



Australian Government

Assessment Requirements for AURTTM007 Carry out crankshaft grinding

Release: 1

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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:

- grind one crankshaft of an in-line petrol engine with at least four cylinders.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to grinding crankshafts, including procedures for:
 - selecting and using personal protective equipment (PPE) for using grinding machines and chemical cleaning and lubricating agents
 - identifying hazards associated with rotating grinding machines
 - manual handling techniques relating to grinding crankshafts
- types, characteristics and limitations of crankshaft grinding machines, including:
 - hand-held machines for oil hole dressing
 - types and grades of grinding wheels, including grit grades
- dismantling procedures for crankshafts, including:
 - numbering and removing counterweights
 - drive gears
 - oil seal sleeves and dowels
- cleaning and inspection procedures, including:
 - chemically cleaning crankshafts, including methods of avoiding damage to nitride and Tufftride crankshafts
 - identifying crankshaft material

- identifying heat treatment process, including nitriding, Tufftriding and induction hardening
- identifying radius treatment, including deep fillet rolling, radius rolling and shot peening
- checking alignment of crankshaft in V blocks
- measuring journals against specifications and identifying damaged journals
- testing procedures for crankshaft, including:
 - crack testing coil shot and end shot
 - testing hardness of journals
- procedures for preparing crankshaft grinding wheel, including:
 - wheel preparation, including selecting wheel to suit radius and journal width of crankshaft
 - dressing procedures for wheel, including:
 - types of diamonds for front and radius dressing
 - procedures for dressing wheel to suit crankshaft radius
 - procedures for dressing front of wheel
- procedures for big end grinding, including:
 - setting crankshaft rotation speed according to crankshaft material and big end diameter
 - setting crankshaft grinder wheel head position
 - setting chuck offsets for big end bearings and adjusting counterweights to suit
 - fitting crankshaft in correct direction of rotation and ensuring that critical surfaces are not damaged by the chuck
 - measuring journal diameters during grinding with constant measuring gauge
- procedures for adjusting crankshaft grinder to suit main bearing journal grinding, including:
 - removing crankshaft from grinder
 - fitting crankshaft in correct direction of rotation
 - setting datum in relation to rear flange and nose for main bearing grinding
- procedures for main bearing journal grinding, including:
 - setting crankshaft rotation speed according to crankshaft material and journal size
 - setting crankshaft grinder wheel head position
 - measuring journal diameters during grinding with constant measuring gauge
- procedures for finishing journal grinding, including:
 - chamfering and dressing oil holes
 - finishing journals according to grade of belt, required finish, and rotational direction
 - setting up and facing flange ends and seal areas
 - final grinding inspections of crankshaft, including:
 - journal surface finish
 - taper, ovality, barrelling, and hourglass
 - grinding chatter
 - burning of radius and journals

- methods of correcting faults
- procedures for removing crankshaft from grinder and checking crankshaft for straightness in V blocks using dial indicator
- requirements of Australian standards relating 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-grinding operations, including rust protection of machined surfaces.

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 crankshaft grinding that they have carried out, 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 crankshaft 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
- crankshaft from an in-line petrol engine with at least four cylinders requiring grinding
- engine crankshaft grinding machine
- precision measuring equipment, including:
 - dial indicators
 - 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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