



Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations —

Part 2: Mounting and operating conditions for draw-off taps

Acoustique — Mesurage en laboratoire du bruit émis par les robinetteries et les équipements hydrauliques utilisés dans les installations de distribution d'eau — Partie 2: Conditions de montage et de fonctionnement des robinets de puisage

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3822/2 was prepared by Technical Committee ISO/TC 43, *Acoustics*.

Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations —

Part 2: Mounting and operating conditions for draw-off taps

0 Introduction

The method of measurement for laboratory tests on noise emission from appliances and equipment used in water supply installations is specified in ISO 3822/1.

This part of ISO 3822 gives detailed descriptions for mounting and operating draw-off taps in such laboratory tests. These taps are for use with cold and/or hot water in buildings (for sinks, wash-basins, baths, etc.) or next to buildings (for example for garden use). Draw-off taps are the most common kind of appliance used in water supply installations.

1 Scope and field of application

This part of ISO 3822 specifies the mounting and operating conditions to be used for draw-off taps when measuring noise emission resulting from water flow.

The procedures described are for general use for all types of draw-off taps of conventional design.

The mounting and operating conditions apply to complete draw-off tap assemblies, including any components normally supplied with the taps (such as shower hoses with heads, anti-splash nozzles, strainers, aerators and S-couplings or other units).

The mounting and operating conditions for individual components are outside the scope of this part of ISO 3822.

NOTE — When components are interchangeable, they may be tested separately in accordance with the procedures specified in other parts of this International Standard.

Thermostatic mixing devices, intended for use with more than one independent draw-off tap, and bidet valves with a direct outlet into an interior part of the body of the bidet are not regarded as conventional draw-off taps and are not covered by this part of ISO 3822. Similarly, electrically operated valves are regarded as combined devices (solenoid valve and outlet) and are not covered by this part of ISO 3822.

The test procedures cover a range of flow pressures between 0,1 and 0,5 MPa¹⁾, of which the most common value is 0,3 MPa.

1) 1 MPa = 10 bar

When the components mentioned are interchangeable or removable without disturbing the normal function of the appliance, tests may be carried out in which these components or flow resistances are replaced by specified standard components or standard flow resistances.

2 References

ISO 7/1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Designation, dimensions and tolerances.*

ISO 49, *Malleable cast iron fittings threaded to ISO 7/1.*

ISO 3822/1, *Acoustics — Laboratory tests on noise emission from appliances and equipment used in water supply installations — Part 1: Method of measurement.*

3 Mounting

3.1 General

Draw-off taps shall be connected to the test pipe and positioned according to the normal position of the tap in use.

3.2 Fitting to the test pipe

The test pipe shall have an external thread R 1 in accordance with ISO 7/1, and shall end with a galvanized union, taper seat 1, U12, in accordance with ISO 49.

3.3 Mounting of draw-off taps with screwed connections

Depending on whether the position of the connection is horizontal or vertical, draw-off taps with screwed connections shall be connected to the test pipe by a means of a galvanized long sweep bend 1, G1 or G4, and/or a galvanized bushing N4, pattern I or II, in accordance with ISO 49. A galvanized socket, reducing M2, in accordance with ISO 49, may be connected to the union or to the bend.

3.4 Mounting of draw-off taps fitted with pipe connections

Draw-off taps without screwed connections shall be mounted with couplings chosen such that rigid and watertight connections are assured. These couplings may be made either by soldering a nipple on to the pipe and using a cap nut or by means of a compression fitting. The coupling shall be made so that no air is trapped therein.

3.5 Mounting of draw-off taps with two inlets

Draw-off taps with two inlets shall be connected to the test pipe by means of a twin outlet (see ISO 3822/1), as specified in 3.3 and 3.4.

4 Test procedure

4.1 General test conditions

4.1.1 General

Draw-off taps shall be tested by the method specified in ISO 3822/1.

4.1.2 Water temperature

Appliances, such as mixing valves, which are normally operated with both hot and cold water shall be tested with water at a temperature not exceeding 25 °C at both inlets.

4.1.3 Outlets

Appliances with more than one outlet (for example bath and shower appliances) shall be tested separately for each outlet.

4.1.4 Discharge

The water discharged from the tap shall be disposed of quietly (see ISO 3822/1). The arrangement for disposing of the discharged water shall in no way influence the flow through the appliance.

4.1.5 Flow adjusters

NOTE — In some types of draw-off taps, especially mixing taps with sequential control, devices known as flow adjusters may be incorporated in the appliance. These devices serve to adjust the pressure loss in the tap to adapt the appliance to its proper use.

When a flow adjuster is incorporated in an appliance to be tested, the manufacturer of the appliance shall provide information on the settings of the flow adjuster for operation at flow pressures of 0,3 and 0,5 MPa.

The procedures specified in 4.2, 4.3 or 4.4 shall be carried out with the settings as advised for 0,3 and for 0,5 MPa. To check for peculiarities (see 4.1.6), the procedure shall be carried out with the setting as advised for 0,5 MPa.

4.1.6 Test pressures

The procedures specified in 4.2, 4.3 or 4.4 shall be carried out at flow pressures of 0,3 and 0,5 MPa. Checks for peculiarities may additionally be made at flow pressures of 0,1, 0,2 and 0,4 MPa.

4.1.7 Water flow rates

In addition to the measurements specified in 4.2, 4.3.1, 4.3.2 and 4.3.3, sound pressure levels may be measured at the appropriate water flow rate given in the annex.

4.2 Procedure for conventional draw-off taps with one inlet

NOTE — If only the values of the sound pressure level at the fully open position, and the maximum sound pressure level occurring on closing the tap, are required, the procedures specified in 4.2.4 and 4.2.5 may be omitted.

4.2.1 Open the appliance fully. Adjust the water flow pressure to the selected value and keep it constant throughout the following steps.

4.2.2 Measure the water flow rate.

4.2.3 Determine the sound pressure level in the test room.

4.2.4 Slowly close the appliance until a flow rate of 0,25 l/s (15 l/min; 0,9 m³/h) is reached. Determine the maximum sound pressure level in the test room during this closing action and measure the water flow rate at which this maximum occurs.

4.2.5 Determine the sound pressure level in the test room at the flow rate of 0,25 l/s.

4.2.6 Slowly close the appliance to the fully closed position. Determine the maximum sound pressure level in the test room during this closing action and measure the water flow rate at which this maximum occurs.

4.3 Procedure for conventional draw-off taps with two inlets

4.3.1 Procedure for mixing valves with similar independent controls for hot and cold water

NOTE — If only the results of testing each control separately are required, the procedure specified in 4.3.1.2 may be omitted.

4.3.1.1 Carry out the procedure specified in 4.2 for each control separately.

4.3.1.2 Open both controls fully and then slowly close the hot control to locate a maximum sound pressure level. At this point, slowly close the cold control and locate a possible further maximum sound pressure level. Determine the greater of the two maximum sound pressure levels and measure the water flow rate at which this maximum occurs. Repeat the procedure, slowly closing the cold control first.

4.3.2 Procedure for mixing valves with a dual function control for flow and temperature, including thermostatic types

NOTES

1 These mixing valves have control functions for the flow rate and for the temperature (ratio of hot and cold water), but both functions are combined in a single control device such as a lever.

2 If only some of the results are required, the procedure specified in 4.3.2.4 may be omitted.

4.3.2.1 With the temperature setting in the extreme cold position carry out the procedure specified in 4.2.

4.3.2.2 With the temperature setting in the extreme hot position carry out the procedure specified in 4.2.

4.3.2.3 Vary the temperature control over its full range with the flow setting at maximum, determine the maximum sound pressure level and measure the water flow rate at which this maximum occurs.

4.3.2.4 If the maximum sound pressure level is higher than those measured in 4.3.2.1 or 4.3.2.2, proceed as specified in 4.2.6 at the intermediate temperature setting at which the maximum sound pressure level occurs.

4.3.3 Procedure for mixing valves with independent controls for flow and temperature, including thermostatic types

Mixing valves with independent controls for flow and temperature shall be tested as for valves with a dual function control (see 4.3.2).

4.3.4 Procedure for mixing valves with a single sequential control, including thermostatic types

NOTE — Mixing valves with a single sequential control are mixing valves in which a single control first opens the valve and then provides a progressively warmer flow. In some cases, the flow rate depends on the temperature setting.

4.3.4.1 Keeping the flow pressure constant, operate the control of the valve over the whole range from the extreme hot position to closed.

4.3.4.2 Determine the maximum sound pressure level and measure the water flow rate when this maximum occurs.

4.4 Procedure for special draw-off taps operated by remote or indirect controls

4.4.1 Operating conditions

Valves with automatic or indirect controls (for example those actuated by push button, proximity switch, etc.) shall be operated in accordance with the manufacturer's instructions.

4.4.2 Procedure

Operate the valve and measure the sound pressure level and the steady water flow rate. Ensure that the flow pressure stays constant and determine the maximum sound pressure level during closure. Valves having two inlets shall be tested using each inlet both separately and together.

5 Test report

The test report shall include the following information:

- a) the information required by ISO 3822/1;
- b) the mounting of the appliance tested;
- c) the flow pressure and flow rates used, the outlet used and the sound pressure levels obtained;
- d) a description of the tap tested, including the type, nominal size, manufacturer and manufacturer's number;
- e) the number of the clauses of this part of ISO 3822 relevant to the appliance, and in accordance with which the tests were carried out, together with descriptions of any peculiarities observed.

Annex

Measurement of sound pressure levels at specified flow rates

(This annex forms an integral part of the standard.)

Nominal thread size of appliance upstream connection	Type of appliance	Water flow rate for testing l/s
1/2	Taps with one inlet Mixing valves with similar independent controls for hot and cold water Mixing valves with one dual function control for flow and temperature Mixing valves with independent controls for flow and temperature Thermostatic mixing valves	0,32
	All the above-mentioned types of tap or mixing valve supplied with single shower outlet fittings	0,20
3/4	Taps with one inlet Mixing valves with similar independent controls for hot and cold water Mixing valves with one dual function control for flow and temperature Mixing valves with independent controls for flow and temperature Thermostatic mixing valves	0,75
	All the above-mentioned types of tap or mixing valve supplied with single shower outlet fittings All the above-mentioned types of bath/shower combination mixing valves for flow through the shower outlet	0,20
1	Taps with one inlet Mixing valves with similar independent controls for hot and cold water Mixing valves with one dual function control for flow and temperature Mixing valves with independent controls for flow and temperature Thermostatic mixing valves	1,35