



Federal Democratic Republic of Ethiopia
OCCUPATIONAL STANDARD

**BOGIE AND BODY PRODUCTION
/ASSEMBLY SUPERVISION**

NTQF Level IV



*Ministry of Education
January 2017*

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopian Occupational Standard (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit title
- Unit code
- Unit descriptor
- Elements and Performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the level including the Unit Codes and the Unit of Competence Titles
- contents of each Unit of Competence listed in the chart
- occupational map providing the Technical and Vocational Education and Training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

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UNIT OF COMPETENCE CHART

Occupational Standard: Bogie and Body Production/Assembly Supervision			
Occupational Code:			
<i>NTQF Level IV</i>			
IND BPS4 01 0117 Use Computer-Aided Design (CAD) to Create and Display 3-D Models	IND BPS4 02 0117 Create and Display 3-D Model Mistake Proof an Operational Process	IND BPS4 03 0117 Calibrate Measuring Equipment	
IND BPS4 04 0117 Apply Original Equipment Manufacturer Repair Procedures	IND BPS4 05 0117 Plan and Organise Bogie Production and Assembly Processes	IND BPS4 06 0117 Apply Engineering Mechanics Principles	
IND BPS4 07 0117 Integrate Mechanical Fundamentals into an Engineering Task	IND BPS4 08 0117 Make Minor Modifications to the Bogie Products and Assembly	IND BPS4 09 0117 Identify Risk and Apply Risk Management Processes on Bogie Production and Assembly	
IND BPS4 10 0117 Manage Personal Presentation and Development	IND BPS4 11 0117 Manage the Impact of Change on Own Work	IND BPS4 12 0117 Install and Maintain Motor Vehicle Instrumentation Sensors and Transmitters	
IND BPS4 13 0117 Test Engines Using a Dynamometer	IND BPS4 14 0117 Plan and Organize Work	IND BPS4 15 0117 Migrate to New Technology	
IND BPS4 16 0117 Establish Quality Standards	IND BPS4 17 0117 Develop Individuals and Team	IND BPS4 18 0117 Utilize Specialized Communication Skills	
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[IND BPS4 19 0117](#)

Manage Micro, Small
and Medium
Enterprises (MSMEs)

[IND BPS4 20 0117](#)

Apply Problem Solving
Techniques and Tools

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Use Computer-Aided Design (CAD) to Create and Display 3-D ModelsError! Bookmark not defined.
Unit Code	IND BPS4 01 0117
Unit Descriptor	<p>This unit of competency covers using a computer-aided design (CAD) program to produce and plot basic 3-D view drawings</p> <p>This unit applies to the production of 3-D models using CAD software and associated equipment. This will include the use of region and solid modelling techniques, section views and pre-drawn library files. Work also includes extraction of properties and application of basic rendering techniques under supervision.</p>

Elements	Performance Criteria
1. Confirm drawing requirements	<p>1.1. Purpose, scope and information and presentation requirements for drawing are confirmed.</p> <p>1.2. Available information relevant to project and work requirements is identified, interpreted and analysed, and further information needs are identified and addressed.</p> <p>1.3. Computing equipment and software used in the organisation are identified.</p> <p>1.4. Work flow and procedures for work supervision are identified and communication requirements confirmed through project.</p> <p>1.5. Requirements are examined for presentation of drawings.</p>
2 Create and display 3-D views	<p>2.1 A 3-D environment on the screen is set up to allow multiple viewing</p> <p>2.2 3-D views on the screen are created by manipulation of drawing planes and insertion of 3-D geometric shapes</p> <p>2.3 Any plane of the 3-D view is drawn.</p> <p>2.4 Editing functions are used to modify 3-D geometric shapes in creating 3-D view</p> <p>2.5 Wire line, surface and solid face displays are produced in isometric, perspective and orthographic projections.</p>
3 Detail 3-D model	<p>3.1 Basic rendering techniques are applied to render solid model to a specified set of criteria.</p>

	3.2 The mass and surface area of a given solid model made are extracted from a nominated material.
4 Save completed drawing file in various formats	4.1 File is saved in an appropriate format to enable retrieval and use in a CAD system. 4.2 File is saved in other formats to enable retrieval in other software applications.

Variable	Range
Multiple viewing	includes: <ul style="list-style-type: none"> • top views • front and side views • general 3-D view
3-D geometric shapes	may include: <ul style="list-style-type: none"> • arcs and lines • spheres • cones • cylinders • boxes

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills competence to: <ul style="list-style-type: none"> • work within typical site/teamwork structures and methods • apply worksite communication procedures • comply with organisational policies and procedures, including quality requirements • participate in work meetings • comply with quality requirements • use industry terminology • apply appropriate safety procedures • identify modelling work requirements and determine appropriate software functions and features
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> • region modelling and solid modelling techniques • development of sectioned models • use of cutting plane • use of cross hatching • use of pre-drawn library files and primitives to produce a 3-D model • use of third level software to produce 3-D models • how to extract mass and area properties • how to extract area properties from region models • application of basic rendering techniques to a 3-D model

Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • reading and interpreting engineering specifications • organising information • using computer and peripherals • using CAD program • saving 3-D models in various file formats • preparing drawings in plane orthogonal, isometric projection or equivalent
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Create and Display 3-D Model Mistake Proof an Operational Process
Unit Code	IND BPS4 02 0117
Unit Descriptor	<p>This unit of competency covers the skills and knowledge required to make changes to own and others work in a work area which prevents errors and/or backsliding to a pre-improvement level of practice.</p> <p>This unit applies to a person who needs to analyse a process that a team is responsible for and determine methods of mistake proofing it (e.g. ensuring it only produces product within an acceptable range or error-free transport and storage of goods). The person will typically be a technical expert, team leader or be in a role where they have sufficient technical understanding of processes in their own work and that of others to be able to mistake proof the production process in their area. After improvement activities have been undertaken these improvements need to be sustained.</p> <p>This unit requires the application of skills associated information gathering and analysis. Initiative, enterprise and problem solving are also required to identify mistakes and determine strategies for eliminating them. This unit also requires communication and teamwork skills to ensure mistake proofing strategies are implemented and self-management and learning skills to continually reflect on and integrate feedback about the effectiveness of strategies.</p>

Elements	Performance Criteria
1. Analyse process	<p>1.1. Sources of variability/non-conformance are identified in the process.</p> <p>1.2. Critical control points are identified in process.</p> <p>1.3. Causes of variability/non-conformance are analyzed.</p> <p>1.4. Competitive systems and practices are implemented.</p>
2. Develop preventative techniques/systems	<p>2.1. Liaise is done with team members and other people to develop mistake proof options for performing operation.</p> <p>2.2. Mistake proofing options are tested and validated.</p>
3. Implement permanent fix	3.1 Liaise is done with relevant people to have

	<p>systems/procedures changed to implement solution.</p> <p>3.2 Liaise is done with relevant people to implement the solution.</p> <p>3.3 Liaise is done with relevant people to ensure self and others in the team or work area have an appropriate skills set.</p> <p>3.4 Follow up is done to ensure implementation occurs.</p>
4. Monitor implementation	<p>4.1. The implementation critically is observed.</p> <p>4.2. The results of the implementation are compared against the expected outcomes.</p> <p>4.3. Solution is modified to improve outcomes.</p> <p>4.4. Procedures are ensured to reflect change.</p> <p>4.5. Ensure training/assessment reflects change.</p> <p>4.6. Change is audited at agreed period/cycle.</p> <p>4.7. Action is taken on any observed deviation</p>
5. Seek improvements	<p>5.1. Changes are observed.</p> <p>5.2. Process is analysed again, if required, to ensure improvements are sustained.</p>

Variable	Range
Competitive systems and practices	<p>may include, but are not limited to:</p> <ul style="list-style-type: none"> • lean operations • agile operations • preventative and predictive maintenance approaches • monitoring and data gathering systems, such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP) and proprietary systems • statistical process control systems, including six sigma and three sigma • Just in Time (JIT), • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • Overall Equipment Effectiveness (OEE)

	<ul style="list-style-type: none"> • process mapping • problem solving • run charts • standard procedures • current reality tree • Competitive systems and practices should be interpreted so as to take into account: <ul style="list-style-type: none"> • the stage of implementation of competitive systems and practices • the size of the enterprise • the work organisation, culture, regulatory environment and the industry sector
Mistake proofing	<p>is based on the concept of zero defects. The first priority is to eliminate the possibility of an error occurring. However, where this is not feasible mistake proofing can be used to reduce the occurrence of errors and/or to minimise their impact.</p> <p>should target an error in the following priority order:</p> <ul style="list-style-type: none"> • eliminate the possibility of the error via changes to the process • prevent the error from occurring via physical or virtual barriers, • reduce likelihood of the error by encouraging correct action (e.g. through warning systems) • mitigate the impact of the error if it does occur
Options for mistake proofing	<p>Factors to consider when prioritising options for mistake proofing will vary according to the process and may include:</p> <ul style="list-style-type: none"> • success rate in eliminating errors • feasibility • skills required by employees • cost and capacity to reduce waste
Procedures	<p>may include:</p> <ul style="list-style-type: none"> • all work instructions • standard operating procedures • formulas/recipes • batch sheet • temporary instructions and similar instructions provided for the operation of the plant • good operating practice as may be defined by industry codes of practice (e.g. Good Manufacturing Practice (GMP) and responsible care) • government regulations <p>Procedures may be:</p> <ul style="list-style-type: none"> • written, verbal, computer-based or in some other format

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • analyse variability and non-conformances • identify, analyse and evaluate information from a variety of sources to identify errors and options for mistake proofing • facilitate implementation of mistake proofing activities that reduce waste • facilitate sustaining the mistake proofing activities
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • mistake proofing concepts, including, in priority order: <ul style="list-style-type: none"> ➢ eliminate the possibility of the error via changes to the process ➢ prevent the error from occurring via physical or virtual barriers ➢ reduce likelihood of the error by encouraging correct action ➢ mitigate the impact of the error if it does occur • understanding of processes undertaken by team • factors in the processes which may cause variability • methods of controlling the variability in the process <p>mistake proofing methods relevant to the process/product</p>
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • communicating with team or work group members, technical support personnel and other relevant staff • explaining mistake proofing and related concepts • facilitating input of others and encouraging acceptance of changes • analysing and visualising operations in terms of flow and contribution to customer outcomes • solving problems to determine root cause of errors and possible solutions • analysing and interpreting information about errors and mistake proofing options in terms of cost, feasibility, regulations and value to the customer • suggesting design changes to operations and products that eliminate the potential for errors • suggesting mechanisms or procedures that warn of errors where operations cannot be designed to eliminate errors,
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>

Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Calibrate Measuring Equipment
Unit Code	IND BPS4 03 0117
Unit Descriptor	This unit describes the performance outcomes required to calibrate mechanical, electrical and gas measuring equipment used in train development. It applies to those in train and related component manufacturing environment.

Elements	Performance Criteria
1. Prepare to calibrate equipment	<p>1.1. Calibration instructions, work plans and workplace checklists are read and interpreted to identify processes.</p> <p>1.2. Calibration equipment is checked for accuracy and currency.</p> <p>1.3. Testing sequence and specified procedures are determined according to industry standards, manufacturer instructions and workplace procedures.</p>
2. Regulate equipment	<p>2.1. Calibration equipment is used and readings are recorded according to workplace procedures.</p> <p>2.2. Calibration equipment is adjusted according to instructions.</p> <p>2.3. Calibration equipment is re-tested to validate adjusted reading.</p>
3. Complete work processes	<p>3.1. Calibration equipment are re-tagged with currency and standard of calibration.</p> <p>3.2. Evidence of wear, malfunction or out-of-tolerance adjustments is detected, reported and repaired within scope of authority.</p> <p>3.3. Equipment and tools are cleaned, inspected for serviceable condition, and stored at the completion of the process.</p> <p>3.4. Work area is cleaned and restored according to workplace procedures.</p>

Variable	Range
Instructions	<p>must include:</p> <ul style="list-style-type: none"> calibration specifications

	<ul style="list-style-type: none"> • industry code of practice and standards • job sheets • manufacturer instructions • use and operation of tools and equipment • Work plans.
Workplace procedures	<p>must include:</p> <ul style="list-style-type: none"> • use, maintenance and storage of calibration equipment • procedure manuals • quality and continuous improvement programs • recording and reporting • Work Health and Safety (WHS) requirements.

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • interpret numerical information in workplace procedures and • manufacturer calibrating instructions • identify workplace procedures relevant to calibrating measurement equipment
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • interpret measurement results and compare with specifications • List measurements. • manage work time and organize work priorities • access, interpret and apply calibrating information, instructions and workplace procedures, particularly to testing sequences and requirements
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • interpret job requirements from calibrating instructions and work plans • interpret manufacturer instructions to calibrate measuring equipment • document measurement results • complete faulty equipment reports • speak clearly and directly in order to communicate equipment calibrating activities
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning

Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.
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Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Apply Original Equipment Manufacturer Repair Procedures
Unit Code	IND BPS4 04 0117
Unit Descriptor	<p>This unit describes the performance outcomes required to locate and apply Original Equipment Manufacturer (OEM) recommended repair procedures, The unit involves body repair of High Strength Steel (HSS) components, vehicle painting, vehicle glazing and vehicle trimming repair processes.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>

Elements	Performance Criteria
1. Locate, interpret and apply OEM-recommended repair procedure	<p>1.1. OEM-recommended repair procedures are sourced using the internet or repair manuals</p> <p>1.2. OEM repair procedure and specifications are read and applied to vehicle repairs</p> <p>1.3. Vehicle design specifications are interpreted</p> <p>1.4. Industry standards and safety requirements are interpreted and followed</p> <p>1.5. Tools and equipment required to carry out tasks are sourced and checked prior to use</p>
2. Ensure compliance with OEM repair and vehicle specifications	<p>2.1. Vehicle specifications, engineering drawings and working drawings are identified and referred to</p> <p>2.2. Relevant OEM repair procedures are checked to ensure compliance with industry quality standards</p> <p>2.3. Repair procedures are reviewed to ensure OEM requirements and guidelines are met</p> <p>2.4. Non-compliance of repairs is identified</p> <p>2.5. Workplace policies and procedures are followed and maintained</p>

Variable	Range
OEM-recommended repair procedures	<p>may include:</p> <ul style="list-style-type: none"> • repair to vehicle body or component damage • refinishing of paint surface

	<ul style="list-style-type: none"> • replacement of vehicle glazing • repairs to trimmed components • repair sequence • selection of repair consumables • Compliance with OEM-recommended procedure.
Vehicle design specifications	<p>may include:</p> <ul style="list-style-type: none"> • OEM engineering designs and drawings • International Design Rules • industry codes of practice • OEM-recommended repair procedures • vehicle repair manuals • Vehicle specification sheets.
Tools and equipment required	<p>may include:</p> <ul style="list-style-type: none"> • workplace tools and equipment • specialised tools for body repair • Computers.
Quality standards	<p>may include:</p> <ul style="list-style-type: none"> • complying with OEM repair procedures • establishing and maintaining product and component repair specifications and tolerances • identifying and rectifying non-conforming parts or products • identifying, minimising and eliminating defects • complying with vehicle repair process or procedure • complying with inspection systems • Complying with OEM vehicle specifications.
Workplace policies and procedures	<p>may include:</p> <ul style="list-style-type: none"> • environment and sustainability • vehicle repair and vehicle specifications • manufacturer specifications and industry codes of practice • WHS requirements • workplace quality policies and procedures • OEM repair standards • Recording and reporting procedures.

Evidence Guide			
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> • source, interpret and apply manufacturer specifications and repair guidelines • apply OEM-recommended repair procedures in an auto body context, which must include vehicle body repair, vehicle painting, vehicle glazing and vehicle trimming repair processes 		
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	<ul style="list-style-type: none"> • apply vehicle manufacturer specifications and guidelines, and information from engineering designs and drawings, to vehicle repairs • Review vehicle design compliance.
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • Workplace Health and Safety (WHS) regulations needed to carry out work in a manner that ensures: <ul style="list-style-type: none"> • the safety of people • equipment cost minimisation • waste avoidance policies, procedures and practices • environmental protection relating to the disposal of waste material • processes for operating IT systems • problem-identification and resolution techniques • workplace policies and procedures relating to OEM repair procedures • quality standards as they relate to OEM repair procedures • inspection techniques, including observation and written reports
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • communication skills to: <ul style="list-style-type: none"> ➢ communicate instructions from job specification sheets ➢ communicate OEM-recommended repair procedures • initiative and enterprise skills to recognise a workplace problem or potential problem and take action • learning skills to identify sources of OEM information, assistance and expert knowledge to expand skills, knowledge and understanding • literacy skills to: <ul style="list-style-type: none"> ➢ read and interpret quality procedures ➢ read and follow information in written job instructions, specifications, standard operating procedures, charts, lists, drawings and other reference documents ➢ obtain and record required repair procedures and parts • numeracy skills to interpret and calculate OEM repair measurements • planning and organising skills to: <ul style="list-style-type: none"> ➢ plan repair requirements and follow repair specification ➢ plan own work requirements and prioritise actions to

	<p>achieve required outcomes and ensure tasks are completed on time</p> <ul style="list-style-type: none"> ➤ identify risk factors and take action to minimise them • problem-solving skills to: <ul style="list-style-type: none"> ➤ refer problems outside area of responsibility to appropriate person and suggest possible causes ➤ seek information and assistance as required to solve problems • self-management skills to: <ul style="list-style-type: none"> ➤ select and use appropriate OEM-recommended repair equipment, materials, processes and procedures ➤ recognise own limitations and seek advice ➤ follow workplace policies and documentation, such as industry codes of practice and procedures • teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks • technical skills to use workplace tools and equipment relating to OEM-recommended repair procedure, including: <ul style="list-style-type: none"> ➤ specialist tools ➤ measuring equipment
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Plan and Organise Bogie Production and Assembly Processes
Unit Code	IND BPS4 05 0117
Unit Descriptor	<p>This unit describes the performance outcomes required to plan and organise workplace, resources and processes required for the production and assembly of bogie components.</p> <p>It applies to those in an automotive manufacturing environment and involves the application of skills and knowledge at a specialist level</p>

Elements	Performance Criteria
1. Plan and prepare	<p>1.1 Production needs are identified and clarified according to job orders</p> <p>1.2 Workplace procedures relating to production are identified and followed</p> <p>1.3 Materials, tools and equipment are selected, prepared and inspected for safe operation</p> <p>1.4 Faulty material, tools and equipment are reported to appropriate personnel</p>
2. Identify production team and resources	<p>2.1 Production team personnel and contractors are selected based on required skills</p> <p>2.2 Materials, tools, equipment, jigs and other resources are identified using workplace job information</p> <p>2.3 Production drawings and specifications are prepared detailing quality and quantities</p>
3. Develop quotas and production schedule	<p>3.1 Job quotas showing personnel, consumables and resource costs are developed</p> <p>3.2 Production schedules are developed showing job sequence and estimated start and completion dates</p> <p>3.3 Quotas and production schedules are submitted to the appropriate personnel for approval</p>
4. Assign production tasks	<p>4.1 Production tasks and activities are identified and assigned to personnel</p> <p>4.2 Production team members are briefed on respective job role</p>
5. Implement production plan	<p>5.1 Personnel, resources and timelines for production are inspected and confirmed according to workplace</p>

	<p>procedures and requirements</p> <p>5.2 Potential production problems are identified and actioned according to workplace procedures</p> <p>5.3 Appropriate personnel are kept informed of production progress</p>
6. Review and complete job	<p>6.1 Production is monitored for quality, budget and time schedule</p> <p>6.2 Work area and tools are cleaned and inspected according to workplace procedures</p> <p>6.3 Job documentation is completed according to workplace procedures</p>

Variable	Range
Workplace procedures	<p>must include:</p> <ul style="list-style-type: none"> • continuous improvement programs • job role and responsibilities • quality requirements • recording and reporting • Work Health and Safety (WHS) requirements.
Resources	<p>must include:</p> <ul style="list-style-type: none"> • job specifications • production drawings • production plant, tools and equipment • production schedules • Workplace reporting systems.
Information	<p>must include:</p> <ul style="list-style-type: none"> • production requirements • production specifications • work orders • Workplace operating procedures.

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • production materials, tools and equipment • environmental and WHS requirements when planning and organising production • workplace documentation covering procedures, specifications and schedules in bogie part production and assembly processes
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • quality standards relating to workplace production and assembly processes

	<ul style="list-style-type: none"> • bogie component production techniques, including methods of: <ul style="list-style-type: none"> ➤ Installing, spring group, bearing, control spring, load spring. ➤ welding bolster parts ➤ Bogie frame. ➤ metal casting ➤ final assembly • Processes for determining production personnel and resource requirements development principles for production budget, quotas, time and schedule company • procedures for assigning personnel procedures for implementing production plan procedures for reviewing production progress and outcomes.
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • complete production schedules • prepare production budgets • prepare staffing schedules • interpret production schedules, work orders and workplace procedures • communicate required outcomes to personnel • update appropriate personnel on production progress • arrange personnel appropriate to skill needs • identify production faults • highlight production areas for improvement
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Apply Engineering Mechanics Principles
Unit Code	IND BPS4 06 0117
Unit Descriptor	<p>This unit of competency covers the application of mechanics and strength of materials principles to devices, machines and systems and their components in order to identify key mechanical properties. It includes a range of basic analyses of static and dynamic loads and moments, stresses and deflections, velocities and accelerations.</p> <p>This unit applies to analysis of mechanical devices, machines and systems and their components to determine a range of mechanical related properties. It covers the analysis of 2-D forces and moments, stresses and deflections on bodies, frames and beams. It is suitable for people working as technicians in engineering or related fields using basic mechanics principles and those pursuing careers and qualifications in engineering or related disciplines.</p>

Elements	Performance Criteria
1. Identify scope of required analysis	<p>1.1. Identify device, machine or system and component parts for analysis</p> <p>1.2. Assess engineering mechanics principles, skills and techniques required by tasks</p> <p>1.3. Review functions and features of devices, machines and systems</p> <p>1.4. Assess software techniques required for basic analysis and graphics required by the task</p> <p>1.5. Identify stakeholders to be consulted on analysis task Confirm Work Health and Safety (WHS) and regulatory requirements, risk management and organisational procedures</p> <p>1.6. Review sustainability implications of tasks</p> <p>1.7. Determine available sources for any required technical and professional assistance</p>
2. Apply engineering mechanics principles and techniques to tasks	<p>2.1. Identify appropriate engineering mechanics principles and analytical, graphical and software-assisted techniques applicable to task</p> <p>2.2. Validate software results using analytical and graphical methods</p>

	<p>2.3. Ensure clear and logical process of analysis and compatibility of units in calculations</p> <p>2.4. Apply resultant loads and reactions on machines, support frames and beams due to parallel and oblique, concentrated and distributed loads and moments</p> <p>2.5. Apply the torque and power required to drive translation screws and winding drums against inclined and vertically suspended loads subject to Select a range of standard hardware to meet specifications gravitation, acceleration and friction resistance loads</p> <p>2.6. Analyse bending and shear stresses in beams subject to static point and distributed loads</p>
3. Report results	<p>3.1. Record results of investigation, evaluation and application</p> <p>3.2. Provide documentation, such as calculations, diagrams, programs and files</p>

Variable	Range
Analysis	<p>Analysis may include:</p> <ul style="list-style-type: none"> • static and dynamic analysis of loads • the stresses and deformations resulting • the transmitted power, torque and speed • graphical and mathematical methods and software options
Regulatory requirements	<p>may include:</p> <ul style="list-style-type: none"> • WHS Acts and regulations • relevant standards • codes of practice from International and overseas engineering and technical associations and societies • risk assessments • registration requirements • safe work practices • state and territory regulatory requirements
Motion	<p>described in this unit may be of constant velocity; constant acceleration or sinusoidal accelerations (e.g. sprung bodies). Other non-uniformly accelerated motions may be described for contrast only. This unit confines itself to 2-D plane motion</p>
Engineering mechanics tasks	<p>covered by this unit include, but are not limited to:</p> <ul style="list-style-type: none"> • application of resultant loads and reactions on machines, support frames and beams • application of the torque and power required to drive

	<p>translation screws and winding drums against inclined and vertically suspended loads subject to gravitation, acceleration and friction resistance loads</p> <ul style="list-style-type: none"> • selecting a range of standard hardware, such as shafts, bolts and hooks, subject to plane axial or shear stresses and deformation limits • analysing bending and shear stresses in beams subject to static point and distributed loads
Appropriate licensed technical and professional assistance	<p>may include:</p> <ul style="list-style-type: none"> • technical support and advice relating to elements which have intrinsic dangers, such as: <ul style="list-style-type: none"> • high pressure • energised fluid vessels • high temperatures and heat energy capacity • wiring with high current control voltages above extra low voltage • professional support for technologies may include: <ul style="list-style-type: none"> • specialist electric motor drives and controllers • specialist materials, plastics, metal alloys and nano materials • special processes, foundry, alloy welding, heat treatment, sealing and fastening

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • determine parameters and context of tasks • apply WHS, regulatory requirements, risk management and organisational procedures • confirm personal functions and responsibilities • review sustainability implications, functions and features of devices, machines and systems • assess and apply engineering mechanics principles, including use of software basic analysis and graphics skills and techniques • Ensure compatibility of units in calculations, Report and document results.
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • mathematical techniques, including arithmetic, algebra, trigonometry, geometry and differential calculus • definition of typical applications of mechanics, statics, dynamics, kinematics, kinetics and strength of materials • analytical, graphical, semi-graphical and software-assisted techniques for all tasks • physical quantities and dimensions, including

	<p>international system of units (SI) and fundamental dimensions and units</p> <ul style="list-style-type: none"> • basic principles of statics applicable to mechanical devices and systems • application of force systems applied to bodies, frames and beams • friction laws and applications in mechanical devices and systems • stress and strain: <ul style="list-style-type: none"> ➤ axial stress ➤ shear stress ➤ bolted and welded joints ➤ torsional stress • bending of beams • dynamics applicable to mechanical devices and systems, including: <ul style="list-style-type: none"> ➤ kinematics of rectilinear motion: <ul style="list-style-type: none"> ✓ displacement, velocity and acceleration ✓ equations of rectilinear motion ✓ equations of simple harmonic motion ✓ uniform acceleration and sinusoidal acceleration ➤ kinetics of rectilinear motion: <ul style="list-style-type: none"> ✓ force, mass and acceleration ✓ freely falling bodies ✓ acceleration against resistance (accelerating force = unbalanced force) ✓ acceleration against gravity and terminal velocity ✓ acceleration against dry sliding friction and air resistance ✓ forces diagrams ➤ curvilinear motion: <ul style="list-style-type: none"> ✓ normal acceleration in curvilinear motion ✓ centrifugal force ✓ circular motion as a particular case of curvilinear motion ➤ kinematics of rotation: <ul style="list-style-type: none"> ✓ rotational motion ✓ angular displacement ✓ angular velocity ✓ angular acceleration ✓ conversions of units of angular motion ✓ equations of rotation with uniform acceleration ✓ relation between linear and angular motion ➤ kinetics of rotation: <ul style="list-style-type: none"> ✓ moment of inertia, second moment of mass,
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	<p>concept and units</p> <ul style="list-style-type: none"> ✓ torque due to inertia compared with torque due to winding drum rope force • the law of a machine • work, energy and power • specifications for engineering hardware applicable to mechanical devices and systems
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • identifying parameters and context of tasks, chain of responsibility, WHS and regulatory requirements, risk management and organisational procedures • confirming personal functions and responsibilities, team and support functional group interdependencies and communications, appropriate qualifications and delegations, and appropriate support • reviewing sustainability implications, functions and features of devices, machines and systems • assessing and applying mechanics principles, software basic analysis and graphics skills and techniques to mechanical devices and systems • employing techniques to ensure clear and logical process of analysis and compatibility of units in calculations • reporting and documenting results of investigation, evaluation and application, calculations, diagrams, programs and files
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Integrate Mechanical Fundamentals into an Engineering Task
Unit Code	IND BPS4 07 0117
Unit Descriptor	<p>This unit of competency covers the integration of mechanical fundamentals to achieve an engineering or related task. It includes identifying task parameters, personal and team functions, chain of responsibility and Work Health and Safety (WHS) guidelines. It includes investigation of machines, mechanisms and mechanical systems, and mechanical fundamentals, such as mechanical methods and processes, workshop techniques, materials, scientific and mathematical principles and computer software. It requires completion of the task in cooperation with the team and documentation of the process and outcomes.</p> <p>The unit applies to engineering or related projects requiring mechanical engineering skills and covers the identification, application and integration of mechanical fundamentals. It is suitable for people working as mechanical designers and draftspersons and those pursuing careers and qualifications in mechanical engineering.</p>

Elements	Performance Criteria
1. Investigate scope of engineering task	<p>1.1. Mechanical and related fundamentals to be integrated into engineering task are identified.</p> <p>1.2. Stakeholders to be consulted are identified.</p> <p>1.3. WHS, regulatory requirements, risk management and organisational procedures are confirmed.</p> <p>1.4. Functions and features of machines, mechanisms and mechanical systems required by the task are reviewed.</p> <p>1.5. Software techniques required for task analysis and graphics are reviewed.</p>
2. Integrate mechanical fundamentals	<p>2.1. Systems thinking is used to address contingencies and constraints, problem solving and decision making, and continuous improvement to achieve integration task.</p> <p>2.2. Mechanical fundamentals are integrated to achieve task objectives.</p>

	2.3. Technical and professional assistance or clarification of design information is sought , as required
3. Report results	3.1. Documentation, such as diagrams and calculations, programs and files is provided. 3.2. Results of investigation, evaluation and integration are recorded.

Variable	Range
Mechanical and related fundamentals	include fundamentals of: <ul style="list-style-type: none"> • materials properties • mechanics • chemistry • thermodynamics • fluid mechanics • fluid power • electrical fundamentals • and may also include depending on the application: • light, sound and electromagnetic effects
WHS, regulatory requirements and enterprise procedures	may include: <ul style="list-style-type: none"> • WHS Acts and regulations • relevant standards • codes of practice • risk assessments • registration requirements • safe work practices • state and territory regulatory requirements
Machines, mechanisms and mechanical systems	may include: <ul style="list-style-type: none"> • Suspension system such as primary and secondary • Hydraulic damper • Wheel alignment • compressors and pneumatic distribution systems • hydraulic systems • fans and ducting systems • mechanical drive systems and transmissions • brakes and clutches • conveyors, elevators, cranes and materials handling plant
Systems thinking	thinking refers to the conduct of engineering work in a manner that demonstrates knowledge of how the interaction of different technical systems on equipment, machinery or structures, as well as the skills and techniques of personnel, combine to perform or support

	<p>engineering-related operations, processes or projects. It embraces determining or establishing how the function of each technical system or component, as well as the skills and techniques of personnel, effects or potentially may effect, outcomes. Systems should be interpreted broadly within the context of the organisation and depending on the project or operation can include equipment, related facilities, material, software, internal services and personnel, and other organisations in the value chain</p>
Constraints and contingencies	<p>may include:</p> <ul style="list-style-type: none"> • financial • organisation procedural or culture • physical constraints, such as limits to resources, limits to site access or logistical limitations
Continuous improvement	<p>may relate to plant, products, processes, systems or services, including design, development, implementation or manufacture, commissioning, operation or delivery and maintenance.</p> <p>Improvement processes may include techniques, such as:</p> <ul style="list-style-type: none"> • balanced scorecard • current and future state mapping • measuring performance against benchmarks • process improvement, problem solving and decision making • data management, generation, recording, analysing, storing and use of software • training for improvement systems participation • technical training
Technical and professional assistance	<p>may include:</p> <ul style="list-style-type: none"> • technical support and advice relating to elements which have intrinsic dangers, such as: <ul style="list-style-type: none"> • high pressure • energised electric power • high temperatures and heat energy capacity • wiring with high current control voltages above extra low voltage • professional support for technologies, such as: <ul style="list-style-type: none"> • specialist electric motor drives and controllers • specialist materials, plastics, metal alloys and nano materials • special processes, foundry, alloy welding, heat treatment, sealing and fastening
Sustainability	<p>is used to mean the entire sustainable performance of the organisation/plant, including:</p>

	<ul style="list-style-type: none"> • meeting all regulatory requirements • conforming to all industry covenants, protocols and best practice guides • minimising ecological and environmental footprint of process, plant and product • maximising economic benefit of process plant and product to the organisation and the community • minimising the negative WHS impact on employees, community and customer
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Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • determine task parameters and context and identify and investigate required mechanical fundamentals • evaluate task requirements, principles, techniques, typical applications and software • plan the task • integrate mechanical fundamentals to achieve task objectives • communicate, cooperate and negotiate with stakeholders to achieve integration task • report and document results
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • WHS and regulatory requirements, codes of practice, and risk minimisation and registration requirements • mechanical and related fundamentals, including: <ul style="list-style-type: none"> ➢ materials properties ➢ mechanics ➢ chemistry ➢ thermodynamics ➢ fluid mechanics ➢ fluid power • electrical fundamentals and may also include depending on the application: <ul style="list-style-type: none"> ➢ light, sound and electromagnetic effects • methods and processes for shaping, cutting, joining and coating of metal and other materials • functions and features of machines, mechanisms and mechanical systems • current options and trends in software, including system layout and simulation
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • communicating, cooperating and negotiating with stakeholders

	<ul style="list-style-type: none"> • identifying parameters and context, WHS and regulatory requirements, risk management and organisational procedures • evaluating requirements, principles, techniques, and typical applications related to task • selecting software for required analysis and graphics • planning the task • solving problems and making decisions using systems thinking and continuous improvement to address contingencies and constraints • reporting and documenting results of investigation, evaluation and integration, diagrams and calculations • reviewing sustainability implications, functions and features for the engineering task
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Make Minor Modifications to the Bogie Products and Assembly
Unit Code	<u>IND BPS4 08 0117</u>
Unit Descriptor	<p>This competency covers the minor modification of products in a bogie frame subassembly and then monitoring initial factory trials. This competency would typically be done by an advanced operator either working alone for a minor modification or with other relevant person(s) for a major modification or a new product.</p> <p>This competency covers minor modifications to existing products to develop an updated version of an existing product or a 'new' product which is strongly based on an existing product. Processes may also need to be modified, but again this modification of process will be minor and based on established practice.</p> <p>A minor modification will be based on an existing product and will produce a modified product of similar specification. Changes may include things like small changes to sizes, shapes, surface finish. Changes may include minor modification to tooling but will not normally include new or significantly redesigned tooling.</p> <p>This competency applies to operators who are required to modify products and demonstrate that an appropriate product and manufacturing process has been developed. It includes:</p> <ul style="list-style-type: none"> • confirming the product specification • making trial or prototype products • interpreting the test results • modifying the product design • Verifying/modifying the product and manufacturing process during initial factory trials.

Elements	Performance Criteria
1. Confirm requirements of modified/new product.	<p>1.1 Check that specifications for new product are made complete and unambiguous.</p> <p>1.2 Items which are unclear or beyond the normal scope of work are clarified.</p> <p>1.3 The type of changes/modifications which are likely to meet these requirements is investigated.</p> <p>1.4 Any possible issues if processes, plant, equipment or tooling outside the plant's normal range are likely to be required are clarified.</p>

	1.5 Tests required on trial product are identified.
2. Identify similar existing product(s).	<p>2.1 Existing product(s) with similar specifications are identified.</p> <p>2.2 Required changes to existing product(s) are estimated.</p> <p>2.3 Practicality of proposed changes is checked.</p> <p>2.4 HSE impacts of proposed changes are checked.</p> <p>2.5 Initial product design and manufacturing process are drafted.</p>
3. Prepare trial products.	<p>3.1 All hazards for pilot/trial production are identified and controlled.</p> <p>3.2 All required plant and equipment are identified and checked.</p> <p>3.3 All required materials and tooling are obtained and prepared.</p> <p>3.4 Trial product and obtain sample(s) are made.</p> <p>3.5 Test results are interpreted.</p> <p>3.6 Product design/manufacturing process is modified and trials are repeated as required.</p>
4. Check initial factory trial.	<p>4.1 Availability of required resources and plant availability are checked.</p> <p>4.2 Ensure all authorities and permissions have been obtained.</p> <p>4.3 Check all hazard controls have been implemented.</p> <p>4.4 Factory trial manufacture of product is monitored.</p> <p>4.5 Sample(s) is/are obtained and test results are interpreted.</p> <p>4.6 Product design/manufacturing process is modified and factory trial repeated as required.</p>
5. Complete trial	<p>5.1 All required records and reports are completed.</p> <p>5.2 Check any changes to resources and procedures have been incorporated into standard procedures.</p> <p>5.3 Ensure any additional skill requirements have been included in future plans.</p>

Variable	Range
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Tests	include the normal range of physical, chemical and environmental (weathering) tests which might be applied to the product.
Trial product	may be full sized, or a scale version. Trial production will typically be 'one off' or small run compared to final production which will occur in normal run sizes under normal conditions
Health, Safety and Environment (HSE)	All operations are subject to stringent health, safety and environment requirements, which may be imposed through State or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the operator needs to ensure the HSE requirements take precedence.
Procedures	All operations are performed in accordance with procedures. Procedures mean all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to: It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:</p> <ul style="list-style-type: none"> • clarify the requirements of the modified product • make an initial design and process and justify that initial design and process • modify the design/process based on test data and justify the modifications • make final adjustments for the scaled up product to work successfully in the factory • Consistent performance should be demonstrated through the evidence from several formula modifications requiring different types of changes
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • tests which might be used and the applicability of the different tests for different product properties • relevant manufacturing methods and the impacts of different methods/processes on product properties • relevant existing products and their properties • requirements for factory trialling and scaling up from laboratory/pilot scale • suppliers of materials and tooling • Sources of information about materials and tooling.

Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • Language, literacy and numeracy requirements • Writing product design specifications, processing instructions and similar documents. • Numeracy is required to interpret technical specifications and test results and to calculate quantities and proportions required for the specification, make adjustments and then to scale up to factory trials.
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Identify Risk and Apply Risk Management Processes on Bogie Production and Assembly
Unit Code	IND BPS4 09 0117
Unit Descriptor	<p>This unit describes the performance outcomes, skills and knowledge required to identify risks and to apply established risk management processes to a subset of an organisation or project's operations that are within the person's own work responsibilities and area of operation</p> <p>This unit applies to individuals with a broad knowledge of risk analysis or project management who contribute well developed skills in creating solutions to unpredictable problems through analysis and evaluation of information from a variety of sources. They may have responsibility to provide guidance or to delegate aspects of these tasks to others.</p> <p>In this unit, risks applicable within own work responsibilities and area of operation, may include projects being undertaken individually or by a team, or operations within a section of the organisation.</p>

Elements	Performance Criteria
1. Identify risks	<p>1.1. The context for risk management are identified.</p> <p>1.2. Identify risks using tools, ensuring all reasonable steps have been taken to identify all risks.</p> <p>1.3. Identified risks are documented in accordance with relevant policies, procedures and legislation.</p>
2. Analyse and evaluate risks	<p>2.1. Risks are analysed and documented in consultation with relevant stakeholders.</p> <p>2.2. Risk categorisation is undertaken and level of risk determined.</p> <p>2.3. Analysis processes and outcomes are documented.</p>
3. Treat risks	<p>3.1. Appropriate control measures are determined for risks and assessed for strengths and weaknesses.</p> <p>3.2. Control measures are identified for all risks.</p> <p>3.3. Risks relevant to whole of organisation or having an impact beyond own work responsibilities and area of operation to others are referred as per established policies and procedures.</p> <p>3.4. Control measures are chosen and implemented for own</p>

	<p>area of operation and/or responsibilities.</p> <p>3.5. Treatment plans are prepared and implemented.</p>
4. Monitor and review effectiveness of risk treatment/s	<p>4.1. Implemented treatment/s is/are regularly reviewed against measures of success.</p> <p>4.2. Review results are used to improve the treatment of risks.</p> <p>4.3. Assistance is provided to auditing risk in own area of operation.</p> <p>4.4. Management of risk is monitored and reviewed in own area of operation.</p>

Variable	Range
Context	<p>may include:</p> <ul style="list-style-type: none"> • any related projects or organisations • any resources, including physical assets, which are vital to operations • key operational elements and service of the organisation • organisation or project, how it is organised and its capabilities • own role and responsibilities in relation to overall project or organisation design
Risks	<p>may include:</p> <ul style="list-style-type: none"> • commercial and legal relationships • economic circumstances and scenarios • human behaviour • individual activities • management activities and controls • natural events • political circumstances • positive risk • technology - technological issues
Tools	<p>may include:</p> <ul style="list-style-type: none"> • documentation to assist in process of identifying risk, and assessing impact and likelihood of occurrence • standard instruments developed for the organisation and contextualised for sections of the workplace's operations, such as checklists and testing procedures • tools to prioritise risks, including where relevant, numerical scoring systems for risks
Stakeholders	<p>may include:</p> <ul style="list-style-type: none"> • contractors

	<ul style="list-style-type: none"> • employees • financial managers • insurance agents • managers • public • service providers • suppliers • unions • volunteers
Risk categorisation	<p>may include:</p> <ul style="list-style-type: none"> • likelihood of risks: <ul style="list-style-type: none"> ➤ almost certain ➤ likely ➤ possible ➤ unlikely ➤ rare • consequences of risks: <ul style="list-style-type: none"> ➤ insignificant ➤ minor ➤ moderate ➤ major ➤ catastrophic ➤ current control measures
Level of risk	<p>may include:</p> <ul style="list-style-type: none"> • low, treated with routine procedures • moderate, with specific responsibility allocated for the risk, and monitoring and response procedures implemented • high, requiring action, as it has potential to be damaging to the organisation or project • extreme, requiring immediate action, as it has potential to be devastating to the organisation or project
Control measures	<p>may include:</p> <ul style="list-style-type: none"> • hierarchy of controls: <ul style="list-style-type: none"> ➤ reduction in likelihood of risks ➤ reduction of consequences of risks ➤ retention of risks ➤ risk aversion ➤ transfer of responsibility of risks
Measures of success	<p>may include:</p> <ul style="list-style-type: none"> • costs • reductions in impact • reductions in likelihood • reductions in occurrence

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • identification, analysis and evaluation of risks • demonstrated understanding of personal role in relation to wider organisational or project context • Demonstrated understanding of risk management processes and procedures.
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • International and international standards for risk management • key provisions of relevant legislation from all levels of government that may affect aspects of business operations, such as: <ul style="list-style-type: none"> ➢ anti-discrimination legislation ➢ ethical principles ➢ codes of practice ➢ privacy laws ➢ environmental issues ➢ occupational health and safety • Organisational policies and procedures relating to risk management processes and strategies auditing requirements relating to risk management.
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • literacy skills sufficient to read and understand a variety of texts; and to write, edit and proofread documents to ensure clarity of meaning, accuracy and consistency of information • research and data collection skills to monitor and evaluate risks • Problem-solving skills to appropriately address identified risks.
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Manage Personal Presentation and Development
Unit Code	IND BPS4 10 0117
Unit Descriptor	<p>This unit of competency describes the skills and knowledge required to manage personal presentation, learning and career options, develop personal conflict management skills and health and fitness plan.</p> <p>It requires the ability to take responsibility for own personal presentation, identify personal strengths and support career path with appropriate learning, manage physical health and fitness and communicate effectively within a team</p> <p>This unit applies to individuals who manage their own presentation and learning and career options, develop personal conflict management skills and a health and fitness plan in a train manufacturing environment.</p>

Elements	Performance Criteria
1. Establish personal presentation standards	<p>1.1. Team, role and personal presentation expectations are clarified.</p> <p>1.2. Personal presentation standards of team are maintained.</p> <p>1.3. Strategies are developed and implemented to achieve personal presentation standards.</p>
2. Determine potential career paths in motorsport	<p>2.1. Personal strengths and opportunities are identified, developed and implemented for improvement.</p> <p>2.2. Personal attitudes needed to succeed in motorsport are identified.</p> <p>2.3. Personal goals and team goals are reviewed and linked.</p> <p>2.4. Career options are considered within the team and outside the team.</p> <p>2.5. Potential career paths are identified to achieve personal goals.</p> <p>2.6. Achievements and experience are documented in the form of a comprehensive résumé.</p>
3. Manage personal learning	<p>3.1. Different learning styles are researched and own learning style preference is identified.</p> <p>3.2. Strategies are developed to maximise the effectiveness of personal learning.</p>

	<p>3.3. The effects of preferred learning styles are researched and applied in the team environment.</p> <p>3.4. Strategies are reviewed and modified, as necessary.</p>
4. Develop personal health and fitness plan	<p>4.1. Personal nutritional requirements are managed for functioning in a motorsport environment.</p> <p>4.2. Stress and fatigue are managed using appropriate strategies.</p> <p>4.3. Personal physical fitness requirements are managed in relation to team role requirements.</p> <p>4.4. Strategies are developed to manage the impact of legal and illegal drugs on personal competence and performance within a motorsport environment.</p> <p>4.5. Own health and fitness plan are reviewed and modified.</p> <p>4.6. WHS, regulatory requirements, risk management and organisational procedures are confirmed.</p>
5. Establish personal conflict resolution strategies	<p>5.1. Potential causes of conflict are identified in relation to preferred learning style within the team environment.</p> <p>5.2. Personal strategies are implemented for dealing with conflict.</p> <p>5.3. Communication techniques are researched.</p> <p>5.4. Strategies are implemented for improving communication with team members.</p>

Variable	Range
Career	<p>include:</p> <ul style="list-style-type: none"> researching personal expectations and potential career paths within and beyond the motorsport team, including national and international opportunities
Effectiveness of personal learning	<p>may include:</p> <ul style="list-style-type: none"> researching different learning styles determining personal preferences devising strategies to increase the effectiveness of personal learning
Own health	<p>may include understanding:</p> <ul style="list-style-type: none"> the principles of fitness nutrition the impact of legal and illegal drugs on body functioning performance and stress management

WHS requirements	<p>may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • team insurance requirements • material safety management systems • controlling body requirements • manufacturer/component supplier specifications • local safe operating procedures
Information and procedures	<p>may include:</p> <ul style="list-style-type: none"> • controlling body rules, category rules and supplementary regulations • team policies and procedures relating to representing the team in public • team procedures relating to reporting and communication

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • interpret and apply team standards and expectations • demonstrate personal presentation and conduct to team expectations for a minimum duration of one (1) day on at least three (3) occasions in motorsport environments, including: <ul style="list-style-type: none"> ➤ workshop ➤ competition event ➤ promotional activity • develop a personal résumé, including detailed statements of: <ul style="list-style-type: none"> ➤ qualifications and training ➤ experience in the motorsport industry ➤ relevant experience beyond the motorsport industry ➤ testimony from employers, colleagues or training bodies • develop a personal health and fitness plan, including detailed statements of: <ul style="list-style-type: none"> ➤ A minimum of three (3) strategies for managing nutrition needs. Each strategy must demonstrate a knowledge of recommended nutritional intake ➤ A minimum of three (3) strategies for increasing

	<p>personal fitness. Strategies must address at least one (1) of flexibility, cardiovascular fitness, muscular strength and endurance</p> <ul style="list-style-type: none"> ➤ a minimum of three (3) stress management strategies • demonstrate a minimum of three (3) conflict resolution strategies, in situations covering: <ul style="list-style-type: none"> ➤ tight timeframes or extended working hours ➤ differing expectations ➤ different working styles ➤ appropriate persons external to the team ➤ work with and around other team members ➤ modify activities to cater for variations in workplace context and environment
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • team roles, responsibilities and relationships • motorsport sectors and categories • goal setting methods, such as Specific, Measurable, Achievable, Realistic, Timely (SMART) • personal presentation standards, including hair, clothes, personal hygiene, posture, body language and speech • résumé and curriculum vitae development • learning styles and the impact of appropriate persons with different learning styles working together in normal and pressure environments • positive and negative effects of personal attitudes in a train manufacturing environment • communication principles and techniques • group dynamics in high-pressure environments • conflict management strategies and techniques • human nutritional requirements, food groups and their effect on the human body, including specific nutritional requirements for functioning in a motorsport environment • the impact of legal and illegal drugs on the human body and their implications in motorsport • principles of physical fitness and fitness requirement for functioning effectively in a train manufacturing environment
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • technical skills to the level required to use workplace technology to assist research and store information • communication skills to the level required to communicate ideas and information to enable

	<p>development of conflict management strategies and effective ways for working with other team members, and to report work outcomes and issues</p> <ul style="list-style-type: none"> • literacy skills to the level required to collect, organise and understand information related to team roles and relationships, learning styles, health and nutrition, communication and conflict resolution • problem-solving skills to the level required to use scenario planning techniques to assist in determining career choices and knowledge of group dynamics to anticipate potential conflict situations and plan management strategies • team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise information flow and communication • planning skills to the level required to plan and organize activities, including research into learning styles, career options, conflict management strategies, and nutrition and physical fitness requirements
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Manage the Impact of Change on Own Work
Unit Code	IND BPS4 11 0117
Unit Descriptor	<p>This unit of competency covers the skills and knowledge required by an employee to effectively manage the changes in their own work resulting from their organisation's implementation of competitive systems and practices.</p> <p>This unit applies to an employee in an organisation implementing competitive systems and practices that affect the employee's own work. The unit includes the skills required to positively participate in ongoing and continuous change as it affects their work. The employee will be expected to deal with these changes as part of a team and to give feedback from their own perspective.</p> <p>This unit requires the application of skills associated with problem solving, planning and organising and self-management for assessing and managing the impact of change on own work. This unit also requires the ability to seek information and feedback from team members on the impact of changes and suggested improvements</p>

Elements	Performance Criteria
1. Examine the impact of change on own work practices	<p>1.1. Competitive systems and practices relevant to changes in own work are identified.</p> <p>1.2. Changes to work flow are examined.</p> <p>1.3. Changes to equipment/process/physical environment are examined.</p> <p>1.4. Changes to work relationship with team members and other teams are examined.</p> <p>1.5. Changes to data collection needs are examined.</p> <p>1.6. Changed work is examined for impacts on Health, Safety and Environment (HSE)</p> <p>1.7. Changes are examined to quality requirements</p> <p>1.8. Any additional individual skill needs are identified.</p> <p>1.9. Other areas requiring assistance are identified.</p>
2. Implement change	2.1. Changes which may have an adverse impact with team leader are reviewed.

	<p>2.2. Changes are adopted to individual work practice.</p> <p>2.3. Assistance is sought in <i>gathering/processing data</i>, as required.</p> <p>2.4. The data collection/processing is implemented and actions are taken on resulting information in accordance with procedures.</p> <p>2.5. Assistance/training is sought to meet needs caused by change.</p>
3. Implement continuous improvement	<p>3.1. All changes are critically examined.</p> <p>3.2. <i>Impacts of changes</i> both up and down the immediate <i>value stream</i> are identified.</p> <p>3.3. Areas are identified for <i>continuous improvement</i>.</p> <p>3.4. Recommendations are made for improvement in accordance with <i>procedures</i>.</p>

Variable	Range
Competitive systems and practices	<p>may include, but are not limited to:</p> <ul style="list-style-type: none"> • lean operations • agile operations • preventative and predictive maintenance approaches • monitoring and data gathering systems such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP) and proprietary systems • statistical process control systems, including six sigma and three sigma • supply, value, and demand chain monitoring and analysis • 5S • continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • Overall Equipment Effectiveness (OEE) • process mapping • problem solving • run charts • standard procedures • current reality tree • Competitive systems and practices should be interpreted so as to take into account:

	<ul style="list-style-type: none"> • the stage of implementation of competitive systems and practices • the size of the enterprise • the work organisation, culture, regulatory environment and the industry sector
Gathering/processing data	<p>performance data may be:</p> <ul style="list-style-type: none"> • undertaken manually by individual employees through charts, tally sheets or keypad/board entry • collected automatically through software, such as SCADA software, ERP systems, MRP and proprietary systems
Impact of change	<p>may include:</p> <ul style="list-style-type: none"> • elements being undertaken individually or as part of a team <p>Seeking assistance from team leaders for areas outside the employee's range of responsibility and authority.</p>
Value stream	<p>may occur include:</p> <ul style="list-style-type: none"> • sales outlet/representative • information gathering, data analysis and research • product design • raw material sourcing • intermediate processing • final assembler/collation/preparation • support services (e.g. accounting, finance and legal) • storage and delivery to customer • after market support
Continuous improvement	<p>includes:</p> <ul style="list-style-type: none"> • the continual evaluation and improvement of all process in terms of time required, resources used, resultant quality, and other aspects relevant to the process
Procedures	<p>may include:</p> <ul style="list-style-type: none"> • all work instructions • standard operating procedures • formulas/recipes • batch sheet • temporary instructions and similar instructions provided for the smooth running of the plant • good operating practice as may be defined by industry codes of practice (e.g. Good Manufacturing Practice (GMP) and responsible care) and government regulations • written, verbal, computer-based or in some other format

Evidence Guide			
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • identify the competitive systems and practices used in their own work • identify changes to their own work flowing from the implementation of the relevant competitive systems and practices • implement changes • know when and how to seek assistance with work changes • make suggestions for improvements 		
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • preventative maintenance • 5S housekeeping • continuous improvement processes (e.g. kaizen) • waste (muda) elimination • formal problem solving procedures (e.g. RCA) • current processes and principles of operation • sources of data on the process/plant and possible applications to information • methods of determining own skill needs and developing skills, if required • HSE principles as relevant to own job • change implementation contacts and procedures relevant to work area • employee assistance mechanisms in the organisation 		
Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • identifying the competitive systems and practices being implemented in the organisation that are relevant to own work, including, if implemented: • Just in Time (JIT) • preventative maintenance • 5S housekeeping • continuous improvement processes (e.g. kaizen) • waste (muda) elimination • formal problem solving procedures (e.g. root cause analysis (RCA)) • analysing own work procedures • communicating with others in work area, team leaders and other employees relevant to changes in own work • solving problems relevant to changes in own work • identifying sources of assistance in organisation if difficulty is experienced with changes • interpreting relevant procedures and instructions 		
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	<ul style="list-style-type: none"> • working as part of a team
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Install and Maintain Motor Vehicle Instrumentation Sensors and Transmitters
Unit Code	<u>IND BPS4 12 0117</u>
Unit Descriptor	This unit describes the performance outcomes required to install, adjust and maintain instrumentation sensors and transmitters used to gather data for development purposes. It applies to those in an automotive and related component manufacturing environment.

Elements	Performance Criteria
1. Identify sensors, transmitters and final control elements	<p>1.1. Workplace requirements relevant to the use of sensors, transmitters and final control elements are identified with appropriate personnel</p> <p>1.2. Instructions and work plans are identified and interpreted</p> <p>1.3. Specifications from data sheets, circuit diagrams and engineering drawings are determined</p> <p>1.4. Sensors, transmitters and final control elements are selected and prepared, and installation is planned and documented</p>
2. Install sensors, transmitters and final control elements	<p>2.1. Equipment is prepared for installation</p> <p>2.2. Equipment is installed</p> <p>2.3. Test is set up to determine correct calibration, operation and data feed</p>
3. Maintain and diagnose faults with sensors, transmitters and final control elements	<p>3.1. Preventative maintenance schedules are implemented</p> <p>3.2. Periodic tests to ensure continued integrity of data are undertaken</p> <p>3.3. Sample data is viewed periodically for obvious irregularities and unexplained aberrations</p>
4. Complete fault documentation and plan corrective action	<p>4.1. Operation of sensors, transmitters and final control elements is monitored and assessed against predetermined specifications and manufacturer's technical data</p> <p>4.2. Fault conditions are identified, localised and monitored</p> <p>4.3. Faults are documented and reported to appropriate personnel</p>
5. Restore equipment and finalise	<p>5.1. Equipment is recovered, and checked for serviceability and calibration</p>

housekeeping	<p>5.2. Serviceable equipment is returned to store for future use</p> <p>5.3. Unserviceable equipment is sent for repair or disposal according to workplace procedures</p> <p>5.4. Workplace documentation and test results are completed</p>
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Variable	Range
Instructions	<p>must include:</p> <ul style="list-style-type: none"> • job sheets, work plans, specifications and drawings • use and operation of tools and equipment • Work Health and Safety (WHS) requirements relating to installing and maintaining motor vehicle instrumentation sensors and transmitters • Workplace and manufacturer instructions.

Evidence Guide	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • comply with workplace procedures and Work Health and Safety (WHS) requirements relating to installing, adjusting and maintaining instrumentation sensors and transmitters • comply with industry code of practice in using instrumentation sensors, signal transmitters and final control units • communicate vehicle data with co-workers • select tools and equipment appropriate to the installation and maintenance of motor vehicle instrumentation sensors and transmitters • check the currency of equipment calibrations • Complete test results relating to installing, adjusting and maintaining instrumentation sensors and transmitters.
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • WHS requirements relating to installing, adjusting and maintaining instrumentation sensors and transmitters • workplace procedures to gather data from vehicle sensors for further development • types of sensors, signal transmitters and final control elements, and procedures for their safe use, operation and maintenance • procedures for identifying faulty sensors • recording and reporting documentation and vehicle data

Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • interpret workplace procedures • Interpret manufacturer installation instructions, installation reports and work plans. • Writing skills to: <ul style="list-style-type: none"> ➢ develop installation plans ➢ record installation outcomes. • Oral communication skills to: <ul style="list-style-type: none"> ➢ communicate irregularities and identified faults with team members ➢ Discuss work plans and schedules with relevant personnel. • Numeracy skills to: <ul style="list-style-type: none"> ➢ interpret vehicle data ➢ interpret circuit diagrams and engineering drawings ➢ determine workplace timelines ➢ calculate material requirements ➢ use, test and calibrate measuring equipment. • Digital literacy skills to: <ul style="list-style-type: none"> ➢ Use electronic sensors, transmitters and final control systems. • Planning and organizing skills to: <ul style="list-style-type: none"> ➢ plan, prepare and organize the installation of instrumentation sensors, transmitters and final control elements ➢ Prepare work area, materials and equipment.
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Test Engines Using a Dynamometer
Unit Code	IND BPS4 13 0117
Unit Descriptor	<p>This unit of competency describes the skills and knowledge required to test engines using a dynamometer.</p> <p>It requires the technical ability to use a dynamometer to test engine performance and to analyse and interpret test results in order to maximise engine performance in the motorsport and performance enhancement environments.</p> <p>This unit applies to individuals who set up, conduct dynamometer tests on engines and log, analyse and report the test data in order to maximise engine performance in motorsport and performance enhancement environment</p>

Elements	Performance Criteria
1. Prepare for dynamometer operation	<p>1.1. Team instructions, controlling body rules, category rules and component supplier specifications are used to specify job requirements, including design, quality, materials, equipment and specifications</p> <p>1.2. Workplace Health and Safety (WHS) requirements, including regulatory requirements, equipment and system isolation requirements, extraction, fire hazard, fuel storage, scatter shields, noise regulations, environmental regulations and personal protection needs are observed throughout the work.</p> <p>1.3. Dynamometer is checked for calibration and serviceability and prepared for operation.</p> <p>1.4. Engine is connected to dynamometer, including ancillary systems and monitoring/control systems.</p> <p>1.5. Exhaust extraction is connected and checked for serviceability.</p> <p>1.6. Engine is prepared for dynamometer testing, including checking oil and water levels, and engine tune and condition are confirmed.</p>
2. Conduct dynamometer testing	<p>2.1. Load is identified and sequence, including run-in period for new engines run.</p> <p>2.2. Correction factors are calculated and applied to results.</p> <p>2.3. Engine connections to the dynamometer are checked.</p> <p>2.4. Selected dynamometer testing sequence is performed in accordance with technical specifications and</p>

	<p>directions and/or the locally authorised method</p> <p>2.5. Dynamometer is analysed to test data and valid conclusions about engine and sub-system condition and performance are made.</p> <p>2.6. Findings, including recommendations for engine configuration and/or modifications are reported to improve performance based on dynamometer data, to appropriate persons</p> <p>2.7. Approved modifications are tested with confirmation runs.</p> <p>2.8. Data is presented to team members as information to complement engine/vehicle set-up.</p>
3. Clean up work area and log test results	<p>3.1. Dynamometer shutdown procedure is performed in accordance with manufacturer/component supplier requirements</p> <p>3.2. Engine is disconnected from dynamometer.</p> <p>3.3. Dynamometer and associated tooling and equipment are cleaned and refurbished.</p> <p>3.4. Operator maintenance of dynamometer is conducted.</p> <p>3.5. Dynamometer test results are logged to create/add to engine history.</p>

Variable	Range
WHS requirements	<p>are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> • personal protective equipment and clothing, including closed-in shoes, long trousers, handling gloves and other equipment • safety equipment • first aid equipment • hazard and risk control • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • team insurance requirements • material safety management systems • controlling body requirements • manufacturer/component supplier specifications • local safe operating procedures

Dynamometers	<p>may include:</p> <ul style="list-style-type: none"> • engine and chassis dynamometers • water loaded dynamometers • electrically loaded dynamometers
Tooling and equipment	<p>may include:</p> <ul style="list-style-type: none"> • engine dynamometer • chassis dynamometer • hand and power tooling • engine compression test kit • vacuum/pressure gauges • flow meters • exhaust analysers • engine diagnostic computer hardware and software
Information and procedures	<p>may include:</p> <ul style="list-style-type: none"> • controlling body rules, category rules and supplementary regulations • event scheduling and location details • team procedures and standards related to: • testing engines using a dynamometer • reporting and communication • use of tooling and equipment • emergency service contacts and team persons emergency contacts • team emergency and event procedures for accidents or injury • work instructions, including worksheets, Material Safety Data Sheets (MSDS), assembly procedures, plans, drawings, designs and checklists • manufacturer/component supplier specifications and application procedures for test equipment and material • International Design Rules (where applicable) • safety body publications • environmental, hazardous chemicals and dangerous goods legislation and local requirements relating to the disposal and use of fuels, lubricants, coolants and cleaning agents
Legislative requirements	<p>are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> • award and enterprise agreements • industrial relations • International standards • International Design Rules • confidentiality and privacy

	<ul style="list-style-type: none"> • WHS • the environment • equal opportunity • anti-discrimination • duty of care • health regulations
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Evidence Guide	
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<p>Critical Aspects of Competence</p>	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> • interpret and apply team requirements, controlling body and category rules and supplementary regulations • correctly apply and use safety equipment and personal protective equipment • follow task instructions, operating procedures and inspection processes to: <ul style="list-style-type: none"> ➢ minimise the risk of injury to self or others ➢ prevent damage to competition vehicle or equipment ➢ achieve required outcomes within team time and quality standards • correctly set up and operate an engine dynamometer to test a minimum of two (2) engines to complete the following: <ul style="list-style-type: none"> ➢ determine engine performance ➢ analyse engine performance data ➢ assess effect of engine and sub-system modifications and present to team members as information to complement engine/vehicle set-up ➢ confirm effectiveness of engine and sub-system modifications ➢ work effectively with others ➢ Modify activities to cater for variations in workplace context and environment.
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<p>Underpinning Knowledge and Attitudes</p>	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • engine performance and dynamometer terminology • preparation procedure for dynamometer testing • dynamometer operation and use of associated hardware and software • test environment correction factors • dynamometer data interpretation and analysis • operator dynamometer maintenance • procedures for reporting task completion • metric and imperial units of measurement • WHS policies and procedures • applicable commonwealth, state or territory legislation,
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	regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to testing engines using a dynamometer
Underpinning Skills	<p>Demonstrate skills of:</p> <ul style="list-style-type: none"> • technical skills to the level required to use workplace technology related to dynamometers, including tooling, equipment, calculators and measuring devices • communication skills to the level required to communicate ideas and information to enable confirmation of work requirements, coordination of work with technical supervisors, other technicians and team members, and to report work outcomes and problems • literacy skills to the level required to collect, organise, understand and analyse information related to dynamometer test results, team requirements and safety procedures • numeracy skills to the level required to use mathematical ideas and techniques to correctly complete measurement of engine performance required for the team • problem-solving skills to the level required to use dynamometer testing to solve problems with engine performance • team skills to the level required to work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity • planning skills to the level required to plan and organise activities, including the preparation and layout of the work area, and the obtaining of equipment and material to avoid backtracking, workflow interruptions or wastage
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Plan and Organize Work
Unit Code	IND BPS4 14 0117
Unit Descriptor	This unit covers the knowledge, skills and attitude required in planning and organizing work activities in a production application. It may be applied to a small independent operation or to a section of a large organization.

Elements	Performance Criteria
1. Set objectives	<p>1.1 Objectives are planned consistent with and linked to work activities in accordance with organizational aims.</p> <p>1.2 Objectives are stated as measurable targets with clear time frames.</p> <p>1.3 Support and commitment of team members are reflected in the objectives.</p> <p>1.4 Realistic and attainable objectives are identified.</p>
2. Plan and schedule work activities	<p>2.1 Tasks/work activities to be completed are identified and prioritized as directed.</p> <p>2.2 Tasks/work activities are broken down into steps in accordance with set time frames and achievable components.</p> <p>2.3 Task/work activities are assigned to appropriate team or individuals in accordance with agreed functions.</p> <p>2.4 Resources are allocated as per requirements of the activity.</p> <p>2.5 Schedule of work activities is coordinated with personnel concerned.</p>
3. Implement work plans	<p>3.1 Work methods and practices are identified in consultation with personnel concerned.</p> <p>3.2 Work plans are implemented in accordance with set time frames, resources and standards.</p>
4. Monitor work activities	<p>4.1 Work activities are monitored and compared with set objectives.</p> <p>4.2 Work performance is monitored.</p> <p>4.3 Deviations from work activities are reported and recommendations are coordinated with appropriate personnel and in accordance with set standards.</p>

	<p>4.4 Reporting requirements are complied with in accordance with recommended format.</p> <p>4.5 Timeliness of report is observed.</p> <p>4.6 Files are established and maintained in accordance with standard operating procedures.</p>
5. Review and evaluate work plans and activities	<p>5.1 Work plans, strategies and implementation are reviewed based on accurate, relevant and current information.</p> <p>5.2 Review is done based on comprehensive consultation with appropriate personnel on outcomes of work plans and reliable feedback.</p> <p>5.3 Results of review are provided to concerned parties and formed as the basis for adjustments/simplifications to be made to policies, processes and activities.</p> <p>5.4 Performance appraisal is conducted in accordance with organization rules and regulations.</p> <p>5.5 Performance appraisal report is prepared and documented regularly as per organization requirements.</p> <p>5.6 Recommendations are prepared and presented to appropriate personnel/authorities.</p> <p>5.7 Feedback mechanisms are implemented in line with organization policies.</p>

Variable	Range
Objectives	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Specific • General
Resources	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Personnel • Equipment and technology • Services • Supplies and materials • Sources for accessing specialist advice • Budget
Schedule of work activities	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Daily • Work-based • Contractual and Regular

Work methods and practices	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Legislated regulations and codes of practice • Industry regulations and codes of practice • Occupational health and safety practices
Work plans	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Daily work plans • Project plans • Program plans • Resource plans • Skills development plans • Management strategies and objectives
Standards	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Performance targets • Performance management and evaluation systems • Occupational standards • Employment contracts • Client contracts • Discipline procedures • Workplace assessment guidelines • Internal quality assurance • Internal and external accountability and auditing requirements • Training Regulation Standards and Safety Standards
Appropriate personnel/ authorities	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Appropriate personnel include: • Management and Line Staff
Feedback mechanisms	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Verbal feedback • Informal feedback • Formal feedback • Questionnaire • Survey and Group discussion

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • set objectives • plan and schedule work activities • implement work plans • monitor work activities • review and evaluate work plans and activities
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • organization's strategic plan, policies rules and regulations, laws and objectives for work unit activities

	<p>and priorities</p> <ul style="list-style-type: none"> • organizations policies, strategic plans, guidelines related to the role of the work unit • team work and consultation strategies
Underpinning Skills	<p>Demonstrates skill to:</p> <ul style="list-style-type: none"> • plan • lead • organize • coordinate • communicate • inter-and intra-person/motivation skills • present
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Migrate to New Technology
Unit Code	IND BPS4 15 0117
Unit Descriptor	This unit defines the competence required to apply skills and knowledge in using new or upgraded technology. The rationale behind this unit emphasizes the importance of constantly reviewing work processes, skills and techniques in order to ensure that the quality of the entire business process is maintained at the highest level possible through the appropriate application of new technology. To this end, the person is typically engaged in on-going review and research in order to discover and apply new technology or techniques to improve aspects of the organization's activities.

Elements	Performance Criteria
1. Apply existing knowledge and techniques to technology and transfer	<p>1.1 Situations are identified where existing knowledge can be used as the basis for developing new skills.</p> <p>1.2 New or upgraded technology skills are acquired and used to enhance learning.</p> <p>1.3 New or upgraded equipment are identified, classified and used where appropriate, for the benefit of the organization.</p>
2. Apply functions of technology to assist in solving organizational problems	<p>2.1 Testing of new or upgraded equipment is conducted according to the specification manual.</p> <p>2.2 Features of new or upgraded equipment are applied within the organization.</p> <p>2.3 Features and functions of new or upgraded equipment are used for solving organizational problems.</p> <p>2.4 Sources of information relating to new or upgraded equipment are accessed and used.</p>
3. Evaluate new or upgraded technology performance	<p>3.1 New or upgraded equipment is evaluated for performance, usability and against OHS standards.</p> <p>3.2 Environmental considerations are determined from new or upgraded equipment.</p> <p>3.3 Feedback is sought from users where appropriate.</p>

Variables	Range
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Environmental Considerations	May include but is not limited to: <ul style="list-style-type: none"> recycling, safe disposal of packaging (e.g. cardboard, polystyrene, paper, plastic) and correct disposal of waste materials by an authorized body
Feedback	May include but is not limited to: <ul style="list-style-type: none"> surveys, questionnaires, interviews and meetings

Evidence Guide	
Critical Aspects of Competence	Competence must confirm the ability to transfer the application of existing skills and knowledge to new technology
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> Broad awareness of current technology trends and directions in the industry (e.g. systems/procedures, services, new developments, new protocols) Vendor product directions Ability to locate appropriate sources of information regarding metal manufacturing and new technologies Current industry products/services, procedures and techniques with knowledge of general features Information gathering techniques
Underpinning Skills	Demonstrate skills of: <ul style="list-style-type: none"> Research skills for identifying broad features of new technologies Ability to assist in the decision making process Literacy skills in regard to interpretation of technical manuals Ability to solve known problems in a variety of situations and locations Evaluate and apply new technology to assist in solving organizational problems General analytical skills in relation to known problems
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> Interview / Written Test Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Establish Quality Standards
Unit Code	IND BPS4 16 0117
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to establish quality specifications for work outcomes and work performance. It includes monitoring and participation in maintaining and improving quality, identifying critical control points in the production of quality output and assisting in planning and implementing of quality assurance procedures.

Elements	Performance Criteria
1. Establish quality specifications for product	<p>1.1 Market specifications are sourced and legislated requirements identified.</p> <p>1.2 Quality specifications are developed and agreed upon.</p> <p>1.3 Quality specifications are documented and introduced to organization staff / personnel in accordance with the organization policy.</p> <p>1.4 Quality specifications are updated when necessary.</p>
2. Identify hazards and critical control points	<p>2.1. Critical control points impacting on quality are identified.</p> <p>2.2. Degree of risk for each hazard is determined.</p> <p>2.3. Necessary documentation is accomplished in accordance with organization quality procedures</p>
3. Assist in planning of quality assurance procedures	<p>3.1 Procedures for each identified control point are developed to ensure optimum quality.</p> <p>3.2 Hazards and risks are minimized through application of appropriate controls.</p> <p>3.3 Processes are developed to monitor the effectiveness of quality assurance procedures.</p>
4. Implement quality assurance procedures	<p>4.1 Responsibilities for carrying out procedures are allocated to staff and contractors.</p> <p>4.2 Instructions are prepared in accordance with the enterprise's quality assurance program.</p> <p>4.3 Staff and contractors are given induction training on the quality assurance policy.</p> <p>4.4 Staff and contractors are given in-service training relevant to their allocated safety procedures.</p>

5. Monitor quality of work outcome	<p>5.1 Quality requirements are identified.</p> <p>5.2 Inputs are inspected to confirm capability to meet quality requirements.</p> <p>5.3 Work is conducted to produce required outcomes.</p> <p>5.4 Work processes are monitored to confirm quality of output and/or service.</p> <p>5.5 Processes are adjusted to maintain outputs within specification.</p>
6. Participate in maintaining and improving quality at work	<p>6.1 Work area, materials, processes and product are routinely monitored to ensure compliance with quality requirements.</p> <p>6.2 Non-conformance in inputs, process, product and/or service is identified and reported according to workplace reporting requirements.</p> <p>6.3 Corrective action is taken within level of responsibility, to maintain quality standards.</p> <p>6.4 Quality issues are raised with designated personnel.</p>
7. Report problems that affect quality	<p>7.1 Potential or existing quality problems are recognized.</p> <p>7.2 Instances of variation in quality are identified from specifications or work instructions.</p> <p>7.3 Variation and potential problems are reported to supervisor/manager according to enterprise guidelines.</p>

Variable	Range
Sourced	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • End-users • Customers or stakeholders
Legislated requirements	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Verification of product quality as part of consumer legislation or specific legislation related to product content or composition.
Safety procedures.	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Use of tools and equipment for fabrication/production/manufacturing works • Workplace environment and handling of material safety, • Following occupational health and safety procedures designated for the task • Respect the policies, regulations, legislations, rule and procedures for manufacturing/production/fabrication

	works
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Evidence Guide			
Critical Aspect of Competence	Demonstrates skills and knowledge to: <ul style="list-style-type: none"> • Monitor quality of work • Establish quality specifications for product • Participate in maintaining and improving quality at work • Identify hazards and critical control points in the production of quality product • Assist in planning of quality assurance procedures • Report problems that affect quality • Implement quality assurance procedures 		
Underpinning Knowledge	Demonstrates knowledge of: <ul style="list-style-type: none"> • work and product quality specifications • quality policies and procedures • improving quality at work • hazards and critical points of operation • obtaining and using information • applying federal and regional legislation within day-today work activities • accessing and using management systems to keep and maintain accurate records • requirements for correct preparation and operation • technical writing 		
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • monitor quality of work • establish quality specifications for product • participate in maintaining and improving quality at work • identify hazards and critical control points in the production of quality product • assist in planning of quality assurance procedures • report problems that affect quality • implement quality assurance procedures 		
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.		
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning 		
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.		
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Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Develop Individuals and Team
Unit Code	IND BPS4 17 0117
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to determine individual and team development needs and facilitate the development of the workgroup.

Elements	Performance Criteria
1. Provide team leadership	<p>1.1 Learning and development needs are systematically identified and implemented in line with organizational requirements.</p> <p>1.2 Learning plan to meet individual and group training and developmental needs is collaboratively developed and implemented.</p> <p>1.3 Individuals are encouraged to self-evaluate performance and identify areas for improvement.</p> <p>1.4 Feedback on performance of team members is collected from relevant sources and compared with established team learning process.</p>
2. Foster individual and organizational growth	<p>2.1 Learning and development program goals and objectives are identified to match the specific knowledge and skills requirements of Competence standards.</p> <p>2.2 Learning delivery methods are made appropriate to the learning goals, the learning style of participants and availability of equipment and resources.</p> <p>2.3 Workplace learning opportunities and coaching/mentoring assistance are provided to facilitate individual and team achievement of competencies.</p> <p>2.4 Resources and timelines required for learning activities are identified and approved in accordance with organizational requirements.</p>
3. Monitor and evaluate workplace learning	<p>3.1 Feedback from individuals or teams is used to identify and implement improvements in future learning arrangements.</p> <p>3.2 Outcomes and performance of individuals/teams are assessed and recorded to determine the effectiveness of development programs and the extent of additional support.</p>

	<p>3.3 Modifications to learning plans are negotiated to improve the efficiency and effectiveness of learning.</p> <p>3.4 Records and reports of competence are maintained within organizational requirement.</p>
4. Develop team commitment and cooperation	<p>4.1 Open communication processes to obtain and share information is used by team.</p> <p>4.2 Decisions are reached by the team in accordance with its agreed roles and responsibilities.</p> <p>4.3 Mutual concern and camaraderie are developed in the team.</p>
5. Facilitate accomplishment of organizational goals	<p>5.1 Team members are actively participated in team activities and communication processes.</p> <p>5.2 Individual and joint responsibility is developed by team's members for their actions.</p> <p>5.3 Collaborative efforts are sustained to attain organizational goals.</p>

Variable	Range
Learning and development needs	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Coaching, monitoring and/or supervision • Formal/informal learning program • Internal/external training provision • Work experience/exchange/opportunities • Personal study • Career planning/development • Performance evaluation • Workplace skills assessment • Recognition of prior learning
Organizational requirements	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Quality assurance and/or procedures manuals • Goals, objectives, plans, systems and processes • Legal and organizational policy/guidelines and requirements • Safety policies, procedures and programs • Confidentiality and security requirements • Business and performance plans • Ethical standards • Quality and continuous improvement processes and standards
Feedback on performance	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Formal/informal performance evaluation

	<ul style="list-style-type: none"> • Obtaining feedback from supervisors and colleagues • Obtaining feedback from clients • Personal and reflective behavior strategies • Routine and organizational methods for monitoring service delivery
Learning delivery methods	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • On the job coaching or monitoring • Problem solving • Presentation/demonstration • Formal course participation • Work experience and involvement in professional networks • Conference and seminar attendance

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • identify and implement learning opportunities for others • give and receive feedback constructively • facilitate participation of individuals in the work of the team • negotiate plans to improve the effectiveness of learning • prepare learning plans to match skill needs • access and designate learning opportunities
Underpinning Knowledge and Attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • coaching and monitoring principles • how to work effectively with team members who have diverse work styles, aspirations, cultures and perspective • how to facilitate team development and improvement • methods and techniques to obtain and interpreting feedback • methods for identifying and prioritizing personal development opportunities and options • career paths and competence standards in the industry
Underpinning Skills	<ul style="list-style-type: none"> • read and understand a variety of texts, preparing general information and documents according to target audience; spell with accuracy; use grammar and punctuation effective relationships and conflict management • communicate including receiving feedback and reporting, maintaining effective relationships and conflict management • plan and organize required resources and equipment to meet learning needs

	<ul style="list-style-type: none"> • coach and mentor skills to provide support to colleagues • report to organize information; assess information for relevance and accuracy; identify and elaborate on learning outcomes • facilitate and conduct small group training sessions • relate to people from a range of social, cultural, physical and mental backgrounds
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Utilize Specialized Communication Skills
Unit Code	<u>IND BPS4 18 0117</u>
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to use specialized communication skills to meet specific needs of internal and external clients, conduct interviews, facilitate group discussions, and contribute to the development of communication strategies.

Elements	Performance Criteria
1. Meet common and specific communication needs of clients and colleagues	1.1 Specific communication needs of clients and colleagues are identified and met. 1.2 Different approaches are used to meet communication needs of clients and colleagues. 1.3 Conflict is addressed promptly and in a timely way and in a manner which does not compromise the standing of the organization.
2. Contribute to the development of communication strategies	2.1 Strategies for internal and external dissemination of information are developed, promoted, implemented and reviewed as required. 2.2 Channels of communication are established and reviewed regularly. 2.3 Coaching in effective communication is provided 2.4 Work related network and relationship are maintained as necessary. 2.5 Negotiation and conflict resolution strategies are used where required. 2.6 Communication with clients and colleagues is made appropriate to individual needs and organizational objectives.
3. Represent the organization	3.1 When participating in internal or external fora, presentation is relevant, appropriately researched and presented in a manner to promote the organization. 3.2 Presentation is made clear and sequential and delivered within a predetermined time. 3.3 Appropriate media is utilized to enhance presentation. 3.4 Differences in views are respected.

	<p>3.5 Written communication is made consistent with organizational standards.</p> <p>3.6 Inquiries are responded in a manner consistent with organizational standard.</p>
4. Facilitate group discussion	<p>4.1 Mechanisms which enhance effective group interaction are defined and implemented.</p> <p>4.2 Strategies which encourage all group members to participate are used routinely.</p> <p>4.3 Objectives and agenda are routinely set and followed for meetings and discussions.</p> <p>4.4 Relevant information are provided to group to facilitate outcomes.</p> <p>4.5 Evaluation of group communication strategies is undertaken to promote participation of all parties.</p> <p>4.6 Specific communication needs of individuals are identified and addressed.</p>
5. Conduct interview	<p>5.1 A range of appropriate communication strategies are employed in interview situations.</p> <p>5.2 Different types of interview is conducted in accordance with the organizational procedures.</p> <p>5.3 Records of interviews are made and maintained in accordance with organizational procedures.</p> <p>5.4 Effective questioning, listening and nonverbal communication techniques are used to ensure that required message is communicated.</p>

Variable	Range
Strategies	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Recognizing own limitations • Utilizing techniques and aids • Providing written drafts • Verbal and non verbal communication
Effective group interaction	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Identifying and evaluating what is occurring within an interaction in a non-judgmental way • Using active listening • Making decision about appropriate words, behavior • Putting together response which is culturally appropriate • Expressing an individual perspective

	<ul style="list-style-type: none"> • Expressing own philosophy, ideology and background and exploring impact with relevance to communication
Interview situations	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Establish rapport • obtain facts and information • Facilitate resolution of issues • Develop action plans • Diffuse potentially difficult situation
Types of Interview	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Related to staff issues • Routine • Confidential • Evidential • Non-disclosure • Disclosure

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Demonstrate effective communication skills with clients and work colleagues accessing service • Adopt relevant communication techniques and strategies to meet client particular needs and difficulties
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • communication process • dynamics of groups and different styles of group leadership • communication skills relevant to client groups
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • full range of communication techniques including: <ul style="list-style-type: none"> ➤ active listening ➤ feedback ➤ interpretation ➤ role boundaries setting ➤ negotiation ➤ establishing empathy ➤ communication strategies • communicate to fulfill job roles as specified by the organization
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test

	<ul style="list-style-type: none"> • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Manage Micro, Small and Medium Enterprises (MSMEs)
Unit Code	IND BPS4 19 0117
Unit Descriptor	This unit covers knowledge, skills and attitude required in running Micro, Small and Medium enterprises. The strategies involve developing, monitoring and managing work activities and financial information, developing effective work habits, and adjusting work schedules as needed.

Elements	Performance Criteria
1. Develop and communicate Strategic work plan	<p>1.1 The importance of planning is sensitized before acting and about the importance of plans to reduce risks and to inhibit impulsive actions and discussed.</p> <p>1.2 The basics of planning and beginning with goal setting are communicated.</p> <p>1.3 The achievement of measurable and realistic short-term business objective is addressed.</p> <p>1.4 How to develop realistic activities plans and schedule is discussed.</p> <p>1.5 Major components of work plan are introduced and understood.</p> <p>1.6 The importance of constant reviewing their plans is understood by monitoring the results.</p>
2. Identify daily work requirements and Develop effective work habits	<p>2.1 Basic concept about effect working culture is discussed and understood.</p> <p>2.2 Different approaches to work culture are developed and understood.</p> <p>2.3 Work requirements are identified for a given time period by taking into consideration of resources and constraints.</p> <p>2.4 Work activities are prioritized based on business needs, requirements and deadlines.</p> <p>2.5 If appropriate, work is allocated to relevant staff or contractors to optimize efficiency.</p> <p>2.6 Work and personal priorities are identified and a balance is achieved between competing priorities using appropriate time management strategies.</p>

	<p>2.7 Input is sought from internal and external sources and used to develop and refine new ideas and approaches.</p> <p>2.8 Business or inquiries is/are responded to promptly and effectively.</p> <p>2.9 Information is presented in a format appropriate to the industry and audience.</p>
3. Manage Marketing of MSMEs	<p>3.1 Information on market and business needs is analyzed and market opportunities identified.</p> <p>3.2 Marketing mix and components are evaluated.</p> <p>3.3 Marketing mix for specific target market is determined.</p> <p>3.4 Marketing mix is monitored and continual adjusted against marketing performance.</p>
4. Manage Human Resources	<p>4.1 Human resource rules, regulations law and procedures are identified and determined.</p> <p>4.2 The existing human resource is audited, and gaps are identified.</p> <p>4.3 Recruitment and selection are conducted based on the organizational requirements.</p> <p>4.4 Selected candidates are oriented and placed for the appropriate position.</p> <p>4.5 Appraisal of employees' performance is conducted.</p> <p>4.6 Appraisal result is used for training and development, promotion, compensation, disciplinary measures and other purposes as required.</p> <p>4.7 Employee relations are maintained.</p>
5. Manage production and Operation	<p>5.1 Production /operation plan is developed and implemented.</p> <p>5.2 Required inputs are purchased and adequate inventories maintained.</p> <p>5.3 Production /operation process is checked and controlled.</p> <p>5.4 Quality control is applied and maintained.</p>
6. Maintain financial records and use for decision making	<p>6.1 The objective and benefits of financial records are discussed and understood.</p> <p>6.2 Asset, liabilities and capital are identified and</p>

	<p>recorded.</p> <p>6.3 Balance sheet and different journals are discussed.</p> <p>6.4 Business transactions are discussed, analyzed, classified and recorded.</p> <p>6.5 Daily financial records are maintained correctly in accordance with legal and accounting requirements.</p> <p>6.6 Invoices and payments are prepared and distributed in timely manner and in accordance with legal requirements.</p> <p>6.7 Outstanding accounts are collected or followed-up.</p> <p>6.8 Revenue, expense and costs are identified and discussed.</p> <p>6.9 Different ledgers and subsidiary ledgers are discussed and maintained.</p> <p>6.10 Profit and loss report is prepared.</p> <p>6.11 Financial interpretation is conducted with assistant from the appropriate person.</p> <p>6.12 Financial manual is prepared.</p>
<p>7. Monitor, Manage and Evaluate work performance</p>	<p>7.1 People, resources and/or equipment are coordinated to provide optimum results.</p> <p>7.2 Staff, clients and/or contractors are communicated within a clear and regular manner, to monitor work in relation to business goals or timelines.</p> <p>7.3 Problem solving techniques are applied to work situations to overcome difficulties and achieve positive outcomes.</p> <p>7.4 Opportunities for improvements are monitored according to business demands.</p> <p>7.5 Work schedules are adjusted to incorporate necessary modifications to existing work and routines or changing needs and requirements.</p> <p>7.6 Proposed changes are clearly communicated and recorded to aid in future planning and evaluation.</p> <p>7.7 Relevant codes of practice are used to guide an ethical approach to workplace practices and decisions.</p>

Variable	Range
Major components of work plan	May include but is not limited to: <ul style="list-style-type: none"> • Objective • Responsibilities • Resources (human, materials, finance, time, etc) • Activities
Resources	May include but is not limited to: <ul style="list-style-type: none"> • Human resource • Money • Time • Machines • Equipment • Space
Time management strategies	May include but is not limited to: <ul style="list-style-type: none"> • Prioritizing and anticipating • Short term and long term planning and scheduling • Creating a positive and organized work environment • Clear timelines and goal setting that is regularly reviewed and adjusted as necessary • Breaking large tasks into smaller tasks • Getting additional support if identified and necessary
Internal and external sources	May include but is not limited to: <ul style="list-style-type: none"> • Staff and colleagues • Management, supervisors, advisors or head office • Relevant professionals such as lawyers, accountants, management consultants • Professional associations
Human resource rules , regulations law and procedures	May include but is not limited to: <ul style="list-style-type: none"> • Recruitment and selection • Orientation and placement • Training and development • Performance appraisal and reward system • Disciplinary procedures • Movement and separation • Industrial relation
Employee relations	May include but is not limited to: <ul style="list-style-type: none"> • Relationship within employees • Relationship among employees and management and labor union • Relationship between labor union and government
Business goals	May include but is not limited to: <ul style="list-style-type: none"> • Sales targets • Budgetary targets

	<ul style="list-style-type: none"> • Team and individual goals • Production targets • Reporting deadlines
Problem solving techniques	<p>May include but is not limited to:</p> <ul style="list-style-type: none"> • Brainstorming • Fish bone • Focus group discussion • Problem tree

Evidence Guide	
Critical Aspects of Competence	<p>A person must be able to demonstrate:</p> <ul style="list-style-type: none"> • Ability to identify daily work requirements and allocate work appropriately • Ability to interpret financial documents in accordance with legal requirements • The ability to prepare strategic plan • The ability to develop effective work habit • The ability to manage marketing of MSEs • The ability to manage human resources of MSEs • the ability to manage production/operation of MSEs • The ability to maintain financial records of MSEs • The ability to manage, monitor and evaluate work performance of MSMEs
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> • Strategic plan • Working culture • Time management strategy • Marketing Mix • Relevant marketing, operation/production, human resource and financial management • Human resource functions • Production/operation functions • Monitoring and evaluation • Problem solving techniques • Federal and Local Government legislative requirements affecting business operations, especially in regard to OHS, equal employment opportunity, industrial relations and anti-discrimination • Relevant industry code of practice • Planning techniques to establish realistic timelines and priorities • Identification of relevant performance measures • Quality assurance principles and methods

Underpinning Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> • Technical or specialist skills relevant to the business operation • Interpret legal requirements, company policies and procedures and immediate, day-to-day demands • Strategic planning skills • Human relation skills • Communicate using questioning, clarifying, reporting, and giving and receiving constructive feedback • Numeracy skills for performance information, setting targets and interpreting financial documents and reports • Technical skills to interpret business document, reports and financial statements and projections • Relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities • Solve problem and develop contingency plans • Using computers and software packages to record and manage data and to produce reports • Evaluate using assessment work and outcomes • Observe for identifying appropriate people, resources and to monitor work
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Bogie and Body Production/Assembly Supervision Level IV	
Unit Title	Apply Problem Solving Techniques and Tools
Unit Code	IND BPS4 20 0117
Unit Descriptor	This unit of competency covers the knowledge, skills and attitude required to apply scientific problem solving techniques and tools to enhance quality, productivity and other kaizen elements on continual basis.

Elements	Performance criteria
1. Identify and select theme/problem.	<p>1.1 Safety requirements are followed in accordance with safety plans and procedures.</p> <p>1.2 All possible problems related to the process /Kaizen elements are listed using statistical tools and techniques.</p> <p>1.3 All possible problems related to kaizen elements are identified and listed on Visual Management Board/Kaizen Board.</p> <p>1.4 Problems are classified based on obviousness of cause and action.</p> <p>1.5 Critical factors like the number of customers affected, Potentials for bottlenecks, and number of complaints etc... is selected.</p> <p>1.6 Problems related to priorities of Kaizen Elements are given due emphasis and selected.</p>
2. Grasp current status and set goal.	<p>2.1 The extent of the problem is defined.</p> <p>2.2 Appropriate and achievable goal is set.</p>
3. Establish activity plan.	<p>3.1 The problem is confirmed.</p> <p>3.2 High priority problem is selected.</p> <p>3.3 The extent of the problem is defined.</p> <p>3.4 Activity plan is established as per 5W1H.</p>
4. Analyze causes of a problem.	<p>4.1 All possible causes of a problem are listed.</p> <p>4.2 Cause relationships are analyzed using 4M1E.</p> <p>4.3 Causes of the problems are identified.</p> <p>4.4 Root causes are selected.</p> <p>4.5 The root cause which is most directly related to the problem is selected.</p>

	<p>4.6 All possible ways are listed using creative idea generation to eliminate the most critical root cause.</p> <p>4.7 The suggested solutions are carefully tested and evaluated for potential complications.</p> <p>4.8 Detailed summaries of the action plan are prepared to implement the suggested solution.</p>
5. Examine countermeasures and their implementation.	<p>5.1 Action plan is implemented by medium KPT members.</p> <p>5.2 Implementation is monitored according to the agreed procedure and activities are checked with preset plan.</p>
6. Assess effectiveness of the solution.	<p>6.1 Tangible and intangible results are identified.</p> <p>6.2 The results are verified over time.</p> <p>6.3 Tangible results are compared with targets using various types of diagram.</p>
7. Standardize and sustain operation.	<p>7.1 If the goal is achieved, the new procedures are standardized and made part of daily activities.</p> <p>7.2 All employees are trained on the new Standard Operating Procedures (SOPs).</p> <p>7.3 SOP is verified and followed by all employees.</p> <p>7.4 The next problem is selected to be tackled by the team.</p>

Variables	Range
Safety requirements	<ul style="list-style-type: none"> • may include but not limited to: • OHS requirements include legislation, material safety, managements system, hazardous substances and dangerous goods code and local safe operating procedures • Work is carried out in accordance with legislative obligations, environmental legislations, relevant health regulation, manual handling procedure and organization insurance requirements
Statistical tools and techniques	<ul style="list-style-type: none"> • may include but not limited to: • 7 QC tools may include: <ul style="list-style-type: none"> ➤ Stratification ➤ Pareto Diagram ➤ Cause and Effect Diagram ➤ Check Sheet ➤ Control Chart/Graph ➤ Histogram ➤ Scatter Diagram • QC techniques may include:

	<ul style="list-style-type: none"> ➤ Brain storming ➤ Why analysis ➤ What if analysis ➤ 5W1H
Kaizen Elements	<ul style="list-style-type: none"> • may include but not limited to: • Quality • Cost • Productivity • Delivery • Safety • Moral • Environment and Gender equality
5W1H	<ul style="list-style-type: none"> • may include but not limited to: • Who: person in charge • Why: objective • What: item to be implemented • Where: location • When: time frame • How: method
4M1E	<ul style="list-style-type: none"> • may include but not limited to: • Man • Machine • Method • Material and • Environment
Creative idea generation	<ul style="list-style-type: none"> • may include but not limited to: • Brainstorming • Exploring and examining ideas in varied ways • Elaborating and extrapolating • Conceptualizing
Medium KPT	<ul style="list-style-type: none"> • may include but not limited to: • 5S • 4M (Machine, Method, Material and Man) • 4p (Policy, Procedures, People and Plant) • PDCA cycle • Basics of IE tools and techniques
Tangible and intangible results	<ul style="list-style-type: none"> • may include but not limited to: • Tangible result may include quantifiable data • Intangible result may include qualitative data
Various types of diagram	<ul style="list-style-type: none"> • may include but not limited to: • Line graph • Bar graph • Pie-chart

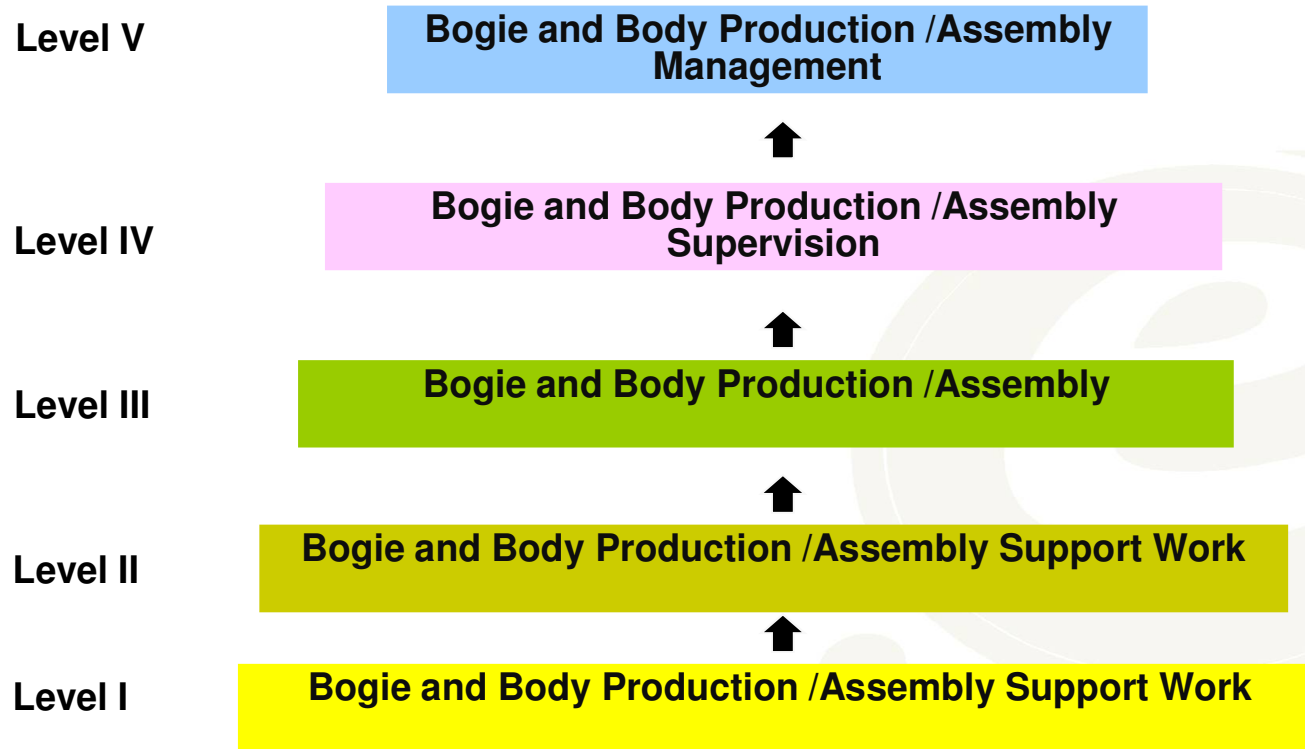
	<ul style="list-style-type: none"> • Scatter and Affinity diagrams
Standard Operating Procedures (SOPs)	<ul style="list-style-type: none"> • may include but not limited to: • The customer demand • The most efficient work routine (steps) • The cycle times required to complete work elements • All process quality checks required to minimize defects/errors • The exact amount of work in process required

Evidence Guide	
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Critical Aspects of Assessment	<p>Demonstrates skills and knowledge competencies to:</p> <ul style="list-style-type: none"> • Apply all relevant procedures and regulatory requirements to ensure quality and productivity of an organization. • Detect non-conforming products/services in the work area • Apply effective problem solving approaches/strategies. • Implement and monitor improved practices and procedures • Apply statistical quality control tools and techniques.
Underpinning Knowledge and Attitude	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • QC story/PDCA cycle/ • QC story/ Problem solving steps • QCC techniques • 7 QC tools • Basic IE tools and techniques. • SOP • Quality requirements associated with the individual's job function and/or work area • Workplace procedures associated with the candidate's regular technical duties • Relevant health, safety and environment requirements • organizational structure of the enterprise • Lines of communication • Methods of making/recommending improvements. • Reporting procedures
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Apply problem solving techniques and tools • Apply statistical analysis tools • Apply Visual Management Board/Kaizen Board. • Detect non-conforming products or services in the work area • Document and report information about quality, productivity and other kaizen elements.

	<ul style="list-style-type: none"> • Contribute effectively within a team to recognize and recommend improvements in quality, productivity and other kaizen elements. • Implement and monitor improved practices and procedures. • Organize and prioritize activities and items. • Read and interpret documents describing procedures • Record activities and results against templates and other prescribed formats.
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

BOGIE AND BODY PRODUCTION AND ASSEMBLY



2

Acknowledgement

We wish to extend thanks and appreciation to the many representatives of business, industry, academe and government agencies who donated their time and expertise to the development of this occupational standard.

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