

# National Standards Commission



## Certificate of Approval

**No 5/6B/35A**

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

Tokheim Model 682-15-SP-L-2 Bulk Flowmetering System

submitted by Gilbarco Aust. Ltd  
12-38 Talavera Road  
North Ryde NSW 2113.

**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.

This Certificate is issued upon completion of reviews of NSC approvals Nos 5/6B/35, 5/6B/42 and 5/6H/1.

### CONDITIONS OF APPROVAL

This approval is subject to review on or after 1 June 1999.  
This approval expires in respect of new instruments on 1 June 2000.

Instruments purporting to comply with this approval shall be marked NSC No 5/6B/35A and only by persons authorised by the submittor.

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

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.

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

#### DESCRIPTIVE ADVICE

**Pattern:** approved 5 May 1994

- A bulk flowmetering system using a Tokheim model 682-15-SP-L-2 flowmeter.

**Variants:** approved 5 May 1994

1. As a modular flowmetering system.
2. As a drum-filling flowmetering system.

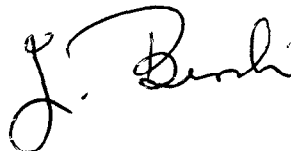
Technical Schedule No 5/6B/50A describes the pattern and variants 1 and 2.

#### FILING ADVICE

The documentation for this approval comprises:

- Certificate of Approval No 5/6B/35A dated 16 September 1994
- Technical Schedule No 5/6B/35A dated 16 September 1994 (incl. Table 1 and Test Procedure)
- Figures 1 to 5 dated 16 September 1994

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 5/6B/35A

**Pattern:** Tokheim Model 682-15-SP-L-2 Bulk Flowmetering System.

**Submittor:** Gilbarco Aust. Ltd  
12-38 Talavera Road  
North Ryde NSW 2113.

#### 1. Description of Pattern

A bulk flowmetering system using a Tokheim model 682-15-SP-L-2 flowmeter which is approved for use with liquid having a kinematic viscosity range between 0.5 and 12.5 mm<sup>2</sup>/s. The system is approved for use for a flow rate range of 15 L/min to 151 L/min. The minimum quantity is 50 litres.

##### 1.1 Pipeline Flowmetering System

###### (i) Supply Tank

A supply tank.

###### (ii) Pump

The pump may be fitted in either a suction lift or suction head (flooded suction) installation, i.e. either above or below (Figure 1) the liquid level in the supply tank. 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.

###### (iii) Non-return Valve

A non-return valve between the pump and the meter or an arrangement of the components and piping to keep the system full of liquid at all times.

###### (iv) Gas Purger/Strainer

A Tokheim (or Daniel) 683-\*\*, 1505-\*\* or 1506-\*\* series gas purger/strainer assembly is fitted as close as practical to the meter inlet (Figure 2). The gas purger/strainer assembly may be omitted only where the tank has automatic alarming of low-liquid level, or has a float-operated shut-off valve in the pump supply, or has other means to prevent gas entering the meter. An alternative strainer assembly may be used.

\*\*\* Approved models may have a '15', '20', '30' or '40' suffix. The model 1505 may alternatively have a '60' suffix.

**(v) Meter**

A Tokheim model 682-15-SP-L-2 (#) 38 mm piston flowmeter (Figure 2). Provision shall be made for a pressure gauge to be connected downstream of the meter.

(#) In the model number, the letters 'SP' may be replaced by 'AF' or 'SS', and the suffix '2' may be any number from '1' to '15'.

A calibrator assembly mounted on top of the meter is used for meter calibration.

**(vi) Indicating System**

Any combination of the following assemblies:

- (a) A Tokheim (or Daniel) model 1541 (Figure 2) or a Veeder-Root 1624 or 7887 series zero start indicator.
- (b) A Tokheim (or Daniel) model 1542 (Figure 3) or a Veeder-Root 7085 or 7890 series zero-start indicator (Figure 2) with ticket printer.
- (c) A Tokheim (or Daniel) model 1540 or a Veeder-Root 1646 or 7889 series preset counter with a Tokheim (or Daniel) 1550, 1600 or 1800 series preset-counter-operated outlet control valve (Figure 3). The preset counter may cause the outlet control valve to close in two stages. A pressure relief pipe may be fitted between the valve and the gas purger/strainer. The preset counter is marked PRESET INDICATION NOT IN USE FOR TRADE.
- (d) Any compatible Commission-approved pulse generator, electronic bulk flowmeter controller/indicator (which may incorporate a volume conversion for temperature device), and flow control valve.

NOTE: Where systems include a pulse generator and electronic indicator, the pulse generator shall be driven directly from the output shaft of the meter; it shall not be driven via a mechanical indicator nor via reduction gear trains.

The use of a right-angled drive would be considered as direct as long as the drive consists of two bevel gears with a 1:1 ratio and provided the right-angled drive is before the drive to any mechanical indicator.

Where the pulse generator is not driven directly, any electronic indicator connected to it shall be marked NOT IN USE FOR TRADE.

**(vii) Transfer Device**

A transfer device in the form of a positive shut-off component such as a manually or automatically-operated control valve located downstream of the meter with no intermediate outlet.

## 1.2 Markings

Instruments are marked with the following data, together in the one location:

Manufacturer's name or mark	
Meter model	
Serial number	
NSC approval number	5/6B/35A
Maximum flow rate	.... L/min
Minimum flow rate	.... L/min
Minimum quantity	.... L #
Type of liquid for which the meter is verified	....
Maximum operating pressure	.... kPa

# May be located separately, e.g. on a metal tag sealed to the instrument.

In addition, preset counters (other than those complying with clause 2.2 Variant 2) shall be marked PRESET INDICATION NOT IN USE FOR TRADE.

## 1.3 Sealing and Verification/Certification Provision

Provision is made for sealing the indicator or indicator/ticket printer and the calibration device of the meter.

Provision is made for a verification/certification mark to be applied.

## 2. Description of Variants

### 2.1 Variant 1

As a modular flowmetering system (Figure 4) which is similar to the pipeline, except that it is a module of metering components in its own assembly rather than built into another structure. It may be portable, including being vehicle-mounted.

The system consists of a gas purger/strainer, a meter and a transfer device. It may contain the pump, together with a pressure control valve (if necessary), and a hose reel; in the latter case, the transfer device is in the form of either a nozzle or dry-break coupling at the end of a flexible hose.

The pump is located lower than the minimum height of the liquid in the supply tank. A non-return valve is located between the pump and the meter, or the components and piping are arranged to keep the system full of liquid at all times.

Any nozzle used shall have an integral outlet control valve. If fitted with an integral anti-drain valve, the valve shall be immediately before the outlet control valve. A separate anti-drain valve may be fitted to the nozzle end of the hose if an integral anti-drain valve is not part of the nozzle. The anti-drain valve retaining pressure shall be not less than 55 kPa.

## 2.2 Variant 2

As a drum-filling flowmetering system (Figure 5) which is similar to the pipeline except for the following:

- (i) The meter is fitted with a Tokheim (or Daniel) 1550 or 637 series outlet control valve and a Tokheim (or Daniel) model 1540 or a Veeder Root 1646, 7889 or 7891 series preset counter or 7892 series preset counter/printer.

The outlet control valve, which incorporates an integral anti-drain valve, may be closed manually or by the counter. A pressure relief pipe may be fitted between the valve and the gas purger/strainer.

The indicator is approved to repeat fixed deliveries of either 60, 200 or 205 litres, and is marked PRESET FOR BATCHES '#' LITRES or BATCHES '#' LITRES (where '#' equals one of the approved preset quantities).

Unlike the pattern, the preset counter of this variant need NOT be marked PRESET INDICATION NOT IN USE FOR TRADE.

- (ii) The system is arranged such that the meter operates at a constant flow rate ( $\pm 5\%$  of nominal) within the maximum and minimum flow rate range.
- (iii) The outlet is either a drum-filling spear or a hose. If a spear is used, it is arranged to fully drain after each delivery so that the control valve is the transfer device. If a hose is used, it is fitted with a Commission-approved nozzle which has an anti-drain valve installed either in the nozzle or immediately before it, and having a retaining pressure of not less than 55 kPa; the nozzle is the transfer device.

## TEST PROCEDURE

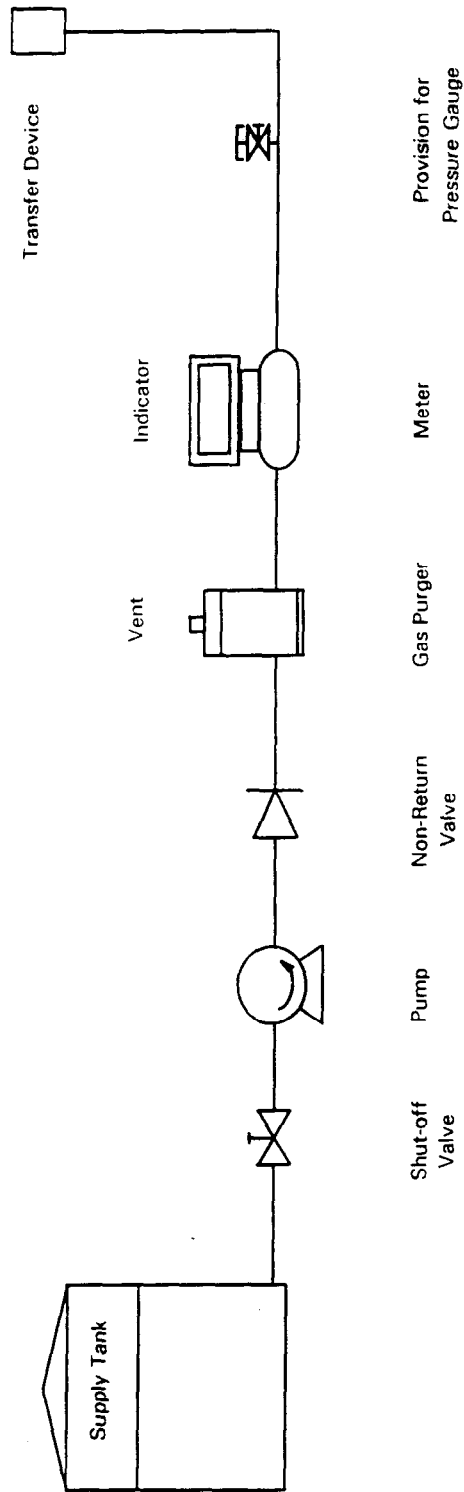
Instruments should be tested in accordance with the Inspector's Handbook using the product with which they will be used and which is marked on the data plate. Tests should be conducted in conjunction with any tests specified in the approval documentation for any indicator and/or conversion device, etc. used.

### **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  $\pm 0.3\%$ .

Where an instrument is fitted with a device to convert the measured volume to volume at reference conditions, the maximum permissible error specified above is increased by 0.2%. Reference conditions for petroleum liquids are specified in Australian Standard 2649 - 1983, *Petroleum Liquids and Gases - Measurement - Standard Reference Conditions*.

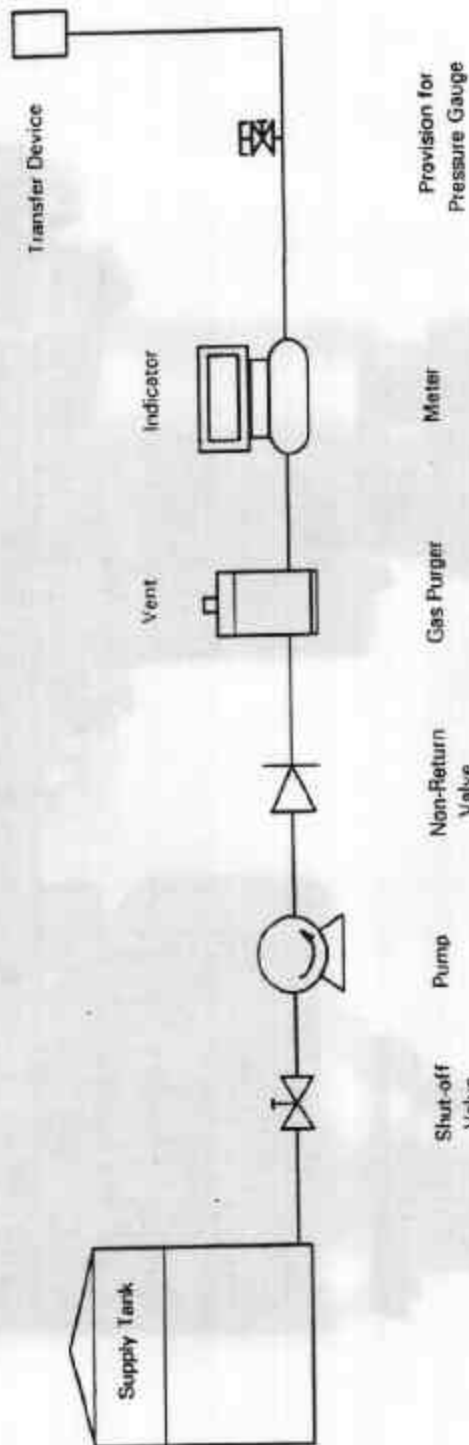
FIGURE 5/6B/35A - 1



Typical Pipeline Flowmetering System

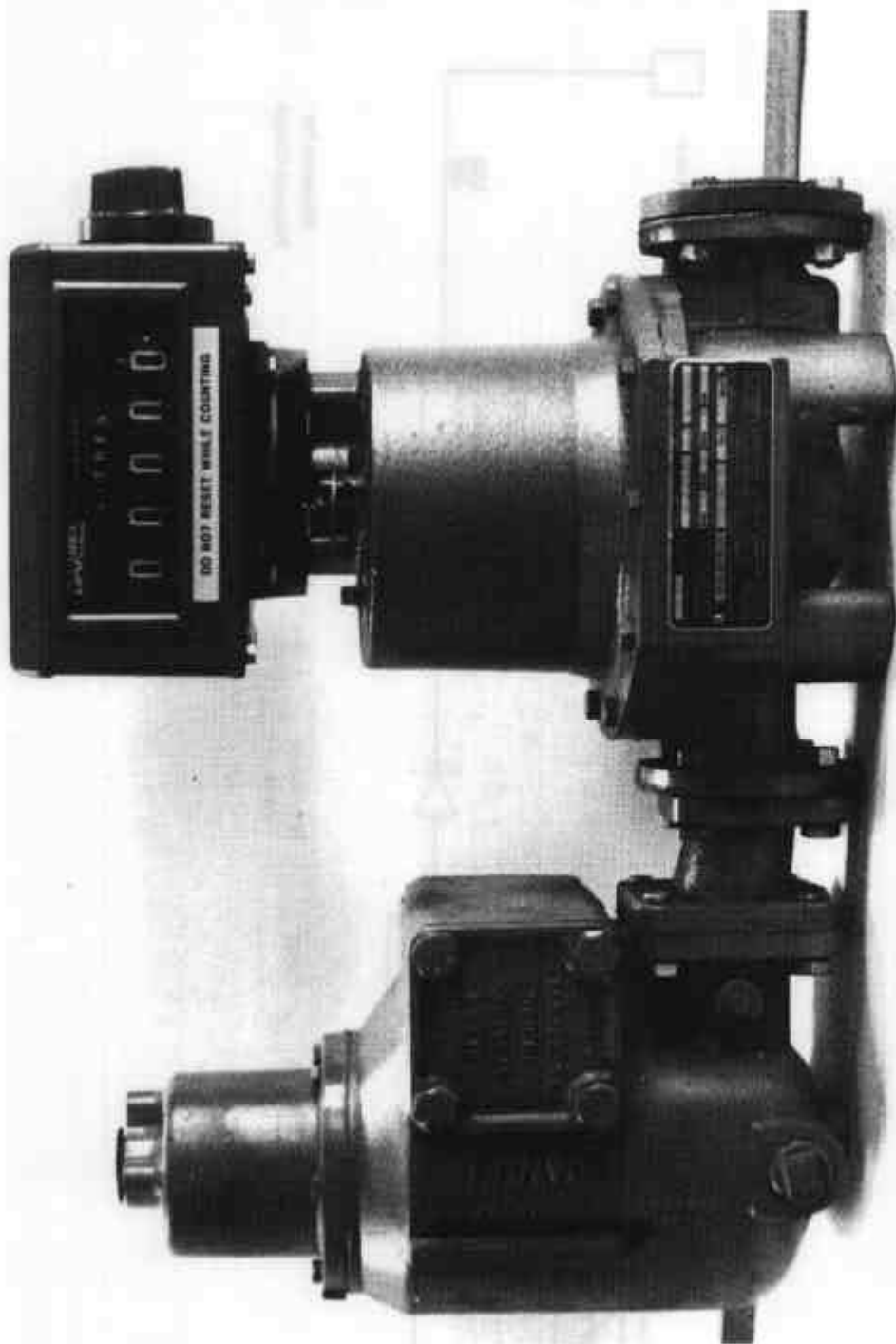


FIGURE 5/6B/35A - 1



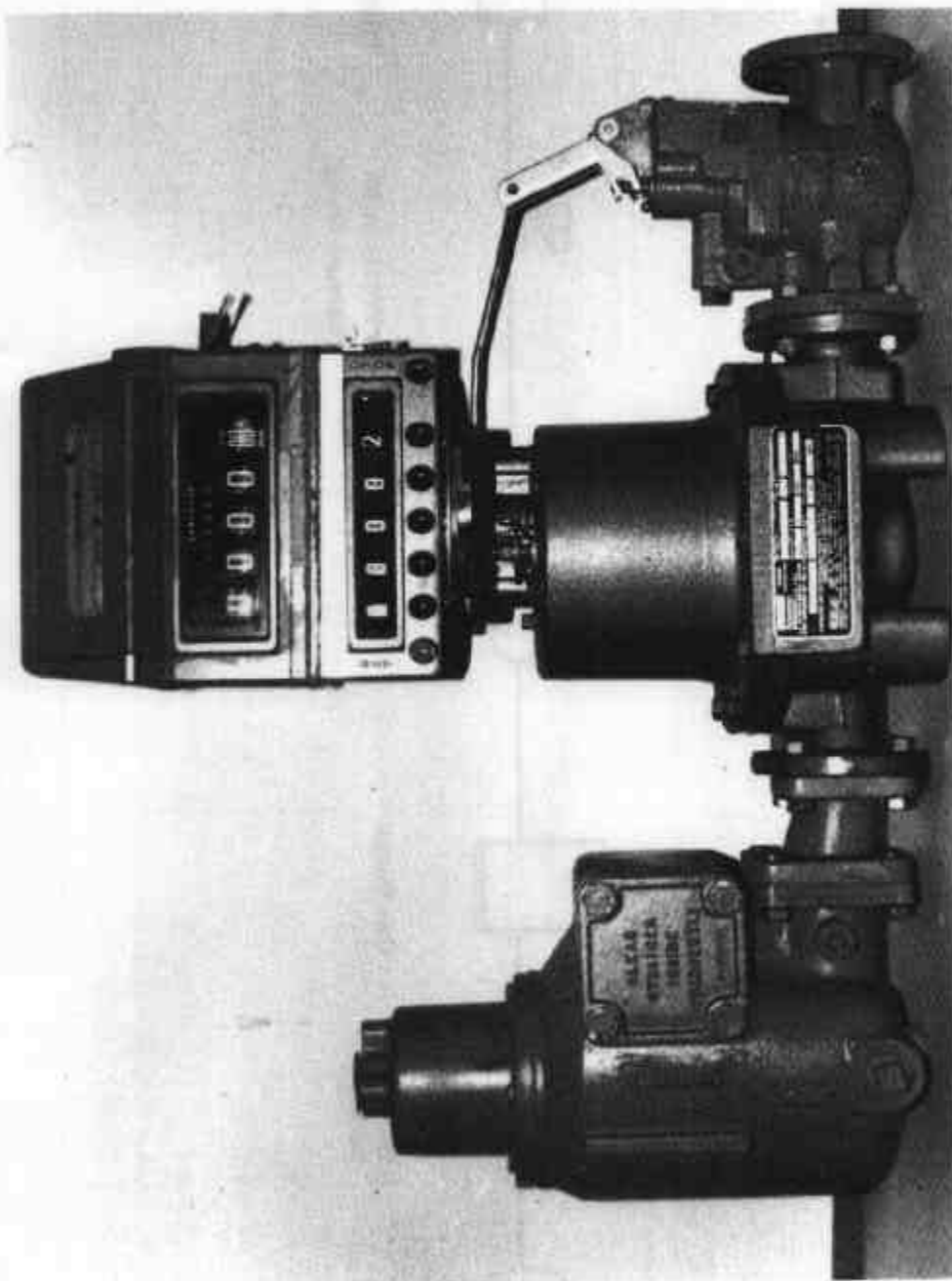
Typical Pipeline Flowmetering System

FIGURE 5/6B/35A - 2



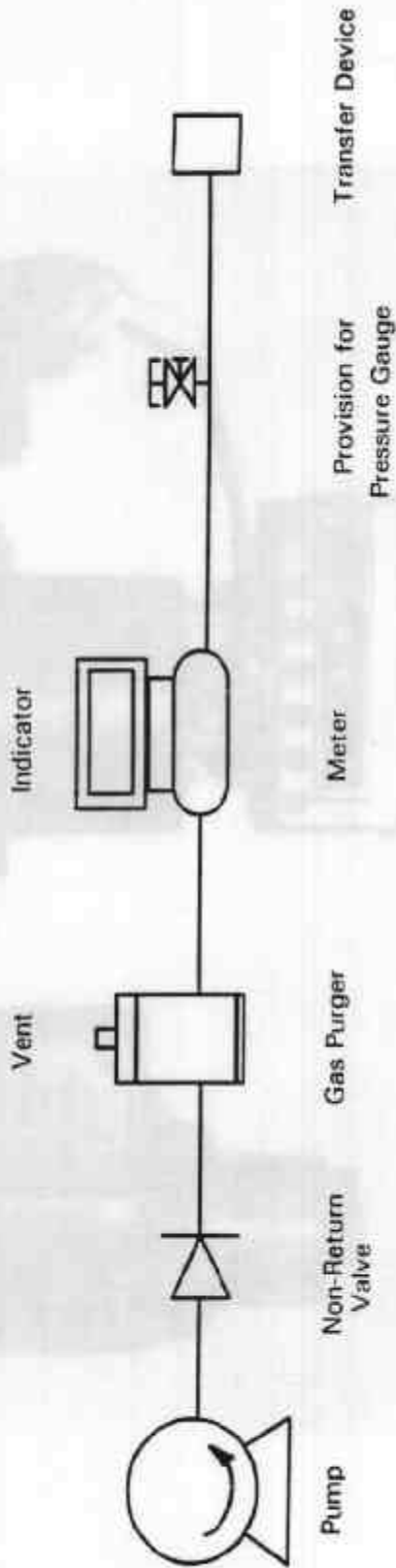
Tokheim 682 Series Flowmeter With 683 Series Gas Purger/Strainer  
and Model 1541 Indicator

FIGURE 5/6B/35A - 3



Tokheim 682 Series Flowmeter With 1550 Series Control Valve,  
Model 1540 Preset Counter and Model 1542 Indicator/Printer

FIGURE 5/6B/35A - 4



Typical Modular Flowmetering System