

**Department Administrative Order No. 03
Series of 2006**

Subject: Further Amending Certain Provisions of Ministry Order No. 32, Series of 1985, as Amended, Particularly Providing for Standard Classification for Airconditioning and Refrigeration Service and Repair Enterprises

WHEREAS, it is the declared State policy under Republic Act No. 6969 (The Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990) to regulate, restrict or prohibit, *inter alia*, the use and distribution of ozone depleting substances (ODS) that present unreasonable risk or injury to health or the environment;

WHEREAS, in order to carry out the objectives of Republic Act No. 6969 the Department of Environment and Natural Resources (DENR) as the principal implementing agency is empowered to call on any other department, office and other government instrumentalities of the government for assistance in the discharge of its functions thereunder;

WHEREAS, a Memorandum of Agreement dated 29 April 2003 was entered into by and among different government agencies, this Department included, whereby the DTI through the Bureau of Trade Regulation and Consumer Protection (BTRCP) committed to amend the current rules on refrigeration and air conditioning service and repair enterprises, particularly to incorporate the requirements of national ODS phase-out strategy embodied in the National Chlorofluorocarbons Phase-out Plan (NCPPI);

THEREFORE, pursuant to Title X, Book IV of the Administrative Code of 1987, the provisions of Presidential Decree No. 1572, Chapter VII of Republic Act No. 7394, otherwise known as the "Consumer Act of the Philippines" and in observance of the requirements of RA No. 6969 and its implementing rules, this Order amending Ministry Order No. 32, Series of 1985, as amended, is hereby prescribed and promulgated for the information, guidance and compliance of all concerned:

Section 1. Section 1 of Rule I of Ministry Order (MO) No. 32, series of 1985 is hereby amended to read as follows:

"Section 1. Definition of Terms - For the purpose of these Rules and as used herein, the following definitions are hereby adopted:

x x x

o. "Back conversion" refers to the act of charging with CFC a system designed for and / or using non-CFC.

p. "*Chlorofluorocarbons (CFCs)*" refers to a family of chemicals that contain chlorine, fluorine and carbon; used as refrigerants, aerosol propellants, cleaning solvents and in the manufacture of foam.

q. "*Fan Coil Unit (FCU)*" refers to an air-conditioning component that consists of a fan motor and an evaporator coil.

r. "*Flushing*" refers to an act of cleaning a contaminated refrigeration / air-conditioning system or system with burnt compressor by pumping or blowing gas, medium / solvent through the system then releasing the compounds to the atmosphere or a system in contact with atmosphere.

s. "*Installation*" refers to any permanent mounting or setting-up of a system; or transfer of equipment from one location to another, which involve opening the system to the atmosphere e.g. the piping has to be cut and reconnected, or involving fixed installation to water piping or electricity.

t. "*Ozone-depleting substances*" (ODS) refers to any substance which is controlled under the Montreal Protocol and its amendments. ODS include chlorofluorocarbons, hydro chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform, hydrobromoflourocarbons, bromochloromethane and methyl bromide. ODS have ozone-depleting potentials greater than 0 and can deplete stratospheric ozone layer.

u. "*Package Air-conditioning Unit (PACU)/ SPLIT-TYPE*" refers to an air-conditioning unit that contains the compressor, water-cooled condenser, metering device and evaporator all of which is in one casing.

v. "*RAC Servicing NC I Qualification*" consist of competencies that a person must achieve to enable such person to install, service, maintain, troubleshoot and repair air-conditioning and refrigeration units in domestic / residential environments per current TESDA Training Regulations.

w. "*RAC Servicing NC II Qualification*" consists of competencies that a person must achieve to enable such person to install, service, maintain, troubleshoot and repair air-conditioning and refrigeration units in commercial environment / establishments other than centralized air-conditioning and industrial refrigeration systems per current TESDA Training Regulations.

x. "*Recovery*" refers to the removal of a refrigerant in any condition (vapor, liquid or mixed with other substance) from a system and to store it in an external container.

y. "*Recycling*" refers to the reduction of contaminants in used refrigerants by separating oil, removing condensables and using devices such as filter dryers to reduce moisture, acidity and particulate matter.

z. "*Retrofitting*" refers to a process of upgrading existing equipment or system using ozone depleting substances to environment friendly refrigerant.

aa. "*Service Mechanic*" refers to a person who is TESDA certified on Heating, Ventilating, Air-conditioning and Refrigeration (HVAC/R) System per current TESDA Training Regulations of Heating, Ventilating, Air-conditioning and Refrigeration (HVAC/R) Sector.

ab. "Servicing" refers to any act or repair, maintenance, testing and trouble shooting of parts, including mechanical and electrical components of an existing CFC-using equipment.

ac. "TESDA" refers to Technical Education and Skills Development Authority.

ad. "Transport Air-conditioning Unit" refers to an air-conditioning unit driven directly from the turning axle of the vehicle when they are in motion, or by the vehicle engine itself, or by a separate gasoline/diesel engine and/or electric motor mounted on the same vehicle. It covers land and marine/sea transports.

ae. "Transport RAC-Servicing NCII Qualification" consists of competencies that a person must achieve to enable such person to install, service, maintain, troubleshoot and repair air-conditioning and refrigeration units in the transport per current TESDA Training Regulations.

af. "Venting" refers to the practice of intentionally releasing and / or purging of ODS to the atmosphere."

ag. "Window Type Air-conditioning Unit" refers to a self-contained air-conditioning unit house in a single casing mounted in a wall or window opening.

Section 2. Section 3 (3) of Rule VII of MO No. 32 as amended by Department Order (DO) No. 69 series of 1993 is hereby amended to read as follows:

"3. Category C - Standard Classification for Air Conditioning and Refrigeration Service and Repair Enterprises.

A. Type A - Window Type Air-Conditioning / Domestic Refrigeration Requirements

A.1 Five Star Type A Refrigeration and Air-conditioning (RAC) Shop

a.1.1 Minimum of four (4) full time Service Mechanic with RAC Servicing NC I qualification and

a.1.2 other mandatory requirements as prescribed in ANNEX A hereof, which is herein made an integral part of this Order.

A.2 Four Star Type A Refrigeration and Air-conditioning (RAC) Shop

a.2.1 Minimum of four (4) Service Mechanic with RAC Servicing NC I qualification and

a.2.2 other mandatory requirements as prescribed in ANNEX A hereof.

A.3 Three Star Type A Refrigeration and Air-conditioning (RAC) Shop

a.3.1 Minimum of three (3) Service Mechanic with RAC Servicing NC I qualification and

a.3.2 other mandatory requirements as prescribed in ANNEX A hereof.

A.4 Two star Type A Refrigeration and Air-conditioning (RAC) shop

a.4.1 Minimum of (2) Service Mechanic with RAC Servicing NC I qualification and

a.4.2 other mandatory requirements as prescribed in ANNEX A hereof.

A.5 One star Type A Refrigeration and Air-conditioning (RAC) shop

a.5.1 At least one (1) Service Mechanic with RAC Servicing NC I qualification and

a.5.2 other mandatory requirements as prescribed in ANNEX A hereof.

B. Type B - Package Type Air-conditioning (PACU) / Commercial Refrigeration (CRE) (includes split type and all stationary refrigeration and air conditioning not included in category A) Requirements

B.1 Five Star Type B Refrigeration and Air-conditioning (RAC) Shop

b.1.1 Minimum of four (4) Service Mechanic with RAC Servicing NCII qualification and

b.1.2 other mandatory requirements as prescribed in ANNEX A hereof

B.2 Four Star Type B Refrigeration and Air-conditioning (RAC) Shop

b.2.1 Minimum of four (4)¹ Service Mechanic with RAC Servicing NCII qualification and

b.2.2 other mandatory requirements as prescribed in ANNEX A hereof.

B.3 Three Star Type B Refrigeration and Air-conditioning (RAC) Shop

b.3.1 Minimum of three (3) Service Mechanic with RAC Servicing NCII qualification and

b.3.2 other mandatory requirements as prescribed in ANNEX A hereof.

B.4 Two star Type B Refrigeration and Air-conditioning (RAC) shop

b.4.1 Minimum of two (2) Service Mechanic with RAC Servicing NCII qualification and

b.4.2 other mandatory requirements as prescribed in ANNEX A hereof.

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B.5 One star Type B Refrigeration and Air-conditioning (RAC) shop

b.5.1 Minimum of one (1) Service Mechanic with RAC Servicing NCII qualification and

b.5.2 other mandatory requirements as prescribed in ANNEX A hereof.

C. Type C - Transport Air-conditioning and Refrigeration Requirements

C.1 Five Star Type C Refrigeration and Air-conditioning (RAC) Shop- must have the following requirements:

c.1.1 Minimum of four (4) Service Mechanic with Transport RAC-Servicing NCII qualification and

c.1.2 other mandatory requirements as prescribed in ANNEX A hereof.

C.2 Four Star Type C Refrigeration and Air-conditioning (RAC) Shop

c.2.1 Minimum of four (4) Service Mechanic with Transport RAC-Servicing NCII qualification and

c.2.2 other mandatory requirements as prescribed in ANNEX A hereof.

C.3 Three Star Type C Refrigeration and Air-conditioning (RAC) Shop

c.3.1 Minimum of three (3) Service Mechanic with Transport RAC-Servicing NCII qualification and

c.3.2 other mandatory requirements as prescribed in ANNEX A hereof.

C.4 Two star Type C Refrigeration and Air-conditioning (RAC) Shop

c.4.1 Minimum of two (2) Service Mechanic with Transport RAC-Servicing NCII qualification and

c.4.2 other mandatory requirements as prescribed in ANNEX A hereof.

C.5 One star Type C Refrigeration and Air-conditioning (RAC) Shop

c.5.1 Minimum of one (1) Service Mechanic with Transport RAC-Servicing NCII qualification and

c.5.2 other mandatory requirements as prescribed in ANNEX A hereof.

Section 3. Qualification of Refrigeration and Air-conditioning (RAC) Service Mechanics. A RAC Service Mechanic must secure the appropriate TESDA National Certificate signed by the TESDA Director General. The qualifications of a Refrigeration and Air-conditioning (RAC) Service Mechanic are stipulated in the TESDA Training Regulations on heating, ventilating, air-conditioning and

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refrigeration (HVAC/R) sector as enumerated in ANNEX B which is made an integral part of this Order. Guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTQCS)". Service mechanics must strictly comply with the provisions set on the Code of Practice for Refrigeration and Air conditioning.

Section 4. Section I of Rule III of Ministry Order No. 32 series of 1985 is hereby amended to read as follows:

"SECTION 1 – REQUIREMENTS FOR ACCREDITATION

x x x

4) Specific Requirements for Accreditation of Refrigeration and Airconditioning Repair and Service Enterprises:

4.1 Original and renewal application :

- 4.1.1 Copy of Insurance Policy (Insurance covers the customer's property/ies entrusted for repair/service and copy of official receipt covering full payment of premium, or an undertaking in lieu of insurance or Affidavit on Jobsite, as the case may be).
- 4.1.2 Warranty or service guarantee duly signed by the owner of the shop
- 4.1.3 List of shop employees and their corresponding positions
- 4.1.4 Certified list of trainings attended by the employees for the last two (2) years
- 4.1.5 List of shop tools and equipment
- 4.1.6 Original and duplicate copy of TESDA National Certification of Service mechanics
- 4.1.7 Original and duplicate copy of the latest certificate of accreditation (for renewal only)
- 4.1.8 Photo of the shop showing front and interior including the facilities and/or equipment therein
- 4.1.9 Shop floor plan
- 4.1.10 Original and copy of DTI Business Name Registration Certificate in case of single proprietorship or Certificate of Registration with SEC and Articles of Incorporation/ Partnership, in case of a corporation or partnership

4.2 Additional Requirement for 3 to 5 star Refrigeration and Airconditioning Repair and Service Enterprises:

- 4.2.1 Copy of dealership agreement (for five star only)
- 4.2.2 Original copy of the Performance Bond including the corresponding receipt of payment.

Section 5. Section 8 of Rule III of M.O. No. 32, series of 1985, as amended by Sec. 3 of Department Order No. 69 Series of 1993, is hereby amended to read as follows:

"Sec. 8. Insurance Policy – The minimum amount of insurance coverage for the different classifications or categories are hereunder indicated:

- a. For motor vehicles / heavy equipment / office machine / data processing equipment / automotive engine rebuilding machine shop / engineering machine shop / electronics / electrical / types of airconditioning and refrigeration service and repair enterprises:

- 1.) 5 star - P1,000,000.00
- 2.) 4 star - P500,000.00
- 3.) 3 star - P200,000.00
- 4.) 2 star - P100,000.00
- 5.) 1 star - P50,000.00

b. All other classifications or categories: A minimum of P50,000.00.

c. In places where there are no insurance companies willing to undertake the risk due to the peace and order situation in the area the Director may grant exemption upon sufficient proof of such circumstance."

Section 5. Section 7, Rule III of M.O. 32, series of 1985 as amended by Section 2 of Department Order No. 69 Series of 1993, is further amended to read as follows:

"Sec 7. Bond - The application for three to five star shops shall be accompanied by a performance bond issued in favor of the Republic of the Philippines in an amount not less than Fifty Thousand Pesos (P50,000.00) which shall guarantee the faithful performance of the job done by the enterprise. The bond shall remain in full force and effect until cancelled or released by the Director."

Section 6. Section 10 of Department Order No. 69 Series of 1993 is hereby amended to read as follows:

"Section 10. *Point System for Classification* - All service and repair enterprises shall be classified based on a point system for each classification and must meet the minimum pre-requisite for star ratings.

The point system for airconditioning and refrigeration service and repair enterprise is embodied in ANNEX C which is made an integral part of this Order."

Types of Refrigeration and Air Conditioning Service and Repair Enterprises	Star rating	points
Type A,B, and C	1 star	30 - 45
	2 star	46 - 60
	3 star	61 - 80
	4 star	81 - 90
	5 star	91 - 100

Section 7. Section 11 of Department Order No. 69 Series of 1993 is hereby amended to read as follows:

"Sec. 11. *Accreditation of Skills Testing and Certification Centers* - TESDA shall accredit testing and assessment centers for technical employees in the service and repair enterprise.

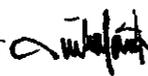
Section 8. Cancellation of Accreditation. After due notice and hearing, a Certificate of Accreditation issued to any refrigeration and air-conditioning service shop and/or service mechanic pursuant to this Order shall be cancelled upon recommendation by the DENR on the ground that the Certificate of Accreditation it issued in conformity with the DENR Administrative Order No. 2004-08 (otherwise known as the "Revised Chemical Control Order for Ozone Depleting Substances) has been revoked or cancelled due to commission of any of the prohibited acts enumerated in Section 11 thereof.

This administrative sanction does not preclude the imposition of other imposable administrative penalties and sanctions provided for under E.O. No. 913 and M.O. No. 69, both series of 1983, or R.A. No. 7394, when circumstances so warrant.

Section 9. Repealing Clause. All rules and regulations of the DTI not consistent with this Order are hereby repealed or amended accordingly.

Section 10. Effectivity – This administrative order shall be published in two (2) newspaper of general circulation in the Philippines and shall take effect on July 1, 2006.

Makati City, Philippines, March 29, 2006.



HON. PETER B. FAVILA
Secretary

Recommended by:



VICTORIO MARIO A. DIMAGIBA
Director
Bureau of Trade Regulation and Consumer
Protection



ZENAIDA CUISON MAGLAYA
Undersecretary
Consumer Welfare and Trade Regulation
Group

ANNEX A

Other Requirements Prescribed by the Bureau:

- A. Minimum Facilities Work Area for 1 and 2 star for all types: 15 sq. meters
- B. Must comply with the requirements on service warranty as indicated in the Implementing Rules and Regulations of the Consumer Act of the Philippines (RA 7394)
- C. Shall have at least 1 unit of all mandatory tools, equipment and instrument used in Refrigeration and Air conditioning works:

A. HAND TOOLS

Mandatory

- a. wrench (open end wrench)
- b. hammer (carpenters claw)
- c. pliers (cutting pliers / slim nose plier)
- d. screw driver (regular screwdriver / phillips screwdriver)
- g. brush (nylon and steel)
- h. files
- i. hacksaws
- j. vise

Optional

- a. portable electric / air driven drill
- b. torque wrench
- c. high pressure water pump for cleaning purpose

B. CUTTING AND BENDING TOOLS

Mandatory

- a. tube cutter/reamer
- b. flaring tools/swaging tool
- c. tube bender (spring type or lever type)

C. SOLDERING AND BRAZING

Mandatory

- a. oxyacetylene with tanks with pressure regulator or alternative approved brazing equipment
- b. nitrogen with pressure regulator

D. INSTRUMENT AND GAUGES

Mandatory

- a. dial type thermometer
- b. gauge manifolds
- c. volt-ohm- millimeter
- d. AC clamp -on ammeter (optional for transport aircon and refrigeration shops)

Optional

- a. handheld electronic thermometer
- b. high pressure gauge (0 to 500psi)



E. MEASURING TOOLS

Mandatory

- a. tape measures

F. SPECIALIZED AND SERVICE INSTALLATION

Mandatory

- a. equipment to recover refrigerant (specifications shall be in accordance with Philippine National Standards)
- b. refrigerant recovery cylinders (non disposables)
- c. vacuum pump (capable of producing 30in Hg vacuum)
- d. weighing scale
- e. vacuum gauge

Optional

- a. electronic scale
- b. air compressor (hose and spray gun)
- c. compressor oil charging pump
- d. electronic vacuum gage
- e. recovery / recycling equipment (in accordance with standards e.g. SAE / ISO/ PNS)
- f. press tool for hoses for automobile air conditioning hoses
- g. refrigerant identifier
- h. refractometer for mineral / ester oil check
- i. UV-leak detection system
- f. electronic leak detector

G. SAFETY DEVICES

Mandatory

- a. welding mask (if welding is performed)
- b. gloves
- c. safety shoes
- d. brazing goggles
- e. fire extinguishers
- f. safety glass
- g. first aid kit

Optional

- a. emergency eye wash
- b. fixed refrigerant monitoring device in workshop

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ANNEX B

Technical Education and Skills Development Authority (TESDA) Training Regulations on Refrigeration and Air-conditioning

The following are competencies and program standard required for **Refrigeration and Air-conditioning (RAC) Service Technician** in the **Heating, Ventilation, Air-conditioning and Refrigeration (HVAC/R) Sector** pursuant to the Training Regulations of the Technical Education and Skills Development Authority.

1. Refrigeration and Air-conditioning (RAC) Servicing NC I (Window-Type Air-conditioning / Domestic Refrigeration)

The units of competency comprising this qualification include the following:

1.1. Basic Competencies (TESDA Code)

- a. Receive and respond to workplace communication (500311101)
- b. Work with others (500311102)
- c. Demonstrate work values (500311103)
- d. Practice Basic housekeeping procedures (500311104)

1.2. Common Competencies (TESDA Code)

- a. Prepare materials and tools (HVC713201)
- b. Observe procedures, specifications and manuals of instruction (HVC311201)
- c. Perform mensuration and calculation (HVC311203)
- d. Perform basic benchwork (HVC713202)
- e. Perform basic electrical work (HVC724201)
- f. Maintain tools and equipment (HVC311204)
- g. Perform housekeeping and safety practices (HVC315201)
- h. document work accomplished (HVC311205)

1.3. Core competencies (TESDA Code)

- a. Install window-type air-conditioning / domestic refrigeration units (HVC723301)
- b. Service and maintain window-type air-conditioning / domestic refrigeration units (HVC723302)
- c. troubleshoot window-type air-conditioning / domestic refrigeration systems (HVC723303)
- d. recover and recycle refrigerant in window-type air-conditioning / domestic refrigeration system (HVC723304)
- e. repair and retrofit window-type air-conditioning and domestic refrigeration systems and its accessories (HVC723305)
- f. perform testing and commissioning for window-type air-conditioning / domestic refrigeration systems (HVC723306)

2. A person who has achieved this Qualification is competent to be:
 - a. window-type air-conditioning installer
 - b. window-type air-conditioning / domestic refrigeration mechanic

3. To attain the National qualification of RAC Servicing NC I, the candidate must demonstrate competence in all the units required for RAC servicing NC I qualification. Successful candidates shall be awarded a national Certificate signed by the TESDA Director General.

4. The qualification of RAC Servicing NC I may be attained through:
 - 4.1 Accumulation of Certificates of Competency (COCs) in all the following areas:

- 4.1.1 Install window-type air-conditioning/domestic refrigeration units

- 4.1.1.1 Install window-type air-conditioning / domestic refrigeration units

- 4.1.1.2 Perform testing and commissioning for window-type air-conditioning/domestic refrigeration units

- 4.1.2 Service and maintain window-type air-conditioning/ domestic refrigeration units

- 4.1.3 Troubleshoot window-type air-conditioning/domestic refrigeration units

- 4.1.4 Recover and recycle refrigerant in window-type air-conditioning/domestic refrigeration systems

- 4.1.5 Repair and retrofit window-type air-conditioning/domestic refrigeration system and accessories

- 4.1.5.1 Repair and retrofit window-type air-conditioning/domestic refrigeration system and accessories

- 4.1.5.2 Perform testing and commissioning for window-type air-conditioning/domestic refrigeration system

- 4.1.6 Successful candidates shall be awarded Certificates of Competency (COCs).

- 4.2 Demonstration of competence through project-type assessment covering all required units of the qualification

- 4.3 For individuals who possess Trade Skills Certificate (TSC) or Certificate of Competency (COC), portfolio assessment is applicable, provided that they are already employed and have related experience for the past three (3) years along the qualification. However, if the assessor finds the evidences presented inadequate, he may still require the candidate to undergo the practical demonstration or present



other evidences in the form of Third Party Report, etc., depending on the need for supplementary evidences.

5. Assessment shall focus on the core units of competency. The tool and common units shall be integrated or assessed concurrently with the core units.

One or two additional evidences in the form of Portfolio, third Party Report, Written Test and Demonstration with Questioning may be required by the assessor in addition to those specified in the Methods of Assessment in the Competency Standards, depending on the need for supplementary evidences.

6. The following are qualified to apply for assessment and certification:

6.1 Graduate of formal, non-formal and informal including enterprise-based training programs

6.2 Experienced Workers (waged employed or self-employed)

7. The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guideline on the Implementation of the Philippine TVET Qualification and Certification System" (PTQCS)

II. Refrigeration and Air-conditioning (RAC) Servicing NCII (Package-Type Air-Conditioning / Commercial Refrigeration)

The units of competency comprising this qualification include the following:

A. Basic Competencies (TESDA Code)

1. Participate in workplace communication (500311105)
2. Work in team environment (500311106)
3. Practice career professionalism (500311107)
4. Practice occupational health and safety procedures (500311108)

B. Common Competencies (TESDA Code)

1. Prepare Materials and tools (HVC713201)
2. Perform mensuration and calculation (HVC311203)
3. Perform basic benchwork (HVC713202)
4. Perform basic electrical works (HVC724201)
5. Maintain tools and equipment (HVC311204)
6. Perform housekeeping and safety practices (HVC315201)
7. Document work accomplished (HVC311205)

C. Core competencies (TESDA Code)

1. Survey site for installation (HVC723307)
2. Install PACU/CRE piping systems (HVC723308)
3. Install PACU/CRE electrical systems (HVC723309)
4. Install package type air-conditioning (PACU) / commercial refrigeration (CRE) units (HVC7233010)

5. Service and maintain PACU/CRE units(HVC7233011)
6. Troubleshoot PACU/CRE systems(HVC7233012)
7. Recover and recycle refrigerant in PACU/CRE systems(HVC7233013) repair and retrofit PACU/CRE systems and its accessories(HVC7233014) perform start-up and commissioning for PACU/CRE (HVC7233015)

2. A person who has achieved this Qualification is competent to be:
 - a. Package-Type Air-conditioning installer
 - b. Commercial Refrigeration Installer
 - c. Package-Type Air-conditioning/ Commercial Refrigeration technician

3. To attain the national qualification of RAC Servicing NC II, the candidate must demonstrate competence in all the units required for RAC Servicing NC II qualification. Successful candidates shall be awarded a national Certificate signed by the TESDA Director General.

4. The qualification of RAC Servicing NC II may be attained through:

4.1 Accumulation of Certificates of Competency (COCs) in all the following areas:

4.1.1 Install package type air-conditioning (PACU) / commercial refrigeration (CRE) units

4.1.1.1 Survey site for installation

4.1.1.2 Install PACU/CRE piping system

4.1.1.3 Install PACU/CRE electrical systems

4.1.1.4 Install PSCU/CRE

4.1.1.5 Perform start-up, testing and commissioning for PSCU/CRE

4.1.2 Service and maintain PSCU/CRE units

4.1.3 Troubleshoot PSCU/CRE units

4.1.4 Recover and recycle refrigerant in PSCU/CRE systems

4.1.5 Repair and retrofit PSCU/CRE system and accessories

4.1.5.1 Repair and retrofit PSCU/CRE system and accessories

4.1.5.2 Perform testing and commissioning for PSCU/CRE

4.1.6 Successful candidates shall be awarded Certificates of Competency (COCs).

4.2 Demonstration of competence through project-type assessment covering all required units of the qualification

4.3 For individuals who possess Trade Skills Certificate (TSC) or Certificate of Competency (COC), portfolio assessment is applicable, provided they are already employed and have related experience for the past three (3) years along the qualification. However, if the assessor finds the evidences presented inadequate, he may still require the candidate to undergo the practical demonstration or present other evidences in the form of Third Party Report, etc. depending on the need for supplementary evidences.

5. Assessment shall focus on the core units of competency. The tool and common units shall be integrated or assessed concurrently with the core units.

One or two additional evidences in the form of Portfolio, third Party Report, Written Test and Demonstration with Questioning may be required by the assessor in addition to those specified in the Methods of Assessment in the Competency Standards, depending on the need for supplementary evidences.

6. The following are qualified to apply for assessment and certification:

- 6.1 Graduate of formal, non-formal and informal including enterprise-based training programs
- 6.2 Experienced Workers (waged employed or self-employed)

7. The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guideline on the Implementation of the Philippine TVET Qualification and Certification System" (PTQCS).

III. Transport RAC Servicing NCII The units of competency comprising this qualification include the following:

A. Basic Competencies (TESDA Code)

- 1. Participate in workplace communication (500311105)
- 2. Work in team environment (500311106)
- 3. Practice career professionalism (500311107)
- 4. Practice occupational health and safety procedures (500311108)

B. Common Competencies (TESDA Code)

- 1. Prepare Materials and tools (HVC713201)
- 2. Observe procedures, specifications and manuals of instruction (HVC311201)
- 3. Perform mensuration and calculation (HVC311203)
- 4. Perform basic benchwork (HVC713202)
- 5. Perform basic electrical work (HVC724201)
- 6. Maintain tools and equipment (HVC311204)
- 7. Perform housekeeping and safety practices (HVC315201)
- 8. Document work accomplished (HVC311205)

C. Core competencies (TESDA Code)

1. Install transport air-conditioning and refrigeration units (HVC723316)
2. Service and maintain transport air-conditioning and refrigeration units (HVC723317)
3. Trouble shoot air-conditioning and refrigeration units(HVC723318)
4. Recover and recycle refrigerant in transport air-conditioning and refrigeration systems (HVC723319)
5. Repair and retrofit transport air-conditioning and refrigeration systems and its accessories(HVC723320)
6. Perform testing and commissioning for transport air-conditioning and refrigeration (HVC723321)

2. A person who has achieved this Qualification is competent to be a transport air-conditioning and refrigeration technician.

3. To attain the national qualification of Transport RAC Servicing NC II, the candidate must demonstrate competence in all the units required for Transport RAC Servicing NC II qualification. Successful candidates shall be awarded a National Certificate signed by the TESDA Director General.

4. The qualification of Transport RAC Servicing NC II may be attained through:

4.1 Accumulation of Certificates of Competency (COCs) in all the following areas:

4.1.1 Install transport air-conditioning and refrigeration units

4.1.1.1 Install transport air-conditioning and refrigeration units

4.1.1.2 Perform testing and commissioning for transport air-conditioning and refrigeration units

4.1.2 Service and maintain transport air-conditioning and refrigeration units

4.1.3 Troubleshoot transport air-conditioning and refrigeration units

4.1.4 Recover and recycle refrigerant in transport air-conditioning and refrigeration system

4.1.5 Repair and retrofit transport air-conditioning and refrigeration system and accessories

4.1.5.1 Repair and retrofit transport air-conditioning and refrigeration system and accessories

4.1.5.2 Perform testing and commissioning for transport air-conditioning and refrigeration

4.1.6 Successful candidates shall be awarded Certificates of Competency (COCs).

4.2 Demonstration of competence through project-type assessment covering all required units of the qualification

5. Assessment shall focus on the core units of competency. The tool and common units shall be integrated or assessed concurrently with the core units.

One or two additional evidences in the form of Portfolio, third Party Report, Written Test and Demonstration with Questioning may be required by the assessor in addition to those specified in the Methods of Assessment in the Competency Standards, depending on the need for supplementary evidences.

6. The following are qualified to apply for assessment and certification:

6.1 Graduate of formal, non-formal and informal including enterprise-based training programs

6.2 Experienced Workers (waged employed or self-employed)

7. The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guideline on the Implementation of the Philippine TVET Qualification and Certification System" (PTQCS).

		actual points		actual points		actual points		actual points		actual points		
		1 star	pts	2 star	pts	3 star	pts	4 star	pts	5 star	pts	
Type B - Package Type Air-conditioning (PACU) / Commercial Refrigeration (CRE) (includes split type and all stationary refrigeration and air conditioning not included in category A)		31	47	68	84	90						
range of points		30 to 45	46 to 60	61 to 80	81 to 90	91 to 100						
max 60		15	30	45	60	60						
value / technician		no. of technician										
A. QUALIFICATION AND NUMBER OF TECHNICIAN												
qualification												
NCII (PACKAGE-TYPE AIR-CONDITIONING / COMMERCIAL REFRIGERATION)		15	1	15	2	30	3	45	4	60	4	60
B. TOOLS AND EQUIPMENT												
mandatory tools		max 20	5	5	5	5	5	5	5	5	5	10
optional tools (1 point per optional tool type)		5	5	5	5	5	5	5	5	5	5	5
C. WARRANTY DURATION												
90 days for workmanship and for new equipt / installation 365 days		1 / tool	0	0	0	0	0	0	0	0	5	5
max 5		2	2	2	2	2	5	5	5	5	5	5
120 days for workmanship and for new equipt / installation 730 days		2	2	2	2	2	0	0	0	0	0	0
5		5	5	5	5	5	5	5	5	5	5	5
D. FACILITIES AND WORK AREA												
tool and equipment storage		max 10	8	8	10	10	10	10	10	10	10	10
work area (minimum 15 sq m)		3	3	3	3	3	3	3	3	3	3	3
record keeping system		5	5	5	5	5	5	5	5	5	5	5
customer reception and waiting area		1	0	0	1	1	1	1	1	1	1	1
E. YEARS IN BUSINESS												
year		max 5	1	2	3	4	5	5	5	5	5	5
equivalent no. of months												
1 yr		0-12	1	1	1	1	1	1	1	1	1	1
2yr		13-24	2	2	2	2	2	2	2	2	2	2
3 yr		25-36	3	3	3	3	3	3	3	3	3	3
4yr		37-48	4	4	4	4	4	4	4	4	4	4
5yr		49-above	5	5	5	5	5	5	5	5	5	5
max 100												

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Type C - Transport Air-conditioning and Refrigeration

		actual points		actual points		actual points		actual points		actual points		
		1 star	pts	2 star	pts	3 star	pts	4 star	pts	5 star	pts	
A. QUALIFICATION AND NUMBER OF TECHNICIAN												
	range of points	30 to 45		46 to 60		61 to 80		81 to 90		91 to 100		
	max	60	15	30	45	60	60	60	60	60	60	
	qualification											
	NCII (TRANSPORT REFRIGERATION AND AIR CONDITIONING)											
	value / technician	15	1	15	2	30	3	45	4	60	4	60
	no. of technician											
B. TOOLS AND EQUIPMENT												
	mandatory tools		5	5	5	5	5	5	5	5	10	
	optional tools (1 point per optional tool type)		5	5	5	5	5	5	5	5	5	
	1 / tool	0	0	0	0	0	0	0	0	5	5	
C. WARRANTY DURATION												
	max	5	2	2	2	5	5	5	5	5	5	
	90 days for workmanship and for new equipt / installation	365 days	2	2	2	0	0	0	0	0	0	
	120 days for workmanship and for new equipt / installation	730 days	5			5	5	5	5	5	5	
D. FACILITIES AND WORK AREA												
	max	10	8	8	8	10	10	10	10	10	10	
	tool and e +	3	3	3	3	3	3	3	3	3	3	
	work area (minimum 15 sq m)	5	5	5	5	5	5	5	5	5	5	
	record keeping system	1	0	0	0	1	1	1	1	1	1	
	customer reception and waiting area	1	0	0	0	1	1	1	1	1	1	
E. YEARS IN BUSINESS												
	max	5	1	2	3	4	5					
	year											
	equivalent no. of months											
	1 yr	0-12	1	1								
	2yr	13-24	2		2							
	3 yr	25-36	3			3						
	4yr	37-48	4				4					
	5yr	49-above	5					5			5	
	max	100										

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