



Australian Government
Department of Industry,
Innovation and Science

**National
Measurement
Institute**

36 Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S470

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.

FE Petro Model STP(ANZ)75 Submersible Turbine Pump

submitted by Franklin Fueling Systems
3760 Marsh Road
Madison WI 53718
USA

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 **1/08/22**, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern and variants 1 to 5 approved – interim certificate issued	24/07/06
1	Pattern and variants 1 to 5 – certificate issued	4/08/06
2	Pattern and variants 1 to 5 reviewed & updated – certificate issued	13/10/11
3	Pattern and variants 1 to 5 reviewed & updated – certificate issued	14/03/17
4	Variant 1 & 5 amended (models from Revision 2 restored) – certificate issued	17/12/18

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S470' and only by persons authorised by the submitter.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S470' in addition to the approval number of the instrument, and only by persons authorised by the submitter.

It is the submitter'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.

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



Mario Zamora

Manager
Pattern Approval, Policy and
Licensing Section

TECHNICAL SCHEDULE No S470

1. Description of Pattern

approved on 24/07/06

The FE Petro model STP(ANZ)75 submersible turbine pump with leak detector (Figure 1) is intended for supplying fuel at a rate of up to 246 L/min to one or more approved fuel dispensers and to detect leakage of fuel.

The pump may also incorporate a telescopic type length adjustment to suit a particular tank diameter range - VL1 designation is for small tank diameter, VL2 is for medium tank diameter and VL3 is for large tank diameter.

The operation of the submersible pump is controlled by a compatible pump controller (e.g. variant 2) which is interfaced to a fuel dispenser via an optional isolation box such as an FE Petro model STP-DHIB.

1.1 Field of Operation

- The submersible turbine pump is designed to supply liquid to a fuel dispenser at a maximum flow rate of 246 L/min and to detect leakage of fuel.
- The leak detector is designed to sense a pipeline leakage equivalent to 190 mL/min or more, at 69 kPa gauge pressure. When a leak is detected, the leak detector automatically restricts the flow of delivery equivalent to 11.4 L/min or less at pump pressure of up to 207 kPa.
- The submersible turbine pump is for use with fuel dispensers approved for accuracy Class 0.5, metering liquids having a dynamic viscosity in the range 0.5 to 20 mPa.s (at 20°C).
- For use with fuel dispensers approved for use with submersible turbine pumps.
- The piping, the size and the number of pumps are installed such that, for all possible operating combinations of deliveries, each measurement transducer is maintained within the approved flow rate range.
- The submersible turbine pump is installed in a manner such that the metering system is at all times maintained at a positive pressure.

A typical installation is shown in Figure 2.

1.2 Markings

Instruments are marked with the following data, together in one location on a data plate or on a metal tag sealed to the top housing of the submersible turbine pump:

Manufacturer's identification mark or trade mark	Franklin Fueling Systems
Manufacturer's designation (model number)
Serial number
Year of manufacture
Pattern approval mark	NMI S470

1.3 Verification and Sealing Provision

The verification mark is applied to the fuel dispenser in accordance with the requirements of the approval documentation for the dispenser to which the pattern approved herein is installed; there is no separate requirement for the application of the mark to, nor for the sealing of, the pattern.

2. Description of Variant 1

approved on 24/07/06

Certain other models and flow rate capacities of FE Petro STP submersible turbine pumps as listed below.

- Model STP(ANZ)150 – for deliveries up to 321 L/min;
- Model STP(ANZ)H150 – for high pressure deliveries up to 246 L/min;
- Model STP(ANZ)200 – for deliveries up to 350 L/min;
- Model STP(ANZ)H200 – for high pressure deliveries up to 300 L/min;
- Model STP(ANZ)VS2 – for deliveries up to 360 L/min;
- Model STP(ANZ)VS4 – for deliveries up to 420 L/min;
- Model STP(SAA)3 – for deliveries up to 640 L/min; and
- Model STP(SAA)5 (Figure 3) – for deliveries up to 946 L/min.

3. Description of Variant 2

approved on 24/07/06

With various models of the FE Petro STP-SC# series smart controller for use with compatible submersible turbine pumps to provide diagnostic functions and pump protection features.

(# represents any alpha character which designates various types of smart controllers)

4. Description of Variant 3

approved on 24/07/06

Certain other models of FE Petro STP submersible turbine pumps as listed below with an FE Petro model IST-VFC, Mag-VFC or EcoVFC variable frequency controller that varies the speed of the motor in response to the pumping demand. Each model incorporates a telescopic pump length adjustment to suit a particular tank diameter range.

- Model IST(ANZ); and
- Model IST(ANZ)VS4.

5. Description of Variant 4

approved on 24/07/06

Various models of FE Petro mechanical leak detectors for replacing other compatible leak detectors intended for particular fuel and flow rate capacity.

- Model STP-MLD+G – for use with petrol (up to 10% ethanol)
- Model STP-MLD+D – for use with diesel and Kerosene (up to 5% biodiesel)
- Model STP-MLD+AG – for use with petrol (up to 85% ethanol)
- Model STP-MLD+BD – for use with kerosene and diesel (100% biodiesel or up to 20% biodiesel)
- Model STP-MLD- for use with Petrol
- Model STP-MLD-D – for use on Diesel and Kerosene
- Model STP-MLD-HC – for use on petrol (high capacity); and
- Model STP-MLD- HCD – for use on diesel and kerosene (high capacity).

6. Description of Variant 5

approved on 24/07/06

Various models of FE Petro pump motor assembly for replacing other compatible pumps designed for particular flow rate capacity and pressure.

- Model PMA(ANZ)75 – suitable for pumps up to 246 L/min;
- Model PMA(ANZ)150 – suitable for pumps up to 321 L/min;
- Model PMA(ANZ)H150 – suitable for pumps up to 246 L/min (high pressure);
- Model PMA (ANZ)200 – suitable for pumps up to 350 L/min;
- Model PMA(ANZ)H200 – suitable for pumps up to 300 L/min (high pressure);
- Model PMA(ANZ)VS2 – suitable for pumps up to 360 L/min;
- Model PMA(ANZ)VS4 – suitable for pumps up to 420 L/min;
- Model PMA(SAA)3# – suitable for pumps up to 640 L/min; and
- Model PMA(SAA)5# – suitable for pumps up to 946 L/min;

(# represents any alpha character which designates various types of mountings)

TEST PROCEDURE No S470

Instruments shall be tested in accordance with any relevant tests specified in the national instrument test procedures.

Maximum Permissible Errors

The maximum permissible errors applicable are those specified for the flowmetering system in which the pattern is fitted, as stated in the approval documentation for the system or in Schedule 1 of the *National Trade Measurement Regulations 2009*.

1. Mechanical Leak Detector Test

The mechanical leak detection system is tested in accordance with the procedures specified in the manufacturer's manual for the FE Petro Leak Detector. (Useful conversions that may be required; 1 gallon = 3.79 L, 1 psi = 6.9 kPa.)

2. Minimum Flow Rate Test

Note: This test should be carried out on initial verification. Thereafter, it need not be done at every verification/certification but should be done periodically at the discretion of the verifying authority.

The minimum flow rate test is performed by simultaneously running either all hoses on all fuel dispensers connected to a particular submersible turbine pump (where the number of hoses is 6 or less) or by simultaneously running between 2/3 and 3/4 of all such hoses (where the number of hoses is more than 6). For the purpose of this test, where two or more pumps are connected in parallel, they shall be considered as one pump. Check that the lowest flow rate is not less than the minimum flow rate specified in the approval documentation for the dispenser.

3. Flow Interlock Test

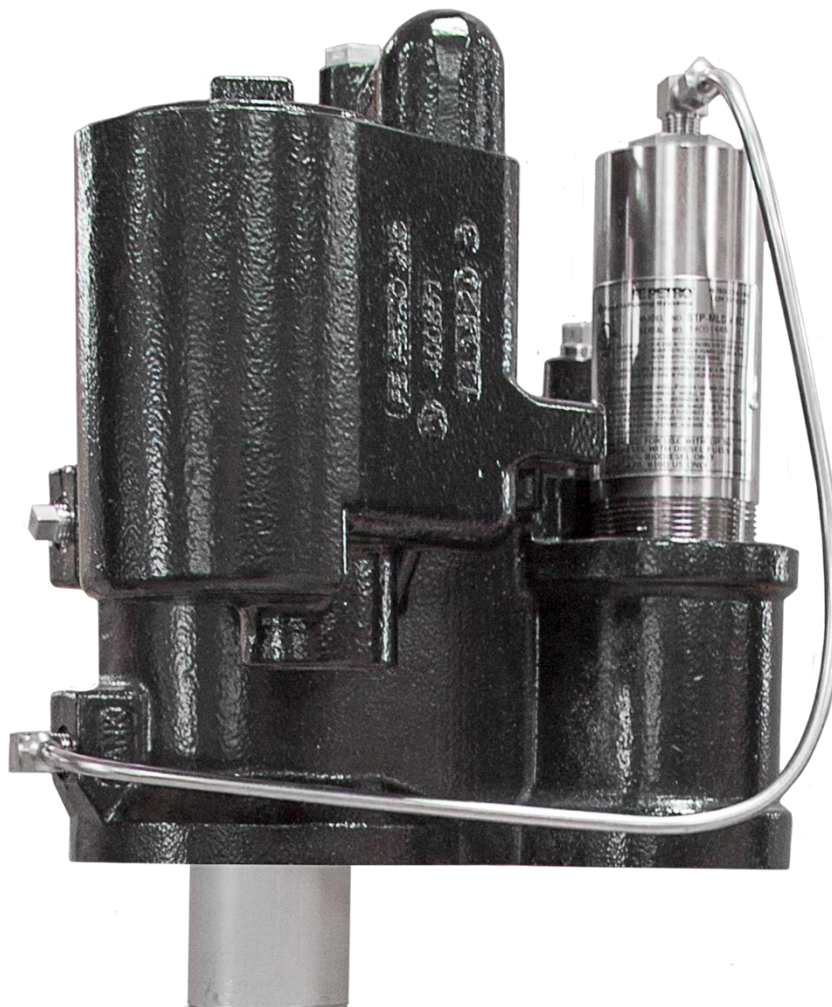
For systems where more than one fuel dispenser (or meter #) is connected to the same submersible turbine pump check that while an authorised delivery is in progress, it is not possible to obtain flow through any other unauthorised meter connected to the same pump.

Begin a delivery from one meter. While this delivery is in progress, attempt to make a delivery from a 2nd meter (meter 2) connected to the same pump WITHOUT meter 2 first being authorised (either locally or remotely) and WITHOUT the indicator reset cycle for meter 2 first being initiated; the delivery for meter 2 should not be possible.

(# – in the case of fuel dispensers with more than one meter)

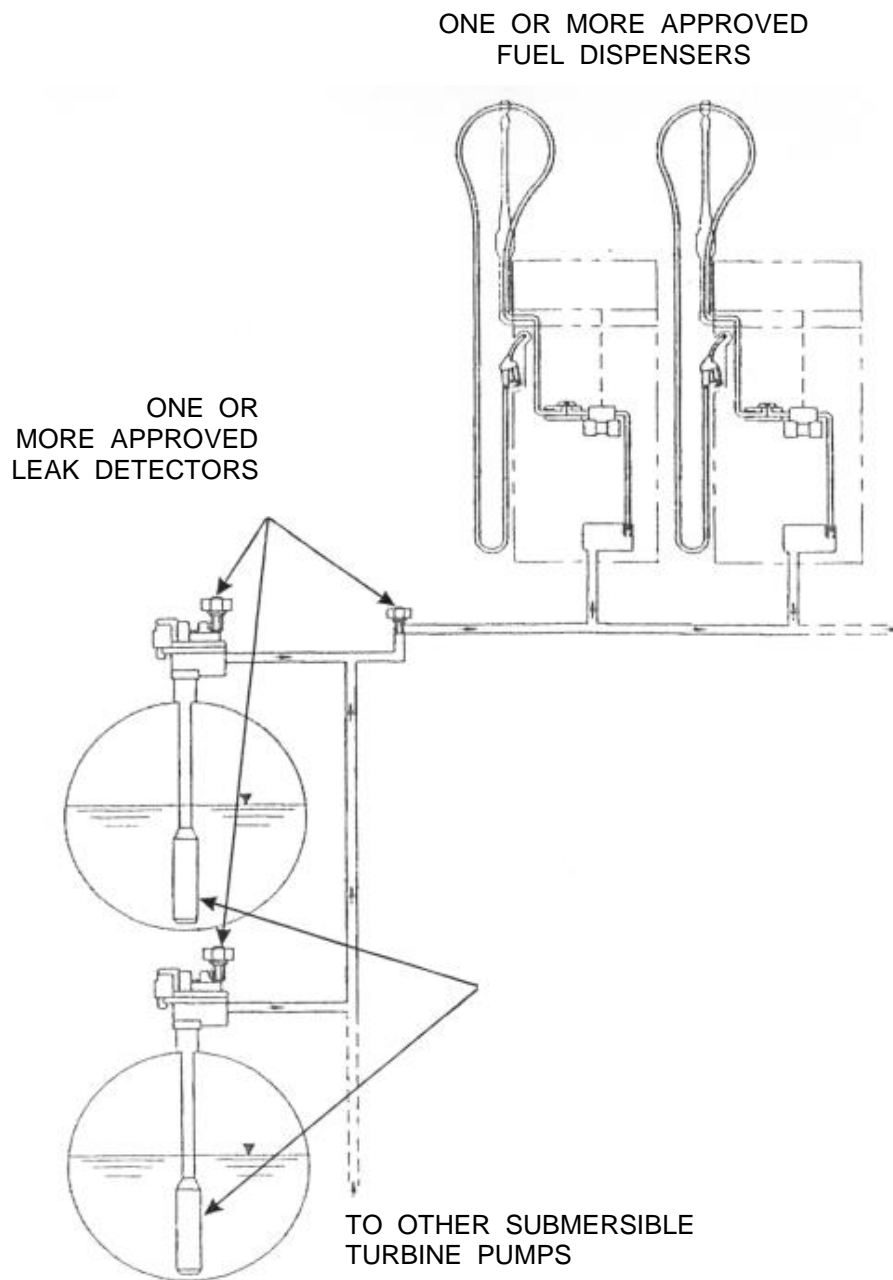
Note: To maintain a meter in unauthorised mode while attempting the above test, remove the nozzle from its normal hang-up position while holding down the nozzle hang-up latch so that the indicator reset cycle is not activated.

FIGURE S470 – 1



FE PETRO Model STP(ANZ)75 Submersible Turbine Pump With Leak Detector

FIGURE S470 – 2



Typical System

FIGURE S470 – 3



FE PETRO Model STP5 Submersible Turbine Pump With Leak Detector