NATIONAL STANDARDS COMMISSION

NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

PROVISIONAL CERTIFICATE OF APPROVAL No P5/6B/68

This is to certify that an approval for use for trade has been granted in respect of the pattern of the

Daniel Model PT Turbine Flowmetering System

submitted by Process and Analytical Engineering Pty Ltd
3/1 Fisher Place
Narwee NSW 2209.

CONDITIONS OF APPROVAL

General:

This approval is subject to review on or after 1/8/89.
This approval expires in respect of new instruments on 1/8/90.

Instruments purporting to comply with this approval shall be marked NSC No P5/6B/68.

This approval may be withdrawn if instruments are constructed other than as described in the drawings and specifications lodged with the Commission.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0.

Special:

The Commission reserves the right to examine any instrument purporting to comply with this approval.

The submittor shall notify the Commission of each instrument prior to submission to Weights & Measures authorities for verification.

Instruments installed under this approval are to be tested at six-monthly intervals after the initial verification test. Such tests are to be arranged by the submittor and supervised by the State Weights and Measures Authority; the results are to be sent to the Commission.

In the event of unsatisfactory performance or of non-compliance with these Conditions of Approval, this approval may be withdrawn.

Signed

Executive Director

Descriptive Advice

Pattern: approved 18/7/88

- Daniel model PT turbine flowmetering system.

Technical Schedule No 5/6B/68 describes the pattern.

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Filing Advice

The documentation for this approval comprises:

Provisional Certificate of Approval No P5/6B/68 dated 21/12/88
Technical Schedule No 5/6B/68 dated 21/12/88 (Incl. Test Procedure)
Figures 1 to 5 dated 21/12/88

TECHNICAL SCHEDULE No 5/6B/68

Pattern: Daniel Model PT Turbine Flowmetering System.

Submittor: Process and Analytical Engineering Pty Ltd
3/1 Fisher Place
Narweee NSW 2209.

1. Description of Pattern

A bulk flowmetering system using a Daniel model PT turbine flowmeter of 100 mm nominal bore (Figure 1) and which is approved for use with petroleum products having a viscosity range of 0.4 to 10 mPa.s (at 15°C) at any flow rate between 3000 L/min and 550 L/min.

1.1 Loading-rack Flowmetering System (Figures 2 to 5)

The system comprises:

(I) A supply tank, optionally with a low-level detection device.

(II) A pump of either positive displacement or centrifugal type - in the latter case the pump is mounted lower than the minimum level of liquid in the supply tank. The supply pipe from the tank has a continuous fall to the pump.

If the pump is not for the exclusive use of the flowmeter, the flow rate through the meter must stay within the appropriate flow rate range for all combinations of alternative uses of the pump.

The system is constructed with the meter operating at sufficient back-pressure in, and immediately downstream of, the meter to minimise vaporisation.

(III) Non-return valves or an arrangement of the components and piping to ensure that the system remains full of liquid at all times, and that reverse flow or syphoning is prevented.

(IV) Flow conditioners of at least 10 pipe diameters and 5 pipe diameters in length installed respectively upstream and downstream of the meter; the upstream conditioner includes straightening vanes.

(V) A Daniel model PT 100 mm turbine flowmeter (Figure 1) with single or dual pickup coils for producing an electrical output signal.

The output signal is interfaced via a preamplifier to a Commission-approved L & L (Email) Omega 2000 series model BLC 80 or BLC88T bulk flowmetering indicator controller (as described in the documentation of NSC approval No S191) which has input characteristics compatible to the preamplifier or the turbine output.

(VI) An outlet control valve located downstream of the meter with no intermediate outlet (except for air-bleeding purposes). Provision shall be made for fitting a pressure gauge downstream of the meter.

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(vii) Top-loading outlet arrangement (Figures 2 to 4) – the highest point of the pipework forms a weir at a fixed level from which the delivery pipe drains to the outlet for all configurations of the loading arm whilst in operation. The shut-off control valve is installed at or upstream of the highest point and a syphon breaker is installed to ensure complete draining of the pipework downstream of the weir.

Alternatively, an anti-drain valve which retains a pressure of not less than 55 kPa may be installed at the delivery point of the pipework; or

Bottom-loading arrangement (Figure 5) – a dry-break coupling located at the delivery point of the pipework.

1.2 Markings

The following information shall be clearly and permanently marked on one or more permanently attached nameplates:

Manufacturer's name or mark	
Model number	
Serial number	
NSC approval number	P5/6B/68
Maximum flow rate	..... L/min
Minimum flow rate	..... L/min
Minimum delivery	 L
Type of liquid for which the meter is verified	

1.3 Verification Provision

Provision is made for a verification mark to be applied.

TEST PROCEDURE

Instruments should be tested in conjunction with any tests specified in the approval documents for the indicator used and in accordance with the Inspector's Handbook, and with the liquid with which they will be used and which is marked on the data plate.

The maximum permissible errors applicable are specified in Document 118, Second Edition, October 1986.

The following information shall be recorded and sent to the Commission, along with the results of all tests carried out at verification:

(a) NSC approval number;
(b) Installation address;
(c) Meter model and serial number;
(d) Identification of the meter assembly in terms of the instruments described in the Technical Schedule;
(e) Totaliser reading;
(f) Type of product used;
(g) Temperature of product entering the meter; and
(h) Flow rate.

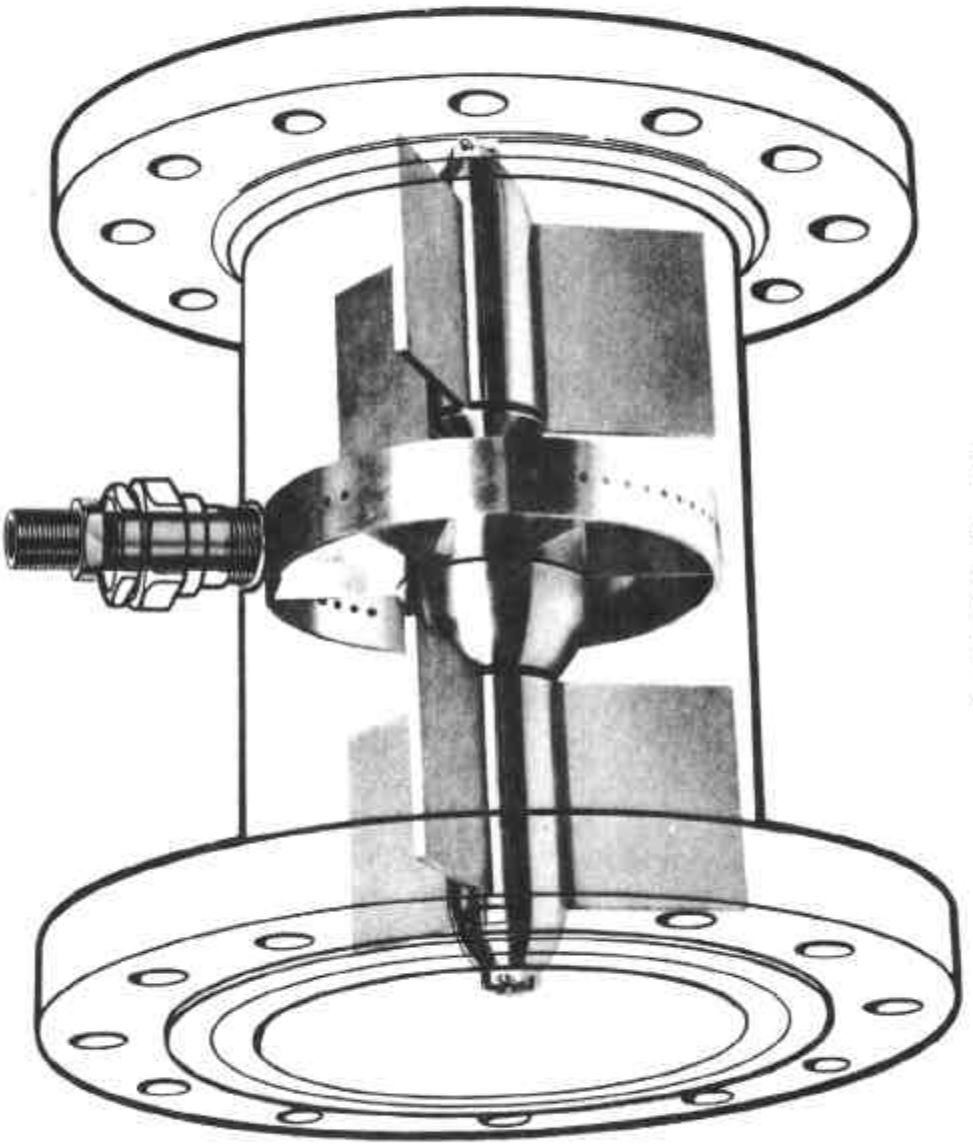
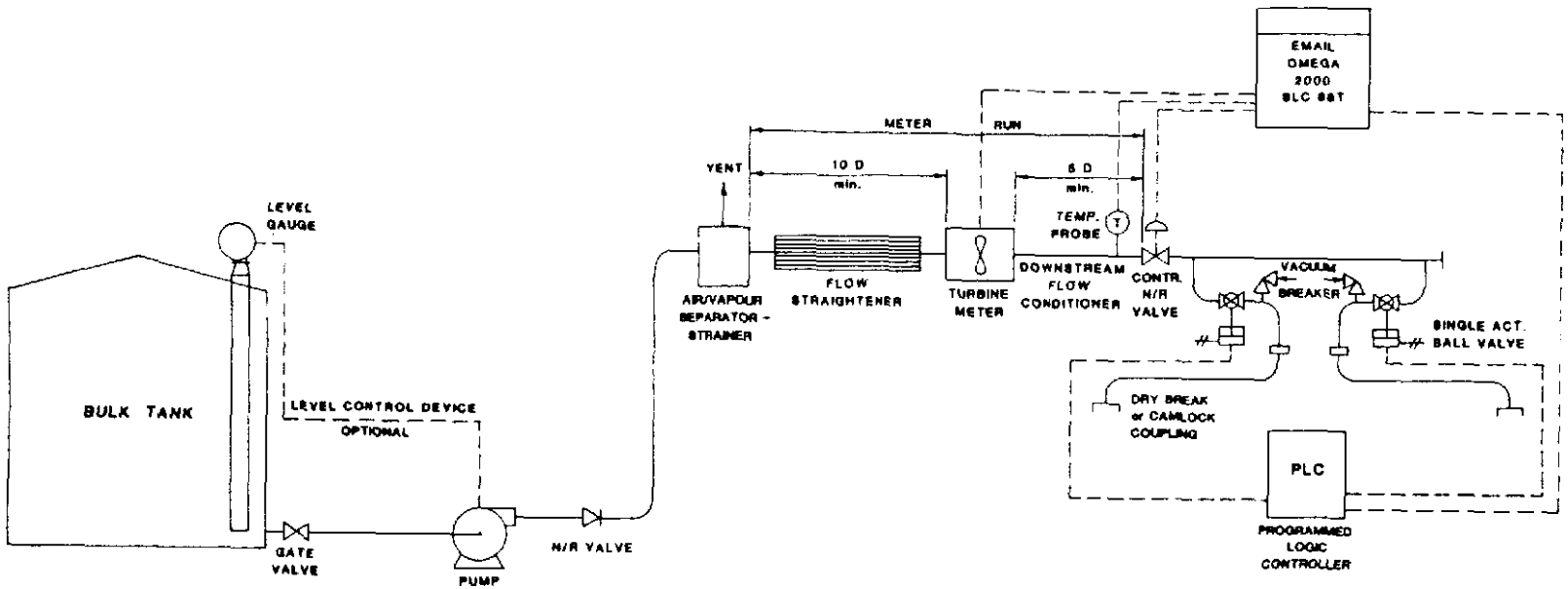


FIGURE 5/68/68 - 1

Daniel PT Turbine Meter

FIGURE 5/6B/68 - 2



Loading-rack System - Top-loading Outlet

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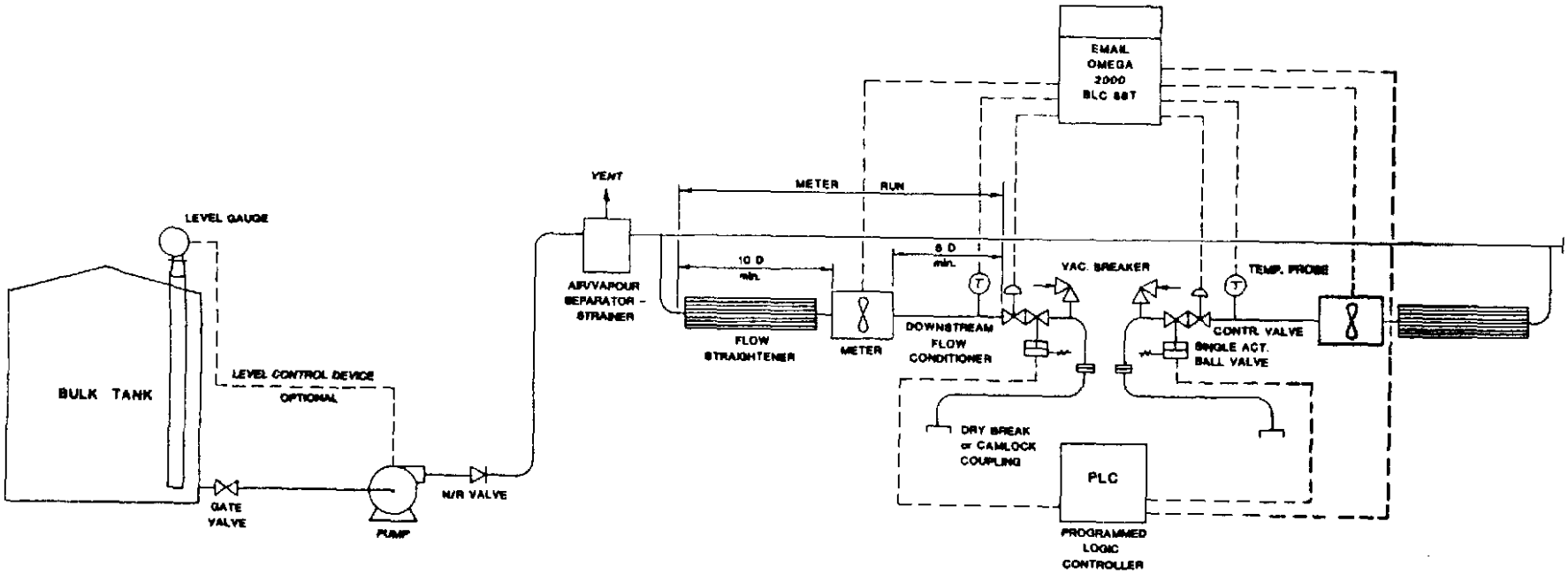
FIGURE 5/6B/68 - 3



Alternative Top-loading Outlet

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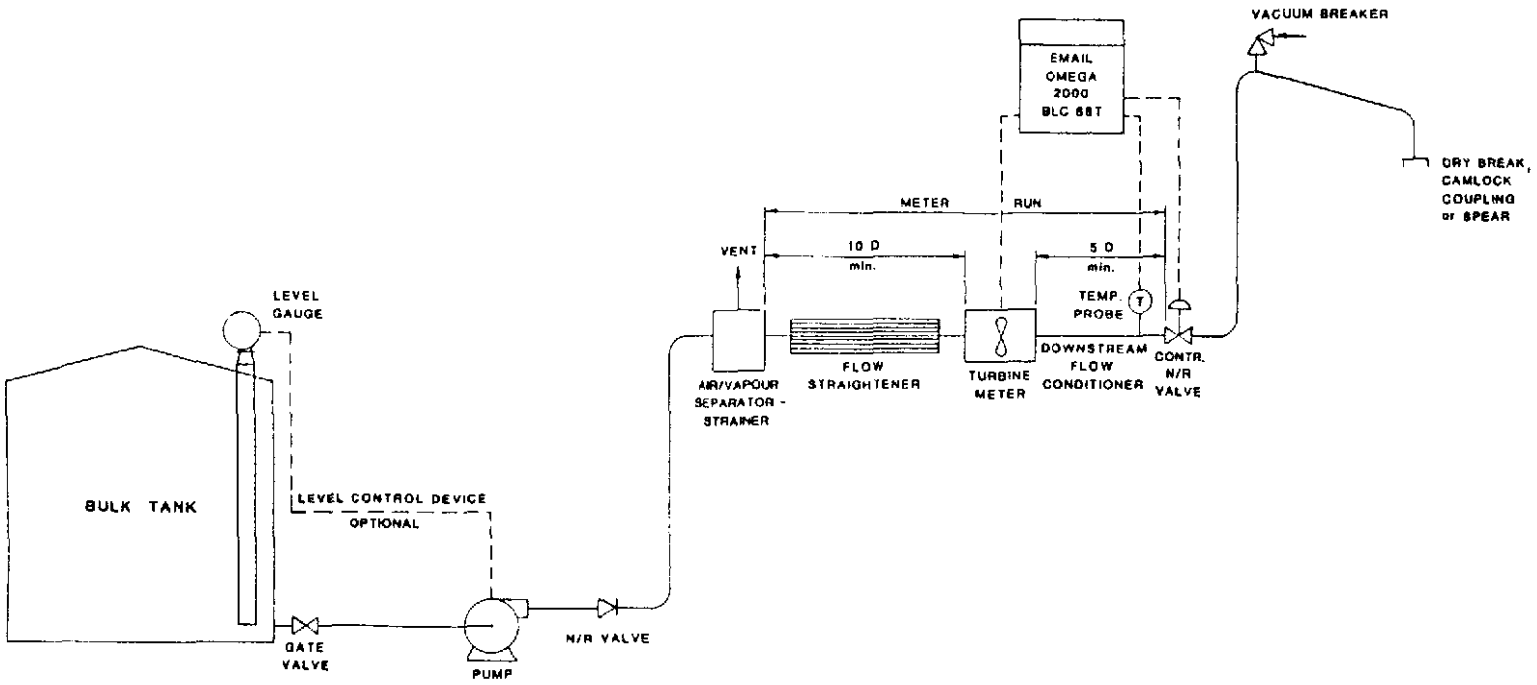
FIGURE 5/6B/68 - 4



Alternative Top-loading Outlet

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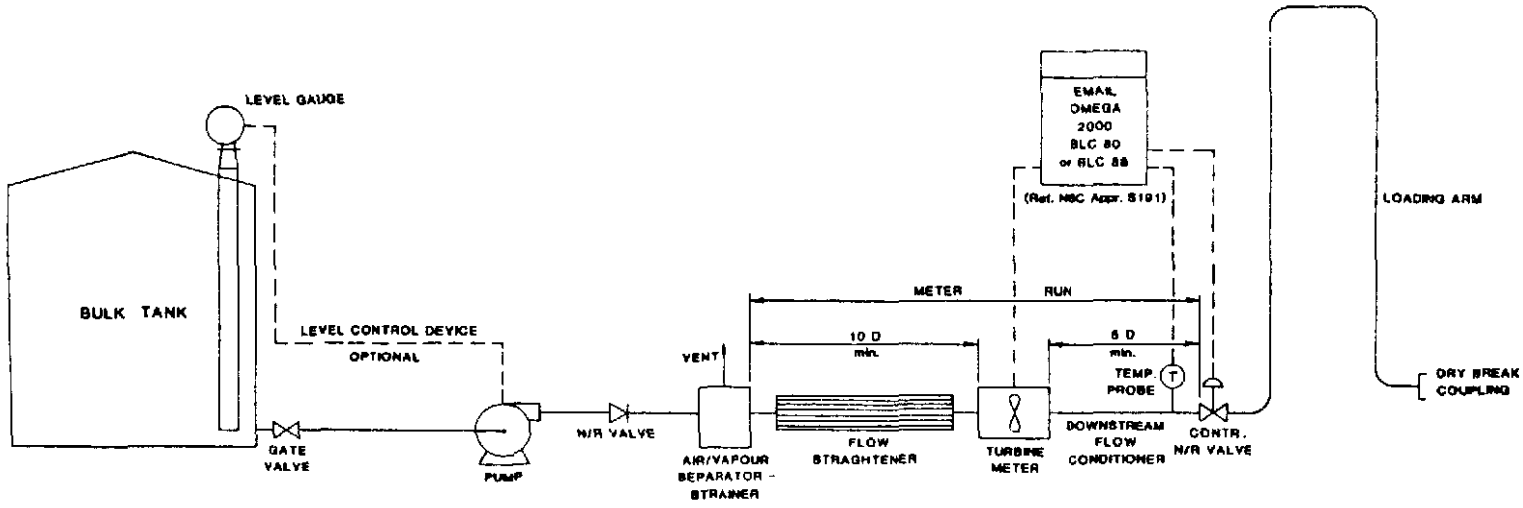
FIGURE 5/6B/68 - 5



Bottom-loading Outlet