

## NO RTEC JOB SPECIFIC SKILLS COMPETENCY

HEATING, AIR CONDITIONING and REFRIGERATION TECHNICIAN  
DOT CODE: 637.261-014 / - 026 SVP 8

### CORE SKILL COMPETENCIES/INDICATORS:

1. Can pass Environmental Protection Agency certification exam(s).

*Note: This item is a mandatory indicator for trainees who will purchase or work with refrigerants, and requires achievement documentation, not just rating (Pre-test deficiency = No; Post-test proficiency = Yes)*

2. Can identify major mechanical, electrical, and electronic components of heating, air-conditioning, and refrigeration systems, including motors, compressors, pumps, fans, ducts, pipes, thermostats, and switches. (S, T)
3. Can demonstrate an understanding of the various heat-transfer technologies, including oil, gas, electric, solid-fuel and multi-fuel heating systems. (S, T)
4. Can demonstrate knowledge of refrigeration cycles, both domestic and commercial, including charging, troubleshooting, repairing coolers and reach-ins, and refrigeration recovery. (S, T)
5. Can demonstrate ability to diagnose refrigeration problems utilizing knowledge of system theory. (S, T)
6. Can demonstrate knowledge of air conditioning system evacuation, compressor change outs, and motor change outs. (R, IN, S, T)
7. Can demonstrate knowledge of electrical components relative to refrigeration, air conditioning, and heating, including wiring diagrams and all component operations. (S)
8. Can demonstrate ability to trouble shoot and/or repair compressors (refrigeration and air conditioning), including electrical functioning. (R, IN, S, T)
9. Can demonstrate proper techniques used to install and/or repair a condenser and an evaporator. (R, IN, S, T)
10. Can demonstrate proper techniques used to install and/or repair defrost timers including electrical functioning. (R, IN, S, T)
11. Can demonstrate proper techniques used to install and/or repair TXV valves, gas valves, and pilot valves. (R, IN, S, T)
12. Can demonstrate proper techniques used to install and/or repair capillary tubes. (R, IN, S, T)
13. Can demonstrate proper techniques involved in using and/or repairing hot gas defrosters. (R, IN, S, T)
14. Can demonstrate proper techniques involved in using and/or repairing receivers. (R, IN, S, T)
15. Can demonstrate proper techniques involved in using and/or repairing pump down systems. (R, IN, S, T)
16. Can demonstrate proper techniques used to install and/or repair ignition modules. (R, IN, S, T)
17. Can demonstrate proper techniques used to install and/or repair sequencers. (R, IN, S, T)
18. Can demonstrate knowledge of time delay relays for heating systems. (R, IN, S, T)
19. Can demonstrate proper techniques used to install and/or repair draft and fan motors. (R, IN, S, T)
20. Can demonstrate proper techniques used to install and/or repair a fusible link. (R, T, S, IN)
21. Can demonstrate proper techniques used to install, and/or repair a sizing control transformer. (R, T, S, IN)
22. Can demonstrate proper techniques used to install and/or repair a thermostat. (R, IN, S, T)
23. Can demonstrate proper techniques used to install and/or repair a transformer, including a buck and boost transformer. (R, IN, S, T)
24. Can demonstrate proper use of both single and 3-phase power sources. (R, IN, S, T)

25. **Can identify and appropriately use refrigerants: R-12, R-22, 409A, 408A, and Fx-56. (R, T)**
26. **Can demonstrate proper techniques used to fabricate, assemble and install ductwork and chassis parts. (R, IN, S, T)**
27. **Can demonstrate proper techniques used to install and/or repair electrical switches (high & low), fan switches, pressure switches, electric heat switches, and oil failure switches. (R, IN, S, T)**
28. **Can demonstrate proper procedure for calculating required capacities for equipment units of a proposed system, and for submitting data to engineering personnel for approval. (R, IN, S, T)**
29. **Can demonstrate understanding of supplier catalogs and technical data to recommend equipment unit selections for a proposed system. (R, IN, S, T)**
30. **Can demonstrate ability to prepare unit design layouts and detail drawings for fabricating parts and assembling a system. (IN, S)**
31. **Can demonstrate proper procedure for estimating cost factors, such as labor and material for purchased and fabricated parts, and costs for assembling, testing and installing in customer's premises. (R, IN, S)**
32. **Can demonstrate proper procedure for installing test fixtures, apparatus, and controls for the purpose of conducting operational tests under specified conditions; can analyze test data, and prepare reports for engineering personnel, as required. (R, IN, S, T)**
33. **Can demonstrate proper procedure for installing new system in customer premises. (R, IN, S, T)**
34. **Can demonstrate proper procedure for testing operational performance of new and existing systems for compliance with contract specifications and applicable codes. (R, IN, S, T)**
35. **Can demonstrate familiarity with industry-specific tools and equipment, including basic and specialized hand tools (e.g. hammers, wrenches, metal snips, electrician hand tools), metalworking tools/equipment, cutting and bending tools/equipment, basic welding equipment, machine-threading and hand-threading equipment, and electrician test equipment. (R, T)**
36. **Can demonstrate familiarity with voltmeters, thermometers, pressure gauges, manometers and other industry-specific testing devices. (R, T)**
37. **Can demonstrate ability to read and interpret blueprints, design specifications and manufacturer's instructions. (IN, S)**
38. **Can demonstrate ability to perform arithmetic operations quickly and accurately. (IN, S)**
39. **Can demonstrate ability to work with precision as regards the attainment of set limits, tolerances, or standards. (R, S, T)**
40. **Can demonstrate ability to work under stress to meet schedule deadlines, or when confronted with emergency situations. (R, I)**
41. **Can demonstrate ability to serve customers and maintain courteous relationships with customers in person and by telephone. (I)**