Taylex® Tanks
Since 1969
Wastewater Specialists

Taylex® Technical and Operational Specifications Manual for a 4,000 LPD A.B.S Advanced Blower System

A purpose designed, commercial treatment plant using a monolithic constructed tank, therefore it is one piece of concrete with no silicone, mortar or internal joins.

Built to Last!

SPECIFICATIONS

Taylex® Advanced Blower System (ABS)

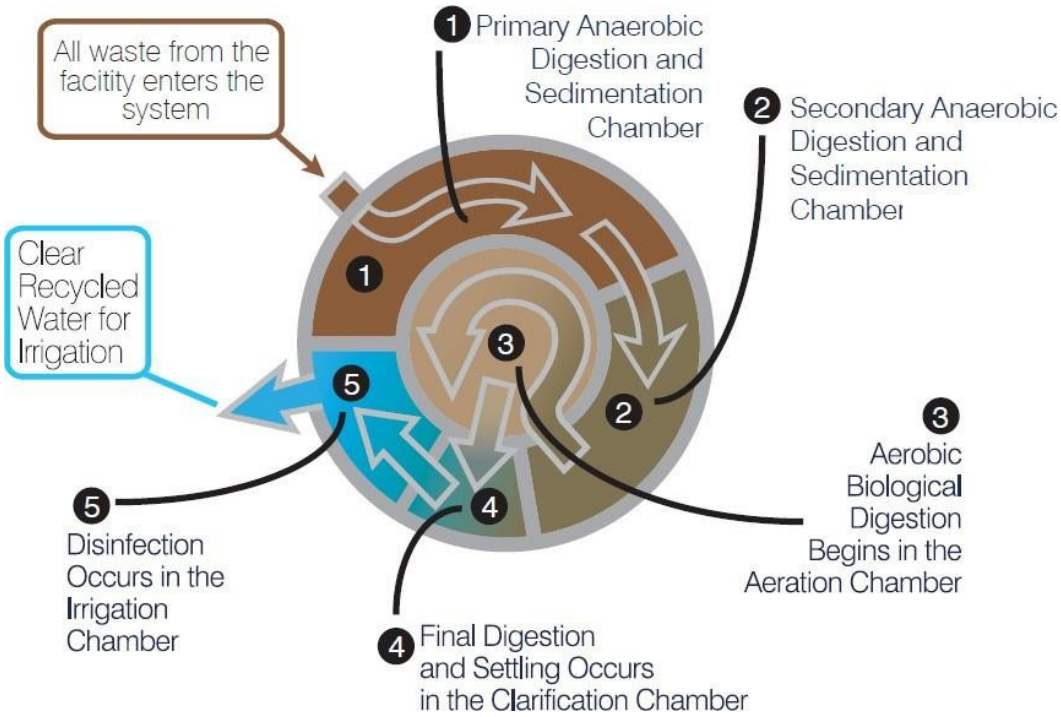
General Description
The Taylex® ABS Aerated Wastewater Treatment System (AWTS) is designed to treat the wastewater from a site with a hydraulic influent loading up to 4,000 litres per day.

The Taylex® ABS AWTS is contained in one vertical axis type concrete collection well with a design capacity of 9,320 litres and an operational capacity of 5,880 litres.

The Taylex® ABS unit consists of:
1 x primary pre- treatment chamber with a capacity of 1,684 litres.
1 x secondary chamber with a working capacity of 842 litres
1 x aeration chamber with a capacity of 2,071 litres containing Bio-Blok® media panels with a surface area of 150m² / m³
1 x sedimentation / clarifier chamber with a capacity of 662 litres
1 x pump chamber with a capacity of 621 litres

A chlorine disinfection unit is installed on the outlet pipe of the clarifier (standard) and can be removed if chlorine disinfection is not required.

The Five Stages to a Taylex® Commercial Treatment system



ABS Control
The system is controlled via a timer which has been parameterized on site to specific requirements. Faults are signalled visually via the timer display as well as acoustically via an alarm mounted within the control panel.

Power Saving mode
The control system can be set to the requirements of each site by calculating the daily flow and adjusting the pump timer in the balance tank to suit.

Sludge Removal
Sludge deposit removal will be required as determined necessary by a licensed Taylex® technician or the client.

Servicing
Routine maintenance servicing of the Taylex® ABS is to be scheduled a minimum of 4 times per year or as per the site specific approval.

Refer to the field service report sheet for testing requirements.

The Taylex® ABS Unit

Material	32 MPa Steel Reinforced Precast Concrete
Height	2300mm
Diameter	2450mm
Invert Level	1830mm or 1530mm
Inlet Size	100mm
Weight	6.25 Tonne

System Design
Design Flows from site has been based a report by Future plus Environmental Doc No. 5491, dated 17/6/2019. The report estimates the flows from different places on the site to not exceed 4,000 litres per day.

Our system design is based on a raw Influent loading of

BOD5	≤ 350 mg/l
Total Suspended Solids	≤ 350 mg/l
Oil and Grease	≤ 50 mg/l

No disinfectant to be used

To achieve the treatment requirements of the local Authority the influent entering the system must fall between these limits. The process design assumes that there are no inhibitory or toxic substances within the wastewater that will impair the biological performance of the system. This could include harsh chemicals, excessive quantities of cleaning detergents or FOGs (fats, oils and greases), or inorganic wastes or Hydrocarbons. Stormwater ingress must also not be allowed to flow into the treatment plant as it will have a significant negative effect on both the performance of the treated effluent and the disposal area.

System Description
The Taylex® Advanced Blower System (ABS) is designed to treat the wastewater from a site with a hydraulic influent loading up to 2,000 litres per day.
The system for this site will consist of one septic tank, one balance tank and two Taylex® ABS units.

Taylex septic Tank
The Taylex® septic tank is designed to suit commercial and domestic applications where wastewater is collected, prior to transferal to the balance tank. The Taylex® septic tank is a vertical axis type concrete collection well. The septic tank flows and all solids. This tank is connected to the Balance tank via a tee junction. If the flows from the site exceed the 4,000 litres per day for an extended period, the extra flows will be stored in the balance tank.

Taylex® Balance Tank
The Taylex® balance tank is designed to suit commercial and domestic applications where wastewater is required to be contained retained or collected, prior to transferal to an onsite treatment system. The Taylex® balance tank is a vertical axis type concrete collection well with. The balance tank stores peak flows and delivers the influent evenly to the treatment systems.

The balance tank is fitted with two Davey D25 Vortex pumps complete with stainless steel chains for ease of maintenance, the internal surface of the chamber are coated in a chemical and gas resistant two pack epoxy coating to protect the chamber from gases and acidic compounds. The chamber comes with all internal pipework and a 32mm or 50mm female treaded outlet. The pumps are connected to two Taylex® Duty Cycle Timers that are situated in a stainless steel control box bolted to the top of the tank. The timers are factory set to deliver 74 litres every two hours to each ABS unit and are set so as to not exceed 4,000 litres per day to the each of the treatment plants.

(Due to variances in flows from pumps and friction loss in pipe work it is recommended that a flow meter be fitted to the irrigation line of each treatment plant so the flows can be monitored and the daily flow adjusted to meet the discharge permit).

A high water alarm is fitted to the balance tank to inform the operator that is full and may require a pump out if the event is ongoing.

Taylex® ABS
The Taylex® ABS units consist of a monolithic constructed multi chambered tank with a total capacity of 9,320 litres and an operational capacity of 5,880 litres.

The Taylex® Industries ABS system is a 5 chambered monolithic tank that uses Submerged Aeration Filtration (SAF) technology. This is an advanced treatment solution where treated water is suitable for dis- posal to ground through land application.
The treatment plant process is described below.

Each Taylex® ABS unit consists of;
1 x Primary pre- treatment chamber with a capacity of 1,684 litres
1 x Secondary pre-treatment chamber with a working capacity of 842 litres
1 x Aeration chamber with a capacity of 2,071 litres containing Bio-Blok® media panels with a surface area of 150m^2/m^3
1 x Sedimentation / clarifier chamber with a capacity of 662 litres
1 x Irrigation pump chamber with a capacity of 621 litres

A chlorine disinfection, mixing and contact unit is installed on the outlet pipe of the clarifier.

The Taylex® ABS Unit

Material	32 MPa Steel Reinforced Precast Concrete
Height	2300mm
Diameter	2450mm
Invert Level	1830mm or 1530mm
Inlet Size	100mm
Weight	6.25 Tonne

Description of an ABS Process Train

Balance Tank

Raw wastewater from the septic enters the precast concrete balance tank. The effluent is then pumped via two Davey D25 Vortex pumps to the primary chambers of the ABS units, at a controlled rate so as to not exceed a daily flow of 4,000 litres per day in total to the two units.

ABS Unit

Primary Chamber

Inside the primary Chamber, anaerobic breakdown occurs. The primary chamber allows sufficient residence time to ensure sufficient BOD reduction has occurred in this process.

Secondary Chamber

The wastewater is gravity fed from the primary chamber to the secondary chamber, where further anaerobic breakdown occurs. The conditioned effluent is then gravity fed to the aeration chamber.

Aeration Chamber

The aeration chamber of the Taylex® ABS contains sufficient fixed film growth media to ensure there is a large surface area per unit volume for micro-organisms to grow on. Fine bubble diffusers are fitted at the base of the chambers to ensure efficient oxygen distribution and thus providing a high rate of biomass production on the filter media. The placement of the diffusers is designed to ensure uniform aeration.

Clarifier Chamber

From the aeration chamber, the effluent is gravity fed to a clarifier (settling chamber) where it is further polished. The collected solids (activated sludge) are pumped back to the primary tank at a ratio to influent flow so that sufficient nitrified waste is recycled to the oxygen starved anaerobic stage for de- nitrification to occur.

Irrigation Chamber

The treated effluent is gravity fed from the clarifier trough a Taylex® TFG filter before flowing into the chlorine disinfection contact unit and into the irrigation chamber. The irrigation pump in this chamber is con- trolled by a float switch which. When sufficient effluent has entered the chamber the float will activate the irrigation pump. The treated effluent is then discharged to the effluent management area for dispersal.

Servicing

Routine maintenance servicing of the Taylex® ABS is to be scheduled a 12 times per year or as per the site specific approval.

Operation and Maintenance Requirements

Using The System

1) To reduce sludge building up in the treatment plant;
   a. Keep all possible inorganic solids out of the system;
   b. Don't use garbage grinders;
   c. Don't put sanitary napkins and other hygiene products into the system.

2) To keep the treatment plant working in good order;
   a. Use biodegradable soaps;
   b. Use low-phosphorus detergents;
   c. Use recommended quantities of detergents;
   d. Don't use powerful bleaches, whiteners, nappy soakers, spot removers and anti-bacterial disinfectants;
   e. Don't put chemicals or paint down the drains.

3) Conservation of water will reduce the volume of effluent requiring dispersal to the land application area, making it last longer and improve its performance. Conservation measures include;
   a. Installation of water-conserving fittings;
   b. Filling the washing machine and not doing small half loads;
   c. Filling the dishwasher and not washing half loads;
   d. Fix leaking taps.

Maintaining the system

1) The treatment plant will need to;
   a. Be maintained in accordance with local authority and manufacturers requirements;
   b. Be serviced 4 times per year by a trained Taylex® technician;
   c. Be protected from vehicles;
   d. Keep access covers to the treatment plant exposed and above ground level;
   e. Have outlet filters (where installed) inspected and cleaned;

2) The land application area needs to be protected as follows;
   a. The land application area should be designed to deter pedestrian traffic;
   b. No vehicles or live stock should be allowed on the land application area;
   c. Deep rooted trees or shrubs should not be grown over the land application area;
   d. Keep diversion drains and bunds upslope of the land application area clean to eliminate entry of surface water flows.

3) The land application area should have the grass mowed and clippings removed. All plants should be maintained to ensure the area takes up nutrients with maximum efficiency.

4) Check equipment and follow manufactures instructions for maintaining and cleaning pumps and filters.

Operating problems

Problems can occur with systems which have not been serviced and maintained. This can cause the land application area to fail due to blockages and clogging of the pipes and soil structure. The warning signs will be obvious.

Example Drawing

(Septic & Balance tanks will vary in size depending on application)