OM MANUAL

MediaPRO
CUSTOM MEDIA FILTRATION

# SINGLE 9 - 13” WATER SOFTENERS & NHWB OPTION

## INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Freecall 1800 656 771
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# INSTALLATION RECORD

## S-9-WS, S-10-WS, S-12-WS, S-13-WS with optional No Hard Water Bypass (NHWB)

Please complete the following as a record for Warranty & Service purposes.

**SOFTENER MODEL:** _____

**SERIAL NO.:** _____

**PURCHASED FROM:** _____

**PURCHASE DATE:** _____

**DATE INSTALLED:** _____

**INSTALLED BY:** _____

**COMPANY:** _____

**CONTACT:** _____

**HARDNESS SETTING:** _____

**VOLUME OF WATER BETWEEN REGENERATION SETTING ($M^3$):** _____

**This product is to be installed by suitably qualified personnel only.** Please review this manual thoroughly before installing your water softener. For correct installation, follow the recommended steps and guidelines. If at any stage of installation, you are unsure of how to proceed, please call our technical team on AU 1800 656 771 for NZ 0800 721 447 for further information.

# ABOUT

## COMPONENTS OF THE WATER SOFTENER

Please familiarise yourself with the components of your Water Softener

### Pressure Vessel (Media Tank)

Wave Cyber pressure vessels have a one-piece HDPE liner with a FRP filament winding outer shell.

The pressure vessel houses both the resin media and the distributor system.

### Control Valve

Clack Automatic 5 Cycle, this controls the cycles of the softener operation.

The valve is microprocessor controlled and monitors water usage. The valve automatically initiates the regeneration of the media based on volume throughput prior to running out of soft water.


### Resin Media

Lewatit high quality food grade monodisperse cation (softener) resin.

The uniform bead-size delivers optimum performance in capacity, flow rate and salt consumption per regeneration with higher chlorine resistance for longer operational life.

### Water Softener Salt

Premium-grade kiln dried water softener salt.

This salt is specifically manufactured for water softeners giving a clean, maximum salt per kg weight and consistent grain size for efficient brining.

### Underbed Gravel

Graded and washed gravel is the support media for the softener resin.

It also helps distribute an even water flow through the media tank during service and regeneration/backwash.

### Brine Tank

Clack blow-moulded high density polyethylene tanks are chemical resistant with UV inhibitors

The brine tank houses the brine well, brine valve/pick-up tube, kiln dried water softener salt and the brine solution.

# How does your Water Softener work?

## WATER HARDNESS

The principal hardness minerals, calcium and magnesium, accumulate as a white scale. This can be found in plumbing fixtures and fittings, jugs, heat exchangers, boilers, steam equipment, shower screens and glassware. Removing the scale delivers better use of energy, lowers running and maintenance costs, reduces cleaning products while providing improved laundry, dishwashing and water-contact appliance protection.

## FUNCTION OF A WATER SOFTENER

The softener exchanges harmful hardness ions for harmless sodium ions, leaving soft water. A special softener resin is the exchange medium and the softener salt is the regenerant. When the resin becomes exhausted with hardness ions the softener regenerates using a brine solution (sodium chloride + water).

During regeneration the high concentration of sodium ions introduced will dislodge and replace the hardness ions while flushing the harmful hardness and chloride ions to drain.

When the process is complete the softener is regenerated and ready to supply soft water again. Twin-tank softeners comprise a large capacity brine tank, and a tall resin tank for increased exchange capacity. There is also a large void space for efficient backwash and brining. All functions are fully automatic with only a periodic 'top-up' of water softener salt required.

**NOTE:** At **NO** time during service or regeneration is the brine solution in contact with the treated/non-treated water to service.

## WHAT CONTROLS THE REGENERATION?

The microprocessor demand control valve controls the regeneration. The hardness level and resin capacity of the softener are programmed into the control which then calculates the amount of 'soft water' the softener can supply before a regeneration is required. The valve includes an in-built water meter that (along with the control) monitors actual water flow and usage.

The control automatically initiates a regeneration at a pre-set time when the calculated soft water volume is reached. The microprocessor monitors high and low usage patterns and compensates to ensure the water remains soft until the next regeneration. The control features a safe 15-volt DC power from a wall-mounted transformer supplied.

## WHAT ARE THE STAGES OF THE BACKWASH CYCLE?

### 1st Stage - Service Position

In this position the softener delivers soft water for usage.

**Note:** The softener is in this position prior to commencing the backwash cycle.

### 2nd Stage - Backwash Position

The water flow is reversed to lift and wash the resin bed clean of entrapped sediment and particulate matter prior to brining.

### 3th Stage - Brine Position

The softener valve draws in brine solution from the brine tank to regenerate the softener resin.

### 4th Stage - Fast Rinse Position

The softener fast-rinses the resin bed to remove residual brine solution.

### 5th Stage - Brine Refill Position

The softener valve refills the brine/salt tank with sufficient water to make brine for the next regeneration.

### The regeneration cycle is now complete.

Note: All the functions of your softener are fully automatic.

# General Specifications

| | |
|---|---|
| Minimum operating pressure | **210 kPa (30psi)** |
| Maximum operating pressure | **700 kPa (100psi)** |
| Maximum & maximum operating temperature | **5°C to 43°C** |
| Inlet & outlet connections | **25mm Male BSP** |
| Valve drain fitting (S-9-SF & S-10-SF + NHWB) | **19mm Hose Barb** |
| Mains power requirement | **240 Volt, 10 amp** |
| Control valve power | **15 Volt DC supplied by wall mount transformer** |
| Transformer output current | **500mA** |

| MODEL | CONTINOUS SERVICE FLOW RATE | PEAK SERVICE FLOW RATE | BACKWASH FLOW RATE |
|---|---|---|---|
| S-9-WS | 19 lpm | 30 lpm | 10 lpm |
| S-9-WS-NHWB | 19 lpm | 30 lpm | 10 lpm |
| S-10-WS | 28 lpm | 42 lpm | 15 lpm |
| S-10-WS-NHWB | 28 lpm | 42 lpm | 15 lpm |
| S-12-WS | 37 lpm | 56 lpm | 20 lpm |
| S-12-WS-NHWB | 37 lpm | 56 lpm | 20 lpm |
| S-13-WS | 50 lpm | 75 lpm | 21 lpm |
| S-13-WS-NHWB | 50 lpm | 75 lpm | 21 lpm |

# INSTALLATION & OPERATING WARNINGS

## CAUTION!

The softener is NOT designed to remove microbiologically unsafe contaminants from the water supply. If the water is for potable and/or food process use it should be disinfected prior to use.

The exchange process partially increases the sodium level in the softened water. If you are sodium intolerant or on a sodium-free diet please contact Southland Filtration for further information.

## IMPORTANT! FAILURE TO COMPLY COULD VOID WARRANTY

1. All plumbing must conform to Australian Standards guidelines and Local Council regulations.
2. For softeners subjected to permanent hydrostatic pressure an integral non-testable backflow prevention device should be fitted in the inlet line. This should be 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
3. For softeners subject to hydrostatic pressure greater than 700 kPa a suitable pressure control device should be fitted in the supply line.
4. 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.
5. For installations subject to excessive or prolonged water hammer, a water hammer arrestor should be fitted.
6. Waste connections should comply with minimum air gap requirements as per AS3500.1,Table 4.5

## IMPORTANT! FOR TANK FILLING OR OPEN-DISCHARGE APPLICATIONS ONLY

The automatic control valve must have a positive back pressure during the regeneration or backwash cycle to ensure effective operation and prevent untreated water going to service. If using the softener/filter to fill a storage tank (or any other open-discharge application) a 'No Hard Water Bypass Valve' must be used.

(**Note:** Softener/Filter Models with 'NHWB' suffix include bypass option).

**Fig. A No Hard Water Bypass valve (NHWB)**

**If there is any step or parts you are not sure of during installation please do not hesitate to contact Southland Filtration for clarification to avoid incorrect installation.**

# INSTALLATION & OPERATING CHECKLIST

## Step One: Locate the Softener

1. It is advisable to locate the softener 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 softener and a drain or waste outlet should be as short as possible.
3. The brine tank should be located on the same level and as close as possible to the softener. Choose an easily accessible area for salt refilling and to facilitate servicing.
4. Hot water can severely damage the softener. If installing near a hot water service ensure a minimum of 2 metres of piping between the outlet of the softener 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.
5. Do NOT install softener where it or its connections (including drain and overflow lines) will be subjected to ambient temperatures under 1°C or over 49°C.
6. Do NOT install softener near chemicals or chemical fumes.
7. The softener will require a standard 3-pin, 240-volt 10-amp grounded power outlet.
8. If the softener is to be installed outside or where the sunlight hits the LCD display it is recommended to purchase the weatherproof cover for the valve to protect the LCD display and electronics. (Refer Fig. B)
9. An approved inlet isolation valve (not supplied) is recommended to be installed on the inlet line.

**Fig. B Waterproof cover**

# Step Two: Filter Assembly & Media Loading

1. Position the softener media tank (pressure vessel) in the selected location allowing room for the brine tank.
2. Place the riser pipe (distributor tube) assembly in the media tank (if not already installed). Ensure riser is sitting in the recess in bottom of tank. The top of the riser pipe should be approximately 5mm above the top of the tank.
3. Cover or plug the top of the riser pipe (distributor tube) with a cap or plastic bag (not supplied) to stop the media entering the riser pipe (distributor tube).
4. Refer to the table below for the amount of softener resin required for your model. Check you have the correct quantity.

**Table 1**

| MODEL | RESIN LITRES |
|---|---|
| S-9-WS & NHWB | 28L |
| S-10-WS & NHWB | 42L |
| S-12-WS & NHWB | 56L |
| S-13-WS & NHWB | 75L |

5. Hold the distributor tube central to the neck of the media tank. Then while exerting light downward pressure to stop the tube from moving, pour in the softener resin using a suitable funnel.
6. Hold the distributor tube central to the neck of the media tank. Then while exerting light downward pressure, shake the media tank a few times back and forth slightly to pack down the media in the tank.
7. Remove the cap/plug from the tube and clean the resin from the media tank threads and the top of the distributor tube.
   **NOTE:** Clean up any spilt media on the ground around the media tank (as this will be very slippery) to prevent any accidents and/or injury.
8. Lightly smear O-ring (silicon) grease to the outside of the top of the distributor tube to approximately 50mm down from the top of the tube.
9. Place the automatic control valve over the distributor tube and, exerting light downward pressure, screw the valve into the media tank thread until the valve bottoms against the top lip of the tank. CAUTION! - Hand tighten only, (approximately 1/4 turn should be sufficient).
10. Re-position the softener media tank so that the control valve is facing in the correct direction.

# Step Three: Water Line Connection

FOR SOFTENER MODELS: S-9-WS, S-10-WS, S-12-WS, S-13-WS

1. Connect the incoming water line (untreated water) to the inlet adaptor (Fig. C) on the bypass valve (Fig. A). Looking front-on at the valve the inlet is at the back of the valve on the right hand side.
2. Connect the outgoing water line (treated water) to the outlet adaptor (Fig. C) on the bypass valve at the back of the valve on the left hand side. Note: Flow direction arrows are moulded on the control valve barrels to show the correct flow direction.

Fig. C Inlet/outlet Adaptors

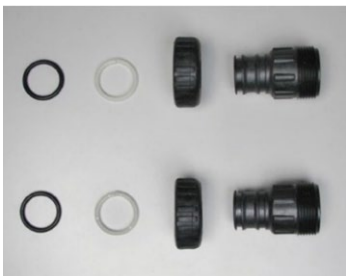
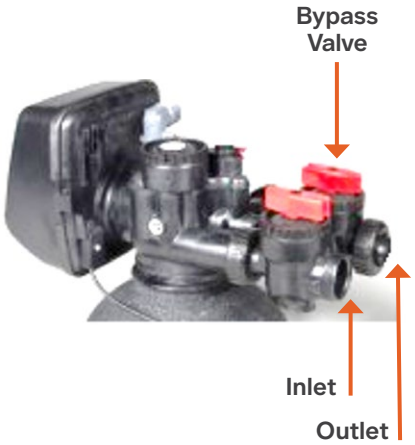


Fig. B Optional Adaptors

Fig. A




FOR MODELS S-9-WS-NHWB, S-10-WS-NHWB, S-12-WS-NHWB, S-13-WS-NHWB

1. Connect the incoming water line (untreated water) to the inlet adaptor (Fig. C) on the bypass valve (Fig. D). Looking front-on at the valve the inlet is at the back of the valve on the right hand side.
2. Connect the outgoing water line (treated water) to the outlet adaptor on the NHWB (Fig. D) at the back of the valve on the left hand side. NOTE:Flow direction arrows are moulded on the control valve barrels to show the correct flow direction.

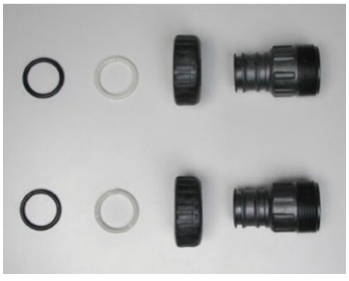


Fig. B Inlet/outlet Adaptors


Fig. D

Fig. D V3070FM. Shown with optional V3191-01 vertical adapter kit

Note: NHWB shown in Vertical position, it can also be put in Horizontal position.

# Step Four: Brine Line Connections

1. Position the brine tank as close as practical to the softener media tank.
2. Push-fit the 3/8 tube into the brine elbow located on the control valve (Fig. E). Ensure the end of the tube is cut clean, not frayed, scratched or damaged and is pushed all the way into the elbow.
3. DO NOT connect the other end to the brine tank at this point in time. It is to be connected during Initial Start Up proceedure.
4. The other end of the tube fits into the brine elbow inside the brine tank (Fig. F). The brine tube should run straight to the brine tank and not be looped or rise higher than the brine elbow on the valve, cut to length if necessary.
5. Ensure the end of the tube is cut clean, not frayed, scratched or damaged and is pushed all the way into the elbow.

**Fig. E**

**Fig. F Brine Elbow**

# Step Four: Drain & Overflow Line Connection

1. If ideally located, the softener will be above, and not more than 6 metres, from the drain. Connect 19mm (3/4”) tubing or hose (Not supplied) to the drain outlet fitting to the drain (Fig. G).

   **IMPORTANT:** Support the hose or tube to prevent kinking. A kinked hose will prevent proper backwash and regeneration. Alternatively, the 19mm (3/4”) hose tail fitting can be removed and the drain hard plumbed with 19mm (3/4”) pipe and fittings (Not supplied).

**Fig. G**

2. If the softener 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 softener is not less than 280kPa. Note: You can elevate an additional 610mm for each additional 70kPa pressure.
3. 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.
4. Where a drain empties into an overhead sewer line, a sink-type trap must be used.

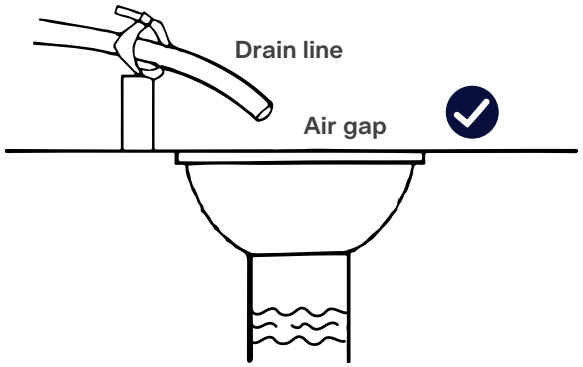
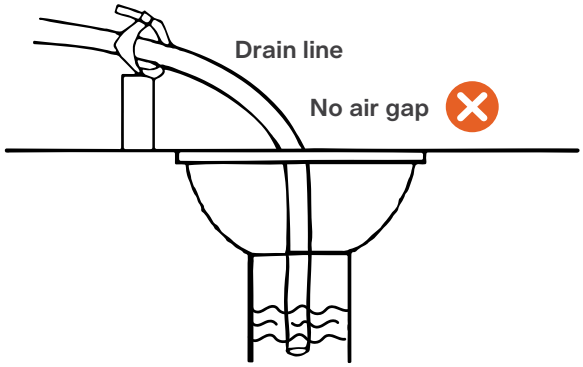



Fig. H




**CAUTION!**

**Never connect the drain line directly into a drain, sewer line or trap. Always allow an air gap between the drain line (Not supplied) and the wastewater (Fig. H) to prevent the possibility of vacuum pressure in the pressure vessel or sewage being back siphoned into the pressure vessel.**

5. Fit a 12mm (1/2") hose (Not supplied) onto the overflow elbow on the side of the brine tank (Fig. I). The hose should run to drain. Allow an air gap between the hose end and the drain as per (Fig. H). **NOTE**: DO NOT join the overflow tube into the drain line.


Fig. H

# Control Board Connections

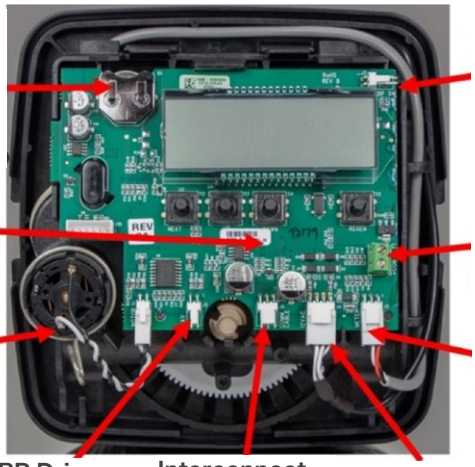



Fig G.

# System Start-up

The final step before putting the softener into service:

- Set the actual time of day into the control valve.
- Regenerate the softener.

# Step Six: Setting Time of Day

1. Make sure the inlet isolation valve is closed.
2. Plug in the transformer and turn on the power point. The control valve will automatically drive to the service position. If a NHWB is fitted it will also drive to service.
3. Scroll through the display by pressing the NEXT button until 'Time of Day' screen is displayed. (Refer Fig. K)
4. Press and hold the SET CLOCK button until the Hour flashes. (Refer Fig. K)
5. Using the UP or DOWN buttons press to change the Hour then press NEXT. Repeat the same to change the Minutes. (Refer Fig. K)
6. Press NEXT to set and return to Time of Day display.


Fig K.

7. 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 savings 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 backup battery replaced. (Refer Fig. J)

# Step Seven: Initial Start Up

1. Make sure the inlet isolation valve is closed.
2. Close the outlet valve on the bypass or outlet isolation valve if NO bypass is installed.
3. Press and hold the REGEN button for three seconds until the drive motor starts. Refer (Fig. L)
4. When the drive stops the control valve will be in backwash, next turn the power OFF.
5. Slowly open the inlet water supply valve 1/4 to 1/3 allowing water to fill the tank slowly in order to expel air. CAUTION: If water flows too rapidly, there could be a loss of media out of media tank to the drain.
6. When the water is flowing steadily to drain without the presence of air, fully open the inlet valve.
7. Turn the power back ON.
8. Press the REGEN button once to forward the valve to Brine Draw position. When the drive stops put your finger over the end of the brine tube to check for suction. If you have suction fit the brine tube into the brine tank brine elbow (Ref. Fig. F). If you don't have suction check the tube connection on the valve (Ref. Fig E.)
9. Press the REGEN button once to forward the valve to Fast Rinse position. When the drive stops wait 1 minute and press the REGEN button again.
10. When the drive stops it will be in the 2nd Backwash position. Wait 1 minute and press the REGEN button again.
11. When the drive stops it will be in the Fast Rinse position. Wait 1 minute and press the REGEN button again.

**Fig G.**

**Note:** The handles also indicate the flow direction

12. When the drive stops it will be in the Brine Refill position. Check that there is water being put into the brine tank.
13. Allow the softener to automatically complete the cycle and return to Service.
14. Put the bypass valve into the service position and/or open the outlet isolation valve.
15. The Water Softener is now in service and ready to supply softened water.

## Immediate Backwash Feature

An immediate backwash can be initiated at any time by pressing and holding the REGEN button for 3 seconds. (Refer Fig. L)

A backwash can be set to be imitated at the pre-programmed time by pressing the REGEN button once and letting go. (Refer Fig. L)


Fig. L

## Step Eight: Load Salt

Check that the softener has put water into the brine tank at the end of the regeneration.

Pour softener salt into the brine tank (Fig. M). A minimum of 2 bags of salt is required. Note: Do NOT fill salt above the top of the brine well.

Load salt to recommended level of approximately 300mm above the brine (water) height. NOTE: The level will change as you add the salt.

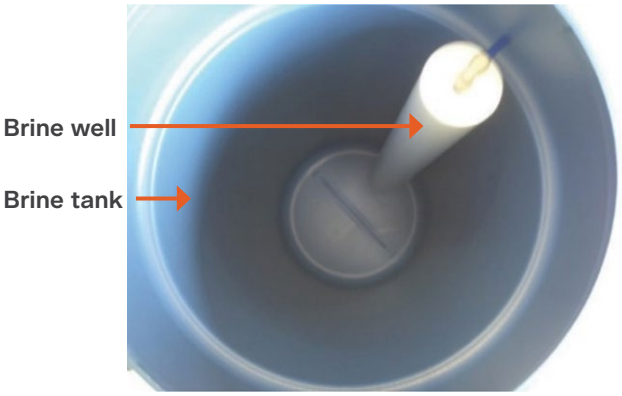



Fig. M

**INSTALLATION IS NOW COMPLETE**

# Owner Operator Screen Displays

## User Displays

### General Operation

When the system is operating, one of five displays may be shown. Pressing NEXT will alternate between the displays shown below.


**User 1**
Typical user display. Shows volume remaining to regeneration. This screen will not be viewed if the control is set for time-clock operation.


**User 2**
Displays number of days to next regeneration. Only viewed if Step 11S or Step 5F is set to OFF.


**User 3**
Displays flow rate L/min. If a meter is not used this display will be shown but 0 will be displayed. If 1.0 ℾ is selected in Step 2CS an "A" in front of the flow rate indicates that the tank with the control valve on it is in service. If "b" is displayed the tank with the in/out head is in service.

**Note:** "A" and/or "B" will only be displayed on Twin - Alternating or Multiple systems.


**User 4**
Displays total volume in cubic meters since last reset. If a meter is not used this display will be shown but 0 will be displayed.
PRESS ▼ FOR 3 SECONDS TO RESET TO 0.


**User 5**
Shows current time.

# MAINTENACE

## Hardness test

A hardness test is supplied with your softener. It is a simple colour change test to determine if the softener is delivery soft or hard water.

### PROCEDURE

1. Open the nearest tap after the softener.
2. Allow water to run for at least 30 seconds.
3. Half fill the plastic tube with water.
4. Add one YES/NO tablet to the sample water and shake until the tablet has fully dissolved.


**Hardness Test Kit**

### RESULTS

If the water sample turns GREEN, the water is soft and the softener is functioning correctly

If the water sample turns RED, the water is HARD. Regenerate the softener and re-test the water. If it is HARD refer to the Softener Troubleshooting Guide following.

# FAQs and Troubleshooting

TC control valves do not have meters so shaded areas are not applicable for TC control valves

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| 1. Timer does not display time of day. | a. Power Adapter unplugged | a. Connect power |
| | b. No electric power at outlet | b. Repair outlet or use working outlet |
| | c. Defective Power Adapter | c. Replace Power Adapter |
| | d. Defective PC board | d. Replace PC board |
| 2. Timer does not display correct time of day | a. Switched outlet | a. Use uninterrupted outlet |
| | b. Power outage | b. Reset time of day. If battery is present the battery may be depleted. See Front Cover and Drive Assembly drawing for instructions. |
| | c. Defective PC board. | c. Replace PC board |
| 3. Display does not indicate water is flowing. Refer to user instructions for how the display indicates water is flowing. | a. Bypass valve in bypass position | a. Put bypass valve in service position |
| | b. Meter connection disconnected | b. Connect meter to PC board |
| | c. Restricted/stalled meter turbine | c. Remove meter and check for rotation or foreign material |
| | d. Defective meter | d. Replace meter |
| | e. Defective PC board | e. Replace PC board |
| | f. Meter not installed | f. Install meter |
| | g. PC board incorrectly programmed | g. Refer to programming instructions |
| 4. Control valve regenerates at wrong time of day | a. Power outages | a. Reset time of day. If battery is present the battery may be depleted. See Front Cover and Drive Assembly drawing for instructions. |
| | b. Time of day not set correctly | b. Reset to correct time of day |
| | c. Time of regeneration incorrect | c. Reset regeneration time |
| | d. Control valve set at “on 0” (immediate regeneration) | d. Check control valve set-up procedure regeneration time option |
| | e. Control valve set at NORMAL + on 0 (delay + immediate regeneration) | e. Check control valve set-up procedure regeneration time option |

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| 5. Control valve stalled in regeneration | a. Motor not operating | a. Replace motor |
| | b. No electric power at outlet | b. Repair outlet or use working outlet |
| | c. Defective Power Adapter | c. Replace Power Adapter |
| | d. Defective PC board | d. Replace PC board |
| | e. Broken drive gear or drive cap assembly | e. Replace drive gear or cap assembly |
| | f. Broken piston retainer | f. Replace drive cap assembly |
| | g. Broken main or regenerant piston | g. Replace main or regenerant piston |
| 6. Control valve does not regenerate automatically when the correct button(s) is depressed and held. For TC valves the buttons are UP and DOWN. For all other valves the button is REGEN. | a. Power Adapter unplugged | a. Connect Power Adapter |
| | b. No electric power at outlet | b. Repair outlet or use working outlet |
| | c. Broken drive gear or drive cap assembly | c. Replace drive gear or drive cap assembly |
| | d. Defective PC board | d. Replace PC board |
| 7. Control valve does not regenerate automatically but does when the correct button(s) is depressed and held. For TC valves the buttons are UP and DOWN. For all other valves the button is REGEN. | a. Bypass valve in bypass position | a. Put bypass valve in normal opera- tion position |
| | b. Meter connection disconnected | b. Connect meter to PC board |
| | c. Restricted/stalled meter turbine | c. Remove meter and check for rotation or foreign matter |
| | d. Defective meter | d. Replace meter |
| | e. Defective PC board | e. Replace PC board |
| | f. Set-up error | f. Check control valve set-up procedure |
| 8. Time of day flashes 'On and Off' | a. Power outage | a. Reset time of day. If battery is present the battery may be depleted. See Front Cover and Drive Assembly drawing for instructions. |

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| 9. Error Codes<br><br>101, 1001 or E1 – Unable to recognise start of regeneration<br>102, 1002 or E2 – Unexpected stall 103, 1003 or E3 – Motor ran to long, timed out trying to reach next<br>cycle position<br><br>104, 1004 or E3 – Motor ran to long, timed out trying to reach home position<br><br>If other error codes display contact the factory | a. Control valve has just been serviced | a. Unplug power source jack from the printed circuit board (black wire) and plug back in or press button sequence to reset valves: TC valves (three buttons) press and hold SET and DOWN buttons for 3 seconds. (Cover button may have other names like “SET HOUR “, “CLOCK” or “SET CLOCK” but the circuit board is labeled with SET.) All other valves press and hold NEXT and REGEN buttons for 3 seconds. |
| | b. Foreign matter is lodged in control valve | b. Check piston and spacer stack assembly for foreign matter |
| | c. High drive forces on piston | c. Replace piston(s) and spacer stack assembly |
| | d. Control valve piston not in home position | d. Unplug power source jack from the printed circuit board (black wire) and plug back in or press button sequence to reset valves: TC valves (three buttons) press and hold SET and DOWN buttons for 3 seconds. (Cover button may have other names like “SET HOUR “, “CLOCK” or “SET CLOCK” but the circuit board is labeled with SET.) All other valves press and hold NEXT and REGEN buttons for 3 seconds. |
| | e. Motor not inserted fully to engage pinion, motor wires broken or disconnected, motor failure | e. Check motor and wiring. Replace motor if necessary |
| | f. Drive gear label dirty or damaged, missing or broken gear | f. Replace or clean drive gear |
| | g. Drive bracket incorrectly aligned to back plate | g. Reseat drive bracket properly |
| | h. PC board is damaged or defective | h. Replace PC board |
| | i. PC board incorrectly aligned to drive bracket | i. Ensure PC board is correctly snapped on to drive bracket |

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| 10. Error Codes for MAV and NHWB<br><br>106 or 1006 – MAV/NHWB unable to nd proper park position, mo- tor ran too long.<br><br>107 or 1007 – MAV/NHWB motor ran too short (stalled) while looking for proper park position<br><br>If other error codes display contact the factory | a. Foreign matter is lodged in MAV/ NHWB | a. Check MAV/NHWB piston and spacer stack assembly for foreign matter |
| | b. High drive forces on MAV/ NHWB piston | b. Replace MAV/NHWB piston and spacer stack assembly |
| | c. MAV/NHWB motor not inserted fully to engage pinion, motor wires broken or disconnected, motor failure | c. Check MAV/NHWB motor and wiring. Check interconnect wir ing to both PC boards. Replace motor or wiring if necessary. |
| | d. MAV/NHWB drive gear damaged, missing or broken gear | d. Replace MAV/NHWB drive cap. |
| | e. MAV/NHWB main gear cover assembly incorrectly aligned to drive assembly. | e. Reseat MAV/NHWB main gear cover assembly properly |
| | f. PC board is damaged or defective | f. Replace PC board |

## Talk to an expert

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