

Loss Prevention Standard

LPS 1254: Issue 1.3

Requirements for the certification of suction tanks for automatic pumps

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PARTICIPATING ORGANISATIONS

This standard was prepared by Technical Panel C of the Loss Prevention Certification Board. The following organisations participated:

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| Association of British Insurers | (ABI) |
| British Automatic Sprinkler Association | (BASA) |
| Confederation of British Industry | (CBI) |
| Local Government Association | (LGA) |
| Risk Engineers Data Exchange Group | (REDEG) |
| International Fire Sprinkler Association/ National Fire Sprinkler Association | (IFSA/NFSA) |
| BRE Centre for Fire and Security | |
| LPC Centre for Risk Sciences | |

REVISION OF LOSS PREVENTION STANDARDS

Loss Prevention Standards will be revised by issue of revised editions or amendments. Details will be posted on our website at www.redbooklive.com

Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments. (See amendments table on page 10)

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

USERS OF LOSS PREVENTION STANDARDS SHOULD ENSURE THAT THEY POSSESS THE LATEST ISSUE AND ALL AMENDMENTS.

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FOREWORD

This standard identifies evaluation criteria for the certification and Listing of suction tanks for automatic pumps by The Loss Prevention Certification Board.

Certification is based on the following criteria:

- a) Satisfactory performance of the Suction tanks, in accordance with the requirements of The Loss Prevention Certification Board.
- b) Verification by the LPCB of the establishment and maintenance of the manufacturers quality management system in accordance with ISO 9001, Quality Management Systems - Requirements.
- c) Satisfactory product service experience.
- d) Suction tanks which comply with the content of this document will not necessarily be considered suitable for certification should it be anticipated that other aspects of design, performance or construction may impair the integrity of the equipment.
- e) Provision of full specifications in accordance with LPCB Application Form F371.

NOTES

Compliance with this LPS does not of itself confer immunity from legal obligations. Users of LPSs should ensure that they possess the latest issue and all amendments.

LPCB welcomes comments of a technical or editorial nature and these should be addressed to "the Technical Director" at enquiries@breglobal.co.uk.

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1. SCOPE

This standard stipulates the requirements for certification of suction tanks for automatic pumps. **This standard is restricted to use in countries outside of the UK and Ireland. For the UK and Ireland, LPS 1276 shall be used .**

- 1.1 The following types of tanks can be certificated for use as pump suction tanks in conjunction with the LPC *Rules for Automatic Sprinkler Installations*.

Type A *Not dependent on inflow, fed from a potable water supply, and suitable for sprinkler service without emptying, cleaning, maintenance or repair for a period of not less than 15 years¹.*

Type B *Not dependent on inflow.*

Type C *Dependent on inflow.*

Type D *Dependent on inflow, fed from a potable water supply, and suitable for sprinkler service without emptying, cleaning, maintenance or repair for a period of not less than 15 years¹.*

Concrete tanks designed and constructed in accordance with BS 8007, with rigid roofs of concrete, metal or glass fibre reinforced plastics are suitable for sprinkler service as Type A tanks.

Note 1. It may still be necessary to have regular maintenance of Type A and D tanks within this 15 year period, for preventative purposes

- 1.2 Certification may only be granted to tanks of the type, style and capacity comparable to that inspected

- 1.3 Each single supply or multi-level water take-off tank supplied under this certification scheme must not exceed a maximum capacity of 1300m³. Duplicate sub-divided tanks may have a total capacity not exceeding 2600m³, provided the dividing wall is structurally capable of supporting either full compartment whilst the other is empty, and the maximum capacity of each compartment does not exceed 1300m³.

Provision is allowed however, for fire insurers to accept single supply, multi-level tanks or sub-divided tanks in excess of these maximum capacities, provided that an independent verification of the tank's design and integrity is submitted by professionally qualified consultants. Such tanks will not be eligible for listing within the LPCB List of Approved Fire and Security Products and Services.

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2. REQUIREMENTS

2.1 General

2.1.1 Water Research Centre

A current Water Research Centre (WRC) Certificate shall be held by the manufacturer for each tank specification, with this including a Type A airgap.

2.1.2 Field Evidence

2.1.2.1 Type A and D suction tanks

There shall be field evidence of the satisfactory behaviour of the materials when used in tank designs for at least 15 years without maintenance¹.

2.1.2.2 Type B and C suction tanks

There shall be field evidence of the satisfactory behaviour of the materials when used in tank designs for at least six years.

2.1.3 Design Calculations and Declaration

Detailed design calculation for all stressed parts of the structure shall be verified by a Chartered Engineer.

2.1.4 Corrosion Protection²

2.1.4.1 Internal protection

Pump suction tanks shall have a period of at least 15 years for Type A and D, and six years for Type B and C, to first maintenance.

2.1.4.2 External protection

Pump suction tanks shall have all external steelwork protected against corrosion in accordance with BS EN ISO 12944, BS 5493, or equivalent. Alternatively, tanks shall be protected against corrosion by lining or coating the tank to give it protection which shall be at least equivalent to that achieved by application of BS 5493.

Note 2. Where corrosion protection systems (internal and external) are not in accordance with the appropriate British Standard specification or equivalent, it may be necessary for the protection system to be specified by independent qualified corrosion consultants.

2.2 Tank Shell

2.2.1^{3,4} Steel tanks Type A and D shall have the tank shell protected by:

- (a) a galvanised coating weight of at least 610g/m² each side⁵; or
- (b) an equivalent corrosion protection system which has been specifically Approved and Listed by the LPCB⁶; or

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(c) Vitreous enamelled tanks must have a minimum coating thickness of 0.25mm.

2.2.2³ Steel tanks of Type B and C shall have the tank shell protected by:

- (a) a galvanised coating weight of at least 305g/m² each side; or
- (b) an equivalent corrosion protection system.

Type B and C suction tanks are considered to be internally and externally maintenance dependent. The maintenance procedure shall be specified by the manufacturer and be consistent with LPC Technical Bulletin 6 of the *LPC Rules for Automatic Sprinkler Installations*.

Note 3. Corrosion protection systems should be regarded as minimum levels and additional protection may be warranted in special circumstances to achieve a design life of at least 15 years (Types A and D) or 6 years (Types B and C).

Note 4. Where Type A or D tank shell exteriors are not protected by a galvanised coating of 610g/m² or equivalent, appropriate inspection, service and preventative maintenance shall be specified. Exterior shell protection of 305g/m² galvanising is set as the minimum acceptable level of exterior protection, together with specified inspection service and maintenance.

Note 5. Type A and D tanks with galvanised coating weight of 610g/m² will be marked 'g' when Listed in the LPCB List .

Note 6. Type A and D tanks with an equivalent corrosion protection system will be marked 'e' when Listed in the LPCB List.

2.2.3 Other types of tank shell (e.g. G.R.P.) may also be considered for certification.

2.3 Tank Roof

2.3.1 Roofs shall exclude daylight.

2.3.2 Roofs shall prevent water from becoming contaminated with extraneous matter.

2.3.3 Pump suction tanks shall be completely enclosed with rigid roofs.

2.4 Ancillary Equipment

Ancillary equipment shall be provided with each tank, as follows:

2.4.1 A permanently attached access ladder generally to BS 4211 which shall incorporate a platform and guard-rail from which a person shall be able to test and/or maintain the ball valves whilst keeping both feet on the platform.

2.4.2 An access opening of such size and location to enable the testing, maintenance and replacement of a three ball valve manifold. The cover of this opening shall be permanently attached by hinged or other means and shall be secured in such a manner as to be capable of being opened by hand.

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- 2.4.3 A device which shall show the total amount of water present in the tank, and which monitors the quantity of water down to below the suction pipe outlet to the pumps. This device shall be capable of being maintained without draining the tank. Note "cat and mouse" type indicators are not adequate.
- 2.4.4 An immersion heater or other means to prevent the ball valves and the water in the vicinity of the ball valves from freezing. Any immersion heater provided must be of a type which shall not burn out when exposed to the air, e.g. when the water level in the tank is lowered below the immersion heater. The heater shall be of the dual element type. Each element shall be capable of operating independently and preventing water in the vicinity of the ball valves from freezing and capable of being maintained without draining the tank.
- 2.4.5 A drainage facility that can completely drain the tank shall be provided.
- 2.4.6 An efficient overflow pipe in compliance with the relevant water bylaws shall be provided.
- 2.4.7 Sealing arrangements shall adequately seal the pump test pipes into the tank structure so that it shall prevent ingress of extraneous matter.

3. EXAMINATION AND INSPECTION

3.1 Conformity between specimen and documentation

The suction tank shall be visually examined for conformity with technical documentation supplied by the applicant. A lack of conformity identified at this stage or throughout the inspection may prevent granting of certification.

3.2 Filled tanks designed and constructed in accordance with the specification submitted under Section 2 above will be examined. They must have a capacity comparable to the size requested for listing, being not less than three years old⁷, and erected by the submitter. The tank need not necessarily be installed in a sprinkler installation. Capacities in excess of this requirement which involve a change of design in the tank body or roof structure will require additional examination. The testing and inspection procedure will normally operate as follows:

- 3.2.1 An installed pump suction tank shall be inspected by LPCB representatives to ensure that it complies with LPS 1254⁸.
- 3.2.2 LPCB also reserve the right to inspect an empty tank, or a tank in the process of construction where deemed appropriate.
- 3.2.3 The LPCB reserve the right to involve independent qualified structural and corrosion specialists to examine the specification and tank (either empty or full) to verify compliance with this standard.

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3.2.4 Where appropriate, tests may also be carried out as part of the evaluation.

Note 7: The three-year period may be extended, should this be considered appropriate by the LPCB.

Note 8: Where inspection of all ancillary items is not feasible, review of specifications may be sufficient.

4. MARKING

All LPCB Certificated products shall be marked in accordance with BRE Global, incorporating the requirements of PN103.

Each approved tank will be required to bear a plate fixed to the tank not more than 1.75m above the base, containing the following information⁹:

- a) Manufacturer's name or trademark
- b) Manufacturer's address
- c) Product Name
- d) LPCB Mark
- e) LPCB Reference No.
- f) Tank Type A, B, C or D
- g) Date of erection
- h) The maximum capacity in m³. Multi-supply tanks shall indicate the capacity for the automatic sprinkler system separately.

Note 9: It is not acceptable for the above details to be shown on ancillary equipment (e.g. height gauge) in lieu of a plate.

5. QUALITY SYSTEM

The LPCB ISO 9001 certification process shall include:

- Control of the Installation Process, including sub-contractor training.
- Review of service and maintenance procedures
- Review of technical data supplied to LPCB using Application Form F371.

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6. PUBLICATIONS REFERRED TO

- BS 4211 : Ladders for Permanent Access
- BS 5493 : Protective coating of iron and steel structure against corrosion
- BS 8007 : Code of practice for the design of concrete structures for retaining aqueous liquids
- BS EN ISO 12944 : Paints and varnishes – Corrosion protection of steel structures by protective paint systems
- LPCB List : List of Approved Fire and Security Products and Services
- ISO 9001 : Quality management systems - Requirements
- F371 : LPCB Application Form for Pump Suction Tanks
- PN103 : BRE Global: Use of the BRE Global Mark(s)
- LPC Rules : LPC Rules for Automatic Sprinkler Installations
- LPS 1276 : The requirements for the certification of above ground suction tanks for automatic pumps for use in automatic sprinkler system installations

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Amendments Issued Since Publication

| DOCUMENT NO. | AMENDMENT DETAILS | SIGNATURE | DATE |
|--------------|---|-----------|----------|
| LPS 1254-1.0 | Copyright and address change | CJA | 22/10/01 |
| LPS 1254-1.0 | Further copyright changes | CJA | 30/07/02 |
| LPS 1254-1.1 | Further copyright changes | CJA | 20/09/05 |
| LPS 1254-1.2 | Restriction of use to countries other than UK and Ireland | PJF | 14/04/09 |
| LPS 1254-1.3 | <ol style="list-style-type: none"> 1. New front cover 2. Title added to header 3. Contents page moved to Page 1 4. Revision of Loss Prevention Standards added on Page 2 5. Notes amended on Page 3 6. Update of references to ISO 9001 standard (Clauses Foreword, 5 & 6) 7. References to ISO 9002 deleted - this standard has been withdrawn and is replaced by ISO 9001 8. Repagination 9. Update of copyright information | DC | Jan.2014 |

Document predecessor: