BRITISH STANDARD

BS EN
26948:1991
ISO 6948:1981

Specification for

Production and performance characteristic tests for automatic steam traps

The European Standard EN 26948:1991 has the status of a British Standard

Cooperating organizations

The European Committee for Standardization (CEN), under whose supervision this European Standard was prepared, comprises the national standards organizations of the following countries.

Austria	Oesterreichisches Normungsinstitut
Belgium	Institut belge de normalisation
Denmark	Dansk Standardiseringsraad
Finland	Suomen Standardisoimisliito, r.y.
France	Association française de normalisation
Germany	Deutsches Institut für Normung e.V.
Greece	Hellenic Organization for Standardization
Iceland	Technological Institute of Iceland
Ireland	National Standards Authority of Ireland
Italy	Ente Nazionale Italiano di Unificazione
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Sweden	Standardiseringskommissionen i Sverige
Switzerland	Association suisse de normalisation
United Kingdom	British Standards Institution

This British Standard was published under the authority of the Standards Board and comes into effect on 29 November 1991

The following BSI references relate to the work on this standard:
Committee reference PSE/7
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Amendments issued since publication

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Contents

National foreword

This British Standard has been prepared under the direction of the Piping Systems Components Standards Policy Committee. It is the English language version of EN 26948:1991 "*Automatic steam traps — Production and performance characteristic tests*" published by the European Committee for Standardization (CEN). It supersedes BS 6025:1982 which is withdrawn. EN 26948:1991 is identical with ISO 6948:1981 published by the International Organization for Standardization (ISO).

A textual error exists in ISO 6948 and in EN 26948. This error has been reported to the Central Secretariat of CEN and the following amendment has been proposed.

In **6.7** delete paragraph 2 and insert the following at the end of the clause.

"*The determination shall be carried out at different pressures within the operating range of the steam trap.*"

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, the EN title page, pages 2 to 6, 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.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 26948:1991

October 1991

UDC 621.646.9.057.6:621.186.6:6:620.1

Descriptors: Valves and fittings, traps: drainage, water vapour, steam, automatic equipment, tests, performance tests, performance evaluation

English version

Automatic steam traps — Production and performance characteristic tests

(ISO 6948:1980)

Purgeurs automatiques de vapeur d'eau — Essais de production et essais des caractéristiques de fonctionnement (ISO 6948:1980)

Kondensatableiter — Fertigungsprüfung und Prüfung der Funktionsmerkmale (ISO 6948:1980)

This European Standard was approved by CEN on 30 September 1991 and is identical to the ISO standard as referred to.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

On the proposal of the Technical Committee CEN/TC 69 "Industrial Valves" CEN BT decided by resolution C67/1990 to submit the International Standard

ISO 6948:1981: *Automatic steam traps — Production and performance characteristic tests*

to Formal Vote.

This European Standard EN 26948 was approved by CEN on 2 July 1991.

According to the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard:

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Contents

1 Scope and field of application

This International Standard specifies tests applicable to automatic steam traps. These tests, which are hereafter referred to as production tests and performance characteristic tests, may be conducted to ensure the correct functioning of a steam trap or to evaluate the performance of a particular design. This International Standard specifies the tests to be performed relative to each one of these two categories and describes briefly the corresponding test methods.

2 References

ISO 6552, *Automatic steam traps — Terminology.*

ISO 6553, *Automatic steam traps — Marking.*

ISO 6704, *Automatic steam traps — Classification.*

3 Definitions

3.1
production tests

those tests carried out by the manufacturer to confirm that each automatic steam trap functions correctly. These tests may be witnessed by the purchaser or his representative; in this case, these tests are referred to as acceptance tests

3.2
performance characteristic tests

those tests carried out to determine the operational characteristics of a particular design of steam trap

4 Production tests

4.1 Product inspection

Samples of the finished traps shall be visually examined and dimensionally checked to ensure that the traps correspond to the stated specification and are marked in accordance with ISO 6553.

4.2 Shell testing

Each steam trap shall be tested to confirm the integrity of its shell under pressure. Further details are given in **6.1**.

4.3 Operational check

Sample steam traps shall be tested to ensure that they open to discharge condensate and close satisfactorily. Further details are given in **6.2**. This test does not apply to the labyrinth (or orifice) steam traps (see ISO 6704).

4.4 Notice for acceptance tests

If the purchaser wishes to witness the tests, this shall be specified in the order.

If the manufacturer shall give the purchaser at least five days notice of the date when the tests will be performed.

5 Performance characteristic tests

A manufacturer may describe the operations of a particular type of steam trap by referring to one or more of the following performance characteristic tests.

A brief explanation of the derivation of each characteristic is given below; further details on the appropriate test methods are specified in clause **6**.

5.1 Minimum operating pressure

The steam trap shall be tested to determine the minimum pressure (atmospheric or above) at which correct opening and closing will occur.

5.2 Maximum operating pressure (PMO)

The steam trap shall be tested to determine the maximum pressure at which correct opening and closing will occur.

5.3 Maximum operating back pressure (PMOB)

The steam trap shall be tested to determine the maximum pressure permissible at the outlet of the device which allows correct functioning.

5.4 Air venting capability

The steam trap shall be tested to determine its ability to discharge air.

5.5 Operating temperature (TO)

The steam trap shall be tested to determine the temperature at which the device operates and in particular the temperature at which it passes its specified capacity.

5.6 Condensate capacity (QH or QC)

The steam trap shall be flow tested to determine its condensate capacity throughout its operating pressure range.

5.7 Live steam loss

The steam trap shall be tested to determine the amount of live steam lost via the trap.

6 Test methods

6.1 Shell testing

The test fluid, the choice of which is left to the discretion of the manufacturer, shall be either:

— water, which may contain a corrosion inhibitor, kerosene or any other suitable liquid having a viscosity not greater than that of water;

— steam, air or any other suitable gas.

NOTE Various statutory authorities require specific approval of test procedures where the test is conducted using steam, air or other gas.

Any internal trim which will not withstand the test pressure may be removed before the test.

The trap shall be essentially vented of air when testing with a liquid.

Traps shall not be painted or otherwise coated with materials capable of sealing against leakage before the shell pressure tests are completed. Chemical corrosion protection treatments and internal linings are permitted. If pressure tests in the presence of a representative of the purchaser are specified, painted traps from stock may be re-tested without removal of paint.

Test equipment shall not subject the trap to externally applied stresses which may affect the results of the tests.

The shell test shall be performed by applying pressure inside the assembled trap with the ends closed.

For all traps, the hydraulic shell test shall be performed at a pressure 1,5 times the maximum allowable pressure at 20 °C.

For traps with a nominal diameter less than or equal to DN 50 in the pressure range up to PN 50, the shell test may be carried out either using liquid at a pressure equal to 1,5 times the maximum allowable pressure at 20 °C or using gas at a pressure (gauge pressure) of 6 bar (0,6 Mpa).

Visually detectable leakage through the pressure retaining walls is not acceptable.

Test durations shall not be less than those specified in the Table.

Table — Minimum durations for shell tests

Nominal trap size DN	Minimum test duration s
DN $\leqslant$ 50	15
65 $\leqslant$ DN $\leqslant$ 200	60
250 $\leqslant$ DN	180

6.2 Operational check

The steam trap shall be fed with steam, and condensate shall be introduced intermittently.

When only steam is present, the steam trap shall close; on the introduction of condensate, the steam trap shall open (the time taken will vary as a function of the steam trap type); when the condensate has been discharged, the steam trap shall again close.

The test is complete when at least one complete cycle has been performed.

Certain types of trap may be tested with air or water.

6.3 Determination of minimum operating pressure

Operational checks, as described in **6.2**, shall be carried out whilst successively reducing the test pressure until the steam trap fails to open and close correctly.

The minimum operating pressure is the lowest test pressure at which correct operation is observed.

6.4 Determination of maximum operating pressure

The maximum operating pressure of the steam trap may be verified by carrying out operational checks, as described in **6.2**, whilst successively increasing the test pressure up to the steam trap's maximum operating pressure.

The steam trap shall open and close correctly throughout the test.

6.5 Determination of maximum operating back pressure

Operational checks, as described in **6.2**, shall be carried out with the outlet from the steam trap connected to a vessel in which the pressure can be raised, independent of the test pressure upstream of the steam trap.

Whilst maintaining a reference pressure at the steam trap's inlet, the pressure at its outlet is to be raised successively until the steam trap fails to open and close correctly.

The maximum operating back pressure is the highest pressure applied to the steam trap's outlet at which correct operation is still observed.

6.6 Air venting capability test

Air shall be introduced at a specified temperature into the trap or upstream piping. The air venting capability shall be checked by an air flow measurement carried out at minimum and maximum operating pressures, the temperature inside the trap being recorded.

6.7 Determination of operating temperature

Steam shall be fed into the steam trap to effect closure. Condensate, at saturated steam temperature, shall then be introduced and, unless the steam trap opens immediately, shall be allowed to cool slowly at the steam trap's inlet.

The temperature of the condensate, measured at the steam trap's inlet, at which the device opens, is the operating temperature.

The operating temperatures are the temperatures of the condensate, measured at the inlet to the trap, at which the trap passes its specified capacities.

6.8 Condensate capacity test

The capacity of the steam trap shall be determined by measuring the amount of condensate that is discharged from the device under specified conditions of pressure differential and condensate temperature.

The test shall be carried out with condensate at different temperatures and at different pressures within the steam trap's operating range to be specified in a forthcoming International Standard.

6.9 Determination of live steam loss

Several methods may be used to determine the amount of live steam lost, if any, by the steam trap in accordance with a forthcoming International Standard.

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National appendix NA (informative)

The United Kingdom participation in the preparation of this European Standard was entrusted by the Piping Systems Components Standards Policy Committee (PSE/-) to Technical Committee PSE/7, upon which the following bodies were represented:

Amalgamated Engineering Union
Association of Bronze and Brass Founders
Association of Building Component Manufacturers
British Chemical Engineering Contractors' Association
British Foundry Association
British Gas plc
British Maritime Technology
British Plumbing Fittings Manufacturers' Association
British Valve and Actuator Manufacturers' Association
Chartered Institution of Building Services Engineers
Copper Development Association
Department of the Environment (Property Services Agency)
Electricity Industry in United Kingdom
Energy Industries Council
Engineering Equipment and Materials Users' Association
Fire Extinguishing Trades Association
GAMBICA (BEAMA Ltd.)
Health and Safety Executive
Institute of British Foundrymen
Institution of Chemical Engineers
Institution of Mechanical Engineers
Institution of Water and Environmental Management
Liquefied Petroleum Gas Industry Technical Association (UK)
Pipeline Industries Guild
Society of British Gas Industries
Society of British Water Industries
Water Companies Association
Water Services Association of England and Wales
West Midlands CBI

National appendix NB (informative)

The British Standards corresponding to the International Standards referred to in the text are as follows:

International Standard	British Standard
ISO 6552:1980	BS 6023:1981 *Glossary of technical terms for automatic steam traps* (Identical)
ISO 6553:1980	BS EN 26553:1991 *Specification for marking of automatic steam traps* (Identical)
ISO 6704:1982	BS EN 26704:1991 *Classification of automatic steam traps* (Identical)

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