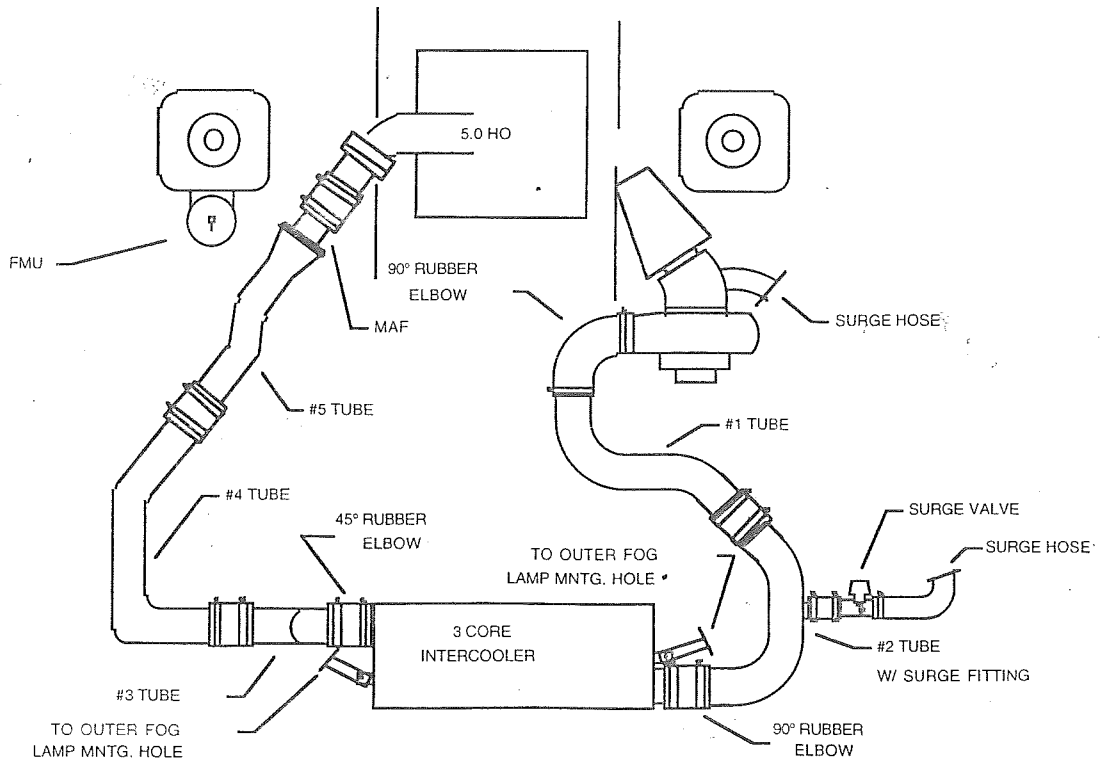


Illus. E4
Intercooler layout



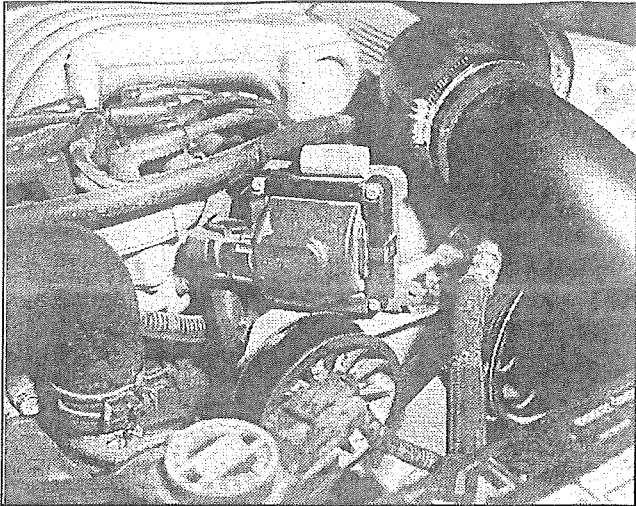
Illus. E5
3 core intercooler installation
View from above engine
(intercooler mounted vertically in front of radiator)

12. Inserting from below, install intercooler in front of radiator, attaching "L" to the hood latch bracket using bolt and clip removed from hood latch support rod. Using the supplied slotted bracket extensions, attach the two lower aft intercooler mounting tabs to the unused power steering mounting holes. The intercooler should bolt firmly into place. (see illus. E1)
13. Install hoses and clamps on intercooler tubes, allowing plenty of overlap between hose and intercooler tubing, with the hose clamp located firmly over the metal tubing.
14. Arrange and install tubes as shown in illustration E2 & E3. Number 1 tube attaches to the rubber elbow attached to the ProCharger. Tube #2 is the large tube with the surge fitting. Use the 2 offset tubes(#3, #4) on each end of intercooler to clear core support. Tube #5 makes sharp turn from tube #4, then 45° to tube #6 through fender well hole.
15. Using supplied gasket between them, bolt the MAF sensor to flange on the end of the #5 intercooler tube. Attach short hose section between the MAF sensor and throttle body and clamp down. Clip MAF harness onto MAF sensor.
16. Tighten all hose clamps securely. Position so that intercooler tubing is away from fog lamps to avoid damage, and away from the frame to avoid resonance.
17. Screw factory air temperature sensor into threaded fitting located on intercooler tube #6 and reconnect harness to sensor. Proceed to section F.

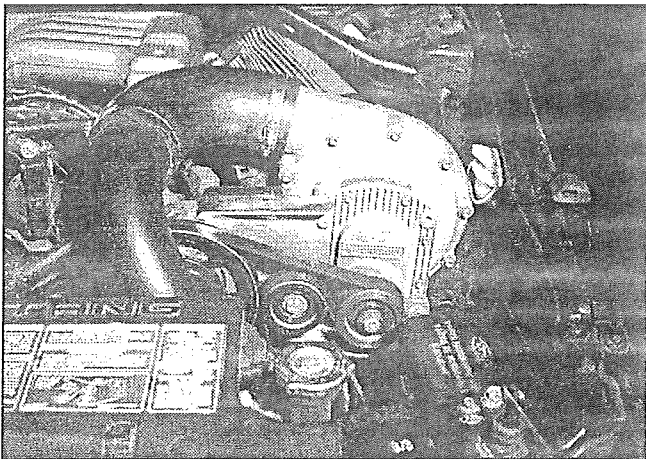
3 core intercooler installation (steps 18-24)

Installation of the 3 core intercooler in GT Mustangs will require permanently removing the driving/fog lights. Cobra's may maintain their driving/fog lights.

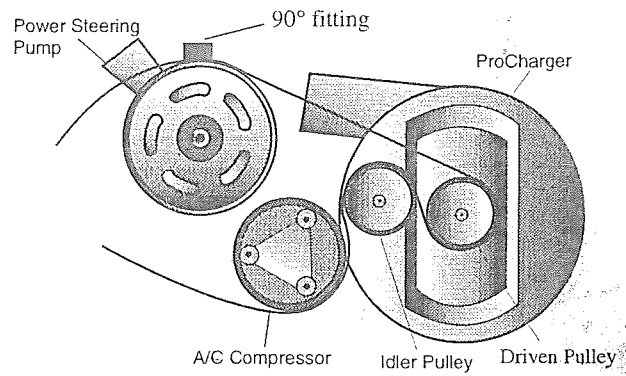
- 18a. Remove the hood latch support rod from behind the front grill.
- 18b. Install the short end (the end without any straight length) of the 45 degree rubber elbow, angled downward, on the outlet of the intercooler (The outlet of the intercooler is the one located at the top left corner when holding the intercooler in front of you such that the inlet and outlet are on the lower right and upper left ends, respectively, and the brackets are on the side of the intercooler closest to your body. When installed, the outlet will be on the passenger side of the car.) Secure the elbow with a hose clamp.
19. Using the supplied bolt/nut assemblies, loosely attach the intercooler support straps to the intercooler, the shorter strap being on the driver (inlet) side.
20. Inserting from below, install the intercooler in front of the radiator and attach the support straps to the outer most driving light mounting holes using the stock bolts. Position the intercooler as far as possible toward the driver side. Note: The intercooler may extend down past the radiator core support by as much as 1.5". Due to variations from car to car, it may be necessary to drill new mounting holes (in the supplied straps) in order to mount the intercooler as high as possible in the front grill.
21. Arrange and install (don't tighten) intercooler tubes as shown in illustration E4 and E5. Be sure to adjust tube #1 as far forward as possible to clear power steering pulley.
- 22a. *For stock MAF sensors.*
Using the supplied gasket, bolt the MAF sensor to the flange on tube #5. Attach a short hose section between MAF sensor and throttle body. Attach MAF sensor connector to sensor.
- 22b. *For aftermarket MAF sensors.*
Using supplied 3.5" rubber hose, attach MAF sensor to tube #5. Using 3" rubber hose, attach MAF sensor to throttle body. Attach MAF sensor connector to sensor.
23. Tighten all hose clamps and intercooler bolts.
24. Re-install the lower air dam and secure the lower fascia tabs using the supplied spacers and screws (if necessary).
25. Screw the factory air temperature sensor into the threaded fitting on the #5 tube and connect the harness.



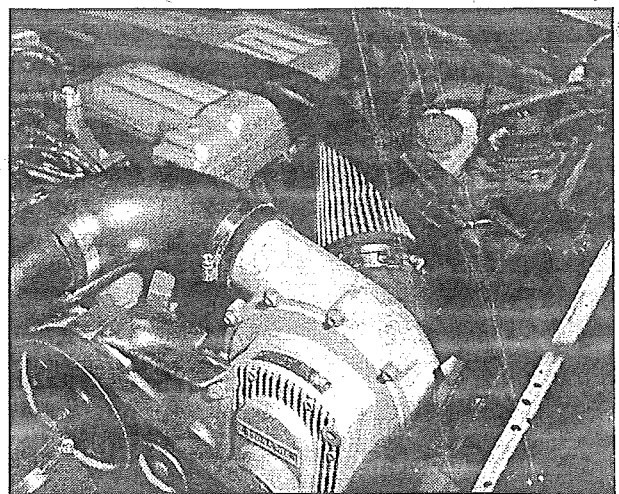
Illus. F1
Coil Installation



Illus. F3
ProCharger installation



Illus. F2
*View from front of car
looking at a/c compressor*



Illus. F4
ProCharger & air filter installation

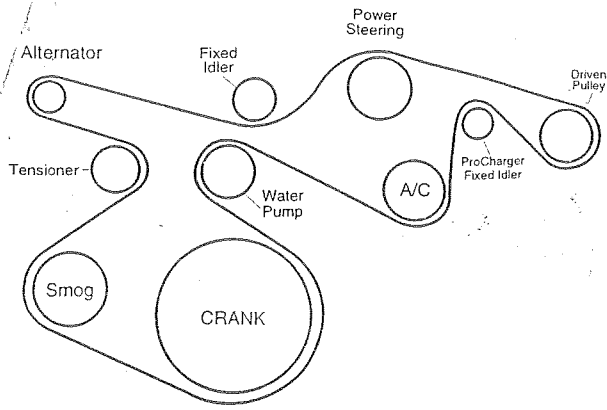
F. PROCHARGER INSTALLATION

In this section you will install the supplied bracket in place of the factory bracket, re-install the power steering pump, air conditioning compressor and ignition coil, then install the ProCharger and connect all related oil lines and air hoses.

Description and Operation

The main components of the ProCharger system are the ProCharger and mounting bracket. The ProCharger is a gear-driven centrifugal compressor, driven by the stock 6 rib serpentine belt. It uses a billet aluminum impeller (P600B), super precision bearings and carburized gears. The impeller speed is dictated by engine rpm, crank pulley-to-driven pulley ratio and the final internal gear ratio. As engine speed is increased both airflow and boost (resulting from engine back-pressure) are increased. The quoted boost levels of the kit can be exceeded if the factory-set redline is surpassed. The mounting bracket is an aluminum casting which houses the power steering pump, as well as, the ProCharger. It utilizes a dual-bearing idler which improves belt wrap around the driven pulley, thus increasing belt traction.

1. Lower vehicle. Install factory coil on top flange of ProCharger bracket with one bolt. Refer to figure F1.
2. Lower supplied bracket into place, inserting power steering pump into its location in the bracket before bolting the bracket into place with three supplied bolts.
3. Secure power steering pump with three factory bolts, noting that pump will have a different orientation than when attached to the factory bracket (see illustration F2). Attach supplied 90° fitting to power steering pump and re-attach power steering line. Re-install air conditioning compressor.
4. Connect oil drain line to middle drain fitting at base of ProCharger and tighten
5. Resting the ProCharger on intake with pulley facing up, connect oil feed line to side of the ProCharger and tighten.
6. Bolt ProCharger to supplied bracket. See figure F3.
7. Install supplied silicone hose onto ProCharger discharge. Secure firmly with hose clamp
8. Install loose end of silicone hose onto #1 intercooler pipe. Secure with hose clamps
9. Connect 45° intake pipe onto ProCharger inlet with surge fitting facing downward, and secure with hose clamp. Attach K&N air filter to end of intake pipe. (See figure F4)
10. Attach short rubber hose section on supplied surge valve to fitting on the #1 intercooler tube and secure with hose clamps. Route long surge hose from surge valve to just behind the ProCharger, and secure to fitting on supplied 45° intake pipe with hose clamp. Route the supplied vacuum line from surge valve to near the stock fuel pressure regulator. Tee into the fuel pressure regulator vacuum line using the supplied tee.
11. Trim oil drain line so that it will drain continuously downhill from the ProCharger into the oil pan drain fitting, and will not have any valleys. Attach oil drain line to drain fitting at oil pan with hose clamp and secure with wire tie. **Ensure that line is not twisted or kinked after tightening to ensure adequate oil flow! Otherwise, oil may back up in the blower causing damage to the ProCharger.**
12. Install supplied 6 rib belt, routing as shown in illustration F5.



Illus. F5

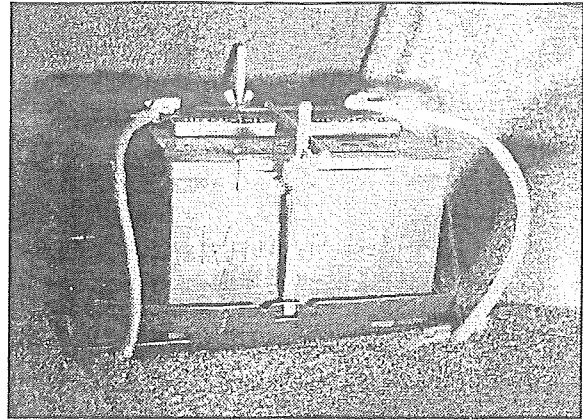
Revised belt routing

Belt Part #

ATI #

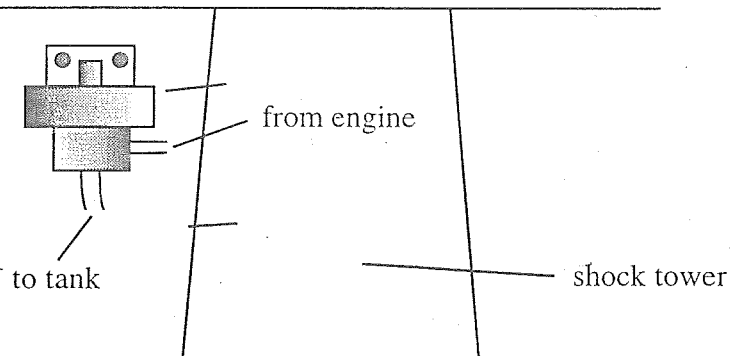
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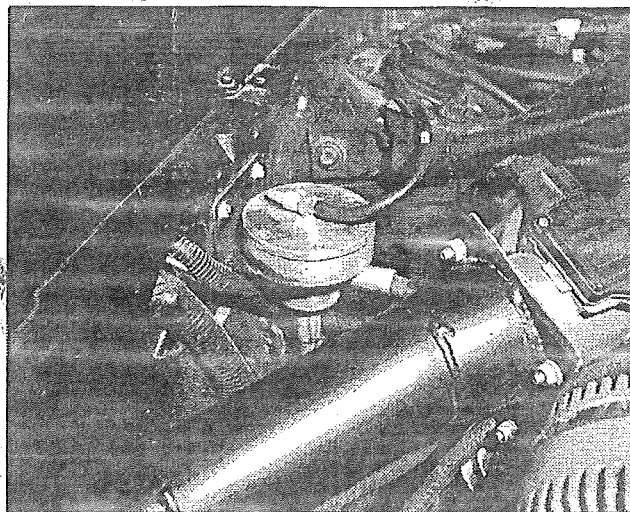
Illus. G1

Battery relocation in trunk



Illus. H1

View from engine, looking at passenger side inner fender



Illus. H2

FMU Installation

G. BATTERY RELOCATION

In this section you will relocate the battery to the passenger side of the trunk. If your battery is already trunk-mounted, disconnect the battery for at least 15 minutes to recalibrate the computer, then proceed to the next section

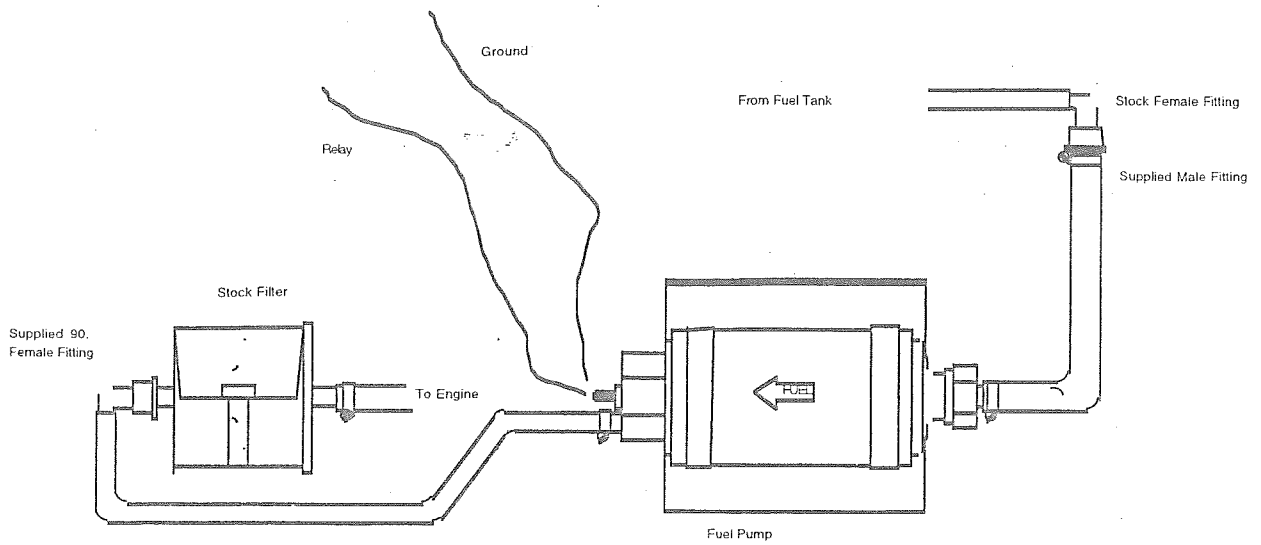
1. Remove carpet from floor of trunk. Locate supplied battery tray to the front passenger side of the trunk, approximately 3.5" from the back seat and 1" from the passenger rear tire (see figure G1). Mark mounting holes for the battery tray and center punch. Check to see that all gas lines and brake lines are clear before drilling. **Do not mount battery over gas tank or spare tire!** Drill holes using 11/32" drill bit. Secure battery tray to trunk floor with four supplied bolts (5/16" x 2")
2. Place battery on tray, then place supplied clamp over battery. Insert supplied clips into slots on each side of clamp. Install threaded end of supplied J-bolts through clips and tighten
3. Install supplied ground wire to battery post. Mount ground strap to secure and safe location, usually the trunk floor, taking care to once again avoid gas and brake lines
4. Carefully plan route of supplied battery cable from trunk along the passenger side of car to the starter. Cut battery cable at desired length, making sure to allow for bends and stripping.
5. Strip 3/4" of insulation from end of cable, and attach supplied copper lug by crimping or soldering. Remove starter, if not done previously. Attach lug to starter and reinstall starter. Be careful not to let the cable contact the exhaust
6. Using electrical tape, encase stock positive battery terminal cover and cable to ensure complete insulation of this now unused cable (and to also allow simple relocation of the battery back to stock position, if necessary). Secure below power distribution box
7. Install supplied positive battery cable to battery post
8. Anchor cable to vehicle frame or sturdy surface with supplied mounting clamps.

H. FUEL MANAGEMENT UNIT INSTALLATION

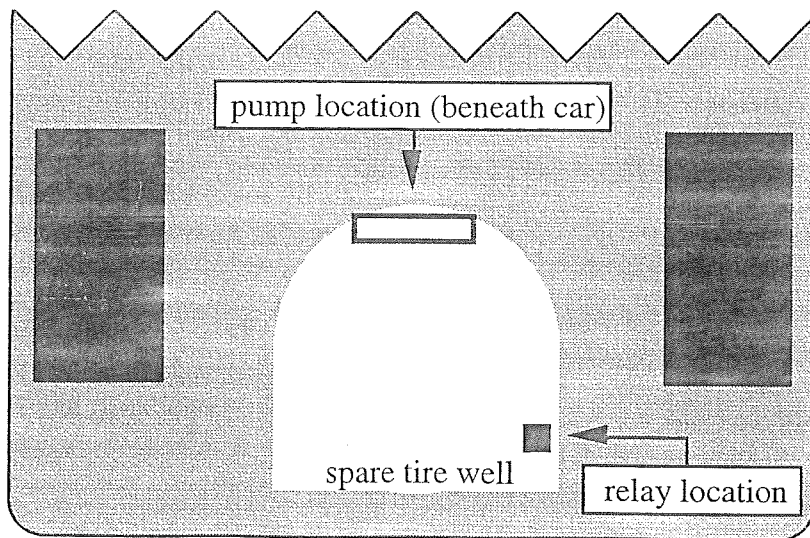
In this section you will install the fuel management unit into the fuel rail return line to ensure adequate fuel pressure under boost.

Description and Operation

The Fuel Management Unit, FMU, is a pneumatically controlled fuel valve. It is operated by boost only and is not sensitive to vacuum. The FMU is installed downstream of the factory fuel pressure regulator (both at the discharge end of the fuel rail) and therefore, can override the factory regulator. When manifold vacuum is present, the fuel pressure is controlled solely by the stock regulator. As boost is created, the FMU begins to shut down the return line to the fuel tank (overriding the stock regulator), which forces the fuel pressure to increase in the fuel rails. Because this increased fuel pressure is not sensed by the car's computer, the injectors are cycled on a normal acceleration schedule. Since the fuel pressure under boost is now higher than the stock 38 psi, the engine receives more fuel for each injector pulse, and the proper air/fuel ratio is achieved. The FMU can be adjusted for different fuel pressure requirements, as well as for different injector sizes. Please refer to the tuning section for adjustment of the FMU.



Illus. I1
*View from below vehicle (below rear seat),
 looking towards rear of vehicle*



Illus. I2
View from above trunk

1. Connect supplied high pressure lines to the FMU. These may already be connected at the factory; if so merely verify that they are fully tightened
2. Mount supplied FMU by drilling two holes in passenger shock tower and securing with provided screws (see figures H1 and H2)
3. Disconnect fuel rail **return** line at the top of the engine (the return line is the one that **does not** have a pressure test fitting) with supplied spring lock disconnect tool. **Warning: fuel is under pressure. Take precaution to avoid injury or fire.**
4. Connect the FMU input hose (with male fitting, connected to side of FMU) to the return line on top of the engine
5. Connect the FMU output hose (with female fitting, connected to bottom of FMU) to the fuel rail return line which returns to the tank.
6. Connect one end the supplied vacuum line to the top of the FMU, and splice the other end into vacuum line at the vacuum tree with the supplied tee.
7. Secure the fuel and vacuum lines with wire ties.
8. Verify the FMU needle valve setting:
 - 19 lb/hr inj. - fully closed (cw)
 - 24 lb/hr or larger - 1 1/2 turns from fully closed (cw)

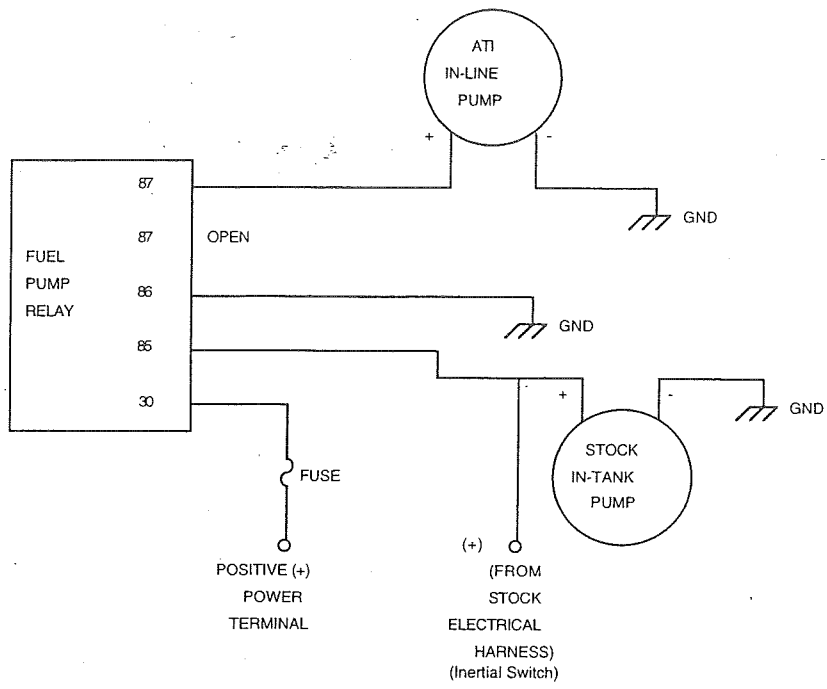
I. FUEL PUMP INSTALLATION

This section covers installation of the in-line fuel pump. The stock in-tank pump is not affected.

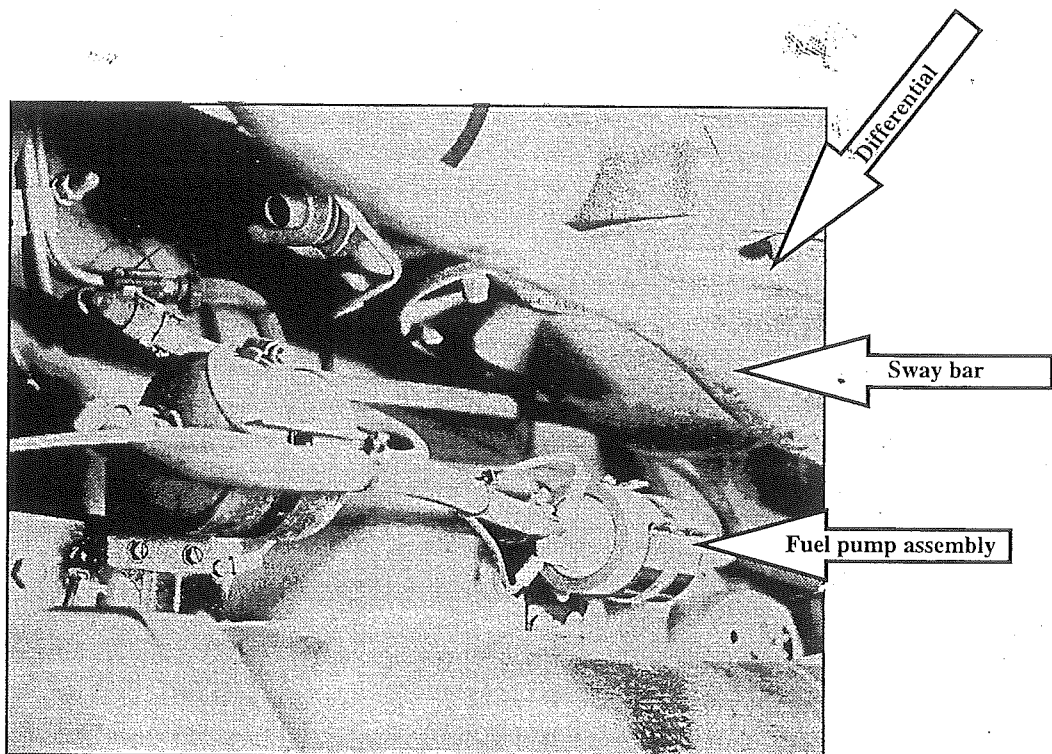
Description and Operation

The fuel pump assembly contains a high flow, high pressure fuel pump. It is installed in-line (in series) between the stock in-tank pump and the fuel filter (outside of the tank). Used in conjunction with your stock pump, fuel pressures in excess of 100 psi can be attained on 19 lb/hr injectors. The pump by itself is rated at 43 gph at 70 psi. The fuel pump is wired into your stock pump harness and operates only when the in-tank pump operates. Since the internal motor is a dc type motor, the pump output is dependent on proper voltage (13.5 vdc) and requires correct orientation of the positive and negative power leads (as specified near the power terminals of the pump).

1. Jack up rear of vehicle and support with jack stands under frame, allowing suspension to drop free. Remove spare tire to avoid damage during drilling operation.
2. Disconnect inlet fuel line (tank side of filter) from fuel filter.
3. To mount fuel pump, hold the fuel pump/bracket assembly against the bottom of the floor board, between the differential and fuel tank. (See I1 thru I3) The fuel pump should be on the forward side of the bracket, and the center mounting hole approximately 8" from the driver's side fuel tank retaining strap bolt. Center-punch the three hole locations.
4. Using a 3/8" - 7/16" drill bit, drill the three mounting holes.
5. Insert a 1/4" i.d. grommet (supplied) into each hole, then mount the fuel pump in this fashion: from the top, insert a 1/4" X 1" bolt with flat washer through each grommet. From underneath, place the bracket onto the bolts. Using washers and nylon lock nuts, secure the bracket. Tighten the nuts so that the bracket is secure but not overtightened. Do not crush the grommets or noise and vibration will be transmitted to the car's interior.
6. Clip supplied 90° female fitting (attached to pump output hose) to fuel filter inlet. Rotate stock 90° female fitting on the line coming from the fuel tank (originally attached to fuel filter inlet), and clip to supplied male fitting (attached to fuel pump inlet hose)
7. Mount supplied relay inside the tire well, within the vehicle (see illustration I2), near the stock fuel harness (on trunk floor near passenger taillight)



Illus. I4
Fuel pump relay wiring diagram



Illus. I3
Fuel pump installation

8. Tap relay terminal #85 into the red/purple wire (may be brown on some models) on the stock fuel harness (inside vehicle near passenger taillight). This will ensure that the stock inertial impact switch controls both the in-tank and in-line fuel pumps. Connect relay terminal #86 to ground, using the relay installation screw or any other suitable surface as ground
9. Connect relay terminal #87 to the positive terminal on supplied fuel pump. Connect negative terminal on supplied fuel pump to clean ground. Make sure all wires and hoses are firmly secured against underbody, using wire ties as necessary.
10. Connect relay terminal #30 to the positive power terminal at the power distribution block in the front left corner of the engine compartment using the supplied in-line fuse and ring connector.
Note: As an alternate power source, terminal #30 can be tapped into the positive battery terminal in the trunk using the supplied in-line fuse and ring connector.
11. Secure all wiring with wire ties.
12. Turn key to the "on" position to verify pump operates for 2-5 seconds then shuts off. If pump does operate in this fashion re-check all connections and verify proper wiring to the inertial impact switch.

J . INSTALLATION REVIEW AND SAFETY CHECK

1. Carefully review the entire installation. Check oil and fuel lines near moving parts and the exhaust system to ensure that these lines are safe, secure and not twisted or kinked. All wires and hoses should be firmly secured with clamps or wire ties.
2. Check all fluid levels (oil, power steering &, radiator). Your vehicle should be filled with 91 octane or higher fuel before any hard driving. It is important that you performed an oil and filter change after the oil drain setup. If you did not do so, it should be performed now before proceeding further.
3. Start engine and idle for a few minutes. Inspect for air or fluid leaks. Check your timing. A stock 5.0 should use 10° initial timing as a starting point. Also, be aware that with full timing, your 5.0 will pull hard all the way to the redline, and when racing you should now shift just before reaching the redline. **Warning: If an aftermarket chip is installed which was not specifically designed for use with a supercharger, remove it prior to driving the vehicle. These chips often advance timing at higher rpms, which will lead to detonation and engine damage.**
4. Shut off engine and check for fluid leakage, signs of rubbing parts, and other potential problems
5. Your vehicle should display a significant increase in performance when you step into the throttle, with no detonation, yet should maintain its previous driveability during daily driving. If this is not so, review your installation, then contact your dealer or ATI for assistance.
6. For best performance and reliability, **always use premium grade fuel (91 octane or higher)** and listen for signs of detonation. Back off throttle should detonation occur. With a properly installed ProCharger intercooled supercharger system, detonation should not be an issue. **Note: Larger cities (especially in winter months) often use oxygenated or reformulated fuels to reduce pollution. Although these fuels have the same octane ratings as unaltered fuels, some people have experienced problems (detonation) with their use. If you experience similar problems, it is advised to reduce your timing or use octane booster to avoid detonation.**
7. Never race your engine (and ProCharger) when your engine is cold. Allow the coolant temperature to climb into operating range for several minutes before driving above 2,500 rpm, to ensure adequate oil lubrication.
8. Be sure you have purchased and properly installed a boost gauge in order to monitor boost. Installation of a fuel pressure gauge and/or a fuel/air ratio meter is also recommended.
9. Please review the maintenance and warranty sections within this owner's manual

K. TUNING

Proper fuel pressure is the main tuning issue of your system. The ProCharger is nothing more than an efficient air pump used to substantially increase the volumetric efficiency of your engine. Intercooling is utilized to remove the heat caused by compressing air, and this in turn results in an intake air temperature which is only 25° above ambient at 9 psi (vs 90°-150° above ambient with non-intercooled superchargers). Thanks to this efficiency, brake specific fuel consumption (BSFC) is very close to that of a naturally aspirated application. This means that there is no need to run the over-sized (over-rich) fuel injectors frequently seen with non-intercooled forced induction applications, where fuel is being used not only to create horsepower, but to fight detonation as well. However, maintaining the proper air/fuel ratio is still extremely important even in intercooled applications. In order to extract as much power as possible from this increased air flow, the proper amount of fuel must be added. Too much fuel will cause the car to hesitate, be sluggish, emit heavy black smoke and not attain proper boost levels. A lean condition will cause the car to detonate (which, under higher boost conditions, can cause blown head gaskets), run hot or break up. The FMU can be adjusted via the air bleed needle valve on the top of the unit. Since each car is different and engine and exhaust modifications will affect your final fuel pressure settings, the following is a guide offered to help you arrive at your final FMU setting.

19 lb/hr injectors: Initial setting: fully closed (cw)

Fuel pressure should increase linearly from the stock setting (38 psi) to approximately 90 to 110 psi at moderate to full boost conditions. If the car hesitates upon snap acceleration or heavy black smoke is emitted from the tail pipe, reduce fuel pressure by turning the needle valve ccw in 1/2 turn increments until the hesitation is gone.

24 lb/hr injectors and larger: Initial setting: 1 1/2 to 2 turns from fully closed (cw).

The vacuum line going to the FMU should contain a white restrictor. Fuel pressure should spike to 75 to 85 psi under full boost for 24 lb/hr injectors and 60 to 70 psi for 30 lb/hr injectors. If car hesitates upon snap acceleration or heavy black smoke is emitted from the tailpipe, reduce fuel pressure by turning the needle valve ccw in 1/4 turn increments until hesitation is gone. If car detonates or breaks up under boost, increase fuel pressure by turning needle valve cw in 1/2 turn increments.

Off-road, high boost applications require high energy ignition systems for proper combustion. If using a stock ignition system on such an application, the plug gap must be reduced to approx. .035" to avoid "blowing out" the flame/spark.

OPERATION AND MAINTENANCE

- **Cold Starting**

Never race your engine (and ProCharger) when your engine is cold. Allow the water temperature to climb into operating range for several minutes before driving above 2,500 rpm, to ensure adequate oil lubrication.

- **Fuel Quality**

For best performance and reliability, **always use premium grade fuel (91 octane or higher)**. Always listen for signs of detonation after refueling, and after replacement or modification of any fuel system components. Back off throttle should detonation occur. With a properly installed ProCharger intercooled supercharger system, detonation should not be an issue

- **Oil and Filter Maintenance**

Always change your oil and filter every 2,500 - 3,000 miles! Synthetic oils such as Redline or Castrol Syntec are recommended. Delaying your oil change beyond 3,000 miles risks the health of both your engine and ProCharger.

- **Ignition System Maintenance**

Because of the vastly cooler intake temperatures delivered by intercooling, you should be able to run full timing (10° initial timing on a stock 5.0) on your intercooled ProCharger application. Also, be aware that with forced induction and full timing your 5.0 will continue to pull hard all the way to the redline, and for maximum performance you should now shift just prior to the redline. If your spark plugs are more than a year old or have more than 10,000 miles logged, you should change your plugs before driving your vehicle under load. Additionally, spark plug wires should be changed every 50,000 miles, or whenever resistance exceeds factory specifications. Aftermarket chips, unless specifically designed for supercharged applications, must be removed to avoid detonation.

- **Air Filter Maintenance**

Your air filters should be cleaned periodically, potentially as often as every 10,000 miles or 6 months, although a service interval of 50,000 - 100,000 miles is quoted by the manufacturer under normal driving conditions. A clogged air filter will result in degraded boost and vehicle performance. K&N air filter cleaner is recommended, and be sure to re-oil the cleaned filter before re-installing. Your vehicle should never be run without an air filter!

- **Belt Replacement ~~PACT~~ #**

Belts can be bought from ATI or from your local parts store. Gates Micro-V belts are recommended; these belts are available at CarQuest™, NAPA™ and other auto parts stores. Your nearest CarQuest store can be found by dialing 800-492-7278, the nearest NAPA store at 800-538-6272.