

REGENERATIVE MEDIA FILTER SYSTEM

Design, Installation, Operation and
Maintenance Guide
PMF - FRP Series



**CAUTION**

Read the manual in its entirety. This manual contains essential information about the installation, operations, maintenance, and safe use of this product. Equipment must be installed and serviced by a qualified technician. Improper installation can void the warranty and cause bodily injury. All weights and dimensions are approximate. All dimensions are in inches; all weights are in pounds.

For all questions, please contact Aquify Systems or a certified Aquify Systems Support Agent.

****NOTE:**** Although every effort has been made to ensure that this manual provides up-to-date information, please note that Aquify Systems PMF-FRP Series specifications are subject to change without notice. Aquify shall not be liable for the accuracy of any information provided by third party technical support personnel, or any damage caused, directly or indirectly, by acts taken or omissions made by you because of such technical support.



TABLE OF CONTENTS

INTRODUCTION	2
Theory of Operation	2
Pulse Cycle	2
AQUIFY DESIGN STANDARDS	3
Flow Requirements	3
Flowrate Data	4
Designer Plan Criteria	5
P&ID Routing	6
GENERAL OVERVIEW	8
Flanged Dimensions and Elevations	8
Internal Components	9
Inlet Diffuser	9
Flexible Tube Elements	10
Pulse Mechanism	10
Perlite Media	11
Cleaner	12
Media Loading System	13
Air Filter Regulator	13
Plumbing Runs and Equipment Locations	14
Influent Line	14
Effluent Line	16
Precoat Line	17
INSTALLATION AND COMMISSIONING	18
Receiving the Equipment	18
Regenerative Media Filter	18
System Accessories	19
Filter Installation	20
Positioning	20
Tilting	20
Foundation	21
Anchoring	21
Quick Exhaust Valve Installation	22
Perlite Media Loading System Installation	23
Assembly Vacuum Loading Valve Installation	24
Air Assembly Regulator Installation	25
PMF Controller Installation	26
Vacuum Transfer Valve and Pipe Installation	27



Hose Connections	28
Flange Connections	29
PVC PIPE	30
PVC Pipe Support Spacing	30
Pipe Sizing	30
Schematics	31
GENERAL NOTES	31
FIELD WIRING TERMINATIONS	32
Incoming Power and Vacuum	32
Solenoid Valves, Pressure Sensors and Flowmeter	32
VFD	33
External Interlock	33
OPERATIONAL CONTROL	34
Control Start-Up	34
Start-Up and Home Screen	34
Home Screen Display	35
Menu View	36
Time Setup	36
Time & Date Screen	37
Filter Data	37
Parameters	38
Services	39
Setup Parameters	40
Inputs 1-4 4 mA to 20 mA	41
Inputs 5-8 4 mA to 20 mA	42
Outputs 4 mA to 20 mA	43
Manual Controls	44
Adjusting Precoat and Effluent Pneumatic Valves	45
VFD PID Setup	46
Adding Perlite	47
Start Filter	48
Filter Mode	51
Drain & Rinse – Media Change	51
Auto Pulse Setup	52
Auto Pulse Block	53
Clean Flex Tubes	53

Input Data	54
I/O Status	54
Trends	55
Manual Overrides	56
Help	57
Alarms & Faults	58
MAINTENANCE PROCEDURES	58
Schedule for Media Change	59
Schedule for Inspection	59
Repair and Replacement Parts	59
MAINTENANCE LOG	60
SPARE PARTS	61
TESTING AND COMMISSIONING – SIGN OFF	63
WARRANTY	64

INTRODUCTION

The regenerative media filter manufactured by Aquify Systems utilizes the latest in aquatics technology to reduce the consumption of water while providing superior quality and clarity. The filter has a notable reduction of energy and chemical costs, minimal footprint, and environmentally friendly filtering media. These features make it a sustainable solution for any mechanical room. The fiberglass line of filters has been specifically designed for harsh aquatics environments where steel products are inadequate or undesired in this application. The filter is constructed for long-lasting performance and durability and is NSF-50 listed to stringent safety, performance, and water quality requirements.

Theory of Operation

Precoat filters, also known as regenerative media filters, are the most efficient type of pool filters available. They trap small particles using a series of small tubes with a layer of precoat media, which aids in filtering the water. As the filter begins to circulate the water, the particulates become trapped in the precoat media layer. As time passes, particulates gradually accumulate within the filter, causing an increase in head loss. Once the pressure differential reaches a certain threshold, the filter controller will automatically switch from the moderate setting to the dirty setting. This change indicates that the filter media has reached its capacity and requires replacement.

By monitoring the pressure differential and utilizing the filter controller, you can ensure timely media changes to maintain optimal filtration efficiency. Regular maintenance and media replacement are crucial to ensure the effectiveness of the filter system and prevent any potential issues caused by excessive pressure differentials.

Pulse Cycle

To prolong the lifespan of the filter media and optimize the energy efficiency of the system, it is recommended to perform a daily pulse cycle. This cycle helps lower the pressure differential within the filter.

You have two options to accomplish this:

MANUAL OPERATION: You can manually initiate the pulse cycle from the home screen of the filter controller.

AUTOMATIC SCHEDULING: Alternatively, you can set up an automatic pulse cycle schedule using a calendar feature available on the filter controller. This allows you to define specific times for the pulse cycle to occur daily. The controller will then automatically initiate the pulse cycle at the scheduled times.

By implementing a daily pulse cycle, you can effectively reduce the pressure differential, prolong the lifespan of the filter media, and optimize the energy consumption of the filtration system.

During the pulse cycle, the valves will automatically reposition, while air is exhausted from the pulse diaphragm, forcing water through the flexible tube elements. The porous filaments are then agitated, loosening the captured particulates from the filter media.

The loosened particulates settle to the bottom of the filter, and the flexible tube elements are re-coated with the media. This process typically takes around 10 minutes to complete. It is recommended to schedule the pulse cycle during the early morning or late evening hours when the body of water is not in use.

Once the pulse cycle is finished, the filter cycle is reactivated, and normal flow is restored without the need for backwashing or media replacement. The filter cycle should continue to operate at the original optimal influent flow for an extended period.

Over time, as the particulates accumulate at the bottom of the filter, and optimal pressure and flow cannot be restored to their optimal levels, it becomes necessary to remove the used media. This can be done by draining the media via gravity into the sewer, septic, or holding tank.

AQUIFY DESIGN STANDARDS

Aquify recognizes the challenges that designers face to integrate products into their workflow in the age of automated design tools like Autodesk Revit. We provide 2D technical drawings, AutoCAD blocks for our 2D designers, and 3D files in multiple formats, including automated Revit families for our 3D designers. Our Revit families automatically select the correct Aquify product for your piping configuration and include additional parameters to be used in piping analysis from within Revit. If your workflow is not supported natively, our Fusion 360 files can be converted online to nearly every format. The tables below can be used as a quick reference for installation specifications and part number lookup.

Flow Requirements

The Aquify Regenerative Media filter systems are designed to provide effective filtration for a wide range of applications. They are available in various sizes, ranging from 30 inches to 60 inches in filter diameter. The designed operating pressure for these systems is 50 psi, though all filters have been hydrostatically tested to 75 psi, to ensure their durability and reliability. They can handle flow rates from 50 GPM to 2400 GPM, this results in an effective filtration rate of up to 2.0 GPM/SF.

It's important to note that if your flow rates fall outside of these recommended ranges, it is advisable to get in touch with an authorized Aquify representative.

Flowrate Data

Variables other than pump flowrates should be considered when sizing a filter. The type of pool, total volume, depth, turnover rate, bather load, and location (indoor/outdoor) may impact the selection. Before finalizing a design or purchasing an Aquify Regenerative Media Filter, it is recommended to consult with Aquify Systems to confirm the selected model and auxiliary components are appropriate.

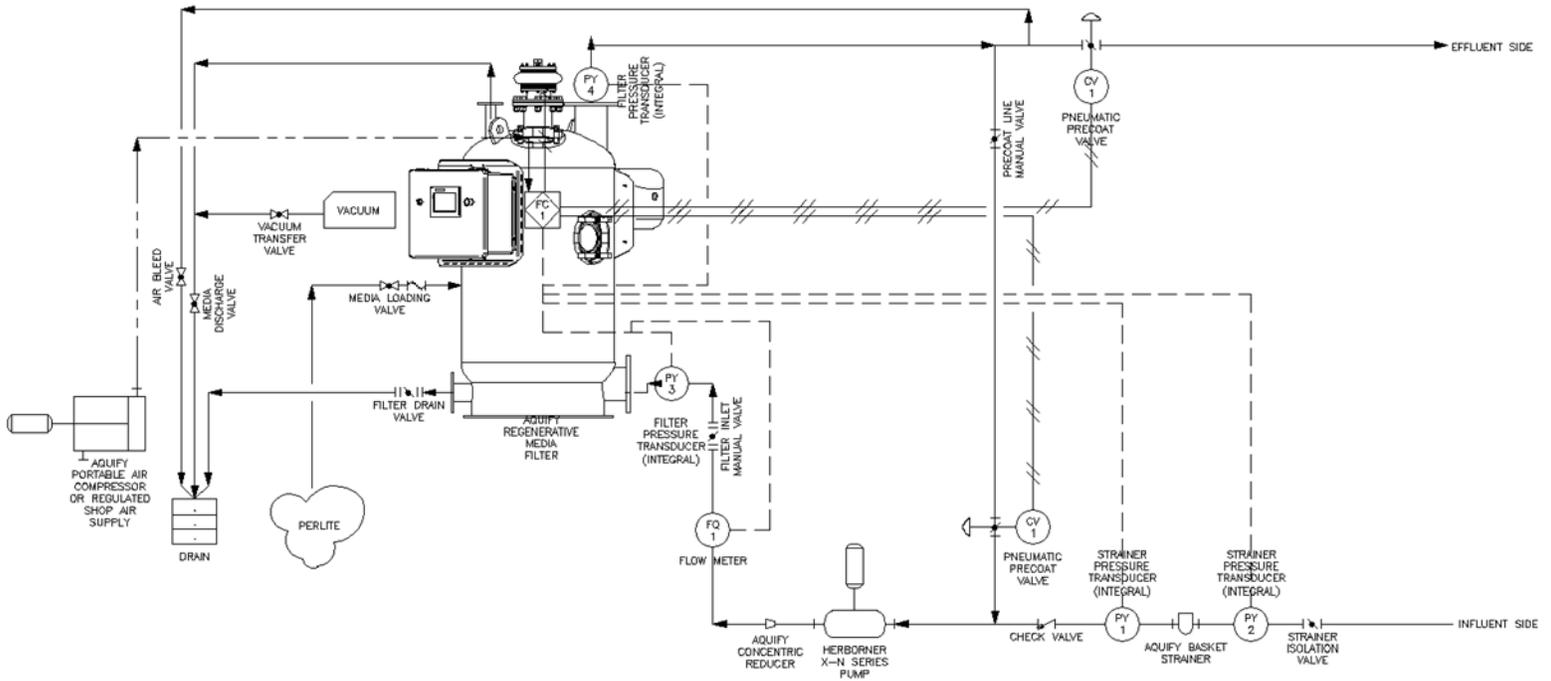
FLOWRATE CHART			
Model	Filter Area [sf]	Flow Rate [gpm]	
		Min	Max
PMF-30-100-FRP	100	50	150
PMF-30-200-FRP	200	100	300
PMF-30-300-FRP	300	150	450
PMF-36-400-FRP	400	200	600
PMF-36-500-FRP	500	250	750
PMF-42-600-FRP	600	300	900
PMF-42-700-FRP	700	350	1050
PMF-48-800-FRP	800	400	1200
PMF-48-900-FRP	900	450	1350
PMF-54-1000-FRP	1000	500	1500
PMF-54-1200-FRP	1200	600	1800
PMF-60-1400-FRP	1400	700	2100
PMF-60-1600-FRP	1600	800	2400

Designer Plan Criteria

DESIGN CRITERIA CHART			
Model	Manufacturer	Brand	Description
PMF-30-100-FRP	Aquify Systems	Regenerative Media Filter	100 SF, 8 lbs Perlite Media, 50 to 150 GPM Max Flowrate 6in Filter and 3in Drain Connections, 150-gal Tank Volume, NSF 50
PMF-30-200-FRP	Aquify Systems	Regenerative Media Filter	200 SF, 16 lbs Perlite Media, 100 to 300 GPM Max Flowrate 6in Filter and 3in Drain Connections, 150-gal Tank Volume, NSF 50
PMF-30-300-FRP	Aquify Systems	Regenerative Media Filter	300 SF, 24 lbs Perlite Media, 150 to 450 GPM Max Flowrate 6in Filter and 3in Drain Connections, 150-gal Tank Volume, NSF 50
PMF-36-400-FRP	Aquify Systems	Regenerative Media Filter	400 SF, 32 lbs Perlite Media, 200 to 600 GPM Max Flowrate 6in Filter and 3in Drain Connections, 248-gal Tank Volume, NSF 50
PMF-36-500-FRP	Aquify Systems	Regenerative Media Filter	500 SF, 40 lbs Perlite Media, 250 to 750 GPM Max Flowrate 6in Filter and 3in Drain Connections, 248-gal Tank Volume, NSF 50
PMF-42-600-FRP	Aquify Systems	Regenerative Media Filter	600 SF, 48 lbs Perlite Media, 300 to 900 GPM Max Flowrate 8in Filter and 4in Drain Connections, 355-gal Tank Volume, NSF 50
PMF-42-700-FRP	Aquify Systems	Regenerative Media Filter	700 SF, 56 lbs Perlite Media, 350 to 1050 GPM Max Flowrate 8in Filter and 4in Drain Connections, 355-gal Tank Volume, NSF 50
PMF-48-800-FRP	Aquify Systems	Regenerative Media Filter	800 SF, 64 lbs Perlite Media, 400 to 1200 GPM Max Flowrate 8in Filter and 4in Drain Connections, 480-gal Tank Volume, NSF 50
PMF-48-900-FRP	Aquify Systems	Regenerative Media Filter	900 SF, 72 lbs Perlite Media, 450 to 1350 GPM Max Flowrate 8in Filter and 4in Drain Connections, 480-gal Tank Volume, NSF 50
PMF-54-1000-FRP	Aquify Systems	Regenerative Media Filter	1000 SF, 80 lbs Perlite Media, 500 to 1500 GPM Max Flowrate 10in Filter and 4in Drain Connections, 620-gal Tank Volume, NSF 50
PMF-54-1200-FRP	Aquify Systems	Regenerative Media Filter	1200 SF, 96 lbs Perlite Media, 600 to 1800 GPM Max Flowrate 10in Filter and 4in Drain Connections, 620-gal Tank Volume, NSF 50
PMF-60-1400-FRP	Aquify Systems	Regenerative Media Filter	1400 SF, 112 lbs Perlite Media, 700 to 2100 GPM Max Flowrate 12in Filter and 4in Drain Connections, 787-gal Tank Volume, NSF 50
PMF-60-1600-FRP	Aquify Systems	Regenerative Media Filter	1400 SF, 128 lbs Perlite Media, 800 to 2400 GPM Max Flowrate 12in Filter and 4in Drain Connections, 787-gal Tank Volume, NSF 50

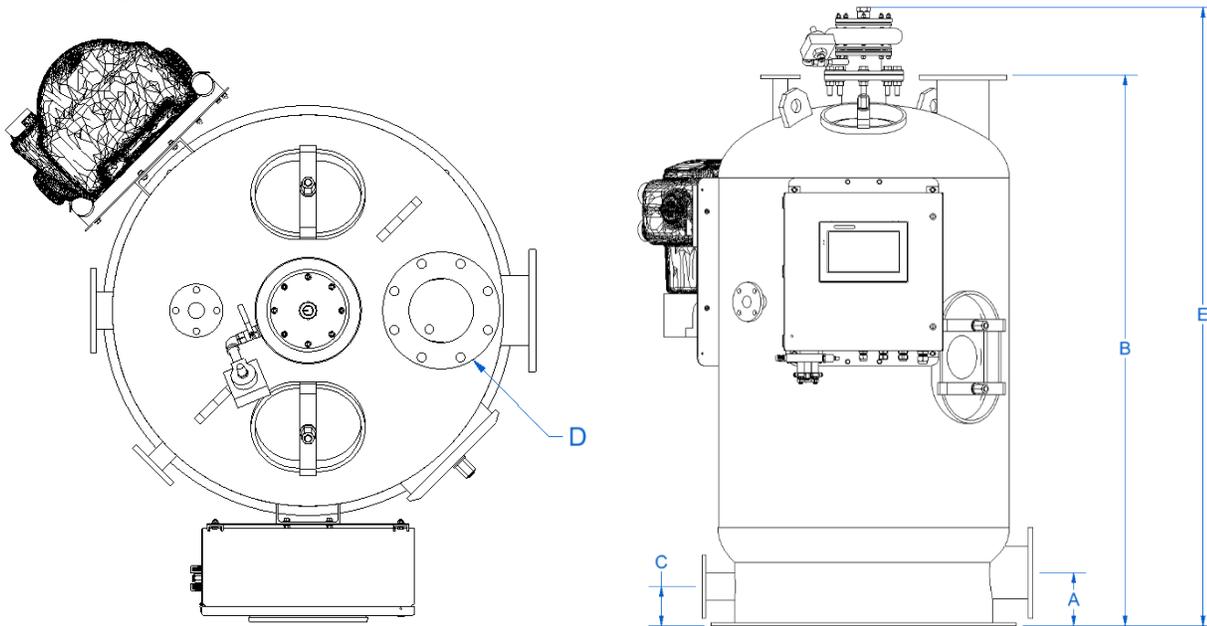
P&ID Routing

- *THE FOLLOWING P&ID DOCUMENT IS USED AS A REFERENCE ONLY DOCUMENT FOR PROPER ROUTING AND CONFIGURATION OF THE AQUIFY PMF-FRP SERIES FILTER.*
- *CONSULT A MECHANICAL ENGINEER FOR PROPER SIZING, ROUTING, AND PLACEMENT OF ALL COMPONENTS.*
- *ADDITIONAL FITTINGS AND COMPONENTS (NOT SHOWN) MAY BE REQUIRED FOR PROPER FLOW AND ROUTING, INCLUDING BUT NOT LIMITED TO REDUCERS, FLANGES, TEES, VALVES, AND SENSORS.*
- *PLACE PNEUMATIC VALVE AS CLOSE AS POSSIBLE TO EFFLUENT LINE, AND AS CLOSE AS POSSIBLE TO REDUCING TEE TO AVOID PRECOAT MEDIA DISCHARGE TO SYSTEM.*
- *FOR ANY QUESTIONS REGARDING PROPER INSTALLATION AND OPERATION OF THE FILTER SYSTEM, REVIEW THE AQUIFY PMF-FRP O&M DOCUMENTATION, OR CONSULT AN AUTHORIZED AQUIFY SUPPORT AGENT.*
- *ALL AUXILIARY EQUIPMENT INCLUDING BUT NOT LIMITED TO HEATER OR UV TREATMENT SYSTEMS MUST BE INSTALLED ON THE EFFLUENT LINE.*
- *CHECK VALVE MUST BE INSTALLED BELOW WATER LEVEL IF SELF-PRIMING PUMP IS USED.*
- *(FOR HERBORNER X-SERIES PUMPS) PUMP MUST BE FLOODED (BELOW WATERLINE) TO ENSURE PROPER FLOW.*
- *DO NOT USE WATER-COOLED PUMPS WITH AQUIFY PMF SERIES FILTERS.*
- *(SUMP ONLY) DRAIN VOLUME SHALL BE MINIMUM TWICE THE FILTER TANK VOLUME.*
- *LOWER FLANGE CONNECTORS MAY BE ROTATED IN 90 DEGREE INCREMENTS IF NEEDED.*
- *THREE INCLUDED WELDED ON UNIVERSAL BRACKETS ON FILTER TANK MAY BE USED TO INSTALL VACUUM AND CONTROLLER IF NOT MOUNTED REMOTELY.*



GENERAL OVERVIEW

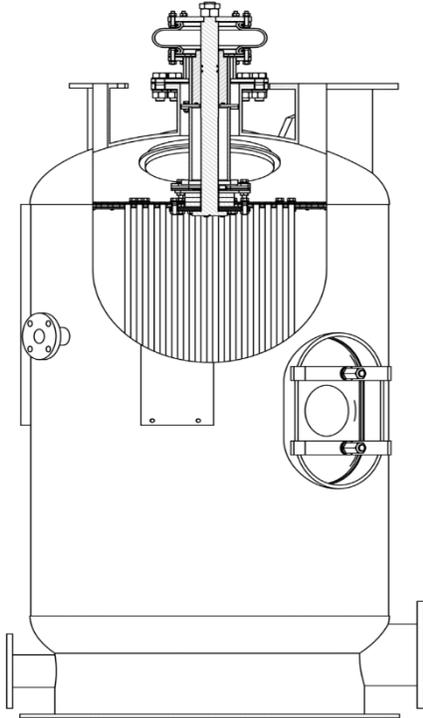
Flanged Dimensions and Elevations


FLANGE CONNECTIONS AND FILTER DIMENSIONS

Model	Influent [A]		Effluent [B]		Drain [C]		Width [D]	Height [E]
	Pipe	Center Line	Pipe	Flange Connection	Pipe	Center Line		
PMF-30-100-FRP								
PMF-30-200-FRP	6	6 ¾	6	68 ¾ ₁₆	3	5	35 ¾	76 ¾
PMF-30-300-FRP								
PMF-36-400-FRP								
PMF-36-500-FRP	6	6 ¾	6	69 11 ₁₆	3	5	41 ¾	78 ¼
PMF-42-600-FRP								
PMF-42-700-FRP	8	8	8	75 ½	4	5 ¾	47 ¾	83 ½
PMF-48-800-FRP								
PMF-48-900-FRP	8	8	8	77	4	5 ¾	53 ¾	85
PMF-54-1000-FRP								
PMF-54-1200-FRP	10	9 ¼	10	78 7 ₁₆	4	5 ½	60 ½	87
PMF-60-1400-FRP								
PMF-60-1600-FRP	12	10 ¾	12	81 9 ₁₆	4	5 ¾	66 ¼	90 ½

All connections, diameter, width, and height measured in inches. Connection sizes are subject to change based on GPM requirements. Bushings, pipe connections, and reducers may be supplied to accommodate the required pipe diameters or to mate with existing pipe sizes on site. Refer to filter spec sheets for additional dimensions, and Revit models for accurate pipe placement information.

Internal Components



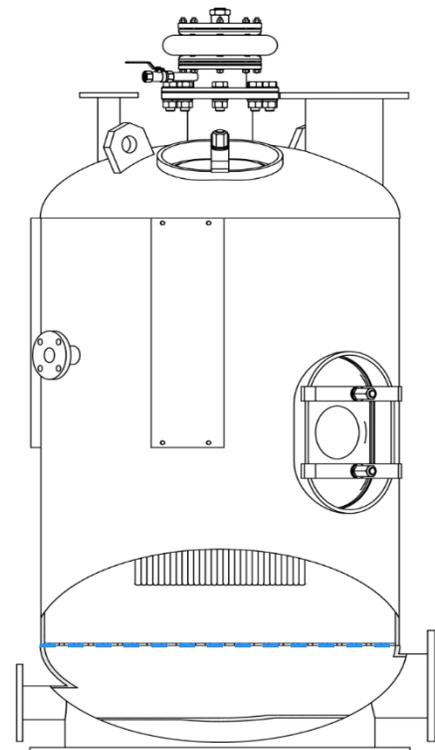
The internal components primarily consist of the flexible tube elements, tube sheet, tube sheet retainer, diffuser, gaskets, and lift shaft. All parts are factory assembled and tested before shipment.

All components are easily accessible for inspection or maintenance via the viewing window or manways.

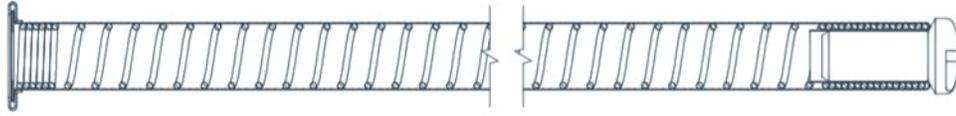
Inlet Diffuser

The diffuser plate substantially reduces the turbulence inside the filter. By reducing the flow velocity and changing the flow direction, the disturbance at the filter bottom is diminished, thus creating a more uniform flow.

The diffuser is an integral part of the bottom head of the FRP tank sub-assembly. Unlike carbon steel pipe, this material is corrosion resistant and will not pit, rust, or scale. The diffuser plate remains smooth, is inherently self-cleaning, and allows an unobstructed flow of media during clean-out.



Flexible Tube Elements



The flexible tube element is made with a high-quality braided, cylinder filament. Each filter tube features an open-ended flange top and closed bottom. The flange is used for attaching and securing the filter elements to the tube sheet. Inside each filament, there is a 316 stainless steel spring to prevent any diameter reduction and ensure structural integrity. Aquify tube elements are designed at a length of 38in, which have been tested and proven to be the optimal size for minimizing movement and bridging.



NEVER RUN THE SYSTEM WITHOUT THE PROPER AMOUNT OF PERLITE. DOING SO WITHOUT ANY OR THE RIGHT AMOUNT COULD FOUL ELEMENTS AND CAUSE PERFORMANCE ISSUES AND LOSS OF TEMPORARY FILTER AREA.

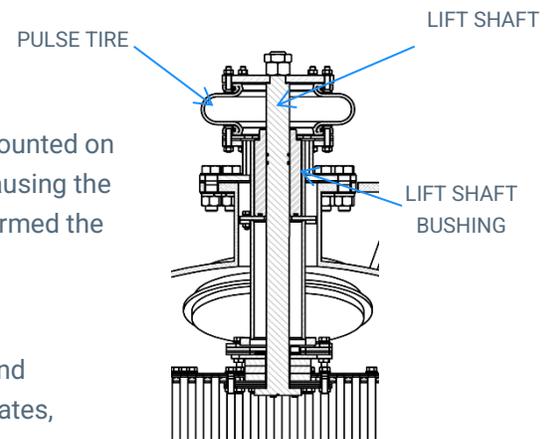
Pulse Mechanism

The "pulse" mechanism includes a pneumatically actuated tire externally mounted on top of the filter. Air is added to and exhausted from the pressurized tire, causing the downward and upward movement of the flexible tube element assembly, termed the "pulse."

Pulse Operations

During the "pulse" cycle, the flexible tube elements coated with the media and accumulated particulates, are dislodged then re-coated without the particulates, effectively extending the life of the filter cycle.

The "pulse" can be initiated manually by the operator or automated by activating the actuator, controlled by a 3-way solenoid valve, electronically through the filter controller.



Pressure: 90 psi MAX



Temperature: -35°F to +135°F



Total Stroke: 1in – 2in



OVER INFLATION CAN CAUSE COMPONENT DAMAGE AND FAILURE OF THE SYSTEM. NEVER INFLATE THE TIRE WITH STOPS REMOVED. THIS COULD RESULT IN PERSONAL INJURY.

Perlite Media

The performance of the Aquify Regenerative Media filter can be significantly affected by the quality of media purchase and the frequency at which the media is changed. Aquify recommends using only NSF 50 certified perlite.

FILTER MEDIA REQUIREMENTS	
Model	Perlite Media [lbs]
PMF-30-100-FRP	8
PMF-30-200-FRP	16
PMF-30-300-FRP	24
PMF-36-400-FRP	32
PMF-36-500-FRP	40
PMF-42-600-FRP	48
PMF-42-700-FRP	56
PMF-48-800-FRP	64
PMF-48-900-FRP	72
PMF-54-1000-FRP	80
PMF-54-1200-FRP	96
PMF-60-1400-FRP	112
PMF-60-1600-FRP	128

DESCRIPTION	
PART NUMBER	PMF-MDP-25
BAG SIZE [lbs]	25
APPLICATION	Water Filtration
PRODUCT	Harborlite® AquaPerl
REQUIRED	NSF 50

****NOTE:**** Perlite is not classified as hazardous and is commonly used across various industries and household products. Aquify's products use a minimal amount of perlite and media changes are infrequent—well below any regulated exposure limits. If you have concerns about potential irritation from airborne dust, refer to your SDS handbook for recommended personal protective measures.

Cleaner

A specialized filter cleaner designed to effectively eliminate buildup within your filter system. When the solution is active, it turns red—visibly indicating it's working. As it neutralizes contaminants, the color shifts to orange or yellow, signaling that the active ingredients have been used up.

FILTER CLEANER REQUIREMENTS	
Model	Perlite Media [lbs]
PMF-30-100-FRP	30
PMF-30-200-FRP	30
PMF-30-300-FRP	30
PMF-36-400-FRP	50
PMF-36-500-FRP	50
PMF-42-600-FRP	71
PMF-42-700-FRP	71
PMF-48-800-FRP	96
PMF-48-900-FRP	96
PMF-54-1000-FRP	124
PMF-54-1200-FRP	124
PMF-60-1400-FRP	158
PMF-60-1600-FRP	158

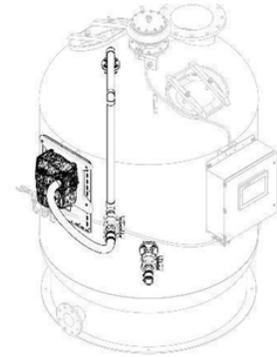
DESCRIPTION	
PART NUMBER	PMF-CLN-25
CONTAINER SIZE [lbs]	25
APPLICATION	Water Filtration
PRODUCT	Filtertrine
COLOR	Red

Media Loading System

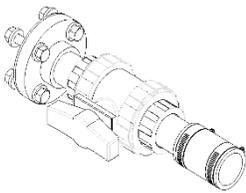
The media loading system is provided to facilitate the loading of perlite media into the filter and minimize the risk of inhalation.

The vacuum includes a minimum UL-listed, five HP 120V single phase, 60 Hz motor.

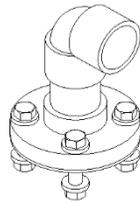
The system comes partially preassembled from our factory. All necessary hardware, fittings, and pipes are included. Electrical connections for the vacuum must be landed in the Aquify Regenerative Media filter controller by the installer in the field.



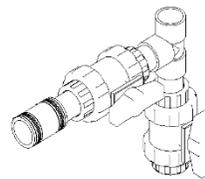
**ASSEMBLY VACUUM
LOADING VALVE**



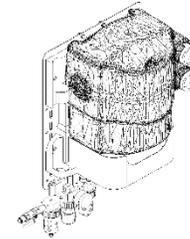
**VACUUM TRANSFER AIR
VENT**



**ASSEMBLY VACUUM
TRANSFER VALVE**



VACUUM AND BRACKET



****NOTE:**** The installer is responsible for cutting the remaining pipes to the appropriate length and routing the drain lines for the filter.

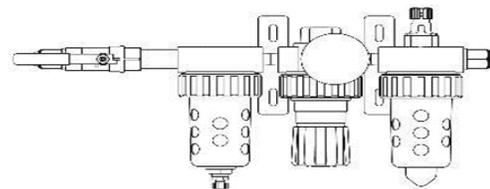


THE MEDIA LOADING SYSTEM IS RATED FOR INDOOR USE ONLY. IF FILTER IS INSTALLED OUTSIDE, THE LOADING SYSTEM MUST BE ENCLOSED FOR PROTECTION FROM NATURAL ELEMENTS.

Air Filter Regulator

The air filter is designed to remove liquid water and particulate matter from compressed air. By filtering the air and capturing solids like dust, dirt, and liquids, the regulator helps reduce contaminants and enhances the efficiency and performance of downstream equipment. Ideally, the pressure regulator maintains a consistent output pressure, regardless of fluctuations in input pressure and downstream flow demands. During the initial system installation and configuration, the regulator should be set to 90 psi.

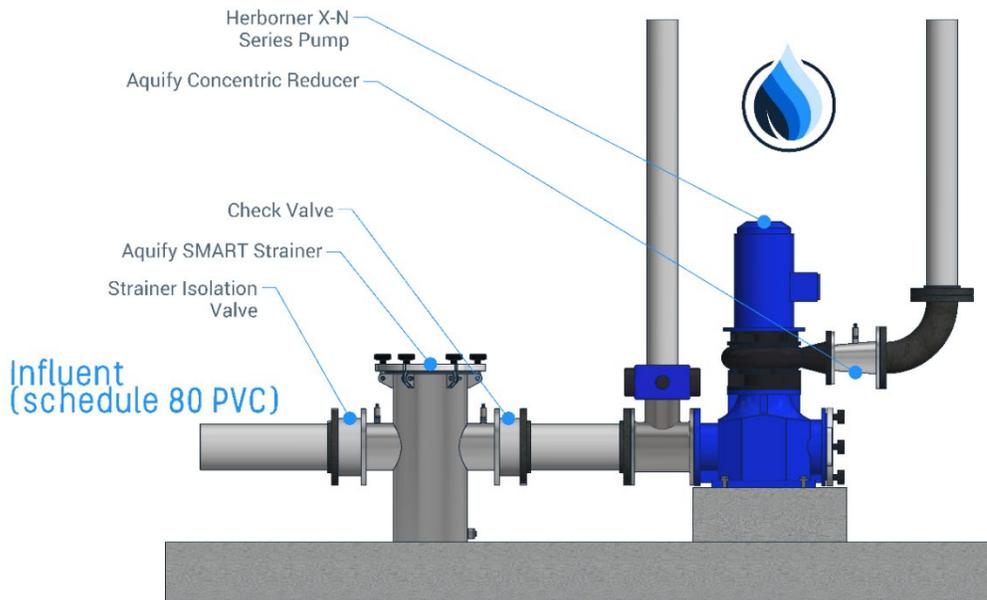
****NOTE:**** To prevent potential damage, the filter regulator elements should be replaced every two years or whenever the pressure drops below 0.1 MPa.



Plumbing Runs and Equipment Locations

Influent Line

The Influent line consists of the pipe and accessories from the pool, surge tank, or balance tank, including the hair & lint strainer, butterfly, and check valve, reducing tee up through the pump. Commercial applications typically use schedule 80 PVC pipes.

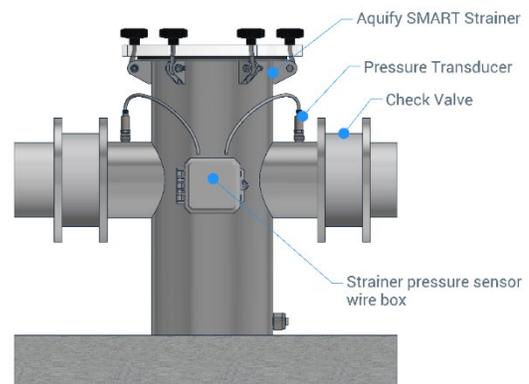


Strainer Isolation Valve

The PVC lever butterfly valve is installed before the hair & lint strainer. During regular operation, this valve remains in the open position and only closed by hand when cleaning the hair & lint strainer.

Basket Strainer

Aquify recommends when designing the pump room, using a straight strainer and an eccentric reducer or tee at the pump suction, rather than a reducing strainer as it will not directly attach to the pump. Before cleaning the strainer basket, turn off the pump and manually close the isolation butterfly valve. For ease of installation, Aquify Systems manufactures a SMART strainer, which includes prewired and installed pressure transducers on the influent and effluent side of the strainer, as well as a UL listed waterproof junction box integrated on the strainer body to ease the installation process. For more information on the Aquify Straight Strainer series, as well as the SMART strainer upgrade, please visit the Aquify Systems website or contact an authorized Aquify support representative.



Check Valve

The check valve should be installed on the effluent side of straight strainer. The check valve's function prevents water from flowing back into the pool or surge tank during the precoat process and as an isolation valve during routine strainer basket cleaning.

Reducing Tee

To reduce the footprint of the mechanical room Aquify recommends installing an eccentric reducing tee (TEE series) on the suction flange of the pump to facilitate a proper transition from the larger suction piping to the smaller suction flange of the pump. This tee would replace the need for a traditional eccentric reducer (RDE series).

Flooded Suction Pump

A flooded suction pump is installed below grade and allows the pool to meet turnover requirements.



IF A SELF-PRIMING PUMP (USUALLY INSTALLED FOR FILTER AT GRADE OR SMALLER SIZES) IS USED INSTEAD OF A FLOODED SUCTION PUMP, INSTALLER MUST INCLUDE AN ADDITIONAL CHECK VALVE ON THE INFLUENT LINE UNDER THE WATER LINE. NOT SHOWN ON SCHEMATIC.

Concentric Reducer

A concentric reducer is required to make up the difference from the effluent flange of the pump and the filter tank connection (effluent pipe size).

Pump Throttle Valve

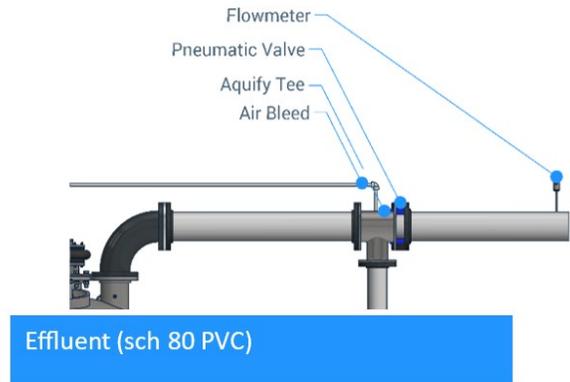
A butterfly gear valve is installed after the pump discharge and before the filter. This valve is used to isolate the filter pump and aid in ensuring the pump is running at an optimal spot of the pump curve. If filter is below water level, this valve is essential to isolating the filter during the drain and rinse process.



IF THE PUMP THROTTLE VALVE IS INSTALLED AT THE FILTER, IT IS IMPORTANT TO LEAVE SPACE BETWEEN THE FILTER INFLUENT FLANGE AND THE THROTTLE VALVE TO INSTALL THE FILTER INFLUENT PRESSURE SENSOR. YOU MAY EXPERIENCE ARTIFICIALLY HIGH INFLUENT FILTER PRESSURES IF INSTALLED INCORRECTLY WHICH WILL LEAD TO OPERATIONAL ISSUES.

Effluent Line

The Effluent line consists of the pipe and accessories from the pump discharge to the pool return. Flowmeters, chemicals, heaters, and other disinfection components are installed on this line downstream of the pneumatic effluent valve. Commercial applications typically use schedule 80 PVC pipes. Flow meter shown here for reference only, Aquify recommends installing the flow meter between the pump and filter if possible, to have a flow reading during precoat cycles.



Air Bleed

A 3/4" pipe needs to be tapped and threaded into the highest point of the effluent pipe located just before the pneumatic effluent valve. It is recommended to tap on a fitting, as shown in the illustration, as the pipe is thicker and easier to thread. The pipe shall be pumped to the drain and have a manual ball valve installed at a chest level. (reference Schematic)

Pneumatic Effluent Valve

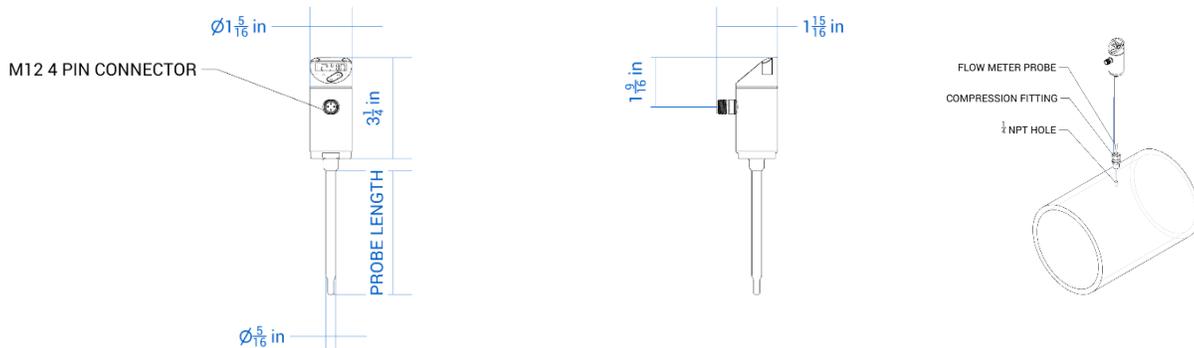
The PVC pneumatic butterfly valve is installed right after the precoat down tee. This valve is generally in the open position during filtration and automatically closes during precoat, filter draining, or when the filter is off.



ALWAYS ENSURE THAT ALL VALVES ARE INSTALLED AND OPERATING CORRECTLY BEFORE OPERATING THE FILTER. PERLITE CAN BECOME DISCHARGED TO THE POOL IF THE PNEUMATIC VALVES DO NOT OPERATE CORRECTLY OR SEAL DURING THE PRECOAT CYCLE.

Flowmeter

Aquify includes a flowmeter with the Aquify Regenerative Media Filter Controller. The flowmeter comes with a flow and temperature output that will be displayed on the filter controller. This flowrate value is used for the constant flow signal sent from the filter controller to the VFD to control the speed of the pump. Compression fitting and factory cable are included with flowmeter.



Precoat Line

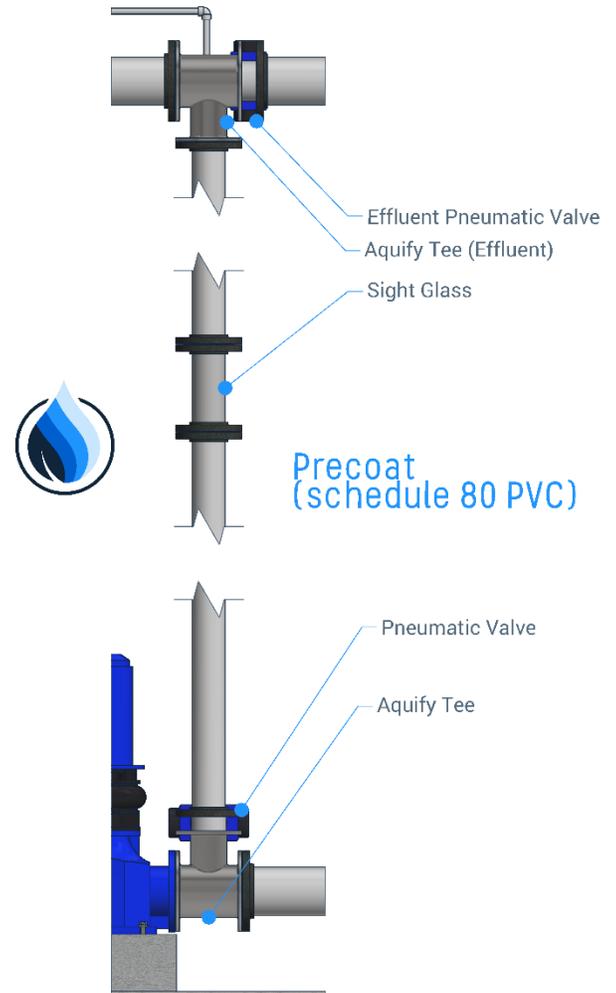
The precoat line is typically sized by filter specifications and design requirements relative to the effluent (return) pipe sizing. Typically, two pipe sizes smaller than effluent piping. This line makes a closed loop to allow for the perlite to regenerate for filter operation.

Pneumatic Precoat Valve

The PVC pneumatic butterfly valve is installed above the isolation valve as low on the pipe as possible. The purpose is to limit the amount of air in the line during precoat. This valve is normally in the closed position during filtration and is automatically opened during precoat cycles.

Sight Glass

Inline sight glass allows the operator to visually observe if the water is clear before valves automatically adjust during the precoat cycle. The observation pipe is schedule 40 clear PVC pipe with schedule 80 flanges. This should be installed in an area that is above the precoat pneumatic valve and easily visible for the operator.

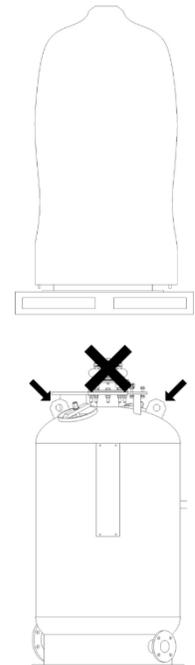


INSTALLATION AND COMMISSIONING

Receiving the Equipment

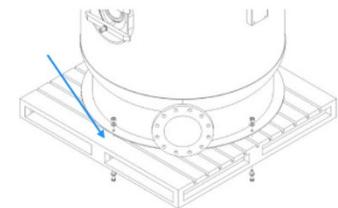
All shipments will be packaged with heat-treated pallets and/or crates and include a packing list, with corresponding parts clearly labeled for ease of identification. Aquify recommends careful inspection of the complete shipment at the time of delivery. Any damage during shipment may impact the functionality of the equipment, take pictures and contact Aquify immediately. The receiver is responsible for the off-loading of the shipment.

REGENERATIVE MEDIA FILTER SHIPPING DIMENSIONS			
Model	Pallet Size [in]	Shipping Height [in]	Shipping Weight [lbs]
PMF-30-100-FRP	48 x 48	82	420
PMF-30-200-FRP	48 x 48	82	465
PMF-30-300-FRP	48 x 48	82	510
PMF-36-400-FRP	48 x 48	84	600
PMF-36-500-FRP	48 x 48	84	640
PMF-42-600-FRP	60 x 60	89	785
PMF-42-700-FRP	60 x 60	89	865
PMF-48-800-FRP	60 x 60	90	1,020
PMF-48-900-FRP	60 x 60	90	1,100
PMF-54-1000-FRP	60 x 60	92	1,290
PMF-54-1200-FRP	60 x 60	92	1,450
PMF-60-1400-FRP	60 x 60	96	1,715
PMF-60-1600-FRP	60 x 60	96	1,875



Regenerative Media Filter

- Filter must be offloaded and handled in the upright position, using the lifting lugs.
- Store the filter in a secure, flat location, protected from any on-going construction.
- Each filter is bolted to the pallet at the four (4) bolt mounting points with ½-3in bolts with additional washers and bolts.
- Socket Wrench tool is required to remove filter from the pallet.



TIPPING FILTER WHILE OFFLOADING OR FOR ANY PERIOD OF TIME AND/OR STORING FILTER ON ITS SIDE CAN CAUSE INTERNAL DAMAGE AND MAY VOID WARRANTY.

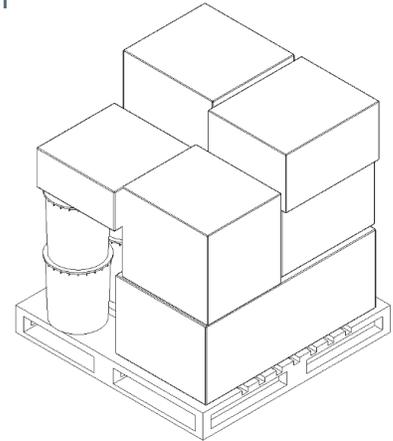
System Accessories

All standard filter shipments will arrive with accessories, media and cleanser to complete the system. The standard shipment contains two (2) additional pallets; however, size and quantity can vary depending upon the filter size and any additional accessories ordered.

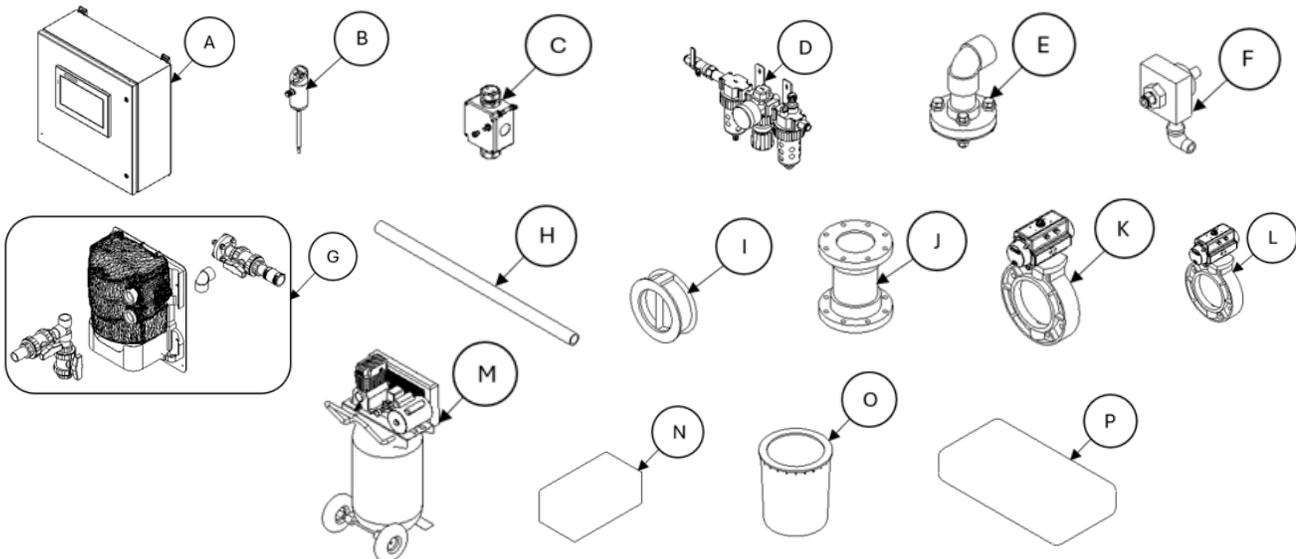
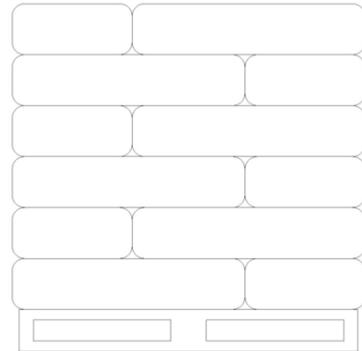
ACCESSORY PALLET 1

Key	Description	Part Number
A	Filter Controller	PMF-CNTRL
B	Flow Meter	FLW-MTR-X
C	Smart Strainer	PMF-CSS
D	Assembly Regulator	1150-0001
E	Assembly Vacuum Transfer Air Vent	1150-0002
F	Assembly Quick Exhaust Valve	1100-0001
G	Perlite Media Loading System	PMF-MDP-SYS
H	PIPE 1-1/2in PVC-80 4FT	3118-1H00-FT-4
I	Check Valve	VCKE-XX
J	In-Line Pre-Coat Sight Glass X	1234-000X
K	Effluent Pneumatic Butterfly Valve XX	VBFP-XX
L	Precoat Pneumatic Butterfly Valve XX	VBFP-XX
Optional		
M	Filter Compressor 2 HP	PMF-CMP-02
N	Start-Up Compressor Kit	CMP-STR
ACCESSORY PALLET 2		
O	Filter Cleanse	PMF-CLN-25
P	Perlite Media 25lb bag	PMF-MDP-25

PALLET 1



PALLET 2



Filter Installation

The Aquify Regenerative Media Filter features internal elements that are vertically positioned and must always be transported and handled in an upright orientation. When lifting the filter, always use the designated lifting lugs.

Installing the filter in a closed, well-ventilated location is preferred.

If the filter is to be installed outdoors all pneumatic and electrical components such as the actuators, the media loading system, and the filter controller must be enclosed and protected from any external elements. Please contact Aquify Systems to confirm if any changes can be made to the standard system, to avoid future repairs and ensure the longevity of the system.

Positioning

Before moving the Aquify Regenerative Media Filter, the path should be free from all obstructions. Inspect the installation area, confirm the floor is level with ample additional space to install all plumbing and ensure adequate room for future maintenance.

Attention must be paid to the following:

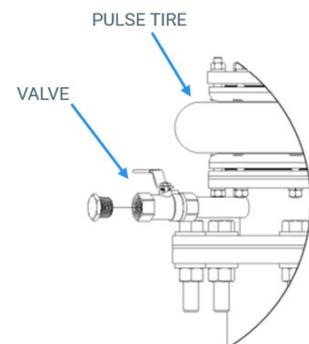
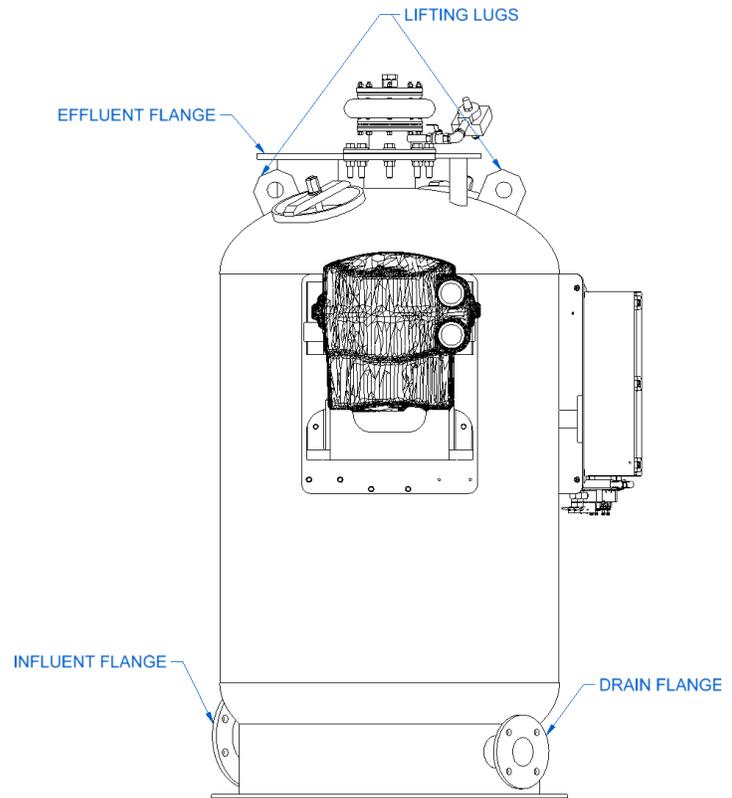
- Minimum installation vertical clearance is 6in.
- Effluent flange (top).
- Influent flange (lower front).
- Drain flange (lower back).

Please review the installation schematic for plumbing guidelines.

Tilting

If tilting the filter is required for installation purposes, the pulse tire **MUST** be pressurized to 90 psi prior.

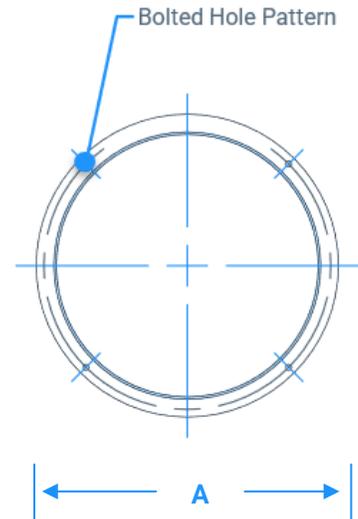
- Remove the plug and connect air to the valve located on the pulse tire.
- Inflate the tire to 90 psi, then close the valve.
- Tilt filter and return to the upright position as soon as possible.
- If tire lost pressure during this process, please reinflate tire to 90 psi and inspect any air leaks. Contact Aquify with any concerns.



Foundation

It is essential when designing the house-keeping pad or foundation that the approximate working weight of the filter or “operating weight” is taken into consideration. Aquify Systems recommends consulting a structural architect or engineer when designing this.

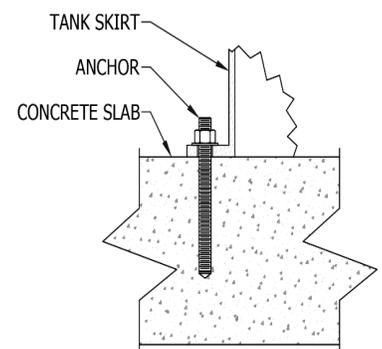
FILTER DIMENSIONS			
Model	Filter Skirt A [in]	Tank Volume [gals]	Operating Weight [lbs]
PMF-30-100-FRP	32 ½	150	1,798
PMF-30-200-FRP	32 ½	150	1,844
PMF-30-300-FRP	32 ½	150	1,884
PMF-36-400-FRP	38 ½	248	2,668
PMF-36-500-FRP	38 ½	248	2,708
PMF-42-600-FRP	42 ½	355	3,751
PMF-42-700-FRP	42 ½	355	3,831
PMF-48-800-FRP	48 ½	480	5,024
PMF-48-900-FRP	48 ½	480	5,104
PMF-54-1000-FRP	54 ½	620	6,461
PMF-54-1200-FRP	54 ½	620	6,621
PMF-60-1400-FRP	60 ½	787	8,284
PMF-60-1600-FRP	60 ½	787	8,444



Anchoring

Once Aquify Regenerative Media filter is positioned in the final location, confirm filter is level then:

- Drill into concrete 3½in deep using a ½in concrete drill bit.
- Remove all concrete debris from holes.
- Place washers and nuts on anchor and insert anchor through the tank skirt plate into the hole.
- Ensure anchors are placed thoroughly into the hole without damaging the threads.
- Tighten bolts to 120 lbs.



FAILURE TO PROPERLY BOLT FILTER TO CONCRETE FLOOR WITH THE SUPPLIED SEISMIC ANCHORS PER INSTRUCTIONS CAN CAUSE FILTER TO TIP OVER. THIS MAY DAMAGE THE FILTER OR CAUSE BODILY INJURY, POSSIBLY RESULTING IN DEATH.

Quick Exhaust Valve Installation

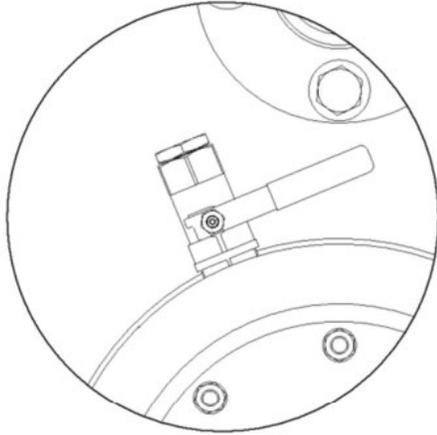


Figure 1. Ball Valve and Plug

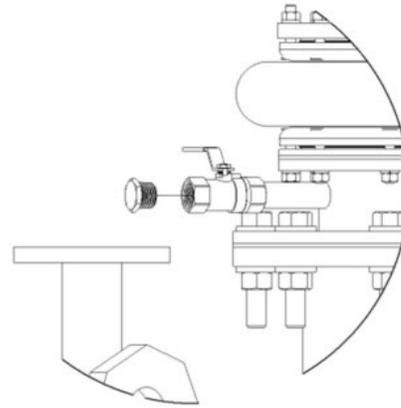


Figure 2. Plug Removal

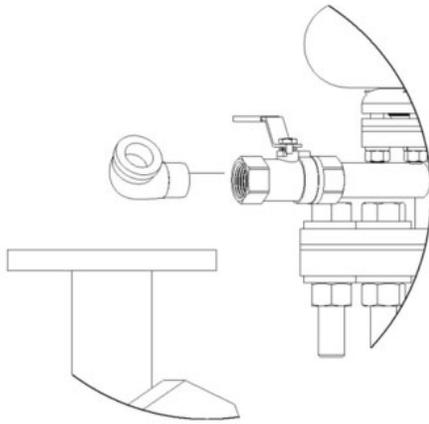


Figure 3. 90° Elbow Insert

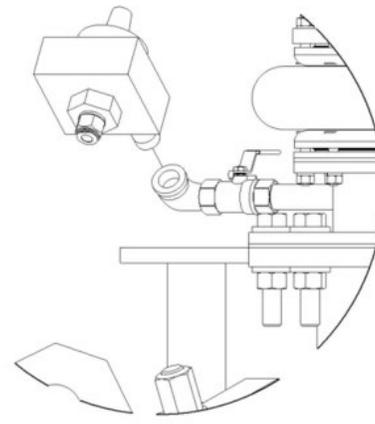
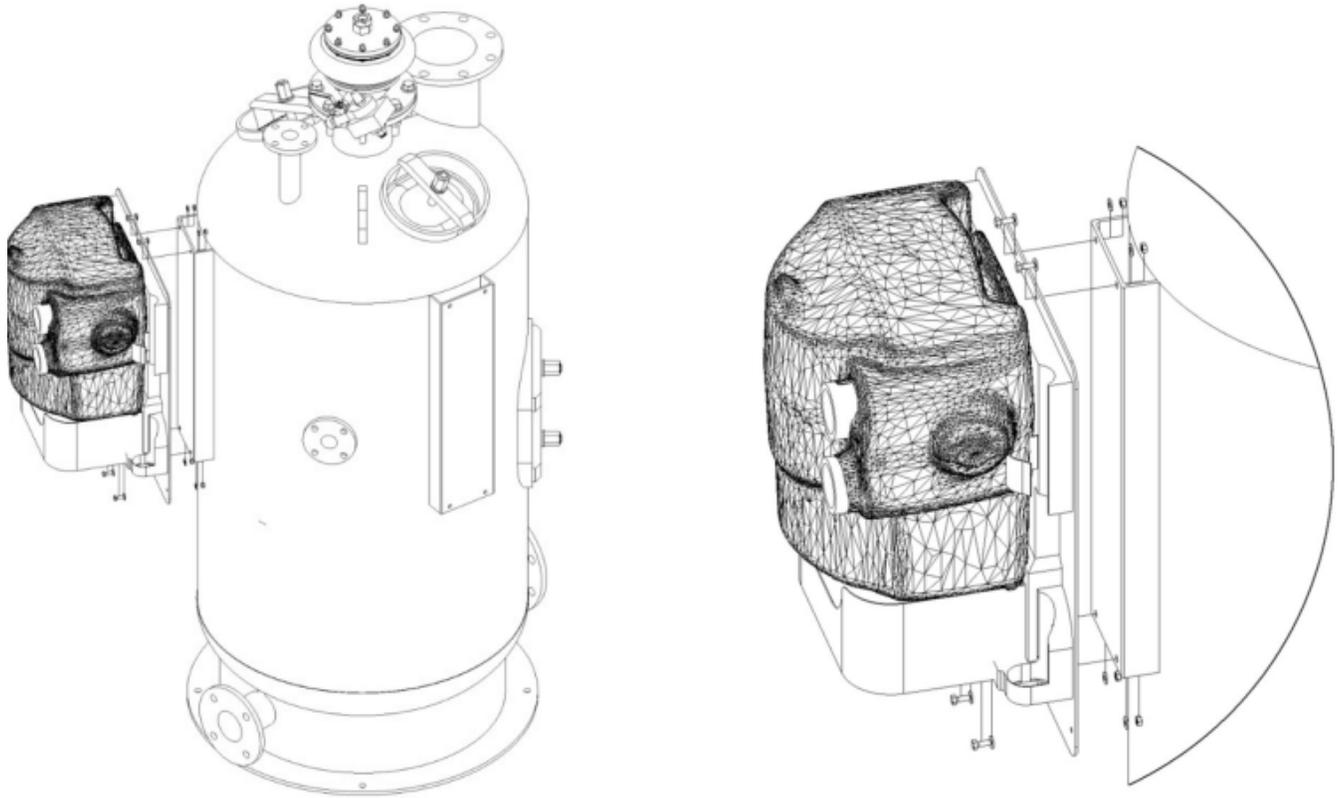


Figure 4. Quick Exhaust Valve Installation

- **Figure 1** The ball valve and plug come pre-assembled to the pulse assembly of the filter.
- **Figure 2** Confirm the ball valve is closed and remove the plug.
- **Figure 3** The 90° elbow needs to be detached from the assembly quick exhaust valve (P/N 1100-0001) and installed to the ball valve prior to installing the complete assembly quick exhaust valve.
- **Figure 4** Once the is installed to the ball valve, the additional piece from the assembly quick exhaust valve is connected.
- Keep the ball valves closed until air lines are connected between the compressor, air regulator, solenoid block, and quick exhaust valve.

Perlite Media Loading System Installation



- The Media Loading System mounting hardware comes attached to the aluminum mounting plate for easy installation. It can be securely mounted to one of the two filter mounting brackets.
- The vacuum can also be mounted to a wall within the proximity of the media transfer pipe and media loading system if space is limited, however it is recommended this kit be attached to the PMF unit.

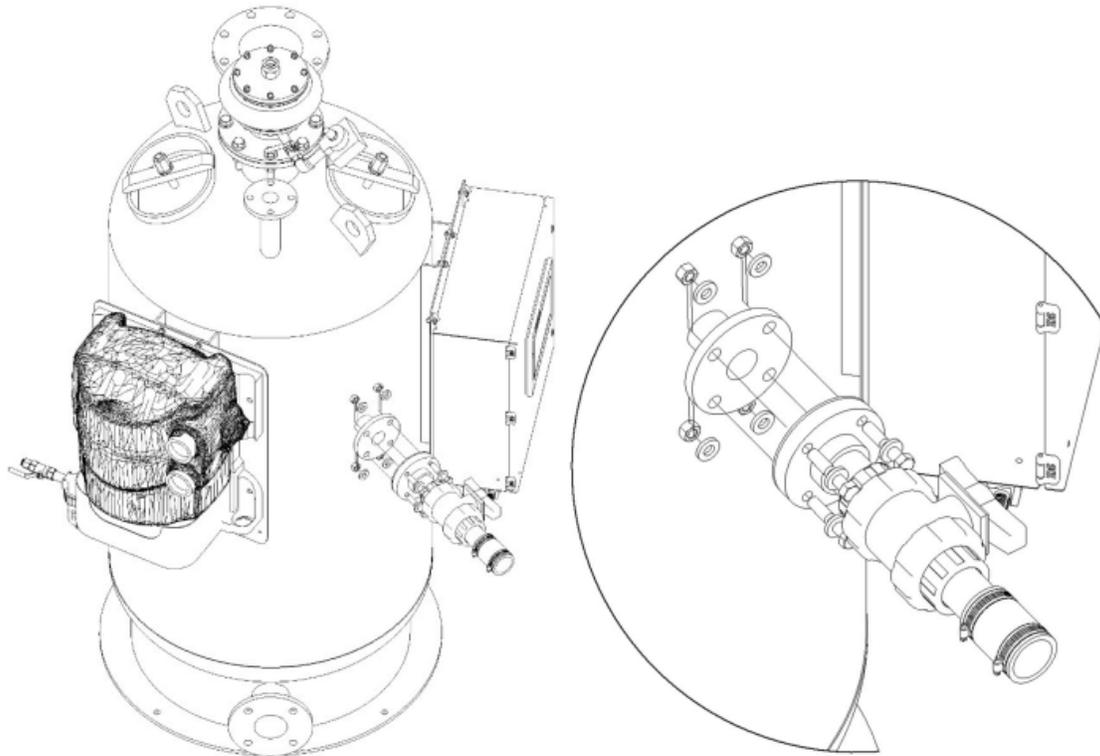
Tools:

- 1/2in Socket Wrench

Mounting Hardware:

- | | |
|--------------------------------------|-------|
| • Bolt Hex 1/4 - 20 - 3/4, 18-8 | Qty 4 |
| • Nut Hex 1/4 - 20, 18-8 | Qty 4 |
| • Washer Oversized 1/4 x 5/8in, 18-8 | Qty 8 |

Assembly Vacuum Loading Valve Installation



- The Assembly Vacuum Loading Valve is positioned 41in from the bottom of the filter.

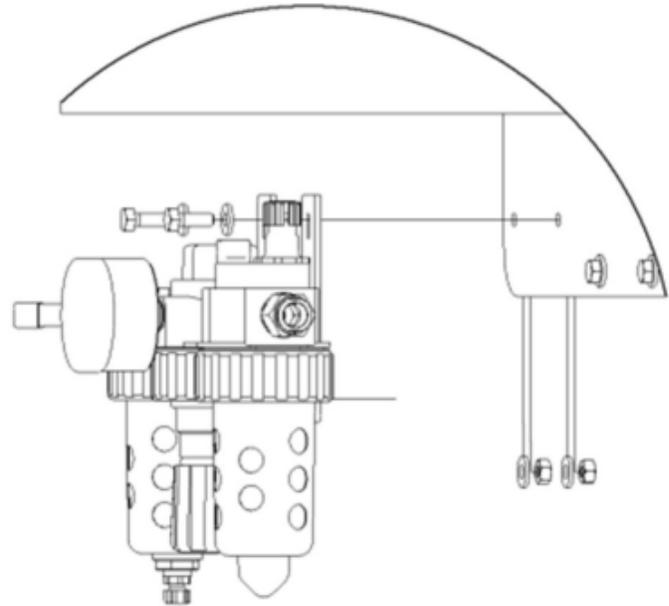
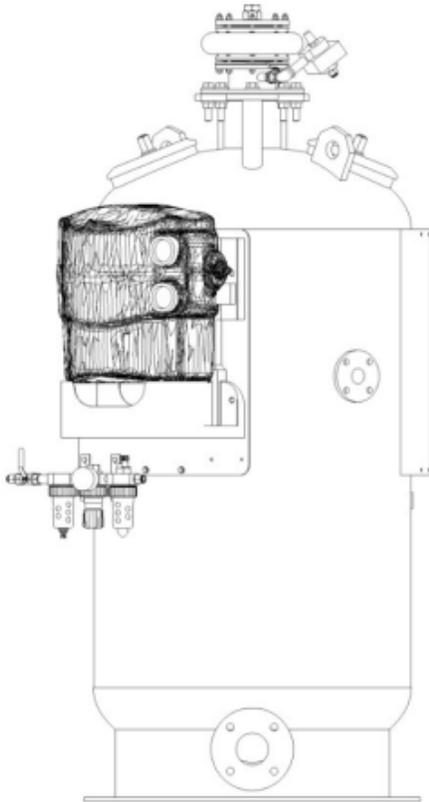
Tools:

- 3/4in socket Wrench

Mounting Hardware:

- | | |
|--|-------|
| • Bolt Hex 1/2 - 13 UNC - 2-1/2, 18-8 Partially Threaded | Qty 4 |
| • Nut Hex 1/2 - 20, 18-8 | Qty 4 |
| • Washer Oversized Flat 1/2 ID x 1-1/4in OD, 18-8 | Qty 8 |

Air Assembly Regulator Installation



- The hardware used for mounting the Assembly Air Regulator (P/N 1150-0001) to the aluminum mounting plate comes preassembled to the plate for ease of installation.
- Keep the ball valves closed until air lines are connected between the compressor, air regulator, solenoid block, and quick exhaust valve.

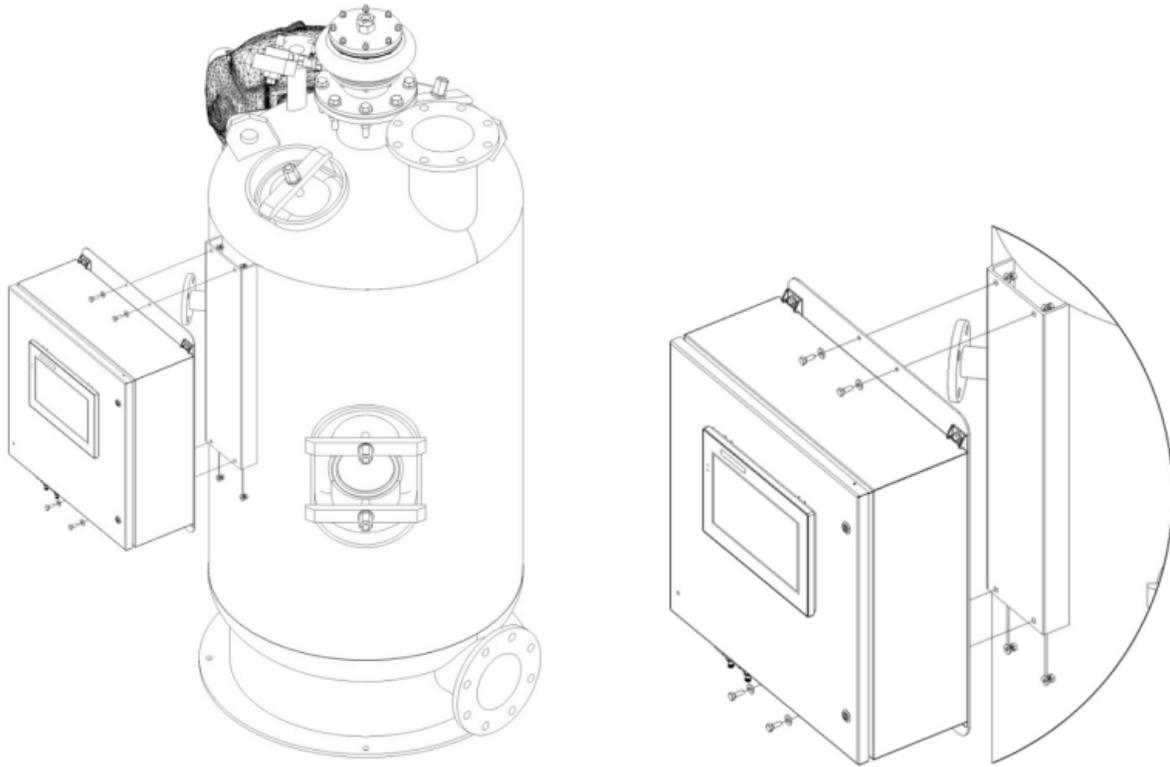
Tools:

- 1/2in Socket Wrench

Mounting Hardware:

- | | |
|--------------------------------------|-------|
| • Bolt Hex 1/4 - 20 - 3/4, 18-8 | Qty 4 |
| • Nut Hex 1/4 - 20, 18-8 | Qty 4 |
| • Washer Oversized 1/4 x 5/8in, 18-8 | Qty 8 |

PMF Controller Installation



- The Controller mounting hardware comes attached to the aluminum mounting plate for easy installation. It can be securely mounted to one of the two filter mounting brackets.

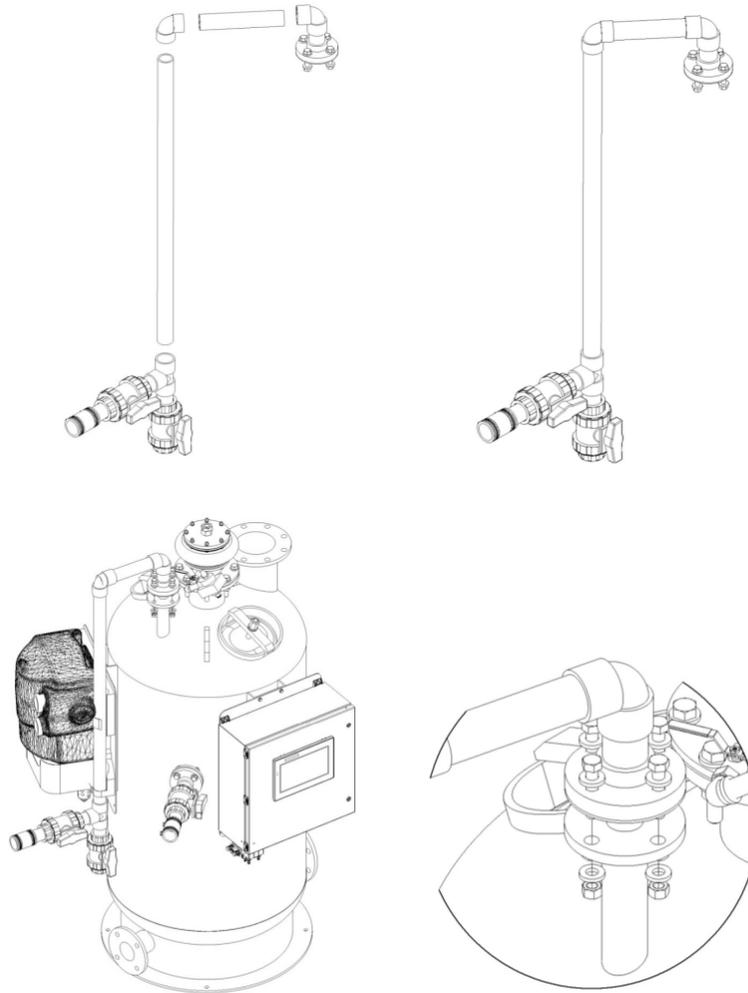
Tools:

- 1/2in socket Wrench

Mounting Hardware:

- | | |
|--------------------------------------|-------|
| • Bolt Hex 1/4 - 20 - 3/4, 18-8 | Qty 4 |
| • Nut Hex 1/4 - 20, 18-8 | Qty 4 |
| • Washer Oversized 1/4 x 5/8in, 18-8 | Qty 8 |

Vacuum Transfer Valve and Pipe Installation



- All hardware and piping are included in the Aquify Perlite Media Loading System & Accessories (P/N PMF-MDP-SYS) box.
- The Assembly Vacuum Transfer Air Vent (P/N 1150-0002) is attached to the filter flange.
- The 1-1/2in PVC Elbow is then attached to the 1-1/2in PVC pipe included in the accessory package.
- The elbow should be oriented where the downpipe is secured on the right side of the Assembly Vacuum Transfer Valve (P/N 1230-000) closest to the media loading system.

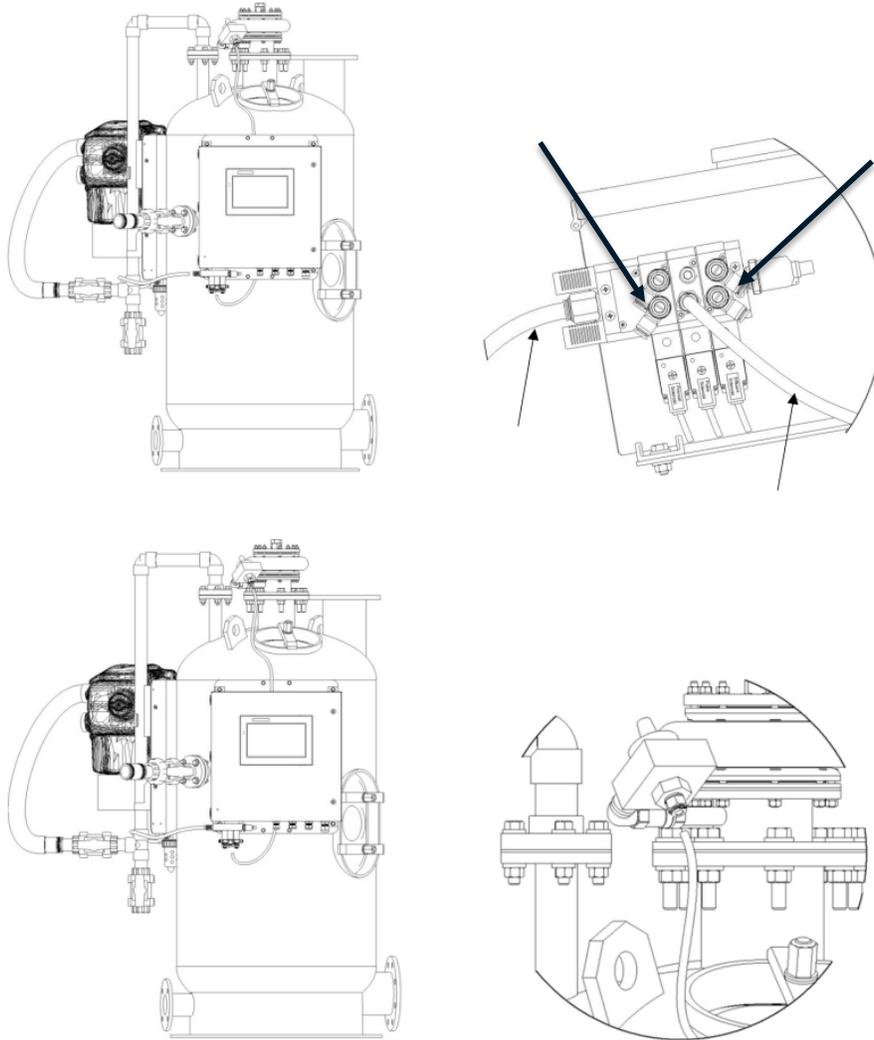
Tools:

- 3/4in Socket Wrench

Mounting Hardware:

- | | |
|---|-------|
| • Bolt Hex 1/2 - 13 UNC - 2-1/2 , 18-8 Partially Threaded | Qty 4 |
| • Nut Hex 1/2 - 20, 18-8 | Qty 4 |
| • Washer Oversized Flat 1/2 ID x 1-1/4in OD, 18-8 | Qty 8 |

Hose Connections



- Connect 1/2in tubing from the compressor to the 1/2in push-to-connect fitting connected to the ball valve on the left side of the air regulator.
- A second 1/2in air hose leads from the 1/2in push-to-connect fitting on right side of the air regulator to the 1/2in push-to-connect fitting on the left side of the solenoid block attached to the controller.
- A 3/8in air hose is connected to a 3/8in push-to-connect fitting on the bottom of the solenoid block to the 3/8in push-to-connect fitting on the quick exhaust valve installed near the pulse tire.
- Connect 1/4in tubing from the precoat and effluent solenoid valves 1/4in push-to-connect fittings to the 1/4in push-to-connect fittings located on the precoat and effluent pneumatic valves.
- Once all air hose connections have been made, the air regulator ball valve can be opened and set to 90-psi followed by the quick exhaust ball valve.

Flange Connections

Typical Bolt Torquing

All filter flanges are industry standard, used for periodic system servicing, anticipated system modification or additions, connecting any industrial butterfly valves, and temporary component hookups. A manway is installed for ease of future maintenance to access tank internals.

All gaskets are full faced, made from an elastic polymer, with a Shore "A" Durometer of approximately 60. It is recommended that gaskets are periodically checked for any corrosion that could allow leakage.

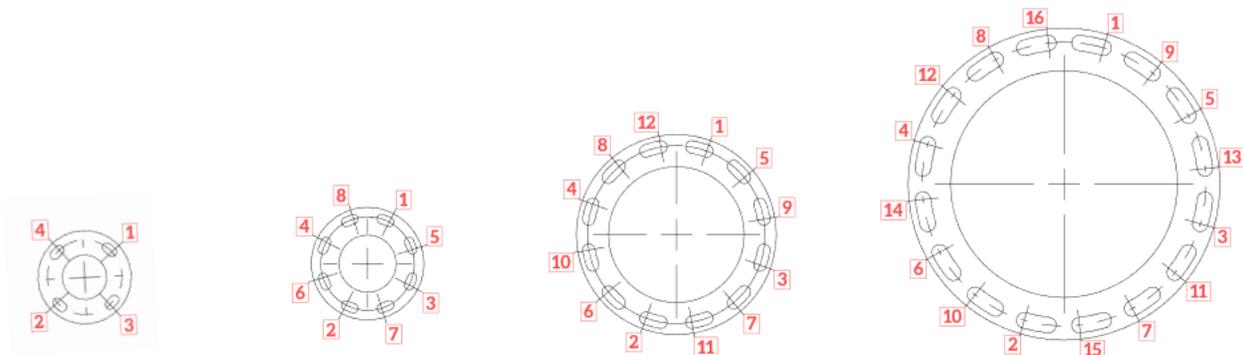
Bolt torque recommended requirements are shown below. Threads should be clean and well lubricated. Actual field conditions may require variations in these recommendations.



UNNECESSARY OVER-TORQUEING WILL DAMAGE THE FLANGE. ALL MANUFACTURERS ARE SLIGHTLY DIFFERENT. IT IS BEST TO REFERENCE MANUFACTURERS TECHNICAL DATA SHEET BEFORE INSTALLING.

Bolt Pattern Sequence

Bolts should be tightened in a 180-degree opposing pattern. The recommended bolt torque sequence is shown below.



PVC PIPE

PVC Pipe Support Spacing

Adequate pipe support is essential for a durable and adequately functioning piping system. Without the support it needs, piping systems incur stress and sag that lead to degradation and breakdown.

Several factors go into calculating the amount of support each system needs and several formulas and techniques used to determine this. Support needs will vary from system to system based on configuration, pipe size, load, and temperature.

Additional items to consider are valves and other points of extra load. These components should be supported separately from the pipe spacing. Other considerations include atmospheric pressure, which can expand or contract the pipe. Clamps and additional supports can be applied to mitigate this fluctuation.

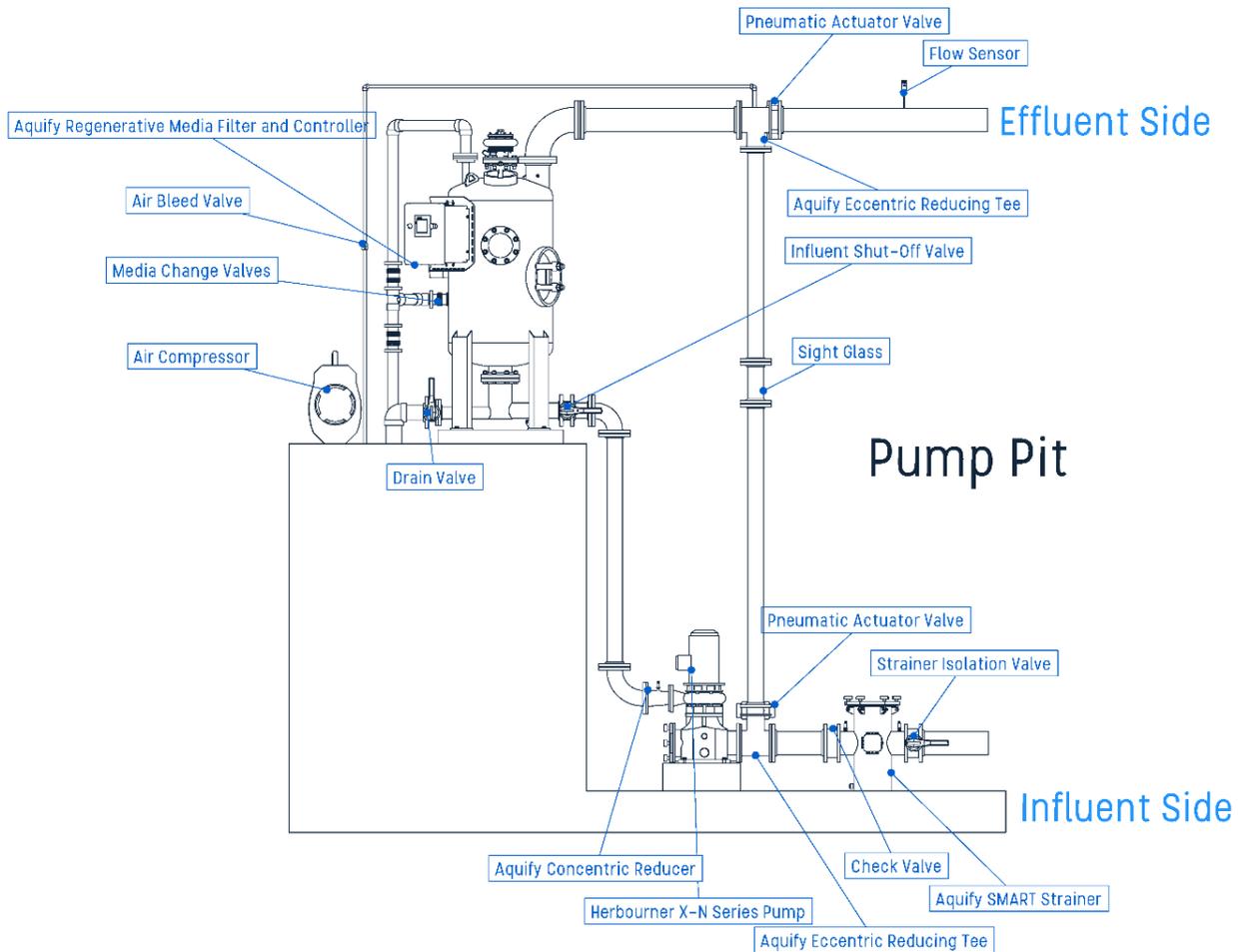
Pipe Sizing

PVC Schedule ("Sch") is the thickness of the PVC pipe wall. The most common is Sch 80 in commercial applications; however, Sch 40 PVC is also available and sometimes approved by designers. The significant differences between Sch 40 and Sch 80 piping are water pressure rating, color, application, and sizing. As the schedule gradually increases, so does the wall thickness; however, the diameter of the pipe will remain the same. Although Sch 80 will have a slightly more restrictive flow, due to the decrease in size of the inside hole (bore), the piping can be used interchangeably (this is not recommended).

Certain states might allow for slightly higher flows. The following figures are considered best practices and in line with the Model Aquatic Health Code (MAHC).

Schematics

Mechanical Room

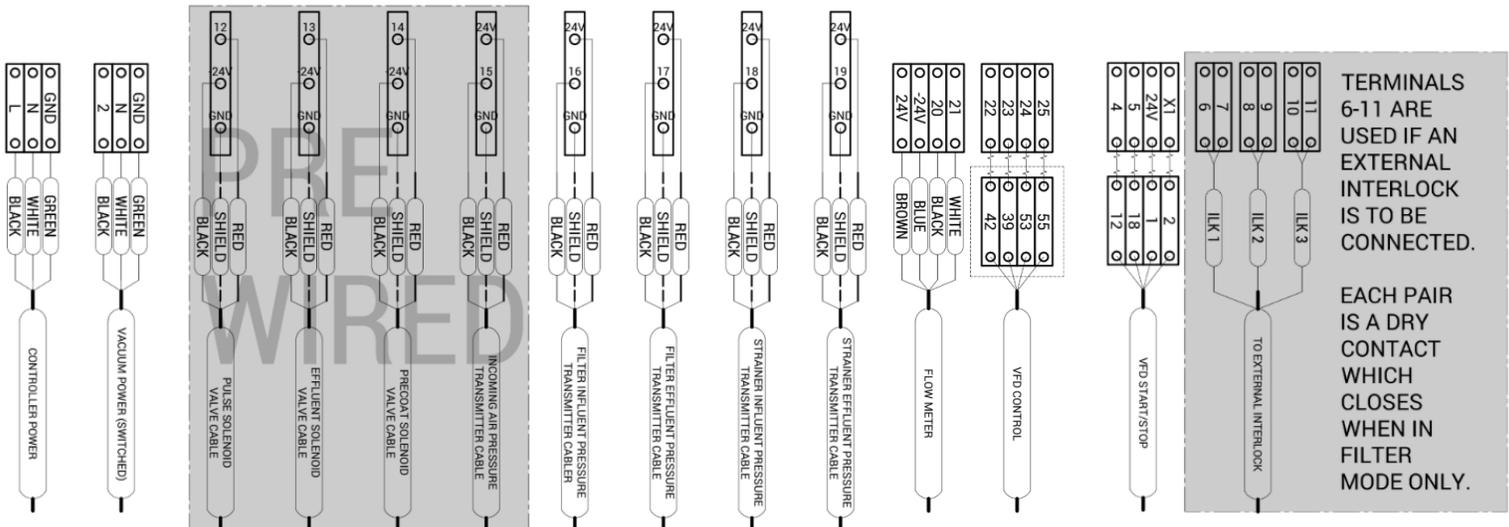


GENERAL NOTES

- Recommended Filter range between 0.5 – 1.5 GPM/SF
- Backwash volume is calculated as 2 x tank volume
- Precoat line is (2) pipe sizes smaller than filter effluent (return) line
- Connection sizes are subject to change based on GPM requirements
- Contact the Aquify Systems design team for any questions on sizing or design integration.

FIELD WIRING TERMINATIONS

Below illustration shows field terminations that will be landed by qualified electricians. This illustration may also be found inside the door of the filter controller. Please note that terminals may deviate due to local supply options.



Incoming Power and Vacuum

- Main power to be 120VAC circuit supplied from main breaker panel. 20 Amp breaker recommended. Conduit connector to be supplied by electrician.
- Vacuum cable to be landed inside filter controller.

Solenoid Valves, Pressure Sensors and Flowmeter

The following comes prewired from factory and are located on the solenoid block

- Pulse solenoid valve
- Effluent solenoid valve
- Precoat solenoid valve
- Incoming air pressure sensor

Below is to be landed by electrician/installer

- Filter influent sensor
- Filter effluent sensor
- Strainer influent sensor
- Strainer effluent sensor
- Flowmeter

VFD

There are 8 wires required between the filter controller and the VFD. Aquify recommends shielded wire. Below are the signals required between the filter controller and VFD. Wire to be stranded and no larger than 16 gauge.

- Start command (24VDC)
- Run verification (24VDC)
- Speed control (4-20 mA)
- Speed reference (4-20mA)

****NOTE:**** The diagram illustrates termination connections for VFDs supplied by Aquify (VFD series). If you have a different VFD please contact support for assistance.

External Interlock

There are 3 auxiliary relays that may be used to tie other equipment to the filter controller. Examples of this equipment are UV systems, chemical controllers and heaters. Each pair is a dry contact and closes when in filter mode only.

OPERATIONAL CONTROL

Control Start-Up

Before connecting to power please check the following:

- Electric installation is done by an authorized electrical engineer.
- Generally applicable guidelines and local installation regulations are followed.
- The electronic control cabinet should always be locked and only opened by qualified personnel.
- The installation location is dry and frost-free. Frost and condensed water may destroy electrical components.
- The electronic control cabinet is protected against exposure to direct sunlight and rain.
- Only carry out installation work on the Filter Controller if it is disconnected from the main power supply.
- Do not dismantle the electronic control cabinet. Dismantling the cabinet or modifying the connections inside the cabinet may result in electric shock or burn and will void the warranty.
- Provide overcurrent protection on the supply voltage before the cabinet cuts power at the specified “fuse max current”.

Start-Up and Home Screen

Once the system is powered on, the regenerative media controller will complete initialization while displaying the Aquify name and logo.



Home Screen Display



Once the initialization is finished the home screen will display the status of each major component within the system along with other key information.

The navigation functions on the left side of the screen include:

- Menu – Prompts the full sidebar menu.
- Back – Brings the user to the previous screen that was displayed.
- Home – Brings the user to the home screen.
- Alarms – Displays Alarms & Faults page triggered by the system.

The right side of the screen displays filter specific functions:

- Start Pulse – Begins a pulse cycle, followed by the precoat cycle.
- Start Filter – Begins the precoat cycle.
- Stop Filter – Stops the filter and pump.

Major Components:

Filter & Strainer	Precoat & Effluent Valve	Filter Pump
<ul style="list-style-type: none"> • Clean • Moderate • Dirty 	<ul style="list-style-type: none"> • Open • Closed 	<ul style="list-style-type: none"> • On • Off

****NOTE:**** The Filter & Strainer status is only visible while system is running

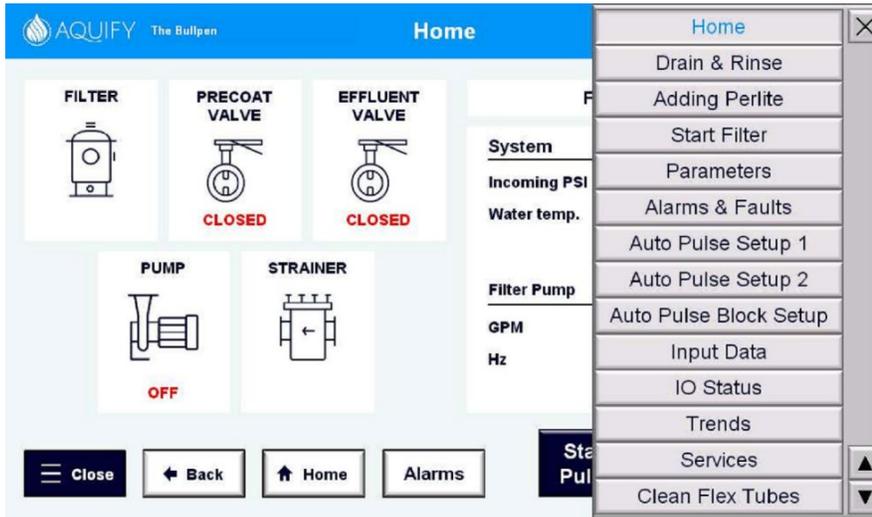
Key Information:

Overall System	Filter Pump	Filter & Strainer
<ul style="list-style-type: none"> • Incoming psi from air regulator • Water Temperature 	<ul style="list-style-type: none"> • GPM (Flow rate) • Hz (Frequency) 	<ul style="list-style-type: none"> • Influent pressure • Effluent pressure • Delta (pressure differential)

Menu View

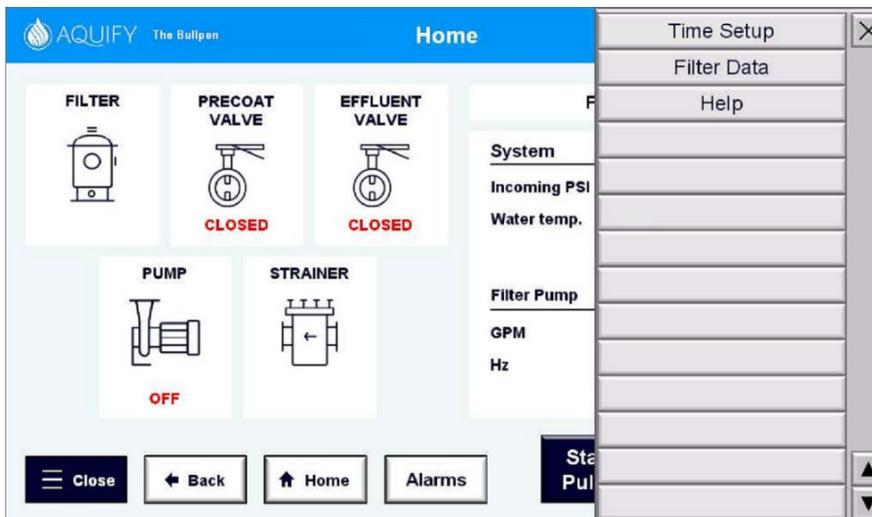
Press the Menu button on the bottom left to access the full sidebar menu on the controller.

Scroll through the sidebar using the arrows at the bottom right of the screen and exit the sidebar using the X at the top right of the screen, or by tapping the Close button that has taken the place of the Menu button.



Time Setup

From the sidebar menu select TIME SETUP to access the Time & Date screen.



Time & Date Screen

The date can be entered under YEAR-MONTH-DAY and the time can be entered under HOUR-MINUTE-SEC.



The time and date entered can be confirmed under CURRENT PLC TIME and CURRENT SCREEN TIME.

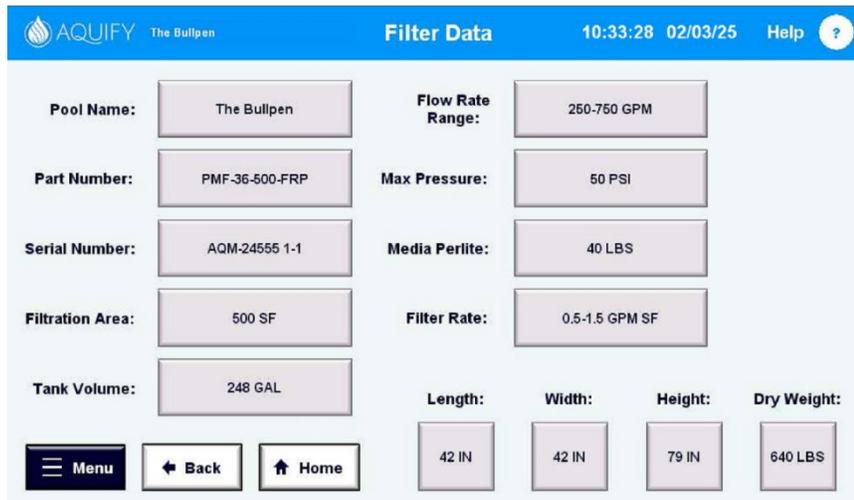
****NOTE:**** Select PRESS TO UPDATE after entering both the date and time or the new plc time will not be saved.

Filter Data

From the sidebar menu from the Time & Date page, select Filter Data.

The Filter Data page contains all pertinent information regarding the PMF unit onsite such as allowable flow range, filter rate, part number.

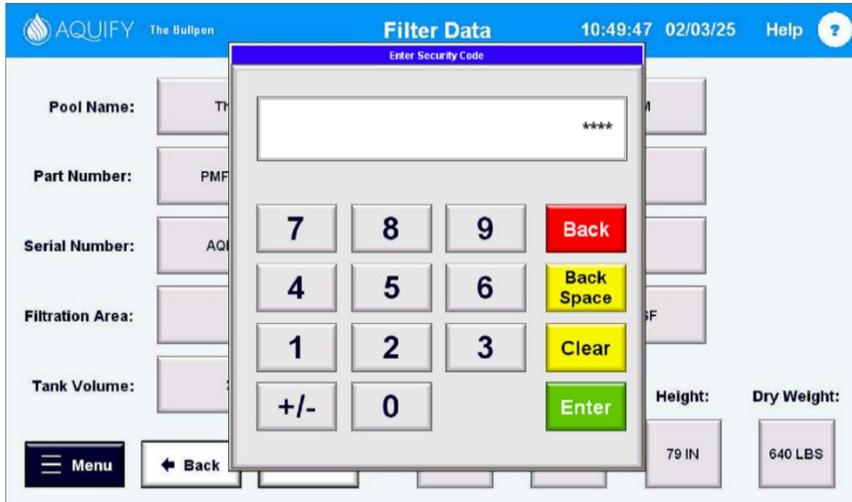
This information comes preset from the factory and should match the information found on the NSF label on the side of the Filter.



****NOTE:**** This information can be entered manually by selecting each button.

Parameters

From the sidebar menu select Parameters, the user will then prompted to enter a security code.



These codes are intended for system operators and technicians only, and allow access to certain pages that can adjust the systems functions and potentially lead to harmful situations if executed incorrectly.

Security Codes	User	Accessible Pages
8675	Service Technician	Parameters, Services
5309	System Operator	Parameters

Once the code is entered, the Parameter page will display.

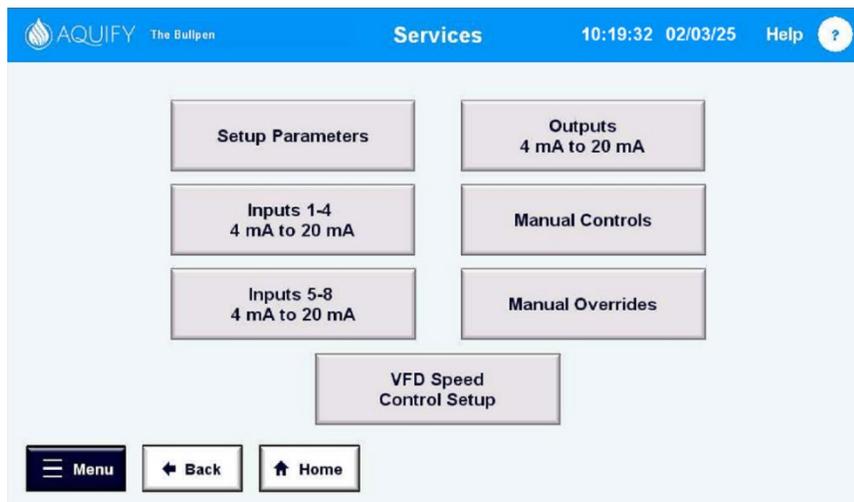


This information comes preset from the factory based upon standard accessories ordered with filter or is preset based on the plans and specifications provided at the time of order.

PARAMETER	SETTING	DESCRIPTION
Pulse Cycle Count	10	Sets the number of pulses per cycle
Pulse Solenoid On Time	5 sec	Determines how long the pulse solenoid is ON during each pulse
Pulse Solenoid Off Time	3 sec	Determines how long the pulse solenoid is OFF during each pulse
Precoat Cycle Time	10 min	Sets how long the precoat cycle will run before transitioning to filter mode
Precoat Valve Open Delay	5 sec	Delay time for the precoat valve opening after the pump has started during the filter cycle
Precoat Valve Close Delay	15 sec	Sets the delay time for the precoat valve closing after the effluent valve has opened during the filter cycle
Effluent Valve Open Delay	15 sec	Sets the delay time for the effluent valve opening after the precoat cycle time is over
Cooldown Timer Setpoint	0 min	Sets the cooldown timer for the aux relays to turn off while the filtration pump is still running before the pulse cycle is started (only for when the filter is running, and an auto pulse cycle is initiated, or the Start Pulse button is pressed manually)
Filter System Maximum GPM	-	Sets the maximum flow for the system (this is determined by the internal pipe diameter that is set on the flow meter. This value must match parameter AEP2 from the flow meter manual. This can be found on Aquify's website)
Filter System Designed GPM	-	This is the setpoint for the PID speed control to run off. Set this to the desired flow rate based upon the plans and specifications.
Pump Precoat Speed	75%	Sets how fast the pump will run during the precoat cycle (75%=45 Hz on standard 0-60 Hz system)
Flex Tube Pulse Count	10	Sets how many times the filter will pulse during the flex tube clean cycle
Flex Clean Timer	60 min	Determines how often the filter will pulse during the flex tube clean cycle

Services

From the sidebar menu select Services, the user will then be prompted to enter the security code.



The Services page should only be accessed by technicians with adequate training and experience or while under supervision of an Aquify representative.

This page is used for the following:

- Access and verify sensor readings and displayed values.
- Startup operations, and for troubleshooting the system with manual overrides which may lead to hazardous situations if activated while the system is in normal operation.

Setup Parameters

From the Services page select the Setup Parameters button.

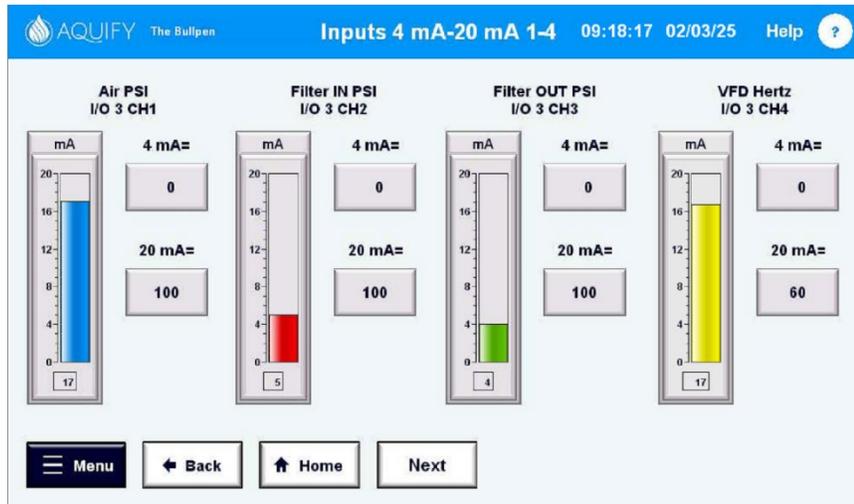


The Setup Parameters page contains setpoints for the allowable system pressures and pressure differentials for the filter and strainer between the influent and effluent connections. These setpoints determine what constitutes a “Dirty”, “Moderate” or “Clean” filter and strainer. For example, if the filter’s delta (pressure differential) on the Home page reaches 15 PSI as set under the AUTO PULSE DELTA SETPOINT, the filter will automatically enter an Auto Pulse cycle and go through a precoat cycle in order to lower the differential pressure.

PARAMETER	SETTING	DESCRIPTION
VFD Run Delay	5 sec	Determines how long the filter will wait for the run verification to come back from the VFD before going into alarm.
Auto Pulse Delay	5 sec	Determines how long the delay will be for the auto pulse cycle to start.
Filter Mod Setpoint	8 psi	Determines the setpoint for when the filter health will display “Moderate” on the home screen.
Filter Dirty Setpoint	12 psi	Determines the setpoint for when the filter health will display “Dirty” on the home screen.
Strainer Mod Setpoint	4 psi	Determines the setpoint for when the strainer health will display “Moderate” on the home screen.
Strainer Dirty Setpoint	8 psi	Determines the setpoint for when the filter health will display “Dirty” on the home screen.
Auto Pulse Delta Setpoint	15 psi	Determines the setpoint for when the filter will go into an auto pulse cycle due to differential pressure.
Low Air Setpoint	50 psi	Determines the setpoint for when the system triggers a low air alarm.

Inputs 1-4 4 mA to 20 mA

From the Setup Parameters page return to the Services page utilizing the navigation back button. Then select the Inputs 1-4 4 mA to 20 mA page.



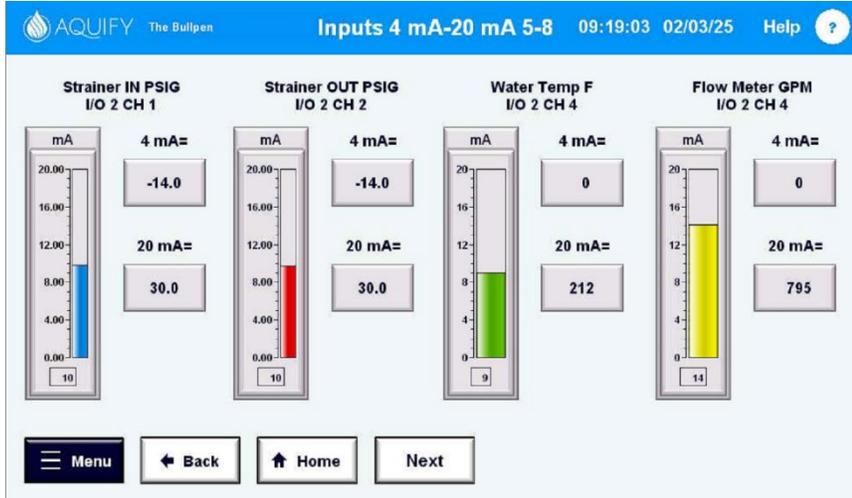
All inputs 1 through 8 are converted to a 4 to 20 mA signal; Inputs 1 through 3 are converted from a 0 to 100 PSI scale and input 4 is converted from a 0 to 60 Hz scale.

- Input 1: Blue; Displays 4-20 mA signal for the incoming air pressure from the air regulator.
- Input 2: Red; Displays 4-20 mA signal for the pressure from the influent pressure sensor.
- Input 3: Green; Displays 4-20 mA signal for the pressure from the effluent pressure sensor.
- Input 4: Yellow; Displays 4-20 mA signal that the VFD is sending the filter controller for the hertz of the pump.

INPUT	FACTORY SETTING		DESCRIPTION
	4 mA=	20 mA=	
Air Psi	0	100	Sets the 4-20 mA scale for the pressure sensor for incoming air on the solenoid block
Filter IN PSI	0	100	Sets the 4-20 mA scale for the influent pressure sensor on the filter
Filter OUT PSI	0	100	Sets the 4-20 mA scale for the effluent pressure sensor on the filter
VFD Hertz	0	60	Sets the 4-20 mA scale for the hertz from the VFD

Inputs 5-8 4 mA to 20 mA

From the Inputs 1-4 4 mA to 20 mA page select the navigation button next, then select Inputs 5-8 4 mA to 20 mA.



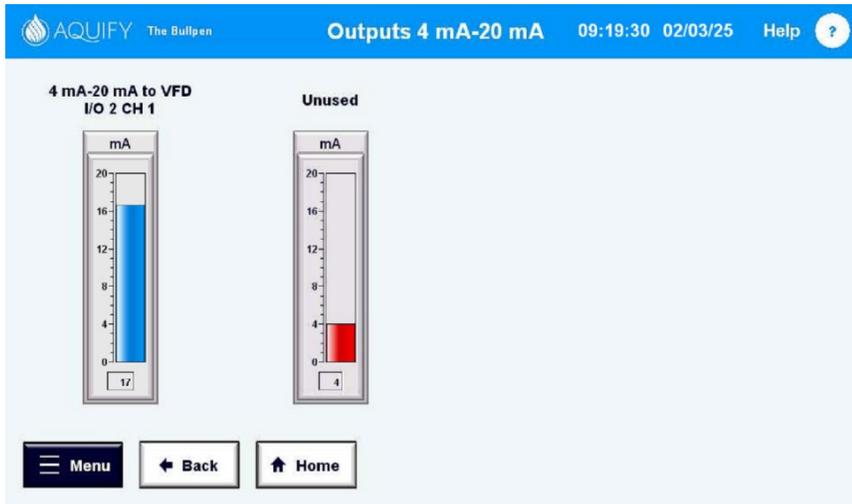
As stated in section 1.9, inputs 5 through 8 are converted to a 4 to 20 mA signal; Inputs 5 and 6 are converted from a -14 to 30 PSI scale, and input 7 is converted from 0 to 212 °F scale. On this system, input 8 is converted from 0 to 795 GPM scale, however this maximum value may change depending on the allowable flow rate on the specific PMF unit. Input 8 20mA setpoint is determined from the flow meter based off the internal pipe diameter.

- Input 5: Blue; Displays 4-20 mA signal for the influent pressure sensor on the strainer.
- Input 6: Red; Displays 4-20 mA signal for the effluent pressure sensor on the strainer.
- Input 7: Green; Displays 4-20 mA signal for the temperature of the water, coming from the flow meter.
- Input 8: Yellow; Displays 4-20 mA signal for the flow rate in GPM, this value may not remain static as the PID control loop is running in normal operation.

INPUT	FACTORY SETTING		DESCRIPTION
	4 mA=	20 mA=	
Strainer IN PSIG	-14	30	Sets the 4-20 mA scale for the incoming pressure sensor for the strainer.
Strainer OUT PSIG	-14	30	Sets the 4-20 mA scale for the effluent pressure sensor on the strainer.
Water Temp F	0	212	Sets the 4-20 mA scale for the water temperature coming from the flow meter.
Flow Meter GPM	0	795	Sets the 4-20 mA scale for the flow rate coming from the flow meter.

****NOTE:**** Input 7 & 8 come from the flow meter. The scaling on the flow meter must match the scaling in the filter controller for the PID speed control to operate properly. Please refer to the flowmeter manual for more information.

Outputs 4 mA to 20 mA



The outputs page contains the 4-20 mA signal that is sent to the VFD for speed control. This signal will change depending on what the Pump Precoat Speed is set to. This value will remain steady for the duration of the precoat cycle, in filter mode this signal will change as the PID control is constantly adjusting the speed of the pump based on what the FILTER SYSTEM DESIGNED GPM (found in Parameters) is set to and what the flow meter is reading.

Manual Controls

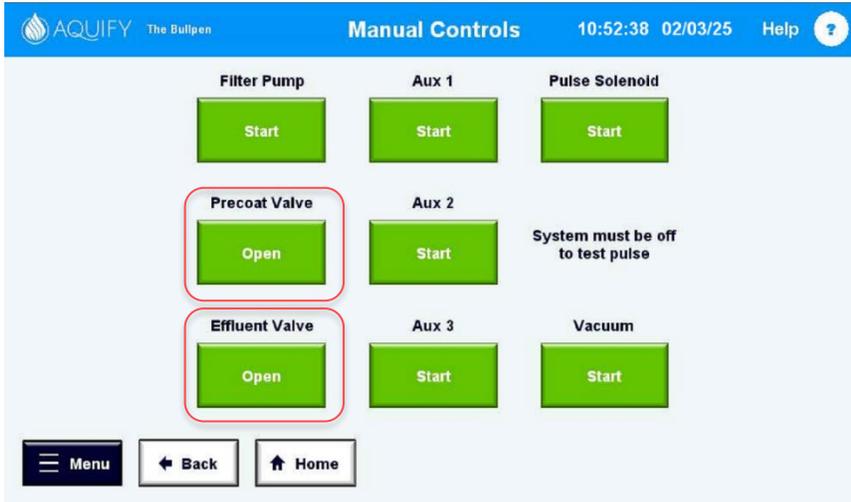


The Manual Controls page contains buttons that allow the user to manually turn on/off certain components of the filter system. This page should primarily be used on startup and/or troubleshooting operations and should not be activated while filter is in normal operation as it may lead to hazardous situations.

Please be aware that trying to run the filter via manual controls bypasses many of the safeties programmed into the controller and can lead to damage of the filtration system and other components. This should only be done under strict supervision from an Aquify certified representative.

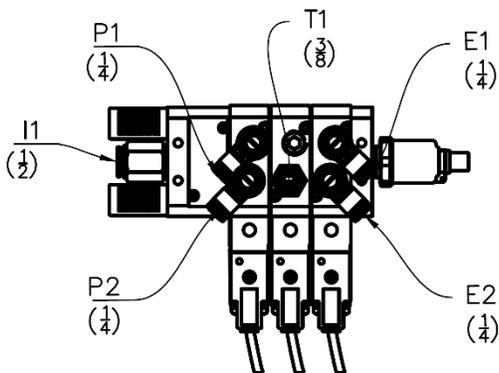
- Filter Pump – turns on and off the run signal for the pump going to the VFD.
- Precoat Valve – opens and closes the pneumatic precoat valve.
- Effluent Valve – opens and closes the pneumatic effluent valve.
- Aux 1 – turns on and off the aux 1 relay.
- Aux 2 - turns on and off the aux 2 relay.
- Aux 3 – turns on and off the aux 3 relay.
- Pulse Solenoid – turns on and off the pulse solenoid which inflates and deflates the pulse tire.
- Vacuum – turns on and off the vacuum (please make sure the vacuum switch at the vacuum is left in the on position).

Adjusting Precoat and Effluent Pneumatic Valves



Adjusting the precoat and effluent pneumatic valves to ensure smooth operation will be done in the manual controls page. This is important to avoid the valves closing too fast and created a water hammer. Mounted to the bottom of the filter controller is the solenoid block. Here is where the solenoid valves for the precoat valve, effluent valve and pulse tire are located. On the precoat and effluent solenoid valves there are needle valves to make adjustments on how much air flows to the pneumatic valves. P2 and E2 adjust the air flow to open the valves, and P1 and E1 adjust the air flow to close the valves.

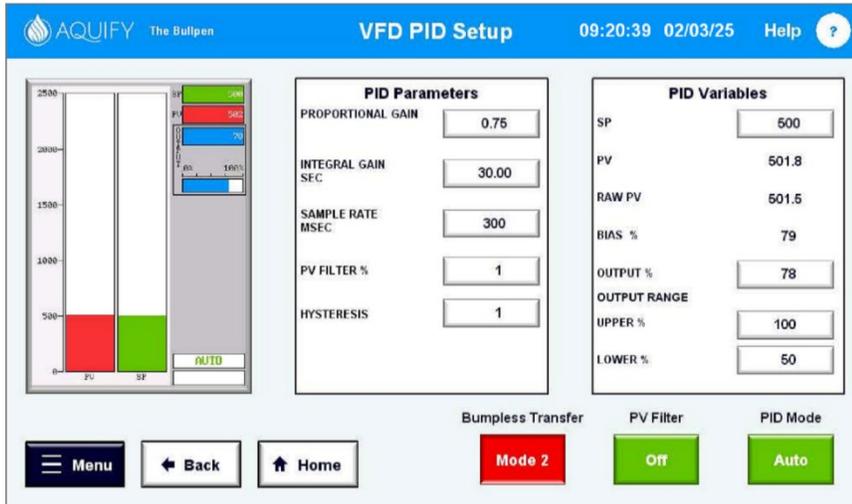
SOLENOID BLOCK CONNECTIONS



To open the precoat valve, press the Open button that is labelled "Precoat Valve". Adjust the needle valve located on P2 until the valve opens smoothly. To close the precoat valve, press the Close button labelled "Precoat Valve". Adjust the needle valve located on P1 until the valve closes smoothly. To open the effluent valve, press the Open button labelled "Effluent Valve". Adjust the needle valve located on E2 until the valve opens smoothly. To close the effluent valve, press the Close button labeled "Effluent Valve". Adjust the needle valve located on E1 until the valve closes smoothly. Repeat these steps until both valves are opening and closing smoothly.

****NOTE:**** Before adjusting valves make sure the system has been turned off by pressing Stop Filter on the Home page.

VFD PID Setup



The VFD PID Setup page contains information regarding the systems control loop.

The left side of the screen shows bar graphs. A legend key is provided to the right of the bar graphs that illustrate the processing variable in red, and the setpoint value in green. The output percentage in blue relates to the filter pump speed.

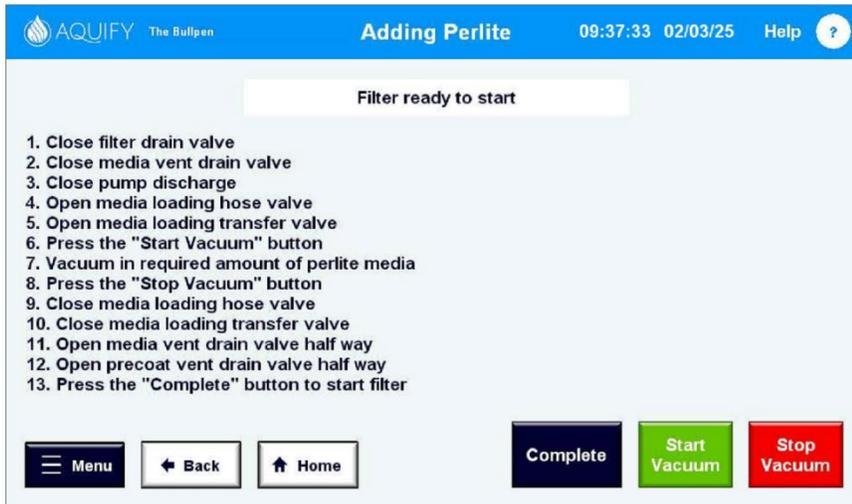
The PID Parameters section contains specific values used for the proportional-integral-derivative control values such as proportional gain, integral gain, and hysteresis. These values are adjustable; however it is highly recommended to leave these values unaltered unless specified by an Aquify representative or user has knowledge of how PID loops work.

The PID Variables section contains the setpoint value and output percentage with a limited range between 50% of the maximum motor speed and 100% of the maximum motor speed. Many duty point for motors do not allow for motors to be ran at less than 50% speed. You may adjust these setpoint but please note that it may lead to premature motor failure.

- PID Mode – changes the speed control mode from Auto to Manual.

****NOTE:**** If placed in Manual the pump will run at the PUMP PRECOAT SPEED set in the parameters page.

Adding Perlite



Filter ready to start

1. Close filter drain valve
2. Close media vent drain valve
3. Close pump discharge
4. Open media loading hose valve
5. Open media loading transfer valve
6. Press the "Start Vacuum" button
7. Vacuum in required amount of perlite media
8. Press the "Stop Vacuum" button
9. Close media loading hose valve
10. Close media loading transfer valve
11. Open media vent drain valve half way
12. Open precoat vent drain valve half way
13. Press the "Complete" button to start filter

[Menu](#)
[Back](#)
[Home](#)
[Complete](#)
[Start Vacuum](#)
[Stop Vacuum](#)

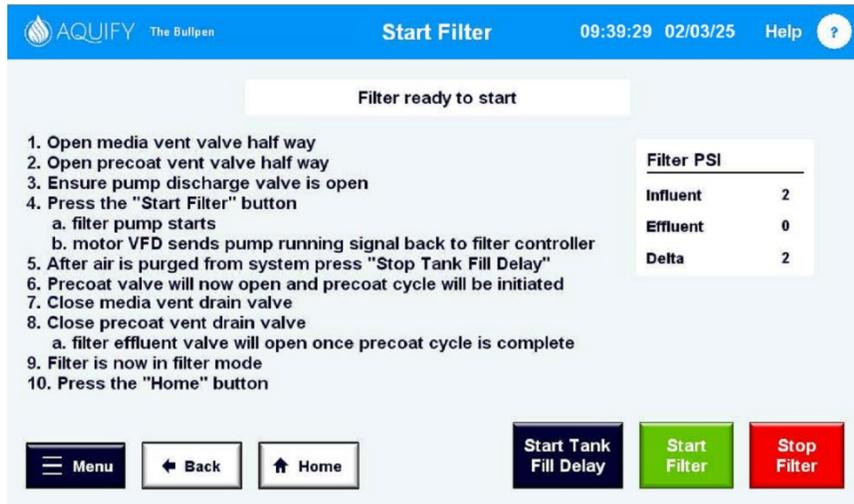
The Adding Perlite page can be accessed by pressing the Menu button on any page and will appear near the top of the sidebar menu that is prompted to the user.

On start-up operations after the filter has been connected to the system the operator can follow the steps provided on the page to load the media into the filter. The amount of media required for the system can be found under the Filter Data page, or on the NSF label on the side of the filter.

When conducting media changes on non-startup operations the operator must remember to turn off the filter and complete the Drain & Rinse process before executing any steps displayed on the Adding Perlite page.

****NOTE:**** The filter tank should be EMPTY when adding perlite media.

Start Filter



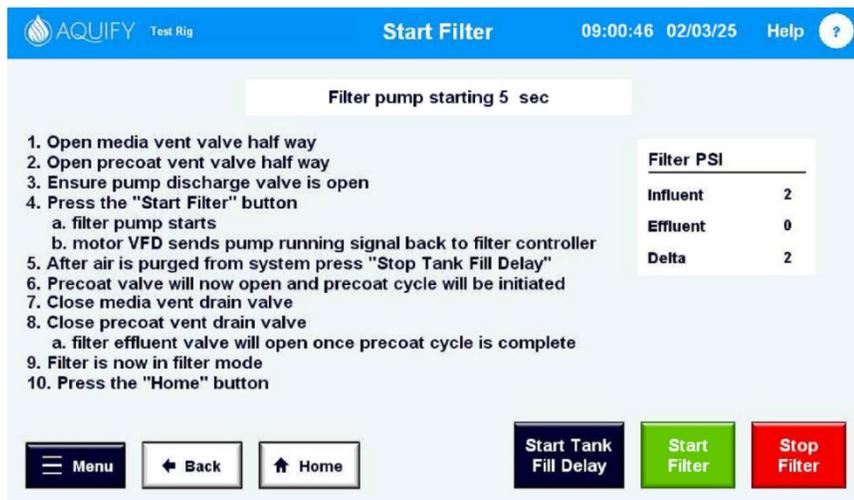
Filter ready to start

1. Open media vent valve half way
2. Open precoat vent valve half way
3. Ensure pump discharge valve is open
4. Press the "Start Filter" button
 - a. filter pump starts
 - b. motor VFD sends pump running signal back to filter controller
5. After air is purged from system press "Stop Tank Fill Delay"
6. Precoat valve will now open and precoat cycle will be initiated
7. Close media vent drain valve
8. Close precoat vent drain valve
 - a. filter effluent valve will open once precoat cycle is complete
9. Filter is now in filter mode
10. Press the "Home" button

Filter PSI	
Influent	2
Effluent	0
Delta	2

[Menu](#)
[Back](#)
[Home](#)
[Start Tank Fill Delay](#)
[Start Filter](#)
[Stop Filter](#)

The Start Filter page can be accessed by pressing the Menu button and will be near the top of the sidebar menu. Once the perlite media has been added to the filter, the filter is ready to begin operation. Follow the steps listed on the screen.



Filter pump starting 5 sec

1. Open media vent valve half way
2. Open precoat vent valve half way
3. Ensure pump discharge valve is open
4. Press the "Start Filter" button
 - a. filter pump starts
 - b. motor VFD sends pump running signal back to filter controller
5. After air is purged from system press "Stop Tank Fill Delay"
6. Precoat valve will now open and precoat cycle will be initiated
7. Close media vent drain valve
8. Close precoat vent drain valve
 - a. filter effluent valve will open once precoat cycle is complete
9. Filter is now in filter mode
10. Press the "Home" button

Filter PSI	
Influent	2
Effluent	0
Delta	2

[Menu](#)
[Back](#)
[Home](#)
[Start Tank Fill Delay](#)
[Start Filter](#)
[Stop Filter](#)

Once the Start Filter button is pressed, the filter pump starts and has 5 seconds to receive the run verification signal from the VFD. Immediately after the filter pump countdown is finished the precoat valve opens with another 5 second delay to reach a steady state, and then a precoat cycle is initiated.

AQUIFY Test Rig
Start Filter 09:03:06 02/03/25 Help ?

Precoat valve opening 5 sec

1. Open media vent valve half way
2. Open precoat vent valve half way
3. Ensure pump discharge valve is open
4. Press the "Start Filter" button
 - a. filter pump starts
 - b. motor VFD sends pump running signal back to filter controller
5. After air is purged from system press "Stop Tank Fill Delay"
6. Precoat valve will now open and precoat cycle will be initiated
7. Close media vent drain valve
8. Close precoat vent drain valve
 - a. filter effluent valve will open once precoat cycle is complete
9. Filter is now in filter mode
10. Press the "Home" button

Filter PSI	
Influent	19
Effluent	17
Delta	2

Menu

← Back

↑ Home

Start Tank Fill Delay

Start Filter

Stop Filter

A precoat cycle starts once the pump filter is activated and the precoat valve is opened, both of these operations are done automatically once the Start Filter button is pressed. The precoat cycle is set to run for 10 minutes by system default, and depending on the system configuration, amount of perlite, etc. this could take less than the 10 minute default period for the tubes to become completely coated.

AQUIFY Test Rig
Start Filter 09:01:00 02/03/25 Help ?

Filter in precoat cycle 09 min 55 sec

1. Open media vent valve half way
2. Open precoat vent valve half way
3. Ensure pump discharge valve is open
4. Press the "Start Filter" button
 - a. filter pump starts
 - b. motor VFD sends pump running signal back to filter controller
5. After air is purged from system press "Stop Tank Fill Delay"
6. Precoat valve will now open and precoat cycle will be initiated
7. Close media vent drain valve
8. Close precoat vent drain valve
 - a. filter effluent valve will open once precoat cycle is complete
9. Filter is now in filter mode
10. Press the "Home" button

Filter PSI	
Influent	19
Effluent	15
Delta	4

Menu

← Back

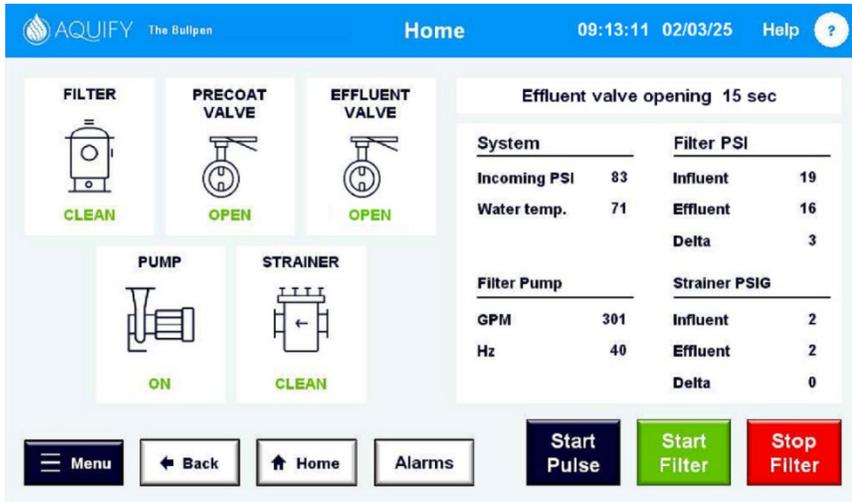
↑ Home

Start Tank Fill Delay

Start Filter

Stop Filter

The Home screen will display the status of each major component within the system. In a precoat cycle the precoat valve must read OPEN while the effluent valve must read CLOSED. Upon system start-up the filter and strainer must read as CLEAN.



Effluent valve opening 15 sec

System		Filter PSI	
Incoming PSI	83	Influent	19
Water temp.	71	Effluent	16
		Delta	3

Filter Pump		Strainer PSIG	
GPM	301	Influent	2
Hz	40	Effluent	2
		Delta	0

Once the precoat cycle has run for the set duration (10 minutes by default) the effluent valve will open followed by a 15 second delay.

Note: If the precoat and effluent valves are opening/closing too fast, the needle knobs located under the filter controller on the solenoid block can be adjusted to decrease the air pressure supplied to the valves and slow the rate of the open/close positions.



Precoat valve closing 14 sec

System		Filter PSI	
Incoming PSI	84	Influent	4
Water temp.	70	Effluent	1
		Delta	3

Filter Pump		Strainer PSIG	
GPM	430	Influent	2
Hz	40	Effluent	2
		Delta	0

Once the effluent valve opens after the 15 second delay the precoat valve will read as CLOSED on the home screen but will take an additional 15 second delay.

Filter Mode



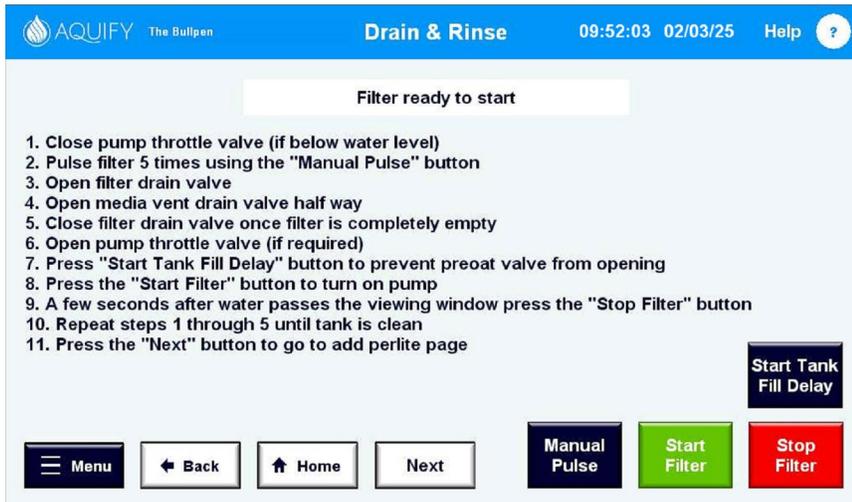
System		Filter PSI	
Incoming PSI	84	Influent	6
Water temp.	70	Effluent	2
		Delta	3
Filter Pump		Strainer PSIG	
GPM	436	Influent	1
Hz	45	Effluent	1
		Delta	1

After the precoat valve closes to end the precoat cycle, the filter is now operating in filter mode.

On startup operations:

- The filter should read CLEAN.
- The precoat valve should read and remain CLOSED.
- The effluent valve should read OPEN.
- The pump should read ON.
- The strainer should read CLEAN.

Drain & Rinse – Media Change



1. Close pump throttle valve (if below water level)
2. Pulse filter 5 times using the "Manual Pulse" button
3. Open filter drain valve
4. Open media vent drain valve half way
5. Close filter drain valve once filter is completely empty
6. Open pump throttle valve (if required)
7. Press "Start Tank Fill Delay" button to prevent precoat valve from opening
8. Press the "Start Filter" button to turn on pump
9. A few seconds after water passes the viewing window press the "Stop Filter" button
10. Repeat steps 1 through 5 until tank is clean
11. Press the "Next" button to go to add perlite page

For media changes, the Drain & Rinse page will be referenced. The Drain & Rinse page is located at the very top of the sidebar menu. The manual pulse button must be pressed at least 5 times, or until all media is thoroughly removed from the flex tubing in the filter. The amount of perlite media required for the filter can be located on the Filter Data page or on the NSF label on the side of the filter.

****NOTE:**** Stop the filter, before starting the Drain & Rinse process.

Auto Pulse Setup

AQUIFY The Bullpen
Auto Pulse Setup 1 09:48:41 02/03/25 Help ?

Sunday	HOUR 0	MINUTE 0	And	HOUR 0	MINUTE 0
Monday	HOUR 0	MINUTE 0	And	HOUR 0	MINUTE 0
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					

Menu
← Back
↑ Home
24 Hour Time Format

AQUIFY The Bullpen
Auto Pulse Setup 2 09:49:32 02/03/25 Help ?

Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday

Menu
← Back
↑ Home
24 Hour Time Format

The filter controller allows for the configuration of four distinct auto pulse cycles based on a set time schedule. Two cycles can be programmed in Auto Pulse Setup 1, while the remaining two are assigned to Auto Pulse Setup 2. To configure the schedule, the operator needs to choose the days for the pulse cycles to occur and set the desired time. The time value for either the hour or minute must be greater than zero to trigger the pulse cycle.

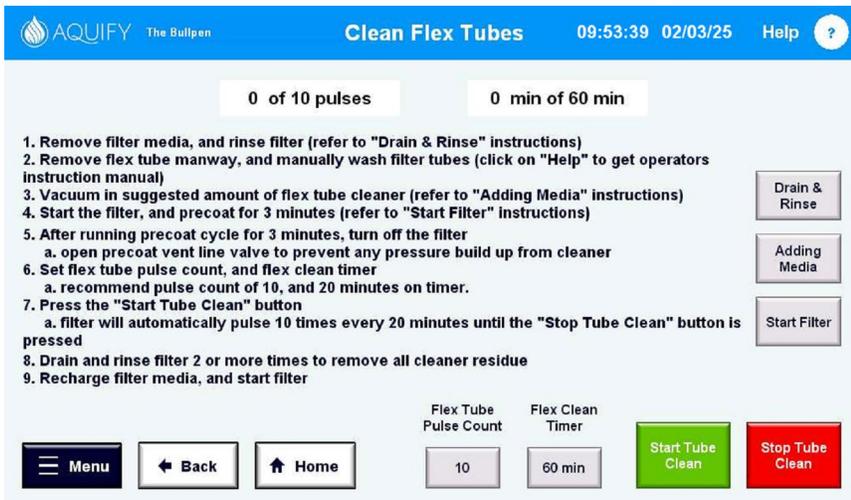
****NOTE:**** The Auto Pulse Setups use a 24-hour time format. If a body of water is being used between the hours of 12:00 pm and 7:00 pm, an auto pulse can be initiated at 10:00 am and 9:00 pm.

Auto Pulse Block



The Auto Pulse Block page enables the operator to define periods during which the pulse cycle will not be triggered due to differential pressure. For example, if a body of water is in use on a Monday from 12:00 PM to 7:00 PM, an auto pulse block can be set for this time frame to prevent any pulse cycles from running during this time.

Clean Flex Tubes

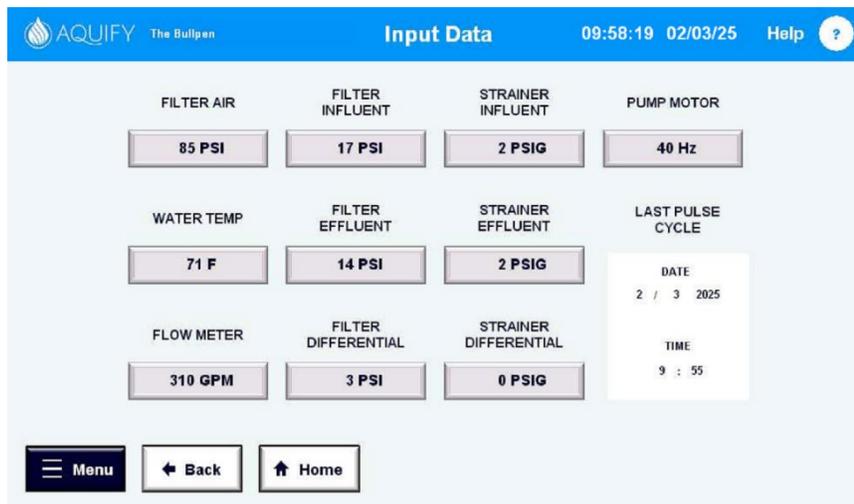


The Clean Flex Tubes Page contains the procedure necessary to run a filter cleaning cycle which is intended to break down any oil build up on the filter elements.

- Flex Tube Pulse Count – determines how many times the tire will pulse.
- Flex Clean Timer – determines how often the pulse cycle will occur.

****NOTE:**** We recommend running this cycle for at least 12 hours.

Input Data



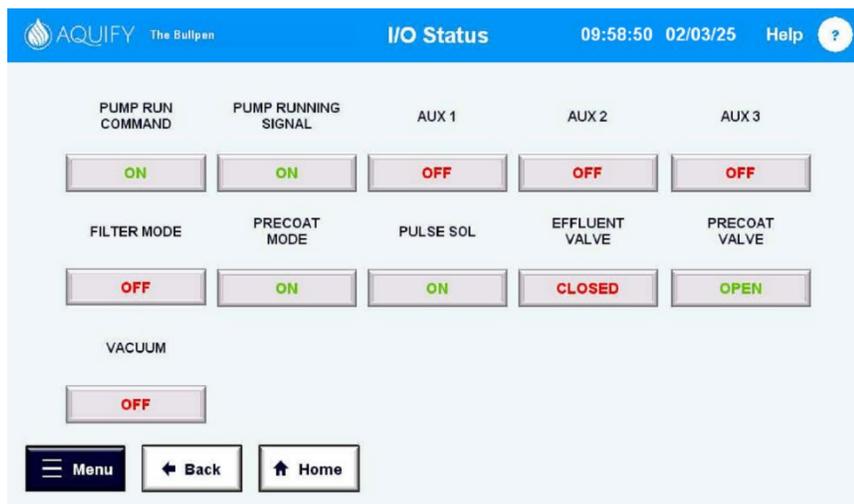
The 'Input Data' dashboard displays the following sensor readings:

SENSOR	READING	SENSOR	READING	SENSOR	READING	SENSOR	READING
FILTER AIR	85 PSI	FILTER INFLUENT	17 PSI	STRAINER INFLUENT	2 PSIG	PUMP MOTOR	40 Hz
WATER TEMP	71 F	FILTER EFFLUENT	14 PSI	STRAINER EFFLUENT	2 PSIG	LAST PULSE CYCLE	DATE: 2 / 3 / 2025 TIME: 9 : 55
FLOW METER	310 GPM	FILTER DIFFERENTIAL	3 PSI	STRAINER DIFFERENTIAL	0 PSIG		

Navigation buttons: Menu, Back, Home.

This page displays all the filter data, many of these values can also be found on the Home page.

I/O Status



The 'I/O Status' dashboard displays the following signal statuses:

SIGNAL	STATUS	SIGNAL	STATUS	SIGNAL	STATUS
PUMP RUN COMMAND	ON	PUMP RUNNING SIGNAL	ON	AUX 1	OFF
				AUX 2	OFF
				AUX 3	OFF
FILTER MODE	OFF	PRECOAT MODE	ON	PULSE SOL	ON
				EFFLUENT VALVE	CLOSED
				PRECOAT VALVE	OPEN
VACUUM	OFF				

Navigation buttons: Menu, Back, Home.

This page displays which signals are ON and OFF in the system. The information is primarily used for troubleshooting and startup operations, to confirm if on and off signals are being sent correctly.

Trends

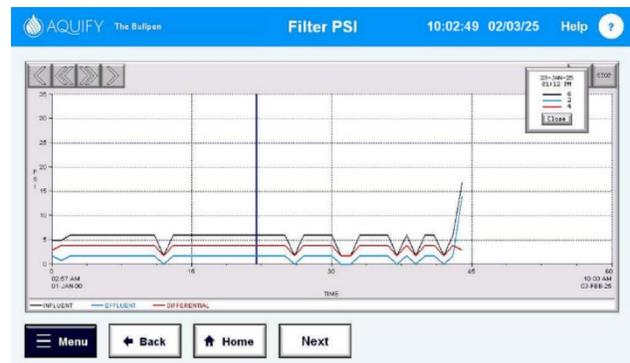
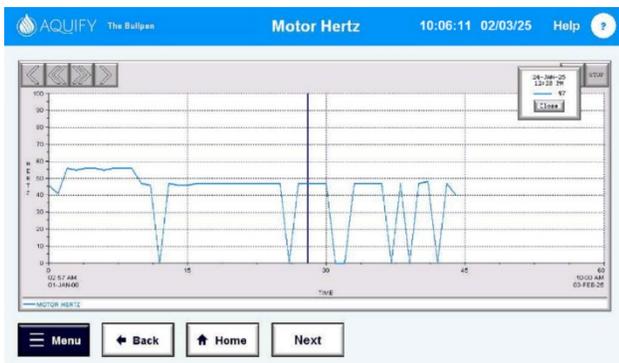
This Page displays data charts for the following:

- Filter Pressure
- Motor Hz
- Strainer Pressure
- Pump GPM
- Water Temperature
- Pump VFD Speed

All of the data charts are stored on a USB device installed on the HMI screen inside of the control panel. The user is able to select a specific point along the X-axis of the chart and read the data in the top right corner of the screen; the only graph that disallows this function is the Pump VFD Speed chart. A legend key is provided at the bottom of the charts to distinguish multiple trend lines.



See the following examples:



****Note:**** Once the USB device memory has been filled an error message will pop up at the top of the screen. Please take the USB device and transfer the files to storage and clear the data from the USB. Plug the USB back into the HMI and the error message will disappear in a few moments.

Manual Overrides

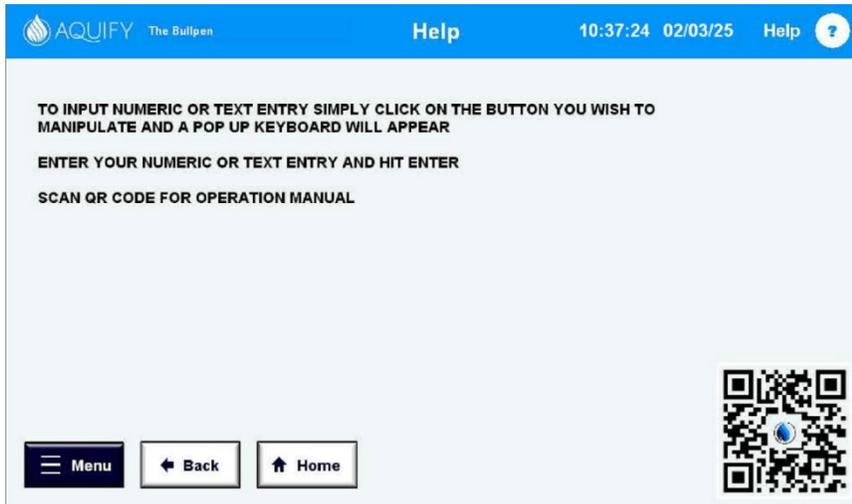


The page contains override commands for:

- VFD Override – this will bypass the run verification signal coming from the VFD
- Filter PSI IN Override – this will override the filter influent pressure sensor
- Filter PSI OUT Override – this will override the filter effluent pressure sensor
- Pump Speed Override – this will override the PID speed control and put it into manual speed (the pump will run at the PUMP PRECOAT SPEED) set under parameters
- Air PSI Override – this will bypass the low air setpoint
- Strainer PSIG IN Override – this will override the strainer influent pressure sensor
- Strainer PSIG OUT Override – this will override the strainer effluent pressure sensor
- Differential Pressure Override – this will override the AUTO PULSE DELTA setpoint found under setup parameters

****Note:**** Overriding certain functions of the filtration system may lead to unsafe conditions. Please be cautious and it is advised to only use these overrides under the supervision of a certified Aquify representative.

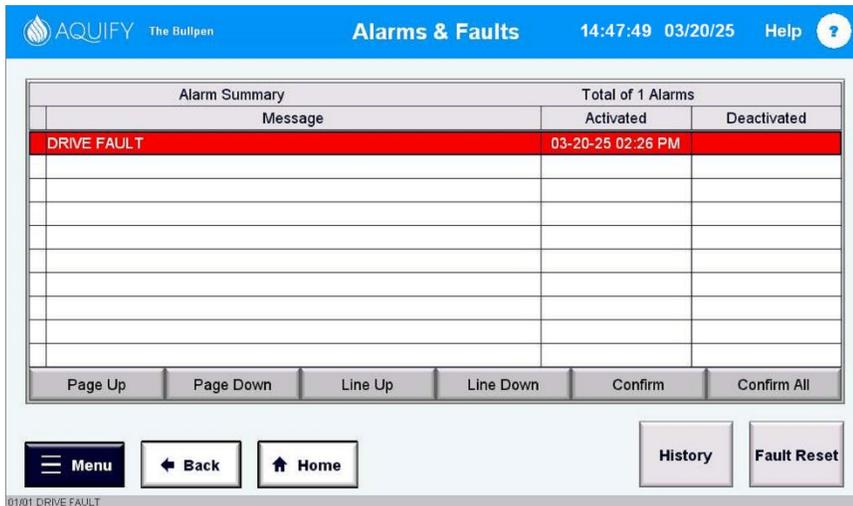
Help



The screenshot shows a web interface with a blue header bar. On the left of the header is the AQUIFY logo and the text 'The Bullpen'. In the center of the header is the word 'Help'. On the right of the header is a timestamp '10:37:24 02/03/25', the word 'Help', and a question mark icon. Below the header, the main content area has a light blue background. It contains three lines of bold text: 'TO INPUT NUMERIC OR TEXT ENTRY SIMPLY CLICK ON THE BUTTON YOU WISH TO MANIPULATE AND A POP UP KEYBOARD WILL APPEAR', 'ENTER YOUR NUMERIC OR TEXT ENTRY AND HIT ENTER', and 'SCAN QR CODE FOR OPERATION MANUAL'. At the bottom left of the content area are three buttons: 'Menu' (with a hamburger icon), 'Back' (with a left arrow icon), and 'Home' (with an up arrow icon). At the bottom right of the content area is a QR code.

This page contains a QR code that directs the user to our operation manual on procedures for substituting parts on the filter, or how to access the internal components of the filter for additional maintenance.

Alarms & Faults



The screenshot shows the 'Alarms & Faults' page with a blue header. The main content is a table titled 'Alarm Summary' with a sub-header 'Total of 1 Alarms'. The table has three columns: 'Message', 'Activated', and 'Deactivated'. One row is highlighted in red, showing 'DRIVE FAULT' in the 'Message' column and '03-20-25 02:26 PM' in the 'Activated' column. Below the table are navigation buttons: 'Page Up', 'Page Down', 'Line Up', 'Line Down', 'Confirm', and 'Confirm All'. At the bottom, there are buttons for 'Menu', 'Back', 'Home', 'History', and 'Fault Reset'. A small status bar at the very bottom reads '01/01: DRIVE FAULT'.

EVENT	MESSAGE	RESOLUTION
Fault	Drive Fault	The run verification was lost between the filter controller and the VFD. Check VFD for any alarms and ensure secure wiring. Please make sure VFD is set to auto.
Fault	Low Air Pressure	This is triggered when the incoming air pressure from the filter regulator drops below 50 PSI. Check the air compressor to make sure it is on. Check all pneumatic lines and components for leaks. Ensure the filter regulator is set for 90 PSI.
Fault	Differential Pressure Fault – Please Change Media	This fault is triggered when the filter PSI delta reaches 15 psi twice within 12 hours. This is an indication that your filter media is dirty and needs to be replaced.
Warning	Filter Dirty	The filter media is dirty and should be changed.

When a fault occurs on the filter system the Alarms & Faults page will be displayed with the current fault being highlighted in red. Faults will shut down the filter system. When a fault is present the issue need to be addressed and the operator must press FAULT RESET in order to clear it. When the status of the filter reads, “Filter not ready to start” that is an indication that there is a fault present that needs to be addressed before the filter can start.

When an alarm or fault occurs, there will be a small notification at the bottom of the current screen. Alarms will not disrupt the operation of the filter.

MAINTENANCE PROCEDURES

For optimum performance of the filter, it is important to do routine maintenance on the filter system. Over time, oils and grease can adhere to the tube elements and create bald spots, which will reduce the overall surface area of the media. Aquify System's NSF 50 approved filter cleaner restores the flex tubes, tank, and other internal components back to like-new condition.

Schedule for Media Change

For optimal filtration performance and the most significant energy savings, it is recommended to pulse daily. The filter controller can automate this function. The daily pulse regenerates the perlite, rearranging the precoat layer and refreshing the outer layer to trap the particulates in the water and lower the differential.

When a daily pulse is performed, and the pressure differential remains at 12 psi or higher, it is time to replace the media. When the pressure differential reaches 12 psi the filter health will indicate DIRTY.

****NOTE:**** Indoor facilities where large debris is not a concern, it is possible that the pressure may not rise significantly over the starting clean differential pressure. To address this, it is advisable to establish a maximum time schedule for media changes, regardless of the pressure differentials. A recommended timeframe is 8 weeks between media change intervals, if filter pressure differential is in an acceptable range.

Schedule for Inspection

DAILY: Filter health should be inspected to ensure it says CLEAN. If filter health says MODERATE plan a media change soon. If filter health says DIRTY change media ASAP to avoid filter shutting down. The tube elements should be inspected for a smooth and consistent coating. Drain any water build up in the compressor and water separator on filter regulator.

PERIODICALLY: The pulse and precoat cycle to ensure all equipment is operating smoothly.

ANNUALLY: It is recommended to open the manways, inspect the internals and manually rinse the tubes elements and interior of the filter to ensure optimal performance and prolong the longevity of the system. Doing this during a filter cleaning cycle is recommended.

Repair and Replacement Parts

If any parts have degraded after inspection or efficiency has noticeably decreased, it is time to order replacement parts from Aquify service and schedule an appointment with an authorized service technician. Be sure to note that this filter is manufactured with a composite fiberglass structure. Damage to the filament-wound shell, fiberglass flanges and nozzles, head, and joining supports should only be done by Aquify or a trained Aquify representative.



DANGER: DO NOT ATTEMPT FIBERGLASS REPAIRS ON A DAMAGED OR CRACKED FILTER. THE VESSEL CAN BE UNDER TREMENDOUS PRESSURE DURING OPERATION. INCORRECT REPAIR MAY FURTHER DAMAGE THE PRESSURE VESSEL, ACCELERATE THE DAMAGE, OR COULD LEAD TO EXPLOSION OF THE VESSEL. CONTACT AQUIFY IMMEDIATELY IF ANY DAMAGE TO THE FILTER IS DETECTED. ALL REPAIRS MUST BE DONE BY AQUIFY OR AN APPROVED AQUIFY SERVICE TECHNICIAN.

MAINTENANCE LOG

Maintenance should only be performed by a qualified pool professional.

DAILY MAINTANCE LOG						
Date:						
Inspect Pressure Differential						
Inspect Tube Elements						
Coating						

MONTHLY MAINTANCE LOG						
Date:						
Observe a Pulse and Precoat Cycle						

ANNUAL YEAR MAINTANCE LOG						
Date:						
Replace filter media at least every 3 months (12 weeks)						

ANNUAL YEAR MAINTANCE LOG						
Date:						
Inspect Internals						
Inspect Gaskets						
Rinse Filter Interior						
Run a chemical filter cleaning cycle						

****NOTE**** It is important to do routine maintenance on your air compressor. Please refer to the air compressor manual for more instructions.

SPARE PARTS

PART NUMBER	DESCRIPTION	QTY	MODEL
K050-0001	Kit Pulse Assembly Small 30in – 36in	1	30in – 36in
[1]	3B57-3307 O-Ring Viton ID 2-1/8in 75A – 330	1	
[2]	3B57-2187 O-Ring Viton ID 1-1/4in 75A – 218	1	
[3]	300-014 Lift Shaft Bushing 30in – 60in Delrin	1	
[4]	300-114 Lift Shaft Bushing Shim 30in – 60in	2	
[5]	3B57-1207 O-Ring Viton ID 1in 75A – 120	1	
[6]	300-203 Gasket Pulse Bushing Keeper 30in - 36in	1	
[7]	300-066 Gasket Pulse Mount Top Flange 30in - 36in	1	
K050-0002	Kit Pulse Assembly Large 42in – 60in	1	42in – 60in
[1]	3B57-3307 O-Ring Viton ID 2-1/8in 75A – 330	1	
[2]	3B57-2187 O-Ring Viton ID 1-1/4in 75A – 218	1	
[3]	300-014 Lift Shaft Bushing 30in – 60in Delrin	1	
[4]	300-114 Lift Shaft Bushing Shim 30in – 60in	2	
[5]	3B57-2187 O-Ring Viton ID 1in 75A – 120	1	
[6]	300-204 Gasket Pulse Bushing Keeper 42in - 60in	1	
[7]	300-099 Gasket Pulse Mount Top Flange 42in - 60in	1	
1510-1610	Manway Window Cover 16 x 10in FRP Assembly	1	30in – 36in
[1]	Manway Hatch	1	
[2]	Gasket Manway	1	
[3]	Lugs and Nuts	2	
1510-1814	Manway Window Cover 18 x 14in FRP Assembly	1	42in – 60in
[1]	Manway Hatch	1	
[2]	Gasket Manway	1	
[3]	Lugs and Nuts	2	
1513-1008	Manway Cover 10 x 8in FRP Assembly	1	30in – 36in
[1]	Manway Hatch	1	
[2]	Gasket Manway	1	
[3]	Lugs and Nuts	2	
1513-1412	Manway Cover 14 x 12in FRP Assembly	1	42in
[1]	Manway Hatch	1	
[2]	Gasket Manway	1	
[3]	Lugs and Nuts	2	
1513-1814	Manway Cover 18 x 14in FRP Assembly	1	48in – 60in
[1]	Manway Hatch	1	
[2]	Gasket Manway	1	
[3]	Lugs and Nuts	2	
300-234	PMF Tube Sheet Wear Pad Gasket 30in – 36in	2	30in – 36in
420-048	PMF Tube Sheet Wear Pad Gasket 42in	2	42in
480-061	PMF Tube Sheet Wear Pad Gasket 48in	2	48in
600-137	PMF Tube Sheet Wear Pad Gasket 54in – 60in	2	54in – 60in
300-173	PMF Tube Shet Felt Gasket 30in	6	30in
360-040	PMF Tube Shet Felt Gasket 36in	6	36in
420-036	PMF Tube Shet Felt Gasket 42in	6	42in
480-040	PMF Tube Shet Felt Gasket 48in	6	48in
540-033	PMF Tube Shet Felt Gasket 54in	6	54in
600-091	PMF Tube Shet Felt Gasket 60in	6	60in
300-800	PMF Flex Tube Element	Multiple	ALL

Tools:

- 1-1/2in Socket Wrench
- 6170-0001 - Pick/Hook [included]
- C110-0002 - O-ring Grease [included]

Disassembly/Detach:

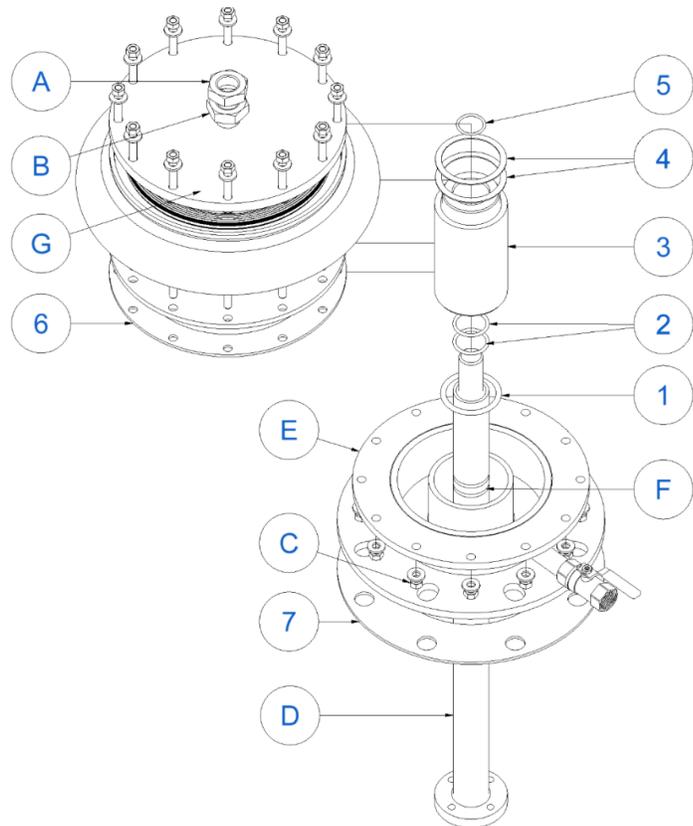
- Remove the two top nuts labeled **(A)** and **(B)**, then the lower nuts **(C)** on the pulse assembly
- Carefully lift the tire and its attached components off the pulse weldment **(E)**. ****Note:**** The pulse weldment will remain secured to the filter flange.
- Detach/remove and set aside the lift shaft bushing (3), lift shaft busing shims (4), O-rings (1), (2) and (5)

Install/Reassemble:

- Largest O-ring (1) insert into the groove on the lift shaft bushing (3).
- Insert on the lift shaft (F) the Medium O-ring into the indentation and the Small O-ring (5) below the grooves
- Slide the lift shaft bushing (3) with O-ring installed over the lift shaft (F) and into the pulse weldment (E)
 - Push it down fully to ensure proper seating and O-ring placement
- Place the lift shaft bushing shims (4) on top of the installed bushing
- Reinstall the tire and attached parts back on the pulse weldment (E)
- Press down on the Top Plate (G) and begin threading nut (B) onto the lift shaft (F)
 - If the nut does not thread easily, remove one of the shims(4) and try again
- Reinstall nuts (C) and tighten them in a star pattern for even pressure
- Reinstall the top nuts (A) and (B) and fully tighten them

1. 3B57-3307: O-Ring Viton ID 2-1/8in 75A – 330
2. 3B57-2187: O-Ring Viton ID 1-1/4in 75A – 218
3. 300-014: PMF Lift Shaft Bushing 30in – 60in Delrin
4. 300-114: PMF Lift Shaft Bushing Shim 30in – 60in
5. 3B57-2187: O-Ring Viton ID 1in 75A – 120

- A. Jam Nut Hex 1in
- B. Nut Hex 1in
- C. Nut Hex 5/16in
- D. Lift Shaft
- E. Pulse Weldment
- F. Lift Shaft Indentions
- G. Top Plate



****Note:**** Before servicing the pulse assembly ensure the tire is deflated. To do this, flip off all three breakers inside filter controller.

****Note:**** Use O-ring lube on all O-rings.

TESTING AND COMMISSIONING – SIGN OFF

Each filter undergoes pressure testing and quality control inspection prior to packaging. These quality assurance steps ensure that the system meets performance standards, operates safely, and maintains structural integrity.

Upon receiving the filter system, inspect it carefully for any potential damage sustained during shipping. If any damage is detected, take photo documentation and immediately contact Aquify or a certified Aquify support agent.

As part of the commissioning process, Aquify Systems and the End-Customer (_____) acknowledges and will sign-off on the following items to confirm successful installation and readiness for operation:

- The Filter is installed according to the manual – sufficient floor space and height for easy access to the manways, drains, controller and anchored correctly.
- Additional leakage testing on sit. The gasket and manway are properly in place, ensuring the filter is sealed correctly. The pneumatic system has been checked for air leaks.
- Go through relevant parameters and how to program them.
- Pulse cycle and precoat cycle perform as intended. Pneumatic valves have been adjusted to avoid water hammer.
- Drain and rinse cycle has been performed and/or instructed on.
- Flow meter reads a value corresponding to logical assessment and in compliance with designed flowrate.
- Filter pressures are in an acceptable range.
- The compressor maintenance was reviewed and performed.
- The manual is available and has been reviewed, and the End-Customer has been instructed to read – and record continuous measurements, which can be noted in “Maintenance Log” found on page 60.

I, (INSERT NAME), hereby sign and acknowledge that Aquify Regenerative Media Filter System, reference (job name & body of water) with serial number _____ is operating as intended, according to the above.

CUSTOMER: _____

Aquify Systems or Aquify Certified Representative

Title: _____

Title: _____

By: _____

By: _____

Date: _____

Date: _____

WARRANTY

Aquify and our partners use state-of-the-art workmanship, materials, and manufacturing processes to create and develop the most innovative equipment. We are committed to delivering the highest quality products backed by our industry leading warranties. All products are carefully inspected for quality and manufacturing conformity prior to shipment. Aquify warrants its products to be free from deficiencies in materials and workmanship under normal use for the period denoted below from the date of installation and/or twelve (12) months after shipment:

- Filter Body ten (10) years
- Filter Internals (10) years
- Electrical Equipment, Gaskets and O-Rings (1) year
- Valves (5) years

If a defect occurs during the warranty period, AQUIFY will, at our discretion, repair or replace the defective component free of charge, provided that:

1. Customer fully cooperates with AQUIFY, in the manner requested by AQUIFY, in attempting to diagnose and resolve the problem by way of phone and email service support.
2. If the problem can be diagnosed and verified by telephone support and a replacement part is required, AQUIFY will either ship at AQUIFY's expense, a repaired, reworked or new part to the Customer, who will install such part as directed by AQUIFY or direct Customer to acquire, at AQUIFY's expense, such part from a third party and to install such part as directed by AQUIFY.
3. In the event that AQUIFY determines that the problem cannot be resolved by way of telephone support and/or shipment by AQUIFY, or acquisition by the Customer of a replacement part for installation by the Customer, AQUIFY will send one or more persons to make an onsite inspection of the problem. If an onsite visit is made, AQUIFY's personnel will evaluate the problem and repair or replace any Equipment determined to be in warranty. If the problem is determined to be attributed to a breach of this warranty, AQUIFY reserves the right to invoice the Customer for this service.
4. The Equipment is covered, and the failure occurs within the Warranty Period.

AQUIFY will, at our option, use new and/or reconditioned parts in performing warranty repair. AQUIFY has the right to use parts or products of original or improved design in the repair or replacement.

Limitations: This warranty shall not apply to any failure or defect which results from:

- Damage due to mishandling, misuse, abuse or failure to operate equipment as specified in the owner's manual.
- Damage due to unauthorized product modifications or failure to use Aquify's original replacement parts.
- Damage caused by negligence, or failure to properly maintain products as specified in the owner's manual.
- Damage caused by failure to maintain water chemistry and conformity within the standards of the swimming pool industry for any length of time.

This warranty does not cover:

1. Equipment components manufactured by third parties but furnished to Customer by AQUIFY are warranted by the original manufacturer, only to the extent of the original manufacturer's warranty.
2. Normal wear and tear of the product.
3. Consumable components such as gaskets.
4. Costs related to removal, installation, or troubleshooting of the damaged component.

5. Damage caused by improper installation, installation not in accordance with Aquify's current published installation and operation manual.
6. Acts of God, terrorism, biological infestations, or input voltage that create operating conditions beyond the minimum or maximum limits listed in the Operations Manual including high input voltage from generators and lightning strikes.
7. Damage caused by improper return packaging Taxes, duties or brokerage fees (if any).

This warranty is the exclusive remedy for all claims based on a failure of or defect in the Equipment, whether the claim is based on contract (including fundamental breach), tort (including negligence), strict liability or otherwise. This warranty is in lieu of all other warranties whether written, oral, implied or statutory. Without limitation, no warranty of merchantability or fitness for a particular purpose shall apply to the Equipment.

AQUIFY does not assume any liability for personal injury or property damage caused by use or misuse of the Equipment. AQUIFY shall not in any event be liable for special, incidental, indirect or consequential damages including, without limitation, lost profits, lost business opportunities, lost revenue or loss or depreciation of goodwill, even if it has been advised of the possibility thereof. AQUIFY's liability shall, in all instances, be limited to repair or replacement of Equipment in breach of this warranty and shall not exceed the cost of such repair or replacement. This liability with respect to repair or replacement will terminate upon the expiration date of this warranty.

In addition to the foregoing, in no event shall AQUIFY's liability relating to the Equipment, or the agreement between AQUIFY and the Customer relating to the Equipment, exceed that portion of the purchase price for the Equipment which is actually paid to AQUIFY.

Aquify Systems

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