

OCCUPATIONAL QUALIFICATION/PART-QUALIFICATION/ SKILLS PROGRAMME

CURRICULUM DOCUMENT TEMPLATE

IN LINE WITH THE QQSF POLICY (2021) OCCUPATIONAL QUALIFICATION TYPE (NOMENCLATURE)

QUALIFICATION/PART-QUALIFICATION/SKILLS PROGRAMME	TYPE (NOMENCLATURE)	TITLE (DESCRIPTOR)	NQF LEVEL	CREDITS
Skills Programme	Skills Programme	Domestic Refrigeration Appliance Repairer	3	60
CURRICULUM CODE	900333-000-00-00			
PARTNER DETAILS	ORGANISATION NAME	WEBSITE ADDRESS	TELEPHONE NUMBER	LOGO
QUALITY PARTNER - DEVELOPMENT	Energy and Water SETA	https://ewseta.org.za	+27 11 274-4700	
QUALITY PARTNER – ASSESSMENT	N/A	N/A	N/A	N/A

DESIGNATION	NAME AND SURNAME	SIGNATURE	DATE
SUBJECT MATTER EXPERT (SME)	Schalk WB Walters	SWB Walters	30 November 2023
QUALITY PARTNER REPRESENTATIVE	Lesha Singh	L. Singh	04 December 2023

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SECTION 1: CURRICULUM SUMMARY

1.1 Occupational Information:

1.1.1 Associated, Organising Framework for Occupations (OFO) Occupational Code and Title

671206: Electrical Equipment Mechanic

1.1.2 Occupation/Specialisation/Part-Qualification/Skills Programme Type, Title, NQF Level, Credits and Curriculum Code, addressed by this Curriculum.

TYPE	TITLE	NQF LEVEL	CREDITS	CURRICULUM CODE
Skills Programme	Domestic Refrigeration Appliance Repairer	3	60	900333-000-00-00

1.1.3 Alternative titles used by industry:

None

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1.2 Curriculum Information:

1.2.2 Articulation for Skills programmes

(a) Work Opportunities:

Qualifying learners would be employable to the refrigeration and air conditioning companies as repairers, installers and maintainers of refrigeration and air conditioning appliances.

(b) Learning Opportunities:

Qualified learners may further their studies by enrolling in other related skills programmes and qualifications, subject to meeting minimum entry requirements of such skills programmes and qualifications.

1.3 Curriculum Structure:

1.3.1 Knowledge/Theory Modules:

900333-000-00-KM-01, Health, safety related to the refrigeration repair environment, NQF Level 2, Credits 2

900333-000-00-KM-02, Internet of Things and smart appliances, NQF Level 3, Credits 1

900333-000-00-KM-03, Drawings, NQF Level 3, Credits 1

900333-000-00-KM-04, Basics of Electrical and Electronics, NQF Level 2, Credits 2

900333-000-00-KM-05, Customer Relation Management, NQF Level 3, Credits 2

900333-000-00-KM-06, Interpersonal Skill, Emotional Intelligence NQF Level 2, Credits 1

900333-000-00-KM-07, Green Solar Energy, Solar Power and Hybrid, NQF Level 3, Credits-1

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900333-000-00-KM-08, Field service report writing, NQF Level 3, Credits 2

Total number of credits: 12

1.3.2 Practical Skills Modules:

900333-000-00-PM-01, Developing manual dexterity, NQF Level 2, Credits 4

900333-000-00-PM-02, Install, test and commission a domestic refrigerator, NQF Level 2, Credits 1

900333-000-00-PM-03, Install, test and commission a domestic air-conditioner, NQF Level 2, Credits 2

900333-000-00-PM-04, Consult client or refer to work order to establish nature of a defect domestic refrigeration appliance, NQF Level 2, Credits 1

900333-000-00-PM-05, Repair a faulty domestic refrigerator, NQF Level 3, Credits 17

900333-000-00-PM-06, Repair an installed domestic air-conditioner, NQF Level 3, Credits 17

900333-000-00-PM-07, Safe handling of refrigerants, NQF Level 2, Credits 6

Total number of credits 48

1.4 Entry Requirements:

NQF Level 2 with Mathematical Literacy

1.5 Recognition of Prior Learning (RPL):

1.5.1 RPL for Access:

NB: QCTO Standard Statement Provided

Learners may use the RPL process to gain access to training opportunities for a programme of learning, qualification, part-qualification or skills programme if they do not meet the formal, minimum entry requirements for admission. RPL assessment provides an alternative access route into a programme of learning, qualification, part-qualification, or skills programme.

Such an RPL assessment may be developed, moderated and conducted by the accredited Skills Development Provider which offers that specific qualification/part qualification/skills programme. Such an assessment must ensure that the learner is able to display the equivalent level of competencies required for access, based on the NQF level descriptors.

1.5.2 RPL for Exemption:

NB: QCTO Standard Statement Provided

For exemption from modules through RPL, learners who have gained the stipulated competencies of the modules of a programme of learning, qualification, part-qualification or skills programme

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through any means of formal, informal or non-formal learning and/or work experience, may be awarded credits towards relevant modules, and gaps identified for training, which is then concluded.

1.5.3 RPL for awarding credits:

NB: QCTO Standard Statement Provided

Learners who have gained the stipulated competencies of the modules of a programme of learning, qualification, part-qualification or skills programme through any means of formal, informal or non-formal learning and/or work experience, may be awarded credits towards relevant modules, and gaps identified for training, which is then concluded.

A valid Statement of Results is required for admission to the EISA in which confirmation of achievement is provided that all internal assessment criteria for all modules in the related curriculum document have been achieved.

For a Skills Programme, the accredited Skills Development Provider (SDP) must ensure all modular competency requirements are met prior to the FISA and keep record of such evidence.

Upon successful completion of the EISA/FISA, RPL learners will be issued with the QCTO certificate for the qualification, part-qualification or skills programme. Quality Partners are responsible for ensuring the RPL mechanism and process for qualifications and part-qualification is approved by the QCTO.

1.6 Quality Partner for Assessment:

NAME OF BODY:	Energy and Water SETA	
ADDRESS OF BODY:	22 Wellington Road Parktown, Johannesburg South Africa	
WEBSITE:	https://ewseta.org.za	
TELEPHONE NUMBER:	+27 11 274-4700	

1.7 List of Qualification(s)/Part- Qualification(s)/Skills Programme(s) Related to this Curriculum

- Occupational Certificate Air Conditioning and Refrigeration Mechanic, SAQA ID 103277, NQF Level 4, 637 Credits
- Occupational Certificate: Domestic and light commercial refrigeration serviceman, SAQA 103279, NQF level 2, 173 Credits
- Skills Programme: Major Kitchen Appliance Repairer, NQF Level ..., .. Credits
- Skills Programme: Small Domestic Appliance Repairer, NQF Level ..., .. Credits

SECTION 2: OCCUPATIONAL/SPECIALISATION/PART-QUALIFICATION/SKILLS PROGRAMME PROFILE

2.1 Purpose:

The purpose of this skills programme is to prepare a learner to function as Domestic Refrigeration Appliance Repairer.

A Domestic Refrigeration Appliance Repairer installs and repairs domestic air conditioners and refrigerators

Note: Domestic Refrigeration Appliances include but are not limited to Domestic, Fridges, Wine Cabinets and (Electric), Freezers (Electric,) limited to 18kw as per SAQCC Gas.

2.2 Tasks:

TASK	LINKS TO ELO
Install and adjust Domestic Refrigeration Appliances (NQF Level 2)	<p>Install a domestic air conditioner system by applying knowledge of applicable legislation and related technology, using applicable tools and equipment.</p> <p>Install a domestic refrigerator by applying knowledge of applicable legislation and related technology, using applicable tools and equipment.</p>
Assess defective domestic refrigeration appliances (NQF Level 3)	<p>Repair a domestic air conditioner system by applying knowledge of applicable legislation, maintenance, and related technology.</p> <p>Repair a domestic refrigerator by applying knowledge of applicable legislation, maintenance and related technology.</p>
Repair a malfunctional domestic refrigeration appliance (NQF Level 3)	

2.3 Occupational Task Details:

2.3.1 Task 1

Install and adjust domestic refrigeration appliances (NQF Level 2)

(a) Unique Product or Service:

Domestic refrigeration appliances installed.

(b) Responsibilities:

Install and adjust a domestic refrigerator.

Install and adjust a domestic air-conditioner.

(c) Contexts:

Processes and procedures to install, service and repair domestic refrigeration appliances.

2.3.2 Task 2

3.2 Assess defective domestic refrigeration appliances (NQF Level 3).

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(a) Unique Product or Service:

Assessed domestic refrigeration appliances.

(b) Responsibilities:

Consult client or refer to work order to establish nature of a defect domestic refrigeration appliance.

Developing manual dexterity

(c) Contexts:

Processes and procedures to test malfunctional domestic refrigeration appliances.

2.3.3 Task 3

Repair a malfunctional domestic refrigeration appliance (NQF Level 3).

(a) Unique Product or Service:

Repaired Domestic Refrigeration Appliances

(b) Responsibilities:

Repair a faulty a domestic refrigerator.

Repair an installed domestic air-conditioner.

Safe handling of refrigerants

(c) Contexts:

Processes and procedures to repair malfunctional domestic refrigeration appliances.

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

3 Knowledge Module Specifications:

NB: MODE OF DELIVERY e.g. face-to-face/contact, online, e-learning, mobile training unit, blended, distance, etc

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-01	Health, and safety related to the refrigeration repair environment	2	2	Face-to-face, Online or Blended
900333-000-00-KM-02	Internet of Things and smart appliances	3	1	Face-to-face, Online or Blended
900333-000-00-KM-03	Drawings	3	1	Face-to-face, Online or Blended
900333-000-00-KM-04	Basics of Electrical and Electronics	3	2	Face-to-face, Online or Blended
900333-000-00-KM-05	Customer Relation Management	3	2	Face-to-face, Online or Blended
900333-000-00-KM-06	Interpersonal Skill, Emotional Intelligence	2	1	Face-to-face, Online or Blended
900333-000-00-KM-07	Green Solar Energy, Solar Power and Hybrid	3	2	Face-to-face, Online or Blended
900333-000-00-KM-08	Field service report writing	3	1	Face-to-face, Online or Blended

Detailing Knowledge Module (KM) contents

3.1 Knowledge Module (KM) – 01: 900333-000-00-KM-01, Health, and safety related to the refrigeration repair environment, NQF Level 2, Credits 2

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-01	Health, and safety related to the refrigeration repair environment	NQF Level 2	Credits 2	Face-to-face, Online or Blended

3.1.1 Module Details:

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to foster a safe and healthy occupational environment. Occupational Health and Safety (OHS) also protects the general public who may be affected by the occupational environment.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-01-KT01	Interpretation of National Safety Legislation (OHS Act & Construction Regulations Montreal protocol and amendments, pressure equipment regulation)	52
KM-01-KT02	General workshop safety (OHS Act)	48

(c) Detailing each topic listed above into topic elements:

KM-01-KT01 ... Interpretation of National Safety Legislation (OHS Act & Construction Regulations Montreal protocol and amendments, pressure equipment regulation)...52 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Compliant to mandatory HSE requirements (OHS Act) and quality standards.	16
KT0102	Interpretation of relevant sections of the Occupational Health and Safety Act.	18
KT0103	Environmental protection Legislation and compliance (Montreal protocol and amendments)	17
KT0104	Interpretation of the Construction Regulations relevant to the installation of a domestic appliance.	15
KT0105	Pressure equipment Regulations.	18
KT0106	Relevant SANS including, but not limited to SANS 10147 and 10142	16

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Explain the interpretation of relevant sections of the Occupational Health and Safety Act	14
IAC0102	Explain the interpretation of the Construction Regulations	16
IAC0103	Identify and explain the possible hazards and risks within the workplace.	14
IAC0104	Explain possible causes of accidents and incidents within a work environment and ways in which these can be mitigated to protect oneself and co-workers.	14
IAC0105	Explain the procedure to be followed with regard to the reporting of incidents and accidents.	15
IAC0106	Explain requirements of Pressure Equipment Regulations and the relevant SANS.	13
IAC0107	Explain the relevance of Ozone depletion and Global warming to refrigeration.	14

KM-01-KT02 ... General workshop safety (OHS Act) ...48%

TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Compliant to mandatory HSE requirements (OHS Act) and quality standards.	14
KT0202	Safety rules and procedures.	12
KT0203	Emergency procedures.	11
KT0204	Emergency exit and assembly points.	12
KT0205	First aid stations and procedures.	11
KT0206	PPE and housekeeping.	14
KT0207	Colour codes and safety signage	15
KT0208	Fire Prevention	11

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Explain the evacuation procedures making use of a scenario	16
IAC0202	Explain with reasons the importance of emergency drills and the consequences of not adhering to such.	18
IAC0203	Identify and explain the interpretation of safety signs and colour coding systems.	17
IAC0204	Explain reasons for demarcation in work areas.	15
IAC0205	Identify the correct PPE to use in the workplace and give reasons for utilising PPE.	18
IAC0206	Discuss the importance of maintaining good house-keeping practices in a workplace.	16

3.1.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	

EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for summative assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

3.1.3 Exemptions

...none

3.2 Knowledge Module (KM) – 02: 900333-000-00-KM-02, Internet of Things and smart appliances, NQF Level 2 Credits 1

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-02	Internet of Things and smart appliances	NQF Level 2	Credits 1	Face-to-face, Online or Blended

3.2.1 Module Details:

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to describes physical objects (or groups of such objects) with sensors, processing ability, software and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-02-KT01	Understanding Internet Of Things (IoT)	31
KM-02-KT02	Guide and Troubleshooting IoT devices	33
KM-02-KT03	IoT Operation Principle and Software Understanding	36

(c) Detailing each topic listed above into topic elements:

KM-02-KT01 Understanding Internet of Things (IoT)...31 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Basics of Internet Of Things (IoT) <ul style="list-style-type: none"> ○ Connectivity ○ Data Collection and Analysis ○ Remote Control ○ Automation ○ Energy Efficiency ○ Improved User Experience ○ Interoperability ○ Security and Privacy ○ Cost and Maintenance ○ Environmental Impact 	80
KT0102	How is it Implemented and Software Setup	20

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Fault Finding and Troubleshooting Guide	52
IAC0102	Mapping of Internet of Things (IoT)	48

KM-02-KT02 Guide and Troubleshooting IoT devices ...33 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Check Connectivity:	6
KT0202	Power Supply:	7
KT0203	App and Firmware Updates:	8
KT0204	Reset the Device:	7
KT0205	Network Issues:	8
KT0206	Device Placement:	7
KT0207	Authentication and Account Issues:	8
KT0208	Device-Specific Troubleshooting:	6
KT0209	Check for Error Messages:	7
KT0210	Internet Service Provider (ISP):	8
KT0211	Firewalls and Network Security:	7
KT0212	Interoperability:	6
KT0213	Factory Reset as a Last Resort:	7
KT0214	Contact Customer Support:	8
KT0215	Privacy and Security:	6

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Discuss typical IoT troubleshooting options	100

KM-02-KT03 ... IoT Operation Principle and Software Understanding ...36 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	IoT Operation Principle <ul style="list-style-type: none"> ○ Sensing and Data Collection ○ Data Processing ○ Connectivity ○ Data Transmission ○ Cloud Platforms ○ User Interfaces ○ Security and Authentication ○ Over-the-Air (OTA) Updates ○ Power Management ○ Interoperability 	52
KT0302	Software Understanding <ul style="list-style-type: none"> ○ Embedded Software ○ Firmware. ○ Cloud Software ○ User Interfaces ○ Security Software ○ OTA Update Software ○ APIs and Integration ○ Data Processing and Analysis 	48

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Discuss IoT operation principles	52
IAC0302	Discuss IoT software principles	48

3.2.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant consumables

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for summative assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment

FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24
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ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

3.2.3 Exemptions

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3.3 Knowledge Module (KM) – 03: 900333-000-00-KM-03, Drawings, NQF Level 2, Credits 1

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-03	Drawings	NQF Level 2	Credits 1	Face-to-face, Online or Blended

3.3.1 Module Details:

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to understand that electrical working drawing consists of lines, symbols, dimensions, and notations to accurately convey an engineering's design to the workers, who install the electrical system on the job.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-03-KT01	Basic electrical diagram,	31
KM-03-KT02	Circuit diagram Understanding	33
KM-03-KT03	Isometric and Orthographic Drawings	36

(c) Detailing each topic listed above into topic elements:

KM-03-KT01 Basic electrical diagram ...31 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Power supply	31
KT0102	Switch	33
KT0103	Load	36

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Read the circuit diagram and fault-finding steps	100

KM-03-KT02 ... Circuit diagram Understanding ...33 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Direct on-line (DOL) Power circuit Control circuit	8
KT0202	Components and Symbols:	9
KT0203	Power Sources:	7
KT0204	Wires and Connections:	9
KT0205	Ground Symbol:	8
KT0206	Switches:	6

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KT0207	Light Emitting Diodes (LEDs):	7
KT0208	Labels and Values:	8
KT0209	Connections and Junctions:	7
KT0210	Direction of Current:	6
KT0211	Series and Parallel Connections:	8
KT0212	Component Placement:	9
KT0213	Circuit Loops:	8
KT0214	Circuit Notation:	8

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Identify components in an electric circuit	100

KM-03-KT03 ... Isometric and Orthographic Drawings ...36 %		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	Develop 2-Dimensional to 3-Dimensional	25
KT0302	Develop 3-Dimensional to 2-Dimensional	26
KT0303	Reading measurements	26
KT0304	Transferring measurements	23

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Transfer measurements from a 3-Dimensional drawing to a 2-Dimensional drawing	100

3.3.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results

CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for summative assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy 	

ASSESSMENT CENTRE	
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy 	

3.3.3 Exemptions

...none

3.4 Knowledge Module (KM) – 04: 900333-000-00-KM-04, Basics of Electrical and Electronics, NQF Level 2, Credits 2

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-04	Basics of Electrical and Electronics	NQF Level 2	Credits 2	Face-to-face, Online or Blended

3.4.1 Module Details:

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to identify a number of basic concepts that form the foundations of electrical, electronics and technology. Electrical current, voltage, resistance, capacitance, and inductance are a few of the basic elements of electronics.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-04-KT01	Principles of electricity	52
KM-04-KT02	Basics of Electrical Safety	48

(c) Detailing each topic listed above into topic elements:

KM-04-KT01 Principles of electricity ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Direct current power supply	16
KT0102	Alternating current power supply	18
KT0103	Frequency	17
KT0104	Single Phase	15
KT0105	Three phase	18
KT0106	Ohm's law	16
KT0107	Series and parallel circuits	16

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Identify components in a basic electric circuit	100

KM-04-KT02 Basics of Electrical Safety ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Causes of electrical fire	20
KT0202	Water and electricity	22
KT0203	Overload	20

KT0204	Electrocution	18
KT0205	Using electric safe tools and portable electric equipment.	20

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	The causes of an electric fire	31
IAC0202	Causes electric shock	33
IAC0203	Safety criteria for the safe usage of portable electric equipment and tools	36

3.4.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for summative assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME):

SP Curr Domestic Refrigeration Appliance Repairer 3 60

	<ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

3.4.3 Exemptions

...None

3.5 Knowledge Module (KM) – 05: 900333-000-00-KM-05, Customer Relation Management, NQF Level 3, Credits 2

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-05	Customer Relation Management	3	2	Face-to-face, Online or Blended

3.5.1 Module Details:

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to develop cordial customer relation attributes.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-05-KT01	Understanding the client	50
KM-05-KT02	Customer service and ethical conduct	50

(c) Detailing each topic listed above into topic elements:

KM-05-KT01 ... Understanding the client ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Engaging with customer	25
KT0102	Effective communication	26
KT0103	Professional approach to business	26
KT0104	Conflict resolution	23

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Given a client interaction scenario, identify poor and successful performance.	30
IAC0102	Role-play a client interaction.	70

KM-05-KT02 ... Customer Service and ethical conduct ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	After care	20
KT0202	Product knowledge	22
KT0203	Active listening skills	20
KT0204	Service quality	18
KT0205	Service standards	20

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Given a scenario or video clip of a service action the learner must be able to list positive and negative responses.	100

3.5.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for summative assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

3.5.3 Exemptions

...None

3.6 Knowledge Module (KM) – 06: 900333-000-00-KM-06, Interpersonal Skill and emotional intelligence, NQF Level 2, Credits 1

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-06	Interpersonal skill and emotional intelligence	NQF Level 2	Credits 1	Face-to-face, Online or Blended

3.6.1 Module Details:

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to help delegates develop effective and polished interpersonal skills. It helps the delegate develop the skills required of liaising and networking with stakeholders. It helps delegates develop the skills which enable them to establish effective relationships. It also focuses on minimizing interpersonal conflict. Lastly it enables delegates to develop effective teams.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-06-KT01	Liaising and networking with internal and external stakeholders	31
KM-06-KT02	Devising and applying a strategy to establish constructive relationships with team members	33
KM-06-KT03	Identifying and minimizing personal conflict in a unit	36

(c) Detailing each topic listed above into topic elements:

KM-06-KT01 Liaise and network with internal and external stakeholders ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Establishing Relationships	16
KT0102	Keep Managers Informed	18
KT0103	Consult with Managers in a Unit	17
KT0104	Promote Constructive Relationships and Interaction	15
KT0105	Raise Concerns of the Quality of Work	18
KT0106	Present Information to the Manager	16

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Given a scenario learners must participate in a roleplay to create network with external stakeholders.	100

KM-06-KT02 Devise and apply a strategy to establish constructive relationships with team members ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Giving and receiving feedback	16
KT0202	Open and closed communication climates	18
KT0203	Listening Skills	17
KT0204	Communicating assertively	15
KT0205	Demonstrating behaviour that is direct, appropriate and respectful	18
KT0206	Transactional Analysis	16
KT0207	Showing appreciation	16

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Given a scenario learners must participate in a roleplay to forge a work team.	100

KM-06-KT03 Identify and minimize personal conflict in a unit ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0301	Developing Relationships with Team Members	25
KT0302	Develop a Strategy through a Consultative Process	26
KT0303	Identify and Use Opportunities for Team Member Discussions	26
KT0304	Offer Feedback and Advice to Team Members	23

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0301	Given a scenario learners must participate in a roleplay to resolve a conflict.	100

3.6.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module

	<ul style="list-style-type: none"> Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for sumative assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy 	

ASSESSMENT CENTRE

- CIPC registered entity
- SARS Tax compliance pin
- Compliant and current health and safety audit report
- Relevant labour legislation visible in facility or on platform (as required by current legislation)
- POPI policy

3.6.3 Exemptions

...None

3.7 Knowledge Module (KM) – 07: 900333-000-00-KM-07, Green Solar Energy, Solar Power and Hybrid, NQF Level 3, Credits 1

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-07	Green Solar Energy, Solar Power and Hybrid	NQF Level 3	Credits 1	Face-to-face, Online or Blended

3.7.1 Module Details:

(a) Purpose of Knowledge Module:

The purpose of this module is to introduce the learner to green energy and its origin.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-07-KT01	Distinction between Green Solar Energy, Solar Power and Hybrid	40
KM-07-KT02	Advantages and disadvantages of the respective Green Solar Energy	60

(c) Detailing each topic listed above into topic elements:

KM-07-KT01 ... Distinction between Green Solar Energy, Solar Power and Hybrid 40%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Green Solar Energy <ul style="list-style-type: none"> • Definition • Key Characteristics 	31
KT0102	Solar Power <ul style="list-style-type: none"> • Definition • Key Characteristics 	33
KT0103	Hybrid (Solar) Systems <ul style="list-style-type: none"> • Definition • Key Characteristics 	36

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Differentiate between Green Solar Energy, Solar Power, and Hybrid (Solar) Systems	100

KM-07-KT02 ... Advantages and disadvantages of Green Solar Energy 60%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT

KT0201	Advantages: <ul style="list-style-type: none"> ○ Renewable and Sustainable ○ Environmentally Friendly ○ Reduced Energy Costs ○ Energy Independence ○ Low Operating Costs ○ Scalability ○ Off-Grid Capabilities ○ Net Metering ○ Silent Operation ○ Long Lifespan ○ Technological Advancements ○ Grid Stability ○ Energy Storage Integration ○ Job Creation 	50
KT0202	Disadvantages <ul style="list-style-type: none"> ○ Intermittent Energy Source ○ Upfront Costs ○ Geographical Limitations ○ Land Use ○ Environmental Impact ○ Energy Storage Costs ○ Aesthetic Concerns ○ Installation Challenges ○ Energy Conversion Efficiency ○ Initial Carbon Footprint 	50

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Describe the advantages and disadvantages of green solar energy	100

3.7.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics

	<ul style="list-style-type: none"> • Tools and standards for final supervised assessment • Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant • All assessment instruments to cover the related topics • Tools and standards for sumative assessment • Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy 	

ASSESSMENT CENTRE	
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report 	

- Relevant labour legislation visible in facility or on platform (as required by current legislation)
- POPI policy

3.7.3 Exemptions

...None

3.8 Knowledge Module (KM) – 08: 900333-000-00-KM-08, Field service report writing, NQF Level 3, Credits 1

NB: Add title level and Credits above

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-KM-08	Field service report writing	3	1	Face-to-face, Online or Blended

3.8.1 Module Details:

(a) Purpose of Knowledge Module:

The purpose of this module is developing technical writing skills and accurately provide reports on the work that was carried out.

(b) List of Knowledge Topics:

TOPIC CODE	TOPIC TITLE	% OF TIME TO BE SPENT
KM-08-KT01	Interpretation of the job card	50
KM-08-KT02	Construction of a field service report	50

(c) Detailing each topic listed above into topic elements:

KM-08-KT01 ... Interpretation of the job card ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0101	Confirm reported or perceived problem.	30
KT0102	Recommend a course of action. <ul style="list-style-type: none"> ○ Tools and equipment. ○ Spare parts. ○ Transport. ○ Time allocation. 	60

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0101	Given a job card a course of action is compiled.	100

KM-08-KT02 ...Construction of a field service report ...%		
TOPIC ELEMENT CODE	TOPIC ELEMENT TITLE	% OF TIME TO BE SPENT
KT0201	Understand the Purpose	6
KT0202	Identify the Audience	7
KT0203	Create an Outline	8
KT0204	Write a Clear Title and Abstract	7
KT0205	Introduction	8
KT0206	Methods or Approach	7

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KT0207	Results	8
KT0208	Discussion	6
KT0209	Conclusions:	7
KT0210	Recommendations (if applicable)	8
KT0211	Proofread and Edit	7
KT0212	Formatting and Presentation	6
KT0213	Review and Feedback	7
KT0214	Finalise the Report	8
KT0215	Distribution and Sharing	6

Internal Assessment Criteria (IAC) and Weight

IAC CODE	IAC DESCRIPTION	% OF TIME TO BE SPENT
IAC0201	Compile a field service report based on the project in module 900333-000-00-PM-01, Developing manual dexterity.	100

3.8.2 Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All learning materials, lesson plans, workbooks, assessment guides to cover the related topics Tools and standards for final supervised assessment Record keeping systems to capture learner data and issue a statement of results
CONSUMABLES	Relevant Consumables
ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant All assessment instruments to cover the related topics Tools and standards for sumative assessment Record keeping systems to capture learner data and issue a statement of results

CONSUMABLES	Relevant Consumables
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Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 24

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 24

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation) POPI policy

3.8.3 Exemptions

...None

4 Practical Skill Module (PM) Specifications:

NB: MODE OF DELIVERY e.g. Face-to-face, Online or Blended/contact, online, e-learning, mobile training unit, blended, distance, etc

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-01	Developing manual dexterity	2	4	Face-to-face
900333-000-00-PM-02	Install, test and commission a domestic refrigerator	2	1	Face-to-face
900333-000-00-PM-03	Install, test and commission a domestic air-conditioner	2	2	Face-to-face
900333-000-00-PM-04	Consult client or refer to work order to establish nature of the domestic refrigeration appliance's malfunction	2	1	Face-to-face
900333-000-00-PM-05	Repair a faulty domestic refrigerator	3	17	Face-to-face
900333-000-00-PM-06	Repair an installed domestic air-conditioner	3	17	Face-to-face
900333-000-00-PM-07	Safe handling of refrigerants	2	6	Face-to-face

Detailing Practical Module (PM) contents

4.1 Practical Module (PM) - 01: 900333-000-00-PM-01, Developing manual dexterity, NQF Level 2, Credits 4

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-01	Developing manual dexterity	2	4	Face-to-face

4.1.1. Module Details

(a) Purpose of the Practical Skills Module:

The main focus of the learning in this practical module is to develop manual dexterity when using a variety of tools and equipment as applicable to the refrigeration environment. Learners will be exposed to using power and hand tools. Working on steel and masonry. Working with copper and PVC pipes

The learner will be required to make a trade related project(s) to demonstrate their manual dexterity.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-01-PS01	Workshop OHS
PM-01-PS02	Basic Tools and equipment
PM-01-PS03	Using Tools

(c) Scope of each Practical Skill Activity:

PM-01-PS01...Workshop OHS ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given the workshop layout learners must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Explain workshop rules
PA0102	Demonstrate dealing with injuries
PA0103	Demonstrate dealing with emergencies

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	Applicable OHS regulations.
AK0102	Workshop housekeeping rules.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0101	Workshop housekeeping rules are explained
ICA0102	Workshop emergency procedures are explained

PM-01-PS02...Basic Tools and equipment ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a set of applicable tools the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Maintain and store Hand tools and instruments (30%)
PA0202	Maintain and store Power tools (20%)
PA0203	Maintain and store Trade related specific tools and instruments (30%)
PA0204	Maintain and store Workshop tools including the porta pak (20%)
PA0205	Maintain and store a Flaring kit.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	Maintenance and storing of tools and equipment.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Storage and maintenance of workshop tools and equipment are explained and demonstrated.

PM-01-PS03... Using Tools ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a project, material and tools the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Use a file
PA0302	Use a hammer
PA0303	Drill a hole in metal
PA0304	Drill a hole in masonry
PA0305	Shape Metal
PA0306	Attaching items to a surface
PA0307	Connect dissimilar copper pipes.
PA0308	Bend copper pipes.
PA0309	Swage copper pipes.
PA0310	Cut PVC pipes.
PA0311	Join PVC pipes.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	Identification and usage of various hand tools (includes but not limited to: electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)
AK0302	Identification, usage, and maintenance of power tools
AK0303	Workshop tools and equipment
AK0304	Possible consequences related to incorrect usage, maintenance, and storage of tools.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0301	Project is evaluated against the set design.
ICA0302	Tolerances are within specified specifications.
ICA0303	Depth of brazing penetration is within tolerance.

4.1.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • List of Tools <ul style="list-style-type: none"> ○ Files ○ Hammers ○ Metal drill bits ○ Masonry drill bits ○ Electric drill ○ Metal saw ○ Screw drivers ○ Pipe bender.

	<ul style="list-style-type: none"> ○ Copper pipe cutter ○ Swage equipment. ○ PVC pipe cutter.
CONSUMABLES	PVC Pipes and related accessories Copper pipe and related accessories. Metal rod. Screws and plugs.

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All assessment instruments to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • List of Tools <ul style="list-style-type: none"> ○ Files ○ Hammers ○ Metal drill bits ○ Masonry drill bits ○ Electric drill ○ Metal saw ○ Screw drivers ○ Pipe bender. ○ Copper pipe cutter ○ Swage equipment. ○ PVC pipe cutter.
CONSUMABLES	PVC Pipes and related accessories Copper pipe and related accessories. Metal rod. Screws and plugs.

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.

FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4
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Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy

4.1.3 Exemptions

...None

4.2 Practical Module (PM) - 02: 900333-000-00-PM-02, Install, test and commission a Domestic Refrigerator, NQF Level 2, Credits 1

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-02	Install, test and commission a Domestic Refrigerator	2	1	Face-to-face

4.2.1. Module Details

(a) Purpose of the Practical Skills Module:

The main focus of the learning in this practical module is to become competent and confident with the installation of entry level refrigerators.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-02-PS01	Special tools and equipment
PM-02-PS02	Plan for the installation.
PM-02-PS03	Prepare the piping, insulation, and electrical accessories.
PM-02-PS04	Test and commission the refrigerator.

(c) Scope of each Practical Skill Activity:

PM-02-PS01... Special tools and equipment ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
...Given a new refrigerator and a job card the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Use a flaring kit.
PA0102	Using a cutting tool.
PA0103	Use a bending tool.
PA0104	Take care of special tools and equipment
PA0105	Use a pinching tool.
PA0106	Cut PVC pipes.
PA0107	Join PVC Pipes

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	Materials and piping
AK0102	Corrosion and metal fatigue.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

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IAC CODE	IAC DESCRIPTION
ICA0101	Copper pipe work is within set standard.
ICA0102	Drilled holes in metal and masonry are within tolerance.
ICA0103	Special tools and equipment are being cared for correctly.

PM-02-PS02... Plan for the installation ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a job card and new refrigerator the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Select the correct tools and equipment
PA0202	Caring of tools and equipment
PA0203	Use of tools and equipment
PA0204	Ensure that there is a power source close by.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	The basic physics of an refrigerators
AK0202	Health and safety aspects.
AK0203	Thermodynamics
AK0204	Basic refrigeration cycle and principles of cooling
AK0205	Special tools and their usage

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Identify special tools applicable to the installation of a refrigerator
ICA0202	Identify and use special equipment
ICA0203	Use special tools
ICA0204	Methods of fixing devices

PM-02-PS03... Position, fix and connect the unit ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a new refrigerator and installation manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Position the unit
PA0302	Level the unit
PA0303	Connect cables to the unit

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	The basic physics of a refrigerator

AK0302	Health and safety aspects.
AK0303	Basic refrigeration cycle and principles of cooling
AK0304	Special tools and their usage

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0301	Unit was positioned in accordance with manufacturer's prescriptions
ICA0302	Unit was levelled in accordance with manufacturer's prescriptions

PM-02-PS04... Test and commission the refrigerator ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a new refrigerator and installation manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Energise the installation
PA0402	Test the functionality of the installation.
PA0403	Sign off the installation
PA0404	Complete job card.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0401	The basic physics of a refrigerator
AK0402	Health and safety aspects.
AK0403	Thermodynamics
AK0404	Basic refrigeration cycle and principles of cooling
AK0405	Special tools and their usage

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0401	Conduct a functionality test.
ICA0402	Job card was completed

4.2.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting

	<p>the number of learners comfortably and safely for the duration of this module.</p> <ul style="list-style-type: none"> • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • Standard installation toolbox • List of Tools <p>Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)</p> <p><input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.)</p> <p><input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p> <p><input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.)</p> <p><input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, etc.)</p> <ul style="list-style-type: none"> •
CONSUMABLES	<p>Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm</p>

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All assessment instruments to cover the related topics.

	<ul style="list-style-type: none"> Record keeping systems to capture learner data and issue a statement of results. Standard installation toolbox List of Tools <p>Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)</p> <p><input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.)</p> <p><input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p> <p><input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.)</p> <p><input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, etc.)</p> <ul style="list-style-type: none">
CONSUMABLES	<p>Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf</p> <p>Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm</p>

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	<p>Requirement of facilitator (SME):</p> <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	<p>Requirement of assessor (SME):</p> <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4

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Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none">• CIPC registered entity• SARS Tax compliance pin• Compliant and current health and safety audit report• Relevant labour legislation visible in facility or on platform (as required by current legislation)• POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none">• CIPC registered entity• SARS Tax compliance pin• Compliant and current health and safety audit report• Relevant labour legislation visible in facility or on platform (as required by current legislation)• POPI policy

4.2.3 Exemptions

...None

4.3 Practical Module (PM) - 03: 900333-000-00-PM-03, Install, test and commission a domestic air-conditioner, NQF Level 2, Credits 2

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-03	Install, test and commission a domestic air-conditioner	2	2	Face-to-face

4.3.1. Module Details

(a) Purpose of the Practical Skills Module:

The main focus of the learning in this practical module is to become competent and confident with the installation of entry level air-conditioners.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-03-PS01	Special tools and equipment
PM-03-PS02	Plan for the installation.
PM-03-PS03	Prepare the piping, insulation, and electrical accessories.
PM-03-PS04	Position, fix and connect the indoor and outdoor unit.
PM-03-PS05	Test and commission the air-conditioner.

(c) Scope of each Practical Skill Activity:

PM-03-PS01...Special tools and equipment ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
.....Given a new air conditioner and a job card the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Use of tools for mounting the brackets.
PA0102	Use of tools for mounting the base plate
PA0103	Use of a flaring kit.
PA0104	Using the cutting tool.
PA0105	Use the bending tool.
PA0106	Taking pressure and temperature readings on manifold gauges.
PA0107	Use a scale to determine the amount of refrigerant
PA0108	Caring of special tools and equipment
PA0109	Brazing
PA0110	Cutting PVC pipes

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE

AK0101	Materials and piping
AK0102	Corrosion and metal fatigue.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0101	Copper pipe work.
ICA0102	Drilling holes in metal and masonry.
ICA0103	Take pressure and temperature readings on manifold gauges
ICA0104	Identify the refrigerant.
ICA0105	Cut and join PVC pipes
ICA0106	Using a scale to determine the amount of refrigerant
ICA0107	Caring of special tools and equipment

PM-03-PS02...Plan for the installation ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a job card and new air conditioner the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Select the correct tools and equipment
PA0202	Caring of tools and equipment
PA0203	Using of tools and equipment
PA0204	Transfer the measurements to the installation area
PA0205	Drill the holes for the refrigerant piping, drainage piping and electrical connection.
PA0206	Mount the baseplate for the indoor unit
PA0207	Mount the bracket for the outdoor unit
PA0208	Ensure that there is power source close by.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	The basic physics of an air-conditioner
AK0202	Health and safety aspects.
AK0203	Thermodynamics
AK0204	Basic refrigeration cycle and principles of cooling
AK0205	Special tools and their usage

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Identify special tools applicable to the installation of an air-conditioner
ICA0202	Identify and use special equipment
ICA0203	Use special tools
ICA0204	Methods of fixing devices

PM-03-PS03 Prepare the piping, insulation, and electrical accessories.....	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a new air conditioner and installation manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Measure copper pipes.
PA0302	Cut copper pipes
PA0303	Deburring or reaming the pipes
PA0304	Insulate copper pipes.
PA0305	Measure and cut electric cable
PA0306	Measure and cut the drainage pipe
PA0307	Fit the drainage pipe

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	The basic physics of an air-conditioner
AK0302	Health and safety aspects.
AK0303	Materials and their application
AK0304	Special tools and their usage

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0301	Copper pipe work.
ICA0302	Copper tube insulation.
ICA0303	Take pressure and temperature readings on manifold gauges
ICA0304	Join PVC pipes

PM-03-PS04...Position, fix and connect the indoor and outdoor unit ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a new air conditioner and installation manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Mount the indoor unit
PA0402	Mount the outdoor unit
PA0403	Connect the pipes to the units
PA0404	Connect cables to the units

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0401	The basic physics of an air-conditioner
AK0402	Health and safety aspects.
AK0403	Basic refrigeration cycle and principles of cooling
AK0404	Special tools and their usage

AK0405	Safe handling of refrigerants
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Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0401	Copper pipe work.
ICA0402	Copper tube insulation.
ICA0403	Join PVC pipes
ICA0404	Methods of fixing devices

PM-03-PS05...Test and commission the air-conditioner ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a new air conditioner and installation manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0501	Energise the installation
PA0502	Test the functionality of the installation.
PA0503	Ensure that the charge is sufficient.
PA0504	Sign off the installation
PA0505	Complete job card.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0501	Safe handling of refrigerants.
AK0502	The basic physics of an air-conditioner
AK0503	Health and safety aspects.
AK0504	Thermodynamics
AK0505	Basic refrigeration cycle and principles of cooling
AK0506	Special tools and their usage

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0501	Conduct a functionality test.
ICA0502	Take pressure and temperature readings on manifold gauges
ICA0503	Job card was completed

4.3.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting

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	<p>the number of learners comfortably and safely for the duration of this module.</p> <ul style="list-style-type: none"> • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • Standard installation toolbox.
CONSUMABLES	Undefined

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All assessment instruments to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • Standard installation toolbox.
CONSUMABLES	Undefined

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	<p>Requirement of facilitator (SME):</p> <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	<p>Requirement of assessor (SME):</p> <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report

- Relevant labour legislation visible in facility or on platform (as required by current legislation)
- POPI policy

ASSESSMENT CENTRE

- CIPC registered entity
- SARS Tax compliance pin
- Compliant and current health and safety audit report
- Relevant labour legislation visible in facility or on platform (as required by current legislation)
- POPI policy

4.3.3 Exemptions

...None

4.4 Practical Module (PM) - 04: 900333-000-00-PM-04, Consult client or refer to work order to establish nature of a defect domestic refrigeration appliance, NQF Level 2, Credits 1

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-04	Consult client or refer to work order to establish nature of a defect domestic refrigeration appliance	2	1	Face-to-face

4.4.1. Module Details

(a) Purpose of the Practical Skills Module:

The purpose of this practical module is to develop the ability to interpret a verbal or written explanation of a malfunctioning product into a possible cause and fault.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-04-PS01	Introduction to the client.
PM-04-PS02	Access the product.

(c) Scope of each Practical Skill Activity:

PM-04-PS01... Introduction to the client ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a job card of a faulty refrigerator appliance the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Arrange an appointment with the client.
PA0102	Confirm appointment with client.
PA0103	Follow dress code prescriptions.
PA0104	Identifying oneself to the client.
PA0105	Get entry instructions from client to access the product.
PA0106	Listing skills.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	Company policy and procedures
AK0102	Code of business ethics.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

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IAC CODE	IAC DESCRIPTION
ICA0101	Listening diagnostically.
ICA0102	Professional presentation.
ICA0103	Product knowledge.

PM-04-PS02...Access the product...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a faulty refrigeration appliance the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Get information from the client.
PA0202	Check power supply.
PA0203	Perform a service test in accordance with manufacturer's specifications.
PA0204	Localise the perceived fault.
PA0205	Report the possible consequences of the fault.
PA0206	Get permission to continue with the repair.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	The operational cycle of the product.
AK0202	Basic mechanical and electric knowledge of the product.

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Their ability to use the manufacturer's manual.
ICA0202	Product knowledge.

4.4.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, eye wash station, sheltered from the elements etc.) if relevant. All learning materials, lesson plans, workbooks, assessment guides to cover the related topics.

	<ul style="list-style-type: none"> • Record keeping systems to capture learner data and issue a statement of results. • List of Tools <p>Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)</p> <p><input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.)</p> <p><input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p> <p><input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.)</p> <p><input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, etc.)</p> <ul style="list-style-type: none"> •
CONSUMABLES	<p>Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm</p>

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, eye wash station, sheltered from the elements etc.) if relevant. • All assessment instruments to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • List of Tools <p>Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters,</p>

	<p>Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)</p> <p><input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.)</p> <p><input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p> <p><input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.)</p> <p><input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, etc.)</p> <p>•</p>
CONSUMABLES	<p>Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm</p>

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	<p>Requirement of facilitator (SME):</p> <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	<p>Requirement of assessor (SME):</p> <ul style="list-style-type: none"> • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment.
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report

- Relevant labour legislation visible in facility or on platform (as required by current legislation)
- POPI policy

ASSESSMENT CENTRE

- CIPC registered entity
- SARS Tax compliance pin
- Compliant and current health and safety audit report
- Relevant labour legislation visible in facility or on platform (as required by current legislation)
- POPI policy

4.4.3 Exemptions

...None

4.5 Practical Module (PM) - 05: 900333-000-00-PM-05, Repair a faulty domestic refrigerator, NQF Level 3, Credits 17

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-05	Repair a faulty domestic refrigerator	3	17	Face-to-face

4.5.1. Module Details

(a) Purpose of the Practical Skills Module:

The main focus of the learning in this practical module is to develop fault finding skills, using the manufacturer's manual, and repairing malfunctioning entry level refrigerators. At least one cycle (approximately 5 credits) must be completed in a training environment. The remainder of the credits should be concluded in the workplace to enhance brand specific skills and knowledge.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-05-PS01	Disassemble a refrigerator in accordance with the manufacturer's maintenance manual
PM-05-PS02	Determine the root cause of the malfunction
PM-05-PS03	Repair or replace components and subcomponents
PM-05-PS04	Reassemble
PM-05-PS05	Conduct a functional test

(c) Scope of each Practical Skill Activity:

PM-05-PS01 Disassemble a refrigerator in accordance with the manufacturer's maintenance manual.	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a job card and a product manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Plan for the repair
PA0102	Take necessary precaution to avoid damage to the environment and the product
PA0103	Select the correct tools
PA0104	Confirm the fault reported against the job card
PA0105	Assess and test the air-conditioner
PA0106	Plan action
PA0107	Remove the related panels

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	The basic physics of a refrigerator
AK0102	Health and safety aspects.
AK0103	Thermodynamics
AK0104	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0101	Risk assessment is performed
ICA0102	Relevant PPE is determined by the risk assessment for the task and site requirements is selected
ICA0103	Appropriate tools are selected according to the requirement
ICA0104	Safety, health and environmental (SHE) requirements are applied
ICA0105	Preliminary material/consumable list is compiled

PM-05-PS02... Determine the root cause of the malfunction	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a malfunctioning refrigerator and product manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Check functionality of subassemblies
PA0202	Check the state of the filters and clean
PA0203	Check the state of the coils and clean
PA0204	Check electrical connections
PA0205	Check for physical damage
PA0206	Check for leaks

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	The basic physics of a refrigerator
AK0202	Health and safety aspects.
AK0203	Thermodynamics
AK0204	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Risk assessment is performed, and safe working procedures followed as per the manufacturer's manual
ICA0202	Correct tools are used to disassemble the sub system and components
ICA0203	Disassembly procedures are correctly followed
ICA0204	Measuring instruments are used to test parts/ components and sub systems
ICA0205	Readings obtained are recorded and interpreted correctly

PM-05-PS03..... Repair or replace components and subcomponents ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a faulty refrigerator and repair manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Consult the maintenance manual
PA0302	Follow the instructions as given in the manual
PA0303	Conduct a functional test
PA0304	If found not to be functional, continue consulting the manual.
PA0305	If found to be functional, reassemble the system.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	The basic physics of a refrigerator
AK0302	Health and safety aspects.
AK0303	Thermodynamics
AK0304	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0301	Faulty components are correctly identified and replaced
ICA0302	Reassembly procedures are followed as per the manufacturer's specifications
ICA0303	Findings are recorded

PM-05-PS04 ... Reassemble in accordance with the manufacturer's maintenance manual	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a repaired refrigerator and repair manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Make sure that all tools, loose components, and waste are removed.
PA0402	Replace panels and fasten with original fasteners unless a fastener is damaged.
PA0403	Energise the system
PA0404	Conduct a functional test
PA0405	Recommission the system
	Sign off the job card.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
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AK0401	The basic physics of a refrigerator
AK0402	Health and safety aspects.
AK0403	Thermodynamics
AK0404	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0401	Components are fitted and tested for functionality before reassembly
ICA0402	Reassembly procedures are correctly followed according to manufacturer's manual
ICA0403	Panels are correctly fitted, and fasteners securely tightened
ICA0404	Housekeeping is performed upon completion of the task
ICA0405	Refrigeration system is tested for functionality and readings recorded
ICA0406	Job card is correctly signed off

4.5.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • List of Tools Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.) <input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.) <input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging

	<p>tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p> <p><input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, recovery unit and tanks.)
CONSUMABLES	<p>List of consumables.</p> <p>Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm</p>

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. All assessment instruments to cover the related topics. Record keeping systems to capture learner data and issue a statement of results. List of Tools <p>Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)</p> <p><input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.)</p> <p><input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p> <p><input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, recovery unit and tanks.)

CONSUMABLES	List of consumables Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, capillary tube, filter/drier, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm
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Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy

4.5.3 Exemptions

SP Curr Domestic Refrigeration Appliance Repairer 3 60

...None

4.6 Practical Module (PM) - 06: 900333-000-00-PM-06, Repair an installed domestic air-conditioner, NQF Level 3, Credits 17

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-06	Repair an installed domestic air-conditioner	3	17	Face-to-face

4.6.1. Module Details

(a) Purpose of the Practical Skills Module:

The main focus of the learning in this practical module is to develop fault finding skills, using the manufacturer's manual, and repairing malfunctioning entry level air conditioners. At least one cycle (approximately 5 credits) must be completed in a training environment. The remainder of the credits should be concluded in the workplace to enhance brand specific skills and knowledge.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-06-PS01	Disassemble an air-conditioner in accordance with the manufacturer's maintenance manual
PM-06-PS02	Determine the root cause of the malfunction
PM-06-PS03	Repair or replace components and subcomponents
PM-06-PS04	Reassemble
PM-06-PS05	Conduct a functional test

(c) Scope of each Practical Skill Activity:

PM-06-PS01... Disassemble an air-conditioner in accordance with the manufacturer's maintenance manual	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a faulty installed air conditioner and manufacturer's repair manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Plan for the repair
PA0102	Take necessary precaution to avoid damage to the environment and the product
PA0103	Select the correct tools
PA0104	Confirm the fault reported against the job card
PA0105	Assess and test the air-conditioner
PA0106	Plan action
PA0107	Remove the related panels

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	The basic physics of an air-conditioner
AK0102	Health and safety aspects.
AK0103	Thermodynamics
AK0104	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0101	Risk assessment is conducted
ICA0102	Relevant PPE is determined by the risk assessment for the task and site requirements is selected
ICA0103	Appropriate tools are selected according to the requirement
ICA0104	Safety, health and environmental (SHE) requirements are applied
ICA0105	Disassemble the air conditioning unit according to manufacturer's disassembly procedure

PM-06-PS02... Determine the root cause of the malfunction ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a faulty installed air conditioner and manufacturer's repair manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Check functionality of subassemblies
PA0202	Check the state of the filters and clean
PA0203	Check the state of the coils and clean
PA0204	Check electrical connections
PA0205	Check for physical damage
PA0206	Check for leaks

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	The basic physics of an air-conditioner
AK0202	Health and safety aspects.
AK0203	Thermodynamics
AK0204	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Measuring instruments are correctly used to test sub-assemblies and components to determine the root cause of the malfunction
ICA0202	Components are checked for physical damage and record is made
ICA0203	Components are tested and readings are recorded
ICA0204	Faulty components are identified

PM-06-PS03... Repair or replace components and subcomponents ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a faulty installed air conditioner and manufacturer's repair manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Consult the maintenance manual
PA0302	Follow the instructions as given in the manual
PA0303	Conduct a functional test
PA0304	If found not to be functional, continue consulting the manual.
PA0305	If found to be functional, reassemble the system.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	The basic physics of an air-conditioner
AK0302	Health and safety aspects.
AK0303	Thermodynamics
AK0304	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0301	Identified faulty components and sub assemblies are replaced
ICA0302	Functional test is performed
ICA0303	Record of faulty components is made and request for replacement is done

PM-06-PS04..... Reassemble in accordance with the manufacturer's maintenance manual ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given a faulty installed air conditioner and manufacturer's repair manual the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Make sure that all tools, loose components, and waste are removed.
PA0402	Replace panels and fasten with original fasteners unless a fastener is damaged.
PA0403	Energise the system
PA0404	Conduct a functional test
PA0405	Recommission the system
PA0406	Sign off the job card.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
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AK0401	The basic physics of an air-conditioner
AK0402	Health and safety aspects.
AK0403	Thermodynamics
AK0404	Basic refrigeration cycle and principles of cooling

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0401	Components and sub-assemblies are assembled as per the manufacturers recommendations
ICA0402	Panels are replaced and fastened using correct tools, fasteners and to the recommended torque where applicable
ICA0403	Air conditioning system is tested for functionality and temperature readings noted
ICA0404	Client confirms system functionality and job card is signed off

4.6.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • List of Tools <p>Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)</p> <p><input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.)</p> <p><input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.)</p>

	<input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.) <ul style="list-style-type: none"> <input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, recovery unit and tanks.)
CONSUMABLES	List of consumables. Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, capillary tube, filter/drier, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. All assessment instruments to cover the related topics. Record keeping systems to capture learner data and issue a statement of results. Tools Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.) <input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.) <input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.) <input type="checkbox"/> Relevant power tools (includes but not limited to: drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.) <ul style="list-style-type: none"> <input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, recovery unit and tanks.)

CONSUMABLES	Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, capillary tube, filter/drier, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm
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Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): • NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none"> • CIPC registered entity • SARS Tax compliance pin • Compliant and current health and safety audit report • Relevant labour legislation visible in facility or on platform (as required by current legislation) • POPI policy

4.6.3 Exemptions

...None

4.7 Practical Module (PM) - 07: XXXXXX-001-000--PM-07, Safe handling of refrigerants, NQF Level 2, Credits 6

MODULE CODE	MODULE TITLE	NQF LEVEL	CREDITS	MODE OF DELIVERY
900333-000-00-PM-07	Safe handling of refrigerants	2	6	Face-to-face

4.7.1. Module Details

(a) Purpose of the Practical Skills Module:

The main focus of the learning in this practical module is to become familiarised with refrigerants and the safe handling of refrigerants.

(b) List of Practical Skill Activities:

PRACTICAL SKILL CODE	ACTIVITY TITLE
PM-07-PS01	Pressure-test a refrigeration system
PM-07-PS02	Evacuate a refrigeration system
PM-07-PS03	Charge the refrigeration system
PM-07-PS04	Recover refrigerants from a refrigeration system

(c) Scope of each Practical Skill Activity:

PM-07-PS01... Pressure-test the refrigeration system ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given an elementary refrigeration system the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0101	Plan for pressure testing
PA0102	Select tools and equipment
PA0103	Determine and test functionality of equipment and pressure regulator
PA0104	Connect to the system
PA0105	Test system
PA0106	Perform leak test

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0101	Safety requirements
AK0102	Tools, equipment, and consumables
AK0103	The importance of calibration and procedures thereof
AK0104	Knowledge of recovery equipment
AK0105	Knowledge of recovery procedures

AK0106	Knowledge of refrigerant disposal
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Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0101	Risk assessment is performed.
ICA0102	Relevant PPE determined by the risk assessment for the task and site requirements is selected.
ICA0103	Appropriate tools are selected according to requirement
ICA0104	180.
ICA0105	Health, safety and environmental (SHE) requirements are applied.
ICA0106	Equipment condition is verified for use.
ICA0107	Calibration is checked
ICA0108	Oil levels and condition are checked

PM-07-PS02...Evacuate a refrigeration system ...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given an elementary refrigeration system the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0201	Plan for the evacuation process
PA0202	Select tools and equipment
PA0203	Determine and test functionality of equipment
PA0204	Test the system
PA0205	Connect the system
PA0206	Evacuate the system applying triple evacuation method and the deep evacuation method.
PA0207	Perform vacuum test to requirement

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0201	Safety requirements
AK0202	Tools, equipment and consumables
AK0203	Evacuation and leak testing procedures
AK0204	The importance of / reasons for calibration
AK0205	Leak testing procedures
AK0206	Evacuation methodologies
AK0207	Vacuum testing and requirements

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0201	Risk assessment is performed.
ICA0202	Relevant PPE determined by the risk assessment for the task and site requirements is selected.
ICA0203	Appropriate tools are selected according to requirement. 180.

ICA0204	Health, safety and environmental (SHE) requirements are applied.
ICA0205	Equipment and consumables
ICA0206	Tools and equipment are identified, selected, and collected for the task
ICA0207	Equipment condition is verified for use.
ICA0208	Calibration is checked
ICA0209	Oil levels and condition are checked
ICA0210	Evacuation level of vacuum pump is determined
ICA0211	Equipment is checked for leaks
ICA0212	Pressure of refrigeration system is checked by using the manifold gauge
ICA0213	The required valves are opened to stabilise system pressure to atmospheric pressure
ICA0214	Vacuum pump and vacuum analyser are connected
ICA0215	The system is evacuated
ICA0216	The process is carried out until the desirable evacuation level is reached as required
ICA0217	The appropriate valves are shut in correct sequence
ICA0218	Vacuum pump is stopped, disconnected, and removed
ICA0219	Perform the vacuum test as per appropriate vacuum requirement
ICA0220	Record vacuum test level and time

PM-07-PS03...Charge the refrigeration system...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given an elementary refrigeration system the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0301	Identify refrigeration containers and refrigerant in a system
PA0302	Handle and store refrigeration containers
PA0303	Plan for the charging the system
PA0304	Select tools and equipment
PA0305	Determine and test functionality of equipment and correct refrigerant type
PA0306	Charge the refrigeration systems (including but not limited to: domestic refrigeration, commercial refrigeration, automotive air conditioning, transport refrigeration, unitary air conditioning system, commercial and industrial air conditioning)

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0301	Knowledge of refrigerants
AK0302	Knowledge of refrigerant containers
AK0303	Handling procedures
AK0304	Storage requirements
AK0305	Transportation procedures
AK0306	Consequences of non-conformance
AK0307	Safety requirements
AK0308	Tools, equipment, and consumables

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AK0309	Calibration procedures
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Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0301	Refrigeration containers are identified in accordance with type and refrigerant
ICA0302	Refrigerant is identified in the system
ICA0303	Refrigeration containers are safely handled in accordance with manufacturer's instructions, workplace procedures and safe handling good practice
ICA0304	Refrigeration containers are stored in accordance with manufacturer's instructions, workplace procedures and safe handling good practice
ICA0305	Refrigeration containers are safely and securely transported
ICA0306	Risk assessment is performed
ICA0307	Relevant PPE determined by the risk assessment for the task and site requirements is selected
ICA0308	Appropriate tools are selected according to requirement
ICA0309	Correct tools and equipment are identified, selected and collected for the task
ICA0310	Equipment condition is verified for use
ICA0311	Calibration is checked
ICA0312	Refrigerant type is verified
ICA0313	The integrity of the refrigeration system is confirmed
ICA0314	The vacuum analyser is removed, if connected
ICA0315	The manifold gauge charging hose is connected to the refrigerant cylinder.
ICA0316	The charging hose(s) are purged as necessary
ICA03170	The required valves are opened in the correct sequence to break the vacuum
ICA0318	The refrigeration system is charged as per OEM's specifications
ICA0319	The refrigeration system is monitored
ICA0320	Valves are closed in correct sequence and the refrigerant manifold gauge set is removed.
ICA0321	Refrigeration system is returned to correct operating status
ICA0322	Refrigerant charge (Kg); evaporating and condensing pressures are recorded

PM-07-PS04... Recover refrigerants from a refrigeration system...	
PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:	
Given an elementary refrigeration system the learner must be able to:	
PRACTICAL SKILL ACTIVITY ELEMENT CODES	PRACTICAL SKILL ACTIVITY ELEMENTS
PA0401	Plan for active or passive recovery process
PA0402	Select tools and equipment
PA0403	Determine and test functionality of equipment
PA0404	Connect the system
PA0405	Perform the recovery process from the refrigeration system.

Applied Knowledge that underpins the Practical Skill Activity

APPLIED KNOWLEDGE CODE	APPLIED KNOWLEDGE
AK0401	Safety requirements
AK0402	Tools, equipment, and consumables
AK0403	The importance of calibration and procedures thereof
AK0404	Knowledge of recovery equipment
AK0405	Knowledge of recovery procedures
AK0406	Knowledge of refrigerant disposal

Internal Assessment Criteria (IAC) for the Practical Skill Activity

IAC CODE	IAC DESCRIPTION
ICA0401	Risk assessment is conducted to establish health, safety and environmental requirements
ICA0402	Relevant PPE determined by the risk assessment for the task and site requirements is selected
ICA0403	Appropriate tools are selected according to requirement
ICA0404	Health and safety requirements are established
ICA0405	Equipment condition is verified for use
ICA0406	Calibration is verified
ICA0407	Oil levels and condition are checked
ICA0408	Evacuation level of the recovery unit is determined
ICA0409	Equipment is checked for leaks
ICA0410	Recovery unit, manifold set and service cylinder are connected to the refrigeration system
ICA0411	Refrigerant is recovered from the system
ICA0412	The recovery process is continuously monitored to guard against overfilling the service cylinder
ICA0413	The process is carried out until the desirable recovery level is reached as required by the national standard and applicable legislation
ICA0414	the appropriate valves are shut in correct sequence
ICA0415	The recovery equipment is stopped, disconnected, and removed.
ICA0416	The refrigerant (kg) recovered is identified and recorded.
ICA0417	Appropriate action is taken to deal with recovered refrigerants

4.7.2. Criteria for accreditation

Requirements, against which Skills Development Providers (SDP) and Assessment Centres, will be accredited, as listed below.

Physical Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.

	<ul style="list-style-type: none"> • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All learning materials, lesson plans, workbooks, assessment guides to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • Tools Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.) <input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.) <input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.) <input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.) <ul style="list-style-type: none"> • <input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, recovery unit and tanks.)
CONSUMABLES	Refrigerants. R134a, R410a, R404a, R1234yf

ASSESSMENT CENTRE	
EQUIPMENT & TOOLS	<ul style="list-style-type: none"> • Physical assessment facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module. • Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements etc.) if relevant. • All assessment instruments to cover the related topics. • Record keeping systems to capture learner data and issue a statement of results. • List of Tools Relevant hand tools (includes but not limited to electrical screw drivers, combination spanners, combination pliers, side cutters, long nose pliers, flat nose pliers, round nose pliers, water pump pliers, adjustable wrenches spanners, wire strippers, cable cutters, Allen key, hammers, spirit level, torque wrench, scribes, engineering blue, callipers.)

	<input type="checkbox"/> Relevant instruments (instruments include but are not limited to, vernier calliper, inside and outside calliper, micrometers, rulers, torque wrench, etc.) <input type="checkbox"/> Relevant trade related specific tools and instruments (includes but not limited to manifold gauge sets, micron-gauges, swaging tools, flaring tools, pipe benders, thermometers, multimeter, clamp-on meter, leak detection equipment, etc.) <input type="checkbox"/> Relevant power tools (includes but not limited to drills, press drills, nibblers, electric sheers, hydraulic press, pedestal grinders, jig saw, etc.) <ul style="list-style-type: none"> <input type="checkbox"/> Relevant workshop tools and equipment (includes but not limited to vacuum pumps, recovery unit and tanks.)
CONSUMABLES	Copper tubing; soft drawn 1/4"-5/8", flare pipe fittings, common solder and brazing fittings, flux, copper brazing rods, silver solder, pvc tubing, oxy-acetylene gas, nitrogen, centurylon foam insulation tape, assorted bolts and nuts, ferrules, lugs, hacksaw blades, masking tape, cutting blades, capillary tube, filter/drier, seals for manifold gauges, refrigerants R600a, R410A, R134a, R404a, R1234yf Electric cables; 1,0mm, 1,5mm, 2,5mm, 4mm

Human Resource Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)	
QUALIFICATIONS & EXPERIENCE	Requirement of facilitator (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Facilitator/learner ratio 1 to maximum 12

ASSESSMENT CENTRE	
QUALIFICATIONS & EXPERIENCE	Requirement of assessor (SME): <ul style="list-style-type: none"> NQF 4 in an industry related trade qualification with 3 years' experience in the domestic appliance repairing environment
FACILITATOR/LEARNER RATIO	Assessor/learner ratio 1 to maximum 4

Legal Requirements:

SKILLS DEVELOPMENT PROVIDER (SDP)
<ul style="list-style-type: none"> CIPC registered entity SARS Tax compliance pin Compliant and current health and safety audit report Relevant labour legislation visible in facility or on platform (as required by current legislation)

- POPI policy

ASSESSMENT CENTRE
<ul style="list-style-type: none">• CIPC registered entity• SARS Tax compliance pin• Compliant and current health and safety audit report• Relevant labour legislation visible in facility or on platform (as required by current legislation)• POPI policy

4.7.3 Exemptions

...None

6 POSSIBLE SEQUENCING AND INTEGRATION

Listing and order of modules in the sequence in which these modules will follow each other during delivery/implementation. This allows for integration of KM, AM (PM/ WM) as work logically flows.

ORDER	MODULE TITLE	MODULE CODE	LEVEL	CREDITS
1.	Health, and safety related to the refrigeration repair environment	900333-000-00-KM-01	2	2
2.	Internet of Things and smart appliances	900333-000-00-KM-02	3	1
3	Drawings	900333-000-00-KM-03	3	1
4	Basics of Electrical and Electronics	900333-000-00-KM-04	3	2
5	Customer Relation Management	900333-000-00-KM-05	3	2
6	Interpersonal Skill, Emotional Intelligence	900333-000-00-KM-06	2	1
7	Green Solar Energy, Solar Power and Hybrid	900333-000-00-KM-07	3	2
8	Field service report writing	900333-000-00-KM-08	3	1
9	Developing manual dexterity	900333-000-00-PM-01	2	4
10	Install, test and commission a domestic refrigerator	900333-000-00-PM-02	2	1
11	Install, test and commission a domestic air-conditioner	900333-000-00-PM-03	2	2
12	Consult client or refer to work order to establish nature of the domestic refrigeration appliance's malfunction	900333-000-00-PM-04	2	1
13	Repair a faulty domestic refrigerator	900333-000-00-PM-05	3	17
14	Repair an installed domestic air-conditioner	900333-000-00-PM-06	3	17
15	Safe handling of refrigerants	900333-000-00-PM-07	2	6