

## THE BEST WAY TO COOL HOT ENGINES!

With The World's Rest Hood I ouvers! TM

The Most-Experienced Hood Louver Company in the World ™



- "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

## **Installation Instructions**

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



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 Obamacare will reimburse you for performing this "operation"! (But, can you still keep your own Mechanic???) Read these carefully and completely.

## PHASE I: Gather these instruments for surgery

- Electrical tape Duct tape
- Masking tape (get 3M-- the best!)
- Shop vac Thick gloves
- An electric saber saw with a metalcutting blade is good for cutting out the hood panels—and safer than using a cutting disc, because it generates fewer sparks. Just don't cut through the underlying hood frame!
- Even better, use an angle grinder. 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 one by SKIL, for around \$29. Popular sizes are 4"- and 4 1/2" - 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, No. 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 @ \$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.)
- Affix 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 to prevent scratching. 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.
  - Most of the heat is in the center mass of the engine compartment, so this location will be the most effective.
  - d. 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 . . .
  - a. With your hood open, look at the interior hood support frame.

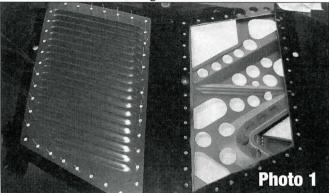
    IT IS COMPLETELY SATISFACTORY TO HAVE SOME

    OF THE HOOD FRAME PASSING UNDER THE HOOD

    LOUVERS. If so, you can "hole out" or "Swiss cheese"

    the hood frame below the Hood Louvers while still maintaining full strength (see Photo 1).

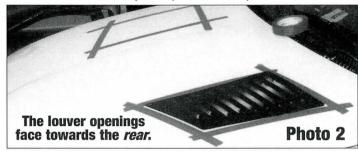
Note, in **Photo 1**, the UNUSUALLY large brace under this (Jeep) hood (most are *much* smaller!). But, NO PROBLEM! The owner, (Detective Michael Livera of the Odessa, Texas P.D.), just holed it out with various size hole-saw drill bits (the large elongated slots were already there). On wide hood frames you can use a 1"- to 3"- dia. hole saw drill bits. On smaller frames, use ½"- to 1"-hole saw drill bits. Drill in the center ridge of the frame; leave the frame *sides* intact, to retain strength. Some vehicles (e.g., certain late Fords) have flat, unraised central panels that have no real support function and which can be cut through and removed.



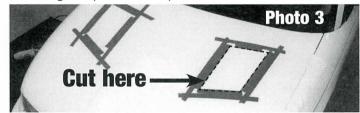
- b. As part of this location process, you do not want rainwater to flow directly onto the *distributor* (most vehicles built in the last 15-to-20 years don't have one) or the *alternator* (which is, typically, so far forward this is not a problem). An option which prevents rainwater from flowing onto the distributor or alternator, *if* that is a problem, is only partially cutting an opening in the hood under that one panel. Also, see the "Notes on Making a Rainwater Diverter" at the end of these instructions (see Photo 7).
- c. If windshield washer squirters are in the way, these can usually be relocated—even <u>remounted</u> <u>onto</u> the Hood Louvers.
- d. 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.
- e. An open-style air cleaner (as on carburetored 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:
  - i. Mount the Hood Louvers farther outboard.
  - ii. Buy a smaller-diameter air cleaner unit. Yours is probably 14"- diameter. Proform/Mr. Gasket makes these in smaller sizes: 6½", 9", and 10"; available at JEGS (800-345-4545) and Summit Racing (800-230-3030).

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

- 1. Run a piece of masking tape down the center of the hood.
- 2. Locate the Hood Louvers precisely where you want them, indexing off the hood center-line.
- 3. 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).



- 4. Remove the Hood Louvers from the hood.
- 5. Next, run an <u>inner row</u> of masking or electrical tape such that the <u>inner</u> edge of it is 1" inboard from the <u>inner</u> edge of the <u>first</u> row of tape you just put on the hood. The <u>inboard</u> edge of this <u>second, inner row</u> of tape is your cutting line (see Photo 3).



6. 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 or tape towels over the exposed areas (but NOT where the panels will be cut out). 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.

- 1. 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. A saber saw with a metal-cutting blade generates fewer sparks than a disk grinder.
- 2. <u>IMPORTANT!</u> Completely cover your windshield with wet/ damp towels. <u>Flying sparks</u> from cutting and grinding <u>will</u> severely pit glass!!
- 3. <u>IMPORTANT!</u> 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 eye glasses!) 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: Radiased 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 ½" 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.



- 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 holing it out with hole saw drill bits, from above (see Photo 1).
- 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.  $6x\frac{1}{2}$ " in Stainless Steel. Lowe's has "Weather-Max" brand, by Hillman — with *polished* heads(!), part no. 127049. Buy two packs. Also buy/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"- dia. 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 openings. This is a good point to clean off the hood. Use a shop vac or compressed-air nozzle to avoid scratching the paint.
- 5. To prevent rusting, paint the raw, cut edge of the hood. A quick way is to move the existing masking-tape border in ¼", 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.

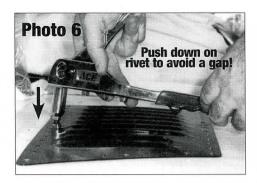


If you want to reinstall the under-hood pad, do it now. Then
cut the pad openings about 1" outboard of the Hood Louvers (to avoid rainwater getting the pad soggy).

## **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"- dia. 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.
- 3. 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.

## PHASE VIII: The Surgery was a success!

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

Thank you! Run cool!

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

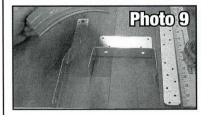
If you like, you can paint these Hood Louvers to match your vehicle. When painting the bare aluminum, scuff sand it well (240 grit or finer is good) to promote paint adhesion. Eastwood makes "Self-Etch Primer" (spray), which etches and primes the material. We heat tested 5 different brands; this worked 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*.









- 1. 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).
- 2. 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 (use Stainless Steel rivets not Aluminum). Smooth well all the cut edges (see Photo 8). Affix a bracket (see below).
- 3. "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).
- 4. Bend a mounting bracket to fit; shown curved, is a Simpson "Strong Tie", LTS 12. Securely bolt, or rivet it to the "Shield" (see Photos 8 and 10).
- 5. Bolt "Shield" to engine; allow at least a 1" air gap below the "Shield" for good air/heat flow.

#### **Limited Warranty and Limitation of Liability**

RunCool warrants that the Products will conform to its written description of them. THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESSED, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND RUNCOOL HEREBY EXPRESSLY DISCLAIMS ALL SUCH OTHER WARRANTIES. IF THE PRODUCTS ARE INSTALLED OR USED IN ANY MANNER OTHER THAN IN ACCORDANCE WITH THE INSTRUCTIONS INCLUDED WITH THE PRODUCTS, THIS LIMITED WARRANTY IS VOID AND SHALL HAVE NO EFFECT. Upon any breach by RunCool, the Buyer's sole and exclusive remedy shall be to receive reimbursement of the price paid for the Products (or the portion thereof with respect to which damages are claimed) or RunCool may elect to replace any of the Products. The Buyer hereby acknowledges that the inclusion of a disclaimer of warranties and the limitation of liability provisions set forth herein is a material inducement to RunCool to enter into the Agreement.



The Most-Experienced Hood Louver Company in the World RUNCOOL® Hood Louvers

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E-MAIL: Cool@HoodLouvers.com · WEB SITE: www.HoodLouvers.com

To: Run Cool Gearheads

Subject: FUNNY

ARTICLE:

This explains why

I don't like for

anyone else to

drive any of my

hot-rodded vehicles!

Thought you'd enjoy!

Run cool!

Lab



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ROBERT A. BUERLEIN PRESIDENT

## POINT OF VIEW

EDITOR'S LETTER

## Car-Guy Safe

was talking to a tech guy from a brake company on the phone recently as we tried to sort out a problem with the four-wheel discs on my '65 Chevy Biscayne (you can read more about that in Marlan's "Brake Troubleshooting" article in this issue). "How well does it stop?" he asked.

"How well does it stop?" he asked.
"Well, it's not great, but it's basically safe." I lied

"Safe, or car-guy safe?" he asked That's a million dollar question. Any car crafter knows that car-

guy safe means 'death trap' in the hands of a regular civilian driver.

We've all had cars that we wouldn't dare let a friend or loved one even back out of the garage without a 10-

minute instructional course. Just pump the throttle a few times, put it in neutral, stab a brick under the tire, pop the hood, disconnect the throttle cable, get out the remote starter, jump the starter solenoid, reconnect the cable, then jump back in the car before it dies and nurse the pedal to keep it running. Don't touch the brakes, because it doesn't have any, so use the e-brake and down shift (hey, that's what the horn is for). The lights don't work, you can't move the seat back, the windows don't roll down, you can't hear over the exhaust-heck, you can't even breathe over the exhaustbut other than that, there's nothing wrong with it. Except the gas tank leaks, the turn signals flash when you hit the brakes, the battery won't hold a charge, and one tire goes flat overnight. Every night.

Larguy safe means having to judge the reaction time of the guy four cars ahead of you in traffic so you can predict the chain reaction that will occur when he taps his brakes to avoid driving through the windshield of the car directly in front of you. It means counting the intervals between the emergency roadside assistance telephones on the side of the freeway to gauge your speed because the speedo hasn't worked since 1973, and figuring mileage in gallons per hour because the gas gauge has been stuck on E since you got the car. Car-guy safe is

pulling a car trailer with an old pickup truck with drum brakes and no trailer brakes—downhill!

How do we let our cars get into this sorry state? Usually we buy them that way, learn to live with the idiosyncrasies, and just never get around to fixing them because it's easier to adapt once you get comfortable in your beater. Familiarity breeds neglect.

Some states, especially back East,

## "Car-guy safe means 'death trap' in the hands of a regular civilian driver"

require periodic safety inspections that keep the worst beaters off the road, and they actually check things like the wipers, horn, parking brake, cracks in the windshield, and major rust or body damage—in other words everything that's usually wrong with my cars-every other year or so. The situation here in California is quite the opposite. In a climate where old cars regularly remain in operation long past the expected service life of their major systems, there are no safety checks whatsoever. That makes for some pretty scary company on the morning commutes.

You can get a pretty good idea of just how bad some of these cars are by taking a trip to one of SoCal's self-service junkyards where many of the fresh arrivals are recent impounds from city streets. I've seen seats and engines bolted in with two-by-fours, transmission mounts made from hose clamps, radiators held in with baling wire, tires so bald they make Kojak look like an ape, and other stuff so scary it's not even car-guy safe.

Maybe it's time for me to actually fix those brakes, change the slipping clutch, hook up the speedometer, get the parking brake working again, and figure out why the rearend vibrates like a freight train and the engine won't run below a half-tank of gas. Aaaah! Or maybe I'll just hop in and drive to work. It's plenty safe.

-Matt King

# GRUMBLE Suit

Rod and Custom

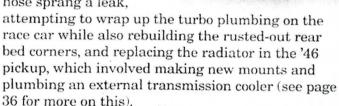
-> B KEY ELLIOTT .

kevin.elliottasorc.com

# Another good entirele! Ran cool! 186

can't be the only one with a "problem" with old cars. Aside from my daily driver I have

four old vehicles: two on the road, one active project, and one dormant. What I seem to be having an increasing problem with is finding the time to work on them. Maybe it's just been a bad month, but the past few weeks have seen me replacing all the cooling system hoses on my '73 Dodge van after the bypass hose sprang a leak,



Add in the fact that my daily driver needed smog testing this month (thankfully handled by my girlfriend, who, owing to her having grown up in a hot rodding household, luckily "gets" my obsession for the most part) and it's been a busy and expensive month car-wise. But it always seems to be that way! I often wonder what it must be like to have a hobby that doesn't involve late nights lying on cold floors, constantly failing to remove the dirt from under my nails, and buying welding gas and grinding discs instead of new clothes or electronic equipment. I'm never likely to find out, I'm in too deep, have been for over 30 years, and if I could change, I don't think I'd want to.

I'm luckier than most in that, for the most part, anything that constitutes a tech story can be done on company time at our Tech Center, though it never seems to pan out that way, and more often than not I find myself setting the shop alarm at ludicrous hours. At least I miss the notorious Southern California rush hour traffic that way! I can't be the only one who wakes up at night.



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OR ELECTRONIC EQUIPMENT.

or can't get to sleep, because I'm planning the next task on a project, working out how to tackle a particular job, or I'm learning about twin disc clutches and turbos rather than football game results, reality TV shows, or when to go to the river.

My life always seems to have been this way, but at least stuff gets done. Quite how the Tribute T or my race car got built in ridiculously short timescales I'm not sure, but they did. It just seems to be getting harder to juggle family time, car time, and work time. So come on, I'm ready to accept advice; let me into the secret, how do you guys find time to work on your projects?

ROBERT A. BUERLEIN
PRESIDENT



#### RUNCOOL® HOOD LOUVERS

The Most Experienced Hood Louver Company in The World

## THANK YOU FOR YOUR ORDER!

Dear Friend,

Many thanks for your order, and we hope you enjoy your RunCool® Hood Louvers!

These have been on-and-off-road proven by many 4-wheelers, racers, truckers, law enforcement officers and, notably, the U.S. Border Patrol.

These scientifically designed (with the help of a NASA engineer), patented hood louvers will help your engine run cool and more efficiently, while you extend the service life of your engine and underhood components. This is the most cost-saving way to cool hot engines.

Thank you for letting us serve you. Let us know if we can help you again, with hood louvers for your other vehicles!

Run Cool!

Robert A. Buerlein

President



