

CERTIFICATE OF APPROVAL No 5/6D/28

This is to certify that the patterns of the

Acme A. O. Smith T11/T7 Flowmeter

submitted by Acme Oil Equipment Services Pty Ltd,
253 Ingles Street,
Port Melbourne, Victoria, 3207,

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

Date of Approval: 28 January 1976

The patterns are described in Technical Schedule No 5/6D/28, and in drawings and specifications lodged with the Commission.

The approval is subject to review on or after 1 January 1981.

All instruments conforming to this approval shall be marked with the approval number "NSC No 5/6D/28".

Approval is granted on condition that:

1. The flow rate is limited to a maximum of 180 l/min.
2. The maximum system pressure is limited to 480 kPa.
3. The pump suction operates under a positive liquid head.
4. The viscosity of the liquid to be measured is within the range 0,6 to 8,3 mPa.s.
5. The liquids for which the instrument is verified are nominated on the instrument data plate.

Signed



Executive Officer



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6D/28

Pattern: Acme A. O. Smith T11/T7 Flowmeters

Submittor: Acme Oil Equipment Services Pty Ltd,
253 Ingles Street,
Port Melbourne, Victoria, 3207.

Date of Approval: 28 January 1976

Conditions of Approval:

1. The flow rate is to be limited to a maximum of 180 l/min.
2. The maximum system pressure is to be limited to 480 kPa.
3. The pump suction is to operate under a positive liquid head.
4. The viscosity of the liquid being measured is within the range 0,6 to 8,3 mPa.s.
5. The liquids for which the instrument is verified are to be nominated on the instrument data plate.

All instruments conforming to this approval shall be marked "NSC No 5/6D/28".

Description:

The pattern (see Figure 1) is a vehicle-mounted instrument for the delivery of liquid petroleum of viscosity between 0,6 and 8,3 mPa.s at a maximum flow rate of 180 l/min and a maximum system pressure at no-flow of 480 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 slopes downward to the pump. The pump by-pass is set so that the maximum no-flow system pressure is 480 kPa.
2. A. O. Smith T11 gas separator (see Figure 2).

3. A. O. Smith T11 meter (see Figure 2).
4. Veeder-Root 7085 zero-start single-handle reset indicator and ticket printer (see 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 — 25-mm or 32-mm bore Nylex hose (see Tables 1 and 2).
7. Anti-drain valve (see Figures 3 and 4) — an 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 10 kPa and which is located downstream of the main nozzle valve, may be used.
9. Marking — instrument data plate(s) sealed to the instrument marked:
 - (a) "approved for kerosene, heating oil, distillate and similar products of viscosity between 0,6 and 8,3 mPa.s"; and
 - (b) "approved for a maximum hose ...x... mm by ...y... m"
where x is the bore of the hose in millimetres and y is the length in metres.
10. Sealing — the following parts of the system are sealed with a lead stamping plug:
 - (a) the meter and register,
 - (b) the instrument data plate.

The approval includes:

1. the meter and gas separator being an A. O. Smith T7 meter and gas separator (see Figure 5); and
2. the indicator being a Veeder-Root 1624 or 1558 zero-start indicator (see Figures 6 and 7). These indicators do not include a ticket printer.

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.

Minimum Delivery:

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 graduations;
 - (c) 1,0-litre gas-purging error; and
 - (d) x litres hose dilation, x being as listed in Tables 1 and 2, Column 2.
2. For a delivery other than that which empties the supply tank, the minimum deliveries for which the relative error from all sources would not exceed 1,5% are listed in Tables 1 and 2, Column 3.

For example, if the hose size marked on the instrument data plate is 32 mm x 30 m, the minimum delivery will be 150 litres with a ticket printer and 100 litres with an indicator only.

3. For a delivery which empties the supply tank, the minimum deliveries for which the relative errors from all sources including gas purging would not exceed 2%* are listed in Tables 1 and 2, Column 4.

Hose Dilation:

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

With the pump stopped and the hose unwound from the reel, open the nozzle to reduce the pressure in the hose to the anti-drain valve retaining pressure of about 55 kPa. Then 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

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

running, read the quantity on the indicator. This quantity is equal to the hose dilation.

Gas Purging:

The effect of gas on the quantity delivered should not exceed 1,0 litre when a delivery is interrupted due to the supply tank running dry, and the delivery 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.

TABLE 1

Minimum Delivery — Ticket Printer fitted

(a) 25-mm Nylex Hose

1	2	3	4
Length of hose	Hose dilation	Minimum delivery	Minimum delivery (Delivery which empties the supply tank)
metres	ml	litres	litres
0 - 10	250	100	125
10 - 20	500	125	150
20 - 30	750	150	150
30 - 45	1125	175	175
45 - 60	1500	200	200
60 - 70	1750	225	225

(b) 32-mm Nylex Hose

1	2	3	4
Length of hose	Hose dilation	Minimum delivery	Minimum delivery (Delivery which empties the supply tank)
metres	ml	litres	litres
0 - 10	300	100	125
10 - 20	600	125	150
20 - 30	900	150	175
30 - 40	1200	175	175
40 - 50	1500	200	200
50 - 60	1800	225	225
60 - 70	2100	250	250

TABLE 2

Minimum Delivery — Indicator only (no ticket printer)

(a) 25-mm Nylex hose

1	2	3	4
Length of hose	Hose dilation	Minimum delivery	Minimum delivery (Delivery which empties the supply tank)
metres	ml	litres	litres
0 - 10	250	25	75
10 - 20	500	50	100
20 - 30	750	75	125
30 - 40	1000	100	125
40 - 50	1250	125	150
50 - 60	1500	150	150
60 - 70	1750	175	175

(b) 32-mm Nylex hose

1	2	3	4
Length of hose	Hose dilation	Minimum delivery	Minimum delivery (Delivery which empties the supply tank)
metres	ml	litres	litres
0 - 10	300	50	75
10 - 20	600	75	100
20 - 30	900	100	125
30 - 40	1200	125	150
40 - 50	1500	150	150
50 - 60	1800	175	175
60 - 70	2100	200	200



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6D/28

VARIATION No 1

Pattern: Acme Flowmeter with A. O. Smith T11/T7 Meter

Submittor: Acme Oil Equipment Services Pty Ltd,
253 Ingles Street,
Port Melbourne, Victoria, 3207.

Date of Approval of Variation: 14 December 1976

The modification described in this Schedule applies to the patterns described in Technical Schedule No 5/6D/28 dated 9 November 1976.

All instruments conforming to this approval shall be marked "NSC No 5/6D/28".

Description:

The approved modification provides for any type, bore or length of hose provided that the minimum delivery* determined from Table 3 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.

Special Tests:

Hose Dilation:

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

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.

* The minimum delivery should not be less than 100 times the gas-purging error.

TABLE 3

Minimum delivery (Indicator only - no ticket printer fitted)	Minimum delivery (ticket printer fitted)	Maximum permitted nose dilation
ƒ	ƒ	ml
25	100	50
50	125	300
75	150	500
100	175	800
125	200	1000
150	225	1300
175	250	1500
200	275	1800
225	300	2000
250	325	2300
275	350	2500
300	375	2800
325	400	3000
350	425	3300
375	450	3500
400	475	3800
425	500	4000
450	525	4300
475	550	4500
500	575	4800

CERTIFICATE OF APPROVAL No 5/6D/28

VARIATION No 2

This is to certify that the following modification of the patterns of the

Acme Flowmeter with A. O. Smith T11/T7 Meter

approved in Certificate No 5/6D/28 dated 9 November 1976 and
subsequent variation

submitted by Acme Oil Equipment Services Pty Ltd,
253 Ingles Street,
Port Melbourne, Victoria, 3207,

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

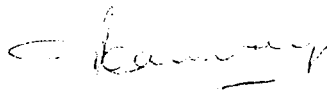
Date of Approval: 28 June 1977

The approved modification, described in Technical Schedule No 5/6D/28 -
Variation No 2 and in drawings and specifications lodged with the Commission,
provides for the delivery of petrol of viscosity between 0,4 and 0,7 mPa.s at
a maximum flow rate between 150 and 250 litres per minute.

The approval is subject to review on or after 1 January 1981.

All instruments conforming to this approval shall be marked with the
approval number "NSC No 5/6D/28".

Signed



Executive Officer

CANCELLED



NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 5/6D/28

VARIATION No 2

Pattern: Acme Flowmeter with A. O. Smith T11/T7 Meter

Submittor: Acme Oil Equipment Services Pty Ltd,
253 Ingles Street,
Port Melbourne, Victoria, 3207.

Date of Approval of Variation: 28 June 1977

The modification described in this Schedule applies to the patterns described in Technical Schedule No 5/6D/28 dated 9 November 1976 and Technical Schedule No 5/6D/28 - Variation No 1 dated 27 January 1977.

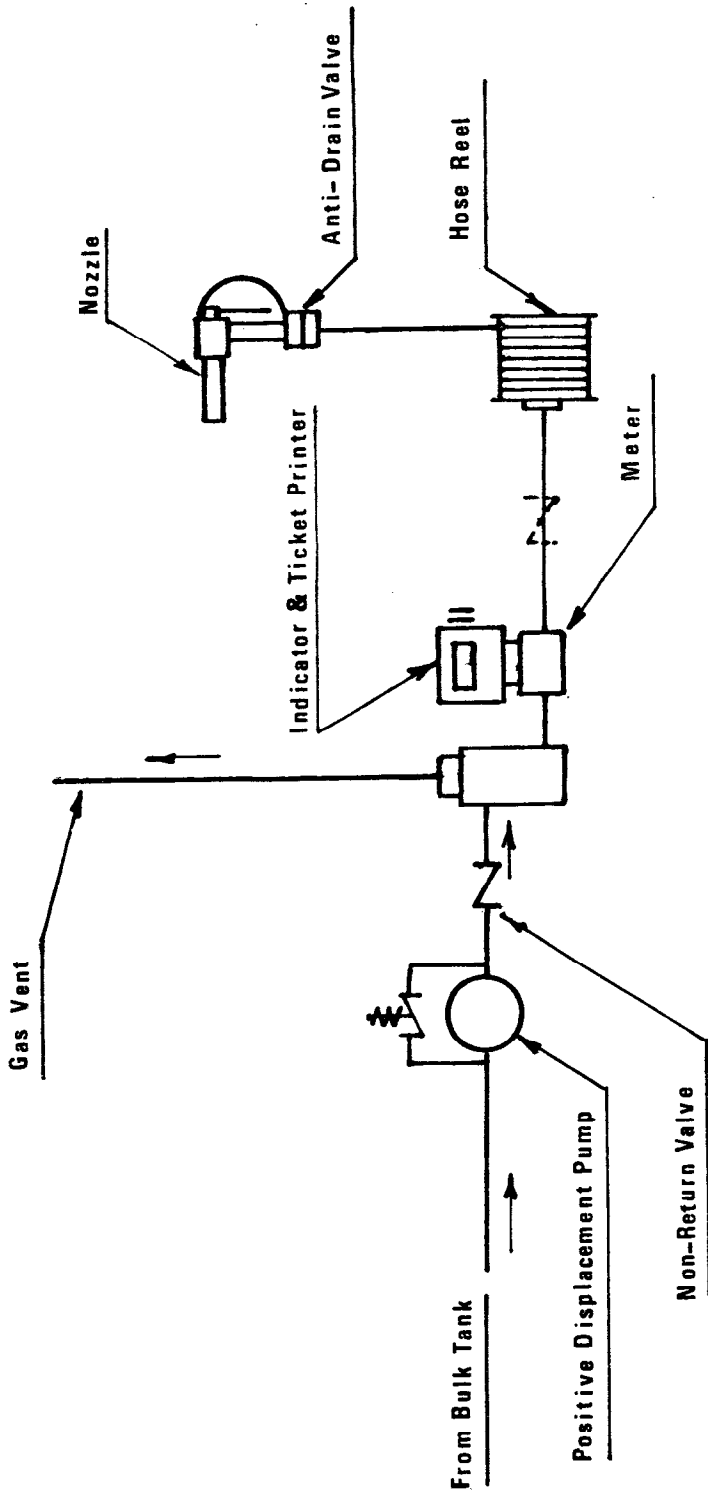
All instruments conforming to this approval shall be marked "NSC No 5/6D/28".

Description:

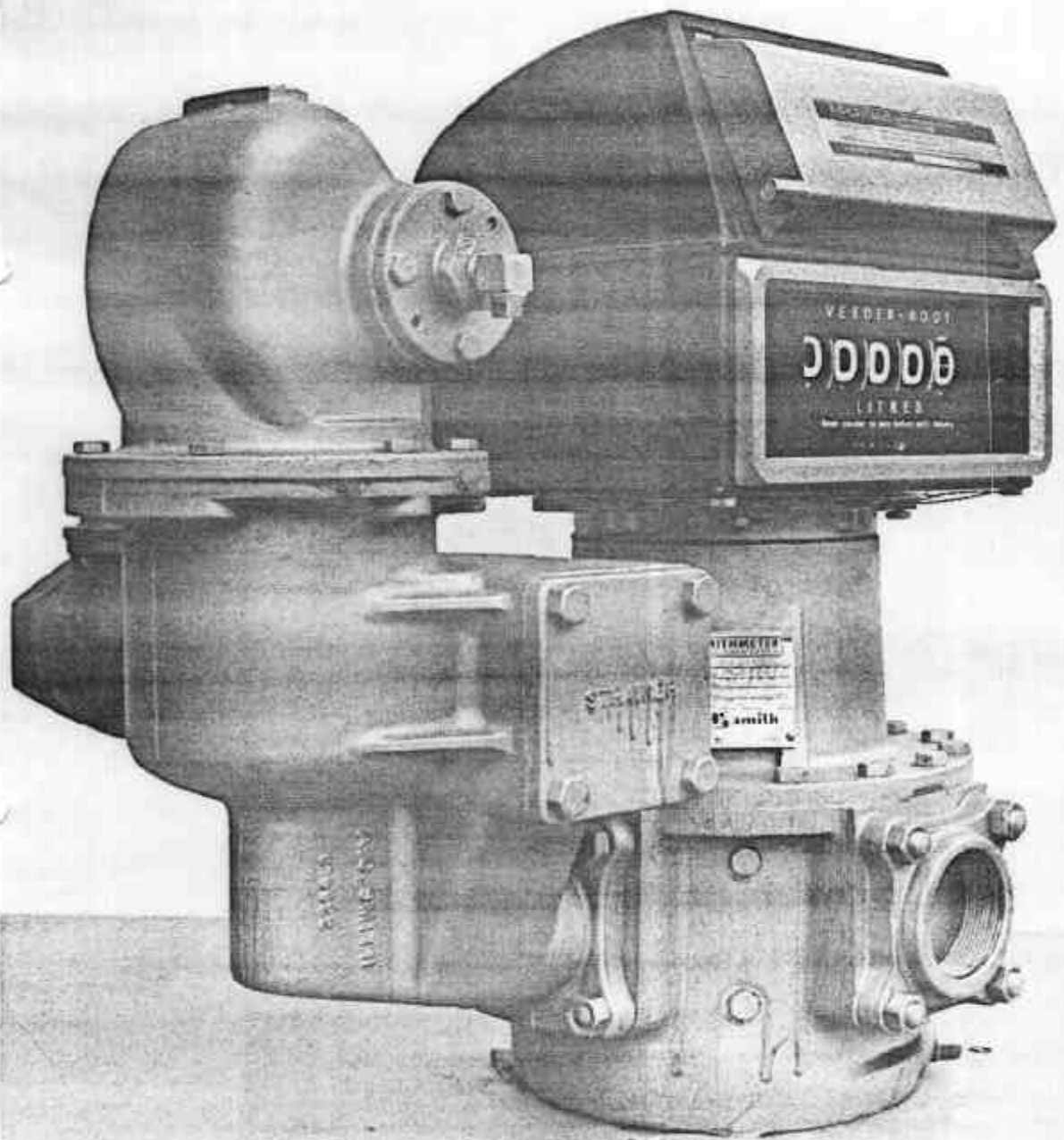
The approved modification provides for the delivery of petrol (viscosity 0,4 to 0,7 mPa.s) at a maximum flow rate between 150 and 250 litres per minute. The instrument data plate sealed to the instrument is marked "approved for petrol".

18/7/77

FIGURE 5/6D/28 - 1



Acme A. O. Smith T11/T7 Flowmeter



T11 Meter, Gas Separator and Veeder-Root 7085 Indicator
and Ticket Printer

9/11/76

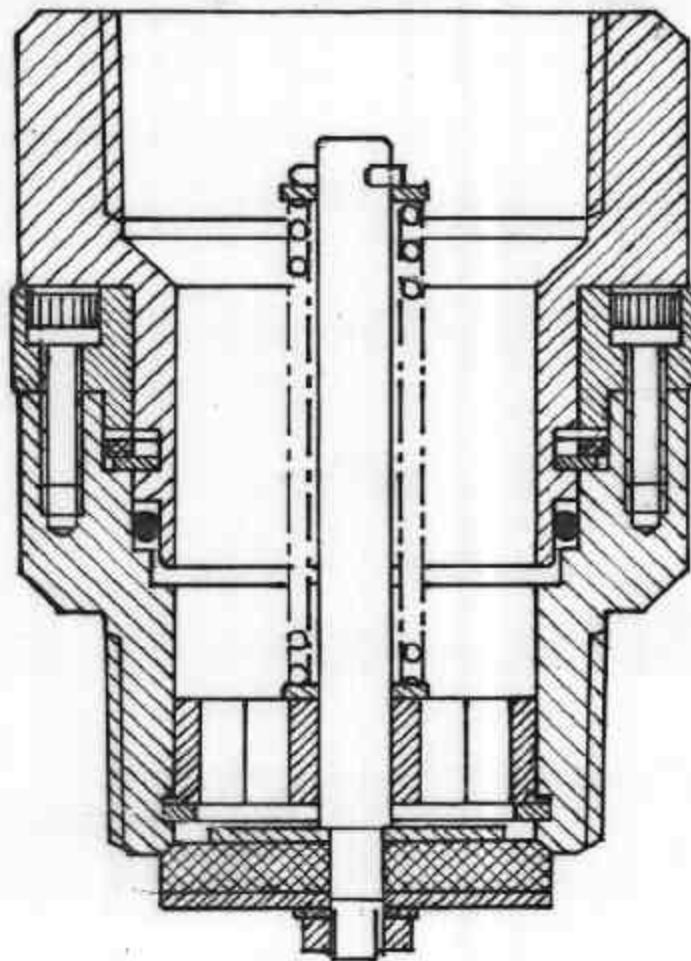
FIGURE 5/6D/28 - 3



Anti-drain Valve and Swivel Coupling

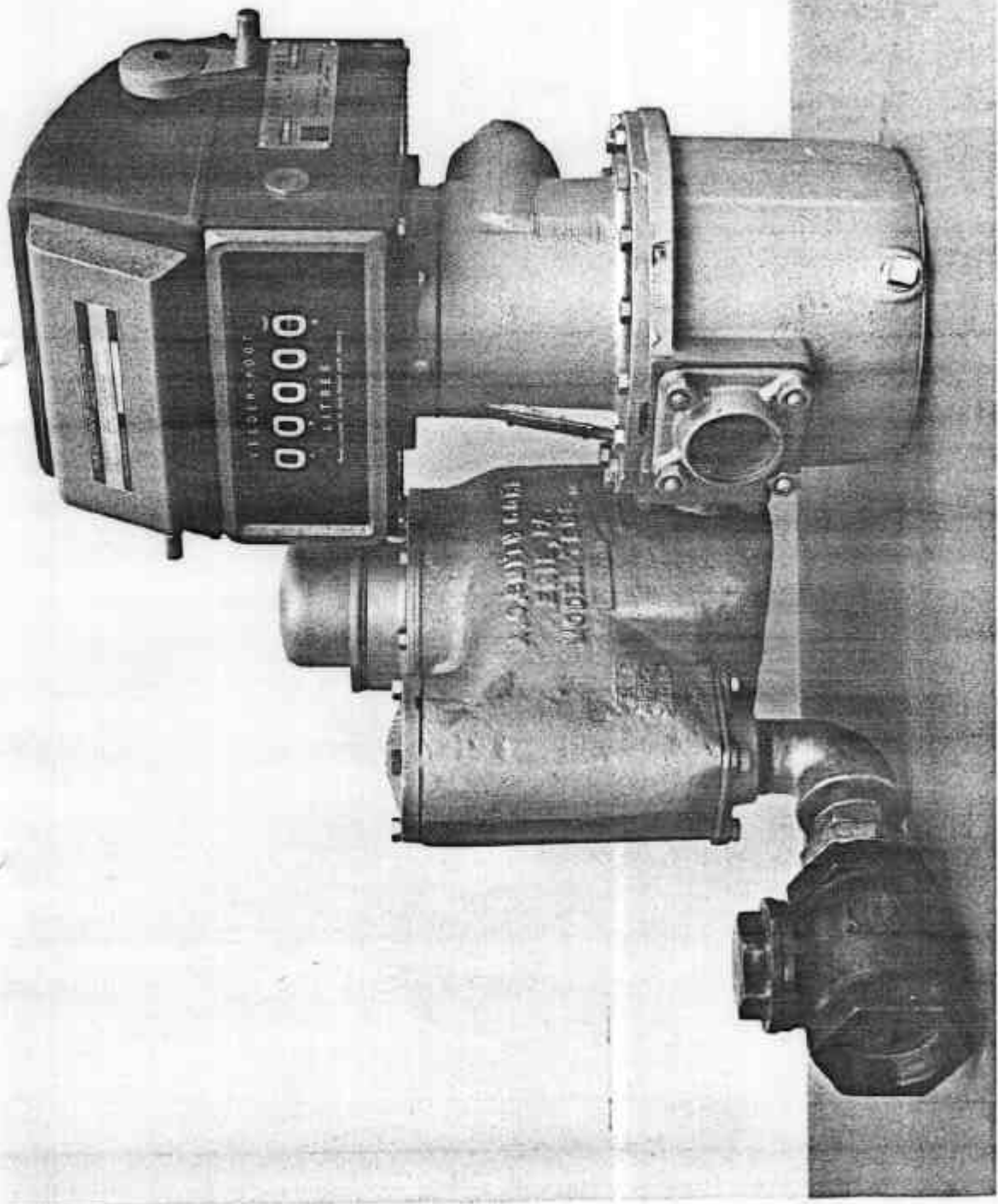
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FIGURE 5/6D/28 - 4



Anti-drain Valve and Swivel Coupling

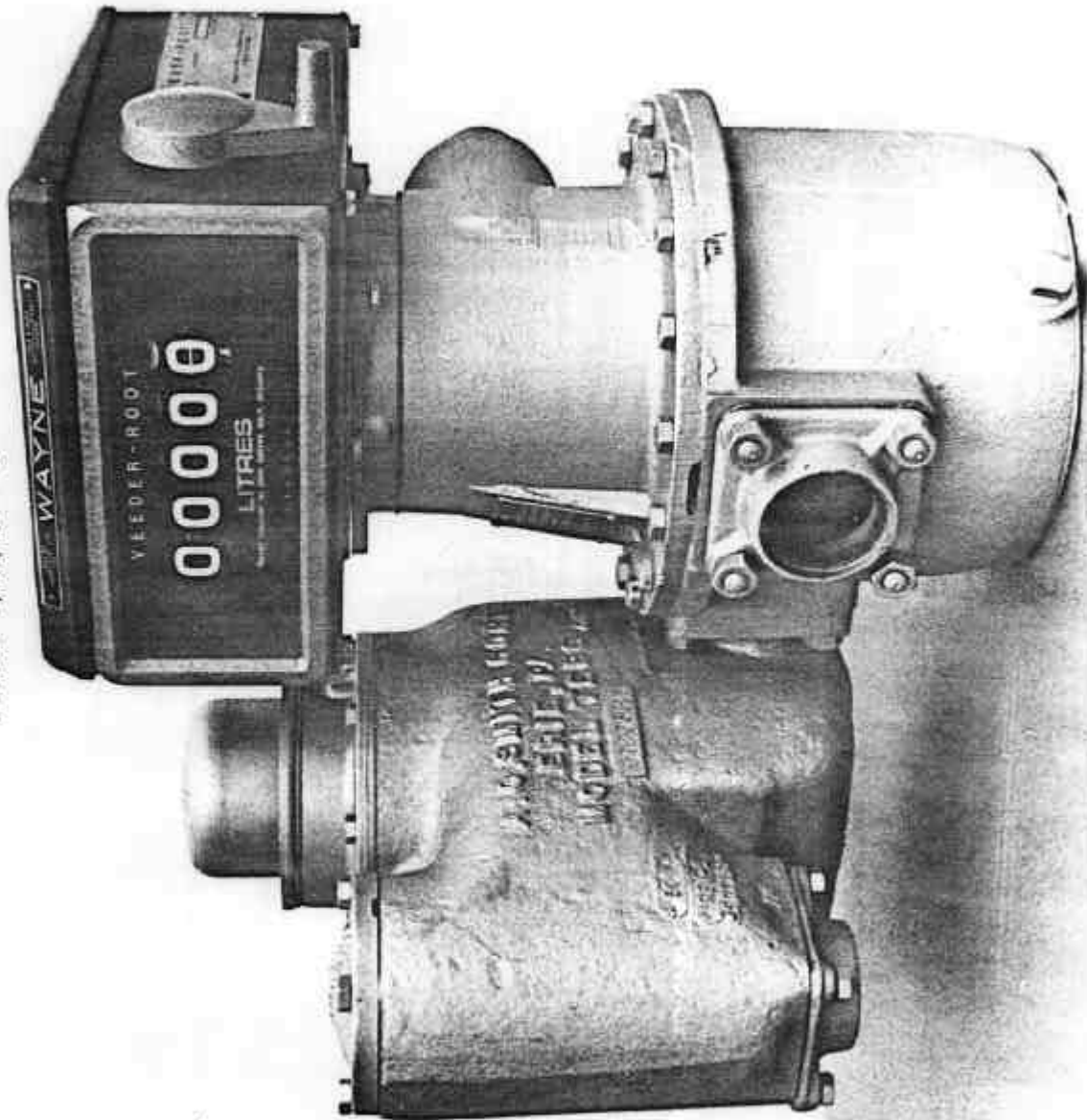
FIGURE 5/6D/28 - 5



T7 Meter, Gas Separator and Veeder-Root 7085 Indicator and Ticket Printer

9/11/76

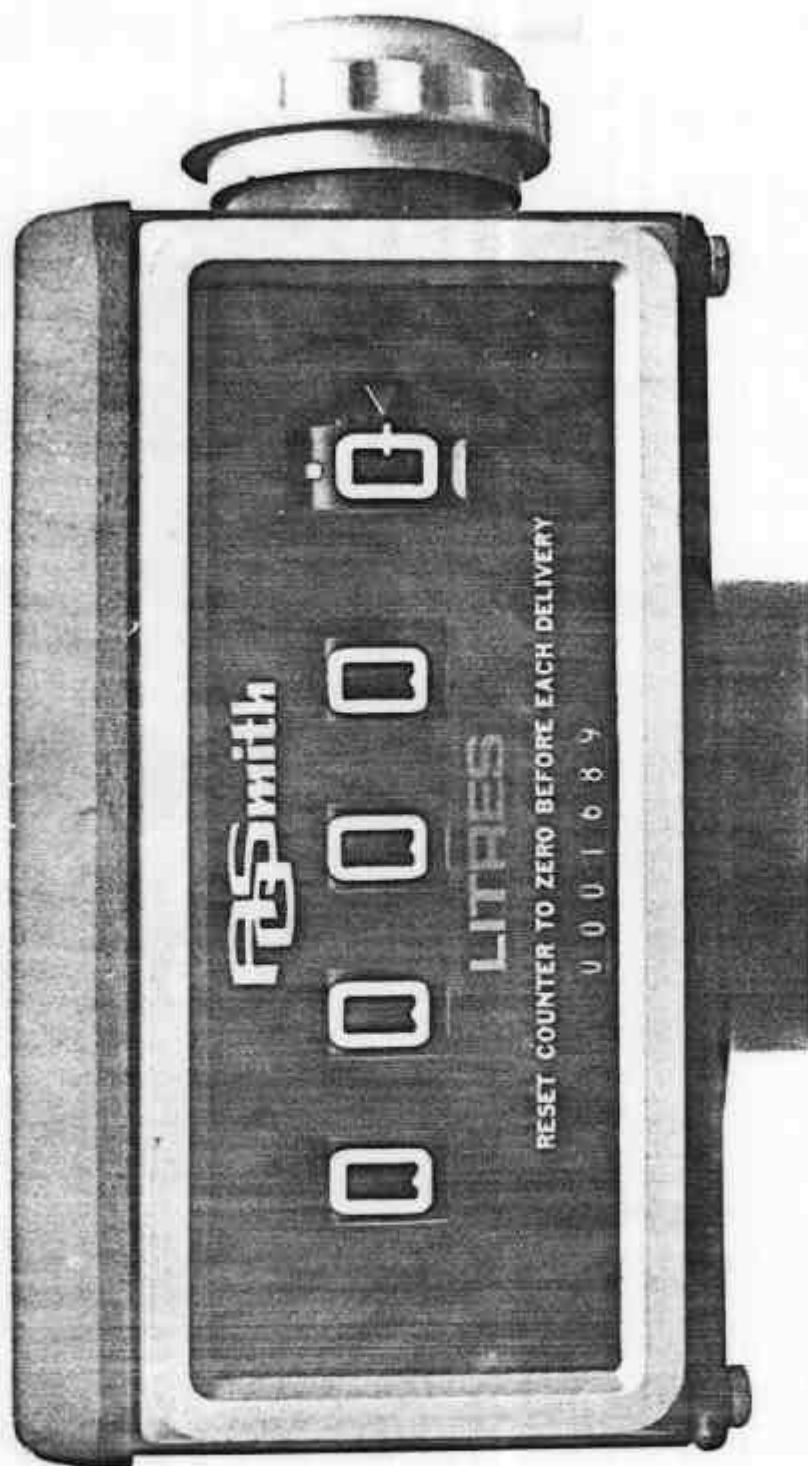
FIGURE 5/6D/28 - 6



T7 Meter, Gas Separator and Veeder-Root 1624 Indicator

9/11/76

FIGURE 5/6D/28 - 7



Veeder-Root 1558 Indicator

9/11/76