5/6A/210
11 February 2011

Australian Government
National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Cancellation

Certificate of Approval

No 5/6A/210

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

Tatsuno Model Neo Sunny GDB366210 Fuel Dispenser for Motor Vehicles

submitted by Tatsuno Corporation
2-12-13 Shibaura Minato-ku
Tokyo 108-8520
Japan

has been cancelled in respect of new instruments as from 1 April 2011.

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

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Tatsuno Model Neo Sunny GDB366210 Fuel Dispenser for Motor Vehicles

submitted by Tatsuno Corporation
2-12-13 Shibaura Minato-ku
Tokyo 108-8520
Japan.

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 117-1, Measuring Systems for Liquids Other than Water, dated July 2004.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 November 2009, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/210' and only by persons authorised by the submittor.

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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.

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 6 October 2004

- A Tatsuno model Neo Sunny GDB366210 fuel dispenser for motor vehicles approved to dispense various grades of petrol or distillate with a maximum flow rate of 45 L/min.

Variant: approved 6 October 2004

1. Certain other models and configurations as listed in Table 1.

Technical Schedule No 5/6A/210 describes the pattern and variant 1.

Variants: approved 19 October 2005

2. With a model EP-1631 Rev 2 display board.
3. Variant 2 with the pre-set facility incorporating a model EP 1634 Rev 2 keyboard circuit board.

Technical Schedule No 5/6A/210 Variation No 1 describes variants 2 and 3.

Variant: approved 14 August 2006

4. For use in attended self-service mode.

Technical Schedule No 5/6A/210 Variation No 2 describes variant 4.

FILING ADVICE

Certificate of Approval No 5/6A/210 dated 1 November 2005 is superseded by this Certificate, and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 5/6A/210 dated 16 August 2006
Technical Schedule No 5/6A/210 dated 15 November 2004 (incl. Table 1 and Test Procedure)
Technical Schedule No 5/6A/210 Variation No 1 dated 1 November 2005
Technical Schedule No 5/6A/210 Variation No 2 dated 16 August 2006
Figures 1 to 7 dated 15 November 2004

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

TECHNICAL SCHEDULE No 5/6A/210

Pattern: Tatsuno Model Neo Sunny GDB366210 Fuel Dispenser for Motor Vehicles

Submittor: Tatsuno Corporation
2-12-13 Shibaura Minato-ku
Tokyo 108-8520 Japan

1. Description of Pattern

A Tatsuno model Neo Sunny GDB366210 fuel dispenser for motor vehicles (Figure 1) approved to dispense various grades of petrol or distillate, in attendant-operated mode.

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} 45 L/min
- Minimum flow rate, Q_{min} 3 L/min
- Maximum pressure of the liquid, P_{max} 280 kPa
- Minimum pressure of the liquid, P_{min} 120 kPa (#1)
- Range of liquid viscosity (at 20°C) 0.5 to 20 mPa.s (#2)
- Nature of liquids to be measured e.g. petrol, distillate
- Maximum temperature of the liquid, T_{max} 50°C
- Minimum temperature of the liquid, T_{min} -10°C
- Environmental conditions -25°C to 55°C

#1 Required minimum pressure for effective operation of the gas elimination device.

#2 The flowmeter is adjusted for use with one product viscosity.

1.2 Metering System

The Tatsuno model Neo Sunny GDB366210 fuel dispenser includes the following components:

(i) Three Tatsuno model FP-1001 gas separators with integral pump/strainer (Figure 2), each driven by an external motor. Any vapour or gas separated by the gas elimination device is exhausted to the vent outlet tube. To prevent reverse flow, a check valve is fitted upstream of the gas separator.

(ii) A gas detection switch fitted to all units dispensing distillate, which stops the flow when an excessive amount of vapour or gas is entrained in the liquid.

(iii) A gas/air test valve provided for checking the operation of the gas elimination device. The device has provision for sealing.

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(iv) Six Tatsuno model FM-1007 4-piston positive displacement meters, each with an integral Tatsuno model EK-1025 pulse generator (Figure 2), as the measurement transducers.

The pulse generator produces 50 pulses per revolution of the meter/pulse generator shaft. The measurement transducer is designed to produce 100 pulses/litre.

The calibration of the meter is achieved by adjusting the effective stroke of one piston; the maximum adjustment is 1.28%.

(v) Two Tatsuno model EP-1628 and EP-1631 price-computing calculator/indicators (Figures 3 and 4). The calculator/indicator comprises a computing unit and a display unit. Separate displays are provided for volume, total price and a display of the unit price (#) for each product.

The indicators display the following maximum values:

Total Price:	$9999.99 in 0.01 cent increments
Volume:	9999.99 L in 0.01 L increments
Unit price:	999.9 ¢/L in 0.1 ¢/L increments

Software version number 1.0 is used. (#)

(vi) The instrument may have the following non-resettable totalisers:

A Tatsuno mechanical totaliser linked mechanically to the meter for totalising the volume throughput in 1 L increments up to a maximum of 9 999 999 L. The totaliser is located above each nozzle.

Alternatively, a Tamura model E 760 electromechanical totaliser may be installed in the area between the main indicator and the pre-set keypad, in which case the optional circuit board EP-1629 is interfaced to the main central processing unit board.

In addition, the calculator/indicator can display the totals (software driven and resettable) in 0.01 L increments up to a maximum of 99 999 999.99 L. (#)

(vii) Six Goodyear model AS2683/1989 16 mm hoses or any other compatible hose that meets the maximum permissible errors for hose dilation.

(viii) The transfer devices are six Elaflex model ZVA Slimline nozzles or Tatsuno model FN-1002-T trigger nozzles or any other approved nozzle that maintains the hose full of liquid at all times and is designed so that the nozzle cannot be placed in a hang-up position other than to end the delivery.

Note that the Tatsuno model FN-1002-T trigger nozzle (Figure 5) incorporates a delivery latch which automatically disengages when the nozzle is placed in its hang-up position; for some applications the latch may be required to be removed.

(#) Unit price may be altered and the software version and electronic totaliser may be displayed by means of the Tatsuno remote transmitter using the procedure given in its Operation Manual.

1.3 Checking Facilities

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

- 'Error 10' is displayed and the delivery terminated when pulse output errors are detected.
- 'Error 14' is displayed when the pump is stopped due to air entrainment.
- 'Error 60' is displayed if a power failure occurs during delivery.

1.4 Sealing Provision

The meters, the calibration button and the gas separator test valve have provision for sealing.

1.5 Verification/Certification Provision

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

1.6 Descriptive Markings

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

Pattern approval sign	NMI 5/6A/210
Manufacturer's identification mark or trade mark	.....
Manufacturer's designation (model number)	.....
Serial number	.....
Year of manufacture	.....
Environmental class	class C (#1)
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	..... (#2)

(#1) See clause **1.1 Field of Operation**.

(#2) Shall be in a form such as 'petrol', 'distillate', 'P' or 'D'."

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. Description of Variant 1

Certain other models and configurations of the Neo Sunny GDB366210 series of fuel dispensers as identified below and in Table 1:

- With one or more approved submersible turbine pump (STP) hydraulic systems. These hydraulic systems replace the equivalent components (i.e. motor, pump/ strainer/gas separator, and associated pipework) in any fuel dispenser covered by this approval in which case the model number has an S as the second character, e.g. the pattern (model GDB366210) becomes model G**S**B366210. More than one fuel dispenser may be connected to the same submersible turbine pump hydraulic system.
- With either narrow or wide dispenser housings in which case the model number has either an A or B respectively as the third character, e.g. the pattern (model GD**B**366210) has a wide housing.
- With up to 8 pumps/meters/hoses/nozzles, in which case the model number has a number from 1to 8 as each of the fourth, fifth and sixth characters, e.g. the pattern (model GDB**366**210) has 3 pumps, 6 meters and 6 hoses/nozzles.
- With any compatible 19 mm hose and nozzle for high flow rate deliveries of up to 70 L/min, in which case the model number has a 2 as the eighth character, e.g. the pattern (model GDB366210) becomes model GDB3662**2**0.
- With a pre-set facility in which case the model number has a J suffix, e.g. the pattern (model GDB366210) becomes model GDB366210**J**. The pre-set facility includes a keypad (Figure 6) and a two-stage solenoid valve, which slows and then stops the delivery when the pre-set amount has been delivered.

  The pre-set amount can be in dollars or litres and is entered via the keypad. There are also five additional buttons that can be programmed for specific amounts. The amount pre-set is displayed on the pre-set display adjacent to the keypad. After the pre-set amount has been set, either the '$' key or the 'L' key must be selected before a delivery will commence. Depending on the selection made the corresponding LED (either under the '$' or 'L'"symbol) will be lit.

  The pre-set indicator displays the following maximum values:

  9990.00 litres in 0.01 litre increments

  9999.00 dollars in 0.01 dollar increments

Note that all model numbers have a 2 or 4 as the seventh character (indicating simultaneous fuelling) and a 0 as the ninth character (indicating no vapour recovery).

Instruments are approved with either 'island oriented' nozzle positions (Figure 7) or 'lane oriented' nozzle positions (Figure 1).

TABLE 1

G D B 3 6 6 2 1 O – The pattern
1 2 3 4 5 6 7 8 9 Suffix – Model number character position

1	Dispenser series	G: Neo Sunny
2	Pump type	either D: internal, or S: submersible (STP)
3	Dispenser width	either A: narrow, or B: wide
4	Number of pumps	from 1 to 3
5	Number of meters	from 1 to 6
6	Number of hoses	from 1 to 8
7	Fuelling	2 or 4: simultaneous
8	Max. flow rate	either 1: standard, 2: high, or 3: mixed
9	Vapour recovery	0: none
Suffix	Pre-set	either 0: not fitted, or J: fitted

TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Uniform Test Procedures. Tests should be conducted in conjunction with any tests specified in the approval documentation for any components used, including submersible turbine pump (STP) hydraulic systems.

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 liquids having a viscosity not exceeding 1 mPa.s (petrol);

±1.0% for gas elimination device for liquids having a 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 1.2 (v) in the Technical Schedule for how this is achieved.

5/6A/210
1 November 2005

TECHNICAL SCHEDULE No 5/6A/210

VARIATION No 1

Pattern: Tatsuno Model Neo Sunny GDB366210 Fuel Dispenser for Motor Vehicles

Submittor: Tatsuno Corporation
2-12-13 Shibaura Minato-ku
Tokyo 108-8520 Japan

1. Description of Variants

1.1 Variant 2

The pattern fitted with a model EP-1631 Rev 2 display board, which incorporates larger liquid crystal display (35 mm for price and volume, and 22 mm for unit price) and has light emitting diodes to illuminate the display. Dispensers fitted with this display board are identified as model Neo-Sunny Ver.2005 operating on version 1.0 software.

1.2 Variant 3

Variant 2 with the pre-set facility incorporating a model EP 1634 Rev 2 keyboard circuit board which allows the pre-set operation as follows:

- Select either the '$' key or the 'L' key on the keyboard (the LED below the symbol of the selected currency or volume will start flickering);
- Enter the amount to be pre-set; and
- Take out the nozzle to store the pre-set amount and commence delivery (the LED below the symbol of the selected currency or volume will remain lit to indicate that a pre-set is stored).

Dispensers with this pre-set facility are marked with a model having a suffix 'J-F'.

5/6A/210
16 August 2006

TECHNICAL SCHEDULE No 5/6A/210

VARIATION No 2

Pattern: Tatsuno Model Neo Sunny GDB366210 Fuel Dispenser for Motor Vehicles

Submittor: Tatsuno Corporation
2-12-13 Shibaura Minato-ku
Tokyo 108-8520 Japan

1. Description of Variant 4

The pattern and variants now approved to dispense various grades of fuels in attended self-service mode using any compatible (#) approved control console.

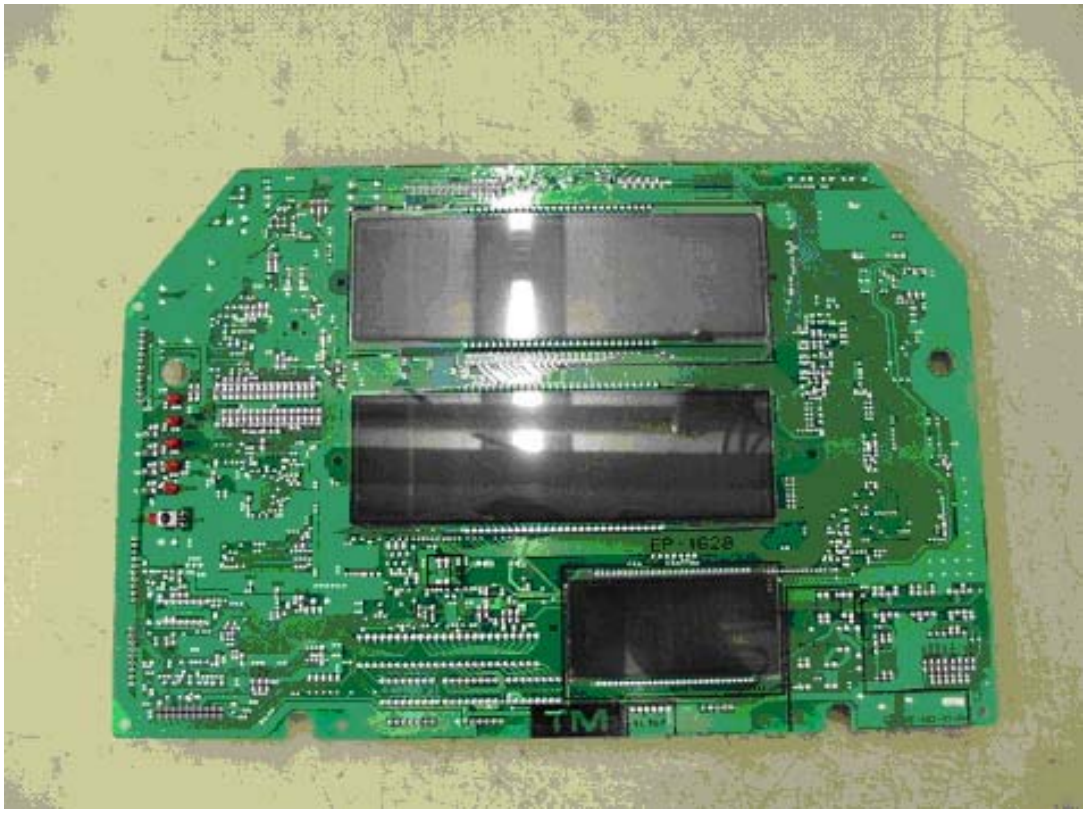
(#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system including all checking facilities.

FIGURE 5/6A/210 – 1

Tatsuno Model Neo Sunny GDB366210 Fuel Dispenser for Motor Vehicles

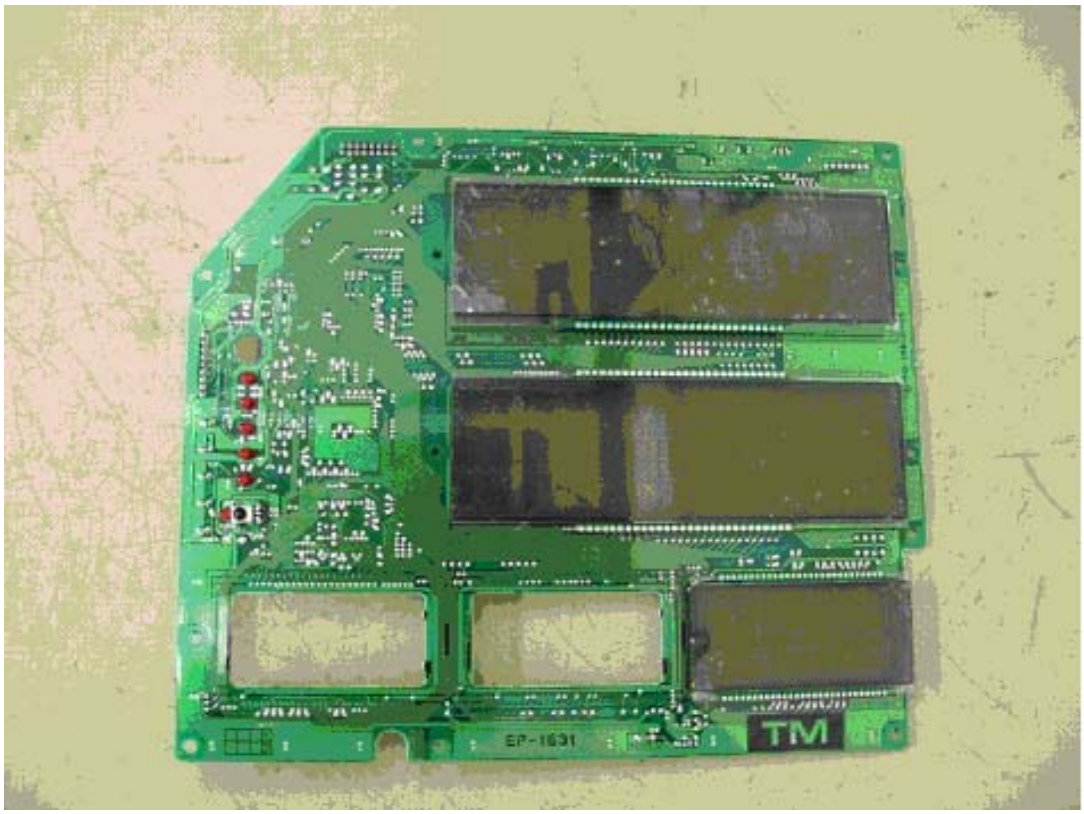
FIGURE 5/6A/210 – 2

FIGURE 5/6A/210 – 3



Tatsuno Model EP-1628 Calculator/Indicator

FIGURE 5/6A/210 – 4



Tatsuno Model EP-1631 Calculator/Indicator

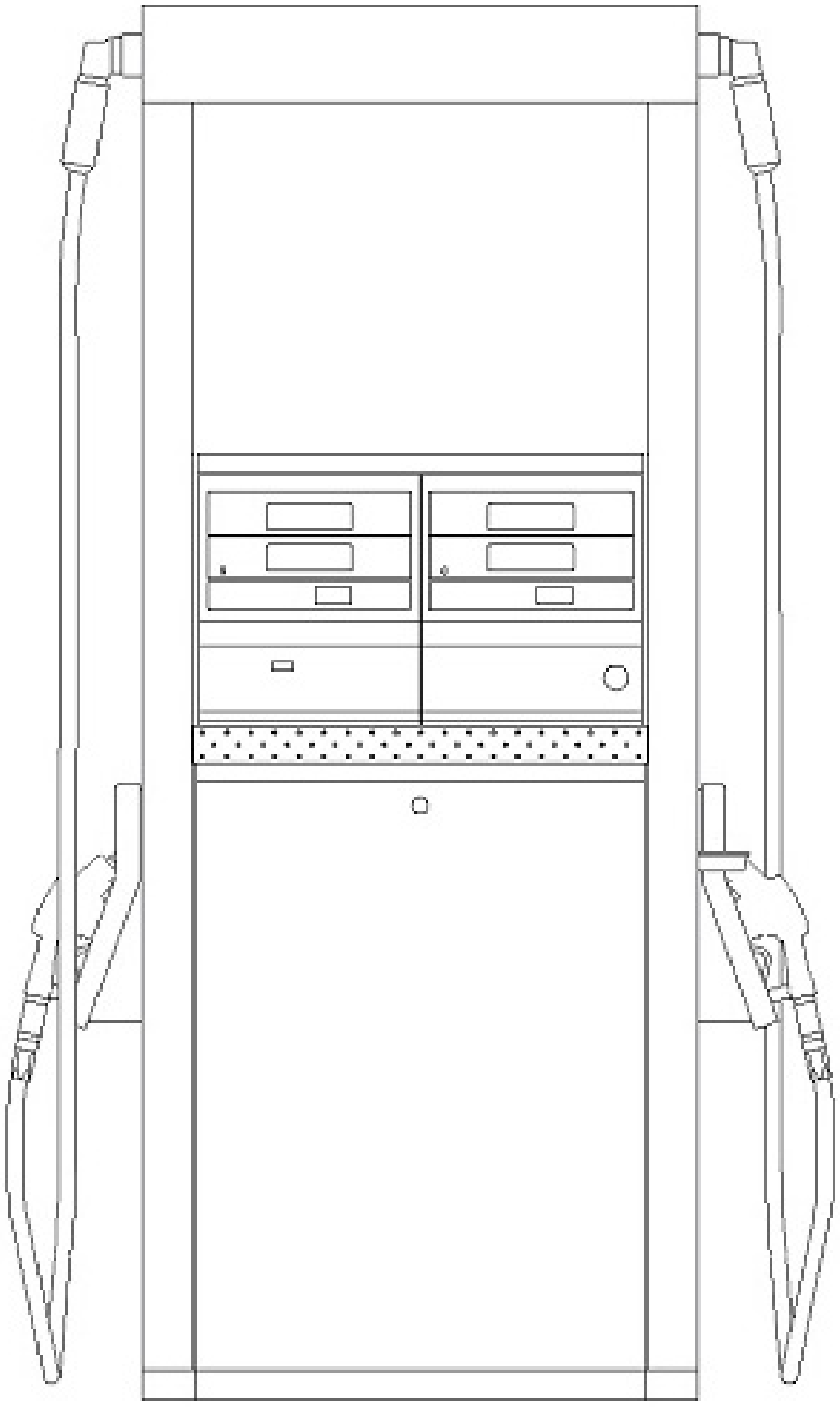
FIGURE 5/6A/210 – 5

Tatsuno Model FN-1002-T Trigger Nozzle

FIGURE 5/6A/210 – 6

Typical Pre-set Keypad

FIGURE 5/6A/210 – 7



Typical Tatsuno Neo Sunny Dispenser With Island-oriented Nozzles