

OIML Member State
The Netherlands

Number R117/2007-A-NL1-20.07
Project number 2473583
Page 1 of 4

Issuing authority
Person responsible: NMi Certin B.V.
M. Boudewijns

Applicant and
Manufacturer Liquid Controls LLC
105 Albrecht Drive, Lake Bluff, IL-60044, United States of America

Manufacturer name
or brand name Liquid Controls LLC and Avery Hardoll

Identification of the
certified type **A measurement sensor**
Type: DM; M(S)xxx; BMxxx
(see table 1, where the description xxx is indicating the meter size and (S)
the use of pressure containing sphere as either S,SAA,SC or SB).

Characteristics See page 2 and further

This OIML Certificate is issued under scheme A

This Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML Type Evaluation Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

R 117-1 (2007) "Dynamic measuring systems for liquids other than water"

Accuracy class 0,3 and 0,5

This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation identified above. This Certificate does not bestow any form of legal international approval.

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate was issued, partial quotation of the Certificate and of the associated OIML Type Evaluation Report(s) is not permitted, although either may be reproduced in full.

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
2 July 2020

Certification Board

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The conformity was established by the results of tests and examinations provided in the associated reports:

- No. NMI-1901792-01 dated 8 August 2018 that includes 66 pages.
- No. NMI-2273797-01 dated 5 April 2019 that includes 27 pages.

Characteristics of the measuring instrument

In Table 1, the general characteristics of the measuring instrument are presented. The construction of the measuring instrument is recorded in the Documentation folder number TC11255-1.

The complete family of meter consists of one family (which are of similar construction) and have the following flow characteristics indicated in table 3.

Table 1 General characteristics of the family of instruments of type M(S)xx

Type	Accuracy Class	Flange size [inch]	Cyclic Volume [L]	Qmin [L/min]	Qmax [L/min]	MMQ [L]	Pmax [kPa]
M5	0,3	1½" (DN 40)	0,31	28	275	50	See note (1)
M(S)7	0,3	2" (DN50)	0,68	50	500	50	
M10	0,3	2" (DN50)	0,68	55	550	100	
M(S)15	0,3	3" (DN80)	1,84	100	1000	100	
M25	0,3	3" (DN80)	1,84	115	1150	100	
M(S)40	0,3	3" (DN80)	5,11	170	1700	200	
M(S)40	0,3	4" (DN100)	5,11	170	2300	200	
M60	0,3	4" (DN100)	9,5	280	2800	200	
M80	0,3	6" (DN150)	9,5	330	3300	500	
M(S)75	0,3 ^H	4" (DN100)	14,9	540	3300	500	
	0,5 ^L			340	3300		
M(S)120	0,3 ^H	6" (DN150)	23,81	760	3785	1000	
	0,5 ^L						
M(S)120	0,3 ^H	8" (DN200)	23,81	455	4545	1000	
	0,5 ^L						

Notes to table 1:

OIML Member State
The Netherlands

Number R117/2007-A-NL1-20.07
Project number 2473583
Page 3 of 4

H Indicates accuracy class approved on High viscosity oil of 18 cSt @ 20 °C.
L Indicates accuracy class approved on Low viscosity oil of 0,82 cSt @ 20 °C.

(1) Maximum pressure for meter model:

- M: 1034 kPa or 1965 kPa
- MS: 1896 kPa
- MSAA: 1965 kPa
- MSB: 5102 kPa
- MSC: 10204 kPa

Table 2 General characteristics of the family of instruments of type BMxx

Type	Accuracy Class	Flange size [inch]	Cyclic Volume [L]	Qmin [L/min]	Qmax [L/min]	MMQ [L]	Pmax [kPa]
BM250 (S)	0,3	2 ½" (DN 65)	2,27	115	1140	100	1034
BM950 (S)	0,3	3" (DN80)	2,27	115	1500	200	
BM450 (D)	0,3	3" (DN80)	4,54	200	2050	200	
BM550 (D)	0,3	4" (DN100)	4,54	220	2280	500	
BM350 (D)	0,3	4" (DN100)	4,54	125	2800	500	
BM650 (T)	0,3	4" (DN100)	6,81	300	3000	500	
BM850 (T)	0,3	6" (DN150)	6,81	200	4250	500	

Note to table 2:

S, D or T between brackets stands for respectively Single, Double or Triple Chamber configuration

Table 3 General characteristics of the family of instruments of type DMxx

Type	Accuracy Class	Flange size [inch]	Cyclic Volume [L]	Qmin [L/min]	Qmax [L/min]	MMQ [L]	Pmax [kPa]
DM (S)	0,3	4" (DN100)	5,75	200	2500	200	1034

Note to table 3:

(S) between brackets stands for Single Chamber configuration.

OIML Member State
The Netherlands

Number R117/2007-A-NL1-20.07
Project number 2473583
Page 4 of 4

The conformity of the following parts was established by the results of tests and examinations provided in the associated report(s):

Part: Measurement sensor
Producer: Liquid Controls LLC
Types: DM; M(S)75; M5; M10; M25; M60; BM250; BM450; BM650
Type Evaluation Report: NMI-1901792-01
Type: M5
Type Evaluation Report: NMI-2273797-01

Table 4 Further general characteristics of the meters

Environmental classes	M3
Ambient temperature range	-25 ... +55 °C
Product temperature range	-5 ... +35 °C
Intended for the measurement of	Hydrocarbon based oils (fuels), with maximum viscosity of 20 mPa·s at 20 °C