



Australian Government
Department of Industry,
Innovation and Science

**National
Measurement
Institute**

**Certificate of Approval
NMI 5/6A/235**

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.

Zhejiang Genuine Machine Co. Ltd Model ZC-22222 Fuel Dispenser for Motor Vehicles

submitted by Broadfuel Property
 163-165 High Street
 Broadford VIC 3160

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 1/05/22, and then every 5 years thereafter.

DOCUMENT HISTORY

| Rev | Reason/Details | Date |
|-----|---|----------|
| 0 | Pattern & variant 1 approved – certificate issued | 26/04/17 |
| | | |

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 5/6A/235' and only by persons authorised by the submitter.

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.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate 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.



Dr A Rawlinson

TECHNICAL SCHEDULE No 5/6A/235

1. Description of Pattern **approved on 26/04/17**

A Zhejiang Genuine Machine Co. Ltd Model ZC-22222 fuel dispenser for motor vehicles is approved to dispense various grades of fuels (*), in attendant-operated mode, or in self-service mode using any compatible (#) approved control console. The meter is adjusted to be correct for the liquid for which it is to be verified.

Instruments may also be known as Knight series fuel dispensers.

- (*) including up to 10% ethanol (E10) and various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).
- (#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system.

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} 50 L/min
- Minimum flow rate, Q_{min} 5 L/min
- Maximum pressure of the liquid, P_{max} 300 kPa
- Minimum pressure of the liquid, P_{min} 100 kPa (#1)
- Range of liquids viscosity 0.5 to 20 mPa.s (at 20°C) (#2)
- Maximum temperature of the liquid, T_{max} 50°C
- Minimum temperature of the liquid, T_{min} -10°C
- Ambient temperature range -25 to 55°C
- Accuracy class 0.5

(#1) Minimum pressure required for effective operation of the gas elimination device.

(#2) The flowmeter is adjusted for use with one product viscosity. Fuels include kerosene, distillate and various grades of petrol (which may include up to 10% ethanol). The pattern and variants constructed for use to dispense various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

1.2 Description of the Metering System

The instrument (Figure 1) incorporates the following components:

- (i) A Zcheng model ZCP-90 pumping unit (Figure 3).
- (ii) A measurement transducer comprising a Zcheng model ZCM-90 four piston positive displacement flowmeter (Figure 4) fitted with a Zcheng model ZCPS-900 pulse generator (Figure 5), or any other compatible (#) NMI-approved pulse generator.
- (#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system.

- (iii) A hose/nozzle, mounted on the side of the dispenser housing. The nozzle used is a 19 mm ZCN-11A nozzle. (*)
- (*) Note that the submitter must be consulted regarding the acceptability of any alternative nozzles.

1.3 Calculator/Indicator

A Zcheng model ZC22222 calculator/indicator (Figure 5) which has a single display or an alternative dual LCD display model (Figure 6b) for indicating dollar, volume and price..

The display limits and increments are:

| | |
|--------------|------------------------------------|
| Volume | 999999, 99(8) in 0.01 L increments |
| Unit Price | 999.99(5) |
| Price to pay | 99999999(8) |

A pre-set device may also be fitted to allow pre-set to be selected by means of volume (litres) or price (dollars).

1.4 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 electrically-operated valves to stop the delivery.

1.5 Descriptive Markings and Notices

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

| | |
|--|--------------|
| Pattern approval number | NMI 5/6A/235 |
| 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} | (#3) |
| Minimum temperature of the liquid, T_{min} | (#3) |
| 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' or 'Minimum delivery 2/5 L'.
- (#2) e.g. distillate or D.
- (#3) Required if liquid temperature range differs from -10°C to 50°C.

1.5 Sealing Provision

The gas separator test valve has provision for sealing. The meter is sealed as shown in Figure 4.

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 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 electrically-operated valves to stop the delivery.

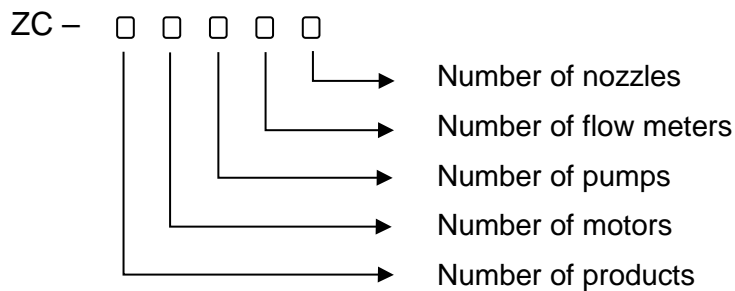
2. Description of Variant 1

approved on 26/04/17

Certain other models and configurations of the ZC series of fuel dispensers identified using Table 1 below.

Instruments may also be known as Knight series fuel dispensers (Figure 7).

TABLE 1 – Approved model designations



TEST PROCEDURE No 5/6A/235

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.

Tests should be conducted in conjunction with any tests specified in the approval documentation for any components used, including indicator/controller and submersible turbine pump (STP) hydraulic systems.

Maximum Permissible Errors

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

FIGURE 5/6A/234 – 1



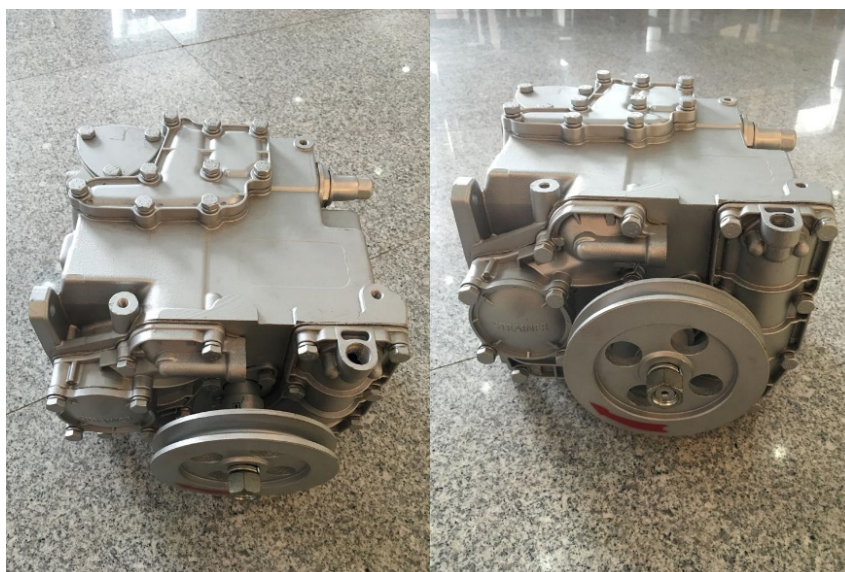
Zcheng Model ZC-22222 Fuel Dispenser for Motor Vehicles (Pattern)

FIGURE 5/6A/234 – 2



Zcheng Model ZC-22222 Fuel Dispenser Hydraulics
(Pattern)

FIGURE 5/6A/234 – 3



Zcheng Model ZCP-90 Pumping Unit

FIGURE 5/6A/234 – 4

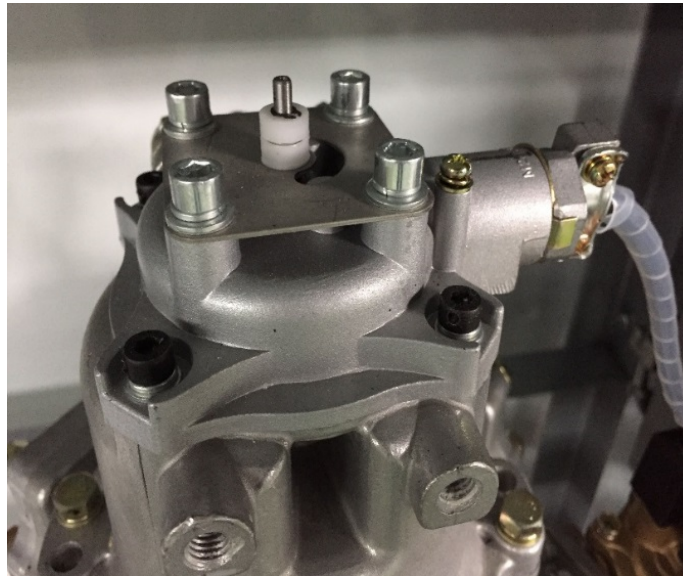


(a) Zcheng Model ZCM-90 Flowmeter



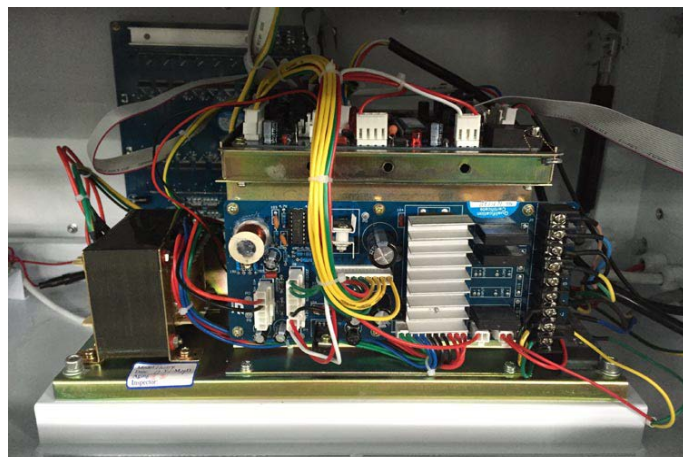
(b) Typical Sealing of Flowmeter

FIGURE 5/6A/234 – 5



Zcheng Model ZCPS-900 Pulse Generator

FIGURE 5/6A/234 – 6



(a) ZCHENG Model ZC22222 Calculator/Indicator



(b) Separate display & Combined display

FIGURE 5/6A/234 – 7



(a) ZCHENG Knight Series 8 nozzles (Variant 1)



(b) ZCHENG Knight Series 4 nozzles (Variant 1)



(c) ZCHENG Knight Series 6 nozzles (Variant 1)

~ End of Document ~