National Measurement Office Certification

2220/2

III(4)e

Pursuant to section 12 of the Weights and Measures Act 1985

Certificate No 2220/2 Revision 2

issued by:
The National Measurement Office

In accordance with the provisions of section 12 of the Weights and Measures Act 1985, the Secretary of State for Business, Innovation & Skills has issued this UK national type-approval certificate to:

Hallamshire Brewery Services
Liverpool Street
Sheffield
S9 2PU
United Kingdom

and hereby certifies as suitable for use for trade the following pattern of an intoxicating liquor instrument for use in dispensing a measured volume of beer or cider by the momentary depression of a switch at a the bar dispense point. The dispense unit is designated "METERMAN MKII" and the measured volume is ½ pint.

The necessary data (principal characteristics, alterations, securing, functioning etc.) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Note: This certificate relates to the suitability of the equipment for use for trade only in respect of its metrological characteristics. It does not constitute or imply any guarantee as to the safety of the equipment in use for trade or otherwise.

This revision replaces previous versions of the certificate.

Issue Date: 11 September 2014
Valid Until: 10 September 2024
Reference No: T1114/0011

Signatory: P R Dixon
for Chief Executive

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National Measurement Office

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CERTIFICATION NO 2220/2 REVISION 2

Descriptive Annex

1 INTRODUCTION

This pattern of a liquid measuring instrument is the same as that described in Certification No. 2220/1 with the modification that there are no pressure switches in the beer line and the electronic circuit in the external control module is now redesigned, enclosed within a smaller control module and located within the dispense head (Figure 1).

2 CONSTRUCTION

2.1 Mechanical

The beer delivery pipe runs from the beer barrel or keg to a froth or beer (FOB) detector, which is included in the measuring system (Figure 2) to prevent excess gas from entering the dispense unit. A float is located within the FOB detector, which normally floats to the top of the chamber. Excess gas may be vented via an exit port and manual control valve located at the top of the chamber. The delivery pipe exits the FOB detector at its base and continues on to the electric assist pump, the cooler and finally the dispense unit.

2.2 Electrical

Power for the system is derived from a 24 V AC transformer mounted in a box containing relays for the mains-operated pump.

The FOB detector incorporates an electrical switch in the body the contacts of which are normally closed, when the float is at the top of the FOB, allowing consecutive deliveries to be made. As entrained gas collects at the top of the FOB and the float descends towards the middle of the FOB, the contacts are switched into the open position, operating an electrical interlock which prevents further dispenses. The system remains interlocked until the float rises once more. A FOB detector override switch is provided so that the interlock may be overridden during cleaning of the system. In this condition the "CLEAN" lamp on the FOB detector override box is lit.

2.3 Electronics

The turbine houses an infrared light emitting diode (LED) and detector which produces electronic output pulses for the control module. The turbine is supplied by RS Components, Stock No 257-149. This is located in the dispense head.

The main electronic circuitry is housed in the control module (Figure 3). Its inputs are those of power, the output signal from the turbine and the signal from the dispense initiate switch. The module controls the dispense solenoid, the dispense head indicator lamp and the relays controlling the mains-operated assist pump. The turbine provides electronic pulses which are detected and counted by the control module. After a preset number of pulses have been counted, the control module closes the solenoid valve and the assist pump is switched off. The preset number of pulses may be adjusted via switches in the control module to allow calibration of the flowmeter.

2.4 Legends

The dispense unit has the Certificate Number 2220/2, the nominal dispense quantity and the METERMAN logo moulded on the plastic cap at the top of the unit.

2.5 Sealing and Stamping

The control module is secured by a nylon monofilament, which is passed through two holes drilled into both cover and base at the midpoint of the longer sides and on either side of the module. The two ends are drawn taut and a lead seal applied.

The turbine is sealed by a monofilament passing through the body and locking ring of the meter housing, returning through the cover and terminating with a lead seal. The Stamp is applied to the two lead seals.

3 OPERATION

Sufficient top pressure from a regulated CO_2 gas supply is applied to the keg to maintain a constant pressure within and to prevent out-gassing of entrained CO_2 gas as beer is drawn off.

3.1 Dispense Sequence

When the bar switch is depressed, a signal is sent to the control module which opens the bar dispense solenoid and starts the pump. With the solenoid valve open, pressure in the system causes the liquid to flow from the beer keg through the FOB detector to the assist pump, which boosts the pressure and increases the flow rate. Liquid then passes through the cooler to the dispense unit, where it spins the turbine rotor and subsequently passes to the spout and exit nozzle.

As the rotor turns, a continuous series of electronic pulses are produced which are detected and counted by the control module. The volume to be dispensed is preset to a given number of pulses by a binary switch in the control module. The total number of pulses can be adjusted to allow calibration of each individual flowmeter. The pulses are transmitted via a single screened cable which is without breaks or connections and is continuous between turbine and control module. When the preset number of pulses have been counted, the control module closes the solenoid valve and the assist pump is switched off.

Once initiated, the system will continue to dispense until the full measure is delivered. An indicator lamp located on the side of the dispense head illuminates when the solenoid valve is open and indicates that the dispense request is proceeding as normal. It remains lit throughout the operation and is extinguished at completion of delivery. A further dispense may be initiated as soon as the previous one has been completed.

An empty keg or excessive gas in the beer will cause the liquid level and float in the FOB detector to drop, operating an electrical interlock which prevents any further liquid from being drawn by the pump and passed via the meter in the dispense unit. The system remains interlocked until a supply of gas free liquid is reinstated to the FOB detector, the excess gas within is purged from the top of the FOB and the float rises once more, before further dispenses may be made.

Excessive gas in the beer line downstream of the FOB detector or incorrect pressure at the dispense unit produces a flow rate which is immediately detected as incorrect, causing the system to truncate delivery and to initiate a minimum delay of approximately 5 seconds. This is because the electronic pulse rate produced by the turbine is outside the requirements for an approximate 5 to 14 second total dispense time limit. The dispense head lamp flashes and further operation of the bar switch during this delay period has no effect. Another dispense may be started only when the delay has expired.

3.2 Interlocks

A new dispense cycle can only be initiated after the previous cycle has been terminated. Operating the dispense switch during a dispense cycle has no effect. The dispense cycle is terminated after approximately of 14 seconds.

A measure cannot be dispensed if the FOB detector interlock is activated.

A delivery is truncated if incorrect pressure exists at the dispense unit and the approximate 14 second total dispense time limit is likely to be exceeded or excessive gas is detected in the beer line downstream of the FOB detector. There is a minimum lockout delay of approximately 5 seconds at the end of a truncated dispense cycle during which the dispense head lamp flashes at a variable rate. Operating the dispense switch during this delay period has no effect.

4 AUTHORISED ALTERNATIVES

4.1 Having a mixed gas (30% CO_2, 70% N_2) supply in place of the CO_2 supply and pump.

4.2 Having no assist pump fitted in the system.

4.3 Having a gas operated pneumatic pump fitted in place of the electrical assist pump.

4.4 Having a dispensed volume of $^1/_3$ pint.

4.5 Having alternative sizes and configurations of dispense head.

4.6 Having no assist pump and a replacement transformer.

When there is no assist pump, the power supply unit with integral relays may be replaced by a smaller 24 V AC transformer to power the control module.

4.7 Having a mechanical FOB detector (Figure 4).

4.8 Having the control electronics mounted in an external box.

The control electronics are mounted into a larger plastic box (Figure 5) that is located externally from the dispense head (Figure 6). This external control module has a LCD display in one end (1), (Figure 5) that is used for management information only. The box is sealed by a nylon monofilament passing through the head of a pair of screws, fitted to the cover and the base, on either side of the module with the ends passing through and terminating with a lead seal.

4.9 Having a measured volume of 125 ml for wine.

Having a measured volume of 125 ml suitable for red or white wine. The system includes a mechanical FOB (froth on beer) detector and a gas operated pump for the dispense of wine from bulk containers.

4.10 The Multiman dispense unit (Figure 7)

Having up to eight “METERMAN MKII” flow meters arranged in a single machine which is designed to deliver several drinks simultaneously. The manufacturer's designation of the system is `The Multiman Dispense Unit'. Each flowmeter may have an adjustable flow restrictor fitted downstream of the flowmeter in order to aid the setting of the delivery speed.

Each individual flowmeter can be isolated so that any number of individual flow meters may be operated from the master switch. Each isolating switch is so arranged that once the delivery has commenced the flowmeter cannot be switched off until the delivery has been completed. The red and green indicating LEDs for each flowmeter are situated next to the isolation switch for the respective tap. The dispense heads are fitted into a cross member which can be tilted downwards during delivery thus reducing the incidence of gas breakout during the dispense.

4.11 The Mul`T'Bar dispense unit (Figures 8 and 9)

Having four `METERMAN MKII' flow meters arranged in a single machine which is designed to deliver several drinks simultaneously. The manufacturer's designation of the system is `The Mul`T'Bar'. Each flowmeter may have an adjustable flow restrictor fitted downstream of the flowmeter in order to aid the setting of the delivery speed.

Each individual flowmeter can be isolated so that any number of individual flow meters may be operated from the main switch. Each isolating switch is so arranged that once the delivery has commenced the flowmeter cannot be switched off until the delivery has been completed. The dispense heads are fitted into a cross member which can be tilted downwards during delivery thus reducing the incidence of gas breakout during the dispense.

The red indicating LEDs for each flowmeter are situated next to the isolation switch for the respective tap. When the instrument is powered the red LEDs light. When a dispense is initiated the red LEDs turn off. If the dispense cut-out mechanism is activated the red LED associated with that flowmeter will flash. When the dispense is complete the red LEDs light again. In this instrument there are no green indicating LEDs.

4.12 The Multiple Dispense Unit (Figures 10 and 11) Submitted by:

C.B.L. (Dispense) Ltd
Unit 3
Caroline Court
Billington Road
Burnley
Lancashire BB11 5UB

As described in the Certificate but having four “METERMAN MKII” flow meters arranged in a single machine which is designed to deliver several drinks simultaneously. The manufacturer's designation of the system is the 'Multiple Dispense Unit' which is generally abbreviated to 'M.D.U.'. Each individual flowmeter has an adjustable in-line flow restrictor fitted downstream of the flowmeter in order to assist with the setting of the delivery speeds, and thereby enabling all four metermen to be set so their cycle is completed at the same time. (Figure 13)

Each individual flowmeter can be isolated so that any number of flow meters can be operated from the main (central) push button switch (Figure 12). Each isolating switch is so arranged electrically that once the delivery has commenced no alteration to that cycle can be made until the delivery has been completed. The dispense outlet spouts are mounted to a central plate and a tray containing the glasses is brought up underneath them, and drinks are then dispensed into the bottom of the glass to enable a quick dispense speed with a minimum of gas breaking out of saturation.

The red and green indicating LEDs for each flowmeter are positioned above the isolating switch for the respective tap. When the machine is powered up the red LEDs light up. When a dispense cycle is commenced the red LEDs go out on any flowmeter in use, and its corresponding green LED is activated and stays lit for the duration of that cycle. When the cycle is completed then the LEDs reverse, and the red LEDs light again. If the dispense cut-out mechanism is activated the red LED associated with that flowmeter will flash until it has reset when a solid red LED will appear.

4.13 Alternative Multiple Dispense Unit (Figure 14)

As described in section 4.11 but having the control box in an alternative position as illustrated in Figure 14.

CONDITIONS

This amendment is limited to the following site:

Reading Football Club
Madjeski Stadium.

The housing for the meters and flow control units will be moved back towards the wall mounting as shown in Figure 14 and the pipe work extended by approximately 0.5m. All other details will remain as described in section 4.11.

4.14 Measured volume of 500 ml for still wines

Having a measured volume of 500 ml for still wines. The system includes a mechanical FOB detector. When the FOB chamber is emptied the float in the chamber obstructs the outlet and the dispense is stopped. The control system detects the premature loss of flow as an error and sends a signal to the LED fitted to the dispense head, causing it to repeatedly flash. Where this occurs the dispensed volume should be re-measured using alternative equipment which has been stamped as suitable for the purpose.

The legends and markings on the dispense unit should be amended as described below:

Certification number: 2220/2
Nominal quantity: 500 ml
For still wines only.

4.15 Table Top Multiple Dispense Machine (Figure 15)

The Table Top Multiple Dispense Machine (TTMDM) is designed to deliver multiple drinks where large numbers of people require serving in a limited period of time. The machine is generally smaller and lighter with a footprint size approx. of 400 mm x 200 mm). The machine comprises a base unit into which the product is fed via bulkhead connectors, two vertical side sections (Figure 16), that house the meters and a cross section containing the solenoid valves, spouts, master operating switch and individual isolating switches. The whole of the vertical and cross sections are covered with a protective cover in either metal or plastic. Drinks containers (normally plastic or cardboard) are fed under the filling heads on a tray and operation of the master switch causes all the meters to dispense into the containers. The pressure of liquid causes the spouts to project downwards into the container thus reducing the incidence of foaming into the containers. When the flow stops the spout retracts to allow removal of the tray of drinks from the machine.

The machine is fed from storage containers and each container is provided with a fob detector to ensure foam does not enter the system when a keg empties. Depending upon operating parameters a pump may be fitted to assist in the flow of product and the product will be cooled by means of some type of cooler. The individual isolating switches on the cross section breaks the switch connection of each individual meter. This means that once the meter has started to dispense it cannot be interrupted by turning the meter off. Similarly, with the individual meter turned off it cannot be activated.

5 RECOMMENDED TESTS

In addition to those tests specified in Regulations the following tests may be performed to check for conformity to the pattern.

5.1 Check that a dispense is truncated if excessive gas is detected in the beer line downstream of the FOB detector.

5.2 Check that, when a dispense is truncated, a minimum delay of approximately 5 seconds occurs before a further dispense may be made.

5.3 Check that the system does not dispense when the FOB detector is activated.

5.4 Check that the flow rate is within the requirements for an approximate 5 to 14 second total dispense time limit.

5.5 Check that the cable from the turbine to the control module is continuous and has no joints or connections along its length.

5.6 Check that each meter is only connected to one bar dispense point.

6 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
2220/2	30 September 1996	Certificate first issued.
2220/2	30 January 2004	Certificate Renewed until 15 June 2014
2220/2 Revision 1	26 October 2009	Amendments 1 to 7 consolidated into certificate – Sections 4.6 to 4.13 Section 4.14 Table Top Multiple Dispense Machine added
2220/2 Revision 2	11 September 2014	Certificate renewal issued.

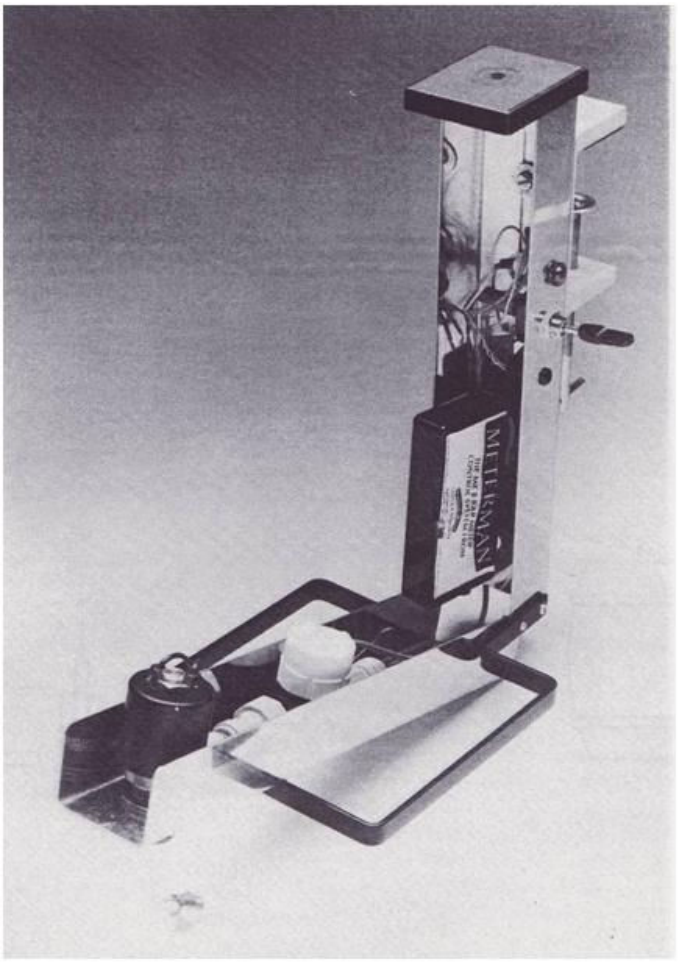

Figure 1 The pattern

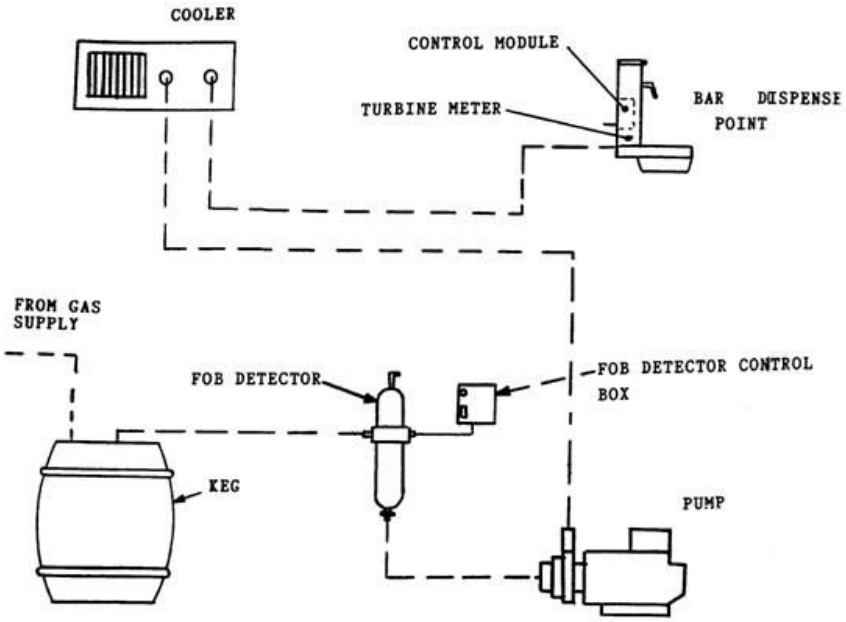

Figure 2 The measuring system

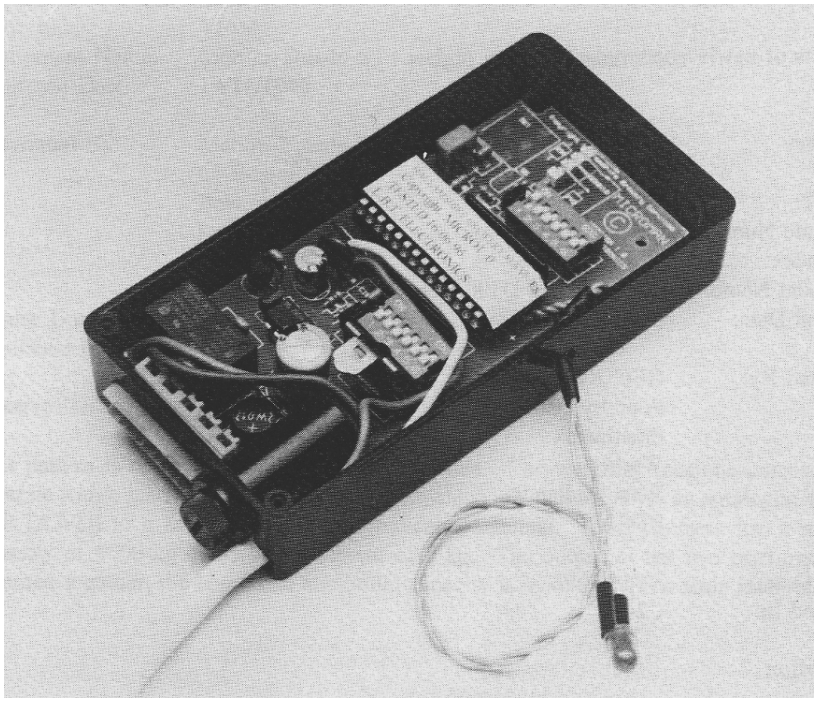

Figure 3 The control module

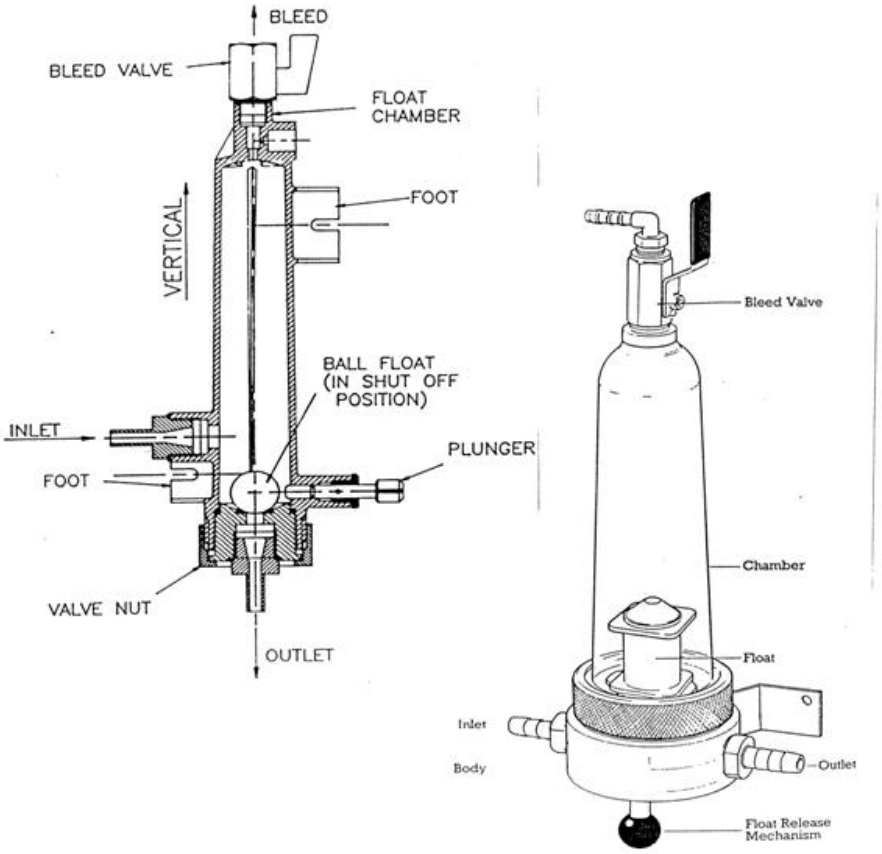

Figure 4 Mechanical FOB detectors

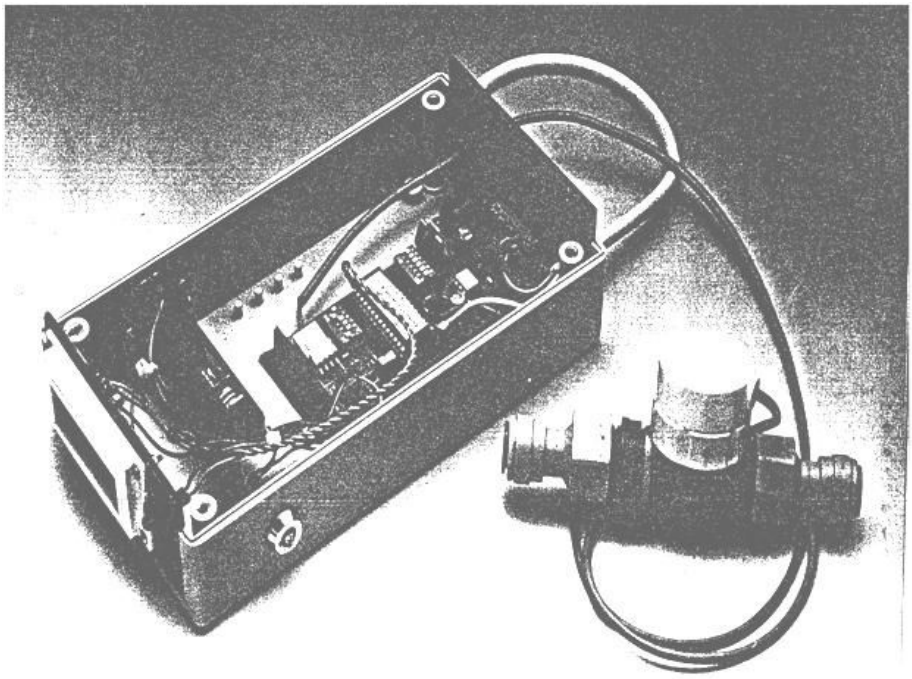

Figure 5 Control Electronics mounted into a larger box with an LCD

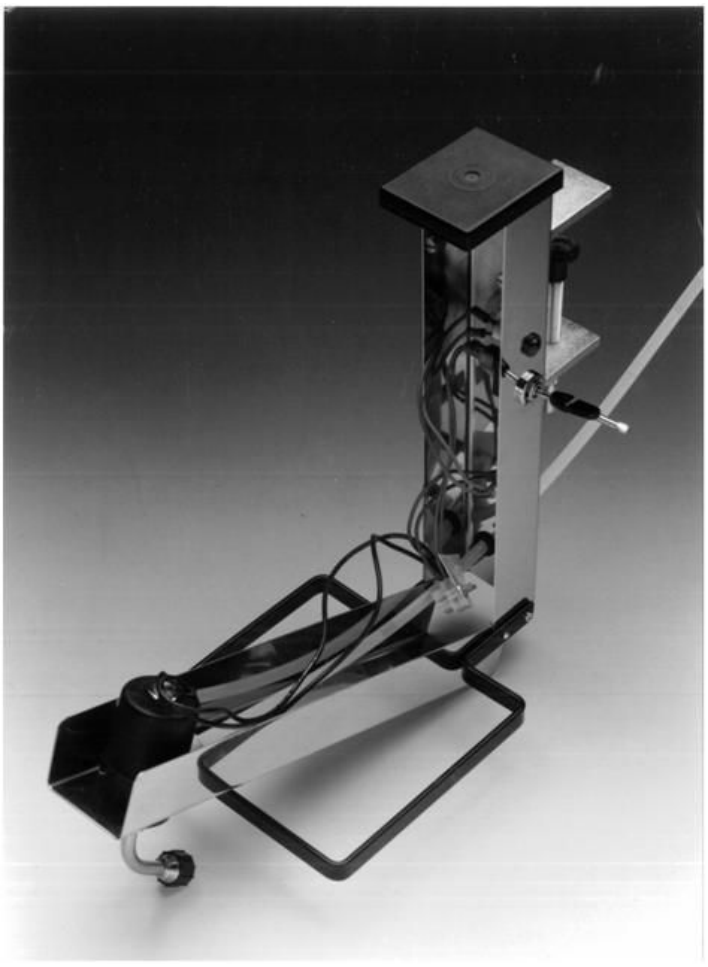

Figure 6 Dispense Head when control electronics mounted in an external box

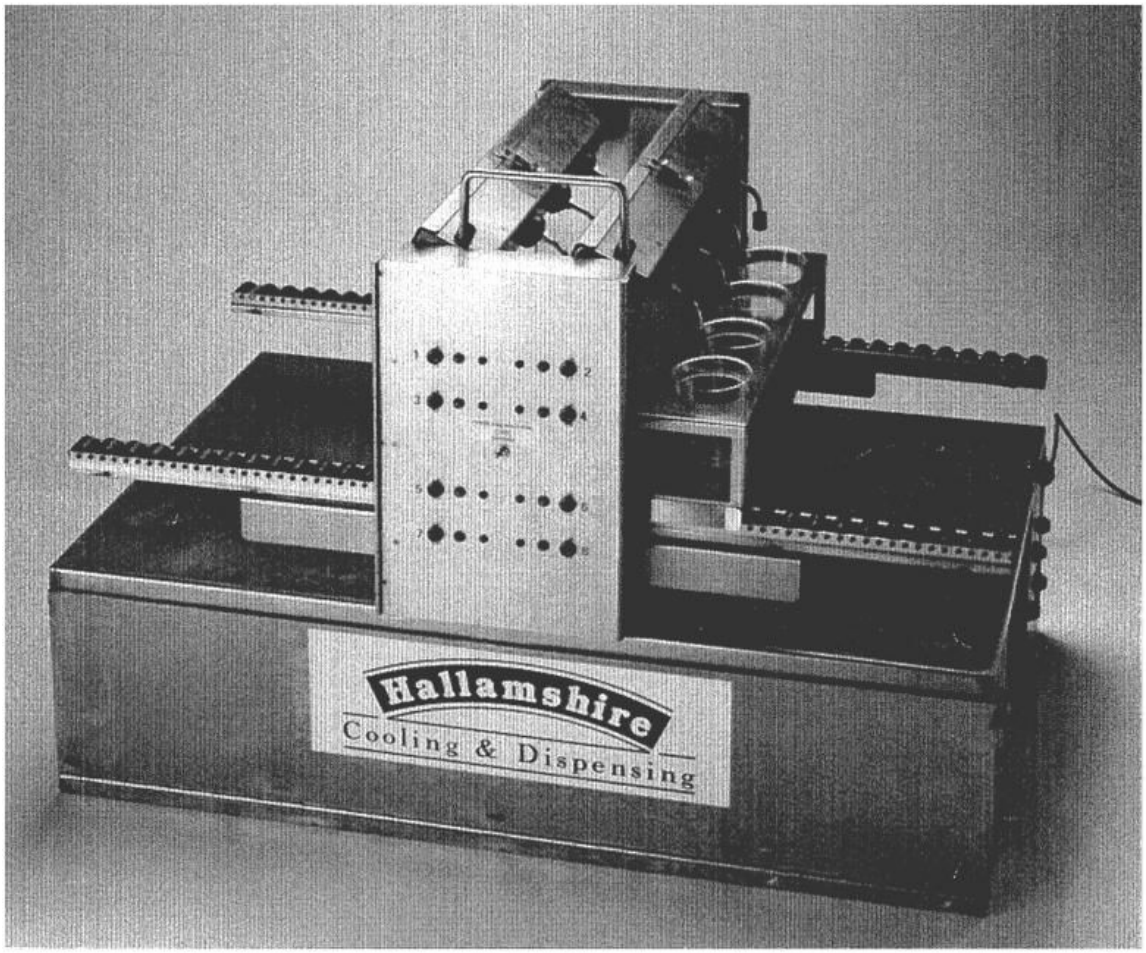

Figure 7 The Multiman dispense unit

Figure 8 The Mul`T'Bar dispense unit

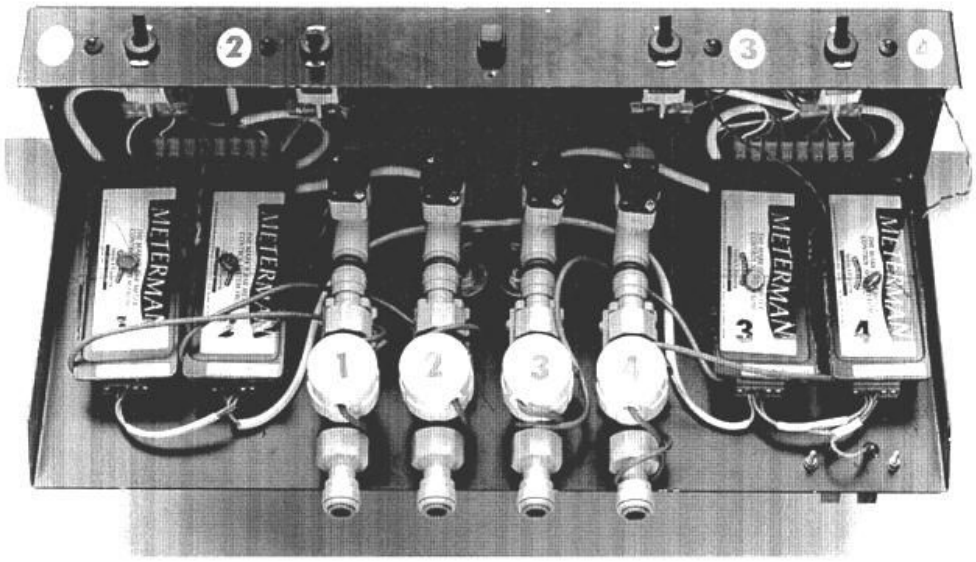

Figure 9 The Mul`T'Bar with cover open showing flow restrictors and "METERMAN MKII" flow meters

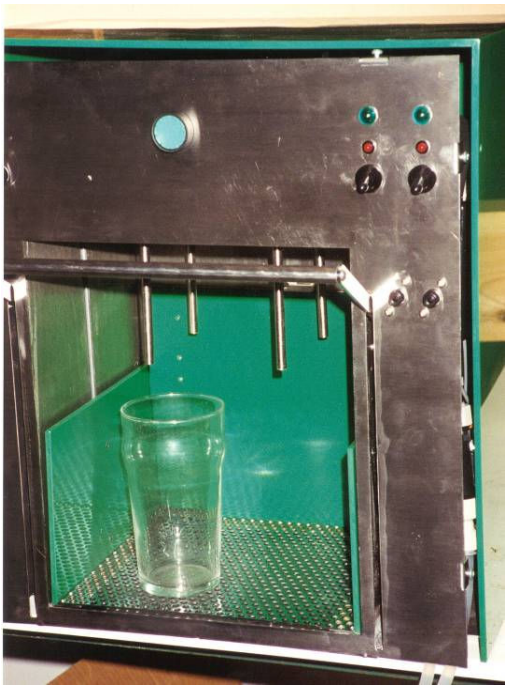

Figure 10 The Multi Dispense Unit (M.D.U)

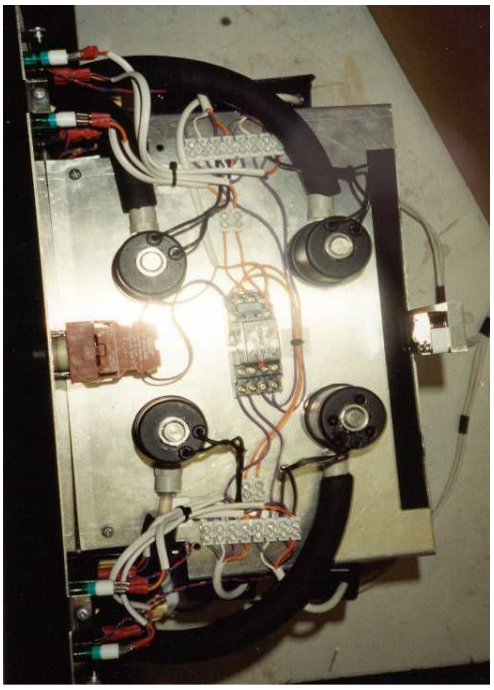

Figure 12 Switch wiring

Figure 11 The Multi Dispense Unit (M.D.U)

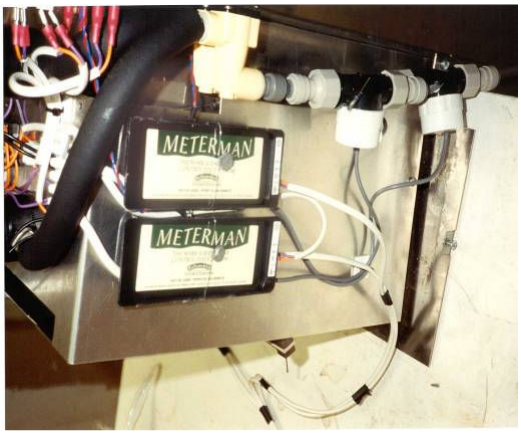

Figure 13 Metermen and flow restrictors

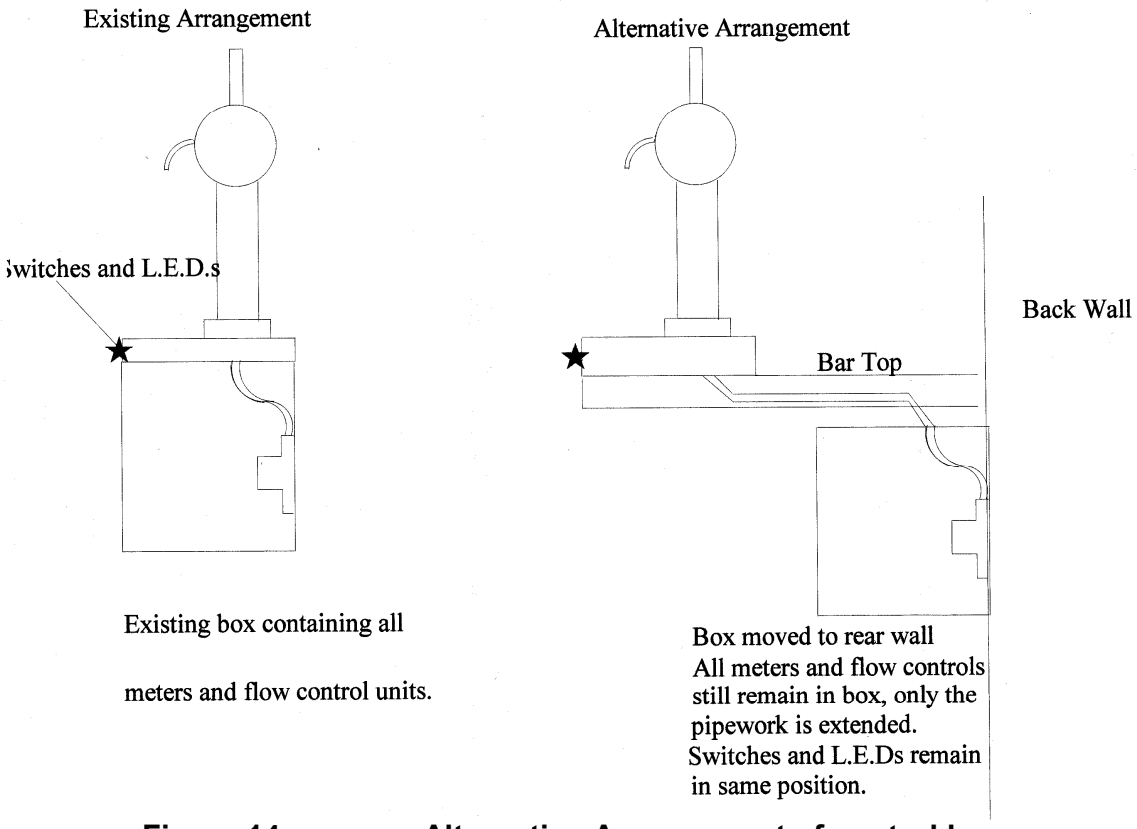

Figure 14 Alternative Arrangement of control box

Figure 15 **Table Top Multiple Dispense Machine**

Figure 16 **Table Top Multiple Dispense Machine - Vertical side section**