

Guide to Good Commercial Refrigeration Practice

Part 9 Assessment of Skills Related Competence and Training

Produced by the Air Conditioning and
Refrigeration Industries Board (ACRIB)
for:

British Refrigeration Association

Institute of Refrigeration



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This Part of the IOR/BRA Code of Practice for Commercial Refrigerating Systems was produced with input from the Air Conditioning and Refrigeration Industry Board (ACRIB), the umbrella organisation for trade associations and professional institutes to co-ordinate industry input into standards and training development.

9.1.0 GENERAL – INDUSTRY RECOGNISED QUALIFICIATONS

The situation regarding national education and training schemes in the UK is subject to regular changes and updates. These are necessary to take into account changes in technology, new legislation and a rolling programme of revision of national occupational standards on which qualifications are based.

National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs) in Refrigeration and Air Conditioning are the recognised qualifications for refrigeration and air conditioning craft level personnel.

These standards of competence are drawn up and developed in consultation with industry by Summit Skills (the sector skills council covering our sector). The qualifications are assessed by Colleges and other Training Providers and Certificates awarded by City & Guilds of London.

9.1.1 LEGAL REQUIREMENTS FOR QUALIFICATION

There is a European-wide requirement for Certification in Refrigerant Handling. At the time of writing the UK legal interpretation of this requirement is that anyone handling the refrigerants below must be suitably qualified as follows:

Refrigerant	Legislation	Current Requirement	Future Requirement (by July 2011)
Ozone Depleting Substances (for example R22)	UK Statutory Instrument 2006 No 1510 "The Ozone Depleting Substances (Qualifications) Regulations" and EC Regulation 2037/2000 On substances that deplete the ozone layer	City and Guilds 2078 or CITB equivalent (J01)	
F Gases (for example R134A, R410A, R407C etc)	UK Statutory Instrument 2008 No. 41 "The Fluorinated Greenhouse Gases Regulation 2008" and Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases	City and Guilds 2078 or CITB equivalent	City and Guilds 2079 or CITB J11

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Other legal requirements may also need to be taken into account depending on the nature of the work individuals are involved in and in relation to pipe fitting, welding, brazing and safety related matters.

9.2 0 QUALIFICATIONS ACCEPTED IN INDUSTRY

9.2.1 NVQs and SVQs See also ANNEX A

The information in this section relates to the current range of national qualifications which are currently scheduled to be reviewed in early 2009.

Each S/NVQ assessment standard covers all aspects of competent performance (both practical skill and underpinning theoretical (and other basic knowledge) required of an employee, within the candidates own capabilities, including:

- installation, commissioning, maintenance and service of a range of systems;
- planning and configuring systems layouts and negotiating, agreeing and carrying out alterations and modifications
- operating safely and with due regard to the safety, not only of self and others, but also of the environment;
- communicating satisfactorily and contributing to the quality and reputation of the employer and the industry in which the employee works.

Written examinations are ways of measuring knowledge, but without necessarily assessing the equivalent ability. S/NVQs are a means of assessing both ability and knowledge and are a measure of competence in 'doing' as well as in 'knowing'.

The four qualifications (currently series 6087) are:

- Small commercial refrigeration and air conditioning systems below 10 kw input power - level 2 (complex 01);
- Commercial and industrial non-ammonia refrigeration systems above 10 kw input power - level 3 (complex 02);
- Ammonia refrigeration systems - level 3 (complex 03);
- Commercial and industrial air conditioning and heat pump systems, complex systems.

The four qualifications require candidates to be assessed on the whole of the same basic framework of 8 units, but each being qualified by a different range of equipment (and in some cases responsibility). One piece of evidence may at the same time satisfy a number of performance criteria for different elements and units in a qualification, so it is hardly necessary to assess every performance criteria or item of range separately.

The eight basic units (in no order of importance) are:

1. Plan and configure systems to meet customer requirements.
2. Specify and agree programmes for implementing systems.
3. Install and test the components of the system.
4. Commission and decommission systems.

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5. Maintain the effective operation of systems
6. Maintain a safe working environment.
7. Maintain effective working relationships.
8. Contribute to quality development and improvement of products and services.

The role of the employer

It is vital that the employer takes an active role in supervising, assessing and training the trainee on site. A programme of activity should be organised so that trainees are able to demonstrate competence in the full range of skills to achieve their qualification. See employing apprentices below.

Assessment of competence

- Candidates must prove their competence in these areas in practice, though
- a portfolio of evidence (worksheets, employer or customer endorsed evidence etc). The portfolio of evidence will be assessed by the training provider.
- A successful assessment on site by qualified assessors from the training provider
- Evidence of competence in pipe work (Brazing) and refrigerant handling (City and Guilds 2078 or CITB)
- Successful achievement of the relevant Technical Certificate which is an on line assessment of underpinning theory knowledge (not currently required for SVQs in Scotland)

Qualifications for Existing workers

The SummitSkills National Assessment Programme (SNAP) has been developed for experienced workers who learnt their trade on site and never got formal qualifications to prove their standard of work by achieving an S/NVQ or SKILLCard. Working with a training centre their existing skills are assessed though “accreditation of prior learning”, and they must also pass an on-line theory test, known as the “Technical Certificate”. There is a list of centres who offer this route to qualification available from SummitSkills at www.summitskills.org.uk

Additional evidence of competence towards NVQ/SVQ

There are other tests of basic skill, which are likely to be required of those working towards S/NVQs. Also there are people in the industry with other certification, which may be taken to demonstrate evidence of adequate theoretical competence, particularly at technician and management levels.

Examples of these skill tests and other certificates are shown in the following paragraphs (9.2.3/4/5), with an outline in annex C. In the meantime, indications of ‘model’ core attributes for engineers and managers are outlined in paragraphs 9.4 and 9.5, with more detailed ‘model’ specifications in annex B.

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NOTE – The national qualifications are regularly reviewed and the current NVQ/SVQs are under review and the titles and assessment framework are likely to be updated from September 2009.

9.2.2 Other Certificates (which may be acceptable)

City & Guilds 207-2 (refrigeration & air conditioning, craft cert);
City & Guilds 207-3 (RAC advanced craft certificate);
City & Guilds 236-2 (electrical installation certificate);
City & Guilds 257 (technician certificate);
BTEC National Certificate in Engineering Electrical/Electronic;
BTEC HNC Engineering (Electrical/Electronic).

9.2.3 Manufacturer Certificates which may supply supplemental evidence of technical and practical knowledge in certain aspects of the industry)

e.g.
brazing;
refrigerants;
microprocessors & electronic controls;
air conditioning;
health & safety;
equipment and components
computing;
electrics.

9.2.4 Education Grade Equivalents

(see annex B)

9.3 CORE ATTRIBUTES OF ENGINEERS

Different qualifications required at various levels or grades; personnel specification guide in annexes A and B.

Technical manipulative skills;
Basic theory and understanding;
Communication (interpersonal) skills;
Team working and leadership (interpersonal) skills;
Previous experience of installing, commissioning, maintaining and/or servicing a range of equipment in the industry (depending on sectors of the market in which such experience has been gained).

9.4.0 CORE ATTRIBUTES OF MANAGERS

(e.g., branch/service/project/technical sales/managers)

Leadership skills;
Communication skills;
Organisational and planning skills;

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Negotiating and presentational skills;
Computing and micro processing skills;
Technical and theoretical understanding;
Electronic skills
Previous experience on a range of equipment and different job roles and companies in the industry.

9.5.0 OTHER QUALIFICATIONS: OUTLINE CONTENT

(See separate annex B)

9.6.0 EMPLOYING APPRENTICES

9.6.1 INTRODUCTION

It is important that young people are encouraged to join the company as apprentice refrigeration and air conditioning engineers so that the company can secure its future with well-trained and experienced personnel. Young people with the correct type of aptitude can in four to five years time become competent service and installation engineers and can start to repay the investment in training previously given.

Training given during their early working lives should run parallel to their studies at college, and although apprentices should experience all the different tasks they should not be used on menial tasks for long periods of time. This situation will only lead to a lack of interest. It is important that apprentices attend college regularly and they should not be encouraged to stop their studies for any reason.

Refrigeration and Air Conditioning engineers need a good balance of manual skills and theory. Without a good grounding in theory it would be almost impossible to diagnose problems associated with refrigeration systems. Apprentices who cannot cope with their college work should not be encouraged to stop going to college because their career path will be put at a disadvantage.

9.6.2 AGE OF APPRENTICE

Grants from Government can assist with college fees, grants are available for students up to the age of 22. Apprentices being employed at 16 years old should first have a year in which they experience all aspects of a technician's life.

1. Assisting maintenance and service.
2. Assisting with installations.
3. Assisting in the stores and administration at the branch.

They should commence formal study at 17 years of age, with two years to complete an NVQ2 and a further two years to complete an NVQ3. At the age of 21 years their formal college education is completed. NVQ's are described in detail in Annex B of this document.

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9.6.3. INDUCTION

Apprentices go through the same induction training as qualified engineers.

9.6.4. QUALIFICATIONS

Apprentices need to be able to comprehend and understand the information that will be imparted to them at College and also during their working day. They should have at least four GCSE A-C grades and have evidence of their manipulative skills. They should have three of their GCSE awards in Mathematics, English and Science. GCSE's are described in Annex A of this document.

9.6.5. GENERAL REQUIREMENTS

Apprentices should be smart in appearance, be enthusiastic and should have a reasonably clear idea of their future.

9.6.6. COLLEGES AND PLACES OF FURTHER EDUCATION

There are only certain colleges that carry out refrigeration and air conditioning NVQ's and their names and addresses are listed in Annex C of this document.

9.6.7. DAY RELEASE OR BLOCK RELEASE

There are advantages and disadvantages with both of the above systems. Block release is when the student goes to college for up to a period of six weeks at a time. Day release is when the student goes to college one day per week.

What are the advantages and disadvantages? Where block release is concerned management know that the student is away from work for a six week period and therefore can plan in advance for this event. The disadvantage is the loss of the student's skills for this period of time may put added pressure on the branch organisation. Accommodation would also have to be paid for by the company. Day release also causes certain problems. It may be easier to plan when the student is away for one day a week, but problems could be associated with having to cover for this student's regular absence of one day a week on installation work for instance, which could put additional pressures on management having to find a replacement for one day every week. Some managers state that this type of arrangement is in fact easier to plan for and they would rather have the student away for one day a week for which they can cover, especially in the summer period, than for six weeks which creates serious problems with labour. With day release only the travelling expenses are required to be paid.

9.6.8. HOW TO OBTAIN GRANTS

Generally grants from the Government include for part or the full cost of college fees only. There is no grant for wages etc. The grant obtained can depend on the area where the branch is located. Government gives a lump sum of money to an administration body in each county called a Learning and Skills Council and just how

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this body administers the Government's allowance results in how much grant is available to offset college fees etc.

To go direct to a LSC is complicated and very time-consuming and some employers choose to use a Managing Agent.

'Train to Gain' is a Government initiative to raise the skill levels of people who are in work but do not already hold at least one Level 2 qualification. Funding may be available to support training for certain companies and individuals - companies should take steps to be assured of the availability of funding before they commit to train to gain. Advice services are offered by a network self employed brokers - see www.traintogain.gov.uk for details.

9.6.9. MANAGING AGENTS

The Managing Agent is a middleman between the LSC and the client and negotiates with the LSC for finance relating to certain courses that they specialise in. Managing Agents do not only obtain access to the finance, but do provide a service by keeping in contact with the College where the apprentice is taking his course and giving the employer progress reports on how the student is progressing. They also manage the delivery of key skills (basic English, maths, IT, communications skills) needed for those on funded apprenticeship programmes to achieve their qualification.

9.6.10. MODERN APPRENTICESHIPS

Modern apprenticeships are based on the old apprentice scheme but are now for four years. There is a formal agreement between the apprentice and the employer relating to salary, working conditions and study, and the Managing Agent will oversee the arrangement. The employer agrees to send the apprentice to college for four years so that the apprentice is able to complete his NVQ2 and 3 and there are additional grants available for modern apprenticeship schemes. SummitSkills, as the Sector Skills Council, is the body that issues the final completion certificates for Modern Apprenticeships.

9.6.11. HEALTH AND SAFETY AND THE UNDER 18's

Young persons under the age of 18 years are subject to certain health and safety restrictions. Guidance on employing young persons on building sites is available from SummitSkills at www.summitskills.org.uk.

9.6.12. PERSONAL PROTECTIVE EQUIPMENT

The apprentice should have the same PPE as qualified engineering staff, and this should be available from the day he/she commences work.

9.7 REGISTRATION OF PERSONNEL

The Industry runs a voluntary register of personnel qualified to handle refrigerants through ACRIB, the Air Conditioning and Refrigeration Industry Board. ACRIB Registered personnel are issued with a photo card once they have proved that they have passed a refrigerant handling assessment.

Although the scheme is voluntary it provides a self-regulatory mechanism to ensure all engineers meet their legal requirement to take the refrigerant handling assessment and is often required contractually for engineers to gain access to sites.

The equipment has a legal obligation to only allow competent personnel to work on stationary refrigeration, air conditioning and heat pump equipment containing ODS or F Gases under the European regulations.

Registration costs £40 and lasts for three years.

ANNEX A

VOCATIONAL QUALIFICATIONS (some definitions and explanations)

A.1 General

Nationally recognised in England, Wales and Northern Ireland, NVQs (National Vocational Qualifications) have been designed by industry to meet its society's needs. Scotland qualifications, SVQs (Scottish Vocational Qualifications), are broadly similar, particularly for refrigeration and air conditioning.

A.2 Sector Skills Council

A government appointed body responsible for skills development strategy for a sector. RAC is represented by SummitSkills (www.summitskills.org.uk) who cover the whole of the building engineer services sector, including plumbing, electrical and heating and ventilation.

A.3 Awarding Bodies

A body approved in England, Wales and Northern Ireland by QCA (Qualification & Curriculum Authority, a merged body of originally NCVQ [National Council for Vocational Qualifications] and SCAA [Schools Curriculum & Assessment Authority]) and in Scotland by SQA (Scottish Qualifications Authority, a merged body of originally SCOTVEC [Scottish Vocational and Educational Council] and SEB [Scottish Examinations Board]) for the purpose of awarding qualifications for the refrigeration and air conditioning sector of industry:

City & Guilds
SQA

A.4 Level Requirement

The vocational framework currently has five levels and the following definitions are intended to be indicative, rather the prescriptive, and to clarify the competence required at each level.

Level 1 competence in the performance of a range of varied work activities, most of which may be routine and predictable;

Level 2 competence in the performance of a range of varied work activities, performed in a variety of contexts. Some of the activities are complex or non-routine, and there is some individual responsibility or autonomy. Collaboration with others, perhaps through membership of a work group or team, may often be a requirement;

Level 3 competence in a broad range of varied work activities performed in a

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wide variety of contexts and most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of other is often required;

Level 4 competence in a broad range of complex, technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and the allocation of resources is often present;

Level 5 competence which involves the application of a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of other and for the allocation of substantial resources feature strongly, as do personal accountabilities for analysis and diagnosis, design, planning, execution and evaluation.

A.5 Vocational Competence - some definitions

UNIT	- describes a functional area of work;
ELEMENT	- describes a portion of that task area;
PERFORMANCE CRITERIA	- stipulates the performance which a candidate has to have achieved to meet the standard;
RANGE STATEMENT	- identifies a range of activity and equipment against which evidence of performance meeting the criteria must have been assessed before a competence award can be made.

ANNEX B

EXPLANATION OF EDUCATIONAL GRADES AND VOCATIONAL CERTIFICATES

B.1 EDUCATIONAL GRADES

Results of GCSE examinations are reported on a 7 point scale of grades A, B, C, D, E, F and G.

Candidates who fail to reach the minimum standard for G do not receive a grade. A subject not receiving a grade will not be recorded on a candidates certificate.

GCSE grades A, B and C maintain the standards of the former GCE 'O' level. Grade C is the former CSE grade 1.

GCSE grades D, E, F and G maintain the standard of the former GCE CSE grades 2, 3, 4 and 5.

Key: GCSE = General Certificate of Secondary Education
GCE = General Certificate of Education
CSE = Certificate of Secondary Education

Grade Equivalents - Table 1

GCSE grades A, B, C	=	GCE 'O' level
GCSE grade C	=	CSE grade 1
GCSE grades D, E, F&G	=	CSE grades 2, 3, 4 & 5

B.2 SKILLS TESTS

Safe Handling of Refrigerant (C&G 2078 or CITB equivalent)

This is a specialist assessment of candidates' skills in handling refrigerant safely, from both a health & safety and an environmental point of view, whether in recovering it from systems or in charging it into systems. The assessment also tests understanding of the possible environmental impacts of refrigerants and relevant current national, European and international regulations on minimising both leakage and adverse effects on the environment. (Under revision at C&G 2079 / CITB J11)

It is a mandatory legal requirement for anyone handling F Gas or ODS refrigerants.

Pipework and Brazing - Category 1 joints under PED (PSSR)

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Specification of procedures for manual flame brazing and brazer assessment
(ISBN 8 870623 09 6)

Specification of a simple procedure for jointing copper pipework for refrigeration systems, which also incorporated a practical means of assessing an individual's competence at this task (both on site and in workshop situations) to a standard acceptable to the industry and the end users of its equipment, systems and services. Published by BRA and endorsed by ACRIB (Air conditioning and Refrigeration Industry Board), copies are available from FETA www.feta.co.uk

Similar assessments are available from CITB Pipework and Brazing

Pipework and Brazing – other categories of jointing under PED (PSSR)

Notified bodies etc..

B. 3 OTHER CERTIFICATES AVAILABLE

BTEC National Diploma in Refrigeration and Air Conditioning

College taught course in two levels (II & III)

BTEC National Diploma in Building Services Engineering (Refrigeration)

College taught course which is structured with 9 units studied in the first year and 8 in the second year (?externally?) examined by BTEC (Business and Technical Education Council)

BTEC Higher National Certificate in Building Services Engineering (Refrigeration)

College taught course comprising 10 units, which are self contained and independently assessed. Certificates are awarded to students who satisfactorily complete all 10 units and a design project.

BTEC High National Certificate in Engineering (Electrical and Electronic)

College taught course preparing candidates for work as electrical and electronic technician engineers, design in collaboration with local industry. Students gain practical and theoretical understanding of the subject area and can select options which are appropriate to their chose career path. Topics can include: electronics; microprocessor systems; communications, electrical power and transmission, power control.

Foundation Degrees

Foundation degrees are designed as a qualification which can help lead into a full degree in Engineering or Building Services. They are offered by vocational colleges in association with Universities. There are no known foundation degrees in Refrigeration or Air Conditioning at the time of writing, but a number are thought to be under development.

B.4 CERTIFICATES NO LONGER BEING OFFERED

Employees may present themselves with other suitable evidence of competence as below. The qualifications are no longer available for new candidates, but they are still current and recognised by industry:

C&G 207-2 Certificate, Refrigeration and Air Conditioning, Part 2

College taught course with final written examination externally marked by City & Guilds and some college assessed project work. The course content included: Tools and equipment; Materials; Refrigeration theory; Assembly; Piping and Wiring; Commissioning and testing systems, Maintenance and fault diagnosis, Health & Safety, Working communications.

C&G 207-3 Certificate, Refrigeration and Air Conditioning, Part 3

College taught course with final written examination externally marked by City & Guilds and some college assessed project work. The course content included; Refrigeration science and calculations; Electrical applications; Building construction; plus either Commercial refrigeration systems and applications; or Air Conditioning systems and applications; or Industrial refrigeration systems and applications; or Heat pumps and heat recovery.

C&G 236-0 Certificate, Electrical Installation Work, Part 2

College taught course designed to provide the necessary academic qualifications for grading as an electrical technician, as defined by the Joint Industry Training Board for the Electrical Contracting Industry, with an end test administered by City & Guilds.

C&G 257 Certificate, Refrigeration and Air Conditioning Technician

College taught course with approximately 50% classroom teaching and 50% workshop practice, with a final examination externally assessed by City & Guilds and some college assessed project work. The syllabus is intended to include drawing and mathematics and science associated with refrigeration and air conditioning. Workshop practice includes installation and service techniques on pipework and electric's.

BTEC National Certificate in Building Services Engineering (Refrigeration)

College taught course in which subjects are studied at BTEC levels NII and NIII and are made up of 10 units (?externally?) examined by BTEC (Business and Technical Education Council).

BTEC National Certificate in Engineering (Electrical & Electronic)

College taught course designed in collaboration with local industry to teach practical and theoretical skills needed by electrical technicians. It develops skills in and knowledge of basic electrical circuits and power transmission and basic electrical and electronic applications and microprocessor systems.

B5 DEFINITIONS OF GRADES OF EMPLOYEES

Definitions of Grades (Service) Categories of employees covered by these 'Benchmark' Conditions of Employment are normally as follows:

i) Trainee / Apprentice

Trainees should have achieved appropriate educational requirements (preferably with manipulative skills) and shall be required to undertake an approved training course in refrigeration and / or air conditioning. (See Note for guidance).

ii) Improver (Mature Student) - will normally:

- Have been in the industry at least 1 year
- Be considered to have the aptitude to become an engineer
- Have satisfactorily completed, or be undertaking an industry approved training course.
- Have achieved an industry recognised skills test for refrigerant handling (see note for guidance).

iii) Refrigeration / Air conditioning engineer - will normally:

- Have been in the industry at least five years.
- Be suitably qualified (including holding an industry recognised certificate of competence to handle refrigerant)

iv) Senior refrigeration / air conditioning engineer - will normally:

- Have a minimum of five years' continuous experience in the industry as a refrigeration / air conditioning engineer.
- Possess a technical knowledge and skill beyond that of a refrigeration / air conditioning engineer including competence, both practical and theoretical, in: commissioning and testing of systems; layout and installation of plant and associated pipework and electrical work; fault diagnosis (and rectification)
- Have general competence and organising ability beyond that of a refrigeration / air conditioning engineer so that he is able, without supervision, to set out jobs from drawings and specification, requisition sundry materials, work in an efficient and economical manner and liaise effectively with other trades;
- Be generally considered suitable at the employer's discretion.

Definition of Grades (Maintenance):

i) Maintenance Engineer - will normally

- Have been in an approved electrical or mechanical engineering services industry at least 1 year;
- Be working towards an industry recognised skills test for refrigerant handling (see note for guidance)

Definitions of Grades (Installation) Categories of employees covered by these 'Benchmark' Conditions of Employment are normally as follows:

i) Trainee / Apprentice

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- trainees should have achieved appropriate educational requirements (preferably with manipulative skills) and shall be required to undertake an approved training course in refrigeration and / or air conditioning (see note for guidance).
- ii) Mate - will normally
- * Have the aptitude to assist installation engineers (including setting out; bending and forming; brazing and welding; lagging / insulating)
- iii) Installation Engineer - will normally
- have been in the industry for a minimum of three years;
 - be competent to lay out, bend and form, braze and weld, support and insulate refrigerant plant and associated pipework;
 - be competent to leak and pressure test, evacuate and charge systems.
- iv) Commissioning Engineer - will normally
- have a minimum of 5 years continuous experience in the industry as an installation / refrigeration / air conditioning engineer
 - possess a technical knowledge and skill beyond that of an installation/refrigeration/air conditioning engineer including competence, both practical and theoretical, in:
 - ◇ commissioning and testing of systems;
 - ◇ layout and installation of plant and associated pipework and electrical wiring;
 - ◇ fault diagnosis and rectification
 - Have general competence and organising ability beyond that of an installation/refrigeration/air conditioning engineer, so that he is able, without supervision, to set out jobs from drawings and specification, requisition sundry materials, work in a efficient and economical manner and liaise effectively with other trades;
 - Be generally considered suitable at the employers discretion

All employees are required to adopt efficient and safe working procedures and methods at all times.

ANNEX C

HEALTH AND SAFETY COURSES AND QUALIFICATIONS

Health and Safety law deems that all persons are aware of the risks to themselves and risks to other persons. There are specific regulations that apply to the industry and persons working in the industry must be aware of them.

NVQ and SVQ qualifications do have a large proportion of health and safety within the curriculum but this must be “topped up” to ensure the employee is aware of his responsibilities at all times.

There are courses available which can do this topping up procedure and others that can give health and safety information to specific employees.

The Passport courses for instance have one day specifically on health and safety and a further day on health and safety on a specific subject such as working in petroleum Industry or the food industry. There is one Passport course called the Client Contractors National Safety Group (CCNSG) this is a 2 day passport course but devoted specifically to health and safety.

SKILLcard

Engineering Services SKILLcard registers the skills and competence of people working throughout the mechanical services sector of the building services engineering industry. A credit card-sized 'skills passport', valid in the majority of cases for five years, is issued to all individuals registered with the scheme. It has been designed enable individual workers to get on many construction sites and demonstrate their awareness of workplace health and safety, and their skills, competence and qualifications; and for contractors and service providers to demonstrate to third parties – such as clients, consumers and end-users – the competence, skills and qualifications of individual members of their workforce. There are different grades and types of cards for different categories of qualification. These include:

- Refrigeration/Air Conditioning Technician/Engineer Refrigeration/Air Conditioning
- Refrigeration/Air Conditioning Technician's/ Engineer's Mate/Assistant

Separate categories exist for supervisors and adult trainees. See www.skillcard.org.uk for details

All personnel applying for the card will need to have an NVQ2 or attend an assessment of the candidates knowledge and then register on a NVQ2 course with a centre.

Tower Scaffold, Scissor Lift and Boom Competence

Personnel who need to erect tower scaffolding or use scissor lift and boom equipment must be competent as part of Health and Safety Law and must therefore have completed a course on the above equipment. The two recognised courses for the above are PASMA and IPAF:-
IPAF for training on scissor lift and boom equipment
PASMA for training in the erection of tower scaffolding.

This Guide is published in the following Parts:

Part 1	Introduction
Part 2	System design and Component Selection
Part 3	Safety Regulations, Standards and Directives
Part 4	System Installation
Part 5	System Commissioning
Part 6	System Maintenance and Service
Part 7	System and Component Decommissioning and Waste Disposal
Part 8	Refrigerants and Retrofitting
Part 9	Assessment of Skills Related Competence and Training

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