



Australian Government

Department of Education, Employment and Workplace Relations

AURT301383A Dismantle, assemble and repair engine block and sub-assemblies

Release: 1

AURT301383A Dismantle, assemble and repair engine block and sub-assemblies

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the competence required to dismantle and assemble an engine block and sub-assemblies to clearances and tolerances and to carry out repairs.
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Application of the Unit

Application of the unit	<p>The unit includes identification and confirmation of work requirement, preparation for work, dismantling, measuring and testing of engine block and sub-assembly components, repair, checking, assembling of engine block and sub-assemblies and completion of work finalisation processes, including clean-up and documentation.</p> <p>This competence relates to engine reconditioning in short and long motors and is to include engine components (crankshafts, camshafts, balance shafts, cylinder blocks/ barrels, cylinder liners (wet and dry), idler shafts, pistons, connecting rods, bearings, rings, gears, chains, belts, pulleys, oil pumps and cylinder head assemblies).</p> <p>Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p> <p>Work is carried out in accordance with award provisions.</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to dismantle engine block and sub-assemblies	1.1. Nature and scope of work requirements are identified and confirmed 1.2. OH&S requirements and personal protection needs are observed throughout the work 1.3. Procedures and information such as workshop manuals, specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Support equipment is identified and prepared 1.6. Engine block and sub-assemblies are cleaned
2. Dismantle engine block and sub-assemblies	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Engine block and sub-assemblies are dismantled using approved methods and tooling/equipment 2.3. Engine block and sub-assemblies are dismantled without causing damage to any component or system 2.4. Component parts are cleaned in preparation for evaluation 2.5. Dismantling/cleaning activities are carried out according to industry regulations/guidelines and enterprise procedures/ policies
3. Determine repair procedures	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Engine block and sub-assembly components are measured against manufacturer/component supplier specifications and tolerances 3.3. Inspection/measurement/testing is completed without causing damage to any component or system 3.4. Engine block and sub-assembly components are evaluated against measurements, tests and inspections made 3.5. Repair requirements are identified and reported according to enterprise policy and procedures 3.6. Repair requirements are completed according to enterprise and manufacturer/component supplier requirements 3.7. Workplace documentation is completed and dealt with relevant to inspection/measurement/testing outcomes 3.8. Inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S legislation, legislation and enterprise

ELEMENT	PERFORMANCE CRITERIA
	procedures/policies
4. Prepare to assemble engine block	<p>4.1. OH&S requirements and personal protection needs are observed throughout the work</p> <p>4.2. Procedures and information such as workshop manuals and specifications, and tooling, are sourced</p> <p>4.3. Method options are analysed and those most appropriate to the circumstances are selected and prepared</p> <p>4.4. Technical and/or calibration requirements for assembly are sourced and support equipment is identified and prepared</p> <p>4.5. Measuring equipment is accessed</p>
5. Check tolerances	<p>5.1. Correct tolerances are obtained using manufacturer/component supplier specifications</p> <p>5.2. Tolerances are checked without causing damage to any component or system</p> <p>5.3. Tasks carried out to comply within established industry guidelines</p>
6. Assemble engine block and sub-assemblies/fit cylinder head(s)	<p>6.1. Engine block and sub-assemblies are assembled and cylinder head(s) fitted without causing damage to any component or system</p> <p>6.2. Assembly and fitting is carried out to comply with manufacturer/component supplier specifications and established industry guidelines and Australian Standards</p> <p>6.3. Assembly and fitting activities are carried out according to industry regulations/guidelines, OH&S legislation, legislation and enterprise procedures/policies</p>
7. Carry out testing and adjustment procedures	<p>7.1. Testing and adjustment are carried out to comply with manufacturer/component supplier specifications, established industry guidelines and Australian Standards</p> <p>7.2. Tests and adjustments are performed using industry approved procedures and equipment</p> <p>7.3. Tests and adjustments are completed without causing damage to any component or system</p> <p>7.4. Testing and adjustment activities are carried out according to industry regulations/guidelines, OH&S legislation, legislation and enterprise procedures/policies</p>
8. Prepare equipment for use or storage	<p>8.1. Work performed is documented and completed</p> <p>8.2. Final inspection is made to ensure safety features are in place</p>

ELEMENT	PERFORMANCE CRITERIA
	8.3. Equipment is cleaned for use or storage to workplace expectations 8.4. Job card is processed in accordance with workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- apply research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures
- apply analytical skills for identification and analysis of technical information
- apply plain English literacy and communication skills in relation to dealing with customers and team members
- apply questioning and active listening skills for example when obtaining information from customers
- apply oral communication skills sufficient to convey information and concepts to customers
- apply planning and organising skills to own work activities, including making good use of time and resources, sorting out priorities and monitoring own performance
- interact effectively with other persons both on a one-to-one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal
- establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions to avoid or minimise reworking and avoid wastage
- use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- use workplace technology related to the dismantling, repair and assembling of engine blocks and sub-assemblies, including the use of electronics, measuring equipment, computerised technology and communication devices and the documenting/recording of results

Required knowledge

A working knowledge of:

- personal safety requirements
- national environmental protection measures for diesel vehicles

REQUIRED SKILLS AND KNOWLEDGE

- construction and operation of engine block and sub-assemblies relevant to application
- assembly/repair procedures
- measuring, adjusting and testing procedures
- types and layout of service/repair manuals (hard copy and electronic)
- interpretation and application of technical information
- equipment safety requirements
- tensioning procedures
- company policies
- manual handling technique
- engine operating principles

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations in the critical aspects of:

- observing safety procedures and requirements
- communicating effectively with others involved in or affected by the work
- selecting methods and techniques appropriate to the circumstances
- completing preparatory activity in a systematic manner
- completing the dismantling, repair and assembly of multi-cylinder blocks, including:
- conducting evaluation of components in accordance with workplace requirements and specifications
- measuring and checking against manufacturer/component supplier specifications
- interpreting clearances
- repairing engine block and sub-assembly
- carrying out assembly to manufacturer/component supplier requirements
- completing assembly of engine and associated components within workplace timeframes
- completing workplace/equipment records

Context of, and specific resources for assessment

Application of competence is to be assessed in the workplace or simulated worksite
 Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints
 Assessment is to comply with regulatory requirements, including Australian Standards

The following resources should be made available:

- workplace location or simulated workplace
- material relevant to the dismantling, repair and assembling of engine blocks and sub-assemblies
- equipment, hand and power tooling appropriate to the dismantling, repair and assembling of engine blocks and sub-assemblies

EVIDENCE GUIDE

- activities covering mandatory task requirements
- specifications and work instructions

EVIDENCE GUIDE	
Method of assessment	<p>Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package</p> <p>Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge</p> <p>Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies</p> <p>Assessment may be applied under project related conditions and require evidence of process</p> <p>Assessment must confirm a reasonable inference that competence is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances</p> <p>It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance may be provided by customers, team leaders/members or other persons subject to agreed authentication arrangements</p> <p>Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role</p>
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
Variables	<p>Other variables may include ancillary systems/components (e.g. cooling system, fuel systems, exhaust systems)</p>
Methods	<p>Methods are to include</p> <ul style="list-style-type: none"> tolerance checking procedures

RANGE STATEMENT

- disassemble/assembly procedure
- tensioning procedures
- visual checking
- use of tooling/equipment

RANGE STATEMENT	
OH&S	OH&S requirements are to be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation/regulation/codes of practice and workplace policies and practices
Safe operating procedures	Safe operating procedures are to include, but are not limited to operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting, working in proximity to others and site visitors
Emergency procedures	Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation
Environmental requirements	Environmental requirements are to include but are not limited to waste management, noise, dust and clean-up management
Quality requirements	Quality requirements are to include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures
Statutory/regulatory authorities	Statutory/regulatory authorities may include Federal, State/Territory and local authorities administering acts, regulations and codes of practice
Tooling and equipment	Tooling and equipment are to include hand tooling, torque wrenches, power tooling; special equipment such as comparator gauges and ring

RANGE STATEMENT	
	compressors; measuring equipment such as micrometers, depth gauges, plasti-gauge; tolerance checking methods; testing procedures; personal protective equipment and lubricating equipment
Materials	Materials may include gasket sealing materials, lubricants, spare parts and cleaning materials
Communications	Communications are to include, but are not limited to verbal and visual instructions and fault documenting and may include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers
Information/documents	<p>Sources of information/documents may include:</p> <ul style="list-style-type: none"> • verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches • safe work procedures related to the dismantling, repair and assembling of engine block and sub-assemblies, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines • regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules • engineer's design specifications and instructions • organisation work specifications and requirements • instructions issued by authorised enterprise or external persons • Australian Standards

Unit Sector(s)

Unit sector	Technical
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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