ref:

ef:

Correspondence: Executive Officer
P.O. Box 282 NORTH RYI
N.S.W. 2113

Telegrams: NATSTANCOM SYDNEY

Telephone: 888 3922

CERTIFICATE OF APPROVAL No 5/6B/29

This is to certify that the patterns of the

A. O. Smith T7 Flowmeter

submitted by Liquid Handling Equipment Pty Ltd,
216 Railway Terrace,
Guildford, New South Wales, 2161,

have been approved under the Weights and Measures (Patterns of Instruments) Regulations as being suitable for use for trade.

Date of Approval: 1 August 1975

The patterns are described in Technical Schedule No 5/6B/29, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 1 January 1977.

All instruments conforming to this approval shall be marked with the approval number "NSC No 5/6B/29".

Approval is granted on condition that:

1. The flow rate is limited to a maximum of 140 litres per minute.

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

3. The liquids measured are limited to petroleum products of viscosities between 1 and 5 mm^2/s only.

4. The liquid for which the flowmeter is calibrated is nominated on the instrument data plate.

Signed

Bill8

Acting Executive Officer

28/8/75

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6B/29

Pattern: A. O. Smith T7 Flowmeter

Submittor: Liquid Handling Equipment Pty Ltd,
216 Railway Terrace,
Guildford, New South Wales, 2161.

Date of Approval: 1 August 1975

Conditions of Approval:

1. The flow rate is to be limited to a maximum of 140 litres per minute.

2. The pump suction is to operate under a positive liquid head.

3. The liquids measured are to be limited to petroleum products of viscosities between 1 and 5 mm^2/s only (that is, kerosene and heating oil). The liquid for which the flowmeter is calibrated is to be nominated on the instrument data plate.

4. All instruments conforming to this approval shall be marked "NSC No 5/6B/29".

Description:

The pattern (see Figures 1 and 2) is a vehicle-mounted instrument for the delivery of liquid petroleum of viscosity between 1 and 5 mm^2/s at a maximum flow rate of 140 litres per minute.

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.

2. Pressure-control valve set to approximately 15 kPa below pump by-pass pressure.

3. A. O. Smith T7 gas separator, incorporating a strainer and float-operated vent valve (see Figure 2).

4. A. O. Smith T7 meter (see Figure 2).

5. Veeder-Root 7085 zero-start indicator and ticket printer (see Figure 3) or Veeder-Root 1624 indicator with Veeder-Root 1630 ticket printer (see Figure 4). The indicator is marked "this indicator not in use for trade". The ticket printer has 1-litre or 0,1-gallon* increments.

6. MLD controller (Meter Locking Device) is a device which, in conjunction with the pressure-control valve, minimises hose dilation by ensuring that the pressure in the hose when the delivery starts is virtually the same as when the delivery finishes. The MLD controller, which is attached to the side of the register (see Figure 5) locks the reset spindle of the ticket printer and only allows a ticket to be printed when the pump is running and the nozzle is closed. Thus the zero printed on the ticket at the start of a delivery will be printed at the same hose pressure as the quantity printed at the end of the delivery.

   The MLD controller comprises a cylinder in which a spring-loaded piston pulls down a locking link when liquid under pressure acts on it. The pressure required to actuate the locking link is regulated by an adjustable plug which compresses the spring under the piston. The plug when set is locked in position by a pin.

   A cover is fitted over the MLD controller (see Figures 3 and 4).

7. Seals — the following parts of the system are sealed:

   (a) indicator and ticket printer, meter and MLD controller (see Figures 2, 3 and 4),

   (b) pump by-pass valve and pressure-control valve,

   (c) instrument data plate.

---

* Permitted for special purposes

8. Hose — up to 90 m of "1¼-inch" Nylex hose of maximum bore 32 mm mounted on a hose reel.

9. Nozzle —

   (a) OPW 1A "1¼-inch" automatic hose nozzle (see Figure 6) — an anti-drain valve unit fitted between the hose and nozzle retains a pressure of not less than 55 kPa (8 psi); the integral anti-drain valve retains a pressure of not less than 7 kPa (1 psi);

   (b) OPW 1190A automatic hose nozzle (see Figure 7). The nozzle may have a bent spout, plastic guard or dashpot, in which case the suffixes S, G or D are added to the part number; an anti-drain valve unit fitted between the hose and nozzle retains a pressure of not less than 55 kPa (8 psi); the integral anti-drain valve retains a pressure of not less than 7 kPa (1 psi);

   (c) OPW 190V/8 hose nozzle (see Figure 8);

   (d) OPW 210V/8 hose nozzle (see Figure 9); or

   (e) Gilbarco T279-0005 hose nozzle (see Figure 10) — an anti-drain valve fitted between the hose and the nozzle retains a pressure of not less than 55 kPa (8 psi); the integral anti-drain valve retains a pressure of not less than 7 kPa (1 psi).

10. A swivel coupling may be fitted to the anti-drain valve unit as illustrated in Figure 10.

11. Marking — an instrument data plate sealed to the instrument is marked: "approved for heating oil only", or "approved for kerosene only".

Special Tests:

The instrument should be tested with the liquid for which it will be used and which is marked on the instrument data plate.

MLD Controller

The MLD controller should lock the reset spindle when the pump is

stopped.

Minimum Delivery:

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

   (a) 1-litre rounding error for the 1-litre increment ticket printer;

   (b) 0,5-litre gas-purging error.

2. For a delivery other than that which empties the supply tank, the minimum delivery for which the relative error from all sources would not exceed 1,5% is 100 litres.

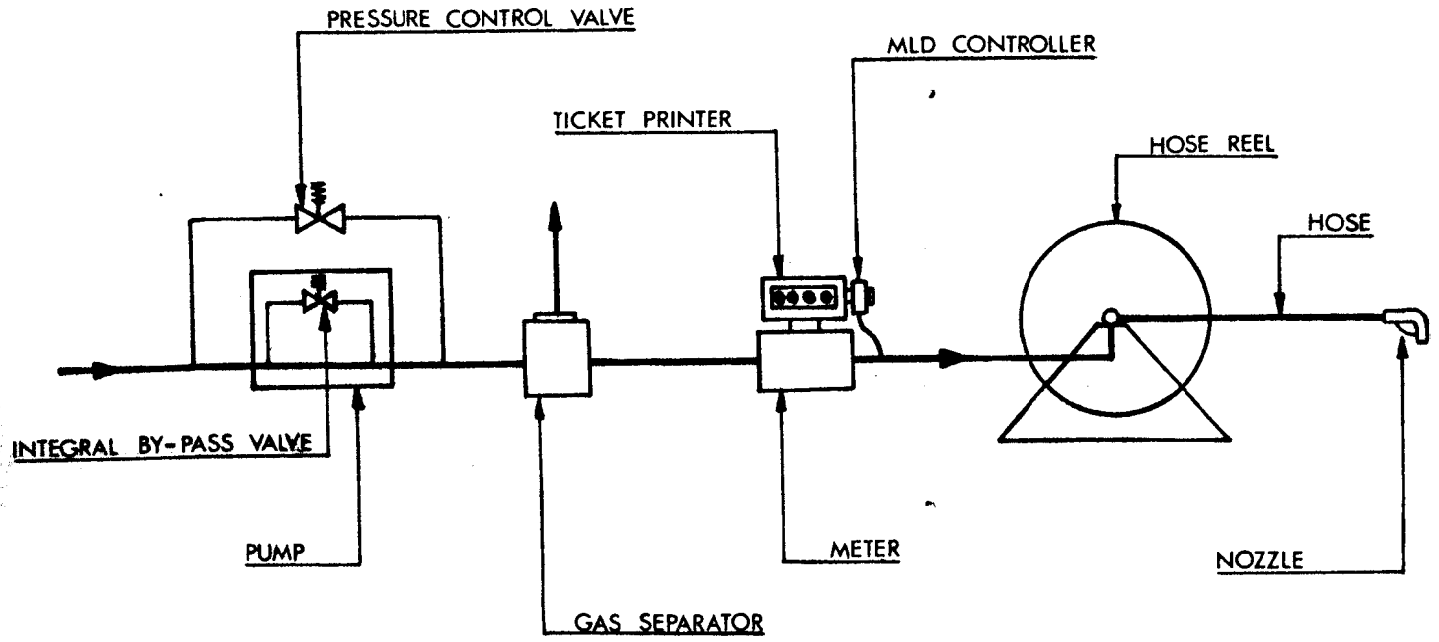
3. For a delivery which empties the supply tank, the minimum delivery for which the relative error from all sources, including the gas-purging error of 0,5 litre, would not exceed 2%* is 100 litres.

Gas Purging:

The effect of gas on the quantity delivered should not exceed 0,5 litre when the supply tank is allowed to run dry during a delivery. To test gas purging it will be necessary to allow the supply tank to empty during a test delivery, then stop the pump motor and refill or change the supply tank, and then start the pump motor to allow the delivery into the proving measure to be completed.

* This includes the 0,5% error permitted for gas separation.

FIGURE 5/6B/29 - 1



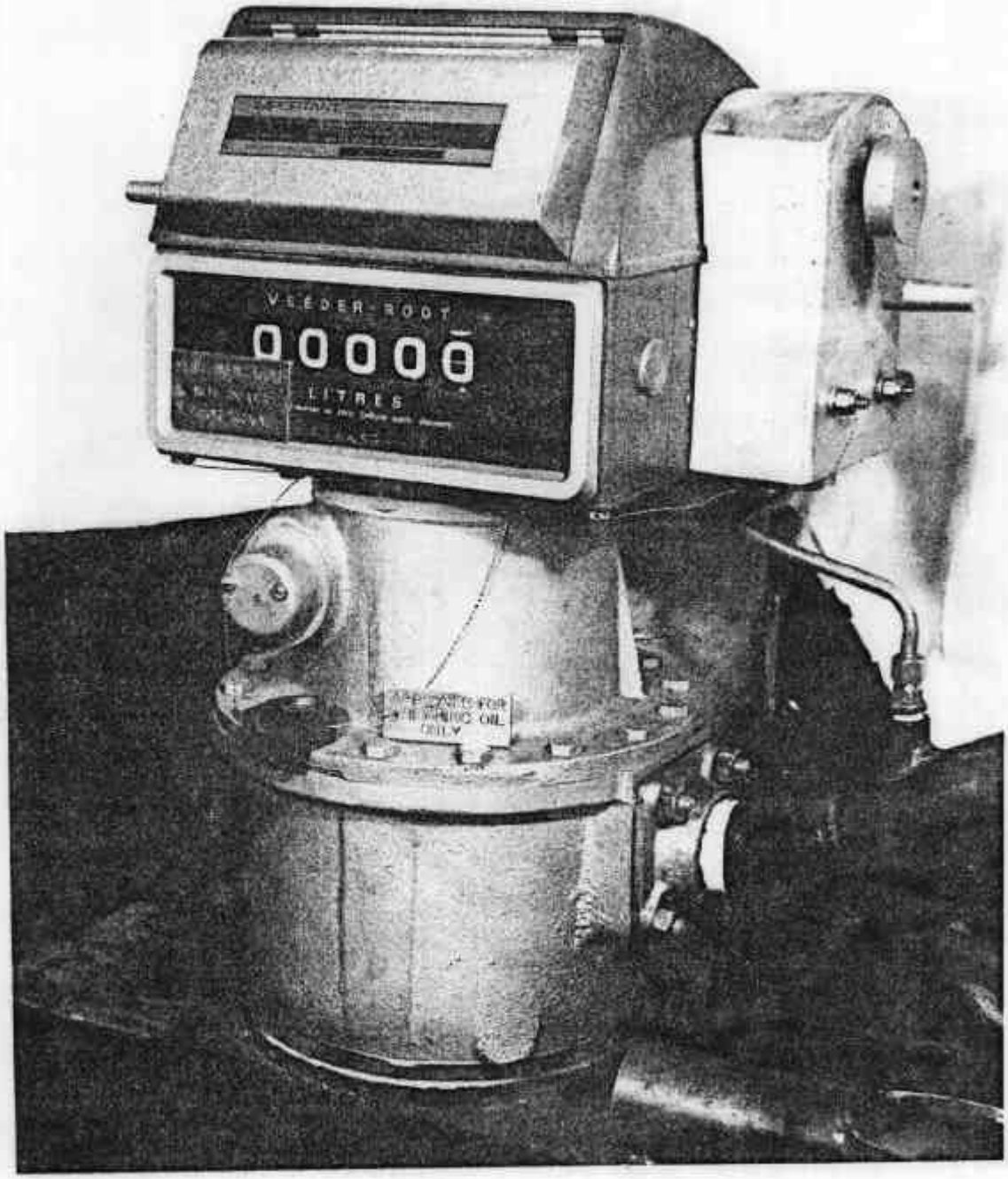
A. O. Smith T7 Flowmeter — Schematic Diagram

FIGURE 5/6B/29 - 2

A. O. Smith T7 Flowmeter

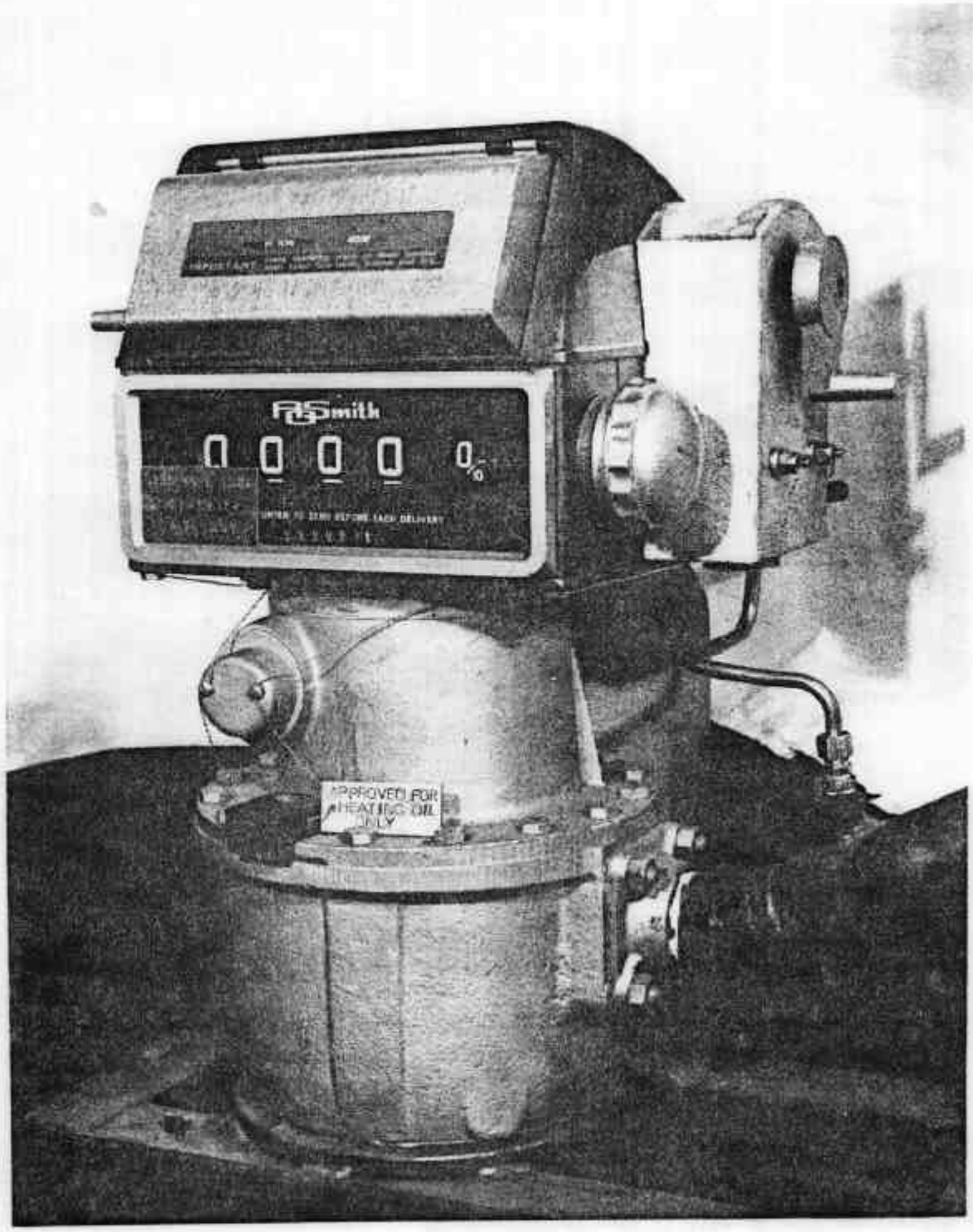
28/8/75

FIGURE 5/6B/29 - 3



T7 Flowmeter with VR 7085 Indicator and Ticket Printer

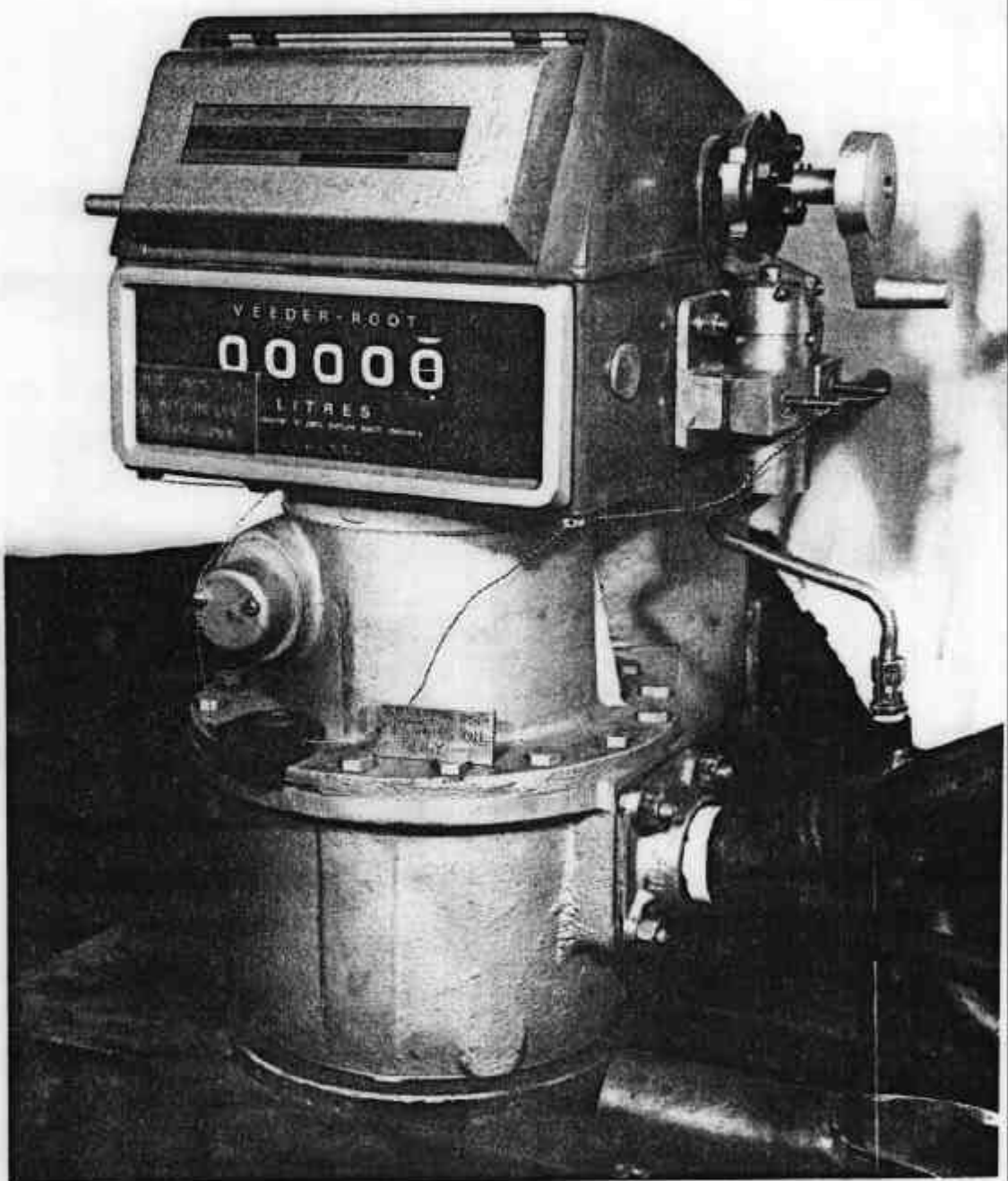
FIGURE 5/6B/29 - 4



T7 Flowmeter with VR 1624 Indicator and VR 1630 Ticket Printer

28/8/75

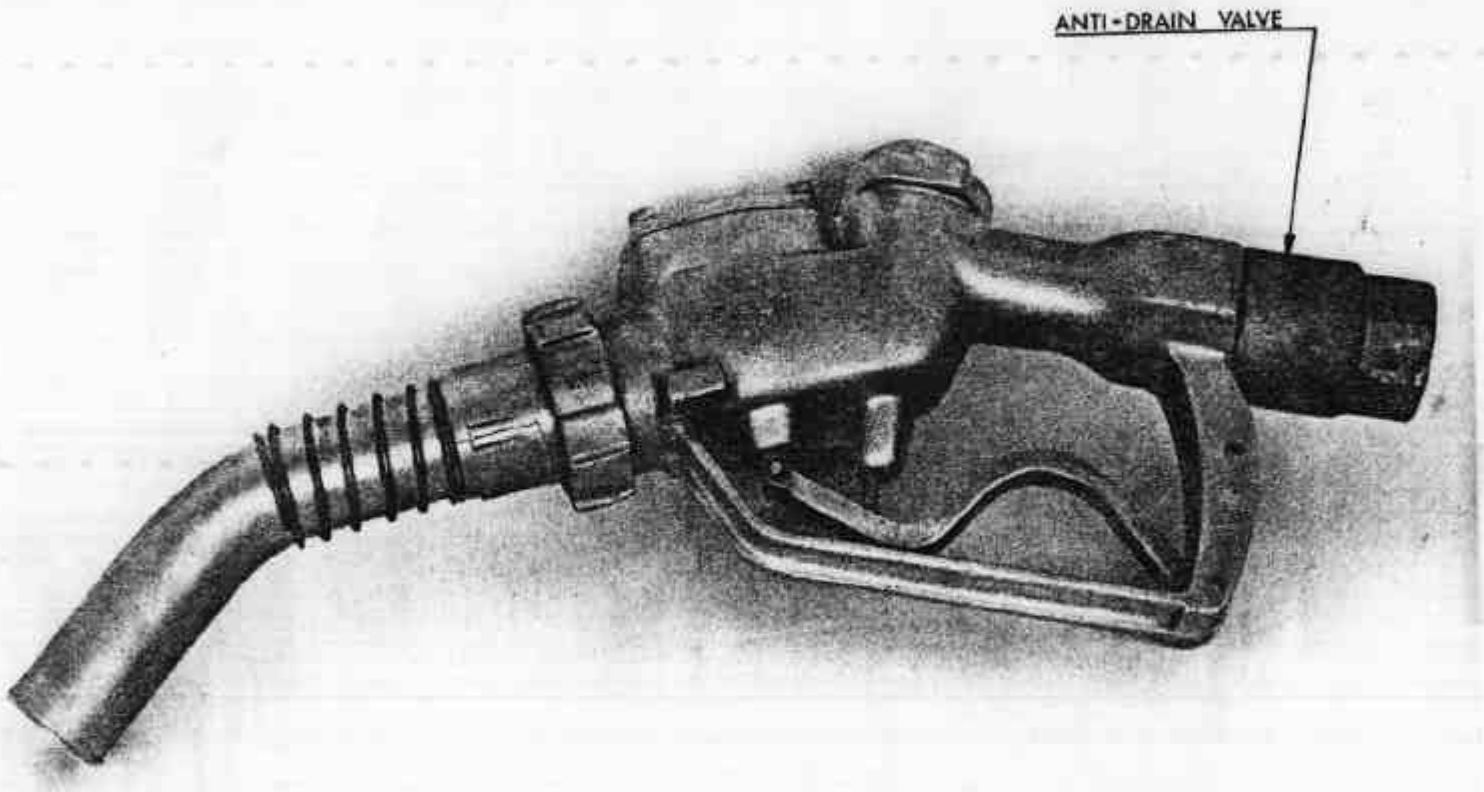
FIGURE 5/6B/29 - 5



MLD Controller — Cover Removed

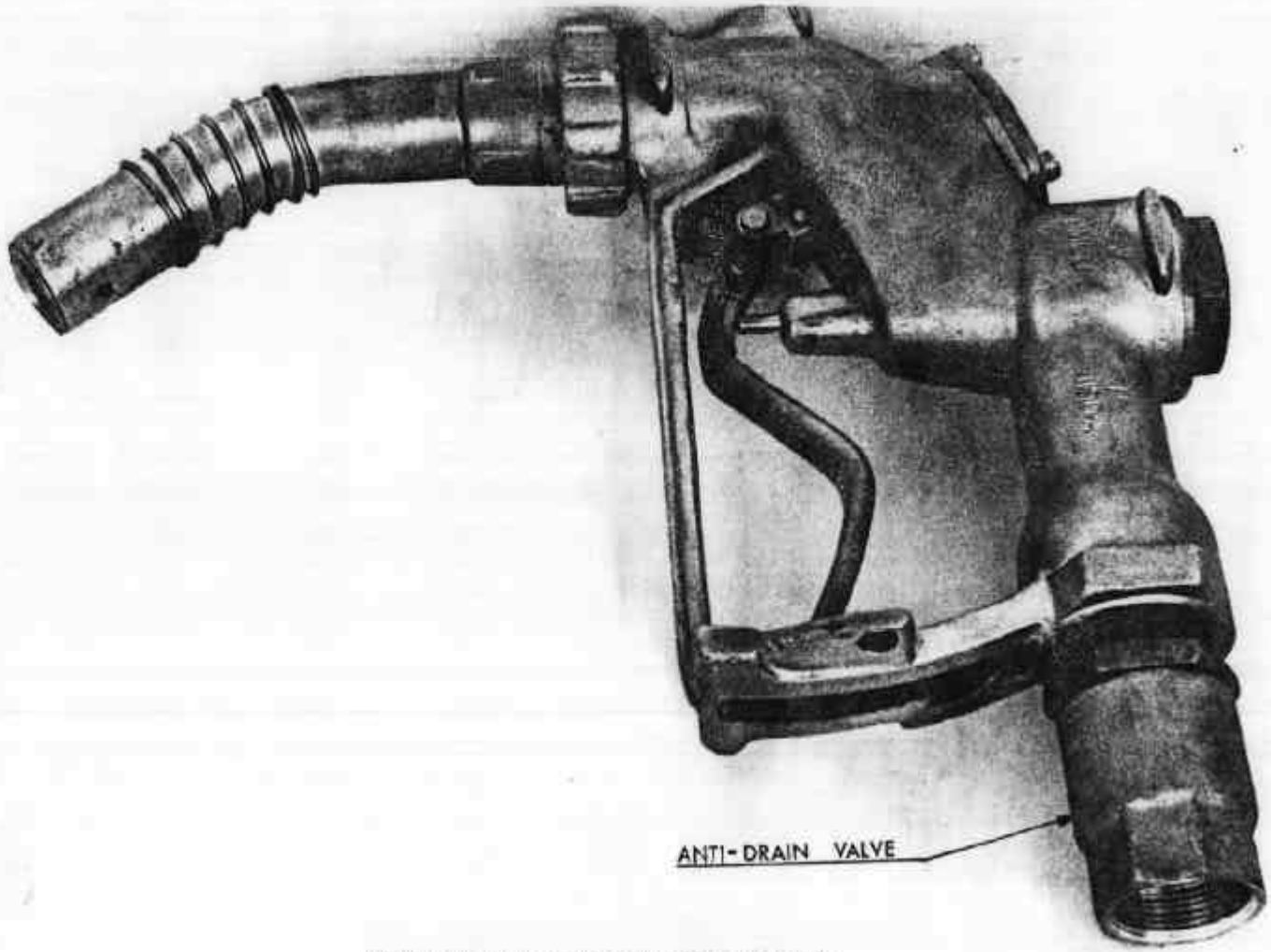
28/8/75

FIGURE 5/6B/29 - 6



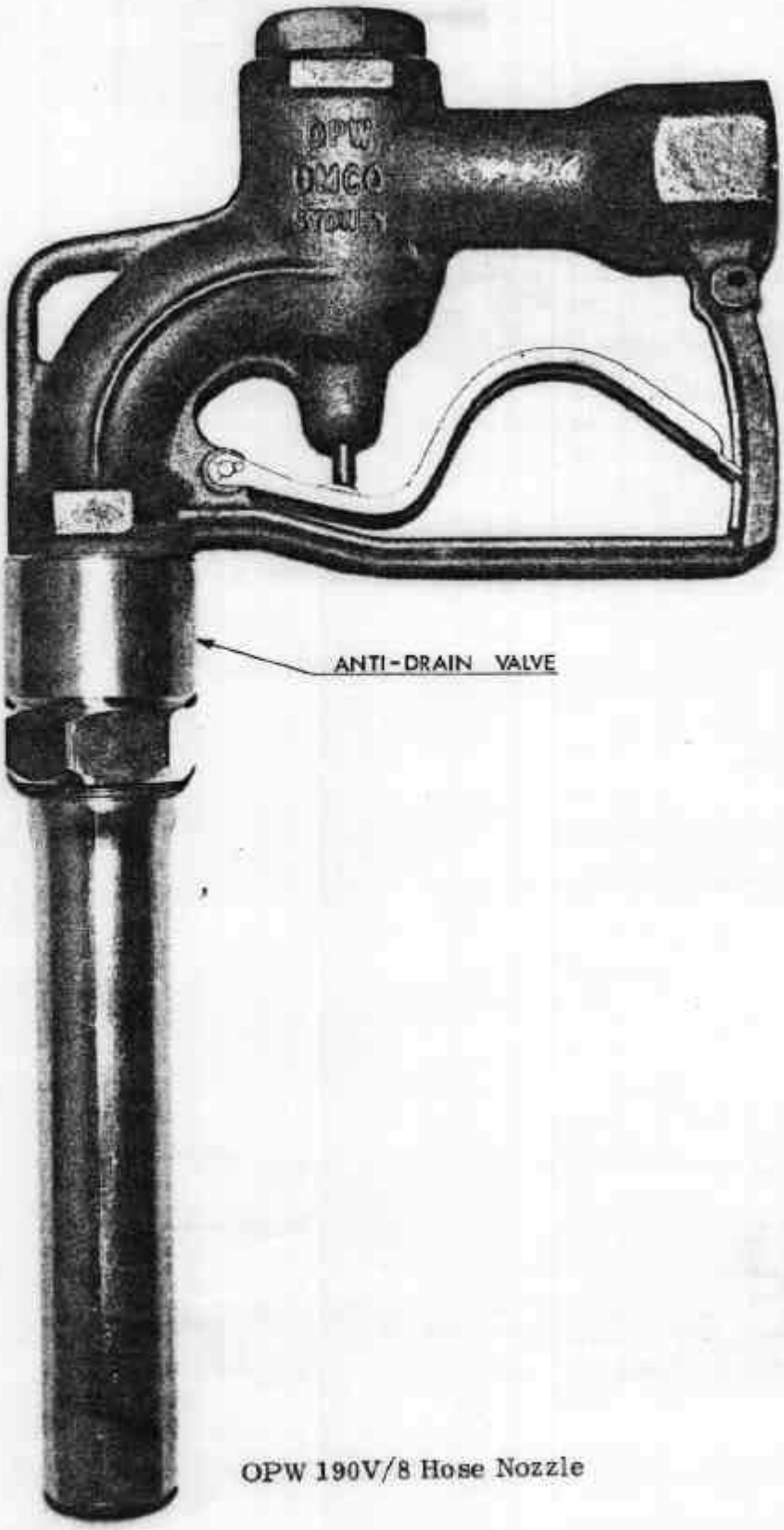
OPW 1A "1¼-inch" Automatic Hose Nozzle with External Anti-drain Valve

FIGURE 5/6B/29 - 7



OPW 1190AS Automatic Hose Nozzle
with External Anti-drain Valve

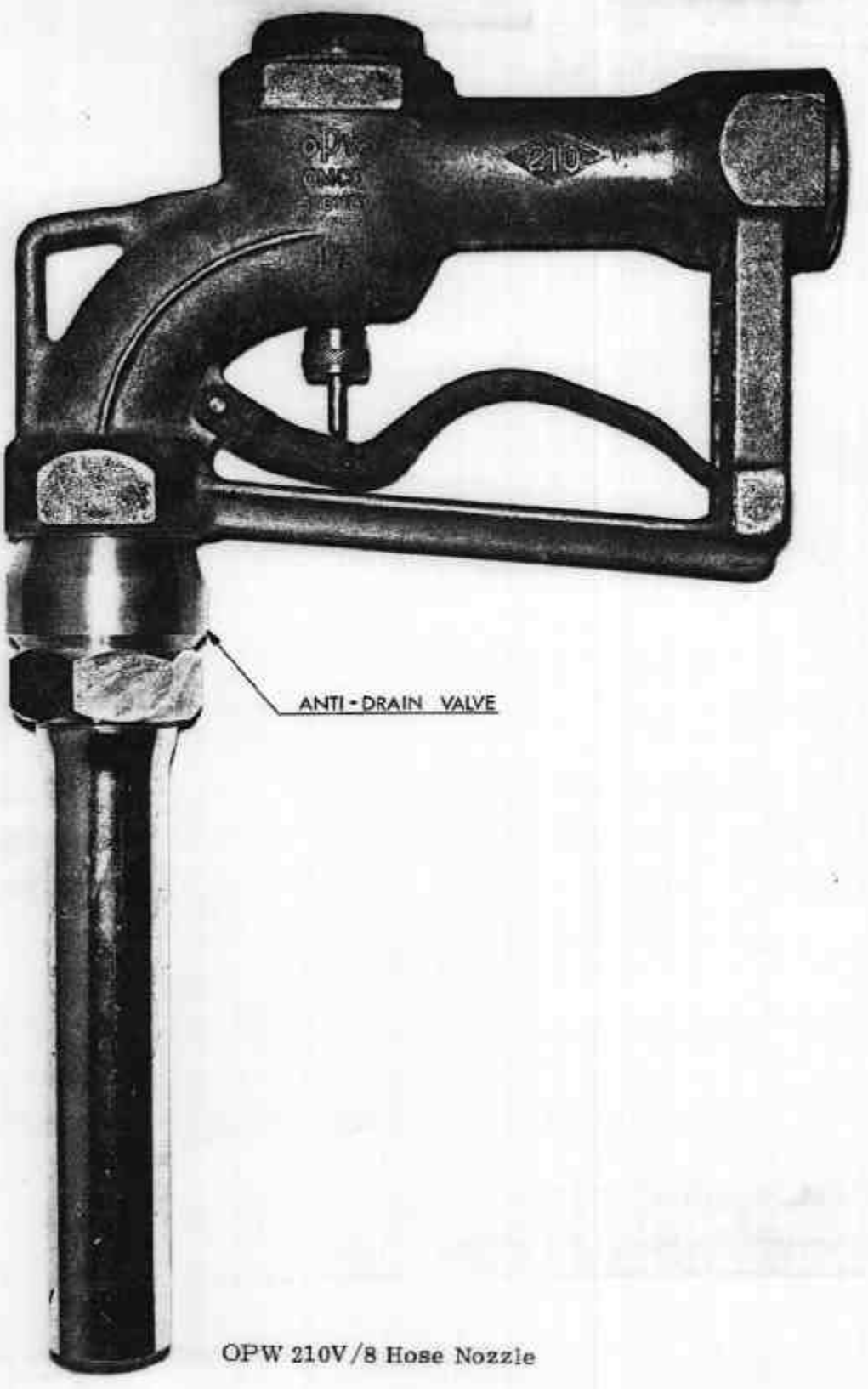
FIGURE 5/6B/29 - 8



OPW 190V/8 Hose Nozzle

28/8/75

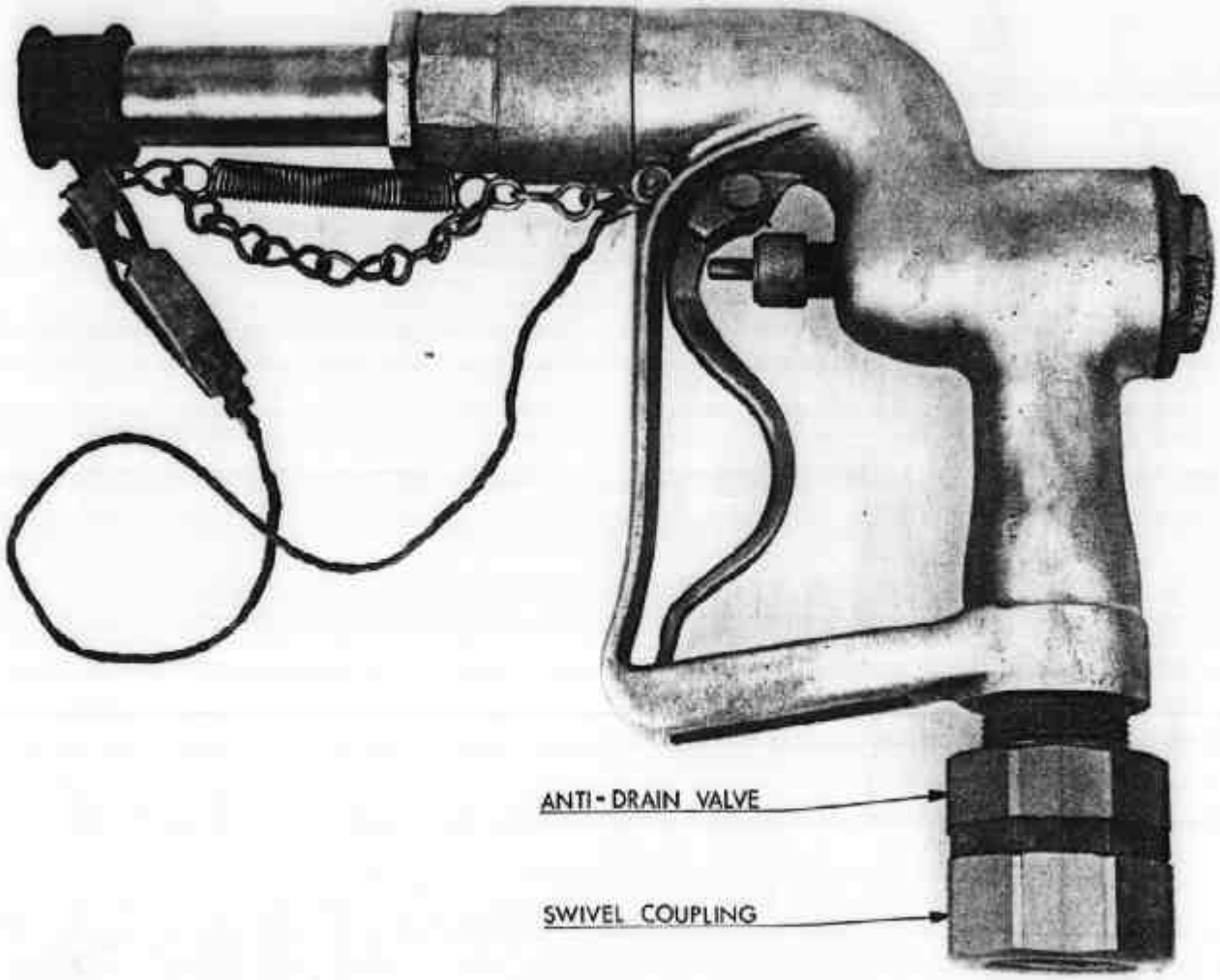
FIGURE 5/6B/29 - 9



OPW 210V/8 Hose Nozzle

28/8/75

FIGURE 5/6B/29 - 10



Gilbarco T279-0005 Hose Nozzle