



**Australian Government**  
**National Measurement**  
**Institute**

Bradfield Road, West Lindfield NSW 2070

# **Cancellation**

## **Certificate of Approval No 5/6A/209**

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

This is to certify that the approval for use for trade granted in respect of the  
Compac Model L40P Fuel Dispenser for Motor Vehicles

submitted by      Compac Industries Ltd  
                         52 Walls Road  
                         Penrose      Auckland      New Zealand

has been cancelled in respect of new instruments as from 1 September 2010.

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

A handwritten signature in black ink, consisting of stylized cursive letters, positioned above a horizontal line.



**Australian Government**  

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**National Measurement  
Institute**

12 Lyonpark Road, North Ryde NSW 2113

**Certificate of Approval**  
**No 5/6A/209**

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of the  
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This is to certify that an approval for use for trade has been granted in respect of the  
Compac Model L40P Fuel Dispenser for Motor Vehicles

submitted by   Compac Industries Ltd  
                  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 becomes subject to review on 1 July 2009, and then every 5 years thereafter. Instruments purporting to comply with this approval shall be marked NSC 5/6A/209 and only by persons authorised by the submittor.

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 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.

The National Measurement Institute 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 2 June 2004

- A Compac model L40P fuel dispenser for motor vehicles.

**Variants:** approved 2 June 2004

1. In certain other models and configurations.
2. In certain other models and configurations connected to one or more submersible turbine pumps.

Technical Schedule No 5/6A/209 describes the pattern and variants 1 & 2.

#### FILING ADVICE

The documentation for this approval comprises:

Certificate of Approval No 5/6A/209 dated 10 June 2005  
Technical Schedule No 5/6A/209 dated 10 June 2005 (incl. Test Procedure)  
Figures 1 to 6 dated 10 June 2005

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

A handwritten signature in black ink, appearing to be 'J. G. T.', is located in the bottom right corner of the page.

## TECHNICAL SCHEDULE No 5/6A/209

**Pattern:** Compac Model Legend L40P Fuel Dispenser for Motor Vehicles  
**Submittor:** Compac Industries Ltd  
52 Walls Road  
Penrose Auckland  
NEW ZEALAND

### 1. Description of Pattern

A Compac model L40P fuel dispenser for motor vehicles (Figure 1) approved to dispense distillate and various grades of petrol, in attendant-operated mode, or in self-service mode when interfaced to a compatible (\*) approved self-service device. The flowmeter is adjusted to be correct for the liquid for which it is to be verified/certified.

- (\*) "Compatible" is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system including all checking facilities.

#### 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, $Q_{max}$                 | 40 L/min                  |      |
| • Minimum flow rate, $Q_{min}$                 | 4 L/min                   |      |
| • Maximum pressure of the liquid, $P_{max}$    | 350 kPa                   |      |
| • Minimum pressure of the liquid, $P_{min}$    | 100 kPa                   | (#1) |
| • Range of liquids that can be measured        | 0.5 to 20 mPa.s (at 20°C) | (#2) |
| • Maximum temperature of the liquid, $T_{max}$ | 40°C                      |      |
| • Minimum temperature of the liquid, $T_{min}$ | 5°C                       |      |
| • Ambient temperature range                    | -25°C to 55°C             |      |
| • Accuracy class                               | 0.5                       |      |

#1 Minimum pressure for effective operation of gas elimination device.

#2 Flowmeter is adjusted for use with one product viscosity.

#### 1.2 Hydraulic System

The Compac model L40P fuel dispenser (Figure 1) uses a Compac Laser housing (frame) and the hydraulic system comprises:

- (i) Either a Wenzhou model ZYB50-CIL pumping unit or a Bennet Type 75 model 190701 pumping unit – the pumping unit incorporates an integral bypass, strainer and a gas elimination device, and is driven via a belt and pulley arrangement connected to an electric motor. Any vapour or gas separated by the gas separator is exhausted to the vent tube of the gas elimination device.

- (ii) A gas detection switch is connected to the vent tube on all units dispensing distillate, and stops the flow when excessive amount of air/vapour is detected in the liquid.
- (iii) A four-piston measurement transducer, known as a Bennet Type SB-100 model N7235-04 flowmeter (Figure 2) is fitted for each available hose/nozzle.
- (iv) Each measurement transducer is fitted with a Compac model Cu-Encoder-3ch pulse generator, which provides a three channel pulse output, each channel producing 50 pulses per shaft revolution.
- (v) A Parker Hannifin model 2104H 19mm two-stage solenoid-operated control valve is connected upstream of each hose and is controlled by the calculator/indicator to allow the control of pre-set deliveries and to allow the system to be pressurised.
- (vi) Either type ZVA or type XIDE 16mm nozzle (Figure 3), or any other compatible approved nozzle connected to a Goodyear flexsteel 559N, 15.9 mm hose or similar. The nozzle is the transfer device, which defines the start and finish of the measured volume throughput, and is designed to maintain the hose full of liquid. The nozzle and its receptacle are designed so that the nozzle cannot be placed in a hang-up position other than to end the delivery.

### 1.3 Calculator/Indicator

The fuel dispenser is fitted with a Compac model C4000 calculator/indicator (Figure 4) as described in the documentation of approval NSC S377.

The software version is P29226 and can be displayed as follows:

- Remove the main dispenser covers.
- Remove 4 screws of the C4000 Control Unit enclosure.
- Make sure the nozzle is hung up.
- Press the Parameter switch once – labelled 'Parameter SW1', situated on the C4000 PCB.
- 'P' will be displayed on the '\$' display.
- The number '29226' will be displayed on the 'Litres' display.

### 1.4 Checking Facilities

Removing the nozzle from its normal hang-up position initiates a segment check of the price, volume, and unit price displays.

- 'Error 7' is displayed and the delivery stopped if an excessive amount of air/vapour is detected.
- 'Error 9' is displayed and the delivery stopped when an error in pulse output is detected.

### 1.5 Pre-set Facility

A numerical keypad with an LCD display is provided for instruments with pre-set facility. The pre-set amount may be in dollars or litres depending on the configuration of the calculator/indicator. Instruments incorporating pre-set facility have a model number with a '-P' suffix, e.g. the pattern becomes a model L40P-P.

### 1.6 Totaliser

The instrument is fitted with an ENM CHICAGO model P29729A, 4.5 V DC, electronic totaliser for indicating the volume totals in one litre graduations up to a maximum of 9 999 999 litres. The totaliser is located below the indicator.

### 1.7 Sealing Provision

The gas separator test valve, the meter and the calibration button on the calculator/indicator have provision for sealing (Figure 5).

### 1.8 Descriptive Markings and Notices

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

Pattern approval sign	NSC 5/6A/209
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
Maximum operating pressure ( $P_{max}$ )	..... kPa
Minimum operating pressure ( $P_{min}$ )	..... kPa
Nature of the liquids to be measured	.....
Environmental class	class C

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'.

### 1.9 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

## **2. Description of Variants**

### **2.1 Variant 1**

Certain other models and configurations as listed below. Instruments are similar to the pattern (model L40P, listed below for comparison) including using one or more internal pumps. Figures 1 and 6, respectively, show dispensers in typical Laser and Legend housings (frames).

- L40P Laser frame, 1 hose, 1 meter, 1 pump, 1 or 2 displays (1 per side).
- L40PD Laser frame, 2 hoses, single suction, 1 pump, 2 meters, and 2 displays.
- LL40P Laser frame, 2 hoses, dual suction, 2 pumps, 2 meters, and 2 or 4 displays (1 or 2 per side).
- LL40PQ Laser frame, 4 hoses, dual suction, 2 pumps, 4 meters, and 4 displays.
- Legend MP2 Legend narrow-frame, 2 hoses, single suction, 1 pump, 2 meters, and 2 displays.
- Legend MP4 Legend frame, 4 hoses, dual suction, 2 pumps, 4 meters, and 2 displays.
- Legend MP4N Legend narrow-frame, 4 hoses, dual suction, 2 pumps, 3 meters, and 2 displays.
- Legend MP6 Legend frame, 6 hoses, three suction inlets, 3 pumps, 6 meters, and 2 displays. (#)

### **2.2 Variant 2**

Certain additional models and configurations which are similar to the pattern except the pump/gas separator and the electric motor are replaced by a compatible submersible turbine pump (STP) fitted to the supply tank.

- L40S Laser frame, 1 hose, 1 meter, STP, and 1 or 2 displays (1 per side).
- L40SD Laser frame, 2 hose, single inlet, STP, 2 meters, and 2 displays.
- LL40S Laser frame, 2 hoses, dual inlets, STPs, 2 meters, and 2 or 4 displays (1 or 2 per side).
- LL40SQ Laser frame, 4 hoses, dual inlet, STPs, 4 meters, and 4 displays.
- Legend MD2 Legend narrow-frame, 2 hoses, single inlet, STP, 2 meters, and 2 displays.
- Legend MD4 Legend frame, 4 hoses, dual inlets, STPs, 4 meters, and 2 displays.
- Legend MD4N Legend narrow-frame, 4 hoses, dual inlets, STPs, 4 meters, and 2 displays.
- Legend MD6 Legend frame, 6 hoses, three inlets, STPs, 6 meters, and 2 displays. (#)

(#) The Legend six hose models (MP6 and MD6) have two C4000 calculator units whereas all other models have one C4000 unit.

## TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Uniform Test Procedures.

### **Maximum Permissible Errors at Verification/Certification**

The maximum permissible errors applied during a verification test of the fuel dispenser using the liquid for which it is to be verified/certified, and from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule are:

- ±0.3% for the calibration/adjustment of the meter; and
- ±0.5% for in-service inspection of the complete measuring system.

Note: Adjusting the errors of a meter to values OTHER than as close as practical to zero is forbidden, even when these values are within the maximum permissible errors.

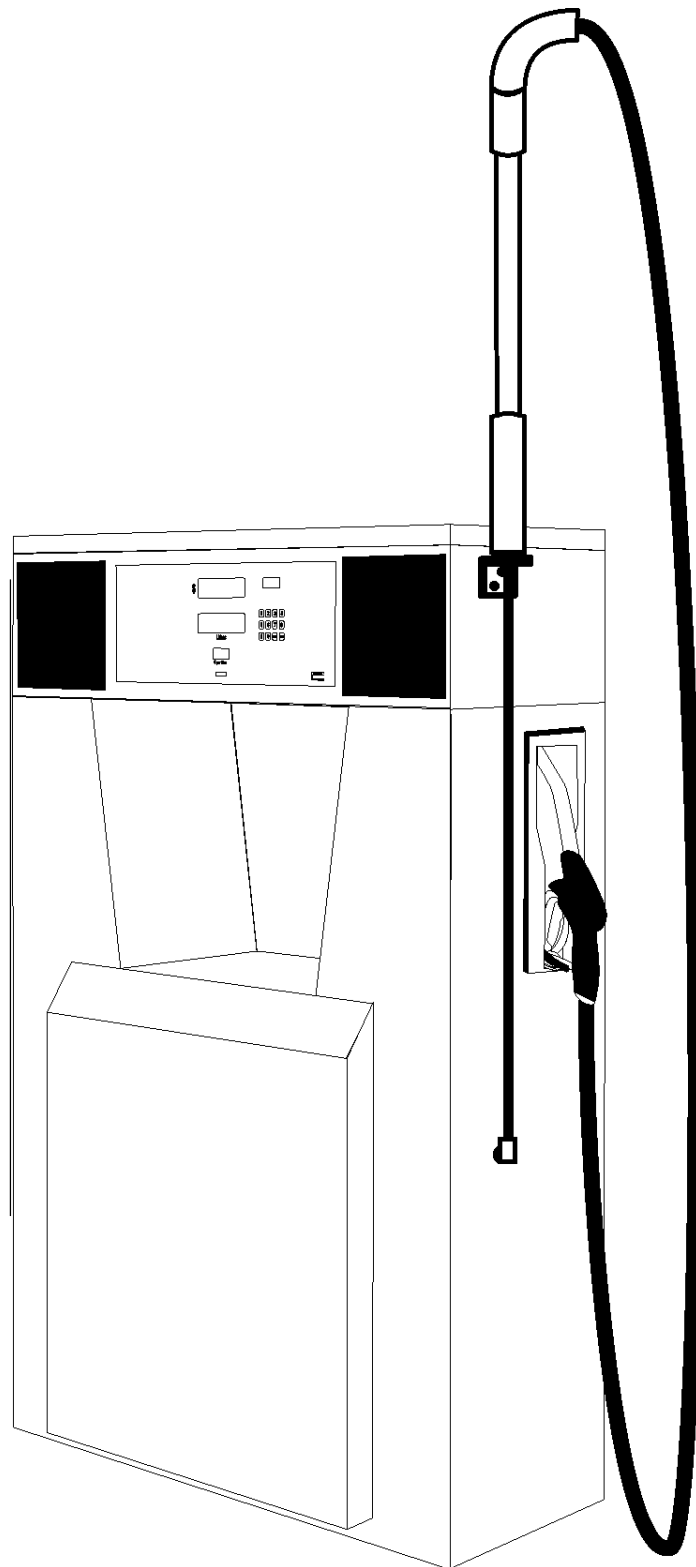
Other applicable maximum permissible errors are:

- ±0.5% for gas elimination device for petrol;
- ±1.0% for gas elimination device for liquids having a dynamic viscosity exceeding 1 mPa.s (distillate);
- ±20 mL for deliveries equal to the minimum measured quantity; and
- ±20 mL due to hose dilation.

Check the software version number; refer to clause **1.3 Calculator/Indicator** in the Technical Schedule for how this is achieved.



FIGURE 5/6A/209 – 1



Compac Model (Laser ) L40P Fuel Dispenser

FIGURE 5/6A/209 – 2

A photograph of a heavy-duty industrial valve, likely a ball valve, with a cast metal body and a handwheel. The valve has a robust, industrial design with a central handwheel on top and two large, flanged ports on the sides. A label on the side of the valve reads "BENNETT" and "12111111". The valve is shown from a three-quarter perspective, highlighting its complex structure and the various bolts and fittings that hold it together. The background is a plain, light-colored surface.

Bennet Type SB-100 Model N7235-04 Flowmeter

FIGURE 5/6A/209 – 3



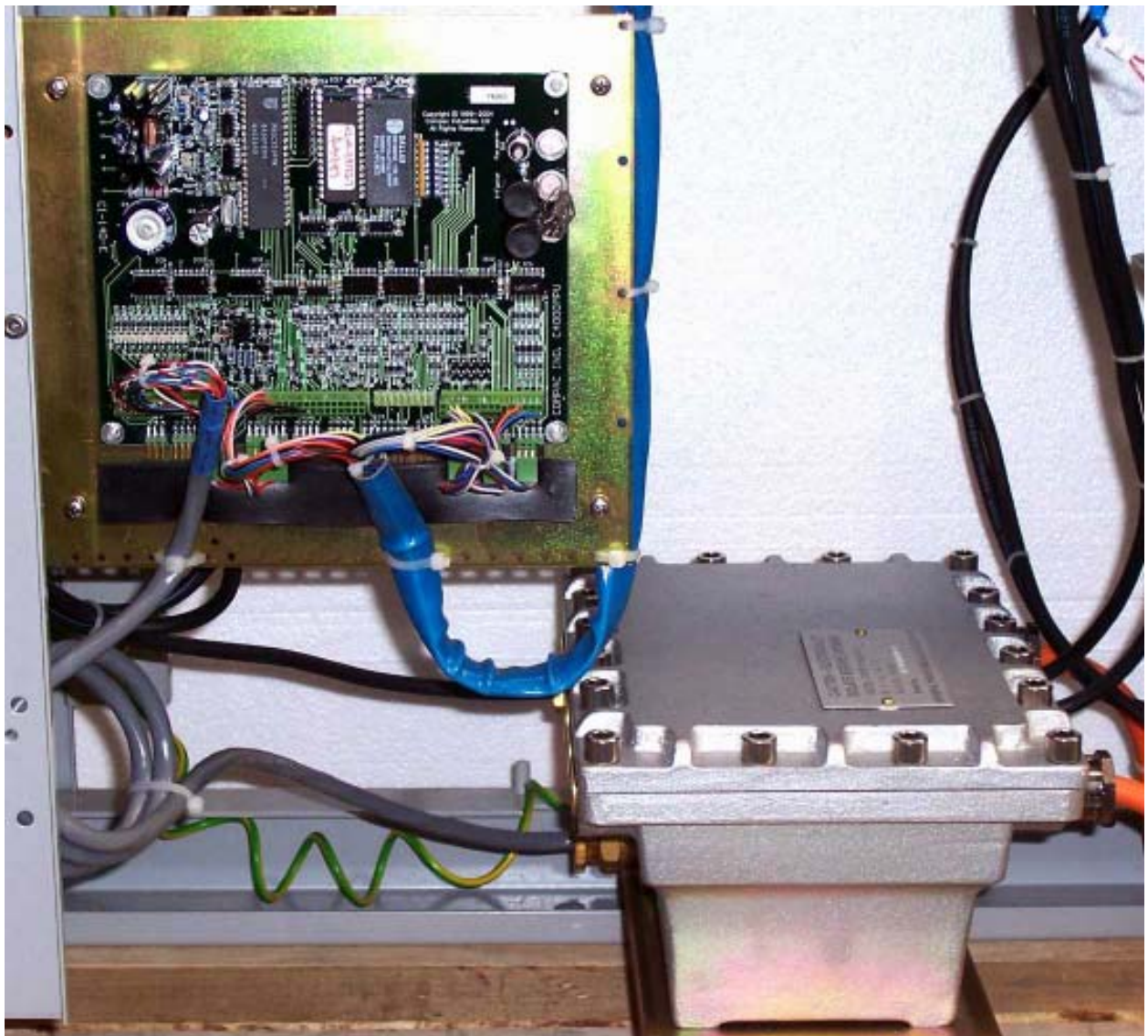
ZVA Nozzle



XIDE 16mm Nozzle

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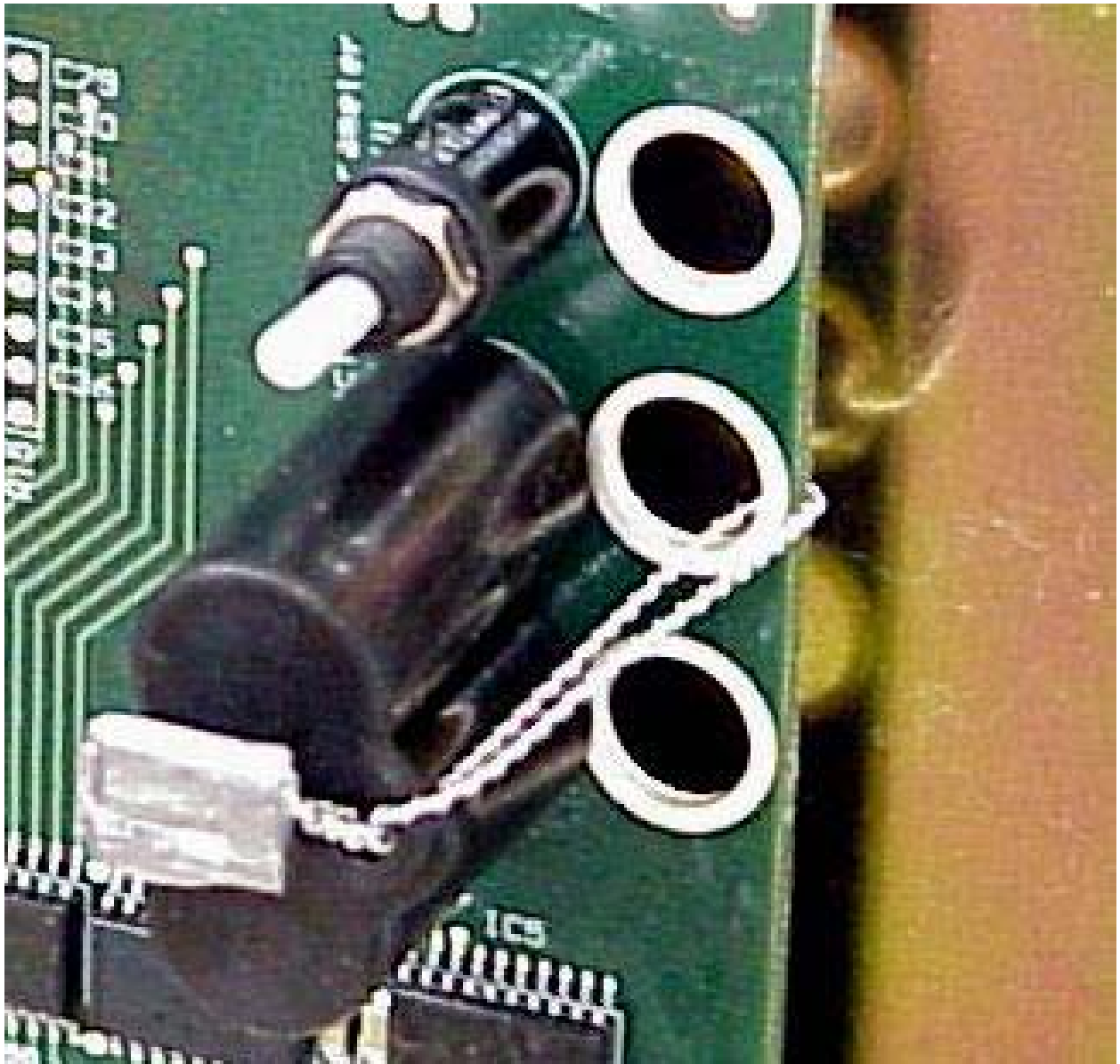
FIGURE 5/6A/209 – 4



Compac Model C4000 Calculator/Indicator



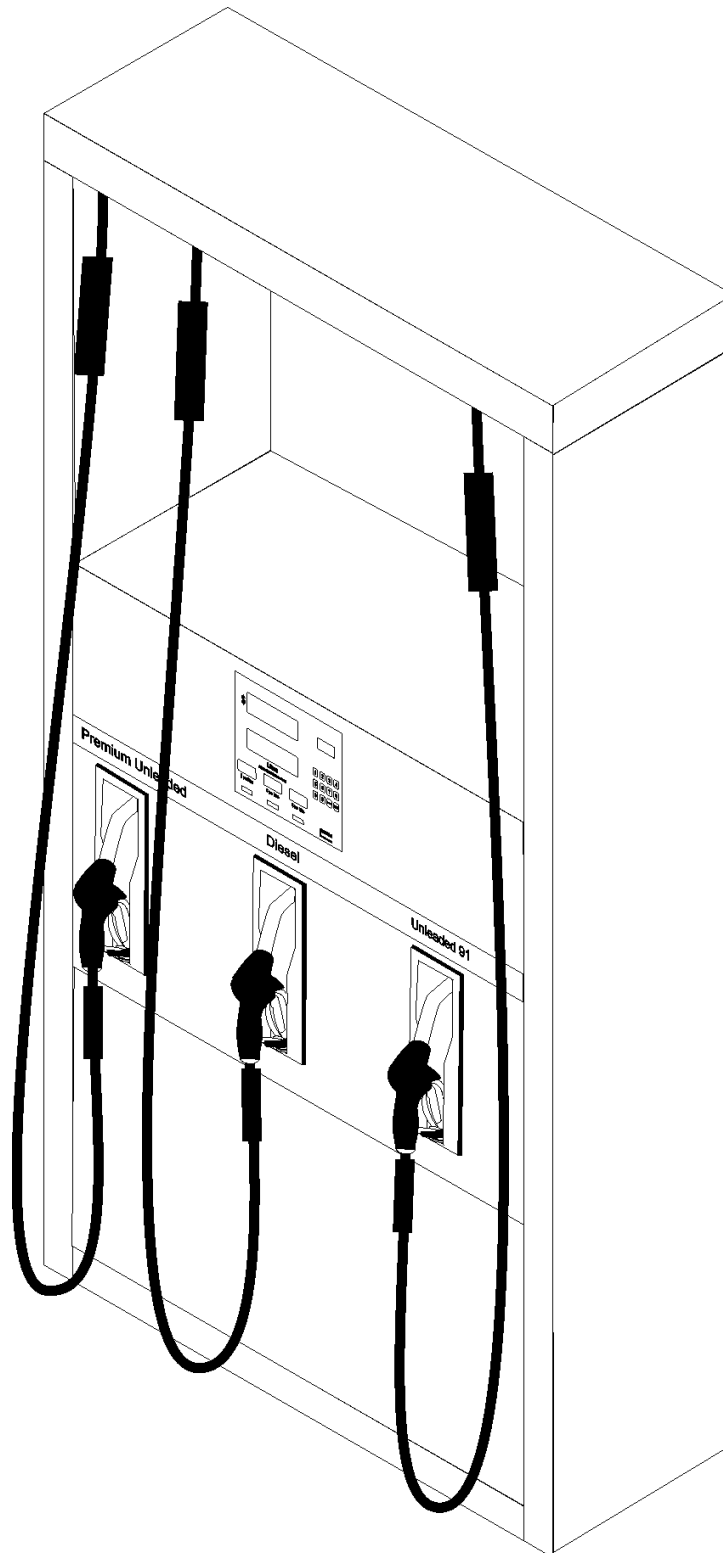
FIGURE 5/6A/209 – 5



Sealing of K-factor Switch

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FIGURE 5/6A/209 – 6



Typical Dispenser in a Legend-style Housing (Frame)