



Australian Government

National Measurement
Institute

Bradfield Road, West Lindfield NSW 2070

Notification of Change

Supplementary Certificate of Approval No S432

Change No 1

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

The following changes are made to the approval documentation for the
FE Petro Model STP(SAA)150 Submersible Turbine Pump

submitted by Gilbarco Australia Limited
 20 Highgate Street
 Auburn NSW 2144.

- A. In Supplementary Certificate of Approval No S432 dated 10 March 2006;
 - 1. The Condition of Approval referring to the review of the approval should be amended to read:

“This approval becomes subject to review on 1 March **2015**, and then every 5 years thereafter.”
 - 2. The FILING ADVICE should be amended by adding the following:

“Notification of Change No 1 dated 16 March 2011”
- B. In Technical Schedule No S432 dated 18 May 2004, the list of approved pumps given in clause **2. Description of Variant 1** should be amended by deleting the last two (2) bullet points (models STP3 and STP5).

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

A handwritten signature in black ink, consisting of stylized cursive letters, likely representing the Chief Metrologist.



Australian Government
National Measurement
Institute

12 Lyonpark Road, North Ryde NSW 2113

Supplementary Certificate of Approval

No S432

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

FE Petro Model STP(SAA)150 Submersible Turbine Pump

submitted by Gilbarco Australia Limited
 20 Highgate Street
 AUBURN NSW 2144.

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.

CONDITIONS OF APPROVAL



This approval becomes subject to review on 1 March 2009, and then every
5 years thereafter.

Instruments purporting to comply with this approval shall be marked with
approval number 'NSC S432' and only by persons authorised by the
submitter.

Instruments incorporating a component purporting to comply with this
approval shall be marked 'NSC S432' in addition to the approval number of
the instrument.

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.

The National Measurement Institute reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

DESCRIPTIVE ADVICE

Pattern: approved 27 February 2004

- An FE Petro model STP(SAA)150 submersible turbine pump intended for supplying fuel to one or more approved fuel dispensers.

Variant: approved 27 February 2004

1. Certain other FE Petro submersible turbine pumps.

Technical Schedule No S432 describes the pattern and variant 1.

Variants: approved 9 March 2006

2. An FE Petro model ISTMVS4 submersible turbine pump.

Technical Schedule No S432 Variation No 1 describes variant 2.

FILING ADVICE

Supplementary Certificate of Approval No S432 dated 18 May 2004 is superseded by this Certificate, and may be destroyed. The documentation for this approval now comprises:

Supplementary Certificate of Approval No S432 dated 10 March 2006
Technical Schedule No S432 dated 18 May 2004 (incl. Test Procedure)
Technical Schedule No S432 Variation No 1 dated 10 March 2006
Figures 1 to 3 dated 18 May 2004
Figure 4 dated 10 March 2006

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

A handwritten signature in black ink, appearing to be 'J. H. T.', is located in the bottom right corner of the page.

TECHNICAL SCHEDULE No S432

Pattern: FE Petro Model STP(SAA)150 Submersible Turbine Pump

Submittor: Gilbarco Australia Limited
20 Highgate Street
AUBURN NSW 2144

1. Description of Pattern

The FE Petro model STP(SAA)150 submersible turbine pump (Figure 1) is intended for supplying fuel to one or more Commission-approved fuel dispensers operating with a Veeder-Root model PLLD electronic line leak detection device.

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 pump (STP) is controlled via switchboard equipment which consists of an FE Petro model STP-DHIB unit, an FE Petro STP-SC unit, or other compatible units.

1.1 Field of Operation

- The submersible turbine pump (Figure 1) is designed to supply liquid to a fuel dispenser at a maximum flow rate of 321 L/min and to detect leakage of fuel.
- The PLLD electronic leak detector (Figure 2) is designed to automatically check and detect a leak equivalent to 11.4 L/min after every dispenser delivery. By this means the system ensures that the STP will be shut off whenever a leak greater than 11.4 L/min is detected.
- 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 which are Commission-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.

1.2 Verification/Certification Mark and Sealing Provision

The verification/certification 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.

1.3 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	FE Petro
Manufacturer's designation (model number)	...
Serial number	...
Year of manufacture	...
Pattern approval sign	NSC No S432

2. Description of Variant 1

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

- Model STP(SAA)75 – for deliveries up to 246 L/min;
- Model STP(SAA)H150 – for high pressure deliveries up to 246 L/min;
- Model STP(SAA)VS2 – for deliveries up to 360 L/min;
- ~~Model STP3 – for deliveries up to 640 L/min; and~~
- ~~Model STP5 (Figure 3) – for deliveries up to 946 L/min.~~

TEST PROCEDURE

Instruments should be tested in accordance with any tests included in the approval documentation for the system in which the pattern is fitted, and in accordance with any relevant tests specified in the Uniform 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.

1. 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.

2. 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.

3. Electronic Leak Detector Test

Operation of the electronic leak detection system is tested by the following procedure:

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 relevant verifying authority.

This test should only be conducted in the presence of an authorised technician.

All air must be out of the system for the leak detection system to work properly.

All fittings should be tight.

Further instructions and safety information is provided in the installation/operation manuals for the electronic leak detection system.

3.1 General

- (a) Ensure that the submersible turbine pump is not turned on during this operation by disabling at the STP control box. Connect a test fixture (pressure gauge and test valve) to the test port of the impact valve ('safety shut-off valve') of the fuel dispenser.
- (b) Connect power to the pump at the control box.
- (c) Start the test by closing the test valve. The line pressure should be zero (0) as indicated on the pressure gauge. Start the submersible pump and dispense at least 15 litres of fuel to remove any air introduced by installing the test fixture.
- (d) Installation is now ready for the leak tests.

3.2 Standard Leak Test

- (a) Close the test valve and reconnect the power to the submersible pump. Make sure that all the nozzles are closed.

Run the pump from the electronic leak detector control panel by pressing "TEST", then the pump number, and then "ENTER". The pump will now run for approximately 5 seconds and then stop. During the running of the pump the pressure on the pressure gauge is approximately 220 kPa; at rest the pressure should be approximately 80 kPa.

- (b) Open the test valve so that a fine, steady, unbroken stream of fuel is observed to flow from the test valve. The pressure drop from 80 kPa to 35 kPa should take between 10 seconds and 30 seconds.

Between approximately 300 ml and 400 ml of fuel should drain from the system. SIGNIFICANTLY LESS OR MORE INDICATES A SYSTEM FAULT.

- (c) Leave the test valve open. The submersible pump will automatically start and run briefly (3-5 seconds with the pressure at approximately 220 kPa) and then stop. The pressure will drop immediately to 80 kPa and steadily drop to 35 kPa.

An audible alarm will sound and "PUMP ALARM PUMP NR..." will appear on the display of the electronic leak detector control panel. The electronic leak detector will shut down the respective pump.

- (d) Pump operation after alarm is affected by programming – attempts to deliver fuel from the nozzle will either be temporarily or permanently inhibited until the system is reset to normal operation. The pressure on the gauge should still be 0 kPa. The pump is switched off and should only be restarted by an authorised technician.

3.3 Catastrophic Leak Test

- (a) Close the test valve and reconnect the power to the submersible pump. Make sure that all the nozzles are closed.

Run the pump from the electronic leak detector control panel by pressing "TEST", then the pump number, and then "ENTER". The pump will now run for approximately 5 seconds and then stop. During the running of the pump the pressure on the pressure gauge is approximately 220 kPa; at rest the pressure should be approximately 80 kPa.

- (b) Open the test valve quickly so that the pressure drop from 80 kPa to 35 kPa takes less than 8 seconds.

Between approximately 300 mL and 400 mL of fuel should drain from the system. SIGNIFICANTLY LESS OR MORE INDICATES A SYSTEM FAULT.

- (c) An audible alarm will sound and “PUMP ALARM PUMP NR...” will appear on the display of the electronic leak detector control panel. The electronic leak detector will shut down the respective pump.
- (d) Pump operation after alarm is affected by programming – attempts to deliver fuel from the nozzle will either be temporarily or permanently inhibited until the system is reset to normal operation. The pressure on the gauge should still be 0 kPa. The pump is switched off and should only be restarted by an authorised technician.

3.4 Further Tests

Repeat tests 3.2 and 3.3 for other submersible turbine pumps.

3.5 At Completion of Electronic Leak Detector Testing

Disable the pump at the control box. Remove the test fixture and replace the plug in the test port. Enable the pump, and dispense at least 15 L of fuel from the dispenser to remove any air introduced into the system.

TECHNICAL SCHEDULE No S432

VARIATION No 1

Pattern: FE Petro Model STP(SAA)150 Submersible Turbine Pump

Submittor: Gilbarco Australia Limited
20 Highgate Street
AUBURN NSW 2144

1. Description of Variant 2

An FE Petro model ISTMVS4 3 kW (4 hp) submersible turbine pump designed to supply liquid to a fuel dispenser at a maximum flow rate of 530 L/min.

FIGURE S432 – 1



FE Petro Model STP(SAA)150 Submersible Turbine Pump

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FIGURE S432 – 2



FE Petro Model STP(SAA)150 Submersible Turbine Pump
With Veeder-Root Model PLLD Leak Detection Device

FIGURE S432 – 3



FE Petro Model STP5 Submersible Turbine Pump