

# ***norweco***® **HYDRO-KINETIC**®

## WASTEWATER TREATMENT SYSTEM

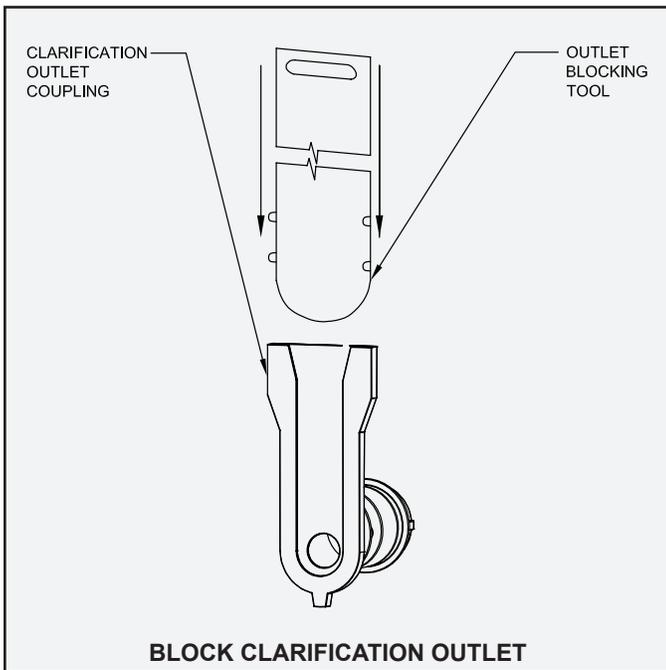
### HYDRO-KINETIC BIO-FILM REACTOR SERVICE

Check operation of the Service Pro control center and complete all Hydro-Kinetic Air Delivery and Recirculation System Service instructions before proceeding with Hydro-Kinetic Bio-Film Reactor service. The Bio-Film Reactor provides final treatment of the system effluent to a near pristine state. In order to insure this high quality effluent, it is essential that the settled solids in the Bio-Film Reactor are pumped to the pretreatment chamber during system service.

**CAUTION: Anytime an air pump, recirculation pump or service pump is connected or disconnected, first shut off the power switch in the control center. Failure to do so could result in personal injury or equipment damage.**

#### EQUIPMENT REQUIRED FROM THE TOOL KADDY

- water hose and spray nozzle
- service pump and hose
- outlet blocking tool
- rubber gloves
- safety face shield or goggles



A fresh water supply is required for cleaning and servicing the Hydro-Kinetic Bio-Film Reactor.

1. Remove the access covers from the pretreatment chamber, clarification chamber and Bio-Film Reactor. Check the condition of the Bio-Film Reactor and the liquids in the tank for color and odor. Note the condition of the system on the Service Inspection Card.
2. With the flow equalization device in place, install the outlet blocking tool in the clarifier outlet coupling prior to pumping the Bio-Film Reactor. This will prevent loss of liquid from the upstream treatment tank.

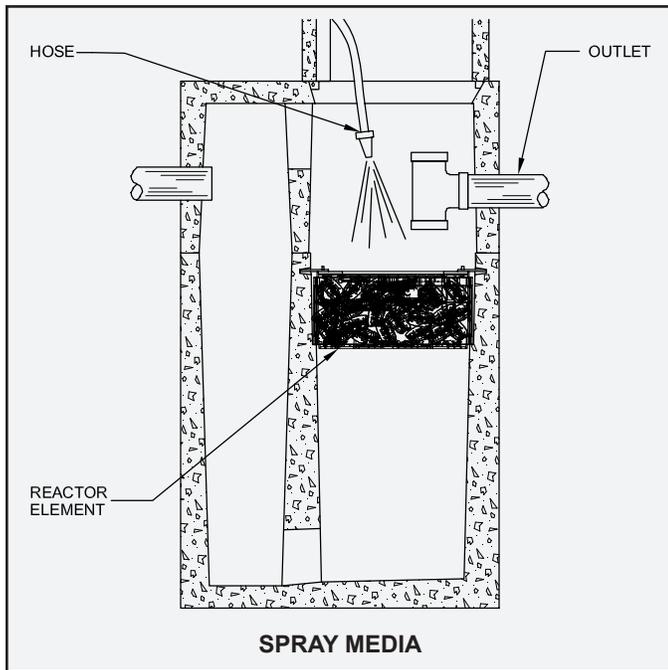
3. Place the intake of the service pump at the bottom of the influent chamber. Place the opposite end of the hose into the pretreatment chamber opening of the upstream system. Pump the contents from the bottom of the Bio-Film Reactor until the accumulated solids are completely withdrawn and the water level is below the bottom of the Reactor Elements. Approximately 150 gallons will be removed.
4. Use a water hose and spray nozzle to rinse off the Reactor Elements and attached growth media. Continue spraying until all sludge and wastewater have been flushed from the media. Rinse away debris that has accumulated on the effluent chamber walls.
5. If necessary, use water to wash away any debris from the inside of the system mounting riser, access cover and surrounding grass or landscaping.
6. Reinstall the pretreatment chamber and Bio-Film Reactor access covers. Clean and store all tools.
7. Remove the outlet blocking tool and allow the filter to refill to normal operating level. Be sure to never leave the Bio-Film Reactor empty after pumping.
8. When the service is complete, return the power switch in the control center to the "on" position. Close the cover of the control center enclosure and secure it with a new tamper evident seal.

#### REACTOR ELEMENT REMOVAL

In the unlikely event that the Reactor Elements cannot be adequately cleaned using normal maintenance spraying, removal from the tank may become necessary.

1. Excavate to the top of the Bio-Film Reactor tank to expose the rectangular access openings. Remove the access openings and set them aside.
2. Remove the outlet tee. It is not glued in place.
3. Use the disassembly tool to turn the locking mechanisms inward on the Reactor Elements until they clear the locking ledge.
4. Thread the removal hook tool to the shaft of your universal tool. Insert the two hooks of the tool in the fourth square opening from the side wall of the tank.

## HYDRO-KINETIC FILTER AND MEDIA SERVICE (Cont.)



5. Lift the Reactor Element from its position by imparting an upward force. Remove the remaining reactor from the tank using the same method through the opposite access opening.
6. Place the Reactor Elements in the service bag provided with your Tool Kaddy to return to your shop for cleaning. Install new or refurbished Reactor Elements in the Hydro-Kinetic Bio-Film Reactor.
7. Using the disassembly tool, turn the locking mechanisms outward on both Reactor Elements until they are secure under the locking ledge.
8. Reinstall the outlet tee. Replace the rectangular access covers on the tank top and backfill the excavation. Be sure to slope grade away from the riser.

### EFFLUENT DISPOSAL SYSTEM CHECK

1. Determine if the effluent from the system is being carried to an outlet for surface and/or subsurface discharge, or if it is being disposed of onlot. Inspect the condition of the effluent disposal system and make appropriate notations on the Service Inspection Card.
2. Although the system effluent may be discharged and disposed of in several acceptable fashions, there should always be a ground water relief point installed in the effluent line. It should be located at a point no higher than the outlet invert of the tank. It will prevent flooding in cases where the disposal line is submerged or saturated with ground water. Locate the ground water relief point and be sure that it is free of obstructions.
3. Locate the point of discharge closest to the system outlet. A free-falling "grab" sample of effluent can be collected after the point of discharge has been thoroughly cleaned. Take note of effluent color, odor and the presence or absence of suspended particles. Accumulation of mud can be a sign of a crushed or broken effluent line and should be reported to the owner.

**NOTE:** An effluent "grab" sample allows a visual assessment and should only be used in conjunction with routine service and/or troubleshooting procedures to accurately evaluate system operation. A "composite" sample, collected over 24 hours of system operation, preserved and transported using USEPA established procedures, is necessary if laboratory analysis of the effluent is to be performed. Laboratory analysis of an effluent "grab" sample can lead to misleading conclusions about system operation and should not be conducted. For further information regarding proper evaluation techniques for sampling onsite systems, refer to the Norweco Technical Bulletin EFFLUENT SAMPLING TECHNIQUES FOR RESIDENTIAL TREATMENT SYSTEMS.

4. Make appropriate notations on the condition of the plant effluent and disposal system on the Service Inspection Card.

### BEFORE YOU LEAVE THE FACILITY...

1. Make sure that both sides of all three Service Inspection Cards are properly and completely filled out, including any specific notes or special services that your inspection indicates are needed.
2. Leave the top section of the Service Inspection Card with the owner and provide a brief verbal explanation of the condition of the system. Advise when to expect your next routine visit and provide your business card with office phone number, should the owner have any questions.
3. Point out the advantages of a continued service policy if the current Hydro-Kinetic system service policy is nearing expiration.
4. Explain that the recirculation pump is set to operate on a time cycle and should not be turned off even during extended periods of non-use. Explain that the control center contains no user-serviceable parts and that the cover is secured with a tamper evident seal for owner protection and protection of component parts.
5. Review the operation of the red warning light and audible alarm on the Service Pro control center with the owner. Inform the owner that the control center should be checked daily to insure proper system operation. Explain that if the light glows and the alarm sounds, it could be due to temporary high water or electrical power fluctuation and that the reset button should be pushed to see if normal operation is resumed before requesting service. If the owner is not home, leave the top section of the service card at the owner's door.

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