

PT/262/0307 – AS (March 2007)
Assessment Schedule for Pipex Ltd's
Packaged Sewage Pumping Stations



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1. Scope

This assessment schedule details the requirements for checking the performance of Pipex Ltd's Packaged Pumping Station product when used for sewerage applications. It is checked against the specified requirements of the UK water industry, the requirements in EN 12050⁽¹⁾ when installed as a collection tank outside buildings, and a general "fitness for purpose" requirement.

The range of Packaged Pumping Station sizes covered is 0.6 metres to 3.5 metres in diameter with a maximum depth of 6.0 metres.

The Packaged Pumping Station chambers are manufactured from polypropylene in sheet and profile form sourced from an external supplier.

The Packaged Pumping Station chamber is manufactured to the same basic design as the Pipex Ltd Universal Manhole product (see Assessment Schedule PT/257/0806 – October 2006). Therefore a number of the requirements for testing and inspection in this schedule repeat those required for the Universal Manhole product.

The Purchaser undertakes the hydraulic and structural design (for ground and traffic loads) of the pumping station and also specifies the M&E requirements to Pipex Ltd. M&E fittings including pipework, pump pedestals, guide rails, and lifting chains are fitted at Pipex Ltd's works.

The Purchaser then installs the pump sets on site.

All the Packaged Pumping Station chambers have a concrete surround constructed on site.

The structural design for the load bearing capacity (ground and traffic) of the Packaged Pumping Stations is not carried out by Pipex Ltd. The Purchaser's designer should undertake a structural design to determine the thickness and any steel reinforcement required for the base, surround and slab. Note: when surrounded in concrete the chambers can be designed to carry main road and carriageway loadings. The Packaged Pumping Stations may have to be designed to resist an external ground water hydrostatic pressure having a head equal to the pumping station chamber depth.

The scope of this approval is limited to those products that are considered suitable to be put forward for adoption by sewerage undertakers.

This schedule requires the following to be assessed in order to prove the "fitness for purpose" of this product:

- 2.1 general design requirements;
- 2.2 product type testing;
- 2.2 audit of the production quality control systems;
- 2.3 review of documentation and guidance for designers, installers and operatives;
- 2.4 operational practices.

2. General Design Requirements

Sewerage pumping stations shall meet the requirements of:

1. BS EN 752-6⁽²⁾;
2. Sewers for Adoption 6th Edition⁽³⁾;
3. Sewers for Scotland⁽⁴⁾.

Key requirements of the above publications in relation to the design and manufacture of the Package Pumping Station are:

1. sump to extend below incoming sewers;
2. avoid "dead zones" where sedimentation can build up;
3. allow adequate clearance between the base and sides of the wet well and the pump inlet;
4. the capacity between start and cut out shall be set to limit the frequency of switching to within the pump manufacturer's recommendations;
5. surrounded with not less than 150mm thickness of concrete;
6. inlet arrangement should ensure satisfactory flow to pumps and avoid vortices (best achieved by the incoming sewer being on the centreline between the submersible pumps).

4. Product Type Testing

The chamber shall comply with the test requirements of BS 7158⁽⁴⁾ with the exception of Clause 7.7. Note: the Clause 7.7 load test is exempted because all pumping stations are surrounded in concrete. The testing carried out on a 1200mm diameter

chamber is applicable to all diameters with the exception of Clause 7.8.

As an alternative to the BS 7158 Clause 7.8 vacuum test an inspection can be made to witness the performance of a large diameter pumping station (diameter 3 metres or greater) sited where the ground water depth rises at least 4 metres above the chamber floor. The internal plastic lining shall not exhibit any signs of damage or significant deformation that would have been caused by the external ground water pressure. The floor of the chamber will need to be visible for inspection.

The following additional tests shall be carried out on a chamber (any diameter) with 8 millimetres thick benching to prove the robustness of the chamber benching:

1. Load test to mimic operative working in chamber – 100 kg person standing in various positions in chamber without unsafe flexing of plastic benching.
2. An impact load test – lump hammer (>0.5 kg) dropped from 6 metres onto plastic benching without causing damage.

5. Production quality audit

An audit of the production quality control systems procedures of the Manufacturer shall be undertaken and a visit to the manufacturing premises made to witness the production process.

Quality control certification for the materials suppliers shall be available.

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The quality control records for the platform manufacture process shall be checked.

6. Documentation

The information provided to designers and installers, including the Pipex product brochure⁽⁵⁾, shall be reviewed to check for completeness, accuracy and agreement with UK water industry requirements and general “fitness for purpose” requirements.

Documentation shall include:

- product details for designers;
- installation details for contractors;

7. Operational practices

An example of an installed Packaged Pumping Station shall be inspected to check the general quality and “fitness for purpose” of the system. The finished work shall be shown to produce the following:

1. satisfactory flow conditions to avoid siltation;
2. sufficiently long design life can be expected.
3. chamber completed in accordance with Sewers for Adoption;
4. reasonable self-cleansing properties compared with typical concrete sewage pumping station wet wells.

The pumping station shall have been operational for at least 12 months.

High pressure jetting is used for cleaning sewage pumping stations. In order to prove that the plastic chamber will not be vulnerable to being damage a sample of

thermoplastic pipe product with a wall thickness of 8 mm or less to represent the thinnest used in the product can meet the high pressure water jetting requirement detailed in WIS 4-35-01 Appendix C – Resistance to Water Jetting.

6. Reference documents

1. EN 12050 Wastewater lifting plants for buildings and sites 2001.
2. European Standard BS EN 752-6, drain and sewer systems outside buildings 1998. Part 6: Pumping Installations.
3. WRC plc. Sewers for Adoption 6th Edition, March 2006.
4. WRC plc. Sewers for Scotland 1st Edition, July 2001.
5. Pipex product brochure – Packaged Pumping Stations.