Cape Cod Community College AMTS

Practical Project Guide for AMT 207 Airframe Curriculum, Subject Item 10

Part 147, Appendix C, Part 1, Subject D Sheet Metal and Non-Metallic

Structures

Item 10. Select, install, and remove special fasteners for metallic, bonded, and composite structures. (Level 2)

# Project 1

Purpose: To acquaint the student with removal, selection, and installation of fasteners for metallic, bonded, and composite structures.

References:

(1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapters 1, 4, and 7
(2) AC 43.13-1B

Equipment and Tools Needed:

(1) Blue Snap-on Metal box
(2) Blue airframe tool kits
(3) Air hose
(4) Personal Protection Equipment (PPE)

Supplies and Materials Needed:

(1) Rivets ( AN470AD3- and AN470AD4- )
(2) Anchor nuts
(3) Skymaster 337 nose and engine fairings

Procedure:

(1) Inspect the Skymaster 337 nose and engine fairings, and select the correct anchor nuts and rivets to be used with those associated fairings.
(2) Remove old anchor nuts using approved method in the AC 43-13.1B
(3) Install new anchor nuts in fairings using approved methods in the AC 43-13.1B

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Practical Project Guide for AMT 207 Airframe Curriculum, Subject Items 10, 11 and 12

Part 147, Appendix C, Part 1, Subject D Sheet Metal and Non-Metallic Structures

Item 10. Select, install, and remove special fasteners for metallic, bonded, and composite structures. (Level 2)
Item 11. Inspect bonded structures. (Level 2)
Item 12. Inspect, test, and repair fiberglass, honeycomb, composite, and bonded primary and secondary structures. (Level 2)

# Project 2

Purpose: To acquaint the student with proper hardware removal, replacement, testing, inspection, and repair procedures for bonded, fiberglass, honeycomb, and composite structures.

References:

(1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 7
(2) AC 43.13-1B

Equipment and Tools Needed:

(1) Heatcon HCS9000B Hot Bonder kit
(2) Blue Snap-on Metal box
(3) Blue airframe tool kits
(4) Air hose

Supplies and Materials Needed:

(1) Personal Protection Equipment (PPE)
(2) Rivets (AN470AD3- and AN470AD4-)
(3) Cirrus SR-20 Wing
(4) Anchor nuts
(5) Fiberglass
(6) Composite build-up materials (breather cloth, porous and non-porous cloth, bag material)

Procedure:

(1) Secure the project area on the Cirrus SR-20 wing from the instructor.
(2) Inspect test, and repair bonded, honeycomb, and composite laminated primary structures using the AC 43.13-1B and Heatcon hot bonder kit
(3) After completing the repair, remove and replace associated anchor nuts and screws with new hardware in accordance with the AC 43.13-1B.

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Practical Project Guide for AMT 207 Airframe Curriculum, Subject Item 13

Part 147, Appendix C, Part 1, Subject D Sheet Metal and Non-Metallic Structures

Item 13. Inspect, check, service, and repair windows, doors, and interior furnishings. (Level 2)

# Project 3

Purpose: To acquaint the student with proper procedures to inspect, check, service, and repair windows, doors and interior furnishings.

References:

(1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 7
(2) AC 43.13-1B Chapter 3

Equipment and Tools Needed:

(1) Skymaster's 337 Windows and Doors
(2) Snap-on Toolbox
(3) Personal Protection Equipment (PPE)

Supplies and Materials Needed:

(1) Safety Wire
(2) Deluxe Windshield Repair Kit 51-861

Procedure:

(1) Inspect and check the damage limitations for the Skymaster 337 windscreen and doors in accordance with the AC 43-13.1B Chap 3.
(2) Once damage level is determined, perform repair to appropriate level in accordance with the AC 43-13.1B.

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Practical Project Guide for AMT 207 Airframe Curriculum, Subject Item 14

Part 147, Appendix C, Part 1, Subject D Sheet Metal and Non-Metallic Structures Item 14.

Inspect and repair sheet-metal structures (Level 3)

# Project 4

Purpose: To acquaint the student with how to inspect and repair sheet metal structures.

References:

(1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapters 1, 4, and 7
(2) AC 43.13-1B

Equipment and Tools Needed:

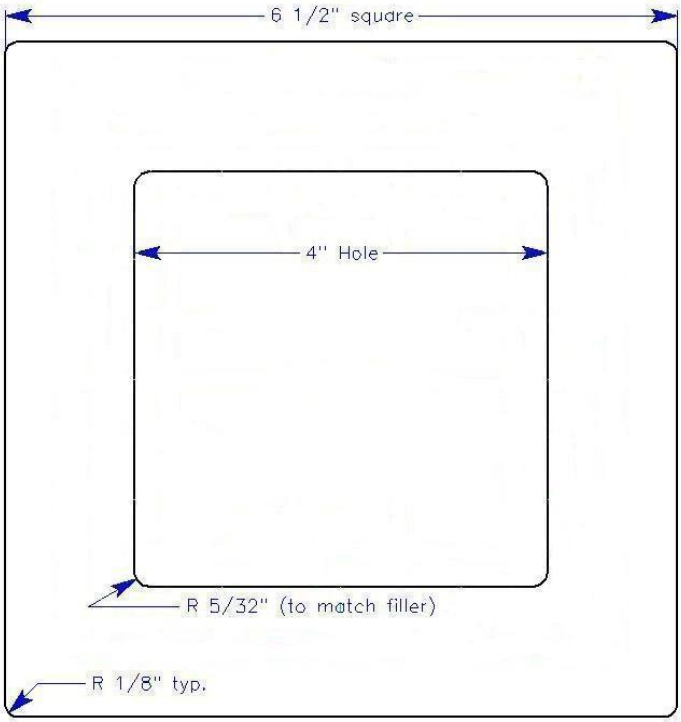
(1) Blue Snap-on Metal box
(2) Blue airframe tool kits
(3) Air hose
(4) Personal Protection Equipment (PPE)

Supplies and Materials Needed:

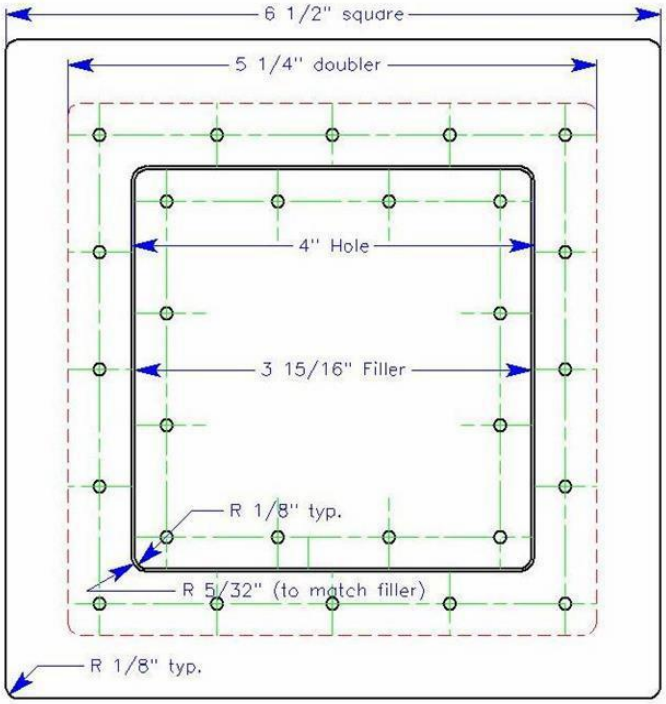
(1) Rivets ( AN470AD3- and AN470AD4- )
(2) 2024 T-3 aluminum .040 thick

Procedure:

(1) Secure the material from the instructor and prepare the simulated damaged aircraft skin.




(2) Next layout the filler and doubler in accordance with the drawing below.




(3) Prepare the skin, doubler, and filler for riveting by laying out the holes as indicated in the drawing on the previous page. Drill, deburr, draw dimple, countersink (as appropriate), and Cleco the assembly together for inspection.

(4) Rivet the assembly together for inspection.

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Practical Project Guide for AMT 207 Airframe Curriculum, Subject Item 15

Part 147, Appendix C, Part 1, Subject D Sheet Metal and Non-Metallic Structures

Item 15. Install conventional rivets. (Level 3)

# Project 5

Purpose: To acquaint the student with proper installation methods for conventional rivets.

References:

(1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapters 1 and 4
(2) AC 43.13-1B

Equipment and Tools Needed:

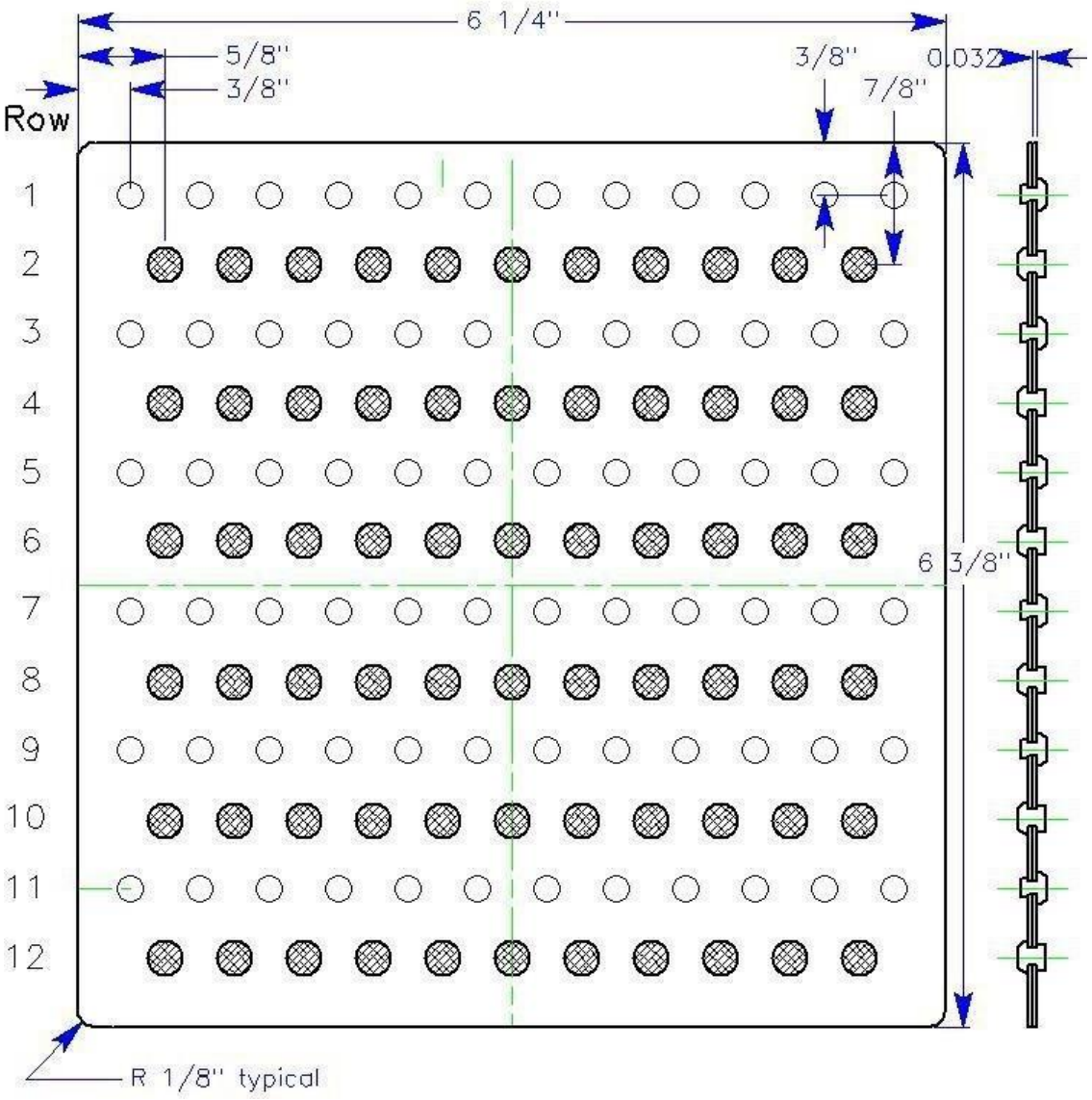
(1) Blue Snap-on Metal box
(2) Blue airframe tool kits
(3) Air hose
(4) Personal Protection Equipment (PPE)

Supplies and Materials Needed:

(1) Rivets (AN470AD3- and AN470AD4-)
(2) 2024 T-3 aluminum .032" thick

Procedure:

(1) Lay-out the required rivet pattern on one of the plates skin in accordance A.C. 43.13-1B, Change 1, for minimum edge distance for 3/32 inches rivets on one half the plate and 1/8 inches rivets on the other half as depicted in the drawing. Install 3/32 inches rivets in the odd numbered rows and 1/8 inches rivets on the even rows with the universal heads of the 3/32 inches rivets on the same side as the bucked tails of the 1/8 inches rivets.
(2) Center punch the line intersections for rivet holes, drill or punch either plate or that you center punched. Then place the two plates together, back drill, disassemble, deburr, and round all corners to 1/8 inches radii.
(3) Rivet the two plate's plate together, checking for proper bucked heads.


6 1/4"
5/8"
3/8"
3/8"
7/8"
0.032
Row
1
2
3
4
5
6
7
8
9
10
11
12
6 3/8"
R 1/8" typical

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Practical Project Guide for AMT 207 Airframe Curriculum, Subject Item 16

Part 147, Appendix C, Part 1, Subject D Sheet Metal and Non-Metallic Structures

Items 16. Form, layout, and bend sheet metal. (Level 3)

# Project 6

Purpose: To acquaint the student with proper procedures to form, layout, and bend sheet metal.

References:

(1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 1 and 4
(2) AC 43.13-1B Chapter 4

Equipment and Tools Needed:

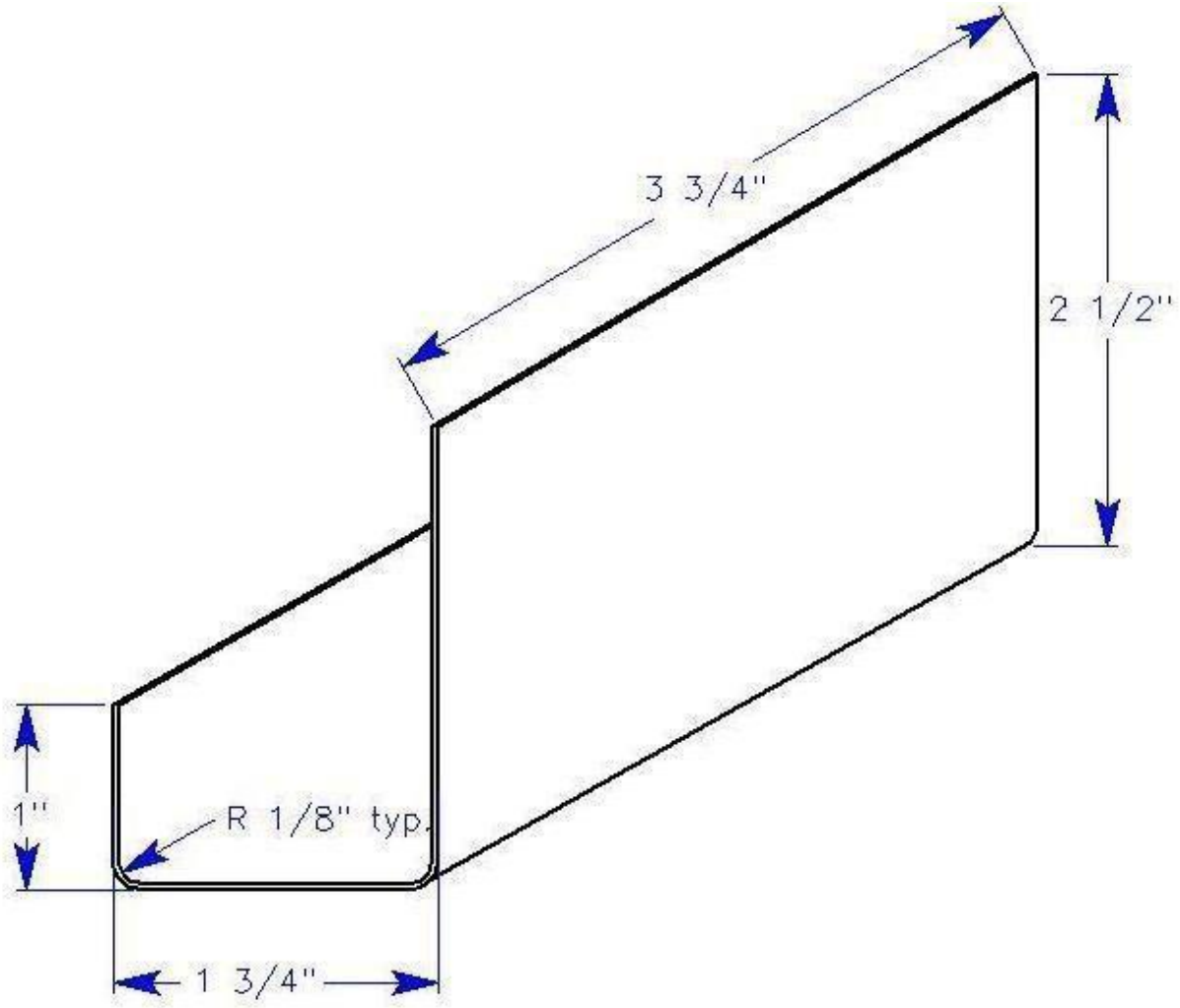
(1) Blue Snap-on Metal box
(2) Blue airframe tool kits
(3) Blue Bender
(4) Air hose
(5) Personal Protection Equipment (PPE)

Supplies and Materials Needed:

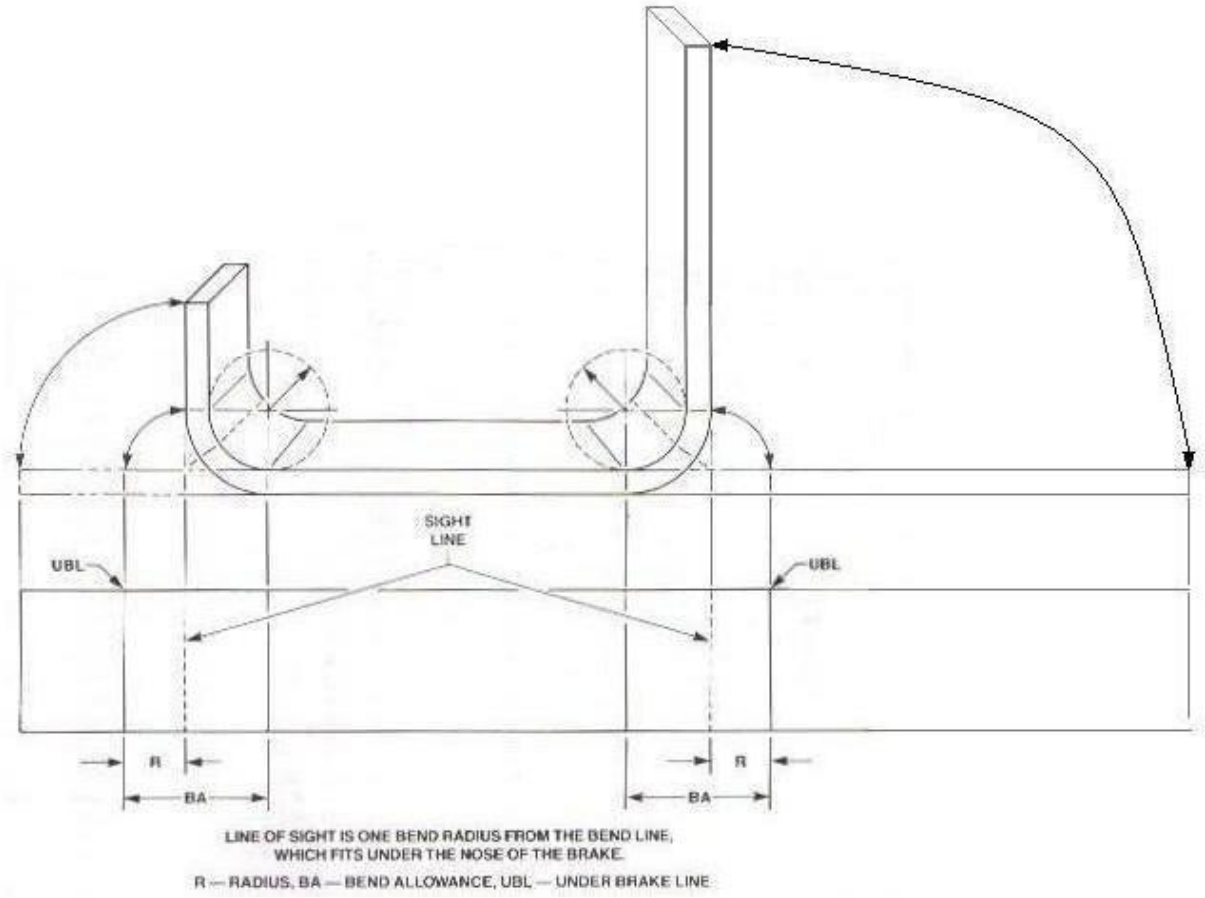
(1) 2024 T-3 aluminum .032

Procedure:

(1) Follow the instructions below as well as the appropriate manuals.
(2) Calculate the flat pattern layout as shown in diagram below.



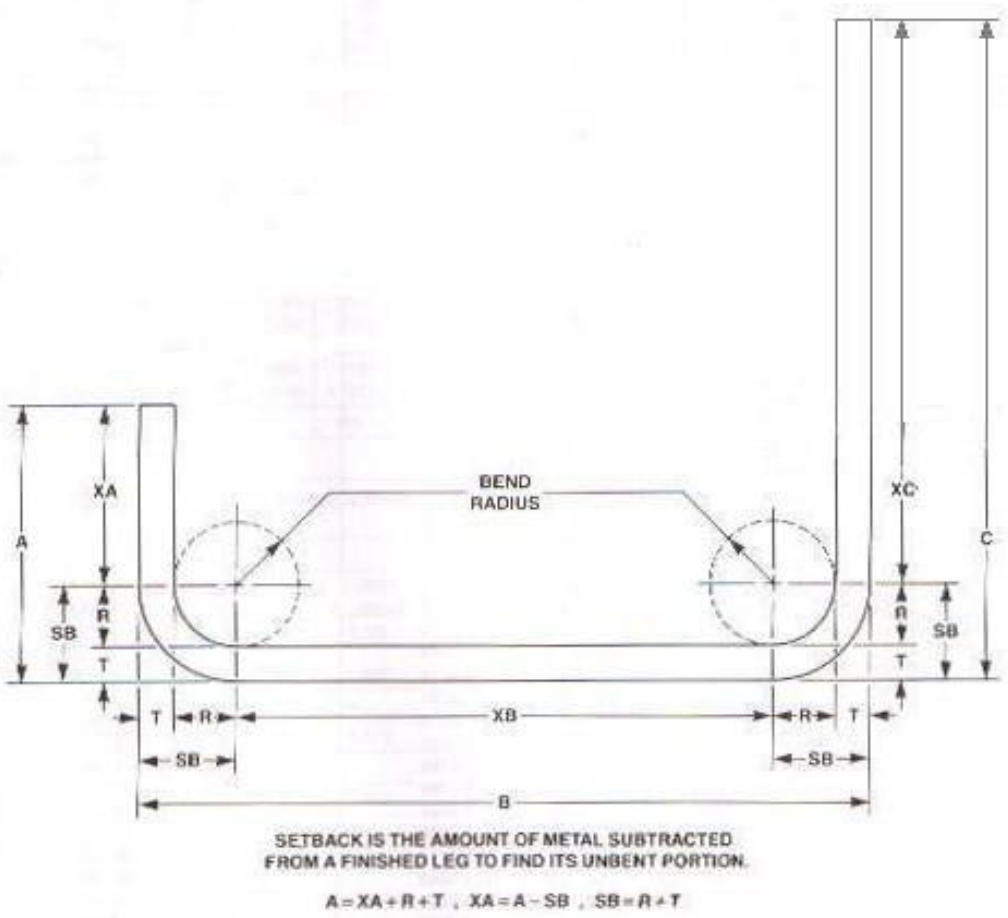

(3) Transfer the flat pattern layout from above to your metal.




LINE OF SIGHT IS ONE BEND RADIUS FROM THE BEND LINE,
WHICH FITS UNDER THE NOSE OF THE BRAKE.

R — RADIUS, BA — BEND ALLOWANCE, UBL — UNDER BRAKE LINE

| Calculate the following | |
|---|---|
| R | |
| BA | |




SETBACK IS THE AMOUNT OF METAL SUBTRACTED FROM A FINISHED LEG TO FIND ITS UNBENT PORTION.

$A = XA + R + T$ , $XA = A - SB$ , $SB = R + T$

| Calculate or complete the following | | |
|---|---|---|
| A | Left Vertical Leg | 1.000 |
| XA | | |
| R | Radius | |
| SB | Set Back | |
| T | Thickness | 0.032 |
| XB | | |
| B | Horizontal Leg | 1.750 |
| XC | | |
| C | Right Vertical Leg | 2.50 |
| **Total Length Required** | | |

(4) Bend the metal, compare to the drawing, and repeat if necessary.

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