NATIONAL STANDARDS COMMISSION

WEIGHTS & MEASURES (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

CERTIFICATE OF APPROVAL No 5/6H/10

This is to certify that an approval has been granted by the Commission that the pattern and variants of the

Axiom Flowmeter with Neptune 38 mm meter

submitted by Axiom Repairs Pty Ltd,
39 Kembla Street,
Cheltenham, Victoria, 3192,

are suitable for use for trade.

The approval of the pattern and variants is subject to review on or after 30/9/83.

All instruments purporting to comply with this approval shall be marked NSC No 5/6H/10.

Relevant drawings and specifications are lodged with the Commission.

Signed

Executive Director

Descriptive Advice

Pattern: approved 21/9/78

. A vehicle-mounted flowmeter with Neptune 38 mm meter, for liquid petroleum products of viscosity between 0.4 and 8.3 mPa.s, namely petrol, kerosene and diesel fuel.

Technical Schedule No 5/6H/10 dated 24/4/79 describes the pattern.

Variant: approved 20/8/81

1. With Neptune 50 mm meter.

Technical Schedule No 5/6H/10, Variation No 1 dated 11/9/81 describes Variant 1.

Filing Advice

Certificate of Approval No 5/6H/10 dated 24/4/79 is superseded by this Certificate and may be destroyed.

The Technical Schedule is retained as part of this approval, which now comprises:

Certificate of Approval No 5/6H/10 dated 11/9/81.
Technical Schedule No 5/6H/10, dated 24/4/79
Technical Schedule No 5/6H/10, Variation No 1 dated 11/9/81.

11/9/81

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6H/10

Pattern: Axiom Flowmeter with Neptune 38 mm Meter

Submittor: Axiom Repairs Pty Ltd,
~~21-23 Capella Crescent~~, 39 KEMBLA ST
~~Moorabbin, Victoria, 3189~~. CHELTENHAM, VICTORIA, 3192.

Date of Approval: 21 September 1978

Conditions of Approval:

1. The maximum flow rate is a flow rate between 100 and 220 L/min; the minimum flow rate is 20% of the maximum flow rate achievable with a particular instrument.

2. The maximum system pressure is limited to 600 kPa.

3. The pump suction operates under a positive liquid head.

4. The liquids measured are limited to petroleum products of viscosities between 0,4 and 8,3 mPa.s.

5. The liquid (commercial or technical name) for which the instrument is verified is nominated on the instrument data plate.

All instruments conforming to this approval shall be marked "NSC No 5/6H/10".

Description:

The pattern (Figure 1) is a vehicle-mounted instrument for the delivery of liquid petroleum of viscosity between 0,4 and 8,3 mPa.s at a maximum flow rate of up to 220 L/min and a maximum system pressure at no flow of 600 kPa.

The flowmeter comprises the following:

1. Positive displacement pump mounted on the assembly at a point lower than the minimum height of the liquid in the supply tank. The supply pipe from the tank to the pump has a continuous fall to the pump. The pump by-pass is set so that the maximum no-flow system

pressure is up to 600 kPa. Provision is made for a pressure gauge to be connected between the pump and the gas purger.

2. Neptune gas purger incorporating a strainer and float-operated vent valve (Figure 2).

3. Neptune 38 mm Type 4 meter (Figure 2).

4. Neptune Type 443 zero-start single-handle reset indicator and ticket printer (Figure 2). The ticket printer has 1 litre increments and the indicator has a scale interval of 1 litre; the first element is marked with ten scale-mark lines numbered from 0 to 9. The aperture through which the first element is viewed is widened in the direction of travel.

5. Non-return valve.

6. Hose — any type, bore or length may be used provided that the minimum delivery, determined from Table 1 and marked on the instrument's data plate for reference by the Weights and Measures Authority, is acceptable to that Authority taking into account the usage of the instrument.

7. Anti-drain valve (Figure 3) — an anti-drain valve, or anti-drain valve and swivel coupling, is fitted on the end of the hose. The anti-drain valve retains a pressure of not less than 55 kPa.

8. Nozzle — any nozzle fitted with an integral anti-drain valve which retains a pressure of not less than 55 kPa and which is located downstream of the main nozzle valve.

9. Marking — instrument data plate sealed to the instrument marked:*

(a) "approved for petrol only"; or

* The approval for the following liquids is based upon the liquid having a viscosity within the range specified for temperatures of 5°C to 40°C, taking into account the variations in the viscosity of each product which occurs with the output from a single refinery or between different refineries and at different times throughout each year:

Liquid[1]	Permitted viscosity range
Petrol	0,4 to 0,7 mPa.s
Kerosene[2]	0,6 to 2,2 mPa.s
Heating oil	1,1 to 4,0 mPa.s
Diesel fuel	1,7 to 8,3 mPa.s

Note: [1] A known trade abbreviation of the name of the liquid is acceptable.

[2] Kerosene includes white spirits and aviation turbine fuel.

(b) "approved for kerosene, heating oil, and diesel fuel"; and

(c) "minimum delivery ...y...litres, y being the minimum delivery determined from Table 1; and

(d) "maximum no-flow pressure ...x... kPa", x being the maximum system pressure when the nozzle is closed.

10. Sealing —

(a) the indicator and ticket printer and meter, by passing a sealing wire through the drilled heads of two of the set screws securing the top cover of the meter to the casing, through the drilled heads of the set screws securing the indicator to the meter, through a drilled lug on the front face of the indicator, through the drilled head of a set screw securing the top cover on the indicator, and terminating the ends beneath a lead stamping plug (Figure 2);

(b) the instrument data plate, by attaching it by a lead stamping plug or by threading the indicator sealing wire through a hole in the data plate.

The approval includes a Neptune 441 zero-start indicator with scale interval of 1 litre; the first element is marked with ten scale-mark lines numbered from 0 to 9 (Figure 4). The aperture through which the first element is viewed is widened in the direction of travel.

Special Tests:

The instrument should be tested with one or more of the liquids for which it will be used and which are marked on the data plate.

1. Hose Dilation

Weights and Measures inspectors should check that the maximum hose dilation, determined by the methods described below, corresponds with the minimum delivery marked on the data plate and complies with Table 1.

A measure of the hose-dilation quantity may be obtained by the following method:

(a) With the pump operating, open and close the nozzle, then with the nozzle closed check that the no-flow system pressure is within 20 kPa of the maximum no-flow system pressure marked on

the instrument data plate.

(b) With the pump stopped and the hose fully wound on its reel, open the nozzle to reduce the pressure in the hose to the anti-drain valve retaining pressure of about 55 kPa. Then fully unwind the hose from the reel, zero the indicator, start the pump and, after allowing not less than 30 seconds for the hose to fully dilate, and with the pump still running, read the quantity on the indicator. This quantity is equal to the maximum hose dilation.

2. Gas Purging

The effect of gas on the quantity delivered should not exceed 1,0% of the minimum delivery marked on the instrument data plate when a delivery is interrupted due to the supply tank running dry, and the delivery is continued by, for example, changing supply tanks. To test gas purging it will be necessary to allow the supply tank to empty during a test delivery, to stop the pump, and to refill or change the supply tank to allow the delivery into the proving measure to be completed.

Non-flow-dependent Errors

1. The non-flow-dependent errors are up to:

   (a) 1 litre rounding error for the ticket printer with 1 litre increments;

   (b) 0,2 litre reading error for the indicator which has the first element indicating by 1 litre scale intervals;

   (c) ...w... litre gas-purging error, w being 1% of the minimum delivery marked on the instrument data plate;

   (d) ...z... litre hose dilation, z being the maximum value of hose dilation for which the instrument is verified — see Table 1.

2. The minimum delivery for which the relative error from all sources would not exceed 1,5% is derived from Table 1 and is marked on the instrument data plate.

TABLE 1

Minimum delivery marked on instrument data plate	Maximum hose dilation	
	Indicator only fitted	Indicator and printer fitted
L	L	L
50	0,3	-
100	0,8	0
150	1,3	0,5
200	1,8	1,0
250	2,3	1,5
300	2,8	2,0
350	3,2	2,5
400	3,8	3,0
450	4,3	3,5
500	4,8	4,0

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6H/10

VARIATION No 1

Pattern: Axiom Flowmeter with Neptune 38 mm Meter

Submittor: Axiom Repairs Pty Ltd,
39 Kembla Street,
Cheltenham, Victoria, 3192.

1. Description of Variant

1.1 Variant 1

With a Neptune 50 mm meter replacing the Neptune 38 mm.

The maximum and minimum flow rates are 450 L/min and 90 L/min and the maximum system pressure at no-flow is 850 kPa.

1.1.1 Sealing

As per the pattern.

NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6H/10

CHANGE No 1

The description of the

Axiom Flowmeter with Neptune 38 mm Meter

given in Technical Schedule No 5/6H/10 is altered by changing the submittor's address to -

Axiom Repairs Pty Ltd,
39 Kembla Street,
Cheltenham, Victoria, 3192.

16/5/79

RS

NATIONAL STANDARDS COMMISSION

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6H/10

CHANGE No 2

The following change is made to the description of the Axiom Flowmeter with Neptune 38 mm meter given in Technical Schedule No 5/6H/10 dated 24/4/79:

In second line of paragraph 8 on page 2, alter 5 kPa to 55 kPa.

Signed

Executive Director

11/9/81

NATIONAL STANDARDS COMMISSION

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NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6H/10

CHANGE No 3

This Notification of Change replaces Notification of Change No 2 dated 11/9/81 which should be destroyed.

The following change is made to the description of the

Axiom Flowmeter with Neptune 38 mm Meter

given in Technical Schedule No 5/6H/10 dated 24/4/79.

Paragraph 8 on page 2 should be amended to read:

"8. Nozzle - any nozzle fitted with an integral anti-drain valve which retains a pressure of not less than 5 kPa and which has fitted to it the anti-drain valve, Item 7 above.

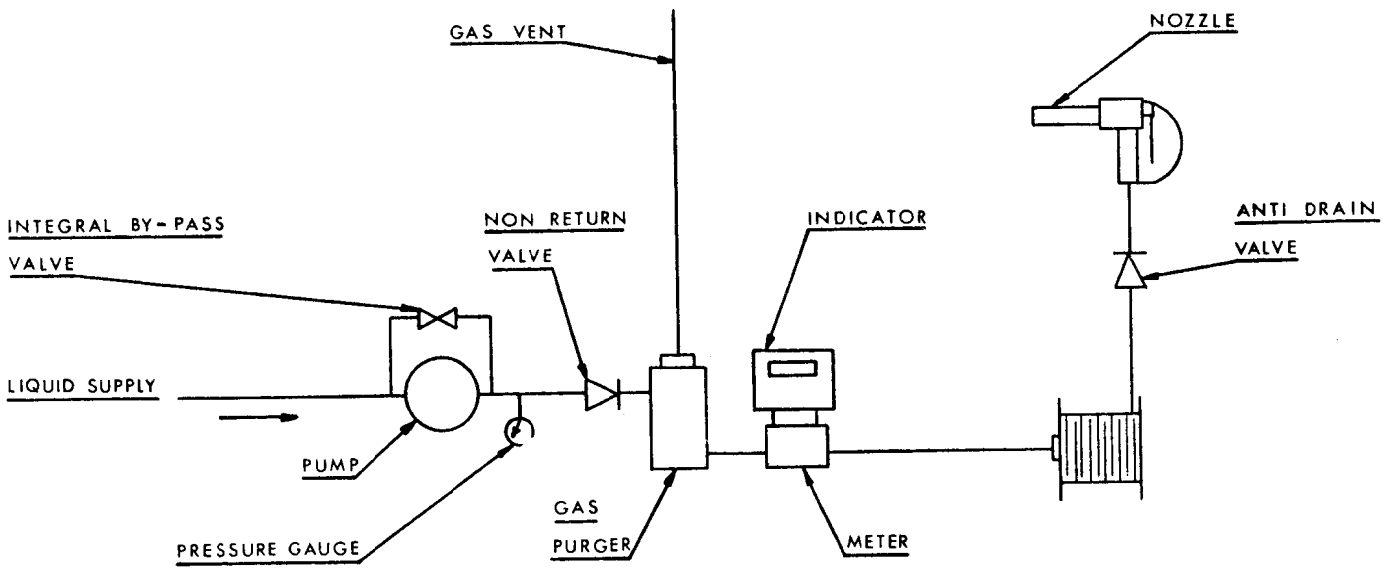
Alternatively, if Item 7 is NOT fitted, the nozzle must have an integral anti-drain valve which retains a pressure of not less than 55 kPa."

Signed

Executive Director

19/7/82

FIGURE 5/6H/10 - 1



Axiom Flowmeter with Neptune 38 mm Meter — Schematic Diagram

FIGURE 5/6H/10 - 2

Neptune Meter with Type 443 Indicator and Ticket Printer and Gas Purger

FIGURE 5/6H/10 - 3

Anti-drain Valve with Swivel Coupling

24/4/79

FIGURE 5/6H/10 - 4

24/4/79

Neptune Meter with Type 441 Indicator and Gas Purger