POWERDYNE

SUPERCHARGER

INSTALLATION INSTRUCTION MANUAL

MODEL BD-10

MUSTANG

1994-1995, 5.0L,
GT MODELS
WITH AIR CONDITIONING

49-STATE SMOG LEGAL
California ARB E.O. Pending

Powerdyne Automotive Products, Inc.
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POWERDYNE
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OFFICIAL

POWERDYNE MODEL BD-10 SUPERCHARGER & KIT LIMITED WARRANTY

Powerdyne Automotive Products warrants your new Powerdyne BD-10 Supercharger & Installation Kit to be free of defects in workmanship and materials for a period of six (6) months from date of purchase.

Prior factory-authorization must be obtained to return any parts for warranty inspection. Superchargers or Kit parts authorized to be inspected for repair or replacement under warranty must be shipped freight prepaid to Powerdyne in California. Determination of actual Warranty qualification rests solely with Powerdyne.

Superchargers will not qualify for warranty if the Supercharger Pulley has been removed (or changed), or if the Powerdyne wire/lead seal has been broken, or, if the Supercharger and/or Kit parts have been altered or improperly installed. Superchargers used for racing, amatuer or professional, are specifically excluded from any warranty protection.

Authorized warranty is limited to repair or replacement only, with no refunds or credits allowed. Warranted Superchargers will continue to be protected under this 6-month limited warranty from the original date of purchase, not from the date of repair or replacement.

Superchargers or Kit parts repaired or replaced under warranty will be returned to the owner transportation charges prepaid, within the 48-Continental United States, or to the point of 48-Continental States embarkation, by UPS ground (or similar) service; owner will be reponsible for excess charges for transportation outside the 48-Continental states or for air or other premium transportation charges.

Superchargers authorized to be returned and inspected which do not qualify for Warranty, and are not repaired at the owner's expense, will be subject to a $100.00 Inspection Fee and returned to the owner, transportation charges collect.

Powerdyne makes no performance or merchantability warranties, neither offered nor implied. Also, because Superchargers are high-performance modifications designed to change the performance of engines for which they are designed, and because Powerdyne has no control over the adequacy and correctness of installation and actual use, Powerdyne expressly disclaims any responsibility or liability for possible engine damage, or incidental or consequental damages which may occur.

This Limited Warranty is the sole and exclusive warranty offered by Powerdyne Automotive Products. No employee or agent may enlarge or modify its terms and/or conditions.

(See Page 2, "Warranty Procedure" -- Over)

IF YOUR VEHICLE IS A 1994 - 95 COBRA, FOLLOW THESE SPECIAL INSTRUCTIONS BETWEEN STEP 19 & 20 OF THE GT INSTRUCTIONS. (NOT APPLICABLE TO 1994 - 95 MUSTANG)

1994 - 1995 Cobra Oil Cooler Line Rerouting

Remove steel oil cooler lines from front of engine. Remove short anglehose from water pump. Replace this hose with the short elbow hose from the lower connections located between steel cooler lines and oil cooler adapter. Use the long elbow from the lower connections on the front inlet of the oil cooler adapter. Connect 18-1/2 inch hose between long U-shaped heater hose and elbow connected to oil cooler adapter. Use hose couplers and stock clamps.Clamp securely; hose must be tucked back behind accessory belt tensioner plate.

Turn radiator pinch-clamp upward and push hose behind accessory belt tensioner plate. Secure hose with cable ties. Cable ties can be run through top of pinch-clamp or around radiator hose. Do not pinch hose with cable ties.

Connect 40"x3/4" inch hose to short elbow on water pump. Use hose coupler and clamps. Run this hose behind thermostat housing, between distributor and coil, behind power steering pump, then down around air conditioning compressor to oil cooler adapter. Secure with clamp.Use cable ties to secure hose.

Keep all hose away from sharp edges and heat sources.

POWERDYNE
AUTOMOTIVE PRODUCTS

POWERDYNE AUTOMOTIVE PRODUCTS INC.

Installation Instructions 94-95 Mustang GT, 5.0 Liter 6 & 9 psi Boost Supercharger Kits.

This manual is intended for the installation of the Powerdyne Supercharger Kits, p/n's S10661 & P10661 (6psi) and S10691 & P10691 (9psi) on 1994 and 1995, 5.0 liter Ford Mustangs. These kits are designed to be 50 state street legal and as of the writing of this manual C.A.R.B. exemption is pending. These kits already comply with EPA Memorandum 1-A making them legal for 49 state usage providing that EPA Memorandum 1-A is not superceded by your local or state regulations.

It is very important that these instructions be followed exactly. Premium unleaded fuel with an octane rating of 92 or higher must be used with this Supercharger. Do not change the pulley on the crankshaft or the Supercharger as this will automatically void the Supercharger warranty! To help you with your installation, read the entire step before starting with that step.

While reading these instructions you will come across some steps that are for the 9psi kit only. These will be identified by the phrase (9psi only). You do not need to follow these steps if you are installing the 6psi kit unless otherwise noted.

Only install this kit on a cold engine with 0 (zero) fuel pressure to avoid injury and possible damage.

STEP 1. Disconnect the battery ground (negative) terminal. Open the fuel filler cap to release any pressure trapped in the tank.

STEP 2. Remove all air flow components from the throttle body forward: air cleaner housing, MAF, rubber bellows, etc. Separate air cleaner housing and remove: MAF, temperature sensor and all wiring (Save for reinstallation later). (See figure 1).

STEP 3. Remove ignition module from passenger side fender well. Place one of the original mounting bolts through top hole in module. Remount using the lower mounting hole in the fender well. This lowers the ignition module approximately 2 inches (See figure 2).

STEP 4. Drain the radiator approximately 5 inches. Remove the plastic radiator cover, upper radiator hose, overflow bottle, black computer relay box and mounting bracket. Disconnect the wiring harness from the black computer relay box and remove the gray plastic harness clip. Move the actual wires 180 deg. and reinstall the gray plastic clip. (The black computer relay box will be relocated on another bracket later). It is necessary to move the wires 180 deg. in order to facilitate relocation.

STEP 5. Remove the accessory drive belt.

STEP 6. Disconnect all wiring from the alternator and the hose from the smog pump. Remove the alternator and smog pump as well as the cast aluminum mounting bracket. Remove the smog pump pulley (save for later reinstallation).

STEP 7. Remove the stock crankshaft pulley.

STEP 8. The air conditioner line running along the fender well must be moved up and outboard. This is accomplished by simply pulling the line up and over the fender well lip and rotating the line in the swivel clamp next to the radiator, bending the bracket over. (Be careful not to break the bracket). See figure 3 (stock location) and figure 4 (relocated).

STEP 9. Using the Powerdyne air filter cover plate as a template, mark and drill 4 (four) 1/8" holes in the fender well to mount the air filter cover to the fender well (see figure 5). Reassemble the air intake tube and the air filter onto the air filter cover plate. Do not install the plate to the fender well at this time.

STEP 10. Relocation of black computer relay box. In order to relocate the relay box to the fender well shelf, it is necessary to move the wiring harness running along the shelf (see figure 6). simply pull out the push-in mounting tab and move the wiring harness outboard (see figure 7). Measuring from the corner of the relay box mounting bracket, locate the mounting bracket 1/2" from the radiator support. Drill 2 (two) 1/8" holes in the shelf using the bracket as

a template (see figure 8). Mount the bracket to the shelf using 2 (two) #10 sheet metal screws provided (see figure 8). Mount the black computer relay box to the mounting bracket using the 2 (two) #10-32 screws, star washers and nuts provided (see figure 9). Reinstall wiring harness (with wires moved 180^) that was removed in step 4 of these instructions (see figure 10).

STEP 11. Place the air filter cover plate over the hole in the fender well by carefully sliding the air filter through the hole. Fasten with 4 (four) #10 sheet metal screws provided. (If you have trouble fastening the air filter cover plate or sliding the filter through, the cover plate may be fastened to the fender well first and the plastic intake tube with the filter attached slid through from under the car). (See figure 5). Screw the temperature sensor into the hole provided in the plastic intake tube. Tighten securely but do not over tighten. A secure seal must be made to avoid air leaks. (See figure 5). Install 3-1/2" x 2" blue sleeve over the intake elbow, tighten. Bolt the MAF adapter to the mass air meter with the supplied rubber gasket between the MAF and the adapter, using the 4 (four) 1/4-20 x 1" bolts, nuts and washers supplied. In order to assure a tight seal a very light film of silicone may be used on the gasket. The upper outboard bolt must also include the supplied MAF mounting support (see figure 5). Install 3-1/8" x 3/4" orange rubber adapter on the down stream side of the MAF (this is the side without the MAF adapter). Slide the MAF adapter, with MAF attached, into the 3-1/2" x 2" blue sleeve on the intake elbow, tighten clamps. Reconnect MAF wiring harness removed in step 2. Position MAF outboard until the MAF mounting support fits flush against the fender well. Using the support as a template, mark the inner fender well and drill 2 (two) 1/8" holes. Fasten the support to the inner fender well using the 2 (two) #10 sheet metal screws provided (see figure 5).

STEP 12. Locate squared threaded boss on passenger side of engine block. Thread supplied 3/8-16 x 5 1/2" stud into square boss. Install 1/4" spacer on stud. Slide smog pump onto stud, install 7/8" spacer on stud (see figure 11). Install the smog pump strap between the smog pump and the front engine mount bolt by removing the engine mount bolt and sliding it through the strap. Re-tighten. Use the supplied bolt to mount the strap to the smog pump (see figure 11a).

STEP 13. Slide 7/16-14 x 4-1/2" bolt through the head plate from rear. Place head plate on head and secure with 3/8-16 x 1" bolt. Make sure the other 2 holes are aligned with the threaded holes in the head (see figure 12).

STEP 14. Disconnect alternator wiring harness from top of power steering bracket by removing the harness tie down. Reroute the wiring harness under the thermostat housing. Make sure to leave the protective shield on the harness (see figure 13).

STEP 15. It is necessary to re-clock the alternator so that the plug-in connector is in the up (12 o'clock) position. **NOTE: If you have never done this, or are unsure at all, take the alternator and these instructions to a certified mechanic! Damage to the alternator may occur! Remove the alternator pulley.** Remove the 3 long screws from the cast aluminum alternator casing. **Do not remove rear half of casing!** Carefully slide off front half of casing. Rotate front half so that the plug-in connector is now in the up position (see figure 14 & 15). **Carefully:** slide the front half back on so that the 3 screw bosses align. Reinstall 3 screws and alternator pulley.

STEP 16. Install 1/2" spacer over the 7/16-14 x 4-1/2" bolt protruding through the head plate (see figure 12). Slide alternator onto 7/16-14 x 4-1/2" bolt (see figure 16). Reconnect wiring harness to alternator making sure the insulator sleeve covers the plug (see figure 17). Slide the Supercharger mounting plate over the alternator bolt and smog pump stud. Secure with 7/16-14 nut and washer, and 3/8-16 nut and washer - do not tighten at this time. Install the 3-1/2" spacers between the head plate and the Supercharger mounting plate. Secure with a 7/16-14 x 5" bolt and washer in the outboard hole and a 3/8-16 x 5" bolt and washer in the inboard hole. Do not tighten. Slide the supplied 3/8" washer between the small tab on the alternator and the Supercharger mounting plate to act as a spacer. Slide the supplied 3/8-16 x 1-1/2" bolt through the Supercharger mounting

plate, the 3/8 washer and the alternator tab. Secure with 3/8-16 nut and washer (see figure 17) tighten all nuts and bolts.

STEP 17. Remove the smog pump to diverter valve hose from the diverter valve and reverse the hose so that the end that was on the diverter valve now connects to the smog pump and the end that was on the smog pump now connects to the diverter valve. Secure with stock clamps. Reinstall the smog pump pulley.

STEP 18. Installation of radiator overflow bottle and bracket. Bolt the supplied radiator overflow bottle bracket to the overflow bottle using the stock bolt. Place a towel or rag over the ABS unit to avoid puncturing the overflow bottle. Slide the overflow bottle into the stock lower mounting bracket, being **extremely:** careful not to damage the bottle on the ABS unit or any other protruding parts. Secure the overflow bottle bracket to the radiator support using the stock bolts. Tighten all 3 bolts (see figure 18). Reconnect the wiring harness and overflow tubing.

STEP 19. Install the crank pulley spacer between the stock accessory crank pulley and the supplied Supercharger crank pulley. Secure with the 4 (four) supplied 3/8-16 x 1-1/2" bolts, lock washers and washers. Tighten bolts evenly in an "x" pattern (see figure 19).

STEP 20. Accessory belt tensioner assembly (figure 20 & 21). Remove the 2 (two) stock 7/16-14 x 3/4" bolts from the air conditioning/power steering bracket. Remove the 2 (two) 8mm bolts that mount ignition coil bracket to the AC/power steering bracket. Place the carriage bolt (see figure 20) through the back side of the slot in the belt tensioner bracket. Using the 2 (two) supplied 1.65" spacers between the belt tensioner bracket and the AC/power steering bracket, install the belt tensioner bracket to the AC/power steering bracket with the supplied 7/16-14 x 5-1/4" bolts supplied (see figure 20). Use the supplied 8mm x 30mm bolts to secure the ignition coil bracket to the belt tensioner bracket.

STEP 21. Remove the stock, flat faced idler pulley from the AC/power steering bracket, being careful not to lose any of the shims between the bracket and pulley. (Some cars do not have these shims). Place the supplied idler spacer (with the small diameter out) on the carriage bolt and the flat faced idler pulley on the spacer (see figure 21). Secure with the supplied pulley retainer and 1/2" nut. Install the supplied ribbed pulley on the AC/power steering bracket, using the shims from earlier in this step, between the ribbed pulley and the bracket. Secure with stock bolt and retainer.

STEP 22. Fuel regulation unit installation. Powerdyne manufactures 3 different ratio FRU's to match the 3 most commonly used injector sizes (19, 24 and 30lb per hour) this kit includes the proper ratio for 19lb injectors (stock on all 5.0 GT Mustangs - not including the Cobra models which use 24lb injectors). If you have 24lb or 30lb injectors you will need to contact the Powerdyne factory (805) 723-2800 to procure the proper FRU. Mount the FRU in front of the passenger side shock tower by measuring 1 inch in front of the shock tower and 3/4 of an inch down from the top of the fender well. Use the bracket as a template and drill 2 (two) 1/8" holes. Secure with 2 (two) supplied, #10 sheet metal screws (see figure 22). Place some rags under the stock return line 3/8" snap-lock connector to catch any escaping fuel and disconnect the stock return line snap-lock connector using a 3/8" Ford fuel line tool. **Make sure any escaping fuel is caught by the rags and does not leak down the side of the engine or onto the exhaust manifold.** The return line is the line closest to the throttle body and does: not: have a pressure fitting on it. The bottom: fitting on the Powerdyne FRU should have a 1/4" fuel line with the female: snap-lock connector on the other end. Route this line above the smog pump hose and under the throttle body housing and connect it to the stock return line going back to the tank. **Make certain that the fuel line is not routed close to the exhaust manifold or the EGR valve!! Failure to correctly route the fuel lines can cause severe damage or injury due to fire!** Secure this line with tie wraps provided. Tighten the tie wraps snugly but do not: crimp the fuel line as this will cause FRU failure (see figures 22 & 23).

The side fitting on the Powerdyne FRU should have a 1/4" fuel line attached with the male: snap-lock connector on the other end. Route this line directly over the valve cover and connect to the female snap-lock connector on the fuel rail. Secure with tie wraps as above (see figure 22). The same cautions apply to this fuel line.

Cut the factory vacuum line between the factory fuel regulator and the vacuum source. Install the supplied 5/32" vacuum tee in this line. Route supplied 5/32" vacuum line from the 5/32" hose fitting on top of the FRU to this tee. Use supplied tie wraps to secure the 5/32" vacuum line to the strut tower brace. Do not over tighten tie wraps and crimp the vacuum line as this will cause a lean condition in the car and could lead to detonation and severe engine damage (see figure 22 and 23). Make sure that the fittings on the FRU are tightened securely and the snap-lock connectors are pushed all the way together and have made a "clicking" sound when they snap together.

STEP 23. Air intake assembly completion. Attach the flex tubing to the MAF using the supplied hose clamp (see figure 24). Remove the stock 3/8" crankcase vent line that ran between the oil filler neck and the air filter. Run the supplied 3/8" vacuum line from the oil filler neck nipple to the nipple on the air filter cover plate.

STEP 24. Supercharger mounting. Carefully slide the Supercharger onto the mounting plate. If the Supercharger touches the water hose located along the head, loosen the water hose clamp and slide the hose further onto the line. Re-tighten clamp. Loosely install 2 (two) of the 3/8-16 x 3/4" socket head screws and 3/8" AN washers to hold the Supercharger in place. Connect the 3-1/2" blue silicone hose on the black plastic intake tube to the Supercharger inlet (see figure 25). Secure with supplied hose clamps. Install the cast aluminum discharge tube by sliding the 3" blue sleeves over the throttle body and Supercharger with the clamps loosened completely. Put the discharge tube into the throttle body side first, then slide the Supercharger output sleeve over the discharge tube. Install the rest of the 3/8-16 x 3/4" socket head screws and 3/8 AN washers in the supercharger and mounting plate. Tighten. Make sure the blue silicone sleeves are positioned properly on the discharge tube and tighten the clamps (see figure 26).

STEP 25. Supercharger belt tensioner mounting. Using the 3 (three) supplied 3/8-16 x 3/4" bolts and washers, install the Supercharger belt tensioner assembly to the front of the Supercharger mounting plate. Tighten finger tight only at this time. Re-install the factory belt around the factory accessories according to the new belt routing diagram (figure 27). Push the accessory belt tensioner down by hand and tighten 1/2" nut on tensioner pulley snugly but not fully. Place a 3/4" open end wrench over the bushing behind the flat faced idler pulley and push or tap down until accessory belt is fully tightened. Tighten 1/2" nut on pulley fully. Place the supplied Supercharger belt over the Supercharger crank pulley, under the Supercharger belt tensioner pulley and over the Supercharger driven pulley (see figure 28). Push down on the tensioner by hand and snug-up the 3 (three) 3/8-16 x 3/4" bolts. Using the same method as above, tighten the Supercharger belt fully, then tighten the 3 (three) 3/8-16 x 3/4" bolts fully.

STEP 26. Radiator hose modification: Cut the stock radiator hose per drawing (see figure 29). Place the supplied radiator hose tube into the cut ends of the radiator hose and tighten the clamps loosely. Install the radiator hose to the thermostat housing and the radiator. Rotate the assembly as necessary to avoid hitting any belts or other items. Tighten all clamps securely.

STEP 27. Plastic radiator cover modification: Using the supplied template (see figure 30). Cut the radiator cover in the 2 (two) spots indicated (see figure 31). Place the supplied vinyl molding over the cuts and squeeze to secure. **NOTE: This is especially important where the radiator hose touches the radiator cover. A sharp edge will wear a hole in the radiator hose (see figure 32).**

STEP 28. Air flow diverter valve (9psi only). Install the air flow diverter valve as per the enclosed drawing (see figure 33). Run the supplied 5/32" vacuum hose from the top of the diverter valve to the supplied 5/32" vacuum tee.

Cut the FRU vacuum line and install the 5/32" tee in the FRU vacuum line.

STEP 29. 155LPH fuel pump (9psi only). Make sure your fuel tank is completely empty! Then follow the directions included in the fuel pump assembly. **Failure to install this pump, or incorrect installation will cause severe engine damage due to a lean condition!**

STEP 30. Computer chip installation (9psi only). The Ford EEC-IV computer is located behind the passenger side kick panel. Remove the panel by carefully pulling out the push-in connectors. **DO NOT:** break these connectors! Follow the instructions included with the computer chip. **Failure to install this chip or incorrect installation will cause severe engine damage!**

STEP 31. Refill radiator and radiator over flow bottle with coolant. Re-connect battery cable.

STEP 32. Check all bolts, nuts, screws and clamps for tightness. Turn the ignition to the "on" position, then off (do not start car) and check the fuel system for leaks. (If leaks occur, mop up **immediately:** and refer back to step 22 in these instructions for proper installation). While checking the fuel system for leaks, look again at the fuel line routing -make sure: the fuel lines are routed away from any: heat source and there is enough play for engine torque.

STEP 33. Start the engine and let it run for a few seconds. Shut off the engine and re-check for fuel leaks (see step 32 above) and for belt alignment. Start the engine again and run at idle for 5 minutes. Check for coolant leaks and refill bottle if necessary. Drive the car easily for the first 20 - 30 miles to break-in the Supercharger. **NOTE:** After a few miles check the Supercharger belt for tightness due to stretching.-

FIGURE #1

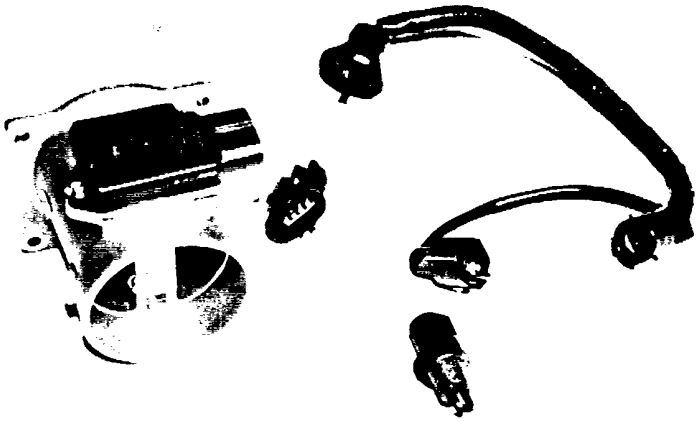


FIGURE #2

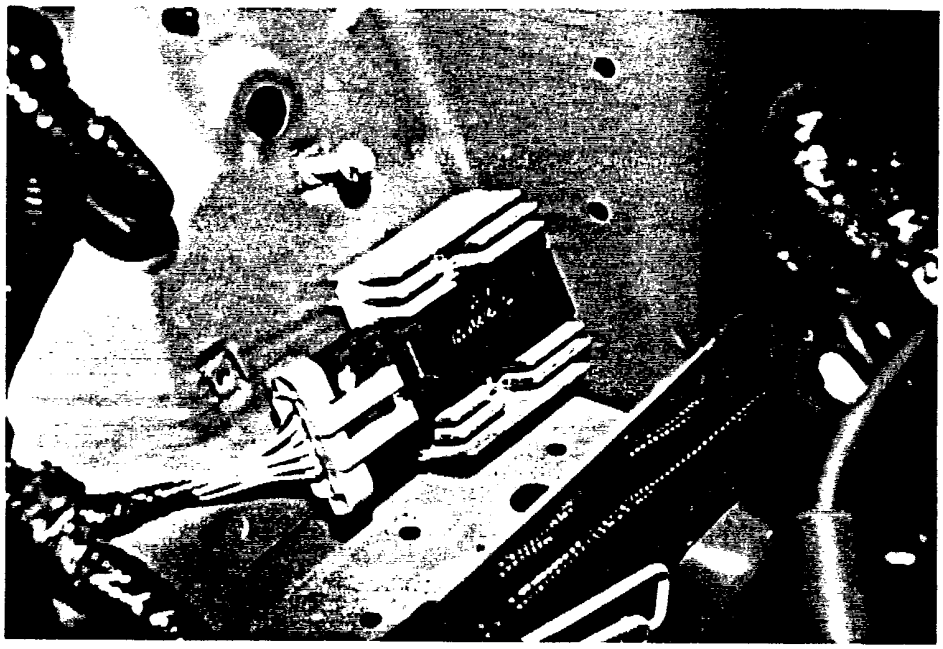


FIGURE #3
(A/C LINE STOCK LOCATION)

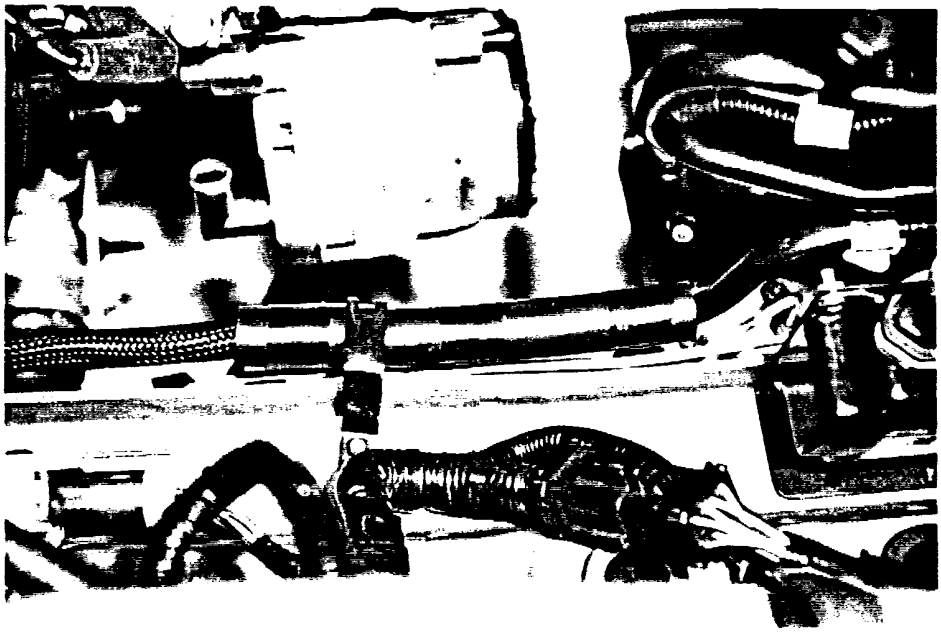


FIGURE #4
(A/C LINE RELOCATED)

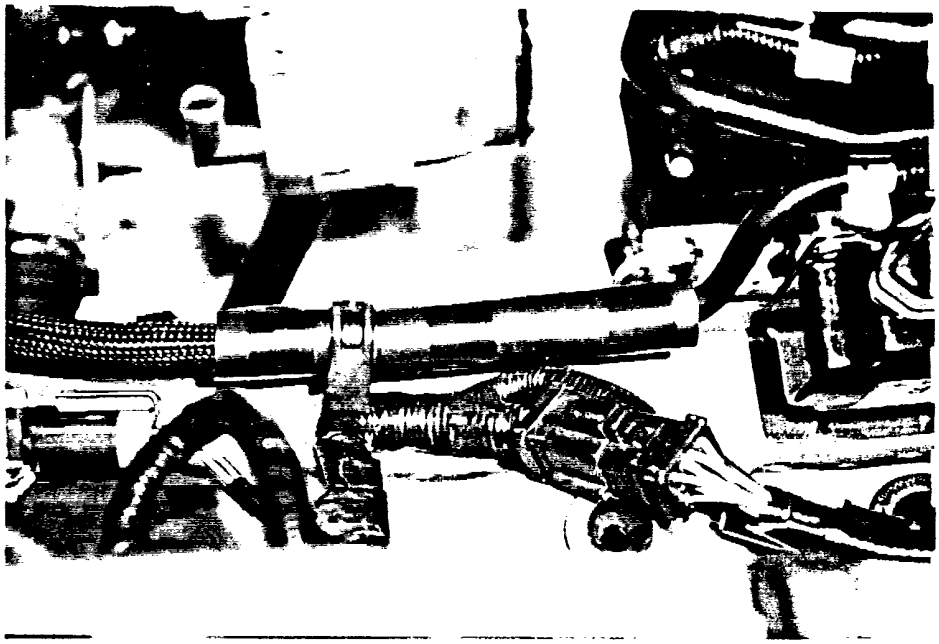


FIGURE #5

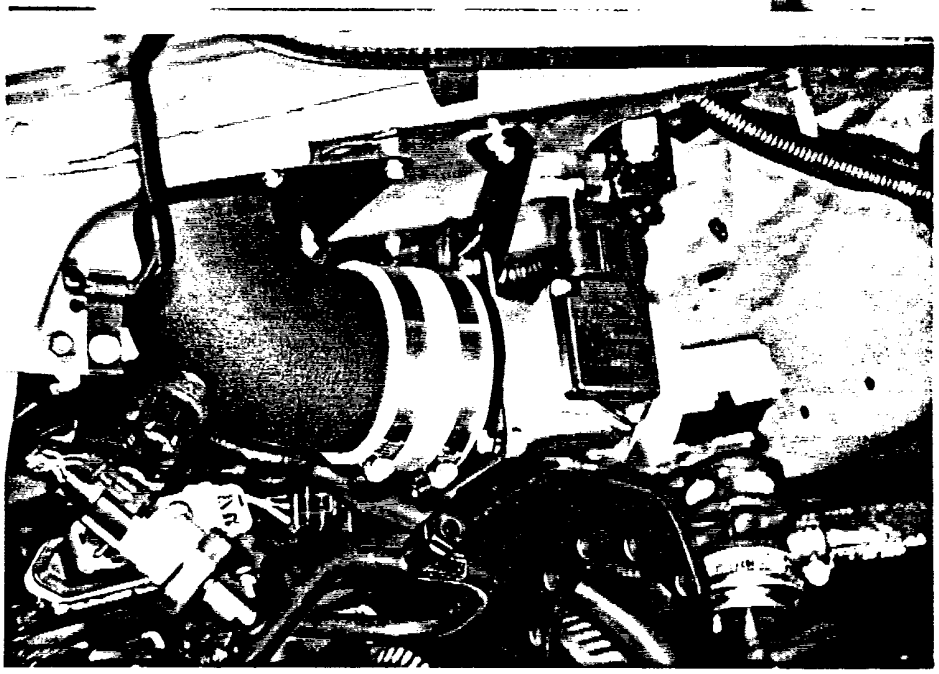


FIGURE #6
(WIRING HARDNESS
STOCK LOCATION)

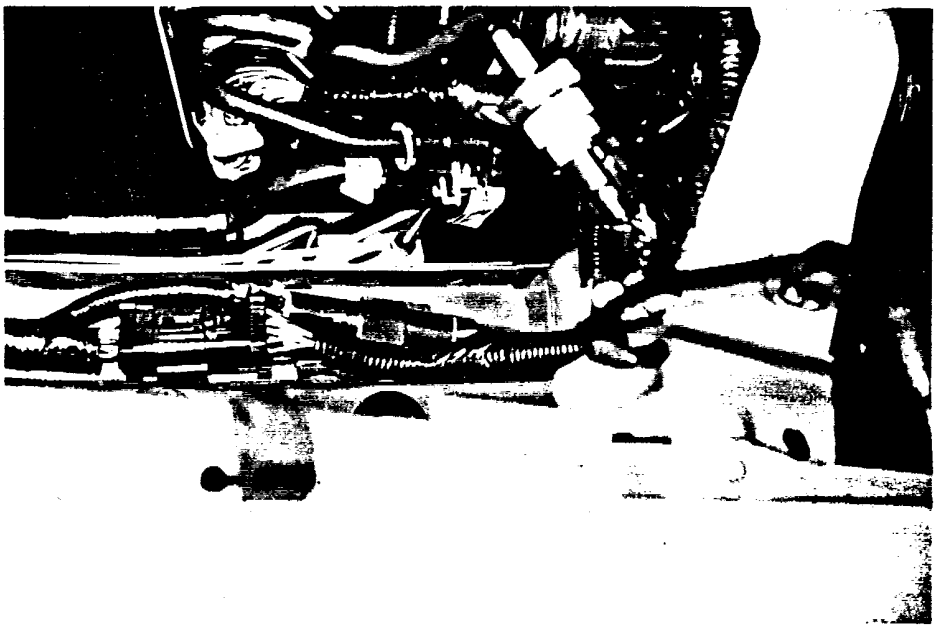


FIGURE #7
(WIRING HARNESS RELOCATED)

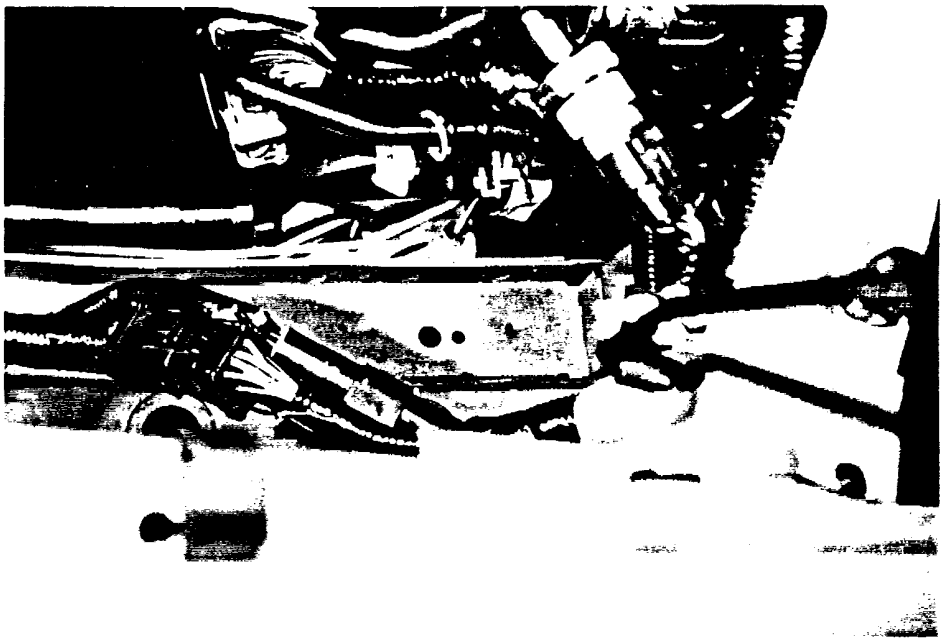


FIGURE #8

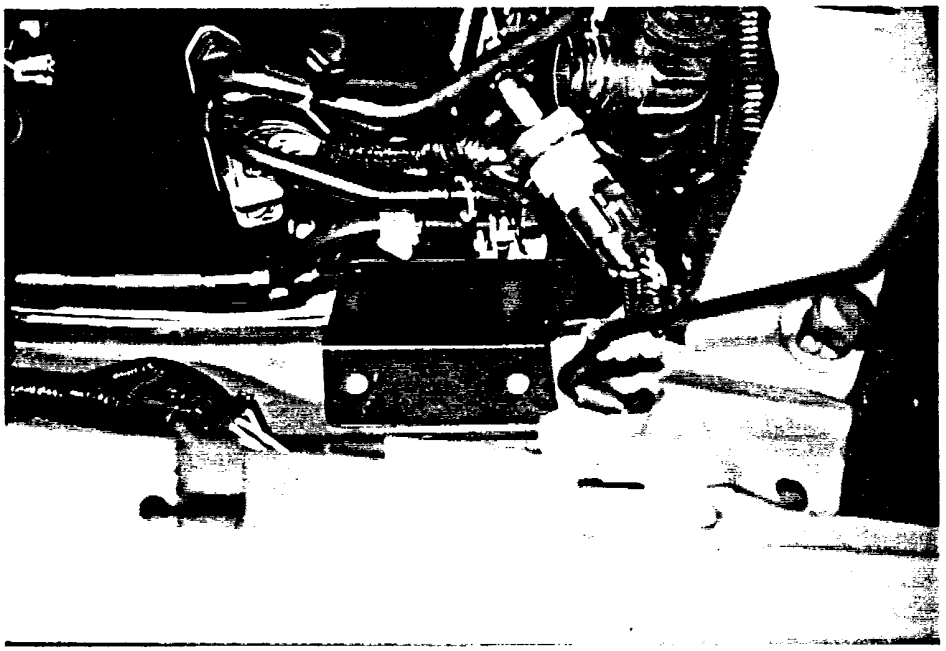


FIGURE #9

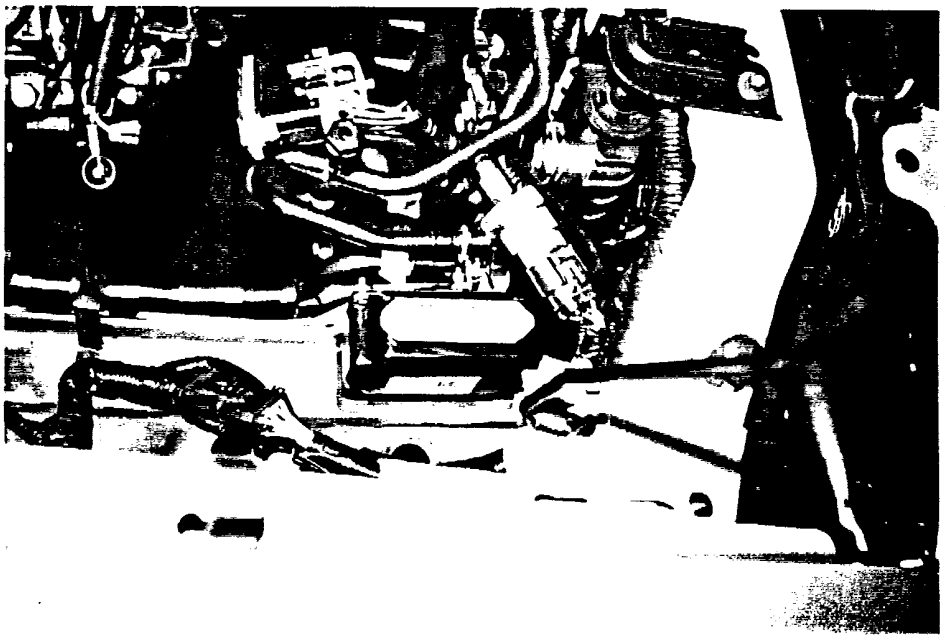


FIGURE #10

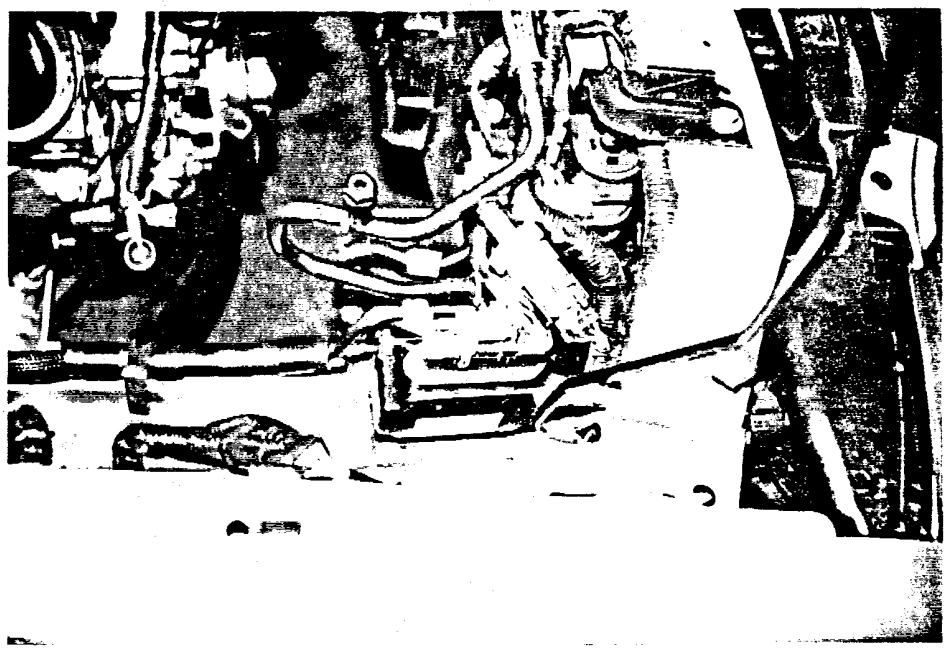


FIGURE #11

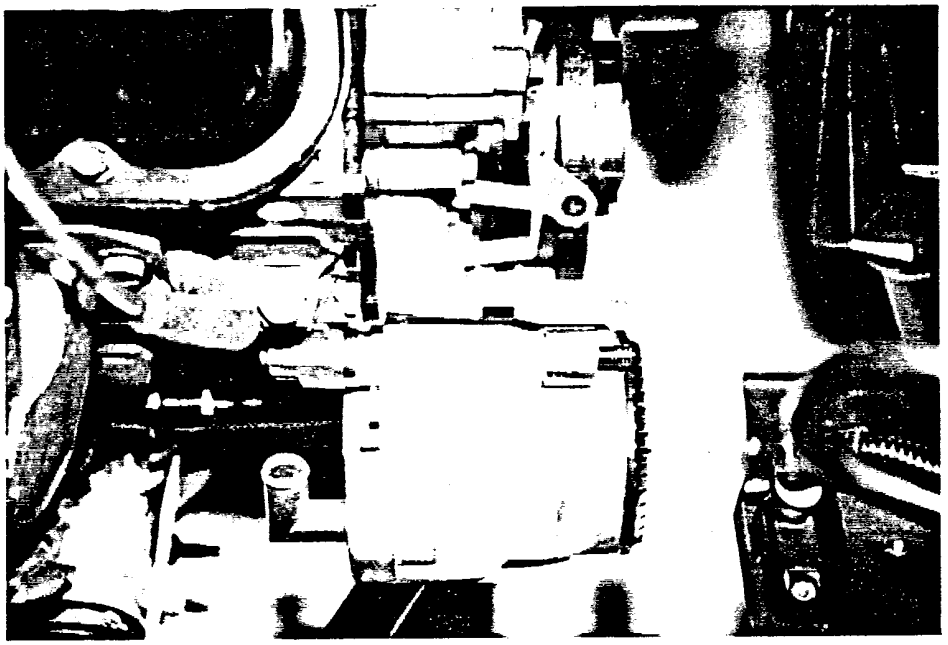


FIGURE #11A

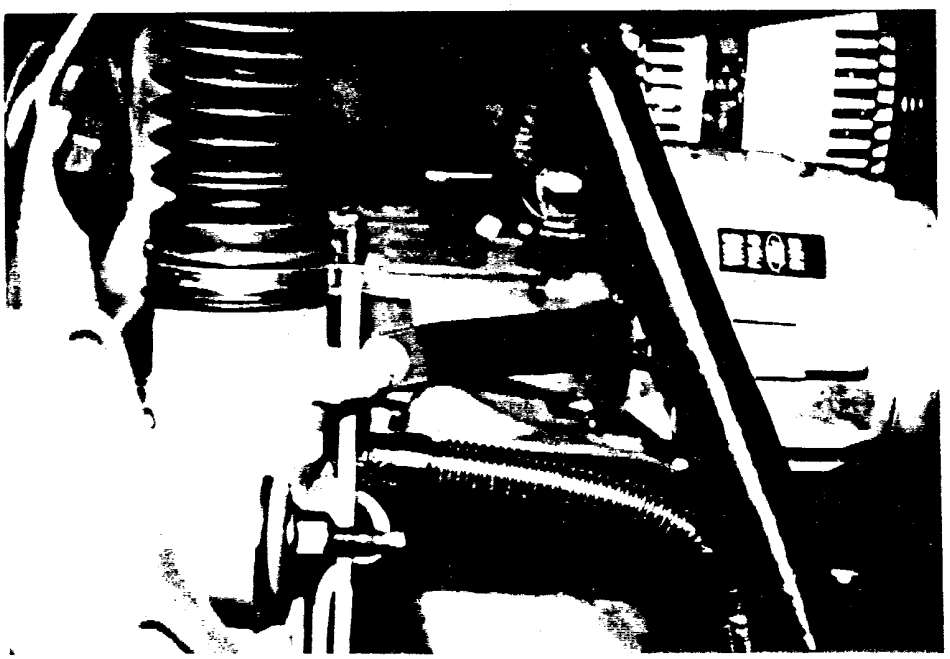


FIGURE #~~12~~ 13

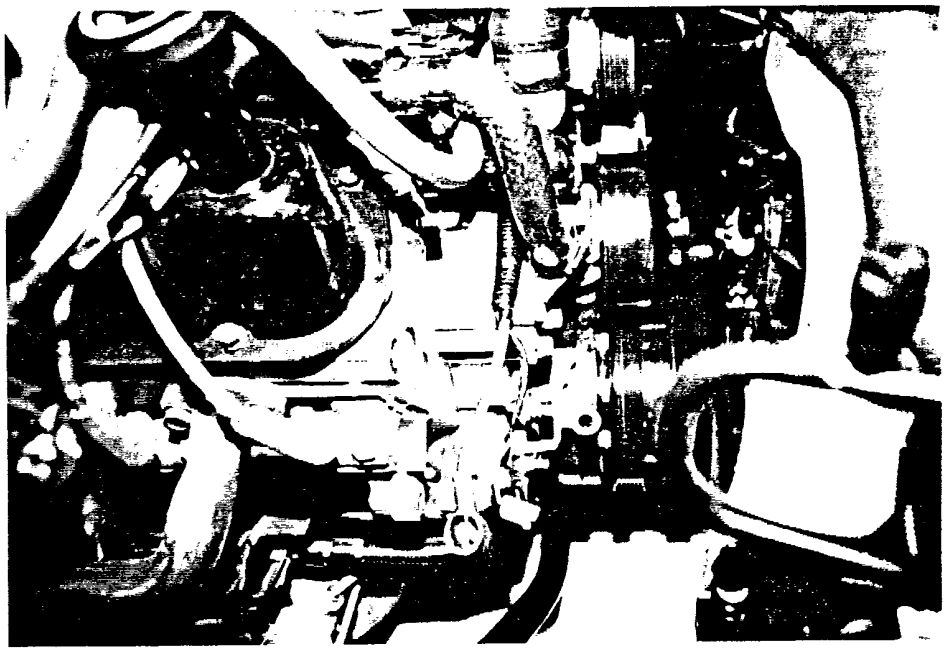


FIGURE #~~13~~ 12

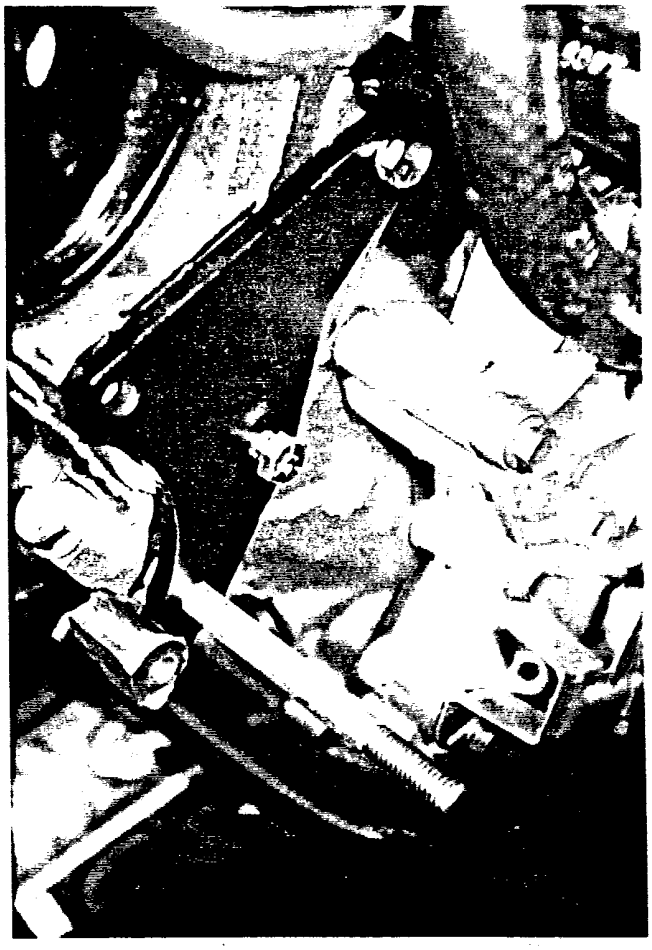


FIGURE #14
(ALTERNATOR STOCK
CONFIGURATION)

FIGURE #15
(ALTERNATOR, RECLOCKED)

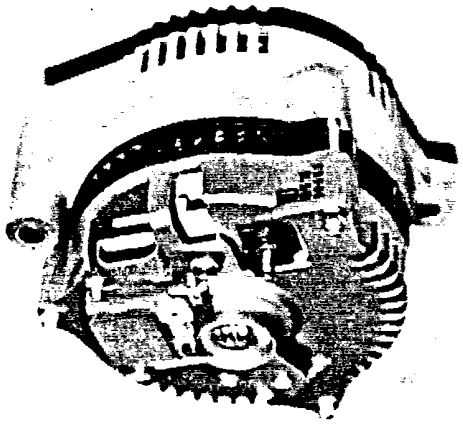


FIGURE #16

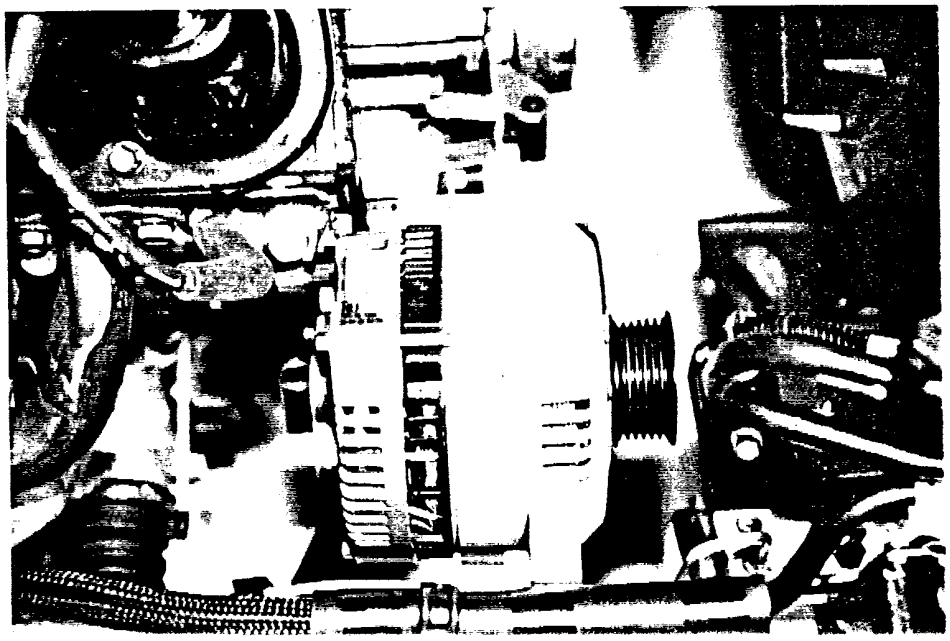


FIGURE #17
(ALTERNATOR INSTALLED)

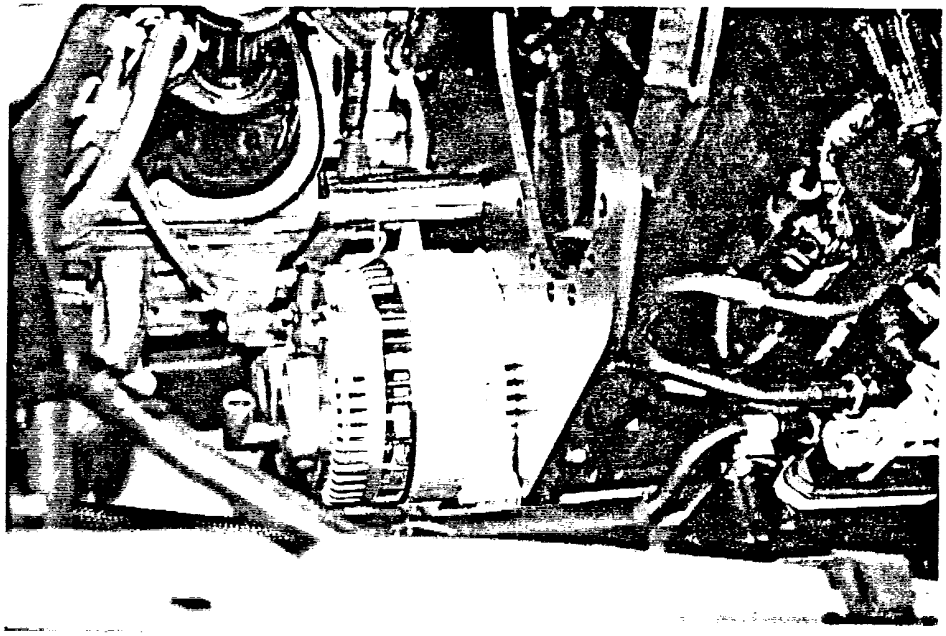


FIGURE #18

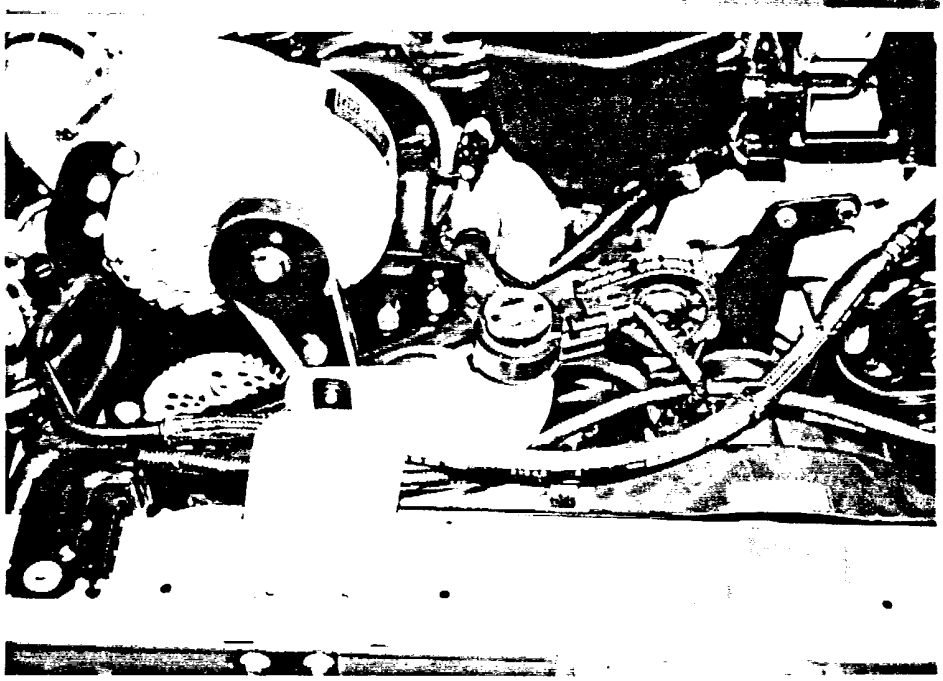


FIGURE #19

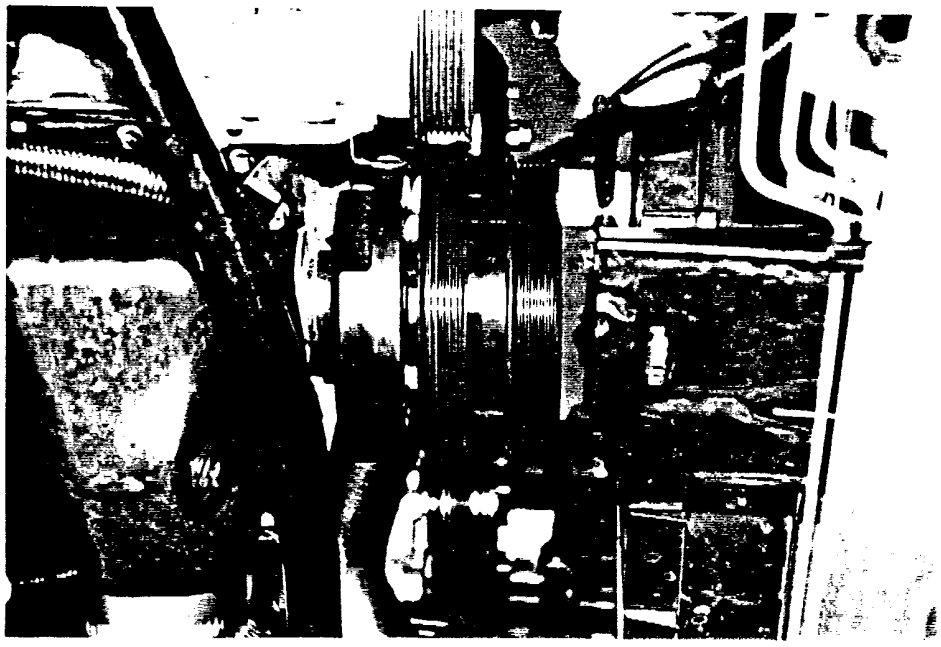


FIGURE #20

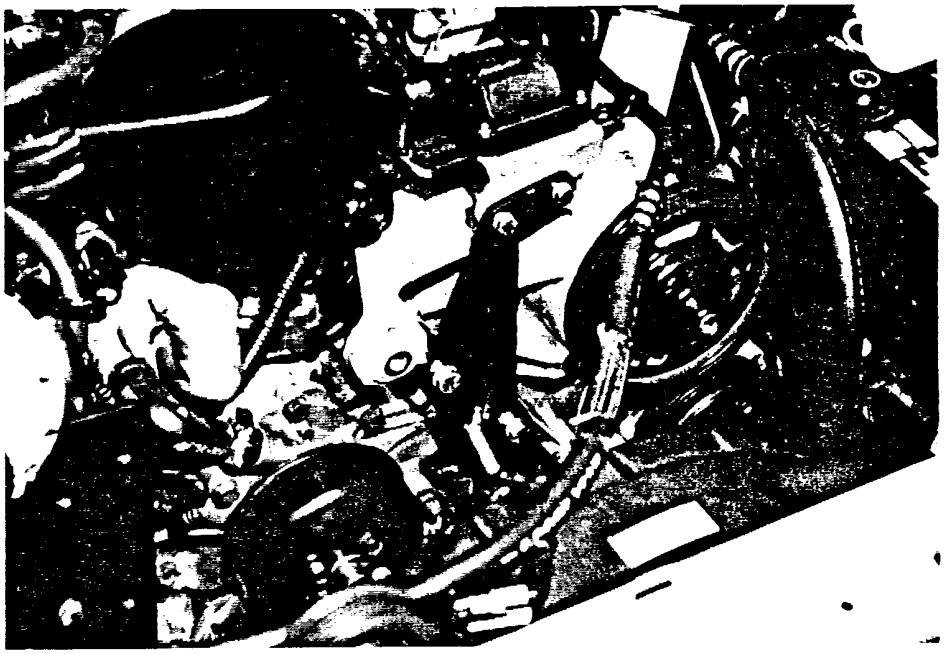


FIGURE #21

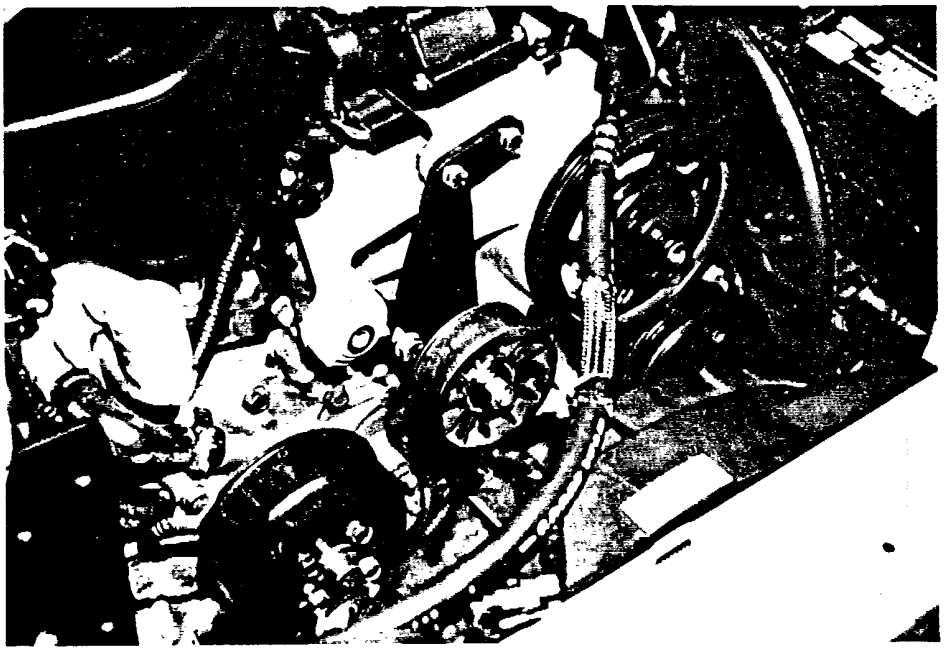


FIGURE #22
(FRU MOUNTING &
LINE ROUTING)

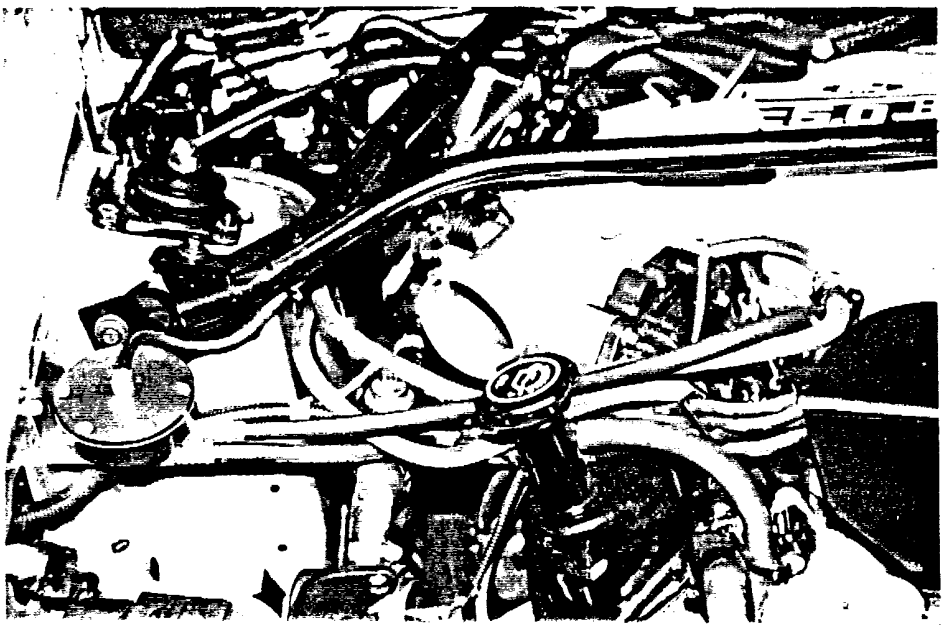


FIGURE #23

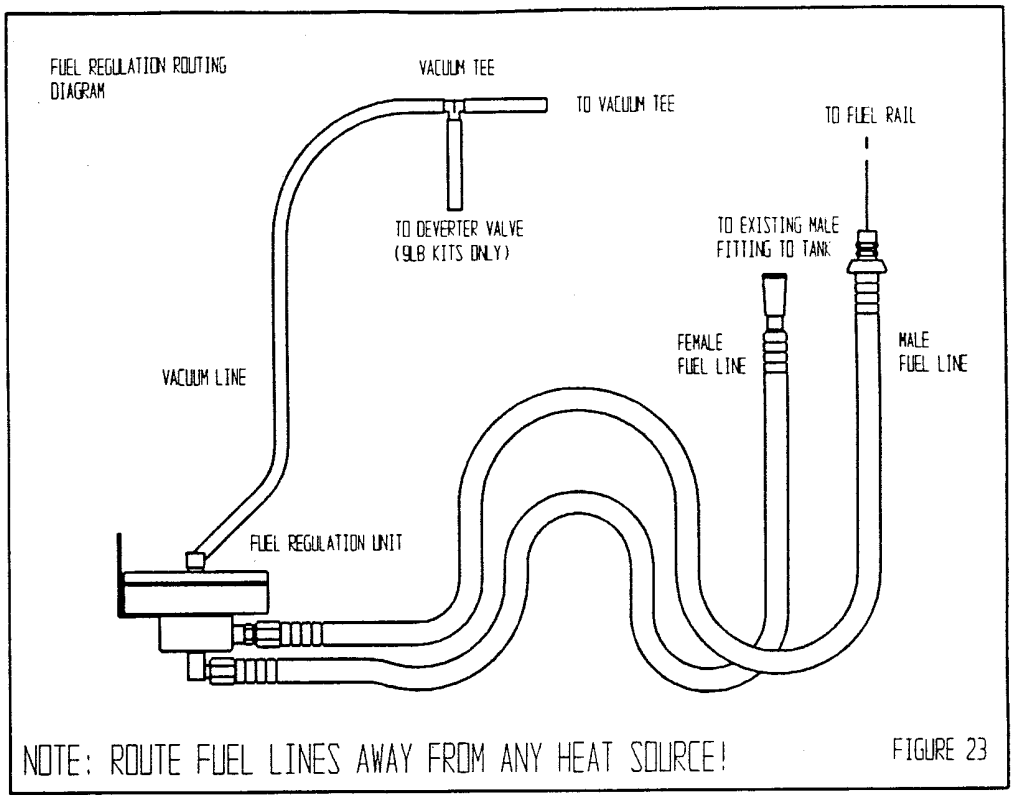


FIGURE #24

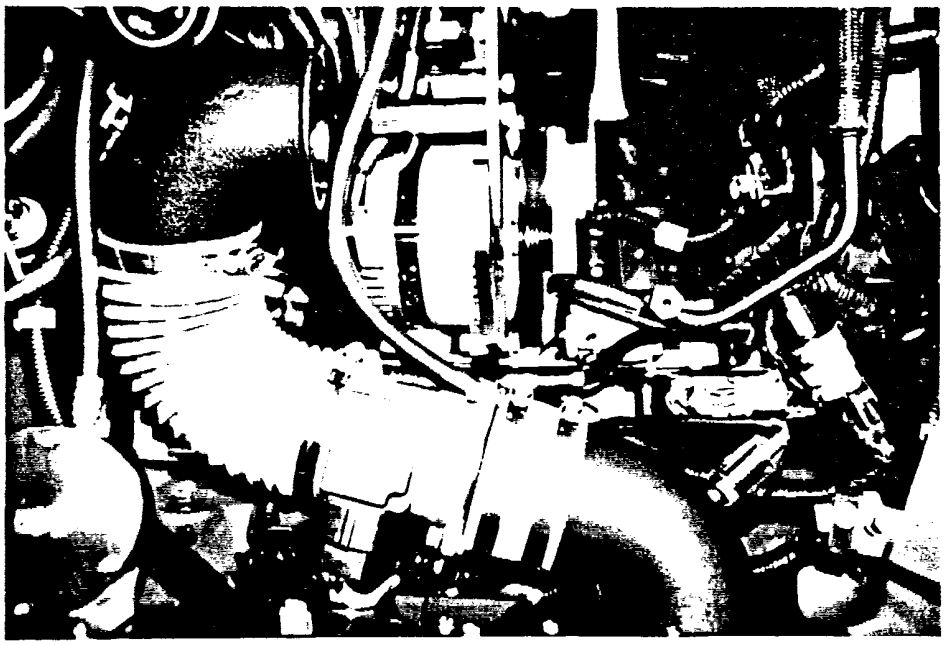


FIGURE #25

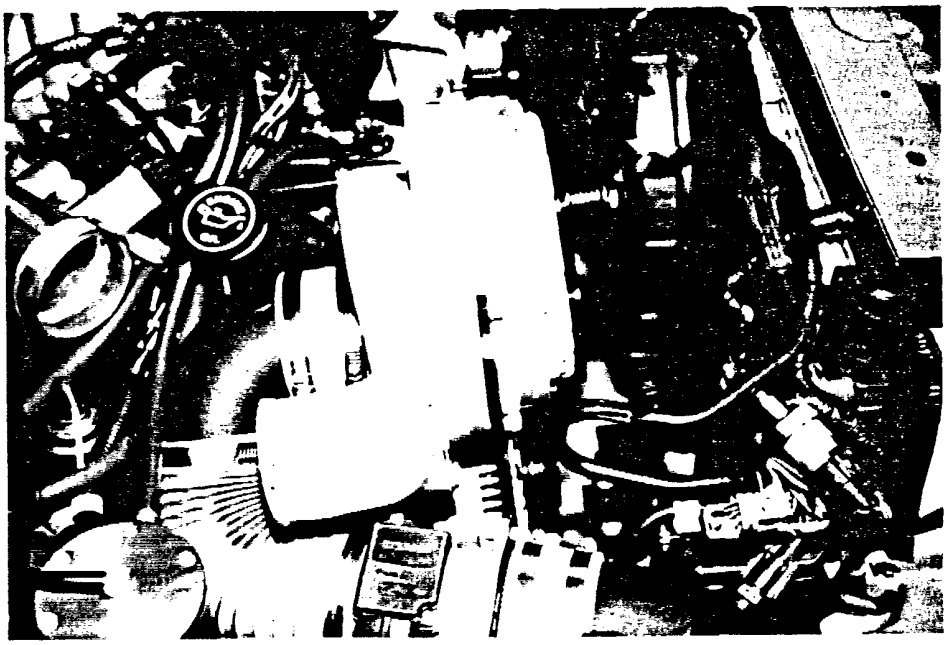


FIGURE #26

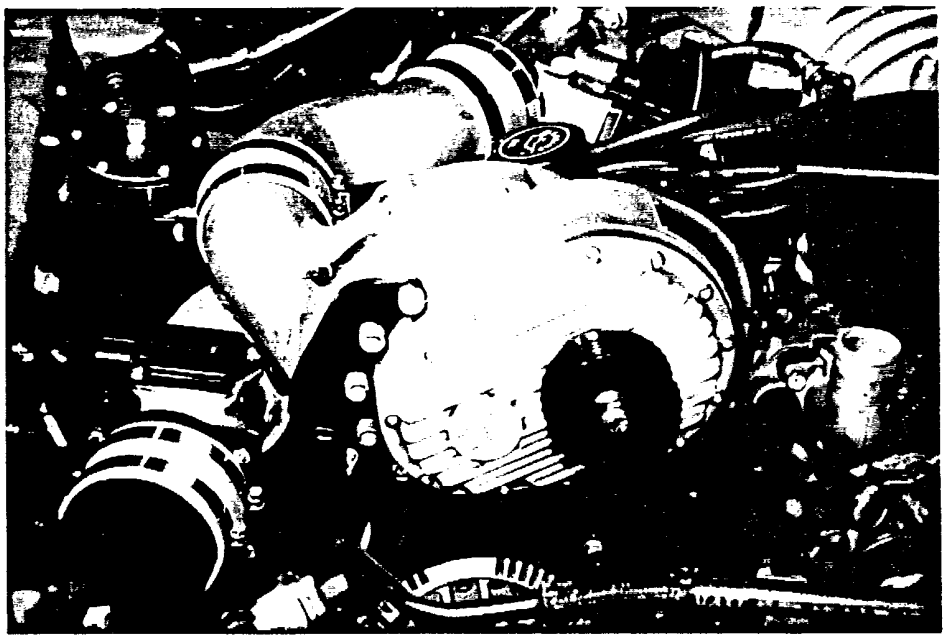


FIGURE #27
(ACCESSORY BELT ROUTING)

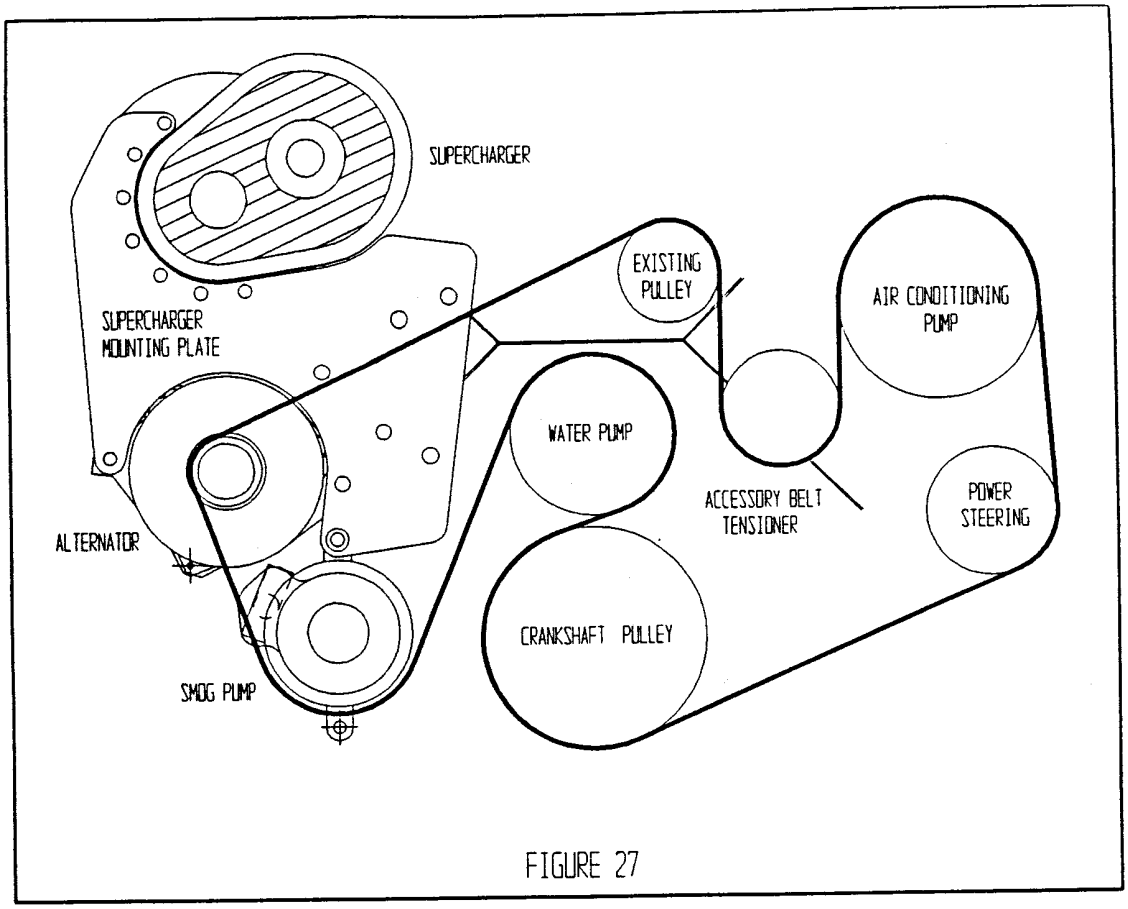


FIGURE 27

FIGURE #28
(SUPERCHARGER BELT ROUTING)

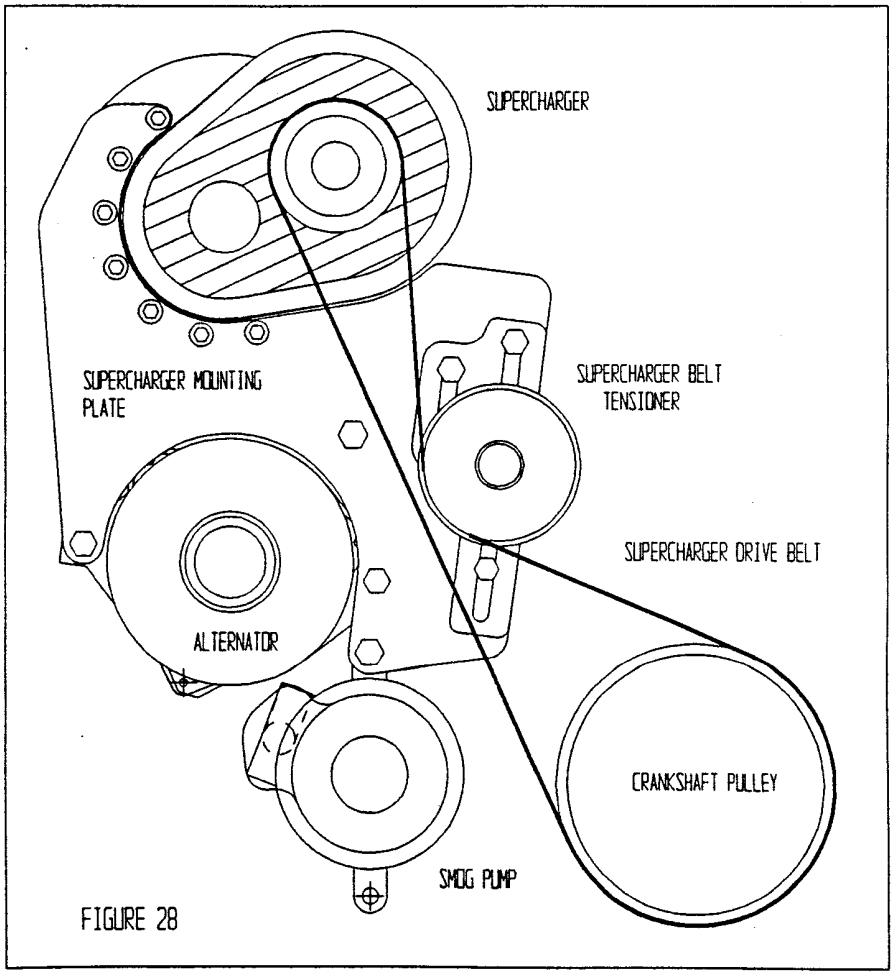


FIGURE 28

FIGURE #29

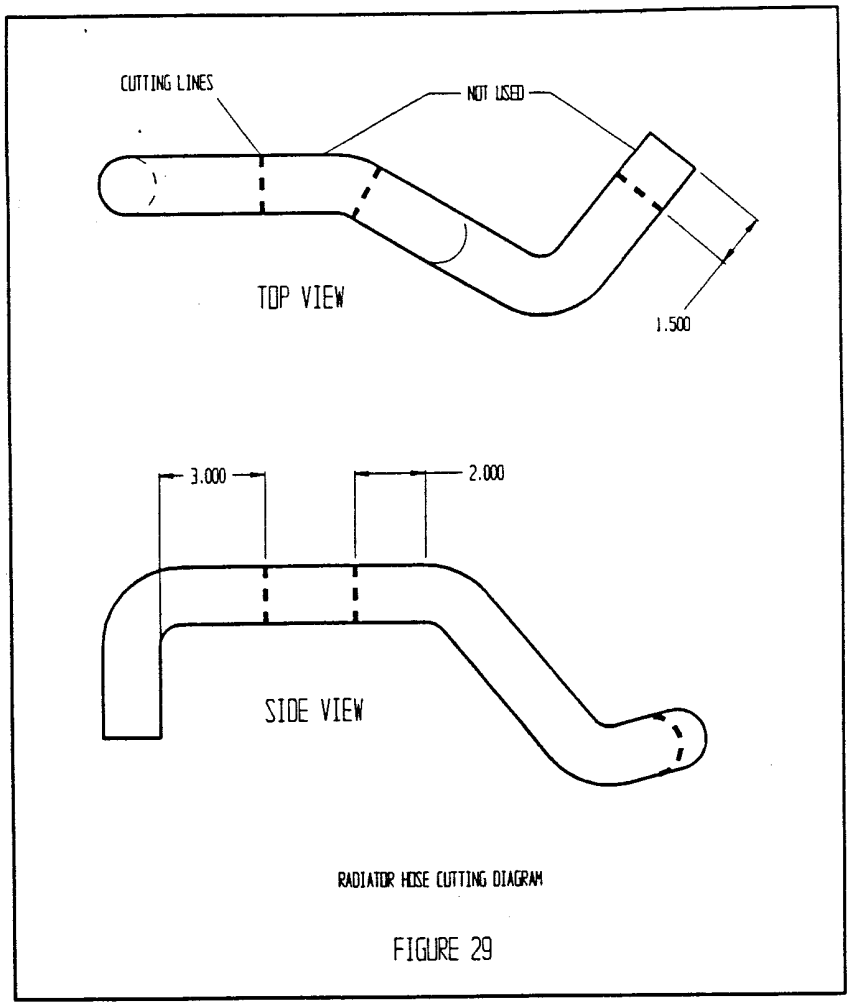

CUTTING LINES
NOT USED
TOP VIEW
1.500
3.000
2.000
SIDE VIEW
RADIATOR HOSE CUTTING DIAGRAM
FIGURE 29

FIGURE #31

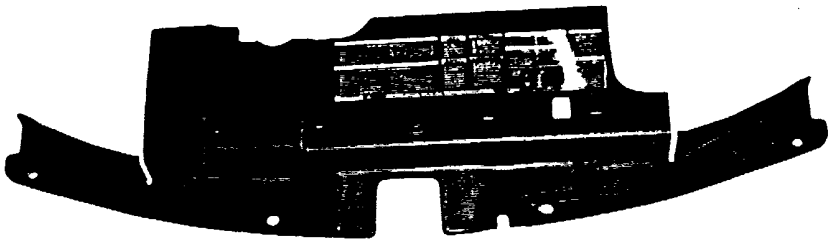


FIGURE #32

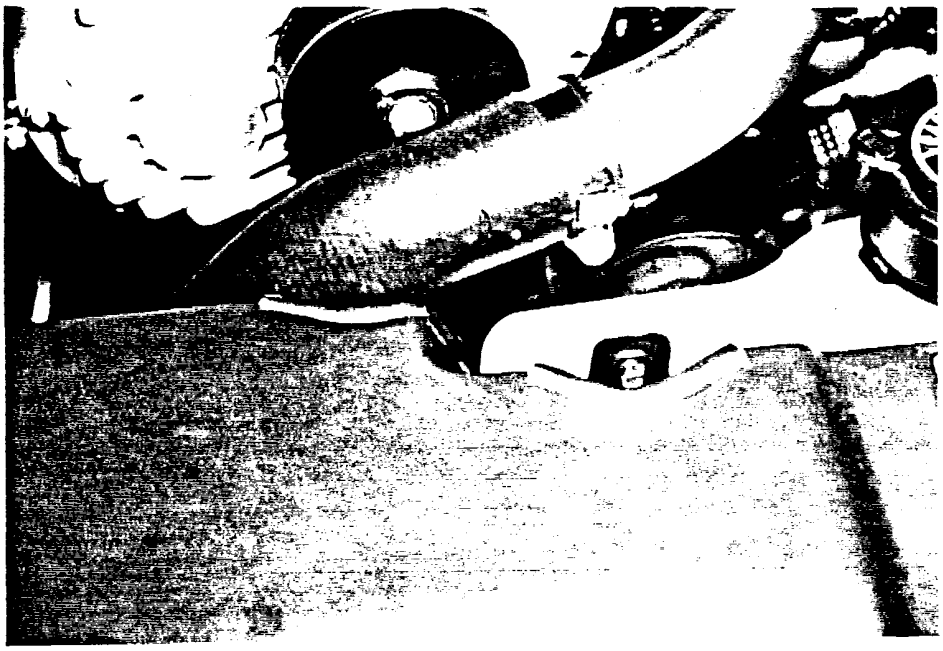


FIGURE #33

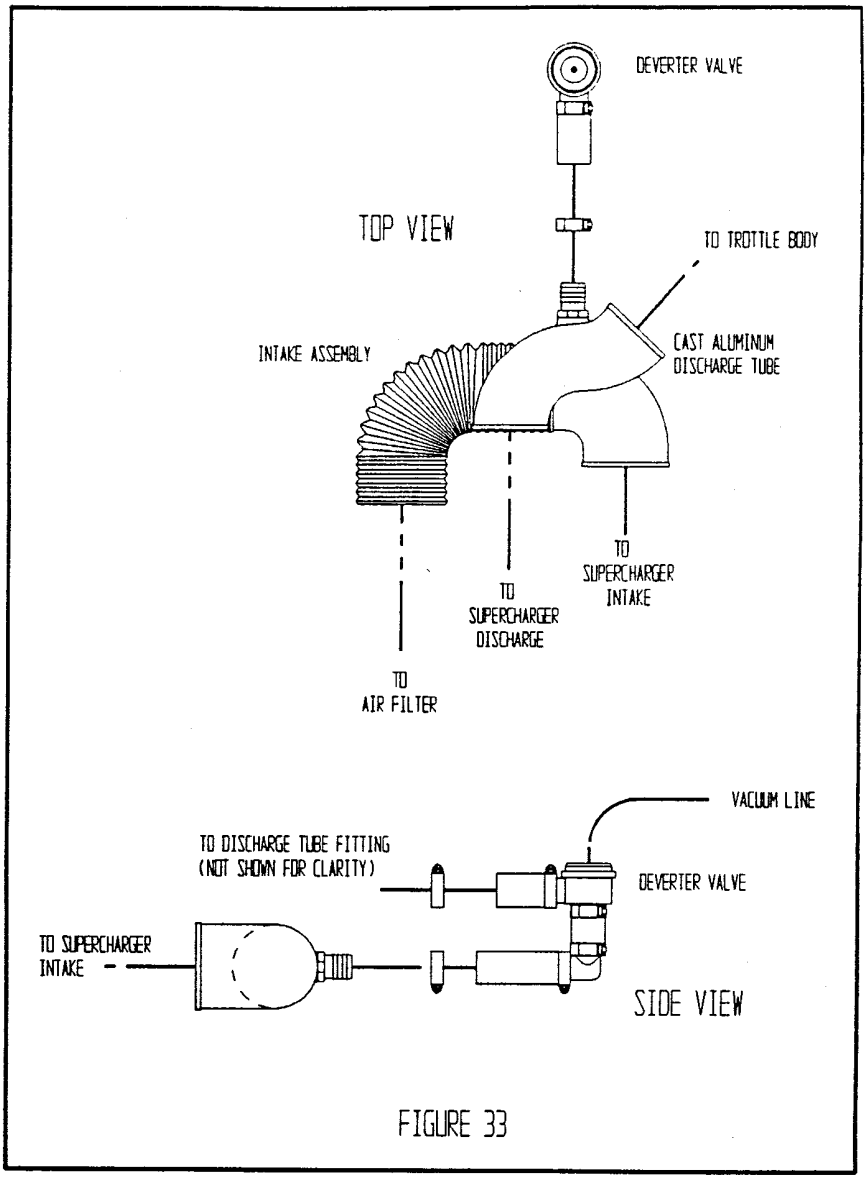
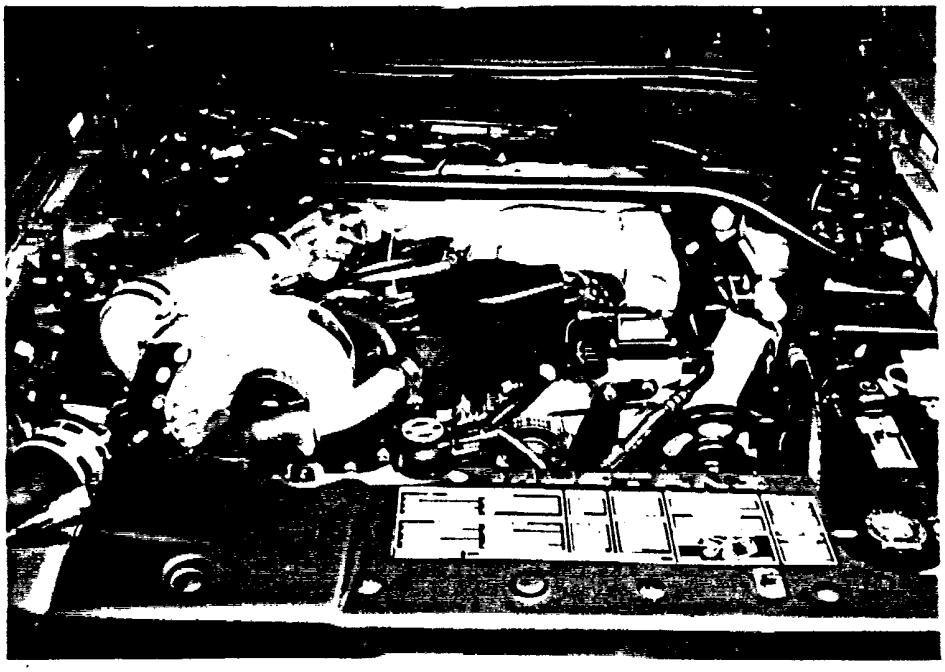


FIGURE 33

COMPLETE INSTALLATION



STEP 28. Air flow diverter valve (9psi only). Install the air flow diverter valve as per the enclosed drawing (see figure 33). Run the supplied 5/32" vacuum hose from the top of the diverter valve to the supplied 5/32" vacuum tee. Cut the FRU vacuum line and install the 5/32" tee in the FRU vacuum line.