

2022

NATIONAL
CRAFT
CHAMPIONSHIPS

PRESENTED BY



2022 Instrumentation Fitting Competition FACT SHEET

Project Manager

Mike Raven, Cianbro Institute

For questions related specifically to the instrumentation fitting competition, contact Mike Raven at mraven@cianbro.com. For all event questions, contact Jarrell Jackson, National Craft Championships Director, (202) 595-1789 or jackson@abc.org. **Note: This competition is limited to four competitors.**

Specific Competition Eligibility

The Instrumentation Fitter competition has no competition-specific eligibility requirements. Please refer to overall eligibility requirements listed on page 3 of 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 will be provided as part of the online exam, but no reference materials are permitted.

Practical Performance Test Description

Each competitor will perform three tasks utilizing knowledge and skills applicable to mounting instruments, bending and installing tubing, and installing tubing supports; terminating electrical instrumentation; and checking out and starting up of a system.

Instrumentation Fitting Task: Tubing

Each competitor will be issued a set of instructions and specifications, a P&ID of the system, an electrical ladder logic diagram, and the schematic of a de-energized solenoid valve.

Working on a plywood wall, 7 feet by 6 feet, which has piping, tanks, conduit, float switches, wiring, unistrut hangers and valves previously attached, each competitor will mount three instruments according to the instructions and specifications. They will then install the appropriate size tubing and hangers according to the instructions and specification sheets, the

schematic of the solenoid, the electrical ladder logic diagram, and the P&ID.

Instrumentation Fitting Task: Electrical Termination

Each competitor will be issued a written set of instructions, specifications, and a termination diagram for termination at the float switch, solenoid valve and relay/termination junction box.

Working on the same plywood wall, the competitor will properly terminate and label all wiring according to the instructions and termination diagram. The project manager will install all wiring in the conduit prior to the test. The competitor will install all covers, and the system will be ready for check out and start up.

Instrumentation Fitting Task: Check Out and Start Up

Upon completion of the above tasks, each competitor will notify the project manager that they are ready for check out and start up. They will be instructed by the project manager to follow the written instructions provided in their package after the electrical judge has completed his/her inspection. The instrumentation judges will then perform their inspection. Upon completion of the instrumentation inspection, each competitor will be instructed to start the system for a function test. Once their part of the system has passed the function test, they will have completed the practical performance test.

Knowledge and Skills Required

The knowledge and skills for this competition are based on all levels of the NCCER Instrumentation Fitting curriculum. It is strongly recommended that competitors have a working knowledge equivalent to a third-year apprentice.

Tools Required

Each competitor should bring only the tools listed below to the competition. Tools will be inspected prior to the practical performance test. Points shall be deducted from the competitor's score for not having the required tools. Any additional tools will not be allowed in the competition area. Points will also be deducted from the competitor's score for any tools that are used by the competitor that are not called out in the specific task instructions. If a tool, necessary to complete the practical performance test, is not listed, the National Craft Championships Committee will provide it.

- ½" Tubing bender
- 3/8" Tubing bender
- ¼" Tubing bender
- ¼" to at least 15/16" combination
- Speed square or 2' square
- Assorted straight and Phillips screw
- Non-programmable scientific calculator
- One 8, 10, or 12" adjustable wrench
- Pencil and paper
- Terminating screw drivers
- Tubing cutter and reamer Torpedo
- Level
- Tape measure
- Non-prescription eyewear may only be worn under safety goggles.
- Wire strippers and crimping tool to be supplied by the project manager.
- Contestants may use their own gloves, provided the project manager deems them safe to use.

The following is specifically **NOT PERMITTED**:

- Any instrumentation fitting reference materials

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 Instrumentation Fitting Sample Score Sheet

	Competitor Identification Numbers				
	Maximum Points				
Workmanship:					
Plan work					
Neatness					
Bending accuracy					
Wiring technique					
Instrument mounting					
Effective use of material					
Clean-up after work					
Layout:					
Following instructions					
Ease of maintenance					
Interferences					
Supports					
Checkout/Startup:					
Pneumatic –					
Proper tube orientation					
Correct flow					
Leaks					
Gap inspection					
Checkout/Startup:					
Electrical –					
Wired correctly					
Labeled correctly					
Termination quality					
SUBTOTAL:	160				
Safety:					
Lock out/Tag out					
Hardhat					
Safety glasses					
Work shoes					
Gloves					
Proper tool use					
Housekeeping					
Hazard to others					
SUBTOTAL:	40				
GRAND TOTAL:	200				