Australian Government

Department of Education, Employment and Workplace Relations

AURT301359A Reclaim engine components

Release: 1

INDUSTRY SKILLS COUNCILS

Creating Australia's Future

AURT301359A Reclaim engine components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the competence required to use various industry accepted methods to reclaim engine components as part of the engine reconditioning process.

Application of the Unit

Application of the unit	The unit includes identification and confirmation of work requirement, preparation for work, reclamation of components through heat treatment and straightening techniques and completion of work finalisation processes, including clean-up and documentation. This unit of competence applies to engine reconditioning. 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		

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 engine reclaiming procedures	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. Procedures and information such as workshop manuals and specifications, and tooling, are sourced 1.4. Method options are analysed and those most appropriate to the circumstances are selected and prepared 1.5. Technical and/or calibration requirements for heat treatment are sourced and support equipment is identified and prepared
2. Heat treat engine components for reclaim	2.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 2.2. Heat treating methods are used to repair damaged/ undersized component(s) 2.3. Heat treat is completed without causing damage to any component or system 2.4. Heat treating process is completed within industry guidelines 2.5. Heat treating operations are carried out according to OH&S legislation, legislation and enterprise procedures/ policies
3. Straighten engine components for reclaim	3.1. Correct information is accessed and interpreted from manufacturer/component supplier specifications 3.2. Straightening equipment is accessed 3.3. Components are mounted and clamped in straightening equipment 3.4. Straightening methods are applied to engine components 3.5. Engine components are straightened using acceptable reconditioning methods, to comply with Australian Standards 3.6. Work is completed without causing damage to any component or system 3.7. Components are measured against manufacturer/ component supplier specifications and allowable tolerances 3.8. Straightening operations are carried out according to

ELEMENT	PERFORMANCE CRITERIA
	industry regulations/guidelines, OH&S legislation, legislation and enterprise procedures/policies
4. Finish components in readiness for assembly	4.1. Components are machined and finished to specifications 4.2. Surfaces are protected with a rust prevention solution 4.3. Components are stored to workplace requirements 4.4. 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 reclaiming engine components, including the use of specialist reclaim tooling and equipment, measuring equipment, computerised technology and communication devices and the documenting/recording of results

REQUIRED SKILLS AND KNOWLEDGE

Required knowledge

A working knowledge of:

- OH&S regulations/requirements, equipment, material and personal safety requirements
- types, characteristics, uses and limitations of reclaim techniques
- dangers of working with heating equipment
- effects of heat on different metals and heating procedures
- component straightening techniques
- hardening and tempering techniques
- enterprise quality procedures
- work organisation and planning 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 • conducting application of heating and straightening in accordance with workplace requirements • completing work to manufacturer/component supplier requirements • straightening components without damage to tooling and equipment or injury to persons • reclaiming components without damage to tooling and equipment or injury to persons • machining reclaimed components to tolerances following enterprise procedures
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 reclaiming engine components • equipment, hand and power tooling appropriate to reclaiming engine components • activities covering mandatory task requirements • specifications and work instructions
Method of assessment	Assessment must satisfy the endorsed assessment guidelines

EVIDENCE GUIDE	
	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.	
Reclaim methods	Reclaim methods are to include hardening and tempering, straightening components, machining components, measuring and comparing to specifications

RANGE STATEMENT	
Engine components	Engine components are to include cylinder heads (alloy and cast iron), piston and connecting rod assemblies, crankshafts and camshafts
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

RANGE STATEMENT	
Tooling and equipment	Tooling and equipment are to include hand tooling, power tooling, lifting equipment, measuring equipment, hydraulic press, heat equipment, heat ovens, reclaiming machines, surface finishers and hardness testers
Materials	Materials may include consumables 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 reclaiming engine components • 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

Co-requisite units

Co-requisite units		

Competency field

Competency field	