BIOCLERE™

BIOLOGICAL WASTEWATER TREATMENT SYSTEM

OPERATION & MAINTENANCE MANUAL

BIOCLERE MODELS: 16/22 & 16/25

AQUAPOINT
AN OBEH COMPANY

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www.aquapoint.com

BIOCLERE™

BIOLOGICAL TREATMENT SYSTEM

Congratulations on your purchase of a Bioclere biological treatment system. The Bioclere is a modification of the classic trickling filter. Trickling filters have been used for over one hundred years for the treatment of wastewater due to their reliability and simplicity of operation.

Naturally occurring microorganisms break down waste (organic matter) in the Bioclere and create harmless byproducts, mainly: water, carbon dioxide and additional microorganisms (sludge). The sludge created in the Bioclere is automatically returned and stored in your primary settling or sludge holding tank. Therefore, the Bioclere unit(s) do NOT require pumping.

However, regular pumping of your grease trap(s) (if applicable) and primary tank(s) is required. Failure to maintain a regular pumping schedule will have an adverse impact on the biology in the Bioclere system. If pumping is ignored for an extended period it may become costly to get the system back to efficient operation.

Aquapoint recommends that the grease trap(s) and primary tank(s) are checked every 3 and 6 months respectively by a certified operator or septic hauler and pumped as needed. For seasonal applications, pumping of the tanks should occur during mid-season to protect the microbiology in the filter. Failure to adhere to this pumping schedule will result in compromised treatment and will void the Bioclere warranty.

The Bioclere units are designed to reduce the effects of toxic substances that may enter the system from your facility. However, it is in your best interest to evaluate what is discharged to the system. Be aware of daily/weekly/monthly/annual activities and the quantities of chemicals that are being discharged. While the bacteria are resistant to many forms of toxic chemicals discharged in small quantities, large volumes or certain combinations of chemicals may have detrimental effects. Some items to be aware of include: cleaning agents, floor strippers, harsh chemicals, paints and solvents, as well as abnormal quantities of soaps and milk. If at any time you are unsure about using a particular chemical please call Aquapoint. If necessary, we will arrange a site meeting to evaluate your products.

Aquapoint wants you to have a good experience with your new Bioclere treatment system. If you treat the bugs with respect, they will treat you to decades of clean water and help to preserve the environment.

Please call our office if you have ANY questions concerning your new system.

Sincerely,

AQUAPOINT
(508) 985-9050

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This Technical Manual is supplied for the benefit of the user and is not applicable to any other customer. Aquapoint.3 LLC is not responsible for any other equipment used in conjunction with this installation. Please refer to contractor or other suppliers for information and use of their equipment.

1.0 GENERAL DESCRIPTION AND FUNCTION

1.1 The Bioclere is a secondary wastewater treatment system. The first stage of treatment occurs in the primary tank in which the solids are settled and partially digested. Wastewater then flows from the primary tank to the Bioclere where treatment by the natural process of biochemical oxidation takes place followed by final clarification prior to discharge.

1.2 The wastewater enters the baffled zone located in the clarifier beneath the Bioclere filter module. It is then pumped to the distribution assembly, which doses the surface of the filter media.

The oxidation process occurs as the water trickles over the biological film that grows on the media surface. The pump operates on a timed sequence that is specific to the individual facility wastewater characteristics to ensure that the dosing rate optimizes filter performance.

In the filter module the biological film thickens until carbonaceous material and oxygen no longer penetrate to the bacteria nearest the media surface. When this occurs the biological film sloughs from the media and passes through the media bed into the clarifier where it settles to the bottom. A sludge return pump periodically returns this sludge to the primary tank.

Thus, the filter media is self-purging and maintenance free.

1.3 Oxygen is provided by a fan located in the top housing of the Bioclere and is vented either through the effluent line of the system or the influent line to the biofilter. The fan is sized to provide the proper supply of oxygen to the treatment process.

1.4 Wastewater flows by gravity through the Bioclere. The pumps are used only for the treatment process. In the event of a power or pump failure the effluent will continue to pass by gravity through the sump portion of the Bioclere to its point of discharge. However, this situation should not be allowed to continue for an extended period of time because without the pumps operating the secondary treatment of the wastewater is no longer occurring.

2.0 SPECIFICATIONS & SCOPE OF SUPPLY

2.1 BIOCLERE MODELS 16/22 & 16/25

2.2 BIOCLERE EQUIPMENT SUPPLIED:

Item	Quantity Per Unit
Tank assembly	1 each
Filter media	1-4 cubic meters depending on model
Pipes, fittings & connectors	Misc.
Distribution system	1 each
Nozzles	3 each
Dosing pump	1 each
Recycle pump	1 each
Latches, Moore 702-L-C-SS	4 each
Baffle	1 each
Fan module assembly	1 each
Control panel	1 each
Misc. hardware	1 set
O & M manual	1 each
Padlocks, Abus	2 each
1 ½" key KA8302	2 each

2.3 PUMP TIMER SETTINGS:

Dosing pump **ON**	8 min.
Dosing pump **OFF**	2 min.
Recycle pump **ON**	2 min.
Recycle pump **OFF**	1 hrs.

2.4 SPECIFICATIONS (continued):

The following is a list of critical parts with specifications. It is recommended that the user have spare parts on hand at all times. They may be obtained through Aquapoint.

DOSING PUMPS:

Manufacturer:	Goulds
Type: LSP0711F	3/4 horsepower
# Required per unit:	One (1)
Electrical:	115v/1ph/60Hz

RECYCLE PUMPS:

Manufacturer:	Goulds
Type: LSP0711F	3/4 horsepower
# Required per unit:	One (1)
Electrical:	115v/1ph/60Hz

FAN:

Manufacturer:	Papst
Type: 4800X	58 cfm
# Required per unit:	One (1)
Electrical:	115v/1ph/60Hz

FLOAT SWITCH:

Manufacturer:	SJE Rhombus
Type: Vertical Master	1003778
# Required per unit:	One (1)
Electrical:	115v/1ph/60Hz

The above will assist when using the other sections of this manual and when ordering any spare parts.

3.0 INSTALLATION

3.1 INTRODUCTION:

This document establishes the installation procedures for the Bioclere secondary wastewater treatment system. It is recommended that these procedures be reviewed and approved by the engineer of record to ensure compatibility with specific site characteristics.

Aquapoint assigns a project manager for each installation to provide onsite supervision of the installation, the fresh water commissioning system and certification that the system is operational. Aquapoint will also arrange for the transportation of the system. Effective execution of these procedures requires coordination with the site contractor.

We request that the site contractor contact Aquapoint at 508-985-9050 to coordinate delivery, installation schedule and fresh water commissioning of the system.

3.2 PROCEDURE:

A. Locate Bioclere from site engineering plans.

B. Excavate to 16" below clarifier. De-water excavation if required.

C. Add 12" (1.00 ft.) of clean 3/8" pea stone.

D. Install pre-cast mounting pad approximately centered to Bioclere location. (See drawing PMW/AWT3015-1).

E. Check to ensure mounting pad is level and elevation is correct.

F. Carefully lower Bioclere into position with proper rigging and lifting techniques.

G. Orient and align Bioclere to inlet and outlet directions. Confirm Bioclere is level.

H. Center the base of the Bioclere unit onto the mounting pad. Attach the Aquapoint, Inc. supplied chain & turnbuckle assemblies for securing and stabilizing the Bioclere unit. (The Chain & turnbuckle assemblies are for installation only and are not for anchoring the Bioclere to offset buoyant forces.)

I. Fill Bioclere with clean fresh water to bottom of outlet pipe to stabilize unit.

J. If Bioclere is installed in groundwater refer to anchoring requirements on site plan and/or contact site engineer.

K. If Bioclere is not installed in groundwater backfill excavation with clean 3/8" pea stone and/or sand to within 12" of the inlet pipe. Check level of Bioclere.

NOTE: Use care while backfilling to prevent Bioclere movement and/or damage to Bioclere.

K. Install inlet, outlet and vent/test port piping.

NOTE: If installation specifies venting through house stack, bring vent pipe to grade and cap.

L. Install recycle piping from Bioclere back to the inlet end of primary (septic) tank. The recycle line is 1 ½" Schedule 40 PVC from the Bioclere to the outside of the primary tank and Schedule 80 PVC inside the primary tank. Schedule 80 PVC to be installed against inside wall and at ½ the tank's liquid depth terminating with a 90^{o} elbow. (See drawing PMW/1256-1). Use pressure fittings. If possible, slope recycle line to the primary tank to allow the recycle pipe to drain.

M. Install wiring with watertight conduit from control location to Bioclere.

N. Backfill around Bioclere with sand and/or pea stone to final grade.

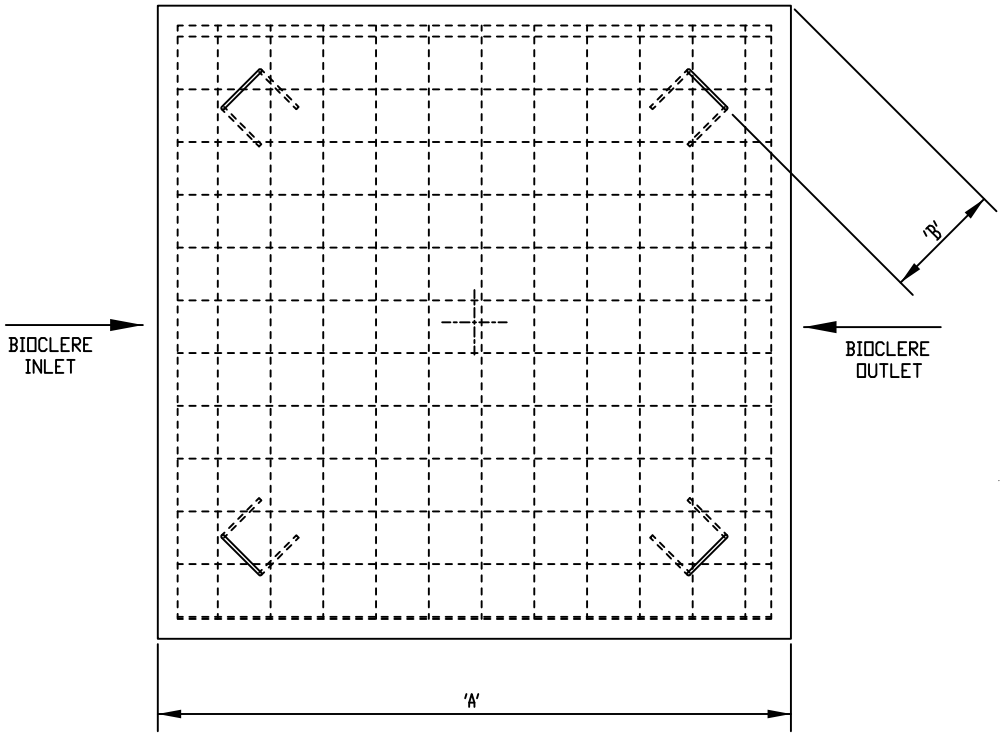
O. Install control box in protected location preferably on exterior of home or building to facilitate access by the operator. Connect power feed and Bioclere. (Drawing AWT 3308).

The following items are performed by the Aquapoint Authorized Representative unless otherwise specified:

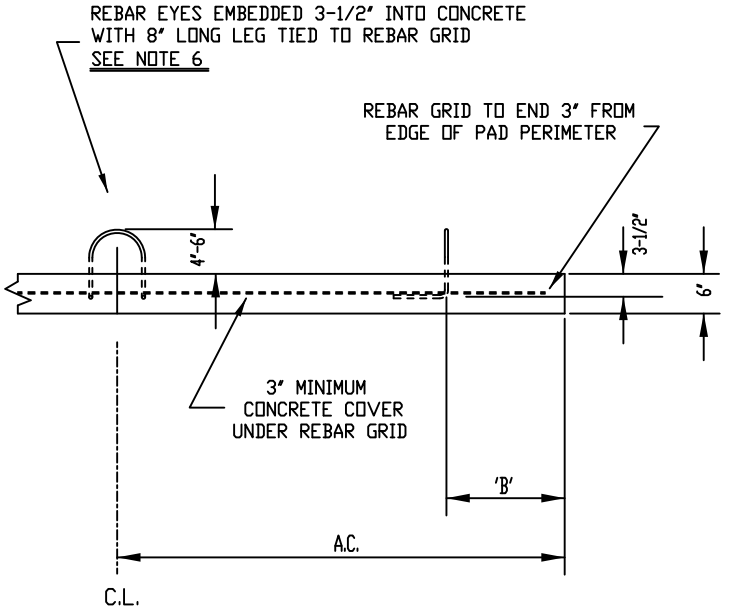
P. Install dosing and recycle pumps with safety ropes to the appropriate pipes.

Q. Install pump wiring to junction box in fan module. (See drawing AWT 3308)

PLAN ON SQUARE PAD
(SEE NOTE 5)



PAD ELEVATION
(ACROSS CORNERS)



BIOCLERE MODEL	'A'	'B'	STEEL REINFORCEMENT GRID	APPROX PAD WEIGHT
16/22 16/25	6'	9"	#3 REBAR @ 8" O.C.	3,600 lbs

NOTES: UNLESS OTHERWISE SPECIFIED:

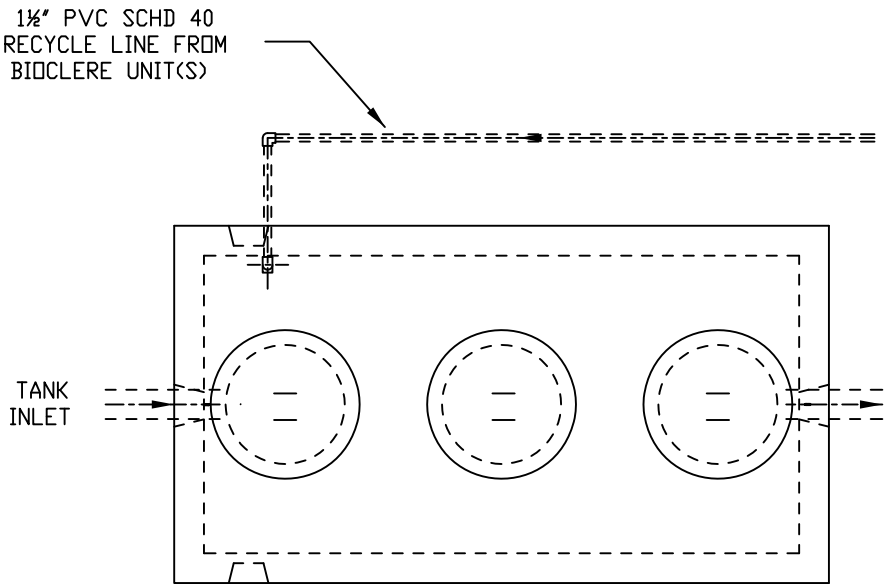
1. CONCRETE MINIMUM STRENGTH: 4,000PSI @ 28 DAYS.
2. DEFORMED REINFORCING BARS TO BE 60,000 PSI YIELD STRENGTH.
3. EYES (4): 1/2" DIAMETER REBAR CAST IN PLACE AS SHOWN.
4. PAD TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
5. CIRCULAR PADS WITH "A" = DIAMETER, CAN BE SUBSTITUTED FOR SQUARE PADS. CIRCULAR PAD REBAR EYES INSTALLED 6" FROM PAD PERIMETER.
6. REBAR EYES ARE NOT DESIGNED FOR LIFTING THE CONCRETE PAD.

Bioclere Base Pad 16.dwg

AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

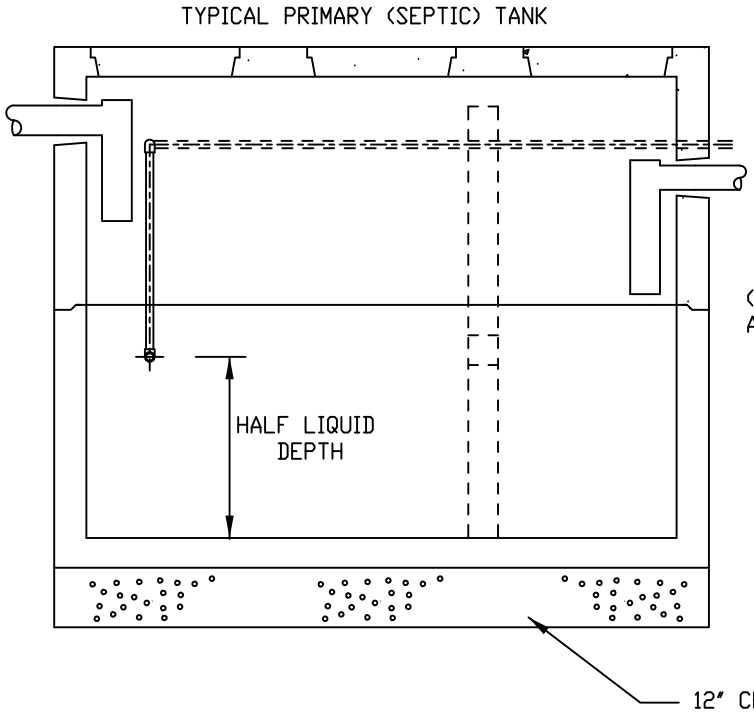
TITLE:	PRECAST MOUNTING PAD FOR 16 SERIES BIOCLERES
DRAWING NO.:	AWT3015-1
REVISION:	A
DATE:	JUNE 18, 2013
DWN BY:	JSL
SCALE:	(1 : 20) SIZE: B (A3)
SHEET #:	

1½" Biofilter Recycle Line Installation at Primary Tank.

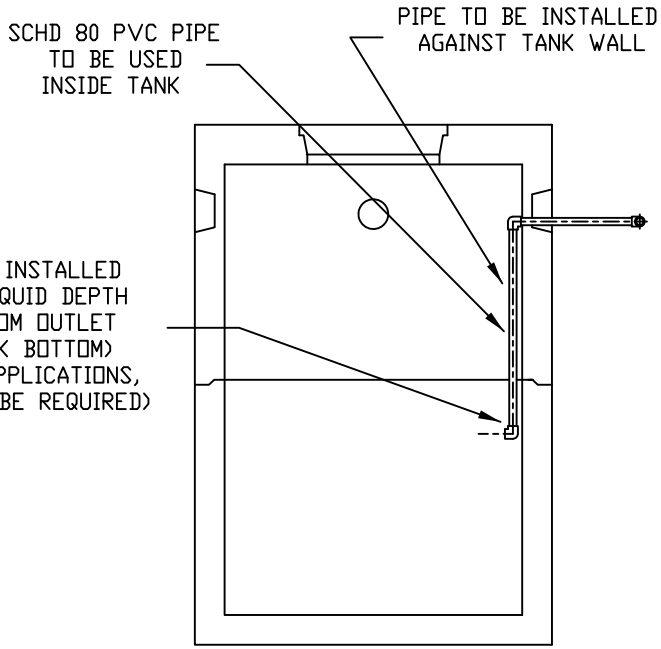


NOTES FOR CONTRACTOR:

1. SLOPE PIPE BACK TO SEPTIC TANK WITH NO LOW POINTS.
2. USE PRESSURE FITTINGS ONLY.



PVC 90° ELBOW INSTALLED AT CENTRE OF LIQUID DEPTH (½ DISTANCE FROM OUTLET INVERT TO TANK BOTTOM) (FOR COMMERCIAL APPLICATIONS, AN EXTENSION MAY BE REQUIRED)



1.5BiofRecyc.dwg

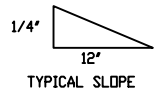
AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

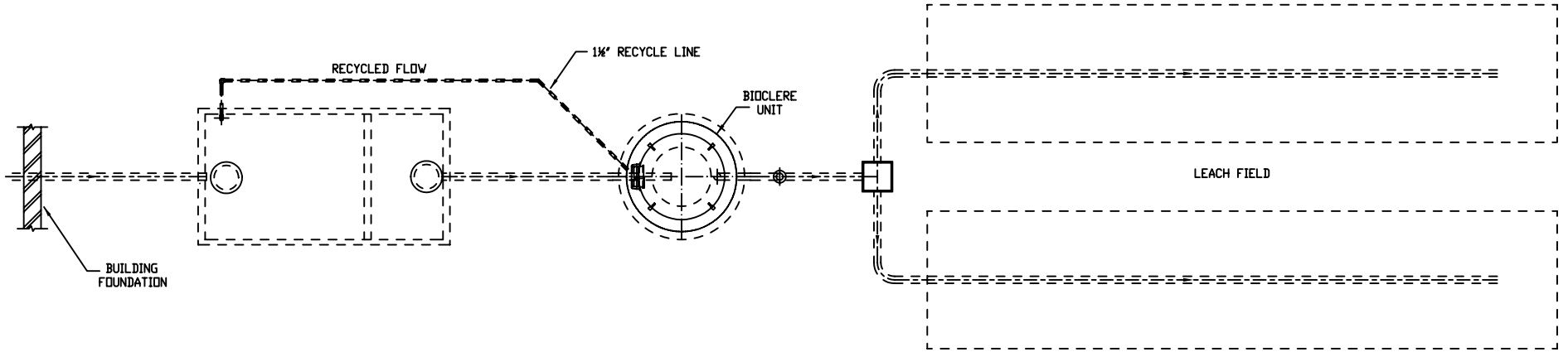
TITLE:	1½" Recycle Line Installation. (Primary Tank)
DRAWING NO:	PMW/1256-1
REVISION:	B
DATE:	9 Feb 09
DWN BY:	P.WILLEY
SCALE:	1 : 40
SIZE:	A / A4
SHEET #:	1 of 1

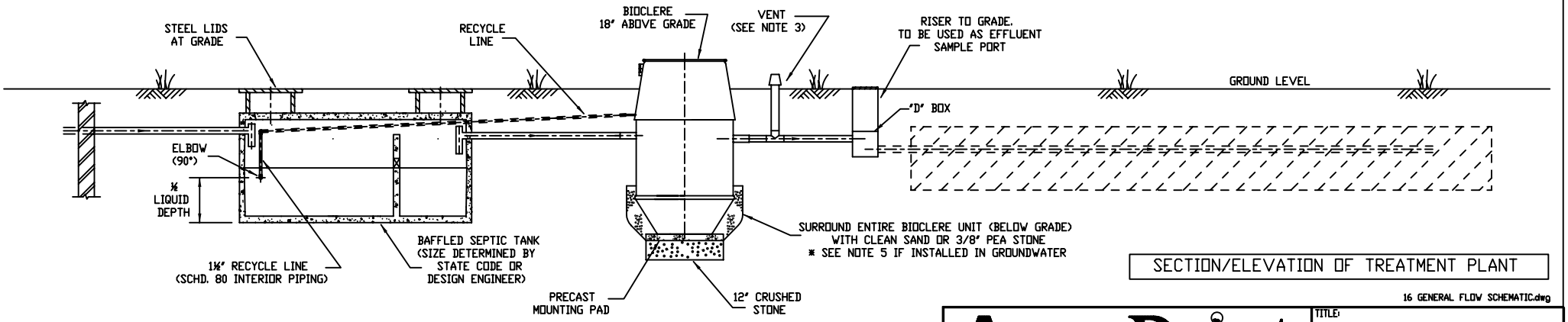
16 GENERAL FLOW SCHEMATIC

NOTES: UNLESS OTHERWISE SPECIFIED:
1. THIS INSTALLATION REPRESENTS BIOCLERE MODEL 16 SERIES.
2. OTHER MODELS MAY BE SUBSTITUTED.
3. IF VENTING IS ACCOMPLISHED THROUGH BUILDING, VENT IS TO BE BROUGHT TO GRADE AND CAPPED.
4. IF INSTALLED IN GROUND WATER CONTACT SITE ENGINEER FOR ANCHORING REQUIREMENTS.
5. CONTRACTOR IS TO SUPPLY ALL CONCRETE STRUCTURES AND PERFORM INSTALLATION.

PLAN ON TREATMENT PLANT







SECTION/ELEVATION OF TREATMENT PLANT

16 GENERAL FLOW SCHEMATIC.dwg

0 3' 6' 9' 12' 15' 18' 21' 24' 27' 30'

AquaPoint
Performance Based Wastewater Treatment Systems
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

TITLE:	TYPICAL GROUND INSTALLATION
DRAWING NO:	UK.1265-4
REVISION:	D
DATE:	3/22/01
DWN BY:	P.WILLEY
SCALE:	1 : 60
SIZE:	B / A3
SHEET #:	1 of 1

4.0 BIOCLERE START-UP

A. During installation the Bioclere and primary tanks should be filled with potable water. Be certain that all water is clean and clear. Under no circumstances is silt laden or muddy water to be used in the Bioclere.

B. Check that the dosing pump is immersed and that the pipe connected and the distribution assembly is level. Check that the sludge recycle pump is standing on the floor of the sump and that the discharge pipe is connected to the sludge recycle line.

C. The Bioclere system is controlled by a Programmable Logic Relay (PLR) with integral HMI screen (interface). PLR operating instructions are provided in Appendix B of this manual and should be reviewed prior to proceeding with this startup procedure.

D. Turn **ON** the toggle switch in the fan box module on the side of the Bioclere unit. When this is turned **OFF**, the fan and all pumps are disconnected and the alarm will sound if the main circuit breaker in the Bioclere control panel is **ON**.

E. Turn the main power breaker in the control panel to **ON**. The green power light will turn **ON** and the PLR control screen will be illuminated. Note that the screen will go into sleep mode and the screen will go black after about 10 seconds if the PLR control buttons are not being used. To re-illuminate the screen press the (esc) key.

F. Using the **(+/-)** navigation buttons on the PLR access the dosing pump and recycle pump timer setting screens and set the dosing and recycle pump timers to short test cycles for the initial startup process. We recommend the following settings.

	ON	**OFF**
Dosing	1 min.	1 min.
Recycle	1 min.	2 min.

G. Access the recycle pump control screen and set the recycle pump to **AUTO**. The recycle pump should turn **ON** and **OF**F in a continuous cycle according to the above timer settings. The sludge recycle operation can be confirmed by observing flow from the recycle line at the head of the primary tank or at the tell tail hole in the recycle piping inside the Biocloere unit.

H. Access the dosing pump control screen and set the dosing pump to **AUTO**. The dosing pump should turn **ON** and **OFF** in a continuous cycle according to the above timer settings. Dosing pump operation can be confirmed by observing flow from the Bioclere dosing array assembly inside the unit.

I. Manually activate the float switch using by pulling one of the float switch wires out of the terminal strip in the control panel or by lowing the water level in the Bioclere clarifier. The

recycle pump operation should terminate when the float switch is in the extended position (open circuit).

J. Confirm the Bioclere ventilation fan is operational.

K. ALARMS: All alarm conditions are controlled by and logged in the PLR module. The alarm circuit consists of (1) current sensor (shared by the dosing and recycle pumps) and (1) AR power alarm relay. The PLR is set for a 3 second delay before the alarm will energize. This allows the pumps time to attain operating amperage. The visual alarm is a light on the top left side of the enclosure, while a Sonalert type audible alarm is located on the bottom right of the enclosure. Alarm conditions must be silenced by accessing the PLR interface screen and by pressing the **(A)** button. Acknowledging an alarm will reset the alarm function, stop the beacon and silences the horn. If applicable, a USP (United Security Products) autodialer is utilized to provide two functions:

1. Immediate notification of an alarm condition to a maximum of (4) telephone numbers and,
2. Weekly call-in to a telephone number verifying that the unit is on line and operating normally.

The current sensing relay (inside the control panel) senses when the dosing and/or recycle pump is running. If a pump fails, draws less current than normal or the circuit breakers trip, the alarm will be activated. These contacts are connected to an audio/visual alarm.

External alarm indication:

A dry contact between terminals 23 and 24 closes for an alarm condition and is used for connection to an automatic voice/ pager dialer system (120 VAC max).

Alarm conditions are as follows:

1. Fan circuit breaker trips/power loss: AR contact opens to indicate either condition and energizing local alarms.

2. Pump failure: Upon loss of amperage as detected by the current sensor the alarm will be initiated.

3. Power switch off in fan module at unit.

L. Testing of dosing and sludge recycle pumps in **MANUAL** mode:

Turn **ON** system as described above and put dosing and recycle pumps in **MANUAL** position. When the pumps start observe the water flowing from the dosing array and into the inlet of the primary tank or observe flow through the recycle “telltale” inside the Bioclere.

M. If any of the functions described above fail, check with the trouble shooting section of this manual (Section 7).

N. Reset timers as described in section 2.3 “Timer Settings” of this manual.

O. If the unit is ready for treatment it may be left in the operating condition with PLR screens set to **AUTO**.

P. If there is some delay before the plant is needed it is recommended that the shut down procedure in Section 5 is followed.

5.0 BIOCLERE SHUTDOWN

A. No action needs to be taken if there is a temporary cessation of flow to the plant for a period of time which does not exceed up to twelve (12) weeks. Leave the plant in operation with power **ON**.

B. Should the plant not need to be operational for any period in excess of 12 weeks, the following shut down procedure will apply:

   1. Run the sludge recycle pump for 2 minutes to remove any secondary sludge from the Bioclere.

   2. If possible, keep the power **ON** to the Bioclere control panel and turn **OFF** the dosing and recycle pumps and leave the fan running. Otherwise, turn the power **OFF** and remove the fan unit. Reinstall the fan unit when the Bioclere is placed back in service.

   3. If "B" is not possible, turn the main power on the Bioclere control panel to **OFF** position.

C. On resumption of wastewater flow to the plant the Bioclere should be re-started as described in Section 4.

6.0 MAINTENANCE PROCEDURES

6.1 INTRODUCTION:

The treatment system shall be operated by an Aquapoint Certified Wastewater Treatment Plant Operator. The treatment system shall also be operated in accordance with the Manufacturers recommendations contained in the Bioclere System Technical Manual. Reporting of test analyses will be done in conformance with applicable rules and local regulations for the use of the system.

Turn the main power switch to **OFF** before servicing the pump, fan or electrical panel box.

6.2 FREQUENCY OF MAINTENANCE:

A. Initial start-up visit to ensure proper commissioning and system operation

B. Weekly (first two weeks): Check pump and fan operation visually via access hatch. Check the accuracy of the timers through two (2) complete cycles.

C. Standard Quarterly Maintenance:

1. Check general condition/appearance of Bioclere unit.
2. Check vent flow, odor.
3. Check general condition of fan box including internal and external wiring, lock, latch, gaskets, etc.
4. Check for quiet fan operation.
5. Check condition of cover locks, latches, gaskets.
6. Check and characterize biomass growth (thickness, color, uniformity).
7. Check recycle pump operation and timing
8. Check dosing pump operation, timing and spray pattern.
9. Check general condition of dosing assembly and clean spray nozzles as necessary.
10. Check general condition of control box including locks, gaskets, etc.
11. Check control panel switches, alarms, timers, etc.
12. Complete and maintain service report file.

See attached Bioclere field report for complete O&M procedures.

6.3 PROCESS CONTROL FOR CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND ($CBOD_5$) REMOVAL WITH THE BIOCLERE SYSTEM:

Wastewater flows from the primary settling tank into a baffled chamber in the clarifier of the Bioclere. Dosing pumps located in this clarifier intermittently dose the PVC filter media bed with the wastewater.

In the Bioclere trickling filter the organic material in the wastewater is reduced by a population of microorganisms whish attach to the filter media and form a biological slime layer. In the outer portion of the slime layer treatment is accomplished by aerobic microorganisms. As the microorganisms multiply the biological film thickens and diffused oxygen and organic substrate are consumed before penetrating the full depth of the slime layer. Consequently the biological film develops aerobic, anoxic and anaerobic zones.

Absent oxygen and a sufficient organic carbon source ($CBOD_5$) the microorganisms near the media surface lose their ability to cling to the media. The wastewater flowing over the media washes the slime layer off the media and a new slime layer begins to form. This process of losing the slime layer is called "sloughing" and it is primarily a function of organic and hydraulic loading on the filter. This natural process allows a properly designed media bed to be self-purging and maintenance free.

The sloughed biomass settles to the bottom of the clarifier as sludge. This secondary sludge is periodically pumped back to the primary tank to enhance the digestion and denitrification processes which is further discussed in ***Section 6.4.2 below.***

6.3.1 Bioclere Trickling Tilter Dosing Rates:

The Bioclere uses a dosing pump to distribute wastewater over the trickling filter. It is critical to periodically clean the nozzles of excess biomass using a bottle brush to ensure uniform distribution. The Bioclere dosing rates that were set at the time of commissioning are listed in ***Section 2.0*** of this Technical Manual. The dosing rates are set so that the flow of water and pollutants (CBOD5 and ammonium) over the biofilm are maximized. This in turn, will maximize the pollutant removal efficiencies and facilitate biomass sloughing through the filter. Therefore, it is **not necessary** to adjust the dosing timers. In fact, the dosing timers should only be adjusted if the Bioclere receives little or no flow for extended periods.

6.3.2 Bioclere Recirculation Rates:

Recirculation of sludge and treated effluent is accomplished in each unit using a submersible stainless steel pump controlled by a fully adjustable timer. The biological solids generated in the filter are returned to the sludge storage facility at regular intervals, typically every hour or two. Therefore, the sludge will not collect in the secondary settling tank and a sludge blanket will not form.

The benefits or recirculation are numerous and include: 1) removing biological sludge from the Bioclere so that only the primary tank(s) need periodic pumping, 2) diluting the influent pollutant concentrations which results in a thinner and more effective biofilm on the media bed, 3) odors are reduced in the primary tanks and the treatment components, 4) diluting biological inhibitors (cleaning agent, sanitizers, etc.) that may exist in the wastewater, 5) achieving nitrogen removal through denitrification due to the recirculation of nitrate to the primary tank.

The recirculation rates that were set at the time of commissioning are listed in ***Section 2.0*** of the Technical Manual. These rates may need adjusting depending on the 1) actual average daily flow, and 2) actual measured strength of the wastewater (concentrations of influent BOD5, TKN etc.). Please contact AquaPoint prior to adjusting the recirculation rates.

6.4 PROCESS CONTROL FOR NITROGEN REMOVAL WITH THE BIOCLERE SYSTEM:

Below is a brief description of how nitrogen removal is accomplished in the Bioclere unit.

6.4.1 Nitrification:

Nitrification is the sequential biological oxidation of NH_4-N, first to nitrite (NO_2^--N) by *Nitrosomonas* bacteria then to nitrate (NO_3^--N) by *Nitrobacter* bacteria according to the following overall equation:

$2NH_4^+ + 2O_2 \rightarrow NO_3^- + 2H^+ + H_2O$

Oxidation of 1 mg/l of NH_4-N requires approximately 4.6 mg/l of dissolved oxygen and produces acid resulting in the consumption of approximately 7.1 mg alkalinity as $CaCO_3$/mg NH_4-N oxidized. Alkalinity is the inorganic carbon source nitrifying bacteria require to oxidize ammonia. ***Therefore it is critical that alkalinity is monitored on a regular basis to ensure complete nitrification.*** Alkalinity concentrations in the Bioclere effluent must remain above 75 mg/l as CaCO3 to allow nitrification to proceed. If the alkalinity drops below this value then it is likely that nitrification will be inhibited and the effluent may not meet permit requirements. It is best to measure the alkalinity in the Bioclere effluent with a field test kit each time you are onsite to inspect the treatment system. Bioclere effluent can be collected from the final pump chamber Effluent can be collected with a bailer.

If required, alkalinity can added in the form of baking soda (sodium bicarbonate). It can be purchased as a powder in 50 pound bags. Contact Aquapoint if assistance is required to determine the alkalinity dosing rate.

Please note that nitrifying bacteria require a stable and consistent environment because of their sensitivity to numerous inhibitory and toxic substances and an array of environmental factors including temperature, pH, dissolved oxygen, and alkalinity. If nitrification is not being achieved then it will be necessary to verify the influent average daily flow, pH, BOD_5, TSS, TKN. It may also be necessary to conduct an inventory of the type and quantity of cleaning and process solutions that are used that may impact the microorganisms in the Bioclere units (i.e. daily, weekly, monthly, yearly).

6.4.2 Denitrification:

Dissimilating denitrification, the biological reduction of nitrate (NO_3^--N) to nitrite (NO_2^--N) and ultimately nitrogen gas in an anoxic environment (dissolved oxygen <0.5 mg/l), involves the transfer of electrons from a reduced electron donor (organic carbon substrate) to an oxidized electron acceptor (NO_3^--N). It is an important reaction as it restores approximately (3.57 mg alkalinity/mg of NO_3^--N reduced), and partially offsets the effects of nitrification in a combined nitrification/denitrification process. The microorganisms responsible for completing the reaction are facultative heterotrophic aerobes contained in the wastewater that are also responsible for $CBOD_5$ oxidation in the Bioclere.

Denitrification in the Bioclere system is accomplished by periodically recirculating secondary sludge and treated nitrified effluent to the septic tank which provides an anoxic environment. Recirculation typically occurs several minutes every hour via a timer in the control panel. See ***Section 2*** of the Bioclere Technical Manual for Bioclere recycle and dosing rates. For typical residential strength wastewater, recirculation of treated effluent from the Bioclere to the septic tank will achieve >70% removal of total nitrogen. This is because weight ratios of carbon to nitrogen, as measured as **BOD:TKN** in the influent wastewater are usually greater than the generally accepted ratio of **4:1** in which denitrification has been proven to proceed without an external carbon source.

AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
TEL 508.985.9050
FAX 508.985.9072

BIOCLERE™

Submit by Email

FIELD REPORT

Date

Client

Address

City State

Inspector

Bioclere Model #(s)

Reason For Site Visit:

☐ O & M ☐ Commissioning

☐ Testing ☐ Other:

(1) Odor

1) Is there odor around the site? ☐ Yes ☐ No

2) Where is the source of odor?

3) If odor is present, check all that apply: ☐ Mild ☐ Medium ☐ Strong ☐ Musty ☐ Septic

(2) Sludge & Scum Depth Measurements

	Scum	Sludge
Grease Trap		
Primary Tank #1		
Primary Tank #2 (if applicable)		
Bioclere 1A		
Bioclere 1B (if applicable)		

	Scum	Sludge
Bioclere 2A (if applicable)		
Bioclere 2B (if applicable)		
Effluent Tank		
Other: _____		

(3) Bioclere Venting

1) Record the Bioclere fan model #(s):

2) Is air passing through the vent(s)? ☐ Yes ☐ No

(if in doubt, put a small plastic bag around vent and allow to fill)

3) Is the fan operating and in good condition...

for Bioclere 1A? ☐ Yes ☐ No

for Bioclere 2A? (if applicable) ☐ Yes ☐ No

for Bioclere 1B? (if applicable) ☐ Yes ☐ No

for Bioclere 2B? (if applicable) ☐ Yes ☐ No

(Please provide necessary details in the report summary section)

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NEW BEDFORD, MA 02745
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FAX 508.985.9072

BIOCLERE™

FIELD REPORT

(4) General

	Bioclere 1A	Bioclere 1B (IF APPLICABLE)	Bioclere 2A (IF APPLICABLE)	Bioclere 2B (IF APPLICABLE)
Are there any filter flies in the unit?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
If so, how many?	☐ Many ☐ Few	☐ Many ☐ Few	☐ Many ☐ Few	☐ Many ☐ Few
Is the lid gasket in good condition?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Locks/latches/handles in good condition?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Is there any external damage to the units?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Cover, fan box, & control panel securely locked?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Does the fan box contain standing water?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

(Please provide necessary details in the report summary section)

Were influent/effluent samples taken for lab analysis? ☐ Yes ☐ No

If process control test samples were taken, please provide the following information:

Alkalinity (as $CaCO_3$) _____ pH _____ Turbidity (NTU) _____

Sample Locations: _____ Temperature (F) _____ DO (mg/l) _____ NH_3-N (mg/l) _____

NO_3-N (mg/l) _____ Other: _____ _____

(5) Biomass Characterization

	Bioclere 1A	Bioclere 1B (IF APPLICABLE)	Bioclere 2A (IF APPLICABLE)	Bioclere 2B (IF APPLICABLE)
What is the color of the biomass?	☐ White ☐ White/Gray ☐ Gray ☐ Gray/Brown ☐ Brown ☐ Red/Brown ☐ Black	☐ White ☐ White/Gray ☐ Gray ☐ Gray/Brown ☐ Brown ☐ Red/Brown ☐ Black	☐ White ☐ White/Gray ☐ Gray ☐ Gray/Brown ☐ Brown ☐ Red/Brown ☐ Black	☐ White ☐ White/Gray ☐ Gray ☐ Gray/Brown ☐ Brown ☐ Red/Brown ☐ Black
Classify the growth of the biomass 6-12 inches below the media surface. 1=light 2=medium 3=heavy				

(6) Nozzle Spray Pattern

	Bioclere 1A	Bioclere 1B (IF APPLICABLE)	Bioclere 2A (IF APPLICABLE)	Bioclere 2B (IF APPLICABLE)
1) Does spray cover the entire media surface area?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
(If not, clean each nozzle with a bottle brush)				
2) Does the spray now cover entire surface area?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
If not, then: *a. remove nozzles and soak them in a bleach solution.* *b. manually engage both dosing pumps for 2 min.* *c. replace nozzles*				
3) Does the spray now cover entire surface area?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
If not, consult AQUAPOINT				

AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
TEL 508.985.9050
FAX 508.985.9072

BIOCLERE™

FIELD REPORT

(7) Pumps and Control Panel

	Bioclere 1A	Bioclere 1B (IF APPLICABLE)	Bioclere 2A (IF APPLICABLE)	Bioclere 2B (IF APPLICABLE)
What is the dosing pump timer setting?	min on: ____ min off: ____	min on: ____ min off: ____	min on: ____ min off: ____	min on: ____ min off: ____
What is the recycle pump timer setting?	min on: ____ hrs off: ____	min on: ____ hrs off: ____	min on: ____ hrs off: ____	min on: ____ hrs off: ____

For the following checklist, set dosing and recycle timers to a test cycle.

What is the amperage of dosing pump 1?	____ Amps	____ Amps	____ Amps	____ Amps
What is the amperage of dosing pump 2?	____ Amps	____ Amps	____ Amps	____ Amps
What is the amperage of recycle pump?	____ Amps	____ Amps	____ Amps	____ Amps
Is dosing pump operating according to test cycle?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Is recycle pump operating according to test cycle?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Are the dosing pumps alternating?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

(Please provide necessary details in the report summary section)

(8) Plumbing

Are the unions in the Bioclere leaking? ☐ Yes ☐ No
(If "yes", then tighten with pipe wrench)

Is the recycle siphon break weep hole operating as designed? ☐ Yes ☐ No
(If "no", clean weep hole)

(9) Final Check

- ☐ Main Power set to "On" and toggle for all pumps set to "Normal" (or "Auto")
- ☐ Alarm toggle set to the "On" position
- ☐ Recycle and dosing pump timers are set back to original cycles in control panel
- ☐ Control panel, Bioclere cover, and fan box locked
- ☐ Record daily flow rate or water meter reading (if possible): ____

(10) Report Summary:

Note: Contact Aquapoint for pump, fan and control component replacement parts.

Signature: _____

7.0 TROUBLE SHOOTING

7.1 Before conducting any repair work on the fan or pump, replacing fuses, or doing any work on the panel or fan module:

SWITCH THE MAIN BIOCLERE BREAKER AND POWER PANEL TOGGLE SWITCH TO OFF

FAULT	POSSIBLE CAUSE	CORRECTIVE ACTION
Fan not working	Power failure	Check circuit breaker and replace if necessary.
	Fan motor failure	Check wiring and terminal connections. Replace fan if necessary.
Dosing pump not working	Power failure	As for fan above.
	Low-level protection	Check that pump is fully submerged.
	Timer control failure.	Check that power switch is ON Replace timer if necessary.
	Pump failure	Check pump in accordance with manufacturer's instructions supplied.
Excessive build-up of biomass	Plant overload	Check that hydraulic and organic load are within design limits. Contact Aquapoint Inc. if capacity is to be increased.
	High sludge levels	Check sludge levels in each unit and de-sludge as necessary.
No biomass in filter	Excess shedding of biomass.	investigate and eliminate any source of biofilm poisoning such as disinfectant, household bleach, acids, etc. showing up in waste.
Odorous	Inefficient treatment.	Check that dosing assembly sprinkles evenly over media surface. Clean dosing assembly.
	Inadequate air supply	Check fan and air intake. See fan not working above.

8.0 FINAL EFFLUENT QUALITY PROBLEMS

8.1 HIGH SUSPENDED SOLIDS

If effluent levels are exceeded carry out the following checks:

1. Examine primary settlement tank. If excessive sludge or floating matter in the chamber is discharging to the Bioclere arrange for the primary tank to be de-sludged.
2. Inspect sludge recycle pump, clean and test to ensure pump is operating satisfactorily.
3. Consult distributor for assistance.

8.2 HIGH C.B.O.D. (Carbonaceous Biochemical Oxygen Demand)

If effluent levels are exceeded carry out the following checks:

1. Check for signs of excessive sludge in the system and for suspended solids.
2. Check that the fan is operating continuously and that the air inlet to the fan is unobstructed. Clean and replace as necessary.
3. Check that the spray distribution system is clean and that the effluent is being distributed evenly to the filter media.
4. Check whether the loading to the plant has increased beyond the design basis. Consult distributor if loading has increased.
5. Ensure that there are no toxic or concentrated cleansing chemicals being discharged to the plant.

8.3 HIGH NH_3N (ammonia-nitrogen)

Carry out check procedure as for Item 8.2.

8.4 HIGH NO_3 (Nitrate-nitrogen)

If effluent levels are exceeded carry out the following checks:

1. Check the recirculation pump and confirm it is operating properly.
2. Check the dissolved oxygen (DO) concentration in the primary settling tank effluent tee. The conditions should be anoxic (between 0.2 and 0.5 mg/l DO). If the DO concentration is high, reduce the recycle rate. If the DO concentration is low, increase the recycle rate.

For additional assistance contact:

AQUAPOINT.3 LLC
39 Tarkiln Place
New Bedford, MA 02745
Tel. 508-985-9050
Fax 508-985-9072

8.5 TOXIC MATERIALS WARNING

In order to maintain proper Bioclere operation the following must be noted:

This Bioclere system is designed to provide treatment for a specific waste stream. Its fixed film biological process is exceptionally stable and will tolerate shocks of high strengths of organic loading. However, toxic shock loading may adversely impact effluent characteristics.

None of the following should be introduced into the Bioclere plant:

1. Gasoline, kerosene, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid or gas.
2. Any non-latex paints, paint thinners, paint removers, or strippers.
3. Any organic solvent or any liquid containing any organic solvent.
4. Any quaternary ammonium sanitizers.
5 Any photographic fluids including waste developer, fixer and rinse water.
6 Any pesticide including insecticides, fungicides, rodenticide, and herbicides of any sort.
7. Any water or wastes containing toxic poisonous solids, liquids, or gases, in sufficient quantity to interfere with the sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, or create any hazard in the ground water.
8. Any waters or wastes having a pH higher than 9.5 or lower than 5.5.
9. Solid or viscous substances in quantities capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the sewage works such as, but not limited to, ash, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, ungrounded garbage, whole blood, paunch, manure, hair, fleshing, and entrails, and paper dishes, cups, milk containers, etc. either whole or in parts.
10. Any water or waste containing fats, wax, grease, or oils, whether emulsified or not, in excess of 100 mg/l, or containing substances which may solidify or become viscous at temperatures between 32 and 150 degrees Fahrenheit (0-65 degrees Celsius).
11. Any shredded garbage. The installation and operation of any garbage grinders in systems using the Bioclere is prohibited.
12. Any storm water, surface water, roof runoff, or subsurface drainage unless the system is designed to accept such sources of water.
13. Rubber gloves, gauze pads, etc. which are typical from medical facilities.

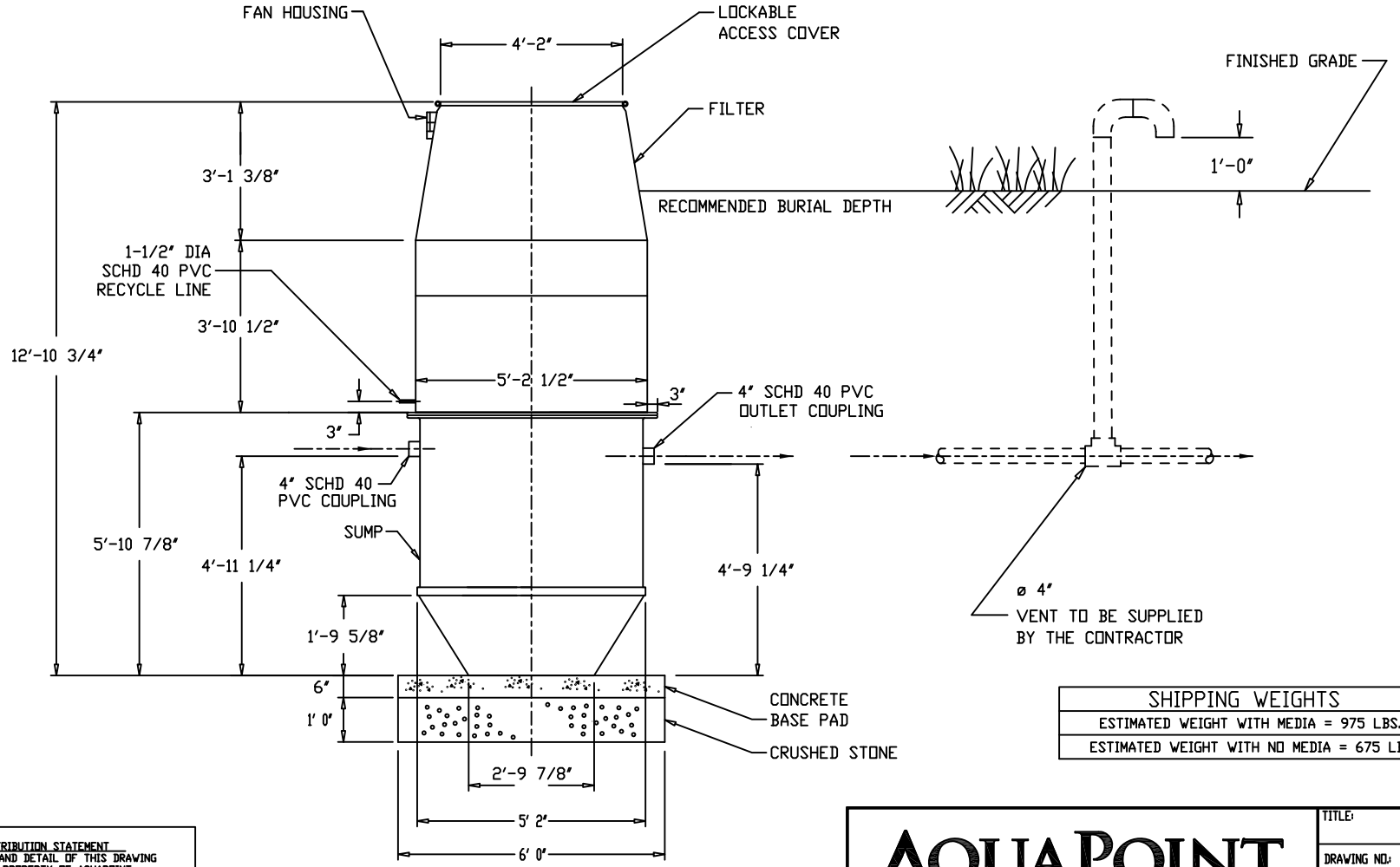
Similarly, substances, which might enhance or inhibit biological activity, should not be discharged into the system.

In the event these or other inhibiting substances inadvertently enter the waste stream contact Aquapoint immediately.

APPENDIX A

BIOCLERE DRAWINGS

NOTES:
1. VENT MAY BE RUN UP THE SIDE OF BUILDING.
2. SEE DRAWING PMW/AWT3015-1 FOR MOUNTING PAD CONSTRUCTION DETAILS.



BIOCLERE MODEL 16/22

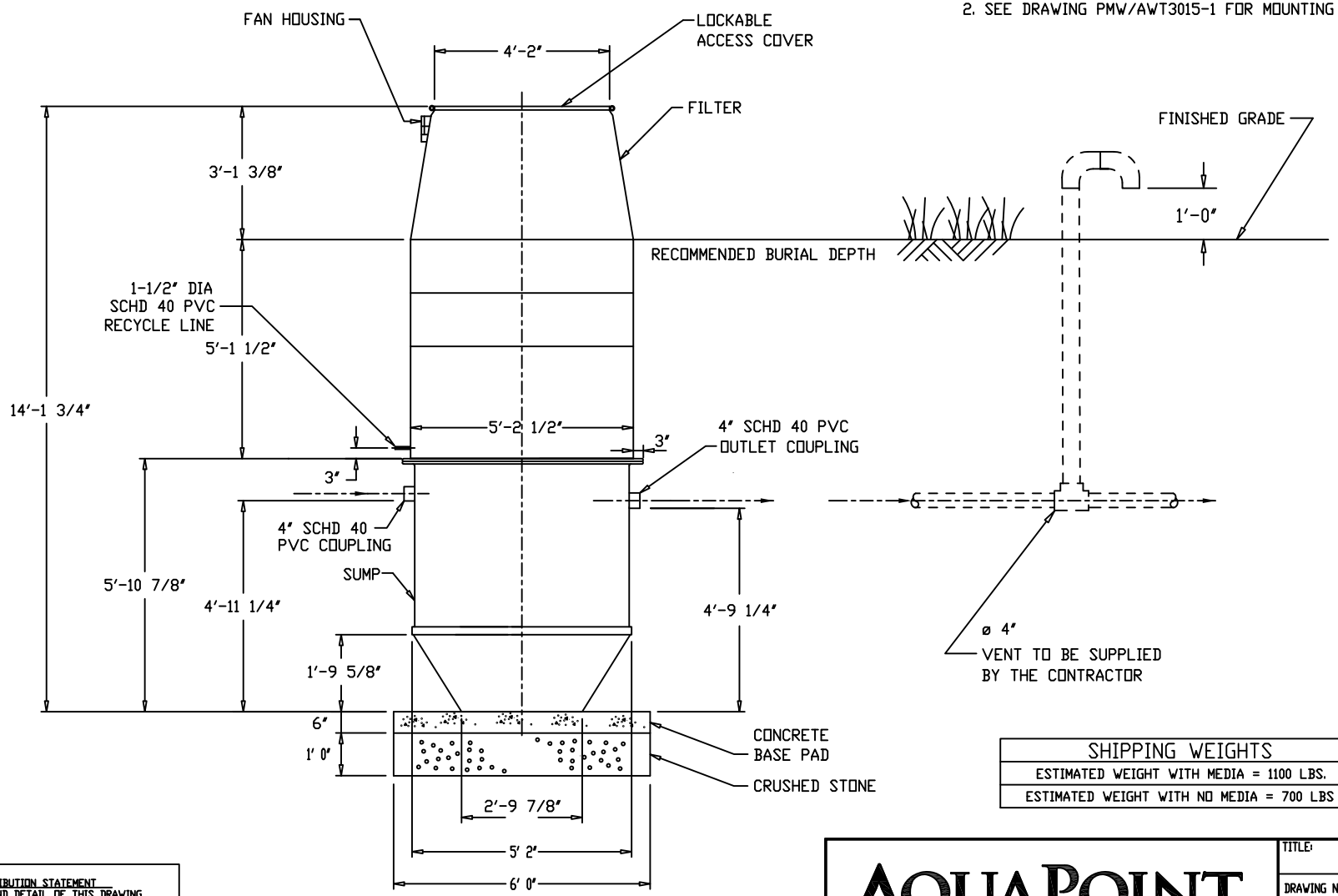
SHIPPING WEIGHTS
ESTIMATED WEIGHT WITH MEDIA = 975 LBS.
ESTIMATED WEIGHT WITH NO MEDIA = 675 LBS.

16-22 std GA.dwg

AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

TITLE:	BIOCLERE 16/22 GENERAL ARRANGEMENT
DRAWING NO:	UK.1259-5
REVISION:	B
DATE:	1/3/13
DWN BY:	P.Willey
SCALE:	1 : 30 SIZE: B
SHEET #:	1 of 1

NOTES:
1. VENT MAY BE RUN UP THE SIDE OF BUILDING.
2. SEE DRAWING PMW/AWT3015-1 FOR MOUNTING PAD CONSTRUCTION DETAILS.



BIOCLERE MODEL 16/25

SHIPPING WEIGHTS
ESTIMATED WEIGHT WITH MEDIA = 1100 LBS.
ESTIMATED WEIGHT WITH NO MEDIA = 700 LBS

16-25 std GA.dwg

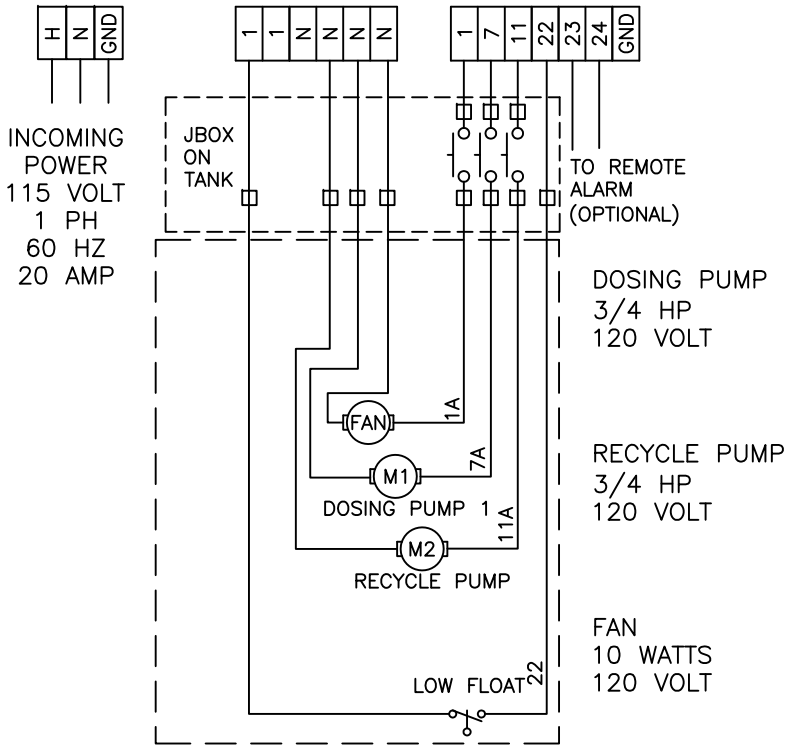
AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

TITLE:	BIOCLERE 16/25 GENERAL ARRANGEMENT
DRAWING NO:	UK.1259-6
REVISION:	B
DATE:	11/14/08
DWN BY:	P.Willey
SCALE:	1 : 30 SIZE: B
SHEET #:	1 of 1

APPENDIX B

BIOCLERE ELECTRICAL SCHEMATICS & PLR OPERATING INSTRUCTIONS

NOTES:



CONTRACTOR EXTERNAL WIRING

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES
TOLERANCES:
ANGLES ± ~
FRACTIONS ± ~
2 PLACE DIM ± ~
3 PLACE DIM ± ~
MATERIAL:
NEXT ASSY | USED ON
APPLICATION

AquaPoint
Leading Waters In Water Resource Technology
35 TARKILN PLACE, NEW BEDFORD, MA 02745
(508) 995-9950 FAX (508) 995-9076

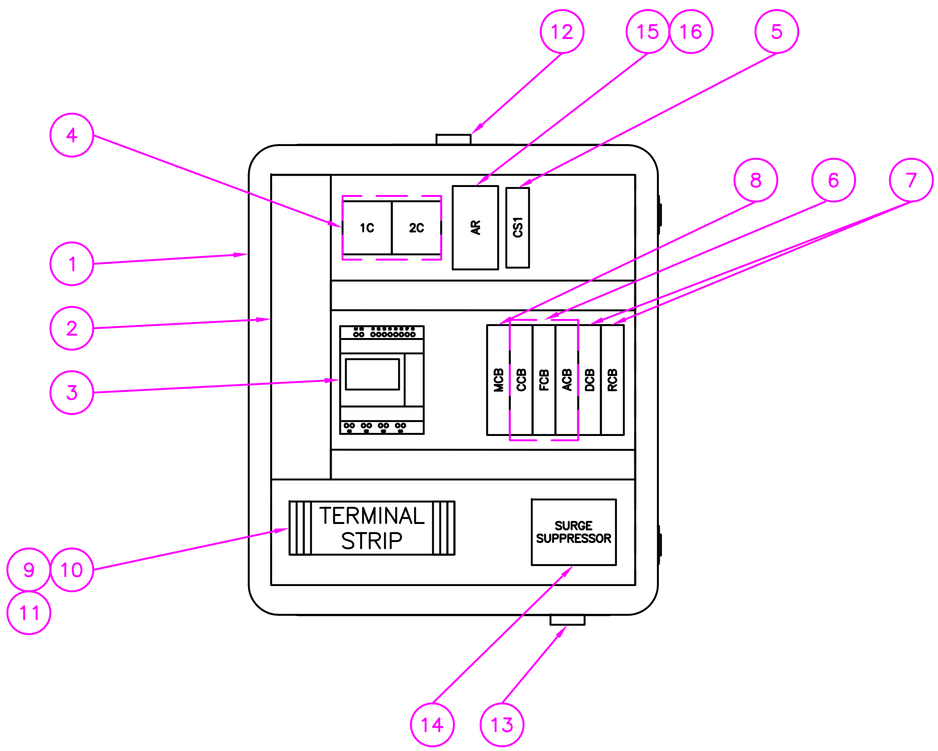
DATE	03-02-14
DRWN BY	ROBERT PAWLOWSKI
CHKR	BRAD ROUNDS
ENGR APPD	
APPVD	

TITLE: SINGLE BIOCLERE 16 SERIES PLR

SIZE B | REVISION: B | DRAWING NO.: AWT3308

SCALE: NONE | DWG 3308_1_revB | SHEET # 1 OF 5

NOTE:



ITEM NO.	QTY	MANUFACTURE	DESCRIPTION	PART NO.
17	1	IDEC	120V GREEN LIGHT	APW199G120
16	1	IDEC	2 POLE RELAY	RH2BUAC120
15	1	IDEC	2 POLE RELAY SOCKET	SH2B-05
14	1	SQUARE D	SURGE SUPPRESSOR	AS9003
13	1	FLOYD BELL	HORN	XC-09-201S
12	1	IDEC	120V RED LIGHT	APW199R120
11	3	ENTRELEC	GROUND TERMINALS	16511316
10	19	ENTRELEC	TERMINALS	11511607
9	2	ENTRELEC	TERMINALS(H, N)	11511811
8	1	ABB	20 AMP CIRCUIT BREAKER	S201K20A
7	2	ABB	10 AMP CIRCUIT BREAKER	S201K10A
6	3	ABB	1 AMP CIRCUIT BREAKER	S201K1A
5	1	DIVERSIFIED	CURRENT SENSOR	CMG0100-20
4	2	AEG	CONTACTORS	LS07.10A0
3	1	CROUZET	PLR CD12	88974043
2	1	ALLIED MOULDED	14 X 12 BACKPANEL	PA142
1	1	ALLIED MOULDED	14 X 12 ENCLOSURE	AM1426L

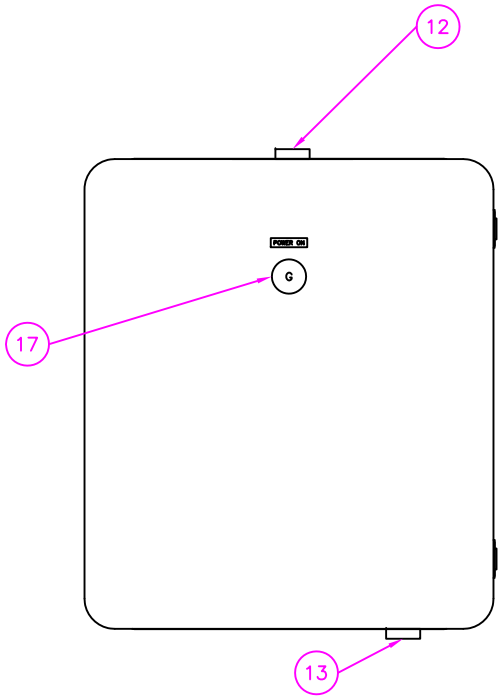
AquaPoint

TITLE: SINGLE BIOCLERE 16 SERIES PLR

SIZE: B | REVISION: C | DRAWING NO.: AWT3308

SCALE: 1:4 | 3308_2_revC | SHEET #: 2 OF 5

NOTE:



AquaPoint

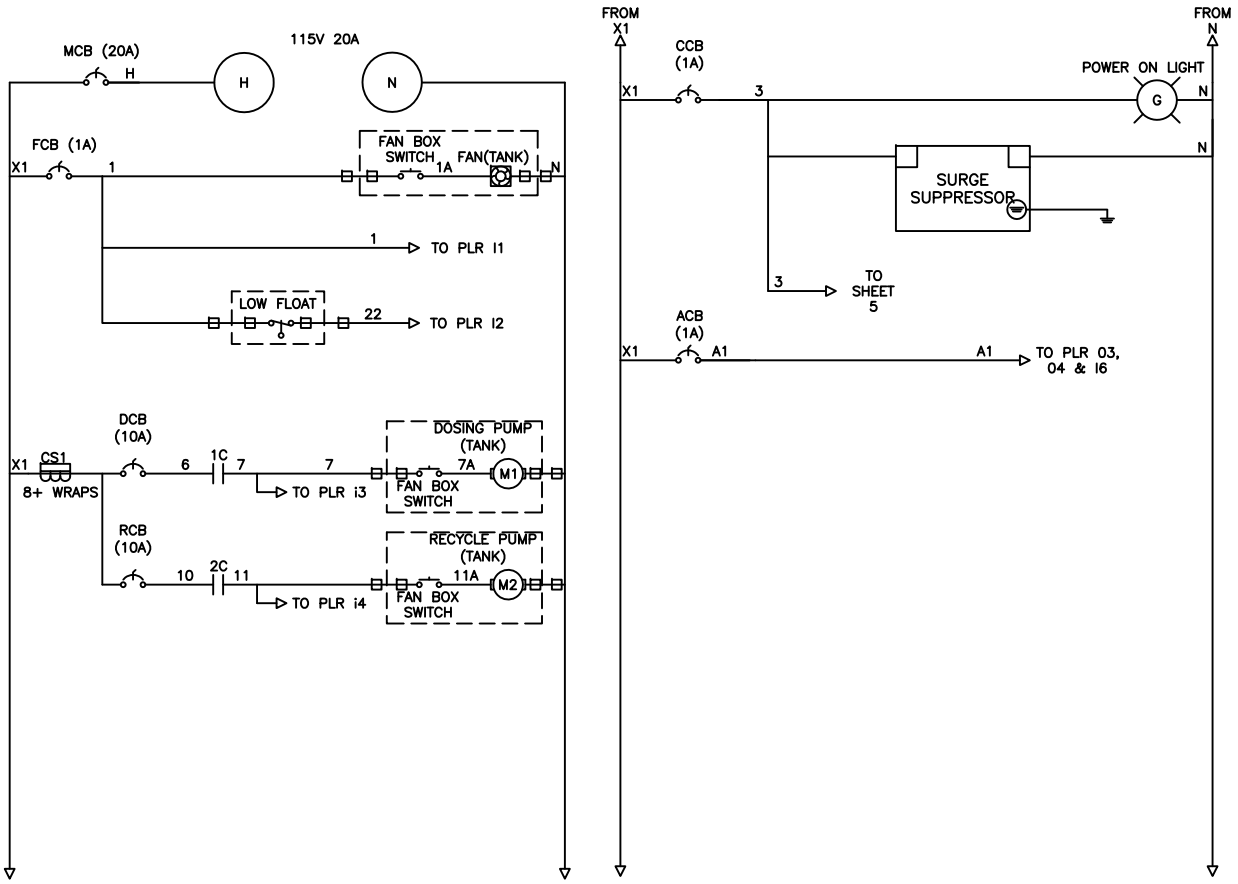
Making Waves in Water Resource Technology

TITLE: SINGLE BIOCLERE 16 SERIES PLR

SIZE: B | REVISION: B | DRAWING NO.: AWT3308

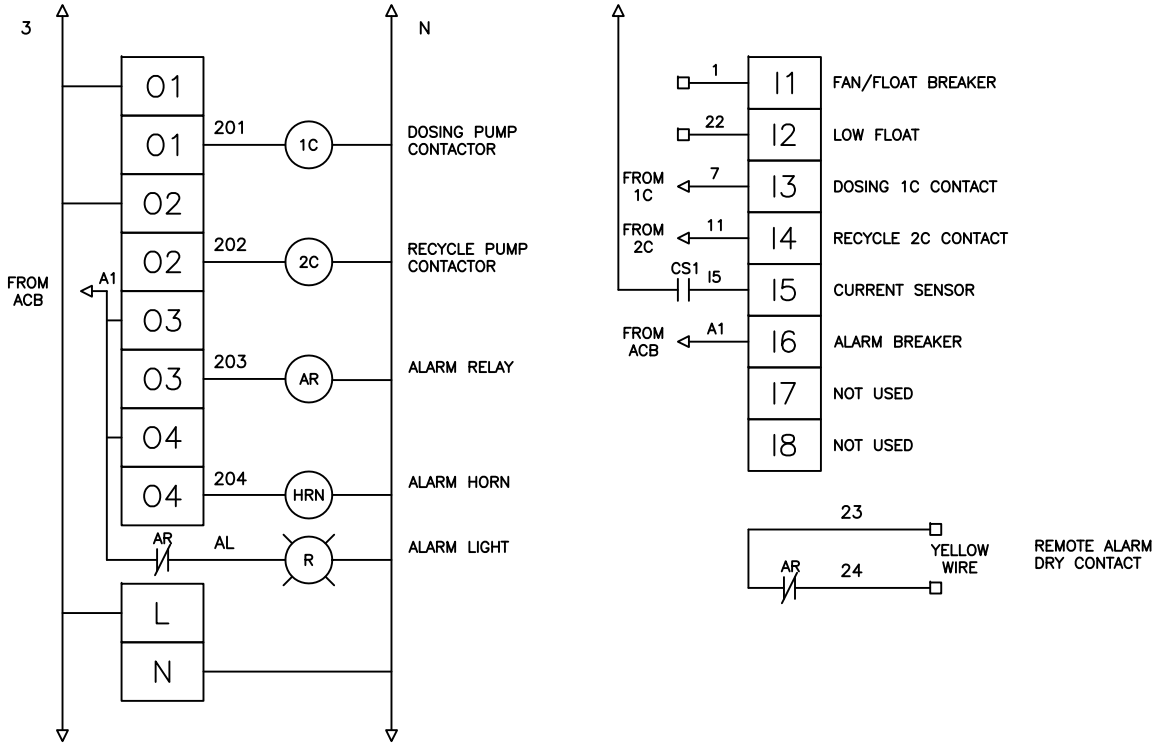
SCALE: 1:4 | DWG 3308_3_revB | SHEET #: 3 OF 5

NOTES:



TITLE: SINGLE BIOCLERE 16 SERIES PLR			
SIZE: B	REVISION: B	DRAWING NO.: AWT3308	
SCALE: NONE	DWG: 3308_4_revB	SHEET #: 4 OF 5	

NOTES:



CROUZET CD12 SMART PLR
BASE UNIT 88974043

TITLE: SINGLE BIOCLERE 16 SERIES PLR			
SIZE: B	REVISION: A	DRAWING NO.: AWT3308	
SCALE: NONE	DOT: 3308_5_revA	SHEET #: 5 OF 5	

Aquapoint Control Systems
16 SERIES BIOCLERE™
Programmable Logic Relay (PLR)
Operating Instructions

System Description

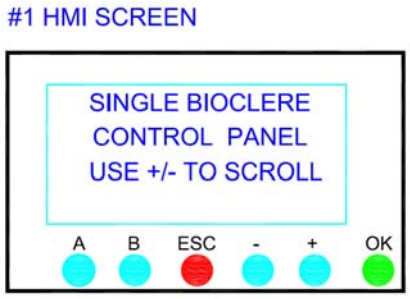
The AquaPoint provided control panel operates a single Bioclere™ Treatment Unit. The PLR controls the operation of the pumps and alarms in a Bioclere™ Unit. A Crouzet Millenium3 Programmable Logic Relay (PLR) executes all system functions. The PLR controller has an integrated Human Machine Interface (HMI) LCD screen to provide access to timer values and to manually control pump operation. The HMI also provides the operator access to pump cumulative run times, as well as alarm status.

Operating Instructions

Before starting the System, it must be installed according to installation instructions, applicable national and local codes, and by a qualified professional.

The System is controlled entirely from the HMI. Upon power up, the Main HMI screen will automatically appear (pictured below).

Main Screen



Control screens for different system functions are accessed scrolling from the screen above.

To move to the next HMI screen use the (**+**) key until the screen you are looking for appears. Press the OK key to access a sub-screen which provides access to a related topic. To scroll backwards through the list of HMI screens use the (**-**) key. If the HMI goes to sleep press the (**ESC**) key to restore the display. If an alarm condition takes place press the (**B**) key to silence the alarm. Note the alarm horn will be silenced but the alarm light will still be eliminated but the alarm will not sound again for that event.

Press the (**A**) button to acknowledge an alarm. Note: Acknowledging an alarm will reset the alarm function, stop the beacon and silence the horn. If the same alarm event takes place again the alarm will also take place.

Overview of the Main Screen

The first two lines of the Main Screen will contain the name of the control panel. The name will include the type of equipment the panel is controlling.

The third line of the Main screen indicates how to access other HMI screens.

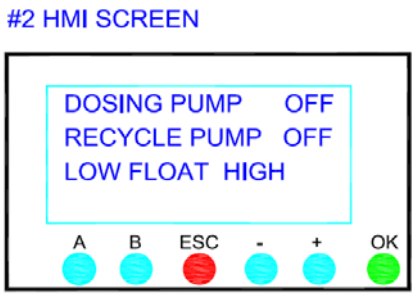
The forth line of the Main screen will display the program's version letter.

Control Keys

The (**A & B**) keys are used for different functions throughout the HMI. The HMI screen will display what the keys are used for if they have a particular function on that HMI Screen.
The (**ESC**) key typically allows the operator to "back up" from a sub-screen and return to the set of main screens.
Note: The (**ESC**) key is a good key to press if the HMI has gone to sleep and you want to wake it up. This is because no matter what screen the HMI has been left on pressing the (**ESC**) key will not change anything in the PLR program.
The (**-&+**) key allows the operator to scroll through a list and increase or decrease an entered value. The function will change depending on what HMI screen you are on.
The (**OK**) key is typically used as a enter key or except key.

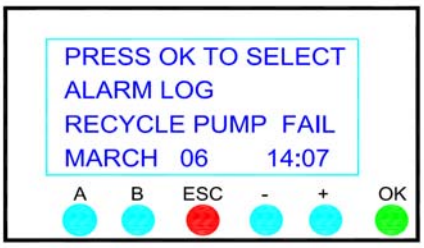
Status Screen

The second screen in the scrolling list of HMI Screens is the STATUS Screen.



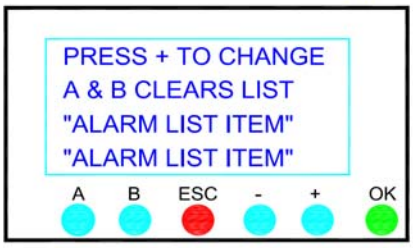
The Status Screen shows the operator the status of each device in the Bioclere™. The status of a device is the instantaneous condition of that device. It does not describe the mode of operation. For instance you can have a pump in AUTO mode but the actual condition of the pump is OFF because it is controlled by a repeat cycle timer.

#3 HMI SCREEN



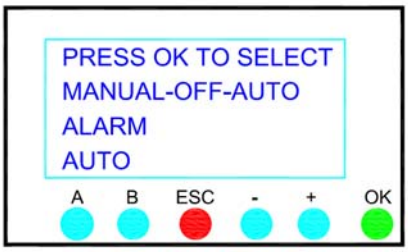
The third screen in the HMI is the Alarm Log Screen. This log will display the last four alarm events that took place. If fewer than four events exist then only the amount of events will be logged and the other lines will be blank. The date (month and day) will be recorded as well as the time of the event. To display or clear the alarm log list press the (**OK**) button on the screen above and the screen below will appear. To scroll through the alarm list, press the (**-** or **+**) key.

#3 SCREEN'S SUBSCREEN (3A)



The Alarm Log screen above will display, at most, the last four alarm events in order of occurrence. From the screen above you can view the list by scrolling with the (**-/+**) buttons. You can clear the list by simultaneously pressing and holding the (**A & B**) button or the operator can press the (**ESC**) button to return to the previous screen.

#4 HMI SCREEN



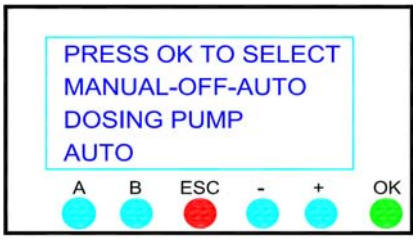
The next HMI Screen as you scroll down using the arrow key is the ALARM Mode Screen. The ALARM can be set to one of three modes of operation: Manual, Off and Auto. To change the mode of operation press the (**OK**) button and the screen below will appear. From the screen below scroll using the (**+**) key to the desired mode of operation. To select that mode press the (**OK**) button.

In Manual mode the alarm will sound constantly. This mode is typically used to test the alarm system. In the Off mode the Alarm will stay off regardless if the system has an alarm condition. If the Alarm System has been turned off the HMI will display a message: “The alarm is turned off”. When the alarm is turned back on, the Alarm will sound since a defined alarm condition is if the alarm is turned off. This alarm condition will need to be silenced and reset to stop the alarm.
In normal operation the Alarm is set to AUTO mode. In AUTO mode the alarm horn and light will be activated if an alarm condition is detected by the system and recorded in the alarm history screen.

#4 SCREEN'S SUBSCREEN (4A)

Press the (**ESC**) key to leave the screen without making a change.

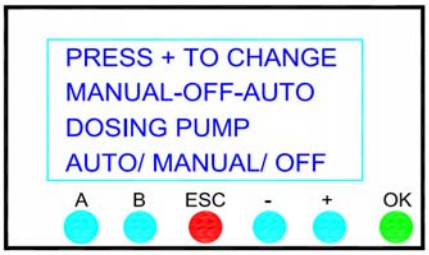
#5 HMI SCREEN



The next HMI Screen as you scroll down using the arrow key is the Dosing Pump Mode Screen. The Dosing Pump can be set to one of three modes of operation: Manual, Off and Auto. To change the mode of operation press the (**OK**) button on the screen above and the screen below will appear. From the screen below scroll using the (**+**) key to the desired mode of operation. To select that mode, press the (**OK**) button. If you do not want to change the pump mode while you are in the Dosing Pump Mode Selection Screen press the (**ESC**) button.

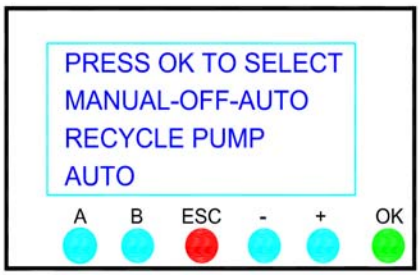
In Manual mode the dosing pump will operate constantly. This mode is typically used to test the operation of the pump. In the Off mode the dosing pump will stay off. If the dosing pump has been turned off the System will alert the operator of this condition.
In normal operation the Dosing Pump is set to AUTO mode. In AUTO mode the Dosing Pump will operate on an ON and OFF operator adjustable timer cycle. If the pump is called to operate and does not have amperage then the alarm will sound indicating a pump failure and display this message in the alarm history screen.

#5 SCREEN'S SUBSCREEN (5A)



If you are on the screen above and do not want to make a change, press the (**ESC**) button to return you to the previous screen.

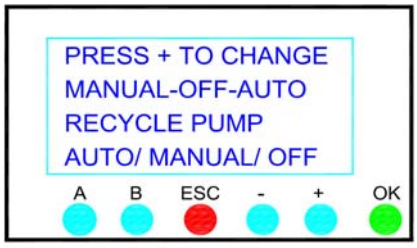
#6 HMI SCREEN



The Recycle Pump Screen is the next HMI screen as you scroll. The Recycle Pump can be set to one of three modes of operation: Manual, Off and Auto. To change the mode of operation press the (**OK**) button on the screen above and the screen below will appear. From the screen below use the (**+**) key to scroll to the desired mode of operation. To select that mode, press the (**OK**) button on the screen below. If you do not want to change the pump mode while you are in the Dosing Pump Mode Selection Screen press the (**ESC**) button.

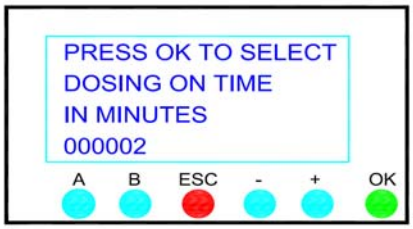
In Manual mode the recycle pump will operate constantly. This mode is typically used to test the operation of the pump. In the Off mode the recycle pump will stay off. If the recycle pump has been turned off the System will alert the operator of this condition. In normal operation the Recycle Pump is set to AUTO mode. In AUTO mode the Recycle Pump operates off of a PLR timer cycle and the low float condition. If the low float is closed (tipped up) the pump will operate on an ON and OFF operator adjustable timer. When the float condition opens (extended) the recycle pump will stop operation without alarming and wait for the float condition to change. If the pump is called to operate but does not show amperage then the alarm will sound indicating a pump failure and display this message in the alarm history screen.

#6 SCREEN'S SUBSCREEN (6A)



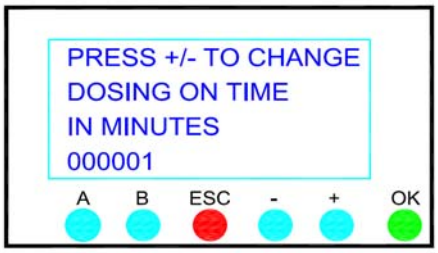
If you are on the screen above and do not want to alter a setting, press the (**ESC**) button to return to the previous screen.

#7 HMI SCREEN



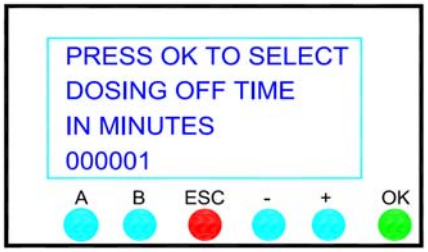
The Bioclere™ Dosing Pump On Timer Screen is accessed through the screen depicted above. The Dosing On Timer Screen allows the operator to set the ON timer settings for the Dosing Pump. All Bioclere™ timers are set in minutes. For the sixteen series Bioclere™ the ON timer is set to 3 minutes and the OFF timer is set to 5 minutes. To adjust the ON time press the OK button and the screen below will appear. From the screen below use the (***+/-***) button to alter the timer setting and press the (**OK**) button to except the change. The new timer value will be displayed at the bottom of the screen above (000002 minutes).

#7 SCREEN'S SUBSCREEN (7A)



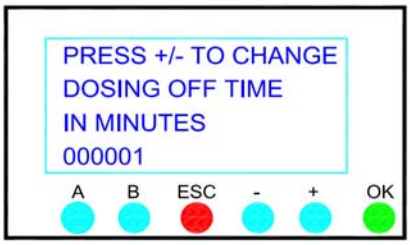
If you are on the screen above, and do not want to alter the time parameter, press the (**ESC**) button to return to the previous screen.

#8 HMI SCREEN



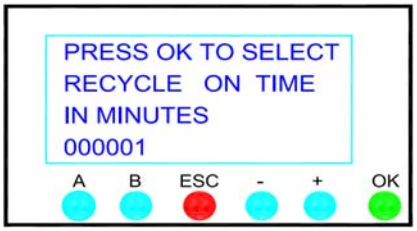
The Bioclere™ Dosing Pump Off Timer Screen is accessed through the screen depicted above and is the next screen as you scroll using the (**+**) button. The Dosing Off Timer Screen allows the operator to set the OFF timer settings for the Dosing Pump. All Bioclere™ timers are set in minutes. For the sixteen series Bioclere™ the OFF timer is typically set to 5 minutes. To adjust the Off time press the (**OK**) button and the screen below will appear. From the screen below use the (**+/-**) keys to alter the timer setting and press the (**OK**) button to except the change. The new timer value will be displayed at the bottom of the screen as is shown above (000001 minutes).

#8 SCREEN'S SUBSCREEN (8A)



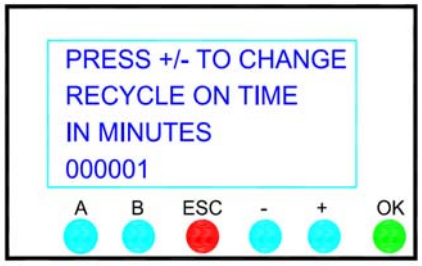
If you are on the screen above and do not want to alter the time parameter press the (**ESC**) button to return you to the previous screen.

#9 HMI SCREEN



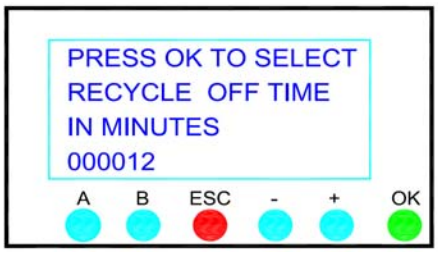
The Bioclere™ Recycle Pump On Timer Screen is accessed through the screen depicted above. The Recycle Pump On Timer Screen allows the operator to set the ON timer settings for the Recycle Pump that returns settled solids from the Bioclere back to the primary tank. All Bioclere™ timers are set in minutes. For the 16 series Bioclere™ the ON timer is typically set to 2 minutes. To adjust the ON time press the (**OK**) button from the screen above and that will bring you to the screen below. From the screen below use the (**+/-**) keys to alter the timer setting and press the (**OK**) button to except the change. The new timer value will be displayed at the bottom of the screen above as shown (000001 minutes).

#9 SCREEN'S SUBSCREEN (9A)



If you are on the screen above, and do not want to alter the time parameter, press the (**ESC**) button to return to the previous screen.

#10 HMI SCREEN

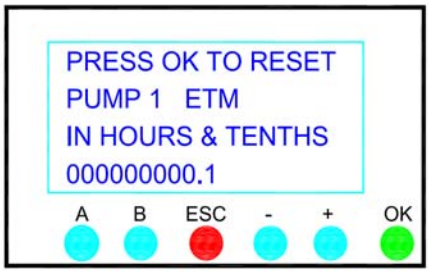


The Bioclere™ Recycle Pump Off Timer Screen is accessed through the screen depicted above and is the next screen as you scroll using the (**+**) button. The Recycle Pump Off Timer Screen allows the operator to set the OFF timer settings for the Recylce Pump. For the sixteen series Bioclere™ the OFF timer is typically set to 150 minutes. To adjust the Off time press the (**OK**) button and it will display the screen below. On the screen below use the (**+/-**) keys to alter the timer setting and press the OK button to except the change. The new timer value will be displayed at the bottom of the screen as is shown above (000012 minutes).

#10 SCREEN'S SUBSCREEN (10A)

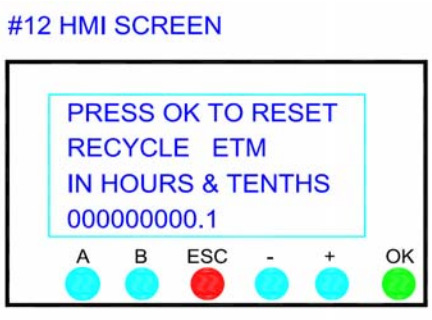
If you are on the screen above, and do not want to alter the time parameter, press the (**ESC**) button to return to the previous screen.

#11 HMI SCREEN



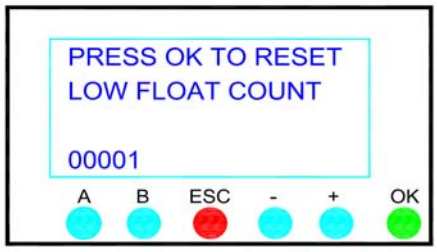
Above is the Dosing Pump elapsed time meter (ETM) screen. The screen will display the amount of cumulative time the Dosing Pump has operated since the last time the ETM was reset. To reset the ETM value for this pump press the (**OK**) button. If the operator does not want to reset the ETM scroll to another screen using the (**-/+**) keys.

#12 HMI SCREEN



Above is the Recycle Pump elapsed time meter (ETM) screen. The screen will display the amount of cumulative time the Recycle Pump has operated since the last time the ETM was reset. To reset the ETM value for this pump, press the (**OK**) button. If the operator does not want to reset the ETM scroll to another screen using the (**-/+**) keys.

#13 HMI SCREEN

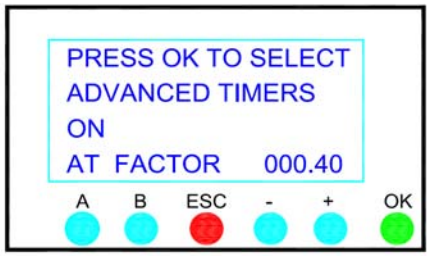


The screen above is the Bioclere™ Low Float Counter Screen. This screen displays the amount of times the Bioclere™ low float condition has OPENED. To reset this value from the screen above press the (**OK**) button and the value in the bottom left hand corner of the screen will return to zero.

During a low float condition the water level in the Bioclere™ clarifier is low. To prevent the level from dropping any lower the control system will stop the recycle pump's normal operation until the level rises again. This signal will also make sure that the level in the Bioclere™ is high enough so the dosing pump can operate properly and sustain the life of the biological activity in the filter bed.

Note: The low float condition is not an alarm condition.

#14 HMI SCREEN

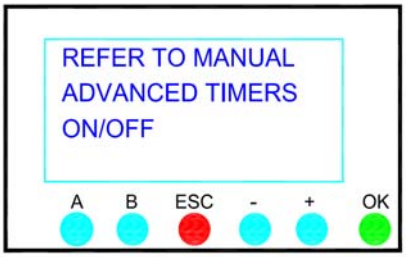


The Advanced Timers Screen (optional equipment) allows the operator to select the Advanced Timer Operation. To select, press the (**OK**) button on the screen above and the screen below will appear. If the Advanced Timers are off then consult Aquapoint if the Advanced Timers Optional Equipment was purchased and not active.
If active the Advanced Timer (AT) Factor will be displayed as shown on the screen above (AT FACTOR 000.40). When an AT FACTOR is displayed this will indicate the actual displayed dosing and recycle pump timer values will be adjusted by a factor to correct for the facility's normal diurnal hydraulic wastewater flow. This setting allows the system to make more efficient use of pumps and increase the efficiency of the nutrient removal process while reducing component cycling and power consumption.

The Advanced Timers have two settings, the Standard AT Mode and the Work Week Mode. The Standard AT setting optimizes timer control taking into account the home is occupied during the day, throughout the week (Monday-Friday).

The Work Week Mode setting optimizes timer control taking into account the facility is unoccupied during the day, throughout the week (Monday-Friday). This Work Week Mode can only be set if the AT setting is ON. The Work Week Mode is either set to ON or OFF. During the system's commissioning the appropriate setting will be implemented.

#14 SCREEN'S SUBSCREEN (14A)

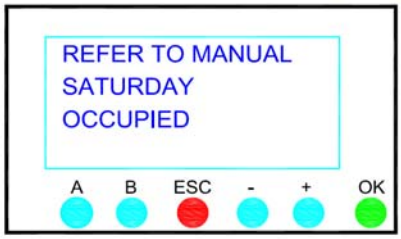


#15 HMI SCREEN

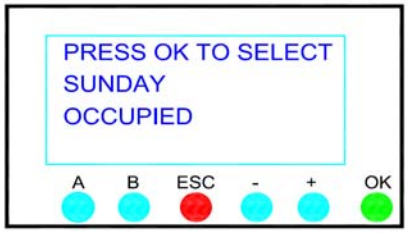
When the Bioclere™ system is operated using the AT system the above screen will allow the operator to tell the system if the dwelling is occupied on Saturday. By pressing (**OK**) the screen below will appear, allowing the operator to select the occupied or not occupied setting to fit existing conditions. The selected condition will be displayed on the screen above.

Note: During unoccupied operation the system does not shut down but operation is modified to better fit the unoccupied condition.

#15 SCREEN'S SUBSCREEN (15A)



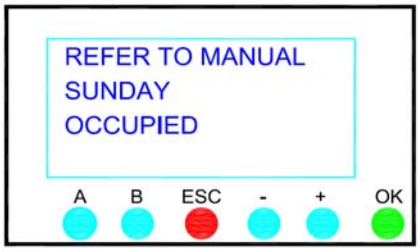
#16 HMI SCREEN



When the Bioclere™ system is operated using the AT system the above screen will allow the operator to tell the system if the dwelling is occupied on Sunday. By pressing OK, the screen below will appear allowing the operator to select the occupied or not occupied setting to fit the conditions. The selected condition will be displayed on the screen above.

Note: During unoccupied operation the system does not shut down but operation is modified to better fit the unoccupied condition.

#16 SCREEN'S SUBSCREEN (16A)



ALARM/ALERT CONDITIONS/TROUBLESHOOTING

Caution: Turn off disconnect switch, lock out and tag out power, and verify prior to servicing!

Bioclere™ # Fan Fail: The fan circuit breaker has tripped.
Solution: Verify the fan and inlet vent does not have debris clogging it. Verify the fan turns freely. Confirm the junction box is free from water/condensation and terminals are in good working condition. Reset fan circuit breaker.

Bioclere™ Dosing Pump Fail: Bioclere™ Dosing Pump is not running when it should be.
Solution: Possible problems or failure conditions consists of the following: pump clogged, pump internal thermal switch tripped or faulty current sensor, loose wire connection, switch at junction box off or malfunctioning, motor contactor malfunction, or pump circuit breaker tripped/malfunction.

Bioclere™ Recycle Pump Fail: Bioclere™ Recycle Pump is not running when it should be.
Solution: Possible problems or failure conditions consists of the following: pump clogged, pump internal thermal switch tripped or faulty current sensor, loose wire connection, switch at junction box off or malfunctioning, motor contactor malfunction, or pump circuit breaker tripped/malfunction.

PLR Run Mode Failure: Bioclere™ programmable logic relay output voltage source is not functioning properly.
Solution: Possible problems or failure conditions consist of the following: Circuit breaker supplying the output power has tripped or malfunctioned.

Float Condition is Low: The Bioclere™ waster level has fallen below the Low Level Float Switch. **This is not an alarm condition!** In this condition the recycle pump will not run until the clarifier level in the Bioclere™ returns to normal. This event is logged in the Alarm Log but the alarm light and horn will not be activated. This event is logged to let the operator now that the condition is taking place and when it is happening.

APPENDIX C

PURCHASERS WARRANTY

AQUAPOINT
AN OBEH COMPANY

BIOCLERE™

PURCHASERS WARRANTY

Project/Site:_____ **Commissioned date:** _____

Aquapoint.3, LLC, a Massachusetts Corporation, warrants to the purchaser that the Bioclere™ wastewater treatment plant is free from defects in material and workmanship for a period of one (1) year from the date of installation. Date of warranty shall mean the day specified on the Installation Report.

Aquapoint.3, LLC shall fulfill this warranty by repairing or exchanging any component that in our judgment shows evidence of defect during the warranty period.

This warranty does not cover treatment processes, or Bioclere™ units which have been flooded by external means, which have been disassembled by unauthorized persons, which have been improperly installed, which have been subjected to external damage or which have not been operated and maintained in accordance with the manufacturer's recommended procedures.

This warranty applies only to the Bioclere™ wastewater treatment plant and does not include any of the building wiring, plumbing, drainage, or disposal systems. Aquapoint.3, LLC is not responsible for any delay or damages caused by defective components or material, or for loss incurred because of interruption of service, or for any other special or consequential damages or incidental expenses arising from the manufacture, sale or use of this treatment plant.

Aquapoint.3, LLC reserves the right to revise, change or modify the construction or design of the Bioclere™ wastewater treatment plant or any component part thereof without incurring any obligation to make such changes or modification in previously sold equipment. Aquapoint.3, LLC also reserves the right to make replacements of component parts under this warranty, to furnish component parts, which, in its judgment, are equivalent to the component part, replaced.

Under no circumstances will Aquapoint.3, LLC be responsible for any other direct or consequential damages, including but not limited to lost profits, lost income, labor charges, delays in production and/or idle production, which damages are caused by a defect in material and/or workmanship in parts.

This warranty is expressly in lieu to any other expressed or implied warranty, excluding any warranty of merchantability or fitness, and of any other obligation on the part of Aquapoint.3, LLC

Please fill out and return no later than ten (10) days after installation to:

AquaPoint.3, LLC
39 Tarkiln Place
New Bedford, MA 02745
Ph: 508-985-9050
Fax: 508-985-9072

Signed: _____ **Signed:** _____
Aquapoint.3, LLC / Date Property Owner / Date

APPENDIX D

PUMP & FAN SPECIFICATIONS

ITT

Wastewater

Goulds Pumps
LSP03/LSP07 Submersible Sump Pumps

LSP03AT

LSP03AV

LSP07

FEATURES

- Corrosion-resistant construction.
- Stainless Steel motor casing and fasteners.
- Glass-filled thermoplastic impeller and casing.
- Upper and lower heavy duty ball bearing construction.
- Motor is permanently lubricated for extended service life and is powered for continuous operation. All ratings are within the working limits of the motor.
- Hard coated 400 series stainless steel shaft for improved corrosion resistance.
- Float switch is adjustable for various liquid levels. Easily removed for direct pump operation or switch replacement.
- Complete unit is lightweight, portable and easy to service.
- Available in manual and automatic versions. See next page for specific order numbers.
- A double labyrinth lip seal system protects the motor. It consists of three lip seals and a V-ring in addition to an impeller counterblade system which keeps solid particles away from the seal unit.

GOULDS PUMPS

Goulds Pumps is a brand of ITT Residential and Commercial Water.

www.goulds.com

Engineered for life

APPLICATIONS

Specially designed for the following uses:

- Basement draining
- Water transfer
- Dewatering

SPECIFICATIONS

- Discharge size: 1 ½" NPT.
- Capacities: to 57 GPM.
- Maximum head: 34 feet TDH.
- Max. solids: ⅜" spherical
- Temperature: 104ºF (40ºC) maximum liquid temperature.
- Maximum pump submergence is 10 ft. for LSP03; 16 ft. for LSP07.

MOTOR

- Single phase, 3450 RPM, 60 Hz
  - LSP03, ⅓ HP, 115 V, 2.9 maximum amps.
  - LSP07, ¾ HP, 115 V (7.1 amps) or 230 V (3.5 amps).
- Built-in thermal overload protection with automatic reset.
- Permanent-split-capacitor type.
- Class B insulation.
- Stainless steel shaft.
- Air filled design.
- Power cord length: LSP03; 10 feet standard, 20 feet optional, LSP07; 20 feet.

FLOAT SWITCH OPTIONS

- Models are available with a float switch. Several options for automatic operation.
- "AV" models are supplied with a vertical float switch.
- "A" models are supplied with a built in float switch.
- "AT" models are supplied with a piggy-back replaceable float switch.

AGENCY LISTING

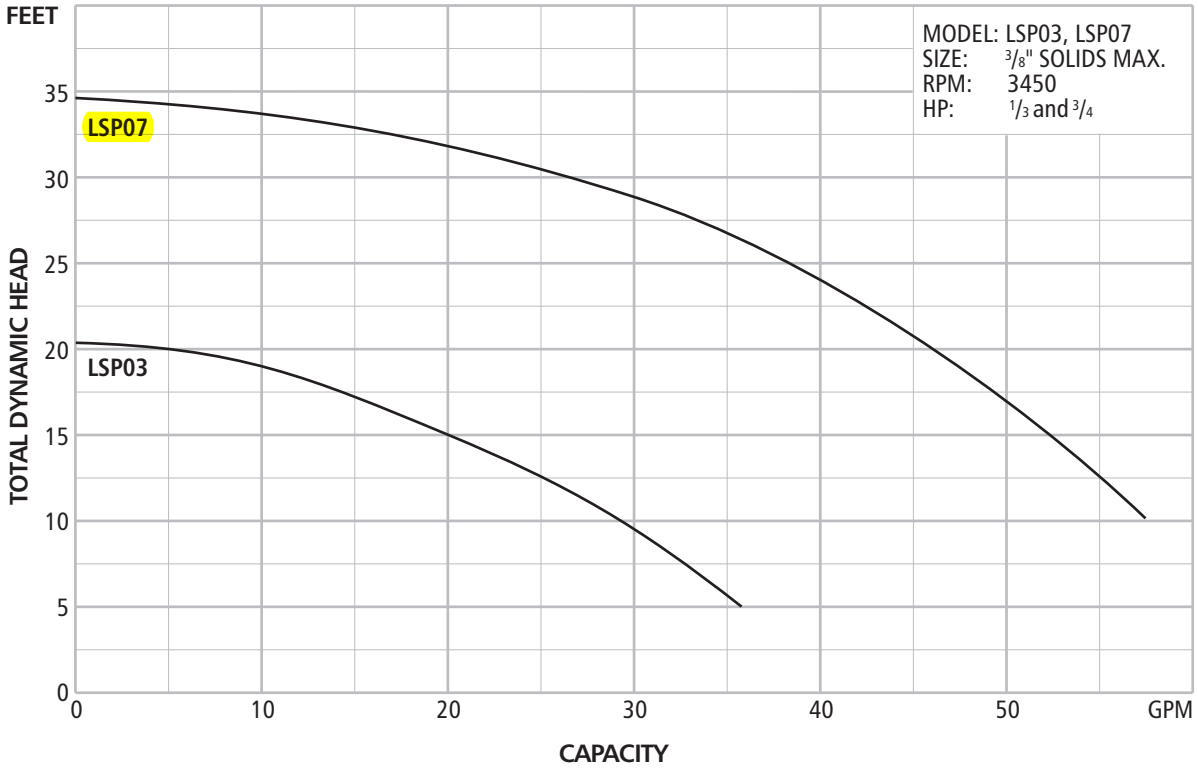
Canadian Standards Association
File #LR114251

Underwriters Laboratories
File #83318

Goulds Pumps is ISO 9001 Registered.

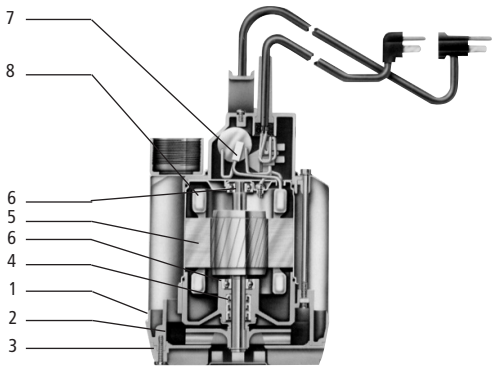
MODEL INFORMATION

Order No.	HP	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Min. On Level	Min. Off Level	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
LSP0311	⅓	115	2.9	10	1	Plug / No Switch	10'	1½"	Manual	Manual	9"	⅜"	11 / 5
LSP0311A						Built-In Wide Angle			11"	5"	12"		
LSP0311AT						Piggyback Wide Angle			11"	5"	12"		
LSP0311AV						Piggyback Vertical			8.5"	2"	12"		
LSP0311F						Plug / No Switch	20'		Manual	Manual	9"		
LSP0311AF						Built-In Wide Angle			11"	5"	12"		
LSP0311ATF						Piggyback Wide Angle			11"	5"	12"		
LSP0711F	¾	115	7.1	10	1	Plug / No Switch	20'	1½"	Manual	Manual	9"	⅜"	15 / 6.8
LSP0711AF						Built-In Wide Angle			12.5"	6.5"	12"		
LSP0711ATF						Piggyback Wide Angle			12.5"	6.5"	12"		
LSP0712F		230	3.5			Plug / No Switch			Manual	Manual	9"		
LSP0712AF						Built-In Wide Angle			12.5"	6.5"	12"		
LSP0712ATF						Piggyback Wide Angle			12.5"	6.5"	12"		



COMPONENTS

Item No.	Description
1	Casing
2	Impeller
3	Suction strainer
4	Shaft seal with cover
5	Motor
6	Ball Bearing
7	Capacitor
8	O-ring



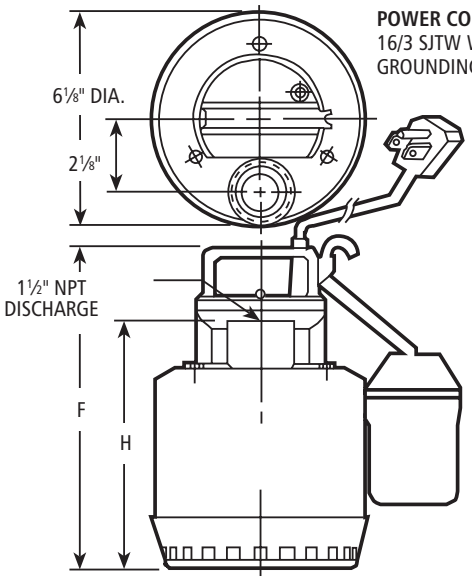
ITT

Wastewater

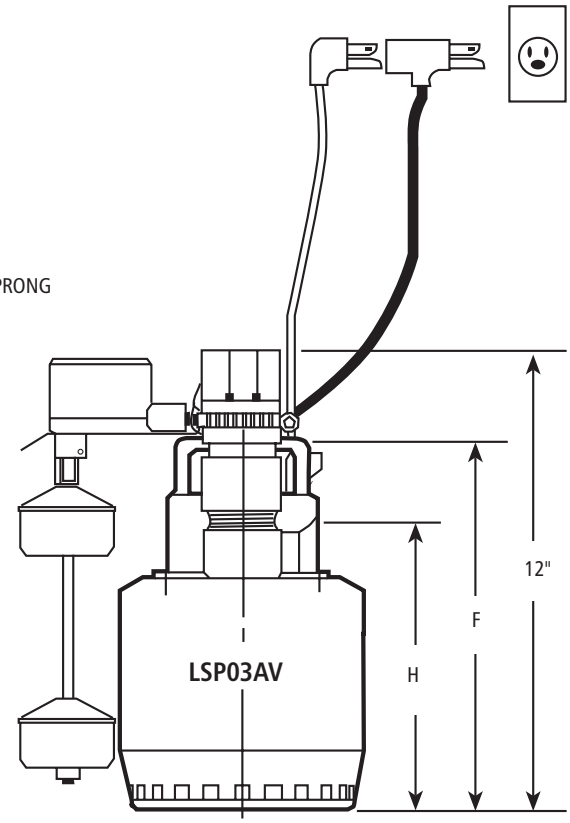
DIMENSIONS

(All dimensions are in inches and weights in lbs. Do not use for construction purposes.)

	F	H
LSP03	9¾	7⅝
LSP07	11¼	9⅛
LSP03AV	9¾	7⅝



POWER CORD:
16/3 SJTW WITH THREE PRONG
GROUNDING PLUG



GOULDS PUMPS

BLSP03 August, 2006

Engineered for life

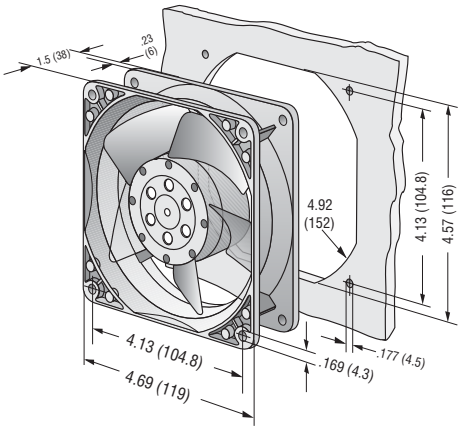
4000N Series Tubeaxial

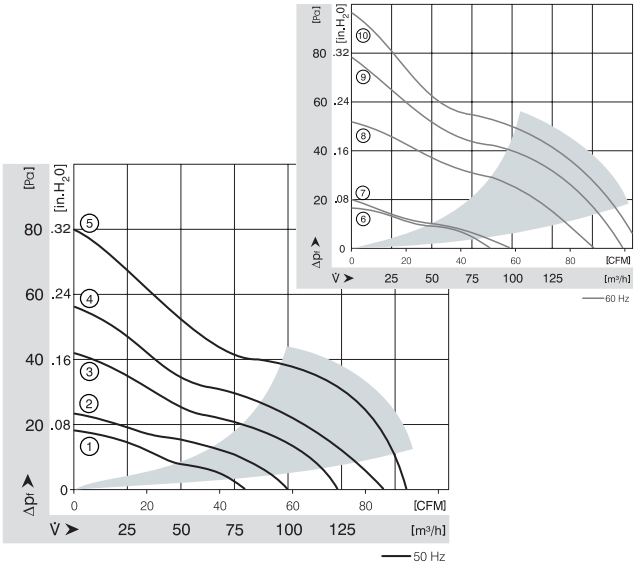
119x119x38mm

- AC fans with external rotor shaded-pole motor. Impedance protected against overloading.
- Metal fan housing and impeller.
- Air intake over struts. Rotational direction CW looking at rotor. Types 4890N and 4840N air exhaust over struts.
- Mounting from either face using four 4.3 mm holes.
- Electrical connection: Terminals with 2 flat pins 2.8 x 0.5 mm.
- Fan housing with ground lug for screw M4 and UNC.
- UL, CSA, VDE approvals on most models, please contact application engineering.

Part Number	Curve	CFM @ 0	VAC	Hertz	Power (W)	dBA	Max Amb. Temp C	Bearing Type	Speed (RPM)	Features	Wgt. (lbs)
4624N	10	105.9	24	60	18.0	50	60	Sintec	3100	Terminals	1.21
4840N	6	50.0	115	60	10.0	26	75	Sintec	1650	Terminals	1.21
4800N	7	57.1	115	60	9.0	32	75	Sintec	1750	Terminals	1.21
4530N	8	88.9	115	60	16.0	45	65	Sintec	2700	Terminals	1.21
4500N	9	99.5	115	60	15.0	48	65	Sintec	3000	Terminals	1.21
4600N	10	105.9	115	60	18.0	50	60	Sintec	3100	Terminals	1.21
4606N	10	105.9	115	60	18.0	51	90	Ball	3100	Terminals	1.21
4890N	1	47.1	230	50/60	11.0	25	70	Sintec	1550	Terminals	1.21
4850N	2	58.9	230	50/60	10.0	32	70	Sintec	1800	Terminals	1.21
4580N	3	72.4	230	50/60	18.0	41	55	Sintec	2350	Terminals	1.21
4550N	4	85.3	230	50/60	16.5	44	55	Sintec	2550	Terminals	1.21
4650N	5	94.2	230	50/60	19.0	46	55	Sintec	2650	Terminals	1.21
4656N	5	94.2	230	50/60	19.0	47	85	Ball	2650	Terminals	1.21
4660N	10	105.9	115/230	50/60	18.0	51	60	Sintec	2650	Terminals	1.21

Available on request:
- Fan housing with mounting bosses.
- Electrical connection via 2 single leads.
- 3.7 mm mounting holes.





SJE VERTICALMASTER® Pump Switch

Mechanically-activated switch designed for direct control of pumps up to 1/2 HP at 120 VAC and 1 HP at 230 VAC.

This mechanically-activated pump switch is designed to operate in non-potable water and sewage applications with limited space. It works well in small sump chambers, effluent applications, and laundry trays, as well as in large tanks.

The SJE VerticalMaster® pump switch is not sensitive to turbulence.

It is available for pump down applications only.

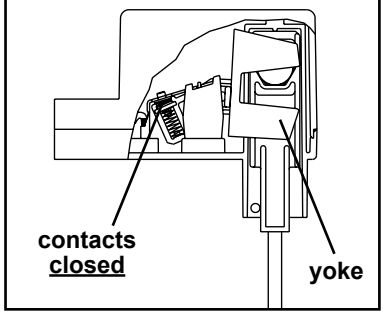
FEATURES

- Heavy-duty contacts.
- Controls pumps up to 1/2 HP at 120 VAC and 1 HP at 230 VAC.
- Adjustable pumping range of .75 to 6.5 inches (2 to 17 cm).
- Includes standard boxed packaging.
- UL Recognized for use in non-potable water and sewage.
- CSA Certified.
- Three-year limited warranty.

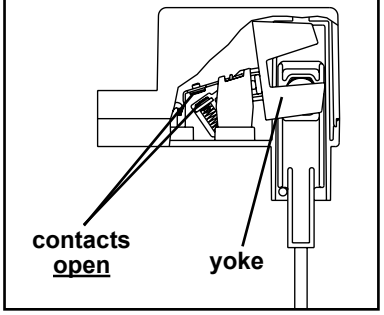
LR54245

Member of Hydraulic Institute

Pump Down / ON position



Pump Down / OFF position



OPTIONS

This switch is available:

- with a 120 VAC or 230 VAC piggy-back plug.
- without a plug for direct wiring in 120 VAC or 230 VAC applications.
- in standard cable lengths of 10, 15, 20, or 30 feet and 3, 5, 6, or 10 meters (longer lengths available).

SPECIFICATIONS

CABLE: flexible 16 gauge, 2 conductor (UL, CSA) SJOW or SJTOW, water-resistant (CPE)

MOUNTING BRACKET & HOSE CLAMP: stainless steel

LIFT ROD: injection molded acetal plastic

FLOAT STOP: neoprene

SWITCH AND FLOAT HOUSING: high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 125°F (52°C)

overall dimensions: 12 inch high x 5 inch x 3 inch wide (30.5 cm high x 12.7 cm x 7.6 cm wide)

switch housing dimensions (excluding cable entrance): 2 inch high x 2.8 inch wide (5 cm high x 7.1 cm wide)

float housing dimensions: 2.3 inch high x 2.7 inch wide (5.8 cm high x 6.9 cm wide)

ELECTRICAL:

120 VAC 50/60Hz Single Phase:

Maximum Pump Running Current: 13 amps

Maximum Pump Starting Current: 60 amps

Recommended Pump HP: 1/2 HP or less

230 VAC 50/60Hz Single Phase:

Maximum Pump Running Current: 12 amps

Maximum Pump Starting Current: 60 amps

Recommended Pump HP: 1 HP or less

NOTE: This switch must be used with pumps that provide integral thermal overload protection.

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

SJE Rhombus®
PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com

SJE VERTICALMASTER® Pump Switch

Mechanically-activated pump switch designed for direct control of pumps up to 1/2 HP at 120 VAC and 1 HP at 230 VAC.

ORDERING INFORMATION

PUMP DOWN ONLY		
Part Number	**Description**	**Shipping Weight**
1003590	10VM1WP	1.73 lbs.
1003772	10VM2WP	1.77 lbs.
1003776	10VMWOP	1.65 lbs.
1003769	15VM1WP	2.08 lbs.
1003773	15VM2WP	2.12 lbs.
1003777	15VMWOP	2.00 lbs.
1003770	20VM1WP	2.43 lbs.
1003774	20VM2WP	2.47 lbs.
1003778	20VMWOP	2.35 lbs.
1003771	30VM1WP	3.13 lbs.
1003775	30VM2WP	3.17 lbs.
1003779	30VMWOP	3.05 lbs.

1 = **120**VAC **2** = **230**VAC **WP** = **W**ith **P**lug **WOP** = **W**ith **O**ut **P**lug

NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).

Click Here to View List Price

OPTIONS

MOUNTING BRACKET AND HOSE CLAMP are standard.

PACKAGING
Boxed - standard

ADDITIONAL CABLE
Additional cable length over 30 feet is available.

UL Recongnized for Water & Sewage

LR54245

SPECIFICATIONS

PUMPING RANGE: 0.75 to 6.5 inches (2 cm to 17 cm)

CABLE: flexible 16 gauge, 2 conductor (UL, CSA) SJOW or SJTOW, water-resistant (CPE).

MOUNTING BRACKET AND CLAMP: stainless steel

LIFT ROD: injection molded acetal plastic

FLOAT STOP: neoprene

SWITCH AND FLOAT HOUSING: high impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 125°F (52°C)

- Overall dimensions: 12 inch high x 5 inch x 3 inch wide (30.5 cm x 12.7 cm x 7.6 cm)
- Switch housing dimensions: 2 inch high x 2.8 inch diameter (5 cm x 7.1 cm)
- Float housing dimensions: 2.3 inch high x 2.8 inch diameter (5.8 cm x 6.9 cm)

ELECTRICAL:

Voltage 50Hz/60Hz Single Phase	Max. Pump Run Current	Max. Pump Start Current	Recommended Pump HP
120 VAC	13 amps	60 amps	1/2 HP or less
230 VAC	12 amps	60 amps	1 HP or less

OTHER INFORMATION

PUMP DOWN is normally open contacts for emptying.

DIRECT WIRING
Units used for direct wiring (without plug) may be used in either 120 VAC or 230 VAC applications within specified amp ratings.

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

SJE Rhombus®
www.sjerhombus.com
sje@sjerhombus.com

Cat Page PN 1011923P

APPENDIX E

RECOMMENDED SPARE PARTS & MATERIAL REQUEST FORM

RECOMMENDED SPARE PARTS

CONTROL PANEL:

Quantity	Description	Part No.
One (1)	Diversified current sensor	CMG-0100-20
One (1)	AEG Contactor	LS0710A0-120V
One (1)	IDEC2 pole relay	RH2BULAC120
One (1)	IDEC2 pole relay socket	SH2B-05
One (1)	ABB 20 Amp Circuit Breakers	S201-K20
One (1)	ABB 10 Amp Circuit Breakers	S201-K8
One (1)	ABB 3 Amp Circuit Breakers	S201-K3
Four (4)	Entrelec terminals	0115 116 07

PUMPS & MECHANICAL:

Quantity	Description	Part No.
One (1)	Bioclere Fan	Papst 4800
One (1)	Bioclere Dosing & Recycle Pump	Goulds LSP0711F
One (1)	Float Switch	SJE 1003778

RETURN AND/OR MATERIAL AUTHORIZATION REQUEST FORM

FAX: 508-985-9072

Date:

Please complete all applicable fields.

Requested by:

Company Name:

Address:

City: State: ZIP:

Site Name:

Address:

City: State: ZIP:

Part # :

Description:

Qty: Date Installed (M/D/Y): Date Failed (M/D/Y):

Reason for return or additional material request (note specific equipment and pump number):

RETURN SHIPPING INFORMATION (if applicable):

AQUAPOINT.3,LLC
39 Tarkiln Place
New Bedford, MA 02745
ATTN: Returns

Please note unit # and pump # that is to be replaced:

NOTE: Return freight must be prepaid. Return Material Request Form must accompany packages(s).

Approved by: _____

☐ Warranty ☐ Bill replacement ☐ Send replacement part ☐ Return ☐ Discard