BRITISH STANDARD

BS EN
329 : 1997

Sanitary tapware — Waste fittings for shower trays — General technical specifications

The European Standard EN 329 : 1993 has the status of a British Standard

ICS 91.140.70

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee B/505, Waste water engineering, to Subcommittee B/505/11, Waste fittings for sanitary appliances, upon which the following bodies were represented:

Association of Consulting Engineers
British Plastics Federation
Clay Pipe Development Association Limited
Concrete Pipe Association
Department of the Environment (Property Services Agency)
Fibre Cement Manufacturers' Association Limited
Institute of British Foundrymen
Institute of Building Control
Institution of Water and Environmental Management
METCOM
Plastics and Rubber Institute
Water Services Association of England and Wales

This British Standard, having been prepared under the direction of the Sector Board for Building and Civil Engineering, was published under the authority of the Standards Board and comes into effect on 15 February 1997

The following BSI references relate to the work on this standard:
Committee reference B/505/11
Draft for comment 90/12877 DC

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Amendments issued since publication

Amd. No.	Date	Text affected

Contents

National foreword

This British Standard has been prepared under the direction of Technical Committee B/505[1)] Waste water engineering and is the English language version of EN 329 : 1993 *Sanitary tapware — Waste fittings for shower trays — General technical specifications*, published by the European Committee for Standardization (CEN).

EN 329 was produced as a result of European discussion in which the UK took an active part. The UK voted against this standard at Enquiry and Formal Vote Stage but the analysis of voting, in accordance with clause **5.1** of the Common CEN/CENELEC Rules, resulted in a positive vote. In consequence the document was accepted as a European Standard.

The standard covers only fittings suitable for use with 40 and 50 ND waste pipes, and G 1¼ B and G 1½ B threaded connections. The fittings are not compatible with waste pipes in general use in the UK.

The standard is now under revision in CEN/TC/165/WG/11 (B/505/11).

WARNING. The incorrect use of products conforming to this standard in a UK waste water system could result in a health hazard.

Cross-references

Publication referred to	Corresponding British Standard
ISO 228-1 : 1982	BS 2779 : 1986 *Specification for pipe threads for tubes and fittings where pressure-tight joints are not made on the threads (metric dimensions)*
EN 248 : 1986	BS EN 248 : 1992 *Sanitary taps: general technical specifications for electrodeposited nickel chrome coatings*
EN 251 : 1990	BS EN 251 : 1992 *Shower trays. Connecting dimensions*

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 14, an inside back cover and a back cover.

[1)] Work on this standard was begun under Technical Committee SEB/2 (CEN/TC 34), was transferred to Technical Committee B/504 (CEN/TC 164) before being passed to B/505 (CEN/TC 165) .

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 329

December 1993

UDC 621.646.2 : 644.6 : 696.144.2 : 621.648.2 : 620.1

Descriptors: Sanitary valves, showers, drainage, specification, classifications, materials specifications, equipment specifications, dimensions, hydraulic properties, verification

English version

Sanitary tapware — Waste fittings for shower trays — General technical specifications

Robinetterie sanitaire — Dispositifs de vidage des receveurs de douche — Spécifications techniques générales

Sanitärarmaturen — Ablaufgarnituren für Duschwannen — Allgemeine technische Anforderungen

This European Standard was approved by CEN on 1993-12-22. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

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

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CEN

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

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

Foreword

This European Standard has been prepared by CEN/TC 165, Waste water engineering, the secretariat of which is held by DIN.

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 June 1994, and conflicting national standards shall be withdrawn at the latest by June 1994.

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

Contents

1 Scope

The aim of this European Standard is to specify:

– the dimensional and hydraulic properties which the waste systems of shower trays shall have;

– the test methods enabling these properties to be verified.

Quality control and quality assurance problems will be handled by the component bodies.

2 Field of application

This standard applies to the waste systems of shower trays installed in areas for body hygiene (bathrooms etc.) whatever the purpose of the building.

It applies to the waste fittings defined in clause **4**.

It does not apply to waste systems for sinks, basins, bidets and baths which will be covered by separate standards.

3 Normative references

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

ISO 228-1 : 1982	*Pipe threads where pressure-tight joints are not made on the threads — Part 1: Designation, dimensions, tolerances*
EN 248 : 1986	*Sanitary tapware — General technical specifications for electro-deposited nickel chrome coatings*
EN 251 : 1990	*Shower trays — Connecting dimensions*

4 Definitions

For the purposes of this standard, the following definitions apply:

4.1 waste outlet

Device fitted on the sanitary appliance whereby the water can be evacuated from the bowl (direct evacuation and possible evacuation through the overflow). It can be sealed by means of a flap or plug with or without grille. If not, it has a grille.

4.2 overflow

Device whereby water can also be evacuated from the bowl over a certain level well above the waste outlet.

Shower traps are not always fitted with an overflow. This is however mandatory where the trap has a sealing device (unless there is a centralized floor trap in the bathroom).

4.3 trap

Hydraulic sealing device between the waste outlet and the evacuation pipe, the purpose of which is to prevent polluted air from the evacuation pipes coming into contact with the air in the inhabited areas, without obstructing the evacuation of the liquids.

5 Classification

5.1 Waste outlets

Waste outlets may be manufactured in one piece or may comprise various pieces joined together mechanically. They can be:

a) flap type outlets;

b) plug type outlets;

c) grille type outlets;

each of them with (or without) trap.

5.2 Traps

– Tube trap (U or S or P)

– Bottle trap with division or dip tube.

6 Materials, design and manufacture

6.1 Recommended materials

All waste systems shall be made of materials which can withstand the action of hot water of maximum temperature 95 °C and domestic waste water.

The materials listed may refer to ISO standards where these exist.

The different parts of the waste system shall be made from the following materials:

For waste outlets and traps:

– copper based alloy;

– plastics materials;

– stainless steels;

– proofed cast iron;

– or any other material giving equivalent results;

– or a combination of two or more of these materials.

For the grilles (overflow, waste):

– corrosion-proof metal materials, stainless steel or plastics materials.

For the waste mechanisms:

– stainless steel or corrosion proofed metallic materials or plastics materials.

For the waste outlet flaps and plugs:

– corrosion-proofed metallic materials or stainless steel;

– elastomer or other materials giving equivalent results or a combination of these materials.

For the joints: elastomer or any other material giving equivalent results.

6.2 State of apparent surfaces

Apparent surfaces as defined in EN 248 shall comply with the requirements of clauses **4**, **5** and **6** of this standard.

6.3 Quality control of the coating

For electrolytically coated surfaces, the quality of the coating shall be checked in compliance with the requirements of clause **7** of EN 248.

6.4 Testing of plastics materials waste systems

Waste systems made of plastics materials or combinations of plastics materials shall be tested as follows:

6.4.1 *Quality control of the plastic mouldings*

6.4.1.1 *Test apparatus*

An oven adjustable to (150 ± 2) °C, except for polyethylene where the temperature is (120 ± 2) °C, with heating power such that the temperature is reached again within a maximum of 15 min after introduction of the waste fittings.

6.4.1.2 *Procedure*

Place the various constituent parts of the waste fittings in the oven which has been previously heated to (150 ± 2) °C or (120 ± 2) °C, as the case may be, so that they cannot touch each other during the test.

Check that the temperature returns to (150 ± 2) °C or (120 ± 2) °C as the case may be in less than 15 min; note the time when the oven reaches this temperature as the start of the exposure period.

After 30 min, remove the test pieces from the oven, taking care not to deform or damage them.

Allow the test pieces to cool until they can be handled.

Examine each of them to check for any surface faults which appear in particular on the weld line or around an injection point if there is one.

6.4.1.3 *Requirements*

After testing, the test pieces shall not show:

– any opening over the entire thickness of the wall at any point whatsoever on a weld line;

– any surface deterioration penetrating through more than half the thickness of the wall, in particular around an injection point.

NOTE. Possible deformations are permitted in the test pieces.

6.4.2 *Behaviour with regard to thermal shock*

6.4.2.1 *Procedure*

Mount the fitting with free outlet on the same type of appliance as it is fitted in normal use. Subject it to five cycles of water circulation, each cycle comprising:

– 15 min of water flow at (95 ± 1) °C at a flow rate of 0,5 l/s;

– immediately afterwards, 10 min of water flow at (20 ± 5) °C at a flow rate of 0,5 l/s.

6.4.2.2 *Requirements*

No leakage shall be observed. At the end of the test, no permanent deformation shall be present.

NOTE. Leaks are tolerated during the first two cycles as long as they are small, and they can be eradicated by tightening the assembly nuts. If this is the case, after the first two cycles, five complete cycles shall be made as described above.

6.5 Testing the internal stresses for drawn brass components

6.5.1 *Test method*

The components of waste fittings of bent brass tube shall be tested as follows:

a) degrease the waste fittings to be tested;

b) soak them in a 25 % ammonia solution (density 0,946 g/cm^3 to 0.950 g/cm^3) at a temperature of between 18 °C and 28 °C for 30 min.

6.5.2 *Requirement*

After drying, check with the naked eye that no cracks have appeared.

7 Requirements and verification of waste fittings

7.1 Dimensional properties

The standardized waste fitting dimensions shall permit:

– on the one hand, their assembly and interchangeability on the shower tray, in accordance with the standardized dimensions in EN 251;

– on the other hand, their connection to the evacuation network.

7.1.1 ***Waste outlets with overflow*** (figure 1 — table 1)

7.1.2 ***Single waste outlets*** (figure 2 — table 2)

Trap dimensions are indicated in table 3

7.1.3 ***Traps*** (figure 3 — table 3)

7.1.4 ***Waste outlet/trap units*** (table 4)

There are two types:

a) waste outlet/trap unit with trap in top of waste outlet (figure 4);

b) waste outlet/trap unit with trap in bottom of waste outlet (figure 5).

Table 1. Waste outlet with overflow (see figure 1)

Definition	**Dimensions of waste outlets**	
	Symbols	**Values** (mm)
Diameter of the waste outlet	G	49 max.
External diameter of flange	E	70 ± 1
Weight of cylindrical part of flange	Z	1 max.
Total height of waste outlet	h	Values such that assembly is possible on a support between 6 and 16 thick
Cone angle of contact of waste outlet on tray	α	Verification by gauge (figure 6)
Bottom of waste outlet before trap	A	ISO 228-1-G 1½ B
Useful thread length for tightening connecting nut	l	11 min
Contact surface of bottom of waste outlet	C	ø 65 min
Vertical distance between axis of overflow hole and bottom of tray waste outlet	L_2	165 to 260
Horizontal distance between axis of waste outlet and axis of overflow	L_1	110 to 170
Diameter of overflow	J	49 max.
Clamping thickness of overflow	N	Value allowing clamping on wall thickness of between 2 mm and 10 mm
Space taken up by overflow	X	60 max.
Diameter of overflow grille	Q	Between 65 and 80

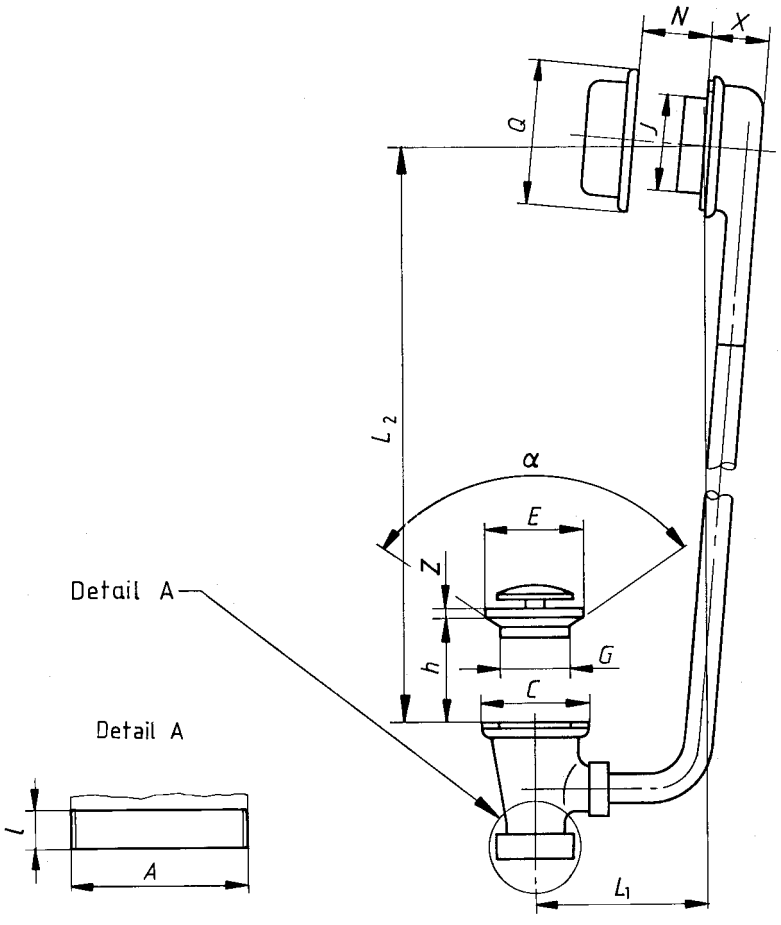


Figure 1. Waste outlet with overflow

Table 2. Single waste outlet (see figure 2)

Definition	**Dimensions of waste outlets**			
	Symbols	**Values** (mm)		
Diameter of outlet	*G*	49 max.	59 max.	87 max.
External diameter of flange	*E*	70 ± 1	$85\ ^{+0}_{-5}$	$115\ ^{+0}_{-5}$
Height of cylindrical part of flange	*Z*	1 max.	1 max.	1 max.
Cone angle of contact of waste outlet on shower tray	α	verification by gauge		
		(figure 6)	(figure 7)	(figure 8)
Clamping height of waste outlet	*h*	Value allowing clamping on a support:		
		6 to 16	6 to 25	6 to 25
Total height of waste outlet	*L*	50 min.	50 min.	50 min.
Waste outlet connection	*A*	ISO 228-1	ISO 228-1	ISO 228-1
		G 1½ B	G 1½ B	G 1½ B
Contact surface of bottom of waste outlet	*C*	65 min.	85 min.	98 min.

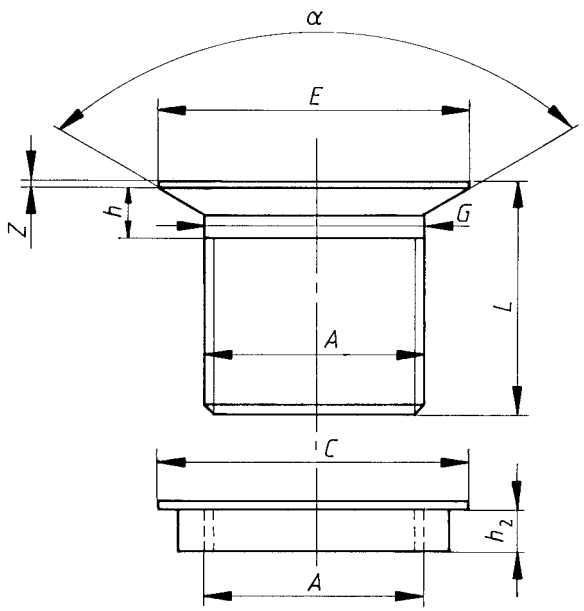
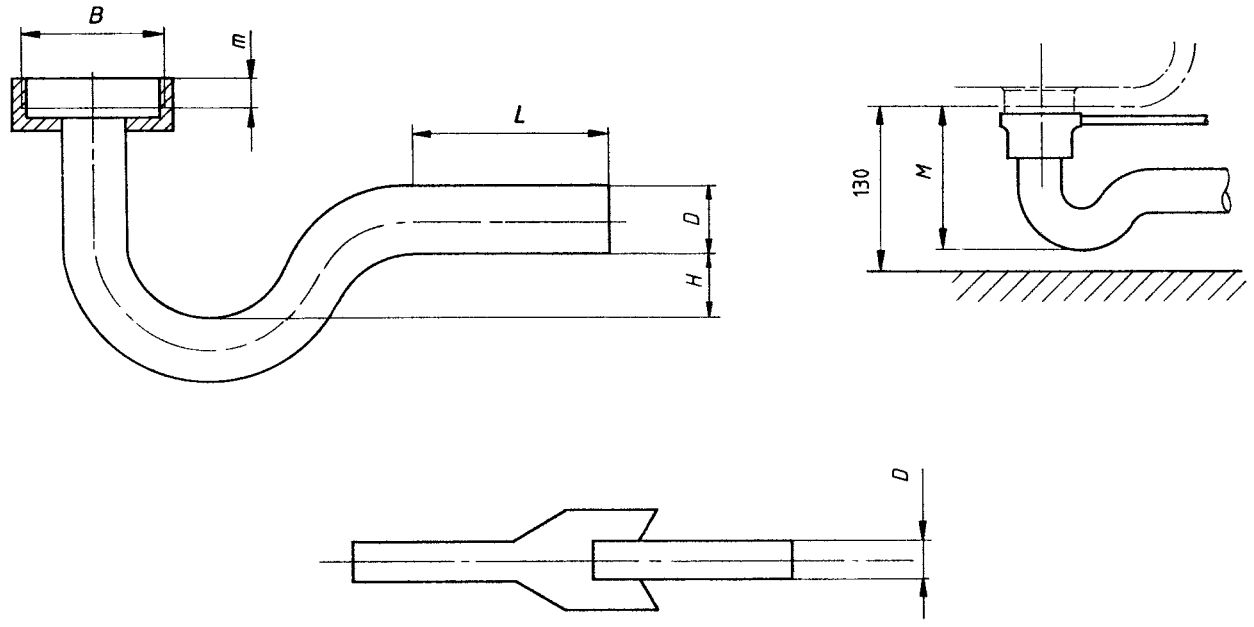


Figure 2. Single waste outlet

Table 3. Traps

Definition	Dimensions of waste outlet	
	Symbols	**Values** (mm)
Height of water seal	*H*	50 min
Connection of outlet pipes	*D*	- Male thread ISO 228/1 — G 1½ B, or ISO 228/1 — G 2 B, or - Plain end or socket for plain end ext.ø 40 or 50 (figure 3)
Total height of waste fitting + trap assembly (from clamp of waste outlet under shower tray)	*M*	125 max. (for shower trays on supports and shower trays with overflow) 80 max. (for shower trays without overflow and trays resting on floor)
Nut for connecting trap to waste outlet	*B*	ISO 228/1 — G 1½
Useful length of thread for tightening connecting nut	*m*	6, 5 to 10 (metal nut) 8 to 11 (plastics nut)
Length of straight part of trap	*L*	50 min.



Dimensions in mm.

Figure 3. Traps

Table 4. Waste outlet/trap unit

Definition	**Dimensions of waste outlet**			
	Symbols	**Values** (mm)		
Diameter of waste outlet	*G*	49 max.	59 max.	87 max.
External diameter of flange	*E*	70 ± 1	85 ± 1	$115\ ^{+0}_{-5}$
Height of cylindrical part of flange	*Z*	1 max.	1 max.	1 max.
Clamping height of waste outlet	*h*	to allow clamping on support		
		6 to 16	6 to 25	
Height of water seal	*H*	50 min.	50 min.	50 min.
Connection to outlet pipes	*D*	ISO 228-1 G 1½ B ISO 228-1 G 2 B or plain end or sockets for plain end (figure 3) ext.ø 40 or 50		
Contact surface of bottom of waste outlet	*C*	65 min.	85 min.	98 min.
Total height of device	*M*	80 max. or	80 max.	
		125 max.	125 max. vertical outlet waste fitting	125 max.
Length of straight part of trap	*L*	50 min.	50 min.	50 min.

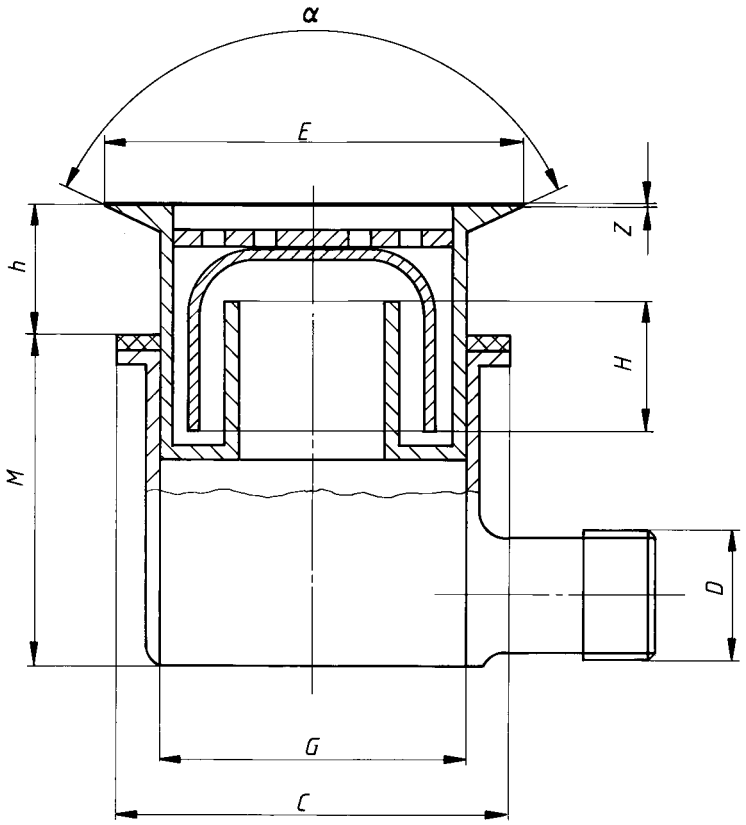


Figure 4. Waste outlet/trap unit with trap in top of waste outlet

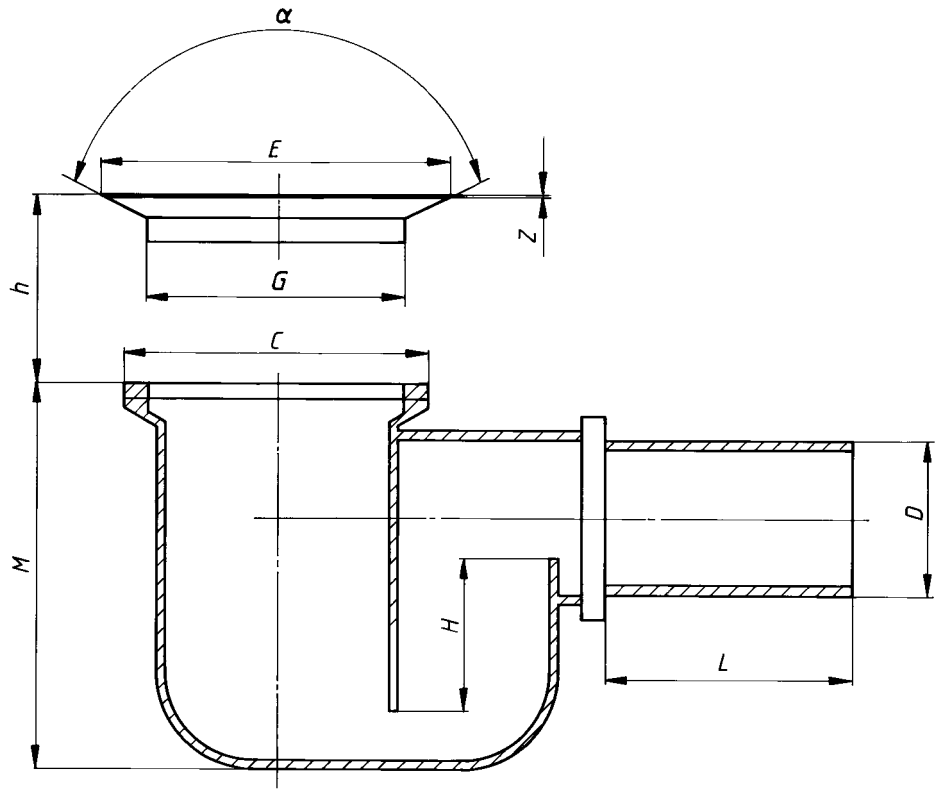


Figure 5. Waste outlet/trap unit with trap in bottom of waste outlet

7.1.5 ***Control gauge for waste outlets fitted to shower trays***

Verfication of waste outlets fitted to shower trays shall be carried out as they are delivered, using a gauge representing exactly the waste outlet hole cut in the shower tray, the shape and dimensions of which are shown in figures 6, 7 and 8. The gauge makes it possible to verify:

1 - using just part A or parts A + B

that the waste outlet is supported in the upper section of the gauge and the upper face of the waste outlet is not seen to project;

that the shaft of the waste outlet can fit freely in the bore of the gauge;

2 - using parts A + B

that the waste outlet is locked correctly onto the gauge.

7.2 Hydraulic properties

7.2.1 ***Test method***

7.2.1.1 *Principle*

This consists of determining the flow rate of the waste system with a constant pressure head specific to the type of waste fitting in question.

7.2.1.2 *Apparatus*

The test apparatus used is shown in figures 9, 10 and 11. The figures are only sketches of the principle.

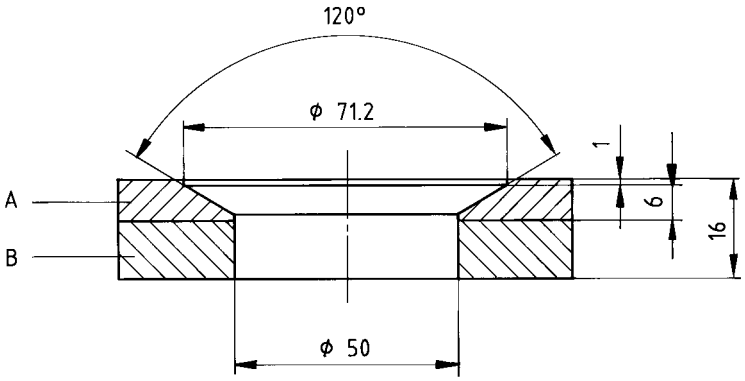
7.2.1.3 *Procedure*

7.2.1.3.1 *Flow rate of waste outlet with overflow*

Fit the waste outlet as shown in figure 10. If the waste outlet has a plug, this shall be removed.

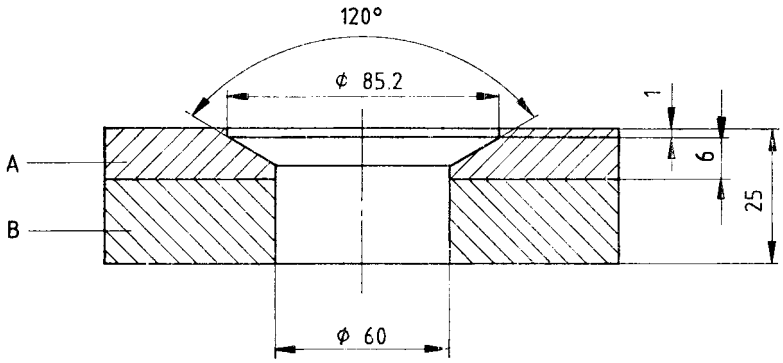
Leave the overflow opening open.

Carry out the measurement with a water height of 120 mm, blocking the lower end with the hand until this water height is reached in the tank, after ensuring that the water level has stablized.



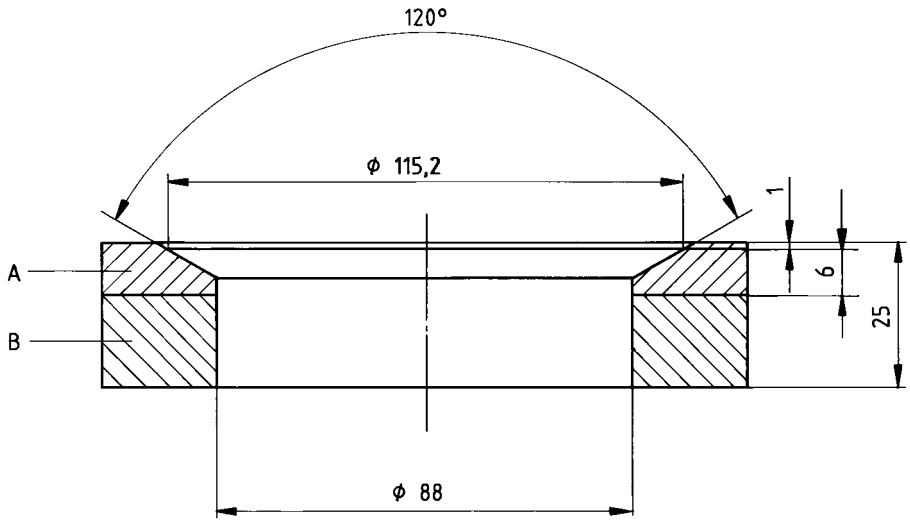
Dimensions in mm

Figure 6. Gauge for diameter 49 mm waste outlet



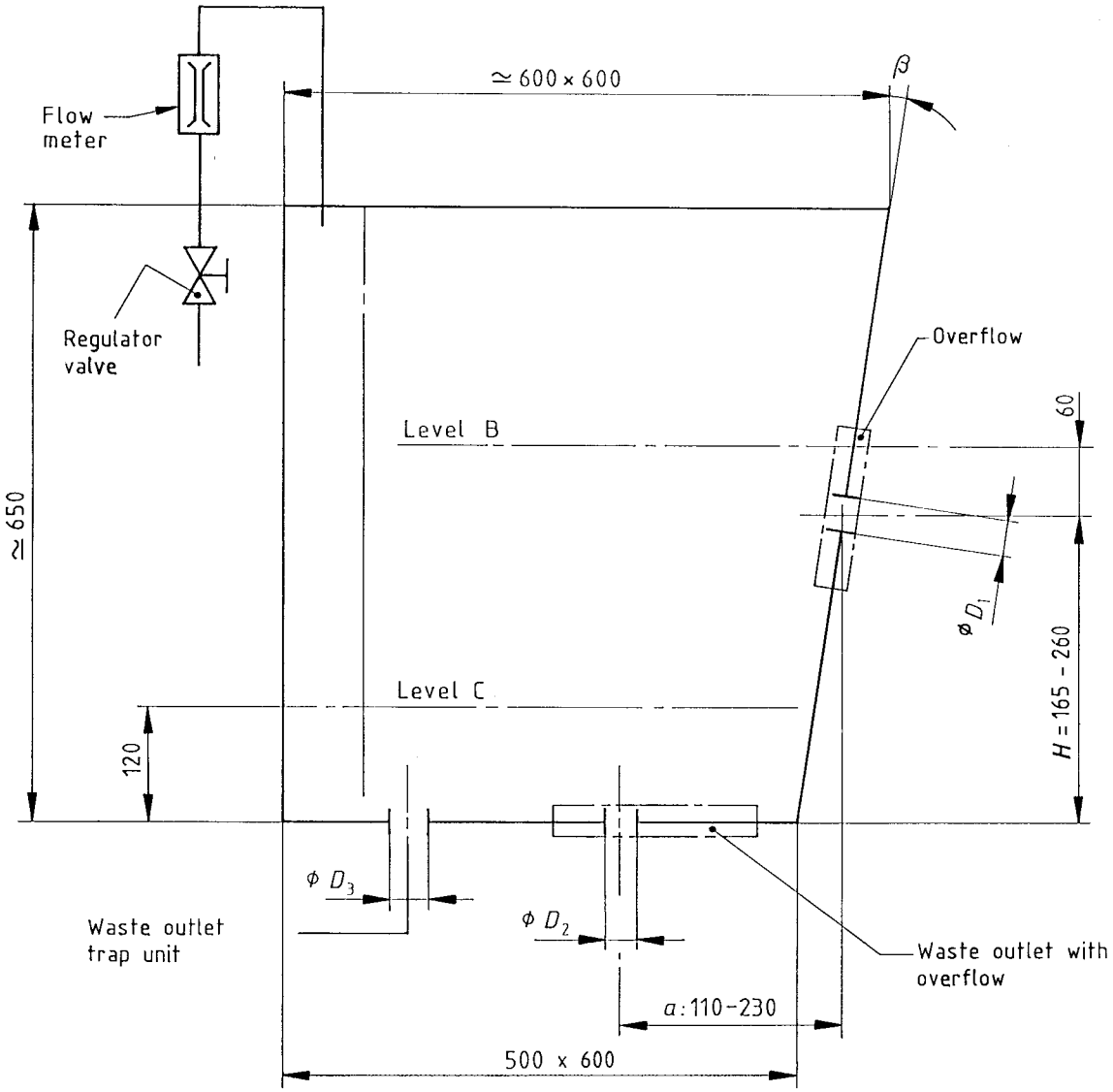
Dimensions in mm

Figure 7. Gauge for diameter 59 mm waste outlet



Dimensions in mm

Figure 8. Gauge for diameter 87 mm waste outlet



Dimensions in mm

Key

B Water level for measuring flow rate of overflow

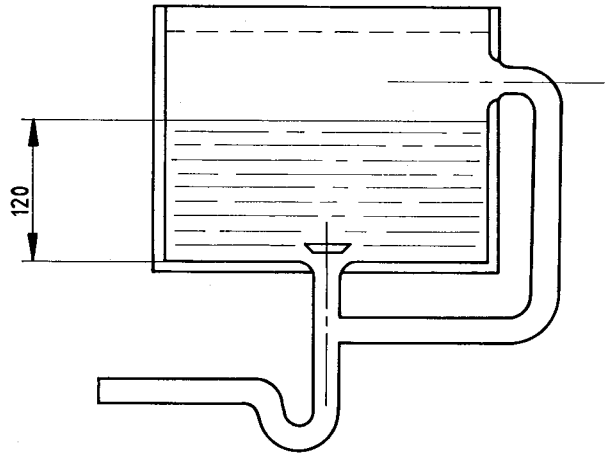
C Water level for measuring flow rate of waste outlet

D_1 Diameter of overflow (waste outlet with overflow)

D_2 Diameter of waste outlet with overflow

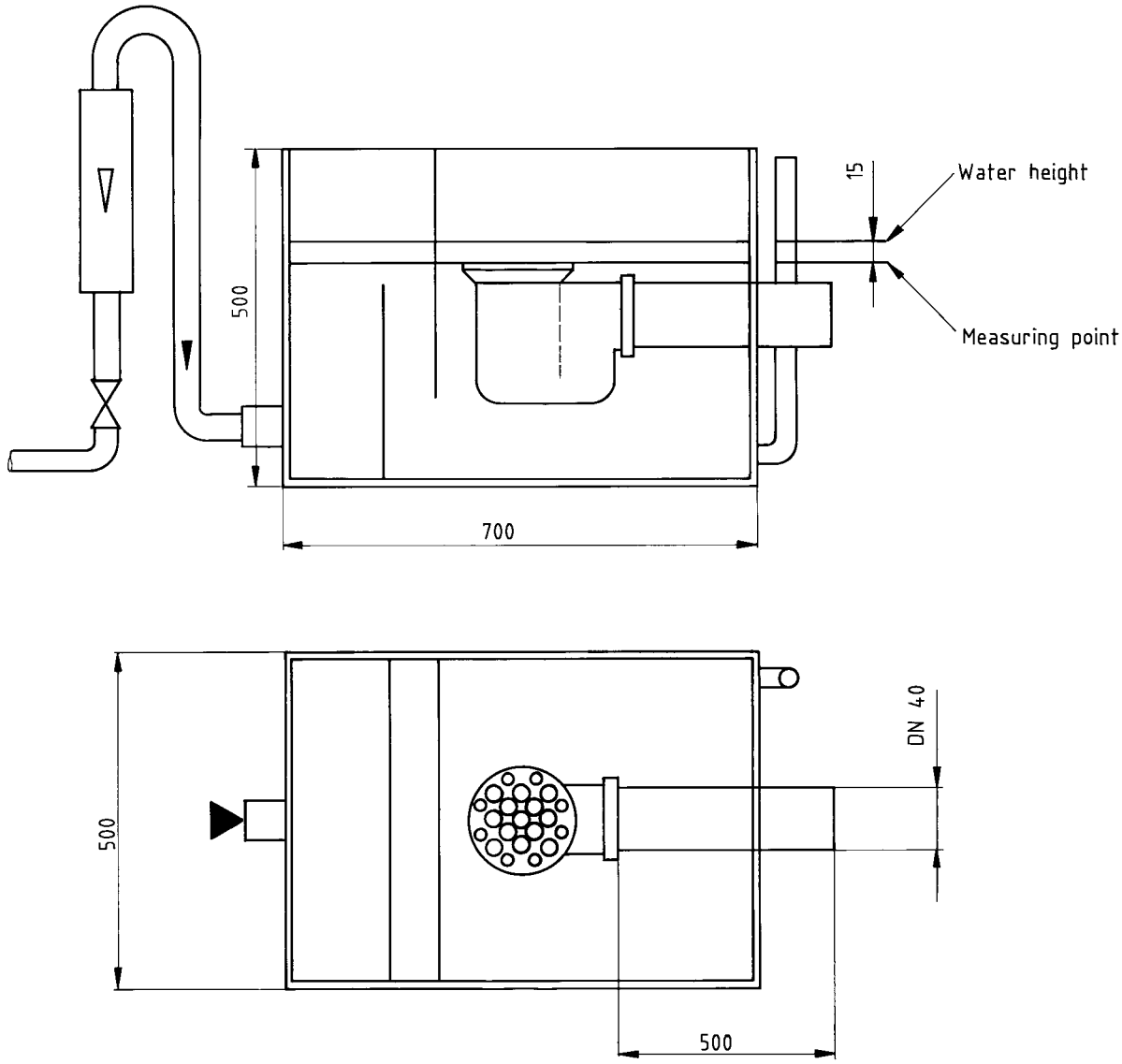
D_3 Diameter of other waste outlets (waste outlet/trap unit)

Figure 9. Apparatus for measuring flow rates



Dimensions in mm

Figure 10. Apparatus for measuring flow rate of waste outlet with overflow



Dimensions in mm

Figure 11. Apparatus for measuring the flow rate of diameter 87 mm waste outlets with integral trap

7.2.1.3.2 *Flow rate of overflow*

Fit the overflow as shown in figure 9.

Carry out the measurement with a water height of 60 mm above the axis of the overflow.

7.2.1.3.3 *Flow rate of waste outlet/trap units*

a) 49 mm and 59 mm diameter

Fit the waste outlet at the point on the apparatus shown in figure 9.

Carry out the measurement with a water height of 120 mm after ensuring that the water level has stabilized.

b) 87 mm diameter

Fit the 87 mm diameter flat waste outlet as shown in figure 11.

Fill the test tanks with water up to a level corresponding to the measuring point (see figure 11).

Continue to fill the tank up to a height of 15 mm above the measuring point.

Measure the flow rate after ensuring that the water height has stabilized.

7.2.2 ***Requirements*** (see table 5)

Table 5. Flow rates of shower tray waste fittings

Waste fitting	Minimum flow rate
Waste outlet with overflow (under 120 mm)	0,5 l/s
Overflow alone	0,35 l/s
Waste outlet/trap units	
- under water load of 120 mm (49 mm and 59 mm diameter)	0,4 l/s
- under water load of 15 mm (87 mm diameter)	0,4 l/s

7.3 Leak tightness test for all traps (see figure 12)

The trap elements and connections shall be leak tight to a pressure of 0,01 MPa (100 mbar) or 1 m height water column. For waste fittings which have been subjected to a thermal shock test, the leak tightness shall be tested immediately after this test.

There shall be no water leakage 1 h after the test apparatus has been filled.

8 Designation

A waste system is designated by:

– its name (in conformity with the classification given in clause **5**)

– its denomination that corresponds:

a) for the waste outlet: to that of the connecting thread;

b) for the trap: to that of the connecting thread to the pipework or that of the external diameter of the pipework (plain end);

– the sanitary appliance for which it is intended;

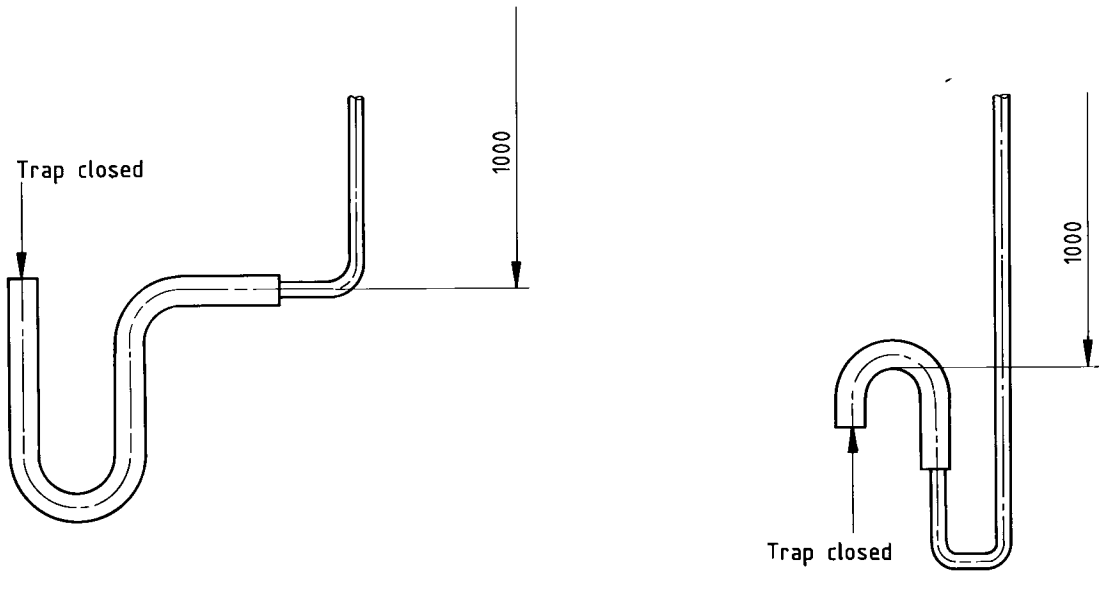
– reference to this standard.

Example of designation

Waste outlet, 1½, external control, for shower tray, EN 329.

9 Marking

All waste systems shall be marked indelibly and shall bear the name and mark of the manufacturer.



Dimensions in mm

Figure 12. Representation of leak tightness test for traps

National annex NA (informative)

Committees responsible

The United Kingdom participation in the preparation of this European Standard was entrusted by the Technical Committee B/505, Waste water engineering, to Subcommittee B/505/11, Water fittings for sanitary applicances, upon which the following bodies were represented:

Association of Consulting Engineers
British Plastics Federation
Clay Pipe Development Association Limited
Concrete Pipe Association
Department of the Environment (Property Services Agency)
Fibre Cement Manufacturers Association Limited
Institute of British Foundrymen
Institute of Building Control
Institution of Water and Environmental Management
METCOM
Plastics and Rubber Institute
Water Services Association of England and Wales

National annex NB (informative)

Cross-references

Publication referred to	Corresponding British Standard
EN 248	BS EN 248 : 1992 *Sanitary taps: general technical specifications for electrodeposited nickel chrome coatings*
ISO 228/1 : 1982	BS 2779 : 1986 *Specification for pipe threads for tubes and fittings where pressure-tight joints are not made on the threads (metric dimensions)*
EN 251 : 1990	BS EN 251 : 1992 *Shower trays. Connecting dimensions*

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