



## FY1M 04 – Install RAC Systems and Components

This Unit comprises of the following combinations of National Occupational Standards (NOS) shown below by award it appears in.

# SUMMES16

## Fit and fix cooling systems, equipment and components



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### Overview

This unit is about assembling, fitting and fixing cooling systems, equipment and components and involves the ability to make on site decisions, in some cases involving the work of others.

The person carrying out this work must follow industry requirements when conducting the installation activity and ensure that they take the appropriate precautions to avoid causing damage and the customer's property.

This unit is also about working with different types of customer and liaising with clients.

# SUMMES16

## Fit and fix cooling systems, equipment and components

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### Performance criteria

- You must be able to:*
- P1 confirm that the materials, tools and equipment required for the installation processes are fit for their intended purpose
  - P2 ensure that arrangements are in place for accessing the work area safely
  - P3 assemble system components using work methods that conform to industry requirements
  - P4 position system components to conform to the system design requirement
  - P5 fix system components using methods that conform to industry requirements
  - P6 connect system components to systems and input services using methods that meet industry requirements
  - P7 install systems, equipment or components including control and safety equipment in the correct position
  - P8 adjust, as appropriate, safety and control features
  - P9 carry out the installation processes following industry requirements while minimising damage to customer property and building features
  - P10 carry out a visual and manual inspection of the system in accordance with relevant standards
  - P11 report to the immediate job supervisor, line manager (or customer) circumstances that affect the progress of the installation in line with industry requirements
  - P12 take precautionary actions to prevent the unauthorised use of un-commissioned systems and components

# SUMMES16

## Fit and fix cooling systems, equipment and components

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### Knowledge and understanding

*You need to know and understand:*

- K1 how to measure and record installation and site details for prefabrication purposes
- K2 the industry practices and work standards for fabricating and installing system components
- K3 the positioning and fixing requirements for system components which conform to the system design and intended functions
- K4 how to safely access the work area
- K5 the procedures required for connecting to input services or connecting pipework into existing systems
- K6 methods of working which protect the building décor, customer property and existing systems or components
- K7 job management structures and methods of reporting and recording job progress or problems delaying progress
- K8 the care and maintenance requirements of tools and equipment, and checks for safe conditions
- K9 the range of tests used to confirm the soundness of systems and components and how to use the range of soundness testing equipment
- K10 the precautionary actions required during installation and testing
- K11 the basic operation of the system and equipment and the risks of leakage associated with it
- K12 the potential leakage points in systems equipment
- K13 the function and operation of the main components in the system and their role and importance for refrigeration leakage prevention and identification
- K14 basic ISO standards relevant to the system or installation
- K15 basic theory of refrigeration and/or air conditioning systems including thermodynamics
- K16 the requirements of EU and UK regulation concerning refrigeration and air conditioning, such as F Gas

# SUMMES16

## Fit and fix cooling systems, equipment and components

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**Suite** Mechanical Engineering Services

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**Key words** cooling systems, assembly

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# SUMMES18

## Decommission cooling systems, equipment and components



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### Overview

This unit is about decommissioning systems and involves making arrangements with the persons responsible for the work location for the safe recovery and disposal of system fluids and components. The person carrying out the work must be aware of the effect isolating part of a system has on the full system.

# SUMMES18

## Decommission cooling systems, equipment and components

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### Performance criteria

- You must be able to:*
- P1 liaise with other persons at appropriate points within the commissioning process to minimise disturbance to work routines
  - P2 check that conditions within the systems or components will permit safe de- commissioning
  - P3 identify any problems in the functioning of the equipment that could damage the system or lead to refrigerant leakage, should no action be taken
  - P4 decommission systems or components using tests and procedures that comply with industry requirements
  - P5 take precautionary actions to ensure that decommissioned systems or components do not prove a safety hazard

# SUMMES18

## Decommission cooling systems, equipment and components

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### Knowledge and understanding

*You need to know and understand:*

- K1 the importance of confirming the system design, specification, functions and outcomes of suspending the operation of the system
- K2 the basic operation of the system and equipment and the risks of leakage associated
- K3 the potential leakage points in systems equipment
- K4 the function and operation of the main components in the system and their role and importance for refrigeration leakage prevention and identification with it
- K5 basic ISO standards relevant to the system or installation
- K6 basic theory of refrigeration and/or air conditioning systems including thermodynamics
- K7 the requirements of EU and UK regulation concerning refrigeration and air conditioning, such as F Gas
- K8 the need to liaise with others whose procedures or routines may be affected by the suspension of the system operation
- K9 the potential hazards that could arise from de-commissioning activities and the checks to be carried out before de-commissioning takes place
- K10 de-commissioning procedures for temporary and permanent de-commissioning of systems
- K11 the precautions to ensure that de-commissioned systems do not prove a safety hazard –measures to prevent systems being brought into operation – safety and warning notices
- K12 how to safely collect and dispose of system contents that may be hazardous to health or the environment
- K13 how to complete systems de-commissioning records



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**Key words** decommission, recovery, safe disposal

## SUMMES25

### Inspect and test mechanical systems, equipment and components



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#### Overview

This unit is about carrying out pre-commissioning checks and tests on systems.

The person carrying out the work must be able to undertake the various checks and tests necessary before the system is brought into operation.

They are required to check the operation and correct position of components. They must also carry out tests to ensure there are no leaks and undertake cleaning or flushing of the system.

In the case of ductwork, there is a specified, permissible level of air leakage.

It is important that they are aware of the effect that isolating part of a system has on the full system.

# SUMMES25

## Inspect and test mechanical systems, equipment and components

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### Performance criteria

- You must be able to:*
- P1 confirm that the system or components installation complies with industry requirements
  - P2 check that input services to the system components are suited to their intended purpose
  - P3 check system or components for soundness using procedures that comply with industry
  - P4 carry out pre-commissioning tests and checks in accordance with industry requirements
  - P5 check that the system cleanliness, additives and charging comply with industry

# SUMMES25

## Inspect and test mechanical systems, equipment and components

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### Knowledge and understanding

*You need to know and understand:*

- K1 the procedures, equipment and legislative requirements for applying specified tests to systems
- K2 the methods of establishing that input services adequately supply all components within the system
- K3 the methods of connecting components to systems
- K4 the actions to take where pre-commissioning checks or tests reveal basic or complex system or component defects
- K5 how to complete pre-commissioning documentation confirming the safe pre-commissioning of systems and components

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**Suite** Mechanical Engineering Services

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**Key words** pre-commissioning check, clean & flush, leaks