

Agricultural water troughs and water fittings —

**Part 1: Specification for water trough
bodies, service boxes and water supply
system**

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Committees responsible for this British Standard

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- British Agricultural and Garden Machinery Association Ltd.
- British Precast Concrete Federation Ltd.
- Glassfibre Reinforced Cement Association
- Ministry of Agriculture, Fisheries and Food
- National Farmers' Union
- Plastic Tanks and Cisterns Manufacturers' Association
- S T C Water Regulations and Fittings Scheme
- Scottish Office (Agriculture and Fisheries Department)
- Water Services Association of England and Wales

This British Standard, having been prepared under the direction of the Farm and Horticultural Buildings Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 January 1992

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
Section 1. General	
1.1 Scope	1
1.2 Definitions	1
Section 2. Trough bodies	
2.1 Design: general requirements	2
2.2 Concrete troughs	2
2.3 Galvanized steel troughs	3
2.4 Spray moulded glass reinforced cement (GRC) troughs	4
2.5 Polyethylene troughs	5
2.6 Test for watertightness and rigidity of completed trough	6
2.7 Marking and information	6
Section 3. Water fittings and service box	
3.1 General	7
3.2 Materials	7
3.3 Design and construction	8
Appendix A Method for determination of toluene extract of carbon black	9
Appendix B Method of test for impact resistance	9
Appendix C Method of test for tensile strength and elongation at break tests	9
Index	10
Figure 1 — Top edge protection of galvanized steel troughs	4
Figure 2 — Rim sections	6
Table 1 — British Standards for cement in concrete troughs	2
Table 2 — Cementitious components	2
Table 3 — Minimum number of stiffeners required for galvanized steel troughs	3
Table 4 — Minimum dimensions for split tube used for top edge stiffening	3
Table 5 — British Standards for cement in GRC troughs	4
Table 6 — GRC for trough bodies	4
Table 7 — Wall and base thickness for polyethylene troughs	6
Table 8 — British Standards for water fittings for troughs	7
Table 9 — British Standards for supply or distribution pipes, and pipe fittings, to troughs	7
Table 10 — Types of float operated valves for various water pressures	7
Table 11 — Position of float operated valves	8
Publication(s) referred to	12

Foreword

This Part of BS 3445, together with Part 2, is a revision of BS 3445:1981 and has been prepared under the direction of the Farm and Horticultural Building Standards Policy Committee. It supersedes BS 3445:1981 which is withdrawn.

The specification for the trough bodies has been revised so as to retain features such as strength and robustness whilst maintaining optional other features which may be requested as extras. In addition agricultural water trough bodies manufactured from polyethylene have been added.

It remains one of the chief functions of this British Standard to protect the water supply against contamination.

It is recognized that manufacturers of troughs are rarely involved in the manufacture or supply of water fittings, or in the installation of the troughs. The new standard is therefore written in two Parts in order that the Parts can be specified separately or together as required.

BS 3445-2 gives recommendations for the installer and operator on meeting water byelaw requirements.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1.1 Scope

This Part of BS 3445 specifies requirements for the bodies of agricultural water troughs for holding drinking water for livestock and for the associated water pipes and fittings, the water level being maintained by a float operated valve controlling a supply of water through a pipe.

Troughs of any suitable shape and of capacity between 60 L and 3 000 L inclusive are covered by this Part of BS 3445.

Section 2 deals with trough bodies and section 3 deals with the water fittings and service box.

NOTE The titles of the publications referred to in this standard are listed on the page 12.

1.2 Definitions

For the purposes of this Part of BS 3445 the definitions given in BS 6100 apply together with the following.

1.2.1

trough body

principal water container of a water trough

1.2.2

service box

housing, either integral with the water trough or attached to it, incorporating a means of attachment for a water supply and for a float operated valve and float

1.2.3

surface box

box covering the chamber in which an underground stop valve/cock is located

1.2.4

backflow

flow of a liquid in a direction contrary to the intended normal direction of flow

1.2.5

backsiphonage

backflow caused by the siphonage of liquid, from a cistern or appliance, into the pipe feeding the cistern or appliance

1.2.6

type A air gap

a visibly unobstructed and complete gap measured vertically between the lowest point of discharge of the inlet pipe and the spill-over level provided on the associated receiving vessel into which the flow is discharged

Section 2. Trough bodies

2.1 Design: general requirements

2.1.1 The water-holding capacity of the container shall be within the range 60 L to 3 000 L inclusive and the size of the trough shall be defined by this capacity.

2.1.2 Surfaces and edges accessible to livestock shall be free from sharp edges and projections.

2.1.3 The minimum depth of water that the container is able to hold before overflow shall be 150 mm and the maximum shall be 800 mm.

2.1.4 The trough body shall either incorporate, or provide for the attachment of, a service box.

2.1.5 The trough body shall withstand the watertightness and rigidity test specified in 2.6.

2.1.6 Materials and substances used in the manufacture of troughs shall not impart toxicity to the trough body, nor shall they render the water in the trough unfit for consumption by livestock.

2.2 Concrete troughs

2.2.1 General

Concrete troughs shall comply with the general requirements specified in 2.1.

2.2.2 Materials

2.2.2.1 General

Materials used in the manufacture of precast concrete elements for troughs shall comply with the appropriate British Standards specified in 2.2.2.2 to 2.2.2.6.

The constituents of the concrete shall be proportioned and mixed to a minimum characteristic compressive strength of 45 N/mm² at 28 days when tested in accordance with BS 1881, and a maximum free water/cement ratio of 0.5 by mass.

Compliance with the above requirements shall be judged in accordance with 3.16.2 of BS 5328-4:1990.

2.2.2.2 Cement

The cement shall comply with one of the following:

- a) be factory-produced by the cement manufacturer and comply with one of the British Standards given in Table 1; or

Table 1 — British Standards for cement in concrete troughs

Type of cement	British Standard
Ordinary and rapid-hardening Portland	BS 12
Portland-blastfurnace	BS 146-2
Sulfate-resisting Portland	BS 4027
Portland pulverized-fuel ash	BS 6588

b) consist of one of the following combinations of BS 12 cement and ground granulated blastfurnace slag (g.g.b.s.) or pulverized-fuel ash (p.f.a.), in accordance with Table 2, to be included as part of the concrete mix by combining them with the other concrete materials in the concrete mixer.

Table 2 — Cementitious components

Cementitious component other than cement	British Standard	% by mass of total cementitious content
g.g.b.s	BS 6699	0 % to 65 %
p.f.a.	BS 3892-1	15 % to 35 %

2.2.2.3 Aggregates

Aggregates shall consist of materials that comply with BS 882 except for the grading requirements of clause 5 of BS 882:1983.

NOTE The manufacturer may modify the gradings to suit his manufacturing process. (See clause 0 of BS 882:1983.)

The nominal maximum size of aggregate shall not exceed the least of the following:

- a) 20 mm;
- b) the concrete cover (see 2.2.3.1);
- c) one-quarter of the minimum thickness of the units.

2.2.2.4 Water

Water shall be clean and free from harmful matter in such quantities as would affect the properties of the concrete in the plastic or hardened state (see Appendix A of BS 3148:1980).

2.2.2.5 Steel reinforcement

The steel reinforcement shall comply with BS 4449, BS 4482 or BS 4483 as appropriate.

2.2.2.6 Admixtures

Admixtures shall comply with BS 5075.

NOTE Admixtures, when used, should not impair the durability of the concrete, nor combine with the ingredients to form harmful compounds nor increase the risk of corrosion of reinforcement.

The chloride ion content of admixtures shall not exceed 2 % by mass of the admixture or 0.03 % by mass of the cement, when used in the following:

- a) any concrete containing reinforcement or other embedded metal; and
- b) any concrete made with cement complying with BS 4027.

2.2.3 Design

2.2.3.1 The walls and the floor of the water-containing compartment shall be not less than 48 mm thick.