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Cumming, GA 30028
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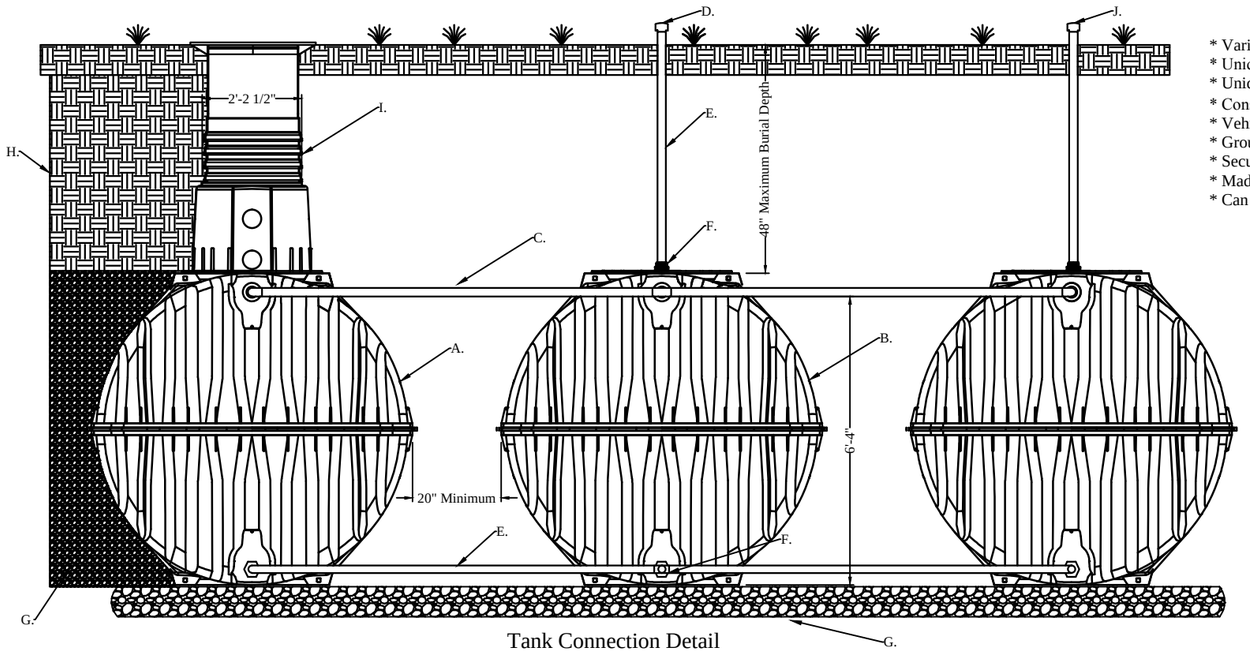
Rainwater Harvesting Systems
Submittal For:

RainFlo 5100-IG PRO
Complete Rainwater Harvesting System

Legend A	
A.	GRAF Carat S 1700 Gallon Underground Tank (1)
B.	GRAF Carat S 1700 Gallon Underground Extension Tank (2)
C.	Optional Upper Tank Connection
D.	2" Screened Tank Vent (2)
E.	2" Lower Balancing Lines
F.	2" Banjo Bulkhead Fitting
G.	Gravel Base (#57) and Backfill (#89 or Pea)
H.	Native Soil Backfill (Above Tank)
I.	12" Riser Extension for Tank Access (Optional)

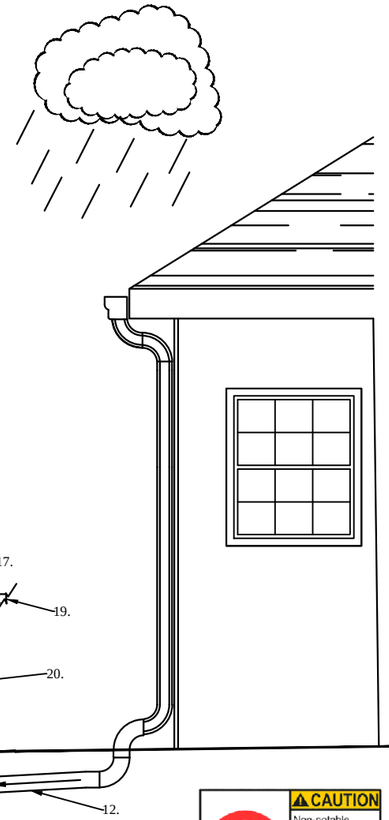
Legend B	
1.	GRAF Carat S 1700 Gallon Underground Tank.
2.	GRAF Optimax Pro Internal Filter with Opticlean Spray Head.
3.	Tank Dome with Sealing Gasket.
4.	RainFlo FI-2500 Flow Inducer Pump System.
5.	2" Floating Pump Extractor with Suction Hose and Air Filled Ball.
6.	2" Bulkhead Fitting for plumbing thru tank or riser assembly.
7.	Overflow siphon with mosquito and rodent stop.
8.	4" Overflow drain to storm drain or other. Typically PVC S&D or Schedule 40 Pipe.
9.	Control Box and Water Level Sensor for Aqua Control (Rainwater System Controller).
10.	Calming inlet to prevent the disturbance of the fine sediment layer at bottom of tank.
11.	GRAF 4" Pipe Gasket Supplied with Dome Seal Kit.
12.	4" PVC from Roof Gutters and Downspouts.
13.	1-1/2" Pump Discharge Hose.
14.	Power Cable to Pump from Control Panel.
15.	Adjustable Riser and Childproof Lid.
16.	Clean water Outlet On Graf Optimax to Rain Collection Tank.
17.	1" Reduced Pressure Principle Assembly (RPZ).
18.	Brass 3Way Valve with 24v Motorized Actuator and 1-1/2" Connections.
19.	Municipal Water Supply Connection.
20.	Output to Irrigation or Other Use.



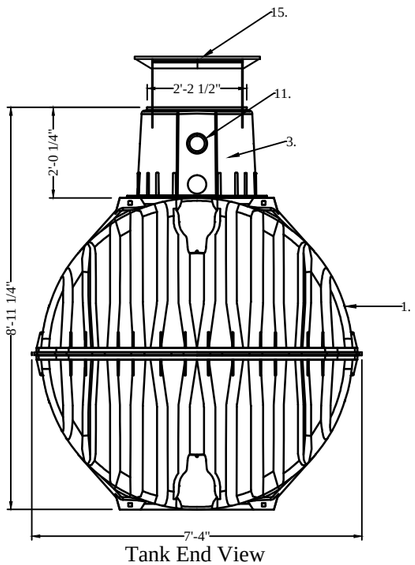
Tank Connection Detail

GRAF Carat S 1700 Gallon Tank Specifications:

* Variable burial depth: 30" to 42" (59" Max. with optional dome extension and "Maxi" telescopic riser)
* Unique in the world! – unique manufacturing process produces the highest stability due to latest techniques
* Unique fit accuracy of the components thanks to new production process
* Consistent quality due to TÜV safety testing and production monitoring
* Vehicle-bearing (with telescopic cast iron manway kit)
* Groundwater stable up to the middle of the tank due to extremely rigid construction
* Secure investment with market leading 15-year warranty
* Made from high quality Duralene; easy to recycle
* Can be expanded as required



USER'S Responsibility
Untreated Rainwater is NON-Potable water. Warning do not drink water supplied from RainHarvest Systems rainwater systems and related equipment. We will be happy to offer suggestions on the use of our various products either by way of printed material or through direct contact with RainHarvest Systems team members. However, since we have no control over the use of our products once they are shipped, NO WARRANTY WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE is made beyond the repair, replacement, or refund of purchase price at the sole discretion of RainHarvest Systems. Users shall determine the suitability of the product for the intended application before using, and the users assume all risk and liability whatsoever in connection therewith, regardless of any team members suggestions or statements as to the application or construction. In no event shall any remedy exceed the purchase price of the product. Consult local building codes for the system use.



Tank End View

Pump Control and 3 Way Valve Control Detail

Tank Side View

Note:
Tank height should be set and plumbing pitched to best utilize existing grade.
A site assessment should be done prior to installation to determine the optimum levels for filter and plumbing so as to provide positive drainage to tank and storm water overflows.

NOTE: This drawing is for illustrative purposes only. Actual systems and designs may vary. Always check with local building codes as they will apply.Electrical work to be performed by licensed professional. Points of use shall be labeled as: **"Non Potable water, Do Not Drink!**

CHK BY:	APP BY:	DRAWN BY	QUOTE NO.	SH.#
		CMG	.	1 OF 1

RainFlo 5100 Pro GRAF Rainwater Collection System

RainHarvest Systems LLC.
6075 Parkway North Drive Suite D
Cumming, GA 30040
Tel: 770-889-2533 Fax: 770-889-2577

STORAGE TANK

RainFlo 5100 PRO Rain Harvesting System

Industry-leading, professional class, complete in-ground 5100 gallon rainwater harvesting system

Flexibility, scalability, high-performance and total control:

The RainFlo 5100 PRO has been specially designed for the demanding requirements of light commercial and high-end residential rainwater collection systems.

Expandable to over 10,000 gallons, this system is equipped with an energy-efficient 2 HP variable frequency drive pump, flow inducer pump housing, self-cleaning internal filtration, digital tank level monitoring and system control – along with automatic switchover to a backup water source.

Simple installation, high quality and extremely low maintenance:

The modular design of the 5100 Pro allows for easy installation over widely varying project conditions. 5,100 gallons of rainwater storage offers significant water supply for residential and light commercial irrigation applications. Additionally, 1,700 gallon expansion modules can extend the system to achieve nearly any storage volume. The integral, self cleaning Graf Optimax Pro Internal filter ensures high water quality by filtering rainwater to 350 microns before entering the tank. This self cleaning filter keeps trash and debris out of your tank, thereby reducing overall system maintenance and improving performance.

Seamless integration into existing irrigation systems allow users to maximize the use of their rainwater resources by irrigating with rainwater first and switching to an auxiliary water supply based on the availability of rainwater. The 5100 Pro Control System provides real-time monitoring and control of rainwater harvesting system functions by tracking collection volume, automating the auxiliary water supply system, providing filter rinse functions, and displaying service reminders. In addition the injection molded Graf Carat Rainwater Storage tank is the only poly tank in the world designed specifically for rainwater harvesting. The Carat Tank also offers a 15 year warranty and is guaranteed not to collapse when completely empty. No other plastic tank in the world can make this claim.

Graf Carat-S Rainwater Tanks

The new generation of Carat rainwater underground tanks has been specially developed for rainwater harvesting

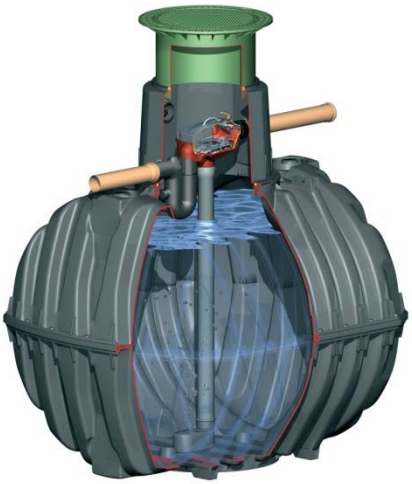
The Carat-S Underground Tank:

The lineup consists of four modular tank units ranging from 700 gallons to 1,700 gallons which are expandable up to thousands of gallons. The precision, modular, and ultra-high strength design of the Carat-S makes it the choice of professionals worldwide. The Graf Carat tank is guaranteed not to collapse when empty when installed per the manufacturer's specifications.

Carat-S Rainwater Tank Features:

- 15 Year manufacturer's warranty
- Suitable for vehicle loading (when combined with the cast iron lid option)
- Variable installation depth with double-sealed telescopic riser
- Convenient 31-1/2" manway opening
- Attractive locking green lid
- Internal pre-filtration option
- Easy to transport and install
- Ultra-high strength materials and design
- Frost-proof installation underground
- Groundwater stable to the middle of the tank

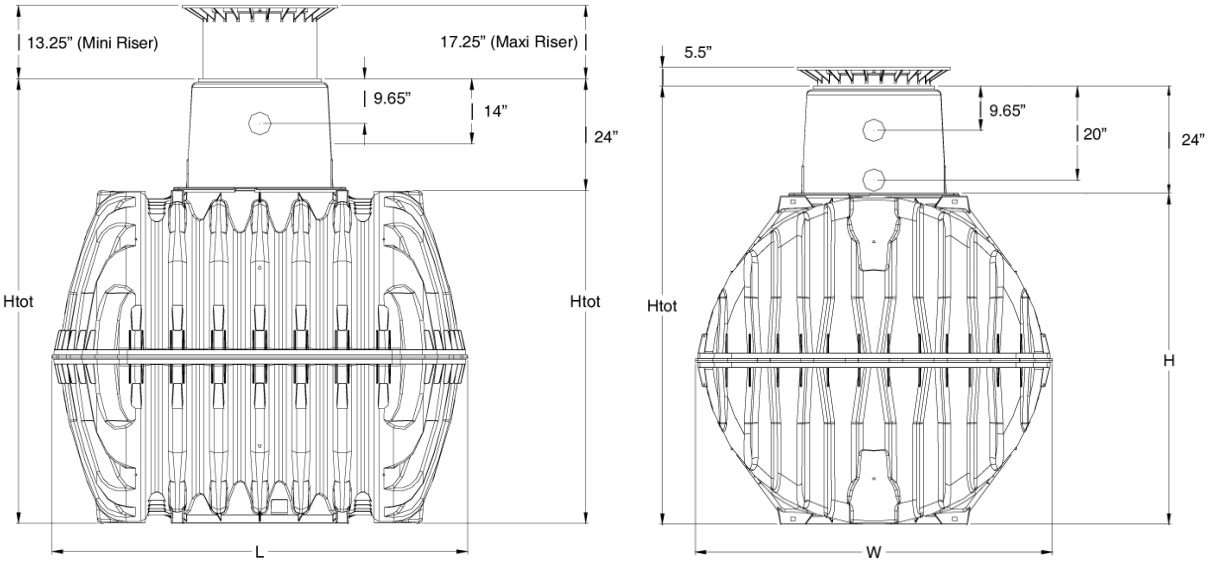
Internal Filter Package Option:



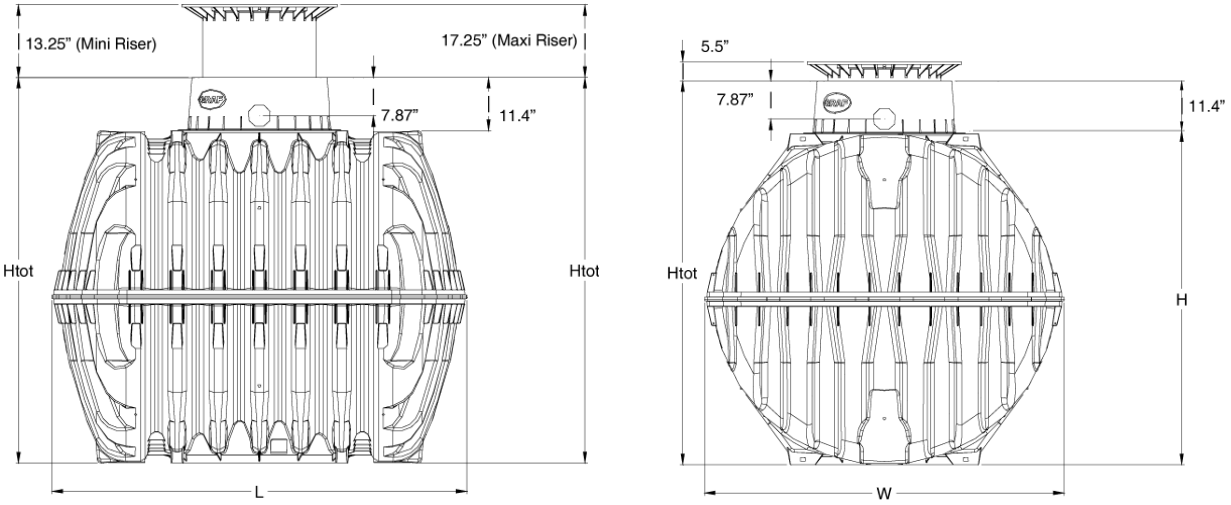
Specially designed for rainwater harvesting, the Graf Optimax Pro® internal self-cleaning filter uses patented filter technology to filter debris from roof areas up to 3,750 sq. ft.

- Greatly simplified installation
- Only one manway and lid in the yard
- Provides over 95% water yield
- Self-cleaning
- Very low maintenance

Dimensions with Maxi Tank Dome:



Dimensions with Mini Tank Dome:



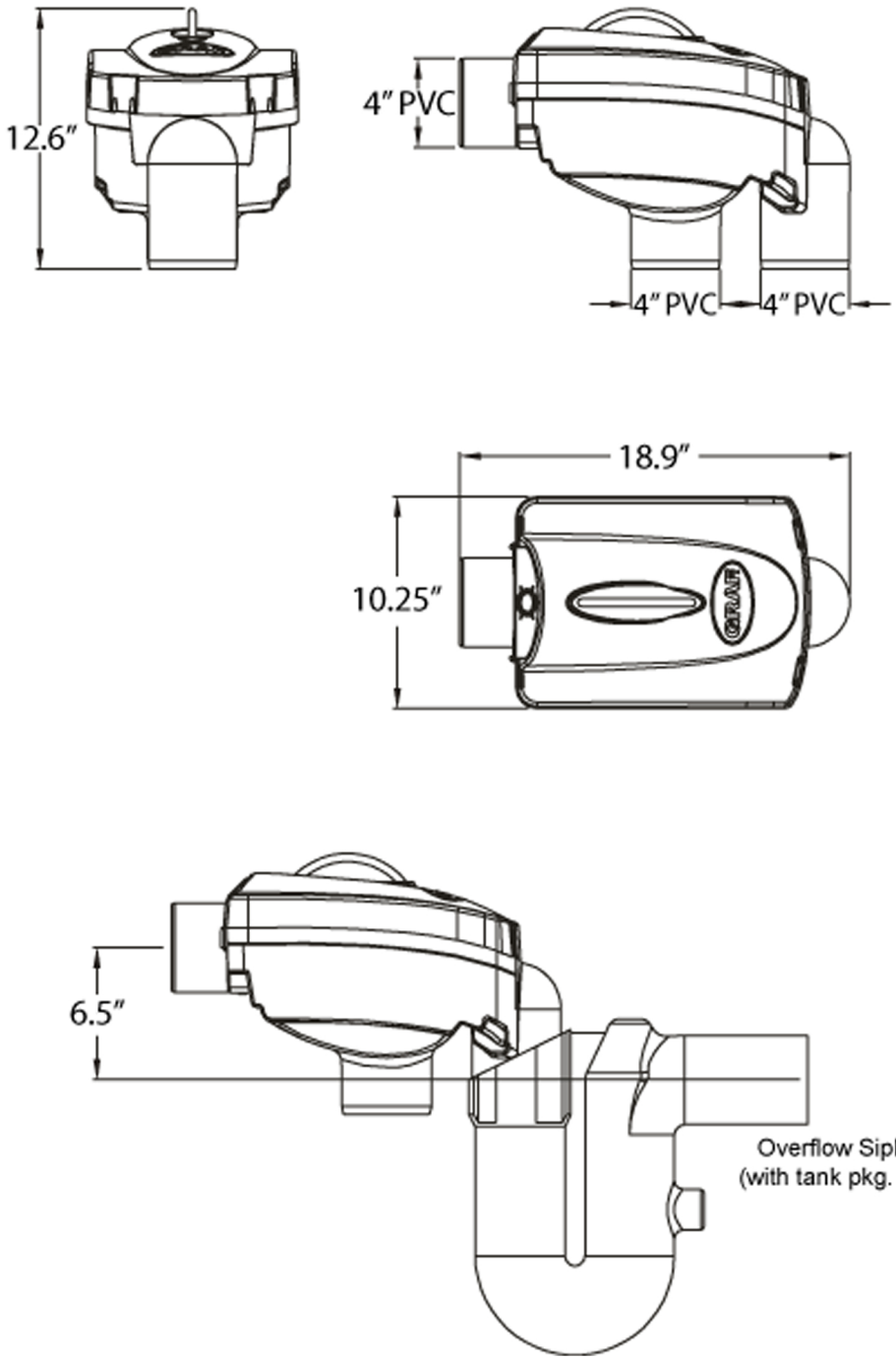
Tank	700 US Gallons	1000 US Gallons	1250 US Gallons	1700 US Gallons	1700 US Gallons (Expansion Tank)
Part No.	372001	372002	372003	372004	372014
Weight	265 lb.	331 lb.	408 lb.	485 lb.	485 lb.
L	82"	90"	90"	94"	94"
W	62"	69"	78"	86"	86"
H	55"	62.5"	71.5"	82.5"	82.5"
Htot*	79"	86.5"	95.5"	106.5"	NA
Htot**	66"	73.5"	82.5"	93.5"	NA

*Htot = total height **with Mini Tank Dome. Deeper burial depths can be achieved using optional extension rings

RAINWATER PRE-FILTER

US Adaptation by RainHarvest Systems

Dimensions:

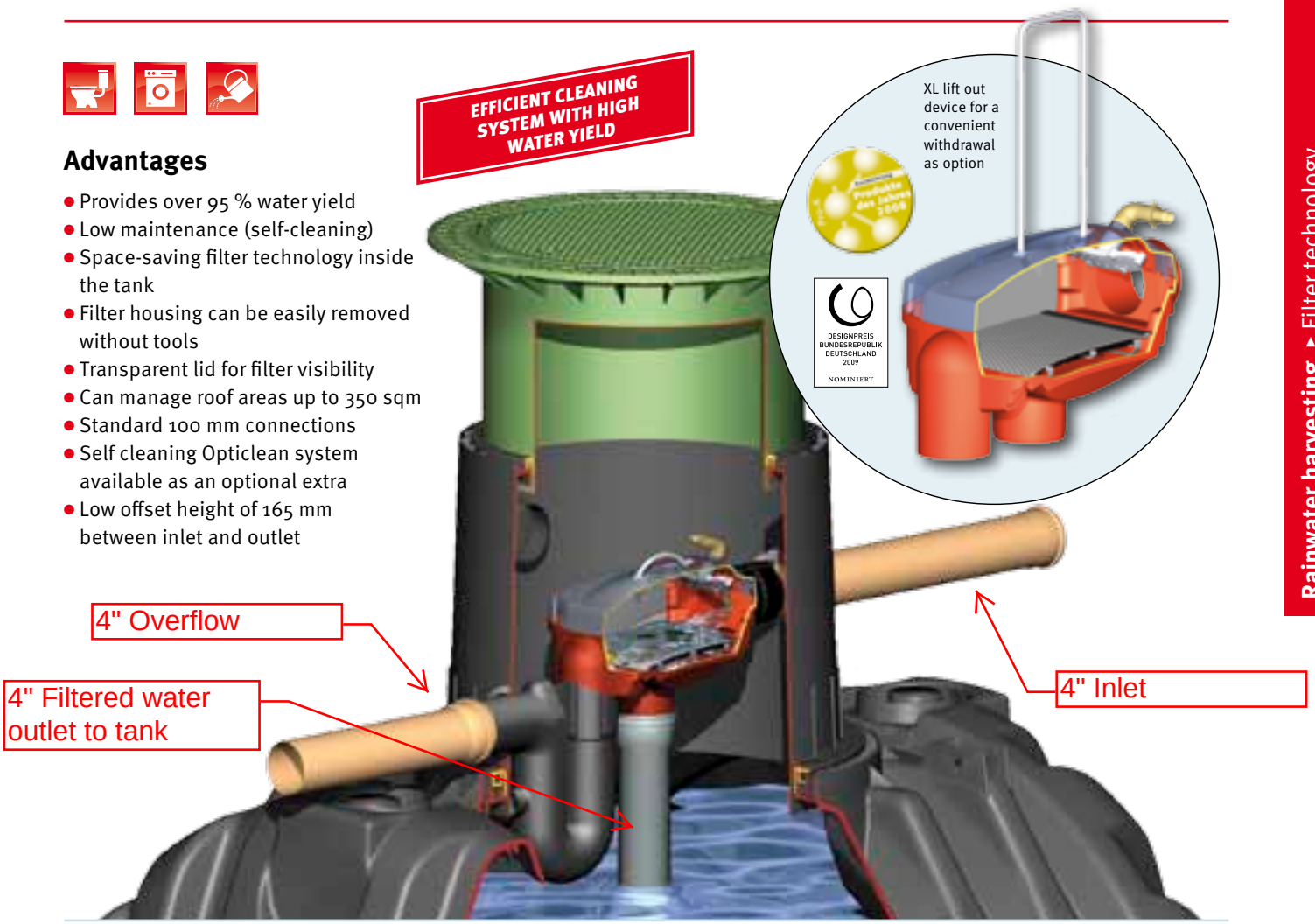


Internal filter technology

Optimax Pro, self-cleaning Filter

Advantages

- Provides over 95 % water yield
- Low maintenance (self-cleaning)
- Space-saving filter technology inside the tank
- Filter housing can be easily removed without tools
- Transparent lid for filter visibility
- Can manage roof areas up to 350 sqm
- Standard 100 mm connections
- Self cleaning Opticlean system available as an optional extra
- Low offset height of 165 mm between inlet and outlet



Optimax-Pro Filter internal

Order no. 340037

Accessories

Cleaning unit Opticlean® internal
without hose

Order no. 340040

Quick assembly sleeve Spannfix
patented (Page 47)

Order no. 340502

XL lift out device
for a convenient withdrawal of filter cover and filter insert, length 505 mm

Order no. 330220

Webcode G2102

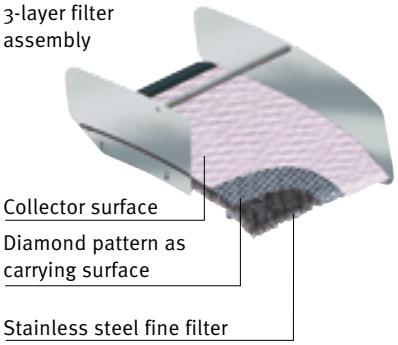
Cleaning unit Opticlean®

- Very intense water jet for cleaning the filter sieve
- Routine maintenance intervals are kept to a minimum
- An automatic activation of the cleaning unit is carried out together with the automatic filter cleaning unit and the Aqua-Center-Silentio

Mode of operation Opticlean®

Filter cartridge

Very smooth surface and, therefore, max. self cleaning, mesh width 0.35 mm (0,01")



Connecting dimensions
for telescopic dome shaft

Dome shaft	Tank overflow	Emergency overflow
Mini	495-695 mm	660-860 mm
Mini	19.5-27.4"	25.9-33.9"
Maxi	495-795 mm	660-960 mm
Maxi	19.5-31.3"	25.9-37.8"

All dimensions are calculated middle of connection until earth top edge

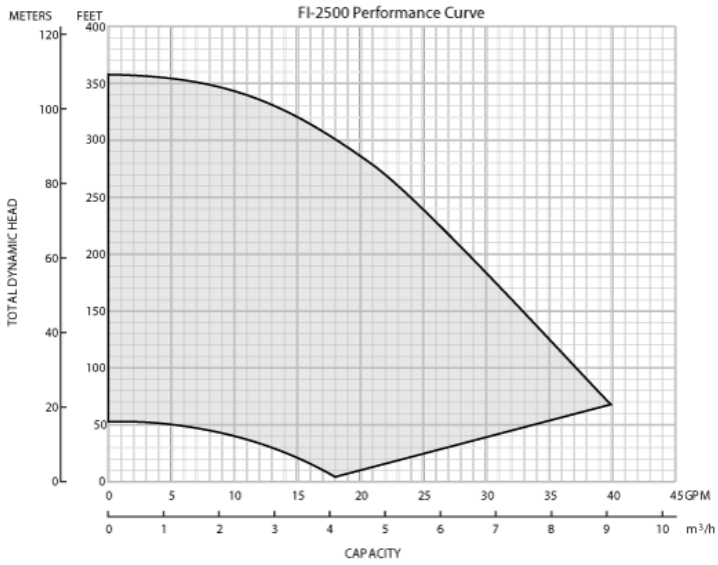
RAINWATER PUMPING SYSTEM

Flow Inducer Rainwater Pump Stations

High performance mid-range automatic pump stations for large residential, commercial, and light-industrial rainwater collection systems.

The Flow Inducer Product Line:

RainFlo Flow Inducer Kits are specially designed for rainwater collection systems using the highest quality components and packaged in a complete and easy to install bundle at an unbeatable price point. Using time-tested Goulds pump technology, these pump stations perfectly fill the performance gap between traditional standalone pumps and more expensive high-end pump stations.



All RainFlo Flow Induction Kits include:

- High Performance Three Phase Motor, 230V
- Variable Speed, Balanced Flow Pump Controller with Transducer (15' cable)
- Water End with Sand and Abrasion Resistant Floating Stack Design
- Flow Induction Pump Chamber with 15 degree Inclination
- 2" Stainless Steel Floating Filter with 10' hose
- 8.2 Gallon Inline Pressure Tank (13.9 Gal on FI-6000 model)

Model Overview:

Flow Induction Pump Station Models			
Model No.	**Motor HP**	**Avg GPM**	**GPM @ 60 PSI**
FI-1800	1.5 HP	18	29
FI-2500	2 HP	25	34
FI-3300	3 HP	33	48
FI-6000	5 HP	60	59

Flow Characteristics:

Maximum pump flow (GPM) at selected pressures (PSI) at 0' vertical lift)								
PSI:	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
FI-1800	35	33	31	29	26	24	21	18
FI-2500	40	38	35	34	32	29	27	25
FI-3300	60	53	51	48	44	40	36	32
FI-6000	60	60	60	59	57	55	53	51

Efficiency:

			Best Efficiency		Max Runout	
Model No.	**HP**	**TDH**	**Flow (GPM)**	**TDH (ft)**	**Flow (GPM)**	**TDH (ft)**
FI-1800	1.5	315	18	237	37	55
FI-2500	2	358	25	238	40	69
FI-3300	3	390	33	230	60	70
FI-6000	5	681	33	390	60	120

Operational overview:

The balanced flow pump controller provides user-adjustable constant pressure using an energy-efficient variable speed pump motor. Using pressure measurements from the transducer, the controller adjusts the pump speed in order to maintain constant pressure, rather than the traditional on-off switched operation of traditional systems. The balanced flow controller provides continuous monitoring of motor current draw, voltage, temperature and loss of pressure. Systems ship factory-set at 50 PSI but can be easily adjusted to higher pressures in the field.

Flow Induction Chamber: The RainFlo Flow Induction Chamber is a specially designed water sealed pump housing which directs incoming water flow over the pump motor, providing necessary cooling, 15º pump inclination for longer bearing life, floating extractor intake, convenient 2" threaded output and compression sealed wiring port. Specially designed stainless steel motor centralizers with PVC pads keep the pump assembly stabilized and centered in the induction chamber for uniform flow and cooling. Vibration dampening rubber feet on the incline supports help protect fiberglass and plastic tanks from abrasion and reduce motor noise. A stainless steel lifting lug and tether assist in lowering the system into the tank. As with the motor assembly, the flow induction chamber is constructed with potable quality components.

Energy Efficient: By converting single phase input to 3 phase pump output, the controller can reduce energy consumption by 50%.

Rain tight Controller: The controller is rated NEMA 3R (Rain tight) so it may be located outdoors. It must be mounted vertically.

Dry-run Protection: This function protects the system from running dry. When the pressure transducer (included) detects inadequate water supply, the pump is automatically disabled. The controller will re-test for water supply until water is detected.

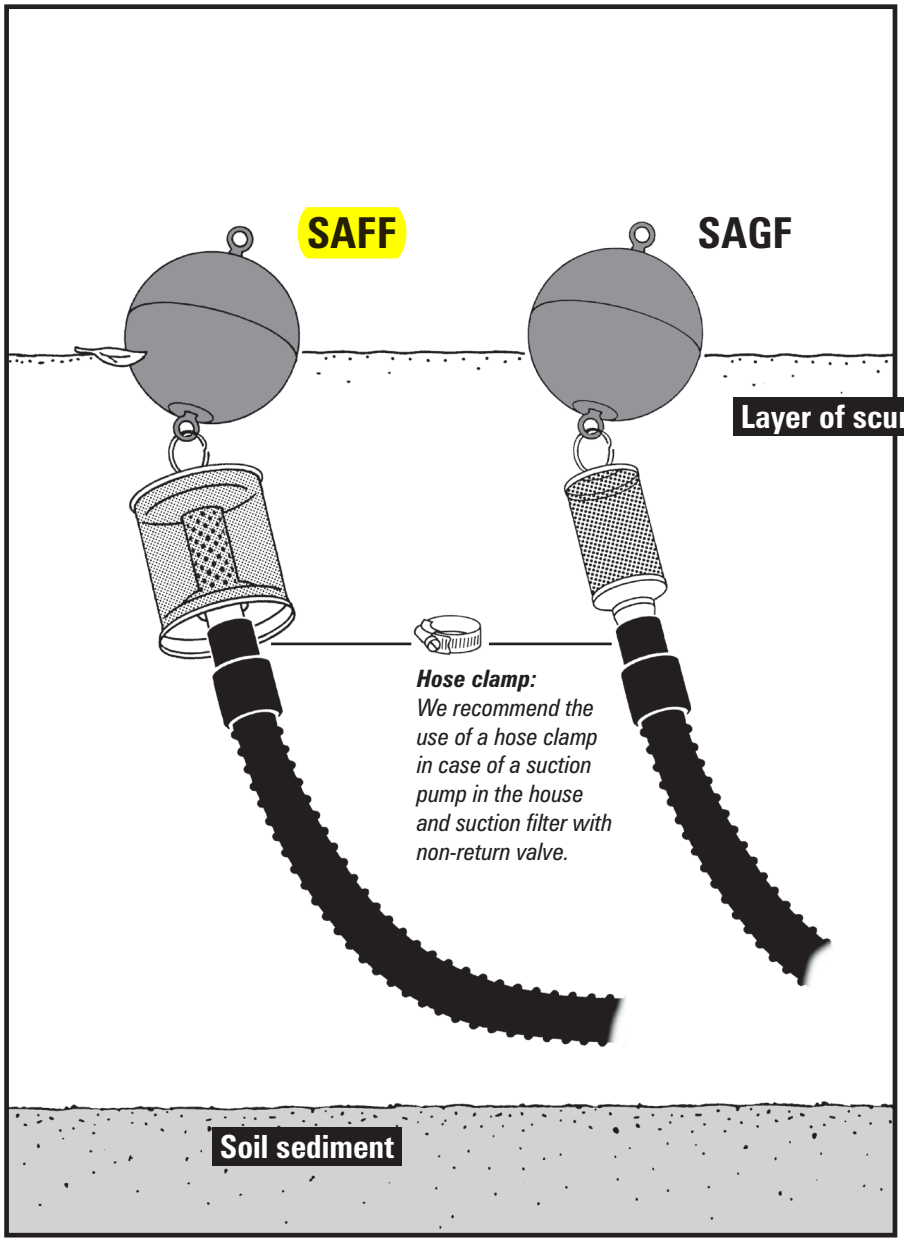
Broken Pipe Protection: The drive will turn off if the system pressure drops 20 PSI below the system set point pressure for a minimum of 30 seconds. (*This fault must be manually reset, it will not clear automatically, and this may prevent property damage if a pipe breaks*.)

Auxiliary Switch Input: For connection of an external switch or control device used to start and stop the pump. Devices such as an over-pressure switch, level (float) switch or any other non-powered switch

In order to provide the highest water quality and safety, the RainFlo and Flow Inducer product labeling shown in the image is not applied to production units.

Floating suction filters

With or without non-return valve



Floating fine suction filters (SAFF)

For the extraction of rainwater out of cisterns, tanks or ponds and wells.

Mesh size of the fine filter: 0,3 mm.

Floating coarse suction filters (SAGF)

For the extraction of clean, already filtered, rainwater out of cisterns and others tanks.

Mesh size if the coarse filter: 1,2 mm.

Floating ball of polyethylene. Filter housing and easy fit hose nozzle of stainless-steel. With or without non-return valve.

	SAFF		SAGF	
Connection	*Filter surface*	*Ø Floating ball*	*Filter surface*	*Ø Floating ball*
1“	380 cm²	15 cm	165 cm²	15 cm
1¼“	380 cm²	15 cm	165 cm²	15 cm
1½“	800 cm²	22 cm	380 cm²	15 cm
2“	1100 cm²	22 cm	380 cm²	15 cm

The suction filters

They consist of a fine or coarse filter mesh with a large surface of stainless-steel.

The use of the SAFF or the SAGF increases the working safety of the whole rainwater installation.

The abrasion of the pump is reduced as well as the contamination of the valves in case of suction and pressure.

The large surface area of the SAFF or the SAGF filter gives a very low suction resistance, resulting in the pump developing its optimum degree of effectiveness.

The suction fine filter (SAFF) is especially suitable for water extraction from water cisterns without any pre-cleaning in the system.

Commercial, cheap non-return valves at the bottom of the suction hoses with little sieves may be a risk for pumps and valve which are down-stream and they might derogate the working safety.

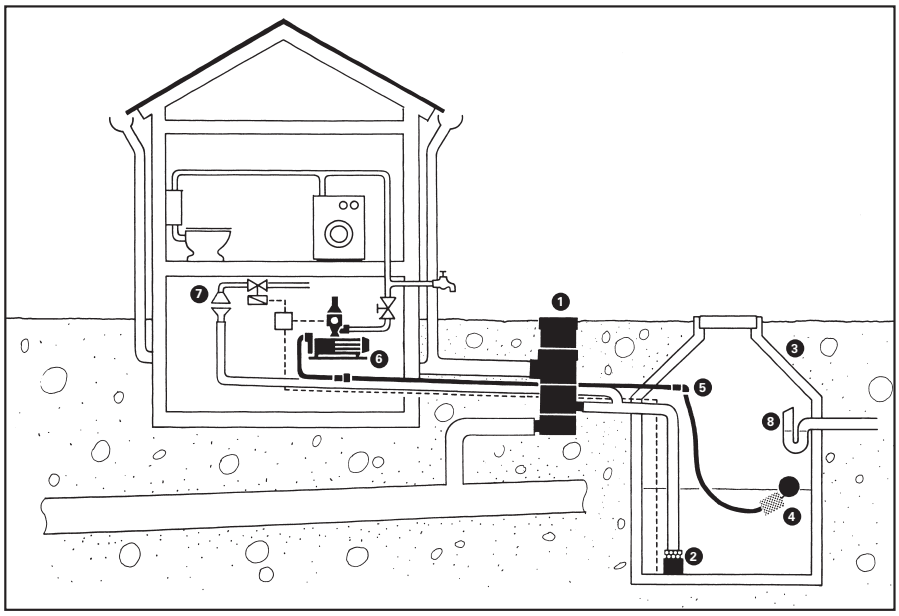
The floating ball allows the suction point to rise and fall with the water and ensures that the water is extracted from where it is cleanest: just below the surface of the water. The filter unit prevents the suction of water from the layer of scrum (fatty and small dirt particles) as well as the suction of sand and heavy particles from the soil sediment.

Non-return valve

Especially for use with a suction pump it maintains a permanent column of water in the connecting suction hose up to the pump (image 1), so that a new column of water does not have to be built up each time the pump starts.

Maintenance

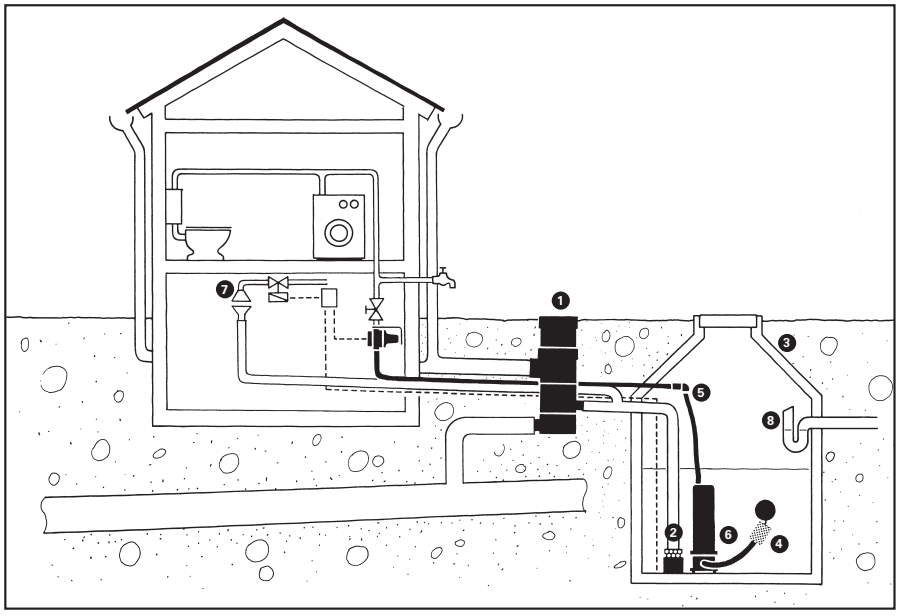
The suction filters should be controlled once a year. The filter mesh can be cleaned with a brush and a strong water jet.



Sketch (image 1): Installation with a suction pump in the basement.

Floating suction filter with non-return valve for use <u>with</u> a suction pump in the basement.

1 Vortex fine filter
2 Smoothing inlet
3 Storage tank
4 Floating suction filter
5 Suction hose
6 Suction pump with automatic switch
7 Open water outlet/ potable water feed
8 Overflow siphon



Sketch (image 2): Installation with a pressure pump in the storage tank.

Floating suction filter <u>without</u> non-return valve for use with a pressure pump in the tank.

1 Vortex fine filter
2 Smoothing inlet
3 Storage tank
4 Floating suction filter
5 Pressure hose
6 Submersible pressure pump with automatic switch
7 Open water outlet/ potable water feed
8 Overflow siphon

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Telefon +49 (0) 60 54-91 21-0, Fax +49 (0) 60 54-91 21-29
Internet: www.wisy.de, E-Mail: info@wisy.de

Tank Level Monitoring and Back-up Water Supply System

AquaControl +

Rainwater System Controller

Item no.: 351027

Distributed in the US by:

RainHarvest Systems

6075 Parkway North Drive
Cumming, GA 30040

(800) 654-9283

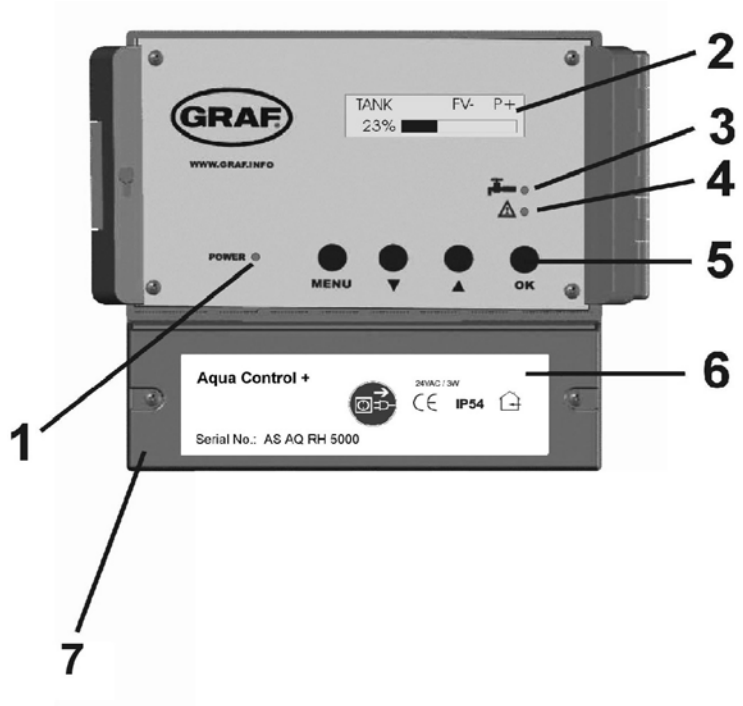


Figure 1: Indicators and Controls

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.

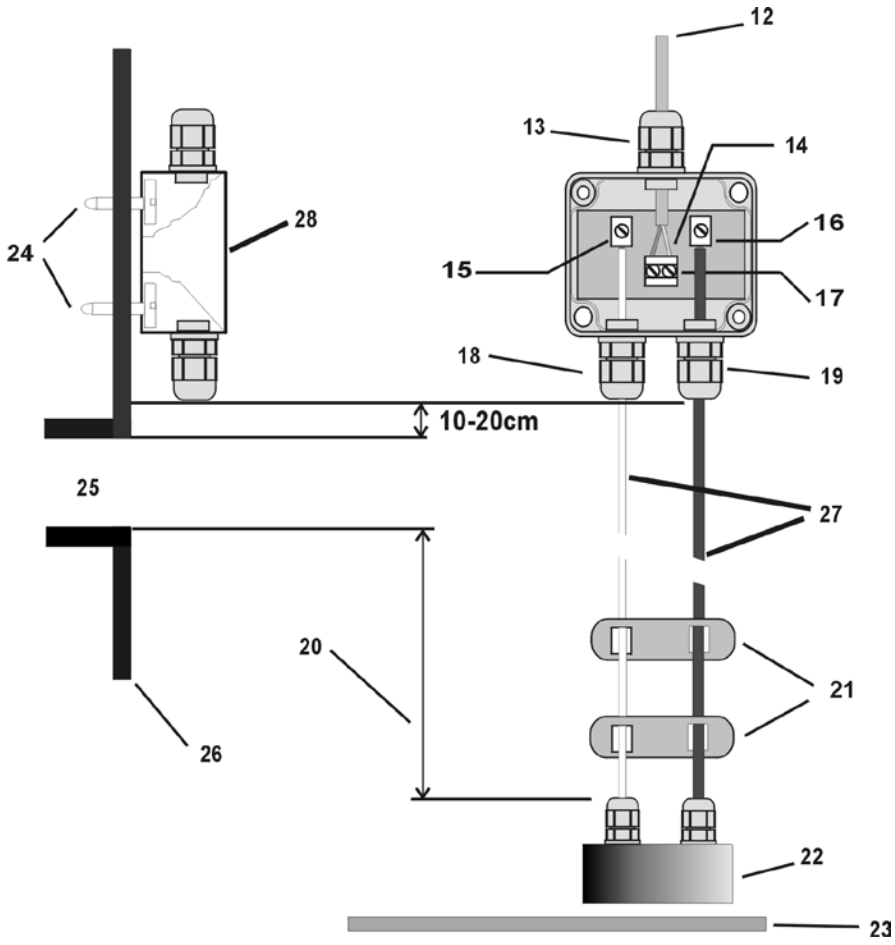


Figure 2: Tank Water Sensor Assembly

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)

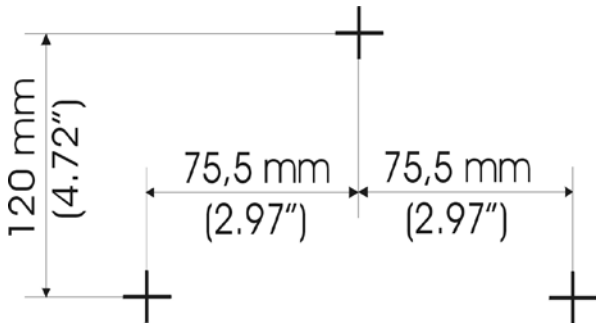


***Figure 3:** Drilling outline for housing outline (**Not to scale**)*

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]**.

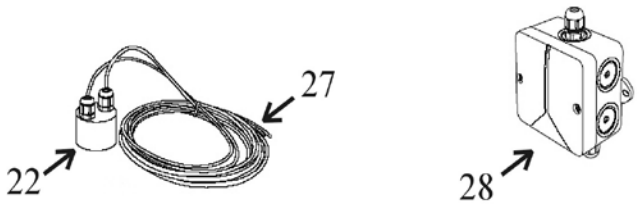


Figure 4: Sensor technology

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.

Purchase date: _____

Device serial number / Type: AS AQ RH

Tank height _____

Software level AQ+ REV: U2.0

Design and specifications are subject to change without notice

Manual revision (RHS): January, 2016; Version: AQ+ U2.0A

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:

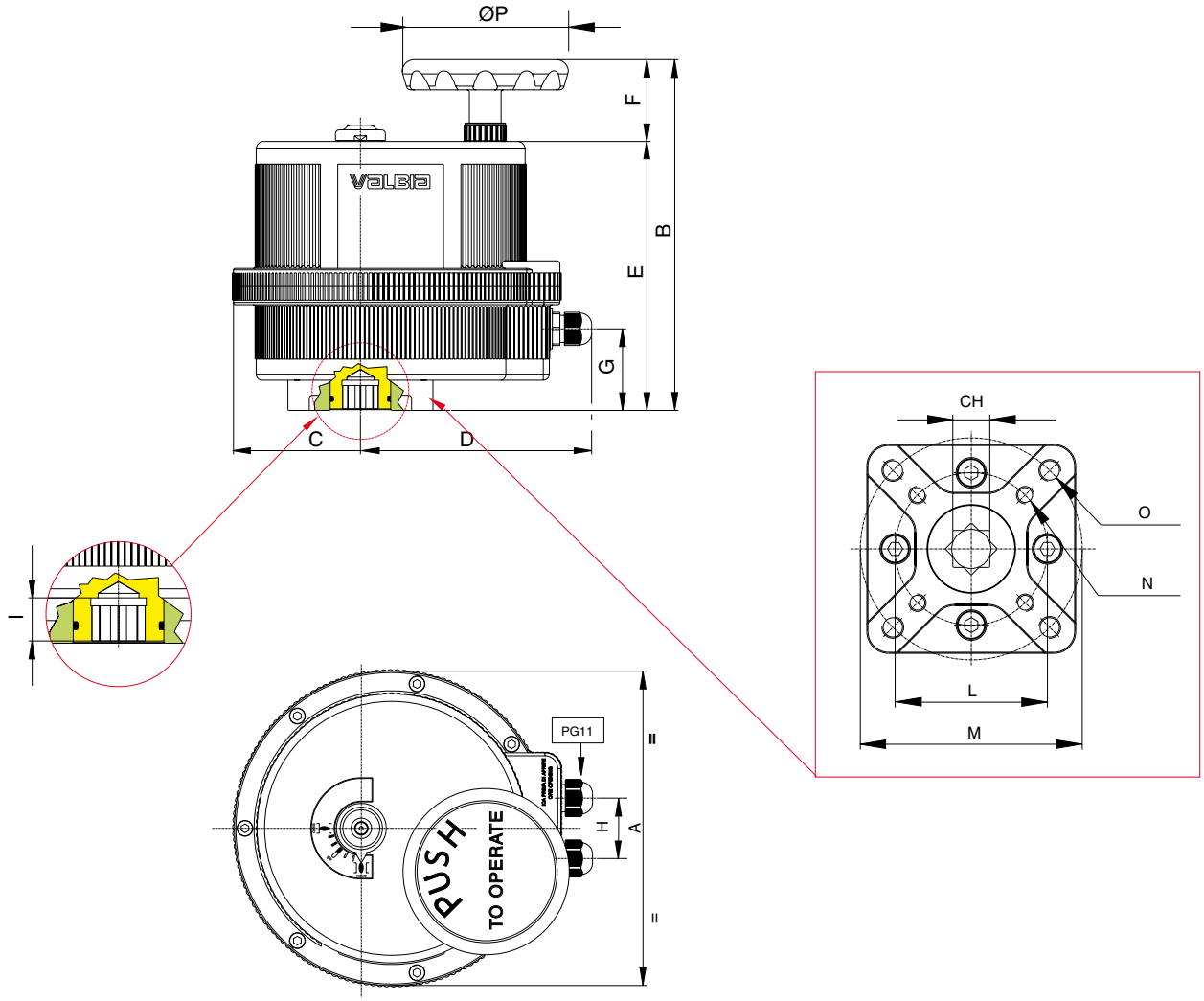
- The actuator housing is made from a V0 self-extinguish class techno-polymer material.
- The kinematics is made by two steel and techno-polymer gear wheels, sustained by hardened steel pinions, mounted on self-lubricating bushings (excluding Mod. VB015), and inserted in a rugged die-cast aluminium structure.
- 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

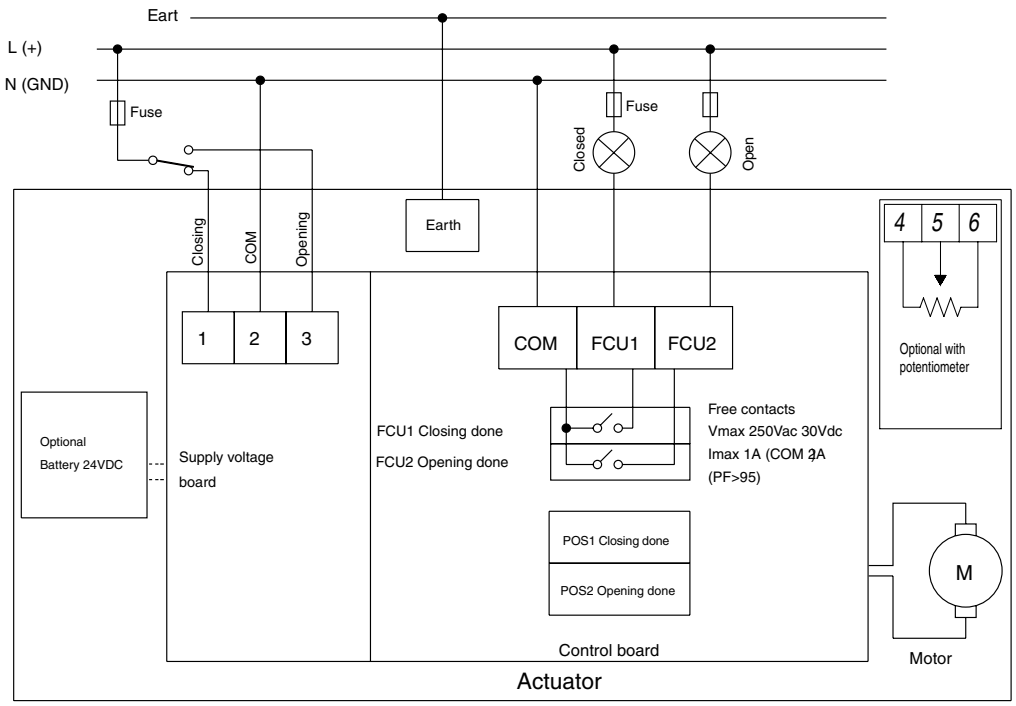
MODEL		VB015		VB030		VB060		VB110		VB190		VB270		VB350	
VERSION H	NOMINAL VOLTAGE	110V AC	230V AC	100-240V AC											
	ABSORBED CURRENT	75mA	25mA	0.3-0.2A		0.6-0.3A									
	ABSORBED POWER	6.6 VA	6 VA	30-48VA		60-72 VA									
VERSION L	NOMINAL VOLTAGE	12V AC/DC	24V AC/DC	12V DC	24V AC/DC	12V DC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



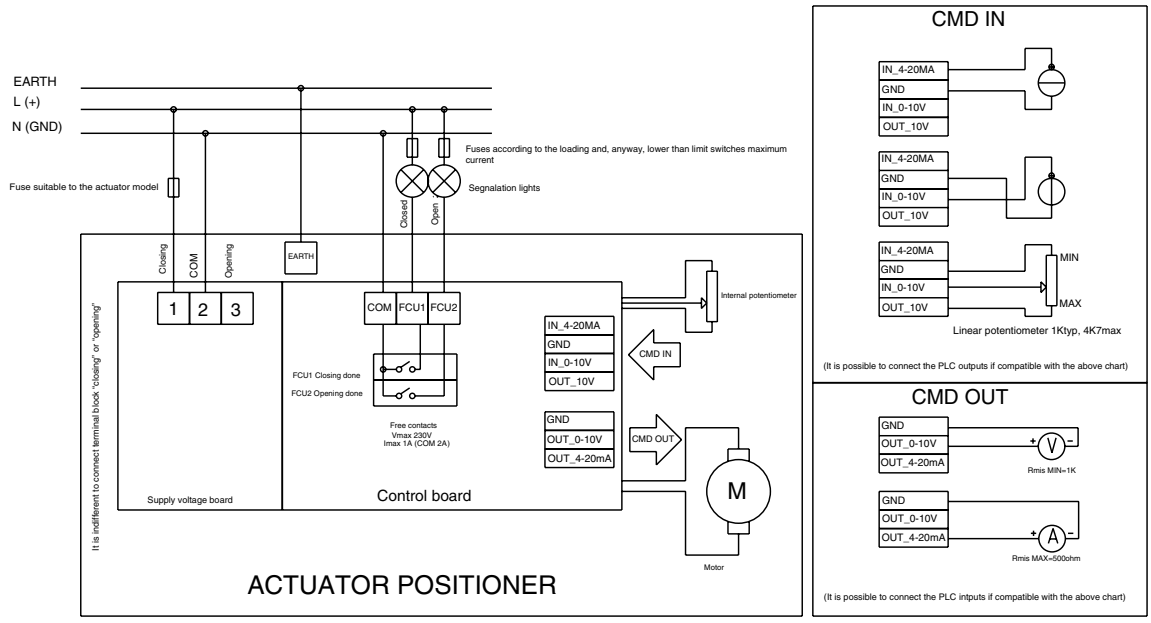
MOD.	DRILLING ISO 5211	CH	A	B	C	D	E	F	G	H	I	L	M	N	O	ØP
VB015	F03 * - F05	0.43	4.84	5.57	1.67	4.74	4.96	0.61	4.35	1.26	0.55	1.42	1.97	10-24 UNC 2BX0.47	1/4-20 UNC 2BX0.55	2.68
VB030	F03 * - F05	0.43	6.18	7.40	2.38	5.12	5.75	1.65	1.30	1.42	0.47	1.42	1.97	10-24 UNC 2BX0.47	1/4-20 UNC 2BX0.55	2.56
VB060	F05 - F07	0.55	7.28	8.46	2.66	5.77	6.81	1.65	2.01	1.42	0.63	1.97	2.76	1/4-20 UNC 2BX0.59	5/16-18 UNC 2BX0.67	2.56
VB110	F07 - F10	0.67	8.31	9.14	3.31	6.02	7.01	2.13	2.13	1.58	0.75	2.76	4.02	5/16-18 UNC 2BX0.79	3/8-16 UNC 2BX0.79	4.33
VB190	F07 - F10	0.67	8.31	9.14	3.31	6.02	7.01	2.13	2.13	1.58	0.75	2.76	4.02	5/16-18 UNC 2BX0.79	3/8-16 UNC 2BX0.79	4.33
VB270	F07 - F10	0.87	8.74	9.19	3.03	6.69	7.17	2.03	2.13	1.58	0.94	2.76	4.02	5/16-18 UNC 2BX0.79	3/8-16 UNC 2BX0.79	4.33
VB350	F07 - F10	0.87	8.74	9.19	3.03	6.69	7.17	2.03	2.13	1.58	0.94	2.76	4.02	5/16-18 UNC 2BX0.79	3/8-16 UNC 2BX0.79	4.33

* Upon request F04 only

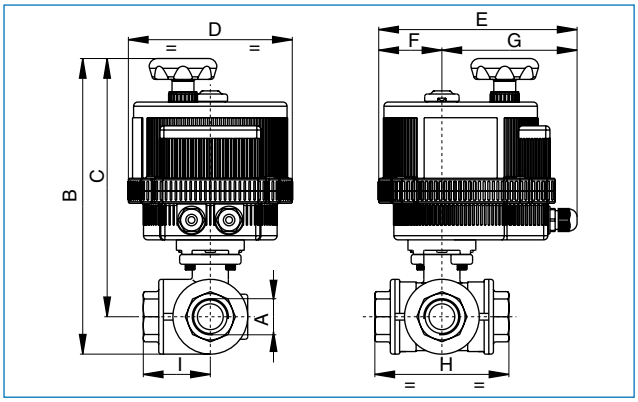
ELECTRIC SPECIFICATION FROM VB30 TO VB350



WIRING OF THE POSITIONER FROM VB30 TO VB350



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	-