



## Operation and Maintenance Manual

Commercial Systems  
CE and CEN Models  
(Except Model CE6KG)

Rev. 11/24/20



Certified to  
NSF/ANSI Standards 40 & 245



## Operation and Maintenance Manual – Commercial Systems

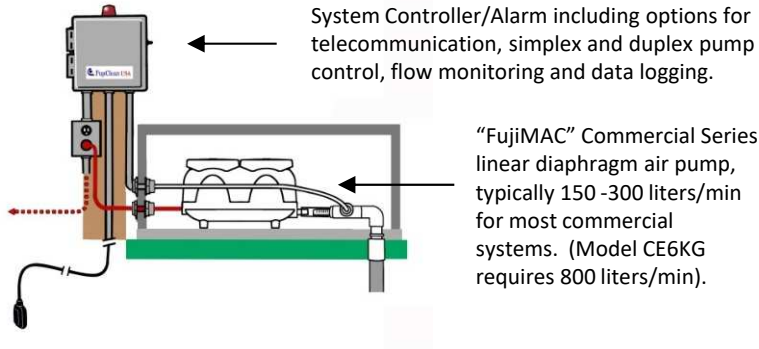
### Introduction

This manual describes operation and maintenance (O&M) procedures necessary to assure proper function and operation of Fuji Clean wastewater treatment systems, including start-up and routine procedures. The manual is divided into the following sections:

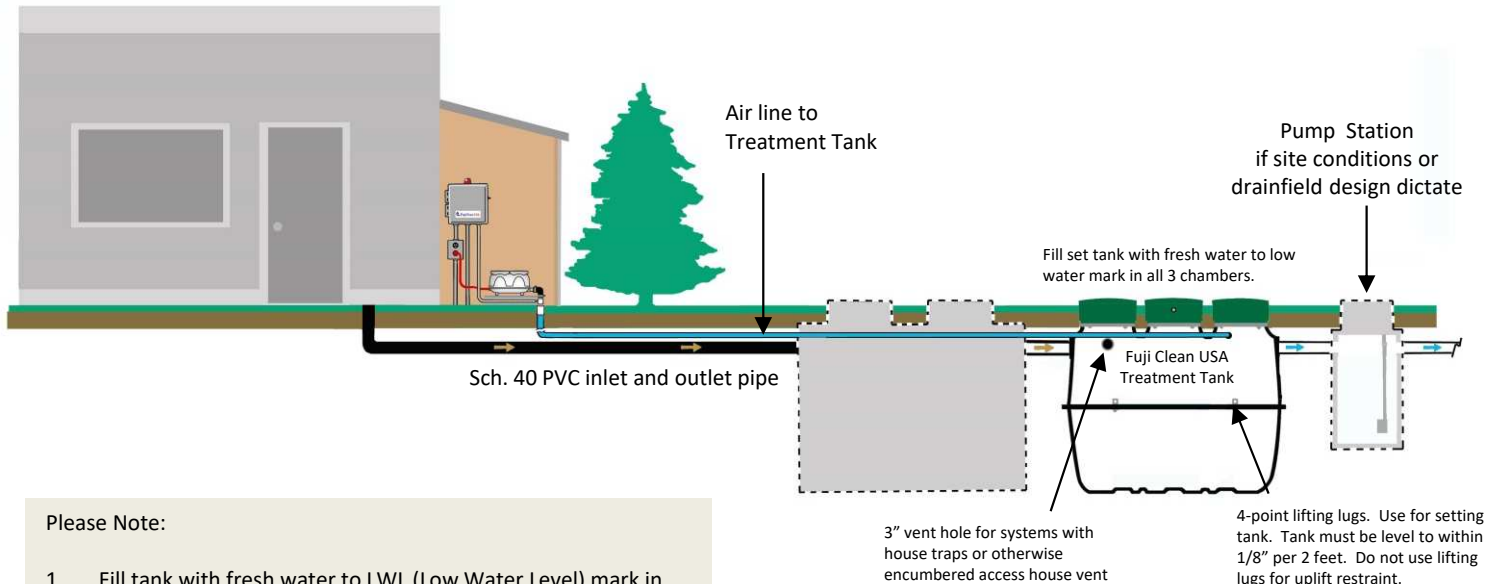
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# Section 1. Installation Overview



Systems may be clustered in parallel configuration for treatment of larger flows. Multiple system configurations may be controlled independently or by one customized controller.

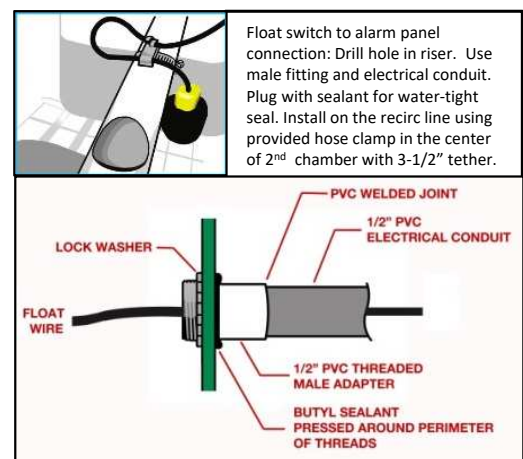


## Please Note:

1. Fill tank with fresh water to LWL (Low Water Level) mark in all three chambers once tank is set.
2. See Installation Manual for uplift restraint detail.
3. "Clearwater" water softener backwash should be discharged directly to footer or separate drywell (if regulations allow) or diverted around Fuji Clean system to drainfield.
4. Use licensed electrician for final wiring.
5. Using grommets or a waterproof adhesive, affix NSF labels in two locations, inside the inlet riser and on the inside of the controller. (Applicable for models up to CE14 and CEN14).



7. Installing contractor responsible for final landscaping, seeding etc. Be certain that final grade pitches away from treatment tank covers.
8. Final inspection and startup shall be the responsibility of the Fuji Clean USA certified O&M provider.
9. Homeowner/User Manual must be provided to and reviewed with system owner to assure proper use.
10. Warranty Card (orange card supplied by Fuji Clean USA), must be returned to Fuji Clean USA to activate warranty.





## Section 2. Treatment Process Overview

Fuji Clean's "contact filtration" treatment is a simple, well engineered process that consists of a controlled, circuitous flow train through anaerobic 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.

### Treatment Process

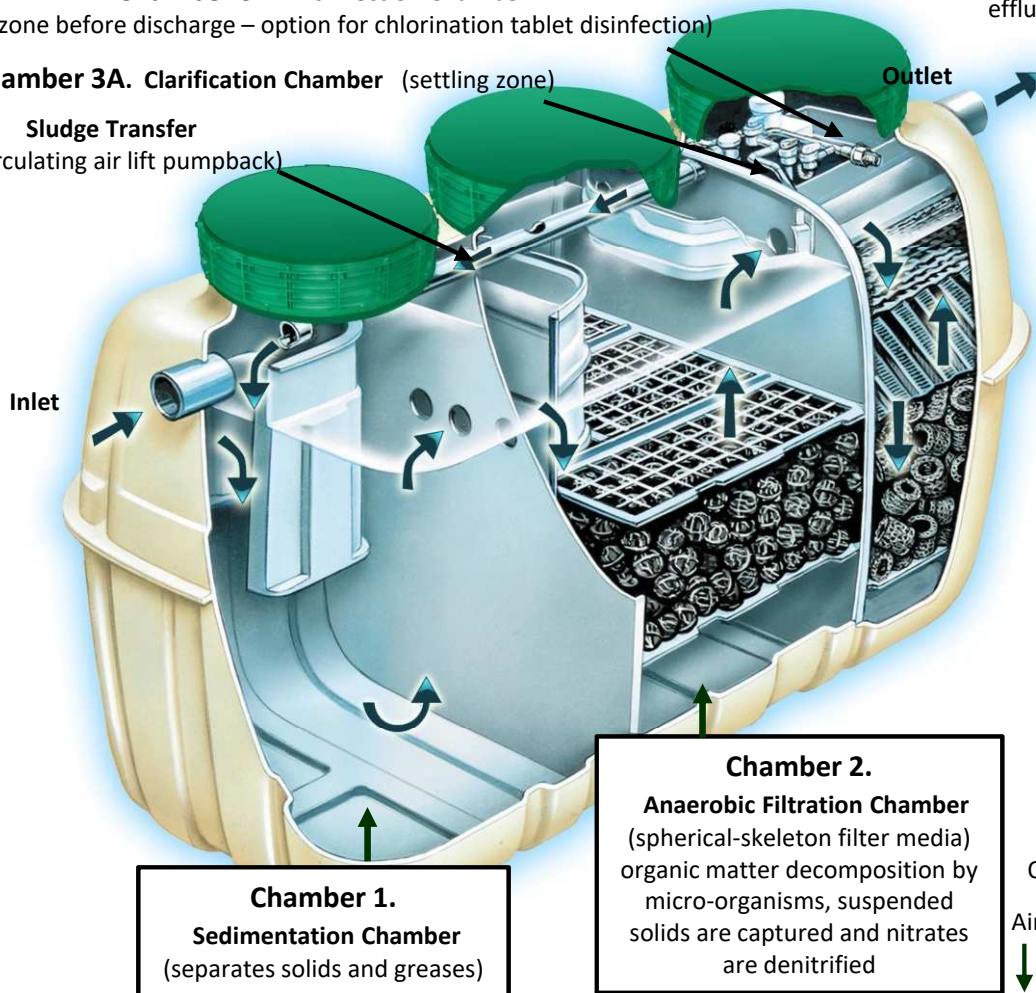


### Chamber 3B. Disinfection Chamber

(final zone before discharge – option for chlorination tablet disinfection)

### Chamber 3A. Clarification Chamber (settling zone)

Sludge Transfer  
(Recirculating air lift pumpback)



#### Chamber 1.

#### Sedimentation Chamber

(separates solids and greases)

#### Chamber 2.

#### Anaerobic Filtration Chamber

(spherical-skeleton filter media) organic matter decomposition by micro-organisms, suspended solids are captured and nitrates are denitrified



**Powered by the MACBlower "RIL" 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 Commercial systems.

### Chamber 3. Aerobic Contact Filtration Chamber

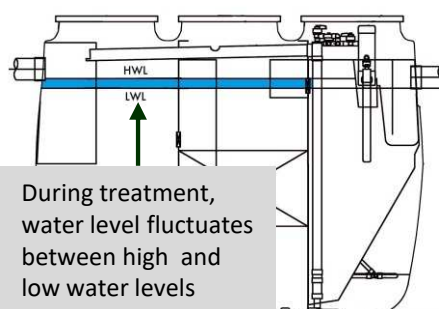
(both board and cylindrical hollow mesh media) oxygen rich zone for aerobic microbe digestion activity, solids filtration and nitrification of ammoniac nitrogens to nitrates

Overflow Effluent Weir

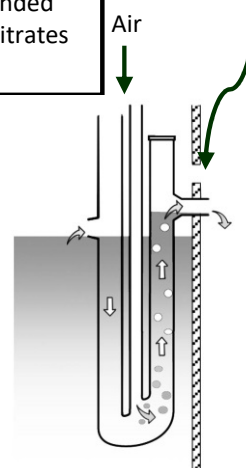
### Flow Equalization

When water level exceeds LWL, treated water is discharged through Chamber 3B via the Effluent Air Lift pump. If water level exceeds HWL, then treated water is also discharged through an overflow effluent weir.

**Airlift Pumps.** This generic illustration shows the mechanics of the "airlift pumps" used in this system, which are simple pipe conduits through which pressurized air (from blower) is introduced at the bottom and by fluid pressure, water is carried up the pipe by ascending bubbles.



During treatment, water level fluctuates between high and low water levels



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

Design Specification Table	CE Series BOD, TSS, TN*							CEN Series BOD, TSS, Enhanced TN				
Model:	CE5	CE7	CE10	CE14	CE21	CE30	CE6KG	CEN5	CEN7	CEN10	CEN14	CEN21
Load Hydraulic (GPD)	500	700	1,000	1,350	1,900	2,700	6,000	500	700	1,000	1,350	1,900
<b>Effluent (assumes domestic strength influent):</b>												
BOD – Effluent (mg/L)	≤20	≤20	≤20	≤20	≤20	≤20	≤20	≤10	≤10	≤10	≤10	≤10
TSS (mg/L)	≤20	≤20	≤20	≤20	≤20	≤20	≤20	≤10	≤10	≤10	≤10	≤10
TN (mg/L)	*≤20	*≤20	*≤20	*≤20	*≤20	*≤20	*≤20	≤10	≤10	≤10	≤10	≤10
<b>Blower Detail:</b>												
Blower Model	80RII	80RII	100RII	150RII	200RII	150RII (2)	200RII (4)	80RII	100RII	150RII	200RII	150RII (2)
Normal Pressure (kPa)	15	15	18	20	20	20	20	15	18	20	20	20
CFM; L/Min	2.8 CFM 80 L/MIN	2.8 CFM 80 L/MIN	3.5 CFM 100 L/MIN	5.3 CFM 150 L/MIN	7.0 CFM 200 L/MIN	10.6 CFM 300 L/MIN	28.0 CFM 800 L/MIN	2.8 CFM 80 L/MIN	3.5 CFM 100 L/MIN	5.3 CFM 150 L/MIN	7.0 CFM 200 L/MIN	10.6 CFM 300 L/MIN
Power Use (kWh/day)	1.2	1.2	1.7	2.7	3.7	5.4	14.8	1.2	1.7	2.7	3.7	5.4
Weight (lbs.)	11	11	11	20	20	20 x 2	20 x 4	11	11	20	20	20 x 2
Outlet Diameter OD-inches)	0.70	0.70	0.70	1.0	1.0	1.0	1.0	0.70	0.70	1.0	1.0	1.0
<b>Tank Detail:</b>												
Material	Fiber-reinforced plastic							Fiber-reinforced plastic				
Height (inches)	61.8	65.4	73.2	77.4	81.3	87.2	87.2	65.4	73.2	77.4	81.3	87.2
Length (inches)	85	95.7	98.8	118.9	152.8	183.7	434.7	95.7	98.8	118.9	152.8	183.7
Width (inches)	43.7	49.2	56.7	68.9	72.4	78.3	115.3	49.2	56.7	68.9	72.4	78.3
Weight (lbs.)	397	463	705	926	1,168	1,543	2,900	463	705	926	1,168	1,543
Inlet Invert (inches)	49	53	61	62	65	71	67	53	61	62	65	71
Outlet Invert (inches)	47	51	59	59.5	63	69	64	51	59	59.5	63	69
Access Ports (number)	3	3	3	3	3	3	7	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"	6@24"x24" " " 2@24"x48" " "	2@20" 1@24"	2@20" 1@24"	2@20" 1@24"	2@20" 1@24"	2@20" 1@24"
Volume Total (gallons)	545	749	1,069	1,498	2,252	3,199	7,239	749	1,069	1,498	2,252	3,199
* TN removal for CE systems based on field testing. Contact Fuji Clean USA for details.												

\* 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.

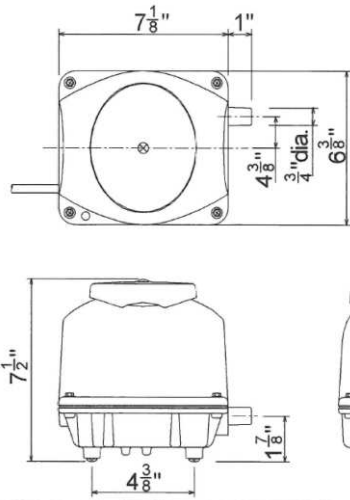
Structural drawings of all Commercial models are available in both .dwg and pdf formats online at [www.fujicleanusa.com](http://www.fujicleanusa.com)

## Section 3b. System Components – FujiMACR11 Blowers

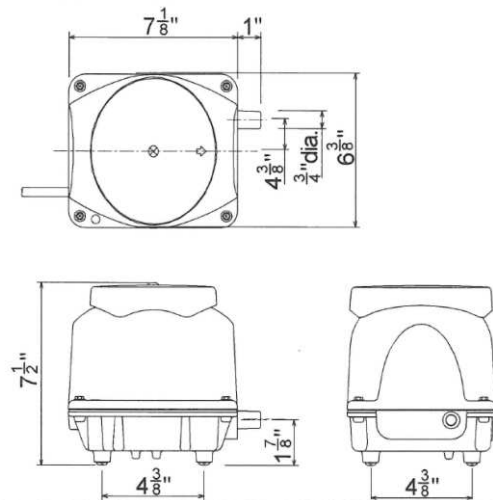
The Table below includes specifications for FujiMACR11 series blowers. The table below includes blower models associated with each standard system installation. Some installations may require upsized blowers based on overall distance (i.e. air conduit length and diameter) and number of elbows from blower to treatment system. Please refer to Fuji Clean installation guidelines.

Fuji Clean USA Treatment System Model	CE5 CE7 CEN5	CE10 CEN7	CEN10 CE14	CE21 CEN14	CE30 (2) CEN 21 (2)
MACBlower Model	FujiMAC 80RII	FujiMAC 100RII	FujiMAC 150RII	FujiMAC 200RII	FujiMAC 150RII x 2
Air Flow Volume	80 L/min 2.8 cfm	100 L/min 3.5 cfm	150 L/min 5.3 cfm	200 L/min 7.0 cfm	150 L/min 5.3 cfm x 2units
Normal Pressure	15 kPa 2.2 psi	18 kPa 2.6 psi	20 kPa / 2.9 psi		20 kPa 2.9 psi x 2units
Rated Voltage	120V				
Frequency	60Hz				
Weight	5.0kg 11 lbs.		9.0kg 20 lbs.		9.0kg 20 lbs. x 2units
Power Consumption kWh/day	1.2kWh/day	1.7kWh/day	2.7kWh/day	3.7kWh/day	2.7kWh/day x 2 units
Amperes	1.0A	1.7A	2.3A	3.1A	2.3A x 2 units
Power Cable	3 × 18AWG × 6ft.2in. (1.88m)				

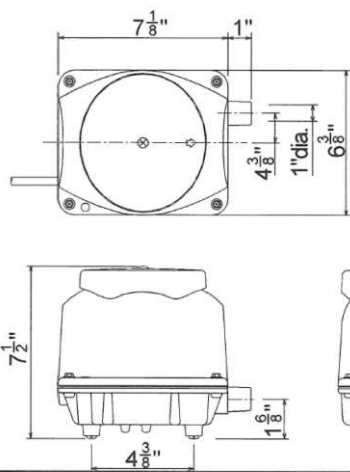
□MAC40RII



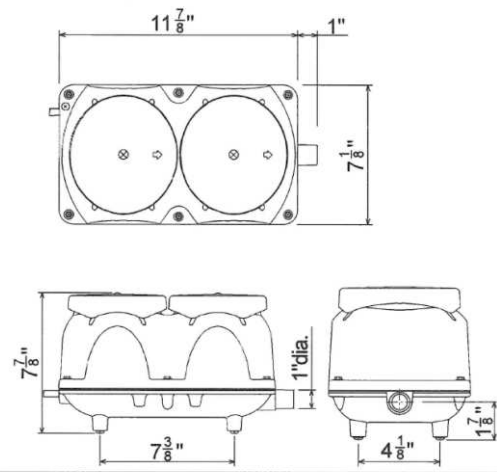
□MAC60RII/80RII/100RII



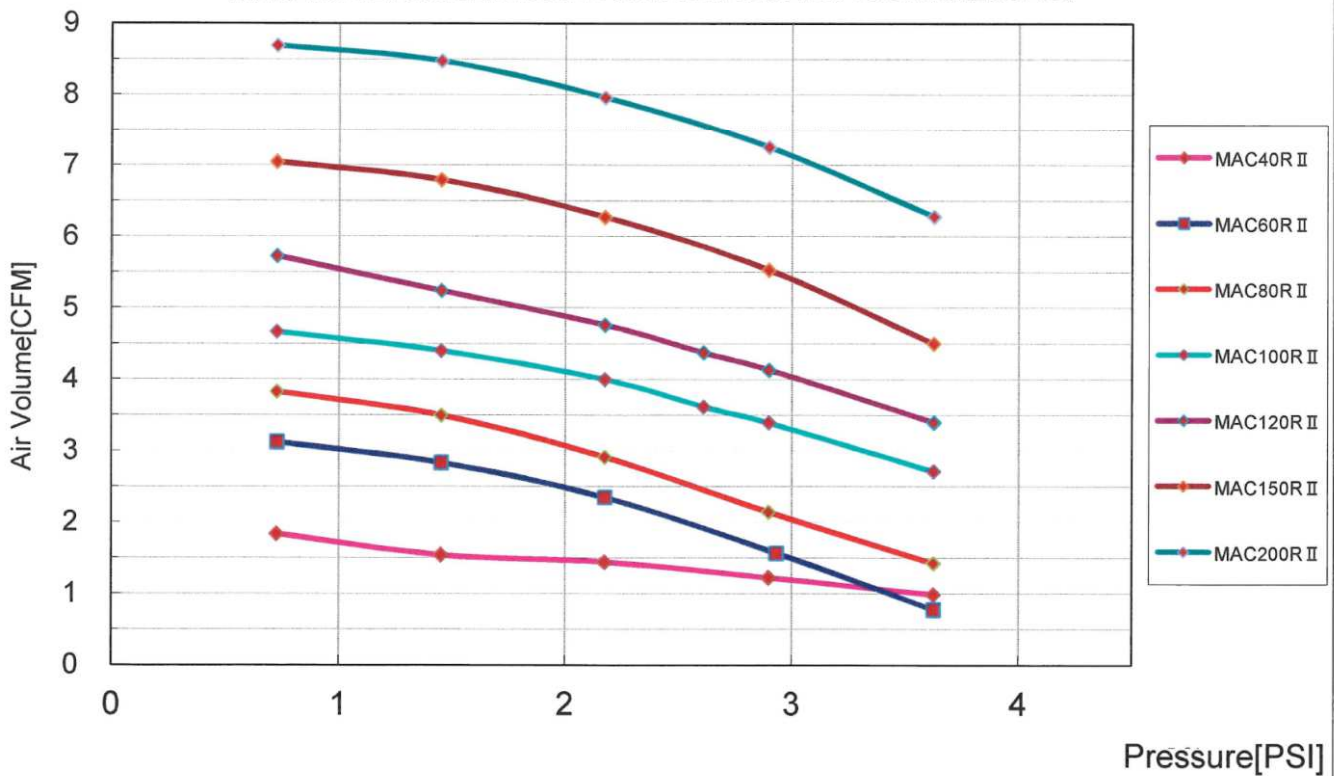
□MAC120RII



□MAC150RII/200RII



**FujiMAC Series Performance Curve -120V60Hz**  
MAC40R II /60R II /80R II /100R II /120R II /150R II /200R II





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

NEMA 4X rated, the Alarm/Control Panel 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: upgraded controllers with telecommunication, alarm tracking and data logging capabilities are available.

A 3-way toggle switch (Test-Normal-Silence) allows check for proper operation by toggling the side panel switch to “Test” mode. When switch is 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. The beacon will continue to flash until normal operation is restored and the alarm will reset. If 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.

Fuji Clean USA offers a choice of customized alarm/control panels, each with different features. Control panel customization is also available to match unique site or job requirements. Please consult Fuji Clean USA for details.



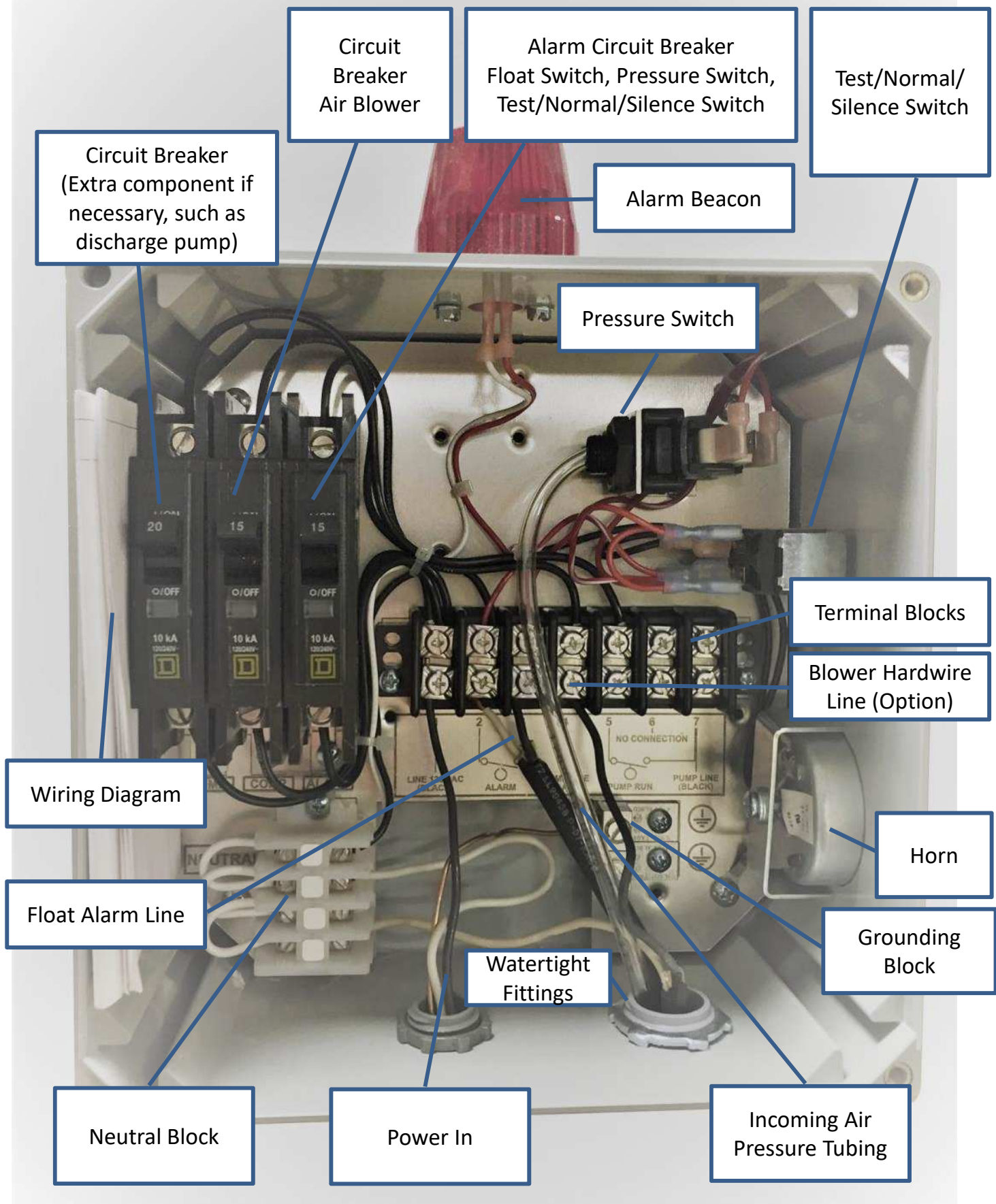


## Control/Alarm Panel Options\*

Fuji Clean Model	A	A1	C	X	D	RI	E	M	KG
Features									
Description	Basic Alarm Panel	Basic Alarm Panel w/ Current Sensor	Basic Alarm w/ Comm. Contact & Time Meter	Basic Alarm with 24-Hour Timer (Night Spray)	Duplex Time Dosing	Simplex Time Dosing	Duplex Dosing Control w/ Data Logging	Basic Large System Control w/ 2 Current Sensors	CE6KG Control with 4 Current Sensors
SJE Rhombus Model #	1041972	1064558	1045040	1029522	IFS41W914 X6A8AC10E 27D	IFS11W114 H6A8AC15 A17G27D w/current sensor	IFI41W914X 6A8AC10E2 7D	1059296	BP2833
NEMA 4X Weather Proof Enclosure	X	X	X	X	X	X	X	X	X
120 Volt AC Breakers (Pump, Air Blower, Alarm)	3	3	3	3	3	3	3	4	5
Alarm/Test/Normal/Silence Switch	X	X	X	X	X	X	X	X	X
Air Blower Low Pressure Alarm Switch	X		X	X	X				
Current Sensor Alarm Switch		X				X	X	X (2)	X(4)
Communication Contacts (Alarm Aux)			X		X	X	X	X	X
Elapsed Time Meter			X		X	X	X		
Duplex Pump Demand or Timed Dosing Control					X	X	X		
24-Hour Timer				X					
Dual Alarm Beacons				X					
Data Logging Panel via USB Port to Flash Drive							X		
UL Listed to Meet and/or Exceed Industry Safety Standards					X	X	X		
Dual Safety Certification for U.S and Canada					X	X	X		

\* Control panel customization is also available to match unique site or job requirements. Please consult Fuji Clean USA for details.

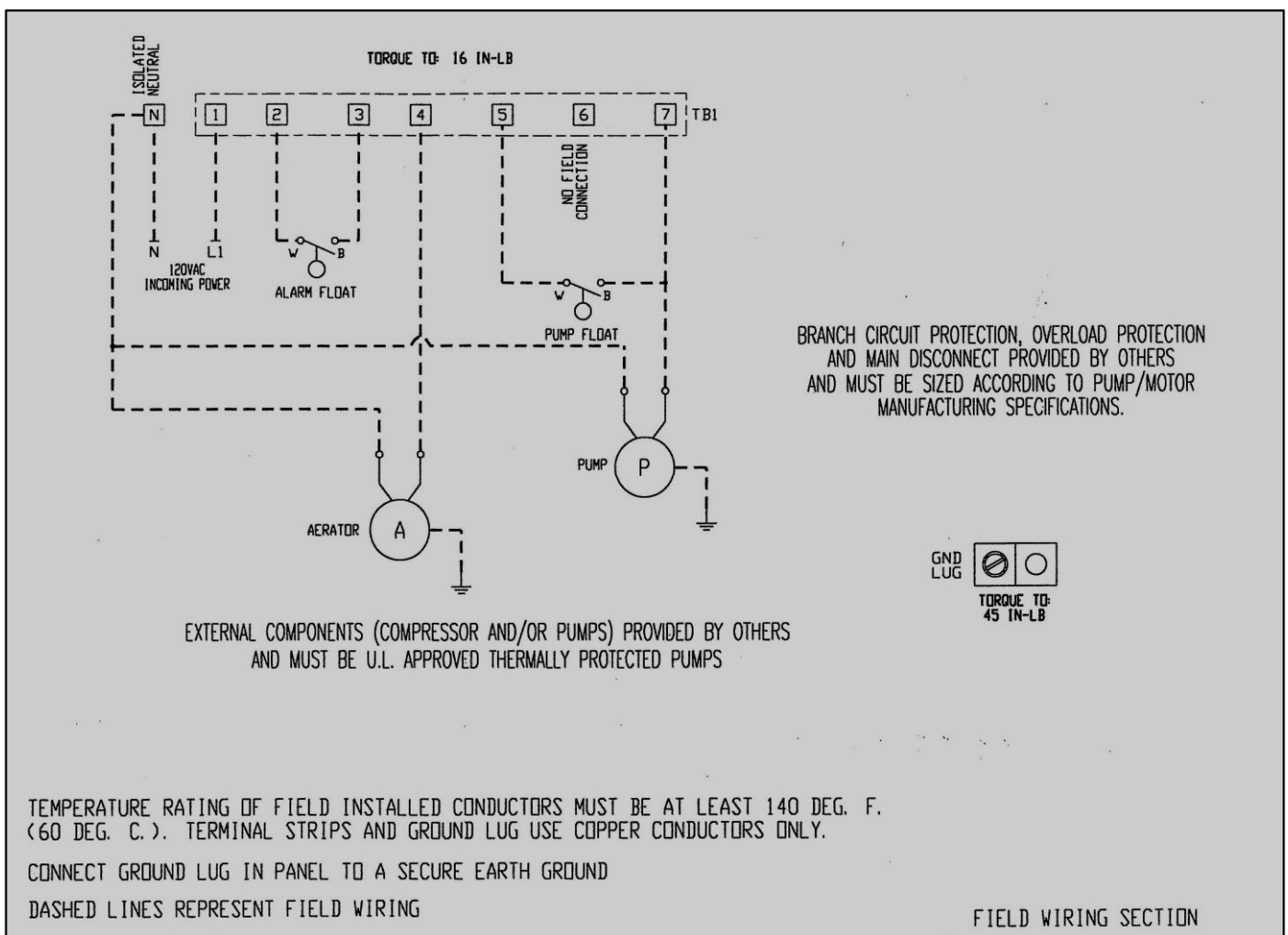
## CONTROL PANEL "A"



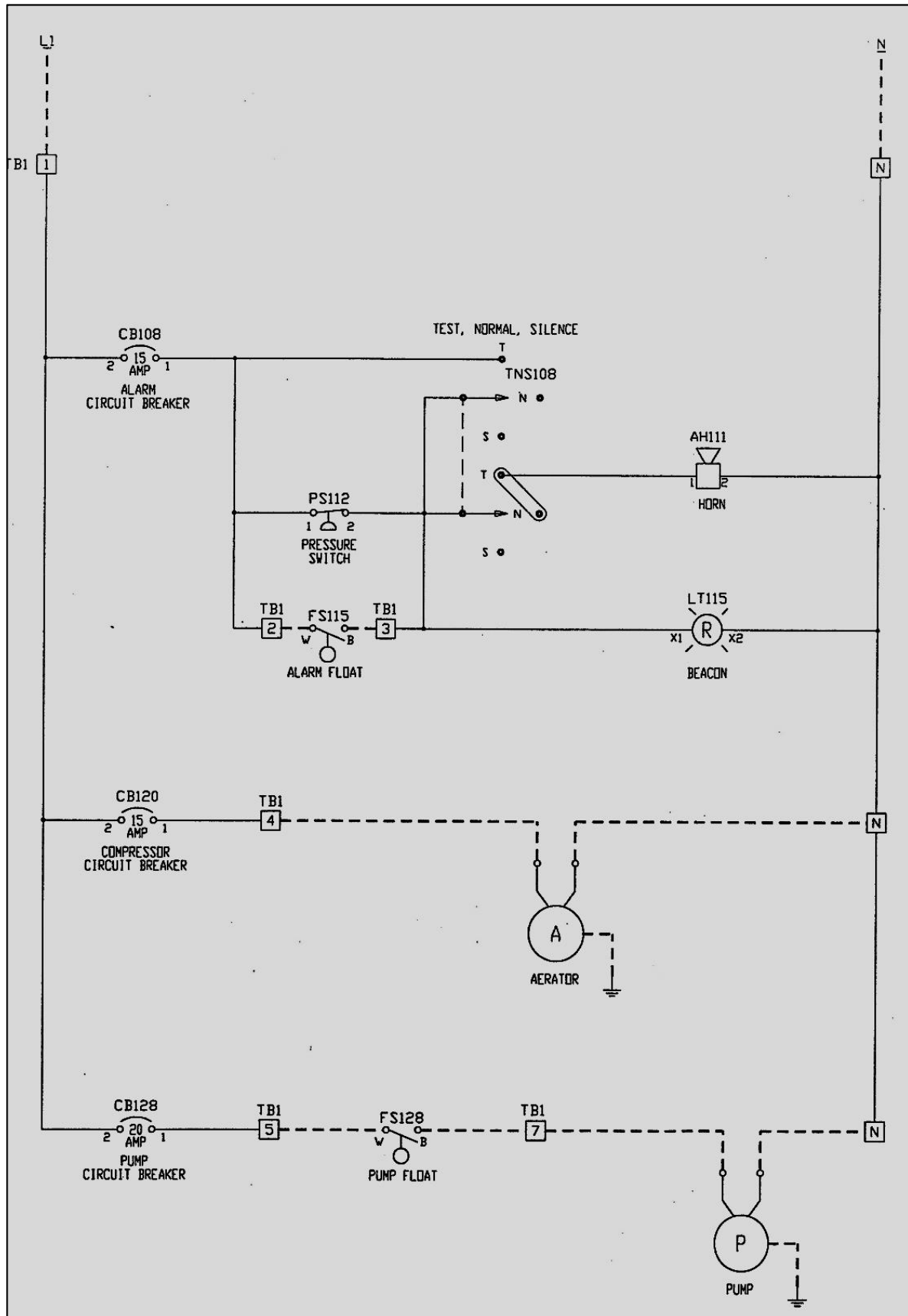
## "A" Control Panel Wiring Diagram p.1

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.

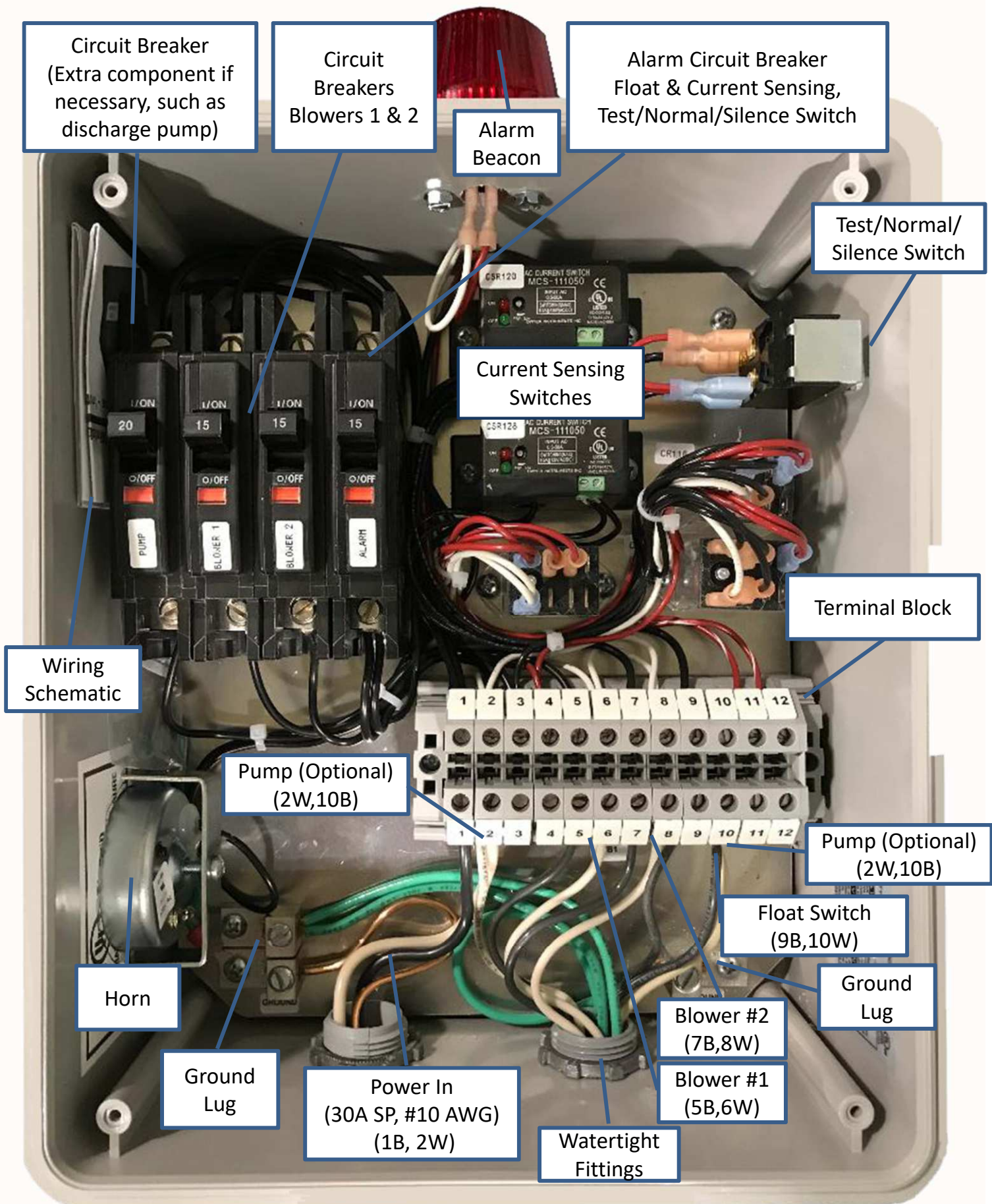


## "A" Control Panel Wiring Diagram p.2

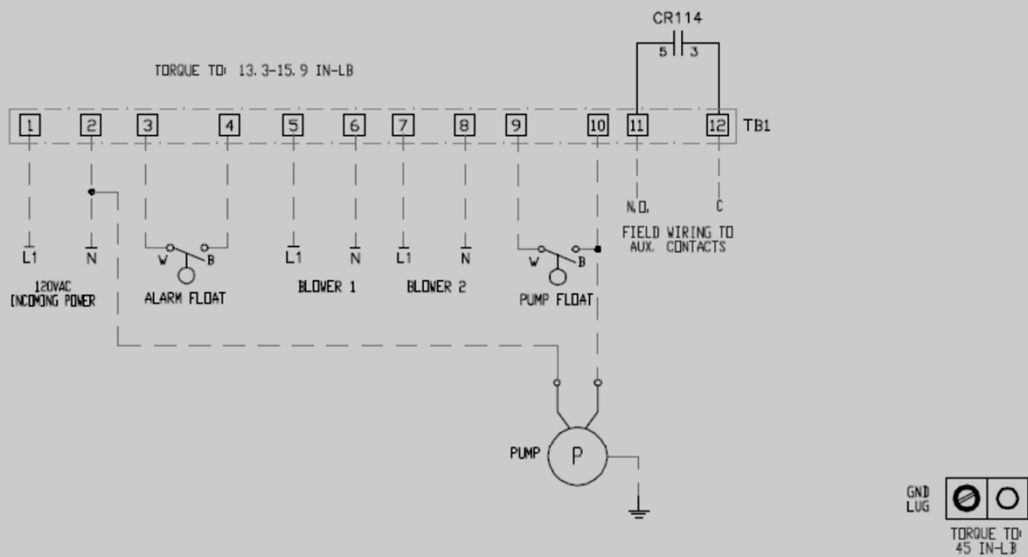




## CONTROL PANEL "M"



## "M" Control Panel Wiring Diagram p.1



OVERLOAD PROTECTION,  
MAIN DISCONNECT AND OVERCURRENT PROTECTION  
OF INCOMING FEEDER CIRCUIT 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.

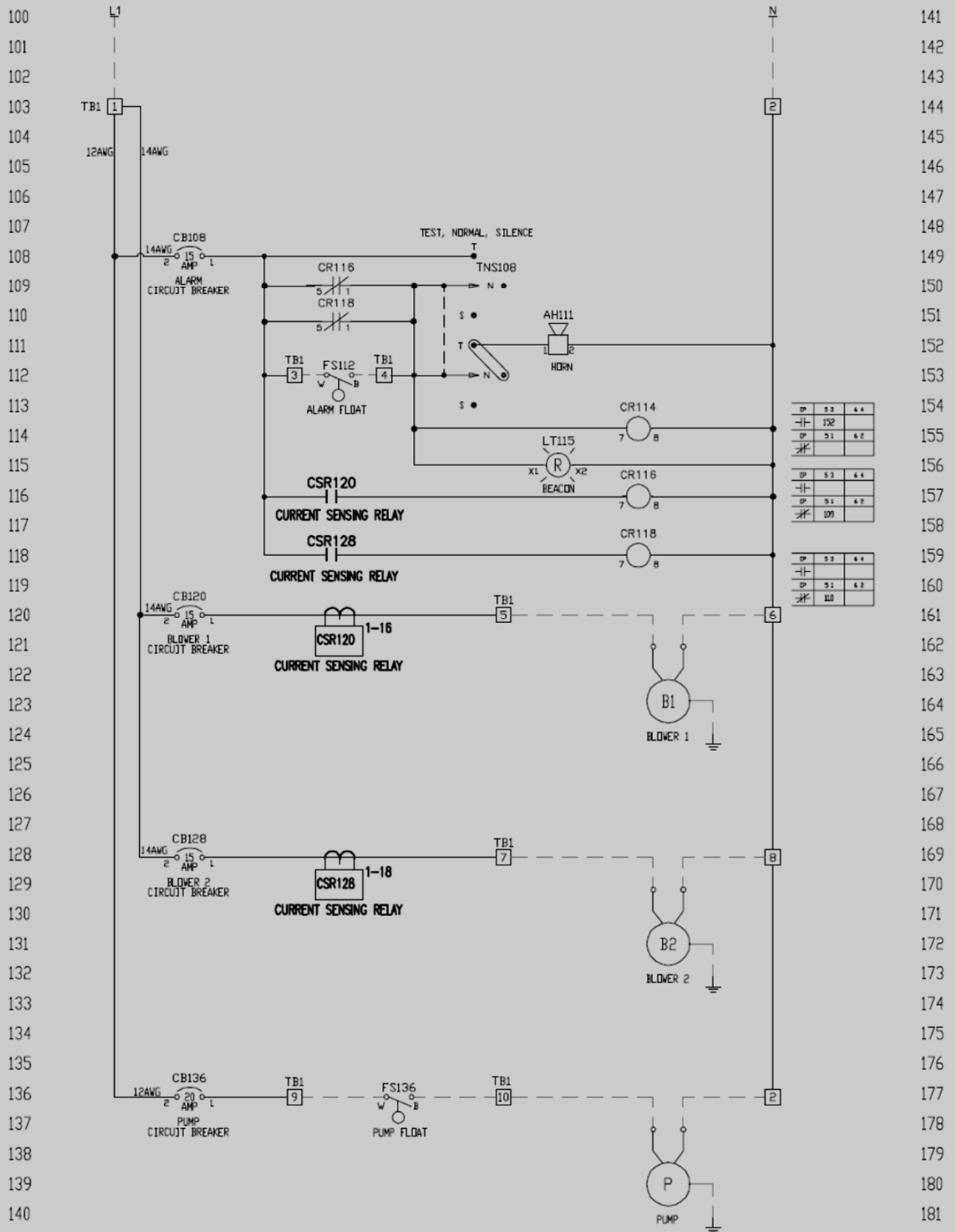
CONNECT GROUND LUG IN PANEL TO A SECURE EARTH GROUND

DASHED LINES REPRESENT FIELD WIRING

FIELD WIRING SECTION

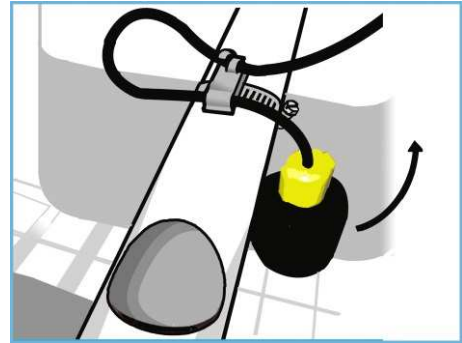
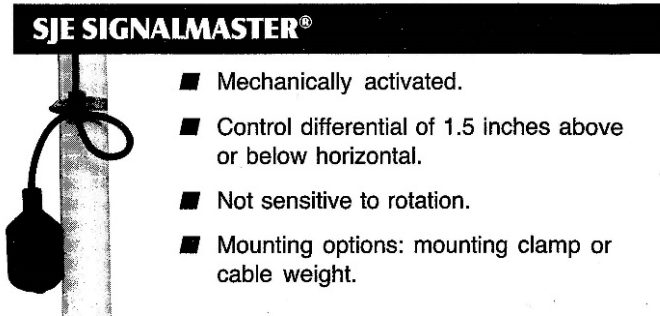
REV. DATE: 1059267						NOTICE: THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND IT SHALL NOT BE USED OR REPRODUCED OR ITS CONTENTS DISCLOSED IN WHOLE OR IN PART, WITHOUT PRIOR WRITTEN CONSENT.						<b>SJE-Rhombus</b>			
						DRWN BY	DATE	CHKD BY	DATE	APPD BY	DATE	PROJECT NO.		QUOTE NO.	REV.
						JJ	6/8/18	JJ	6/8/18	ACB	6/8/18	1059267		N/A	A
												TITLE			
	A	CD484	6/18	JJ		DEM NAME		DEM P/N		PAGE	SCALE	DRG SIZE	LIT. RH. SCHEM MECH AER 2 BLOWERS W/AUX		
	REV	ECO NO.	DATE	DRWN	APPD	N/A		N/A		1 of 1	NONE	D			

## "M" Control Panel Wiring Diagram p.2



## Section 3d. 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.



**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.



**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 3e. System Components – Wi-Fi Communications Device

The SJE Rhombus MySpy Wi-Fi Messenger requires controller communication contacts. Fuji Clean USA Controller "C" is the most basic controller model that provides these contacts. This device must be mounted within range of home Wi-Fi signal.

### MySpy® WiFi Messenger Alarm System

**Easy-to-install indoor alarm system with WiFi connectivity, remote notification, battery backup, and auto reset.**

The MySpy® WiFi Messenger system monitors and reports any residential alarm condition (contact closure), including sump high water level (float switch), or under/over temperature alarms. When the contact closes, the alarm notifies the user locally (audible and visual alarm) and remotely via SMS text messages and/or emails over a WiFi or Ethernet network to a smartphone, tablet or computer. The horn can be silenced when the alarm is active, but the alarm light remains on until the condition is cleared. Once the condition is cleared, the alarm will automatically reset.

No cellular connection needed (no monthly fees), but it is necessary for the home owner to have a reliable WiFi network and connection to the internet for this alarm to send remote notifications. Text message notifications can be sent to a cell phone with an active SMS service.



#### FEATURES

- NEMA 1 enclosure rated for indoor use.
- Automatic alarm reset.
- Red "alarm" light, green "power on" light, blue "network status" light, alarm "test" switch, horn "silence" switch, and WiFi Protected Setup (WPS) connection button.
- WiFi connectivity for remote alarm reporting
  - WiFi Protected Setup (WPS) push-button connect feature for simplified connection.
  - Manual WiFi setup done through Ethernet connection.
- Ethernet connectivity for remote alarm reporting - for cabled connection to router or modem (cable not included).
- Notifies the user via text and/or email notifications of the following conditions: Alarm, Power Lost, Power Restored, Low Battery, and Alarm Offline.  
**NOTE: Installation of an Uninterruptible Power Supply (UPS) on internet modem and wireless router is recommended. The internet connection must be maintained to receive notifications.**
- Notifies up to 4 contacts (2 text and 2 email contacts).
- Alarm horn sounds at 87 decibels at 10 feet (3 meters).
- Can be used with any switching mechanism rated to include 1 amp, 9 VDC load.
- If primary power fails, the alarm system continues to work locally due to battery backup feature. (battery not included.)  
**NOTE: A Power Lost notification will be sent when entering battery backup mode, but other email and text notifications will not be sent in this mode.**
- Complete package includes standard SJE SignalMaster® control switch with 15 feet (4.57 meters) of cable and mounting clamp.
- Switching mechanism operates on low voltage and is isolated from the power line to reduce the possibility of shock.
- Auxiliary alarm contacts for easy attachment of remote devices
- Low battery chirp.
- Easy access battery compartment.
- External terminal block for easy float switch installation.
- CSA Certified.
- Five-year limited warranty.



#### OPTIONS

**When ordered with the alarm, this system is available with:**

- Alternate float switch models for high or low level warning.
- Splice kit.

**SEE BACKSIDE FOR ORDERING INFORMATION.  
SEE PRICE BOOK FOR LIST PRICE.**

#### SPECIFICATIONS

##### VOLTAGE FOR 120 VAC MODEL:

Primary: 120 VAC, 60 Hz, 2.4 watts max.  
(alarm condition)

Secondary: 9 VDC

##### BATTERY BACKUP POWER: 9 VDC

**ALARM ENCLOSURE:** 6 x 4 x 2.25 inch  
(15.24 x 10.16 x 5.71 cm), NEMA 1 plastic.

**ALARM HORN:** 87 decibels at 10 feet  
(3 meters)

##### AUXILIARY ALARM CONTACTS

**Voltage:** 120 VAC

**Current:** 0.5 amps maximum N/O  
0.5 amps maximum N/C

**POWER CORD:** 6 foot (1.8 meter)

##### FLOAT SWITCH CONNECTION TERMINAL:

For float switch connection only. Do not apply power. (Voltage across terminals is 8-9 VDC).

**FLOAT SWITCH:** SJE SignalMaster® control switch with mounting clamp

**Cable:** 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)

**Float:** 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high impact, corrosion resistant polypropylene housing for use in sewage and water up to 140°F (60°C)

**WIFI:** Connect using push-button WiFi Protected Setup (WPS) or manually by using Ethernet connection (ethernet cable not provided). WPA2 security required on wireless router.

**ETHERNET:** Requires an ethernet connection (ethernet cable not provided).

**NOTE:** Cellular WiFi hotspots are not recommended for use with this WiFi alarm, as intermittent or unreliable notification service can result.



### SJE RHOMBUS

PO Box 1708, Detroit Lakes, MN 56502

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1-218-847-4617 Fax

email: customer.service@sjerhombus.com

**www.sjerhombus.com**

**D.1**

# MySpy® WiFi Messenger Alarm System

Easy-to-install liquid level alarm system with WiFi connectivity, remote notification, auto-reset, and battery backup features for indoor use.

## ORDERING INFORMATION

120 VAC		
Part #	Description	Shipping Weight
1043586	MSWF-01H (120 VAC w/15' SJE SignalMaster® High Level)	2.73 lbs.
1043655	MSWF-01L (120 VAC w/15' SJE SignalMaster® Low Level)	2.73 lbs.
1043656	MSWF-01H (120 VAC w/15' Sensor Float® High Level)	2.81 lbs.
1043657	MSWF-01X (120 VAC no float)	1.44 lbs.

H = High Level L = Low Level X = No Float

MASTER CARTON holds 16 boxed units.  
SEE PRICE BOOK FOR LIST PRICE.

## OPTIONS

### CONTROL SWITCH OPTIONS

The MySpy® WiFi Messenger alarm system comes standard with a 15ft **SJE SignalMaster®** control switch with mounting clamp. Other float switches are available. See control switch section of the catalog.

To determine the price of alarm with an alternate float, add the price of the part number with "no float" to the price of the float switch.

## SPECIFICATIONS

### VOLTAGE FOR 120 VAC MODEL:

Primary: 120 VAC, 50/60 Hz, 2.4 watts max. (alarm condition)  
Secondary: 9 VDC

### BATTERY BACKUP POWER: 9 VDC

ALARM ENCLOSURE: 6 x 4 x 2.25 inches (15.24 x 10.16 x 5.71 cm),  
NEMA 1 plastic

ALARM HORN: 87 decibels at 10 feet (3 meters)

AUXILIARY ALARM CONTACTS: 120 VAC, 0.5 amps max N/O,  
0.5 amp max N/C

POWER CORD: 6 foot (1.8 meter)

FLOAT SWITCH CONNECTION TERMINAL: for float switch connection only  
(voltage across terminals is 8-9 VDC)

FLOAT SWITCH: SJE SignalMaster® control switch with mounting clamp

CABLE: 15 feet (4.57 meters), flexible 18 gauge, 2 conductor (UL)  
SJOW, water resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 cm x 12.3 cm), high  
impact, corrosion resistant polypropylene housing for use in sewage  
and water up to 140°F (60°C)

WIFI: Connect using push-button WIFI Protected Setup (WPS) or manually  
by using Ethernet connection (ethernet cable not provided).

ETHERNET: Requires an ethernet connection (ethernet cable not provided).  
WPA2 security required on wireless router.

NOTE: Cellular WiFi hotspots are not recommended for use with this WiFi  
alarm, as intermittent or unreliable notification service can result.



**SJE RHOMBUS**

www.sjerrhombus.com  
customer.service@sjerrhombus.com

**Call or fax your order!**  
**1-888-DIAL-SJE (1-888-342-5753) / Fax 218-847-4617**

Product offering and pricing are subject to change without notice.  
Please visit [www.sjerrhombus.com](http://www.sjerrhombus.com) for the most current information.

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## Section 4. Maintenance Program

### **Scheduled Maintenance – General**

If sampling is required, please draw samples prior to maintenance protocol. Refer to Section 8 of this Manual for proper sampling procedure.

Regularly scheduled maintenance by a qualified service professional is necessary for efficient operation of this commercial system. Scheduled maintenance is required semi-annually at a minimum and will typically take a service professional about 1 hour 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 system loading but is recommended approximately once annually for Fuji Clean commercial systems, 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 the blower 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 a few moments to check that the alarm is triggered. (Note: It sometimes takes up to a minutes before air pressure dissipates and 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. Please follow steps on the following page.

## Blower Air Filter Cleaning / Replacement Procedure (FujiMAC Models Under 120 L/min.)

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



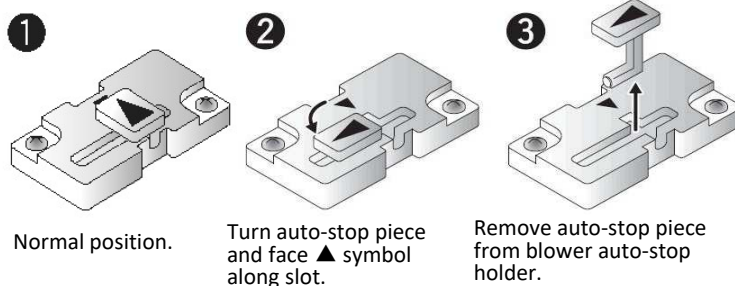
## Blower Air Filter Cleaning / Replacement Procedure (FujiMAC Models over 120 L/min)

Replacing the blower air filter consists of removing the filter covers with a Phillips screwdriver, removing and cleaning the used filter (blow clean with air pressure) or replacing them with new filters, and screwing covers back into place.

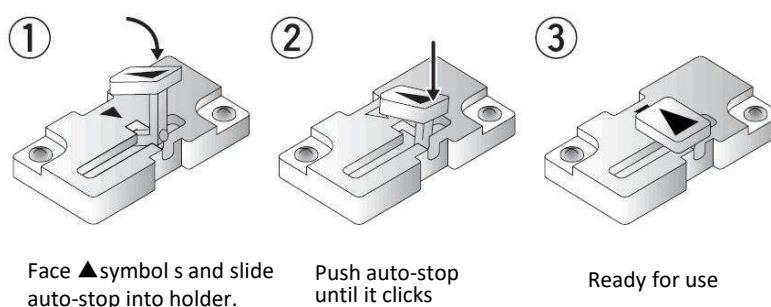


### Auto-stop piece function

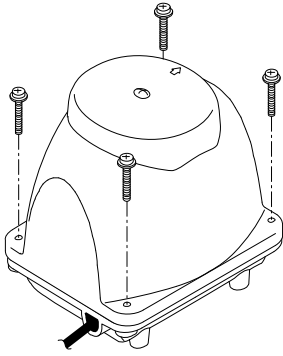
#### Removing auto-piece stop



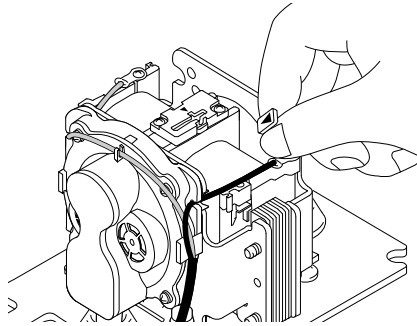
#### Replacing auto-piece stop



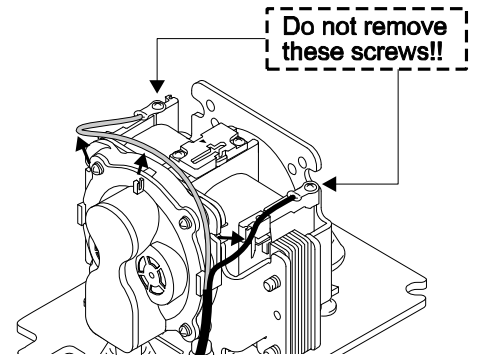




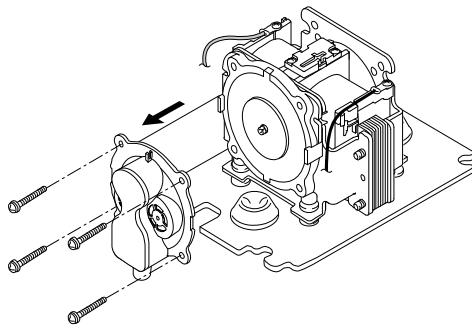
1. Remove cover bolts using a 5/16" wrench.



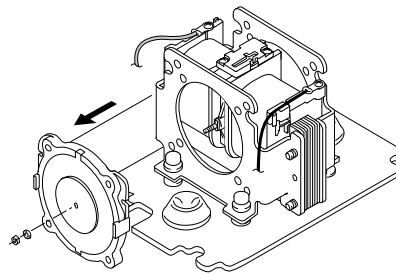
2. Remove auto-stop piece as instructed page 20.



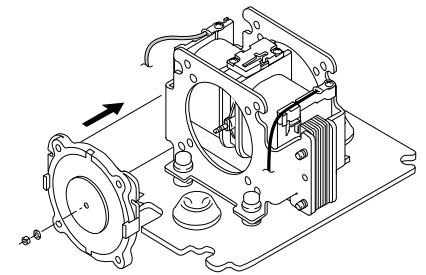
3. Remove power cable from 3 hooks. Attention **Do not remove screws!!**



4. Remove 4 screws from diaphragm casing using a Phillips head screwdriver.

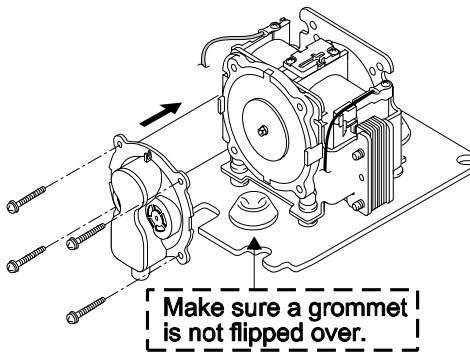


5. Remove nut and take diaphragm off motor body.

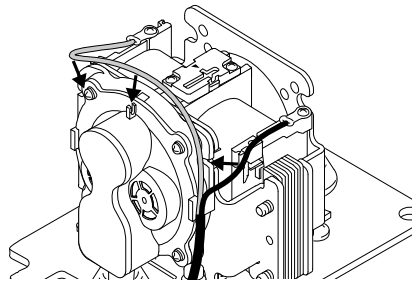


6. Install a new diaphragm using new nut provided.

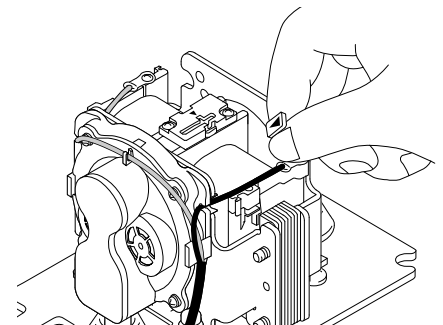
\*Tightening torque – about 1 Nm



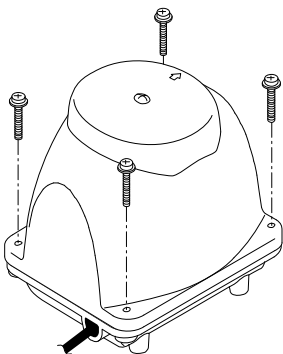
7. Insert air outlet into a rubber grommet and reattach casing assembly with 4 screws.



8. Replace a power cable in 3 hooks.



9. Install auto-stop piece as instructed in first steps.



10. Fix cover bolts using a 8mm-box wrench.



**Warning** Turn off power when replacing the diaphragm/valve assembly. Electric Shock Hazard.



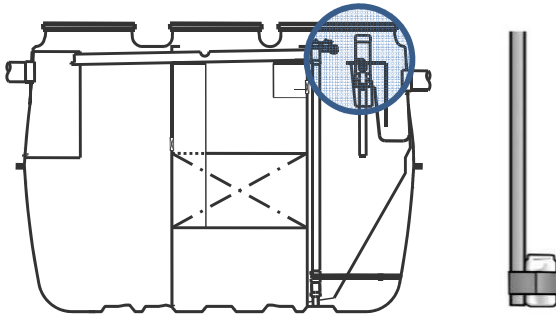
**Attention** Replace both sides of diaphragm/casing assembly at the same time. (FujiMAC150RII and 200RII models require replacement of all 4 diaphragms) If one diaphragm breaks, it generally indicates that the remaining diaphragm is weak and vulnerable to near term breakage.

- \* Replace diaphragm/valve assembly every year to maximize lifespan.
- \* Operate blower to ensure proper operation after replacing diaphragms.
- \* Please do not lubricate any internal parts of air pump.

## 5. Treated Effluent Check.

**(Minimum Required frequency: 1x every 6 months)**

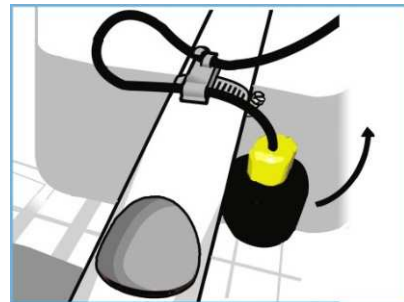
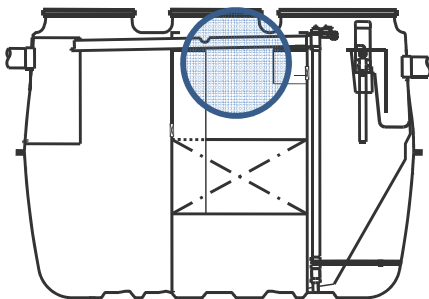
Collect a sample of treated effluent from the clarification chamber and evaluate for clarity, odor and pH. Sample should be nearly clear with a faint musty smell. If sample is cloudy or exhibits a septic odor, then the system is not treating properly and requires maintenance. Please refer to the Troubleshooting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



## 6. High Water Float Check.

**(Minimum Required frequency : Start-up and 1x every 6 months)**

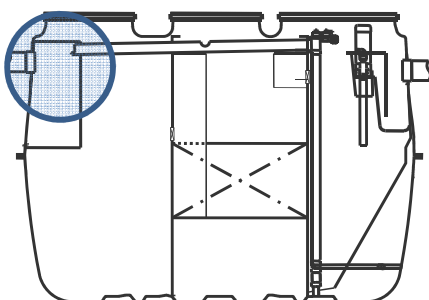
Check that the high water float switch is operating freely. Lift to check that the alarm is triggered. (Note: Float's activation horizon is 1.5" above or below level horizon).



## 7. Inflow Baffle Check.

**(Minimum Required frequency : Start-up and 1x every 6 months)**

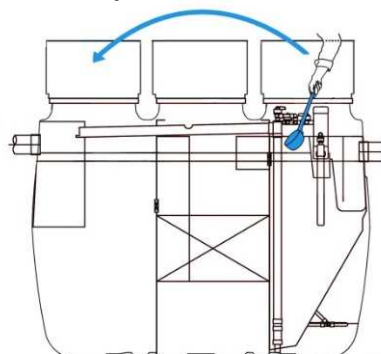
Make sure that the inflow pipe is not blocked. **(Note: Remove scum or debris if necessary)**



## 8. Transfer Scum.

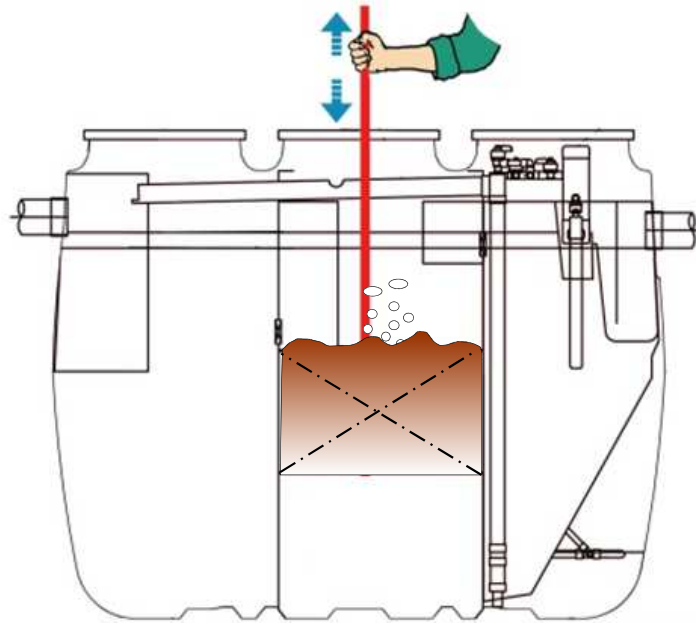
**(Minimum Required frequency : 1x every 6 months)**

If scum is visible Chamber 3, scoop with a ladle or collection jar and transfer it into the Sedimentation Chamber. (Chamber 1)



### 9. De-Gas. (Minimum Required frequency : 1x every 6 months)

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 prevent nitrogen gas back-up and to assure uniform media contact and filtration.



### 10. Backwash and Sludge Transfer.

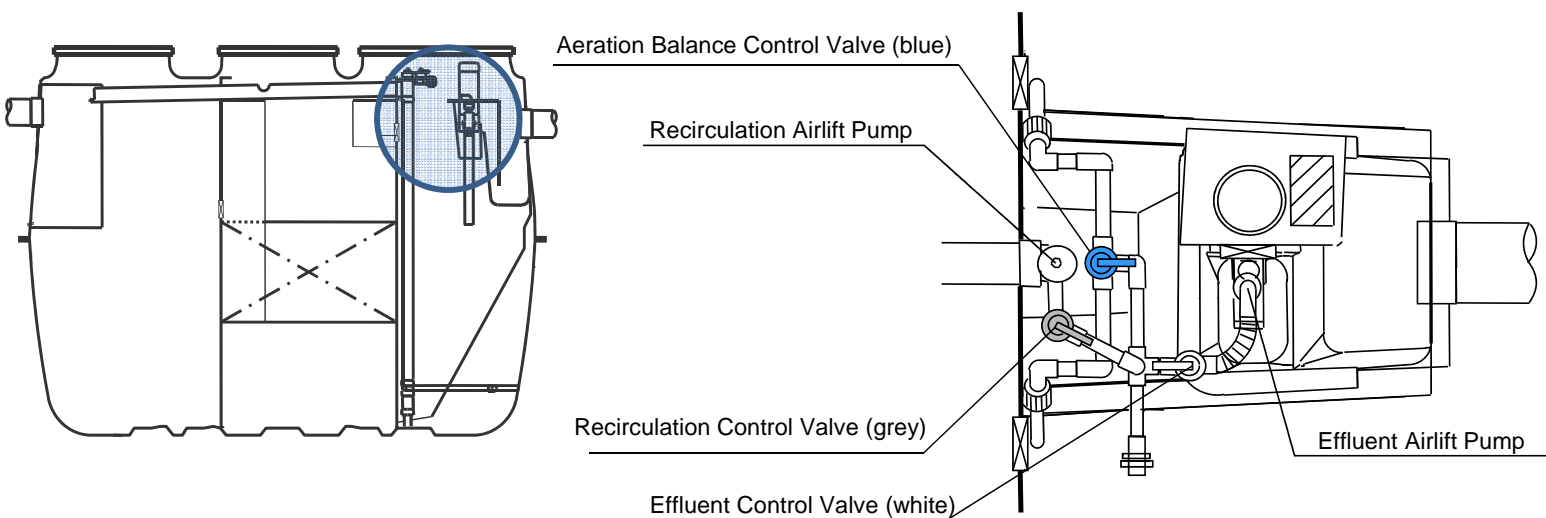
(Minimum Required frequency : 1x every 6 months)

Perform a backwash and sludge transfer operation.

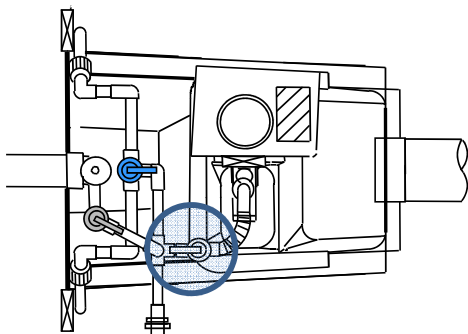
**\*Note: Water level in tank must be at Low Water Level (LWL) .**

Excessive biofilm growth on the contact filter media (Chambers 2 and 3) may cause partial clogging or short circuiting and deteriorate the performance of the system.

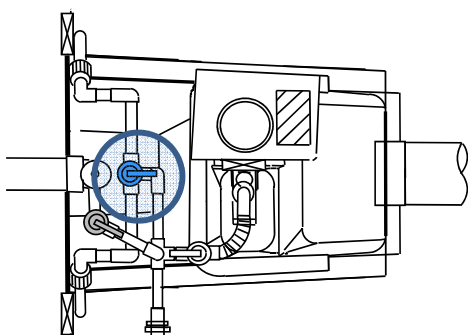
It is essential to carry out this backwash operation and sludge transfer at every maintenance visit.



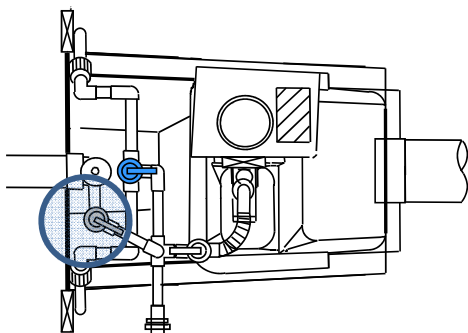
**Step 1.** Shut off the Effluent Air-lift Pump by turning the Effluent Control Valve (white valve) to zero.



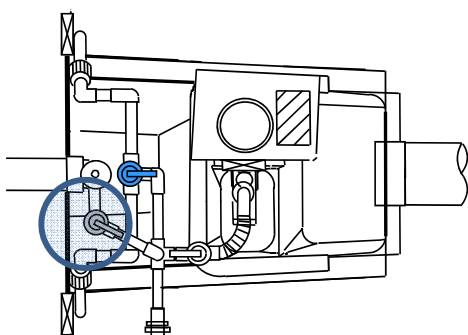
**Step 2.** Aerate one side of the chamber by turning the Aeration Balance Control Valve (blue valve) fully one way. Wait for one minute, and then turn the valve fully in the opposite direction. Wait for another minute, and then reset the valve to the original position at 50.



**Step 3.** 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 4.** Reset the Recirculation Control Valve (grey valve) to the original position.



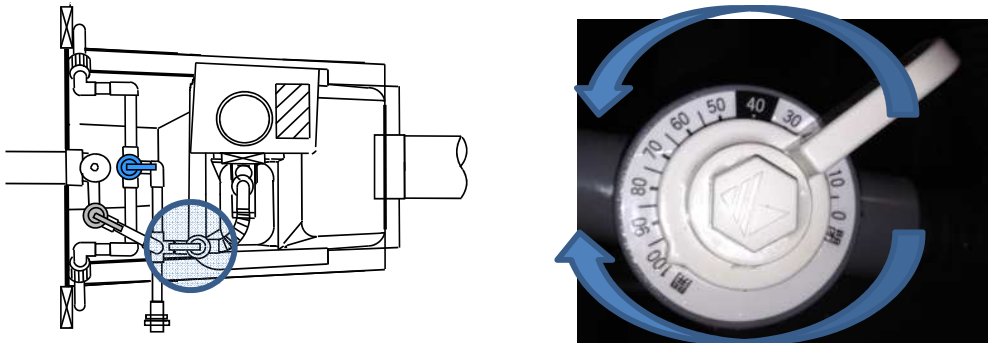
CE Systems



CEN Systems

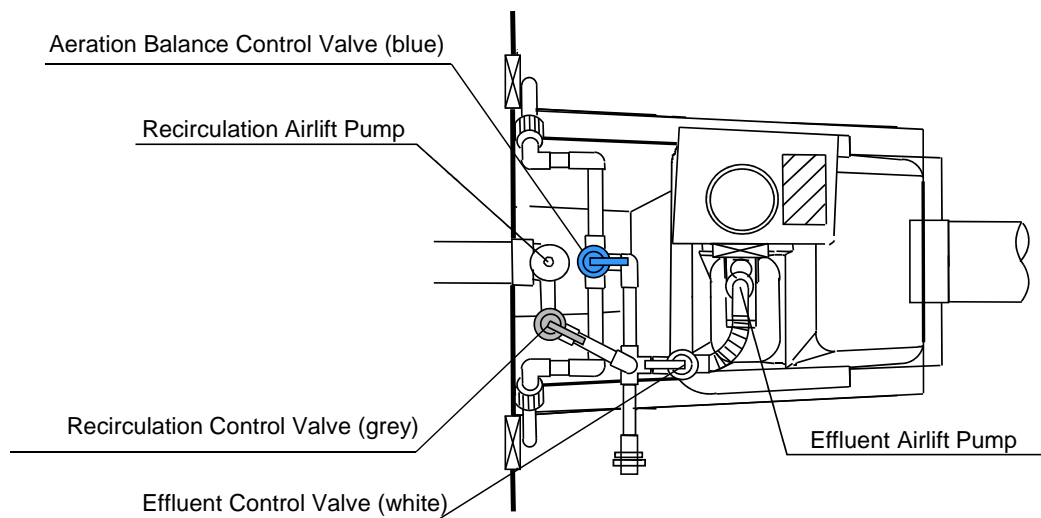
**Step 5.** Repeat Steps 2 - 4 three times.

**Step 6.** Flush the Effluent Control Valve (white) by rotating the valve back and forth from 0 to 100 several times.



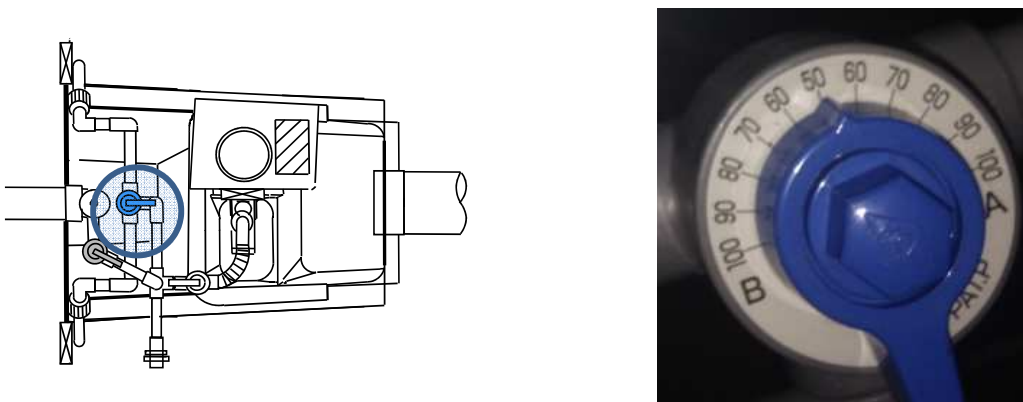
**11. Reset Valves to standard operating setting.**

**(Warning! This step is easy to forget but essential for proper system operation.)**



**11-1. Reset Aeration Balance Control Valve (blue).**

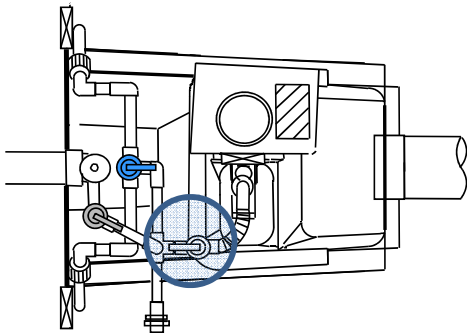
The default, setting for the Aeration Control Valve is 50. Visually observe the airflow rates on each side of the plant by checking to see if bubbles are evenly distributed on both sides of the aeration chamber. If there is an obvious discrepancy in airflow between the two sides, adjust the Aeration Balance Control Valve so that the airflow is equal





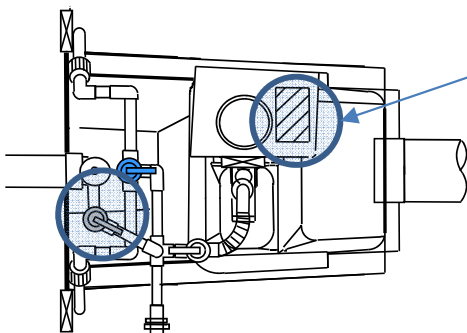
### 11-2. Reset Effluent Airlift Valve (white).

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



### 11-3. Recirculation Control Valve. (gray)

The recirculation valve should be set according to the table in tank.



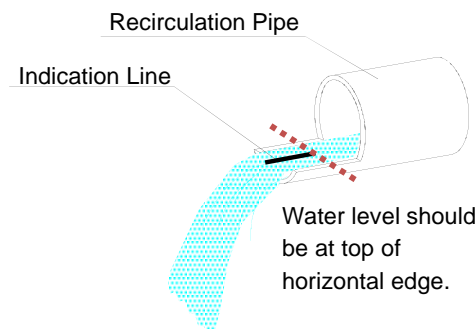
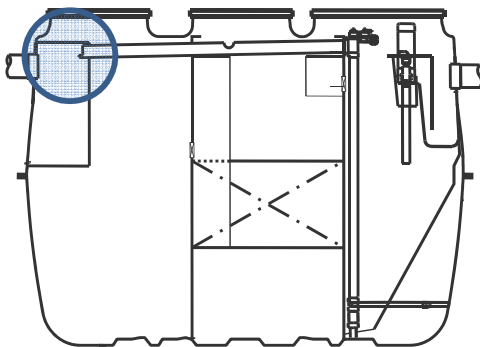
CE Systems



CEN Systems

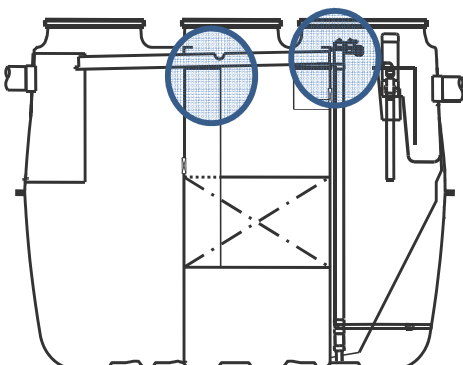
### Important!

Normal recirculation flow should be level with the top edge of the recirculation pipe line cut-out spilling into Chamber 1.



### 12. Clean Recirculation pipe and air-lift pump . (Recommended frequency: 1x every 6 months)

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

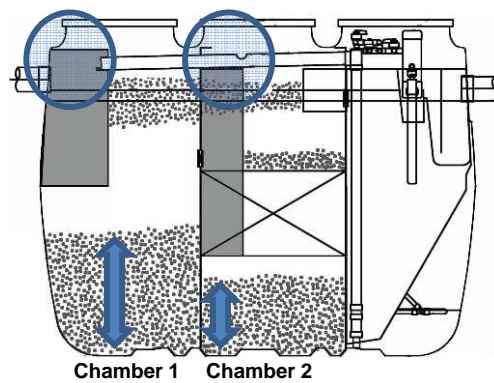


### 13. Measure Sludge and Pump Out if Necessary

(Minimum Required frequency : 1x every 6 months)

Measure sludge level with sludge judge. (from chamber 1 baffle and chamber 2 baffle) If the depth of sludge accumulation is more than the table as below, the system needs pumped out.

Sludge accumulations	CE5	CE7 CEN5	CE10 CEN7	CE14 CEN10	CE21 CEN14	CE30 CEN21	CE6KG
<b>Sedimentation (1<sup>st</sup>) chamber</b>	35 inch	35 inch	44 inch	44 inch	48 inch	54 inch	38 inch
<b>Anaerobic (2<sup>nd</sup>) chamber</b>	16 inch	16 inch	16 inch	16 inch	22 inch	20 inch	23 inch



### 14. Refill the chlorinator (if applicable).

Place refill chlorination tablets in the chlorinator tube and adjust the dissolve rate by rotating the bottom cap of the chlorinator.

### 15. Cleaning Aeration Pipes (as required)

Aeration Pipes should be cleaned if:

- Air bubbles in Aeration Chamber are unevenly distributed after the backwash flushing procedure and adjusting the aeration valve.
- The recirculation flow rate has increased considerably without resetting the Recirculation Valve (gray valve). Use hose adaptor supplied by Fuji Clean USA.

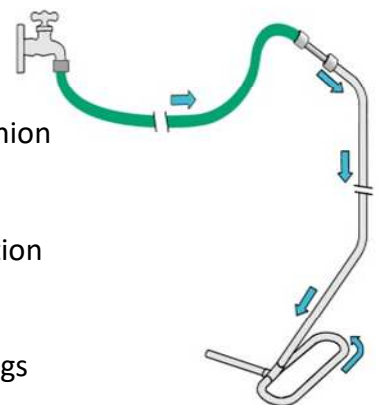
**Step 1.** Turn off the blower.

**Step 2.** Loosen a barrel union. (**Do not remove!**) Pull the air line from the barrel union

#### Clean With Hose:

Attach adaptor (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.

**Step 3.** Reconnect aeration pipes, turn on blower and re-set standard valve settings



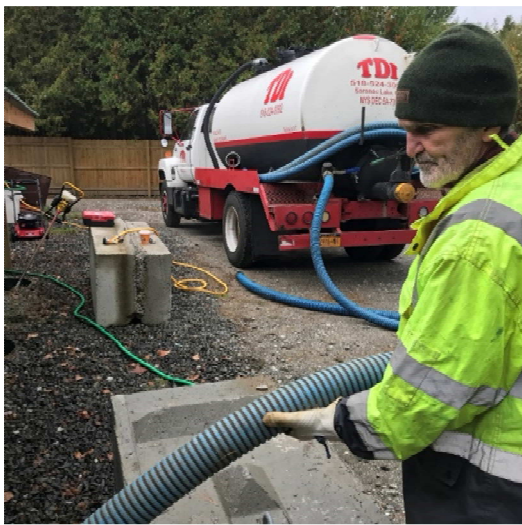
## IMPORTANT NOTICE!

As part of routine maintenance, your Fuji Clean treatment system will periodically require “pump-out” servicing, which removes accumulated solids such as sludge and scum from your system. Frequency of pump-out varies widely based on individual system use but we generally estimate that it should occur approximately once every two years.

Your service provider will inform you when your system is in need of pump-out.

It is important that your pump out provider be familiar with proper pump-out technique.  
Questions? Please call your local distributor or Fuji Clean USA (207-406-2927).

## FUJI CLEAN PUMP-OUT INSTRUCTIONS

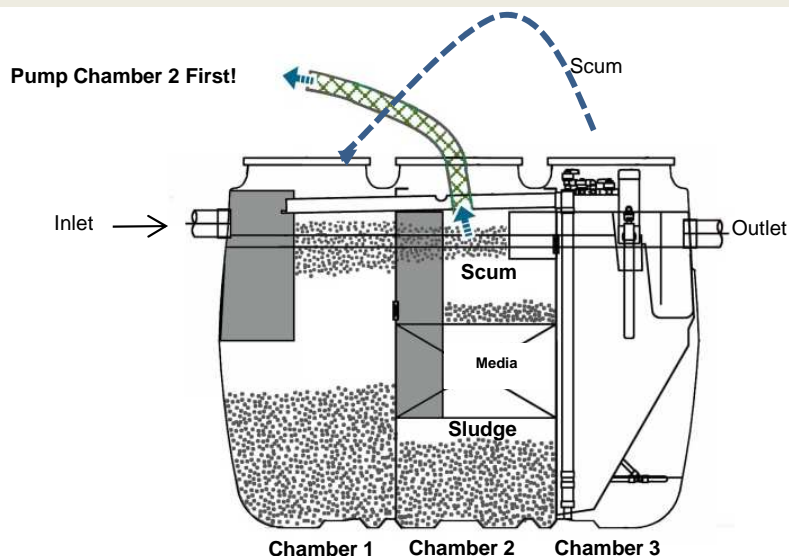


During pump-out, no vehicles of any kind (including the pump truck performing pump-out operations) shall be parked or located on the slab

A distance of at least 20 feet must be maintained between pump-out vehicle and tank.

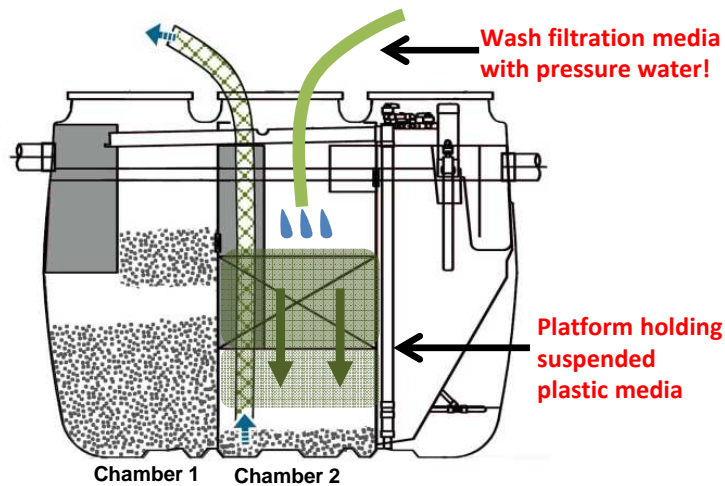
**Step 1. Use ladle and Air-lift pump to transfer sludge and scum from Chamber 3 back to Chamber 1.**

**Step 2. Turn off all electrical components.**

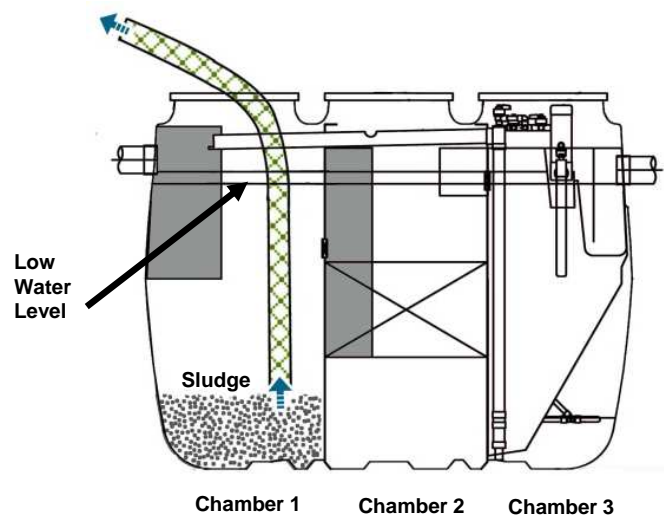
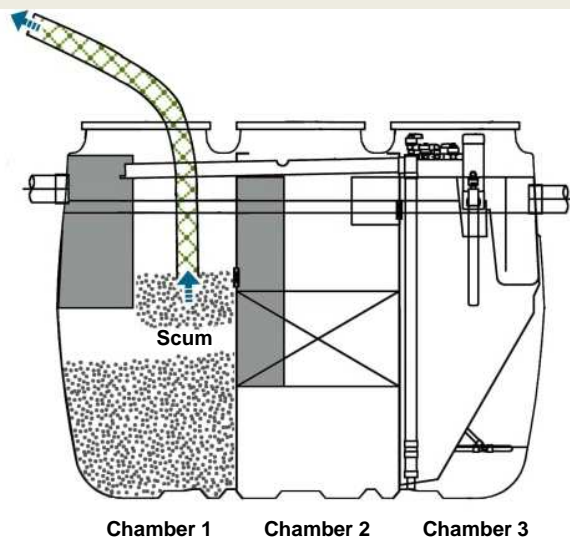


**Step 3. With pumpout hose, remove scum and sludge on the filtration media from Chamber 2**

**START WITH THE CHAMBER 2 FIRST! Pumping Chamber 1 first may draw solids up into the media in Chamber 2.**



**Step 4. Insert suction hose into the baffle. Remove sludge from the bottom of Chamber 2.**  
**Rinse filtration media with pressure water during pumpout. This prevents the weight of loaded media in Chamber 2 from damaging the suspended platform on which it rests.**



**Step 5. Remove scum and sludge Chamber 1.**



**Step 6. Refill water to the low water level (LWL) mark in all chambers immediately following all sludge pump-out operations. This operation is necessary to prevent tank damage or breaching from exterior pressure.**

**Step 7. Turn on all electrical components.**





## SYSTEM INSPECTION CHECKLIST

This inspection checklist should be completed by a Fuji Clean USA authorized service provider at the time of inspection. Fuji Clean recommends inspection/service visits once every 6 months. At each regularly scheduled maintenance visit, the authorized service provider shall, at a minimum, follow the O&M Maintenance Program as detailed in the Fuji Clean O&M Manual.

Site Name: \_\_\_\_\_

Site Address: \_\_\_\_\_

<u>Item</u>	<u>Comments:</u> (use reverse if necessary)
<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. Blower Consumable Components	_____
<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	_____
<input type="checkbox"/> 9. Backwash and Sludge Transfer (Important!)	_____
<input type="checkbox"/> 10. Set Recirculation Control Valve	_____
<input type="checkbox"/> 11. Set Aeration Balance Control Valve	_____
<input type="checkbox"/> 12. Set Effluent Airlift Valve	_____
<input type="checkbox"/> 13. Check/Clean Effluent Airlift Pipe	_____
<input type="checkbox"/> 14. Check/Clean Recirculation Airlift Pipe	_____
<input type="checkbox"/> 15. Refill Chlorinator (if applicable)	_____
<input type="checkbox"/> 16. Clean Aeration Pipes (if necessary)	_____
<input type="checkbox"/> 17. Measure Sludge and Pump out if necessary*	_____
<input type="checkbox"/> 18. Check Flow Monitor Component (if Appl.)	_____

\* Pump Out. System should be pumped out when sludge levels as measured in the Sedimentation Chamber (1<sup>st</sup> chamber) and/or Anaerobic Chamber (2<sup>nd</sup> chamber), accumulate to levels shown in the following table. Please refer to pump out instructions in O&M Manual.

Chamber / Model	CE5-7/CEN5	CE10-14/CEN7-10	CE21/CEN14	CE30/CEN21
Sedimentation (#1)	35-inches	44-inches	48-inches	54-inches
Anaerobic (#2)	16-inches	16-inches	22-inches	20-inches

\_\_\_\_\_  
Authorized Service Provider

\_\_\_\_\_  
Date





## **Fuji Clean USA, LLC Limited Warranty**

Page 1

### **Warranty Activation**

To activate Fuji Clean USA Warranty, a Warranty Activation Card, (“Orange Card”) provided with each system, must be returned to Fuji Clean USA by the system installer, service provider, distributor or system owner after system installation. Fuji Clean USA’s physical or electronic receipt of this card activates system Warranty.

### **Period of Coverage**

Fuji Clean USA, LLC warrants the parts in each treatment unit to be free of defects in material and workmanship for a period of two years from date of system installation at the site where wastewater is to be treated. An Extended Service Policy shall be made available by Fuji Clean USA, its authorized dealers or service providers after the initial two-year coverage period.

### **Obligations of Fuji Clean USA, LLC**

Fuji Clean USA, LLC warrants its products only. At its sole expense, Fuji Clean USA, LLC will service and repair the installed unit including all parts and labor that show evidence of defective material or workmanship when operated within design parameters, provided that all financial obligations of the owner/purchaser are in compliance with the Sales Agreement provided by an authorized dealer of Fuji Clean USA treatment systems. Determination of defective material or workmanship shall be made by a Fuji Clean USA authorized dealer, distributor and/or service provider.

### **Obligations of Installing Contractor**

Fuji Clean USA, LLC is not and does not purport to be a contractor or contracting service. Fuji Clean USA does not perform or offer to perform services that a licensed contractor would provide, including, but not limited to, installation of the Fuji Clean treatment processing unit, excavation, plumbing installation, electrical installation, and other similar work performed by a contractor. An installing contractor must follow all installation instructions in the Fuji Clean Installation Manual provided with every Fuji Clean treatment processing unit shipped from Fuji Clean USA, LLC.

If a tank or any components of the Fuji Clean treatment processing unit shipped from Fuji Clean USA, LLC is found to be damaged or defective during shipping or installation, the damage or defect must be reported within one (1) business day to Fuji Clean USA, its distributors or authorized service providers. Fuji Clean USA, in a timely manner, shall service, repair, or replace the damaged or defective tank or component parts. If the discovered damage or defect is not reported to Fuji Clean USA, its distributors or authorized service providers within one (1) business day, and the tank or component part is installed with damage or defects known to the installing contractor, this Warranty shall not apply.

### **Exclusions and Disclaimers - General**

This Warranty does not apply to Fuji Clean USA units that have been tampered with or altered by unauthorized persons, improperly installed, damaged by an installing contractor, have been subject to external physical damage, or acts of god. Further, this Warranty does not cover Fuji Clean USA units that have been flooded by external means or damage done by altered or improper wiring or overload protection. Additionally, this Warranty does not apply if the Fuji Clean USA unit has been operated beyond its maximum capacity or permit, if approved design has been altered after the fact, or if the Fuji Clean USA unit has been contaminated with chemicals injurious to biological growth.



## **Fuji Clean USA, LLC Limited Warranty**

Page 2

### **Exclusions and Disclaimers – H-20 Rated Concrete Slabs**

Design details for H-20 rated concrete slabs (slabs) and uplift restraints included in the Fuji Clean Installation Manual convey concepts and approaches design professionals and contractors can consider in their projects. The design details for slabs and uplift restraints are intended for informational purposes only and are not intended as professional design advice and shall not be relied upon as such. The contents of the design details are not a substitute for the advice or consultation of a licensed engineer, contractor, or other design professional that you should consult with in the design and construction of the slabs and uplift restraints. Design professionals must exercise their own best judgment with regard to appropriate slab design and uplift restraint for their specific projects. Fuji Clean reserves the right to make additions, deletions, or modifications to the design details for slabs and uplift restraints at any time and without prior notice. Fuji Clean USA, LLC assumes no responsibility for errors or omissions in the design details for slabs and uplift restraints. In no event shall Fuji Clean USA be liable for any special, direct, indirect, consequential, or incidental damages or for any damages whatsoever arising out of or in connection with the use of the H-20 concrete slab design details.

### **Exclusions and Disclaimers – Sludge Pumpout – Water Refill**

For all Fuji Clean USA units, particularly H-20 units, water refill to the low water level (LWL) mark in all chambers must immediately follow all sludge pump-out operations to avoid damage to the unit. During all sludge pump-out operations and water refill, no vehicles of any kind (including the pump tank truck performing pump-out operations) shall be parked or located on the slab. Fuji Clean USA, LLC does not perform or offer to perform any pump-out operations on commercial or residential Fuji Clean USA units. Fuji Clean USA assumes no responsibility for any error, omission, or failure that occurs during sludge pump-out operations. Fuji Clean is not responsible for any damage to units during sludge pump-out operations, including but not limited to damage caused by a failure to refill water to the low water level mark or vehicles parked or located on the slab during sludge pump-out operations and water refill.

### **Other Provisions**

This Warranty only applies to the Fuji Clean USA, LLC treatment processing system and does not include any wiring, plumbing, drainage, disposal or leaching systems. Fuji Clean USA, LLC or its dealers or authorized service providers also reserves the right to furnish a component part which, in its judgment, is equivalent to the company part replaced. Further, owner agrees to provide to Fuji Clean USA, or its authorized dealers or service providers with clear access to the processor covers on a year-round basis.

Under no circumstances will Fuji Clean USA, LLC be liable for direct or consequential damages including but not limited to lost profits, lost income, labor charges, delays in production or idle production time of habitability which results from any defect in material and/or workmanship of Fuji Clean USA, LLC's system or units.

This Warranty is expressly in lieu of any other expressed or implied warranties. Further, any implied warranties for merchantability and fitness for a particular purpose are hereby disclaimed.

This Warranty provides the owner/purchaser specific legal rights. You may have other rights, which vary from state to state.

## TROUBLESHOOTING

### General

SYMPTOM	SOLUTION
Water is ponding around risers and covers	<ul style="list-style-type: none"> <li>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.</li> </ul>
Strong and unusual odor exists even with the manhole lids closed.	<ul style="list-style-type: none"> <li>During the first few weeks of operation there may be noticeable odor from the system. This should cease once the bacteria are established.</li> <li>If odor persists, seeding material may be added to both anaerobic and aeration chambers, and/or the recirculation rate may be increased the upper end of the normal operation range.</li> <li>If odor continues to persist, please contact manufacturer for instructions. Installation of a vent may be necessary.</li> </ul>
Blower is making an unusually loud noise	<ul style="list-style-type: none"> <li>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.</li> </ul>

## TROUBLESHOOTING

### Chamber 1. Sedimentation Chamber

SYMPTOM	SOLUTION
Inlet pipe is blocked	<ul style="list-style-type: none"> <li>Remove the blockage.</li> </ul>
Excessive scum accumulations. (Scum layer reaches the top of the influent baffle)	<ul style="list-style-type: none"> <li>Measure sludge level. (see page 27), break the scum layer, otherwise have the system pumped out.</li> </ul>
Excessive sludge accumulations. (Depth of sludge layer exceeds 24-inches)	<ul style="list-style-type: none"> <li>If the sludge exceeds the holding capacity, have the system pumped out. (see page 27)</li> </ul>
Foreign materials, excessive oil or fat entering the system.	<ul style="list-style-type: none"> <li>Remind the homeowner to refrain from disposing harmful substances into their system. (Please refer to Homeowner's Manual for listing.)</li> </ul>

## TROUBLESHOOTING

### Chamber 2. Anaerobic Filtration Chamber

SYMPTOM	SOLUTION
Excessive sludge accumulations	<ul style="list-style-type: none"> <li>If the bottom sludge layer is thicker than table page 27, and excessive sludge has accumulated on the filtration media, have the system pumped out.</li> </ul>
Filtration media is blocked up. (The water level in Chamber 2's media is lower than that in the baffle.)	<ul style="list-style-type: none"> <li>Perform a degassing operation on the filtration media. Poke media with a section of PVC pipe. (O&amp;M Procedure #9)</li> <li>If the problem still persists even after the degassing and sludge transfer operation, pressure wash the filtration media using blower and hose affixed to a PVC pipe.</li> </ul>
Foreign materials, excessive oil or fat entering the system.	<ul style="list-style-type: none"> <li>Remind the homeowner to refrain from disposing prohibited substances and limited-use substances.</li> </ul>



## 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>• Check to make sure that the blower operates properly.</li> <li>• Check to make sure that there is no leakage from the aeration pipework.</li> <li>• Perform a backwash operation. (O&amp;M Procedure #10)</li> <li>• Clean the aeration pipes.</li> <li>• Adjust the aeration control valve.</li> </ul>
Dissolved Oxygen is less than 3.0mg/L.	<ul style="list-style-type: none"> <li>• Check with homeowner for abnormal flow activity</li> <li>• Check to make sure that the blower operates properly.</li> <li>• Perform a backwash operation. (O&amp;M Procedure #10)</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> <li>• Perform a backwash operation. (O&amp;M Procedure #10)</li> </ul>
Recirculation flow rate is too high	<ul style="list-style-type: none"> <li>• Perform a backwash operation. (O&amp;M Procedure #10)</li> <li>• Clean the aeration pipes.</li> <li>• Adjust the aeration control valve.</li> </ul>
Recirculation flow rate is too low	<ul style="list-style-type: none"> <li>• Clean the recirculation pipe and 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. (O&amp;M Procedure #10)</li> <li>• Transfer the sludge to Chamber 1, the Sedimentation Chamber, using airlift pump.</li> </ul>

# TROUBLESHOOTING

## Chamber 3a. Clarification 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> <li>Perform a backwash operation. (O&amp;M Procedure #10)</li> <li>Transfer the sludge to Chamber 1, the Sedimentation Chamber, using airlift pump.</li> </ul>
Excessive sludge accumulations.	<ul style="list-style-type: none"> <li>Transfer the sludge to Chamber 1, the Sedimentation Chamber, using airlift pump.</li> <li>Increase Recirculation volume.</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

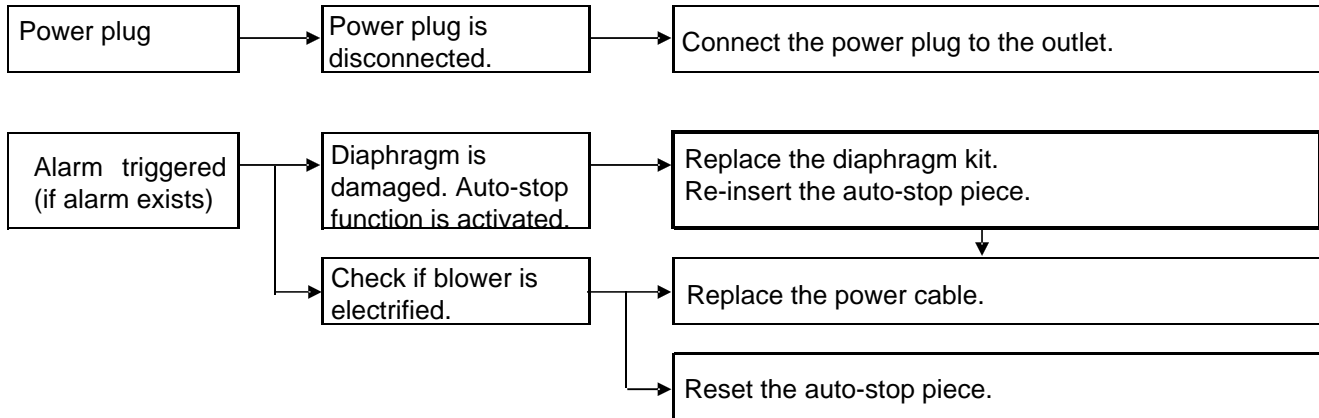
## Air Blower

### What to observe

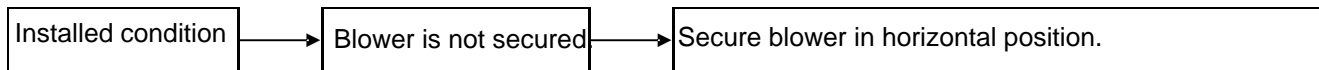
### Status

### How to solve the problem

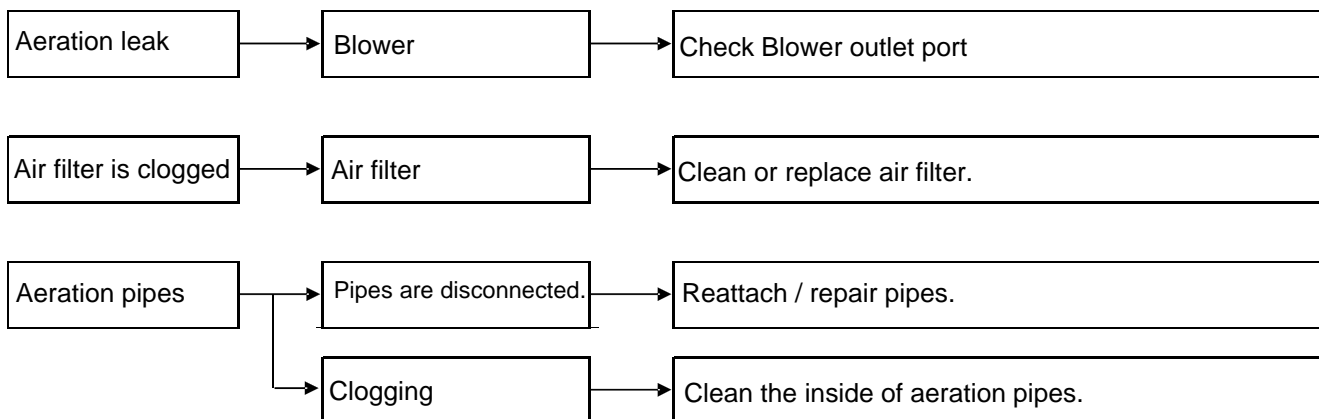
#### Blower is not working



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



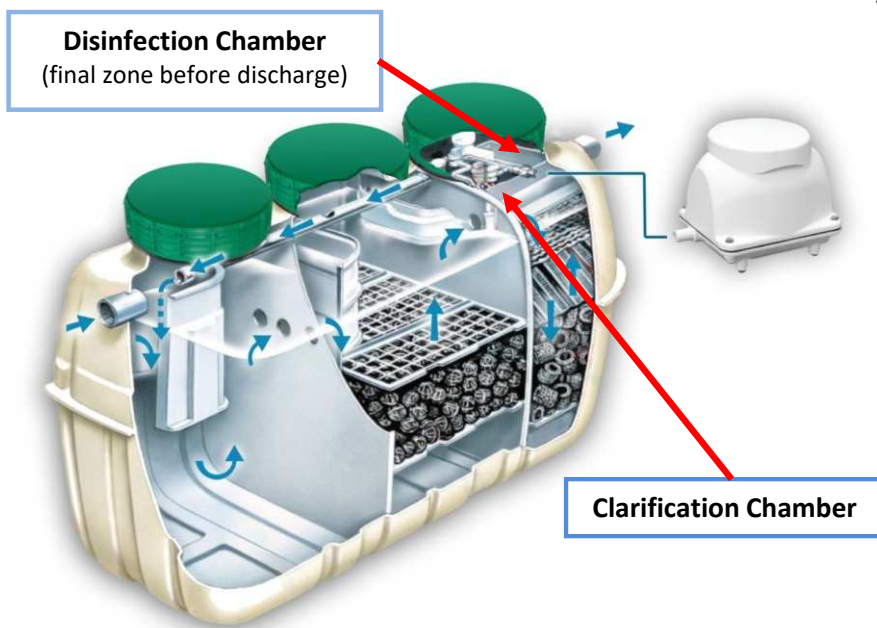
#### Low air volume or misplaced air from aeration pipes (treatment plant)



## Fuji Clean Treatment System Sampling Protocol

*The following wastewater sampling protocol applies to all Fuji Clean CE and CEN model treatment system and is intended to provide direction for proper sample collection, storage and preservation as well as proper tracking, analysis and reporting.*

1. Sample collection location shall be from the Disinfection Chamber within the Aeration Chamber of each system, which is the final location before discharge. If this area is too tight for the sampling tool, pull samples from the clarification chamber as shown.



Take samples from here; the final "Disinfection Chamber."



If the Disinfection Chamber is too tight to reach, pull samples from here; the "Clarification Chamber."

### Sample Procurement Methodology:

#### Grab Sample Collection (*Note: Prevent scum or solids from contaminating sample*)

- Open cover over the Aerobic Contact Filtration Chamber (the cover closest to system discharge) and observe the appearance of water including floating or suspended matter on the Sample Collection Sheet).
- Prepare sample bottle labels (per procedure Step #6 below) supplied by certified state laboratory and affix securely to bottles.
- Plunge sample dipper below water surface (about 2-3 inches) and allow to fill (note: multiple retrievals may be necessary to obtain the necessary volume).
- Transport to the accredited laboratory as soon as possible within the holding time frame for the target analytes as shown in the Sample and Preservation Holding Time Table.

Sampling Preservation/Holding Times/Volumes			
	Wastewater		
INORGANICS	container <sup>1</sup>	preservation <sup>2</sup>	holding time <sup>3,4</sup>
Alkalinity	P, G - 200 ml <sup>5</sup>	cool 4°C	14 days
Ammonia-N	P, G - 100 ml	H <sub>2</sub> SO <sub>4</sub> to pH<2, cool 4°C <sup>7</sup>	28 days
BOD <sub>5</sub>	P, G - 1000 ml	cool 4°C	24 hours
CBOD <sub>5</sub>	P, G - 1000 ml	cool 4°C	24 hours
Chloride	P, G	cool 4°C	28 days
COD	P, G - 60 ml	H <sub>2</sub> SO <sub>4</sub> to pH<2, cool 4°C <sup>7</sup>	28 days
Color	P, G - 100 ml	cool 4°C	48 hours
Conductivity/specific conductance/salt toxicity	P, G - 100 ml	cool 4°C	28 days
Hardness	P, G - 60 ml	HNO <sub>3</sub> to pH<2 <sup>6</sup>	6 months
Nitrate-N	P, G - 60 ml	cool 4°C	48 hours
Nitrite-N	P, G - 60 ml	cool 4°C	48 hours
Oil & Grease	1000 ml amber glass, teflon lined cap	H <sub>2</sub> SO <sub>4</sub> or HCl to pH<2, cool 4°C	28 days
Orthophosphate-P	P, G - 100 ml	Filter immediately, <sup>10</sup> cool 4°C	48 hours
pH	P, G - 100 ml	none required	immediately <sup>6</sup>
Phosphorus, total	P, G - 100 ml	H <sub>2</sub> SO <sub>4</sub> to pH<2, cool 4°C <sup>7</sup>	28 days
Total Kjeldahl Nitrogen (TKN)	P, G	H <sub>2</sub> SO <sub>4</sub> to pH<2, cool 4°C <sup>7</sup>	28 days
Turbidity	P, G - 100 ml	cool 4°C	48 hours
SOLIDS			
Settleable solids	P, G - 1000 ml	cool 4°C	49 hours
(TDS)	P, G - 200 ml	cool 4°C	7 days
Total suspended solids (TSS)	P, G - 1000/200 ml	cool 4°C	7 days
Total solids	P, G - 200 ml	cool 4°C	7 days
Total volatile solids (TVS) and Loss on Ignition (LOI)	P, G - 200 ml	cool 4°C	7 days
BACTERIOLOGY			
Total Coliform	P, G - 200 ml	cool 4°C	6 hours <sup>7</sup>
Fecal Coliform	P, G - 200 ml	cool 4°C	6 hours <sup>7</sup>

### Sample Acceptance Criteria

**Sample Documentation** - The laboratory provides chain of custody forms for complete documentation including sample specific comments and the following information: client specific information, sample id, sampler name, sampling date and time and location, sample matrix, type of container and preservation, analytical parameters and custody signatures with date and time. Sample Labeling – Samples must be assigned a unique identifier documented with indelible ink on a secure sample label and on the chain of custody form. Water resistant, permanent labels are available.

**Temperature** - EPA and MADEP require solid and aqueous samples be cooled to 4°C.

#### Notes:

1 P = high density polyethylene, precleaned (HDPE), G = glass, precleaned

2 Immediate preservation in the field is preferred. Preserve each aliquot at time of collection for composite sampling, if possible. When using an automatic sampler, cool sampler to 4°C until compositing is completed.

3 Holding times listed are the maximum that samples may be held before analysis or extraction.

4 Holding times listed start at time of sampling for grab samples and end of composite period for composites.

5 The volumes listed may be reduced or increased depending analyte combinations, detection limits and sample specific quality control. Contact the laboratory for minimum volumes for specific analytical combinations.

6 EPA defines "immediately" as within 15 minutes of collection. If not possible, analyze within 15 minutes of arrival at laboratory.

7 Deliver samples to the lab as soon as possible if 6 hours is not achievable. Add 0.008% sodium thiosulfate if the presence of residual chlorine is indicated by potassium iodide test paper.



2. Adequately trained sample collection personnel shall be provided by a Fuji Clean distributor or if required by state regulation, by a certified laboratory independent of Fuji Clean USA, its authorized service provider and system design engineer of record.
3. All samples shall be collected in sample containers supplied a state certified laboratory. Sample containers shall contain laboratory prepared sample preservatives when applicable.
4. Samples should be collected directly into the containers in which they will be submitted for analysis. Where this is not possible, a dedicated, disposable sampling device (such as a polyethylene bailer) may be used provided it is unwrapped immediately prior to use and properly disposed of after collecting the sample(s) from a single system.
5. A state certified laboratory supplied chain-of-custody and sample analysis request form shall accompany all sample containers and shall document
  - a) the name of all individuals in possession of the sample containers
  - b) the time
  - c) the date
  - d) reason for the sample container transfer
  - e) In addition, the form shall be used to specify each sample analysis request (e.g. TKN, Nitrate-nitrogen, chloride, etc.), method of sample preservation, and shall document the time of sample collection, the point of collection, the method used to induce sample flow and any anomalous events and observations which occur during the sample collection.
6. All sample containers shall be pre-labeled prior to sample collection. Labels shall provide the location (street address and site name if applicable) of the sample, parameter to be sampled; date and time of sample collection; sampler's initials; preservative (if any).
7. All samples shall be collected and immediately place in a laboratory supplied cooler and chilled on ice to 4°C.
8. All samples shall be collected as grab samples. Composite sampling is prohibited unless specifically authorized by the Executive Director.
9. Analysis protocol for nitrogen: When nitrogen is collected for analysis, the laboratory shall report:
  - a) Nitrate-nitrogen, nitrite-nitrogen, ammonia-nitrogen, total kjeldahl nitrogen and chlorides.
  - b) In addition the laboratory shall report total nitrogen as the sum of nitrate-nitrogen, nitrite-nitrogen, plus total kjeldahl nitrogen from samples collected during a common sampling date.
  - c) When laboratory results indicate ammonia-nitrogen concentration to be greater than total kjeldahl nitrogen concentrations, the results will not be accepted and re-sampling for all required parameters shall be required.

10. All sample collection, storage, and transport procedures shall be in conformance with all relevant state mandated field sampling procedures.
11. All laboratory analytical procedures shall be in accordance with all relevant state mandated laboratory methodology.

## **UV Systems**

Fuji Clean systems that include sampling from UV disinfection units shall be sampled in the separate pump tank as follows:

- a) Pre-UV sampling will follow the sampling protocol listed above.
- b) Post-UV samples will be drawn through a ¼” ballcock and Tygon tubing. Sampling protocol is as follows:

### *Sampling Equipment and Supplies*

- Sampling Device – ¼-inch ball valve fitting (supplied by Fuji Clean) and Tygon tubing

### *Grab Sample Collection*

- Follow all pre-sampling procedures described in standard “grab sample” protocol.
- Cut new section of Tygon tubing
- Install ball valve and Tygon tubing in discharge pressure port
- Activate discharge pump for 60 seconds. Then open sample collection container, put Tygon tubing into sample collection container, fill container and immediately cap container and place in cooler with ice.
- Transport to the laboratory as soon as practicable per respective holding times for the target analytes as shown in the Sample and Preservation Holding Time Table.