

INSTALLATION INSTRUCTIONS

Thank you for purchasing genuine Design Engineering, Inc. products. Be sure to always wear the proper safety equipment when installing any DEI product. Design Engineering Inc. WILL NOT BE HELD LIABLE FOR IMPROPER INSTALLATION OR USE OF THIS PRODUCT. Please follow all instructions provided. If you are unsure of any installation procedure, please contact a certified technician.

DESCRIPTION: 901067 Universal Liner Instructions

KIT CONTENTS:

- Glass insulation. 25.5' x 18
- Pattern Felt. 18" x 60" (In these instructions the felt is red. That color may vary in actual kit)
- Aluminum Sheet. 24" x 21"

TOOLS NEEDED:

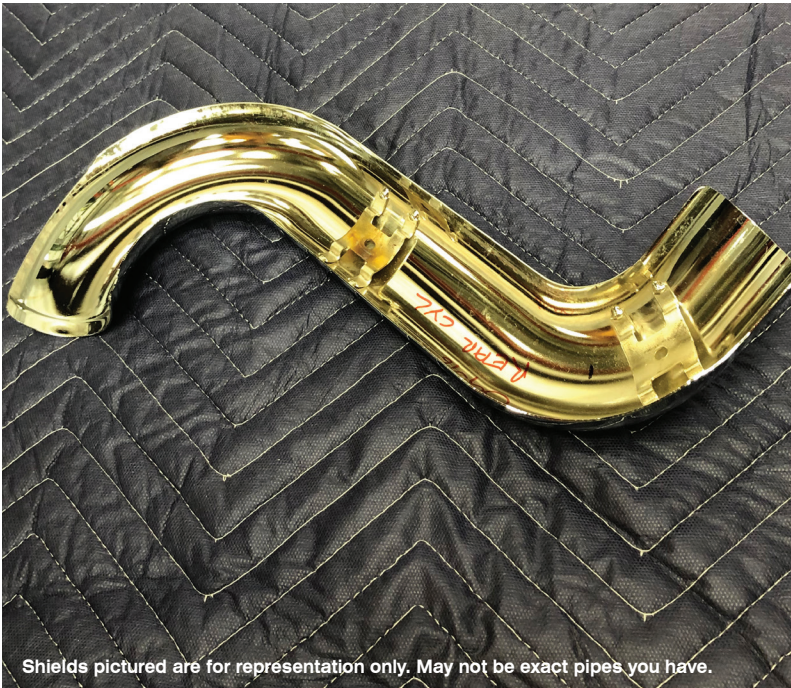
Heavy Duty Scissors, Sharpie marker
Utility knife, masking tape

SAFETY:

Safety glasses
Gloves

NOTE OF CAUTION: Wear eye and hand protection when installing all materials.

OVERVIEW: This kit controls heat on existing heat shields. This is enough to make most heat shields for the average motorcycle. The material is designed to be used between the exhaust pipe and metal pipe shields. The aluminum is between the exhaust pipe and glass insulation. The glass insulation is not designed to be in direct contact with the hot exhaust pipe.



STEP 1. Allow the motorcycle to cool before performing any work. Remove your heat shields following the factory manual. Most are held in place with worn gear style clamps. Once the shields are removed, mark the direction the clamps are installed, then remove the clamps from the shield.

NOTE: Take note of what direction the clamps were installed. If needed refer to a shop manual for this process. We suggest writing notes on this instruction sheet on which way the clamps are positioned, this will help with reinstalling the clamps later in the correct direction.

STEP 2. Lay the shield on a table, Make sure to have a blanket or towel down to prevent any scratches to the shield. (Fig 1)

FIG. 1



3 You will first need to make a pattern using the felt provided. (color may vary for the felt). Lay the felt over the shield. . Push the felt into the shield. Fill as much of the shield as you can.(Fig 2)

4. Use a marker to trace the edge of the shield to one side of the felt. (Fig 3)

5. Once you have traced one side, use scissors to cut along the trace mark. (Fig 4)

FIG. 2
LAY FELT OVER SHIELD AND PRESS IT INTO THE BACK OF THE SHIELD



FIG. 3
TRACE THE EDGES OF THE SHIELD ONTO THE FELT WITH A MARKER



FIG. 4
CUT ALONG THE TRACED LINE

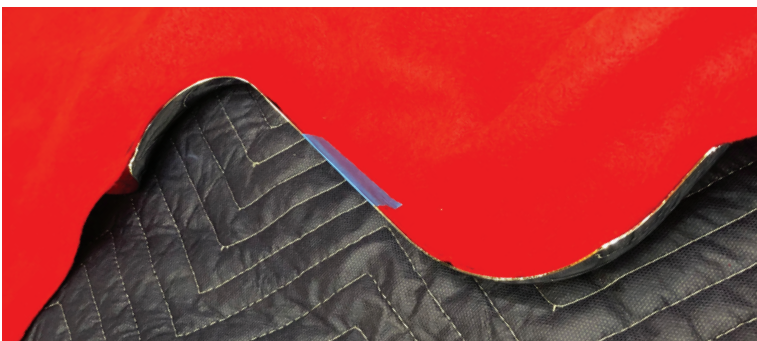
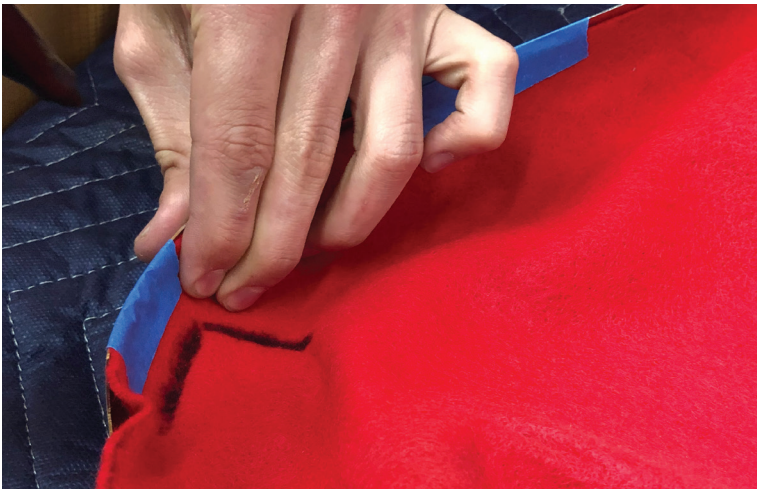


FIG. 5
TAPE THE EDGE OF THE FELT TO THE HEAT SHIELD

6. Once you cut one side, place the felt back into the shield and tape the edge you just cut to the same edge of the shield. (Fig 5)

7. Make sure the felt is laying back into the contour of the shield. You will know need to mark the clamp stand offs. (Fig 6)

8. Use scissors to cut out the area for the clamp standoffs. (Fig 7)



FIG. 6
MARK THE LOCATIONS OF THE STAND OFFS

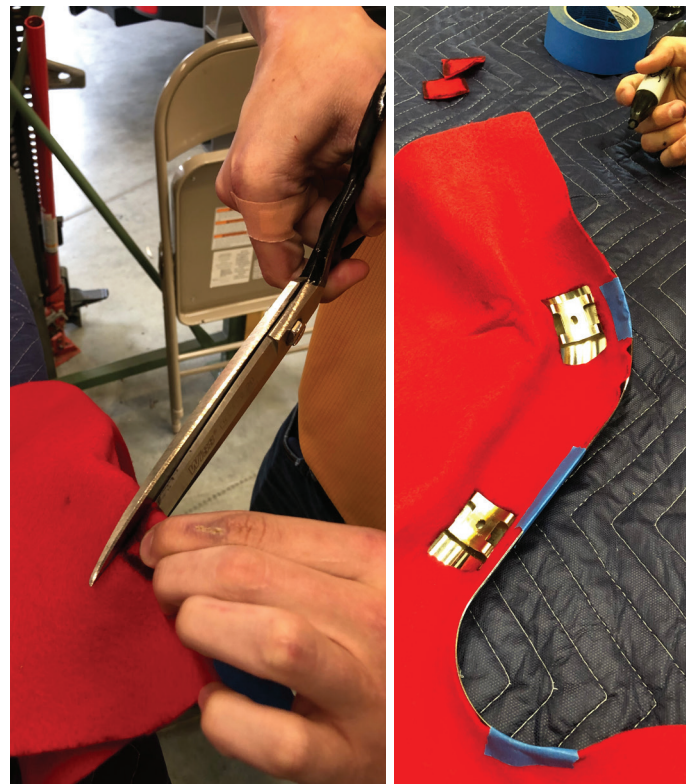
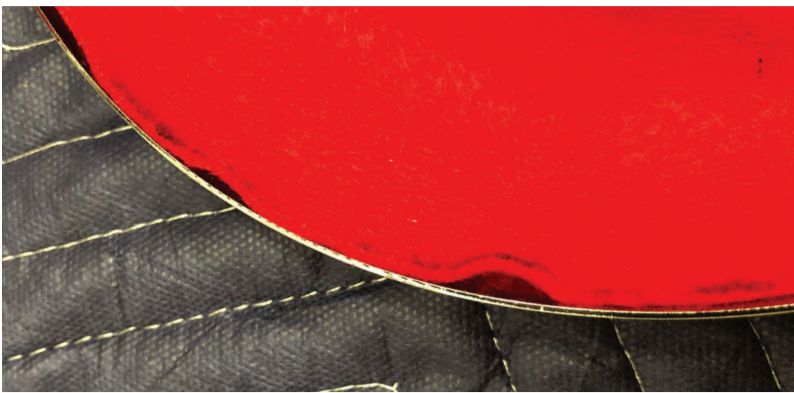


FIG. 7
CUT OUT AREAS FOR STAND-OFFS AND CLAMPS



9. Trace a cut out line on the other side of the felt. Cut along the line using scissors (Fig 8)

FIG. 8
TRACE THE REST OF THE SHIELD AND CUT OUT WITH SCISSORS



10. Lay the felt pattern back in the shield. The felt will want to bunch in bends and corners. You will need to make relief cuts where this happens. This will allow the insulation and aluminum to fit into the bends. (Fig 9)

FIG. 9
THE MATERIAL WILL BUNNCH IN BENDS AND CORNERS

11. Make pie or triangle cuts in these areas. Make small cuts and open them up as needed. (Fig 10)

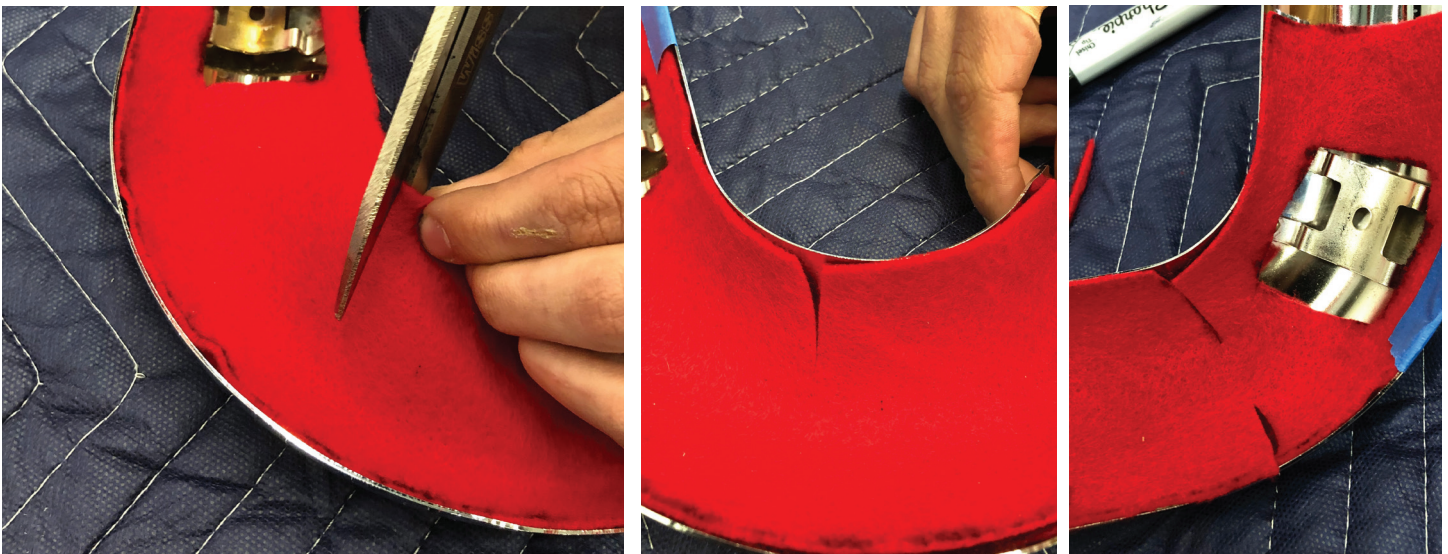
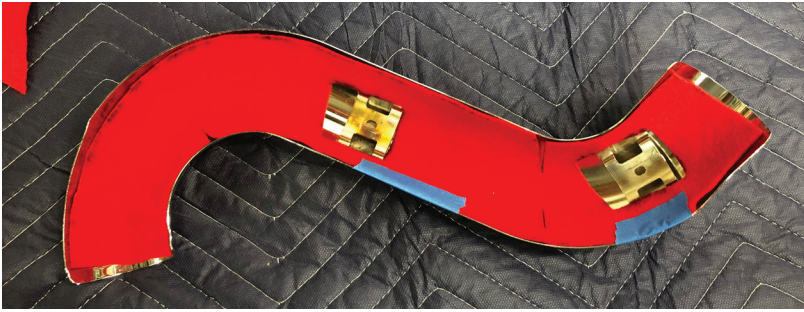
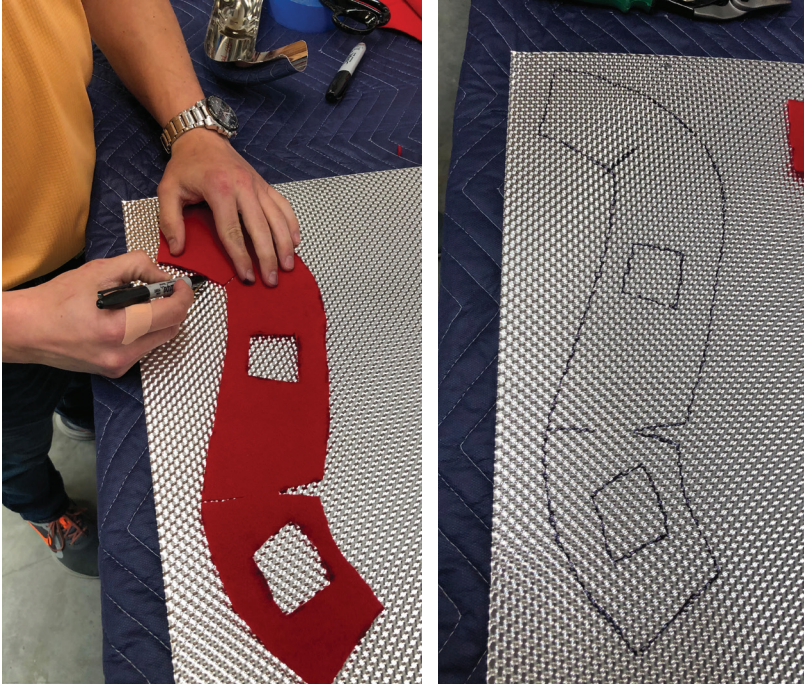


FIG. 10
MAKE PIE CUTS IN THESE AREAS TO LET THE MATERIAL OPEN UP AND LAY FLAT



12. You now have a pattern to use to mark and cut the insulation and aluminum. (Fig. 11)

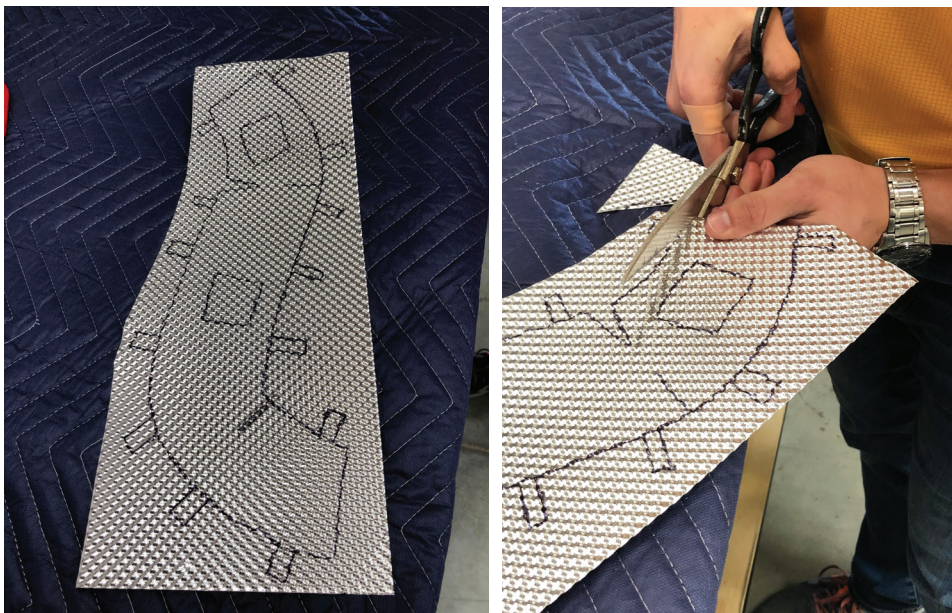
**FIG. 11
TRACE THE REST OF THE SHIELD AND CUT OUT WITH SCISSORS**



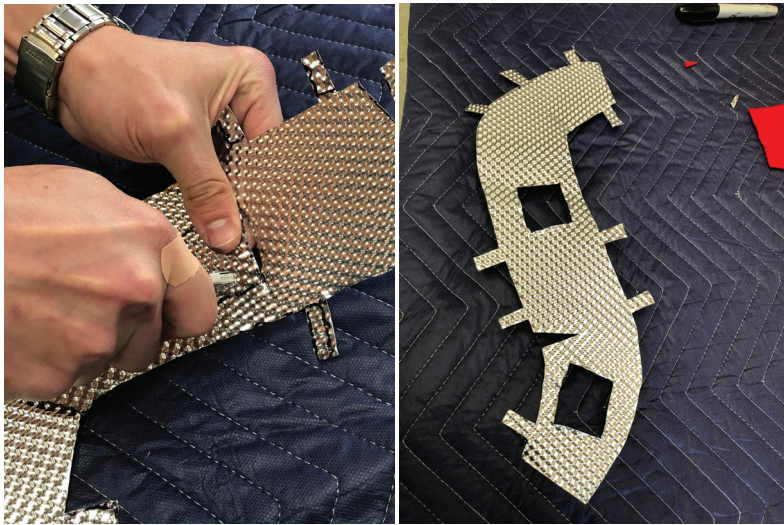
13. You will need to transfer the pattern to the aluminum. Lay the pattern on the aluminum and trace with a marker. Make the line slightly smaller than the felt pattern, just the width of the marker line will do. (Fig 12)

14. You will need to add small tabs to the aluminum trace line only. These will be bent over to help hold the insulation in place during installation. (Fig 13) The shape, location and size of these tabs are not critical. Just place them randomly as needed. Use your scissors to cut out the aluminum. (Fig 13)

**FIG. 12
TRANSFER THE PATTERN TO THE ALUMINUM**

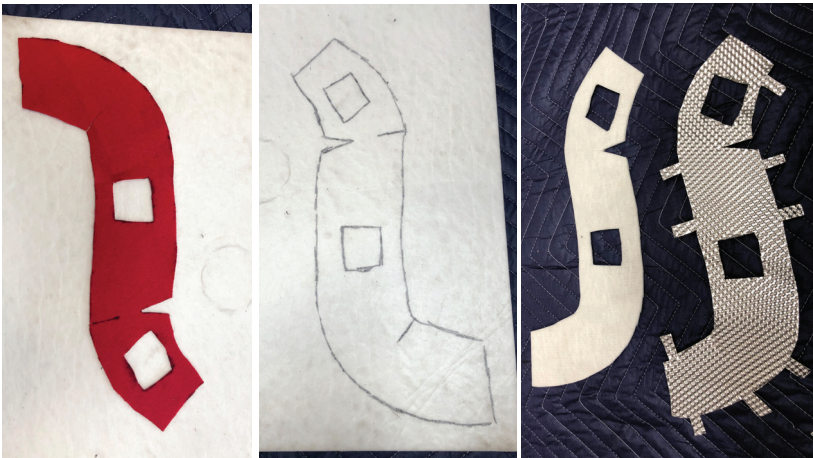


**FIG. 13
ADD SMALL TABS TO THE ALUMINUM PATTERN AND CUT OUT WITH SCISSORS**



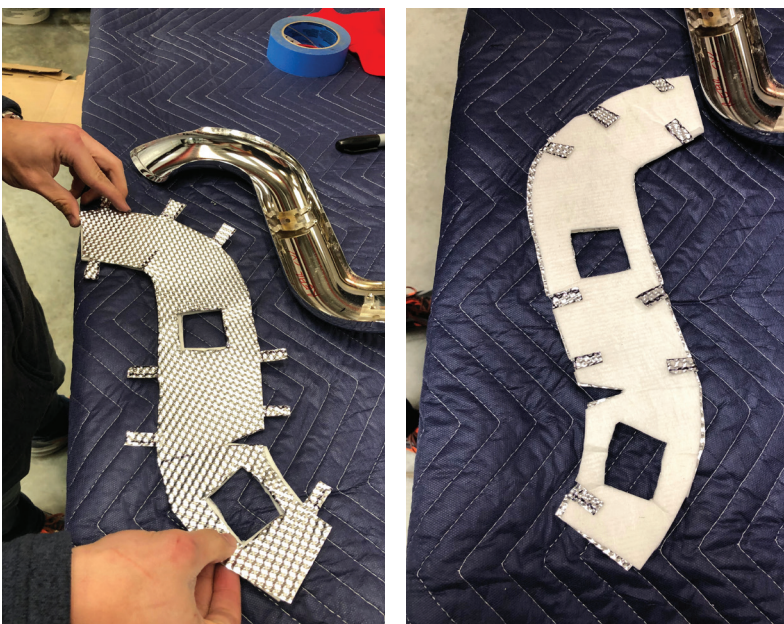
15. Use a utility knife to cut out the center holes for the clamp standoffs. (FIG 14)

**FIG. 14
CUT OUT HOLES FOR STANDOFFS**



16. Repeat the process for the insulation material. The insulation does not need the tabs added. (FIG 15)

**FIG. 15
REPEAT PROCESS FOR THE INSULATION MATERIAL
(DO NOT ADD TABS TO INSULATION MATERIAL)**



17. Lay the insulation on top of the aluminum, make sure you have the correct orientation to fit the shield. Bend over the tabs to hold the insulation in place. (FIG 16)

**FIG. 16
LAG INSULATION ON TOP OF ALUMINUM AND FOLD OVER TABS TO SECURE**



18. Lay the heat shield liner into your pipe shield and press into place. This will take a little time to get the fit correct. You may have to trim some material once its in place. (fig 4245 and 4246)

19. Reinstall the worm gear clamps, making sure to install them in the same direction they were removed.

NOTE: It is helpfull to use a pick when re-installing clamps to grab the end that is being inserted into the welded on stand off.

20. Install the shield back on the exhaust pipe.

NOTE: Wipe off any fingerprints on the heat shields before starting the motorcycle to prevent discoloration.



21. Repeat the process as needed for other shields.

NOTE: The bike is ready to ride. We suggest checking the hose clamps after 50 miles with the bike cool.

FIG. 17
PRESS LINER INTO SHIELD