

Test Report No. 719171152-MEC10/02-CLC
dated 12 APRIL 2010



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SUBJECT:

Testing of Tap/Fitting/Mixers.

TESTED FOR:

Vola A/S
Lunavej 2
DK 8700 Horsens
Denmark

Attn: Mr. Tommy Jorgenson

METHOD OF TEST:

PUB Requirement for Water Efficiency Labelling Scheme

BS 5412 : 1996 Specification for low-resistance single taps and combination tap assemblies (nominal size ½ and ¾) suitable for operation at PN 10 max.

DESCRIPTION OF SAMPLE:

Product : Tap/Fittings/Mixers
Brand Name : Vola

S/N	Description	Model
1.	One Handle Electronic Mixer (Sensor)	HV1E

Note:

Refer to APPENDIX for photo.



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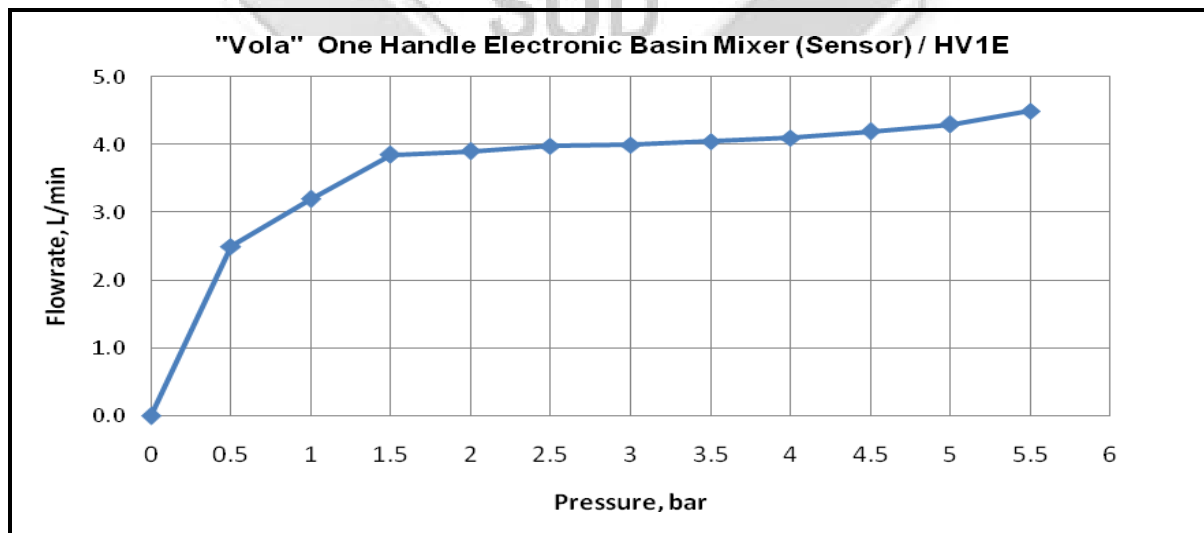
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TEST RESULTS:

Hydraulic Characteristics

- 1) Description: One Handle Electronic Basin Mixer (Sensor)
Model: HV1E

Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0		
0.5	2.5		
1.0	3.2		
1.5	3.9		
2.0	3.9		
2.5	4.0		
3.0	4.0	4 to 6 litres/min (1 tick)	
3.5	4.1	2 to 4 Litres/min (2 ticks)	
4.0	4.1	2 litres/min or less (3 ticks)	
4.5	4.2		
5.0	4.3		
5.5	4.5		



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TEST RESULTS:

(A1) Water Tightness & Pressure Resistance Characteristics

Sample Reference		Basin Mixer (Sensor) HV1E	BS 5412 : 1996 Requirement
Characteristics			
Obturator on seat and upstream of obturator		Passed	Clause 8.2.2.1 (a) Watertightness of the obturator: Throughout the duration of the test, there shall be no leakage past the obturator.
		Passed	(b) Watertightness upstream: Throughout the duration of the test, there shall be no leakage or seepage through the walls.
Downstream of obturator		Passed	Clause 8.2.3.1 Throughout the duration of the test, there shall be no leakage, or seepage through the seals.
Mechanical behaviour upstream		Passed	Clause 9.2.2 There shall be no deformation or leakage.
Mechanical Behaviour Downstream	Tap without jet regulator	Passed	Clause 9.2.3 No permanent deformation shall be produced in that part of the tap situated downstream of the obturator.

(B1) Hydraulic Characteristics

Sample Reference		Basin Mixer (Sensor) HV1E	BS 5412 : 1996 Requirement
Characteristics			
Flow rate test at 0.1 bar running pressure	Combined	1.2**	Combination taps assemblies (each side tested separately). ½" tap : 7.5 (l/min) min.
			Combination taps assemblies (both tap fully open). ½" tap : 10.8 (l/min) min.

****Non-compliance with BS 5412 : 1996 requirements (Please refer to page 5 of 7).

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TEST RESULTS: Cont'd

(C1) Mechanical Endurance Test of Obturator (Headwork)

Sample Reference Characteristics	Basin Mixer (Sensor) HV1E	BS 5412 : 1996 Requirement
Number of cycles : 200,000	Passed	Clause 12.1.4 After testing, the tap shall again satisfy the watertightness criteria given in clause 8 and there shall be no permanent deflection or failure of any component part.

(D1) Repeat Watertightness Test

Sample Reference Characteristics	Basin Mixer (Sensor) HV1E	BS 5412 : 1996 Requirement
Obturator on seat and upstream of obturator	a) Passed	Clause 8.2.2.1 a) Watertightness of the obturator: Throughout the duration of the test, there shall be no leakage past the obturator.
	b) Passed	b) Watertightness upstream: Throughout the duration of the test, there shall be no leakage or seepage through the walls.
Downstream of obturator	Passed	Clause 8.2.3.1 Throughout the duration of the test, there shall be no leakage, or seepage through the seals.

(E1) Hydraulic Characteristics

Sample Reference Characteristics	Basin Mixer (Sensor) HV1E	SS CP 48 Requirement
Timing test for delay action tap	Passed	Timing 2~3 seconds

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TEST RESULTS: Cont'd


(F1) Power Failure Check


Sample Reference Characteristics	Basin Mixer (Sensor) HV1E	Requirement
Upstream of obturator	Passed	During the power failure simulation, the water flow should stopped under circumstances of (On or Off Mode)

REMARKS:

S/N	Type of tap fittings	Model	BS 5412: 1996 Requirements	Characteristics
1.	One Handle Electronic Mixer (Sensor)	HV1E	Complied	A. Watertightness & pressure resistance C. Mechanical endurance D. Repeat watertightness

- a. The test sample complied with BS 5412 : 1996 requirements except hydraulic characteristics.
- b. The hydraulic characteristics complied with SS CP 48: 1989 requirements.
- c. The test samples complied with power failure check.
- d. Effect on Water Reference : S08MEC07709-1A&1B-LYP dated 08/04/2009 and S08MEC07709-2A&2B-LYP dated 08/04/2009
- e. Headwork Endurance Reference : S08MEC07709/CLC dated 15/04/2009


Chua Lee Choong
Associate Engineer

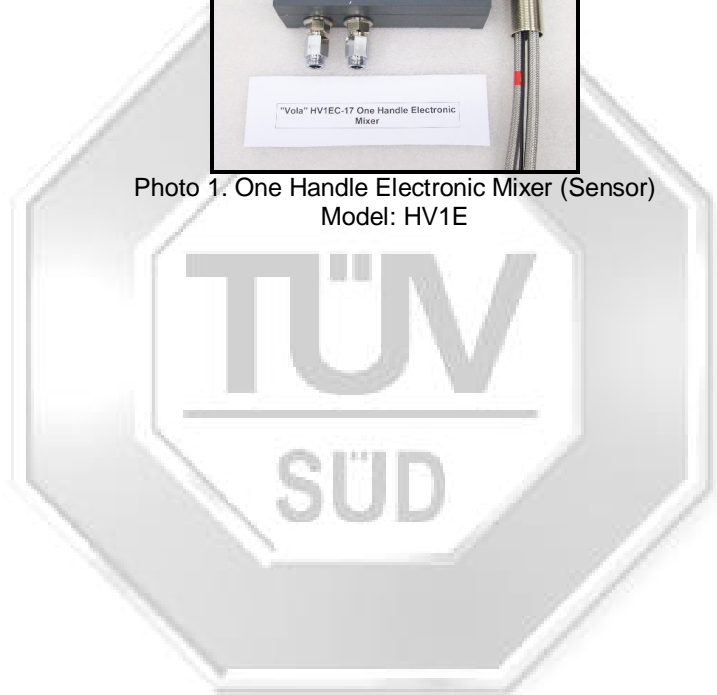

Chua Peck Cheong
Product Manager
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APPENDIX



Photo 1. One Handle Electronic Mixer (Sensor)
Model: HV1E



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March 2010