Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 5/6A/242

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.

PEC Limited Model Pinnacle P8HP Fuel Dispenser for Motor Vehicles

submitted by PEC Limited
2 Station Road
Marton 4710 New Zealand

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 & variants 1 to 5 provisionally approved – interim certificate issued	20/12/22
1	Pattern and variants 1 to 5 approved – certificate issued	11/04/23
2	Variant 6 approved – certificate issued	19/04/24
3	Variant 3 amended, Variant 7 approved – certificate issued	10/12/25

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number ‘NMI 5/6A/242’ and only by persons authorised by the submittor.

Instruments purporting to comply with this approval and currently marked ‘NMI P5/6A/242’ may be re-marked ‘NMI 5/6A/242’ but only by persons authorised by the submittor.

(Note: The ‘P’ in the approval number may be a temporary marking.)

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*.

Darryl Hines
Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 5/6A/242

1. Description of Pattern **provisionally approved on 20/12/22 approved on 11/04/23**

A PEC Limited Model Pinnacle P8HP fuel dispenser for motor vehicles is approved to dispense various grades of fuels (*), in attendant-operated mode, or in attended or unattended self-service mode using any compatible (#) approved control system. The meter is adjusted to be correct for the liquid for which it is to be verified.

(*) including up to 85% ethanol (E85) and various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

1.1 Field of Operation

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

- Minimum measured quantity, V_{min} 2 L
- Maximum flow rate, Q_{max} 80 L/min
- Minimum flow rate, Q_{min} 5 L/min
- Maximum pressure of the liquid, P_{max} 350 kPa
- Minimum pressure of the liquid, P_{min} 100 kPa (#1)
- Range of liquids viscosity 0.5 to 20 mPa.s (at 20 °C) (#2)
- 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 kerosene, distillate and various grades of petrol (which may include up to 85% ethanol). The pattern and variants are 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 PEC Limited Model Pinnacle P8HP fuel dispenser (Figure 1) incorporates the following components and features:

(i) The supply line for each grade of fuel is connected to a Tatsuno model FP1001 pump/strainer/gas separator (Figure 2). A gas/air test valve is provided for checking the operation of the gas elimination device.

(ii) The supply is measured using one or two Tatsuno model MP-02515 4-piston positive displacement meters (eight in total), one for each nozzle (Figures 1 and 3). Each meter is fitted with a PEC model Pinnacle measurement transducer that communicates the volume of fluid measured to the indicators.

(iii) A PEC model Pinnacle calculator/indicator as described in the documentation of **NMI approval S835**, or any other compatible (#) NMI-approved calculator/indicator.

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

(iv) Eight hoses/nozzles are mounted on the side of the dispenser housing. Each hose is fitted with a ZVA nozzle. (**)

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

Control to the flow of each nozzle is achieved with either one or more Asco model PAG 29221 or other compatible (#) single or two-stage solenoid valves or with Asco model PVXG291A111 or other compatible (#) proportional valves.

1.3 Calculator/Indicator

A PEC model Pinnacle calculator/indicator as described in the documentation of NMI approval S835, or any other compatible (#) NMI-approved calculator/indicator which display the following for each grade of fuel:

Volume	000.00 L to 999.99 L in 0.01 L increments
Unit price	0.1 to 999.9 c/L in 0.1 c/L increments
Price	$000.00 to $999.99 in 1 c increments

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

Software version number is described in the documentation of NMI approval S835.

The fuel dispenser is fitted with a pre-set keypad facility that allows pre-set values to be entered. The pre-set amount is displayed and may be viewed before, during and after the delivery is complete.

1.4 Sealing Provision

The PEC model Pinnacle calculator/indicator has provision for sealing as described in NMI S835

Adjustments are made using the Pinnacle calculator/indicator. The Tatsuno model MP-02515 is not fitted with an adjustment wheel and does not require sealing.

A gas separator test valve is fixed to the pumping unit and has provision for sealing as shown in Figure 4.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Checking Facilities

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

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

- Delivery is stopped if excessive amounts of air/vapour are detected.
- In the event of a power failure, the displayed value for a delivery is retained.
- Delivery is stopped and an error displayed if an error in pulse output is detected.

1.7 Descriptive Markings and Notices

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

Pattern approval sign	NMI 5/6A/242	
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 (V_{min}) shall be clearly visible on any indicating device visible to the user during measurement, in the form 'Minimum delivery 2 L'.

(#2) e.g. 'petrol', 'distillate', 'P' or 'D'.

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

2. Description of Variant 1 provisionally approved on 20/12/22 approved on 11/04/23

Certain other models and configurations of the Pinnacle series of fuel dispensers (Figure 1) identified using Table 1 below.

TABLE 1 – Approved Models of the Pinnacle Series

Model numbers are in the form 'model Pinnacle P8HP' (the pattern), where:

First position; Vapour recovery or no vapour recovery.

P Not equipped with vapour recovery
V Equipped with vapour recovery

Second position; the hose count

1 to 9 and A for 10 hoses.

Third position; the series

H for Pinnacle H series
L for Pinnacle L series

Fourth position; the supply.

P A suction device using pump/s and air separator/s
D A dispenser with the product supplied under pressure from a submersible turbine pump (STP) hydraulic system/s
C Combined, a device with products requiring pressure and suction

3. Description of Variant 2 provisionally approved on 20/12/22
approved on 11/04/23

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.

4. Description of Variant 3 provisionally approved on 20/12/22
approved on 11/04/23

amended on 10/12/25

Any PEC Pinnacle series fuel dispenser of this approval now fitted with a PEC model Vapour Recovery Stage 2 (aka VRII) vapour recovery and monitoring system and used up to a maximum flow rate of 45 L/min.

The VRII system controller continuously monitors the vacuum line pressure, taking inputs from a pressure switch or sensor whilst monitoring the correct operation of the vapour recovery system for hoses on each side of the fuel dispenser.

The site vacuum system uses vacuum pumps housed in their own enclosure. Integral vacuum systems use a Durr vacuum pump housed in the dispenser.

The vapour recovery and monitoring system is approved by the German TÜV SÜD Industrie Service GmbH authority.

Only vapour recovery components and systems as listed below and included in the relevant TÜV approval certificates may be used, namely:

(i) **For collection of vapour:**

- 85-2.23-2
- 85-2.67-3
- 85-2.93
- 85-2.XXX

and the only approved system components are:

- Vapour recovery nozzles – Elaflex SLIMLINE 2 GR
- Coaxial hose – Elaflex model Conti Slimline or Goodyear Flexsteel vapour assist
- Control valves – Burkert model 2832/6022
- Control board – Burkert model1094 EV
- Vapour recovery pump(s) – Durr MEX 0831 / MEX 0544.

(ii) **or automatic monitoring of the vapour to fuel ratio**:

- TÜV M-20.1 NSW

and the only approved system components are:

- Vaporix model control monitor
- Fafnir model Vaporix flowmeter.

5. Description of Variant 4 provisionally approved on 20/12/22 approved on 11/04/23

A PEC model P8HP series fuel dispenser for motor vehicles for dispensing Diesel Exhaust Fluid (DEF) in attendant-operated mode, or in attended or unattended self-service mode using any compatible (#) approved control system. The meter is adjusted to be correct for the liquid for which is verified.

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

6.1 Field of Operation

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

- Minimum measured quantity, V_{min} 2 L
- Maximum flow rate, Q_{max} 40 L/min
- Minimum flow rate, Q_{min} 4 L/min
- Maximum pressure of the liquid, P_{max} 320 kPa
- Minimum pressure of the liquid, P_{min} 50 kPa
- Dynamic viscosity 1.4 mPa.s (at 25 °C) (##)
- Maximum temperature of the liquid, T_{max} +30 °C
- Minimum temperature of the liquid, T_{min} 0 °C
- Ambient temperature range −25 to +55 °C
- Accuracy class 0.5

(##) The model P8HP dispenser is adjusted to be correct for Diesel Exhaust Fluid (AUS32 - aqueous urea solution 32.5%) for which it is to be verified.

6.2 Description of the Metering System

The model P8HP dispenser incorporates the following components:

- A Tatsuno model FM1022 4-piston positive displacement meter, one for each nozzle. Each meter is fitted with a PEC model Pinnacle measurement transducer that communicates the volume throughput to the indicator.
- A 16 mm Elaflex ZVA nozzle and 16 mm hose.
- An ASCO PVXG291A111 or other compatible (#) control valve.
- May also be used with submersible turbine pump as described in Variant 2.

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

6. Description of Variant 5 provisionally approved on 20/12/22 approved on 11/04/23

To allow the simultaneous operation of multiple hoses on each side of the dispenser. The 'Dollars', 'Litres' and 'Unit Price' will be displayed simultaneously for the product dispensed from each hose.

7. Description of Variant 6 approved on 19/04/24

With pumps as described for the pattern with standard flow hoses and compatible ZVA Elaflex nozzles and known as standard flow rate fuel dispensers with the following field of operation:

- Maximum flow rate, Q_{max} 60 L/min
- Minimum flow rate, Q_{min} 5 L/min

Dispensers may contain a combination of standard and high flow hydraulics such that some hoses will have a Q_{max} 60 L/min and other hoses will have a Q_{max} of 80 L/min. The dispenser will be marked as Q Max 60/80 L/min.

8. Description of Variant 7 approved on 10/12/25

Instruments are fitted with a PEC Stage 2 (VR2) vapour recovery and monitoring system and are used up to a maximum flow rate of 45 L/min. A typical instrument is shown in Figure 5. The vapour recovery and monitoring system is approved by the German TÜV SÜD Industrie Service GmbH authority.

Only vapour recovery components and systems as listed below and included in the relevant TÜV approval certificates may be used.

The relevant TÜV approvals (and the approved components) are:

(i) For collection of vapour:

- VR2 – 1505 – 117 EU
- VR2 – 1505 – 119 EU

and the only approved system components are:

- Vapour recovery nozzles – Elaflex models SLIMLINE 2 GR, and SLIMLINE 3 GR
- Coaxial hose – Elaflex model Conti Slimline 21/8 Coax.
- Control valves – ASCO EMXX, Burkert model 6022/2832
- Control & monitor board – VARECO model VC Plus
- Vapour recovery pump(s) – Durr models MEX 0831-11/ MEX 0544

(ii) For automatic monitoring of the vapour to fuel ratio:

- TÜV U 12.17,

and the only approved system components are:

- TST VARECO model VC Plus.
- Vortex flow sensor “VFS”.

TEST PROCEDURE No 5/6A/242

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

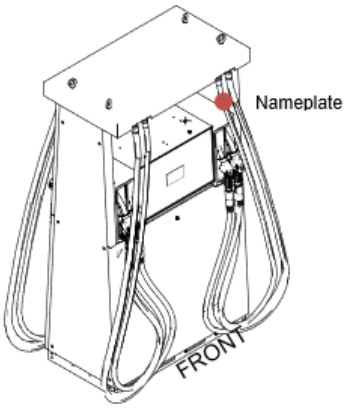
The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

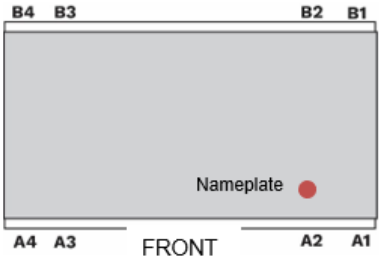
Hose Configuration

The front of a unit may be identified by the placement of the nameplate as shown by a red dot in the illustrations below.

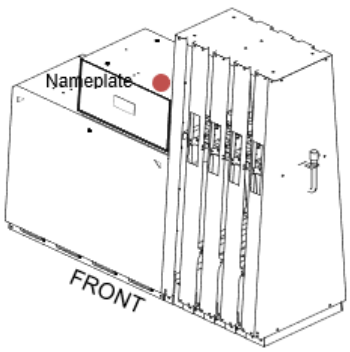
Where the serial number on the data plate is 12345, the hose letter and numbers are shown in the illustrations below are added to the instrument serial number for individual hose serial numbers.

H Series





L Series



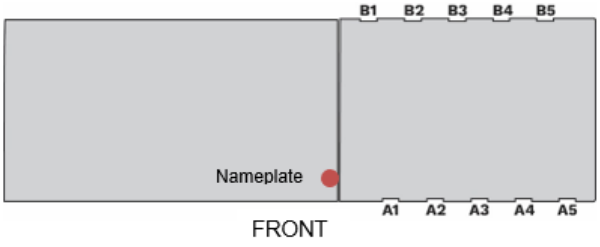


FIGURE 5/6A/242 – 1

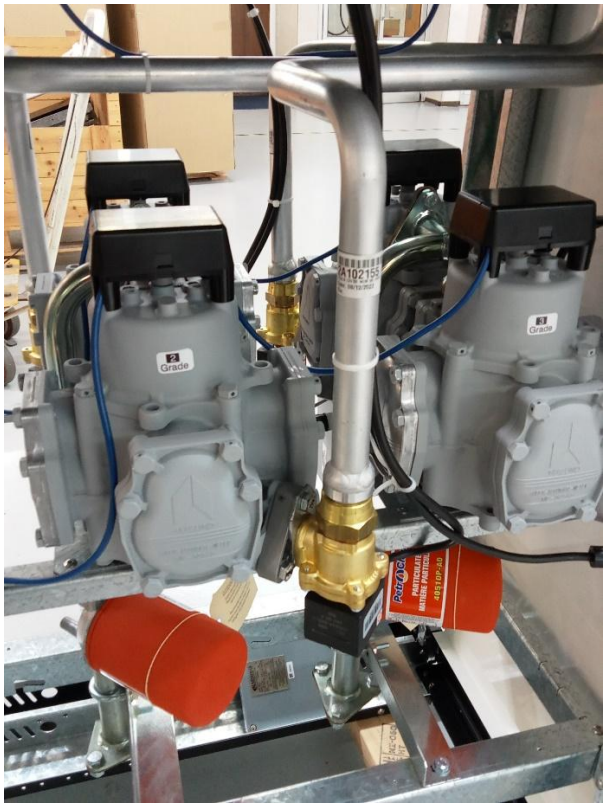
a) PEC Model Pinnacle P8HP Fuel Dispenser for Motor Vehicles – H Series

b) PEC Model Pinnacle P8HP Fuel Dispenser for Motor Vehicles – L Series

FIGURE 5/6A/242 – 2

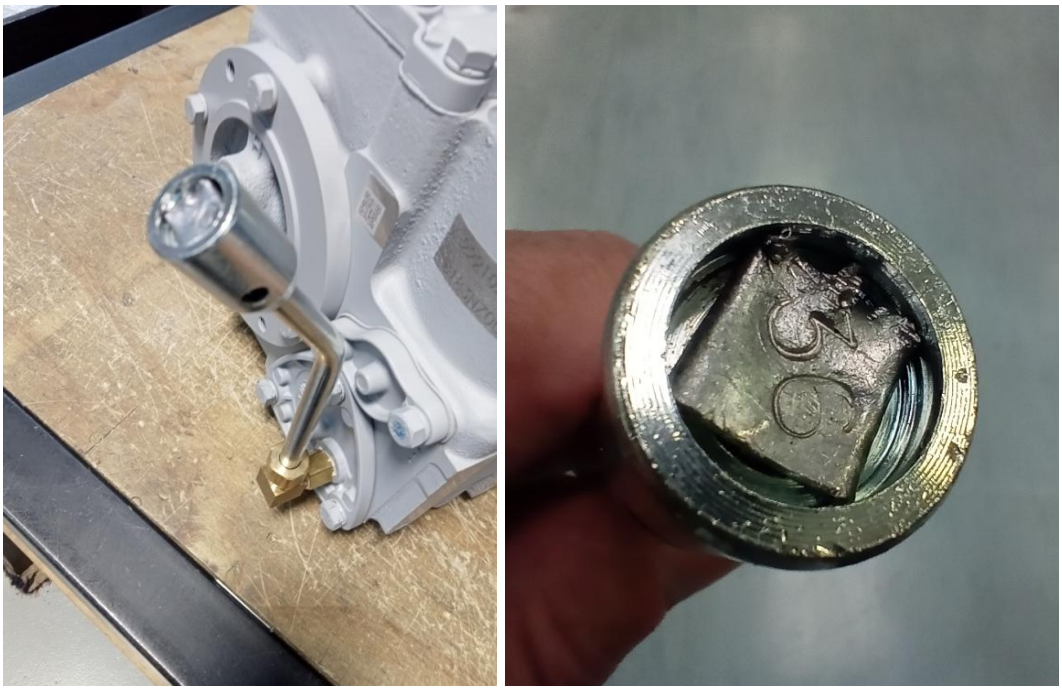
Tatsuno Model FP1001 Pump/strainer/gas Separator Units – The Pattern

FIGURE 5/6A/242 – 3

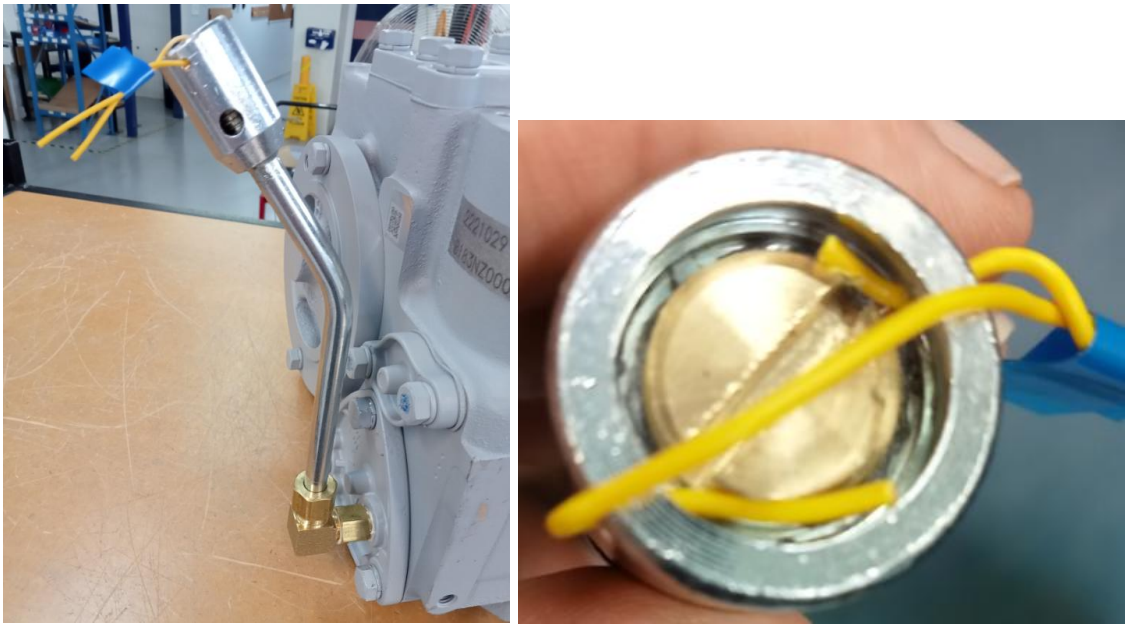


Tatsuno Model MP-02515 meters

FIGURE 5/6A/242 – 4



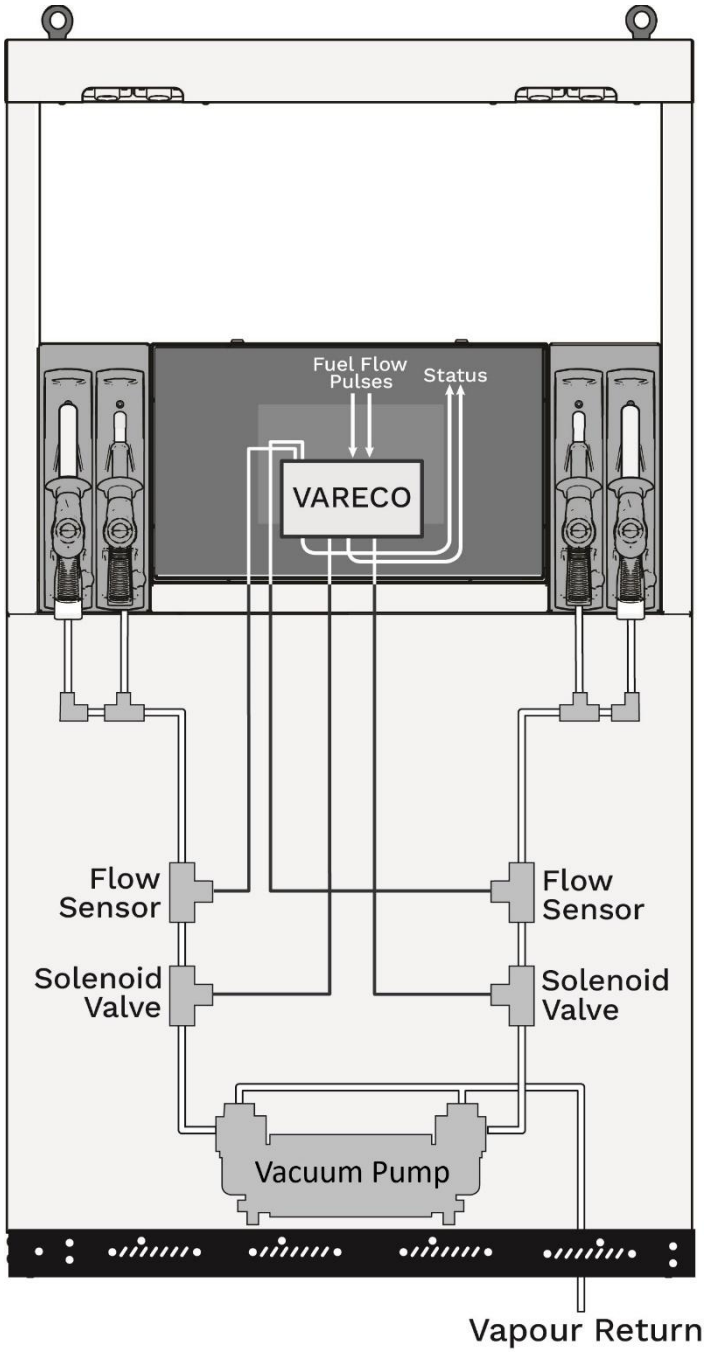
(a) Using a Lead Seal



(b) Using sealing wire and plastic seal

Typical Mechanical Sealing of the Gas Eliminator test valve

FIGURE 5/6A/242 – 5



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