter body. This filter protects the Rinse Controller. If this blocks the filter will not backflush and block. To clean this filter ideally you need to shut the pump down. Turn the 3-way tap that flushes the filter manually to the **OPEN**. This relieves the pressure in the mini-filter, so that it can be opened and cleaned. To open it you need to unscrew the bottom bowl off. Remove the element and clean it.

Rinse Controller

The Rinse Controller is basically the “brain” of the filter. It is basically a pilot operated diaphragm valve that senses inlet and outlet pressure across a diaphragm. When the pressure drop (DP) across the filter increases it pushes the diaphragm against a spring. At about 7 psi DP this will actuate a backflush or cleaning cycle by opening the flush valve to drain.

We recommend that you do not tamper or adjust the Rinse Controller as it has been factory set to the correct differential pressure (7 psi DP) point to keep the filter clean and functioning correctly. You should not attempt to take the Rinse Controller apart at any time.

In most cases, if this part is malfunctioning it is usually a symptom of another problem with the filter and **not** a problem with the controller. It could be that you have either a blocked fine screen or have an internal cleaning mechanism fault.

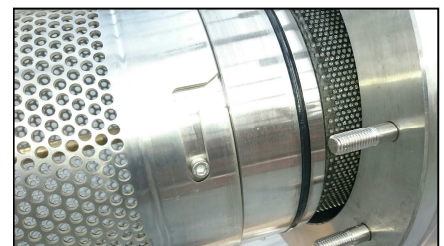
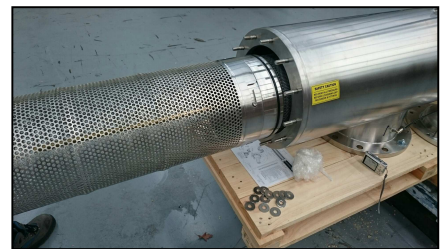
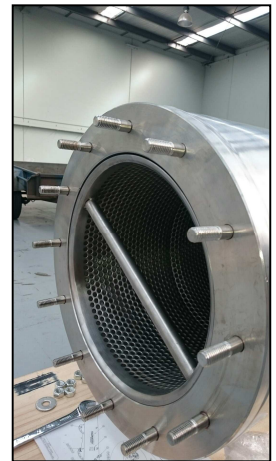
Adjusting the Rinse Control may be required if it has been tampered or played with. To do this, proceed as follows:

- 1) Loosen the lock nut on the adjusting screw on top of the Rinse Controller.
- 2) Backflush the filter manually on the 3-way tap.
- 3) Undo the adjusting screw anti-clockwise until the filter back flushes.
- 4) Turn the adjusting screw **in** clockwise 2 turns.
- 5) Tighten the lock nut back down on the adjusting screw.

Disassembly Instructions

Your filter can be easily disassembled by following the following instructions:

- a) If possible backflush the filter manually first before any work is commenced, and shut down the filter after this flush cycle.
- b) Make sure that the filter is isolated and contains no residual pressure before proceeding.
- c) To remove the Cover Lid, undo & remove the 12 x nuts and washers holding this down. The Cover Lid will now come off from the filter.
- d) Drain the filter body if required so that the Fine Screen assembly is fully visible inside the filter.
- e) The Coarse Screen is connected to the Fine Screen with a bayonet connection. Both can be removed together by pulling hard on the handle and sliding it out.
- f) The Fine Screen is seated into the housing by 2 x O Rings. If the screen has been in the housing for a long time it may be reluctant to come out, so more force may be required. Do not jolt or use any shock loading.
- g) Once the Coarse Screen is out of the filter with the top of the Fine Screen showing, remove the Coarse Screen on by turning it off the bayonet connection on the Fine Screen.
- h) The Fine Screen assembly is quite heavy! You will need the help of another person to remove it. Slide the Fine Screen out with one person at each end and place it on a bench or the floor. Check it for cleanliness which will show the effectiveness of the filter cleaning.
- i) If the Screen requires cleaning you **MUST** clean, using a high pressure water cleaner, clean the Screen from inside to outside only! (A garden hose or tap will not be strong enough).
- j) If you may need to take the Screen assembly apart and remove the Dirt Collector assembly you must first remove the PVC Rotor Chamber as shown below.



- k) Before replacing the Fine Screen into the filter, grease the 2 x O Rings using a suitable silicon grease.
- l) To remove the Collector pipe from the main assembly, you will need to remove the 4 x Philips head screws that attach the Rotor onto the Collector Pipe. Remove the Rotor from the tube and slide the Collector out.
- m) To remove the Piston Assembly, remove the 8 x nuts & washers holding it onto the body and remove.



Preventative Maintenance

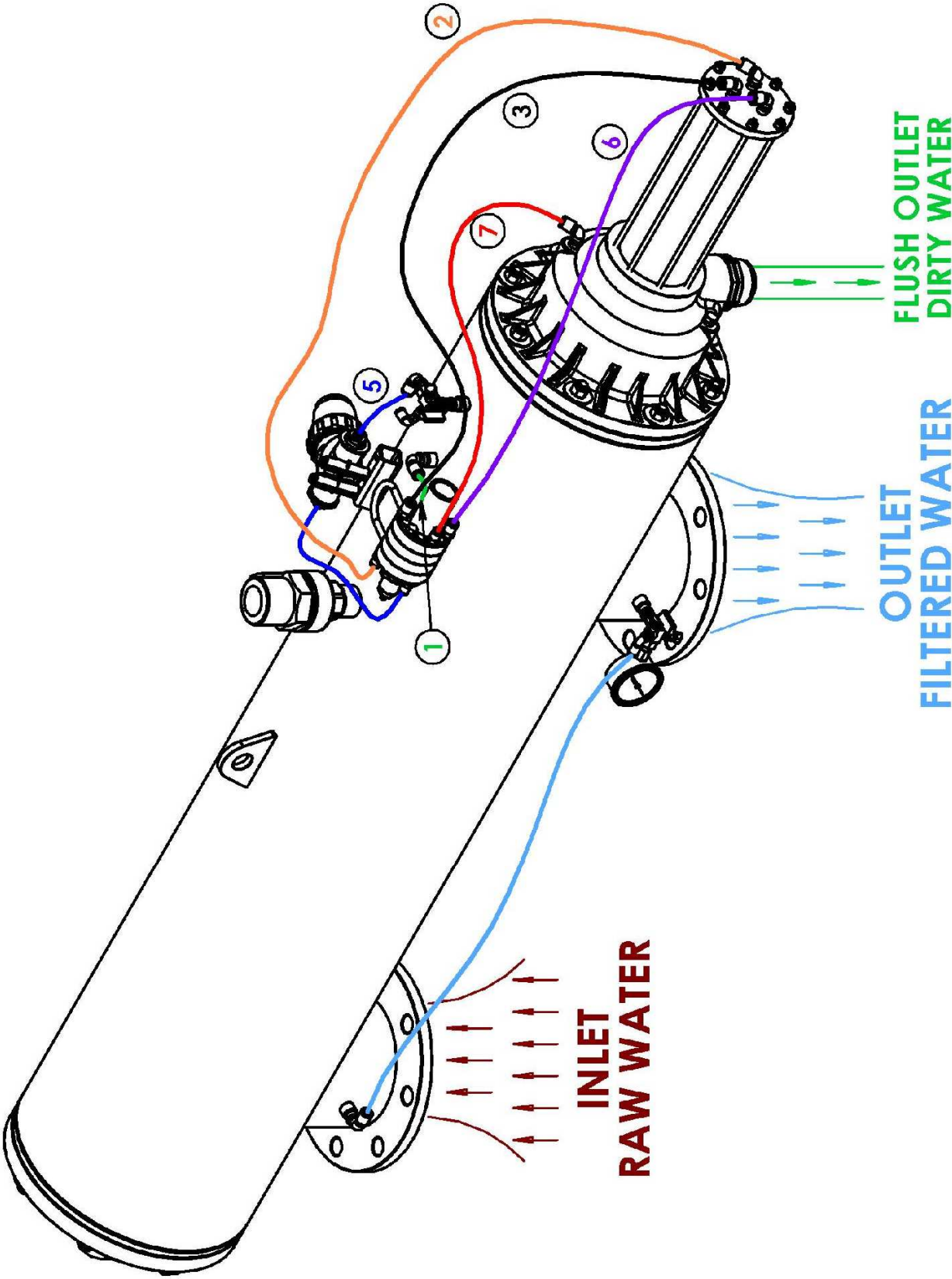
1. Every 2 – 3 weeks
 - a. Flush Filter Manually
 - b. Check that all filter functions and cleaning cycle is operating correctly.
2. Every 3 weeks
 - a. Clean the Mini-Filter
 - b. Every 6 months
 - c. Clean the coarse screen
3. Every 12 months
 - a. Strip and inspect the complete filter internals
 - b. Piston shaft and plunger moves in and out of the Piston freely
 - c. The wear on the Piston Bearing and the Rotor Bearing
 - d. The wear on the Collector Shaft and the Top Bearing
 - e. Remove and replace any worn parts
 - f. Check that the Fine Screen is clean

Trouble Shooting

Generally you will find if the filter malfunctions it will show a high DP (differential pressure) or become blocked. This could be caused by a random condition like a sudden high dirt load event of a control malfunction or an internal mechanical problem. The trick will be to find which one of these three (3) is the cause.

Problem	Possible Cause	Solution
The filter does not flush	Valves are closed	Open valves
	Pressure differential is high, >15 psi. (Rinse controller will normally be venting water in this mode).	Perform a manual flush as follows: <ol style="list-style-type: none"> 1. Close the filter outlet valve 2. Check that the filter outlet and inlet pressures are equal 3. Perform a manual flush as in Section 7.0 d, page 7. 4. Check the inlet pressure. 5. If the filter has been extensively blocked then flush the filter manually 2-3 times. 6. Open the outlet valve and check inlet-outlet pressures
	Rinse controller dripper blocked. (Controller venting water).	Change dripper
	Rinse controller has been adjusted incorrectly	Check and re-adjust screw on rinse controller. (Section 10)
	Control tubes or fittings to Rinse controller are incorrectly connected or blocked	Check the controller plumbing. Check and clear any blocked tubes.
	3-Way tap is in wrong position. It must be on AUTO	Rotate to correct position
The filter 2" flush valve stays open for a long time on the second/return stroke.	Drain pipes are not clear. The flush line is restricted, or too long, or not big enough in diameter	Check if drain lines are clear. Test by removing the flush line. Shorten existing line or replace with a larger diameter pipe.
Insufficient inlet pressure (less than 30 psi)	Inlet valves not fully open	Open inlet valves to maximum. Increase the inlet pressure or throttle the outlet to increase pressure during the flush cycle. Fit a hydraulic pressure sustaining valve.
Pressure differential exceeds 10 psi during normal operation	Coarse filter is blocked	Check and clean the Coarse Screen
	Rinse controller needs adjusting/re-setting	Adjust rinse controller (see below) Check for blockage at high pressure sensor connection.
	The flow rate for the filter is too high	Reduce flow rate.
Water does not flow through the filter	Inlet lines blocked	Check inlet lines
	Isolating valves are closed	Open isolating valves
	The screen is blocked completely. Possibly causes are: Low inlet pressure, high flow, high dirt load, controller malfunction or internal mechanism problems	Perform a manual flush as follows: <ol style="list-style-type: none"> 1. Close the filter outlet valve 2. Check that the filter outlet and inlet pressures are equal 3. Perform a manual flush as in Section 7.0 d, page 7. 4. Check the inlet pressure. 5. If the filter has been extensively blocked then flush the filter manually 2-3 times. 6. Open the outlet valve and check inlet-outlet pressures.
2" Flush valve leaks or remains open	Valve seals may be leaking because of damage or the Piston is jammed.	Remove Piston Assembly, check seals and that it moves in and out freely. If not check/replace the 95 mm Piston seals. Check that the Collector assy rotates and moves freely inside the Fine Screen. If not check what is obstructing it.

Hydraulic Control System Layout



Warranty

Triangle Waterquip warrants all Filtaworx® products against defects in material and workmanship for a period of 12 months from commissioning date or 18 months from delivery date, whichever date comes first.

The warranty is limited and valid only when the product is used in accordance with the manufacturer's standards and instructions and on condition that the customer fulfils their obligations set forth in this manual. The manufacturer's liability is limited to the replacement of defective parts with new or rebuilt parts free of charge. Any freight charges are for the customer's account.

This warranty is extended only to the original purchaser. A purchase receipt or other proof of date of the original purchase may be required before warranty performance is rendered.

This warranty only covers failures due to defects in materials and workmanship which occur during normal use. It does not cover damage caused by accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, modification or service by anyone other than the manufacturer or the manufacturers authorized agent or representative personnel.

The manufacturer is not liable for incidental or consequential damage resulting from the use of this product or arising out of any breach of this warranty. All express and implied warranties including the warranties of merchantability and fitness for a particular purpose/use are limited to the applicable warranty period set forth above.

In the event of a warranty claim a purchase order will be required from the customer to send the replacements part/s on. These parts will be invoiced at the standard replacement part price including freight. Faulty replaced parts are to be returned to Triangle Waterquip or their agent/distributor for evaluation, inspection and assessment, so that they can be checked for cause of damage and claim. If they are deemed to be a warranty claim then the part/s cost as invoiced will be credited to the customer, less the cost of any freight incurred. If the replacement parts are not deemed to be a warranty claim then the invoice will remain in place as is.