



Australian Government
Department of Industry,
Science and Resources

**National
Measurement
Institute**

36 Bradfield Road, West Lindfield NSW 2070

**Certificate of Approval
NMI 5/6A/241**

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.

HYDIP Model HFD-P-C-S-120D Fuel Dispenser for Motor Vehicles

submitted by IOR Petroleum Pty Ltd
99 Southgate Ave
Cannon Hill QLD 4170

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 *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 and variants provisionally approved – interim certificate issued	13/07/21
1	Pattern and variants amended (Special Conditions of Approval) – interim certificate issued	04/08/22
2	Pattern and variants approved – certificate issued	08/03/24

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 5/6A/241' and only by persons authorised by the submitter.

Instruments purporting to comply with this approval and currently marked 'NMI P5/6A/241' may be re-marked 'NMI 5/6A/241' but 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 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*.



Darryl Hines
Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 5/6A/241

1. Description of Pattern **provisionally approved on 13/07/21**
amended on 04/08/22

A HYDIP model HFD-P-C-S-120D fuel dispenser for motor vehicles (Figure 1) approved to dispense various grades of fuels, in attendant-operated mode, unattended mode, or in self-service mode when interfaced to a compatible (#) approved self-service device.

(#) '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, V_{min} 10 L (#1)
- Maximum flow rate, Q_{max} 150 L/min
- Minimum flow rate, Q_{min} 15 L/min
- Maximum pressure of the liquid, P_{max} 1050 kPa
- Minimum pressure of the liquid, P_{min} 140 kPa (#2)
- Viscosity range of liquid (at 20°C) 0.5 to 20 mPa.s (#3)
- Liquid temperature range -10°C to 50°C
- Ambient temperature range -25°C to 55°C
- Accuracy Class 0.5

(#1) The calculator/indicator indicates the volume at least in 0.01 L increments.

(#2) As specified for the gas elimination device for effective operation.

(#3) The flow meter is adjusted to be correct for the liquid for which it is to be verified/certified as marked on the data plate.

1.2 Components of the Measuring System

The instrument incorporates the following components:

(i) Tank

A supply tank which may incorporate a detector for low-level. The detector is used to prevent further deliveries when the low liquid-level is reached and prevents air from entering the pipework.

(ii) Pump

A positive displacement pump, centrifugal or submersible turbine type pump located at the tank may be used to provide flow through one or more fuel dispenser(s) in HyDip pressure systems (P). For suction system (S) fuel dispensers; internal pumps are utilised with integrated NMI approved gas/vapour elimination devices.

(iii) Non-return Valve

A non-return valve is fitted near the pump upstream of the flowmeter to prevent reverse flow and ensure the supply pipework remains full of liquid.

(iv) Gas Detection

With pump installed in flooded suction and with the supply tank installed above ground. The supply tank is fitted with a low level device which prevents measurements when the device is activated.

Alternatively, a mechanical leak detector (MLD) may be integrated into the submersible pump outlet and mechanically stops the flow of liquid when excessive gas is entrained within the liquid.

(v) Measurement Transducer

Flomec model OM025A001-211Q1N positive displacement oval gear flowmeter (Figure 2) with integrated dual channel Hall Effect sensors as described in approval NMI 5/6B/210.

(vi) Solenoid Valve

A Parker model 7321BCN02 solenoid valve or equivalent (*) is mounted inside the cabinet immediately after the flow meter and before the dispensing hose and nozzle.

(*) Equivalent' is defined to mean other proprietary equipment of the same or better specifications requiring no changes to the software specified in this approval for satisfactory operation of the system

(vii) Dispensing Hose and Nozzle

An Elaflex model ZVA 25 nozzle or any other compatible NMI-approved nozzles. A nozzle holder fitted with an electronic switch to activate and cancel operation is fitted to the right-hand side of the cabinet when viewing from the front of the unit.

1.3 Control System

The HYDIP model HFTX2 control system as described in approval NMI S707 provides unattended self-service operation of a fuel delivery system for registered account customers

1.4 Calculator/Indicator

The HYDIP model HFTX2 control system and HYDIP Pump Display (Figure 3) operate as the calculating and indicating device as described in approval NMI S707.

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

Total price: \$9 999.99 in \$0.01 increments

Volume: 9 999.99 L in 0.01 L increments

Unit price: 999.9 ¢/L in 0.1 cent increments

1.5 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 and has provision for controlling electrically-operated valves to stop the delivery.

1.6 Descriptive Markings and Notices

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

Pattern approval mark	NMI 5/6A/241
Manufacturer's identification mark or trade mark	.....
Meter model	.....
Serial number of the instrument	.....
Year of manufacture	.....
Minimum measured quantity (V_{min})	..... L (#1)
Maximum flow rate, Q_{max}	..... L/min
Minimum flow rate, Q_{min}	..... L/min
Maximum operating pressure (P_{max})	..... kPa
Minimum operating pressure (P_{min})	..... kPa
Type of the liquid for which the system is verified	..... (#2)
Maximum temperature of the liquid, T_{max}	..... (#3)
Minimum temperature of the liquid, T_{min}	..... (#3)
Environmental class	Class C

(#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 e.g. 'Minimum delivery 10 L'

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

1.7 Sealing Provision

Provision is made for the pulse generator to be sealed to prevent access to its electronics.

The calculator/indicator is sealed as described in its approval documentation NMI S707 or any other compatible (#) NMI-approved calculator/indicator.

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

2. Description of Variant 1 **provisionally approved on 13/07/21**

Certain other models and configurations of the HFD series of fuel dispensers. Model numbers are made up of a series of fields representing the various approved components/features, as follows (*For example, the pattern is a model HFD-P-C-S-120D*):

HFD – [1] – [2] – [3] – [4][5]

- [1] – Pump Type: Pressure (P) supplied by external pump – e.g. Submersible Turbine Pump or Suction System (S) supplied by an internal pump.
- [2] – Housing Type: Cabinet (C) or Kit Form (K)
- [3] – Number of Hoses: Single Hose (S), Dual Hose (D), Triple Hose (T) or Quad Hose (Q)
- [4] – Maximum Flow Rate:
 - Q_{max} 40 L/min, V_{min} 2 L (40)
 - Q_{max} 80 L/min, V_{min} 5 L (80)
 - Q_{max} 120 L/min, V_{min} 10 L (120)
 - Q_{max} 400 L/min, V_{min} 50 L (400)
- [5] – Product Dispensed: Diesel (D), Unleaded (U), AdBlue (A) or Aviation (V), Biodiesel (B)

For models which have more than one hose, a HYDIP Pump Display is provided per hose up to a maximum of four (4) hoses per HFTX2 indicating device as per NMI S707 approval.

Models which are supplied by an internal suction pump (S) utilise a Bennet Type 75 model pump complete with integral strainer/gas separator/air eliminator up Q_{max} 80 L/min.

Models that require up to Q_{max} 120 L/min utilise a Bennet Type 140 Model pump.

Models that require a kit form to be installed inside a pump bay or a fuel cell or similar, all components are the same as the pattern and variants mounting in modular format for ease of installation and maintenance.

3. Description of Variant 2 **provisionally approved on 13/07/21**

Models of the HFD series fuel dispenser described in Variant 1 for the dispensing of various grades of petrol, diesel, AdBlue and aviation fuels to heavy vehicles at a nominal flow rate of 400 litres per minute through a single hose.

The model utilises two solenoid valves to enable ramp up and ramp down, pre-set functionality.

3.1 Field of Operation

The field of operation is determined by the characteristics described for the pattern with the following variations:

- Minimum measured quantity, V_{min} 50 L (#1)
- Maximum flow rate, Q_{max} 450 L/min
- Minimum flow rate, Q_{min} 40 L/min

(#1) The calculator/indicator indicates the volume at least in 0.01 L increments.

3.2 System Description

The instrument incorporates the components of the pattern with components listed in Table 1 below.

TABLE 1

Component	Make	Model	Size	Material
Fuel Filter	Not Applicable			
Flow Meter	Flomec	OM050A001-211Q1N	50 NB	Cast Aluminium
Solenoid Valve (Primary Flow)	Parker	7321BGN02 (#1)	50 NB	Brass
Solenoid Valve (Secondary Flow)	Parker	7321BCN02 (#1)	20 NB	Brass
Dispensing Nozzle	Liquip	LYNX850	150 NB	N/A
	or any other compatible NMI-approved nozzles.			

(#1) Or any equivalent model solenoid valve of the same or better specifications requiring no changes to the software specified in this approval for satisfactory operation of the system

4. Description of Variant 3 **provisionally approved on 13/07/21**

Models of the HFD series fuel dispenser described in Variant 1 for the dispensing of AdBlue (urea solution) to diesel powered trucks and light vehicles at a nominal flow rate of 40 litres per minute through a single hose.

4.1 Field of Operation

The field of operation is determined by the characteristics described for the pattern with the following variations:

- Minimum measured quantity, V_{min} 2 L (#1)
- Maximum flow rate, Q_{max} 150 L/min
- Minimum flow rate, Q_{min} 5 L/min

(#1) The calculator/indicator indicates the volume at least in 0.01 L increments.

4.2 System Description

The instrument incorporates the components of the pattern with components listed in Table 2 below.

TABLE 2

Component	Make	Model	Size	Material
Fuel Filter	Not Applicable			
Flow Meter	Flomec	OM025S001-211Q1N	25 NB	Stainless Steel
Solenoid Valve	Parker	221S15F Coil: E70913DT5L5 (#1)	50 NB	Stainless Steel
Dispensing Nozzle	Liquip	ZVA AdBlue HV 4.0 Blau	150 NB	N/A

- (#1) Or any equivalent model solenoid valve of the same or better specifications requiring no changes to the software specified in this approval for satisfactory operation of the system

TEST PROCEDURE No P5/6A/241

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.

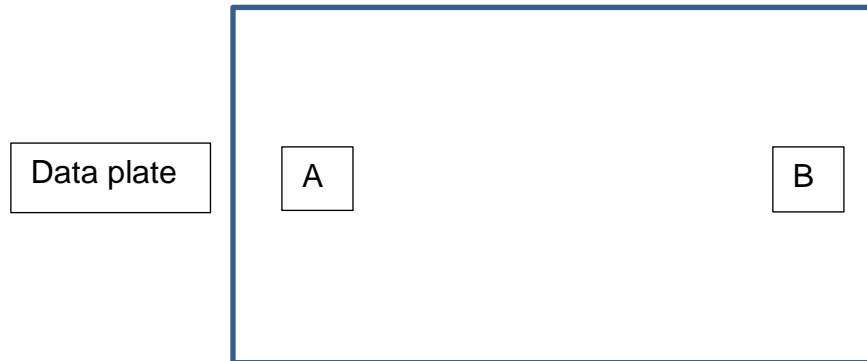
Maximum Permissible Errors

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

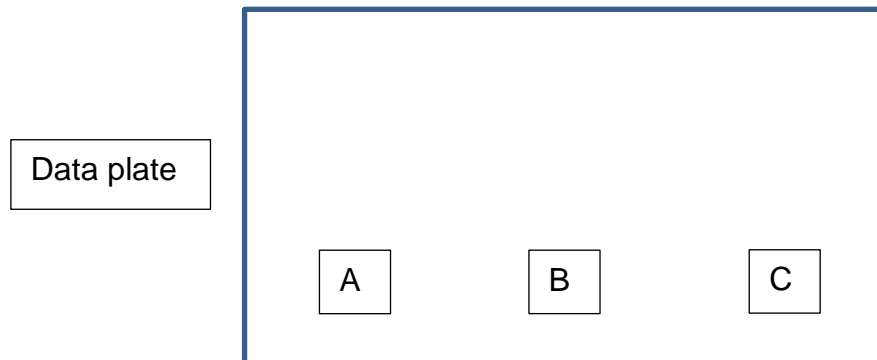
Hose Configuration

Where the serial number on the data plate is 12345, the suffix for a hose is as appended as identified in the following figures, for example the Dual Hose dispenser is numbered 12345A, and 12345B:

Dual Hose (D):



Triple Hose (T):



Quad Hose (Q):

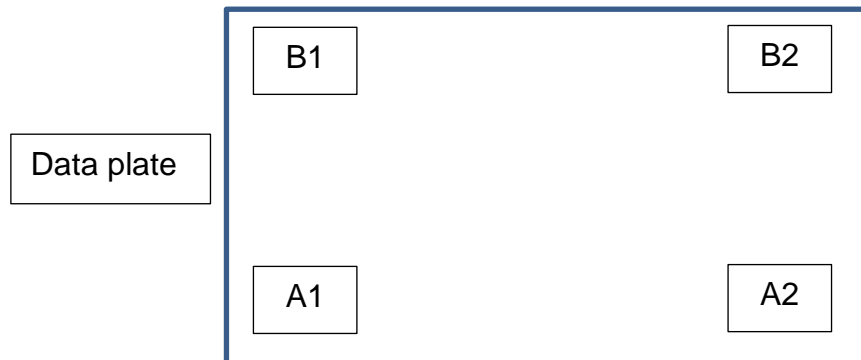


FIGURE 5/6A/241 – 1

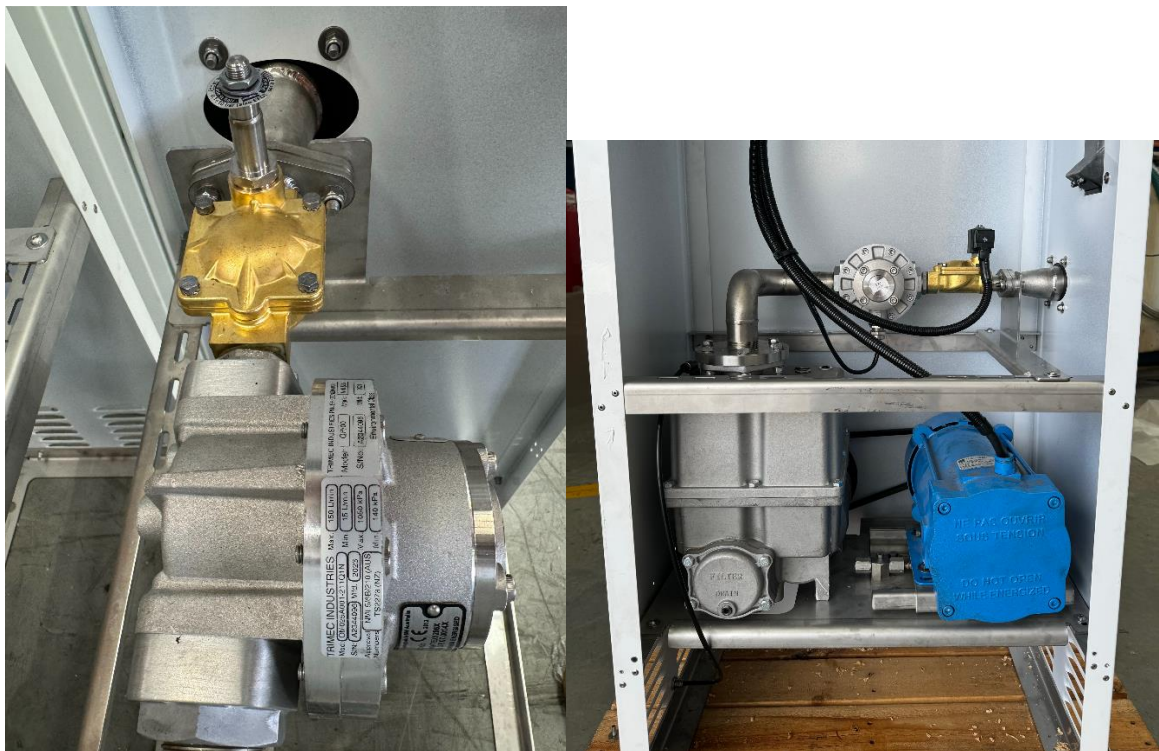


HYDIP Model HFD-P-C-S-120D Fuel Dispenser for Motor Vehicles (Pattern)

FIGURE 5/6A/241 – 2

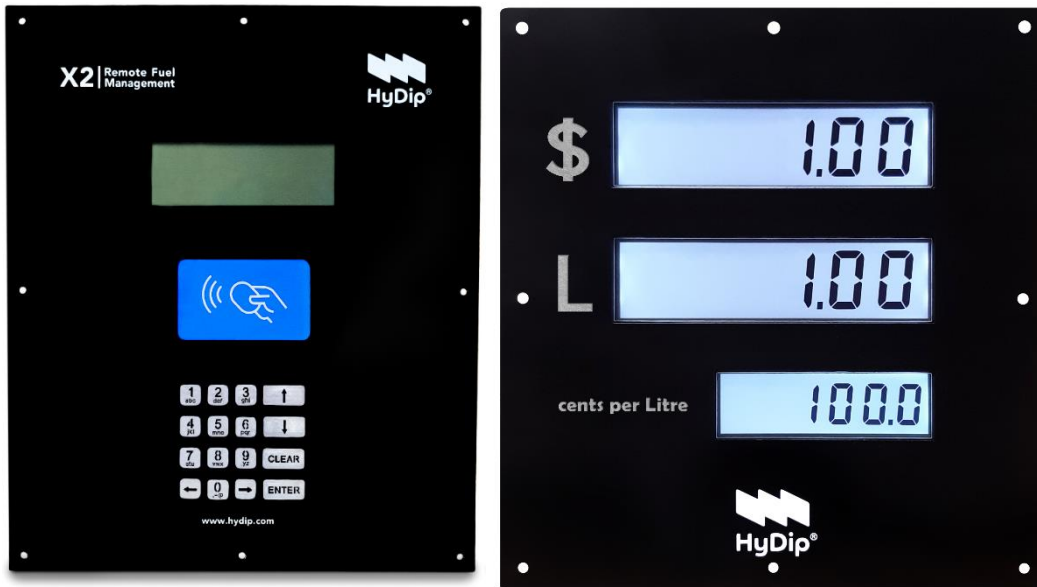


(a) HYDIP Model HFD-P-C-S-120D Fuel Dispenser Hydraulics (Pattern)



(b) Flomec model OM025A001-211Q1N

FIGURE 5/6A/241 – 3



HYDIP Model HYDIP HFTX2 and Pump Display

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