



Australian Government

National Measurement
Institute

Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 5/6B/201

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.

Turbo Messtechnik Model KF-G Flowmetering System

submitted by Blue Mountains City Council
 Civic Place
 Katoomba NSW 2777

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 becomes subject to review on **1/08/16**, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – interim certificate issued	7/07/00
1	Pattern amended – notification of change to interim issued	25/08/06
2	Pattern approved –certificate issued	11/12/00
3	Pattern reviewed – notification of change issued	5/07/06
4	Pattern reviewed & updated – certificate issued	10/02/12

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI (or NSC) 5/6B/201' 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.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificates No S1/0/A or No S1/0B.

Special

The submitter shall provide copies of the results of the first verification test to NMI.

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

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke at the bottom.

TECHNICAL SCHEDULE No 5/6B/201

1. Description of Pattern

approved on 7/07/00

A Turbo Messtechnik model KF-G electromagnetic flowmeter for use in a mobile flowmetering system (Figures 1 and 2) designed to measure the volume of effluent collected from a storage tank.

1.1 System Description

- (a) A secondary liquid storage or holding tank, usually located below ground level, is supplied with treated liquid effluent from a primary septic tank which contains waste that is continually broken down by bacteria into liquid form.
- (b) A Mono model MD80 or model Merlin pump with a flexible hose at the inlet of the pump to allow connection to the holding tank. The outlet from the pump is a rigid pipe installed in a vertical position.
- (c) A Turbo Messtechnik model KF-G electromagnetic flowmeter (Figure 3) mounted in the vertical position downstream of the pump. The flowmeter is the transfer point.
- (d) The pipework from the outlet of the flowmeter is connected to the top of the tank into which the metered effluent is delivered.
- (e) The signal output from the meter is interfaced to a PC2-A turbo converter which provides a pulse output proportional to the volume throughput. The converter is connected to a Contrec model 405D calculator/indicator (Figure 4). Both devices are located inside the cabin of the vehicle.
- (f) A Datamega model DCN-191 printer or equivalent (*) provides a receipt for the quantity metered by the system.
- (*) "Equivalent" is defined to mean other proprietary equipment of the same or better specifications requiring no changes to software for satisfactory operation of the complete system including all checking facilities.

1.2 Field of Operation

The field of operation of the measuring system is determined by the following characteristics:

- Minimum measured quantity 300 L
- Maximum flow rate, Q_{max} 600 L/min
- Minimum flow rate, Q_{min} 100 L/min
- The liquid to be measured is treated liquid effluent

1.3 Operational Procedure

- (a) To commence measurement the pump must be operating at 800 to 1000 rpm.
- (b) During the priming process, irregular pumping and fluctuation in flow rate occurs. Wait until the hose to the inlet pump is full of liquid. This is determined by observing that consistent flow rate is maintained.
- (c) Reset the calculator/indicator to commence measurement of liquid flow.

- (d) Observe the transfer of liquid until the hose to the pump inlet exhibits vibration/movement and fluctuation of flow rate occurs.
- (e) Reset the calculator/indicator to define end of measurement. This will initiate a receipt for the quantity measured.

1.4 Markings and Notices

Each measuring system shall bear the following information, placed together either on the indicating device or on a data plate:

Pattern approval mark	NMI (or NSC) 5/6B/201
Manufacturer's identification mark or trade mark
Meter model
Serial number of the instrument
Year of manufacture
Maximum flow rate (Q_{\max}) L/min
Minimum flow rate (Q_{\min}) L/min
Minimum measured quantity L
Accuracy class	1.5
Type of liquid for which the system is verified	Effluent

1.5 Sealing Provision

Provision is made for sealing the following components:

- (i) The Turbo Messtechnik model KF-G electromagnetic flowmeter (Figure 3);
and
- (ii) The TRIMEC model 405D calculator/indicator (Figure 5).

TEST PROCEDURE No 5/6B/201

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures using the type of liquid with which they will be used and which is marked on the instrument. Tests should be conducted in conjunction with any tests specified in the approval documentation for any indicator/controller and/or any conversion device, etc. used.

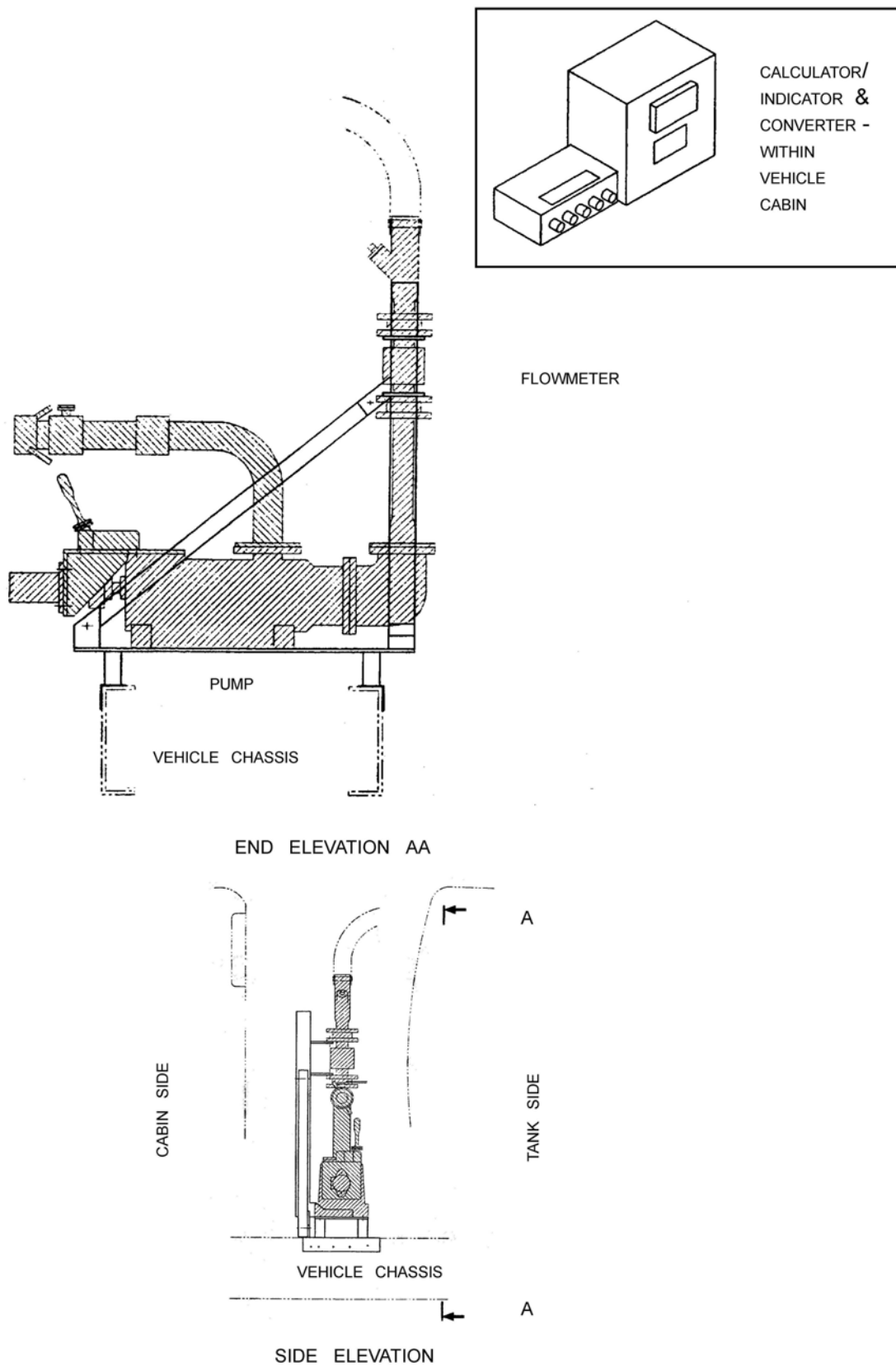
The liquid to be measured is treated liquid effluent. In the absence of appropriate quantities of treated effluent being available, the pattern may be tested and calibrated using water drawn from a standing pond, or similar source.

Maximum Permissible Errors

For accuracy class 1.5:

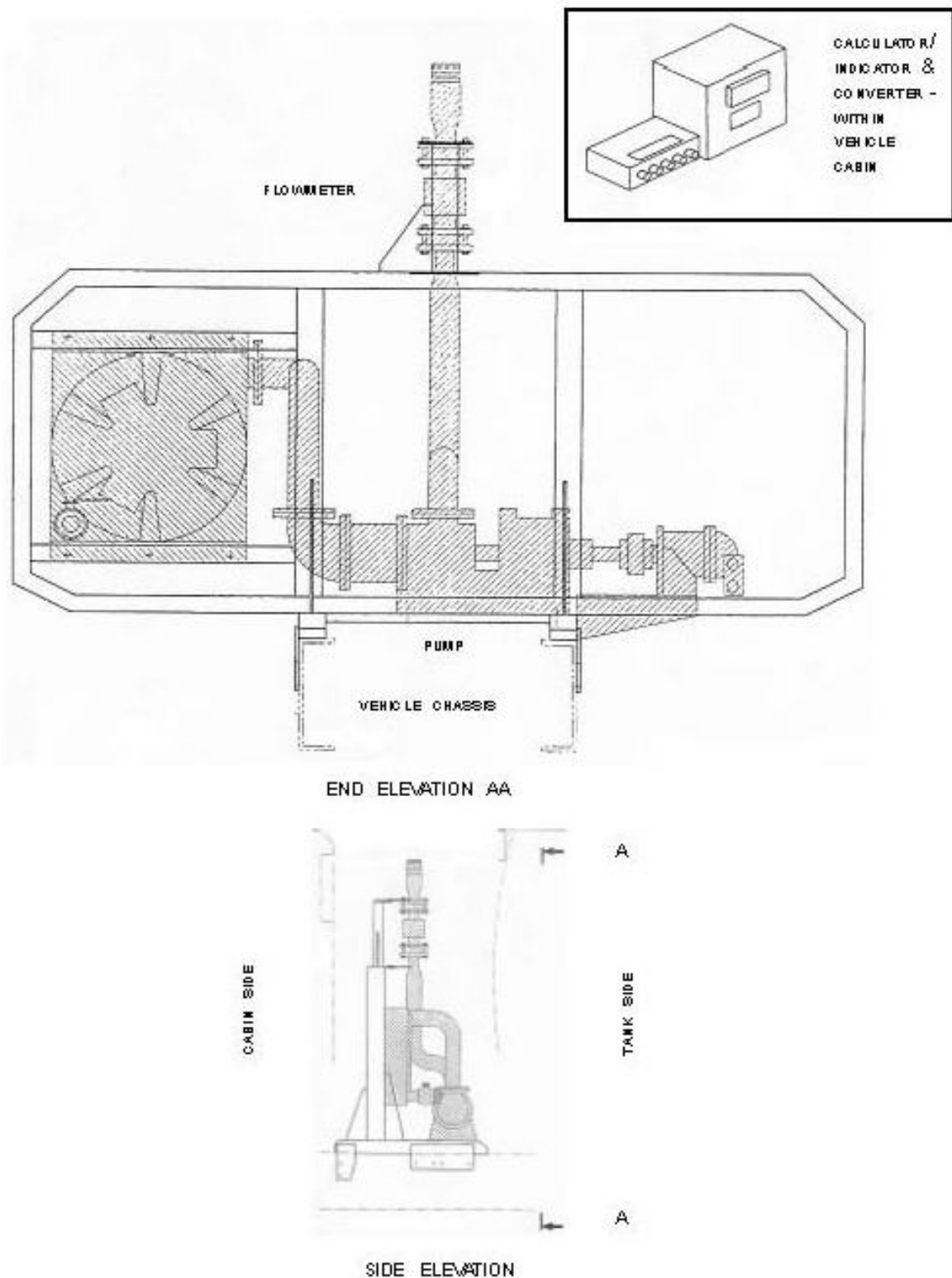
1. The maximum permissible errors applicable for quantities not less than 600 L are:
 - $\pm 1.0\%$ for the meter at verification, with the system primed and full of liquid;
and
 - $\pm 1.5\%$ for verification of the complete measuring system.
2. The maximum permissible error for deliveries equal to the minimum measured quantity is ± 9 L.

FIGURE 5/6B/201 – 1



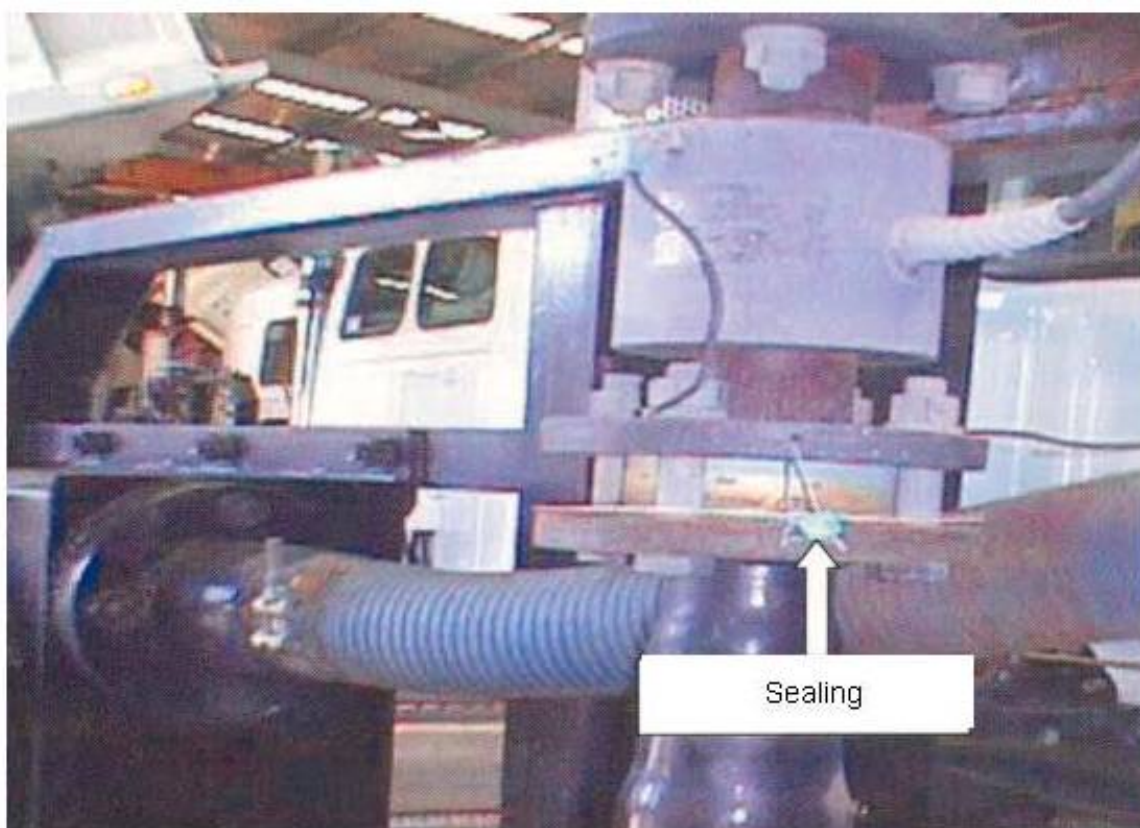
Typical Turbo Messtechnik Model KF-G Flowmetering System
When Fitted to a Rigid Vehicle

FIGURE 5/6B/201 – 2



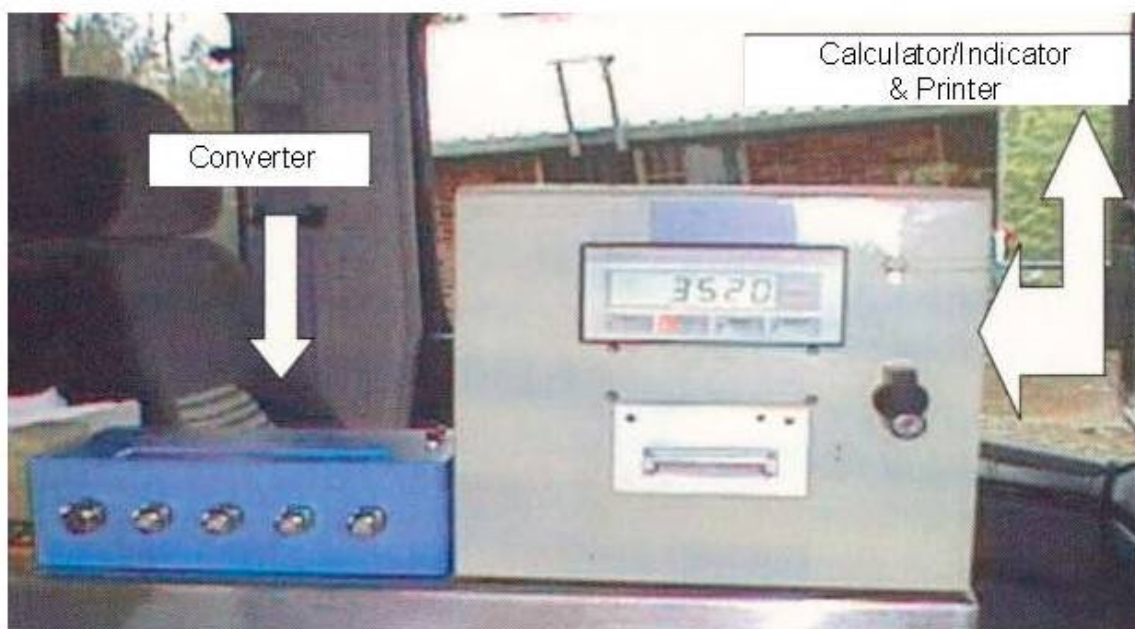
Typical Turbo Messtechnik Model KF-G Flowmetering System
When Fitted to an Articulated Vehicle

FIGURE 5/6B/201 – 3



Turbo Messtechnik Model KF-G Flowmeter
Including Sealing Method

FIGURE 5/6B/201 – 4



Contrec Model 405D Calculator/Indicator and
PC2-A Converter

FIGURE 5/6B/201 – 5



Sealing Method for Contrec Model 405D Calculator/Indicator

~ End of Document ~