

National Standards Commission

12 Lyonpark Road, North Ryde NSW

Notification of Change

Supplementary Certificate of Approval No S291

Change No 1

The following change is made to the approval documentation for the

Red Jacket Model Submersible Pump Driveway Flowmeter Hydraulic Supply System

submitted by Marley Pump Australia Pty Ltd
125 Fischer Street
Torquay VIC 3228.

In Cancellation Supplementary Certificate of Approval No S291 dated 2 January 2001, the reference to the date of cancellation (given as 1 February 2001) should be amended so that it now reads:

“... will be cancelled in respect of new instruments as from 1 February 2002.”

Signed by a person authorised under Regulation 60 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

A handwritten signature in black ink, which appears to read 'Jim Bennett'. The signature is written in a cursive, flowing style.



National Standards Commission

12 Lyonpark Road, North Ryde NSW

Cancellation

Supplementary Certificate of Approval No S291

This is to certify that the approval for use for trade granted in respect of the

Red Jacket Model Submersible Turbine Pump Driveway Flowmeter Hydraulic Supply System

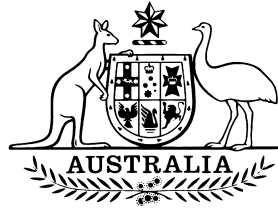
submitted by Marley Pump Australia Pty Ltd
125 Fischer Street
Torquay VIC 3228

has been cancelled in respect of new instruments as from 1 February 2001.

Instruments which were verified/certified before that date may, with the concurrence of the relevant verifying authority, be submitted for reverification.

Signed by a person authorised under Regulation 60 of the National Measurement Regulations 1999 to exercise the powers and functions of the Commission under this Regulation.

National Standards Commission



Supplementary Certificate of Approval

No S291

Issued under Regulation 9
of the
National Measurement (Patterns of Measuring Instruments) Regulations

This is to certify that an approval for use for trade has been granted in respect of the

Red Jacket Model Submersible Pump Driveway Flowmeter Hydraulic Supply System

submitted by Marley Pump Australia Pty Ltd
 (formerly submitted by Red Jacket Petroleum Systems)
 125 Fischer Street
 Torquay VIC 3228.

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 November 1997, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No S291 and only by persons authorised by the submittor.

.../2

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 Commission 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 the Commission's Document 106.

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

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0/A.

DESCRIPTIVE ADVICE

Pattern: provisionally approved 8 October 1992
approved 11 February 1993

- Red Jacket model Submersible Pump driveway flowmeter hydraulic supply system for use in a Commission-approved driveway flowmetering system approved for use with submersible turbine pumps.

Variant: provisionally approved 8 October 1992
approved 11 February 1993

1. With a model ELD3 electronic line leak detection system.

Technical Schedule No S291 describes the pattern and variant 1.

Variants: approved 3 October 1996
re-approved 10 January 1997

2. With one or more model P300H17-3HB or P500H19-3K 150 mm BigFlo submersible turbine pumps.
3. With one or more model FX2V, or model FX2VD, or model BigFlo Diaphragm Valve mechanical line leak detectors.
4. With a model ST1401L or ST1801L electronic line leak detection system.

Technical Schedule No S291 Variation No 1 describes variants 2 to 4.

FILING ADVICE

Supplementary Certificate of Approval No S291 dated 22 November 1993 is superseded by this Certificate and may be destroyed.

The documentation for this approval now comprises:

- Supplementary Certificate of Approval No S291 dated 10 March 1997
- Technical Schedule No S291 dated 22 November 1993 (incl. Test Procedure)
- Technical Schedule No S291 Variation No 1 dated 10 March 1997 (incl. Test Procedure and Notification of Change)
- Figures 1 to 3 dated 22 November 1993

Signed and sealed by a person authorised under Regulation 9 of the National Measurement (Patterns of Instruments) Regulations to exercise the powers and functions of the Commission under this Regulation.



National Standards Commission

TECHNICAL SCHEDULE No S291

Pattern: Red Jacket Model Submersible Pump Driveway Flowmeter Hydraulic Supply System.

Submitter: Red Jacket Petroleum Systems
32 Highland Boulevard
Ringwood VIC 3134.

1. Description of Pattern

The pattern is a Red Jacket model Submersible Pump hydraulic supply system which may replace the equivalent components (i.e. motor, pump, gas separator and associated pipework) in a Commission-approved driveway flowmetering system approved for use with submersible turbine pumps and to dispense petrol, kerosene or distillate at flow rates up to the maximum specified in the approval documentation for the flowmetering system.

This system provides positive pressure at all times to the driveway flowmeters and incorporates one or more leak detectors.

1.1 Components

The main components of the hydraulic supply system, as shown in Figures 1 or 2, are:

- one or more Red Jacket model P75S3-3 or P150S3-3 100 mm submersible turbine pumps;
- one or more Red Jacket model PLD 116-030 or XLP 116-035 mechanical leak detectors; and
- an impact valve ('safety shut-off valve') for each driveway flowmeter.

1.2 Verification/Certification and Sealing Provision

Application of a verification/certification mark to the flowmeter constitutes application of the mark to the system including any components listed above; there is no separate provision for the application of the mark to, or for the sealing of, the components.

1.3 Markings

The following is the minimum data required to be permanently and indelibly marked on the hydraulic supply system, either on a nameplate or on a metal tag sealed to the top housing of the submersible pump:

Manufacturer's name or mark
Serial number
Year of manufacturer
NSC approval number

NSC No S291

Driveway flowmeters fitted with an hydraulic supply system purporting to comply with this approval shall be marked NSC No S291, in addition to the approval number of the flowmeter.

2. Description of Variant 1

With a Red Jacket model ELD3 electronic leak detection system (Figure 3) instead of the mechanical system of the pattern.

The ELD3 includes a Red Jacket 'Precision Function Element', accumulator and pressure sensor ('transducer') as the leak detection system.

TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Inspector's Handbook.

Maximum Permissible Errors at Verification/Certification

The maximum permissible error applied during a verification test from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule is $\pm 0.3\%$.

1. MECHANICAL LEAK DETECTOR TEST

Operation of the mechanical leak detector 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.

- a) Connect a pressure gauge and test valve to the test port of the impact valve ('safety shut-off valve') under the driveway flowmeter. Ensure that the submersible turbine pump is not turned on during this operation by disabling at the STP control box.
- b) Start the test by closing the test valve. The line pressure should be zero as indicated on the pressure gauge. At the control box enable the pump; observe that the pressure gauge reads approximately 220 kPa and dispense at least 15 L of fuel to remove any air introduced by installing the pressure gauge and valve.
- c) Turn off the pump and observe that the pressure gauge reads approximately 80 kPa. Open the test valve sufficiently so that a steady, unbroken stream of fuel is observed to flow from the test valve. Wait until flow ceases from the valve and the test gauge reads zero. Between 300 and 400 mL of fuel should have drained from the valve. **SIGNIFICANTLY LESS OR MORE INDICATES A SYSTEM FAULT.** Leave the test valve open.
- d) Start the pump by lifting the operating flap, but leaving the nozzle closed. A steady stream of fuel should be observed to flow from the test valve. The pressure on the gauge should not exceed 150 kPa during this step.

Attempt to deliver fuel from the nozzle. A flow rate of less than 12 L/min indicates correct operation of the leak detector.
- e) Close the nozzle but leave the pump running. Slowly close the test valve until the pressure reads approximately 150 kPa and the flow rate from the valve is approximately 200 mL in 1 minute.
- f) Close the test valve with the pump still running. A rise in pressure on the test gauge to approximately 220 kPa should be noted after not more than 10 seconds.
- g) Hang up the nozzle. Observe that the pressure gauge reads approximately 80 kPa.
- h) 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 flowmeter to remove any air introduced into the system.

2. ELD3 ELECTRONIC LEAK DETECTOR TESTING

Operation of the ELD3 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 ELD3 electronic leak detection system.

2.1 General

- (a) Disconnect power to the pump at the control box.
- (b) Open the test port of the 'safety shut-off valve' of the dispenser and install the test fixture (pressure gauge and test valve).
- (c) Connect power to the pump at the control box.
- (d) 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 litre of fuel to remove any air introduced by installing the test equipment.
- (e) Installation is now ready for the leak tests.

2.2 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 ELD3 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 run 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 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 ELD3 control panel. The ELD3 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.

2.3 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 ELD3 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 run 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 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 ELD3 control panel. The ELD3 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.

2.4 Further Tests

Repeat tests 2.2 and 2.3 for other submersible turbine pumps.

2.5 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 flowmeter to remove any air introduced into the system.

3. 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 relevant verifying authority.

The minimum flow rate test is performed by simultaneously running either all hoses on all driveway flowmeters connected to a particular submerged 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 15 L/min.

4. AUTHORISATION TEST

For systems where more than one driveway flowmeter is connected to the same pump, begin a delivery from one flowmeter.

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

National Standards Commission

TECHNICAL SCHEDULE No S291 VARIATION No 1

Pattern: Red Jacket Model Submersible Pump Driveway Flowmeter Hydraulic Supply System.

Submittor: Marley Pump Australia Pty Ltd
125 Fischer Street
Torquay VIC 3228.

1. Description of Variants

1.1 Variant 2

With one or more Red Jacket model P300H17-3HB or model P500H19-3K 150mm BigFlo submersible turbine pumps.

1.2 Variant 3

With one or more Red Jacket model FX2V, or model FX2VD, or model BigFlo Diaphragm Valve mechanical line leak detectors.

1.3 Variant 4

With a Red Jacket model ST1401L or model ST1801L electronic line leak detection system instead of the mechanical line leak detection system of the pattern.

NOTIFICATION OF CHANGE

In Technical Schedule No S291 dated 22 November 1993, the reference to the submittor should be amended to now read:

Marley Pump Australia Pty Ltd
125 Fischer Street
Torquay VIC 3228.

TEST PROCEDURE

For Variant 3:

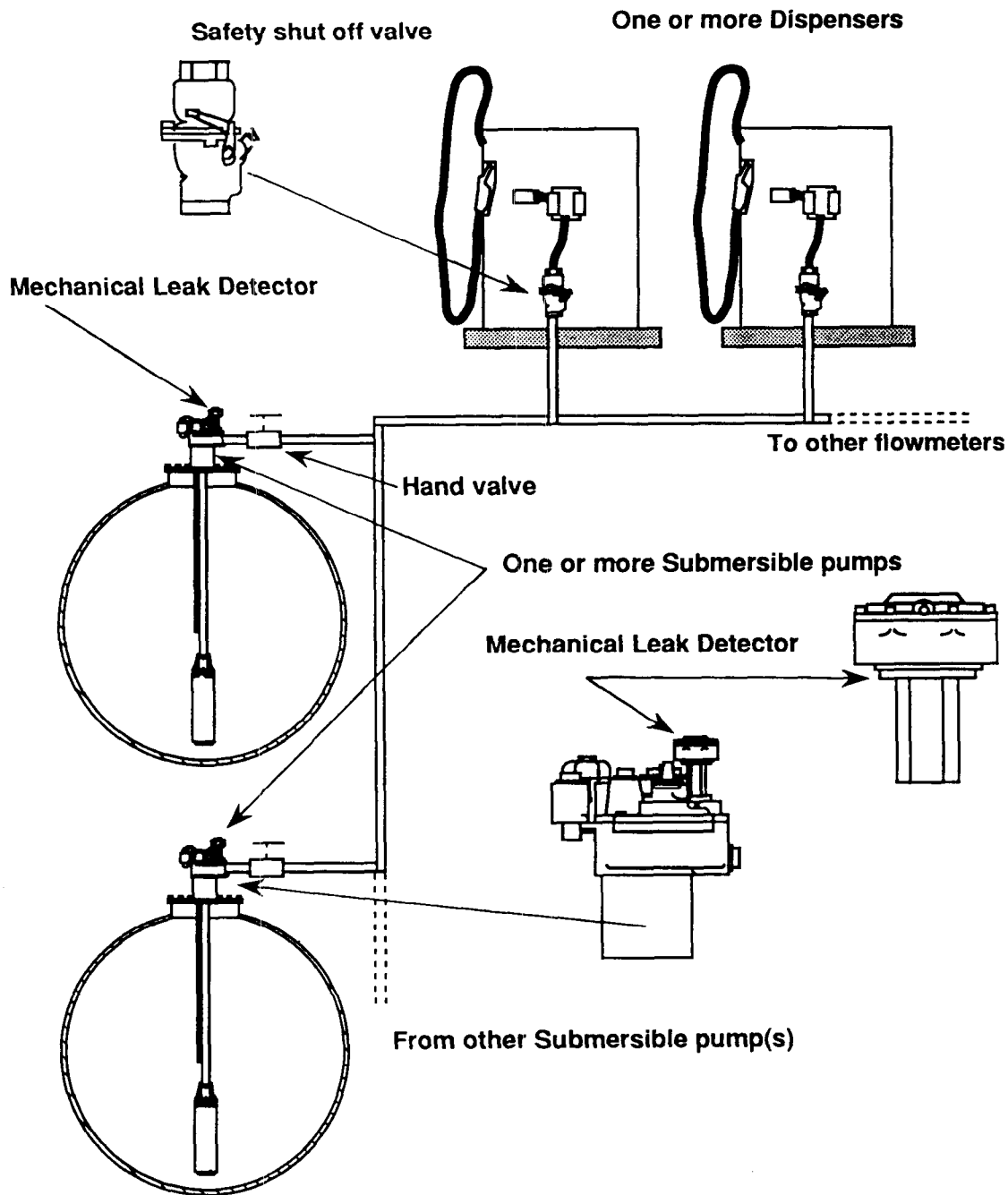
Instruments complying with this variant shall be tested in accordance with the manufacturer's instructions as laid out in the Red Jacket Petroleum Equipment publication entitled *Test Procedures for Mechanical Leak Detectors (issue 051-259 2/95, February 1995)*, pages 1 to 14, *Testing Mechanical Leak Detectors with the FXT Testing System*.

Ensure that the leak detector has reacted to the imposed leak and is in 'leak sensing mode' by attempting to deliver fuel from the nozzle. A restricted flow should be observed indicating that the leak detector has reacted and a simulated leak is present.

For Variant 4:

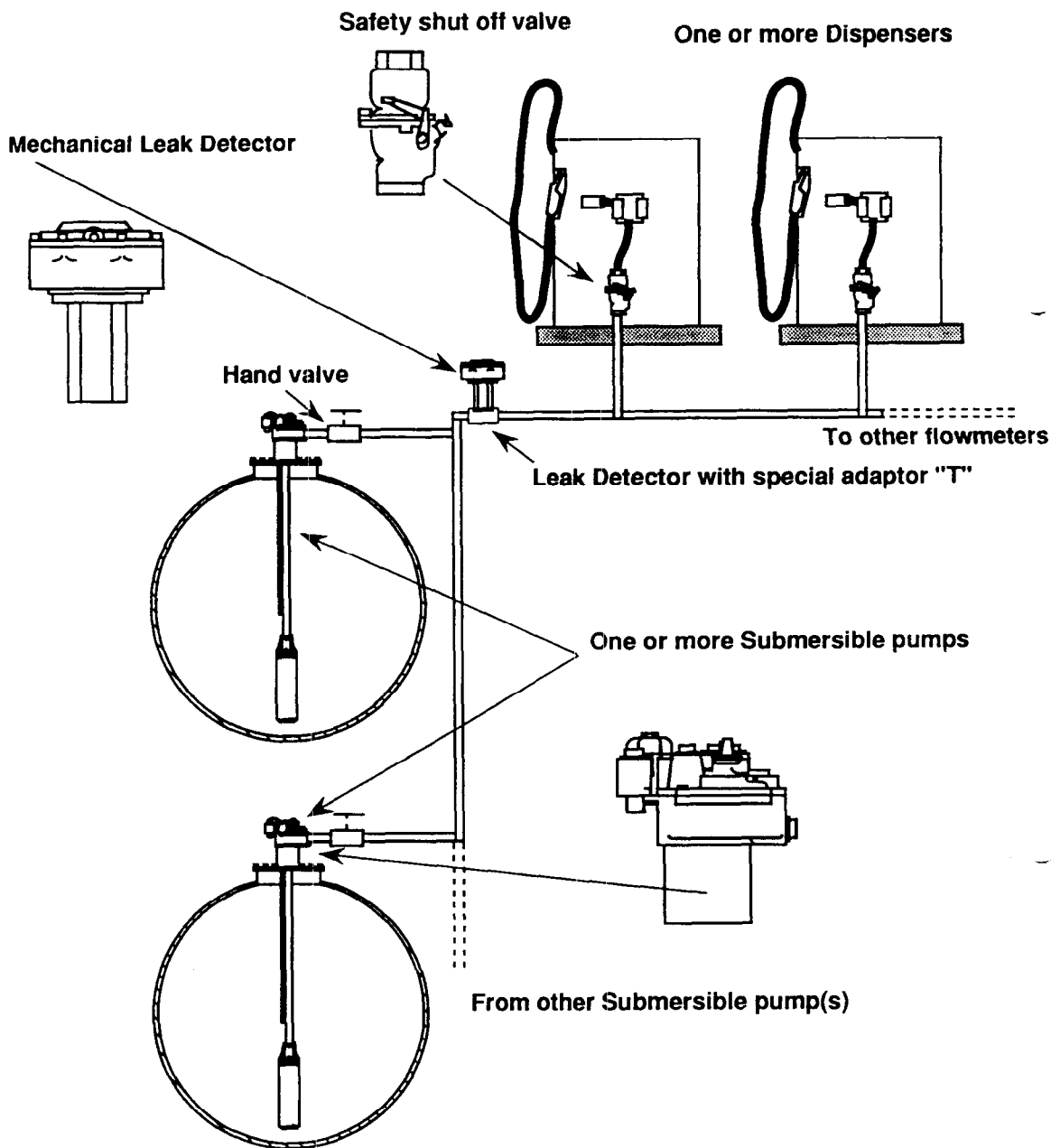
Instruments complying with this variant shall be tested in accordance with test **2. ELD3 Electronic Leak Detector Testing** of the Test Procedure included in Technical Schedule No S291 dated 22 November 1993.

FIGURE S291 - 1



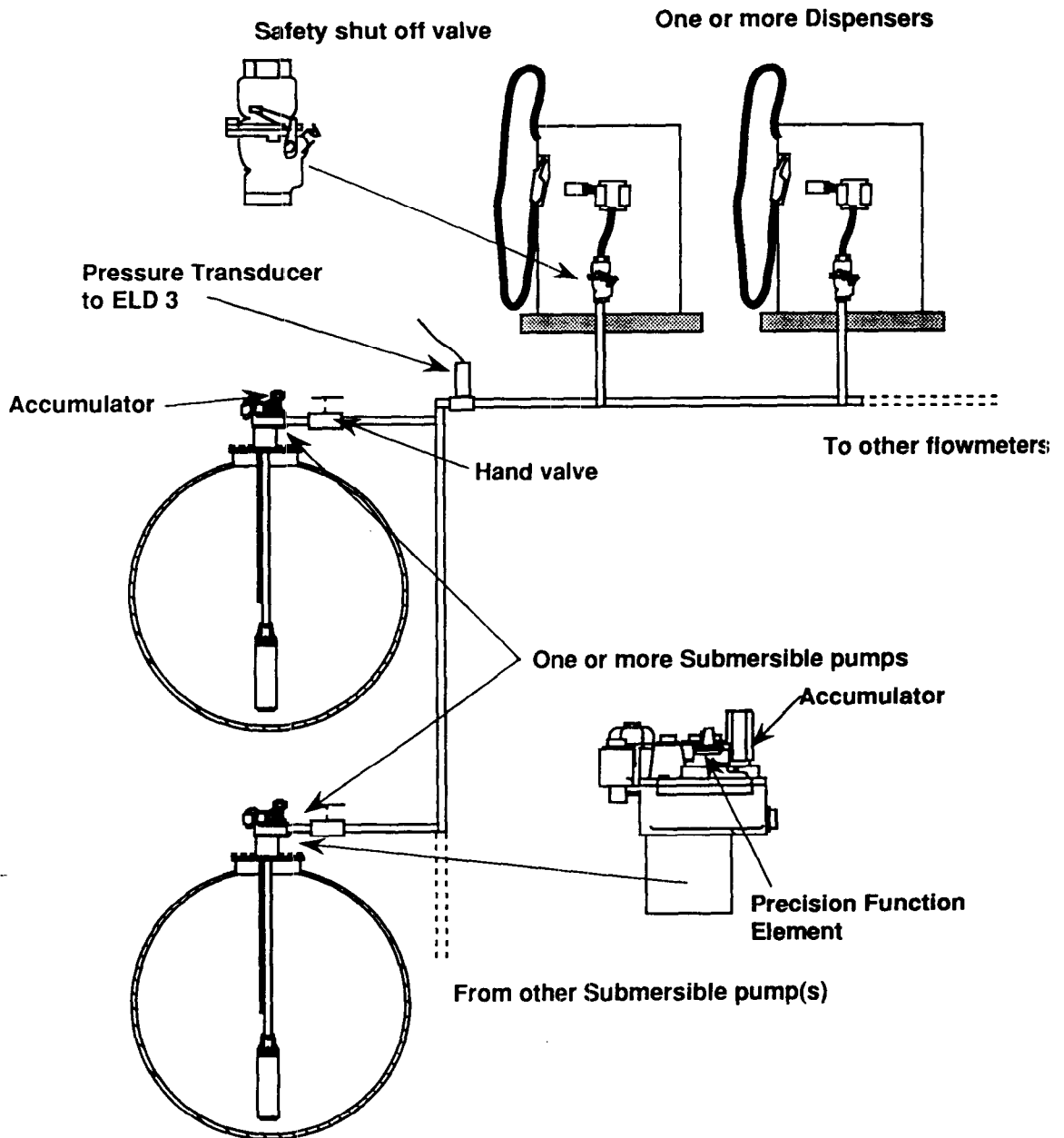
Typical Submersible Turbine System (Pattern)

FIGURE S291 - 2



Alternative Submersible Turbine System (Pattern)

FIGURE S291 - 3



Typical Submersible Turbine System (Variant 1)