



Established 1987

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Designers and manufacturers of waste water treatment systems
approved to Class 'A' USA and EN 12566-PT.3 C E

BIODIGESTER STANDARD 100 - 500 OPERATING INSTRUCTIONS

The following instructions are for guidance purposes and are submitted without obligation or prejudice. The plant owner is responsible for all matters in relation to health and safety during operation.

1. INITIAL START UP

Once the Biodigester sewage treatment plant has been installed and commissioned, operation may commence.

The Air Blower runs continuously and feeds air to fine bubble diffusers at the base of the treatment chamber. The Sludge Return Pump operates for a few minutes 4-24 times per day to automatically return sludge from the humus (final settlement) chamber to the primary settlement chambers. This system also recirculates effluent. Specific frequencies and durations of the sludge return/recycle system depend upon the size of the Biodigester, the loading and the effluent quality required.

Once the plant is in operation biomass will naturally build up on the high surface area of the media within the treatment chamber and is also retained in suspension within the circulating liquor. Maximum growth and full performance are normally achieved after about six weeks. If appropriate the process may be speeded up by using special additives or a small quantity of humus sludge from another operational treatment plant placed in the treatment chamber.

The organisms that make up the biomass are predominantly bacteria, fungi and protozoa.

The Biodigester 'Standard' is designed to be self sustaining and adjustments are not normally required. Individual taps to each diffuser normally remain fully open.

SAFETY FIRST - ALWAYS KEEP THE PLANT LOCKED

2. OPERATION

Once the Biodigester treatment plant is operating it will adequately handle all ordinary domestic sewage. However whilst it will handle bleach it is better if this is used sparingly. Also take care not to use domestic cleaning products containing anti bacteria compounds or fungicides as these may inhibit growth of the biomass. It is also important not to use Ammonia based cleaning compounds especially where the 'Consent to Discharge' has an Ammonia limit. Whenever possible use washing powders and dishwasher powders which are genuinely described as "Environmentally Friendly".

Where there is a 'Communal Kitchen' such as at restaurants the kitchen drainage must be fitted with a full retention grease trap.

These comments are particularly important for small populations

3. TIMER MODES

Some Biodigesters at sites with variable loading are fitted with variable timer modes to save power at times of low use.

Specific instructions are issued for each Biodigester with a 'Timer Mode' system.

4. MAINTENANCE

Weekly:-

Check that the air blower is running. Check that the sludge return/recycle system operates correctly. If a grease trap is in use for the kitchen drainage inspect and empty as appropriate. However a correctly sized and designed grease trap should last 12 months between emptyings so long as the kitchen is correctly run.

Every Three Months:-

- (i) Primary settlement chambers. Check sludge levels within the two primary settlement chambers using a suitable probe and desludge as appropriate. It is essential to leave a little sludge to re-seed the process. The frequency of desludging will depend upon loading. See desludging instruction sheet. A fully loaded Biodigester 'Standard' is likely to need desludging between 1 and 3 times per year.
- (ii) Treatment Chamber. Check air is circulating within the treatment chamber by inspection. Tighten pipe clips.
- (iii) Humus or Final Settlement Chamber. Check build up of solid matter forming a crust. If necessary have this removed by the tanker when desludging the primary chambers. It may occasionally be necessary to empty the humus chamber completely.
- (iv) Air Blower. Check external coarse air filters on housing and clean if necessary. Check external air filter on air blower and clean or replace as appropriate. In a non dusty environment the air filter is likely to need replacement annually.
- (v) Air Lines. Check tightness of all air line connections and pipe clips. Check condition of air lines. Use taps to adjust and balance air flow to media chamber if required.
- (vi) Electrical Wiring. Check for loose connections or damage.
- (vii) Sludge Return Pump. Before testing the sludge return pump operation inspect return pipe at primary chamber manhole or tank inlet for dampness, this checks that the pump has been operating under timer control. Press sludge return pump button and check operation of pump through one cycle. The panel is wired so that if it is turned off and then turned on again the pump will run for its set time and then turn off.

- (viii) Warning Lights. Check panel warning lights and any alarms if fitted.
- (ix) Final Effluent. Check quality of final effluent by inspection. Clean final effluent pipe (and sample chamber if fitted) to prevent any build up of solid having an affect upon sample taking.
- (x) Receiving Watercourse. If the discharge is to a watercourse inspect and note its condition.

Every Twelve Months:-

As at 'Every three months' plus:- Take out sludge return pump and pipework. Clean, check and tighten pipe clips. Re-fit.

5. FAULT FINDING

<u>FAULT</u>	<u>POSSIBLE CAUSE(S)</u>	<u>REMEDY</u>
(i) Air Blower inoperative	Power not turned on.	Turn on.
	Blown fuse.	Replace. If fuse blows again, trace fault, contact supplier or an electrician.
	Earth leakage trip has operated.	Reset. If system trips again trace Fault, contact supplier or an electrician.
	Cut out trip has operated.	Reset
	Electrical fault.	Check wiring to air blower and panel.
	Air Blower failure	Contact supplier or an electrician.
(ii) Air Blower operates but does not deliver sufficient air to treatment chamber.	Blocked air filter.	Replace
	Faulty air blower	Contact supplier or an electrician.
	Air leakage	Check all connections and air lines.
	Air lines blocked.	Inspect air lines to ensure they have not been compressed or kinked.

	Diffusers blocked or faulty.	Inspect and check diffusers.
(iii) Poor effluent quality	See (i) and (ii) above.	
	Excessive sludge accumulation	Desludge both primary chambers. Check humus chamber for excessive crust build up. Remove crust or empty tank completely and clean as appropriate.
	Sludge return system faulty.	Check pump operation and control circuitry, including overload cut out.
	Chemical Interference or inhibition	Check for excessive use of bleach, Ammonia based cleaning products and those containing bactericides or fungicides or any other inhibitor of the natural biological process.
	Grease Contamination.	Check plant and grease trap as appropriate.
	Plant overloaded.	Consult supplier/Manufacturer.

6. PROLONGED ABSENCE

In the event of prolonged absence the following procedures are advisable.

(i) Absence of 3 months or less

Leave plant fully operational or fit timer system.

(ii) Absence greater than 3 months.

Consult Burnham Environmental Services for advice.