



Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD367B Remove and replace conveyor belts

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency covers the removal and replacement of conveyor belts in contracted, remote site locations. It covers all types of industrial conveyor belts in standard configurations.

Application of the Unit

Application of this unit

This competency applies to advanced operators who remove and replace conveyor belts, often in remote locations and with limited facilities. The key factors are the safe removal of any burden or materials from the belt, identification of any factors which might inhibit belt removal or replacement, safe removal and storage of the existing belt and replacement with the new belt. This competency is typically performed by operators working either independently or as part of a work team.

The operator will:

- de-tension and remove old belt, or join to new belt for removal
- track on and commission the new belt
- inspect the splice and either approve the work or re-do the splice
- identify any hazards and take appropriate action
- store, pack and/or remove old belt
- clean up site, dispose of scrap and recycle materials where possible
- complete logs and reports.

To satisfactorily complete this job it will often be appropriate to also possess the following competencies:

- *PMBPROD265B Operate portable vulcanising equipment*
- *MSAOPS363A Organise on site work*

and the appropriate conveyor belt splicing competency

- *PMBPROD374B Splice steel cord conveyor belts*
- *PMBPROD376A Splice fabric ply conveyor belts*
- *PMBPROD377A Splice solid woven conveyor belts.*
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit of competency has **no** prerequisites.

Employability Skills Information

Employability Skills

The required outcomes described in this unit contain applicable Employability Skills. The Employability Skills Summary of the qualification(s) in which this unit is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT ELEMENT	PERFORMANCE CRITERIA Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
1. Plan for conveyor belt replacement.	1.1 Review belt specifications and work order documentation. 1.2 Identify hazards and risk controls. 1.3 Review plan to ensure that downtime is minimised, materials are used economically and quality standards are met. 1.4 Ensure that all permissions and permits have been obtained. 1.5 Ensure that all required equipment, tools and materials are available and have been checked for condition, quality and compliance tags. 1.6 Ensure that a safe work area has been established.
2. Remove and replace conveyor belt.	2.1 Examine the conveyor system for and eliminate sources of potential belt damage. 2.2 Facilitate removal of conveyed materials from the belt 2.3 Identify and eliminate any residual dangerous or hazardous substances or contaminants. 2.3 Ensure conveyor equipment is disengaged and locked out. 2.4 Remove tension from belt, as required. 2.5 Set up equipment to appropriately support the removal and replacement of belt, without unnecessary twisting or bending. 2.6 Remove existing belt and track replacement belt onto rollers. 2.7 Store removed belt appropriately. 2.8 Ensure new belt is spliced according to procedures.
3. Commission conveyor belt.	3.1 Inspect belt condition for imperfections or irregularities. 3.2 Start conveyor or monitor start up to procedures. 3.3 Monitor and adjust tracking, speed and tensions as required. 3.4 Observe belt in operation and identify conditions which may require emergency shutdown of

ELEMENT	PERFORMANCE CRITERIA
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	equipment. 3.5 Give appropriate notice of any impending shut down to procedures. 3.6 Follow shutdown procedures.
4. Clean work area.	4.1 Clean work area and return to approved condition. 4.2 Follow all waste and recycling procedures. 4.3 Complete documentation
5. Anticipate and solve problems	5.1 Recognise a problem or a potential problem. 5.2 Determine problems needing priority action. 5.3 Refer problems outside area of responsibility to appropriate person, with possible causes. 5.4 Seek information and assistance as required to solve problems. 5.5 Solve problems within area of responsibility. 5.6 Follow through items initiated until final resolution has occurred.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Application of knowledge of the materials, equipment and process sufficient to recognise material and equipment conditions which may lead to out of specification production. For example, pulling plates are fitted as required to ensure the belt tracks properly.

Knowledge of organization procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.

Application of the knowledge of managing risks using the hierarchy of controls applied to belt replacement. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup.

Competence includes the ability, for the practical completion of the job, to apply and/or explain:

- function and operating principles of conveyor systems and ancillary equipment
- impact of incorrect or faulty joining processes
- planning process, to ensure that belt is removed and replaced in the correct sequence of operations and applying the required procedures
- production workflow sequences and inherent hazards with conveyors
- stresses and tensions on working belts and the common failure causes
- correct selection and use of equipment, materials, processes and procedures
- ensure that all equipment is certified as required for the intended duty
- products, materials and material characteristics for splicing belts
- effects of temperature, pressure and time on the curing process
- changes in conveyor and joining materials during the joining process.

Competence also includes the ability to:

- plan own work, including predicting consequences and identifying improvements
- identify factors which may affect product quality or production output and appropriate remedies
- identify when the operator is able to rectify faults and when assistance is required.

Language, literacy and numeracy requirements

This unit requires the ability to read and interpret typical product specifications, job sheets and material labels as provided to operators.

Writing is required to the level of completing workplace forms.

Numeracy is also required, eg to determine the number of belt sections required to form a continuous belt for a given conveyor length.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the assessment guidelines for this training package.

Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

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

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- identify critical materials properties and belt removal and replacement process characteristics
- identify hazards in the removal and replacement process and put in place appropriate controls
- plan own work process within workplace procedures and explain the reasons for the steps in the process
- take appropriate action to observe equipment, materials and products for out of specification results, make adjustments and identify problems to be reported.

Consistent performance should be demonstrated. For example, look to see that:

- production quality and output standards are met consistently
- problems are anticipated from process observations
- problems are efficiently resolved
- the removal and replacement process runs consistently and smoothly.

Assessment method and context

Assessment will occur in the field on an industrial conveyor belt installation.

Competence in this unit may be assessed:

- on a processing plant, allowing for operation under all normal and a range of abnormal conditions
- in a situation allowing for the generation of evidence of the ability to recognise, anticipate and respond to problems
 - by using a suitable simulation and/or a range of case studies/scenarios
 - through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Specific resources for assessment

This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required.

Access must be provided to appropriate learning and/or assessment support when required.

Where applicable, physical resources should include equipment modified for people with disabilities.

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. Add any 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. Where reference is made to industry codes of practice and/or Australian/international standards, the latest version must be used.

Context

This competency applies to the removal and replacement of conveyor belts. It includes the operation of all relevant additional equipment where that equipment is integral to the belt removal and replacement process. The competency unit includes the use of manual handling aids such as hand winches and portable lifting gear, and of powered equipment/aids for some aspects.

Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Tools and equipment

This competency covers different types of conveyor belts, including:

- steel cord belts
- fabric reinforced ply belts
- solid woven belts.

The competency includes use of equipment and tools such as:

- portable power generators and vulcanising equipment
- knives and other cutting instruments
- belt winders, belt stands and winches
- clips, pulling plates, steel cables (certified as required)
- portable hoists/lifting equipment not requiring any special permits or licences
- hand tools (such as spanners, wrenches, hammers)
- power operated hand tools (such as drills, cutting disks, sanders)
- relevant personal protective equipment

Hazards

Typical hazards include:

- unpredicted belt movements
- equipment malfunctions
- manual handling hazards
- lifting, tracking and securing hazards
- equipment operation hazards
- damaged material hazards.

Problems

'Anticipate and solve problems' means resolve a wide range of routine and non-routine problems, using product and process knowledge to develop solutions to problems which do not have a known solution/a solution recorded in the procedures.

Typical process and product problems may include:

- weight of the belting to be removed and replaced
- obstructions and impediments to removal and fitting on new belt
- worn or malfunctioning rollers, drums or propulsion equipment
- lack of accessibility
- lack of required human resources
- tool problems
- variations in materials and/or contamination of materials
- processing problems.

Variables

Key variables to be monitored include:

- belt condition
- belt location
- gradient of belt
- types of scrapers
- skirting systems used
- degree of damage
- weight of the belt
- forces acting on the conveyor belt
- environmental conditions
- lock-out of equipment.
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Unit Sector(s)

Not applicable.