INTERNATIONAL STANDARD

ISO 9896

First edition
1996-04-15

Plastics traps for discharge pipework systems inside buildings

Siphons en matières plastiques pour les systèmes d'évacuation à l'intérieur des bâtiments

Reference number
ISO 9896:1996(E)

Contents

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Annexes

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9896 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

Annexes A to K form an integral part of this International Standard.

Introduction

The plastics traps covered by this International Standard are sufficiently different from the other fittings of a pipework discharge system specified in the product specifications for pipework discharge systems being prepared by TC 138/SC 1 to require a separate International Standard.

This page intentionally left blank

Plastics traps for discharge pipework systems inside buildings

Section 1: General

1.1 Scope

This International Standard specifies requirements for traps for discharge pipework systems for domestic use within buildings, i.e. pipework systems for the discharge of domestic waste waters[1].

1.2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 161-1:1978, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series.*

ISO 228-1:1994, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 3633:1991, *Unplasticized poly(vinyl chloride) (PVC-U) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 7671:1991, *Polypropylene (PP) pipes and fittings (jointed by means of elastomeric sealing rings) for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 7675:1991, *Chlorinated poly(vinyl chloride) (PVC-C) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 7682:1991, *Acrylonitrile/butadiene/styrene (ABS) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 8770:1991, *High-density polyethylene (PE-HD) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

1) For the definition of "domestic waste waters", see annex A or refer to national codes of practice.

Section 2: Sanitary appliance traps

2.1 Scope

This section specifies requirements for sanitary appliance traps for discharge installations inside buildings for the evacuation of domestic waste waters.

2.2 Definitions

For the purposes of this section, the following definitions apply.

2.2.1 trap: A fitting designed to permit the evacuation of domestic waste water into a discharge system and, by means of a water seal, to prevent the passage of foul gases in the opposite direction.

2.2.2 sanitary appliance trap: A trap designed for connection to a plumbing appliance.

2.2.3 demountable trap: A trap which can be repeatedly removed from and reassembled on the associated appliance and waste pipe, and which has means of access for cleaning, satisfying the requirements of 2.5.1.

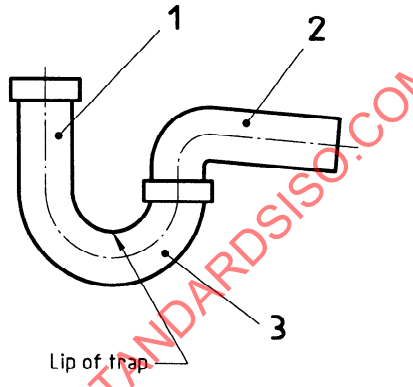
2.2.4 tubular trap: A trap having uniform cross-sectional area throughout (see figure 1 [2]).

2.2.5 bottle trap: A trap in which the division between the inlet and the outlet is formed either by an internal tube (see figure 2 [2]), or a partition (see figure 3 [2]) within the body of the trap.

2.2.6 urinal trap: A trap designed for use only with a bowl-urinal having a horizontal spigot outlet. The seal depth of such traps is measured in combination with the urinal. As an example, see figure 4 [2].

2.2.7 lip of trap: The lowest portion, inside a trap, of the barrier which enables a water seal to be provided (see figures 1, 5 and 6).

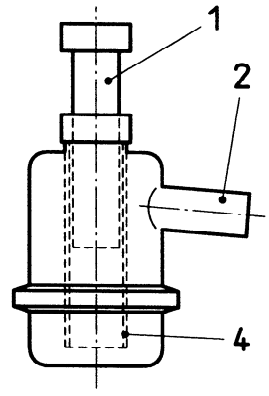
2.2.8 depth of water seal: The depth of water h which would have to be removed from a fully charged trap before gases and odours at atmospheric pressure could pass through the trap (see figure 5).



Key

1 Inlet connection, which is optionally adjustable
2 Outlet pipe
3 "U" bend

Figure 1 — Tubular trap

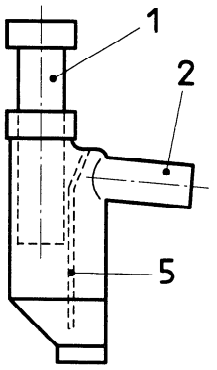


Key

1 Inlet connection, which is optionally adjustable
2 Outlet pipe
4 Dip tube

Figure 2 — Bottle trap with dip tube

2) Diagrammatic representation only.



Key

1 Inlet connection, which is optionally adjustable
2 Outlet pipe
5 Internal partition

Figure 3 — Bottle trap with internal partition

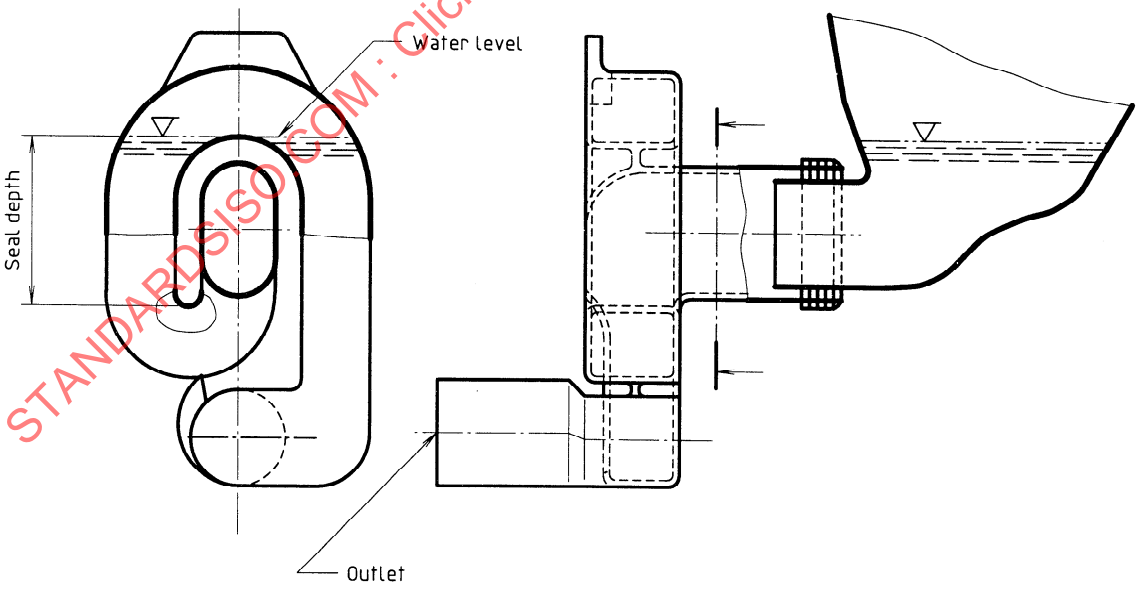
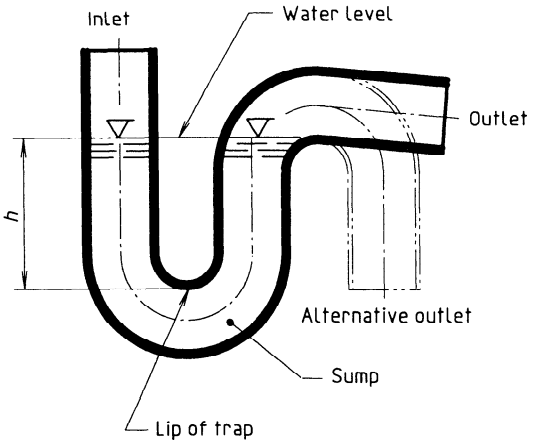


Figure 4 — Urinal trap



NOTE — The minimum seal depth is made up of the following elements:

a) self-siphonage allowance;
b) external siphonage allowance;
c) evaporation;
d) absolute minimum.

Figure 5 — Depth of water seal

2.3 Materials

2.3.1 General

The material used to manufacture the body of the trap shall conform to the performance requirements specified for discharge pipes and fittings of the relevant materials in ISO 3633 (PVC-U), ISO 7675 (PVC-C), ISO 7682 (ABS), ISO 7671 (PP) or ISO 8770 (PE-HD). These are referred to throughout this International Standard as the "head documents". It should be noted that not all of these materials are necessarily suitable for manufacturing all components. Where other materials are used for seals, backnuts, etc., the assembly shall be capable of meeting the performance requirements of this International Standard.

2.3.2 Elastomeric seals

Elastomeric seals in traps shall conform to the requirements given in the head documents for elastomeric seals in fittings made of the same material as the trap.

2.4 Appearance

The internal surfaces of traps shall be free from grooving or blistering and without flash or other protrusions likely to ensnare debris and cause blockages to an extent that would prevent conformity to this International Standard.

2.5 Geometrical characteristics

2.5.1 Nominal trap sizes

Traps are designated by the sizes of both the inlet and outlet connections (e.g. 1 1/4 in × 32 is a trap with a G 1 1/4 in threaded inlet conforming to ISO 228-1 and a 32 mm outlet to fit ISO 161-1 components).

2.5.2 Access for cleaning

2.5.2.1 Traps shall either be demountable (see 2.5.2.2) or capable of meeting the self-cleansing test specified in 2.8.4.

2.5.2.2 A demountable trap, if a bottle trap, shall have a removable bottle, or, if not a bottle trap, shall have either a union situated between the lip and the invert of the outlet of the trap or a cleaning eye not less than 19 mm in diameter. Except in the case of traps intended only for use in restricted clearance under baths or shower trays, such a cleaning eye shall be positioned on the underside of the sump of the trap.

NOTE 1 Minimum diameters greater than 19 mm may be required by local regulations.

2.5.3 Additional inlets

Additional inlets, when not in use, shall be watertight.

2.5.4 Positions of inlets

Traps shall have all inlets positioned before the water seal except that, where provided, an overflow connection shall be at such a level that the highest part of its bore is:

a) anywhere on the inlet side of the trap;

b) if elsewhere, not higher than the lip of the trap (see figure 6).

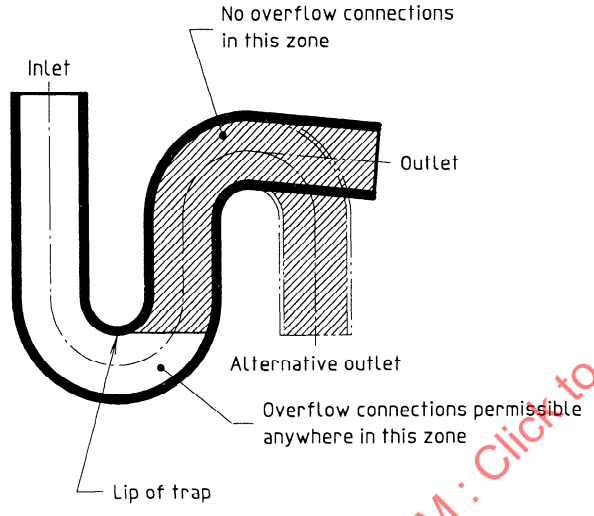


Figure 6 — Positions of inlets and outlets

2.5.5 Inlet connections

If a trap does not have a connection or adaptor supplied by the manufacturer, then it shall be suitable for connection to one of the following, of a size given in table 2:

a) a thread conforming to ISO 228-1;

b) a pipe meeting the requirements of ISO 161-1.

2.5.6 Outlet connections

If a trap does not have a connection or adaptor supplied by the manufacturer, its outlet shall be capable of connection to an ISO pipe or fitting of a size which is associated in tables 2 and 3 with the inlet size of that trap.

2.5.7 Seal depth

The seal depth of a trap shall be a minimum of 50 mm except in traps manufactured for use where building codes call for a greater minimum depth.

It shall not be possible to reduce the depth of seal below the designed depth, and the design of the inlet and outlet connections shall not affect the seal depth.

2.5.8 Wall thickness

Wall thickness shall be defined by the manufacturer.

2.6 Physical and mechanical characteristics

2.6.1 Torque test for coupling threads

When tested in accordance with annex B, all inlet nut connections shall resist a torque of 15 N·m without the connection splitting or the threads jumping. All other threaded connections shall resist a torque of 15 N·m without splitting or the thread jumping.

2.6.2 Elevated-temperature cycling test

Traps shall conform to the requirements of the 1 500-cycle or 5-cycle elevated-temperature cycling test given in the head documents.

2.6.3 Oven test (stress-relief test)

Moulded components of traps shall conform to the requirements of the stress-relief test in an air-circulating oven given in the head document for moulded fittings of the same material as the component. Traps comprising more than one component shall not be tested in the assembled state. Test pieces should preferably be components which have not been assembled, but components taken from assembled traps may be tested when they can be dismantled without strain or damage.

2.7 Chemical characteristics

2.7.1 Stress cracking

When tested in accordance with annex C, traps shall neither crack nor show any severe surface delamination, as detected with normal unaided vision.

2.8 Functional characteristics

2.8.1 Discharge rate

When tested in accordance with annex D, traps of sizes up to 50 mm or 2 in shall conform to the discharge rates given in table 1[3].

Table 1

Inlet size	Flow rate[1] l/s
25 mm or 1 in	0,5
32 mm or 1 1/4 in	0,65
40 mm or 1 1/2 in	0,8
50 mm or 2 in	1,2

1) These figures may be revised following publication of accepted CEN documents.

2.8.2 Seal retention test

2.8.2.1 This test is only required to be carried out on traps having a greater volume on the inlet side than on the outlet side and having a seal depth of less than 60 mm.

2.8.2.2 When tested in accordance with annex E, the trap shall retain its seal to such an extent that the curve plotted from experimental results does not enter the square enclosed by the axes of the diagram and lines drawn parallel to each axis passing through the value 350 MPa on the other axis (see figure 7).

2.8.3 Antiblockage

Traps shall be capable of accommodating the passage of a 10-mm-diameter ball.

The ball shall pass through the trap from inlet to outlet merely by tilting the trap in the appropriate directions, no other force being applied to the ball.

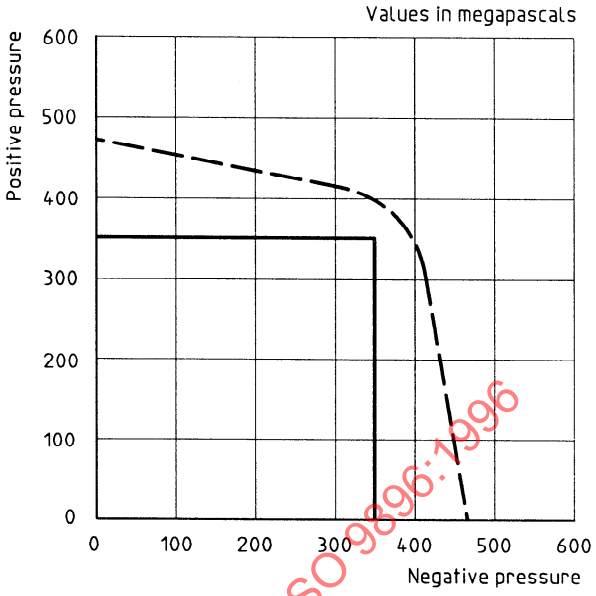


Figure 7 — Seal retention test diagram

2.8.4 Self-cleansing test for traps that are not demountable

When tested with glass balls in accordance with the method described in annex F, at least 70 % of the balls shall pass through the trap.

2.8.5 Watertightness

The trap, including its inlet and outlet connections, shall conform to the pressure and watertightness requirements given in the relevant head document for a discharge pipe and fitting of the same material and size as the trap.

2.9 Marking

The minimum marking required on a trap shall comprise the following:

a) the manufacturer's name or trade mark;

b) the nominal size in accordance with tables 2 and 3, unless this is marked on the packaging;

c) the material (symbol or code) from which the main body is made.

3) This test is a measure of the effective cross-sectional area and hydraulic resistance of the trap.

Table 2 — Nominal trap sizes

Dimensions in millimetres except where inches are indicated

Inlet size	Outlet size						
	32	40	50	63	75	90	110
25	25 × 32	25 × 40	25 × 50				
1''	1'' × 32	1'' × 40	1'' × 50				
32	32 × 32	32 × 40	32 × 50				
1 1/4''	1 1/4'' × 32	1 1/4'' × 40	1 1/4'' × 50				
40		40 × 40	40 × 50				
1 1/2''		1 1/2'' × 40	1 1/2'' × 50				
50			50 × 50				
2''			2'' × 50				
63				63 × 63			
75					75 × 75		
90						90 × 90	
110							110 × 110

NOTE — Dimensions 1'', 1 1/4'', 1 1/2'' and 2'' refer to ISO 228-1 threaded connections; all other dimensions refer to ISO 161-1 sizes.

Table 3 — Inlet/outlet sizes

Dimensions in millimetres except where inches are indicated

Inlet size	Outlet size (nominal size, internal diameter)		
	32	40	50
1 1/4''	1 1/4'' × 32		
1 1/2''		1 1/2'' × 40	
2''			2'' × 50

NOTE — Dimensions 1 1/4'', 1 1/2'' and 2'' refer to ISO 228-1 threaded connections; unlike table 2, the outlet sizes are nominal internal diameters.

Section 3: Gully traps

3.1 Scope

This section specifies requirements for gully traps for discharge installation inside buildings for the evacuation of domestic waste waters at low and/or high temperatures.

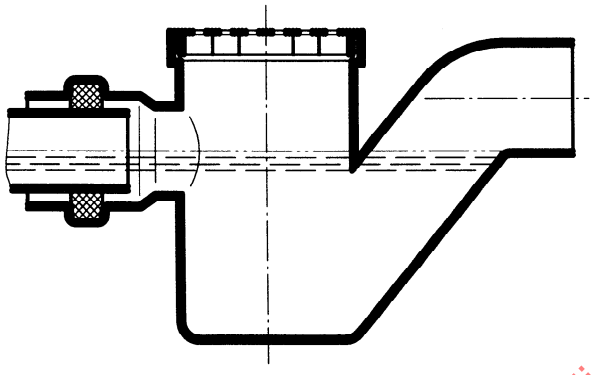
3.2 Definitions

For the purposes of this section, the following definitions apply.

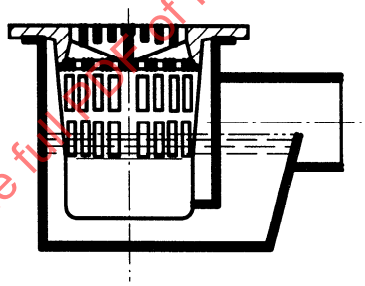
3.2.1 gully: A discharge fitting, the top of which is a grating or sealed cover capable of installation at floor level, intended to receive waste water either through perforations in a grating or from pipes connected to the body of the fitting, or both. A gully may include an integral trap.

Typical designs are shown in figure 8.

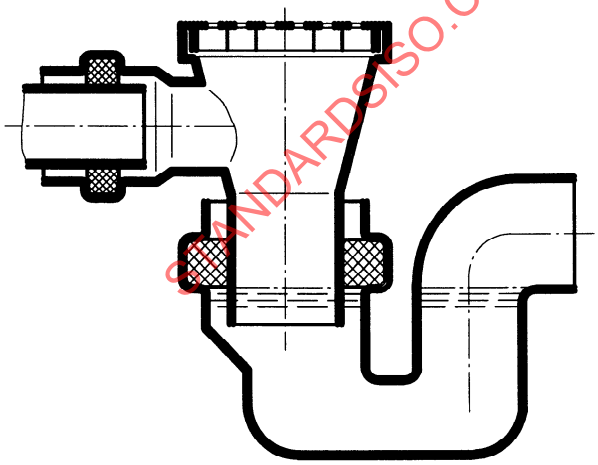
3.2.2 gully trap: A trap suitable for connection to the outlet of a gully which does not incorporate a trap.



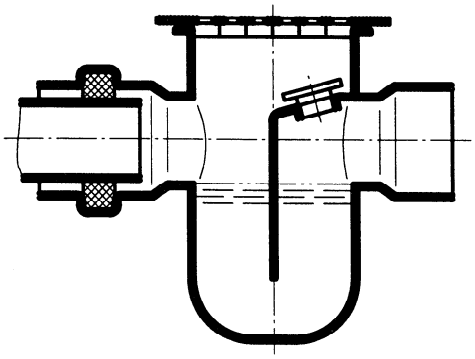
a)



b)



c)



d)

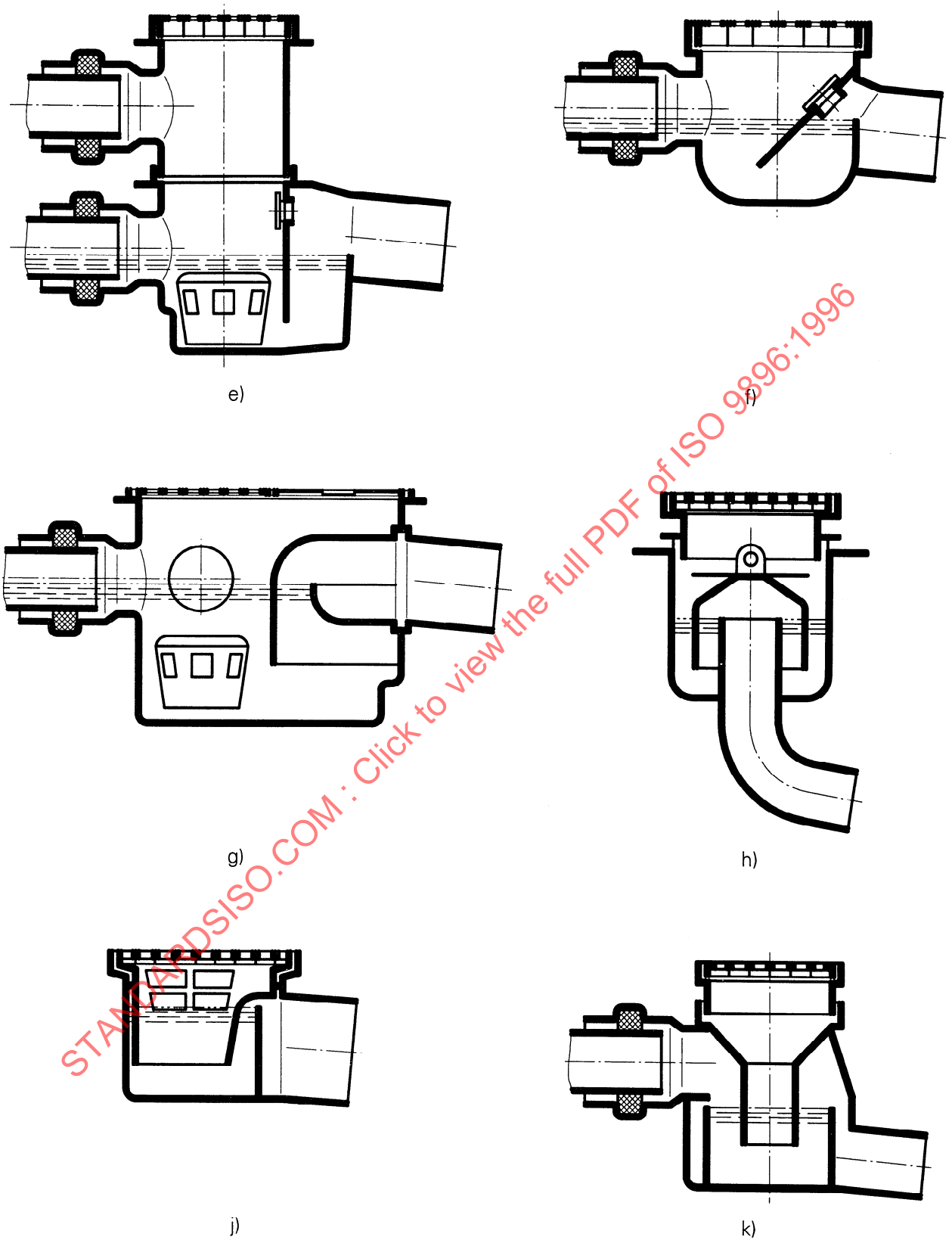


Figure 8 — Typical gullies

3.2.3 demountable gully: A gully or gully trap which has a removable dividing tongue or removable sludge-bucket.

3.2.4 lip of gully: The lowest portion, inside a gully, of the barrier which enables a water seal to be provided (see figure 9).

3.2.5 depth of water seal: The depth of water h which would have to be removed from a fully charged gully before gases and odours at atmospheric pressure could pass through the gully (see figure 9).

3.3 Materials

3.3.1 General

The material used to manufacture the body of the gully shall conform to the performance requirements specified for discharge pipes and fittings of the relevant materials in ISO 3633 (PVC-U), ISO 7675 (PVC-C), ISO 7682 (ABS), ISO 7671 (PP) or ISO 8770 (PE-HD). These are referred to throughout this International Standard as the "head documents". It should be noted that not all of these materials are necessarily suitable for manufacturing all components. Where other materials are used for seals, gratings, etc., the assembly shall be capable of meeting the performance requirements of this International Standard.

3.3.2 Elastomeric seals

Elastomeric seals in gullies shall conform to the requirements given in the relevant head document for elastomeric seals in fittings made of the same material as the gully.

3.3.3 Gratings

Gratings (grilles) or surface plates of gullies may be of materials other than plastics, such as metals.

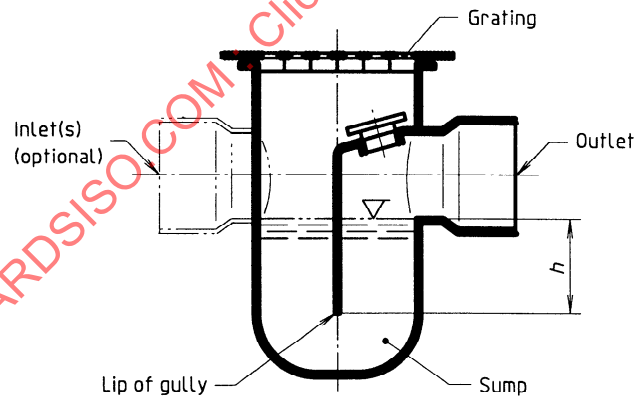
3.4 Appearance

The internal and external surfaces of gullies shall be free from grooving, blistering or any other surface defect. In particular, the internal surfaces shall be as smooth as practicable without flash or protrusions likely to ensnare debris and cause blockage.

3.5 Geometrical characteristics

3.5.1 Nominal gully size

Gullies are designated by the size of the outlet. Nominal outlet sizes within the scope of this specification are 40 mm, 50 mm, 63 mm, 75 mm, 90 mm, 110 mm, 125 mm and 160 mm.



NOTE — The minimum seal depth is made up of the following elements:

a) self-siphonage allowance;
b) external siphonage allowance;
c) evaporation;
d) absolute minimum.

Figure 9 — Depth of water seal

3.5.2 Access for cleaning

Gullies shall have provision for cleaning and rodding the outlet pipe system leading to and from the gully. When a hole with an air-tight cover or plug is provided for rodding, the clear diameter of such an opening shall not be less than 32 mm in a gully having a nominal outlet size of 110 or below and not less than 50 mm in a gully of nominal outlet size 125 or 160.

NOTE 2 Local regulations may require cleaning openings of greater diameters.

3.5.3 Additional inlets

Additional inlets, when not in use, shall be fitted with a suitable plug and shall be watertight.

3.5.4 Positions of inlets

Gullies shall have all inlets positioned before the water seal or before the lip of the gully.

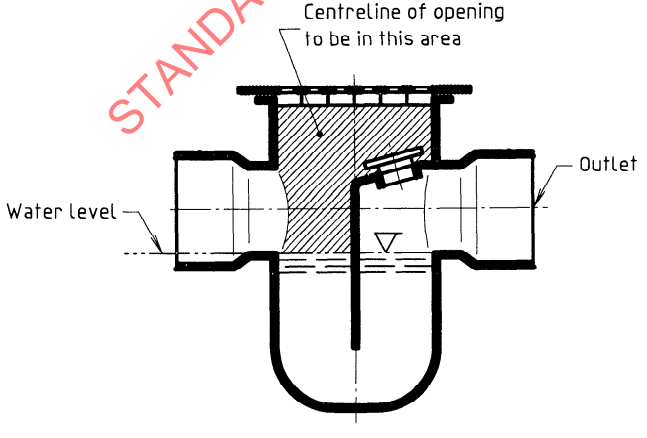
The centreline of any inlet shall not be lower than the invert of the outlet and shall be on the inlet side of the trap (see figure 10).

3.5.5 Inlet connections

Inlet connections shall be suitable for connection to a surface plate or grating and/or one or more of the following options:

a) a thread conforming to ISO 228-1;

b) a pipe meeting the requirements of ISO 161-1.



NOTE — Figure is diagrammatic only.

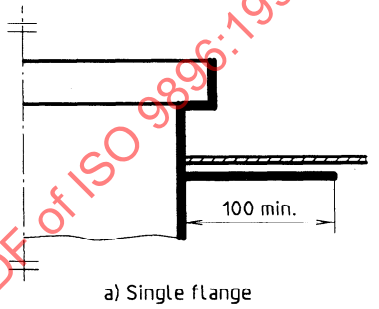
Figure 10 — Positions of inlets

3.5.6 Assembly instructions

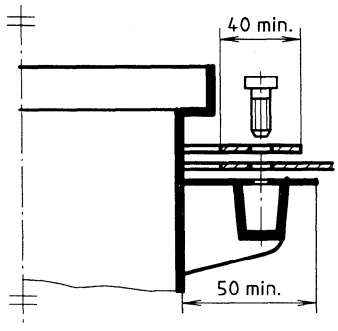
The manufacturer shall give detailed instructions regarding assembly and installation.

3.5.7 Gullies for membrane-covered floors (see figure 11)

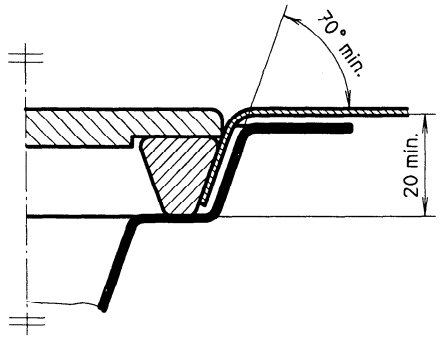
Dimensions in millimetres



a) Single flange



b) Flange and clamping ring (loosely fitting flange)



c) Conical recess and locking ring

Figure 11 — Gullies for membrane-covered floors

When the watertightness of the joint between the floor covering and the gully depends on adhesively bonding the floor covering to a single flange, that flange shall not be less that 100 mm wide [see figure 11a)].

When a clamping ring (loosely fitting flange), not less than 40 mm wide, is provided, the fixed flange shall be not less than 50 mm wide. In this case, the joint may be made watertight by an elastomeric seal [see figure 11b)].

When the plastic flooring is bent downwards through an angle of not less than 70° from the horizontal and clamped to the side of a recess in the gully, that recess shall not be less than 20 mm deep [see figure 11c)].

3.5.8 Seal depth

The seal depth of gullies shall be a minimum of 50 mm except in gullies manufactured for use where building codes call for a greater minimum depth.

It shall not be possible to reduce the depth of seal below the designed depth, and the design of the inlet and outlet connections shall not affect the seal depth.

3.5.9 Dimensions of apertures in gratings

Holes or slots in an inlet grating supplied with a gully may be of any shape. If the grating is intended for use in locations inaccessible to wheeled traffic, the holes or slots shall pass a solid metal ball 6 mm in diameter and not pass a ball 8 mm in diameter.

3.5.10 Outlet connections

Outlet connections shall be spigots or sockets as specified in the head documents.

3.6 Physical and mechanical characteristics

3.6.1 Physical stability under external load

Gullies are classified according to the location in which they are to be installed.

Gullies having gratings or surface plates of ductile iron, steel, non-ferrous metals, plastics or such materials in combination with concrete shall be subjected to the proof and deflection tests described in annex G. Only the proof test is required for gullies having gratings of cast iron. Proof loads are given in table 4. The specimen shall not crack or rupture before the proof load is reached.

The load applied in the deflection test is 2/3 proof load. After the load is removed, the residual deflection may exceed neither 1/250 of the inside width of the grating nor 2 mm. These tests shall be performed on three specimens.

Table 4 — Load used in proof and deflection tests

Class[1)]	Proof load P kN	Deflection test load kN
H	1,5	1
K	3	2
L	15	10
M	125	83,3

1) The use of these classes shall be as defined in national codes of practice.

3.6.2 Elevated-temperature cycling test

Gullies shall conform to the requirements of the 1 500-cycle or 5-cycle elevated-temperature cycling test given in the head documents.

In the case of demountable gullies and gully traps, after the gully or trap has been subjected to this elevated-temperature cycling test, any removable component shall still be capable of being dismantled and re-fixed.

When the sealing action of the trap depends upon the integrity of a removable component, the elevated-temperature cycling test shall be followed by a seal retention test using positive air pressure as given in 3.8.2.

3.7 Chemical characteristics

3.7.1 Stress cracking requirement for gullies

Gullies made of new materials shall be tested by the method described in annex C and shall neither crack nor show any severe surface delamination.

3.8 Functional characteristics

3.8.1 Discharge rate

When tested in accordance with annex H, gullies fitted with gratings for floor drainage shall conform to the discharge rates given in table 5.

Table 5 — Minimum discharge rates for gullies

Nominal outlet size mm	Minimum discharge rate l/s	Head over grating mm
40	0,65	15
50	0,8	
63	0,8	
75	0,8	
90	0,8	
110	1,6	
125	2,8	
160	4	

Gullies fitted with inlets to receive water from pipes shall be capable of passing a flow of 0,9 l/s through any one inlet, and a total flow of 1,2 l/s through any combination of two inlets without water passing upwards through the apertures in the grating.

3.8.2 Seal retention test

After conforming to the requirements of 3.6.1, the floor gully shall be connected to a pressure-tight pipe installation with a volume of about 20 l, the trap of the floor gully filled with water and an air pressure of 400 Pa induced via the outlet.

During the test, the floor gully, the pipe installation and the water shall have the same temperature (± 2 °C) as the ambient temperature in the laboratory.

After a period of 0,25 h (15 minutes), the pressure shall not have decreased more than 10 % (40 Pa).

The test is then repeated using a negative air pressure of 400 Pa.

This test shall be used as a production quality control test for gullies having welded, cemented or mechanical joints in the seal area. It is required only as a type test for other gullies.

3.8.3 Antiblockage

The gully or gully trap shall be capable of accommodating the passage of a 10-mm-diameter ball.

The ball shall pass through the gully or gully trap from inlet to outlet merely by tilting the gully or gully trap in the appropriate directions, no other force being applied to the ball.

3.8.4 Self-cleansing

This test is not required for gullies which are demountable as defined in 3.2.3.

When the gully is tested in accordance with annex J, at least 50 % of the glass balls shall pass through the gully.

3.8.5 Tightness of connection between floor gully and flooring

Floor gullies intended for use with plastics-membrane floor coverings shall be tested by the method given in annex K and shall not leak.

3.9 Marking

3.9.1 Marking of gullies

Markings shall be placed on the main body of the gully. The minimum marking required comprises the following:

a) manufacturer's name or trade mark;

b) the nominal size unless this is marked on the packaging;

c) the material (symbol or code) from which the main body is made.

When there is a removable component, this shall be marked with the manufacturer's name or trademark.

3.9.2 Marking of gratings

Gratings (grilles) or surface plates shall be marked with their class, as given in table 4, in addition to the manufacturer's name or trademark.

Annex A
(normative)

Definition of domestic waste waters

domestic waste waters: Waters discharged and diverted into the sewage system, in particular waters that have become altered in composition and have become fouled (or impure) by being used domestically (including waters from flushing systems containing human excrement and, if necessary or authorized, animal excrement, and waters from normal households, offices, old people's homes, hotels, schools, etc.).

Such waters never have a temperature exceeding 100 °C continuously for more than 2 min and have a pH value normally in the range pH 2 to pH 12.

Annex B
(normative)

Torque test for nuts

B.1 Principle

The purpose of the test is to establish the suitability of inlet connection nuts.

B.2 Apparatus

B.2.1 Steel "Go" gauge, set on the minimum diameter of the respective size of ISO 228-1 thread form.

B.2.2 Spanner, to fit the external shape of the nut to be tested without giving support to the position of threads under test.

B.2.3 Torque spanner.

B.3 Procedure

Fit the trap inlet connection nut to the "Go" gauge (B.2.1), or a nut other than an inlet nut to the male threaded component with which it is intended to be used.

Attach the torque spanner (B.2.3) and tighten to a torque of 15 N·m.

Note whether the thread jumps and examine the nut to see whether it is split.

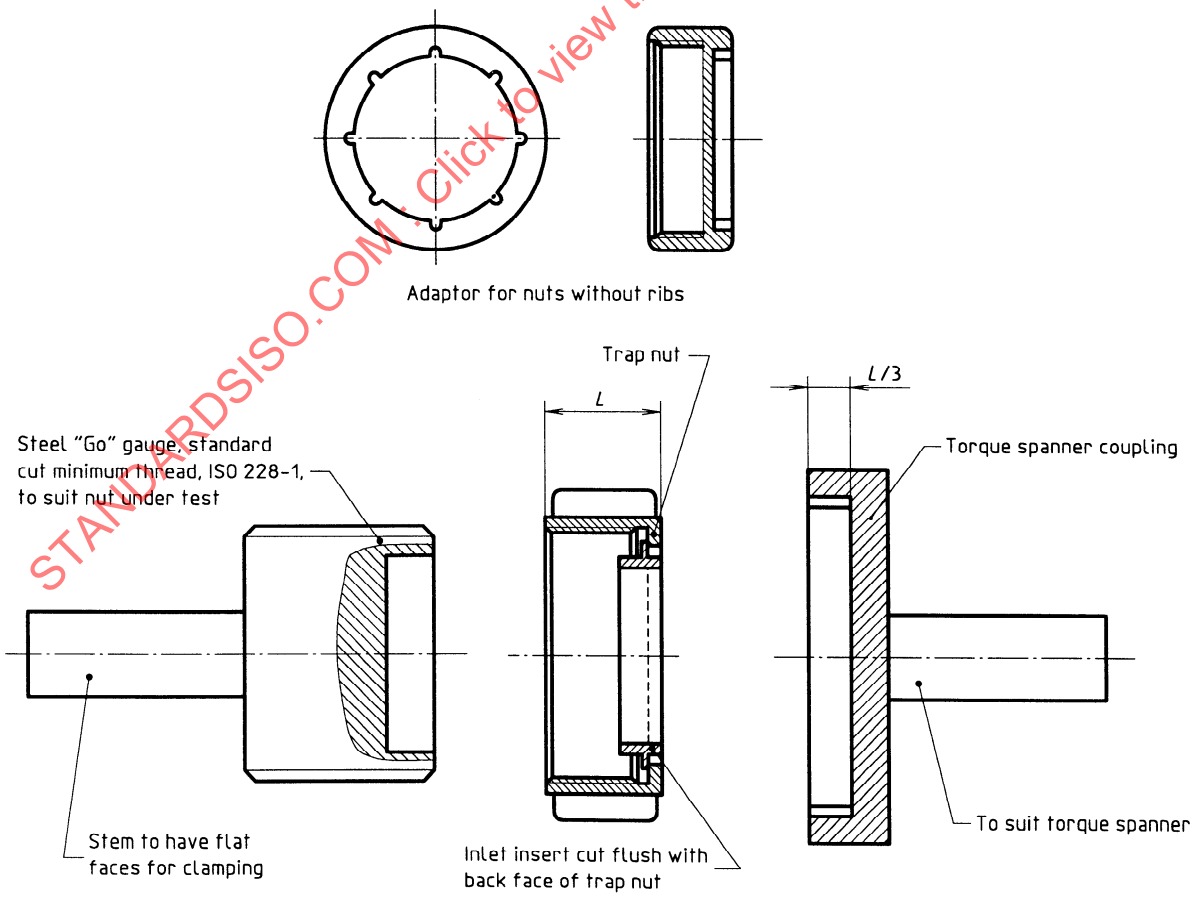


Figure B.1 — Torque test for inlet nuts

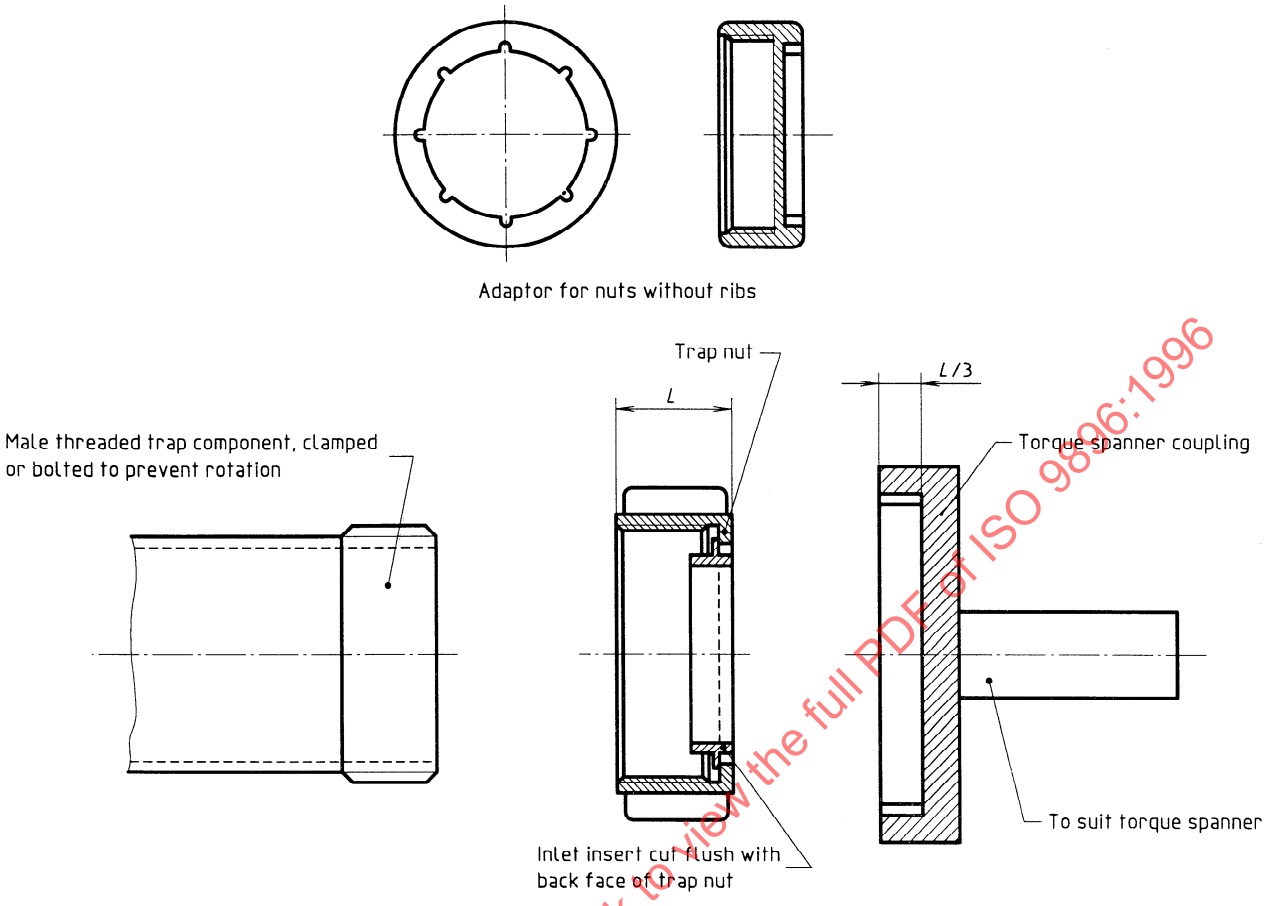


Figure B.2 — Torque test for nuts other than inlet nuts

Annex C
(normative)

Stress cracking test

C.1 Apparatus

C.1.1 Bath, designed to accommodate the required number of test specimens immersed in an aqueous solution of sodium alkyl aryl sulfonate (C.2.1), with temperature controls, forced circulation and sufficient insulation so as to maintain a temperature of 80 °C ± 2 °C throughout the working volume of the bath.

C.2 Reagent

C.2.1 Sodium alkyl aryl sulfonate, 2 % (*m/m*) solution, maintained at a temperature of 80 °C ± 2 °C.

C.3 Procedure

Submerge the specimens in the solution and examine after 24 h for signs of cracking, delamination or distortion. If no signs of failure are noted, continue testing until such signs occur, up to a maximum period of six days.

It is permissible to test any number of specimens simultaneously or add further specimens to the bath, providing identification control is practised to ensure that accurate immersion times are maintained.

C.4 Test report

The test report shall include at least the following information:

a) all details necessary for the identification of the traps or gullies under test;

b) a reference to this method of test, i.e. annex C of ISO 9896;

c) whether or not the traps or gullies cracked or showed severe surface delamination during the test;

d) the date of completion of the test.

Annex D
(normative)

Rate-of-flow test for traps

D.1 Principle

This test is designed to show that the smallest cross-sectional area of the trap is able to pass water at an adequate rate.

The flow is measured at which the trap maintains a specified head of water in a tank discharging though a clear-bore connection.

D.2 Apparatus

D.2.1 Tank.

D.2.2 Water supply, passing through a flowmeter.

D.3 Procedure

Fit the trap on to the tank (D.2.1), using a waste outlet from which any grid or other obstruction to the clear bore of the waterway has been removed.

Run water from the water supply (D.2.2) into the tank and adjust the rate of flow until the head of water in the tank is 150 mm.

When this water level has been maintained steady for 3 min, note the rate indicated by the flowmeter.

D.4 Test report

The test report shall include at least the following information:

a) all details necessary for the identification of the trap(s) under test;

b) a reference to this method of test, i.e. annex D of ISO 9896;

c) the rate(s) of flow in the trap(s);

d) the date of the test.

Annex E
(normative)

Seal retention test

E.1 Principle

This test is designed to give an indication of the ability of a trap to retain its water seal when exposed to repeated applications of negative pressure.

E.2 Apparatus

The essential features of the apparatus are illustrated in figure E.1. Additionally, there shall be a means of applying positive pressure.

E.3 Procedure

Check the depth of seal of the trap by measurement.

With the trap full and the flap closed, adjust the negative pressure $-p_1$ in the duct to some arbitrary chosen value by means of the valve (see figure E.1).

Open the flap and check that the trap is full. Close the flap for 5 s. Do this 10 times. Lower the residual water level in the trap by 5 mm.

Apply a small positive pressure to the duct and slowly increase this, noting the maximum pressure $+p_1$ reached immediately before air begins to bubble through the trap.

Establish other values of positive pressure $+p_2$, $+p_3$, etc., corresponding to other values of negative pressure $-p_2$, $-p_3$, etc. Plot the curve $+p$ against $-p$.

Determine the performance index of the trap as given by the point at which this curve intersects the diagonal passing through all points at which $+p = -p$.

E.4 Test report

The test report shall include at least the following information:

a) all details necessary for the identification of the trap under test;

b) a reference to this method of test, i.e. annex E of ISO 9896;

c) whether or not the curve plotted from the values of $+p$ versus $-p$ enters the square shown in figure 7, the diagonal of which extends from $+p = 0 = -p$ to $+p = 350$ MPa $= -p$; also report, in megapascals, as the performance index of the trap, the value on the curve at which $+p = -p$;

d) the date of the test.

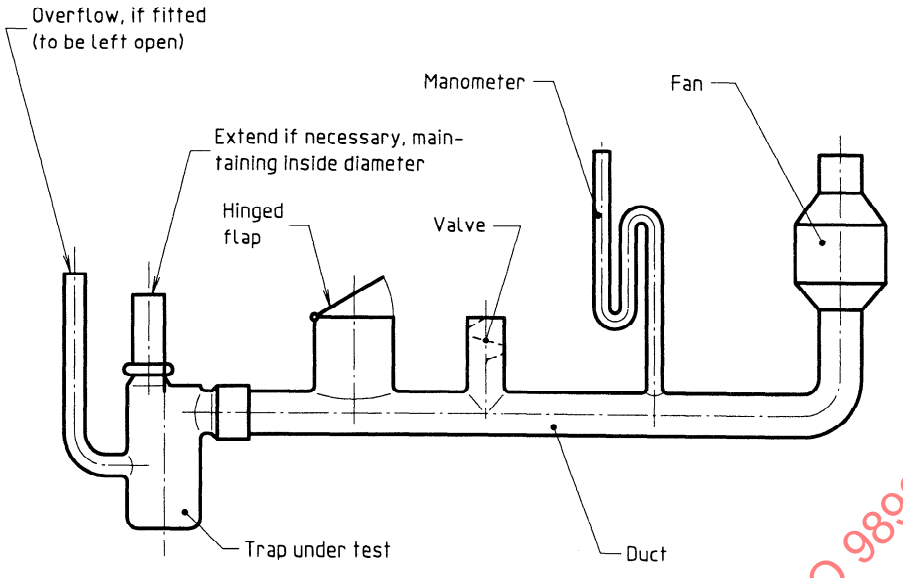


Figure E.1 — Essential features of the apparatus

Annex F
(normative)

Self-cleansing test for traps

F.1 Apparatus

F.1.1 Box, on the underside of which a trap can be mounted, as shown in figure K.1, by a waste outlet from which the grating has been cut out.

F.1.2 Glass balls, having a diameter of approximately 5 mm and a nominal density of 3,0 g/cm^3.

F.1.3 Supply of water, maintained at between 5 °C and 10 °C, which can be supplied to the test assembly at the specified rate (see F.2.3).

F.2 Procedure

F.2.1 Mount the trap beneath the box (F.1.1).

F.2.2 Place sufficient glass balls (F.1.2) to occupy a volume of 600 cm^3 in a weighed container, and reweigh to determine the mass of the glass balls.

F.2.3 Pass water at a temperature between 5 °C and 10 °C through the assembly at a rate of 0,3 l/s for 60 s and, during the first 30 s, pour the 600 cm^3 of glass balls into the trap.

F.2.4 Collect, dry and weigh the balls which have passed through the trap.

F.2.5 Repeat steps F.2.2 to F.2.4 twice to obtain three results in all.

F.2.6 Calculate the average mass of the quantity of glass balls passing through the trap.

F.3 Test report

The test report shall include at least the following information:

a) all details necessary for the identification of the trap(s) under test;

b) a reference to this method of test, i.e. annex F of ISO 9896;

c) the mass of the 600 cm^3 of glass balls;

d) the average mass of the quantity of glass balls which passed through the trap;

e) the date of the test.

Annex G
(normative)

Load tests for strength and deflection

G.1 Principle

The purpose of these tests is to confirm the strength and safety of the gully under the external loads which may be expected in the locations for which it is classified.

G.2 Apparatus

G.2.1 Test machine, with means of measuring applied loads to an accuracy of 1 % of the load.

G.2.2 Platen, of the size given in table G.1 for the size of gully to be tested.

G.2.3 Supporting framework and packing, as requisite.

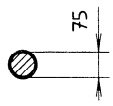
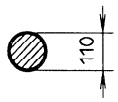
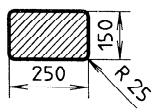
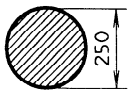
G.3 Procedure

Mount the gully on the bed of the test machine (G.2.1), if necessary concreted in or mounted in a special framework (G.2.3), so that it is firmly supported.

The gully shall be so placed that the centre — intersection of diagonals — of its grating is at the centre of the platen (G.2.2) and the surface of the grating is perpendicular to the applied force.

Table G.1 — Platen sizes for testing gratings

Dimensions in millimetres

Shape of grating and internal width w	Platen shape and size
$w \leqslant 140$	
$140 < w \leqslant 200$	
$200 < w \leqslant 300$	For $a \leqslant 300$ 
	For $a > 300$ 
$w > 300$	
The bottom edges of the platens shall be rounded off with a radius not exceeding 3 mm.	