



**SAIT**

**REGIONAL SKILLS**

**JUNIOR PROJECT**



**Skills**Canada  
Alberta

# 9 WELD PROJECTS

## GMAW - ER70S-6

1F

2F

3F

## SMAW - E6010 (E4310)

1F

2F

3F

## SMAW - E7018 (E4918)

1F

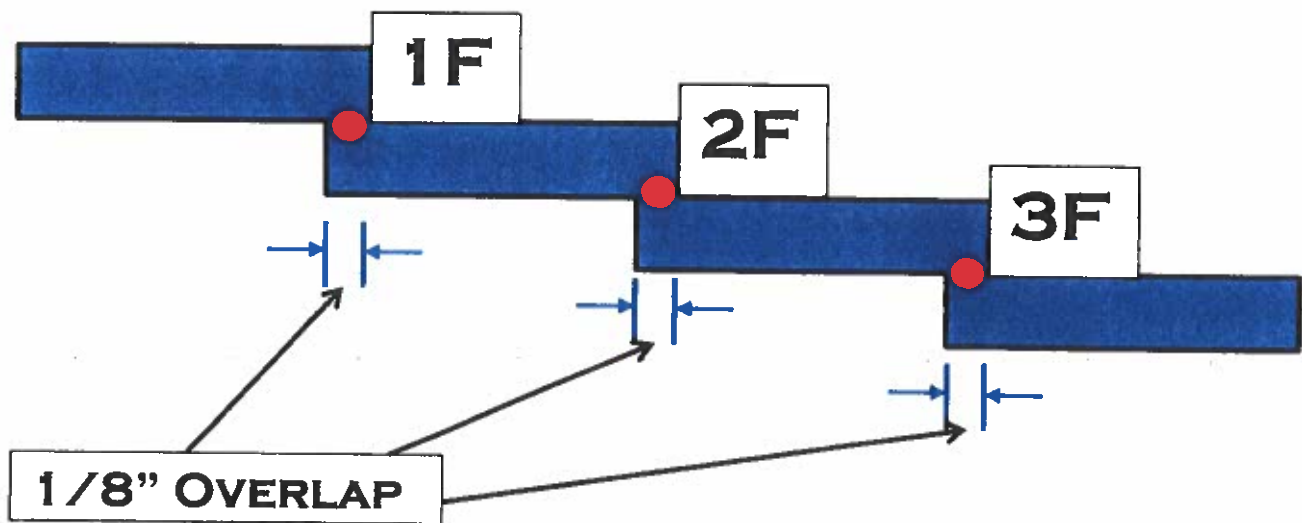
2F

3F

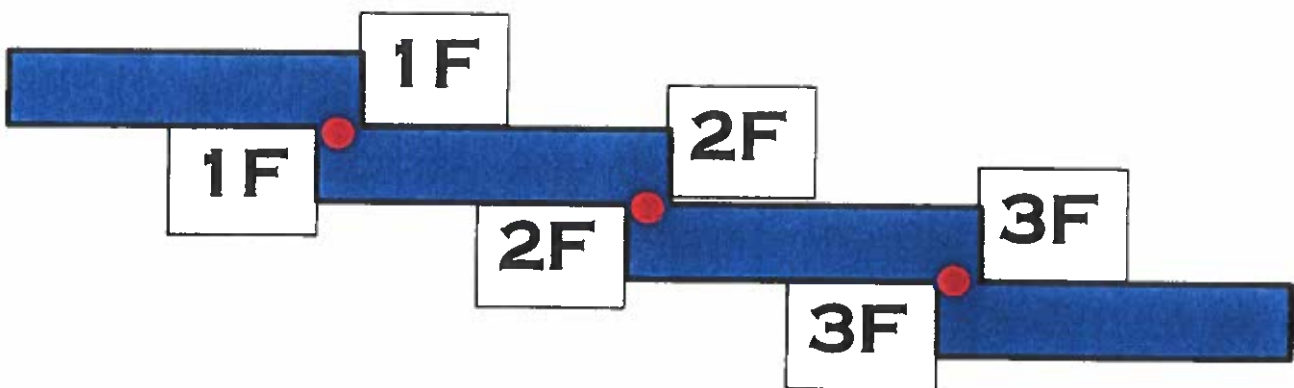
# TACK UP AND WELD LOCATION

- TACKS TO BE LOCATED ON ENDS OF PLATE.
- TACK EACH SET OF PLATES WITH THE PROCESS YOU ARE WELDING WITH.
- FILLET WELD PLATES TO OVERLAP 1/8 INCH

## TACK WITH GMAW



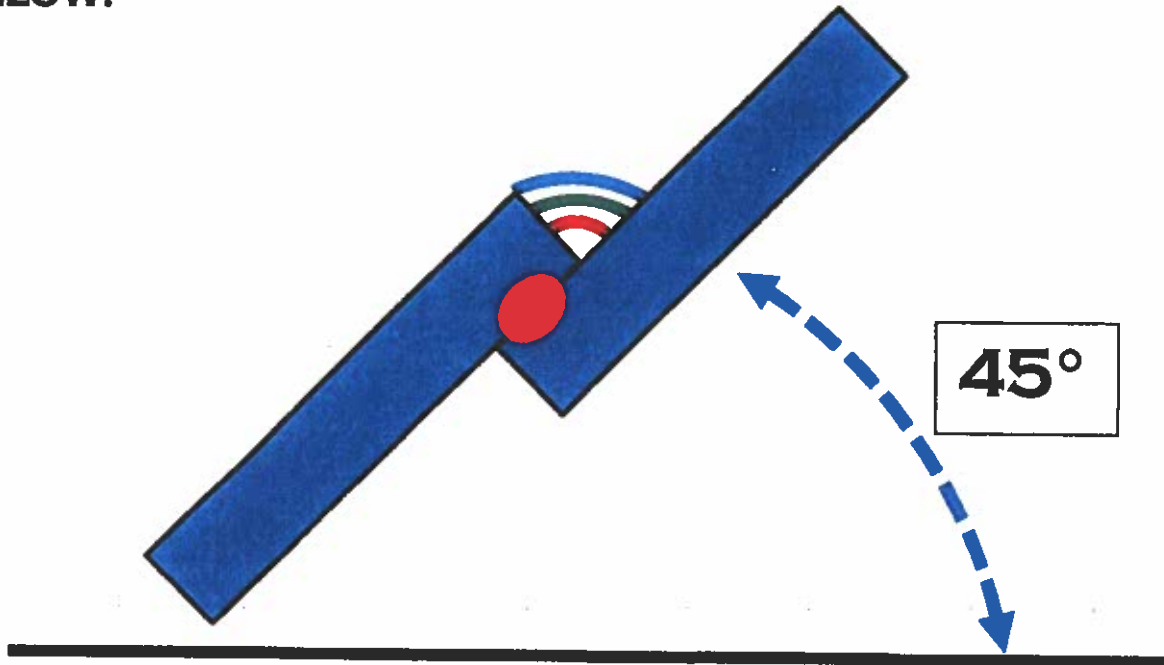
## TACK WITH SMAW



# WELD # 1

## 1F GMAW

WELD IS COMPLETED IN THE FLAT POSITION; THE PLATES ARE LOCATED 45° TO THE HORIZONTAL PLAIN, AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

### SUGGESTED SETTINGS: (IN BLUE)

VOLTAGE RANGE: 14 TO 21.5 VOLTS (18.5 VOLTS)

AMPERAGE RANGE: 150 TO 250 AMPS (185 AMPS)

INDUCTANCE: 0 TO 100 % (IF UNSURE LEAVE AT 50%)

GAS: 25 TO 35 CFH (AROUND 30 CFH IS FINE)

# WELD #2

## 2F GMAW

WELD IS COMPLETED IN THE HORIZONTAL POSITION; THE PLATES ARE WELDED AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

**SUGGESTED SETTINGS: (IN BLUE)**

**VOLTAGE RANGE: 14 TO 21.5 VOLTS (18.5 VOLTS)**

**AMPERAGE RANGE: 150 TO 250 AMPS (185 AMPS)**

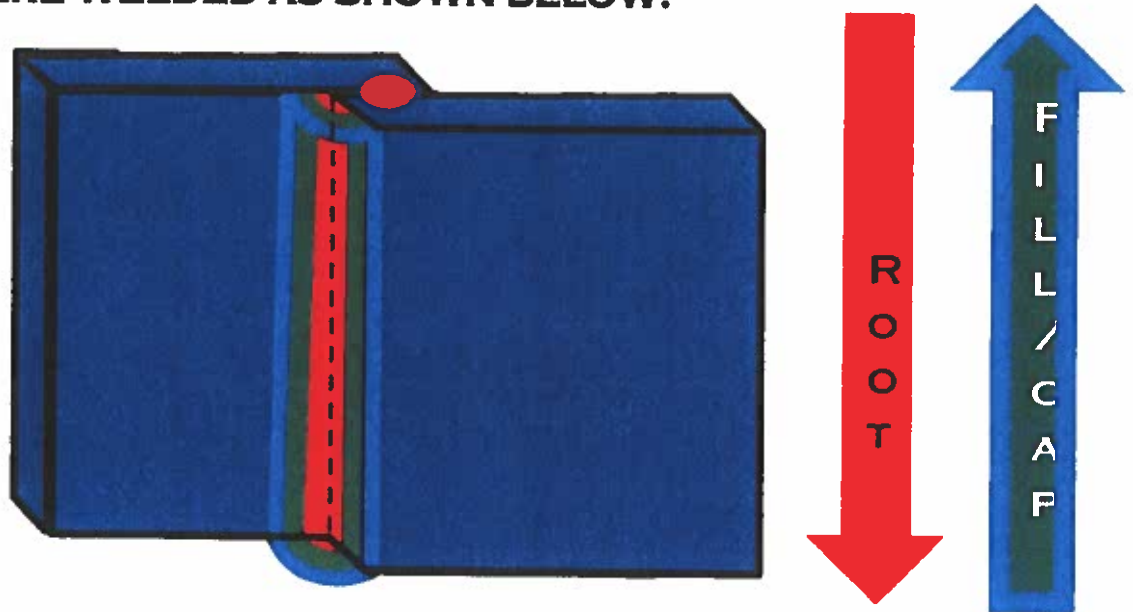
**INDUCTANCE: 0 TO 100 % (IF UNSURE LEAVE AT 50%)**

**GAS: 25 TO 35 CFH (AROUND 30 CFH IS FINE)**

# WELD #3

## 3F GMAW

WELD IS COMPLETED IN THE VERTICAL POSITION; THE PLATES ARE WELDED AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

ROOT PASS IS COMPLETED FROM TOP TO BOTTOM (DOWNHILL). FILL AND CAP PASSES FROM BOTTOM TO TOP (UPHILL).

**SUGGESTED SETTINGS: (IN BLUE)**

VOLTAGE RANGE: 14 TO 21.5 VOLTS (18.5 VOLTS)

AMPERAGE RANGE: 150 TO 250 AMPS (185 AMPS)

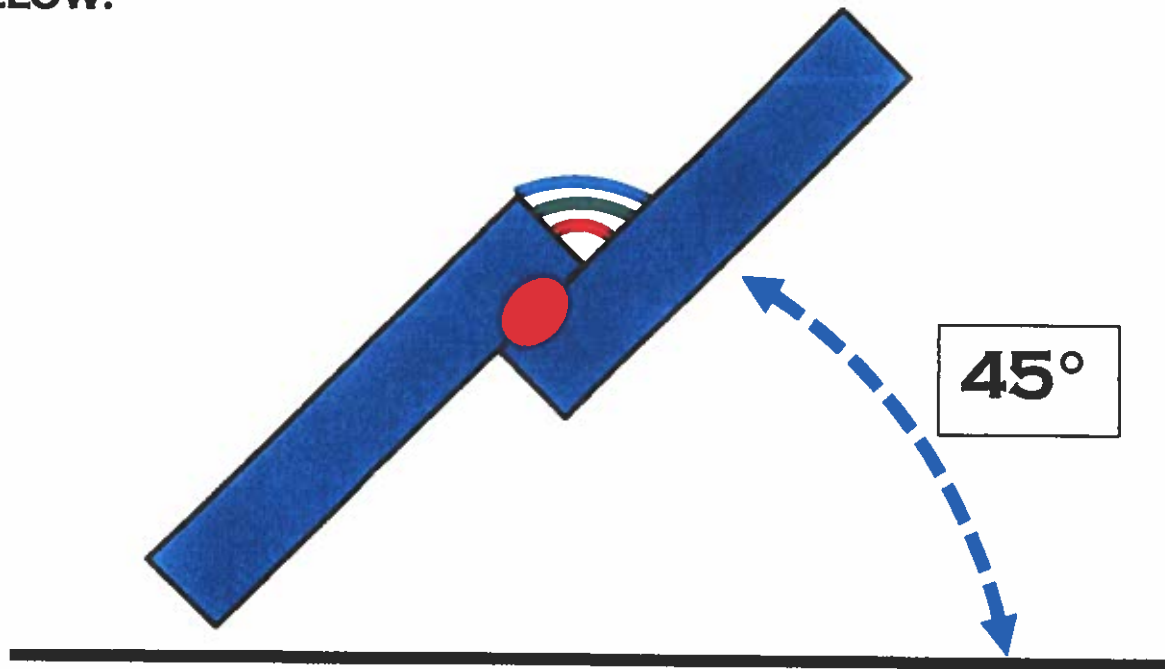
INDUCTANCE: 0 TO 100 % (IF UNSURE LEAVE AT 50%)

GAS: 25 TO 35 CFH (AROUND 30 CFH IS FINE)

# WELD #4

## 1F SMAW WITH 1/8" 6010

WELD IS COMPLETED IN THE FLAT POSITION; THE PLATES ARE LOCATED 45° TO THE HORIZONTAL PLAIN, AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

**SUGGESTED SETTINGS: (IN BLUE)**

**ARC MANIPULATION: WEAVE BEADS**

**ARC LENGTH: SHORT TO NORMAL ARC LENGTH**

**AMPERAGE RANGE: 80 – 140 AMPS**

- **ROOT 90 AMPS**
- **FILL 95 AMPS**
- **CAP 80 AMPS**

**ARC FORCE OR DIG: 0 TO 100 % (60 + OR – 10)**

# WELD #5

## 2F SMAW WITH 1/8" 6010

WELD IS COMPLETED IN THE HORIZONTAL POSITION; THE PLATES ARE WELDED AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

### SUGGESTED SETTINGS: (IN BLUE)

ARC MANIPULATION: STRINGER BEADS

ARC LENGTH: SHORT TO NORMAL ARC LENGTH

AMPERAGE RANGE: 80 – 140 AMPS

- ROOT 90 AMPS
- FILL 90 AMPS
- CAP 85 AMPS

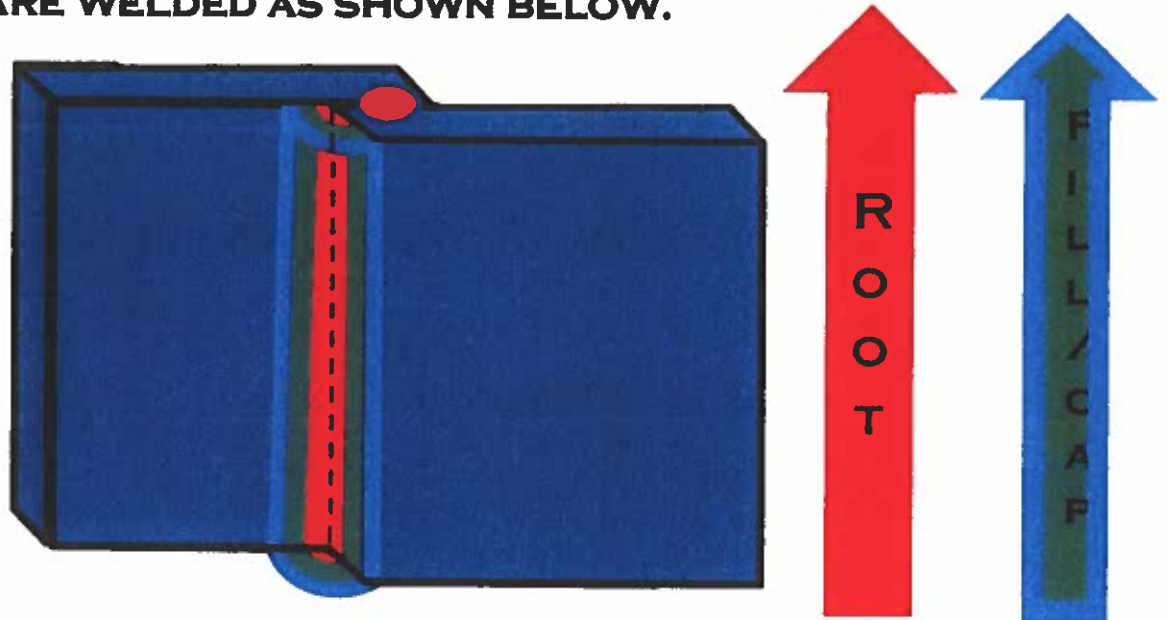
ARC FORCE OR DIG: 0 TO 100 % (60 + OR – 10)



# WELD #6

## 3F SMAW WITH 1/8" 6010

WELD IS COMPLETED IN THE VERTICAL POSITION; THE PLATES ARE WELDED AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

ROOT, FILL AND CAP PASSES FROM BOTTOM TO TOP.

**SUGGESTED SETTINGS: (IN BLUE)**

ARC MANIPULATION: WEAVE BEADS

ARC LENGTH: SHORT TO NORMAL ARC LENGTH

AMPERAGE RANGE: 80 – 140 AMPS

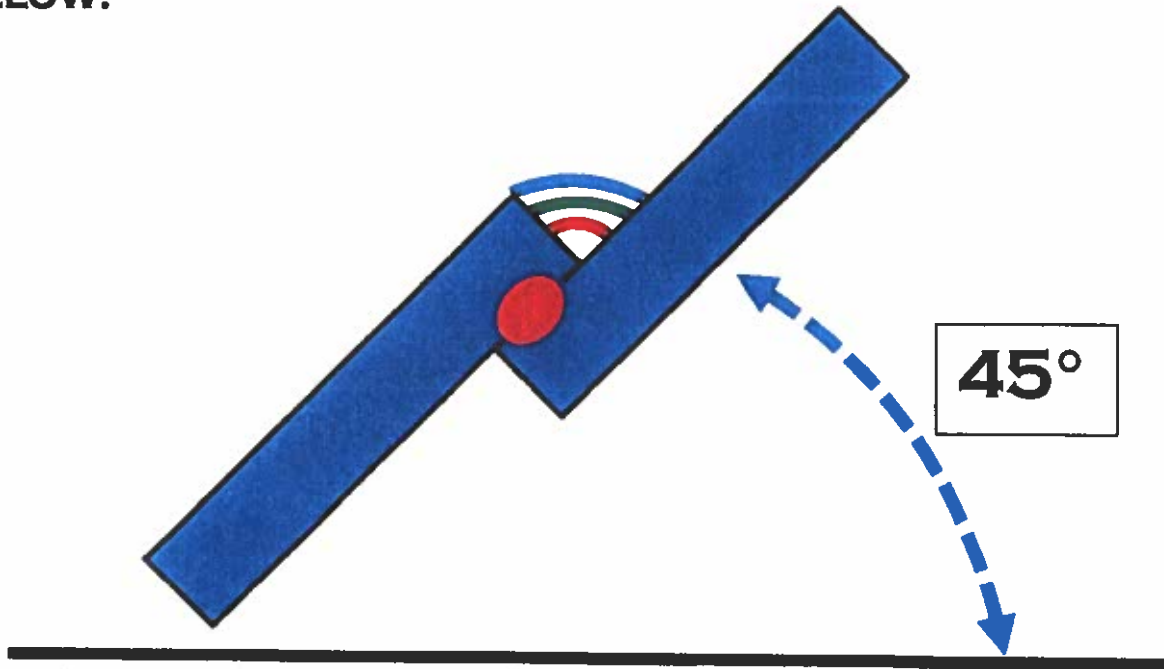
- ROOT 80 AMPS
- FILL 85 AMPS
- CAP 85 AMPS

ARC FORCE OR DIG: 0 TO 100 % (60 + OR - 10)

# WELD #7

**1F SMAW WITH 3/32" OR 1/8" 7018**

**WELD IS COMPLETED IN THE FLAT POSITION; THE PLATES ARE LOCATED 45° TO THE HORIZONTAL PLAIN, AS SHOWN BELOW.**



**FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.**

**SUGGESTED SETTINGS: 1/8" 7018 FILLER**

**ARC MANIPULATION: WEAVE BEADS**

**ARC LENGTH: SHORT TO NORMAL ARC LENGTH**

**AMPERAGE RANGE: DEPENDS ON ELECTRODE SIZE**

**3/32" 70 – 100 AMPS**

**1/8" 80-175 AMPS**

**ROOT 90 AMPS**

**ROOT 130**

**FILL 95 AMPS**

**FILL 130**

**CAP 80 AMPS**

**CAP 120**

**ARC FORCE OR DIG: 0 TO 100 % (60 + OR – 10)**

# WELD #8

## 2F SMAW WITH 3/32 OR 1/8" 7018

WELD IS COMPLETED IN THE HORIZONTAL POSITION; THE PLATES ARE WELDED AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

**SUGGESTED SETTINGS: (USE 3/32" 7018 FILLER)**

**ARC MANIPULATION: STRINGER BEADS**

**ARC LENGTH: SHORT TO NORMAL ARC LENGTH**

**AMPERAGE RANGE: DEPENDS ON ELECTRODE SIZE**

**3/32" 70 – 100 AMPS**

**1/8" 80-175 AMPS**

**ROOT 90 AMPS**

**ROOT 130**

**FILL 95 AMPS**

**FILL 120**

**CAP 80 AMPS**

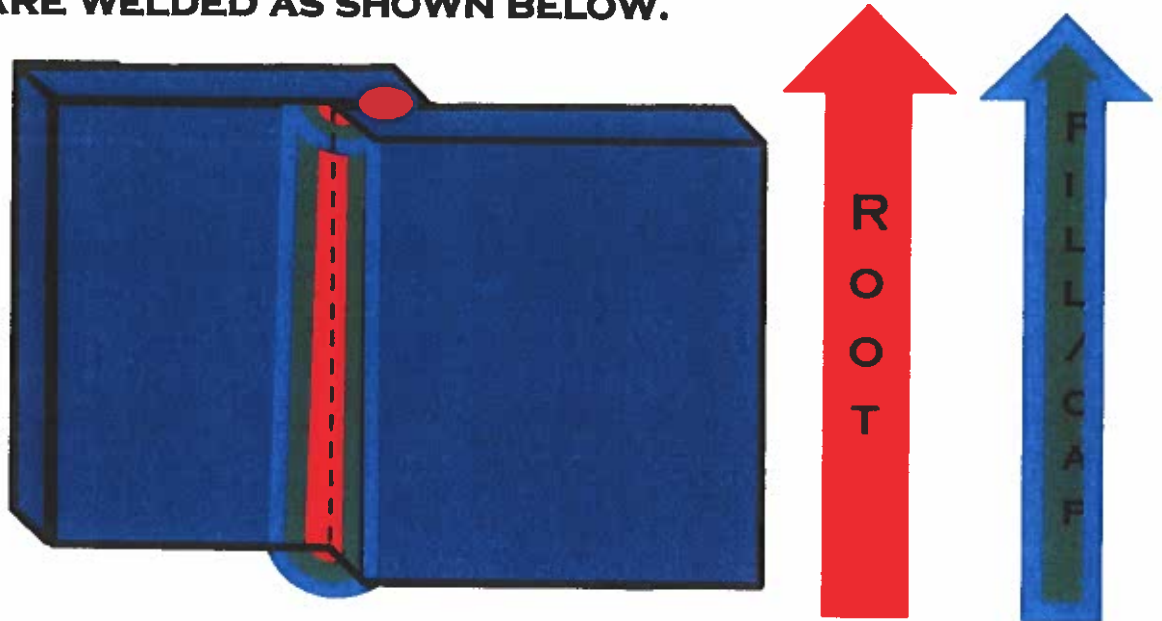
**CAP 115**

**ARC FORCE OR DIG: 0 TO 100 % (60 + OR – 10)**

# WELD #9

## 3F SMAW WITH 3/32 OR 1/8" 7018

WELD IS COMPLETED IN THE VERTICAL POSITION; THE PLATES ARE WELDED AS SHOWN BELOW.



FINISHED WELD SHOULD BE SLIGHTLY CONVEX WITH AS MANY PASSES AS NEEDED TO ACHIEVE DESIRED APPEARANCE.

ROOT, FILL AND CAP PASSES FROM BOTTOM TO TOP.

SUGGESTED SETTINGS: (USE 3/32" 7018 FILLER)

ARC MANIPULATION: **WEAVE BEADS**

ARC LENGTH: SHORT TO NORMAL ARC LENGTH

AMPERAGE RANGE: DEPENDS ON ELECTRODE SIZE

3/32" 70 – 100 AMPS

1/8" 80 -175 AMPS

ROOT 90 AMPS

ROOT 125

FILL 95 AMPS

FILL 110

CAP 80 AMPS

CAP 110

ARC FORCE OR DIG: 0 TO 100 % (60 + OR – 10)