Australian Government
Department of Industry, Science and Resources
National Measurement Institute

Certificate of Approval

NMI 5/6A/231

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.

Beijing Sanki Petroleum Technology Model SK52GF222B Fuel Dispenser for Motor Vehicles

submitted by Sanki Australia Pty Ltd
Level 16, 414 Latrobe Street
Melbourne VIC 3000

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 is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern and variants 1 & 2 approved – certificate issued	14/02/14
1	Pattern amended (*Vmin*) – Variant 3 approved – certificate issued	18/02/16
2	Pattern and variant 4 approved – certificate issued	27/09/16
3	Pattern and variant 5 approved – certificate issued	23/03/17
4	Pattern and variant 6 approved – certificate issued	27/10/23

CONDITIONS OF APPROVAL

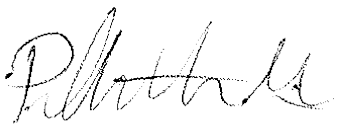
General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/231' 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 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 Phillip Mitchell
A/g Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 5/6A/231

1. Description of Pattern approved on 14/02/14

A Beijing Sanki Petroleum Technology model SK52GF222B fuel dispenser for motor vehicles (Figure 1 and Table 1) is approved to dispense various petrol or distillate (*), in attendant-operated mode, or in unattended 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. The pattern may also be known as the “Ranger Equipment.”

(*) 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, *Vmin*	2 L	
• Maximum flow rate, *Qmax*	50 L/min	
• Minimum flow rate, *Qmin*	5 L/min	
• Maximum pressure of the liquid, *Pmax*	300 kPa	
• Minimum pressure of the liquid, *Pmin*	100 kPa	(#1)
• Range of liquids viscosity	0.5 to 20 mPa.s (at 20 °C)	(#2)
• Maximum temperature of the liquid, *Tmax*	50 °C	
• Minimum temperature of the liquid, *Tmin*	−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 are 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) Two Beijing Sanki Petroleum Technology model GP-50 pump/strainer/gas separators (Figure 2)**.** A gas/air test valve is provided for checking the operation of the air elimination device.

(ii) The measuring transducers are Beijing Sanki Petroleum Technology model FM-500 positive displacement meters Figure 3. Each meter is fitted with a Zhengzhou Windbell Electrical Equipment model WB-S/Y500 pulse generator that communicates the volume of fluid measured to the indicator.

(iii) A Beijing Sanki Petroleum Technology model SK-03 price-computing calculator/indicator (Figure 1).

(iv) An optional pre-set facility may also be fitted.

(v) A 19 mm hose supplying fuel to a 19 mm OPW model 11-A nozzle (*).

(vi) Control of the flow of the nozzle is achieved with a Zhejian Chunhui Intell Gznt Control single or two stage solenoid valve.

(*) Note that the submittor must be consulted regarding the acceptability of any alternative nozzles.

1.3 Calculator/Indicator

A Beijing Sanki Petroleum Technology Co., Ltd model SK-03 calculator/indicator comprises a computing unit and a display unit (Figure 1). A single display is provided for volume, total price, and unit price.

The indicators display the following maximum values:

- Volume 0000.00 L to approx. 9990.00 L (*) in 0.01 L increments
  (*) Always less than 9999.99 L
- Unit price 0.1 to 999.9 c/L in 0.1 c/L increments
- Price $0000.00 to $9999.00 in 1 cent increments
- Totaliser (#) To 9 999 999.9 L, mechanical or electronic
  (#) Electronic totaliser (software driven and resettable) and mechanical totaliser (non-resettable)
- Pre-set To $999 in $1 increments

The pre-set facility uses two-stage solenoid valves to slow down and cut off the flow.

The main software version number for the calculator/indicator is SK97V510, which can be viewed by entering ‘Level 1’ password, command 18.

1.4 Descriptive Markings and Notices

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

Pattern approval sign	NMI 5/6A/231	
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 (*Vmin*)	 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, *Tmax*	…..°C	
Minimum temperature of the liquid, *Tmin*	…..°C	
Environmental class	class C	

(#1) In addition, the minimum measured quantity (*Vmin*) shall be clearly visible on any indicating device visible to the user during measurement, in the form ‘Minimum delivery 2 L’.

(#2) e.g. distillate or D.

1.5 Sealing Provision

The gas separator test valve has provision for sealing. The meter calibration access 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

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

- Delivery is stopped if excessive amounts of air/vapour are detected.
- In the event of a power failure, the displayed value for a delivery is retained.
- Delivery is halted and an error code displayed if an error in pulse output is detected.

2. Description of Variant 1 approved on 14/02/14

Certain other models and configurations of the SK52 series of fuel dispensers identified using Table 1 below, including dispensers with from one (1) to eight (8) meters/hoses/nozzles (Figures 5 to 9).

TABLE 1

Meaning of model designations for the SK52 series of fuel dispensers: (the pattern is a model SK52GF222B)

1st and 2nd digits - series, always;

SK

3rd and 4th digits - housing style, either;

52 = 'Narrow' style housing, as in Figure 1 (the pattern, SK52GF222B) and Figure 5 (variant 1, SK52*F111*)

56 = 'Wide' style housing, as in Figure 6 (variant 1, e.g. SK56*F636* or SK56*F424*)

65 = 'Cantilever' style housing, as in Figure 8 (variant 1, e.g. SK65*F848*, SK65*F636*, SK65*F424* or SK65*F212*)

5th digit - pump type, either;

GF = Internal gear pump (the pattern)

QF = Using approved submersible turbine pump (variant 2)

ZF = Internal vane pump (the pattern with alternative pump style)

6th digit - number of nozzles, 1 to 8

7th digit - number of products, 1 to 4

8th digit - number of flowmeters, 1 to 8

Suffix, either;

A = Submersible turbine pump

B = Suction pump

3. Description of Variant 2 approved on 14/02/14

With one or more compatible submersible turbine pumps (STPs) incorporating a leak detection system (Figure 10). The STP replaces the equivalent components (i.e. motor, pump/strainer/gas separator, and associated pipework) in certain fuel dispensers covered by this approval.

4. Description of Variant 3 approved on 18/02/16

Models SK52GF and SK52QF now fitted with 25 mm (1") pipework and components to achieve a maximum flow rate of 80 L/min.

These dispensers have the same Field of Operation as the pattern except as listed below:

- Minimum measured quantity, *Vmin* 5 L
- Maximum flow rate, *Qmax* 80 L/min
- Minimum flow rate, *Qmin* 8 L/min

5. Description of Variant 4 approved on 27/09/16

Models SK52QF same as variant 3 with 40mm hose and nozzle and two flowmeters in parallel to achieve a maximum flow rate of 110 L/min.

These dispensers have the same Field of Operation as the pattern except as listed below:

- Minimum measured quantity, *Vmin* 5 L
- Maximum flow rate, *Qmax* 110 L/min
- Minimum flow rate, *Qmin* 11 L/min

6. Description of Variant 5 approved on 23/03/17

Models SK52QF same as variant 1 dispensers with one or two hoses for use with AdBlue

Field of Operation

The field of operation of the AdBlue 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} 320 kPa
- Minimum pressure of the liquid, P_{min} 50 kPa (#1)
- Dynamic viscosity (at 25 °C) 1.4 mPa.s (#2)
- Maximum temperature of the liquid, T_{max} 30 °C
- Minimum temperature of the liquid, T_{min} 0 °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 to be correct for AdBlue fluid AUS32 (aqueous urea solution 32.5%) for which it is to be verified.

7. Description of Variant 6 approved on 27/10/23

Models SK52QF, SK10GF111B, or SK10QF111B, a single Hose Pump or Dispenser for Diesel only with the operating components the same the pattern.

Models SKQF6510510A, a 10 Hose Dispenser for ULP or Diesel with the operating components the same as the pattern.

All models have the same field of operation as the pattern.

TEST PROCEDURE No 5/6A/231

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

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.

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.

Maximum Permissible Errors

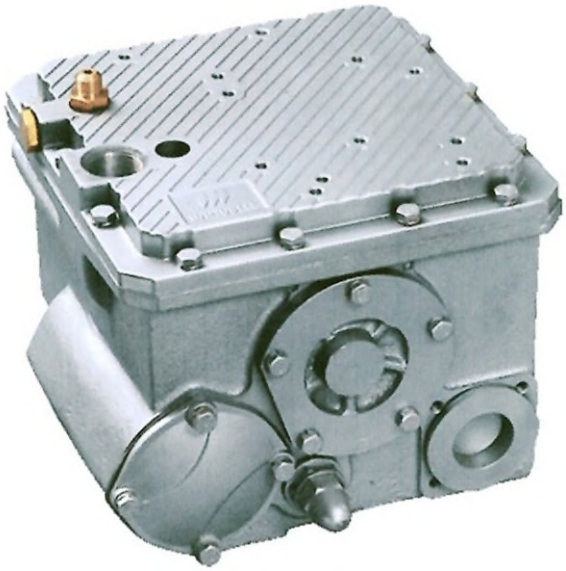
The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

FIGURE 5/6A/231 – 1

(a) Beijing Sanki Petroleum Technology Model SK52GF222B Fuel Dispenser (The Pattern)

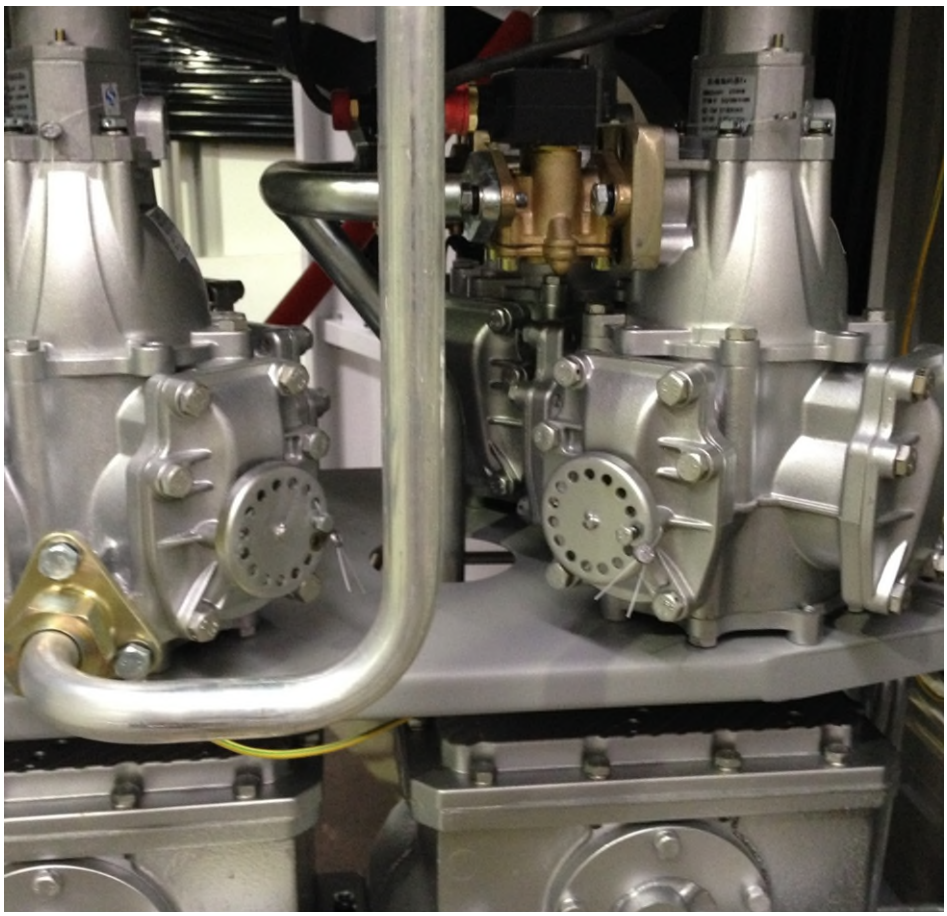
(b) Model SK52GF222B Fuel Dispenser Hydraulics

FIGURE 5/6A/231 – 2



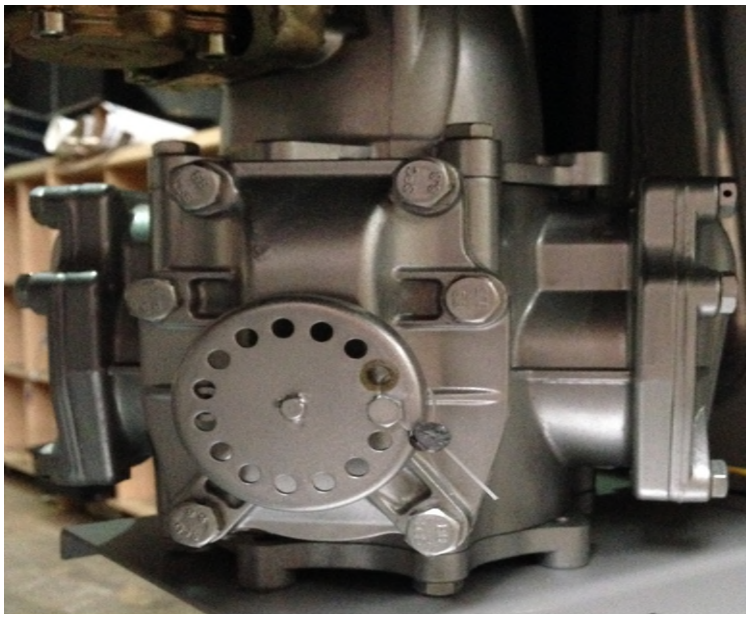
Beijing Sanki Petroleum Technology Model GP-50 Pumping Unit

FIGURE 5/6A/231 – 3

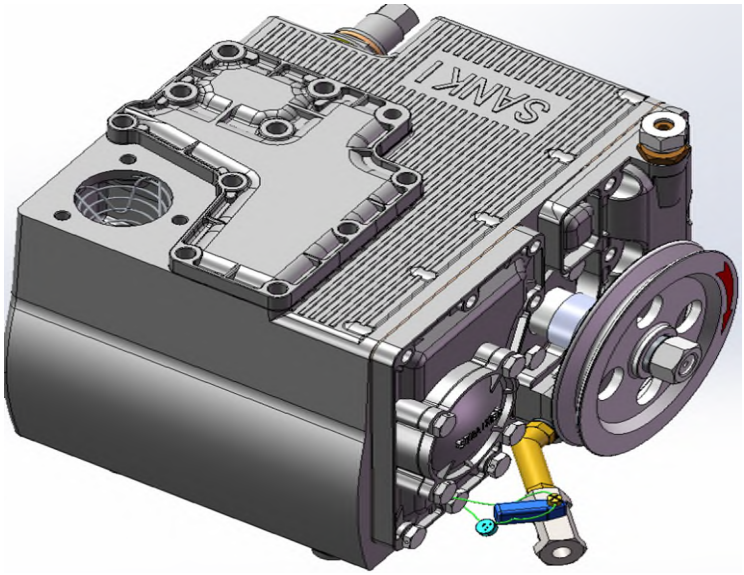


Beijing Sanki Petroleum Technology Model FM-500 Flowmeters

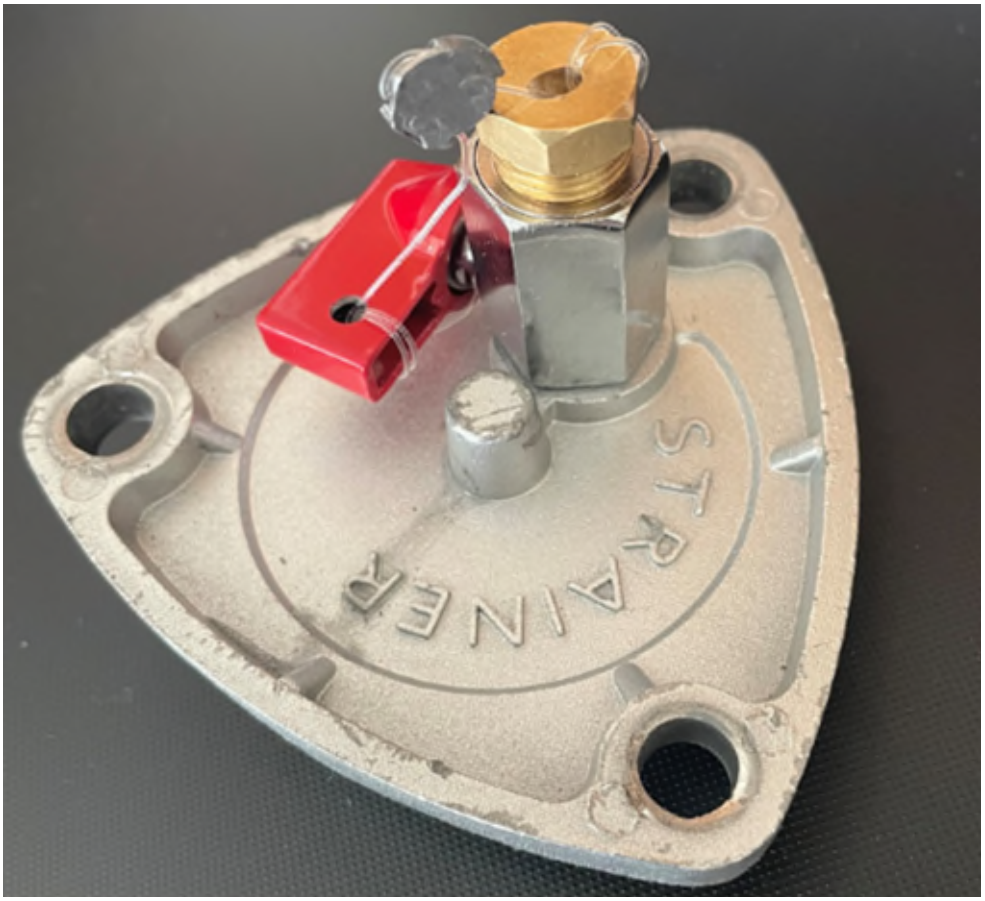
FIGURE 5/6A/231 – 4



All Models manufactured after June 2023 -Typical Sealing of Air separation test valve



SK10 Range - Typical Sealing of Air separation test valve



For all models Manufactured before June 2023 - Typical Sealing of Air separation test valve

FIGURE 5/6A/231 – 5

Typical Single Hose 52-style Housing Dispenser – Model SK52*F111* (Variant 1)

FIGURE 5/6A/231 – 6

Typical Version 56-style Housing Dispensers – Models SK56*F636* & SK56*F424* (Variant 1)

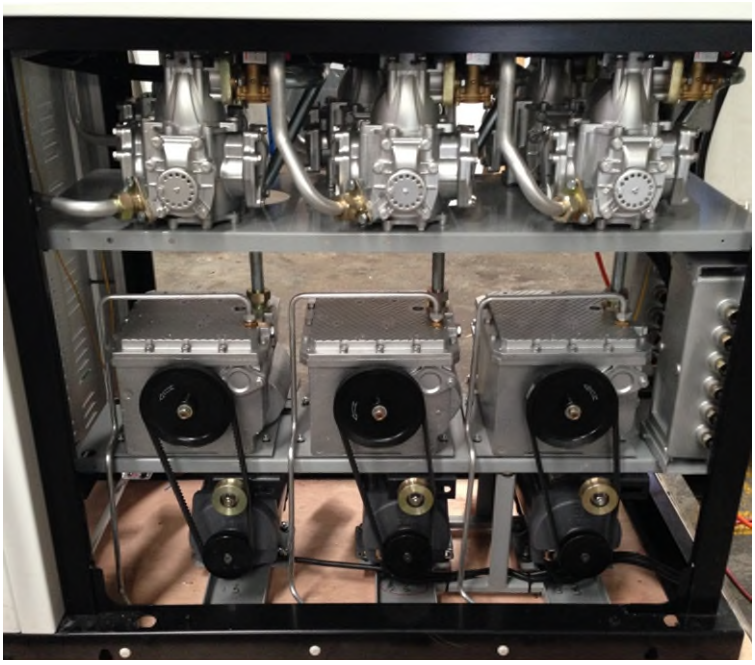
FIGURE 5/6A/231 – 7

Typical Version 56 Dispenser Hydraulics (Variant 1)

FIGURE 5/6A/231 – 8

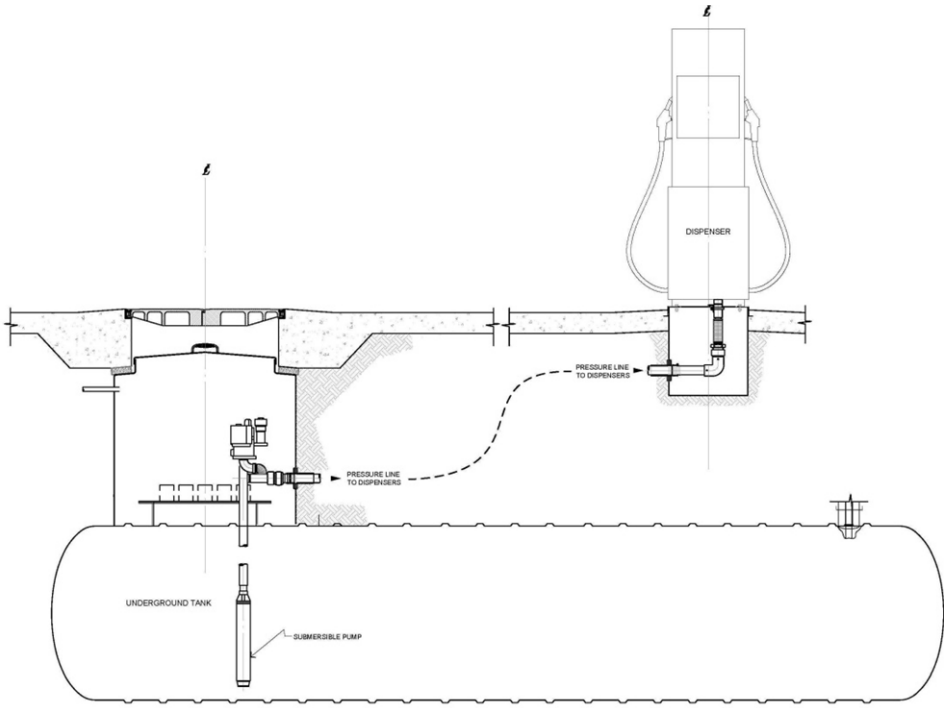
Typical Version 65-style Housing Dispensers – Models SK65*F848* & SK65*F636* (Variant 1)

FIGURE 5/6A/231 – 9



Typical Version 65 Dispenser Hydraulics (Variant 1)

FIGURE 5/6A/231 – 10



Typical Submersible Turbine Pump (STPs) System (Variant 2)

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