



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Cancellation
Certificate of Approval
NMI 5/6A/217

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

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

PEC Model L111UP Fuel Dispenser for Motor Vehicles

submitted by PEC Fuel Pumps Ltd
 2 Station Road
 Marton 4741 NEW ZEALAND

has been cancelled in respect of new instruments as from 1 August 2015.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 & 2 approved – interim certificate issued	22/09/08
1	Pattern & variants 1 & 2 approved – certificate issued	13/10/08
2	Pattern amended (pump model) – notification of change issued	15/09/11
3	Pattern & variants 1 & 2 cancelled – cancellation certificate issued	6/07/15

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

Dr A Rawlinson



Australian Government

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Certificate of Approval

No 5/6A/217

Issued by the Chief Metrologist under Regulation 60
of the
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This is to certify that an approval for use for trade has been granted in respect of the

PEC Model L111UP Fuel Dispenser for Motor Vehicles

submitted by PEC Fuel Pumps Ltd
 2 Station Road
 Marton 4741 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 117-1, *Measuring Systems for Liquids Other than Water*, dated July 2004.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 October 2013, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/217' 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 22 September 2008

- A PEC model L111UP fuel dispenser for motor vehicles approved for use to dispense various types of liquid hydrocarbons over a flow rate range of 16 to 160 L/min.

Variants: approved 22 September 2008

1. Certain other models and configurations of the L1000 series.
2. With one or more compatible submersible turbine pumps.

Technical Schedule No 5/6A/217 describes the pattern and variants 1 & 2.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 5/6A/217 dated 13 October 2008
Technical Schedule No 5/6A/217 dated 13 October 2008 (incl. Table 1
and Test Procedure)
Figures 1 to 3 dated 13 October 2008



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, appearing to be 'J. G. T.', written in a cursive style.

TECHNICAL SCHEDULE No 5/6A/217

Pattern: PEC Model L111UP Fuel Dispenser for Motor Vehicles

Submitter: PEC Fuel Pumps Ltd
2 Station Road
Marton 4741 NEW ZEALAND

1. Description of Pattern

A PEC model L111UP fuel dispenser for motor vehicles (Figure 1 & Table 1) approved to dispense various grades of petrol or distillate (*), in attendant-operated mode.

The meter is adjusted to be correct for the liquid for which it is to be verified/certified.

The fuel dispenser may be used in attended or unattended self-serve mode, when interfaced to an compatible (#) approved fuel dispenser controller.

(*) various grades of petrol which may include up to 10% ethanol ('E10') and various grades of pure diesel and biodiesel/distillate blends (to Australian government standards).

(#) '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.

1.1 Field of Operation

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

- Minimum measured quantity, V_{min} 5 L
- Maximum flow rate, Q_{max} 160 L/min
- Minimum flow rate, Q_{min} 16 L/min
- Maximum pressure of the liquid, P_{max} 490 kPa
- Minimum pressure of the liquid, P_{min} 100 kPa (#1)
- Range of liquids viscosity (at 20°C) 0.5 to 20 mPa.s (#2)
- Maximum temperature of the liquid, T_{max} 40°C
- Minimum temperature of the liquid, T_{min} 5°C
- Ambient temperature range -10°C 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.

1.2 Description of the Metering System

Fuel is supplied through a Goodyear model Steelflex 25 mm or 32 mm hose to a 25 mm or 32 mm ZVA nozzle (Note: the submitter should be consulted regarding the acceptability of alternatives).

The measuring system incorporates the following components:



- (i) Two Tatsuno model **PGS-0257** pump/strainer/gas separators. A gas/air test valve is provided for checking the operation of the air elimination device.
- (ii) The measuring transducer is a Tatsuno model FM-1002-A21#001 Lobe type positive displacement meter. Each meter is fitted with a PEC model #2A33866 pulse generator that communicates the volume of fluid measured to the indicator.
- (iii) A PEC model MHP price-computing calculator/indicator.
- (iv) A pre-set facility.
- (v) Control of the flow of the nozzle is achieved with an Asco 1" or ¾" single or two stage solenoid valve.
- (vi) A fast/slow switch, fitted in close proximity to the nozzle holster, allows deliveries to be performed a lower flow rate.

1.3 Calculator/Indicator

A PEC model MHP calculator/indicator comprises a computing unit and a display unit. A single display is provided for volume, total price, and unit price. The indicators display the following maximum values:

- Volume 0000.00 L to approximately 9990.00 L (*) in 0.01 L increments.
(* Always less than 9999.99 L.
- Unit price 0.1 to 999.9 c/L in 0.1 c/L increments
- Price \$0000.00 to \$9990.00 in 1 cent increments
- Totaliser (#) To 9 999 999 L, mechanical or electronic
(#) Electronic totaliser (software driven and resettable), and mechanical totaliser (non-resettable).
- Pre-set To \$999 in \$1 increments

The pre-set facility uses two-stage solenoid valves to slow down and cut off the flow.

The main software version number for the calculator/indicator is A2.xxx, which can be viewed by entering the function number '08' while in the set-up function mode.

To access the set-up function mode, insert a fuel dispenser key into the calculator/indicator panel lock and turn the key to the unlock position. The 'dollar' display shows the dispenser number, and the 'litres' display shows 'FN-_'.

Use the keypad to enter the function number followed by the 'FILL' key. Press the 'CLEAR' key to leave any setup function. (Refer to the manufacturer's manual for all function numbers.)

1.4 Sealing Provision

The meter is sealed as shown in Figure 2.

1.5 Checking Facilities

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 halted and an error code displayed if an error in pulse output is detected.

1.6 Verification/Certification Provision

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

1.7 Markings

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

Pattern approval sign	5/6A/217
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
Type of liquid or dynamic viscosity	..... (#2)
Maximum temperature of the liquid, T_{max}	40°C
Minimum temperature of the liquid, T_{min}	5°C
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. distillate or D.

2. Description of Variants

2.1 Variant 1

Certain other models and configurations of the L1000 series of fuel dispensers identified using Table 1, including dispensers with two meters/hoses/nozzles.

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 3 shows a typical fuel dispenser (in this case with two meters) with a submersible turbine pump system.

TABLE 1

Meaning of model designations for the L1000 series of fuel dispensers:

First digit	Model/Meter type L = Lobe
Second digit	Series, namely 1 = 1000
Third digit	Number of hoses, 1 or 2
Fourth digit	Hydraulic system type 0 = submersible turbine pump (STP) system 1 = single integral centrifugal type pump 2 = two integral suction/air separator type pumps
Fifth digit	Maximum flow rate U = ultra high flow to 160 L/min
Sixth digit	Pre-set facility P = Pre-set fitted Blank = No pre-set fitted

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/Certification

The maximum permissible errors may be specified in Schedule 12 of the *National Measurement Regulations 1999*. Specific errors applied during a verification test of the fuel dispenser using the liquid for which it is to be verified/certified, and from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule are:

±0.3% for **the calibration/adjustment of the meter**; and

±0.5% for **in-service inspection of the complete measuring system**.

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:

±0.5% for gas elimination device for petrol;

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

±20 mL for deliveries equal to the minimum measured quantity; and

±20 mL due to hose dilation.



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Notification of Change

Certificate of Approval No 5/6A/217

Change No 1

Issued by the Chief Metrologist under Regulation 60
of the
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The following changes are made to the approval documentation for the

PEC Model L111UP Fuel Dispenser for Motor Vehicles

submitted by PEC Fuel Pumps Ltd
 2 Station Road
 Marton 4741 NEW ZEALAND.

- A. In Certificate of Approval 5/6A/217 dated 13 October 2008, the FILING
 ADVICE should be amended by adding the following:
 “Notification of Change No 1 dated 15 September 2011”
- B. In Technical Schedule No 5/6A/217 dated 13 October 2008, clause
 1.2 Description of the Metering System subclause (i) is amended to
 read, in part:
 “... Tatsuno model PDS-0257 **or model FP 1001** pump/...”

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 that reads 'C Davies'.

FIGURE 5/6A/217 - 1

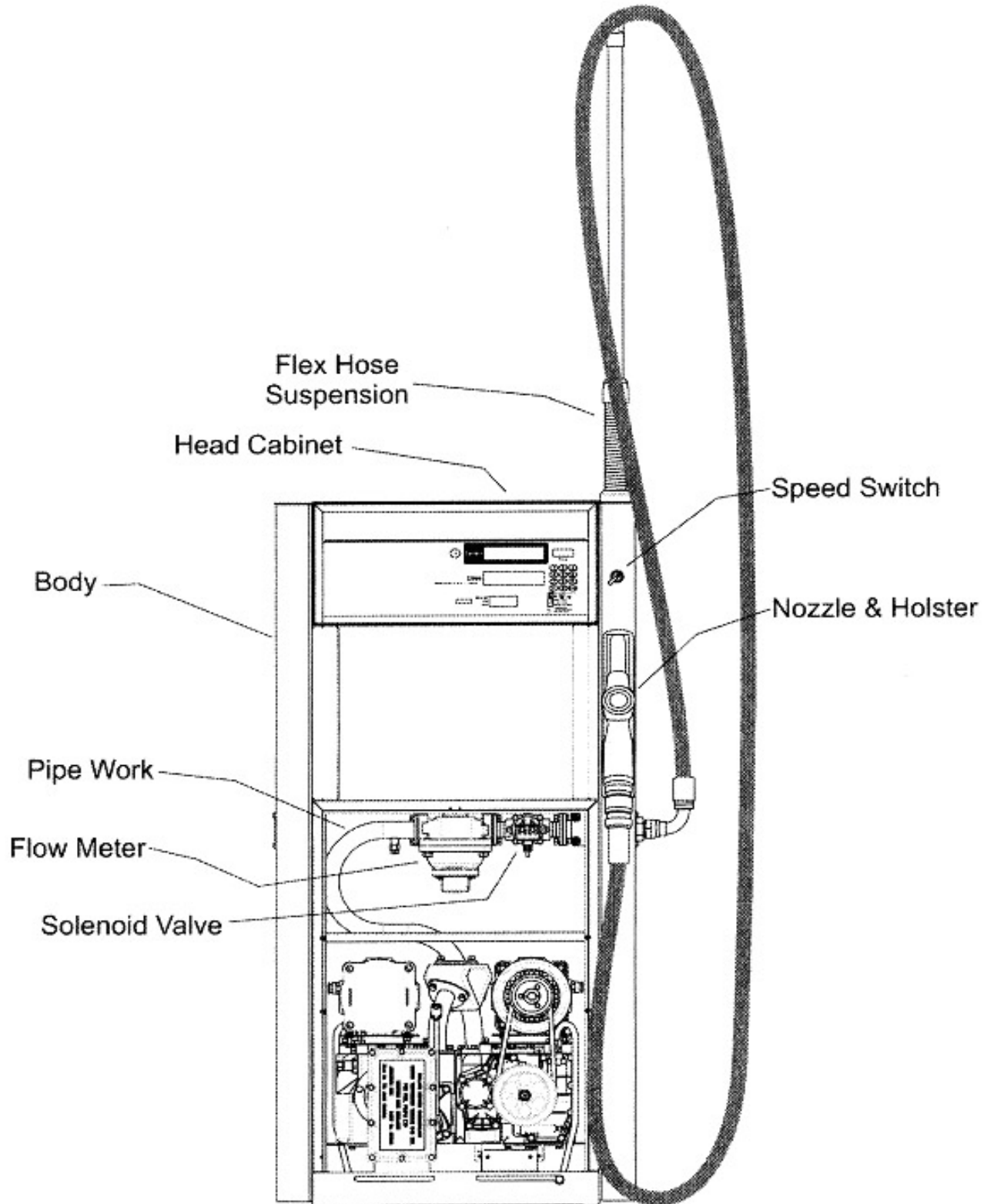
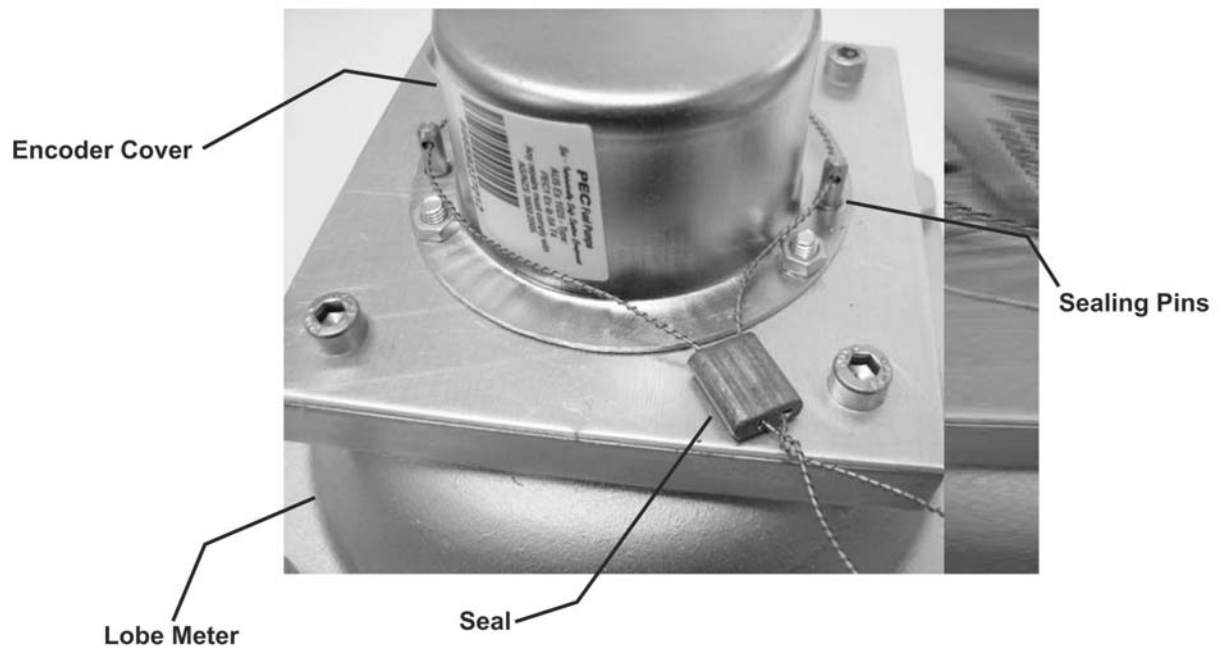
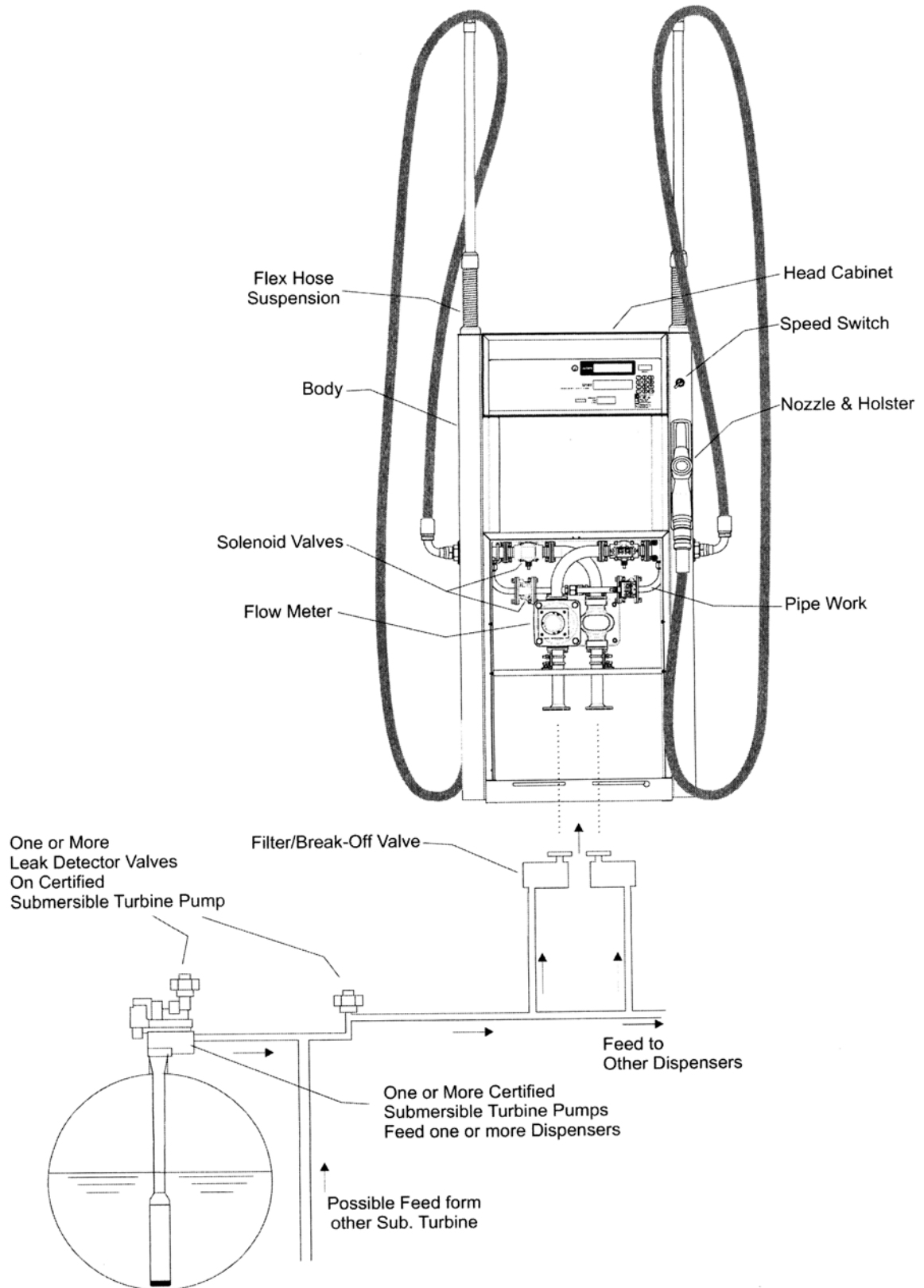


FIGURE 5/6A/217 – 2



Showing Typical Sealing Method

FIGURE 5/6A/217 - 3



Typical Submersible Turbine Pump System