



MECHANICAL ENGG. DIVISION

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SCIENTIFIC AND INDUSTRIAL
TESTING AND RESEARCH CENTRE

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TEST REPORT NO : 04 0243 Page 1 of 12 Date : 2014.08.20

LIFE TEST REPORT OF DOMESTIC WATER METER

Name & Address of the Customer : V.A.Valves
Udyog Nagar, Gadaipur P.O
Randhawa Masandan
JALANDHAR - 144 004.

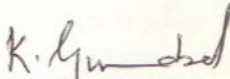
Dear Customer,

We are pleased to forward the test report for the following sample.

Item Description : 25mm Water Meter, Make: FEDREL
Sample S.No. : 1013, 1014 & 1015
Received on : 19.06.2014
Test Method : As per IS779:1994
Customer Ref.No./Date : VAV/L-2, 12.06.2014

Thanking you

Yours faithfully


(K GUNABAL)

Joint Director.



NOTE:

1. This report refers only to the particular sample(s) submitted for testing and the sample was not drawn by us.
2. This report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Si'Tarc.
3. The results reported in this report are valid at the time of under the stated conditions of measurement.
4. Correction or attestation if any invalidate this report. This report strictly confidential & its use for publicity, arbitration or as evidence in legal disputes if forbidden.



CERTIFICATE No. T-0068

Test Report No. : 04 0243 Page : 2 of 12 Date: 2014.08.20

LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

Our Code No. : 04 0243	Deviations from the Test Method
Received On : 2014.06.19	NIL
Duration of Test : 2014.06.20 to 2014.07.31	

DESCRIPTION OF THE SAMPLE :	
Make : FEDREL	Size, mm : 25
Type : Multi Jet	Meter No : 1013, 1014 & 1015
Class : B	

TESTING FACILITY	
Magnetic Flowmeter : PI FLOW 106, 107	Weighing Balance : MI WEIG 28
Pressure Transmitter, P1 : PI PRESS 115	Hydrostatic Pressure Tester : PI HYPR 35
Pressure Transmitter, P2 : PI PRESS 116	Temperature Oven : 22117101

A. PERFORMANCE TEST RESULTS

Flow Tests : (CI:10.2 & 11)				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1013	1014	1015
i)	Maximum flow rating of meter, kl/hr	7	7	7
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	7.643	8.842	7.801
iii)	Pressure loss, MPa	0.090	0.075	0.080
iv)	Error in metering accuracy, % (± 2 %)	-1.404	-1.357	-1.498
	Result	Pass	Pass	Pass

Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.
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(Faint duplicate of the signature and approval section above)



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Tested as per IS 779:1994

2. At Nominal Flow Rate (Q_n):

S.No	Parameter / Meter No	1013	1014	1015
i)	Nominal flow rating of meter, kl/hr	3.5	3.5	3.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	3.730	4.025	3.769
iii)	Pressure loss, MPa	0.021	0.019	0.020
iv)	Error in metering accuracy, % (± 2 %)	-1.137	-1.233	-1.328
Result		Pass	Pass	Pass

3. At Transitional Flow Rate (Q_t):

S.No	Parameter / Meter No	1013	1014	1015
i)	Transitional flow rating of meter, l/hr	280	280	280
ii)	Error in metering accuracy, % (± 2 %)	-1.247	-1.437	-1.057
Result		Pass	Pass	Pass

4. At Minimum Flow Rate (Q_{min}):

S.No	Parameter / Meter No	1013	1014	1015
i)	Minimum starting flow rating of meter, l/hr	70	70	70
ii)	Error in metering accuracy, % (± 5%)	-2.568	-3.060	-3.552
Result		Pass	Pass	Pass

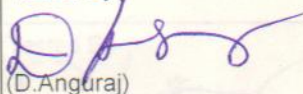
5. Pressure Tightness Test (CI: 10.1):

S.No	Parameter / Meter No	1013	1014	1015
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass

6. Temperature Suitability Test (CI: 10.3):

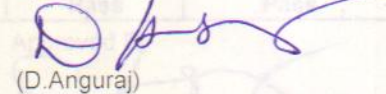
S.No	Parameter / Meter No	1013	1014	1015
i)	Temperature, 45 deg. C	Withstood	Withstood	Withstood
ii)	Duration, 10 hrs	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass

Tested By


(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.

Approved By


(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.



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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Flow Tests(after temperature suitability test):				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1013	1014	1015
i)	Maximum flow rating of meter, kl/hr	7	7	7
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	7.664	8.647	7.873
iii)	Pressure loss, MPa	0.092	0.080	0.083
iv)	Error in metering accuracy, % (± 2 %)	-1.287	-1.238	-1.481
Result		Pass	Pass	Pass
2. At Nominal Flow Rate (Q_n):				
S.No	Parameter / Meter No	1013	1014	1015
i)	Nominal flow rating of meter, kl/hr	3.5	3.5	3.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	3.802	4.039	3.784
iii)	Pressure loss, MPa	0.022	0.021	0.020
iv)	Error in metering accuracy, % (± 2 %)	-1.136	-1.285	-1.385
Result		Pass	Pass	Pass
3. At Transitional Flow Rate (Q_t):				
S.No	Parameter / Meter No	1013	1014	1015
i)	Transitional flow rating of meter, l/hr	280	280	280
ii)	Error in metering accuracy, % (± 2 %)	-1.252	-1.423	-1.081
Result		Pass	Pass	Pass
4. At Minimum Flow Rate (Q_{min}):				
S.No	Parameter / Meter No	1013	1014	1015
i)	Minimum starting flow rating of meter, l/hr	70	70	70
ii)	Error in metering accuracy, % (± 5%)	-2.737	-3.223	-3.710
Result		Pass	Pass	Pass
5. Pressure Tightness Test (Cl: 10.1 of IS 779:1994):				
S.No	Parameter / Meter No	1013	1014	1015
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
Tested By (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		





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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

7. Life Test (CI :12.4.4):

Meter No :1014 & 1015

i). Discontinuous Flow:

a). Nominal flow rate	: 3.5 kl/hr	c). No. of Interruptions :	100000
b). Test flow rate	: 3.5 kl/hr	d). Duration of Pauses :	15 sec

ii). Continuous Flow:

a). Nominal flow rate	: 3.5 kl/hr	c). Period of Operation :	100 hrs
b). Test flow rate	: 7 kl/hr		

Result: Satisfactory

Result: Satisfactory

Flow Tests(after life test) :

1. At Maximum Flow Rate (Q_{max}):

S.No	Parameter / Meter No	1014	1015
i)	Maximum flow rating of meter, kl/hr	7	7
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	8.608	7.888
iii)	Pressure loss, MPa	0.082	0.084
iv)	Error in metering accuracy, % (± 2 %)	-1.204	-1.303
Result		Pass	Pass

2. At Nominal Flow Rate (Q_n):

S.No	Parameter / Meter No	1014	1015
i)	Nominal flow rating of meter, kl/hr	3.5	3.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	4.028	3.881
iii)	Pressure loss, MPa	0.019	0.022
iv)	Error in metering accuracy, % (± 2 %)	-1.266	-1.316
Result		Pass	Pass

Tested By

(D.Anguraj)

Jr.Engineer/ Mech. Engg. Division.



Approved By

(D.Anguraj)

Jr.Engineer/ Mech. Engg. Division.

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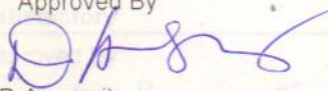
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Tested as per IS 779:1994

3. At Transitional Flow Rate (Qt):			
S.No	Parameter / Meter No	1014	1015
i)	Transitional flow rating of meter, l/hr	280	280
ii)	Error in metering accuracy, % (± 2 %)	-1.414	-1.017
Result		Pass	Pass
4. At Minimum Flow Rate (Qmin):			
S.No	Parameter / Meter No	1014	1015
i)	Minimum starting flow rating of meter, l/hr	70	70
ii)	Error in metering accuracy, % (± 5%)	-3.332	-3.820
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1014	1015
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
6. Temperature Suitability Test :			
S.No	Parameter / Meter No	1014	1015
i)	Temperature, 45 deg. C	Withstood	Withstood
ii)	Duration, 10 hrs	Withstood	Withstood
Result		Pass	Pass
Flow Tests(after temperature suitability test):			
1. At Maximum Flow Rate (Qmax):			
S.No	Parameter / Meter No	1014	1015
i)	Maximum flow rating of meter, kl/hr	7	7
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	8.615	7.916
iii)	Pressure loss, MPa	0.082	0.081
iv)	Error in metering accuracy, % (± 2 %)	-1.176	-1.422
Result		Pass	Pass
Tested By		Approved By	
			
(D.Anguraj)		(D.Anguraj)	
Jr.Engineer/ Mech. Engg. Division.		Jr.Engineer/ Mech. Engg. Division.	





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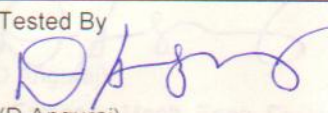

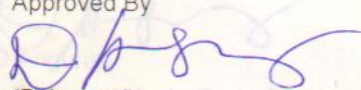
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Tested as per IS 779:1994

2. At Nominal Flow Rate (Q_n):			
S.No	Parameter / Meter No	1014	1015
i)	Nominal flow rating of meter, kl/hr	3.5	3.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	4.043	3.841
iii)	Pressure loss, MPa	0.020	0.022
iv)	Error in metering accuracy, % (± 2 %)	-1.229	-1.328
Result		Pass	Pass
3. At Transitional Flow Rate (Q_t):			
S.No	Parameter / Meter No	1014	1015
i)	Transitional flow rating of meter, l/hr	280	280
ii)	Error in metering accuracy, % (± 2 %)	-1.449	-1.273
Result		Pass	Pass
4. At Minimum Flow Rate (Q_{min}):			
S.No	Parameter / Meter No	1014	1015
i)	Minimum starting flow rating of meter, l/hr	70	70
ii)	Error in metering accuracy, % (± 5%)	-3.374	-3.870
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1014	1015
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
B. CONSTRUCTION			
Meter No. : 1013			
I. Before Dismantling (Cl: 7):			
1). General(Cl: 7.1):			
When the meter has been subjected to an accidental reversal of flow, it is capable of withstanding it without any deterioration or change of their metrological properties.			
Result: Satisfactory			
Tested By  (D. Anguraj) Jr.Engineer/ Mech. Engg. Division.			
		Approved By  (D. Anguraj) Jr.Engineer/ Mech. Engg. Division.	

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2). Body(CI: 7.2):

The body has free from manufacturing and processing defects. And it is not repaired by plugging, welding or by the addition of materials. Internal shape of the body has to ensure smooth flow of water and easy dismantling.

Result: Satisfactory

3). Registration Box(CI 7.3):

The registration box may be provided with escape hole(s) for minimizing the accumulation of water.

Result: Not applicable.

4). Cap(CI: 7.4):

The cap and registration box are integral, the material for cap is the same as used for registration box. The cap has so designed and fixed to the registration box as to avoid entry of water and dirt. The transparent window which covers the dial has inserted from the inside into the cap. The protective lid is secured by a robust hinge or other suitable method of robust construction. Cap ring where applicable should be of the same material as of the cap

Result: Satisfactory

CI: 7.4.1: Transparent window covering the dial should be provided with a wiper on the inner side for wiping off condensed water.

Result: Not applicable.

5). Connections(CI: 7.5):

The meter casing has been fitted with pipe line by means of two cylindrical nipples with connecting nuts. The threads on the connection has conforming to IS 2643 (Pt.1 to 3) : 1975.

Result: Satisfactory

6). Strainers(CI: 7.6):

Water meters have been provided with strainers. They are rigid, easy to remove and clean and is fitted on the inlet side of the water meter. It is possible to remove and clean the strainer in such a way as not to disturb the registration box or tampering with it. The strainer has a total area of holes not less than twice the area of the nominal inlet bore of the pipe to which the meter is connected except in the case of single jet inferential type of meters. The free area of holes is such that it complies with the head loss at nominal and maximum flow rates. An external strainer is fitted on the inlet side satisfying the above requirements

Result: Satisfactory

Tested By

(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.

Approved By

(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.



SLFME 024/07.01/11.13



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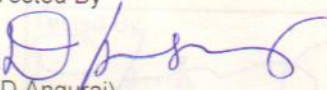
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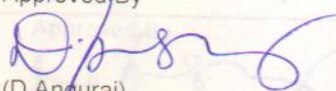
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Tested as per IS 779:1994

- 7). **Impeller and Piston(CI: 7.7):**
CI: 7.7.1: Impeller and impeller shaft assembly has rest on a self-lubricating bearing of low frictional resistance.
Result: Satisfactory
- 8). **Impeller and Measuring Chamber(CI: 7.8):**
The impeller chamber and measuring chamber has a rigid construction and withstand to internal stress.
Result: Satisfactory
- 9). **Gears and Pinions(CI: 7.9):**
Gears and pinions has constructed properly and smoothly mesh with each other and has firmly fitted on their shafts.
Result: Satisfactory
- 10). **Bearings(CI:7.10):**
Impeller bearing has suitably grounded and polished. It shape has a provision to prevent the penetration to sand and to preclude the deposit of anything in solution or suspension in water and to facilitate the washing away of such deposits by the water flow. Gear shaft has freely revolve in their bearing.
Result: Satisfactory
- 11). **Counter(CI:7.11):**
The counter has a combination of pointer and cyclometer type and the pointers reading is in clockwise direction. The rollers of cyclometer counter and the pointer are made of plastic and self-lubricating type.
Result: Satisfactory
- 12). **Dial(CI: 7.12):**
The dial has made of plastic and has indestructible marking with good legibility.
Result: Satisfactory
- 13). **Regulator(CI: 7.13)**
An internal regulator has been provided on the meter and it is not accessible from out side.
Result: Satisfactory

Tested By

(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.



Approved By

(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.



CERTIFICATE No. T-0068

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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

14). Sealing(CI:7.14):

Sealing hole has been provided and the meter has sealed properly to render it impossible to obtain access to the measuring unit including registration box and cap without breaking the seal. Sealing wire is made of rust proof material.

Result: Satisfactory

15). Frost Protection Device(CI:7.15):

Result: Not Applicable

Indicating Device(CI: 8):

1). **CI: 8.1:** The indicating device is capable of record 99999 m³

2). **CI: 8.2:** The indicator has allow by simple juxtaposition of its various constituent elements, a reliable,easy and unambiguous reading of the volume of water measured and expressed in m³. The volume is indicated by the combination of pointers on circular scales and in-line consecutive digits.

3). **CI: 8.2.1:** The m³ and its multiples have been indicated in black and sub-multiples of m³ in red. This color coding applies to the pointers on circular scale type indicating devices and to the drum in in-line digit indicating devices. The actual or apparent height of the digits on the drums is not being less than 4mm.

For digital indicators the visible displacement of all digits is upward in value.The advance of any given digital unit is completed while the digit of the immediately next lower value describes the last tenth of its travel. The drum showing the digits of lowest value may move continuously.The whole number of m³ is clearly indicated.

4). **CI: 8.2.2:** The indicators with pointer has rotates in a clock-wise direction.The value in 'kl' for each scale division are accompanied by a multiplying factor of x0.0001m³, x0.001m³, 0.01m³ and 0.1m³

5). **CI: 8.2.3(a):** The unit symbol ' m³ ' is mentioned in immediate vicinity of the indicator.

Tested By,

(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.

Approved By

(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.





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6). **CI: 8.2.3(b):** The fastest-moving visible graduated element, the control element, the scale interval of which is known as "Verification Scale Interval" has been move continuously.

Result: Satisfactory

7). **CI: 8.2.4:** The length of verification scale interval is not less than 1mm and not more than 5mm. The scale is consist of lines of equal thickness not exceeding one quarter of the distance between the axes of two consecutive lines and differing only in length. The width of the pointer index tip is not exceeding one quarter of the distance between two scale divisions, and it is not greater than 0.5mm.

Result: Satisfactory

8). **CI: 8.3 Value of Verification Scale Division:** The maximum value of verification scale interval is 0.0001m³.

9). **CI:8.4 Accelerating Device:**

The vane provided on the pressure plate does the purpose of the accelerating device. During the testing, it is ensured that, to increasing the speed of the meter is not possible by using this device , when the flow is below Q_{min}.

II. After Dismantling(CI:12.4.3 & 12.4.4):

After the two meters have undergone the life test and all the type tests, one of the meters (Meter No: 1014), which has undergone greater deterioration in its performance under the flow test is dismantled completely to its component parts and examined with a view to ensuring that there is no undue wear or distortion with regard to dimensions and tolerances within specified values. Particular attention is also paid to impeller, impeller shaft, bearings, gears and pinions, pivots and gland packing. After studying all the components, all parts are reassembled. There is no difficulty and force for fitting needed during assembly.

Result: Satisfactory

Tested By

(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.

Approved By

(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.





CERTIFICATE No. T-0068

MECHANICAL DIVISION

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TESTING AND RESEARCH CENTRE

Test Report No : 04 0243

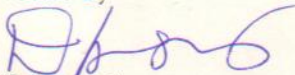
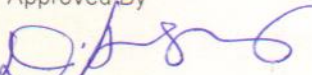
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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

C. DIMENSIONAL VERIFICATION (CI :9)					
S. No	Nomenclature	Standard requirement	Meter No		
			1013	1014	1015
1)	Meter Size, mm	25	25	25	25
2)	Threads	G 1½B	G 1½B	G 1½B	G 1½B
3)	Nominal flow rate, kl/hr	3.5	3.5	3.5	3.5
4)	Length of Thread on the Body(a), mm	12 (min.)	16.3	16.4	16.1
5)	Length of Thread on the Body(b), mm	16 (min.)	18.7	18.5	18.8
6)	Length (with Nipple), mm	380 (± 5.00)	380.8	381.1	380.5
7)	Length (without Nipple), mm	260 (+ 0, - 2)	259.7	259.5	259.2
8)	Width , mm	170 (max.)	102.9	103.3	103.1
9)	Height(H1) , mm	65 (max.)	34.8	35.1	34.9
10)	Height(H2), mm	260 (max.)	77.1	77.4	77.3
Result			Pass	Pass	Pass
D. VERIFICATION SCALE INTERVAL			: Not Applicable		
E. MARKING (CI :14.1)					
a). Trade Mark : Marked		d). Class of water meter		: Marked	
b). SI.No : Marked		e). Direction of flow		: Marked	
c). Nom. Size : Marked		f). Year of manufacturing		: Marked	
		and SI. No			
			Result: Satisfactory		
Remarks:					

--- End of test report ---					
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.		Approved By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.			



SLFME 024/07.01/11.13



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LIFE TEST REPORT OF DOMESTIC WATER METER

Name & Address of the Customer : V.A.Valves
Udyog Nagar, Gadaipur P.O
Randhawa Masandan
JALANDHAR - 144 004.

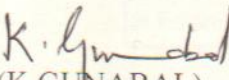
Dear Customer,

We are pleased to forward the test report for the following sample.

Item Description : 40mm Water Meter, Make: FEDREL
Sample S.No. : 1007, 1008 & 1009
Received on : 01.07.2014
Test Method : As per IS779:1994
Customer Ref.No./Date : -, 03.04.2014

Thanking you

Yours faithfully


(K GUNABAL)

Joint Director.



NOTE:

1. This report refers only to the particular sample(s) submitted for testing and the sample was not drawn by us.
2. This report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Si'Tarc.
3. The results reported in this report are valid at the time of under the stated conditions of measurement.
4. Correction or attestation if any invalidate this report. This report strictly confidential & its use for publicity, arbitration or as evidence in legal disputes if forbidden.



CERTIFICATE No. T-0068

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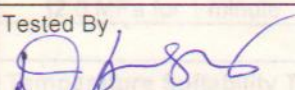
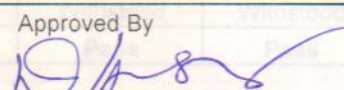
SCIENTIFIC AND INDUSTRIAL
TESTING AND RESEARCH CENTRE

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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Our Code No. : 04 0246	Deviations from the Test Method			
Received On : 2014.07.01	NIL			
Duration of Test : 2014.07.01 to 2014.08.16	1007	1008	1009	
DESCRIPTION OF THE SAMPLE :				
Make : FEDREL	Size, mm : 40			
Type : Multi Jet	Meter No : 1007, 1008			
Class : B	& 1009			
TESTING FACILITY				
Magnetic Flowmeter : PI FLOW 107, 108	Weighing Balance : MI WEIG 28			
Pressure Transmitter, P1 : PI PRESS 115	Hydrostatic Pressure Tester : PI HYPR 35			
Pressure Transmitter, P2 : PI PRESS 116	Temperature Oven : 22117101			
A. PERFORMANCE TEST RESULTS				
Flow Tests : (Cl:10.2 & 11)				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Maximum flow rating of meter, kl/hr	20	20	20
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	21.960	22.068	21.888
iii)	Pressure loss, MPa	0.090	0.091	0.087
iv)	Error in metering accuracy, % (± 2 %)	0.880	0.681	0.582
Result		Pass	Pass	Pass
Tested By		Approved By		
				
(D. Anguraj)		(D. Anguraj)		
Jr. Engineer/ Mech. Engg. Division.		Engineer/ Mech. Engg. Division.		



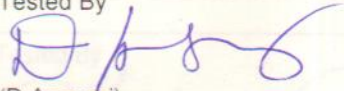
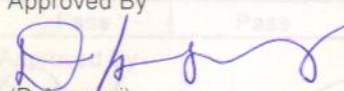
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2. At Nominal Flow Rate (Q_n):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Nominal flow rating of meter, kl/hr	10	10	10
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	11.376	11.592	11.124
iii)	Pressure loss, MPa	0.020	0.018	0.021
iv)	Error in metering accuracy, % (± 2 %)	0.775	1.040	0.908
Result		Pass	Pass	Pass
3. At Transitional Flow Rate (Q_t):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Transitional flow rating of meter, l/hr	800	800	800
ii)	Error in metering accuracy, % (± 2 %)	0.684	0.783	0.586
Result		Pass	Pass	Pass
4. At Minimum Flow Rate (Q_{min}):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Minimum starting flow rating of meter, l/hr	200	200	200
ii)	Error in metering accuracy, % (± 5%)	2.477	2.725	3.221
Result		Pass	Pass	Pass
5. Pressure Tightness Test (Cl: 10.1):				
S.No	Parameter / Meter No	1007	1008	1009
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
6. Temperature Suitability Test (Cl: 10.3):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Temperature, 45 deg. C	Withstood	Withstood	Withstood
ii)	Duration, 10 hrs	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By  (D. Anguraj) Engineer/ Mech. Engg. Division.		

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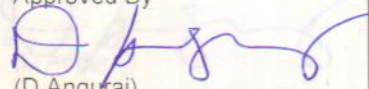
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Flow Tests(after temperature suitability test):				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Maximum flow rating of meter, kl/hr	20	20	20
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	21.780	21.636	21.528
iii)	Pressure loss, MPa	0.091	0.093	0.090
iv)	Error in metering accuracy, % (± 2 %)	0.798	0.698	0.500
Result		Pass	Pass	Pass
2. At Nominal Flow Rate (Q_n):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Nominal flow rating of meter, kl/hr	10	10	10
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	11.088	11.340	11.196
iii)	Pressure loss, MPa	0.020	0.021	0.023
iv)	Error in metering accuracy, % (± 2 %)	0.746	1.011	1.077
Result		Pass	Pass	Pass
3. At Transitional Flow Rate (Q_t):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Transitional flow rating of meter, l/hr	800	800	800
ii)	Error in metering accuracy, % (± 2 %)	0.656	0.855	0.556
Result		Pass	Pass	Pass
4. At Minimum Flow Rate (Q_{min}):				
S.No	Parameter / Meter No	1007	1008	1009
i)	Minimum starting flow rating of meter, l/hr	200	200	200
ii)	Error in metering accuracy, % (± 5%)	2.491	2.982	3.227
Result		Pass	Pass	Pass
5. Pressure Tightness Test (CI: 10.1 of IS 779:1994):				
S.No	Parameter / Meter No	1007	1008	1009
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.		Approved By  (D.Anguraj) Engineer/ Mech. Engg. Division.		



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7. Life Test (CI :12.4.4):

Meter No :1007 & 1009

i). Discontinuous Flow:

a). Nominal flow rate	: 10 kl/hr	c). No. of Interruptions	: 52	100000
b). Test flow rate	: 10 kl/hr	d). Duration of Pauses	: 15 sec	

ii). Continuous Flow:

a). Nominal flow rate	: 10 kl/hr	c). Period of Operation	: 100 hrs	Result: Satisfactory
b). Test flow rate	: 20 kl/hr			Result: Satisfactory

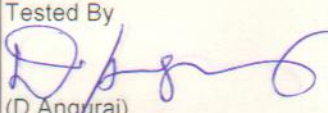
Flow Tests(after life test) :

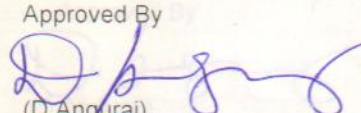
1. At Maximum Flow Rate (Q_{max}):


S.No	Parameter / Meter No	1007	1009
i)	Maximum flow rating of meter, kl/hr	20	20
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	21.708	21.636
iii)	Pressure loss, MPa	0.091	0.089
iv)	Error in metering accuracy, % (± 2 %)	0.732	0.533
	Result	Pass	Pass

2. At Nominal Flow Rate (Q_n):

S.No	Parameter / Meter No	1007	1009
i)	Nominal flow rating of meter, kl/hr	10	10
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	10.908	11.016
iii)	Pressure loss, MPa	0.020	0.019
iv)	Error in metering accuracy, % (± 2 %)	0.790	1.054
	Result	Pass	Pass

Tested By

(D. Anguraj)
Jr.Engineer/ Mech. Engg. Division.

Approved By

(D. Anguraj)
Engineer/ Mech. Engg. Division.





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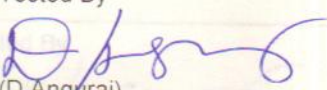
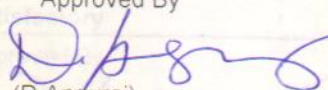
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3. At Transitional Flow Rate (Qt):			
S.No	Parameter / Meter No	1007	1009
i)	Transitional flow rating of meter, l/hr	800	800
ii)	Error in metering accuracy, % (± 2 %)	0.651	0.552
Result		Pass	Pass
4. At Minimum Flow Rate (Qmin):			
S.No	Parameter / Meter No	1007	1009
i)	Minimum starting flow rating of meter, l/hr	200	200
ii)	Error in metering accuracy, % (± 5%)	2.436	3.089
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1007	1009
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
6. Temperature Suitability Test :			
S.No	Parameter / Meter No	1007	1009
i)	Temperature, 45 deg. C	Withstood	Withstood
ii)	Duration, 10 hrs	Withstood	Withstood
Result		Pass	Pass
Flow Tests(after temperature suitability test):			
1. At Maximum Flow Rate (Qmax):			
S.No	Parameter / Meter No	1007	1009
i)	Maximum flow rating of meter, kl/hr	20	20
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	21.708	21.564
iii)	Pressure loss, MPa	0.089	0.091
iv)	Error in metering accuracy, % (± 2 %)	0.967	0.693
Result		Pass	Pass
Tested By		Approved By	
			
(D. Anguraj)		(D. Anguraj)	
Jr. Engineer/ Mech. Engg. Division.		Engineer/ Mech. Engg. Division.	






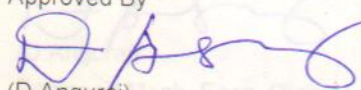
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2. At Nominal Flow Rate (Q_n):			
S.No	Parameter / Meter No	1007	1009
i)	Nominal flow rating of meter, kl/hr	10	10.0
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	11.124	11.196
iii)	Pressure loss, MPa	0.018	0.019
iv)	Error in metering accuracy, % (± 2 %)	0.713	0.912
Result		Pass	Pass
3. At Transitional Flow Rate (Q_t):			
S.No	Parameter / Meter No	1007	1009
i)	Transitional flow rating of meter, l/hr	800	800
ii)	Error in metering accuracy, % (± 2 %)	0.630	0.531
Result		Pass	Pass
4. At Minimum Flow Rate (Q_{min}):			
S.No	Parameter / Meter No	1007	1009
i)	Minimum starting flow rating of meter, l/hr	200	200
ii)	Error in metering accuracy, % (± 5%)	2.822	3.554
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1007	1009
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
B. CONSTRUCTION			
Meter No. : 1008			
I. Before Dismantling (CI: 7) :			
1). General(CI: 7.1):			
When the meter has been subjected to an accidental reversal of flow, it is capable of withstanding it without any deterioration or change of their metrological properties.			
Tested By		Result: Satisfactory	
 (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		 (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.	





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2). Body(CI: 7.2):

The body has free from manufacturing and processing defects. And it is not repaired by plugging, welding or by the addition of materials. Internal shape of the body has to ensure smooth flow of water and easy dismantling.

Result: Satisfactory

3). Registration Box(CI 7.3):

The registration box may be provided with escape hole(s) for minimizing the accumulation of water.

Result: Not applicable.

4). Cap(CI: 7.4):

The cap and registration box are integral, the material for cap is the same as used for registration box. The cap has so designed and fixed to the registration box as to avoid entry of water and dirt. The transparent window which covers the dial has inserted from the inside into the cap. The protective lid is secured by a robust hinge or other suitable method of robust construction. Cap ring where applicable should be of the same material as of the cap.

Result: Satisfactory

CI: 7.4.1: Transparent window covering the dial should be provided with a wiper on the inner side for wiping off condensed water.

Result: Not applicable.

5). Connections(CI: 7.5):

The meter casing has been fitted with pipe line by means of two cylindrical nipples with connecting nuts. The threads on the connection has conforming to IS 2643 (Pt.1 to 3) : 1975.

Result: Satisfactory

6). Strainers(CI: 7.6):

Water meters have been provided with strainers. They are rigid, easy to remove and clean and is fitted on the inlet side of the water meter. It is possible to remove and clean the strainer in such a way as not to disturb the registration box or tampering with it. The strainer has a total area of holes not less than twice the area of the nominal inlet bore of the pipe to which the meter is connected except in the case of single jet inferential type of meters. The free area of holes is such that it complies with the head loss at nominal and maximum flow rates. An external strainer is fitted on the inlet side satisfying the above requirements.

Result: Satisfactory

Tested By

(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.

Approved By

(D. Anguraj)

Engineer/ Mech. Engg. Division.

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- 7). **Impeller and Piston(CI: 7.7):**
CI: 7.7.1: Impeller and impeller shaft assembly has rest on a self-lubricating bearing of low frictional resistance.
Result: Satisfactory
- 8). **Impeller and Measuring Chamber(CI: 7.8):**
The impeller chamber and measuring chamber has a rigid construction and withstand to internal stress.
Result: Satisfactory
- 9). **Gears and Pinions(CI: 7.9):**
Gears and pinions has constructed properly and smoothly mesh with each other and has firmly fitted on their shafts.
Result: Satisfactory
- 10). **Bearings(CI:7.10):**
Impeller bearing has suitably grounded and polished. It shape has a provision to prevent the penetration to sand and to preclude the deposit of anything in solution or suspension in water and to facilitate the washing away of such deposits by the water flow. Gear shaft has freely revolve in their bearing.
Result: Satisfactory
- 11). **Counter(CI:7.11):**
The counter has a combination of pointer and cyclometer type and the pointers reading is in clockwise direction. The rollers of cyclometer counter and the pointer are made of plastic and self-lubricating type.
Result: Satisfactory
- 12). **Dial(CI: 7.12):**
The dial has made of plastic and has indestructible marking with good legibility.
Result: Satisfactory
- 13). **Regulator(CI: 7.13)**
An internal regulator has been provided on the meter and it is not accessible from out side.
Result: Satisfactory

Tested By

(D.Anguraj)

Jr.Engineer/ Mech. Engg. Division.



Approved By

(D.Anguraj)

Engineer/ Mech. Engg. Division.



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14). Sealing(CI:7.14):

Sealing hole has been provided and the meter has sealed properly to render it impossible to obtain access to the measuring unit including registration box and cap without breaking the seal. Sealing wire is made of rust proof material.

Result: Satisfactory

15). Frost Protection Device(CI:7.15):

Result: Not Applicable

Indicating Device(CI: 8):

1). **CI: 8.1:** The indicating device is capable of record 99999 m³

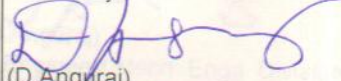
2). **CI: 8.2:** The indicator has allow by simple juxtaposition of its various constituent elements, a reliable,easy and unambiguous reading of the volume of water measured and expressed in m³. The volume is indicated by the combination of pointers on circular scales and in-line consecutive digits.

3). **CI: 8.2.1:** The m³ and its multiples have been indicated in black and sub-multiples of m³ in red. This color coding applies to the pointers on circular scale type indicating devices and to the drum in in-line digit indicating devices. The actual or apparent height of the digits on the drums is not being less than 4mm.
For digital indicators the visible displacement of all digits is upward in value.The advance of any given digital unit is completed while the digit of the immediately next lower value describes the last tenth of its travel. The drum showing the digits of lowest value may move continuously.The whole number of m³ is clearly indicated.

4). **CI: 8.2.2:** The indicators with pointer has rotates in a clock-wise direction.The value in 'kl' for each scale division are accompanied by a multiplying factor of x0.0001m³, x0.001m³, 0.01m³ and 0.1m³

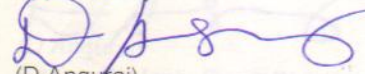
5). **CI: 8.2.3(a):** The unit symbol ' m³ ' is mentioned in immediate vicinity of the indicator.

Tested By


(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.



Approved By


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Engineer/ Mech. Engg. Division.



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6). **CI: 8.2.3(b):** The fastest-moving visible graduated element, the control element, the scale interval of which is known as "Verification Scale Interval" has been move continuously.
Result: Satisfactory

7). **CI: 8.2.4:** The length of verification scale interval is not less than 1mm and not more than 5mm. The scale is consist of lines of equal thickness not exceeding one quarter of the distance between the axes of two consecutive lines and differing only in length.
The width of the pointer index tip is not exceeding one quarter of the distance between two scale divisions, and it is not greater than 0.5mm.
Result: Satisfactory

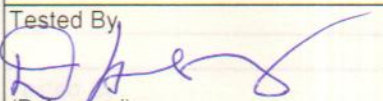
8). **CI: 8.3 Value of Verification Scale Division:** The maximum value of verification scale interval is 0.0001m³.

9). **CI:8.4 Accelerating Device:**
The vane provided on the pressure plate does the purpose of the accelerating device. During the testing, it is ensured that, to increasing the speed of the meter is not possible by using this device, when the flow is below Q_{min}.
Not Applicable

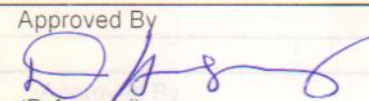
II. After Dismantling(CI:12.4.3 & 12.4.4):

After the two meters have undergone the life test and all the type tests, one of the meters (Meter No: 1009), which has undergone greater deterioration in its performance under the flow test is dismantled completely to its component parts and examined with a view to ensuring that there is no undue wear or distortion with regard to dimensions and tolerances within specified values. Particular attention is also paid to impeller, impeller shaft, bearings, gears and pinions, pivots and gland packing. After studying all the components, all parts are reassembled. There is no difficulty and force for fitting needed during assembly.

Result: Satisfactory

Tested By

(D. Anguraj)
Jr. Engineer/ Mech. Engg. Division.



Approved By

(D. Anguraj)
Engineer/ Mech. Engg. Division.



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MECHANICAL ENGG. DIVISION

TESTING AND RESEARCH CENTRE

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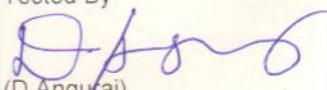
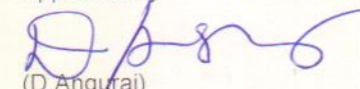
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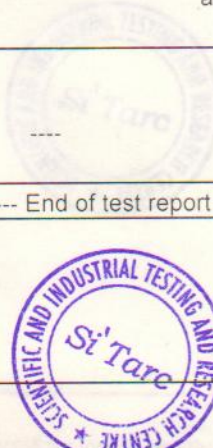
Date: 2014.08.21

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C. DIMENSIONAL VERIFICATION (CI :9)					
S. No	Nomenclature	Standard requirement	Meter No		
			1007	1008	1009
1)	Meter Size, mm	40	40	40	40
2)	Threads	G 2B	G 2B	G 2B	G 2B
3)	Nominal flow rate, kl/hr	10	10.0	10.0	10.0
4)	Length of Thread on the Body(a), mm	13 (min.)	18.1	18.2	17.9
5)	Length of Thread on the Body(b), mm	20 (min.)	22.1	22.3	22.3
6)	Length (with Nipple), mm	430 (± 5.00)	431.0	430.5	431.0
7)	Length (without Nipple), mm	300 (+ 0, - 2)	299.4	299.2	299.4
8)	Width , mm	210 (max.)	127.3	127.5	127.4
9)	Height(H1) , mm	75 (max.)	35.6	35.5	35.5
10)	Height(H2), mm	300 (max.)	115.7	115.8	115.5
Result			Pass	Pass	Pass
D. VERIFICATION SCALE INTERVAL			: Not Applicable		
E. MARKING (CI :14.1)					
a). Trade Mark : Marked		d). Class of water meter		: Marked	
b). SI.No : Marked		e). Direction of flow		: Marked	
c). Nom. Size : Marked		f). Year of manufacturing		: Marked	
		and SI. No			
Result: Satisfactory					
Remarks:					

--- End of test report ---					
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.			Approved By  (D. Anguraj) Engineer/ Mech. Engg. Division.		



SLFME 024/07.01/11.13



CERTIFICATE No. T-0068

MECHANICAL ENGG. DIVISION

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SCIENTIFIC AND INDUSTRIAL
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RECOGNISED BY DSIR/MINISTRY OF SCIENCE & TECHNOLOGY AND BIS, ACCREDITED BY NABL IN THE FIELDS OF MECHANICAL, ELECTRICAL & CHEMICAL TESTING AND MECHANICAL & ELECTRO TECHNICAL CALIBRATION. SPONSORED BY INDUSTRIAL DEVELOPMENT BANK OF INDIA (IDBI), PROMOTED BY THE SOUTHERN INDIA ENGG. MANUFACTURERS ASSOCIATION (SIEMA) AND COIMBATORE DISTRICT SMALL SCALE INDUSTRIES ASSOCIATION (CODISSIA).

TEST REPORT NO : 04 0237 Page 1 of 12 Date : 2014.06.27

LIFE TEST REPORT OF DOMESTIC WATER METER

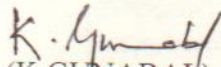
Name & Address of the Customer : V.A.Valves
Udyog Nagar, Gadaipur P.O
Randhawa Masandan
JALANDHAR - 144 004.

Dear Customer,

We are pleased to forward the test report for the following sample.

Item Description : 15mm Water Meter, Make: FEDREL
Sample S.No. : 1001, 1002 & 1003
Received on : 18.04.2014
Test Method : As per IS779:1994
Customer Ref.No./Date : ZAIPL/SITARC/2013-14,08.04.2014

Thanking you
Yours faithfully


(K GUNABAL)

Joint Director.



NOTE:-

1. This report refers only to the particular sample(s) submitted for testing and the sample was not drawn by us.
2. This report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Si'Tarc.
3. The results reported in this report are valid at the time of under the stated conditions of measurement.
4. Correction or attestation if any invalidate this report. This report strictly confidential & its use for publicity, arbitration or as evidence in legal disputes if forbidden.



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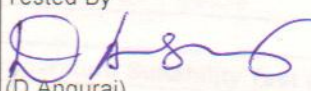

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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Our Code No. : 04 0237	Deviations from the Test Method			
Received On : 2014.04.18	NIL			
Duration of Test : 2014.04.19 to 2014.06.18				
DESCRIPTION OF THE SAMPLE :				
Make : FEDREL	Size, mm : 15			
Type : Multi Jet	Meter No : 1001 , 1002			
Class : B	& 1003			
TESTING FACILITY				
Magnetic Flowmeter : PI FLOW 106	Weighing Balance : MI WEIG 28			
Pressure Transmitter, P1 : PI PRESS 115	Hydrostatic Pressure Tester : PI HYPR 35			
Pressure Transmitter, P2 : PI PRESS 116	Temperature Oven : 22117101			
A. PERFORMANCE TEST RESULTS				
Flow Tests : (Cl:10.2 & 11)				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1001	1002	1003
i)	Maximum flow rating of meter, kl/hr	3	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.586	3.593	3.578
iii)	Pressure loss, MPa	0.063	0.071	0.071
iv)	Error in metering accuracy, % (± 2 %)	-0.967	0.870	-1.468
	Result	Pass	Pass	Pass
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By  (H. Sahul Hameed) Engineer/ Mech. Engg. Division.		



SLFME 024/07.01/11.13



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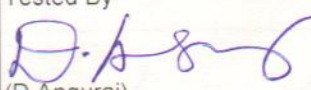

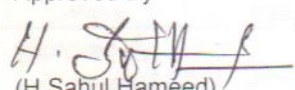
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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

2. At Nominal Flow Rate (Q _n):						
S.No	Parameter / Meter No	1001	1002	1003		
i)	Nominal flow rating of meter, kl/hr	1.5	1.5	1.5		
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.955	1.937	1.879		
iii)	Pressure loss, MPa	0.015	0.018	0.023		
iv)	Error in metering accuracy, % (± 2 %)	-1.227	-0.966	-0.443		
	Result	Pass	Pass	Pass		
3. At Transitional Flow Rate (Q _t):						
S.No	Parameter / Meter No	1001	1002	1003		
i)	Transitional flow rating of meter, l/hr	120	120	120		
ii)	Error in metering accuracy, % (± 2 %)	-1.324	-0.419	-1.324		
	Result	Pass	Pass	Pass		
4. At Minimum Flow Rate (Q _{min}):						
S.No	Parameter / Meter No	1001	1002	1003		
i)	Minimum starting flow rating of meter, l/hr	30	30	30		
ii)	Error in metering accuracy, % (± 5%)	1.784	-2.801	-2.801		
	Result	Pass	Pass	Pass		
5. Pressure Tightness Test (CI: 10.1):						
S.No	Parameter / Meter No	1001	1002	1003		
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood		
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood		
	Result	Pass	Pass	Pass		
6. Temperature Suitability Test (CI: 10.3):						
S.No	Parameter / Meter No	1001	1002	1003		
i)	Temperature, 45 deg. C	Withstood	Withstood	Withstood		
ii)	Duration, 10 hrs					
	Result	Pass	Pass	Pass		
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.					Approved By  (H. Sahul Hameed) Engineer/ Mech. Engg. Division.	

SLFME 024/07 01/11.13



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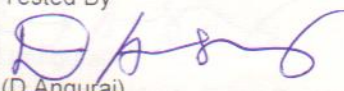
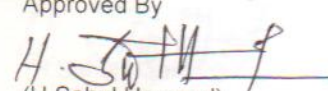
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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Flow Tests(after temperature suitability test):				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1001	1002	1003
i)	Maximum flow rating of meter, kl/hr	3	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.535	3.564	3.550
iii)	Pressure loss, MPa	0.096	0.092	0.094
iv)	Error in metering accuracy, % (± 2 %)	-0.926	1.009	-1.313
Result		Pass	Pass	Pass
2. At Nominal Flow Rate (Q_n):				
S.No	Parameter / Meter No	1001	1002	1003
i)	Nominal flow rating of meter, kl/hr	1.5	1.5	1.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.955	1.937	1.879
iii)	Pressure loss, MPa	0.024	0.022	0.023
iv)	Error in metering accuracy, % (± 2 %)	-1.190	-0.987	-1.393
Result		Pass	Pass	Pass
3. At Transitional Flow Rate (Q_t):				
S.No	Parameter / Meter No	1001	1002	1003
i)	Transitional flow rating of meter, l/hr	120	120	120
ii)	Error in metering accuracy, % (± 2 %)	-1.461	-0.981	-1.461
Result		Pass	Pass	Pass
4. At Minimum Flow Rate (Q_{min}):				
S.No	Parameter / Meter No	1001	1002	1003
i)	Minimum starting flow rating of meter, l/hr	30	30	30
ii)	Error in metering accuracy, % (± 5%)	-2.809	-1.847	-1.847
Result		Pass	Pass	Pass
5. Pressure Tightness Test (Cl: 10.1 of IS 779:1994):				
S.No	Parameter / Meter No	1001	1002	1003
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
Tested By		Approved By		
 (D. Anguraj)		 (H. Sahul Hameed)		
Jr.Engineer/ Mech. Engg. Division.		Engineer/ Mech. Engg. Division.		



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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

7. Life Test (CI :12.4.4):

Meter No :1001 & 1003

i). Discontinuous Flow:

a). Nominal flow rate : 1.5 kl/hr c). No. of Interruptions : 100000
b). Test flow rate : 1.5 kl/hr d). Duration of Pauses : 15 sec

ii). Continuous Flow:

a). Nominal flow rate : 1.5 kl/hr c). Period of Operation : 100 hrs
b). Test flow rate : 3 kl/hr

Result: Satisfactory

Result: Satisfactory

Flow Tests(after life test) :


1. At Maximum Flow Rate (Q_{max}):

S.No	Parameter / Meter No	1001	1003
i)	Maximum flow rating of meter, kl/hr	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.539	3.560
iii)	Pressure loss, MPa	0.094	0.096
iv)	Error in metering accuracy, % (± 2 %)	-0.988	-1.377
Result		Pass	Pass

2. At Nominal Flow Rate (Q_n):


S.No	Parameter / Meter No	1001	1003
i)	Nominal flow rating of meter, kl/hr	1.5	1.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.955	1.937
iii)	Pressure loss, MPa	0.023	0.021
iv)	Error in metering accuracy, % (± 2 %)	-1.200	-0.400
Result		Pass	Pass

Tested By


(D. Anguraj)
Jr.Engineer/ Mech. Engg. Division.



Approved By


(H. Sahul Hameed)
Engineer/ Mech. Engg. Division.

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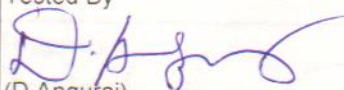
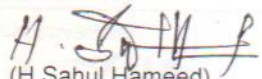
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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

3. At Transitional Flow Rate (Qt):			
S.No	Parameter / Meter No	1001	1003
i)	Transitional flow rating of meter, l/hr	120	120
ii)	Error in metering accuracy, % ($\pm 2\%$)	-1.294	-1.790
Result		Pass	Pass
4. At Minimum Flow Rate (Qmin):			
S.No	Parameter / Meter No	1001	1003
i)	Minimum starting flow rating of meter, l/hr	30	30
ii)	Error in metering accuracy, % ($\pm 5\%$)	-2.213	-3.221
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1001	1003
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
6. Temperature Suitability Test :			
S.No	Parameter / Meter No	1001	1003
i)	Temperature, 45 deg. C	Withstood	Withstood
ii)	Duration, 10 hrs		
Result		Pass	Pass
Flow Tests(after temperature suitability test):			
1. At Maximum Flow Rate (Qmax):			
S.No	Parameter / Meter No	1001	1003
i)	Maximum flow rating of meter, kl/hr	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.532	3.521
iii)	Pressure loss, MPa	0.095	0.093
iv)	Error in metering accuracy, % ($\pm 2\%$)	-0.914	-1.668
Result		Pass	Pass
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.		Approved By  (H.Sahul Hameed) Engineer/ Mech. Engg. Division.	



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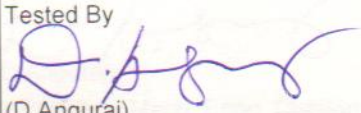

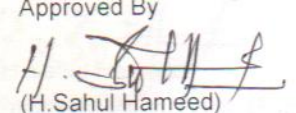
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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

2. At Nominal Flow Rate (Q_n):			
S.No	Parameter / Meter No	1001	1003
i)	Nominal flow rating of meter, kl/hr	1.5	1.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.955	1.937
iii)	Pressure loss, MPa	0.022	0.021
iv)	Error in metering accuracy, % (± 2 %)	-1.216	-0.420
Result		Pass	Pass
3. At Transitional Flow Rate (Q_t):			
S.No	Parameter / Meter No	1001	1003
i)	Transitional flow rating of meter, l/hr	120	120
ii)	Error in metering accuracy, % (± 2 %)	-1.286	-1.777
Result		Pass	Pass
4. At Minimum Flow Rate (Q_{min}):			
S.No	Parameter / Meter No	1001	1003
i)	Minimum starting flow rating of meter, l/hr	30	30
ii)	Error in metering accuracy, % (± 5%)	-2.642	-3.615
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1001	1003
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
B. CONSTRUCTION			
Meter No. : 1002			
I. Before Dismantling (Cl: 7) :			
1). General(Cl: 7.1):			
When the meter has been subjected to an accidental reversal of flow, it is capable of withstanding it without any deterioration or change of their metrological properties.			
Result: Satisfactory			
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.			Approved By  (H. Sahul Hameed) Engineer/ Mech. Engg. Division.

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Tested as per IS 779:1994

2). Body(CI: 7.2):

The body has free from manufacturing and processing defects. And it is not repaired by plugging, welding or by the addition of materials. Internal shape of the body has to ensure smooth flow of water and easy dismantling.

Result: Satisfactory

3). Registration Box(CI 7.3):

The registration box may be provided with escape hole(s) for minimizing the accumulation of water.

Result: Not applicable.

4). Cap(CI: 7.4):

The cap and registration box are integral, the material for cap is the same as used for registration box. The cap has so designed and fixed to the registration box as to avoid entry of water and dirt. The transparent window which covers the dial has inserted from the inside into the cap. The protective lid is secured by a robust hinge or other suitable method of robust construction. Cap ring where applicable should be of the same material as of the cap

Result: Satisfactory

CI: 7.4.1: Transparent window covering the dial should be provided with a wiper on the inner side for wiping off condensed water.

Result: Not applicable.

5). Connections(CI: 7.5):

The meter casing has been fitted with pipe line by means of two cylindrical nipples with connecting nuts. The threads on the connection has conforming to IS 2643 (Pt.1 to 3) : 1975.

Result: Satisfactory

6). Strainers(CI: 7.6):

Water meters have been provided with strainers. They are rigid, easy to remove and clean and is fitted on the inlet side of the water meter. It is possible to remove and clean the strainer in such a way as not to disturb the registration box or tampering with it. The strainer has a total area of holes not less than twice the area of the nominal inlet bore of the pipe to which the meter is connected except in the case of single jet inferential type of meters. The free area of holes is such that it complies with the head loss at nominal and maximum flow rates. An external strainer is fitted on the inlet side satisfying the above requirements

Result: Satisfactory

Tested By

(D. Anguraj)

Jr.Engineer/ Mech. Engg. Division.



Approved By

(H. Sahul Hameed)

Engineer/ Mech. Engg. Division.

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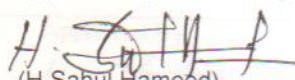
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<p>7). Impeller and Piston(CI: 7.7): CI: 7.7.1: Impeller and impeller shaft assembly has rest on a self-lubricating bearing of low frictional resistance.</p>	<p>Result: Satisfactory</p>
<p>8). Impeller and Measuring Chamber(CI: 7.8): The impeller chamber and measuring chamber has a rigid construction and withstand to internal stress.</p>	<p>Result: Satisfactory</p>
<p>9). Gears and Pinions(CI: 7.9): Gears and pinions has constructed properly and smoothly mesh with each other and has firmly fitted on their shafts.</p>	<p>Result: Satisfactory</p>
<p>10). Bearings(CI:7.10): Impeller bearing has suitably grounded and polished. It shape has a provision to prevent the penetration to sand and to preclude the deposit of anything in solution or suspension in water and to facilitate the washing away of such deposits by the water flow. Gear shaft has freely revolve in their bearing.</p>	
<p>11). Counter(CI:7.11): The counter has a combination of pointer and cyclometer type and the pointers reading is in clockwise direction. The rollers of cyclometer counter and the pointer are made of plastic and self-lubricating type.</p>	<p>Result: Satisfactory</p>
<p>12). Dial(CI: 7.12): The dial has made of plastic and has indestructible marking with good legibility.</p>	<p>Result: Satisfactory</p>
<p>13). Regulator(CI: 7.13) An internal regulator has been provided on the meter and it is not accessible from out side.</p>	<p>Result: Satisfactory</p>
<p>Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.</p>	<p>Approved By  (H.Sahul Hameed) Engineer/ Mech. Engg. Division.</p>



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LIFE TEST REPORT OF DOMESTIC WATER METER
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14). Sealing(CI:7.14):

Sealing hole has been provided and the meter has sealed properly to render it impossible to obtain access to the measuring unit including registration box and cap without breaking the seal. Sealing wire is made of rust proof material.

Result: Satisfactory

15). Frost Protection Device(CI:7.15):

Result: Not Applicable

Indicating Device(CI: 8):

1). **CI: 8.1:** The indicating device is capable of record 99999 m³

2). **CI: 8.2:** The indicator has allow by simple juxtaposition of its various constituent elements, a reliable,easy and unambiguous reading of the volume of water measured and expressed in m³. The volume is indicated by the combination of pointers on circular scales and in-line consecutive digits.


3). **CI: 8.2.1:** The m³ and its multiples have been indicated in black and sub-multiples of m³ in red. This color coding applies to the pointers on circular scale type indicating devices and to the drum in in-line digit indicating devices. The actual or apparent height of the digits on the drums is not being less than 4mm.

For digital indicators the visible displacement of all digits is upward in value.The advance of any given digital unit is completed while the digit of the immediately next lower value describes the last tenth of its travel. The drum showing the digits of lowest value may move continuously.The whole number of m³ is clearly indicated.

4). **CI: 8.2.2:** The indicators with pointer has rotates in a clock-wise direction.The value in 'kl' for each scale division are accompanied by a multiplying factor of x0.0001m³, x0.001m³, 0.01m³ and 0.1m³

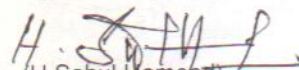
5). **CI: 8.2.3(a):** The unit symbol ' m³ ' is mentioned in immediate vicinity of the indicator.

Tested By


(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.



Approved By


(H.Sahul Hameed)
Engineer/ Mech. Engg. Division.




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Tested as per IS 779:1994

- 6). **CI: 8.2.3(b):** The fastest-moving visible graduated element, the control element, the scale interval of which is known as "Verification Scale Interval" has been move continuously.
Result: Satisfactory
- 7). **CI: 8.2.4:** The length of verification scale interval is not less than 1mm and not more than 5mm. The scale is consist of lines of equal thickness not exceeding one quarter of the distance between the axes of two consecutive lines and differing only in length.
The width of the pointer index tip is not exceeding one quarter of the distance between two scale divisions, and it is not greater than 0.5mm.
Result: Satisfactory
- 8). **CI: 8.3 Value of Verification Scale Division:** The maximum value of verification scale interval is 0.0001m^3
- 9). **CI:8.4 Accelerating Device:**
The vane provided on the pressure plate does the purpose of the accelerating device. During the testing, it is ensured that, to increasing the speed of the meter is not possible by using this device , when the flow is below Q_{\min} .
- II. After Dismantling(CI:12.4.3 & 12.4.4):**
After the two meters have undergone the life test and all the type tests, one of the meters (Meter No: 1003), which has undergone greater deterioration in its performance under the flow test is dismantled completely to its component parts and examined with a view to ensuring that there is no undue wear or distortion with regard to dimensions and tolerances within specified values. Particular attention is also paid to impeller, impeller shaft, bearings, gears and pinions, pivots and gland packing. After studying all the components, all parts are reassembled. There is no difficulty and force for fitting needed during assembly.
Result: Satisfactory

Tested By

(D. Anguraj)
Jr.Engineer/ Mech. Engg. Division.



Approved By

(H. Sahul Hameed)
Engineer/ Mech. Engg. Division.

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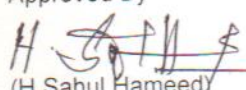
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LIFE TEST REPORT OF DOMESTIC WATER METER Tested as per IS 779:1994

C. <u>DIMENSIONAL VERIFICATION (CI :9)</u>					
S. No	Nomenclature	Standard requirement	Meter No		
			1001	1002	1003
1)	Meter Size, mm	15	15	15	15
2)	Threads	G ¾B	G ¾B	G ¾B	G ¾B
3)	Nominal flow rate, kl/hr	1.5	1.5	1.5	1.5
4)	Length of Thread on the Body(a), mm	10 (min.)	11.5	11.6	11.3
5)	Length of Thread on the Body(b), mm	12 (min.)	14.9	14.6	14.1
6)	Length (with Nipple), mm	250 (± 5.00)	248.1	248.2	247.9
7)	Length (without Nipple), mm	165 (+ 0, - 2)	164.1	163.9	163.7
8)	Width , mm	100 (max.)	98.3	98.9	98.8
9)	Height(H1) , mm	50 (max.)	30.8	30.7	30.8
10)	Height(H2), mm	180 (max.)	70.3	70.2	70.1
Result			Pass	Pass	Pass
D. <u>VERIFICATION SCALE INTERVAL</u>			: Not Applicable		
E. <u>MARKING (CI :14.1)</u>					
a). Trade Mark : Marked		d). Class of water meter		: Marked	
b). SI.No : Marked		e). Direction of flow		: Marked	
c). Nom. Size : Marked		f). Year of manufacturing and SI. No		: Marked	
Result: Satisfactory					
Remarks: --					
--- End of test report ---					
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.				Approved By  (H.Sahul Hameedy) Engineer/ Mech. Engg. Division	

SLFME 024/07.01/11.13



CERTIFICATE No. T-0068

MECHANICAL ENGG. DIVISION

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RECOGNISED BY DSIR/MINISTRY OF SCIENCE & TECHNOLOGY AND BIS, ACCREDITED BY NABL IN THE FIELDS OF MECHANICAL, ELECTRICAL & CHEMICAL TESTING AND MECHANICAL & ELECTRO TECHNICAL CALIBRATION. SPONSORED BY INDUSTRIAL DEVELOPMENT BANK OF INDIA (IDBI), PROMOTED BY THE SOUTHERN INDIA ENGG. MANUFACTURERS ASSOCIATION (SIEMA) AND COIMBATORE DISTRICT SMALL SCALE INDUSTRIES ASSOCIATION (CODISSIA).

TEST REPORT NO : 04 0238 Page 1 of 12 Date : 2014.06.27

LIFE TEST REPORT OF DOMESTIC WATER METER

Name & Address of the Customer : V.A.Valves
Udyog Nagar, Gadaipur P.O
Randhawa Masandan
JALANDHAR - 144 004.

Dear Customer,

We are pleased to forward the test report for the following sample.

Item Description : 20mm Water Meter, Make: FEDREL
Sample S.No. : 1004, 1005 & 1006
Received on : 18.04.2014
Test Method : As per IS779:1994
Customer Ref.No./Date : ZAIPL/SITARC/2013-14,08.04.2014

Thanking you

Yours faithfully

K. Gunabal
(K GUNABAL)

Joint Director.



NOTE:

1. This report refers only to the particular sample(s) submitted for testing and the sample was not drawn by us.
2. This report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Si'Tarc.
3. The results reported in this report are valid at the time of under the stated conditions of measurement.
4. Correction or attestation if any invalidate this report. This report strictly confidential & its use for publicity, arbitration or as evidence in legal disputes if forbidden.



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Test Report No. : 04 0238

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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Our Code No. : 04 0238	Deviations from the Test Method			
Received On : 2014.04.18	NIL			
Duration of Test : 2014.04.19 to 2014.06.18				
DESCRIPTION OF THE SAMPLE :				
Make : FEDREL	Size, mm : 20			
Type : Multi Jet	Meter No : 1004 , 1005			
Class : B	& 1006			
TESTING FACILITY				
Magnetic Flowmeter : PI FLOW 106	Weighing Balance : MI WEIG 28			
Pressure Transmitter, P1 : PI PRESS 115	Hydrostatic Pressure Tester : PI HYPR 35			
Pressure Transmitter, P2 : PI PRESS 116	Temperature Oven : 22117101			
A. PERFORMANCE TEST RESULTS				
Flow Tests : (CI:10.2 & 11)				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Maximum flow rating of meter, kl/hr	5	5	5
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	5.090	5.076	5.069
iii)	Pressure loss, MPa	0.089	0.091	0.096
iv)	Error in metering accuracy, % (± 2 %)	0.272	1.079	0.691
	Result	Pass	Pass	Pass
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By  (H. Sahul Hameed) Engineer/ Mech. Engg. Division.		



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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

2. At Nominal Flow Rate (Q _n):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Nominal flow rating of meter, kl/hr	2.5	2.5	2.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	2.516	2.531	2.527
iii)	Pressure loss, MPa	0.023	0.024	0.022
iv)	Error in metering accuracy, % (± 2 %)	0.397	0.828	0.636
Result		Pass	Pass	Pass
3. At Transitional Flow Rate (Q _t):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Transitional flow rating of meter, l/hr	200	200	200
ii)	Error in metering accuracy, % (± 2 %)	0.658	0.833	0.658
Result		Pass	Pass	Pass
4. At Minimum Flow Rate (Q _{min}):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Minimum starting flow rating of meter, l/hr	50	50	50
ii)	Error in metering accuracy, % (± 5%)	2.167	2.522	2.877
Result		Pass	Pass	Pass
5. Pressure Tightness Test (Cl: 10.1):				
S.No	Parameter / Meter No	1004	1005	1006
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
6. Temperature Suitability Test (Cl: 10.3):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Temperature, 45 deg. C	Withstood	Withstood	Withstood
ii)	Duration, 10 hrs			
Result		Pass	Pass	Pass
Tested By		Approved By		
 (D. Anguraj)		 (H. Sahul Hameed)		
Jr. Engineer/ Mech. Engg. Division.		Engineer/ Mech. Engg. Division.		



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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Flow Tests(after temperature suitability test):				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Maximum flow rating of meter, kl/hr	5	5	5
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	5.087	5.080	5.062
iii)	Pressure loss, MPa	0.096	0.094	0.092
iv)	Error in metering accuracy, % (± 2 %)	0.318	0.913	0.834
Result		Pass	Pass	Pass
2. At Nominal Flow Rate (Q_n):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Nominal flow rating of meter, kl/hr	2.5	2.5	2.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	2.524	2.538	2.520
iii)	Pressure loss, MPa	0.022	0.020	0.023
iv)	Error in metering accuracy, % (± 2 %)	0.434	0.981	0.732
Result		Pass	Pass	Pass
3. At Transitional Flow Rate (Q_t):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Transitional flow rating of meter, l/hr	200	200	200
ii)	Error in metering accuracy, % (± 2 %)	0.616	0.780	0.616
Result		Pass	Pass	Pass
4. At Minimum Flow Rate (Q_{min}):				
S.No	Parameter / Meter No	1004	1005	1006
i)	Minimum starting flow rating of meter, l/hr	50	50	50
ii)	Error in metering accuracy, % (± 5%)	2.203	2.863	2.863
Result		Pass	Pass	Pass
5. Pressure Tightness Test (Cl: 10.1 of IS 779:1994):				
S.No	Parameter / Meter No	1004	1005	1006
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood
Result		Pass	Pass	Pass
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.		Approved By  (H.Sahul Hameed) Engineer/ Mech. Engg. Division.		
				

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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

7. Life Test (Cl :12.4.4):

Meter No :1004 & 1006

i). Discontinuous Flow:

a). Nominal flow rate : 2.5 kl/hr c). No. of Interruptions : 100000
b). Test flow rate : 2.5 kl/hr d). Duration of Pauses : 15 sec

ii). Continuous Flow:

a). Nominal flow rate : 2.5 kl/hr c). Period of Operation : 100 hrs
b). Test flow rate : 5 kl/hr

Result: Satisfactory

Result: Satisfactory

Flow Tests(after life test) :

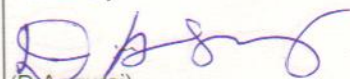
1. At Maximum Flow Rate (Q_{max}):

S.No	Parameter / Meter No	1004	1006
i)	Maximum flow rating of meter, kl/hr	5	5
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	5.051	5.044
iii)	Pressure loss, MPa	0.096	0.093
iv)	Error in metering accuracy, % (± 2 %)	0.301	0.913
Result		Pass	Pass

2. At Nominal Flow Rate (Q_n):

S.No	Parameter / Meter No	1004	1006
i)	Nominal flow rating of meter, kl/hr	2.5	2.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	2.542	2.552
iii)	Pressure loss, MPa	0.021	0.023
iv)	Error in metering accuracy, % (± 2 %)	0.528	0.676
Result		Pass	Pass

Tested By


(D. Anguraj)

Jr.Engineer/ Mech. Engg. Division.

Approved By


(H. Sahul Hameed)

Engineer/ Mech. Engg. Division.



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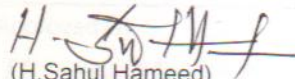
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LIFE TEST REPORT OF DOMESTIC WATER METER

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3. At Transitional Flow Rate (Qt):			
S.No	Parameter / Meter No	1004	1006
i)	Transitional flow rating of meter, l/hr	200	200
ii)	Error in metering accuracy, % ($\pm 2\%$)	0.623	0.821
Result		Pass	Pass
4. At Minimum Flow Rate (Q _{min}):			
S.No	Parameter / Meter No	1004	1006
i)	Minimum starting flow rating of meter, l/hr	50	50
ii)	Error in metering accuracy, % ($\pm 5\%$)	2.577	2.907
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1004	1006
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
6. Temperature Suitability Test :			
S.No	Parameter / Meter No	1004	1006
i)	Temperature, 45 deg. C	Withstood	Withstood
ii)	Duration, 10 hrs	Withstood	Withstood
Result		Pass	Pass
Flow Tests(after temperature suitability test):			
1. At Maximum Flow Rate (Q _{max}):			
S.No	Parameter / Meter No	1004	1006
i)	Maximum flow rating of meter, kl/hr	5	5
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	5.044	5.047
iii)	Pressure loss, MPa	0.092	0.094
iv)	Error in metering accuracy, % ($\pm 2\%$)	0.424	1.044
Result		Pass	Pass
Tested By		Approved By	
 (D. Anguraj) Jr.Engineer/ Mech. Engg. Division.		 (H. Sahul Hameed) Engineer/ Mech. Engg. Division.	



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2. At Nominal Flow Rate (Q _n):			
S.No	Parameter / Meter No	1004	1006
i)	Nominal flow rating of meter, kl/hr	2.5	2.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	2.534	2.542
iii)	Pressure loss, MPa	0.022	0.021
iv)	Error in metering accuracy, % (± 2 %)	0.697	0.747
Result		Pass	Pass
3. At Transitional Flow Rate (Q _t):			
S.No	Parameter / Meter No	1004	1006
i)	Transitional flow rating of meter, l/hr	200	200
ii)	Error in metering accuracy, % (± 2 %)	0.847	1.045
Result		Pass	Pass
4. At Minimum Flow Rate (Q _{min}):			
S.No	Parameter / Meter No	1004	1006
i)	Minimum starting flow rating of meter, l/hr	50	50
ii)	Error in metering accuracy, % (± 5%)	2.863	3.193
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	1004	1006
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
B. CONSTRUCTION			
Meter No. : 1005			
I. Before Dismantling (CI: 7) :			
1). General(CI: 7.1):			
When the meter has been subjected to an accidental reversal of flow, it is capable of withstanding it without any deterioration or change of their metrological properties.			
Result: Satisfactory			
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By  (H. Sahul Hameed) Engineer/ Mech. Engg. Division.	



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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

2). Body(CI: 7.2):

The body has free from manufacturing and processing defects. And it is not repaired by plugging, welding or by the addition of materials. Internal shape of the body has to ensure smooth flow of water and easy dismantling.

Result: Satisfactory

3). Registration Box(CI 7.3):

The registration box may be provided with escape hole(s) for minimizing the accumulation of water.

Result: Not applicable.

4). Cap(CI: 7.4):

The cap and registration box are integral, the material for cap is the same as used for registration box. The cap has so designed and fixed to the registration box as to avoid entry of water and dirt. The transparent window which covers the dial has inserted from the inside into the cap. The protective lid is secured by a robust hinge or other suitable method of robust construction. Cap ring where applicable should be of the same material as of the cap

Result: Satisfactory

CI: 7.4.1: Transparent window covering the dial should be provided with a wiper on the inner side for wiping off condensed water.

Result: Not applicable.

5). Connections(CI: 7.5):

The meter casing has been fitted with pipe line by means of two cylindrical nipples with connecting nuts. The threads on the connection has conforming to IS 2643 (Pt.1 to 3) : 1975.

Result: Satisfactory

6). Strainers(CI: 7.6):

Water meters have been provided with strainers. They are rigid, easy to remove and clean and is fitted on the inlet side of the water meter. It is possible to remove and clean the strainer in such a way as not to disturb the registration box or tampering with it. The strainer has a total area of holes not less than twice the area of the nominal inlet bore of the pipe to which the meter is connected except in the case of single jet inferential type of meters. The free area of holes is such that it complies with the head loss at nominal and maximum flow rates. An external strainer is fitted on the inlet side satisfying the above requirements

Result: Satisfactory

Tested By


(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.



Approved By


(H. Sahul Hameed)

Engineer/ Mech. Engg. Divi

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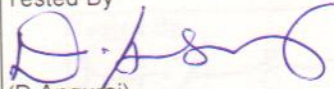
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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

- 7). **Impeller and Piston(CI: 7.7):**
CI: 7.7.1: Impeller and impeller shaft assembly has rest on a self-lubricating bearing of low frictional resistance.
Result: Satisfactory
- 8). **Impeller and Measuring Chamber(CI: 7.8):**
The impeller chamber and measuring chamber has a rigid construction and withstand to internal stress.
Result: Satisfactory
- 9). **Gears and Pinions(CI: 7.9):**
Gears and pinions has constructed properly and smoothly mesh with each other and has firmly fitted on their shafts.
Result: Satisfactory
- 10). **Bearings(CI:7.10):**
Impeller bearing has suitably grounded and polished. It shape has a provision to prevent the penetration to sand and to preclude the deposit of anything in solution or suspension in water and to facilitate the washing away of such deposits by the water flow. Gear shaft has freely revolve in their bearing.
- 11). **Counter(CI:7.11):**
The counter has a combination of pointer and cyclometer type and the pointers reading is in clockwise direction. The rollers of cyclometer counter and the pointer are made of plastic and self-lubricating type.
Result: Satisfactory
- 12). **Dial(CI: 7.12):**
The dial has made of plastic and has indestructible marking with good legibility.
Result: Satisfactory
- 13). **Regulator(CI: 7.13)**
An internal regulator has been provided on the meter and it is not accessible from out side.
Result: Satisfactory

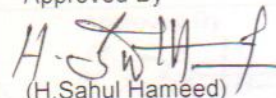
Tested By


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Approved By


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Engineer/ Mech. Engg. Division.

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Tested as per IS 779:1994

14). Sealing(CI:7.14):

Sealing hole has been provided and the meter has sealed properly to render it impossible to obtain access to the measuring unit including registration box and cap without breaking the seal. Sealing wire is made of rust proof material.

Result: Satisfactory

15). Frost Protection Device(CI:7.15):

Result: Not Applicable

Indicating Device(CI: 8):

1). **CI: 8.1:** The indicating device is capable of record 99999 m³

2). **CI: 8.2:** The indicator has allow by simple juxtaposition of its various constituent elements, a reliable,easy and unambiguous reading of the volume of water measured and expressed in m³. The volume is indicated by the combination of pointers on circular scales and in-line consecutive digits.


3). **CI: 8.2.1:** The m³ and its multiples have been indicated in black and sub-multiples of m³ in red. This color coding applies to the pointers on circular scale type indicating devices and to the drum in in-line digit indicating devices. The actual or apparent height of the digits on the drums is not being less than 4mm.

For digital indicators the visible displacement of all digits is upward in value.The advance of any given digital unit is completed while the digit of the immediately next lower value describes the last tenth of its travel. The drum showing the digits of lowest value may move continuously.The whole number of m³ is clearly indicated.

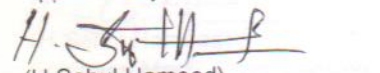
4). **CI: 8.2.2:** The indicators with pointer has rotates in a clock-wise direction.The value in 'kl' for each scale division are accompanied by a multiplying factor of x0.0001m³, x0.001m³, 0.01m³ and 0.1m³

5). **CI: 8.2.3(a):** The unit symbol ' m³ ' is mentioned in immediate vicinity of the indicator.

Tested By


(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.

Approved By


(H.Sahul Hameed)
Engineer/ Mech. Engg. Division.



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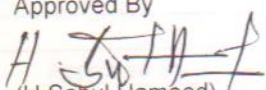
LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

- 6). **CI: 8.2.3(b):** The fastest-moving visible graduated element, the control element, the scale interval of which is known as "Verification Scale Interval" has been move continuously.
Result: Satisfactory
- 7). **CI: 8.2.4:** The length of verification scale interval is not less than 1mm and not more than 5mm. The scale is consist of lines of equal thickness not exceeding one quarter of the distance between the axes of two consecutive lines and differing only in length.
The width of the pointer index tip is not exceeding one quarter of the distance between two scale divisions, and it is not greater than 0.5mm.
Result: Satisfactory
- 8). **CI: 8.3 Value of Verification Scale Division:** The maximum value of verification scale interval is 0.0001m³
Result: Satisfactory
- 9). **CI:8.4 Accelerating Device:**
The vane provided on the pressure plate does the purpose of the accelerating device. During the testing, it is ensured that, to increasing the speed of the meter is not possible by using this device, when the flow is below Q_{min}.
Not Applicable
- II. After Dismantling(CI:12.4.3 & 12.4.4):**
After the two meters have undergone the life test and all the type tests, one of the meters (Meter No: 1006), which has undergone greater deterioration in its performance under the flow test is dismantled completely to its component parts and examined with a view to ensuring that there is no undue wear or distortion with regard to dimensions and tolerances within specified values. Particular attention is also paid to impeller, impeller shaft, bearings, gears and pinions, pivots and gland packing. After studying all the components, all parts are reassembled. There is no difficulty and force for fitting needed during assembly.
Result: Satisfactory

Tested By

(D. Anguraj)
Jr. Engineer/ Mech. Engg. Division.



Approved By

(H. Sanul Hameed)
Engineer/ Mech. Engg. Division.

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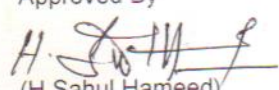
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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

C. DIMENSIONAL VERIFICATION (CI :9)					
S. No	Nomenclature	Standard requirement	Meter No		
			1004	1005	1006
1)	Meter Size, mm	20	20	20	20
2)	Threads	G 1B	G 1B	G 1B	G 1B
3)	Nominal flow rate, kl/hr	2.5	2.5	2.5	2.5
4)	Length of Thread on the Body(a), mm	12 (min.)	14.8	14.7	14.9
5)	Length of Thread on the Body(b), mm	14 (min.)	17.4	17.5	18.1
6)	Length (with Nipple), mm	290 (± 5.00)	288.9	288.7	288.6
7)	Length (without Nipple), mm	190 (+ 0, - 2)	189.2	189.0	188.9
8)	Width , mm	130 (max.)	99.6	99.3	99.8
9)	Height(H1) , mm	60 (max.)	26.3	26.4	26.4
10)	Height(H2), mm	240 (max.)	77.0	76.5	76.9
Result			Pass	Pass	Pass
D. VERIFICATION SCALE INTERVAL			: Not Applicable		
E. MARKING (CI :14.1)					
a). Trade Mark : Marked		d). Class of water meter		: Marked	
b). SI.No : Marked		e). Direction of flow		: Marked	
c). Nom. Size : Marked		f). Year of manufacturing and SI. No		: Marked	
Result: Satisfactory					
Remarks:					

--- End of test report ---					
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.			Approved By  (H.Sahul Hameed) Engineer/ Mech. Engg. Division		



SLFME 024/07.01/11.13



CERTIFICATE No. T-0068

MECHANICAL ENGG. DIVISION

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SCIENTIFIC AND INDUSTRIAL
TESTING AND RESEARCH CENTRE

RECOGNISED BY DSIR/MINISTRY OF SCIENCE & TECHNOLOGY AND BIS, ACCREDITED BY NABL IN THE FIELDS OF MECHANICAL, ELECTRICAL & CHEMICAL TESTING AND MECHANICAL & ELECTRO TECHNICAL CALIBRATION. SPONSORED BY INDUSTRIAL DEVELOPMENT BANK OF INDIA (IDBI), PROMOTED BY THE SOUTHERN INDIA ENGG. MANUFACTURERS ASSOCIATION (SIEMA) AND COIMBATORE DISTRICT SMALL SCALE INDUSTRIES ASSOCIATION (CODISSIA).

TEST REPORT NO : 04 0236 Page 1 of 12 Date : 2014.06.27

LIFE TEST REPORT OF DOMESTIC WATER METER

Name & Address of the Customer : V.A.Valves
Udyog Nagar, Gadaipur P.O
Randhawa Masandan
JALANDHAR - 144 004.

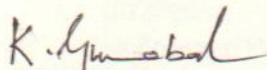
Dear Customer,

We are pleased to forward the test report for the following sample.

Item Description : 15mm Water Meter, Make: FEDREL
Sample S.No. : 14 000501, 14 000503 & 14 000504
Received on : 18.04.2014
Test Method : As per IS779:1994
Customer Ref.No./Date : ZAIPL/SITARC/2013-14,08.04.2014

Thanking you

Yours faithfully


(K GUNABAL)

Joint Director.



NOTE:

1. This report refers only to the particular sample(s) submitted for testing and the sample was not drawn by us.
2. This report shall not be reproduced except in full, unless written permission for the publication of an approved abstract has been obtained from the Director, Si'Tarc.
3. The results reported in this report are valid at the time of under the stated conditions of measurement.
4. Correction or attestation if any invalidate this report. This report strictly confidential & its use for publicity, arbitration or as evidence in legal disputes if forbidden.



CERTIFICATE No. T-0068

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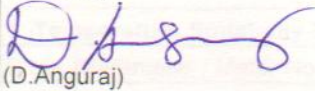

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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Our Code No. : 04 0236	Deviations from the Test Method			
Received On : 2014.04.18	NIL			
Duration of Test : 2014.04.19 to 2014.06.18				
DESCRIPTION OF THE SAMPLE :				
Make : FEDREL	Size, mm : 15			
Type : Single Jet	Meter No : 14 000501 , 14 000503			
Class : B	& 14 000504			
TESTING FACILITY				
Magnetic Flowmeter : PI FLOW 106	Weighing Balance : MI WEIG 28			
Pressure Transmitter, P1 : PI PRESS 115	Hydrostatic Pressure Tester : PI HYPR 35			
Pressure Transmitter, P2 : PI PRESS 116	Temperature Oven : 22117101			
A. PERFORMANCE TEST RESULTS				
Flow Tests : (CI:10.2 & 11)				
1. At Maximum Flow Rate (Q_{max}):				
S.No	Parameter / Meter No	14 000501	14 000503	14 000504
i)	Maximum flow rating of meter, kl/hr	3	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.226	3.182	3.121
iii)	Pressure loss, MPa	0.097	0.089	0.096
iv)	Error in metering accuracy, % (± 2 %)	0.332	-0.385	0.152
	Result	Pass	Pass	Pass
Tested By  (D. Anguraj) Jr. Engineer/ Mech. Engg. Division.		Approved By  (H. Sahul Hamer) Engineer/ Mech. Engg. Division.		



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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

2. At Nominal Flow Rate (Q _n):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Nominal flow rating of meter, kl/hr	1.5	1.5	1.5	
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.544	1.555	1.613	
iii)	Pressure loss, MPa	0.023	0.022	0.023	
iv)	Error in metering accuracy, % (± 2 %)	1.140	0.947	1.334	
Result		Pass	Pass	Pass	
3. At Transitional Flow Rate (Q _t):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Transitional flow rating of meter, l/hr	120	120	120	
ii)	Error in metering accuracy, % (± 2 %)	-0.793	-1.274	1.134	
Result		Pass	Pass	Pass	
4. At Minimum Flow Rate (Q _{min}):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Minimum starting flow rating of meter, l/hr	30	30	30	
ii)	Error in metering accuracy, % (± 5%)	1.287	-0.600	1.916	
Result		Pass	Pass	Pass	
5. Pressure Tightness Test (CI: 10.1):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood	
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood	
Result		Pass	Pass	Pass	
6. Temperature Suitability Test (CI: 10.3):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Temperature, 45 deg. C				
ii)	Duration, 10 hrs	Withstood	Withstood	Withstood	
Result		Pass	Pass	Pass	
Tested By				Approved By	
 (D. Anguraj) Jr.Engineer/ Mech. Engg. Division.				 (H. Sahul Hameed) Engineer/ Mech. Engg. Division.	

SLFME 024/07.01/11.13



CERTIFICATE No. T-0068

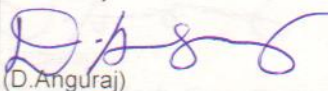

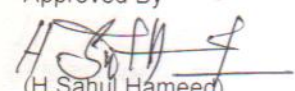
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LIFE TEST REPORT OF DOMESTIC WATER METER

Tested as per IS 779:1994

Flow Tests(after temperature suitability test):					
1. At Maximum Flow Rate (Q_{max}):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Maximum flow rating of meter, kl/hr	3	3	3	
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.208	3.150	3.157	
iii)	Pressure loss, MPa	0.097	0.096	0.096	
iv)	Error in metering accuracy, % (± 2 %)	0.386	-0.436	0.386	
Result		Pass	Pass	Pass	
2. At Nominal Flow Rate (Q_n):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Nominal flow rating of meter, kl/hr	1.5	1.5	1.5	
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.570	1.580	1.591	
iii)	Pressure loss, MPa	0.020	0.022	0.023	
iv)	Error in metering accuracy, % (± 2 %)	1.085	0.664	1.506	
Result		Pass	Pass	Pass	
3. At Transitional Flow Rate (Q_t):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Transitional flow rating of meter, l/hr	120	120	120	
ii)	Error in metering accuracy, % (± 2 %)	-0.600	-1.058	1.232	
Result		Pass	Pass	Pass	
4. At Minimum Flow Rate (Q_{min}):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	Minimum starting flow rating of meter, l/hr	30	30	30	
ii)	Error in metering accuracy, % (± 5%)	1.548	-1.381	2.525	
Result		Pass	Pass	Pass	
5. Pressure Tightness Test (CI: 10.1 of IS 779:1994):					
S.No	Parameter / Meter No	14 000501	14 000503	14 000504	
i)	1.6 MPa for 15 minutes	Withstood	Withstood	Withstood	
ii)	2.0 MPa for 1 minute	Withstood	Withstood	Withstood	
Result		Pass	Pass	Pass	
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.				Approved By  (H.Sanul Hameed) Engineer/ Mech. Engg. Division.	

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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

7. Life Test (Cl :12.4.4):

Meter No :14 000501 & 14 000504

i). Discontinuous Flow:

a). Nominal flow rate : 1.5 kl/hr c). No. of Interruptions : 100000
b). Test flow rate : 1.5 kl/hr d). Duration of Pauses : 15 sec

ii). Continuous Flow:

a). Nominal flow rate : 1.5 kl/hr c). Period of Operation : 100 hrs
b). Test flow rate : 3 kl/hr

Result: Satisfactory

Result: Satisfactory

Flow Tests(after life test) :

1. At Maximum Flow Rate (Q_{max}):

S.No	Parameter / Meter No	14 000501	14 000504
i)	Maximum flow rating of meter, kl/hr	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.143	3.136
iii)	Pressure loss, MPa	0.094	0.096
iv)	Error in metering accuracy, % (± 2 %)	0.306	0.480
Result		Pass	Pass

2. At Nominal Flow Rate (Q_n):

S.No	Parameter / Meter No	14 000501	14 000504
i)	Nominal flow rating of meter, kl/hr	1.5	1.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.706	1.688
iii)	Pressure loss, MPa	0.020	0.022
iv)	Error in metering accuracy, % (± 2 %)	1.105	1.303
Result		Pass	Pass

Tested By

(D. Anguraj)

Jr. Engineer/ Mech. Engg. Division.



Approved By

(H. Sahul Hameed)

Engineer/ Mech. Engg. Division.

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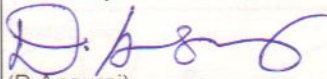
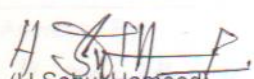
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3. At Transitional Flow Rate (Qt):			
S.No	Parameter / Meter No	14 000501	14 000504
i)	Transitional flow rating of meter, l/hr	120	120
ii)	Error in metering accuracy, % ($\pm 2\%$)	-0.796	1.168
Result		Pass	Pass
4. At Minimum Flow Rate (Q_{min}):			
S.No	Parameter / Meter No	14 000501	14 000504
i)	Minimum starting flow rating of meter, l/hr	30	30
ii)	Error in metering accuracy, % ($\pm 5\%$)	1.703	2.662
Result		Pass	Pass
5. Pressure Tightness Test :			
S.No	Parameter / Meter No	14 000501	14 000504
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass
6. Temperature Suitability Test :			
S.No	Parameter / Meter No	14 000501	14 000504
i)	Temperature, 45 deg. C	Withstood	Withstood
ii)	Duration, 10 hrs		
Result		Pass	Pass
Flow Tests(after temperature suitability test):			
1. At Maximum Flow Rate (Q_{max}):			
S.No	Parameter / Meter No	14 000501	14 000504
i)	Maximum flow rating of meter, kl/hr	3	3
ii)	Minimum discharge with pressure loss not exceeding 0.1MPa, kl/hr	3.128	3.143
iii)	Pressure loss, MPa	0.096	0.098
iv)	Error in metering accuracy, % ($\pm 2\%$)	0.365	0.553
Result		Pass	Pass
Tested By  (D. Anguraj) Jr.Engineer/ Mech. Engg. Division.		Approved By  (H. Sahul Hameed) Engineer/ Mech. Engg. Division.	



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2. At Nominal Flow Rate (Q_n):

S.No	Parameter / Meter No	14 000501	14 000504
i)	Nominal flow rating of meter, kl/hr	1.5	1.5
ii)	Minimum discharge with pressure loss not exceeding 0.025 MPa, kl/hr	1.717	1.696
iii)	Pressure loss, MPa	0.021	0.022
iv)	Error in metering accuracy, % (± 2 %)	1.173	1.372
Result		Pass	Pass

3. At Transitional Flow Rate (Q_t):

S.No	Parameter / Meter No	14 000501	14 000504
i)	Transitional flow rating of meter, l/hr	120	120
ii)	Error in metering accuracy, % (± 2 %)	-0.896	1.581
Result		Pass	Pass

4. At Minimum Flow Rate (Q_{min}):

S.No	Parameter / Meter No	14 000501	14 000504
i)	Minimum starting flow rating of meter, l/hr	30	30
ii)	Error in metering accuracy, % (± 5%)	2.002	2.964
Result		Pass	Pass

5. Pressure Tightness Test :

S.No	Parameter / Meter No	14 000501	14 000504
i)	1.6 MPa for 15 minutes	Withstood	Withstood
ii)	2.0 MPa for 1 minute	Withstood	Withstood
Result		Pass	Pass

B. CONSTRUCTION

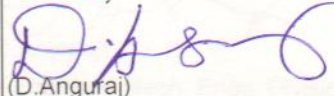
Meter No. : 14 000503

I. Before Dismantling (CI: 7) :**1). General(CI: 7.1):**

When the meter has been subjected to an accidental reversal of flow, it is capable of withstanding it without any deterioration or change of their metrological properties.

Result: Satisfactory

Tested By



(D. Anguraj)

Jr.Engineer/ Mech. Engg. Division.



Approved By



(H. Sahul Hammed)

Engineer/ Mech. Engg. Division.

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2). Body(CI: 7.2):

The body has free from manufacturing and processing defects. And it is not repaired by plugging, welding or by the addition of materials. Internal shape of the body has to ensure smooth flow of water and easy dismantling.

Result: Satisfactory

3). Registration Box(CI 7.3):

The registration box may be provided with escape hole(s) for minimizing the accumulation of water.

Result: Not applicable.

4). Cap(CI: 7.4):

The cap and registration box are integral, the material for cap is the same as used for registration box. The cap has so designed and fixed to the registration box as to avoid entry of water and dirt. The transparent window which covers the dial has inserted from the inside into the cap. The protective lid is secured by a robust hinge or other suitable method of robust construction. Cap ring where applicable should be of the same material as of the cap

Result: Satisfactory

CI: 7.4.1: Transparent window covering the dial should be provided with a wiper on the inner side for wiping off condensed water.

Result: Not applicable.

5). Connections(CI: 7.5):

The meter casing has been fitted with pipe line by means of two cylindrical nipples with connecting nuts. The threads on the connection has conforming to IS 2643 (Pt.1 to 3) : 1975.

Result: Satisfactory

6). Strainers(CI: 7.6):

Water meters have been provided with strainers. They are rigid, easy to remove and clean and is fitted on the inlet side of the water meter. It is possible to remove and clean the strainer in such a way as not to disturb the registration box or tampering with it. The strainer has a total area of holes not less than twice the area of the nominal inlet bore of the pipe to which the meter is connected except in the case of single jet inferential type of meters. The free area of holes is such that it complies with the head loss at nominal and maximum flow rates. An external strainer is fitted on the inlet side satisfying the above requirements

Result: Satisfactory

Tested By

(D. Anguraj)

Jr.Engineer/ Mech. Engg. Division.



Approved By

(H. Sahul Hameed)

Engineer/ Mech. Engg. Division.

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- 7). **Impeller and Piston(CI: 7.7):**
CI: 7.7.1: Impeller and impeller shaft assembly has rest on a self-lubricating bearing of low frictional resistance.
Result: Satisfactory
- 8). **Impeller and Measuring Chamber(CI: 7.8):**
The impeller chamber and measuring chamber has a rigid construction and withstand to internal stress.
Result: Satisfactory
- 9). **Gears and Pinions(CI: 7.9):**
Gears and pinions has constructed properly and smoothly mesh with each other and has firmly fitted on their shafts.
Result: Satisfactory
- 10). **Bearings(CI:7.10):**
Impeller bearing has suitably grounded and polished. It shape has a provision to prevent the penetration to sand and to preclude the deposit of anything in solution or suspension in water and to facilitate the washing away of such deposits by the water flow. Gear shaft has freely revolve in their bearing.
- 11). **Counter(CI:7.11):**
The counter has a combination of pointer and cyclometer type and the pointers reading is in clockwise direction. The rollers of cyclometer counter and the pointer are made of plastic and self-lubricating type.
Result: Satisfactory
- 12). **Dial(CI: 7.12):**
The dial has made of plastic and has indestructible marking with good legibility.
Result: Satisfactory
- 13). **Regulator(CI: 7.13)**
An internal regulator has been provided on the meter and it is not accessible from out side.
Result: Satisfactory

Tested By

(D.Anguraj)

Jr.Engineer/ Mech. Engg. Division.



Approved By

(H.Sahul Hameed)

Engineer/ Mech. Engg. Division.

SLFME 024/07.01/11.13



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LIFE TEST REPORT OF DOMESTIC WATER METER
Tested as per IS 779:1994

14). Sealing(CI:7.14):

Sealing hole has been provided and the meter has sealed properly to render it impossible to obtain access to the measuring unit including registration box and cap without breaking the seal. Sealing wire is made of rust proof material.

Result: Satisfactory

15). Frost Protection Device(CI:7.15):

Result: Not Applicable

Indicating Device(CI: 8):

1). **CI: 8.1:** The indicating device is capable of record 99999 m³

2). **CI: 8.2:** The indicator has allow by simple juxtaposition of its various constituent elements, a reliable,easy and unambiguous reading of the volume of water measured and expressed in m³. The volume is indicated by the combination of pointers on circular scales and in-line consecutive digits.


3). **CI: 8.2.1:** The m³ and its multiples have been indicated in black and sub-multiples of m³ in red. This color coding applies to the pointers on circular scale type indicating devices and to the drum in in-line digit indicating devices. The actual or apparent height of the digits on the drums is not being less than 4mm.

For digital indicators the visible displacement of all digits is upward in value.The advance of any given digital unit is completed while the digit of the immediately next lower value describes the last tenth of its travel. The drum showing the digits of lowest value may move continuously.The whole number of m³ is clearly indicated.

4). **CI: 8.2.2:** The indicators with pointer has rotates in a clock-wise direction.The value in 'kl' for each scale division are accompanied by a multiplying factor of x0.0001m³, x0.001m³, 0.01m³ and 0.1m³

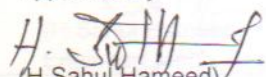
5). **CI: 8.2.3(a):** The unit symbol ' m³ ' is mentioned in immediate vicinity of the indicator.

Tested By


(D.Anguraj)
Jr.Engineer/ Mech. Engg. Division.



Approved By


(H.Sahul Hameed)
Engineer/ Mech. Engg. Division.

SLFME 024/07.01/11.13



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6). **CI: 8.2.3(b):** The fastest-moving visible graduated element, the control element, the scale interval of which is known as "Verification Scale Interval" has been move continuously.

Result: Satisfactory

7). **CI: 8.2.4:** The length of verification scale interval is not less than 1mm and not more than 5mm. The scale is consist of lines of equal thickness not exceeding one quarter of the distance between the axes of two consecutive lines and differing only in length.

The width of the pointer index tip is not exceeding one quarter of the distance between two scale divisions, and it is not greater than 0.5mm.

Result: Satisfactory

8). **CI: 8.3 Value of Verification Scale Division:** The maximum value of verification scale interval is 0.0001m³.

9). **CI:8.4 Accelerating Device:**

The vane provided on the pressure plate does the purpose of the accelerating device. During the testing, it is ensured that, to increasing the speed of the meter is not possible by using this device, when the flow is below Q_{min}.

II. After Dismantling(CI:12.4.3 & 12.4.4):

After the two meters have undergone the life test and all the type tests, one of the meters (Meter No: 14 000504), which has undergone greater deterioration in its performance under the flow test is dismantled completely to its component parts and examined with a view to ensuring that there is no undue wear or distortion with regard to dimensions and tolerances within specified values. Particular attention is also paid to impeller, impeller shaft, bearings, gears and pinions, pivots and gland packing. After studying all the components, all parts are reassembled. There is no difficulty and force for fitting needed during assembly.

Result: Satisfactory

Tested By

(D. Angura)

Jr.Engineer/ Mech. Engg. Division.



Approved By

(H. Sahul Hameed)

Engineer/ Mech. Engg. Division.



CERTIFICATE No. T-0068

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Tested as per IS 779:1994

C. DIMENSIONAL VERIFICATION (CI :9)					
S. No	Nomenclature	Standard requirement	Meter No		
			14 000501	14 000503	14 000504
1)	Meter Size, mm	15	15	15	15
2)	Threads	G ¾B	G ¾B	G ¾B	G ¾B
3)	Nominal flow rate, kl/hr	1.5	1.5	1.5	1.5
4)	Length of Thread on the Body(a), mm	10 (min.)	11.6	11.6	11.7
5)	Length of Thread on the Body(b), mm	12 (min.)	12.6	12.5	12.6
6)	Length (with Nipple), mm	250 (± 5.00)	248.2	248.4	248.9
7)	Length (without Nipple), mm	110 (+ 0, - 2)	109.2	109.7	109.8
8)	Width , mm	100 (max.)	74.4	74.2	74.9
9)	Height(H1) , mm	50 (max.)	16.8	16.8	16.7
10)	Height(H2), mm	180 (max.)	65.5	65.6	65.5
Result			Pass	Pass	Pass
D. VERIFICATION SCALE INTERVAL			: Not Applicable		
E. MARKING (CI :14.1)					
a). Trade Mark : Marked		d). Class of water meter		: Marked	
b). SI.No : Marked		e). Direction of flow		: Marked	
c). Nom. Size : Marked		f). Year of manufacturing and SI. No		: Marked	
Result: Satisfactory					
Remarks:					
--- End of test report ---					
Tested By  (D.Anguraj) Jr.Engineer/ Mech. Engg. Division.				Approved By  (H.Sahul Hameed) Engineer/ Mech. Engg. Division	

SLFME 024/07.01/11.13