

Building valves — Water pressure reducing valves and combination water reducing valves — Requirements and tests

The European Standard EN ISO 1567:1999 has the status of a
British Standard

ICS 23.060.40; 91.140.60

National foreword

This British Standard is the official English language version of EN 1567:1999.

The UK participation in its preparation was entrusted by Technical Committee B/504, Water supply, to Subcommittee B/504/7, Control and safety devices, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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, the EN title page, pages 2 to 18, an inside back cover and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Sector Committee for Building and Civil Engineering, was published under the authority of the Standards Committee and comes into effect on 15 February 2000

© BSI 02-2000

ISBN 0 580 34269 7

Amendments issued since publication

Amd. No.	Date	Comments

English version

**Building valves — Water pressure reducing valves and
combination water pressure reducing valves — Requirements
and tests**

Robinetterie de bâtiment - Réducteurs de pression d'eau et
combinés avec réducteur - Exigences et essais

Gebäudearmaturen - Druckminderer und
Druckmindererkombinationen für Wasser - Anforderungen
und Prüfungen

This European Standard was approved by CEN on 5 September 1999.

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



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

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

Contents

	Page
Foreword.....	3
Introduction	4
1 Scope	4
2 Normative references	4
3 Definitions.....	5
3.1 Water pressure reducing valve.....	5
3.2 Combination water pressure reducing valve	5
4 Classification of the water pressure reducing valves and combination water pressure reducing valves	5
4.1 Valve form.....	5
4.2 Nominal diameter (DN)	5
4.3 End connections	5
4.4 Adjustment	6
4.5 Temperature range	6
5 Designation.....	6
6 Materials.....	8
6.1 Chemical and hygienic behaviour of materials	8
6.2 Nature of materials	8
7 General design requirements	9
7.1 Adjustable pressure reducing valve	9
7.2 Non adjustable pressure reducing valve.....	9
7.3 Removal requirements	9
7.4 Pressure test point	9
7.5 Strainer.....	9
8 Requirements and tests	9
8.1 General.....	9
8.2 Mechanical requirements and tests.....	10
8.3 Hydraulic tests and requirements	13
8.4 Acoustic requirements	17
9 Marking and technical documents	18
9.1 Marking	18
9.2 Technical documents	18

Foreword

This European Standard 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 April 2000, and conflicting national standards shall be withdrawn at the latest by April 2000.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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

Introduction

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

- 1) This standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA.
- 2) It should be noted that, while awaiting the adoption of the verifiable European criteria, existing national regulation concerning the use and or the characteristics of this product remain in force.

1 Scope

This European Standard specifies dimensions, materials and performance requirements (including methods of test) for Water Pressure Reducing Valves and Combination Pressure Reducing Valves, of nominal size from DN 8 to DN 100, for inlet pressures that do not exceed 1,6 MPa (16 bar) and a temperature that does not exceed 30 °C for cold water application and 80 °C for hot water application. Except when stated otherwise by the manufacturer, the valves can be mounted in any orientation.

NOTE: The use of the device specified in this standard does not override the need to use hydraulic safety devices to prevent over pressurisation.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1254-2

Copper and copper alloys – Plumbing fittings – Part 2: Fittings with compression ends for use with copper tubes

EN 1561

Founding – Grey cast irons

EN 1563

Founding – Spheroidal graphite cast irons

EN 1982

Copper and copper alloys – Ingots and castings

EN 10213-2

Technical delivery conditions for steel castings for pressure purposes - Part 2: Steel grades for use at room temperature and elevated temperatures

EN 12420

Copper and copper alloys – Forgings

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 3822-3

Acoustics - Laboratory tests on noise emission from appliances and equipment used in water supply installations - Part 3: Mounting and operating conditions for in-line valves and appliances.

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 228-1

Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation

ISO 7005-3 : 1988

Metallic flanges – Part 3: Copper alloy and composite flanges

3 Definitions

For the purposes of this standard the following definitions apply:

3.1 Water pressure reducing valve

A valve that reduces the pressure of a fluid at the outlet to an adjustable or preset value.

3.2 Combination water pressure reducing valve

A water pressure reducing valve with additional functions (e.g. stop valve and check valve) contained within the same body.

4 Classification of the water pressure reducing valves and combination water pressure reducing valves

A valve is classified by:

- valve form
- nominal size (DN)
- end connections
- adjustment
- range of temperature

4.1 Valve form

- Water pressure reducing valves
- Combination water pressure reducing valves

4.2 Nominal diameter (DN)

The nominal diameter (DN) is declared by the manufacturer. Each nominal diameter (DN) corresponds to the nominal flow rates in table 5.

The inlet connection of the valve is DN or one size larger or one size smaller than the nominal size (DN).

In the case of flange connections the nominal size (DN) shall be determined by the DN of the inlet connection.

4.3 End connections

Examples of end connections are shown in table 1. Combinations of two kinds of connections are possible.

4.4 Adjustment

Two types are specified:

- adjustable pressure reducing valves
- non-adjustable pressure reducing valves

4.5 Temperature range

- cold water up to 30 °C maximum
- warm water up to 80 °C maximum

5 Designation

A valve is designated by:

- valve form
- nominal size (DN)
- end connections types and sizes
- adjustment, adjustable/non-adjustable
- outlet set pressure for non adjustable valves
- temperature range
- valve body material and surface finish
- acoustic group
- the number of this standard EN 1567

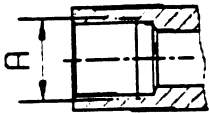
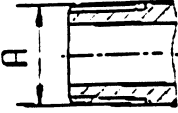
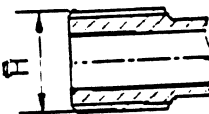
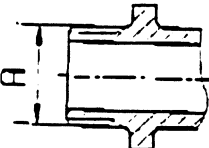
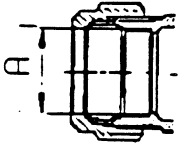
Designation examples:

EXAMPLE 1: Water pressure reducing valves, DN 20, inlet $R_p \frac{3}{4}$ " female thread, outlet $R \frac{3}{4}$ ", male union according to ISO 7-1, non-adjustable, outlet pressure 3 bar, body of bronze, cast finish, for water up to 80 °C maximum, acoustic group II – EN 1567.

EXAMPLE 2: Combination water pressure reducing valve with stop valve, DN 25, with $R1$ " male union on both inlet and outlet connection, according to ISO 7-1, adjustable, body of brass, cast finish, for water up to 30 °C maximum, acoustic group I – EN 1567.

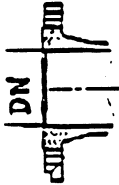
EXAMPLE 3: Water pressure reducing valve, DN 80, with flanges according to ISO 7005-3, adjustable, body of cast iron, powder coated, for water up to 30 °C maximum – EN 1567.

Table 1: End connections and nominal sizes (DN)

Type		DN10	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
 ISO 7-1	A	Rp 3/8	Rp 1/2	Rp 3/4	Rp 1	Rp 1 1/4	Rp 1 1/2	Rp 2	Rp 2 1/2	Rp 3	Rp 4
 ISO 7-1	A	R 3/8	R 1/2	R 3/4	R 1	R 1 1/4	R 1 1/2	R 2	R 2 1/2	R 3	R 4
 ISO 228-1	A	G 1/2 B	G 3/4 B	G 1 B	G 1 1/4 B	G 1 1/2 B	G 2 B	G 2 1/2 B	-	-	-
 ISO 228-1	A	G 3/8 B	G 1/2 B	G 3/4 B	G 1 B	G 1 1/4 B	G 2 B	G 2 1/2 B	-	-	-
 EN 1254-1	A	12	15/18 14 16	22	28	35	42	54	76,1	88,9	-

(continued)

Table 1: (concluded)

Type		DN10	DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100
 ISO 7005-3:1988	DN	-	15	20	25	32	40	50	65	80	100

6 Materials

6.1 Chemical and hygienic behaviour of materials

The selection of materials is the responsibility of the manufacturer, provided the complete valve satisfies the requirements of this standard. The materials and coatings used shall not contaminate or change the drinking water, when in normal or accidental contact up to a temperature of 90 °C.

The requirements, with regard to the drinking water quality, are specified in national regulations.

The manufacturer shall state in his technical and sales literature what materials and coatings are used. The materials, in particular copper alloys, for which recommendations or international standards exist, shall comply with them. These references shall be stated.

6.2 Nature of materials

6.2.1 Copper alloys

Examples are given in table 2.

Table 2: Examples of copper alloys

Material designation	Material number	EN-Standard
CuSn10-C	CC 480 K	EN 1982
CuZn39Pb3	CW 614 N	EN 12420
CuZn40Pb2As	CW 617 N	EN 12420
CuSn5PbZn5-C	CC 491 K	EN 1982
CuSn3Pb5Zn8-C	CC 490 K	EN 1982

Copper-zinc alloys containing more than 10 % zinc are subject to dezincification when submitted to water capable of dezincification. In the countries where the use of products made of dezincification resistant materials is required, the products have to guarantee a dezincification depth less than 200 µm in any direction, they have to be tested in accordance with the standard EN ISO 6509 and have to be marked in compliance with the indications under section "MARKING" (point 9).

6.2.2 Casting materials

Examples are given in table 3.

Table 3: Examples of casting materials

Material designation	Material number	EN-Standard
EN-GJL-250	EN-JL 1040	EN 1561
EN-GJL-300	EN-JL 1050	EN 1561
EN-GJS-400-15	EN-JS 1030	EN 1563
EN-GJS-500-7	EN-JS 1050	EN 1563
EN-GJS-350-2	EN-JS 1010	EN 1563
EN-GJS-400-18	EN-JS 1020	EN 1563
GP 240 GH	1.0619	EN 10213-2

7 General design requirements

7.1 Adjustable pressure reducing valve

If adjustment is made by a rotary control, any increase of the outlet pressure shall be obtained by rotating it in a clockwise direction. Other means of adjustment shall be clearly indicated.

7.2 Non adjustable pressure reducing valve

No means of adjustment shall be indicated and there shall be no visible device to adjust the outlet pressure.

7.3 Removal requirements

Valves that cannot be removed without altering or dismantling the pipework shall have an accessible and removable internal working mechanism.

7.4 Pressure test point

If pressure test points are included, they shall have a minimum diameter of RP ¼.

7.5 Strainer

If a strainer is incorporated it shall have a minimum free area that corresponds to the nominal size (DN) of the valve.

8 Requirements and tests

8.1 General

Tests shall be carried out with the valve in the horizontal position, except where recommended otherwise by the manufacture.

Unless otherwise specified tolerances shall be $\pm 5\%$.

One valve shall be used for tests 8.2.1 and 8.2.2 and shall not be subjected to further testing. On a second valve, performance tests shall be carried out in the sequence 8.3.1, 8.3.2, 8.3.3, 8.3.4, 8.3.5, 8.4, 8.2.3 and 8.2.4.

For adjustable valves adjust the outlet pressure to 3 bar with the inlet pressure at 8 bar.

Non-adjustable valves shall be tested at the original set pressure. The outlet pressure, measured at 8 bar inlet pressure, shall not deviate by more than $\pm 10\%$ of the declared outlet pressure, or $\pm 0,3$ bar at an outlet pressure of less than 3 bar.

For combination valves the same requirements apply and tests shall be carried out as with simple pressure reducing valves.

The additional components shall comply with the relevant European Standards.

Unless otherwise stated tests shall be carried out with water between 10 °C and 30 °C.

8.2 Mechanical requirements and tests

8.2.1 Bending moment test of the body

8.2.1.1 Principle

The mechanical bending strength of the body is tested by a bending moment test, in which a force is applied for a predetermined period.

8.2.1.2 Test

The pressure reducing valve or combination pressure reducing valve is fixed by one side of the body to a test apparatus as shown in figure 1.

Connect the other side to a metal tube and apply the appropriate force F as given in table 4.

This force shall be applied for (30^{+10}_0) s.

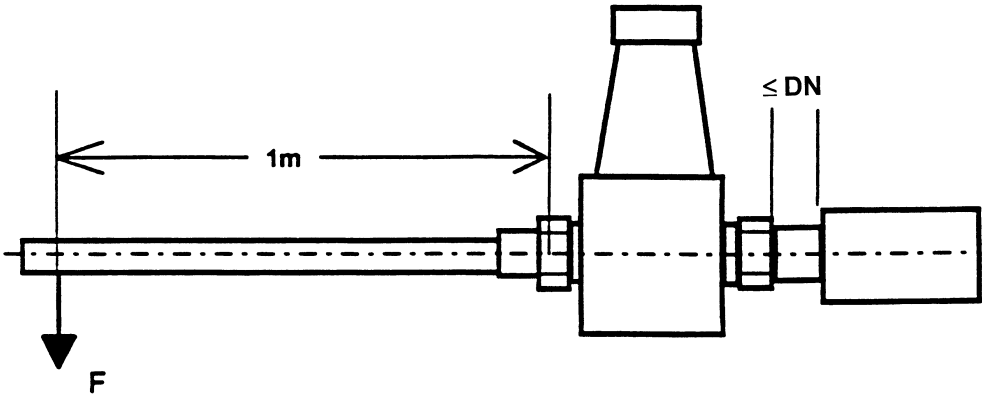


Figure 1: Testing rig for bending moment test of the body

Table 4: Forces for testing the bending strength of the body

Nominal diameter (DN)	8	10	15	20	25	32	40	50	65	80	100
Force (N)	40	40	80	150	300	400	500	600	750	950	1 300
Force (N) (Compression fittings)	30	30	50	85	125	160	200	300	—	—	—

8.2.1.3 Requirement

After this test the valve shall have no permanent deformation, fissures or ruptures.

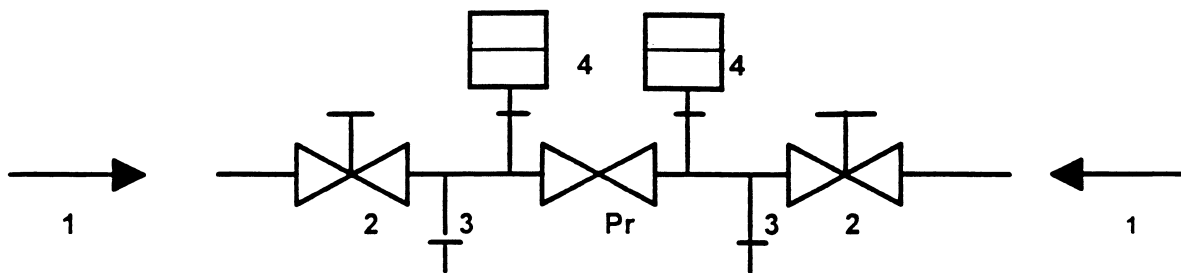
8.2.2 Pressure strength and tightness of the body

8.2.2.1 Principle

The pressure strength and tightness of the valve are verified by applying a water pressure of 25 bar to the valve's inlet connection and 16 bar to the valve's outlet connection, for period of (10^{+2}_0) min.

8.2.2.2 Test

The valve shall be installed in the test rig as shown in figure 2.



1 = Pressurizing device; 2 = Stop valve; 3 = Drain valve;
4 = Pressure gauge; Pr = Test piece

Figure 2: Test rig for pressure strength and tightness of the valve

For pressure reducing valves combined with a safety valves (safety group) the safety valve has to be rendered inoperative when the tests are carried out.

Simultaneously apply at the inlet and outlet a pressure of 16 bar. While maintaining the outlet pressure, increase the inlet pressure to 25 bar. Maintain both pressures for (10^{+2}_0) min.

8.2.2.3 Requirement

No leakage or permanent deformation shall occur.

8.2.3 Tightness between inlet and outlet chamber

8.2.3.1 Principle

The pressure reducing valve, at inlet pressure between 6 bar and 16 bar, shall remain drop tight under no flow conditions.

NOTE: It is important to take precautions against any changes of the water and ambient air temperatures in order to avoid measuring errors caused by the expansion of the water in case of temperature changes.

8.2.3.2 Test 1

The valve is connected to the test rig as shown in figure 2.

Apply an inlet pressure of 6 bar. The inlet and outlet shall be properly vented and the outlet stop valve (2) kept closed. Maintain the inlet pressure at 6 bar for (10^{+2}_0) min and observe the outlet pressure.

The outlet pressure shall not change during the test period.

8.2.3.4 Test 2

Increase the inlet pressure from 6 bar to 16 bar in one bar increments, allowing 1 min after each increase for the valve to stabilize. Maintain the inlet pressure at 16 bar for 10 min and observe the outlet pressure.

8.2.3.5 Requirement

At 16 bar inlet pressure the outlet pressure shall not change during the test period.

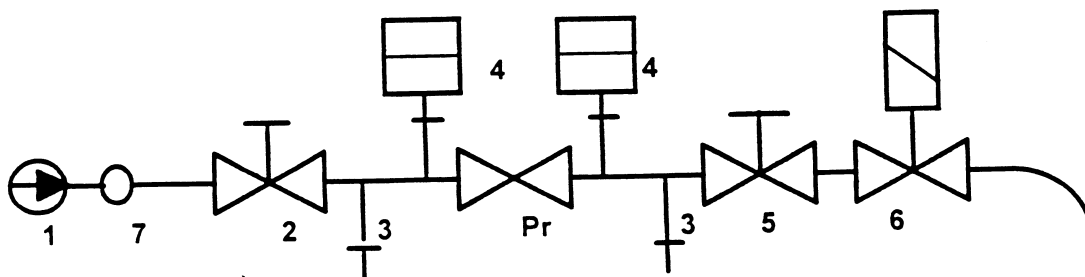
8.2.4 Endurance and pressure resistance under flow conditions

8.2.4.1 Principle

The valve shall withstand 200 000 opening/closing cycles at various flow rates.

8.2.4.2 Test

The valve is installed in a test rig as shown in figure 3.



1 = Upstream pressure pump; 2 = Stop valve; 3 = Drain valve;
4 = Pressure gauge; 5 = Regulating valve; 6 = Solenoid valve
7 = Water flow meter; Pr = Test piece

Figure 3: Test rig for endurance and pressure resistance

8.2.4.2.1 Testing temperatures

The test is carried out with:

- Cold water with a temperature in the range of 10 °C to 30 °C for valves designed for use with cold water.
- Hot water with a temperature in the range of 75 °C to 80 °C for valves designed for use with hot water.

8.2.4.2.2 The pressure reducing valve shall be subjected to $(50\,000 \pm 100)$ cycles via an automatic solenoid valve (6), at flow rates between $Q = 0$ and Q_N , as given in Table 5.

Keeping the inlet pressure at 8 bar adjust the flow rate to Q_N by mean of regulating valve 5. Keep both $Q = 0$ and Q_N . each for a minimum of 10 seconds.

The maximum pressure during the change over time shall not exceed 10 % of the inlet pressure.

The change over time shall be kept as short as possible.

8.2.4.2.3 Following the test 8.2.4.2.2, the valve shall be subjected to further $(50\,000 \pm 100_0)$ cycles, between flow rate $Q = 0$ and 10 % of Q_N .

8.2.4.2.4 The valve shall be stored for 28 days at ambient temperature.

8.2.4.2.5 Repeat the tests 8.2.4.2.2 and 8.2.4.2.3.

8.2.4.3 Requirement

The valve shall:

- During the endurance test
 - Not show any sign of damage which could affect its function.
 - Not leak, particularly in the area of the diaphragm.
- After the test

Comply with the requirements given in 8.2.3 and 8.3.4.

For adjustable valves

- for cold water it is permitted to reset, by no more than 10 %,
- and for hot water not more than 20 % the set pressure to 3 bar.

For non-adjustable valves, when assessing if the requirement given in 8.3.4 has been complied with, the tolerance band is displaced vertically by the difference between the valve's basic setting recorded in 8.3.2.3 and the value marked on the valve.

- for cold water application no more than 10 % and
- for hot water application no more than 20 %.

Table 5: Nominal flow rate

Nominal Diameter (DN)	8	10	15	20	25	32	40	50	65	80	100
Nominal Flow Rate Q_N l/s*)	0,10	0,16	0,35	0,63	1,0	1,6	2,53	3,89	6,67	10	15,56
Nominal Flow Rate Q_N m ³ /h*)	0,36	0,56	1,27	2,27	3,6	5,8	9,1	14	24	36	56
*) These flow rates equate to a velocity of 2 m/s											

8.3 Hydraulic tests and requirements

8.3.1 Setpoint range for adjustable valves

8.3.1.1 Principle

For adjustable valves the setpoint range shall allow control of the outlet pressure from $\leq 1,5$ bar for an inlet pressure of 8 bar and $\leq 6,5$ bar outlet pressure for an inlet pressure of 16 bar, without changing the spring. The set point range shall be determined at zero flow rate.

Special valves can exceed the upper end of the set point range. In this case they shall be specifically marked.

8.3.1.2 Test

The valve is installed in a test rig as shown in figure 2. The inlet and outlet ports shall be purged.

At an inlet pressure of 8 bar adjust the valve to obtain the minimum outlet pressure.

Record the outlet pressure obtained.

At an inlet pressure of 16 bar adjust the valve to obtain the maximum outlet pressure.

Record the outlet pressure obtained.

8.3.1.3 Requirement

Minimum outlet pressure $\leq 1,5$ bar.

Maximum outlet pressure $\leq 6,5$ bar except for special valves.

8.3.2 Set point of non adjustable valves

8.3.2.1 Principle

The outlet pressure (Ps) of a pre-set pressure reducing valve shall remain within the given tolerances.

8.3.2.2 Test

The pressure reducing valve is installed as shown in figure 2 with an inlet pressure of 8 bar. The inlet and outlet ports shall be properly purged. The outlet pressure shall be recorded.

8.3.2.3 Requirement

The set point (Ps) of non-adjustable pressure reducing valves shall not differ

- by more than $\pm 0,3$ bar from the marked value if 3 bar or less
- or by more than ± 10 % if greater than 3 bar. Record the deviation from the marked set pressure.

8.3.3 Inlet pressure influence

8.3.3.1 Principle

The effect of changes in inlet pressure on the outlet pressure is checked by a static pressure test in the range of 6 bar to 16 bar.

8.3.3.2 Test

The pressure reducing valve shall be installed in a test rig as shown in figure 2.

For adjustable valves the outlet pressure shall be set at 3 bar at an inlet pressure of 8 bar.

For non-adjustable valves the pre-set value (Ps) according to 8.3.2.2 is used.

Increase the inlet pressure from 6 bar to 16 bar in 1 bar increments, waiting 1 min between increases. Record the outlet pressure at each increment.

8.3.3.3 Requirements

The curve shall be within the parameters given in figure 4.

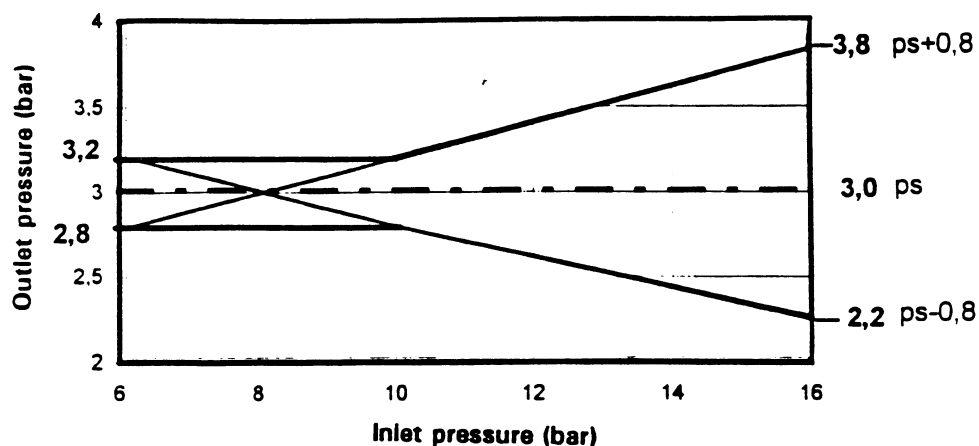


Figure 4: Inlet pressure influence

8.3.4 Flow rate and outlet pressure

8.3.4.1 Principle

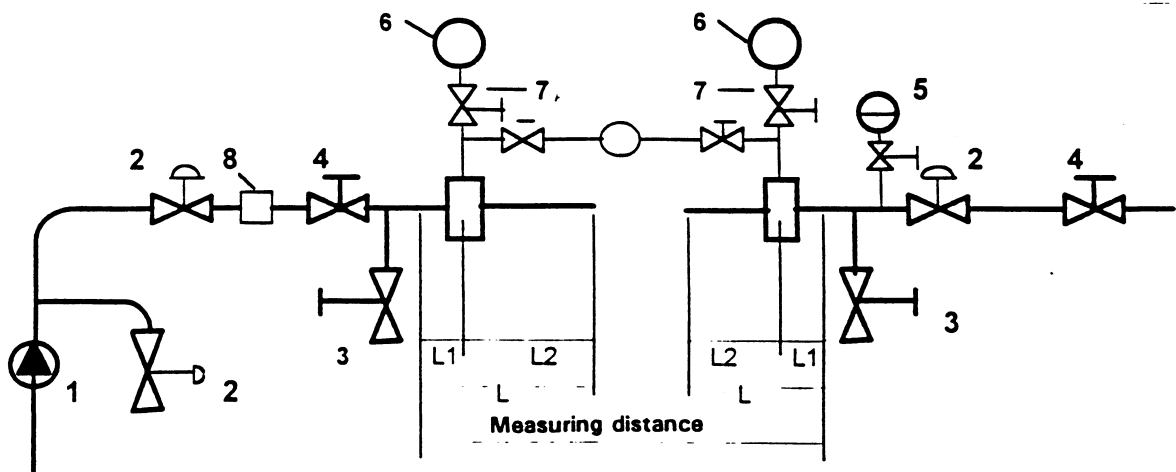
The pressure reducing valve shall maintain the outlet pressure within the upper and lower limits according to figure 6, from $Q = 0$ up to the Q_N given in table 5 irrespective of inlet pressure fluctuations from 6 bar to 16 bar.

8.3.4.2 Test

The pressure reducing valve shall be installed in a test rig as shown in figure 5 and the inlet and outlet ports shall be purged.

Slowly open the control valve (2) and record the outlet pressure from $Q = 0$ to Q_N with a maintained inlet pressure of 8 bar.

The same test shall be repeated with an inlet pressure of 6 bar and 16 bar or parallel curves shall be extrapolated for 6 and 16 bar from the 8 bar curve and test results obtained in 8.3.3.3.



- $L_1 \geq 5 D$
 $L_2 \geq 10 D$
 D = Inside diameter of pipeline
1 = Pump; 2 = Control valve; 3 = Drain valve; 4 = Stop valve; 5 = accumulator;
6 = means of measuring the pressure and the differential pressure;
7 = isolating valves for pressure gauges
8 = Flowmeter

Figure 5: Flow rate and outlet pressure test rig

8.3.4.3 Requirements

The plotted curves shall be within the tolerance band given in figure 6.

For a non-adjustable valve the tolerance band is displaced vertically by the difference between the valve's basic setting recorded in 8.3.2.3 and the marked set pressure.

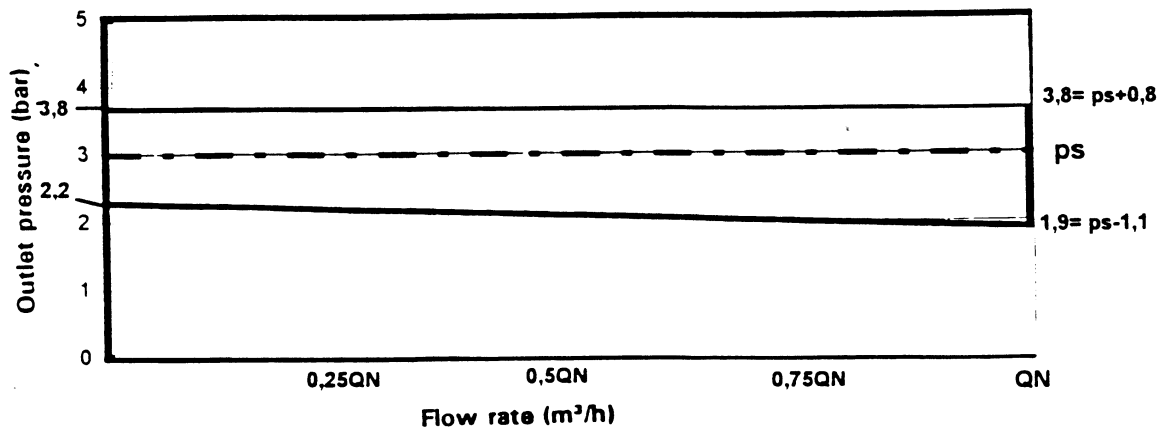


Figure 6: Flow rate and outlet pressure

8.3.5 Flow rate and outlet pressure at low inlet pressure

8.3.5.1 Principle

At a given inlet pressure the outlet pressure curve shall remain within given parameters.

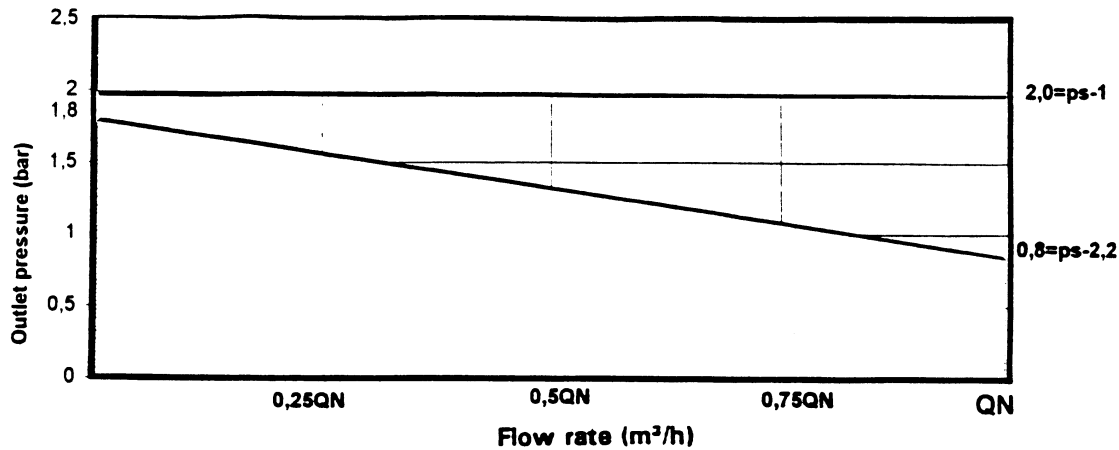


Figure 7: Flow rate and outlet pressure at low inlet pressure

8.3.5.2 Test

The valve shall be installed in a test rig as shown in figure 5 and the inlet and outlet ports shall be purged.

Without changing the set pressure adjustment of the pressure reducing valve and with no flow through the valve, reduce the inlet pressure to 2 bar.

For non-adjustable valves the inlet pressure shall be set at 1 bar below the pre-set pressure (Ps) and kept constant.

Slowly open the control valve (2) and record the outlet pressure from $Q = 0$ to Q_N , keeping the inlet pressure constant.

8.3.5.3 Requirement

The curve shall be within the parameters given in figure 7.

8.4 Acoustic requirements

Water pressure reducing valves and combination pressure reducing valves are tested at flow rates Q_N as given in table 5 in accordance with EN ISO 3822-1 and EN ISO 3822-3.

Classification is on the basis of the acoustic level of the valves L_{ap} according to table 6.

Table 6: Acoustic groups

Acoustic Group	L_{ap} (dB (A))
	Q_N
I	≤ 20
II	≤ 30
Unclassified	> 30

9 Marking and technical documents

9.1 Marking

The valve shall be legibly and permanently marked with:

- name or logo of the manufacturer;
- nominal size (DN);
- set pressure for non-adjustable valves;
- an arrow for the direction of flow;
- outlet pressure for special cases.

– In the 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 are allowed to be marked "DR".

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

9.2 Technical documents

The following information is to be made available by the manufacturer:

- nominal pressure (maximum inlet pressure);
- maximum water temperature 30 °C or 80 °C;
- acoustic group if the valve is classified;
- reference to this standard EN 1567.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

Copyright subsists in all BSI publications. BSI also holds the copyright, in the UK, of the publications of the international standardization bodies. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI.

This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols, and size, type or grade designations. If these details are to be used for any other purpose than implementation then the prior written permission of BSI must be obtained.

If permission is granted, the terms may include royalty payments or a licensing agreement. Details and advice can be obtained from the Copyright Manager. Tel: 020 8996 7070.