



Australian Government

MSMTMINS402 Inspect liquid measuring instruments using volume measures

Release: 2

MSMTMINS402 Inspect liquid measuring instruments using volume measures

Modification History

Release 2. Adjustments to the Application, Performance Criteria and Range of Conditions. Adjustment to Assessment Conditions. Equivalent.

Release 1. Supersedes and is equivalent to MSATMINS402A Inspect liquid measuring instruments using volume measures

Application

This unit of competency covers the ability to apply National Instrument Test Procedures to determine whether liquid measuring instruments, tested using volume measures, are suitable for trade use. The unit also involves auditing the performance of verifiers, by auditing recently verified liquid measuring instruments, to ensure they meet the legislative requirements for trade use.

This unit of competency is applicable to trade measurement inspectors appointed under national measurement legislation who may inspect a wide range of liquid measuring instruments, tested using volume measures, as part of their allocated duties.

Liquid measuring instruments are used in a very wide range of commerce. For example, petrol dispensers measure fuel at the point of sale and flowmeters are used to measure bulk commodities, such as milk, chemicals and petroleum products during production and distribution. Inspections are often performed over extended durations in non-routine and hazardous environments. Inspectors must work safely, including applying basic first aid, assessing potential confined spaces, working with hazardous materials, working in hazardous environments, working with heavy machinery, using appropriate workplace clearance forms, completing safety inductions and working at heights.

While no specific licensing or certification requirements apply to this unit at the time of publication, all inspection activity is legislated under the *National Measurement Act 1960*.

Pre-requisite Unit

Nil

Competency Field

Trade measurement

Unit Sector

Elements and Performance Criteria

Elements describe the Performance criteria describe the performance needed to

essential outcomes		demonstrate achievement of the element	
1	Prepare for inspection	1.1	Identify and evaluate the type of instrument to be inspected
		1.2	Access and review any history of previous inspections at trader's premises
		1.3	Access and correctly interpret appropriate documentation required for the inspection
		1.4	Identify and access test equipment, products and consumables required for the inspection
		1.5	Ensure specified test equipment is fit for purpose in accordance with applicable legislation and organisational procedures
		1.6	Store and transport test equipment in accordance with organisational procedures and industry best practice
		1.7	Identify workplace health and safety issues relevant to the inspection
2	Initiate inspection	2.1	Identify the site controller, explain the purpose of the inspection and produce formal identification, if required
		2.2	Identify relevant site health and safety issues and implement appropriate control strategies
		2.3	Conduct a preliminary evaluation of the site's trading practices and prioritise activities to maximise inspection outcomes
		2.4	Identify trade measuring instruments and plan inspection to minimise disruption to the public and trader
3	Evaluate liquid measuring instrument performance	3.1	Evaluate whether the operating environment will impact on the instrument performance
		3.2	Modify the operating environment or implement alternative arrangements to ensure reliable test conditions as necessary

- 3.3 Identify the maximum permissible errors for the instrument from the legislative requirements
 - 3.4 Use test equipment safely in accordance with applicable legislation and organisational procedures
 - 3.5 Check instrument for compliance with the appropriate Certificates of Approval
 - 3.6 Inspect the instrument in accordance with relevant National Instrument Test Procedures and appropriate National Measurement Institute (NMI) policy
 - 3.7 Evaluate results against prescribed performance criteria and determine if the instrument is suitable for trade use in accordance with legislative requirements
- 4 Conduct a verifier instrument audit
- 4.1 Identify the scope of the verifier instrument audit
 - 4.2 Identify the expected outcomes of the verifier instrument audit
 - 4.3 Assess the verifier's performance against the expected outcome
 - 4.4 Check that the verification mark complies with legislation
 - 4.5 Analyse any variances from the expected outcomes to identify isolated or systemic problems
- 5 Analyse and report inspection results
- 5.1 Analyse inspection data for unacceptable performance trends
 - 5.2 If required, display the inspection result on the instrument in accordance with legislative requirements
 - 5.3 Use test reports to present inspection results in the required format
 - 5.4 Complete inspection documentation in accordance with legislative requirements and organisational procedures
 - 5.5 Communicate inspection results within the specified time and in accordance with organisational guidelines

		5.6	Recommend follow-up actions as appropriate
6	Act on non-compliance	6.1	Select applicable enforcement action for the non-compliance in accordance with legislative requirements and organisational policy and procedures
		6.2	Inform traders of non-compliances and consequences of failing to have them corrected
		6.3	Implement enforcement action in accordance with legislative requirements and organisational policy and procedures
		6.4	Respect the rights of the trader at all times

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

National Instrument Test Procedures include one or more of:	• measuring instrument test procedures • any other test procedure prescribed by the NMI
Classes of liquid measuring instruments include one or more of:	• fuel dispensers other than liquid petroleum gas (LPG) dispensers • milk flowmeters tested using a volume measure • any other liquid measuring instrument prescribed by the NMI
Test equipment includes:	• reference standards of measurement • equipment, such as a small measure, dummy nozzle, safety equipment and a hand tools

Certificates of Approval include:	• any Certificate issued by the Chief Metrologist under Regulation 60 of the <i>National Measurement Regulations 1999</i> approving the pattern of a liquid measuring instrument as being suitable for trade
Prescribed performance criteria for liquid measuring instruments include:	• that the design is in accordance with the appropriate Certificates of Approval • that the performance meets the criteria described in the Certificates of Approval, National Instrument Test Procedures and legislation
Verification	Has the same meaning as Section 18GG of the <i>National Measurement Act 1960</i>
Verification marks	Verification marks for different instruments are defined in Regulations 2.28 and 2.29 of the <i>National Trade Measurement Regulations 2009</i>
Trading practices include one or more of:	• methods used for the sale of goods • using measuring instruments • position of measuring instruments • environmental factors • suitability of instrument • incorrect measurement
Enforcement actions include one or more of:	• formal warnings, infringement notices, undertakings, injunction and prosecutions
Legislation includes:	• national measurement legislation • applicable Commonwealth, state and territory work/occupational health and safety (WHS/OHS) legislation
NMI policy includes:	• test procedure variations between a verification, in-service or audit inspection • bulletins • instructions

- determinations

WHS/OHS and environmental management requirements include:

- complying with WHS/OHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of material/product measured
- applying any necessary hygiene controls

Unit Mapping Information

Release 2. Adjustments to the Application, Performance Criteria and Range of Conditions. Adjustment to Assessment Conditions. Equivalent.

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=d1287d36-dff4-4e9f-ad2c-9d6270054027>

Assessment Requirements for MSMTMINS402 Inspect liquid measuring instruments using volume measures

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Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- completing initial verification testing of at least three (3) instruments from one (1) or more of the following classes of liquid measuring instruments:
 - fuel dispensers other than liquid petroleum gas (LPG) dispensers
 - milk flowmeters
- accessing and correctly interpreting documentation required for inspections, evaluation of liquid measuring instruments and verifier audits
- ensuring test equipment and reference standards are fit for purpose in accordance with applicable legislation and organisational procedures
- planning, preparing for and safely conducting inspections to maximise outcomes and minimise disruption to the public and trader
- checking compliance and evaluating the performance of liquid measuring instruments using appropriate Certificate of Approval, National Measurement Institute (NMI) policy and National Instrument Test Procedures, and adjusting for any impact of the operating environment
- reliably determining if liquid measuring instruments are suitable for trade use in accordance with legislative requirements
- conducting at least two (2) verifier instrument audits to assess the performance of verifiers who test and mark liquid measuring instruments for trade use
- assessing verifier performance against expected outcomes and analysing any variances to identify isolated or systemic problems
- identifying potential non-compliance of trading practices (applicable to instruments) with national measurement legislation and initiating an efficient inspection strategy that has a limited impact on others
- recognising and acting on non-compliance of liquid measuring instrument or verifier performance and/or trading practices with national measurement legislation and initiating appropriate enforcement action
- demonstrating professionalism and respecting the rights of the trader at all times
- using advanced communication and negotiation skills to:
 - explain the purpose of inspection
 - inform traders of non-compliances and consequences of failing to rectify them

- access external equipment and resources to complete the inspection
- explain inspection procedures and outcomes to traders, verifiers and managers
- performing specified calculations involving:
 - fractions, decimals, ratios, proportions and percentages
 - scientific notation, correct units and the correct number of significant figures, calculation of uncertainties
 - evaluation of formulae containing powers, exponents and logarithms functions
 - preparation and interpretation of linear graphs
- maintaining the security and confidentiality of data in accordance with organisational and regulatory requirements
- reporting results in the required formats and expected timeframe
- working safely.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- general science principles and concepts, including:
 - physical states (solid, liquid, gas), weight, mass, gravity and density
 - pressure, pressure differential, backpressure and head pressure, fluid flow and viscosity
 - temperature effects and coefficients of expansion, flashpoint, boiling point and ice point
- metrological terms and terminology specific to liquid measuring instruments, including maximum permissible errors, maximum permissible difference and maximum permissible variation, traceability, repeatability, uncertainty, error of measurement and error of indication, meter creep, hose dilation, temperature correction, linearization and gas elimination
- basic details of the design, application and function of components used in liquid measuring instruments
- national measurement legislation applicable to liquid measuring instruments
- safe work method statements (SWMS) for a range of trading environments, such as laboratories, retail, commercial, office, manufacturing, industrial, mining, construction, medical, chemical and petroleum
- NMI policy requirements, including test procedure variations between a verification, in-service or audit inspection, bulletins, instructions and determinations
- National Instrument Test Procedures and operating procedures for equipment and reference standards used in job role, including:
 - test conditions and possible environmental impacts on performance of the instrument
 - key preparation/measurement steps in test method
 - calculation steps to give results in appropriate units and precision
 - maximum permissible errors for liquid measuring instruments under inspection
 - safety principles and procedures relevant to liquid measuring instruments

- organisational policy and procedures for inspecting liquid measuring instruments including completing inspection documentation
- organisational safety procedures and requirements of applicable Commonwealth, state and territory work/occupational health and safety (WHS/OHS) legislation.

Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency should be assessed in the workplace, or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
 - *MSMTMREF301 Use and maintain reference standards*
 - *MSMTMINS401 Inspect a range of weighing instruments*
 - *MSMTMINS403 Inspect a range of trading practices*
 - *MSMTMINS404 Inspect a range of pre-packaged products*
- Holistic assessment methods include:
 - review of inspection reports and verifier instrument audit reports prepared by the candidate
 - feedback from supervisors and peers regarding the candidate's ability to conduct inspections, evaluate the performance of liquid measuring instruments and audit verifier's performance in accordance with legislative and organisational procedures
 - questions to assess understanding of relevant procedures, licensing requirements, trader obligations and remedial actions
 - review of candidate's responses to inspection scenarios, such as potential/actual non-compliances and appropriate actions, common issues and problems
 - observation of the candidate conducting an inspection.
- Access is required to instruments, equipment, materials, workplace documentation, procedures, and specifications associated with this unit including, but not limited to:
 - latest versions of appropriate documentation, such as Certificates of Verification and Approval, NMI policy, intermediate National Instrument Test Procedures for verifying liquid measuring instruments and relevant legislation

- workplace clearance forms and correction tables for volume, density and pressure for a range of liquids
- equipment manuals, safety data sheets (SDS), safety procedures and safety equipment
- records, such as test reports, audit reports, instrument history and test results
- liquid measuring instruments; test equipment, such as pumps, funnels and hoses; and reference standards
- computer and relevant software and/or organisation information management system.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience in trade measurement at least to the level being assessed and broad industry knowledge (such as a relevant industry qualification).
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment in trade measurement OR
 - having consulted with trade measurement inspectors and/or verifiers performing the competency being assessed within the last twelve months.

Links

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