

## INDIANA Operation and Maintenance Manual

Residential Systems  
CE and CEN Models

Revised: June 18, 2018



Certified to  
NSF/ANSI Standards 40 & 245



## Indiana Operation and Maintenance Manual Index

### **TNI Approval Letter**

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June 15, 2018

Scott Samuelson  
Managing Director  
Fuji Clean USA, LLC  
41-2 Greenwood Road  
Brunswick, ME 04011

Dear Mr. Samuelson:

Re: Approval of Fuji Clean USA, LLC CE- and CEN-Series Model units  
For use in residential and commercial onsite sewage systems

The Fuji Clean USA CE- and CEN-Series Model units listed below are hereby approved for use in Indiana as an additional system component in an onsite sewage system by the Indiana State Department of Health (department), under the provisions of *410 IAC 6-8.3-52(h)*, *410 IAC 6-10.1-49(h)*, and the *Indiana Standards for Aerobic Treatment Units* published by the department on September 8, 2015. This approval is for the use in commercial onsite sewage systems and individual residential onsite sewage systems. Approval is effective this 14<sup>th</sup> day of June, 2018.

The Fuji Clean USA Approved Models are limited to:

ATU Series	Model	Flow Rating (GPD)	Min. Flow (GPD)	BOD Rating (lbs./day)	BOD (mg/L)		TSS (mg/L)	
					Min.	Max.	Min.	Max.
CE	5	450	45	0.52	100	300	100	350
CE	7	630	63	0.73	100	300	100	350
CE	10	900	90	1.04	100	300	100	350
CEN	5	450	45	0.69	100	300	100	350
CEN	7	630	63	0.97	100	300	100	350
CEN	10	900	90	1.38	100	300	100	350

Each Model is approved for options 1.a; 1.b; 1.c; and 2.a; *Indiana Standards for Aerobic Treatment Units*, published by the department on September 8, 2015.

- I. Fuji Clean USA, LLC. is required to:
  - a) Provide tank connectors to ensure watertight pipe connections at the inlet and outlet of the treatment unit;
  - b) Certify distributors, designers, installers, service providers and those involved in permitting of these technologies;
  - c) Submit to the department a list of all certified installers, distributors, and service providers for the State of Indiana on a quarterly basis the first year and annually after that; and notify the department immediately of the removal of any certified installer, distributor, or service providers;

- d) Submit for review and approval of the department any proposed changes to any system component or the Indiana Product Manuals prior to implementation of the changes;
  - e) Notify the department in writing of any scheduled training event at least 10 working days prior to the event;
  - f) Provide on-going consultation to health department staffs, designers, installers, and service providers;
  - g) Report to the department within 30 days the failure of any owner to renew a service contract for the operation and maintenance of any onsite sewage system that includes a Fuji Clean USA CE- or CEN- Series unit.
- II. The Fuji Clean USA CE- and CEN-Series unit is subject to:
- a) The review by the department of each individual project when the unit will be subject to intermittent flows. Further, all start-up and shut down procedures must be carried out by a certified service provider after local health department notification and consultation.
  - b) The review by the department for each individual residential project where:
    - 1. A trash tank is proposed in lieu of a full sized septic tank in accordance with Section IV., *Indiana Standards for Aerobic Treatment Units* published by the department on September 8, 2015, or
    - 2. A soil absorption field of reduced size is proposed in accordance with Section VII. F., *Indiana Standards for Aerobic Treatment Units* published by the department on September 8, 2015.

Unless plan review and permit issuance has been delegated to the local health department in accordance with Section V. C., *Indiana Standards for Aerobic Treatment Units* published by the department on September 8, 2015.
  - c) The applicable provisions of ISDH Rule 410 IAC 6-8.3, and ISDH Rule 410 IAC 6-10.1, including the discharge to a soil absorption field which meets all of the provisions of the applicable rule, except for system sizing as allowed in Section VII. F., *Indiana Standards for Aerobic Treatment Units* published by the department on September 8, 2015;
  - d) Treating only domestic and/or residential strength wastewater;
  - e) The applicable provisions of *Indiana Standards for Aerobic Treatment Units* published by the department on September 8, 2015;
  - f) The Fuji Clean USA Indiana Design, Contractor Installation, Operation and Maintenance, and Owner's Manuals; and
  - g) The provisions and criteria identified in this approval letter.
- III. The Fuji Clean USA CE- and CEN-Series aerobic unit manufacturer, designer, distributor, installer, and service provider is subject to:
- a) Fuji Clean USA, LLC Certification;
  - b) Maintaining a status of good standing with Fuji Clean USA, LLC.

This approval may be revoked or modified by the department for non-compliance, or if it is documented that it would not be in the best interests of public health for approvals to continue.

If you wish to request administrative review of this *Approval* pursuant to Indiana Code 4-21.5-3-5, you must file a petition for review within fifteen (15) days after this *Approval* is received. The petition for review and petition for stay of effectiveness must be postmarked no later than July 10, 2018.

The petition for review must be in writing and must include facts demonstrating that:

- The petitioner is a person to whom the *Approval* is specifically directed;
- The petitioner is aggrieved or adversely affected by the *Approval*; or
- The petitioner is entitled to review under any law.

If the petition for review is not filed timely, this *Approval* becomes FINAL. Any petition for review and petition for stay of effectiveness must be submitted in writing to:

Court Administrator  
Office of Legal Affairs, #3H  
Indiana State Department of Health  
2 North Meridian Street  
Indianapolis, IN 46204

If you do not object to this product submittal approval, you do not need to take any further action.

Sincerely,

A handwritten signature in blue ink, appearing to read "m. mettler".

Michael Mettler, REHS, Director  
Environmental Public Health Division  
317/233-7183  
mmettler@isdh.in.gov

cc: Bennette D. Burks, P.E., AOSE, Fuji Clean USA, Technical Advisor for Indiana Approval  
Local Health Departments  
Onsite Staff



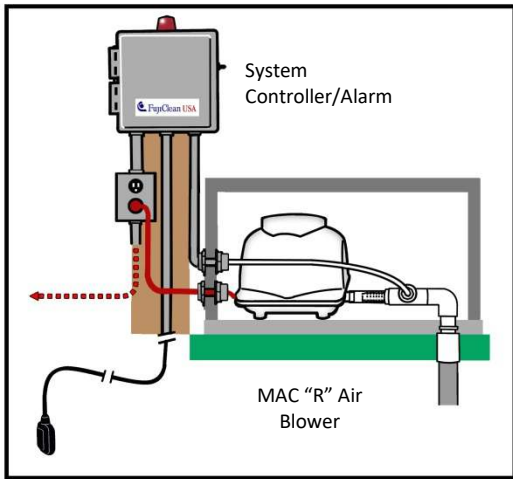
## A. Overview and Indiana Rules

Fuji Clean USA (Fuji Clean), residential wastewater treatment systems have been approved in Indiana as Aerobic Treatment Units (ATU) for new and replacement/repair installations. Indiana designs that incorporate Fuji Clean technology shall include the following:

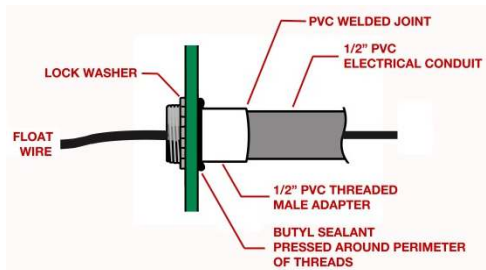
1. All system designers, installers and service providers must be Indiana Fuji Clean USA certified. Training is available on a regular basis in Indiana through Fuji Clean USA's Authorized Representative.
2. Design must be in compliance with the manufacturer's manuals, Indiana State Department of Health (ISDH) Rule [Indiana Standards for Aerobic Treatment Units (ATU)], 410 IAC 6-8.3 and 410 IAC 6-10.1] and any applicable Local Health Department policies, and Local Ordinances.
3. Fuji Clean's TNI Approval Letter, with approved models, is included with this document. (Also on Department's website; "Approved TNI").
4. Fuji Clean's treatment system model selection shall be based on the Design Specification Summary in this Indiana Design Manual.
5. Fuji Clean ATU's will only accept sewage as defined in 410 IAC 6-8.3-41 and in 410 IAC 6-10.1-38.
6. Design will stipulate that water softener backwash shall not enter the Fuji Clean ATU and be managed by an option approved by the ISDH rules.
7. System O&M must be performed by an authorized service provider according to the requirements of the SI O&M program.
8. Soil Absorption system design shall meet or exceed the provisions of Rule 410 IAC 6-8.3, 6-10.1 and Indiana TNI Standards for the specific soil absorption field technology. A Fuji Clean unit utilizing a conventional soil absorption field technology may qualify for a 33 percent reduction in absorption field sizing.
9. Insulation shall be used per the Fuji Clean Installation Manual.
10. CAD and PDF drawings of systems are available at the website: [www.fujicleanusa.com](http://www.fujicleanusa.com)

**Please contact Fuji Clean USA or its Indiana Authorized Representative  
with questions or for additional technical information.**

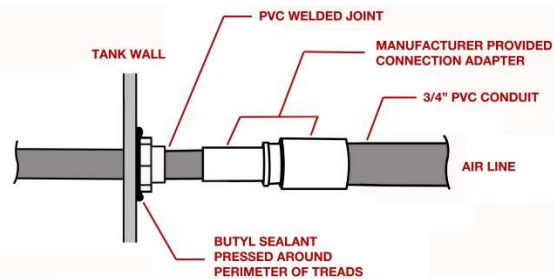




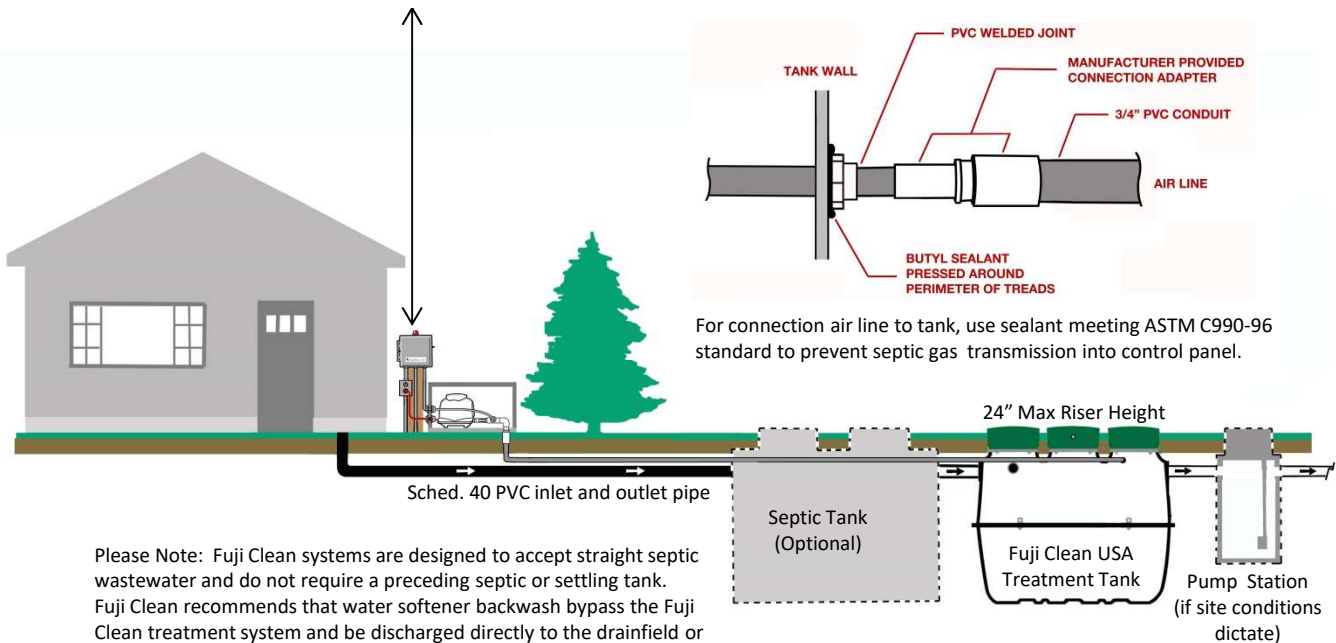
## Installation Overview



For connection of float switch cord to alarm panel, drill hole in riser and use male fitting and electrical conduit. Plug fitting with sealant standard that meets ASTM C990-96 to assure water-tight seal and to prevent septic gas transmission into control panel.



For connection air line to tank, use sealant meeting ASTM C990-96 standard to prevent septic gas transmission into control panel.



Please Note: Fuji Clean systems are designed to accept straight septic wastewater and do not require a preceding septic or settling tank. Fuji Clean recommends that water softener backwash bypass the Fuji Clean treatment system and be discharged directly to the drainfield or effluent pump tank, if one is installed.

**FUJI CLEAN USA, LLC**  
**NSF/ANSI Standard 40 Class 1**  
**MODEL NO.: CE5 SERIAL NO.: F14D0002**  
**CAPACITY (GPD): 450**  
 41-2 GREENWOOD RD. BRUNSWICK, ME 04011 207-406-2927



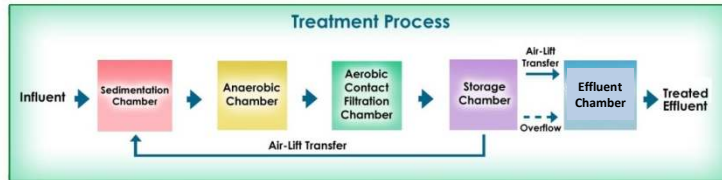
Using grommets or a waterproof adhesive, labels meeting NSF standards (supplied by Fuji Clean USA) shall be affixed in two locations, inside the riser and on the inside of the controller.



## E. Treatment Process Overview

Fuji Clean's "contact filtration" treatment is a simple, well engineered process that consists of a controlled, circuitous flow train through anoxic and aerobic chambers and in direct contact with assorted proprietary fixed film medias on which biological digestion of organic matter occurs. Media is also designed and positioned to provide mechanical filtration of process wastewater.

The system includes two air lift pumps (see diagram below) The Recirculating Airlift Pump returns process water and sludge from the aerobic zone to the sedimentation chamber, recirculating 2-4 times inflow per day for CE models and 4-6 times inflow for CEN (enhanced denitrification) models. The Effluent Airlift Pump is designed to help equalize flow and discharge treated effluent.



**Two Air Lift Pumps.** One Recirculating Air Lift pump sending process water and solids back to Chamber 1, and one Effluent Air Lift Pump for measured discharge of treated effluent. (See airlift pump info below).

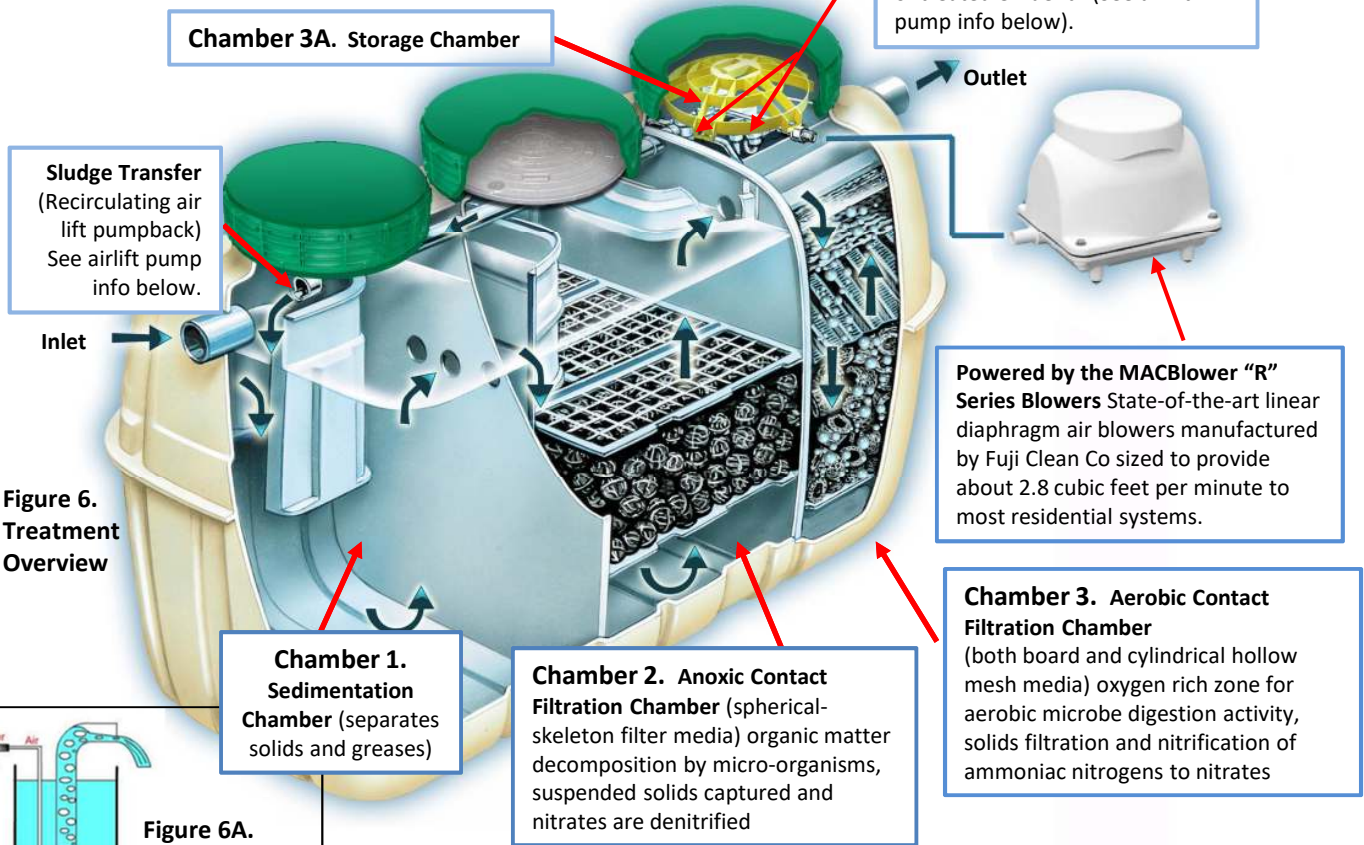


Figure 6. Treatment Overview

**Sludge Transfer**  
(Recirculating air lift pumpback)  
See airlift pump info below.

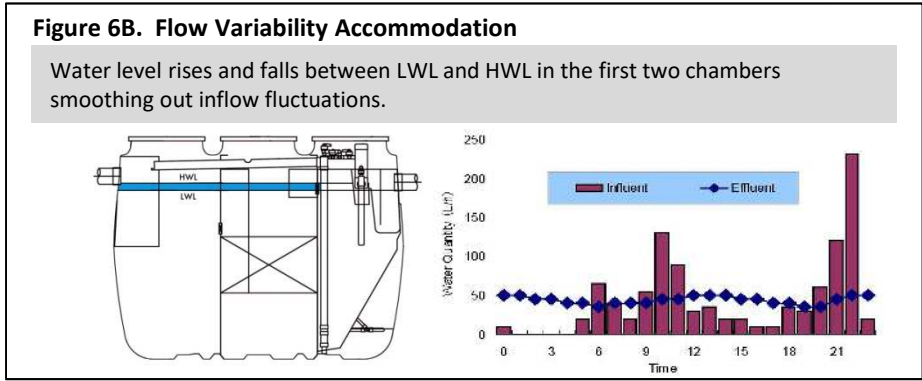
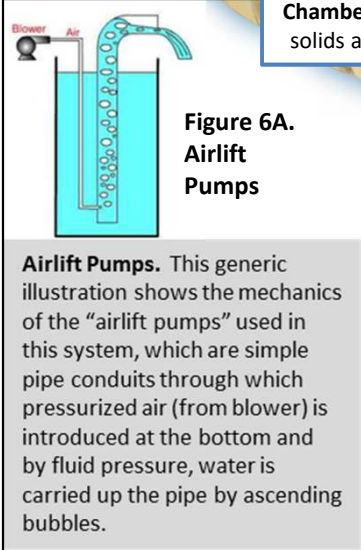
**Chamber 3A. Storage Chamber**

**Powered by the MACBlower "R" Series Blowers** State-of-the-art linear diaphragm air blowers manufactured by Fuji Clean Co sized to provide about 2.8 cubic feet per minute to most residential systems.

**Chamber 3. Aerobic Contact Filtration Chamber**  
(both board and cylindrical hollow mesh media) oxygen rich zone for aerobic microbe digestion activity, solids filtration and nitrification of ammoniac nitrogens to nitrates

**Chamber 1. Sedimentation Chamber** (separates solids and greases)

**Chamber 2. Anoxic Contact Filtration Chamber** (spherical-skeleton filter media) organic matter decomposition by micro-organisms, suspended solids captured and nitrates are denitrified





## Section 3a. System Components and Specifications - Summary

TABLE 1 FUJI CLEAN USA RESIDENTIAL SYSTEM SPECIFICATION TABLE	CE Series BOD, TSS, TN*				CEN Series BOD, TSS, Enhanced TN		
	Model	CE5	CE7	CE10	CEN5	CEN7	CEN10
Fuji Clean USA Load Rating (Bedrooms)	3	4	6		3	4	6
Load Hydraulic** (GPD)	450	630	900		450	630	900
<b>Blower Size and Power Consumption:</b>							
Blower Model / CFM (Standard)	MAC80R 2.8 CFM	MAC80R 2.8 CFM	MAC100R 3.5 CFM		MAC80R 2.8 CFM	MAC100R 2.8 CFM	MAC100R 3.5 CFM
Power Use (kWh/day)	1.27	1.27	1.92		1.27	1.92	1.92
<b>Tank Detail:</b>							
Material	Fibre-reinforced plastic				Fibre-reinforced plastic		
Height (inches)	61.8	65.7	73.6		65.7	73.6	77.4
Length (inches)	85	95.7	98.8		95.7	98.8	118.9
Width (inches)	43.7	49.2	56.7		49.2	56.7	68.9
Weight (lbs.)	397	463	705		463	705	926
Inlet Invert (inches, to 1/8")	49	53	61		53	61	62
Outlet Invert (inches to 1/8")	47	51	59		51	59	59.5
Access Ports (number)	3	3	3		3	3	3
Access Port Diameter (inches)	3@20"	2@20" 1@24"	2@20" 1@24"		2@20" 1@24"	2@20" 1@24"	2@20" 1@24"
Volume Total (gallons)	540	749	1069		749	1069	1498
Vol. Chamber 1, Sedimentation (gal)	198	277	397		277	397	558
Vol Chamber 2, Anaerobic(gal)	198	278	396		278	396	556
Vol Chamber 3, Aeration (gal)	95	127	181		127	181	248
Vol Chamber 3a, Storage (gal)	44	63	90		63	90	124
Vol.Chamber 3b, Disinfection (gal)	4	4	6		4	6	12

\* TN data was obtained during CE testing, but not to NSF245 testing protocol. CEN testing was to NSF245 protocol.

\*\* Please consult with distributor or Fuji Clean USA for commercial models designed to treat hydraulic flows above those listed in this table.

\*\*\* Please consult with distributor or Fuji Clean USA for system specification and sizing in cases where influent biologic strength is greater than domestic strength.

## Section 3b. System Components and Specifications - Structural Drawings

Structural drawings of all residential models are presented in Appendix 1 of this Manual, and available in both .dwg and pdf formats online at [www.fujicleanusa.com](http://www.fujicleanusa.com)

## Section 3c. System Components - MACBlowers

The Table below includes specifications for “R” Series MACBlowers, which power treatment in Fuji Clean USA Systems. The table includes blower models associated with each standard system installation. However, blowers associated with larger Fuji Clean systems are also provided since some installations may require upsized blowers based on overall distance (i.e. air conduit length and diameter) and number of elbows from blower to treatment system. Please refer to the **Fuji Clean USA Installation Manual** for details.

Additional O&M information specific to the MACBlower component of the Fuji Clean USA system is provided in the **MACBlower Installation and O&M Manual**, provided in Appendix 2 of this Manual.

<b>Fuji Clean USA Treatment System Model (Number of MACBlowers)</b>			<b>CE5 (1) CE7 (1) CEN5 (1)</b>	<b>CE10 (1) CE14 (1) CEN7 (1) CEN10 (1)</b>
<b>MACBlower Model</b>	<b>MAC40R</b>	<b>MAC60R</b>	<b>MAC80R</b>	<b>MAC100R</b>
Air Flow Volume	40 L/min 1.4 cfm	60 L/min 2.1 cfm	80 L/min 2.8 cfm	100 L/min 3.5 cfm
Normal Pressure	12 kPa 1.7 psi	15 kPa 2.2 psi		18 kPa 2.6 psi
Rated Voltage	120V			
Frequency	60Hz			
Outlet Pipe Size	13mm ID (18mm OD) 33/64 inch ID (45/64 inch OD)			
Weight	4.5kg 9 lbs. 14 oz.	5.0kg 11 lbs.		
Power Consumption	34W 0.045 HP	45W 0.060 HP	54W 0.072 HP	83W 0.111 HP
Amperes	0.8A	1.3A	1.0A	1.7A
Power Cable	3 × 18AWG × 1.8m (5ft.11in.)			
Manufacturer	Made in Japan by Fuji Clean			

## System Components – MACBlowers (Commercial Systems)

<b>Table 2 cont. MAC Blower Specification Table</b>			
<b>Fuji Clean Treatment System Model (Number of MACBlowers)</b>		<b>CE21 (1)</b>	<b>CE30 (1) CEN21 (1)</b>
<b>MACBlower Model</b>	<b>MAC120R</b>	<b>MAC150R</b>	<b>MAC200R</b>
Air Flow Volume	120 L/min 4.2 cfm	150 L/min 5.3 cfm	200 L/min 7.0 cfm
Normal Pressure	18 kPa / 2.6 psi		
Rated Voltage and Current	120V		
Frequency	60Hz		
Outlet Pipe Size	20mm ID (26mm OD) 25/32 inch ID (1-1/32 inch OD)		
Weight	8.5kg 18 lbs. 12 oz.	9.0kg 19 lbs. 13 oz.	
Power Consumption	98 W 0.131 HP	120 W 0.160 HP	170 W 0.227 HP
Power Cable	3 × 18AWG × 1.8m (5ft.11in.)		
Manufacturer	Made in Japan by Fuji Clean		

## Section 3e. System Components - Alarm / Control Panel

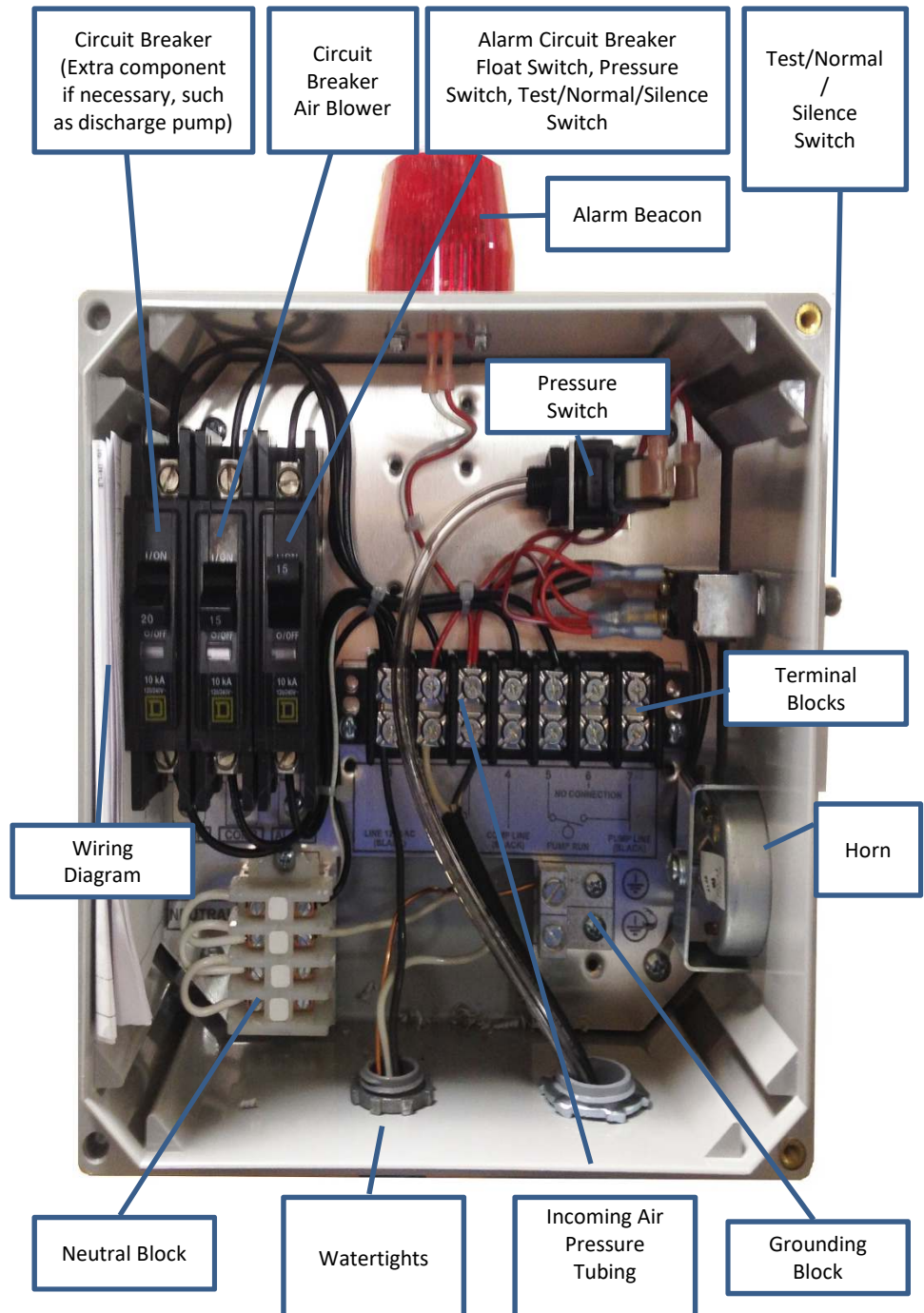
Housed in a NEMA 4X rated enclosure, the Alarm/Control Panel is connected to the treatment system and monitors tank water level and blower operation. An audible horn and red beacon light will activate in the event of either a tank high water condition or if the blower ceases to operate (causing a drop in air pressure). Please note: an upgraded controller with telecommunication and alarm tracking capabilities is available. Please contact Fuji Clean USA for details.

The Alarm/Control panel is equipped with a 3-way toggle switch (Test-Normal-Silence) that allows check for proper operation by toggling the side panel switch to "Test" mode. The horn will sound and the red beacon will activate so long as the switch is held in the "Test" position. When switch it released, it will return to normal operation.

In the event of an alarm condition the "Silence" switch may be engaged to silence the audible alarm. However, the beacon will continue to flash until normal operation is restored (i.e. blower air pressure is restored or high water float is deactivated), in which case the alarm will reset and both audible and visual alarms will clear.

If at any stage a new alarm condition occurs, the "Silence" mode will expire and the unit's horn will begin sounding again.

All conduits between panel and treatment tank must be sealed to prevent gas leakage into panel.



## Alarm / Control Panel Component Specifications

Manufacturer: SJE-Rhombus

Model #: 1017273 / Mechanical Aerobic w/o timer

Table 3. Switches, Horn and Light Component Specifications

Description	Make	Model #	Electrical Certifications	Voltages	Amps	Action
HORN	WORLDWIDE TECHNOLOGIES	16004146SSFRONT/4HOL	UL RECOGNIZED (UCST2)	120V		
SINGLE POLE 20A BREAKER	SCHNEIDER ELECTRIC	QOU120	CSA IEC UL LISTED	120/240	20	
SINGLE POLE 15A BREAKER	SCHNEIDER ELECTRIC	QOU115	CSA IEC UL LISTED	120/240	15	
TOGGLE SWITCH	CARLING	6GG5B-73	UL CSA VDE	250	15	
PRESSURE SWITCH	HERGA	6871-OEO-U126	UL CSA		21	
LED BEACON	SJE-RHOMBUS	1023163	UL	120		

Table 4. Enclosure Specifications

Description	Make	Model #	Electrical Certifications	Overall Dimensions	Interior Dimensions	Material	Type
ENCLOSURE BOX	CARLON	NL884B	UL LISTED CSA	8X8X4		POLYCARBONATE	
ENCLOSURE COVER	CARLON	NJ88L	UL LISTED CSA	8X8		POLYCARBONATE	

Table 5. Miscellaneous Component Specifications

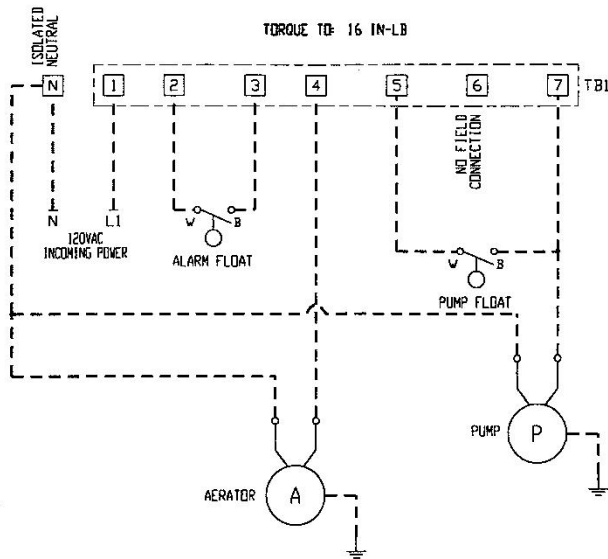
Description	Make	Model #	Electrical Certifications						
GROUND LUG	ILSCO	TA-6-S	UL 486A/B 90° C Listed and is CSA certified.						
TERMINAL BLOCK	SCHNEIDER ELECTRIC	9080GK6	CE CSA (LR62144/6228 01) UL listed (E60616/XCFR2)						
TERMINAL BLOCK	USD/COOPER/MAGNUM	TB300-07-SP	UL/CSA IEC COMPLIANCE CE CERTIFIED						



# Alarm/Control Panel Wiring Diagram p.1

Please provide wiring diagram to licensed electrician for making proper electrical connections. (A copy of this diagram is also provided inside NEMA 4X rated control panel enclosure).

Please Note: The basic Fuji Clean control panel does not come equipped with a timer or timing device. Please contact your distributor for this and other alarm/controller upgrade options.



BRANCH CIRCUIT PROTECTION, OVERLOAD PROTECTION AND MAIN DISCONNECT PROVIDED BY OTHERS AND MUST BE SIZED ACCORDING TO PUMP/MOTOR MANUFACTURING SPECIFICATIONS.



EXTERNAL COMPONENTS (COMPRESSOR AND/OR PUMPS) PROVIDED BY OTHERS AND MUST BE U.L. APPROVED THERMALLY PROTECTED PUMPS

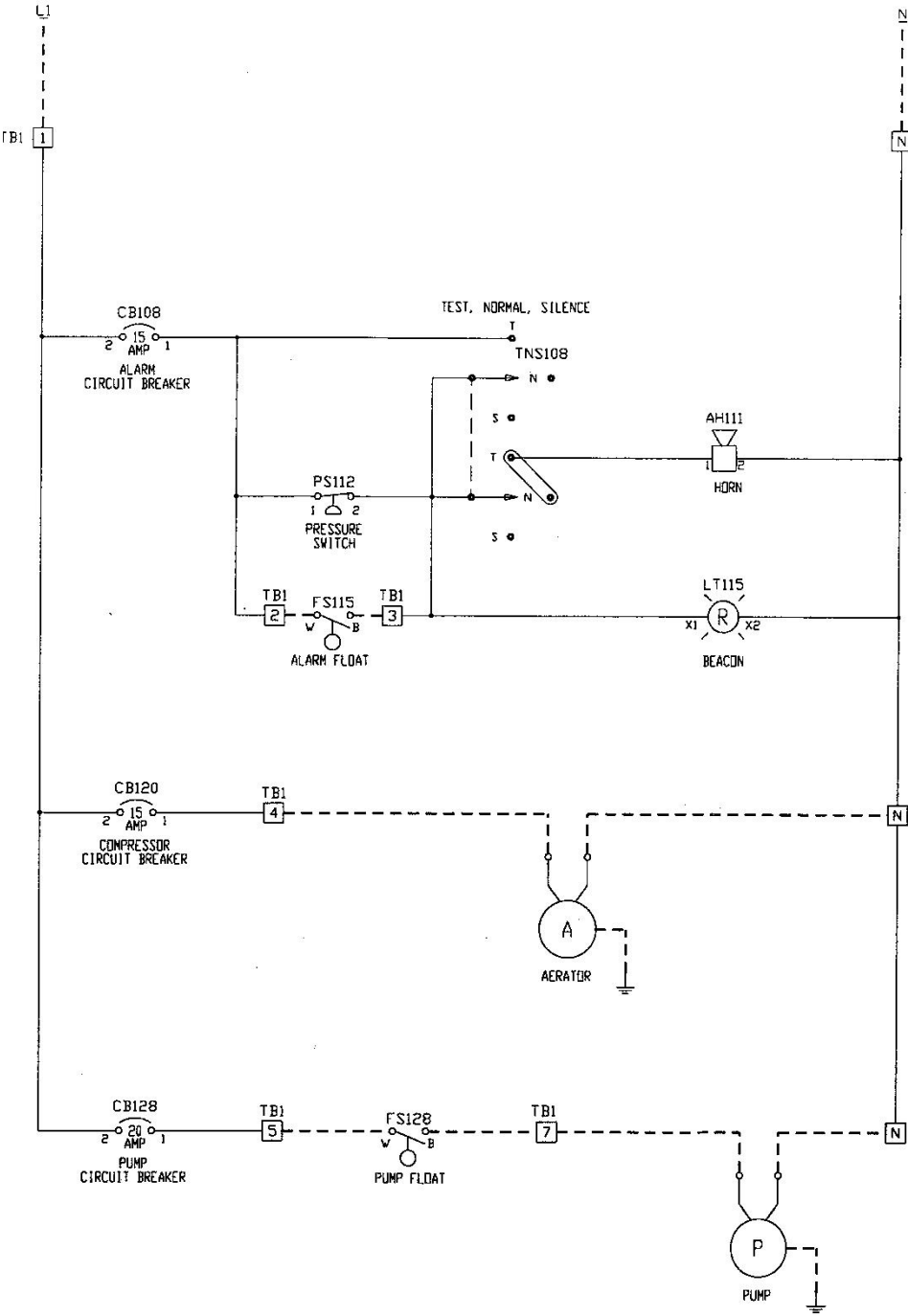
TEMPERATURE RATING OF FIELD INSTALLED CONDUCTORS MUST BE AT LEAST 140 DEG. F. (60 DEG. C.). TERMINAL STRIPS AND GROUND LUG USE COPPER CONDUCTORS ONLY.

CONNECT GROUND LUG IN PANEL TO A SECURE EARTH GROUND

DASHED LINES REPRESENT FIELD WIRING

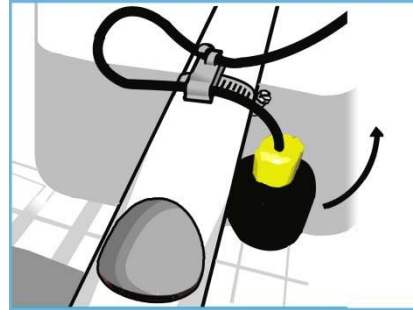
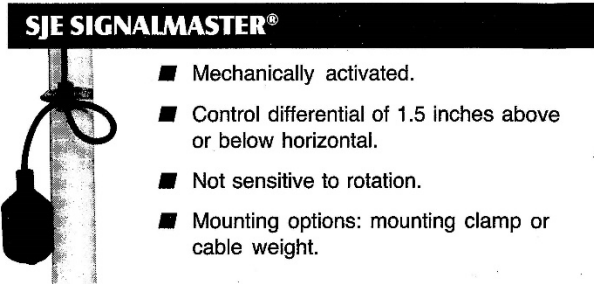
FIELD WIRING SECTION

# Alarm/Control Panel Wiring Diagram p.2



## Section 3e. System Components - Float Switch

The SJE Rhombus Signalmaster float switch may be pre-mounted in Fuji Clean USA treatment systems. In the event that the float switch needs to be installed or replaced, this information from SJE Rhombus is supplied for informed, proper handling during the installation process.



### Mounting the Switch

Install on the pumpback line using the provided hose clamp and mounting fixture in the center of Chamber 2, (Anaerobic Contact Filtration Chamber) with 3-1/2" (9 cm) of electrical cord tether.



**⚠ WARNING**  
**ELECTRICAL SHOCK HAZARD**  
 Disconnect power before installing or servicing this product. A qualified service person must install and service this product according to applicable electrical and plumbing codes.



**⚠ WARNING**  
**EXPLOSION OR FIRE HAZARD**  
 Do not use this product with flammable liquids. Do not install in hazardous locations as defined by National Electric Code, ANSI/NFPA 70.

Failure to follow these precautions could result in serious injury or death. Replace product immediately if switch becomes damaged or severed. Keep these instructions with warranty after installation. This product must be installed in accordance with National Electric Code, ANSI/NFPA 70 so as to prevent moisture from entering or accumulating with in boxes, conduit bodies, fittings, float housing, or cable.

#### PREVENTATIVE MAINTENANCE

- Periodically check the product. Check that the cable has not become worn or that the housing has not been damaged so as to impair the protection of the product. Replace the product immediately if any damage is found or suspected.
- Periodically check to see that the float is free to move and operate the switch.
- Use only SJE Rhombus replacement parts.
- The Sensor Float and Sensor Float Mini control switches contain mercury and MUST be recycle or disposed of according to local, state and federal codes.

## SJE-RHOMBUS® THREE-YEAR LIMITED WARRANTY

SJE-RHOMBUS® warrants to the original consumer that this product shall be free of manufacturing defects for three years after the date of consumer purchase. During that time period and subject to the conditions set forth below, SJE-RHOMBUS® will repair or replace, for the original consumer, any component which proves to be defective due to defective materials or workmanship of SJE-RHOMBUS®.

**THIS EXPRESS WARRANTY DOES NOT APPLY TO THE MOTOR START KIT COMPONENT. SJE-RHOMBUS® MAKES NO WARRANTIES OF ANY TYPE WITH RESPECT TO THE MOTOR START KIT.**

**ELECTRICAL WIRING AND SERVICING OF THIS PRODUCT MUST BE PERFORMED BY A LICENSED ELECTRICIAN.**

**THIS WARRANTY DOES NOT APPLY:** (A) to damage due to lightning or conditions beyond the control of SJE-RHOMBUS®; (B) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided; (C) to failures resulting from abuse, misuse, accident, or negligence; (D) to units which are not installed in accordance with applicable local codes, ordinances, or accepted trade practices, and (E) to units repaired and/ or modified without prior authorization from SJE-RHOMBUS®.

*Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.*

**TO OBTAIN WARRANTY SERVICE:** The consumer shall assume all responsibility and expense for removal, reinstallation, and freight. Any item to be repaired or replaced under this warranty must be returned to SJE-RHOMBUS®, or such place as designated by SJE-RHOMBUS®.

**ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. SJE-RHOMBUS® SHALL NOT, IN ANY MANNER, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AS A RESULT OF A BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.**

## Section 4. Maintenance Program

### **Scheduled Maintenance – General**

If sampling is required, please draw samples prior to maintenance protocol. Refer to Appendix 3 for proper sampling procedure.

Regularly scheduled maintenance by a qualified service professional is necessary for efficient operation of this system. The recommended frequency of scheduled maintenance is semi-annually and will typically take a service professional about 20 minutes to complete per visit. Proper maintenance also requires sludge be pumped out from the system on a periodic basis. The frequency of pump-out depends on the system's loading but is recommended approximately once every two years, and more frequently for systems that treat heavy flows and loads.

Consumable parts for the blower such as the blower diaphragms and air filter should be replaced regularly. The recommended replacement interval for these parts is 12 months, although site conditions (such as air quality) may warrant a longer or shorter interval.

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### **Regular Maintenance Procedures**

**1. Outside Environment Check. (Recommended frequency: start-up and 1x every 6 months)**

- The system is accessible and nothing inhibits access to maintenance.
- Surface water is draining away from risers and covers.
- No signs of physical damage to the treatment system, piping, alarms or components
- No unusual smells around the system.
- No unusually loud blower noise, such as rattling.

**2. Blower Box Check. (Recommended frequency: Start-up and 1x every 6 months)**

Open the blower box, make sure that it is operating properly.  
Inspect all fittings and vents to ensure they are clean and dry.

**3. Blower Operation and Blower Alarm Check. (Recommended frequency: Start-up and 1x every 6 months)**

Make sure the blower operates properly. Clean the air filter or replace it, if necessary. Turn off the blower for few moments to check that the alarm is triggered.

**4. Blower Consumable Components (Recommended frequency: air filter inspection 1x every 6 months. Diaphragm replacement as required.)**

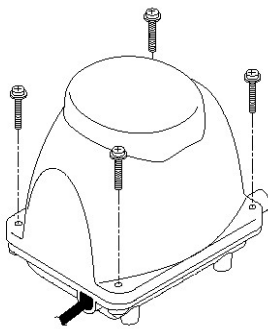
The blower contains an air filter and diaphragms, which are considered “consumables.” The air filter should be inspected and cleaned/replaced regularly. Diaphragms and their casings should be replaced regularly to maximize blower life and efficiency. The recommended frequency for each of these procedures is once annually. Please follow steps on the following page.

## Blower Air Filter Cleaning / Replacement Procedure

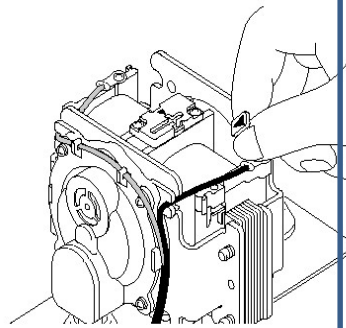
Replacing the blower air filter is very simple and consists of removing the filter cover with a Phillips screwdriver, removing the old, cleaning it (blow clean with air pressure) or replacing it with a new filter, and then screwing the cover back into place.



## Blower Diaphragm Replacement Procedure



**Step 1.** Remove cover bolts and screw with 8mm socket and screwdriver



**Step 2.** Remove autopiece stop as shown:

Removing auto-piece stop

①

Normal position.

②

Turn auto-stop piece and face ▲ symbol along slot.

③

Remove auto-stop piece from blower auto-stop holder.

Replacing auto-piece stop (see Step 9)

①

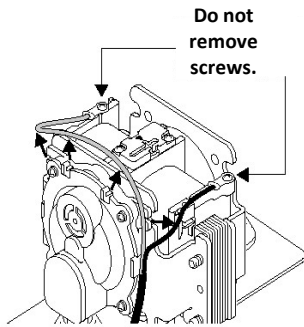
Face ▲ symbol s and slide auto-stop into holder.

②

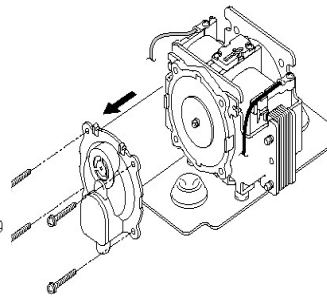
Push auto-stop until it clicks

③

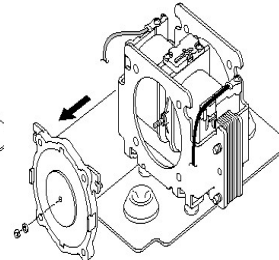
Ready for use



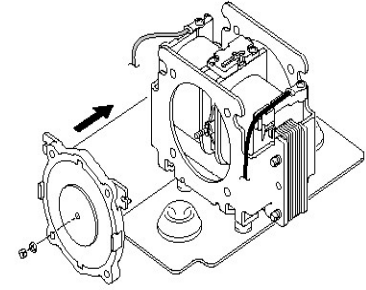
**Step 3.** Remove power cable from 4 hooks. **Do not remove screws.**



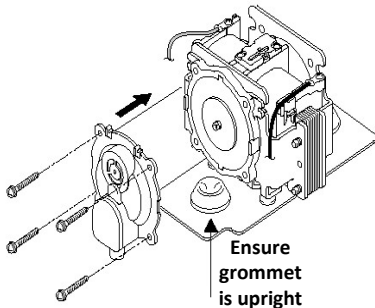
**Step 4.** Remove 4 screws from one casing.



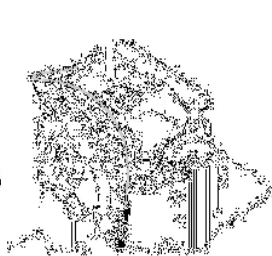
**Step 5.** Remove nylon nut and diaphragm from body



**Step 6.** Install new diaphragm using new nylon nut provided. Torque tighten to about 1 Nm.



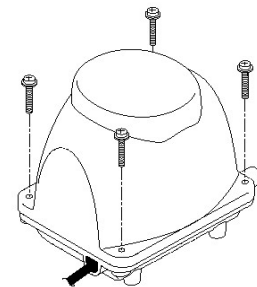
**Step 7.** Insert casing air outlet into rubber grommet. Secure with 4 screws. Repeat Steps 4-7 for 2<sup>nd</sup> diaphragm.



**Step 8.** Fit power cable onto 4 hooks.



**Step 9.** Re-set auto-piece stop as shown above



**Step 10.** Replace cover bolts and screw.

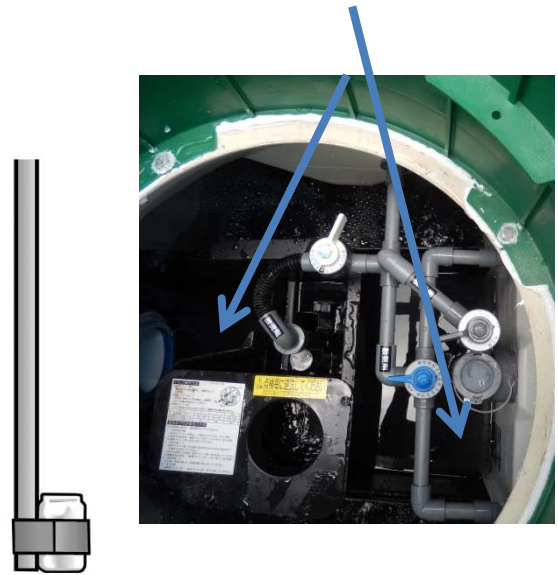


Open all access covers and secure the area around the access openings.

**5. Treated Effluent Check. (Recommended frequency: 1x every 6 months)**

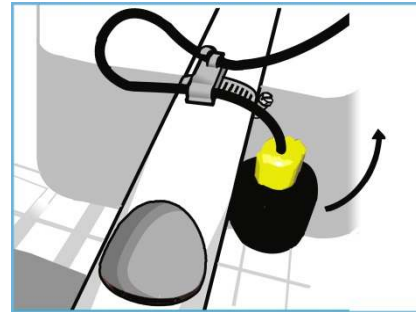
Collect a sample of treated effluent from the aeration chamber and evaluate for clarity and odor and pH. Sample should be nearly clear and with a faint musty smell. If sample is cloudy or exhibits a septic odor, then the system is not treating properly and requires maintenance. Please refer to the Troubleshooting Guide for direction. pH should be checked. If too low, procedures should be implemented to correct. (see Troubleshooting Guide).

Take samples from either "Storage Chamber"



**6. High Water Float Switch Check. (Recommended frequency: Start-up and 1x every 6 months)**

Check that the high water float switch is operating freely. Lift up the high water float switch to check that the alarm is triggered. (Note: Float's activation horizon is 1.5" above or below level horizon).



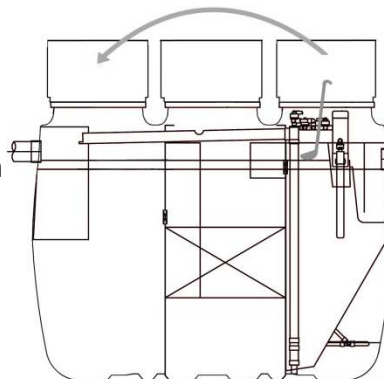
**7. Inflow Pipe Check. (Recommended frequency: Start-up and 1x every 6 months)**

Make sure that the inflow pipe is not blocked.



**8. Transfer Scum. (Recommended frequency: 1x every 6 months)**

If any scum appears in the Chamber 3, scoop with a ladle or a collection jar and transfer it into the sedimentation chamber.



Use ladle or sample jar to transfer scum back to Chamber 1.

**9. Set Recirculation Control Valve. (gray)  
(Recommended frequency: Start-up and 1x every 6 months)**

The recirculation valve (gray) should be set to its default setting range according to the table below for ALL flows.

Model	Default Setting (%)
CE5	30% to 35%
CE7	25% to 30%
CE10	25% to 30%
CEN5	40% to 45%
CEN7	35% to 40%
CEN10	35% to 40%

At start-up, and for standard operation, the Recirculation Control Valve (gray) should be set according to the table and instructions listed under Procedure #9. NOTE: CEN systems have a higher recirculation rate than CE systems.



CE Systems



CEN Systems

(Within the ranges shown in the table above, set at lower end for projected below average hydraulic flows and at the higher end for higher average projected hydraulic flows.)

Important! Normal recirculation flow should be level with the top edge of the airlift pumpback line cut-out spilling into Chamber 1. If backflow is too high or too low, this typically indicates that service cleaning is required (O&M Steps 12-16).



**10. Check/Set Aeration Balance Control Valve (blue).  
(Recommended frequency: Start-up and 1x every 6 months).**

The default, normal setting for the Aeration Control Valve is 50%. Visually observe the airflow rates on each side of the plant by checking to see if bubbles are evenly distributed on both sides of the aeration chamber. If there is an obvious discrepancy in airflow between the two sides, adjust the Aeration Balance Control Valve so that the airflow is equal. Important! If adjustment of this valve is ineffective, then the likely cause of uneven bubbles is usually a blockage in the aeration pipes and is corrected with aeration pipe cleaning: See O&M Step # 14.



At start-up, and for standard operation, the Aeration Balance Control Valve (blue) should be set to 50%,

**11. Check/Set Effluent Airlift Valve (white). (Recommended frequency: Start-up and 1x every 6 months)**

The Effluent Control Valve is initially set to 40% and there is typically no need for it to be adjusted under standard conditions.



At start-up, and for standard operation, the Effluent Airlift Valve (white) should be set to 40%. 20

**12. Backwash and Sludge Transfer. (Recommended frequency: 1x every 6 months)**  
Perform a backwash and sludge transfer operation.

Excessive biofilm growth on the contact and filter media (Chambers 2 and 3) may cause partial clogging or short circuiting and deteriorate the performance of the system. It is essential to carry out this backwash operation and sludge transfer at every maintenance visit.

**Step 1.** Shut off the Effluent Air-lift Pump by turning the Effluent Control Valve (white valve) clockwise until it won't turn any more.



**Step 2.** Transfer the sludge on the bottom of the aeration chamber by turning the Recirculation Control Valve (grey valve) to 70-80 and wait for one minute.



**Step 3.** Reset the Recirculation Control Valve (grey valve) to the original position.



CE Systems



CEN Systems

**Step 4.** Aerate one side of the chamber by turning the Aeration Balance Control Valve (blue valve) fully one way. Wait for one minute, and then turn the valve fully to the opposite direction. Wait for another minute, and then reset the valve to the original position



**Step 5.** Repeat Steps 2 - 4 three times.

**Step 6.** Final repeat of Step 2.

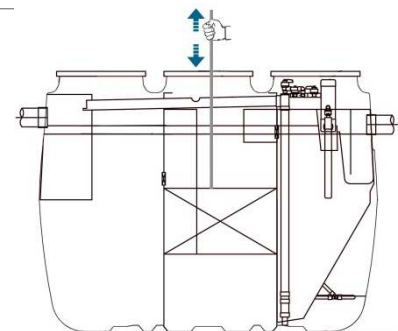
**Step 8.** Flush the Effluent Control Valve (white) by rotating the valve back and forth from 0 to 100 several times.



**Step 9.** Reset the Recirculation Control Valve (grey valve) and the Effluent Control Valve (white valve) to their original positions. Make sure that the aeration is working properly.



**Step 10.** Poke and penetrate into the anaerobic filtration media with a small diameter PVC pipe (e.g. ½-inch) gently and evenly throughout Anaerobic Filtration Chamber for media degassing. This is a simple but essential procedure to assure uniform media contact and filtration.



**13. Check / Clean Effluent Airlift Pipe. (Recommended frequency: Start-up and 1x every 6 months)**

Check the observation port in the airlift line to see if there is smooth water flow from the effluent airlift pump. If there is uneven flow or a disruption in flow, then clean the airlift pipe with a cleaning brush.



**14. Clean Recirculation Air-lift Pump (Recommended frequency: 1x every 6 months)**

Excessive biofilm build-up in the recirculation air-lift pump may affect the recirculation rate. Remove the plastic cap on the air-lift head, clean inside the pipe with a pipe cleaning brush. Also clean the recirculation pumpback line as shown.



**15. Cleaning Aeration Pipes (Recommended frequency: 1x every 6 months or as required)**

Aeration Pipes should be cleaned especially if bubbles are unevenly distributed even after adjusting the aeration balance or the recirculation flow rate has increased considerably without resetting Recirculation Valve (gray valve).

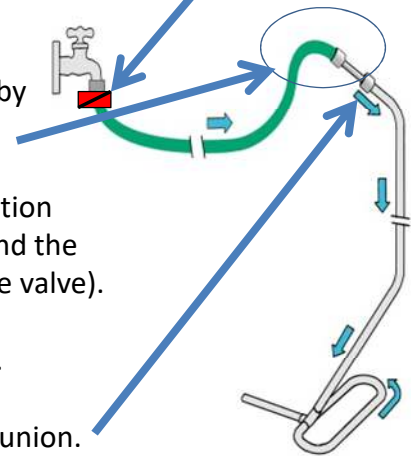
**Preparation: Backflow prevention must be installed on the hose!**

Use hose adaptor supplied by Fuji Clean USA.

**Step 1.** Close the Recirculation Control Valve (grey valve) and the Effluent Control Valve (white valve).

**Step 2.** Turn off the blower.

**Step 3.** Disconnect a barrel union.



**Clean With Hose: (Use for standard cleaning)**

Attach adaptor with check valve (provided by manufacturer) to garden hose and connect with aeration pipe. Run water from spigot for 1 minute. Repeat for the 2<sup>nd</sup> aeration pipe.

**Remember: backflow prevention must be installed to the faucet first.**

**Step 4.** Reconnect aeration pipes, turn on blower and re-set standard valve settings (see O&M Procedure #'s 10-12)

## 16. Measure Sludge and Pump Out if Necessary (Recommended frequency: 1x every 2 years or as required)

Sludge removal is required to remove accumulated solids from the treatment system. Since the frequency of sludge removal varies widely based on individual system use, it is difficult to provide “standard” pump-out frequency intervals, although as a general rule, we recommend a sludge removal interval once every 2 years. System conditions indicating the necessity for pump out include the following:

- Biological treatment performance is severely deteriorated due to excessive amounts of oil or chemicals which interfere with the bacterial activity.
- Excessive scum or sludge builds up in the sedimentation chamber. Specifically, for residential models, when sludge levels reach more than 35-inches in Chamber 1 (Sedimentation Chamber) or more than 16-inches in Chamber 2 (Anaerobic Contact Filtration Chamber). Please contact your distributor for a sludge measuring tool if necessary.
- Abnormal rise of the water level
- Excessive scum builds up in Chamber 2, the Anaerobic Filtration Chamber and large amounts of solids flow into Chamber 3, the Aerobic Filtration Chamber, even after performing a sludge transfer operation (O&M procedure #12).

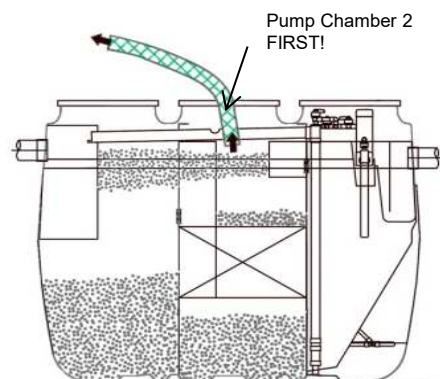
### Pumpout and Desludging Procedures

**Step 1.** Turn off all electrical components.

**Step 2.** Clean the inlet and outlet pipe.

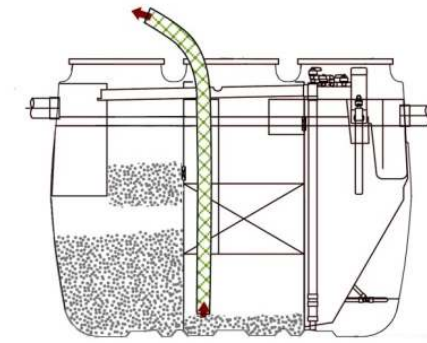
**Step 3.** Transfer suspended solids and scum from Chamber 3 and 3A back to Chamber 1.

**Step 4.** With pumpout hose, remove scum and sediment build-up on the filtration media from Chamber 2 **FIRST!** Otherwise you risk solids being drawn up into the media in Chamber 2.

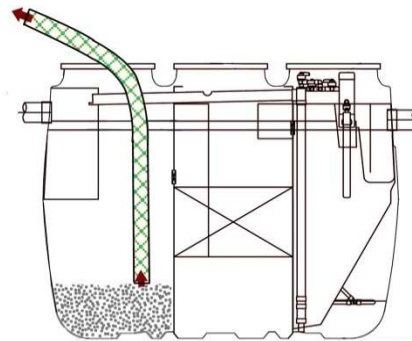
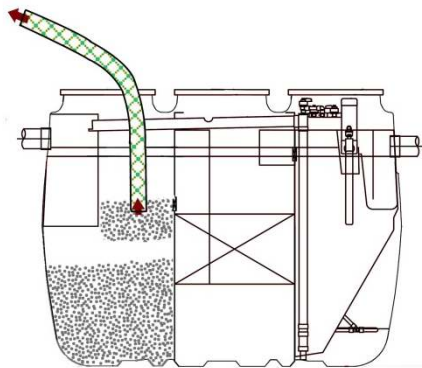




**Step 5.** Insert suction hose into the baffle. Remove sludge from the bottom Chamber 2 while washing the filtration media and chamber wall with high pressure water.



**Step 6.** Remove scum and sludge in the sedimentation chamber.



**Step 7.** Re-fill the system with water to LWL.

**Low water line in Chamber 1**



**Step 8.** Turn on all electrical components.



**INDIANA SYSTEM INSPECTION CHECKLIST REPORT ~ FujiClean CE & CEN Systems**

To be completed by authorized service provider at each inspection/service visit--once every 6 months..Please follow the O&M Maintenance Program in the Fuji Clean O&M Manual..Contact Fuji Clean USA with questions, comments and/or troubleshooting assistance..Authorized Service Provider must maintain a copy of this report in records.

SYSTEM SITE	MAINTENANCE PROVIDER
Name: _____	SERVICE DATE: _____
Address: _____	Name: _____
_____	Company: _____
Town/State: _____ <b>INDIANA</b>	Town/State: _____
Contact: _____	License No: _____
Contact Info: _____	Contact Info: _____

<b>SERVICE PROCEDURE / OPERATION</b>	<b>COMMENT / DATA / OBSERVATION (use reverse side)</b>
<input type="checkbox"/> 1. Outside Environment Check → → → →	_____
<input type="checkbox"/> 2. Blower Box Check → → → →	_____
<input type="checkbox"/> 3. Blower Operation and Blower Alarm Check → →	_____
<input type="checkbox"/> 4. Replace blower Consumable Components if nec. →	_____
<input type="checkbox"/> 5. Treated Effluent Check	
Clarity (Required) → → → →	_____
Odor (Required) → → → →	_____
pH (Required) → → → →	_____
DO (Recommended) → → → →	_____
<input type="checkbox"/> 6. High Water Float Switch Check → →	_____
<input type="checkbox"/> 7. Inflow Pipe Check → → → →	_____
<input type="checkbox"/> 8. Transfer Scum to Sedimentation Chamber →	_____
<input type="checkbox"/> 9. Check/Set Recirculation Control Valve →	_____
<input type="checkbox"/> 10. Check/Set Aeration Balance Control Valve →	_____
<input type="checkbox"/> 11. Check/Set Effluent Airlift Valve → →	_____
<input type="checkbox"/> 12. Backwash and Sludge Transfer (Important!) →	_____
<input type="checkbox"/> 13. Check/Clean Effluent Airlift Pipe → →	_____
<input type="checkbox"/> 14. Check/Clean Recirculation Airlift Pipe → →	_____
<input type="checkbox"/> 15. Clean Aeration Pipes (if necessary) → →	_____
<input type="checkbox"/> 16. Measure Sludge and Pump out if necessary*	
→ Sedimentation Chamber (Chamber 1) → →	_____
→ Anaerobic Chamber (Chamber 2) → →	_____
<input type="checkbox"/> 17. Check Flow Monitor Component (if Applicable) →	_____

**Pump-out reminder.**..If 35<sup>g</sup> or more of sludge accumulates in the Sedimentation Chamber (1<sup>st</sup> chamber) or 16<sup>g</sup> or more in the Anaerobic Chamber (2<sup>nd</sup> chamber), the system should be pumped.. Pump Anaerobic Chamber (2<sup>nd</sup> chamber) first, followed by the Sedimentation Chamber (1<sup>st</sup> chamber)..Please refer to Fuji Clean USA O&M Manual.

## TROUBLESHOOTING

### General

SYMPTOM	SOLUTION
Water is ponding around risers and covers	Landscaping is necessary (possibly involving addition of fill material) so that water drains away from risers and covers. Note: risers may be added to the unit as necessary, but service personnel must be able to reach into the unit and move controls. Recommended maximum riser height is 24-inches.
Strong and unusual odor exists even with the manhole lids closed.	<p>During the first few weeks of operation there may be noticeable odor from the system. This should cease once the bacteria are established.</p> <p>If odor persists, seeding material may be added to both anaerobic and aeration chambers, and/or the recirculation rate may be increased to 35%, the upper end of the normal operation range.</p> <p>If odor continues to persist, please contact manufacturer for instructions. Installation of a vent may be necessary.</p>
Blower is making an unusually loud noise	Normal blower operation is quiet. Typically a loud or rattling blower noise is created when the blower is in contact with its housing, or has slipped off its base platform.

## TROUBLESHOOTING

### Chamber 1. Sedimentation Chamber

SYMPTOM	SOLUTION
Inlet pipe is blocked	Remove the blockage.
Excessive scum accumulations. (Scum layer reaches the top of the influent baffle)	Measure sludge level. If the depth of sludge accumulation is less than 24-inches (or 18-inches in Chamber 2), break the scum layer, otherwise have the plant pumped out.
Excessive sludge accumulations. (Depth of sludge layer exceeds 24-inches)	If the sludge exceeds the holding capacity, have the plant pumped out.
Foreign materials, excessive oil or fat entering the system.	Remind the homeowner to refrain from disposing harmful substances into their system. (Please refer to Homeowner's Manual for listing.)

## TROUBLESHOOTING

### Chamber 2. Anaerobic Filtration Chamber

SYMPTOM	SOLUTION
Excessive scum accumulation. (less than 4-inches)	If Chamber 1, the Sedimentation Chamber still has the remaining sludge holding capacity, (less than 24-inches of sludge build-up), transfer the scum to the sedimentation chamber, otherwise have the plant pumped out.
Excessive scum accumulation. (more than 4-inches)	Have the plant pumped out.
Excessive sludge accumulations	If the bottom sludge layer is thicker than 18-inches and excessive sludge has accumulated on the filtration media, have the plant pumped out.
Filtration media is blocked up. (The water level in Chamber 2's media is lower than that in the baffle.)	<p>Perform a degassing operation on the filtration media. (Poke media with a section of PVC pipe. See O&amp;M procedure #12).</p> <p>If the problem still persists even after the degassing and sludge transfer operation, pressure wash the filtration media using an effluent pump and hose affixed to a PVC pipe.</p>
Foreign materials, excessive oil or fat entering the system.	Remind the homeowner to refrain from disposing prohibited substances and limited-use substances.

# TROUBLESHOOTING

## Chamber 3. Aerobic Contact Filtration Chamber

SYMPTOM	SOLUTION
Bubbles are not evenly distributed throughout the chamber or there are no bubbles at all.	<ul style="list-style-type: none"><li>• Adjust the aeration control valve.</li><li>• Check to make sure that there is no leakage from the aeration pipework.</li><li>• Check to make sure that the blower operates properly.</li><li>• Clean the aeration pipes</li><li>• Perform a backwash operation. (O&amp;M Procedure #12).</li></ul>
Dissolved Oxygen is less than 1.0mg/L.	<ul style="list-style-type: none"><li>• Check to make sure that the blower operates properly.</li><li>• Perform a backwash operation. (O&amp;M Procedure #12).</li></ul>
Recirculation rate is unable to be adjusted or no recirculation at all.	<ul style="list-style-type: none"><li>• Adjust the recirculation control valve.</li><li>• Check to make sure that there is no leakage from the aeration pipework.</li><li>• Check to make sure that the blower operates properly.</li></ul>
Recirculation flow rate is too high	<ul style="list-style-type: none"><li>• Clean the aeration pipes</li></ul>
Recirculation flow rate is too low	<ul style="list-style-type: none"><li>• Clean the recirculation airlift pump.</li></ul>
Excessive foaming.	<ul style="list-style-type: none"><li>• Some foaming may occur during the early stage of operation. This should cease once the bacteria are established. Seeding may also be effective. Please contact your distributor for additional seeding information.</li></ul>
Excessive suspended solids.	<ul style="list-style-type: none"><li>• Perform a backwash operation.</li></ul>
Cold water is hampering treatment	<p>The following measures will allow greater oxygen penetration into biofilm.</p> <ul style="list-style-type: none"><li>• Increase frequency of backwash</li><li>• Increase blower size</li><li>• Perform desludge operation (i.e. sludge pumpout)</li></ul>



# TROUBLESHOOTING

## Chamber 3a. Storage Chamber

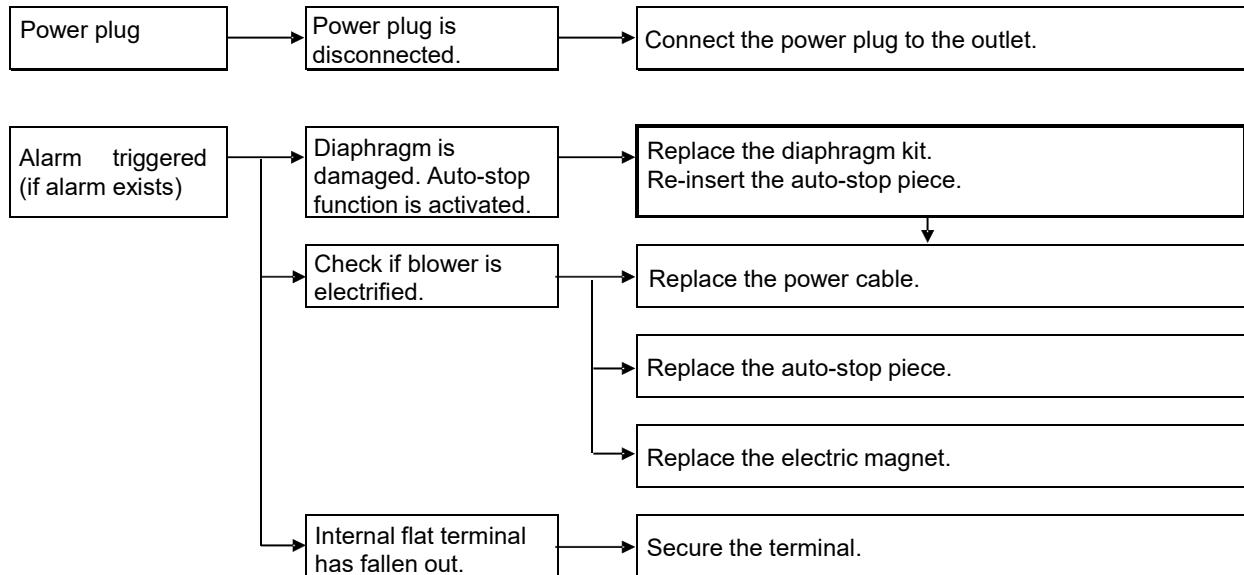
SYMPTOM	SOLUTION
Scum forming.	<ul style="list-style-type: none"><li>• Transfer the scum to Chamber 1, the Sedimentation Chamber, using a pump, ladle or suitable container.</li><li>• Increase the recirculation rate (within the normal operating range).</li></ul>
Excessive sludge accumulations.	<ul style="list-style-type: none"><li>• Transfer the sludge to Chamber 1, the Sedimentation Chamber, using a pump, ladle or suitable container.</li></ul>
Ph is too low or too high. (Ph < 5.8 or Ph > 8.6)	<ul style="list-style-type: none"><li>• Check to make sure the recirculation rate is appropriate.</li><li>• Remind homeowner of what cannot be put into this system (refer to Homeowner's Manual).</li><li>• Install a slow-release lime dispersal system into the sedimentation chamber to raise the pH. Please contact Fuji Clean USA for details.</li></ul>
Excessive biofilm on the chamber wall.	<ul style="list-style-type: none"><li>• Clean the wall with brush or water pressure and transfer solids to the sedimentation chamber.</li></ul>
Effluent airlift pump is not working.	<ul style="list-style-type: none"><li>• Clean the airlift pump.</li><li>• Flush the effluent control valve.</li><li>• Check to make sure there is no leakage from the blower pipework.</li><li>• Check to make sure that the blower operates properly.</li></ul>

# TROUBLESHOOTING

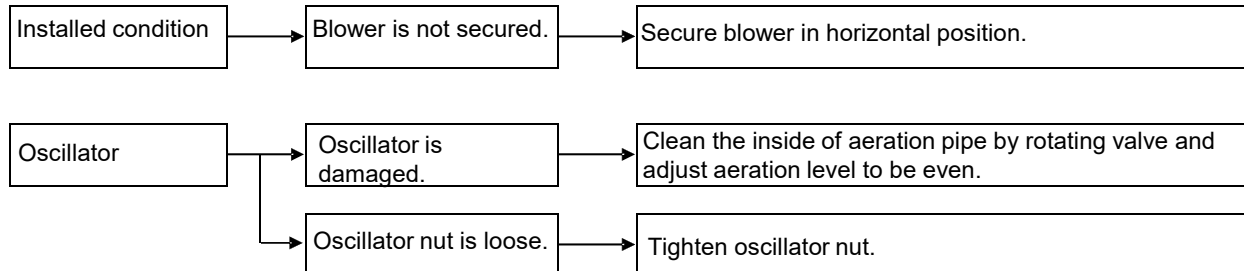
## Air Blower

**What to observe                      Status                      How to solve the problem**

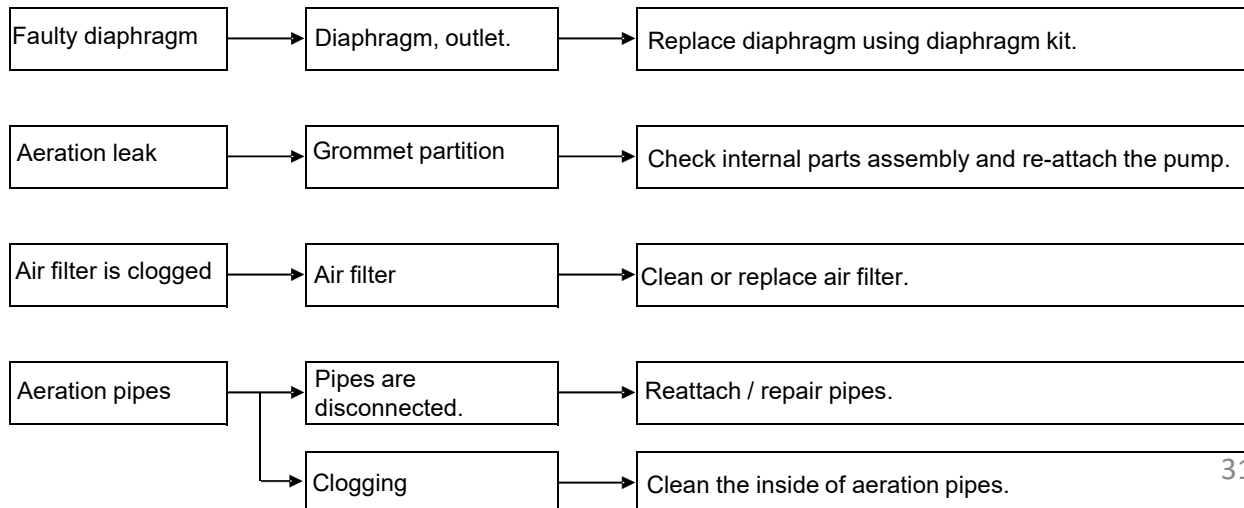
### Blower is not working



### Blower is making an abnormal or excessive operating noise.



### Low air volume or misplaced air from aeration pipes (treatment plant)





## H. Indiana Authorized Providers

### 1. Authorized Indiana Service Providers (to date):

- a. Tim Shopp,  
TJ Misc., Inc.  
2989 County Road 43, Waterloo, IN 46793  
Tel: 260-868-1043 (office); 260-417-1786 (mobile)

### 2. Authorized Indiana Installers (to date)

- a. Tim Shopp,  
TJ Misc., Inc.  
2989 County Road 43, Waterloo, IN 46793  
Tel: 260-868-1043 (office); 260-417-1786 (mobile)

### 3. Design and Installation Training

Installation training and certification will be provided by TJ Misc.. Inc. to designers, installers and those involved in permitting onsite systems. Training and certification is required prior to installation. TJ Misc. will provide certification and evidence of training and a copy of that certification and evidence will be maintained by TJ Misc. and will be provided to ISDH. TJ Misc. will directly supervise the first system installation for each installer to ensure that designs / installation instructions are being followed.

### 4. Operation and Maintenance Training:

Operation and Maintenance training and certification will be provided by TJ Misc. Inc. TJ Misc. will provide evidence of training and a copy of that evidence will be maintained by TJ Misc. Inc. and will be provided to ISDH. All authorized service providers shall follow provisions outlined in the Fuji Clean USA Indiana TNI Approval and Local Health Department requirements.

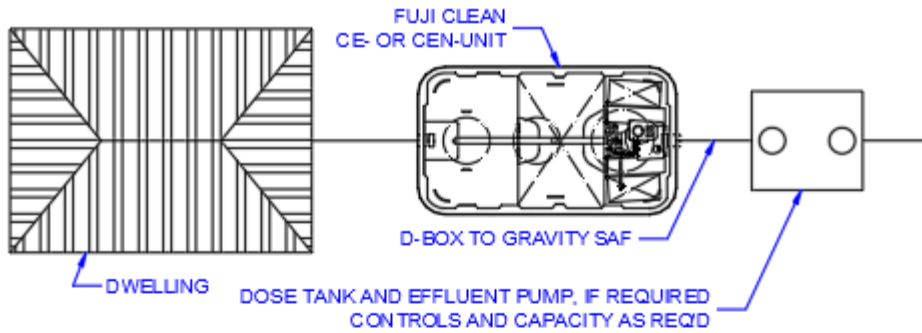
### 5. Notification:

ISDH shall be notified at least 10 working days in advance of any scheduled training events.

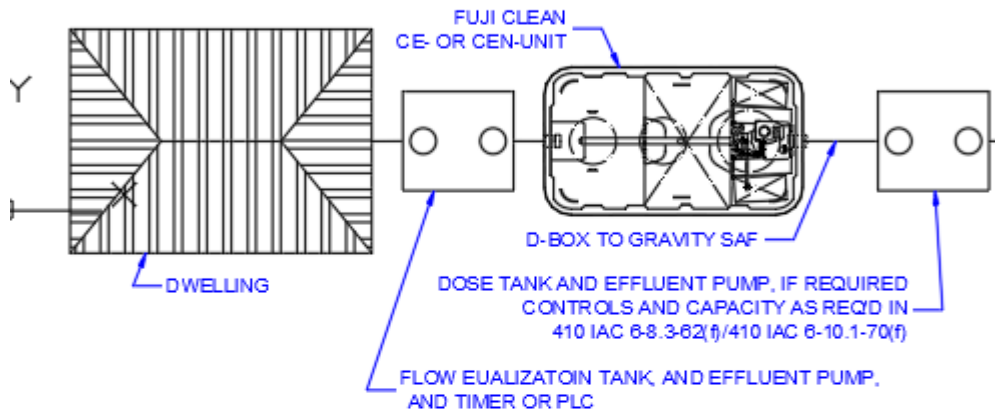
### 6. Additional Providers:

Fuji Clean USA, LLC, is committed to providing additional service providers as market demands increase.

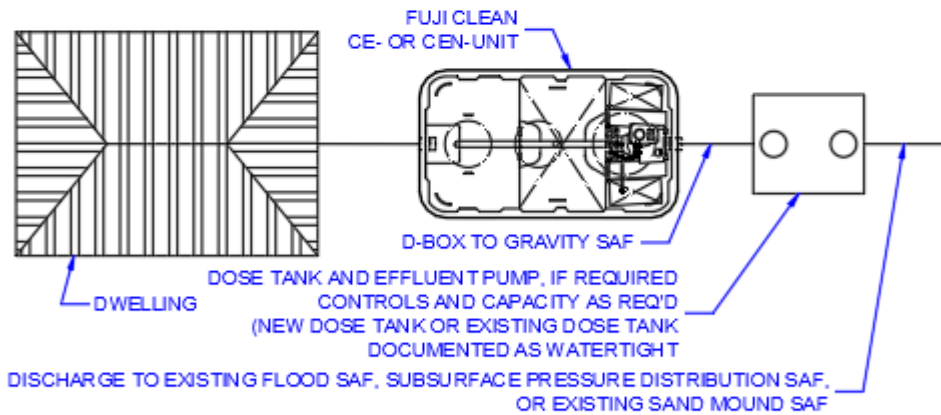
**DESIGN CONFIGURATION 1.A: TREATMENT UNIT**



**DESIGN CONFIGURATION 1.B: FLOW EQUALIZATION OF TREATMENT UNIT**



**DESIGN CONFIGURATION 1.C: REMEDIATION OR ADDITION TO AN EXISTING RESIDENTIAL SAF**



**DESIGN CONFIGURATION 2.A: TREATMENT UNIT AND DOSING OF THE SDS SAF**

