

Installation Instructions: POP-RIVET MODELS

Congratulations! You now own genuine RunCool® Heat-Escape™ OuterCooler™ Hood Louvers. Read instructions thoroughly and “Limited Warranty and Limitation of Liability,” at end.



The Most-Experienced
Hood Louver Company in the World™

Patented MADE IN THE U.S.A. 

THE *BEST* WAY TO COOL *HOT* ENGINES!™

With The World's Best Hood Louvers!™



The louver openings
face towards the rear.

- “Classic Rodders punched louvers in their hoods to help radiate heat. The Old Dads knew what they were doing, and the principle is no less valid today.”
— Car Craft Magazine
- “When you...cut off the airflow in the engine compartment...You may have a great radiator shroud, but if you can't get the hot air out, the thing will cook when you are sitting still.”
— Chevy High Performance Magazine

Welcome to this RunCool® Hood Louvers Installation Session! Most owners will install these, themselves. All Car Guys we know would make good surgeons, as they frequently “operate” on their vehicles. (And, considering the occasional busted knuckle or two, this can also include some pain and blood loss!) Hence, these Installation Instructions have a step-by step “Surgical” approach, also with the hope that any remaining traces of Obamacare will reimburse you for performing this “operation”! (But, can you still keep your own Mechanic???)

PHASE I: Gather these Instruments for Surgery

- Electrical tape • Duct tape
- Blue masking tape (get 1" and 2" wide)
- Shop vac • Thick gloves
- Use an angle grinder to cut out the panels. If you don't have one of these, this is the **handiest** electric tool anyone can have in his shop! Harbor Freight (800-423-2567) sells these starting at only \$11.95 (#03150-IRYH) and \$19.95 (#31309-IRYH). Northern (800-533-5545) also has them in the \$20-\$25 price range, and theirs comes with the **cutting** disc (this set is item #143378-B259). Lowe's has some in the \$29-\$39 range. Popular sizes are 4" and 4½" diameter. Be sure to have a **thin**, 1/16" or thinner, metal-**cutting** disc for this tool (1/4" is too thick). DeWalt (available at Lowe's) makes one only .045" thick—excellent (#A60T-BF). An air tool cut-off

wheel with a cutting disc works quite well. Also have a **grinding** disc or a file for smoothing off the cut edges.

- Pop rivet gun (the best is ARROW (#RH200, \$19 at Lowe's or Ace). If you have compressed air and want to **really speed up the process (!!!)**, an air-powered rivet gun can **quickly** justify itself—(#93458-9YFA) for \$34.99 from Harbor Freight.
- Face shield/goggles (protect eyes).
- 6 or 7 wet/damp clean (**not** oily—fire hazard!) bath towels (they shouldn't get stains—just don't tell your wife).
- Fire extinguisher—be sure it is full!
- Flat black spray paint.
- Hole-saw drill bits for metal; 1" to 2" dia. good for Step #V-5; this and/or other sizes good for Step #V-6. (Cheap ones at \$3.99 for a set of 8 sizes—#38425-1DEH at Harbor Freight.) The best ones are at Lowe's.

PHASE II: Prepare for Surgery

1. We ship some (not all) of our Natural Aluminum Hood Louvers with a white or clear plastic film overlay. If yours have this, **remove** it now. (For easy removal, heat film with a hair dryer. Start at the **rear** of the panel and pull forward.)
2. Affix two layers of black plastic electrical tape along the **underside** of the perimeter of the Louver panels as a slight cushion between the Louvers and the surface of your vehicle. Put it **inboard** about 1/16" so it doesn't show around outer edges.
3. Open your hood. See the under-hood insulation pad. If held in with push-in clips, remove the clips and pad. You can replace this later if you like (many people leave it off) and cut out holes in the pad

where the Hood Louvers are. If the pad is glued in, decide where the Hood Louvers will be (see Phases III and IV), mark the corresponding areas on the hood pad and surgically remove those two pieces. Either way, when you cut the pad: (a) leave a 1" margin all around so any water coming in will not get the pad soggy, and (b) be sure to remove this pad (or the pad areas under the future openings) **BEFORE** you cut out the metal hood panels (sparks hitting oily pad = fire hazard!).

PHASE III: Determine the Location

There are factors to consider when determining where to locate your Hood Louvers. **NOTE: THE LOUVERED OPENINGS FACE TOWARD THE REAR OF THE VEHICLE.**

1. Enhancing Factors...
 - a. You want to select a location where they **look** good on the hood.
 - b. If you have a turbo, try to locate them above it, to aid the evacuation of the heat.
 - c. Most of the heat is in the center mass of the engine compartment, so this location will be the most effective. For maximum effect at speeds over 60 m.p.h. mount farther forward.
 - d. Many years of experience shows no problems with rainwater flowing onto the engine block, valve covers, battery, manifolds, etc. — people frequently **wash** their engines, some using 1200 p.s.i. pressure washers!

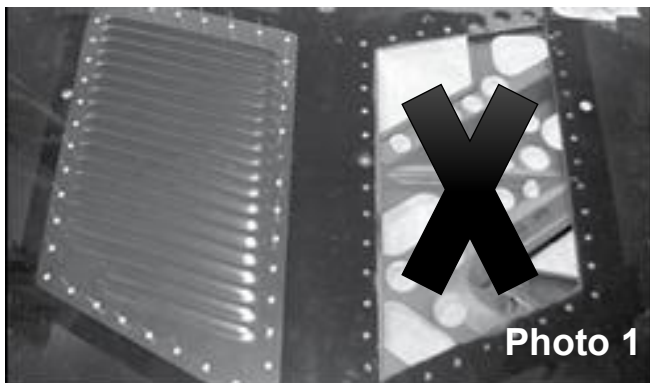
2. Factors to Take into Consideration

- If hood is easy to remove (as on jeeps) do so and rest it on sawhorses.
- With your hood open, look at the interior hood support frame.

IT IS COMPLETELY SATISFACTORY TO HAVE SOME OF THE HOOD FRAME PASSING UNDER THE HOOD LOUVERS.
DO NOT CUT HOLES or "SWISS CHEESE" ANY PART OF YOUR FRAME UNDER THE HOOD.

Note, in **Photo 1**, the UNUSUALLY large brace under this (Jeep) hood (most are *much* smaller!). **But, NO PROBLEM!**

There is still plenty of room for the air to be removed from under the hood. No need to put holes or "Swiss Cheese" your frame.



- As part of this location process, you do not want rainwater to flow directly onto the *distributor* (most vehicles built since the early to mid-1990's don't have one) or the *alternator* (which is, typically, so far forward this is not a problem). An option which prevents rainwater from flowing onto the distributor or alternator, if that is a problem, is only *partially* cutting an opening in the hood *above* that component and *under* that louvered panel.
- Also, see the "Notes on Making a Rainwater Diverter" at the end of these instructions (see Photo 7-10).
- If **windshield washer squirter**s are in the way, these can usually be **relocated**—even **remounted onto** the Hood Louvers.
- On Jeeps with a **windshield hold-down** and **two rubber 'bumpers'**, often you can actually locate the Hood Louvers such that the bumpers are just **outboard** of, or on, the Hood Louvers, and the hold-down bracket can be mounted **inboard** of, or **on and through** the rivet holes of the inboard borders of the Hood Louvers.
- An open-style air cleaner (as on carburetor engines), with an **exposed** filter element, is also a consideration (but if this is a V8, usually no problem as the Louvers are usually **outboard** of this). Here are two suggestions for this situation:
 - Mount the Hood Louvers farther outboard.
 - Buy a smaller-diameter air cleaner unit. Yours is probably 14"- diameter. Proform and/or Mr. Gasket makes these in smaller sizes: 6 1/2", 9", and 10"; available at JEGS (800-345-4545) and Summit Racing (800-230-3030).

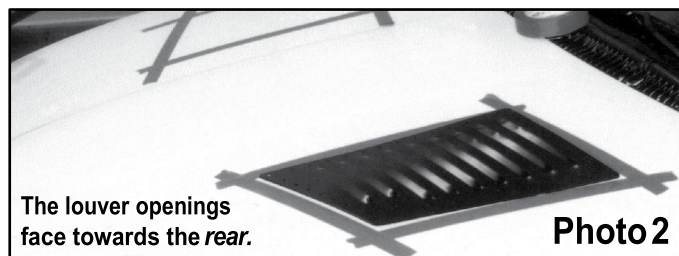
PHASE IV: Designate your Cut Lines

Note: The Hood Louvers will 'mold' to fit the contour of most hoods as you pop rivet them down.

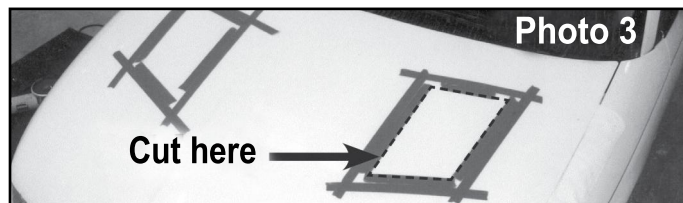
- Run a piece of masking tape down the center of the hood.
- Locate the Hood Louvers precisely where you want them,

indexing off the hood center-line.

- Apply masking tape or electrical tape onto the hood, around the perimeter of each, making an exact **outline** of each Hood Louver panel (see **Photo 2**).



- Remove the Hood Louvers from the hood.
- Next, run an **inner row** of masking or electrical tapes such that the **inner** edge of it is 1" inboard from the **inner** edge of the first row of tape you just put on the hood. The **inboard** edge of this **second, inner row** of tape is your cutting line (see **Photo 3**). Compare this proposed cut line/opening area to the actual openings in the Hood Louver panels, where they will be mounted on the hood. This is to be sure that the remaining hood area does not block any of the open areas of the Hood Louver panels, which would reduce heat flow out.



- Good suggestion** (but not shown in the photos, here): Protect the paint on your hood from scratches from the metal dust generated by cutting and drilling. To do so, tape newspapers, towels or paper towels over the exposed areas (but NOT where the panels will be cut out) and over the front fenders. Remember Fire Safety; keep an extinguisher handy.

PHASE V: Let the Surgery Begin!

Now you are almost ready to cut panels out of the hood so heat will rise through the Hood Louvers. (Don't be nervous; you'll be **really** glad you did it!) Do **not** cut until you get to Step 6, in this Phase V.

- Due to flying sparks from cutting steel, exercise extreme safety. Be sure nothing is in the immediate or surrounding area that a spark can ignite, including petroleum products, products made with petroleum (such as plastic), dry leaves — even steel wool! Outdoors is usually safest.
- IMPORTANT! Completely cover your windshield with wet/damp towels. Flying sparks from cutting and grinding will severely pit glass!!**
- IMPORTANT! Completely cover your engine and engine bay with clean/damp towels. Sparks from cutting and grinding can be a fire hazard. This will also make clean-up easier!**

4. **Be Sure To:**

- Grind when your engine is cold (gasoline can evaporate—explosive — when hot).
- Open your hood all the way for at least five minutes, to let any trapped gasoline fumes escape, before cutting.

- Be sure your fire extinguisher is fully charged and nearby and ready!!
 - Keep your hood at least partially opened to prevent accumulation of gasoline fumes.
 - Wear goggles (**Note: Sparks can pit the lenses of eyeglasses!**) to protect your eyes when cutting.
 - Throughout the cutting/grinding process, be on constant fire alert—including regularly opening your hood and checking there.
5. **Optional Off-Road Racing Tip:** Radius corners are stronger than squared-off corners. **Before** you cut out the panels, if you have a hole saw drill bit in a diameter between $\frac{1}{2}$ " and 2" (1" is best), drill holes in the four corners of each area of the hood you are going to cut out. Drill four holes tangent to, and inboard of, the four lines to be cut, so each corner will have a smooth radius.



6. Using your saber saw, cut-off wheel, or angle grinder, cut out a panel along the **inner** side of the **inner row** of the masking tape outline (see Photo 4). If using an angle grinder, be sure to use a thin **cutting** disc, rather than a thick **grinding** disc. Several shallow passes are better than one deep pass. Open the hood regularly to check the towels under the hood to be sure a spark hasn't ignited them or anything else there or in the surrounding area. **Don't cut into or through the underlying hood frame.** Instead, come back **after** you have cut out and removed the panels and "Swiss cheese" the frame there by holding it out with hole saw drill bits, from above (see Photo 1 on Page 2).
7. Wearing thick gloves (sharp edges), remove the cut-out panels from the hood. Note: Usually, the sheet metal of the hood is affixed to the hood frame with a thick, anti-vibration adhesive. Use a screwdriver or chisel to pry the cut-out panels off the hood frame.
8. Use your angle grinder or a file to smooth out the raw edges of the hood around the cut-out area. Again, practice fire safety!

PHASE VI: Drill the Holes

1. Peel off the **inner row** of tape on the hood, leaving the outer row of tape in place.
2. Place the Louver panels back on the hood, using the **outer row** of tape as an outline for the position. Tape the Louver panels in place, with a short piece of duct tape in the middle of each side of each Hood Louver. Leave most of the mounting holes around the perimeter of the Louver panel exposed, so you can see where to drill the holes!

Note: If, for your own reasons, you'd rather use sheet metal screws, we suggest No. 6x1/2" in Stainless Steel. Lowe's has "Weather-Max" brand, by Hillman – with polished heads (!), part no. 127049. Buy two packs. Also buy and/or use a 7/64" drill bit, not the one furnished with this kit. After installing, grind off/blunt the screw tips – for safety.

3. Drill the mounting holes, being sure to use a 9/64" drill bit (provided with the kit). This is the proper size for the 1/8"-diameter rivets provided. This is a slightly smaller-size hole than on the Louver panels, to give you a little bit of leeway in mounting the panels. Your drill bit should pass through the hood and continue about 3/8" beyond the underside of the hood's surface (to give enough room behind it for the pop rivet to affix). **Don't** drill through anything below that distance. If you hit a hood support, **within that depth**, drill through it. Drill the four corner holes first. Then take some nails or machine screws, and temporarily drop them into the holes, to serve as locator pins, as you drill the remaining holes. These pins **must** be a snug fit—or the panel will move, and the holes will be "off."
4. Now, remove the locator pins and the Hood Louvers. Open the hood and de-burr any rough edges of the cut opening.
5. To prevent rusting, paint the raw, cut edge of the hood. A quick way is to move the existing masking-tape border in $\frac{1}{4}$ ", then mask off the rest of the hood with newspaper. Next paint the inner area of holes and the cut edge (see Photo 5). It will not show because it will be covered by the Hood Louvers. Also spray paint (with flat black) any of the underhood support frame that might show through the Louver openings from the top. This is to prevent it from being conspicuous when seen through the Louvers.

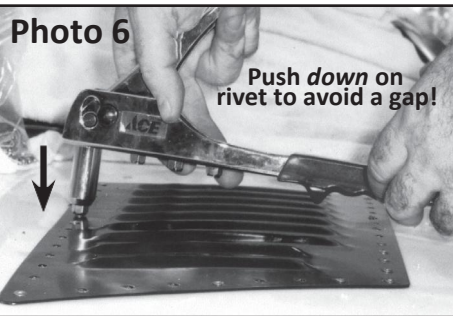


6. Clean off the hood. Use a shop vac or compressed-air-nozzle
7. If you want to reinstall the under-hood pad, do it now. Then, close the hood and, from **above** the hood, cut out the pad. Next, open the hood and trim off 1" all around the inside of these 2 openings in the pad (to avoid rainwater getting it soggy).

PHASE VII: Pop the Rivets in Place

(To continue the surgery analogy, this is where the S.A. [Surgical Assistant] 'closes' the patient with surgical staples.)

1. Before "popping" the rivets in place, be sure to wear eye protection. Be sure the Hood Louver panel is pressed down firmly against the hood (see Photo 6). A gap between the Hood Louver panel and hood will not allow the pop rivet to mount tightly. Pop the rivets in place, from the outside in. Two-to-three squeezes per rivet are needed before it pops.
Do the four corners, first. Then do the center of each side. If you encounter a thick section, such as a hood-frame brace, here are some suggestions.
Try one of the pop rivets provided.
Or you can pop a rivet in a piece of scrap sheet metal. Grind off the back of the pop rivet so you can extract it, with the head of the pop rivet intact. Then take a hammer and a 1/16"-diameter punch (or a nail) and knock out the rivet head from the underside.



- Glue pop rivet head in place in that hole in the Hood Louver panel. J-B Weld, a strong, two-part epoxy, is excellent for this. Another option is to get some longer pop rivets.
- If any pop rivets didn't turn out to your satisfaction (e.g., you had a gap), you can remove them. Open the hood and grind off the underside of the offending pop rivet and knock it out.
 - Remove the towels from across your engine and across your windshield.

Careful: These will have metal dust and sharp flakes in them, so don't spill them into the engine compartment or onto the vehicle! Use a shop vac to completely clean these areas, as well as the hood.

- Following installation, if you have nicked any of the black or white rivets or Hood Louvers, touch them up. We've found women's fingernail polish, in black or white, works well. Be sure to wipe off the excess 'paint' on the applicator tip **before** you apply it, or you will deposit a large glob!

PHASE VIII: The Surgery was a Success!

- Drive and enjoy your vehicle with your new RunCool® Hood Louvers.
- Consider additional sets of RunCool Hood Louvers for your other vehicles!

When completed, please send us some photos we might be able to put on our website! Shoot from up high (as on a step ladder), so the Hood Louvers show up.

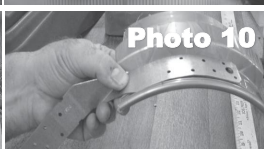
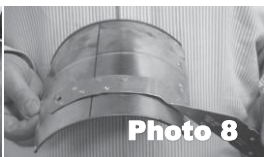
If you wish to paint your RunCool® Hood Louvers...

If you like, you can paint these Hood Louvers to match your vehicle. When painting the bare aluminum, scuff sand it well (240 grit or finer is good) to promote paint adhesion. Eastwood makes paint adhesion. Eastwood makes "Self-Etch Primer" (spray), which etches and primes the material. We heat tested 5 different brands; this worked the best. Available in Flat Gray or Flat Black at 866-483-2259. If you paint the Louver panels before you install them, the fasteners will be more distinctive, for an enhanced, high-performance look.

Most Will ***Not*** Need This, But for Your Information: Notes on Making a Rainwater Diverter

Experience shows no problems with rainwater flowing onto the engine block, valve covers, battery, manifolds, etc. – after all many people frequently wash their engine! The only need to divert rainwater is if it flows directly onto the **distributor**, **alternator** or **open-air cleaner**.

- You can make a "Shield" over the component, using the cut-out panel from the hood. Curve it and bolt it on, typically using an existing bolt that is also holding something else (see Photo 7).



- A "Shield" can also be made using a new steel (not plastic – melts!) paint can. Wear thick gloves and eye protection! Cut off the "East" 40% and the "West" 40% of the can. "Nest" these two "halves" and pop rivet them together. Smooth well all the cut edges (see Photo 8). Affix a bracket (see below).
- "Joist Hanger" and "Tie Strap" brackets can be found at Lowe's (near the "Lumber" section); they are quite varied and adaptable (see Photo 9).
- Bend a mounting bracket to fit; shown curved is a Simpson "Strong Tie", LTS12. Securely bolt or rivet it to the "Shield" (see Photos 8 and 10).
- Bolt "Shield" to engine; allow **at least** a 1" airgap **below** the "Shield" for good air/heat flow (see Photo 7).

Limited Warranty and Limitation of Liability

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