

DIN EN 15091:2007-03 (E)

Sanitary tapware - Electronic opening and closing sanitary tapware

Contents	Page
Foreword	5
Introduction	6
1 Scope	7
2 Normative references	9
3 Terms and definitions	11
4 General requirements and testing	11
4.1 Marking	11
4.2 Materials	12
4.3 Functions	12
4.4 Protection against pollution	12
4.5 Electric characteristics and requirements	12
4.6 Leaktightness characteristics	14
4.7 Pressure resistance characteristics	15
5 Requirements and testing for tapware	17
5.1 Scope	17
5.2 Dimensional characteristics	17
5.3 Hydraulic characteristics	25
5.4 Water hammer	32
5.5 Endurance	33
5.6 Acoustic characteristics	34
6 Requirements and testing for flushing valves for urinals	36
6.1 Scope	36
6.2 Definitions	36
6.3 Classification of flushing urinal valves	36
6.4 Designation	36
6.5 Dimensional characteristics	37
6.6 Hydraulic characteristics	38
6.7 Measurement of water hammer for urinal flushing valves	38
6.8 Mechanical endurance	39
7 Requirements and testing for flushing valves for WCs	40
7.1 Scope	40
7.2 Definitions	40
7.3 Classification	41
7.4 Dimensional characteristics	41
7.5 Hydraulic characteristics	43
7.6 Principle and verification of atmospheric pipe interrupters of WC flushing valves	43
7.7 Mechanical endurance	43
7.8 Acoustic characteristics	44
Annex A (normative) Recommendation for the design of pressure take-off tees	45
Bibliography	47

Figures contents	Figure 1 -- Type 1 - Supply system with a pressure range of (0,05 to 1,0) MPa [(0,5 to 10) bar]	8
Figure 2 -- Type 2 - Supply system with a pressure range of (0,01 to 1,0) MPa [(0,1 to 10) bar]	9	
Figure 3 -- Tap with visible body for horizontal surface	18	
Figure 4 -- Threaded inlets of taps with visible body for mounting on vertical surfaces	19	
Figure 5 -- Tapware with inlets and outlets aligned	19	
Figure 6 -- Tapware with inlets and outlets at right angles	20	
Figure 7 -- Mixing valves for horizontal mounting threaded inlet	21	
Figure 8 -- Mixing valves for horizontal mounting, stud connection	21	
Figure 9 -- Mixing valves with straight fittings	22	
Figure 10 -- Mixing valve with excentric unions	23	
Figure 11 -- Mixing valve with captive nuts	24	
Figure 12 -- Mixer with opposed inlets	25	
Figure 13 -- Supply circuits	26	
Figure 14 -- Test circuits for tapware intended for Type 1 water supply systems	28	
Figure 15 -- Mounting of mixing valves	29	
Figure 16 -- Flow rate test apparatus for taps intended for type 2 supply systems	30	
Figure 17 -- Test rig for water hammer test	32	
Figure 18 -- Top-entry urinal flushing valve	37	
Figure 19 -- Side-entry urinal flushing valve	37	
Figure 20 -- Side-entry WC flushing valves	43	
Figure 21 -- Top-entry WC flushing valves	43	
Figure A.1 -- Examples of pressure take-off tees	45	
Tables Contents	Table 1 -- Identification of the clauses of this standard	6
Table 2 -- Conditions of use	7	
Table 3 -- Performance characteristics to be noted if used outside the recommended operating range	7	
Table 4 -- Summary of leaktightness tests	15	
Table 5 -- Dimensions	18	
Table 6 -- Dimensions of threaded inlets	19	
Table 7 -- Dimensions of threads	20	
Table 8 -- Dimensions of mixers	21	

Table 9 -- Dimensions	24
Table 10 -- Dimensions of pipework	28
Table 11 -- Flow rates and test pressures according to application	31
Table 12 -- Acoustic groups	35
Table 13 -- Classes of flow rate	35
Table 14 -- Classification	36
Table 15 -- Threads	37
Table 16 -- Flow rate	38
Table 17 -- Dimension of the supply pipe	39
Table 18 -- Threads and outlet pipe	41
Table 19 -- Permitted thread lengths	41