Australian Government
Department of Industry and Science

National Measurement Institute

Certificate of Approval

NMI 5/6A/218

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.

Wayne Model Global Star V C33-33 HHR Fuel Dispenser for Motor Vehicles

submitted by Wayne Fueling Systems Sweden AB
(formerly submitted by Dresser Wayne AB)
Hanogatan 10
211 24 Malmo Sweden

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 becomes subject to review on **1/05/19**, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 3 approved – interim certificate issued	3/04/09
1	Pattern & variants 1 to 3 approved – certificate issued	12/02/10
2	Variant 4 approved – certificate issued	28/07/10
3	Pattern & variants 1 to 4 updated – variant 5 approved – certificate issued	19/05/11
4	Variant 6 approved – certificate issued	10/02/12
5	Pattern & variants 1 to 6 updated – Table 1 amended – certificate issued	20/04/12

Document History (Cont…)

6	Pattern & variants 1 to 6 amended (submittor) – Variant 7 approved – interim certificate issued	23/07/14
7	Pattern & variants 1 to 6 amended (submittor), updated & reviewed – variant 7 approved – certificate issued	10/09/15

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI 5/6A/218' 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 Certificates No S1/0/A or 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 A Rawlinson

TECHNICAL SCHEDULE No 5/6A/218

1. Description of Pattern **approved on 3/04/09**

A Wayne Global Star multi-product model V C33-33 HHR fuel dispenser for motor vehicles (Figures 1 and 2) is approved to dispense various grades of fuels (*), in attendant-operated mode, or in attended 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.

(*) 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}	40 L/min	
• Minimum flow rate, Q_{min}	4 L/min	
• Maximum pressure of the liquid, P_{max}	300 kPa	
• Minimum pressure of the liquid, P_{min}	120 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).

1.2 Description of the Metering System

The metering system incorporates the following components:

(i) Six Wayne AB model CPU compact pumping units each with an integral gas elimination device.

(ii) Six Wayne AB model WM 002393-001 (aka model iMeter) positive displacement four piston double-sided measurement transducers (Figure 3) each fitted with a Wayne AB model WM 001682 WIP ('Wayne Integrated Pulser') pulse generator (Figure 3) which produces 200 pulses per revolution.

(iii) Six hoses/nozzles are used, three mounted on both the front and the rear of the dispenser housing. This model is fitted with 16 mm hoses, ZVA Slimline 2 (21 mm) nozzles, and 0.75 kW pump motors. Note that the submittor should be consulted regarding the acceptability of any alternative nozzles.

1.3 Calculator/Indicator

The Wayne AB model iGEM calculator/indicators (Figure 1), one per side, have a display for total price and for volume delivered, as well as a separate unit price display allocated for each nozzle.

The display limits and increments are:

Price	(6 digits) up to 9999.00 in 0.01 cents
Volume	(6 digits) up to 9999.00 in 0.01 L
Unit price	(4 digits) up to 99.99 in price/L

A pre-set facility (keypad and display) may also be fitted.

The instrument is approved with version 10.xx (#) software, which can be viewed by pressing '3' on the remote control or by pressing 'CRC' button on the iGEM computer board. The software version will appear on the unit price display.

(#) The last two digits of the software version number (10.xx) may be any number greater than '02' (e.g. 10.03) – these last two digits represent features which are not metrologically significant.

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.

1.5 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/218	
Manufacturer's identification mark or trade mark	Wayne Fueling Systems Sweden AB	
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}	50°C	
Minimum temperature of the liquid, T_{min}	-10°C	
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 2/5 L'.

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

1.6 Sealing Provision

The gas separator test valve has provision for sealing. The meter is sealed as shown in Figure 4.

1.7 Verification Provision

Provision is made for the application of a verification mark.

2. Description of Variant 1 **approved on 3/04/09**

Certain other models and configurations of the Global Star V C series of fuel dispensers identified using Table 1.

Instruments may be fitted with 21 mm hoses, ZVA Slimline 2 (25 mm) nozzles (*), and 1.1 kW pump motors, in which case the fuel dispenser has the following field of operation:

- Maximum flow rate (Q_{max}) 70 L/min
- Minimum flow rate (Q_{min}) 7 L/min
- Minimum measured quantity (V_{min}) 5 L

3. Description of Variant 2 **approved on 3/04/09**

With two Wayne AB model CPU compact pumping units as described for the pattern supplying a single Wayne AB model WM 002393-001 meter using 32 mm piping, a 32 mm hose, a ZVA (25 or 31 mm) nozzle (*) and 1.1 kW pump motors. The fuel dispenser has the following field of operation:

- For use with distillate
- Maximum flow rate (Q_{max}) 130 L/min
- Minimum flow rate (Q_{min}) 13 L/min
- Minimum measured quantity (V_{min}) 5 L

(*) The submittor should be consulted regarding the acceptability of alternatives.

4. Description of Variant 3 **approved on 3/04/09**

With one or more compatible submersible turbine pumps (STPs) incorporating a leak detection system. The STP replaces the equivalent components (i.e. motor, pump/strainer/gas separator, and associated pipework) in certain fuel dispensers covered by this approval (refer to Table 1). Figure 5 shows a typical fuel dispenser with a submersible turbine pump system, including typical sealing.

More than one fuel dispenser may be connected to the same submersible turbine pump.

Dispensers may operate with the standard maximum flow rate, Q_{max} of 40 L/min, or with the increased maximum flow rate, Q_{max} of 70 L/min (Variant 1), or dispensers for use with distillate may be used with the high maximum flow rate, Q_{max} of 130 L/min (Variant 2)

5. Description of Variant 4 approved on 27/10/10

The pattern and variants now with version 11.xx (#) software, which can be viewed by pressing ‘3’ on the remote control or by pressing ‘CRC’ button on the iGEM computer board. The software version will appear on the unit price display.

(#) The last two digits of the software version number (11.xx) may be any number greater than ’00’ (e.g. 11.01) – these last two digits represent features which are not metrologically significant.

6. Description of Variant 5 approved on 18/05/11

Any fuel dispenser of this approval now fitted with a Wayne model Vapour Recovery II vapour recovery system and used up to a maximum flow rate of 40 L/min.

Typical systems are shown in Figures 6 and 7.

The vapour recovery and monitoring system is approved by the German TÜV SÜD Industrie Service GmbH authority.

Only vapour recovery components and systems as listed below and included in the above TÜV approval certificates may be used.

The relevant TÜV approvals (and the approved components) are:

(i) For collection of vapour:

- TÜV certificate 85-2.23-2,

and the only approved system components are:

- Vapour recovery nozzle – Elaflex model ZVA 200 GR
- Coaxial hose – Elaflex model Conti Slimline 2 1/8 Coax
- Control valve – Burkert model 6022
- Control board – Burkert model 2832
- Vapour recovery pump(s) – Durr models MEX 0544, MEX 0831-10, or MEX 0831-11.

(ii) For automatic monitoring of the vapour to fuel ratio:

- TÜV certificate Ü-12.14,

and the only approved system components are:

- Monitor – Wayne model Vapour Gate monitor
- Flowmeter – Wayne model VR flowmeter
- Controller – Wayne model iGEM dispenser processor.

7. Description of Variant 6 approved on 10/02/12

Certain models of the Global Star V C series approved dispense Diesel Exhaust Fluid (DEF) (aka AdBlue) fluid AUS32 (aqueous urea solution 32.5%) for certain motor vehicles having heavy duty diesel engines fitted with a Selective Catalytic Reduction (SCR) unit in attendant operated mode.

The meter is adjusted to be correct for DEF fluid AUS32 (aqueous urea solution 32.5%) for which it is to be verified.

7.1 Field of Operation

The field of operation of the measuring system is the same as described in clause **1.1 Field of Operation**, except for the following characteristics:

- Maximum temperature of the liquid, T_{max} 30°C
- Minimum temperature of the liquid, T_{min} 0°C

The approved instruments are the Global Star model C22-22 HHR and model C11-11 HHR (refer to Table 1 for model description).

These instruments use the same metering system as described for the pattern except that only 1 or 2 Wayne AB model WM 002393-001 (aka model iMeter) measurement transducers are used as required.

These instruments use the same Wayne AB model iGEM calculator/indicators as described for the pattern but are approved with version 11.xx (#) software. The software version can be viewed by pressing '3' on the remote control or by pressing 'CRC' button on the iGEM computer board. The software version will appear on the unit price display.

(#) The last two digits of the software version number (11.xx) may be any number greater than '02' (e.g. 10.03) – these last two digits represent features which are not metrologically significant.

8. Description of Variant 7 approved on 23/07/14

With one or more Xflo™ Duplex model WM014466-0001 flowmeters (Figure 8) instead of the Wayne AB model WM 002393-001 flowmeters described for the pattern.

8.1 Field of Operation

The field of operation of the Xflo™ Duplex model WM014466-0001 meter is the same as for the Wayne AB model WM 002393-001 meter (clause **1.1 Field of Operation** for the pattern) except as follows:

Minimum measured quantity, V_{min} 2 L
Maximum flow rate, Q_{max} 70 L/min
Minimum flow rate, Q_{min} 4 L/min

TEST PROCEDURE No 5/6A/218

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

Maximum Permissible Errors

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

Tests

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.

TABLE 1– Meaning of Model Designations of the Wayne Global Star V C Series

Field Name	**Code (#) = Description**
Pump Style Series	Wayne Global Star **V C**
Model Designator	11 = 1 grade supported 22 = 2 grades supported **33** = 3 grades supported 44 = 4 grades supported
Product-in (hydraulic modules) / Product-out (hoses)	11 = 1 product inlets (hydraulic modules) and 1 product out (hoses per side) 22 = 2 product inlets (hydraulic modules) and 2 products out (hoses per side) **33** = 3 product inlets (hydraulic modules) and 3 products out (hoses per side) 32 = 3 product inlets (hydraulic modules) and 2 products out (hoses per side) 44 = 4 product inlets (hydraulic modules) and 4 products out (hoses per side) 42 = 4 product inlets (hydraulic modules) and 2 products out (hoses per side) 43 = 4 product inlets (hydraulic modules) and 3 products out (hoses per side)
Pump Design	HH = high hose **HHR** = high hose retractor

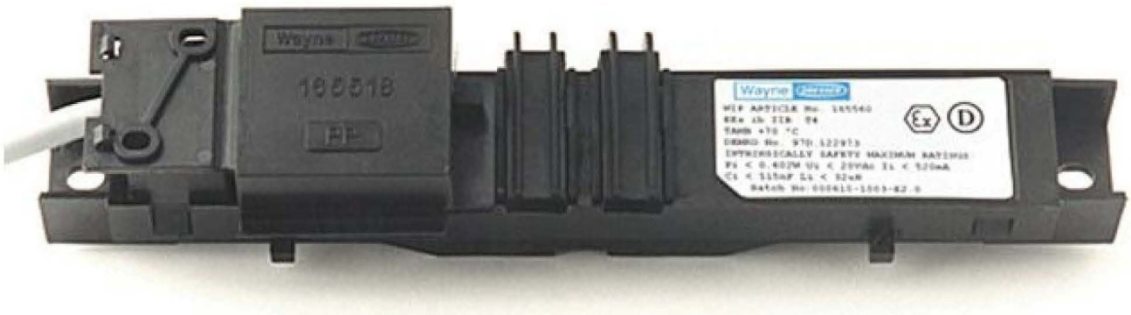
(#) The model number for the **pattern** is Wayne Global Star V C33-33 HHR

FIGURE 5/6A/218 – 1

Wayne Model Global Star V C33-33 HHR
Fuel Dispenser for Motor Vehicles

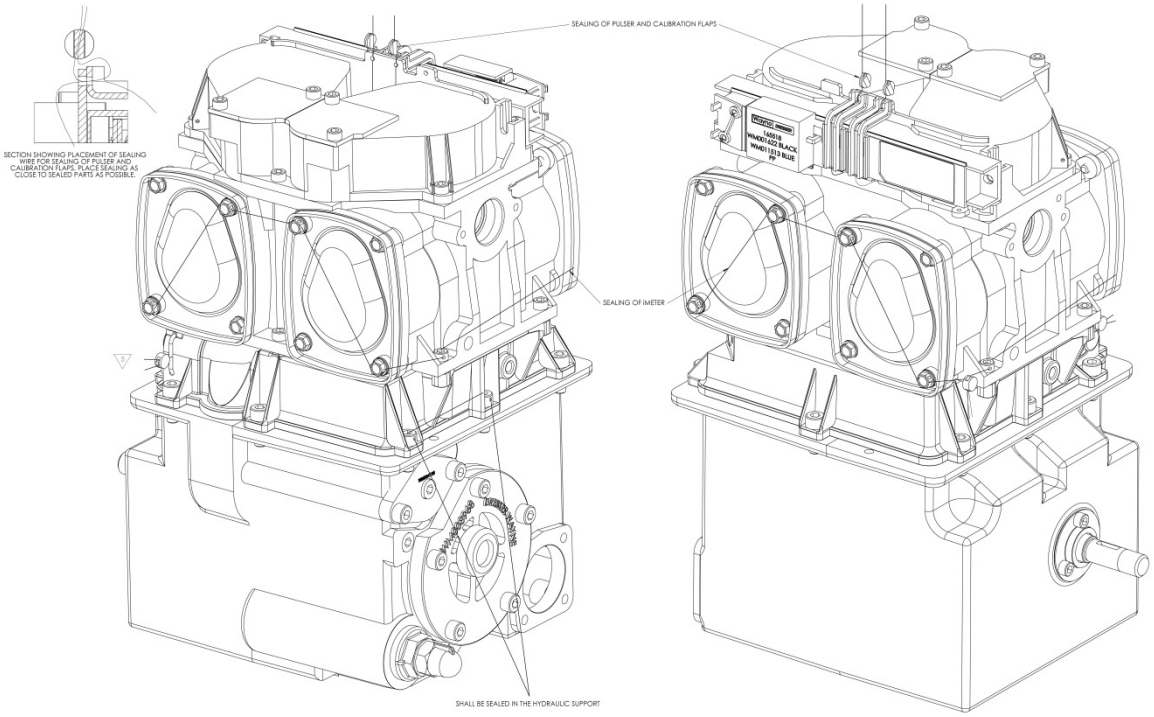
FIGURE 5/6A/218 – 2

FIGURE 5/6A/218 – 3



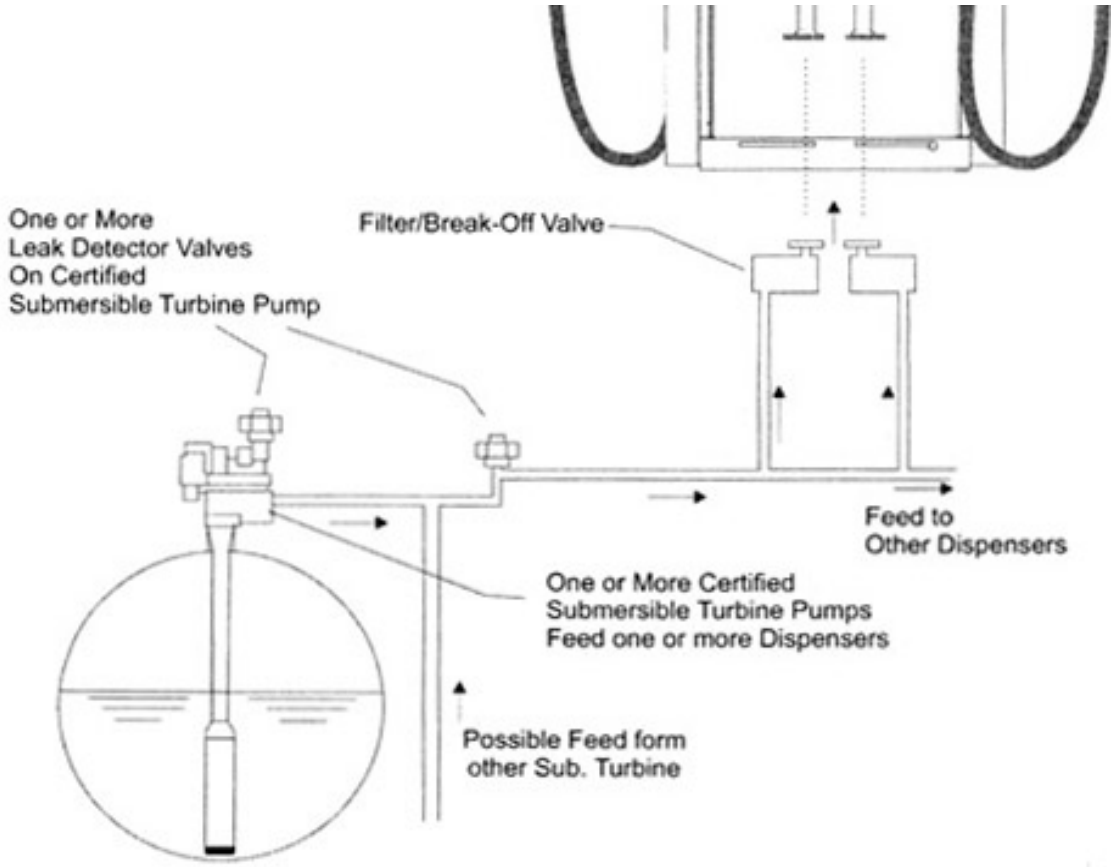
Wayne AB Model WM 002393-001 (aka model iMeter) Measurement Transducer and Model WM 001682 WIP Pulse Generator

FIGURE 5/6A/218 – 4

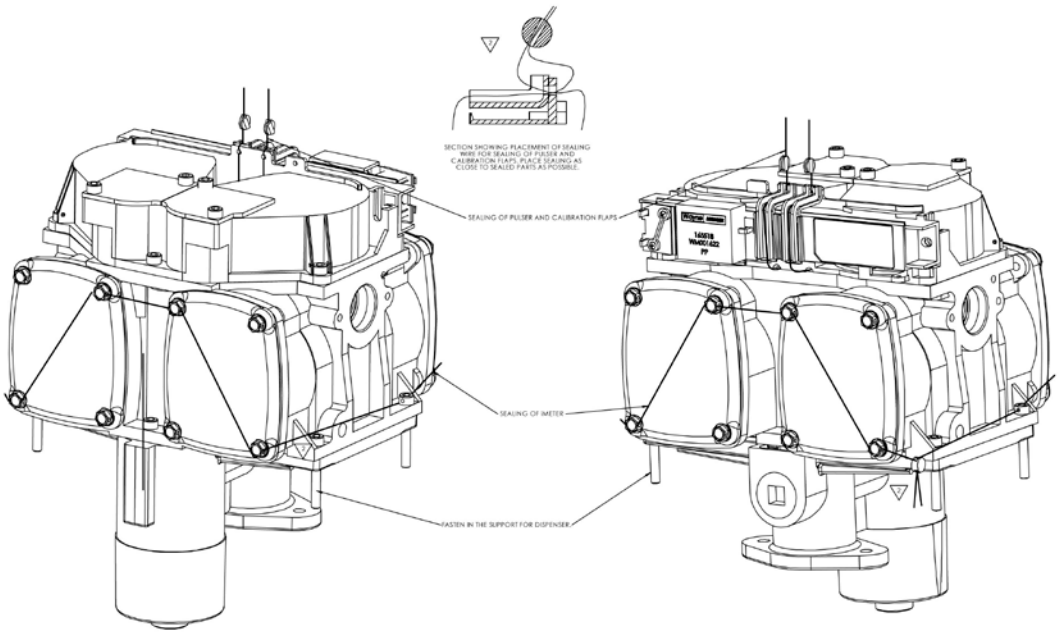


Showing Typical Sealing Method for Instruments With an Internal Pumping Unit

FIGURE 5/6A/218 – 5

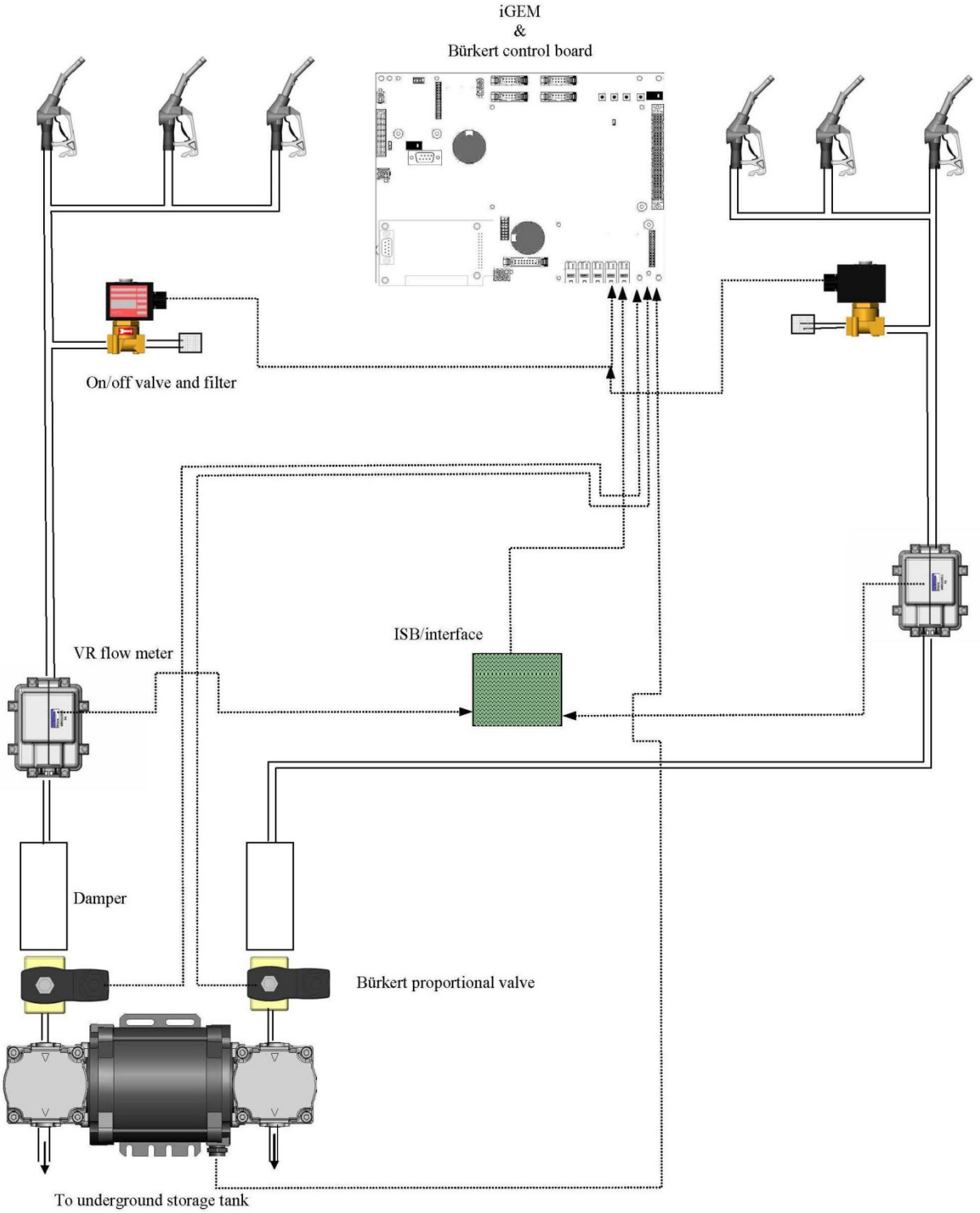


(a) Typical Submersible Turbine Pump (STP) System – Variant 3



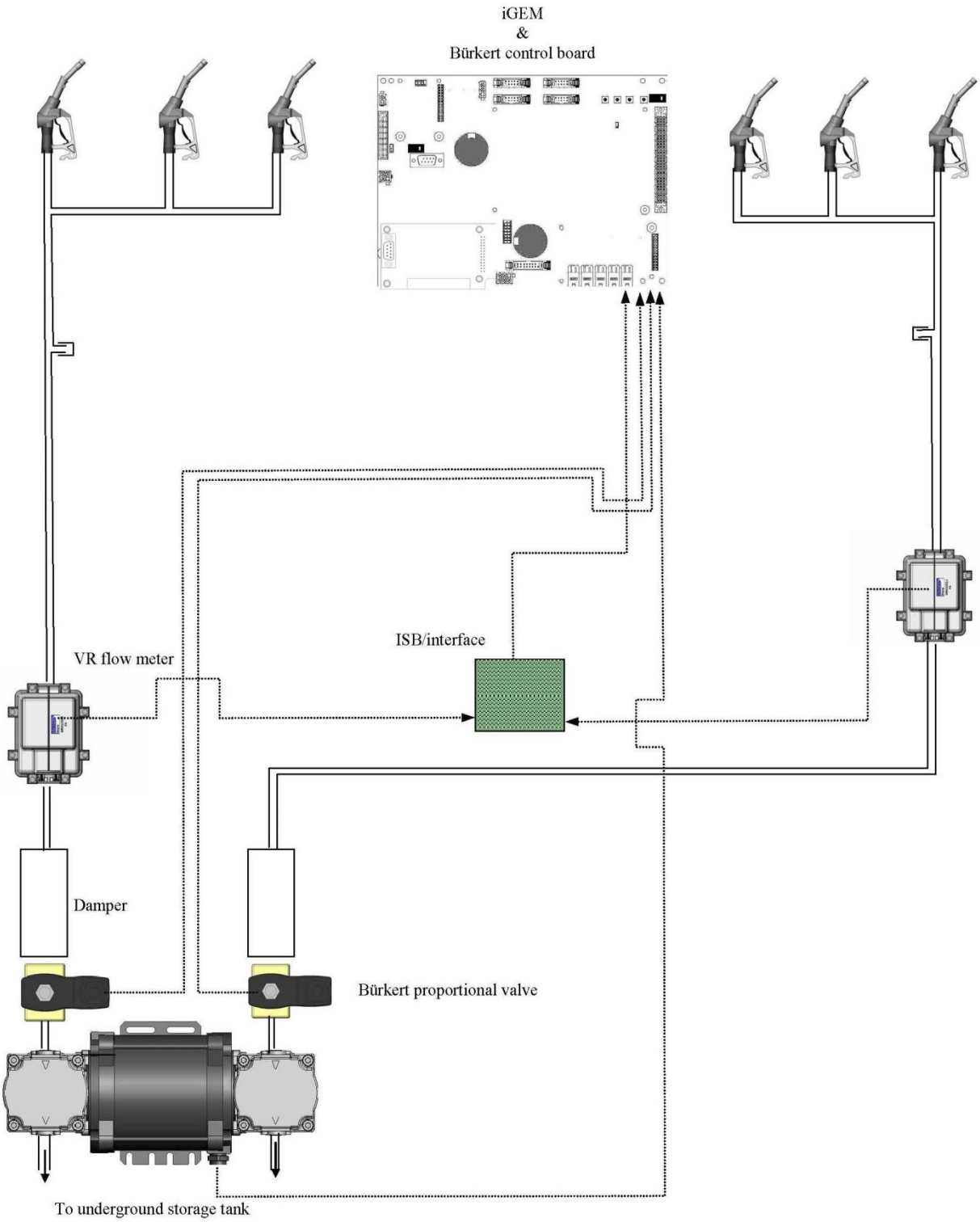
(b) Showing Typical Sealing Method for Instruments Connected to an STP System – Variant 3

FIGURE 5/6A/218 – 6



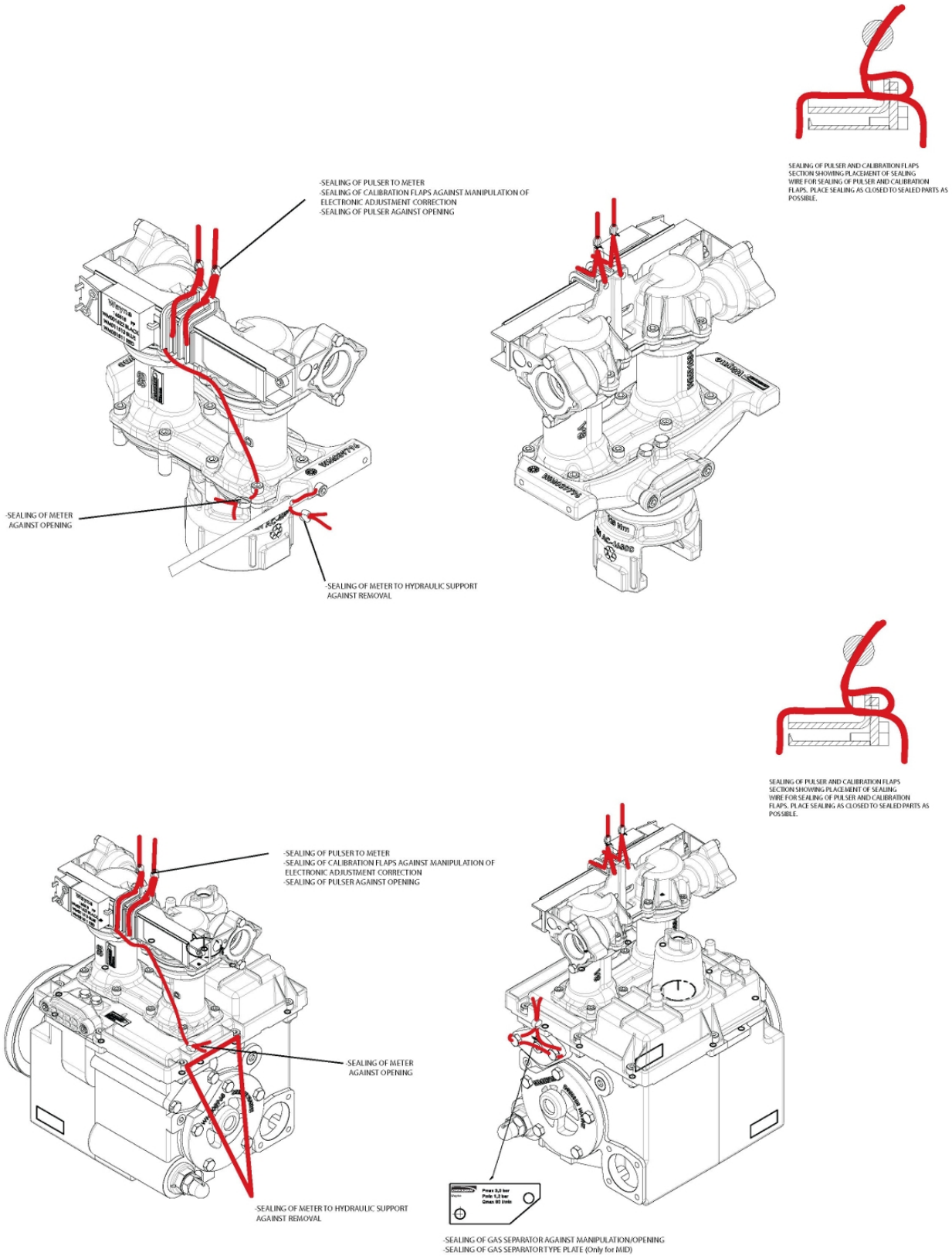
Wayne Model Vapour Recovery II Vapour Recovery System
(with self-check facility) – Variant 5

FIGURE 5/6A/218 – 7



Wayne Model Vapour Recovery II Vapour Recovery System
(without self-check facility) – Variant 5

FIGURE 5/6A/218 – 8



Typical Sealing Methods of Xflo™ Duplex Model WM014466-0001 Flowmeter – Variant 7

~ End of Document ~