Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 5/6A/223

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Compac Model MA30S Liquid Dispenser for Motor Vehicles

submitted by Compac Industries Ltd
52 Walls Road
Penrose Auckland 1061
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.

This approval has been granted with reference to document NMI R 117 *Measuring Systems for Liquids Other than Water*, dated June 2011.

This approval becomes subject to review on **1/08/22**, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern provisionally approved – interim certificate issued	4/05/10
1	Pattern approved – interim certificate issued	15/07/10
2	Pattern approved – certificate issued	13/08/10
3	Variants 1 to 3 approved – certificate issued	18/05/11
4	Pattern (Test Procedure) amended – notification of change issued	20/10/11
5	Pattern & variants 1 to 3 updated – variant 4 approved – certificate issued	18/07/12
6	Variant 5 approved – certificate issued	31/03/15

DOCUMENT HISTORY (cont…)

Rev	Reason/Details	Date
7	Pattern & variants 1 to 5 **reviewed** – variant 6 approved – certificate issued	2/12/16
8	Pattern Amended (Any compatible NMI approved Calculator/indicator) - certificate issued	21/01/19

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/223' and only by persons authorised by the submittor.

Instruments purporting to comply with this approval, or incorporating a component purporting to comply with this approval, and currently marked 'NMI P5/6A/223' may be re-marked 'NMI 5/6A/223' but 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 National Measurement Institute (NMI) 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 document NMI P 106.

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

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.

Darryl Hines
Manager
Pattern Approval, Policy and Licensing Section

TECHNICAL SCHEDULE No 5/6A/223

1. Description of Pattern **provisionally approved on 4/05/10**
approved on 15/07/10

A Compac Industries model Master MA30S single liquid dispenser for certain (#1) motor vehicles is approved to dispense AdBlue (urea solution). The meter is adjusted to be correct for the liquid for which it is to be verified.

(#1) Vehicles having heavy duty diesel engines fitted with a Selective Catalytic Reduction (SCR) unit.

1.1 Field of Operation

The field of operation of the measuring system is determined by the following characteristics:

- Minimum measured quantity, V_{min} 2 L
- Maximum flow rate, Q_{max} 30 L/min
- Minimum flow rate, Q_{min} 3 L/min
- Maximum pressure of the liquid, P_{max} 320 kPa
- Minimum pressure of the liquid, P_{min} 50 kPa
- Dynamic viscosity (at 25°C) 1.4 mPa.s (#2)
- Maximum temperature of the liquid, T_{max} 30°C
- Minimum temperature of the liquid, T_{min} 0°C
- Ambient temperature range -25 to 55°C
- Accuracy class 0.5

(#2) The flowmeter is adjusted to be correct for AdBlue fluid AUS32 (aqueous urea solution 32.5%) for which it is to be verified.

1.2 Description of the Metering System

The instrument (Figure 1) incorporates the following components:

(i) With an external centrifugal or vane type pump installed in flooded suction and with the supply tank installed above ground. The supply tank is fitted with a low level device which prevents measurements when the device is activated.

(ii) A measurement transducer comprising a Compac model KG-40 coriolis principle mass flowmeter which provides electrical pulse output proportional to liquid throughput (Figure 2).

(iii) A hose/nozzle, mounted on the side of the dispenser housing. The nozzle used is an Elaflex ZVA 16 mm; the hose used is an Elaflex Adblue 16 mm of 6 metres maximum length.

(iv) A Parker model 7221 direct lift stainless steel solenoid valve is used.

(v) A Compac model C4000 calculator/indicator (Figure 2) or any other compatible (#) NMI-approved calculator/indicator, which has 3 displays for indicating the following:

- Volume up to 9999.99 L
- Price up to 9999.99 $
- Unit price up to 999.9 ¢/L

The instrument is approved with software version HIA29253. The version number is written on the chip, or can be viewed by pressing the parameter switch once.

For any other compatible (#) NMI-approved calculator/indicator, see the NMI-approval.

1.3 Checking Facilities

An automatic segment test is performed at the start of each delivery.

The calculator monitors the presence and correct transmission of signal from the measurement transducer, and in the event of detecting a fault the instrument indicates an error code and has provision for controlling the electrically-operated solenoid valve to stop the delivery.

1.4 Sealing Provision

For the C4000 calculator/indicator, access to the electronic meter calibration switch has provision for sealing as shown in Figure 3. For any other compatible (#) NMI-approved calculator/indicator, see the NMI-approval.

The lid of the measurement transducer is sealed in place during manufacture and cannot be removed without damaging the transducer.

(#) 'Compatible' is defined to mean that no additions/changes to hardware/software specified in this approval are required for satisfactory operation of the complete system.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Markings

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

Pattern approval sign	5/6A/223	
Manufacturer's identification mark or trade mark	.....	
Manufacturer's designation (model number)	.....	
Serial number	.....	
Year of manufacture	.....	
Maximum flow rate (Q_{max})	..... L/min	
Minimum flow rate (Q_{min})	..... L/min	
Minimum measured quantity (V_{min})	 L	(#1)
Maximum operating pressure (P_{max})	..... kPa	
Minimum operating pressure (P_{min})	..... kPa	
Nature of liquids to be measured	.....	(#2)
Maximum temperature of the liquid, T_{max}	°C	
Minimum temperature of the liquid, T_{min}	°C	
Environmental class	class C	

(#1) In addition, the minimum measured quantity (V_{min}) shall be clearly visible on any indicating device visible to the user during measurement, in the form 'Minimum delivery 2 L'.

(#2) AdBlue fluid AUS32 (aqueous urea solution 32.5%).

2. Description of Variant 1 approved on 17/05/11

A Compac model Master MMA30S dual hose dispenser dispensing AdBlue fluid AUS32 (urea solution) at a maximum flow rate of up to 40 L/min.

3. Description of Variant 2 approved on 17/05/11

For use with a remote nozzle holder and a remote display allowing mobile delivery systems to use the dispenser inside a separate housing with the display and nozzle on the outside of that housing – the display on the dispenser may be retained or removed. This variant may be used with a high mast (Figure 4a) or a hose reel (Figure 4b).

4. Description of Variant 3 approved on 17/05/11

With a Compac model DCA ('Driveway Card Acceptor') card-operated control system (as described in the documentation of approval NMI S454) mounted on top of the dispenser indicator (Figure 5) known as the ComFutra option. The ComFutra is used in unattended self-service operation for registered users only. The 'Litres Total' electronic display is an individual user's total and is displayed as an 8 digit number to two decimal places (maximum 999999.99 L).

For the C4000 calculator/indicator, the software number 29255 will be displayed when the parameter switch is pushed. For any other compatible (#) NMI-approved calculator/indicator, see the NMI-approval.

5. Description of Variant 4 approved on 18/07/12

Compac models Laser LA30S and Laser LLA30S fuel dispensers which are the same as the Compac model Master MA30S (the pattern) and Master MMA30S (variant 1) respectively, except for that they are housed in a different chassis.

When used in conjunction with variant 3 (i.e. with a DCA control system) it is known as the Cardking option.

6. Description of Variant 5 approved on 31/03/15

For use with one or more Compac model V50 coriolis principle mass flowmeters (Figure 6) which provide a Modbus RS485 output to the calculator/indicator. This data is safeguarded with a CRC checksum over the data package.

Software for the C4000 calculator/indicator using the V50 flowmeter is versions 29600 and 29601. For any other compatible (#) NMI-approved calculator/indicator, see the NMI-approval.

If air is detected the dispenser will stop the transaction flashing 'Air' on the display. This allows for the use of an above tank suction pump with this meter.

(#) 'Compatible' is defined to mean that no additions/changes to hardware/software specified in this approval are required for satisfactory operation of the complete system.

7. Description of Variant 6 approved on 2/12/16

To include the MA30S as a kit without the master frame. The kits (Figure 7) are to be installed in a separate housing that include supply tank and pump.

TEST PROCEDURE No 5/6A/223

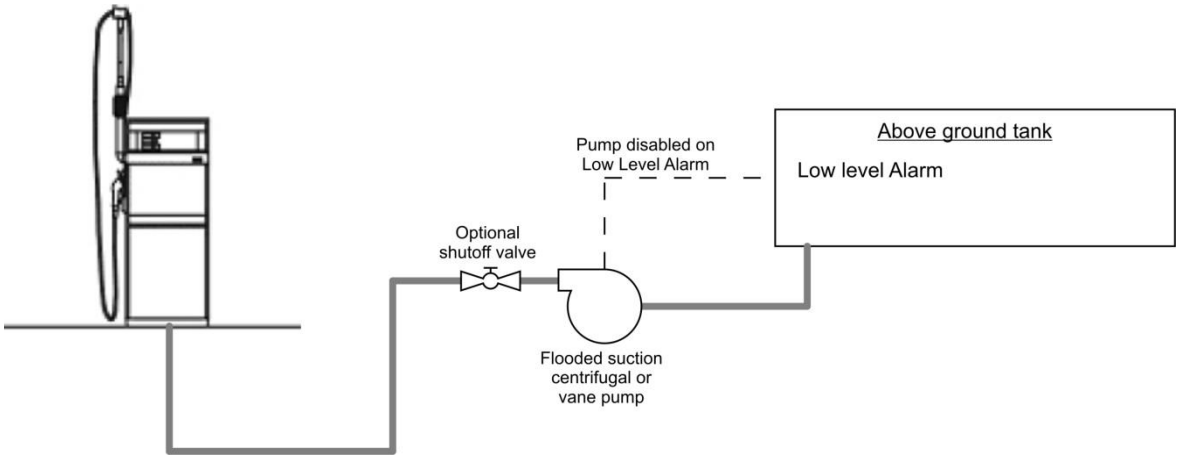
Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

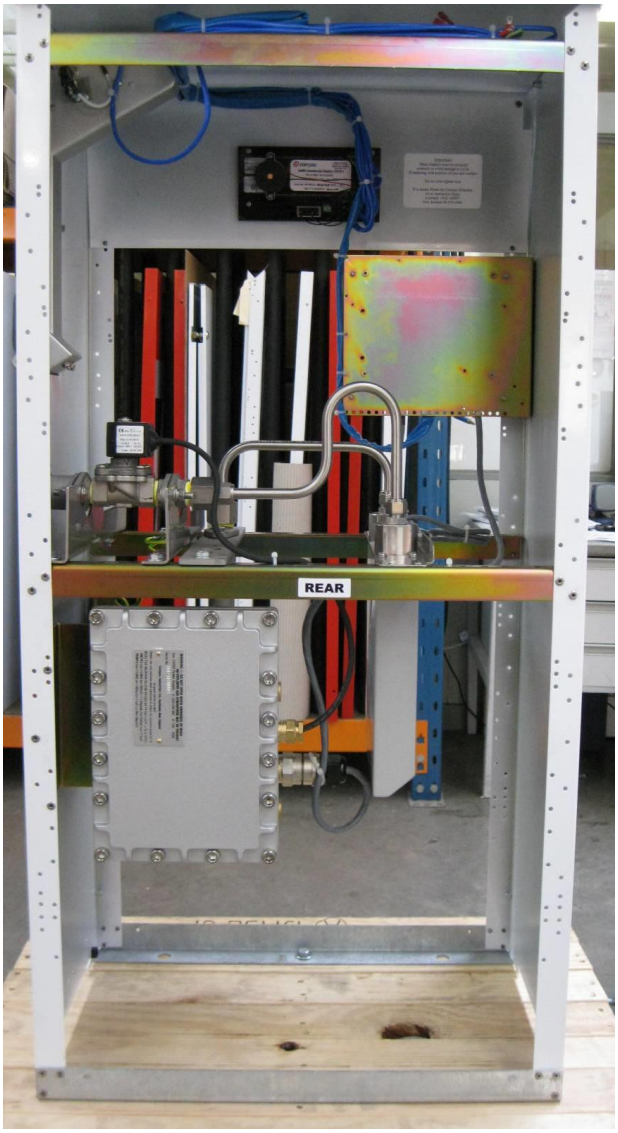
Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

FIGURE 5/6A/223 – 1



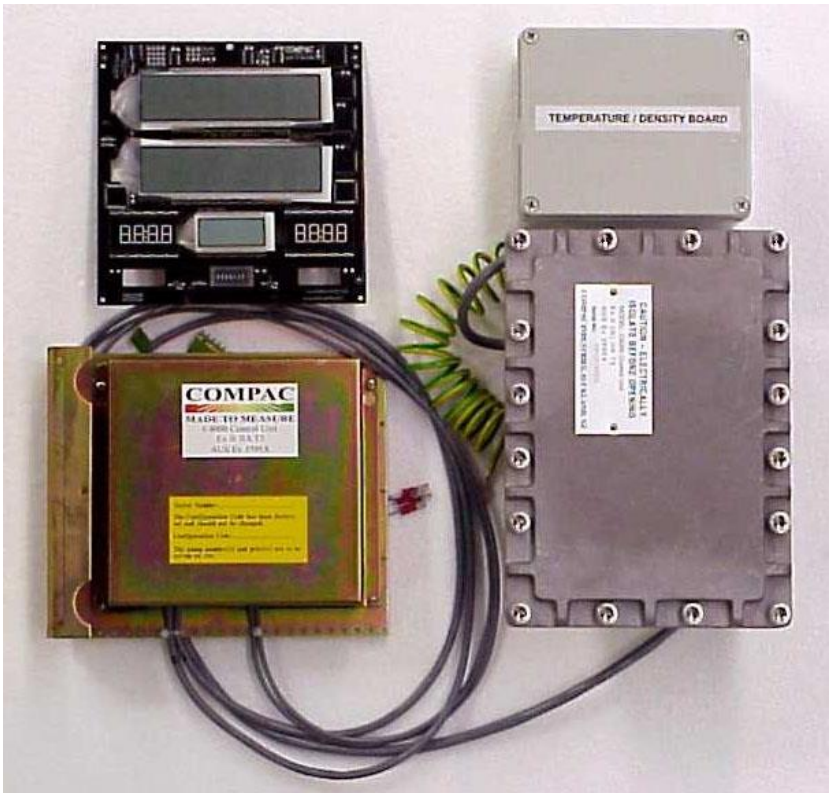
(a) Compac Model MA30S (AdBlue) Liquid Dispenser – Typical Installation



b) Compac Model MA30S (AdBlue) Liquid Dispenser – Without Covers

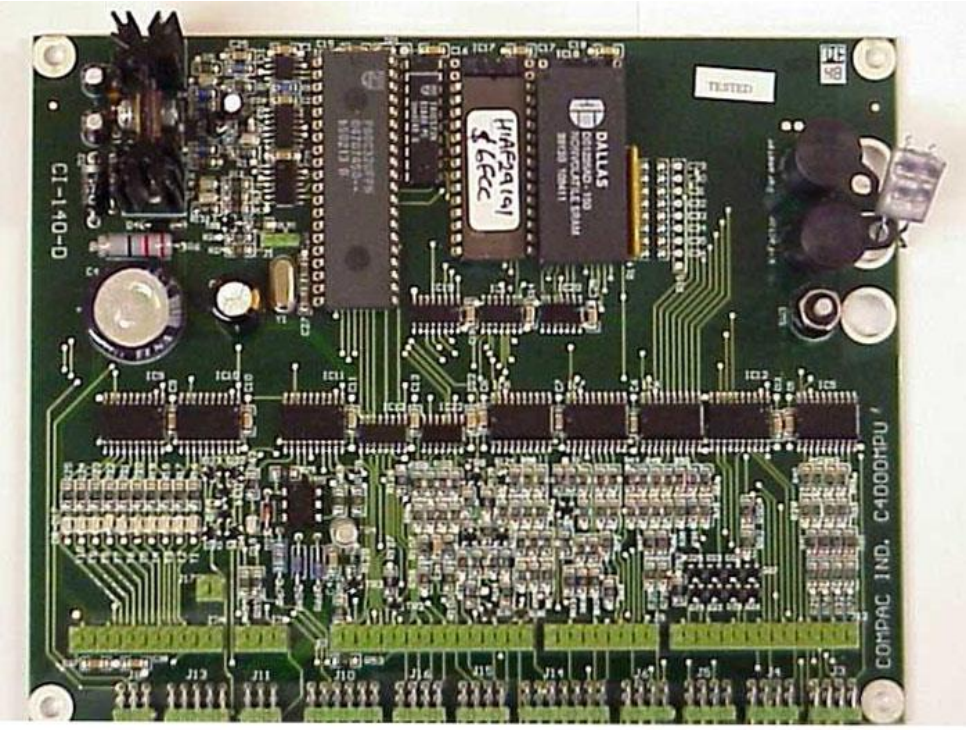
FIGURE 5/6A/223 – 2

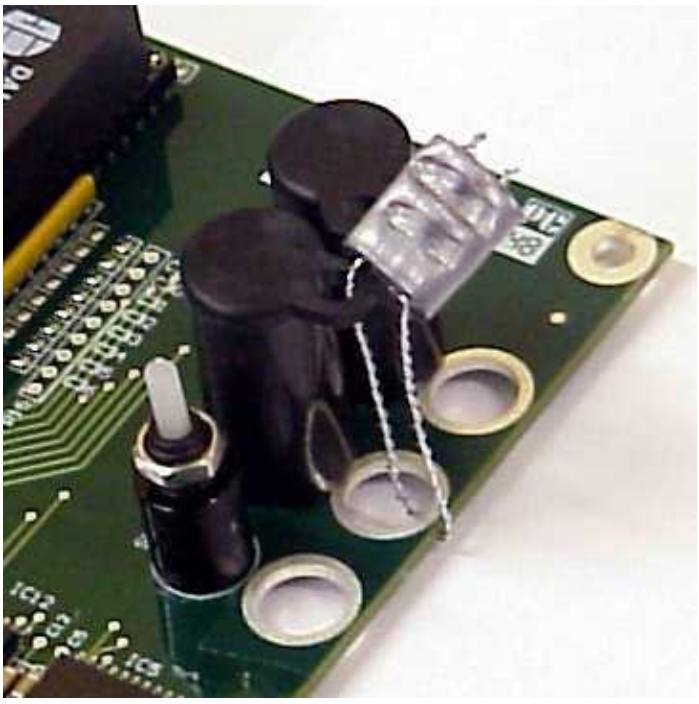
(a) Compac Model KG-40 Mass Flowmeter



(b) Compac Model C4000 Calculator/Indicator

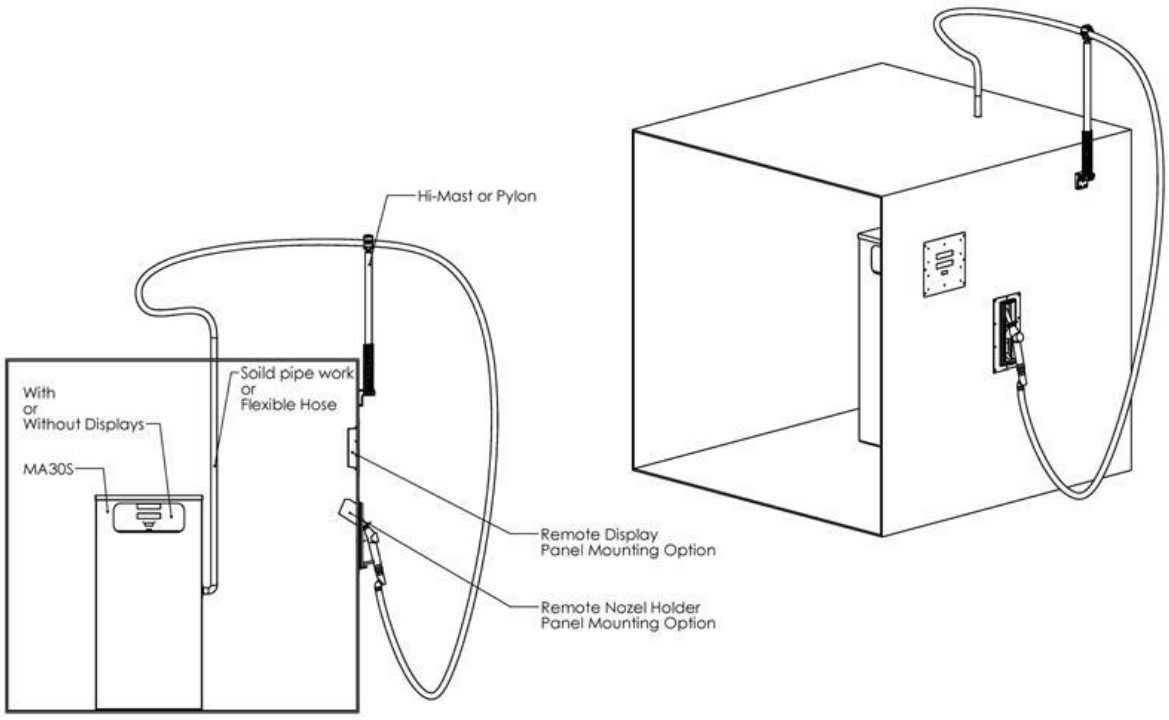
FIGURE 5/6A/223 – 3



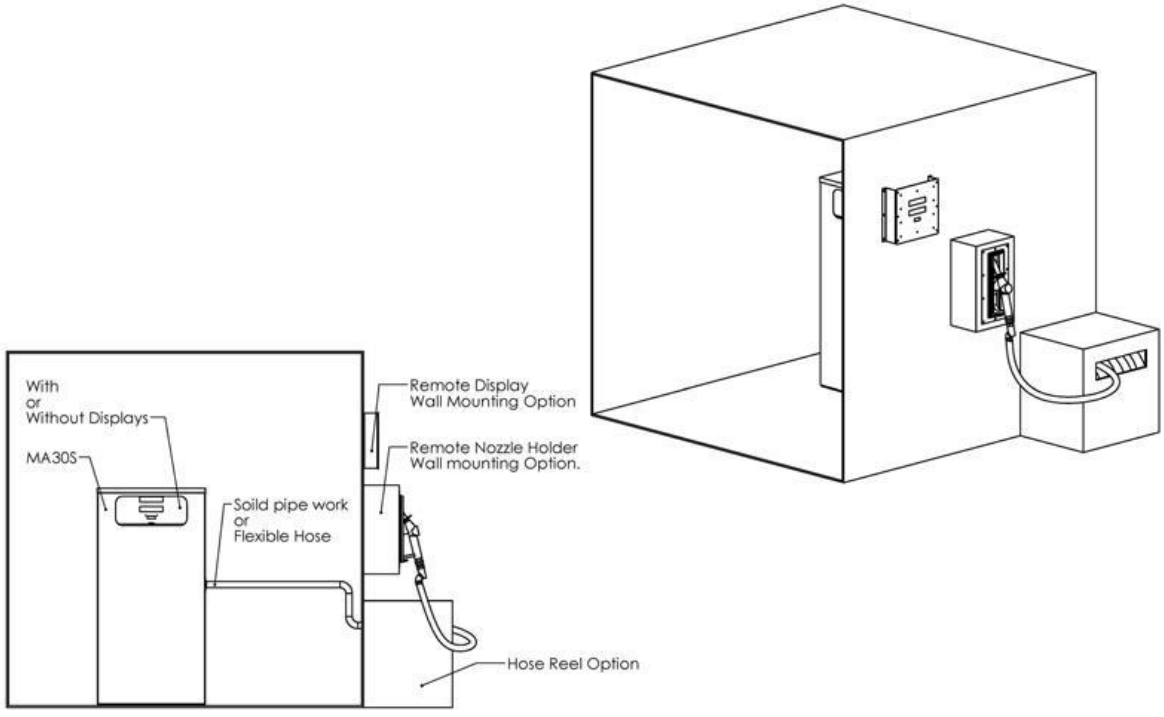


Typical Sealing of Meter Calibration (k-factor) Switch

FIGURE 5/6A/223 – 4



(a) Remote Nozzle Holder and Display with High Mast Option



(b) Remote Nozzle Holder and Display with Hose Reel Option

FIGURE 5/6A/223 – 5

Compac Dispenser With ComFutra Option – Variant 3

FIGURE 5/6A/223 – 6

Compac Model V50 Flowmeter – Variant 5

FIGURE 5/6A/223 – 7

Compac Model Master MA30S as a Kit (Variant 6)

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