



ESWATINI VOCATIONAL QUALIFICATIONS PACKAGE
FOR

LPG

DOMESTIC INSTALLATION

LEVEL 3



Prepared by the Directorate of Industrial and Vocational Training (DIVT)

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Registration documents can be downloaded at the link:

<https://www.divt.org.sz/qualifications>

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The qualifications package was developed through consultations and combined efforts of individuals, organizations and collaborating partners. The qualification contains unit standards benchmarked from other countries in the SADC Region and internationally. The DIVT facilitated the whole process of developing this package.

The following individuals together with their organizations are acknowledged for their special inputs.

Name	Surname	Organization
Bonga	Simelane	ESERA
Bonginkosi	Dlamini	ESERA
Ntokozo	Mkhatshwa	Mpaka Vocational Centre
Malcom	Fife	Eswatini Gas Solution
Paul	Wills	Safe Gas
Mvuyo	Dlamini	Galp Eswatini
Gcina	Singwane	DIVT
Earnest	Simelane	DIVT
Excellent	Gwebu	Octane Engineering

THE QUALIFICATION NATIONAL VOCATIONAL CERTIFICATE LPG DOMESTIC INSTALLATION LEVEL 3

Originator	DIVT		
Qualification Type:	Certificate	Descriptor:	LPG Domestic Installation
Specialisation:			
Level:	3	Minimum Credits:	80
Actual Credits	81		
Sub-Framework	TVET		
Field name	Engineering, Manufacturing and Construction	Field no:	07
Sub-field no:	Electricity and Energy	Sub-field no:	0713

Rationale

Describe the context of ETSDS The Technical and Vocational System in Eswatini lacks occupational standards and harmonised curricula for training which has the input for the industry players. There is general dissatisfaction with the competencies produced by the system in terms of relevance with the labour market. There is currently no correlation between the required industry skills and the qualification the system produces.
Describe how the qualification will impact positively within the sketched context: The qualification will provide the much-needed correlation between the required industry skills and the competencies produced by the system. The qualification will also harmonise curricula for training with the input of industry players.
Why do you need the qualification? This qualification will enhance the status and productivity of the learner as well as contribute to improved quality, production rate and growth within the engineering sector. The range of typical learners at this level could include individuals preparing to qualify as a LPG Domestic Installer. Qualifying learners will obtain a National Vocational Certificate in LPG Domestic Installation which places the learner in a position to investigate requirements for advancement to qualified artisan status or progress to a National Certificate at ENQF Level 4.

Purpose

The purpose of the qualification is to develop learners who have the competencies required for performing LPG Domestic Installation tasks. It is awarded to people who have demonstrated the skills and knowledge of LPG Domestic Installation tasks within this broad industry.

Learners attracted to this qualification include those who are assistants in LPG Installation, learners who inspire to acquire formal training in LPG Installation and those who are in the non-formal sector who will acquire through trade testing.

Graduates will be able to ...

The qualification is developed to produce LPG Domestic Installers who can operate with minimum supervision. Graduates will be able to relate their learning to scientific and technological principles and concepts.

Entry Requirements

Minimum requirements for entry:

- SGCSE or equivalent
- RPL

Associated Level Descriptors

Knowledge	• To demonstrate ability to understand and apply theoretical and technical knowledge of key concepts to perform tasks and solve problems within given parameters. • To have an understanding of solutions to a limited range of predictable problems.
Skills	• To apply a range of methods, tools and materials to complete routine activities.
Personal Attributes	• To complete tasks under moderate supervision in stable contexts. • To demonstrate ability to perform tasks in a team. • To demonstrate ability to adhere to organizational values.

Learning Outcomes Statements and Associated Assessment Criteria

This qualification will enable the learner to find employment as a skilled worker to perform Artisan duties in LPG Domestic Installation.

Learning Outcomes - After completion of this qualification learners will be able to:	Assessment Criteria
• Demonstrate an understanding of LPG Domestic Installation and the practice including tools, materials, processes, equipment and machinery.	This is a theory assessment approach. It should be compulsory and be achieved before learners can proceed to a practical assessment. This assessment should be conducted in a form of a written examination paper. The pass rate should be at least 60% to 70%
• Perform LPG Domestic Installation operations and practices and tasks under minimum supervision	Practical assessment to be carried out in a Domestic LPG Installation set-up (actual or simulation). The proof of competency should be between 60% or 70% to prove competency.
• Ensure a safe working environment for self, mates and equipment.	An important aspect which should be embedded on the theory and should also be observed during practical tests
• Evaluate and solve unfamiliar problems and report work done and pending work to clients and immediate supervisors.	To be assessed both in theory and practical through complex problem solving scenarios. This will be embedded on the theory and practice assessments

Components of Qualifications

The components of the qualification which, in their combination, make up the complete qualification (Components, levels, and credit values...)

UNIT ID	TITLE	LEVEL	CREDITS
LPG 301	Apply Quality Principles on a Gas Installation Project	3	4

LPG 302	Apply Safety Concepts to a Gas Installation Site	3	4
LPG 303	Demonstrate Understanding of Gas Piping, Fittings and Valves	3	4
LPG 304	Demonstrate understanding of Basic Gas Instrumentation	3	4
LPG 305	Demonstrate Understanding of LP-gas Properties	3	2
LPG 306	Demonstrate understanding of the Regulatory Environment Applicable to LP-gas Installations	3	4
LPG 307	Demonstrate understanding of the Operating Principles of LPG Appliances	3	4
LPG 308	Demonstrate understanding of Mechanical Engineering Principles as Applicable to LPG Appliances	3	4
LPG 309	Diagnose Operational Faults in LPG Systems and Take Remedial/Corrective Action	3	5
LPG 310	Install LPG storage of aggregate storage capacity up to 500 litres	3	4
LPG 311	Install LP-gas Pressure Regulators	3	4
LPG 312	Install Room Ventilation & Flue Systems	3	3
LPG 313	Perform Basic Welding/Joining of Metals	3	4
LPG 314	Perform Corrective Maintenance on Gas Equipment and Appliances	3	4
LPG 315	Perform Routine Maintenance on Gas Equipment and Appliances	3	4
LPG 316	Procure and maintain stock levels of equipment and consumables required for LP-gas system installations and maintenance	3	4
LPG 317	Replace a Component as Part of LPG System Operations	3	5
LPG 318	Select, use and care for engineering hand tools	3	2
LPG 319	Select, Use and Care for Engineering Power Tools	3	3
LPG 320	Size and Install LP-gas Piping Systems	3	4
LPG 221	Apply basic entrepreneurship skills	2	2
LPG 222	Demonstrate basic knowledge of engineering drawing in different context	2	3
			81

Rules of Combination

Specific rules? The learner should be competent in all units in this qualification
Compulsory modules, units learning? All units are compulsory in these qualifications
Any subminimum credits to be achieved? The learner should acquire all 81 credits in these qualifications

Integrated Assessment

How will the assessment be done? This qualification will have compulsory theory and practice
How often will the assessment be done? • Written examination produced by DIVT • Practical assessment coordinated by DIVT
Who will be responsible for the assessment? • DIVT

International Comparability

How does the qualification/part-qualification compare with similar qualifications internationally, especially within SADC (SADCQF), within the continent, the TQF or globally?

SADC	This qualification contains unit standards from the South African Qualifications Authority and aligns with the level descriptors in the SADC Qualifications Framework
African Continent	N/A
Globally, including TQF	N/A

Articulation Possibilities/Learning Pathways

A provision to learners, on successful completion of accredited prerequisites, to move between components of the delivery system.

Vertical	NVC LPG Commercial Installation	
Horizontal	None	
Diagonal	No match	

Name of Registered Provider

Name:	DIVT
Address:	P. O. Box 1218 Mbabane

UNIT STANDARDS

Apply principles of gas installation

Title		Apply Quality Principles on a Gas Installation Project			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 301	Credits	4

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing recognition, further mobility and transportability within the field. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
None
2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in LPG operations are carried out for domestic and commercial purposes.
3. The qualifying learner is able to:
 - Implement a workplace-based quality;
 - Establish quality-based work methods;
 - Implement Quality Control;
 - Evaluate quality of own work.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Labour Act 2005;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 -And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Implement workplace-based quality

Range

Quality criteria should include workmanship, welding, finishing, quality of materials, material compatibility, visual aesthetics, customer satisfaction and quality of equipment.

Performance Criteria

- 1.1 The principles of quality are explained as applicable to the workplace.
- 1.2 Client quality requirements are obtained and explained in terms of quality requirements.
- 1.3 Material and equipment specifications are established in terms of quality requirements.
- 1.4 Quality requirements are interpreted in terms of the tasks performed.
- 1.5 Quality criteria are specified for each task as per procedures.

Element 2: Establish quality-based work methods

Performance Criteria

- 2.1 Administrative and commercial objectives are established and documented in accordance with specified requirements.
- 2.2 Work methods are established and applied for each task in terms of quality requirements.
- 2.3 Material and equipment procurement practises are established as applicable to own workplace.
- 2.4 Materials handling and storage methods are established.
- 2.5 Material and equipment procurement policies are established in terms of quality requirements.
- 2.6 Materials handling and storage methods are established and applied in terms of quality requirements.

Element 3: Implement Quality Control

Performance Criteria

- 3.1 Inspection and purchase procedures are implemented in terms of quality requirements.
- 3.2 Testing procedures are explained in accordance with the relevant standards.
- 3.3 Own work is assessed against quality requirements.
- 3.4 Requirements include workmanship, welding, finishing, material compatibility, visual aesthetics, customer satisfaction.

Element 4: Evaluate quality of own work

Performance Criteria

- 4.1 Quality of own work is assessed against accepted task specifications.
- 4.2 Client feedback is obtained on the quality of work.
- 4.3 Quality gaps are identified in accordance with accepted industry quality procedures.
- 4.4 Work methods, procurement policies and material handling procedures are adapted in order to address quality problems.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Apply Safety Concepts to a Gas Installation Site

Title		Apply Safety Concepts to a Gas Installation Site			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 302	Credits	4

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing recognition, further mobility and transportability within the field. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. Learners who demonstrate competence as described in the outcomes of this Unit Standard will understand the importance and practical application of safety concepts to a gas installation site.
3. The qualifying learner will be able to:
 - Understand hazards associated with gases;
 - Work within the requirements of a work permit or site owner's permission to work;
 - Establish safe working conditions;
 - Perform installations safely.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Labour Act 2005;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;

And all subsequent amendments

5. Performance of all elements in this unit standard must comply with industry standards

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Demonstrate knowledge of hazards associated with gases

Range

- Hazards include but are not limited to flammability, low temperature and high cylinder pressure.
- Procedures include but are not limited to leak detection, pressure test, completion of safety checklist.

Performance Criteria

- 1.1 Hazards relevant to each type of gas are identified from the relevant MSDS.
- 1.2 An acceptance test is performed according to standard workplace procedures.
- 1.3 Proper ventilation is established to prevent a hazardous environment.
- 1.4 The procedures relating to the safe transport of gas cylinders are explained in accordance with workplace procedures and relevant regulations.
- 1.5 Safe distance requirements and fire precautions.

Element 2: Work within the requirements of a work permit or site owner's permission to work

Range

- Permit types include hot work (open flame) permits, cold work permits (including scaffolding and roof clearances), permits for working in confined spaces, trenches and vessel entry permits.
- Requirements include but are not limited to working at heights, scaffolding and hot work conditions.

Performance Criteria

- 2.1 The purpose and reasons for a permit system or owner's permission are explained in accordance with specified requirements.
- 2.2 The principles governing the issue and retraction of a work permit or owner's permission are explained in accordance with specified requirements.
- 2.3 The implications of continuing work in an area where conditions have changed are explained according to workplace procedures.

- 2.4 Different permit types are listed and explained in accordance with standard workplace procedures.
- 2.5 Statutory and workplace permit requirements are applied according to standard workplace procedures.
- 2.6 Safe working procedures are followed when working with other services.
- 2.7 Lock-out and isolation procedures are applied and adhered to according to workplace procedures.

Element 3: Establish Safe Working Conditions

Range

Emergency safety equipment includes but is not limited to fire extinguishers, hoses and alarms.

Performance Criteria

- 3.1 Potential hazards are identified and removed, reduced or reported in accordance with workplace procedures.
- 3.2 Personal Protective Equipment (PPE) is identified and used in accordance with workplace procedures.
- 3.3 The location of emergency safety equipment is verified on the work site.

Element 4: Perform Installations Safely

Range

- Installation specifications include safe distances, equipment for flame proof, safety devices, e.g. pressure safety valves.
- Installation methods include ventilation, purging of gas line before work commences removal of ignition sources, etc.

Performance Criteria

- 4.1 Safe installation methods are followed at all times.
- 4.2 The installation specifications are adhered to at all times.

- 4.3 Personal protective equipment is worn in accordance with task requirements.
- 4.4 Gas cylinders are safely handled, transported and stored as per workplace procedures.
- 4.5 Tools, equipment and consumables are safely handled and stored in accordance with workplace procedures.
- 4.6 The required tools are selected and used in a safe manner.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Demonstrate Understanding of Gas Piping, Fittings and Valves

Title		Demonstrate Understanding of Gas Piping, Fittings and Valves			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 303	Credits	4

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing competence to able to explain gas piping, fittings and valves. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. Learners who demonstrate competence as described in the outcomes of this Unit Standard will understand the importance and practical application of safety concepts of gas piping, fittings and valves.
3. The qualifying learner will be able to:
 - Explain the application of piping and fittings in process applications;
 - Describe pipe coverings;
 - Identify valve components and explain valve functioning in a process system;
 - Trace and analyse pipe networks.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Demonstrate an understanding of piping and fittings in gas applications

Range

- Fittings includes but is not limited to tees, elbows, flanges, blinds, bends, long bends, reducers, traps, unions, caps and expansion bellows.
- Materials includes but is not limited to PVC, steel, copper and stainless steel.

Performance Criteria

- 1.1 The purpose and applications for different piping materials are described according to workplace procedures.
- 1.2 Standard fittings are identified in terms of the gas industry.
- 1.3 Standard pipe sizes are listed in terms of the gas industry.
- 1.4 The purpose of piping and fittings are described in accordance with workplace requirements.

Element 2: Demonstrate an Understanding of Pipe Coverings

Performance Criteria

- 2.1 Key colour-coding for pipes is identified and the purpose is described in accordance with accepted industry use.
- 2.2 The purpose and applications for thermal insulation on pipes are explained in accordance with accepted industry use.
- 2.3 The purpose and applications for heat tracing on pipes are explained in accordance with workplace procedures.
- 2.4 Gas applications where thermal insulation and heat tracing are used are identified on the site.
- 2.5 The purpose and applications for different piping materials are described in accordance with workplace procedures.

Element 3: Identify valve components and explain valve functioning in a process system

Range

- The range of valves includes but is not limited to butterfly-, gate-, globe-, plug-, ball-, diaphragm-, non-return (check), safety- (SV) and relief valves (RV).
- The range of reasons may include but are not limited to corrosion, exposure to high temperature, poor lubrication, mechanical obstructions and leaking seals

Performance Criteria

- 3.1 Valves are identified and the purpose of using valves is described in accordance with workplace procedures.
- 3.2 The advantages and disadvantages of using different valve types are explained in accordance with specified requirements.
- 3.3 Valve components are identified and their functions described in accordance with workplace procedures.
- 3.4 Basic working principles of the different valve types are described with the assistance of freehand drawings.
- 3.5 Valve and control valve positions are recognised as open, partially open or closed.
- 3.6 Reasons for using control valves are explained in accordance with specified requirements.
- 3.7 Indicators and reasons for non-optimal performance of valves are identified and described in accordance with workplace procedures.

Element 4: Trace and analyse pipe networks

Range

- Adjustments include opening, closing, partially opening and -closing valves.
- The range of configurations includes but is not limited to placement of flanges, valves, expansion bellows, use of surface and elevated pipe racks and bypass configurations.

Performance Criteria

- 4.1 Valve adjustments are made under supervision.
- 4.2 A freehand drawing is made of a pipe system by tracing the system through the building.

- 4.3 Flows are indicated in a freehand drawing of a piping system by interpreting open and closed valves, control valves, check valves and pumping direction.
- 4.4 The impact of opening and closing certain valves in the system is explained in accordance with workplace procedures.
- 4.5 Reasons for piping and valve configurations are explained in accordance with workplace procedures.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Demonstrate understanding of Gas Instrumentation

Title		Demonstrate understanding of Basic Gas Instrumentation			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 304	Credits	4

Purpose

This unit specifies the skills and knowledge required to understand gas instrumentation in a gas environment. The acquired skills contributes to the full personal development of each learner and the social and economic development of the society at large in understanding the role of gas instrumentation in gas installations and the effect it has on the growth and development. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, the learner must demonstrate knowledge of:
 - the general principles of gas instrumentation;
 - understanding of pressure measurement and -gauges;
 - understanding of temperature measurement and -gauges;
 - understanding of flow measurement and -gauges;
 - understanding of level measurement and -gauges.
3. To demonstrate competency, a candidate must meet the performance criteria for this unit standard by using science and technology effectively and critically, showing responsibility towards the environment and health of others when explaining the operating principles and functions of a range of gas instruments.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Explain of the General Principles of Gas Instrumentation

Range

- Instruments should include both local digital- and remote analogue (dial) types;
- The range includes assigning labels to instrument abbreviations for example PI (pressure indicator), TR (temperature recorder), LIC (level indicator controller).

Performance Criteria

- 1.1 The purpose of instrumentation is explained in terms of its measurement, recording and control functions.
- 1.2 Gas instrumentation applications are outlined in accordance with accepted industry practice.
- 1.3 Basic signal transfer methods are described as applicable to gas installations.
- 1.4 Basic instrumentation terminology is used in accordance with accepted industry practice.
- 1.5 The concepts and importance of instrument calibration, zero checking, accuracy and reliability are explained as applicable to own workplace.

Element 2: Identify and determine of Pressure Measurement and Gauges

Range

- Instruments should include both digital and analogue (dial) types.
- Gauges used should include absolute pressure, gauge pressure and differential pressure gauges ("U"-tube).

Performance Criteria

- 2.1 Pressure gauges are identified and accurate readings are taken in accordance with specified requirements.
- 2.2 Measurement units are identified as applicable to the workplace.

- 2.3 The distinction between absolute pressure and gauge pressure is explained as applicable to the gas industry.
- 2.4 Parts and components of pressure gauges are identified and their functions explained in terms of gas installations.
- 2.5 Operating principles of pressure measurement and -gauges are explained with the assistance of sketches.

Element 3: Determine Temperature Measurement and Gauges

Range

Instruments should include both digital and analogue (dial) types.

Performance Criteria

- 3.1 Temperature gauges are identified and accurate readings are taken in accordance with specified requirements.
- 3.2 Measurement units are identified as applicable to the workplace.
- 3.3 Parts and components of temperature gauges are identified and their functions explained in terms of gas installations.
- 3.4 Operating principles of temperature measurement and -gauges are explained with the assistance of sketches.

Element 4: Identify and explain Flow Measurement and Gauges

Range

Instruments should include both digital and analogue (dial) types.

Performance Criteria

- 4.1 Flow gauges are identified and accurate readings are taken in accordance with specified requirements.
- 4.2 Measurement units are identified as applicable to the workplace.
- 4.3 Parts and components of flow gauges are identified and their functions explained in terms of gas installations.

- 4.4 Operating principles of flow measurement and -gauges are explained with the assistance of sketches.

Element 5: Identify and explain Level Measurement and Gauges

Range

The range includes the taking of level glass, analogue and digital readings.

Performance Criteria

- 5.1 Level measurement instruments are identified and accurate readings are taken in accordance with specified requirements.
- 5.2 Measurement units are identified as applicable to the workplace.
- 5.3 Parts and components of level gauges are identified and their functions explained in terms of gas installations.
- 5.4 Operating principles of level measurement and -gauges are explained with the assistance of sketches

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Demonstrate Understanding of LP-gas Properties

Title		Demonstrate Understanding of LP-gas Properties			
Domain		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 305	Credits	2

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing competence to understand the importance of understanding the properties of LPG to apply to each activity when doing installations. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. Learners who demonstrate competence as described in the outcomes of this Unit Standard will understand all properties of LPG.
3. The qualifying learner will be able to:
 - Describe the different gas groupings as applicable to the gas manufacturing industry.
 - Demonstrate understanding of the application of flammable gases.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Describe the different gas groupings as applicable to the gas manufacturing industry **Range**

Properties include chemical formula, flammability, density, identification methods and condensation temperature.

Performance Criteria

- 1.1 The three phases of substances are defined and examples identified in accordance with specified requirements.
- 1.2 The properties of gases are explained as described by the ideal gas law.
- 1.3 The properties of gases are explained as described by the liquefied gas law.
- 1.4 Properties of common gases are listed in accordance with specified requirements.

Element 2: Demonstrate understanding of the application of flammable gases

Range

Special installation requirements include but is not limited to colour-coding of pipes and cylinders

Performance Criteria

- 2.1 The properties of flammable gases and the combustion triangle are described in accordance with specified requirements.

Hazards and the correct response relevant to inert/non-reactive gases are described using examples from industry.
- 2.2 Applications of flammable gases are described by using actual industry examples.
- 2.3 Special installation requirements of flammable gases are described in accordance with workplace procedures.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Demonstrate understanding of the Regulatory Environment Applicable to LP-gas Installations

Title		Demonstrate understanding of the Regulatory Environment Applicable to LP-gas Installations			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 306	Credits	4

Purpose

This unit standard focuses on the field of gas system installations and is aimed at ensuring that the learner understands the regulatory environment in which a gas installer operates. It requires the performance of work in a safe manner through awareness of risks and work requirements, and the planning and performance of safe work practices with concern for personal safety and the safety of others. It includes the identification of hazardous materials, and compliance with legislated work safety practices. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, a candidate must demonstrate knowledge of:
 - Managing activities in terms of preparation, planning, conducting and concluding of the installation while complying with a range of regulations.
 - Reading and interpreting a range of regulatory documentation.
 - Completing job documentation according to regulatory requirements.
 - Understanding the regulations governing the gas installations industry.
3. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968;
 - Workmen's Compensation Act No.7 of 2011;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
4. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Outline business rules in terms of its impact on gas installers

Performance Criteria

- 1.1 The difference between business rules, standards, acts and regulations is explained in terms of their application to the field of gas installations.
- 1.2 Customer installation policies and procedures are explained in terms of their purpose and role in maintaining standards.
- 1.3 The code of conduct of registered gas installers is discussed in terms of personal and professional conduct.
- 1.4 The purpose and importance of official registration of gas installers in Eswatini is explained in terms of gas installers' rights and obligations.

Element 2: Explain the contents and relevance of various local and international standards on gas installations

Performance Criteria

- 2.1 A summary of each standard is given in terms of its relevance to gas installations.
- 2.2 National and international standards relevant to gas installations are identified and listed in accordance with specified requirements.
- 2.3 National and international standards governing gas installations are explained in terms of their role and purpose.
- 2.4 Specific sections and subsections of the different standards are identified and listed as relevant to gas installations.

Element 3: Explain the relevance of various OHS regulations on gas installations

Performance Criteria

- 3.1 The impact of general machinery regulations is explained in terms of its relevance to gas installations.

- 3.2 The applications of pressure equipment regulations are explained in terms of its relevance to gas installations.
- 3.3 The role and impact of hazardous substances regulations is explained in terms of its relevance to gas installations.
- 3.4 The purpose and impact of major hazardous installation regulations is explained in terms of its relevance to gas installations.
- 3.5 The applications and impact of building and construction regulations is explained in terms of its relevance to gas installations.

Element 4: Describe the role and impact of other laws and applicable standards on gas installations

- 4.1 The role and impact of the "Environmental Act" is explained in terms of its relevance to the gas installers.
- 4.2 The role and impact of SZNS standards is explained in terms of its relevance to gas installation businesses.
- 4.3 The role and impact of "third party risk insurance" is explained in terms of its relevance to gas installation businesses.
- 4.4 The role and impact of applicable by-laws is explained in terms of its relevance to the gas installers.

Registration Data

Date first registered	2028
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Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Demonstrate understanding of LPG Appliance

Title		Demonstrate understanding of the Operation Principles of LPG Appliances			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	307	Credits	4

Purpose

This unit standard specifies the competencies required to state the essential requirements for the safe operation of gas appliances, understanding the fuel gases used in domestic and commercial appliances, and the principles of their combustion, describing and explaining the operating principles of domestic gas appliances, requirements for efficient combustion and operation are stated according to design and construction specifications and requirements for efficient combustion and operation are stated according to design and construction specifications.

Special Notes

1. Entry information/Prerequisite:
 - None
2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which LPG cooling and heating operations are carried out for domestic and commercial purposes.
3. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 2005 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: State the Essential Requirements for the Safe Operation of Gas Appliances

Performance Criteria

- 1.1 A brief outline of legislation, standards and codes of practice relevant to servicing of gas appliances is given in terms of the impact on appliance repair.
- 1.2 The essential safety design, construction and operating requirements for gas appliances are stated according to relevant legislation and standard requirements.
- 1.3 The essential installation safety requirements for gas appliances are stated according to relevant legislation and manufacturer's requirements.
- 1.4 The essential commissioning requirements for gas appliances are stated as per industry standard requirements.

Element 2: Describe the Fuel Gases Used in Domestic Appliances and the Principles of their Combustion

Performance Criteria

- 2.1 The gases commonly used for fuel are described with reference to their principal constituents, method of distribution, and physical characteristics.
- 2.2 Combustion, including explosive combustion, are described in terms of combustion principles.
- 2.3 The requirements for fuelling arrangements are stated as per manufacturer's specifications.
- 2.4 Incomplete combustion is described in terms of its products, characteristics and symptoms with reference to their consequences for the health of people and animals.

Element 3: Describe and explain the operating principles of domestic gas appliances

Performance Criteria

- 3.1 Basic electrical sources of igniting combustion are described in terms of combustion principles.

- 3.2 Devices used for control and protection, including temperature control, are identified and their functions described as per operations specifications.
- 3.3 Appliance operation is explained with the aid of sketches showing all major components, and with reference to operation under normal and abnormal conditions.
- 3.4 Work practices are carried out without injury to workers, public, or damage to building, other services, tools or equipment.
- 3.5 The consequences of sub-standard repair are described in terms of the effect on productivity and the potential danger to people, appliance and equipment.

Element 4: The requirements for efficient combustion and operation are stated according to design and construction specifications

Performance Criteria

- 4.1 Disconnection procedures of gas appliances from the gas supply are described with reference to health and safety standards.
- 4.2 understanding of safe servicing procedures applicable to domestic gas appliances is demonstrated.
- 4.3 Reconnection procedures of gas appliances from the gas supply are described with reference to health and safety standards.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Demonstrate understanding of Mechanical Principles for LPG

Title		Demonstrate Understanding of Mechanical Engineering Principles as Applicable to LPG Appliances			
Domain		Physical Planning and Construction			
Subfield		Manufacturing, Engineering and Technology			
SZNQF Level	3	Unit ID	308	Credits	4

Purpose

This unit standard specifies the competencies required to name and explain the thermodynamic properties of the gas in domestic and commercial appliances, explain and apply concepts of gas mechanics.

Special Notes

1. Entry information/Prerequisite:
 - None
2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in LPG operations are carried out for domestic and commercial purposes.
3. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Explain the thermodynamic properties of the gas in the appliances

Range

- State of matter may include solids, gases, liquids, molecular motion and phase change.
- It also includes Mass, volume, density, relative density, specific volume, force, weight, pressure, specific heat, enthalpy, entropy, internal energy.

Performance Criteria

- 1.1 The phenomenon of energy conversion and the need for high-energy conversion efficiencies is explained in accordance with energy conversion principles.
- 1.2 The nature and states of matter are explained in terms of atomic theory.
- 1.3 The important thermodynamic properties of a substance and its units of measurement are explained in accordance with thermodynamic principles.
- 1.4 The various laws of thermodynamics are defined and their importance explained and applied in accordance with thermodynamic principles.
- 1.5 The property changes of a gas undergoing typical thermodynamic processes are calculated using specified formulae and methods.
- 1.6 Calculations relating to work, sensible and latent heat transfers and availability in energy are carried out using specified formulae and methods.

Element 2: Explain and Apply Concepts of Open and Closed Systems as used in Appliances

Performance Criteria

- 2.1 Open and closed systems are defined and the meaning of steady gas flow explained in terms of prescribed principles.
- 2.2 Calculations involving open and closed systems using steady flow principles are carried out using prescribed methods and formulae.
- 2.3 The modes of heat transfer are described and explained in terms of in terms of heat transfer principles.
- 2.4 The modes of heat transfer are described and explained in terms of in terms of heat transfer principles

Element 3: Explain and Apply Concepts of Gas Mechanics

Performance Criteria

- 3.1 The various types and characteristics of fluids are described specifically in terms of location and magnitude.
- 3.2 The basic properties of fluids are described in terms of physical and chemical characteristics.
- 3.3 Saturation vapour pressure and temperature are described including an explanation of the relationship between them.
- 3.4 The basic principles of fluid statics relating to fluid pressure are stated with reference to Gay-Lussac principle.
- 3.5 The operation of piezometers and manometers are explained and pressures and pressure differences calculated from observed readings.
- 3.6 Static fluid forces are calculated and their location on surfaces determined from observed readings.

Element 4: Explain and Apply Concepts of Gas Flow Rates

Performance Criteria

- 4.1 The meaning of volume and mass-flow rates are explained and calculated in accordance with volume and mass-flow rates principles.
- 4.2 The continuity equation in typical gas flow applications is explained with reference to gas flow in pipes and ducts with varying cross section, with or without branches.
- 4.3 The variation in the various head terms for typical fluid flow is described.
- 4.4 Equations for fluid power are explained and their use demonstrated with reference to mass flow rates and head, volume flow rate and pressures.

Registration Data

Date first registered	2025
Anticipated review	2030

Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Diagnose LPG Operation Faults

Title		Diagnose Operational Faults in LPG Systems and Take Remedial/Corrective Action			
Domain		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 309	Credits	5

Purpose

This unit standard specifies the competencies required to establishing the extent of the problem, diagnosing the problem, determining the use of trouble shooting procedures and correcting the fault or propose remedial action.

Special Notes

1. Entry information/Prerequisite:
 - Apply safety concepts to a LP-gas installation site
 - Apply basic knowledge of engineering drawing in different context
2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which LPG operations are carried out for domestic and commercial purposes.
3. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or industry standards and guidelines.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - SZNS standards;
 - Occupational Health and Safety (OHS) Act 2001And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Establish the extent of the problem

Performance Criteria

- 1.1 The purpose of fault finding is explained.
- 1.2 The various types of operational faults are stated and explained and their interaction identified.
- 1.3 The effects of these faults on the operation of components and systems are listed and discussed.
- 1.4 A general description of the complaint by the operator and/owner is obtained.

Element 2: Diagnose the Problem

Performance Criteria

- 2.1 All operating parameters are observed and recorded.
- 2.2 All components are examined in a logical and systematic sequence for any evidence of malfunction.
- 2.3 The impact of making quick decisions and temporary fixes is explained in terms of costs and goodwill.
- 2.4 Possible causes of the fault are identified using sensory skills.
- 2.5 Possible causes of the fault are diagnosed from description given by operator, owner or users.
- 2.6 The impact of control or component malfunction or maladjustment on the performance is explained.

Element 3: Correct Faults

Performance Criteria

- 3.1 The fault diagnosed is corrected.
- 3.2 The result of the correction is checked and found suitable.

3.3 Suitable remedial action for correcting the fault is proposed

Element 4: Correct Fault or Propose Remedial Action

Performance Criteria

- 4.1 System is re-started correctly.
- 4.2 All operating parameters are checked and recorded.
- 4.3 Operating parameters are compared with original parameters to evaluate improvement.

Element 5: Clean Up

Performance Criteria

- 5.1 Clear the work area and dispose of waste material, reuse or recycle materials in accordance with environmental and workplace requirements.
- 5.2 Tools and equipment are cleaned, serviceability is checked, reporting any damage and store and secure according to manufacturer recommendations and workplace procedures.
- 5.3 Relevant safety information is reported in accordance with workplace requirements.

Registration Data

Date first registered	2025
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Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Install LPG Storage

Title		Install LPG storage of aggregate storage capacity up to 500 litres			
Filed		Physical Planning and Construction			
Subfield		Manufacturing, Engineering and Technology			
SZNQF Level	3	Unit ID	LPG 310	Credits	4

Purpose

This unit specifies the skills and knowledge required to select, install and test liquefied petroleum gas (LPG) storage facilities with a capacity up to 500 litres. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, the learner must demonstrate knowledge of:
 - terminology relating to installing LPG storage installations;
 - characteristics, application and limitations of approved materials and components;
 - sizing cylinder requirements, including total megajoule (MJ) load and cylinder vaporisation rates;
 - installation requirements for cylinder compartment ventilation and enclosures and relief valve venting;
 - commissioning LPG regulators, including working and lockup pressure
 - tools, materials and equipment used to select, install and test LPG storage facilities;
 - work health and safety requirements for selecting, installing and testing LPG storage facilities;
 - properties of gas, gas safety, combustion principles, pressure and flow rates.
3. To demonstrate competency, a candidate must meet the performance criteria for this unit standard by using science and technology effectively and critically, showing responsibility towards the environment and health of others when explaining the operating principles and functions of a range of gas instruments.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.

And all subsequent amendments

5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Identify installation requirements

Performance Criteria

- 1.1 LPG storage requirements are determined from relevant job plans and specifications, codes, SZNS standards, manufacturer's specifications and regulatory requirements.
- 1.2 Workplace policies and procedures are identified and applied,
- 1.3 Work health and safety (WHS) and environmental requirements are applied.

Element 2: Prepare for work

Performance Criteria

- 2.1 A materials list is created and materials are collected.
- 2.2 Appropriate tools and equipment are selected, including personal protective equipment (PPE).
- 2.3 Location of LPG cylinders selected from relevant job plans and specifications, codes, relevant SZNS standards, manufacturer's specifications and regulatory requirements.

Element 3: Install LPG storage system

Performance Criteria

- 3.1 Cylinders, pipework and appliance(s) are installed to the requirements of relevant job plans and specifications, codes, SZNS standards, manufacturer's specifications and jurisdictional requirements.
- 3.2 Installation is tested and purged.
- 3.3 Storage system from cylinder outlet is tested, purged and regulator adjusted to be gas-tight, in compliance with regulatory authority and installation requirements.

- 3.4 Compliance plates and signage are affixed according to job plans and specifications, codes, relevant Australian standards, manufacturer's specifications and jurisdictional requirements.

Element 4: Clean up

Performance Criteria

- 4.1 Work area is cleared, and disposed of, materials are re-used and re-cycled in accordance with state and territory legislation and workplace policies and procedures.
- 4.2 Tools and equipment, check for serviceability and report any damage, and store and secure.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Install pressure controls

Title		Install LP-gas Pressure Regulators			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 311	Credits	4

Purpose

This unit standard specifies the skills and knowledge required to install and commission gas control and regulating equipment for consumer piping carrying LP-gas up to 200 kPa. Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, the learner must demonstrate knowledge of:
 - how to access relevant information, including codes and standards;
 - tools, materials and equipment used for the installation and commissioning of gas control and regulating equipment;
 - work health and safety (WHS) requirements for the installation and commissioning of gas control and regulating equipment;
 - properties of gas, gas safety, combustion principles, pressure and flow rates;
 - processes, procedures and techniques for installing, testing and commissioning gas pressure control equipment;
 - Installation and ventilation requirements of over-pressure regulators, including internal relief and over-pressure shut off (OPSO) valves.
3. This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.
4. To demonstrate competency, a candidate must meet the performance criteria for this unit by installing one single and one two-stage system connecting to an appliance that includes an internal relief and over-pressure shut off valve.
5. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;

- Workmen's Compensation Act No.7 of 1983;
- Occupational Health and Safety (OHS) Act 2001;
- SZNS standards

And all subsequent amendments

6. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Identify installation requirements

Performance Criteria

- 1.1 Access, read and determine gas pressure control equipment installation requirements from job specifications, relevant SZNS Standards, codes, manufacturer's specifications and jurisdictional/regulatory requirements.
- 1.2 Workplace policies and procedures and identified and applied as well as work health and safety (WHS) and environmental requirements.

Element 2: Prepare for work

Performance Criteria

- 2.1 Potential hazards are identified and control measures are identified and implemented.
- 2.2 Materials lists are created and materials are collected.
- 2.3 Appropriate tools and equipment including personal protective equipment (PPE) are selected.

Element 3: Install and commission equipment

Performance Criteria

- 3.1 Pipework, fittings and gas pressure control equipment is installed.

- 3.2 System is tested, purged and commissioned.
- 3.3 Gas pressure is adjusted.
- 3.4 Documentation according to regulatory requirements completed.

Element 4: Clean Up

Performance Criteria

- 4.1 Work area is cleared and disposed of, materials are re-used in accordance with applicable legislations and workplace policies and procedures.
- 4.2 Tools and equipment are cleaned, serviceability is checked and damages are reported, and stored and secured

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Install room ventilation

Title		Install Room Ventilation & Flue Systems			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 312	Credits	3

Purpose

This unit standard specifies the skills and knowledge required to install ventilations and test flues for gas appliances in accordance with relevant regulatory requirements. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, a candidate must demonstrate knowledge of:
 - properties of gas, gas safety, combustion principles, pressure and flow rates;
 - types of approved flues for appliances, including:
 - balanced;
 - individual appliance;
 - multiple flues;
 - natural draft;
 - twin wall flues
 - how to access relevant information, including codes and standard;
 - tools, materials and equipment used for the installation and testing of gas appliance flues;
 - Work health and safety (WHS) requirements for the installation and testing of gas appliance flues.
3. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Labour Act 2005;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 -And all subsequent amendments
4. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Identify installation requirements

Performance Criteria

- 1.1 Flue installation requirements are accessed, read and determined from job specifications, relevant Standards, codes, manufacturer's specifications and jurisdictional requirements.
- 1.2 Workplace policies and procedures, work health and safety (WHS) and environmental requirements are identified and applied.

Element 2: Prepare for work

Performance Criteria

- 2.1 Materials list are created and materials are collected
- 2.2 Tools and equipment are selected, including personal protective equipment (PPE).

Element 3: Install ventilation and test flue

Range

Market research related terms: Products, services, market, market research, market Segmentation and target market.

Performance Criteria

- 3.1 Flue, supports, components and weatherproofing are set out and installed according to job specifications and complying with relevant Standards, codes, manufacturer's specifications and jurisdictional requirements.
- 3.2 Flue is tested for operation and adjusted as required.
- 3.3 Documentation is completed according to regulatory requirements and workplace procedures.

Element 4: Clean Up

Performance Criteria

- 4.1 Clear the work area, and dispose of, reuse or recycle materials in accordance with state and territory legislation and workplace policies and procedures.
- 4.2 Clean tools and equipment, check for serviceability and report any damage, and store and secure.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Perform Basic welding on metals

Title		Perform Basic Welding/Joining of Metals			
Domain		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 313	Credits	4

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing competence to be able to verify task requirements and select necessary welding processes, equipment and consumables, to comply with specifications and to apply safe work practices. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. The skills, values and knowledge reflected in this unit standard are required by people in the field of engineering.
3. Qualifying learners can perform heat-related joining of metals, using oxy-fuel gas processes, brazing, soldering, high frequency brazing, butt welding and spot welding.
4. The learner is required to weld/join non-ferrous metals in any position. The learner is required to work under general supervision.
 - Total range of pre-operational checks on materials and equipment are regularly and consistently performed.
 - Unsafe and worn parts or defective equipment and potential hazards are identified and reported.
 - Work area is secured according to worksite procedures.
 - Materials are joined/welded using correct process according to job specifications.
 - Process never stops through lack of materials where it is within my control.
 - Problems are communicated to appropriate personnel.
 - Correct personal protective equipment is selected and used in a safe manner.
 - A clean and tidy work environment is maintained.
 - Work is carried out in a safe manner.
 - Reporting is done on time and accurately.
 - Reasons for preparing materials and equipment for welding/joining process.
 - Consequences of not performing pre-operational checks.

- Different types of welding and gas related hazards.
 - Implications of not using the correct welding/joining process.
 - Quality awareness: (impact on internal/external customers) not responding or responding slowly to problems at work station.
 - Implications of the misuse of welding/joining equipment.
 - Implications of not using appropriate personal protective equipment.
 - Implications of not following safe working practices.
 - Importance of restoring the work area to a safe and serviceable conditions.
 - Scrap material is disposed of and surplus material stored.
 - Wastage is minimised.
5. Regulations and legislation relevant to this unit standard include but not limited to the following:
- Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 -
- And all subsequent amendments
6. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Prepare for work activity

Range

Potential hazards include poor connections, damaged hoses, incorrect handling and storage of cylinders, faulty equipment, leaking gauges, flash-back arrestors and damaged electrical leads.

Performance Criteria

- 1.1 Job instructions are read to determine sequence of operations.
- 1.2 Required heat related welding/joining equipment and consumables are selected.
- 1.3 Pre-operational checks on equipment are carried out correctly.
- 1.4 Unsafe or worn parts or defective equipment or potential hazards are reported in the required format.
- 1.5 Materials are prepared for welding/joining.

- 1.6 Special personal protective equipment is used during the operation.

Element 2: Weld/join metals

Range

Welding/joining includes using oxy-fuel gas processes, brazing, soldering, high frequency brazing, butt welding, and spot welding.

Performance Criteria

- 2.1 Work area is prepared for welding/joining process.
- 2.2 Work area is secured.
- 2.3 Appropriate weld/join process is used.
- 2.4 The metal is welded/ joined correctly to give a good quality finish.

Element 3: Apply quality checks on completed weld/joint

Performance Criteria

- 3.1 Weld/join is cleaned correctly.
- 3.2 Visual checks for quality finishes are conducted at the end of the process.

Element 4: Perform finishing activities

Performance Criteria

- 4.1 Scrap material is disposed of according to organisational procedure.
- 4.2 Surplus materials are stored according to organisational procedure.
- 4.3 Equipment is cleaned and stored according to organisational procedure.
- 4.4 Problems with materials and equipment are reported.
- 4.5 Work area is restored to a safe and serviceable condition after activity

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Perform corrective maintenance

Title		Perform Corrective Maintenance on Gas Equipment and Appliances			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 314	Credits	4

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing competence to be able to repair basic gas equipment and appliances. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 -
2. This unit standard shall enable the learner to identify and solve problems in which responses display those responsible decisions, using critical and creative thinking, have been made by:
 - Interpreting component functions/malfunctions in accordance with the manuals and specifications.
 - Interpreting applicable sections in the manuals and specifications in accordance with the specified task requirements.
 - Locating faults and identifying corrective action with the aid of manuals and specifications.
3. The qualifying learner is able to:
 - Plan fault finding and maintenance functions;
 - Conduct fault finding and testing of gas equipment and appliances;
 - Repair gas equipment or appliances;
 - Conclude gas equipment or gas appliance repair
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 -

And all subsequent amendments

5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Plan fault finding and maintenance functions

Performance Criteria

- 1.1 Appropriate manuals and specifications for the appliance, system or equipment to be worked on are selected in accordance with workplace procedures.
- 1.2 Specific sections applicable to the specified task are identified in the manuals and specifications.
- 1.3 Component functions/malfunctions are interpreted in accordance with the manuals and specifications.
- 1.4 Applicable sections in the manuals and specifications are interpreted in accordance with the specified task requirements.
- 1.5 Tools and test instruments to be used are selected according to the specified task.

Element 2: Conduct fault finding and testing of gas equipment and appliances

Performance Criteria

- 2.1 The equipment or appliance is inspected for visible damage according to safety inspection sheets.
- 2.2 Repairs are done in accordance with manufacturer's manual.
- 2.3 The equipment or appliance is tested in correct sequence as per fault finding procedures.
- 2.4 Faults are located and corrective action identified with the aid of manuals and specifications.
- 2.5 Faults, wear and tear are identified according to workplace procedures.

Element 3: Repair gas equipment or appliances

Performance Criteria

- 3.1 Appropriate tools are used to remove faulty components.
- 3.2 Components are selected and replaced according to manufacturer's specifications.
- 3.3 The gas equipment or appliance is checked for correct assembly according to maintenance procedures.
- 3.4 Safety precautions are adhered to according to safe work procedures.

Element 4: Conclude gas equipment or gas appliance repair

Performance Criteria

- 4.1 Each gas connection and seal are checked for leaks as per safe work procedures.
- 4.2 Repaired equipment or appliance is tested for correct operation according to manufacturer's specifications and statutory requirements.
- 4.3 Equipment or appliance is cleaned before approving it for service.
- 4.4 Tools and test instruments are cleaned and stored according to statutory requirements.

Element 5: Clean Up

Performance Criteria

- 5.1 Clear the work area and dispose of waste material, reuse or recycle materials in accordance with environmental and workplace requirements.
- 5.2 Clean tools and equipment, check for serviceability reporting any damage and store and secure according to manufacturer recommendations and workplace procedures.
- 5.3 Record and report relevant safety information in accordance with workplace requirements

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Perform routine maintenance

Title		Perform Routine Maintenance on Gas Equipment and Appliances			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 315	Credits	4

Purpose

This unit standard will contribute to the full development of any learner within the gas installations environment, by providing competence to be able to perform routine maintenance on gas equipment and appliances. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment

Special Notes

1. Entry information/Prerequisite:
 - None
2. This unit standard shall enable the learner to identify and solve problems in which responses display those responsible decisions, using critical and creative thinking, have been made by:
 - Performing checks and tests required to verify safe working of equipment.
3. The learner can be able to use science and technology effectively and critically, showing responsibility towards the environment and health of others:
 - Checking equipment for safe operation, leaks and mechanical integrity.
 - Adhering to applicable health, safety, environmental and housekeeping procedures.
4. Gives understanding the role of routine maintenance on gas equipment and appliances in the gas industry and the effect it has on the growth and development of the organisation, its customers and employees.
5. The qualifying learner is able to:
 - Plan and prepare for routine maintenance;
 - Obtain all materials required to perform the job;
 - Perform routine maintenance activities;
 - Monitor the condition of machinery and equipment.
6. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Labour Act 2005;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;

And all subsequent amendments

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1:

Performance Criteria

- 1.1 The job requirements are obtained, listed and clarified with the (internal or external) client.
- 1.2 The job is planned to include sequence and estimated timing of events.
- 1.3 A job card is prepared to indicate basic job requirements.
- 1.4 An assessment is made of equipment, parts and materials required for the job.
- 1.5 An evaluation is made of consumables, lubricants and coolants required for the job.

Element 2: Obtain all materials required to perform the job

Performance Criteria

- 2.1 Equipment, parts and materials are acquired based on specific job requirements.
- 2.2 Consumables, lubricants and coolants are acquired based on specific job requirements.
- 2.3 Tools, specialised tools and testing equipment are obtained and prepared based on specific job requirements.
- 2.4 Cleaning agents and materials are prepared or obtained for the job.
- 2.5 Plans and drawings are obtained before the start of the job.

Element 3: Perform routine maintenance activities

Performance Criteria

- 3.1 Minor adjustments are made, settings are changed and fasteners are tightened in accordance with manufacturer specifications and schedules.
- 3.2 Consumables are refilled and serviceable components are replaced in accordance with equipment manufacturer specifications and schedules.
- 3.3 Equipment is checked for safe operation, leaks and mechanical integrity.
- 3.4 Problems that cannot be rectified are immediately reported in accordance with workplace procedures.
- 3.5 Machines and workplace are cleaned and waste is disposed of in accordance with general good housekeeping standards.
- 3.6 Work is checked for conformance to quality requirements and general good workmanship.
- 3.7 Applicable health, safety, environmental and housekeeping procedures are adhered to in accordance with workplace procedures.

Element 4: Conclude gas equipment or gas appliance repair

Range

Monitoring should take place for a sufficient time period to ensure that mechanical faults, leaks and malfunctioning equipment are identified.

Performance Criteria

- 4.1 Machine and equipment condition is monitored in accordance with workplace procedures.
- 4.2 Checks and tests required to verify safe working of equipment are performed in accordance with procedures.
- 4.3 Machine and equipment condition is reported in an accurate and clear manner.
- 4.4 Tools and equipment are stored in allocated areas.
- 4.5 Administrative functions are completed in accordance to workplace requirements.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Procure and Maintain Stock

Title		Procure and maintain stock levels of equipment and consumables required for LP-gas system installations and maintenance			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 316	Credits	4

Purpose

The outcomes of this unit standard will enable the learner to be able to procure and maintain stock levels of equipment and consumables required for LP-gas system installations and maintenance. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. The learner is able to identify and solve problems in which responses display those responsible decisions, using critical and creative thinking, have been made by:
 - Taking possible estimation errors, losses that may occur and market changes into consideration to determine total materials requirements.
 - Comparing material quantities to supplied requisition or order.
 - Counting stock and comparing to calculated stock levels.
3. The qualifying learner is able to:
 - Explain stock control concepts in accordance with typical industry practices.
 - Maintain appropriate stock levels.
 - Procure stock for a given period or specific contract.
 - Count and evaluate materials stocked.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
5. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Explain stock control concepts in accordance with typical industry practices

Range

The stock system includes the items in stock, replacement levels, supplier, shelf life and age (where applicable) and condition (new or reconditioned).

Performance Criteria

- 1.1 A systematic stock information system is maintained in accordance with workplace procedures.
- 1.2 All stock items are clearly identified with tags or labels.
- 1.3 Stock is stored in an organised, safe and clean environment.
- 1.4 Required stock and stock information is accessed within a short space of time.

Element 2: Maintain appropriate stock levels

Range

Re-ordering policy should take the cost of holding stock, administrative costs and service levels into consideration.

Performance Criteria

- 2.1 Stock levels are maintained above pre-determined minimum levels.
- 2.2 Orders and materials are traced in accordance with specified requirements.
- 2.3 Desired stock levels are noted taking stock rotation into consideration.
- 2.4 Re-ordering policy is explained in terms of own workplace.

Element 3: Procure stock for a given period or specific contract

Range

Relevant factors may include, but is not limited to price, payment terms, availability, delivery time, quality, reliability, distance and on-site delivery.

Performance Criteria

- 3.1 Damaged materials and packaging are noted and problems addressed in accordance with workplace procedures.
- 3.2 Material quantities are compared to supplied requisition or order.
- 3.3 An itemised bill of materials is compiled based on project requirements or off-take for the given period.
- 3.4 Possible estimation errors, losses that may occur and market changes are taken into consideration to determine total materials requirements.
- 3.5 An enquiry is lodged and quotes are obtained from approved suppliers based on total material requirements.
- 3.6 One or more suppliers are selected based on relevant criteria.

Element 4: Count and evaluate materials stocked

Performance Criteria

- 4.1 Stock is counted and compared to calculated stock levels.
- 4.2 Clean tools and equipment, check for serviceability and report any damage, and store and secure.
- 4.3 Incorrect, damaged and missing items are noted and handled according to company policies and procedures.
- 4.4 Outstanding and late orders are followed up with suppliers.
- 4.5 Consumable expiry dates are noted, expired materials removed and short shelf-life items are flagged.

Registration Data

Date first registered	2025
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Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Replace an LPG Component

Title		Replace a Component as Part of LPG System Operations			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 318	Credits	5

Purpose

This unit standard is intended for basic numeracy skills to apply LPG systems.

This unit standard specifies the competencies required to replace LPG system's components. It includes planning and prepares for work, the correct usage of manifold gauges, purging, replace components as well as complete work and do housekeeping.

Special Notes

1. Entry information/Prerequisite:
 - Apply quality principles on a gas installation project;
 - Demonstrate basic knowledge of health and safety in a working environment;
 - Select, use and care for engineering hand and power tools;
 - Understand electrical and mechanical engineering principles as applicable to LPG appliances.
2. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.
3. Assessment evidence may be collected at any realistic place or simulated real place where logical collection of such evidence can be achieved.
4. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 2005
 - Workmen's Compensation Act No.7 of 1983
 - Occupational Health and Safety (OHS) Act 2001
 - SZNS 085: 2024And all subsequent amendments

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Plan and Prepare for Work

Range

- Tools and equipment may include but are not limited to standard tool box, multi-meter, set of spanners, set of screw drivers, manifold gauges, ratchet wrench, side cutter, water pump pliers, long nose pliers, anemometer, tube cutter, manifold gauges, shifting spanner and recovery unit.
- Materials may include but are not limited to any material required for replacing specific components.

Performance Criteria

- 1.1 Work instructions, including job cards, specifications and operational details are obtained, confirmed and applied.
- 1.2 Workplace inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements are carried out.
- 1.3 Safety requirements are followed in accordance with safety plans and policies.
- 1.4 Tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults rectified or reported prior to commencement.
- 1.5 Material requirements are identified and obtained in accordance with job card and/or specifications.
- 1.6 Materials are safely handled and located ready for use in accordance with job at hand.

Element 2: Use System Manifolds

Performance Criteria

- 2.1 Procedures and information required for operating a refrigeration manifold gauge are identified and sourced in line with workplace procedures.
- 2.2 Operating procedures for refrigeration recovery unit are implemented in line with workplace procedures.

- 2.3 Procedures for fitting gauges to the system with service and valves are implemented in line with workplace procedures.

Element 3: Purge Gas in the Piping System

Performance Criteria

- 3.1 Procedures and information required for pumping out gas are identified and sourced in line with workplace procedures.
- 3.2 Procedures are implemented in line with workplace procedure.
- 3.3 Components are replaced in line with workplace procedures.
- 3.4 The system is return to normal operation after the replacements of components.

Element 4: Replace Components

Performance Criteria

- 4.1 Procedures and information required for replacing a component are identified and sourced in line with workplace procedures.
- 4.2 System component is replaced in line with workplace procedures.
- 4.3 System is leak tested and returned to normal operation.

Element 5: Complete the Work and Carry Out Housekeeping

Range

Work completion details may include but are not limited to job card and sign-out form for equipment

Performance Criteria

- 5.1 Work is completed and appropriate personnel notified in line with workplace procedures.
- 5.2 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.
- 5.3 Material is collected and stored in line with workplace procedures.

- 5.4 Equipment used is cleaned, checked, maintained and stored in line with workplace procedures.
- 5.5 Work completion details are finalised in line with workplace procedures.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Select, Care and Use Engineering Hand Tools

Title		Select, use and care for engineering hand tools			
Field		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 318	Credits	3

Purpose

This unit standard specifies the skills and knowledge required to use commonly used engineering hand tools for gas applications. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, a candidate must demonstrate knowledge of:
 - types, function and purpose of engineering hand tools used in gas applications;
 - how to access relevant information.
 - work health and safety (WHS) requirements relevant to use of hand tools.
3. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standards.And all subsequent amendments
4. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Prepare to use hand tools

Performance Criteria

- 1.1 Organisational work health and safety (WHS) and environmental requirements identified, obtained and interpreted.
- 1.2 Power sources identified and power supply accessed.
- 1.3 Appropriate personal protective equipment (PPE) selected and ensure it is correctly fitted and used according to the requirements of the job.
- 1.4 Electrical safety requirements identified.

Element 2: Use hand tools for work

Performance Criteria

- 2.1 Hand tools checked for serviceability and safety and faults reported to supervisor according to workplace requirements.
- 2.2 Hand tools selected consistent with the needs of the job.
- 2.3 Relevant equipment selected to secure, position or support material for hand tool application.
- 2.4 Hand tools used safely and effectively for the application according to manufacturer's specifications and workplace procedures.
- 2.5 Relevant material handled and secured for hand tool application.

Element 3: Clean Up

Performance Criteria

- 3.1 Work area cleared and waste material disposed of in accordance with environmental and workplace requirements.
- 3.2 Tools and equipment cleaned, checked for serviceability reporting any damage and stored and secured according to manufacturer recommendations and workplace procedures.
- 3.3 Relevant safety information recorded and reported in accordance with workplace requirements.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Select, Care and Use of Power Tools

Title		Select, Use and Care for Engineering Power Tools			
Domain		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 319	Credits	3

Purpose

This unit standard specifies the skills and knowledge required to use commonly used engineering power tools for gas applications. The knowledge, skills and understanding demonstrated in this unit standard are essential for upliftment, social and economic transformation in the gas installation environment.

Special Notes

1. Entry information/Prerequisite:
 - None
2. To be competent in this unit standard, a candidate must demonstrate knowledge of:
 - types, function and purpose of engineering power tools used in gas applications;
 - How to access relevant information.
 - Work health and safety (WHS) requirements relevant to use of power tools.
3. Regulations and legislation relevant to this unit standard include but not limited to the following:
 - Employment Act 1968 and/or as amended;
 - Workmen's Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - SZNS standardsAnd all subsequent amendments
4. Performance of all elements in this unit standard must comply with industry standards.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Prepare to use power tools

Performance Criteria

- 1.1 Identify, obtain and interpret organisational work health and safety (WHS) and environmental requirements.
- 1.2 Identify power sources and access to power supply.
- 1.3 Select appropriate personal protective equipment (PPE) and ensure it is correctly fitted and used according to the requirements of the job.
- 1.4 Identify electrical safety requirements.

Element 2: Use power tools for work

Performance Criteria

- 2.1 Select power tools consistent with the needs of the job according to workplace procedures.
- 2.2 Check power tools for tags, serviceability and safety according to WHS requirements and report any faults to supervisor according to workplace procedures.
- 2.3 Select relevant equipment to secure, position or support material for power tool application.
- 2.4 Use power tools safely and effectively for application according to manufacturer's specifications and workplace procedures.
- 2.5 Store power tools safely when not in use according to workplace procedures.

Element 3: Clean Up

Performance Criteria

- 3.1 Clear the work area and dispose of waste material, reuse or recycle materials in accordance with environmental and workplace requirements.
- 3.2 Clean tools and equipment, check for serviceability reporting any damage and store and secure according to manufacturer recommendations and workplace procedures.
- 3.3 Record and report relevant safety information in accordance with workplace requirements.

Registration Data

Date first registered	2025
Anticipated review	20230
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)

Size and Install LPG Piping Systems

Title		Size and Install LP-gas Piping Systems			
Domain		Physical Planning and Construction			
Subfield		Electricity and Energy			
SZNQF Level	3	Unit ID	LPG 320	Credits	4

Purpose

This unit standard specifies the skills and knowledge required to size and install consumer gas piping. This may include but not limited to planning and preparation for work, installing pipes as well as completing of work and carrying out housekeeping.

Special Notes

1. Entry information/Prerequisite:
 - Demonstrate basic knowledge of health and safety in a working environment.
 - Understand electrical and mechanical engineering principles as applicable to LPG appliances.
2. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturer's specifications and/or company's guidelines and instructions.
3. To be competent in this unit, a candidate must demonstrate knowledge of:
 - pipe sizing including:
 - appliance pressure and gas consumption requirements;
 - properties of gas
 - length of run
 - allowable pressure drop;
 - available pressure
 - approved materials, their limitations and application for installing gas piping systems, including:
 - testing for gas-tightness;
 - using current testing equipment
 - electrical safety and required precautions
 - how to access relevant information, including codes and standards
 - tools, materials and equipment used to size and install consumer gas piping
 - work health and safety (WHS) requirements to size and install consumer gas piping
 - properties of gas, gas safety, combustion principles, pressure and flow rates.
4. Safe working practices include but are not limited to day-to-day observation of safety policies and procedures and legislative requirements.
5. Performance of all elements in this unit standard must comply with industry standards.
6. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which air condition and refrigeration environment.
7. This unit standard applies to both LPG installations for domestic and commercial use.

8. Regulations and legislation relevant to this unit standard include but not limited to the following:
- SZNS SANS 10087:2008 – part 1 – 8 / SZNS 085: 2024;
 - SZNS SANS 1774: 2018;
 - SZNS ISO 10461:2005;
 - SZNS ISO 10460:2018;
 - SZNS IS 16017: 2022;
 - Guide to Good Industry Practices LPG in Commercial Kitchens – World LPG Association;
 - Employment Act 1968, and/or as amended;
 - Workmen’s Compensation Act No.7 of 1983;
 - Occupational Health and Safety (OHS) Act 2001;
 - Environmental Management Act 2002;
- And all subsequent amendments

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which comply with the accreditation, national assessment and moderation requirements set by the Eswatini Higher Education Council.

Elements and Performance Criteria

Element 1: Identify installation requirements

Performance Criteria

- 1.5 Consumer gas service installation requirements are accessed, read and determined from job specifications, relevant industry Standards, codes, specifications and regulatory requirements.
- 1.6 workplace policies and procedures, work health and safety (WHS) and environmental requirements are Identified and applied

Element 2: Plan and Prepare for Work

Range

- Tools and equipment may include but not limited to standard tool box, oxy-acetylene gas brazing set, hand power drilling machine, swaging and flaring tool set, engineering square, spirit level, spring bender, level type bender, hacksaw blade, Step ladder, pipe cutter, files, measuring tape and reamer.
- Materials may include but not limited to pipe, screws, bolts and nuts, washers, tubes, armour flux, cable ties, brazing rods, trunking, couplings, elbows, saddle, mounting brackets and crack filler.

Performance Criteria

- 2.1 Installation and work instructions, including job cards, specifications and operational details are obtained.
- 2.2 Workplace inspection, assessment of conditions and hazards are determined.
- 2.3 Tools and equipment are identified and checked. Defective tools and equipment are maintained and or marked and reported to supervisor.
- 2.4 Materials requirements are identified and obtained in line with job specification.
- 2.5 Materials are safely handled and/or located ready for use in line with workplace procedures.
- 2.6 Technical and/or calibration requirements for tools and equipment are sourced and implemented in line with workplace procedures.
- 2.7 Environmental protection requirements are identified and taken into account in line with environmental plans and obligations.

Element 3: Size and Install Gas Piping

Range

Market research related terms: Products, services, market, market research, market segmentation and target market.

Performance Criteria

- 3.1 Pipe installation is sequenced in line with job schedule.
- 3.2 Pipe work routes are planned within constraints of the building structure, specification and regulations.
- 3.3 Pipe work installation is carried out to comply with technical standards and job specifications with enough access to effect connections and maintenance.
- 3.4 Final check of the installed pipe work is carried out to verify that it complies with all requirements.

Element 4: Complete Work and Carryout Housekeeping

Performance Criteria

- 4.1 Work is completed and designated person notified in line with workplace procedures.
- 4.2 Work area is cleared of waste, cleaned, restored in line with workplace procedures.
- 4.3 Reusable material is collected and stored in line with workplace procedures.
- 4.4 Tools and equipment used is cleaned, checked, maintained and stored in line with workplace procedures.
- 4.5 Work completion details are finalised in line with workplace procedures.

Registration Data

Date first registered	2025
Anticipated review	2030
Standard setting body (SSB)	Directorate of Industrial and Vocational Training (DIVT)
Body responsible for review	Directorate of Industrial and Vocational Training (DIVT)