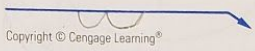
UNIT 16: REVIEW

Graph paper is provided at the end of this review for your use.

1. a. Complete the following welding symbol to indicate the building up of a surface.



b. Apply and identify an element used with this symbol.

$\frac{1}{8}$ minimal thickness

c. On which side of the reference line is the weld symbol placed?

Arrow Side

2. a. Does this symbol have an arrow side, or other side significance?

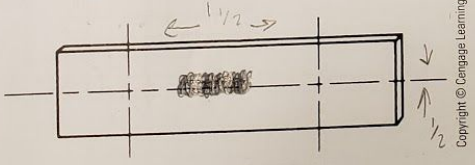
no side significance

b. Give the reason for your answer.

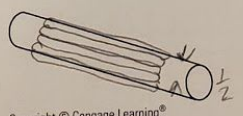
It is not applied to the joint

3. a. Show how the extent of the surfacing weld is indicated between the vertical centerlines in the following illustration.

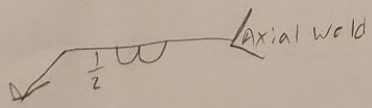
b. Show how a 1½" weld width is indicated with a ½" surface buildup.



4. a. Illustrate an axial weld direction on the following sketch of a round rod to a ½" surface buildup.

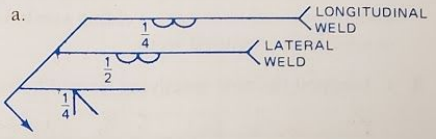


b. Draw the welding symbol to specify this.



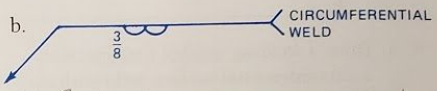
5. Explain the significance of the following welding symbols.

a.



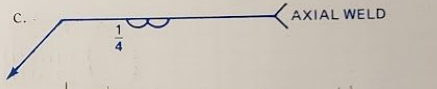
$\frac{1}{4}$ bevel, arrow side, $\frac{1}{2}$ build up lateral surface weld, $\frac{1}{4}$ build up longitudal weld.

b.



$\frac{3}{8}$ depth circumferential weld

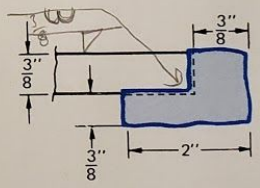
c.



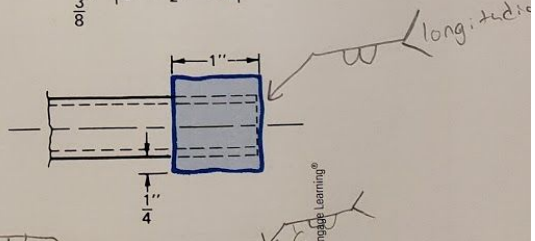
$\frac{1}{4}$ depth axial weld.

6. Draw the symbol for the following. Use a suitable sketch for applying the symbol.

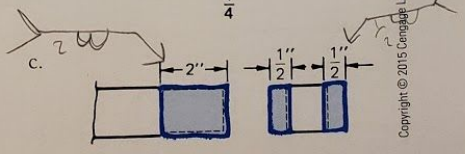
a.



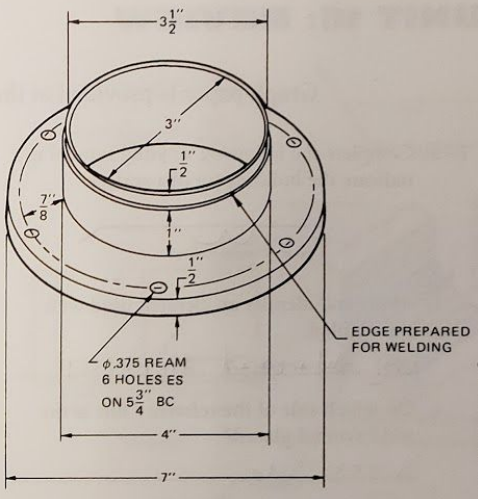
b.



c.



7. Illustrated is a hub cap punch prepared for welding and in finished form. The operation is to be done by building up with a surface weld to the desired height and machining the contour to match the 4" diameter. Allow ⅛" for finishing the welded surface. The surface is to be welded circumferentially. Make a two-view working sketch including dimensions and necessary welding symbols to specify the required work.



8. a. Interpret the note specifying reamed holes.

Plug weld (6) 5 3/4" spacing

b. What is the spacing of the hole in degrees?

60°

9. a. Draw a welding symbol that specifies a circumferential surface weld with no buildup size requirement.

b. Prepare a sketch that illustrates how the weld would appear.

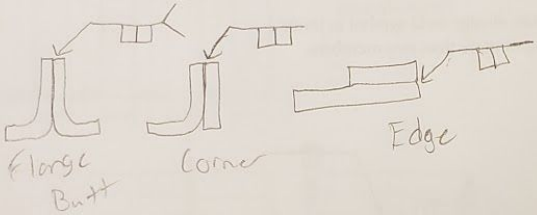
UNIT 17: REVIEW

Graph paper is provided at the end of this review for your use.

1. a. Identify three joints to which an edge weld symbol may be applied.

Flange Butt Joint
Edge Joint
Corner Flange Joint

b. Sketch examples of these joints.



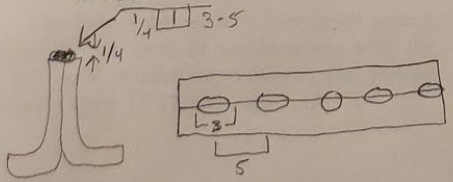
c. Apply the edge weld symbol with an arrow side significance to each of these joints.

2. Sketch how the edge weld symbol would be shown for an intermittent other side edge weld. Use a welding symbol for this purpose.

3. a. What other weld symbols may be used in conjunction with the edge weld symbol?

Depth, length and Pitch
1/4, 3-5

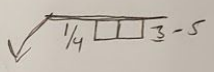
b. Sketch combination edge weld symbols to include the other weld symbols identified in 3(a).



4. a. List three dimensions that may be applied to an edge weld symbol.

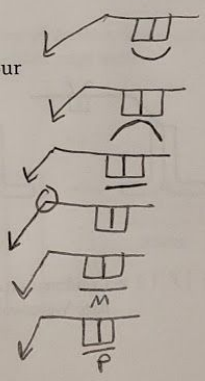
Depth, length and Pitch

b. Sketch a welding symbol with an edge weld that includes the standard locations for these dimensions.

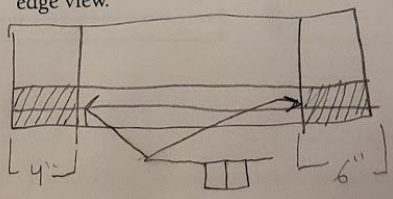


5. Sketch welding symbols that include an edge weld symbol having the following elements:

Convex contour
Concave contour
Flush or flat contour
Weld-all-around
Machine flat
Planish flat

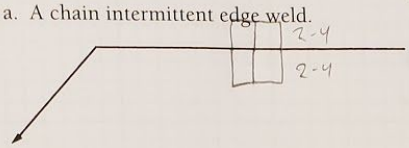


6. Sketch a welding symbol that includes an edge weld symbol applied to extension and hatching lines to show the location and extent of an edge view.

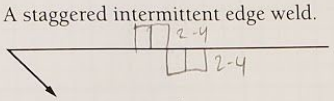


7. Complete the following symbols to show:

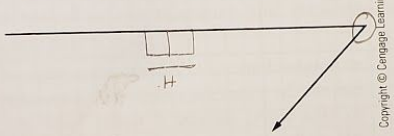
a. A chain intermittent edge weld.



b. A staggered intermittent edge weld.



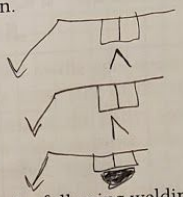
c. A weld-all-around edge weld including finish and method of finish.



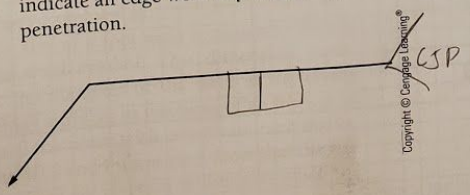
8. a. Identify the joints that lose their identity upon completion of an edge weld when complete penetration is specified.

Flare V-groove
Flare bevel groove
melt thru Symbol

b. Using sketches, illustrate the joints and their appearance identified in 8(a) upon their completion.



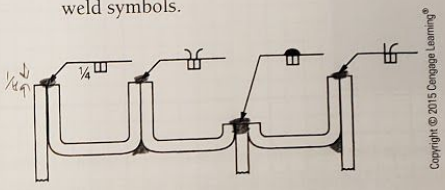
c. Complete the following welding symbol to indicate an edge weld requiring complete penetration.



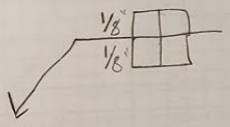
9. Up to what metal thickness size is an edge weld symbol usually applied?

3/16"

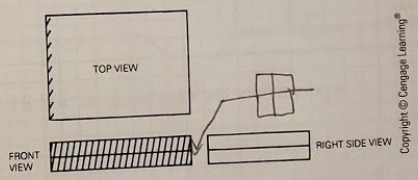
10. On the drawing that follows, sketch how the completed weld will appear as indicated by the weld symbols.



11. Sketch a welding symbol to specify a both sides edge weld with a ⅛" thickness on an edge joint.



12. In the following drawing, edge welds are to be specified for the edges identified by hatched lines. Apply the appropriate symbol(s).



UNIT 18: REVIEW

Graph paper is provided at the end of this review for your use.

1. Using sketches, show how the spot-weld symbol differs from the weld-all-around symbol.

On the line break ↓ weld all around

2. On what side of the reference line are dimensions applied to the spot-weld symbol?

Depends on Symbol Side, either top left or bottom left

3. Is it necessary to use a tail with the spot-weld symbol?

Yes, for required elements used.

Explain.

for required elements to be used.

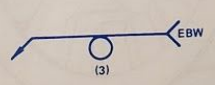
4. What does the term pitch refer to when applied to the spot-weld symbol?

middle to middle Spacing of the welds.

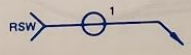
5. List five dimensions or other information that may be applied to the spot-weld symbol.

Strength, Size, force, newtons, lbs, Spacing, extent.

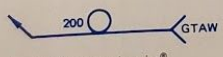
6. Identify the dimension shown with each of the following spot-weld symbols:



3 spot welds

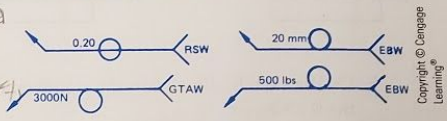


1 inch pitch



Strength

7. Give the significance of each dimension shown in the following symbols.



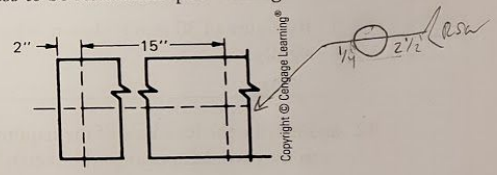
a. .20" Size

b. 20 mm Size

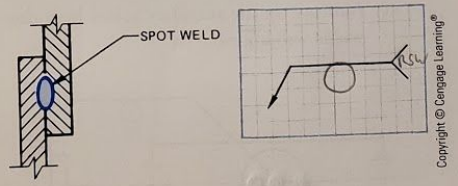
c. 3000 N Shear Strength

d. 500 lbs Strength

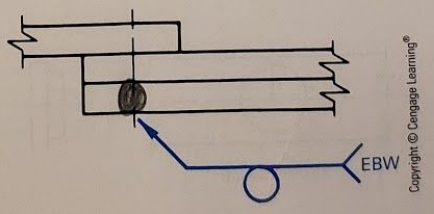
8. Apply a welding symbol to the following sketch to indicate seven spot welds on the horizontal centerline between the 15" dimension, spaced 2½" apart, size of spot weld to be ¼", and the process to be resistance spot welding.



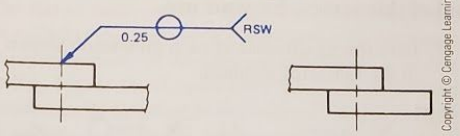
9. Show where the spot-weld symbol should be located on the reference line for the weld shown in the following sketch. Include an RSW process reference.



10. Sketch the weld called for by the following symbol.



11. a. Sketch the desired weld as indicated by the following welding symbol. Apply it to the sketch shown on the right.



b. On the sketch, dimension the significance of the 0.25 figure. Size

c. Identify the type of joint that is shown in the sketch.

Spot weld middle

d. If a figure of 200 lbs were shown in place of the 0.25, what would it signify?

Strength

e. If a figure of 200N is shown, what does it signify?

Shear Strength

f. If a figure of 30 mm is shown, what does it signify?

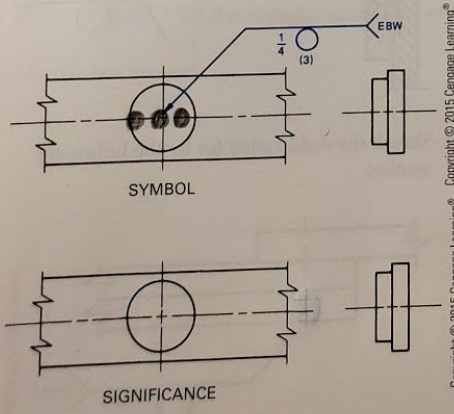
Size

12. a. Describe the locations of the required welds as they would appear in the sketch below.

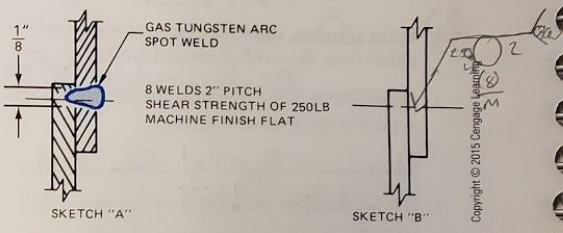
They would all appear on the left Side

b. Indicate on the sketch below the location of the weld specified by the weld symbol given.

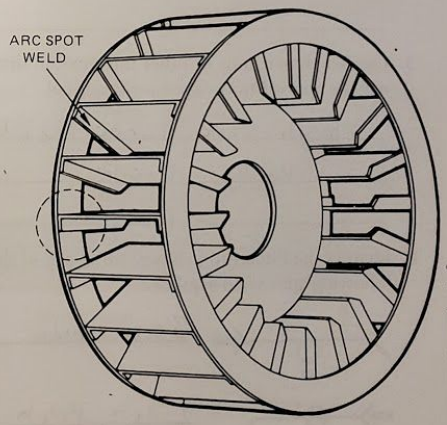
c. Indicate on the sketches below how the welds will appear.

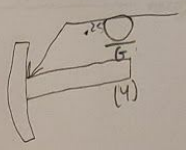


13. Apply the data for spot welds shown in Sketch "A" to Sketch "B" by means of a welding symbol.



14. Sketch an enlarged detail of the portion of the fan rotor that is circled by a broken line. Apply a spot-weld symbol to this fan rotor that signifies four spots 0.25" diameter and spaced 1" apart. The spot welds are to be made on the outside surface of the ring. Include an appropriate welding process reference on the welding symbol. Also indicate the spot welds are to be finished flush by grinding.





UNIT 19: REVIEW

1. a. Identify the following symbols.

(1) RSW — Spot butt Resistance arc welding

(2) PW — Spot Arrow Plug or welding

(3) EBW — Other Spot Eletric beam welding

(4) GTAW — field weld Gas tungsten

b. Which symbol or symbols in question 1(a) cannot be converted to a projection-weld symbol by changing the welding process?

Number 4

2. List five elements that can be applied to a projection-weld symbol.

Size and Strength

Spacing

Extent

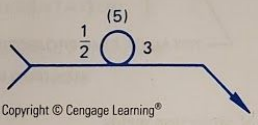
Number of welds

Welding Processes

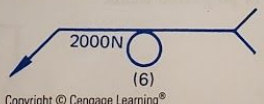
3. a. Identify each element given on the following projection-weld symbols (1 through 4).

b. Add the element(s) missing in each of the symbols.

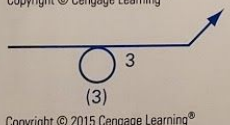
(1) Process, strength, extent



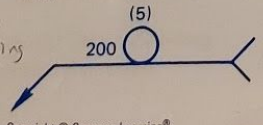
(2) Spacing, process



(3) Strength, process



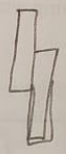
(4) Process, size, spacing



4. a. How does the joint preparation for a projection weld differ from that for a spot weld?

Always prepared with a raised surface

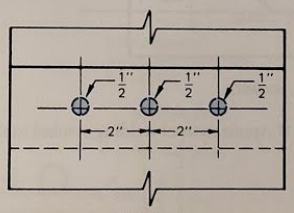
b. Prepare a sketch to illustrate this.



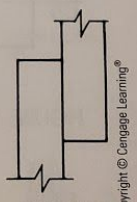
5. Where is the projection-weld symbol located on the reference line? How does this differ from spot-weld symbol locations?

In the tail marked "PW", Spot welds are on reference line.

6. Apply a welding symbol to Sketch "B" that specifies the data shown in Sketch "A." Add any other elements necessary to indicate that it is a projection weld. Indicate on the symbol that there are to be three projection welds with ½" diameters, spaced 2" apart. Add any other elements necessary to indicate that it is a projection weld.



SKETCH "A"



SKETCH "B"

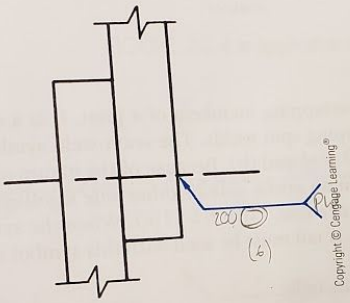
7. Is the projection-weld symbol used to denote a both sides significance? Explain.

No it has designated sides, arrow or other

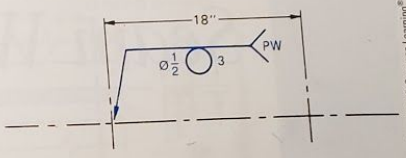
8. a. Locate the projection-weld symbol on the reference line of the welding symbol in the following sketch to indicate other side projection welds.

   b. Add the necessary elements to indicate that six projection welds are required.

   c. Add the element that specifies a shear strength of 200 pounds per projection weld.



9. What is the significance of the welding symbol shown in the following illustration?



Projection Plug weld, 3" spacing, 1/2 build up.

UNIT 20: REVIEW

Graph paper is provided at the end of this review for your use.

1. List six elements that can be applied to the seam-weld symbol.

Size
Extent
Pitch
Strength
Shear Strength
Process

2. What element, if any, is added to the seam-weld symbol to differentiate it from the spot weld?

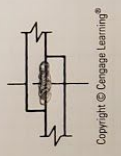
lines through

3. Why is a seam-weld symbol used with only a one side significance?

Because the nature of the weld.

4. a. What is indicated when the seam-weld symbol is located astride the reference line of the welding symbol?

b. Sketch how the weld should appear.



5. What is the meaning of each element shown on the following welding symbols?

a. EBW 4
Pitch
other side
Electric beam welding

b. EBW 300
Strength arro
arrow side

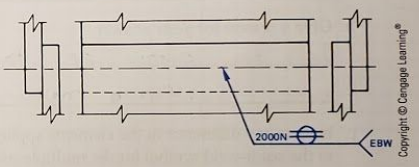
c. RSEW $\frac{1}{2}$ 2-2
length. Pitch
Size

d. RSEW 3000N
Shear
Strength

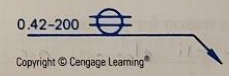
e. EBW 60 mm
Size
arrow
Beam welding

6. a. In the left- or right-side view below, show how the weld should appear as specified in the center sketch.

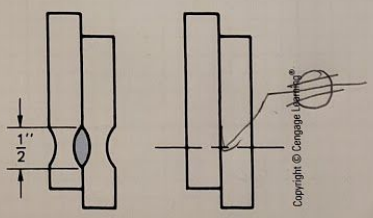
b. Indicate the significance of the 2000N value.



7. Correct the following welding symbol by sketching it correctly.



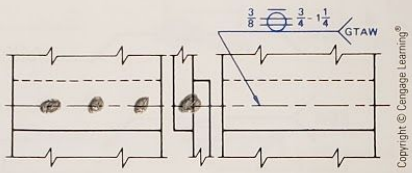
8. How should the welding symbol be shown in the sketch on the right to denote the seam weld shown on the left?



9. When a seam weld is not to be made parallel to the joint, how must this be indicated?

Sitting on the middle of the reference line

10. Referring to the welding symbol in the right-hand sketch, illustrate the significance of the elements of the welding symbol on the left-hand and center sketches.



11. a. Is the arrow side, other side application of the seam-weld symbol to a multiple-joint seam weld different from its application to a single-joint weld?

NO

b. Give a reason for your answer.

Only the arrow side, other side significance matters

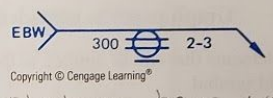
c. Is there any difference in the elements applied to the seam-weld symbol for the multiple-joint seam as compared to the single-joint seam weld?

Yes

Give a reason for your answer.

Not all elements are compatible

12. a. What welding process is indicated in the following welding symbol?



Electronic beam welding

b. What is the strength specified?

300 lbs

c. What is the length and pitch of the seam weld?

Length 2 inches

Pitch 3 inches

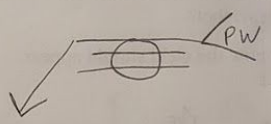
13. When a welding symbol refers to a detail drawing, where is this information located on the symbol?

In the tail of the reference line

14. When is a flush-contour symbol not applied to a seam-weld symbol?

When it is centered astride.

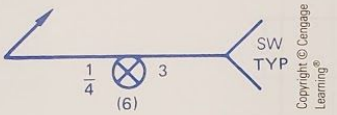
15. Sketch a welding symbol for a seam weld specifying a postweld finish.



UNIT 21: REVIEW

Graph paper is provided at the end of each review for your use.

1. Identify the elements applied to the following welding symbol:



¼ Size

⊗ Stud weld symbol

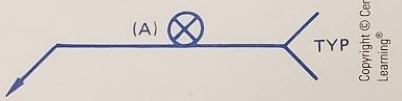
3 Pitch

(6) number of welds

SW Stud weld

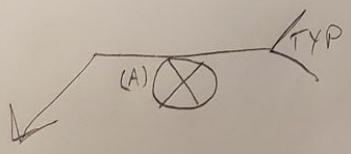
TYP Typical

2. a. Explain what is wrong with the following welding symbol:

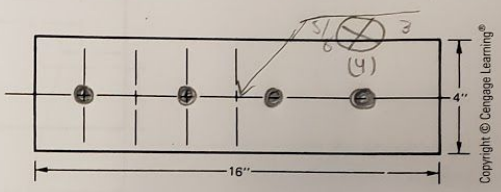


Stud welds are not placed on other side Significance.

b. Sketch the welding symbol in 2(a) so that it is shown correctly.



3. Complete the following sketch by adding a welding symbol to indicate four stud welds centered on the workpiece and in a straight line, 3" on center with ⅝" stud size. Include all dimensions necessary for locating the stud welds. Use hypothetical dimensions where necessary.



4. Complete Sketch B by adding a welding symbol to indicate the stud welds required in Sketch A. Include all necessary dimensions. Stud size is ¾" and the welds are to be typical. The stud spacing is to be 3" vertically.