(UK/0126/0077) 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/0126/0077 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:

**ABB Limited**
**Oldends Lane**
**Stonehouse**
**Gloucestershire**
**GL10 3TA**
**United Kingdom**

in respect of a family of cold-water meters named AquaMaster, utilising a common, electromagnetic principle and having the following characteristics:

AquaMaster Mains Powered Model MM/GA, Size DN40, DN50, DN80, DN100, DN150, DN200, DN250 & DN300.
AquaMaster Transmitter FER2
$Q_3/Q_1$ (R) = 400 or 630

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.

This revision replaces previous versions of the certificate.

Signatory: P R Dixon
for Chief Executive
National Weights & Measures Laboratory
(Part of the National Measurement Office)
Department for Business, Innovation & Skills
Stanton Avenue
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Valid Until: 25 April 2020
Reference No: T23/0017

# Descriptive Annex

## 1 INTRODUCTION

This pattern of liquid measuring instrument is for measuring the volume of cold water which has passed through it. It relates to models of the AquaMaster mains powered family based on an electromagnetic measurement principle.

## 2 FUNCTIONAL DESCRIPTION

The AquaMaster consists of two main elements, the flow transmitter (calculator/indicator) and the flow sensor (meter). The flow transmitter may be mounted on the sensor or positioned separately. (Figures 1 and 2).

## 3 TECHNICAL DATA

### 3.1 Flow designation

**3.1.1** Meters with Q3/Q1 (R400)

| DN | Q4 (m3/h) | Q3 (m3/h) | Q2 (m3/h) | Q1 (m3/h) |
|---|---|---|---|---|
| 40 | 31 | 25 | 0.1 | 0.063 |
| 50 | 50 | 40 | 0.16 | 0.1 |
| 80 | 125 | 100 | 0.4 | 0.25 |
| 100 | 200 | 160 | 0.64 | 0.4 |
| 150 | 500 | 400 | 1.6 | 1.0 |
| 200 | 788 | 630 | 2.5 | 1.6 |
| 250 | 1,250 | 1,000 | 4 | 2.5 |
| 300 | 2,000 | 1,600 | 6.4 | 4 |

**Table 1: Related flowrates according to DN**

**3.1.2** Meters with Q3/Q1 (R630)

| DN | Q4 (m3/h) | Q3 (m3/h) | Q2 (m3/h) | Q1 (m3/h) |
|---|---|---|---|---|
| 40 | 31 | 25 | 0.063 | 0.040 |
| 50 | 50 | 40 | 0.10 | 0.063 |
| 80 | 125 | 100 | 0.25 | 0.16 |
| 100 | 200 | 160 | 0.41 | 0.25 |
| 150 | 500 | 400 | 1.0 | 0.63 |
| 200 | 788 | 630 | 1.6 | 1.0 |
| 250 | 1,250 | 1,000 | 2.5 | 1.6 |
| 300 | 2,000 | 1,600 | 4.1 | 2.5 |

**Table 2: Related flowrates according to DN**

### 3.2 Other Designations

| | |
|---|---|
| Temperature class: | T50 (0.1 °C – 50 °C) |
| Orientation requirements: | None |
| Maximum admissible pressure (MAP) | 16 bar |
| Pressure Loss at Q3 | 0.25 bar max |
| Climatic environment: | -25 °C to +55 °C |
| Humidity | Condensing / non-condensing |
| Mechanical environment: | M1 |
| Electromagnetic environment: | E1 |
| Location: | Integral or Remote (<200m cable) |
| Reverse Flow: | Bi-directional measurement |
| Minimum straight length of inlet pipe: | 0D (0) |
| Minimum straight length of outlet pipe: | 0D (0) |
| Orientation: | Can be installed in any position |
| Power Supply: | Mains 85 to 265V AC<br>Frequency 50Hz or 60Hz |

#### 3.2.1 Software Versions

| | Software i.d. | Software Version |
|---|---|---|
| Main Application | WAJC2027 | v2.46 or v2.48 |
| Bootloader | WAJC2009 | V1.02 |
| Update Application Manager (Non GSM Version) | WAJC2010 | v1.04 |
| Update Application Manager (GSM Version) | WAJC2026 | V1.27 |
| Pre Amp Sensor Memory | WAJC2004 | V1.04 |
| Pre-Amp EEROM | WAJC2033 | V1.03 |

## 4 PERIPHERAL DEVICES AND INTERFACES

### 4.1 Interfaces

The instrument may have the following interfaces:

(i) Digital Pulse output
(ii) Scancoder Remote Reading Interface
(iii) RS232 Communications
(iv) Optional GSM Radio Communications
(v) Optional Pressure Transducer Connection

## 4.2 Peripheral devices

The instrument may be connected to any peripheral device that has been issued with a test certificate or parts certificate by a Notified Body responsible for Annex B (MI-001) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a test certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the flow meter, other than to check for correct data transmission or validation / verification;
- Any Pulse / Frequency Output receiving equipment
- Alarm Contact Output receiving equipment
- RS232 communications equipment
- Scancoder reader via wired connection or an inductive pad

# 5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

**5.1** Legends and inscriptions

**5.1.1** The instrument bears the following legends:

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

**5.2** Detail here the securing requirements.

# 6 LOCATION OF SEALS AND VERIFICATION MARKS

**6.1** Securing the software

After installation and commissioning, to prevent unauthorised modification of any parameters the "read-only" dip switch, must be set to On, which prevents login thereby making all parameters read only. This is as shown in Figures 3 and 4.

The “read only” mode works on all interfaces including the GSM / SMS communication option.

**6.2** Sealing the transmitter

Anti tamper seals should be fitted, as shown in Figure 5.

## 7 ALTERNATIVES

There are no alternatives at present.

## 8 ILLUSTRATIONS

Figure 1 AquaMaster Mains Powered Integral Form
Figure 2 AquaMaster Mains Powered Remote Form
Figure 3 Access to Read Only Switch
Figure 4 Location and Setting of Read Only Switch
Figure 5 Transmitter Sealing

## 9 CERTIFICATE HISTORY

| ISSUE NO. | DATE | DESCRIPTION |
|---|---|---|
| UK/0126/0077 | 26 April 2010 | Type examination certificate first issued. |
| UK/0126/0077 Revision 1 | 15 December 2010 | Revision 1 issued.<br>Section 3.2.1 - New main application software version number 2.48 added |


**Figure 1 AquaMaster Mains Powered Integral Form**


**Figure 2 AquaMaster Mains Powered Remote Form**

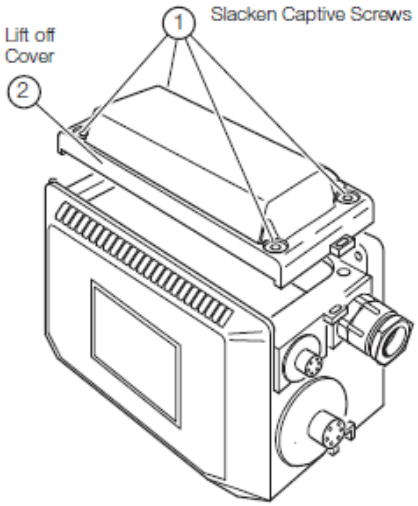


**Figure 3 Access to Read Only Switch**

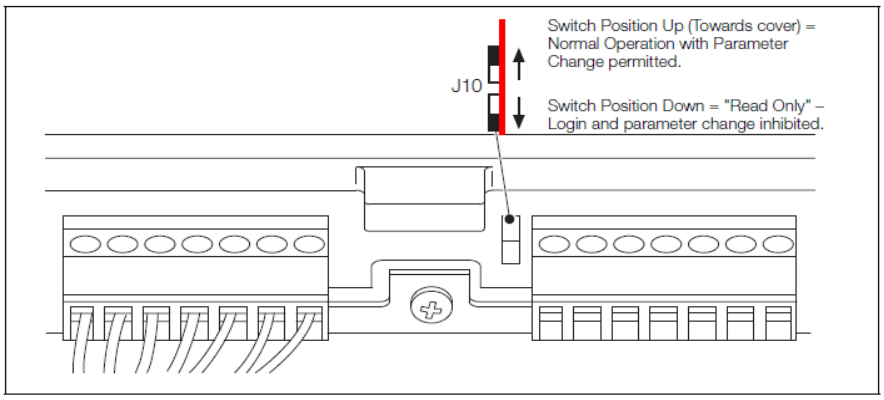


*Fig. 3.17 Location of the Read Only switch*

**Figure 4 Location and Setting of the Read Only Switch**

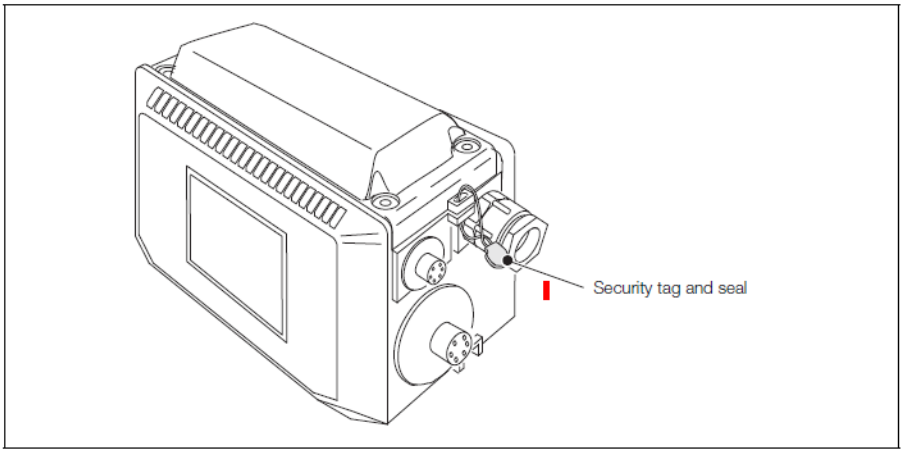


**Figure 5 Transmitter Sealing**