(UK/0126/0035) MI-001

NATIONAL WEIGHTS AND MEASURES LABORATORY

United Kingdom of Great Britain and Northern Ireland

Certificate of EC type-examination of a measuring instrument
Number: UK/0126/0035 Revision 1

issued by the Secretary of State for Business, Innovation & Skills
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Cold-water Meters) Regulations 2006 (SI 2006/1268) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

Watertech SRL
Strada Antica Fornace, 2/4
14053 Canelli
AT – Italy

in respect of a cold-water meter (Manifold N 1-1,5) of rotary-piston volumetric concentric design and having a rated permanent flowrate Q3 of 1.6m^3/h (R250) or 2.5m^3/h (R400).

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Signatory: M A Bokota
for Chief Executive
National Weights & Measures Laboratory
(Part of the National Measurement Office)
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Descriptive Annex

1 INTRODUCTION

This pattern of liquid measuring instrument is for use in measuring the volume of cold water which has passed through it. It is a volumetric coaxial cold-water meter having a Q3 (permanent flowrate) of 1.6 or 2.5 cubic metres per hour cubic metre per hour. It incorporates a rotary piston measuring assembly mounted in a plastic body that is fitted into a cast brass alloy body for connection to a manifold in any orientation. The rotary piston drives a magnet that couples to a non-resettable totalising display (register) that indicates up to 99999.99995 m^3. The register is positioned on the top of the measurement chamber and secured between the plastic snap-shut cover and sealing board. The meter is shown in Figure 1.

2 FUNCTIONAL DESCRIPTION

The meter body (watchcase) (21) is made of brass alloy. The main measurement components including the chamber (18), piston (16), shutter (15) and top plate (13) are all made of injection moulded plastic. These components are sealed in the watchcase with an O-ring (9) trapped between a plastic locating ring (10) and copper sealing board (8). This is all fixed in place by a plastic moulded press ring (7). The register (5) sits on top of the sealing board and is held in place by the plastic snap-shut cover (6). The strainer (19) is fitted underneath the measuring chamber. The connection to the manifold is arranged via a British Pipe Thread G 1½" male threaded co-axial inlet/outlet at the base of the meter body.
Mounted on top of the body plate is the hermetically sealed non-resettable totalising register, which indicates up to 99999.99995 m^3. The register comprises an eight drum, five black and three red, mechanical counter and a dial indicator (Figure 3), the last significant drum indicates 0.001 m^3 per numbered division. The least significant drum moves continuously whilst motion of the other drums from one digit to the next is completed during the time that the drum of the immediately next lowest value completes the last tenth of its revolution. The dial indicator, marked "x 0.0001", has a metallic rotating pointer which moves continuously and displays 0.0001 m^3 per numbered division. The dial is sub-divided to indicate 0.00005 m^3. The internal components of the meter are shown in Figure 2 and cross sectional drawings of the register and meter are shown in Figures 3 and 4 respectively.

3 TECHNICAL DATA

3.1 Flow designation

3.1.1 Meter with Q3 = 1.6 m^3/h

Table 1 Related flowrates according to each Q3/Q1 designation

Q_3/Q_1 (R)	**250**	**200**
Q_2/Q_1	1.6	1.6
Q1 Minimum flowrate (m^3/h)	0.00640	0.00800
Q2 Transitional flowrate (m^3/h)	0.01024	0.01280
Q3 Permanent flowrate (m^3/h)	1.6	1.6
Q4 Overload flowrate (m^3/h)	2.0	2.0

3.1.2 Meters with Q3 = 2.5 m^3/h

Table 2 Related flowrates according to each Q3/Q1 designation

Q_3/Q_1 (R)	400	315	200
Q_2/Q_1	1.6	1.6	1.6
Q1 Minimum flowrate (m^3/h)	0.00625	0.00794	0.01250
Q2 Transitional flowrate (m^3/h)	0.01000	0.01270	0.02000
Q3 Permanent flowrate (m^3/h)	2.5	2.5	2.5
Q4 Overload flowrate (m^3/h)	3.125	3.125	3.125

3.2 Other designations

Temperature class:	T30 (0.1°C – 30°C)
Orientation requirements:	None
Revs/litre of measuring chamber	30
Maximum admissible pressure (MAP)	16 bar
Pressure Loss at Q3	0.63 bar max
Climatic environment:	-10°C to +55°C
Mechanical environment:	M1
Electromagnetic environment:	n/a
Location:	Open/closed, condensing/non-condensing
Reverse Flow:	The measured volume in reverse flow is subtracted from the cumulated volume

4 PERIPHERAL DEVICES AND INTERFACES

The meters may be permanently or temporarily fitted with a pulse giving sensor, fitted externally to the register. Pulses from this sensor can be used to transfer a repeat of the indicated volume to an ancillary device.

4.1 Magnetic pointer and sensor unit

The first element of the verification scale on the meter register is equipped with a pointer incorporating a magnet. Pulses are generated by a magnet passing a reed switch. The sensor unit may be fixed to the meter by clips locating in 2 holes on the locating board or alternatively by metal screws.

4.2 Inductive pointer and sensor unit

The first element of the verification scale on the meter register is equipped with a metallic non-magnetic foil which generates pulses when passing inside an inductive field generated by a transmitter secured to the outside of the meter, which can be used with a data recorder.

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

5.1 Legends and inscriptions

The instrument bears the following legends:

'CE' marking
Supplementary metrology marking
Notified body identification number
Permanent flow rate Q_3
Flowrate range Q_3/Q_1 (R)
Serial number
Manufacturers mark or name
Certificate number

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 Securing method

The measuring assembly is secured by locating the snap fit plastic cover to the meter body. The register is positioned in the plastic cover and secured by the plastic locating board. The plastic cover and locating board have integrally moulded clips and once fitted, unauthorised dismantling is not possible without leaving evidence of tampering.

6.2 Location of verification markings

The verification markings identified in 5.1 are permanently etched on the top surface of the shroud as shown in Figure 5.

7 ILLUSTRATIONS

Figure 1 Manifold N 1-1, 5 meter
Figure 2 Exploded diagram of manifold meter
Figure 3 Meter register
Figure 4 Cross section of meter
Figure 5 Top Face of meter showing verification markings

8 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0035	4th July 2008	Type examination certificate first issued.
Revision 1	6th October 2009	- Section 3.1.1, ratio Q_3/Q_1 (R) for Q3 = 1.6 m^3/h extended from R200 to R250 - Section 3.1.2 added, Meter with Q3 = 2.5 m^3/h (R400) - Section 4.2 added

Figure 1 Manifold N 1-1, 5 meter

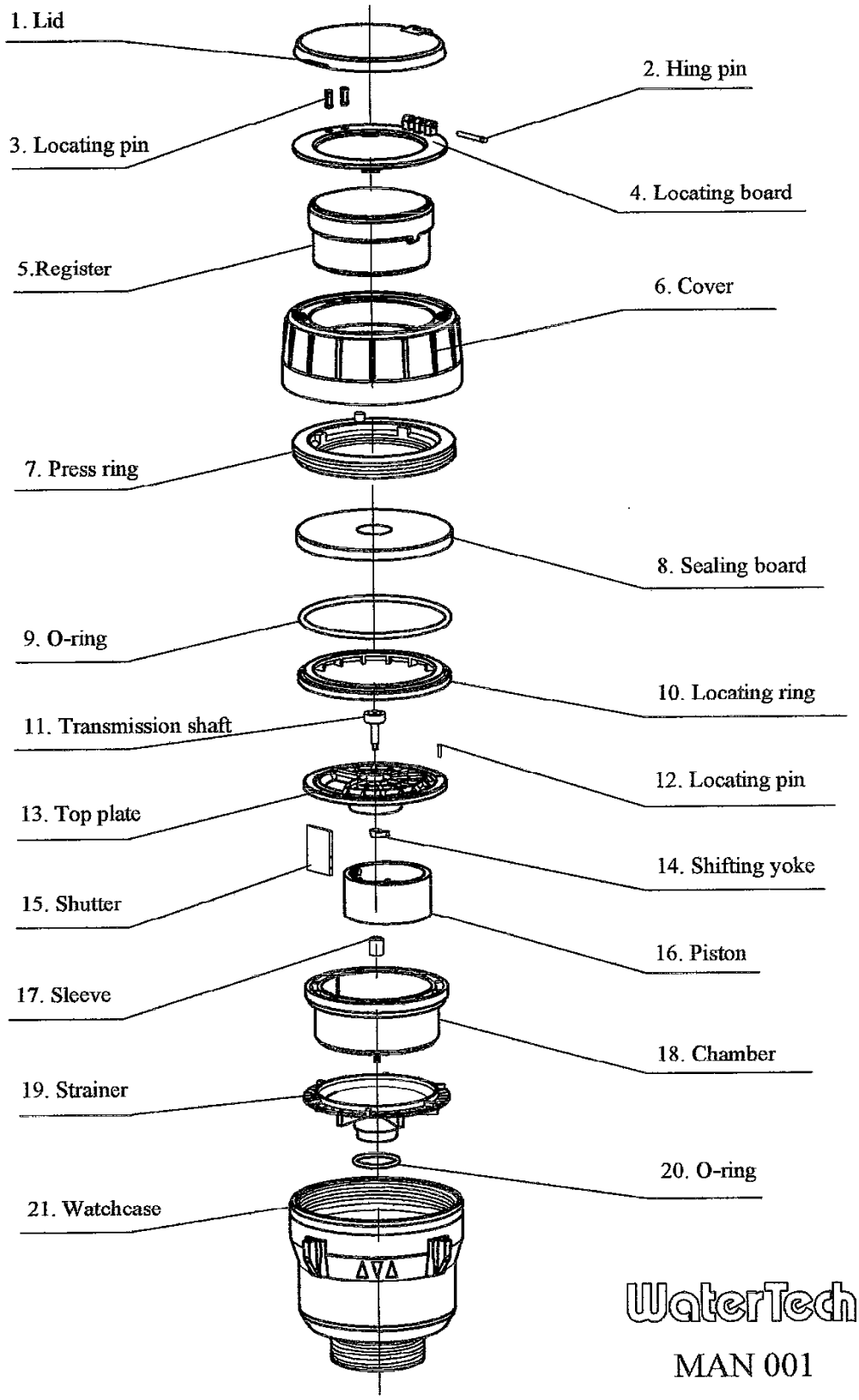


Figure 2 Exploded diagram of manifold meter

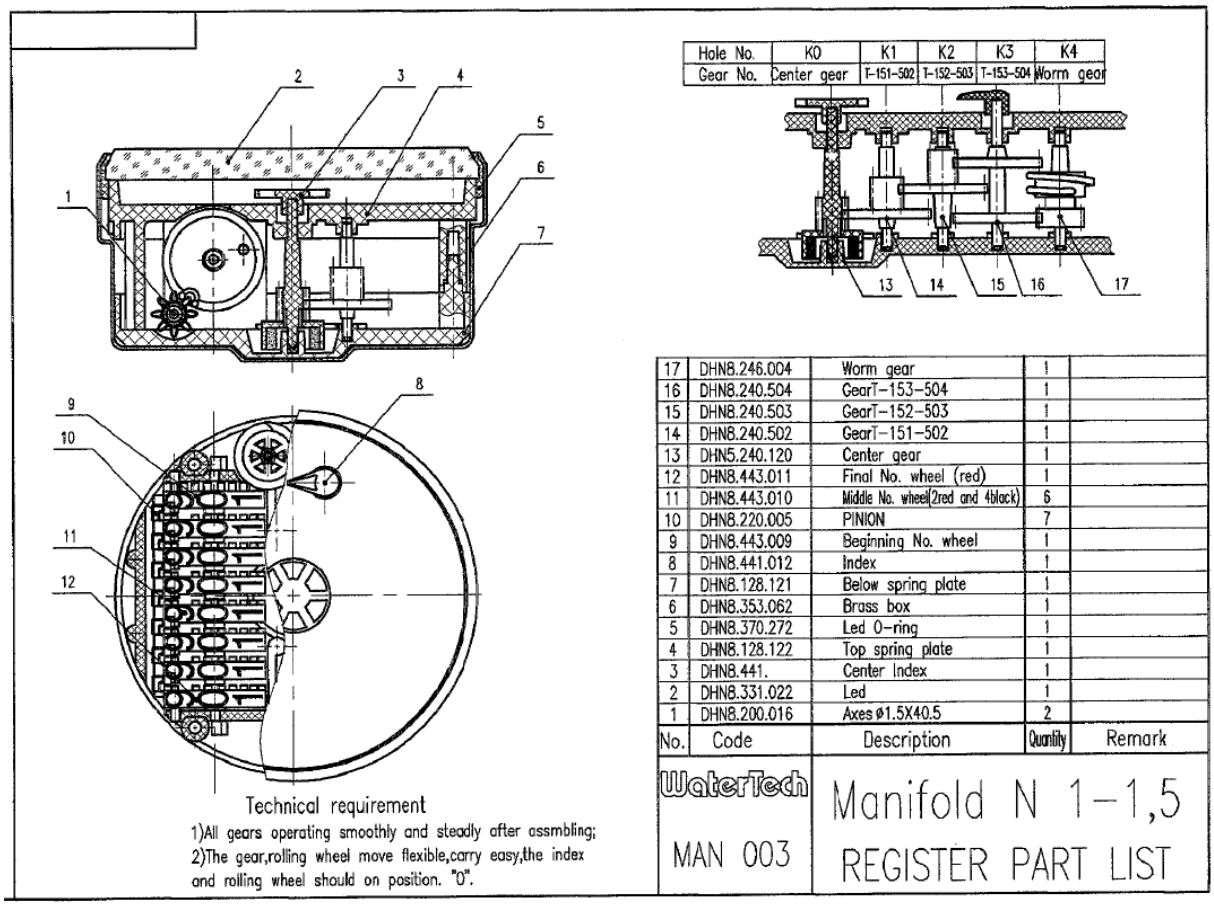
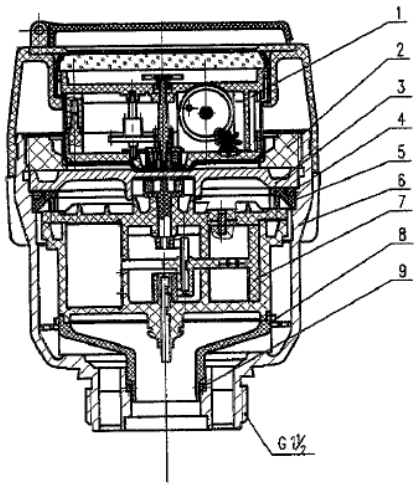


Figure 3 Meter register



No.	Code	Description	Quantity	Remark
9	DHN8.370.277	O-ring ø24	1	
8	DHN8.468.033	Strainer locating board	1	
7	DHN4.003.092	Measure device	1	
6	DHN8.302.210	Watchcase	1	
5	DHN8.370.275	Flow guiding locating ring	1	
4	DHN8.370.273	O-ring ø78	1	
3	DHN8.128.123	Sealing board	1	
2	DHN8.370.276	Press ring	1	
1	DHN5.307.027	Cover group accessory	1	
WaterTech MAN 002		Manifold N 1-1,5 CROSS SECTION		

Figure 4 Cross section of meter

Figure 5 Top Face of meter showing verification markings