



Australian Government
**National Measurement
Institute**

Bradfield Road, West Lindfield NSW 2070

Cancellation
Provisional Certificate of Approval No P12/1/5

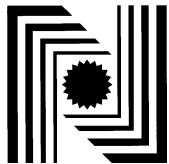
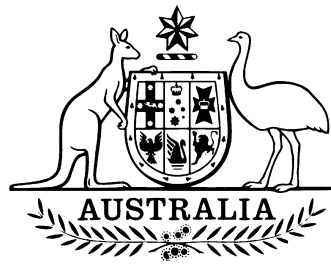
Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that the approval for use for trade granted in respect of the
Compac Model C-CNG Compressed Gaseous Fuel Measuring System for Vehicles
submitted by CompAir (Australasia) Ltd
 34-40 Ricketts Road
 Mount Waverley VIC 3149

has been cancelled in respect of new instruments as from 1 May 2009.

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. K. T.', written in a cursive style.



National Standards Commission

12 Lyonpark Road, North Ryde NSW

Provisional Certificate of Approval

No P12/1/5

Issued 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

Compac Model C-CNG Compressed Gaseous Fuel Measuring System for Vehicles

submitted by CompAir (Australasia) Ltd
 34-40 Ricketts Road
 Mount Waverley VIC 3149.

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 May 2002.

Instruments purporting to comply with this approval shall be marked NSC No P12/1/5 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 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 NSC P 106.

The Commission 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 of Approval No S1/0/A.

Special:

This approval is limited to ten (10) instruments.

The submitter shall advise the Commission in writing of the proposed location and specifications of each instrument prior to it being initially verified/certified.

Instruments shall not be initially verified/certified until the person intending to carry out the verification/certification has been advised in writing by the Commission of the location and suitability of the instrument.

Instruments purporting to comply with this approval shall be marked NSC No P12/1/5 prior to verification/certification.

Instruments installed under this approval are to be re-verified at six-monthly intervals. The submitter is to arrange such tests and is to send the results to the Commission.

In the event of unsatisfactory performance or of suitable test results not being received by the Commission, this approval may be withdrawn.

DESCRIPTIVE ADVICE

Pattern: provisionally approved 6 April 2000

- A Compac model C-CNG compressed gaseous fuel measuring system for vehicles. The system is a dual hose dispenser fitted with two Compac model COM16 flowmeters.

Technical Schedule No 12/1/5 describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Provisional Certificate of Approval No P12/1/5 dated 27 August 2001
Technical Schedule No 12/1/5 dated 27 August 2001 (incl. Test Procedure)
Figures 1 and 2 dated 27 August 2001

Signed by a person authorised under Regulation 60
of the National Measurement Regulations 1999 to
exercise the powers and functions of the Commission
under this Regulation.

A handwritten signature in black ink, appearing to read "Jim Bennett". The signature is written in a cursive style with a large initial "J" and "B".

TECHNICAL SCHEDULE No 12/1/5

Pattern: Compac Model C-CNG Compressed Gaseous Fuel Measuring System for Vehicles

Submittor: CompAir (Australasia) Ltd
34-40 Ricketts Road
Mount Waverley VIC 3149.

1. Description of Pattern

A Compac model C-CNG compressed gaseous fuel measuring system for vehicles approved for use over a flow rate range of 1.5 to 60 m³/min. The minimum delivery is 2 m³.

Instruments are approved for attendant-operated mode, or in attended self-service mode when interfaced to a compatible Commission-approved fuel dispenser controller.

1.1 Component Structure

The system is a Compac model C-CNG dual dispenser (Figures 1 and 2) and has components as detailed below.

(i) Measurement Transducer

The measurement transducers are two Compac model COM16 positive displacement flowmeters which provide electrical pulse output proportional to gas throughput. Each COM16 flowmeter is located downstream of a fixed pressure regulator which controls the flow of gas supplied from a low, medium and high pressure gas bank.

The calibration of each meter in the dispenser is achieved electronically using the k-factor switch located in the calculator/indicator.

(ii) Calculator/indicator

The C-CNG dispenser incorporates a Compac model C4000 electronic price-computing calculator/indicator compatible to receive electrical pulse output from a model COM16 flowmeter and a 4 to 20 mA signal from a compatible temperature and pressure transducer.

A conversion factor of 1.31643 is used for converting the measured mass to displayed volume. The unit of measurement in use for trade and displayed to the purchaser is **deemed** cubic metres (m³).

The calculator/indicator can be configured to display the quantity in kilograms when the density factor is set to unity, or to display in equivalent cubic metres by entering the appropriate value for the density factor.

The unit of measurement for price and unit price shall be dollars (\$) or cents (c).

(iii) Outlet Piping

The pipework from each meter to its hose includes isolating valves.

(iv) Hose, Nozzle and Transfer Point

Each meter in the dispenser is fitted with a delivery hose having a nominal bore of 10 mm and a return vent line having a nominal bore of 2.5 mm.

The delivery hose and the return vent line are supported on a hose mast and are fitted with hose-break couplings.

The transfer point is in the form of a ball valve which starts and stops the flow of gas through the Parker model H4-62 refuelling connection. A bleed valve is also fitted to vent the gas between the hose-break coupling and the transfer point.

1.2 Markings and Notices

Instruments carry the following markings, together in one location:

Manufacturer's mark, or name written in full	Compac, NZ
Model designation
Serial number of the instrument
Pattern approval mark for the instrument in the form	NSC No P12/1/5
Maximum flow rate m ³ /min
Minimum flow rate m ³ /min
Minimum delivery (*) m ³
Maximum operating pressure	25 000 kPa

(*) Marked on the fuel dispenser indicator.

1.3 Sealing Provision

Provision is made for the calibration adjustment switches located in the calculator/indicator to be sealed.

1.4 Verification/Certification Provision

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

TEST PROCEDURE

Maximum Permissible Errors

The maximum permissible errors applicable at verification/certification and reverification are:

(i) Measured Quantity

The maximum permissible error for verification/certification shall be $\pm 2\%$ of the quantity delivered.

The maximum permissible error for reverification shall be $\pm 3\%$ of the quantity delivered.

(ii) Price

The price indicated shall equal the price calculated from the volume and unit price indicated.

(iii) Temperature and Pressure

Check the measurement made by the temperature and pressure transducers to within 2°C and 1%, respectively, using a traceable calibrator compatible for use with the transducers.

To display the temperature:

Press the k-factor switch until the display shows 'Ea'. The indicator will display the temperature for side A of the dispenser. To display the temperature for side B of the dispenser, continue to press the k-factor switch until the display shows 'Eb'.

To display the pressure:

Press the k-factor switch until 'b' configuration appears. The normal setting for 'b' is 0000. To change the \$ display to indicate pressure during the delivery, change the 'b' configuration setting to 0100. [Note: After checking the pressure measurement, change the 'b' configuration setting back to 0000.]

1. Scope

Tests shall be carried out at six-monthly intervals using the gravimetric system. A report shall be prepared and forwarded to the National Standards Commission.

2. Equipment

- 2.1 A suitable weighing instrument with a scale interval not greater than 20 g, and which is able to provide the required weighing measurements with an uncertainty not greater than $\pm 0.67\%$.
- 2.2 Certified test masses of at least 10 kg.
- 2.3 Three, 60 litre NGV cylinders.
- 2.4 Necessary valves, hoses and couplings to be able to fill and empty the cylinders.
- 2.5 A stop watch to determine the flow rate.

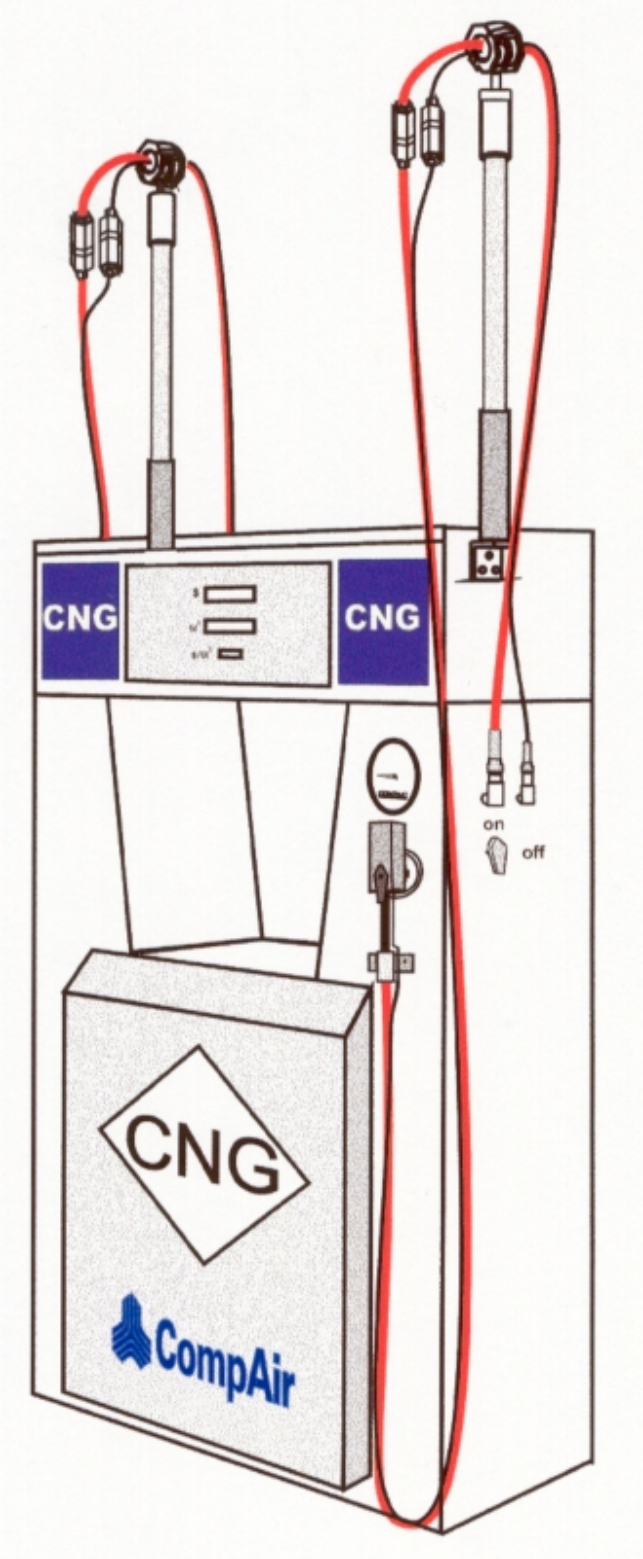
3. Procedure

- 3.1 Set up the weighing instrument on a flat surface and out of the wind. Level the instrument, switch on, and allow for any warm-up time.
- 3.2 Zero the instrument and place the empty cylinder on the weighing platform. Either note the mass of the empty cylinder or tare off the mass of the cylinder.
- 3.3 Remove the cylinder from the weighing platform and place it in the vicinity of the fuel dispenser.
- 3.4 Connect the nozzle/hose of the fuel dispenser to the cylinder. Authorise the dispenser, open the cylinder valve, then open the refuelling nozzle and make a delivery at the maximum achievable flow rate until the cylinder is approximately 75% full. For a 60 L cylinder this equates to approximately 7.6 kg of gas. Time the filling process and determine the nominal flow rate.
- 3.5 Close the cylinder valve and the refuelling nozzle and return the nozzle/hose to the dispenser.
- 3.6 Record the quantity displayed by the fuel dispenser.
- 3.7 Place the cylinder on the weighing platform and record the mass (kg) indicated. Subtract the tare mass of the cylinder if the cylinder has not been tared off to obtain the mass of the gas delivered.
- 3.8 If the fuel dispenser indicates volume, convert the mass of the gas in the cylinder to volume delivered by multiplying by the conversion factor (1.31643).
- 3.9 Determine the relative error as follows:

$$\frac{(\text{quantity displayed} - \text{quantity delivered}) \times 100}{\text{quantity delivered}}$$

- 3.10 Remove the partly filled cylinder from the weighing platform and place it near to the dispenser. Connect the nozzle/hose of the fuel dispenser to the partly filled cylinder and perform a slow flow rate test by completing the delivery into the cylinder until the flow stops. Time the filling process and determine the flow rate.
- 3.11 Close the cylinder valve and the refuelling nozzle and return the nozzle/hose to the fuel dispenser. Record the quantity displayed by the dispenser.
- 3.12 Place the cylinder on the weighing platform and record the total mass of gas delivered into the cylinder. To determine the mass of gas delivered for the slow flow rate test, subtract the mass of gas delivered for the fast flow rate test.
- 3.13 Repeat steps 3.2 to 3.12 with at least two more test cylinders.
- 3.14 Check that all results are within the maximum permissible errors. Check that the fast and slow flow rates determined in 3.4 and 3.10 are within the flow rate range marked on the nameplate of the dispenser.
- 3.15 Check price calculations for the quantities delivered and the unit price settings.

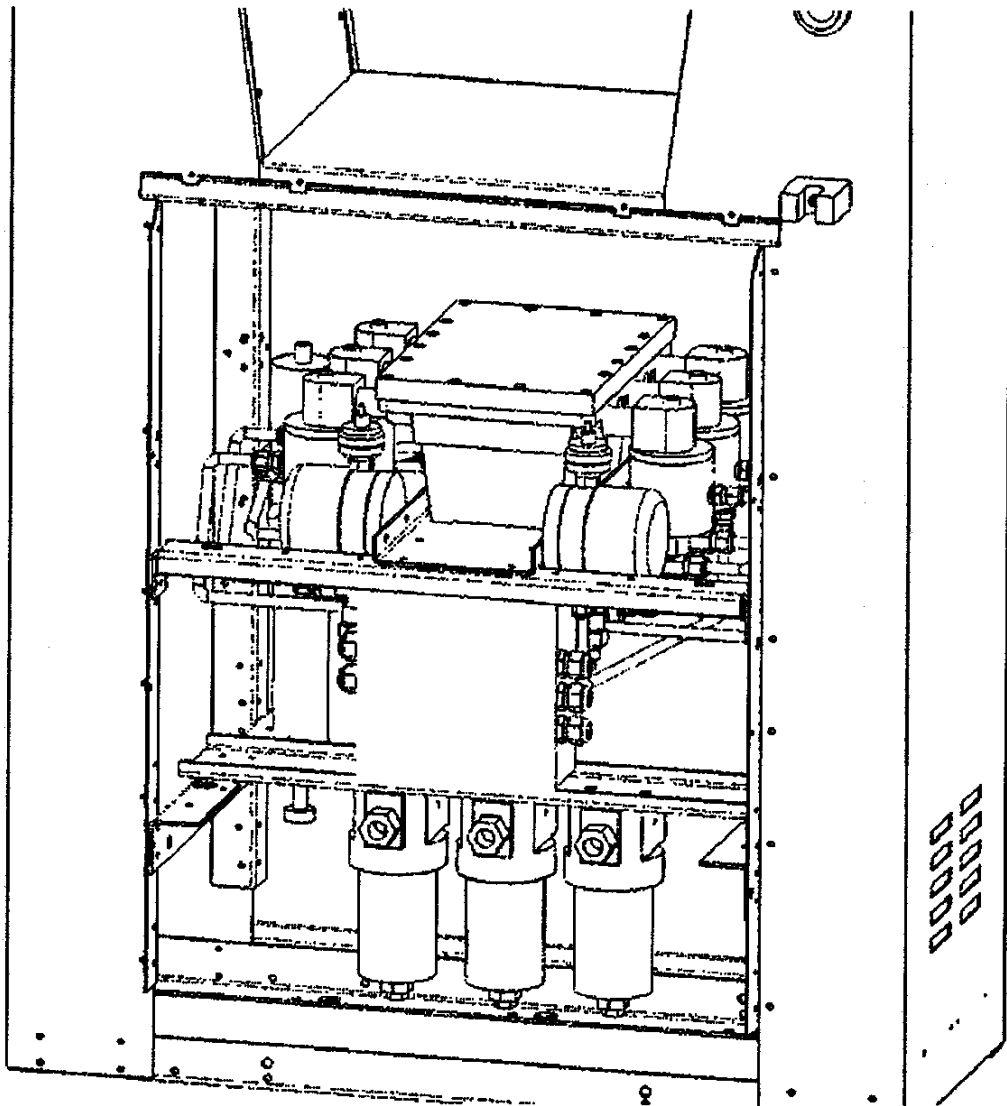
FIGURE 12/1/5 - 1



Compac Model C-CNG Compressed Gaseous Fuel Dispenser

P12/1/5
27 August 2001

FIGURE 12/1/5 - 2



Compac Model C-CNG Compressed Gaseous Fuel Dispenser
- Component Layout