

**Department of Education**  
**SPTVE**  
**SHIELDED METAL ARC**  
**WELDING (SMAW)10**  
**Multi Pass Weld in Flat Position**  
**Quarter 2: Week 4 Module**



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## EXPECTATIONS

At the end of the lesson, the learner is expected to:

1. identify the procedures of multi pass weld in flat position,
2. enumerate the procedures of welding multi pass weld and
3. draw the working drawing of multi pass weld in flat position.



## PRE-TEST

**Direction:** Encircle the letter of the correct answer.

1. Refers to the layers of beads which has been deposited in the base metal.  
A. Arc rays  
B. Pass  
C. Puddle  
D. Ripple
2. What is the recommended amperage setting in welding single pass fillet?  
A. 85  
B. 90  
C. 95  
D. 100
3. What is the specified length of tack welds on fillet welds?  
A. 5 mm  
B. 10 mm  
C. 15 mm  
D. 20 mm
4. Welding fillet, the normal arc length is \_\_\_\_\_.  
A.  $1/16 - 1/8$  inch.  
B.  $1/8 - 3/16$  inch.  
C.  $1/4 - 3/8$  inch.  
D.  $5/16 - 1/2$  inch.
4. Metal to be welded should be tack welded in \_\_\_\_\_.  
A. Both edge of the plate  
B. Both end and the center of the joint  
C. Center and edge of the joint.  
D. Center of the joint
6. A fillet weld is a weld type in the cross-sectional shape of a \_\_\_\_\_.  
A. Circle  
B. Rectangle  
C. Square  
D. Triangle
7. Travel angle for single pass fillet weld is usually set at an angle of \_\_\_\_\_.  
A. 45 degrees  
B. 60 degrees  
C. 70 degrees  
D. 85 degrees
8. Frequently used in all kinds of work, which may be single fillet lap joint or double fillet.  
A. Butt joint  
B. Corner joint  
C. Lap joint  
D. Tee joint
9. Use \_\_\_\_\_ electrode and tack weld the metal to form a T-joint.  
A. 6010  
B. 6011  
C. 6013  
D. 7018
10. In stringer bead in flat fillet weld of the same thickness plate, the work Angle is always.  
A. 30 degrees  
B. 45 degrees  
C. 60 degrees  
D. 70 degrees



## LOOKING BACK

In the previous lesson, you have learned the single pass fillet weld in flat position. Now let us see if you still remember these single pass fillet weld.

**Directions:** Arrange the jumbled words to identify what is being described in the sentence.

1. FLLETI WEDL - a weld of approximately triangular cross section joining two surfaces approximately at right angles to each other  
\_\_\_\_\_
2. F1 – Welding fillet in flat position.  
\_\_\_\_\_
3. TCAK WDLE – is a temporarily weld.  
\_\_\_\_\_.
4. SINLGE PSSA– pertain to one pass weld from the joint.  
\_\_\_\_\_
5. TRIANLGE – is a cross-sectional shape in fillet weld.  
\_\_\_\_\_



## BRIEF INTRODUCTION

### Multi Pass Weld in Flat Position

#### Materials:

- 3 pcs. Mild Steel plates 10mm X 50mm X 200mm
- 10 pcs. E-6013- 3.25mm/E

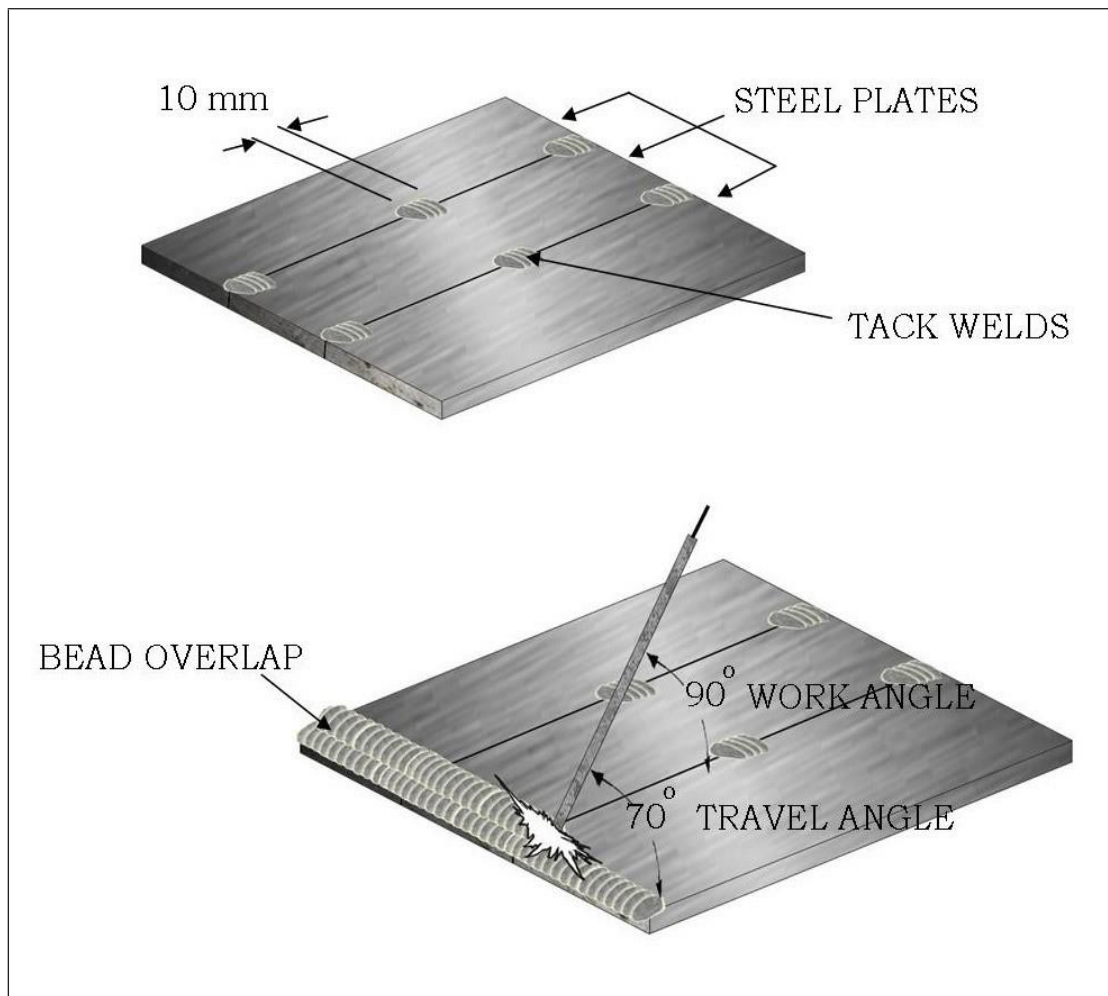
#### Tools and Equipment:

- AC or DC welding machine with accessories
- Chipping Hammer
- Steel brush
- Welding gloves (leather)
- Welding apron (leather)
- Welding helmet/mask
- Portable grinder

#### Procedures:

1. Wear the Protective Equipment (PPE) before welding.
2. Prepare tools, equipment and materials needed.
3. Set up the welding machine and adjust the correct current amperage settings to 95 amperes. 85-100 amperes (range of adjustments)
4. Lay the plates on the welding table, and tackweld each part- one at the middle and at the end of the joint.
5. Deposit the first bead right below the bottom edge of the plate. You may use whipping or dragging techniques.
6. Remove the slag with a chipping hammer and clean the bead using the steel brush.  
**Note:** Use clear goggles or face shield when chipping. The direction of chipping should be away from you.
7. Strike the second bead to overlap the first bead by half to 2/3 overlap. It must completely fuse the plate and the first bead.
8. Deposit all the remaining beads until you fill the entire plate.  
**Note:** The slag must be chipped off before the next weld bead is put in place.
9. Visually check the following:  
**Note:** The weld should be correctly overlapped, straight, of even thickness and width with fine ripples.

## WORKING DRAWING



**Figure 14.** Welding processes for multipass in Flat position



## ACTIVITIES

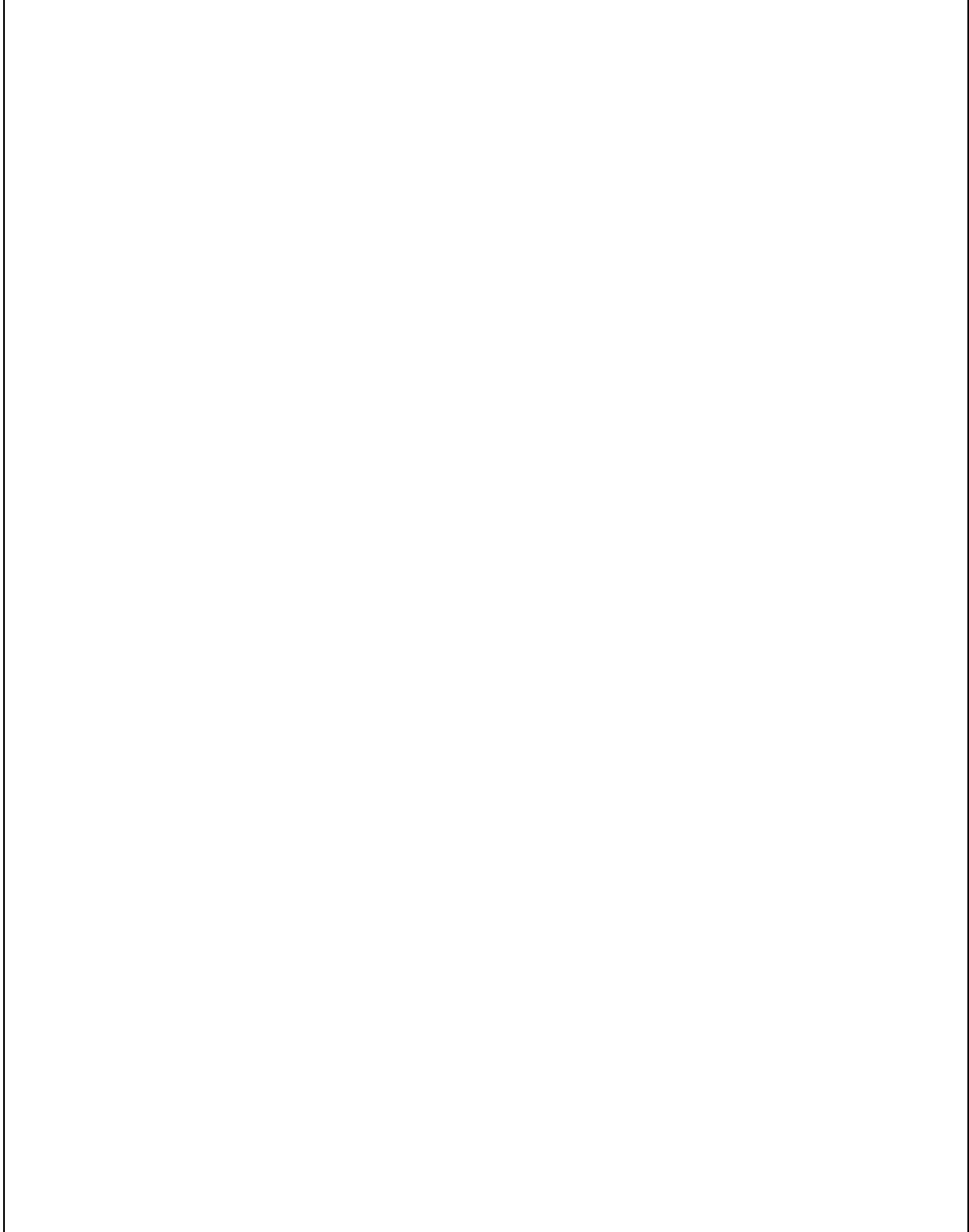
### Activity 1: “ARRANGE ME”

**Directions:** Arrange the correct welding procedures of multi pass fillet weld in flat position. Write 1 on the blank for the first procedure, 2 for the second procedure and 3 to 9 for the succeeding procedure.

- \_\_\_\_\_ Set up the welding machine and adjust the correct current amperage settings to 95 amperes. 85-100 amperes (range of adjustments)
- \_\_\_\_\_ Remove the slag with a chipping hammer and clean the bead using the steel brush. **Note:** Use clear goggles or face shield when chipping. The direction of chipping should be away from you.
- \_\_\_\_\_ Visually check the following:  
**Note:** The weld should be correctly overlapped, straight, of even thickness and width with fine ripples.
- \_\_\_\_\_ Wear the Protective Equipment (PPE) before welding.
- \_\_\_\_\_ Lay the plates on the welding table, and tackweld each part- one at the middle and at the end of the joint.
- \_\_\_\_\_ Strike the second bead to overlap the first bead by half to 2/3 overlap. It must completely fuse the plate and the first bead.
- \_\_\_\_\_ Prepare tools, equipment and materials needed.
- \_\_\_\_\_ Deposit the first bead right below the bottom edge of the plate. You may use whipping or dragging techniques.
- \_\_\_\_\_ Deposit all the remaining beads until you fill the entire plate.  
**Note:** The slag must be chipped off before the next weld bead is put in place.

## **Activity 2**

**Directions:** Draw the illustration/working drawing of multi pass weld in flat position. See figure 14





### REMEMBER

The welding steps and procedures are very important or required to follow completely because it serves as a guide of a welder for the effective welding in accordance with welding procedure specification, or WPS.



### CHECK YOUR UNDERSTANDING

**Directions:** Enumerate the welding procedures on how to weld multi pass weld in flat position.

- 1) \_\_\_\_\_  
\_\_\_\_\_
- 2) \_\_\_\_\_  
\_\_\_\_\_
- 3) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 4) \_\_\_\_\_  
\_\_\_\_\_  
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- 5) \_\_\_\_\_  
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- 6) \_\_\_\_\_  
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- 7) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 8) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 9) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





## POST TEST

**Direction:** Encircle the letter of the correct answer.

1. Use \_\_\_\_\_ electrode and tack weld the metal to form a T-joint.  
A. 6010  
B. 6011  
C. 6013  
D. 7018
2. . What is the specified length of tack welds on fillet welds?  
A. 5 mm  
B. 10 mm  
C. 15 mm  
D. 20 mm
3. Metal to be welded should be tack welded in \_\_\_\_\_.  
A. Both edge of the plate  
B. Both end and the center of the joint  
C. Center and edge of the joint.  
D. Center of the joint
4. Refers to the layers of beads which has been deposited in the base metal.  
A. Arc rays  
B. Pass  
C. Puddle  
D. Ripple
5. Frequently used in all kinds of work, which may be single fillet lap joint or double fillet.  
A. Butt joint  
B. Corner joint  
C. Lap joint  
D. Tee joint
6. A fillet weld is a weld type in the cross-sectional shape of a \_\_\_\_\_.  
A. Circle  
B. Rectangle  
C. Square  
D. Triangle
7. What is the recommended amperage setting in welding single pass fillet?  
A. 85  
B. 90  
C. 95  
D. 100
8. In stringer bead in flat fillet weld of the same thickness plate, the work angle is always.  
A. 30 degrees  
B. 45 degrees  
C. 60 degrees  
D. 70 degrees
9. Travel angle for single pass fillet weld is usually set at an angle of \_\_\_\_\_.  
A. 45 degrees  
B. 60 degrees  
C. 70 degrees  
D. 85 degrees
10. Welding fillet, the normal arc length is \_\_\_\_\_.  
A.  $1/16 - 1/8$  inch.  
B.  $1/8 - 3/16$  inch.  
C.  $1/4 - 3/8$  inch.  
D.  $5/16 - 1/2$  inch.

<p><b>Post-test</b></p> <ol style="list-style-type: none"> <li>1. C</li> <li>2. B</li> <li>3. B</li> <li>4. B</li> <li>5. D</li> <li>6. D</li> <li>7. C</li> <li>8. B</li> <li>9. B</li> <li>10. A</li> </ol>	<p><b>Checking your understanding</b></p> <ol style="list-style-type: none"> <li>1. Wear the Protective Equipment (PPE) before welding.</li> <li>2. Prepare tools, equipment and materials needed.</li> <li>3. Set up the welding machine and adjust the correct current amperage settings to 95 amperes. 85-100 amperes (range of adjustments)</li> <li>4. Lay the plates on the welding table, and tackweld each part-on the middle and at the end of the joint.</li> <li>5. Deposit the first bead right below the bottom edge of the plate. You may use whipping or dragging techniques.</li> <li>6. Remove the slag with a chipping hammer and clean the bead using the steel brush.</li> <li>7. Strike the second bead to overlap the first bead by half to 2/3 overlap. It must completely fuse the plate and the first bead.</li> <li>8. Deposit all the remaining beads until you fill the entire plate.</li> <li>9. Visually check the following:               <p><b>Note:</b> The weld should be correctly overlapped, straight, of even thickness and width with fine ripples.</p> </li> </ol>	<p><b>Key to Corrections:</b></p> <p><b>Pre-test</b></p> <ol style="list-style-type: none"> <li>1. B</li> <li>2. C</li> <li>3. B</li> <li>4. A</li> <li>5. B</li> <li>6. D</li> <li>7. C</li> <li>8. D</li> <li>9. C</li> <li>10. B</li> </ol> <p><b>Looking Back</b></p> <ol style="list-style-type: none"> <li>1. Fillet weld</li> <li>2. IF</li> <li>3. Tack weld</li> <li>4. Single Pass</li> <li>5. Triangle</li> </ol> <p><b>Activity</b></p> <p><b>Act.1</b></p> <ol style="list-style-type: none"> <li>A. 3</li> <li>B. 6</li> <li>C. 9</li> <li>D. 1</li> <li>E. 4</li> <li>F. 7</li> <li>G. 2</li> <li>H. 5</li> <li>I. 8</li> </ol>
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## References

- *K12 Basic Education Curriculum, Grade 10 SMAW LM Final Check and verified page 65-68*
- Public Technical Vocational High Schools, Competency-Based Learning material, SMAW NCI, (Department of Education 2008)