RAINFLO™

UVS-25 Packaged Pumping and Water Treatment System

Submittal Documentation

RainHarvest Systems | 4475 Alicia Lane | Cumming, GA 30028 | (770) 889-2533 | Sales@rainharvest.com

RAINFLO UVS-25

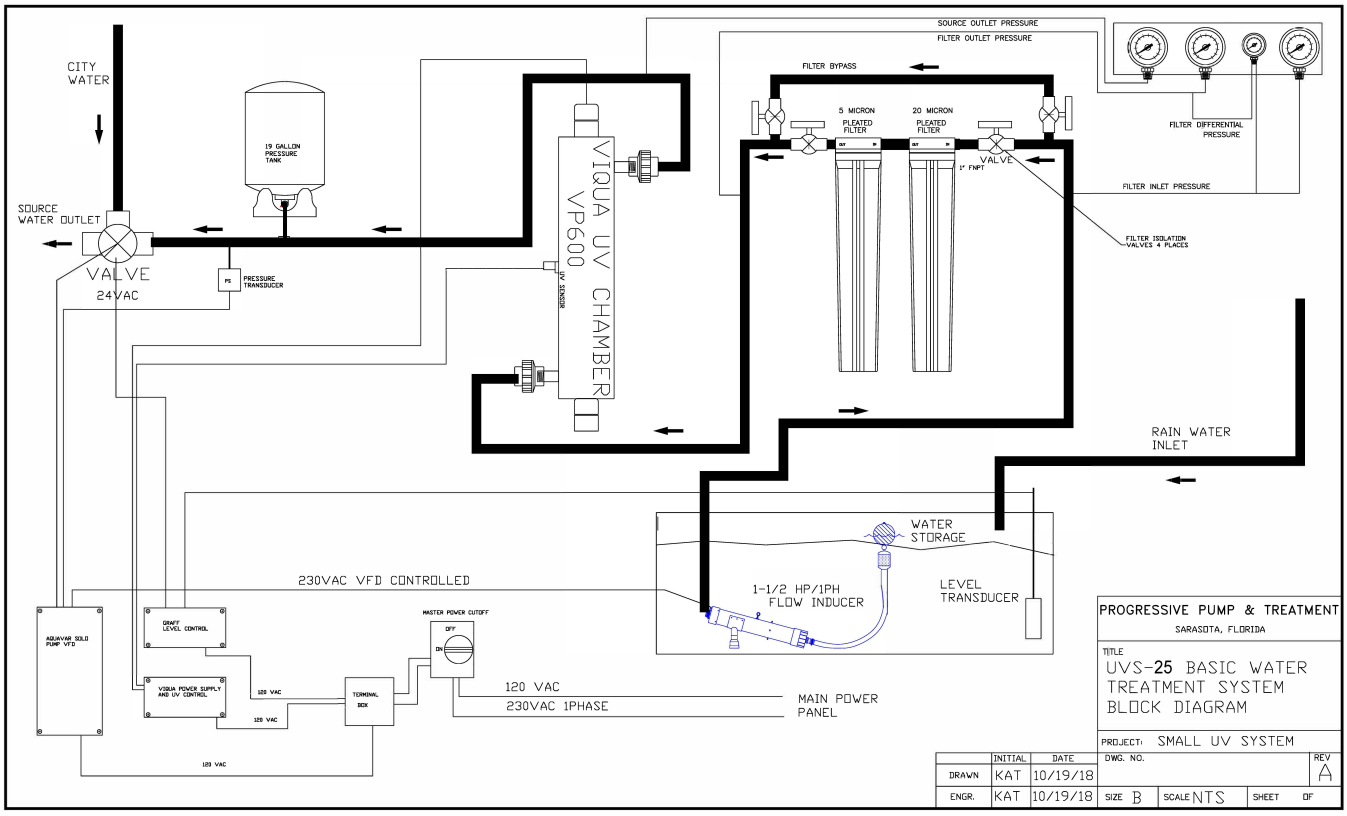
The RainFlo UVS-25 Standard pumping system implements readily available, field tested components into a compact, affordable package designed to provide years of reliable service for residential and light commercial applications. Using commonly stocked components for its construction ensures that, when needed, service and replacement parts for the UVS-25 system are readily available in nearly any time or place. Building on the popular RainFlo Flow Inducer pump technology, the UVS-25 uses proven Goulds pump and VFD pump controls, Viqua UV disinfection technology, and Graf system controls to deliver disinfected water at a constant pressure and variable flow rate up to 25 GPM at 40 PSI.

The UVS-25 is perfect for applications such as irrigation, greenhouse systems, toilet flushing, cooling tower make up, laundry processes, industrial process water, and other non-potable plumbing applications. Storage tank empty? No problem! The on-board Graf system controller can detect the water level in your tank and automatically switch to an auxiliary water supply at user defined set points. When your tank fills again the UVS-25 will automatically switch back over to harvested water without the need for human intervention. The UVS-25 has also been designed to fit through a standard 30" door, making it perfect for use in existing buildings and new construction alike. Due to the packaged nature of the UVS-25 installation is quick and easy. If you need a cost effective, reliable, pumping, treatment, and control solution for your water harvesting project the RainFlo UVS-25 is the best in its class.

RAINFLO UVS 25

RainFlo 25 GPM Complete Pumping and UV Disinfection Skid Includes:

- Pump system to deliver water at a variable flow rate at constant pressure up to 25 GPM @ 40 PSI
- System can be configured with a submersible pump or skid mounted end suction pump
- 25 GPM Viqua VP600 UV disinfection system and dual 4.5" x 20" filter housings with filtration to 5 microns
- 19 Gallon pressure tank
- Water tank level monitor to measure water level in the storage tank and switch to an auxiliary water supply on low level.
- Automatic city water bypass valve
- Single 230V/1PH power supply required
- Pre-plumbed and assembled in SCH 80 PVC Pipe
- Mounted on a powder coated Aluminum skid
- Includes differential pressure gauges and isolation valves
- Dimensions: 62" height x 25" width x 36" depth



CITY WATER

19 GALLON PRESSURE TANK

SOURCE WATER OUTLET

VALVE 24VAC

PS PRESSURE TRANSDUCER

VIQUA UV CHAMBER VP600

UV SENSOR

SOURCE OUTLET PRESSURE

FILTER OUTLET PRESSURE

FILTER BYPASS

5 MICRON PLEATED FILTER

20 MICRON PLEATED FILTER

VALVE 1" FNPT

FILTER DIFFERENTIAL PRESSURE

FILTER INLET PRESSURE

FILTER ISOLATION VALVES 4 PLACES

RAIN WATER INLET

WATER STORAGE

1-1/2 HP/1PH FLOW INDUCER

LEVEL TRANSDUCER

230VAC VFD CONTROLLED

AQUAVAR SOLO PUMP VFD

GRAFF LEVEL CONTROL

VIQUA POWER SUPPLY AND UV CONTROL

MASTER POWER CUTOFF

OFF

ON

TERMINAL BOX

120 VAC

120 VAC

120 VAC

120 VAC

230VAC 1PHASE

MAIN POWER PANEL

PROGRESSIVE PUMP & TREATMENT

SARASOTA, FLORIDA

TITLE

UVS-25 BASIC WATER TREATMENT SYSTEM BLOCK DIAGRAM

PROJECT: SMALL UV SYSTEM

	INITIAL	DATE	DWG. NO.	REV
DRAWN	KAT	10/19/18		A
ENGR.	KAT	10/19/18	SIZE B	SCALE NTS	SHEET OF

RainHarvest Systems

4475 Alicia Lane
Cumming, GA 30028

General Number:
770-889-2533
Sales@RainHarvest.com

Rainwater Pumping System

Aquavar SOLO M15432

TECHNICAL BROCHURE
BAQSOLO2 R3

AQUAVAR SOLO²™

CONSTANT PRESSURE CONTROLLERS FOR: 1Ø – 3-WIRE MOTORS,
1Ø – 2-WIRE CENTRIPRO MOTORS, 3Ø MOTORS

BUILT IN THE USA
ENGINEERED, ASSEMBLED & TESTED

CentriPro
a xylem brand

FEATURES

LED display clearly indicates actual system pressure, output frequency, current draw and error log.

Dual system set points for advanced system application.

Programmable output relay can be configured to run optional accessories such as a chlorinator, or link to a home monitoring system.

NEMA 3R Enclosure: Rainproof, outdoor/indoor rated enclosure.

Current Limit Selector Switch: Rotary switch to set current limit to match motor Service Factor Amps (SFA).

Dry Well Sensitivity Switch: Choice of low or high sensitivity.

Pressure Drop: Choose a 5 or 20 PSI pressure drop for restarts.

Low Pressure Cut-Off: Set on or off depending on application.

Constant Pressure: Provides consistent pressure even as flow requirements vary.

Controller acts as a pump protection and troubleshooting device. Flashing lights indicate system faults.

Standard pressure sensor cable is 10' long. Optional lengths of 25', 50', 100', 150' and 200' are available.

Integrated output motor filter protects the motor from voltage spikes and limits electrical interference with devices such as portable telephones, radios, televisions and garage door openers.

Cooling Fan: Allows operation in ambient temperatures up to 122°F.

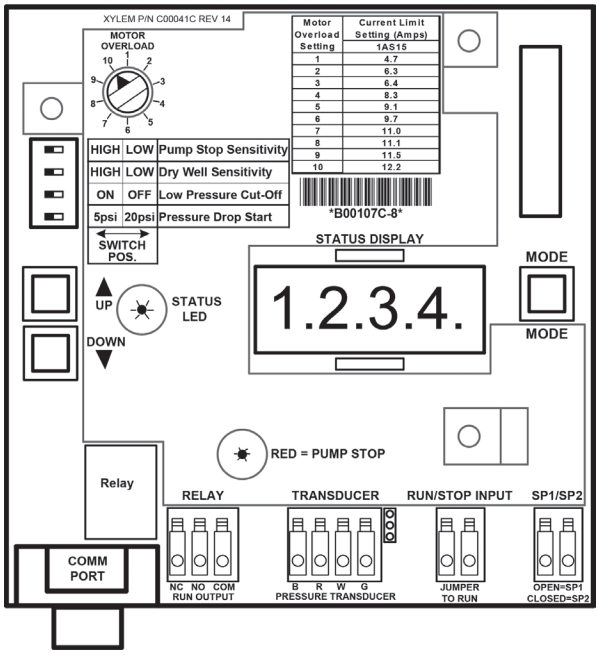
AGENCY LISTINGS

C US — Tested to UL 508C and CSA 22.2 0-M91, 14-95 and 0.4-M1982 Standards By Canadian Standards Association File #LR38549

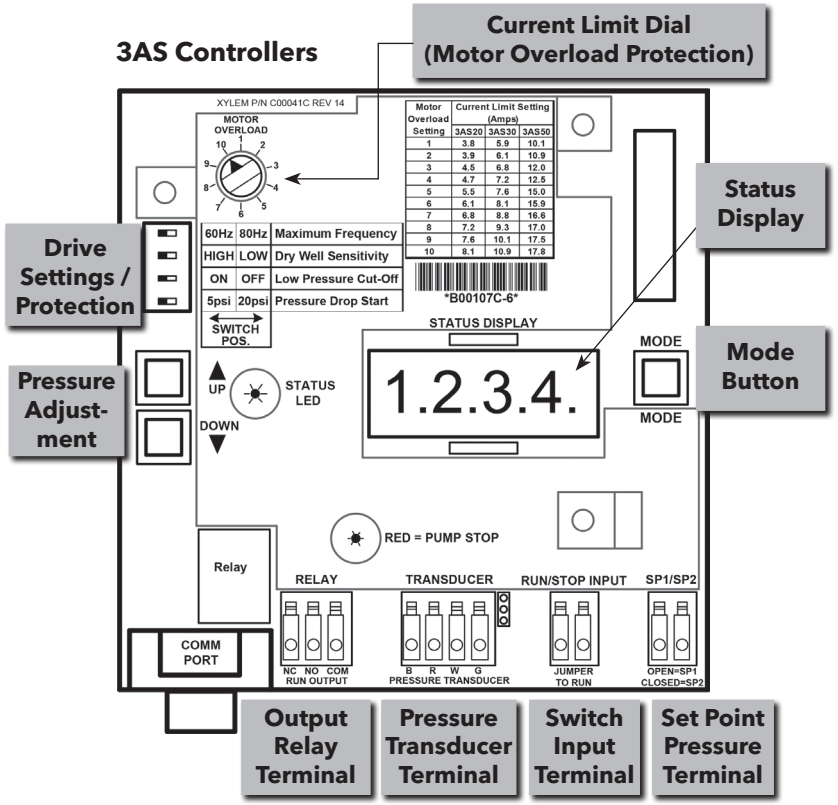
NSF/ANSI 61-G — Drinking Water System Components – Health Effects & Optional Annex G - Class 6861 18 - Mechanical Devices - NSF/ANSI 61 - Certified to NSF/ANSI 61 Sect. 8 (including optional Annex G)

USER INTERFACE BOARD

1AS Controllers



3AS Controllers



SPECIFICATIONS – 3Ø MODELS / 1Ø INPUT AND 3Ø OUTPUT

Controller Temperature Range:

- Minimum Ambient Temperature: -4°F (-20°C)
- Maximum Ambient Temperture: +122°F (+50°C)

Input Voltage: single-phase, 230 Volt, two (2) wire grounded system.

Output Voltage: variable frequency, variable voltage, three-phase power to the motor.

Speed Selector Switch: Selects Output Frequency of either –

- 30 - 60 Hz - Use matched HP Water End and Motor
- 30 - 80 Hz - Use mis-matched Water End and Motor

Enclosure Dimensions:

- Height: 18.6"
- Width: 9.9"
- Depth: 5.3"

Packaged Dimensions:

- Height: 21"
- Width: 13"
- Depth: 8"

Motor Compatibility with 3AS_ _ Models

HP	Three Phase	
	CentriPro & Pentek XE	Franklin & Grundfos
¾	Yes	Yes
1	Yes	Yes
1½	Yes	Yes
2	Yes	Yes
3	Yes	Yes
5	Yes	①

① Amps may be higher than controller overload range - use of these motors will current limit and provide reduced performance.

3AS20 SPECIFICATIONS

- HP Range: ¾ to 2
- Unit Weight: 19 lbs.
- Packaged Weight: 23 lbs.
- Pressure Set point adjustable from 20 - 85 psi using the standard 100 psi sensor. ①

3AS30 SPECIFICATIONS

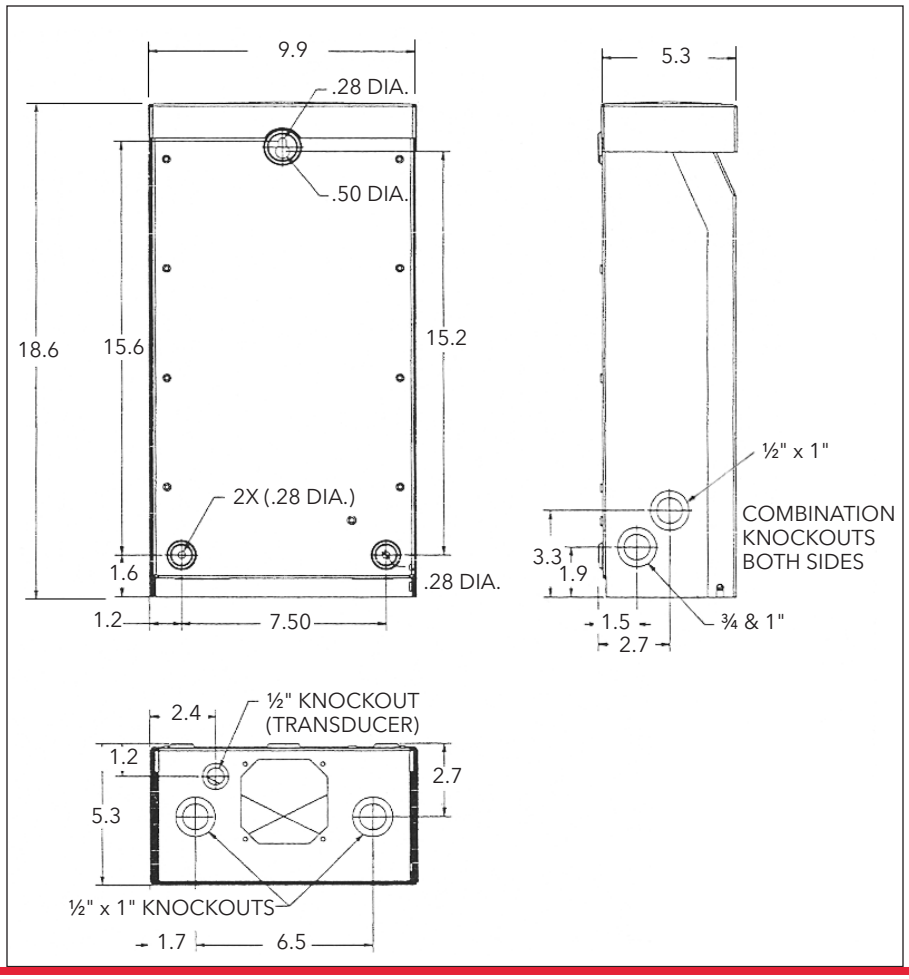
- HP Range: 1½ to 3
- Unit Weight: 20 lbs.
- Packaged Weight: 24 lbs.
- Pressure Set point adjustable from 20 - 85 psi using the standard 100 psi sensor. ①

3AS50 SPECIFICATIONS

- HP Range: 3 to 5
- Unit Weight: 25 lbs.
- Packaged Weight: 29 lbs.
- Pressure Set point adjustable from 20 - 100 psi using the standard 200 psi sensor. ①

① Higher pressures are available using a higher pressure sensor. See page 4.

DIMENSIONS (inches) – ALL MODELS



SPECIFICATIONS – 1AS15 – 1Ø MODEL – 1Ø INPUT AND 1Ø OUTPUT

Controller Temperature Range:

- Minimum Ambient Temperature: 14°F (-10°C)
- Maximum Ambient Temperture: 122°F (50°C)

Input Voltage: single-phase, 230 Volt, two (2) wire grounded system.

Output Voltage: 1Ø, variable voltage, variable frequency, single phase power to the 2-wire or 3-wire motor

Speed/Frequency: 30-60 only

Enclosure Dimensions:

- Height: 18.6"
- Width: 9.9"
- Depth: 5.3"

Packaged Dimensions:

- Height: 21"
- Width: 13"
- Depth: 8"

1AS15 SPECIFICATIONS

- Unit Weight: 19 lbs.
- Packaged Weight: 23 lbs.
- Pressure Set point adjustable from 20 - 85 psi using the standard 100 psi transducer.
- HP Range:

Motor Compatibility with Aquavar SOLO 1AS15

HP	Single Phase 2-Wire		Single Phase 3-Wire	
	CentriPro & Pentek XE	Franklin, Grundfos and Flint & Walling	CentriPro & Pentek XE	Franklin, Grundfos and Flint & Walling
½	Yes	Yes	Yes	Yes
¾	Yes	Yes	Yes	Yes
1	Yes	Yes	Yes	Yes
1½	Yes	Yes	Yes	Yes
2	No	No	Yes	①

① Amps are higher than controller overload range - use of these motors will current limit and provide reduced performance.

TANK SIZING

Diaphragm Tank Sizing and Pre-Set Pressure Recommendations:

Diaphragm type (captive air) tanks are required on these systems.

Table 1: Tank Sizing Selection

Maximum Pump GPM	Recommended Tanks	
	Total Volume	Order Number
10	1.9	V6P
24	4.9	V15P
36	7.3	V25P
70	13.9	V45
100	19.9	V60

Use Total Tank Volume, not drawdown volume, to select the proper tank size. The total tank volume should be approximately 20% of the pump's maximum flow. For example, when using a 10 gpm pump the system requires a minimum 2 gallon (total volume) tank.

The tank sizing recommendations are field proven to prevent objectionable pressure drops on start-up and provide smooth operation for the majority of variable speed pump systems.

When using the default, 5 PSI pressure drop, setting: Set the tank pressure, while tank is empty of water, to 20 psi below the desired system pressure setting. Ex. for a 50 psi system pressure, charge the tank to 30 psi.

See IOM for other settings or if using a large tank.

Table 2: Controller, Breaker, Generator Sizing

Motor		Controller Model ②				Circuit Breaker ③	Generator ④ (VA)
HP	Voltage ①	1AS15	3AS20	3AS30	3AS50		
½	230					15	2200
	200						
¾	230						2900
	200						
1	230						3500
	200						
1½	230					20	4400
	200						
2	230					30	6100
	200						
3	230						8100
	200						
						40	
5	230					50	13300
	200						

① Supply voltage must be 196 VAC – 265 VAC.

② Shaded areas indicate which controller models can be used with which motors. Lighter shading indicates combinations where controller will limit peak performance to 85% of catalog value for pump/motor.

③ Circuit Breaker or Dual Element Time Delay Fuse Size (Amps) protecting branch circuit supplying controller.

④ Minimum size of single phase 240 V generator required.

Table 3: Service Factor Amps All Motors

HP	230 Volt									200 Volt	
	1Ø 2-Wire			1Ø 3-Wire			3Ø			3Ø	
	CentriPro[1]	Franklin	Grundfos	CentriPro	Franklin	Grundfos	CentriPro	Franklin	Grundfos	CentriPro	Franklin
½	4.7/4.7	6	6	6.3	6	6	N/A	N/A	N/A	N/A	N/A
¾	6.4/6.2	8	8.4	8.3	8	8.4	3.9	3.8	N/A	4.5	4.4
1	9.1/8.1	9.8	9.8	9.7	9.8	9.8	4.7	4.7	N/A	5.5	5.4
1½	11.0/10.4	13.1[2]	13.1[2]	11.1	11.5	11.6	6.1	5.9	7.3	7.2	6.8
2	N/A	N/A	N/A	12.2	13.2[2]	13.2[2]	7.6	8.1	8.7	8.8	9.3
3	N/A	N/A	N/A	N/A	N/A	N/A	10.1	10.9	12.2	12	12.5
5	N/A	N/A	N/A	N/A	N/A	N/A	17.5	17.8	19.8[2]	20.2[2]	20.5[2]

1. CentriPro 2-Wire motors have Generation 1 and Generation 2 amp ratings, see motor nameplate or motor data sticker that was supplied with motor.

2. Amps are higher than controller overload range - use of these motors will current limit and provide reduced performance.

PRESSURE RANGES FOR ALL AVAILABLE TRANSDUCERS

Transducer	1AS15 / 3AS20		3AS30		3AS50	
	Minimum PSI	Maximum PSI	Minimum PSI	Maximum PSI	Minimum PSI	Maximum PSI
100 PSI ①	20	85	20	85	10	50
200 PSI ②	40	170	40	170	20	100
300 PSI	60	255	60	255	30	150

① Standard on 1AS15/3AS20, 3AS30 ② Standard on 3AS50

Warning! Exploding tank can injure or kill, some combinations of Transducer and Controller allow system pressure adjustment to exceed the maximum working pressure of the tank and piping.

Ensure system pressure is set below the maximum working pressure of the tank and system piping.

Protect tank and piping against overpressure, install a properly sized pressure relief valve (PRV) able to pass full pump flow at the maximum working pressure of the tank. In finished basements or where PRV blow-off can cause property damage, pipe the PRV to a suitable drain.

Table 4: Wire Sizing
Maximum Cable Lengths in Feet to Limit Voltage Drop to 5% for 230 V Systems ①

1AS15 Controller to Motor – Controllers with 2-Wire 1Ø Motors

Motor Lead Lengths - CentriPro 2-Wire Motors - Based on Service Factor Amps, 30° C Ambient and 5% Voltage Drop														
Motor Rating				60° C & 75° C Insulation - AWG Copper Wire Size										
Volts	HP	kW	SFA	14	12	10	8	6	4	2	1/0	2/0	3/0	4/0
230	½	0.37	4.7	466	742	1183	1874	2915	4648	7379	11733	14803	18688	23544
	¾	0.55	6.4	342	545	869	1376	2141	3413	5419	8617	10871	13724	17290
	1	0.75	9.1	241	383	611	968	1506	2400	3811	6060	7646	9652	12160
	1½	1.1	11.0	199	317	505	801	1246	1986	3153	5013	6325	7985	10060

1AS15 Controller to Motor – Controllers with 3-Wire 1Ø Motors

Motor Lead Lengths - CentriPro 3-Wire Motors (CSIR) - Based on Service Factor Amps, 30° C Ambient and 5% Voltage Drop														
Motor Rating				60° C & 75° C Insulation - AWG Copper Wire Size										
Volts	HP	kW	SFA	14	12	10	8	6	4	2	1/0	2/0	3/0	4/0
230	½	0.37	6.3	348	553	883	1398	2175	3467	5505	8753	11044	13942	17564
	¾	0.55	8.3	264	420	670	1061	1651	2632	4178	6644	8383	10582	13332
	1	0.75	9.7	226	359	573	908	1413	2252	3575	5685	7173	9055	11408
	1½	1.1	11.1	197	314	501	793	1234	1968	3124	4968	6268	7913	9969
	2	1.5	12.2	180	286	456	722	1123	1790	2843	4520	5703	7199	9070

All Models – Service Entrance to Controller

Controller Input	Motor HP	Copper Wire Size 75°C Insulation Exposed to a Maximum of 50°C (122°F) Ambient Temperature ②																	
		14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
230V 1 PH	¾	279	445	706	1020	1608	2552	3186	4019	5065	6383	8055							
	1	226	360	571	824	1300	2064	2576	3250	4095	5161	6513	8201						
	1½	*	**286**	455	657	1036	1644	2052	2589	3262	4111	5188	6533	8236	9710				
	2	*	*	**331**	478	754	1197	1495	1886	2376	2995	3779	4759	5999	7073	8455	9852		
	3	*	*	**246**	355	561	890	1111	1401	1766	2225	2808	3536	4458	5256	6283	7321	8343	
	5	*	*	*	**218**	**343**	545	680	858	1081	1363	1720	2165	2730	3219	3847	4483	5109	6348

3AS20, 30, 50 Controller to Motor – Controllers with 3Ø Motors

Controller Output	Motor HP	Copper Wire Size 75°C Insulation Exposed to a Maximum of 50°C (122°F) Ambient Temperature ②																	
		14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	300	350	400	500
230V 3 PH	¾	690	1100	1748	2523	3978	6316	7884	9945										
	1	558	890	1413	2040	3216	5106	6375	8041										
	1½	445	709	1126	1625	2562	4068	5078	6406	8072									
	2	324	516	820	1184	1866	2963	3699	4666	5879	7410	9351							
	3	241	384	609	880	1387	2202	2749	3467	4369	5506	6949	8750						
	5	*	235	373	539	849	1348	1683	2123	2675	3372	4255	5358	6755	7964	9520			

① Reduce lengths by 13% for 200 V systems.
② Lengths in bold require 90° C wire.
* Wire does not meet the N.E.C. ampacity requirement.
Shading indicates 40° C maximum ambient.

The lengths in each of the Wire Sizing tables represent 100% of the allowable voltage drop when motor is running at full load. When sizing wire, the voltage drop of each wire segment must be included. The total must not exceed 100% of the allowable drop. Take for example a 1.5 HP motor with a distance from Service Entrance to Controller of 100' and 500' between the Controller and Motor.

- Service Entrance to Controller = 100' of 10 AWG (100/455) = 22 % (455' is from the S.E. to Controller chart)
- Controller to Motor = 500' of 12 AWG (500/709) = 71 % (709' is from the Controller to Motor chart)

Total Drop (must be ≤ 100%) 93 %

If the distance from the Controller to Motor was 600' (600/709) = 85% + 22% = 107%, we would need to use #10 wire for that segment, ex. 600/1126 = 53% + 22% (for 100' of #10) = 75% which is acceptable. It is also acceptable to use different wire sizes for the Buried and Well sections of wire.

3Ø, 4" MOTORS – ELECTRICAL DATA, 60 HERTZ 3450 RPM

CentriPro #	Red Jacket #	HP	kW	Volts	SF	Full Load		Service Factor		Locked Rotor Amps	Line - Line Resistance
						Amps	Watts	Amps	Watts		
M07430	75C323	0.75	0.55	200	1.5	3.8	812	4.5	1140	32	2.6-3.0
M10430	100C323	1	0.75		1.4	4.6	1150	5.5	1500	29	3.4-3.9
M15430	150C323	1.5	1.1		1.3	6.3	1560	7.2	1950	40	1.9-2.5
M20430	200C323	2	1.5		1.25	7.5	2015	8.8	2490	51	1.4-2.0
M30430	300C323	3	2.2		1.15	10.9	2890	12.0	3290	71	0.9-1.3
M50430	500C323	5	3.7		1.15	18.3	4850	20.2	5515	113	0.4-0.8
M07432	75C313	0.75	0.55	230	1.5	3.3	850	3.9	1185	27	3.3-4.3
M10432	100C313	1	0.75		1.4	4.0	1090	4.7	1450	26.1	4.1-5.1
M15432	150C313	1.5	1.1		1.3	5.2	1490	6.1	1930	32.4	2.8-3.4
M20432	200C313	2	1.5		1.25	6.5	1990	7.6	2450	44	1.8-2.4
M30432	300C313	3	2.2		1.15	9.2	2880	10.1	3280	58.9	1.3-1.7
M50432	500C313	5	3.7		1.15	15.7	4925	17.5	5650	93	.85-1.25

1Ø, 4" MOTORS – ELECTRICAL DATA, 60 HERTZ 3450 RPM

Type	Motor Order Number		HP	KW	Volts	SF	Full Load		Service Factor		Locked Rotor Amps	Winding Resistance	
	CentriPro	Red Jacket					Amps	Watts	Amps	Watts		Main	Start
2 Wire PSC	M05422	50C211	0.5	0.37	230	1.6	3.7	834	4.7	1073	19.5	4.5-5.2	-
	M07422	75C211	0.75	0.55		1.5	5.0	1130	6.4	1459	24.8	3.0-4.8	-
	M10422	100C211	1.0	0.75		1.4	7.9	1679	9.1	1990	21.7	4.2-5.2	-
	M15422	150C211	1.5	1.1		1.3	9.2	2108	11.0	2520	42.0	1.9-2.3	-
3 Wire	M05412	50C311	0.5	0.37		1.6	5.5	745	6.3	1033	22.3	4.2-4.9	17.4-18.7
	M07412	75C311	0.75	0.55		1.5	7.2	1014	8.3	1381	32.0	2.6-3.6	11.8-13
	M10412	100C311	1	0.75		1.4	8.4	1267	9.7	1672	41.2	2.2-3.2	11.3-12.3
	M15412	150C311	1.5	1.1		1.3	9.7	1693	11.1	2187	47.8	1.6-2.3	7.9-8.7
	M20412	200C311	2	1.5		1.25	9.9	2170	12.2	2660	49.4	1.6-2.2	10.8-12.0

The AQUAVAR SOLO²™ 1AS15 model 30-60 hertz speeds only.

The AQUAVAR SOLO²™ 3AS models provide the option of operating the system at either 30-60 or 30-80 hertz speeds.

	30 - 60 Hertz (Standard Speed) Setting		30 - 80 Hertz (High Speed) Setting	
Controller	Water End	Motor HP	Water End	Motor HP
3AS20	1	1	½	1
3AS20	1½	1½	¾	1½
3AS20	2	2	1	2
3AS30	1½	1½	¾	1½
3AS30	2	2	1	2
3AS30	3	3	1½	3
3AS50	5	5	3	5

When using the "80 hertz" setting with mis-matched water ends and motors, use the larger pump curve as the top curve. The bottom, or 30 hertz, curve is calculated using the smaller wet end curve and the Affinity Laws. The ProPak Bulletins define performance curves. See BGPROPAK60 or BGPROPAK80 for curves.

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services, and agricultural settings. With its October 2016 acquisition of Sensus, Xylem added smart metering, network technologies and advanced data analytics for water, gas and electric utilities to its portfolio of solutions. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xyleminc.com

xylem
Let's Solve Water

Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.centripro.com

TECHNICAL BROCHURE
B5-25GS R8

FEATURES

Powered for Continuous Operation: All ratings are within the working limits of the motor as recommended by the motor manufacturer. Pump can be operated continuously without damage to the motor.

Field Serviceable: Units have left hand threads and are field serviceable with common tools and readily available repair parts.

Sand Handling Design: Our face clearance, floating impeller stack has proven itself for over 50 years as a superior sand handling, durable pump design.

FDA Compliant Non-Metallic Parts: Impellers, diffusers and bearing spiders are constructed of glass filled engineered composites. They are corrosion resistant and non-toxic.

Discharge Head/Check Valve: Cast 303 stainless steel for strength and durability. Two cast-in safety line loops for installer convenience. The built-in check valve is constructed of stainless steel and FDA compliant BUNA rubber for abrasion resistance and quiet operation.

Motor Adapter: Cast 303 stainless steel for rigid, accurate alignment of pump and motor. Easy access to motor mounting nuts using standard open end wrench.

Stainless Steel Casing: Polished stainless steel is strong and corrosion resistant.

Hex Shaft Design: Six sided shafts for positive impeller drive.

Engineered Polymer Bearings: The proprietary, engineered polymer bearing material is strong and resistant to abrasion and wear. The enclosed upper bearing is mounted in a durable Noryl® bearing spider for excellent abrasion resistance.

5GS, 7GS, 10GS, 13GS, 18GS & 25GS

5-25 GPM, ½ – 5 HP, 60 HZ, SUBMERSIBLE PUMPS

BUILT IN THE USA
ENGINEERED, ASSEMBLED & TESTED

GOULDS WATER TECHNOLOGY
a xylem brand

WATER END DATA

Series	Model	Required HP	Stages	Length (in)	Weight (lbs)
5GS	5GS05R	.5	9	12.9	8
	5GS05	.5	12	15.0	9
	5GS07	.75	15	17.0	11
	5GS10	1	20	21.7	13
	5GS15	1.5	26	25.8	15
	5GS20	2	33	31.6	19
7GS	7GS05R	.5	7	11.7	6
	7GS05	.5	10	13.8	7
	7GS07	.75	13	16.0	8
	7GS10	1	17	18.8	9
	7GS15	1.5	22	23.6	12
	7GS20	2	27	27.2	13
	7GS30	3	34	33.2	18
10GS	10GS05R*	0.5	8	12.2	7
	10GS05*	0.5	10	13.6	8
	10GS07*	0.75	14	16.4	9
	10GS10*	1	16	17.7	11
	10GS15	1.5	17	18.4	12
	10GS20	2	20	21.7	13
	10GS30	3	27	27.5	18
	10GS50R	5	35	33	21
	10GS50	5	42	40.2	24
13GS	13GS05	.5	5	10.1	6
	13GS07	.75	7	11.5	7
	13GS10	1	10	13.6	8
	13GS15	1.5	12	15.0	9
	13GS20	2	17	18.4	12
	13GS30	3	21	22.3	15
18GS	18GS07	.75	6	11.8	7
	18GS10	1	8	13.5	8
	18GS15	1.5	11	16.1	10
	18GS20	2	14	18.6	11
	18GS30	3	19	24.1	15
	18GS50R	5	24	28.3	17
	18GS50	5	30	34.4	21
25GS	25GS10	1	7	13.4	8
	25GS15	1.5	9	15.3	9
	25GS20	2	11	17.2	10
	25GS30	3	15	20.9	14
	25GS50R	5	22	28.7	17
	25GS50	5	26	33.4	21

*New High Head Hydraulic Design for models manufactured starting 8/2017

NOMENCLATURE

See price book for complete order numbers.

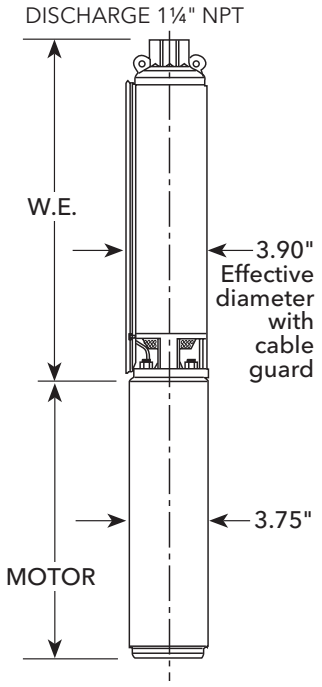
5 GS 05 4 1 2 C

- GPM at Best Efficiency — 5, 7, 10, 13, 18, 25
- GS Pump Series
- Horsepower Code
  - 05 = 1/2
  - 07 = 3/4
  - 10 = 1
  - 15 = 1 1/2
  - 20 = 2
  - 30 = 3
  - 50 = 5
- 4 = 4" Motor
- Phase
  - 1 = 1 Phase 3 Wire
  - 2 = 1 Phase 2 Wire
  - 3 = 3 Phase 3 Wire
- Voltage
  - 1 = 115 V
  - 2 = 230 V
  - 3 = 380 V
  - 4 = 460 V
  - 7 = 575 V
- C = CentriPro Motor
- CL = w/CentriPro Motor, less Control Box
- RCL = Reduced Stage / CentriPro Motor less Control Box

"GS" SERIES MATERIALS OF CONSTRUCTION

Part Name	Material
Discharge Head	AISI 303 SS
Check Valve Poppet	AISI 304 SS
Check Valve Seal	BUNA, FDA compliant
Check Valve Seat	AISI 304 SS
Check Valve Retaining Ring	AISI 302 SS
Bearing Spider - Upper	Noryl® GFN2
Bearing	Proprietary Engineered Polymer
Klipring	AISI 301 SS
Diffuser	Lexan®
Impeller	Noryl®
Bowl	AISI 304 SS
Intermediate Sleeve *	AISI 304 SS, Powder Metal
Intermediate Shaft Coupling *	AISI 304 SS, Powder Metal
Intermediate Bearing Spider *	Glass Filled Engineered Composite
Intermediate Bearing Spider *	AISI 303 SS
Shim	AISI 304 SS
Screws – Cable Guard	AISI 304 SS
Motor Adapter	AISI 303 SS
Casing	AISI 304 SS
Shaft	
Coupling	AISI 304 SS, Powder Metal
Cable Guard	AISI 304 SS
Suction Screen	AISI 304 SS

*See repair parts for where used.



SPECIFICATIONS

Model	Flow Range GPM	Horsepower Range	Best Efficiency GPM	Discharge Connection	Minimum Well Size	Rotation①
5GS	1.2 – 7.5	½ – 2	5	1¼	4"	CCW
7GS	1.5 – 10	½ – 3	7	1¼	4"	CCW
10GS	3 – 16	½ – 5	10	1¼	4"	CCW
13GS	4 – 20	½ – 3	13	1¼	4"	CCW
18GS	6 – 28	¾ – 5	18	1¼	4"	CCW
25GS	8 – 33	1 – 5	25	1¼	4"	CCW

① Rotation is counterclockwise when observed from pump discharge end.

CENTRIPRO 4" SINGLE-PHASE MOTORS

Order No.	Type	HP	Volts	Length in. (mm)	Weight lb. (kg.)
M05421	2-wire PSC	½	115	11.0 (279)	20 (9.1)
M05422		½	230	11.0 (279)	20 (9.1)
M07422		¾		12.4 (314)	23 (10.4)
M10422		1		13.3 (337)	25 (11.3)
M15422		1.5		14.9 (378)	29 (13.2)
M05411	3-wire	½	115	10.0 (253)	19 (8.6)
M05412		½	230	9.7 (246)	18 (8.2)
M07412		¾		10.8 (275)	22 (10)
M10412		1		11.7 (297)	23 (10.4)
M15412		1.5		13.6 (345)	28 (12.7)
M20412		2		15.1 (383)	31 (14.1)
M30412		3		18.3 (466)	40 (18.1)
M50412		5		27.7 (703)	70 (31.8)

NEMA MOTOR

- Corrosion resistant stainless steel construction.
- Built-in surge arrestor is provided on single phase motors through 5 HP.
- Stainless steel splined shaft.
- Hermetically sealed windings.
- Replaceable motor lead assembly.
- NEMA mounting dimensions.
- Control box is required with 3 wire single phase units.
- Three phase units require a magnetic starter with three leg Class 10 overload protection.

CENTRIPRO 4" THREE-PHASE MOTORS

Order No. by Voltage			HP	Length in. (mm)	Weight lb. (kg.)
200V	230V	460V			
M05430	M05432	M05434	½	10.8 (275)	22 (9.7)
M07430	M07432	M07434	¾	10.8 (275)	22 (9.7)
M10430	M10432	M10434	1	11.7 (297)	23 (10.4)
M15430	M15432	M15434	1.5	11.7 (297)	23 (10.4)
M20430	M20432	M20434	2	13.8 (351)	28 (12.7)
M30430	M30432	M30434	3	15.3 (389)	32 (14.5)
M50430	M50432	M50434	5	21.7 (550)	55 (24.9)
M75430	M75432	M75434	7.5	27.7 (703)	70 (1.8)

Order No.	HP	Volts	Length in. (mm)	Weight lb. (kg.)
M15437	1.5	575	11.7 (297)	23 (10.4)
M20437	2		15.3 (389)	32 (14.5)
M30437	3		15.3 (389)	32 (14.5)
M50437	5		27.7 (703)	70 (31.8)
M75437	7.5		27.7 (703)	70 (31.8)

AGENCY LISTINGS

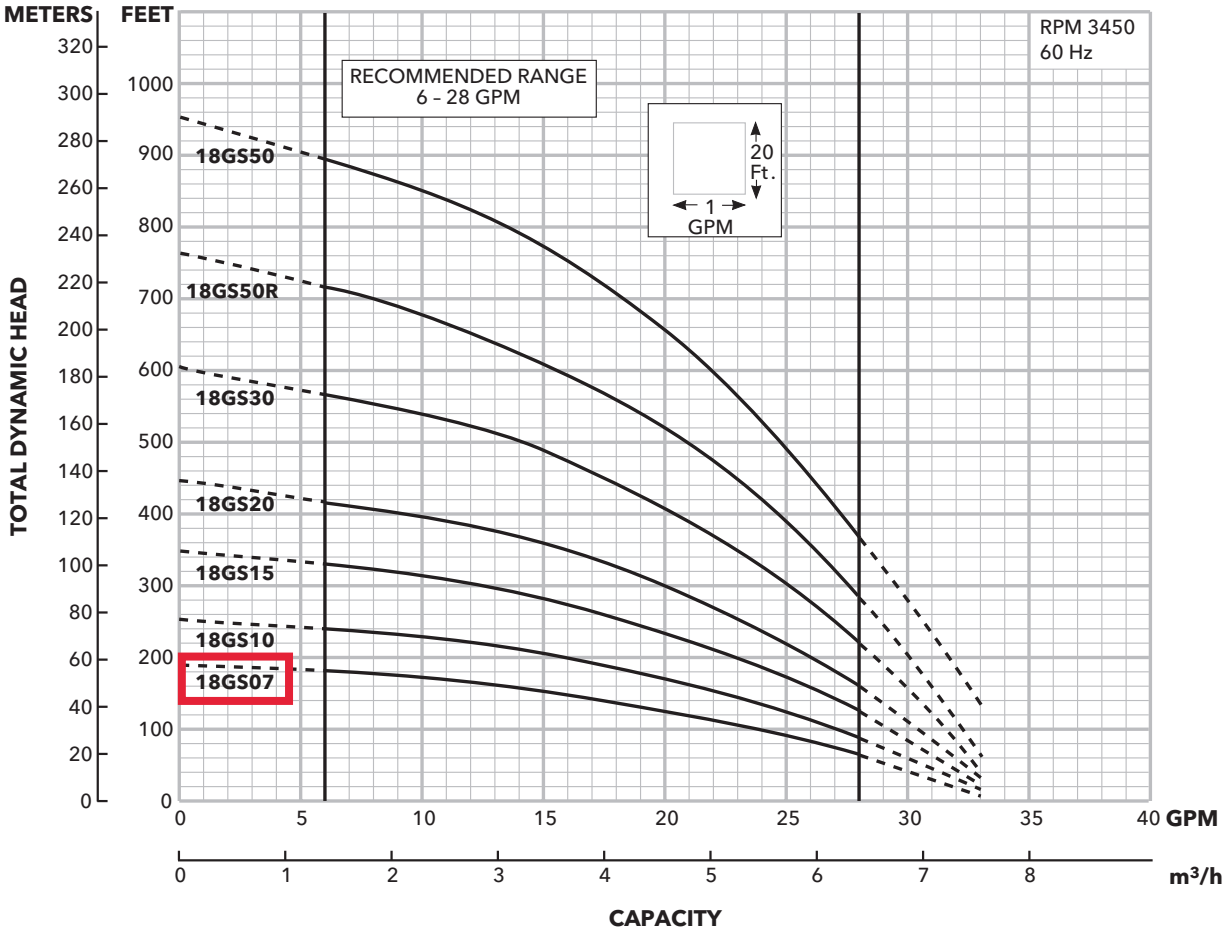
Pump/Water End and CentriPro Motor - tested to UL778 and CAN 22.2 by CSA International (Canadian Standards Association)

CentriPro Motor - Certified to NSF/ANSI 61, Annex G, Drinking Water System Components 4P49

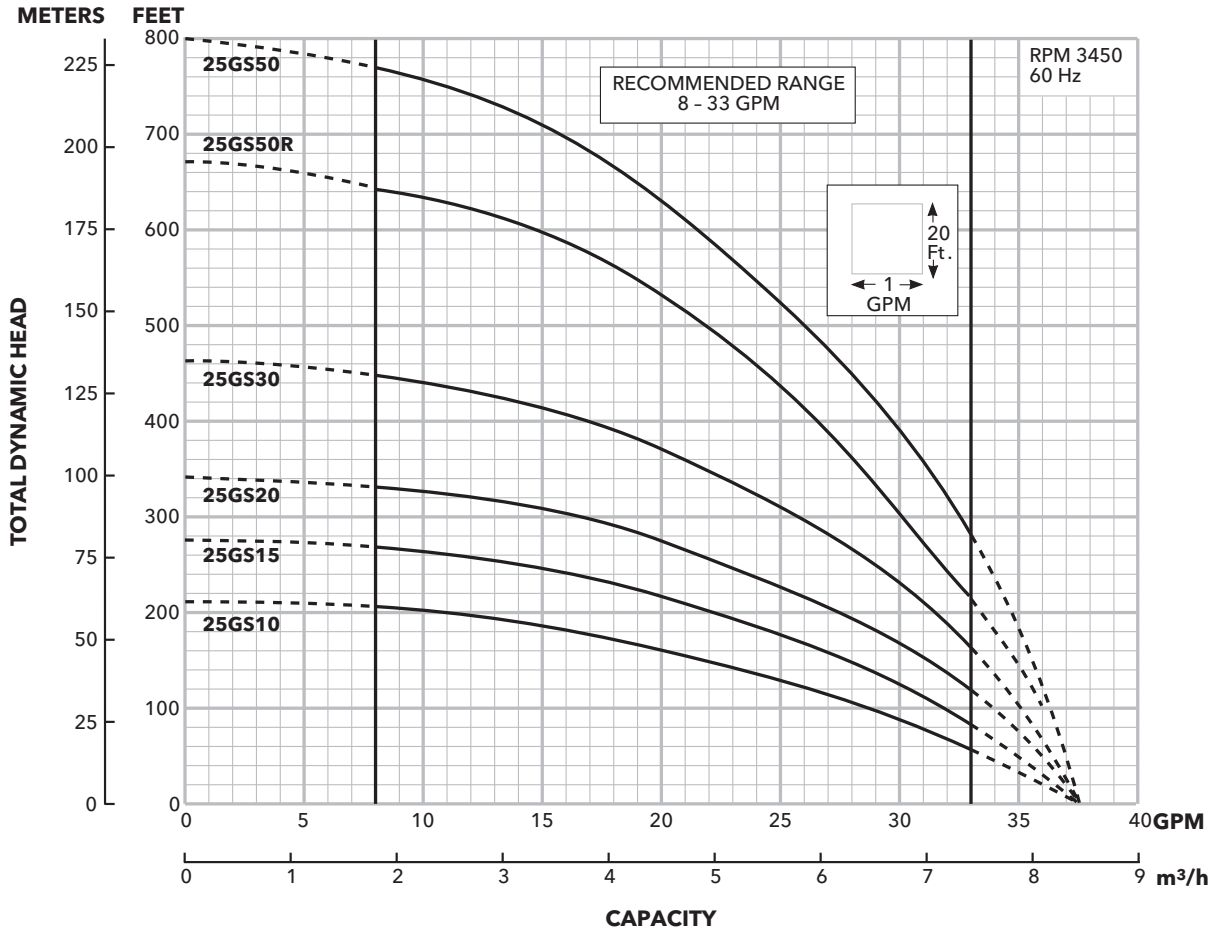
NSF/ANSI 372 – Drinking Water System Components – Lead Content

CLASS 6853 01 - Low Lead Content Certification Program - - Plumbing Products

Model 18GS



Model 25GS



MODEL 18GS

SELECTION CHART

Horsepower Range ¾ – 5, Recommended Range 6 – 28 GPM, 60 Hz, 3450 RPM

Pump Model	HP	PSI	Depth to Water in Feet/Ratings in GPM (Gallons per Minute)																														
			20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	340	380	420	460	500	540	580	620	660	700	740	780	820	860
18GS07	¾	0			28.2	26.5	24.0	21.0	17.9	13.5																					
		20	27.7	25.9	23.0	20.0	16.5	10.8																							
		30	25.0	22.0	18.8	15.7	9.5																								
		40	22.2	18.9	15.1	9.0																									
		50	18.4	15.0	7.5																										
		60	13.5	5.0																											
Shut-off PSI			74	66	58	49	40	32	23	14																					
18GS10	1	0					27.0	25.5	23.6	21.2	18.8	15.9	12.0																		
		20		28.0	26.6	25.1	22.7	20.0	17.6	14.0	10.0																				
		30	27.9	26.1	24.3	22.2	19.8	17.1	13.8	8.3																					
		40	26.0	24.1	22.0	19.7	17.0	13.1	8.0																						
		50	24.0	22.0	19.1	16.5	13.0	7.1																							
		60	21.0	18.6	15.8	12.0																									
Shut-off PSI			103	94	86	77	68	60	51	42	34	25	16																		
18GS15	1½	0						28.4	27.2	26.0	24.8	23.0	21.4	19.6	17.5	15.0	12.1														
		20				27.8	26.8	25.4	24.0	22.2	20.6	18.8	16.7	14.0	10.0																
		30			27.7	26.5	25.3	23.8	22.0	20.2	18.5	16.1	13.5	10.0																	
		40		27.5	26.3	25.0	23.6	22.0	20.1	18.1	16.0	13.1	9.5																		
		50	27.6	26.4	25.0	23.4	21.8	20.0	18.0	15.5	13.0	9.2																			
		60	26.0	24.6	23.0	21.2	19.5	17.5	15.0	12.0	7.9																				
Shut-off PSI			143	134	126	117	108	100	91	82	74	65	56	48	39	30	22														
18GS20	2	0								28.0	27.1	26.2	25.1	24.0	22.9	21.4	20.0	16.8	12.8												
		20						27.8	26.8	25.8	24.6	23.7	22.6	21.0	19.5	18.0	16.0	11.6														
		30					27.5	26.5	25.5	24.5	23.3	22.1	20.6	19.0	17.5	15.8	13.6	6.5													
		40			28.5	27.4	26.4	25.4	24.4	23.2	22.0	20.5	18.9	17.4	15.7	13.5	11.0														
		50		28.0	27.2	26.2	25.3	24.3	23.0	21.8	20.3	18.7	17.0	15.3	13.1	10.5	6.0														
		60	28.0	27.1	26.2	25.1	24.0	22.9	21.4	20.0	18.3	16.8	14.8	12.8	9.5																
Shut-off PSI			183	174	165	157	148	139	131	122	113	105	96	87	79	70	61	44	27												
18GS30	3	0											28.0	27.4	26.7	26.0	25.0	23.5	21.5	19.2	16.9	14.2	10.5								
		20									27.7	27.0	26.3	25.8	24.9	24.0	23.0	21.0	18.9	16.5	13.5	9.0									
		30								27.6	26.9	26.2	25.5	24.8	23.9	22.9	21.9	19.8	17.5	14.9	11.2										
		40							27.5	26.9	26.2	25.4	24.6	23.8	22.8	21.8	20.9	18.5	16.0	13.3	8.0										
		50						27.4	26.8	26.0	25.2	24.5	23.6	22.6	21.7	20.6	19.5	17.3	14.5	11.0											
		60				28.0	27.4	26.7	26.0	25.0	24.3	23.5	22.5	21.5	20.5	19.2	18.0	15.7	12.8	7.0											
Shut-off PSI						225	216	208	199	190	182	173	164	156	147	139	130	113	95	78	61	43	26								
18GS50R	5	0															27.7	26.6	25.4	24.0	22.5	20.8	19.0	16.9	14.5	11.7	8.1				
		20													27.6	27.0	26.4	25.2	23.8	22.2	20.5	18.7	16.6	14.1	11.2	7.4					
		30											28.0	27.5	26.9	26.3	25.7	24.4	22.9	21.3	19.5	17.5	15.2	12.5	9.1						
		40										27.9	27.4	26.8	26.2	25.6	25.0	23.5	22.0	20.3	18.4	16.2	13.7	10.6	6.7						
		50									27.9	27.3	26.7	26.1	25.5	24.8	24.1	22.7	21.0	19.2	17.2	14.8	12.0	8.5							
		60								27.8	27.2	26.7	26.1	25.4	24.7	24.0	23.3	21.7	20.0	18.1	15.9	13.3	10.1	6.0							
Shut-off PSI										261	252	244	235	226	218	209	200	183	166	148	131	114	96	79	62	44	27				
18GS50	5	0																	27.9	26.8	25.8	24.8	23.7	22.6	21.2	19.9	18.4	16.8	14.8	12.4	9.7
		20																27.5	26.6	25.6	24.5	23.3	22.2	21.0	19.8	18.0	16.2	14.3	12.0	8.8	
		30															28.0	26.9	26.0	25.0	23.9	22.9	21.6	20.3	18.6	17.0	15.0	13.0	10.2	6.2	
		40														28.0	27.4	26.3	25.3	24.4	23.2	22.1	20.1	19.4	17.9	16.0	14.0	11.6	8.0		
		50													27.9	27.3	26.8	25.9	24.9	23.8	22.7	21.3	20.1	18.5	16.9	14.9	12.8	10.0	6.0		
		60												27.9	27.2	26.8	26.2	25.2	24.1	23.0	21.9	20.7	19.2	17.5	15.8	13.6	11.0	7.8			
Shut-off PSI														307	298	290	281	264	246	229	212	195	177	160	143	125	108	91	73	56	39

RainHarvest Systems

4475 Alicia Lane
Cumming, GA 30028

General Number:
770-889-2533
Sales@RainHarvest.com

Tank Level Monitoring and Back-up Water Supply System

Rainwater System Controller

Bonomi 1.25" 3-way Motorized Valve

User Manual

AquaControl +

Rainwater System Controller

Item no.: 351027

Distributed in the US by:

RainHarvest Systems

4475 Alicia Lane

Cumming, GA 30028

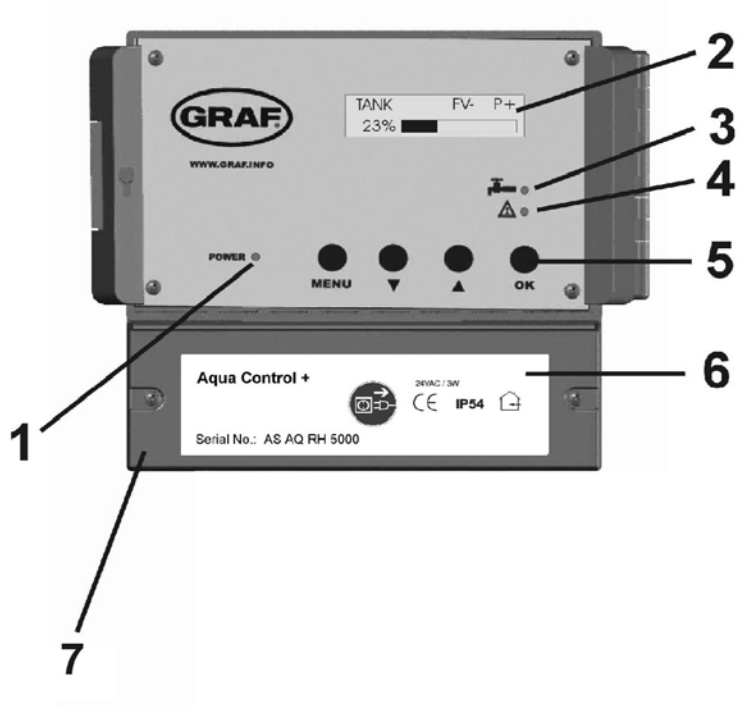


Figure 1: Indicators and Controls

1: LED for power supply
2: Information Display
3: LED for drinking water operation
4: LED for faults and malfunction
5: Operating buttons
6: Lower cover of the System Control
7: The main fuse for the rainwater system controller is under this cover.

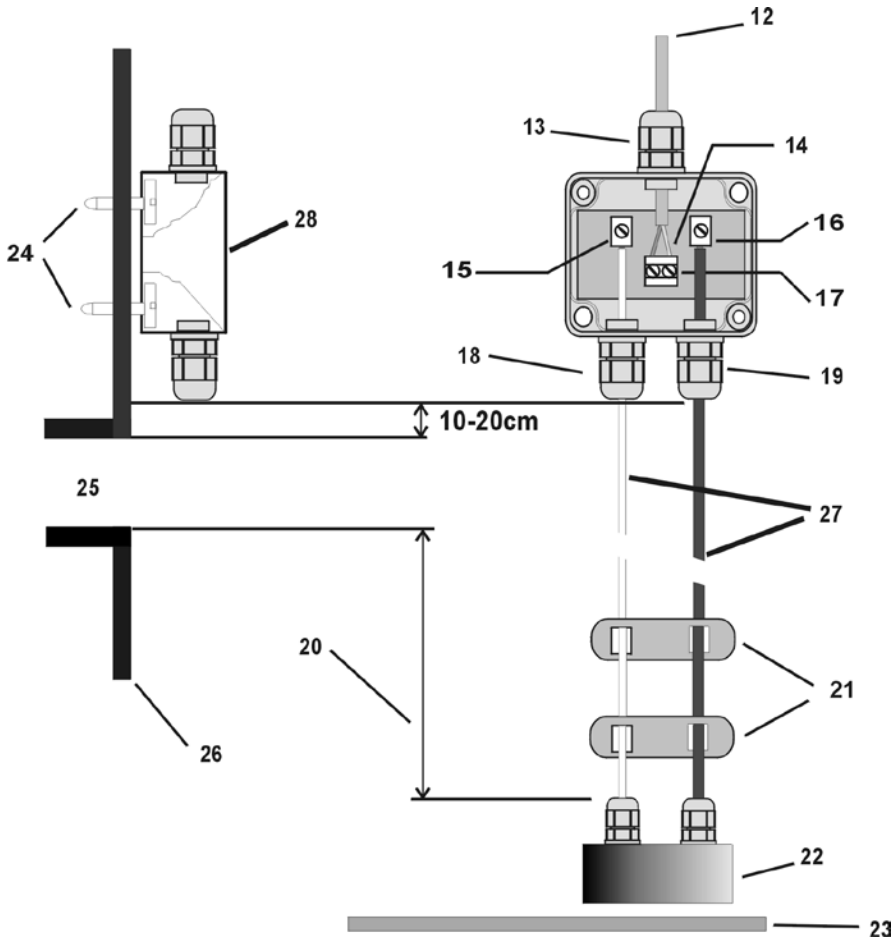


Figure 2: Tank Water Sensor Assembly

12: Data cable
13: Wire seal 3
14: Connection of the data cable is polarity protected.
15: Connect white wire here
16: Connect red wire here
17: Data cable terminal
18: Wire seal 2
19: Wire seal 1
20: Active measuring length
21: When assembling be sure that the cable spacers are equally distributed over the cable length.
22: Stainless steel probe
23: Tank floor
24: Screws
25: Overflow
26: Tank or riser wall
27: Sensor
28: Sensor control box

Important Safety Notes:

Please read and follow safety instructions carefully before assembly or using the device!

Equipment using a 120 VAC supply may only be installed and commissioned by a qualified tradesman. The assembly place must allow all possible safety precautions when laying the attached cables.

Power supply cables and data cables mast not be damaged or pinched in any way. Plan the assembly place so that you can reach the transformer easily and unplug it from the electrical outlet in dangerous situations.

Choose the assembly place so that children cannot play or be near the device and its connections without supervision.

Before opening the device, disconnect it from the main supply (unplug) otherwise there is a serious danger of an electrical shock.

Fuses may only be replaced with standard-compliant parts with the same nominal value.

All liability is excluded for damages which result from non-compliance of these instructions or from improper handling of the device. At chosen intervals in this hand book we will give directions for safety precautions. These safety precautions have been specially marked:

STOP Before opening the equipment
unplug the transformer from the outlet!

1.Description

The **AquaControl+** is an electronic water management control system.

It has been developed especially for rainwater usage systems. It can be used with a wide variety of tank systems.
Tanks made from metal or steel reinforced cement may only be used when the following conditions have been correctly followed.

Metal tanks lead to faulty readings. It is optimal to install the device so that the sensor is as far as possible from the metal sides so, for example, in the center of a cylindrical tank. The system controls offer an easy to use guide for the switch programming. Using an LCD display the fill measurement is shown in 1 % stages (in relation to the height of the tank).The sensor operates with 12 volts DC, supplied from the main control unit.

All programmed **values such as the tank height are retained after disconnection of the power supply or after loss of power.**

Performance features:

- Fill level measurement display in 1% steps with a bar type indicator
- Freely variable switching points in 1% steps for drinking water refill
- Automatic flushing of the system intervals in days, and duration in minutes are programmable
- Dialogue oriented user guidance (choice of language)
- Equipment indication using 3 additional LED
- Supervision of the sensor control box and the sensor
- Error indications in simple text
- Analog output for connection to external systems: 0-10V DC

Technical data:

Control electronics		**Measurement sensors**	
Operating current	:24VAC	Measurement voltage	:12V DC
Fused	:T500mA	Measuring frequency	:(0.2-20)kHz
Power consumption	:3VA	Data cable length	:165 feet, maximum
Tank height	:9.8 feet (optional 20feet)		
Measurements	:6.1”x6.5”x3.5”	Measurements	:3.6”x3.2”x2”

Terminal 1

Operating voltage	: 24V AC
Maximum Current	: 5Amps

Terminal 2-4

Operating voltage	: 24V AC
Maximum Current	: 1Amps

Terminal 5

Operating voltage	: 120V AC/DC
Maximum Current	: 3Amps

Analogue outlet:

Minimal apparent ohmic resistance	: 20K Ohm
Short circuit protection	: Yes
Short circuit current	: Approx. 15mA
Cable length	: 650 feet, maximum; shielded

Note:

*Only the control electronics in the device are protected by the fuse. Valves and pump connections are **not** protected. These are protected only by the mains supply via the circuit breaker.*

*The yellow LED indicating "Drinking water operation" **[3]** is lit as soon as the valve switches over to the mains supply. The user is made aware that the system now uses water from the mains supply. The red LED for "Faults and malfunctions" **[4]** is lit as soon as the system identifies a fault. The display will then show a warning that describes the cause of the fault in plain text.*

2.Assembly

2.1Control system

The mains plug of the transformer serves as an on / off switch.

- Loosen the fastening screws of the lower cover **[6]** and remove the cover
- Mark out drilling points and drill according to sketch
- Fasten the device with the enclosed installation hardware (screw anchor and screws)

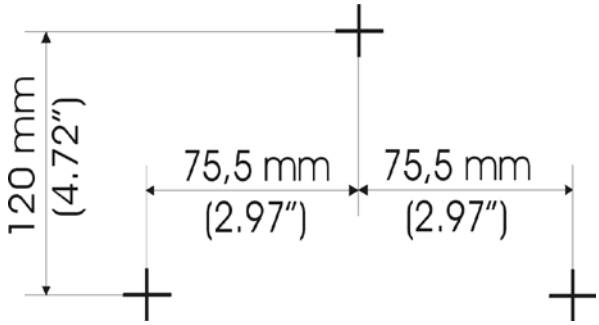


***Figure 3:** Drilling outline for housing outline (**Not to scale**)*

2.2 Connection Sensors and Cable

Sensor electronics consist of a stainless steel probe **[22],** red and white connecting wires **[27]** and sensor control box **[28]**.

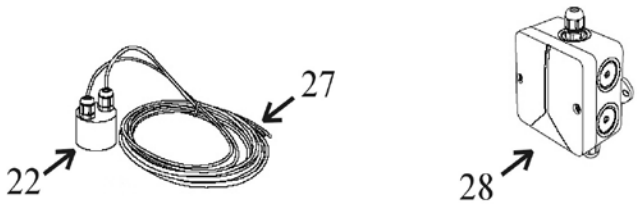


Figure 4: Sensor technology

1. Now the sensor control box [**28]** (cover removed) should be installed on the tank wall (preferably in the manhole shaft of the Graf synthetic tank). The location of the mounted sensor control box should be between 4" and 6" above the overflow **[25]**. The enclosed screws should be used to secure the device. After fully tightening the screws, the points that are showing themselves on the outside of the tank must be blunted to avoid injury **[24]**.

2. Measure the height from the bottom of the tank **[23]** to the end of the terminals **[15]** and **[16]** on the **[28]**.

3. Shorten the connection cable to suit the measured height.

4. After shortening the cable, the distance between the cable fastening spacers **[21]** should be set equally along the entire length. The cable fastening spacers prevent the red and white wires of the sensor from crossing over and thereby causing a slight distortion of the measurement readings. If for any reason the cable fastening spacers cannot be mounted, an additional distortion of the measurement reading of approximately 1% may result.

5. Connect the sensor cable to the sensor as described in the following instructions: Remove approximately 1/4" of insulation from both of the wires. Next, pass the red wire through the wire seal 1**[19]** and tighten this lightly, then connect the red wire to the terminal **[16**]. The free white wire is now passed through the wire seal 2 **[18]** and tightened lightly, then connect the white wire to the terminal **[15]**.

6. Now pass the end of the data cable **[12]** through the wire seal 3 **[13].** Lightly tighten the wire seal and connect the cable wire cores of the data cable **[12]** to the double terminal **[14]**. The connection of the data cable is reverse polarity protected. **Attention! The screws should be tightened with care to ensure that they are not damaged.**

7. Now recheck that all the connections and the sensor components have been fitted correctly. Replace the cover of the sensor control box and secure this with the appropriate fastening screws.

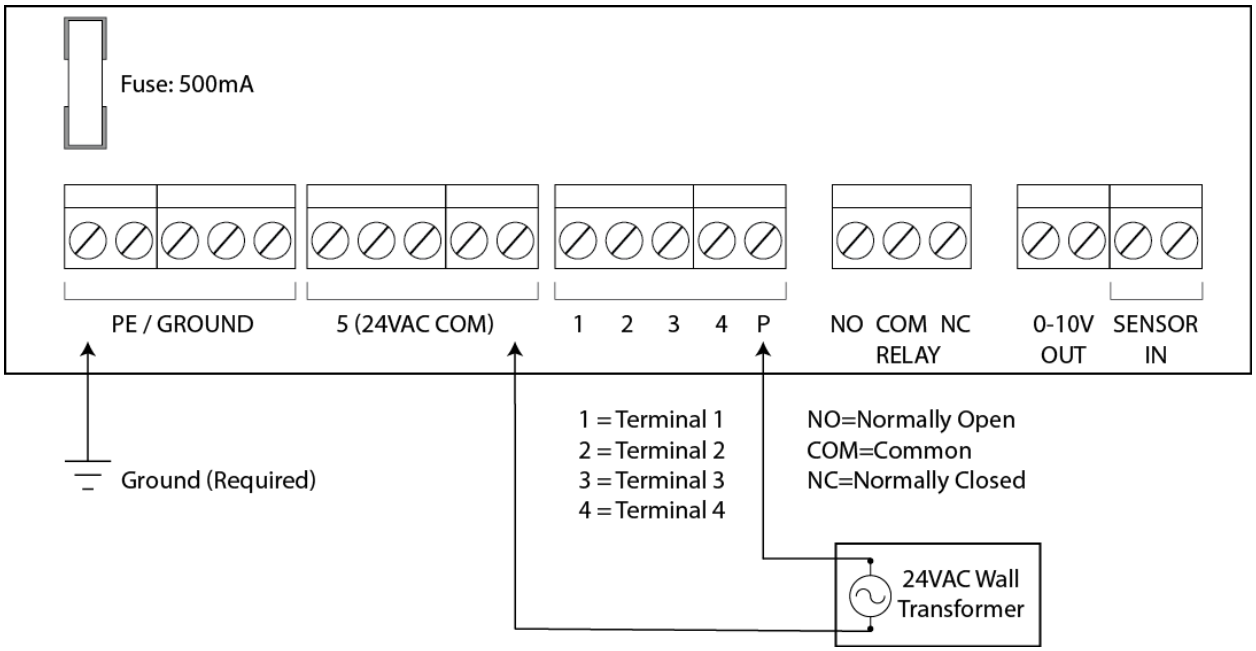
8. At the main system control unit, remove the jacket from the ends of the shielded sensor data cable, strip about ¼" of insulation from the wires, and insert each wire into the appropriate terminal labeled "SENSOR" on the main circuit board. Tighten the terminal screws securely.

Note:

The red and the white wires going down to the probe should be straight and smooth to be drawn taught by the weight of the stainless steel probe. <u>The stainless steel probe must hang just above the tank floor.</u> When setting the spacers please be sure to distribute them equally over the complete length as shown in Figure 2.

2.3. Electrical Wiring Connections

The AquaControl+ offers the rain water system a dry run protection for the pump or the house water system when equipped with an external pump relay. In order for the dry run protection will function properly the rain water system must be wired according to the following diagram.



For the supply of 24V AC to operate valves and other accessories, external power must be supplied to the 24V AC input terminals using a transformer sufficient for the needs of the attached devices.

Figure 5: Electrical wiring diagram

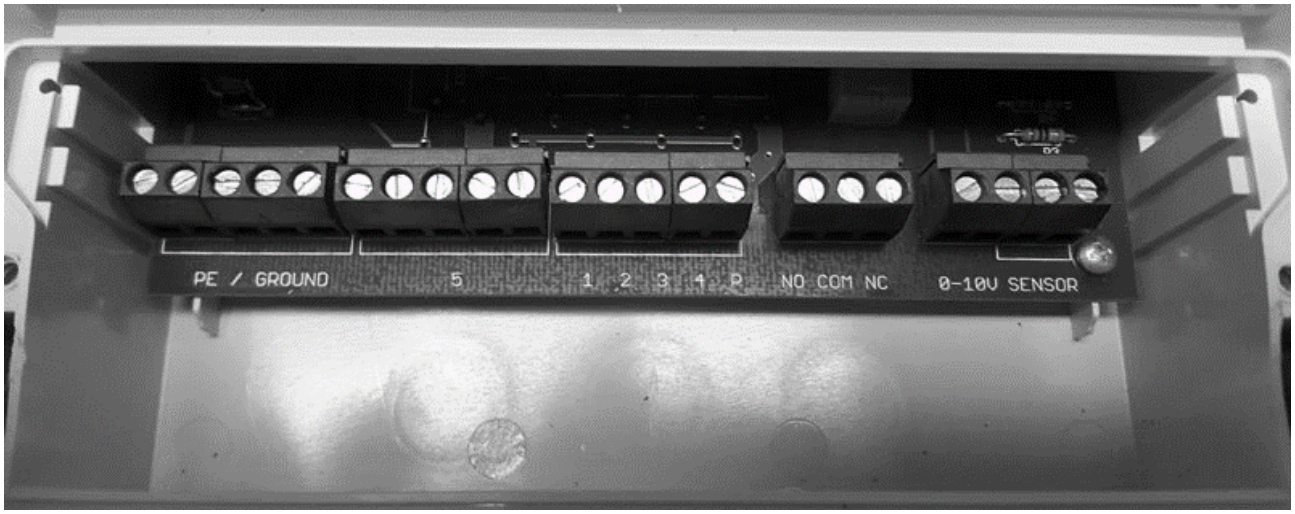


Figure 6: Photo of electrical connections

NEW – DESIGN PROTECTED

GENERAL SPECIFICATIONS

VALBIA electric actuators are designed for the automation of ball and butterfly valves for the industrial, commercial and OEM markets. As a result of years of intensive R+D, advanced high-tech electrical component design and precise gearing VALBIA electric actuators offer the best in performance and long term reliability.

The range has been manufactured with the following features:

- The actuator housing is made from a V0 self-extinguish class techno-polymer material.
- The kinematics is made by two steel and techno-polymer gear wheels, sustained by hardened steel pinions, mounted on self-lubricating bushings (excluding Mod. VB015), and inserted in a rugged die-cast aluminium structure.
- The direct connection part of the actuators to the valves, is made via a painted die-cast aluminium plate, with a dual drilled ISO 5211 interface.
- The electronic circuit automatically adjusts the motor speed, (depending on the mechanical charge variations), to keep the cycle time consistant.
- All actuators are provided with an electronic system and torque limiter.
- A standardly furnished heater is activated once the actuator is powered, and when the temperature inside the housing drops below 77° F.
- Two auxillary limit switches are standard.
- Optional 4-20 mA 0-10v modulating boards and battery back-up protection are available.

MODEL		VB015	VB030	VB060	VB110	VB190	VB270	VB350
MAX WORKING TORQUE (in-Lbs)		133	266	530	975	1680	2390	3100
VOLTAGE (V)	LOW VOLTAGE	12V AC/DC	12V DC	12V DC	12V DC	12V DC	12V DC	12V DC
		24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC
	HIGH VOLTAGE MULTITENSION	110V AC / 230V AC NO - NOT AVAILABLE	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC
WORKING TIME (sec)		12/24V 10 110/230V 25	8	9	27	27	50	50
TORQUE LIMITER		STD	STD	STD	STD	STD	STD	STD
DUTY RATING		50%	75%	75%	75%	75%	75%	75%
PROTECTION		IP65	IP65-67	IP65-67	IP65-67	IP65-67	IP65-67	IP65-67
ROTATION		90°	90°	90°	90°	90°	90°	90°
UPON REQUEST		180°	180° or 270°	180° or 270°	180° or 270°	180° or 270°	180° or 270°	180° or 270°
MANUAL INTERVENTION		STD	STD	STD	STD	STD	STD	STD
POSITION INDICATOR		STD	STD	STD	STD	STD	STD	STD
WORKING TEMPERATURE		-4°F + 131°F	-4°F + 131°F	-4°F + 131°F	-4°F + 131°F	-4°F + 131°F	-4°F + 131°F	-4°F + 131°F
HEATER		STD	STD	STD	STD	STD	STD	STD
ADDITIONAL FREE LIMIT SWITCHES		n°2 STD	n°2 STD	n°2 STD	n°2 STD	n°2 STD	n°2 STD	n°2 STD
DRILLING ISO 5211 PAD		F03 - F05 *	F03 - F05 *	F05 - F07	F07 - F10	F07 - F10	F07 - F10	F07 - F10
SQUARE DRIVE		0.43	0.43	0.55	0.67	0.67	0.87	0.87
SQUARE UPON REQUEST		0.35	0.35-0.55	0.43-0.67	0.55-0.87	0.55-0.87	0.67	0.67
SAFETY BLOCK		NOT AVAILABLE	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST
				NOT AVAILABLE FOR MOD 12V				
POSITIONER (4~20mA or 0~10 VDC)		NOT AVAILABLE	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST
LINEAR POTENTIOMETER (5K Ω 1W)		NOT AVAILABLE	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST	UPON REQUEST
ELECTRICAL CONNECTIONS		PG11	PG11	PG11	PG11	PG11	PG11	PG11
WEIGHT (LBS)		3.09	5.07	7.28	10.80	10.80	13.23	13.23

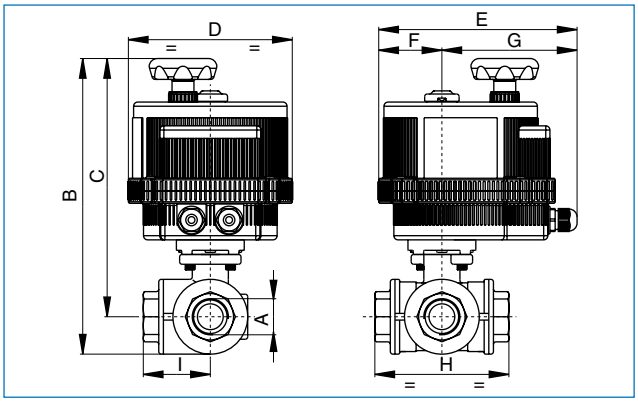
* upon request F04 only

ELECTRIC ACTUATOR POWER CONSUMPTION

MODEL		VB015		VB030		VB060		VB110		VB190		VB270		VB350	
VERSION H	NOMINAL VOLTAGE	110V AC	230V AC	100-240V AC											
	ABSORBED CURRENT	75mA	25mA	0.3-0.2A		0.6-0.3A									
	ABSORBED POWER	6.6 VA	6 VA	30-48VA		60-72 VA									
VERSION L	NOMINAL VOLTAGE	12V AC/DC	24V AC/DC	12V DC	24V AC/DC	12V DC	24V AC/DC	12V DC	24V AC/DC	12V DC	24V AC/DC	12V DC	24V AC/DC	12V DC	24V AC/DC
	ABSORBED CURRENT	1.2A	0.6A	2.0A	1.0A	3.6A	1.8A	2.0A	1.0A	3.6A	1.8A	3.6A	1.8A	3.6A	1.8A
	ABSORBED POWER	15 VA		24 VA		44 VA		24 VA		44 VA		44 VA		44 VA	
	FREQUENCY	50/60 HZ													

OPERATING CONDITIONS: FLUID H2O – T 68°F

SERIES 8E065(T) ***
8E066(L) ***



PSI	400	400	400	400	400	400	400	400	400	400
DN / A	1/4"	3/8"	1/2"	3/4"	1"	1"1/4	1"1/2	2"	2"1/2	3"
B	7.44	7.44	7.44	7.63	9.98	10.43	11.16	13.05	14	14.04
C	6.77	6.77	6.77	6.86	9.03	9.25	9.74	11.36	11.81	11.81
D	4.84	4.84	4.84	4.84	6.18	6.18	6.18	7.38	7.28	7.28
E	6.41	6.41	6.41	6.41	7.50	7.50	7.50	8.43	8.43	8.43
F	1.67	1.67	1.67	1.67	2.38	2.38	2.38	2.66	2.66	2.66
G	4.74	4.74	4.74	4.74	5.12	5.12	5.12	5.77	5.77	5.77
H	2.64	2.64	2.87	3.19	3.74	4.39	4.86	5.73	6.93	7.08
I	1.32	1.32	1.44	1.60	1.87	2.20	2.43	2.87	3.47	3.54
ACT.	VB 015	VB 015	VB 015	VB 015	VB 030	VB 030	VB 030	VB 060	VB 060	VB 060

***	VOLTAGE SUPPLY ORDER CODE			
FOR MOD. VB015	12V AC/DC + 001	24V AC/DC + 002	110V AC + 003	230V AC + 005
FOR MOD. VB30÷350	12V DC + 001	24V AC/DC + 002	100÷240 VAC + 004	-

RainHarvest Systems

4475 Alicia Lane
Cumming, GA 30028

General Number:
770-889-2533
Sales@RainHarvest.com

Filtration System

RainFlo Double Sediment Filter

Viqua VP600 UV Disinfection

RainFlo Double Big Blue Sediment Filter

Clear Housing Upgrade Available

Double Filter Description:

The double big blue is a complete, pre-assembled water purification assembly that filters water down to 5 microns. The system comes complete with (2) Big Blue filter housings, a double filter housing mounting bracket, a filter housing wrench, and the connecting nipples in between the filter housings.

Additionally, the unit arrives with filter cartridges pre-installed. From left to right, the filter cartridges installed are a 20 micron pleated sediment filter and a 5 micron pleated sediment filter.

The unit arrives completely assembled ready for installation. Installation is a breeze. Simply mount the unit to the wall and plumb in your water supply line. The standard system is set up to have a water flow from left to right. Right to left flow is also available.

Double Filter Features:

Inlet/Outlet:	1" female NPT
Housing Options:	Each housing includes a pressure relief valve (red button)
Max Pressure:	90 PSI
Max Flow Rate:	35 GPM
Max Temperature:	100°F
Dimensions (H X W):	27-3/8" X 25"

#20 Big Blue®

#20 Big Clear

#10 Big Blue®

#10 Big Clear

BIG BLUE® & BIG CLEAR FILTER HOUSINGS

- **Large capacity housing suitable for high flow applications**
- **10" and 20" lengths available in opaque and clear**
- **Pressure relief/bleed on inlet side of cap**
- **Accepts 4½" diameter cartridges**

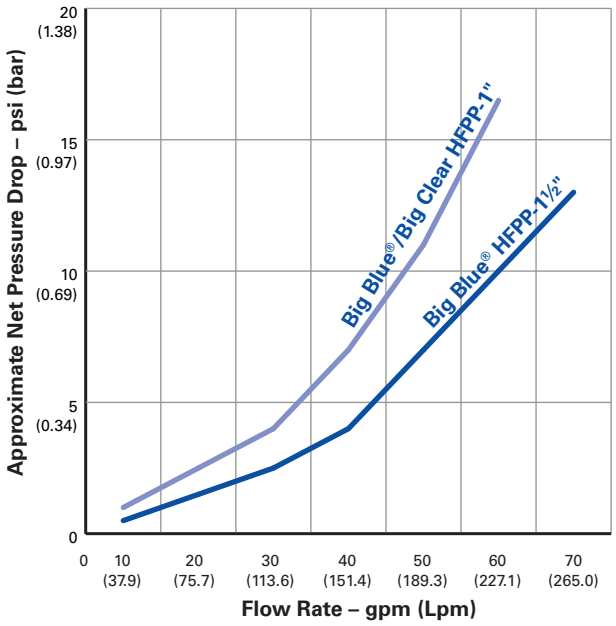
Big Blue® Filter Housings offer the versatility to meet all of your large-capacity filtration needs, including high-flow and heavy-sediment applications. The extra large housing allows for greater cartridge capacity, reducing the number of vessels required for high flow-rate applications. Sumps are constructed of durable reinforced polypropylene and are available in both 10" and 20" lengths.

The high-flow polypropylene (HFPP) cap is available with 3/4", 1" or 1½" NPT inlet and outlet ports. The 1¼" internal port allows a greater volume of liquid to pass through the HFPP cap more rapidly.

Big Blue® housings are compatible with a broad range of chemicals and are available with or without a pressure relief button. They accept a wide variety of 4½" diameter cartridges.

Big Clear Filter Housings offer on-site examination of flow, performance, and cartridge life and are ideal for a variety of applications. The blue polypropylene caps are available with an optional pressure-relief button on the inlet side to relieve pressure inside the housing when changing filter cartridges.

BIG BLUE®/BIG CLEAR
Filter Housings



NSF COMPONENT

The 150233, 150234, 150235, 150236, 150237, 150238, 150239, 150240, 150467, 150468, 150469, and 150470 Tested and Certified by NSF International to NSF/ANSI Standard 42 for material and structural integrity requirements.

NOTE: The Big Clear Series of housings are not NSF component listed.

Housing Specifications and Performance Data

Model	Maximum Dimensions	Initial ΔP (psi) @ Flow Rate (gpm)
#10 Big Blue®–3/4"	13⅛" x 7¼" (333 mm x 184 mm)	2 psi @ 15 gpm (0.1 bar @ 57 Lpm)
#10 Big Blue®–1"	13⅛" x 7¼" (333 mm x 184 mm)	1 psi @ 15 gpm (0.1 bar @ 57 Lpm)
#10 Big Blue®–1½"	13⅝" x 7¼" (346 mm x 184 mm)	1 psi @ 20 gpm (0.1 bar @ 76 Lpm)
#20 Big Blue®–3/4"	23⅜" x 7¼" (594 mm x 184 mm)	2 psi @ 15 gpm (0.1 bar @ 57 Lpm)
#20 Big Blue®–1"	23⅜" x 7¼" (594 mm x 184 mm)	1 psi @ 15 gpm (0.1 bar @ 57 Lpm)
#20 Big Blue®–1½"	23⅜" x 7¼" (606 mm x 184 mm)	1 psi @ 20 gpm (0.1 bar @ 76 Lpm)
#10 Big Clear–1"*	13½" x 7⅛" (343 mm x 181 mm)	1 psi @ 15 gpm (0.1 bar @ 57 Lpm)
#20 Big Clear–1"*	23 ¾" x 7⅛" (603 mm x 181 mm)	1 psi @ 15 gpm (0.1 bar @ 57 Lpm)

* Not Performance Tested or Certified by NSF.

Materials of Construction	BIG BLUE®	BIG CLEAR
Housing	Polypropylene	Lexan (#10), Polycarbonate (#20)
Cap	Polypropylene (HFPP)	Polypropylene (HFPP)
Button Assembly	300-series Stainless Steel, EPDM, and Polypropylene	300-series Stainless Steel, EPDM, and Polypropylene
O-Ring	Buna-N	Buna-N
Maximum Temperature	100°F (37.8°C)	100°F (37.8°C)
Maximum Pressure	#10 Big Blue® – 100 psi (6.9 bar) #20 Big Blue® – 90 psi (6.2 bar)	#10 Big Clear – 100 psi (6.9 bar) #20 Big Clear – 90 psi (6.2 bar)

CAUTION: Protect against freezing to prevent cracking of the filter and water leakage.

Printed in USA MR06 310053

Flow-Max® Pleated Cartridges For Reduced Filtration Costs

Get more filtration for the money with Flow-Max® pleated cartridges for high flow, long life, greater sediment removal and reduced filtration costs.

Flow-Max filter cartridges outperform wound, spun, melt blown, resin bonded and other "depth" type filter elements because our cartridges are pleated to provide increased surface area and longer life.

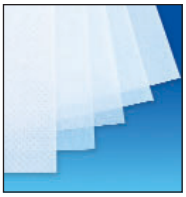
Lower pressure drop is another significant advantage, using Flow-Max pleated cartridges, which allows for increased flow rates and the use of smaller filter housings to reduce capital equipment costs.

Further savings are provided because our 100% synthetic filter media is cleanable, five micron and up, to lower cartridge replacement costs.

Flow-Max filter cartridges outperform other pleated elements because our high-performance filter media is systematically produced using 100% synthetic fibers, with no binders or additives to leave a residue, foam or contaminate.

Our filter media is dramatically thicker than other products. For this reason, Flow-Max cartridges provide "depth" filtration for greater sediment removal, along with more surface area with our pleated design.

A multi-ply laminate is used with our sub and one micron absolute grades for longer life and greater solids removal. (See right.)



Features

Filter media is pleated for greater surface area.

Synthetic filter media is cellulose-free.

"Thicker" filter media has a greater capacity to capture and retain particles, compared to thin, more rigid media types, which have less void space for particle retention.

One micron absolute and 0.35 media use a multi-ply laminate for superior performance.

Long lengths have netting to hold pleats in place.

All cartridge types and lengths are wrapped.

Full product line (types, lengths & micron ratings).

Benefits

Low pressure drop; long life; reduced filtration costs, compared to wound and spun cartridges.

No additives or binders, which may cause foaming.

Increased dirt holding capacity; longer life; fewer cartridge replacements needed; and reduced filtration costs, compared to other pleated cartridge suppliers.

Increased particle removal efficiency; longer life; and reduced cost per gallon filtered.

Superior performance and appearance.

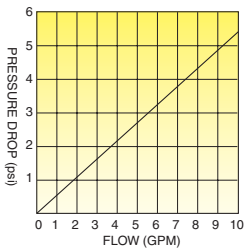
Provides security at no additional cost.

Greater selection from your single source supplier!

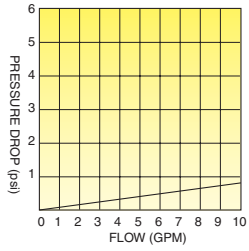
Flow-Max® cartridges cost less to use . . . regardless what they cost to buy!

Lower pressure drop for higher flow rates

Flow-Max® cartridges are pleated, so initial pressure drop is significantly less compared to depth cartridges, such a wound, spun, melt blown and resin bonded. As a result, higher flow rates are possible, reducing filter housing size requirements to lower capital equipment costs.

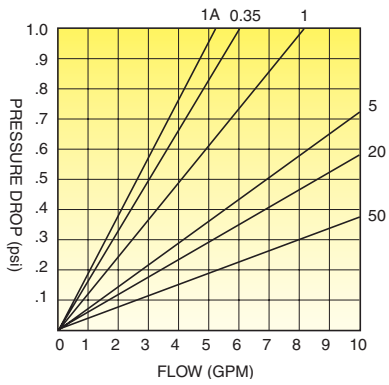


Depth cartridge
(5 micron)

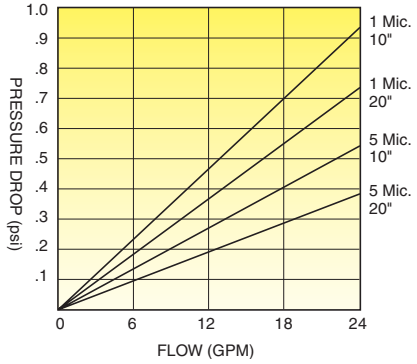


Flow-Max® cartridge
(5 micron)

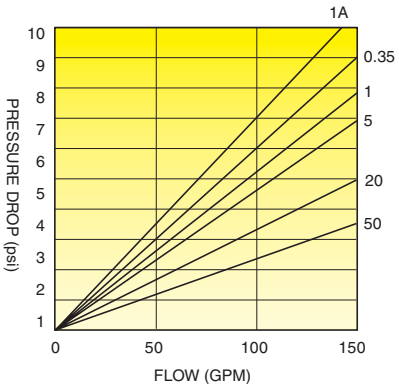
Use the pressure drop charts shown below to help determine the ideal flow rate for your particular application:



Standard cartridges (9-3/4")



Full-Flow (B-B) cartridges



Jumbo cartridges

Note: Pressure drop data shown above include filter housing and cartridge.

Flow rates

Maximum flow rate guidelines for Flow-Max cartridges are shown below:

Micron Rating	Maximum Flow Rates Per Cartridge (GPM)							
	Standard Cartridge			10" Full-Flow	20" Full-Flow	Jumbo Cartridge		
	9-3/4"	20"	29-1/4"			40	90	170
1 Absolute	3	6	9	8	12	20	40	80
0.35 Micron	4	8	12	9	13	25	50	100
1 Micron	4	8	12	10	15	30	60	120
5 Micron	7	14	21	15	25	50	100	150
20 Micron	8	16	24	15	25	50	100	150
50 Micron	10	20	30	15	25	50	100	150

Note: Filter housing selection should also be considered when flow rate per cartridge is determined.

Washable & reusable

Flow-Max® cartridges are washable and reusable, five micron and up to reduce filtration costs. For best results, direct spray into pleats to dislodge sediment. Or, let dry and brush off filter cake from surface of the media.

All Flow-Max® cartridges are individually shrink wrapped for purity

Flow-Max® Full-Flow Cartridges

4-1/2" OD cartridges with cellulose-free filter media for water filtration applications

One micron absolute rated and 0.35 nominal micron cartridges

Ideal for water filtration to remove Cryptosporidium and Giardia cysts. Both grades utilize a multi-ply filter media for greater retention efficiencies and long life.

Full-Flow (B-B) 4-1/2" OD x 9-3/4" length

Product Code	Length	Media Type	Micron Rating	Number Per Case
FM-BB-10-1A	9-3/4"	Synthetic	1 Absolute	8
FM-BB-10-0.35	9-3/4"	Synthetic	0.35	8
FM-BB-10-1	9-3/4"	Synthetic	1	8
FM-BB-10-5	9-3/4"	Synthetic	5	8
FM-BB-10-20	9-3/4"	Synthetic	20	8
FM-BB-10-50	9-3/4"	Synthetic	50	8

Note: Cartridges listed above fit in Full-Flow and Big-Blue® filter housings.

Full-Flow (B-B) 4-1/2" OD x 20" length

Product Code	Length	Media Type	Micron Rating	Number Per Case
FM-BB-20-1A	20"	Synthetic	1 Absolute	4
FM-BB-20-0.35	20"	Synthetic	0.35	4
FM-BB-20-1	20"	Synthetic	1	4
FM-BB-20-5	20"	Synthetic	5	4
FM-BB-20-20	20"	Synthetic	20	4
FM-BB-20-50	20"	Synthetic	50	4

Note: Cartridges listed above fit in Full-Flow and Big-Blue® filter housings.

Specifications (synthetic media for sediment)

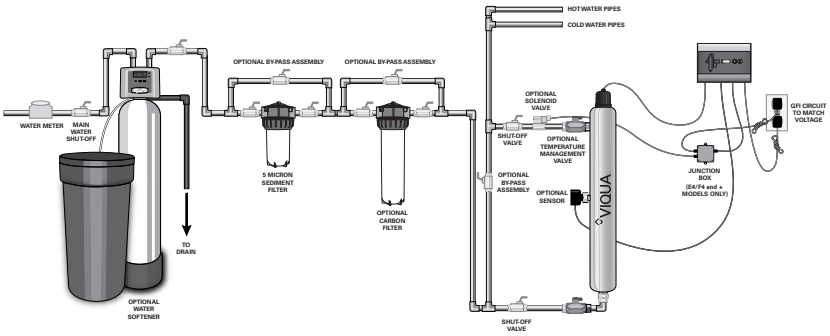
Maximum temperature	140°F (60°C)	Center tubes	PVC
Minimum temperature	40°F (4.4°C)	End caps	Molded urethane
Maximum pressure	40 PSID	Maximum flow rate, model 40	50 GPM (12M³HR)
Recommended change out	25-30 PSID	Maximum flow rate, model 90	100 GPM (24M³HR)
Filter media	PE & PP	Maximum flow rate, model 170	150 GPM (36M³HR)

VIQUA | VP600, VP950, E4, E4+, F4, & F4+

Ultraviolet Water Disinfection Systems from VIQUA

The quality of drinking water can change with time and become contaminated with harmful bacteria. The **PROFESSIONAL family** of compact UV disinfection systems provide a **reliable, economical,** and **chemical-free** way to safeguard drinking water in any residential or light commercial application. VIQUA's products have been designed and tested to ensure quality drinking water is at everyone's finger tips.

Regardless of your need, there is a VIQUA system to suit your requirements. VIQUA offers systems that range in flow rates from 22 GPM (5 m^3/hr) up to 46 GPM (10 m^3/hr) for small businesses and public facilities



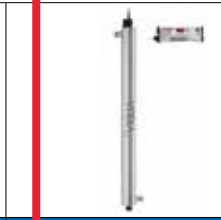
Features of VIQUA UV water disinfection systems

- Equipped to inactivate chlorine-resistant parasites such as **Cryptosporidium** and **Giardia**, harmful bacteria like *E.Coli*, and viruses not visible to the naked eye.
- Specially designed and tested high output lamps provide consistent and reliable ultraviolet output over the entire life of the lamp (9000 hours) to ensure continuous purification, and offer superior performance in a wide range of water conditions.
- The system is easy to maintain and service with easy lamp and quartz sleeve replacement.
- Built with a durable stainless steel chamber to prolong life and eliminate ultraviolet light degradation.
- **NEW** LCD controller features a large backlit display for easy reading, simultaneously displaying lamp life remaining, UV Intensity Status (E4/E4+, & F4/F4+ only), support contact information, and lamp replacement reminder that indicates when the lamp needs to be replaced, ensuring continued water safety. The intuitive, user-friendly menu is dealer programmable and allows the user to quickly find the replacement parts needed for the system by using the replacement parts menu, dealer contact information, as well as on board quick-reference instructions for system troubleshooting.
- The special lamp plug ensures that no one can power the UV lamp if it's not in the UV chamber.

VP600M, VP950M, E4+, & F4+

- User friendly sensor ensures safe UV levels are maintained.
- Monitored systems have a specialized 254nm UV intensity sensor which notifies homeowner of changes in UV performance.
- Monitored systems allow for the installation of an optional solenoid valve which will stop the flow of water through the chamber should the UV performance fall below a safe a level.

Specifications

				
MODEL				
N. America	VP600; VP600M;	VP950; VP950M;	E4; E4+ (650682; 650683)	F4; F4+ (650686; 650687)
EU CEE 7/7	VP600/2; VP600M/2;	VP950/2; VP950M/2;	650718; 650719	650720; 650721
AUS/NZ 3112	VP600/2A; VP600M/2A;	VP950/2A; VP950M/2A;	--	--
UK BS 1363	VP600/2B; VP600M/2B	VP950/2B; VP950/2B	--	--
FLOW RATES (@ 95% UVT)				
US Public Health (16 mJ/cm^2)	40 GPM (150 lpm) (9.0 m^3/hr)	60 GPM (230 lpm) (13.7 m^3/hr)	42 GPM (160 lpm) (9.6 m^3/hr)	45 GPM (170 lpm) (10.2 m^3/hr)
VIQUA Standard (30 mJ/cm^2)	30 GPM (113 lpm) (6.7 m^3/hr)	46 GPM (175 lpm) (10.5 m^3/hr)	22 GPM (83 lpm) (5 m^3/hr)	36 GPM (136 lpm) (8.2 m^3/hr)
NSF/EPA (40 mJ/cm^2)	22 GPM (83 lpm) (5.0 m^3/hr)	35 GPM (130 lpm) (7.8 m^3/hr)	16 GPM (60 lpm) (3.6 m^3/hr)	27 GPM (102 lpm) (6.1 m^3/hr)
DIMENSIONS				
Chamber	30.3" x 3.5" (78 cm x 8.9 cm)	45" x 3.5" (114 cm x 8.9 cm)	30" x 4" (76 cm x 10 cm)	44.25" x 4" (112.5 cm x 10 cm)
Controller	9.3" x 3.25" x 2.5" (24.1 cm x 8.1 cm x 6.4 cm)	9.3" x 3.25" x 2.5" (24.1 cm x 8.1 cm x 6.4 cm)	8.5" x 6" x 3" (22 cm x 15 cm x 7.6 cm)	8.5" x 6" x 3" (22 cm x 15 cm x 7.6 cm)
Inlet/Outlet Port Size	1" MNPT*	1 1/2" MNPT*	1" MNPT	1" MNPT
Shipping Weight	14 lbs (6.4 kg)	19 lbs (8.6 kg)	13 lbs (5.9 kg)	18 lbs (8.2 kg)
ELECTRICAL				
Voltage	100-240V / 50/60 Hz	100-240V / 50/60 Hz	100-240V / 50/60 Hz	100-240V / 50/60 Hz
Power Consumption	78 W	110 W	83 W	130 W
Maximum Operating Pressure	125 psi (8.62 bar)	125 psi (8.62 bar)	125 psi (8.62 bar)	125 psi (8.62 bar)
Influent Water Temperature	2-40°C (36-104°F)	2-40°C (36-104°F)	2-40°C (36-104°F)	2-40°C (36-104°F)
FEATURES				
Visual "Power On"	YES	YES	YES	YES
Chamber Material	304 SS	304 SS	304 SS	304 SS
Visual Lamp Life Remaining	YES	YES	YES	YES
Audible Lamp Failure	YES	YES	YES	YES
Audible Lamp Replacement Reminder	YES	YES	YES	YES
Solenoid Valve	Optional - SOL-1.0 or SOL-1.0/2	Optional - SOL-1.0 or SOL-1.0/2	Optional (650717-002)	Optional (650717-002)
UV Sensor	VP600M	VP950M	E4+	E4+

*/2B - BSP

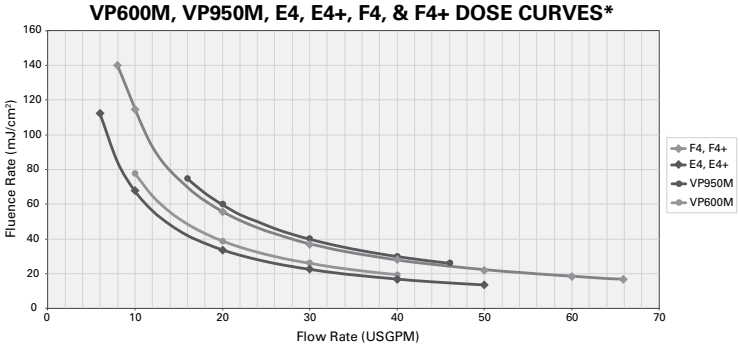
Replacement Parts

S600RL-HO – UV lamp for VP600& VP600M	**602734** – quartz sleeve for F4 & F4+
S950RL-HO – UV lamp for VP950 & VP950M	**BA-ICE-C** – controller for VP600 & VP950
602806 – UV lamp for E4 & E4+	**BA-ICE-CM** – controller for VP600M & VP950M
602807 – UV lamp for F4 & F4+	**650733R-001** – controller E4, E4+, F4 & F4+
QSO-600 – quartz sleeve for VP600 & VP600M	**650703** – sensor for E4+ & F4+
QSO-950 – quartz sleeve for VP950 & VP950M	**254NM-C1** – sensor for VP600M & VP950M
602733 – quartz sleeve for E4 & E4+	

Water Quality Parameters

Hardness	Iron	Tannins
< 7 grains (120 mg/L)	< 0.3 mg/L	< 0.1 mg/L

VP600M, VP950M, E4, E4+, F4, & F4+ DOSE CURVES*



*@ 95% UVT and 20°C

425 Clair Rd. W, Guelph, Ontario, Canada N1L 1R1
t. 1.519.763.1032 • f. 1.519.763.5069 • tf. 1.800.265.7246 (US/CAN) • t. +31.73.747.0144 (EUR)
info@viqua.com • **www.viqua.com**