

Issued by	NMi Certin B.V.
In accordance with	– WELMEC guide 8.8 “General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring instruments under the MID”. – OIML R117-1 Edition 2007 (E) “Dynamic measuring systems for liquids other than water”.
Producer	The Netherlands
Measuring instrument	A Meter (PD meter), intended to be used as a part of a measuring instrument.
Type	: JZ010; JZ015; JZ025; JZ040; JZ050; JZ080; JZ100; JZ150; JZ200 ^[1]
Destined for the measurement of	: Oil and oil products, chemical products and potable liquids.
$Q_{\min} - Q_{\max}$	: see paragraph 1.2 of Description
Minimum measured quantity	: see paragraph 1.2 of Description
Accuracy class	: 0,3; 0,5
Environment classes	: M2
Temperature range liquid	: -10 °C / +50 °C
Temperature range ambient	: -25 °C / +55 °C
	Further properties are described in the annexes: – Description TC7364 revision 2 – Documentation folder TC7364-3
Remarks	An overview of performed tests is given in the annex: – Appendix TC7364 revision 2. This revision 2 replaces the previous revision 1, including its documentation folder.

^[1] With Z being a code, indicating the type of material of the meter, see 1.2.1.

Issuing Authority **NMi Certin B.V.**
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1 General information on the measurement transducer

All properties of the measurement sensor, whether mentioned or not, shall not be in conflict with the legislation.

This Evaluation Certificate is the positive result of the applied voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC guide 8.8.

This evaluation certificate is issued based on the previous EEC type approvals as shown in the table below:

type	Previous EEC approval number
JZ010	E108
JZ015	E107
JZ025	E101
JZ040	E100
JZ050	E106
JZ080	E104
JZ100	E105
JZ150	E155
JZ200	E219

The complete measuring system must be covered by an EC type-examination Certificate.

1.1 Essential Parts

1.1.1 Measurement sensor

The measurement sensor consists of a housing in which one rotor is mounted. Two pairs of vanes are placed into four slots in the rotor. Each pair of vanes are positioned by a rod and can move in and out of the rotor. The incoming liquid forces the rotor to rotate. See page 2 of document number 7364/1-02.

1.1.2 Adjustment device, see the Documentation folder

The measurement sensor is equipped with an adjustment device, which consists of the following characteristics:

- adjustment steps of 0,08% to 0,12%
- adjustment range 9%

1.1.3 Pulser (optional)

Optional one of the following pulsers can be applied:

- Namur pulser see documentation no. 7364/1-08;
- Eltomatic pulser type 01-08 documentation no. 7364/1-06;
- Eltomatic pulser type 01-09 documentation no. 7364/1-07;

1.1.4 Mechanical counter

For JZ010 and JZ015:

One of the following mechanical counters can be used:

- type JZ015NE

For JZ025 / JZ050 / JZ080 / JZ100 / JZ150 / JZ200

The following mechanical reset counter can be used:

- Veeder Root, type 0788700-900

1.1.5 Mechanical printer

The following mechanical printers can be used:

- Veeder Root, type zero start 0788810-011;
- Veeder Root, type Accumulatief 0788811-501.

1.1.6 Mechanical preset

The following mechanical preset can be used:

- Veeder Root, type zero start 0788901-703;

1.1.7 Mechanical temperature conversion (optional, only for JZ080)

Works according formula:

$$V_0 = V_T \times \left(1 - K_0 \times (T - T_0) \right)$$

With:

- V_0 = Volume at reference temperature T_0
- V_T = Volume at temperature T (meter temperature)
- K_0 = Expansion coefficient (T_0 and K_0 are indicated on the conversion device)

Manufacturer : A.O. Smith

Capillary length : approximately 1 meter

1.2 Essential Characteristics

1.2.1 Measurement sensor

The meter has the following characteristics:

type	P(e) [bar]	Cyclic volume [ℓ]	Diameter inlet/outlet [mm]	Minimum Measured Quantity sensor (MMQ) [ℓ]	"Z" code material type [-]
JZ010	52	0,010	10	0,2 (0,4 – 4 ℓ/min)	1 / 3
JZ010	52	0,010	10	0,5 (1 – 20 ℓ/min)	1 / 3
JZ015	52	0,025	15	0,2 (0,4 – 4 ℓ/min)	1 / 3 / 5
JZ015	52	0,025	15	0,5 (1 – 20 ℓ/min)	1 / 3 / 5
JZ025	20 or 25	0,166	25	5	1 / 2 / 3 / 5
JZ040	20 or 25	0,166	40	5	1 / 2 / 3 / 5
JZ050	20 or 25	0,400	50	100	1 / 2 / 3 / 5
JZ080	20 or 25	2,941	80	100	1 / 2 / 3 / 5
JZ100	20 or 25	5,280	100	100	1 / 2 / 3 / 5
JZ150	20 or 25	11,900	150	500	1 / 2 / 3 / 5
JZ200	20 or 25	29,300	200	see next table	1 / 2 / 3 / 5

viscosity range [mPa·s]												
0,1 - 0,5		0,5 - 5		5 - 100		100 - 300		300 - 1000		1000 - 3000		
Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	Q _{max}	Q _{min}	
type	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]	[ℓ/min]
JZ010	--	--	20	1	20	0,4	8	0,08	2,4	0,024	0,8	0,008
JZ015	--	--	50	2,5	50	1	20	0,2	6	0,06	2	0,02
JZ025	--	--	160	8	160	3,2	60	0,6	20	0,2	6	0,06
JZ040	250	25	250	12,5	250	1	100	1	30	0,3	10	0,1
JZ050	500	100	500	25	500	10	200	2	60	0,6	20	0,2
JZ080	1900	380	1900	95	1900	38	800	8	200	2	80	0,8
JZ100	--	--	2750	138	2750	55	1100	11	330	3,3	110	1,1
JZ150	--	--	4600	230	4600	92	1800	18	550	5,5	180	1,8
JZ200	--	--	8000	400	8000	200	3600	40	1600	20	1000	10
MMQ JZ200 [ℓ]	--	--	500	--	200	--	50	--	20	--	10	--

1.2.2

1.2.2.1 Mechanical counter for JZ010 and JZ015

All mechanical counters have the following characteristics:

- Maximum indication 9999.99 m³ (6 elements)
- Scale interval 0,00001 m³, graduated every 0,0001 m³.
- Full revolution of the first element 0,001 m³.
- Non resettable.

1.2.2.2 Mechanical counter for JZ025/040/050/080/100/150/200

All mechanical counters have the following characteristics:

- Maximum indication 999.99 m³ (5 elements)
- Scale interval 0,001 m³, graduated every 0,01 m³.
- Full revolution of the first element 0,1 m³.
- Equipped with a zero setting device.

During the zeroing the display is blinded, after zeroing this blinding is removed.

1.2.3 Mechanical printer

The mechanical printers have the following characteristics:

- Printed scale interval 0,01 m³.
- The delivery is printed in two steps, start value and stop value of the delivery is printed. Each printed value is six or seven digit number.
- The first step of the delivery also zeros the mechanical counter.
Optionally this step also zeros the printer; in this case the start value on the ticket consists of zeros.
- During the delivery the ticket is secured against removal.

1.2.4 Mechanical preset device

Essential characteristics

- Pre-set scale interval 0,01 m³.
- Maximum pre-set 99,99 m³ (4 elements) or 999,99 m³ (5 elements).
- During the delivery the pre-set indication counts back to zero.

1.3 Non essential characteristics

1.3.1 Mechanical counter

All mechanical counters are equipped with a total counter with the following characteristics:

- Maximum indication 99999,99 m³ (7 elements) or 999999,99 m³ (8 elements).
- Scale interval 0,01 m³.
- Not resettable to zero.

1.4 Essential Shapes

1.4.1 Inscriptions.

On the measurement sensor, clearly visible, at least the following is inscribed:

- the Evaluation Certificate number: TC7364;
- name or trade mark of the manufacturer;
- type;
- serial number;
- Qmin and Qmax;
- maximum pressure Pmax;
- characteristics of the product.

On the the volume counter:

- "Minimum Measured Quantity:..." or "Vmin..."

Note: The minimum measured quantity is the largest value of:

- The MMQ mentioned for the sensor in paragraph 1.2.
- 100 times the display scale interval
- 200 times the printed scale interval

If a pulser is used for the readout of the measured quantity instead of a display or printer the MMQ is only larger or equal than the MMQ mentioned for the sensor in paragraph 1.2.

An example of the inscriptions is given in drawing 7364/1-04.

1.4.2 Sealing: see chapter 2.

2 Seals

The following items are sealed:

- The meter body is sealed against opening.
- The adjustment device is sealed

If the temperature conversion device is present:

- The front and back cover of the conversion device is sealed against opening
- The temperature probe is sealed against removal.

An example of the sealing is given in drawing 7364/1-05.

3 Conditions for Approval

1. The use of this Evaluation Certificate is limited to:
 - Other parties may use this Evaluation Certificate only with the written permission of VAF Instruments B.V., the Netherlands.



Appendix

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Performed tests on behalf of this Evaluation Certificate:

Test	Type	Test report	Test house	Remarks
Accuracy and MMQ	JZ010 and JZ015	NMi-SO11201080-01		Witnessed by NMi Certin B.V.