

Operation Manual



SAFETY, INSTALLATION, AND OPERATION WASTE WATER TREATMENT SYSTEM

MACHINE UNPACKING

ALL CLEANERS ARE CAREFULLY INSPECTED AND CARTONED TO PROTECT AGAINST SHIPPING DAMAGE. IF THERE IS DAMAGE OR MISSING PARTS, THE TRANSPORTATION COMPANY AGENT SHOULD MAKE A NOTATION TO THAT EFFECT ON THE BILL. REFER TO THE PARTS LIST IN THIS MANUAL AND ADVISE WHAT PARTS ARE MISSING OR DAMAGED. IF AVAILABLE, GIVE THE INVOICE NUMBER ON ALL ORDER BILLS. THIS PROCEDURE WILL ENABLE NEEDED PARTS TO BE SHIPPED QUICKLY.

THANKYOU for choosing our product. Please **READ** ALL Installation, Operation, and Maintenance instructions before operating the machine.

IMPORTANT SAFETY INSTRUCTIONS

NOTE: Refer to CLEANER MODEL  for **SERIAL NUMBER** location.

The safety alert symbol. This symbol is used to identify safety information about hazards that can result in personal injury.

A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

 **DANGER** indicates a hazard which, if not avoided, will result in death or serious injury.

 **WARNING** indicates a hazard which, if not avoided, could result in death or serious injury.

 **CAUTION** indicates a hazard which, if not avoided, might result in minor or moderate injury. **CAUTION**, when used without the alert symbol, indicates a situation that could result in damage to the equipment.

**Read and understand this
"OPERATOR'S MANUAL"
and "LABELS ON THE
MACHINE" before starting.**



GENERAL SAEFTY

1. Before operating this machine, read and observe all safety, unpacking, and operating instructions. Failure to comply with these could create hazardous condition possibly resulting in injury, property damage, or death.
2. The operator of this equipment should not operate this equipment when fatigued or under influence of alcohol or drugs.
3. The operator of this equipment should be thoroughly familiar with its operation and trained in the job to be accomplished.
4. The operator of this equipment should wear protective face shields and other protective clothing as required for safe operation.
5. Do not leave this machine unattended when it is operating.
6. All installations must conform to all applicable local codes. Contact your electrician, plumber utility company or seller for details.
7. If chemicals are used in conjunction with this equipment, read and follow the product label directions. In particular, follow the directions in the appendix section of this manual concerning the correct use of chemical in the chlorine feeder.
8. Some version of this equipment has a Ground Fault Circuit Interrupter (GFCI) installed. Tripping of the GFCI indicates an electrical fault. If this condition occurs, consult a qualified electrician for repair of the equipment.
9. If any volatile chemicals such as gasoline are likely to be contained in the waste to be

 **WARNING:** The discharge reaching over 125° F can cause **SERIOUS BODILY INJURY** to you and anyone coming in contact with it.

La décharge atteignant par-dessus 125° F peut causer **LA BLESSURE PHYSIQUE SERIEUSE** à vous et n'importe qui entrant le contact avec cela.

La expulsión de que es más de 125°F puedo hacer un **lesión de grave** a Usted o alguien quien usar esto equipo.

processed, refer to the factory for further instructions on enclosing and venting the equipment. Failure to do so could result in fire and/or explosion.

10. If water leaks are found at any time during the operation of this equipment, it should be immediately shut down, all power disconnected, and the leak repaired.
11. Do not allow water from any source to accumulate on this equipment, or electrical shock causing injury or death could result.
12. Waste from this equipment may be hazardous. Check with your local authorities for the correct disposal of accumulated wastes. Handle wastes with caution. This instruction also applies to use sand from the sand filter.
13. Do not block the pump suction inlet. Severe or fatal injury could be the result.
14. Do not move the back Flush valves with the equipment running. Shut off the pump, change the position of the valve, and restart the pump, otherwise, personal injury or equipment damage could occur.
15. Prior to working on any part of the equipment, stop the equipment, shut off the water and compressed air supply, and disconnect the electrical power. Prior to disassembling the filters, first drain the filters, and release any pressure. Do not adjust the clamps on the filters with the system running. Always first release any pressure, otherwise personal injury or damage to the equipment could occur. Carefully follow all instructions later in this manual for adjustment of the filter clamps and/or securing devices.
16. Never operate the pump dry. To do so, even for a short period will result in permanent damage, resulting in leaks from the pump.
17. Never operate the system with higher pressures than 40 PSI at any point in the system.
18. Never operate the system at higher temperatures than 110 degrees Fahrenheit.
19. Periodically, the system should be carefully inspected for worn or damaged components. These should be replaced immediately to avoid the risk of personal injury or equipment damage. Do not operate the equipment with worn or damaged components.

MECHANICAL SAFETY

1. All guards, shields, and covers must be replaced after adjustments are made to prevent accidental contact with hazardous parts.



ELECTRICAL SAFETY

1. This machine must be electrically grounded. Failure to have the machine grounded may result in the operator being electrically shocked and even death.
2. Do not plug-in or un-plug machine with wet hands.
3. Keep power cords and connections (connectors) out of water.



INTRODUCTION

The CSF series of treatment systems are designed for the removal of contaminants to waste water used for pressure washing, and to allow the water to be reused. The system removes settleable and filterable contaminants from the water. If further treatment of the water is required, please consult your Alkota dealer who can supply equipment which can be added to the CSF systems.

You should familiarize yourself with the various components in the system by referring to the assembly drawing in the appendix section of the manual prior to reading the remainder of this manual.

SYSTEM DESCRIPTION

The system operates in three stages to remove contamination from the water.

1. Waste water after storage in a storage vessel such as a sump or tank, is pumped to the coalescer section of the system, where free oil is removed in a liquid form. The coalescer also provides for the settlement of heavy sludge's, which must be manually drained from the sludge collection area of the vessel periodically.
2. The water now passes into the treatment tank, from where the circulating pump continuously passes the water through the sand filter that removes solids, and then returns it to the treatment tank. Chlorine (or another recommended biocide) is added to the water to prevent the buildup of bacteria and/or algae. Periodically, the pH of the water must be checked.
3. As water is required for reuse or further treatment, it passes through the polish filter and then out of the system.

Periodically as required, the sand filter is backwashed, and the accumulated sludge is normally returned to the wash pad, or to another filtration device such as a bag filter.

A small flow of water is returned to the storage sump/tank to allow for biological control of the water in the sump/tank and the coalescer.

IMPORTANT: IT IS IMPORTANT THAT SITE CONDITIONS ARE OPTIMIZED FOR ANY WATER TREATMENT SYSTEM TO OPERATE EFFECTIVELY. SEPARATE INSTRUCTIONS ARE AVAILABLE FROM YOUR RETAILER FOR THE FACTORY AS TO THE CORRECT TYPE OF WAS PAD AND SUMP/TANK ARRANGEMENT WHICH IS NECESSARY FOR THE CORRECT OPERATION OF THE EQUIPMENT.

TREATMENT VOLUMES

The rate of operation of the equipment depends on a number of factors, such as the amount of sediment and oil in the water to be treated. The following table should be used as a guide only. Reference should be made to the information that may be available from your seller, or the factory for further information as to the recommended rates of flow.

TABLE 1

MODEL	LOW SEDIMENT AND/OR OIL CONTENT	MODERATE SEDIMENT AND/OR OIL CONTENT	HIGH SEDIMENT AND/OR OIL CONTENT
CSF-1	10 gpm (37 lt/min)	7 gpm (26 lt/min)	4 gpm (15 lt/min)
CSF-2	20 gpm (75 lt/min)	14 gpm (52 lt/min)	8 gpm (30 lt/min)
Max daily vol. CSF-1	5,000 gal. (11,250 liters)	3,500 gal. (7,700 liters)	2,000 gal. (4,400 liters)
Max daily vol. CSF-2	10,000 gal. (22,500 liters)	7,000 gal. (15,400 liters)	4,800 gal. (8,800 liters)

LOCATION

The system should be as close as practical to the source of the water to be treated, and the position of the reuse of the treated water.

FREEZE PROTECTION

The components of the system, and any associated components, along with the pipe work and any pumps must be protected from freezing.

HOUSING

The system must be protected from rainfall and any other severe weather conditions.

LEVELING

The system should be placed on a level surface, and the system tank assembly must be leveled to within a ¼" in each direction, using the coalescer as a guide.

ELECTRICAL REQUIREMENTS

The system requires the following electrical supply within 20 ft of the placement of the system. This supply must be made through 3-pin grounded connections. The use of extension cords is NOT recommended.

TABLE 2

MODEL	VOLTS	AMPS	PHASE	Hz
CSF-1	115	20	1	60
CSF-2	230	20	1	60

OTHER SYSTEM REQUIREMENTS

The system requires a feed pump. Correctly specified pumps are available from the factory, and the control panel is provided with a lead of connection to the correctly specified model.

NOTE: The lead from the control panel has a capacity of 2 amps, 120V. If a different voltage or higher current are required, consult a competent electrician for the correct installation.

The system requires the provision of a fresh water source for makeup water. This would normally be provided through the normal fresh water supply in the building.

NOTE: the system is provided with an air gap in the fresh water makeup control. Reference should be made to any local codes to ensure that this complies with these codes.

The sand filter requires a supply of #20, 0.40-0.55 mm. silica sand (see system specification sheet for the amount). This is not delivered with the system, and should be obtained locally.

The system also requires the provision of chlorine or other recommended tablets. These are not supplied with the system, and should be obtained locally. Refer to the Appendix section of this manual for the correct specification of these chemicals.

Equipment is required to monitor the level of chlorine or other biocide in the water in the treatment system. This equipment should be obtained locally.

IMPORTANT: REFER TO THE INSTRUCTIONS IN THE APPENDIX SECTION OF THIS MANUAL FOR THE CORRECT GRADE AND TYPE OF CHEMICAL TO USE IN THE CHLORINATOR.

A means of reliably checking the pH level of the water is also required, and is not supplied with the system. This equipment should be obtained locally. If any difficulty is encountered, contact your retailer or the factory.

Chemicals for adjustment of the pH of the water in the system may also be required. The recommended chemical for raising the pH is Caustic Soda (Sodium Hydroxide) and for lowering the pH, Muriatic Acid, or Sulfuric Acid.



WARNING: THESE CHEMICALS ARE POTENTIALLY DANGEROUS TO BOTH PERSONNEL AND EQUIPMENT. REFER TO THE INFORMATION SUPPLIED WITH THE CHEMICALS PRIOR TO USE.

A collection vessel for waste oil removed by the coalescer is also required. A 5 gallon bucket is usually sufficient for this purpose.

IMPORTANT: IF VOLATILE MATERIALS SUCH AS GASOLINE OR OTHER CHEMICALS ARE LIKELY TO BE COLLECTED IN THE COALESCER. PLEASE CONTACT THE FACTORY FOR FURTHER INSTRUCTIONS ON SECURING AND VENTING

SYSTEM INSTALLATION

THE COALESCER. THE RISK OF EXPLOSION OR FIRE OTHERWISE EXISTS.

IMPORTANT: DO NOT PLUG IN THE POWER CORD UNTIL NOTED IN THESE INSTRUCTIONS.

THE ELECTRICAL COMPONENTS OF THIS SYSTEM ARE NOT EXPLOSION PROOF. IF THIS IS REQUIRED, PLEASE CONSULT THE FACTORY PRIOR TO INSTALLATION.

WE RECOMMEND THAT A QUALIFIED ELECTRICIAN REVIEW THE PROPOSED ELECTRICAL INSTALLATION PRIOR TO CONNECTING THE EQUIPMENT TO AN ELECTRICAL SUPPLY.

1. The system is packaged on two or three skids. Consult the assembly drawing for details. Place the skids in the approximate final location, and remove the packing materials. Move the system into its final position.
2. Shipping can cause components to become insecure, and equipment to loosen. It is therefore important to ensure that all components are secure and in place. Check that all hose and pipe connections are secure, and all bolts and securing devices are in place and secure.
3. Remove the lids from the coalescer and the treatment tank, and then assemble the system as follows. Refer to the assembly drawings for assembly information.

If the system was delivered in three parts, follow all of these directions. If the system was delivered in two parts, start at No. 2 below.

1. Place the coalescer on top of the treatment tank, and bolt it down. Then assemble the outflow pipe work from the coalescer to the treatment tank. Level the treatment tank with the coalescer on top to within a 1/4" in each direction, USING THE COALESCER TO MAKE THIS JUDGEMENT.
2. Install the coalescer drain valve, supplied loose. Use the Teflon tape to ensure a leak-tight seal.
3. Install the treatment tank drain valve, supplied loose. Use Teflon tape to ensure a leak-tight seal.
4. Connect the lead from the circulating pump to the same from the low level switch.
5. Connect the suction hose from the treatment tank to the suction side of the circulating pump, ensuring that the "O" ring is in place in the tank valve union.
6. Connect the return hose from the sand filter to the treatment tank.
7. Release the fresh water makeup float switch from its shipping position, and allow it to hang into the treatment tank. The bottom of the float should be between 12" and 18" from the bottom of the tank when in the correct position. If adjustment is required, release the strain relief securing the float to the tank, and reposition.

8. The low and high level switches are secured for shipping, and have been factory adjusted but may have moved in transit. Remove the shipping bracket on the outside of each switch, and manually move the switch to ensure that they operate correctly. The distance that the floats move between "clicks" should not be less than 4" when the switches are moved manually. If adjustment is required, refer the appendix section for detail of adjustment procedures. Ensure that the switch floats are secure on the operating rods.
9. Connect the feed pump to the system inlet on the coalescer. Separate instructions are provided with the recommended pump. The high level switch in the treatment tank is for feed pump control. The lead from the control panel provides a controlled 115 V 2amp supply for this purpose. If a higher supply is required, refer to a qualified electrician for the correct installation.
10. Connect the backwash pipe from the treatment system to the sump/storage tank. This should normally be a minimum of a 2" PVC connection with a maximum of a 100 ft gravity return to the sump/tank. If a greater distance is required, or a vertical run is required, please refer to the factory for further instructions.
11. Ensure that all system valves are closed (handles across the direction of flow).
12. Remove the top of the sand filter (see directions in the appendix) and using a hose, fill the filter with water above the level of the laterals. This is to prevent damage when the sand is added, and also assists in preventing "rat-holing" when filling the filter with sand.
13. Carefully add the required amount (see system specification table) of the correct grade of sand, leveling the sand as the filter is filled.
14. Remove any sand from the seal area of the filter seal; replace the lid, and the lid clamps or bolts. Refer to the directions in the Appendix section.

IMPORTANT: ENSURE THAT THE DIRECTIONS FOR REPLACING THE LID AND TIGHTENING THE CLAMPS OR BOLT ARE CAREFULLY FOLLOWED TO AVOID PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT.

15. Using a hose fill the coalescer with fresh water and allow water to flow until the coalescer overflows into the treatment tank. Stop the flow of water to the coalescer.

16. Ensure that all three-system switches on the control panel (circulating pump, sump pump, and fresh water makeup) are in the OFF position.
17. Connect the power source to the equipment. Secure any spare power cord so that the cord cannot become immersed in water, or will chafe on any equipment, or is a hazard to operators.
18. Connect the fresh water makeup supply using a garden hose. Turn on the water supply and ensure that no leaks occur.
19. Turn on the fresh water makeup switch on the control panel. Water should start to flow into the treatment tank. Observe that when the fresh water makeup level switch is in the OFF position, the water turns off. Also check that when the control panel switch is placed in the OFF position, that the flow of water stops.

TESTING

The system is now ready for testing.

The system was factory tested prior to shipment, but leaks and other damage can occur during shipment.

1. Remove the top of the circulating pump strainer. And fill the strainer with water. Replace the strainer lid. This allows the pump to be primed. Do not operate the pump prior to filling the strainer with water, or damage to the pump will occur.
2. Open the valves from the treatment tank to the pump, and from the sand filter to the treatment tank, (valve handles in line with the direction of flow). Ensure that the outlet valve from the sand filter is closed, and that all drain valves are closed. Open the valve from the sand filter to the chlorinator.
3. Start the circulating pump by operating the switch on the control panel.
4. Observe the pressure gauges on both filters to ensure that no pressures exceed 40 psi at any time. If these pressures are exceeded, IMMEDIATELY stop the system, disconnect the electrical supply, and investigate the cause. Adjust the valve from the sand filter to the treatment tank until the pressure gauge on the sand filter registers 20 psi with the system operating.
5. Allow the circulating pump to operate for 10 to 15 minutes, and observe the system for all leaks have been corrected, and the circulating pump has operated for 15 minutes without any further leaks occurring.

6. With the circulating pump operating, carefully open the air bleed valves on top of each filter in turn, and allow the air to escape until water appears at the bleed valve. Shut each valve when this occurs.
7. Manually raise the low level float and note that the circulating pump shuts off. If the pump does not shut off, shut down the pump and correct the problem.
8. Start the system feed pump (also known as the sump pump, or transfer pump), and adjust it to pump at a rate just above the maximum rate of reuse. Please refer to the Table 1 (on page 5) for guidance on the maximum rates of instantaneous and daily flow. **ON CSF-2 WITH THE PUMP OPERATING**, loosen the union securing the oil skimmer bar in the coalescer so that the slot is $\frac{1}{4}$ " to $\frac{3}{8}$ " above the level of the water, and retighten the union. This adjustment allows for an accumulation of oil on top of the coalescer of 2" to 3" prior to oil flowing out of the coalescer. This is the correct operation. If the bar is set too low, water will flow out of the coalescer with the oil. If the bar is set too high, oil will accumulate in the coalescer, and eventually flow into the treatment tank with the water. This may cause the sand in the sand filter to become blinded, and have to be replaced.
9. Manually raise the high level float switch in the treatment tank, and note that the supply pump shuts off. If this does not occur, shut down the system and correct the problem.
10. Shut down the system by placing all the control panel switches in the OFF position, and closing all the system valves, until use of the system is required.

NOTE: The system has no control for the outflow volume. And if the treated water from the system is to be discharged with an open outflow such as to sewer or to a reuse tank, provision must be made to control the outflow volume to a value not to exceed the value given in Table 1. Installing a valve and partially closing it until the recommended volume is achieved can achieve this. In most other cases, such as when the system is feeding a pressure washer, or another treatment system, that equipment will control the outflow volume. You should ensure however that the equipment volume requirements do not exceed the values given in Table 1.

If more than 10ft of hose is required to connect from the system outlet, a pressure pump may be required to supply the necessary volume. The discharge hose should be at least $\frac{3}{4}$ ". Consult the factory for advice if problems occur.

chlorine or other recommended biocide tablets in the chlorinator, and adjust the chlorinator control valve to No. 1 on the dial. Ensure that the water supply valve from the water circulating system to the chlorinator is in the open position.

This system is now ready for operation.



CAUTION: USE ONLY THE RECOMMENDED GRADE OF CHEMICAL IN THE CHLORINATOR, OR HAZARDOUS OR TOXIC FUMES CAN BE FORMED WHICH MAY CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

SYSTEM OPERATION

The system is designed to operate continuously. 24-hour operation is required. This minimizes the possibility of bacterial contamination of any of the water in the system and consequent odors and/or dangers to health.

The system operates as follows:

1. Water in the storage tank/sump is pumped from the sump/tank to the coalescer. When the water in the sump/tank reaches a low level, a level switch in the sump/tank stops the pump.
2. The water is passed to the coalescer where free oil is removed and passes out of the coalescer into a storage vessel for future disposal.
3. The water now passes by gravity to the treatment tank. If the treatment tank fills up, a high level switch stops the supply pump, thereby preventing overflows.
4. If the total amount of water in the complete system reaches a point where the treatment tank reaches only approximately $\frac{1}{3}$ full, a level switch automatically introduces fresh water to maintain the level in the system.
5. Water is transferred by the circulating pump from the treatment tank through the sand filter, and is then returned to the treatment tank. If the water in the treatment tank falls to a level at which the pump may lose suction, a low level switch shuts off the circulating pump, preventing damage to the pump.
6. As water is required from the system it first passes through a polish filter which controls the final size of any solids remaining in the water.

7. Chlorine or other biocide is added to the water to control the formation of bacterial and/or algae. A small amount of chlorinated water is continuously returned to the storage sump/tank to control bacteria and/or algae in all the water in the system.
8. When the system is opening, not normal supervision is required, although several checks should be carried out during the normal working day to ensure that the system is operating according to specifications.

SYSTEM START-UP

1. Connect the outflow from the polish filter to the reuse application, or to the next treatment system, or to both, depending on the required system configuration, leaving the outflow valve from the polish filter open.
2. Open the following valves:
 - a. Treatment tank to sand filter.
 - b. Sand filter to treatment tank.
 - c. Trickle valve to allow water from the system to flow to the tank/sump.
3. Ensure that all drain valves are closed.
4. Place all three switches on the control panel in the ON position. This action starts the flow of water from the supply pump, the flow of water from the fresh water makeup, and the circulating pump. All three are automatically controlled.

Treated water from the system can now be used.

DAILY OPERATION

The system should ideally be operated continuously. This allows the flow of water from the treatment system to the sump/tank to operate continuously, so preventing the buildup of bacteria and/or algae in the complete treatment system. Allowing bacteria to form increases the loadings on the system, and the amount of sludge and other wastes from the system.

Continuous system operation allows for continuous improving filtration. The longer the system is operated, the better the quality of water from the system will be.

The following maintenance must be carried out for successful long-term operation of the equipment.



WARNING: IF TIMING DEVICES ARE USED, A FLOW OF WATER IS RETURNED FROM THE SYSTEM TO THE SUMP/TANK. THIS WILL REQUIRE THAT THE WATER BE THEN RETURNED TO THE TREATMENT SYSTEM VIA THE SUMP OR TRANSFER PUMP. IF A COMPRESSED AIR OPERATED PUMP IS USED, THE COMPRESSED AIR SUPPLY MUST BE AVAILABLE DURING ALL TIMES THAT THE SYSTEM IS OPERATING.

WASTE DISPOSAL

Three types of waste will be generated from the waste water being treated in the system.

1. Sludge is produced in the sand filter, which depending on the system configuration is normally returned to the wash pad during backwashing. In most configurations, the wastewater will also settle in the sump/tank, causing sludge to settle. Excessive buildup of the sludge must not occur, or the sump/tank will not operate correctly. The sludge must be regularly disposed of to an approved facility.
2. Waste oil may be generated from the coalescer. Normally this can be disposed of to a waste oil collection service.
3. If the level of colloidal or dissolved solids in the water being recycled increases to the point where it becomes unacceptable, the water may have to be removed and replaced. Additional equipment is available from the factory to deal with these situations if required.



WARNING: REFER TO LOCAL, STATE AND FEDERAL REQUIREMENTS PRIOR TO DISPOSING OF WASTES FROM THIS TREATMENT SYSTEM.

WASTES FROM THIS TREATMENT SYSTEM MAY BE HAZARDOUS. HANDLE THEM WITH APPROPRIATE METHODS TO AVOID PERSONAL INJURY, OR DAMAGE TO HEALTH.

MACHINE MAINTENANCE WASTE WATER

1. Frequent checks must be made on the level of chlorine or other biocide in the system. If chlorine compounds are used, this level should be kept at the levels recommended in the systems specifications Table. LEVELS IN EXCESS OF THIS MAY CAUSE NITROUS OF DANGEROUS FUMES WHICH MAY BE A HEALTH HAZARD, OR MAY DAMAGE THE EQUIPMENT.
2. Frequent checks must be made on the pH level of the water. The recommended levels are listed in the System Specification Table. LEVELS ABOVE OR BELOW THIS MAY CAUSE HAZARDOUS CONDITIONS WHICH CAN

CAUSE THE FORMATION OF HAZARDOUS OR NOXIOUS GASES AND/OR LIQUIDS WHICH CAN CAUSE PERSONAL INJURY OR EQUIPMENT DAMAGE.

3. Frequent checks should be made to ensure that broken or worn parts are promptly replaced.
4. Frequent checks should be made to ensure that no leaks occur. If this should occur, immediately shut the equipment down, and correct the leaks prior to restarting the equipment.

SAND FILTER BACKWASHING

1. Frequently check the pressure gauges on top of each of the filters. When the sand filter pressure gauge registers 25 psi, or after 7 days, whichever occurs first, the sand filter must be backwashed as follows:
2. Shut down the circulating pump using the switch on the control panel.
3. Rotate ball valve to reverse flow.
4. Restart the circulating pump, and operate it for a period no exceeding two (2) minutes.
5. Shut down the circulating pump, and move the backwash valves to their normal position.
6. Restart the circulating pump, and observe the pressure gauge on the sand filter for a period of 1-2 minutes. If the pressure does not exceed 20 psi, the system is successfully flushed. If a higher pressure is registered, repeat the above steps.
7. If after three attempts, the correct values have not been noted, the likelihood is that the sand has become permanently fouled, and may have to be replaced.

POLISH FILTER MAINTENANCE

If insufficient water is being delivered from the system, the likelihood is that the polish filter has become fouled, and cleaning is required. If this occurs, follow the following procedure.

1. Shut down the circulating pump using the switch on the control panel.
2. Close the feed valve from the treatment tank to the circulating pump, and drain the polish filter using either the outflow or the filter drain (Refer to the appendix section for details). Open the air bleed valve to allow air to enter the filter, and the filter to drain.
3. Loosen the "V" clamp on the filter, and remove the top of the filter. Remove the filter element.
4. Clean the filter element as recommended.

5. Replace the filter element in the correct position, referring to the "TOP" and "BOTTOM" instructions on the element. Replace the plastic ring on top of the element, and replace the top of the filter housing. Replace the "V" clamp, and refer to the appendix for directions for correct tensioning.
6. Close the drain valve(s) from the filter, and open the supply valve from the treatment tank.
7. Start the circulating pump, and follow the directions for air bleeding in the TESTING section of the manual.
8. If the amount of water being delivered from the filter is still insufficient, repeat the cleaning steps. If this is not successful, then the filter element will have to be replaced.

CHECKING CHLORINE & pH LEVEL

In the beginning, frequently check both the level of pH and the level of chlorine of the water in the system. Adjust the levels to those recommended in the System Specification Table by adjusting the metering valve on the chlorinator, and by adding pH adjustment chemicals. Refer to the manufacturer's information about these chemicals. Frequently check that chlorine tablets remain in the chlorinator.



DAILY OPERATION

The system should ideally be operated continuously. This allows the flow of water from the treatment system to the sump/tank to operate continuously, so preventing the buildup of bacteria and/or algae in the complete treatment system. Allowing bacteria to form increases the loadings on the system, and the amount of sludge and other wastes from the system.

Continuous system operation allows for continuous improving filtration. The longer the system is operated, the better the quality of water from the system will be.



WARNING: IF TIMING DEVICES ARE USED, A FLOW OF WATER IS RETURNED FROM THE SYSTEM TO THE SUMP/TANK. THIS WILL REQUIRE THAT THE WATER BE THEN RETURNED TO THE TREATMENT SYSTEM VIA THE SUMP OR TRANSFER PUMP. IF A COMPRESSED AIR OPERATED PUMP IS USED, THE COMPRESSED AIR SUPPLY MUST BE AVAILABLE DURING ALL TIMES THAT THE SYSTEM IS OPERATING.

TROUBLESHOOTING

WASTE WATER TREATMENT SYSTEMS

TROUBLE	POSSIBLE CAUSE	REMEDY
Circulating pump will not run	1. No power applied to system 2. Low water level in treatment 3. Low level switch in treatment tank 4. Fuses blown	
Low water level in treatment tank	1. Makeup water supply switched off/ disconnected 2. Makeup level switch faulty	
No wastewater being pumped to system	1. Feed (sump) pump not switch on 2. Compressed Air supply to feed pump off 3. High level switch in treatment tank faulty	
No oil being discharged from coalescer	1. Skimmer bar out of adjustment 2. Sump/tank retaining free oil 3. No oil in waste stream	
Pressure at san filter greater than 20 psi	1. Sand filter backwash required 2. Sand contaminated beyond recovery	
Insufficient water delivered from system	1. Supply hose from system too long/ narrow 2. Sand filter backwash required 3. Polish filter requires to be cleaned	
Pungent chlorine odor	1. pH too low – check 2. Chlorine level too high – check	
Bacteria, odor and/or algae formation	1. pH levels wrong – check and correct 2. Chlorine levels too low – check and correct 3. Insufficient or no water being returned to sump/tank for system curculation	

SAND FILTER BACK WASHING

MACHINES EQUIPPED WITH BALL VALVES

Frequently check the pressure gauges on top of each of the filters. when the sand filter pressure gauge resistsars 25 psi, or after 7 days, whichever comes first, the sand filter must be back flushed per the directions below.

1. Shut down the ciculating pump using the switch on the control panel.
2. Turn the ball valves from the operating postion to the flush position.



BACK FLUSH POSITION



BACK FLUSH POSITION



3. Restart the circulating pump and operate it for a period not exceeding two (2) minutes.
4. Shut down the circulating pump.
5. Move the ball valves in the normal operation position.



NORMAL POSITION



NORMAL POSITION



6. Restart the circulating pump, and observe the pressure gauge on the sand filter for a peeriod of one (1) to two (2) minutes. If the pressure does not exceed 20 psi, the systemhas been successfully flushed. If higher pressure is registered, repeat the above steps.
7. If after three (3) attempts, the correct values have not been noted, the likelihood is that the sand filter has become permanently fouled and the sand may have to be replaced.

