

National Standards Commission



Certificate of Approval

No 5/6A/93

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

Production Engineering Model 1401 P Multi-product Driveway Flowmeter

submitted by Production Engineering (Aust.) Pty Ltd
 Suite 403
 270 Pacific Highway
 Crows Nest NSW 2065.

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.



CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/4/97.

This approval expires in respect of new instruments on 1/4/98.

Instruments purporting to comply with this approval shall be marked NSC No 5/6A/93 and only by persons authorised by the submittor.

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.

The Commission 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 19/3/92

- . A Production Engineering model 1401 P multi-product driveway flowmeter approved for use to dispense various grades of petrol over a flow rate range of 15 to 50 L/min.

Variants: approved 19/3/92

1. Certain other models and configurations.
2. With a submersible turbine pump hydraulic system.

Technical Schedule No 5/6A/93 describes the pattern and variants 1 and 2.

Variant: approved 16/6/92

3. For use with certain Gilbarco control consoles.

Technical Schedule No 5/6A/93 Variation No 1 describes variant 3.

FILING ADVICE

Certificate of Approval No 5/6A/93 dated 15/6/92 is superseded by this Certificate and may be destroyed.

The documentation for this approval now comprises:

- Certificate of Approval No 5/6A/93 dated 28/7/92
- Technical Schedule No 5/6A/93 dated 15/6/92 (incl. Table 1 and Test Procedure)
- Technical Schedule No 5/6A/93 Variation No 1 dated 28/7/92 (incl. Notification of Change)
- Figures 1 to 4 dated 15/6/92



National Standards Commission

TECHNICAL SCHEDULE No 5/6A/93

Pattern: Production Engineering Model 1401 P Multi-product Driveway Flowmeter.

Submitter: Production Engineering (Aust.) Pty Ltd
Suite 403
270 Pacific Highway
Crows Nest NSW 2065.

1. Description of Pattern

A Production Engineering model 1401 P 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 50 L/min, in attendant-operated, or locally or remotely-authorised applications.

1.1 Features

The model 1401 P flowmeter, similar to that shown in Figure 3 but without the 'Air Sense Device' (gas detector), has the following components or features:

- . 2 Tatsuno model PGS-0257 pump/gas separators.
- . 4 Tatsuno model MP-02515 4-piston positive displacement meters.
- . 4 Production Engineering model ENCODER ASSEMBLY #87804 pulse generators.
- . 2 Production Engineering model MHP price-computing indicators, one on either side of the flowmeter.
- . Preset facilities.
- . 4 hoses fitted with any Commission-approved nozzles.

1.2 Indicator

The model MHP indicators display the following:

Volume	To 999.99 L in 0.01 L increments
Unit price	To 999.9 c/L in 0.1c increments
Price	To \$9999.99 in 1c increments
Totaliser	To 99999999 L in 1 L increments
Preset	To \$99 in \$1 increments

A totalising indicator for each grade of product is incorporated at the side of the indicator cabinet and may be set to read either volume sold (litres) or amount sold (whole dollars).

Instruments are fitted with purchaser-operated preset facilities which use solenoid valves to control the flow. A manager's keyswitch may be used to access various management functions including operational modes and unit price setting.

1.3 Sealing and Verification/Certification Provision

Provision is made for the application of a verification/certification mark. The meter calibration is sealed.

1.4 Markings

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/93
Maximum flow rate L/min
Minimum flow rate L/min
Liquid temperature range	5°C to 40°C
Operating (air) temperature range	-10°C to 45°C
Maximum operating pressure kPa
Approved for use with (products)

2. Description of Variants

2.1 Variant 1

Certain other models and configurations, identified using Table 1, and including the following features:

- Without the preset facility, in which case the model number has an 'N' suffix, e.g. model 1402 N.
- For use with distillate or kerosene, e.g. model 1402 P (Figure 3). A gas detection system ('Air/Sense Sensing Device') is mandatory for products other than petrol.

2.2 Variant 2

With a submersible turbine pump hydraulic system replacing the equivalent components (i.e. motor, pump/gas separator, and associated pipework) in any driveway flowmeter covered by this approval, identified using Table 1.

The replacement hydraulic system includes a Red Jacket model P75S3-3 or model P150S3-3 (or Gilbarco model T221X or model T122W) submersible turbine pump with a Red Jacket model 116-030-5PLD (or Gilbarco model OTO4966) leak detector.

More than one driveway flowmeter may be connected to the same submersible turbine pump hydraulic system.

Figure 4 shows a flowmeter using both a pump/gas separator system and a submersible turbine pump hydraulic system (e.g. model 1432).

TABLE 1 - Model Numbering and Codes

First Digit:	Model number, 1 = 1000 series.
Second Digit:	Number of hoses, 1 to 4.
Third Digit:	Hydraulic type, 1 to 9, e.g. pump/gas separator or submersible turbine pump supply system, various combinations.
Fourth Digit:	Air sense configuration, 1 to 6, e.g. with or without gas detection system ('air sense'), various combinations.
Suffix:	P = With preset N = Without preset

TEST PROCEDURE No 5/6A/93

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 $\pm 0.3\%$.

For submersible turbine pump hydraulic systems

1. Operation of the leak detector is tested by the following procedure:

Note: This Test should be carried out on initial verification. Thereafter, it need not be done at every verification/certification but should be done periodically at the discretion of the relevant verifying authority.

- a) Connect a pressure gauge and valve to the test port of the impact valve under the driveway flowmeter. Ensure that the submerged 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 nozzle at the flowmeter 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 submerged turbine pump (where the number of hoses is 6 or less) or by simultaneously running between $\frac{2}{3}$ and $\frac{3}{4}$ 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.
- Note: This Test should be carried out on initial verification. Thereafter, it need not be done at every verification/certification but should be done periodically at the discretion of the relevant verifying authority.



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TECHNICAL SCHEDULE No 5/6A/93

VARIATION No 1

Pattern: Production Engineering Model 1401 P Multi-product Driveway Flowmeter.

Submitter: Production Engineering (Aust.) Pty Ltd
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1. Description of Variant 3

Any driveway flowmeter of this approval fitted with a Production Engineering model MHP indicator now used with any of the Gilbarco control consoles listed below:

- Model T11-5 - up to 12 flowmeters - refer NSC approval No S207.
- Model T12AC - up to 12 flowmeters - refer NSC approval No S207.
- Model T24 - up to 24 flowmeters - refer NSC approval No S246.

NOTIFICATION OF CHANGE

In Technical Schedule No 5/6A/93 dated 15/6/92;

(a) Clause 2.2 **Variant 2** is amended by adding the following:

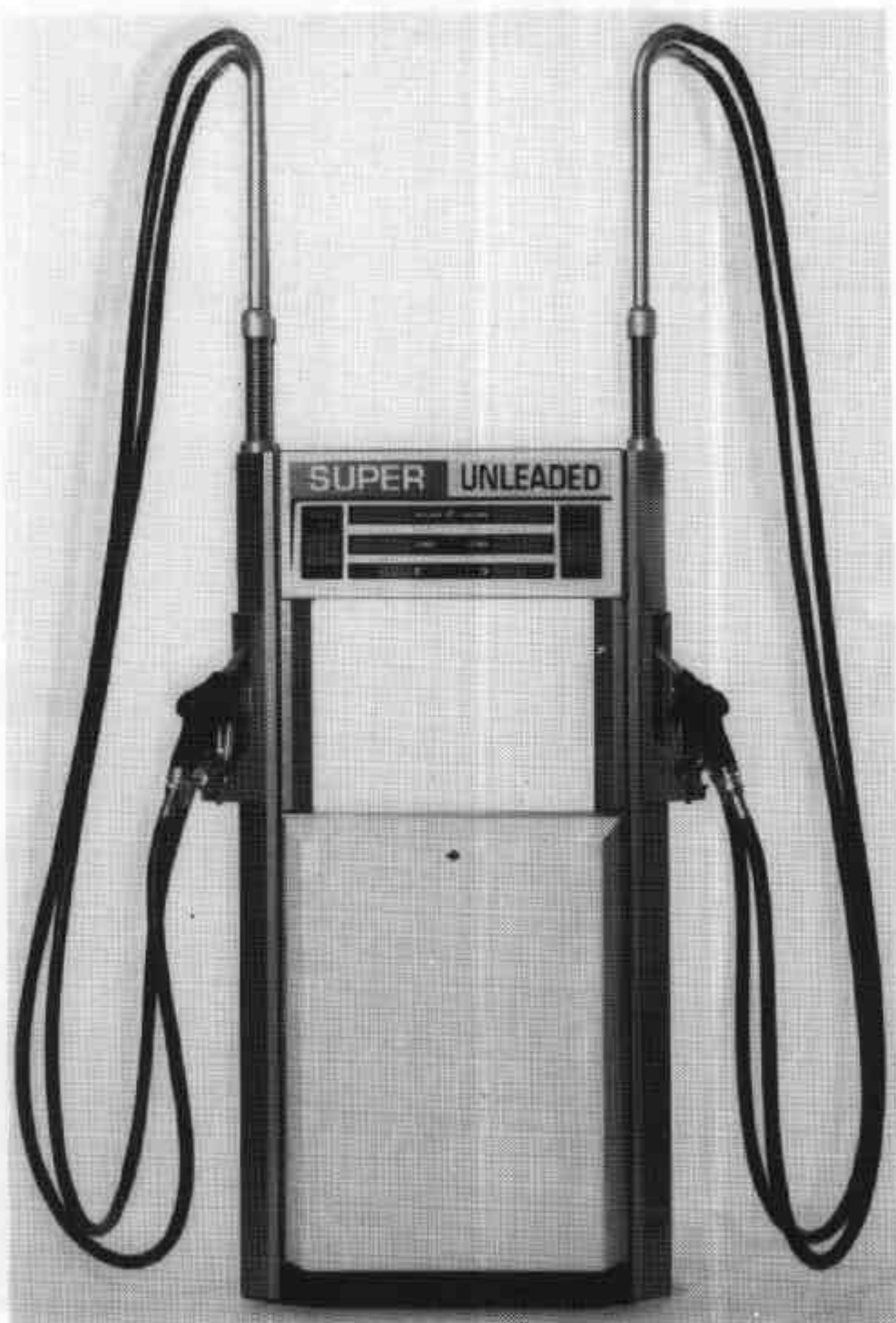
"Driveway flowmeters purporting to comply with this variant carry a **5* # style model number, e.g. the pattern, model 1401 P, becomes model 1451 P."

(b) The TEST PROCEDURE is amended by adding the following test:

"3. For systems where more than one driveway flowmeter is connected to the same pump, begin a delivery from one flowmeter.

While this delivery is still in progress, attempt to make a delivery from a 2nd flowmeter connected to the same pump WITHOUT this flowmeter first being authorised (either locally or remotely) and WITHOUT the indicator reset cycle for this flowmeter first being initiated; the 2nd delivery should not be possible."

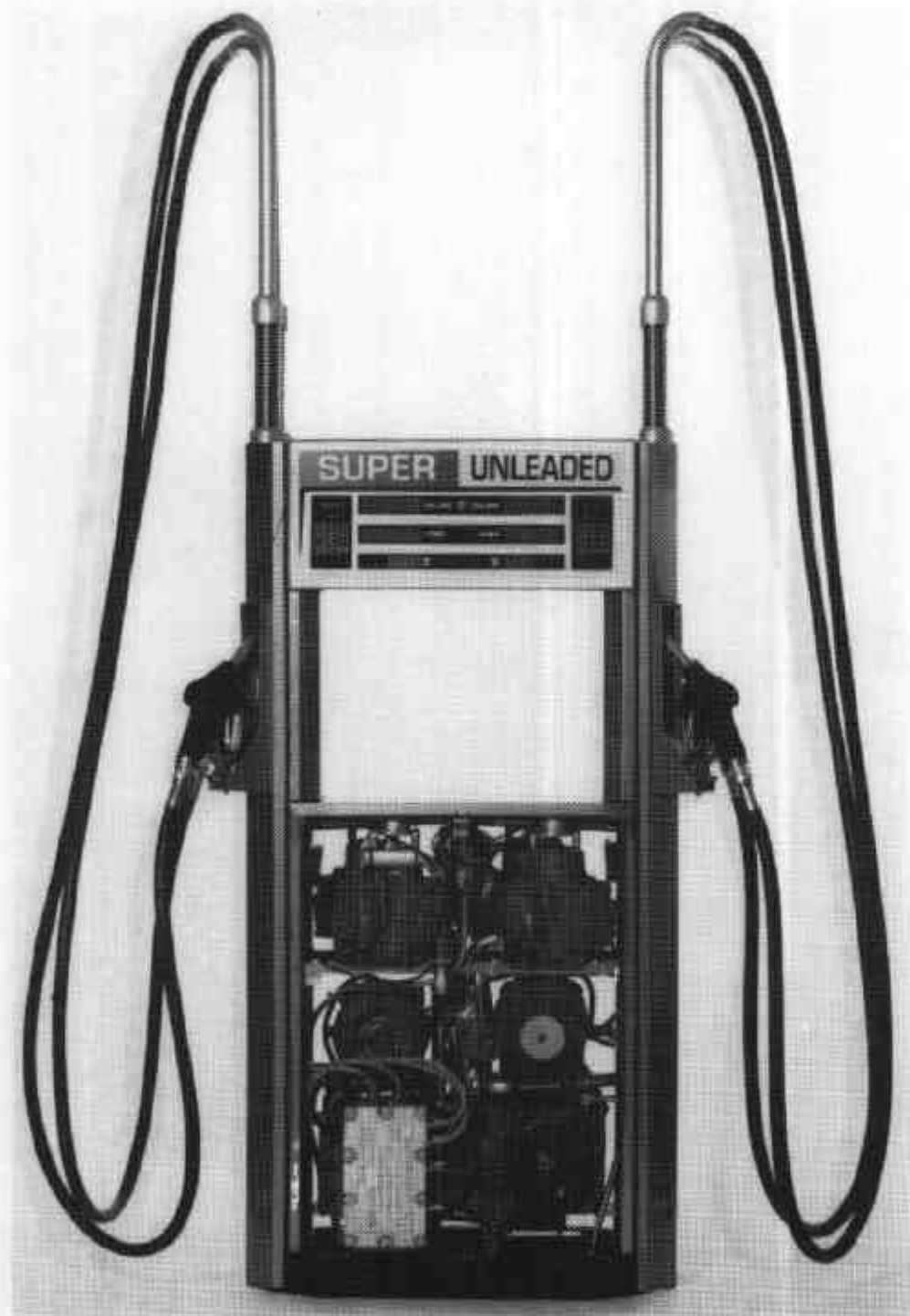
FIGURE 5/6A/93 - 1



Production Engineering Model 1401 P Multi-product Driveway Flowmeter

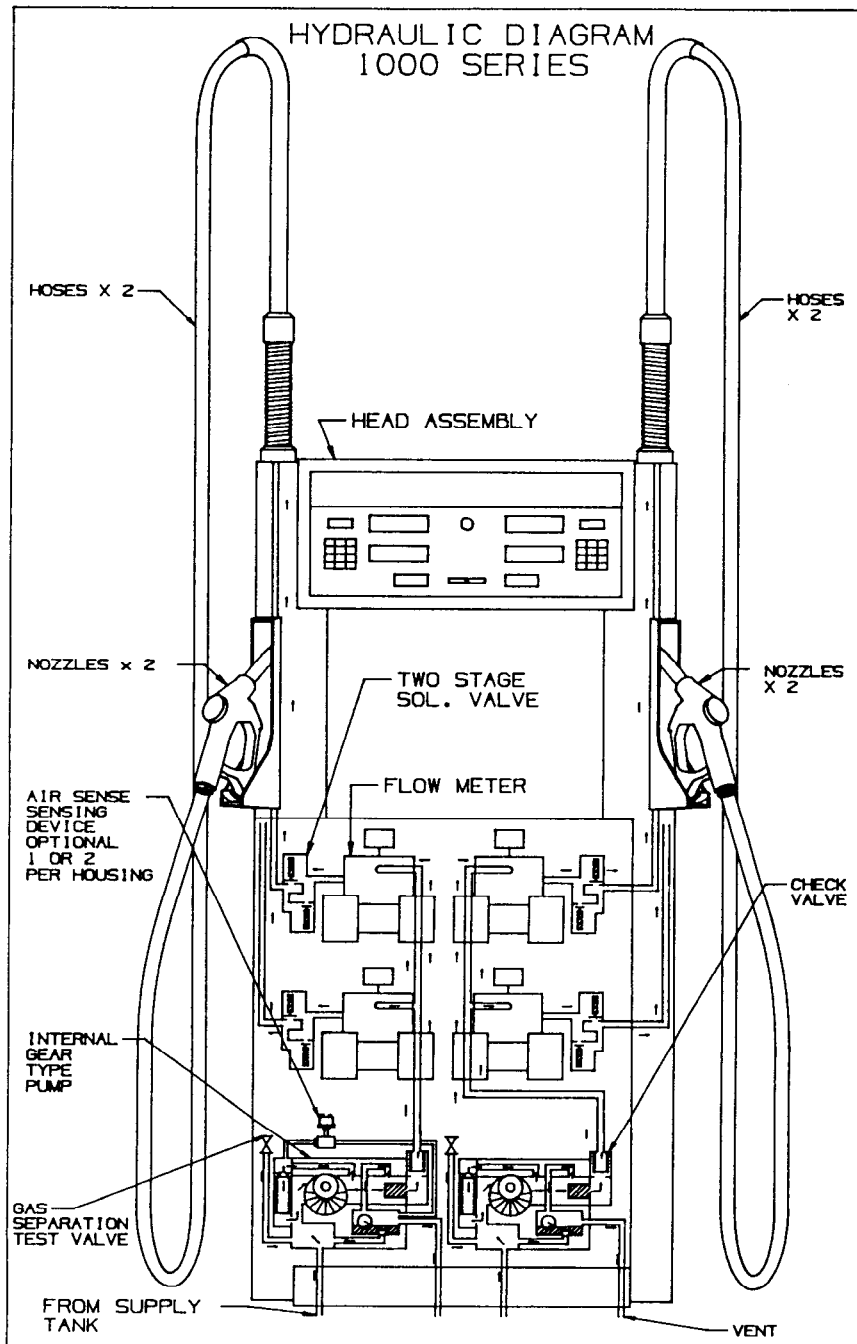
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FIGURE 5/6A/93 - 2



Model 1401 P With Covers Removed

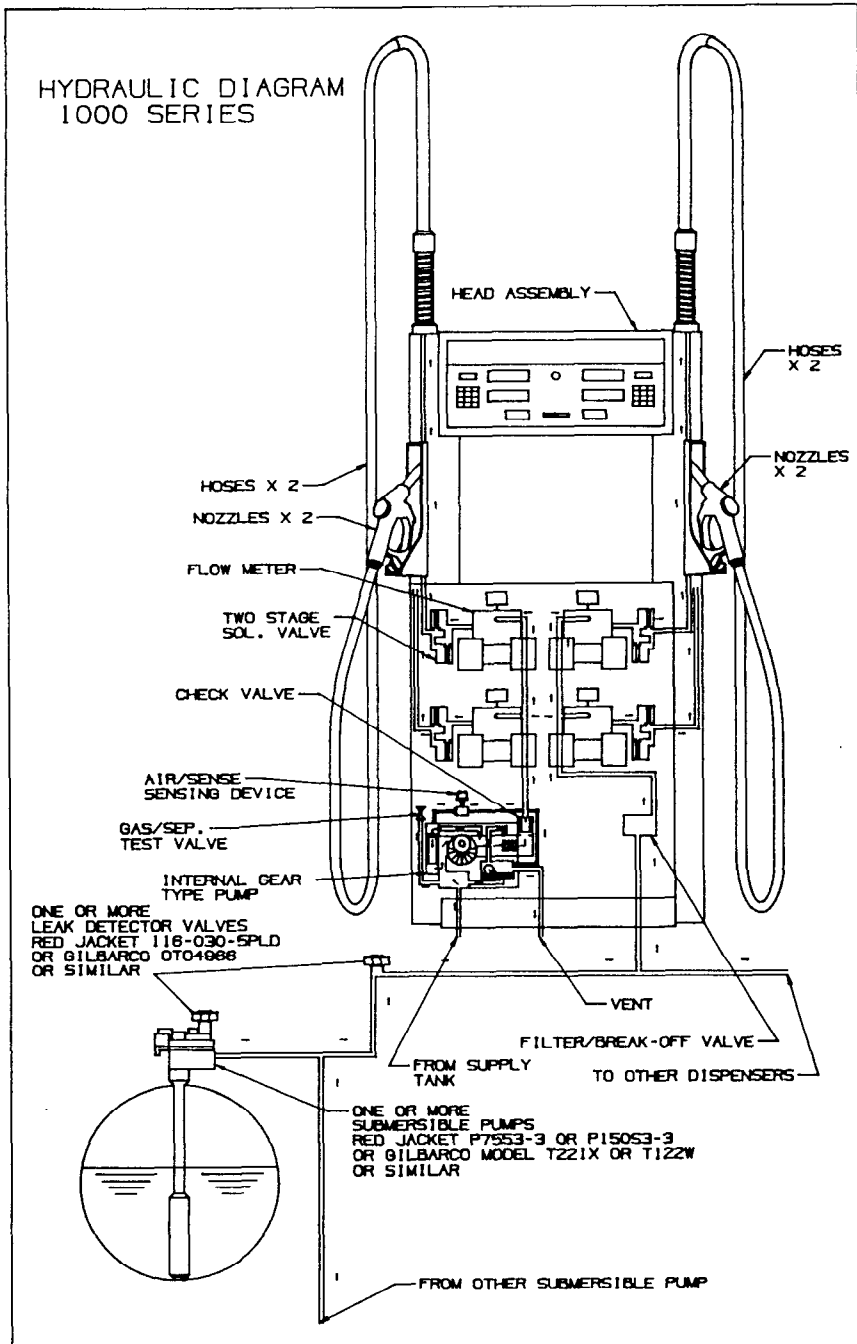
FIGURE 5/6A/93 - 3



Typical Multi-product Flowmeter, Including With Gas Detection System

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FIGURE 5/6A/93 - 4



Typical Multi-product Flowmeter, Including With Submersible Turbine System