



2022 HVAC Competition

FACT SHEET

Project Manager

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For questions related specifically to the HVAC competition, contact Mitch Clark at mclark@comfortsystemsusa.com. For all event questions, contact Jarrell Jackson, National Craft Championships Director, (202) 595-1789 or jackson@abc.org.

Specific Competition Eligibility

The HVAC competition has no competition-specific eligibility requirements. Please refer to overall eligibility requirements listed in the guidebook.

Online Exam

Important news for 2022 - The online exam must be completed before competitors arrive on site. Exceptions will be made for extreme circumstances with prior approval of the NCC Director via email. If an exception is granted, the makeup exam will take place Tuesday, March 15, 8:30-11 a.m., and be proctored on site by NCCER. Only those competitors with prior approval from the NCC Director will be allowed to take the test on site. All competitors must sit for the online exam or face disqualification from the NCC. The online exam continues to make up 25% of one's overall competition score.

Competitors will complete the online exam at a local NCCER Accredited Training Sponsor or Assessment Center. It is the responsibility of the sponsor organization to schedule test sessions directly with NCCER by emailing a request to: NCCTest@nccer.org, with the subject line Schedule NCC Test.

NCCER will contact the sponsoring organization to provide access to the online test in NCCER's Testing System. Information on accessing the testing system will be provided, including requirements for the testing proctor.

All exams/tests are based on the standardized craft training process. In addition to the knowledge and skills required for each competition, all competitors should have completed the NCCER Core Curriculum modules. A nonprogrammable calculator is permissible as part of the online exam, but no reference materials are permitted.

Practical Performance Test Description

The practical performance test involves the reading and interpretation of blueprints, recovery, evacuation, leak test and recharge refrigerant of air conditioning equipment. Competitors must perform soldering and brazing techniques on a specific application; wire high- and low-voltage power supplies, the assembly and installation of some sheet metal plenums attaching to a package rooftop system; and perform electrical troubleshooting techniques. All competitors should possess basic blueprint reading skills, air conditioning and heating systems experience, including startup and commissioning of air conditioning systems, as well as knowledge of programmable thermostats.

Knowledge and Skills Required

The knowledge and skills for this competition are based on all levels of the HVAC curriculum, with particular emphasis on the following modules:

- Introduction to HVAC
- Tools of the Trade
- Copper and Plastic Piping Practices
- Soldering and Brazing
- Basic Electricity
- Introduction to Cooling
- Introduction to Heating
- Introduction to Control Circuit
- Troubleshooting
- Accessories and Optional Equipment
- Leak Detection, Evacuation, Recovery, and Charging
- Troubleshooting Electric Heating
- Troubleshooting Cooling
- Troubleshooting Accessories
- Troubleshooting Electronic Controls
- System Startup and Shutdown

Tools Required

Each competitor must bring the tools listed below to the competition. Tools may be examined prior to the practical performance test below. If a tool, necessary to complete the practical performance test is not listed, the National Craft Championships Committee will provide it:

- Tubing cutter and tubing reamer
- Swedging tool (1/2-inch)
- Level
- Manifold gauge set (410A refrigerant)
- Digital thermometer
- Needle-nose pliers
- Channel-lock pliers
- Screwdrivers (slotted and Phillips)
- Nut runners (1/4- to 5/16-inch)
- Tape measure
- Voltmeter
- Ohmmeter
- Black electrical tape
- Small spray water bottle
- Striker
- Micron vacuum gauge with additional hoses if needed
- Allen wrenches
- Small pocket screwdriver (straight tip)

Tools and equipment supplied by NCC onsite:

- Turbo torch kit
 - Ear plugs at competitors' discretion
 - Utilize gloves while in use
- Vacuum pump
- Flaring tool
- Recovery machine with bottle
 - Utilize gloves while handling refrigerant
- Refrigerant scales
- Utility knife
 - Utilize gloves while in use
- Cordless drill gun with assorted bits
- Hammer
- Adjustable wrenches
- Sheet metal seamers
- Wire strippers

Sample Score Sheet

The following sample score sheet is provided to give competitors an example of the criteria that may be included in the practical performance test. **However, this score sheet is only a sample and not intended to act as a study guide in preparation or to imply specific criteria that will be judged during the actual practical performance test.**

ABC National Craft Championships HVAC Sample Score Sheet

Judging Criteria	Competitor Identification Numbers				
	Maximum Points				
Soldering and brazing					
Layout of work					
Leak check					
System components					
Diagram accuracy					
Troubleshooting					
System recovery, evacuation, and recharge					
Sequence of work					
Care and use of tools					
General – ability to follow directions, quality of workmanship, neatness, best use of time and completion					
Project disassembly					
SUBTOTAL:	160				
Safety – housekeeping					
Use of hard hat					
Use of safety glasses					
Use of power tools					
Proper footwear					
SUBTOTAL:	40				
GRAND TOTAL:	200				
Tie Breaker #1					
Tie Breaker #2					
Tie Breaker #3					
Tie Breaker #4					