



## **928 Motorsports Supercharger Installation**

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### **1985-86 32v Porsche 928**



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## **928 Motorsports Supercharger Installation**

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**Toll-Free Tech Hot Line:**

**877-FOR-928M**

**877-367-9286**

**Please do not copy this manual and give copies to your friends. Our ability to bring you this supercharger kit at this price relies on our customers coming to us for our knowledge and experience in supercharging these cars. Much of this information is hard fought and the product of multiple trials and errors. Please do not give any section of this manual to your friends, but rather, encourage them to contact 928 Motorsports, LLC for their own kit. THANK YOU!**

**Thank you for your purchase. We have included an entire set of silicone vacuum hoses and a 928 Motorsports coffee cup at no charge for you.**





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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.

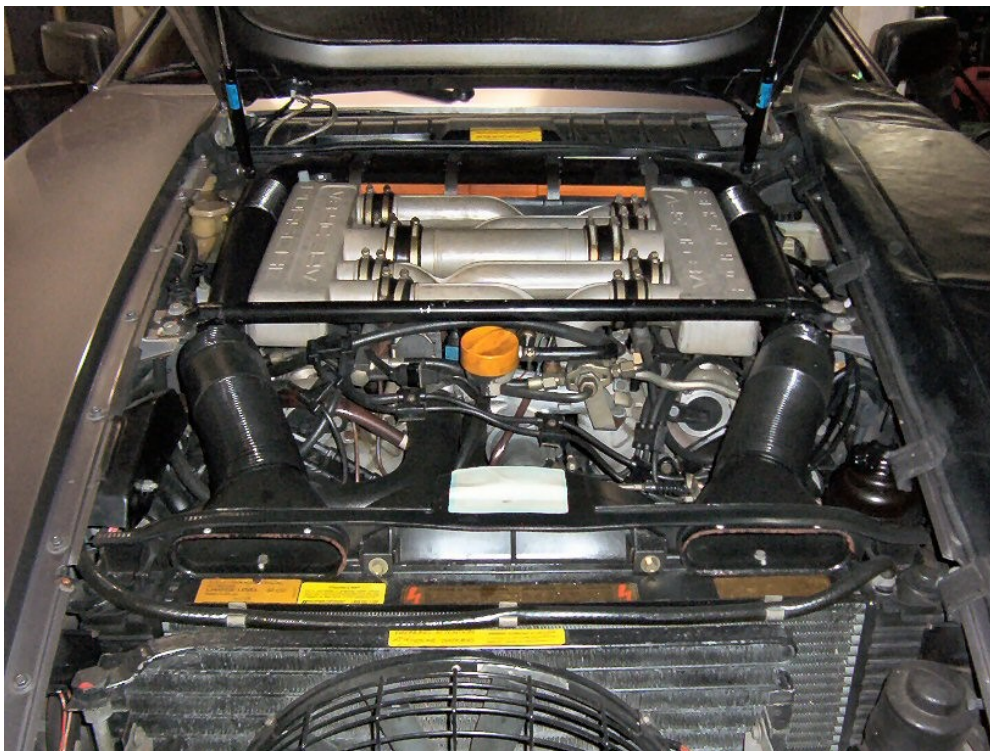
**NOTE: "Left" and "Right" are used in this manual frequently. Left and Right are always as seen from the driver's seat-as you sit in the car.**

### Phase 1: Preparation of your Motor

In some of the following pictures, the radiator is in place and in others, the radiator has been removed so we can get better pictures. It is not necessary to remove the radiator to install the supercharger kit, but you may decide to remove it first to make more room to work.

No special preparation to your 928 motor is required for the installation of this kit. The Air Pump and the EGR system is left alone, removing it is not necessary. The catalytic converter is also not affected.

However, it is important that the engine be running correctly before the supercharger is installed. If your engine is already running poorly, diagnosis of any problem will be complicated further by the supercharger, so it is much easier to attend to any problems or perform any maintenance needed now.

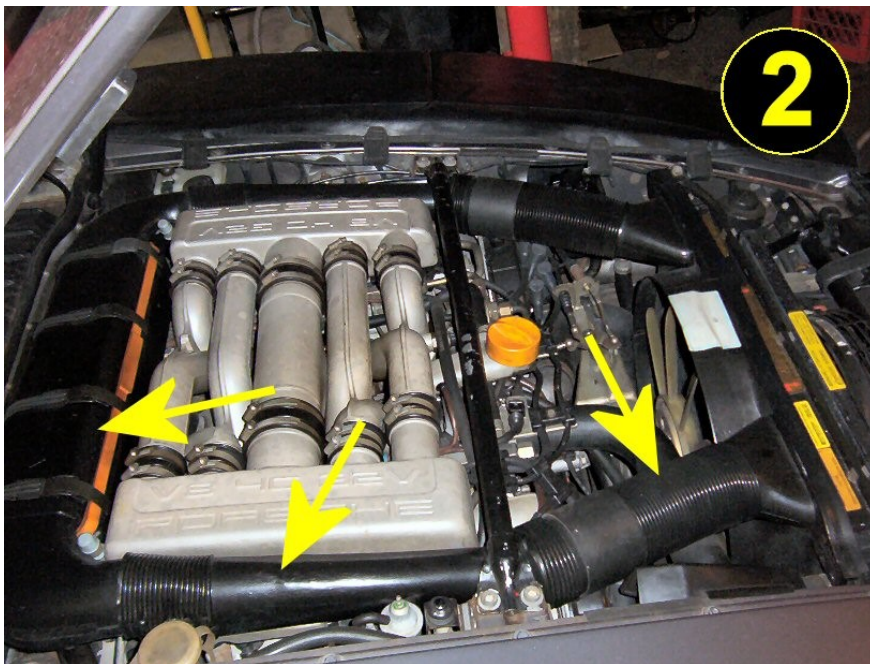




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Give your engine a good tune-up, check the age and condition of the ignition wires and the timing belt. Replace as necessary. Inspect all the vacuum lines—some of them will have boost now and if they are brittle, they will crack (if they aren't already). A free set of silicone vacuum lines has been included for this purpose. Finally, change the spark plugs to one heat range colder than stock.

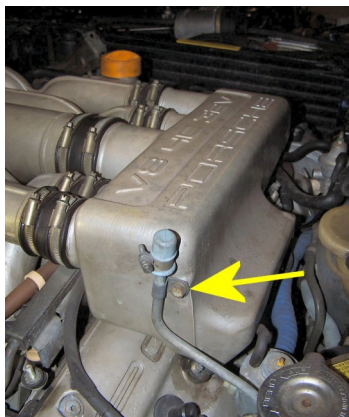


Start by removing the plastic cold air intake tubing and the top of the air filter housing as shown in Picture 2. The tubes just pull off, and the top of the air filter housing is secured with rubber hook straps.

On this engine, it is necessary to remove the intake plenums in order to replace the spark plugs. There will be oil inside the plenums because of the PCV system, use this opportunity to clean the intake hoses and plenum. Oil on the intake hoses will make the connections slide off under boost.

loosening all the clamps as shown and one bolt at the rear that holds the emissions sniffer tube in place. Then pull straight out as in picture IM1.

Remove the intake plenums by







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Inspect each of the black rubber hose couplings—they must not be cracked or torn and should still be supple. Replace any that need it now.

Wipe down each hose nipple on the plenum with paint thinner, carb spray, or similar cleaner to remove all the oils shown in Picture IM2.

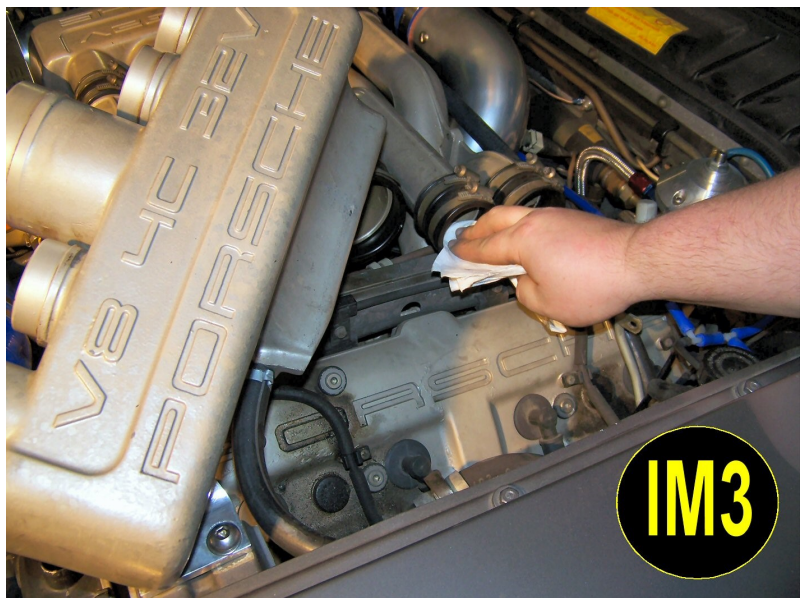
Then take the same cleanser to the hose couplings themselves, and clean all the oil off of the inside of them as shown in Picture IM3.

Replace your spark plugs now to one heat-range colder than stock, and then re-assemble the plenum.

If you decide to replace your ignition wires, do that too before putting the plenums back on.

Start the car and drive it now to be sure that no errors have been made before going further. You have just changed the spark plugs, and possibly the ignition wires and vacuum lines and maybe even the timing belt.

Put it back together and take it for a drive to make sure it is running correctly before proceeding.







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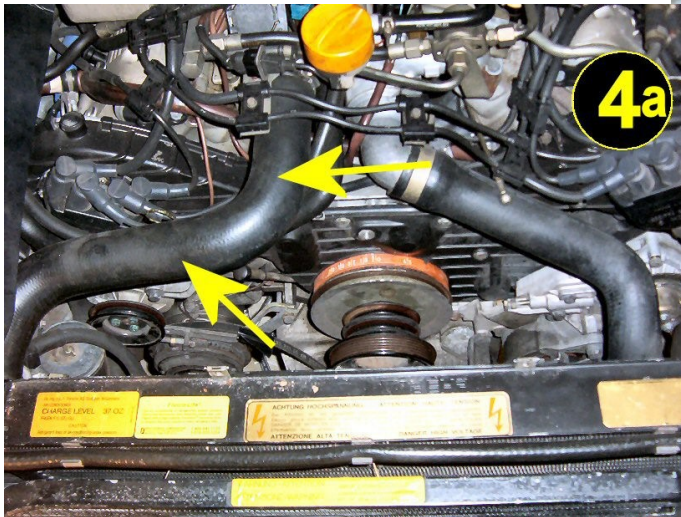
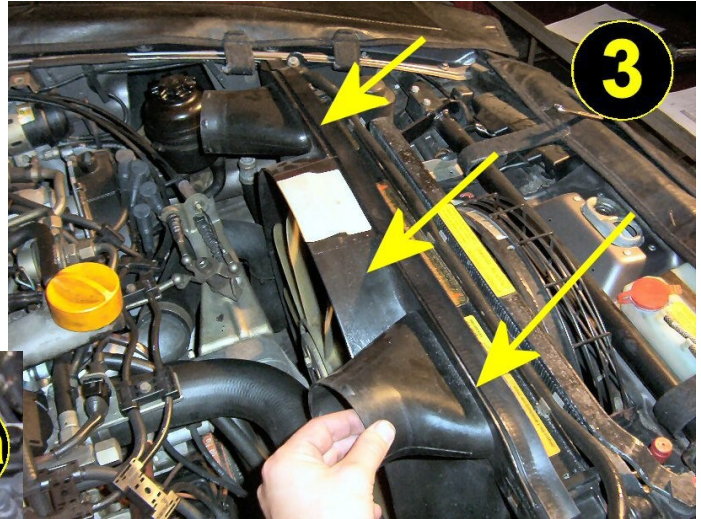
### Making some room to work:

We begin our installation by removing a few things to allow us clear access to the motor.

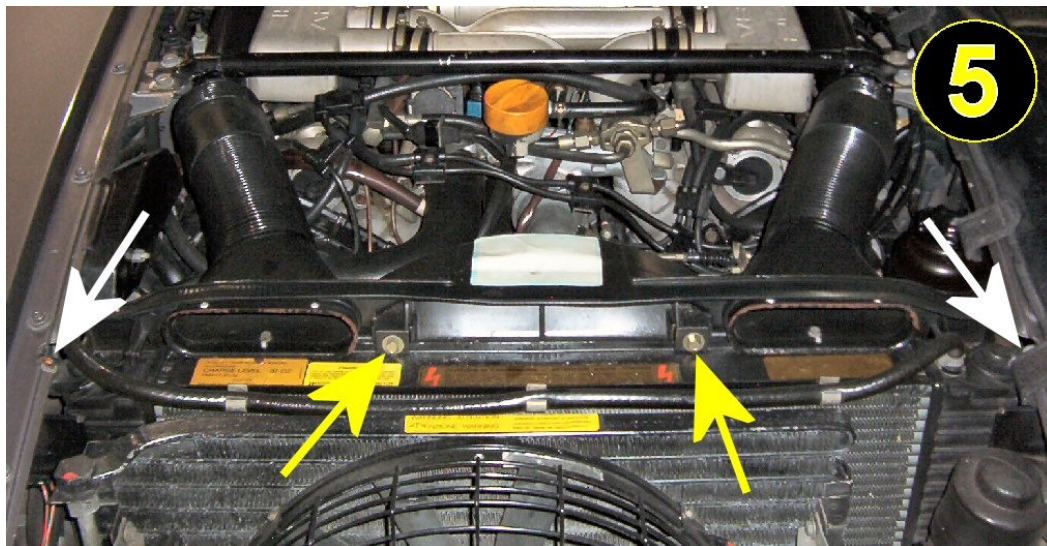
Remove the cold air intake tubes and air filter top again as you did before in Picture 2.

Remove the upper fan shroud as shown in Picture 3. This is held on to the top of the radiator with two small 10mm bolts as shown by the yellow arrows in Picture 5.

Remove the upper radiator hose now. Pic 4a.



Remove the radiator hold-down clamps, One on each end of the top of the radiator where shown by the white arrows in Pic 5 and Picture 6 (next page).

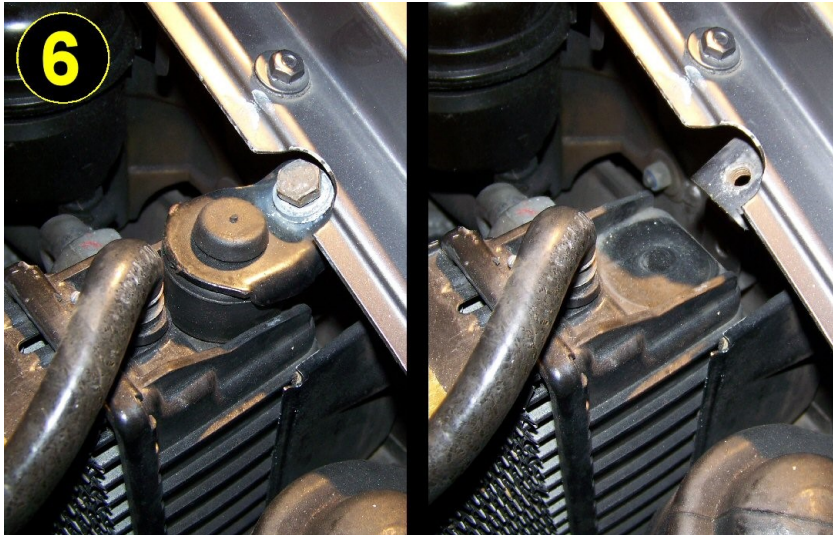






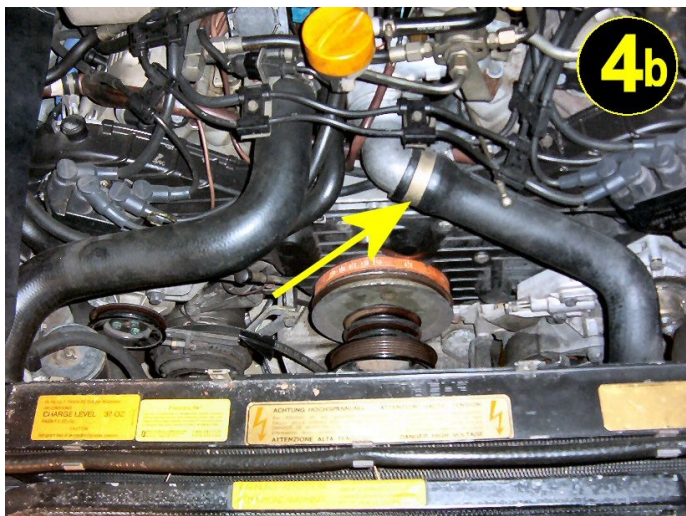
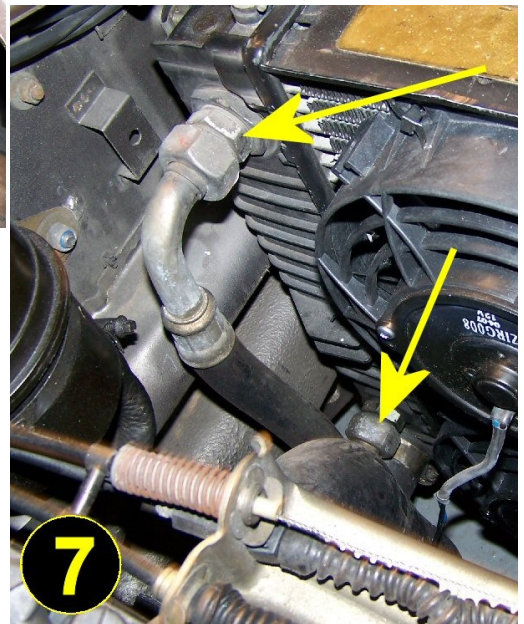
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Using two wrenches in opposition, disconnect the oil lines where they attach to the radiator on the inside left end tank, and, if the 928 is an automatic, disconnect the transmission cooler lines from the radiator on the right inside end tank. Picture 7

Underneath the radiator, find the blue plastic drain tap and unscrew it a few turns to drain the coolant from the radiator. It does not need to be removed. Also underneath the radiator, find the two 10mm screws that hold the lower fan shroud on and remove them.



Remove the lower fan shroud. Remove the lower radiator hose where it attaches to the motor. It can remain attached at the radiator. Pic 4b.

You should now be able to pull the radiator straight up and out of the car.



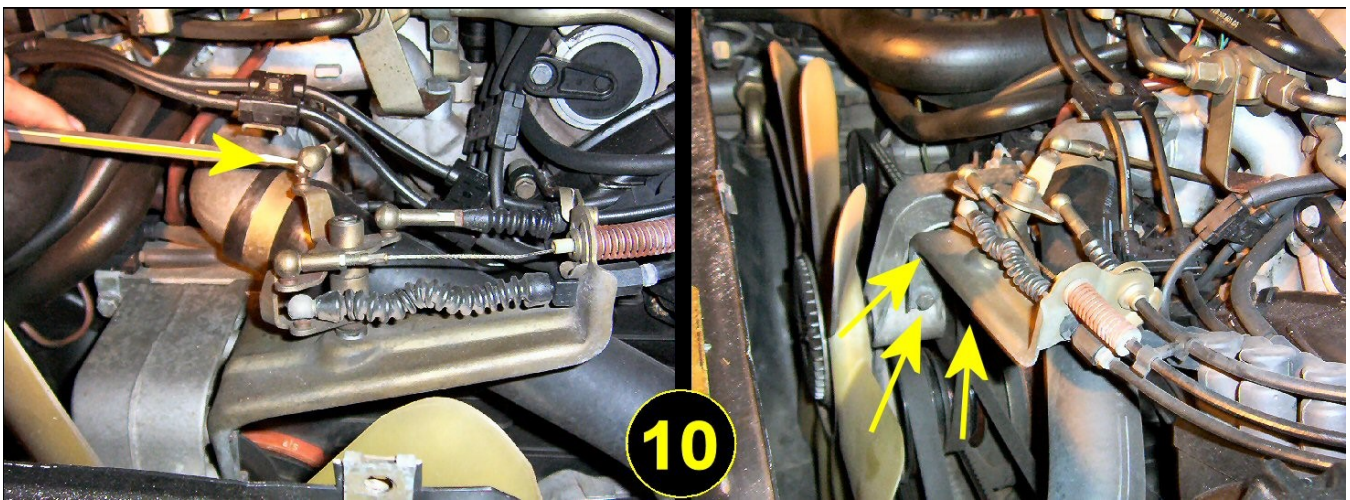


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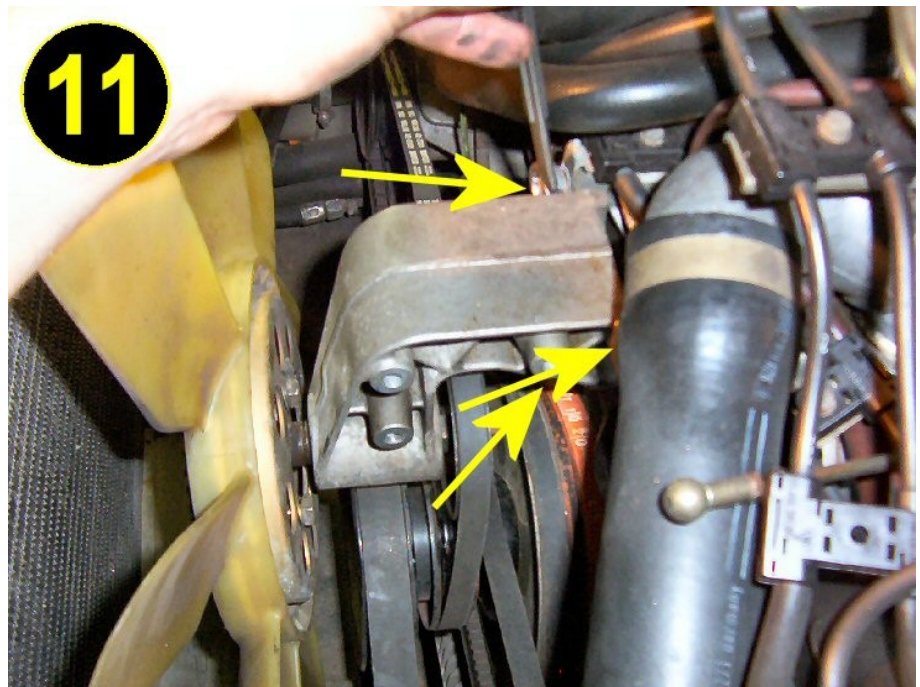
### Removing the Fan Assembly:

First, we must detach the throttle cables from the side of the fan support. Place a flat screwdriver under the ball linkage and gently pry the accelerator rod off of the linkage as shown in Picture 10. Then remove the three 13mm bolts that hold the throttle cable bracket to the side of the fan mounting bracket, and swing the throttle cable assemblies to the side.



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). Lift the fan assembly out the top. It will not be going back on the car.

If you are going to store it, store it upright so the silicone in the viscous clutch does not leak out.







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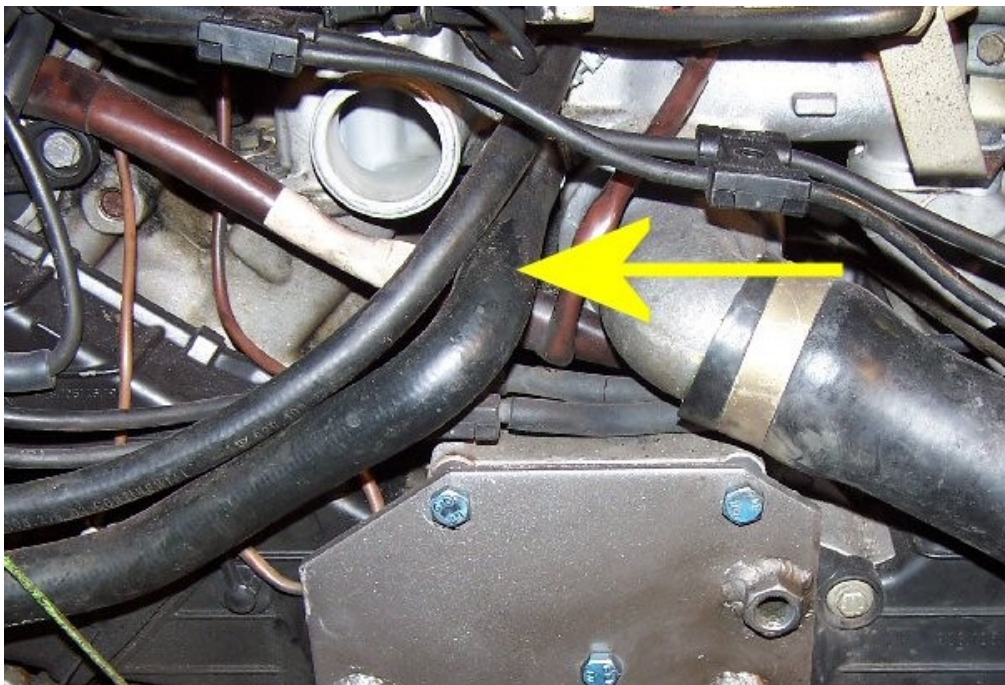
### Adjusting the Dip Stick Tube:

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. You can check that now because your AC belt is still attached. Remove the stock dipstick and replace it with the shortened dipstick supplied with your kit now. Compare the oil level markings on the two dipsticks. Call 928 Motorsports if they are not very close to the same.

Next, we want to remove all the belts from the motor. There are 4 of them: the fan belt (you just loosened when you removed the fan), the alternator belt, air conditioning belt, and air pump belt. I recommend that you label each belt as you remove them as several of them are similar in size. This will make re-assembly much easier. Simply wrap a tag of masking tape around them to write on.

### Adjusting the Reservoir Water Line:

Just to the side of the spot where the upper radiator hose was connected to the engine, you will find a 1" diameter hose that travels past the right front head and down the right inner fender to the coolant reservoir.



Loosen the clamp at the motor for this hose, and pull the hose off.

Cut off about 2 inches of hose, and re-attach to the engine. Note: this hose is flared at the end, do not cut off all of the flare or you will not get it back on to the motor!

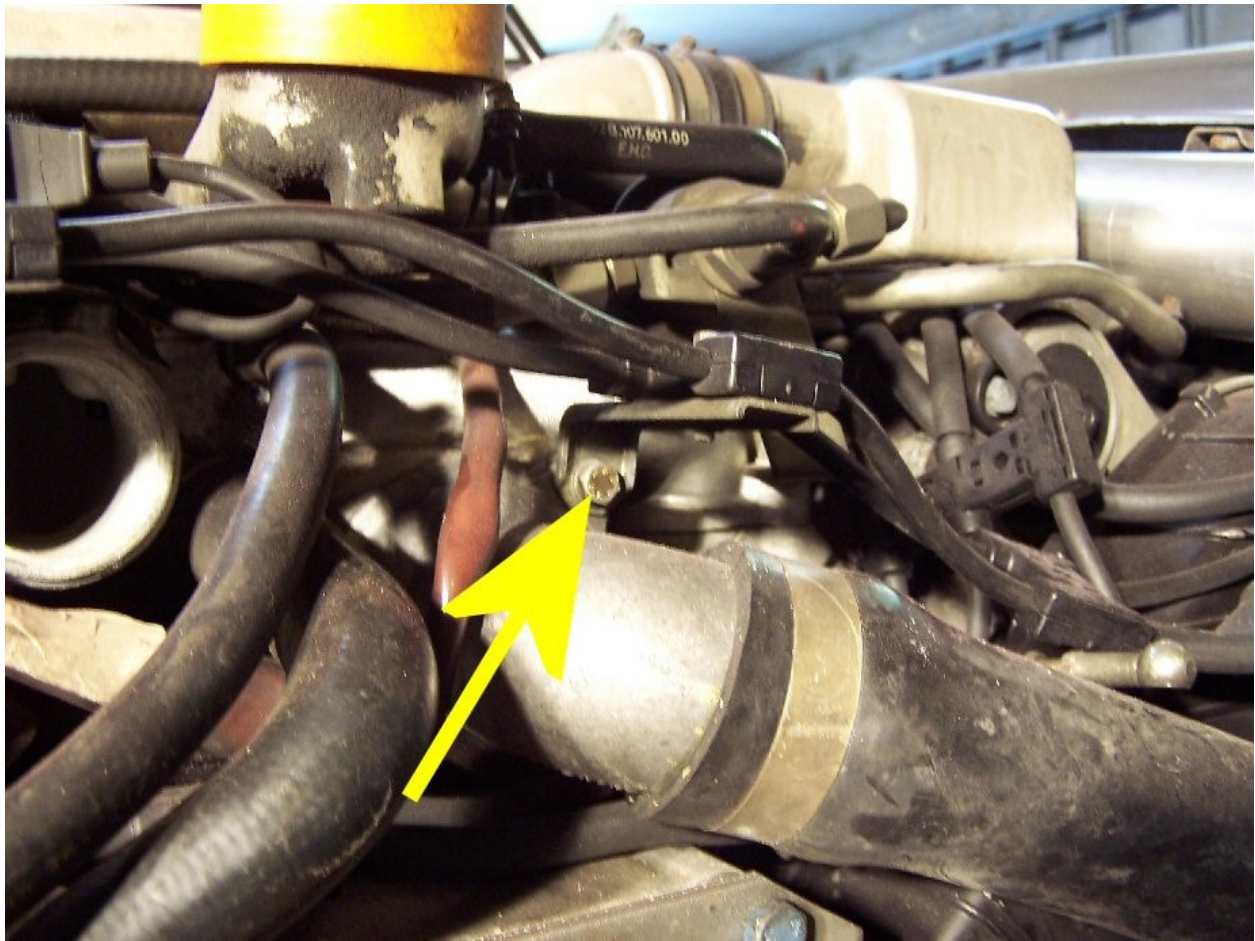


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### **Making clearance for the Supercharger Intake:**

Remove the bolt that holds this spark plug wiring harness holder to the engine, and remove the small 6mm nut that holds the spark plug wires to it from the top. This will not be going back on the engine.







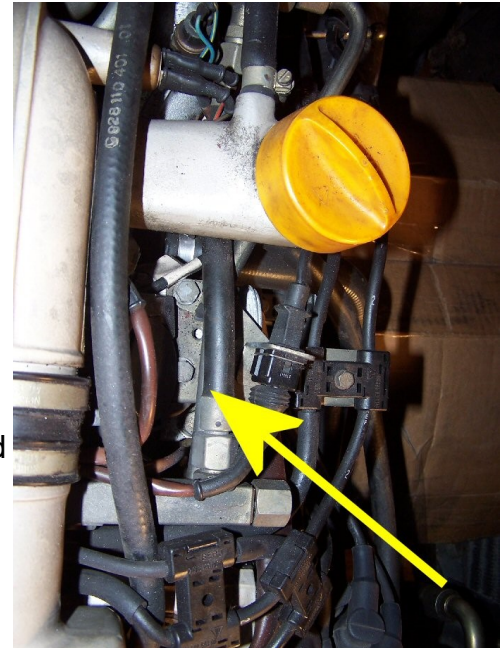
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There is a diagnostic plug-in at the front of the motor that we know need to relocate. This yellow arrow shows where it is.

These next two pictures show what it looks like on the motor, and also what it looks like off the motor.

Remove the metal supporting bracket for the diagnostic plug, the cover for the plug, and the spark plug wire holder. The diagnostic plug can stay, just lay it down now about where it used to be. All the spark plug wires should be loose now as they cross the front of the engine. They can still be loomed together, but they should no longer be bolted down to fixed mounts.







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### 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 (or a 1 1/16" socket) and a big breaker bar or 3/4" drive ratchet. But, read to the end of this section before trying to break torque on that crankshaft bolt.

The engine must be "locked" so we can break torque on the crankshaft pulley bolt. Picture 18 shows a flywheel locking tool and the next page shows how to use it.

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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### Phase 2: Installation of the Supercharger

#### Crankshaft Pulley Installation:

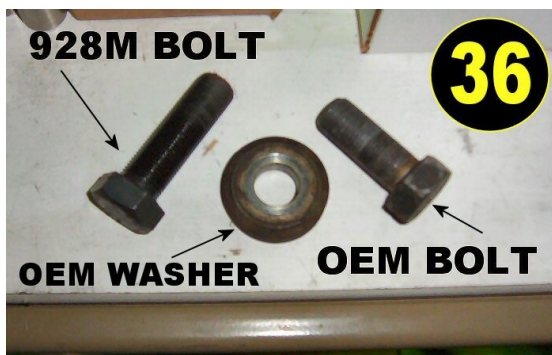
Place the air conditioning pulley back on the crank shaft as shown in picture 35. It remains loose until sandwiched in place, so do not be concerned if it wobbles at this point. Now take the large aluminum 928 Motorsports pulley and press it on the end of the crank shaft.

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 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.

You can put the alternator, air condi-



tioner, air pump, and power steering belts back on and tighten them.







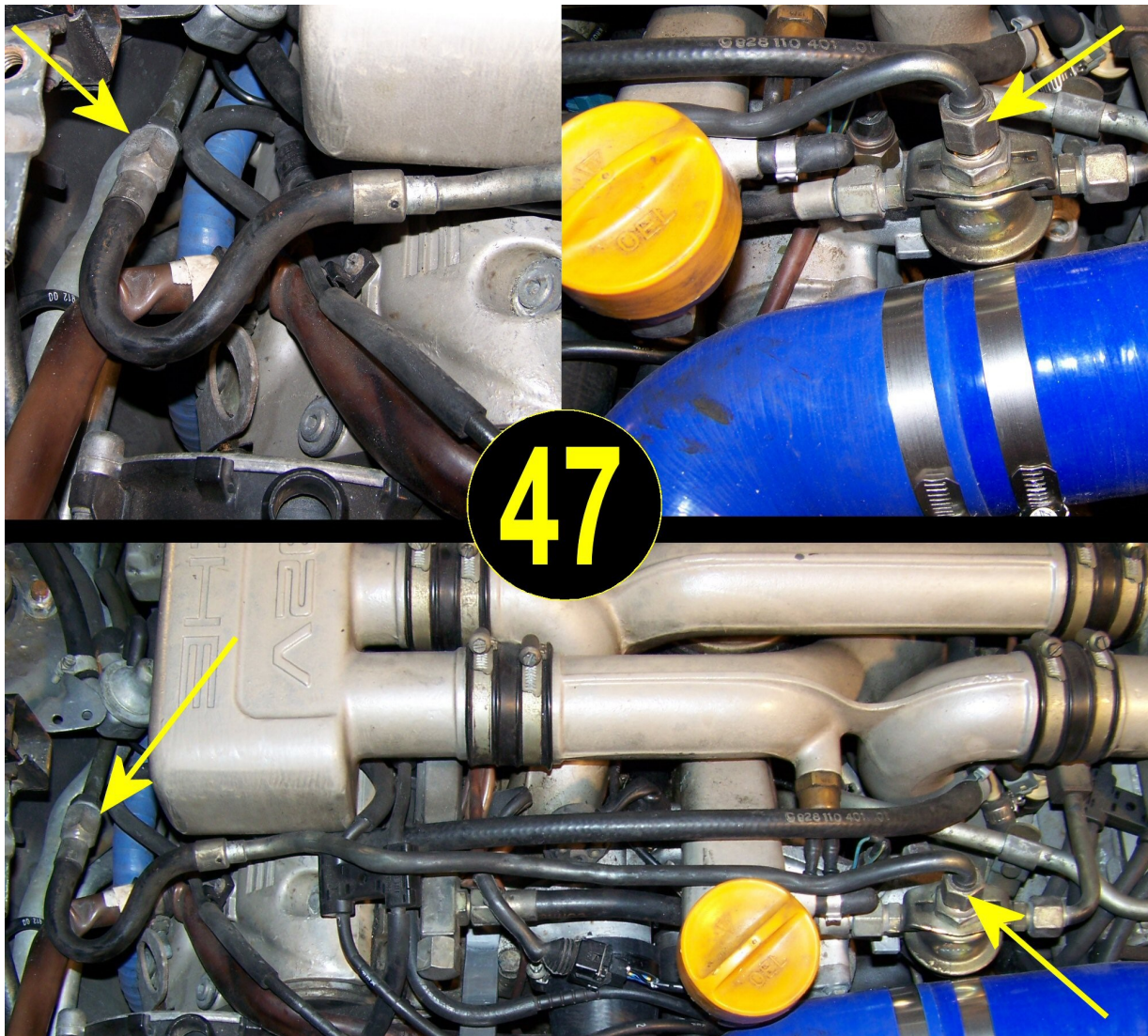
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### Making Room For The Air Intake:

To make room for the supercharger air intake we need to replace the fuel line shown in picture 47 with the one provided in your kit. You will note that we will also be rotating the Fuel Damper slightly.

Remove the 4 bolts that hold the engine cross bar, and set the cross bar aside for the moment.



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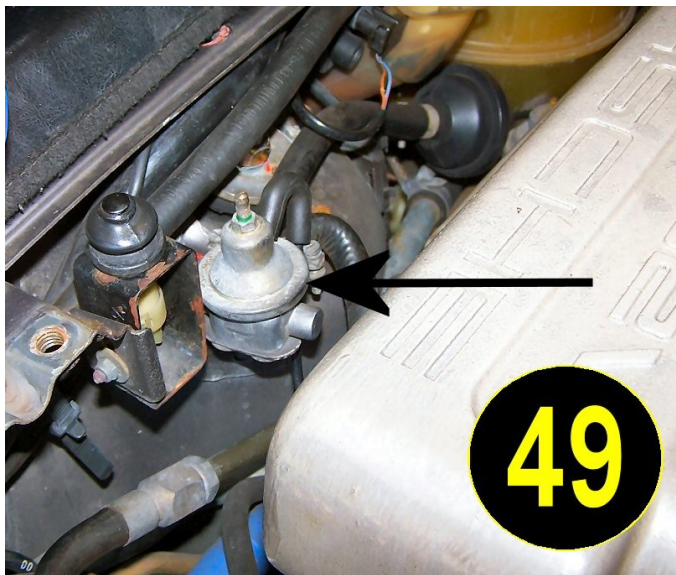


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Loosen the fuel line at each end and remove the hose. Always use two wrenches in opposition as shown in Picture 48.

While we are doing this, we also need to relocate the small electric solenoid valve shown in Picture 49. Simply remove the two screws that hold it down to the mounting bracket on the bottom, and push the solenoid over and down.



It stays connected just as before, and lays down in the valley so we can get the intake tubing over it. Pic 50





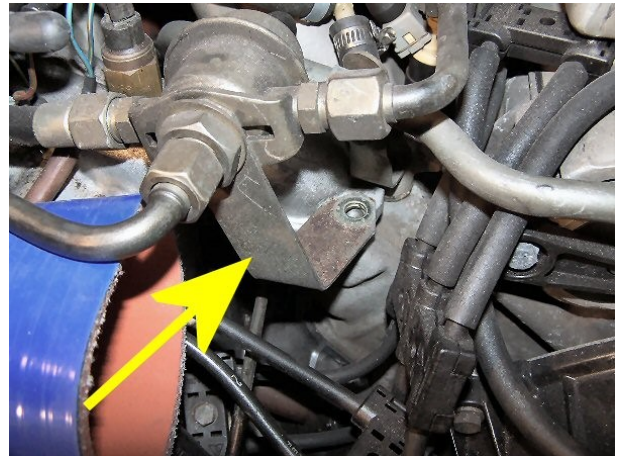


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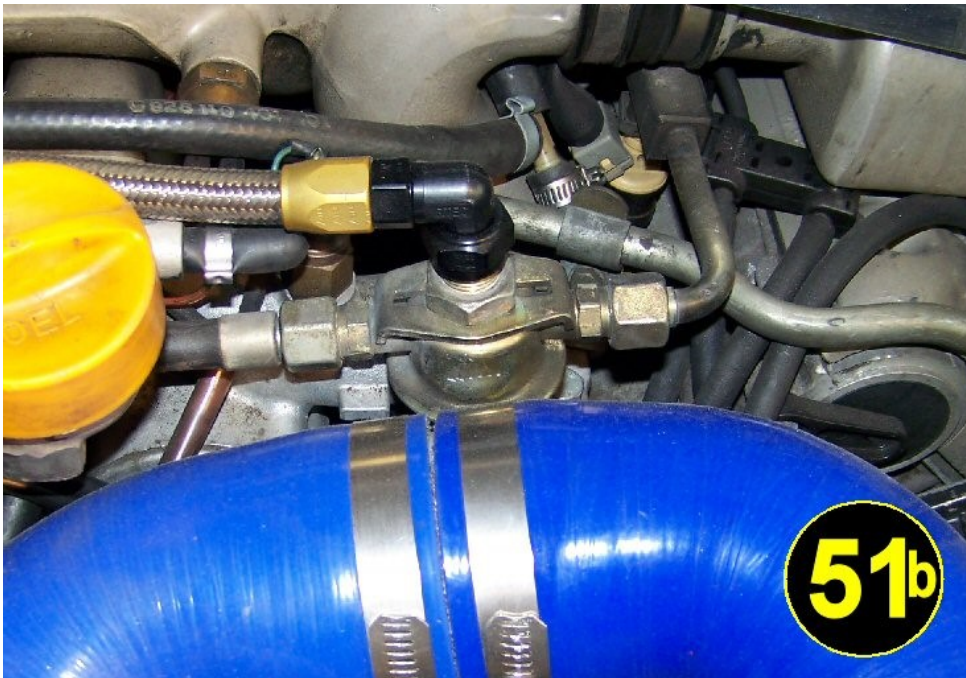
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Locate the fuel dampener on the front of the motor as shown in Picture 51a.

Remove the mounting bracket that holds the dampener in its current position.



Loosen all the fuel fittings on the fuel damper and rotate it so that it is in the position shown in Picture 51b and re-tighten the fittings. Check to make sure you have not knocked off any vacuum hoses in the area.



Picture 51a = BEFORE  
Picture 51b = AFTER

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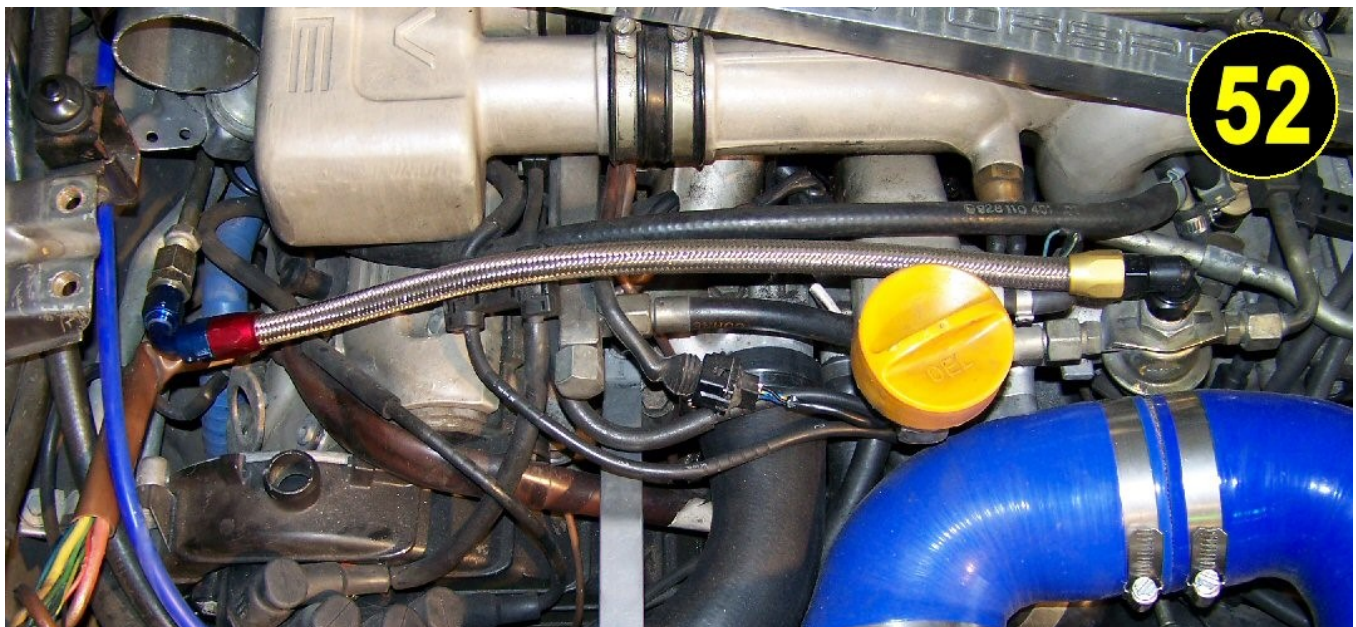
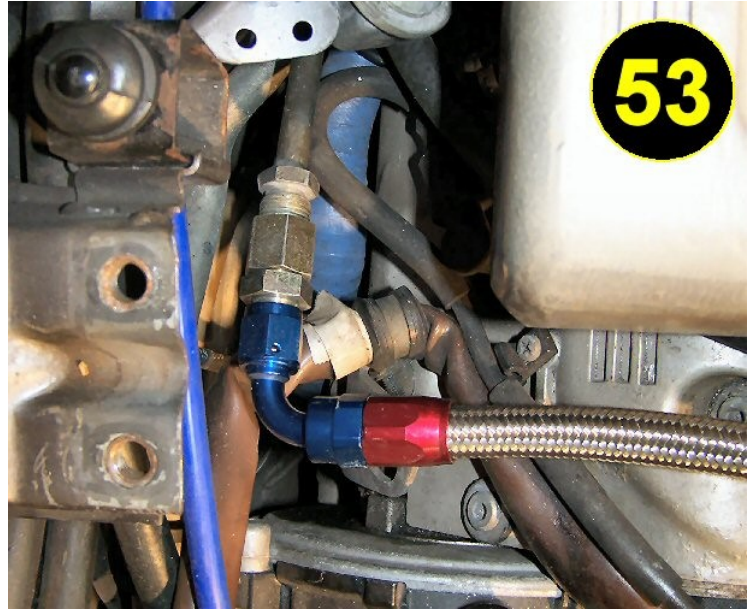




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Locate the new braided stainless steel fuel line in your kit, and mount it as shown in Pictures 52, 53, and 51b (previous page)..







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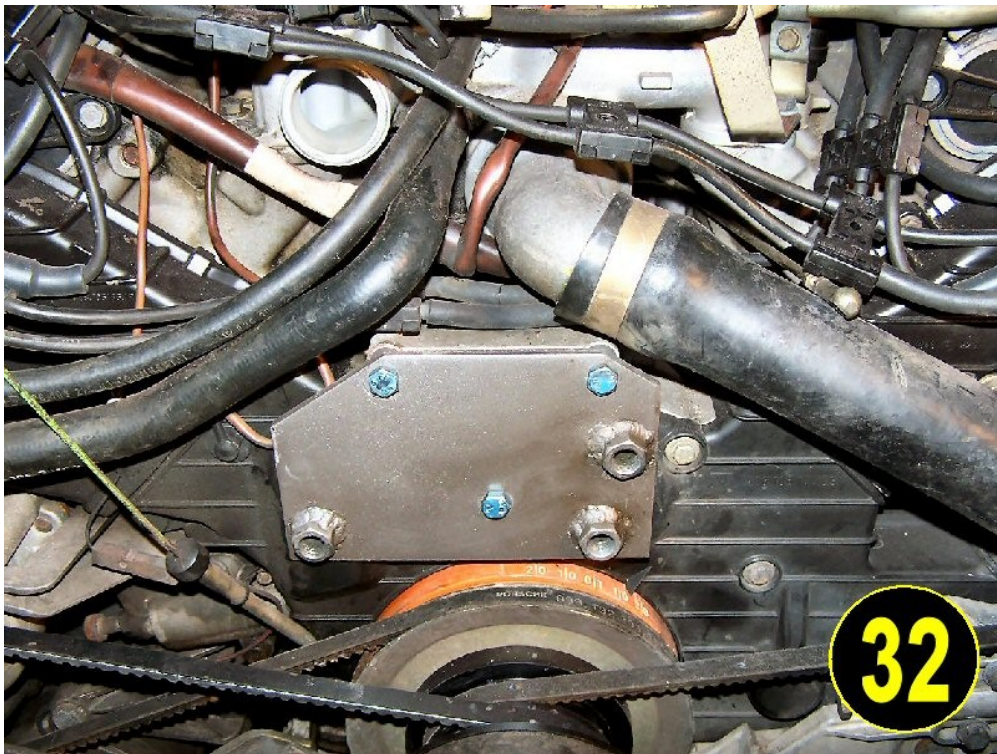
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### Mounting Inner Supercharger Mount:

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.

When mounted to the motor, the plate will look like Photo 32





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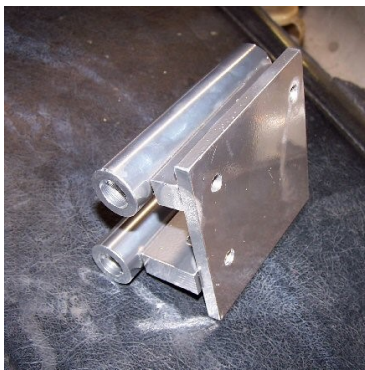
### Mounting the Outer Supercharger Mount and the Head Unit:

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



your accelerator cable bracket as shown.



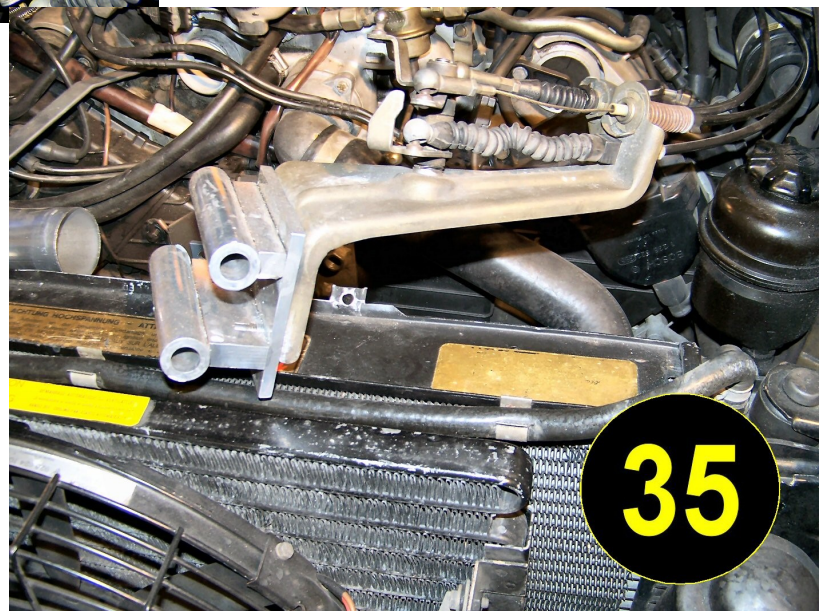
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kit and bolt it to the inner mount with the short 8x15mm bolt as shown in picture 34. Do not put the final torque on that bolt just yet.

Take the special throttle cable adapter from your kit shown in picture 35 and mount it to





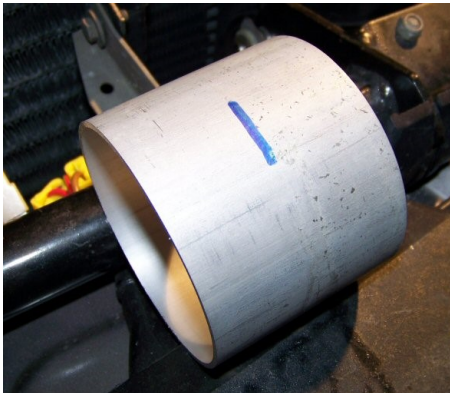
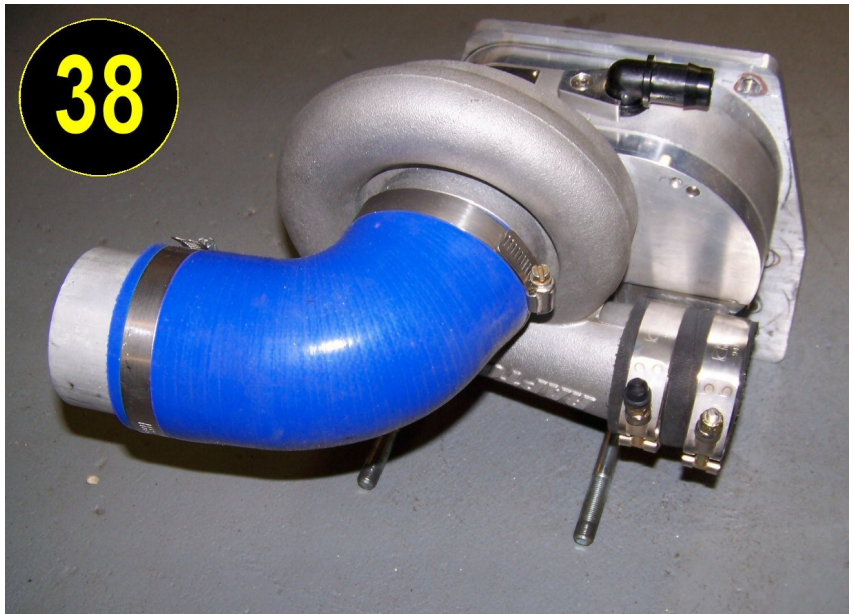


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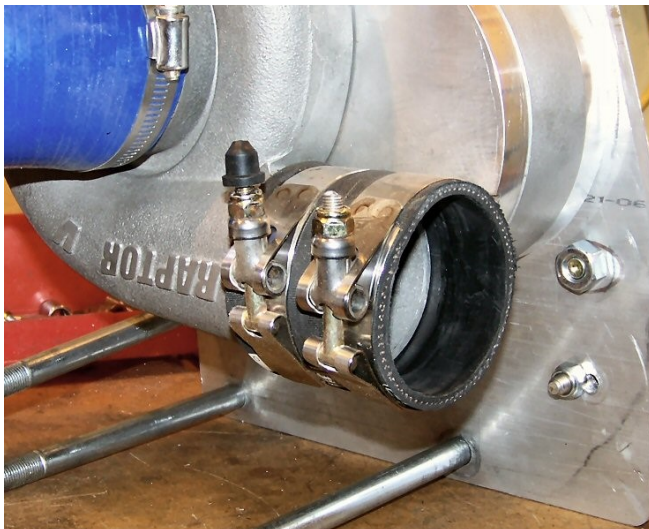
There are a few parts we can assemble now on the workbench much faster and easier now than when they are on the car.

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-bolt 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 19mm bolts supplied from your kit and the three stainless steel spacers. One spacer is long, two spacers are short. Slide all the bolts through the mounting plate, and slide the two short spacers over the bolts now as shown.

The last bolt (closest to the supercharger outlet) gets the steel washer slid over it, then the long stainless steel spacer as shown.



You can also pre-mount the belt tensioner to the bracket now, but only install the top bolt at this time, and do not tighten it. Picture 46



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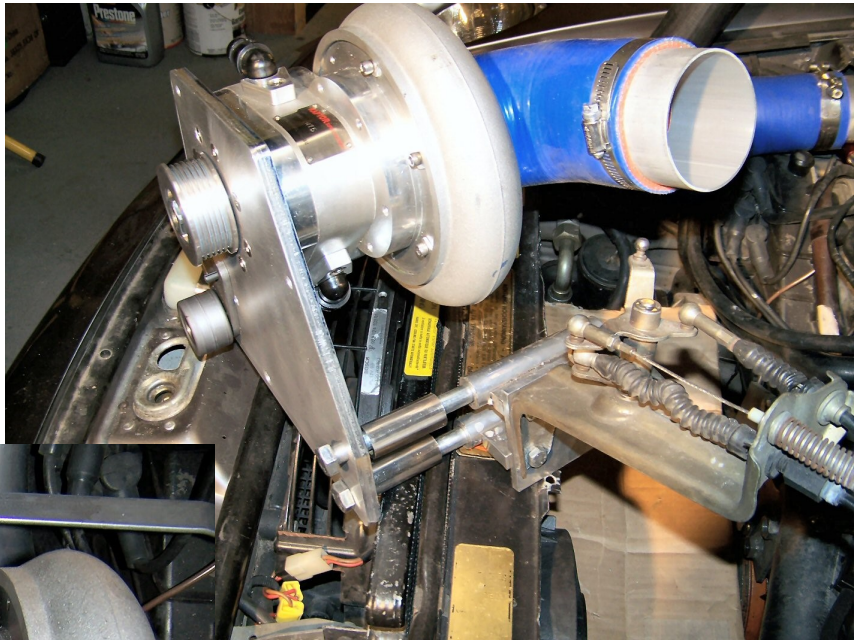


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Now place a piece of cardboard over your crankshaft pulley to protect it while we install this assembly. You can do this next step alone, but it is easier with two people.

Take the Head Unit assembly and set it on top of the radiator area. Slide the throttle cable bracket onto the bolts with the short spacers as shown.



Get the tube of Loctite blue supplied with the kit, and put a drop of the Loctite blue on the threads of each of the 3 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.





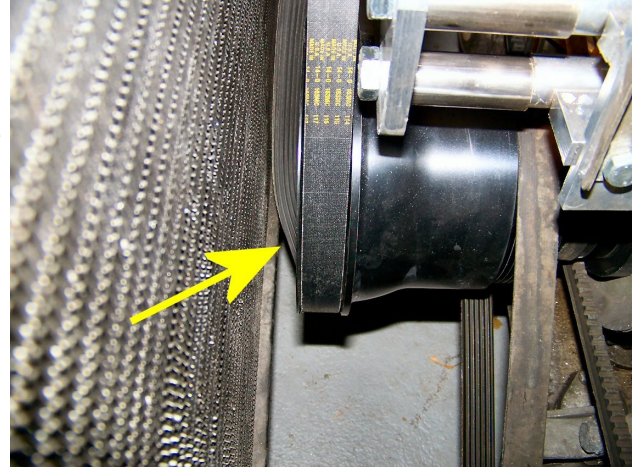
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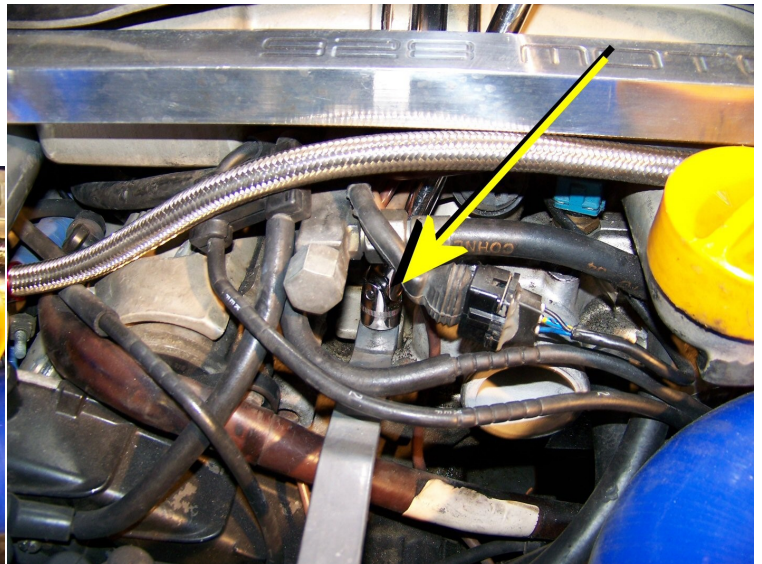
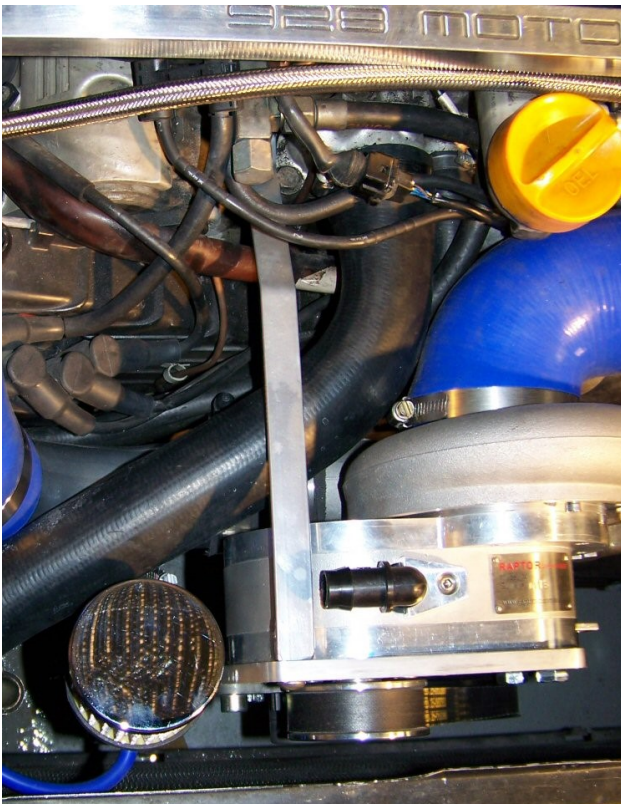
Its time to put the belt on the supercharger now. Your 928 Motorsports supercharger kit has been designed to allow great flexibility in tuning, and includes fitments for several different pulley and belt combinations.

Put the supercharger belt supplied over the head unit pulley and around the crankshaft pulley. Depending on the pulley and belt you are using, the belt may be snug and not easily fir around the crankshaft.

Once the pulley is wrapped about 2/3rds the way around the crankshaft pulley, turning the start motor briefly will spin the belt on the rest of the way easily.



Now it is time to install the supercharger top strap. Remove the first 13mm intake



manifold bolt from cylinder number 1 and insert it through the top strap provided with your kit, and then re-install back into the motor.

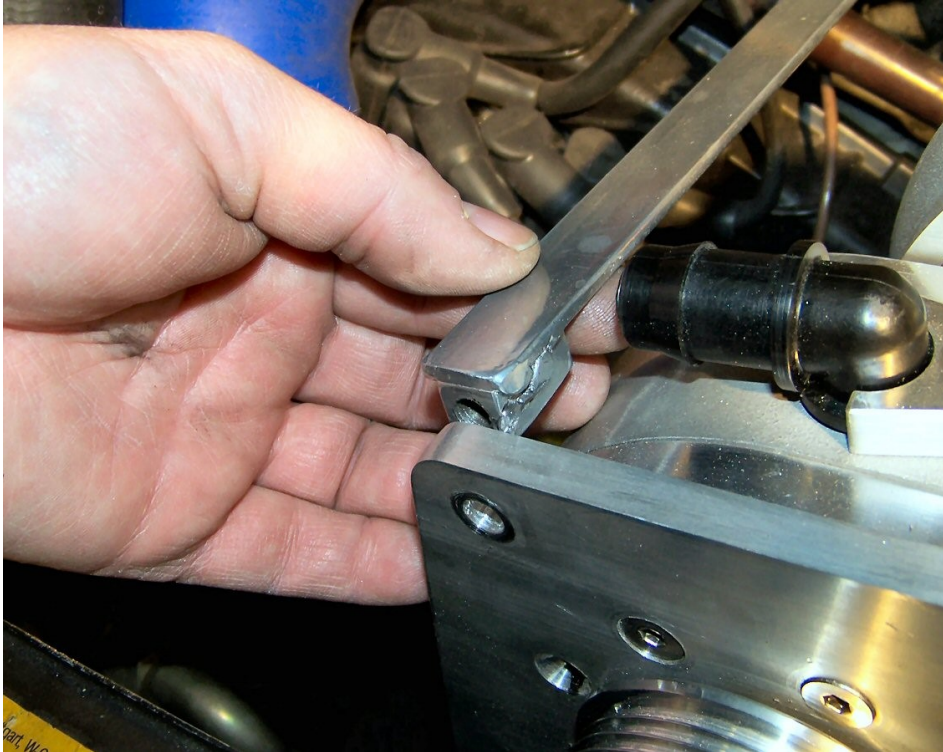




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The front of the top strap is held to the supercharger bracket by a 40mm long allen-head bolt supplied.

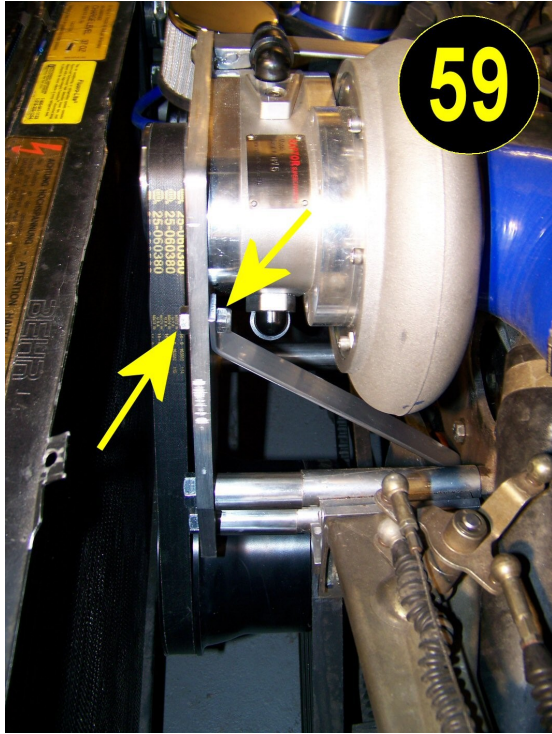


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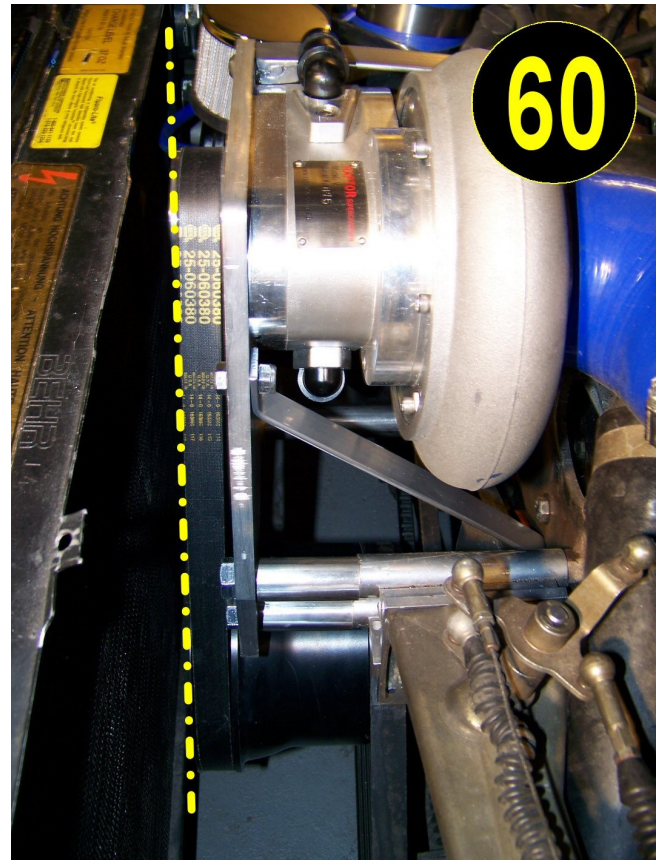
Finally, we need to put the bolt through the Z-strap and the front bracket as shown in Picture 59.

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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Snap the ball linkage back on to the throttle bell crank assembly that we removed in Picture 10. Have a helper sit in the car with the engine off and operate the accelerator pedal up and down. Confirm that the throttle bell crank can swing through its entire range of motion without interference, and that when the gas pedal is floored, the throttle rod is pulled all the way out.

It should not be necessary to adjust the throttle rod, but if it is, you can lengthen or shorten it as needed. Pry the ball linkage off of the bell crank, and use two wrenches in opposition to loosen the jam nut. Hold the shaft tightly with a pliers while you rotate the ball end, then re-tighten the jam nut.



Take care not to twist the other end off of the throttle body beneath the intake manifold, but if you do, know that you can snap it back into place without removing the whole manifold. I've done it.

In one extreme case, I had to remove the left side plenum to snap it back on, but that's about as bad as it gets.



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### Installing 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 two 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 through 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 thick so you can pry against it to adjust your belt tension.

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 two nuts on the backside to hold it there.







## 928 Motorsports Supercharger Installation

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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

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### Installing the Blow-Off Valve:

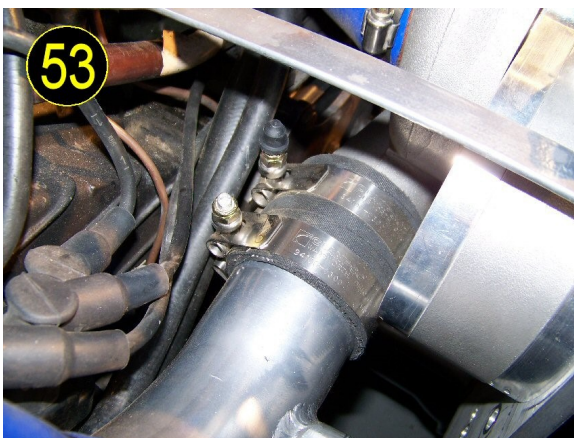
If the radiator is still in the car, remove the upper radiator hose at the radiator end and fold it out of the way.

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



The Blow Off Valve

Insert the outlet elbow from your kit into the 2.5" black hose that is on the outlet nipple of the Raptor, and secure it in place with the two smallest T-bolt clamps from your kit. See Pictures 52 and 53.



After the clamps are tight, they must be trimmed so they will not poke into the upper radiator hose we will be installing next. You can use a bolt cutters or an air cutoff tool.

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







## 928 Motorsports Supercharger Installation

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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.

Now it is time to install the special upper radiator hose that has been supplied in your kit.

Note that, when it is installed correctly, it clears all the obstacles on its way to the radiator inlet.



We the motor for a moment now. Stuff a rag or a towel into the open supercharger outlet for the moment to prevent anything from falling into it.

are done at front of the



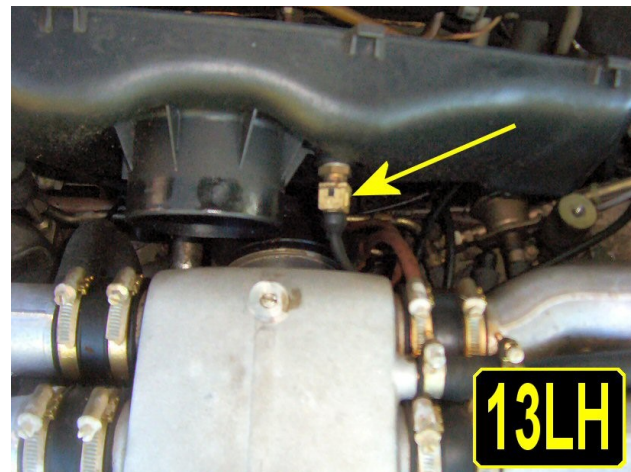
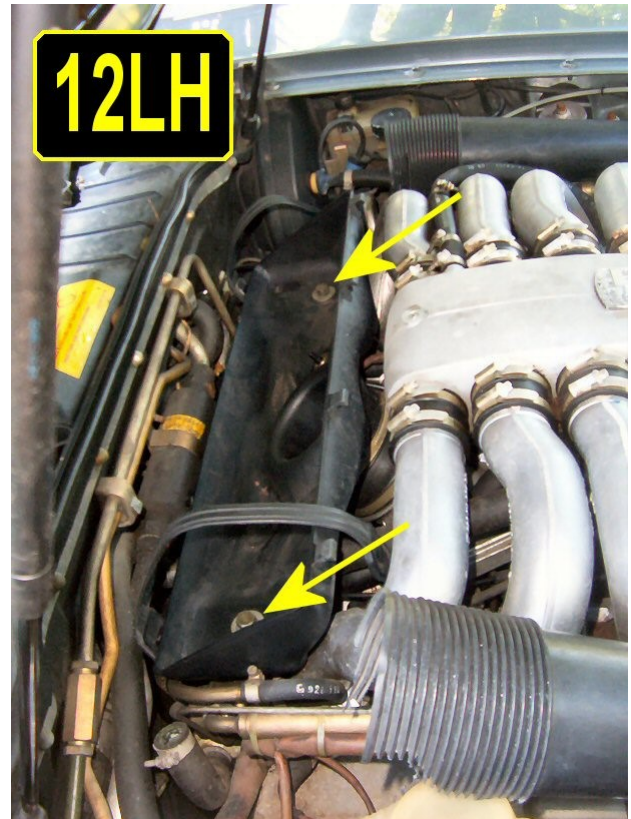
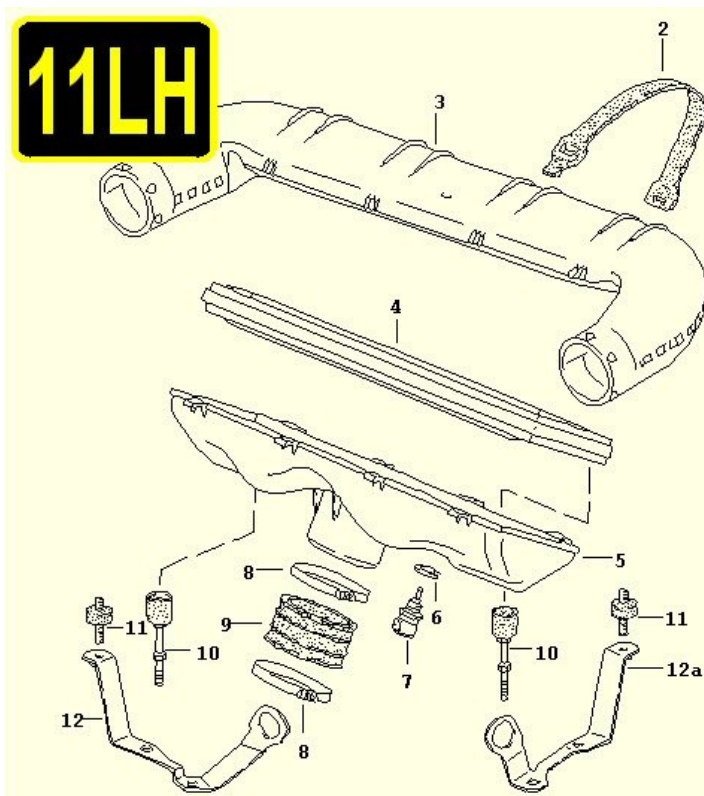
## 928 Motorsports Supercharger Installation

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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 as shown in picture 12LH. These have to be removed.

Then loosen the hose clamp that holds on the intake. (#8 in picture 11LH) .



As you lift up the air filter box, unclip the air temp sensor shown in picture 13LH.





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The back of the engine should now look like this:



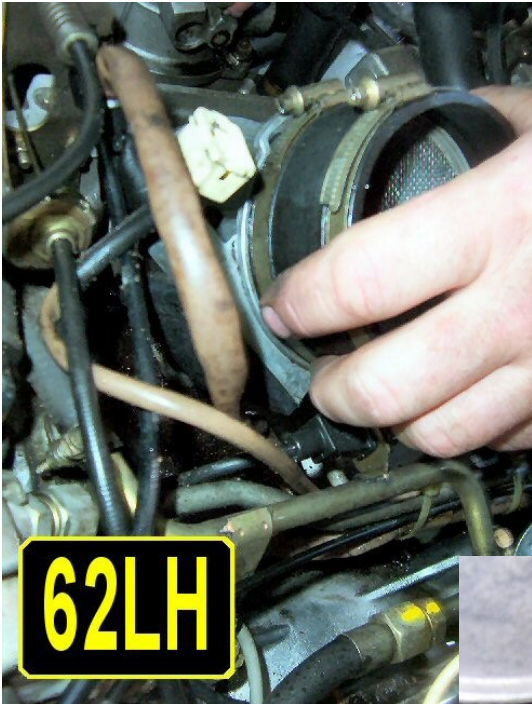
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Grab the Mass Air Flow Sensor and pull up on it, wiggling it a bit from side-to-side as you do there is nothing holding it in place but an O-Ring. It will pull right out as shown in 62LH. Disconnect the electrical connector that is attached to it, and laid it to the side.



Note, the puddle of oil in the bottom of the air inlet as shown. This is normal, just wipe it up with a rag. It is caused by the crankcase ventilation (PCV) system. (More on that later)

You can clean up the engine valley now and the area around the mass-air flow sensor now with rags and carb spray.



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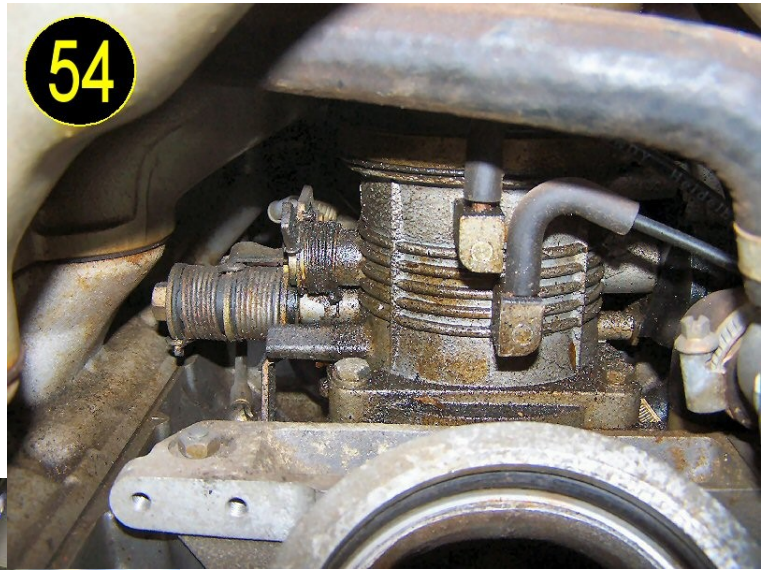




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Picture 54 shows what you will see if you put your head under the intake and look forward at the throttle body. This is a good time to spray the throttle linkage and return springs with carb cleaner to assure free operation. Gently check the vacuum connections. I do not recommend a vigorous cleaning—just spray the gunk off of everything and leave it alone.



After your clean-up is over, stuff a clean rag into the intake opening while we move on to work on the fuel lines. This will help keep any debris from falling into the open intake.

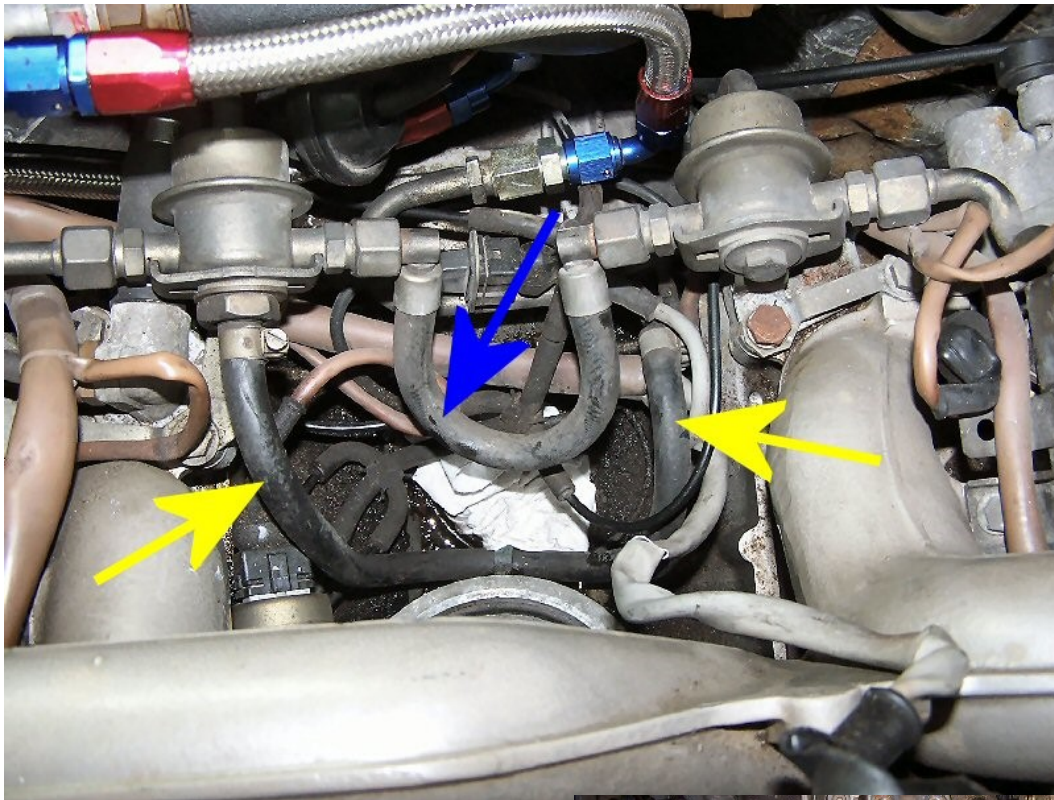


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### INSPECT and REPLACE OLD FUEL LINES:

Notice the YELLOW arrows in this picture pointed at the black rubber return fuel line coming out of the fuel pressure regulator in that picture. Replace the fuel line we are pointing to with YELLOW arrows with the new hi-pressure fuel line that we have provided with your kit.



Then inspect the U-shaped fuel line that we are pointing to with the BLUE arrow.

If it is cracked or brittle, it should be replaced or re-built. 928 Motorsports has a re-building service for these fuel lines, call us if you need it for your 928.







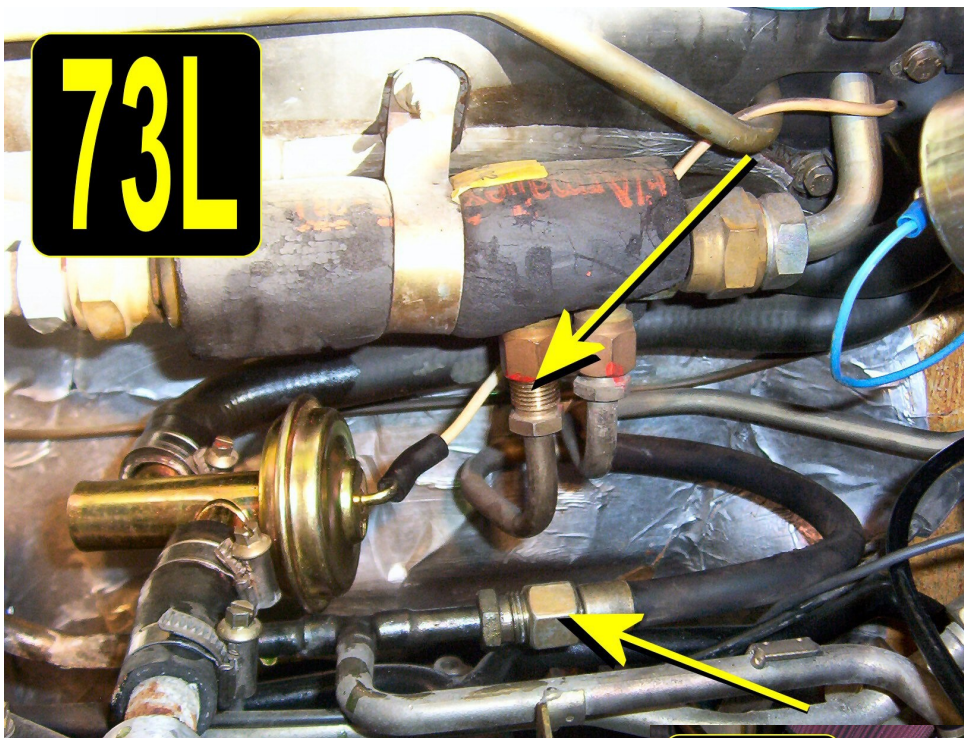
## 928 Motorsports Supercharger Installation

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### Installing the Fuel Management Unit (FMU):

The fuel management unit supplied with your kit is used to increase the fuel pressure to the injectors as the boost developed by the supercharger also increases. This provides a steady enrichment in fuel delivered to every combustion chamber as those chambers are also at the same time getting more air. This prevents damage to your motor and increases the horse power tremendously. The fuel management unit is mounted on the firewall at the back of the left head as shown in picture 70L.

First, we need to remove the existing fuel return line so we can plumb in our FMU.



Find the fuel return line on the firewall of the 928 Behind the motor and remove it. Always use two wrenches in opposition so you do not break the fuel lines.

Just for your information, that horizontal tube at the back of the firewall that has the black insulation around it is actually a fuel cooler where Porsche uses the air conditioning system to chill the gasoline, before it returns to the gas tank.

Locate the fuel lines that have been provided in your kit to replace the one you just removed. Picture 72L.







## 928 Motorsports Supercharger Installation

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Screw the new lines into the fuel cooler and onto the fuel rail just finger-tight at this time. Refer to picture 76L. Dis-regard the gray cylinder at the bottom of 76L.

Screw the other ends of the fuel lines into the FMU just finger-tight at this time also.

**IMPORTANT:** the line from the motor goes to IN on the FMU, the line exiting the FMU goes to the fuel cooler on the firewall.



Hold the FMU with the lines attached up to the firewall and mark the firewall for drilling through the mounting bracket on the FMU.

Make sure you locate it low enough to allow the hood to close.

Remove the mounting bracket from the bottom of the FMU to use as a template.

**READ NEXT PAGE BEFORE PROCEEDING**





## 928 Motorsports Supercharger Installation

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If you have a cover over the top of your cowl (it covers the windshield wiper motor and the area between the firewall and the base of the windshield), remove it now.

Check to make sure that where you have marked to drill, that you are not going to hit an air conditioning line or a wire harness on the back side of the firewall. Use the small bolts provided in the kit. The nuts go on the inside.

The firewall may appear soft, but that is a sound deadening cover, there is metal underneath.

Remove the mounting bracket from the

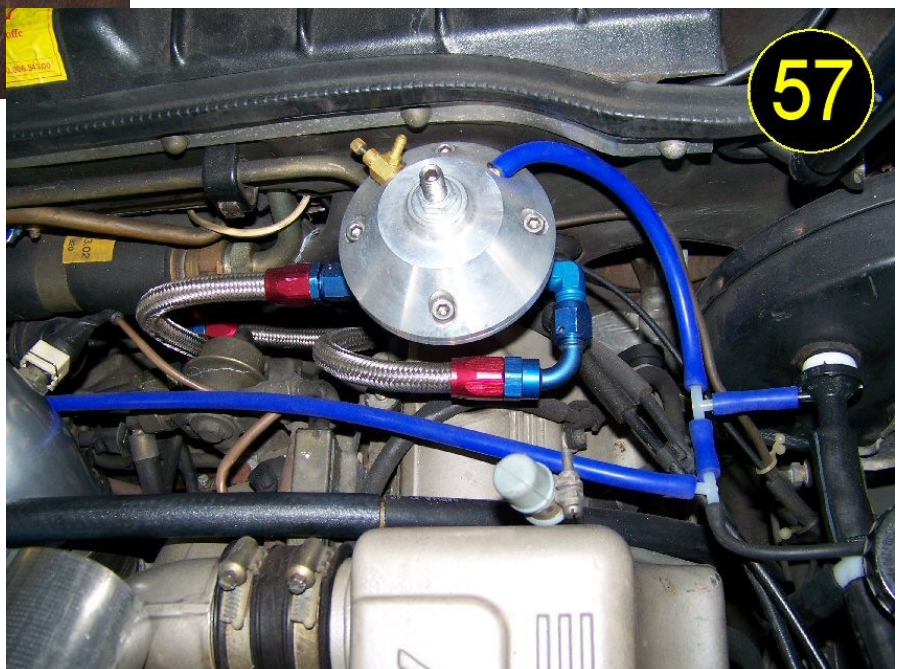


bottom of the FMU, insert the bolts through it, and then re-attach the bracket to the FMU before mounting to the firewall. See Picture 56

Picture 57 shows the FMU

mounted with all the fuel lines in place.

Now go back and tighten each fuel fitting with two wrenches in opposition.

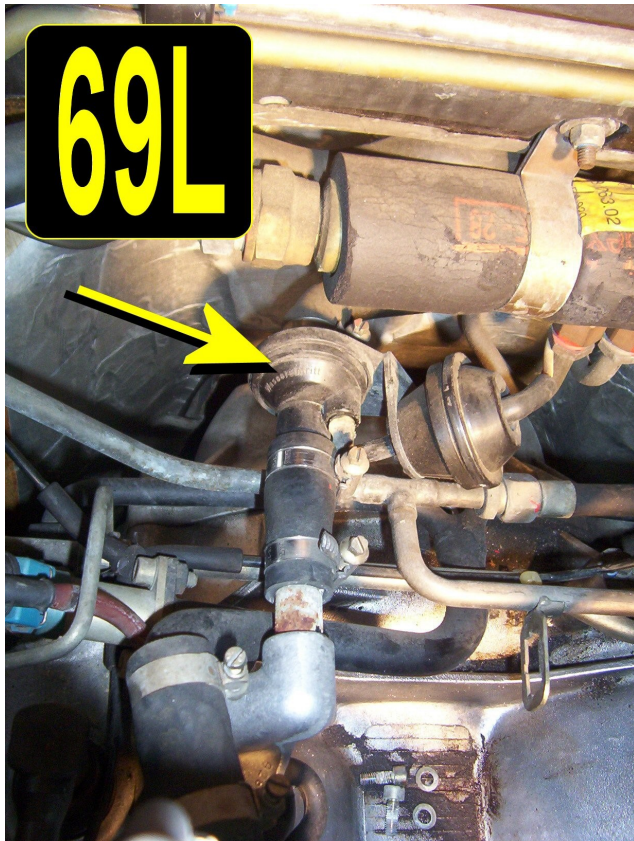




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This is also an excellent time to replace the plastic heater valve if you have one. See picture 69L. We have had customers who, after supercharging, have accelerated so quickly that the surge from the water pump split the plastic open and they dropped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



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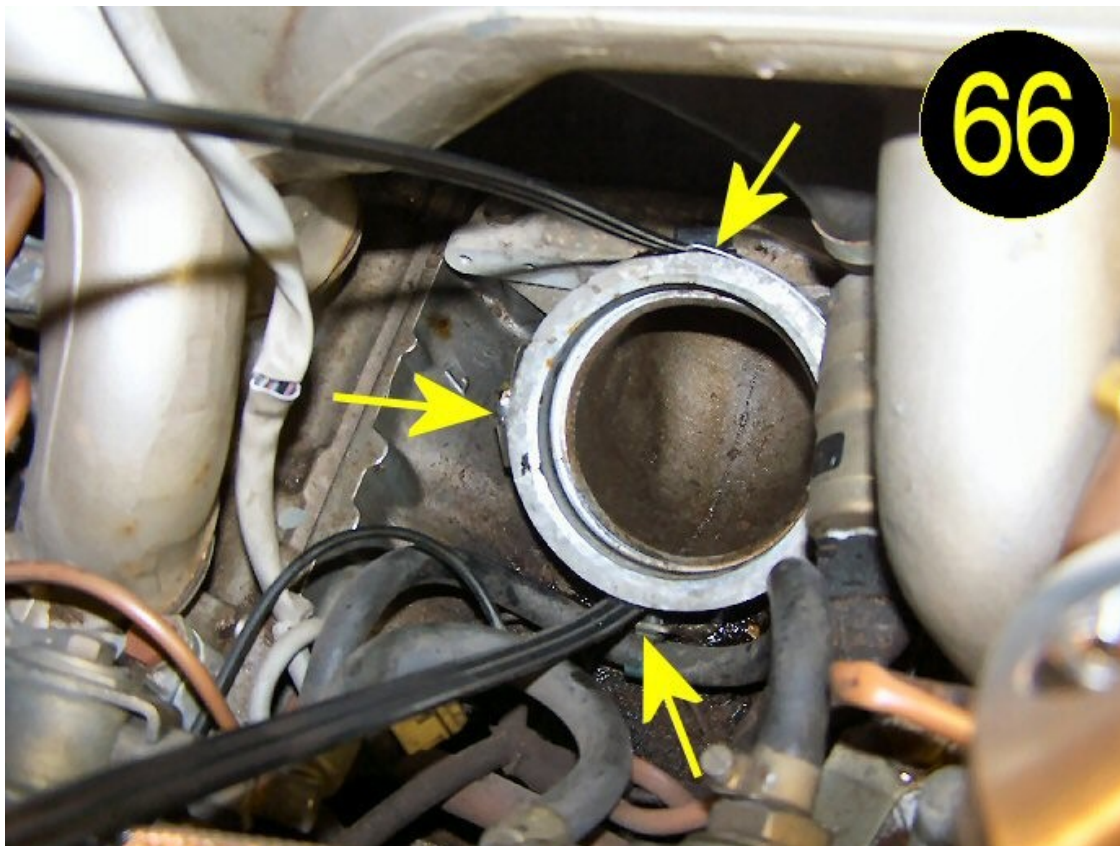
### Re-install and Lock Down MAF Sensor:



Locate the large straps and a single 4.5" diameter hose clamp from your kit as shown in picture 64LH. These are special straps that have a tensile strength of 750 pounds. We will be tying down the MAF sensor with them so it does not pop out under boost.

Place two straps under the large hose clamp and over the mouth of the intake manifold as in pictures 66. Orient the straps in the 6 and 12 o'clock position and tighten the clamp.

Note that the hose clamp is barely visible in Pic 66 as it is correctly positioned beneath the lip of the intake manifold.



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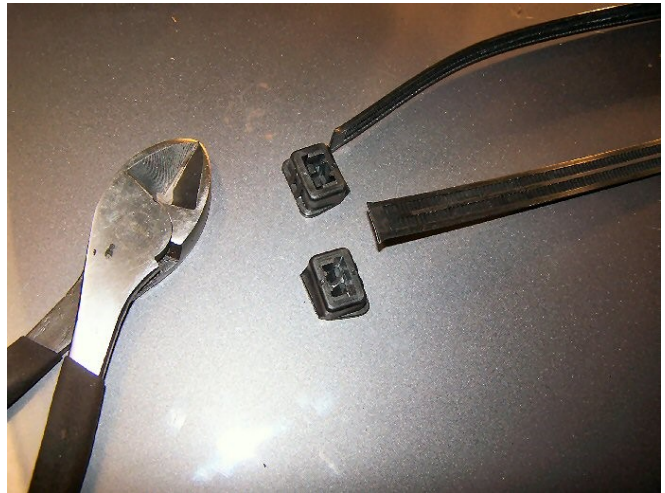
## 928 Motorsports Supercharger Installation

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Cut the clamp end off of the remaining two straps as shown. Discard the straps, all we want is the clamp.

Take note that the MAF sensor has two rectangular loops on it, in roughly the 6 and 12:00 positions.

Remove the rag from the intake opening now.



Now coat the outer base of the MAF sensor with a light film of white grease and push it back into place in the intake manifold - but as you do, slide the tie-down straps through the rectangular tie-down loops.



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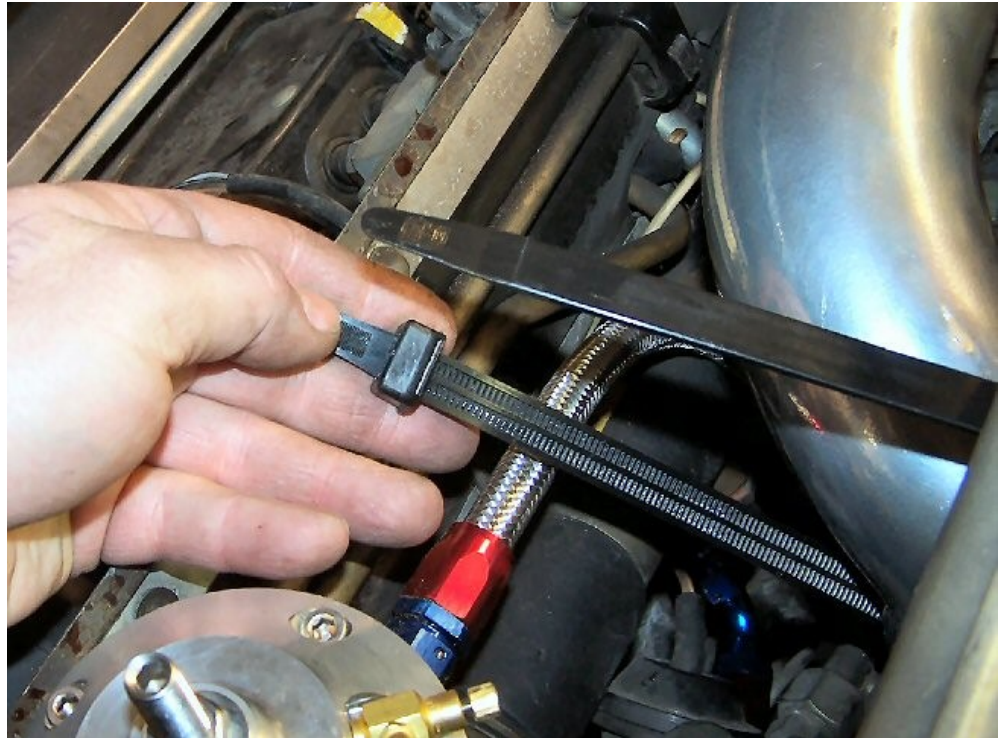




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Take the clamps we recently cut off the straps, and slide them down the straps and tight up against the MAF, as shown.



Snip off the extra strap material when finished.

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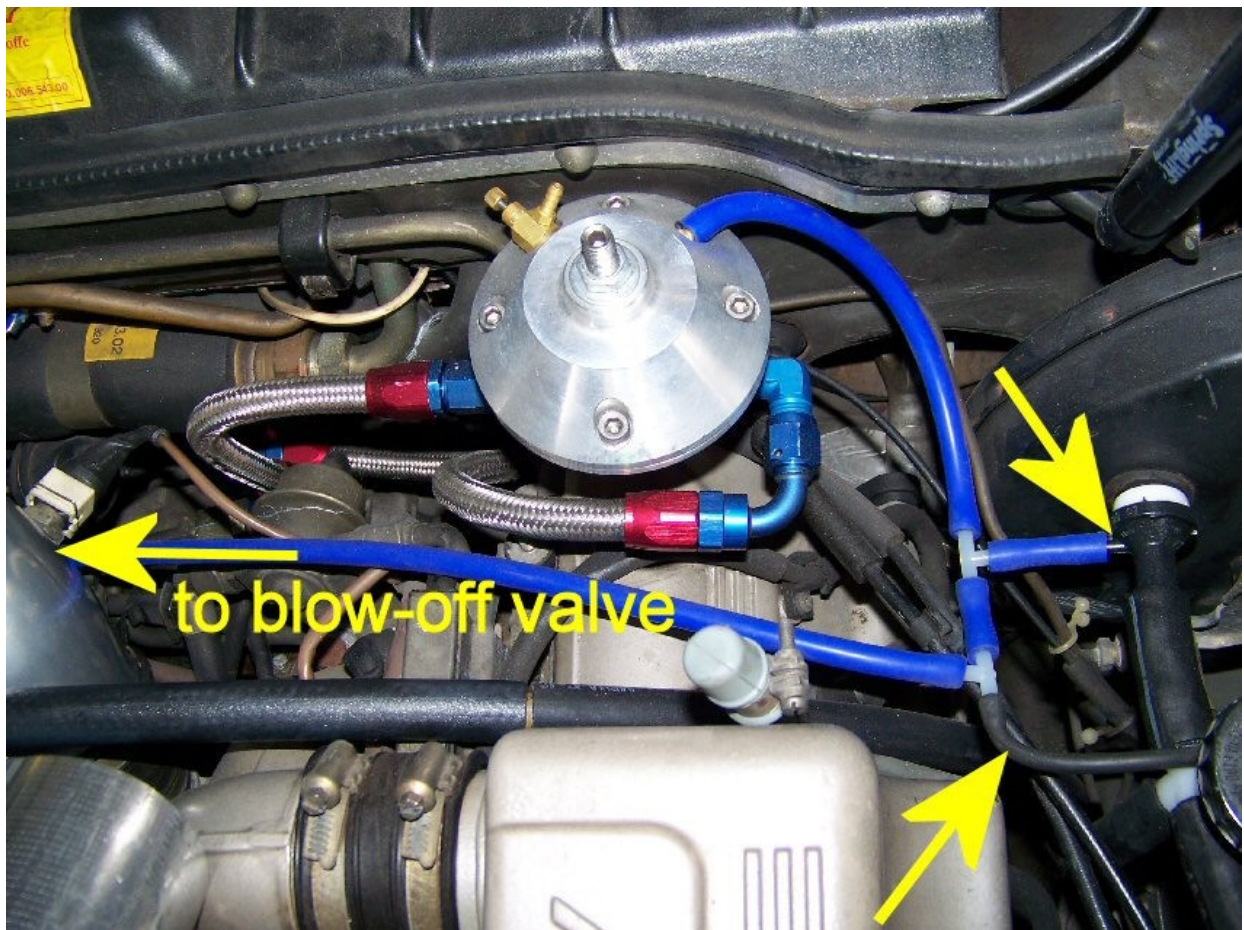
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### Running Vacuum to the Blow-Off Valve and the FMU:

Refer to the photo below. The two yellow arrows on the right point to a small black vacuum line that is currently attached right at the entrance to the brake booster. This is where we will get our vacuum for the systems we have just installed.

Pull the small hose off, and using the silicone vacuum lines and tees provided, make your car look like the picture. Note the line exiting the picture to the left, that continues behind the engine, then down the side of the engine and forward where it finally attaches to the blow-off valve we installed previously. Avoid pinch-points and the exhaust headers as you route the line forward.







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### Modifying the Crankcase Ventilation System:

All engines have a way to ventilate the blow-by gases that get past the piston rings and into the bottom of the engine. Commonly, these "PCV" systems (for Positive Crankcase Ventilation) are plumbed back up into the intake manifold so the vacuum located there can suck the crankcase vapors out.

Problem is: after we install the supercharger, the intake manifold will be pressurized, and no longer have a vacuum. If we leave the PCV hoses connected as they are now, we will blow boost into the oil pan and pressurize the entire motor. In that circumstance, performance would be poor and a number of oil seals and gaskets would get blown out.

The correction for this is not complicated. In this kit, we have supplied you with the fittings and the hoses and now the know-how to ventilate your engine correctly after supercharging.

Start by removing the right-side intake plenum like you did in the beginning when replacing your spark plugs with one-step cooler ones.







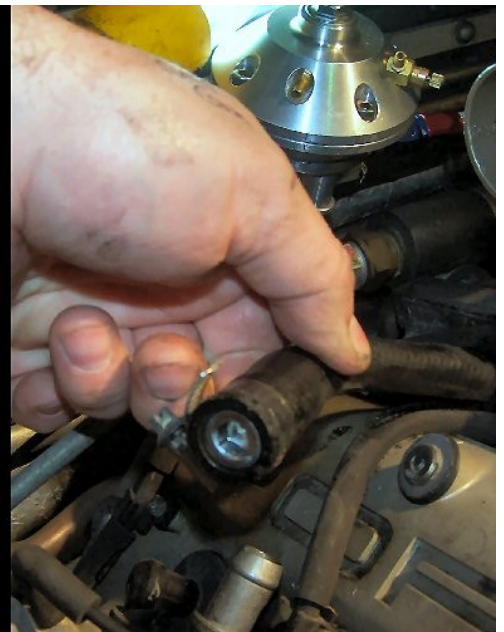
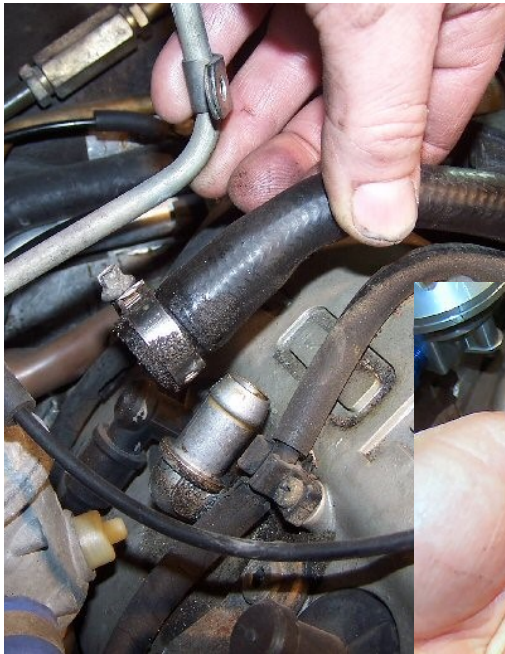
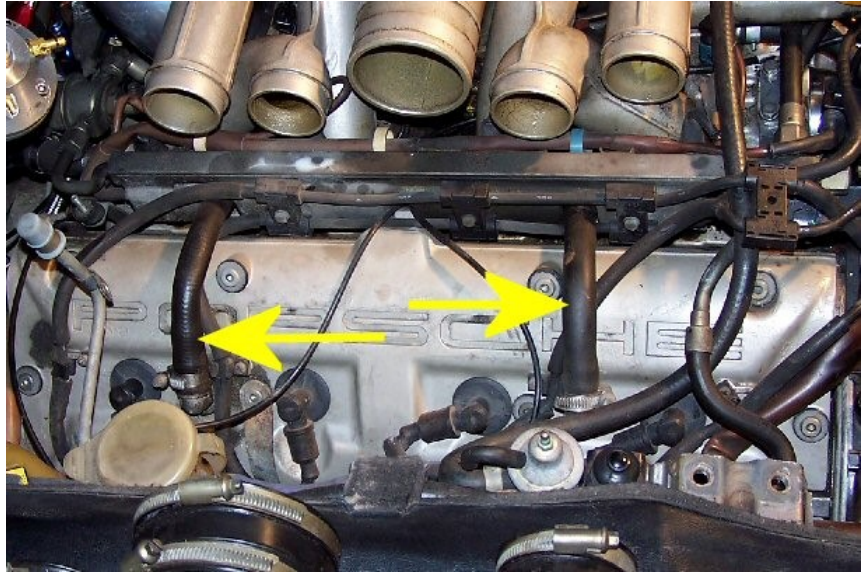
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Locate the two PCV hoses that exit the cam tower as shown.

We will deal with them one-at-a-time.

The REAR PCV HOSE: remove it from the hose nipple on the cam tower, and insert the plug from your kit into the end of the hose as shown, and clamp it there. This is all we do with this hose. It is going to lay right next to the new hose we will be adding soon.







## 928 Motorsports Supercharger Installation

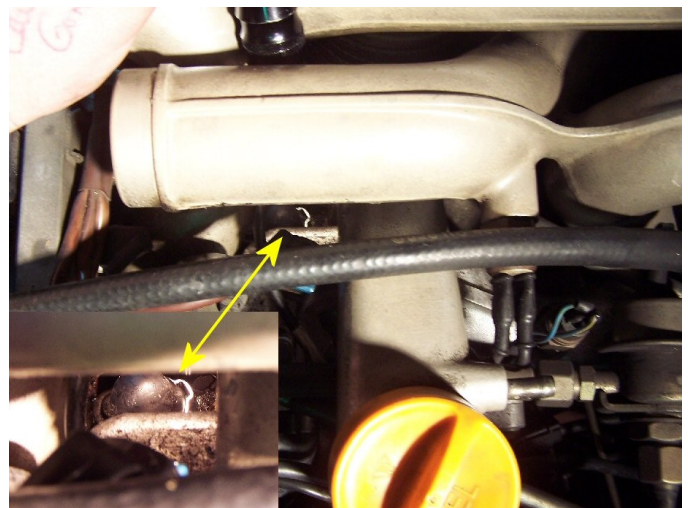
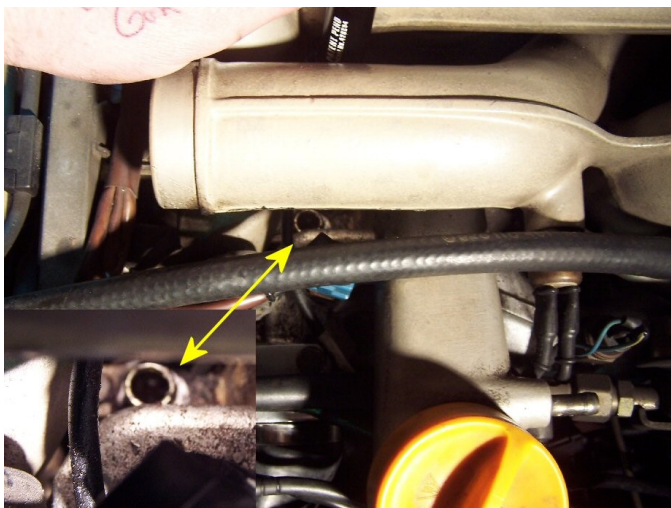
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The FRONT PCV HOSE: follow it from the camshaft cover underneath the manifold and forward where it attaches to a nipple on the oil filler neck at the base. We want to completely remove this hose, and cap the breather nipple that it is currently attached to.

When you tug on this hose, you may find it already in very bad condition. This is pretty common on these engines. See Photo at right.

Locate the rubber cap and clamp from your kit.

With a long-handled needle-nose pliers, remove the old hose and clamp where it attaches, and slide on the new cap and the clamp over it. The easiest way to get the old clamp off is to cut it with a gasket scraper and a hammer. See below.



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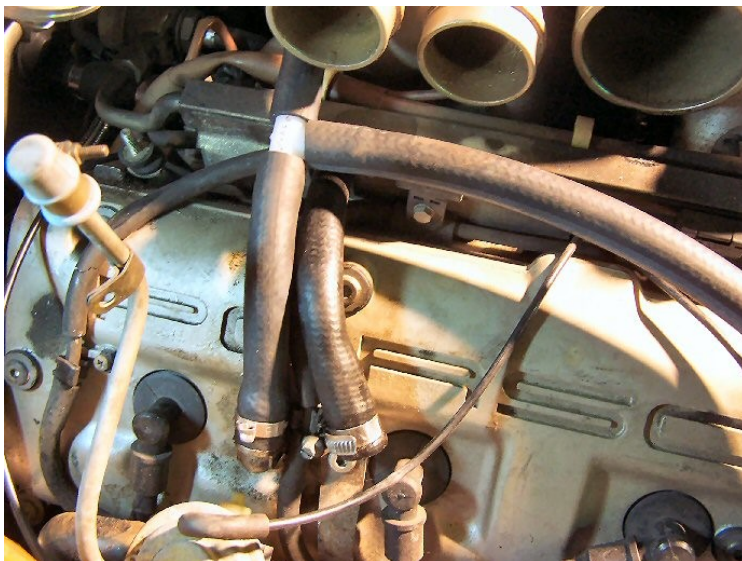
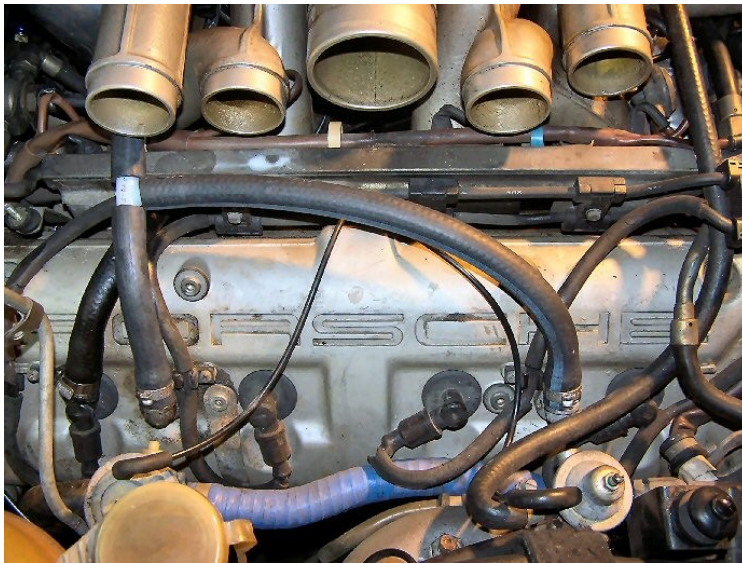


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Get the special 1/2" hose and barbed tee that has been supplied with your kit. You will also want some Dawn dishwashing liquid for this next step. We will use Dawn as a lubricant to help us get the hoses on the engine nipples. It is unique chemically, it will be absorbed into the rubber and evaporate, so the hoses will not slide off. If you use any other brand, the hoses will slide off as easily as they slide on. We don't want these hoses sliding off.

Looking at these pictures, assemble the hoses as shown with the tee just past the end of the plenum.



We recommend you turn the plenum over and look at the bottom of it—try to cut your hoses in such a way that they lay into the recesses provided.

**READ INSTRUCTIONS NEXT PAGE  
BEFORE PROCEEDING**





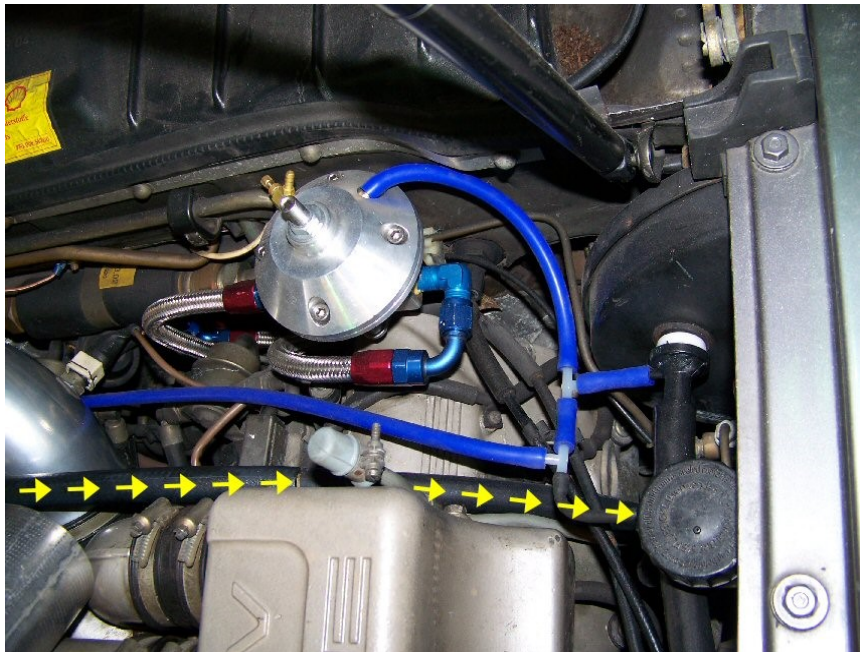
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Put the Dawn liquid on the needle nose pliers, insert the pliers into the hose end, and spread the handles to stretch the hose. Then fit them over the nipples on the cam covers. This hose will shrink to adhere, so no clamps are needed. The pictures show a different hose that required clamps.

Make sure the hose to the front-most cam cover nipple is long enough that the tee will be OUTSIDE the plenum when the plenum is put back on the motor, as shown.

The last hose exits the tee and travels across the back of the motor and down beneath the brake booster, where it exhausts to atmosphere. See the pictures below. You can now re-install the right side intake plenum, and tighten the clamps.





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At the back of the plenum you just re-installed, and near the coolant reservoir, you should find an open rubber hose pointed up. This used to go to the air filter box. Loosen the clamp that holds it to the EGR valve, and rotate it so that it now points down. Done.







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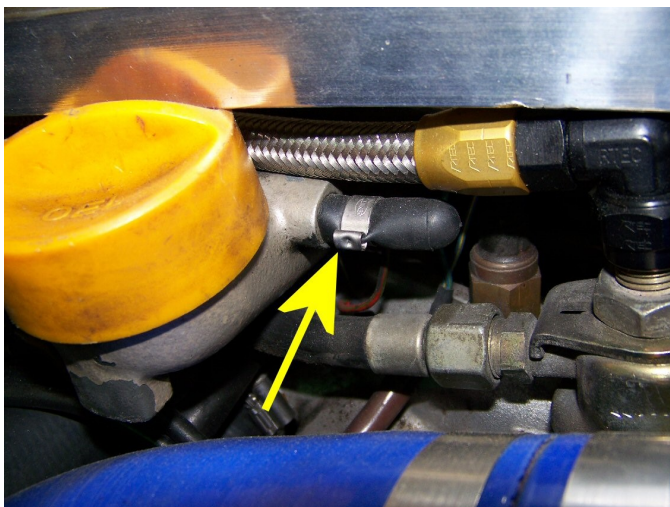
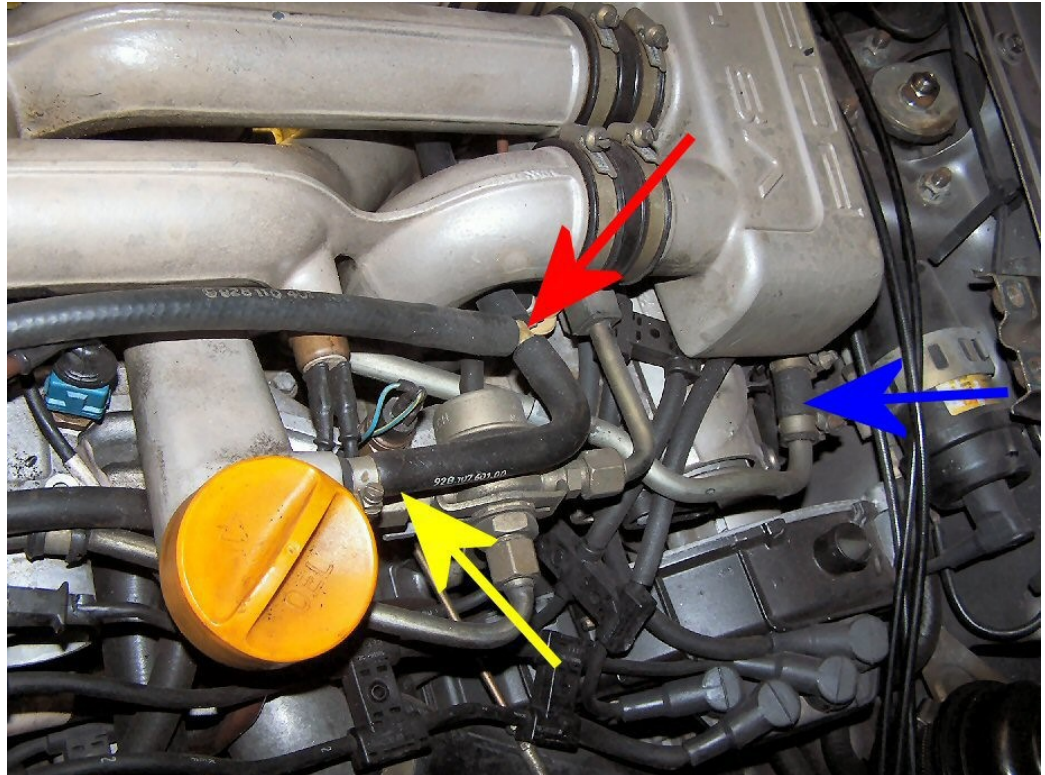
At the front of the motor, find the items shown in the picture below.

Remove the hose that goes from the yellow arrow to the red one.

Insert the 90 high-temp elbow provided in your kit where the red arrow is.

Basically, you are changing what used to be a connection of 3 hoses to a connection of two.

Cap the hose nipple on the filler neck with a rubber cap and clamp as shown.



On the next page, we will deal with the hose under the blue arrow.



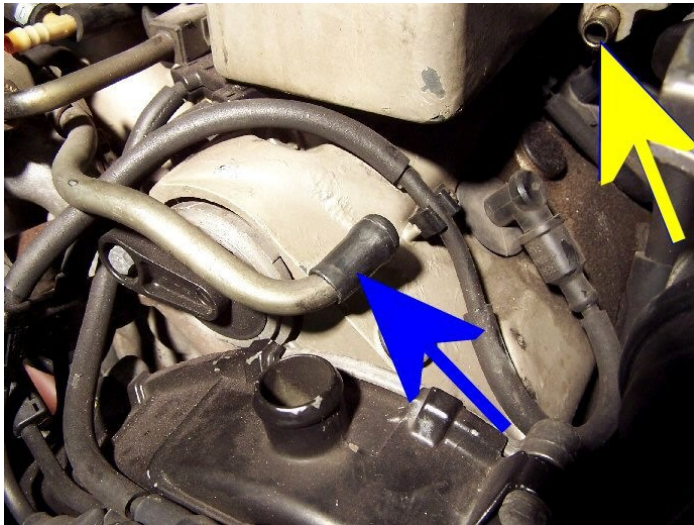


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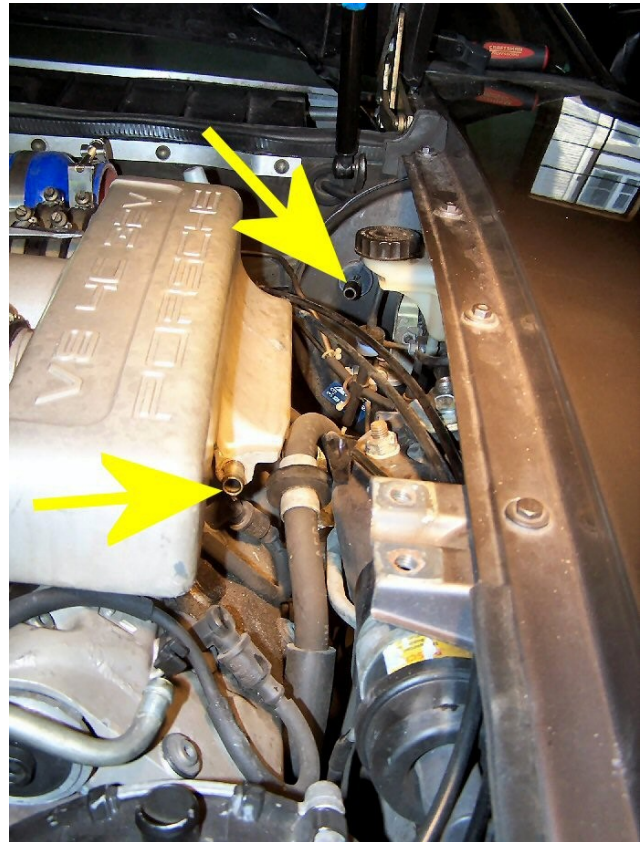
On the left side of the intake plenum, you will find a hose like this that goes from the manifold forward and backwards to the brake booster. Remove it.

Cap the tube shown by the BLUE arrow as shown. In your kit you will find about



20 inches of special 1/2" hose. Use this to connect from the hose barb on the intake manifold (YELLOW arrow) to the brake booster.

It should travel forward, make a nice, easy curve back on itself and go to the brake booster, just like the original hose did.







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### Installing The Intake Tubing:

The picture below will remind you what the finished tubing installation looks like:



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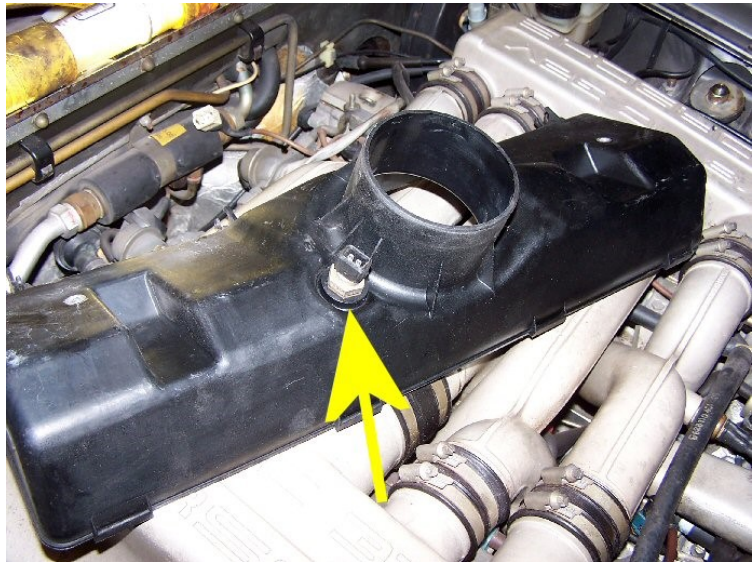




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Locate the air filter box you removed earlier, and turn the bottom of it up-side down. Remove the air temp sender as shown.



The temp sender screws into the hole we have drilled and tapped for you in the large 90 degree steel elbow (left).

Mix a little JB Weld from your kit, and carefully run a bead around the threads of your temp sender and screw it into the intake elbow. NOTE: when properly mounted to the engine, this temp sender will be at the back of the intake

elbow pointed at the firewall.



Set it aside for the epoxy to firm up.





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Locate the large air intake tube shown, and the boost pressure sending unit from your kit.

Put a thin bead of JB Weld on the threads of the boost pressure sender and screw it into the tube. The hole has already been drilled and tapped for you.

Set it aside for the epoxy to firm up.

From your kit, remove the 16 gauge red and blue wires. Strip and crimp ends onto them as shown, and install under the terminals of the Boost pressure sender as shown in Picture 70 below. Make certain the black wire is attached to the terminal with the ground symbol above it, and the blue wire is attached to the terminal marked "G" for "Gauge".







## 928 Motorsports Supercharger Installation

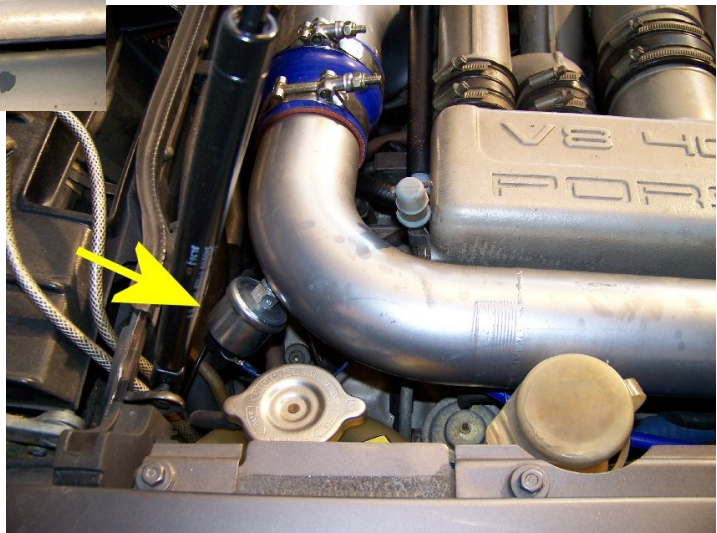
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Put the large 90 elbow into the MAF sending unit and clamp it with the stock clamps that used to be connected to the air filter box. The large end goes down, the smaller end points to the right side of the engine. Plug in the temp sending unit before you install the pipe, its easier that way.

On the end of that tube, install the 3.5" to 2.75" reducing coupling and two t-bolt clamps. You will use the very large (4.0") t-bolt clamp and one of the 3.0" t-bolt clamps on this connection.



The mandrel bent tube with the boost temp sender in it now is installed, and connects as shown. As the vacuum line for the blow off valve is already installed, it should be under this tube when you lay it in place, and that is fine. Just check that it is in a place where it will not get pinched.





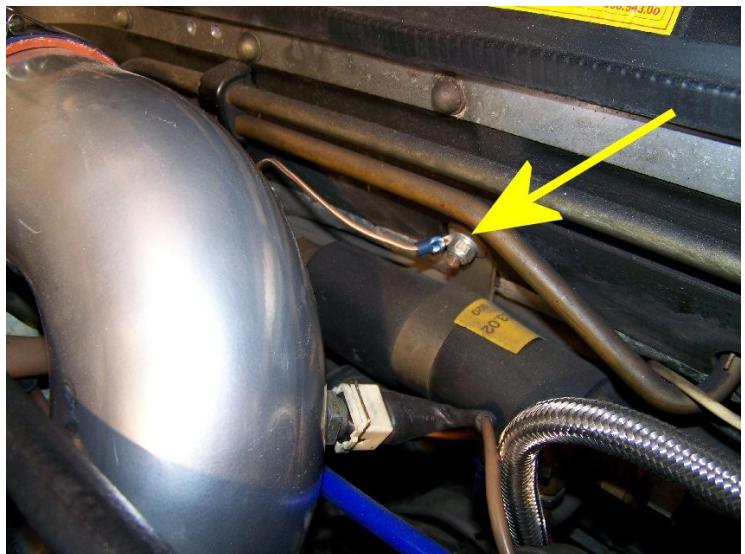


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You can now take the black wire that was attached to the boost pressure sender and mount it to a good ground. I recommend the bolt that holds up the fuel cooler as shown, It is welded to the firewall, and makes an excellent ground.



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Next, add the 10" long section of black hose as shown, and a clamp around it.

The last part is the silicone 90 elbow that goes from the up tube that the Blow Off Valve is mounted on to the black Gates hose you just put in place.

Find a 3" long section of steel tubing to put between the hoses as a splice. See Pictures.

The black hose under the suspension cross brace gives the system a little give when the engine rocks on its rubber mounts during acceleration.



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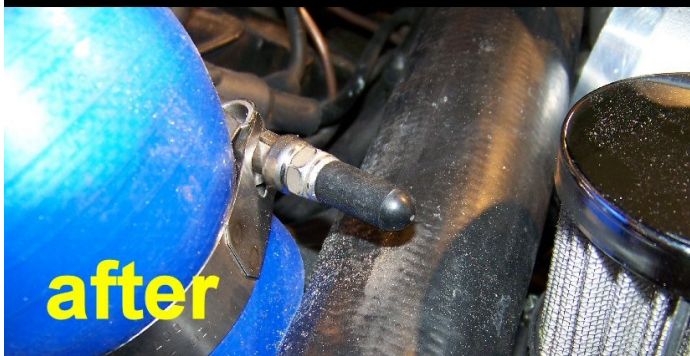
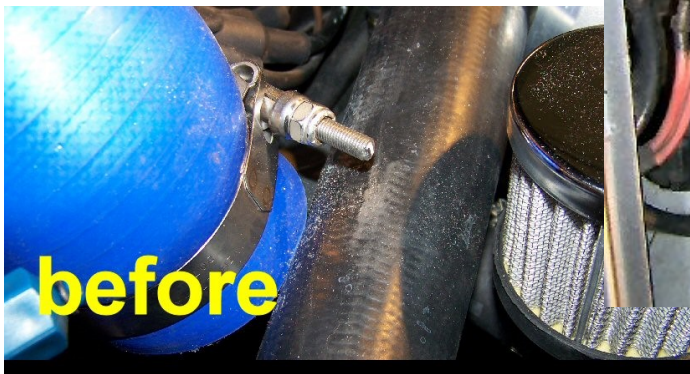
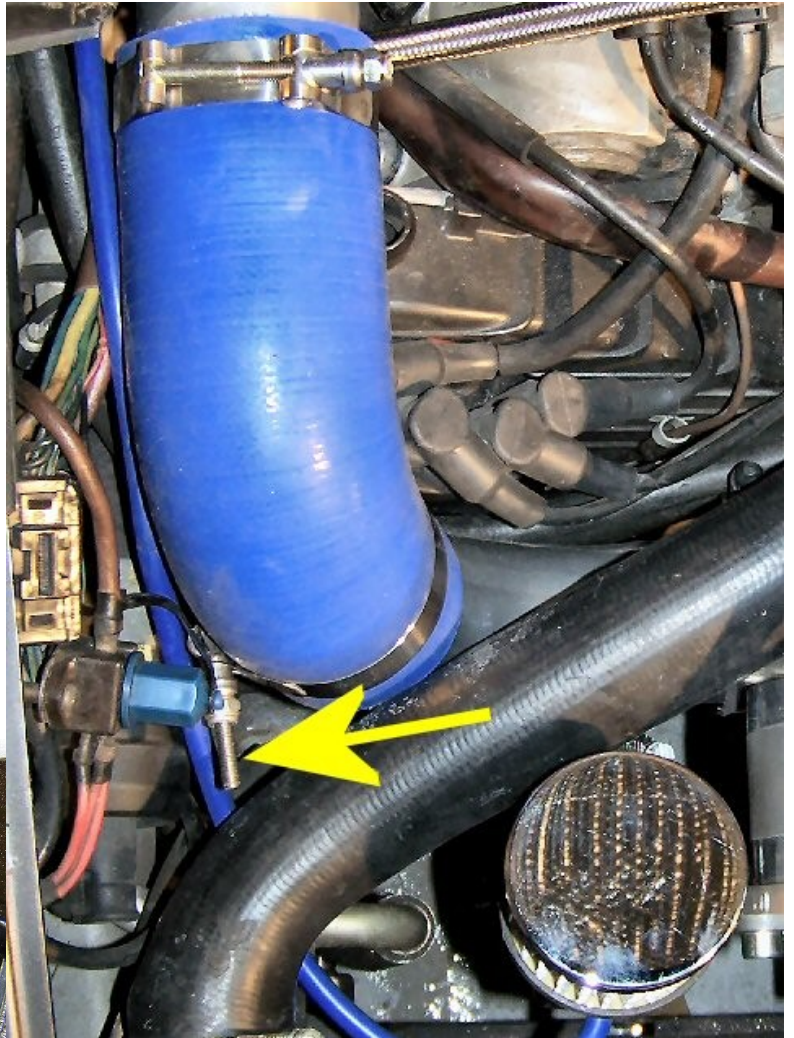


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The t-bolt clamp at the top of the blow-off tube must not be allowed to rub on the upper radiator hose. Position the clamp so that it will not.

Cut off the extra length of the bolt after it is tight, and insulate it with a black rubber cap from the kit as shown.



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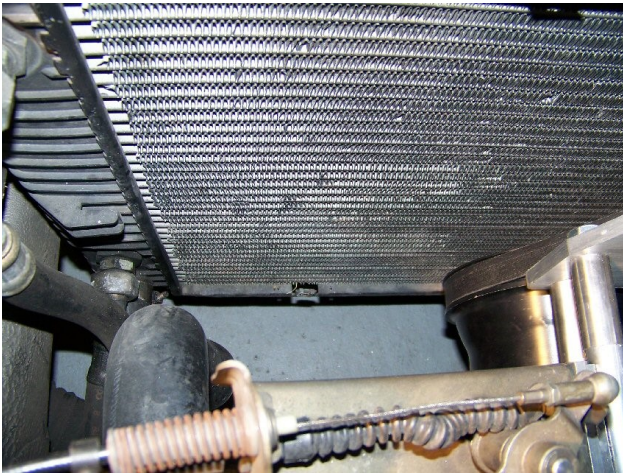


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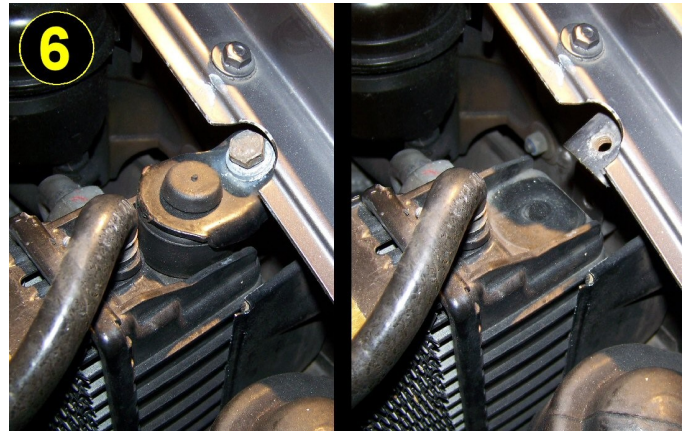
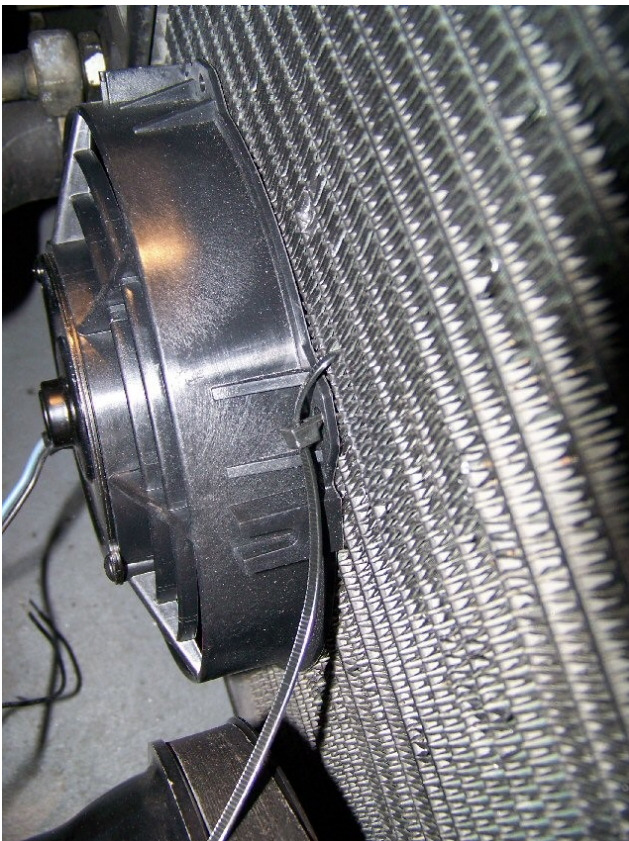
### Mounting the radiator fans:

The two electrical fans are mounted directly to the inside of the radiator on the left side, where they will help the integral oil cooler as well as the radiator itself.



Each fan gets attached to the radiator with 4 cable ties pushed through the mounting holes of the fan, through the radiator, up or down one radiator row, and back. The pictures on this page will explain.

We find, that if we remove the radiator hold-down clamps as before, we can tip the radiator forward and back and this makes it much easier.



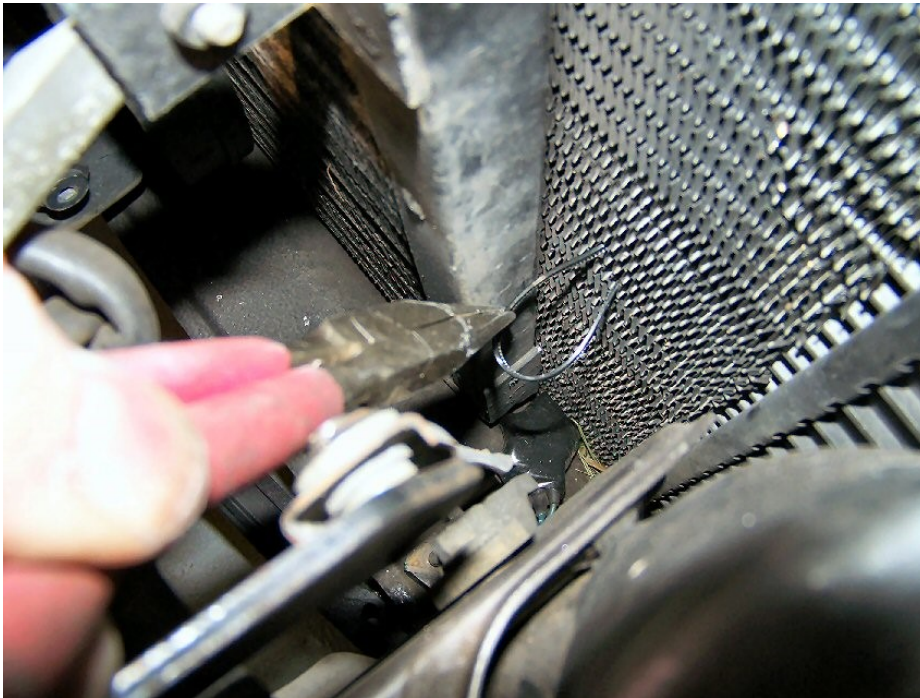
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## 928 Motorsports Supercharger Installation

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Use a long needle-nosed pliers to turn the cable tie back around and push it back through the radiator.



When finished, re-install the radiator hold-down clamps.



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## 928 Motorsports Supercharger Installation

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### Mounting the Raptor Fan Assembly:

Your Raptor supercharger is the only air-cooled centrifugal supercharger in the world. Where many supercharger head units use hot engine oil to cool the bearings, the Raptor uses much colder air from in front of the radiator to cool the bearings. This increases bearing life, but more importantly, it lowers the temperature of the charged air significantly to add HP and engine safety to your installation.

Locate the fan assembly mounting bracket from your kit that looks like the picture to the right:

In front of the radiator, you will find a mounting bolt used by the front air dam or louvers, remove the nut, add the Raptor bracket, and reinstall the nut. The Raptor fan assembly gets zip-tied to the steel bracket as shown.

The 1" convoluted tubing with your kit will carry the breeze from the cooling unit and into the Raptor supercharger.



Push about an inch of the 1" flex tubing into the Raptor fan assembly. Route the tubing as shown across the front of the radiator, around the side between the radiator and the inner fender, and to the Raptor.



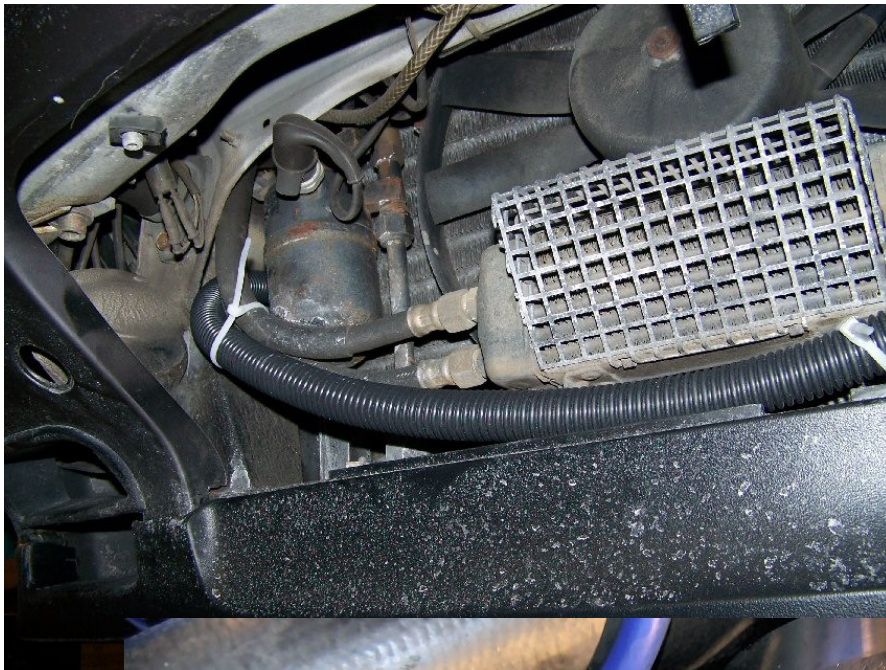


## 928 Motorsports Supercharger Installation

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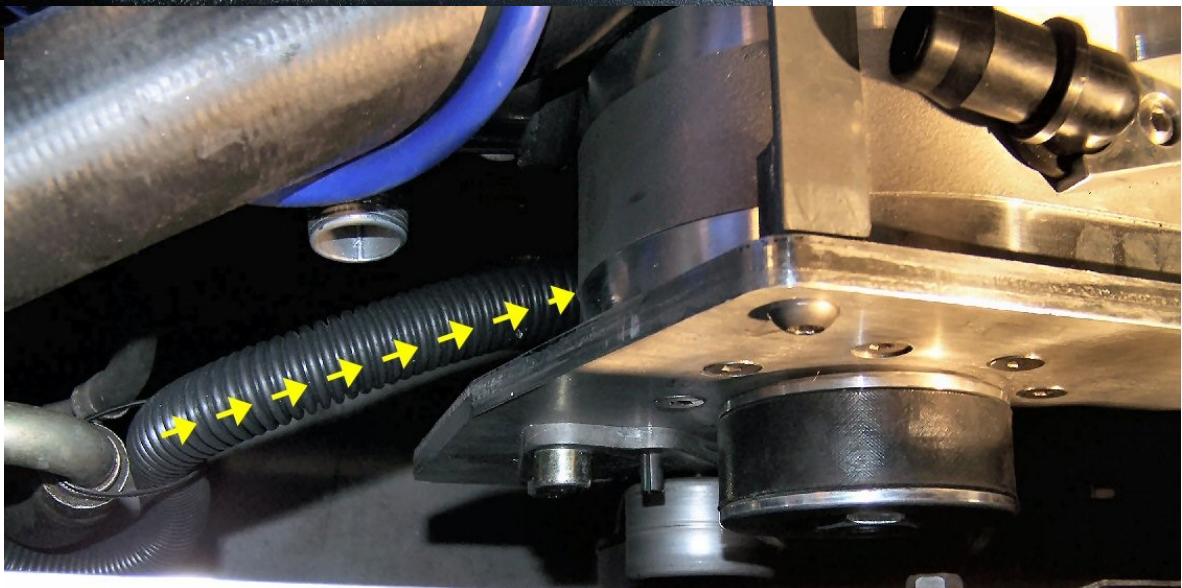
Route the tubing as shown across the front of the radiator, around the side between the radiator and the inner fender, and to the Raptor.

There are two black plastic nipples on your Raptor that you can attach to, it does not matter which one you use. Which ever one we blow in to, the other one will become the outlet.



You will need to trim this tubing to length, we sent you more than you need.

Secure the flex tubing in several places along its run so it cannot get loose.



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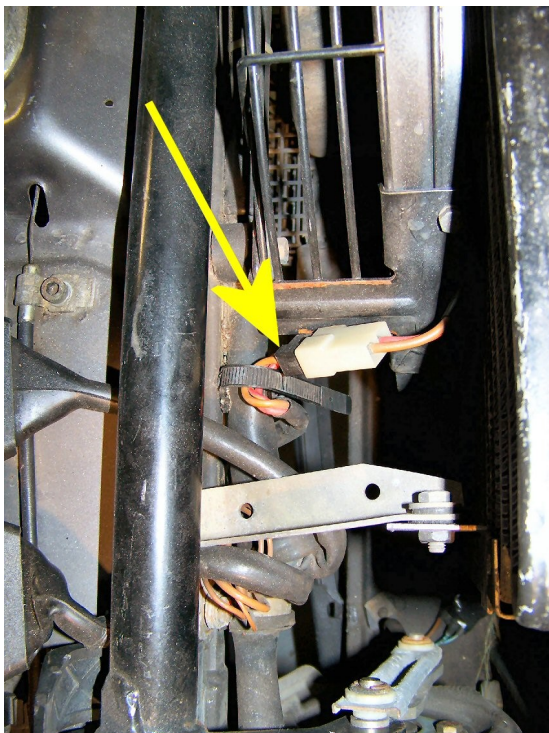
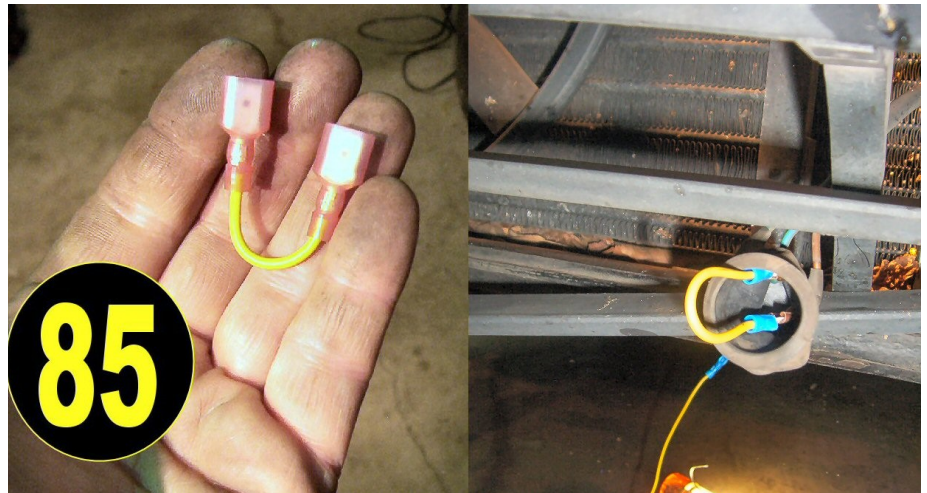
### Wiring the electric fans:

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.

TEST THIS to make sure you have done it correctly before proceeding. Simply turn your ignition key to the RUN position, and fan should start. When you turn the ignition key OFF, the fans will continue to run for a moment, then shut off. This is normal.

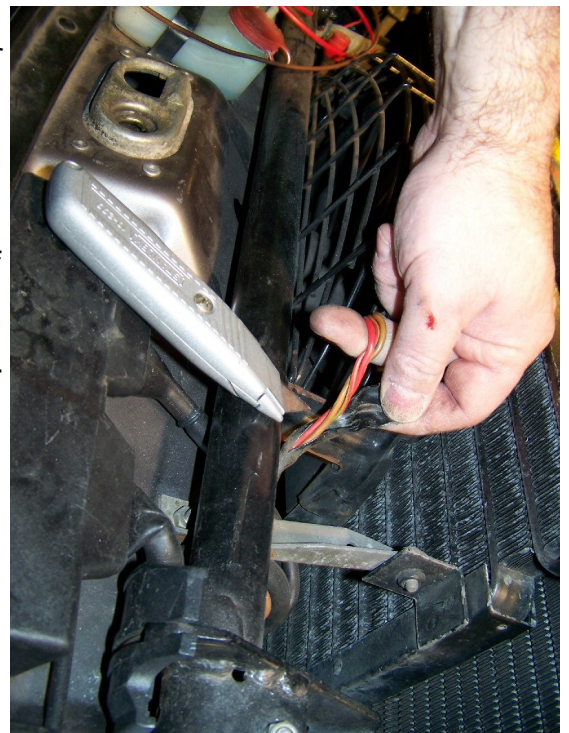
Seal the rubber boot with silicone or electrical tape.

In front of the radiator, find the



electrical connector for the fan as shown on the left.

Remove the strap that holds it down (it can be re-used if you are careful with it) and slice open the outer cover for a few inches so we can access the wires inside.



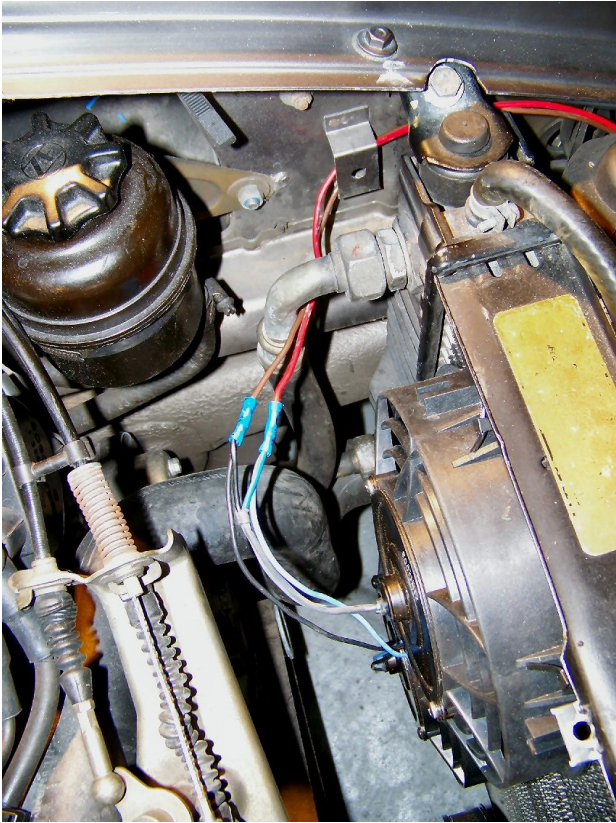
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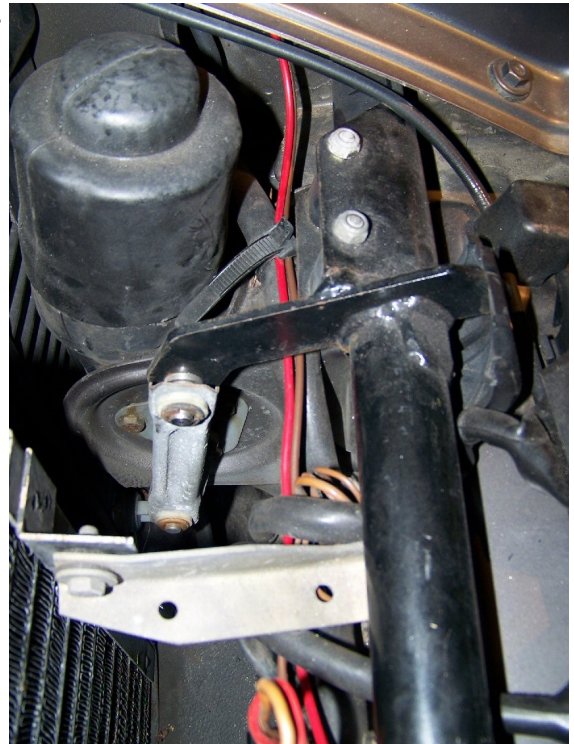
## 928 Motorsports Supercharger Installation

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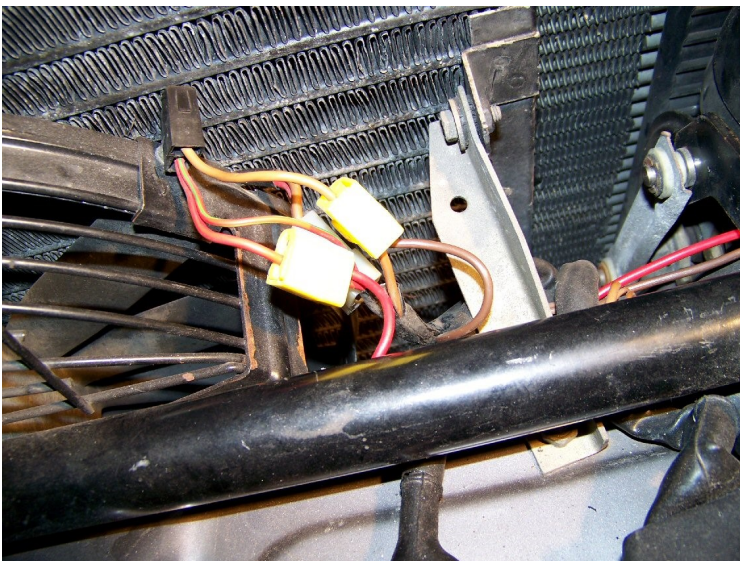


Now move to the inside of the radiator. In your kit you will find some two-conductor wire and butt connectors for your electric fans. Starting at the fans, wire them together and to the 2-conductor wire as shown .

Route the wire around the radiator and to the fan connector you just uncovered moments ago. 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.



Also bring the wires up from the Raptor fan assembly to the same area.



Connect all the wires together with the two large yellow splice connectors as shown.





## 928 Motorsports Supercharger Installation

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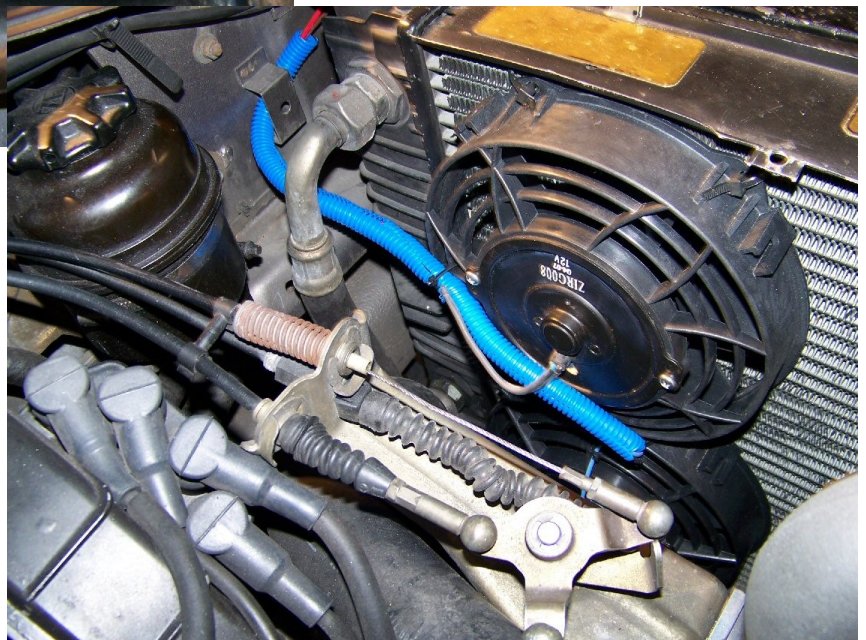
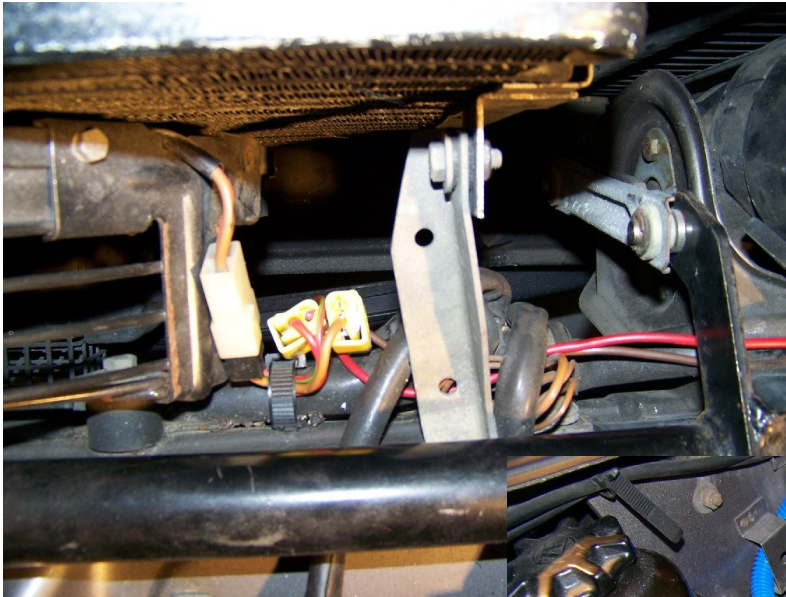
Test your connections now by turning the key on. When you turn the key to the “run” position all four electrical fans should operate, check each of them.

1. The factory pusher fan in front of the radiator
2. The two new puller fans behind the radiator
3. The Raptor Fan (just put your hand to the cooling outlet on the supercharger, you should feel the breeze. )

If the test is not successful, check your connections.

If the test is successful, loom the wires together with cable ties again to prevent them from working loose or getting into a belt or mechanism and getting pinched. Finally, install the split hose loom we have provided to keep the connections dry and looking nice. For photographic purposes, we used blue hose loom in this manual so it will stand out in the pictures.

Yours is black.



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## 928 Motorsports Supercharger Installation

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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.

Refer to picture 88 and see that we want you to take a drill and put a small hole in 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 mid-way 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.



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## 928 Motorsports Supercharger Installation

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If you have been following our instructions step-by-step up to this point, then the supercharger already has the first air inlet hose and coupler on it. It should look like this:



On the top of your radiator, there are two tabs with holes in them that held the air dam down. The tab on the right side, (nearest the supercharger) is fine just as is. The tab on the left side (nearest the fans we have added to the radiator) must be folded down flat. Take a pliers and fold it flat as shown and test-fit the air box. The air box assembly must fit down flat on top of the radiator. You will also need to bend some of the lip outward too in order to accomplish this. The pictures that follow will explain:

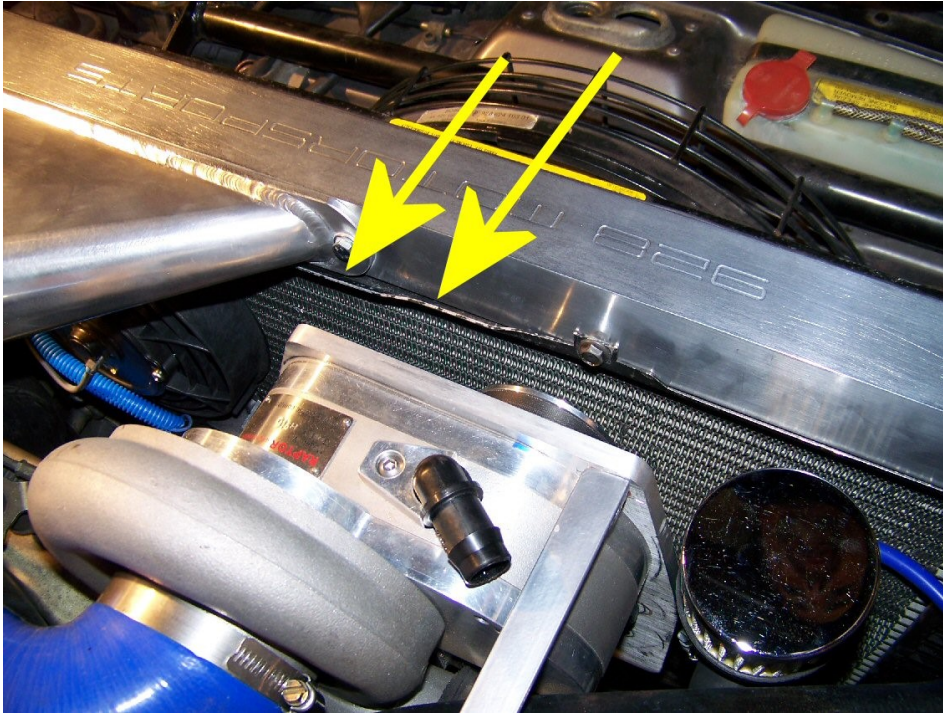




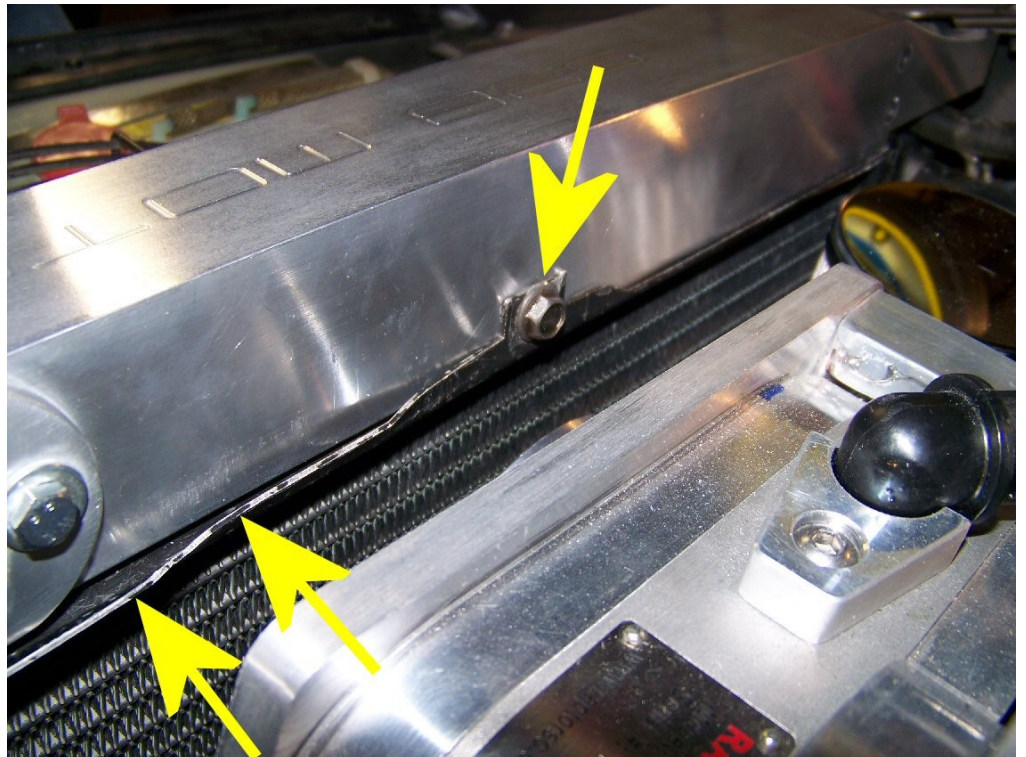


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Take the special bolt provided and secure the air box to the top of the radiator by the tab in front of the supercharger as shown .



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All that is left now is to install the last 90 degree silicone elbow that connects the air box to the supercharger inlet hose. Add your hose clamps, and you are done.

Note that we use worm gear hose clamps on the inlet side (because it is not pressurized) and we use t-bolt clamps after the supercharger because everything is pressurized at that point.



**AIR**

**FILTER**

**MAINTENANCE** This air box assembly uses a permanent air filter media made for us by K&N.

Do not throw it away. When service becomes necessary, remove the air box from the vehicle (one bolt holds it to the top of the radiator and remove one hose clamp). Clean the air filter with carb spray and let dry. Re-oil the air filter with K&N air filter oil per K&N's instructions, do not over-oil.





## 928 Motorsports Supercharger Installation

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### **OPTIONAL: Installation and Wiring of the Gauges: If not installing gauges, jump to page 76**

Locate these items from your kit:

13 feet of 20 gauge, blue wire (already attached at one end to the Boost Pressure Sender)

3 feet of 20 gauge, green wire-air fuel gauge between the buffer and the gauge

3 feet of 20 gauge, yellow wire-air fuel gauge between the buffer and the gauge

4 feet of 20 gauge, black wire-ground for both gauges and buffer

9 feet of 20 gauge, red wire-Power supply for both gauges

8 feet of 20 gauge, white-From the O2 line to the air/fuel sensor

Take the 928 Motorsports A-pillar gauge pod unit and snap it in place on the drivers side A-pillar. Review the separate A-pillar Installation Instructions, but do not use any adhesive or glue at this time. You should be able to just press it in place, it will stay there. This is just to give you a reference point of where the gauges are to go.

Go now in to the right front fender well, by the passenger seat and pull back the carpet and plywood that covers the fuse panel.

Make your self a tool to attach wires to so you can push and pull them around. A few moments making the right tool will save hours. You can put a tight hook in the end of a coat-hanger wire, but the one that I have found works best is to put a wire-sized hole in the blade of a long flat screwdriver, as shown.



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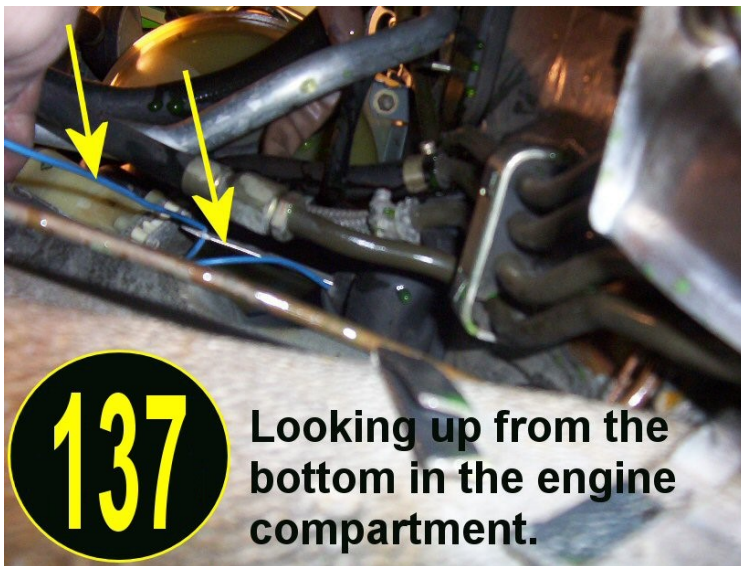
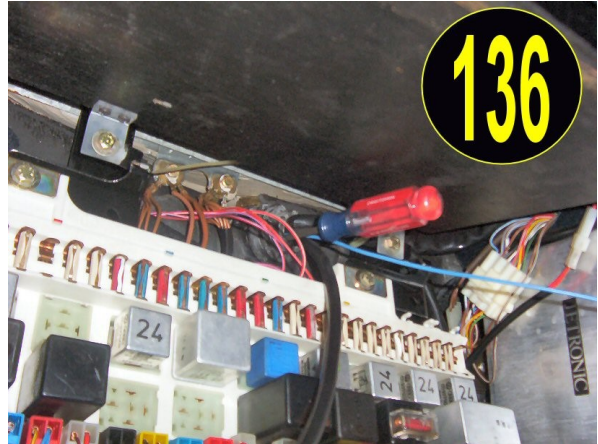


## 928 Motorsports Supercharger Installation

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We need to pull the blue wire in the engine bay through the firewall to the dash. Above the fuse panel you will find a large rubber pass-through (grommet) where all the wires from the engine compartment pass-through into the fuse panel area as shown in picture 136.

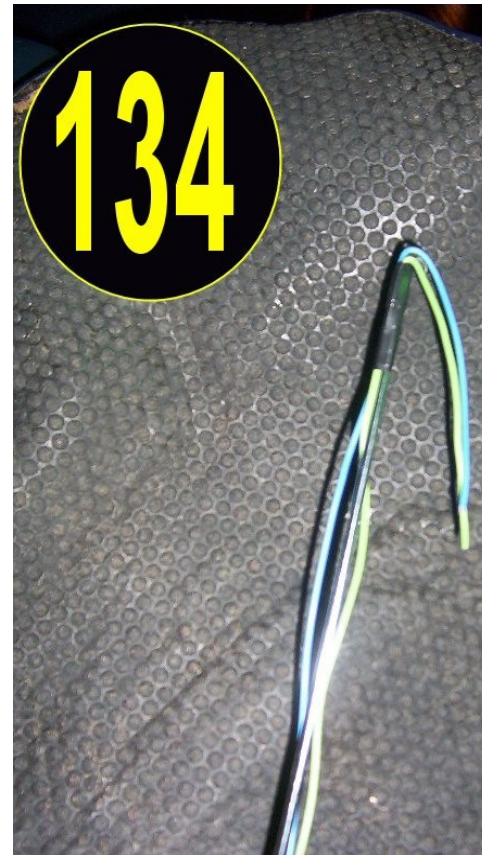
Take your long screw driver and carefully push that through the grommet into the engine bay. Now attach the blue wire to the end of it, so when you withdraw your screwdriver the wire comes with it. Pull all the extra blue wire through, but leave enough on the engine side that you can easily attach and detach the intake tube with the boost sender in it if needed later. Picture 137 shows an easy access to the screwdriver from the bottom of the car looking up at the through-wall grommet.



**Looking up from the bottom in the engine compartment.**

You should now have several feet of the blue wire at the fuse panel.

Add the White and the Red wires as shown in Picture 134.







## 928 Motorsports Supercharger Installation

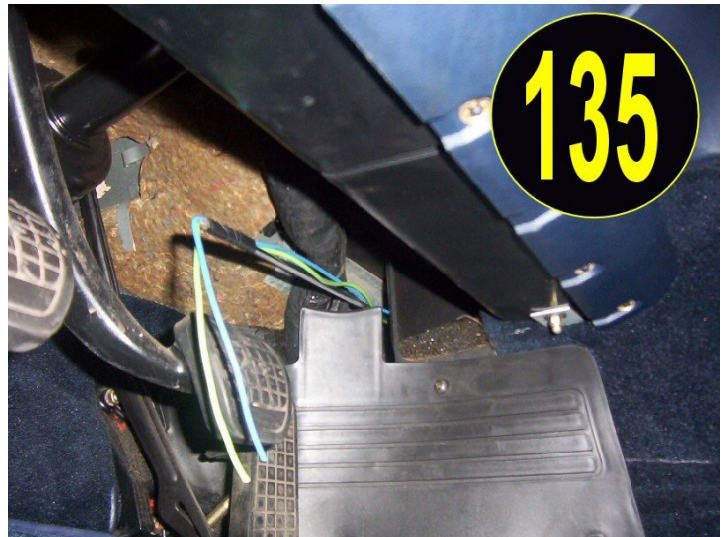
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We want to pass these wires over the transmission tunnel, between the right foot well and the left foot well. There is ample space to pass these wires from through just behind the heating duct.

Take the screwdriver with the wires attached and from the right side foot well, pass it behind the heater duct, over to the left side and it will come out over top of the accelerator pedal, as shown in picture 135. Remove the tape and pull the wires through with enough cord so that you can reach the gauges.

Be sure to go over the top of the pedal assembly, and above the steering column. Stay away from moving parts. Routing along the paths of the factory wires is always a good idea.

Leave only enough wire in the fuse panel area to make your connections there easily.



We've learned that one of the easiest ways to route the wires from behind the dash to the gauges is, if you will open the drivers side door, you will find that you can slide your screwdriver tool behind the dash just below where the A-pillar meets the fender. See picture 141. Push a screw driver through the gap where they meet from the outside and it will be able to be seen on the inside if you lie on your back by the pedals. (Put the seat all the way back for comfort).

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## 928 Motorsports Supercharger Installation

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Now that the screw driver is on the inside, we want you to tape the blue wire, the yellow wire, and the green wire and pull them all up through.

The blue, yellow and green wires will be out on the instrument panel side of the car door and you truck them in behind the dash and they run up the A-pillar gauge pod. See picture 141. Decide now whether you want the boost gauge to be the top gauge and the air/fuel gauge below or the other way around (this is you personal preference). You can press the gauges in place, lightly, as shown in picture 138. (We have not yet permanently affixed the A-pillar gauge pod. Until we're done here, we will not permanently affix the A-pillar gauge pod.

You have now run the wires generally where they need to go, it is time to turn you over to the instructions for wiring the gauges that came with each gauge.



You will notice that there is a little black buffer box included with your air/fuel gauge.

This is because, although your O2 sending unit measures your air/fuel richness at 6 times a second, we don't want the gauge to move that quickly, or it becomes very hard to read. The little black buffer box converts the O2 signals into sweeps so you get a chance to read it and the needle doesn't just sit there and vibrate.

The best place to mount this little electronic gauge buffer is in the left front foot well, high above the clutch pedal and to the outside. Picture 139.

The air/fuel gauge we provide is special. It not only looks like the factory gauges in your 928, but it also will read the signal of your factory O2 sensor, so you do not have to change or install a different O2 sensor.







## 928 Motorsports Supercharger Installation

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Please note that there is a gray wire coming out of the buffer box which you will connect to the white wire we have pulled over the transmission hump from the right front fender-well.

The end of the white wire gets spliced into the wire from your O2 sensor, as shown in picture 140.

At the bottom of the fuse panel, you will find a connector that looks like the one at the bottom of picture 140. It has a very small

black silicone wire coming to it. That is the wire from your O2 sensor. Splice in to the small black wire with a red scotch lock connector (supplied) to our white wire. The other side of this connector has a bright green wire coming from it—do not disturb this side.



Also, in picture 140 you will see a red wire which is going to supply power to the gauges, but only when the ignition key is on. This must be spliced into a power supply in the fuse panel. Take a 12 volt test light and probe the fuse panel, looking for a power supply that comes on only when the ignition key is in the running position. Splice in your red wire using one of the blue scotch locks provided, as shown. The other end of the red wire attaches according to the manufacturers instructions with your gauges. It is not necessary to run a separate red or black wire up the A-pillar to the gauges, but rather you can run one red and one black wire up to the back of the lower gauge, and just daisy-chain them up to the upper gauge also. Do this now, crimping on all your wire ends as you go. A number of small red ring terminals have been provided for your gauges.

Start the car and test the operation of the gauges. The boost gauge may move when you turn on the key, but not again until about 3,000 RPM. If the gauges are working correctly, finish the A-pillar installation according to the instructions included.

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## 928 Motorsports Supercharger Installation

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### Tuning the Installation:

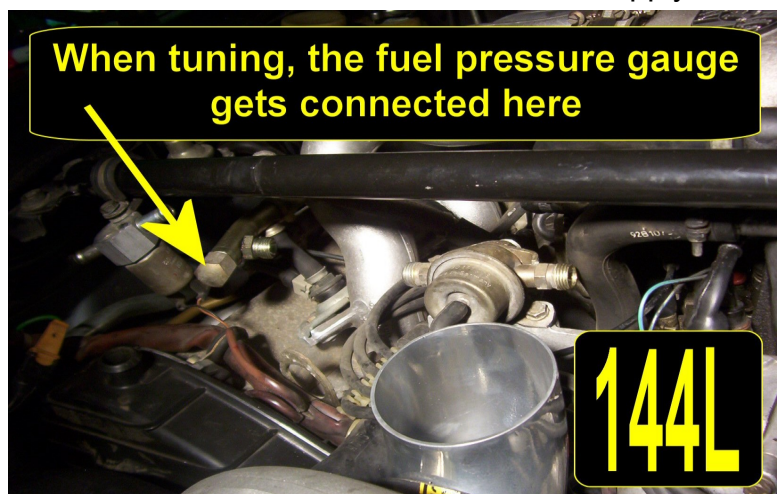
The LH-Jet system has a “learning computer” in the system that will automatically adjust the air/fuel mixture at idle to work with your new supercharger. As such, tuning this installation is easy. HOWEVER—that does not mean it can be overlooked. It is VERY IMPORTANT that we set up the FMU so we never run lean when under boost.

We want to start up your supercharged 928 now and just let it idle. The idle will be poor for about 30 seconds as the fuel computer re-maps the system, then it will level out. This is a one-time occurrence and will not happen again.

With the engine at idle, **check for fuel leaks**, especially all those braided lines that we attached at both the front and the back of the motor and the FMU (Fuel Management Unit). Run your fingers around every fitting as the engine runs and when you remove your fingers, they should come up dry. If there is any gasoline on your fingers when you removed them from the fitting, shut off the engine and re-tighten those fittings. Re-test.

You may want to temporarily attach a fuel pressure gauge to the front of the fuel rail. This is a portal provided by Porsche to adjust fuel rail pressures at the factory and provide testing and tuning assistance. It is not required that you install a fuel pressure gauge in that fuel rail to tune your supercharged 928, but it is recommended. Be very careful if you remove the nut on the front of the fuel rail. There is a small ball bearing in there that actually performs the sealing function. Be sure not to drop it and to put the ball bearing back into the cap when this test is finished to make sure that it seals correctly.

We provide a special FMU with our kits that is better than other kit manufacturers supply. This FMU not only can control when it starts to add extra fuel (by the large screw at the top) but you can also adjust the rising rate easily to match the motor/supercharger combination. Other FMU's cannot do this.







## 928 Motorsports Supercharger Installation

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Adjust the static fuel system pressure by the allen screw on top of the FMU as shown in picture 145L. Turn the adjustment screw with the engine running in or out to achieve and idle speed fuel pressure of about 38 to 40 psi, wherever your car runs better.

Then lock the adjusting screw in place on top of the FMU and leave it alone. That should be adequate.

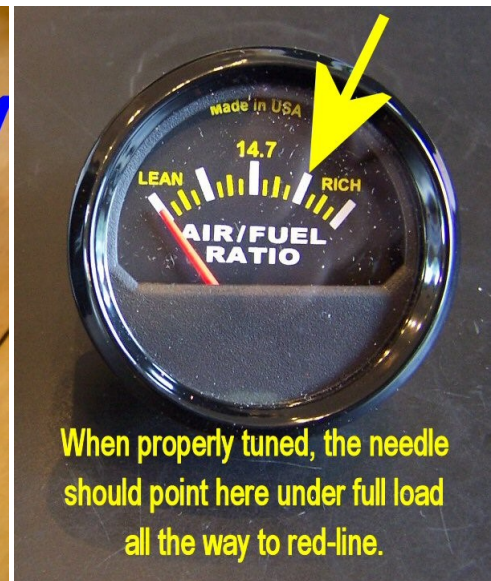
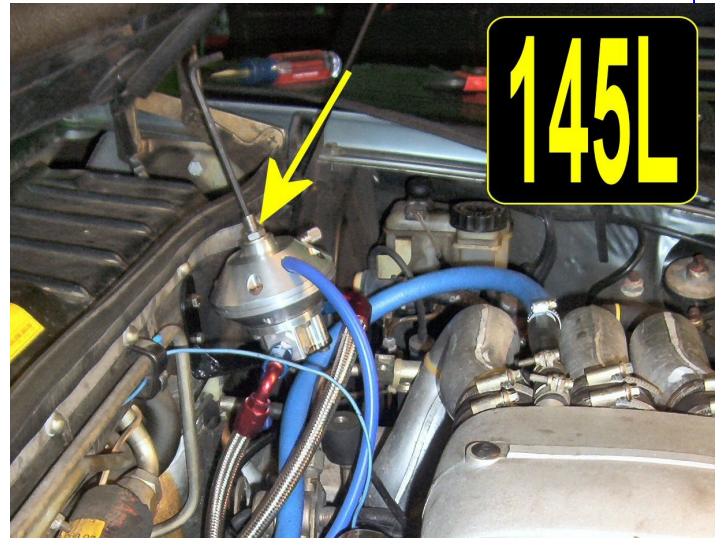
Test-drive the car under load and watch your gauges. The thumb screw on the side of the FMU adjusts how quickly your fuel comes in once the boost starts to come in.

Make several "pulls" on a country back-road, turning the brass thumb screw under the BLUE arrow until the orange needle on the air/fuel gauge holds steady at Wide-Open Throttle right to red-line.

Under full throttle, 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.

Your 928 will now be tuned well enough to drive and enjoy safely. If you want to take it to a Dyno, they can tune it their even more accurately.





## 928 Motorsports Supercharger Installation

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### 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.

### Trimming 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 hacksaw or even a bolt cutters to lop off an inch or so. Do not remove too much - you 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. Black rubber bolt-end caps have been provided for each of these t-bolt clamps for cosmetic purposes. Slide one onto the end of each belt to dress-up the install. You can shorten them with a scissors if they are too long.

### Check For Leaks:

This installation has required you to remove and replace several fuel lines. These must be checked for leaks at every fitting and junction the first time the engine is started. **DO NOT SKIP THIS STEP.** We know we said it before in these instructions, its just that important.





## 928 Motorsports Supercharger Installation

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### Checking your Engine Oil Level

Your 928 has a very “busy” engine bay, and there isn’t a lot of room for accessories like the supercharger kit we have just installed.

Your kit has been designed so that the dipstick is as un-obstructed as it can be. Follow these simple guidelines whenever you want to check your engine oil level.

Loosen one clamp from your Blow Off Valve and wiggle the Valve forward and off. Set it to the side. The vacuum line can stay connected. Your dipstick is now easily accessed as shown by the red arrow below.

Put the Blow Off Valve back when your done.

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## 928 Motorsports Supercharger Installation

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### Regular Maintenance Items:

The Raptor V Supercharger we use is typically good for about 20,000 miles between rebuilds with no maintenance whatsoever. There is no maintenance necessary.

**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.

**Octane Booster:** Add octane Booster if you are going to go auto crossing or racing just to be safe. A bottle of "Octane Performance Booster" by Solder Seal is about \$1.50 and treats a tank of 20 gallons. It raises 91 octane gas to about 93 octane and is cheap insurance.

**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).





## 928 Motorsports Supercharger Installation

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### Driving your 928SC:

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 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.

As for driving your supercharged 928, we recommend you be on dry pavement on a straight road when you punch it until you get the feel of the boost coming in and how the car takes off. Note at what RPM the boost really starts to come in hard. Think: if you're in mid-corner and the boost came in like that, it is likely it would kick your rear tires out. Be aware of this.

When accelerating from a stand-still, allow your 928 to weight-transfer correctly before flooring it. This technique as a 'Rolling Throttle'. Roll into the throttle part way to get the weight transferred over the rear tires before depressing it to the floor completely. This allows the weight transfer can take place so you can launch correctly without excessive wheel spin.

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



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