

# Trojan-Pro

## Foul & Surface Water Pumping System

Revision 3.2 - 12<sup>th</sup> April 2023

### INTRODUCTION

The [Newton Trojan-Pro](#) is a medium sized sump chamber that thanks to a clever modular manufacturing process, is available in four sizes, ranging from 1.2m to 2.1m high, in increments of 300 mm. Depending on the pumps used within the pumping system build, the Trojan-Pro chamber is suitable for a variety of pumping tasks, ranging from lifting sewage from basements as well as the removal of ground water and surface drainage.

Details of the pumping systems built with the Newton Trojan-Pro chamber are confirmed in the pages below.

### BENEFITS

- Compatible with a large range of pumps for the pumping of sewage, clean water and grey water
- Complex geometry with strengthening ribs resulting in a strong and robust sump
- Recessed ribbing for surrounding concrete to lock into, preventing sump flotation
- Supplied with double-locked and sealed recessed lid. High-end lids, frames and solid lids are available as cost options (see page 4)
- Available in 1.2, 1.5, 1.8 and 2.1 metre depths
- Large opening for easy removal and installation of the pumps
- Built systems available with Auto-Coupling System with rails for easy pump installation and removal
- Supports a large number of frames and lids

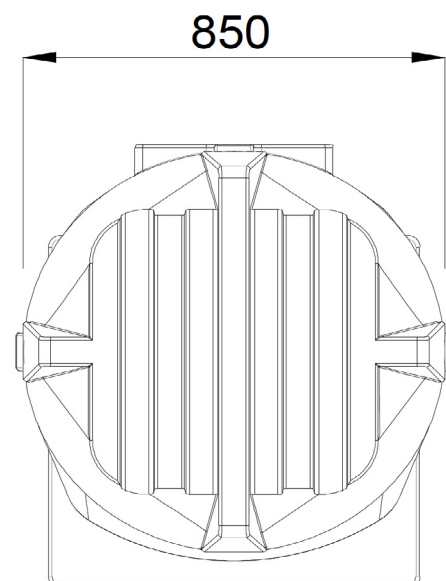
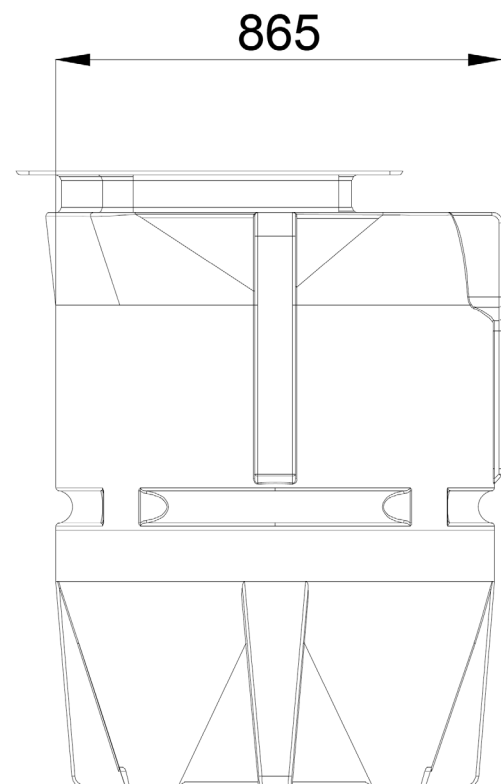
### TYPICAL APPLICATIONS

Depending on the type and performance of the pumps installed, the pumping systems based upon the Trojan-Pro sump are suitable for the following pumping applications:

- Sewage lifting station where the sewage invert is below the height of the street sewage system
- Sewage system with 24 hour storage for small properties of one, two or three bedrooms
- Waste and grey water pumping
- Ground water pumping as part of the Type C Newton CDM System
- Large volume surface water pumping
- As a central collection sump for large Newton CDM installations

### PRODUCT LIFE EXPECTANCY

The Trojan-Pro chamber is made from robust HDPE and should provide, under normal service conditions, a chamber for the life of the building. Please refer to the relevant data sheets for confirmation of the guarantees for the pumps and ancillaries used within the pumping systems confirmed below.



### TECHNICAL DATA - TROJAN-PRO

Features	CHAMBER HEIGHT				Units
	1200	1500	1800	2100	
Material	HDPE				
Colour	White				
Internal Diameter	830				mm
External Diameter	850				mm
Height (not including lid & frame)	1200	1500	1800	2100	mm
Weight - Chamber only	38	45	53	61	kg
Clear Opening	585 x 585				mm
Lid/Frame Support	720 x 720				mm
Storage Zone*	No Storage	300	450	600	litres

\* With no more than 300mm invert and maximum 600mm pumping zone

### TECHNICAL DATA - PUMPS

Built Pump System	F1 to F6	S1 to S4	S6 to S8	FG1 to FG6	Units
Features	Feka VS 1000	CP400	NP750	Semisom 125	
Pump Design	Vortex	Vortex	Vortex	Cutter	
Discharge Size - female BSP	2	2	2	1 1/2	inch
Max. Soft Solids Handling	50	10	35	N/A	mm
Recommended Discharge Pipe	63/75	50/63	50/63	32 / 50	mm
Pumping Head (Max.)	14	10.0	12.5	30	m
Flow Rate (Max.)	450	290	360	109	litres/min
Flow Rate at 4 m Head	374	220	320	N/A	litres/min
Pump Switching	Panel	Auto or Panel	Panel	Auto or Panel	
Float Switch	Paddle	Vertical	Vertical	Paddle	
Pump Start Level (auto)	Fully Adjustable	Fully Adjustable	Fully Adjustable	N/A	mm
Min. Stop Water Level (auto)	By float position	80	By float position	N/A	mm
Length	203	215	236	240	mm
Width	170	155	173	190	mm
Height	402	385	380	442	mm
Weight	19.3	12.0	8.5	22	kg
Clean Water Pumping	Yes	Yes	Yes	No	
Effluent Pumping	Yes	No	Yes*	Yes	
Sewage Pumping	Yes	No	No	Yes	
Fluid Temperature Range	0 to 35	0 to 40	0 to 40	0 to 40	°C
Motor Output	1000	400	750	1180	W
Power Supply	Single Phase				
Starter	Capacitor Type				
Start Current	31	10.5	28	36.8	Amp
Running Current	6.63	2.4	6.7	9.2	Amp
Body Material	Stainless Steel	Stainless Steel / Plastic		Cast Iron / Stainless Steel	
Shaft Material	Stainless Steel				
Shaft Seals	Silicon Carbide Carbon Alumina	Carbon Ceramic	Carbon Ceramic	Silicon Carbide	

\* Manual pumps only, switched with control panel and sewage type paddle floats.

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## Foul & Surface Water Pumping System

### SELF-BUILD SYSTEMS

Bare Trojan-Pro chambers can be purchased ready to be built by the user.

Pumps, together with the correctly sized non-return valves, shut-off valves, uPVC pipe and pipe fittings, tank connector, control systems and alarms, as well as the preferred lid & frame, will need to be purchased to create a full pumping system.

### LID AND FRAME PURCHASE CODES

Trojan-Pro Sump Chamber	
Chamber only	Purchase Code
1.2 m	TR12
1.5 m	TR15
1.8 m	TR18
2.1 m	TR21

The Newton Trojan-Pro has a clear opening of 585 x 585mm and a frame support of 720 x 720mm. All lids and frames that fit the frame support size are suitable for use with the Trojan-Pro pumping system.

Two optional steel, double-seal and locked lids and frames are stocked and supplied by Newton. Please confirm the required lid and frame with your order:

Lid Type	Size of Opening	Overall Size H x W x L	Weight Capacity	Purchase code
Recessed	600 x 600	58 x 680 x 680	10	TPSL9
Solid	600 x 600	25 x 640 x 640	5	TPSL8



### CHOOSING THE CORRECT CHAMBER SIZE

The correct sizing of the chamber is dependent on the depth of each 'zone' within the overall sump depth.

The **Pumping Zone** is measured from the chamber base to the highest level that the water should reach during normal pumping operations. This level will be higher with large pumps switched by panel and multiple floats, and will be less with small automatic pumps. The pump data sheets will confirm the water stop height. If this is unknown a height of 400mm is normally used with clean water and 700 - 800mm with foul pumping systems.

The **Invert Zone** is measured from the finished floor level/chamber lid level of the floor above the sump chamber to the bottom of the lowest invert/pipe entering the chamber. This zone is effectively dead space within the chamber and can add significantly to the total depth of the sump chamber required.

The **Storage Zone** mostly applies to foul pumping systems and is the volume of waste water that can be safely stored within the system over a 24 hour period to allow for continued use of waste water facilities during power outage or system failure. The Trojan-Pro chamber holds approximately 150 litres for each 300mm of sump depth.

### FOUL SYSTEMS - F1 TO F6 & FG1 TO FG6 - STORAGE REQUIREMENTS

Where Part H of UK Building Regulations requires 24 hour storage volume to be included within the sump depth, this is measured at 150 litres per person. It is generally accepted that the calculation assumes two persons within the main or first bedroom and one person in each of the other bedrooms.

Where the Trojan-Pro chambers do not have the required storage to meet the requirements of Part H, our larger pumping systems will be required. Please speak to our technical department for more information.

Where 24-hour storage is not required, for example where the pumping system is required for lifting foul water from the basement to street level drainage, the sump must be deeper than the combined height of the Pumping Zone and Invert Zone.

### SURFACE & GROUND WATER SYSTEMS - S1 TO S8

Chamber depth will be dictated by the depth of the Invert and the pumping zone.

### EXAMPLES

Water Type	Invert Zone	Storage Zone	Pumping Zone	Total	Sump Depth
Foul	200	600	700	1500	1500
	400	900	700	2000	2100
	300	N/A	700	1000	1200
Ground & Surface	500	N/A	400	900	1200
	850	N/A	700	1550	1800

### FULLY BUILT SYSTEMS - FOUL WATER

- Fully built pumping system
- Pumps controlled by DAB e.box control panel and multiple float switches
- Rail system option allowing for pumps to be lowered into place using guide-rails where they safely lock into the auto coupling system, which allows for safe and easy removal of the pumps for servicing and repair

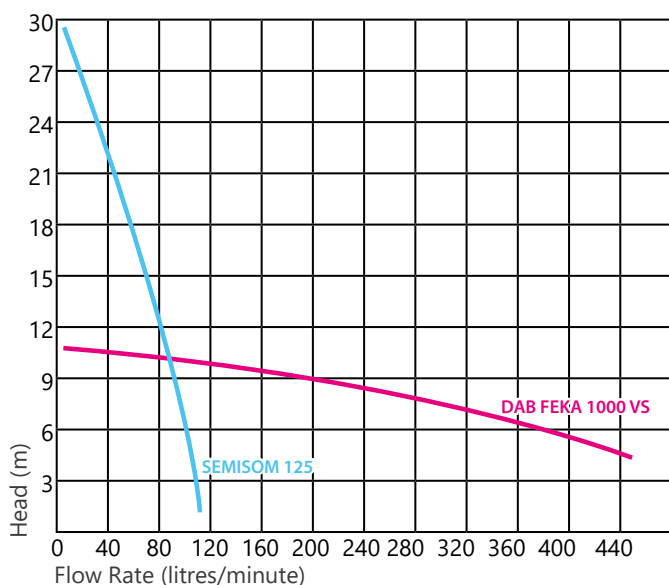
### SYSTEM PARTS - CODES F1 to F6 & F1S TO F6S

- Sump chamber: 1.2, 1.5, 1.8 or 2.1m
- Lid and frame: TPSL8 or TPSL9
- Pumps: DAB FEKA 1000 VS
- Pump control: DAB E.Box panel
- Floats: 3 x paddle floats
- None return valve: 2" cast iron ball valve
- Internal pipe and fittings 2" uPVC
- Guide rails, auto coupling stools and lifting chains

### SYSTEM PARTS - CODES FG1 to FG6 & FG1S TO FG6S

- Sump chamber: 1.2, 1.5, 1.8 or 2.1m
- Lid and frame: TPSL8 or TPSL9
- Pumps: SEMISOM 125
- Pump control: DAB E.Box panel
- Floats: 3 x paddle floats
- None return valve: 2" cast iron ball valve
- Internal pipe and fittings 2" uPVC
- Guide rails, auto coupling stools and lifting chains

### PERFORMANCE CURVE - DAB FEKA VS 1000 & SEMISOM 125



### PURCHASE CODES - DUAL FOUL PUMP SYSTEM

2 x DAB FEKA VS 1000 - Manual Pumps		
DAB e.box Control Panel, Floats & Alarm		
Chamber Size	Rails or Free-Standing	Purchase Code
1.2 m	Free Standing	F1
1.2 m	Rails	F2
1.5 m	Free Standing	F3
1.5 m	Rails	F4
1.8 m	Rails	F5
2.1 m	Rails	F6

### PURCHASE CODES - SINGLE FOUL PUMP SYSTEM

1 x DAB FEKA VS 1000 - Automatic Pumps		
Floats & Alarm		
Chamber Size	Rails or Free-Standing	Purchase Code
1.2 m	Free Standing	F1S
1.2 m	Rails	F2S
1.5 m	Free Standing	F3S
1.5 m	Rails	F4S
1.8 m	Rails	F5S
2.1 m	Rails	F6S

### PURCHASE CODES - DUAL MACERATOR FOUL PUMP SYSTEM

2 x SEMISOM 125 - Manual Pumps		
DAB e.box Control Panel, Floats & Alarm		
Chamber Size	Rails or Free-Standing	Purchase Code
1.2 m	Rails	FG1
1.2 m	Rails	FG2
1.5 m	Rails	FG3
1.5 m	Rails	FG4
1.8 m	Rails	FG5
2.1 m	Rails	FG6

### PURCHASE CODES - SINGLE MACERATOR FOUL PUMP SYSTEM

1 x SEMISOM 125 - Automatic Pumps		
Floats & Alarm		
Chamber Size	Rails or Free-Standing	Purchase Code
1.2 m	Rails	FG1S
1.2 m	Rails	FG2S
1.5 m	Rails	FG3S
1.5 m	Rails	FG4S
1.8 m	Rails	FG5S
2.1 m	Rails	FG6S

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### FULLY BUILT SYSTEMS - SURFACE & GROUND

- Fully built pumping system

#### SYSTEM PARTS - CODES S1 to S4

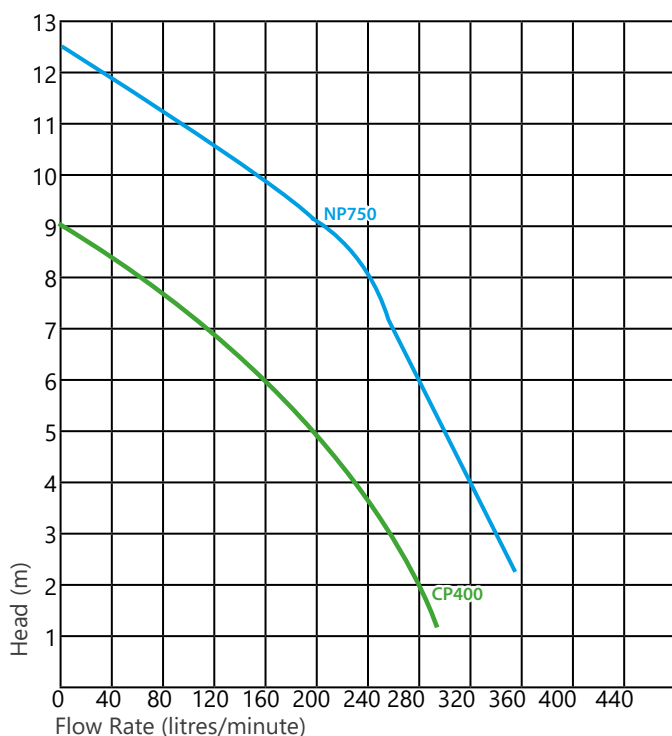
- Sump chamber: 1.2 or 1.5m
- Lid and frame: TPSL8 or TPSL9
- Pumps: 2 x CP400
- Pump Control - S1 & S3: By pump - Automatic
- Pump Control - S2 & S4: NOT INCLUDED\*
- Internal pipe and fittings: 50mm

#### SYSTEM PARTS - CODES S6 to S8

- Sump chamber: 1.5, 1.8 or 2.1m
- Lid and frame: TPSL8 or TPSL9
- Pumps: 2 x NP750 (manual)
- Pump Control: NOT INCLUDED\*
- Internal pipe and fittings: 50mm
- Guide rails, auto coupling stools and lifting chains

\* Pump control is not included with manual systems S2, S4, S6, S7 and S8. The Pump Controller or NEX Series CE12 Duplex Control Panel needs to be purchased.

### PERFORMANCE CURVE - CP400 & NP750



### PURCHASE CODES

Chamber Size	Pumps x 2	Auto or Manual	Rails or Free-Standing	Purchase Code
1.2 m	CP400	Auto	Free Standing	S1
1.2 m	CP400	Manual	Free Standing	S2
1.5 m	CP400	Auto	Free Standing	S3
1.5 m	CP400	Manual	Free Standing	S4
1.5 m	NP750	Manual	Rails	S6
1.8 m	NP750	Manual	Rails	S7
2.1 m	NP750	Manual	Rails	S8

### AUTOMATIC VS MANUAL PUMPS

Automatic pumps are supplied with Vertical Float Switches that allow for flexible pump switching, and for adjustment of the ON & OFF positions of each pump, as well as the overall height of the pump switching.

Manual pumps must be matched to the [Newton Pump Controller](#) (Code CP9) or [NEX Series CE12 Duplex Control Panel](#) (Code CP3). Please see pump and pump controller data sheets for further information.

### MATCHED BATTERY BACK-UP SYSTEMS

The following battery back-up systems are available to ensure continued pumping during power outage:

Matched Battery Back-up Systems			
Pumping System	Inverter	Battery	Purchase Code
S1 to S4	12/800/35	60 Ah	BBS3
S1 to S4	12/800/35	100 Ah	BBS4
S1 to S4	12/800/35	200 Ah	BBS5
S6 to S8	12/1600/70	100 Ah	BBS6
S6 to S8	12/1600/70	200 Ah	BBS7

### BATTERY BACK-UP SYSTEMS - INVERTERS

Newton Battery Back-Up systems can also be sized and purchased separately for systems that require enhanced protection with larger batteries or banks of batteries. Please see below or refer to the [Victron MultiPlus TDS](#).

#### Inverters

- For 400W pumps: [12/800/35](#) - Code BB1
- For 750W pumps: [12/1600/70](#) - Code BB11

#### Batteries

- 60 Ah battery - Code BB20
- 100 Ah battery - Code BB21
- 200 Ah battery - Code BB22

### INSTALLATION & COMMISSIONING

The pumping systems are large and heavy and installation requires significant groundworks to be undertaken including excavation and concreting in of the chamber into the ground.

Connection of the pumps, control systems and battery back-up systems requires expert knowledge and experience. Please consult the Trojan-Pro Operating Manual and relevant pump Installation Instructions before commencing installation.

### SERVICING

Newton pumps should be serviced by trained and qualified pump engineers only. It is recommended that the pumping system is serviced at the pump engineers discretion and within an ongoing service agreement/contract. Newton can supply the details of competent installation and servicing companies on request.

### CONNECTIONS IN & OUT OF THE CHAMBER

Please note: Conduit, vent, rising main, fittings and solvent weld glue are not supplied but are required.

### RISING MAIN PIPE & FITTINGS

The systems are supplied with a 63mm socket ready for connection of a 63mm rising main. If a 50mm rising main is preferred, part number PP35 is required. Please see Page 7 for pipe and fittings for the rising main.

### CONDUIT

Pumps power cables are high voltage. Alarm and float cables are low voltage.

**NOTE:** Low voltage and high voltage cables should not use the same conduit.

Conduit should be large enough to ensure that all cables can easily be pulled through, both at installation and commissioning of the pumps and for when the pumps and or float cables require replacement. If unsure, use 110mm for the conduit.

### VENT

Where the chamber is receiving water from S1 to S8 surface and groundwater systems, the incoming drainage connection acts as a vent and so additional vents are not required.

If the system is sealed, as with F1 to F6 foul systems, air cannot enter the chamber and so a dedicated vent pipe will be needed. A convenient way to do this is to use the same 63mm pipe and fittings as used by the rising main, passing through the wall of the chamber via a wall flange.

Vent pipes must be a minimum of 50mm O/D and to ensure that sufficient air passes into the chamber to replace the water volume being replaced by the pumps, it is recommend that the vent is of similar diameter and not smaller than the size of the rising main.

### INLETS

Inlet connections will need to be cut on site. Where the pumping system is receiving water from a Newton CDM, Type C, [cavity drain waterproofing system](#), a BaseDrain Connection Kit will be required - Purchase Code D21.

### WALL FLANGES & HOLE CUTTERS

Wall flanges and holes cutters are available for 50mm, 63mm and 110mm O/D pipe. Please see page 7 for further details.

### PUMP WARRANTIES

CP400 - 1-year manufacturers warranty or a 3-year back-to-base warranty if the pumps are serviced by a Newton approved service engineer.

NP750 - 3-year manufacturers warranty or a 5-year back-to-base warranty if the pumps are serviced by a Newton approved service engineer.

DAB FEKA 1000 VS - 2-year manufacturers warranty.

### PACKAGING & HANDLING

The pumping System is delivered on a pallet and will require either a forklift of a multi-person lift to move from the delivery vehicle to installation position. Check the delivery weight before using a multi-person lift.

### LIMITATIONS

- Order the correct pump for the water type and duty
- The chamber is designed to be a liner to act as framework for the placement of the concrete surrounding it. It is not a structural element and is reliant on the surrounding concrete to resist ground and ground water pressure

### STORAGE

The pumping system should not be exposed to direct sunlight for more than a few days.  
Cover if stored outside.

### HEALTH & SAFETY

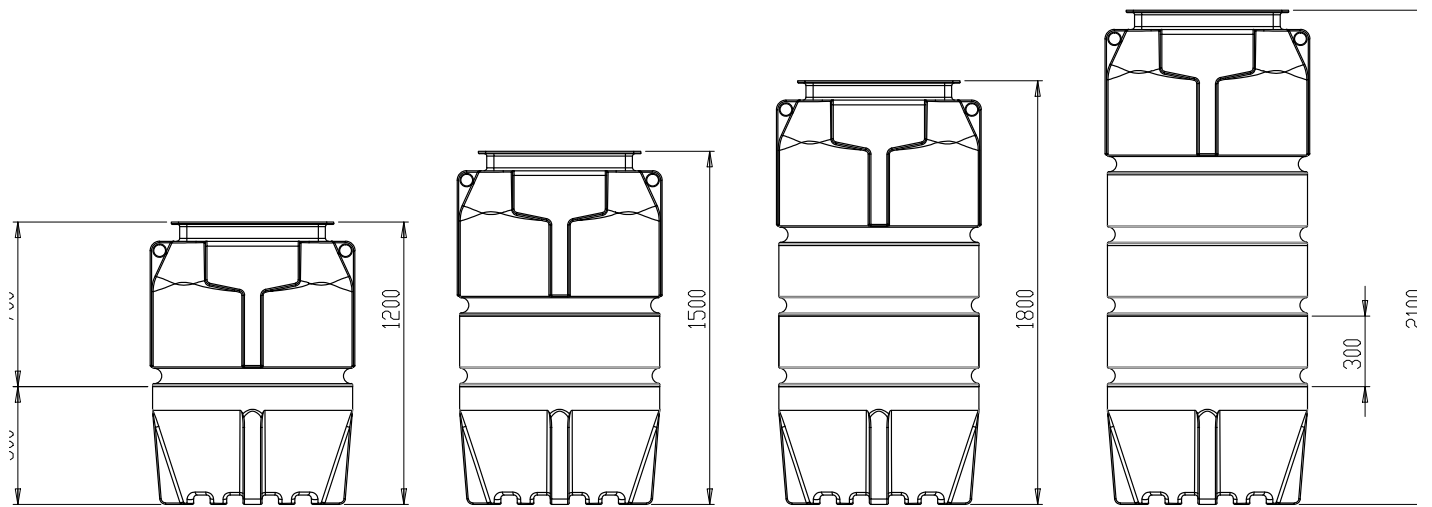
Use appropriate PPE for the environment the system is installed within.

As with all site work, the dangers of working with water and electricity pose severe threats to health if obvious and fundamental precautions are not taken. Therefore if you are in any doubt to any of the following, please do not hesitate to contact us.

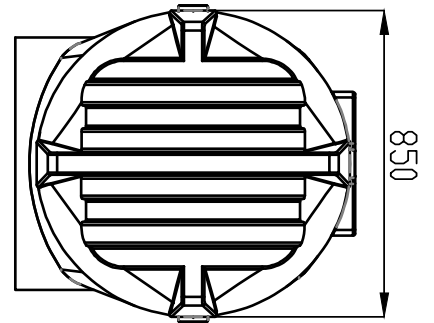
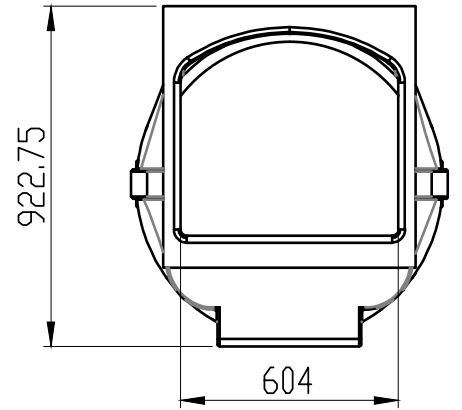
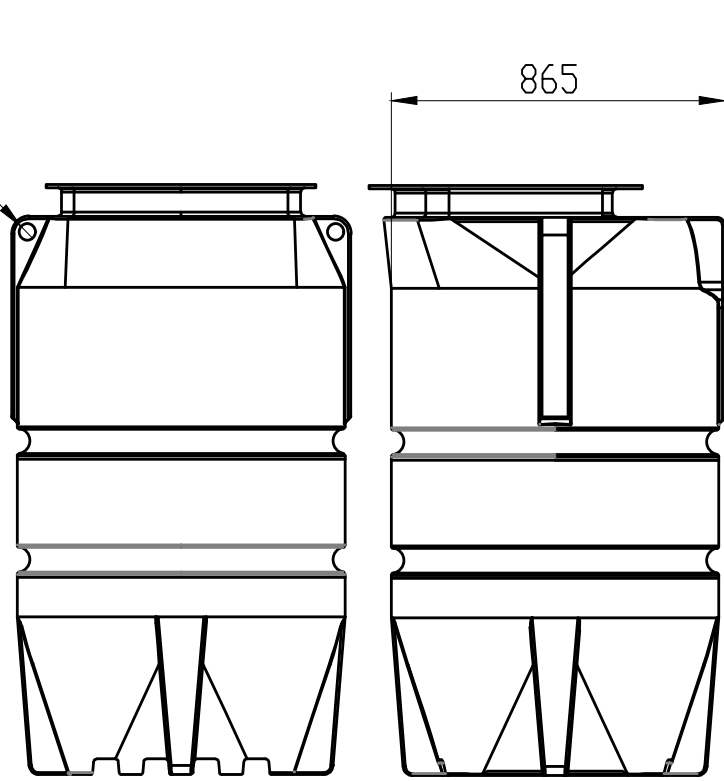
All work should be undertaken by qualified personnel only.

# Trojan-Pro

Foul & Surface Water Pumping System



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### ANCILLARIES

ITEM Product Code

#### SUMP OPTIONS

##### *CDM*

BaseDrain Connection Kit - BaseDrain Adaptor, 63 mm flexi-pipe and 63mm wall flange D21

##### *Wall Flanges*

Wall flange for 50mm diameter vent and conduit pipe WF50

Wall flange for 63mm inlet WF63

Wall flange for 110mm inlet WF110

##### *Hole Cutters*

82mm Hole Cutter for 50 mm wall flange HC82

95mm Hole Cutter for 63mm wall flange HC95

140mm Hole Cutter for 110mm wall flange HC140

Arbor for hole cutter PA33

#### uPVC PRESSURE RATED PIPE & FITTINGS

##### *50mm rising main*

63mm to 50mm female reducer/adaptor PP35

50mm Pipe - 2.5m lengths PP1

50mm Flexible pipe - 25m coil PP9

50mm Wall mount clips - Pack of 10 PP6

50mm 90-degree elbow - female to female socket PP2

50mm 45-degree elbow - female to female socket PP3

50mm Female to female socket PP4

50mm Tee - female to female socket PP5

50mm Union - female to female socket PP46

##### *63mm rising main*

63mm Pipe - 2.5m lengths PP10

63mm Flexible pipe - 25m coil PP19

63mm Wall mount clips - Pack of 10 PP15

63mm 90-degree elbows - female to female socket PP11

63mm 45-degree elbows - female to female socket PP12

63mm Female to female socket PP13

63mm Tee -female to female socket PP14

63mm Union - female to female socket PP17

63mm wall mount clips PP15

uPVC Solvent-on Wet 'R Dry - 240ml G2

uPVC Pipe Primer - 473ml G3

uPVC Solvent 0.5 litre G1

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