

SINGLE 18-30" WATER SOFTENER & NHWB OPTION

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Freecall 1800 656 771
southlandfiltration.com.au

 **southland**
FILTRATION

CONTENTS

Click a section to navigate directly to the corresponding page in the manual

Installation Record **3**

S-18-WS, S-21-WS, S-24-WS, S-30-WS with optional No Hard Water Bypass (NHWB) **3**

About **4**

How does your Water Softener work? **5**
General Specifications **7**

Installation & Operating Warnings **8**

Installation & Operating Checklist **9**

Step One: Locate the Softener **9**
Step Two: Filter Assembly and Media Loading **10**
Step Three: Water Line Connection **12**
Step Four: Drain & Overflow Line Connection **13**
Step Five: Brine Line Connection **13**
Control Board Connections **15**
System Start-up **15**
Step Six: Setting Time of Day **15**
Step Seven: Initial Start Up **16**
Immediate Regeneration Feature **17**
Step Eight: Load Salt **17**
Owner Operator Screen Displays **18**
Maintenance **19**
Hardness test **19**
FAQs and Troubleshooting **20**



southland
FILTRATION

Freecall 1800 656 771

southlandfiltration.com.au

INSTALLATION RECORD

S-18-WS, S-21-WS, S-24-WS, S-30-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 (M³):

This product is to be installed by suitably qualified personnel only. Please review this manual thoroughly before installing your sediment filter. 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 and on 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 protection for water-contact appliances.

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 media and the softener salt is the regenerant. When the resin becomes laden 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 replaces 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 with 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, 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 automatically adjusts the capacity to ensure the water remains soft until the next regeneration. The control features a safe 15-volt DC power from the 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	WS1.5 Valve 40mm BSPF
Inlet & outlet connections	WS2 Valve 50mm BSPF
Valve drain fitting	WS1.5 Valve 40mm BSPF
Valve drain fitting	WS2 Valve 50mm BSPF
Mains power requirement	240 Volt, 10 amp
Control valve power	15 Volt DC supplied by wall mount transformer
Transformer output current	500mA

MODEL	CONTINUOUS SERVICE FLOW RATE	PEAK SERVICE FLOW RATE	BACKWASH FLOW RATE
S-18-WS	96 lpm	150 lpm	41 lpm
S-18-WS-NHWP	96 lpm	150 lpm	41 lpm
S-21-WS	117 lpm	183 lpm	56 lpm
S-21-WS-NHWP	117 lpm	183 lpm	56 lpm
S-24-WS	167 lpm	241 lpm	75 lpm
S-24-WS-NHWP	167 lpm	241 lpm	75 lpm
S-30-WS	283 lpm	383 lpm	114 lpm
S-30-WS-NHWP	283 lpm	383 lpm	114 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. (Refer Fig. A).

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



Fig. A No Hard Water Bypass valve (NHWB)

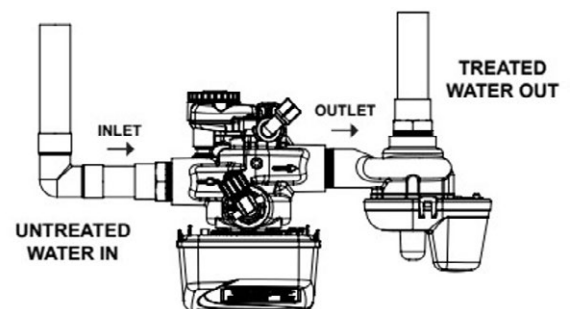


Fig. B Typical NHWB Plumbing

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

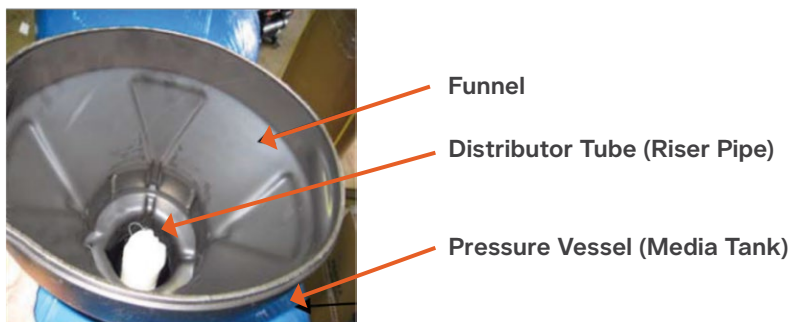
1. It is advisable to locate the softener in a protected environment. If the unit is to be installed outside, or in the open, a protective shelter or shed is recommended.
2. The distance between the softener and a drain or waste outlet should be as short as possible.
3. The brine tank should be located on the same level and as close as possible to the softener and in 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. X)
9. An approved inlet isolation valve (not supplied) is recommended to be installed on the inlet line.



Fig. X Waterproof cover

Step Two: Filter Assembly and 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 it is sitting in the recess in bottom of media 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. Lightly smear silicon grease to the outside of the top of the distributor tube to approximately 50mm down from the top of the tube.
5. Place the automatic control valve over the distributor tube and, exerting slight downward pressure, screw the valve into the media tank thread until the valve bottoms against the top lip of the tank. **CAUTION!** - Firmly hand tighten only, (1/4 turn should be sufficient).
6. Re-position the softener media tank so that the control valve is facing in the correct direction.
7. While holding the media tank remove the valve without moving the media tank.
8. Fill the media tank approximately 1/3rd with water to prevent damage to the hub & lateral (distributor assembly) in the bottom of the tank when pouring in the gravel.



9. Refer to the table below for the amount of media required for your model. Check you have the correct quantities before commencing. Hold the distributor tube central to the neck of the media tank. Then apply light downward pressure to stop the tube from moving, and pour in the underbed gravel first, followed by the softener resin.

Sequence is: first # 5 Gravel, then # 6 Gravel then the Resin media.

Table 1

MODEL	UNDERBED GRAVEL #5	UNDERBED GRAVEL #6	RESIN LITRES
S-18-WS & NHWB	35kg	20kg	150L
S-21-WS & NHWB	50kg	25kg	175L
S-24-WS & NHWB	60kg	30kg	250L
S-30-WS & NHWB	120kg	60kg	400L

10. Remove the cap/plug from the riser tube and clean the media from the tank thread and the top of the distributor tube.
NOTE: To prevent any accidents and/or injury, clean up any spilt media on the ground around the media tank – this can be very slippery!
11. Fill the media tank with water to approximately 150mm from the top.
12. Lightly smear silicon grease to the outside of the top of the distributor tube to approx. 50mm down from the top of the tube.
13. Place the automatic control valve over the riser pipe (distributor tube) and exerting slight 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, (1/4 turn should be sufficient).

Step Three: Water Line Connection

FOR SOFTENER MODELS: S-18-WS, S-21-WS, S-24-WS, S-30-WS & NHWB

1. Inlet and outlet pipework should be 40mm minimum (Note: Model S-30-WS and S-30-WS-NHWB is 50mm pipework). Isolation valves (not supplied) should be installed in the incoming and outgoing lines (NOT the Drain line). A full bypass line with isolation valves (not supplied) is recommended to ensure ongoing water supply during servicing and maintenance. (Refer Fig. C for valve connections).
2. Plumb the incoming untreated water (Raw Feed) line to the inlet of the valve (Fig. C/E) on the left hand side and the treated water (service) line to the outlet of the valve (Fig. C/E) on the right hand side. Flow direction arrows are on the valve connections to show the correct flow.
3. For softeners without the NHWB the water meter (turbine), (Fig. D) is to be fitted (if not already installed) into the outlet (Fig. C) on the right hand side. The treated water (service) line is connected to the outlet of the water meter (Fig. D) on the right hand side.
4. For softeners with the NHWB (Fig. F), it is to be fitted directly into the outlet of the valve and the water meter fitted into the NHWB (Fig. E). The treated water (service) line is connected to the outlet of the water meter (Fig. E). These components may already be fitted.



Fig. C Control Valve



Fig. D Water Meter

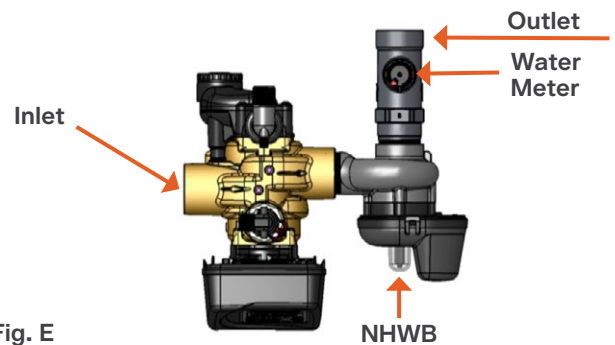


Fig. E



Fig. F NHWB (No Hard Water Bypass)



Fig. G DLFC (Drain Line Flow Control)

Step Four: Drain & Overflow Line Connection

1. If ideally located, the softener will be above, and not more than 6 metres, from the drain. The drain line must be a minimum pipe size of 40mm (50mm for Model S-30-WS and S-30-WS-NHWP) PVC pipe. It is recommended to have a piece of clear PVC pipe (approximately 500mm) incorporated in the drain line to observe the clarity of the wastewater going to drain. (Refer Fig. C/G)
2. Connect the drain line to the outlet of the DLFC (Fig. G) which is fitted in the drain outlet (Fig. C)
3. 3.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. You can elevate an additional 610mm for each additional 70kPa pressure.
4. 4.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.
5. 5.Where a drain empties into an overhead sewer line, a sink-type trap must be used.

Step Five: Brine Line Connection

1. Position the brine tank as close as practical to the softener media tank.
2. Push-fit the 1/2" tube into the brine elbow located on the control valve (Fig. H). 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 procedure.



Fig. H

4. The other end of the tube fits into the brine elbow inside the brine tank (Fig. I). 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.

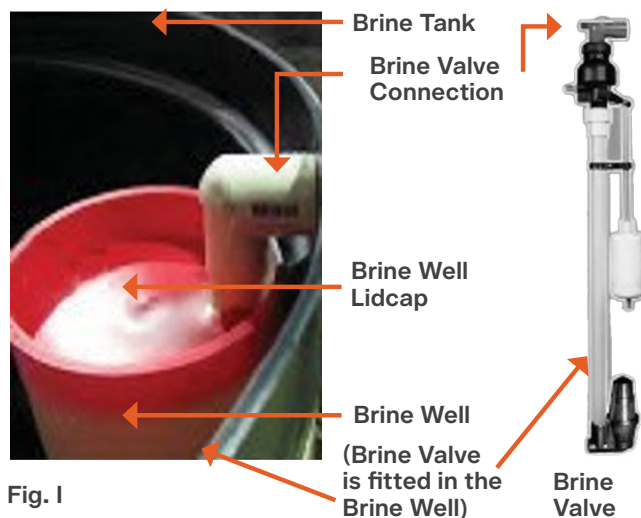


Fig. I

6. DO NOT plumb the drain line direct into a drain, sewer line or trap. Always allow an air gap between the drain line and the wastewater (Fig. J) to prevent the possibility of a vacuum in the pressure vessel or sewage being back-siphoned into the pressure vessel.

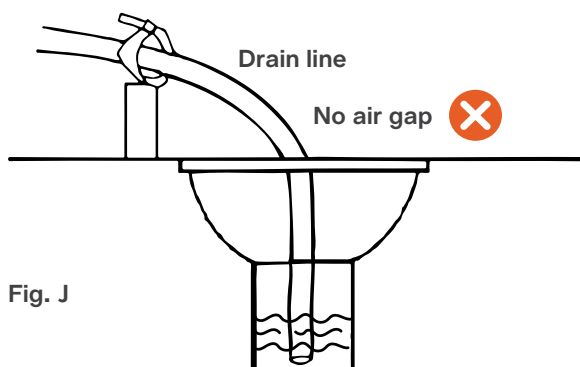
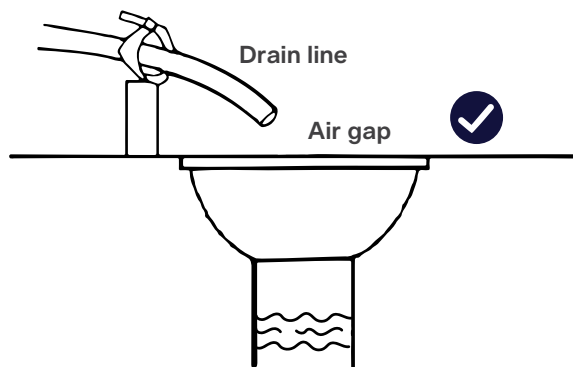


Fig. J



7. Fit a 12mm or 25mm (1/2" or 1") hose (depending on the softener model) onto the overflow elbow on the side of the brine tank (Fig. K). The hose should run to the drain. Allow an air gap between the hose end and the drain as per (Fig. J). **NOTE: Do NOT** join the overflow tube into the drain line.
8. For models S-30-WS & S-30-WS-NHWP only, when the brine tank is in position and connected load the #4 Gravel supplied (120kg) into the brine tank (making sure not to get any in the brine well) and level.

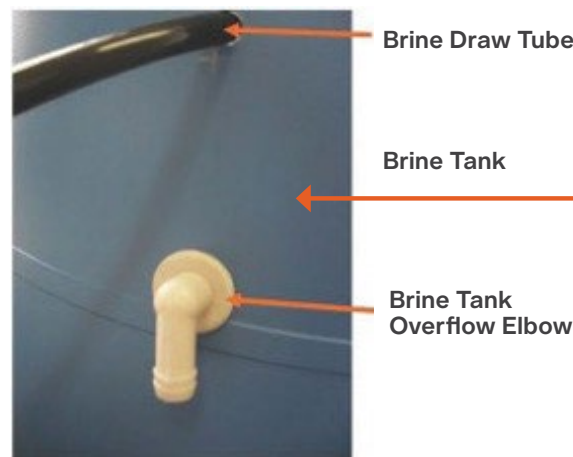
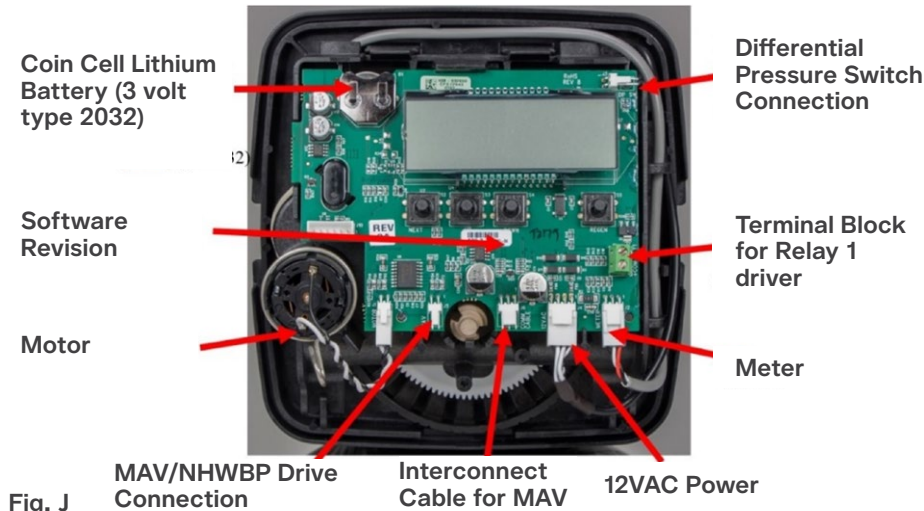


Fig. K

Control Board Connections



System Start-up

The final steps 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. Close inlet isolation valve.
2. Plug in the transformer and turn on the power point. The control valve will automatically drive to the service position. Note: 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.
4. Press and hold the SET CLOCK button until the Hour flashes.
5. Using the UP or DOWN buttons press to change the Hour then press NEXT. Repeat the same to change the Minutes.
6. Press NEXT to set and return to Time of Day display.



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 battery replaced. (Refer Fig. L).

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 (Fig. N) for three seconds until the drive motor starts.
4. When the drive stops the valve will be in backwash, next turn the power OFF.
5. Open the inlet water supply valve very slowly allowing water to fill the media tank in order to expel air. CAUTION: If water flows too rapidly, there could be a loss of media out of the drain.
6. When the water is flowing steadily to drain without the presence of air, fully open the inlet valve and turn the power back ON.
7. 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 (Fig. I). If you don't have suction check the tube connection on the valve. (Refer Fig. H)
8. 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.
9. 9. When the drive stops the valve will be in the 2nd Backwash position. Wait 1 minute and press the REGEN button again.
10. When the drive stops the valve will be in the 2nd Fast Rinse position. Wait 1 minute and press the REGEN button again.

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

Immediate Regeneration Feature

An immediate regeneration can be initiated at any time by pressing and holding the REGEN button for 3 seconds.

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



Fig. N

Regeneration Button

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 (Refer Fig. P). A minimum of 10 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.

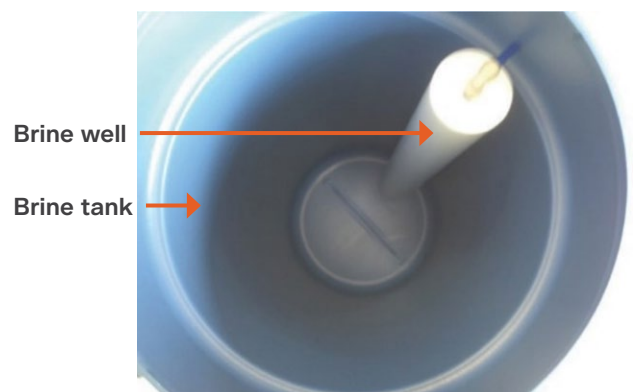


Fig. O

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 1.0Γ 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.

MAINTENANCE

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 operation 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 101, 1001 or E1 – Unable to recognise start of regeneration 102, 1002 or E2 – Unexpected stall 103, 1003 or E3 – Motor ran to long, timed out trying to reach next cycle position 104, 1004 or E3 – Motor ran to long, timed out trying to reach home position 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	a. Foreign matter is lodged in MAV/ NHWB	a. Check MAV/NHNB piston and spacer stack assembly for foreign matter
106 or 1006 – MAV/NHNB unable to find proper park position, motor ran too long.	b. High drive forces on MAV/ NHNB piston	b. Replace MAV/NHNB piston and spacer stack assembly
107 or 1007 – MAV/NHNB motor ran too short (stalled) while looking for proper park position	c. MAV/NHNB motor not inserted fully to engage pinion, motor wires broken or disconnected, motor failure	c. Check MAV/NHNB motor and wiring. Check interconnect wiring to both PC boards. Replace motor or wiring if necessary.
	d. MAV/NHNB drive gear damaged, missing or broken gear	d. Replace MAV/NHNB drive cap.
If other error codes display contact the factory	e. MAV/NHNB main gear cover assembly incorrectly aligned to drive assembly.	e. Reseat MAV/NHNB main gear cover assembly properly
	f. PC board is damaged or defective	f. Replace PC board

**Talk to
an expert**

AU 1800 656 771
NZ 0800 721 477

New South Wales

Unit 2, 5-7 Whyalla
Place, Prestons, 2170.
Ph: 02 9098 1667

Victoria

17 Business Park
Drive, Ravenhall, 3023.
Ph: 03 9009 5213

Queensland

Unit 6, 13-25 Dunhill
Crescent, Morningside, 4170.
Ph: 07 3624 9900

Tasmania

Level 1, 100 Sunderland
Street, Derwent Park, 7009.
Ph: 03 6272 1477

