P12/1/4
3 March 2009

Australian Government

National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Cancellation
Provisional Certificate of Approval No P12/1/4

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

Sulzer Model CFH 1001 Natural Gas for Vehicles (NGV) Flowmetering System

submitted by GreenField Australia Pty Limited
(formerly Sulzer Australia Pty Limited)
Unit 4, 27 Salisbury Road
Hornsby NSW 2077

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*.

National Standards Commission

Provisional Certificate of Approval

No P12/1/4

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations

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

Sulzer Model CFH 1001 Natural Gas for Vehicles (NGV) Flowmetering System

submitted by Sulzer Australia Pty Limited
27 Salisbury Road
Hornsby NSW 2077.

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.

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CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 February 2003, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No P12/1/4 and 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 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 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 No S1/0/A.

Special:

This approval is limited to ten (10) instruments.

The submittor 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 P12/1/4 prior to verification/certification.

Instruments installed under this approval are to be re-verified at six-monthly intervals. The submittor 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.

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DESCRIPTIVE ADVICE

Pattern: provisionally approved 5 January 1998

- A Sulzer model CFH 1001 natural gas for vehicles (NGV) flowmetering system. The system is a single dispenser fitted with a Micro Motion mass flowmeter comprised of a model DHO 38 S flow sensor and a model RFT 97122 pulse generator/transmitter.

Variant: provisionally approved 5 January 1998

1. Model CFH 1003 single hose and models DFH 2001 and DFH 2003 dual hose dispensers.

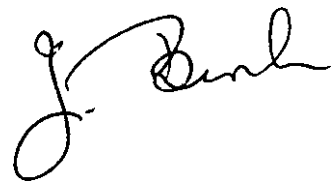
Technical Schedule No P12/1/4 describes the pattern and variant 1.

FILING ADVICE

The documentation for this approval comprises:

Provisional Certificate of Approval No P12/1/4 dated 7 August 1998
Technical Schedule No P12/1/4 dated 7 August 1998 (incl. Test Procedure)
Figures 1 to 3 dated 7 August 1998

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Measuring Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.



TECHNICAL SCHEDULE No P12/1/4

Pattern: Sulzer Model CFH 1001 Natural Gas for Vehicles (NGV) Flowmetering System.

Submittor: Sulzer Australia Pty Limited
27 Salisbury Road
Hornsby NSW 2077.

1. Description of Pattern

A Sulzer model CFH 1001 flowmetering system approved for use to dispense natural gas for vehicles (NGV) over a flow rate range of 3 to 29 m^3/min. The minimum delivery is 1.0 m^3.

Instruments are approved for attendant-operated operation.

1.1 Component Structure

The system is a single dispenser in a Sulzer model CFH 1001 housing (Figure 1). Each model CFH 1001 flowmeter has components as detailed below including a single inlet connection from a single high pressure storage (Figure 2).

(i) Mass Flowmeter

A Micro Motion mass flowmeter comprised of a model DHO 38 S flow sensor and a separate model RFT 97122 pulse generator/transmitter. The flow sensor determines mass flow and sends this information to the pulse generator/ transmitter where it is processed and converted into an output signal directly proportional to mass flow.

(ii) Computer/indicator

A PEC model Ceepec VA2.09/P electronic price-computing driveway flowmeter indicator receives the signal from the pulse generator/transmitter.

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 (m^3).

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

(iii) Outlet Piping

The pipework from the meter to the hose includes a spring-loaded regulator and an isolating valve

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(iv) Hose and Nozzle

The dispenser is fitted with two hoses; a nominal 10 mm supply line and a nominal 2.5 mm return vent line.

The hoses are supported on a hose mast and are fitted with hose-break couplings.

The nozzle incorporates a Whitey model SS-83KF4 3-way refuelling valve and a Parker model H4-62 refuelling connection.

1.2 Markings and Notices

Instruments carry the following markings, in the form shown on the right, together in one location:

Manufacturer's mark, or name written in full	Sulzer
Model designation	.....
Serial number of the instrument	.....
Pattern approval mark for the instrument in the form	NSC No P12/1/4
Maximum flow rate	..... m^3/min
Minimum flow rate	..... m^3/min
Minimum quantity	..... m^3
Maximum operating pressure	25 000 kPa

1.3 Sealing Provision

Provision is made for the calibration adjustments to be sealed by sealing the housing of the pulse generator/transmitter and by sealing the removeable cover in the PEC indicator (which prevents access to the input board located behind the cover).

1.4 Verification/Certification Provision

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

2. Description of Variant 1

Certain models as described below:

- Model CFH 1003 being a single hose dispenser similar to the pattern but with three inlet connections to allow supply from three separate high pressure storages;

- Model DFH 2001 being a dual NGV dispenser having two flowmetering systems similar to the pattern in the one housing; and
- Model DFH 2003 being a dual NGV dispenser having two flowmetering systems similar to the model CFH 1003 in the one housing (Figure 3).

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 ±2% of the quantity delivered.

The maximum permissible error for reverification shall be ±3% of the quantity delivered.

(ii) Price

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

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 10 mg, and which is able to provide the required weighing measurements with an uncertainty not greater than ±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.

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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.

P12/1/4
4 May 2001

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Provisional Certificate of Approval No P12/1/4

Change No 3

The following changes are made to the approval documentation for the

Sulzer Model CFH 1001 Natural Gas for Vehicles (NGV) Flowmetering System

submitted by Sulzer Australia Pty Limited
27 Salisbury Road
Hornsby NSW 2077.

1. In Provisional Certificate of Approval No P12/1/4 and its Technical Schedule both dated 7 August 1998, all references to the submittor should be amended to read:

   "GreenField Australia Pty Limited"

2. In Provisional Certificate of Approval No P12/1/4 dated 7 August 1998, in the DESCRIPTIVE ADVICE for the pattern the following should be added:

   "May also be known as a GreenField model CFH 1001 system."

3. In Technical Schedule No 12/1/4 dated 7 August 1998 (including in Figures 1 to 3), all references to "Sulzer" should have the following added:

   "(or GreenField)"

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.

P12/1/4
24 October 2000

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Provisional Certificate of Approval No P12/1/4

Change No 2

The following change is made to the approval documentation for the

Sulzer Model CFH 1001 Natural Gas for Vehicles (NGV) Flowmetering System

submitted by Sulzer Australia Pty Limited
27 Salisbury Road
Hornsby NSW 2077.

In Technical Schedule No 12/1/4 page 3 issued as part of Notification of Change No 1 dated 22 September 2000, clause 2.1 should be amended by changing the reference to the scale interval to read:

"... with a scale interval not greater than **20 g**, and which ..."

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

P12/1/4
22 September 2000

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Provisional Certificate of Approval No P12/1/4

Change No 1

The following change is made to the approval documentation for the

Sulzer Model CFH 1001 Natural Gas for Vehicles (NGV) Flowmetering System

submitted by Sulzer Australia Pty Limited
27 Salisbury Road
Hornsby NSW 2077.

In Technical Schedule No 12/1/4 dated 7 August 1998, pages 3, 4 and 5 are replaced by the attached pages (3 and 4), which include an amended Test Procedure.

Signed by a person authorised under Regulation 63 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

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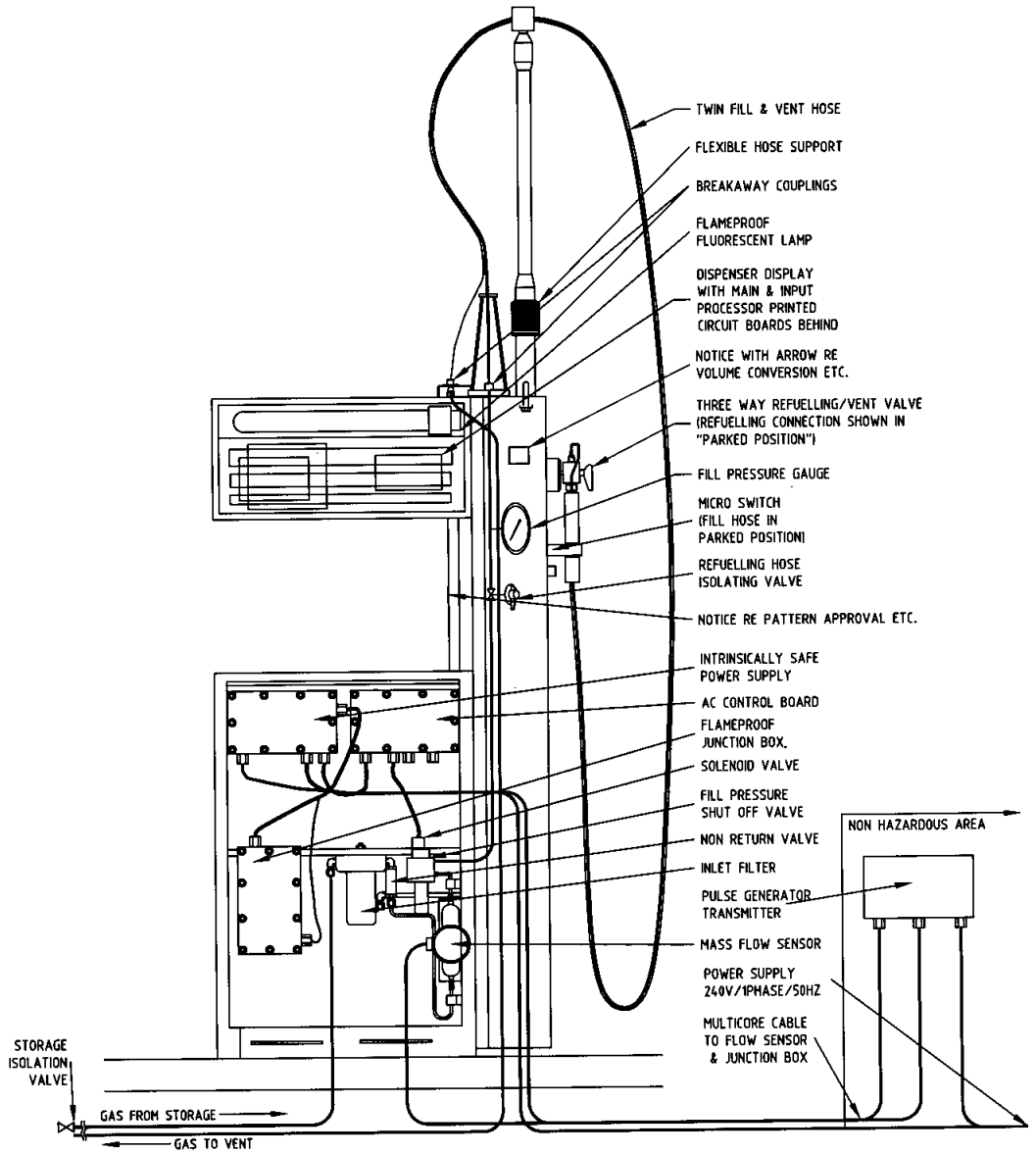
FIGURE P12/1/4 - 1

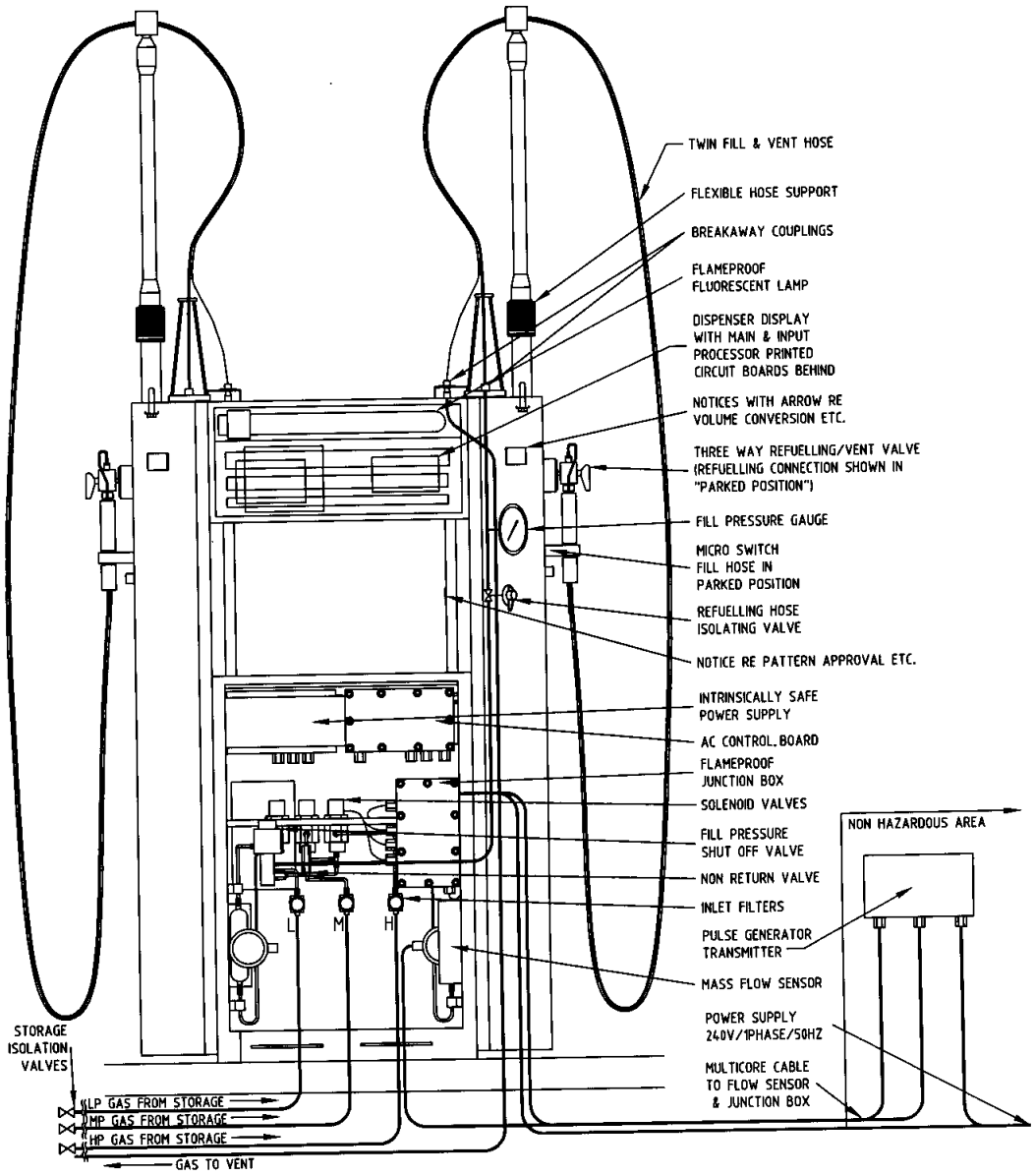
Sulzer Model CFH 1001 (NGV) Flowmeter

FIGURE P12/1/4 - 2



Sulzer Model CFH 1001 (NGV) Flowmeter

FIGURE P12/1/4 - 3



Sulzer Model DFH 2003 (NGV) Flowmeter