928 Motorsports Supercharger Installation

For Porsche 928 equipped with K-Jetronic (CIS) Fuel System

928 Motorsports Supercharger Installation

This manual was written when we were using Powerdyne superchargers in our installations. So, you will see a lot of Powerdyne pictures.

Your kit has been upgraded to use the much better Raptor supercharger. Please interpret the installation instructions as necessary until I can get the installation manual all caught up.

Thank you,

Carl

Carl Fausett
928 Motorsports

928 Motorsports Supercharger Installation

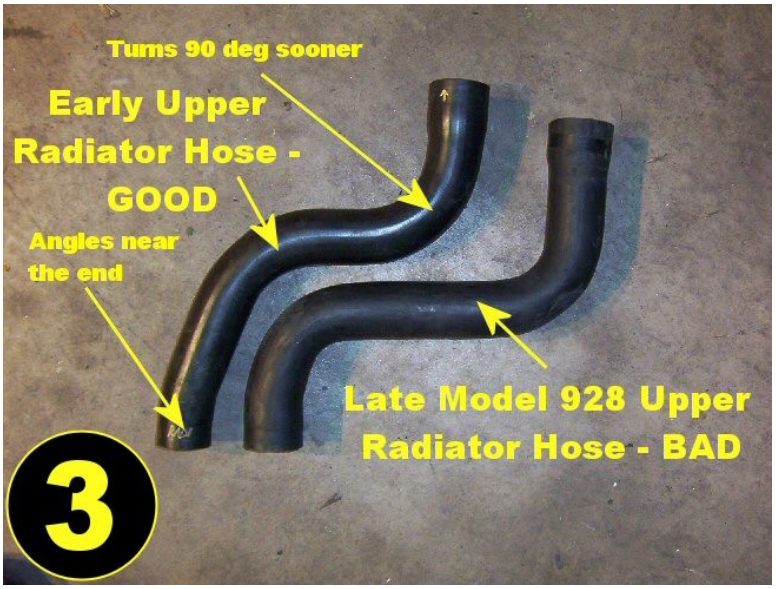
For 16v K-Jetronic Motors

We recommend that you steam clean or power wash your motor before beginning the supercharger installation. It's more fun to work on a clean motor than a greasy one.
NOTE: “Left” and “Right” are used in this manual frequently. Left and Right are always as seen from the driver’s seat-as you sit in the car.

Phase 1: Disassembly and Preparation of your Motor

In these pictures we've removed the radiator to get better photographs for you. Removing the radiator to install the supercharger kit is optional, but you might find that it's a good time Anyway to replace your lower radiator hose and or the oil lines that go from the radiator to the oil filter area, if you have them on your 928. Euro models have the external oil lines that go to the radiator from the engine, US models don’t.

The first thing we want to do is to make sure your 928 has the correct upper radiator hose on it. See photo 3. If you have the wrong hose, it will not go around the supercharger correctly later. The correct hose can be ordered from us if you need it.



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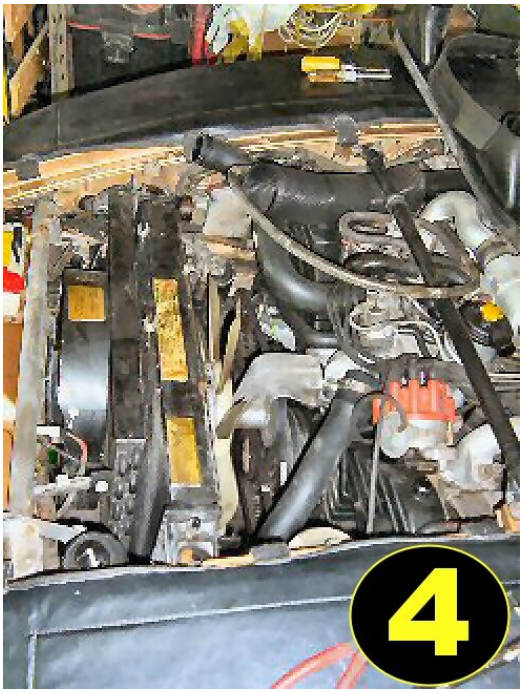
Radiator Removal:



To remove the radiator, (optional step) start by removing the fan shrouds top and bottom of the fan. (Photo 4) You will find two 10mm bolts hold the upper half of the fan shroud in place on the top, and two 10mm bolts hold the bottom half to the radiator on the bottom. You drain the radiator by loosening (but not removing) the BLUE plastic plug located in the bottom of the radiator on the passenger side. Remove both the upper and lower radiator hoses. It is recommended that you remove the hoses from the engine, rather than at the radiator itself so as to not damage the radiator hose nipples.
(See Photo 5).

Dis-connect the oil lines to the radiator (if you have them) – always using two wrenches in opposition to loosen the lines so you do not break the radiator nipples! Then you can remove the 6MM hex-headed bolts that secure the rubber hold-down clamps (photo 6) on each side of the radiator, and pull the radiator out thru the top.

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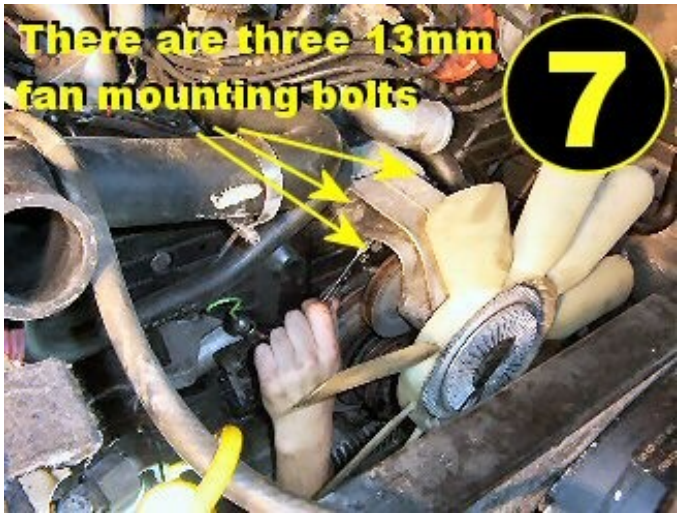
Next, we want to remove all the belts from the motor. I recommend that you label the air conditioning belt, the power steering belt and the alternator belt so that you remember to put them back on the right pulleys when we're reassembling the front of the motor. The alternator belt is the smallest belt and unlikely to get confused, but the A/C compressor belt and the power steering belt are of the same gauge and can get mixed up if you're not careful. Labeling the belts with a yellow marker or a string or anything you want will help you keep them straight. The air pump belt will not be going back onto the motor.

Removing the Fan Assembly:

The next step is to remove the fan assembly by removing the three 13 mm bolts that hold it to the front of the block. (Photo 7).



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The front of your motor should look just like this, at this time. (Photo 9).

Adjusting the Dip Stick Tube:

This is a good time to adjust the dip stick tube a little bit to make insertion and removal later after the supercharger is installed much easier. All you need to do is grab the top of the dip stick tube and gently bend it towards the front of the vehicle by about 1". That will facilitate checking your oil when the supercharger tubing is all in place. Don't go further than about 1" or the Air Conditioning belt may rub on the dip stick tube. Remove the stock dipstick and insert the shortened dipstick supplied with your kit now.

Removal of the Crankshaft Pulleys:

The next step is to remove the crankshaft pulleys. They are held in place by a single 27mm bolt in the center. You will need a 27mm socket and a big breaker bar or as in this picture (Photo17), we're using a ¾" drive socket set and a 1 1/16" socket which works pretty good. But, read to the end of this section before trying to break torque on that crankshaft bolt.

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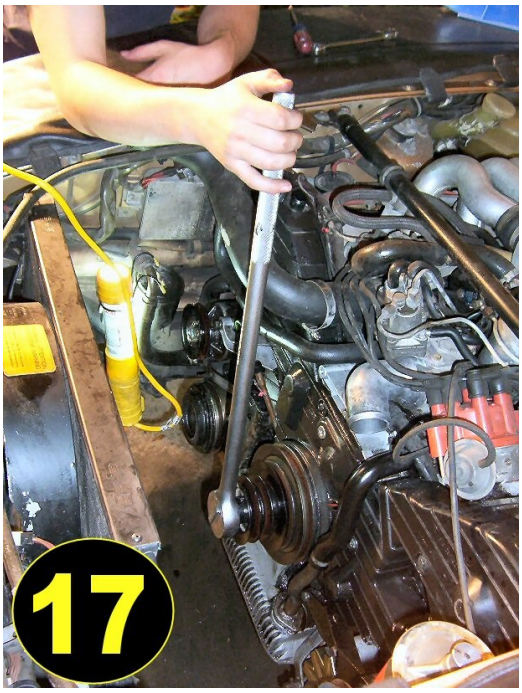
You will need to borrow a flywheel lock tool from a Porsche dealer to hold the crank shaft while you break torque on the crankshaft pulley bolt. The tool looks like the picture in photo 18. We also have flywheel lock tools for sale and for rent if you need one. Just call.



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Manual Transmission Cars:

Remove the slave cylinder with a 13mm socket or wrench and just pull it out of the way and over to the side a little. You will have to pull out the clutch release rod temporarily, but you do not have to disconnect any hydraulic lines. Slide in the special tool to engage the ring gear and bolt it in place with the slave cylinder bolts you just removed. (Photo 19).

Automatics:

Remove the cover plate over the access hole on the bell housing and install the fly wheel lock in the same place as the manual trans cars. NOW you will be able to break torque on that crankshaft bolt, and remove the two pulleys – the power steering/alternator assembly and the Air Conditioner pulley. (Photo 20). **Pay attention to the direction the special washer faces under that big bolt as you need to put it back facing the same way again later.** The Air Conditioner pulley will be going back on the car later.

At this point, your motor should look like this: (Photo 21).

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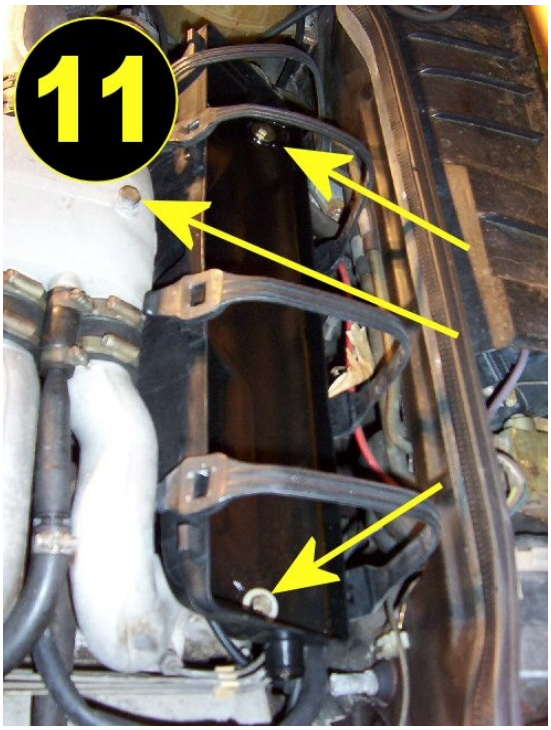
Removal of Air Filter Box:

Now it is time to remove the air box cover and air filter and set it aside. Inside the air box cover you'll find two 13mm bolts in each corner of the air box. These have to be removed. (Picture 11)

Then loosen the 13mm bolt that screws down through the center plenum as in picture 12.

There may also be hoses about one inch in diameter for the air breather assembly stuffed in both ends of the lower air box; those will have to be removed.



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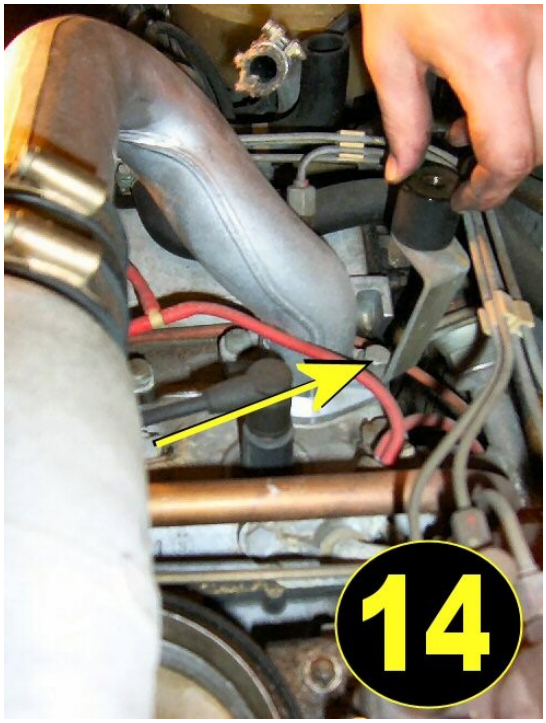
Underneath the lower air box cover, you'll find two rubber mounts that support the air box that are held to the intake manifolds by 13mm bolts. You'll need to take the 13mm bolts out of the intake manifold, remove the rubber mount and put the bolts back into the intake manifold and torque them down. (Photo 14).



At this point, cover the engine air intake with a rag while we work on the rest of the motor to prevent any material from accidentally getting dropped inside the intake. (Photo 15).

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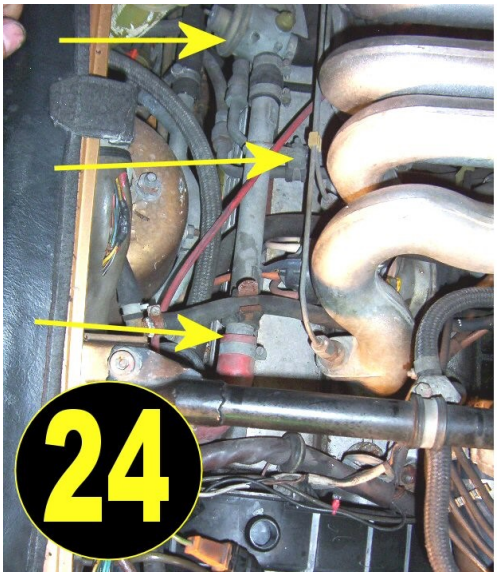
Removal of EGR Air Lines:

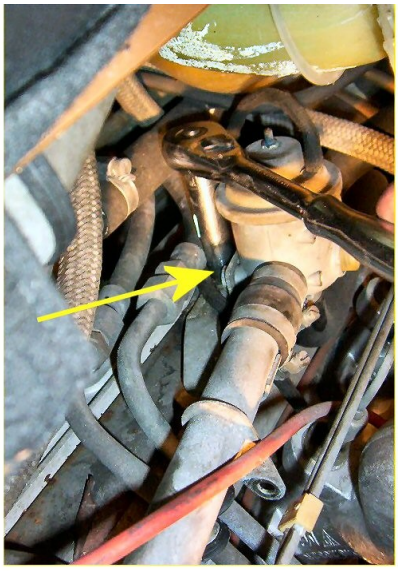
Now that the air filter box is out of our way, we can remove the air pump and air rail assemblies. These systems represent the very first attempts at reducing PPM (parts per million) of noxious gases in order to comply with EPA emissions laws here in the States. They simply took fresh outside air and pumped it into the exhaust system to dilute the percentage of bad gases found in the exhaust! On most of the 928s I have seen, the air hoses in this system are cracked and open and the system has stopped working years ago. They were only intended to help get the car thru emissions checks during its original warranty period anyway.

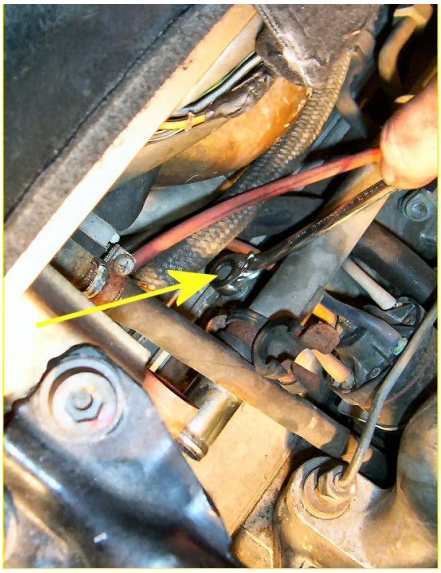
NOTE: You can either remove the air rail completely (recommended if you will not be having a visual emissions equipment inspection in the future) or, you can leave the air rail where it is and just plug it (good for emissions inspection states).

EGR OPTION 1 - Removing the air rail:

The air rail is held in place by three 10mm bolts. (Photo 24). One goes horizontally through a bracket that holds the two fuel lines and is right on top in the center of the passenger side valve cover. The other two bolts are located below the air pump rail as these pictures show. A 10mm deep socket will just sneak under that air rail and remove them.







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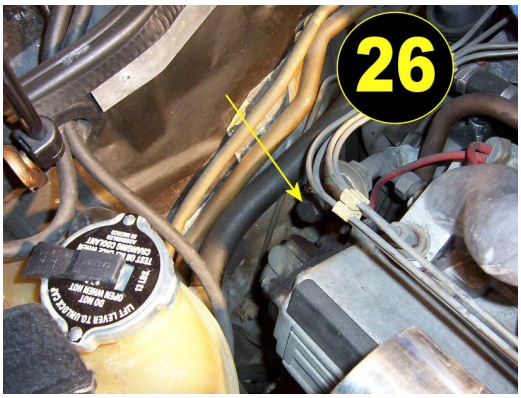
Removing the smog pump rail will leave three openings that need to be plugged. One at the back of the head, 3/4 inch in diameter, which you will plug with the cap provided. (Photo 26).



Then there is a small vacuum hose that goes to the back of the throttle body. Remove the hose and plug with the small cap provided. (Picture 22)

The third is the 1/2 inch braided hose as shown in Photo 25. This hose exits the engine compartment on most models into the right front fender. Take off the right front inner fender liner (three 10mm screws hold it on to expose the windshield washer reservoir and the air canister). Pull the hose through the fender as in Photo 25, trim about 8 inches off the end, and stuff it behind the windshield washer reservoir. It will stay nice and dry and very safe back there, it is just a gas tank vent. Put your inner fender liner back on. Also, if you removed the air rail, go back and replace that bolt you removed on the fuel line support bracket a moment ago.

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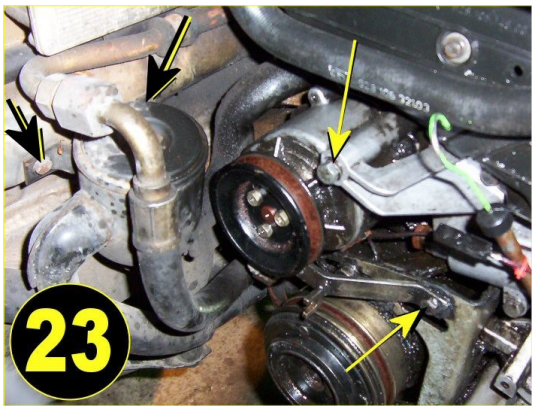
Removal of EGR Air Pump:

Remove the smog pump itself by taking out the 13mm bolts, (as shown in picture 23) at the front of the air conditioner mount and the timing belt tensioner bracket. The air supply for the air pump system is mounted to the inner frame rail on the passenger side of the vehicle just in front of the smog pump pulley, as shown in this picture. It is held in place by two 10mm bolts, which we will remove and it will bring the air filter canister for the air pump system free in your hand.



Now we have the air pump assembly removed and all the lines have been plugged, the crank shaft pulley is removed and all the belts obviously with it, and the air filter air box has been removed and its mounts. We have completed the disassembly portion of the installation. This is a good time to clean the engine up a bit before we begin the assembly of actually installing the supercharger kit to the motor.

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Installing the Crankcase Ventilation System:

The 16v Porsche 928 has a small built-in oil separator for separating the oil from the outbound crankcase fumes, and returning the oil to the oil pan.

It is very important to augment the oil separator when installing the supercharger. There will be more air forced into the motor, meaning more crankcase emissions too.

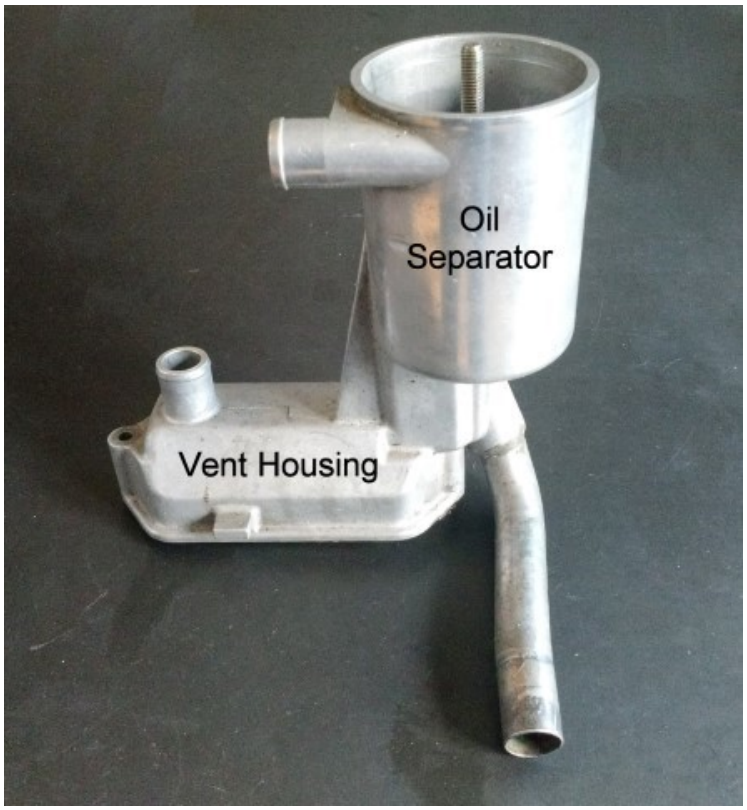
In your supercharger kit parts, there is a separate bag labelled “Oil Control System”

Refer to the instructions in that bag and and install the complete oil control system now.

DO NOT SKIP THIS STEP.

The oil control system we designed works wonderfully on 16v 928 engines driven hard on the street with the occasional track day too.

However, if you are going racing, contact us for mods to the oil control kit to use a catch tank and satisfy the rules of your racing organization.



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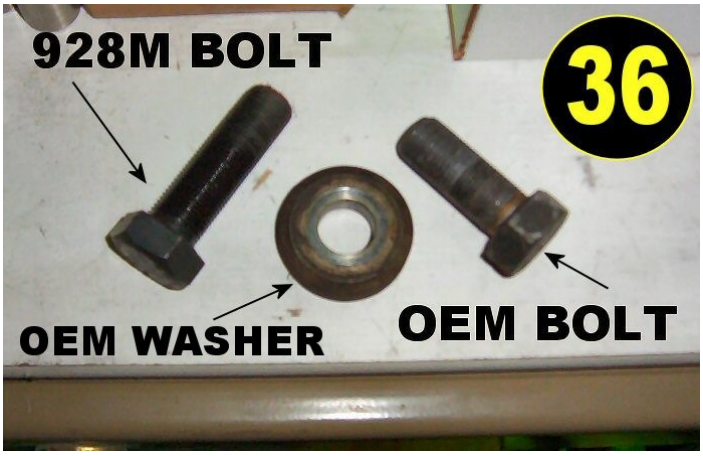
Phase 2: Installation of the Supercharger

Crankshaft Pulley Installation:

Place the air conditioning pulley back on the crank shaft as shown in picture 35. It remains loose until sandwiched in place, so do not be concerned if it wobbles at this point. Now take the large aluminum 928 Motorsports pulley and press it on the end of the crank shaft.

Take the 27mm bolt and washer we removed in photo 17, replace the bolt with the one provided in your kit (as shown in photo 36) and mount up your crank pulley. Be sure you re-use the original washer that you removed and face it in the same direction as before. Remember to put a little anti-seize or loctite blue (supplied) on the threads of this bolt to get a true torque, and then tighten it to 218 ft/lbs. Note, some crankshafts are threaded deeper than others. If the new bolt we supplied bottoms out in the hole before clamping the pulleys tight, just insert the hardened washer we have supplied beneath it.

Now, remove the locking tool from the flywheel if you installed one, and replace the clutch slave cylinder and push rod.



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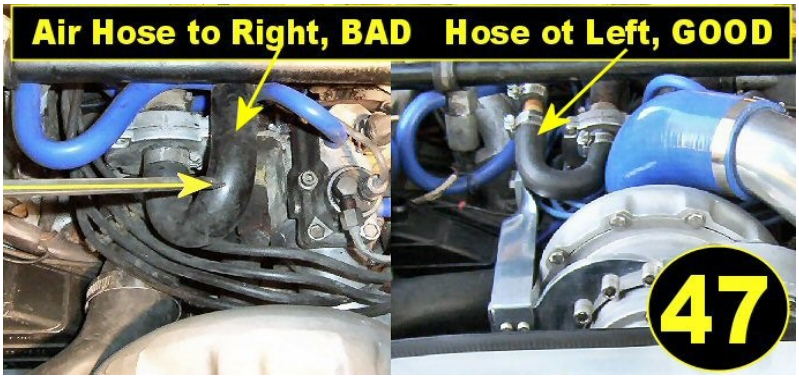
Making Room For The Air Intake:

To make room for the supercharger air intake we will start by removing the hose that comes out of the front of the auxiliary air valve (see photo 47) and turns back to the left and replace it with our hose and two #12 clamps that go back and to the right like photo 48. Hook the lines back up as needed.



Some 928s will need to rotate their warm-up regulator to make room for the air intake, some will not. If your warm up regulator is mounted horizontally as you see in photograph 50, we need to rotate it so that it is mounted vertically. To rotate the warm up regulator, you need to loosen the fuel lines as shown in photo 51 on the next page.

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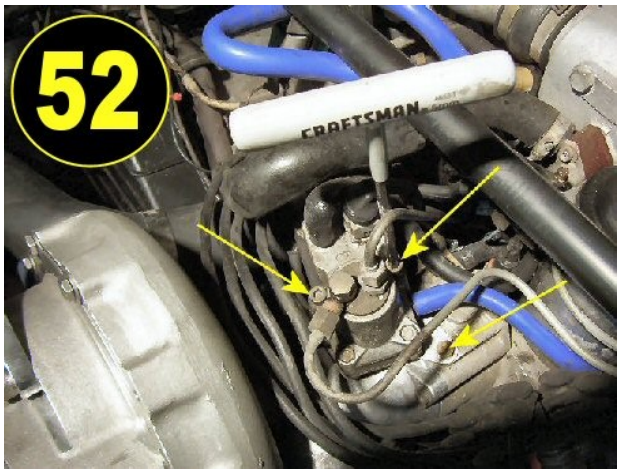
Get a 12mm and a 14mm wrench and hold the base of the flare nut while turning the collar in opposition to loosen it. It is not necessary to remove these lines, it is only necessary to loosen them. See picture 51.

Remove the two socket head cap screws with a 5mm allen wrench, as shown in picture 52. The uppermost cap screw is screwed directly into the block. The bottom one is screwed in to a nut. You will have to get a 10mm wrench on the bottom to hold the nut while loosening the lower cap screw.



Save the two bolts and clean the threads on them because they will be reused. Now take a 10mm socket, and remove the remaining hex head bolt that mounts the warm up regulator to the top of the thermostat assembly. Then you can remove the triangular shaped adapter plate that was mounting your warm up regulator and we are now ready to turn the warm up regulator and mount it vertically back in the same position.

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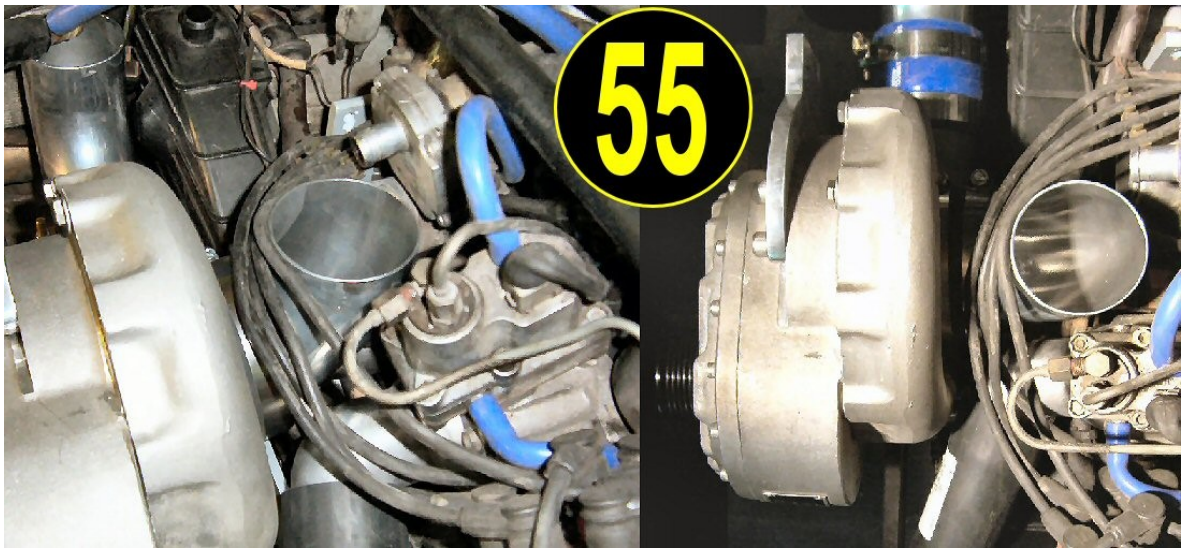
The only problem I've ever found rotating the warm up regulator is the rubber hose on top can become very brittle and old with age and refuses to flex, in which case this is just a good time to replace that vacuum line with a new one from the blue silicone vacuum lines we provided. See photo 53 for details.

The electrical connection on top of the warm up regulator will rotate easily. All the other connections will just pivot on their points.

Photo 55 shows the warm up regulator now mounted vertically at the front of the motor like we want and that opens up the area we need for the air filter intake.. Later, when the supercharger is mounted, you can route your ignition wires like this:



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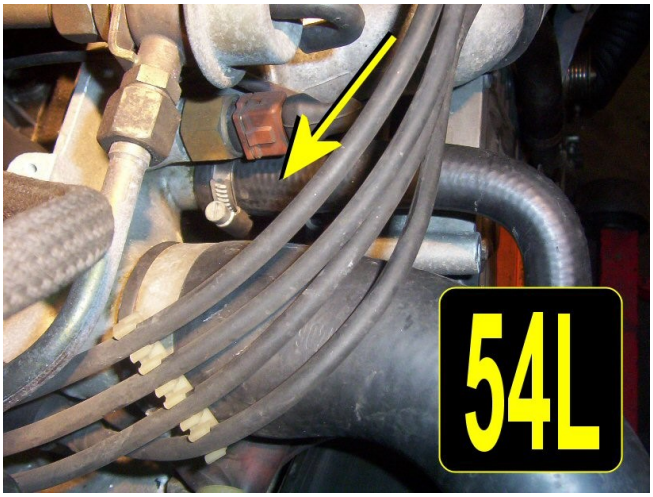
To make more room for the supercharger air intake, remove the heater hose where it connects as shown in picture 54L, cut about 1” out of it, and put it back on. Be sure to clean the aluminum nipple with emery paper before hooking the hose back up so it down not leak.



Mounting Inner Supercharger Mount:

The Second step in the assembly is to mount the steel inner supercharger plate to the front of the engine. Hold the supercharger plate in your hand so that you have it oriented as shown in picture 32. From the kit select the three 40 mm long by 6 mm metric bolts. They are blue in color and can be seen in picture 33.

We recommend that you coat these bolts with loctite red which you will find in your kit, to keep them from backing out. You may want to clean up the threaded holes in your motor with a metric tap if you see signs of corrosion before proceeding. Because of the precise drilling and machining in the 928 Motorsports mount, you will have to turn in each bolt several times and then move to the next bolt, turn it several times, move to the next bolt, turn it several times and so on, until the supercharger mounting plate is flush up against the motor before you can begin to torque them.

Washers are not necessary underneath the bolt heads as we used washered bolts that do not require separate washers. Torque to 25 ft. lbs.

Your motor should look like Photo 32L now.

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Mounting the Outer Supercharger Mount and the Head Unit:

The Raptor supercharger head unit comes pre-mounted to the bracket as shown in picture 36. The mounting screws are already torqued by the people at 928 Motorsports for you.

Take the Z-shaped support bracket from your kit and bolt it to the inner mount with the short 8x15mm bolt as shown in picture 34.

Do not put the final torque on that bolt just yet.

Note how the loom for the engine wiring harness goes above the z-bracket.

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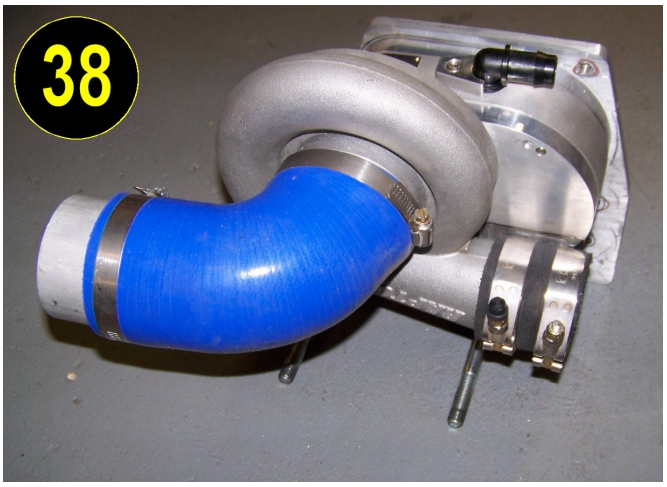
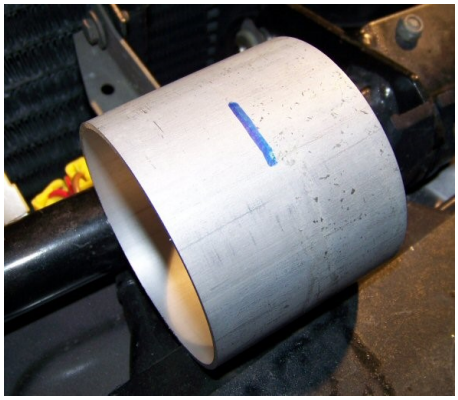
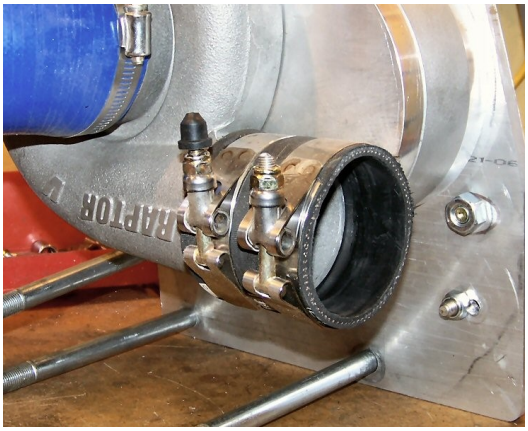
There are a few parts we can assemble now on the workbench much easier now than later when they are on the car.

Find the 3” 90-degree silicone elbow that has a very short leg (about 2.”) in your kit and install it onto your Raptor intake now. A thin coat of Dawn dishwashing liquid will make this easier. Point is as shown in the picture 38, and clamp it in place with one of the #52 worm gear clamps.





Find the 3” aluminum hose sleeve and draw a line in the center of it with a marker. It goes into the hose halfway—just up to the marker line, and is clamped with another #52 hose clamp.



Now find the three inch length of 2 1/2” black hose and secure it to the outlet of the supercharger with one of the small T-blot clamps as shown. A second t-bolt clamp is placed on the hose also, but not tightened.

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Locate the three long, heavy bolts supplied from your kit and the three stainless steel spacers.

Slide all the bolts through the mounting plate, and slide the spacers over the bolts now as shown.

This is your belt tensioner. It has been installed for you by us .

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Now place a piece of cardboard over your crankshaft pulley to protect it while we install this assembly.

You can do this next step alone, but it is easier with two people.

Put a drop of the Loctite blue on the threads of each of the 3 large mounting bolts.

Lower the assembly into place, and while your partner takes the weight off of it, you will be able to start the bolts into the mounting nuts easily.

Torque to 80 ft/lbs.

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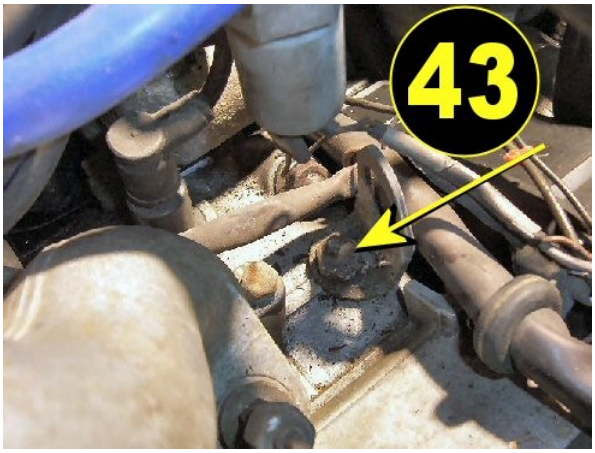
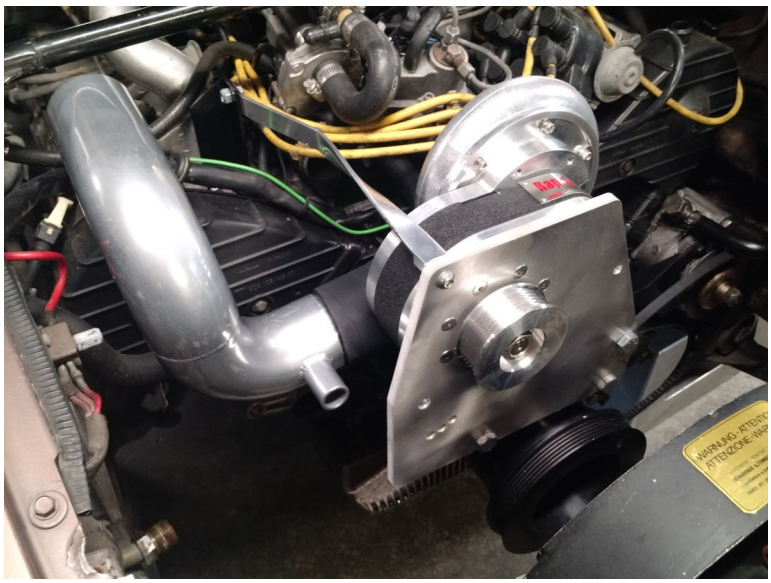
Now it is time to install the supercharger top strap. This is the strap that prevents it from being pulled down by the force of the belt. Find these two parts in your kit now:



Locate and remove the engine lift hook located at the front of the right head, as shown in photo 43.

Re-use that bolt and put it through the foot of the new upright from your kit (black in the picture above) . Then mount the silver strap to the black mount and to the supercharger mount as shown. Install all fasteners loosely at first until you have it positioned correctly, then tighten them in place.



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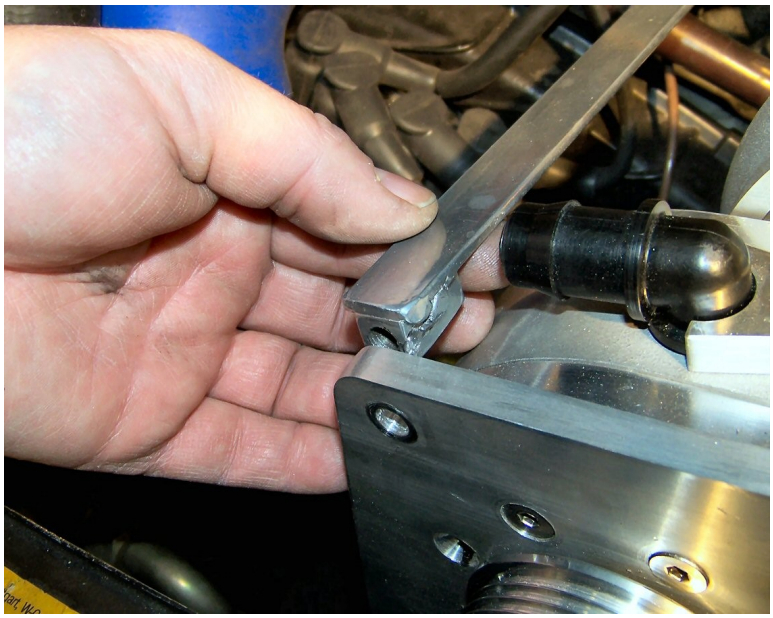

The front of the top strap is held to the supercharger bracket by a 40mm long Allen-head bolt supplied.

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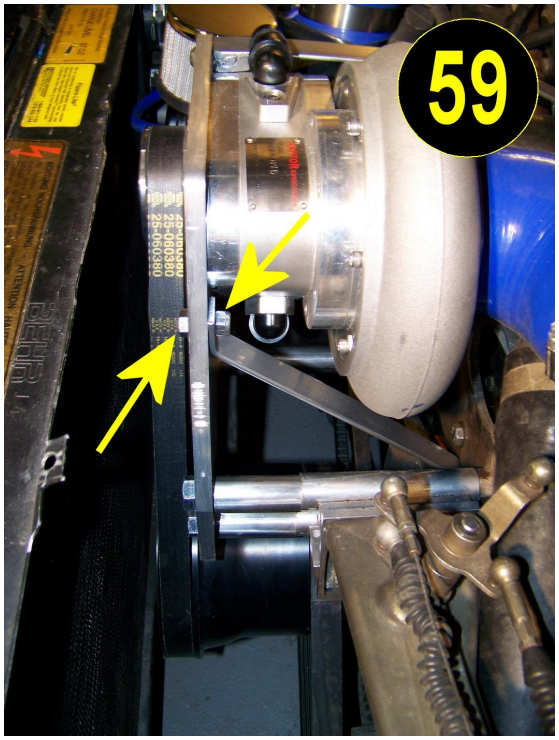
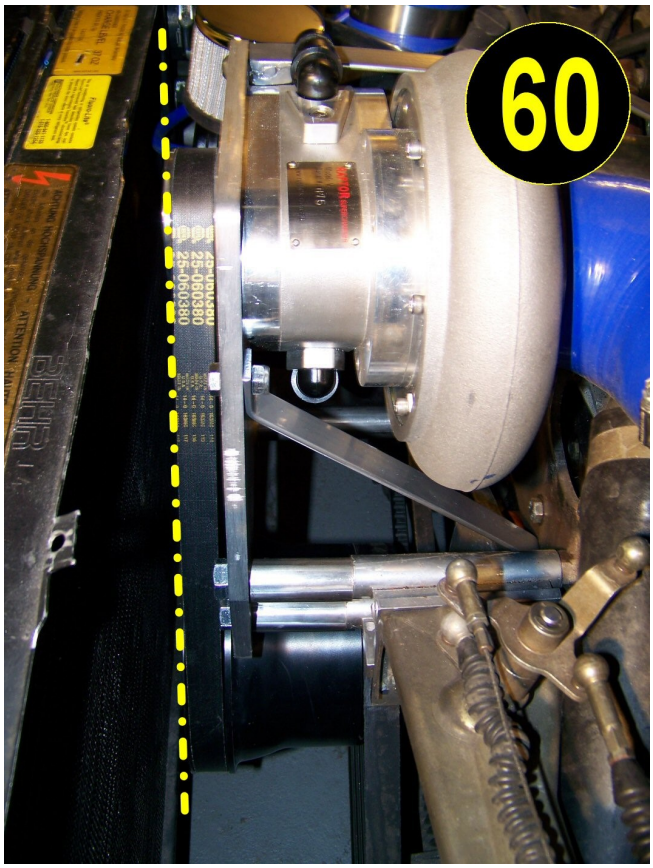


Finally, we need to put the bolt through the Z-strap and the front bracket as shown in Picture 59.

You can now tighten all the supercharger mounting bolts fully. Note we have not tensioned the belt as yet.

Now that we have mounted the supercharger head unit to the motor, we want to confirm that the pulleys are lined up as they should be.



Place a straight edge across the crankshaft pulley and see if it lines up with the front of the supercharger pulley. They should. This will provide long belt life and eliminate belt slippage for you. See photograph 60.

The supercharger can be moved in or out if needed by adjusting the stainless steel spacers.

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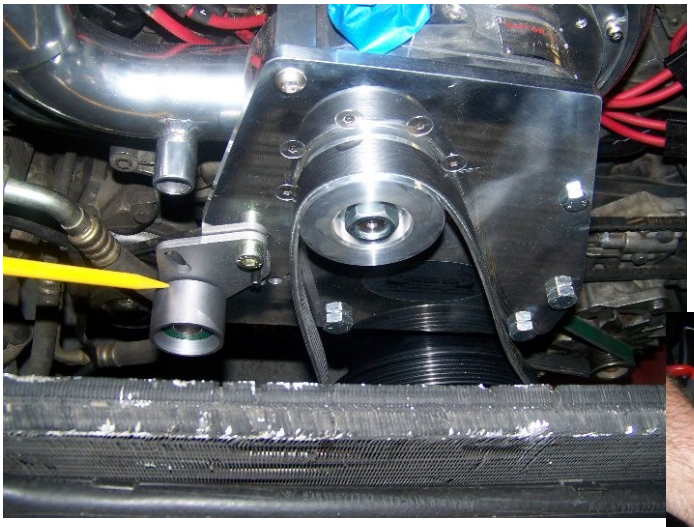
Its time to put the belt on the supercharger now. Your 928 Motorsports supercharger kit has fitments for several different pulley and belt combinations. For now, please place the supercharger belt supplied around the crank pulley and over the supercharger drive pulley.

Installing and Adjusting the Belt Tensioner:

The belt tensioner should already be mounted to the supercharger bracket at this point, as we installed it before we lowered the supercharger assembly into the car.

You have a choice of three holes to use for the adjustment bolt on your belt tensioner, provided so you can have a great range of adjustment for various belt and pulley combinations.

Swing the belt tensioner into the belt as far as you can with your hands and insert the adjustment bolt though the swing slot and into the hole that will provide the greatest belt tension. Put the locknut on the backside, and take up the slack.



The head of the top bolt is extra tall so you can pry against it to adjust your belt tension as shown below.

Insert a suitable pry bar over the bolt head and under the pin provided and pivot the tensioner to tighten the belt. Have a helper hold the pry bar in this position while you tighten the nut on the backside to hold it there.

928 Motorsports Supercharger Installation

When the belt tension is correct, it should have only about 1/4 to 1/2” of lateral movement in the belt when you push on it with your finger mid-way between the supercharger pulley and the crankshaft pulley. Picture 70.

Be sure to return here and check the belt tension again after about 300 miles as the supercharger belt will have worn into the pulley grooves deeper, and will need to be re-tightened.

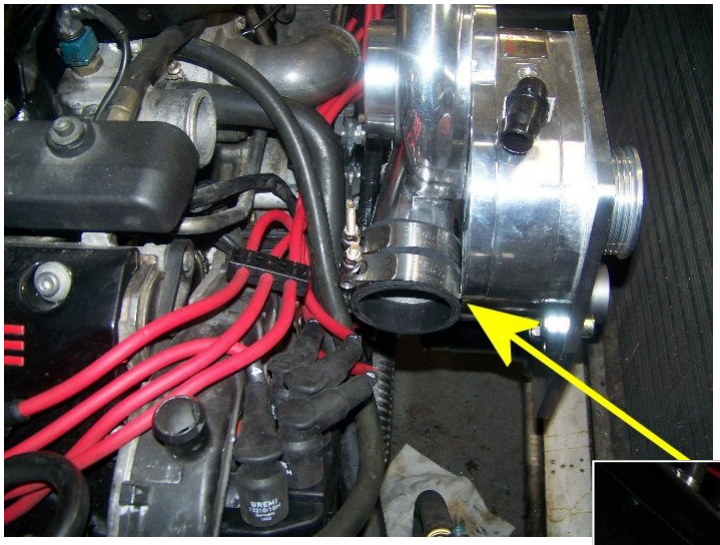
The front of your supercharger near the pulley should always be clean when you inspect it.

If you ever see black dust there, your supercharger belt is slipping and needs to be tightened.

928 Motorsports Supercharger Installation

Installing the Blow-Off Valve:

Check that the outlet of the supercharger is level and directly pointed at the right front fender. Rotate the outlet volute if needed.



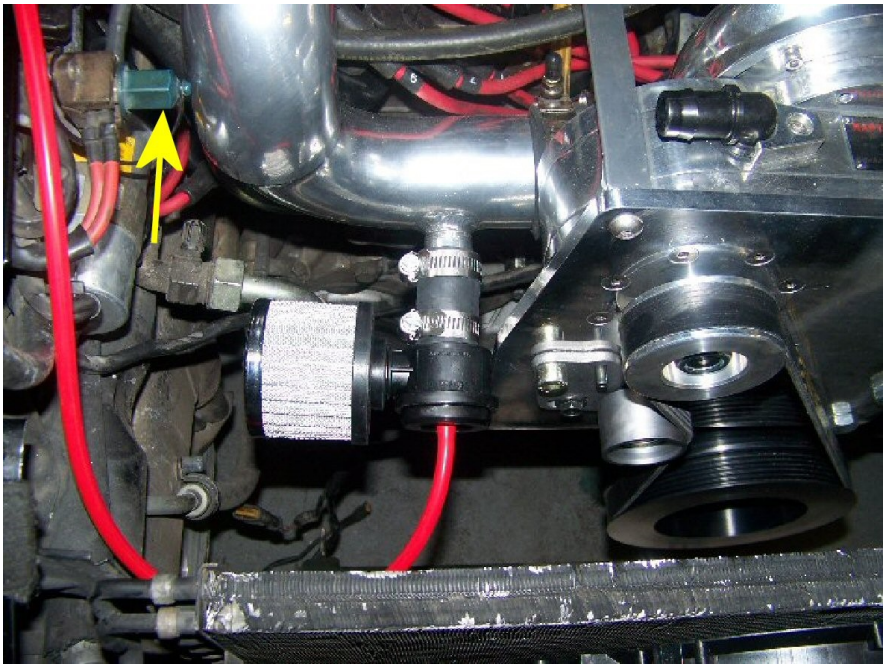
On Page 19 we placed the 2.5” black hose onto the outlet nipple of the Raptor, and added the two smallest T-bolt clamps to it. Your install should now look like this.

Locate the custom supercharger outlet tube from your kit that looks like this:

...and the Blow Off Valve assembly

928 Motorsports Supercharger Installation

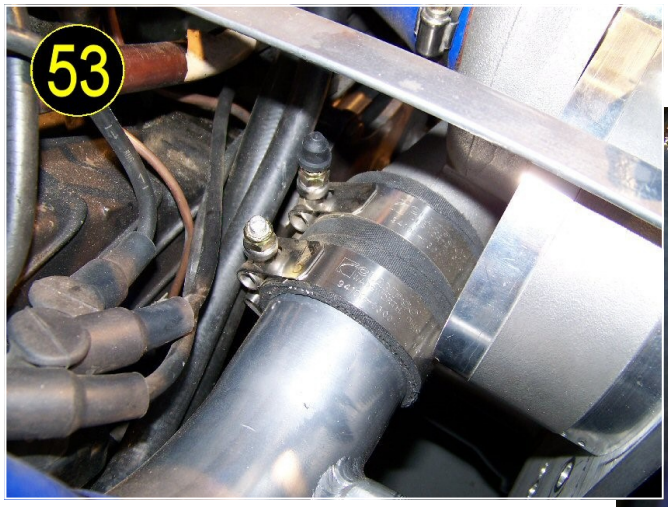
Slip the outlet tube into the rubber sleeve on the end of the supercharger so it looks like this:



You may have to gently bend the forward battery post a little to one side to get clearance. Make sure the forward battery post has a cap on it as shown.

The blow off valve attaches to the supercharger outlet tube with a 3” long section of 1” hose and two #12 hose clamps as shown.

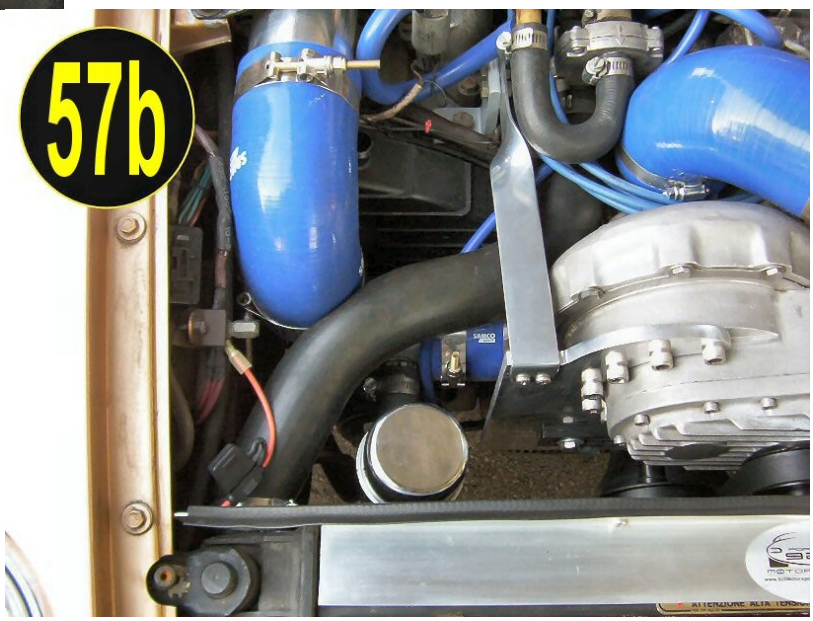
After the clamps are tight, they must be trimmed so they will not poke into the upper radiator hose we will be installing next. Leave about 3/8” above the nuts. You can use a bolt cutters or an air cutoff tool to cut them off. Plug all intakes that are open with rags first!



Then cover the tips of the bolts as shown with the rubber caps provided.

928 Motorsports Supercharger Installation

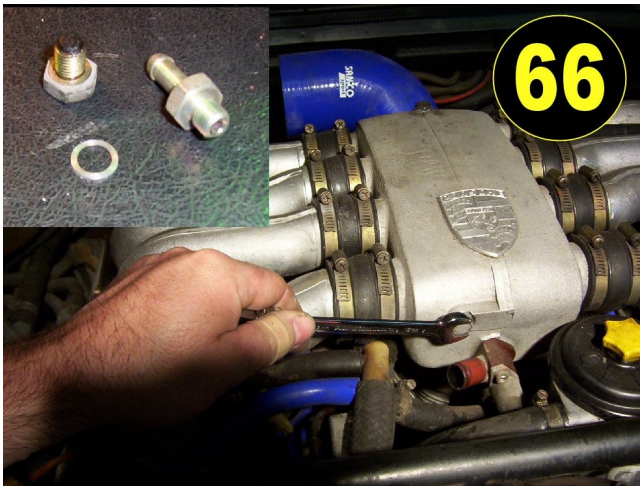
Trim about 1.5” from the end of your upper radiator hose and put it back on. See picture 57a. *Note, the route of the finished upper radiator hose in picture 57b.

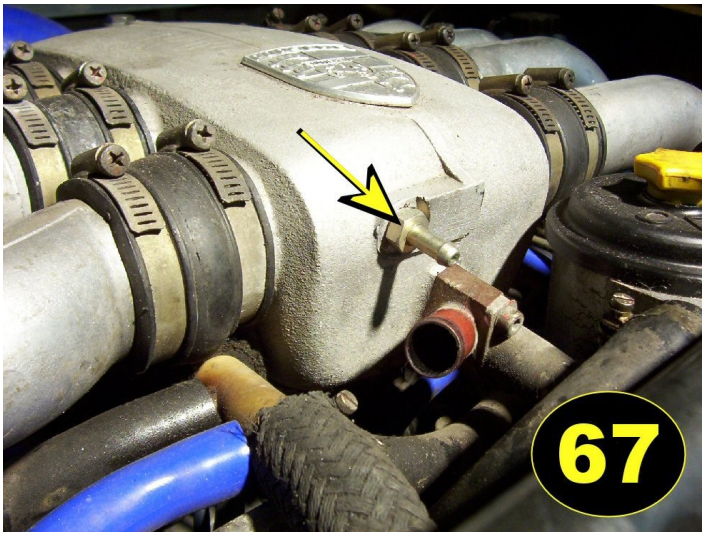


928 Motorsports Supercharger Installation

Running Vacuum to the Blow-Off Valve:

The supercharger system has to have a blow-off valve so that the engine knows what to do with all that extra boost when you step off the accelerator suddenly, like down shifting for a corner. In that set of circumstances the engine gets a high vacuum and it opens our blow- off valve which releases the excess boost to the atmosphere. On manual transmission cars, we will be removing the bolt from the front of the intake plenum and installing our fitting, (see photo 66) in it's place and putting a vacuum line in there. It looks like photo 67 when installed.





If your car is an automatic, you will be installing a T there instead in the vacuum line that comes out of the very same fitting. Take a vacuum hose from the kit of blue silicone vacuum hoses provided and run it from the intake manifold nipple or tee to the connection on the bottom of the blow-off valve. A cable-tie will keep it up near the radiator hose and away from the belts. See photo 67a.

928 Motorsports Supercharger Installation

Installation of CIS Intake Elbow:

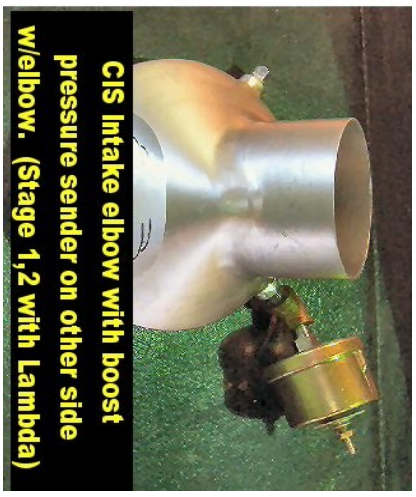
It's time to prepare your CIS intake elbow according to which gauges you have.

This kit from 928 Motorsports comes with boost pressure and air fuel ratio gauges. At this time we will install the boost pressure gauge sender into the CIS elbow before we put the CIS elbow on the car. Please study photo 60.

Notice that your 928 Motorsports CIS intake elbow comes with two 1/8" national pipe taper female nipples for the insertion of sender units. In the stage 1 and 2 kits, we're only inserting the boost pressure sending unit and the other gauge port is plugged with a ordinary 1/8" national pipe taper plug. In the stage 3 kit, the same elbow is used, but the 1/8" national pipe taper plug is removed and the air temperature sender is installed, to measure the temperature of the air as it enters the motor.

Screw the boost sender unit into your CIS intake elbow on the side you think is right, <u>but do not tighten it at this time</u>.

This is a good time to check the operation of the air metering plate in your CIS unit. It should move freely up and down without binding. (See photo 63). Inspect the ring gasket that goes around that as we are going to be using that to seal around the bottom of our CIS intake elbow. Using carb spray on a rag, clean the top of the plate. Do not try to clean underneath the plate of the CIS system.



Test-fit the CIS intake elbow with the senders installed to make sure the senders do not hit anything on either side before you put the final tightening on them. See picture 65.

***Note,** The CIS elbow goes in-and-out the easiest from the passenger side of the fuel distributor it is a snug fit, but it will go.

If your car is a US model, it will be equipped with a lambda sensor. It is going to have an air temperature sensing pipe that comes up to the intake manifold as shown in photo 61. If that is the case, you will need to install the 45 degree elbow into the CIS intake elbow to move the boost sensor up and out of the way of the lamda pipe.

When you can test-fit your CIS elbow and your boost sending unit does not hit anything, it is OK to tighten the sender fittings.

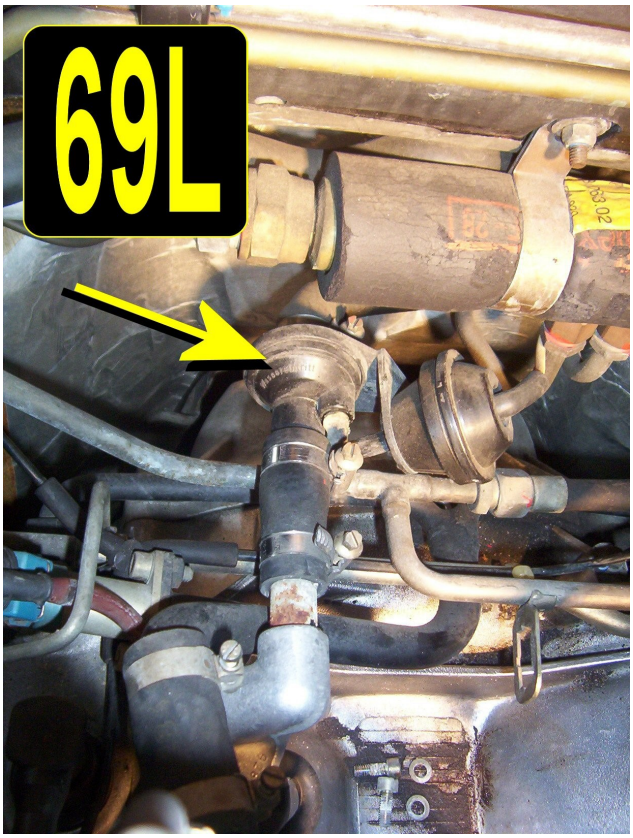
Now it is time to take the pressure bolt that goes through the plenum and drop it in place and you get an idea how much of the bolt you need to cut off. In this case it's about a 1/2".

Photo 64 shows we have marked the bolt and we're going to cut off about 14mm of the bottom.

Because the CIS intake adapter elbows are hand made by us, they may vary slightly in height at the peak. The other variables include whether you have a EURO or US intake, and the height that your intake center plenum is mounted within the 8 rubber sleeves that hold it in place over the throttle body. There are a lot of variables here, so we can't tell you how long that bolt has to be. You have to drop it in there, measure it, cut it off, try it and so on. On this one, we started out by cutting off 14mm, we went back, we put the bolt back in the plenum, screwed it down, weren't happy with hose much stuck out of the top of the plenum, took it back to the vise, used the hack saw, cut off another 4mm and we liked it better that time. What is right for one installation may not be right for another, so this is a test it, take it out, put it in kind of thing. Remember, if you're going to error, error on the side of cutting off too little and leaving the bolt too long, you can always cut it a second time.

928 Motorsports Supercharger Installation

This is also an excellent time to replace a plastic heater valve if you have one. See picture 69L. We have had customers who, after supercharging, have accelerated so hard that the plastic heater valve split open and they dropped all of their coolant! A replacement steel heater valve is available at 928 Motorsports if you would like to replace it now.



928 Motorsports Supercharger Installation

Installing The Intake Tubing:

Stage 1 System: Early kits hade a two-piece intake tubing system, that looks like this:

Your kit has a one-piece intake-air tube, with a mandrel bent corner already in place. Install it to look like this:

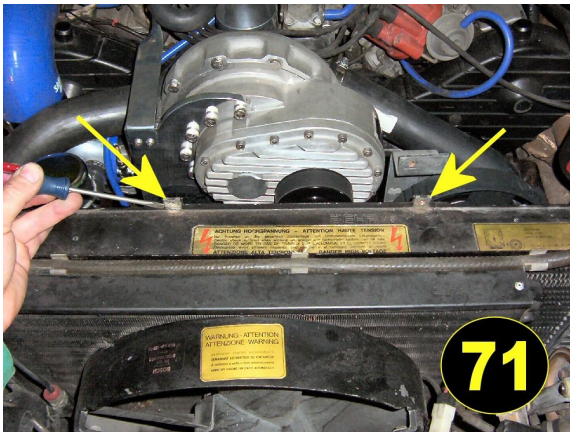
Stage 2 System: Instructions for the intake tubing for the stage 2 kit is included in the section on Intercooler Installation.

IF STAGE 2: **GO TO THE NEXT SECTION AND CONTINUE.**

928 Motorsports Supercharger Installation

Installation of the Upper Radiator Shroud:

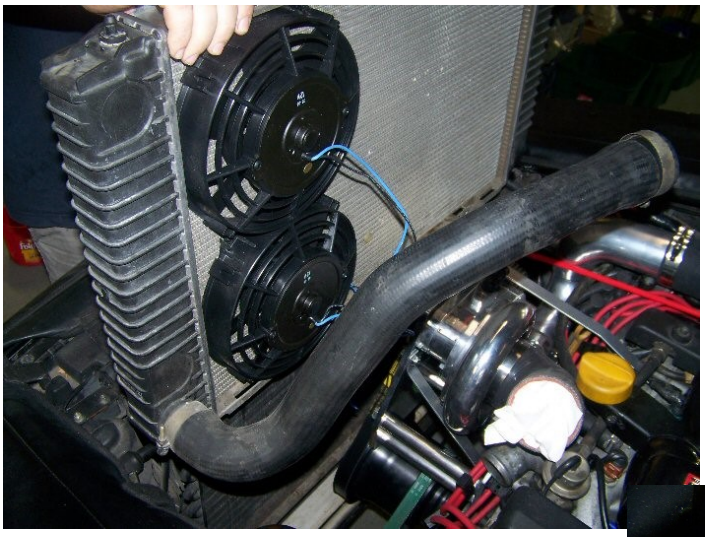
Remove the threaded clips that are located on the top of the radiator as shown in photo 71 using a screw driver as shown. We will be using bolts here and we don't want to use those threaded clips. Find the two stainless steel allen head bolts that are 6mm x 14mm long and insert them through the fan shroud/radiator shroud on top. On the drivers side it also inserts through the upper fan (described on the next page) as shown on photo 72 and snug up, tightening with the #10 nylock screws on the back.



Next, remove the rubber gasket from the top of the the old fan shroud, see photo 73 and carefully place it on top of your new aluminum 928 radiator shroud, so that the end products looks like photo 74.

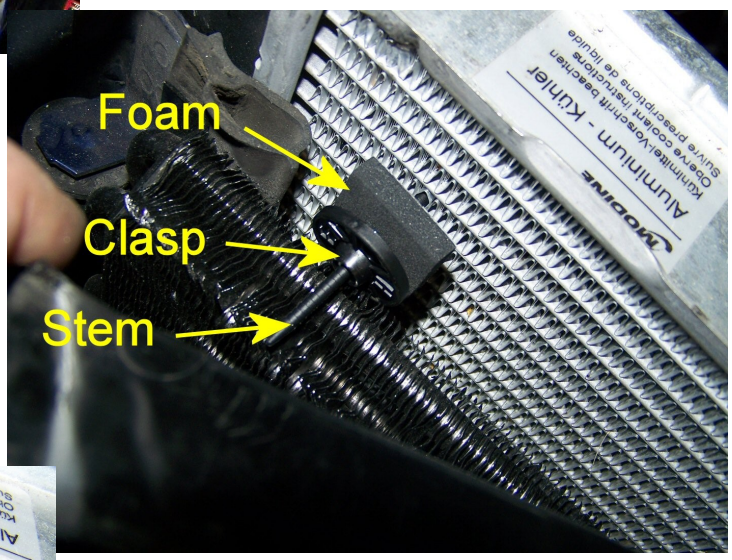
928 Motorsports Supercharger Installation

Mounting the fans to the radiator:



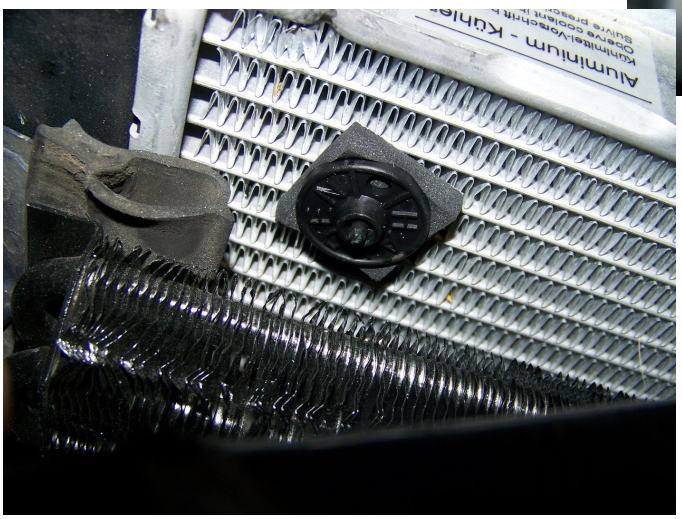
Take a look at the two 8” hi-volume electric fans included in your kit. They each have one flat side. They need to mounted so the flat sides face each other to fit on the radiator correctly. The top fan will have the flat side down, the lower fan will have the flat side up.

Starting with the bottom fan, mount it to the left side of the radiator core with the special fan retainers provided. Insert the retainer stem through the mounting holes in the fan shroud and through the cooling core of the radiator.



On the front, add the foam squares provided and the retaining clip.

Locate all of the retainers before adding the retaining clips. You can tip the radiator top toward the engine to make this process easier.

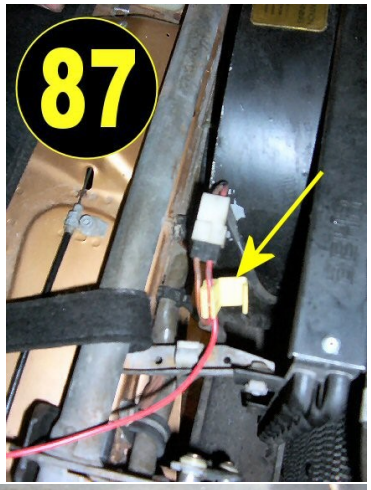


After they are all pulled tight, trim off the excess stem with a wire cutter.

928 Motorsports Supercharger Installation

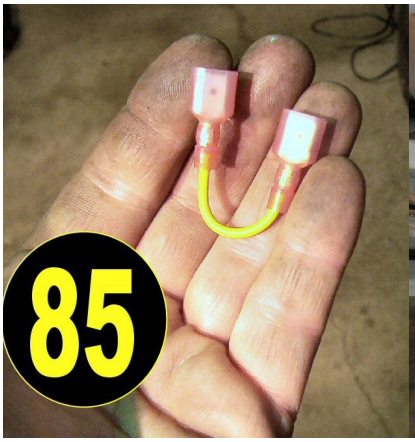
Wiring the electric fans:

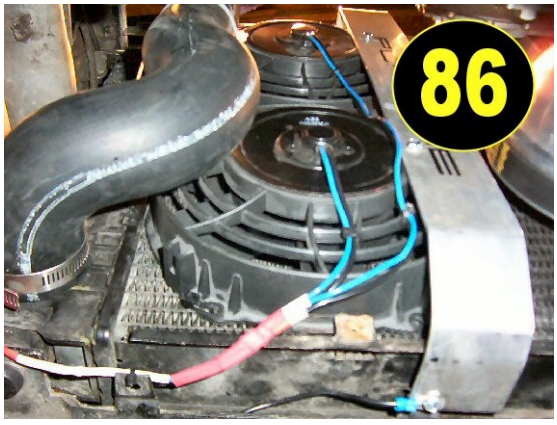
Using the yellow electrical splice and the red wire provided in the kit, you will splice into the red wire that leads to the auxiliary fan near its junction (photo 87) and route that wire underneath the radiator and connect it to the blue wire from the two muffin fans we've just installed. Be sure to route the wires along with the other wires in looms and away from all moving parts, including the mechanism to raise and lower the headlights.



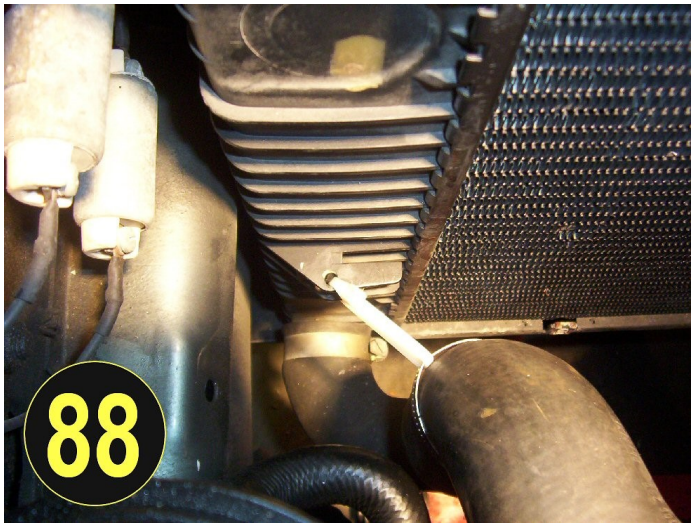
Take the rubber plug off of the temperature sensor that is located in the lower left hand corner of the radiator, (lower right hand corner if you're looking at the radiator from the front of the car) and take the jumper shown in photo 85 and jumper that wire. This will turn on the auxiliary fan, and use it all the time in replacement of the belt driven fan that we've removed. By wiring the fan in this way, we're using the factory fuse and relay system that Porsche engineered to supply the fans with power.

After the wires are routed, you can test this circuit by turning the key on. When you turn the key to the "run" position all three electrical fans should operate. Then loom the wires together with cable tied again to prevent them from working loose or getting into a belt or mechanism and getting pinched. Looking at photo 86 you can see the completed wiring for the fans and how it is loomed up tight against the bottom of the car, being secured and out of harms way.





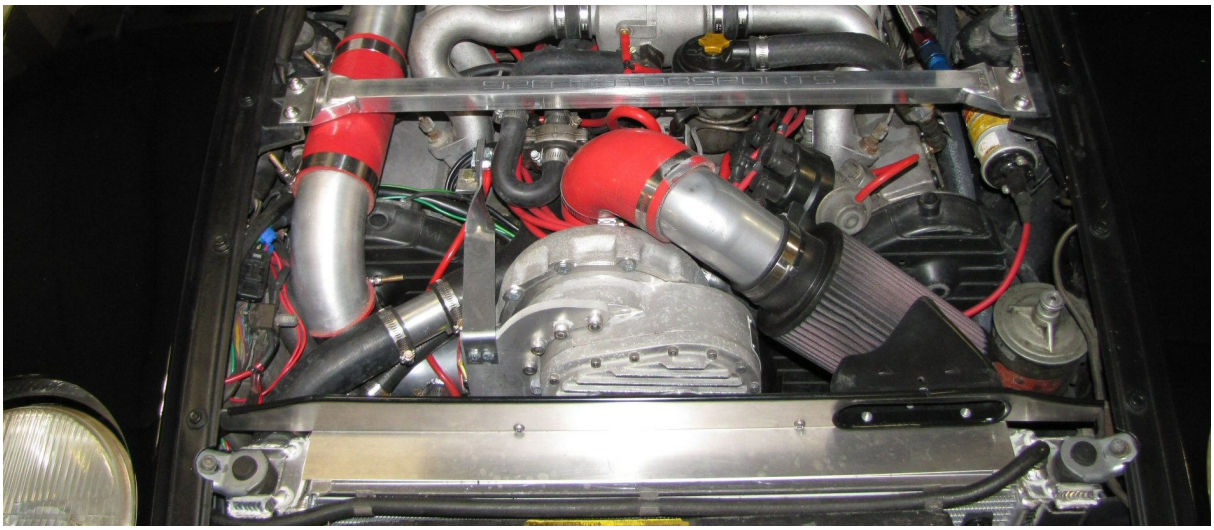
928 Motorsports Supercharger Installation



Because we removed the fan shroud from your radiator, we've lost a lower radiator hose bracket that helped keep the lower radiator hose away from the power steering pulley. Please look at picture 88 and you'll see that we want you to take a drill and drill through the plastic bracket on the radiator. Use the #28 stainless steel hose clamp provided, and the longest cable tie in your kit. Center the hose clamp about midway in the lower radiator hose and tie from the hose clamp to the radiator, pulling the whole radiator hose gently away from the power steering pulley so that it doesn't get cut. You do not need to pull it away hard, this is just to keep the hose from going **in** toward the motor.

Air Filter: Now it's time to install the air filter assembly onto your supercharger kit. Take the K&N air filter with the intake elbow hose attached to it, as shown and slip the end over the intake elbow at the back of the supercharger head unit making sure you get it down and least 1/2" over the metal elbow and then clamp it. The air filter lays on top of the lower radiator hose and it is surrounded on all sides and is not clamped in place.

We have not installed the radiator air dam yet, that will be coming soon.



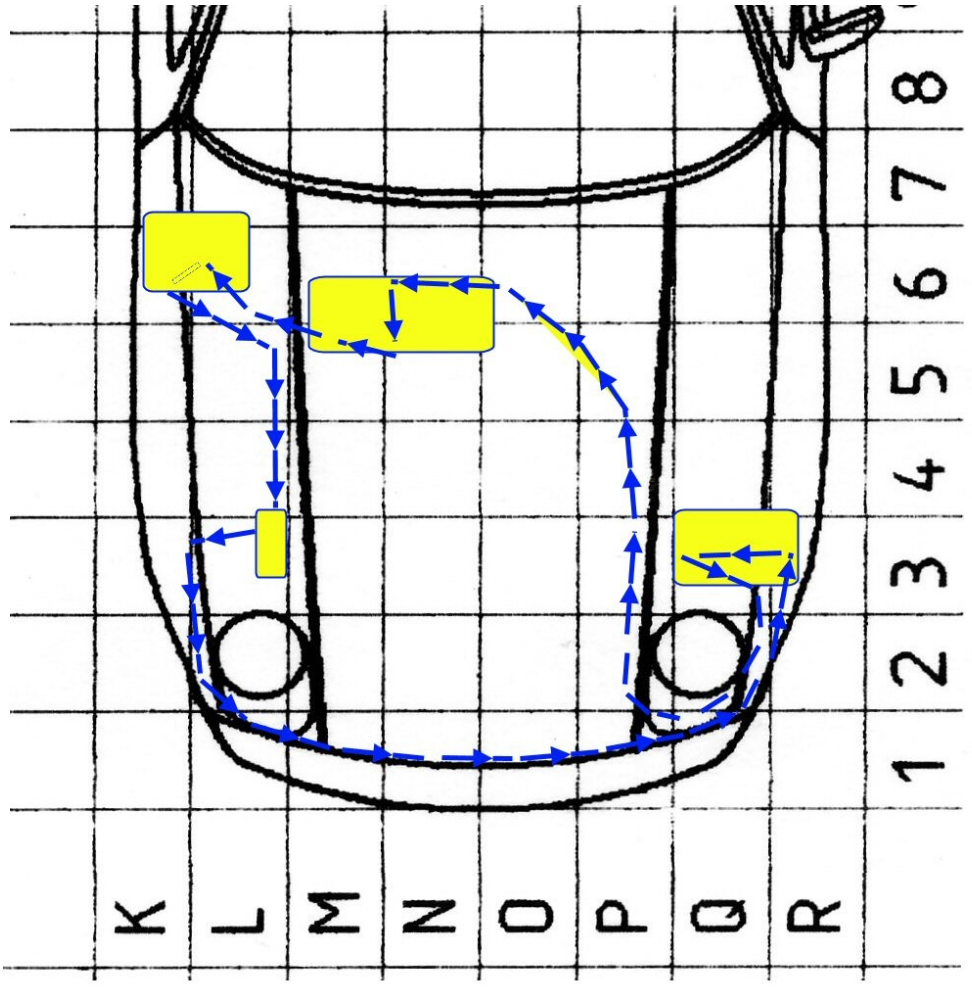
Note:

The next section describes the intercooler installation for **Stage 2** Kits.

If you are installing a **Stage 1** Kit, skip to page 61 and continue.

928 Motorsports Supercharger Installation

Intercooler System Schematic



The coolant for the intercooler system is water/windshield washer solution and is stored in the windshield-washer reservoir located at K^ on the schematic. From there it will flow to the pump at L3. From the pump, it flows to the heat exchanger mounted just before the left front tire at position Q3. From the heat exchanger into the back of the intercooler at N5, then out of the intercooler and back to the reservoir.

In this process we are going to mount all the hardware first and run all the hoses last. This is deliberate and makes for a simpler installation.

928 Motorsports Supercharger Installation

Phase 3: Installation of the Optional Intercooler System:
(Stage 2 Kit Only)

Before we start installing parts for your intercooler system, let's get comfortable with the location of everything. Please take a look at pictures 90, 91 and 92. The intercooler goes on top and behind the right head. Air comes out of the intercooler and goes into the intake elbow we've already installed.

The pump for the water system for the intercooler will be installed behind the right front head light.

The heat exchanger for the intercooler system is mounted behind the left front head light.

The direction of the coolant flow in this system is optimal and has been designed to use as few running feet of hoses as possible. Hot air will enter the intercooler and cold air will exit the intercooler. The hot air will give off it's heat into the water with-in the intercooler.

The hot water leaves the intercooler through the top front port to travel into the right front inner fender well and into the top of the windshield washer reservoir. The water moves down through the windshield washer reservoir, comes out the bottom and goes over to the pump intake behind the RF headlight. The water then comes out under pressure our of the pump, goes around the front of the car and into the heat exchanger behind the LF head light. It comes out of the heat exchanger, through the engine compartment and into the bottom of the intercooler, thus completing the entire cycle.

928 Motorsports Supercharger Installation

Phase 3: Installation of the Optional Intercooler System (Stage 2 Kit Only)

In this procedure we're going to install and mount all the hardware first and run all the hoses last. This is deliberate and makes for a simpler installation.

Let's start by installing the intercooler itself. The intercooler is going to sit at the back of the motor on the right bank. We don't want the intercoolers aluminum and the steel fuel lines to rub on each other causing a failure in either one, neither do we want a rattle in the engine compartment.

We have provided you with a black semi-rectangular insulative skid pad that we want you to put over top of the fuel lines. It just rests there so that the intercooler can sit on top. This is high-density poly-ethylene and it will provide a nice skid pad so that neither the fuel lines or the intercooler come into contact with each other. See Picture 94. You can test fit the intercooler now by setting it in it's spot on top of the black skid pad. Do not attach any hoses to it, just yet.

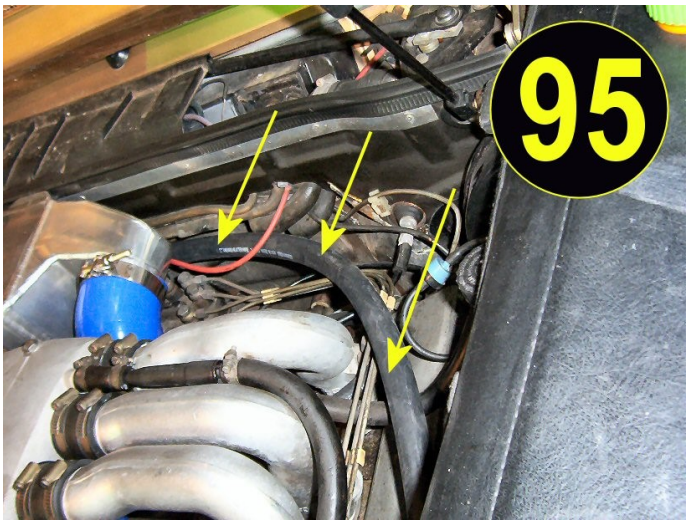
It is time to jack the car up and put it on sturdy jack stands. Remove both front tires and remove the forward and rear inner fender liner from the right front and the forward inner fender liner from the left front.

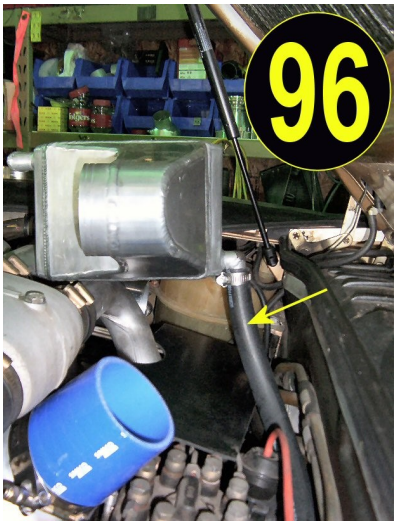
928 Motorsports Supercharger Installation

The next step is to open a path for the intercooler hose that we're about to lay in. Go to the front of the 928 and look between the louvers in front of the car. See picture 95a. In the upper right hand corner as you look through the louvers you can see a piece of black sheet metal trim just to the side of the radiator that is put there to prevent the air from going around the radiator. It is below the bumper mount. All we have to do is bend that out of the way. This makes a very nice run for one of our intercooler water lines. The "tool" I use to bend that in is actually a broom handle. It fold the metal back the perfect amount for a 3/4" heater hose to pass through.

This small metal plate gets bent back.

Put the broom down and pick up the 9' foot long section of 3/4" heater hose provided and run it through that port, to the side of the power steering pump, among the top of the left head, over the fuel distributor and into the intercooler. See photo 95. It is important that you connect the lower intercooler water line (heater hose) to the back of the intercooler <u>before</u> you put the intercooler in place. See photo 96. Once the intercooler is in place, you won't easily get at that elbow to attach a hose anymore. Go ahead and clamp this with a #12 hose clamp.



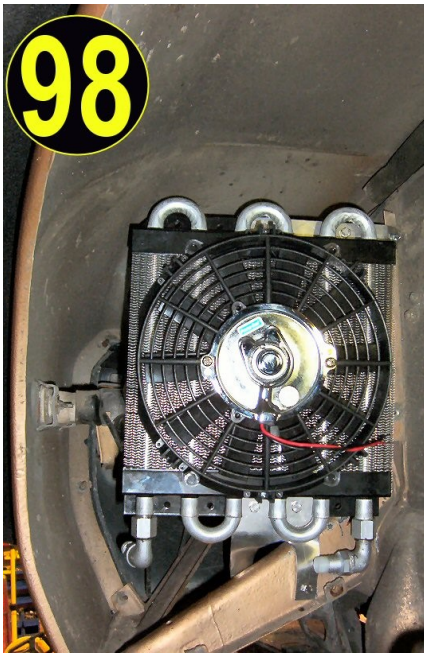


928 Motorsports Supercharger Installation

Phase 3: Installation of the Optional Intercooler System (Stage 2 Kit Only)

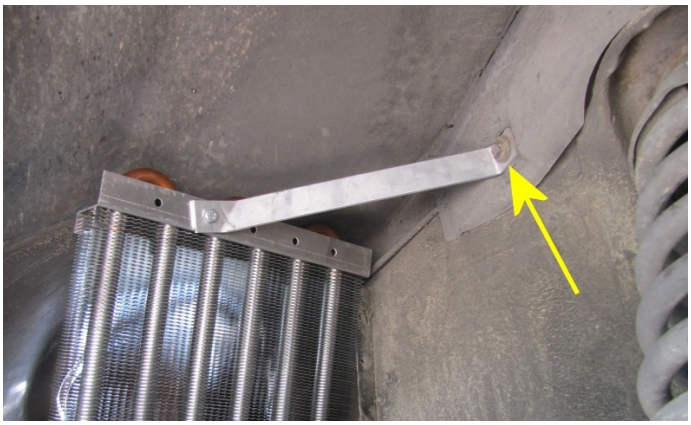
MOUNTING THE HEAT EXCHANGER:

Now we're going to mount the heat exchanger in the left front fender well. As requested before, your car should be on jack stands and the front tires have been removed. The left front inner fender liner has been removed. Your fender well will look like picture 97.



Your heat exchanger and fan assembly came shipped from 928 Motorsports, LLC. with the bottom mounting bracket and upper mounting bracket already attached. The U shaped mounting bracket and the inlet and outlet for the heat exchanger are at the bottom. Place the heat exchanger assembly on top of your fender strut so that the U shaped bracket straddles it with a leg on each side. As shown in picture 98.

Since 2012, we have been using new, larger heat exchangers, so no electric fan is needed.

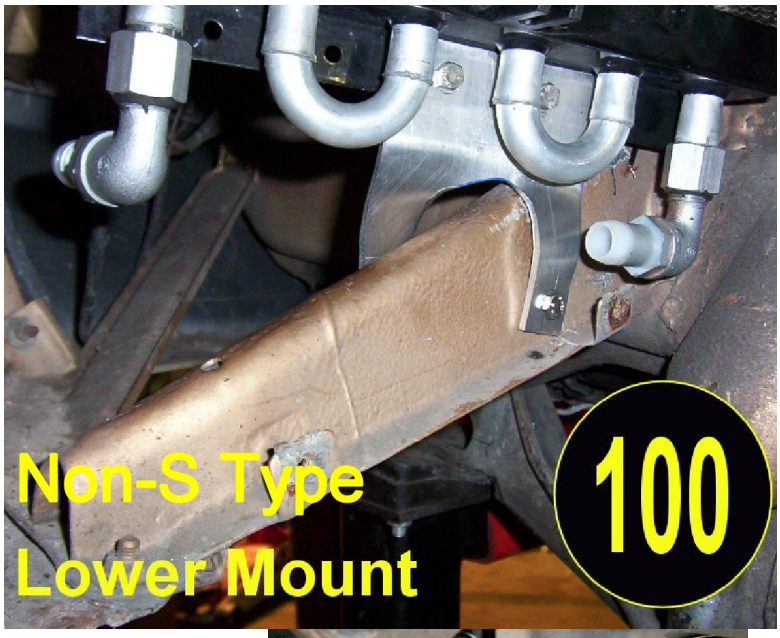


Remove the screw shown, slide the upper mount under it, and replace the screw.

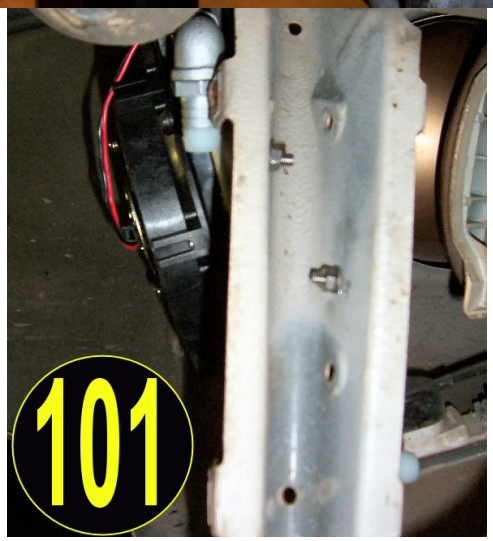
928 Motorsports Supercharger Installation

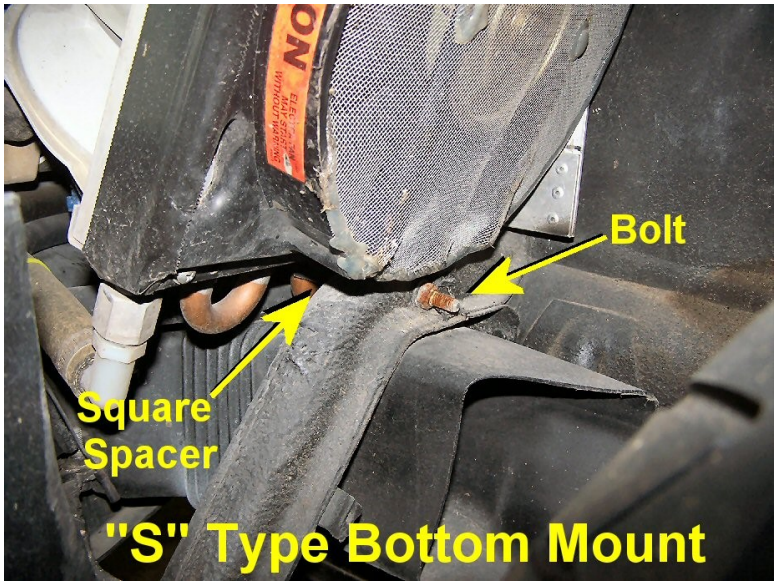
Phase 3: Installation of the Optional Intercooler System (Stage 2 Kit Only)

Normal 928: At the bottom, you're going to use the 10 MM bolts supplied and drill two holes through your lower fender brace and the nuts go underneath as shown in pictures 100 and 101. After you have mounted the heat exchanger and electric fan unit in the left front fender with the parts supplied, tighten with two 10 MM bolts and nuts into the lower fender support.



S-Type 928: The S-type has a chin spoiler and brake cooling duct that is different than the non-S. The At the bottom, you're going to use the 10 MM bolts supplied and drill two holes through your lower fender brace and the nuts go underneath as shown in pictures 100 and 101. After you have mounted the heat exchanger and electric fan unit in the left front fender with the parts supplied, tighten with two 10 MM bolts and nuts into the lower fender support.



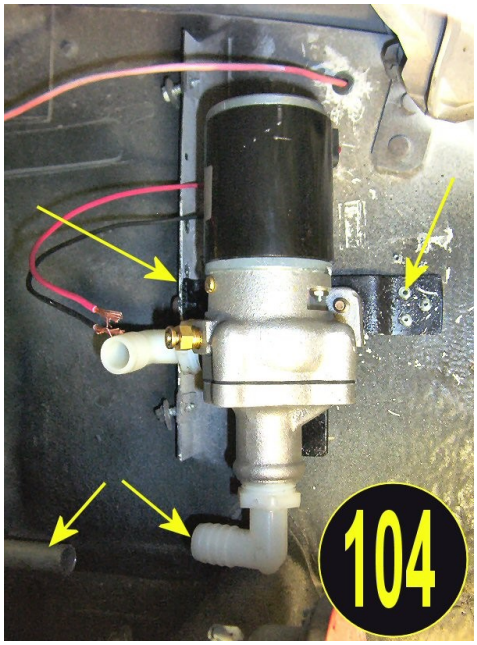


*Note, the heat exchanger sits in the inner fender well at an angle, not square. The outer part of the heat exchanger is farther forward than the part of the heat exchanger that is near the fender well. That is the correct positioning of the heat exchanger.

Turn the steering wheel full left and right and check for clearance.

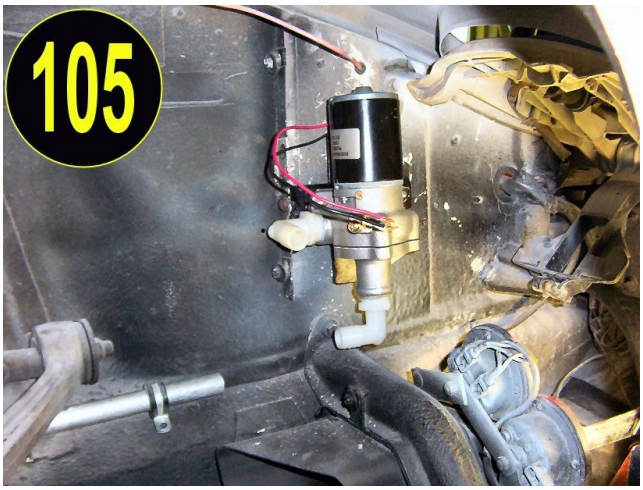
928 Motorsports Supercharger Installation

Phase 3: Installation of the Optional Intercooler System (Stage 2 Kit Only)



Your water pump will mount vertically just behind the head lamp, as shown in picture 104 and 105. Notice that the height of the inlet elbow at the bottom of the water pump is very near the height of the water line that will be coming to it, also shown in picture 104. Position the pump on the inner fender wall as shown in picture 104 and you will need to cut a notch in the nose shaped bracket that is mounted to the inner fender of your Porsche that was holding the inner fender liner just moments ago. The notch will allow the hose nipple as shown in 104 to provide clearance for that hose nipple. Before permanently affixing the pump to the inner fender well, take your hand to the bottom of your head lamp and lift it up into the fully raised position and down making sure there is adequate clearance and that the head lamp doesn't hit the pump in that location, then you have it. Then mount the water pump to the inner fender well with the rivets provided.

***Special note!** When drilling the holes in the inner fender well for the rivets, be very careful to go no further than you need to through the metal. Directly on the other side of this location is the ignition module for the 928. It stands off the inner fender in the engine compartment about 1/4". It is on the other side of this inner fender well so be careful when you push the drill through for this water pump installation that you don't penetrate the engine bay too far. This is also the reason we're using steel rivets to affix the water pump to the inner fender well.



We don't use bolts and nuts because the other side f the fender well is not available to us, and we can't use sheet metal screws because they penetrate too far and also sheet metal screws vibrate loose over time. So these steel rivets are a good way to go. You will use two or three rivets on the right hand side of the water pump when you mount it to the fender well and you will use one or two rivets on the 90 degree L-shaped angle on the left side as shown.

The finished water pump installation can be seen in picture 105.

928 Motorsports Supercharger Installation

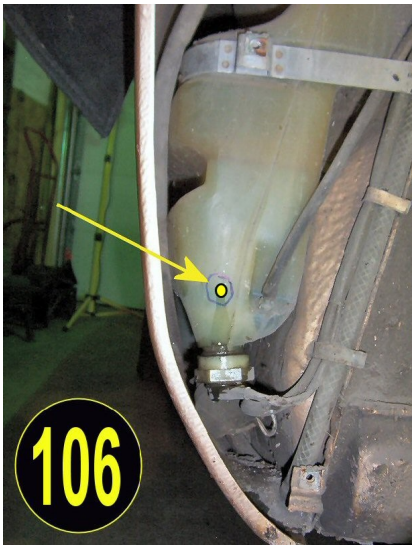
Phase 3: Installation of the Optional Intercooler System (Stage 2 Kit Only)

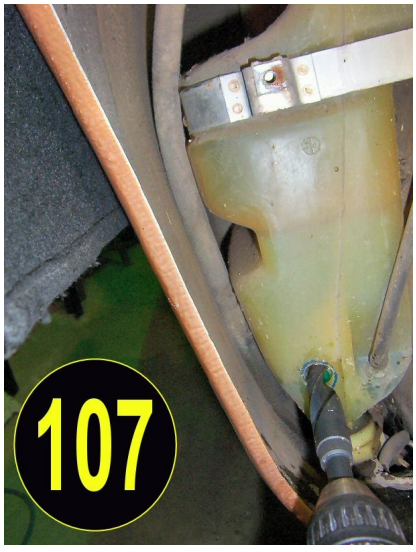
The next step is the modification of the windshield washer reservoir. We use the windshield washer reservoir to be the heat sink for up to 3 gallons of water so that the heat exchanger and this kit can never get what they call “thermally soaked”. That is to say, it has absorbed the maximum amount of heat or thermal energy it can.

The windshield washer reservoir will continue to perform it’s role as the reservoir for the windshield washer fluid and the windshield washers will still function when we are done. The coolant we use for the supercharger kit intercooler system is common windshield washer fluid. That also helps provide the antifreeze capabilities that we want to insure that the heat exchanger never freezes.

The process we’ve selected for you to modify your windshield washer reservoir has two distinct advantages. 1) We don’t need to have you remove the windshield washer reservoir from the car. 2) The windshield washer reservoir low fluid indicator light switch, which is a float switch located in the bottom of the plastic reservoir, is going to remain in place and continue to operate correctly with this procedure. However, we are going to drill a hole in the windshield washer reservoir for our hose nipple. If you would prefer an alternate method of installing a hose nipple in the windshield washer reservoir, please call 928 Motorsports, LLC and we will tell you how to remove the windshield washer reservoir and remove the float switch from the windshield washer reservoir and put the hose nipple there.

Toward the bottom of the windshield washer reservoir there is a flat spot facing directly forward about 2” up from the absolute bottom, and this is where we want you to drill our hole. Please see picture 106. If your reservoir has fluid in it, that’s OK. Simply place a bucket under the reservoir. Your first hold should be about 1/4” in dia.



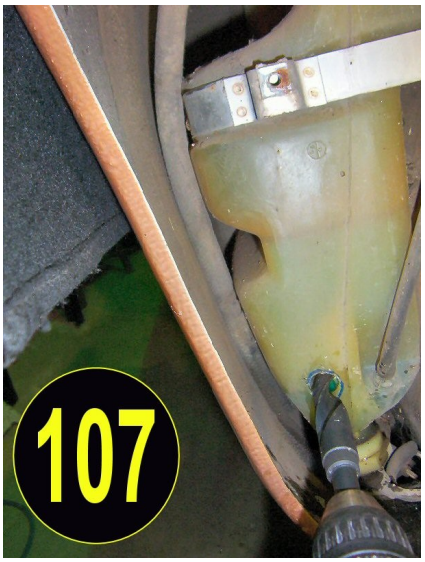


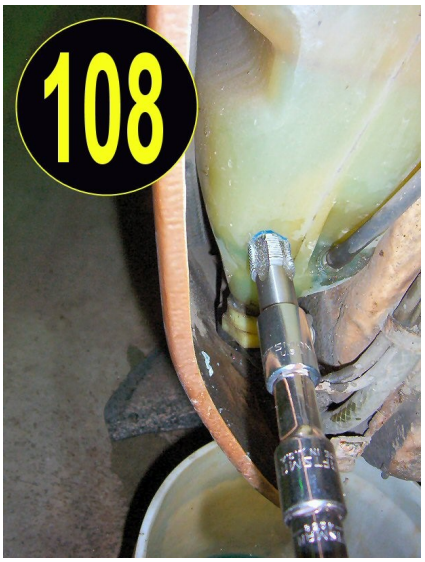
After we drilled a small pilot hole, take the proper bit for the tap you need for the fitting provided and drill out the remainder of the hole as shown in picture 107. The fluid in the windshield washer reservoir will drain down to the hole I just drilled, of course.

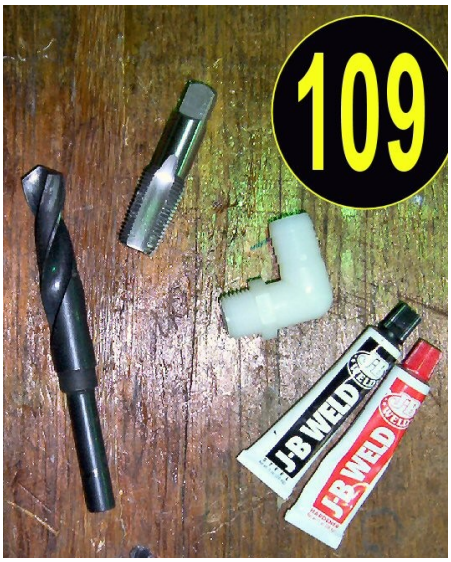
928 Motorsports Supercharger Installation

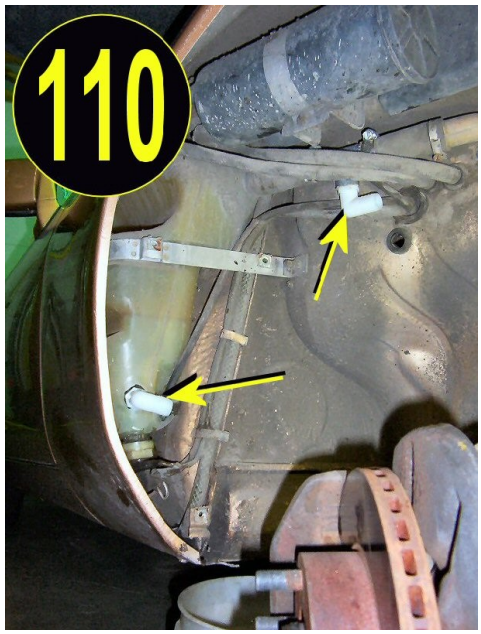
See picture 108. Tap the hole you have just made to fit the nipple provided. Place paper towels in the hold and clean it up, making sure the hole is dry and the fluid level is a little below your tapped hole. The reason for this is because we are going to put in a nipple with epoxy adhesive, and the epoxy won't usually seal under water, so you must lower the water level in the windshield washer reservoir below this hole so that the sealant can cure.

Now coat the threads of the barbed 90 degree nipple provided with the kit with J.B. Weld epoxy provided. See picture 109. Spin in the 90 degree nipple and let it come to rest in the direction of the inner fender as shown in picture 110 so that it can cure in that position.







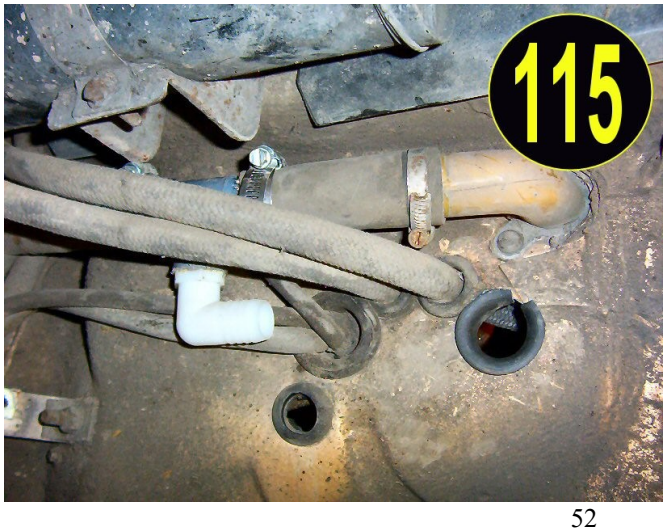


928 Motorsports Supercharger Installation

The last piece of the windshield washer modification is to drill a 1-1/8” hole in the fender well so that we can run a hose from the engine compartment.

***Note,** the location of the hole where I have marked it in picture 113. If you have removed the exhaust gas circulation system then you can also use one of the holes previously used for the EGR system. In this case, we decided to leave the charcoal canister in front of the right front fender well intact and in place to make emissions testing easier later on. Otherwise, we could have enlarged the hole that routed hoses from the engine compartment to the charcoal canister.

We cut a 1-1/8” hole as shown in picture 113 and then rounded it with the grommet provided so that the sharp edges would not cut our new water hose. See pictures 114 and 115. We cut a 1-1/8” hole because by the time we put a grommet around it to prevent chafing, a 3/4” water line is going to run perfectly through that grommeted area.



928 Motorsports Supercharger Installation

Now locate the one inch rubber hose that leads from the filler neck for the windshield washer reservoir to the top of the windshield washer reservoir. You will cut out a 2” section, as you can see in picture 111 and 112 and insert a T supplied within your kit. Add the two clamps and put it in place. This is going to be the beginning of the return line for the intercooler. Warm water will be entering from the intercooler through this connection.

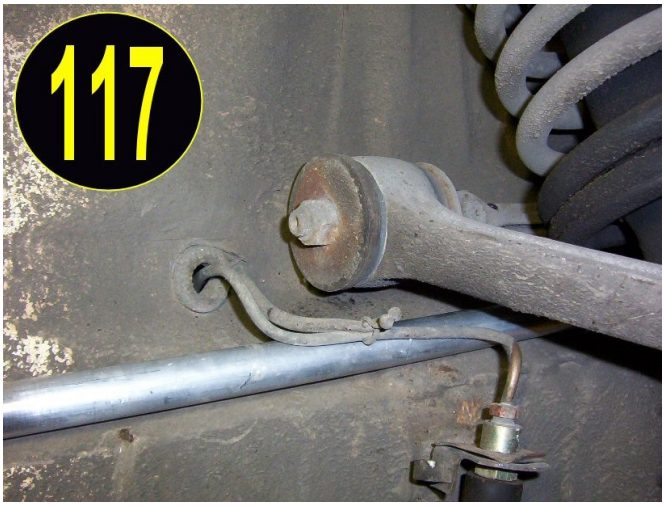
Maintenance Tip: Check that this 1” line is free from rust residue in the two places with the RED arrows in picture 111 before proceeding. If you do find rusty metal there, call 928 Motorsports for the procedure to remove it.

Your finished modification should look like picture 115.

Please locate all the re-maining 3/4” heater hoses provided. Lay them out, you should find a 7’ piece, a 3’ section and two 1’ sections. We tend to cut them long-just trim off what you do not need.

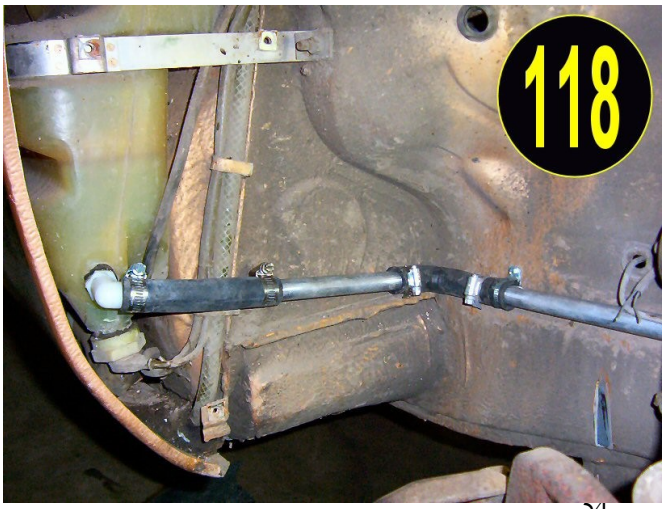
928 Motorsports Supercharger Installation

Now we will install the metal coolant line in the right front fender well. We used metal coolant line to add durability because it is a environment where it is going to get stones and rocks thrown up. You will find in your kit a 2 foot section of aluminum tubing and you will also find a 8 inch long section of aluminum tubing. The 2 foot section goes underneath the upper A-Arm and just above the chassis in the little crease that is made in the body. See picture 116. To do this you will take your hands to the metal front brake line and give them a little lift. You will find that they will bend gently and safely out of the way, allowing you to put this tubing beneath the break line. This is demonstrated in picture 117.

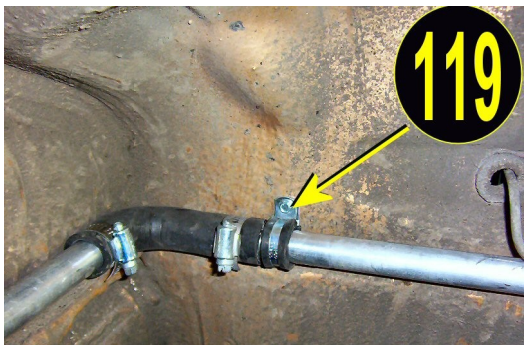


Remember, because we have the car in the air and the wheel off the car, the lower A-Arm is at its lowest most point as the caliper and break assembly is hanging completely down. That is very unusual and will never happen again unless the car goes airborne. Under normal circumstances, the upper A frame is even further from this conduit than it is at this time.

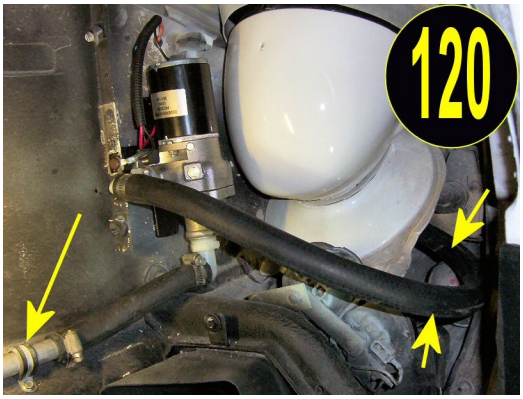
From your kit, go get the 2-1 foot long sections of 3/4” hose and several of the #12 hose clamps, the 3 hose straps and the black rubber 3/4 90 degree pre-formed elbow. That elbow goes in the corner of the fender well, as you can see in picture 118 with two clamps around it. The small 8” section of solid aluminum tubing goes next and one of the 1’ sections of the 3/4” hose continues on and connects to the elbow we installed in your windshield washer reservoir with two clamps on it. Again as shown in picture 118.

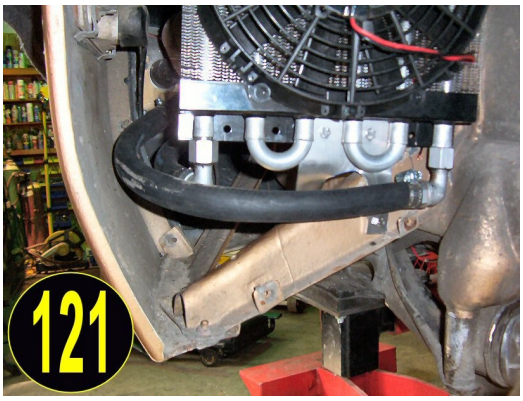


928 Motorsports Supercharger Installation



On the other end of this metal tubing, please refer to picture 120, we have the other 1' section of 3/4" hose that comes out of the metal tube and over to the pump inlet, (which is the bottom nipple) and it gets two #12 hose clamps on it. Finally, picture 119 and 120 also show the location of the clamps that secure the aluminum rod in place so that they don't move. The sheet metal screws we want you to use are included in your kit. You can tighten all the hose clamps at this time.





Now, please take the 7' long piece of 3/4" heater hose and the long, heavy red wire supplied and fasten the ends of them together with some electrical tape (temporarily).

Starting in the right front fender, next to the water pump, we want to run that 7' hose and Red Wire from the water pump around the bottom of the head light in front of the radiator and just behind the louvers, across the entire car, behind the bumper, all the way to the left front where it sweeps out the left front bumper and around to the second nipple of the heat exchanger. Attach a #12 hose clamp on each end. You may have to trim the hose slightly if we have given you too much. Make sure that it is routed in such a way that it doesn't interfere with the headlamps going up or down. When it reaches the left side, you can break that electrical tape. We will be wiring the fan in the left front fender with that red wire in just a moment. But for now, just do the hose. Connect the hoses on both ends for this run as shown in picture 120 and 121.

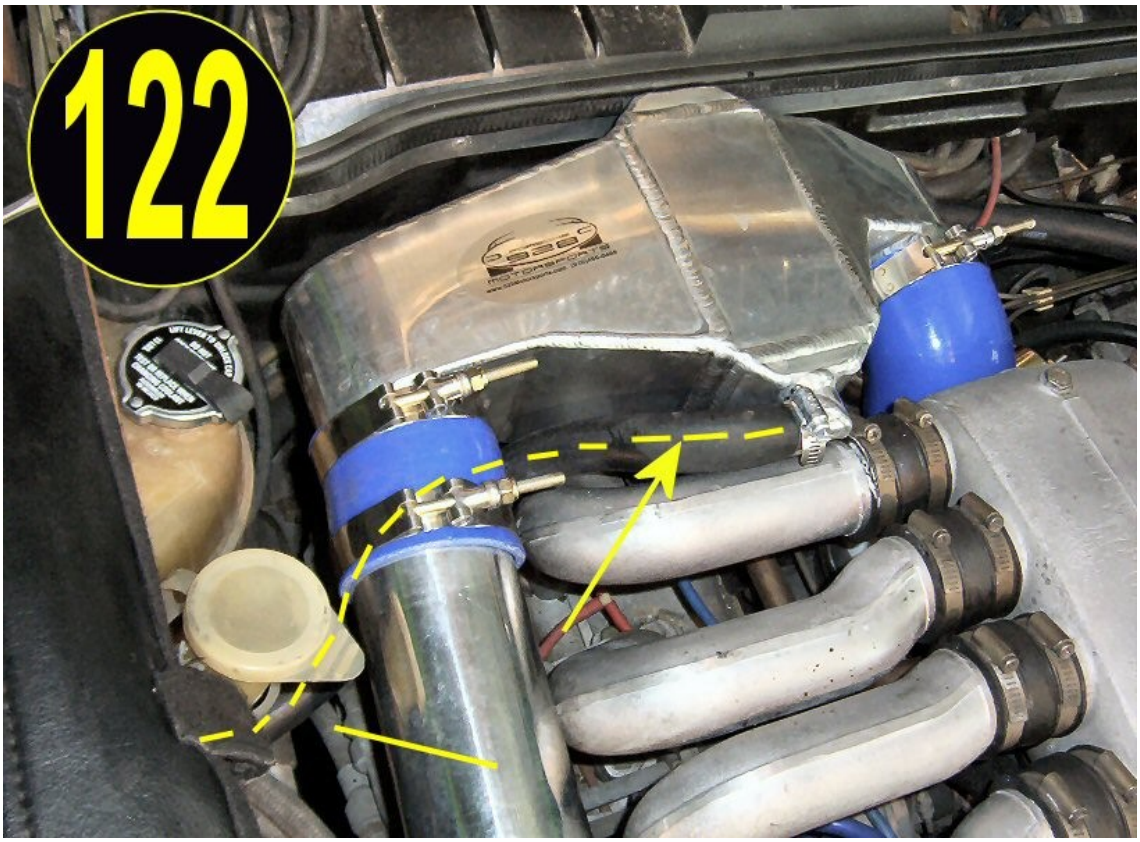
Earlier in these instructions, we attached the 9' long piece of heater hose t the bottom of the intercooler as we laid the intercooler in place at the back of the motor. That hose should be running behind the motor, over the top of the bell housing, right to left, over the left cam tower, along the left cam tower, down behind the power steering pump, out the front of the motor, along the left side, between the radiator and the left side of the engine bay, and out the front of the grille. It is now time to take that and tuck in under the bumper, next to the hose coming from the right side of the car and follow along the left front bumper, around the back to the heat exchanger. It connects to the other nipple on the heat exchanger. The heat exchanger is not specific as to which end is the in-let and which end is the out-let. You can do it either way depending on your preference.

928 Motorsports Supercharger Installation

We want to turn this to the left for this heater hose to be as large a radius as possible. A nice sweeping turn so as to avoid kinking the hose. Attach it to the heater exchanger and put another #12 clamp on it there.

Now, at the top of the motor, you will find at the front of the inte5cooler, there is a 3/4” hose nipple pointed towards the right front fender. This is for your 3’ long section of heater hose. Please put your one end of the heater hose on there with a #12 host clamp. See picture 122. It goes over or under the aluminum inlet pipe and out the fender well through the hole with grommet that we put in place a little while ago. Through the fender well and connects to the T that you installed at the top of the windshield washer reservoir which you can see in photograph 115 (previously).

Now, it is time to follow all the hoses around the car and make sure every #12 clamp is secure and also to take the wire ties that have been provided, (the black plastic cable ties), and loom our heater hose away from anything that might chaf or cut them. In the left front fender, loom the heater hoses together as they exit the heat exchanger and around behind the left front bumper. Make sure the left front head light goes up and down correctly and does not interfere with the heater hoses. In the right front fender, you may want to use a wire tie to loom the heater hose again away from the head light as it moves up and down.



928 Motorsports Supercharger Installation

Now, it is time to add windshield washer fluid back into the windshield washer reservoir and fill it.

If you still have your car up on jack stands in the front, it is a good idea not to town on the pump just yet, because you would be running the pump dry. Wait until you lower the front of the car. You will find with this design, a normal amount of windshield washer fluid in the reservoir will put the pump under water so that the pump cannot run dry under normal circumstances. The pump is mounted lower than the windshield washer reservoir and will always have fluid.

Also with this design, the system is self-bleeding. As the water circulates through the intercooler system, it drops into the top of the windshield washer reservoir at the top, and any air bubbles in the system are automatically vented out. The system does not have to be purged or bled.

However, on this first fill with windshield washer fluid, there will be some air trapped in the electric water pump that has to be purged. Look closely on the electric water pump that you have installed and you will find a small brass valve that you simply press in (or pull a small ring out) to bleed the air out of the pump. The air will exit, and when water exits you can let go of the valve and you have successfully bled the air out of your pump. You can now hook up jumper wires to the two electrical leads out of your water pump. Power goes to red, ground goes to black.

The fastest way to get power to this water pump is directly on the other side of the fender where it is mounts, there is a forward positive battery terminal on the inside of the right front fender. It is a very convenient place to get power. Jumper the water pump, run it, check for leaks in the entire intercooler system. When there are no leaks, it is ok to put in the inner fender liner behind the right front tire that covers the windshield washer reservoir. Once installed, the rear fender liner will look like picture 124.

928 Motorsports Supercharger Installation

Intercooler Wiring Overview: We have to supply power to the fan in the left front fender and the pump in the right front fender. We do this by use of a 12 volt relay provided in your kit that we mount in the right front fender well above the pump. We're going to wire to that and splice into a circuit. This particular electrical system on the car has it's own independent power and doesn't stress any of the existing electronics in the car or the fuse panel.

For wiring, let's start in the left front fender for the fan assembly. The black wire out of the fan gets a circular terminal clamped onto it and it gets screwed directly into the fender wall, providing the ground. The red wire coming out of that fan assembly gets the 8 foot 12 gauge red wire crimped onto it and that we pulled the width of the car following the same path as the 3/4" heater hose. Now let's take some of the black cable ties provided and tie up that red wire that runs the width of the car as well as the 3/4" heater hose to the bottom of the grille and the bumper so that it doesn't drop down and look unsightly.

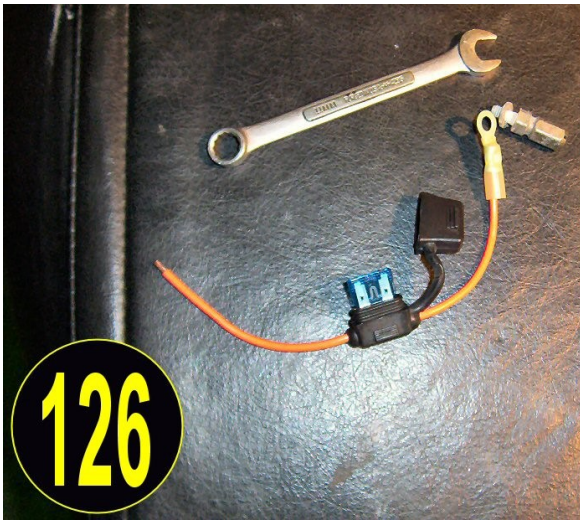
This concludes the left front fender. You can put the left front tire back on. The left front inner fender liner does not go back on.

Disconnect the battery at this time!

Of the two horns that are mounted to the right front fender support strut, loosen the 13 MM bolt on the innermost horn mount. We are going to put our ground strap for that relay and the water pump underneath that horn mount. Put the ground clamp underneath that horn bolt and tighten it back down as shown in picture 125.

928 Motorsports Supercharger Installation

Power for the system comes from the forward positive terminal in the right front inner fender underneath the hood. Find the in-line fuse holder from your kit as shown in picture 126. Take an 11 MM wrench and remove the stud of the bolt. Then put the new wire for your relay underneath that bolt, through all the previous lines and thread the bolt back in and tighten. See picture 127.



Drill the fender to run your wire as shown in picture 128, and be sure to line the hole with the small grommet provided.

928 Motorsports Supercharger Installation

Mount the relay high in the LF fender as shown in picture 128 with one of the sheet metal screws provided. ***Note,** It is important when you're putting these screws towards the inner fender well to mount the relay and the pump to be very away of your location on the other side so that you don't mistakenly drive screws into the ignition computer.

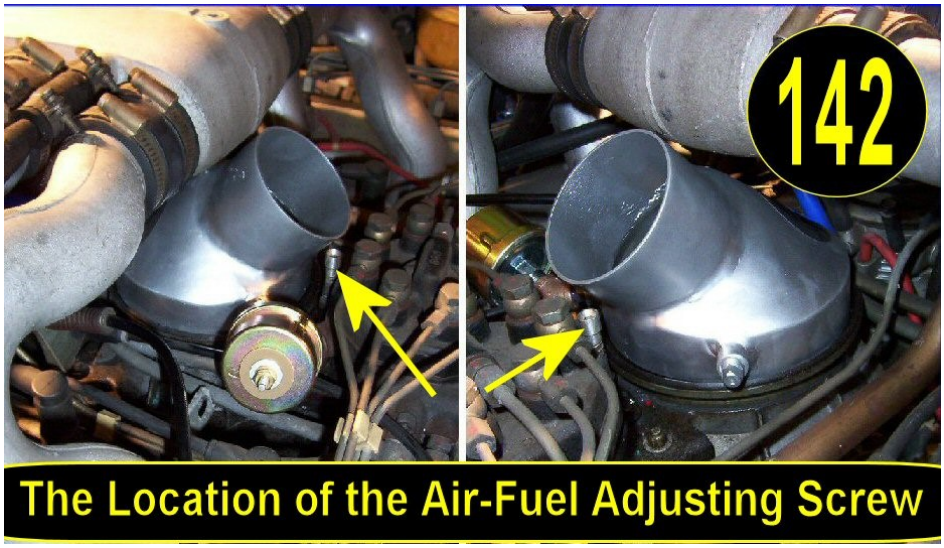
The relay wiring instructions are as follows:

- Attach the ground wire that goes from the bottom of the horn bracket to spade terminal number 85.
- Attach the power supply that comes from under the hood, through the 15 amp fuse holder assembly that we ran through the fender well and attach that through the relay to spade terminal number 30.
- The next wire is the red power wire that will supply power to the water pump and to the fan on the radiator. It goes to spade terminal number 87.
- You will have one spade terminal left now and that will be number 86 and that wire goes to our switching supply that turns this system on and off. The best place to tap this power as you recall in our installation of the electric fans, is the air conditioning fan supply right at the fan connector. This way the ignition switch controls the whole circuit without any draining on the battery when the switch is off and yet every time the car is running, we know absolutely that the fans are on as well as the pump and the intercooler radiator fan.

928 Motorsports Supercharger Installation

Tuning The Installation:

The CIS system has an adjustment that will allow you the enrich the air/fuel mixture ACROSS THE ENTIRE RPM RANGE right on the CIS assembly. At the factory, this is set to run in a moderate-to-lean condition, to improve emissions and gas mileage. You may want to adjust it a little richer to pick up more performance and HP.



The adjustment screw is a 3mm allen socket located just between the CIS intake and he fuel distributor, as shown in picture 142. A very small adjustment has a rather large impact, so you want to be conservative with your adjustments. To turn the screw IN will RICHEN it, OUT will LEAN IT OUT. Your goal is a 11.5 or 12:1 air/fuel ratio at wide-open throttle.

We sell a special tool that makes this adjustment easier.

928 Motorsports Supercharger Installation

Replacing Old Vacuum Lines

Your kit came with a set of silicone hoses from us without charge. Check over your vacuum lines now and replace any that look suspicious. The rubber in the factory vacuum lines has been under attack by heat and ozone and they may be cracked and brittle.

The key is to remove only one vacuum hose at a time, compare it to a hose from the kit and cut a length to match. Put the new hose back on to the car, and repeat. Do only one vacuum hose at a time and you will not have nay errors.

Do not use silicone hose for fuel or fuel vapor. Gasoline dissolves silicone. Use silicone hoses for vacuum and small water lines only. The silicone is very durable and will never harden or crack.

Triming T-Bolt Clamps (optional)

You have installed several T-bolt clamps during this build. After these clamps were tightened, you will have long threaded ends sticking out. It is safe to trim these back a bit to improve the appearance of the installation.

Place a shop towel or two beneath the bolts and use an air-powered cut-off tool, a hack-saw or even a bolt cutters to lop off an inch or so. Do not remove too much - your want to be able to remove and re-install these clamps again in the future. Finish the ends of the bolts with a file to remove the burrs.

Breaking in the Supercharger:

Just a couple of words about driving your new supercharged Porsche 928. We recommend for the first 100 miles, you don't take the car all the way to red line as you are seating the bearings in your new supercharger. Make some nice runs with it and run it up to about 4,000 rpm or so and enjoy it. At the end of 100 miles, we want you to check your intercooler fluid level, check all your belts for tension including the alternator belt, the power steering belt and now your new supercharger belt. It is probable that the supercharger belt will have stretched and will need to be re-tightened. Simply refer back to the section on tensioning your supercharger belt and snug it up a little bit more.

928 Motorsports Supercharger Installation

Regular Maintenance Items:

The Powerdyne BD-11a we use is typically good for about 30,000 miles between rebuilds with no maintenance whatsoever. The only thing that damages the BD-11a is running at speeds above 6,000 rpm, where it is not designed to go. There is no maintenance necessary for the BD-11a.

If you use the windshield washer sprayers to wash the windshield, keep in mind you're also spraying intercooler coolant on your windshield. So to prevent your intercooler system running low, keep your windshield washer reservoir topped off.

Gasoline: Use Premium gasoline now, 91 Octane or better. Avoid Ethanol mixes if you can as the actual octane rating received before additives is lower, and the ethanol is hard on the rubber diaphragms in the fuel system.

Intercooler Fluid: Use windshield washer solvent/antifreeze as you would normally, and do NOT use just plain water. Keep it full.

Watch the Redline: Pay attention to your dyno results or the dyno charts of others with cars just like yours. Observe where the air/fuel ratio rose above 13.0 to one – and remember to shift before that point for the safety of your motor. If you want a higher shift point contact us – we make pulleys for your kit in several sizes just so we can adjust your shift point to where you want it to be.

Oil Level: Check your oil level more frequently. There is more air passing through your crankcase than before, and more oil is consumed as oil vapor. This is common with supercharged cars. Check your oil level more often.

Oil Type: Change to Synthetic Oil if your motor is all broken in (> 7,000 miles on it). The reason: we are employing positive crankcase ventilation on this supercharger kit, and actively evacuating the crankcase pressure by sucking it back into the intake.

So, some oil/crankcase vapor is being ingested by the motor (as it was before the SC kit was installed) Synthetic motor oils do not lower the octane rating of the air/fuel mixture much at all, however traditional motor oils do. That's why switching to synthetic can be another good safety factor to help prevent detonation in your engine.

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Driving your 928SC:

As far as driving your supercharged 928, the first couple times you run it, we recommend you be on dry pavement on a straight road until you get the feel of the boost coming in and how the car takes off. You will notice that if you're in mid-corner and the boost came in, that it is likely it would kick your rear tires out. You want to be aware of this. You can no longer slap the gas peddle to the floor because you will make the car unsettle in its weight distribution and may break the rear tires free. The drivers in supercharged cars refer to this technique as a 'Rolling Throttle', you roll into the throttle as you slowly and steadily depress it to the floor to that the weight transfer can take place to the rear wheels and you can launch correctly.

Under boost, the air/fuel gauge should remain to the rich-side always. If it goes "Lean" under boost, get out of the throttle and call us. We will want to adjust the fuel system to get you more fuel.

On steady-state driving, like under cruise-control on the highway, the air/fuel ratio will "hunt", and the needle will slowly swing back and forth. This is normal and correct.

Enjoy your supercharged Porsche 928 and call us if you have any questions.