

**Montana SkillsUSA**  
**Welding, Arc**  
**(Secondary State Only)**

**PURPOSE:**

To promote trade excellence in a competitive situation and give prevocational welding students the opportunity to demonstrate competency in arc welding.

**CLOTHING REQUIREMENT:**

Clean coveralls and/or protective leathers, leather work boots, leather gloves and safety glasses.

**ELIGIBILITY:**

This contest is intended for students who have progressed beyond the point of eligibility for the BASIC WELDING contest, but have not developed competency in the specialized processes covered in the COMBINATION WELDING contest. This is a state level - no national competition exists solely for arc welding. Students who have had instruction in SMAW (ARC) GMAW (MIG) and GTAW (TIG) should enter COMBINATION WELDING to experience vocationally oriented competition that leads to a national contest.

**OBSERVER RULES:**

Depending on the particular contest site arrangement used each year, observers may not be allowed in the contest area because of space and safety limitations. In the event observers are allowed, these rules apply:

- A roped or marked area shall be designated for observers;
- No observer, including SkillsUSA advisors, shall be outside this area;
- Observers shall not talk or gesture to contestants;
- Judges shall penalize contestants if they accept assistance from observers.

(Observers should be warned before penalty occurs.) Observers are not allowed in the assembly area.

**EQUIPMENT AND MATERIALS:**

1. Supplied by the contest committee:
  - a. All necessary welding equipment unless otherwise notified.
  - b. Instructions and technique sheets.
  - c. All necessary information and furnishings for judges.
2. Supplied by the contestant:
  - a. Welding Helmet (Quick-change hood is acceptable)
  - b. Welding Gloves
  - c. Safety Clothing (Leather jacket, sleeves, chaps recommended) (100% cotton coveralls are acceptable)
  - d. Leather Work Boots

- e. Welding/Cutting Goggles
- f. Safety Glasses (**mandatory**) (**if safety approved prescription glasses are used, they must have side shields or safety glasses/goggles to fit over prescription glasses**)
- g. Chipping Hammer
- h. Pliers
- i. Tape Measure
- j. Combination Square
- k. Soap Stone
- l. Wire Brush (stainless steel for best results)
- m. Ear plugs
- n. Metal stock prepared according to specifications issued in advance of the contest. (Each piece of metal stock must have the contestant's identification number stamped on one face.) **Failure to follow these instructions will put the contestant at an extreme disadvantage since no substitute pieces of stock will be furnished.**

## **RULES**

1. Contestants will be assigned numbers generated through the state SkillsUSA registration software in advance of the Montana SkillsUSA Leadership Conference. These numbers will be the only means of identifying contestants throughout the contest. **FOR SAFETY REASONS, PLEASE HAVE STUDENTS PLACE THEIR IDENTIFYING NUMBER ON THEIR BACK.**
2. Contestants must be on time for the orientation and the contests. Check the conference schedule for orientation and contest times.
3. Contestants will be given blue prints or job sheets explaining the tasks to be performed.
4. Contestants will have to make all equipment adjustments.
5. Ten minutes will be allowed for familiarization with welding equipment.
6. Welding evaluation procedure will include visual inspection, break testing, and guided bend testing.
7. All rules of safety must be observed at all times. At the contest committee's option, a written examination covering safety and proper procedures may be included as part of the contest.
8. Welding machines will not be at proper settings and must be adjusted by the contestant.
9. Contestants will be assigned welding stations.
10. Types of welds to be assigned include, but are not limited to:
  - a. Fillet welds – all positions
  - b. Vertical welds (break tested)
  - c. Butt welds – all positions
  - d. Flat butt weld – (guided bend tested)

11. The contestant will be able to choose 1/8" electrodes in the following classifications:
  - a. E6011
  - b. E6013
  - c. E7018
  - d. E7024

### **SAFETY**

1. Demonstrate personal safety
2. Demonstrate general shop safety
3. Set safe parameters for all welding processes used

### 12. **STANDARDS OF ACCEPTABILITY:**

- a. **Contour** – the exposed face of the weld should be reasonably smooth and regular. There should be no overlapping or undercutting. The weld should conform to the required cross section for the size of weld specified in the instructions.
- b. **Extend of Fusion** – There should be complete fusion between the weld and base weld and full penetration to the root of the weld.
- c. **Soundness** – The weld should contain no oxide particle or slag inclusion.
- d. **Technique** – will be observed by judges. A penalty may be assessed for infractions in the areas of general safety, set up and alignment, lighting, and turning off torches, electrode angle, arc length, travel speed, machine settings, and other procedures and equipment usage.

### **JUDGING CRITERIA:**

Contestants will be evaluated on selected competencies based on the following criteria.

<b><u>ITEMS EVALUATED</u></b>	<b><u>POSSIBLE POINTS</u> (to be determined by the project, the contest chairs and the judges)</b>
Location & position of materials	
Selection of filler rods & wire	
Selection of electrical & gas pressure	
Contestant Performance Ability, Manual Skill, Speed and Accuracy	
Safety	
Bend Test	
General Bead Appearance and Dimensions	
Penetration	
<b>TOTAL</b>	
Clothing Penalty	