Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 5/6A/233

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.

Gilbarco Model T980A1NP Endura Fuel Dispenser for Motor Vehicles

submitted by Gilbarco Australia Limited
20 Highgate Street
AUBURN NSW 2144

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 117-1, Measuring Systems for Liquids Other than Water, dated June 2011.

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 6 approved – certificate issued	10/12/15
1	Variant 7 & 8 approved – certificate issued	05/03/17
2	Variant 7 amended Pattern Amended to include Hose Configuration certificate issued	28/02/20

Document History (cont…)

3	Variant 9 approved – Variant 10 provisionally approved – certificate issued	27/09/22
4	Variant 10 approved – certificate issued	13/12/22

CONDITIONS OF APPROVAL

General

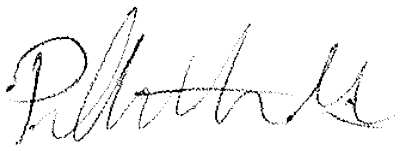
Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/233' and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI 5/6A/233' in addition to the approval number of the instrument, and only by persons authorised by the submittor.

It is the submittor'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 Certificate No S1/0B.

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



Phillip Mitchell
A/g Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 5/6A/233

1. Description of Pattern approved on 10/12/15

A Gilbarco model T980A1NP Endura single fuel dispenser for motor vehicles is approved to dispense various grades of fuels (*), in attendant-operated mode, or in attended self-service mode using any compatible (#) approved control console. The meter is adjusted to be correct for the liquid for which it is to be verified.

(*) including up to 10% ethanol (E10) and various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

(#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system.

1.1 Field of Operation

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

• Minimum measured quantity, *Vmin*	2 L	
• Maximum flow rate, *Qmax*	50 L/min	
• Minimum flow rate, *Qmin*	5 L/min	
• Maximum pressure of the liquid, *Pmax*	350 kPa	
• Minimum pressure of the liquid, *Pmin*	140 kPa	(#1)
• Range of liquids viscosity	0.5 to 20 mPa.s (at 20 °C)	(#2)
• Maximum temperature of the liquid, *Tmax*	50 °C	
• Minimum temperature of the liquid, *Tmin*	−10 °C	
• Ambient temperature range	−25 to 55 °C	
• Accuracy class	0.5	

(#1) Minimum pressure required for effective operation of the gas elimination device.

(#2) The flowmeter is adjusted for use with one product viscosity. Fuels include kerosene, distillate and various grades of petrol (which may include up to 10% ethanol). The pattern and variants constructed for use to dispense various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

1.2 Description of the Metering System

The instrument (Figure 1) incorporates the following components:

(i) A Gilbarco model GPU-90 pumping unit (Figure 2) as described in the documentation of approval NMI S455.

(ii) A measurement transducer comprising a Gilbarco model C+ (##) four piston positive displacement flowmeter (Figure 3) fitted with an SIP model M11128 pulse generator (Figure 4) as described in approval NMI S691, or any other compatible (#) NMI-approved pulse generator.

(##) The meter may also be known as the model T19976 G3 (which may also have an 'S' suffix).

(#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system.

(iii) A hose/nozzle, mounted on the side of the dispenser housing. The nozzle used is a 16 mm ZVA Elaflex nozzle. (*) The fuel dispenser is fitted with a hose retraction facility.

(*) Note that the submittor must be consulted regarding the acceptability of any alternative nozzles.

1.3 Calculator/Indicator

A Gilbarco model Sandpiper 2 calculator/indicator (also known as the E101 electronic set – Figure 5) which has a single display for indicating volume only.

The display limits and increments are:

Volume 9999.99 in 0.01 L increments

The instrument is approved with version 29-04-XXx (**) software, which can be viewed at power up or by forcing a restart by pushing the F1 then the F2 buttons on the Managers' keypad.

The 6 digit display will show either 'End00X' or '---- 29', then after a short period '04-XXx'.

(**) 'End00X' or '29' identifies E101 hardware and '04' is the functionality code for OIML. The 'XXx' will be a pair of numeric characters and may include one alpha character e.g. 24, 25, 26, 27 with or without an alpha character i.e. 24E, etc.

A pre-set device may also be fitted to allow pre-set to be selected by means of volume (litres) or price (dollars).

1.4 Descriptive Markings and Notices

Instruments are marked with the following data, together in one location on a data plate:

Pattern approval number	NMI 5/6A/233	
Manufacturer's identification mark or trade mark	.....	
Manufacturer's designation (model number)	.....	
Serial number	.....	
Year of manufacture	.....	
Maximum flow rate (Q_{max})	..... L/min	
Minimum flow rate (Q_{min})	..... L/min	
Minimum measured quantity (V_{min})	 L	(#1)
Maximum operating pressure (P_{max})	..... kPa	
Minimum operating pressure (P_{min})	..... kPa	
Nature of liquids to be measured	.....	(#2)
Maximum temperature of the liquid, T_{max}	..... °C	(#3)
Minimum temperature of the liquid, T_{min}	..... °C	(#3)
Environmental class	class C	

(#1) In addition, the minimum measured quantity (*Vmin*) shall be clearly visible on any indicating device visible to the user during measurement, in the form 'Minimum delivery 2 L' or 'Minimum delivery 2/5 L'.

(#2) e.g. distillate or D.

(#3) Required if liquid temperature range differs from −10 °C to 50 °C.

1.5 Sealing Provision

The gas separator test valve has provision for sealing. The pulse generator is sealed as shown in Figure 3.

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Checking Facilities

An automatic segment test is performed at the start of each delivery.

The calculator monitors the presence and correct transmission of signal from the measurement transducer, and in the event of detecting a fault the instrument indicates an error code and has provision for controlling electrically-operated valves to stop the delivery.

2. Description of Variant 1 approved on 10/12/15

Certain other models and configurations of the Endura series of fuel dispensers identified using Table 1 below.

TABLE 1 – Approved model designations

Meaning of model designations for the Endura series of fuel dispensers:

(the pattern is a model T980A1NP Endura)

1st, 2nd and 3rd digits, Series;

T98 = Gilbarco Australia product, base model

4th digit, models, e.g.

0 = lane oriented display(s), side mounted hose(s) (the pattern)

5th digit = Country code;

A= Australia

6th digit N = Number of hoses;

1 or 2 (single grade for suction, one or two grades for STPs)

7th = Flow rate;

N = Normal (50 L/min)
H = High (90 L/min)
E = Extended (130 L/min)
U = Ultra high (160 L/min)

8th = Hydraulic module;

P = Pump (suction pumping unit, either type GPU-90 or GPU-140)
D = Dispenser (pressure system using approved submersible turbine pump)

3. Description of Variant 2 approved on 10/12/15

With one or more Gilbarco model V flowmeters (Figure 5) which may also be known as the model V+, instead of the model C+ flowmeters described for the pattern. This meter is fitted with an SIP model M11128 pulse generator (Figure 4) as described in approval NMI S691.

The field of operation of the model Gilbarco model V (or V+) meter is the same as for the C+ meter (clause 1.1 for the pattern) except as follows:

- Maximum temperature of the liquid, T_{max} 40 °C
- Minimum temperature of the liquid, T_{min} −10 °C
- Ambient temperature range −10 to 55 °C

4. Description of Variant 3 approved on 10/12/15

With standard pump/STP(s) as described for the pattern, but with 25mm piping, 25 mm hoses, and ZVA Elaflex 25 mm nozzles (*), and known as **H**igh flow rate fuel dispensers with the following field of operation:

- For use with distillate
- Maximum flow rate (*Qmax*) 90 L/min
- Minimum flow rate (*Qmin*) 9 L/min
- Minimum measured quantity (*Vmin*) 5 L

5. Description of Variant 4 approved on 10/12/15

With Gilbarco model GPU-140 pumping units with 32 mm piping, 32 mm hoses, and ZVA Elaflex 32 mm nozzles (*), and known as **E**xtended flow rate fuel dispensers with the following field of operation:

- For use with distillate
- Maximum flow rate (*Qmax*) 130 L/min
- Minimum flow rate (*Qmin*) 13 L/min
- Minimum measured quantity (*Vmin*) 5 L
- Minimum flow rate (*Qmin*) 16 L/min
- Minimum measured quantity (*Vmin*) 5 L

(*) Note that the submittor must be consulted regarding the acceptability of any alternative nozzles.

6. Description of Variant 5 approved on 10/12/15

With one or more compatible submersible turbine pumps (STPs) incorporating a leak detection system (Figure 7). The STP replaces the equivalent components (i.e. motor, pump/strainer/gas separator, and associated pipework) in certain fuel dispensers covered by this approval.

Dispensers may operate with the standard maximum flow rate, *Qmax* of 50 L/min, or dispensers for use with distillate may be used with the **U**ltra-high maximum flow rate, *Qmax* of 160 L/min.

7. Description of Variant 6 approved on 10/12/15

The pattern and variants for use to dispense various grades of petrol which may include up to 85% ethanol (‘E85’).

8. Description of Variant 7 approved on 05/03/17 amended on 28/02/20

For use with Gilbarco Apollo Calculator/indicator. This indicator is approved with versions A30xxx software, which can be viewed as described above in clause **1.3 Calculator/Indicator**

9. Description of Variant 8 approved on 05/03/17

Same as pattern, with an addition of a display and the nozzle boot/Push to Stop Button mounted away from the main dispenser housing (Figure 8)

10. Description of Variant 9 approved on 27/09/22

With a new-design Endura dispenser housing with a grill shown in figure 10.

11. Description of Variant 10 provisionally approved on 27/09/22
approved on 13/12/22

With a variant of the Gilbarco Apollo Calculator/indicator approved with versions A32xxx software, which can be viewed as described above in clause **1.3 Calculator/Indicator**

TEST PROCEDURE No 5/6A/233

Instruments shall be tested in accordance with any relevant tests specified in the national instrument test procedures.

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

Tests should be conducted in conjunction with any tests specified in the approval documentation for any components used, including indicator/controller and submersible turbine pump (STP) hydraulic systems.

Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

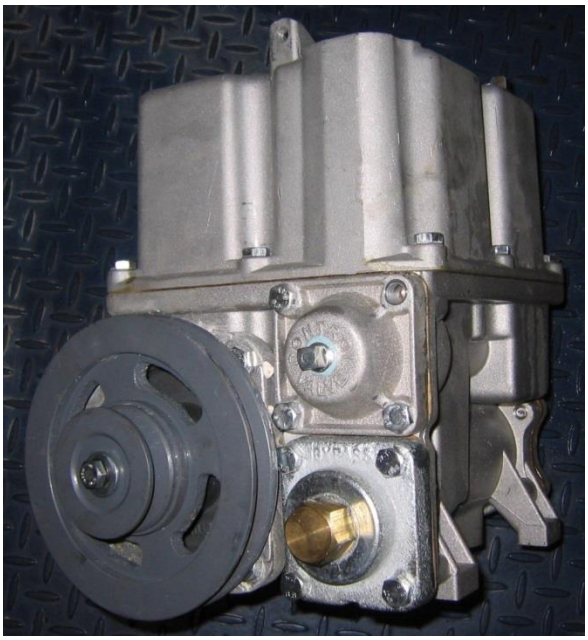
Hose Configuration

Endura series, 2 Hose model (Figure 9)
The numbering guide is on the J Box inside the metering cabinet. The allocated suffix for a hose is as per the numbering guide, for example a 2 Hose Dispenser is numbered 12345A, and 12345B,

FIGURE 5/6A/233 – 1

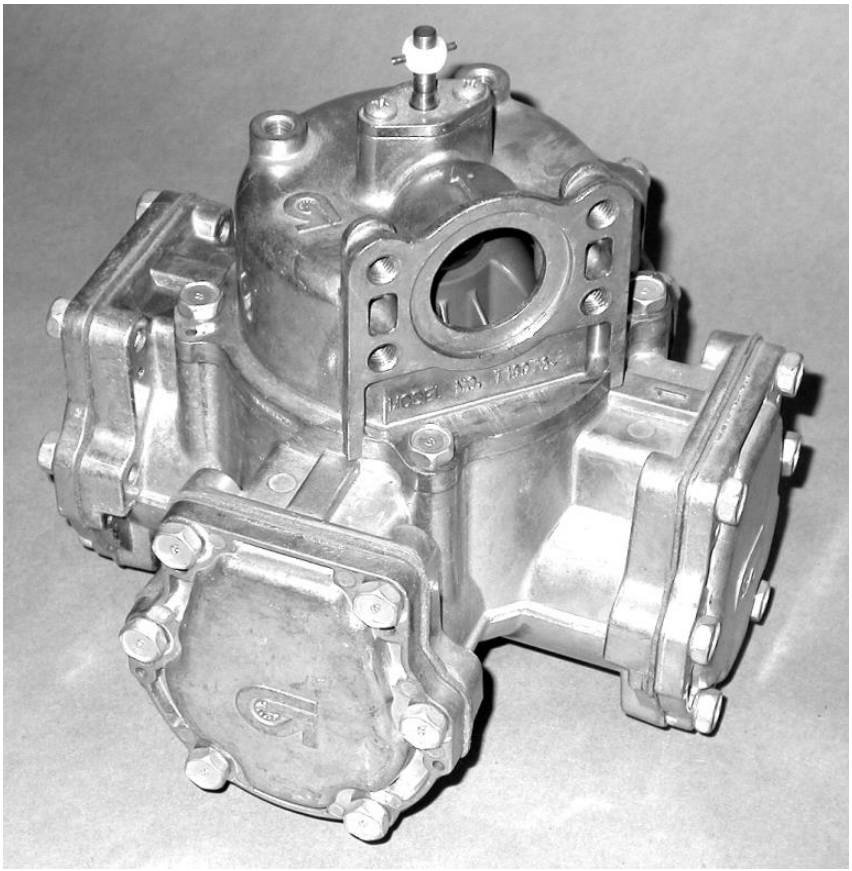
Gilbarco Model T980A1NP Endura Fuel Dispenser for Motor Vehicles (Pattern)

FIGURE 5/6A/233 – 2



Gilbarco Model GPU-90 Pumping Unit

FIGURE 5/6A/233 – 3



Gilbarco Model C+ (T19976 G3) Flowmeter

FIGURE 5/6A/233 – 4

SIP Model M11128 Pulse Generator (incl. sealing)

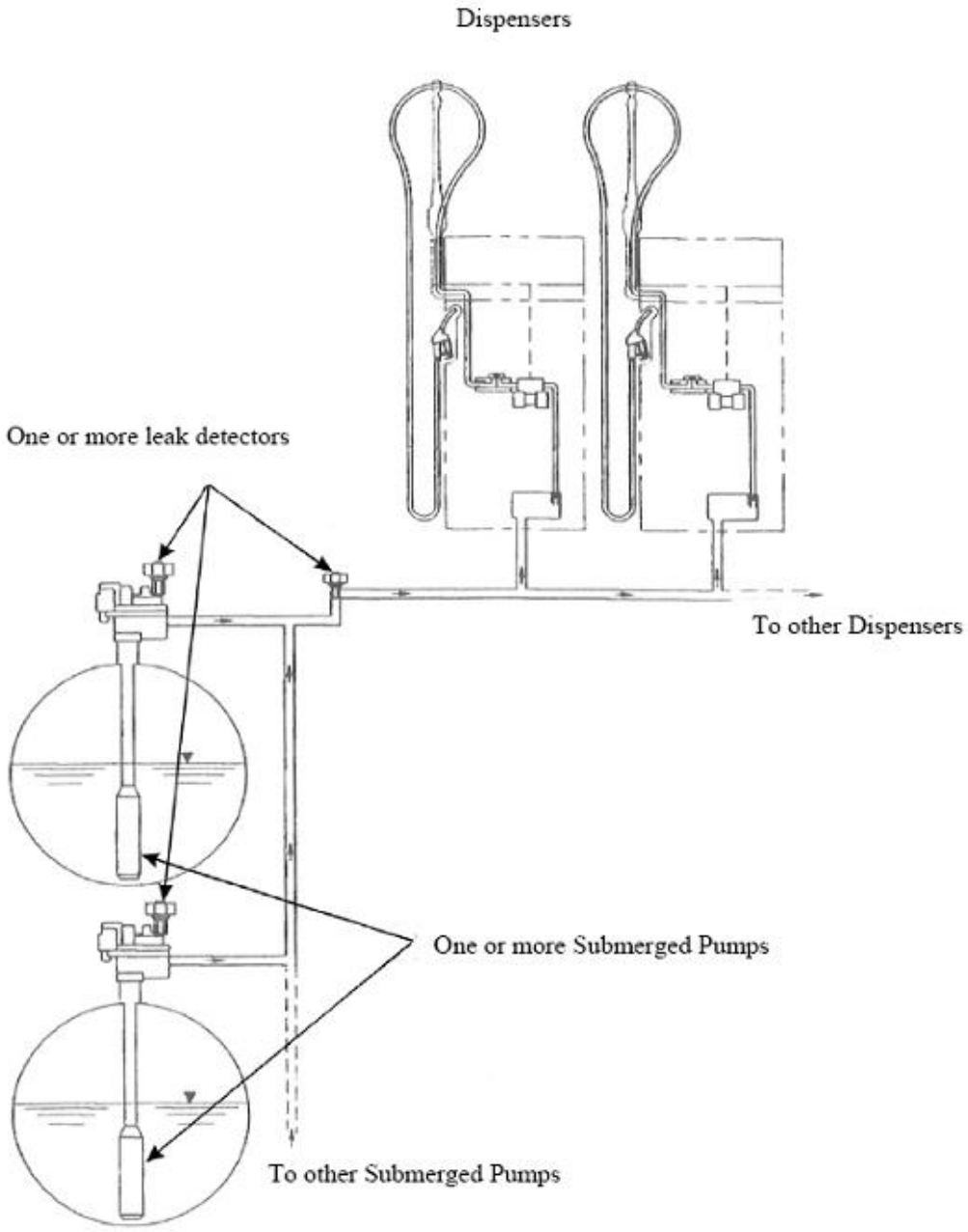
FIGURE 5/6A/233 – 5

Gilbarco Model Sandpiper 2 Calculator/Indicator (aka E101 Electronic Set)

FIGURE 5/6A/233 – 6

Gilbarco Model V (aka V+) Flowmeter (Variant 2)

FIGURE 5/6A/233 – 7



Typical Submersible Turbine Pump (STPs) System (Variant 5)

FIGURE 5/6A/233 – 8

With an addition of a display and the nozzle boot/Push to Stop Button mounted away from the main dispenser housing (Variant 8)

FIGURE 5/6A/233 – 9

REAR

ENDURA 40/40 FLOW RATE
ENDURA 120/40 FLOW RATE

HOSE POSITION

A m A

JUNCTION BOX

B m B HOSE POSITION

HOSE LETTER (A) IS ADDED TO THE PUMP SERIAL No. (ie 600000) MARKED ON THE NAMEPLATE TO PRODUCE THE INDIVIDUAL HOSE SERIAL NUMBER (ie 600000A)

NAMEPLATE

FRONT

Endura 2 Hose Dispenser

FIGURE 5/6A/233 – 10

New design Endura Fuel Dispenser with a Grill (Variant 9)

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