



## **Heating and Air Conditioning Installer-Servicer DOT # 637.261-014**

The following is a brief synopsis of what an apprentice should learn in the ACCA/CF three year apprenticeship program.

By the end of the first year the apprentice should have a basic knowledge of Air Conditioning fundamentals, such as, superheat and subcooling, matter and energy and basic electricity, blueprint reading, tools and their uses, system components and how they relate to each other in the refrigeration system, basic piping soldering and brazing techniques, refrigerant recovery, basic psychrometrics, codes as they apply to the trade, customer relations, a safety and first aid certification, some apprenticeship history, and basic math as it relates to our trade.

Much emphasis will be put on the refrigeration cycle, pressure-temperature relationships and superheat and subcooling. The apprentice should also be exposed to as many mechanical side issues on the job as the employer can allow.

Refrigerant gages, a dual lead electronic thermometer, a multimeter and an ammeter should be obtained by the apprentice by the end of the first year.

An EPA 608 refrigerant recovery exam will be given during the school year for those apprentices who do not already have this certification. This exam will be given as an extracurricular class because many apprentices already have the certification. This certification must be obtained before the apprentice enters the third year class.

By the end of the second year of the program the apprentice should have obtained a better knowledge of superheat and subcooling as they relate to air flow, refrigerant charge, restrictions in the refrigerant circuit, non condensables, valve problems and load issues among other problems. A special emphasis will be put on these concepts because they are so misunderstood in our trade.

This year will build on the fundamentals that were learned in the first year. The apprentice will learn about ventilation and filtration, registers, grills and diffusers. Apprentices will be exposed to load calculations, psychometrics again, and duct design. Electrical installations and control circuitry will be learned in more depth. Apprentices will be exposed to heat pumps, oil and gas heating systems and electric heat. Interpersonal relations within the work environment will be discussed also.

During the third year the apprentices will delve into electrical installations and troubleshooting in detail. Apprentices will gain knowledge about motors and motor controls, electric control valves, control devices and control circuits and diagrams. They will learn proper start-up and check out procedures. They will also learn more about refrigeration specialties like driers, sight glasses, receivers, relief valves, vibration absorbers and others. Much emphasis again will be put on superheat and subcooling as it is related to troubleshooting the mechanical side of the system. We will discuss leadership training in this year because we hope that these graduates will be the trainers for the apprentices who will follow them.

Near the end of the third year all graduating apprentices will be required to take an ARI/GAMMA certification test. The cost is minimal and it will allow us to evaluate the quality of our training, as well as give the apprentices a valuable certification of which they can be proud.

Third year graduates will also have the opportunity to take the NATE test if they elect to do so. NATE suggests that technicians have a minimum of two years of service experience for them to be successful on this test.

Apprenticeship is absolutely the very best way to learn our trade. The more on-the-job "hands-on" experience an apprentice gets; the more he/she learns in the classroom. Use the program the way it was designed and the rewards will be great for both the apprentice and the employer.