

EPO No. 24**Examination Procedure Outline for****Vehicle-Tank Meters
Gravity-Discharge**

It is recommended that this outline be followed for all gravity-discharge vehicle-tank meters – analog or digital. Nonretroactive requirements are followed by the applicable date in parentheses. Do not use this outline for testing milk metering systems, or power-operated vehicle tank meters.

SAFETY NOTES

When excerpting this Examination Procedure Outline for duplication, the "Safety Considerations" section and the "Glossary of Safety Key Phrases" should be duplicated and included with the outline.

The inspector is reminded of the importance of evaluating potential safety hazards prior to an inspection and taking adequate precautions to avoid personal injury or damage to the device. The inspector should read and be familiar with the introductory section on safety found at the beginning of this publication. As a minimum, the following safety precautions should be noted and followed during the inspection. Definitions of each reminder are found in the "Glossary of Safety Key Phrases" at the back of this publication.

Safety policies and regulations vary among jurisdictions. It is essential that inspectors or servicepersons be aware of all safety regulations and policies in place at the inspection site and to practice their employer's safety policies. The safety reminders included in this EPO contain general guidelines useful in alerting inspectors and servicepersons to the importance of taking adequate precautions to avoid personal injury. These guidelines can only be effective in improving safety when coupled with training in hazard recognition and control.

Clothing	Material Safety Data Sheets (MSDS)
Electrical Hazards	Nature of Product
Emergency Procedures	Personal Protection Equipment
Eye Protection	e.g., Safety Shoes, Safety Aprons, Gloves, Hard Hat, etc. if deemed necessary
Fire Extinguisher	Safety Cones/Warning Signs
First Aid Kit	Static Discharge
Grounding	Switch Loading
Ignition Sources	Traffic
Lifting	Transportation of Equipment
Location	
also:	Wet/Slick Conditions, Chemicals, Hazardous Materials, Petroleum Products, Obstructions

EPO No. 24**Inspection:****Safety First !!!**

Check the inspection site carefully for safety hazards and take appropriate precautions.

Check to be certain that the ground surface of the inspection site is sufficiently strong and rigid to support the prover when it is filled with product – don't forget to chock the wheels of the prover.

Learn the nature of hazardous products used at or near the inspection site – obtain and read copies of MSDS's.

Know emergency procedures and location and operation of fire extinguisher and emergency shut-offs.

Post safety cones/warning signs and be aware of vehicular and pedestrian traffic patterns.

Use caution in moving in wet, slippery areas and climbing on prover, storage tanks, and vehicles.

Use personal protection equipment and clothing appropriate for the inspection site.

If leaks, spills, or exposed wiring cause hazardous testing conditions it is recommended that the testing be discontinued until the unsafe conditions are corrected.

Be sure that a first aid kit is available and that it is appropriate for the type of inspection activity.

H-44 General Code and Vehicle-Tank Meters Code References

1. General considerations.

Selection	G-S.3., G-UR.1.1., G-UR.1.2., G-UR.1.3.
Installation	G-S.2., G-UR.2.1., G-UR.2.2., UR.1.1.
Position of equipment.....	G-UR.3.3.
Accessibility	G-UR.2.3.
Assistance	G-UR.4.4., G-UR.4.6.
Use and maintenance.....	G-UR.3.1., G-UR.4.1., G-UR.4.2., UR.2.3.

2. Indicating and recording elements.

Design	S.1.1.1.
Units.....	S.1.1.2.(a) , S.1.1.3.(b) and (c)
Readability.....	G-S.5., G-S.6. (1/1/77), G-S.7., S.1.2., S.1.3.
Values of intervals.....	G-S.5.3.
Computing-type devices	
Display of unit price	S.1.4.1, UR.1.2.
Printed ticket.....	S.1.4.2., UR.2.2.
Exceptions for the sale of aviation fuel	UR.2.2.1.
Money-value computations	S.1.4.3.
Advancement and return to zero.....	S.1.1.4., S.1.1.5., UR.2.1.

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- Provision for sealingG-S.8. (1/1/90), G-UR.4.5.
3. MarkingG-S.1., G-UR.2.1.1.,
S.5.1, S.5.2.
4. Measuring elements.
Vapor eliminationS.2.1.
Security seal on adjusting mechanismG-UR.4.5., S.2.2.
5. Piping.
Directional flow valves and discharge line and valvesS.2.3., S.3.
LeaksG-UR.4.1.
Facilitation of fraudG-S.2.

Pretest Determinations:

1. Determine that the test fluid in the tank compartment is similar in character to the fluid to be measured N.1.
2. Determine that a compartment or compartments have a sufficient amount of product to conduct “high head” and “low head” tests.
3. Test drafts: determine if the prover size is adequate and that the prover inlet is lower than the meter outlet N.3.
4. Tolerances.
Applicable requirementsG-T., T.1.
Tolerance valuesT.2.
Agri-chemicalsT.3.
RepeatabilityT.4.
5. Note totalizer reading

Test Notes:

Wear appropriate personal protection equipment such as petroleum-resistant, nonskid safety shoes (to prevent possible injury from spills or slipping on slick surfaces), protective clothing, eye protection (to prevent injury from splashed product), and a hard hat (to prevent injury from overhangs and projections).

Use proper grounding procedures.

Be sure that prover is equipped with an explosion proof motor.

Carefully inspect electrical supply lines to test equipment for wear and damage; correct potentially hazardous conditions before use.

Device operator should be present at all times during test – the operator (not the inspector) should operate the device under test. Do not leave equipment unattended while in operation.

EPO No. 24**Test Notes (cont.):**

1. Wet prover. Allow a 30-second drain period each time prover is emptied.
2. Evaporation and volume change: exercise care so that the product temperature is the same in the prover as at the meter.....N.2.
3. Record totalizer (s) indication before and after each draft to determine proper operation
4. After each test draft:
 - a. Print a ticket (if so equipped).....G-S.5.6.
 - b. If computing type, check price computation on indicator and on recorded representations.....G.S.5.6., S.1.4.2., S.1.4.3., S.1.4.4.
 - c. Check for agreement between indicators.....G-S.5.2.2.

Test:

If supply or return lines are not coupled at their discharge ends, they must be held in place continuously while product flows through the line.

Use proper lifting techniques to lift and move equipment.

Be aware of and attempt to eliminate potential ignition sources in or near the inspection site.

Be aware of vehicular and pedestrian traffic in the area.

1. Normal test--full flow (high head, full compartment), basic toleranceN.4.1., T.2.
2. Normal test – full flow (medium head, one-half full compartment), basic toleranceN.4.1., T.2.
3. Normal test – full flow (low head, one and one-half times prover capacity in compartment), basic toleranceN.4.1., T.2.
4. Special test – split compartment, special tolerance.....S.2.1., N.4.2. (b) , T.2.
 - a. Start test (normal flow rate) from a compartment containing less test load than one-half prover capacity.
 - b. Permit test to continue until lack of fluid supply causes meter register to stop absolutely.
 - c. Shut manifold valve (or disconnect whip-hose connection) from now empty compartment.
 - d. Open valve from compartment with adequate supply of fluid to complete test.
5. RFI/EMI test (electronic equipment only).....G-N.2., G-UR.1.2., G-UR.3.2., G-UR.4.2.
 Radio Frequency Interference (RFI)
 Electromagnetic Interference (EMI)
6. Check automatic stop mechanismG-UR.4.1.
 The device should stop the flow within one-half the minimum interval indicated.
7. Security sealG-UR.4.5.

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Test (cont.):

Record on the official report the number of gallons of product dispensed during test.

Avoid switch loading!
Test devices dispensing low-vapor pressure products (e.g., diesel fuel, kerosene)
before testing devices dispensing high-vapor pressure products (e.g., gasoline).

After all equipment at a location has been tested, review results to determine compliance
with equipment maintenance and use of adjustmentsG-UR.4.1., G-UR.4.3.

Take precautions to isolate equipment when
transporting it to avoid exposure to hazardous fumes.