



SECTION: C3.10.120

CL0052

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Supersedes

New

ENVIRONMENTAL

Zoeller Family of Water Solutions™

Fusion® Series Treatment Systems

Small Scale Residential & Commercial Treatment Units



Clarus Environmental Overview

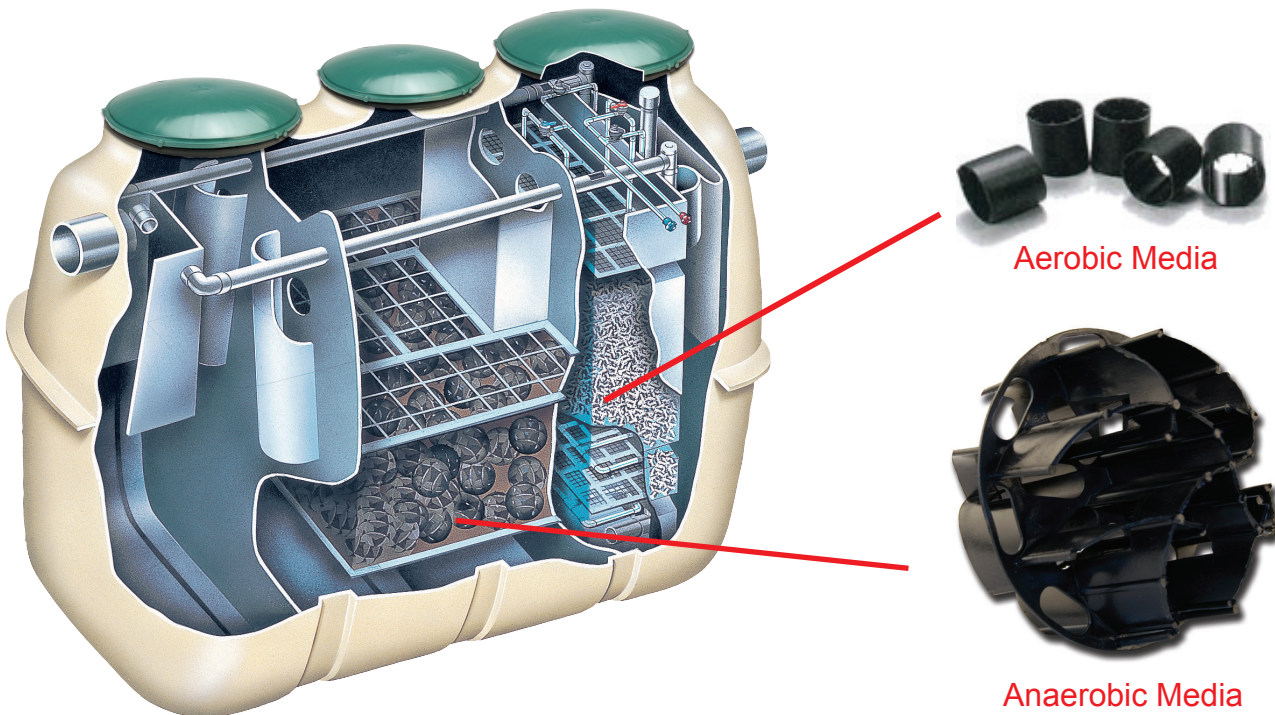
Clarus Environmental is a division of the Zoeller Company, an industry leader in pumps and pumping systems since 1939. Our objective is to meet the growing demand for solutions, products, and services in the fields of environmental protection and wastewater treatment. We seek to provide our customers with environmentally friendly solutions by offering high quality products and proven technology. When it comes to wastewater treatment systems and products, Clarus Environmental has the solutions for you.

Fusion® Series Overview

The Fusion® Series Treatment Systems combine the best elements of anaerobic and aerobic digestion to provide superior wastewater treatment. The system readily and consistently meets the secondary treatment standards of 9 mg/L CBOD₅, and 9 mg/L TSS. Because the Fusion® is equipped with built-in pretreatment, no additional septic tank is required. The system's two types of media provide a stable environment to ensure that strong bacterial colonies remain even after high flow events that may impede the performance of a normal septic tank.

The anaerobic chamber uses fixed media to improve the efficiency of traditional primary treatment. The aerobic chamber employs suspended media in two zones to enhance secondary treatment. The upper zone provides a stable home for beneficial bacteria to colonize. The packed lower zone provides a filtration mechanism while a sludge return process enables the efficient reduction of suspended solids in the effluent. Additionally, an automatic backwash routine stirs the media with air, twice daily, to thoroughly break up accumulated solids. These solids are then returned to the sedimentation chamber. Denitrification is achieved by returning nitrified effluent to a carbon-rich anoxic environment in the first chamber.

The use of media within the Fusion® yields extremely reliable treatment. Although wastewater constituents and flow rates can vary from day to day, the Fusion® will continue to perform consistently, effectively, and efficiently. The system can even sustain low or no flow periods for several months with little or no disruption of effluent quality.



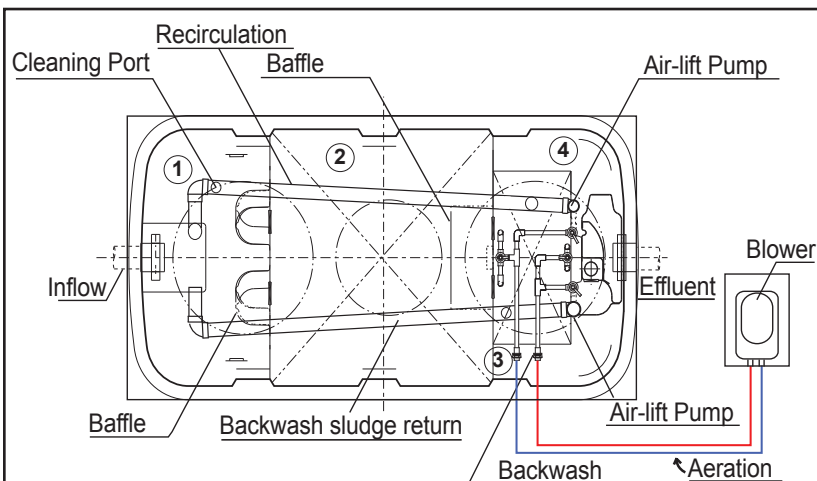
The Fusion® Series Treatment Systems represent a collaboration with Fuji Clean Co., Ltd.

PROCESS DESCRIPTION

How the Fusion® system works

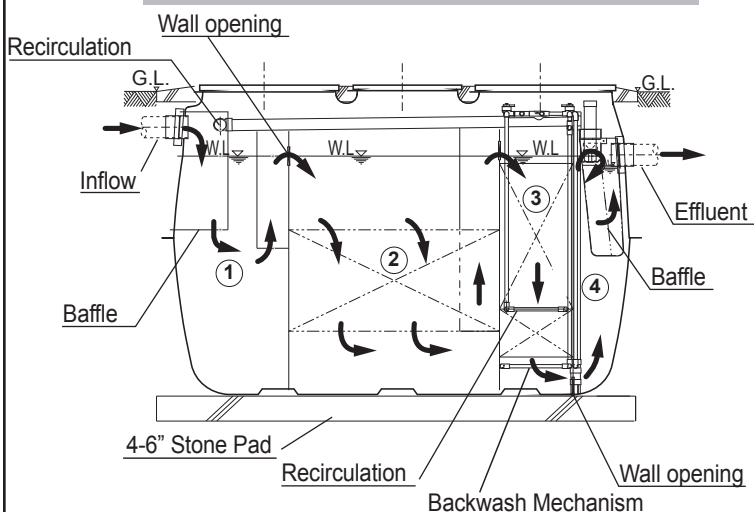


Certified to
NSF/ANSI
Standard 40



Top View

Numbers correspond to the explanations below.



Side View

the microorganisms in this chamber convert nitrates in the recirculated effluent returning from the aerobic chamber to gaseous nitrogen. The nitrogen then escapes to the atmosphere.

3. Aerobic Filter Media Chamber

The aerobic floating and circulating filter media chamber consists of an aeration upper section and a filter media lower section. The chamber is filled with hollow, cylindrical filter media (0.6 inch diameter and 0.55 inches long). Biological treatment takes place with the help of the fixed film growth on the filter media surface. Aeration is continuous. Residual suspended solids are captured by the filter media circulating in this section.

The filter media in the Aeration chamber are backwashed regularly (5 or 10 minute cycle, twice a day) by the backwash system located at the bottom of the chamber. The backwashed effluent is transferred by air lift back into the sedimentation chamber for

1. Sedimentation Chamber

This chamber is designed to physically separate solids (sludge) and floating materials (scum) from the incoming water.

2. Anaerobic Chamber

This chamber contains a spherical-skeleton type of filter media (4.3 inch diameter). Through fixed film processes on the surface of the filter media, biological anaerobic treatment thrives while suspended solids are captured. Furthermore,

further digestion.

4. Treated Water Storage Chamber

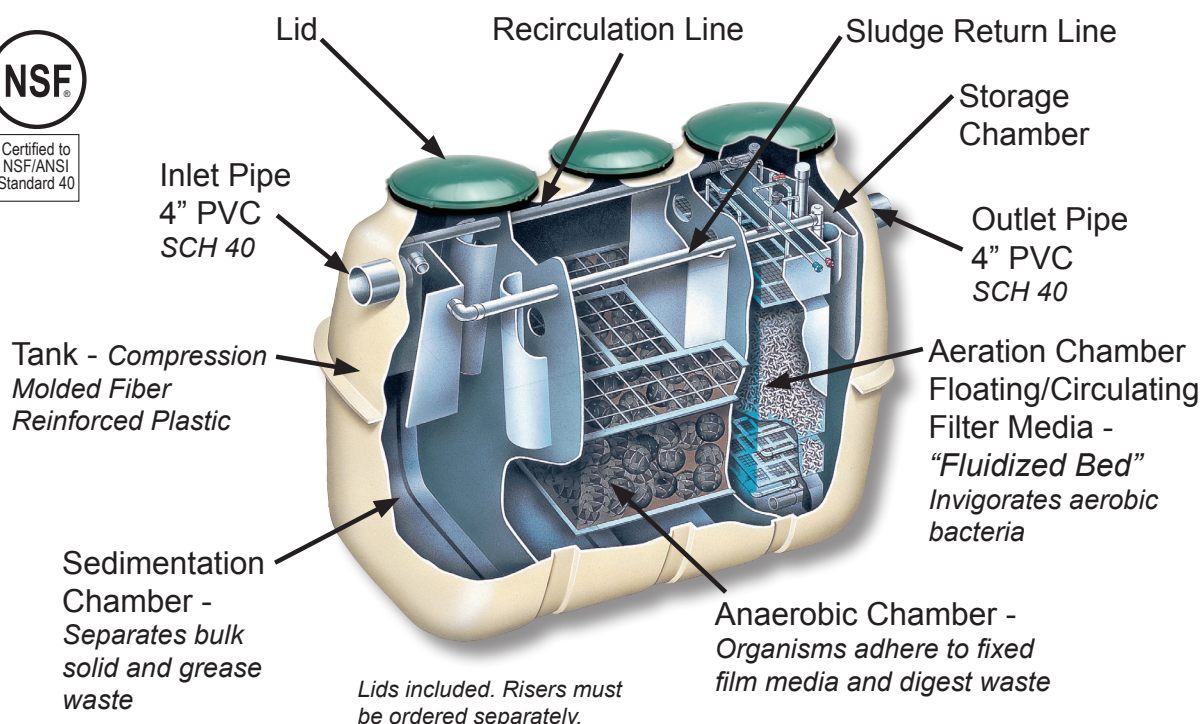
During normal operation, a recirculation line transfers a portion of the treated effluent back into the sedimentation chamber by way of an air lift. This chamber is designed to temporarily store treated effluent coming out of the aerobic filter media chamber. The treated effluent in the storage chamber is ready for discharge.

All Clarus Environmental products must be installed and maintained in accordance with all applicable codes.

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



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Application:

Residential/commercial wastewater secondary treatment

Treatment Unit Types:

5250-0001	➡	450 GPD
5250-0002	➡	600 GPD
5250-0003	➡	800 GPD

Waste strength reduction*:

9 mg/l CBOD₅
9 mg/l TSS

*Based upon residential strength waste and NSF/ANSI Std 40 performance evaluation.

Material:

All materials are noncorrosive in the septic environment.
Media never needs to be removed or replaced.

Easy to install or retrofit:

Fusion® Series Treatment Systems are compact, efficient, and designed to be installed in a typical residential/commercial environment.

Proven Technology:

Fuji Clean Co., LTD initially developed their wastewater Jokaso treatment system in 1969. With decades of refinement, the Clarus Fusion® Series has been optimized to treat residential waste.

Maintenance:

The system requires semiannual maintenance and will be provided with maintenance contract information. Maintenance provider is dependent upon geographical location.

Chambers	Actual Values		
	Volumes (gallons)		
Model Number	ZF450	ZF600	ZF800
Sedimentation Chamber	130	184	258
Anaerobic Chamber	262	371	526
Aeration Chamber	80	98	132
Storage Chamber	73	94	129.5
Total	545	747	1046
Inflow in gallons/day	450	600	800
Size: Width in inches	44	49	56
Length in inches	85	96	99
Height in inches	62	66	74
Weight in pounds	463	639	882

The Fusion® Series Treatment Systems represent a collaboration with Fuji Clean Co., Ltd.

Versatility

Fusion® Series Treatment Systems are easily installed in both new construction and retrofit applications.

Other applications in which Fusion® Systems are beneficial include:

- high water tables
- shallow bedrock
- shallow soil restrictive horizons
- heavy clay soils
- small lots
- renovation of failed systems
- environmentally sensitive areas
- surface discharge applications
- reuse applications

Always consult your state and local regulations for specific design & installation requirements.

Fusion® Discharge Options

Treated effluent from the Fusion® system is suitable for discharge into either a soil absorption system or to the surface. Discharge options are dependent upon the site/soil conditions as well as the state and local regulations.

Soil Absorption Systems

Since the Fusion® system treats effluent to such a high level, many state and local regulations allow a reduction in the size of the soil absorption system compared to soil absorption systems receiving conventional septic tank effluent. This is based upon the fact that the bulk of the treatment occurs within the Fusion® system, rather than in the soil. Finished Fusion® effluent can be dispersed into nearly all available soil absorption options. Conventional gravel trench systems, leaching chamber systems, drip irrigation systems, and various gravelless pipe technologies are all examples of common dispersal technologies following Fusion® treatment.

Surface Discharge Systems

Surface discharge options typically include either direct/indirect stream discharge or surface irrigation systems. The treated effluent normally requires disinfection by chlorination or ultraviolet light to reduce coliform bacteria to acceptable levels. In addition, a post-treatment aeration device may be required to increase dissolved oxygen levels, depending upon state and local regulations.

For additional information or assistance with discharge options, please contact Clarus Environmental.

FUSION® UNITS & ACCESSORIES

Fusion® Series Treatment Systems

P/N 5250-0001	ZF450 w/ Fusion® control panel and blower assembly
P/N 5250-0008	ZF450 w/ auto-dialer panel and blower assembly
P/N 5250-0002	ZF600 w/ Fusion® control panel and blower assembly
P/N 5250-0009	ZF600 w/ auto-dialer panel and blower assembly
P/N 5250-0003	ZF800 w/ Fusion® control panel and blower assembly
P/N 5250-0010	ZF800 w/ auto-dialer panel and blower assembly

Economy 20" and 24" Riser Systems*

P/N 5085-0001	20" X 6" Riser
P/N 5085-0002	20" Cover
P/N 5086-0001	24" X 6" Riser
P/N 5086-0002	24" Cover

- Injection molded, exceptionally strong
- HDPE is noncorrodible in a septic environment
- Watertight
- Simple to install
- Stackable
- Economical



*All Fusion® Systems come with lids. Risers can be added to bring lids to grade.
ZF450 has 2 - 24" diameter openings
ZF600 has 2 - 24" diameter openings and 1 - 20" diameter opening.
ZF800 has 2 - 24" diameter openings and 1 - 20" diameter opening.

Bio-Dynamic® Tablet Feeder

P/N 5090-0003

The tablet feeder is designed as a reliable means of chemical application to a waste stream. Up to 500 gallons per day may be effectively chlorinated using just one unit. Integral 4" inlet and outlet hubs form a direct solvent weld connection to the treatment system piping. Because of the feeder's design, it can effectively manage peak flows with no reduction in efficiency. Fall within the tablet feeder eliminates standing water, thereby reducing chemical use and maintenance. The molded one-piece feed tube constantly applies chemical treatment. Multiple units can be applied in parallel by using the Zoeller Tru-Flow® Splitter System. The tablet feeder may also be connected directly to the inlet of a chemical contact chamber or tank.

- Quick and easy to install
- Durable PVC construction
- 4" inlet and outlet hubs



Decorative Rock Covers

P/N 5090-0007

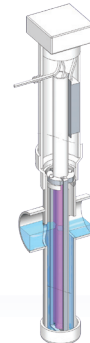
Plastic landscape rock covers for Fusion® blower. Note: ventilation holes are not predrilled.



UV Disinfection Unit #3G

P/N 5250-0004

The Salcor Model 3G Ultraviolet Disinfection Unit is designed to disinfect the effluent from advanced treatment units. It couples directly to the discharge pipe and is permanently installed below grade.



FUSION® SERVICE PARTS

Blower Assembly

P/N 5250-0005

Model MX80NZ

Programmable compressor that feeds oxygen to the aeration chamber and powers recirculation/sludge return.

- 115V, 1 PH, 60 watt/hr
- MET listed • 80L/min



Fusion® Control Panel

P/N 10-2148

- 120V, 1 PH, 10 Amp
- Alarm float w/30' cord
- Audible and visual alarm



Blower Air Filter

P/N 018849

- Fits MX80, MX80N and MX80NZ blowers



Blower Diaphragm Kit

P/N 018848

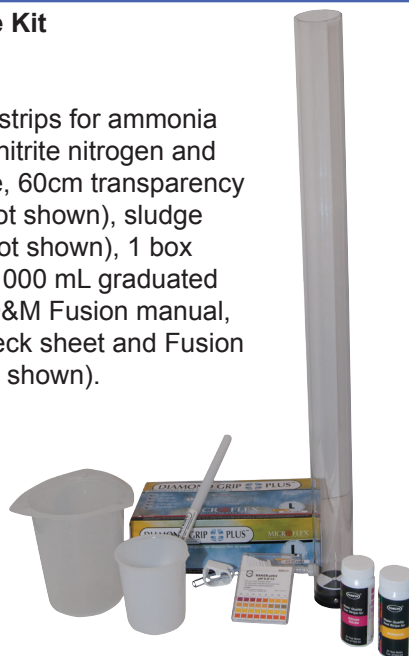
- Fits MX80N and MX80NZ blowers



Fusion® Service Kit

P/N 5250-0007

Kit contains test strips for ammonia nitrogen, nitrate/nitrite nitrogen and pH, 250 mL ladle, 60cm transparency tube, tool box (not shown), sludge judge w/ case (not shown), 1 box of latex gloves, 1000 mL graduated plastic beaker, O&M Fusion manual, maintenance check sheet and Fusion door hanger (not shown).



Bio-Sanitizer® Disinfecting Tablets

P/N 5090-0004

10 lb. Container

P/N 5090-0009

45 lb. Container

The tablets are made from pure calcium hypochlorite and contain at least 70% available chlorine. Each tablet is 2-5/8" diameter by 13/16" thick. Tablets are white in color for easy identification. The tablets shall dissolve slowly, releasing controlled amounts of chlorine for water or wastewater disinfection. A 10 pound pail contains 32 tablets.



Dechlorination Tablets

P/N 5090-0013

25 lb container

P/N 5090-0011

45 lb container

Reduces or removes free and combined chlorine from the effluent of onsite wastewater treatment systems.



ENVIRONMENTAL

Zoeller Family of Water Solutions™

Your Peace of Mind is Our Top Priority®

3649 Cane Run Rd. • Louisville, KY 40211 • 877-244-9340 • fax 877-414-4316
www.clarusenvironmental.com