



2023 HVAC Competition

FACT SHEET

Project Manager

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Specific Competition Eligibility

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

Online Exam

The online exam must be completed before competitors arrive on site, at a local NCCER Accredited Training Sponsor or Assessment Center. Accommodations will be made for extreme circumstances with prior approval of the NCC director. 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. It is the responsibility of the sponsor organization to schedule test sessions directly with NCCER. Test registration and guidelines will be available in January 2023.

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 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, and perform some pipe threading exercises.

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
- Pipe Threading Process

Tools Required

Each competitor must bring the tools listed below to the competition. Tools may be examined prior to the practical performance test below.

- Digital thermometer
- Swedging tool (3/8-inch)
- Striker
- Manifold gauge set (410A refrigerant)
- Micron vacuum gauge with additional
- Voltmeter
- Ohmmeter
- Black electrical tape
- Small spray water bottle

Tools and equipment supplied by NCC onsite:

- Turbo torch kit
 - Ear plugs at competitors' discretion
- Vacuum pump
- Flaring tool
- Recovery machine with a bottle
- Refrigerant scales
- Threading machine
- Pipe vise
- Pipe cutter
- Cordless drill gun with assorted bits
- Tubing cutter and tubing reamer
- Needle-nose pliers
- Level
- Channellock pliers
- Screwdrivers (Phillips and Straight)
- Nut runners (1/4-5/16-inch)
- Tape measure
- Allen wrenches
- Adjustable wrenches
- Wire strippers
- Utility knife

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.**

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**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					

SAMPLE