5/6A/90
11 September 2000

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Cancellation
Certificate of Approval No 5/6A/90

This is to certify that the approval for use for trade granted in respect of the

Compac Industries Model M80C Driveway Flowmeter

submitted by Compac Industries Limited
52 Walls Road
Penrose Auckland
NEW ZEALAND

has been cancelled in respect of new instruments as from 1 October 2000.

Instruments which were verified/certified before that date may, with the concurrence of the relevant verifying authority, be submitted for reverification.

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

National Standards Commission

Certificate of Approval

No 5/6A/90

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

Compac Industries Model M80C Driveway Flowmeter

submitted by Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

CONDITIONS OF APPROVAL

This approval is subject to review on or after 1/8/96.
This approval expires in respect of new instruments on 1/8/97.

Instruments purporting to comply with this approval shall be marked NSC No 5/6A/90 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.

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The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

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

DESCRIPTIVE ADVICE

Pattern: approved 22/7/91

- A Compac Industries model M80C driveway flowmeter approved for use to dispense various grades of petrol in attendant-operated or locally-authorised applications.

Variant: approved 22/7/91

1. Other models and configurations, identified using Table 1.

Variant: provisionally approved 22/7/91 - approved 2/9/91

2. For use with distillate, kerosene or Jet A1, in which case a gas detection system is fitted.

Variants: approved 2/9/91

3. Other models, as listed in Table 2.

4. Displaying volume (litres) only.

Variant: provisionally approved 2/9/91 - approved 24/1/94

5. With certain submersible turbine pumps.

Technical Schedule No 5/6A/90 describes the pattern and variants 1 to 5.

Variant: approved 10/2/92

6. With an integral printer.

Technical Schedule No 5/6A/90 Variation No 1 describes variant 6.

Variant: approved 14/8/92

7. With a Bennet type SB 100 model N7235-04 meter.

Variant: approved 2/10/92

8. With 4 meters and displays in the same housing.

Technical Schedule No 5/6A/90 Variation No 2 describes variants 7 and 8.

Variant: approved 22/10/93

9. Certain EMPEROR model driveway flowmeters.

Technical Schedule No 5/6A/90 Variation No 3 describes variant 9.

Variants: approved 18/11/93

10. Certain HILINE model driveway flowmeters.

11. With a Compac model COM125 meter.

Technical Schedule No 5/6A/90 Variation No 4 describes variants 10 and 11.

FILING ADVICE

Certificate of Approval No 5/6A/90 dated 15/11/93 is superseded by this Certificate and may be destroyed.

Note: The Provisional status and conditions of variant 5 are hereby removed.

The documentation for this approval now comprises:

Certificate of Approval No 5/6A/90 dated 14/3/94
Technical Schedule No 5/6A/90 dated 15/11/91 (incl. Tables 1 & 2, and Test Procedure)
Technical Schedule No 5/6A/90 Variation No 1 dated 15/6/92 (incl. Notification of Change)
Technical Schedule No 5/6A/90 Variation No 2 dated 30/10/92
Technical Schedule No 5/6A/90 Variation No 3 dated 15/11/93
Technical Schedule No 5/6A/90 Variation No 4 dated 14/3/94 (incl. Table 3 & Notification of Change)
Figures 1 to 8 dated 15/11/91
Figures 9 and 10 dated 30/10/92
Figure 11 dated 15/11/93
Figures 12 to 16 dated 14/3/94

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.

J. Burch

National Standards Commission

TECHNICAL SCHEDULE No 5/6A/90

Pattern: Compac Industries Model M80C Driveway Flowmeter.

Submittor: Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

1. Description of Pattern

A Compac Industries model M80C driveway flowmeter (Figures 1 and 2) approved for use to dispense various grades of petrol (including Avgas) over a flow rate range of 15 to 80 L/min, in attendant-operated or locally-authorised applications.

1.1 Features

The model M80C has the following components or features:

- A Bennet type 75 model 190701 pump/strainer/gas separator.
- A Bennet type 40 model H607001 4-piston positive displacement meter.
- A Compac model CU C3000-3CH pulse generator.
- A Compac model C3000-BM price-computing indicator.
- Any Commission-approved nozzle.
- A Compac model CC1200 or CC4800 central controller and/or a management printer may also be connected.

The flowmeter may be fitted with a card-reader and/or a keypad for entering a personal identification number (PIN) to activate the flowmeter.

1.2 Indicator

The model C3000H indicator comprises a computing unit and separate display units. Each computing unit may be connected with up to 3 single or double-sided display units. The indicator has maximum unit price of 9.999 $/L and maximum total price of $999.99 or of $9999.99.

1.3 Central Controller

The optional model CC1200 or CC4800 central controller (Figure 3) which may be connected to up to 16 driveway flowmeters, may be used to centrally set the unit price of up to 15 grades of fuel and for other management functions.

Figure 4 shows a typical system.

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1.4 Sealing and Verification/Certification Provision

Provision is made for the application of a verification/certification mark. The meter calibration is sealed.

1.5 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/90
Maximum flow rate	..... L/min
Minimum flow rate	..... L/min
Liquid temperature range	5°C to 40°C
Operating (air) temperature range	-10°C to 45°C
Maximum operating pressure	..... kPa
Approved for use with (products)	.....

2. Description of Variants

2.1 Variant 1

Certain other models and configurations, identified using Table 1, and including the following instruments:

- In alternative ("retail") housings e.g. model C80 (Figure 5).
- With 2 metering systems in the same housing e.g model CC80 (Figure 6).
- With a maximum flow rate of 40 L/min e.g model CC40.
- With a preset facility e.g model CC40P. The preset facility uses solenoid valves to slow down and cut off the flow.

2.2 Variant 2

For use with distillate, kerosene or Jet A1, in which case a gas detection system is fitted.

2.3 Variant 3

Certain other models in alternative housings (Figure 7), and listed in Table 2.

2.4 Variant 4

With the indicator displaying volume (litres) only, provided the instrument carries a notice stating "NOT TO BE USED FOR TRADING DIRECT WITH THE PUBLIC", or "NOT FOR PUBLIC USE" (or similar wording), in capital letters not less than 6 mm high, either on or adjacent to each reading face.

2.5 Variant 5

With one or more Red Jacket model P75S3-3 or P150S3-3 submersible turbine pumps and with one or more Red Jacket model 116-030-5 PLD or 216-004 leak detectors (Figure 8).

TABLE 1 - Approved Models and Configurations - Variant 1

*	FRAME TYPE:
C	Retail, 1 meter, 1 computing unit, 2 displays.
CC	Retail, 2 meters, 1 computing unit, 2 displays.
M	Commercial, 1 meter, 1 computing unit, 2 displays.
MM	Commercial, 2 meters, 2 computing units, 2 displays.
MME	Commercial, 2 meters, 1 computing unit, 2 displays.
P	Commercial (upmarket), 1 meter, 1 computing 1 computing unit, 2 displays.
PP	Commercial (upmarket), 2 meters, 2 computing units, 2 displays.
PPE	Commercial (upmarket), 2 meters, 1 computing unit, 2 displays.
*	MAXIMUM FLOW RATE:
40	40 L/min.
80	80 L/min.
*	PUMP TYPE: (Blank if self-contained pump used)
D	1 pump, 2 meters.
S	Submersible turbine pump.
*	OPTIONS:
P,C,...	Various codes for options including preset and cardreader.

e.g. M80 C (the pattern)

TABLE 2 - Approved Models and Configurations - Variant 3

Model	Version	Features
EURO	MHD4A	4 meters, 2 computing units, 4 displays.
EURO	MHD6A	6 meters, 3 computing units, 6 displays.
EURO	MHP4A	4 meters, 2 computing units, 4 displays.
EURO	MHP6A	6 meters, 3 computing units, 6 displays.
LOLINE	MHD4A	4 meters, 2 computing units, 4 displays.
LOLINE	MHD6A	6 meters, 3 computing units, 6 displays.

NOTE: ##D## versions use submersible turbine pumps.
##P## versions use self-contained pumps.

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 is optional i.e. it is not mandatory for verification/ certification.

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 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 all hoses connected to a particular submerged turbine pump. Check that the slowest 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.

National Standards Commission

TECHNICAL SCHEDULE No 5/6A/90

VARIATION No 1

Pattern: Compac Industries Model M80C Driveway Flowmeter.

Submittor: Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

1. Description of Variant 6

With an integral receipt printer for use only by authorised card holders.

NOTIFICATION OF CHANGE

1. The following changes are made to the descriptions given in Technical Schedule No 5/6A/90 dated 15/11/91:

(a) In clause **1.1 Features**, the reference to the model of price-computing indicator should be amended by changing the suffix, so that it now reads "model C3000H".

(b) In clause **1.4 Sealing**, the 2nd sentence should be replaced by;

> "The mechanical calibrator for the meter, and the K-factor switch which is located on the indicator electronics board, are both sealed."

2. The Test Procedure issued as part of Technical Schedule No 5/6A/90 dated 15/11/91 is amended as follows:

(a) In Test 1, replace the 'Note' with the following:

> "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."

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(b) In Test 2, replace the first paragraph with the following:

"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."

National Standards Commission

TECHNICAL SCHEDULE No 5/6A/90

VARIATION No 2

Pattern: Compac Industries Model M80C Driveway Flowmeter.

Submittor: Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

1. Description of Variants

1.1 Variant 7

With a Bennet type SB 100 model N7235-04 4-piston meter (Figure 9) instead of the meter described for the pattern.

This meter, like that it replaces, is approved for use over a flow rate range of 15 to 80 L/min.

1.2 Variant 8

With 4 meters and displays in the same housing and known as model CC40Q (Figure 10) or, when used with a submersible turbine pump, as model CC40SQ.

National Standards Commission

TECHNICAL SCHEDULE No 5/6A/90

VARIATION No 3

Pattern: Compac Industries Model M80C Driveway Flowmeter.

Submittor: Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

1. Description of Variant 9

Any version of the EURO models listed in Table 2 (in Technical Schedule No 5/6A/90 dated 15/11/91) in an alternative housing (Figure 11) and known as EMPEROR models.

The version number listed in Table 2 now has an 'E-' prefix, e.g. EURO MHD4A becomes EMPEROR E-MHD4A.

National Standards Commission

TECHNICAL SCHEDULE No 5/6A/90

VARIATION No 4

Pattern: Compac Industries Model M80C Driveway Flowmeter.

Submittor: Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

1. Description of Variants

1.1 Variant 10

Certain versions and configurations as listed in Table 3, with components of the pattern in alternative housings (Figures 12 and 13) and known as the HILINE series.

Instruments may also be fitted with the Bennet type SB 100 model N7235-04 4-piston meter as approved in variant 7.

Figure 14 shows a typical instrument with internal pumps (model MHP6A), while Figure 15 shows a typical instrument supplied from a submersible turbine pump as approved in variant 5 (model MHQD4).

An 'A' suffix in the version code denotes one display per hose, rather than one display per side.

TABLE 3 - Approved Models and Configurations - Variant 10

Model	Version	Features
HILINE	MHD4A	4 meters, 1 or 2 computing units, 4 displays.
HILINE	MHD6A	6 meters, 2 or 3 computing units, 6 displays.
HILINE	MHP4A	4 meters, 1 or 2 computing units, 4 displays.
HILINE	MHP6A	6 meters, 2 or 3 computing units, 6 displays.
HILINE	MHQD4	4 meters, 1 or 2 computing units, 2 displays.
HILINE	MHQD4A	4 meters, 1 or 2 computing units, 4 displays.
HILINE	MHQP4	4 meters, 1 or 2 computing units, 2 displays.
HILINE	MHQP4A	4 meters, 1 or 2 computing units, 4 displays.

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1.2 Variant 11

With a Compac model COM125 rotary vane meter (Figure 16) instead of the meter described for the pattern.

This meter, like that it replaces, is approved for use over a flow rate range of 15 to 80 L/min.

NOTIFICATION OF CHANGE

In the Test Procedure included as part of Technical Schedule No 5/6A/90 dated 15/11/91, the tests for instruments fitted with submersible turbine pumps should be amended as follows:

A. In test 1., the 'Note' is replaced by the following;

"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."

B. Test 2. is replaced by the following; (The 'Note', which is the same as that above, is retained.)

"2. The minimum flow rate test is performed by simultaneously running either all hoses on all driveway flowmeters connected to a particular submersible 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."

C. Another test is added, as follows:

"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."

5/6A/90
20/8/92

National Standards Commission

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6A/90

CHANGE No 1

The following change is made to the approval documentation for the

Compac Industries Model M80C Driveway Flowmeter

submitted by Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

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.

J. Birch

In Technical Schedule No 5/6A/90 dated 15/11/91, clause **1.1 Features** is amended by changing the reference to the nozzle used to read:

"A ZVA or any other Commission-approved nozzle."

National Standards Commission

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6A/90

CHANGE No 2

The following change is made to the approval documentation for the

Compac Industries Model M80C Driveway Flowmeter

submitted by Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

In Technical Schedule No 5/6A/90 dated 15/11/91, clause **1.1 Features** is amended by adding the following to the list of components:

. A gas detection system.

(NOTE: A gas detection system is necessary for products other than petrol, and is required for petrol when the flow rate exceeds 55 L/min.)

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

NOTIFICATION OF CHANGE

CERTIFICATE OF APPROVAL No 5/6A/90

CHANGE No 3

The following change is made to the approval documentation for the

Compac Industries Model M80C Driveway Flowmeter

submitted by Compac Industries Limited
52 Walls Road
Penrose Auckland New Zealand.

In Technical Schedule No 5/6A/90 Variation No 1 dated 14/3/94, Figure 16 (a diagram) is replaced by the attached Figure (a photograph of the Compac model COM125 meter).

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.

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National Standards Commission

Notification of Change
Certificate of Approval No 5/6A/90
Change No 4

The following changes are made to the approval documentation for the

Compac Industries Model M80C Driveway Flowmeter

submitted by Compac Industries Limited
52 Walls Road
Penrose Auckland
NEW ZEALAND.

In Certificate of Approval No 5/6A/90 dated 14 March 1994;

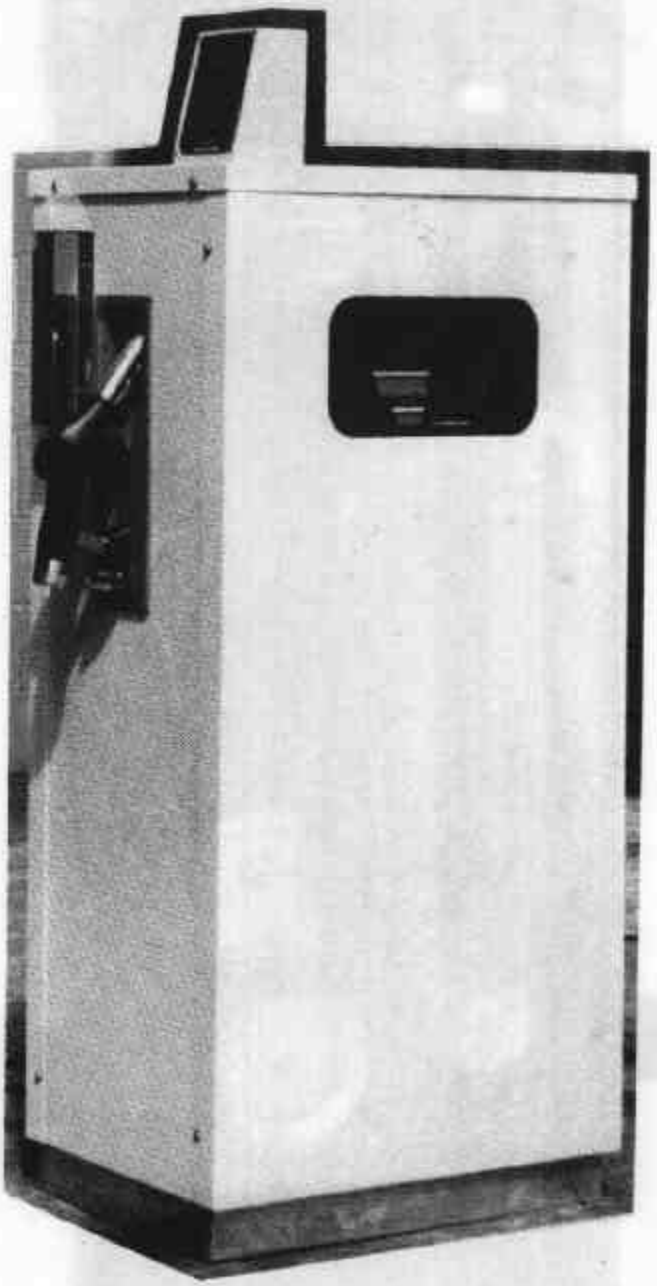
1. The Condition of Approval referring to the review of the approval should be amended to read:

   This approval becomes subject to review on 1 August 1996, and then every 5 years thereafter.

2. The Condition of Approval referring to the expiry of the approval should be deleted.

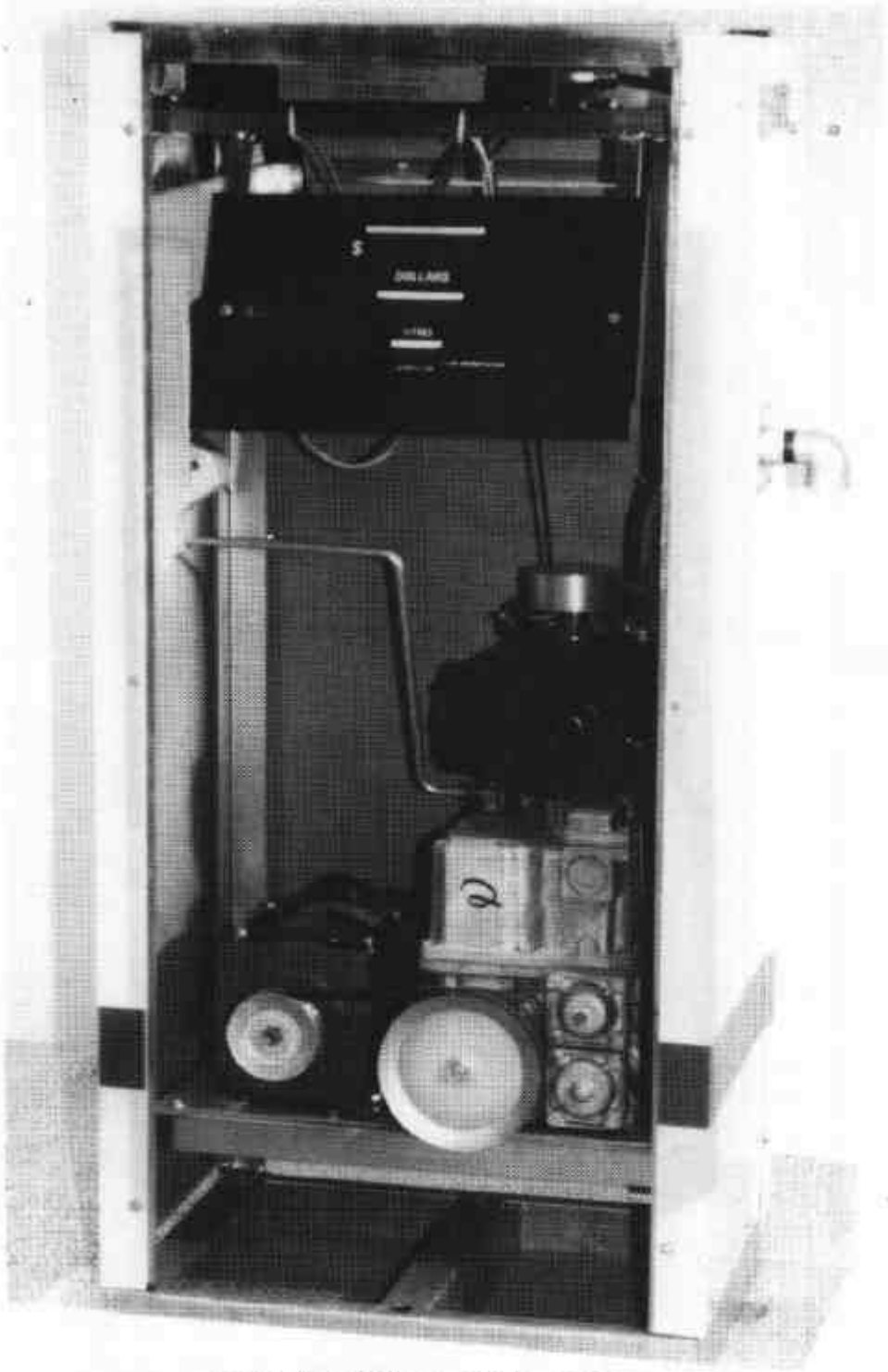
Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.

FIGURE 5/6A/90 - 1



Compac Industries Model M80C Driveway Flowmeter

FIGURE 5/6A/90 - 2



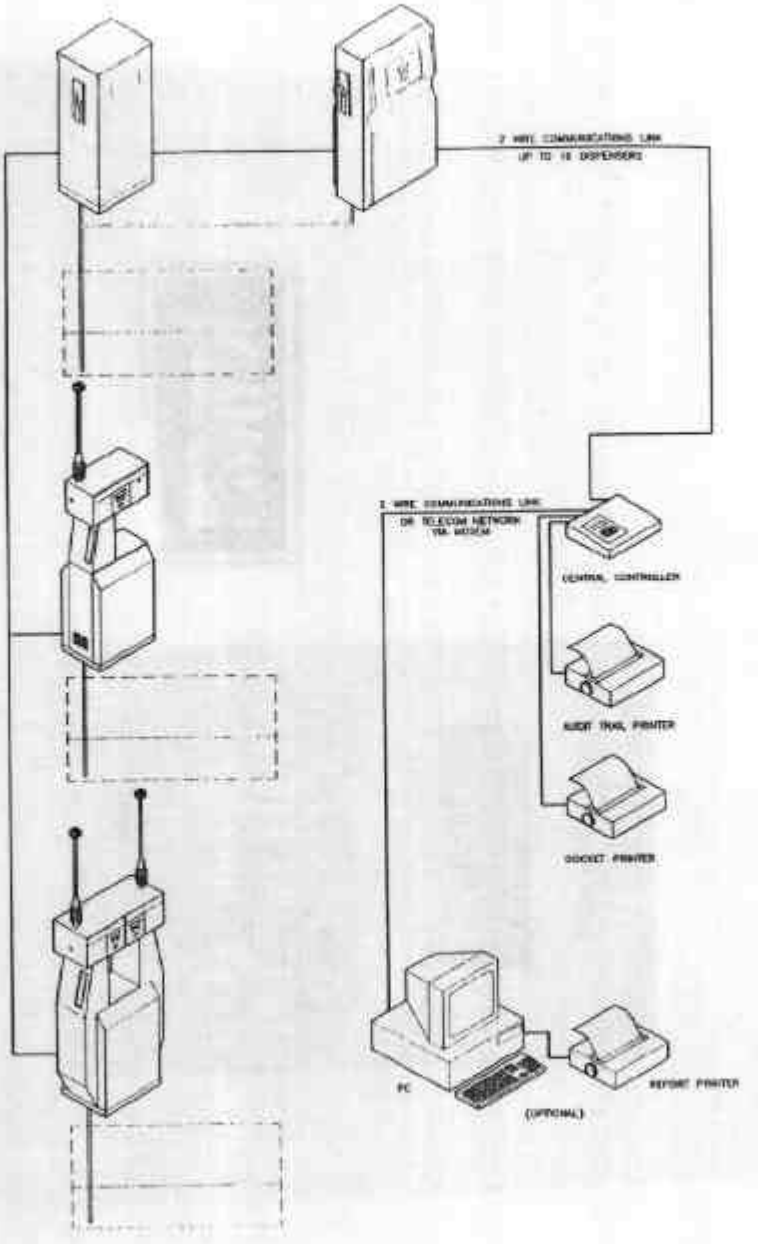
Model M80C Driveway Flowmeter

FIGURE 5/6A/90 - 3

Model CC1200 or CC4800 Central Controller

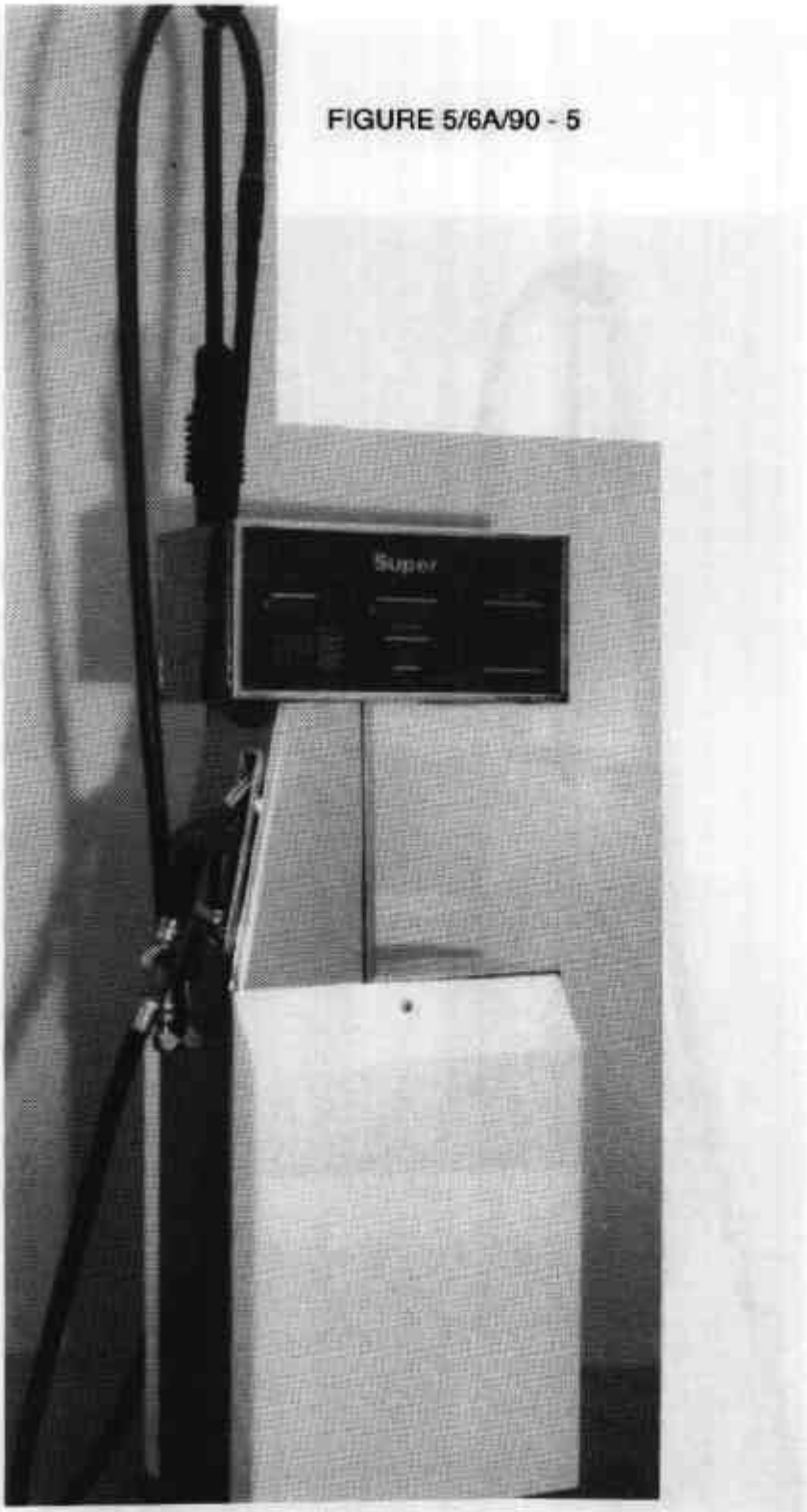
5/6A/90
15/11/91

FIGURE 5/6A/90 - 4



Typical System Layout

FIGURE 5/6A/90 - 5

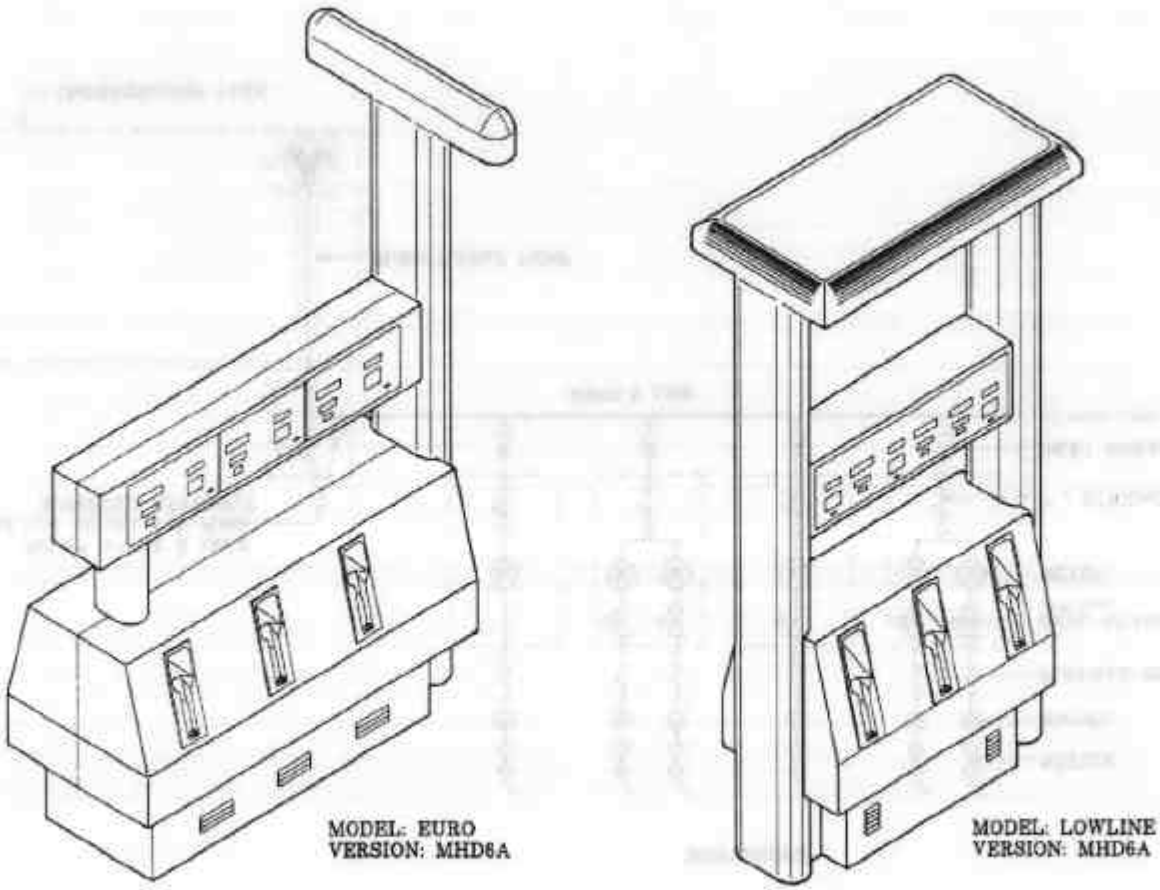


Model C80 Driveway Flowmeter

FIGURE 5/6A/90 - 6

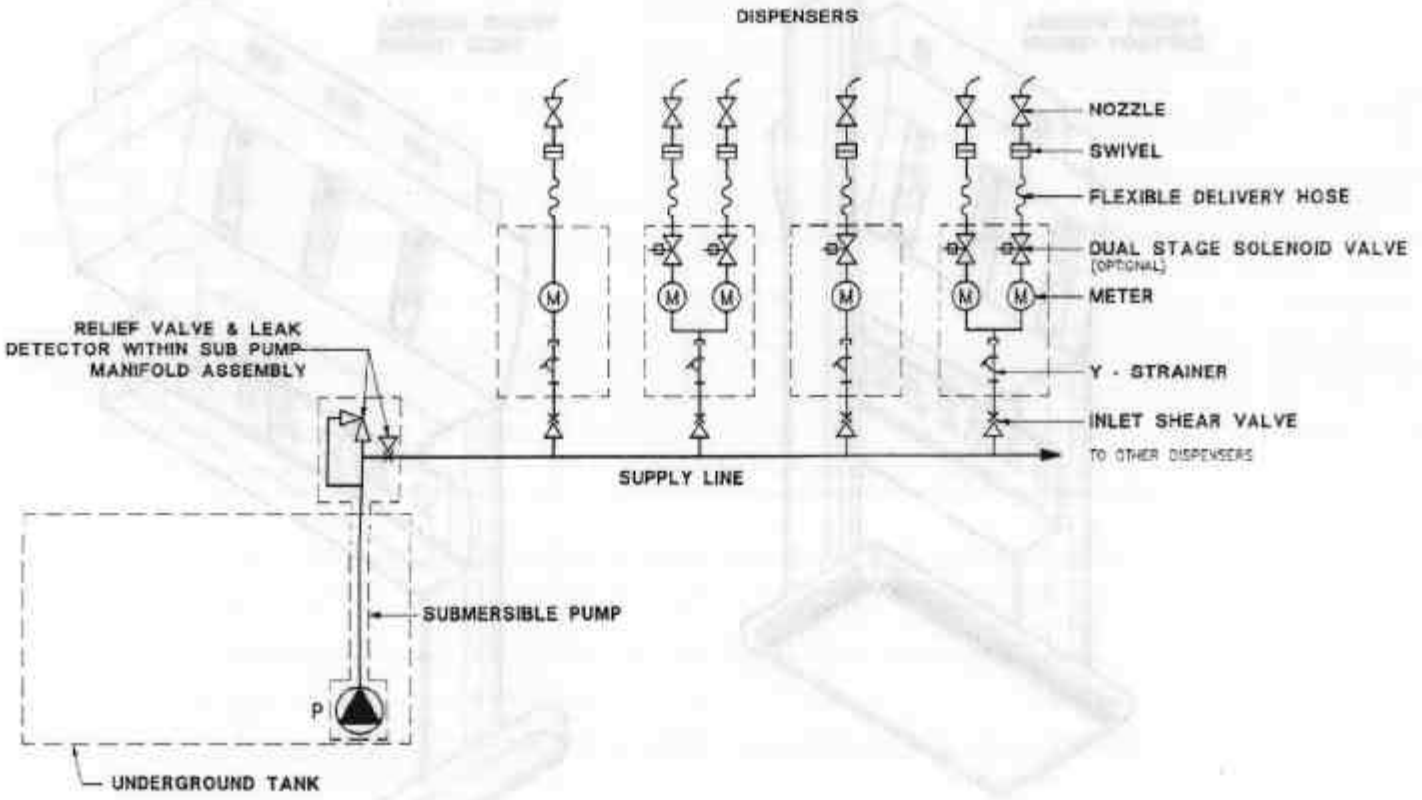
Model CC80 Driveway Flowmeter

FIGURE 5/6A/90 - 7



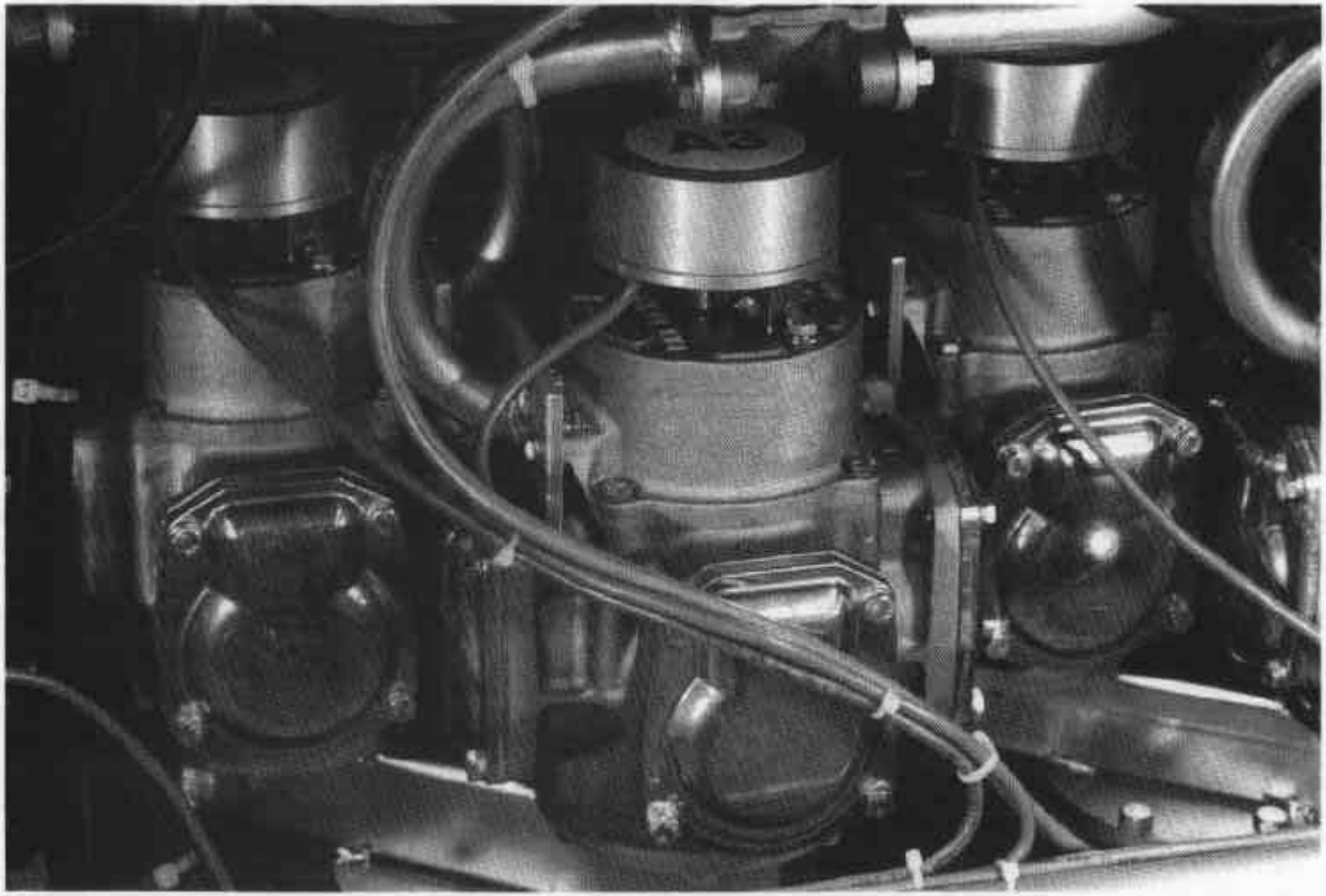
Model EURO MHD6A and Model LOWLINE MHD6A

FIGURE 5/6A/90 - 8



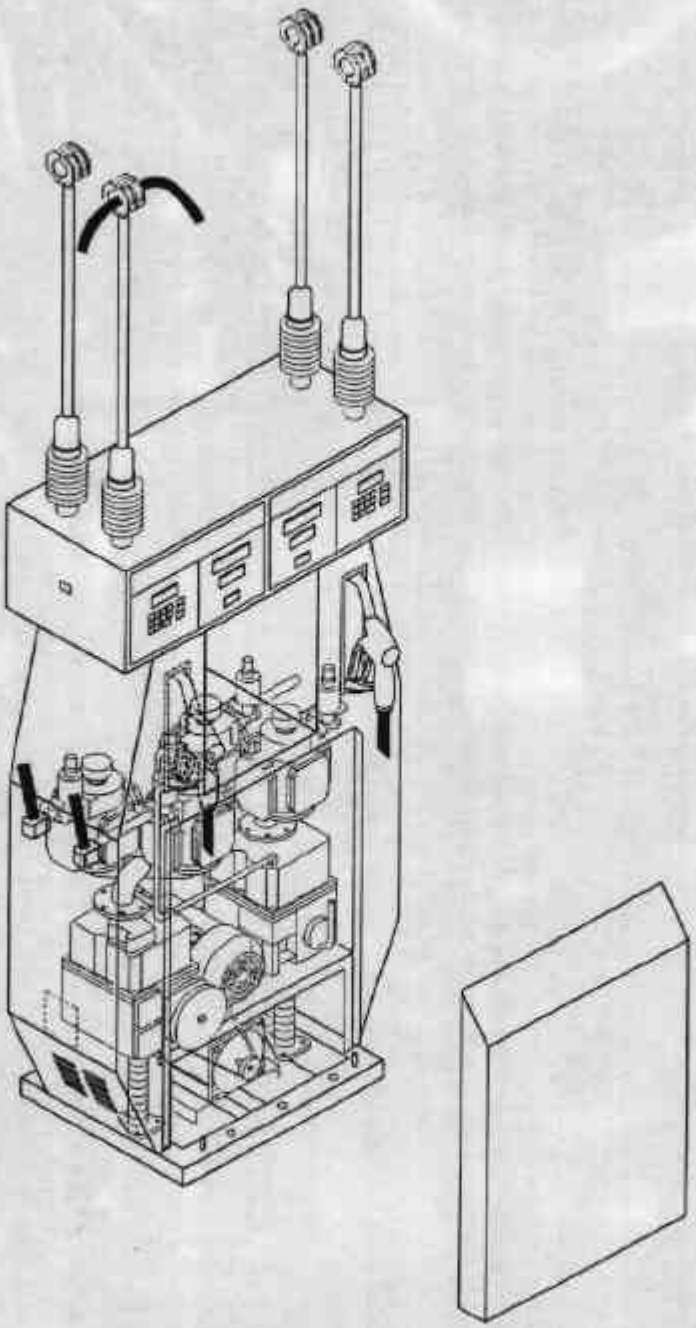
Typical Submersible Turbine System

FIGURE 5/6A/90 - 9



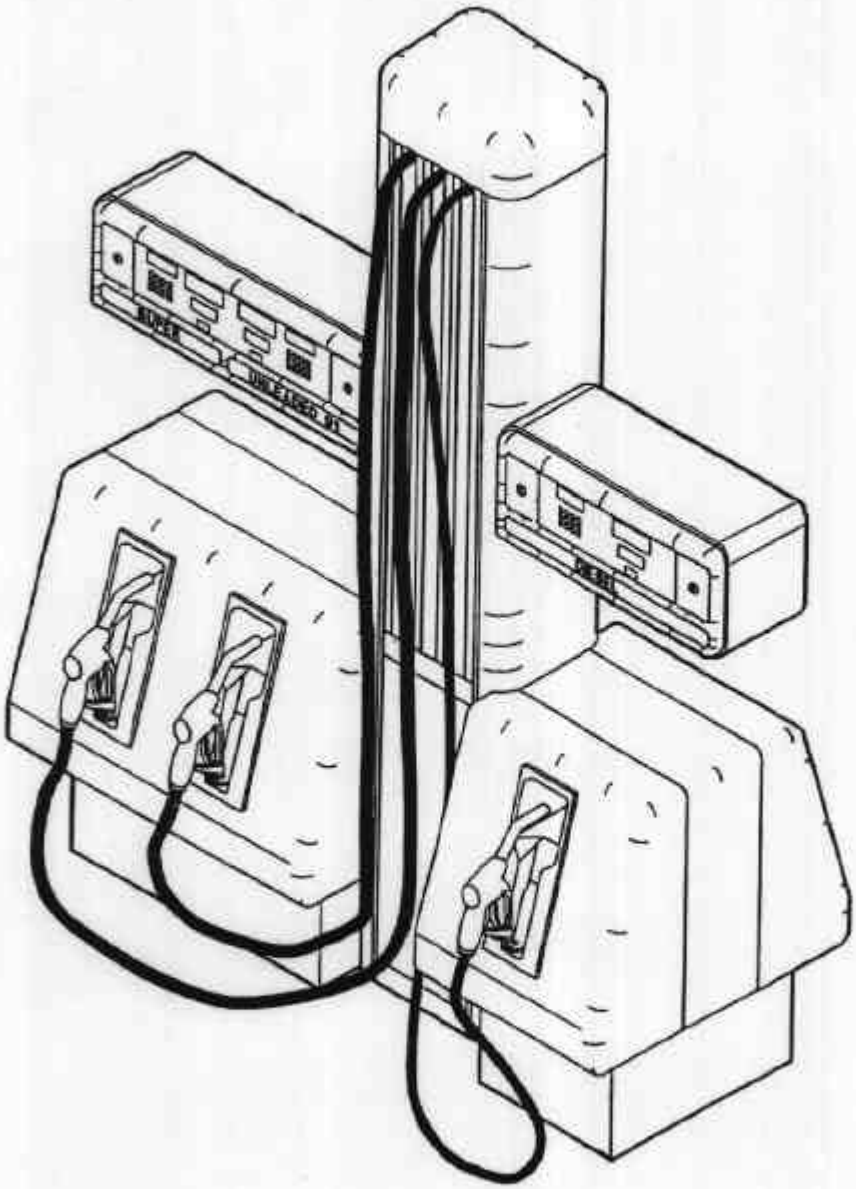
Showing Bennet Type SB 100 Model N7235-04 Meters

FIGURE 5/6A/90 - 10



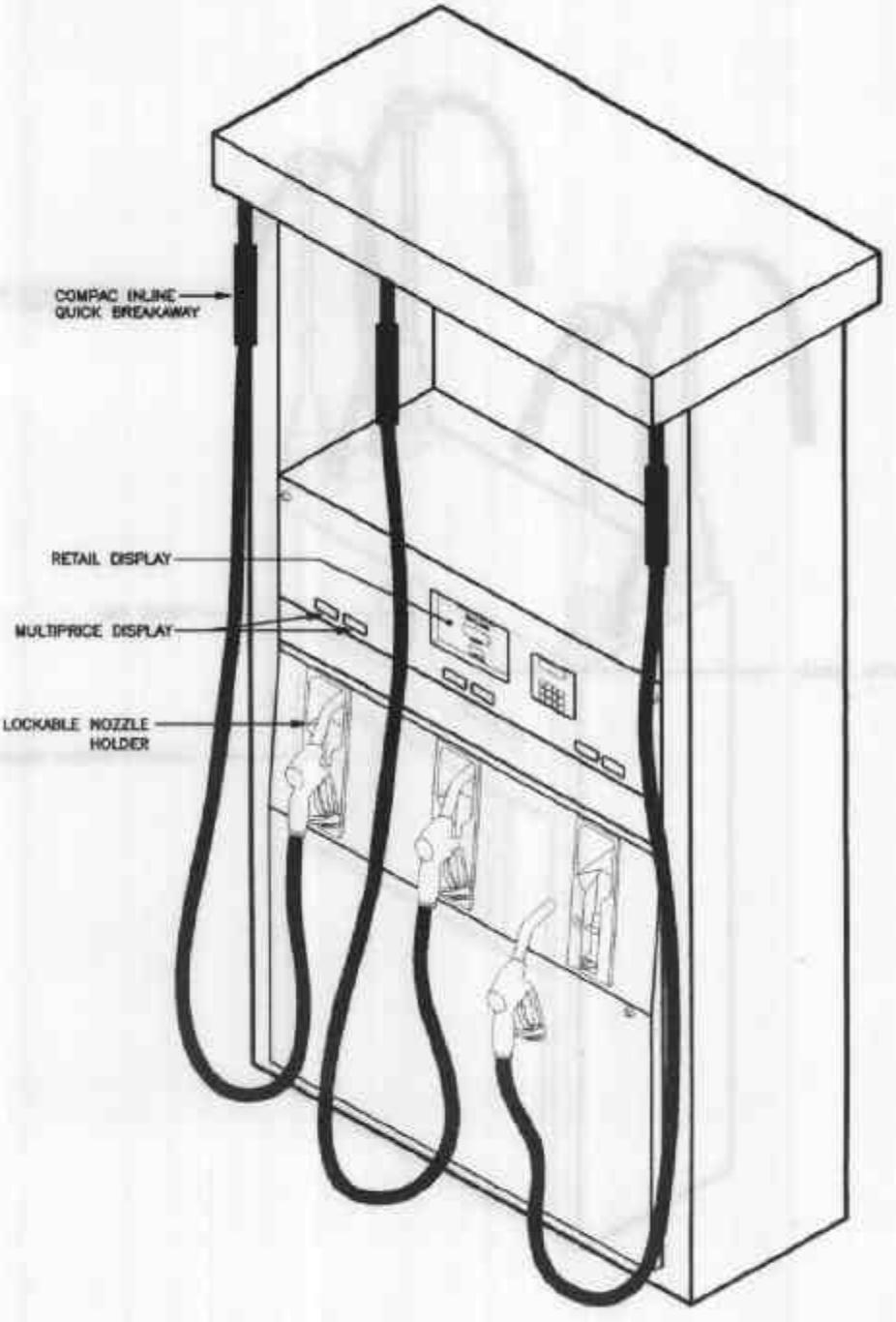
Compac Industries Model CC40Q Driveway Flowmeter

FIGURE 5/6A/90 - 11



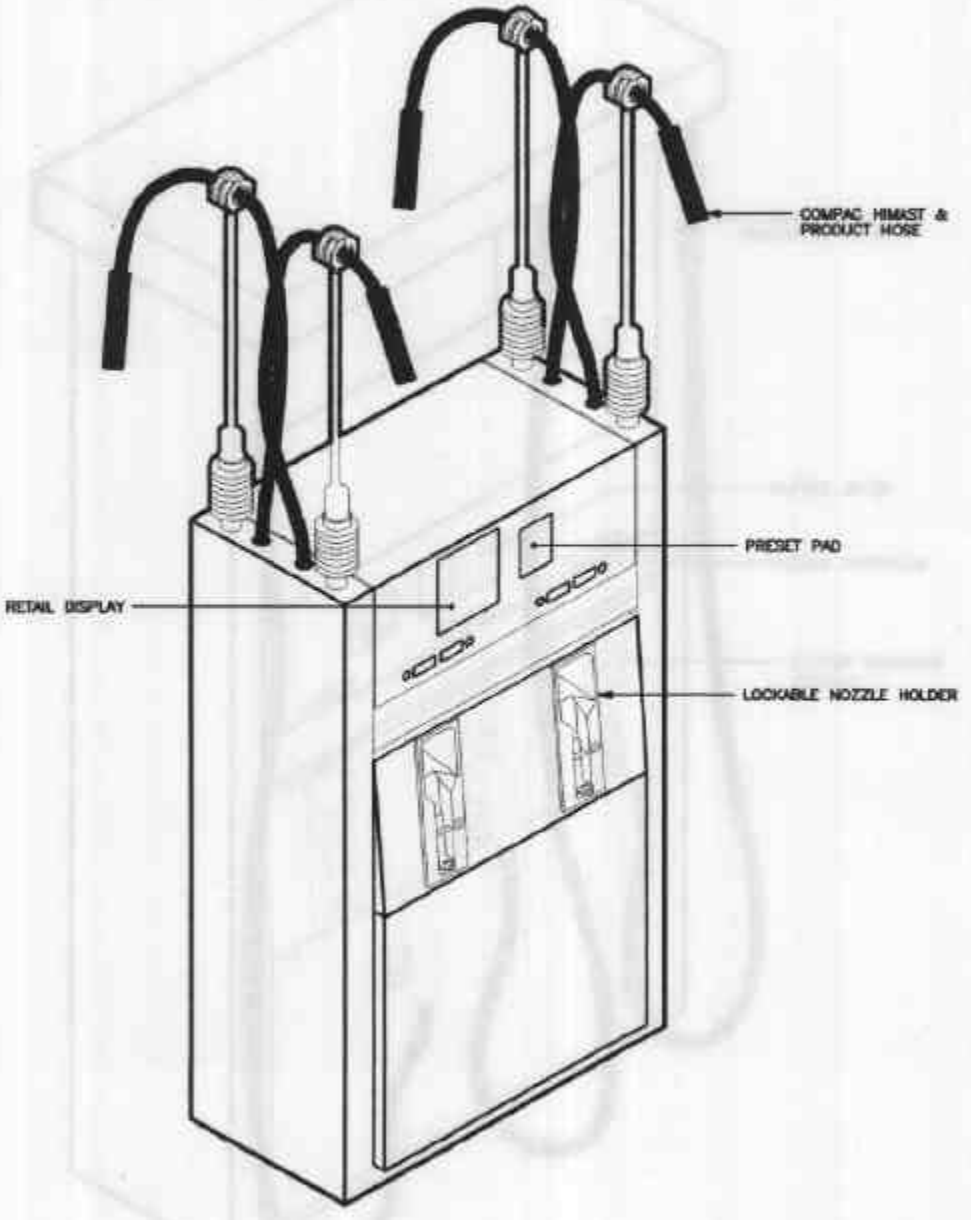
Typical Compac Industries EMPEROR Series Driveway Flowmeter

FIGURE 5/6A/90 - 12



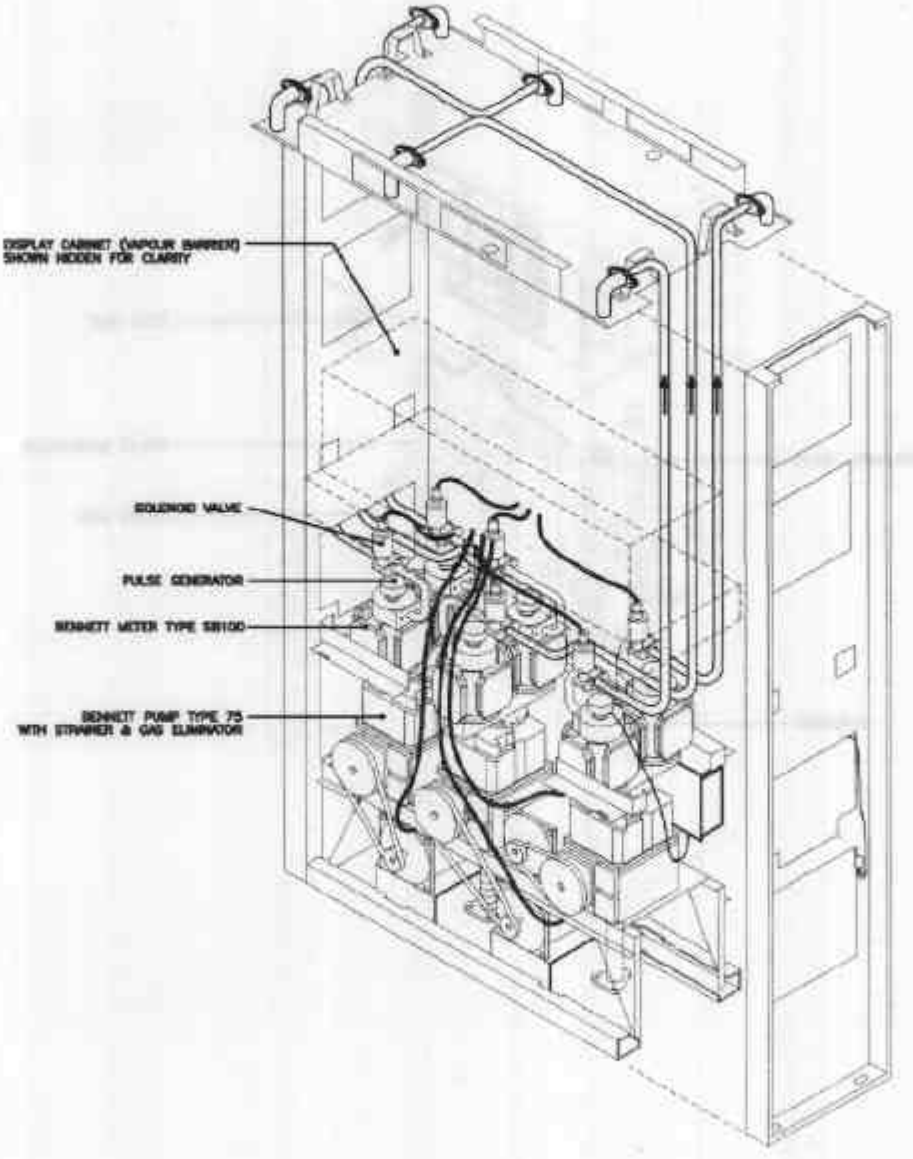
Typical HILINE MHD/MHP Housing

FIGURE 5/6A/90 - 13



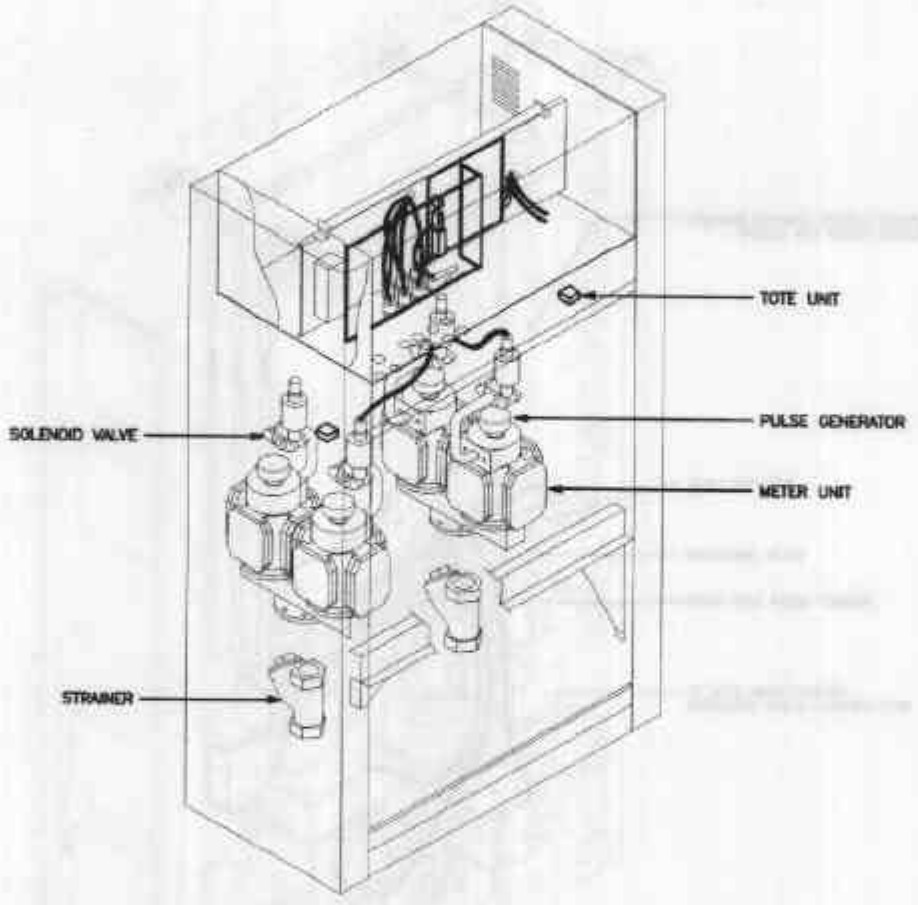
Typical HILINE MHQD/MHQP Housing

FIGURE 5/6A/90 - 14



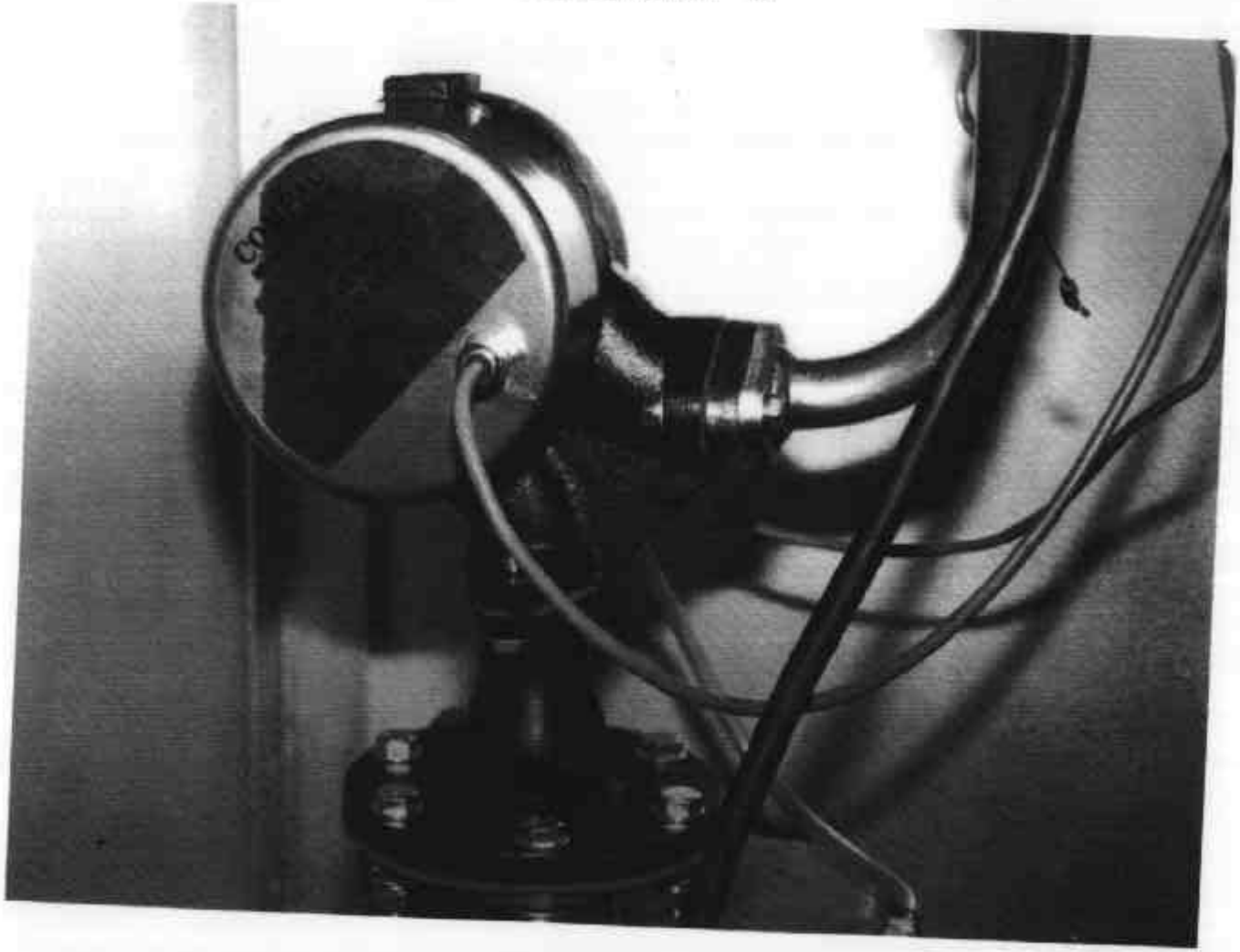
Typical Internal Pump Instrument

FIGURE 5/6A/90 - 15



Typical Hydraulic System With Remote Pumps

FIGURE 5/6A/90 - 16



Compac Model COM125 Meter