TYPE 50, 51    DISPENSERS AND REFUELLERS

APPLICATION

Devices used to measure motor fuel and other automotive or petroleum liquids in retail and wholesale trade. Does not include automotive lubricant or propane motor fuel dispensers. Consult IPO-Part 2, sections 5 and 6.

Dispensers - a maximum approved flow rate of 90 litres/min or less.

Refuellers - a maximum approved flow rate greater than 90 litres/min.

EQUIPMENT

Appropriate volumetric prover standards (20 litre measures or 20 litre provers for dispensers up to 90 L/minute or 250 litre mobile provers for refuellers), product circulation vessel, certified thermometer (0.1 °C).

Note: Prover standards must all be verified and designated as a local standard by Measurement Canada. Twenty litre test measure standards require re-certification once per year, while 20 litre and 250 litre mobile provers require re-certification once every four years.

Note: Prior to use, each prover standard must be examined to ensure its integrity and calibration have not been compromised (seals are intact, no physical damage: dents, leaks and cracked or broken sight glasses).

Note: Provers and measures used to test gasoline dispensers and refuellers must have approved means to minimize vapour loss. Consult bulletin V-24 for additional information.

USE

- Device is approved for trade use ........................................ NOA, Act, section 8
- Device and components are suitable for the actual use .................. NOA, R-271, R.272
- Device has been initially inspected (if applicable) and bears the initial inspection marks ........................ R-29, Bulletin V-08, Bulletin V-09
- Flow rates are within approved range .................................... NOA, R.290
- ATC (seasonal and partial conversion) ................................. Bulletin V-19
- Gasoline and fuel sold by the gallon ...................................... Bulletin V-19
- Register with ATC uses a volume correction factor authorized for the actual liquid ............................... Bulletin V-18
TYPE 50, 51 DISPENSERS AND REFUELLERS

VISUAL EXAM (MARKING AND LABELLING)

- Device is marked with the required information (manufacturer's name, model and serial number, approval number(s), maximal and minimal flow rate, volume corrected to 15 °C, etc.) . NOA, R.21
- Information is marked as required and marking is permanent (if applicable) ................. R.18
- Marking plate is permanently affixed to the device .................................................. R.18
- Initial inspection marks (steel die or approved label) ............................................. R.29
- Units of measurement and, if applicable, the ¢ per litre or $ per litre face plate markings are appropriate (location, size, appropriate decimal and number of places) ...... R.135, R.136, R.137
- Labelling/marketing of multiple outlet systems (i.e, satellite units) ....................... R.282
- Marking device usage restriction (if applicable) is appropriate ........................ NOA, R.70

Note: Consult applicable NOA for the marking of serial numbers (measuring chamber identification) on multi-product dispensers.

Note: The requirement of SVM.2-15 for marking test thermal wells is no longer applied.

VISUAL EXAMINATION (PRINTERS, TICKETS, CONSOLES AND CARD-LOCKS)

- Tickets are appropriate to the printing device ......................................................... R.149
- Information is printed as required ......... R.129, R.295, SVM.1-27, SVM.2-27, bulletin V-20
- Devices equipped with money acceptors print amount of money tendered and change SVM.1-36
- Quantity printed with adequate number of digits and decimals ............. R.126, Bulletin V-7
- Printed ticket is provided to customer prior to leaving premises (card-locks only) ........ R.292

VISUAL EXAMINATION (SEALS)

- Measuring element/calibration adjustment is sealed .............................................. R.235
- Register - Means of adjustment used for processing pulses is sealed ......... SVM.1-8, SVM.1-9
- Means of adjusting ATC is accessible and sealable ........................................ SVM.2-7
- ATC sensor/well assembly is sealed ................................................................. SVM.2-10
- Flow control valve (if applicable) is sealed ....................................................... R.280

Note: Calibration and settings of metrological functions must not be possible without breaking seals or being logged (event logger) as prescribed. Device must not operate normally if left in calibration mode.

Note: NOA must be consulted as well for special sealing provisions.
TYPE 50, 51 DISPENSERS AND REFUELLERS

VISUAL EXAMINATION (INSTALLATION - GENERAL)

• Device is installed in accordance with restrictions and conditions listed in the NOA and in accordance with manufacturer’s instructions .................................................. NOA, R.68, R.69, R.70
• Device is adequately secured, protected against abnormal environmental factors, connected to an adequate and compatible electrical supply as prescribed by the manufacturer and attached components do not adversely affect its performance ...................... R.124, R.141, R.142
• Device’s primary register is positioned for customer view ............................................. R.143, R.144
• Minimum graduation is in compliance with requirements ........................................ R.68(2), R.126, SVM.1-20
• Increments of registration displayed by mechanical meter registers or printed by electromechanical printers are compliant ........................................ SVM.1-20
• Means of registration of total price - sufficient number of digits ................................ SVM.1-21
• Device/system has convenient means to allow for testing and inspection .................. R.284
• Blending dispensers - if one meter is equipped with ATC, all meters must be ........... SVM.1-27

VISUAL EXAMINATION (SETTINGS)

• Multi products/Multi meters - Selection of unit price and adjustment are interlocked ........ SVM.1-16
• Register used with more than one meter or liquid prevents the delivery of more than one liquid at a time ........................................................................................................ SVM.1-18
• Multi products - ATC - Selection of coefficient of expansion is interlocked ............... SVM.2-12
• Adjacent linearization factors must not deviate by more than 0.25% ....................... SVM.1-10
• Means of adjustments set both GROSS and NET registration ................................ SVM.2-28

Note: The piping of a multi-product/multiple meters system must be equipped with the necessary automatic solenoid valves or other means interfaced with the electronic register to make the interlocking system operational as prescribed by the requirements.

VISUAL EXAMINATION (UPSTREAM AND DOWNSTREAM PIPING AND HOSES)

• Short and unencumbered suction piping ................................................................. R.273
• Piping and accessories are installed so as to minimize the passage of air and gas ........ R.274
• Adequate air prevention and elimination system is in place; air eliminator has not been obstructed (if applicable) ................................................................. R.278, R.279
• Filter, strainer, or other approved means located immediately upstream from the meter ... R.277
• Sealed flow control valve (if necessary) ................................................................. R.280
• Check valve (or other approved means) installed to keep the system primed and prevent back flow (if necessary) ................................................................. R.280, R-28, SVM.1-34
• All product is delivered downstream from the transfer point and retained upstream from the transfer point, and piping/hose downstream from the meter can be readily inspected .... R.282
• Multiple outlet systems comply with installation and marking requirements ............. R.282
• Quick-acting valve installed near outlet for inspection purpose (cabinet refuellers) ........ R.283
• Automatic means (valve) to stop liquid flow when missing pulses are detected ........ SVM.1-37
• Multi-product systems - Interlocked valves to prevent the delivery of more than one liquid .......................................................................................................... SVM.1.38
• Automatic valve having throttling effect is located downstream from the meter ....... R.285
• Provision for systems having hose(s) longer than 5 meters (if applicable) ............. Bulletin V-01
TYPE 50, 51  DISPENSERS AND REFUELLERS

- Spring-loaded anti-drain valve installed at the outlet end of the delivery hose .............. R.286
- ATC temperature sensor and test well are installed within one metre of the meter (if applicable); no components are installed between the ATC sensor and the meter ........ SVM.2-23, SVM.2-25
- Test thermal well is installed adjacent to the sensor and such that it will retain thermal conducting fluid during a test (if applicable) ..................................................... SVM.2-24
- ATC requirements for blending metering systems composed of more than one meter - all meters must be equipped with ATC .............................................. SVM.2-27

Note: Piping, valves and other components must be examined for leakage. Particular attention must be paid when examining suction piping. For safety and accuracy, any leakage should be fixed before inspection.

PERFORMANCE

Note: Certified volumetric provers and measures are required to be wet and dripped in accordance to their verification certificate .......................................................... STP-22

Volume correction for the expansion or contraction of the prover shell needs to be calculated into the observed volume reading ......................................................... STP-23

Note: The above correction is not required for 20 litre measures or 20 litre provers.

In-service limits of error apply to tests performed in the field ........ R.265, Bulletins V-03, V-23 and V-24

To improve overall accuracy tests, it is recommended that the temperature of the product at the meter be stabilized to within 1.0 °C (± 0.5 °C of the mean temperature) by circulating product prior to beginning any test runs applicable to the determination of accuracy.

- Return to Zero test .......................................................... STP-1
- Interlock Test ............................................................. STP-2
- Segment Test (if electronic) ................................................. STP-3
- Slow Flow Test ........................................................... STP-4
- Fast Flow Test ............................................................. STP-5
- Repeatability Test ........................................................ STP-7
- Agreement Between Registrations Test ........................................ STP-9
- Computed Value Test .......................................................... STP-10
- Pulser Backlash Test (if electronic) ........................................... STP-14
- Prepay Test (if applicable) .................................................. STP-17
- Check Valve or Anti-drain Valve Test ........................................ STP-11
- Hose Expansion Test (if necessary) ........................................ STP-12
- Delivery Cross-over Test (if applicable) ........................................ STP-15
- Product Blend Test (if applicable) ........................................... STP-16
- ATC Test (if applicable) .................................................... STP-18
- ATC Temperature Sensor Failure Test (if applicable) ......................... STP-19
- EM/RF Interference Test (if applicable) ........................................ STP-20
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Note: The accuracy of meters (measuring chambers) used to measure several grades of products must be tested using the highest and the lowest grade in terms of viscosity.

Revision 1

A note was added under the Performance section in an effort to reduce the uncertainty of inspection results for fuel dispensers and refuellers as it is important to reduce temperature fluctuations and any significant difference in temperature between the product in the measure and that in the meter.

Revision 2

Removed reference to gas and diesel fuel in the title and Application section. Under the Application section, “gas and diesel” was replaced with “motor fuel and other automotive or petroleum liquids” and reference to how the devices used to measure gas and diesel are enclosed and approved was also removed. Statements were added under the Equipment section and Note subsection to ensure test standards are checked for damage prior to use and standards used to test gasoline dispensers have approved means to minimize vapour loss during tests. Test standards used to test diesel and other non-volatile automotive liquid product dispensers may continue to be used without means to minimize vapour loss. Added printed ticket check for card-locks under the Visual Examinations section. Minor editorial corrections were also made.