



HYDRO-KINETIC BIO-FILM REACTOR®

TANK PUMPING INSTRUCTIONS

These instructions provide a general guideline concerning when and how to pump out the Hydro-Kinetic Bio-Film Reactor and supplement other instructional materials included in the Hydro-Kinetic Bio-Film Reactor Service Instructions. In order to maximize performance, protect system components and insure protection of the surrounding environment, the Bio-Film Reactor should be thoroughly checked at a minimum frequency of 24 months by a factory-trained Norweco service technician. Renewable service contracts are available from the local licensed Norweco dealer.

The Hydro-Kinetic Bio-Film Reactor will periodically require pumping. Because treatment systems are biological processes and technologies vary, the time frames listed within these instructions are estimates. Actual pumping frequency will depend on the amount and strength of the wastewater being processed and the type of treatment system upstream of the Bio-Film Reactor. Handling and disposal of the contents of the Bio-Film Reactor and/or the upstream treatment system are regulated by local, state and federal authorities. Disposal options may include land application, lagoon treatment, municipal wastewater treatment or landfill disposal. Prior to arranging for tank pumping, contact the Norweco dealer to obtain complete information on access to chambers, removing equipment, coordination of services and disposal of tank contents.

During Hydro-Kinetic Bio-Film Reactor installation, backfilling or service, do not allow dirt or mud to enter the system. Once in the system, dirt or mud will form a heavy sludge which will affect settling characteristics, interfere with filtration and degrade effluent quality. If dirt or mud enters the system, it must be removed to insure proper system operation. Removing the dirt or mud may require repeated flushing and tank pumping. For additional details refer to Hydro-Kinetic Bio-Film Reactor Tank Delivery and Setting instructions.

INTRODUCTION

Pumping frequency will depend upon the type and efficiency of the treatment system installed upstream of the Hydro-Kinetic Bio-Film Reactor. Septic tanks are designed to store solids and perform limited biological treatment. Frequent pumping of a septic tank is mandatory to remove and dispose of these solids before they discharge from the tank. The Hydro-Kinetic Bio-Film Reactor is designed to improve the effectiveness of any treatment process and extend the life of the disposal system. Removal of the solids in the Hydro-Kinetic Bio-Film Reactor will be required when indicated by an inspection as outlined herein.

WHEN TO PUMP

Your system may include service inspections free of charge at regular intervals during the initial warranty period. If the upstream treatment system is an ANSI/NSF Standard 40 listed product, these inspections are automatically included for the first two years. If the system is a septic tank, it should be evaluated every 12 to 24 months by a trained wastewater professional. The Hydro-Kinetic Bio-Film Reactor should be inspected and serviced at the same time. Pumping of the system by a licensed tank pumping and disposal service will likely be necessary at 3 to 5 year intervals, based on variations in system occupancy, usage and loading. The Hydro-Kinetic Bio-Film Reactor may require pumping more frequently than the upstream treatment system, particularly if installed downstream of a septic tank.

ROUTINE SERVICE INSPECTIONS

Regular service inspection procedures are outlined in detail in the Hydro-Kinetic Bio-Film Reactor Service Instructions. These routine service procedures include inspection of the influent chamber, media chamber, reactor elements and effluent line to determine if the system should be pumped. Routine service should be performed on the upstream treatment system and Hydro-Kinetic Bio-Film Reactor before the system is pumped. The results of the routine service inspection, system evaluation and tank pumping (when performed) should be noted on the Service Inspection Card.

UPSTREAM SYSTEM INSPECTION

The upstream treatment system must be functioning properly for the Hydro-Kinetic Bio-Film Reactor to provide the maximum benefit and service life. If the upstream treatment system is a proprietary design, refer to the manufacturer's maintenance and service instructions. Follow the manufacturer's directions exactly, using a trained wastewater professional. If the upstream system is a septic tank, or other conventional system without manufacturer's instructions, follow the guidelines of the local governing regulatory agency. At a bare minimum, have the entire system evaluated every 24 months. If the Bio-Film Reactor is going to be pumped, it may be desirable to pump all or part of the upstream system at the same time, per manufacturer and/or regulatory recommendations.

SETTLEABLE SOLIDS TEST

To evaluate the upstream treatment system for pumping, a settleable solids test may need to be performed on the aeration chamber. Refer to the manufacturer's recommendations (if applicable) and Standard Methods for the Examination of Water and Wastewater for proper test procedures.

EFFLUENT LINE INSPECTION

Check to make sure there is a groundwater relief point installed in the effluent line and it is free from obstruction. An accumulation of paper, fibers, hair or grease indicates that the Hydro-Kinetic Bio-Film Reactor needs to be pumped. If there is a surface discharge point, make sure that it is free from debris, foam, mud, etc. Make appropriate notations on the Service Inspection Card.

BIO-FILM REACTOR INSPECTION

A complete Hydro-Kinetic Bio-Film Reactor inspection procedure is listed below. The results of the inspection should be noted on the Service Inspection Card.

1. Remove the cover being careful not to allow dirt or mud to enter the tank.
2. Visually examine the surface of the influent chamber and media chamber of the Hydro-Kinetic Bio-Film Reactor for a significant accumulation of grease, oil or non-biodegradable materials.
3. To check the depth of the settled sludge layer in a plastic Bio-Film Reactor, first use the Universal Tool to slide each Reactor Element outward to form a 3" gap between the Elements. Use a Sludge Judge or secure a rough white towel to the handle of the hopper scraping tool and lower it between the Elements to the bottom of the media chamber. For a concrete tank, use a Sludge Judge or secure a rough white towel to the handle of the hopper scraping tool and lower it to the bottom of the influent chamber.
4. Push the tool through the settled sludge layer to the bottom of the tank. Wait several minutes and carefully remove the tool. The depth of the settled sludge will be shown by a dark line on the towel, or on the scale of the

Sludge Judge. If the settled sludge layer is 24 inches or greater, the Bio-Film Reactor should be pumped.

5. For a plastic tank, return the Reactor Elements to their normal position in the center of the media chamber.

HOW TO PUMP THE BIO-FILM REACTOR

A complete Hydro-Kinetic Bio-Film Reactor pumping procedure is listed below. Prior to tank pumping, contact the Hydro-Kinetic Bio-Film Reactor dealer to obtain complete information on equipment removal and reinstallation. Failure to properly remove and reinstall equipment and access covers during tank pumping may result in damage to the system and will void the warranty.

1. If the Hydro-Kinetic Bio-Film Reactor requires pumping, contact a tank pumping service licensed by the local regulatory agency. The septage or biosolids from the system must be removed and disposed of in a manner consistent with federal, state and local regulations.
2. Advise the pumping service that they will be pumping approximately 500 gallons from the Bio-Film Reactor.
3. Remove the Bio-Film Reactor access cover. The Reactor Elements can stay in place. Lower the hose into the influent chamber until it contacts the bottom of the tank. Withdraw the hose approximately 2 inches.
4. Completely pump 100% of the contents from the tank and rinse the Reactor Elements and media with a hose during tank pumping.
5. After pumping, refill the Hydro-Kinetic Bio-Film Reactor to capacity with clean water. Replace the access cover that was removed. **NOTE:** It is essential to immediately refill the Bio-Film Reactor with clear water to the design flow line. The water must be free of leaves, mud, grit or other materials that might interfere with system operation. Dewatering and leaving the system empty will affect tank integrity and void the warranty.

Following tank pumping, no other system adjustments are necessary for proper biological treatment to continue. Regular service inspections by a factory-trained Norweco service technician should be conducted to insure long term system performance.

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