

**Australian Government** 

National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

# Notification of Change Certificate of Approval No 5/6A/84A Change No 2

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

The following changes are made to the approval documentation for the

Gilbarco Model T087A Multi-product Driveway Flowmeter

submitted by	Gilbarco Au	ist. Ltd	
	(now Gilbar	co Austra	lia Limited)
	now of 20 H	lighgate S	Street
	AUBURN	NSW	2144.

A. In Certificate of Approval 5/6A/84A dated 7 February 1997, the FILING ADVICE should be amended by adding the following:

"Notification of Change No 1 dated 29 February 1996 Notification of Change No 2 dated 3 September 2008"

B. In Technical Schedule No 5/6A/84A dated 14 June 1993 (14/6/93) clause **1.1 Features**, the last 'bullet' point should be amended to read;

"The nozzles used are Elaflex model 'Slimline 2' ZVA nozzles, or any other compatible approved nozzles."

Note: Approval 5/6A/84A was cancelled in respect of new instruments on 1 October 2000.

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

2/60



12 Lyonpark Road, North Ryde NSW

# Cancellation Certificate of Approval No 5/6A/84A

This is to certify that the approval for use for trade granted in respect of the

Gilbarco Model T087A Multi-product Driveway Flowmeter

submitted by Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113

has been cancelled in respect of new instruments as from 1 October 2000.

Instruments which were verified/certified before that date may, with the concurrence of the relevant verifying authority, be submitted for reverification.

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

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5/6A/84A 7 February 1997

# **National Standards Commission**



# **Certificate of Approval**

# No 5/6A/84A

Issued under Regulation 9

of the

National Measurement (Patterns of Measuring Instruments) Regulations

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

Gilbarco Model T087A Multi-product Driveway Flowmeter

submitted by Gilbarco 12-38 T

Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113.

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.

# CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 March 1998, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No 5/6A/84A and only by persons authorised by the submittor.

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

### Certificate of Approval No 5/6A/84A

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 Commission 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 the Commission's Document 106.

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

### DESCRIPTIVE ADVICE

Pattern: approved 15 February 1993

• A Gilbarco model T087A multi-product driveway flowmeter.

Variants: approved 15 February 1993

- 1. Other models and configurations as listed in Table 1.
- 2. In alternative housings; models as listed in Table 2.
- 3. With increased maximum flow rate; models as listed in Table 3.
- 4. With model DT06460 I.S. pulse generators.
- 5. With up to 8 hoses; models as listed in Table 4.

Technical Schedule No 5/6A/84A describes the pattern and variants 1 to 5.

Variant: approved 12 June 1995

6. With a modified model T258AT pump unit.

Variant: approved 31 August 1995

- 7. With a modified model T258AT pump unit, and having a gas detector **fitted**.
- Variant: provisionally approved 12 July 1995 approved 10 January 1997
- 8. With pre-pressurisation facility.

Technical Schedule No 5/6A/84A Variation No 1 describes variants 6 to 8.

Page 2

# Certificate of Approval No 5/6A/84A

Variant: approved 29 April 1996

9. With a Gilbarco vapour recovery system.

Technical Schedule No 5/6A/84A Variation No 2 describes variant 9.

Variants: approved 14 November 1996

- 10. Certain models of the T079 series as listed in Table 5.
- 11. Certain models of the T077, T078, T087 and T088 series as listed in Table 6.

Technical Schedule No 5/6A/84A Variation No 3 describes variants 10 and 11.

## FILING ADVICE

Certificate of Approval No 5/6A/84A dated 30 July 1996 is superseded by this Certificate and may be destroyed.

The Provisional status and Special Conditions of Approval for Variant 8 are hereby removed.

The documentation for this approval now comprises:

Certificate of Approval No 5/6A/84A dated 7 February 1997 Technical Schedule No 5/6A/84A dated 14 June 1993 (incl. Tables 1 to 4 and Test Procedure) Technical Schedule No 5/6A/84A Variation No 1 dated 28 September 1995 Technical Schedule No 5/6A/84A Variation No 2 dated 30 July 1996 Technical Schedule No 5/6A/84A Variation No 3 dated 7 February 1997 Figures 1 to 12 dated 14 June 1993 Figures 13 and 14 dated 30 July 1996

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

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### TECHNICAL SCHEDULE No 5/6A/84A

Pattern: Gilbarco Model T087A Multi-product Driveway Flowmeter.

Submittor: Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113.

#### 1. Description of Pattern

A Gilbarco model T087A multi-product driveway flowmeter (Figures 1 and 2) approved for use to dispense various grades of petrol over a flow rate range of 15 to 55 L/min, in attendant-operated or locally or remotely-authorised applications.

**1.1** Features (Table 1)

The model T087A includes the following components:

- . 2 model T258AP pump/gas separators.
- . 4 model T262 B or T262 C series 4-piston positive displacement meters.
- 4 model DR04334 pulse generators.
- 2 model DT03616 price-computing indicators.
- 4 Commission-approved ZVA nozzles.

The pulse generators are driven from the output shaft of the meter through a gear assembly and may be mounted singly or in pairs, either in an open frame or in a flameproof enclosure ('pulser box'). A checking pulse generator is mounted on the gear assembly.

Hydraulic control of flow to each nozzle is via a 2-stage pilot valve and flow control valve. The model T087A has a preset facility with slow flow controlled by these valves. Flowmeters may be fitted with a purchaser-operated preset keypad or the preset facility may be set via the vendor's console.

#### 1.2 Indicator

The purchaser displays show:

000.00 L to 995.00 L in 0.01 L increments
0.1 to 999.9 c/L in 0.1 c/L increments
\$000.00 to \$995.00 in 1 c increments
\$00.00 to \$99.00 in \$1.00 increments

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All driveway flowmeters are fitted with a manager's keypad and rotary mode switch located behind one side of the flowmeter indicator panel. The switch permits the following functions:

Attendant-operated or self-serve	
Set price	<ul> <li>for each grade of product</li> </ul>
Set allocation (#)	- in \$ in units of 1 up to 99
Totals	- in \$ or L for each hose
Test	- allows field test procedures
	•

(#) - limit of amount dispensed in \$.

#### 1.3 Sealing and Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

The mechanical calibrator on each meter and the gas separation test valve are both sealed.

#### 1.4 Markings

NA - C- ...

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

Manufacturer's name or mark	
Model number	
Serial number	
NSC approval number	5/6A/84A
Maximum flow rate	L/min
Minimum flow rate	L/min
Liquid temperature range	5°C to 40°C
Maximum operating pressure	kPa
Approved for use with (products)	•••••

#### 2. Description of Variants

#### 2.1 Variant 1

Other models and configurations, as listed below and in Table 1. Instruments without preset facility cannot be used for PREPAY transactions.

- . With 6 meters/hoses/nozzles. Figure 3 shows a model T088A flowmeter.
- With 2 or more nozzles dispensing distillate, in which case a gas detection system is fitted (Figure 4).

Page 3

- Modified for use with a Gilbarco model STP (submersible turbine pump) hydraulic supply system in accordance with NSC approval No S245. Such instruments then carry a 'D' suffix, e.g. model T087A becomes model T087AD. They may be used to dispense petrol, kerosene or distillate.
- In an alternative housing, including relocated indicator, as shown in Figure 5, in which case the model number has an additional '-100' suffix, e.g. model T087AD becomes T087AD-100.
- With a model T258AT pump unit with integral gas detector and gas separator (Figure 6), in which case the model number has a 'P' suffix, e.g model T078A becomes model T078AP.
  - With a manually-operated latch fitted to the nozzle receptacle (Figure 7).

Model	Number of Meters/ Hoses/Nozzles	Preset
T087A*	4	Yes
T087B*	4	No
T087C*	4	Yes
T087D*	4	No
T088A*	6	Yes
T088B*	6	No
T088C*	6	Yes
T088D*	6	No

#### TABLE 1 - Approved Models T087/T088 Series

Note: \* Refer to text for list of suffixes.

#### 2.2 Variant 2

In alternative housings, as shown in Figures 8 to 10, and known as various models of the T077/T078/T079 series as listed in Table 2.

# TABLE 2 - Approved Models Variant 2

Model	Number of Meters/ Hoses/Nozzles	Preset
T077A*	4	Yes
T077B*	4	No
T077C*	4	Yes
T077D*	4	No
T078A*	6	Yes
T078B*	6	No
T078C*	6	Yes
T078D*	6	No
T078E*	6	Yes
T078F*	6	No
T079A*	2	Yes
T079B*	2	No
T079C*	2	Yes
T079D*	2	No
T079J*	4	Yes
T079K*	4	No
T079L*	4	Yes
T079M*	4	No

Note: \* Refer to text for list of suffixes.

#### 2.3 Variant 3

Certain models of the T079 series as listed in Table 3 with a model T258AT pump unit (Figure 11) and approved for use with a maximum flow rate of 85 L/min. A gas detection system is fitted.

#### TABLE 3 - Approved Models Variant 3

Model		Number of Meters/ Hoses/Nozzles	Preset
T079ED		2	Yes
T079FD		2	No
T079EP		2	Yes
T079FP		2	No
T079ND	(#)	2	Yes
T079PD	(#)	2	No
T079NP	(#)	2	Yes
T079PP	(#)	2	No

(#) One meter restricted to 55 L/min in these models.

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#### 2.4 Variant 4

With a model DT06460 I.S. pulse generator mounted directly on top of each meter (Figure 12) and the model Phase 2 (4-product) CD electronics module, in which case the model number has a '-1' suffix, e.g. model T078A becomes model T078A-1.

### 2.5 Variant 5

Certain models of the T078 series as listed in Table 4 and approved for use with up to 8 meters/hoses/nozzles (Figure 12). These flowmeters shall be used with a Gilbarco model STP (submersible turbine pump) hydraulic supply system and are approved for use with a maximum flow rate of 55 L/min.

These models incorporate a model DT06460 I.S. pulse generator mounted directly on top of each meter (Figure 12) and the model Phase 2 (4-product) CD electronics module.

#### TABLE 4 - Approved Models Variant 4

Model	Number of Meters/ Hoses/Nozzles	Preset
T078LD	8	Yes
T078MD	8	No
T078ND	6	Yes
T078PD	6	No

#### TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Inspector's Handbook.

#### Maximum Permissible Errors at Verification/Certification

The maximum permissible error applied during a verification test from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule is  $\pm 0.3\%$ .

Note: The following tests should be carried out on initial verification. Thereafter, they need not be done at every verification/certification but should be done periodically at the discretion of the relevant verifying authority.

#### For instruments fitted with submersible turbine pumps

- 1. Operation of the leak detector is tested by the following procedure:
  - a) Connect a pressure gauge and valve to the test port of the impact valve under the driveway flowmeter. Ensure that the submersible turbine pump is not turned on during this operation by disabling at the STP control box.
  - b) Start the test by closing the test valve. The line pressure should be zero as indicated on the pressure gauge. At the control box, enable the pump and dispense at least 15 L of fuel to remove any air introduced by installing the pressure gauge and valve.
  - c) Turn off the pump and open the test valve sufficiently so that a steady, unbroken stream of fuel is observed to flow from the test valve. Wait until flow ceases from the valve and the test gauge reads zero. Leave the test valve open.
  - d) Start the pump by lifting the operating flap, but leaving the nozzle closed. A steady stream of fuel should be observed to flow from the test valve. The pressure on the gauge should not exceed 150 kPa during this step.

Attempt to deliver fuel from the nozzle. A flow rate of less than 11 L/min indicates correct operation of the leak detector.

- e) Close the test valve and nozzle with the pump still running. A rise in pressure on the test gauge should be noted after not more than 10 seconds.
- f) Disable the pump at the control box. Remove the test fixture and replace the plug in the test port. Enable the pump, and dispense at least 15 L of fuel from the flowmeter to remove any air introduced into the system.
- 2. The minimum flow rate test is performed by simultaneously running either all hoses on all driveway flowmeters connected to a particular submersible turbine pump (where the number of hoses is 6 or less) or by simultaneously running between 2/3 and 3/4 of all such hoses (where the number of hoses is more than 6). For the purpose of this test, where two or more pumps are connected in parallel, they shall be considered as one pump. Check that the lowest flow rate is not less than 15 L/min.



### TECHNICAL SCHEDULE No 5/6A/84A

VARIATION No 1

Pattern: Gilbarco Model T087A Multi-product Driveway Flowmeter.

Submittor: Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113.

#### 1. Description of Variants

#### 1.1 Variant 6

Certain models of driveway flowmeters of this approval (identified by the model number having a 'P' suffix) fitted with a modified Gilbarco model T258AT pump unit with integral gas separator but without the gas detector. A modified T257 gas separator sump with inlet flow control valve is also fitted (similar to that shown in Figure 6).

Instruments are suitable for use with petrol at flow rates up to 55 L/min.

#### 1.2 Variant 7

Similar to variant 6 but with a gas detector fitted, in which case instruments are suitable for use with distillate.

#### 1.3 Variant 8

With modified software controlling the sequence of pump and flow control valve operation to achieve pressurisation of the product, periodically prior to a delivery being started.



## TECHNICAL SCHEDULE No 5/6A/84A

VARIATION No 2

### Pattern: Gilbarco Model T087A Multi-product Driveway Flowmeter.

Submittor: Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113.

#### 1. Description of Variant 9

Certain models of driveway flowmeters of this approval fitted with a Gilbarco model DT07770 vapour recovery system. Figure 13 shows a typical installation.

The system includes the following components:

- . Two Gilbarco vapour recovery pumps, one for each side of the flowmeter;
- . A control printed circuit board;
- . A power supply unit;
- . Coaxial vapour recovery hoses; and
- . ZVA vapour recovery nozzles, either model 204-GRV-BL (Figure 14) for leaded petrol or model 204-GRV for unleaded petrol.

A vapour recovery system shall only be fitted to instruments suitable for use with petrol at flow rates up to 55 L/min.

# TECHNICAL SCHEDULE No 5/6A/84A VARIATION No 3

Pattern: Gilbarco Model T087A Multi-product Driveway Flowmeter.

Submittor: Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113.

### 1. Description of Variants

### 1.1 Variant 10

Certain models of the T079 series as listed in Table 5 which are single-sided flowmeters and are approved for use with distillate at flow rates up to 85 L/min. The internal pump models (i.e. those with an EP or FP suffix and which are NOT supplied from a submersible turbine supply system) are fitted with a model T258T pump unit and a gas detection system. An F or S suffix is added to the model number to indicate front or rear meter/hose/nozzle.

Model	Position of Meter/Hose/Nozzle	Preset
T079EP-1F	Front	Yes
T079FP-1F	Front	No
T079EP-1R	Rear	Yes
T079FP-1R	Rear	No
T079ED-1F	Front	Yes
T079FD-1F	Front	No
T079ED-IR	Rear	Yes
T079FD-1R	Rear	No

Note: Suffix 'D' denotes dispenser version (refer variant 1)

Suffix 'P' denotes model T258AT pump unit (refer variant 7)

## 1.2 Variant 11

Certain models of the T077, T078, T087, and T088 series as listed in Table 6 and which are fitted with either four or six meters/hoses/nozzles. Two meters/hoses/nozzles are approved for use with distillate at flow rates up to 85 L/min; these are fitted with a model T258AT pump unit and a gas detection system. The remaining two or four meters/hoses/nozzles are for use with petrol at flow rates up to 55 L/min.

	TABLE 6	
Model	Number of Meters/Hoses/Nozzles	Preset
T077GD-1	4	Yes
T077HD-1	4	No
T077GP-1	4	Yes
T077HP-1	4	No
T078GD-1	6	Yes
T078HD-1	6	No
T078GP-1	6	Yes
T078HP-1	6	No
T087GD-100	4	Yes
T087HD-100	4	No
T087GP-100	4	Yes
T087HP-100	4	No
T088GD-100	6	Yes
T088HD-100	6	No
T088GP-100	6	Yes
T088HP-100	6	No

**Note:** Suffix 'D' denotes dispenser version (refer variant 1)

Suffix 'P' denotes model T258AT pump unit (refer variant 7)

5/6A/84A 29 February 1996

# **National Standards Commission**



# NOTIFICATION OF CHANGE CERTIFICATE OF APPROVAL No 5/6A/84A

### CHANGE No 1

The following change is made to the approval documentation for the

Gilbarco Model T087A Multi-product Driveway Flowmeter

submitted by Gilbarco Aust. Ltd 12-38 Talavera Road North Ryde NSW 2113.

In Technical Schedule No 5/6A/84A Variation No 1 dated 28 September 1995 (for Variant 8), the following should be added:

Instruments fitted with the modified software are inhibited from displaying the volume for the first 100 mL of any delivery.

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

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# FIGURE 5/6A/84A - 1



Gilbarco Model T078A Multi-product Driveway Flowmeter

5/6A/84A 14/6/93

FIGURE 5/6A/84A - 2



Typical Hydraulic System - T087 Series



Model T088A

5/6A/84A 14/6/93

FIGURE 5/6A/84A - 4



Typical Hydraulic System With Gas Detection System



Typical T087/T088 Series Instrument in Alternative Housing

FIGURE 5/6A/84A - 6



With Model T258AT Pump Unit (In This Case Supplying Two Meters)

### FIGURE 5/6A/84A - 7



5/6A/84A 14/6/93

FIGURE 5/6A/84A - 8



Typical T077/T078/T079 Style Housing

FIGURE 5/6A/84A - 9



Typical T077/T078/T079 With Gas Detection System

5/6A/84A 14/6/93

FIGURE 5/6A/84A - 10



Alternative T077/T078/T079 Style Housing



Typical Hydraulic System - Variant 3

5/6A/84A 14/6/93

FIGURE 5/6A/84A - 12



Typical Instrument With Model DT06460 I.S. Pulse Generators (In This Case With 8 Meters - Variant 4) FIGURE 5/6A/84A - 13



Typical Hydraulic System With a Vapour Recovery System

5/6A/84A 30 July 1995

FIGURE 5/6A/84A - 14



Model 204-GRV-BL Vapour Recovery Nozzle