

Operation and Maintenance Requirements – Attenuation Storage Tank and Flow
Control Chambers

Schedule	Required Action	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually or as required
Remedial actions	Repair / rehabilitate inlets, outlet, overflows and vents	Annually, or as require
Monitoring	Inspect. Check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build up and remove if necessary	Every 5 year or as required
	Neoprene Seal / Rubber Gasket	Annually

Notes:

1. Regular inspection and maintenance is required to ensure the effective long-term operation of below-ground storage systems.
2. The inspection and maintenance of the attenuation tank is the responsibility of the developer or the developer's agent until such a time the tank is fully adopted by the overseeing authority.

Carlow Tank Maintenance

Frequency of Inspection & Maintenance

When assessing the required maintenance and inspection schedule, it should be noted that each tank is entirely unique and should be assessed on a project by project basis.

The rate of accumulation/deposition of sediment is a function of the surrounding environment, i.e. the location of the storage tank, type of influent, local industry, road quality etc.

Installations should be inspected at least once every 5 years and cleaned approximately every 10 years, if necessary. The expected build-up of silt being approximately 25mm – 50mm over a 10 year period, representing a loss of volume of 8% -16% in a 3.0m deep system.

Due to the very large voids ratio present within the Carlow Tank system, access for maintenance personnel is generous and each tank is easily accessed & transversed during maintenance works. We recommend, as part of best practice, both an upstream and downstream silt trap be installed alongside the tank.

Pressure/Jet washing of the tank floor is the safest, quickest and most effective means of cleaning and maintaining each tank. During maintenance operations, a silt pump should be placed within a downstream sump/silt trap, and wash water pumped to a settling chamber to facilitate the removal of sediment from the network and recycling of water for cleaning purposes.

Health & Safety Precautions:

Please note that any inspection or maintenance work should be carried out in strict accordance with Confined Spaces best practice. Particular care should be undertaken, when using petrol or diesel powered pressure washers in close proximity to the tank. Always use trained and properly equipped personnel.

HydroBrake Maintenance

Normally, little maintenance is required as there are no moving parts within the Flow Control. Experience has shown that if blockages occur they do so at the intake, and the cause on such occasions has been due to a lack of attention to engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size. The Flow Control (where applicable) is fitted with a pivoting bypass door, which allows the manhole chamber to be

drained down should blockage occur. The smaller conical units, below the minimum recommended size, are also supplied with rodding facilities or vortex suppressor pipes as standard.

Following installation of the Flow Control it is vitally important that any extraneous material i.e. building materials are removed from the unit and the chamber. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. If problems are experienced, please do not hesitate to contact the company so that an investigation may be made.

All Flow Control units are typically manufactured from grade 304 Stainless Steel, and if required they can also be manufactured in grade 316 Stainless Steel. Both materials have an estimated life span in excess of the design life of drainage systems.

Neoprene Seal / Rubber Gasket Maintenance

The hydrobrake unit is sealed to the concrete wall of the manhole by the use of a rubber gasket or neoprene seal.

The condition of the seal shall be inspected annually for signs of damage and deterioration and repaired or replaced as required in accordance with the manufacturer's recommendations.

Ham Baker Adams Penstock and Lifting Bar Maintenance

Every 3 Months:

1. It is recommended that all units are operated through a full cycle.
2. Check any operating gear for damage, wear and freedom of movement. Clean the spindle threads by hosing down with clean water. Apply grease to the spindle, and to any grease nipples present in accordance with the recommended lubricant below.
3. Check any lifting beam hooks for freedom of movement. Check the disengagement ropes for wear and tear and replace with the same specification rope as necessary. Moving parts should be lightly oiled/greased. (Note that it is advisable to hose down lifting beams after every time used, especially around the hook pivots and disengagement rope assembly). Note also the requirement in the Health and Safety Recommendations (Section 2), with regard to the requirement for a thorough examination prior to use by a competent person. Customers/end users are reminded that it is their responsibility to ensure that the lifting beams and associated slings are re-tested in accordance with legal requirements at the required frequency.

4. Check that guarding originally supplied with the unit remains in position and is securely fixed, including any fixed guards or protection tubes.
5. All other moving parts should be lightly oiled or greased as appropriate.

Every 12 Months:

1. Clean the unit by hosing down with clean water to remove any grit or debris.
2. Check for any leakage between the unit and concrete wall (or pipe) and the general soundness of the surrounding civil structure. Make good any faults.
3. Check tightness of all fixing bolts/nuts including foundation bolts.
4. Whilst in the fully open/extended position check that there is no damage or excessive wear to the sealing surfaces. Consult Ham Baker Ltd for advice on repair to damaged seals.
5. Normal wear on the seals on penstock units may be overcome by adjustment of the wedges or adjusters. Seek advice from Ham Baker Ltd on the adjustment of the factory set wedges or adjusters.
6. Metal sealing surfaces and metal wedge faces should be greased, (ensuring where necessary for potable water applications that the grease has WRC/DWI approval as required).
7. Check all components for corrosion damage. Painted units should be checked for signs of corrosion or damage to the paint system and repaired in accordance with the repair scheme for the original paint system (in accordance with the paint manufacturer's instructions). Seek advice from Ham Baker Ltd regarding any components which show any signs of excessive corrosion.
8. Remove the door threaded door nut (for non-rising spindles) or threaded yoke sleeve (for rising spindles) and thoroughly check for signs of wear. These components must be replaced if excessive wear is evident (because if threads shear the door may fall/unit may fail without warning).
9. Non-rising spindles require special consideration for maintenance, particularly if the liquid level creates regular grit and debris contamination of the threads and nut.