



**Australian Government**

**Assessment Requirements for AURTTM009  
Fit sleeves and bore and hone engine  
cylinders**

**Release: 1**

# Assessment Requirements for AURTTM009 Fit sleeves and bore and hone engine cylinders

## Modification History

Release	Comment
Release 1	New unit of competency.

## Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- work on three different engine blocks as follows:
  - bore one engine block to accept parallel liners with correct interference fit
  - bore one engine block to accept flanged liners with correct interference fit
  - bore and hone the cylinders of a different multi-cylinder engine block to achieve correct piston to bore clearance.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to fitting sleeves and boring and honing engine cylinders, including:
  - procedures for selecting and using personal protective equipment (PPE) for:
    - handling engine cylinder blocks
    - using boring and honing machines
    - using chemical cleaning and lubricating agents
  - safe operating procedures for boring and honing machinery, including:
    - electrical safety of boring and honing machinery
    - boring and honing machinery movement and operation
- environmental requirements, including procedures for trapping, storing and disposing of cleaning and lubricating fluids released during the machining process
- types and application of sleeves, including:
  - dry sleeves, including:
    - interference fit parallel sleeve

- interference fit flanged sleeves
- chrome type finished-to-size dry flanged sleeves
- wet sleeves, including:
  - flanged
  - stepped
- sleeve fitting procedures, including:
  - interference sleeves, including fitting parallel sleeves to step in parent bore
  - wet sleeves
  - checking sleeve height
- types, characteristics and limitations of honing and boring machines, including:
  - types and grades of boring tools
  - types and grades of honing stones
  - hand-held and machine-operated hones
- tool sharpening methods, including:
  - maintaining sharpness of tool throughout boring operations
  - compensation methods for tool wear throughout boring operations
- boring methods and procedures, including:
  - determining required size of bore, including honing allowance
  - preparing engine cylinder block for boring, and setting engine cylinder block into boring machine, including jigs, rails and clamps
  - setting boring tool to correct diameter, locking boring tool, and setting limit stop
  - reasons for taking a test cut
  - speed and feed rates of boring tool for differing materials, including alloysil or nicolsil, and for bore diameters
  - methods for setting speed and feed rate of boring tools
- honing methods and procedures, including:
  - cleaning engine cylinder block before and after honing
  - preparing portable and stationary honing machines, setting engine cylinder block into honing machine, and setting hone stroke
  - setting honing speeds and feed rates to achieve required finish
  - methods of measuring bores for taper, ovality and barrelling
- types and application of cleaning, lubricating and protective agents, including:
  - material suitability
  - application of lubricating agents for different speeds and feed rates of boring machines and honing machines
  - hazards associated with chemical cleaning and lubricating agents
- requirements of Australian standards relevant to engine reconditioning, including:
  - AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
  - AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines

- post-repair procedures, including rust protection.

## Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the engine cylinders that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer engine specifications
- AS 4182 Automotive repairs – Code of practice for reconditioning reciprocating spark ignition engines
- AS 4427 Automotive repairs – Code of practice for reconditioning reciprocating compression ignition engines
- three different multi-cylinder engine blocks as specified in the performance evidence
- engine boring and honing machines
- precision measuring equipment, including:
  - dial bore gauges
  - dial indicator gauges
  - inside and outside metric and imperial micrometers.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

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