Australian Government

Department of Education, Employment and Workplace Relations

AURTH301166A Repair engines and associated engine components (heavy vehicle)

Release: 1

AURTH301166A Repair engines and associated engine components (heavy vehicle)

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the competence required to carry out repair of an engine, and associated engine components on compression ignition engines.

Application of the Unit

Application of the unit	The unit includes identification and confirmation of work requirement, preparation for work, engine system testing and analysis, repair of engines and associated components and completion of work finalisation processes, including clean-up and documentation. This unit of competence should be contextualised to the qualification to which it is being applied. Engines may include those for, heavy vehicles, mobile plant, agricultural machinery and marine craft. Work requires individuals to demonstrate judgement and problem-solving skills in managing own work activities and contributing to a productive team environment. Work is carried out in accordance with award provisions.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to undertake repair of engines	1.1. Nature and scope of work requirements are identified and confirmed 1.2. OH&S requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work 1.3. National Environmental Protection Measure for Diesel Vehicles (Guidelines) is sourced and observed throughout the work as applicable to tasks 1.4. Procedures and information such as workshop manuals and specifications, and tools, are sourced 1.5. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.6. Technical and/or calibration requirements for engine systems repair are sourced and support equipment is identified and prepared 1.7. Warnings in relation to working with engines and associated systems are observed
2. Conduct engine systems tests and analyse results	2.1. Methods for engine systems tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 2.2. Engine is started and run up to operating temperature and checked for leaks, abnormal noises and pressures 2.3. Test results are compared with manufacturer/component supplier specifications to indicate compliance or non-compliance 2.4. Results are documented with evidence and supporting information and recommendation(s) made 2.5. Report is forwarded to persons for action in accordance with workplace procedures
3. Carry out repair	3.1. Methods for repair are implemented in accordance with workplace procedures and manufacturer/component supplier specifications 3.2. Adjustments made during the repair are in accordance with manufacturer/component supplier specifications
4. Prepare vehicle/ equipment for use or storage	4.1. Repair schedule documentation is completed 4.2. Final inspection is made to ensure protective guards, safety features and cowlings are in place 4.3. Final inspection is made to ensure work is to workplace expectations 4.4. Vehicle/equipment is cleaned for use or storage to workplace expectations

ELEMENT	PERFORMANCE CRITERIA
	4.5. 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, including the use of measuring equipment, computerised technology and communication devices and the documenting/recording of results

Required knowledge

A working knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- National Environmental Protection Measures for Diesel Vehicles as applicable to tasks

REQUIRED SKILLS AND KNOWLEDGE
• engine construction and operation relevant to application • types and layout of service/repair manuals (hard copy and electronic) • engine/component repair procedures • engine removal and replacement procedures • measuring and testing procedures • equipment/component safety requirements • work organisation and planning processes • enterprise quality processes

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 • dismantling, evaluating, assembling, adjustment, measuring and testing • repairing a range of engines and associated components to workplace requirements and specifications • repairing of engine and associated components completed within workplace guidelines and timeframes
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 repair of engines and associated engine components • equipment, hand and power tooling appropriate to the repair of engines and associated engine components • activities covering mandatory task requirements • specifications and work instructions

EVIDENCE GUIDE	
Method of assessment	Assessment must satisfy the endorsed assessment guidelines of the automotive industry's RS&R Training Package Assessment methods must confirm consistency and accuracy of performance together with application of underpinning knowledge Assessment must be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies Assessment may be applied under project related conditions and require evidence of process 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 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 Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
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.	
Engines	Engines may be: • four stroke compression ignition engines for heavy vehicle, agricultural machinery, mobile plant and marine craft

RANGE STATEMENT	
	• two stroke compression ignition for heavy vehicle, agricultural machinery, mobile plant, and marine craft

RANGE STATEMENT	
Repair methods	Repair methods are to include identification of component wear/damage, fluid leakage, removal, dismantling, reassembly, refitting, adjusting and testing
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 tools 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

RANGE STATEMENT	
	practice
Tooling and equipment	Tooling and equipment may include hand tools, power tools, lifting and jacking equipment, specialist tooling and lubricant dispensing equipment
Materials	Materials may include spare parts, consumables, lubricants 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	Sources of information/documents may include: • 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 repairing engines and associated components • regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules, Environment Protection Regulations (Diesel Fuels), National Environment Protection For Diesel Vehicle Guidelines 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

Co-requisite units

Co-requisite units		

Competency field

Competency field	