



PACIFIC WATER TECHNOLOGY



MEDIAPLUS IRON & MANGANESE REMOVAL FILTER

INSTALLATION MANUAL



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PACIFIC WATER TECHNOLOGY INSTALLATION INSTRUCTIONS
MANUAL – MEDIAPLUS IRON AND MANGANESE REMOVAL FILTER



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1.0. Overview

1.1. Advantages

- No regeneration required. Iron removal efficiency is very high.
- Only periodic backwashing required.
- Durable material with a long life and a wide temperature range.
- Light in weight: only 46-50 lbs. per cubic foot.

1.2. Conditions for Operations

- Alkalinity should be greater than two times the combined sulphate and chloride concentration.
- pH should be 6.8+.
- Dissolved Oxygen content must be equal to at least 15% of the iron (or iron and manganese) content.
- Bed Depth: 30 to 36 inches.
- Backwash rate: 10 to 12 gpm per square foot for MediaPlus
- Backwash bed expansion: 35% to 50%.

1.3. Incoming Water

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

1. Maximum iron level = 15ppm
2. Oxygen level = 15% of iron level
3. pH range = 6.8 - 9.0
4. Alkalinity = greater than 2 x sulphate + chloride
5. Organic matter = less than 5ppm
6. Free chlorine = less than 0.5ppm
7. Temperature = 3 - 45°C (35 - 110°F)
8. No Hydrogen Sulphide, Oil or Polyphosphates
9. Backwash flow rate must be 2 times service rate

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.



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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 advise on effluent issues if concerned with flow to drain.

1.6. 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 unswitched to prevent the filter from being inadvertently switched off.

1.7. Installation of Service Flow Restrictor

The Maric Flow restrictor should be installed after the Clack control head. Feeding filtered water of use. This will ensure that a flowrate of 15 LPM is not exceeded during filtration, whilst still allowing a flowrate of over 40 LPM during backwash.



2.0 Technical Data

2.1 Description of Filter

Soluble iron and manganese are oxidised by air in the presence of a catalyst and precipitated out of solution. Hydrogen Sulphide is reduced by oxidation to a sulphur precipitate. The filter media is oxidised by dissolved oxygen present in the water. The iron and manganese precipitates are trapped in the filter bed and removed by the automatic backwashing of the filter.

2.2 Backwashing

Efficient and regular backwashing is a very important function of filtration. Without it, the bed can compact and 'channeling' can occur causing bypassing of unfiltered water, resulting in short and ineffective filtration cycles and high pressure losses. Your filter is fully automatic so regular backwashing is assured. It also has high backwash flow rates and has variable backwash settings that allows you to set the backwash frequency to accommodate the loading of the raw water. The MAV valve (optional) allows for clean water backwashing of the filter.

2.2.1 What controls the Backwash?

The Valve and Control. The frequency of backwashing is determined by the quality of the raw water, the more contaminated the raw water is, the more frequent the backwashing is required. The valve is fully automatic with optional water meter and incorporates Service, Backwash and Purge cycles. The water meter is set to a pre-determined volume of water based on the iron and manganese content of the raw water and will automatically backwash the filter when the pre-set volume has been attained. The volume setting can be changed to suit any water quality variations. When a backwash is activated, the timer motor engages a piston that travels within a flow diversion cage and sequences the water flow as required during the different stages of the backwash cycle. Please note: The pump feeding the filter should be sized for the correct backwash flow rate.

2.2.2 Components of an Iron Filter

The Filter comprises of a 3-cycle control valve, water meter, fiberglass pressure vessel containing MediaPlus media and gravel underbed, A NHWB valve to prevent untreated water going to service when the filter is backwashing. An internal riser pipe with bottom distributor distributes the water flow through the filter. An optional air compressor, controlled by a flow-switch, delivers air to oxidise the filter media.

2.2.3 What are the stages of the Backwash cycle

- 1st Stage - Service Position In this position the filter delivers filtered water for usage. The filter is in this position prior to commencing the backwash cycle.



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- 2nd Stage - Backwash Position The water flow is reversed and wash the media bed clean of entrapped sediment and particulate matter prior to purging.
- 3rd Stage - Purge Position The filter is purged with water to remove any remaining impurities and re-bed the media. The Backwash Cycle is now complete and the unit will return to the Service Position.

2.3 CAUTION!

The filter is not designed to remove microbiologically unsafe contaminants from the water supply. If the water is for potable use it should be disinfected prior to use.

IMPORTANT. FAILURE TO COMPLY WITH THE FOLLOWING COULD VOID WARRANTY!

- a. All plumbing must conform to Australian Standards guidelines and Local Council regulations.
- b. For filters subjected to permanent hydrostatic pressure an integral non-testable backflow prevention device in accordance with AS3500.1 and complying with AS 2845.1 Clauses 3.6.3, 3.6.4, 7.3.1 and 7.3.3 should be fitted in the inlet line.
- c. For filters subject to hydrostatic pressure in excess of 700 kPa a suitable pressure control device should be fitted in the influent line.
- d. Where the hot water system is a mains pressure storage type, a cold-water relief valve of suitable rating should be fitted (if not already installed), between the non-return valve and the cold-water inlet of the hot water system.
- e. For installations subject to excessive or prolonged water hammer, a water hammer arrestor should be fitted.
- f. Waste connections should comply with minimum air gap requirements as per AS3500.1

2.4 System Specifications

- Minimum Operating Pressure :280kpa
- Maximum Operating Pressure :600 Kpa
- Minimum & Maximum Operating Temperature :4°C to 43°C
- Inlet & Outlet Connections: 1.5" male BSP
- Valve Drain Fitting: ¾" or 1" male BSP
- Mains Power Requirement: 240 Volt, 10 amp
- Control Valve Power: 12 Volt AC supplied by wall mount transformer supplied
- Transformer Output Current: 500mA
- Maximum Recommended Intermittent Flow Rate:
- MediaPlus 14" models: 15 lpm

Higher flow rates than recommended could result in iron leakage into the service water.



3 Installation

3.2 Locate the Filter

CHECKLIST

1. It is advisable to locate the filter and flow switch (if required) in a protected environment. If the unit is to be installed outside, or in the open, a protective shelter or shed is recommended.
2. The distance between the filter and a drain should be as short as possible.
3. Location should be easily accessible and have adequate height clearance to facilitate servicing.
4. Please ensure that there is aeration of the media prior to contacting the filter media. This can be achieved by feeding compressed air into the raw water at a controlled rate.
5. Hot water can severely damage the filter. If installing near a hot water service, ensure a minimum of 2 metres of piping between the outlet of the filter and inlet of the heater to help avoid heat transfer. Ensure a non-return valve on the inlet of the hot water system is present and functional.
6. Do not install filter where it or its connections (including drain and overflow lines) will ever be subjected to ambient temperatures under 1°C or over 49°C.
7. The filter, compressor (if installed) and solenoid power supply will require standard 3 pin 240-volt 10 amp grounded power outlets

3.3 Media Loading & Filter Assembly

8. Position the filter tank in the selected location.
9. Place the distributor tube and basket assembly in the media tank. Ensure riser is sitting in recess in bottom of tank.
The top of the distributor tube should be level with or up to 5mm above the top of the filter tank.
10. **Cover or plug the top of the distributor tube to stop the media entering the tube.**
11. Fill the tank approximately 2/3rds with water to prevent damage to the underdrain assembly when media filling.
12. The amount of media required and order of filling is as per below.
Check you have the correct quantities. While holding the distributor tube central to the neck of the tank and exerting slight downward pressure to stop the tube from moving, pour in the underbed and then the MediaPlus media.



Media required for 14” filter:

- 25 kg underbed #6 gravel
 - 5 bags of MediaPlus media (125 kg)
13. Remove the cover or plug from the tube and clean the media from the tank threads and the top of the distributor tube.

3.4 Water Line Connections

Note:

Inlet and outlet pipework should be 1 to 1.5” mm minimum. Isolation valves should be fitted to each line. A full bypass line with isolation valves is recommended to ensure ongoing water supply during servicing.

14. Install the flow switch, and compressor line if required. They should be installed on the inlet water line before the filter tank as far downstream from the filter as possible. This will ensure good aeration prior to the filter.

Install the flow switch (if required) horizontally or in an upward flow vertical position. Do not install in a downward flow vertical position. The switch paddle should be cut and trimmed to suit the pipework. Ensure the paddle does not obstruct too much water flow. Refer to the ‘F25 Flow Switch Installation Instructions’, and ‘Installation Layout Drawing’ for further instructions.

15. Plumb the incoming raw water line to the valve inlet. The inlet is on the right-hand side and the outlet on the left-hand side of the valve. Flow direction arrows are on the valve barrels to show the correct flow.
16. Plumb the backwash connection at the top to the white flow restrictor fitting provided. The waste line should not be longer than 6 meters and be sure not to kink the hose as that will restrict flow.

If the filter is located where the drain lines must be elevated, you may elevate the lines up to 2 metres providing the run does not exceed 5 metres and the water pressure at the filter is not less than 280kpa. You can elevate an additional 610mm for each additional 70kpa pressure.

17. Where the drain line is elevated but empties into a drain below the level of the control valve, form a 180mm loop at the far end of the line so that the bottom of the loop is level with the valve drain line connection. This will provide an adequate siphon trap.



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18. Where a drain empties into an overhead sewer line, a sink-type trap must be used.

Never connect a drain line and the wastewater to prevent the possibility of sewage being back siphoned into the filter. Always allow for an air gap.



Figure 1 - Clack Valve

3.5 Wiring Connections

WIRING CONNECTIONS

The control valve and dosing pump each require a 10 amp GPO.

Remove the filter control valve cover by lifting the side lugs and pulling cover forward.

- _ 1. Check the 2 pin connector from the NHWB valve has not come loose in transit and is firmly connected to the MAV/ NHWBP drive connection pins on the control board (Fig D).
- _ 2. Check the 3 pin connector from the Water Meter (Fig C) has not come loose in transit and is firmly connected to the METER drive connection pins on the control board (Fig D).
- _ 3. Check the 4 pin power cable connector (Fig D) has not come loose in transit and is firmly connected to the 12VAC POWER pins on the control board.

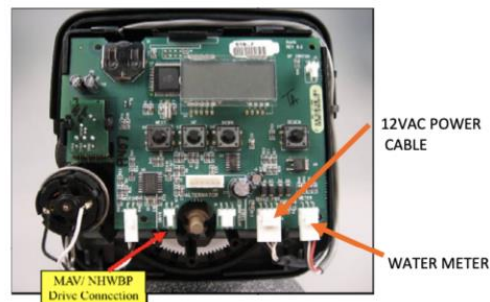


Fig D. CONTROL BOARD

Figure 2 - Control Board



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3.6 System Start-Up

Please do at least 5 backwashes during startup of new filter.

SYSTEM START-UP

- _ 1. After installation is complete, turn power supply on to the dose pump, solenoid valve and filter control valve. The filter control will synchronise to the home position.
- _ 2. Set the actual time of day into the control valve:



Setting Time of Day

Push NEXT until time of day screen is displayed. Press and hold ▲ or ▼ until the SET indicator is displayed, and the hour flashes. Press ▲ or ▼ until the correct hour is displayed.

Then press NEXT. The minutes will flash. Press ▲ or ▼ until the correct minute is displayed.

Press NEXT to return to the Display Screens. Time of day should only need to be set after power outages lasting more than 8 hours, if the battery has been depleted and a power outage occurs, or when daylight saving time begins or ends. If a power outage lasting more than 8 hours occurs, the time of day will flash on and off which indicates the time of day should be reset. If a power outage lasts less than 8 hours and the time of day flashes on and off, the time of day should be reset and the battery replaced.

- _ 3. Press and hold the REGEN button on the controller for three seconds. The drive motor will start and progress the valve to the BACKWASH position.
- _ 4. Slowly open the inlet water supply valve slowly, allowing water to fill the tank and expel air to the drain. CAUTION: If water flows too rapidly, there could be a loss of media to the drain. The dosing pump will start when there is sufficient flow.
- _ 5. Allow the filter to run and complete the rest of the backwash cycle automatically.



Figure 3 - Clack Valve Options



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3.7 Backwash

IMMEDIATE BACKWASH FEATURE:

A backwash can be initiated at any time by pressing and holding the REGEN button for 3 seconds.



INSTALLATION COMPLETE

Figure 4 – Clack Valve Regen

Thanks again, to have the opportunity for your business!!