



# 2019 HVAC Competition

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## FACT SHEET

National Craft  
Championships

### Project Manager

#### Mitch Clark, Comfort Systems USA

For questions related specifically to the HVAC competition, contact Mitch Clark, 2018 HVAC project manager, (602) 558-1618 or [mclark@comfortsystemsusa.com](mailto:mclark@comfortsystemsusa.com). For all event questions, contact Lisa Nardone, National Craft Championships director, (202) 595-1789 or [nardone@abc.org](mailto:nardone@abc.org).

### Specific Competition Eligibility

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

### Written Exam

Every competitor should have a thorough understanding of the craft in which he/she is registered. 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 Contren® Learning Series Core Curriculum modules. Reference materials and calculators are not permitted in the written exam.

### 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 NCCER Contren® Learning Series 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
  - Utilize gloves while in use
  - Ear plugs at competitors' discretion
- 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

LENOX AND IRWIN TOOLS

- 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						
<b>SUBTOTAL:</b>	<b>160</b>					
Safety – housekeeping						
Use of hard hat						
Use of safety glasses						
Use of power tools						
Proper footwear						
<b>SUBTOTAL:</b>	<b>40</b>					
<b>GRAND TOTAL:</b>	<b>200</b>					
Tie Breaker #1						
Tie Breaker #2						
Tie Breaker #3						
Tie Breaker #4						