

1970-1978 DATSUN 240Z/260Z/280Z ALUMINUM RADIATOR KIT



The aluminum radiator kit for the 1970-1978 Z car uses a modern and efficient radiator design which has been used on Datsun Z V8 Conversions for years. The aluminum radiator kit weighs 9 lbs less than a stock Datsun radiator, and provides better cooling. The kit is sold as part # DAT-500. Cost is \$250. Shipping weight is 30 lbs.

Installation Notes:

1. On 1973 and 1974 Z cars, the radiator assembly will bolt into the car with no modifications, other than splicing hoses.
2. On 1970-1972 cars, holes must be drilled in the frame rails to attach the lower radiator bracket to the car (see page 12-6).
3. On 1975-1978 280Zs, the Air Flow Meter must be repositioned to make room for the upper radiator hose (see page 12-8).

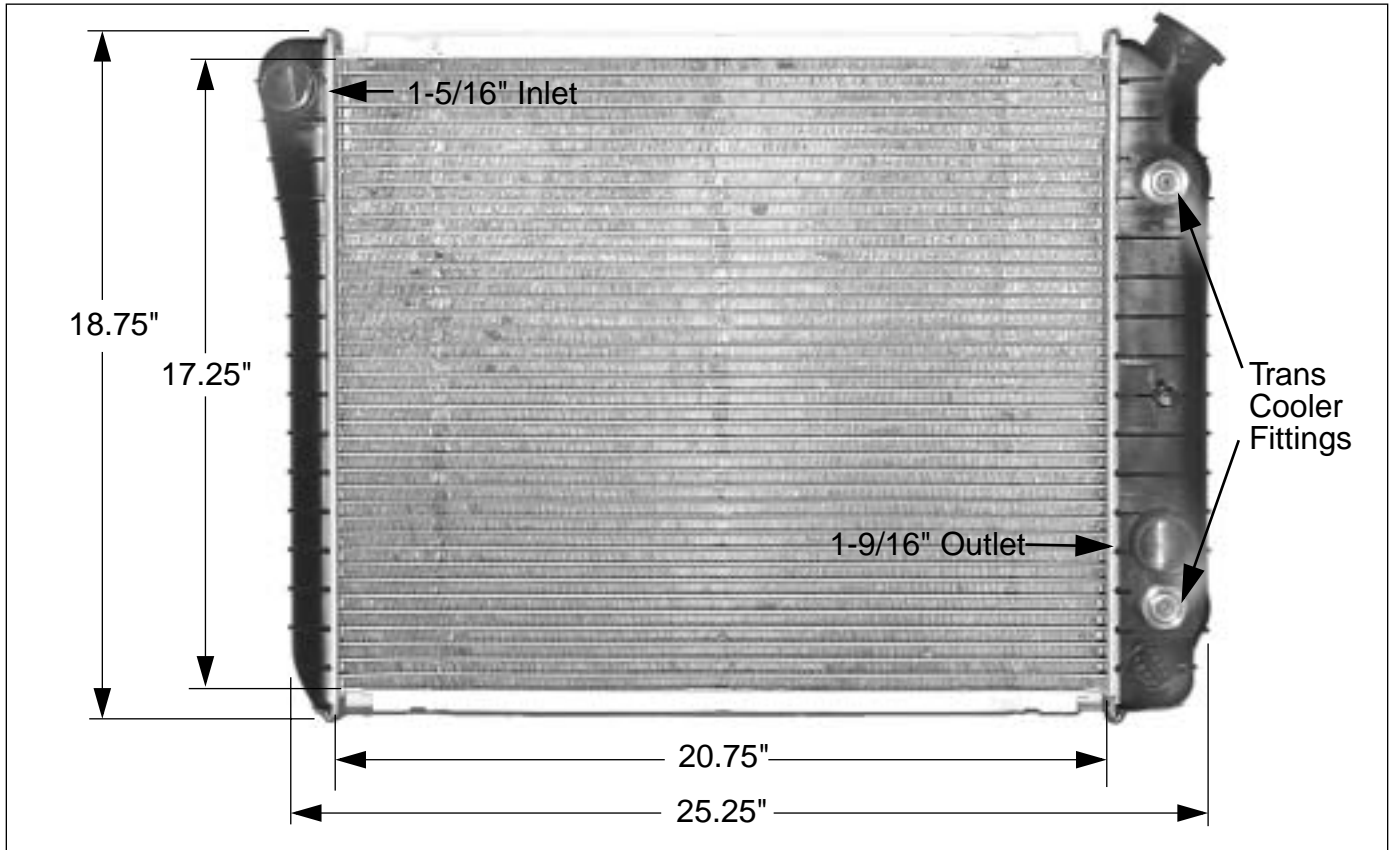
PARTS LIST

Radiator (page 12-2)

Upper and Lower radiator mounting brackets, rubber mounting pads. Nuts and bolts (page 12-5)

Upper and Lower Hose assemblies (page 12-14)

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PLASTIC/ALUMINUM RADIATOR

This is what we feel is the best radiator for the V8 Z. It also works very well on the six-cylinder Z car, and it weighs about 9 lbs less than the stock 6-cylinder radiator.

This radiator is made for Stealth Conversions. It is the base radiator for 1984-1986 V8 Camaro's, but with a thicker core (1-3/8" thick, compared to 7/8" for a stock radiator). It is light, inexpensive, and does an excellent job of cooling. It has the correct overall dimensions to fit in a Z car, and it has an automatic transmission cooler in the passenger's side tank. The heavy-duty radiator for a 1984-1986 Camaro has a 1-3/8" thick core, but it has an overall width of about 30" (compared to 25.25" on the radiator shown above) which is too wide to fit between the frame rails in the Z car.

The radiator can be purchased separately as part #DAT-121. Cost is \$140. Shipping weight is 30 lbs due to oversize packaging.

WEIGHT SAVINGS

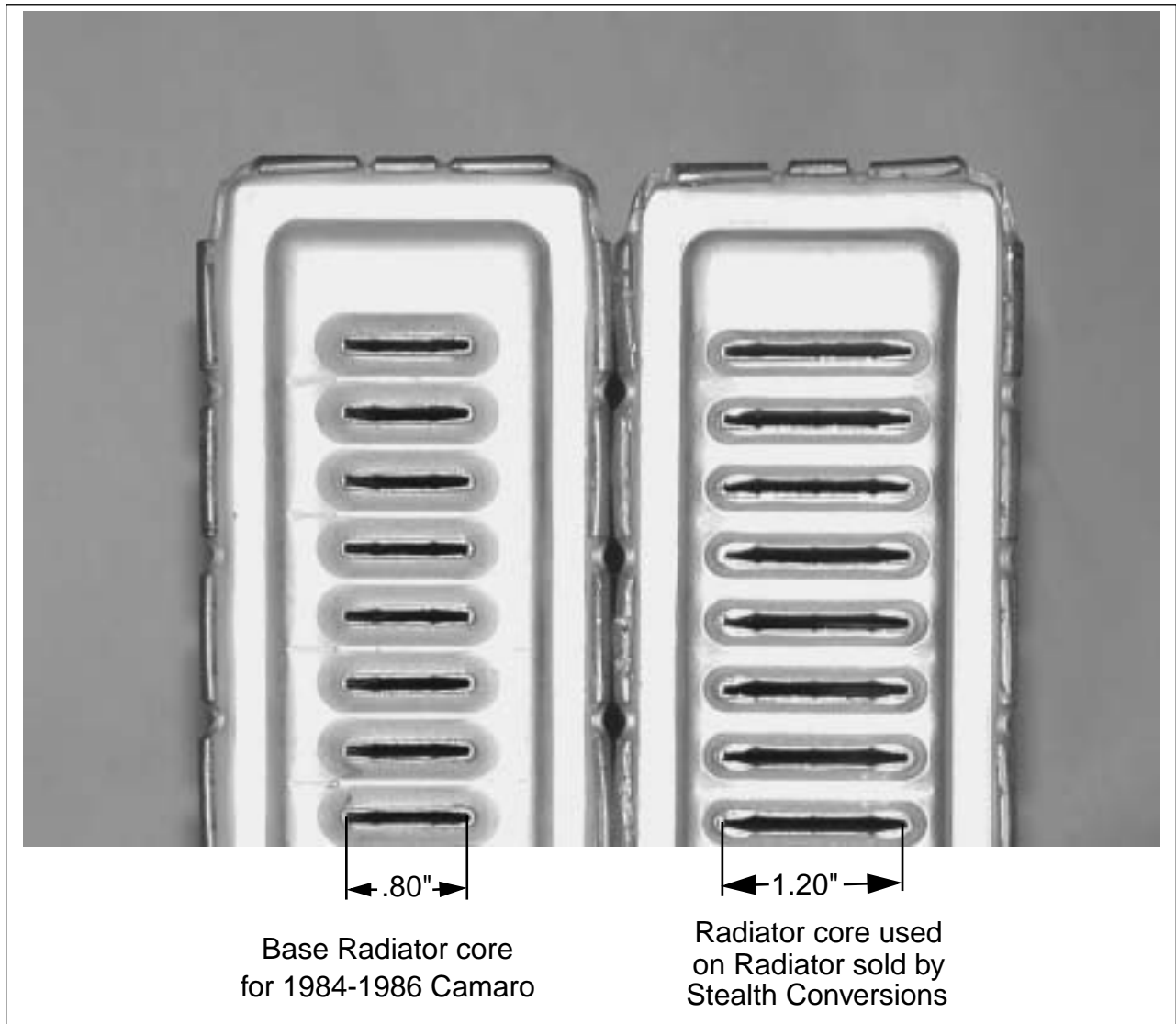
The radiator shown above weighs less than 10 lbs pounds (empty). The side tanks do not hold a lot of coolant, and this also saves weight. When the radiator is filled with coolant, it weighs 15 lbs. The brackets which hold the radiator weigh 6 lbs, for a total weight of 21 lbs.

By comparison, a stock 280Z radiator weighs 20 lbs (empty), and 30 lbs full of coolant.

RADIATOR CAP

The radiator cap on the Datsun Z will fit on the Chevrolet style radiator.

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RADIATOR CORES

The radiator core on the left is used on the base radiator for the 1984-1986 Camaro. The core width is 7/8" (.88"). The tube width is .800".

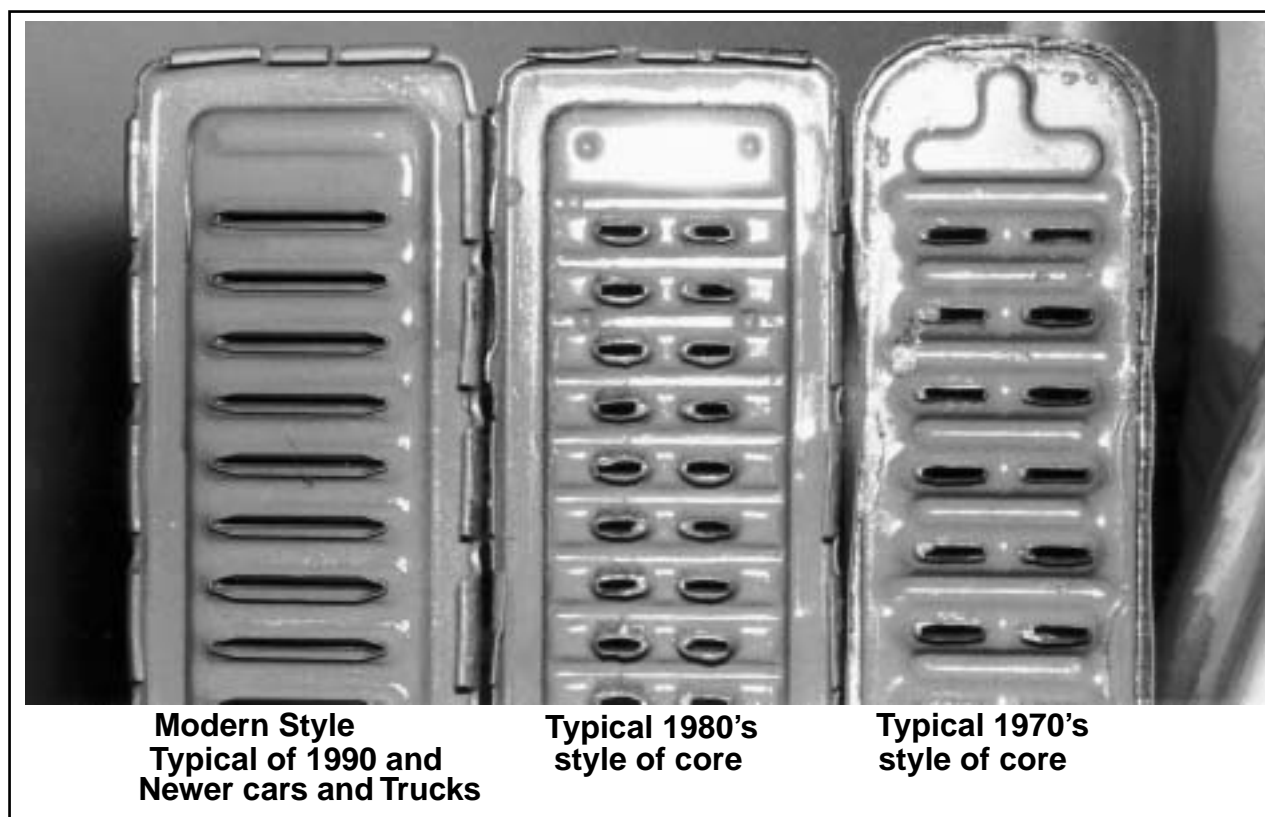
The radiator core on the right is used on the radiator sold by Stealth Conversions. The core width is 1-3/8". The tube width is 1.25".

The genuine Camaro radiator with the thin core does a good job of cooling the V8 Z, but some people returned the radiators without ever using them because they felt the radiator was too thin to cool well.

Radiator prices have dropped over the years and Stealth Conversions can sell the custom made radiators for less than the wholesale cost of radiators 10 years ago.

One of the reasons radiator prices have dropped over the years is due to the low cost of aluminum (Russia is now a large source of the ore used to produce Aluminum). Another reason for the cost reduction is because of competition from radiators manufactured from overseas. The quality of the American made radiators sold by Stealth Conversions is first rate.

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RADIATOR CORE DESIGNS

There are a lot of different radiator designs and different materials: Copper-brass, aluminum, 1-row core, 2-row core, 3-row core, continuous fin, louvered fin, straight fin, serpentine fin, dimpled tube, cross flow, down flow, high-efficiency core, 1-pass core, 2-pass core... etc.

A lot of the different designs have more to do with marketing than actual cooling ability.

On the left is a modern style radiator core used in everything from new Corvettes to new trucks. The tube width is 1-1/4", and the tubes are spaced at 7/16" interval. The wide tube has more surface area that contacts the cooling fins than the radiator cores shown to the right. The greater surface area results in better heat transfer.

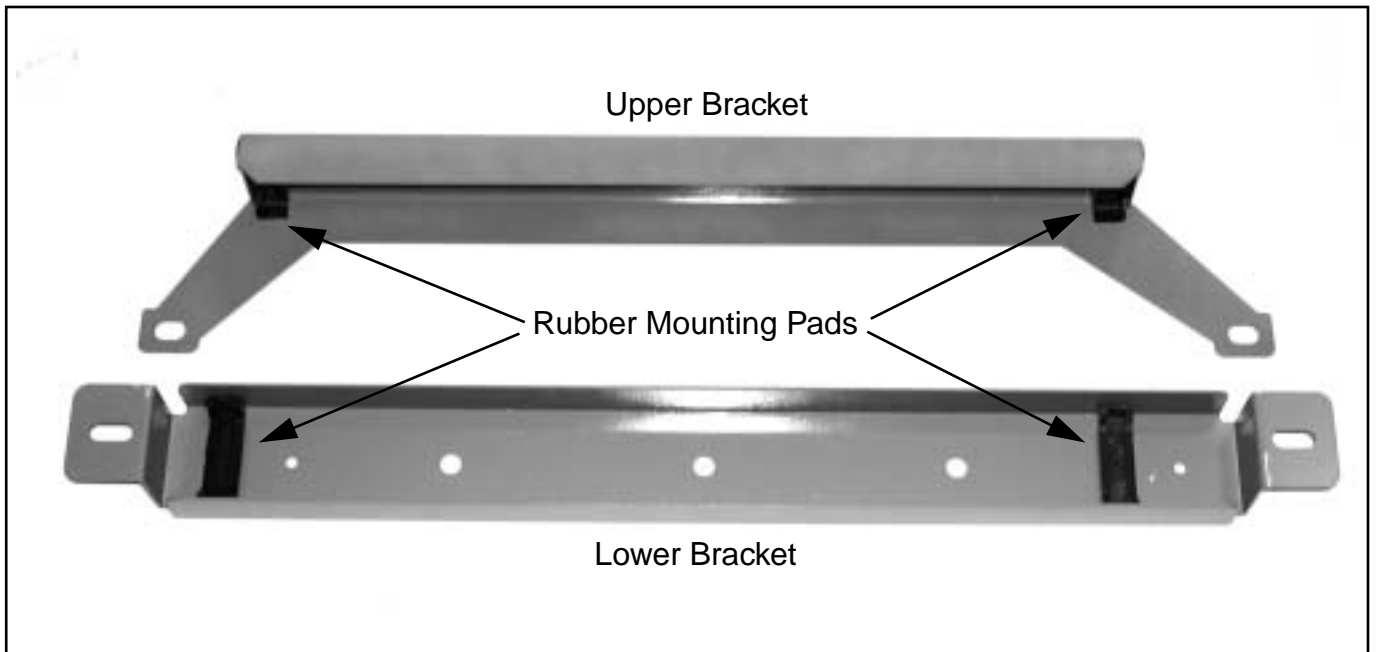
The center radiator core is a two-row copper-brass design that is used on a lot of cars built in the early 1980's. The tubes are 3/8" wide and they are spaced at 7/16" intervals. The core on the right is also a two-row copper-brass design. Its tubes are 1/2" wide and they are spaced at 9/16" intervals. This design was used through the 1970's.

The one-row core design is the best for cooling and the lightest weight of the three radiators shown. Copper has better heat transfer characteristics than aluminum, but the aluminum is more easily formed into wide tubes, and it is lighter and less expensive than copper.

Custom 4-row core radiators do not cool as well as often advertised because it is difficult to get air through the thick core due to aerodynamic restriction. Also, once the cooling air has gone past the first row, the air is heated up so that it cannot cool the second row as much as the first row, and this pattern continues to the fourth row, which does not provide much additional cooling.

The aluminum one-row radiator is the best radiator we have found for the V8 Z, as well as the 6-cylinder Z.

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RADIATOR MOUNTING BRACKETS

For durability, it is important to completely rubber mount the radiator using Chevrolet radiator pads, and making sure that nothing rubs on the radiator core.

The aluminum radiators need to be rubber mounted to protect from vibration and from electrolytic corrosion. One of the reasons the all-aluminum racing radiators don't last long on street cars is because they are often mounted metal-to-metal.

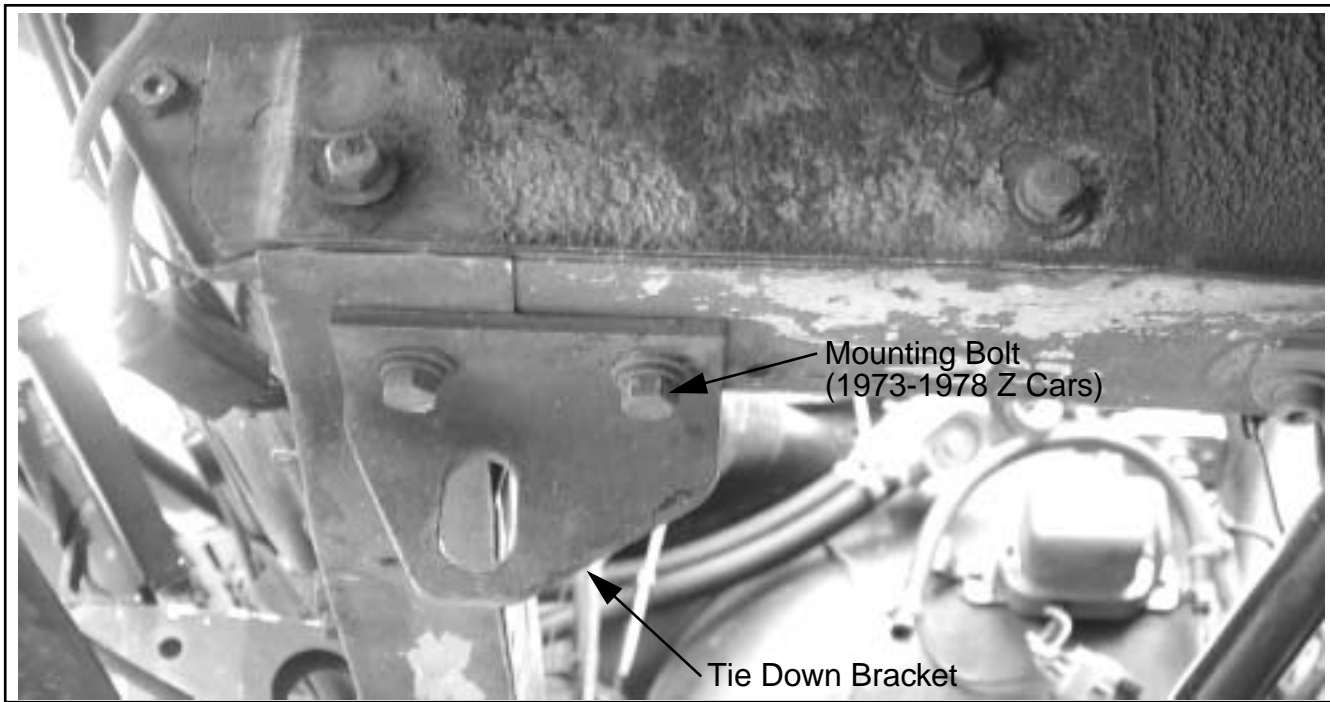
The Stealth Conversions brackets shown above, use Chevrolet style rubber mounting pads (from a 1986-1993 S-10 Truck) that isolate the radiator from vibration and electrolytic corrosion. The brackets come with the rubber mounting pads (GM part #12338053).

The brackets have alignment holes which hold the rubber pads in place for installation purposes, but silicone sealant must be used to hold the rubber mounting pads to the radiator brackets.

The brackets are made from Zinc Plated steel to prevent rust, although the parts shown above were painted. To see the appearance of the zinc plated parts, see page 12-10.

The mounting kit can be purchased separately as part # DAT-125. Cost is \$65. Shipping weight is 10 lbs.

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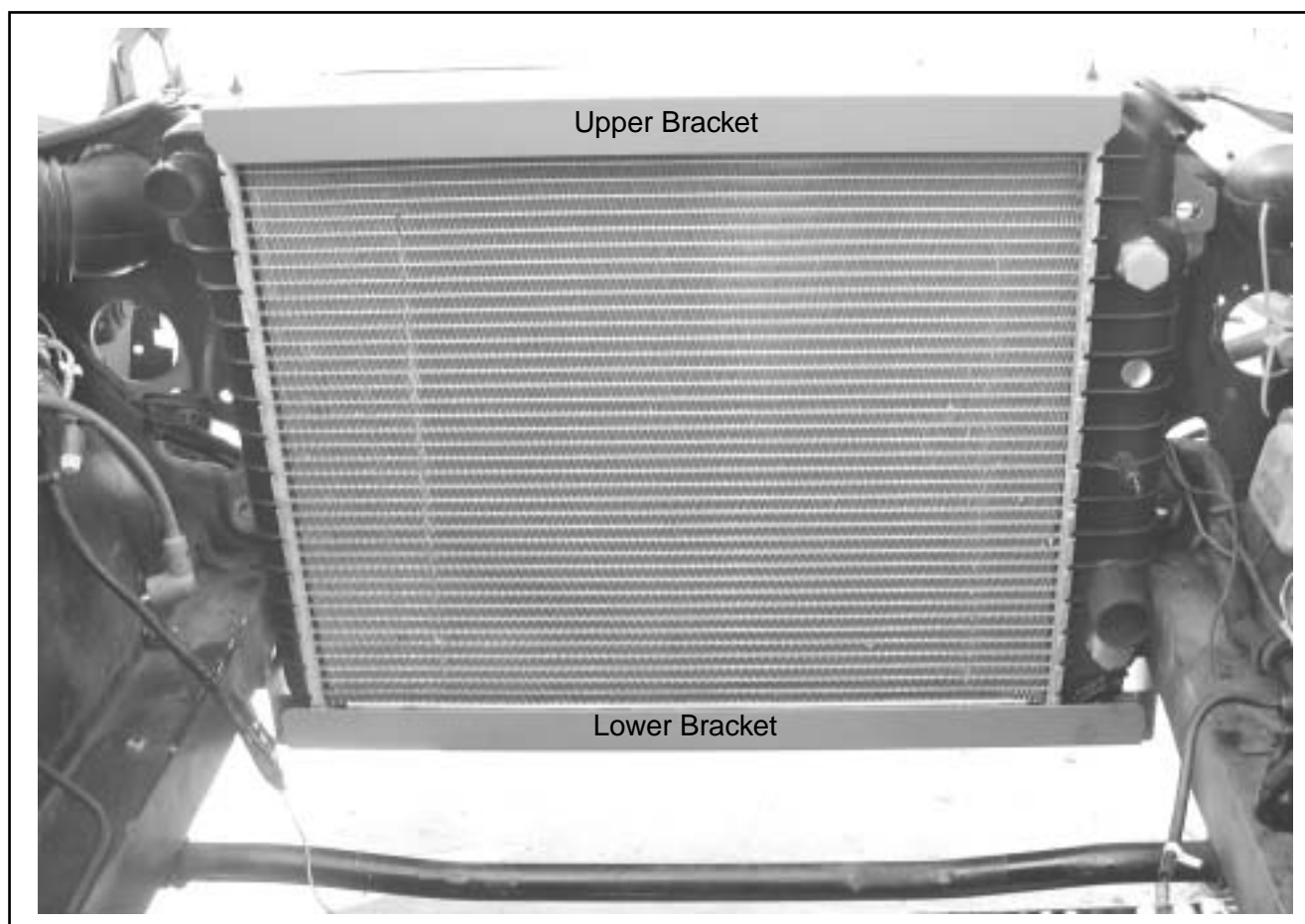
LOWER RADIATOR BRACKET INSTALLATION

The lower radiator bracket is attached to the Z car below the frame rails.

On 1973-1978 cars, the original bolts which hold the tie-down brackets are used to hold the lower radiator bracket in place.

On 1970-1972 cars, holes have to be drilled through the frame rails to install the lower radiator brackets. One 1/4" diameter, 3-1/2" long bolt on each side will hold the lower radiator bracket to the frame rails. Be sure to use large washers to distribute the loads on the frame rails because the frame rails are easily crushed by over-tightening the bolts.

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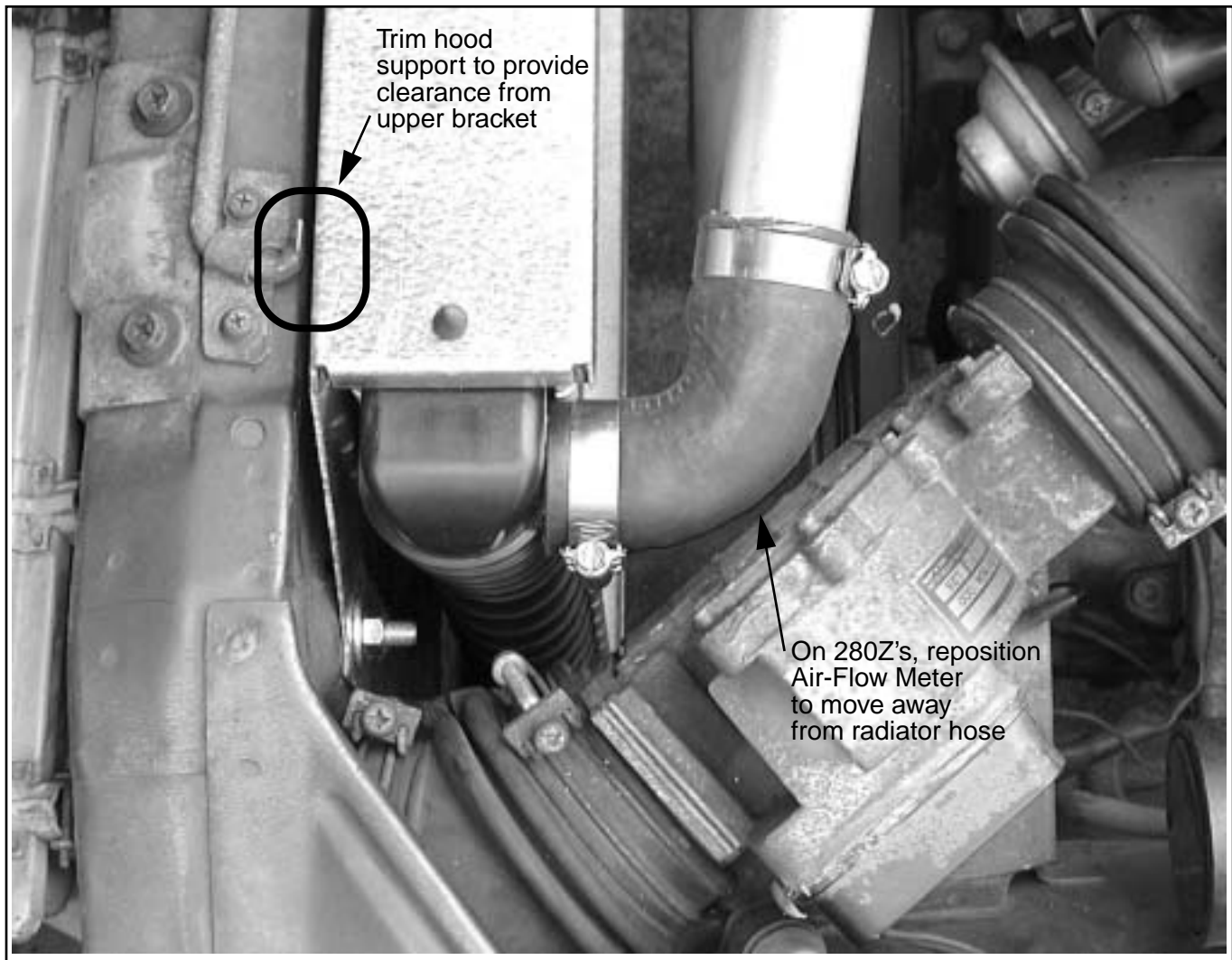
RADIATOR MOUNTED IN CAR

The radiator is mounted in this car (a 1973 car) as a bolt-in. There is only about 1/8" between each side of the radiator and the frame rails on 1970-1974 cars.

The 1975-1978 cars have a little more room between the radiator and the frame rails because the sides of the frame rail next to the radiator are formed slightly differently than earlier models.

The 1970-1972 cars need to have a hole drilled through the top and bottom of each frame rail to install the lower bracket using a 1/4" x 3-1/2" long bolt.

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UPPER RADIATOR HOSE AND AIR-FLOW METER

On 280Z cars, the air-flow meter interferes with the upper radiator hose. The air-flow meter must be repositioned. On this car, the bracket which mounts the air-flow meter was bent to rotate the air-flow meter away from the upper radiator hose. Also, the flexible rubber air ducts attached to the air-flow meter must be re-adjusted to compensate for the relocated air-flow meter.

Relocating the air-flow meter as shown above will probably take about 1/2 hour.

It should also be noted that the radiator brackets have slotted holes to allow moving the radiator side-to-side. On this car, the radiator was moved towards the passenger's side as far as possible to improve clearance between the air-flow meter and the upper radiator hose

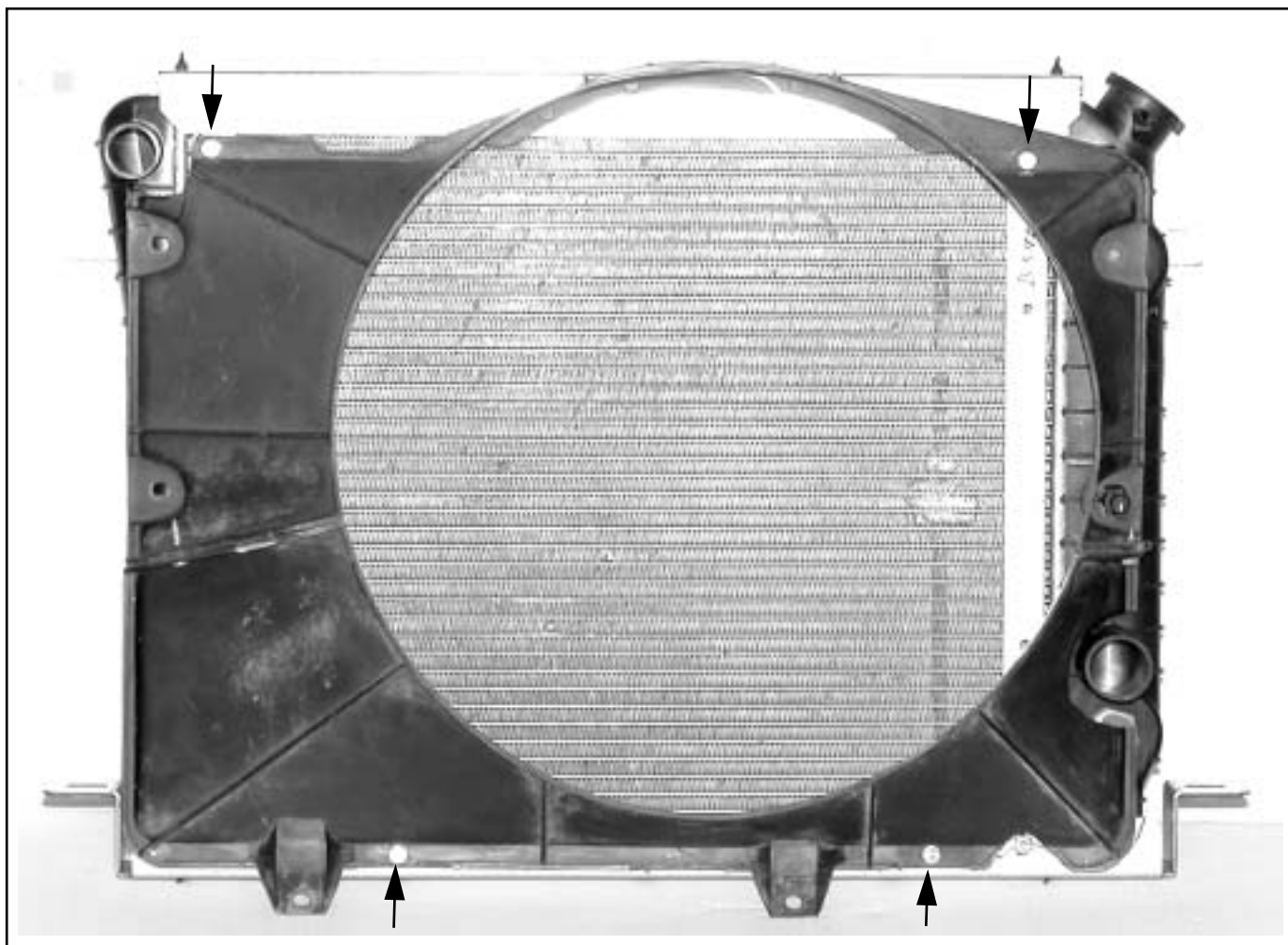
On this installation, there is about 1/2" clearance between the upper radiator hose and the air-flow meter.

The stock Z car upper radiator hose is too short to be used with the Chevrolet radiator.

HOOD SUPPORT MODIFICATION

The edge of the hood support bracket (circled) needs to be trimmed to clear the upper bracket. About 1/8" needs to be removed -- this can be done with a grinder, a hacksaw, or a file.

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FAN SHROUD

The only difference in the cooling system between air-conditioned Z cars, and non-air-conditioned Z cars is the installation of a fan shroud, which came on air-conditioned Z cars. The fan shroud improves cooling efficiency, and it makes the air-conditioning work better by drawing more air through the condenser (which is mounted in front of the radiator).

Z Cars without air-conditioning did not come with fan shrouds, and a shroud is not necessary with the Chevrolet style radiator in a Datsun Z that does not have air-conditioning, or has had the air-conditioning removed.

On air-conditioned Z cars, the stock fan shroud is extremely important.

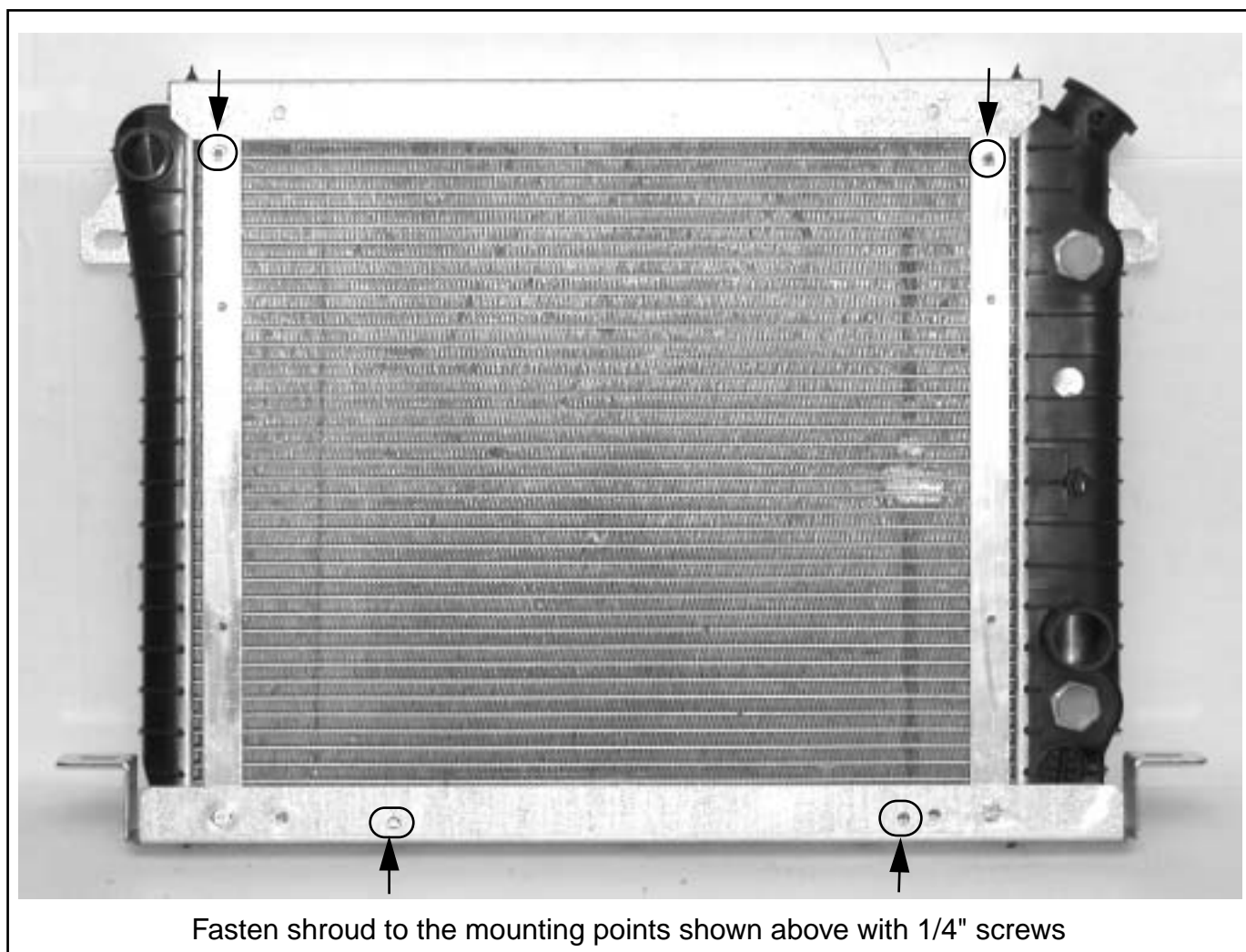
The fan shroud can be installed onto the Chevrolet style radiator, but it needs to be trimmed to clear the upper radiator hose, the lower radiator hose, and the probe on the passenger's side of the radiator. Trimming can be done with a band saw, or a grinder.

Two pieces of 1/4" x 1" x 19" long aluminum flat bar should be installed to connect the top and bottom brackets, and to allow bolting the shroud to the bracket assembly. These parts are shown on the following page.

There will be a 1/2" gap between the radiator and the sides of the shroud. Foam can be glued to the sides of the shroud to seal the gap, but it is not necessary.

It will probably take an hour or two to test fit and modify the fan shroud, and install brackets, but if your vehicle has air-conditioning, and you don't want to run an electric cooling fan, installing the fan shroud is worth the effort.

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FAN SHROUD BRACKETS

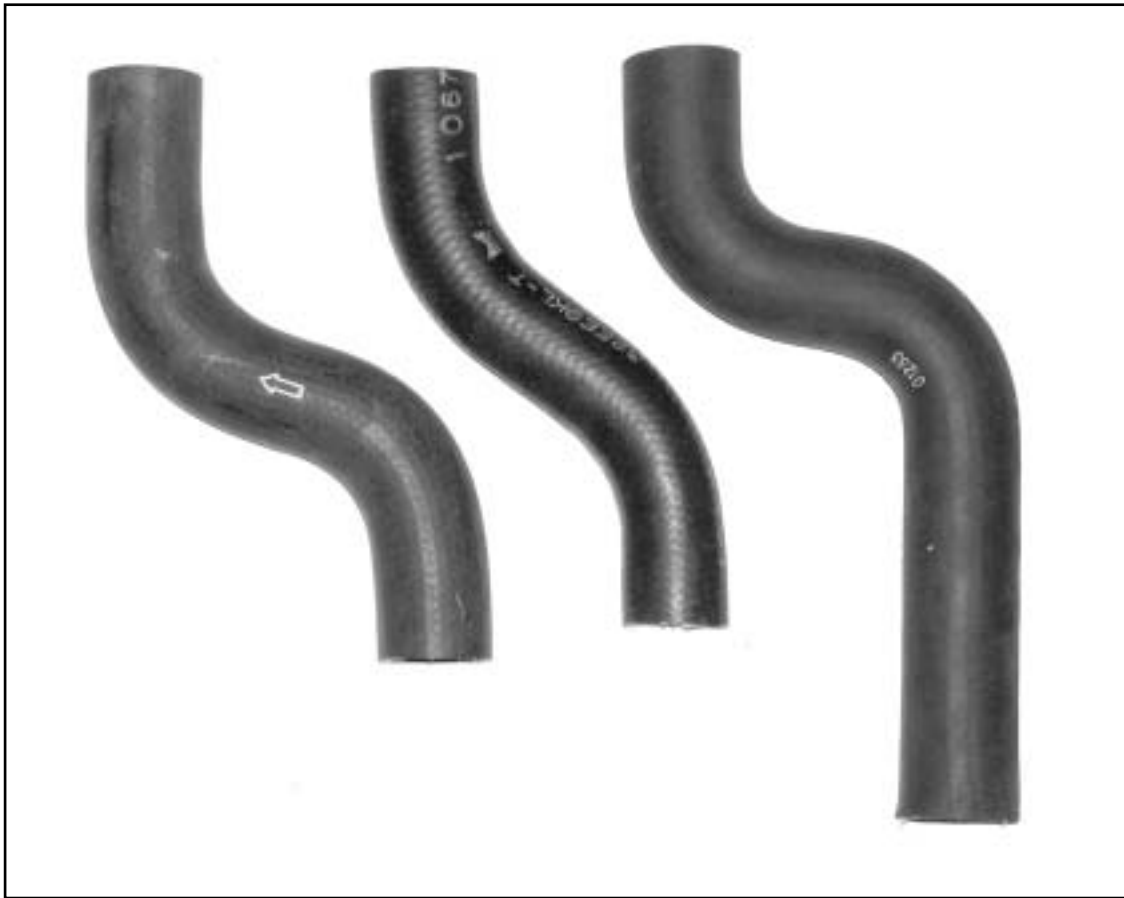
The brackets the fan shroud attaches to at the top mounting points are made from 1/4" x 1" x 19" long aluminum flat bar.

The flat bar holds the top and bottom brackets together as a rigid structure, and it provides two mounting points for the top of the shroud.

Use 1/4"-20 bolts to hold the shroud to the flat bar. Drill and tap the flat-bar for the 1/4"-20 bolts.

As shown, the flat bar is too close to the sides of the radiator, and contacted the rubber mounting pads. The flat bar was trimmed to clear the rubber mounting pads.

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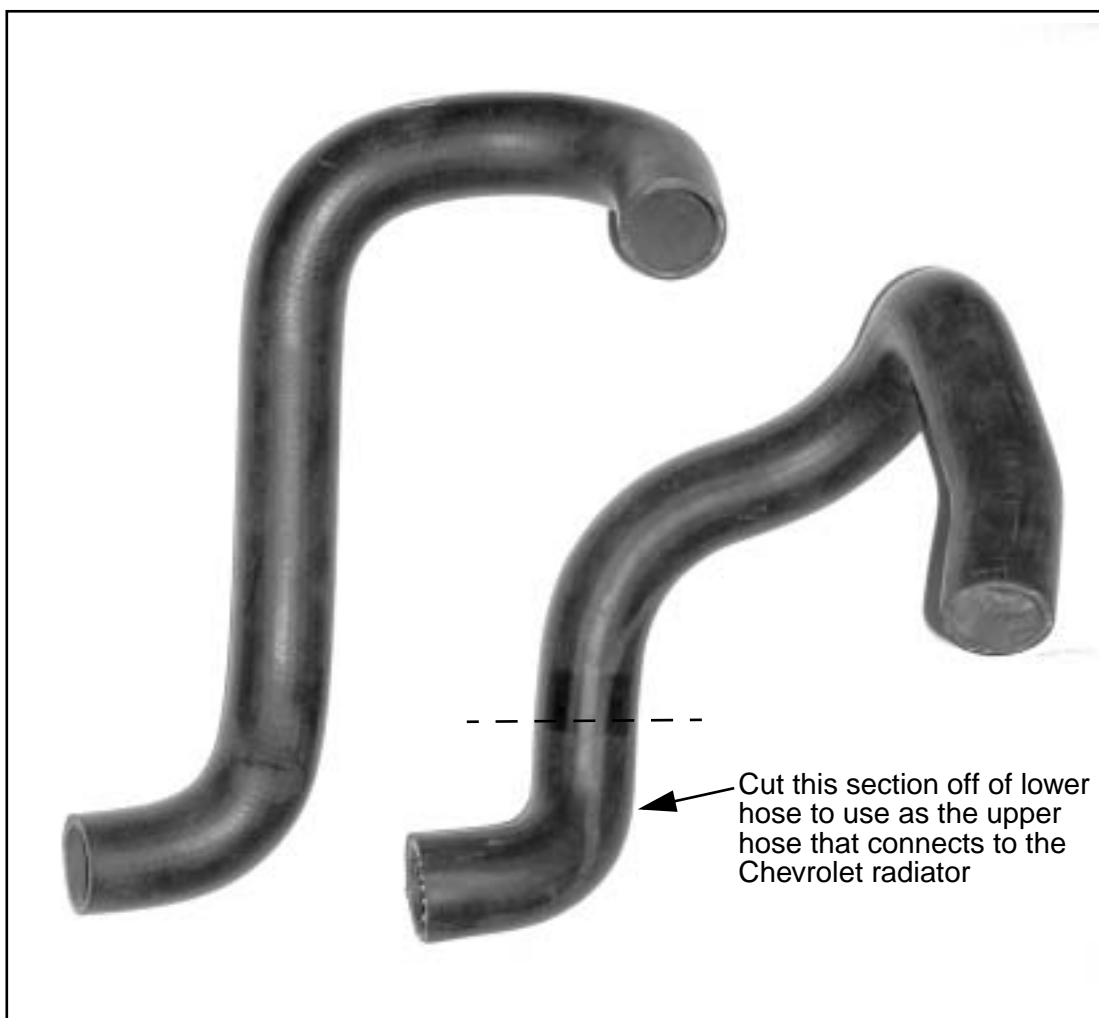
UPPER RADIATOR HOSES

The three hoses shown above are listed as the upper radiator hose for a Datsun 280Z.

As you can see, they are all different. The hose on the left was purchased from a Nissan dealer, and the other two hoses were purchased from local automotive stores.

The purpose of showing these hoses is to explain why it is often necessary to cut and splice hoses to fit an application.

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LOWER RADIATOR HOSES

The hose on the left is a stock 280Z lower radiator hose that was purchased from a Nissan dealer.

The hose on the right is Goodyear brand of hose that is listed as a 280Z lower radiator hose.

The lower sections of the hoses will be cut off to attach the Chevrolet radiator to the Datsun engine.

The lower section that is cut off can be used on the upper radiator hose where the hose connects to the radiator. The tight bend will help with the clearance between the upper radiator hose and the air flow meter.

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RADIATOR HOSE SPLICERS, AND REDUCERS

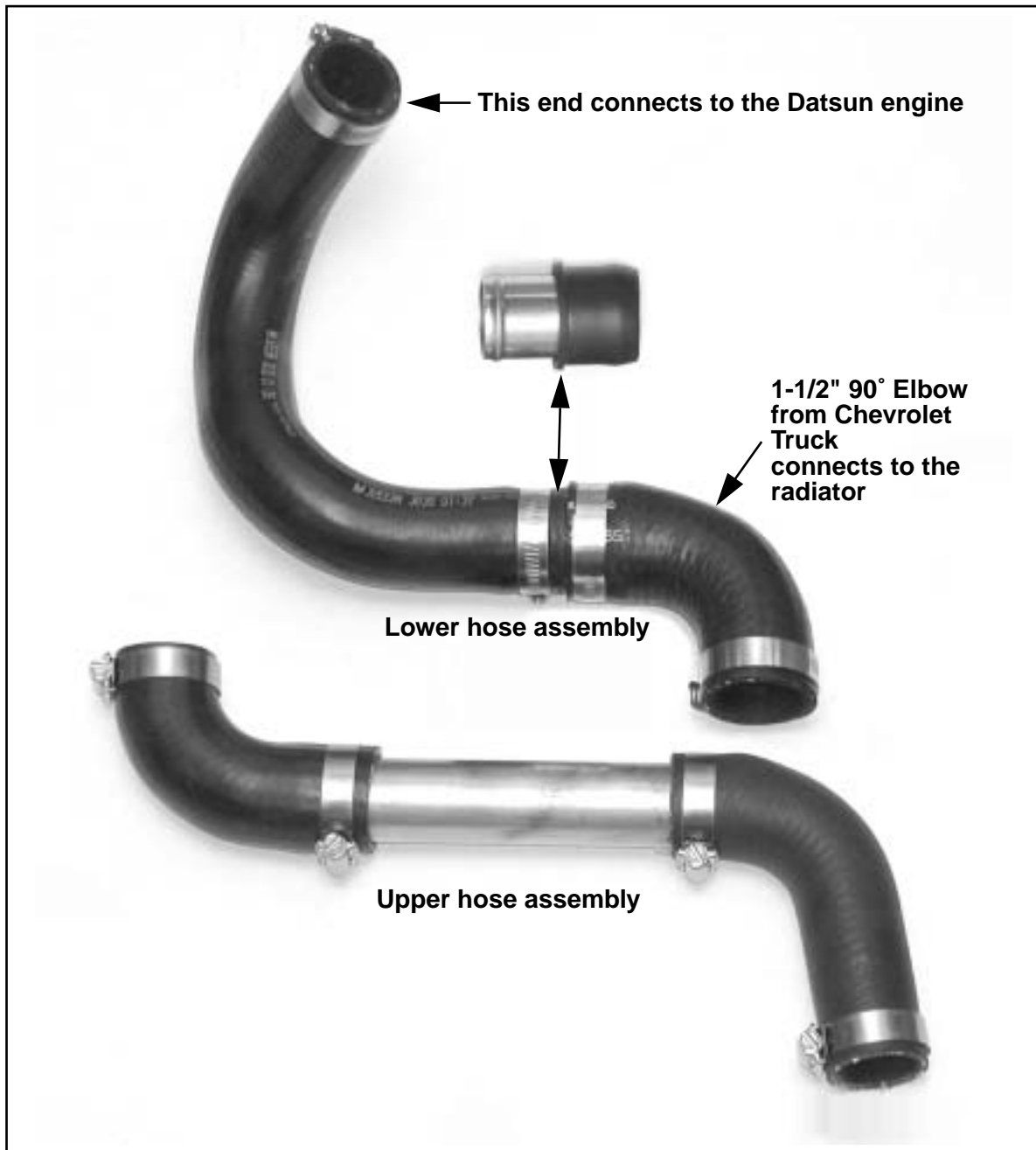
The hose splicers and hose reducer bushing shown are required when connecting hoses to the Chevrolet radiator. Assembled hoses are shown on the next page.

If you want to use your existing hose, and you can purchase hoses cheaply, Stealth Conversions sells a hose splicer kit for the 6-cylinder application which includes one short 1-3/8" brass hose splicers, one long 1-3/8" hose splicer and one 1-1/2" to 1-1/4" hose reducer bushing as part # DAT-501. Cost is \$18. Shipping weight is 3 lbs.

The 1-1/2" to 1-1/4" hose reducer bushing will stretch onto the 1-3/8" hose splicer.

The reducer bushing should be trimmed so that it overhangs the splicer by less than 1/4" so that it will not obstruct coolant flow.

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HOSE KIT

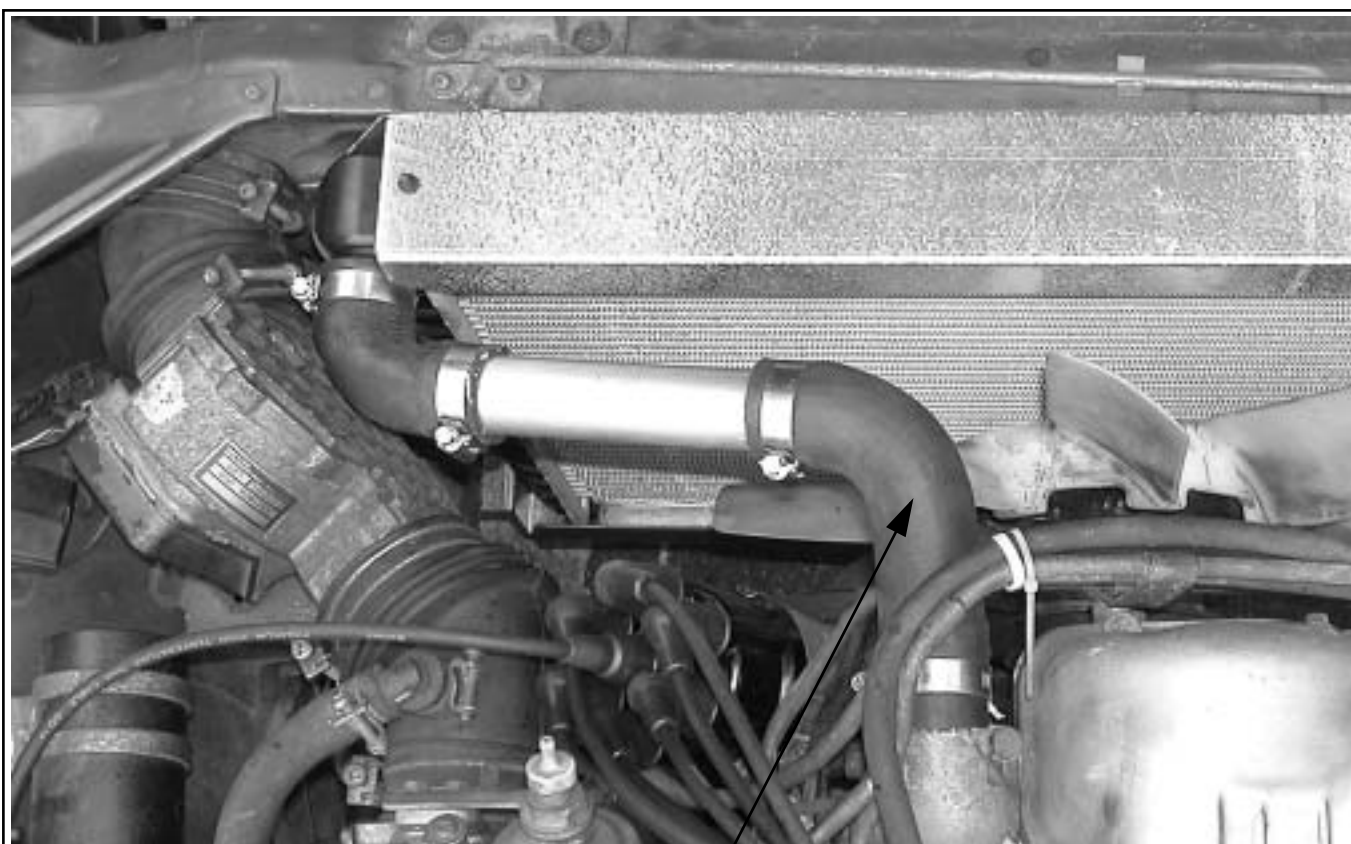
The hose assemblies shown above are made from sections of Datsun replacement hoses, hose splicers, a hose reducer a 90° elbow and eight hose clamps.

The 90° elbow is from a lower radiator hose from a 1998 Chevrolet Full size truck with a 350 V8 and heavy-duty cooling.

The kit includes eight high-quality lined hose clamps. Lined hose clamps have a steel liner which protects the rubber hose from being cut by the serrations in the hose clamp. An advantage of lined hose clamps is that the hose can be removed and retightened repeatedly without damaging the hose.

The hose kit is available separately as part # DAT-502. Cost is \$65. Shipping weight is 5 lbs.

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This section of the upper hose should be long enough to allow the engine to move without placing stress on the radiator fitting

UPPER RADIATOR HOSE

The stock Z upper radiator hose is too short for the Chevrolet radiator.

In addition, on 280Z's, the radiator hose needs to make a tight turn where it connects to the radiator in order to clear the air-flow meter.

The upper hose assembly was made by splicing two radiator hoses together, using a 7-1/2" long, 1-3/8" diameter hose splicer (shown on previous page).

The section that makes a tight bend next to the air flow meter is cut from a 280Z lower hose (see page 12-12)

The shape of the hoses is critical in allowing normal engine movement, without putting stress on the radiator. The section going from the thermostat housing to the hose splicer is intentionally long so that it can flex as the engine moves during normal driving.

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ELECTRIC COOLING FAN POSITION

There is not much room between the 6-cylinder engine and the radiator.

A thin electric cooling fan can fit between the engine and the radiator, but it must be offset towards the driver's side to clear the water-pump pulley.

The fan shown is a 16" diameter fan. It is the largest diameter fan that can fit between the radiator mounting brackets. A 14" diameter fan (shown on the next page) will cool a non-air-conditioned Z car.

The fans should be wired to turn on automatically when the coolant gets hot. We don't like to see the coolant get above 200° F. Adjustable thermostats are available at many auto part stores.

Mounting electric cooling fans requires custom brackets. Make sure the brackets hold the fan/shroud assembly securely, without touching the radiator, as shown on the next page.

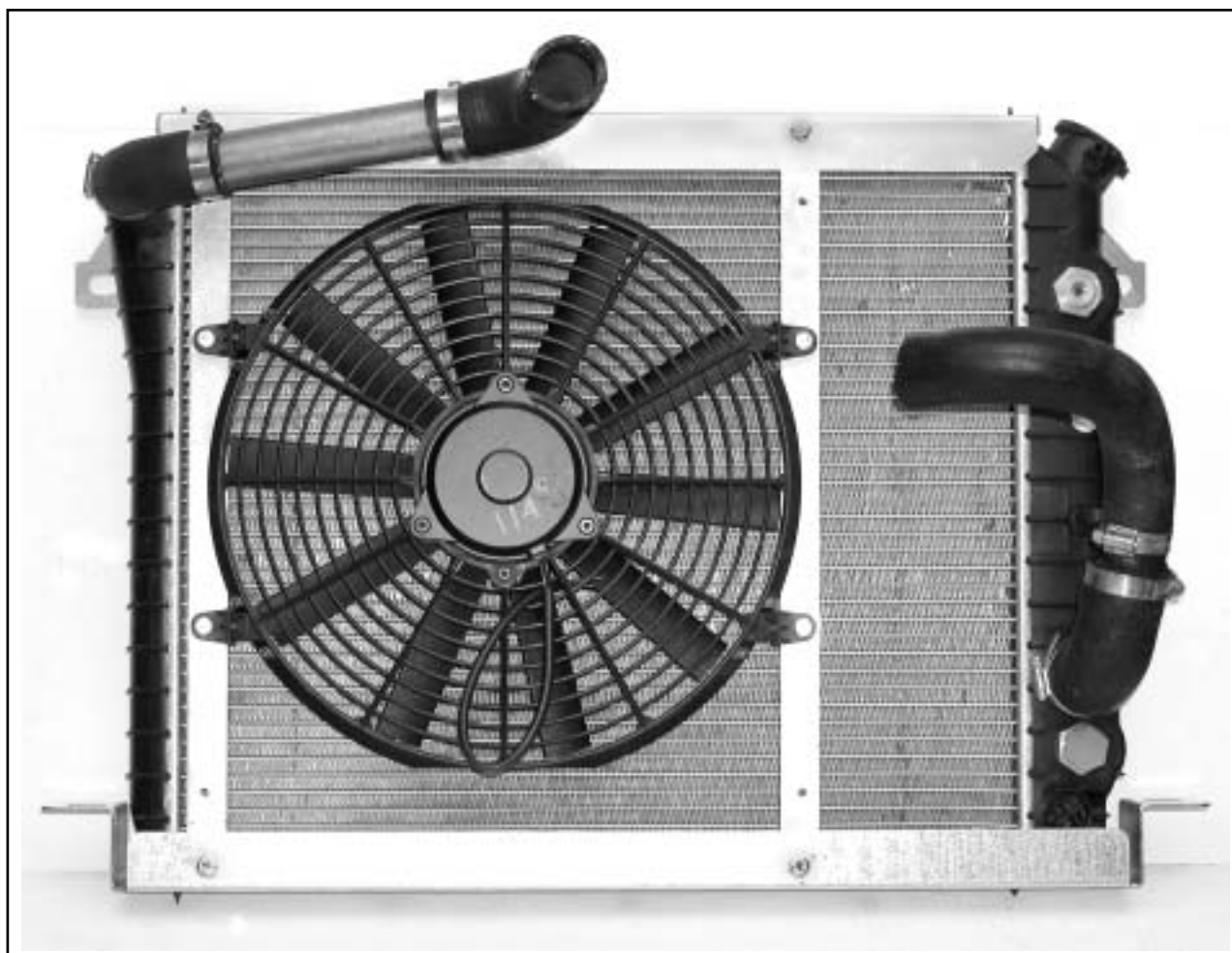
With the radiator and fan combination shown above, the fan will only run in stop and go traffic. Once the car is moving over 15-20 mph, the radiator's efficient core design allows enough air to go through the radiator for adequate cooling.

4-row radiators often don't work well with electric cooling fans because the radiator can be too restrictive for ram air to easily flow through it. All new GM cars with electric cooling fans use thin radiator cores because they depend on ram air for cooling when moving.

ELECTRIC COOLING FANS AND AIR-CONDITIONING.

If the car is air-conditioned, the fan should be wired to turn on whenever the air-conditioning is turned on, unless a pressure switch is installed in the air-conditioning hoses to turn the fan on when the pressures get high. For most people, it will be easiest to wire the fan so that it turns on whenever the air conditioning is turned on. Most electric fan kits have instructions for wiring the fans when using air-conditioning.

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RADIATOR BRACKETS AND ELECTRIC FAN INSTALLATION

When using an electric cooling fan, it is important to protect the radiator by not attaching the fans to the radiator core. As shown on the previous page, the fan needs to be offset towards the driver's side to clear the water-pump pulley.

The tall flanges on the radiator brackets allow bolting fan assemblies to the brackets using 1/4" thick x 1" wide, x 19" long aluminum flat bar, which has holes drilled and tapped to accept 1/4"-20 x 1/2" long bolts. The tapped holes are located 1/2" from each end of the 19" long aluminum bar stock.

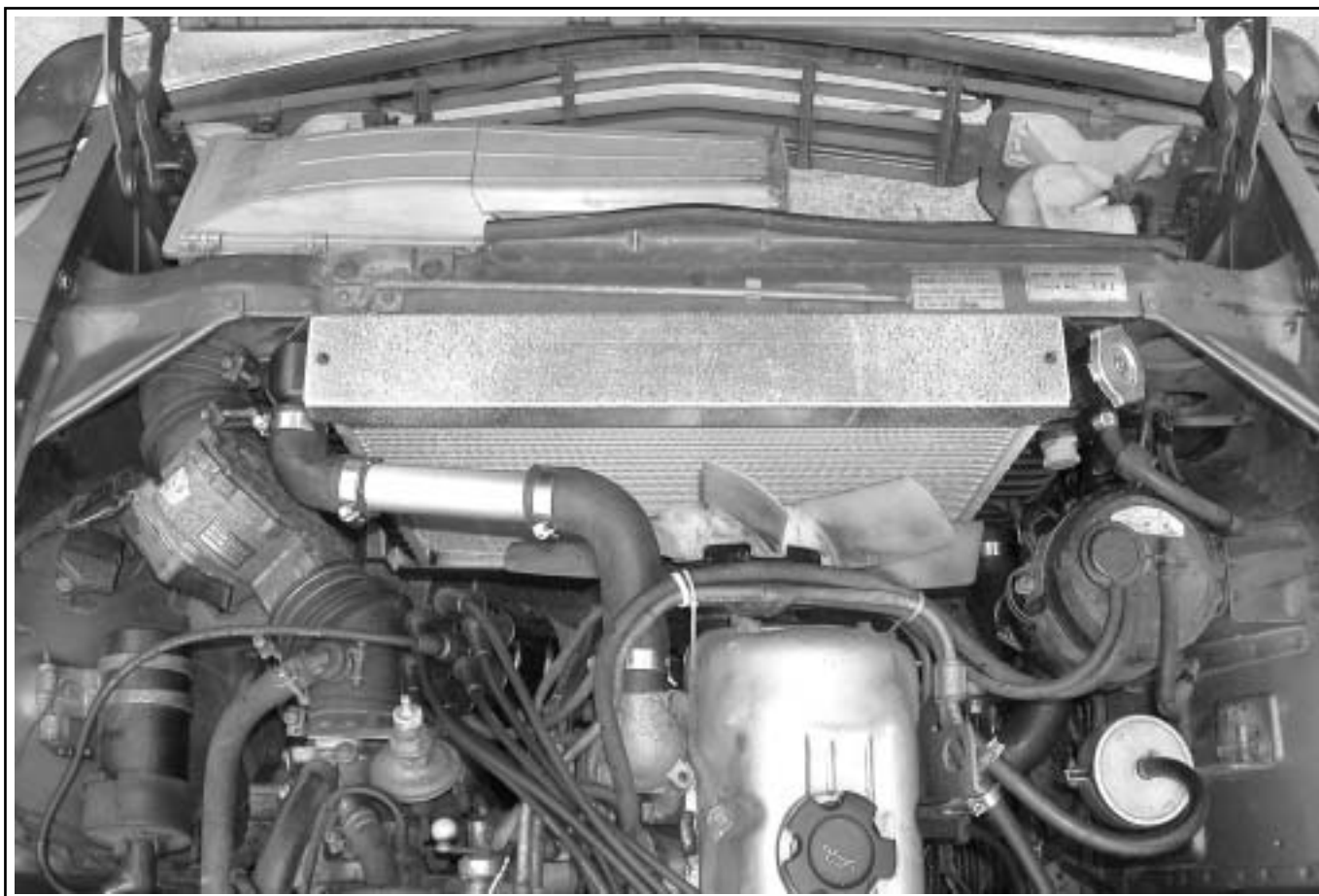
The bolts that attach the fan to the aluminum bar stock are 5/8" to 3/4" long and need to be secured with Loctite® or some other bolt adhesive to prevent loosening because the plastic brackets will break if the bolts are tightened too much.

Using lock-nuts on the bolts is not a good idea because they may protrude into the radiator core.

The fan shown in this photograph is a 14" diameter "puller" which will cool a non-air-conditioned Z car.

When using an electric cooling fan on an air-conditioned Z car, a 16" diameter cooling fan is recommended. We have seen people install "pusher" fans behind the radiator, and they don't cool as well because the air foil on the fan blade does not work as well when running backwards. The convex part of the blade must point to the front of the car.

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FINISHED INSTALLATION

This is the finished installation in a 1978 280Z.

The owner of the car does not use the air-conditioning and did not install the fan shroud.

The lower radiator hose is barely visible. The charcoal canister was temporarily removed for easier access to the lower radiator hose.

The stock Datsun Z radiator cap will fit on the Chevrolet radiator, and the hose to the coolant recovery tank was shortened, and connected to the radiator.

AUTOMATIC TRANSMISSION

If your car has an automatic transmission, the Datsun transmission cooler hoses will have to be cut, and spliced to the Chevrolet radiator using transmission cooler fittings available from automotive stores. The Chevrolet radiator uses 5/16" inverted flare fittings.