



Australian Government
Department of Industry,
Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 14/3/55

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

B Meters GSD8 model water meter

submitted by All Valve Industries Pty Ltd
Unit 2, 18-28 Sir Joseph Banks Drive
Kurnell NSW 2231

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 49-1 Water Meters Intended for the Metering of Cold Potable Water and Hot Water, *Part 1 Metrological and Technical Requirements*, dated May 2022.

This approval is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & Variants 1 to 3 approved – certificate issued	6/11/20
1	Variant 4 approved, certificate updated – certificate issued	05/08/24

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/55' and only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.



Darryl Hines
Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 14/3/55

1. Description of Pattern **approved on 6/11/20**

A DN15 B Meters GSD8 model water meter used to measure cold potable and hot water supplies for trade.

1.1 Field of Operation

The field of operation of the measuring system using the DN15 B Meters GSD8 model water meter is determined by the following characteristics:

Minimum flow rate, Q ₁ :	0.01563 m ³ /h
Transition flow rate, Q ₂ :	0.025 m ³ /h
Maximum continuous flow rate, Q ₃ :	2.5 m ³ /h
Overload flow rate, Q ₄ :	3.125 m ³ /h
Flow rate ratio, Q ₃ /Q ₁ :	160
Temperature class:	T50
Maximum admissible temperature:	50 °C
Maximum admissible pressure:	1600 kPa
Pressure loss class:	Δp 63
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Orientation:	H↑ ⁽¹⁾
Flow Direction:	Forward only

⁽¹⁾ H↑ (Horizontal with indicating device position on top)

⁽¹⁾ See Variant 3 for more orientation options

1.2 Features/Functions

The pattern (Figure 1) consists of an inferential single jet flow sensor and an indicating device and has features/functions as listed below:

Connection type:	Threaded end connections.
Display:	A mechanical display (Figure 2) incorporating 8 numerical rollers and one rotary dial (for the verification scale interval) allowing for a maximum indication range of 99.999 m ³ in 0,00005 m ³ increments
Communications:	See Variant 2
Materials:	Meter housing: Brass Indicating device: Polymer material
Meter length:	110 mm

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1.3 Conditions

1.3.1 Installation Conditions:

No flow straightener or flow conditioner is required.

For Accuracy Class 2, the flow profile sensitivity class is U0/D0.

1.3.2 Water Quality

The meter is approved for use in the metering of cold potable and hot water supplies.

1.4 Software Version

NA

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

The meter is mechanically sealed via the application of tamper evident seals connecting the meter body and indicating device housing (Figure 3).

1.7 Descriptive Markings and Notices

Instruments are marked with the following data, either grouped or distributed on the casing, the indicating device dial or an identification plate (Figure 2):

Manufacturer's name or mark	...
Serial number	...
Pattern approval number	NMI 14/3/55
Numerical value of maximum continuous flow rate, Q_3 ...	
Flow rate ratio, Q_3/Q_1	...
Unit of measurement	m^3
Temperature class ⁽¹⁾	T50
Maximum admissible pressure ⁽²⁾	1600 kPa
Pressure loss class ⁽³⁾	63 kPa or Δp 63
Orientation ⁽⁴⁾	H↑
Flow profile sensitive class ⁽⁵⁾	U0/D0
Direction of flow	→
Accuracy class ⁽⁶⁾	2

⁽¹⁾ Optional for temperature class T30 meters

⁽²⁾ Optional for meters with MAP = 1000 kPa

⁽³⁾ Optional for pressure loss class Δp 63

⁽⁴⁾ Optional for meters approved for all orientations

⁽⁵⁾ Optional for U0/D0 class meters

⁽⁶⁾ Optional for accuracy class 2 meters

2. Description of Variant 1

approved on 6/11/20

The Pattern and Variants are approved with the following alternative Temperature Classes: T30, T70, T90 and T30/T90.

3. Description of Variant 2

approved on 6/11/20

The Pattern and Variants are approved with the alternative indicating devices (Figure 4 and Figure 5) and communication options specified in Table 1.

Table 1 Indicating Devices and Communications Outputs

Model number	Indicating Device	Communications Output
GSD8	A mechanical display incorporating 8 numerical rollers and 1 rotary dial	NA
GSD8-R		Reed pulse output (1 L per pulse)
GSD8-I		Mbus wired / wireless OMS output
GSD5	A mechanical display incorporating 5 numerical rollers and 4 rotary dials	NA
GSD5-R		Reed pulse output (10 L per pulse)

4. Description of Variant 3

approved on 6/11/20

The Pattern and Variants are approved with the alternative flowrates and orientations specified in Table 2 the Pattern is included in bold for completeness.

Table 2 Approved flowrates and orientations

Meter size	DN15	DN15	DN15	DN15
Minimum flowrate Q ₁ (m ³ /h)	0.01563	0.025	0.050	0.050
Transitional flowrate Q ₂ (m ³ /h)	0.025	0.040	0.080	0.080
Maximum continuous flowrate Q ₃ (m ³ /h)	2.5	2.5	2.5	2.5
Overload flowrate Q ₄ (m ³ /h)	3.125	3.125	3.125	3.125
Ratio Q ₃ /Q ₁	160	100	50	50
Orientation ⁽¹⁾	H↑		H→	V

⁽¹⁾ Orientation Key:

H↑ (Horizontal with indicating device position on top)

H→ (Horizontal with indicating device position at the side)

V (Vertical from bottom to top and from top to bottom)

5. Description of Variant 4

approved on 05/08/24

The pattern and variants are approved with a DN20 meter size (Figure 6) and the associated characteristics as specified in Tables 3 below.

Table 3 – DN20 meter size associated characteristics

Minimum flowrate Q ₁ (m ³ /h)	0.020
Transitional flowrate Q ₂ (m ³ /h)	0.032
Maximum continuous flowrate Q ₃ (m ³ /h)	4
Overload flowrate Q ₄ (m ³ /h)	5
Ratio Q ₃ /Q ₁	200
Orientation	H↑ ⁽¹⁾
Meter Length (mm)	130

⁽¹⁾ H↑ (Horizontal with the indicating device positioned on top)

TEST PROCEDURE No 14/3/55

Water meters tested for initial verification shall comply with the Certificate of Approval, Technical Schedule, and the maximum permissible errors for initial and subsequent verifications at the operating conditions in effect at the time of verification. Maximum permissible errors for the initial and subsequent verification of water meters are given in the *National Trade Measurement Regulations 2009* (Cth).

Water meters shall be verified in accordance with NITP 14 *National Instrument Test Procedures for Utility Meters*.

The following exceptions apply for accuracy class 2 meters:

- The working water temperature range for verification is dependent on the temperature class of the meter as follows:
 - T30 and T50: $20\text{ °C} \pm 10\text{ °C}$;
 - T70 and T90: $20\text{ °C} \pm 10\text{ °C}$ and $50\text{ °C} \pm 10\text{ °C}$;
 - T30/90: $50\text{ °C} \pm 10\text{ °C}$.
- Where a meter is tested with a working water temperature greater than 30 °C , the maximum permissible errors shall be:
 - $\pm 5\%$ within the flowrate range $Q_1 \leq Q < Q_2$; and
 - $\pm 3\%$ within the flowrate range $Q_2 \leq Q \leq Q_4$.

NOTE: NMI reserves the right to vary this procedure. Any such variation shall be notified in writing by NMI.

FIGURE 14/3/55 – 1



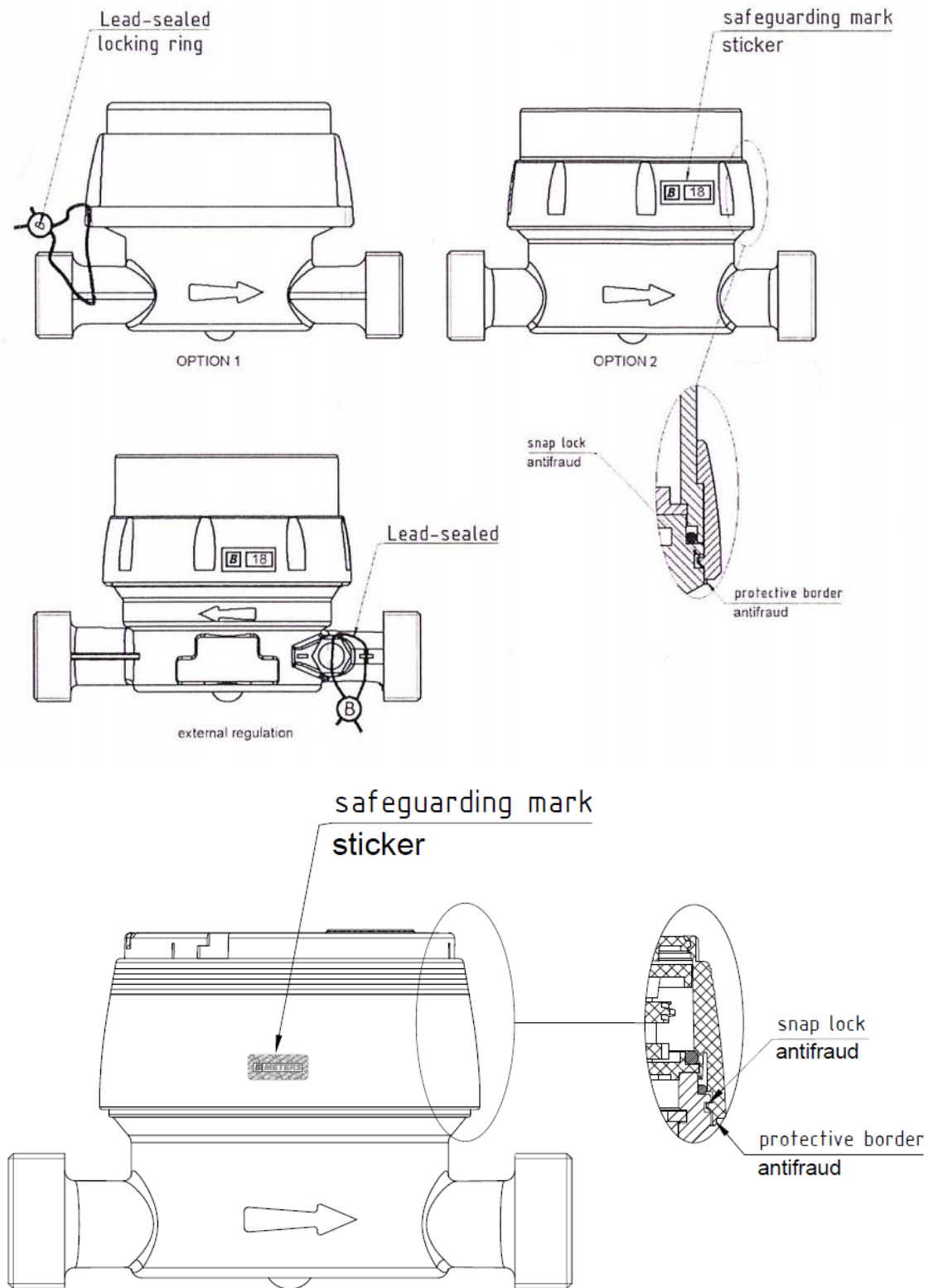
DN15 B Meters GSD8 model water meter – The Pattern

FIGURE 14/3/55 – 2



The Indicating Device and an example of the Required Markings

FIGURE 14/3/55 – 3



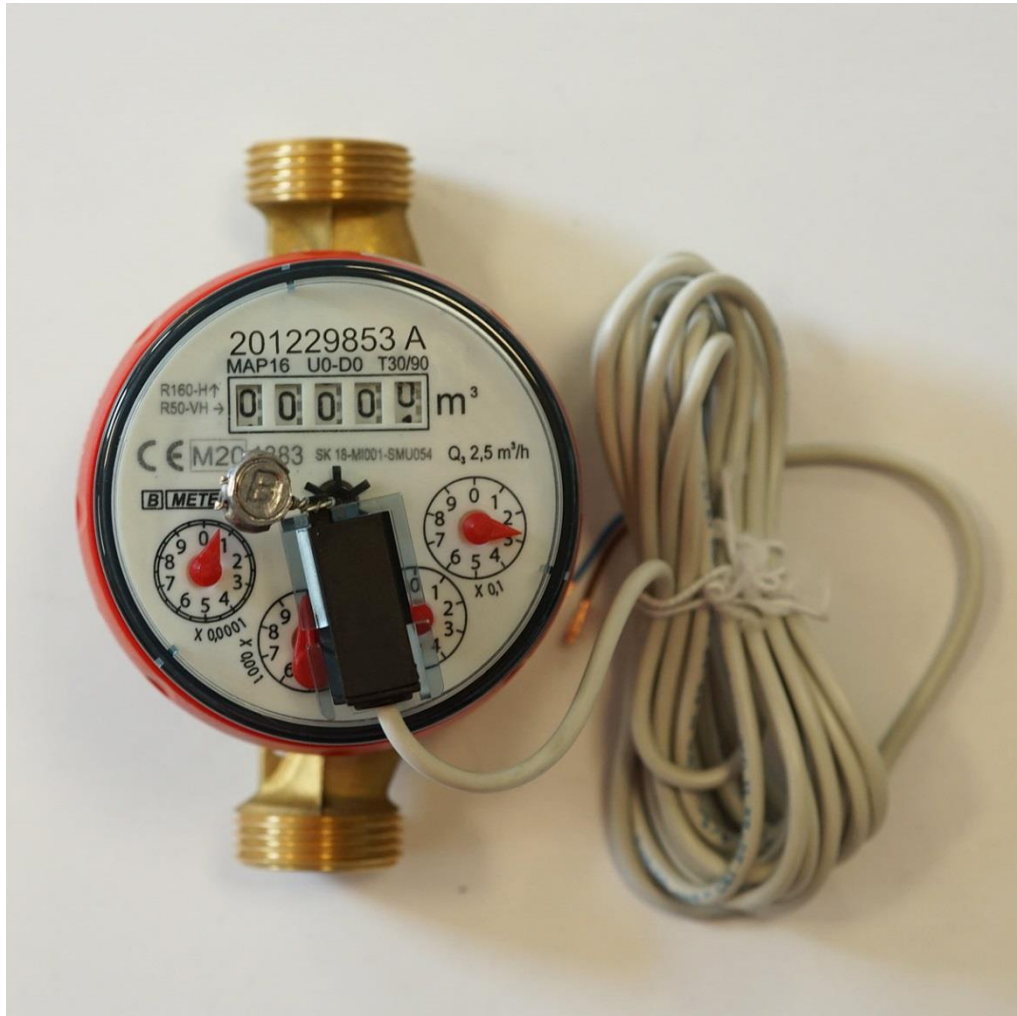
Sealing provisions

FIGURE 14/3/55 – 4



GSD8-R – Variant 2

FIGURE 14/3/55 – 5



GSD5-R – Variant 2

FIGURE 14/3/55 – 6



DN20 B Meters GSD8 model water meter – Variant 4

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