
Overview

This standard covers the recovery, flushing and recharging of F gas and other refrigerants associated with automotive mobile air conditioning (MAC) and climate control systems. This standard also includes leak detection and rectification of any leaks.

Note: In order to achieve this NOS, it will also be necessary to hold a valid certificate to meet the current regulatory requirements concerning F Gas.

Performance criteria*You must be able to*

- P1. use the appropriate personal protective equipment when handling F gas and other refrigerants
- P2. support your removal and replacement activities by referring to:
 - P2.1. vehicle and gas related technical data
 - P2.2. manufacturer's guidance
 - P2.3. removal and replacement procedures
 - P2.4. health, safety and legal requirements
- P3. ensure that the **tools and equipment** you require are calibrated and in a safe working condition to meet manufacturer's and legal requirements
- P4. select and use the correct **tools and equipment** to identify refrigerant type and capacities
- P5. select and use the correct **tools and equipment** for recovery, flushing and recharging of refrigerants
- P6. carry out all refrigerant recovery, flushing and recharging activities following:
 - P6.1. recognised safe working methods
 - P6.2. manufacturers' instructions
 - P6.3. your workplace procedures
 - P6.4. health, safety and legal requirements
- P7. work in a way which reduces the risk of any refrigerant emissions
- P8. carry out suitable checks and any necessary rectification activities to ensure the recharged system is free from leaks
- P9. collect and transfer any waste materials to comply with current legislation and workplace policies
- P10. complete work records accurately, in the format required and promptly pass them to the relevant person(s)

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

- K1 the health, safety and environmental regulations relating to the handling of F gas and other refrigerants in automotive mobile air conditioning (MAC) NOSs
- K2 how the vehicle is powered and the associated health and safety risks
- K3 the legal requirement to maintain and process appropriate F gas records
- K4 how and where to find relevant safety technical information
- K5 your workplace procedures for:
 - K5.1 the referral of problems related to refrigerant handling
 - K5.2 completion of work records
- K6 the importance of selecting, using and maintaining the appropriate personal protective equipment when handling F gas and other refrigerants
- K7 how to safely dispose of or recycle refrigerant components in line with environmental legislation

Equipment

- K8 how to select, check and use all the **tools and equipment** required to recover, flush and recharge F gases and other refrigerants within automotive mobile air conditioning and climate control systems
- K9 how to use equipment to identify the type of gas removed

Automotive Mobile Air Conditioning (MAC) Systems

- K10 the operating principles and function of automotive mobile air conditioning (MAC) and climate control units containing F gas refrigerants
- K11 the operating principles and function of automotive mobile air conditioning (MAC) and climate control units containing F gas refrigerants within alternative fuelled vehicles
- K12 the types of refrigerants used in automotive systems and their properties and characteristics
- K13 the impact of F gas emissions on the environment in relation to their global warming potential and climate change
- K14 the hazards associated with different air conditioning systems

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- K15 the procedures for the safe handling of F gas and other refrigerants when recovering, flushing and recharging from automotive mobile air conditioning units
 - K16 how to work in a way that minimises the risk of any refrigerant emissions
 - K17 how to check air conditioning systems for gas leaks and rectify leakage
 - K18 how to handle refrigerant cylinders
 - K19 the methods of storing removed mobile air conditioning (MAC) parts and the importance of storing them correctly

Scope/range

All the items listed below form part of the National Occupational Standard

- 1. Tools and equipment** are:
 - 1.1. hand tools
 - 1.2. special purpose equipment
 - 1.3. general workshop equipment
 - 1.4. air conditioning recovery plant
 - 1.5. refrigerant identifier
 - 1.6. sealing equipment

**Additional
Information****Glossary**

This section contains examples and explanations of some of the terms used but does not form part of the standard.

Alternative Fuel

This is defined as any type of fuel that may be used to power an internal combustion engine; examples would include LPG, bio ethanol etc.

Vehicles:

These can be light vehicles or commercial vehicles. In addition, they may be SI, CI, Hybrid, Electric or Alternative fuel vehicles.

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