National Standards Commission

Certificate of Approval

No 5/6A/89

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

Southwest Pumps Model 2040-2 Driveway Flowmeter

submitted by Southwest Pumps Australia
PO Box 167
Forestville NSW 2087.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/6/96.
This approval expires in respect of new instruments on 1/6/97.

Instruments purporting to comply with this approval shall be marked NSC No 5/6A/89 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.

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DESCRIPTIVE ADVICE

Pattern: approved 1/5/91

- A Southwest Pumps model 2040-2 driveway flowmeter.

Variant: approved 1/5/91

1. Certain other models and configurations.

Technical Schedule No 5/6A/89 describes the pattern and variant 1.

FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 5/6A/89 dated 1/12/92
Technical Schedule No 5/6A/78A dated 1/12/92 (incl. Test Procedure)
Figures 1 to 4 dated 1/12/92

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.

National Standards Commission

TECHNICAL SCHEDULE No 5/6A/89

Pattern: Southwest Pumps Model 2040-2 Driveway Flowmeter.

Submittor: Southwest Pumps Australia
PO Box 167
Forestville NSW 2087.

1. Description of Pattern

A Southwest Pumps model 2040-2 driveway flowmeter (Figures 1 and 2) approved for use to dispense various grades of petrol and distillate at a maximum flow rate of 50 L/min, in locally or remotely authorised applications.

1.1 Features

The model 2040-2 (Figure 3) has the following components or features:

- One or more Red Jacket model P75S3-3 or P150S3-3 submersible turbine pumps.
- One or more Red Jacket model 116-030-5 PLD leak detectors.
- Four Southwest Pumps model Enerflo 3-piston positive displacement meters.
- 2-stage flow control solenoid valves, one for each meter.
- Screw-on filters, incorporated in the pipe work downstream of each meter.
- Four Southwest Pumps model MLPC2 price-computing indicators with maximum unit price of 9.999 $/L and maximum total price of $9999.99.
- Richards model A70 or model 1A, or other Commission-approved nozzles.

1.2 Operational Modes

Instruments may be used for locally or remotely-authorised operation; in the latter case, they may only be used with a Southwest Pumps model ECS1A driveway flowmeter control system as described in the documentation of NSC approval No S270. Unit prices may be changed using the console, i.e. central unit price setting.

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A self diagnostic touch pad is located beside each indicator behind the indicator front panel and may be used to access various managerial functions, including operational modes and local unit price setting. Details of the last sale made may be displayed through this touch pad.

The submersible pumps are controlled by the computing indicator and control of flow to each nozzle is achieved by the 2-stage solenoid valve.

1.3 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/89
Maximum flow rate	..... L/min
Minimum flow rate	..... L/min
Maximum operating pressure	..... kPa
Approved for use with (products)	.....

1.4 Sealing and Verification/Certification Provision

Provision is made for the application of a verification/certification mark. The meter calibration, the screw-on filters (where fitted) located downstream of each meter, and the bleed plug located on top of each meter, are sealed.

2. Description of Variant 1

Other models and in configurations as listed in Table 1, and including the instruments described below:

- As a single-sided instrument, e.g. model 2100-2 (Figure 4), which has 1 meter, hose and indicator.
- In a multi-product type format, e.g. model 2220-2, which has 4 meters and hoses, but only 2 indicators.
- With additional management facilities, in which case the model number has either a -3 or a -5 suffix.

. With a preset facility, in which case the model number has either a -4 or a -5 suffix.

The instrument may be fitted with a purchaser-operated preset control or the preset facility may be set via the vendor's console. Instruments without preset facility cannot be used for prepay transactions.

TABLE 1

Model Number	Single/Double Sided	Number of Hoses	Number of Indicators
2020 - *	Single	2	2
2040 - *	Double	4	4
2100 - *	Single	1	1
2110 - *	Double	2	2
2200 - *	Single	2	1
2220 - *	Double	4	2
2300 - *	Single	3	1
2330 - *	Double	6	2
2400 - *	Single	4	1
2440 - *	Double	8	2

* Either a 2, 3, 4, or 5 suffix - refer Description of Variant 1.

Model numbers may have the additonal suffix AU, denoting Australia.

TEST PROCEDURE

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 ±0.3%.

For instruments fitted with submersible turbine pumps:

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 operating flap, 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 2/3 and 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.

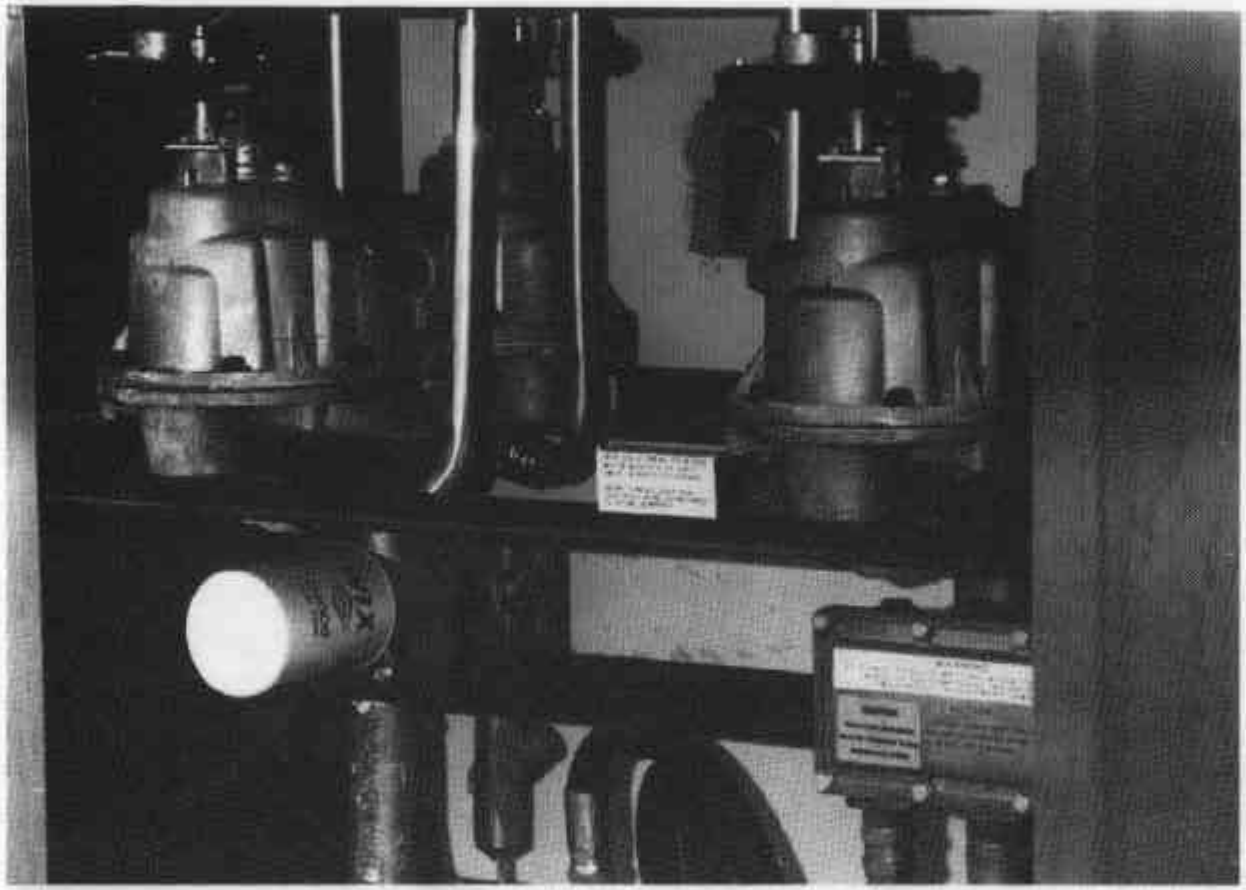
3. For systems where more than one driveway flowmeter is connected to the same pump, begin a delivery from one flowmeter.

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/89 - 1

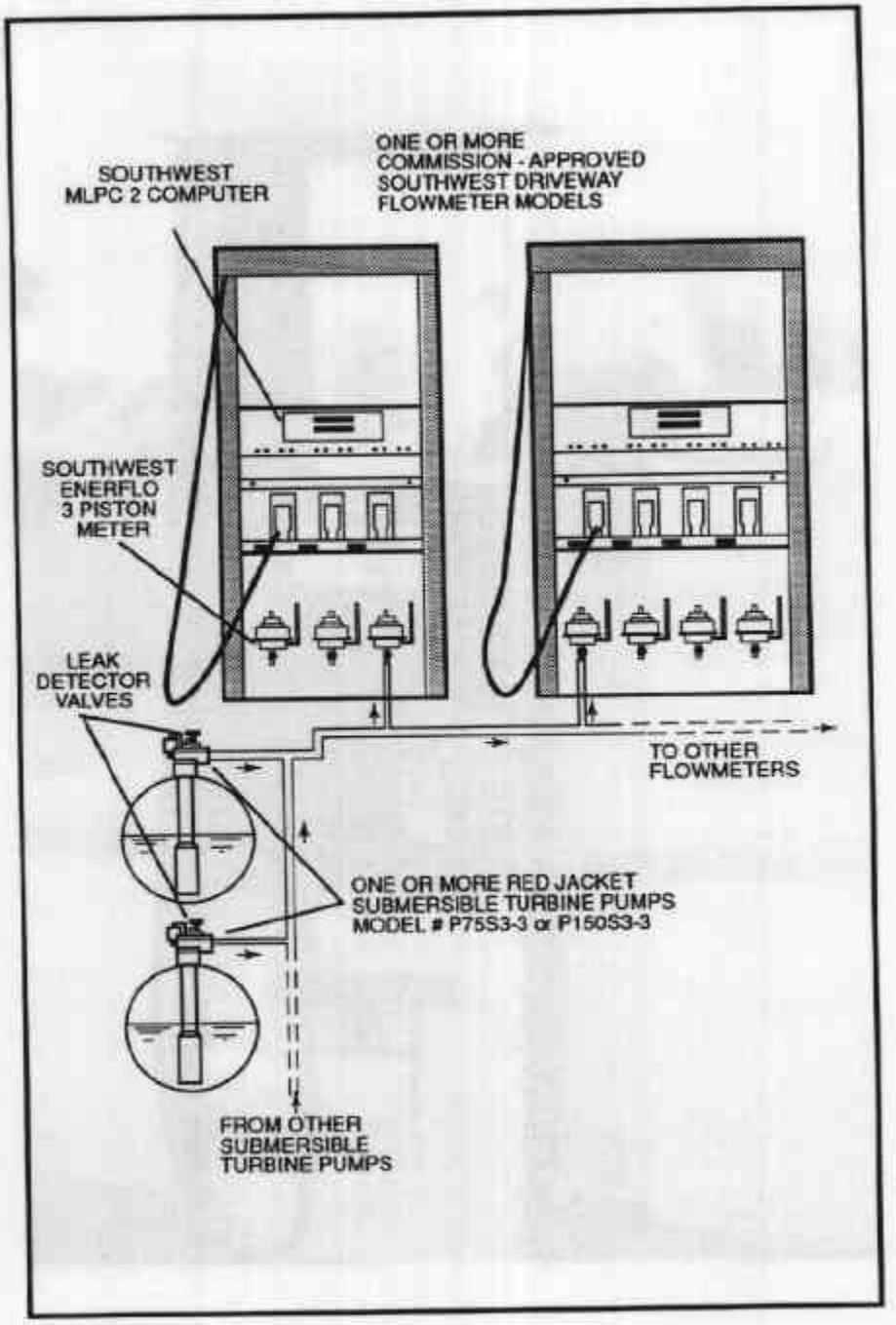
Southwest Pumps Model 2040-2 Driveway Flowmeter

FIGURE 5/6A/89 - 2



Model 2040-2 Without Covers

FIGURE 5/6A/89 - 3



Schematic Diagram of a Typical System

FIGURE 5/6A/89 - 4

Model 2100-2 Driveway Flowmeter