

# REWATEC™

ASP Polyethylene Packaged Sewage Treatment Plant



## Owner's Manual & Installation Guide

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### Rewatec ASP Polyethylene Package Sewage Treatment Plant

Standard Discharge Level: 20BOD/30SS/20NH3-N

### Manual Version OM0006 Rev 6.2

Created On: 27 Feb 2024



**Installers: To Safeguard Warranty Please  
Ensure You Are Using the Latest  
Installation Manual**

## Customer Checklist

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Complete Installation Record



Page 4

Read Important Customer  
Information



Page 5

Register Your Warranty



Page 6

See Maintenance Schedule



Page 7–8

Familiarise Yourself With This  
Manual



Page 9>

## Installation Record

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Please record details of your ASP tank installation here and keep this document in a safe place.

Unit Installed (Please Tick)

<input type="checkbox"/> ASP06	<input type="checkbox"/> ASP08	<input type="checkbox"/> ASP12	<input type="checkbox"/> ASP16	<input type="checkbox"/> ASP20	<input type="checkbox"/> ASP25
<input type="checkbox"/> ASP06P	<input type="checkbox"/> ASP08P	<input type="checkbox"/> ASP12P	<input type="checkbox"/> ASP16P	<input type="checkbox"/> ASP20P	<input type="checkbox"/> ASP25P

Serial Number:

Commissioning

Date:

### Commissioning Company

Name: -----

Address: -----

-----

Contact: -----

### Service Company

Name: -----

Address: -----

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Contact: -----

If you require assistance finding a service company, please contact Premier Tech. Your warranty is invalidated if you do not keep to a regular servicing schedule.



**PT Water and Environment UK**

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PT-WaterEnvironment.co.uk



## Regulations & your responsibilities

A package sewage treatment plant is an essential component of the home or workplace. It provides with safe, hygienic wastewater treatment and disposal to make sure your family and colleagues have a pleasant place to live and work and that the local community and environment is protected. You must treat your package sewage treatment plant with the respect it deserves and make sure it is operated and maintained properly so it can continue to provide outstanding performance.

## Building Regulations

- Notices are required to be displayed in the household stating that the plant is connected to a private sewage treatment plant. Notices in toilets and bathrooms would also inform guests.
- Planning and building control departments of your local council should be informed of the work being undertaken.

## What responsibilities do I have?

Users of a packaged treatment plant have a responsibility under the terms of the Water Resources Act (1991) to ensure that the plant meets the standards set by the Environment Agency. The plant is designed to ensure that the final effluent discharged back into the water table (Ground Water) or watercourse meets these requirements. Once your plant is commissioned and operating efficiently, the Environment Agency may sample the discharge from the plant to check it meets the agreed standards. The Environment Agency also has the right to alter the consent standard. **It is essential to regularly maintain and service the plant to make sure it is running efficiently.** You can do a lot to ensure you get the best out of your plant. This manual offers a simple and practical guide to help you do just that.

- The plant must be emptied of sludge as required by the operating instructions, ensuring that the tanker company used is licensed as required to dispose of the waste. **All documentation relating to the sludge disposal should be kept with the servicing records.**
- The plant must be serviced in accordance with this **Operation and Maintenance manual. An appropriate service provider must carry out the annual service.** Records of all services undertaken must be kept.
- **When a house is sold, evidence that the treatment plant has been properly installed and maintained will be required.**

Thank you for purchasing a Premier Tech product.

## 10 Year Warranty

To activate your warranty complete the form below to receive your warranty certificate by email:

[premiertechaqua.co.uk/forms/warranty-activation-form.aspx](http://premiertechaqua.co.uk/forms/warranty-activation-form.aspx)



- Your ASP treatment plant is supplied with a 10-year tank guarantee and a 1 year componentry guarantee, extendable to 5 years if you register your warranty.
- This warranty is dependent upon the plant being installed, operated and maintained in accordance with this Installation, Operation and Maintenance manual.
- The Blower supplied with your Treatment Plant contains serviceable parts; these MUST be replaced, by a suitably qualified person, in line with the manufacturers operation and maintenance guide supplied.
- Proof of correct installation and plant maintenance (servicing) including purchase of serviceable parts MUST be retained, as these will be required in the event of any warranty claim.

Failure to comply with the above Terms and Conditions will invalidate the warranty.

Premier Tech Water & Environment Ltd accepts no liability for any damage or loss, including consequential loss, caused by the failure of any equipment supplied.

NB: The final effluent pump on the pumped discharge models is covered by a 12-month guarantee.

## Rewatec ASP Maintenance Schedule

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Details of servicing & maintenance requirements are located within this manual. Please use this page to record your tanks services and maintenance.

Your warranty is invalidated if you do not keep to a regular servicing schedule.

**6 Month Check**

Date:

Servicing Company:

Notes:

**1<sup>st</sup> Annual Service**

Date:

Servicing Company:

Notes:

**2<sup>nd</sup> Annual Service**

Date:

Servicing Company:

Notes:

**3<sup>rd</sup> Annual Service**

Date:

Servicing Company:

Notes:

**4<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**5<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**6<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**7<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

## Rewatec ASP Maintenance Schedule

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**8<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**9<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**10<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**11<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**12<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**13<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**14<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

**15<sup>th</sup> Annual Service**

Date:

Servicing Company:

Notes:

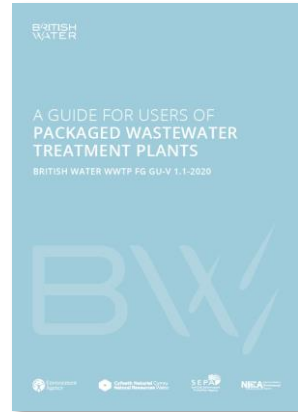


## Additional Resources

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British Water's A Guide For Users Of Packaged Wastewater Treatment Plants can be found on the British Water website.

<https://www.britishwater.co.uk>



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# Introduction

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This Installation, Operation, and Maintenance (O&M) manual includes descriptive literature, specifications and drawings relating to the principal mechanical and electrical equipment incorporated in the treatment plant. It is the responsibility of the owner, installer, and operator to read and fully understand these instructions before installing, commissioning or operating the plant. In the unlikely event of problems occurring with your plant you may either refer to this manual, your equipment supplier or directly to Premier Tech Water & Environment Ltd.

The plant comprises two treatment stages; an aerobic biological zone and a final clarification zone. The design combines the benefits of a well-proven treatment process with our engineering expertise to produce a high-quality system, which is robust and reliable. The plant will provide long and trouble-free operation, providing the simple maintenance procedures described out in this manual are regularly carried out.

**Your attention is drawn to the 'Health and Safety' section at the beginning of this manual. It is IMPERATIVE that you read these instructions BEFORE working on the plant.**

The plant has been designed to treat the volume and strength of sewage specified in the original quotation. Please note the following points:

- The maximum design loadings must not be exceeded (see original quotation, order acknowledgement and this O&M Manual for details).
- The plant is designed for gravity feed and should not be pumped to.
- Surface water, from roofs etc., must not enter the plant and or sewerage system.
- High volume discharges from swimming pools or Jacuzzi's must not enter the plant.
- Large quantities of chemicals such as water softener regenerant, disinfectants, strong acids or alkalis, oil and grease, pesticides or photographic chemicals must not enter the system.
- Do not use chemical or biological emulsifiers in grease traps.
- Do not dispose of nappies, baby wipes, sanitary towels, incontinence pads or similar materials via the toilet.
- Do not dispose of medicines down the toilet or sink.
- Waste disposal units should not be used unless accounted for within the original specification.

**If you have any doubt about a particular substance, please contact Premier Tech Water & Environment Ltd.**

# Important – Health and Safety

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*(Important – Please Read This Before Starting Any Work on the Plant)*

United Kingdom Health and Safety at Work Act 1974.

Section 6(a) of this Act requires manufacturers to advise their customers on the safety and the handling precautions to be observed when installing, operating, maintaining and servicing their products.

The user's attention is therefore drawn to the following:

1. The appropriate sections of this manual must be read before working on the equipment.
2. Suitably trained or qualified personnel must carry out installation and servicing.
3. Normal safety precautions must be taken and appropriate procedures observed to avoid accidents.

**If further technical advice or product information is required refer to your service company, your local supplier or Premier Tech Water & Environment Ltd.**

## Health

It is the customer's responsibility to ensure that all necessary protective clothing/equipment is available.

*Leptospirosis – what is Leptospirosis and are you at risk?*

Two types of Leptospirosis infection affect people in the UK.

1. Weil's disease – this is a serious and sometimes fatal infection that is transmitted to humans by contact with soil, water or sewage contaminated with urine from infected rats.
2. Hardjo-type Leptospirosis – this is transmitted from cattle to humans.

**What are the symptoms?** → Both diseases start with a flu-like illness with a persistent and severe headache, muscle pains and vomiting. Jaundice appears about the fourth day of the illness.

**How might I catch it?** → The bacteria can enter the body via cuts and scratches and through the lining of the mouth and throat or through the eyes.

**How can I prevent it?** → After having worked in contact with sewage or anything contaminated with sewage, wash your hands and forearms thoroughly with soap and water. If your clothes, boots or tools are contaminated with sewage, wash thoroughly after handling them.

- **Take immediate** action to wash thoroughly any cut, scratch or abrasion of the skin as soon as possible. Apply antiseptic to the wound, cover with cotton wool or gauze, and protect with a waterproof plaster.
- **DO NOT** handle food, drink or smoking materials without first washing your hands.

If you contract the symptoms described above after coming into contact with sewage, report it to your doctor immediately and advise him/her of the circumstances.

### **Safety**

Sewage gases are potentially hazardous. **DO NOT** enter the unit or any sump.

**Before carrying out any maintenance work, the equipment must be electrically isolated by disconnecting the blower and if fitted the discharge pump.**

**DO NOT** leave the plant cover open for any longer than is necessary. Temporary barriers and warning signs should be erected around any open covers or manways as appropriate.

# Owner's Responsibilities

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The owner of the Sewage Treatment Plant is entirely responsible for plant operation and ensuring that the effluent quality does not breach the Discharge Consent Standards.

The offloading of the treatment plant and the correct installation is the responsibility of the owner. We would strongly recommend that a contractor that understands sewage and drainage systems should install the plant.

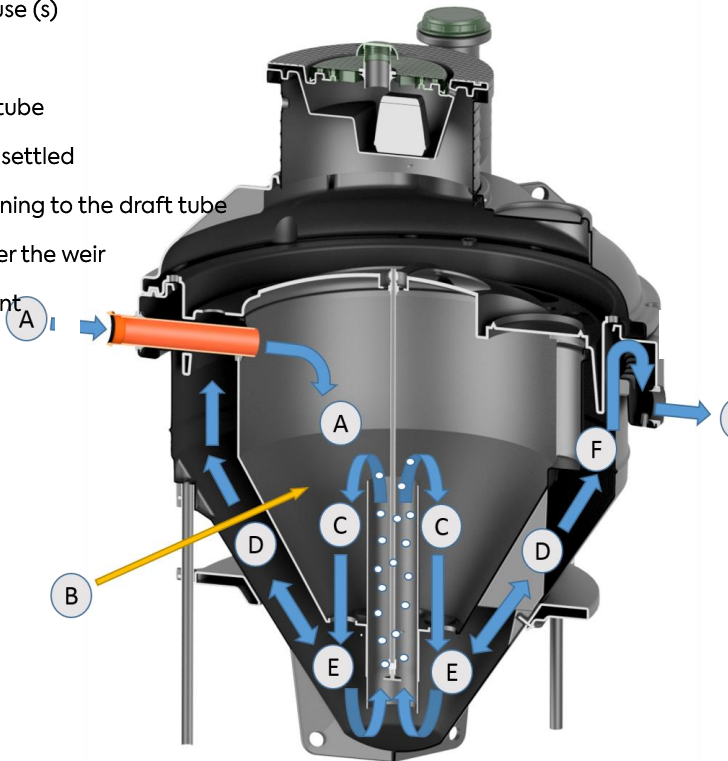
The chosen method of discharge remains with the client in consultation with the environment agency. Responsibility for the design, installation and maintenance of the system remains with the client. Premier Tech Water & Environment Ltd accepts no liability for any damage or loss, including consequential loss, caused by the failure of any equipment supplied.

# Process and Plant Description – Gravity Discharge

Rewatec ASP treatment plants have an inner central chamber and an outer settlement zone. The plant treats sewage using the extended aeration principle in the central bio-zone chamber. A simple course bubble diffuser, housed in a draft tube, introduces the air that provides the oxygen to the bacteria that then treats the sewage. The bio-zone retains the mixture of water, sewage and air until the level of treatment has been achieved. The treated effluent then enters the conical clarifier tank where settlement takes place and the settled solids are drawn back towards the draft tube (where the diffuser is located) and returned to the bio-zone. The effluent finally leaves the plant over a weir that extends around the circumference of the tank, at the outlet level. The movement of fluid through the whole system is by gravity displacement. There are no moving parts in the treatment plant.

As the process is aerobic a continuous supply of oxygen, provided by the air blower, is required. Therefore, the air blower needs to run continuously when the plant is in operation.

- A) Inlet, flow from the house (s)
- B) Bio-Zone chamber
- C) Flow around the draft tube
- D) Treated effluent being settled
- E) Settled Bio-solids returning to the draft tube
- F) Final effluent going over the weir
- G) Effluent exiting the plant



# Process and Plant Description – Pumped Discharge

For situations where it is not possible for the treated effluent, from the Rewatec ASP treatment plant, to gravitate to the final discharge location, a plant with an integral final effluent discharge pump can be provided. The method of plant operation, for treating the incoming sewage, is the same as for the gravity discharge unit. The final effluent passes over a weir that extends around the circumference of the tank and is directed to the final effluent discharge pump.

As the process is aerobic a continuous supply of oxygen, provided by the air blower, is required. Therefore, the air blower needs to run continuously when the plant is in operation.

A) Inlet, flow from the house (s)

B) Bio-Zone chamber

C) Flow around the draft tube

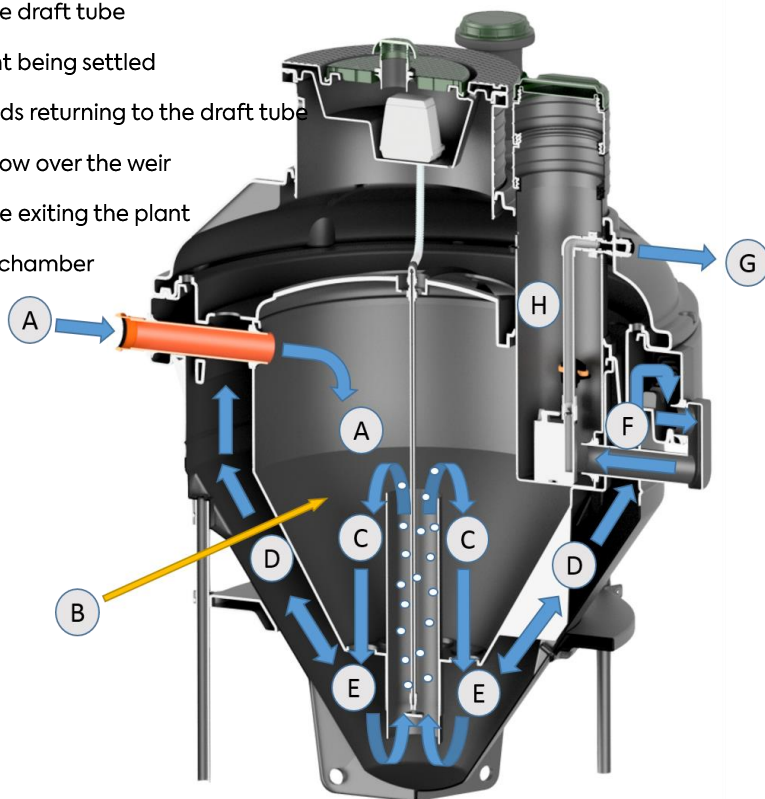
D) Treated effluent being settled

E) Settled Bio-solids returning to the draft tube

F) Final effluent flow over the weir

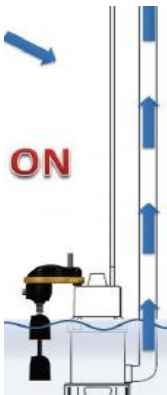
G) Pump discharge exiting the plant

H) Integral pump chamber



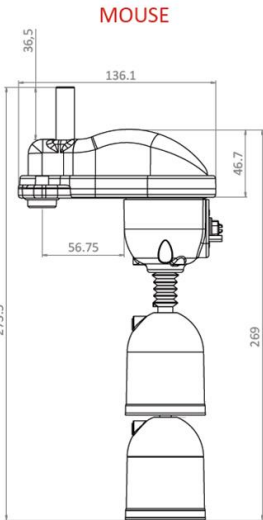
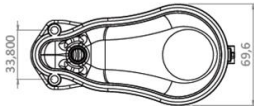


# Pump Chamber – Pumped Discharge



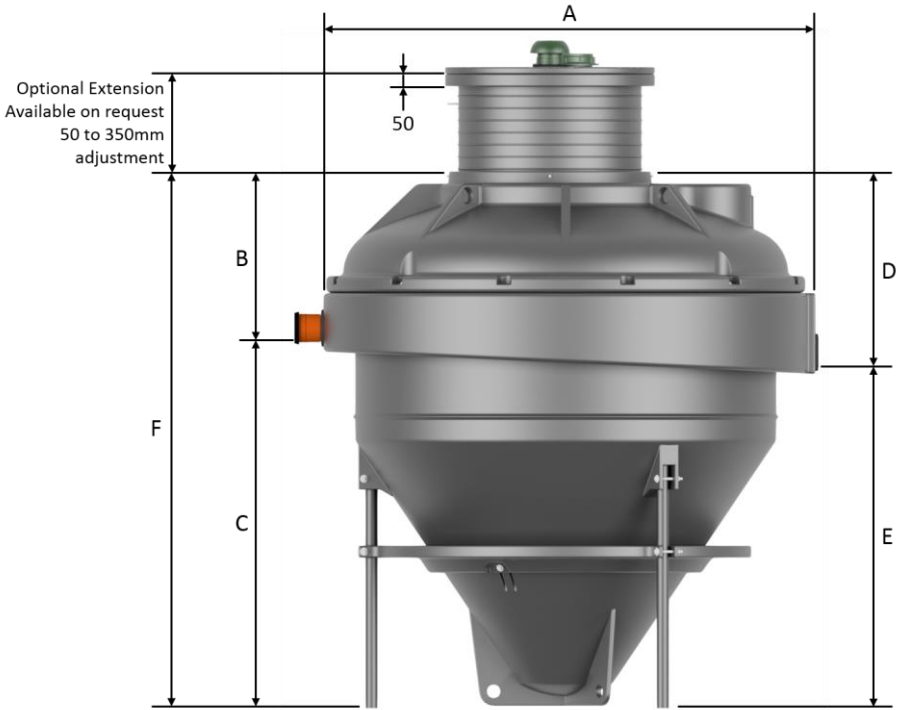
MOUSE

PET - 200mm:  
min. 60mm (2,60in) – max. 120mm (5,19in)



MOUSE

# Plant Dimensions



# ASP Specification

Rewatec® Unit		ASP06 POLYET HYLEN E	ASP08 POLYET HYLEN E	ASP12 POLYET HYLEN E	ASP16 POLYET HYLEN E	ASP20 POLYET HYLEN E	ASP25 POLYET HYLEN E
Population Equivalent		6	8	12	16	20	25
Hydraulic Load (l/day)		1200	1600	2400	3200	4000	5000
Organic Load (g BOD5/day)		360	480	720	960	1200	1500
Ammonia (g NH3/day)		48	64	96	128	160	200
O/A Diameter	A	2000	2000	2000	2000	2000	2000
Standard Inlet Invert (mm)	B	700	700	700	700	700	700
Inlet Invert to Base (mm)	C	1500	1500	1900	1900	2000	2300
Standard Outlet invert (mm)	D	800	800	800	800	800	800
Outlet Invert to Base –Gravity Discharge (mm)	E	1400	1400	1800	1800	1900	2200
O/A Depth inc. lid(mm)	F	2250	2250	2650	2650	2750	3050
Pipework Fitting (mm)		110	110	110	110	110	110
Blower Rated Power (Watts)		80	90	90	160	160	230
Estimated Blower Consumed Power @ Working Pressure (Watts)		75	80	90	130	130	190
Blower Cover Size (Green) (mm)		Ø450	Ø450	Ø450	Ø450	Ø450	Ø450
Plant cover (Grey) (mm)		Ø750	Ø750	Ø750	Ø750	Ø750	Ø750
Plant Weight (kg)		260	260	310	310	330	360
<b>Pumped Outlet Option: ASP##-P POLYETHYLENE</b>							
Pump Rated Power (Watts)		550	550	550	550	550	550
Pump Maximum Flowrate (l/s)		4.3	4.3	4.3	4.3	4.3	4.3
Pump Maximum Discharge Head (m)		10	10	10	10	10	10
Pump outlet size		1 1/4" BSP (Female threaded) Compression fitting for 32mm MDPE pipe.					

# Installation Guide



**IMPORTANT! PLEASE READ HEALTH AND SAFETY INSTRUCTIONS BEFORE ATTEMPTING ANY WORK.**

The following instructions are offered as guidance only. For site-specific installation requirements, the owner should seek consultation with a suitably experienced / qualified installation contractor.

## Materials

It is strongly recommended that concrete and / or backfill materials are not ordered until the treatment plant is on site. Premier Tech Water & Environment Ltd do not accept any level of liability for losses incurred by the unlikely event of a late delivery of the treatment plant.

## Offloading

The contractor is responsible for offloading the tank and any accessories using following method:

- **ASP6 to ASP25 using straps or chains with lifting shackles or hooks into the lifting brackets as shown.** (Any chains or steel ropes used in rigging **must not** be in contact with the tank)

**Do not** lift the tank if it contains any water. Maintain control over the tank when lifting by use of guide ropes. **Do not** allow the tank to impact against other objects. If the tank is stored on site prior to installation, it must be upright on a flat and level ground where it cannot be punctured or otherwise damaged. Chock with tyres or other cushioning material to prevent moving, and tie down if high winds are expected.

## Supplied items

The usual extent of supply is:

- (i) Treatment plant ready for installation.
- (ii) Air blower.
- (iii) Air hose (2.5m) and connections.
- (iv) Installation, operation and maintenance manual.
- (v) Air blower manual.

See your delivery note for full details of items ordered.



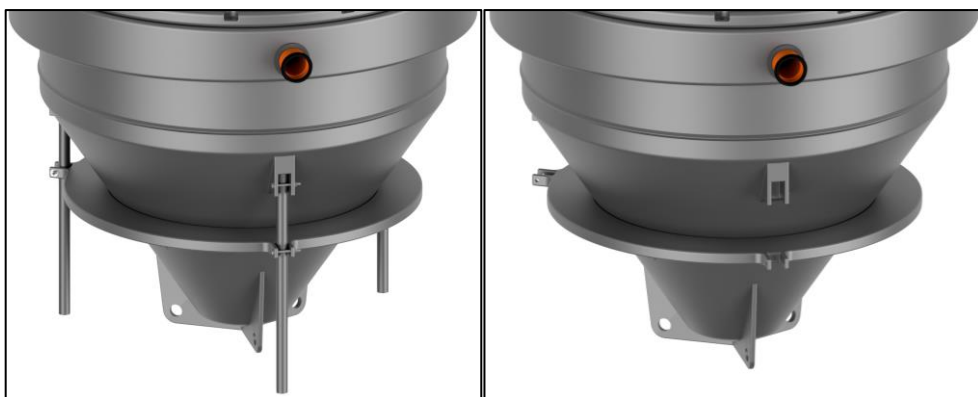
# Installation Guide With/Without Legs

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If you wish to remove the legs during installation.



NOTE: Remove all 6 nuts and bolts , Remove all 3 legs , Leaving the support ring in position.



## **Loadings**

If the tank is installed in an area where traffic or other superimposed loadings can be applied, it may be necessary to consult a structural engineer for the design of a reinforced concrete slab to prevent the load being transmitted to the tank (or its concrete surround). If this slab is constructed immediately above the tank, it should be separated from the concrete surrounding the plant.

## **Ventilation**

Before installing the tank, care must be given on how to provide adequate ventilation across the plant. As each site is different we can offer the following advice as guidance only (see BS8301, and Building Regulations Section H for further details). Ensure that an existing vent stack is in place or is supplied to the building discharging to the treatment plant.

# General Installation Guideline Procedure

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Installation procedures must be in accordance with the Health and Safety at Work Act 1974, and other relevant legislation. Your procedures should also follow good building practice. With due regard to the requirements of Building Regulations and Planning Orders, the waste water treatment plant should be located as far away as is reasonably practicable from habitable buildings or habitable rooms in buildings. The waste water treatment plant cover is rated for pedestrian use only; the plant should not be located in a trafficked area. Where it is likely that vehicular activity could adversely/accidentally impact on the waste water treatment plant then adequate security fencing or barriers must be provided.

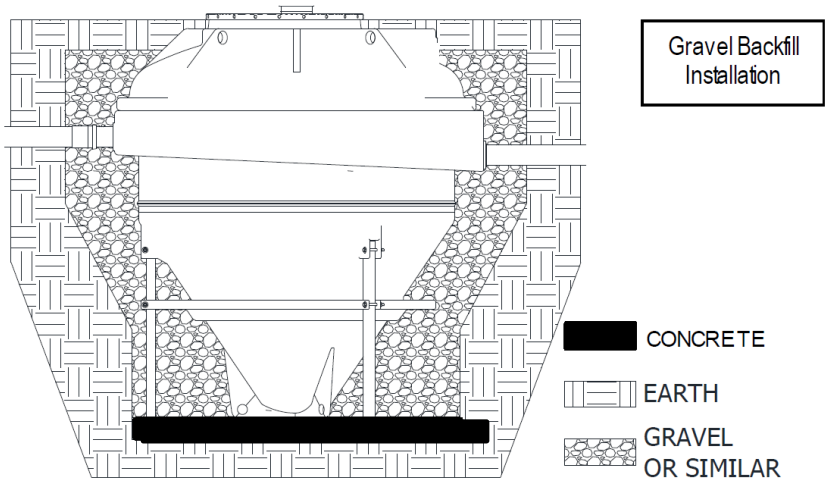
This procedure is issued as a guide only. Premier Tech Water & Environment accept no liability for incorrectly installed units. If the customer has any concerns then a suitably qualified installation contractor who has full access to all site conditions should be consulted.

During installation, it is important to check that the treatment plant remains level across all planes. The performance of a misaligned unit may be affected.

- 1 The installer must determine the existence, or otherwise, of a water table taking into account the conditions at the time. Excavate to the tank dimensions allowing a minimum clearance of 250mm between the tank and the sides of the excavation. The inlet/outlet invert levels and the tank dimensions will determine the depth of the excavation. The base of the unit should sit on a firm levelled surface. **Important – the base should be level across all planes.** Care should be taken not to dig too deep a hole.
- 2 If the installer is confident that the water table will not create a floatation issue during any part of the year, then for the backfill material small rounded gravel (See Appendix I for gravel specification) or other such inert material meeting the specification, at the discretion of the installer, may be used. The plant must be anchored by means of a minimum 200mm deep lean mix concrete poured over and between the base framework of the treatment plant. Important – check that the treatment plant is level across all planes during installation. If in doubt, then assume a water table will be present and the plant should be installed with concrete backfill.
- 3 For deep invert installation's Concrete surround to the plant must be used i.e. granular backfill is not suitable.
- 4 It is recommended that the hole is excavated to a diameter of 1.9m – 2.0m. Measure approximately 850mm from the bottom and widen the hole to a diameter of 2.5m – 2.6m. (See table on page 19).

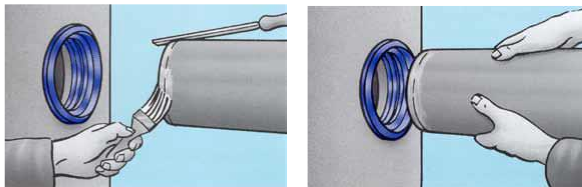
- 5 The inlet and outlet connections **MUST** be blanked during installation.
- 6 ASP6 to ASP25: The lifting points can be used to lift the plant slowly into the hole.

The plant should have no water, in it at any stage, when it is being lifted.



7. Continue checking the level of the plant. Ensure the inlet and outlet connections of the unit are in alignment with the incoming and outgoing sewer connections. Consult local building regulations to clarify inlet and outlet gradients.
8. Backfill with pea gravel or concrete method, filling internally at the same rate with water to the same depth as the back fill and continue to check the plant remains level. Continue to add water and backfill at the same rate to a level 250mm below the inlet/outlet pipes.
9. Check the plant is level and connect the inlet and outlet connections, first removing the temporary blanks.
10. Chamfer the edge of the connecting pipe and lubricate the end as shown, then, centre the end of the pipe and push it into the seal, so that the pipe end is pushed through the rubber seal by 50mm.

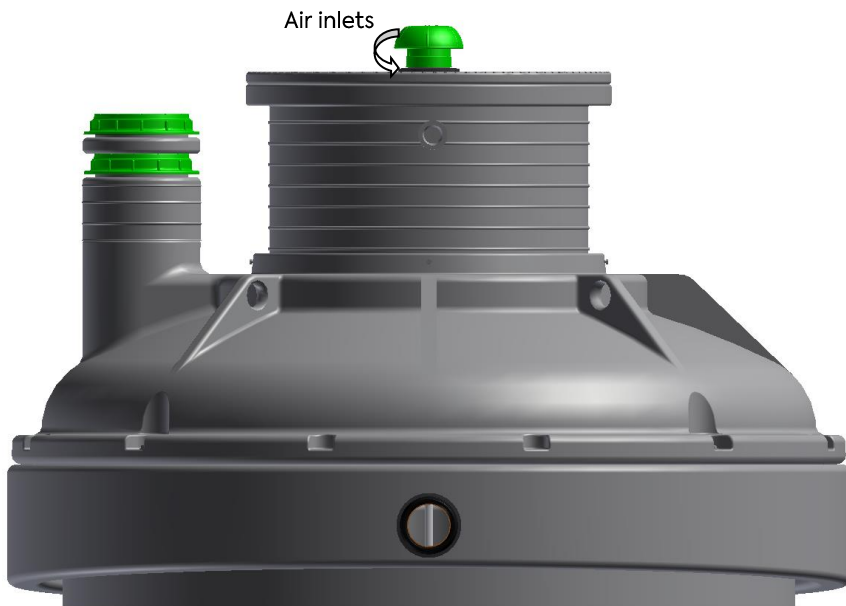




11. Backfill up to a minimum of 50 mm below the access cover (must be exposed at all times). Check the air hose to the air blower and the connection in the tank are secured with a jubilee clip.
12. The relevant environmental authority may require an effluent sampling point downstream of the treatment plant. Sample Chamber can be supplied. Please contact Premier Tech Water & Environment on +44 (0) 191 5878650 for details.
13. For integral pumped discharge units connect the discharge rising main to the pump outlet from the plant.

## Integrated Air Blower Housing Installation.

1. The air blower is supplied in the top neck of the plant that will need a 13-amp single-phase electrical supply. The discharge pump for pumped outlet models is supplied with 5m of cable – see electrical installation section.
2. We do not recommend that the plant is located within a flowerbed or where soil is exposed. Plants must not block the ventilation around the lid of the housing. Pollen and dust may require the filter on the air blower to be cleaned more often.
3. Note: if the air blower overheats (the blower operates continuously) due to poor installation it may invalidate the warranty.
4. Access to the blower housing is required for periodic maintenance. Locating the plant away from areas that may flood is essential.
5. Do not forget to place a drawstring in the duct for the electrical cables.
6. Cut a hole in the upper section of the plant (above the level of the inlet pipe, as shown below) for the electrical gland. The hole needs to be in the flat section, above the rim that joins the lower and upper parts of the tank together.
7. Check that the air hose is not bent, kinked or squashed and then ensure the jubilee clips are tightly secured.



Integrated blower ventilation

## **Remote Air Blower Housing Installation.**

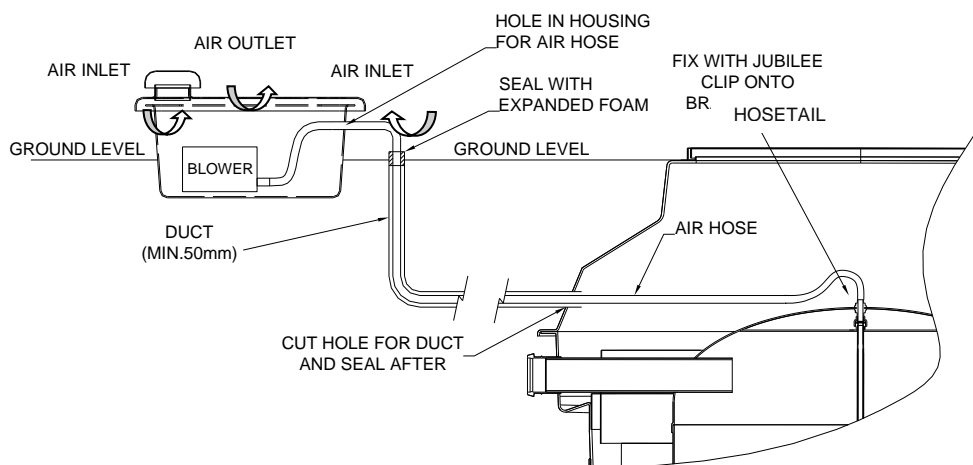
1. The air blower is supplied in the ASP and will need to be repositioned in the green enclosure supplied separately. It will need a 13-amp single-phase electrical supply. The housing should be within 10 metres of the treatment plant to allow the air hose to connect to the treatment plant.
2. It is important not to locate the green blower housing in direct sunlight; a shady place is preferred, as this will extend the life of the air blower. We strongly recommend that an outside building or garage is used with plenty of space around the housing.
3. The blower housing needs to be placed on a firm base.
4. If the blower housing must be installed outside, we do not recommend that it is located in a flowerbed or where soil is exposed. Plants must not block the ventilation around the lid of the housing or cover the dome on the top. Pollen and dust may require the filter on the air blower to be cleaned more often.

Note: if the air blower overheats (the blower operates continuously) due to poor installation it may invalidate the warranty.

5. Access to the blower housing is required for periodic maintenance. Locating the housing away from areas that may flood is essential.
6. The air hose (10m supplied) needs to be placed in a duct (typically at least 50mm diameter hard plastic pipe) so that the air hose is not squashed or bent. When the air hose needs replacing having it in a duct enables easy replacement.
7. Do not forget to place a drawstring in the duct.
8. Cut a hole in the upper section of the plant (above the level of the inlet pipe, as shown below) for the duct pipe. The hole needs to be in the flat section, above the rim that joins the lower and upper parts of the tank together. Slide the duct through the hole allowing 50mm to project into the inside of the tank. Seal the gap between the duct pipe and the tank with a suitable silicone or acrylic sealant.
9. The other end of the duct should finish by the blower housing.
10. Drill a hole in the housing just larger than the diameter of the air hose.
11. Pass the air hose from the treatment plant to the air blower.

12. Check that the air hose is not bent, kinked or squashed and then connect the hose to the air blower with a jubilee clip.
13. Seal the ducts with suitable expanding foam to stop rodents or insects entering the duct and to prevent excessive vibration noise.

## **Remote Air Blower Housing Installation.**



## **Electrical Installation**

In order to achieve a safe and cost-effective installation, it is not possible to state a specific installation configuration that would suit all sites. The selection of current protection devices must remain the responsibility of the installer, as the person qualified to assess site conditions and supply configuration. It is therefore imperative that electrical installation of this equipment is entrusted to a fully qualified electrician.

When installing the electrical supply, the following points should be considered:

1. The supply to the blower (and discharge pump where fitted) should be provided by a dedicated circuit via isolation and protection devices consistent with the requirements for fixed equipment and in accordance with the latest regulations issued by the Institution of Electrical Engineers.
2. The supply to the blower should be an independent single-phase 13-amp supply that can be isolated and has some form of suitable electrical protection.
3. Where fitted, the integral discharge pump will require a separate single phase 13-amp supply that can be isolated and has some form of suitable electrical protection. The integral discharge pumps are supplied with 5m of cable which will require the blower housing to be closer to the plant, alternatively the cable can be extended.

**Failure to comply with the following could result in the invalidation of warranty:**

4. All connections to the air blower (and discharge pump where fitted) should be made via the enclosure using correctly sized and rated glands. Ensure the glands (supplied by others) and ducts are sealed to prevent the ingress of moisture and rodents.
5. When drilling the housing, care must be taken to prevent the ingress of swarf into the electrical components, airline or air blower.

# Electrical installation for Air Blower & Pumped Outlet Version

## Integrated Air Blower & Pump Housing Installation.



### **STEP 1**

When Plant arrives, it is fitted with rubber plug. This plug **Must** be removed before operating



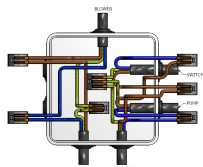
### **STEP 2**

Drill 2 holes for supply 1 and 2 (on Main lid & Blower box) Diameter to suit cable gland accordingly



### **STEP 3**

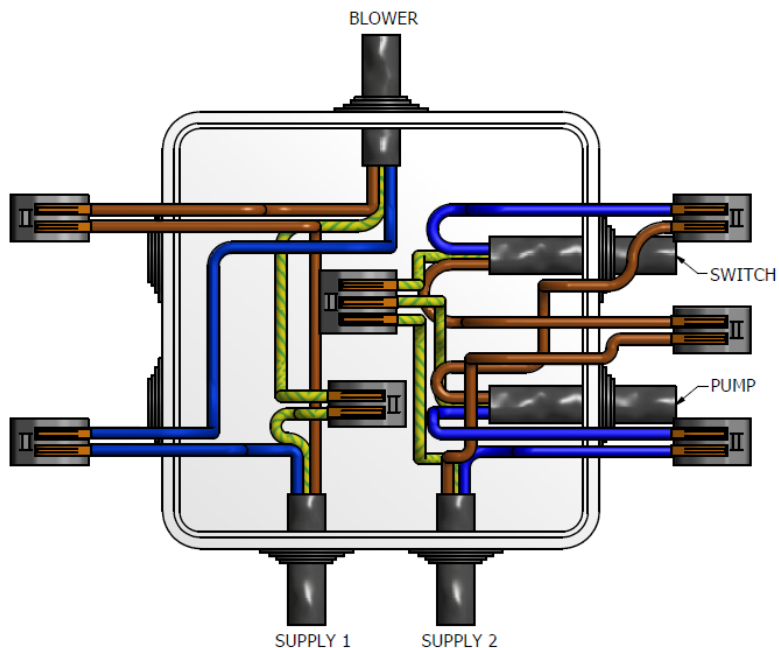
Fit Cable Gland for supply 1 and 2 on Main lid and blower box showing in the picture above making sure this is fully sealed. (Allowing cable to fit through main lid and inside blower box where the junction box is situated. (Glands NOT supplied)



### **STEP 4**

Qualified Electrician to connect as instructed in O&M

## ASP Junction Box Installation Guide (Pumped Version Only)



### Premier Tech Installation on Junction Box

1. BLOWER
2. SWITCH
3. PUMP

### Electrician Installation on junction box

1. SUPPLY 1
2. SUPPLY 2

### Please Note

The Plant will **NOT** be supplied / fitted with supply 1 and 2 Cables, Electrician Installation Technician will be responsible for supply 1 & 2 and connect according to drawing above

# Start-Up and Commissioning

---

The unit **MUST** be commissioned before sewage is allowed to enter the system.  
A qualified electrician **MUST** check all electrical connections and cabling.

Check that the air line from the air blower to the plant is unobstructed ☐

Ensure there are no dirt or materials in the tank ☐

Ensure the unit is filled with clean water and there is a discharge from the outlet. This is best done by using a hosepipe in the inlet manhole or by running several taps in the connected household(s) ☐

Check the electrical supply has been installed by a qualified electrician ☐

Switch the Blower Isolator to ON. Check the air blower runs. Check the aeration pattern in the bio-zone ☐

Where fitted, check that the outlet pump integral float switch can move freely. Ensure there is sufficient water in the pump chamber for the pump to operate i.e. the pump float is raised ☐

Switch the Pump (when applicable) Isolator to ON. Check that the pump operates. The level in the pump chamber should drop until the float switch stops the pump ☐

Checked by.....

Signature.....

Date.....

The Treatment Plant is now operational. However, the process relies on the growth of microorganisms in the Biological Zone. The time taken for these naturally occurring organisms to develop is dependent on temperature and is typically 8 – 10 weeks. However, this may be up to six months in winter. When the biology has 'matured' in this way, the treatment process will be completely established. During this time, do not allow any strong cleaning agents or bleaches to enter the system.



## **Shutdown Procedure**

Temporary absence of flow will not be detrimental, as the plant will continue to recycle the activated sludge within the system. However, in circumstances where the flow may be interrupted for more than **2 MONTHS**, the plant should be shut down by the following procedure:

De-sludge the system in accordance with the instructions in Appendix D of this manual.

Refill the system with clean water as described on previous page.

Switch off the mains supply to the air blower.

Switch off the mains supply to the discharge pump (where fitted).

## **Warranty**

Your ASP treatment plant is supplied with a 10-year Parts and Workmanship guarantee.

This warranty is dependent upon the plant being installed, operated and maintained in accordance with this Installation, Operation and Maintenance manual.

The Blower supplied with your Treatment Plant contains serviceable parts; these **MUST** be replaced, by a suitably qualified person, in line with the manufacturers operation and maintenance guide supplied.

Failure to comply with the above Terms and Conditions will invalidate the warranty.

Proof of correct installation and plant maintenance (servicing) including purchase of serviceable parts **MUST** be retained, as these will be required in the event of any warranty claim.

Premier Tech Water & Environment Ltd accepts no liability for any damage or loss, including consequential loss, caused by the failure of any equipment supplied.

NB: The final effluent pump on the pumped discharge models is covered by a 12-month guarantee.

# Maintenance Schedule

---

## Weekly Inspections

- Check that the air blower is operating by listening for a gentle hum.
- Check the final effluent discharging from the unit at the sample point. If it is cloudy or contains suspended particles contact your maintenance/service provider.

## Initial 6 Month Check

Premier Tech Water & Environment recommends that the unit is fully inspected and tested by **a suitably qualified service company** following its first 6 months of use

As per Weekly Inspections, plus

- Check for any signs that the air blower is overheating.
- Check for air leaks and excessive heat in the air hose, and that the blower and airline fittings are secure.
- Is there any evidence of water or moisture entering the blower housing?
- Check the aeration chamber has a vigorous air supply.
- Are there any foul odours when the lid is lifted?
- If fitted check the operation of the discharge pump.

## Annual service

Premier Tech Water & Environment recommends that a **suitably qualified service company** carry out the annual service.

As per the Initial 6 monthly Inspections, plus:

- It is important that this procedure is carried out before anything else.
- Obtain a sample of the final effluent to check that the plant is operating correctly. This may require introducing a small flow into the treatment unit to obtain the sample.
- If the system **discharges** into a watercourse such as a stream or ditch, then check the vicinity for any visible signs of pollution.
- If the system discharges into a drainage field, then verify as far as possible that the effluent from the plant is soaking into the ground.
- The contents of the central bio zone chamber (activated sludge) should be inspected to determine the settle ability of the sludge see (see Appendix D). The settle ability test will determine when the plant needs emptying of sludge (de-sludging).
- Inspect the top surface of the bio zone for any grease balls, soap suds, foaming or any non-biodegradable materials. These materials are best removed from the plant and correctly disposed of.
- Check that all the airways to the blower housing are clear and the air blower has adequate ventilation.
- **Caution Ensure Blower is isolated before working on the unit** Carry out maintenance on the blower unit in accordance with the blower manufacturer's instructions (See Appendix B).
- Clean the air blower air filter.
- Check that the air pipe from the air blower to the plant is not blocked, crushed or kinked.
- Check that the air diffuser is operating by inspecting the bio-zone turbulence. We recommend that the diffuser is removed and cleaned annually as this may block in hard water areas with scale.
- **Caution Ensure Pump is isolated before working on the unit.** Where fitted remove the final effluent discharge pump and carefully remove any accumulations of debris around the impellor.
- Where fitted ensure the free movement of the non-return valve fitted in the discharge pipe from the effluent discharge pump.
- Where fitted ensure there is no debris in the pump discharge chamber.
- Where fitted check operation of discharge pump and clear movement of pump discharge float switch (See Appendix C).
- Ensure that all the lids and covers are correctly secured before leaving site.

## **Every 2 ½ years**

- De-sludge the plant, if not undertaken during the annual service (See Appendix D).
- Carry out maintenance on the blower unit in accordance with the manufacturer's instructions.

# Appendix A: ASP Tank Specifications

Material Specification:	High Density Polyethylene.
Colour:	Natural Grey

	ASP06	ASP08	ASP12	ASP16	ASP20	ASP25
Design Loadings (max.)						
Population Equivalent [P.E.]	6	8	12	16	20	25
Hydraulic Load [l/day]	1200	1600	2400	3200	4000	5000
Organic Load [g BOD/day]	360	480	720	960	1200	1500
Ammonia Load [g NH <sub>3</sub> /d]	48	64	96	128	160	200
<b>Dimensions</b>	See page 18/19 for dimensions					
Drain Inlet Invert [m]	See page 18/19 for dimensions					
Depth from Inlet Invert [m]	See page 18/19 for dimensions					
Pipework Connections	110 Socket inlet / 110 rubber grommet outlet					
Approximate Weight (empty) [kg]	260	260	310	310	330	360
<b>Blower</b>						
Power consumption		See page 18/19 for details				
Power Supply		Single Phase, 240V, 50Hz				
<b>Pump</b>						
Power consumption		See page 18/19 for details				
Power Supply		Single Phase, 240V, 50Hz				

# enviro et series

Oil-Free - Linear Diaphragm Pump

Charles Austen  
Pumps Ltd

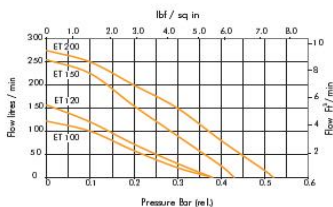
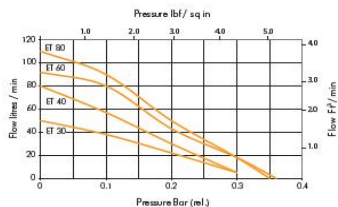


## Performance

- 30 to 250 litres/min flow



- Green drive technology – energy efficient motors low power consumption
- Specially formulated diaphragm material for extended life
- Due to no wearing parts no reduction in performance
- Robust and compact construction – weatherproof
- Easy to service with competitively priced spares kit
- Suited to intermittent or continuous duty applications
- Whisper quiet operation as low as 35dB



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USA Tel: 011 44 1932 355277  
Email: [info@charlesausten.com](mailto:info@charlesausten.com)  
Web: [www.charlesausten.com](http://www.charlesausten.com)

## Enviro options



ET pump with optional straight connector



ET pump with L shape connector (supplied)

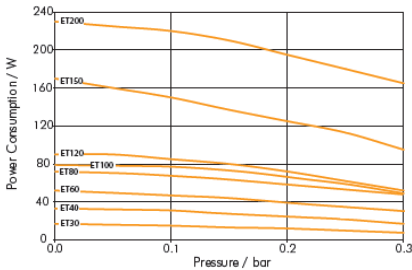


Enviro alarm

## Application Ideas

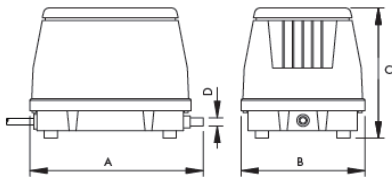


## Performance/Technical

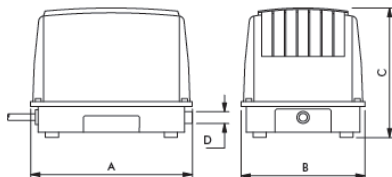


## Dimensions

### ET30, ET40, ET150 & ET200



### ET60, ET80, ET100 & ET120



Distributed by:



Model no.	Performance	Noise level db	Power consumption w
	Flow (l/min) @ pressure (bar)		
ET30	30.0 @ 0.15	40.0	25
ET40	40.0 @ 0.15	40.0	30
ET60	60.0 @ 0.17	40.0	55
ET80	80.0 @ 0.10	40.0	75
ET100	100.0 @ 0.10	45.0	80
ET120	120.0 @ 0.10	45.0	90
ET150	150.0 @ 0.15	45.0	160
ET200	200.0 @ 0.15	46.0	230

Model no.	Weight kg	Dimensions (mm)			
		A	B	C	D
ET30	4.0	208	150	178	14
ET40	4.3	220	155	190	14
ET60	6.0	203	165	153	18
ET80	7.0	210	185	171	18
ET100	8.5	238	196	177	18
ET120	9.5	265	215	198	18
ET150	9.0	256	200	222	18
ET200	9.0	256	200	222	18

## Connections

**ET30, ET40** - Plain, horizontal, connection 14.0mm OD also supplied with screw in barbed connector 10mm OD

**ET60, ET80, ET100 and ET120** - Plain, horizontal, connection 18.0mm OD also supplied with screw in barbed connector 12.0mm OD

**ET150, ET200** - Plain, horizontal, connection 18.0mm OD

Please note - it is important that you ensure the motor specification stated and the range of materials offered in the pump are compatible with the performance, environmental limitations and chemical resistance requirements of the application.

For further information or details of our extensive range of pumps, contact our technical sales office who will be pleased to help you select the most suitable pump for your application.

S30-253/4

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 Fax: +44 (0)1932 351285 Email: [info@charlesausten.com](mailto:info@charlesausten.com)  
[www.charlesausten.com](http://www.charlesausten.com)

**Charles Austen**  
 Pumps Ltd



POLYETHYLENE

## APA-HL Air Pressure Alarm

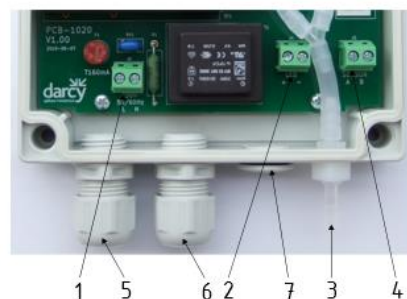
The sewage treatment plant pump air pressure and high level are monitored. The beacon flashes when the air pressure is outside the range 7kPa – 25kPa (70mbar – 250mbar) or a high level is detected.

The unit has battery backup and will alarm when a mains failure occurs. A low battery will also cause an alarm.



## Specification

Enclosure	<p>IP65 ABS</p> <p>130mm x 130mm x 35mm</p> <p>Colour:</p> <p>Base: Light grey (RAL7035)</p> <p>Lid: Smoked grey (transparent)</p>
Weight	336g (without batteries)
Power (Mains, J6)	<p>230VAC <math>\pm 10\%</math> 50/60Hz 1.8W</p> <p>3.3VA, cos <math>\phi = 0.55</math></p> <p>Transformer primary fuse: T180mA TR5 (soldered to PCB)</p>
Power (Battery, BT1)	<p>4 x AA (LR6) 1.5V alkaline cells (not included)</p> <p>Battery life:</p> <p>Operated solely from battery, no alarms: At least 2 years</p>
Battery check	<p>Mains powered: every 5 seconds</p> <p>Battery powered: every 24 hours</p> <p>First check is 5 seconds after power up or reset</p> <p>Alarms when less than 4.1V</p>
Power LED	<p>Green</p> <p>Flash rate:</p> <p>Mains: continuously lit</p> <p>Battery: once every 5 seconds</p> <p>Mains failure detection typically takes 30 seconds</p> <p>Restored mains detection typically takes 5 seconds</p>
Alarm LED beacon (J4)	<p>6VDC 20mA to external LED beacon</p> <p>Short-circuit protected (37.5mA constant current)</p> <p>Flash rate:</p> <p>Mains: once a second</p> <p>Battery: once every 5 seconds</p> <p>Double flash indicates low battery (less than 4.1V)</p>
Internal alarm LED (D2)	Flashes in synchronisation with LED attached to J4.
Air inlet	<p>4mm barbed plastic for soft silicone tubing</p> <p>Lower trip point: 7kPa (70mbar)</p> <p>Upper trip point: 25kPa (250mbar)</p>
High level sensor (J5)	<p>Monitored continuously on mains power, every 15 minutes on battery backup.</p> <p>From volt-free contact. Should be normally closed when not in alarm which also allows a broken cable to be detected.</p> <p>Fit a wire link to J5 if not used.</p>



## Terminals

1. J6, mains in (230V  $\pm 10\%$ , 50/60Hz).
2. J4, external alarm LED beacon.
3. 4mm air inlet. Supplied from a tap in the silicone air line from the pump.
4. J5, high level sensor input.
5. Mains input cable gland (M16).
6. External alarm LED beacon cable gland (M16).
7. Fitted with M16 blanking plug as standard. May be replaced with M16 cable gland if high level sensor input is used.



## Wiring

### Mains Input

J6 Terminal	Wire Colour
L	Brown
N	Blue

Table 1 – Mains input wiring

### External LED Beacon

J4 Terminal	Wire Colour
+	Red
-	Black

Table 2 – External alarm LED beacon wiring

### High-Level Sensor

If the high-level sensor will be used, remove the blanking plug, and fit an M16 cable gland and wire according to Table 3. If the high-level sensor is not used, fit a wire link across the terminals of J5.

J5 Terminal	Wire Colour
A	Brown
B	Blue

Table 3 – High level sensor wiring

## Fitting Alarm to Air Blower

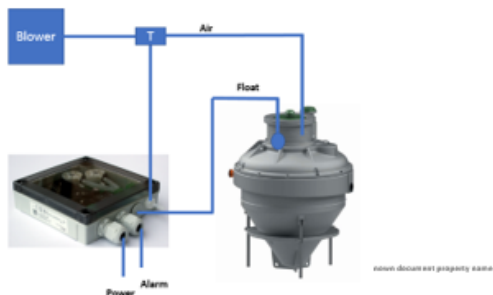
8. Cut hose to approximately 100mm from blower.
9. Place Jubilee clips over hose.
10. Place T-piece in the middle of the hose pipe.
11. Tighten all Jubilee clips securely.
12. Connect the supplied 4mm tubing from the T-piece to the air inlet on the alarm.

## Operation

An alarm is raised if:

- The air blower pressure goes outside the range 7kPa (70mbar) - 25kPa (250mbar).
- If the high-level switch is fitted and a high-level is detected (Monitored continuously on mains power, every 15 minutes on battery backup).
- A low or missing battery is detected.

A raised alarm flashes the external LED beacon and the internal red LED, D2. Flashes are once a second when mains is present or once every 5 seconds on battery backup. A double flash between single flashes indicates a low or missing battery.



## Appendix C: Optional Final Effluent Discharge Pump

# TOP

### Submersible DRAINAGE pump

► for clear water



#### **PLEASE NOTE:**

Round Float will NOT be fitted to top 2 pump.

Vertical Switch will be fitted

(See Page 9&10 for details)



#### PERFORMANCE RANGE

- Flow rate up to **400 l/min** (24 m<sup>3</sup>/h)
- Head up to **14.5 m**

#### APPLICATION LIMITS

- Immersion limit:
  - **3 m** for TOP 1-2-3
  - **5 m** for TOP 4-5
- Maximum liquid temperature **+40 °C**  
(Maximum liquid temperature +90 °C for a maximum of 3 minutes intermittent service)
- Passage of suspended solids up to **Ø 10 mm**
- Suction level:
  - **14 mm** above ground level for TOP 1-2-3
  - **30 mm** above ground level for TOP 4-5
- Continuous service **S1**

#### CONSTRUCTION AND SAFETY STANDARDS

- Complete with:
- **5 m** long power cable for TOP 1-2-3
  - **10 m** long power cable for TOP 4-5
  - float switch

EN 60335-1  
IEC 60335-1  
CEI 61-150

EN 60034-1  
IEC 60034-1  
CEI 2-3



#### CERTIFICATIONS



#### INSTALLATION AND USE

The **TOP** series is suitable for use with **clear water** that does not contain abrasive particles.

As a result of the design solutions that have been adopted, such as the complete cooling of the motor and the shaft with double seal, these pumps are easy to use and reliable.

They are suitable for use in applications such as draining small flooded areas (rooms, cellars, garages) in the event of an emergency, for the disposal of waste water in the home (from dishwashers, washing machines) and for emptying drainage traps.

#### PATENTS - TRADE MARKS - MODELS

- Registered Community Design n° 342159-0011

#### OPTIONALS AVAILABLE ON REQUEST

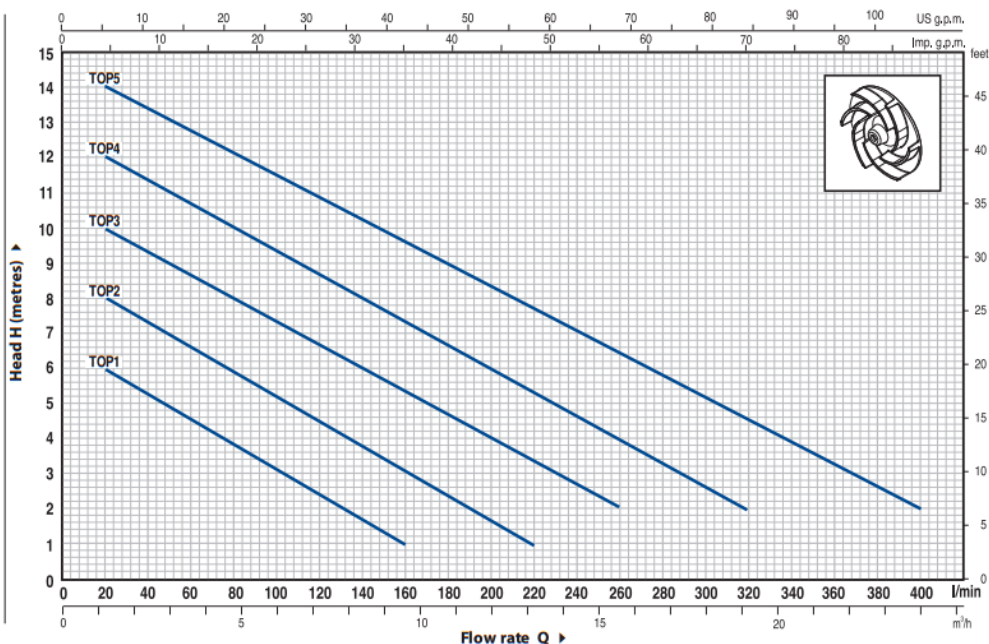
- **"TOP - LA"** pumps intended for use with aggressive liquids
- Special mechanical seal
- TOP 1-2-3 pumps with **10 m** long power cable
  - N.B. Standard EN 60335-2-41 states that the power cable must be 10 m long for outdoor applications
- Pumps without float switch
- Other voltages or 60 Hz frequency

#### GUARANTEE

1 year subject to terms and conditions

# CHARACTERISTIC CURVES AND PERFORMANCE DATA

50 Hz n=2900 1/min



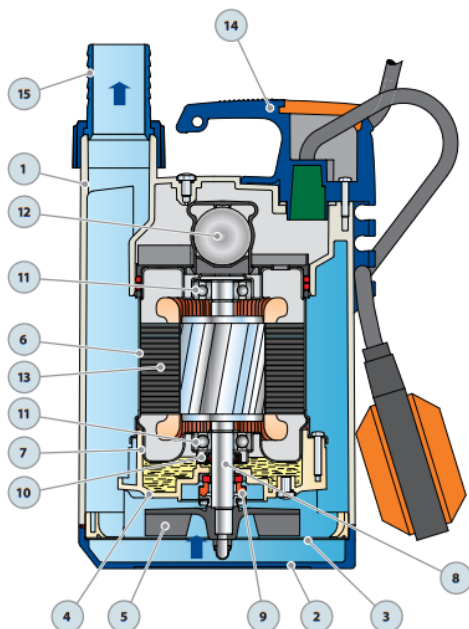
MODEL Single-phase	POWER		Q	m³/h l/min	0	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12	13.2	14.4	15.6	16.8	18.0	19.2	20.4	21.6	22.8	24
	kW	HP			0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400
TOP 1	0.25	0.33	H metres	7	6	5.5	4.5	4	3	2.5	1.5	1													
TOP 2	0.37	0.50		9	8	7.5	6.5	6	5.5	4.5	4	3	2.5	1.8	1										
TOP 3	0.55	0.75		10.5	10	9	8.8	8	7.5	6.5	6	5.5	4.8	4	3.5	2.5	2								
TOP 4	0.75	1		12.6	12	11.5	10.7	10	9.3	8.7	8	7.3	6.7	6	5.3	4.7	4	3.3	2.7	2					
TOP 5	0.92	1.25		14.5	14	13.5	12.7	12.1	11.5	10.8	10.2	9.6	8.9	8.3	7.7	7.1	6.4	5.8	5.2	4.5	3.9	3.3	2.6	2	

Q = Flow rate H = Total manometric head

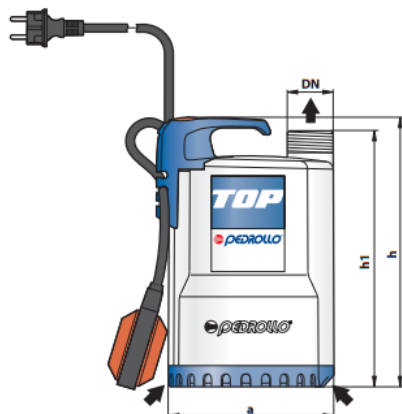
Tolerance of characteristic curves in compliance with EN ISO 9906 App. A.

# TOP 1-2-3

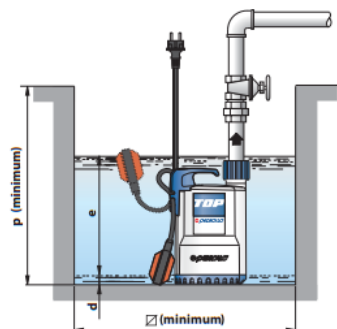
POS.	COMPONENT	CONSTRUCTION CHARACTERISTICS
1	PUMP BODY	Technopolymer
2	SUCTION FILTER	Technopolymer
3	SUCTION PLATE	Stainless steel AISI 304
4	DIFFUSER	Technopolymer
5	IMPELLER	Noryl GFN2V
6	MOTOR CASING	Stainless steel AISI 304
7	MOTOR CASING PLATE	Stainless steel AISI 304
8	MOTOR SHAFT	Stainless steel EN 10088-3 - 1.4104
9	SHAFT WITH DOUBLE SEAL AND OIL CHAMBER	
<i>Pump</i>		<i>Seal</i>
<i>Model</i>		<i>Model</i>
<i>TOP 1-2-3</i>		<i>AR-12R</i>
<i>TOP 1-2-3 LA</i>		<i>AR-12R LA</i>
<i>Shaft</i>		<i>Diameter</i>
<i>TOP 1-2-3</i>		<i>Ø 12 mm</i>
<i>TOP 1-2-3 LA</i>		<i>Ø 12 mm</i>
<i>Materials</i>		<i>Stationary ring</i>
		<i>Rotational ring</i>
		<i>Elastomer</i>
<i>TOP 1-2-3</i>		<i>Ceramic</i>
<i>TOP 1-2-3 LA</i>		<i>Ceramic</i>
		<i>Graphite</i>
		<i>Graphite</i>
		<i>NBR</i>
		<i>NBR</i>
10	LIP SEAL	Ø 12 x Ø 19 x H 5 mm
11	BEARINGS	6201 ZZ / 6201 ZZ
12	CAPACITOR	
<i>Pump</i>		<i>Capacitance</i>
<i>Single-phase</i>		<i>(230 V or 240 V)</i>
<i>TOP 1</i>		<i>6.3 µF 450 VL</i>
<i>TOP 2</i>		<i>10 µF 450 VL</i>
<i>TOP 3</i>		<i>14 µF 450 VL</i>
<i>110 V</i>		<i>16 µF 250 VL</i>
<i>16 µF 250 VL</i>		<i>16 µF 250 VL</i>
13	ELECTRIC MOTOR	
		– Single-phase 230 V - 50 Hz
		with thermal overload protector built-in to the winding
		– Insulation: F class
		– Protection: IP 68
14	HANDLE ASSEMBLY (resin sealed)	
		Complete with:
		– 5 metre long "H07 RN-F" power cable with Schuko plug
		– Float switch.
15	HOSE CONNECTOR WITH UNION	
		Ø 25 mm hose connection for TOP 1
		Ø 35 mm for TOP 2-3



## DIMENSIONS AND WEIGHT



Typical installation



MODEL	PORT	DIMENSIONS mm							kg
		a	h	h1	d	e	p	Ø	
Single-phase	DN								
TOP 1	1 1/4"	152	257	237	14	variable	350	350	4.5
TOP 2									5.2
TOP 3			287	267					6.6

## ABSORPTION

MODEL	VOLTAGE (single-phase)		
	230 V	240 V	110 V
Single-phase			
TOP 1	1.3 A	1.3 A	3.0 A
TOP 2	2.0 A	2.0 A	5.3 A
TOP 3	3.2 A	3.2 A	7.9 A

## Appendix D: Settle Ability Test & Emptying Sludge

---

### Settle Ability Test.

Take a turbidity tube or transparent 1 litre cylinder (Jar can be used) with 10 equal divisions up the vertical side. Then follow the next sequence:

- A) Fill the tube with the liquor taken from the central aerated bio zone.
- B) Allow the filled tube to stand and observe over a period of 30 minutes.
- C) The sludge should settle into a layer at the bottom and above the sludge layer should be clear liquid.
- D) In ideal circumstances the colour of the sludge should be brown towards a coffee colour and settlement should usually occur within 10 to 15 minutes. The supernatant (clearer liquid above the sludge) should not be cloudy or have any large suspended particles in it. There should be no offensive odour.

### Settlement Test Trouble Shooting Guide.

**Colour Grey:** There may be too much laundry effluent going into the plants. Ask the residents to check they are not putting in too much detergent. Check that the Laundry use is not all on one day of the week and it is spread out. Try to limit the use to 1 to 2 clothes washings per day. Another possibility is that surface water from the roof etc. is entering the plant.

**White deposits** in the activated sludge. These are probably due to grease and fat getting into the plant, which should be discouraged. The deposit may form into balls.

**Light Brown:** This is due either to the plant just starting up or that it is lightly loaded. The settlement may be poor and “fluffy” in texture. Do not confuse the lack of settle ability with the need to de-sludge the plant. In a lightly loaded plant this is not the right action to take.

**Black colour:** The plant may have some septic sludge in it. In this case the best solution is to have the plant de-sludged.

**No clear supernatant:** If there is only a small amount of clear liquid above the sludge layer, 8 or 9 if the container is divided into 10 parts vertically, then the unit needs emptying of sludge.

A record of the test and the results should be kept.

## **Emptying The Plant of Sludge (De-Sludge)**

**Note:** If a high-water table is present or local flooding has taken place then we recommend that the plant is not emptied at this time.

The procedure is as follows:

- A) Turn off the air blower.
- B) Remove the access cover above the plant for visual inspection.
- C) Remove the de-sludge cap.
- D) The hose removing the sludge should be gently lowered into the plant taking care not let the hose go down the central draft tube (if de-sludge pipe is not used).
- E) The hose should rest on the bottom of the cone.
- F) The liquid should then be removed from the tank. When the level drops the scum layer from the clarifier will be removed. It may require a fresh water hose to help it flush away and to clean up the plant. Leave approximately 0.3m of sludge in the base of the plant to aid reseedling of the process.
- G) It is recommended that the plant be filled as soon as possible with water or sewage from the connected Property(s).

## Appendix E: Fault Finding

Symptom	Cause	Action
<b>Strong Odour</b>	Excess chemicals in the plant Excessive laundry use Carry out a settlement test Drains inadequately venting  Nothing obvious can be found  Lack of aeration	See appendix F See appendix F See appendix D Check that a high-level vent is fitted to the house and is working correctly.  Carryout 12-month service and correct any faults found.  Check air blower.
<b>Air blower stopped</b>	Switched off at the mains isolator  Power Failure	Switch on  Check the supply board for a trip or fuse.
<b>Air blower is running but no turbulence</b>	Air pipe has been blocked or squashed or has a problem such as the hose is split  Air blower diaphragm split	Inspect pipe and check all joints for any leaks or splits.  Replace air blower diaphragm.
<b>Poor final effluent</b>	Check the air blower is operating and delivering air to the bio-zone  Carry out a settlement test in appendix D	Check and repair any faulty parts.  Follow the fault-finding guide in appendix E.
<b>Bio-zone chamber has grey colour</b>	Check there is good supply of air to the plant. (turbulent pattern in Bio-zone)	Check air blower is operating correctly.



Symptom	Cause	Action
Bio-zone has greyish to black colour and an offensive odour	Excessive laundry use	See do & don'ts section of this manual re laundry detergents.
Bio-zone has a very light brown colour and has few suspended solids. White suds.	Lightly loaded	If plant has just started or the effluent quality is OK, no further action. Otherwise contact Premier Tech Water & Environment for advice.  Check that no surface water is entering the plant.
Bio-zone is black in appearance	Plant is organically over-loaded  Not enough air is getting to the bio-zone	Check load to plant or if a de-sludge is required.  Check air blower and air lines.
Grease balls in the bio-zone.	Too much grease in effluent.  Excessive laundry use	Reduce grease in kitchen waste.  See laundry section of do & Don'ts.
Final effluent contains many Solids.	Carry out 12-month service	Only empty the plant of sludge if required.
Final Effluent Discharge Pump not running	Switched off at the mains isolator  Power Failure	Switch on.  Check the supply board for a trip or fuse.
Final Effluent Discharge Pump running but effluent not being pumped	Pump float switch jammed – no effluent to pump in pump chamber  Debris blocking pump  Pump non-return valve blocked	Isolate pump, remove and free float switch.  Isolate pump, remove and remove debris.  Isolate pump, remove pump and free non-return valve.

### Introduction

When we take a bath, put the washing machine on or flush the toilet few of us stop to consider what happens to the wastewater (sewage). It simply goes down the drain or waste pipe and is no longer our concern. But if your drains lead to a packaged treatment plant, particularly one using a biological treatment system, then it's worth paying some attention to what happens next...

**If you don't** you could easily end up with a treatment plant which is not working efficiently and eventually run the risk of polluting your local environment and even facing possible prosecution as a result.

### **What is sewage?**

Sewage is made up of not just the organic waste from toilets but also the chemicals and waste water from everyday activities such as washing, cleaning, cooking and washing clothes and dishes. The sewage from bathrooms, kitchens and toilets collects in a series of drains that feed to a sewer. In most households or commercial premises, the sewage flows away through a series of sewers and is treated at a large-scale sewage treatment works. However, for houses and premises in remote or isolated locations where no mains drainage is available, other options such as cesspools, septic tanks and treatment plants (i.e. Rewatec ASP) are used.

# Do's and Don'ts

Do:

## Weekly Inspections

- Check that the air blower is operating by listening for a gentle hum.
  - Check the final effluent discharging from the unit at the sample point. If it is cloudy or contains suspended particles contact your maintenance provider.
- 
- **Think** before you put **anything** down the sink, toilet or drains
  - **Tell** your guests/visitors/staff that you have a specialist sewage treatment plant and tell them how they can avoid harming it.
  - **Read the label** and use the **manufacturers' recommended doses** for all household cleaning products.
  - **Use** cleaning products little and often so the plant isn't overloaded.
  - **Spread** your clothes washing throughout the week.
  - **Stick** to the same washing, dishwasher powders and other cleaning products - the bacteria in the plant will work more efficiently with products they are used to.
  - **Use** liquid cleaners for clothes washing and for dishwashers, use sparingly.

## Don't:

- **Spring** clean and use large amounts of cleaners and chemicals in one day
- **Have** a "washing day" – spread your washing throughout the week
- **Use** household bleach and other strong chemicals indiscriminately
- **Keep** changing your brands of household cleaners and washing powders
- **Pour** bottles of medicine, mouth wash etc. down the toilet
- **Put** sanitary towels, tampons, disposable nappies, baby wipes, cotton wool, incontinence pads etc. down the toilet
- **Over** flush the toilet unnecessarily – use a water-saving flush if it's fitted
- **Pour** fat or grease from cooking down the sink or drains
- **Change** the oil in your chip pan and pour it down the sink
- **Use** your waste disposal unit like a rubbish bin – use it sparingly
- **Pour** garden chemicals or car engine oil down the drains

## Laundry Detergents

Firstly, you need to find out the level of hardness of your local water (see section on water softeners). Once you know how hard or soft your water is you can read the label on your laundry detergent and decide how much to use. The aim is to minimise the amount of detergent you use to limit its impact on the treatment plant whilst ensuring you get the best results from your wash.

- It is recommended that you use washing liquids in an in-machine ball dispenser, rather than powders. You get the best results from having the liquid in the heart of the wash; a liquid is already in suspension and therefore "gets to work" quicker and it reduces the amount of product left in the washing machine dispenser or lost on its journey to the drum.
- For normal "coloured" washes try to use a washing product without added bleach. For white washes add a separate bleach (such as the one produced by Ecover).
- Read the label and stick to the dosage recommended for the level of hardness of your water and to match the level of dirtiness of your washing. This is particularly important if you are using "concentrated" or "compact" liquids or powders because it is easy for your hand to slip and for you to use far too much.
- Try to ensure you have a full load each time or use an energy-saving "half load" programme if you have one. Don't be tempted to overload as this will not produce a good wash and could damage your machine in the longer term. A correctly loaded machine should have enough space for you to put your hand in to place the liquid ball on top of the washing.
- Normal wash temperatures, with the occasional very hot or "boil" wash, are not a problem for the treatment plant. However, it is not a good idea to do regular very hot washes as this could raise the plant temperature and affect the bacterial process.
- Your washing machine produces the largest quantity of waste water your treatment plant has to deal with. Don't have a "wash day" as this could produce too much water for the plant to handle in one go. Try to spread your washing throughout the week.

- **Dishwasher products**

Your dishwasher cleaner is probably the most "aggressive" cleaning product in your household. It needs to be to make greasy plates sparkling and "squeaky" clean as the advertisers promise. **It is therefore all the more important that you stick carefully to the manufacturers' recommended dosage.** It is recommended that you use a liquid, rather than powder or tablet cleaners as these are understood to be more efficient.

Most dishwashers use salt as a water softener – try to ensure the salt dispenser is always topped up because soft water increases the efficiency of the cleaning product and enables you to use only the minimum dosage of cleaner.

German dishwasher manufacturers, who pride themselves on their low-water energy-saving machines, recommend that you **do not rinse** your washing up under the hot tap before putting it in the dishwasher. Although this is a traditionally common practice, dishwashers and their cleaning products are now so effective that this is unnecessary – you are merely wasting energy and hot water.

- **Other cleaning products**

It is most important that you always follow the manufacturers' recommended dosage on all household-cleaning products. Read the label – don't be tempted to use guesswork. Try to avoid using large amounts of cleaning products in one go. If you follow the recommended dosage and use only small quantities on a regular basis they should not have any adverse effect on the treatment plant. However, a day's spring-cleaning using massive amounts of household cleaners and disinfectants indiscriminately will affect the efficiency of the plant and destroy some of the bacteria. If the bacteria are harmed or killed they will eventually re colonise the plant, but in the meantime your plant would not be operating at peak effectiveness – depending on the amount of chemicals used.

- **Water softeners**

To reduce the quantity of laundry detergents you use you need to find out how hard your water is. **You can phone your local water company** (see Yellow Pages). They will be able to tell you where your water comes on the hardness scale.

The hardness of water is determined by the amount of calcium and other minerals it contains. Hard water is rich in calcium, which reduces the effectiveness of soap and detergents. There is a scale of water hardness in England: 0 – 5° very soft, 5 –10° soft, 10 – 15° medium hard, over 15° hard. In line with EU recommendations, all fabric-washing products now carry advice on how much to use according to these levels of water hardness. Once you have identified where your water fits on the scale you can work out exactly how much detergent to use. If in doubt you could phone the manufacturer for advice – most offer a customer-care phone service.

- **Commercial Water Softeners**

Water softeners that involve a “salt” regeneration process can be very harmful to biological treatment systems. As the softener regenerates a very concentrated salt solution is used. This will be toxic to the micro-organisms in your biological sewage treatment plant. Domestic water softeners for single household should not present a problem. Please contact Premier Tech Water & Environment Ltd if in doubt.

- **Waste disposal units**

These do not inhibit the micro-organisms, but, depending on use, they can present the treatment plant with considerable extra load. It is much better to compost your vegetables peelings etc.-it is cheaper and more environmentally friendly

- **Harmful substances**

The following list consists of commonly known process inhibitors, it is not an exhaustive list. Under no circumstances should these enter the treatment plant:

Jeyes Fluid; medicines; cooking oil or melted fat e.g. from a grill tray or chip pan; motor oils or other car products; garden chemicals such as weed killers or fertilisers; DIY products such as paints, white spirit, paint thinners and other solvents, glue, antifreeze, dairy waste.

**Just think before you dispose of any chemicals into the system – if in doubt always dispose of it elsewhere.**

## Appendix G: Extension Kit Adjustable Deep Installation

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### Blower container

To be fitted to the extension.



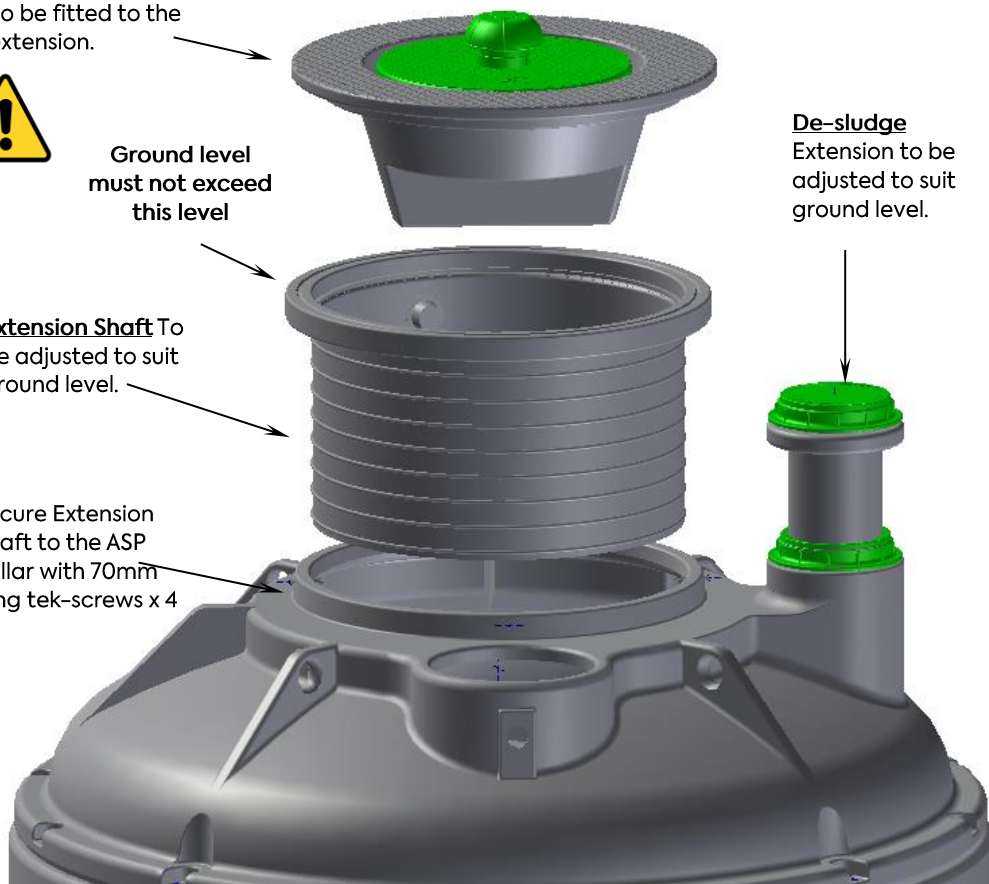
Ground level  
must not exceed  
this level

Extension Shaft To  
be adjusted to suit  
ground level.

Secure Extension  
Shaft to the ASP  
collar with 70mm  
long tek-screws x 4

### De-sludge

Extension to be  
adjusted to suit  
ground level.



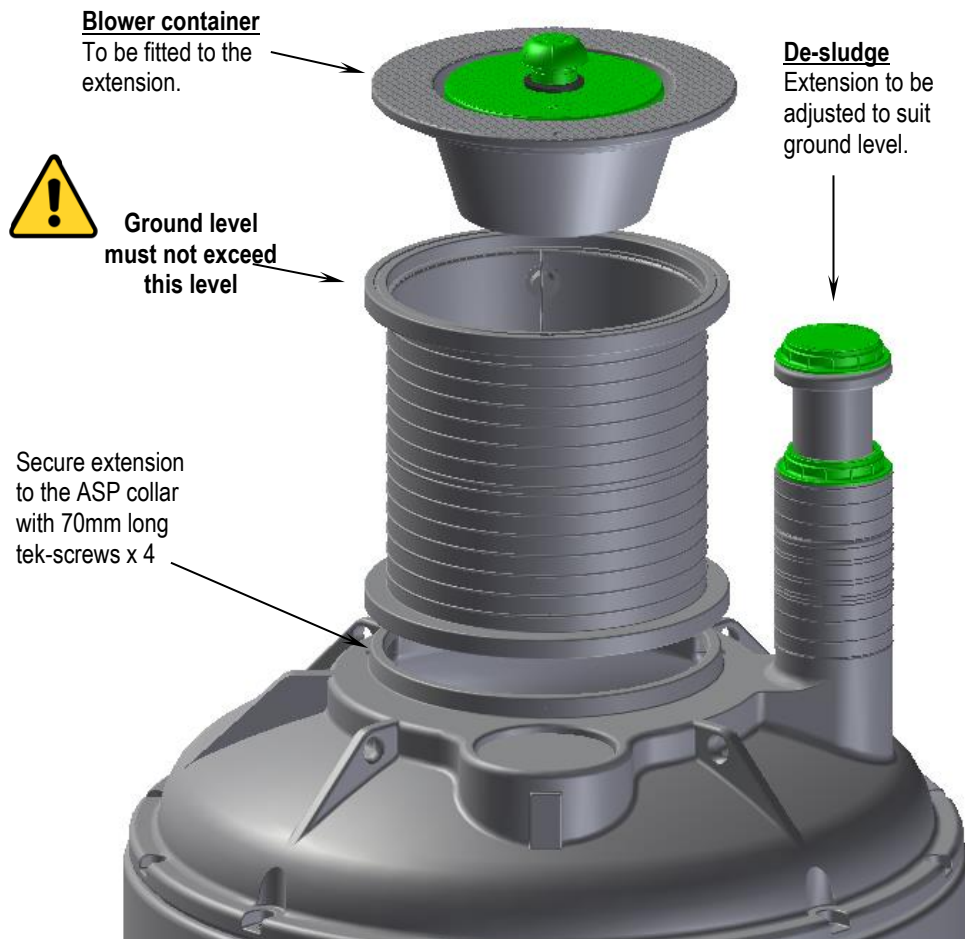
## PLEASE NOTE:

Upon installation of the extension shaft please ensure extension shaft is fully sealed to prevent backfill entering the system.



## Appendix H: Extension Kit Fixed Deep Installation

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NOTE: With a fixed extension kit you can still have the neck adjustable to suit your requirements by cutting off the bottom of the shaft, also adjust the de-sludge fitting to suit ground level. After cutting the shaft please refer to APPENDIX G for installation guide.

### **PLEASE NOTE:**

Upon installation of the extension shaft please ensure extension shaft is fully sealed to prevent backfill entering the system.

# Appendix I: Quick Installation Guide

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## Do:

Read this O&M Manual including appendices for full details

Keep this manual together with any drawings that were issued and any other communication (order acknowledge, quotation, etc.)

Take care when offloading the unit – external and internal pipe work & electrical equipment could be damaged!

Ensure adequate ventilation – the treatment plant is part of the foul drainage system and requires venting (see section Installation Guide)

Use a suitable rated cable to connect the socket inside the Rewatec® ASP unit to the electrical equipment (see section Electrical Installation)

## Don't:

Install any Rewatec® ASP units deeper than the supplied access turrets (i.e. do **not** extend the turrets)

Incorporate a standard household earth leakage circuit breaker (RCD) in the power supply to the unit, unless required by IEE regulations. Then a dedicated device should be provided (see section Electrical Installation).

## Important Warning:

The standard Tank is designed for an installation depth of up to 1 metres from the Inlet Invert with a Water Table up to Grade when installed in a concrete backfill and incorporating the manufacturers Deep Installation Extension Kit. Failure to comply with these requirements will result in the invalidation of the manufacturer's warranty.

## Appendix J: Notice

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Please remove transport packaging (Foam, Plastic Bag) before operating this plant.



When the plant arrives, it is fitted with a rubber plug. This must be removed before operating



Rubber Plug is removed before operation

## Appendix K: Granular Surround Specification

Granular backfill material must be free flowing material and can be:

### Pea Gravel

**MUST** be naturally rounded aggregate with a particle size greater than 3 mm and less than 18mm.

Gravel **MUST** be clean and free flowing, free from large rocks, dirt, sand, roots, organic materials or debris.

Upon screening analysis, the backfill material **MUST** have no more than 5% by weight passing 2.38mm Sieve

### Crushed Stone

**MUST** be crushed stone or gravel with particle size not less than 3 mm and not greater than 12 mm

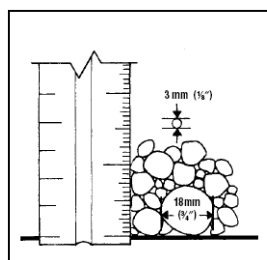
Aggregate **MUST** be clean and free flowing, free from large rocks, dirt, sand, roots, organic materials or debris. Material **MUST** be washed or screened to remove fine particles.

Upon screening analysis, the backfill material **MUST** have no more than 5% by weight passing 2.38 mm Sieve

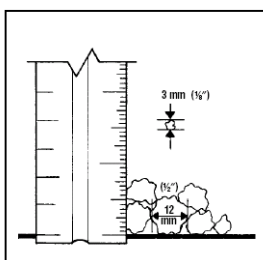
Use of other than specified backfill and bedding materials will void the tank warranty.

NOTE: All backfill material shall be free of ice and snow at time of installation.

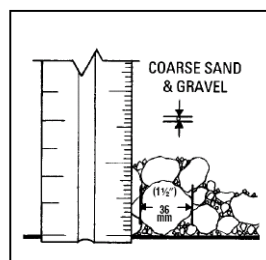
Backfill material shall not be frozen or contain lumps of frozen material at any time during placement.



Pea Gravel



Crushed Stone



Secondary Backfill

## **Secondary Backfill Specification**

Secondary backfill shall not be used adjacent to the tank. It **MUST** only be used only at a distance of 450mm from the tank walls. The following are approved as Secondary Backfill materials:

### **Gravel**

The Gravel **MUST** not contain any rocks larger than 36 mm on largest dimension.

Backfill materials **MUST** be clean and free flowing, free from dirt, clay, fine sand, roots, organic materials or debris.

Upon screening analysis this backfill material **MUST** have no more than 5% by weight passing through a 0.075mm Sieve.

During placement this backfill material must be compacted to 95% Relative Compaction.

## Concrete Specification

The specification for the concrete mix to surround the tank should be selected by the tank installer taking into account the site conditions and application requirements.

For a typical non structural application in good ground conditions, with non aggressive soils, a concrete with a 28 day compressive strength of 20 to 30N/mm<sup>2</sup> with a 25 to 50mm slump, complying with the relevant BS EN, is generally suitable. For non typical applications, aggressive soils or structural applications specialist advice should be obtained.

### Lift height (rate of rise)

Determine the lift height (m), or rate of rise (m/h) for the specific concrete type used, to ensure that a design pressure ( $P_{max}$ ) of 15kN/m<sup>2</sup> on the tank IS Not exceeded.

### Vibration

The design of the tank assumes minimal compaction of the surrounding concrete. Where necessary, this may be extended to include light internal vibration. Do not use deep revibration which will substantially increase the pressure on the tank, possibly causing failure.

### Impact of Concrete on Discharge

The effects of concrete discharge impact are considerable. These effects must be considered to ensure the maximum pressure of 15kN/m<sup>2</sup> on the tank is not exceeded. UNDER NO CIRCUMSTANCES should concrete be discharged directly onto the tank.

### Live Load

If the tank is installed in an area where traffic, or other superimposed loadings can be applied, a structural engineer should be consulted, to design a reinforced concrete slab spanning over the tank. This is to prevent the load being transmitted to the tank (or its concrete surround). If this slab is constructed immediately above the tank, it should be separated from the concrete surrounding the tank by compressible material.

### Control of Groundwater

Tanks must not be subjected to buoyant forces during installation, taking account of ground water levels and surface water run-off, and their accumulation in the tank excavation.

### **Installation Procedure**

Maintain a completely dry excavation until the final pour of concrete has set. Failure to do this may result in voids beneath the tank.

Fill the tank with clean water to a depth of 300mm and recheck the pipework levels and connections. Commence backfilling evenly around the tank with concrete ensuring there are no voids. Continue filling the tank with water whilst evenly backfilling with concrete around the tank ensuring that the progressive water level is no more than 300mm above the concrete level.

