

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, at a local NCCER Accredited Training Sponsor or Assessment Center. Exceptions 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. To schedule a test or view additional guidelines, please view the info page [here](#).

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**

Continued on the next page

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						
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					