Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 5/6A/243

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.

A Mithra Fueling Model INNO 2000-E 222P Fuel Dispenser for Motor Vehicles

submitted by Mithra Fueling Australia Pty Ltd
Level 1, 8 Cato Street
Hawthorn East VIC 3123

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 & variant 1 approved – certificate issued	11/11/24
1	Change of address – certificate issued	14/04/26

CONDITIONS OF APPROVAL

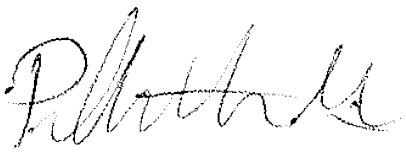
General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 5/6A/243' 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*.



Phillip Mitchell
A/g Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 5/6A/243

1. Description of Pattern approved on 11/11/2024

A Mithra Fueling model INNO 2000-E 222P 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 system. The meter is adjusted to be correct for the liquid for which it is to be verified.

(*) 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} 350 kPa
- Minimum pressure of the liquid, P_{min} 140 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 & 2) incorporates the following components:

(i) A Franklin Electric STP series or Red Jacket STP series submersible pump incorporating a leak detection system or any compatible (#) submersible pump.

(ii) A measurement transducer comprising a Mithra model MTH-65 four piston positive displacement flowmeter (Figure 3) fitted with a Mithra model MTR-100 or Eltomatic 01-09 pulse generator (Figure 4), 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 front and rear of the dispenser housing. The nozzle used is a 19 mm or 25 mm ZVA brand or as equal size 11A or 7HL model OPW nozzles, or any other compatible (#) nozzle. The hose used is

an Elaflex Slimline DN 16, 21 or 25 and as equal size Trelleborg, Semperit or any other compatible (#) hose or nozzle.

(#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system. The submittor must be consulted regarding the acceptability of any alternative nozzles.

1.3 Calculator/Indicator

A Mithra EFSC+ model CPU calculator/indicator (Figure 5) interfaces to the Mithra Pulser; an integrated microcontroller that measures pulses generated by the connected Mithra flowmeters. An LCD display (Figure 6) is used for indicating dollar, volume and price, and a separate display under the keypad is utilized for the electromechanical totaliser.

- The display limits and increments are:
- Price (8 digits) up to 999999.00 in 0.01 cents
- Volume (8 digits) up to 999999.00 in 0.01 L
- Unit price (6 digits) up to 999999 in price/L
- Totaliser (non-resettable) (7 digits) up to 9 999 999 in 1 L increments

A pre-set facility is fitted to allow pre-set to be selected via keypad, by means of volume (litres) or price (dollars).

The instrument is approved with version 2.0.2 -3c03 software, which can be viewed by following the below steps.

1. With the nozzle stowed, press CLEAR button on the keypad
2. Version number will appear on the LCD

Calibration is adjusted via electronic calculation. Access to calibration mode requires a dynamic password.

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.

Pulser connection error is indicated by a code displayed as "EPULSX".

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/243	
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 11/11/24

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

Model numbers are made up of a series of fields representing the various approved components/features, as follows *(For example, the pattern is a model INNO 2000-E 222P):*

TABLE 1 – Approved model designations

Inno**[1]** – **[2][3][4][5][6]**

[1] – Approved Series:
- INNO 2000-E. (Figure 6)
- INNO 2000-DEF-I (Figure 7)
- INNO 5000-H (Figure 8a. & b.)
- INNO 6000-L (Figure 9a. & b.)

[2] – Number of Grades

[3] – Number of Hoses

[4] – Number of Displays

[5] – Pump Type:
- Pressure (P) supplied by external pump (Figure 10) – e.g. Submersible Turbine Pump or
- Pump Hose Suction System (S) supplied by an internal pump (Figure 11).

[6] – Flow rate:
- Normal flow rate (50 LPM),
- High flow rate (70 LPM),
- Ultra high flow rate (120 LPM)

2.1 Approved Series

Models having Approved Series designation INNO 2000-DEF-I (Figure 7) configured for dispensing Diesel Exhaust Fluid (DEF), also know as Adblue fluid. 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} 320 kPa
- Dynamic viscosity (at 25°C) 1.4 mPa.s (#3)
- 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

(#3) The flowmeter is adjusted to be correct for AdBlue fluid AUS32 (aqueous urea solution 32.5%) for which it is to be verified.

The model uses a Mithra MTH-AB model 4 pistons positive displacement Adblue flowmeter (Figure 10).

2.2 Pump Type

Models having the pump type designation as Pressure (Figure 11) as indicated by Table 1 utilizes a Franklin Electric STP series or Red Jacket STP series or any compatible (#) submersible pump.

Models having designation of Suction (i.e. Inno2000-E-222S) as indicated by Table 1 utilising a positive displacement pump inside the assembly of the instrument. The pump unit is a Pump Kose (Figure 12), driven by an external electric SAMWHA motor via a belt. Pump assembly includes integral bypass, strainer and a gas elimination device. Vapour and gas are expelled to a vent tube.

2.3 Flow rate

Models having designation High flow rate as indicated by Table 1, fitted with Mithra model MTH-65 fuel flowmeter (Figure 3), ELAFLEX Slimline DN21 hose or equal size Trelleborg or Semperit hoses, ZVA 25 mm nozzle or OPW 7HL nozzle or other compatible (#) nozzle, with the following field of operation:

- Minimum measured quantity, V_{min} 2 L
- Maximum flow rate, Q_{max} 70 L/min
- Minimum flow rate, Q_{min} 7 L/min

Models having designation Ultra-high flow rate as indicated by Table 1, fitted with two Mithra model MTH-L100B (Figure 13) flowmeters in parallel, ELAFLEX Slimline DN25 hose or equal size Trelleborg or Semperit hoses, ZVA 25 mm nozzle or OPW 7HL nozzle or other compatible (#) nozzle, with the following field of operation:

- Minimum measured quantity, V_{min} 5 L
- Maximum flow rate, Q_{max} 120 L/min
- Minimum flow rate, Q_{min} 12 L/min

(#) ‘Compatible’ is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system.

3. Description of Variant 2 approved on 11/11/24

Instruments are fitted with a Mithra stage II vapour recovery system and are used up to 42 L/min. A typical instrument is shown in Figure 14.

Vapour recovery components and system as listed below and included in the relevant approval certificates may be used.

For collection of vapour;

ATEX, PTB044002 (DurrTechnik MEX 0544 Vapour recovery pump)
IECEx, ITS 19.0033X (DurrTechnik Vapour recovery pump Elnor motor)

Vapour recovery nozzles and hose;

ATEX, Elaflex ZVA 200 GR, Slimline 2 GR (TPS 19 ATEX 103415 0002 U)
Type Approval, Coaxial Hose Elaflex Conti slimline coax 21/8 (TAP00002RY)

TEST PROCEDURE No 5/6A/243

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.

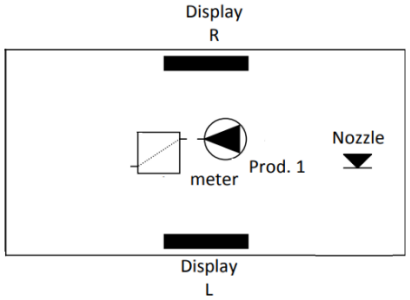
Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 20097*.

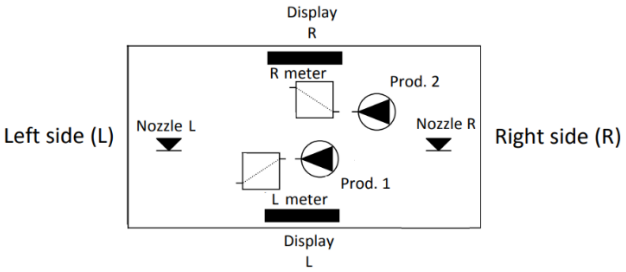
Hose Configuration

Where the serial number on the data plate is 12345, the suffix for a hose is as appended as identified in the following figures, for example the Dual Hose dispenser is numbered 12345A, and 12345B:

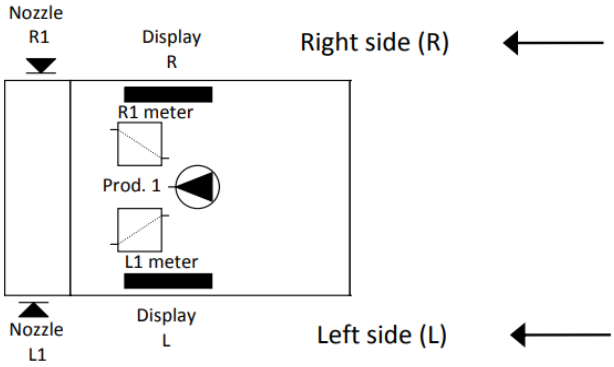
Single Hose:

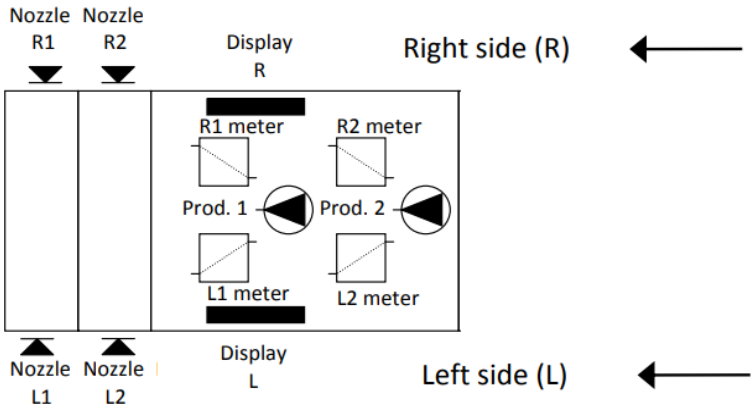


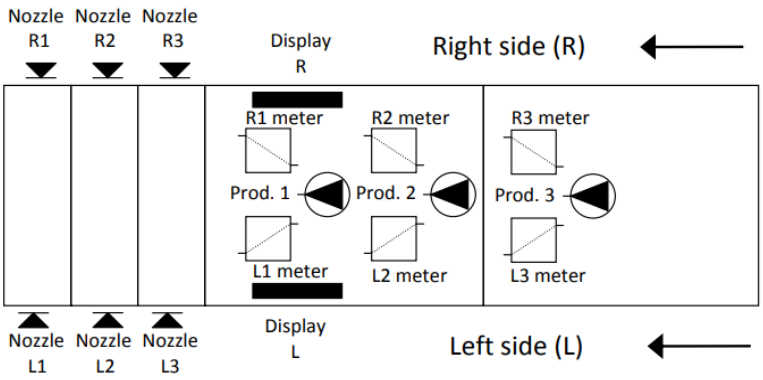
Double Hose:

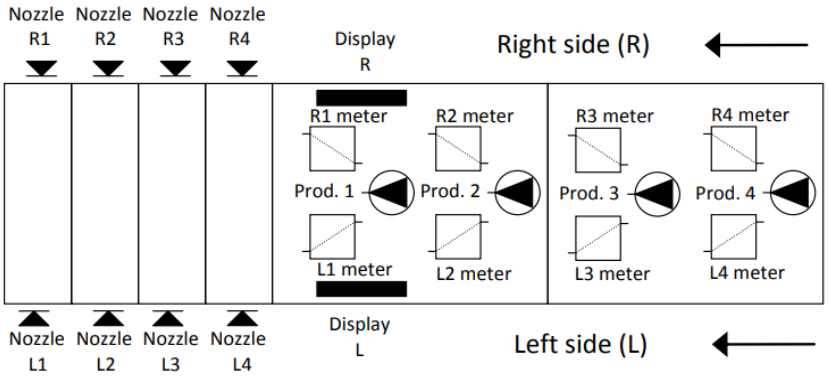


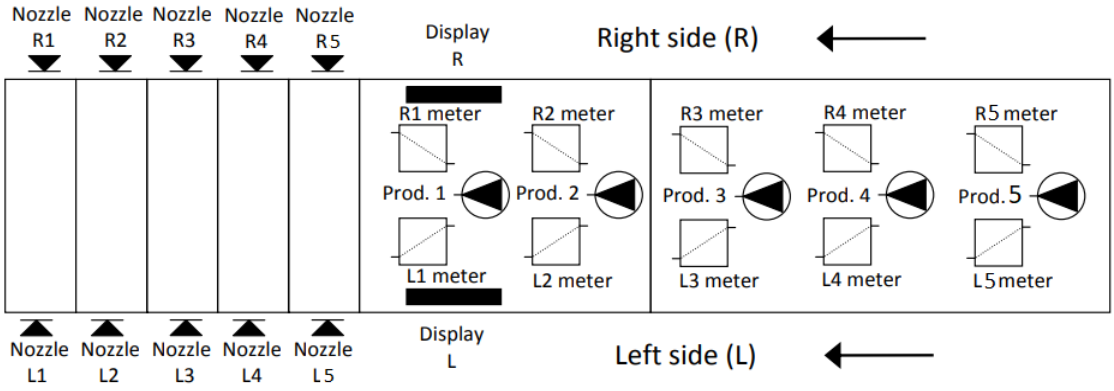
Multiproduct Hoses:

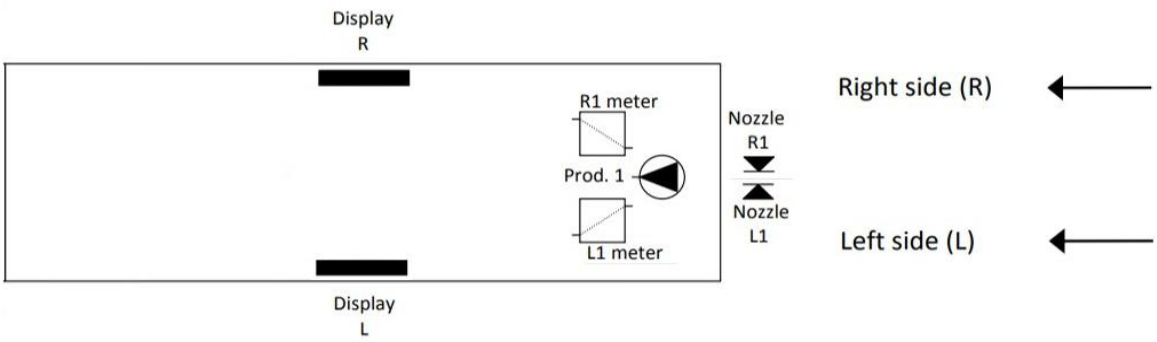


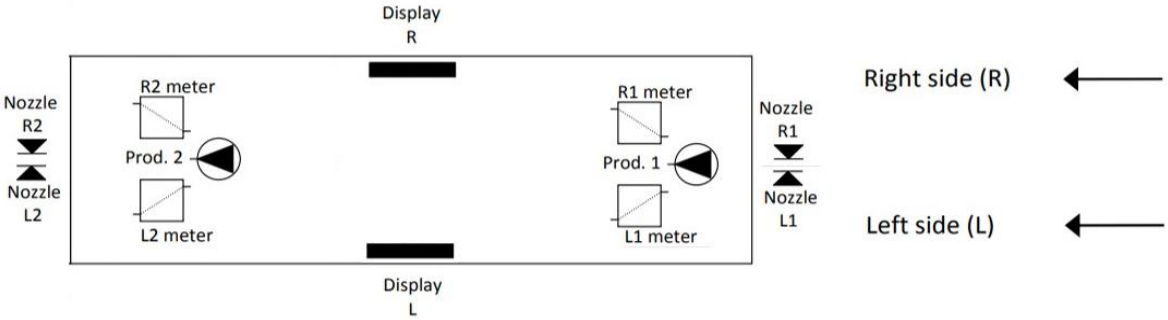


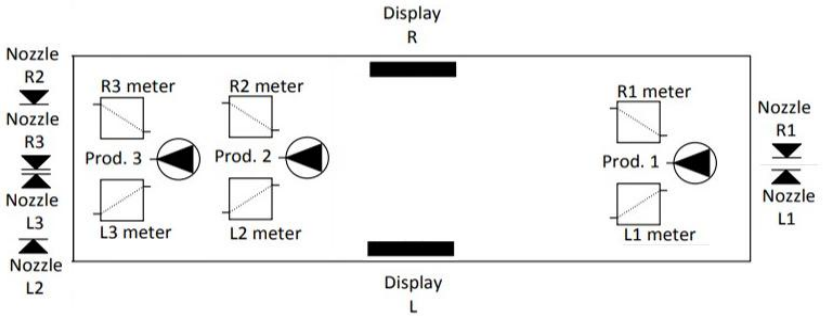


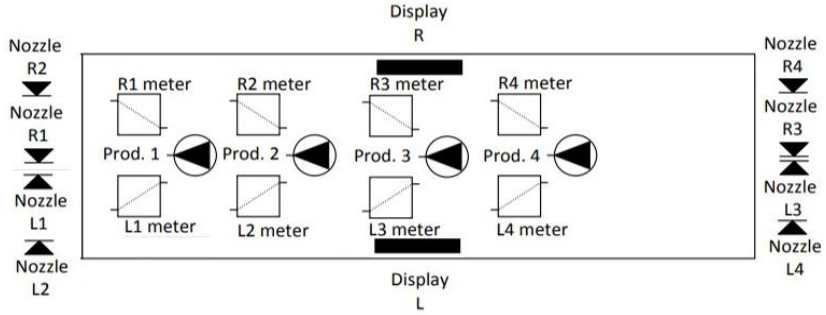

Nozzle R1
Nozzle R2
Nozzle R3
Nozzle R4
Display R
Right side (R)
R1 meter
R2 meter
R3 meter
R4 meter
Prod. 1
Prod. 2
Prod. 3
Prod. 4
L1 meter
L2 meter
L3 meter
L4 meter
Nozzle L1
Nozzle L2
Nozzle L3
Nozzle L4
Display L
Left side (L)


Nozzle R1
Nozzle R2
Nozzle R3
Nozzle R4
Nozzle R5
Display R
Right side (R)
R1 meter
R2 meter
R3 meter
R4 meter
R5 meter
Prod. 1
Prod. 2
Prod. 3
Prod. 4
Prod. 5
L1 meter
L2 meter
L3 meter
L4 meter
L5 meter
Nozzle L1
Nozzle L2
Nozzle L3
Nozzle L4
Nozzle L5
Display L
Left side (L)


Display R
R1 meter
Prod. 1
L1 meter
Nozzle R1
Nozzle L1
Right side (R)
Left side (L)
Display L


Display R
Nozzle R2
Nozzle L2
R2 meter
Prod. 2
L2 meter
R1 meter
Prod. 1
L1 meter
Nozzle R1
Nozzle L1
Right side (R)
Left side (L)
Display L


Display
R
Nozzle
R2
Nozzle
R3
Nozzle
L3
Nozzle
L2
R3 meter
R2 meter
R1 meter
Prod. 3
Prod. 2
Prod. 1
L3 meter
L2 meter
L1 meter
Nozzle
R1
Nozzle
L1
Display
L
Right side (R)
Left side (L)


Display
R
Nozzle
R2
Nozzle
R1
Nozzle
L1
Nozzle
L2
R1 meter
R2 meter
R3 meter
R4 meter
Prod. 1
Prod. 2
Prod. 3
Prod. 4
L1 meter
L2 meter
L3 meter
L4 meter
Nozzle
R4
Nozzle
R3
Nozzle
L3
Nozzle
L4
Display
L
Right side (R)
Left side (L)

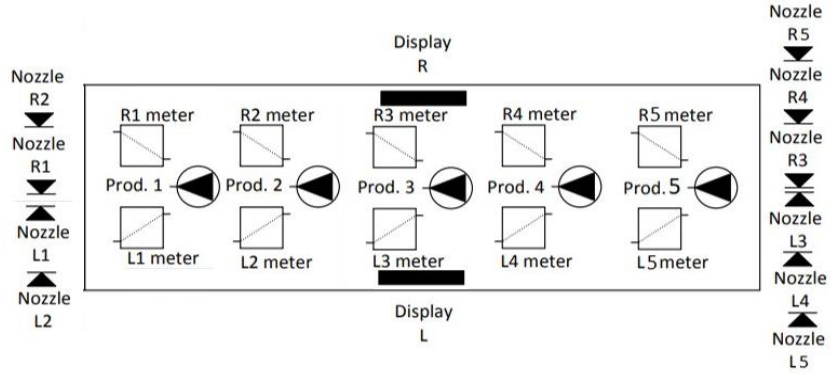
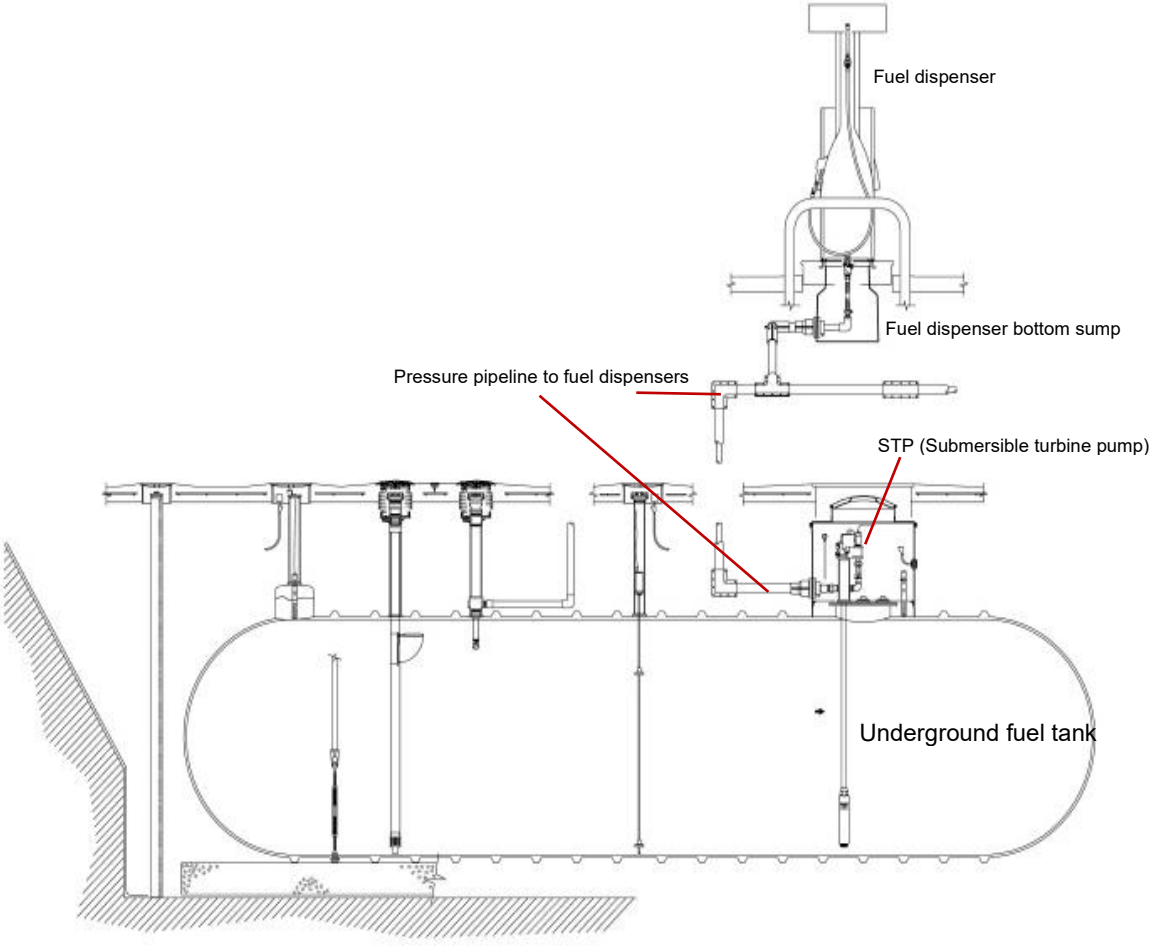

Display
R
Nozzle
R2
Nozzle
R1
Nozzle
L1
Nozzle
L2
R1 meter
R2 meter
R3 meter
R4 meter
R5 meter
Prod. 1
Prod. 2
Prod. 3
Prod. 4
Prod. 5
L1 meter
L2 meter
L3 meter
L4 meter
L5 meter
Nozzle
R5
Nozzle
R4
Nozzle
R3
Nozzle
L3
Nozzle
L4
Nozzle
L5
Display
L
Right side (R)
Left side (L)

FIGURE 5/6A/243– 1

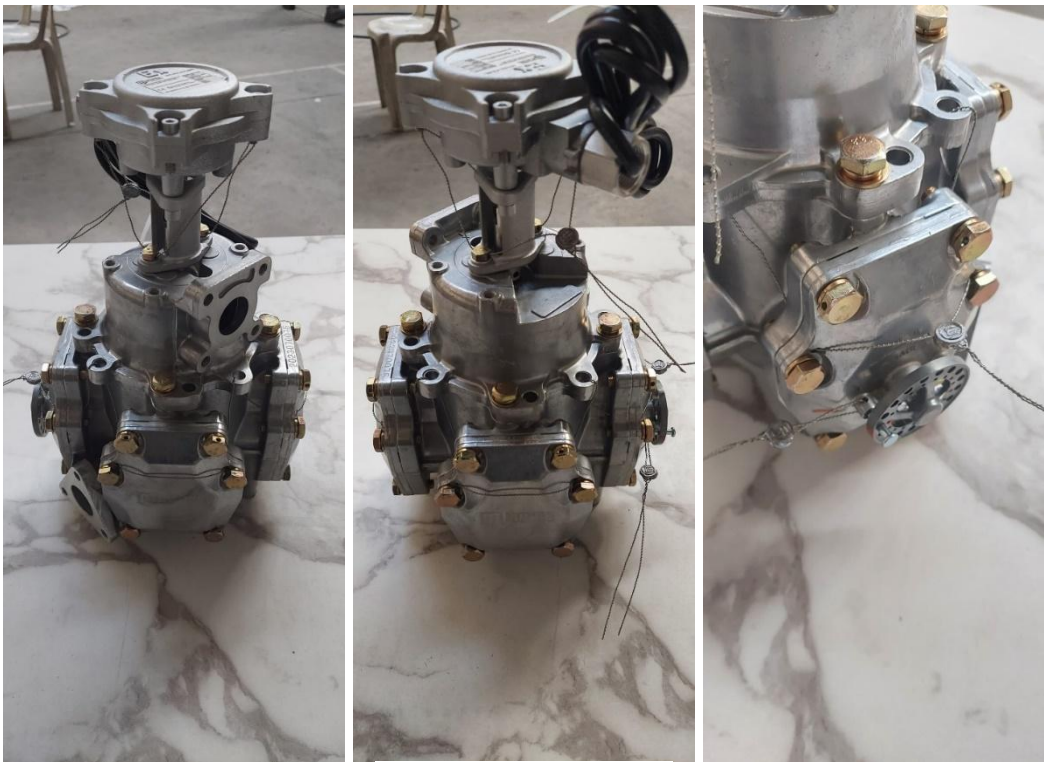


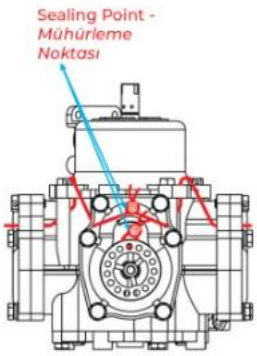
A Franklin Electric STP series or Red Jacket STP series submersible pump

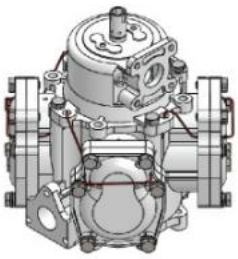
FIGURE 5/6A/243– 2

Mithra Fueling Model INNO 2000-E 222P - Fuel Dispenser for Motor Vehicles (Pattern)

FIGURE 5/6A/243– 3



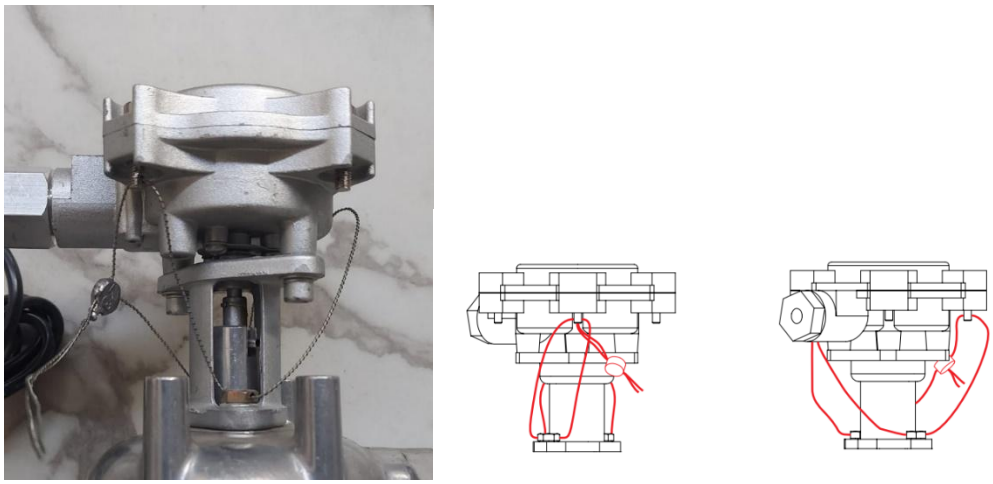




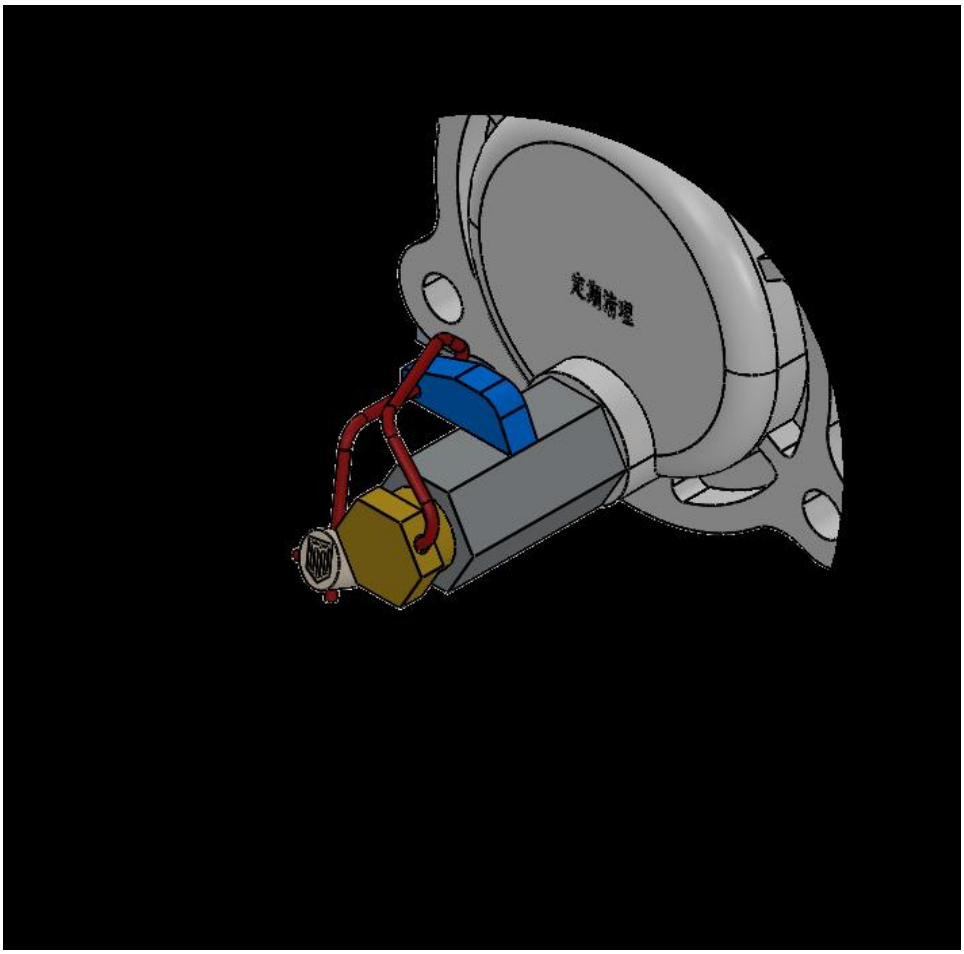
MTH-65

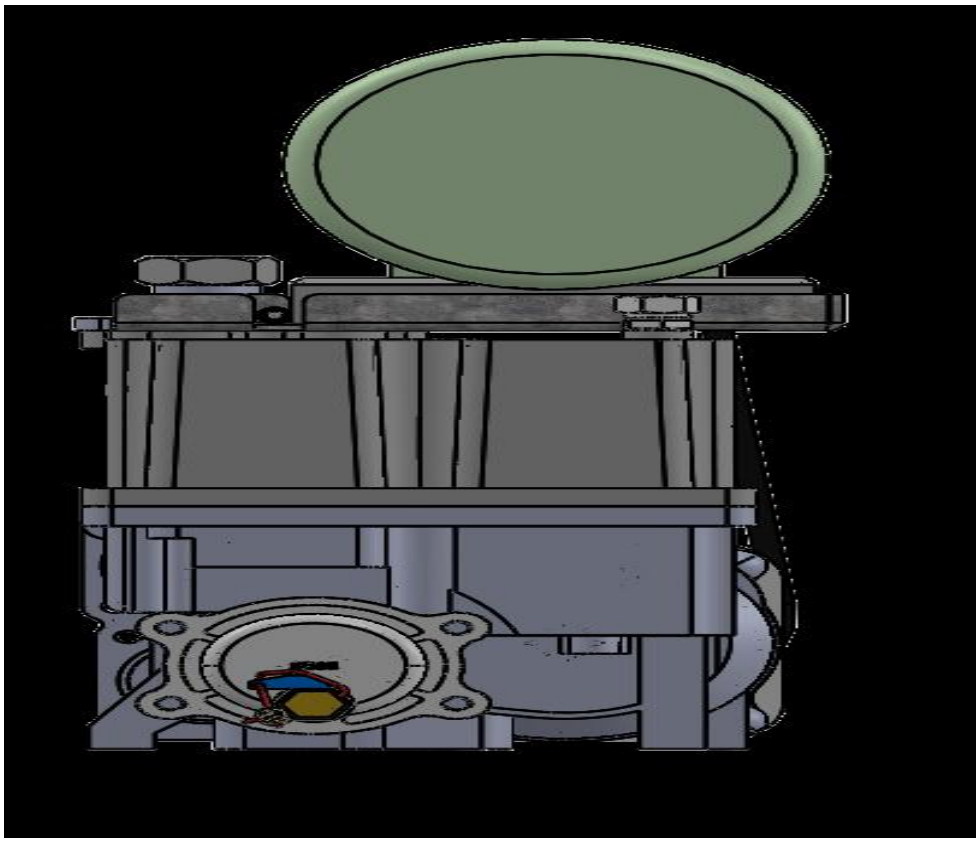
Mithra Fueling model MTH-65 Fuel Flowmeter with sealing method

FIGURE 5/6A/243– 4



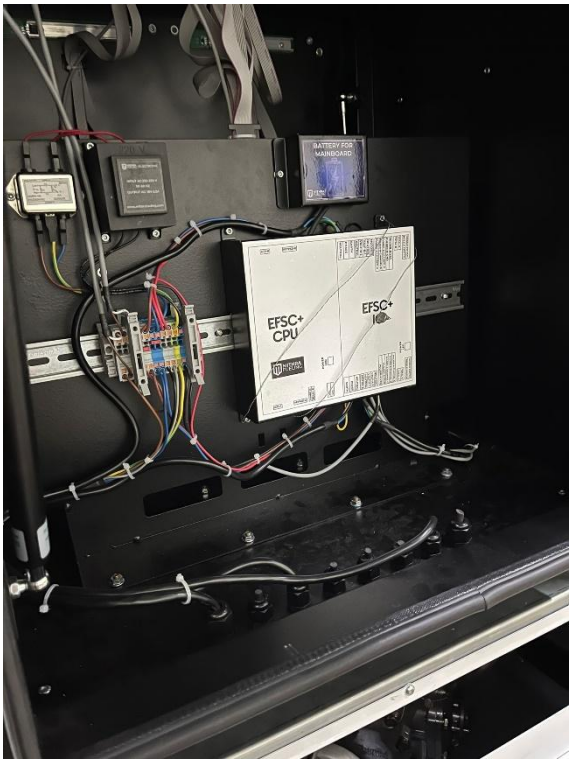
Mithra Fueling Pulser with sealing method





Sealing of the air elimination test valve

FIGURE 5/6A/243– 5



Mithra Fueling EFSC+ CPU with sealing method (2 products)

FIGURE 5/6A/243– 6

Mithra Fueling LCD Displays

FIGURE 5/6A/243– 6

Mithra Fueling model INNO 2000 E 242P Fuel Dispenser for Motor Vehicles

FIGURE 5/6A/243– 7

Mithra Fueling model INNO DEF-I 222P Dispenser

FIGURE 5/6A/243– 8

a. Mithra Fueling model INNO 5000 H 482 Fuel Dispenser for Motor Vehicles

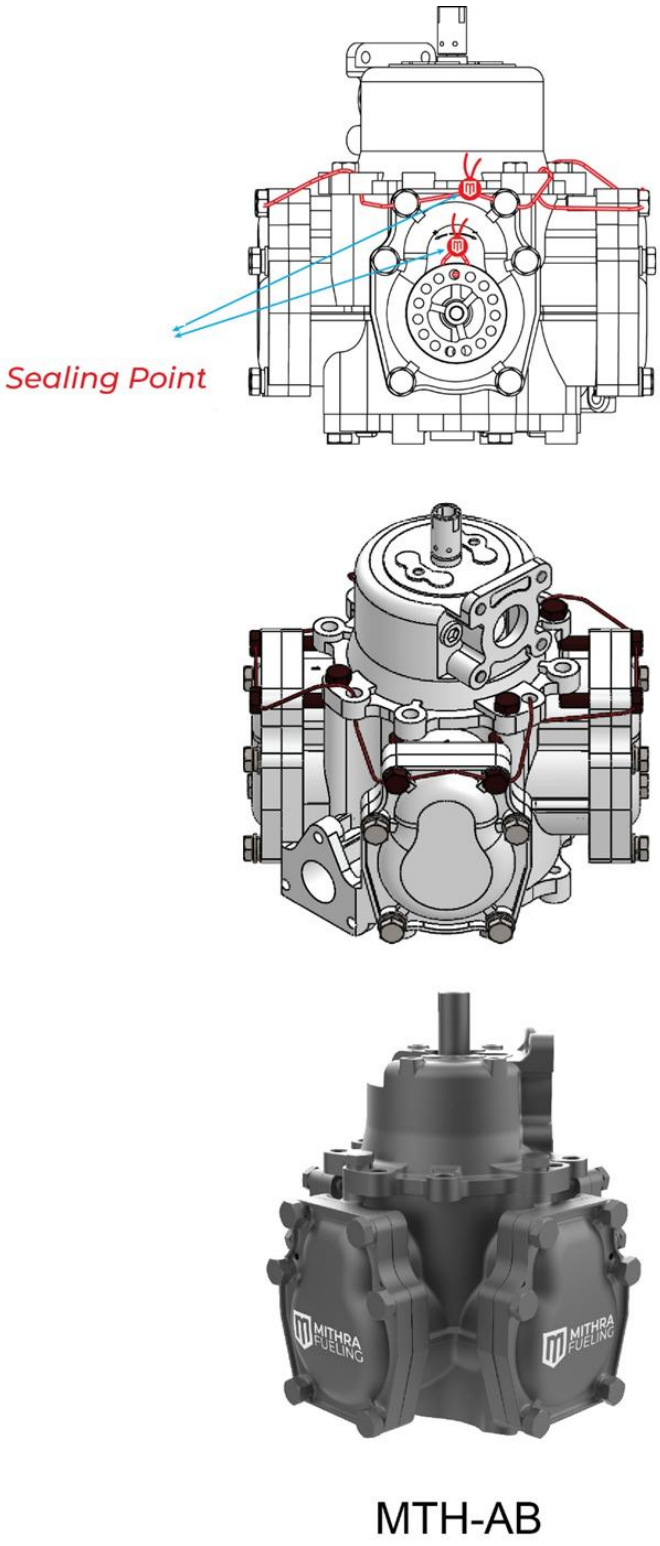
b. Mithra Fueling model INNO 5000 H 5102 Fuel Dispenser for Motor Vehicles

FIGURE 5/6A/243– 9

a. Mithra Fueling model INNO 6000 L 482 Fuel Dispenser for Motor Vehicles

b. Mithra Fueling model INNO 6000 L 5102 Fuel Dispenser for Motor Vehicles

FIGURE 5/6A/243– 10



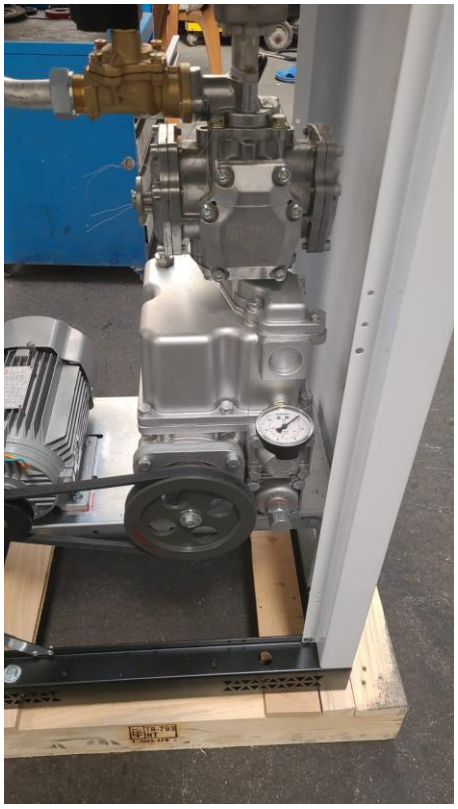
Mithra Fueling model MTH-AB DEF Flowmeter with sealing method

FIGURE 5/6A/243– 11

a. Mithra Fueling model INNO 2000 E 222 Fuel Dispenser Hydraulics (Pressure Type)

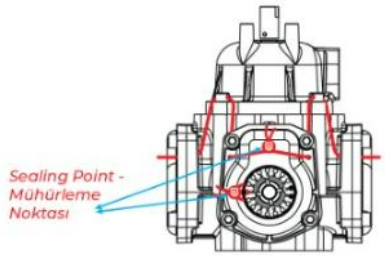
b. Mithra Fueling Model INNO 2000 E 242P Fuel Dispenser Hydraulics (Pressure Type)

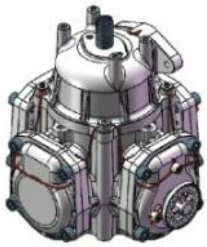
FIGURE 5/6A/243– 12



a. Fuel Dispenser Hydraulics

FIGURE 5/6A/243– 13

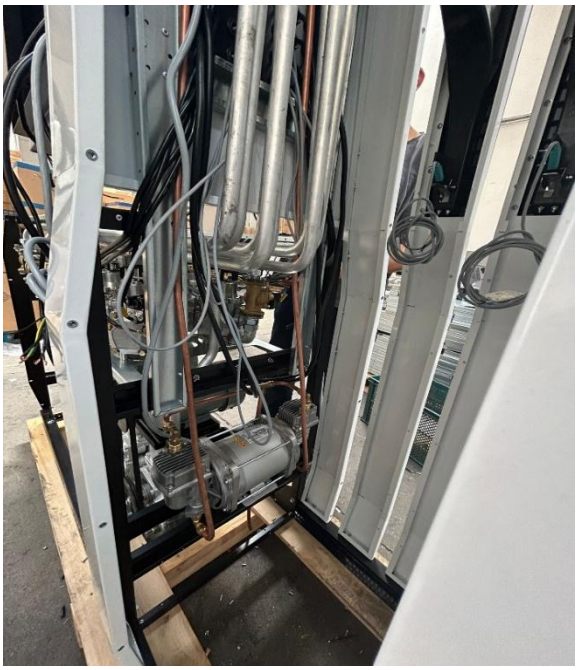




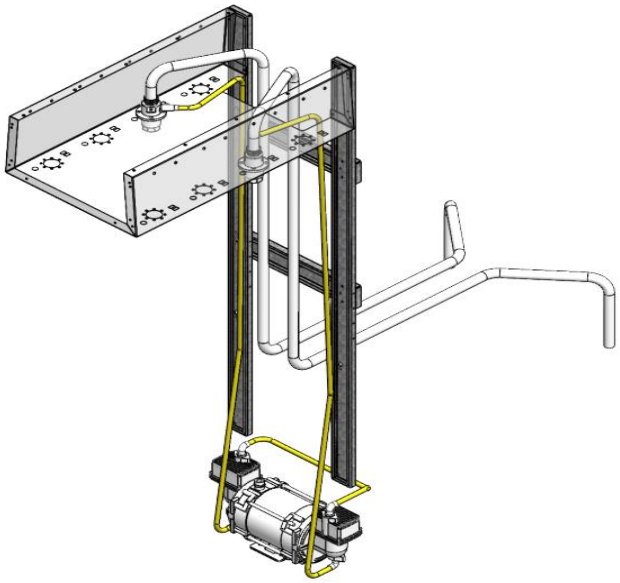
MTH-L100B

Mithra Fueling model MTH-L100B Flowmeter with sealing method

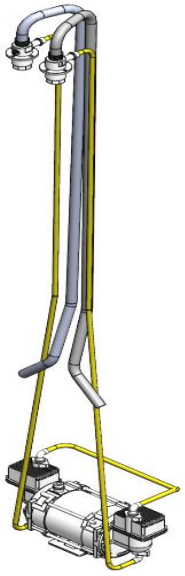
FIGURE 5/6A/243– 14



Mithra Fueling Model INNO 6000 L 482-S Fuel Dispenser Hydraulics
(Suction Type with vapour recovery components)



Mithra Fueling Model INNO 6000 L
Fuel Dispenser Vapour recovery
system placement



Mithra Fueling Model INNO 5000 H
Fuel Dispenser Vapour recovery
system placement

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