

ENGINEERING SCQF LEVEL 7 APPRENTICESHIPS STANDARDS & FRAMEWORKS

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Introduction to the new standards

Scotland's people are its greatest asset and essential to the future prosperity of the country, but the overall population is ageing and predicted to decline. As Scotland grows older, people are more likely to work for longer, with multiple employers and in multiple careers. This results in a greater need for in-work engagement with the skills system to reskill or upskill in line with changing work demands

Employer demand for workers continues to increase while the supply of permanent and temporary workers is falling, bringing new challenges for industries and employers across Scotland. Over a third (34.9%) of businesses in Scotland report a shortage of workers and skill gaps.

There is clear recognition that change is required to ensure that the Scottish skills system support employers and the economy against future disruption and volatility, modular construction of apprenticeships to support upskill, reskilling and job evolution is critical to ensure that any standards can continue underpin and support the rapid changing nature of the engineering and advanced manufacturing sector. The use of technology in delivery and assessment of apprenticeships to support national and rural delivery will increase and the recognition of micro-credentials aligned to employer and industry developed competencies will be important and the need to upskill the workforce becomes paramount.

As part of commitment in recognising the future skills challenges a recent industry led review of the Modern Apprenticeship Engineering provision was undertaken; this involved the largest consultation of employers, employees, industry groups and delivery partners in recent times. This review covered within its scope 9 existing engineering based and related apprenticeships.

In line with the agreed Apprenticeship (Standards and Frameworks) Strategy the development approach was to ensure the optimum shape of apprenticeship provision allowing recognition of shared and common competence within jobs and ultimately apprenticeships to support flexibility and labour transitions and progression for all users of the Apprenticeship content.

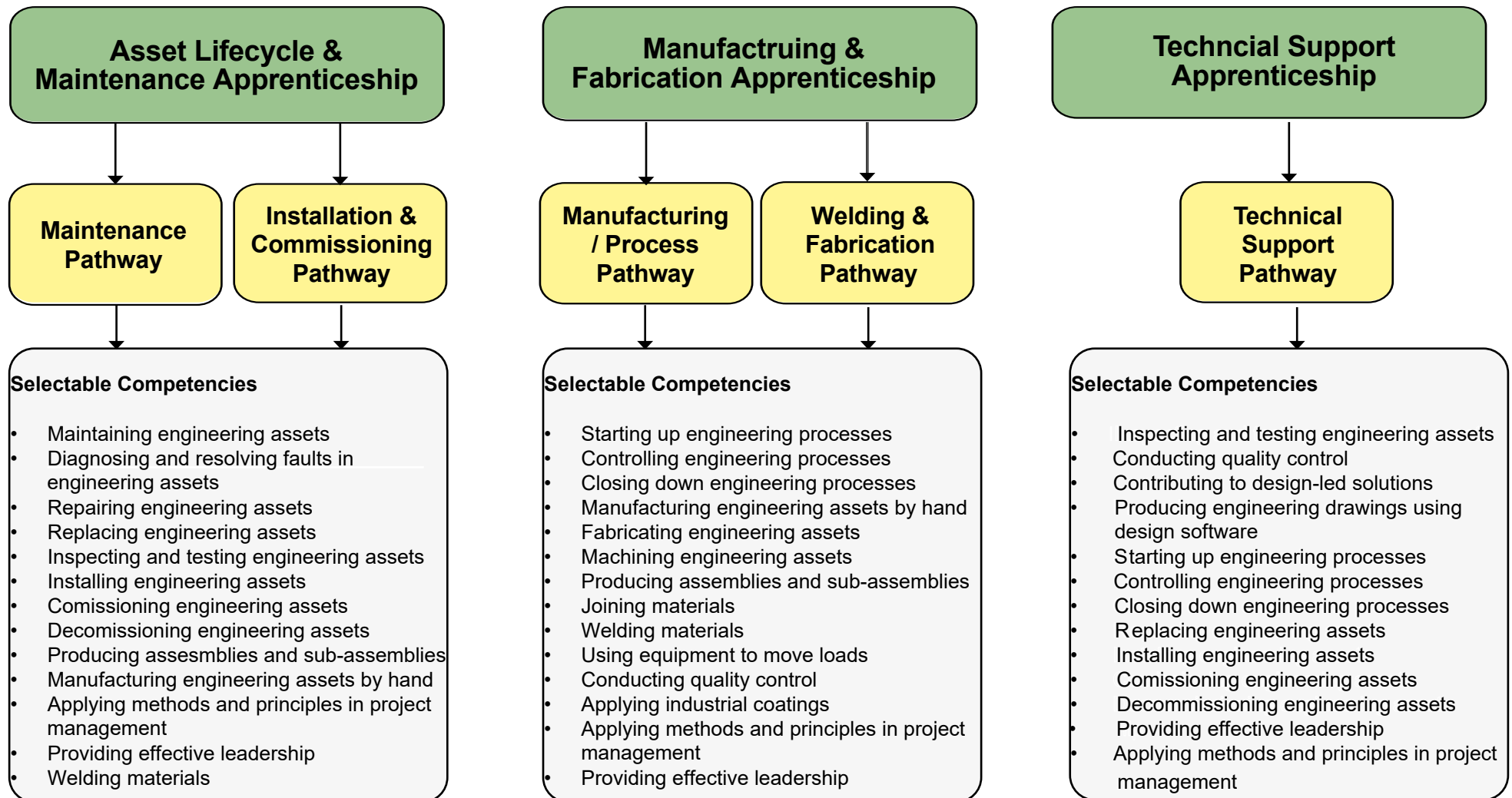
The outcome of this review led to the development and launch of three new Modern Apprenticeships

- **Engineering: Maintenance and Asset Management**
 - o Maintenance
 - o Installation and Commissioning
- **Engineering: Manufacturing**
 - o Manufacturing/ Process
 - o Welding & Fabrication
- **Engineering: Technical Support**

The newly developed Engineering apprenticeship supports recognition and development of shared skills and competencies includes elements of specialist skill and competence to ensure specialist functions important to various sectors of the industry and the economy are available to those that need them. The standards are written in such a way that they consider higher level functional task activity to which employer context, environment and disciplines can be aligned. The standards also contain skills that support adaptive and sustainable practice and is the first Scottish Apprenticeship to include a discrete competence on "Sustainable Practice" to ensure that Scottish engineers of the future understand how they can develop sustainable practices and products. The new standard also includes Meta-skills: to support employees to develop skills to enhance their personal effectiveness and adapt and leverage the opportunity of change throughout their career.

Mandatory Competencies (relevant to all apprenticeships and pathways below)

- Performing core engineering activities
- Developing meta-skills and personal practice
- Understanding the importance of environmental good practice and sustainability



The value and benefits of the new standards

It provides the skills that employers and the Scottish Economy needs, supports employers and the economy to respond to future labour market challenges and explicitly builds in competence in sustainable practice within engineering roles. The standards have been developed utilising a collaborative approach and has considered the major engineering disciplines and skills.

The standards also provide for greater ties between learning and the realities of work, supporting and closing skills gaps and seeks to help in the reduction of skills shortages across the sector. The structure of standards also designed to help in providing greater resilience within the labour market supporting labour transitions and skills under employment.

The inclusion of non-technical skills and provision also supports increased effectiveness (productivity), adaptability and sustainability – skills that employers and talent care about. These skills create an underpinning and bridgehead to a more flexible and adaptive model of skills development that supports employers and the economy with the major structural challenges and the ability for apprentices to adapt and adopt and use of emerging technologies.

The higher-level task function concept

The world is experiencing a historic transformation in how people work, where they work and even why they work. The skills we each need to enter and progress in work are changing too. As we face an unpredictable and rapidly evolving future, continuing to develop the right skills in response to this change will be critical for us all with new economic challenges are emerging.

The National Strategy for Economic Transformation (NSET) highlights the opportunity for Scotland to strengthen its position

in new markets and industries, generating new, well-paid jobs from a just transition to net zero. Realising these opportunities, and the higher-skilled, higher wage jobs they create, will require support for lifelong training which helps people and employers have the skills they will need to be competitive and grow.

Today we are experiencing a rapid increase in the number of job types, coupled with a lack of job standardisation, making the change far more complex to predict and respond to as technologies and jobs continue to change throughout people's careers, workers will need to continuously develop adaptive resilience and a diverse skillset, including baseline digital skills, to remain competitive in the labour market. Similarly, as technology replaces routine tasks, people will need to adapt, developing related, uniquely human skills which continue to add value in the workplace.

In this context, it is essential that Scotland's workers have lifelong opportunities to acquire and use new knowledge and skills which allow them to remain competitive in the labour market and support a growing and evolving Scottish economy. This will require a more balanced portfolio of learning provision in future, combining the best of traditional academic routes with greater investment in work-based learning, and new forms of rapid upskilling and retraining.

The new engineering apprenticeship standards are designed to support in accommodating the fast-moving pace of change in the sector and that of the changing working environment. These standards allow for multiple contexts and environments to be accommodated and also the rapid technical developments within the sector. The high-level task functional approach to the apprenticeship content provides for greater flexibility in meeting Employer needs and the incorporation of existing and new technical engineering advances. This approach ensures greater alignment between the employer workplace skills requirements and knowledge and understanding needed for today and future successful transitions.

Extensive discussions with employers and industry through the development of these qualifications and apprenticeships highlighted two key perspectives.

Work provides the context for learning

Whilst the working environment is unique to each employer, spending the majority of their time within a workplace is common to every apprentice. Historically, some apprenticeships have been heavily contextualised to be unique to a specific sector or sub sector. Feedback from employers was that on occasion this could lead

in some instances to challenges in currency of the qualification/ apprenticeship as the industry/ sub sector evolves more quickly than the skills system can keep up and what is required is not recognised within the apprenticeship.

By recognising the functions of work within these apprenticeships and defining competence, that will suit the vast majority of employers/ sectoral areas, but allowing flexibility in the assessment of these competencies to reflect current workplace/ industry practices ensures that these apprenticeships can enable the currency as practice, technology, safety and sustainability etc. practises evolve.

Competence at occupational level and job competence may vary

Additionally, there was a recognition that in some areas there are likely to be additional elements and standards that an individual needs to achieve to be both competent and, on many occasions, safe within their working environment.

In these instances, it is important, where competence is above the apprenticeship/ qualification baseline, that employers are able to determine what competence means to them. This means that if there are any local (employer) or industry standards that an individual needs to achieve to do the job within their workplace that the achievement of these – if mapped to the original competence – should be able to provide evidence in whole or in part for the demonstration of competence in that area. This we hope should remove, in these instances, any need for repetition or Multiple forms of assessment and ensure that the apprentices are competent and able to undertake work safely and to the level of competence required by each employer.

Identification and mapping of any local requirements should be undertaken between employer and training provider at the start of each apprenticeship.

To provide examples of this approach SDS and Enginuity have engaged with a selection of employers/ sectors that had identified specific sub-sectoral or additional mandatory standards, and we worked directly with them to provide small number of worked exam-ples detailed below.

To aid the introduction of the new engineering standards a set of examples have been created to show how providers and employers can work collaboratively in understanding how an employer led detailed standard or operating procedure, and associated task can be used to align that activity undertaken by apprentices, to the new high level functional task work situations that form the apprenticeship standards. These examples have been created working closely with a small number of employers across different parts of the engineering and advanced manufacturing sector to show how the apprenticeship standard can work in different contexts and complex associated tasks. Examples have been drawn from Rail, Oil & Gas, Aerospace and Marine sectors.

Employers from these areas have set out detailed tasks that apprentices would be expected to perform within their functional job roles and identified the likely apprenticeship standard that would align to the task. Detailed analysis of the tasks has been undertaken as part of this work and the appropriate apprenticeship standards signposting to performance, knowledge and understanding completed for each task. The completed templates show how the task content, and the activity performed as part of the task aligns to apprenticeship expected performance knowledge and understanding requirements that forms the apprenticeship standard. The templates are also designed to show how providers and employers might work collaboratively using a template approach to incorporate internal operating/ employer operating standards and procedures that already exist and that apprentices will follow where carrying out a particular task. The detail and references within the templates are not exhaustive and the examples are designed to be used a reference tool for providers and employers to help in the delivery of the new apprenticeship standard, and how the standard can be used to incorporate tasks and activities across multiple engineering environments, contexts and engineering related disciplines.

Examples show relate to the following - **click on the example you would like to review:**

Rail	Oil & Gas	Aerospace	Marine
<ul style="list-style-type: none">• Overhead Line Maintenance Faulting (OLE)• Drainage Inspection• Visual Inspection of Track Assets	<ul style="list-style-type: none">• Drawing Office• Overhauling Valve Assemblies	<ul style="list-style-type: none">• Crew Oxygen Bottle Installation• EDP Case Drain Filter Replacement• Gauge/ Scratch Repair of Fuselage Skin• Rad Alt Antennas	<ul style="list-style-type: none">• Welding Watertight Blast Door• Fabrication, Fitting and Faring FHD Assembly

Engineering context	<ul style="list-style-type: none"> What is the engineering context/ environment? For example, Rail, Oil & Gas, Aerospace, Marine.
Apprenticeship pathway	<ul style="list-style-type: none"> Three new engineering apprenticeship frameworks have been developed: Asset Lifecycle and Maintenance, Manufacturing and Fabrication and Technical Support. Which framework aligns to the task and will be used?
Description of task	<ul style="list-style-type: none"> What is the title of the task/ high level description? The step-by-step detail of the task will be outlined below.
Selectable Competencies chosen which align to the task description	<ul style="list-style-type: none"> What are the optional competency titles that align to the task? The detail of these can be found in the Occupation Profile of the relevant apprenticeship framework.
Additional Competencies that may have relevance to the task	<ul style="list-style-type: none"> Are there other optional competencies that may be of relevance to the task?
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> What are Meta-Skills? What are the key meta-skills used in this task? The meta-skills profile can be found in the Occupation Profile of the relevant apprenticeship framework. The key meta-skills may vary depending on the optional competencies chosen.

Detail of task activity	Performance, Knowledge and Understanding References	Employer references/ standards	Other considerations
<ul style="list-style-type: none"> Detail of a specific task(s) that an apprentice would be expected to perform within their functional job roles 	<ul style="list-style-type: none"> The appropriate apprenticeship standards signposting to performance, knowledge and understanding completed throughout the task. This detail can be found in the Occupation Profile for the relevant framework. 	<ul style="list-style-type: none"> What are the employer reference points/ standards an apprentice needs to follow for this task? 	<ul style="list-style-type: none"> Any further considerations? Examples here could include the application of risk assessments, quality standards and expectations, company policies or technical standards interpretation.

Engineering context	<ul style="list-style-type: none"> • Rail: Overhead Line Equipment (OLE)
Apprenticeship pathway	<ul style="list-style-type: none"> • Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> • Overhead line, faulting, high level and low level maintenance and defect rectifications
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> • Maintaining engineering assets • Diagnosing and resolving faults in engineering assets • Replacing engineering assets • Inspecting and testing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> • Producing assemblies and sub-assemblies • Repairing engineering assets • Commissioning engineering assets • Installing engineering assets • Providing effective leadership
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> • Communicating, Critical Thinking, Initiative and Sense Making

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1, 6, 7 K&UR – 1, 2 		
Fault finding, rectification and testing of Overhead Line Equipment (OLE) <ul style="list-style-type: none"> Investigation and correction of an OLE alignment and/or support fault (such as dropper and stagger problems) and associated equipment. Contact wire/catenary/ insulator electric fault investigations against consistent fault reports. Investigation and rectification of faults on earthing and bonding systems. Investigation and rectification of faults on tensioned equipment. Investigation and rectification of mechanical clearance problems. Investigation and rectification of OLE tensioning devices. Investigation and rectification of mechanical faults on OLE wires. 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 2, 3, 5, 7, 8, 9, 11 K&UR – 2, 3, 4, 5, 7, 8, 10, 11, 14 Selectable Competence Diagnosing and resolving faults in engineering assets <ul style="list-style-type: none"> PR – 1, 2, 5, 6, 7, 8, 9, 10, 11 K&UR – 1, 3, 4, 5, 7, 8, 13, 14, 15 Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 7, 8, 9 K&UR – 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 	<ul style="list-style-type: none"> NR/L2/ELP/21085 NR/L2/ELP/21087 NR/L2/ELP/21088 NR/L3/ELP/27237 	<ul style="list-style-type: none"> OLE Maintenance 1,2 & 3 Railway training courses required to complete

<p>Routine inspection and planned maintenance (High Level Tasks)</p> <ul style="list-style-type: none"> Non-intrusive high-level inspections OLE, insulator and sectioning components (Catenary System/Overlaps) Non-intrusive high-level inspections OLE, insulator and sectioning components (Neutral Section/SI) High level intrusive inspection and follow up actions Gauging and adjustment of OHL assemblies and components Replacement of “in-running” components – Life ex-pired/campaign change Small Steelwork replacement - Life expired/campaign change Trackside isolation switch maintenance (High Level) Make “Registration” Adjustments (Height and Stagger) 	<p>Selectable Competence Maintaining engineering assets</p> <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 7, 8 K&UR – 1, 2, 3, 4, 5, 6, 8, 12 <p>Selectable Competence Inspecting and testing engineering assets</p> <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 7, 9 K&UR – 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 <p>Selectable Competence Replacing engineering assets</p> <ul style="list-style-type: none"> PR – 4, 5, 6, 7, 8 K&UR 1, 2, 3, 4, 6, 7, 8, 9, 10 	<ul style="list-style-type: none"> NR/L3/ELP/27237 NR/L2/ELP/27009 NR/L3/ELP/29987 NRL/L3/MTC/RCS0216 	<ul style="list-style-type: none"> OLE Maintenance 1,2 & 3 Railway training courses required to complete
<p>Routine inspection and/or planned maintenance (Low Level Tasks)</p> <ul style="list-style-type: none"> Non-intrusive low-level inspections and follow up actions. Low level intrusive inspection and follow up actions. Switch operating equipment (low level) maintenance. Examine structure at ground level and apply protective coatings – “piled” struct 	<p>Selectable Competence Maintaining engineering assets</p> <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 7, 8 K&UR – 1, 2, 3, 4, 5, 6, 8, 12 <p>Selectable Competence Inspecting and testing engineering assets</p> <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 7, 9 K&UR – 1, 2, 3, 4, 5, 6, 7, 9, 10, 11 	<ul style="list-style-type: none"> NR/L2/ELP/21085 NR/L3/ELP/27237 NR/L2/ELP/21131 NRL/L3/MTC/RCS0216 	<ul style="list-style-type: none"> OLE Maintenance 1,2 & 3 Railway training courses required to complete

Engineering context	<ul style="list-style-type: none"> • Rail: Track and Off Track
Apprenticeship pathway	<ul style="list-style-type: none"> • Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> • Compliance Inspection of Track Assets
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> • Maintaining engineering assets • Repairing engineering assets • Replacing engineering assets • Inspecting and testing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> • Diagnosing and resolving faults in engineering assets • Producing assemblies and sub-assemblies • Manufacturing engineering assets by hand
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> • Communication, Critical Thinking, Initiative and Sense Making

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1, 6, 7 K&UR – 1, 2 		
<ul style="list-style-type: none"> TR00 Track Induction TR02 Maintain Off Track Assets TRXX New Standards being written HSE T9 Manual Handling PTS Personal Track Safety 			
Tools and Equipment <ul style="list-style-type: none"> Ensure you have the correct Personal Protective Equipment (PPE), Equipment, Tools. 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR - 5 K&UR – 2, 4, 8 Selectable Competence Maintaining engineering assets (similar examples can be found in other selectable competencies) <ul style="list-style-type: none"> PR - 1, 2 K&UR – 3 	<ul style="list-style-type: none"> NR/L2/CIV/005 Module 3,4,5 	<ul style="list-style-type: none"> Knowledge and Experience necessary

Follow diagrammatic instructions <ul style="list-style-type: none"> Diagrams must be followed at all times from inlet to outlet of drains 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 1 K&UR – 1, 6 	<ul style="list-style-type: none"> NR/L2/CIV/005 Module 3,4,5 	
Understand and Identify Track Asset Components <ul style="list-style-type: none"> Identify asset types (catchpit, channel, culvert, trash screen etc) Adjoining drainage assets Field Drains to track drains Self-Cleaning drains Syphons / Sumps 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 8 K&UR – 8, 10, 11 Selectable Competence Maintaining engineering assets (similar examples can be found in other selectable competencies) <ul style="list-style-type: none"> PR - 3 K&UR – 2, 3 	<ul style="list-style-type: none"> NR/L2/CIV/005 Module 3,4,5 	<ul style="list-style-type: none"> Knowledge and Experience necessary
Identify defects <ul style="list-style-type: none"> Inspect assets to identify missing or worn components that could cause a safety risk to safe running of trains 	Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 8, 9 K&UR – 4, 5, 7, 8, 9, 10, 11, 12, 14, 15 	<ul style="list-style-type: none"> NR/L2/CIV/005 Module 3, 4, 5 	<ul style="list-style-type: none"> Knowledge and Experience necessary

Report on Defects <ul style="list-style-type: none"> Complete paperwork and submit to Section Manager Use My work App to update and score drainage according to structural and service condition 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR - 12, 14, K&UR – 15, 16, 17 Mandatory Competence Developing meta-skills and personal practice <ul style="list-style-type: none"> PR – 8 K&UR – 6, 7 Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 7 K&UR – 13, 15 	<ul style="list-style-type: none"> NR/L2/CIV/005 Module 3, 4, 5 	<ul style="list-style-type: none"> Knowledge and Experience necessary
Rectify or Replace Defective components <ul style="list-style-type: none"> Rectify, report and document through Track Engineering form + Work Arising Form on works complete. Add using My Work App 	Selectable Competence Repairing engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 7, 8 K&UR – 3, 4, 5, 6, 8, 9, 10, 11 Selectable Competence Replacing engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 7, 8 K&UR – 3, 4, 5, 6, 8, 9, 10, 11 	<ul style="list-style-type: none"> NR/L2/CIV/005 Module 11, 12, 13, 14,15 	<ul style="list-style-type: none"> Knowledge and Experience necessary

Engineering context	<ul style="list-style-type: none"> • Rail: Track and Off Track
Apprenticeship pathway	<ul style="list-style-type: none"> • Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> • Compliance Inspection of Track Assets
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> • Maintaining engineering assets • Repairing engineering assets • Replacing engineering assets • Inspecting and testing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> • Manufacturing engineering assets by hand • Diagnosing and resolving faults in engineering assets • Producing assemblies and sub-assemblies
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> • Communication, Critical Thinking, Initiative and Sense Making

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> • PR - 1, 6, 7 • K&UR – 1, 2 		
Core Competencies Required <ul style="list-style-type: none"> • TR00 Track Induction • TR01 Maintain Permanent Way Assets • TR06 Inspect Permanent Way Infrastructure • HSE T9 Manual Handling • PTS Personal Track Safety 			
Tools and Equipment <ul style="list-style-type: none"> • Ensure you have the correct PPE, Equipment, Tools for the task 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> • PR - 5 • K&UR – 2, 4, 8 Selectable Competence Maintaining engineering assets (similar examples can be found in other selectable competencies) <ul style="list-style-type: none"> • PR - 1, 2 • K&UR – 3 	<ul style="list-style-type: none"> • TRK/001 • Module 019 	

Follow diagrammatic instructions <ul style="list-style-type: none"> BVI diagrams must be followed at all times Identified patroller for each inspection 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 1, 2, 4, 7 K&UR – 1, 6, 7, 8 	<ul style="list-style-type: none"> TRK/001 Module 002 Module 019 	<ul style="list-style-type: none"> 4 Weekly reviews with Section Manager
Understand and Identify Track Asset Components <ul style="list-style-type: none"> Plain Line Track Continuously welded Rail Joint Track Switches and Crossing 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 8 K&UR – 8, 10, 11 Selectable Competence Maintaining engineering assets (similar examples can be found in other selectable competencies) <ul style="list-style-type: none"> PR - 3 K&UR – 2, 3 	<ul style="list-style-type: none"> TRK/001 Module 002 Module 019 	<ul style="list-style-type: none"> Knowledge and Experience necessary
Identify defects <ul style="list-style-type: none"> Inspect assets to identify missing or worn components that could cause a safety risk to safe running of trains 	Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 8, 9 K&UR – 4, 5, 7, 8, 9, 10, 11, 12, 14, 15 	<ul style="list-style-type: none"> TRK/001 Module 002 Module 019 	<ul style="list-style-type: none"> Knowledge and Experience necessary

Report on Defects <ul style="list-style-type: none"> Complete paperwork and submit to Section Manager 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR - 12, 14, K&UR – 15, 16, 17 Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 7 K&UR – 13, 15 	<ul style="list-style-type: none"> TRK/001 Module 002 Module 019 	<ul style="list-style-type: none"> 4 Weekly review with Section Manager
Rectify or Replace Defective components <ul style="list-style-type: none"> Rectify, report and document through Track Engineering form + Work Arising Form on works complete. 	Selectable Competence Repairing engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 7, 8 K&UR – 3, 4, 5, 6, 8, 9, 10, 11 Selectable Competence Replacing engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 7, 8 K&UR – 3, 4, 5, 6, 8, 9, 10, 11 	<ul style="list-style-type: none"> TRK/001 Module 002 Module 019 	<ul style="list-style-type: none"> 4 Weekly review with Section Manager

Engineering context	<ul style="list-style-type: none"> Drawing Office
Apprenticeship pathway	<ul style="list-style-type: none"> Engineering: Technical Support
Description of task	<ul style="list-style-type: none"> Producing Engineering Drawings
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> Contributing to Design-Led Solutions Producing Engineering Drawings and Models using Design Software
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> Starting up Engineering Processes Controlling Engineering processes Conducting quality control Applying Methods and Principles in Project Management
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> Creativity, Communicating, Integrity, Sense Making

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing meta-skills and personal practice <ul style="list-style-type: none"> PR - 1, 6, 7 K&UR – 2, 7 		
Pre-Checks <ul style="list-style-type: none"> Identify that all required documentation is available prior to starting task or Job. Where additional information or documentation is required – then this to be requested from the Originator of Job. 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 1, 2,4 K&UR - 1,2 Selectable Competence Contributing to design led solutions <ul style="list-style-type: none"> PR – 3 K&UR – 2 	<ul style="list-style-type: none"> Picklist ES-020.1 Work Instruction WI0-0335 – Requesting Eng. Drawings and/or Design 	<ul style="list-style-type: none"> Picklist Guidelines
Safety Checks <ul style="list-style-type: none"> Ensure correct PPE is sourced and worn prior to conducting dimensional inspection. Ensure START card has been implemented prior to starting the task or job 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 5 K&UR - 4 	<ul style="list-style-type: none"> Policy SOPS0005 Provision & Use of PPE. Policy SOPS0010 Use of START Cards. 	<ul style="list-style-type: none"> Safety BASIX & Risk Assessment EUR0133 – Entering Workshops

Dimensional Inspection <ul style="list-style-type: none"> Liaise with workshop to locate relevant job prior to carrying out dimensional inspection. Ensure the appropriate measuring equipment has been selected for the Job and that it has been calibrated and within valid date. Completion of START Card. 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 4 K&UR - 6, 7, 16 Selectable Competence Contributing to design led solutions <ul style="list-style-type: none"> PR- 3, 4 K&UR - 3, 5 	<ul style="list-style-type: none"> Policy SOPS 0065 - Calibration Policy SOPS0010 – Use of START Cards 	<ul style="list-style-type: none"> Safety BASIX & Risk Assessment EUR0133 – Entering Workshops
General Requirements <p>Identify the following details)</p> <ul style="list-style-type: none"> Unique Number Manufacturer Type of Valve or Operator Size and class or Model No. Serial Number & Markings Tag Number & Failure Mode 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> K&UR – 2, 19 	<ul style="list-style-type: none"> Picklist ES-020.1 	<ul style="list-style-type: none"> Internal training course and Toolbox Talk Picklist Guidelines
Specific Work scope <ul style="list-style-type: none"> Identify and review the required work scope prior to starting task or job. Take all necessary dimensions & measurements to meet the criteria for the work scope. Confirm if any recorded dimensions conform with any relevant standards (i.e. Topworks conform with ISO Standards and End Connections conform with ASME and API standards). Document all recorded data and dimensions within the relevant Electronic Job files. 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 13, 14 K&UR – 6, 7 Selectable Competence Contributing to design led solutions <ul style="list-style-type: none"> PR – 1, 2, 4 K&UR – 3, 5 	<ul style="list-style-type: none"> Procedure SC1-0271 - Processing of Drawing Office Jobs Applicable ISO, ASME, & API Standards Procedure SC1-0009 – Control of Management System Records 	

Documentation <ul style="list-style-type: none"> The appropriate Job Regis-ters to be updated to reflect the status of the job. All recorded data to be added to the Drawing Office Job pack. All new drawings produced to be recorded in the CAD Drawing Register, with all details recorded and relevant Drawing numbers allocated against each part or assembly. Drawing Office Job sheet to be updated with all drawing numbers and identified by appropriate draughtsperson. Changes or Amendments to any drawings shall be recorded and appropriate revision status number applied to the drawing. (i.e. Rev. A, B, C, etc...) 	Mandatory Competence <u>Performing core engineering activities</u> <ul style="list-style-type: none"> PR – 12 K&UR - 15 	<ul style="list-style-type: none"> Procedure SC1-0271 – Processing of Drawing Office Jobs Policy SOPS 0074 – Design & Engineering Controls Procedure SC1-0141 – Control of Engineering Drawings 	<ul style="list-style-type: none"> Drawing Office Competency Criteria & Framework
Produce Engineering Drawings and Design Review <ul style="list-style-type: none"> Using all data and dimensions recorded Produce 3D models for required component part(s) or assemblies. Using the 3D models created - generate 2D Engineering drawings used for the design, manufacture, or mod-ification of these parts. All generated drawing views to be presented on a standard Drawing Border template. The layout of the drawing views shall be in accordance with the correct graphic projection as identified in the Drawing border. Appropriate scales shall be applied and noted on the Drawing. All dimensions used in manufacturing drawings shall be in inches unless otherwise determined. 	Mandatory Competence <u>Performing core engineering activities</u> <ul style="list-style-type: none"> PR – 8, 15, 20, 21 Selectable Competence <u>Contributing to design led solutions</u> <ul style="list-style-type: none"> PR - 5, 6, 9 K&UR – 7, 8, 9 	<ul style="list-style-type: none"> Procedure SC1-0141 – Control of Engineering Drawings Procedure SC1-0272 – Processing Design Jobs Procedure SC1-0271 – Processing of Drawing Office Jobs BS 8888 – Technical product documentation & specification BS EN ISO 128 – Technical drawing standard 	<ul style="list-style-type: none"> External course – 3D & 2D CAD Systems Drawing Office Competency Criteria & Framework Internal training sessions on 3D CAD systems Technical Chart TC-073 Geometrical Tolerancing Symbols Drawing Office Competency Criteria & Framework

Performance Requirements (PR) - Details of what an individual will be able to do on achievement of competency (work situation).

Knowledge and Understanding Requirements (K&UR) - Application of what individuals must know and understand to carry out the competency (work situation) and which underpin competent performance.

<ul style="list-style-type: none"> Drawings produced for the renewal and manufacture of new parts shall be subjected to a Non-OEM selection process carried out by the Engineering team. All Non-OEM parts shall be reviewed and where necessary calculations carried out to verify suitability for service media / operating conditions. Once approval has been given by the Engineering team; then the drawings can be issued out for the manufacture of the new part(s). 	<p>Selectable Competence <u>Producing Engineering drawings using design software</u></p> <ul style="list-style-type: none"> PR – 3, 4, 5, 6, 7 K&UR – 4, 6, 7 	<ul style="list-style-type: none"> Work Instruction WI1-0203 -Geometrical Tolerancing. Policy SOPS 0074 – Design & Engineering Controls Procedure SC1-0272 – Processing Design Jobs 	<ul style="list-style-type: none"> Client Specifications
<p>Checking Engineering Drawings and issue Engineering Drawings</p> <ul style="list-style-type: none"> The nominated checker must be deemed competent in this checking activity. The checker shall identify the part(s) or assemblies required and locate the relevant job. The checker shall carry out a Final dimensionaler check prior to checking the Engineering drawings. The checker shall mark up the drawing with any appropriate changes or comments and passed back to the Draughtsperson to make the necessary changes. Once any changes have been made to the drawings and the checker is satisfied, then these drawings can be signed as checked and approved by the nominated checker. Once all drawings have been checked and approved then these can be issued to the relevant workshops or Machine shop for manufacture. 	<p>Mandatory Competence <u>Performing core engineering activities</u></p> <ul style="list-style-type: none"> PR – 9 K&UR - 14 <p>Selectable Competence <u>Contributing to design led solutions</u></p> <ul style="list-style-type: none"> PR – 8, 10, 11 K&UR – 10 <p>Selectable Competence <u>Producing Engineering drawings using design software</u></p> <ul style="list-style-type: none"> PR – 8 K&UR – 9 	<ul style="list-style-type: none"> Procedure SC1-0141 – Control of Engineering Drawings Procedure SC1-0141 – Control of Engineering Drawings Procedure SC1-0271 – Processing of Drawing Office Jobs ProcedureSC1-0141 – Control of Engineering Drawings Procedure SC1-0272 – Processing of Design Jobs Procedure SC1-0009 Control of Management System Records 	<ul style="list-style-type: none"> Non-OEM form + Design Dossier Drawing Office Competency Criteria & Framework Toolbox Talk Drawing Office Competency Criteria & Framework Guidelines

<ul style="list-style-type: none">• All drawings or documentation issued for manufacture shall be recorded in the Document Distribution Register.• All drawings shall be digitally stamped as a 'Controlled Copy' c/w 'Job details' decals stamp specific to the drawing and job.• Digital copies of the 'Controlled Copy' drawings are dropped into the specific Electronic Job File and a link emailed out to the relevant workshops and machine shop for accessibility to manufacture or modify.			
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Engineering context	<ul style="list-style-type: none"> Valve Division
Apprenticeship pathway	<ul style="list-style-type: none"> Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> Overhauling Valve Assemblies
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> Maintaining Engineering Assets Repairing Engineering Assets Replacing Engineering Assets Inspecting and Testing Engineering Assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> Producing assemblies and sub-assemblies
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> Collaborating, Focussing, Critical Thinking and Initiative

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting		
Pre-Checks <ul style="list-style-type: none"> Identify all job cards and Drawings etc Ensure all correct data has been confirmed Check all tooling and calibration cert Risk Assessment specific to job 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 1, 2, 3, 6 K&UR – 2, 3, 7, 8, 9, 10 Selectable Competence Maintaining engineering assets <ul style="list-style-type: none"> PR – 1, 2, 3 K&UR – 3 	<ul style="list-style-type: none"> SOPS0027 Hazardous Substances in Valve Overhaul SOPS0065 Calibration 	<ul style="list-style-type: none"> Evidence of Job cards and drawings Evidence of calibration sheets applied to tools and equipment.
General Requirements <ul style="list-style-type: none"> Competent on valve type All relevant courses acquired and certified. Recognise specific size and class. Pressure testing cert 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 5 K&UR – 2, 11, 20 Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR – 1, 2, 7 K&UR – 2 	<ul style="list-style-type: none"> SOPS0014 Testing of Valves 	<ul style="list-style-type: none"> Start cards Course certificates Competency completed and signed

Strip & QA <ul style="list-style-type: none"> Strip down procedure followed. All Parts accounted for Tooling Stored and located. Analysing all component parts Documenting all parts 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 8, 9, 10, 11, 12 K&UR – 15 Selectable Competence Maintaining engineering assets <ul style="list-style-type: none"> PR – 4, 5, 6, 8 K&UR – 1, 2, 3, 5 Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 4, 5 K&UR – 1, 2, 3 	<ul style="list-style-type: none"> SOPS0094 Servicing, Repair & Upgrade of Valves 	<ul style="list-style-type: none"> Pressure testing course cert.
Build <ul style="list-style-type: none"> Refurbishment of components Replacing of component parts Correct build procedure Correct Torque Function test 	Selectable Competence Repairing engineering assets <ul style="list-style-type: none"> PR – 4, 5 K&UR – 2, 4, 6, 7 Selectable Competence Replacing engineering assets <ul style="list-style-type: none"> PR - 4, 5 K&UR - 2, 4, 6 	<ul style="list-style-type: none"> SOPS0094 Servicing Repair & Upgrade of Valves SOPS0096 Torque Testing Valves 	<ul style="list-style-type: none"> QA Job Cards – Strip & QA Parts Drawings Parts Lists

Testing and Finalise & Certification <ul style="list-style-type: none"> Preparing valve for testing Setup and fixtures Identify test pressures required Identify max working pressure. Follow correct test procedure Sign and certify valve Signed Documentation on Quality Assurance Card Finishing off / Prep for Painting Quality Assurance Team to inspect before shipping 	Mandatory Competence <u>Performing core engineering activities</u> <ul style="list-style-type: none"> PR – 8, 9, 11, 12 K&UR - 15 Selectable Competence <u>Repairing engineering assets</u> <ul style="list-style-type: none"> PR – 5, 6, 7, 8 K&UR – 9, 10 Selectable Competence <u>Replacing engineering assets</u> <ul style="list-style-type: none"> PR – 5, 6, 7, 8 K&UR - 8, 9, 10 Selectable Competence <u>Inspecting and testing engineering assets</u> <ul style="list-style-type: none"> PR – 4, 5, 7, 8, 9 K&UR – 4, 5, 8, 10, 11 	<ul style="list-style-type: none"> SOPS0014 Pressure testing of Valves SOPS0111 Valves & Pressure Equipment SOPS0096 Di-mensional Surveys QA Survey Work Instructions 	<ul style="list-style-type: none"> QA Job Card – Rebuild Page Drawings Torque Value Charts Function test procedures Test Records QA Job Card – Test Page Test Procedures QA Job Card – Finalised and signed copy Test Certificate QA Certificate
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Engineering context	<ul style="list-style-type: none"> • Aerospace
Apprenticeship pathway	<ul style="list-style-type: none"> • Engineering Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> • Crew Oxygen Bottle Installation
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> • Maintaining engineering assets • Replacing engineering assets • Inspecting and testing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> • Repairing engineering assets • Installing engineering assets
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> • Communicating, Critical Thinking, Initiative and Sense Making

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1, 2, 7 K&UR – 2, 7 		
Task Preparation <ul style="list-style-type: none"> Research the task Prepare for the task i.e. spares, tools and calibrated tooling check, reference materials, PPE, equipment, gain authorisation, ensure scope of training covers task A/C system isolation, COSHH, Risk assessments, H+S Procedures i.e. fire evacuation, first aid Check the status of the aircraft via status board Ensure the aircraft is grounded 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 2, 3, 5, 7, 8, 9, 10, 11 K&UR – 2, 3, 4, 5, 7, 8, 10, 11, 12, 14 	<ul style="list-style-type: none"> Aircraft Maintenance Manuals 12-15-21-600-801 Job cards Company policies and procedures (Independent In-pection Procedure 2003/10) H+S procedures PPE & Uniform Procedure rev 5 	<ul style="list-style-type: none"> Training records
Carrying out the task <ul style="list-style-type: none"> Ensuring area is clean and tidy, free of foreign objects Clear access to work can be obtained Ensure spares have appropriate documentation Visually inspect the oxygen bottle and parts label on the bottle 	Selectable Competence Maintaining engineering assets <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 8 K&UR – 1, 2, 3, 4, 5, 6, 8, 11, 12 Selectable Competence Replacing engineering assets <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 7, 8 K&UR – 8 		

<ul style="list-style-type: none"> • Ensure candidate is clean of any oils or greases • Ensure the correct tooling i.e. brass spanner kit • Consider lifting techniques for the installation • Protection of other aircraft components during installation • Protection of the oxygen bottle • Install bottle into housing and ensure the orientation is correct • Tighten clamp to secure the bottle using calibrated torque wrenches • Remove electrical and mechanical protection covers • Replace the 'o rings' • Connect hoses and regulator to bottle • Connect cannon plug electrical connector with correct orientation • Tighten mechanical connection to required torque values as per the maintenance manuals • Ensure none of the electrical or mechanical connections contact the structure • Approved engineer inspection for correct installation 			
Testing <ul style="list-style-type: none"> • Reset the circuit breakers • Open the bottle using the regulator • Carry out an audible and visual leak check using the approved solutions • Comparison checks that the gauge on the bottle matched the gauge on the flight deck • Secure bottle regulator using approved locking techniques 	Selectable Competence <u>Inspecting and testing engineering assets</u> <ul style="list-style-type: none"> • PR – 2, 3, 4, 5, 8, 9 • K&UR – 1, 2, 3 ,4, 5, 6, 8, 10, 11, 12, 13 		

<p>Task completion</p> <ul style="list-style-type: none"> • Dispose of waste in appropriate containers • Return tooling and carry personal tool check • Ensure area is clean and free from foreign objects • Ensure the area is returned to company approved standard • Any paper documentation to be disposed of • Complete job card i.e. tools, spares, part number and serial number, personal authorisation number • Report task complete to supervisor • Task review • Candidate reflective account regarding the task and how it relates to ongoing meta-skills and company knowledge of the task • Complete personal logbook 	<p>Mandatory Competence Performing core engineering activities</p> <ul style="list-style-type: none"> • PR –7, 8, 9, 10, 11, 12 • K&UR – 2, 7, 8, 10, 11, 12, 14, 15 <p>Selectable Competence Maintaining engineering assets</p> <ul style="list-style-type: none"> • PR - 5, 6, 8 • K&UR – 1, 2, 3, 4, 5, 6, 8, 12 		
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Engineering context	<ul style="list-style-type: none"> Aerospace
Apprenticeship pathway	<ul style="list-style-type: none"> Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> Engine Driven Pump (EDP) Case Drain Filter Replacement
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> Maintaining engineering assets Replacing engineering assets Inspecting and testing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> Repairing engineering assets Installing engineering assets
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> Communicating, Critical Thinking, Initiative and Sense Making

EDP CASE DRAIN FILTER REPLACEMENT (AEROSPACE)



Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1,2, 7 K&UR – 2, 7 		
Task Preparation <ul style="list-style-type: none"> Research the task Prepare for the task i.e. spares, tools and calibrated tooling check, reference materials, PPE, equipment, gain authorisation, ensure scope of training covers task A/C system isolation, COSHH, Risk assessments, H+S Procedures i.e. fire evacuation, first aid Check the status of the aircraft via status board Ensure the aircraft is grounded 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR –1, 2, 3, 5, 7, 8 K&UR – 1, 2, 3, 4, 5, 7, 8, 9, 14 	<ul style="list-style-type: none"> Aircraft Maintenance Manuals 29-11-51/201 Job cards Company policies and procedures (Independent Inspection Procedure 2003/10) H+S procedures PPE & Uniform Procedure rev 5 HYJET V COSHH Assessment 	<ul style="list-style-type: none"> Training records
Carrying out the task <ul style="list-style-type: none"> Depressurise the hydraulic system Remove the filter bowl Remove the filter assembly and retain oil and filter for inspection and sampling Remove old 'o rings' packing from filter housing using approved techniques 	Selectable Competence Maintaining engineering assets <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, 6, 8 K&UR – 1, 2, 3, 4, 5, 6, 8, 12 Selectable Competence Replacing engineering assets <ul style="list-style-type: none"> PR – 4, 6, 7, 8 K&UR - 1, 2, 3, 4, 5, 6, 7, 9, 10 		

Performance Requirements (PR) - Details of what an individual will be able to do on achievement of competency (work situation).

Knowledge and Understanding Requirements (K&UR) - Application of what individuals must know and understand to carry out the competency (work situation) and which underpin competent performance.

<ul style="list-style-type: none"> Inspect new 'o rings' with your approved engineer Lubricate new 'o ring' and install Check orientation of packing Engineer to inspect the in-stallation of the new 'o rings' Install filter Install filter bowl Carry out torquing in accordance with maintenance manual Secure filter bowl using approved locking technique 			
Testing <ul style="list-style-type: none"> Reset the circuit breakers Repressurise the hydraulic system Gain approval to activate the hydraulic system Assist with the hydraulic system leak and function test Carry out an audible and visual leak check using the approved solutions 	Selectable Competence Inspecting and testing engineering assets <ul style="list-style-type: none"> PR – 2, 3, 4, 5, 8, 9 K&UR – 1, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13 Selectable Competence Replacing engineering assets <ul style="list-style-type: none"> PR - 5 K&UR - 8 		
Task completion <ul style="list-style-type: none"> Dispose of waste in appropriate containers Return tooling and carry personal tool check Ensure area is clean and free from foreign objects Ensure the area is returned to company approved standard Any paper documentation to be disposed of 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 7, 8, 9, 10, 11, 12 K&UR – 2, 7, 8, 10, 11, 12, 14, 15 		

<ul style="list-style-type: none">• Complete job card i.e. tools, spares, part number and se-rial number, personal authorisation number• Report task complete to supervisor• Task review• Candidate reflective account regarding the task and how it relates to ongoing meta-skills and company knowledge of the task• Complete personal logbook			
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Engineering context	<ul style="list-style-type: none"> Aerospace
Apprenticeship pathway	<ul style="list-style-type: none"> Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> Gauge/scratch repair on fuselage skin
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> Maintaining engineering assets Inspecting and testing engineering assets Repairing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> Installing engineering assets Diagnosing and resolving faults in engineering assets
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> Communicating, Critical Thinking, Initiative and Sense Making

GAUGE/ SCRATCH REPAIR ON FUSELAGE SKIN (AEROSPACE)



Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1,2, 7 K&UR – 2, 7 		
Task Preparation <ul style="list-style-type: none"> Research the task Prepare for the task i.e. spares, tools and calibrated tooling check, reference materials, PPE, equipment, gain authorisation, ensure scope of training covers task A/C system isolation, COSHH, Risk assessments, H+S Procedures i.e. fire evacuation, first aid Check the status of the aircraft via status board Ensure the aircraft is grounded 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 1, 2, 3, 5, 7 K&UR – 1, 2, 3, 4, 5, 7, 8, 9, 14 	<ul style="list-style-type: none"> Structure Repair Manuals 53-00-01-2R-38 Job cards Company policies and procedures H+S procedures PPE & Uniform Procedure rev 5 	<ul style="list-style-type: none"> Training records
Carrying out the task <ul style="list-style-type: none"> Make sure the area is clean and ready for the repair Apply safety warning labels for paint stripper Paint strips the area in question Wait for the paint stripper to react to remove the painted area Clean the paint stripper 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 8, 9, 11, 13 K&UR – 5, 11, 16, 17 Selectable Competence Maintaining engineering assets <ul style="list-style-type: none"> PR – 1, 2, 4, 5 K&UR – 1, 3, 5, 6, 12 		

Performance Requirements (PR) - Details of what an individual will be able to do on achievement of competency (work situation).

Knowledge and Understanding Requirements (K&UR) - Application of what individuals must know and understand to carry out the competency (work situation) and which underpin competent performance.

<ul style="list-style-type: none"> Wash the area to ensure all residue has been removed Inspect the skin where damaged Rework the area as required i.e. drill or blend Arrange NDT to carry out a High Frequency Eddy Current inspection (where they are looking for cracks in the structure) Arrange NDT to carry out Ultra Sonic Thickness Inspection Assess the depth of rework against the allowable damage criteria If in limits apply the chemical conversion coating If out of limits advise engineer to seek a repair scheme Apply primer Apply paint 	<p>Selectable Competence Inspecting and testing engineering assets</p> <ul style="list-style-type: none"> PR – 4, 5, 8, 9 K&UR – 1, 2, 4, 5, 6, 8, 10, 11 <p>Selectable Competence Repairing engineering assets</p> <ul style="list-style-type: none"> PR – 2, 4, 5, 6, 7, 8 K&UR – 4, 5, 6, 7, 8, 10 		
<p>Task completion</p> <ul style="list-style-type: none"> Dispose of waste in appropriate containers Return tooling and carry personal tool check Ensure area is clean and free from foreign objects Ensure the area is returned to company approved standard Any paper documentation to be disposed of Complete job card i.e. tools, spares, part number and serial number, personal authorisation number Report task complete to supervisor Task review Candidate reflective account regarding the task and how it relates to ongoing meta-skills and company knowledge of the task Complete personal logbook 	<p>Mandatory Competence Performing core engineering activities</p> <ul style="list-style-type: none"> PR – 10, 11, 12, 15 K&UR – 12, 15, 18 <p>Mandatory Competence Developing Meta Skills and Personal Practice</p> <ul style="list-style-type: none"> PR – 4, 5, 6, 8 K&UR – 9 <p>Selectable Competence Maintaining engineering assets</p> <ul style="list-style-type: none"> PR – 5, 6, 8 K&UR – 1, 2, 3, 4, 5, 6, 8, 12 		

Engineering context	<ul style="list-style-type: none"> • Aerospace
Apprenticeship pathway	<ul style="list-style-type: none"> • Engineering: Asset Lifecycle and Maintenance
Description of task	<ul style="list-style-type: none"> • Radio Altimeter (RAD) Antennas
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> • Maintaining engineering assets • Inspecting and testing engineering assets • Installing engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> • Diagnosing and resolving faults in engineering assets • Repairing engineering assets
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> • Communicating, Critical Thinking, Initiative and Sense Making

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1,2, 7 K&UR – 2, 7 		
Task Preparation <ul style="list-style-type: none"> Research the task Prepare for the task i.e. spares, tools and calibrated tooling check, reference materials, PPE, equipment, gain authorisation, ensure scope of training covers task A/C system isolation, COSHH, Risk assessments, H+S Procedures i.e. fire evacuation, first aid Check the status of the aircraft via status board Ensure the aircraft is grounded 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 1, 2, 3, 5, 7 K&UR – 1, 2, 3, 4, 5, 7, 8, 9, 14 	<ul style="list-style-type: none"> Aircraft Maintenance Manual 34-33-00-700-801 Job cards Company policies and procedures H+S procedures PPE & Uniform Procedure rev 5 AeroShell Grease 33 COSHH Assessment 	<ul style="list-style-type: none"> Training records
Carrying out the task <ul style="list-style-type: none"> Perform operational test of RAD ALT 1 and 2 Perform LRRRA Air/GND Discrete input test Remove all 4 RAD ALT Antennas Perform inspection of each antenna connector and aircraft side connector (looking for moisture, contamination and corrosion) Remove all old sealant using aircraft approved scrapers 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 6, 8, 9, 11, 13 K&UR – 5, 9, 11, 16, 17 Selectable Competence Maintaining engineering assets <ul style="list-style-type: none"> PR – 1, 2, 4, 5 K&UR – 1, 3, 4, 5, 6, 8, 10, 11 		

<ul style="list-style-type: none"> Inspect fuselage area for damage Reconnect all 4 RAD ALT Connectors Install all o rings/gaskets under the inspection of the approved engineer Attach antennas to fuselage using calibrated tooling in accordance with the torque values Carry out a bonding check using approved calibrated tooling Apply aero dynamic sealant around the antennas 	<p>Selectable Competence Inspecting and testing engineering assets</p> <ul style="list-style-type: none"> PR – 1, 2, 3, 4, 5, K&UR – 1, 2, 4, 5, 6, 8, 10, 11 <p>Selectable Competence Installing engineering assets</p> <ul style="list-style-type: none"> PR – 1, 2, 5, 6, 7 K&UR – 1, 2, 4, 5, 6 		
<p>Testing</p> <ul style="list-style-type: none"> Perform RAD ALT 1 and 2 operational tests Record any details of corrosion or moisture if found 	<p>Selectable Competence Inspecting and testing engineering assets</p> <ul style="list-style-type: none"> PR – 5, 7, 8, 9 K&UR – 5, 6, 7, 8, 9, 10, 11 13, 14, 15 		
<p>Task completion</p> <ul style="list-style-type: none"> Dispose of waste in appropriate containers Return tooling and carry personal tool check Ensure area is clean and free from foreign objects Ensure the area is returned to company approved standard Any paper documentation to be disposed of Complete job card i.e. tools, spares, part number and serial number, personal authorisation number Report task complete to supervisor Task review Candidate reflective account regarding the task and how it relates to ongoing meta-skills and company knowledge of the task Complete personal logbook 	<p>Mandatory Competence Performing core engineering activities</p> <ul style="list-style-type: none"> PR – 10, 11, 12, 15 K&UR – 12, 15, 18 <p>Mandatory Competence Developing Meta Skills and Personal Practice</p> <ul style="list-style-type: none"> PR – 4, 5, 6, 8 K&UR – 9 <p>Selectable Competence Maintaining engineering assets</p> <ul style="list-style-type: none"> PR – 5, 6, 8 K&UR – 1, 2, 3, 4, 5, 6, 8, 12 		

WELDING WATERTIGHT BLAST DOOR (SHIPBUILDING)



Engineering context	<ul style="list-style-type: none">• Shipbuilding
Apprenticeship pathway	<ul style="list-style-type: none">• Engineering: Manufacturing and Fabrication
Description of task	<ul style="list-style-type: none">• Welding watertight door using Flux Core MC1 1.0mm welding wire
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none">• Welding materials
Additional competencies that may have relevance to the task	<ul style="list-style-type: none">• Starting up engineering processes• Controlling engineering processes• Closing down engineering processes
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none">• Communicating, Initiative, Integrity, Sense Making

WELDING WATERTIGHT BLAST DOOR (SHIPBUILDING)



Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1,2, 7 K&UR – 2, 7 		
Documentation <ul style="list-style-type: none"> Instructions from supervisor Watertight door weld sequence Risk and COSHH assessments Take-5 Dynamic Risk assessment filled out and signed by supervisor Welding Parameter Card Welding Fillet size card Hot work permit to work Welder handbook 2023 Rev 2 Health and safety <ul style="list-style-type: none"> RPE – Air Fed welding Helmet with charcoal filter PPE – Overalls, Boots, Glasses, Gloves LEV (Local Exhaust Ventilation) in place Scaffolding tags in plac 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 2, 3, 4, 5, 7 K&UR – 2, 3, 4, 5, 7 	<ul style="list-style-type: none"> UG SHE 14881 – Manual Handling Risk Assessment Welding Consumables and their usage – PI Operation 50763 Welding Hand-book. Welding Engineering Dept. Feb 2023 (Issue 2) Fillet Welding Information Card – PI Operations 50756 FMSHE 003 Grinding COSHH Assessment MIG/MAG Wlding COSHH Assessment -4241982 Blast Door Weld Sequence - MCW/FCW-CC-102/103 	

Performance Requirements (PR) - Details of what an individual will be able to do on achievement of competency (work situation).

Knowledge and Understanding Requirements (K&UR) - Application of what individuals must know and understand to carry out the competency (work situation) and which underpin competent performance.

Preparation of equipment and work area <ul style="list-style-type: none"> • Kemppi Welding Suitcase checked and calibrated • Welding rectifier checked and calibrated • Welding cables and hoses checked for damage and leaks • Welding wire collected from store and correctly fed through wire feed mechanism • 4" air grinder and pencil grind-er checked and connected • Other tools checked for suitability – Bolster, TWI Fillet Gauge, Wire Brush, HEPA 14 Hoover, Chipping hammer, snips • Compressed air hose checked for damage. • Deck area checked for slips/tips and falls hazards • Second side checked in line with hot work permit • Temporary lighting set up • Set up barrier tape/warning signage 	Selectable Competence Welding materials <ul style="list-style-type: none"> • PR – 1, 2, 3 • K&UR – 1, 2, 3 Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> • PR – 6, 7 • K&UR – 7, 8, 9, 10 		
Carrying out task <ul style="list-style-type: none"> • Welding parameters set and checked in line with regulations • Mark bulkhead with sections to be welded and in what order • Tack welds inspected prior to commencing welding • Welds deposited in order, between welds tack welds ground out and welded over with next weld deposit 	Selectable Competence Welding materials <ul style="list-style-type: none"> • PR – 4, 5, 6, 8, 9 • K&UR – 4, 5, 6, 8 Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> • PR – 7, 8, 9, 10, 13, 14 • K&UR – 11, 12 14, 16, 17, 19, 20, 21 		

<ul style="list-style-type: none"> Slag removed between each weld deposit Grinder used to blend star-stops following weld sequence guidance Removal of spatter using approved bolster Wire brush weld Inspect weld for fillet size compliance 			
Task completion <ul style="list-style-type: none"> Write welder number on any completed welds Use HEP A 14 hoover to remove welding dust and debris Complete hot work permit Finish Take-5 and return to supervisor Complete NDT register identifying weld location Return equipment to store/correct location 	Selectable Competence Welding materials <ul style="list-style-type: none"> PR – 7 K&UR – 7 Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 11, 12, 15 K&UR – 15, 18 		

Engineering context	<ul style="list-style-type: none"> • Shipbuilding
Apprenticeship pathway	<ul style="list-style-type: none"> • Engineering: Manufacturing and Fabrication
Description of task	<ul style="list-style-type: none"> • Position, fitting and fairing 6mm Bulkhead (BHD)
Selectable competencies chosen which align to the task description	<ul style="list-style-type: none"> • Fabricating engineering assets
Additional competencies that may have relevance to the task	<ul style="list-style-type: none"> • Starting up engineering processes • Controlling engineering processes • Closing down engineering processes
Meta-skills used throughout the task (top 4)	<ul style="list-style-type: none"> • Adapting, Focussing, Sense Making and Communicating

Detail of task activity	Performance, Knowledge & Understanding references	Employer references/ standards	Other considerations
	Task - Competence Signposting Mandatory Competence Developing Meta Skills and Personal Practice <ul style="list-style-type: none"> PR - 1,2, 7 K&UR – 2, 7 		
Documentation <ul style="list-style-type: none"> Instructions from supervisor Access Isometric drawings and fabrication pack from supervisor or chargehand Risk and COSHH assessments Take-5 Dynamic Risk assessment filled out and signed by supervisor Tack welding documentation WS Operations 9412 steelwork fabrication workmanship standards handbook Health and safety <ul style="list-style-type: none"> RPE (Respiratory Protective Equipment) – 3M full and half face mask PPE – Overalls, Boots, Glasses, Gloves, ear plugs, hardhat LEV (Local Exhaust Ventilation) in place Scaffolding tags in place Cable management Emergency shutdown procedures (thermal cutting) Emergency evacuation procedures Emergency accident procedure 	Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR - 1, 2, 3, 4, 7, 12 K&UR – 1, 2, 3, 7, 15 Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> PR – 4, 5, 7 K&UR – 4, 5, 7 	<ul style="list-style-type: none"> 14881 – Manual Handling Risk Assessment FMSHE 003 Grinding COSHH Assessment FMSHE UG SHE 7282 – Take 5 Card PI 50736 MMA Tack Welding Parameters BMS01-9-4335 CLG 8244 Burning Activities on Govan Site MI Ops 51432 Burning Torch Set Up COSHH MMA Welding ID4237682 COSHH Dust from grinding & welding ID399077 RA-PI SHE 50131 working at height CLY 30387 safe usage of hydraulic pumps 	

Preparation of equipment and work area <ul style="list-style-type: none"> • Check MMA welding cables, earthing arrangement and rectifier checked for damage • Check Grinder and connection (air and electrical) • Deck area checked for slips/tips and falls hazards • Second side checked in line with hot work permit • Temporary lighting set up. • Set up barrier tape/warning signage • Check set up of thermal cutting equipment, hoses, regulators, flashback arresters and check gas manifold for leaks • Sign out pumps and fairing aids from store TCMAx system, checking for calibration 	Selectable Competence Fabricating engineering assets <ul style="list-style-type: none"> • PR – 1, 2, 3 • K&UR – 1, 2, 3 Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> • PR – 6, 7 • K&UR – 7, 8, 9, 10 		
Carrying out task <ul style="list-style-type: none"> • Locate specific lay-down area to collect assembly • Review all fabrication drawings including isometric drawings, including isometric sketch to identify assembly location and orientation, interpret plan view for any piece part requirements, and review PORT/ STBD elevations to identify connection requirements • Correct BHD assembly number and items from fabrication drawings • Identify unit location within building bays • Request lifting operation support from tradesperson and line management 	Selectable Competence Fabricating engineering assets <ul style="list-style-type: none"> • PR – 4, 5, 7 • K&UR – 4, 5, 6, 7, 8, 9 Mandatory Competence Performing core engineering activities <ul style="list-style-type: none"> • PR – 7, 8, 9, 10, 12, 13, 14 • K&UR – 1, 6, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21 		

- Before work commences as-sess area of any potential risks to safety or operational requirements and control within own capacity and capabilities or escalate and report to supervisor or SHE team
- Start preparation work on unit and locate BHD position, orientation
- Pick up powder lines on deck and check dimensions against documentation and frame/centreline
- Mark thickness projection for fairing process
- Highlight powder lines for clarity using chalk line
- Add additional working lines if required
- Flush/grind any seams which may interfere and clash with edge of BHD
- Position temporary stoppers flush with powder line and tack weld to deck
- Assist tradesman with lifting operation to guide and drop BHD into position
- Move from temporary position into correct position by checking datum points located of fabrication drawings (edge of plate AFT end, frame or centre line
- Once position ensure BHD is aligned and flush with powder line
- Ensure fit-up is tight deck to BHD complying with the welding procedure and tack weld in position using MMA welding equipment
- Once fixed in correct position continue fairing process to push or pull BHD assembly towards powder line following the thickness markings, and pump deck up towards BHD if required to ensure the correct set up for welding procedure

<ul style="list-style-type: none"> • Continue fairing process between bulbar stiffeners heights for connections and use thermal cutting if any require trimming • Flush and dress any connections which required trimming • Continue fairing process checking for alignment, fit-up and bar connections • Once completed check T-bar stiffeners frames for square, if unit is level at this stage, it can be plumbed • Use chain blocks or pull-lifts to push or pull BHD assembly over to correct position • Once square/ plumbed attach temporary Acrow props using MMA welding equipment • Ensure sufficient Acrow props are utilised across the span of the BHD assembly, make safe. • Inform supervisor of completion and detach lifting arrangement and crane • Update work pack 			
<p>Carrying out task</p> <ul style="list-style-type: none"> • Use HEP A 14 hoover to remove dust and debris • Complete hot work permit • Finish Take-5 and return to supervisor • Close down and turn off any equipment as required by safety standards • Return equipment to store/ correct location 	<p>Selectable Competence Fabricating engineering assets</p> <ul style="list-style-type: none"> • PR – 6 <p>Mandatory Competence Performing core engineering activities</p> <ul style="list-style-type: none"> • PR – 11, 12, 15 • K&UR – 15, 18 		

About Enginuity

Enginuity is a charity dedicated to helping employers find new ways to close the skills gap in UK engineering and manufacturing, creating a more productive sector that is at the forefront of delivering solutions to society's greatest challenges.

Enginuity combine a unique approach to sector data with a deep understanding of skills challenges to help employers ensure the sector has a highly skilled, globally competitive workforce now and in the future.

Enginuity's Focus

Working with all parts of the skills ecosystem: employers, educators, policymakers, and third-party organisations. Enginuity focus on the challenges these groups say are important. Examples include:

- Employers are struggling to fill current skills gaps
- Employers are not able to manage future skills demands
- Solving cross-industry skills challenges requires a 'sector connector'

Enginuity are uniquely positioned to address these challenges as the only organisation in the sector that is independently funded. Enginuity are funded by EAL, the skills partner of the engineering and manufacturing sector. This means they are:

- Entirely impact driven
- Solution agnostic
- Focussed on the whole sector

For more information about Enginuity and what they off, please refer to their website: Enginuity.org

About Skills Development Scotland (SDS)

Skills Development Scotland is the national skills body supporting the people and businesses of Scotland to develop and apply their skills.

With colleagues working across the country in schools, careers centres and partner locations, we are passionate about skills development and its contribution to a modern, innovative and prosperous Scottish economy.

We are committed to building a Scotland which champions fair work practices and a diverse workforce.

Working with our partners, we strive to ensure employers have the right skills, at the right time in high performing, fair and equal workplaces, and that every individual has the skills and confidence to get a job and progress in the workplace, achieving their full potential.

Our support for employers includes tailored skills advice and funding for workforce development.

For more information about Skills Development Scotland (SDS) and what they do, please refer to their website:

SkillsDevelopmentScotland.co.uk