# Department of Education
# SPTVE
# Shielded Metal Arc Welding (SMAW) 9
## Methods of Striking an Arc
## Quarter 2: Week 1 Module


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## EXPECTATIONS

At the end of the module, you should be able to:

1. identify the methods of striking an arc;
2. illustrate the methods of striking an arc; and
3. determine the method used in striking an arc.

## PRE-TEST

**Directions:** Read the questions carefully and choose the letter of the correct answer. Write your answer on a separate sheet of paper.

1. What will you do if the electrode welds to the plate?
   A. quickly snap the electrode to one side
   B. drag the electrode fast to finish the weld rapidly
   C. withdraw the electrode quickly to an arc length equal to its diameter
   D. switch off the welding machine and detached the electrode with cold chisel.
2. Which of the following is a safety precaution?
   A. set the welding machines to the any current setting
   B. remove your personal protective equipment when welding
   C. when the spark appears move quickly away from your work and drop the electrode
   D. position your body in such a way that your head will be cleared of the column of fumes arising from the arc
3. This method is where you point the electrode downwards at an angle of approximately 75º and the striking end to about 15 mm above the start position on the plate surface.
   A. tapping method C. universal method
   B. scratching method D. zigzag method
4. What will you do when the spark appears?
   A. quickly snap the electrode to one side
   B. drag the electrode fast to finish the weld rapidly
   C. withdraw the electrode quickly to an arc length equal to its diameter
   D. switch off the welding machine and detached the electrode with cold chisel.
5. What will you do if the electrode does not release?
   A. quickly snap the electrode to one side
   B. drag the electrode fast to finish the weld rapidly
   C. withdraw the electrode quickly to an arc length equal to its diameter
   D. switch off the welding machine and detached the electrode with cold chisel.
6. This method is done by scratching the electrode to the base metal.
   A. scratching method C. untapping method
   B. tapping method D. zigzag method

7. This method is done by moving the electrode downward until it just taps the base metal.
   A. scratching method  C. untapping method
   B. tapping method  D. zigzag method
8. The distance of an arc must be _____to the diameter of electrode regardless of the method you used in striking an arc.
   A. equal  C. lower
   B. higher  D. unequal
9. In scratching method, point the electrode downwards at an angle of approximately ____ and the striking end about _____ above the start position on the plate surface.
   A. 75º and 10 mm  C. 75º and 30 mm
   B. 75º and 15 mm  D. 75˚ and 40 mm
10. In tapping method, point the electrode downwards at an angle of approximately _____ and the striking end to about _____ above the start position on the plate surface.
   A. 75º and 10 mm  C. 75º and 30 mm
   B. 75º and 15 mm  D. 75˚ and 40 mm

**LOOKING BACK**

**Directions:** Put a check mark (/) if the statement is correct and cross out (X) if the statement is wrong. Write your answer on a separate sheet of paper.

_____1. Always check the welding machines and its accessories before and after using them.
_____2. See to it that there are no combustible materials near the welding area.
_____3. Always wear protective gears.

_____4. Observe safety measures while working.

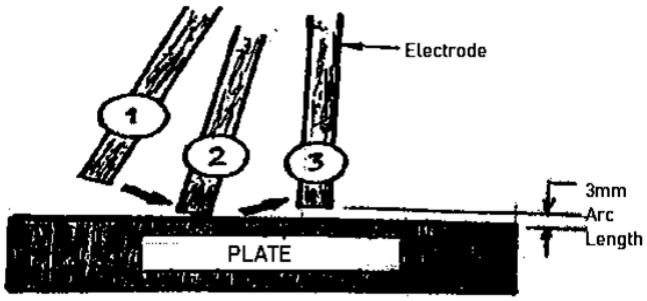
_____5. The material and equipment must be properly checked.

## BRIEF INTRODUCTION

There are 2 methods of striking an arc. Here are the following:

1. **Scratching Method**

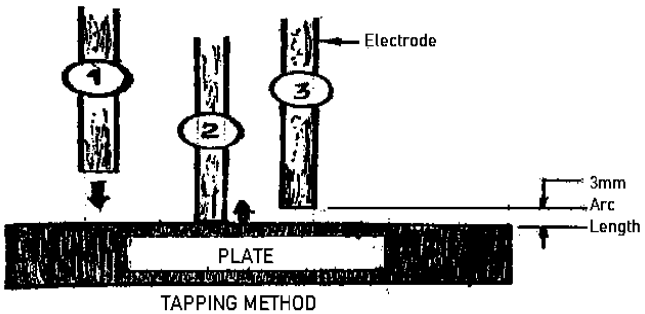
It is done by scratching the electrode to the base metal like scratching a match. The electrode is moved across the plate inclined at an angle of approximately 75º and the striking end about 30 mm above the start position on the plate surface ass you would strike a match. As the electrode scratches the base metal, an arc will be formed. It is the simplest method for most beginners.



SCRATCHING METHOD

2. **Tapping Method**

It is done by moving the electrode downward at an angle of approximately 75º and the striking end to about 15 mm above the start position on the plate surface (until it just taps the base metal) then bringing the electrode up slightly to form an arc with the same
distances to the diameter of electrode.

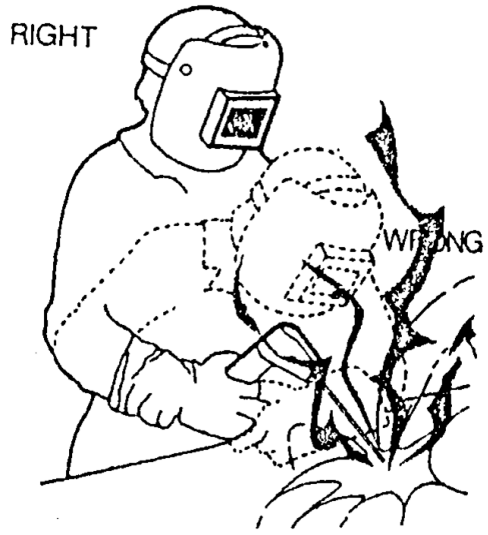


TAPPING METHOD

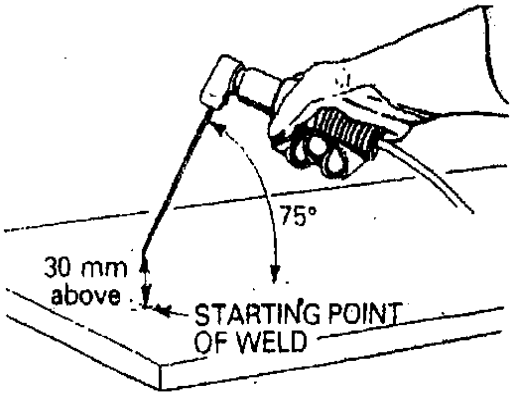
**PROCEDURES IN STRIKING AN ARC**

1. Procedure:
    A. Prepare the 10mm x 50mm x 100mm steel plate.
    B. Prepare the safety gears on welding area.
    C. Inspect the connections of the welding machines.
    D. Set the welding machines to the recommended current setting.

E. Clamp the bare end of the electrode in the holder.
F. Position your body in such a way that your head will be cleared of the column of fumes arising from the arc.
G. Strike the arc either scratching or tapping method (refer to the scratching and tapping procedure below).
H. When the spark appears withdraw the electrode quickly and maintain the proper arc length approximately the same weight as the diameter of electrode.
I. Maintain arc for at least 5-7 seconds.

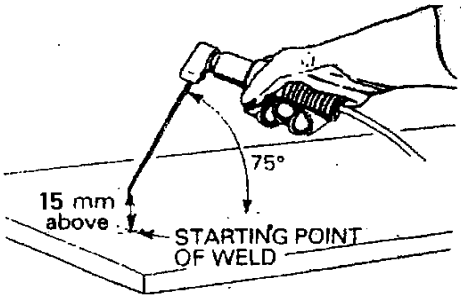



1. **Scratching Procedure:**
   a. Point the electrode downwards at an angle of approximately 75º and the striking end about 30 mm above the start position on the plate surface.
   b. Strike the end of the electrode on the plate surface similar to striking a match.
   c. When a spark appears, withdraw the electrode quickly and draw an arc of approximately 6 mm.
   d. Move the electrode to the start position and then reduce the arc length to a distance equal to the diameter of the electrode.



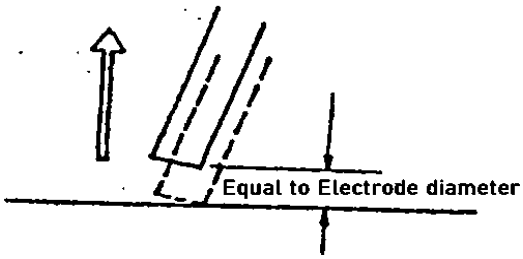
2. **Tapping Procedure:**

A. Point the electrode downwards at an angle of approximately 75º and the striking end to about 15 mm above the start position on the plate surface.




B. Lower the electrode on the plate surface.


C. When the spark appears, withdraw the electrode quickly to an arc length equal to its diameter.




***NOTE:***
**If the electrode welds to the plate, quickly snap the electrode to one side.*
**If the electrode does not release, switch off the welding machine and detached the electrode with a cold chisel.*

3. **Quality Criteria:**
   The height of the arc is maintained not more than diameter of electrode.
   The proper distance of an arc must be maintained for at least 5-7 seconds.

**ACTIVITIES**

**Directions:** Read the statement carefully. Write TM if it is Tapping Method and write SM if it is Scratching Method. Write your answer using separate sheet of paper.

_____1. The electrode scratches the metal.

_____2. Bringing the electrode up slightly to form an arc.

_____3. It is done by moving the electrode downward.

_____4. It taps the base metal.

_____5. It is the simplest method for the beginner.

_____6. It is done by moving the electrode across the plate.

_____7. Angle of approximately 75º and the striking end about 30 mm.

_____8. Angle of approximately 75º and the striking end to about 15 mm.

**REMEMBER**

- There are two general methods of striking an arc. These are scratching method and tapping method.

- The scratching method is easier for beginners and when using an AC machine. The electrode is moved across the plate inclined at an angle, as you would strike a match. As the electrode scratches the plate an arc is struck. When the arc has formed, withdraw the electrode momentarily to form an excessively long arc, then return to normal arc length.

- In the tapping method, the electrode is moved downward to the base metal in a vertical direction. As soon as it touches the metal it is withdrawn momentarily to form an excessively long arc, then returned to normal arc length

## CHECK YOUR UNDERSTANDING

**Directions:** Illustrate the two [2] methods of striking an arc. Use separate long bond paper for your performance.

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|---|---|
| | |

## POST TEST

**Directions:** Read the questions carefully and choose the letter of the correct answer. Write your answer in a separate sheet of paper.

1. This method is done by scratching the electrode to the base metal.

A. scratching method C. untapping method
B. tapping method D. zigzag method

2. This method is done by moving the electrode downward until it just taps the base metal.
   A. scratching method C. untapping method
   B. tapping method D. zigzag method
3. The distance of an arc must be _____to the diameter of electrode regardless of the method you used in striking an arc.
   A. equal C. lower
   B. higher D. unequal
4. In scratching method, point the electrode downwards at an angle of approximately ____ and the striking end about _____ above the start position on the plate surface.
   A. 75º and 10 mm C. 75º and 30 mm
   B. 75º and 15 mm D. 75˚ and 40 mm
5. In tapping method, point the electrode downwards at an angle of approximately _____ and the striking end to about _____ above the start position on the plate surface.
   A. 75º and 10 mm C. 75º and 30 mm
   B. 75º and 15 mm D. 75˚ and 40 mm
6. What will you do when the spark appears?
   A. quickly snap the electrode to one side
   B. drag the electrode fast to finish the weld rapidly
   C. withdraw the electrode quickly to an arc length equal to its diameter
   D. switch off the welding machine and detached the electrode with cold chisel.
7. What will you do if the electrode does not release?
   A. quickly snap the electrode to one side
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   C. withdraw the electrode quickly to an arc length equal to its diameter
   D. switch off the welding machine and detached the electrode with cold chisel.
8. What will you do if the electrode welds to the plate?
   A. quickly snap the electrode to one side
   B. drag the electrode fast to finish the weld rapidly
   C. withdraw the electrode quickly to an arc length equal to its diameter
   D. switch off the welding machine and detached the electrode with cold chisel.
9. Which of the following is a safety precaution?
   A. set the welding machines to the any current setting
   B. remove your personal protective equipment when welding
   C. when the spark appears move quickly away from your work and drop and drop the electrode
   D. position your body in such a way that your head will be cleared of the column of fumes arising from the arc
10. This method is where you point the electrode downwards at an angle approximately 75º and the striking end to about 15 mm above the start position on the plate surface.
    A. tapping method C. universal method
    B. scratching method D. zigzag method

**REFERENCES:**


Public Technical Vocational Schools, COMPETENCY-BASED LEARNING MATERIAL, Third Year, Shielded Metal Arc Welding [Department of Education 2008]

Welding Technology, 2nd Edition, Gower A. Kennedy

Welding Guide Fabrication Shop, Ismael V. Palabrica

Metal Works 1, SEDP Series, Industrial Technology

Basic Manual Metal Arc Welding, National Training Center for Technical Education and Staff Development

Welding Principles and Applications, Larry Jeffus and Harold V. Johnson


***Key to Correction***

| **Pretest** | **Posttest** |
|---|---|
| 1. D | 1. A |
| 2. D | 2. B |
| 3. A | 3. A |
| 4. C | 4. C |
| 5. A | 5. B |
| 6. A | 6. C |
| 7. B | 7. D |
| 8. A | 8. A |
| 9. C | 9. D |
| 10. B | 10. A |