

Sanitary tapware — Low pressure mechanical mixing valves — General technical specification

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 36, an inside back cover and a back cover.

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Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 164, Water supply, the Secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 1999, and conflicting national standards shall be withdrawn at the latest by October 1999.

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

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Introduction

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

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

1 Scope

This European Standard specifies requirements for low hydraulic resistance mechanical mixing valves suitable for use in low pressure water supply systems as described in informative annex C.

This European Standard specifies:

- the dimensional, leaktightness, mechanical and hydraulic performance, mechanical endurance characteristics with which low pressure mechanical mixing valves shall comply;
- the procedure for testing these characteristics.

It is applicable:

- to low pressure mechanical mixing valves, intended for use on sanitary appliances in washrooms (toilets, bathrooms etc.) and in kitchens;
- to low pressure mechanical mixing valves used under the following pressure and temperature conditions given in Table 1.

NOTE Mechanical mixing valves for use at pressures in excess than those in Table 1 are covered by EN 817.

2 Normative references

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

EN 31, *Pedestal wash basins — Connecting dimensions.*

EN 32, *Wall hung wash basins — Connecting dimensions.*

EN 35, *Pedestal bidets over rim supply only — Connecting dimensions.*

EN 36, *Wall hung bidets over rim supply only — Connecting dimensions.*

EN 111, *Wall hung rinse basins — Connecting dimensions.*

EN 232, *Baths — Connecting dimensions.*

EN 246, *Sanitary tapware — General specifications for flow rate regulators.*

EN 248, *Sanitary taps — General technical specifications for electrodeposited nickel chrome coatings.*

EN 695, *Kitchen sinks — Connecting dimensions.*

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

EN 1254-2, *Copper and copper alloys — Plumbing fittings — Part 2: Fittings with compression ends for use with copper tubes.*

prEN 1717, *Protection against pollution of potable water in drinking water installations and general requirements of devices to prevent pollution by backflow.*

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

ISO 5167-1:1991, *Measurement of fluid flow by means of pressure differential devices — Part 1: Orifice plates, nozzles and Venturi tubes inserted in circular cross-section conduits running full.*

3 Definition

For the purposes of this standard, the following definition applies.

3.1

mechanical mixing valve

valve which by means of a control device mixes hot and cold water between the “all cold water” position and the “all hot water” position and adjusts the flow rate of the mixture obtained between the “no flow” and “maximum flow” positions, either using the same control device or another separate control device

Table 1 — Conditions for the use of low pressure mechanical mixing valves

	Limits of use	Recommended limits for correct operation
Dynamic pressure	0,01 to 0,1 MPa (0,1 to 1 bar)	$0,02 \text{ MPa} \leq P \leq 0,1 \text{ MPa}$ ($0,2 \text{ bar} \leq P \leq 1,0 \text{ bar}$)
Hot water temperature	$T \leq 90 \text{ }^{\circ}\text{C}$	$55 \leq T \leq 65 \text{ }^{\circ}\text{C}$
Cold water temperature	$T \leq 25 \text{ }^{\circ}\text{C}$	$T \leq 25 \text{ }^{\circ}\text{C}$
Mechanical strength ¹⁾	static pressure = 1 MPa (10 bar)	
For low pressure mechanical mixing valves complying with this table there are no acoustical requirements.		
Low pressure mechanical mixing valves complying with this standard may also be used with inlet supply pressures in the range from 0,1 MPa to 0,2 MPa (1,0 bar to 2,0 bar) on condition that acoustical performance is not a requirement of the installation.		
¹⁾ Low pressure mechanical mixing valves are designed to provide sufficient mechanical strength for operation at 1 MPa (10 bar) static pressure.		

4 Classification

There are two types of low pressure mechanical mixing valves:

4.1 Single control mechanical mixing valves

Mechanical mixing valves with a single control device for adjusting flow rate and temperature.

4.2 Other mechanical mixing valves

Mechanical mixing valves with separate control devices for adjusting flow rate and temperature.

5 Designation

A low pressure mechanical mixing valve is designated by:

- its type (see clause 4);
- its nominal size (1/2 or 3/4) (see Table 4), with or without diverter (see Table 2);
- type of body (see Table 2);
- type of nozzle (see Table 2);
- sanitary appliance on which it is to be used (see Table 2);
- method of mounting (see Table 2);
- its flow rate series (see Table 12);
- the letters LP (low pressure);
- reference to this standard (EN 1286).

In the case of a mechanical bath/shower mixer, the flow rate shall be designated by both flow rate series. The first for the bath outlet, the second for the shower outlet.

EXAMPLE

Single control mechanical mixing valves 3/4, with diverter, visible body and fixed nozzle outlet, for bath/shower, for horizontal mounting, series 250, LP EN 1286.

Table 2 — Designation

Diverter	with or without diverter
Type of body	Two hole, single hole, visible or concealed
Type of nozzle	fixed or moveable nozzle outlet, no nozzle outlet
Intended use	basin, bidet, sink, bath or shower
Mounting method	horizontal or vertical surfaces

6 Marking — Identification

6.1 Marking

Mechanical mixing valves complying with this standard shall be marked permanently and legibly with:

- the mark or name of the manufacturer;
- the letters L.P.

6.2 Identification

The temperature control device for the mechanical mixer shall be identified:

- for cold water by the colour blue;
- for hot water by the colour red.

The identification of cold water shall be on the right and the hot water on the left.

7 Materials

7.1 Chemical and hygienic characteristics

All materials in contact with water intended for human consumption shall present no health risk up to a temperature of 90 °C. They shall not cause any deterioration in water intended for human consumption, with regard to food quality, appearance, odour or taste.

Within the recommended limit given in clause 1 for correct operation, the materials shall not be subject to any deterioration which might compromise the operation of the mechanical mixing valve. Pressurized parts shall withstand the limits of use set in Table 1. Materials with inadequate corrosion resistance shall be given additional protection.

7.2 Exposed surface condition and quality of coating

Visible chromium plated surface and Ni-Cr coatings shall comply with the requirements of EN 248.

8 Dimensional characteristics

8.1 General comment on drawing

The design and construction of components without defined dimensions permits various design solutions to be adopted by the manufacturer. Special cases are covered in 8.5.

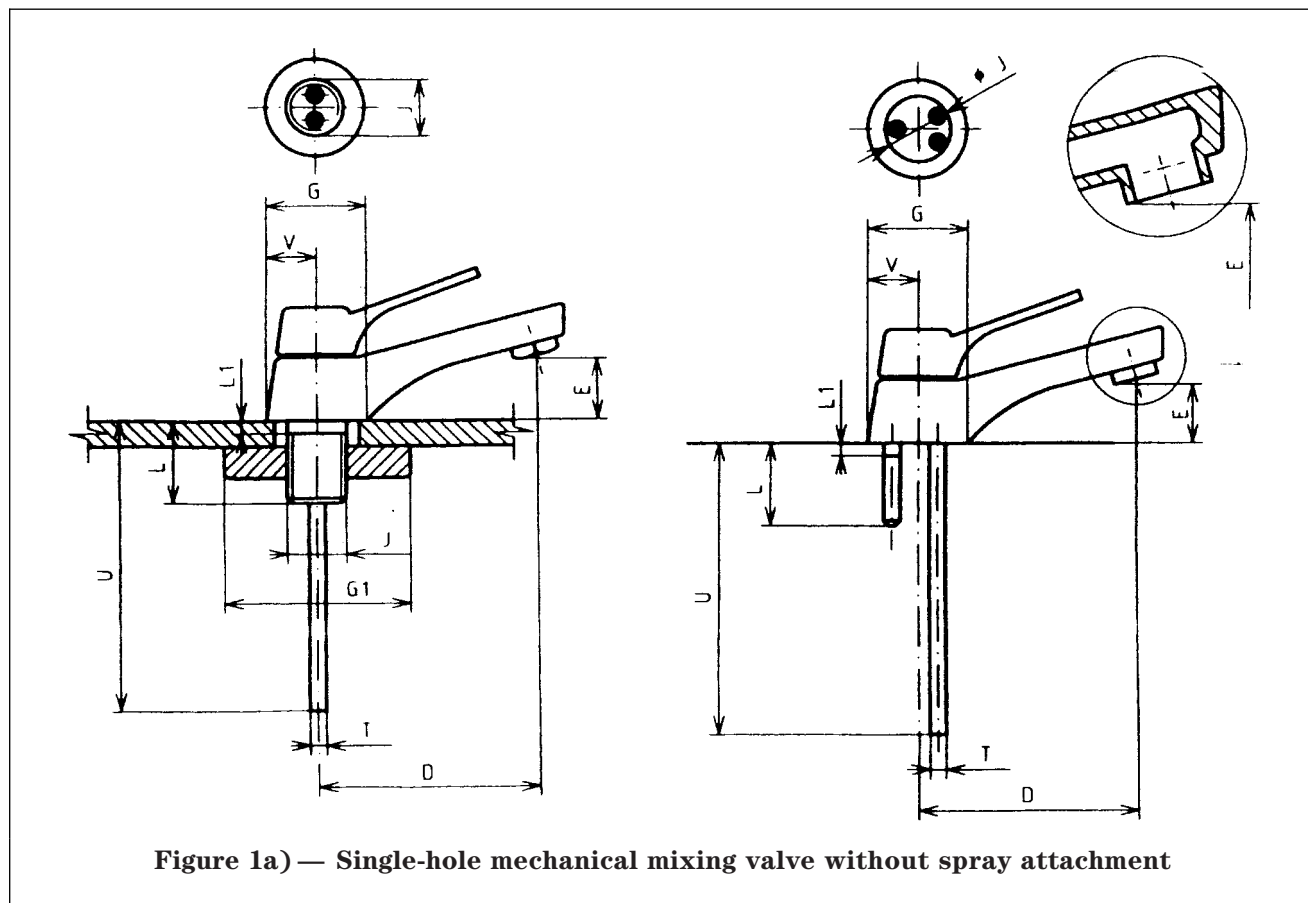
8.2 Low pressure mechanical mixing valves mounted on horizontal surfaces

The standardized dimensions of mechanical mixing valves:

- firstly, guarantee their mounting and interchangeability on sanitary appliances complying with EN 31, EN 32, EN 35, EN 36, EN 111, EN 232, EN 695;
- secondly, give the various options for connection with the water supply.

8.2.1 Single-hole mechanical mixing valves — *visible body* (see Table 3)

8.2.1.1 Without spray attachment [see Figure 1a)]



8.2.1.2 With spray attachment [see Figures 1b) and 1c)]

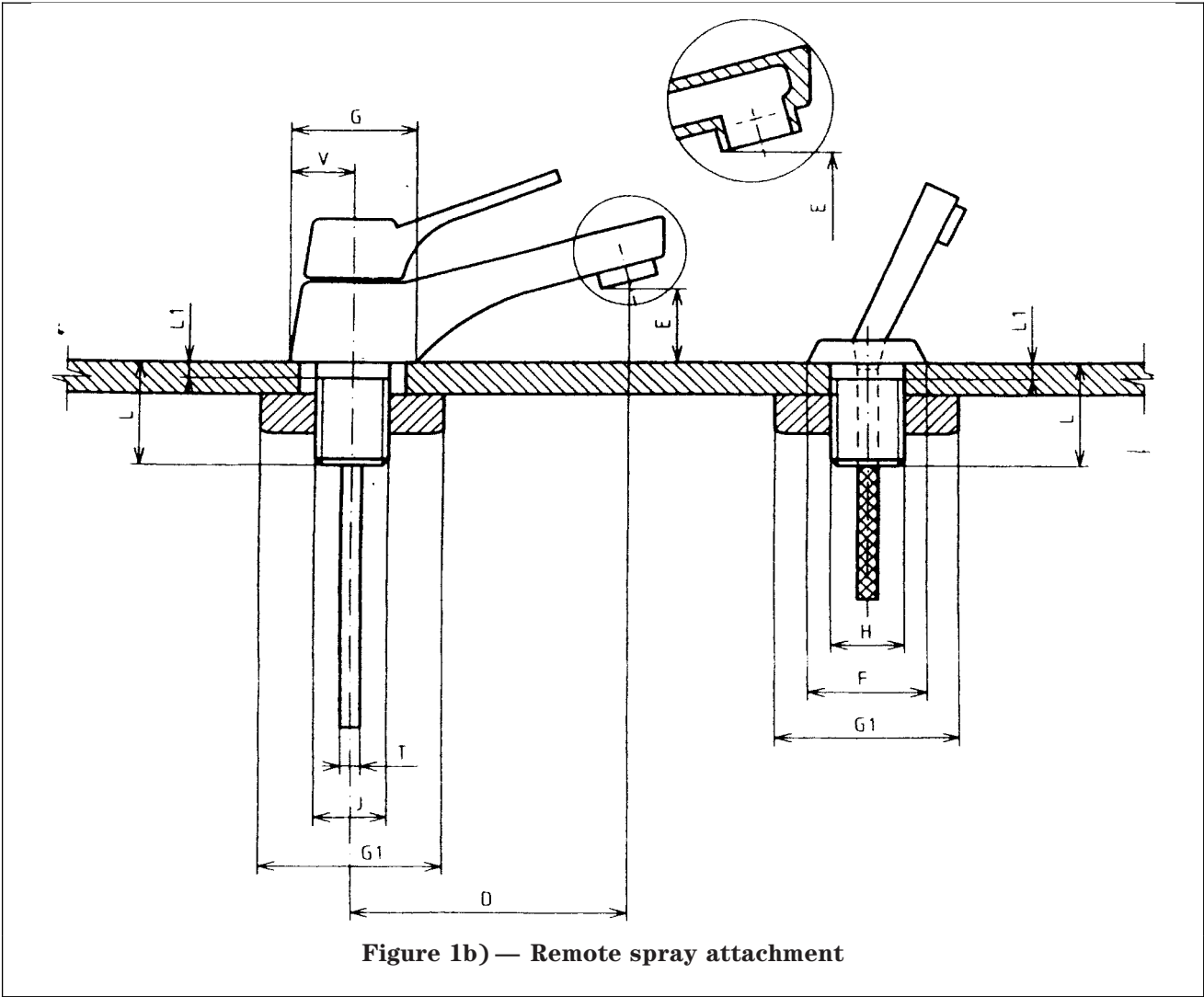


Figure 1b) — Remote spray attachment

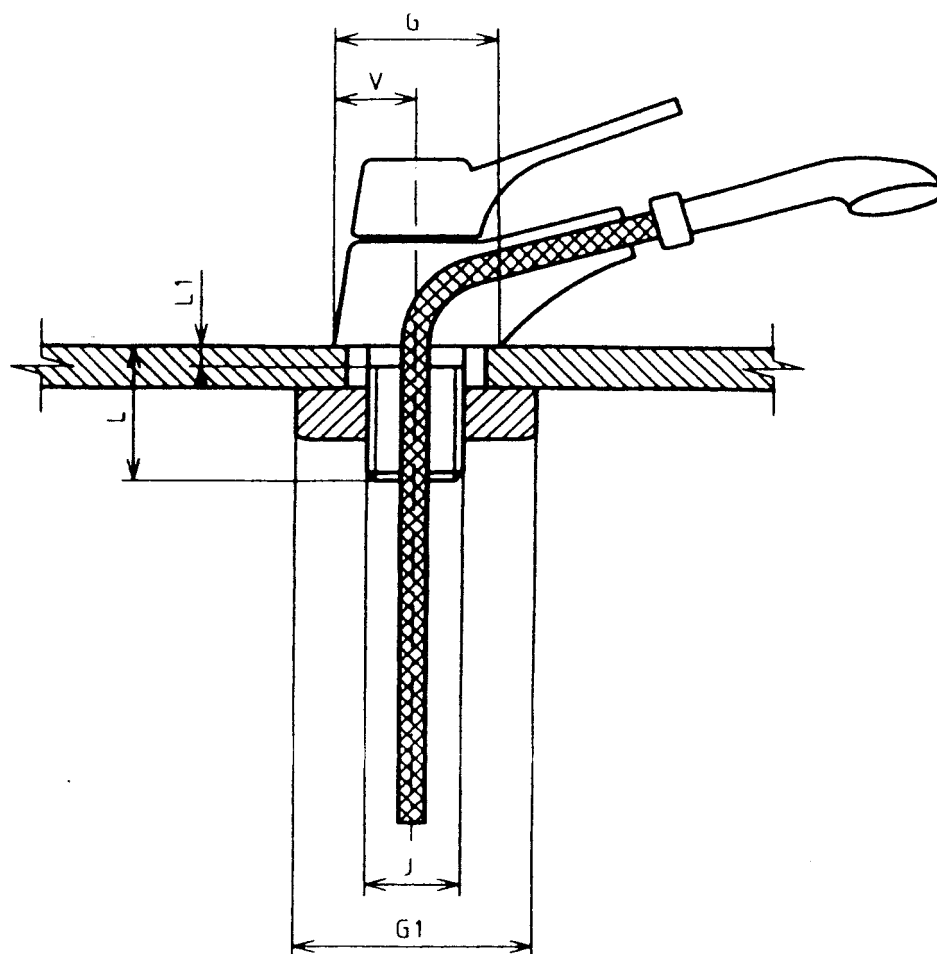
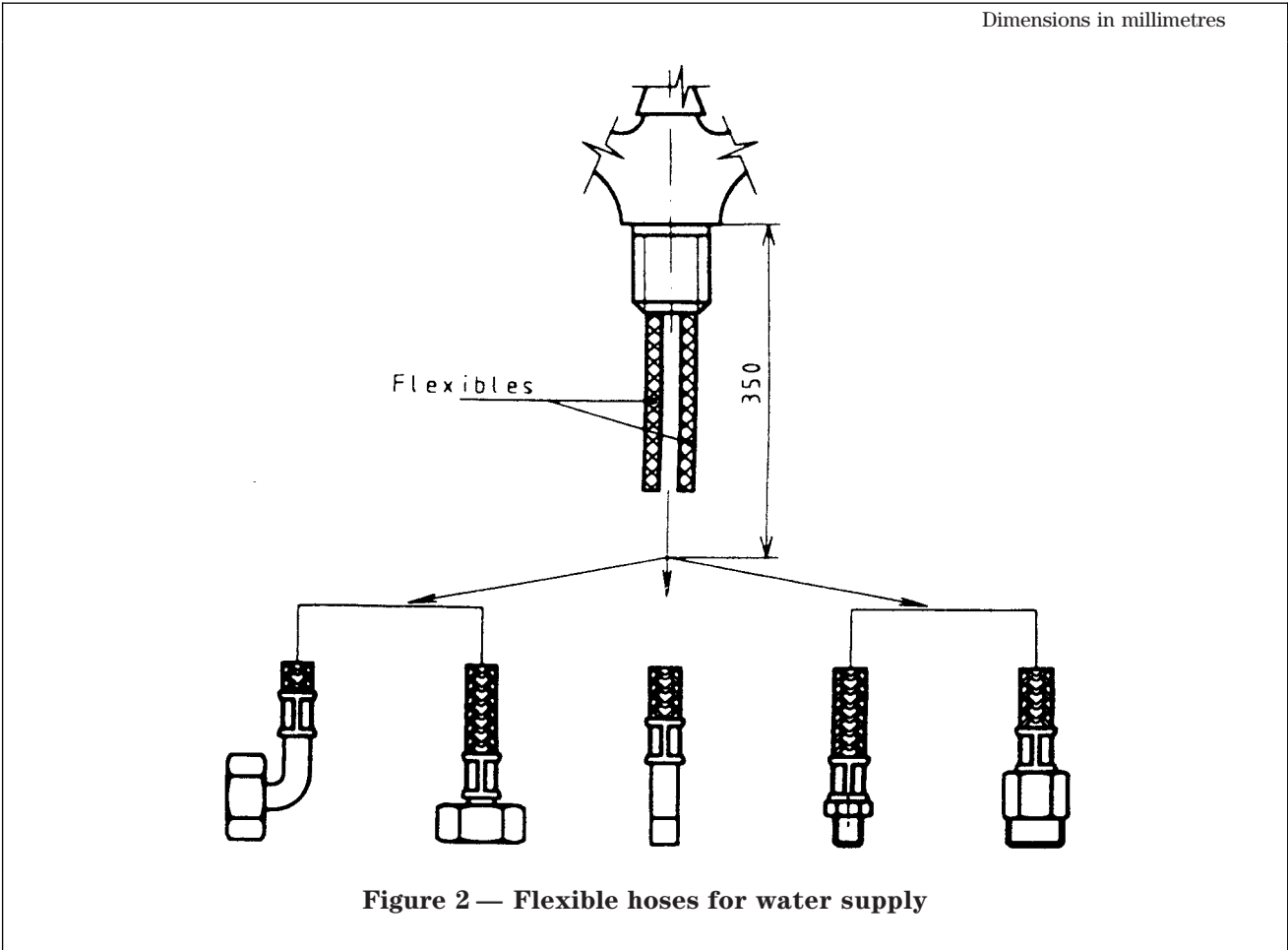


Figure 1c) — Integral spray attachment

8.2.1.3 Flexible hoses for water supply



NOTE Supply hoses can be used with the mixers shown in Figures 1a), 1b), 1c), 5 and 6. Other methods of connection to the supply are permissible.

Table 3 — Single-hole visible body mixing valves with or without spray attachment
[see Figures 1a), 1b), 1c)]

Mixing valves with remote outlet (Figures 5 and 6)

Dimensions	Values in millimetres	Comments
D	100 min.	Dimension from the centre of outlet, as supplied, i.e. orifice with or without flow rate regulator
E	25 min.	Dimension from lowest point of the outlet orifice to the mounting surface
F	42 min., wash basin, bidet, sink, bath	Smallest dimension of the remote spray attachment base
G	45 min.	Smallest dimension of the mixer base
G1	External diameter 50 max.	Clamping washer
H	29 max.	Shank diameter of remote spray attachment
J	33,5 max.	The two inlet pipes and retention stud shall be contained in a circle of diameter J
L and L1	Dimensions which allow mixers to be fitted on to supports of thickness between 1 mm and 18 mm	
T	Copper tube with an external diameter of 10 or 12	Plain or G 3/8 male or female thread or G 1/2 male or female thread
	Hose in accordance with 8.2.1.3	Plain end with an external diameter of 10 mm or 12 mm or with G 3/8 male or female thread or G 1/2 male or female thread
U	350 min.	
V	35 max. for baths 32 max. for wash basins, bidets and sinks	Projection of mixing valves base to rear, measured from axis of diameter J.
NOTE Dimensions J, T and U are not for baths and are left to the discretion of the manufacturer.		

8.2.2 Two-hole mechanical mixing valves with visible body mounted on horizontal surface (see Table 4 and Figure 3)

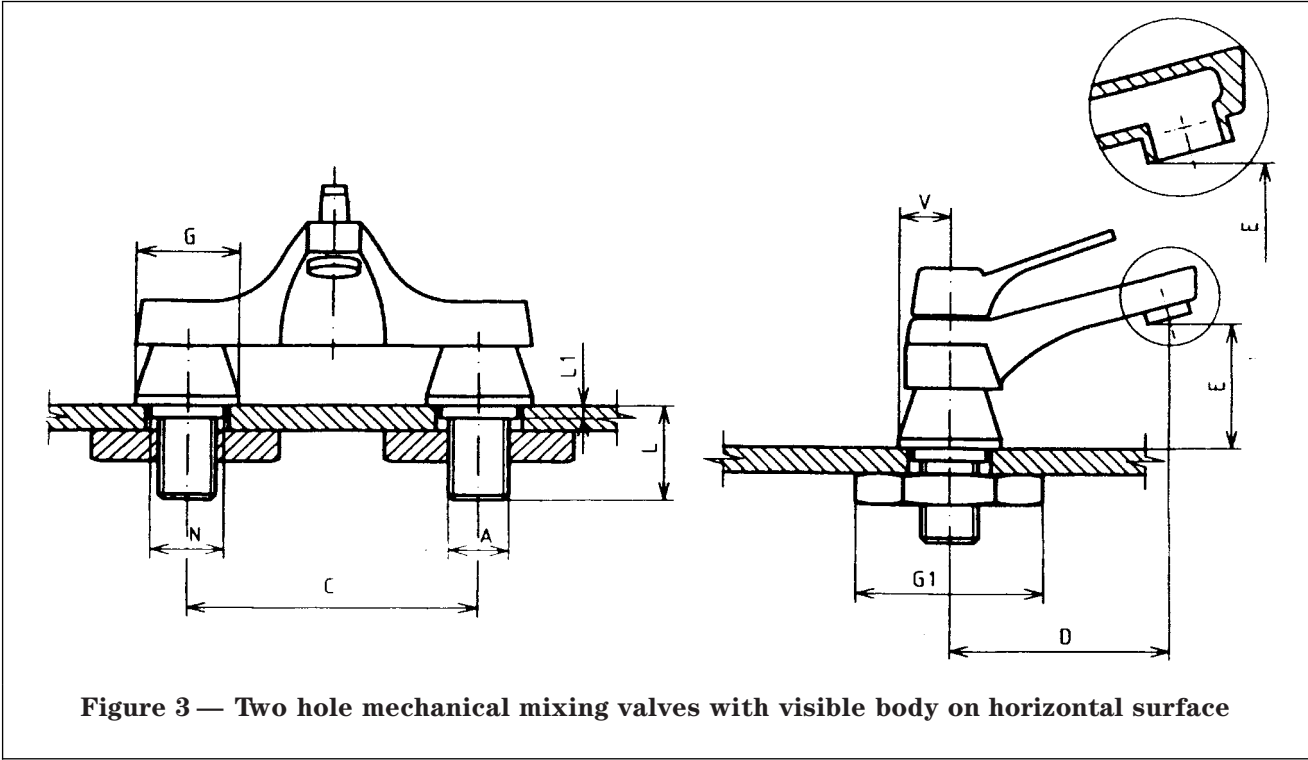


Table 4 — Two hole mechanical mixing valves with visible body on horizontal surface		
Dimension	Values in mm	Comments
A	G 1/2 B: Basin, bidet and sink G 3/4 B: Baths	See ISO 228-1
C	Wash basin/bidet/sink: 200 ^{+3,5} ₋₁ Bath only 150 ± 1 180 ± 1	
D	100 min.	Dimension from the centre of outlet orifice, as supplied i.e. with or without flow rate regulator
E	25 min.	Dimension from lowest point of the outlet orifice to the mounting surface
G	Wash basin/bidet/sink: 42 min. Bath: 45 min.	Smallest dimension of the base
G1	External diameter: 50 max.	Clamping washer
L and L1	Dimensions which allow mixers to be fitted on to supports of thickness between 1 mm and 18 mm and connection with the water supply	
N	24 max.	
V	35 max. for baths 32 max. for wash basins, bidets and sinks	Projection of mechanical mixing valves flange to rear measured from axis of diameter A