

BEGINNING ARC WELDING

8.1. Vocabulary

Ex. 1. Match the words with their definitions.

1. tapping	a. the process of gently striking a welded joint with a hammer to test its soundness.
2. to conduct electricity	b. a welding electrode that has become stuck or fused to the workpiece during welding.
3. amperage	c. heated to a temperature at which it glows red due to high heat.
4. red hot	d. the working end of a welding rod or electrode where the arc is formed.
5. rod tip	e. an electrical circuit that allows current to flow directly from one point to another without passing through the intended load.
6. short circuit	f. the strength of an electric current measured in amperes.
7. shielding gas	g. the ability of a material to allow the flow of electric current.
8. flux covering	h. a metal added during welding to fill gaps and provide additional material for the joint.
9. stuck rod	i. a gas used in welding to protect the molten metal from contamination by the surrounding air.
10. filler metal	j. a layer of material applied to the surface of a weld to prevent oxidation and improve the quality of the weld.



Ex. 2. Complete the sentences with the given words:

Tapping, amperage, conduct, red hot, Shielding gas, flux covering, short circuit, filler, rod tip, stuck rod

The _____(1) helps protect the weld pool during the arc welding process.

A _____(2) can disrupt the arc welding process if not properly controlled.

Proper selection of _____(3) metal is essential for achieving quality welds in arc welding.

Adjusting the _____(4) is crucial to maintain the right heat input during arc welding.

Always maintain a consistent distance between the _____(5) and the base material during arc welding.

Certain types of electrodes _____(6) electricity more efficiently in the arc welding process.

A _____(7) can cause defects in the weld bead and should be avoided during arc welding.

_____ (8) the electrode gently after the arc has been broken helps remove excess slag.

_____ (9) is used to protect the molten metal from atmospheric contamination during arc welding.

The metal should be heated until it is _____(10) before attempting arc welding for optimal results.

8.2. Reading

Ex. 1. Read the text.

Mistakes to avoid in Arc Welding

Arc welding is a complex process that requires skill and precision. While it can be a highly effective method for joining metals, there are several common mistakes that beginners should avoid to ensure successful welds.

One of the most important things to remember when arc welding is to maintain the correct angle between the electrode and the workpiece. If the angle is too steep, the electrode will dig into the metal and create a deep crater. On the other hand, if the angle is too shallow, the weld bead will be wide and flat, making it difficult to achieve good penetration. The ideal angle is around 15 degrees from vertical, but this may vary depending on the type of joint being welded.

Another common mistake is moving the electrode too quickly or too slowly along the joint. If the electrode is moved too quickly, the weld bead will be thin and weak, while moving it too slowly can result in excessive heat buildup and distortion of the workpiece. It's important to maintain a steady, consistent pace to ensure even fusion of the metals.

Controlling the size and shape of the weld bead is also crucial in arc welding. Beginners often make the mistake of creating a bead that is too large, which can lead to overwelding and an increased risk of defects such as porosity. To avoid this, it's important to use the correct current setting and adjust the travel speed accordingly. Additionally, maintaining a short arc length – the distance between the electrode and the workpiece – can help prevent excessive heat input and produce a more controlled weld bead.

Finally, it's important to pay attention to safety precautions when arc welding. Welding produces intense heat, bright light, and harmful fumes, so it's essential to wear appropriate protective gear such as welding helmets, gloves, and clothing. Adequate ventilation is also necessary to remove fumes and gases from the work area.

By avoiding these common mistakes and practicing proper technique, beginners can improve their arc welding skills and produce high-quality welds. It's important to remember that welding is a skill that takes time and practice to master, so don't be discouraged if your first few attempts are less than perfect.

Ex. 2. Answer the questions.

1. What is the ideal angle between the electrode and the workpiece in arc welding?
2. How does moving the electrode too quickly or too slowly affect the weld bead?
3. Why is controlling the size and shape of the weld bead crucial in arc welding?
4. What are some safety precautions that should be taken when arc welding?
5. How can beginners avoid overwelding and defects such as porosity in arc welding?
6. Why is it important to maintain a steady, consistent pace while welding?
7. What advice would the author give to beginners who are just starting out with arc welding?

8.3. Communication

Ex. 1. Complete the dialogue with the given phrases.

working with such high temperatures / make a career out of it / welding business together / to do arc welding / learning arc welding once / It takes some patience / practicing in

Brian: Hey Alex, nice to see you breaking out the welding gear.

Alex: Yeah, I just learned how (1) ... in my metalworking class and I really like it.

Brian: Really? Isn't it hard? I tried (2) ... but it was too tricky for me.

Alex: Well, at first it's a little intimidating, (3) But once you get the hang of it, it's actually quite fun.

Brian: Hmm interesting, maybe I'll have to give it another try.

Alex: You should! (4) ... , but once you've got a good rhythm going, it's almost therapeutic.

Brian: Sounds like you enjoy welding. Do you think you could (5) ... ?

Alex: Definitely considering it. I've always loved making things out of metal, and being able to weld just adds another dimension to it.

Brian: Nice, well keep me updated on your plans. Maybe we can start our own (6) ... someday!

Alex: Haha, that would be cool. For now, I'm happy (7) ... my garage. Wanna give it a go?

Brian: Sure, let's see if I still have two hands when we're done.