



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Notification of Change
Certificate of Approval No 5/6A/224
Change No 1

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

Transponder Technologies Model 805-WM40-P21-D160S-RR-N-N-X Fuel Dispenser
for Motor Vehicles

submitted by Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950

- A. In Certificate of Approval 5/6A/224 dated 24 March 2010, the FILING
ADVICE should be amended by adding the following:
“Notification of Change No 1 dated 15 May 2013”
- B. In Technical Schedule No 5/6A/224 dated 24 March 2010, the following
should be made:
- (i) On page 1, in clause **1.2 Field of Operation**, the ambient temperature
range values should be amended to read ‘-10 to 55°C’.
- (ii) On page 3, the clause numbers in some of the clause headings should be
amended, as follows:
- ‘1.8 Sealing Provision’;**
‘1.9 Verification Provision’; and
‘1.10 Markings and Notices’
- (iii) On page 3, in clause **1.10 Markings and Notices**, the maximum and
minimum liquid temperature range values should be amended to read
‘ T_{max} 50°C’ and ‘ T_{min} -10°C’.

- C. On page 6, in TEST PROCEDURE, all the text (8 lines) after the Note (about adjusting the errors) should be deleted.

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

A handwritten signature in black ink, appearing to read 'A Rawlinson', with a horizontal line underneath.

Dr A Rawlinson



Australian Government

**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

No 5/6A/224

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

Transponder Technologies Model 805-WM40-P21-D160S-RR-N-N-X Fuel Dispenser
for Motor Vehicles

submitted by Transponder Technologies Pty Ltd
 2 Hamra Drive, Export Park
 Adelaide Airport SA 5950.

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, July 2004.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 April 2016, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/224' 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.

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

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

DESCRIPTIVE ADVICE

Pattern: approved 23 March 2010

- A Transponder Technologies model 805-WM40-P21-D160S-RR-N-N-X fuel dispenser for motor vehicles.

Variants: approved 23 March 2010

1. Certain other models of the 805-WM series.
2. With one or more compatible submersible turbine pumps.
3. With two metering systems.
4. With using alternate forecourt communications protocols.

Technical Schedule No 5/6A/224 describes the pattern and variants 1 to 4.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 5/6A/224 dated 24 March 2010

Technical Schedule No 5/6A/224 dated 24 March 2010 (incl. Table 1 and Test Procedure)

Figures 1 to 5 dated 24 March 2010



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 stylized cursive letters, positioned to the right of the signature text.

TECHNICAL SCHEDULE No 5/6A/224

Pattern: Transponder Technologies Model 805-WM40-P21-D160S-RR-N-N-X
Fuel Dispenser for Motor Vehicles

Submittor: Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950

1. Description of Pattern

A Transponder Technologies model 805-WM40-P21-D160S-RR-N-N-X fuel dispenser for motor vehicles (Figures 1 and 2) approved to dispense distillate (*) in attendant-operated mode. The meter is adjusted to be correct for the liquid for which it is to be verified/ certified.

(*) including various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

The pattern, model 805-WM40-P21-D160S-RR-N-N-X, is an 805 series dispenser with a Macnaught model WM40 flowmeter and approved for use with a maximum flow rate of 160 L/min. Other features may be identified using Table 1.

1.1 Field of Operation

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

- Minimum measured quantity, V_{min} 50 L
- Maximum flow rate, Q_{max} 160 L/min
- Minimum flow rate, Q_{min} 32 L/min
- Maximum pressure of the liquid, P_{max} 1800 kPa
- Minimum pressure of the liquid, P_{min} 90 kPa (#1)
- Range of liquids viscosity (at 20°C) 0.5 to 20 mPa.s (#2)
- Nature of liquid to be measured, e.g. distillate
- Maximum temperature of the liquid, T_{max} 50°C
- Minimum temperature of the liquid, T_{min} -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 distillate, various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

1.2 Description of the Metering System

The fuel dispenser incorporates the following components:

- (i) Two Dresser Wayne model 4-47579 compact pump units (that are joined at the outlets by a manifold to a single metering system (meter/hose/nozzle), with two gas separators with gas test valves that have provision for sealing and two gas detection devices that are used to detect when the gas separators cannot perform within the maximum permissible errors.

- (ii) One Macnaught model WM40 positive displacement meter (Figure 3a).
- (iii) A Parker Hannifin model XLG201540AA74DK 38 mm solenoid valve to control flow (Figure 3b).
- (iv) One Transponder Technologies model T5b calculator/indicator (Figure 1) with two display boards and using 'New Zealand Forecourt Communications Protocol' Interface board (i.e. PEC, Compac and Transponder Technologies protocols).
- (vii) One 38 mm ZVA nozzle or any other compatible NMI-approved nozzle.
- (viii) A Global 20 G1 31.5 mm R1 20CIT/SN EN853 (6.4 MPa maximum pressure) hose or any other compatible hose that meets the maximum permissible errors for hose dilation.
- (ix) One flow rate selector switch that selects between one or two pump operation and enables the operator to select the flow rate. One pump operation provides a nominal maximum flow rate of 80 L/min and two pump operation provides a nominal maximum flow rate of 160 L/min.

1.3 Measurement Transducer

The measurement transducer is a Macnaught model WM40 positive displacement flowmeter (Figure 3a) incorporating oval gear rotors with two magnets per rotor that pass across a pulser circuit board with dual Reed switches electronic pulse generators, to produce a dual output signal proportional to the volume throughput.

1.4 Calculator/Indicator

The Transponder Technologies model T5b calculator/indicator (Figure 1) is as described in the documentation of approval NSC S414 (including software) and comprises a computing unit and two display units.

Separate displays are provided for volume, price and unit price. The indicators display the following maximum values:

- Total price: up to \$9 999.99 in 0.01 cent increments
- Volume: up to 9 999.99 in 0.01 L increments
- Unit price: up to 999.9 ¢/L in 0.1 cent increments

Alternatively, any compatible (#) NMI-approved calculator/indicator may be used.

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

1.5 Totaliser

The instrument has a Jenm Chicago model P2G729A (4.5 V DC) electronic totaliser for the volume throughput in one litre graduations up to a maximum of 9 999 999 litres. The totaliser is located above the nozzle receptacle.

1.6 Transfer Device

The transfer device is any approved nozzle that maintains the hose full of liquid at all times and is designed so that the nozzle can not be placed in a hang-up position other than to end the delivery.

1.7 Checking Facilities

Removing the nozzle from its normal hang-up position initiates a segment check of the price, volume, and unit price displays.

- 'Error 19' is displayed and the delivery stopped if excessive amounts of air/vapour are detected;
- 'Error 17' is displayed and the delivery stopped when pulse output errors are detected; and
- 'Error 12' is displayed when the non-return valve is faulty and the pulser is measuring reverse flow.

1.5 Sealing Provision

The electronic calibration switch in the model T5b calculator/indicator has provision for sealing as described in the documentation of approval NMI S414.

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

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Markings

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

| | |
|--------------------------------------------------|----------------------------------|
| Pattern approval sign | 5/6A/224 |
| Manufacturer's identification mark or trade mark | Transponder Technologies Pty Ltd |
| 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} | 40°C |
| Minimum temperature of the liquid, T_{min} | 5°C |
| Environmental class | class N |

(#1) In addition, the minimum measured quantity (V_{min}) shall be clearly visible on any indicating device visible to the user during measurement, in the form 'Minimum delivery 50 L'.

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

2. Description of Variants

2.1 Variant 1

Certain other models and configurations of the 805-WM40 series of fuel dispensers, identified using Table 1 below:

TABLE 1

The model number always begins with '805-WM40' followed by various alpha numeric characters, e.g. the pattern is a model 805-WM40-P21-D160S-RR-N-N-X.

- Instrument series field – always **805** representing the 805 series.
- Meter field – always **WM40** representing the Macnaught WM40 meter.
- Hydraulic system field – either:
 - P** – representing the 'pump' version with internal pump/s; or
 - D** – representing the 'dispenser' version with one or more approved submersible turbine pump (STP) hydraulic systems (Variant 2).
- Inlet/outlet field – either **11**, **21**, or **22**, comprised of:
 - 1** or **2** as the first digit – representing the number of inlets; and
 - 1** or **2** as the second digit – representing the number of outlets.
- Product field (repeated if 2nd product used, Variant 3) – either:
 - B** – representing biodiesel or biodiesel/distillate blends (to Australian government standard); or
 - D** – representing distillate.
- Flow rate field always **160** (repeated if 2nd product used, Variant 3).
- Solenoid field always **S** representing that solenoid valves are fitted (repeated if 2nd product used, Variant 3).
- Display field – comprised of two characters representing the type of display fitted to each side of the dispenser (e.g. *-RR-*), either:
 - R** – representing a retail display (with price-computing);
 - C** – representing a commercial display (volume only); or
 - B** – representing no display fitted to 2nd side.
- Approval field – always **N** representing NMI-approved.
- Forecourt communications protocol field – either:
 - N** – representing that the "New Zealand Protocol" is fitted; or
 - G** – representing that the "Gilbarco Protocol" is fitted; or
 - E** – representing that the "Email Protocol" is fitted.
- Pre-set field – either:
 - P** – representing that a pre-set facility is fitted; or
 - X** – representing that no pre-set facility is fitted.

2.2 Variant 2

With one or more compatible submersible turbine pumps (STPs) incorporating a leak detection system. The STP replaces the equivalent components (i.e. motor, pump/strainer/gas separator, and associated pipework) in certain fuel dispensers covered by this approval (refer to Table 1). Figure 4 shows a typical fuel dispenser with a submersible turbine pump system, including typical sealing.

More than one fuel dispenser may be connected to the same submersible turbine pump.

Internal filters are fitted in any fuel dispenser covered by this variant.

2.3 Variant 3

For use in a two inlet/two outlet configuration, in which case two metering system (two sets of inlets, meters, hoses, nozzles and pulse generators) are fitted, for example, the model 805-WM40-D22-D160S-D160S-RR-N-N-X (Figure 5), a two inlet and two hose model (22) dispensing diesel at a nominal maximum flow rate of 160 litres per minute.

Two hose models may only be used with an NMI-approved submersible turbine pump hydraulic system (Variant 2) and not with internal pumps.

2.4 Variant 4

For use in applications using alternate forecourt communications protocols. The protocol is changed by a configuration setting in the software and through the use of a suitable electrical interface (i.e. circuit board).

The approved models are listed below:

- (i) The model 805-WM40-P21-D160S-RR-N-G-X fitted with a Gilbarco forecourt communications protocol.
- (ii) The model 805-WM40-P21-D160S-RR-N-E-X fitted with an Email forecourt communications protocol.

TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Uniform Test Procedures. 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 at Verification

The maximum permissible error applied during a verification test of the fuel dispenser using the liquid for which it is to be verified, and from normal flow rate to the minimum flow rate is:

±0.3%.

Note: Adjusting the errors of a meter to values OTHER than as close as practical to zero is forbidden, even when these values are within the maximum permissible errors.

Other applicable maximum permissible errors are:

±1.0% for gas elimination device for liquids having a dynamic viscosity exceeding 1 mPa.s.

±500 mL for deliveries equal to the minimum measured quantity; and

±500 mL due to hose dilation for instruments without a hose reel.

Software Version Number

Check that the software version used is as described in the approval documentation of calculator/indicator used.



FIGURE 5/6A/224 – 1



Transponder Technologies Model 805-WM40-P21-D160S-RR-N-N-X
Fuel Dispenser for Motor Vehicles

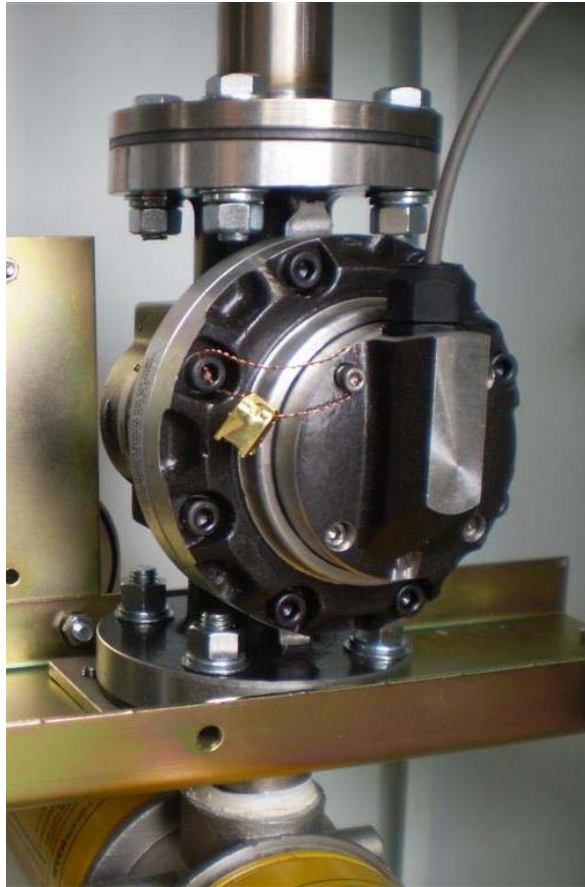
5/6A/224
24 March 2010

FIGURE 5/6A/224 – 2

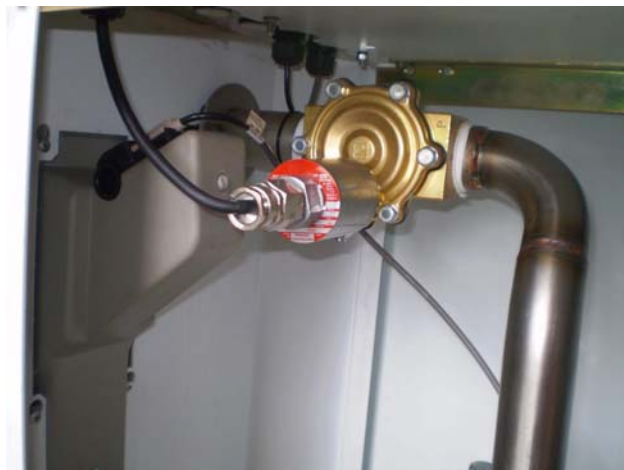


Model 805-WM40-P21-D160S-RR-N-N-X – Hydraulics

FIGURE 5/6A/224 – 3

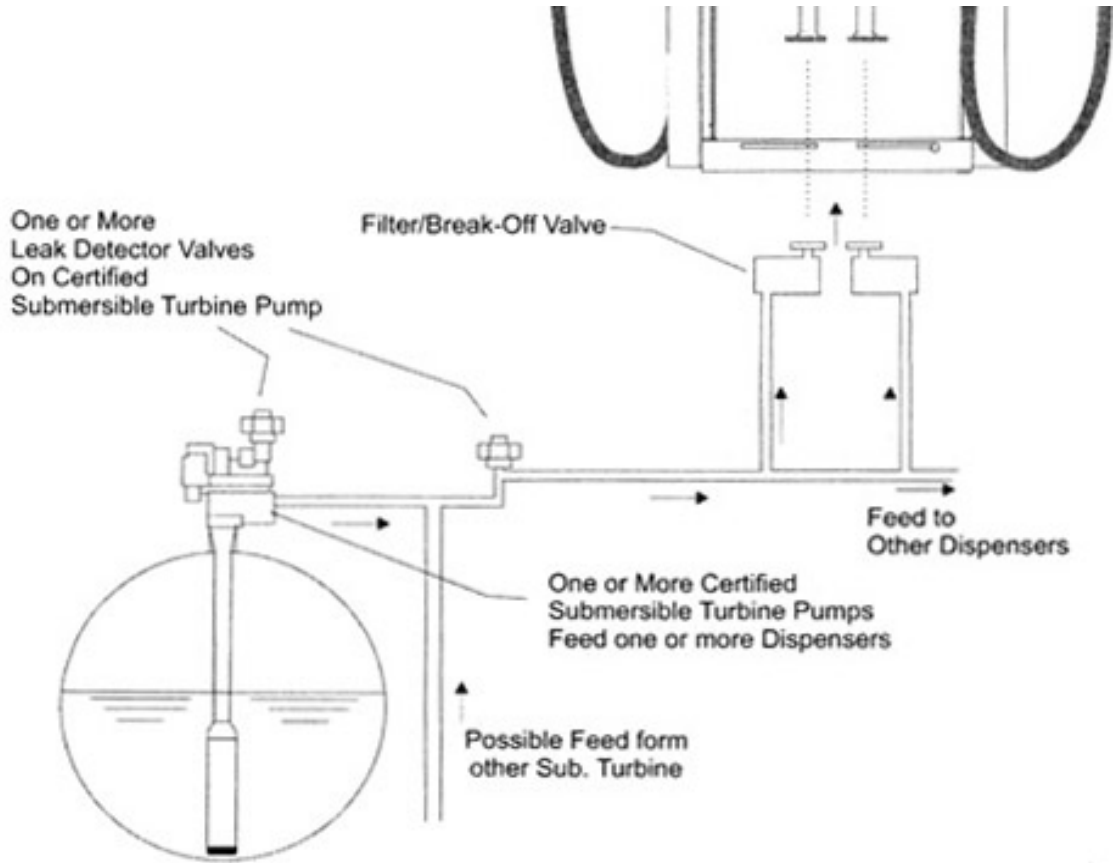


(a) Macnaught Model WM40 Measurement Transducer Including Sealing

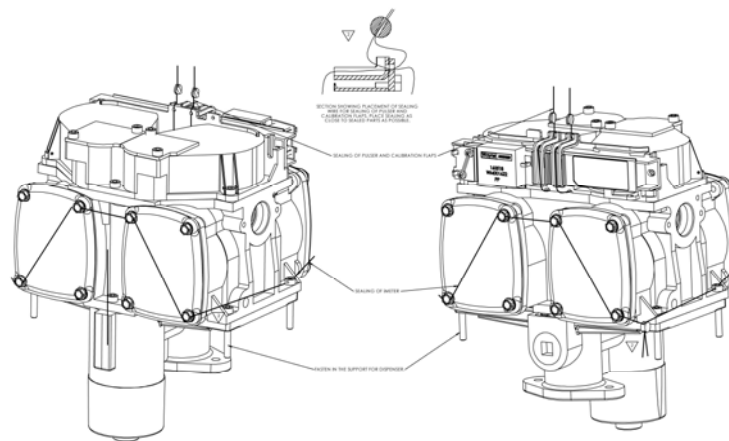


(b) Parker Hannifin Model XLG201540AA74DK Solenoid Valve

FIGURE 5/6A/224 – 4



(a) Typical Submersible Turbine Pump (STP) System



(b) Showing Typical Sealing Method for Instruments Connected to an STP System

FIGURE 5/6A/224 – 5



With Two Metering Systems – Variant 3
(supplied from a submersible turbine pump hydraulic system)