

## **National Standards Commission**

12 Lyonpark Road, North Ryde NSW

### **Cancellation Certificate of Approval No 5/6A/96**

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

Compac Industries Model P160P 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 June 2001.

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 60 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/96**

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 P160P 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 1/10/97.  
This approval expires in respect of new instruments on 1/10/98.

Instruments purporting to comply with this approval shall be marked NSC No 5/6A/96 and only by persons authorised by the submittor.

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

It is the submitter'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.

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

#### DESCRIPTIVE ADVICE

**Pattern:** approved 8/9/92

- A Compac Industries model P160P driveway flowmeter approved for use over a flow rate range of 15 to 160 L/min, in attendant-operated or locally-authorized applications.

**Variant:** approved 8/9/92

1. Certain other models and configurations, identified using Table 1.

**Variants:** provisionally approved 8/9/92 - approved 31/3/94

2. With certain submersible turbine pumps.
3. With two Satam meters of the pattern in the same housing.
4. With two metering systems in the same housing, one using the Satam meter of the pattern, the other using a Bennett type 100 meter.

Technical Schedule No 5/6A/96 describes the pattern and variants 1 to 4.

**Variants:** approved 28/9/93

5. In an alternative housing known as the 'C' series frame type.
6. With an integral printer.

Technical Schedule No 5/6A/96 Variation No 1 describes variants 5 and 6.

**Variants:** approved 31/3/94

7. With a Compac model COM250 meter.
8. With a Compac model COM125 meter.

Technical Schedule No 5/6A/96 Variation No 2 describes variants 7 and 8.

#### FILING ADVICE

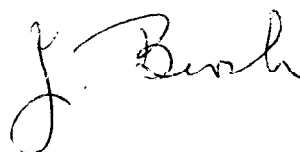
Certificate of Approval No 5/6A/96 dated 20/10/93 is superseded by this Certificate, and may be destroyed.

Note: The Provisional status and conditions of variants 2, 3 and 4 are hereby removed.

The documentation for this approval now comprises:

Certificate of Approval No 5/6A/96 dated 28/6/94  
Technical Schedule No 5/6A/96 dated 10/3/93 (incl. Table 1 and Test  
Procedure)  
Technical Schedule No 5/6A/96 Variation No 1 dated 20/10/93  
Technical Schedule No 5/6A/96 Variation No 2 dated 28/6/94  
Figures 1 to 8 dated 10/3/93  
Figure 9 dated 20/10/93  
Figure 10 dated 28/6/94

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.





## National Standards Commission

### TECHNICAL SCHEDULE No 5/6A/96

**Pattern:** Compac Industries Model P160P Driveway Flowmeter.

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

#### 1. Description of Pattern

A Compac Industries model P160P driveway flowmeter (Figures 1 and 2) approved for use to dispense various grades of petrol (including Avgas) or distillate over a flow rate range of 15 to 160 L/min, in attendant-operated or locally-authorised applications.

##### 1.1 Features

The model P160P has the following components or features:

- 2 Bennet type 75 model 190701 pump/strainer/gas separators connected in parallel.
- A Compac gas detection system fitted to each pump/strainer/gas separator.
- A Satam model ZC.17.24/24 rotary vane positive displacement flowmeter.
- A Compac model CU C3000-3CH pulse generator driven directly by the meter output shaft.
- A Compac model C3000H price-computing indicator.
- A ZVA or any other Commission-approved nozzle.

A 'HI/LOW' switch may be fitted to each meter/hose to restrict the flow rate to 80 L/min, by switching one of the pumps off.

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

A Compac model CC1200 or CC4800 central controller and/or a management printer may also be connected.

##### 1.2 Indicator

The model C3000H indicator comprises a computing unit and separate 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 and for other management functions.

Figure 4 shows a typical system.

### 1.4 Sealing and Verification/Certification Provision

Provision is made for the application of a verification/certification mark. The K-factor switch, located on the indicator electronics board, shall be 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/96
Maximum flow rate	..... L/min
Minimum flow rate	..... L/min
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:

- In an alternative housing, e.g. model M160P (Figure 5).
- With a preset facility, identified by a '-P' suffix, e.g. model M160P-P.
- 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.

## **2.2 Variant 2**

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 (Table 1 & Figure 6).

In these flowmeters, the 'HI/LOW' flow switch (where fitted) controls the maximum flow rate by means of solenoid valves.

## **2.3 Variant 3**

With two Satam meters (as described for the pattern) supplied by a submersible turbine pump. Both meters are either supplied with the same product from one inlet ('dual' flowmeter), e.g. model M160SD, or they may have separate inlets allowing different products, e.g. model MM160S (Figure 7).

## **2.4 Variant 4**

With two meters, being one Satam meter (as described for the pattern) and one Bennett type 100 meter, supplied by a submersible turbine pump, e.g. model MM160/80S (Figure 8 and Table 1). The Bennett meter is approved for use with a maximum flow rate 80 L/min.

**TABLE 1 - Approved Models and Configurations**

	*	FRAME TYPE:
	M	1 inlet, 1 meter, 1 computing unit, 2 displays.
	MM	2 inlets, 2 meters, 2 computing units, 4 displays.
	MME	2 inlets, 2 meters, 1 computing unit, 4 displays.
	P	1 inlet, 1 meter, 1 computing unit, 2 displays.
	PP	2 inlets, 2 meters, 2 computing units, 4 displays.
	PPE	2 inlets, 2 meters, 1 computing unit, 4 displays.
	*	MAXIMUM FLOW RATE: (#)
	40	40 L/min with Bennett meter.
	80	80 L/min with Bennett meter.
	160	160 L/min with Satam meter.
	*	PUMP TYPE:
	P	Self-contained pump, within the flowmeter housing.(#)
	S	Submersible turbine pump.
	*	(Blank if not a 'Dual' flowmeter.)
	D	'Dual' - 1 inlet, 2 meters, 2 computing units, 4 displays.
	*	OPTIONS: (May be blank.)
	-P,-C,	Various codes for options including preset and cardreader.

e.g.

P160P (the pattern);  
MM160SD (variant 3);  
MM160/80S (variant 4).

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



## 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  $\pm 0.3\%$ .

For instruments fitted with submersible turbine pumps:

1. Operation of the leak detector is tested by the following procedure:

**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.

- a) Connect a pressure gauge and valve to the test port of the impact valve (inlet shear valve) under the driveway flowmeter. Ensure that the submersible 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 sufficiently 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 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.
- 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.
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.



# National Standards Commission

TECHNICAL SCHEDULE No 5/6A/96

VARIATION No 1

**Pattern:** Compac Industries Model P160P Driveway Flowmeter.

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

## 1. Description of Variants

### 1.1 Variant 5

In an alternative housing (Figure 9) known as the 'C' series frame type.

These flowmeters have 'C', 'CC' or 'CCE' frame types and use the same components as the type 'M', 'MM' and 'MME' respectively, listed in Table 1 (in Technical Schedule No 5/6A/96 dated 10/3/93), e.g. type 'C' has 1 inlet, 1 meter, etc. while type 'CCE' has 2 inlets, 2 meters, etc.

### 1.2 Variant 6

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



5/6A/96  
28/6/94

## National Standards Commission

TECHNICAL SCHEDULE No 5/6A/96

VARIATION No 2

**Pattern:** Compac Industries Model P160P Driveway Flowmeter.

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

### 1. Description of Variants

#### 1.1 Variant 7

With a Compac model COM250 rotary vane positive displacement meter (Figure 10) instead of the Satam model ZC.17.24/24 meter described for the pattern.

The model COM250 is a high flow meter approved for use over a flow rate range of 15 to 160 L/min when used with the Bennet pump/strainer/gas separators described for the pattern. When fuel is supplied from a submersible turbine pump as described for variant 2, the COM250 meter may be used up to a maximum of 250 L/min.

#### 1.2 Variant 8

With a Compac model COM125 rotary vane meter instead of the Bennett type 100 meter described for variant 4.

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



# **National Standards Commission**

## **Notification of Change**

### **Certificate of Approval No 5/6A/96**

### **Change No 1**

The following change is made to the approval documentation for the

Compac Industries Model P160P Driveway Flowmeter

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

In Certificate of Approval No 5/6A/96 dated 28 June 1994, 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.

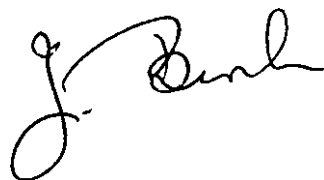
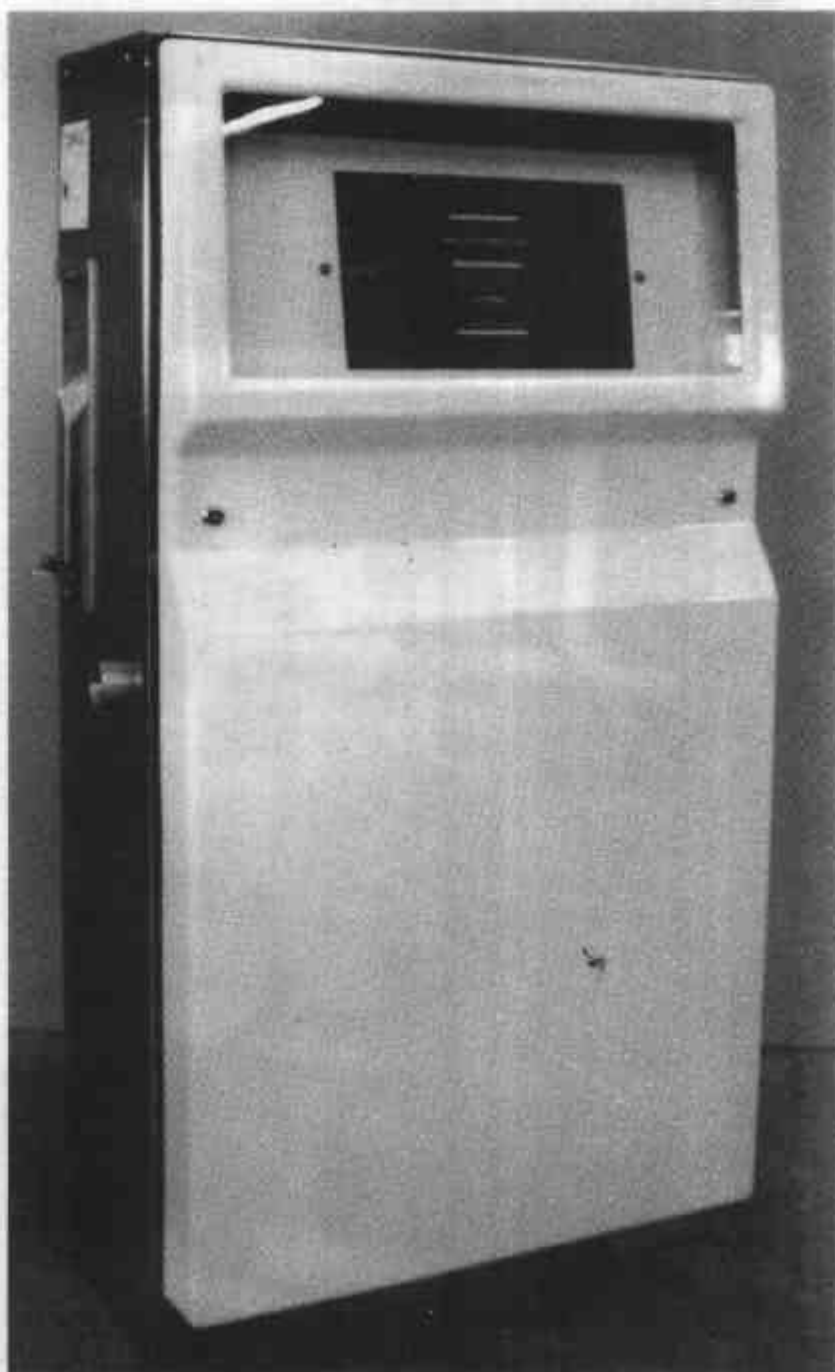


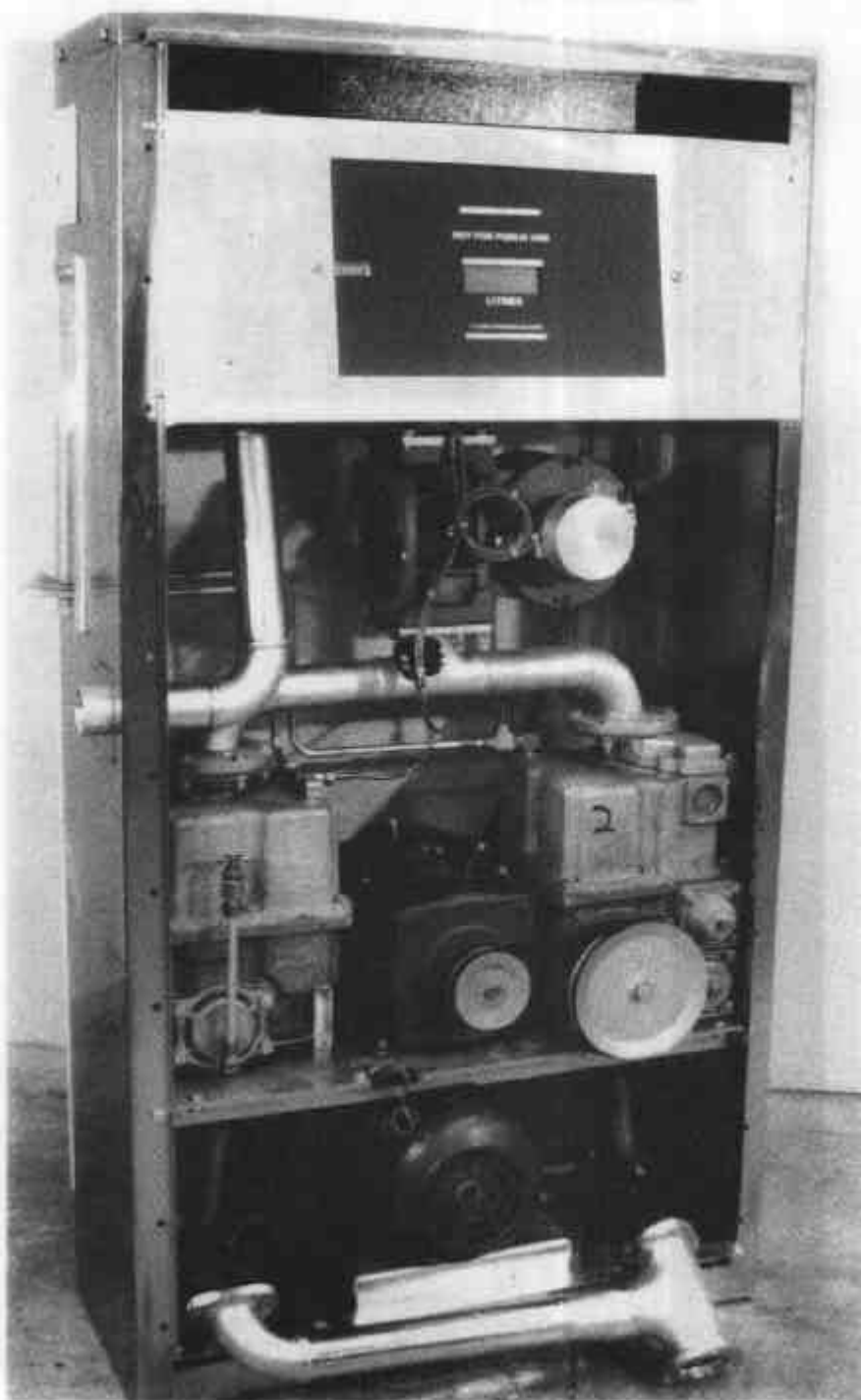
FIGURE 5/6A/96 - 1



Compac Industries Model P160P Driveway Flowmeter

5/6A/96  
10/3/93

FIGURE 5/6A/96 - 2



Model P160P Without Covers

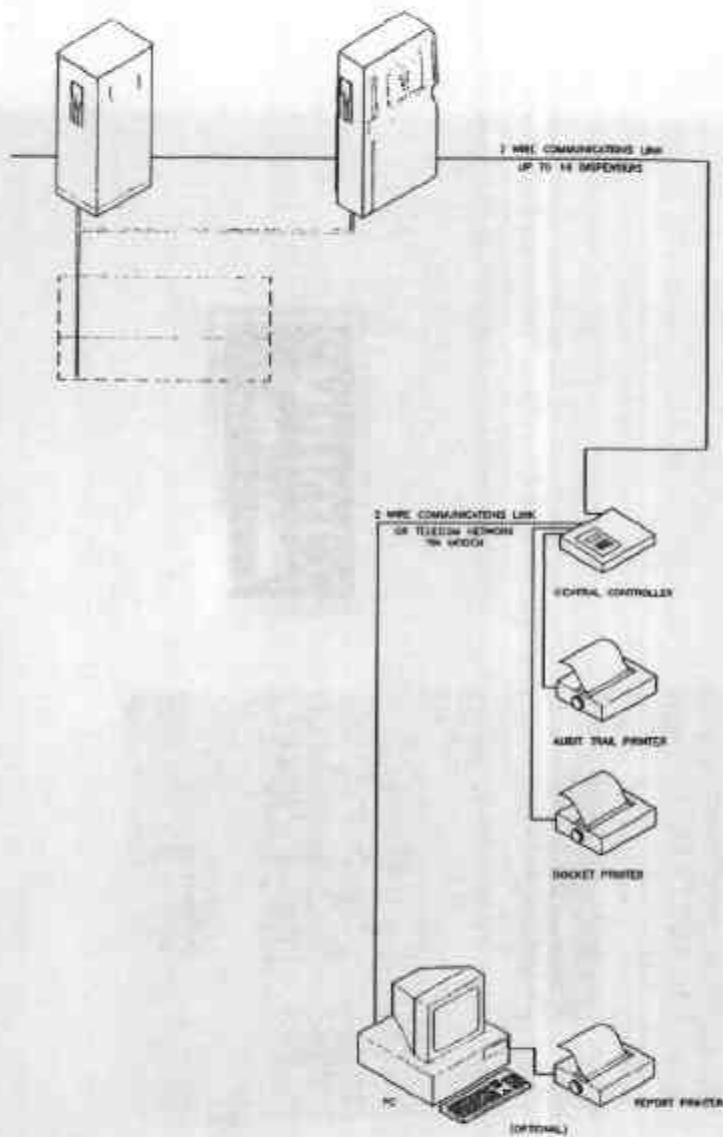
FIGURE 5/6A/96 - 3



Model CC1200 or CC4800 Central Controller



FIGURE 5/6A/96 - 4



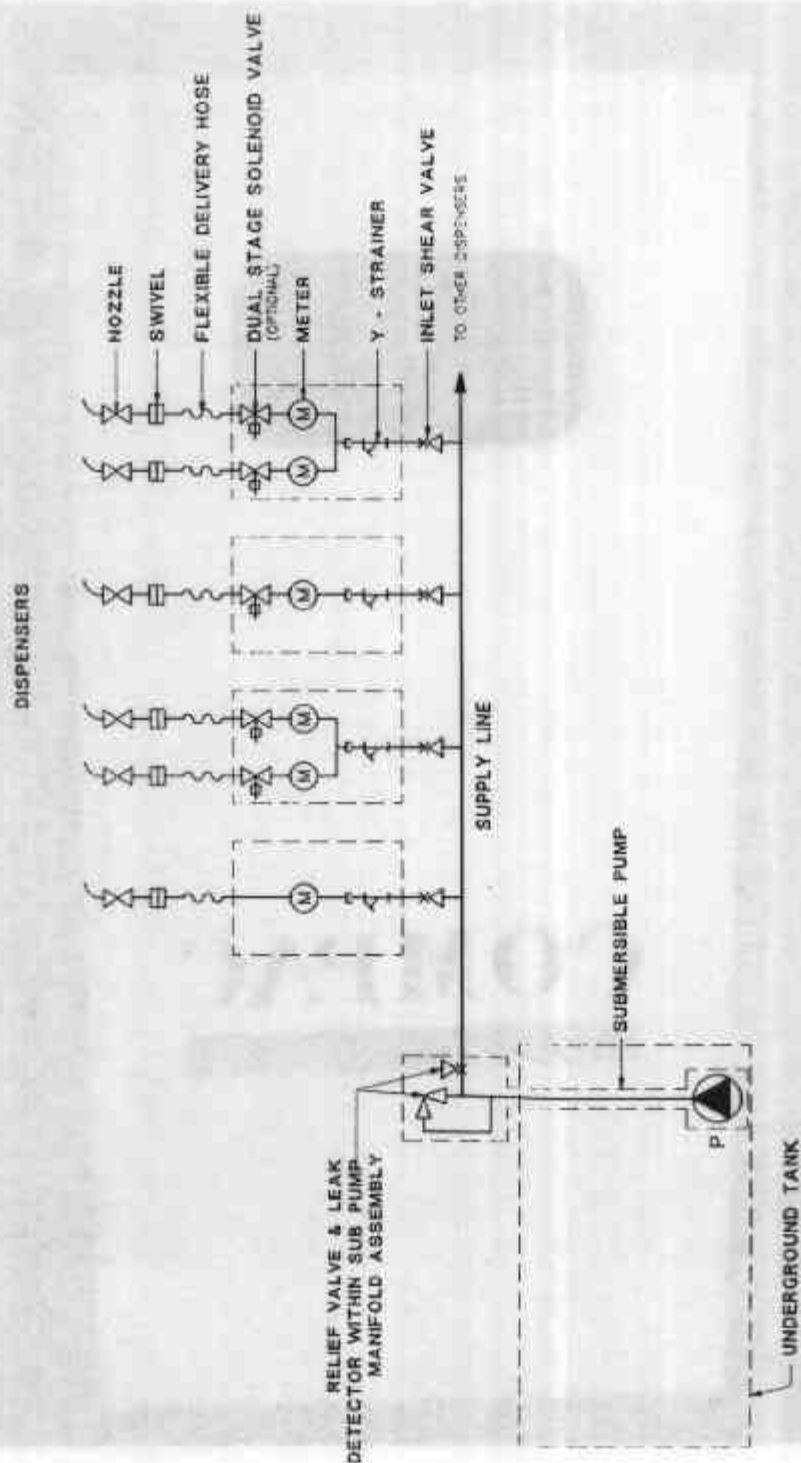
Typical System Layout

FIGURE 5/6A/96 - 5



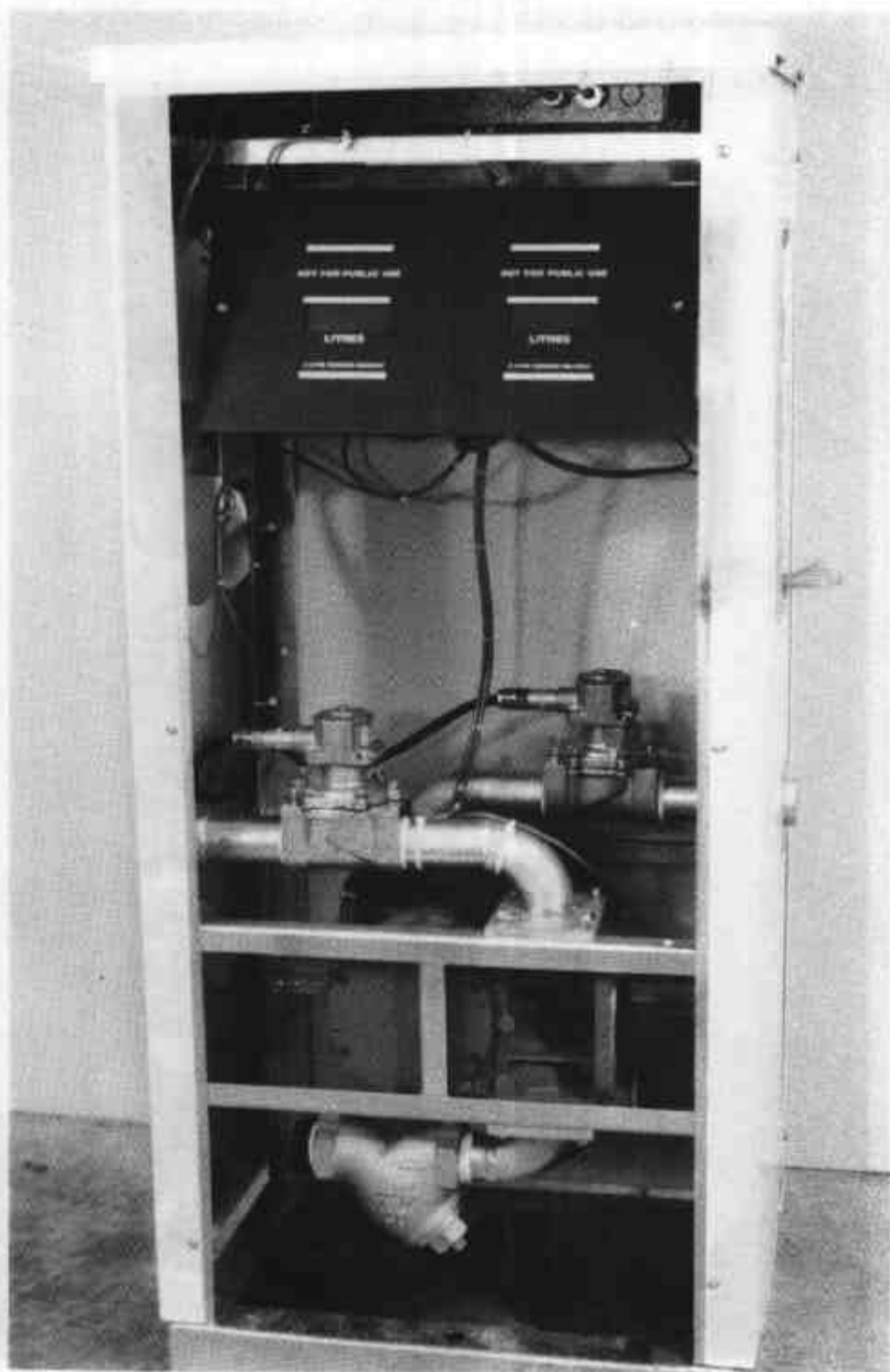
Model M160P

FIGURE 5/6A/96 - 6



Typical System With a Submersible Turbine Pump

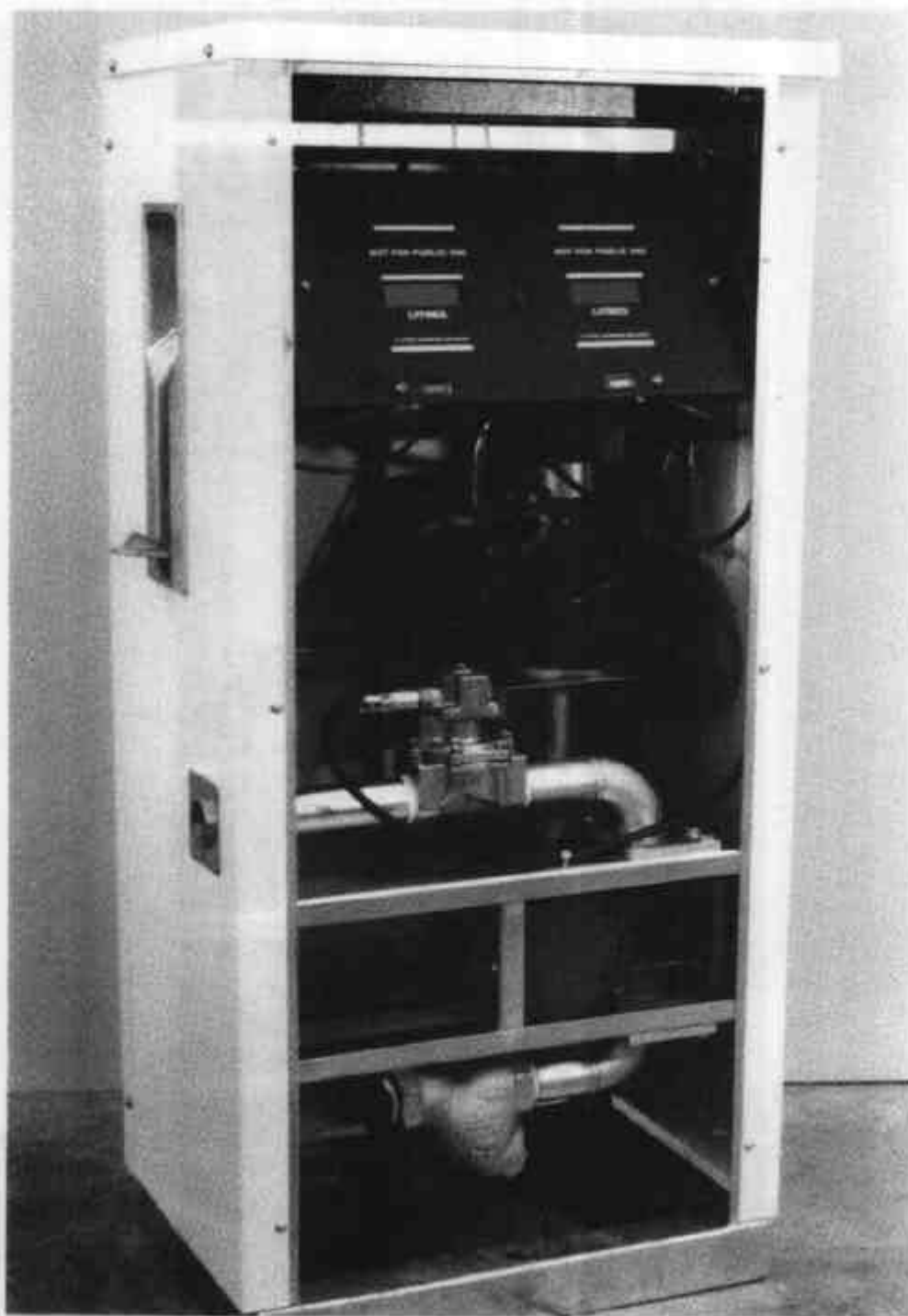
FIGURE 5/6A/96 - 7



Model MM160S

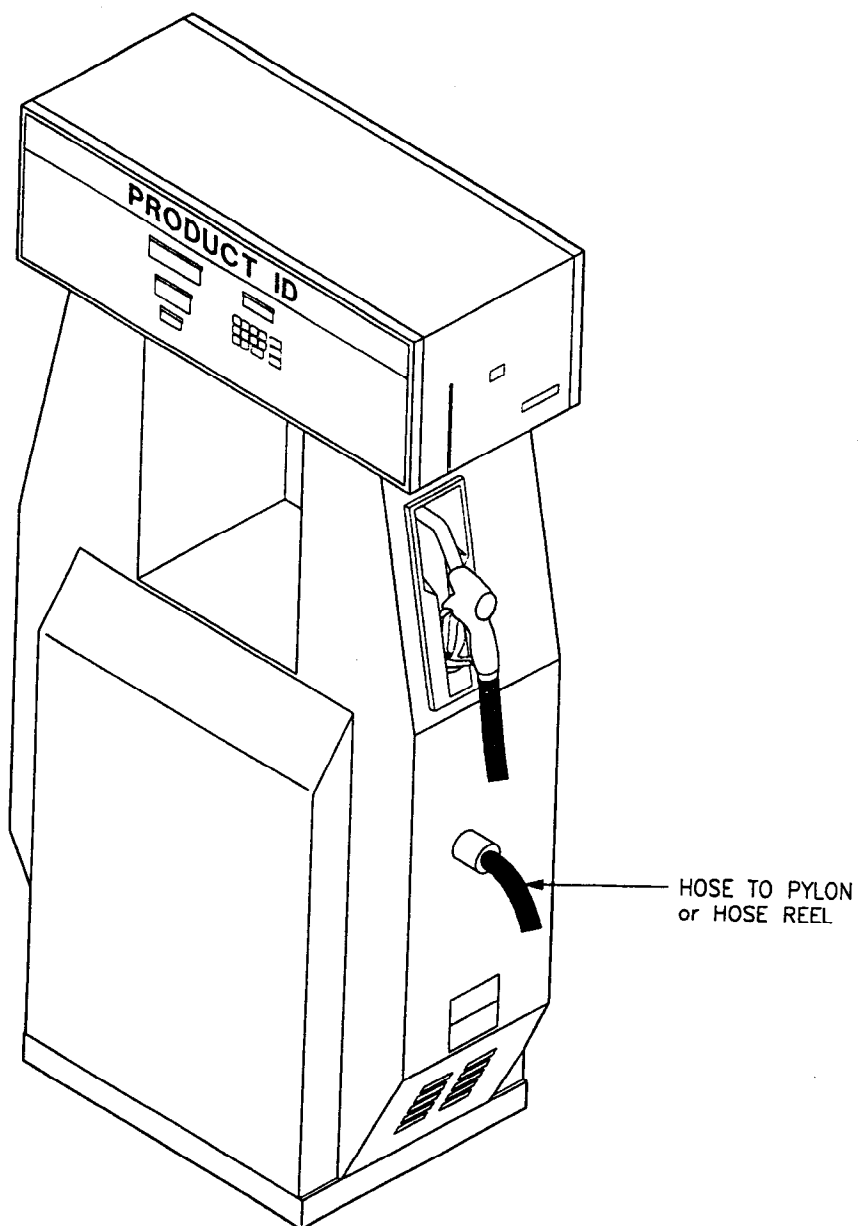
5/6A/96  
10/3/93

FIGURE 5/6A/96 - 8



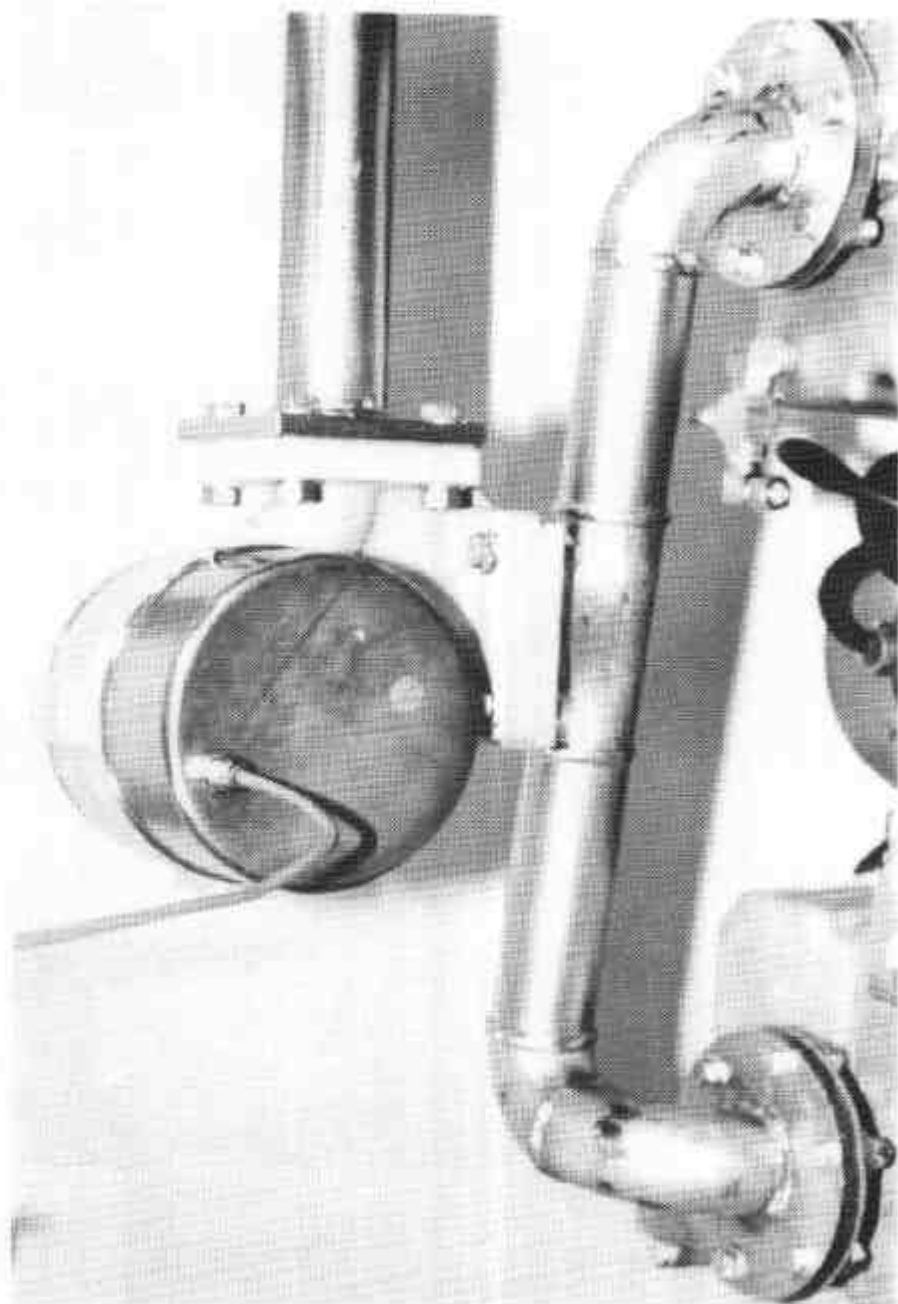
Model MM160/80S

FIGURE 5/6A/96 - 9



Compac Industries Model C160P Driveway Flowmeter

FIGURE 5/6A/96 - 10



Compac Model COM250 Meter