BRITISH STANDARD

BS EN
15069:2008

Safety gas connection valves for metal hose assemblies used for the connection of domestic appliances using gaseous fuel

ICS 23.060.40; 91.140.40

National foreword

This British Standard is the UK implementation of EN 15069:2008.

The UK participation in its preparation was entrusted to Technical Committee GSE/1, Gas fittings and connections.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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English Version

Safety gas connection valves for metal hose assemblies used for the connection of domestic appliances using gaseous fuel

Dispositifs de raccordement de sécurité pour appareils à usage domestique utilisant les combustibles gazeux et alimentés par tuyau métallique onduleux

Sicherheitsgasanschlussarmaturen für den Anschluss von Gasgeräten mit Gasschlauchleitungen in der Hausinstallation für brennbare Gase

This European Standard was approved by CEN on 2 February 2008.

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Foreword

This document (EN 15069:2008) has been prepared by Technical Committee CEN/TC 236 “Non industrial manually operated shut-off valves for gas and particular combinations valves-other products”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by September 2008, and conflicting national standards shall be withdrawn at the latest by December 2009.

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This document 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 89/106/EEC.

For relationship with EU Directive 89/106/EEC, see informative Annex ZA, which is an integral part of this document.

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

Introduction

This European Standard contains product characteristics relating to the safety of persons, animal and property and the protection of their environment.

The objective of this European Standard is to achieve safe operation of connection valves by specifying the requirements of performance, materials and test methods.

Safety gas connection valves are used internally to connect gas appliances including movable gas appliances and externally to connect appliances such as grills, gas radiation heating, lights etc.

Valves manufactured to this European Standard are designed to be used with compatible hose assemblies conforming to EN 14800 and prEN 15070:2007.

Attention is drawn to the need for careful quality control as given in EN ISO 9001:2000.

This European Standard is based on a balance of requirements given by the major national European Gas Authorities for valves and metal hose assemblies for the connection of domestic gas appliances.

It reflects the recognised practise and technology of products approved today as well as the present culture of usage by the consumer.

The introduction of new technologies supported by National Gas Authorities may require the adoption of this European Standard regarding individual requirements and tests.

1 Scope

These valves are suitable for connection of the fixed gas supply system to domestic appliances inside or outside a dwelling using 2nd or 3rd Family gases and at a pressure of up to and including 0,5 bar.

These valves are designed for the use with either movable appliances or for the connection of fixed appliances.

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 377, *Lubricants for applications in appliances and associated controls using combustible gases except those designed for use in industrial processes*

EN 437:2003, *Test gases — Test pressures — Appliance categories*

EN 549, *Rubber materials for seals and diaphragms for gas appliances and gas equipment*

EN 1503-1, *Valves — Materials for bodies, bonnets and covers — Part 1: Steels specified in European Standards*

EN 1503-3, *Valves — Materials for bodies, bonnets and covers — Part 3: Cast irons specified in European Standards*

EN 1503-4, *Valves — Materials for bodies, bonnets and covers — Part 4: Copper alloys specified in European Standards*

EN 1775:2007, *Gas supply — Gas pipework for buildings — Maximum operating pressure less than or equal to 5 bar — Functional recommendations*

EN 10222 (all parts), *Steel forgings for pressure purposes*

EN 10277-3, *Bright steel products — Technical delivery conditions — Part 3: Free-cutting steels*

EN 13501-1:2007, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 60335-1:2002, *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335-1:2001, modified)*

EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227:2006)*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

ISO 1817:2005, *Rubber, vulcanized — Determination of the effect of liquids*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Connections

3.1.1
safety connection valve
component which permits or interrupts the flow of gas by the movement of a closure device which is operated by the connection or disconnection of a metal hose assembly where the valve inlet is connected to the gas installation pipework and whose outlet connects mechanically to the metal hose assembly and prevents any gas flow if the hose assembly is disconnected.

In addition it can incorporate an overflow safety device or a thermal safety device.

It also can be combined with a manually operated valve

3.1.2
safety quick connection
end fitting consisting of two parts that is designed to permit quick connection and disconnection without tools, the device is leak-tight such that it prevents the release of gas from the upstream pipe work when disconnected and is designed to prevent accidental disconnection and incorrect operation

3.1.3
threaded connection
connection which is gas tight achieved either by metal to metal contact in the thread or by assistance of a gasket. This connection can only be assembled and disassembled with an appropriate tool

3.2
SC valve
abbreviation used in this European Standard to denote a safety connection valve as defined in 3.1

3.3
domestic appliance
appliance intended for use by individual householders inside or outside a dwelling

3.4
standard reference conditions
conditions to which all measured values are corrected (temperature: 15 °C, absolute pressure 101,325 Pa, dry air)

3.5
SC valve inlet
part of the SC valve which is connected to the gas installation pipe

3.6
SC valve outlet
part of the SC valve which is connected to the assembly

3.7 Leak-tightness

3.7.1
external leak-tightness
leak-tightness of a gas carrying component with respect to atmosphere. Distinction shall be made between:

— external leak-tightness with the SC valve connected;

— external leak-tightness with the SC valve disconnected

3.7.2
internal leak-tightness
leak-tightness between the inlet and outlet of the manually operated device of the SC valve (if it exists), with the closure device moved to the closed position

3.8 Pressures

3.8.1
inlet pressure
pressure at the inlet of the SC valve

3.8.2
outlet pressure
pressure at the outlet of the SC valve

3.8.3
maximum operating pressure (MOP)
maximum pressure at which a SC valve can be operated continuously, under normal operating conditions

3.8.4
test pressure
pressure to be applied during the test

3.8.5
pressure drop
difference between the inlet and the outlet pressures

3.9 Flow

3.9.1
rated flow rate
flow rate of air under standard reference conditions, at a given pressure drop

3.9.2
overflow safety device (OSD)
safety device which automatically interrupts the flow of gas if it exceeds a preset value

3.9.3
overflow safety level
flow rate of air at which the overflow safety device interrupts the flow of gas

3.10 Temperatures

3.10.1
maximum operating temperature (MOT)
maximum temperature at which a SC valve can be operated continuously, under normal operating conditions

3.10.2
minimum operating temperature (mOT)
lowest temperature at which a SC valve can be operated continuously, under normal operating conditions

3.10.3
thermal safety device (TSD)
device that automatically shuts off the flow of gas when the temperature exceeds a preset value

3.11
closure device
movable part of the SC valve which shuts off the gas flow

3.12
manually operated control
mechanical independent device that shuts off the flow of gas under a voluntary action

3.13
screw-in connector
end fitting consisting of two parts that is designed to permit screw in connection and disconnection without tools, the device is leak-tight such that it prevents the release of gas from the upstream pipe work when disconnected and is designed to prevent accidental disconnection and incorrect operation

3.14
gas
term gas relates to a second or third family gas as referred to in EN 437:2003, Table 1. These gases are commonly referred to as natural gases or liquefied petroleum gases (LPG)

4 General requirements

4.1 SC valve types

The SC valve is designed to have a combination of elements as shown in Figure 1.

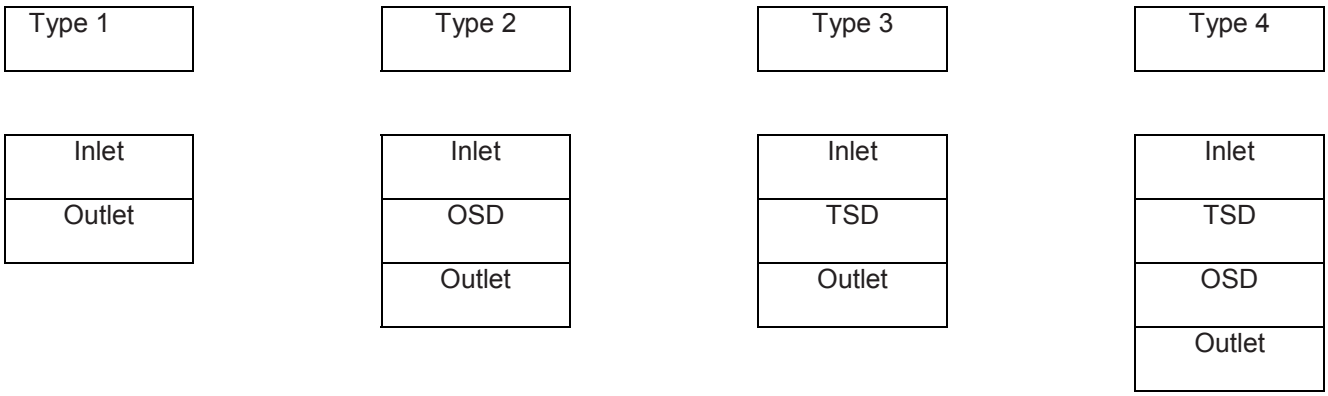


Figure 1 — SC valve – Combination of elements and their sequence

No other combinations and sequence of elements as shown in Figure 1 shall be in conformity to this European Standard.

4.2 Classification

4.2.1 Temperature classes

SC valves shall be divided into two temperature classes as follows:

Table 1 — SC valve temperature classes

Class	Temperature range (°C)
T1	–20 to 60
T2	–40 to 60

4.2.2 Pressure classes

SC valves shall be divided into three pressure classes as follows:

Table 2 — SC valve pressure classes

Class	MOP (Pa)	MOP (bar)
P1	5 000	0,05
P2	$0{,}2 \times 10^5$	0,2
P3	$0{,}5 \times 10^5$	0,5

4.3 Construction requirements

4.3.1 General

The SC valve shall be constructed and assembled in such a way that its operating characteristics can not be altered under the normal operating conditions of installation and use.

If it is possible after disconnection of the hose for foreign bodies to enter the SC valve and to alter its operation the SC valve shall be provided with a protection device.

NOTE The SC valve can be protruding, embedded or semi-embedded in its support.

An overflow safety device, if fitted, shall comply with the requirements of 5.20.

4.3.2 Materials

The parts of the SC valve in contact with gas or the surrounding atmosphere, shall be manufactured from corrosion resistant materials, or shall be suitably protected to withstand the corrosion resistance tests in 5.16. The manufacturer shall provide a warning that if the SC valve is to be built into a wall it shall be protected from its surroundings by appropriate means.

The parts of the housing which separate a gas-carrying compartment from the atmosphere shall be manufactured from one of the following metals:

— copper alloy excluding aluminium-bronze; according to EN 1503-4;

— ductile cast iron excluding laminar cast iron; according to EN 1503-3;

— forged steel and cast steel; according to EN 10222, EN 1503-1 or EN 10277-3;

— austenitic stainless steel.

End fittings and non-permanently attached parts, whether surface finished or not, shall be manufactured from stainless steel, or from copper alloys containing at least 57 % copper and up to a maximum permitted 3,5 % lead.

Where there can be risk of stress corrosion cracking, any threaded parts manufactured from the above copper alloys shall be stress relieved.

Springs and other moving parts shall be manufactured from corrosion resistant material or shall be coated to protect against corrosion and shall be capable of retaining their protective coating despite any movement resulting from the operation of the SC valve.

All markings shall be durable and resistant to atmospheric conditions. Labels and their markings shall neither deteriorate nor lift or become unreadable by humidity and temperature for a reasonably economic working life.

Non-metal components and aluminium may be used in an overflow safety device directly in contact with gas provided that in the event of a fracture of this part not more than 30 dm^3/h of air can escape at the MOP.

Rubber seals shall conform to EN 549.

Lubricants shall conform to EN 377.

4.3.3 Nominal sizes

The nominal size of SC valve shall be designated DN 8 and DN 12 and shall be determined by the flow rate requirements given in 5.6. For the purpose of this standard DN 10 and DN 15 fittings shown in Annex A shall be considered as DN 8 and DN 12 respectively.

4.4 Construction

All SC valve components, when under visual examination shall be clean and free from burrs and shall have no sharp edges and corners which could cause damage, injury or incorrect operation.

SC valves shall be leak-tight and maintenance free. Seals for moving parts, which separate gas ways from the atmosphere, shall maintain their original leak-tightness according to 5.4 without any manual adjustment.

It shall not be possible to interfere with the sealing device inside a SC valve and the OSD, if fitted. This requirement can be evidenced by visual examination and shall apply both when the SC valve is connected and when the SC valve is disconnected.

If a compression spring is used, the two end-faces of the spring shall be parallel and perpendicular to the axis of the spring. The end coils of a spring shall not damage their mating faces.

The wall thickness from any gas way to atmosphere or to holes connected to the atmosphere, shall not be less than 1 mm. Holes for screw, pins etc., which are used for the assembly of parts and for mounting, shall not provide any leak path between gas ways and the atmosphere. This requirement shall be verified by dimensional metrology.

4.5 Connection

4.5.1 General

The manufacturer shall declare the type of connection used and provide the necessary connection details as part of the installation instructions in 6.4.

NOTE Annex A provides information on local and/or national regulations for connection types.

4.5.2 Connection and disconnection

The SC valve shall be designed such that when the hose is connected or disconnected, there shall be no intermediate position in which leaks may occur.

4.5.3 Disconnection

After disconnection the SC valve shall automatically shut-off the gas flow as required in 5.4.2.

4.5.4 Rotation

In cases where rotation of the hose is possible, the hose shall be capable of rotating 360° in both directions without disconnection.

4.6 Operation

4.6.1 General

The method used to connect and disconnect the hose to the SC valve shall be such that it prevents disconnection without manual manipulation and subsequent incorrect operation.

4.6.2 **Manual operated control** (if fitted)

The manually operated control shall be such that the open and closed positions shall be without ambiguity.

In the case of a rotating manual actuator, rotation shall cover an angle of 90° in a clockwise direction for closure.

In the open and closed position there shall be a system of stops satisfying the test described in 5.19.

4.7 Dangerous substances

Materials used in SC valve shall not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the member state of destination.

5 Performance requirements and tests

5.1 General

Unless otherwise stated:

— all pressures shall be in their static conditions and shall be relative to atmospheric pressure;

— the ambient temperature for the tests shall be within the temperature limits given in 5.3;

— the SC valves to be tested shall be stored in the laboratory for at least 30 min before the start of the tests, so that their temperature has stabilized;

— the tests shall be carried out using dry air and the flow measurements shall be adjusted to standard reference conditions by the equation given in 5.6.2.

5.2 Test end fittings

Tests requiring the use of end fittings identical to those on the hose shall be carried out with dummy fittings as described in Annex B. Such fittings shall have dimensions giving the largest tolerance field.

5.3 Test sequence schedule

If any sample fails one of the tests within the test sequence schedule given in Table 3 then all samples shall be deemed to have failed to meet the type test requirements of this European Standard. The tests shall be performed under ambient conditions. The following tolerances shall apply:

atmospheric pressure:	(± 0,1) mbar	air pressure:	(± 5) %
flow rate:	(± 5) %	ambient temperature:	(± 1) °C
temperature above 125 °C:	(± 10) °C	time:	(± 0,1) %
dimensions:	(± 0,1) mm		

For each DN the tests shown in Tables 3 and 4 shall be performed in the sequence given.

Table 3 — SC valve test sequence schedule

Test No	Tests	SC valve No	1	2	3	4	5	6	7	8	9	No of samples
5.4.1	Angular seal		X	X								2
5.4.3	Internal leak-tightness		X	X	X	X	X	X	X			7
5.5	Internal pressure		X	X								2
5.6	Rated flow rate		X									1
5.7	Tensile strength resistance		X									1
5.8	Bending resistance			X								1
5.9	Torsion resistance				X							1
5.10	Impact resistance					X						1
5.11.1	Durability manually operated SC valve						X					1
5.11.2	Durability connection/disconnect						X					1
5.11.3	Rotation durability of the SC valve outlet						X					1
5.11.4	Durability ageing with temperature							X				1
5.12.1	Low temperature resistance		X	X								2
5.12.2	High temperature resistance							X				1
5.12.3	Leak tightness during thermal load		X	X								2
5.14	Reaction to fire										X	1
5.16	Salt spray resistance								X			1
5.17	Operating torque (manually operated SC control)				X			X				2
5.18	Operating strength (quick connection)				X			X				2
5.19	Stop resistance			X								1
5.21	Electric continuity								X			1
5.4.2	External leak-tightness		X	X	X	X	X	X	X			7
	System with overflow safety device											
5.20.1	External leak-tightness				X	X						2
5.20.2	Overflow safety rate				X	X						2
5.20.3	Overflow safety durability				X	X						2
5.20.4	Normal flow durability				X							1
5.22	Non-metal components									X		1
	System with thermal safety device											
5.23.1	Reaction to temperature						X					1

Table 4 — All non-metal parts test sequence schedule

Test No	Tests	SC valve No	1	2	3	4	5	6	No of samples
5.13	Resistance to lubricants					X	X	X	3
5.15	Resistance to gas (n-pentane)		X	X	X				3

5.4 Leak-tightness

5.4.1 Angular seal

5.4.1.1 Requirements

With the SC valve in the fully closed position, the angular distance between the gas port in the closure member and both the inlet port and outlet port in the SC valve body, shall be at least 8º with a measurement uncertainty of 1º.

5.4.1.2 Test

The procedure shall be as follows. Install the SC valve on a test rig which shall be capable of measuring the angle of rotation of the actuator (e.g. a 360º graduated scaled pointer fixed to the actuator).

Connect the SC valve inlet to an air source at a pressure of 1,5 MOP.

Close the SC valve. Open the SC valve until the internal leakage is greater than what is required in 5.4.3. The value measured shall satisfy the requirements of 5.4.1.1.

A bubble indicator or a similar flow measuring device shall be used to check that the flow has ceased.

5.4.2 External leak-tightness

5.4.2.1 Requirements

In either connected or unconnected position, the external leak-tightness of the SC valve shall be less than or equal to 15 cm^3/h.

5.4.2.2 Tests

5.4.2.2.1 General

The tests shall be carried out in the direction of the normal flow of gas with the following test pressure:

— Pe 1 = 20 mbar;

— Pe 2 = 1,5 MOP.

The inaccuracy of the measurement shall not be greater than 4 cm^3/h and the resolution shall be greater than 1 cm^3/h.

5.4.2.2.2 Test in a connected position

The test shall be carried out with the closed test end fitting connected to the SC valve.

In a case where an OSD can be manually operated and there is an independent manually operated control, it shall be successively set to the fully open, intermediate and fully closed position. The leakage rate shall be measured for Pe1 and Pe2.

5.4.2.2.3 Test in an unconnected position

Prior to the test the SC valve shall be in a connected position and pressurised.

The SC valve shall then be disconnected and after 2 s the leakage rate shall be measured.

In cases where there is an independent manually operated control, it is successively set to the fully open, intermediate and fully closed position.

The leakage rate shall be measured for 1,5 MOP.

5.4.3 Internal leak-tightness

5.4.3.1 Requirements

This requirement shall only apply to SC valves equipped with manually operated control.

In the connected position, the internal leak-tightness shall be less than or equal to 15 cm³/h.

5.4.3.2 Test

This test shall be carried out on samples n° 1 and n° 2 with suitable equipment giving the accuracies stated below. The test shall be carried out in the direction of the normal flow of gas with air at the following test pressure:

— Pe = 20 mbar;

— Pe = 1,5 MOP.

The inaccuracy of the measurement shall not be greater than 5 cm³/h and the resolution shall be greater than 1 cm^3/h.

The open test end fitting shall be connected to the unit and the manual control shall be set to fully closed.

The leakage rate shall be measured for pressure Pe1and Pe2.

5.5 Internal Pressure

5.5.1 Requirements

In either connected or unconnected position, the internal pressure test for a safety gas connection SC valve shall be deemed to be satisfactory if after meeting the requirements of 5.5.2 the value of the leak measured shall be less than or equal to 15 cm^3/h. The appropriate strength test pressure according to Table 5 shall be maintained for at least 5 min.

Table 5 — Strength test pressure (STP) as a function of the maximum operating pressure (MOP)

MOP bar	STP bar
0,1 < MOP ≤ 0,5	> 1,75 MOP
MOP ≤ 0,1	≥ 2,5 MOP

5.5.2 Test

The internal pressure test shall be carried out using air.

The appropriate strength test pressure according to Table 5 shall be maintained for at least 5 min.

The internal pressure test shall precede or be performed simultaneously with the tightness test.

5.6 Rated flow rate

5.6.1 Requirements

The minimum flow rate through an SC valve (Type 1 to Type 4) when tested as follows shall be as given in Table 6.

Table 6 — Minimum flow rates

Nominal size of SC valve	Minimum air flow rate at a pressure drop of 0,5 mbar
DN 8	0,5 m^3/h
DN 12	0,8 m^3/h

Low calorific gases according to EN 437 can result in a lower value and as such shall be brought in line with the power rating of the appliance.

5.6.2 Test

This test shall be as follows and shall be carried out on samples n° 1 and n° 2.

The test medium shall be air.

The test shall be carried out in the direction of the normal flow of gas.

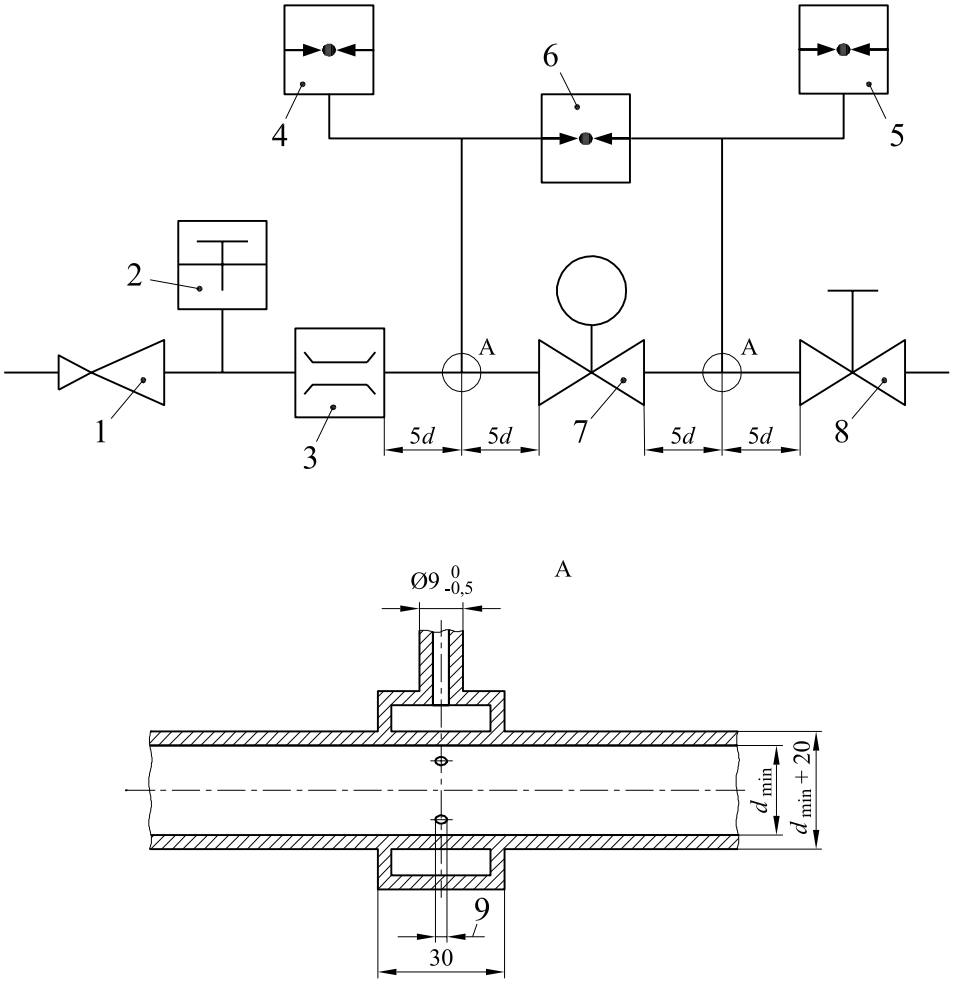
In cases where there is an independent manual control, it shall be set to the fully open position.

A test apparatus, as described in Figure 2 shall be used to carry out this test.

The test shall be carried out with an open test end fitting as shown in Annex B.

The limit of error in measurement of flow and pressure shall not exceed 2 %. The air temperature shall be measured to ± 0,5 °C.

Dimensions in millimetres



Key

1 adjustable governor for inlet pressure
2 thermometer
3 flow meter
4 inlet pressure gauge
5 outlet pressure gauge
6 differential pressure gauge
7 test sample
8 manual control tap
9 4 holes of 1,5 mm

Nominal size DN	Diameter d_{min} mm
8	9
12	15

Figure 2 — Apparatus for the rated flow rate test

Depending on the means of measurement used the measured rated flow rate shall be corrected to a volumetric flow rate under standard reference conditions using the following equation:

$$V_r = V_m \sqrt{\frac{d}{d_r} \cdot \frac{1013,25 + p}{1013,25} \cdot \frac{p_a + p}{1013,25} \cdot \frac{288,15}{273,15 + t_{air}}}$$

where

V_r is the volumetric air flow rate under reference conditions, in m^3/h;

V_m is the volumetric air flow rate under test conditions, in m^3/h;

p_a is the atmospheric pressure, in mbar;

p is the air supply pressure at the inlet of the meter, in mbar;

t_{air} is the air temperature at the measuring point, in °C;

d is the air density (e.g. if a wet meter is used);

d_r is the dry air density.

If a dry meter is used, the ratio $\frac{d}{d_r} = 1$.

5.7 Tensile strength resistance

5.7.1 Requirements

The SC valve shall resist a tensile strength of 1 000 N in the axis of the outlet connection for 60 s.

A SC valve equipped with a safety quick connection shall resist a tensile strength of 440 N in a locked position.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness in the connected and unconnected positions as specified in 5.4.2;

— internal leak-tightness as specified in 5.4.3;

— force required to achieve operating torque of the connection as specified in 5.17.

A visual check with the naked eye corrected for normal vision shall not show any permanent deformation.

5.7.2 Tests

This test shall be carried out on sample n° 1.

The SC valve is not under pressure. The SC valve shall be held in a test apparatus which prevents movement or damage to the sample and is connected to the closed test end fitting. The force shall be gradually applied at a speed of 25 N/s up to 1 000 N, (440 N for a SC valve equipped with a safety quick connection) maintained for 60 s. If a SC valve equipped with a safety quick connection has no locked position the manufacturer shall provide a test end fitting which can be locked.

5.8 Bending resistance

5.8.1 Requirements

The SC valve shall resist a bending moment of 25 N · m perpendicular to the connection for 900 s.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness in the connected and unconnected positions as specified in 5.4.2;

— internal leak-tightness as specified in 5.4.3;

— force required to achieve operating torque of the connection as specified in 5.17.

A visual check with the naked eye corrected for normal vision shall not show any permanent deformation.

5.8.2 Tests

This test shall be carried out on sample n° 2 in two perpendicular directions.

In the case of a manually operated the test shall be carried out in two perpendicular directions both of which shall be perpendicular to the axis of the SC valve.

The SC valve is not under pressure. The SC valve shall be held in a test apparatus which prevents movement or damage to the sample and connected to the closed male test end fitting. The bending force shall be gradually applied without shock up to a value of 25 N · m, maintained for 900 s and then released.

5.9 Resistance to torsion

5.9.1 Requirements

An SC valve equipped with screw in connection shall resist a torsional moment of 40 N · m gradually applied between the input and the body of the SC valve and then between the output and the body of the SC valve.

An SC valve equipped with safety quick connection shall resist a torsional moment of 15 N · m gradually applied between the input and the body of the SC valve.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness in the connected and unconnected positions as specified in 5.4.2;

— internal leak-tightness as specified in 5.4.3;

— force required to achieve operating torque of the connection as specified in 5.17.

A visual check with the naked eye corrected for normal vision shall not show any permanent deformation.

5.9.2 Tests

This test shall be carried out on sample n° 3. The connections shall be capable of supporting the required turning moment (40 N · m for screw in types and 15 N · m for quick connect type) and be capable of complying with the external leak-tightness test (5.4.2), the internal leak-tightness test (5.4.3) and the operating torque test (5.17).

The connection shall be tightened using a torque meter having an accuracy of ± 5 %, with the SC valve fixed to or solidly held by a suitable frame.

In the case of a screw-in connection type SC valve, two connectors, screwed in to a torque of 40 N · m, shall be installed at the input and output of the SC valve.

In the case of a safety quick connection type SC valve, a connector, screwed in to a torque of 15 N · m, shall be installed at the input of the SC valve.

The external leak-tightness test, as described in 5.4.2, shall be then carried out, followed by the internal leak-tightness test, as described in 5.4.3, and finally the operating torque test as described in 5.17.

5.10 Resistance to impact

5.10.1 Requirements

The SC valve shall support a perpendicular impact of 5 J and an axial impact of 10 J, on the SC valve outlet fitting when in the connected position.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness in the connected and unconnected positions as specified in 5.4.2;

— internal leak-tightness as specified in 5.4.3;

— force required to achieve operating torque of the connection as specified in 5.17.

A visual check with the naked eye corrected for normal vision shall not show any permanent deformation.

5.10.2 Tests

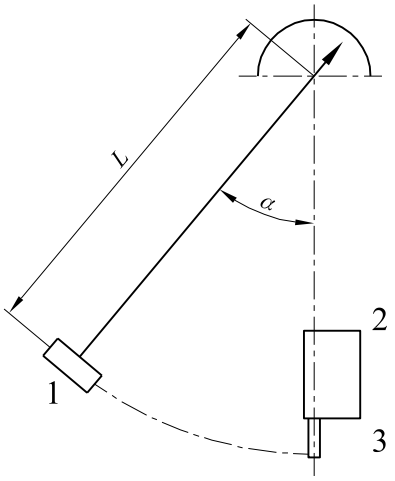
This test shall be carried out on sample n° 4.

The SC valve shall be held in a vertical or horizontal position in a suitable test assembly. The test end outlet fitting is then connected.

Two frontal impacts of 5 J are delivered perpendicularly (on the test end fitting).

Two impacts of 10 J are delivered axially (on the test end fitting).

An example of the test apparatus is shown in Figure 3.



Key

1 mass
2 SC valve in the connected position
3 closed test end fitting

$W = M \cdot L \cdot g\ (1 - \cos\alpha)$

where

M kg
W N · m (joule)
L m
g acceleration due to gravity (in m/s^2)
α angle of fall

Figure 3 — Apparatus for the resistance to impact test

5.11 Durability

5.11.1 Durability of the manually operated control SC valve

5.11.1.1 Requirements

Any SC valve independent from its connection shall satisfy a durability test of 5 000 cycles.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness as specified in 5.4.2;

— internal leak-tightness as specified in 5.4.3;

— operating torque as specified in 5.17.

5.11.1.2 Test

This test shall be carried out on sample n° 5, at an air pressure of 0,02 bar.

The manually operated control of the SC valve shall be subjected to 5 000 opening /closing cycles at a rate of one cycle every 15 s ± 2 s. During a cycle, the test apparatus shall enable the SC valve (which is under test) to go from the fully closed position to the fully open position and return again.

5.11.2 Durability of connection and disconnection

5.11.2.1 Requirements

This requirement only applies to a SC valve equipped with a safety quick connection.

The SC valve shall satisfy a connection/disconnection durability test of 5 000 cycles.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness as specified in 5.4.2;

— Internal leak-tightness as specified in 5.4.3.

— operating torque as specified in 5.17.

5.11.2.2 Test

This test shall be carried out on sample n° 5, with the closed test end fitting.

The SC valve shall be subjected to 5 000 connection/disconnection cycles at a rate of one cycle every 30 s ± 2 s. During a cycle, the end fitting shall be able to go from the completely connected position to the completely disconnected position and back again.

5.11.3 Rotation durability of the SC valve outlet

5.11.3.1 Requirements

Where it applies, the SC valve outlet shall satisfy a rotation durability test of 5 000 cycles without disconnection.

After the test, the SC valve shall conform to the following requirements:

— external leak-tightness requirements as specified in 5.4.2;

— internal leak-tightness test as specified in 5.4.3;

— operating torque test as specified in 5.17.

5.11.3.2 Test

This test shall be carried out on sample n° 5.

The SC valve outlet shall be subjected to 5 000 rotations of +180º / -180º or the full designed angular movement. The test apparatus shall be adapted accordingly so that the test can be performed.

5.11.4 Temperature durability - Thermal ageing

5.11.4.1 Requirements

The SC valve shall satisfy a thermal ageing test, consisting of two cold cycles and one hot cycle.

At the end of the test, the SC valve shall conform to the following requirements:

— the maximum operating torque applied for connection and disconnection as defined in 5.17 (with a tolerance of +20 %);

— the external tightness of the SC valve (connected or disconnected) as defined in 5.4.2;

— the internal tightness of the SC valve as defined in 5.4.3;

— the operating torque for the manual control, if it exists, as defined in 5.17 (with a tolerance of +20 %).

5.11.4.2 Test

For SC valves type 3 and 4 the thermal device shall be removed or disabled.

This test shall be carried out on sample n° 6. The SC valve shall be not connected.

This test consists of a cold cycle, one hot cycle and another cold cycle. The SC valve shall be positioned vertically or horizontally.

Cold cycle: +20 °C → mOT

The temperature shall be gradually reduced from 20 °C to the mOT in 60 min and held at this temperature for 150 min. The temperature of the SC valve is then gradually increased to the ambient temperature over a maximum of 4 h, after which it is then put through one hot cycle.

Hot cycle: +20 °C → see Table 7

Table 7 — Operating temperature test

Temperature	Duration
80 °C	960 h
90 °C	480 h
100 °C	240 h

The temperature of the SC valve shall be:

— raised to any of the temperatures according to Table 7 within 60 min and held for the appropriate time;

— gradually lowered to 20 °C over a maximum of 4 h and held at 20 °C for 120 min.

The cold cycle shall be repeated after the hot cycle.

5.12 High and low temperature resistance

5.12.1 Low temperature resistance

5.12.1.1 Requirement

The SC valve shall be subjected to temperatures corresponding to Table 8 (depending on the temperature class , T1 = -20 °C, T2 = -40 °C).

— At a pressure of 0,02 bar, the external tightness of the SC valve (connected and disconnected) shall be considered satisfactory if the measured leak value shall be less than or equal to T_f (Table 8).

— The maximum operating strength for connection and disconnection shall be in conformity with the requirement as defined in 5.18.

— If the SC valve is equipped with a manual control, its internal tightness shall be in conformity with the requirement as defined in 5.4.3 and the operating force shall be in conformity with the requirement as defined in 5.17.

After the test the marking shall be verified and shall not have either deteriorated nor lifted nor become unreadable.

5.12.1.2 Tests

5.12.1.2.1 External tightness, disconnection and connection strength

This test shall be carried out in a thermal chamber on sample n° 1 for each temperature *T* given in Table 8 and for the type of SC valve.

The initial temperature shall be 20 °C. The SC valve shall be connected with a closed test end fitting (Annex B) and subjected to 0,02 bar air pressure.

The manual control, if it exists, shall be fully opened.

The temperature shall be adjusted to the temperature *T* in less than 90 min and held for 20 min. External tightness shall be then measured.

The thermal chamber shall be then opened and the SC valve removed to measure the rotation movement of the SC valve in accordance with 5.17. This operation shall be performed in less than 1 min.

Next, both the SC valve and the unconnected test end fitting shall be returned to the thermal chamber and held for 20 min at *T*. External tightness shall be then measured.

The thermal chamber shall be then opened and the SC valve removed to measure the connection strength in accordance with 5.18. This operation shall be performed in less than 1 min.

5.12.1.2.2 Internal tightness and operating strength of the manual control

This test shall be carried out in a thermal chamber on SC valve n° 2 for each temperature *T* given in Table 8 for the type of SC valve.

The open test end fitting (Annex B) shall be connected, and the manual control shall be then closed.

The temperature shall be adjusted to *T* in less than 90 min and held for 20 min. External tightness shall be then measured according to 5.4.2.

The thermal chamber shall be then opened and the SC valve removed to measure the operating strength of the manual control in accordance with 5.17. This operation shall be performed in less than 1 min.

Table 8 — Maximum leakage rate

T_f in ml/h	-40 °C	-20 °C
T1		20
T2	20	20

5.12.2 High temperature resistance (only for SC valve without TSD)

5.12.2.1 Requirement

The SC valve shall be designed and constructed such that exposing it to a fire does not result in an explosion or significant aggravation of the fire.

5.12.2.2 Test procedure

The SC valve shall be subjected to the resistance to high temperature tests given in EN 1775:2007, Annex A, Procedure B.

5.12.3 Leak-tightness during thermal load (only for SC valve with TSD)

5.12.3.1 Requirement

In an connected position and during a thermal load of 650 °C the leak-tightness of the SC valve shall not exceed 0,03 m^3(st)/h.

5.12.3.2 Tests

These tests shall be conducted as test 5.12.2.2 on samples n° 1 and n° 2, in the direction of the normal flow of gas with thermal resistant sealing of the inlet connection and the following test pressures:

— Pe = 20 mbar;

— Pe = 1,5 MOP.

The test shall be carried out with the open test end fitting connected to the SC valve.

If a manual control SC valve exists, it shall be in its open position.

The measurement of the leak-flow shall be then taken at the test pressure Pe1 and Pe2.

5.13 Resistance to lubricants

5.13.1 General

In cases where non-metal materials excluding rubber are used in contact with gas, each of the relevant components taken separately shall meet this requirement.

5.13.2 Requirement

After immersion in n° 2 oil, the relative variation in mass shall range between -15 % and +5 %.

5.13.3 Test

The test shall be carried out in accordance with 7.2 of ISO 1817:2005 using the gravimetric method. The immersion time in n° 2 oil shall be (168 ± 2) h at a temperature of 60 °C.

The relative variation in mass, Δm, shall be then determined by means of the following equation:

$$\Delta m = [(m_3 - m_1)/m_1] \cdot 100$$

where

m_1 is the initial mass of the sample in air;

m_3 is the mass of the sample in air after immersion.

5.14 Reaction to fire

5.14.1 Requirement

The reaction to fire of products shall be determined and classified in accordance with EN 13501-1 and declared according to the provisions of 5.14.2.

NOTE See ZA.1 and ZA.3 for the use of no performance determined (NPD).

When uncoated, SC valve components made of materials which are restricted to those listed in 4.3.2, no reaction to fire testing is required. The SC valve may be classified and declared Class A1 without further testing.

When SC valves or coatings contain a mass or a volume (whichever is greater) of 1 % or more of organic components it shall be subjected to Class classification according to EN 13501-1. The reaction to fire of products shall be determined and classified according to the provisions of 5.14.2.

5.14.2 Testing and assessment methods

5.14.2.1 Products not satisfying the requirements for the fire reaction Class A1 (classified without testing)

For products subjected to ignitability test following the requirements of EN 13501-1:2007, Table 1, the test shall be performed in accordance with EN ISO 11925-2.

The SC valve shall be tested in the working position(s) recommended by the manufacturer. The flame shall be applied, on the SC valve in connected position, to the interface of the SC valve inlet / outlet.

5.15 Resistance to gas

5.15.1 General

In the event that non-metal materials excluding rubber are in contact with gas, each of the relevant components taken separately shall meet this requirement.

5.15.2 Requirement

After immersion in n-pentane, the relative variation in mass shall range between +15 % and -10 %.

5.15.3 Test

The mass concentration of the test solution shall be at least 98 % normal pentane, estimated by gas chromatography.

The test shall be carried out in accordance with 7.2 of ISO 1817:2005 using the gravimetric method and with Clause 9 concerning the determination of extracted soluble substances, but under the following conditions:

a) with an immersion time in n-pentane of (72 ± 2) h at a temperature of 23 °C (± 2 °C);

b) the test samples shall be dried for (168 ± 2) h in a chamber at (40 ± 2) °C and under atmospheric pressure.

The relative variation in mass Δm shall be then determined by means of the following equation:

$$\Delta m = [(m_5 - m_1)/m_1] \cdot 100$$

where

m_1 is the initial mass of the sample in air;

m_5 is the mass of the sample in air after drying.

5.16 Corrosion resistance

5.16.1 Requirement

After completion of the test, no corrosion shall be revealed, that could impair the operation of the SC valve (disregarding possible salt deposits), and the external tightness of the SC valve (connected and disconnected) shall be in conformity with the requirement defined in 5.4.2.

After the test the marking shall be verified using the naked eye corrected for normal vision and it shall neither deteriorate nor lift nor become unreadable.

5.16.2 Test

This test shall be carried out on sample n° 7; following the requirements of EN ISO 9227, for a neutral salt spray (NSS).

The SC valve is not under pressure and is also disconnected.

If protection is used by the manufacturer, it shall be positioned at the outlet of the device.

The inlet of the SC valve shall be closed by a cap whose dimensions conform to national specifications.

The test chamber shall spray a saline solution having a mass concentration of 5 % ± 0 sodium chloride in distilled water.

The intensity of the spray shall be such that, for each 80 cm^2 of horizontal collecting surface, 2 ml (± 1 ml) of solution shall be collected per hour.

The test chamber shall be maintained at a temperature of 35 °C (± 1 °C).

The test lasts 96 h (± 2 h).

5.17 Operating torque for a manually operated control SC valve

5.17.1 Requirement

This requirement applies solely to an SC valve equipped with a manually operated control. The operating torque of the manually operated control shall not require a force exceeding 4 N · m and the maximum force applied on the end of the manually operated control shall not exceed 50 N.

5.17.2 Test

The test shall be carried out, without pressure, on samples n° 3 and n° 6, which shall be securely attached to the test apparatus.

Three opening/closing operations shall be performed manually before beginning the measurements.

The operating torque shall be measured by means of an appropriate torque meter, to an accuracy of ± 10 % of the measured value. Opening and closing of the device shall be carried out at a constant angular velocity of approximately 1,5 rad/s.

The test shall be repeated twice and each measurement shall conform to the requirements stipulated in 5.17.1.

5.18 Operating strength for a safety quick connection SC valve

5.18.1 Requirement

This requirement applies solely to SC valves equipped with safety quick connection. Connection or disconnection shall be carried out using the following values:

— between 5 N and 50 N for an axial movement;

— between 0,2 N · m and 2 N · m for a rotating movement.

In the event that several movements shall be combined, each of them shall be measured and shall satisfy the requirement.

5.18.2 Test

The test shall be carried out, without pressure, on samples n° 3 and n° 6, which shall be securely attached to the test apparatus.

The test apparatus ensures the guidance of the test end fitting used (male or female cap, depending on the type of SC valve). The SC valve shall be securely attached to the test bench. The support for the test end fitting shall be mobile whilst minimizing friction.

The test apparatus may be moved by hand or motor-assisted.

Three opening/closing operations shall be performed manually before beginning measurement.

Force shall be exerted smoothly up to the limit required to complete the connection. An appropriate measuring instrument records the maximum strength for this operation. The test shall be repeated twice for each movement required and each measurement shall comply with the requirement stipulated in 5.17.1.

The operating force shall be measured using an appropriate instrument, to an accuracy of ± 10 % of the measured value. Connections and disconnections shall be carried out at a maximum angular velocity of $\pi/2$ rad/s and/or a maximum translation velocity of 5 cm/s.

5.19 Stop resistance

5.19.1 Requirement

All the stops on the manually operated control shall resist the following:

— 15 N · m in a case of a stop of a rotational movement;

— 100 N in a case of a stop of an axial movement.

After testing:

— a visual examination with the naked eye corrected for normal vision shall be carried out to check the absence of deformation or apparent failure of the device;

— the device shall conform to the tightness requirements stipulated in 5.4.2 and 5.4.3.

5.19.2 Test

The test shall be carried out, without pressure, on sample n° 2, which shall be securely attached to the test apparatus. For each movement, after having reached the stop, a force shall be applied slowly and smoothly up to the limit required in 5.18.1, for a period of 10 min. The operating force shall be measured with an appropriate instrument, to an accuracy of ± 10 % of the measured value.

5.20 SC valves type 2 and 4

5.20.1 Leak-tightness of the OSD

5.20.1.1 Requirement

In a connected position, the leakage from the OSD in closed position shall not exceed 3 000 cm^3/h.

5.20.1.2 Tests

These tests shall be carried out on samples n° 3 and n° 4, in the direction of the normal flow of gas with the following test pressures.

— Pe = 20 mbar;

— Pe = 1,5 MOP.

The test shall be carried out with the opened test end fitting connected to the SC valve. The maximum duration of the measurement stabilization of the leak shall be fixed at 120 s.

If a manually operated control exists, it shall be to be left in its open position. The air flow to the upstream of the device shall be increased gradually until the OSD mechanism is activated.

The measurement of the leak-flow shall be then taken for Pe1 and Pe2.

5.20.2 Overflow safety rate

5.20.2.1 Requirement

The OSD shall automatically stop the gas output between 1,00 m^3/h and 2,00 m^3/h.

After the test, the reset mechanism of the OSD shall be checked. After resetting the mechanism and after making the downstream part tight, the flow shall be effective after 30 s.

5.20.2.2 Test

This test shall be carried out on samples n° 3 and n° 4, in all the operational positions recommended in the manufacturers installation instructions (vertical and/or horizontal).

The test shall be carried out with the opened test end fitting connected to the device. The test shall be carried out with air, in the direction of the normal flow of gas, at a pressure of 20 mbar.

If a manually operated control exists, it shall be to be left in its open position.

The rate of increase in flow shall be 0,1 m^3/h per second.

In order to reach a flow of 1 m^3/h a duration of 10 s shall be required.

5.20.3 Overflow safety durability

5.20.3.1 Requirement

The OSD shall be able to resist 50 successive cycles of release / reset.

During these cycles, the OSD shall not present failure of release or reset.

After the test, the SC valve shall still conform to the leak-tightness test (according to 5.20.1) and the rated flow rate (according to 5.6).

5.20.3.2 Test

This test shall be carried out on samples n° 3 and n° 4.The test shall be carried out with the open test end fitting connected to the SC valve.

The OSD shall be subjected to 50 cycles of release / reset, at a rate of one cycle every 60 s approximately. The pressure of air upstream of the SC valve shall be kept to the MOP.

Pressure downstream of the SC valve can be checked automatically during each cycle, for example:

— flow 1 = minimum V_d -10 %;

— checking of non release;

— flow 2 = maximum V_d;

— checking of release;

— flow 3 = 0;

— reset operation;

— checking of reset.

5.20.4 Normal flow durability

5.20.4.1 Requirement

The OSD shall be able to resist 30 000 cycles of successive variations of flow.

During these cycles, the release mechanism shall not be activated.

After the test, the SC valve shall still conform to the leak-tightness test (according to 5.20.1), the rated flow rate (according to 5.6) and the overflow safety rate (according to 5.20.2).

5.20.4.2 Test

This test shall be carried out on sample n° 3.

The OSD shall be subjected to 30 000 cycles of variations of flow ranging between 0,0 m^3/h and V_d -10 %. The resolution of the apparatus shall be 3 % of the measured value. The test shall be carried out in air under a pressure of 20 mbar.

Each cycle lasts approximately 30 s with 15 s of rise in flow until V_d -10 %, 5 s of stabilization to this flow then 10 s of reduction in flow until the flow is zero.

During these cycles, the release mechanism shall not be activated. The continuity of the pressure downstream of the SC valve shall be checked.

5.21 Electrical continuity

5.21.1 Requirement

The electrical resistance of the SC valve, in a connected position, shall not exceed 0,1 Ω.

5.21.2 Test

This test shall be carried out on sample n° 7, following the conditions indicated in EN 60335-1:2002, 27.5.

The SC valve shall be in a connected position with an open test end fitting.

With a contact provided by, for example an electric pin or crocodile clip, a current of 25 A shall be put into circulation between the inlet of the system and the test end fitting. This current shall be supplied by a generator of which the open circuit voltage does not exceed 12 V (direct or alternating (50 Hz)).

The voltage drop shall be measured between the test end fitting and the inlet of the SC valve. The electrical resistance shall be then calculated with this voltage drop and the current and it shall not exceed 0,1 Ω.

The resistance of the electrical cable shall be not included in the measurement.

The operator shall ensure that the contact resistance does not influence the results of the test.

5.22 Leak-tightness of the system with non-metal components

5.22.1 Requirement

In case of a fracture of a non-metal part of the system, no more than 30 dm^3/h of air shall escape.

5.22.2 Test

Non-metal pieces in contact with gas shall be first taken out of the body.

Joints, O rings and SC valves which ensure leak-tightness shall not be taken out.

The test shall be carried out in a connected position (with the closed test end fitting connected to the SC valve) and in an unconnected position.

Connect the inlet of the system to an air source of MOP.

The test shall be carried out according to 5.4.2.

The maximum leak measurement shall not exceed 30 dm^3/h.

5.23 SC valves type 3 and 4

5.23.1 Reaction to temperature

5.23.1.1 Requirement

The TSD shall automatically stop the gas output between 80 °C and 100 °C.

After the test the leak-tightness of the SC valve in connected position shall not exceed 0,03 m^3(st)/h.

5.23.1.2 Test

This test shall be carried out on sample n° 5. The test shall be carried out with the open test end fitting connected to the device. This sample shall be equipped with a thermocouple near the TSD.

The temperature of the SC valve shall be raised to 80 °C and held for the appropriate time. The TSD shall be in open position (checked by flow or visually).

The temperature of the SC valve shall be raised to 100 °C and held for the appropriate time. Now the thermal device shall be in its closed position (checked by flow or visually).

After the SC valve has been allowed to cool down to room temperature the leak-tightness test given in 5.4.2 shall be carried out in the direction of normal flow of gas with the following test pressures:

— Pe = 20 mbar;

— Pe = 1,5 MOP.

The leakage rate shall be measured for pressure Pe1 and Pe2.

6 Evaluation of conformity

6.1 General

The conformity of a SC valves to the requirements of this standard and with the stated values shall be demonstrated by:

— initial type testing,

— factory production control by the manufacturer, including product assessment.

For the purposes of testing, SC valves may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for the same characteristics for all SC valves within that same family (a product may be in different families for different characteristics).

6.2 Type testing

6.2.1 Initial type testing (ITT)

6.2.1.1 General

Initial type testing shall be performed to show conformity with this standard on first use of this European Standard for SC valves being put onto the market and:

— at the beginning of the production of a new or modified SC valve assembly design or change in materials of the components;

— at the beginning of a new or modified method of production.

In case of type testing on SC valves for which initial type testing in accordance with this European Standard has already been performed, type testing may be reduced:

— if it has been established that performance characteristics compared with the already tested SC valve is the same, or

— in accordance with the rules for grouping into same families given in 4.1.

6.2.1.2 Characteristics

All tests in Clause 5 shall be subjected to initial type testing except for the release of dangerous substances which may be declared based upon control of raw materials.

6.2.1.3 Sampling, testing and compliance criteria

Initial type testing shall be performed on samples of SC valves representative of the manufactured types, and shall be chosen at random from either a production lot, or in the absence of available lots assemblies representative of the production or away from the manufacturers premises products from the market.

The number of SC valves to be tested shall be in accordance with 5.3. Tests shall be performed according to the given test sequence and compliance sequence of 5.3.

The results of all tests shall be recorded and held by the manufacturer for at least ten years after the date of final production of the SC valve.

6.2.2 Subsequent type testing

Subsequent type testing shall be performed upon modification of product or production characteristics as given in 6.2.1.1.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market conform to the declared performance characteristics. The FPC system shall consist of written procedures (works' manual), regular inspections and tests and the use of results to control raw and other incoming materials or components, equipment, the production process and the product. Records shall remain legible, readily identifiable and retrievable.

An FPC system conforming with the requirements of EN ISO 9001:2000, and made specific to the requirements of this European Standard, shall be considered to satisfy above requirements.

The results of inspections or tests requiring action shall be recorded, as shall any action taken. The action to be taken when control values or criteria are not met shall be recorded and retained for the period specified in the manufacturer's FPC procedures.

6.3.2 FPC requirements for all manufacturers

The manufacturer shall establish procedures to ensure that the production tolerances are within the declared values which have been established from the results of the initial type test programme. The characteristics minimum test frequencies shall be as given in Table 9.

Table 9 — Minimum frequency of testing for product testing and evaluation as part of FPC for each product family

Property	Clause, indicating the relevant test	Minimum number of samples / test	Minimum frequency of test
Angular seal	5.4.1	1	Every 10 000 pieces but at least 4 × per year
External leak-tightness	5.4.2	1	Each piece produced
Internal leak-tightness	5.4.3	1	Each piece produced
Internal pressure	5.5.2	3	1 × per year
Rated flow rate	5.6.2	1	Every 10 000 pieces but at least 4 × per year.
Tensile strength resistance	5.7.2	1	1 × per year
Bending resistance	5.8.2	1	1 × per year
Resistance to torsion	5.9.2	1	1 × per year
Resistance to impact	5.10.2	1	1 × per year
Durability	5.11.1.2/5.11.2.2/5.11.3.2/ 5.11.4.2	1	1 × per year
Low and high temperature resistance	5.12.1.2/5.12.2.2/5.12.3.2	1	1 × per year
Resistance to lubricants	5.13.3	1	1 × per year
Resistance to gas	5.15.3	1	1 × per year
Corrosion resistance	5.16.2	1	1 × per year
Operating torque for manually operated control	5.17.2	1	Every 10 000 pieces but at least 4 × per year
Operating strength for safety quick connection	5.18.2	1	Every 10 000 pieces but at least 4 × per year
Stop resistance	5.19.2	1	Every 10 000 pieces but at least 4 x per year
Leak-tightness of the OSD for SC valves type 2 and 4	5.20.1.2	1	Each piece produced
OSD rate	5.20.2.2	1	Each piece produced
OSD durability	5.20.3.2	1	1 × per year
Normal flow durability	5.20.4.2	1	1 × per year
Electrical continuity	5.21.2	1	1 × per year
Leak tightness of a system with non-metal components	5.22.2	1	1 × per year
Resistance to temperature for SC valves type 3 and 4	5.23.1.2	3	1 × per year

If a single sample of the test batch fails a further sample batch consisting of a minimum of twice the original sample batch from the same manufacturing lot shall be repeated and if one of the new samples fails the production lot shall be rejected.

The manufacturer shall record the results of the tests specified above. The records shall as a minimum include the following information:

— identification of the SC valve tested;

— the date of sampling and testing;

— the test method performed;

— the test result;

— the person responsible for the testing.

6.3.3 Manufacturer-specific FPC system requirements

6.3.3.1 Personnel

The responsibility, authority and relationship between personnel that manage, perform or verify work affecting product conformity, shall be defined. This applies, in particular, to personnel that need to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

6.3.3.2 Equipment

All manufacturing, weighing, measuring and testing equipment necessary to achieve, or produce evidence of, conformity shall be calibrated or verified and regularly inspected according to documented procedures, frequencies and criteria. Control of monitoring and measuring devices shall be in accordance with EN ISO 9001:2000, 7.6.

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process.

Inspection and maintenance shall be carried out and recorded in accordance with the manufacturer's written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.3.3 Raw materials and components

The specification of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their conformity. The verification of conformity of the raw material with the specification shall be in accordance with EN ISO 9001:2000, 7.4.3.

6.3.3.4 In-process control

The manufacturer shall plan and carry out production under controlled conditions. Production shall incorporate a final leak tests as given in 5.4.2 and 5.4.3 for each individual SC valve put on the market.

Compliance with EN ISO 9001:2000, 7.5.1 and 7.5.2 shall be deemed to satisfy the requirements of this clause.

6.3.3.5 Traceability

Individual production lots shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes are inspected regularly. Compliance with EN ISO 9001:2000, 7.5.3 shall be deemed to satisfy the requirements of this clause.

6.3.3.6 Non-conforming products

The manufacturer shall have written procedures which specify how non-conforming products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures. Compliance with EN ISO 9001:2000, 8.3 shall be deemed to satisfy the requirements of this clause.

6.3.3.7 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to achieve conformity and/or prevent recurrence.

6.4 Installation instructions

Each SC valve shall be accompanied by installation instructions in the language of the country of its intended destination giving all necessary information regarding its safe installation and usage together with details of the soundness test that should be used at installation and during its lifetime.

The instructions shall detail:

— the method and procedure of how to install an SC valve and how to verify its correct installation;

— the method of how to check for the presence of any gaskets and the control procedure to ensure that gaskets are not damaged;

— the verification of gas leak- tightness after installation of the SC valve and its connecting parts.

The instructions shall in addition give as a minimum the following information:

— trade name of the manufacturer, the product name and the product type;

— logo of the Certification Body (if appropriate);

— EN number of this European Standard;

— type(s) of gas for which the assembly is designed;

— pressure class of the SC valve;

— temperature class of the SC valve;

together with the following text:

— "SC valve for use with domestic gas appliances";

and warnings:

— "Any deterioration or damage to any part of the SC valve shall result in the need to replace the SC valve; alterations to any part of the SC valve shall mean that the SC valve is no longer in conformity with this standard";

— **DO NOT**

— "Place in areas warmer than 60 °C";

— "Install the SC valve if any doubt exists regarding the compatibility of its fittings and those on the appliance or the gas supply";

— “Use adapters in order to achieve compatibility of fittings”;

— “Install the SC valve into an inaccessible area’’;

— **DO**

— “Ensure that the SC valve allows an adequate flow rate for its intended use”;

— “Install in accordance with existing local and National Regulations as well as best custom and practice”;

— “Follow both the installation instructions of the SC valve manufacturer, including those for the position and orientation of the connection point";

— “Protect the SC valve from its surroundings by appropriate means if installed in walls”.

NOTE These instructions and warnings can be supplemented as required by drawings.

6.5 Packaging

The manufacturer shall provide a visible warning that installation should be performed by authorised personnel where this is required by national regulations.

Each SC valve shall be protected against the ingress of any foreign matter into any of the parts of the SC valve.

NOTE This requirement can be met by identifiable sealed packaging of the SC valve.

Ensure that the correct types of SC valves are identifiable on the product packaging.

The packaging shall also be marked according to ZA.3.

Annex A
(informative)

SC valve and hose fitting design requirements for connection to the gas supply pipework or to the pressure reduction device of portable gas bottles

NOTE The details given in Table A.2 (Figures A.4 to A.16) and the fittings shown in Table A.4 (Figures A.19 to A.21) are not for the SC valve but for the hose.

Table A.1 — SC valve design requirements for connection to the gas supply pipework

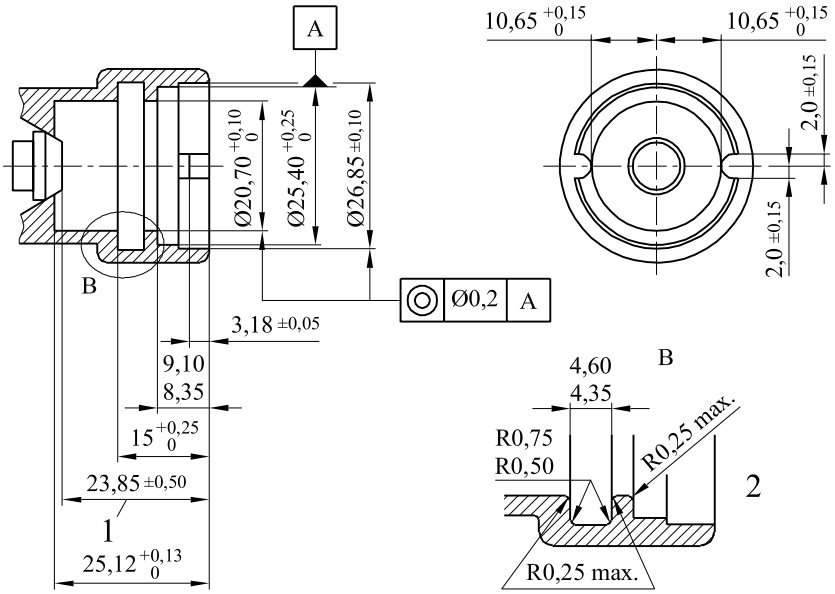
Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989	Dimensions in millimetres  **Key** 1 SC valve in closed position 2 enlarged detail B showing dimensions of recess – uses O ring size 211 to BS 1806 Essential dimensions **Figure A.1 — SC valve – DN 12**
NOTE The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.		

Table A.1 — SC valve design requirements for connection to the gas supply pipework (*continued*)

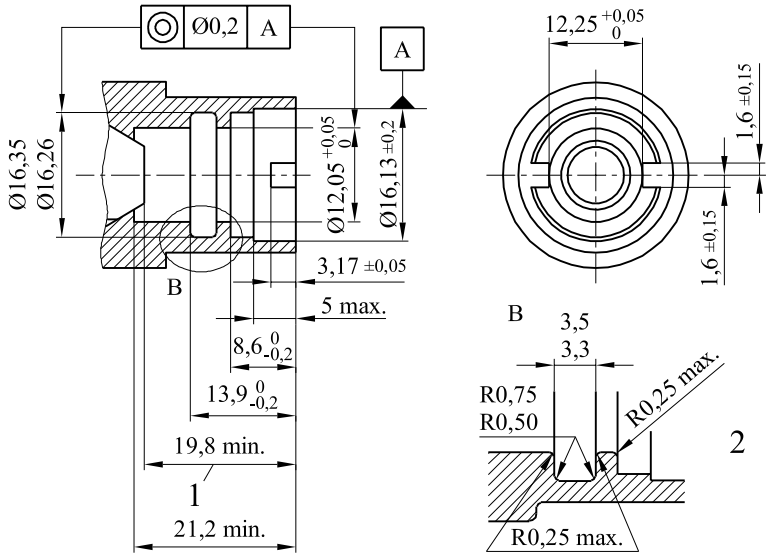
Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989	Dimensions in millimetres  **Key** 1 SC valve in closed position 2 enlarged detail showing dimensions of recess – uses O ring size 0116-24 to BS 4518 Essential dimensions

Figure A.2 — SC valve – DN 8

NOTE The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

Table A.1 — SC valve design requirements for connection to the gas supply pipework (*concluded*)

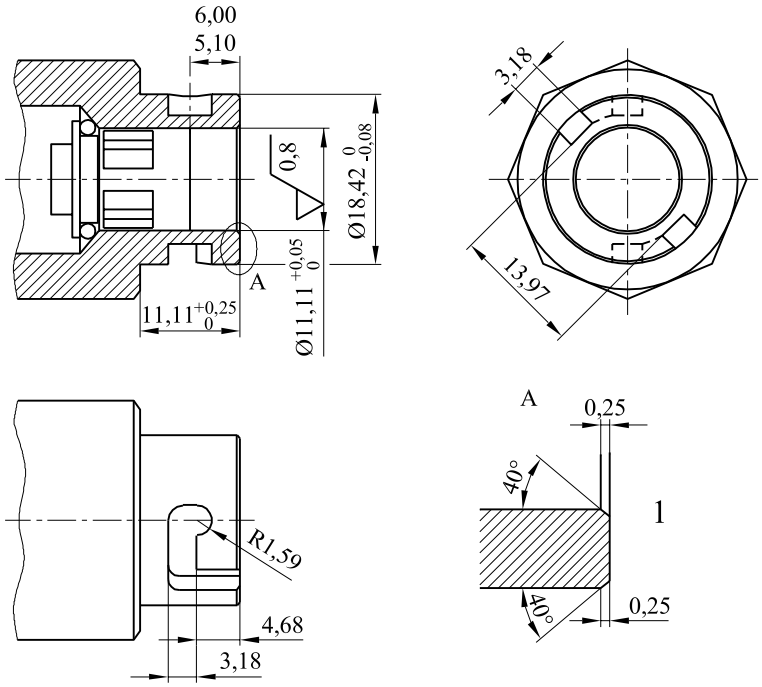
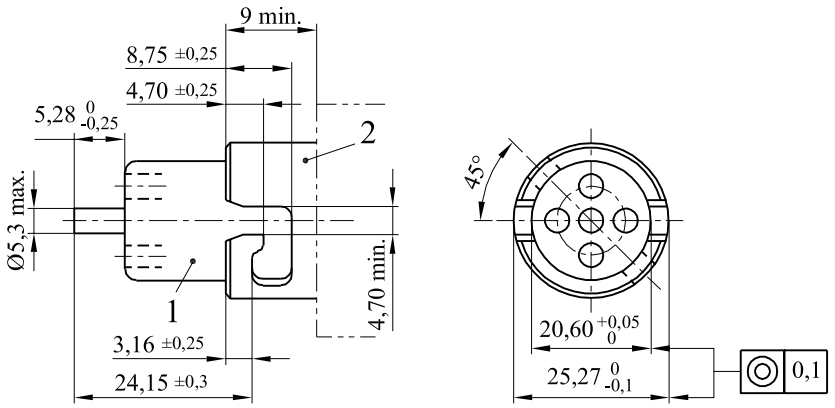
Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989	Dimensions in millimetres  **Key** 1 detail of end of socket Essential dimensions General tolerance ± 0,13 **Figure A.3 — SC valve – DN 8**
NOTE The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.		

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework

Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989, Section 3	Dimensions in millimetres



Key

1 plug

2 plug ring

Essential dimensions of R1/2 size plug connectors

Figure A.4 — Plug – DN 12

NOTE 1 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 2 These details are not for the SC valve but for the hose.

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework (*continued*)

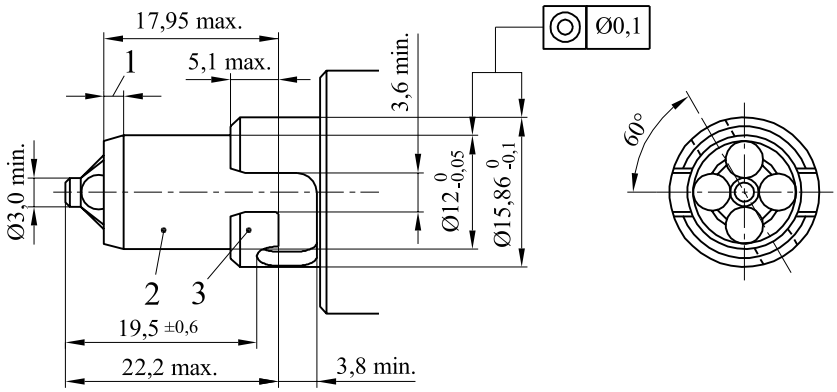
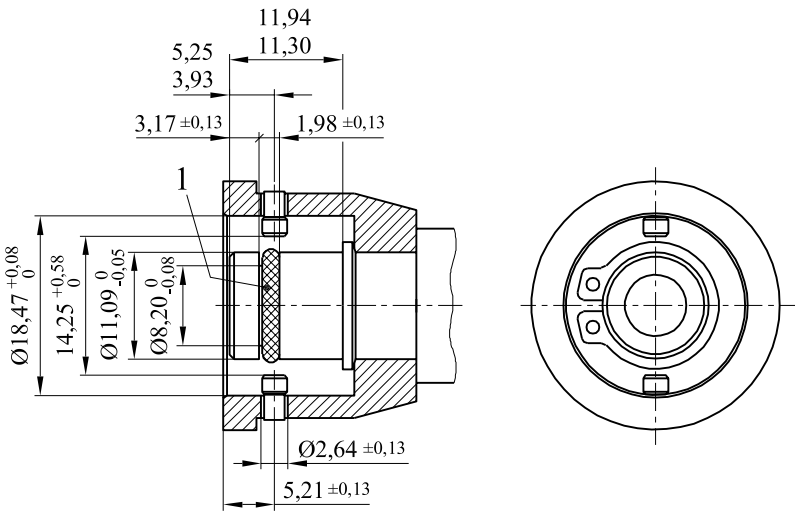
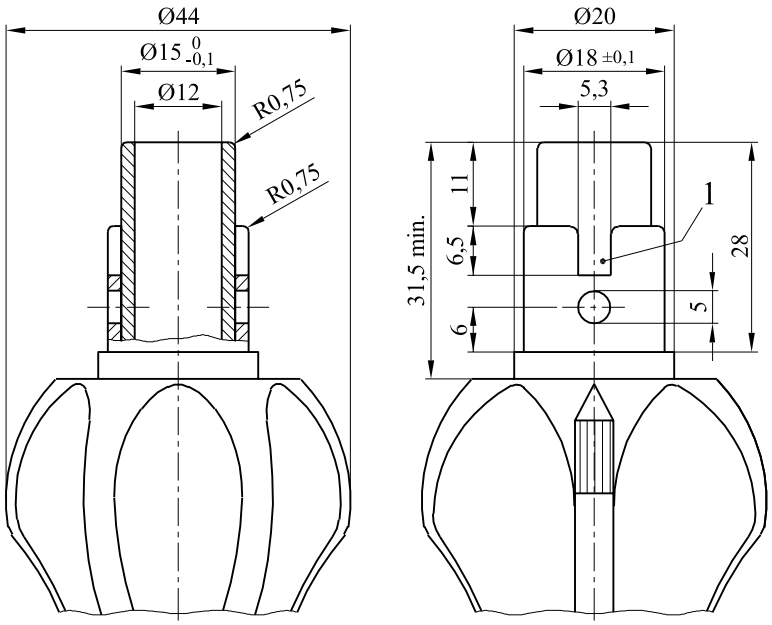
Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989, Section 3	Dimensions in millimetres  **Key** 1 radius of chamfer – 2,1 max. 2 plug 3 plug ring Essential dimensions of R3/8 size plug connectors **Figure A.5 — Plug – DN 8**
Spain UK Ireland	UNE 60715-1 BS 669-1:1989, Section 3	Dimensions in millimetres  **Key** 1 O ring BS 1806 - 011 Essential dimensions **Figure A.6 — Plug – DN 8**
NOTE 3 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards. NOTE 4 These details are not for the SC valve but for the hose.		

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework (*continued*)

Currently used in	Existing national standard or regulation	Standardised design
Austria	ÖNORM M 7438	Dimensions in millimetres  **Key** 1 2 slots 180° apart **Figure A.7 — Plug – DN 12**
Germany Sweden Netherlands	DIN 3383-1	
Spain	UNE 60715-2	
Switzerland	Gastec QA 69	

NOTE 5 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standard or regulation.

NOTE 6 These details are not for the SC valve but for the hose.

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework (*continued*)

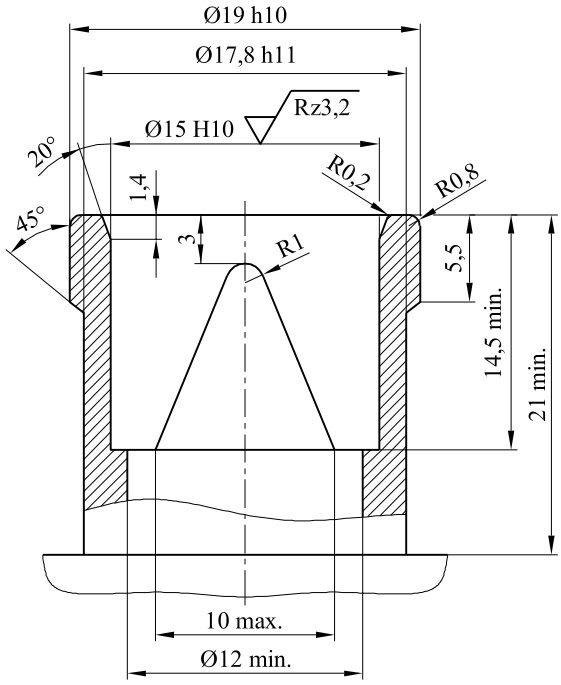
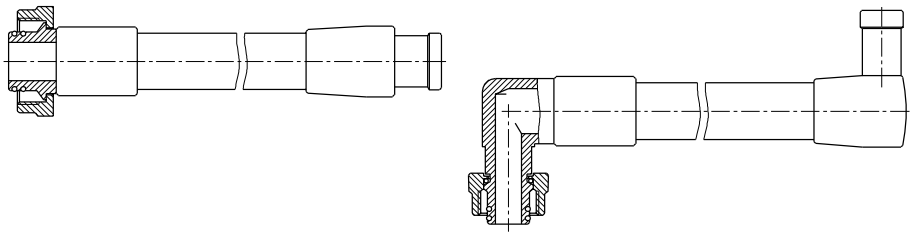
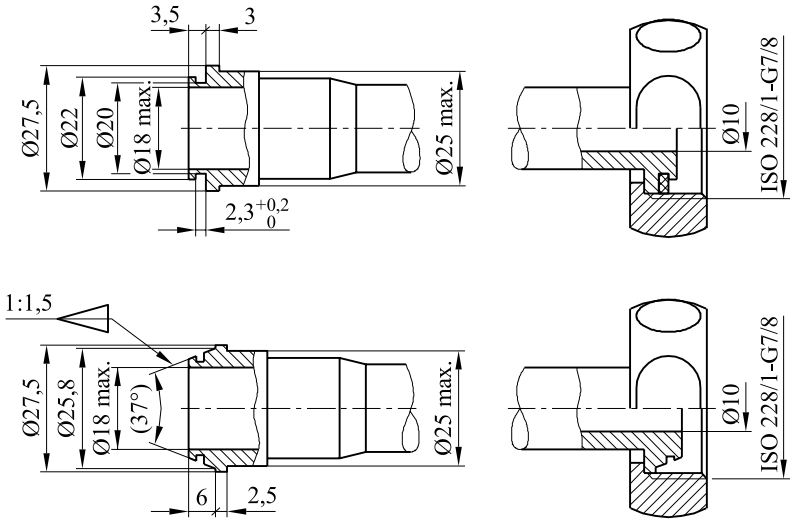
Currently used in	Existing National Regulation	Standardised design
Germany Sweden	DVGW VP 635-1	Dimensions in millimetres  **Figure A.8 — Connecting plug – DN 12**
Germany Sweden	DVGW VP 635-1	 **a) Hose assembly with nipple** **b) Hose assembly with nipple and–90° elbows** **Figure A.9 — Hose assembly DN 12**
NOTE 7 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standard or regulation. NOTE 8 These details are not for the SC valve but for the hose.		

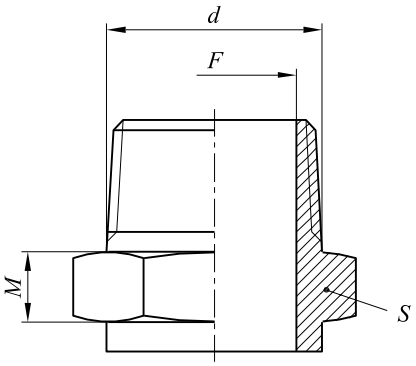
Table A.2 — Hose fitting design requirements for connection to the gas supply pipework (*continued*)

Currently used in	Existing national standard	Standardised design
Austria Germany Spain Switzerland Sweden	ÖNORM M 7438 DIN 3383-2	Dimensions in millimetres  **Figure A.10 — Nipple and swivel nut – DN 12**

NOTE 9 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 10 These details are not for the SC valve but for the hose.

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework (*continued*)

<table>
<tr><th>Currently used in</th><th>Existing national standard</th><th>Standardised design</th></tr>
<tr><td>Italy</td><td>UNI 9891</td><td>Dimensions in millimetres
 

Wrench size
Key
DN nominal diameter
F minimal internal diameter
M minimal value of wrench size
d conical thread as per ISO 7-1
S width of hexagonal part

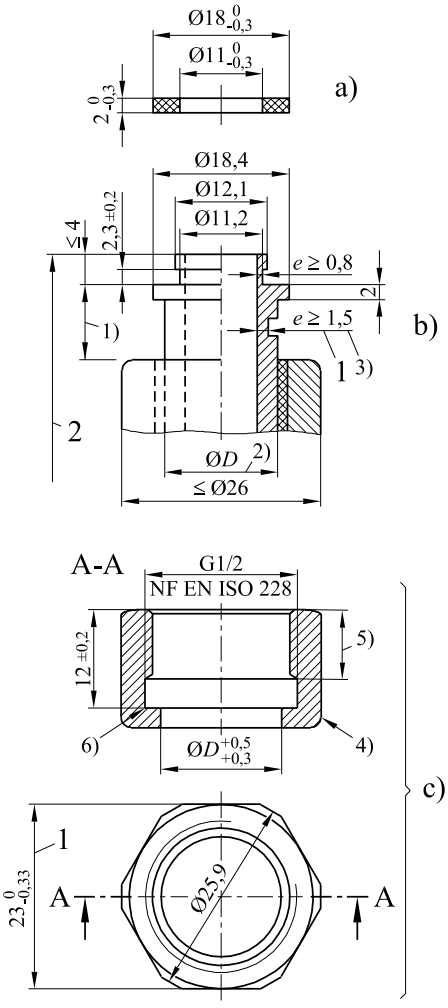
<table>
<tr><td>DN</td><td>F</td><td>M</td><td>d</td><td>S</td></tr>
<tr><td>10</td><td>10</td><td>4,0</td><td>R3/8</td><td>17</td></tr>
<tr><td>15</td><td>12</td><td>5,0</td><td>R1/2</td><td>22</td></tr>
</table>
NOTE 11 The requirements of DN 8 and DN 12 in the standard apply to the sizes DN 10 and DN 15 given in this table.

Figure A.11 — Fixed male thread – DN 8 and DN 12</td></tr>
<tr><td colspan="3">NOTE 12 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 13 These details are not for the SC valve but for the hose.</td></tr>
</table>

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework (*continued*)

Currently used in	Existing national standard	Standardised design
France	NF D36-121	Dimensions in millimetres



Dimensions without tolerances have to be within ± 0,1 mm. Shapes and dimensions without specification are under manufacturer's initiative.

a) Gasket

Hardness (80^{+5}_{-4}) D.I.D.C.

b) Nipple

Raw material: metal withstanding corrosion

1) Size equal or greater than the height of the swivel nut. Angles will be edge cut to avoid any damage to the gasket.
2) $D \leq 15{,}7$ mm
3) The upper face must allow the use of a spanner as described in ISO 691:2005 and remains accessible after the swivel nut is mounted.

c) Swivel nut

Colour: other than black

Raw material: metal withstanding corrosion

The swivel nut screwed must have at least 3 fillets engaged.

4) Height of the hex at least equal to the depth of the threading.
5) In case of existing groove the useable part of the threading has to be 7 mm as a minimum.
6) When a groove is designed, the diam. Of the groove must be equal to $21^{+0,5}_{-0}$ mm.

Key

1 = W width across flats

2 = NL nominal length

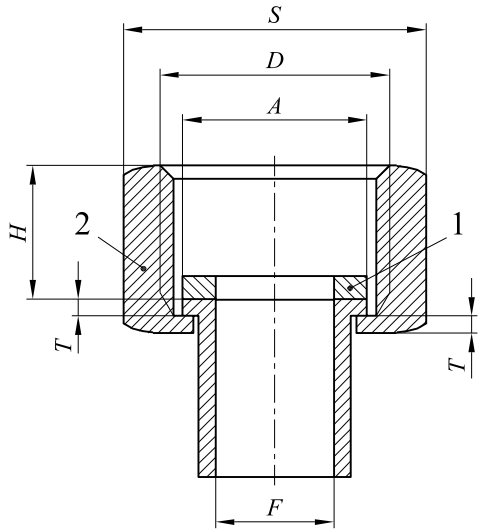
Swivel nut to be of any colour other than black.

Figure A.12 — Nipple and swivel nut – DN 12

NOTE 14 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 15 These details are not for the SC valve but for the hose.

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework *(continued)*

<table>
<tr><th>Currently used in</th><th>Existing national standard</th><th>Standardised design</th></tr>
<tr><td>Italy
Portugal</td><td>UNI 9891</td><td>Dimensions in millimetres
 

Key
1 gasket
2 hexagonal swivel nut
<table>
<tr><th>DN</th><th>F</th><th>S</th><th>D</th><th>A</th><th>H</th><th>T</th><th>Gasket dimensions</th></tr>
<tr><td>10</td><td>10</td><td>19</td><td>G⅜</td><td>14,5</td><td>8</td><td>1,5</td><td>14,5 × 10 × 2</td></tr>
<tr><td>15</td><td>12</td><td>24</td><td>G½</td><td>18,0</td><td>10</td><td>1,5</td><td>18,0 × 12 × 2</td></tr>
</table>
NOTE 16 The requirements of DN 8 and DN 12 in the standard apply to the sizes DN 10 and DN 15 given in this table.

Figure A.13 — Nipple and swivel nut – DN 8 and DN 12</td></tr>
<tr><td colspan="3">NOTE 17 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 18 These details are not for the SC valve but for the hose.</td></tr>
</table>

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework *(continued)*

Currently used in	Existing National Regulation	Standardised design
Netherlands	Gastec QA 34	Dimensions in millimetres

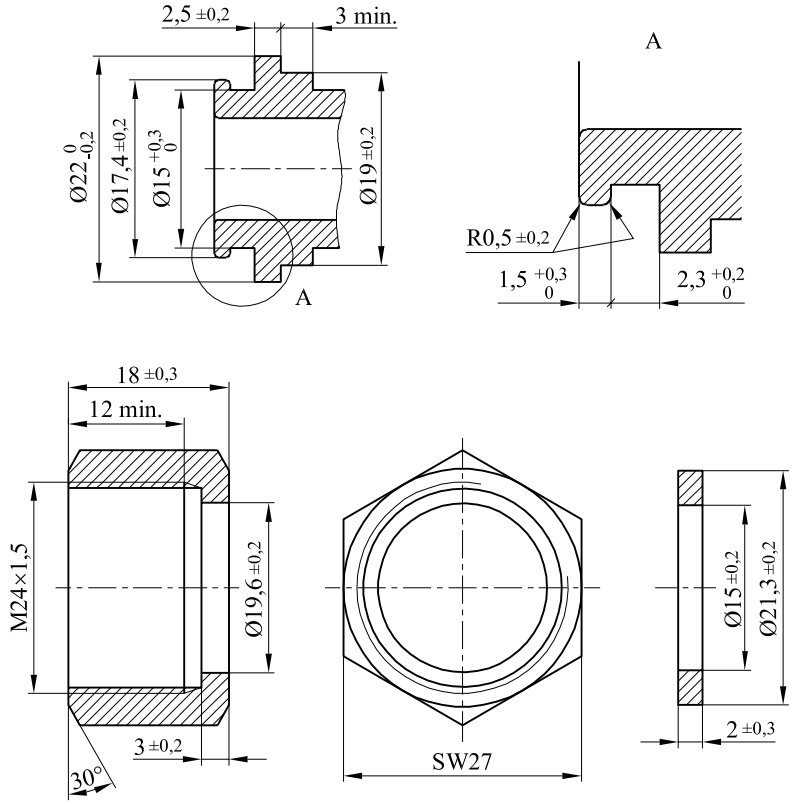
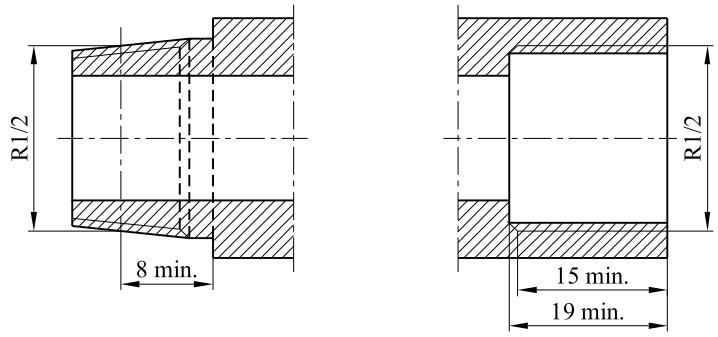


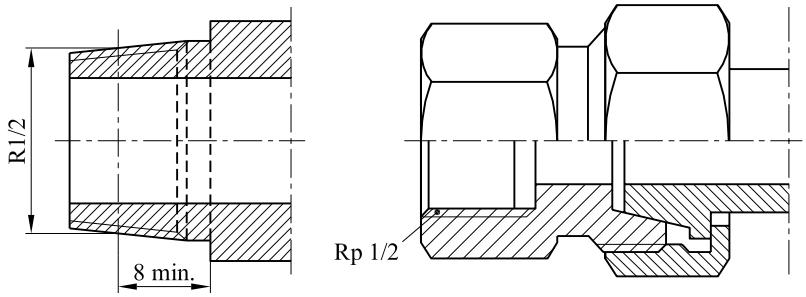
Figure A.14 — Nipple and swivel nut – DN 12

NOTE 19 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standard or regulation.

NOTE 20 These details are not for the SC valve but for the hose.

Table A.2 — Hose fitting design requirements for connection to the gas supply pipework *(concluded)*

<table>
<tr><th>Currently used in</th><th>Existing national standard</th><th>Standardised design</th></tr>
<tr><td>Belgium</td><td>EN 10226-1
for thread</td><td>Dimensions in millimetres
 

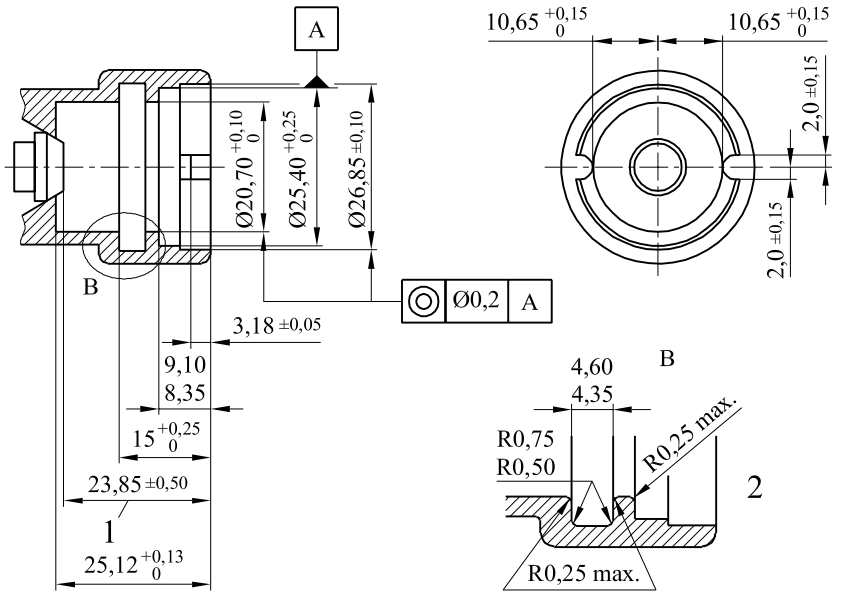
Fix nut R1/2 fitted to the hose
Figure A.15 — Fixed male thread and fixed female thread – DN 12</td></tr>
<tr><td>Belgium</td><td>EN 10226-1</td><td>Dimensions in millimetres
 

Fixed male thread
Nipple + swivel nut with metal to metal seal on the female thread
Figure A.16 — Fixed male thread and nipple + swivel nut with metal to metal seal on the female thread – DN 12</td></tr>
<tr><td colspan="3">NOTE 21 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 22 These details are not for the SC valve but for the hose.</td></tr>
</table>

Table A.3 — SC valve design requirements for connection to the pressure reduction device of portable gas bottles

Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989	Dimensions in millimetres



Key

1 SC valve in closed position

2 enlarged detail B showing dimensions of recess – uses O ring size 211 to BS 1806

Essential dimensions

Figure A.17 — SC valve – DN 12

NOTE The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

Table A.3 — SC valve design requirements for connection to the pressure reduction device of portable gas bottles (*continued*)

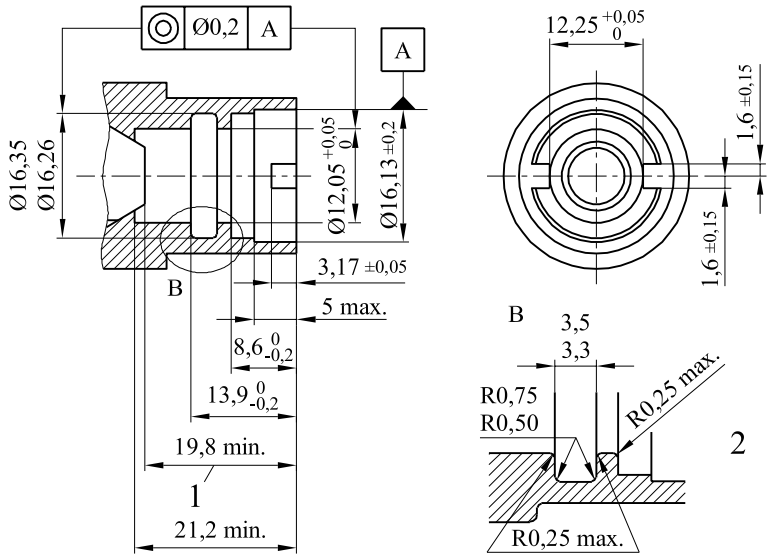
Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989	Dimensions in millimetres  **Key** 1 SC valve in closed position 2 enlarged detail showing dimensions of recess – uses O ring size 0116-24 to BS 4518 Essential dimensions

Figure A.18 — SC valve – DN 8

NOTE The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

Table A.3 — SC valve design requirements for connection to the pressure reduction device of portable gas bottles (*concluded*)

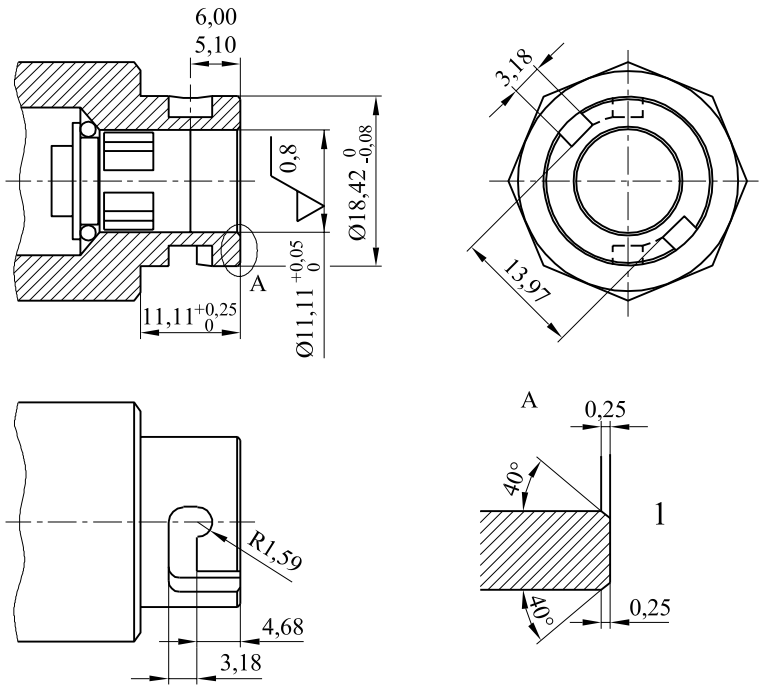
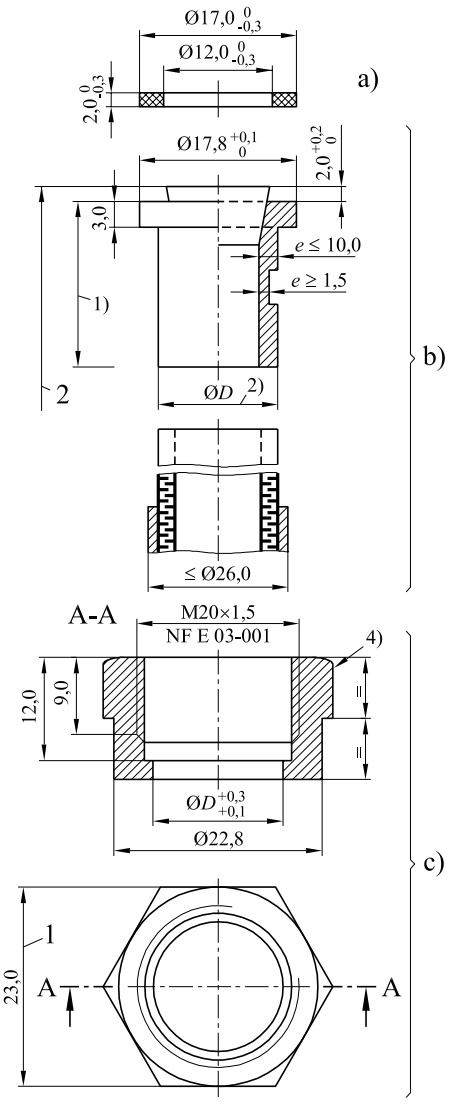
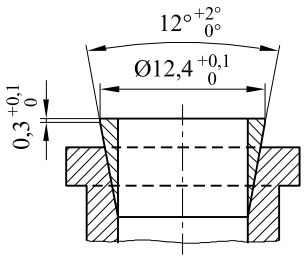
Currently used in	Existing national standard	Standardised design
Spain UK Ireland	UNE 60715-1 BS 669-1:1989	Dimensions in millimetres  **Key** 1 detail of end of socket General tolerance ± 0,13 **Figure A.19 — SC valve – DN 8**
NOTE The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.		

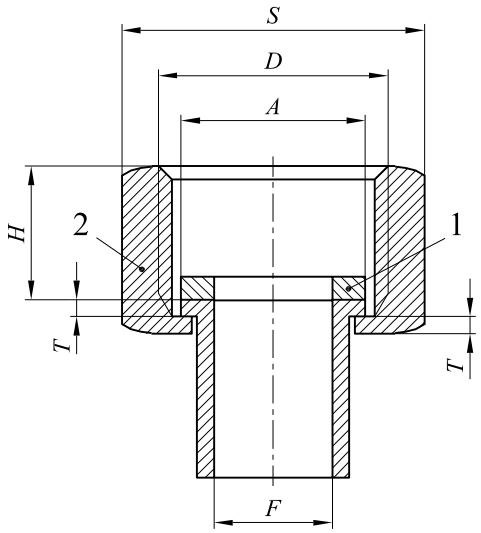
Table A.4 — Hose fitting design requirements for connection to the pressure reduction device of portable gas bottles

Currently used in	Existing national standard	Standardised design
France	NF D36-125	Dimensions in millimetres   Dimensions without tolerances have to be within ± 0,1 mm. Shapes and dimensions without specification are under manufacturer's initiative. **a) Gasket** Colour: other than black and possibility of orange identification Hardness (80^{+5}_{-4}) D.I.D.C. **b) Nipple** Raw material: metal withstanding corrosion 1) Size equal or greater than the height of the swivel nut. Angles will be edge cut to avoid any damage to the gasket. The upper faces (if any) will fulfil the sketch. 2) $D \leq 15{,}1$ mm **c) Swivel nut** Colour: other than black Raw material: metal withstanding corrosion 4) Height of the hex 50 % of the height of the swivel nut. **Key** 1 = W width across flats 2 = NL nominal length **Figure A.20 — Nipple and Swivel nut – DN 8**

NOTE 1 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 2 These details are not for the SC valve but for the hose.

Table A.4 — Hose fitting design requirements for connection to the pressure reduction device of portable gas bottles (*continued*)

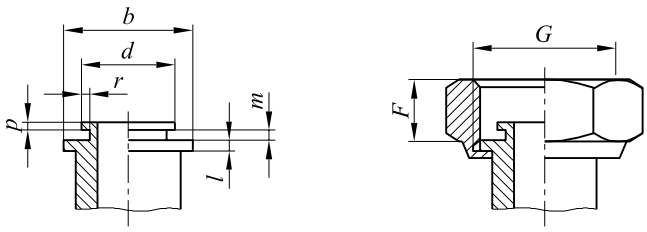
<table>
<tr><th>Currently used in</th><th>Existing national standard</th><th>Standardised design</th></tr>
<tr><td>Italy</td><td>UNI 9891</td><td>Dimensions in millimetres
 

Key
1 gasket
2 hexagonal swivel nut
<table>
<tr><th>DN</th><th>F</th><th>S</th><th>D</th><th>A</th><th>H</th><th>T</th><th>Gasket dimensions</th></tr>
<tr><td>10</td><td>10</td><td>19</td><td>G⅜</td><td>14,5</td><td>8</td><td>1,5</td><td>14,5 × 10 × 2</td></tr>
<tr><td>15</td><td>12</td><td>24</td><td>G½</td><td>18,0</td><td>10</td><td>1,5</td><td>18,0 × 12 × 2</td></tr>
</table>
NOTE 3 The requirements of DN 8 and DN 12 in the standard apply to the sizes DN 10 and DN 15 given in this table.

Figure A.21 — Nipple and swivel nut – DN 8 and 12</td></tr>
<tr><td colspan="3">NOTE 4 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

NOTE 5 These details are not for the SC valve but for the hose.</td></tr>
</table>

Table A.4 — Hose fitting design requirements for connection to the pressure reduction device of portable gas bottles (*concluded*)

<table>
<tr><th>Currently used in</th><th>Existing national standard</th><th>Standardised design</th></tr>
<tr><td>Spain</td><td>UNE 60715-2</td><td>
Dimensions in millimetres


<table>
<tr><th>DN</th><th>G</th><th>d (max) mm</th><th>b (min) mm</th><th>p (min) mm</th><th>r (min) mm</th><th>m (min) mm</th><th>l (min) mm</th><th>F (min) mm</th></tr>
<tr><td>8</td><td>¼"</td><td>8</td><td>11,0</td><td>1</td><td>1</td><td>2</td><td>2</td><td>7</td></tr>
<tr><td>12</td><td>½"</td><td>14</td><td>17,3</td><td>1</td><td>1</td><td>2</td><td>2</td><td>7</td></tr>
</table>
NOTE 6 The collar is optional. Other designs of the flat faced nipple support are also accepted provided they fulfil the function of holding back the seal. If this is achieved without a collar then the minimum height (m + p) needs to be 3 mm.

Figure A.22 — Nipple and swivel nut – DN 8 and DN 12
</td></tr>
<tr><td colspan="3">NOTE 7 The illustrations and dimensions given are purely schematic. For design and performance information refer to the national standards.

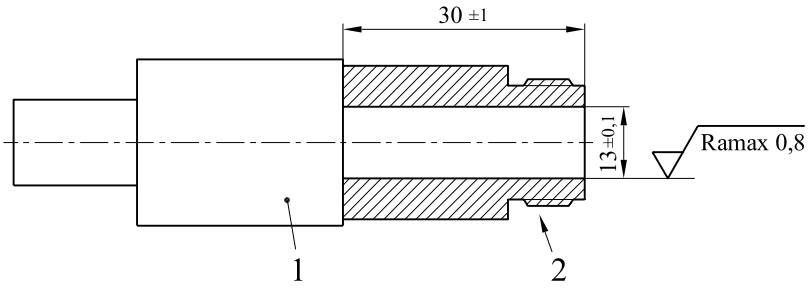
NOTE 8 The fittings shown are not for the SC valve but for the hose.</td></tr>
</table>

Annex B
(informative)

Test end fitting

NOTE The hose fitting designs (national standards) shown in Figures B.1 and B.2 are detailed in Annex A.

Dimensions in millimetres



Key

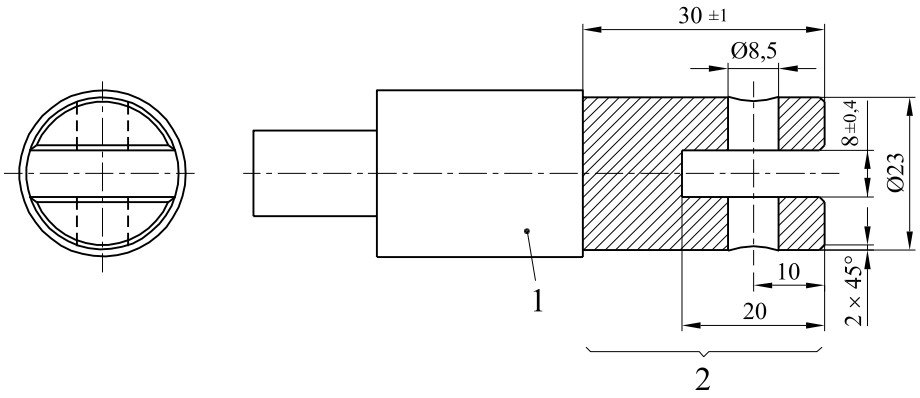
1 hose fitting design (national standard)

2 EN 10226-1 or EN ISO 228-1

Material: stainless steel, minimum hardness 500 vickers

Figure B.1 — Open test end fitting

Dimensions in millimetres



Key

1 hose fitting design (national standard)

2 (example) design of this part can be constructed to accommodate the test apparatus

Figure B.2 — Closed test end fitting

Annex ZA
(informative)

Clauses of this European Standard addressing the provision of the EU Construction Products Directive

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M/131 "Pipes, tanks and ancillaries not in contact with water intended for human consumption given" by the European Commission and the European Trade Association.

The clauses of this European Standard shown in this annex meet the requirements of the mandate given under the EU Construction Products Directive (89/106/EEC) as amended by Council Directive 93/68/EEC.

Compliance with these clauses confers a presumption of fitness of the safety SC valves covered by this Annex for the intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

WARNING: Other requirements and other EU Directives, not affecting the fitness for intended uses, can be applicable to the safety SC valves falling within the scope of this European Standard.

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through

http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm).

This annex establishes the conditions for the CE marking of the “Safety Gas Connection SC valve for use with metal hose assemblies for the connection of the fixed gas supply system to domestic appliances using gaseous fuels” intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as Clause 1 of this standard and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for Safety Gas Connection SC valves

Construction product: Safety Gas Connection SC valves **Intended use:** Attachment of metal hose assemblies used for the connection of domestic appliances using gaseous fuels			
Essential characteristics	**Requirement clauses in this and other European Standard(s)**	**Levels and/or classes**	**Notes**
Reaction to fire	5.14	See EN 13501-1	Class A1
Dimensional tolerances	5.3		± ,00 mm
Internal pressure	5.5.2		1,5 MOP Threshold
Tightness (gas)	5.4.2/5.19/5.20		Threshold below 15 cm^3/h
Effectiveness	5.6		m^3/h
Durability	5.12/5.16/5.17/5.18 5.11/5.15		Pass or fail
Resistance to high temp	5.12		Threshold level 650 ºC for 30 min
Mechanical strength (Tensile strength) (Bending resistance) (Torsion resistance) (Impact resistance)	5.7/5.8/5.9/5.10		Threshold levels > 440 N > 25 N · m > 40 N · m > 10 J
Safeguard against overloading of handle	5.19		Threshold above 15 N · m
Release of dangerous substances	4.7		Substance “x” less than “y” ppm (or NPD)

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

ZA.2 Procedure for attestation of conformity of SC valves

ZA.2.1 System of attestation of conformity

The system of attestation of conformity of Safety Gas Connection SC valves indicated in Table ZA.1 in accordance with the Decision of the Commission 99/472/EC (amended by 2001/596/EC) as given in Annex III of the mandate for "Pipes, tanks and ancillaries not in contact with water intended for human consumption", Mandate M/131, is shown in Table ZA.2 for the indicated intended use and relevant level or class.

Table ZA.2 — Systems of attestation of conformity

Product	Intended uses	Classes	Attestation of conformity systems
SC valves	used for the transport/distribution/storage of gas/fuel intended for the supply of building heating/cooling systems, from the external storage reservoir or the last pressure reduction unit of the network to the inlet of the boiler/heater/cooler system(s) of the building(s).	–	3
	In installations not subjected to reaction to fire regulations,		
	In installations in areas subject to reaction to fire regulations	A1(1), A2(1),B(1),C(1)	1
		A1(2),A2(2), B(2),C(2),D,E	3
		(A1 to E)(3),F	4

System 1: See Directive 89/106/EEC (CPD) Annex III.2.(i), without audit testing of samples.

System 3: See Directive 89/106/EEC (CPD) Annex III.2.(ii), Second possibility.

System 4: See Directive 89/106/EEC (CPD) Annex III.2(ii), Third possibility

Amended by (2001/596/EC)

(1) Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. the addition of fire retardants or a limiting of organic material).

(2) Products/materials not covered by footnote 1.

(3) Products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of Classes A1 according to Commission Decision 96/603/EC.

The attestation of conformity of the SC valves in Table ZA.1 shall be based on the evaluation of conformity procedures indicated in Tables ZA.3.1 and ZA.3.2 resulting from application of the clauses of this or other European Standard indicated therein.

Table ZA.3.1 — Assignment of evaluation of conformity tasks for SC valves under System 1 – only applicable for coated valves not classified A.1 CWFT and intended to be used in areas subject to reaction to fire regulations

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1	6.3
	Further testing of samples taken at factory	All characteristics of Table ZA.1	6.3.2
	Initial type testing (ITT) by a notified test lab	All characteristics of Table ZA.1 except Reaction to Fire	6.2
Tasks under the responsibility of the product certification body	Initial type testing	Reaction to fire other than Class A.1	5.14.2
	Initial inspection of factory and of FPC	Parameters related to reaction to fire other than Class A.1	6.3
	Continuous surveillance, assessment and approval of FPC	Parameters related to reaction to fire other than Class A.1	6.3

Table ZA.3.2 — Assignment of evaluation of conformity tasks for SC valves under AoC System 3

Tasks		Content of the task	Evaluation of conformity clauses to apply
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1	6.3
	Further testing of samples taken at factory	All characteristics of Table ZA.1	6.3.2
	CWFT declaration by the manufacturer	Reaction to fire if Class A.1	5.14.1
	Initial type testing (ITT) by a notified test lab	All characteristics of Table ZA.1 except reaction to fire if Class A.1	6.2

ZA.2.2 EC Certificate and Declaration of conformity

(In case of products with system 1): When compliance with the conditions of this annex is achieved, the certification body shall draw up a certificate of conformity (EC Certificate of conformity), which entitles the manufacturer to affix the CE marking. The certificate shall include:

— name, address and identification number of the certification body;

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market, if he takes responsibility for CE marking.

— description of the product (type, identification, use, ...);

— provisions to which the product conforms (i.e. Annex ZA of this EN);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);

— number of the certificate;

— conditions of validity of the certificate, where applicable;

— name of, and position held by, the person empowered to sign the certificate.

In addition, the manufacturer shall draw up and retain a declaration of conformity (EC Declaration of conformity) including the following:

— name and address of the manufacturer, or his authorised representative established in the EEA;

— name and address of the certification body;

— description of the product (type, identification, use, ...), and a copy of the information accompanying the CE marking;

NOTE 2 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

— provisions to which the product conforms (i.e. Annex ZA of this EN), and a reference to the ITT report(s) and factory production control records (if appropriate);

— particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);

— number of the accompanying EC Certificate of conformity;

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative.

(In case of products under system 3): When compliance with the conditions of this annex is achieved, the manufacturer or his agent established in the EEA shall draw up and retain a declaration of conformity (EC Declaration of conformity), which entitles the manufacturer to affix the CE marking. This declaration shall include:

— name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;

— description of the product (type, identification, use,...), and a copy of the information accompanying the CE marking;

— provisions to which the product conforms (i.e. Annex ZA of this EN);

— particular conditions applicable to the use of the product, (e.g. provisions for use under certain conditions);

— name and address of the notified laboratory(ies);

— name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

ZA.3 CE marking and labeling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EC and shall be shown on the SC valve (or when not possible it may be on the accompanying label, the packaging or on the accompanying commercial documents e.g. a delivery note)].

The following information shall be durable and clearly visible on the SC valve:

— name or identifying mark and registered address of the producer;

— the last two digits of the year in which the marking is affixed;

— reference to this European Standard – EN 15069:2008.

The above and the following information shall accompany the CE marking symbol which may be on the packaging or in the case of bulk supply on documentation accompanying the product:

— description of the product: generic name, material, dimensions, … and intended use;

— information on those relevant essential characteristics listed in Table ZA.1 which are to be declared:

— declared values and, where relevant, level or class (including “pass” for pass/fail requirements, where necessary) to declare for each essential characteristic as indicated in "Notes" in Table ZA1;

— “No performance determined” for characteristics where this is relevant.

The “No performance determined” (NPD) option may not be used where the characteristic is subject to a threshold level. Otherwise, the NPD option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State of destination.

Figure ZA.1 gives an example of the information to be given on the product, label, packaging and/or commercial documents.

CE 01234	*CE conformity marking, consisting of the "CE"-symbol given in Directive 93/68/EEC.* *Identification number of the notified laboratory (if relevant)*
AnyCo Ltd, PO Box 21, B-1050 **08** 01234-CPD-00234	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the marking was affixed* *Certificate number (if relevant)*
EN 15069:2008 Safety gas connection SC valves for the connection of domestic appliances using gaseous fuel **Reaction to fire……..: Class A1** **Dangerous substances : Substance "x" = less than "y" ppm (or NPD)** **Other characteristics indicated** **Dimensional tolerances…….± 0,1 mm** **Internal pressure ……..0.5 bar** **Tightness…….below 15 cm³/h** **Mechanical strength** (Tensile strength resistance)…… 1 000 N (Bending resistance)…….. 25 Nm (Torsion resistance)…….. Pass (Impact resistance)…….. Pass **Durability** Connection and disconnection……5 000 cycles Rotation durability of the connector…5 000 cycles Thermal ageing……Pass **Resistance to high temperature…650 ºC for 30 min** **Safeguard against overloading of handle …Pass**	*No. of European Standard* *Description of product* *and* *information on regulated characteristics.* *The manufacturer may either indicate achieving the thresholds (pass/fail) if the thresholds are clear in this document or declare actual values if these exceed the minimum thresholds*

Figure ZA.1 — Example CE marking information

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations need not be mentioned.

Bibliography

[1] BS 669-1:1989, *Flexible hoses, end fittings and sockets for gas burning appliances — Specification for strip-wound metallic flexible hoses, covers, end fittings and sockets for domestic appliances burning 1st and 2nd family gases*

[2] BS 1806:1989, *Specification for dimensions of toroidal sealing rings ('O'-rings) and their housings (inch series)*

[3] BS 4518:1982, *Specification for metric dimensions of toroidal sealing rings ('O'-rings) and their housings*

[4] DIN 3383-1, *Hose assemblies and connection valves for gas; safety hose assemblies; safety valves with quick connecting device*

[5] DIN 3383-2, *Hose assemblies and connection valves for gas — Part 2: Hose assemblies for rigid connection*

[6] DVGW VP 635-1, *Safety gas connection valves for metallic and/or nonmetallic gas pipes for the connection of flexible metallic or nonmetallic hose assemblies*

[7] DVGW VP 635-2, *Safety flexible hose assemblies from metallic or nonmetal materials for safety gas connection valves according to DVGW VP 635-1*

[8] DVGW VP 618-1, *Safety hose assembly with socket joint with knurled nut and connecting fitting for connection to safety gas connection valves according to DIN 3383-1*

[9] DVGW VP 618-2, *Safety hose assembly with socket joint with knurled nut and connecting fitting for connection to safety gas connection valves according to DVGW VP 635-1*

[10] GASTEC QA Approval Requirement 69, *Metal gas taps for installations inside buildings*, dated 01-01-1989

[11] GASTEC QA Approval Requirements 34, *Flexible rubber hoses for connecting gas appliances*, dated 01-01-1989

[12] NBN D 04-002, *Hoses with mechanical unions for connection of household appliances using natural gas*

[13] NF D36-121, *Household economy — Corrugated metallic flexible piping for the external connection of domestic appliances using gaseous fuels distributed by networks*

[14] NF D36-125, *Household economy — Corrugated metallic flexible piping for the external connection of domestic appliances using butane and propane from cylinders*

[15] ÖNorm M 7438, *Safety hose assemblies for gas with quick connecting device device and safety connection valves — Model M for installation in hot zones*

[16] UNE 60715-1, *Flexible hoses for connection of installations to burning appliances. Assemblies of flexible connection with security socket and thread. Part 1: Spirally-metallic*

[17] UNE 60715-2, *Flexible hoses for connection of installations to burning appliances. Assemblies of flexible connection with security socket and thread. Part 2: Continuous helicoidal corrugated stainless steel flexible connection assemblies*

[18] UNI 9891, *Corrugated flexible safety metallic hose assemblies for the connection of gas appliances for domestic and similar uses*

[19] EN 331, *Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings*

[20] EN 331/prA1, *Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings*

[21] EN 682, *Elastomeric Seals — Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

[22] EN 751 (all parts), *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water*

[23] EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

[24] EN 14800, *Corrugated safety metal hose assemblies for the connection of domestic appliances using gaseous fuels*

[25] prEN 15070:2007, *Elastomeric packed metallic stripwound safety gas hose assemblies for the connection of domestic appliances using gaseous fuels*

[26] 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)*

[27] EN ISO 9000, *Quality management systems — Fundamentals and vocabulary (ISO 9000:2005)*

[28] ISO 7-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

[29] ISO 691:2005, *Assembly tools for screws and nuts — Wrench and socket openings — Tolerances for general use*

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