ZOELLER®
PUMP COMPANY

Fusion® Series
Treatment Systems

Small Scale
Residential & Commercial
Treatment Units

Trusted. Tested. Tough.®

Clarus Fusion® Overview

Clarus Fusion® is one of many environmental products offered by Zoeller Company, an industry leader in pumps and pumping systems since 1939. Our objective is to meet the growing demand for solutions and products in the onsite wastewater treatment industry. We seek to provide our customers with Fusion® friendly solutions by offering high quality products and proven technology. When it comes to wastewater treatment systems and products, Clarus Fusion® 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 $CBOD_5$, and 9 mg/L TSS. Because the Fusion® is equipped with built-in pretreatment, no additional septic tank is needed unless 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.

Aerobic Media

Anaerobic Media

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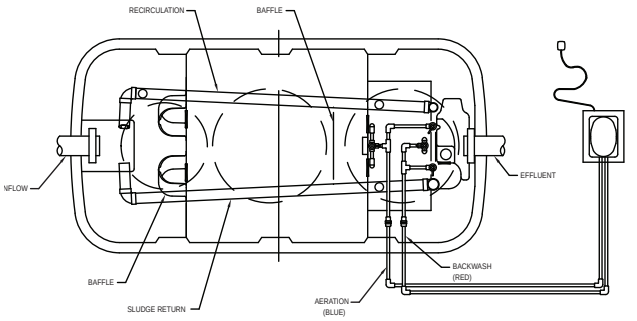
PROCESS DESCRIPTION

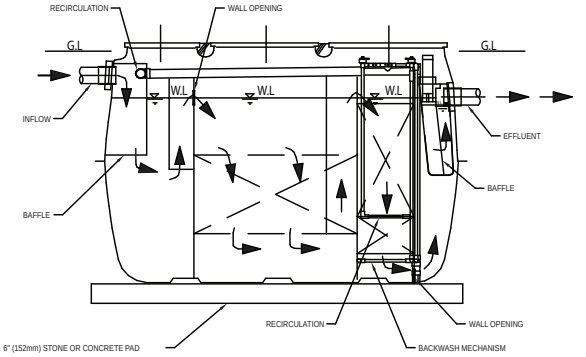
How the **Fusion**® system works

Certified to NSF/ANSI Standard 40 Class 1 Performance Designation



TOP VIEW SK3194

Numbers correspond to the explanations below.



SIDE VIEW SK3194

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, 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 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 Fusion® 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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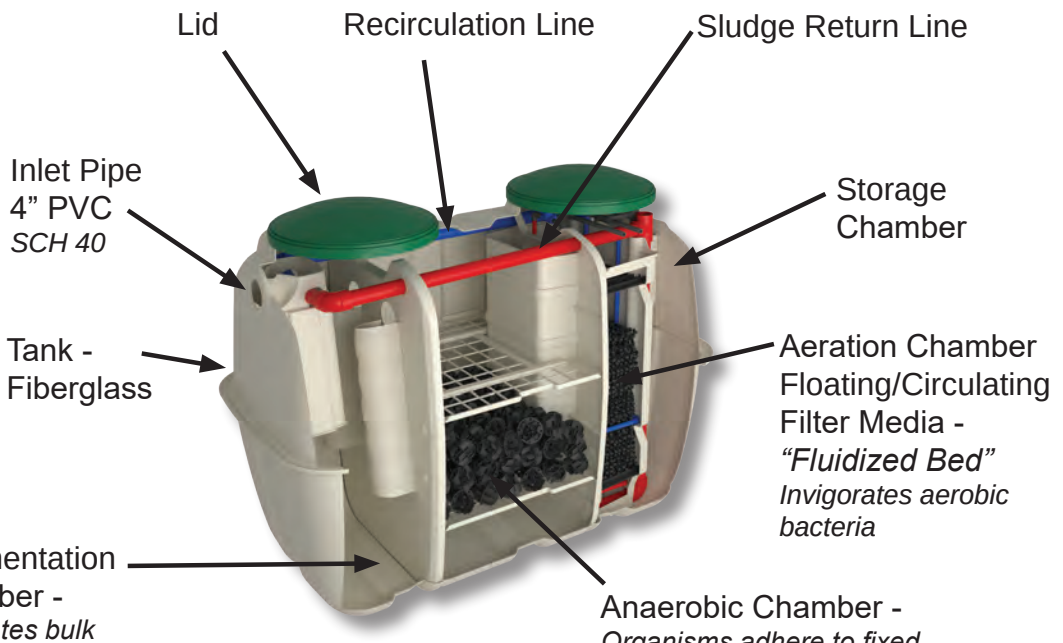
Certified to NSF/ANSI Standard 40 Class 1 Performance Designation



Lids included. Risers must be ordered separately.

Application:
Residential/commercial wastewater secondary treatment
Treatment Unit Types:

5250-0001 → 450 GPD
5250-0003 → 800 GPD

Waste strength reduction*:

9 mg/l $CBOD_5$
9 mg/l TSS

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

Material:
Materials will not corrode 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.

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	ZF800
Sedimentation Chamber	130	258
Anaerobic Chamber	262	526
Aeration Chamber	80	132
Storage Chamber	73	129.5
Total	545	1046
Inflow in gallons/day	450	800
Size: Width in inches	44	56
Length in inches	85	99
Height in inches	62	74
Weight in pounds	504	882

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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
- Fusion® 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 Zoeller Pump Company.

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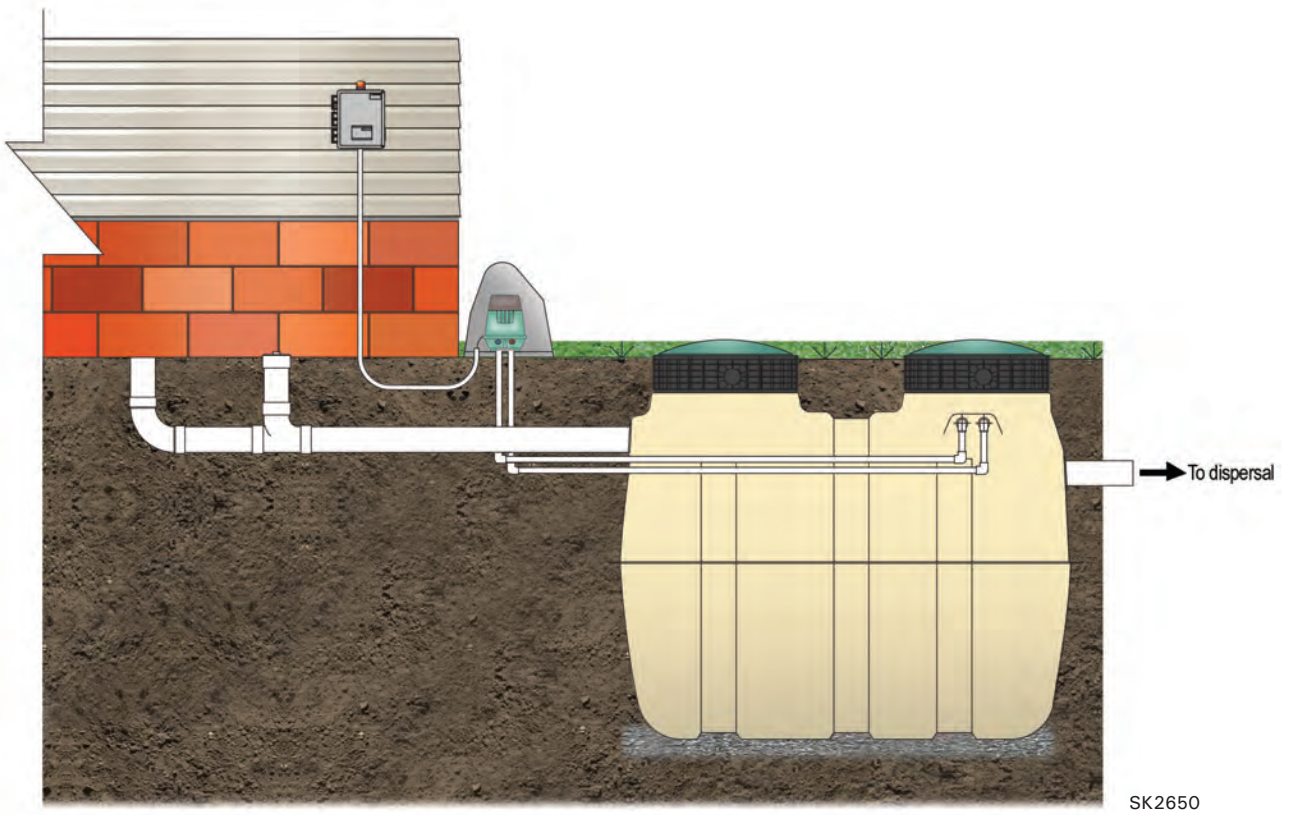
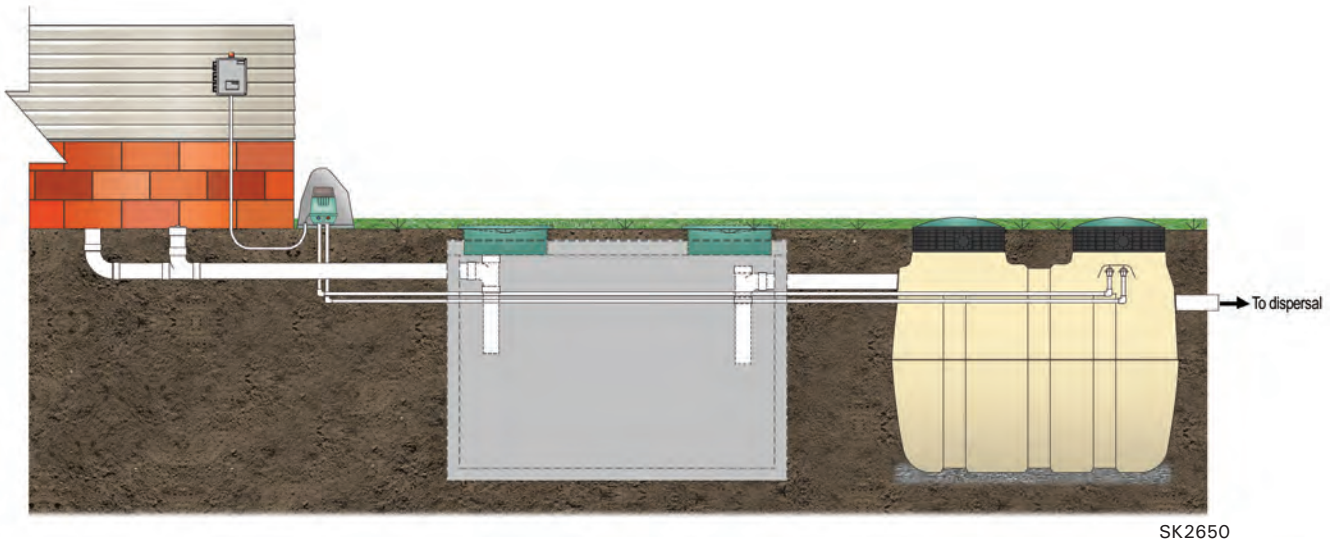
Typical Gravity Flow Fusion® Installation



Fusion® with Optional Septic Tank



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Fusion® Layout with Drip Dispersal

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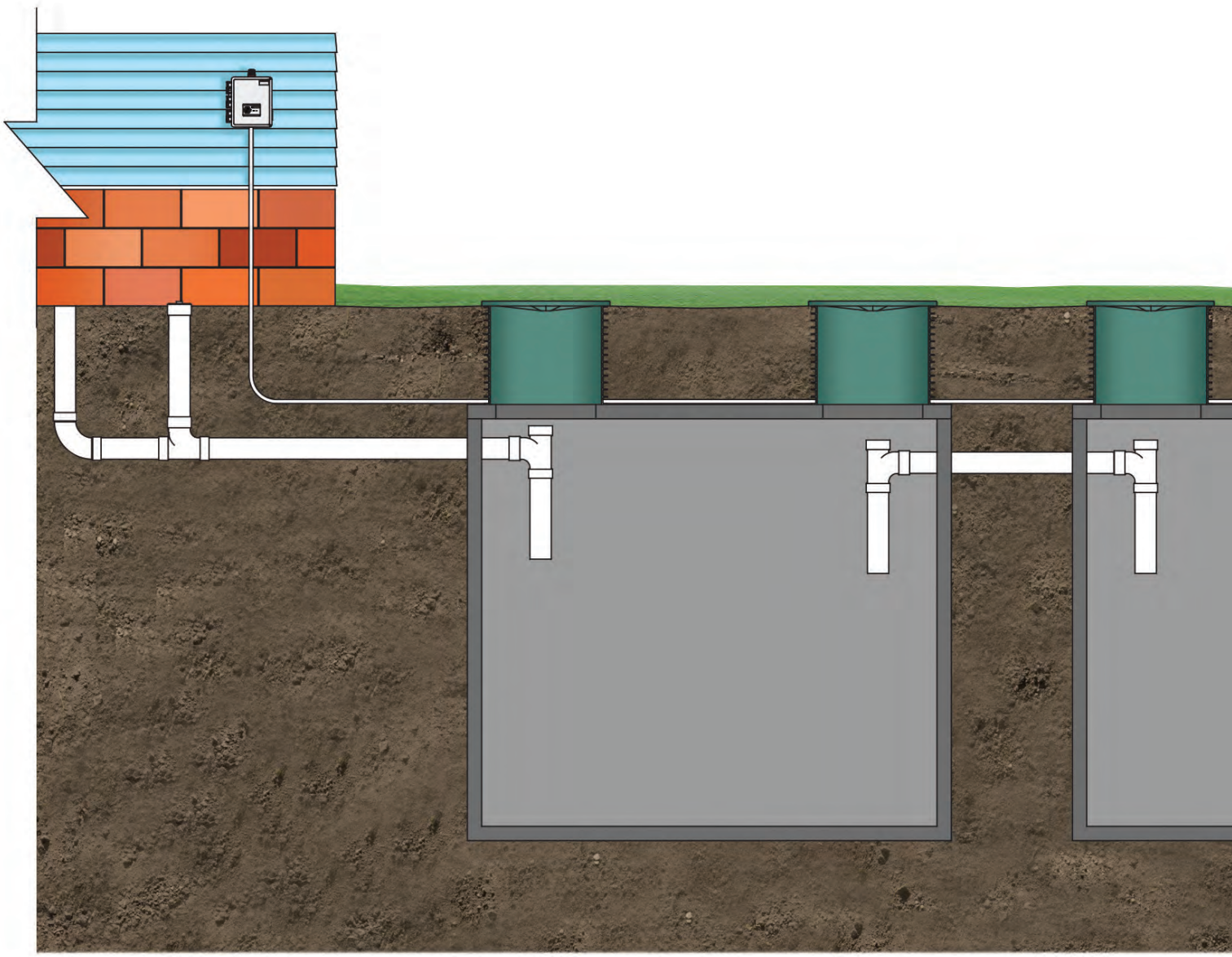
Pumping to Multiple Fusion® Units



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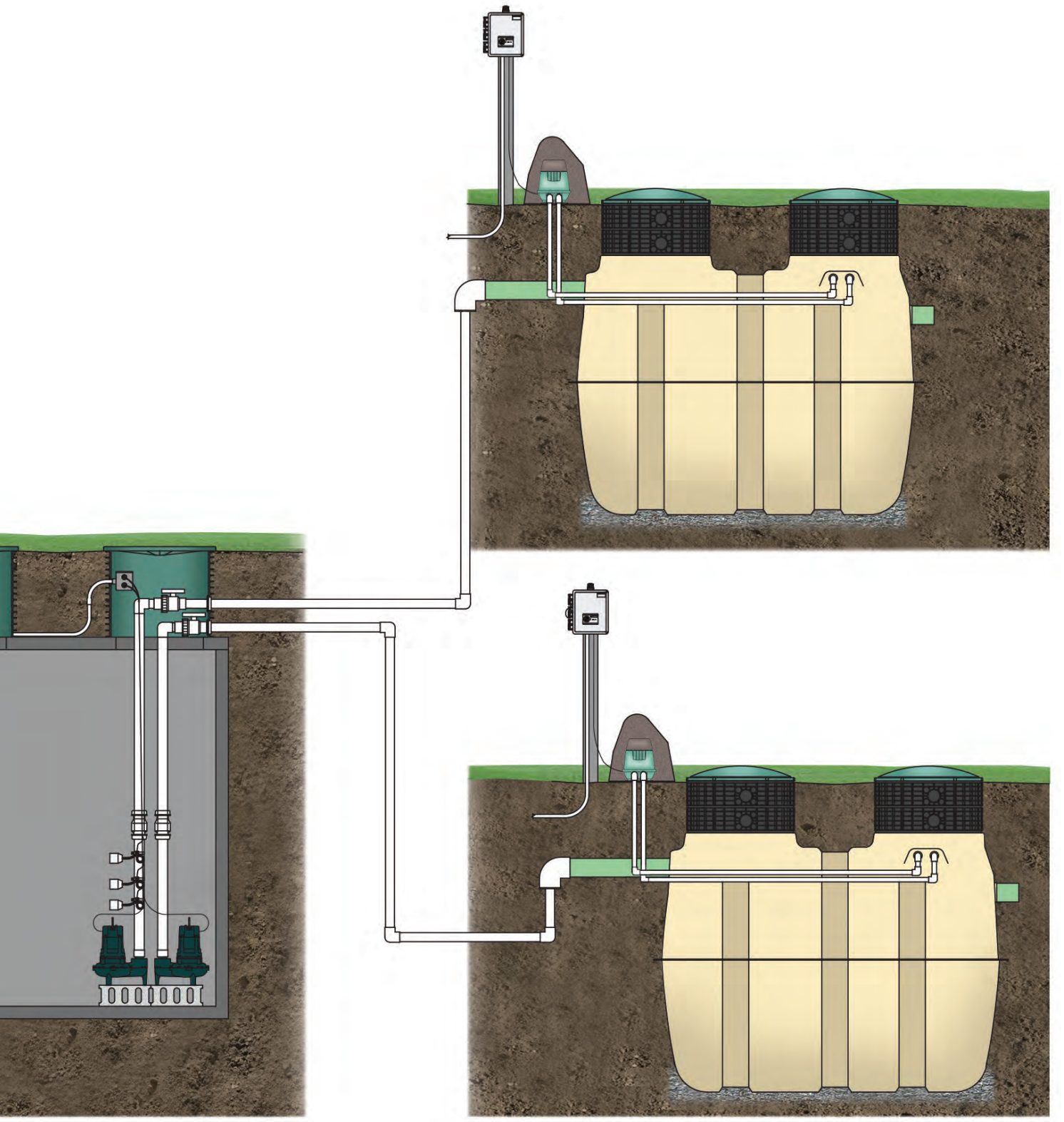

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FUSION® UNITS & ACCESSORIES

Fusion® Series Treatment Systems

P/N 5250-0001	ZF450 Fusion®
P/N 5250-0003	ZF800 Fusion®

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
ZF800 has 2 - 24" diameter openings and 1 - 20" diameter opening.

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.

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FUSION® SERVICE PARTS

Blower Assembly
P/N 5250-0050
Model Duo 80

Programmable compressor that feeds oxygen to the aeration chamber and powers recirculation/sludge return.
- 115V, 1 PH, 71 watt/hr
- 80L/min

c UL us

Fusion® Alarm Panel
P/N 10-2148

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

Blower Air Filter
P/N 156509

- Fits Duo 80 blower

Blower Diaphragm Kit
P/N 156508

- Fits Duo 80 blower

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 (Full version)
P/N 5250-0007

Kit contains 250 mL ladle, 60cm transparency tube, tool box, 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).

Fusion® Service Kit (Compact version)
P/N 5250-0035

Kit includes all items listed in the full version, except for the tool box and latex gloves.

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