

English version

Devices to prevent pollution by backflow of potable water - Automatic diverter - Family H, type C

Dispositifs de protection contre la pollution de l'eau potable
par retour - Inverseur à retour automatique - Famille H, type
C

Sicherungseinrichtungen zum Schutz des Trinkwassers
gegen Verschmutzung durch Rückfließen - Automatischer
Umsteller - Familie H, Typ C

This European Standard was approved by CEN on 24 December 2004.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 14506:2005) has been prepared by Technical Committee CEN/TC 164 "Water supply", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by November 2005, and conflicting national standards shall be withdrawn at the latest by November 2005.

This document has been developed with reference to EN 1717 "Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by this document:

- a) this document provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- b) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

1 Scope

This document specifies:

- a) field of application;
- b) requirements for automatic diverters;
- c) dimensional and the physico-chemical properties and the properties of general hydraulic, mechanical and acoustic design of automatic diverters;
- d) test method and requirements for verifying these properties. For sanitary tapware (see Clause 2) with integrated devices, the automatic diverter is only considered to be a backflow protection device if it has passed the requirements of this document and additionally those of the applicable product standard for the draw off tap or mixing valve;
- e) marking and presentation;
- f) acoustics.

This document specifies the characteristics of automatic diverters suitable for use in drinking water systems at pressures up to 1 MPa (10 bar) and temperatures up to 65 °C and for 1 h at 90 °C. They are intended only for installation with no downstream closing device.

This document is applicable to the product type indicated as follows:

- i) integrated in spout (outlet);
- ii) integrated in the mixing body;
- iii) non-integrated (part of a set) above the maximum water level.

This document is not applicable to the product type non-integrated below the maximum water level.

2 Normative references

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

EN 200, *Sanitary tapware — Single taps and combination taps (PN 10) - General technical specification*

EN 248, *Sanitary tapware — General specification for electrodeposited coatings of Ni-Cr*

EN 806-1:2000, *Specifications for installations inside buildings conveying water for human consumption — Part 1: General*

EN 817, *Sanitary tapware — Mechanical mixers (PN 10) — General technical specifications*

EN 1111, *Sanitary tapware — Thermostatic mixing valves (PN 10) — General technical specification*

EN 1112, *Shower outlets for (PN 10) sanitary tapware*

EN 1113, *Showers hoses for (PN 10) sanitary tapware*

EN 1286, *Sanitary tapware — Low pressure mechanical mixing valves — General technical specification*

EN 1287, *Sanitary tapware — Low pressure thermostatic mixing valves — General technical specifications*

EN 1717:2000, Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN ISO 3822-1, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 1: Method of measurement (ISO 3822-1:1999)*

EN ISO 3822-2, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 2: Mounting and operating conditions for draw-off taps and mixing valves (ISO 3822-2:1995)*

EN ISO 6509, *Corrosion of metals and alloys — Determination of dezincification resistance of brass (ISO 6509:1981)*

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1717:2000 and EN 806-1:2000 and the following apply.

automatic diverter

part of sanitary tapware capable of switching the water supply from the shower hose outlet (secondary outlet) to the bath outlet (primary outlet) in the event of insufficient supply pressure. It incorporates the following characteristics:

- a) means of manually diverting flow to a hose outlet and of maintaining diversion as long as a positive supply pressure is maintained;
- b) automatic closure of the hose outlet with anticipation and return to air gap discharge when the supply pressure falls below a prescribed minimum;
- c) sufficient mechanical loading to maintain closure of the hose outlet in the event of a negative supply pressure.

For the purpose of this document "automatic diverter HC "is hereafter referred to as "device(s)"

4 Nominal size and pressure ranges

The nominal size of non-integrated devices (DN) shall correspond to the denomination of the thread according to Table 1.

Nominal size is not applicable to integrated devices.

For specifications of threads please see 8.2.

Table 1 — Nominal size vs thread size

Thread size	$\frac{1}{2}$	$\frac{3}{4}$
DN	15	20

The device shall be suitable for the pressure ranges specified.

5 Designation

The device is designated by:

- a) name;
- b) reference to this document (EN 14506);
- c) family, type;
- d) pressure range (HP or LP);
- e) acoustic group.

EXAMPLE for a designation

Automatic diverter, EN 14506, family H, type C, HP, I

6 Marking and technical documents

6.1 Marking

6.1.1 General

In countries where the use of products made of dezincification resistant materials is not required, the dezincification resistant products according to EN ISO 6509 as well as the products which do not contain zinc, may be marked "DR".

In countries where the use of dezincification resistant materials is required, the dezincification resistant products, as well as the products which do not contain zinc, shall be marked "DR".

6.1.2 Marking for integrated devices

An additional marking required for sanitary tapware shall be indicated by letters indicating family and type of device. The marking shall be visible and permanent, i.e. moulded, engraved, etched or obtained by similar procedures.

6.1.3 Marking for non integrated devices

The marking shall indicate:

- a) name, manufacturer's brand or logo;
- b) arrow indicating normal direction of flow;
- c) nominal size (DN);
- d) acoustic group;
- e) letters indicating family and type of device.

Marking a), b), c), and e) are obligatory. In case there is no marking for d), the device shall be considered as not classified acoustically.

6.2 Technical documents

Each package and/or each batch and/or each catalogue of the supplier/manufacturer shall contain technical product information which shall be written in a commonly spoken language of the country in which the product is sold.

It shall provide the following information:

- a) designation and purpose of the product;
- b) installation instructions;
- c) minimum installation height;
- d) (brand) name and address of the supplier/manufacturer;
- e) instructions for maintenance, if any;
- f) spare part list, if any.

For integrated devices, the technical documents for the sanitary fitting, shall state whether the automatic diverter is of an anti pollution type, or whether the hose outlet of the sanitary tapware is protected by some other means against backflow — as required by EN 1717, or, whether additional means for backflow protection has to be installed.

7 Symbolization

The graphic representation of the device is as follows (see Figure 1):

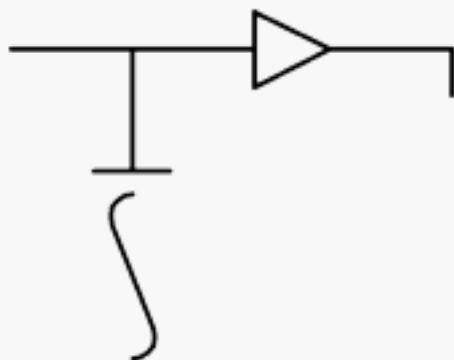
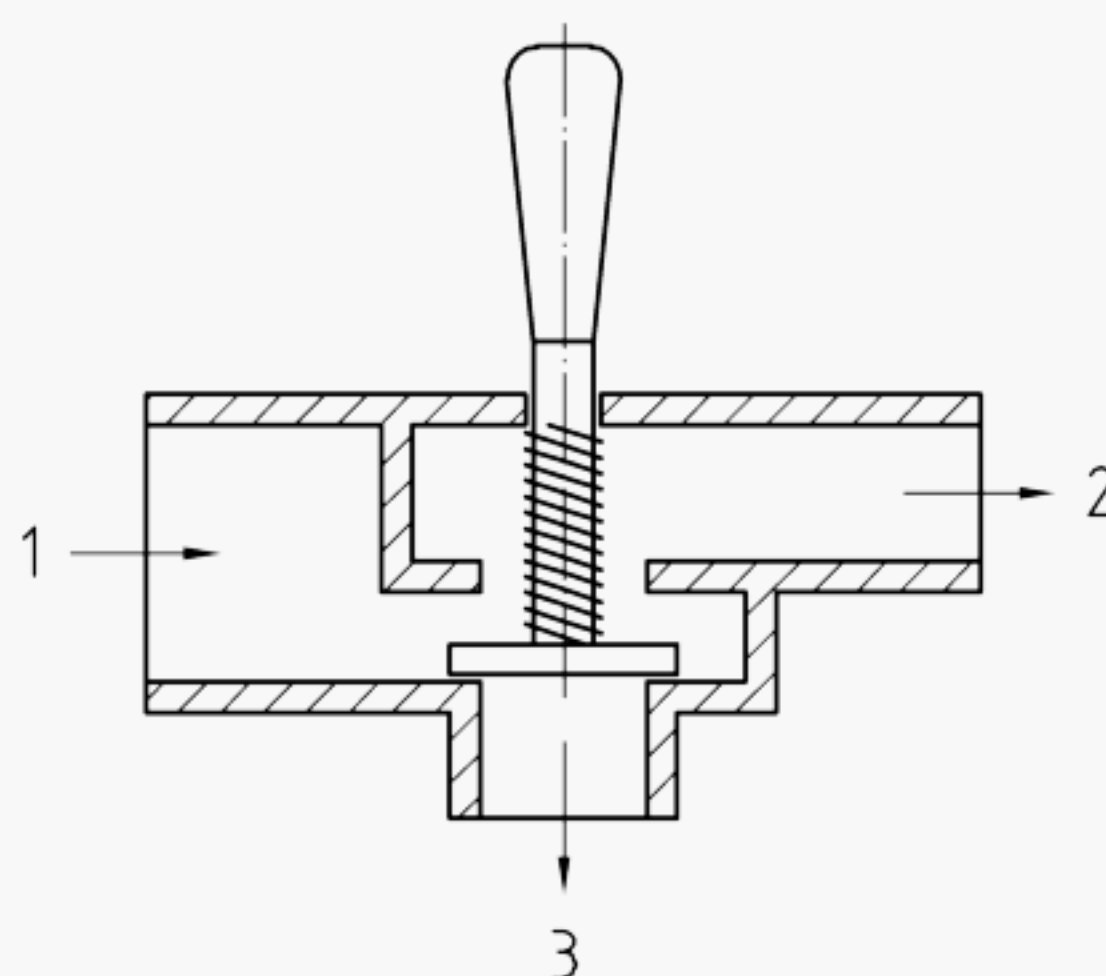


Figure 1 — Graphic symbol

8 General design characteristics

8.1 Design principle

A typical design principle of HC device is given in Figure 2.



Key

- 1 Inlet
- 2 Bath
- 3 Shower

Figure 2 — Design principle of HC device

8.2 Connections

For devices supplied as part of a set the connection shall be as specified in the sanitary tapware standards EN 200; EN 817; EN 1111; EN 1112; EN 1113; EN 1286; or EN 1287.

For non integrated devices the following standards shall be applicable:

ISO 7-1 or EN ISO 228-1.

9 Physico-chemical characteristics

9.1 Materials

The materials and the coatings used, liable to come normally or accidentally in contact with potable water, shall satisfy the EU regulations concerning water quality,

The materials and the coatings shall be:

- a) corrosion resistant in accordance with ISO 9227;
- b) prone to the least scaling possible;
- c) in conformity with the associated standards and regulations;

- d) compatible among themselves and with:
- water distributed;
 - fluids or matter liable to come into contact with them;
 - products normally used for disinfection operations of the network: potassium permanganate and sodium hypochlorite.

9.2 Nature of materials

The choice of materials is left to the discretion of the manufacturer.

- a) Copper-zinc alloys containing more than 10 % zinc are subject to denzincification when submitted to water capable of dezincification. In countries where the use of products made of dezincification resistant materials is required, the products shall guarantee a dezincification depth less than 200 um in any direction, they shall be tested in accordance with EN ISO 6509 and shall be marked in compliance with the indication in Clause 6.
- b) Neither the materials nor the coatings used shall, by normal or accidental contact with drinking water, cause any risk of affecting or modifying the water up to a temperature of 90 °C. The suitability of the water for human consumption is defined by national regulations.
- c) The manufacturer shall state in his technical and sales literature the nature of the materials and the coatings selected.
- d) The materials, and in particular copper alloys, for which recommendations or standards exist shall comply with the relevant recommendations or standards.

10 Characteristics and tests

10.1 General

10.1.1 Examples shown in the figures are for guidance only. Laboratory equipment shall be designed to ensure that the devices can be tested in accordance with the specified requirements. Twin inlet devices, unless otherwise stated, will be fed from a common supply.

10.1.2 General tolerances

- a) Accuracy of measurements.

In the absence of any particular specifications:

- flow rate and pressure: ± 2 % of the value indicated;
- temperature: cold water, ± 5 °C of the required value;
- hot water, ± 2 °C of the required value;
- time: $^{+10}_0$ % of the required value;

- b) Accuracy of measuring instruments.

All measuring instruments shall have a precision of ± 2 % of the measured value. Temperature measurements shall be accurate to 1 K.

10.2 Test sequence

Minimum three samples shall be submitted. The test sequence is specified in Annex A.

The diverters submitted as components have to be tested as such.

The device for type testing shall be installed in the position recommended by the manufacturer and tested in accordance with the following sequence:

Stage 1: Visual verification. See 10.3.

Stage 2: Leak tightness and anticipation. See 10.4.

Stage 3: Endurance testing. See 10.5.

Stage 4: Vacuum test. See 10.6.

10.3 Visual verification (Stage 1)

For both high and low pressure applications, verify visually that the device conforms to the description and the appropriate drawings of the manufacturer.

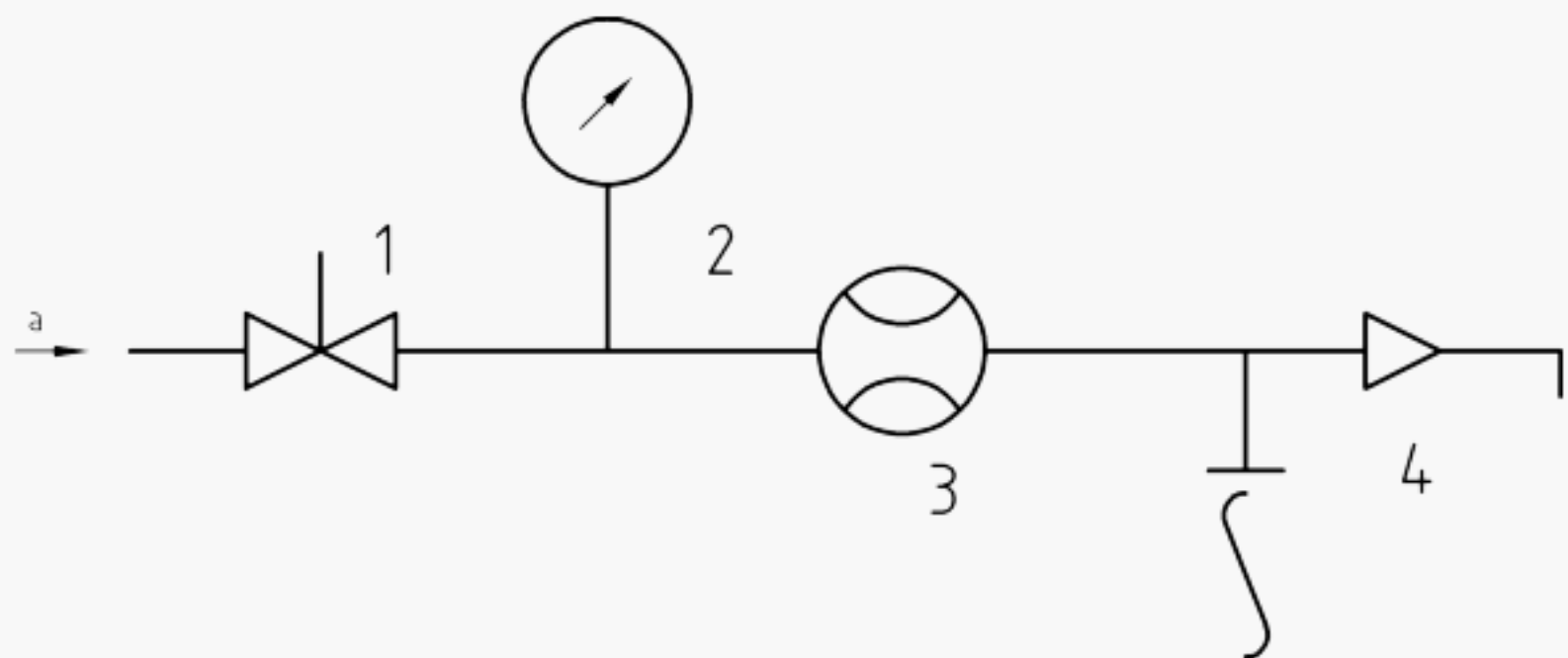
10.4 Leak tightness test and anticipation (Stage 2)

10.4.1 General

The purpose of the test is to determine that the leak tightness of the device is in accordance with the relevant requirements of the applicable product standards for sanitary fittings.

10.4.2 Test equipment for high pressures devices

An example of suitable test equipment is shown in Figure 3.



Key

- a Water supply
- 1 Valve
- 2 Pressure gauge
- 3 Flow meter
- 4 Test device

Figure 3 — Leak tightness testing equipment for high pressure devices

10.4.3 Leaktightness and operation of automatic diverter for high pressure applications

10.4.3.1 General

The pressure/time diagram is shown in Figure 4.

With combination tap assemblies the controls shall be fully open. With fittings conforming with EN 817 and EN 1111 the flow control shall be fully open and the temperature control shall be in the mid position.

10.4.3.2 Procedure: Device in position flow to bath

- a) connect the tapware, in its normal position of use, to the test circuit;
- b) connect the hydraulic resistance Class A to the shower outlet;
- c) with the automatic diverter in the flow to bath mode apply a dynamic pressure of $0,4 \text{ MPa} \pm 0,02 \text{ MPa}$ ($4,0 \text{ bar} \pm 0,2 \text{ bar}$) for $60 \text{ s} \pm 5 \text{ s}$;
- d) inspect for leakage at the outlet to shower.

10.4.3.3 Requirement: device in position flow to bath

There shall be no leakage at the outlet to shower.

10.4.3.4 Continuation procedure: device in position: flow to shower

- a) put the automatic diverter in the flow to shower mode with the outlets to bath and shower open;
- b) adjust the dynamic pressure to $0,4 \text{ MPa} \pm 0,02 \text{ MPa}$ ($4,0 \text{ bar} \pm 0,2 \text{ bar}$) and apply for $60 \text{ s} \pm 5 \text{ s}$;
- c) inspect for leakage at the outlet to bath;
- d) gradually reduce the pressure to $0,05 \text{ MPa} \pm 0,005 \text{ MPa}$ ($0,5 \text{ bar} \pm 0,05 \text{ bar}$) and maintain it there for $60 \text{ s} \pm 5 \text{ s}$;
- e) verify the automatic diverter position and inspect for leakage at the outlet to bath;
- f) with the automatic diverter still in the shower position gradually reduce the dynamic pressure to $0,015 \text{ MPa} + 0,005 \text{ MPa}$ ($0,15 \text{ bar} + 0,05 \text{ bar}$);
- g) verify that the diverter has switched to the bath position.

10.4.3.5 Requirement: device in position — flow to shower

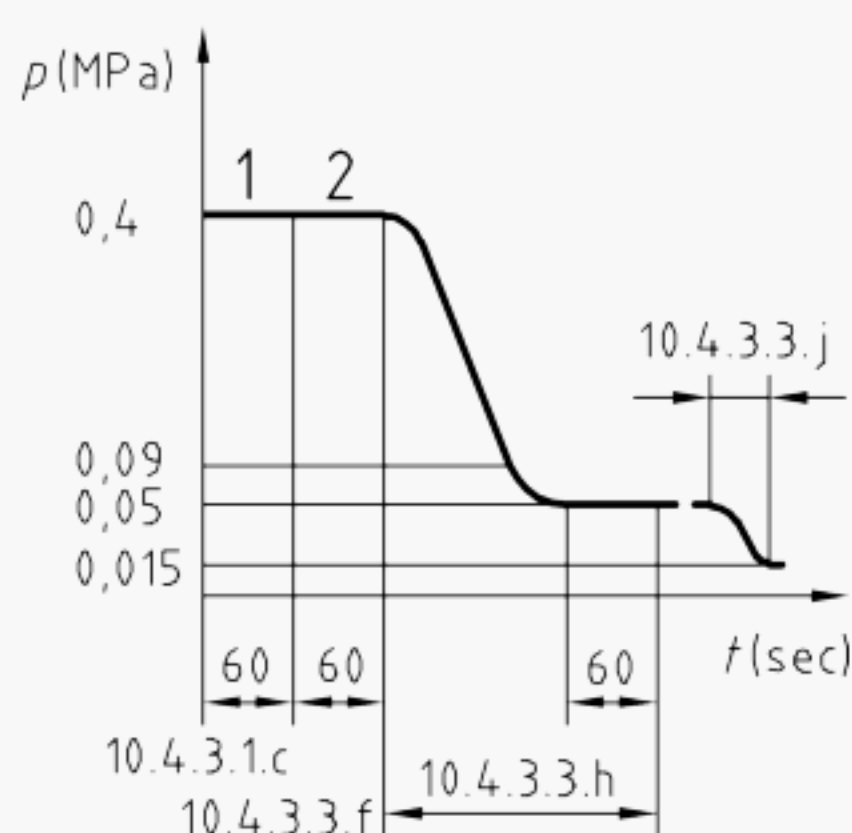
- a) there shall be no leakage at the outlet to bath whilst the automatic diverter remains in the flow to shower position above $0,05 \text{ MPa} + 0,005 \text{ MPa}$ ($0,5 \text{ bar} + 0,05 \text{ bar}$)
- b) the automatic diverter shall revert to the flow to bath position at a pressure between $0,05 \text{ MPa}$ and $0,015 \text{ MPa}$ ($0,5 \text{ bar}$ and $0,15 \text{ bar}$).

10.4.3.6 Continuation procedure — device in position: flow to bath

- a) reapply a dynamic pressure of $0,05 \text{ MPa} + 0,005 \text{ MPa}$ ($0,5 \text{ bar} + 0,05 \text{ bar}$) for $60 \text{ s} \pm 5 \text{ s}$;
- b) verify whether leak tightness is obtained at the shower outlet.

10.4.3.7 Requirements position: flow to bath

There shall be no leakage at the outlet to shower.



Key

- 1 Bath
- 2 Shower

Figure 4 — Pressure/Time diagram for HP leaktightness test

10.4.4 Leak tightness and operation of automatic diverters for low pressure applications

10.4.4.1 General

With combination tap assemblies the controls shall be fully open. With fittings conforming with EN 1286 and EN 1287 the flow control shall be fully open and the temperature control shall be in the mid position.

10.4.4.2 Procedure: device in position flow to bath

- a) for verification of leak tightness of the bath outlet in bath mode, connect the device to the test circuit leaving the shower outlet free (see Figure 6);
- b) with the device in flow to bath mode with the outlets to bath and shower open;
- c) open the control valve of the test circuit to supply a flow pressure of 0,018 MPa to 0,022 MPa (0,18 bar to 0,22 bar);
- d) verify for $60 \text{ s} \pm 5 \text{ s}$ if there is no leakage at the shower connection point.

10.4.4.3 Requirement: device in position flow to bath

There shall be no leakage at the shower connection point.

10.4.4.4 Continuation procedure: device in position flow to shower

- a) connect the hydraulic resistance shown in the Figure 7 (calibrated to 0,15 l/s at 0,02 MPa) to the hose attachment point;
- b) regulate the dynamic pressure to between 0,018 MPa to 0,022 MPa (0,18 bar to 0,22 bar) (see Figures 6 and 7);
- c) close the manometer isolating valve;

- d) turn diverter in the flow-to-shower mode without altering the settings of the test circuit. The outlet to bath shall be open;
- e) verify for $60\text{ s} \pm 5\text{ s}$ that there is no flow at the outlet to bath;
- f) open the manometer isolating valve;
- g) re-adjust the dynamic pressure at the tap inlet, by adjustment of the test circuit control valve, to between 0,018 MPa to 0,022 MPa (0,18 bar to 0,22 bar) referenced to the bath outlet datum (the Figure 5 starts at this point);
- h) verify if the diverter is in the shower position and check for leakage at the outlet to bath for $60\text{ s} \pm 5\text{ s}$;
- i) reduce the dynamic pressure to 0,015 MPa (0,15 bar) and maintain for $60\text{ s} \pm 5\text{ s}$. Verify if the diverter is in the shower position and check for leakage at the outlet to bath for $60\text{ s} \pm 5\text{ s}$;
- j) reduce the dynamic pressure to 0,012 MPa (0,12 bar). Check that the automatic diverter has switched to bath position.

10.4.4.5 Requirement: flow to shower

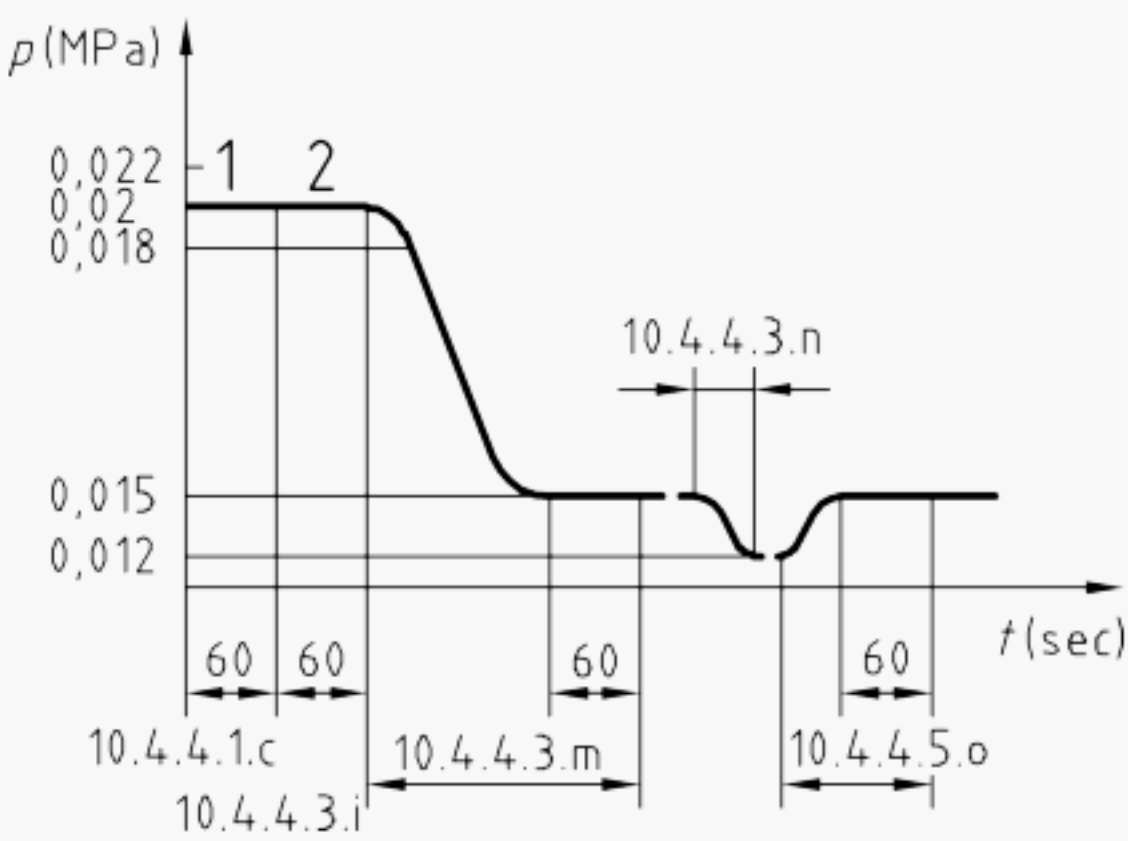
- a) there shall be no leakage at the outlet to bath whilst the device remains in the flow to shower position;
- b) for the duration of the tests there shall be no leakage. The device shall revert to the flow to bath position at a pressure between 0,015 MPa and 0,012 MPa (0,15 bar and 0,12 bar).

10.4.4.6 Continuation procedure: flow to bath

- a) for leakage verification disconnect the shower outlet pipework;
- b) re-apply the dynamic pressure of 0,015 MPa (0,15 bar) for $60\text{ s} + 5\text{ s}$;
- c) record any leakage from the hose attachment point.

10.4.4.7 Requirement

There shall be no leakage from the hose attachment point.



Key
1 Bath
2 Shower

Figure 5 — Pressure/time diagram for low-pressure leak tightness test

Dimensions in millimetres

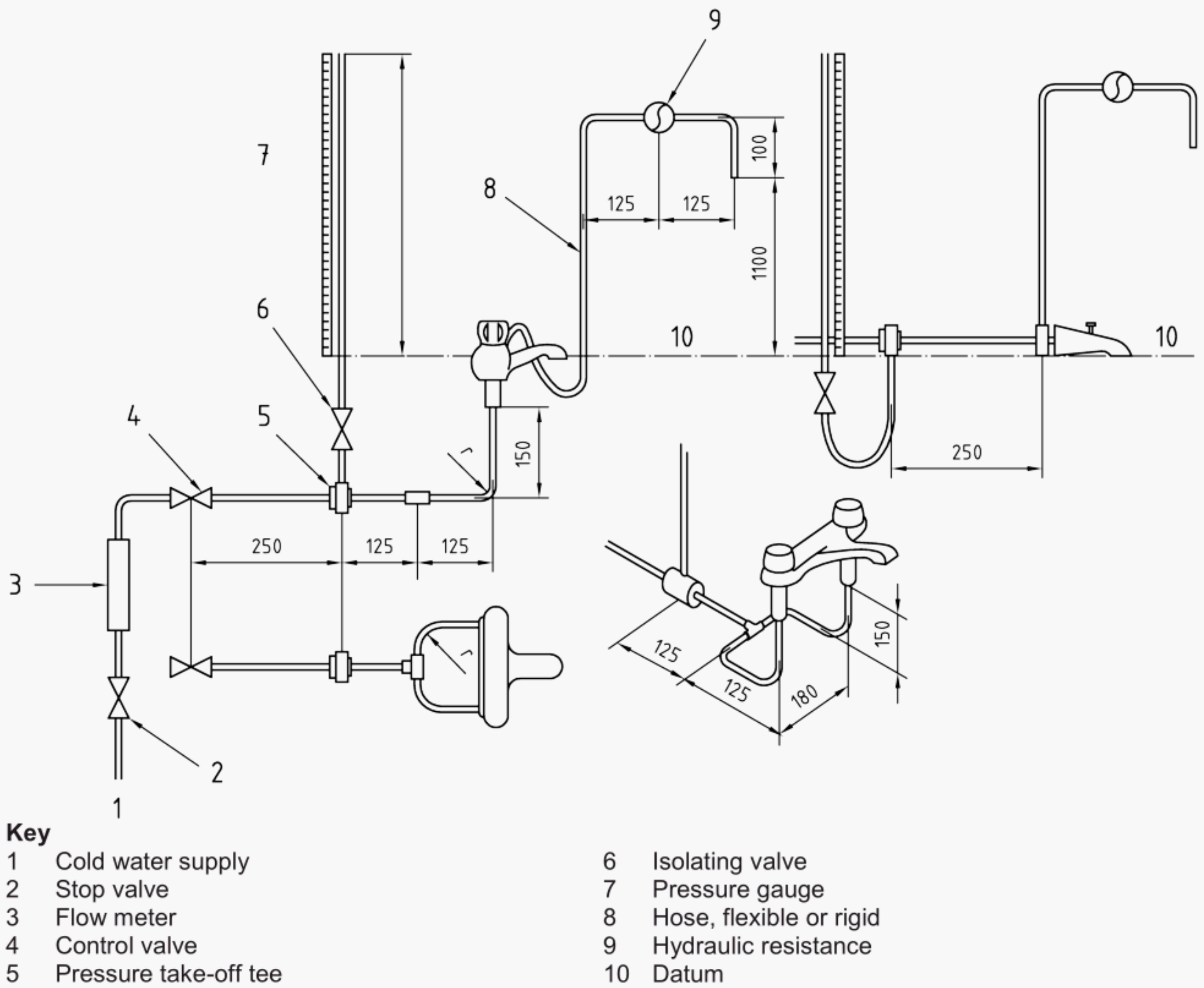
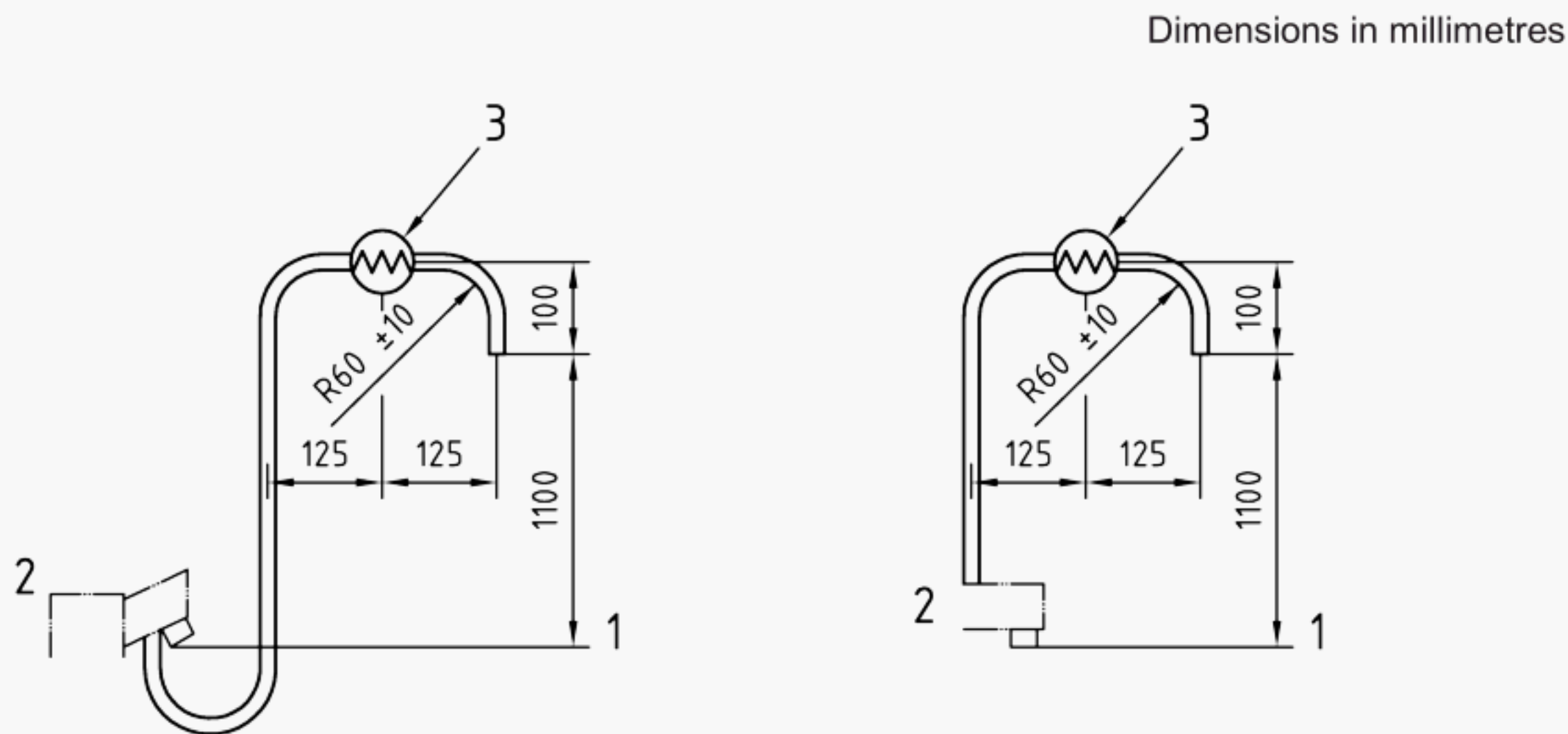


Figure 6 — Test equipment for low-pressure devices



- Key**
- 1 Datum
 - 2 Diverter
 - 3 Hydraulic resistance

The tube shall be of same nominal size as the diverter connection for the shower outlet

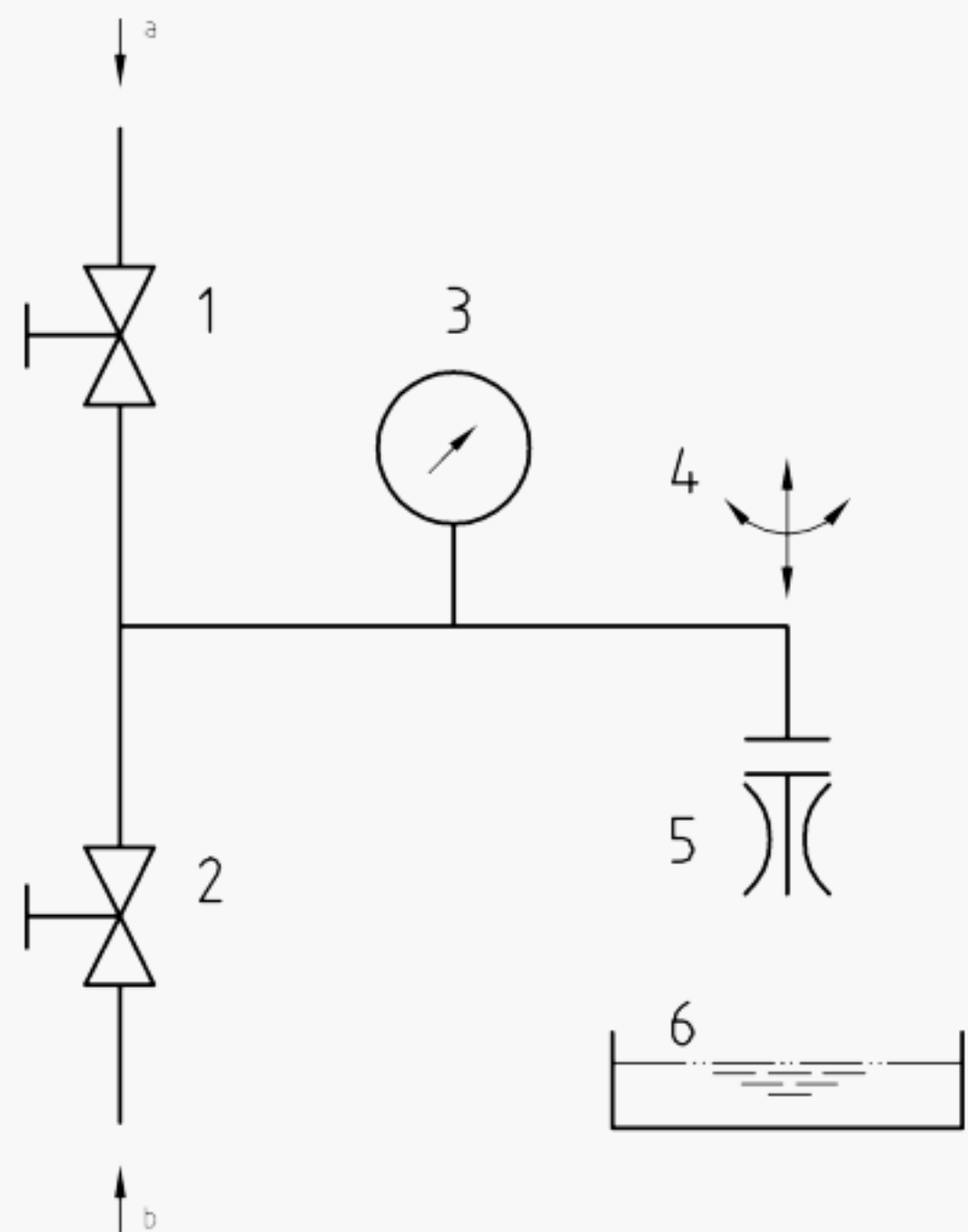
Figure 7 — Hydraulic resistance for low-pressure automatic diverters

10.5 Mechanical endurance testing (Stage 3)

10.5.1 General

This Clause describes a method of evaluating the mechanical endurance of automatic diverters of combination tap assemblies and mixing valves, and specifies the test criteria.

10.5.2 Test equipment



Key

- a Cold water
- b Hot water
- 1 Quick acting valve
- 2 Quick acting valve
- 3 Pressure gauge
- 5 Resistance
- 6 Water reservoir

4 Automatic machine ensuring alternate operation¹.

Figure 8 — Test rig for endurance testing

Supply circuits with a pump or similar device to supply the required cold water static pressure at a temperature of $\leq 30\text{ }^{\circ}\text{C}$ and the required hot water static pressure at $65\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$.

10.5.3 Principle

The device is subjected to a specified number of operations whilst being supplied alternately with cold water and hot water to test its behaviour over a period of time, taking into account the effect of water temperature.

10.5.4 Procedure

- a) Install the device, on the test rig and connect both inlets according to Figure 8;
- b) Connect (4) to the automatic diverter;
- c) Adjust the dynamic pressure of both hot and cold circuits:

¹ The machine incorporates a mechanism for moving the automatic diverter to the shower position under the conditions specified, and in addition, an automatic quick-acting valve to cut off the supply to the fitting under test.

- for high pressure fittings: $0,4 \text{ MPa} \pm 0,02 \text{ MPa}$ ($4 \text{ bar} \pm 0,2 \text{ bar}$);
- for low-pressure fittings: $0,02 \text{ MPa} \pm 0,002 \text{ MPa}$ ($0,2 \text{ bar} \pm 0,02 \text{ bar}$).

d) The shower outlet is equipped with:

- hydraulic resistance A or equivalent for high pressure;
- resistance to low pressure shown in the Figure 7 (calibrated to $0,15 \text{ l/s}$ at $0,02 \text{ MPa}$).

e) Subject the automatic diverter to a test of 80 000 cycles, one cycle being defined as follows:

- with the automatic diverter in the flow to bath position, allow water to flow through the spout for $5 \text{ s} \pm 0,2 \text{ s}$;
- move the automatic diverter to the shower position;
- allow water to flow through the shower outlet for $5 \text{ s} \pm 0,2 \text{ s}$;
- use (1) and (2) to cut off the supply to the tap, allowing the automatic diverter to return to flow to bath position, and then reopen the supply.

Throughout the test, supply the device alternately with cold water for $15 \text{ min} \pm 1 \text{ min}$ and then hot water for $15 \text{ min} \pm 1 \text{ min}$.

10.5.5 Requirement

Throughout the test, there shall be no incidents of failure of the automatic diverter.

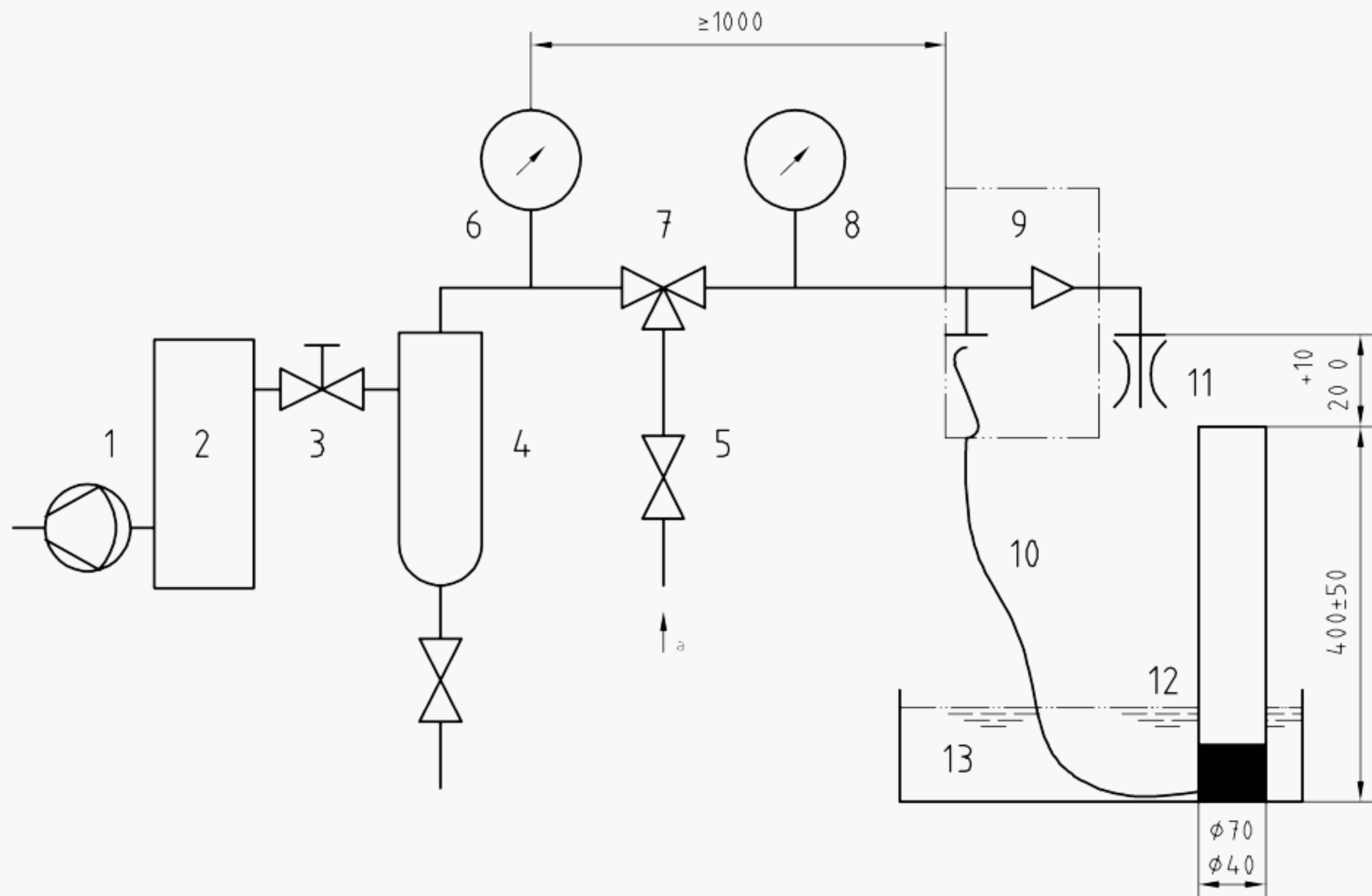
On completion of 80 000 cycles the assembly shall be leaktight when tested as described in 10.4.3 or 10.4.4 as appropriate.

10.6 Vacuum tests for high and low pressure applications (Stage 4)

10.6.1 Functional vacuum test

10.6.1.1 Test equipment

Dimensions in millimetres



Key

- | | | | |
|---|----------------|----|----------------------|
| a | Water supply | 7 | 3-way valve |
| 1 | Vacuum pump | 8 | Pressure gauge |
| 2 | Vacuum vessel | 9 | Test device |
| 3 | Stop valve | 10 | Shower hose |
| 4 | Water trap | 11 | Hydraulic resistance |
| 5 | Stop valve | 12 | Transparent tube |
| 6 | Pressure gauge | 13 | Water reservoir |

Figure 9 — Test equipment for vacuum tests for high and low-pressure applications

For the transparent tube (12) an inner diameter between 40 mm and 70 mm and a height of 400 mm ± 50 mm is recommended; the top of the transparent tube shall be (20 + 10) mm below the primary outlet of the device under test.

10.6.1.2 Dynamic vacuum test in shower position

a) Preparation of the device under test:

- i) Remove, or block fully open, any check valves fitted at the inlets or the hose outlet connection.
- ii) In the case of a high pressure fitting remove the jet regulator or flow straightening device and replace it with an orifice (throttle disc 'O') with a flow rate of $18 \text{ l/min} \pm 1 \text{ l/min}$ when tested at 0,3 MPa (3 bar) (similar to class S).
In the case of a low pressure fitting leave any flow straightener/jet regulator in place unless more than 50 % of the total flow orifices are made up of apertures having a minimum dimension unable to accept a diameter 4 mm gauge. In which case, a throttle disc with a flow rate of $15 \pm 1 \text{ l/min}$ when tested at 0,01 MPa (0,1 bar) shall be fitted.

b) Establishment of the datum level:

- i) Install the test device according the manufacture's instructions and the Figure 9.
- ii) For combination tap assemblies open both flow controls fully. For mixing valves the flow control shall be fully open and the temperature control shall be in the mid-blend position. Apply a water pressure 'P' of $\geq 0,05 \text{ MPa}$ (0,5 bar) to purge the system of air.
- iii) Put the test device into shower mode.
- iv) When the hose and sight glass are purged and the water level is stable, close the fitting's flow control and verify the water level in the sight glass after the automatic diverter has reverted to bath. Re-open the fitting and repeat steps b) ii and b) iv in total minimum three times to establish the average datum position.

c) Vacuum test:

- i) For combination tap assemblies open both flow controls fully. For mixing valves the flow control shall be fully open and the temperature control shall be in the mid-blend position. Apply a water pressure 'P' of $\geq 0,05 \text{ MPa}$ (0,5 bar) to purge the system of air.
- ii) Put the device into shower mode.
- iii) Apply a vacuum of 0,05 MPa (0,5 bar) for minimum 10 s by adjusting (7) to vacuum position in less than 1 s.
- iv) Verify the water level in the transparent tube (12).

10.6.1.3 Requirements

The level observed at step c) iv of the test shall be not less than the average datum level established at step b) iv.

10.6.2 Static vacuum test in bath mode

10.6.2.1 Test Equipment

See the Figure 9.

10.6.2.2 Static vacuum test automatic diverter in bath mode

This test is to be applied to the same device as test 10.6.1.

- a) For combination tap assemblies open both controls fully. For mixing valves the flow control shall be fully open and the temperature control shall be in the mid position.
- b) With valve (7) in water supply position, open valve (5) and purge the pipe work system.
- c) Operate the automatic diverter to ensure the transparent tube (12) is completely full.

- d) Close valve (5).
- e) Apply a vacuum of 0,05 MPa (0,5 bar) for minimum 10 s by adjusting valve (7) to vacuum position in less than 1 s.
- f) Observe the water level in transparent tube (12).

10.6.2.3 Requirements

The water level at step 4 shall be no lower than the rim of the transparent tube (12).

11 Acoustic characteristics

11.1 General

This Clause specifies the test method for classifying the devices by acoustic group.

11.2 Procedure

11.2.1 Mounting and operating conditions

This shall be carried out in accordance with the requirements of EN ISO 3822-2.

11.2.2 Test methods

The test shall be carried out in accordance with the requirements of EN ISO 3822-2.

The flow rates shall be ≥ 12 l/min with resistance class A at the shower outlet and ≥ 20 l/min with resistance Class B or C at the bath outlet.

11.3 Test criteria

11.3.1 Expression of the results

The results of the measurements carried out in accordance with EN ISO 3822-1 shall be expressed as appliance sound level pressures L_{AP} in dB(A).

11.3.2 Noise classification

The devices shall be classified in accordance with Table 2.

Table 2 — Acoustic groups

Acoustic group	L_{AP} db (A) at 0,3 MPa
I	< 20
II	$20 \leq L_{AP} \leq 30$
Not classified	> 30

Annex A
(normative)

Sampling and test sequence

Table A.1 — Test sequence on the samples submitted

Number of samples/tests			
Test	Device 1	Device 2	Device 3
Visual verification (10.3)	X	X	X
Tightness (10.4)	X	X	
Endurance testing (10.5)	X		
Vacuum (10.6)	X	X	