

Test Report No. 719171152-MEC10/03-CLC
dated 12 APRIL 2010



PSB Singapore

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SUBJECT:

Testing of Tap/Fitting/Mixers.

TESTED FOR:

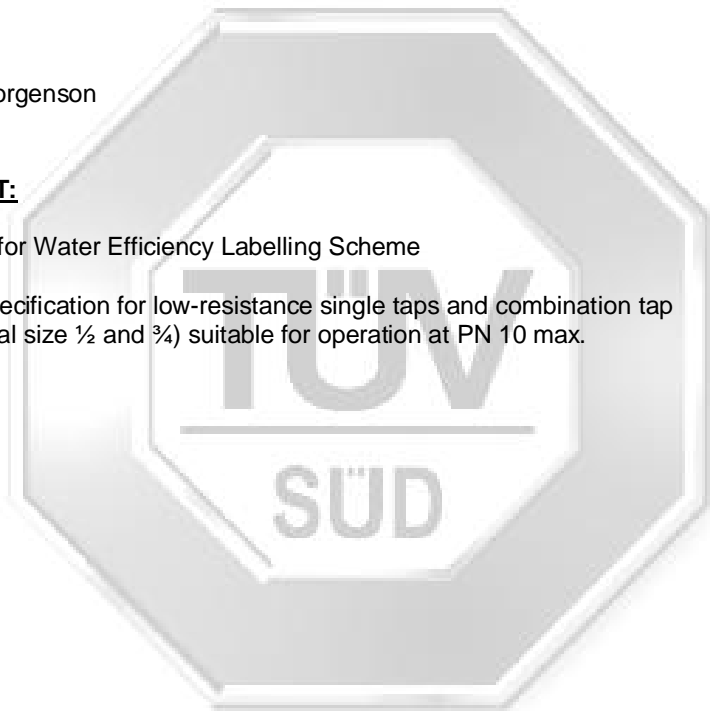
Vola A/S
Lunavej 2
DK 8700 Horsens
Denmark

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 $\frac{1}{2}$ and $\frac{3}{4}$) suitable for operation at PN 10 max.



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TUV[®]



DESCRIPTION OF SAMPLE:

Product : Tap/Fittings/Mixers
Brand Name : Vola

S/N	Description	Model
1.	Deck Mounted Sink Mixer	SC 2
2.	Deck mounted sink mixer with hand shower	SC 3
3.	Deck mounted sink mixer with hand shower	SC 4
4.	Deck Mounted Sink Mixer	SC 6
5.	Deck Mounted Sink Mixer	SC 8
6.	Deck Mounted Sink Mixer	SC 11
7.	Deck Mounted Sink Mixer	SC 13

Note:

Refer to APPENDIX for photo.




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TEST RESULTS:

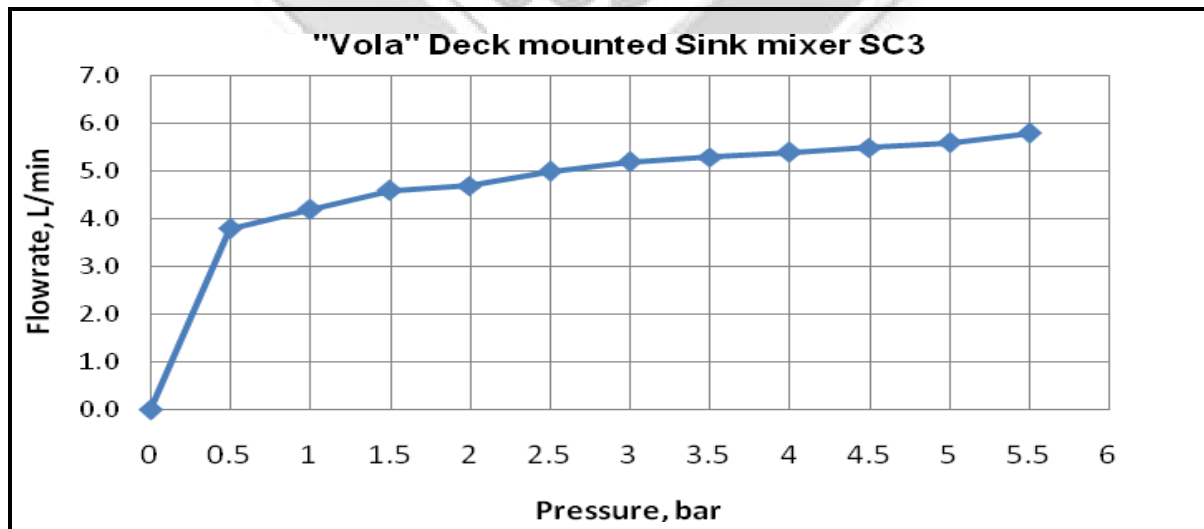
Hydraulic Characteristics

- 1) Description: Deck mounted sink mixer with hand shower
Model: SC3

Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0		
0.5	3.8		
1.0	4.2		
1.5	4.6		
2.0	4.7		
2.5	5.0		
3.0	5.2		
3.5	5.3		
4.0	5.4		
4.5	5.5		
5.0	5.6		
5.5	5.8		

Products/Fittings
Basin Taps & Mixers

- 4 to 6 litres/min (1 tick)
- 2 to 4 Litres/min (2 ticks)
- 2 litres/min or less (3 ticks)




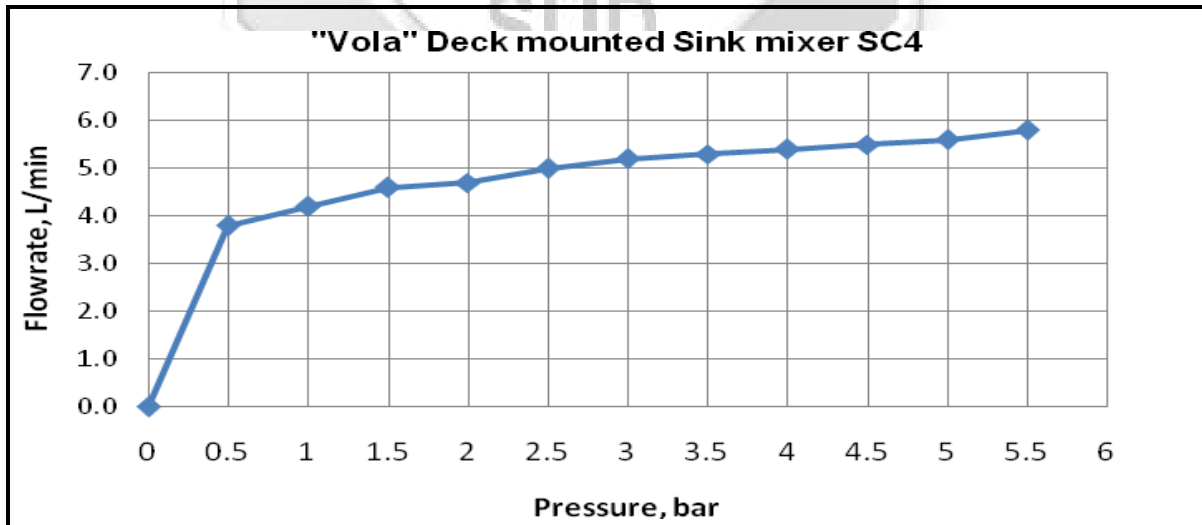
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Hydraulic Characteristics

2) Description: Deck mounted sink mixer with hand shower
Model: SC4

Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0	<p>Products/Fittings Basin Taps & Mixers</p> <p>4 to 6 litres/min (1 tick) 2 to 4 Litres/min (2 ticks) 2 litres/min or less (3 ticks)</p>	
0.5	3.8		
1.0	4.2		
1.5	4.6		
2.0	4.7		
2.5	5.0		
3.0	5.2		
3.5	5.3		
4.0	5.4		
4.5	5.5		
5.0	5.6		
5.5	5.8		

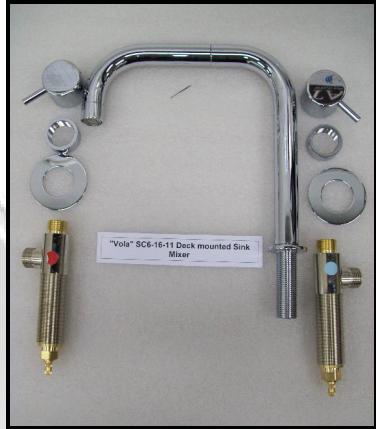


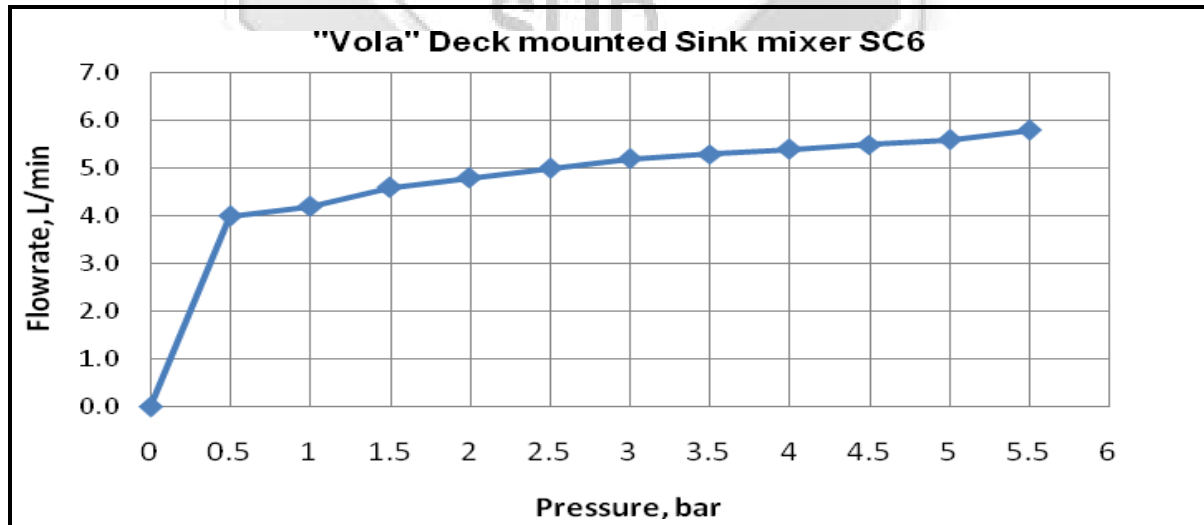
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Hydraulic Characteristics

**3) Description: Deck Mounted Sink Mixer
Model: SC6**

Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0	<p>Products/Fittings Basin Taps & Mixers</p> <p>4 to 6 litres/min (1 tick) 2 to 4 Litres/min (2 ticks) 2 litres/min or less (3 ticks)</p>	
0.5	4.0		
1.0	4.2		
1.5	4.6		
2.0	4.8		
2.5	5.0		
3.0	5.2		
3.5	5.3		
4.0	5.4		
4.5	5.5		
5.0	5.6		
5.5	5.8		




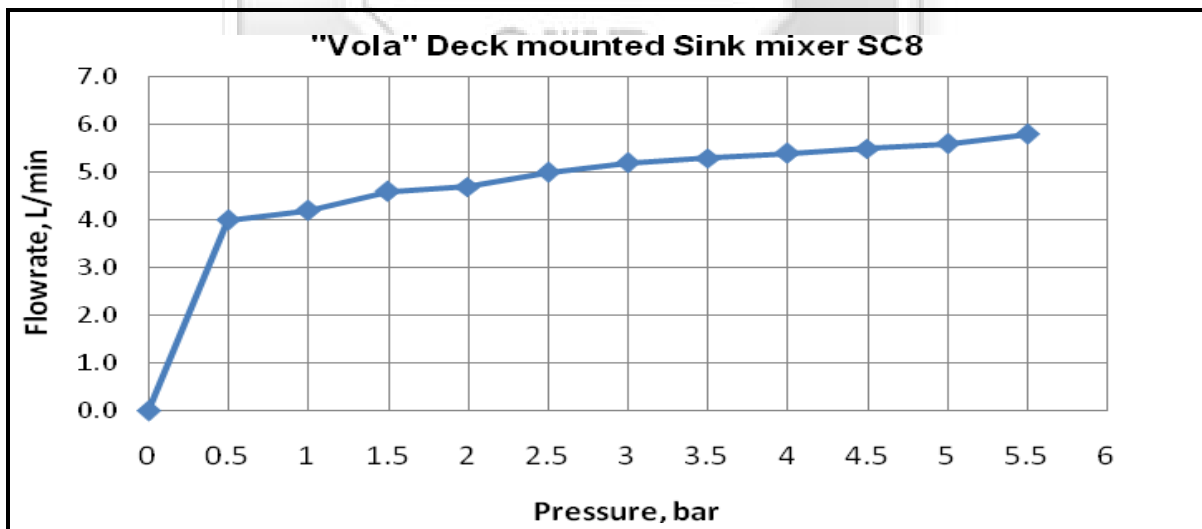
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Hydraulic Characteristics

**4) Description: Deck Mounted Sink Mixer
Model: SC8**


Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0	<p>Products/Fittings Basin Taps & Mixers</p> <p>4 to 6 litres/min (1 tick) 2 to 4 Litres/min (2 ticks) 2 litres/min or less (3 ticks)</p>	
0.5	4.0		
1.0	4.2		
1.5	4.6		
2.0	4.7		
2.5	5.0		
3.0	5.2		
3.5	5.3		
4.0	5.4		
4.5	5.5		
5.0	5.6		
5.5	5.8		

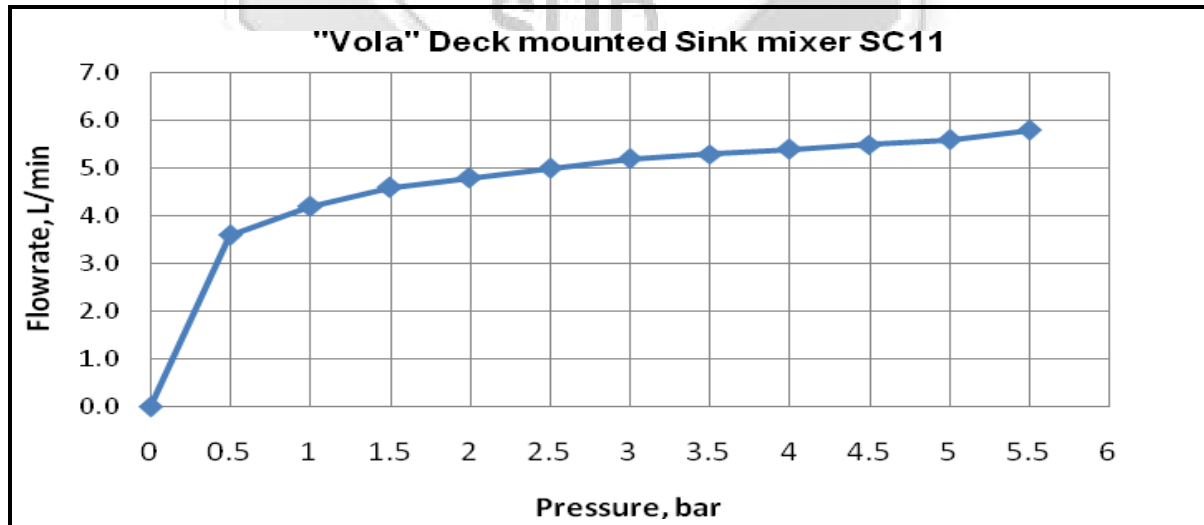


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Hydraulic Characteristics

5) Description: Deck mounted sink mixer with hand shower
Model: SC11

Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0	<p>Products/Fittings Basin Taps & Mixers</p> <p>4 to 6 litres/min (1 tick) 2 to 4 Litres/min (2 ticks) 2 litres/min or less (3 ticks)</p>	
0.5	3.6		
1.0	4.2		
1.5	4.6		
2.0	4.8		
2.5	5.0		
3.0	5.2		
3.5	5.3		
4.0	5.4		
4.5	5.5		
5.0	5.6		
5.5	5.8		




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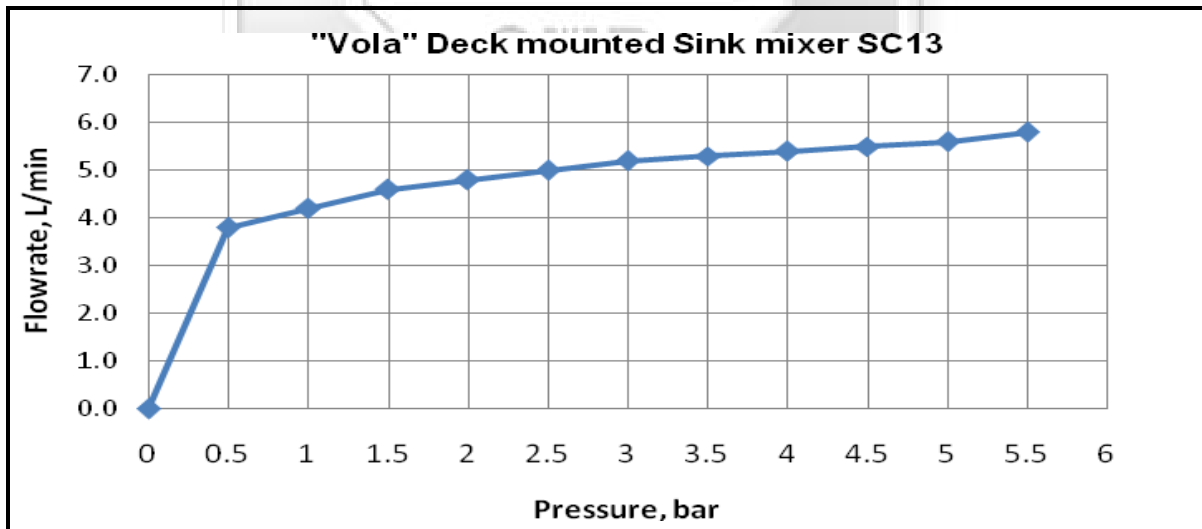
Hydraulic Characteristics

6) Description: Deck mounted sink mixer with hand shower
Model: SC13

Flow Pressure (bar)	Flow Rate (litres/min)	Flow Rate Requirements for Water Efficiency Labelling	Photo
0	0		
0.5	3.8		
1.0	4.2		
1.5	4.6		
2.0	4.8		
2.5	5.0		
3.0	5.2		
3.5	5.3		
4.0	5.4		
4.5	5.5		
5.0	5.6		
5.5	5.8		

Products/Fittings
Basin Taps & Mixers

4 to 6 litres/min (1 tick)
2 to 4 Litres/min (2 ticks)
2 litres/min or less (3 ticks)



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TEST RESULTS:

(A1) Water Tightness & Pressure Resistance Characteristics

Sample Reference		Deck Mounted Sink Mixer SC2, SC3, SC4, SC6 SC8, SC11, SC13	BS 5412 : 1996 Requirement
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. (b) Watertightness upstream: Throughout the duration of the test, there shall be no leakage or seepage through the walls.
		Passed	
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.
	Tap with jet regulator	-	

(B1) Hydraulic Characteristics

Sample Reference		Deck Mounted Sink Mixer		BS 5412 : 1996 Requirement
Flow rate test at 0.1 bar running pressure	Combined	SC2	2.1**	Combination taps assemblies (each side tested separately). ½" tap : 7.5 (l/min) min.
		SC3	2.2**	
		SC4	2.1**	
		SC6	2.0**	Combination taps assemblies (both tap fully open). ½" tap : 10.8 (l/min) min.
		SC8	2.0**	
		SC11	2.1**	
		SC13	1.9**	

****Non-compliance with BS 5412 : 1996 requirements (Please refer to page 10 of 12).

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REMARKS:

S/N	Type of tap fittings	Model	BS 5412: 1996 Requirements	Characteristics
1.	Deck Mounted Sink Mixer	SC 2	Complied	A. Watertightness & pressure resistance
2.	Deck mounted sink mixer with hand shower	SC 3	Complied	
3.	Deck mounted sink mixer with hand shower	SC 4	Complied	
4.	Deck Mounted Sink Mixer	SC 6	Complied	
5.	Deck Mounted Sink Mixer	SC 8	Complied	
6.	Deck Mounted Sink Mixer	SC 11	Complied	
7.	Deck Mounted Sink Mixer	SC 13	Complied	

- 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. Effect on Water Reference : S08MEC07709-1A&1B-LYP dated 08/04/2009 and S08MEC07709-2A&2B-LYP dated 08/04/2009.
- d. Headwork Endurance Reference : S08MEC07709/CLC dated 15/04/2009.
- e. Swivel Endurance Reference : 719171152-MEC10/01-CLC dated 12/Apr/2010.


 Chua Lee Choong
 Associate Engineer


 Chua Peck Cheong
 Product Manager
 Automotive & Industrial Group
 Mechanical Centre

APPENDIX



Photo 1. Deck Mounted Sink Mixer SC2



Photo 2. Deck Mounted Sink Mixer SC3



Photo 3. Deck Mounted Sink Mixer SC4



Photo 4. Deck Mounted Sink Mixer SC6



Photo 5. Deck Mounted Sink Mixer SC8



Photo 6. Deck Mounted Sink Mixer SC11



Photo 7. Deck Mounted Sink Mixer SC13

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March 2010