CAED Support Shops

**MIG welder**

**Prep all tools and materials BEFORE you begin:**

-Safety equipment including hoods, gloves and jackets

-Mild Steel 1/8”-1/4” thick cut approx.. 2”x4”

-It is important to remember that some students will be intimidated by the sights and sounds of electric welding.

Remember to stay positive and encouraging!

**•Review dress code/Personal protection**

-Remind students that long hair must be tied back, loose clothing and/or jewelry must be removed

-Non-synthetic long sleeves and pants required: Cotton, Wool, Leather

-Welding hood must be worn at ALL times while welding or observing

-Leather gloves must be worn

**•Briefly discuss Hazards** (No Horror Stories)

-User condition can be hazard ie; lack of sleep, in a hurry

-Burns

-Eye injury/Flash-burn

-Flammable materials including rags

-Painted or Galvanized material is NOT allowed

•**What is Welding?**

-Discuss definition of welding.

weld1

*verb*   
1.join together (metal pieces or parts) by heating the surfaces to the point of melting using a blowtorch, electric arc, or other means, and uniting them by pressing or hammering

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-Define Parent Material and Filler Material

-Briefly discuss definition of M.I.G. “**M**etal **I**nert **G**as”

-Briefly describe the unique process pointing out:

-Wire feed and shielding gas

-Electrode/Heat source is also filler material

-Ground Clamp

**With Machine OFF**

**•Demonstrate Machine Setup**

-Open Side Cover

-Point out wire and describe the material and size

-Walk students through how to read the chart for machine setup

-Ask questions making sure students understand:

-What material they are welding (mild steel)

-What material the wire/filler material is (mild steel)

-What shielding gas is being used (Argon/CO2)

•**Discuss and Demonstrate importance of:**

-Body and Hand Position

-Stick Out should be 3/8 inch

-*Excess wire should be cut with pliers NEVER on side of table or workpiece*

-Torch Angle and Height

-Approx. 15 degrees

-3/8” distance (see “stick out”)

-Warn those around you by loudly announcing “welding” before initiating arc.

**Making Welds**

**•Demonstrate running a Horizontal bead**

-Remind students to \*\*\*Stay In The Puddle\*\*\*

-Make sure students are close enough to see…this will be a challenge

-All the action is happening in approx. ¼ square inch

-Briefly Review/Demonstrate

-Body Position

-Using non-dominate hand as a guide/anchor

-Stick-Out/Torch Height

-Run a simple horizontal bead

-Review weld appearance

-Show 3/8” stick out after weld

-If the entire group did not see, have them adjust and run another bead.

**•Students make Horizontal Weld**

-If possible, have student sit on stool

-Help each student:

-Get comfortable

-Establish correct torch angle and height

-Make sure non-dominant hand is in contact with table and torch

-Help/physically manipulate torch with them holding it to establish correct angle etc. if necessary

-When they are ready remind them to audibly say “welding”

-Physically hold torch handle with them during first attempt(s)

-Correct torch angle/speed/height as necessary

-Carefully watch as they run bead by themselves and give POSITIVE constructive feedback.

-Repeat until all students in group have welded

**•Demonstrate Fillet Weld**

-Demonstrate how to tack weld parts together

-Demonstrate Horizontal Fillet Weld

-Emphasize torch angle and “Crescent” pattern/motion

-Demonstrate Vertical Fillet on opposite side

-Emphasize torch angle and “stop and go” pattern/motion

**•Students Make Horizontal and Vertical Fillet Welds**

**•Remind students to clean-up after themselves.**

Show them where the brooms, vacuum, etc. are located and what our expectations for clean-up are.

**REMEMBER-We are here to help. If you have any questions ask!**

**Tips For Techs**

The TWO most common beginner mistakes:

-Moving too fast

-Torch too far away from weld puddle/backing up while welding

**Other Problems and Causes:**

**-**Frothy/Lava-like welds

-No shielding gas

-Popping and Spitting

-Incorrect machine setup

-Thin/Narrow beads

-Incorrect machine setup (too cold) or moving too fast

-Tall, rounded beads

-Incorrect machine setup

-moving too fast

-Bead on only one side of weld

-Incorrect torch angle or aim

