| OIML Member State | OIML Certificate No. |
|---|---|
| Sweden | R117/2019-A-SE1-24.01 |

# OIML CERTIFICATE ISSUED UNDER SCHEME A

**OIML Issuing Authority**

Name: RISE Research Institutes of Sweden AB
Address: Box 857, SE-50115 Borås, Sweden
Person responsible: Martin Tillander

**Applicant**

Name: Tokheim India Private Limited
Address: Building No.2, Plot No.66, TTC Industrial Area, MIDC, Mahape, Navi Mumbai-400710, Maharashtra, India

**Manufacturer**

Name: Tokheim India Private Limited
Address: Building No.2, Plot No.66, TTC Industrial Area, MIDC, Mahape, Navi Mumbai-400710, Maharashtra, India

**Identification of the certified type** *(the detailed characteristics will be defined in the annex to this certificate*
A family of Tokheim branded fuel dispensers with type designations listed under construction below.

**Designation of the module** *(if applicable)*

Tokheim Quantium QX30

This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R117 Edition (year): 2019

For accuracy class: 0,5

This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

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|---|---|
| Sweden | R117/2019-A-SE1-24.01 |

The conformity was established by the results of tests and examinations provided in the associated OIML type evaluation report:

No. 1228924 dated 2024-07-05 that includes 12 pages

The technical documentation relating to the identified type is contained in documentation file which is included in OIML type evaluation report mentioned above.

**OIML Certificate History**

| Revision No. | Date | Description of the modification |
|---|---|---|
| 0 | 2024-08-15 | First edition |
| | | |
| | | |
| | | |

Identification, signature and stamp
**The OIML Issuing Authority**
RISE Research Institutes of Sweden AB

.....

Date: 2024-08-15

*Important note:* Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full. The validity of this certificate can be verified by RISE.

| | |
|---|---|
| **OIML Member State**<br>Sweden | **OIML Certificate No.**<br>R117/2019-A-SE1-24.01 |

# ANNEX to an OIML Certificate of Conformity

**Issuing Authority**

Name: RISE Research Institutes of Sweden AB
Address: Box 857, SE-50115 Borås, Sweden
Person responsible: Martin Tillander

**Applicant**

Name: Tokheim India Private Limited
Address: Building No.2, Plot No.66, TTC Industrial Area, MIDC, Mahape, Navi Mumbai-400710, Maharashtra, India

**Manufacturer**

Name: Tokheim India Private Limited
Address: Building No.2, Plot No.66, TTC Industrial Area, MIDC, Mahape, Navi Mumbai-400710, Maharashtra, India

**Correction**

……
……

Identification, signature and stamp
**The Issuing Authority**
RISE Research Institutes of Sweden AB

……..

Date: 2024-08-15


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**In respect of (type of instrument)**

A family of Tokheim Quantium (QX30) Fuel dispenser, for petrol, kerosene, diesel, ethanol, FAME/RME, HVO fuel, Biofuels and its blends, DEF (Diesel Exhaust Fluid).

**Construction**

Product names :

- Tokheim Quantium Q330 series Fuel dispenser
- Tokheim Quantium Q430 series Fuel dispenser

Product designation:

| Tokheim India Quantium | Product | Meter | Nozzle/Hose | Display | Duty Type | Suction (S) Pressure (P) |
|---|---|---|---|---|---|---|
| TIQ | 1 | 1 | 1 | 2 | SS-Standard Duty | S-Suction |
| | 1 | 4 | 4 | 4 | | |
| | 1 | 2 | 2 | 2 | HH-Heavy Duty | |
| | 2 | 2 | 2 | 2 | | |
| | 2 | 2 | 2 | 4 | VH-Very Heavy Duty | |
| | 2 | 4 | 4 | 2 | | P-Pressure |
| | 2 | 4 | 4 | 4 | SH-Standard/Heavy Duty | |
| | 3 | 6 | 6 | 2 | | |
| | 3 | 6 | 6 | 4 | | |
| | 4 | 8 | 8 | 2 | | |

Standard duty – Flowrate up to 40lpm

Heavy duty - Flowrate up to 80lpm

Very Heavy duty - Flowrate up to 130lpm



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## Product Configuration and feature Matrix

Tokheim Quantium™
fuel dispenser family


| | Q330 | Q430 |
|---|---|---|
| Retail | ● | ● |
| Consumer | ● | |
| Fleet | ● | |
| Lane | ● | ● |
| Island | ● | |
| Double Sided Display | ● | ● |
| 1 or 2 Active | ● | ● |
| 4 Active | ● | ● |
| Product-Nozzle Configuration | 1-1,1-2,2-2,2-4,3-6 | 2-4,3-6,4-8 |
| High Hose | ● | ● |
| RS485 Communication Interface | ● | ● |
| Vapour Recovery | ● | ● |

Right and Left side is recognized by removing one of the doors from the hydraulic cabinet and look at the sheet metal support at the bottom. There is the letter R or L sticker will be seen pasted on to the sheet metal as can be seen in the pictures below. Right can also be described as A-side and Left can be described as B-side.



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**Measuring system (fuel dispenser) description**

A complete measuring system consists of one electronic module and one to four hydraulic modules. If one pump and air separator is serving more than one nozzle simultaneously the total maximum flowrate through these nozzles is limited by the air separator (according to "Components included") and the volume sensor (according to "Volume sensor flowrate range" under "Technical data", chapter 2.1). For higher flowrate another hydraulic module have to serve the same nozzle. For further information see block diagram in this chapter.

**Electronic module function**

TQCL is an electronic subsystem, and it consists mainly of calculator, indicating device, and keyboard with preset. This module can handle up to 4 motors, 8 pulse transmitters, 8 nozzles and 8 solenoid valves. The electronic module is able to serve up to four customers at a time (called 4 active).

**Hydraulic function modules**

Measurement transducer function is a hydraulic subsystem and it consists mainly of: volume sensor and pulse transmitter.

Pump and air separator function is a hydraulic subsystem and it consists mainly of: Pumping Unit including air separator, motor and non-return valve.

Regulation function is a hydraulic subsystem and it consists mainly of: solenoid valves for flow rate regulation and on/off.

Delivery function is a hydraulic subsystem and it consists mainly of: hoses, nozzles and nozzle switch.

Central pump function is a hydraulic subsystem and it consists mainly of: delivery of air free liquid according to OIML R117-1, item 5.1.3 and security valve.



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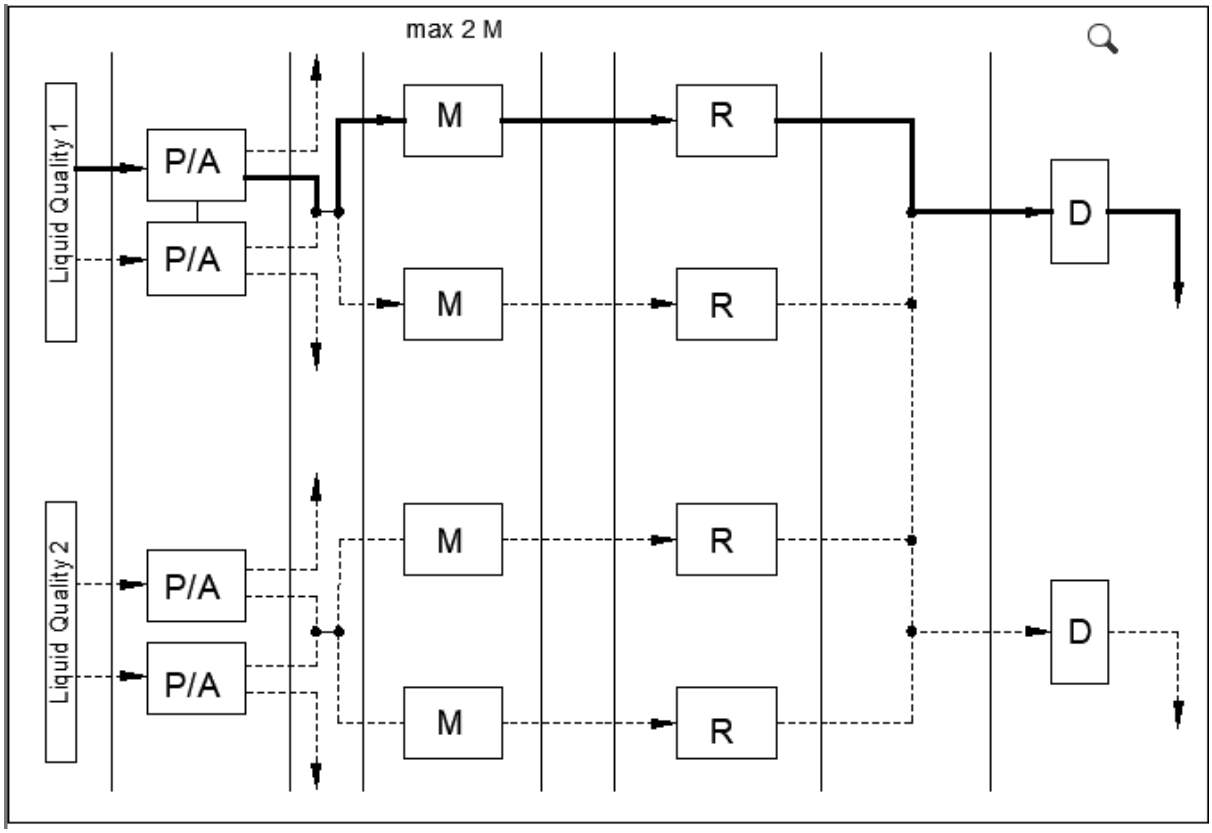
If the measuring system is equipped with a central pump an external (central) pump is used instead of an internal pump. The external system must comply with OIML 117-1, item 5.1.3 (i.e. it shall be equipped with an arrangement that prevents air to come into the system). The same applies to additive injection.

During verification it shall be possible to verify each volume sensor separately.

Block diagram describing permitted ways, and some restrictions to produce one delivery product for one customer. Each such configuration shall be a subset of the diagram. To produce multiple delivery products for a customer the block diagram is used several times.




| | |
|---|---|
| P/A = Pressurizing and Air separation | Pumping unit with all necessary devices |
| M = Measuring | Volume Sensor and Pulse transmitter |
| R = Regulating | Solenoid Valve |
| D = Delivering | Hose, Nozzle and Nozzle Switch |



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**Tokheim Quantium Series Product Range:**

1. **Quantium 330 or Q330 Dispenser Series. (Mono)**

| | Mono |
|---|---|
| Model | Q330 |
| Number of products/simultaneous fueling | 1 |
| Number of nozzles | 1 |
| Number of displays | 1 or 2 |
| Nozzle position | Island or Lane |

Picture 1: 1-1-2 (1-Product, 1-Nozzle, 2-Displays) Island configuration.

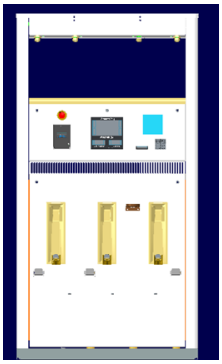
2. **Quantium 330 or Q330 Dispenser Series. (Dual)**

| | Dual |
|---|---|
| Model | Q330 |
| Number of products/simultaneous fueling | Up to 2 |
| Number of nozzles | 2 |
| Number of displays | 2 or 4 |
| Nozzle position | Island or Lane |

Picture 2: 2-2-4 (2-Product, 2-Nozzle, 4-Displays) Island configuration.

3. **Quantium 330 or Q330 Dispenser Series. (MPD-Multi Products Dispenser)**

| | MPD |
|---|---|
| Model | Q330 |
| Number of products/simultaneous fueling | Up to 4 |
| Number of nozzles | 4 or 6 or 8 |
| Number of displays | 2 or 4 |
| Nozzle position | Lane |



Picture 3: 3-6-2 (3-Product, 6-Nozzle, 2-Displays) Lane configuration

Picture 4: 2-4-2 (2-Product,4-Nozzle,2-Displays) Lane configuration.



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### 4. Quantium 430 or Q430 Dispenser Series. (MPD-Multi Products Dispenser)

| | |
|---|---|
| | MPD |
| Model | Q430 |
| Number of products/simultaneous fueling | Up to 4 |
| Number of nozzles | 4 or 6 or 8 |
| Number of displays | 2 or 4 |
| Nozzle position | Lane |

Picture 5: 4-8-2 (4-Product, 8-Nozzle, 2-Displays) Lane configuration

**Components included**

Tokheim Quantium (QX30) Fuel dispenser families may include the following components.

| **Measurement transducer function** | |
|---|---|
| Volume sensor (petrol, petrol/ethanol mixtures, kerosene, diesel or diesel/FAME/RME/HVO/BioFuels mixtures) | Wayne iMeter2 Duplex (DM2-2) or<br>Wayne iMeter2 Single equipped side A (DM2-1) or<br>Wayne iMeter2 Single equipped side B (DM2-1) or |
| Volume sensor (petrol*, kerosene, diesel or diesel/FAME/RME/HVO mixtures)<br>*Petrol including ethanol according to international standard to petrol is suitable for use | Tokheim TQM |
| Volume sensor (DEF) | Wayne iMeter2 DM2-X DEF<br>Tokheim TQM-AL (also known as TM80-AdB or TQM-AdB) |
| Pulse transmitter | |

| Part No | i-Meter2 | TQM |
|---|---|---|
| WM001682-0009 | FC | |
| WM001682-0011 | FC | |
| 999035-XXX((WM088787-XXX) DISP | FC | |
| 999839-XXX (SPC) | | NFC |
| 997219-XXX (SMP) | | NFC |

FC=Flow Compensating, NFC= Not Flow Compensating



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**Pump and air separator function**

Pumping Unit *

| P No. | | Qmax per pumping unit |
|---|---|---|
| WM018719-0001<br>WM078195-0001 | P, K, D, H, E, F | 90lpm |
| TK80 (974692) | P, K, D, H,,E, F | 80lpm |
| TQP-RS or EPZ (908177, 909043, 908518) | P, K, D, H, E, F | 45lpm |
| TQP-HS or PAS V3 (948971) | P, K, D, H, E, F | 130lpm |

P = petrol, K = kerosene, D = diesel, E = ethanol, F=FAME/RME, H=HVO

Anti-Foaming pipe 0-1 pcs (Can be installed in CPU) — DFS WR002578

Motor **, one per Pumping Unit — 0,75 kW, 3-phase 400 V, 1400-1500 rpm or<br>0,75 kW, 3-phase 230 V, 1400-1500 rpm or<br>0,75 kW, 1-phase 230 V, 1400-1500 rpm or<br>0,55 kW, 1-phase 230 V, 1400-1500 rpm or<br>1,1 kW, 3-phase 400 V, 1400-1500 rpm or<br>1,1 kW, 3-phase 230 V, 1400-1500 rpm or<br>1,1 kW, 1-phase 230 V, 1400-1500 rpm

Inlet suction check valve *** — Wayne WM049971-000X

* *is replaced in dispenser variant*

** *is left out in dispenser variant*

*** *is added in dispenser variant*

## Regulating function, solenoid valve

| NEW ASCO code | | Dover code (Datasheet in parentheses) | Part Description |
|---|---|---|---|
| Cat no | Voltage | | |
| JV 431463-001 | 24/DC | WM045522-0001 (WU007252) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, ALU BODY |
| JV 431463-003 | 24/DC | WM045522-0003 (WU007252) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, ALU BODY, INMETRO, PRODUCTION BRAZIL |
| JV 431463-002 | 24/DC | WM045522-0002 (WU007252) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, COMPCOTE ALU BODY |
| JV 431464-001 | 24/DC | WM045523-0001 (WU007253) | SOLENOID VALVE, ON/OFF, SINGLE IECEX, ALU BODY |
| JV 431465-001 | 24/DC | WM045525-0001 (WU007254) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, BRASS BODY |
| JV 431466-001 | 24/DC | WM045526-0001 (WU007255) | SOLENOID VALVE, PROPORTIONAL, DUPLEX, SINGLE EQUIPPED RIGHT, IECEX, BRASS BODY |



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| NEW ASCO code | | Dover code (Datasheet in parentheses) | Part Description |
|---|---|---|---|
| Cat no | Voltage | | |
| JV 431467-001 | 24/DC | WM045527-0001 (WU007256) | SOLENOID VALVE, ON/OFF, DUPLEX IECEX, BRASS BODY |
| JV 430298-001 | 24/DC | WM044745-0001 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, ALU BODY, CABLE LENGTH 3000 mm |
| JV 430298-002 | 24/DC | WM044745-0002 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, ALU BODY, INMETRO, PRODUCTION BRAZIL |
| JV 430298-003 | 24/DC | WM044745-0003 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, COMPCOTE ALU BODY |
| JV 430298-004 | 24/DC | WM044745-0004 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, COMPCOTE ALU BODY, CABLE LENGTH 1750 mm |
| JV 430298-005 | 24/DC | WM044745-0005 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, COMPCOTE ALU BODY, CABLE LENGTH 1750 mm |
| JV 430298-006 | 24/DC | WM044745-0006 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX AND INMETRO, ALU BODY, 3 M CABLE |
| JV 430298-007 | 24/DC | WM044745-0007 (WM045843) | SOLENOID VALVE, PROPORTIONAL, SINGLE IECEX, COMPCOTE ALU BODY, 5 M CABLE |
| JV 430299-001 | 24/DC | WM044746-0001 (WM045844) | SOLENOID VALVE, ON/OFF, SINGLE IECEX, ALU BODY |
| JV 430301-001 | 24/DC | WM044747-0001 (WM045846) | SOLENOID VALVE, PROPORTIONAL, DUPLEX IECEX, BRASS BODY |
| JV 430302-001 | 24/DC | WM044750-0001 (WM045847) | SOLENOID VALVE, PROPORTIONAL, DUPLEX, SINGLE EQUIPPED RIGHT, IECEX, BRASS BODY |
| JV 430303-001 | 24/DC | WM044751-0001 (WM045850) | SOLENOID VALVE, ON/OFF, DUPLEX IECEX, BRASS BODY |
| JV 427488-001 | 24/DC | DFS/Tokheim 950188-002 | SOLENOID VALVE DOUBLE 24V-ALL FUEL |
| JV 427488-004 | 24/DC | DFS/Tokheim 950188-004 | SOLENOID VALVE DOUBLE 24V-ALL FUEL (2M CABLE) |
| JV 427489-004 | 24/DC | DFS/Tokheim 950188-005 | SOLENOID VALVE SINGLE - ADBLUE |
| JV 427488-005 | 24/DC | DFS/Tokheim 950188-006 | SOLENOID VALVE DUAL - ADBLUE |
| SM-FP-0101 | 24/DC | DFS/Tokheim 998030-002 | SOLENOID VALVE DOUBLE 24V (2M CABLE) |
| SM-FP-0101 | 24/DC | DFS/Tokheim 998030-004 | SOLENOID VALVE DOUBLE 24V (3M CABLE) |
| X291542455001F1 | 24/DC | DFS/Tokheim 998976-004 | SOLENOID VALVE DOUBLE 24V-ALL FUEL (2M CABLE) |



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**Delivery function**

| | |
|---|---|
| Hose, 16 mm (5/8”), max length 10 m | Elaflex Conti-Slimline 16 |
| Hose, 16 mm (5/8”), max length 10 m | Elaflex Conti-Slimline 16 BIO |
| Hose, 16 mm (5/8”), max length 10 m | Elaflex Conti-Slimline 16 LT |
| Hose, 16 mm (5/8”), max length 10 m | Goodyear EN 1360, type 3, 16 bar |
| Hose, 19 mm (3/4”), max length 10 m | Goodyear Hardwall Petrol Hose B.S. 3395/1989 type 3 |
| Hose, 21 mm (7/8”), max length 10 m | Elaflex Conti-Slimline 21 |
| Hose, 21 mm (7/8”), max length 6 m | Elaflex Conti-Slimline 21 - COAX (vapour recovery) |
| Hose, 21 mm (7/8”), max length 10 m mmq = 5,0 l | Elaflex Conti-Slimline 21 - COAX (vapour recovery) |
| Hose, 21 mm (7/8”), max length 10 m | Elaflex Conti-Slimline 21 BIO |
| Hose, 21 mm (7/8”), max length 10 m | Elaflex Conti-Slimline 21 LT |
| Hose, 21 mm (7/8”), max length 6 m | Elaflex Conti-Slimline 21 LT (vapour recovery) |
| Hose, 21 mm (7/8”), max length 10 m mmq = 5,0 l | Elaflex Conti-Slimline 21 LT (vapour recovery) |
| Hose, 25 mm (1”), max length 6 m | Elaflex Conti-Slimline 25 LT |
| Hose, 25 mm (1”), max length 10 m, mmq = 5,0 l | Elaflex Conti-Slimline 25 LT |
| Hose, 25 mm (1”), max length 10 m | Goodyear EN 1360, type 3, 16 bar |
| Hose, 32 mm (1 1/4”), max length 7 m mmq = 5,0 l | Elaflex HD 32 |
| Hose, DEF, max length 6 m, mmq = 5,0 l | Elaflex LPG ID=16, max working p=25 bar |
| Hose, 25 mm (1”), max length 40 m, mmq = 20 l, max flow rate >60 LPM | Elaflex HD 25 C winded on Reel |
| Hose, 32 mm (11/4”), max length 40 m, mmq = 20 l, max flow rate >60 LPM | Elaflex HD 32 C winded on Reel |
| HOSE -1 EXCEEDS S-EN 1360:2013 TYPE 3M ID 19mm WP 16KG/cm.SQ., max length 10 m | Parker ¾-PARKER MARKWEL FUEL DISPENSING HOSE |
| HOSE -1 EXCEEDS S-EN 1360:2013 TYPE 3M ID 25mm WP 16KG/cm.SQ., max length 10 m | Parker 1-PARKER MARKWEL FUEL DISPENSING HOSE |
| Hose -1 Exceeds BS-EN 1360:2013 TYPE 2M ID 19mm WP 16KG/CM.SQ, max length 10 m | Polyhose ¾-Polyhose Fuel Dispensing Hose |
| Hose -1 Exceeds BS-EN 1360:2013 TYPE 2M ID 25mm WP 16KG/CM.SQ, max length 10 m | Polyhose 1-Polyhose Fuel Dispensing |
| Vapor Recovery Hose 7/8" MH63496, max length 10 m | XFY / OPW VR 7/8" MH63496-OPW Vapor Recovery Hose |



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**Delivery function**

| | |
|---|---|
| Hose-GATES Fuel Master Curb Pump 1WB 3/4" (19.0mm) 250PSI (17bar) Meets& Exceeds BS EN 1360:2013/3M, max length 10 m | GATES Fuel Master |
| Nozzle 40-70 l/min | Elaflex ZVA slimline or OPW 21 or OPW 11 or OPW 7 or equivalent |
| Nozzle 40-70 l/min | Elaflex ZV 19 or 12VW OPW(VR) or Elaflex ZVA Slimline 2 without Drip-Stop or Elaflex ZVA Slimline 2 GR or equivalent |
| Nozzle 40-70 l/min, mmq = 5,0 l | Elaflex ZVA slimline TMV"DRIP-STOP" or equivalent |
| Nozzle 40 l/min, mmq = 5,0 l | OPW ACN or AVN or equivalent |
| Nozzle 90-130 l/min | Elaflex ZVA 25, 1" or equivalent |
| Nozzle 90-200 l/min | Elaflex ZVA 32, 11/4" or equivalent |
| Nozzle, DEF | Elaflex ZVA SS AdBlue or equivalent |
| Nozzle, DEF | Elaflex ZVA AdBlue LV or equivalent |

**Components included for electronic calculator function, TQCL**

| | |
|---|---|
| CPU-board | DFS/Tokheim 999356 or<br>DFS/Tokheim 997623 or<br>DFS/Tokheim 997391 or<br>DFS/Tokheim 997217 |
| Software CPU Board | Welmec CRC: 108, SW version 09.xx |
| Hydraulic Peripherals | DFS/Tokheim 976569 |



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**Components included for electronic function, TQCL**

| | |
|---|---|
| Display Board | DFS/Tokheim 997656 or<br>DFS/Tokheim 999506 or<br>DFS/Tokheim 997221 or<br>DFS/Tokheim 997655 or<br>DFS/Tokheim 997657 or<br>DFS/Tokheim 997905 or<br>DFS/Tokheim 998085 or<br>DFS/Tokheim 999722 or<br>DFS/Tokheim 999880 or<br>DFS/Tokheim 999886 or<br>DFS/Tokheim 999887 |
| Keypad Display Board | DFS/Tokheim 997220 |
| Unit Price Display Board | DFS/Tokheim 976901 |
| Electronic Totalizer | DFS/Tokheim 997377 or<br>DFS/Tokheim 997218 or<br>DFS/Tokheim 997376 or<br>DFS/Tokheim 997378 or<br>DFS/Tokheim 997379 |
| Dongle | DFS/Tokheim 997223 |
| Door lock interface | DFS/Tokheim 998898 |
| Electronic Printer | DFS/Tokheim 998093 |
| Power supply | DFS/Tokheim 953371 |

**Integrated/Optional equipment and functions**

- Pre-set of volume or price *****
- Volume totalizer
- Encrypted communication (256 bit AES)
- Family Integrity
- OTP based authentication
- Non-Openable and Self-Destructible Pulser
- AES Key exchange using PKI
- SHA256 is used to verify the software's authenticity.



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- Electronic Calibration
- Encrypted/ Non encrypted & Multilingual Printer.
- Capable of communicating with external POS.
- Electronic Door Lock Arrangement

**Integrated equipment and functions not subject to legal metrology control**

- Vapour recovery system with vapour pump, regulating proportional valves and an electronic board a vapour recovery monitoring system consisting of a Vapour meter and belonging Intrinsic safe barrier may be used. Means for vapour recovery must not influence the accuracy of measurements such that the maximum permissible error is exceeded.
- To enhance the security feature and to restrict unauthorized access to the dispenser unit Electronic Lock is provided on the dispenser doors.

**Rated operating conditions.**

**Measurand**
Volume of liquid fuel expressed in litre.

**Measurement range**

| | |
|---|---|
| Maximum flowrate ($q_{max}$) | 40 to 130 l/min (DEF down to 10 l/min) |
| Minimum flowrate ($q_{min}$) | ≥ 2 l/min |
| Minimum measured quantity (mmq) | DEF iMeter2 DM2-X DEF, 2,0 and 5,0 l.<br>TQM, 2,0l only.<br>TQM AL, 5,0 l only |
| Scale interval, volume display | 0,01 l |
| Maximum working pressure | 0,35 MPa |
| Minimum working pressure | 0,10 MPa |
| Liquid temperature range | -30°C to +55°C only for iMeter2<br>-40°C to +50C° only for TQM<br>-25°C to +55°C iMeter2 FAME/RME<br>-10°C to +55°C only for DEF iMeter2<br>-5°C to +35°C only for DEF TQM, TQM-AL |

| | |
|---|---|
| Type of liquids: | |
| Volume sensor iMeter2 | Petrol, kerosene, diesel, ethanol or FAME/RME/HVO/ Biofuels and its blends |
| Volume sensor TQM | Petrol, kerosene, diesel, ethanol or FAME/RME/HVO/ Biofuels and its blends |
| Viscosity range | 0,4 -8,0 mPas |
| Volume sensor iMeter2 DM2-X DEF & TQM-AL: | DEF (Diesel Exhaust Fluid, e.g. AdBlue) |
| Volume sensor flow rate range | |
| iMeter2 Duplex (each meter) and Single | 0,2 to 110 l/min |
| (Flow compensating Pules Transmitter) | 0,4 to 40 l/min only for DEF |



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| | |
|---|---|
| iMeter2 Duplex (each meter) and Single<br>(Not flow compensating Pules Transmitter) | 1,6 to 70 l/min<br>0,2 to 70 l/min only for Petrol<br>4 to 70 l/min only for FAME/RME |
| TQM Meter | 4 to 80 l/min |
| TQM AL | 2 to 40 l/min |

**Environments classes / influence quantities**

| | |
|---|---|
| Mechanic: | class M1 |
| Electromagnetic: | class E1 |
| Humidity: | class H3 |
| Ambient temperature limits: | -40°C to +55°C (tested to +60°C)<br>-5°C to +55°C for DEF |

**Interfaces and compatibility conditions**

Interface for vapour recovery systems.

Communication between fuel dispenser and other parts of a measuring system (e g POS-systems) using one of the following non-reactive interfaces is evaluated and approved. (This does not imply that the complete self-service arrangement fulfils the requirements of OIML R117):

| SW protocol | Hardware |
|---|---|
| TLC | RS485 (CPU board) |

When the dispenser is a part of a self-service arrangement the following requirements have to be fulfilled:

- The communication between the dispenser and the self-service device/devices has to be through one of the interfaces/protocols listed above.
- The connection has to be verified by the installer so the metrolgical data are presented in a way, whether it is an indicated, printed or memorized result, that meets the requirements of OIML R117.

**Control of measuring task of the instrument in use**

**Identification Software for TQCL**

The metrological software is identified by the checksum (W&M CRC value, see Software PCB board on pages 15 and 16), which can be accessed by pressing the P1 key on keypad. Code CRC, Welmec CRC and firmware version of CPU, ET, all Pulsers and LON etc can be viewed by accessing P1 code 1043.

After pressing the P1 key on keypad P1 code selection screen is displayed on Keypad Display also known as SKD (Secured keyboard Display) as per below format.



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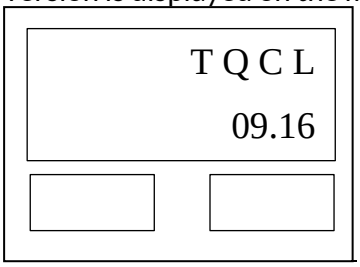
P1 CODE Screen:


Now enter 4 digit P1 code i.e. 1043. After pressing the enter key, a screen will be displayed to enter the user number and password.


We can see firmware information after entering PASSWORD in the next screen. (Press 6 to go forward and 4 to go back.) For e.g.




Even after powering on the dispenser, the name of the calculator i.e. TQCL, and the software version is displayed on the main display as given below;



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**Calibration-/adjustment procedure**

- Dispensers with iMeter2 and TQM volume sensors are calibrated/adjusted according to TQCL user manual (English version, other languages may be available)

**Sealing**

The dispenser is sealed according to the requirement described in this chapter. The pictures in "Example pictures of sealing of the instrument" is example how the sealings can be applied.

NOTE: When using wire through screws etc. to make seals, ensure that the wire is as short and taut as possible. The closing stamp must be placed such as it is within reach for pressing with intended pliers, without dismantle surrounding components with the help of tools. The closing stamp can be of any suitable material.

Nameplate
The following seals are required:

- The nameplate should be riveted to the dispenser structure/column or sealed to the frame with a small "vandal proof" label to prevent removal or exchange.

TQCL Calculator
The following seals are required:

- calibration-switches which support volume calibration of each nozzle is sealed to prevent recalibration.
- Sealing is also to protect LM data like totals, calibration data & configuration back up data etc
- Seal between CPU cover and the center plate to prevent removal or exchange of CPU board from the dispenser structure and to safeguard LM data stored in CPU
- Cold start switch to prevent and restrict unauthorised access

Electromechanical totalizer
The following seals are required:

- EMT (if any) connectors are sealed to prevent tampering to mechanical totalizer readings.

Vapor recovery arrangement (not subject to legal metrology)
The following seals are required:

- VR Board with Calibration Switches support A/L ratio regulation needs to be sealed to prevent recalibration.

iMeter 2 Liquid Meter
The following seals are required:


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- Sealing of pulser to prevent opening and removal.
- Sealing of meter to prevent opening.
- Sealing of meter to prevent removal.
- Sealing air separator to prevent opening.

TQM Liquid Meter
The following seals are required:

- ATC Temperature sensor sealed prevent removal.
- Sealing of cover of the calibration screws to prevent manipulation of calibration.
- Sealing of pulser to prevent opening and removal.
- Sealing of meter to prevent opening.
- Sealing of meter to prevent removal.
- Sealing air separator to prevent opening.

**Information to be borne by and to accompany the instrument**

The name plate mounted on the instrument shall contain the following information:
- the OIML certificate number
- Space for verification mark
- the name or trademark
- the serial number and year of manufacture
- the designation or type name (according to "Product names and designation")
- Type of Liquid or Viscosity class (not for DEF) *
- the temperature range of the dispensed liquid
- the accuracy class
- max. flow rate Qmax
- min. flow rate Qmin
- minimum measured quantity
- max. pressure Pmax
- the ambient temperature range
- mechanical class
- electromagnetic class
- humidity class
- Nominal value of the AC voltage supply

* depending of volume sensor

**Example pictures of sealing of the instrument:**

**1) Electronic Calibration and Electronic Totaliser Arrangement:**

ET(Electronic Totaliser) PCBA has eight calibration-switches which support volume calibration of each nozzle. Calibration switches can be sealed nozzle wise, or all can be sealed together using single wire. Sealing is also to protect LM data like totals, calibration data & confguration back up data etc. EMT (if any) connectors are also sealed to avoid ampering to mechanical totalizer readings. Option-3 or Option-4 are used when calibration-switches are on CPU board


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[Please note that the manufacturer can choose a minimum any one of the sealing options or multiple sealing options given below as per the national regulations and as per the requirements of the customer.].

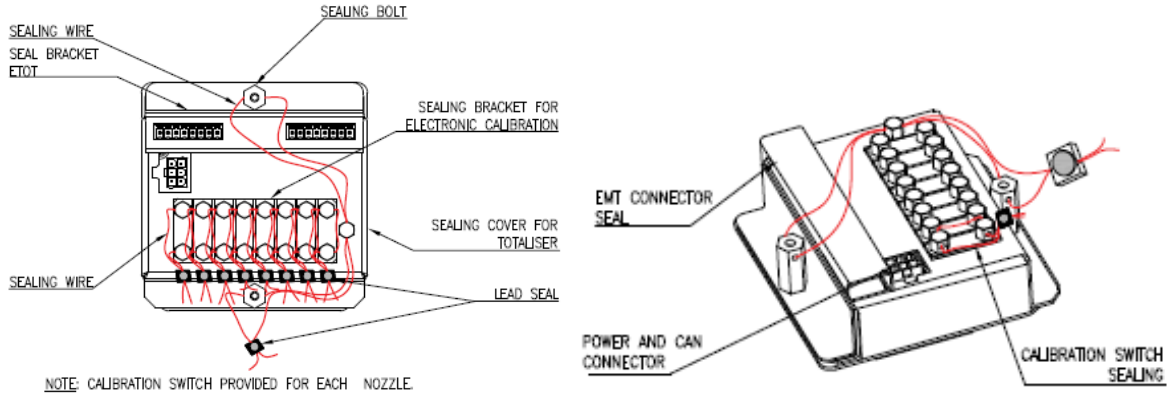


Fig 1: Individual Calibration Switch Sealing (Option-1)

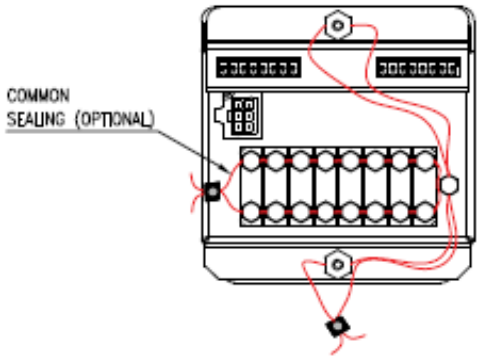


Fig 2: Common Sealing for Calibration Switches (Option-2)

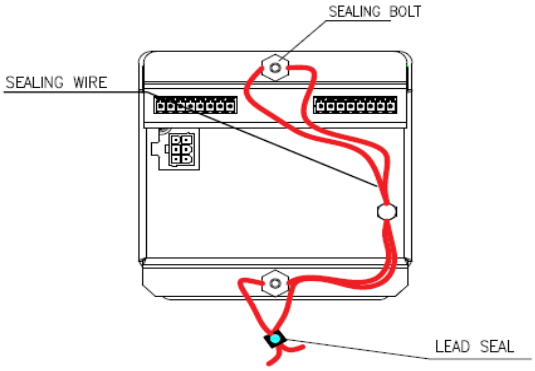


Fig 3: ET Sealing when Calibration Switches are provided on CPU (Option-3)

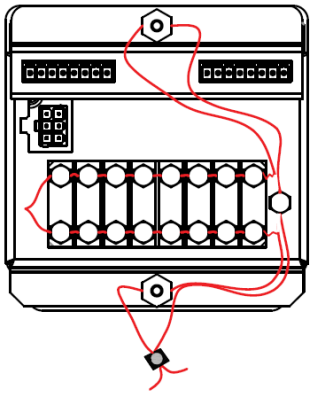

Fig 4: ET Sealing when Calibration Switches are provided on CPU (Option-4)



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## 2) Sealing of CPU-Board Assembly:

Please note that the manufacturer can choose a minimum any one of the sealing options or multiple sealing options given below as per the national regulations and as per the requirements of the customer.

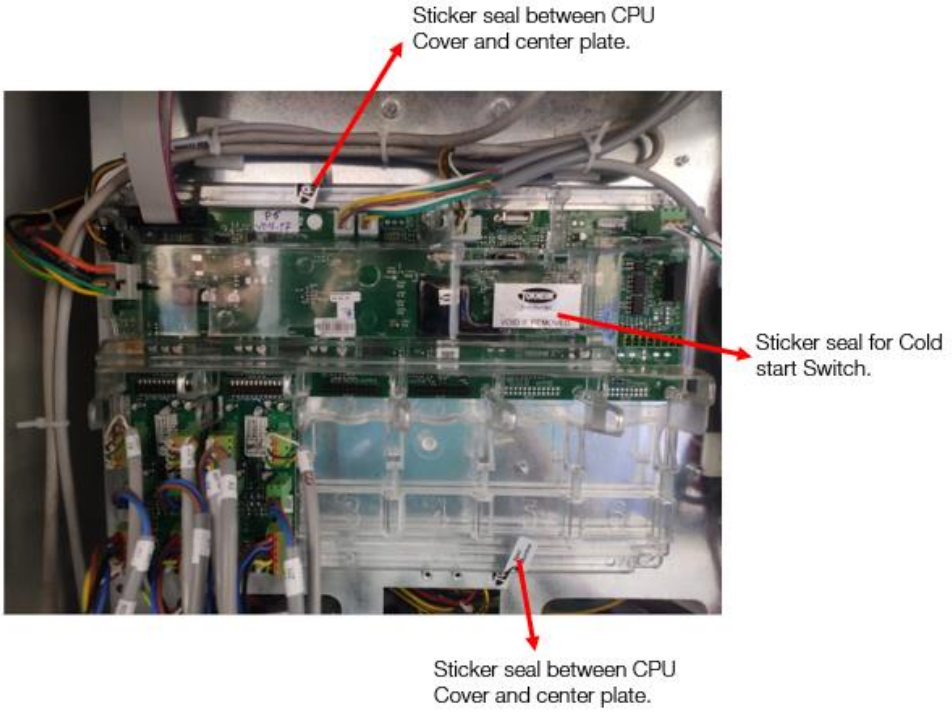


Fig 5: CPU Sticker Sealing (Option-1)

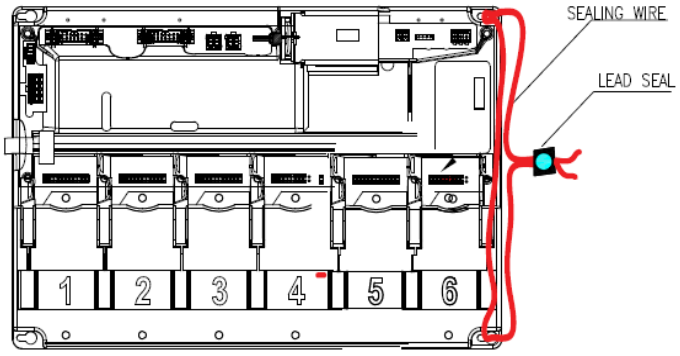


Fig 6: Seal between CPU cover and center plate (Option-2)



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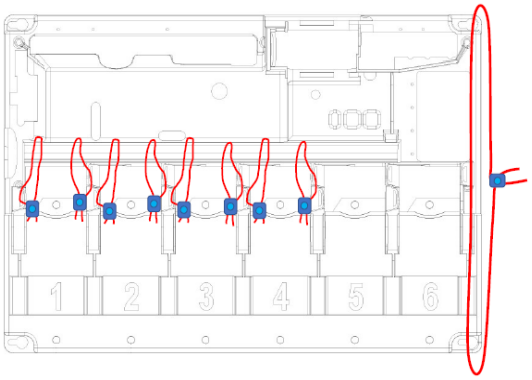
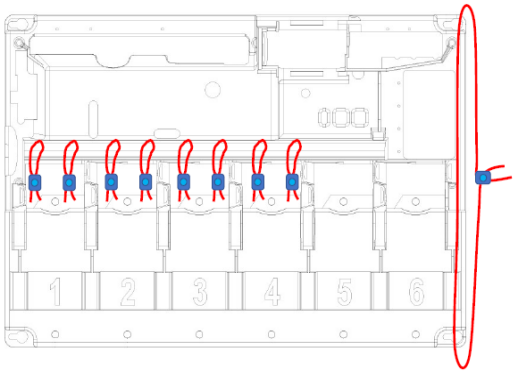
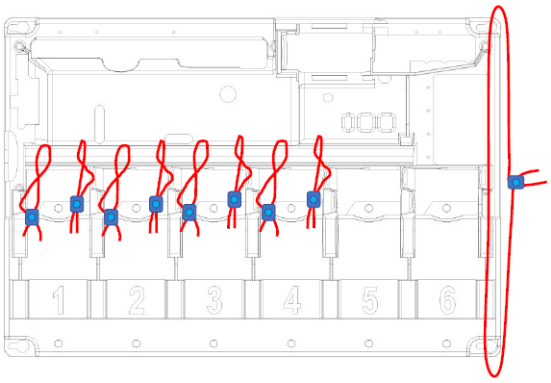



(Option-3)

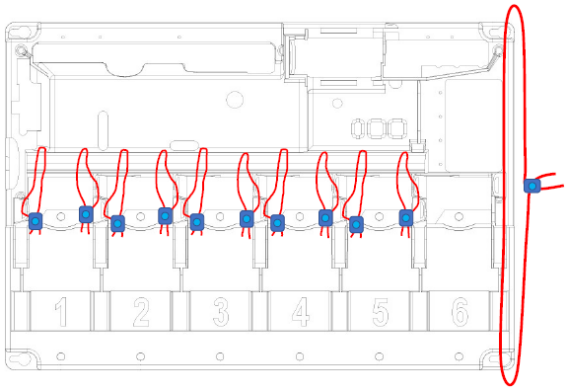



(Option-4)

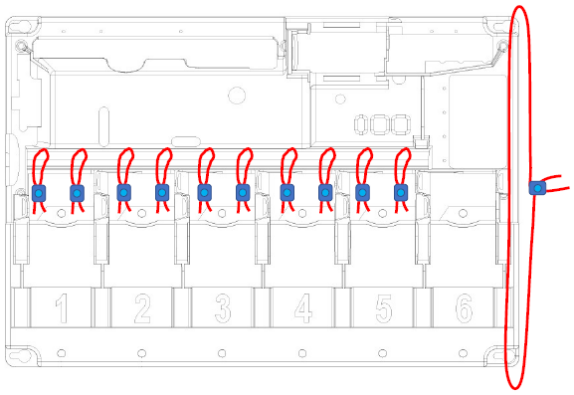



(Option-5)

Fig 7: CPU Sealing when calibration switches are provided on CPU




(Option-6)




(Option-7)



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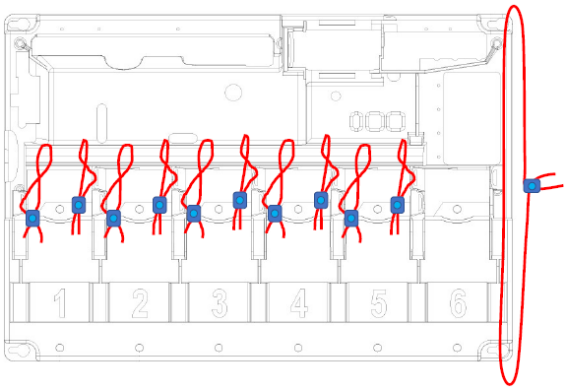


(Option-8)
Fig 8: CPU Sealing when calibration switches are provided on CPU and ET is provided at HYM5 Position.

### 3) Vapour Recovery System Sealing Arrangement not subject to legal metrology control:

Please note that the manufacturer can choose a minimum any one of the sealing options or multiple sealing options given below as per the national regulations and as per the requirements of the customer.

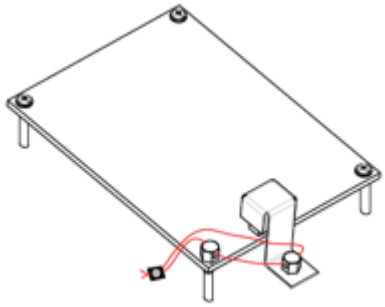

Fig 9: Vapour Recovery Board Sealing (Option-1)

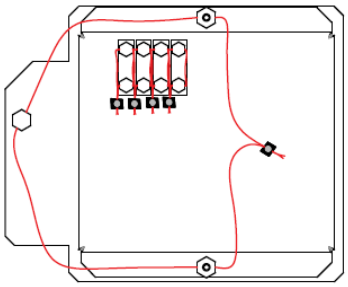

Fig 10: CE Board Per Nozzle Sealing (Option-2)

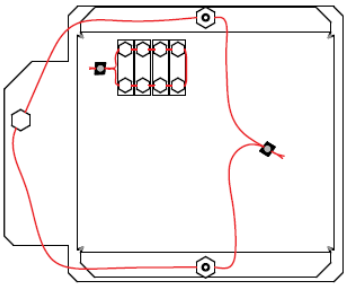

Fig 11: CE Board Per Common Sealing (Option-3)


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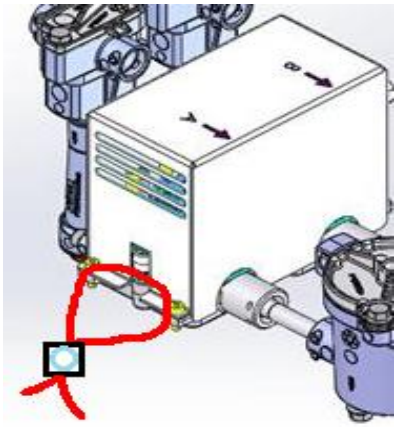

Fig 12: VFM Sealing (Option-4)

**4) TQM Meter with Top mounted pulser arrangement:**

Please note that the manufacturer can choose a minimum any one of the sealing options or multiple sealing options given below as per the national regulations and as per the requirements of the customer.

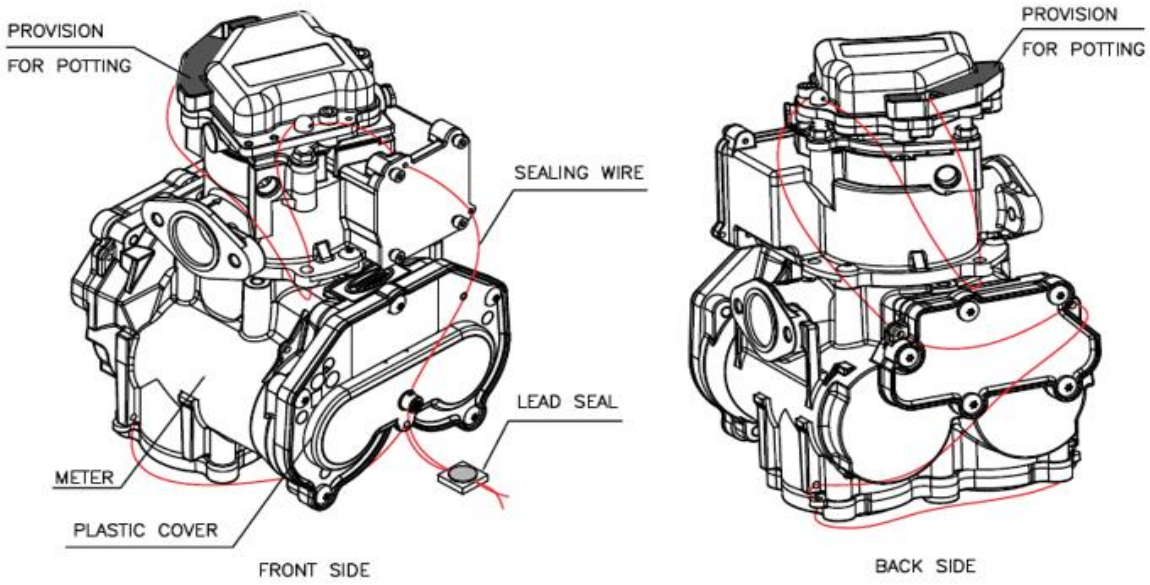


Fig 13: TQM Meter with Top mounted pulser arrangement (Option1)



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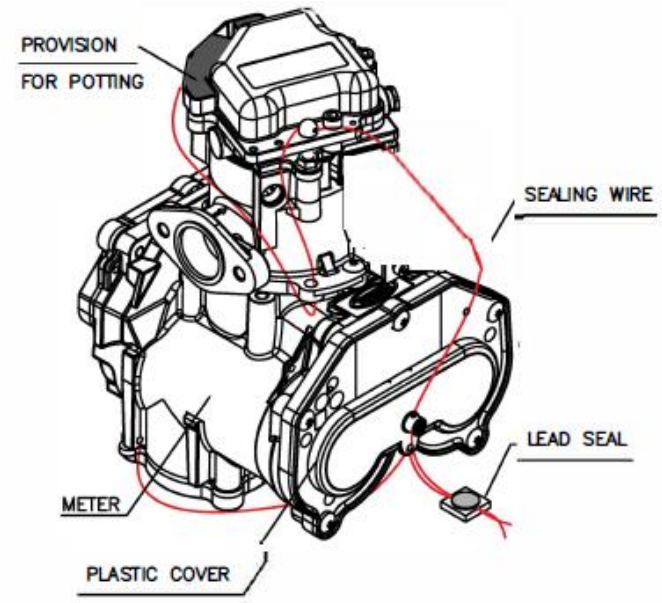


Fig 14: TQM Meter with new control housing and Top mounCM. SQulser arrangement (Option2)

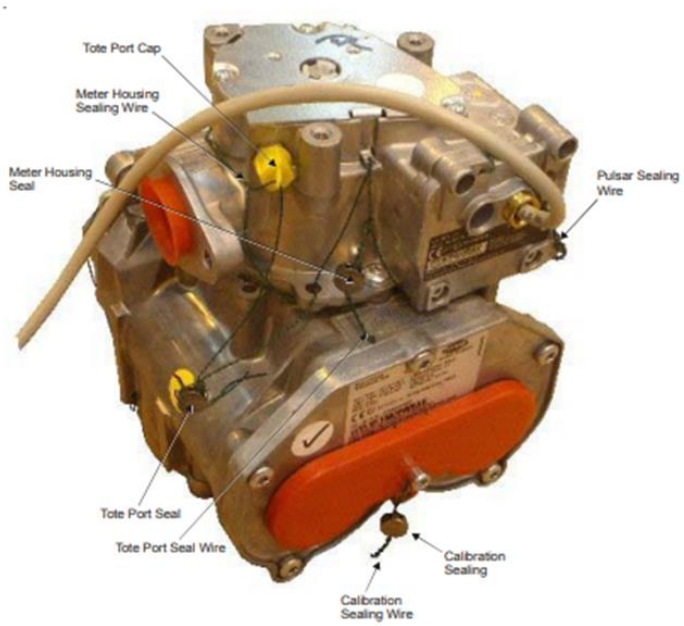


Fig 15 : TQM Meter wiTMV “ide mounted pulser arrangement(Option3)

## 5) TQP-HS/PAS V3 Gas Separator Sealing Drawing:



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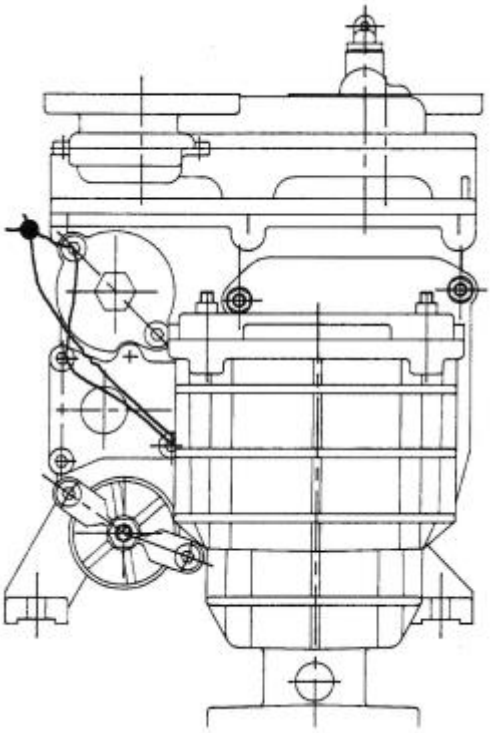

Fig 16: TQP-HS/PAS V3 Gas Separator Sealing Drawing

### 6) TQP-RS/EPZ Gas Separator Sealing Drawing:

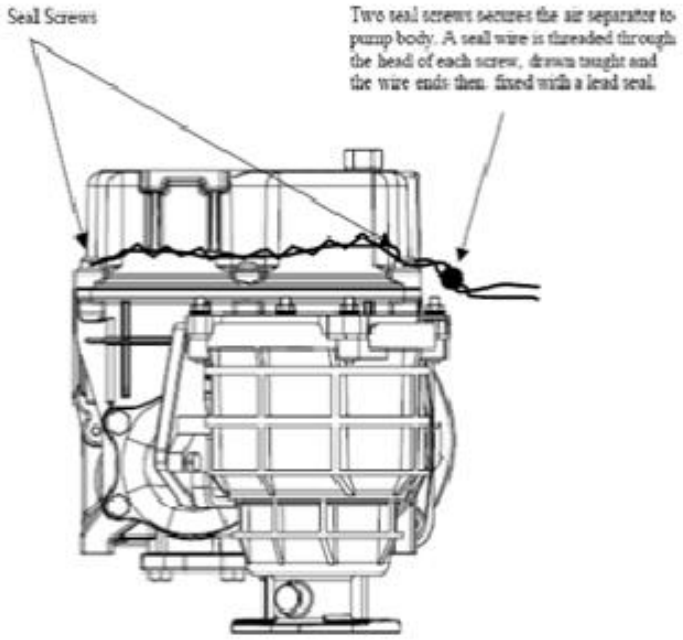


Fig 17: TQP-RS/EPZ Gas Separator Sealing Drawing



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## 7) TK80 Gas Separator Sealing Drawing:

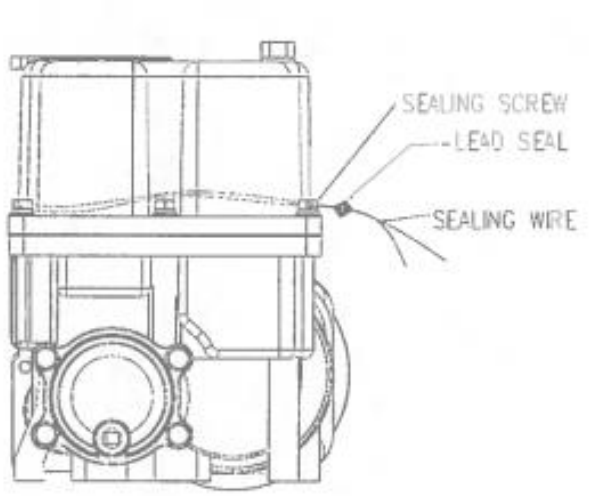


Fig 18: TQP-HS/PAS V3 Gas Separator Sealing Drawing

## 8) Sealing drawing of iMeter2 with CPU Pumping Unit (Suction Type):

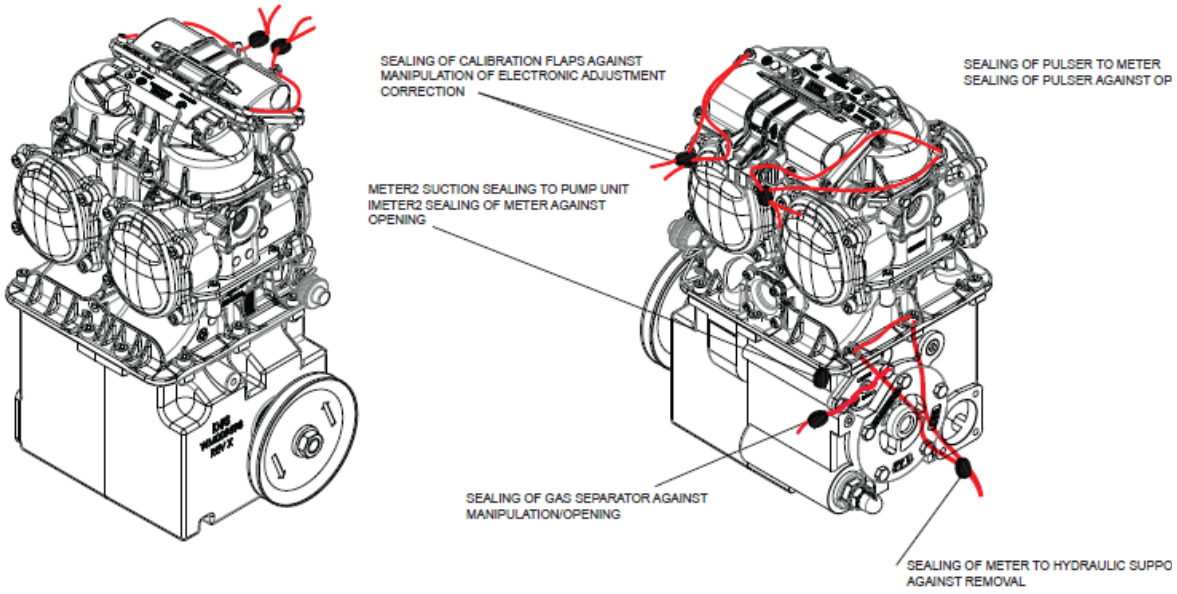


Fig 19: Sealing drawing of iMeter2 with CPU Pumping Unit (Suction Type)

## 9) Sealing drawing of iMeter2 without Pumping Unit (Pressure Type):



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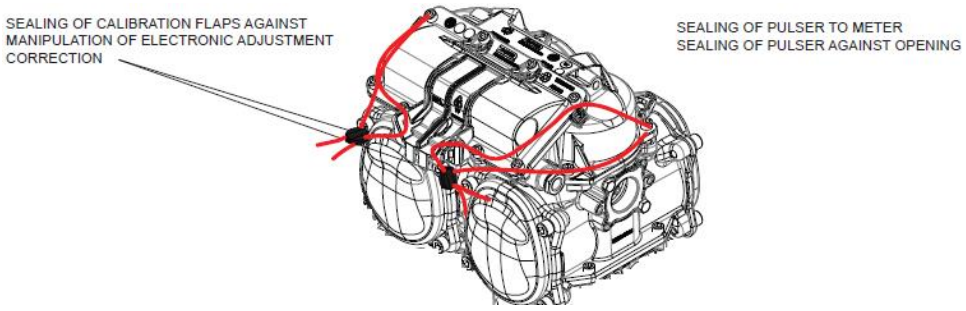


Fig 20: Sealing drawing of iMeter2 without Pumping Unit (Pressure Type)

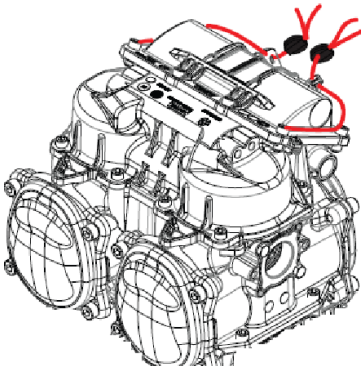

Fig 21: Sealing drawing of iMeter2 without Pumping Unit (Pressure Type)



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