

BS EN 13160-6:2016



BSI Standards Publication

Leak detection systems

Part 6: Sensors in monitoring wells

National foreword

This British Standard is the UK implementation of EN 13160-6:2016.

The UK participation in its preparation was entrusted to Technical Committee PVE/393/2, Leak detection devices.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Leak detection systems - Part 6: Sensors in monitoring wells

Systèmes de détection de fuites - Partie 6: Systèmes statiques de détection de fuites dans les puits piézométriques

Leckanzeigesysteme - Teil 6: Sensoren in Überwachungsschächten

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European foreword

This document (EN 13160-6:2016) has been prepared by Technical Committee CEN/TC 393 “Equipment for storage tanks and for filling stations”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard *Leak detection systems* consists of 7 parts:

- *Part 1: General principles*
- *Part 2: Requirements and test/assessment methods for pressure and vacuum kits*
- *Part 3: Requirements and test/assessment methods for liquid systems for tanks*
- *Part 4: Requirements and test/assessment methods for sensor based leak detection systems*
- *Part 5: Requirements and test/assessment methods for in-tank gauge systems and pressurized pipework systems*
- *Part 6: Sensors in monitoring wells*
- *Part 7: Requirements and test/assessment methods for interstitial spaces, leak detection linings and leak detection jackets*

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1 Scope

This European Standard specifies the requirements for leak detection systems – class V for use with systems designed for fuels that are flammable, having a flash point up to but not exceeding 100 °C.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13160-1:2016, *Leak detection systems — Part 1: General principles*

EN 13160-3:2016, *Leak detection systems — Part 3: Requirements and test/assessment methods for liquid systems for tanks*

EN 13160-4:2016, *Leak detection systems — Part 4: Liquid and/or vapour sensor systems for use in leakage containments or interstitial spaces*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13160-1:2016 apply.

4 General

This type of leak detection kit is classified according to EN 13160-1:2016 as class V.

The general requirements on leak detection systems according to Clause 5 of EN 13160-1:2016 shall be met.

5 Monitoring wells

Monitoring wells shall be installed in the ground, with a minimum diameter of 300 mm.

Where liquid sensors are used, the monitoring well shall extend from the ground level to a depth of at least 1,0 m below:

a) the lowest normal groundwater level

or

b) the lowest point of any tank or pipe, whichever is lower.

Where vapour sensors are used, the monitoring well shall extend from the ground level to a depth of at least 1,0 m below the lowest point of any tank or pipe.

Where there is the risk that the normal groundwater level will fall below the point 1,0 m above the lowest perforation opening of a monitoring well, vapour sensors shall be used.

Shall have a casing which is perforated uniformly, both vertically and circumferentially, which extends from ground level to the lowest point of the well. The pattern of perforations shall be designed to permit entry of liquid into the well at any height, but shall be small enough to prevent inflow of the surrounding ground material.

The casing should be constructed with sufficient strength so that the well is not distorted under pressure of the surrounding ground, whether empty or full of liquid.

Shall have a top cap sealed to a minimum standard of IP 66 according to EN 60529:1991, to prevent entry into the well of surface water, liquid spills etc. The cap shall be removable to allow inspection of the contents of the well.

Shall have a bottom seal fixed permanently to the casing to prevent the entry of ground material during installation or in service.

Sufficient monitoring wells should be installed around a system and positioned to ensure that any leakage of stored product from any part of the system will reach a monitoring well.

Specification for the monitoring well casing:

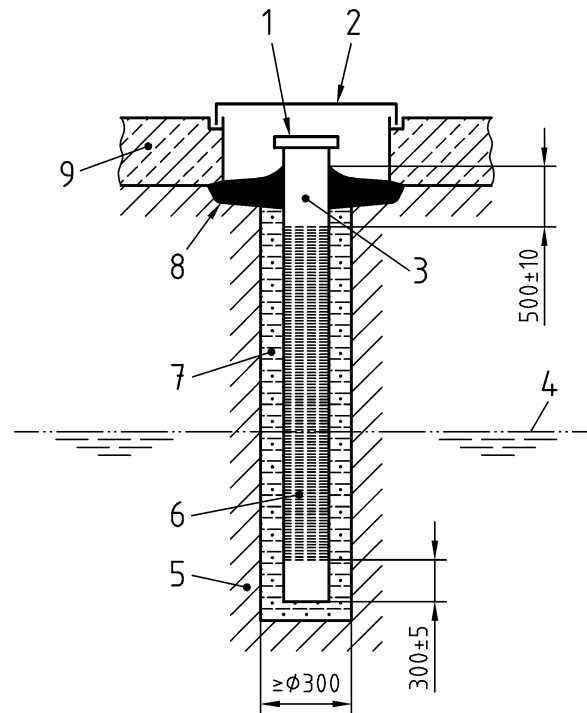
Size:	minimum 100 mm inner diameter
Wall thickness:	minimum 6,0 mm
Material:	e.g. Polyethylene (PE) or equivalent
Slots:	0,4 to 0,6 mm wide 45 to 55 mm long equally spaced around the circumference of the casing 6,8 mm vertical spacing.

The casing shall be closed at the bottom.

In ground conditions where fine soil is present that would pass through the slots a filter screen should be fitted of such size as to prevent passage of the ground material.

Monitoring wells should not be used where the ground material does not allow adequate permeation of stored product or vapour between the storage system and the monitoring well. Monitoring wells should be surrounded by filler sand or pea shingle to at least 300 mm diameter.

Construction of a monitoring well, see Figure 1.



Key

- 1 lockable well seal
(IP 66 according to EN 60529:1991)
- 2 monitoring well cover
- 3 unperforated pipe in sealed area
- 4 groundwater level
- 5 ground material
- 6 perforated casing
- 7 filler sand or pea shingle
- 8 sealed to prevent contamination from above
- 9 concrete or bitumen

Figure 1 — Construction of monitoring wells

6 Discriminating liquid sensors

The liquid sensor of category 2 shall meet the requirements according to 4.1.2 and 4.1.4, if applicable and 4.1.5, 4.2.1 and 4.2.2 of EN 13160-4:2016.

Shall be capable of differentiating between water and the stored product, and shall not give an alarm condition in the presence only of water.

If the liquid sensor requires the presence of groundwater for correct operation, and the level of groundwater falls below the minimum or rises above the maximum necessary for correct operation, an alarm condition shall result.

7 Vapour sensor

The vapour sensor shall meet the requirements according to 4.1.2 to 4.1.4, if applicable and 4.1.5, 4.2.1 and 4.2.2 of EN 13160-4:2016.

The alarm device shall enter an alarm condition in the presence of vapour of the stored product.

Vapour sensors used in any location where there is the risk that they could become submerged in water or any other liquid shall sound an alarm on becoming submerged.

8 Alarm device

An alarm shall be indicated on detecting the presence of stored product or on detecting the absence of water, when this is required for correct operation.

An alarm device according to EN 13160-3:2016, 4.1.3.5 shall be provided.

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