

WELDING FABRICATION DEMONSTRATION

Purpose

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of welding fabrication.

First, refer to General Regulations, Page 9.

CLOTHING REQUIREMENT

Official SkillsUSA khaki work shirt and pants, black or brown leather work shoes, and safety glasses with side shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.) To purchase official work clothes, contact Midwest Trophy Manufacturing Co. Inc. by calling 1-800-324-5996 or order online at www.mtmrecognition.com/skillsusa/.

Note: Contestants must wear their official contest clothing to the contest orientation meeting.

ELIGIBILITY

Open to active SkillsUSA members enrolled in programs with welding as the occupational objective. This is a team event. Each team will be comprised of three student members from the same school and training program.

Equipment and Materials

1. Supplied by the technical committee:

- a. All necessary welding equipment and materials
- b. All instructions and procedure sheets with drawings

2. Supplied by contestant:

- a. Hearing and/or ear protection
- b. Welding helmet with appropriate filter plate/lens and protective cover plate/lens in a flip or slide front. Auto darkening shields are permissible
- c. Spare spatter and filter lenses/plates for arc welding helmet and oxyacetylene goggles

- d. Pocket calculator
- e. Lead pencil and/or ballpoint pen
- f. Soap stone with holder
- g. Scribe with magnet
- h. Combination square set
- i. 10-foot (3.1 meters) steel tape measure
- j. Fillet weld gauge
- k. 16-ounce (.45 kilogram) ball peen hammer
- l. Center punch
- m. 10-inch (254 millimeters) vise grips
- n. 6-inch (152 millimeters) side cutting pliers or diagonal cutting pliers
- o. 6-inch (152 millimeters) needle nose pliers
- p. Chipping hammer with or without wire brush
- q. Stainless steel wire brush
- r. Electric angle grinder
- s. Flint striker
- t. Framing square
- u. Torpedo level
- v. One-page, typewritten résumé

Specific Rules for Contest Participants

1. Contestants must correctly use the equipment/tools during the contest. The technical committee may stop a contestant at any section of the contest if they deem a contestant's actions to be hazardous to either themselves or others. Such stoppage shall disqualify the team for that section of the contest. If the contestant is warned a second time, The team will be disqualified. While the contest is in progress, there shall be no communication between the contestants or between the contestants and anyone else except as directed by the judge or contest chairperson.
2. All terms and definitions and welding symbols will be in accordance with the current addition of ANSI/AWS A3.0 (Terms & Definitions) and ASNU/A2.4.
3. Time limits will be establishing on the contest procedures sheets for all segments of the test.

4. Evaluation of the completed project will be judged visually. Nondestructive and/or destructive tests may be used to complete the project evaluation.
5. Welding and cutting operation instructions will be specified in drawing and procedure sheets provided to the contestants.

Scope of the Contest

- Contestants will demonstrate their ability to perform a job and skills selected which demonstrates a mastery of SMAW, oxy-fuel cutting, use of measuring tools, and understanding of the structural fitting and welding process.
- Contestants will be tested on requisition of material, ability to work from drawings, layout procedures, cutting and fitting, finish and quality control, safety and teamwork.

Contestants must be able to demonstrate the following competencies as identified by the national technical committee

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a. Safety

- i. Demonstrate personal safety.
- ii. Demonstrate general shop safety.
- iii. Demonstrate gas, electrical and chemical safety.
- iv. Demonstrate knowledge of proper actions to be taken in an emergency.

b. Measurements

- i. Identify basic metal working tools used in measuring.
- ii. Use visual measuring tools to accuracy of 1/32 of an inch.
- iii. Employ the components of a combination square set.
- iv. Use layout and marking tools are required.

c. Blueprint Reading

- i. Use information found in the block of the drawing.

- ii. Read and understand three-dimensional drawings.
- iii. Identify the basic views used in blueprints including assembly detail and fit-up drawings.
- iv. Identify commands types of the lines, abbreviations and symbols in accordance with national drawing standards ANSI.
- v. Identify basic welding symbols and components of a symbol (such as arrow, reference line, size or length) in accordance with the national welding symbol standard AWS.

d. Shielding Metal Arc Welding (SMAW)

- i. Demonstrate safety procedures for SMAW.
- ii. Demonstrate ability to correct set up SMAW power sources, related welding equipment and do basic process and equipment troubleshooting.
- iii. Correctly identify base metal prior to welding.
- iv. Set up and shut down equipment for welding of carbon steel.
- v. Select correct type of filter metal size of electrode based on carbon steel (1/4 inch to 1/2 inch thickness).
- vi. Prepare carbon steel for welding.
- vii. Start, stop and restart stringer beads on carbon steel in the flat, horizontal, vertical up and down and overhead positions.

e. Gas Metal Arc Welding (GMAW)

- i. Demonstrate safety procedures for GMAW.
- ii. Demonstrate ability to correct set up GMAW power sources, related welding equipment and do basic process and equipment troubleshooting.
- iii. Correctly identify base metal prior to welding.
- iv. Set up and shut down equipment for welding of carbon steel.

- v. Select correct type of filler metal size of electrode based on carbon steel (1/4 inch to 3/8 inch thickness).
- vi. Prepare carbon steel, stainless steel and/or aluminum for welding.
- vii. Start, stop and restart stringer beads on carbon steel in the flat, horizontal, vertical up and down and overhead positions.
- viii. Weld a lap joint with a multiple pass, fillet weld on carbon steel.

Welding Fabrication Contest Score Sheet

Items Evaluated	Possible Points	Contest Number							
Teamwork	100								
Safety	100								
Requesting materials	50								
Setup	50								
Layout	50								
SMAW	100								
GMAW	100								
Oxy Fuel Torch Operation & Cutting and Fitting	100								
Completed Weldment	100								
Finish and Quality Control	100								
Written test	100								
Oral Assessment	50								
Total Score	1000								