KENNE BELL

THE ULTIMATE MUSTANG SUPERCHARGER

INSTALLATION INSTRUCTIONS & OWNERS MANUAL

1986-'93 MUSTANG 5.0 HO V8

(WITH A/C - WITHOUT AC)

Supercharger Serial Number _____

Date of Shipment _____

Purchased by _____

Kenne Bell Superchargers - 10743 Bell Court, Rancho Cucamonga, CA 91730

INSTRUCTION FIGURES AND ILLUSTRATIONS

To assist you in the installation of the Kenne Bell TS1000 Kit, we've listed the illustrations for quick reference. We have gone to great lengths to provide you with comprehensive, easy to understand instructions.

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Illustration: 24-04-6 Fuel Injection - Upper Intake & TB removal

Illustration 24-04-10 Fuel Line Removal

KENNE BELL

INSTALLATION INSTRUCTIONS
KENNE BELL TS1000 SUPERCHARGER KIT
FORD MUSTANG 5.0 LHO 1986-'93

INTRODUCTION

Congratulations. You have just purchased the most technically advanced supercharger kit available for the Ford 5.0 L HO.
The supercharger is the latest design Twin Screw design. It is a highly efficient supercharger that delivers boost with considerably lower intake charge temperature than other mechanical designs. Adiabatic efficiency is an enviable 60-70% over the entire RPM range. Torque and boost "come in" earlier than with any other design, without lag or hesitation so you FEEL the flat torque curve and maximum power even at the lower RPM levels. Life expectancy is as much as 3 times the life of the engine itself when maintained properly. There are no teflon seals on the rotors to wear or whine.

Fuel pressure and delivery is raised at wide open throttle under boost to compensate for the additional horsepower developed by the engine. To generate the additional fuel an auxiliary fuel pressure device (fuel system booster) is activated under boost.

No emissions devices are de-activated or removed; nor is the air fuel ratio or spark timing altered in the EEC-IV.

IMPORTANT

Read over all the installation instruction materials before starting so you have a better understanding of the kit.

INSTALLATION OVERVIEW

The Kenne Bell TS1000 Supercharger Kit is a simple, straight forward installation as compared to other kits. It requires removal of the intake manifold (6 bolts) and the throttle body (4 bolts.)
Hook up the 3 vacuum hoses (location marked) connect the fuel system and install the Supercharger Assembly with the new support brackets. That's all there is to it. All necessary gaskets, bolts, brackets, etc. are included. It is not necessary to relocate the MAF sensor, alternator, air intake box, air pump, fuel line brackets, radiator hose, etc., and drill holes in the oil pan as with other kits. No external oil coolers or filters are required. The Supercharger features a self contained, internally lubricated system. Installation time is a fraction of other kits, taking a mere 2 1/2 hours with a little experience. If installing the system yourself the first time, it will take longer. Take your time.

The TS1000-5 (5 psi) kit and the TS1000-8 (8 psi) kit are both 50 State Legal, and utilize the same supercharger. The TS1000-8 (8 psi) kit includes:

1. Retard Ignition System
2. 155 L In-Tank Fuel Pump
3. A smaller pulley
4. A Pressure Switch (activates retard system)

The instructions, therefore, apply to both kits.

TOOLS REQUIRED

- Ordinary hand tools
- OTC #7363 or Ford Motorcraft CT-1543-B Fuel Line Disconnect Kit
- Hacksaw
- 1/2" drill bit
- 1/2" drill motor
- Grinder
- Drain pan for coolant

(1/4" T-Handle Allen Ball Wrench included in kit)

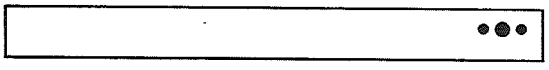
BOLT SIZES

- Adjustable Idler Pulley Outer Nut - 1 1/16"
- Adjustable Idler Pulley Inner Nut - 9/16"
- Supercharger Pulley - 8mm (5/16")
- Supercharger Top and Rear - 6mm
- Supercharger Drain Plug - 3mm
- Supercharger Oil Level Plug - 21mm
- Supercharger Extension Housing - 5mm
- Supercharger (Blower) inlet Manifold - 1/4"

Note:

A special wrench (F3140) if required to remove the supercharger pulley. Allen bolt must be torqued to [redacted] 59 Ft. lbs.

F3140 Pulley Tool



KENNE BELL
INSTALLATION INSTRUCTIONS

TS1000-8 KIT (8 PSI)

The TS1000-8 (8psi) Kit is identical to the TS1000-5 (5 psi) except for the following:

1. **Crane Hi-Capacity Ignition**
2. **Crane Retard Unit**
3. **Pressure Switch (mounted in outlet (blower) manifold)**
4. **155L/HR In-Tank Fuel Pump**

BASIC OPERATION

At approximately 3-4 psi, the pressure switch opens and sends a signal to the Crane Retard Unit. If any retard is dialed in on the unit, the timing is immediately retarded that amount (1-20) under boost. If there is no evidence of detonation, do not dial in any retard as it will reduce performance.

Note: Since the boost of the Kenne Bell Kit is full boost at any RPM above 2000, and not a progressive boost build up that is dependent on RPM (1 psi at 1000, 2 psi at 2000, 3 psi at 3000, 4 psi at 5000, etc.) we need not concern ourselves with degrees of retard per 1000 RPM as others do. Merely dial in the retard the engine requires under boost and that's it.

ILLUSTRATIONS

For those not entirely familiar with the Ford engine, etc., we have included illustrations from the Ford Service Manual to help you with the installation.

Sit down and read these instructions before beginning.

BEFORE INSTALLATION

1. Change the air filter but NEVER remove it when operating the engine. Like any supercharger, your new Kenne Bell Supercharger demands clean air. The stock paper panel filter is OK IF a ram air hose is not connected to it.

The Kenne Bell Ram Air Kit with 9" "Big Boy" cone filter minimizes restriction, protects the engine and supercharger, and increases horsepower.

NEVER OPERATE THIS SUPERCHARGER WITHOUT A QUALITY AIR FILTER.

2. Check engine timing. Should be 10 degrees BTDC as per manufacturer's recommendations.

3. Remove any aftermarket Chip (Prom.)

4. Be sure spark plugs, wires and ignition system are in good condition. Use only copper core spark plugs.

KENNE BELL
INSTALLATION INSTRUCTIONS

TS1000 SUPERCHARGER KIT (5 AND 8 PSI)

BEFORE INSTALLATION

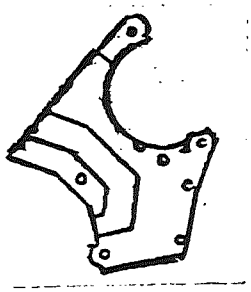
SEE OTHER PAGE

1. Remove the air inlet tube assembly (Illustration 24-41-2)

2. Drain cooling system

3. Remove fan belt & discharge AC system. Remove the two hoses from the AC compressor. (Fig. 2) The ends will be cut off and the new Kenne Bell AC Hose Extensions ("O" and "P") installed in these hoses.

4. Remove all hardware that attaches front plate to engine and remove front plate (plate holds AC compressor & power steering pump.) It looks like this:



*Note: If vehicle was NOT originally equipped with AC, a different length belt (F3131) is required, as the power steering pump is located in a higher location. If eliminating the AC compressor from an AC equipped vehicle, we offer yet another belt (3132.)

5. Remove the inside rear attaching bolt from AC compressor so it can pivot on the remaining outside bolt. (The AC compressor will be rotated to a different location with this kit.)

6. Modify front plate according to the template provided (Fig. 3), i.e., cut off end, grind ledge and drill out hole to 1/2") Note: This is ALL the cutting, etc. required with these kits.

7. Remove all electrical connections & hoses attached to the throttle body and the throttle linkage.

8. Remove the throttle cable bracket.

9. Remove all hoses attached to the upper intake manifold and the air inlet hose attached to the throttle body.

10. Remove the 6 bolts that hold the upper intake to the lower intake manifold and then remove the entire manifold/throttle body assembly from engine (Illus. 24-04-07.)

11. Remove plug wires from the left engine bank and lay them out of the way on the other side of engine: Note: If wires are old, replace with Kenne Bell F1030 "Red Hot" Lifetime Silicone Wires.

12. Remove the throtle body assembly and EGR base from the stock manifold. Remove 2 of the studs from the stock upper intake manifold & install them into the top 2 holes of the supercharger inlet manifold, using a light coat of Anti-Seize(Permatex 133K or equal)--this is the best guarantee a bolt will never seize in aluminum--on the threads. Moly cam lube also works well. Install the throttle body & EGR base assembly onto the supercharger inlet manifold, using the new gaskets ("V" and "W"), and 2 long bolts provided, again using "Anti-Seize" on the threads.

13. Re-install the modified front plate & pivot the AC compressor toward the outside of the car.
Note: DO NOT tighten the AC support bracket until all AC bolts are aligned and started.

14. Remove the old gasket from the lower intake manifold and clean surfacer thoroughly, and install new intake gasket "U". Note: Use a little Gasgacinch in each corner to hold the gasket in place while installing the supercharger. Now you're ready to install the Supercharger Assembly.
IMPORTANT: Standing on the left side of the engine, rotate the 4 fuel injectors counter clockwise until the connector terminals contact the fuel rail. This gives the necessary clearance between the injectors and the Supercharger. Note: It is easier if you now connect the vacuum line to the PCV valve, as it is difficult to get at once the Supercharger is installed.

15. First install the 5/16" stud provided into the lower intake manifold hole closest to the stock fuel pres sure regulator (passenger's side rear hole) and lay supercharger assembly on lower intake manifold us- ing the 5/16" stud as a guide. Install the front and the long center passenger side bolts, coating threads with Anti-Seize, moly lube or oil, lift the supercharger assembly upward and hand tighten these 3 bolts.

16. Install the 3 driver's side bolts. Note: The T-handle 6mm wrench supplied in kit must be used to tighten the hard-to-get-at center bolt underneath the supercharger intake. Tighten all bolts.

17. Install the front supercharger support bracket "L" over the supercharger drive and attach it to the front engine plate at locations "A" and "B" with the two (2) 7/16" bolts provided. Use the black machined washers on both sides. (See Fig. 4) DO NOT TIGHTEN YET.

18. Now install the two (2) remaining bolts into the AC compressor at locations "C" and "D", with the black and gold washer shims between the supercharger support bracket & AC compressor.
Note: The black washers must be installed against the support bracket. The gold washers go between the black washer and AC compressor (Fig.4).

19. Now you are ready to tighten all the bolts. Be sure the bracket is not binding on the supercharger extension housing. All the bolts should line up and the bracket should slide on the extension housing without binding. Tighten bolts "A" and "B" and then bolts "C" and "D".

20. Install the rear support bracket "K" to the bottom left rear bolt hole of the supercharger and to the rear exhaust manifold bolt hole, using the new bolt "N" and shims. The shims go between the bracket and the header flange. (Fig.1.) INSTALL THIS BRACKET LAST. Headers other than OEM (stock) will require modifying the bracket. This is only a support bracket so do not bolt down so it in any way "pulls" or places a load on the supercharger. Note: This bracket may be eliminated.

21. Install the belt starting at the supercharger pulley and follow the arrows (Fig. 5) ending up at the supercharger pulley. Push up on the tensioner and loop belt over the supercharger pulley then release the tensioner. The adjustable idler pulley will be in position #1 (Fig.6) with either the 5 psi or 8 psi kit on AC cars. See Fig.7 for ideal belt position and method of checking. We prefer the "minimum" setting for new belts (see Fig.7, View A) as belts stretch.
Replace belt when indicator reads maximum, or adjust the belt with adjustable idler pulley.

22. Disconnect the return fuel line at the push lock fitting closest to the throttle body, using an OTC #7363 or Motorcraft CT-1543-B Fuel Line Disconnect Kit (any parts store has them). The return fuel line is the smaller of the two fuel lines, and is labeled. Separate the fuel line, as it will be routed or looped through the fuel system booster; spread the male and female ends of the disconnected return line, and connect them to the two lines from the fuel system booster. (Connect male to female--female to male, Fig.13, See illus. 24-04-10 for procedure.)

23. Connect the three vacuum lines on the supercharger intake manifold to their indicated positions. (top to PCV, bottom to vacuum tree (where original manifold vacuum hose was connected) and center line to vapor canister/fuel pressure regulator/vacuum line). Fig. 8.

24. Reconnect all electrical connections and hoses to throttle body and EGR base. Reconnect throttle linkage and air inlet hose.

25. Cut the two existing AC hose lines to the AC compressor 1 1/2" back from the metal sleeve (Fig.9) and install the new AC hose extensions in these hoses with the special clamps provided. They connect to the AC compressor, using the new O-rings "R". Route the hose with the 90 Degree fitting ("P") underneath the supercharger extension housing, as shown in Fig.10.
Note: The AC system will have to now be recharged.

26. Lay the left bank spark plug wires under the supercharger shaft extension and reconnect them to the plugs.

27. Fill the supercharger gear case (located on the right upper corner of case) with the special oil provided. (Red Line [redacted] Hi Performance Non-Foaming Synthetic [redacted] or equal.)
Change oil every 12,000 miles.

The supercharger will take 6 - 8 ounces. DO NOT OVERFILL. See Fig. 11.
Check oil level in a day or so and add as required.

28. Refill engine with coolant.

29. CAUTION: Turn on the ignition key, but DO NOT START ENGINE.
CHECK FOR FUEL LEAKS at the O-ring connections and the fuel system booster lines.

30. Start the engine and again check carefully for ANY fuel leaks.

31. You're ready to go! Experience the whisper quiet instant boost-instant torque and unprecedented horsepower of the Kenne Bell TS1000-5.
Boost should be 5-6 psi with no detonation.
If ANY detonation (pinging or knock) occurs, refer to "Troubleshooting Tips", or call Kenne Bell Tech Line (909)941-0985 or FAX (909) 944-4883.

Note: If engine detonates or pings, GET OUT OF IT. It doesn't take long for detonation to cause damage.

KENNE BELL
INSTALLATION AND OPERATION TIPS
KENNE BELL TS1000 SUPERCHARGER KIT

*Use only 92 octane or higher (R&M/2) fuel. If engine detonates, check fuel pressure, injectors, fuel filter, engine temperature, air filter and vacuum leaks (Refer to "Troubleshooting" Section for more detailed recommendations.)

*Kit is designed for stock compression ratio. Higher ratios will cause increased detonation.
A Kenne Bell F1001 Ram Air Kit is HIGHLY RECOMMENDED as it improves performance up to 35HP and .35 sec/3.5mph in the 1/4 mile. The '94-'95 air inlet system is more restrictive than the '86-'93 cars. The Kenne Bell 80mm Mass Air Flow Meter (optional) really helps performance by freeing up the intake restriction. Our data logger drag strip tests indicated up to.3 sec/3 mph (30 HP) with no other change. 24 lb, 30 lb, 35 lb or 40 lb injectors MUST use the Kenne Bell Chip. DO NOT USE "RE-CALIBRATED" AFTERMARKET METERS (meters "re-calibrated" for larger injectors) WITH OUR SUPERCHARGER KITS. They alter the transfer function
and load tables, advance the ignition timing and lean the fuel mixture, resulting in pinging and detonation, plus poor driveability.

*Use synthetic engine oil. Red Line is the best we ever tested. Change oil and filter every 3,000 miles. If using conventional oil, use Valvo line Turbo Oil and change every 2,000 miles. DO NOT exceed these recommendations as changing oil frequently reduces engine wear in any performance engine.

*Use Redline [redacted] Synthetic Hi-Performance [redacted] 50w engine oil in the Supercharger. Change every 12,000 miles.

*We recommend installing a new set of Autolite spark plugs. Change them every 20,000 miles. Close plug gaps to .035".

*If engine has over 40,000 miles we recommend changing to Kenne Bell "Red Hot" Turbo Wires.

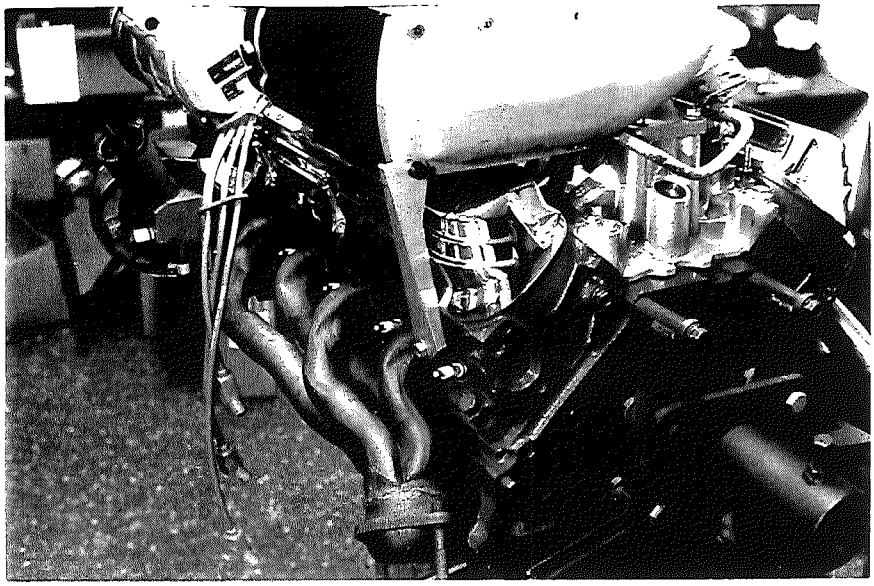
*Kit is designed for use with the factory crank pulley. A smaller aftermarket pulley will reduce performance (boost) as it does not spin the supercharger as fast. Consult us for special pulley applications.

*Check belt tension every 2,500 miles. The idler pulley on the front support plate may be adjusted to compensate for stretch.

*DO NOT advance ignition timing over the factory setting.

*DO NOT use aftermarket "chips" that alter ignition timing. Use only Kenne Bell Chips with our Supercharger kits.

*DO NOT use aftermarket mass air meters "re-calibrated" for larger than stock injectors.

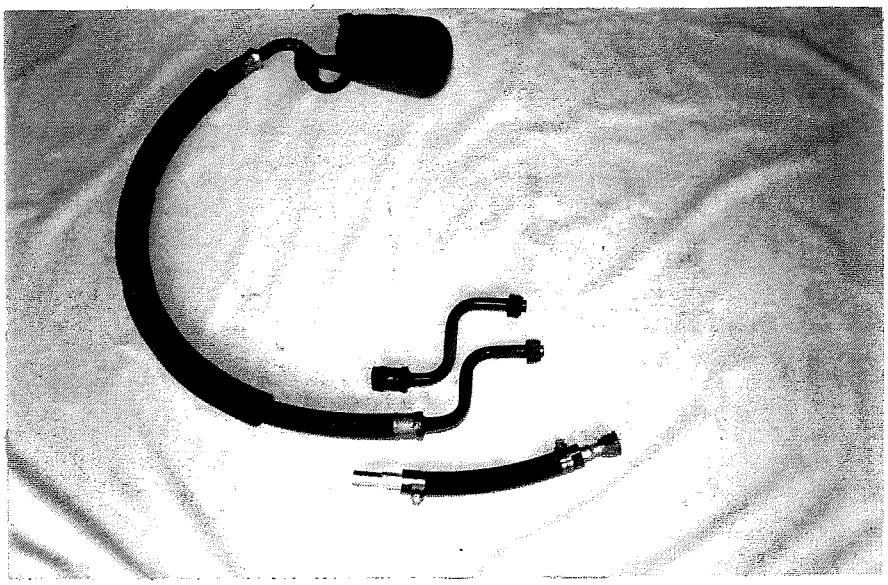


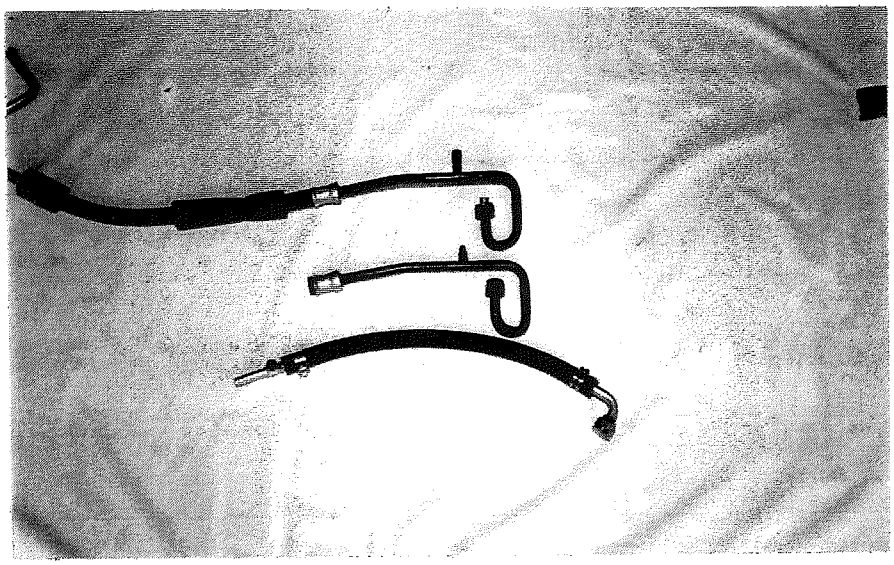
1. BOLT UPPER PART OF BRACKET TO THE LOWER LEFT OF THE INLET MANIFOLD, HAND TIGHT, AS SHOWN

   NOTE: BOLT THIS BRACKET ON FIRST.
   LEAVE LOWER INLET MANIFOLD BRACKET BOLT LOOSE.

2. BOLT LOWER PART OF BRACKET TO REAR HEADER BOLT.
   NOTE: BRACKET MAY HAVE TO BE MODIFIED FOR NON-STOCK HEADERS AS THE FLANGE AND BOLT ARRANGEMENT AND LOCATION VARY.

FIG. 1 REAR BRACKET MOUNT (SUPERCHARGER)

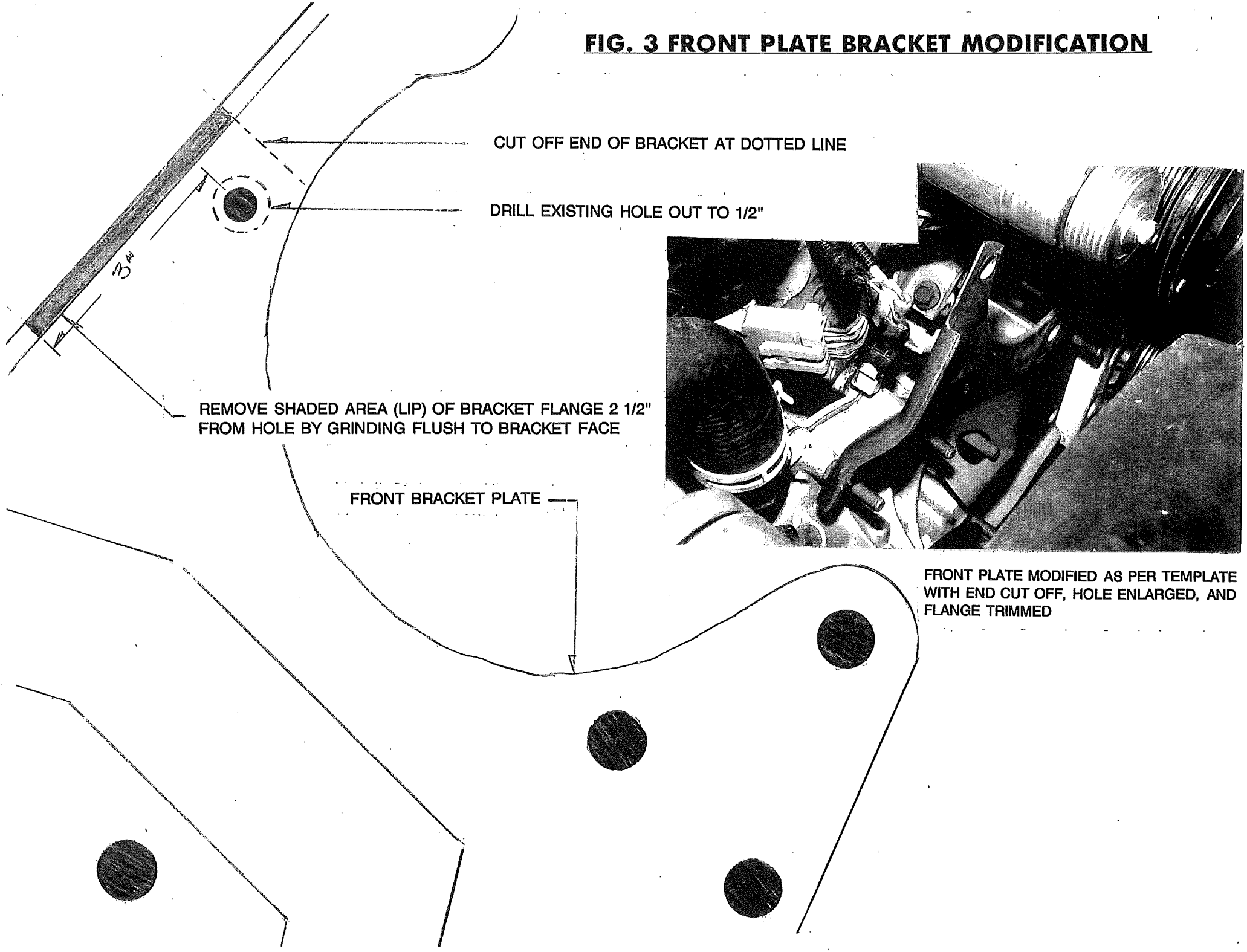




AC HOSE LINES BEFORE AND AFTER CUTTING CUT 1 1/2" IN BACK OF RING OR SLEEVE. USE SILICONE ON FITTING AND SLIDE INTO OLD HOSE. KENNE BELL KIT GETS RID OF THOSE UGLY TWISTED STEEL LINES.

FIG. 2 AC HOSES

FIG. 3 FRONT PLATE BRACKET MODIFICATION



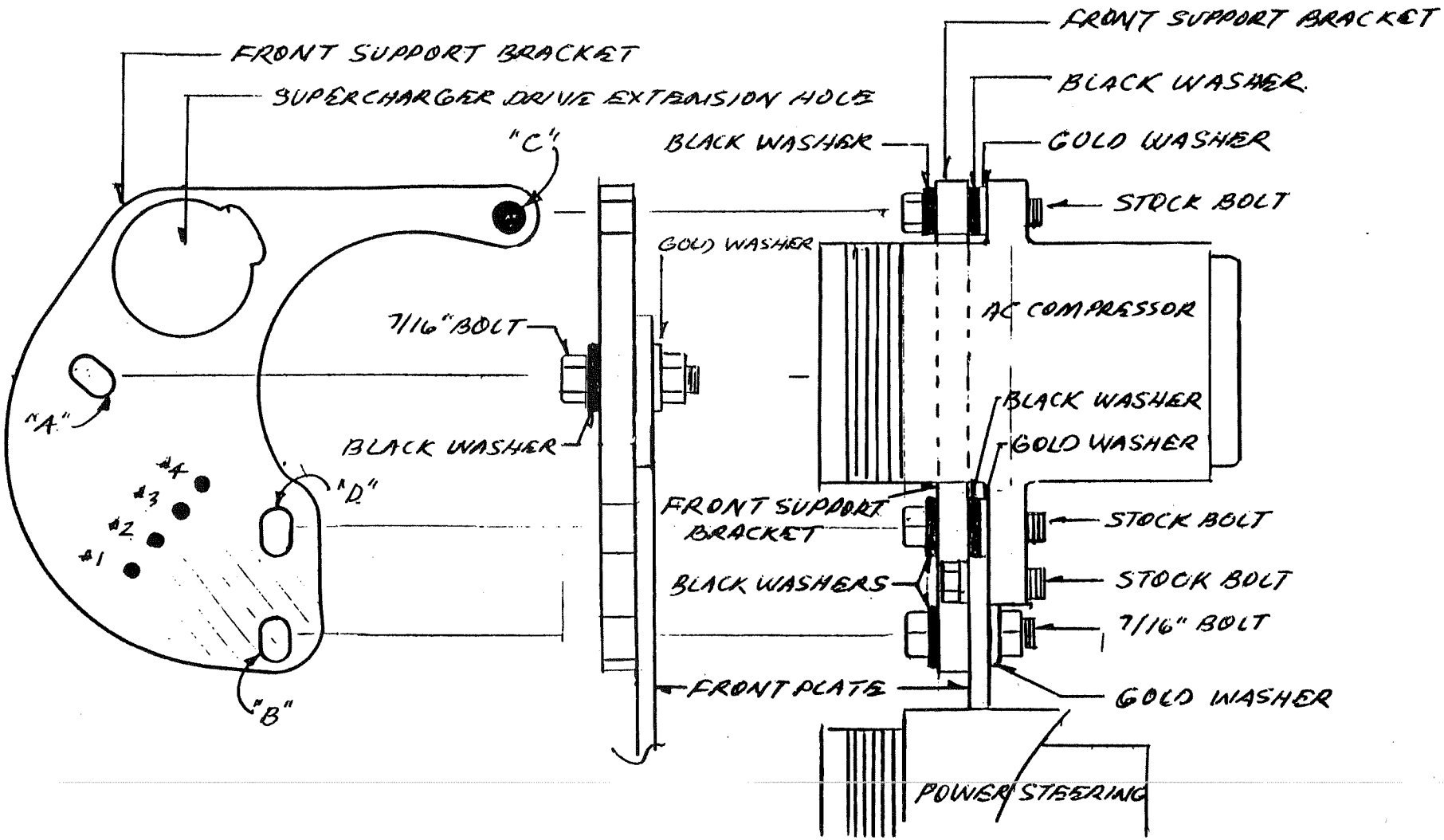
FRONT PLATE MODIFIED AS PER TEMPLATE WITH END CUT OFF, HOLE ENLARGED, AND FLANGE TRIMMED

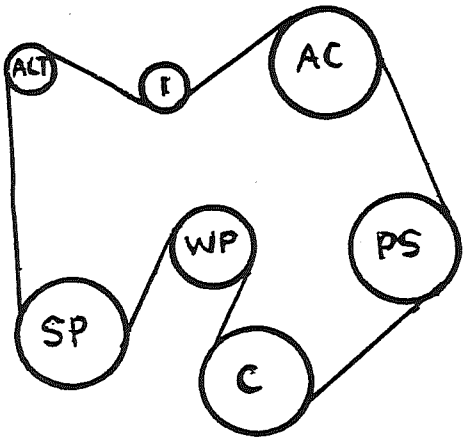
FIG. 4 FRONT SUPPORT BRACKET INSTALLATION

1. Install the front support bracket over the supercharge drive extension and attach it to the modified(see instructions) front engine bracket with the 7/16" bolts at locations "A" and "B", with washers, as illustrated below. Do not tighten mechanically - leave it "hand tight ."

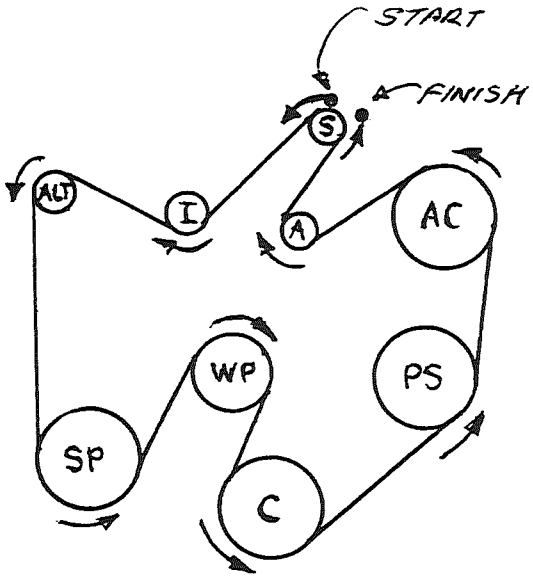
2. Install the two bolts with washers in locations "C" and "D" by pivoting the AC compressor.

3. Be sure bracket does not bind on supercharger drive extension and then tighten all four bolts.

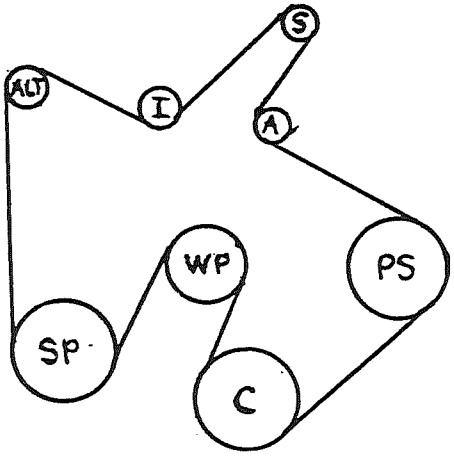




STOCK WITH AC



KENNE BELL WITH AC
(#1 POSITION-P3130 BELT



KENNE BELL WITH AC BYPASSED
POSITION-F3132 BELT

BELT INSTALLATION
(KENNE BELL WITH AC)

See illustration above for belt routing. Start at the supercharger and follow the arrows. You will end up with the belt looped at the supercharger pulley. Use a wrench or prybar on the stock tensioner to relieve tension and install the belt. Check to be sure belt is in all the pulley grooves and the tension is correct on the indicator.

FIG. 5 BELT ROUTING

FIG. 6 ADJUSTABLE IDLER PULLEY

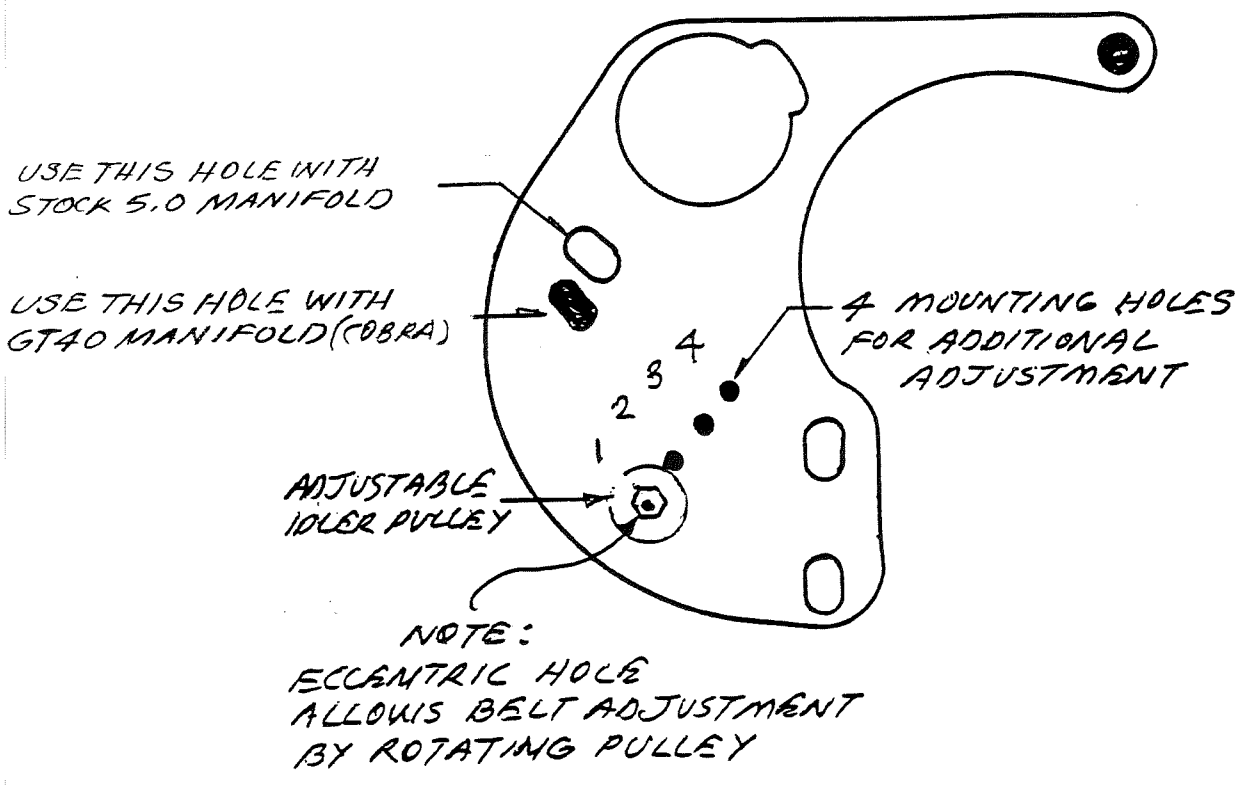
The Kenne Bell Kit design has built-in flexability which allows for minor and major belt adjustments.

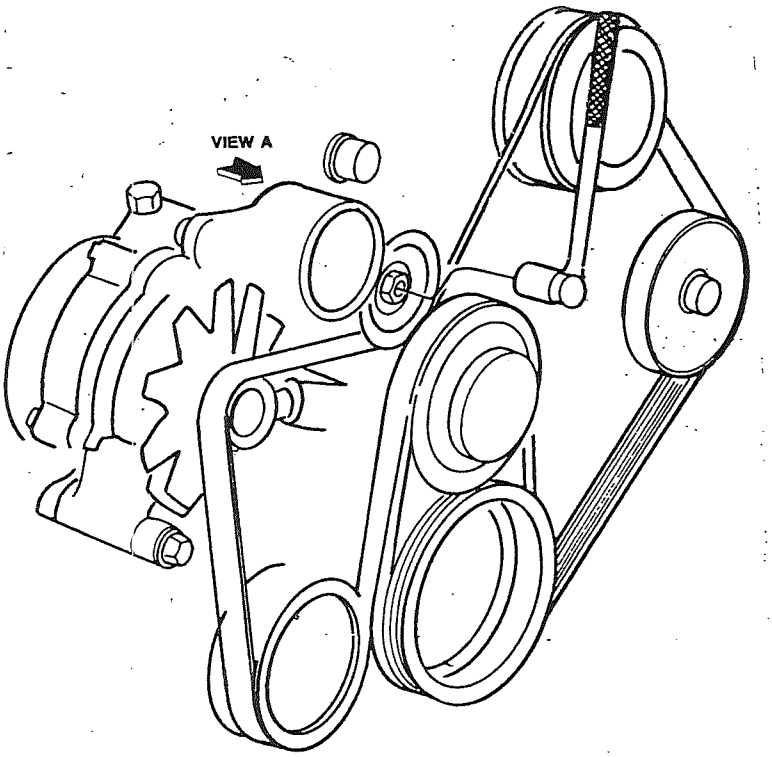
POSITION	KIT	BELT
Pos. # 1	5 psi & 8 psi kits with AC	F 3130
Pos. # 2	AC car with AC bypassed	F 3132
Pos. # 1	Non AC car (meeds 2 AC braclets)	F 3130
Pos. # 1	5 psi & 8 psi kits with after-market 2 1/2" alternator pulley	F 3130
Pos. # 2	5 psi & 8 psi kits with after-market 4 3/4" alternator pulley	F 3130
Pos. # 2	5 psi & 8 psi kits with after-market 2 1/2" alternator & 4 3/4" waterpump pulleys	F 3130

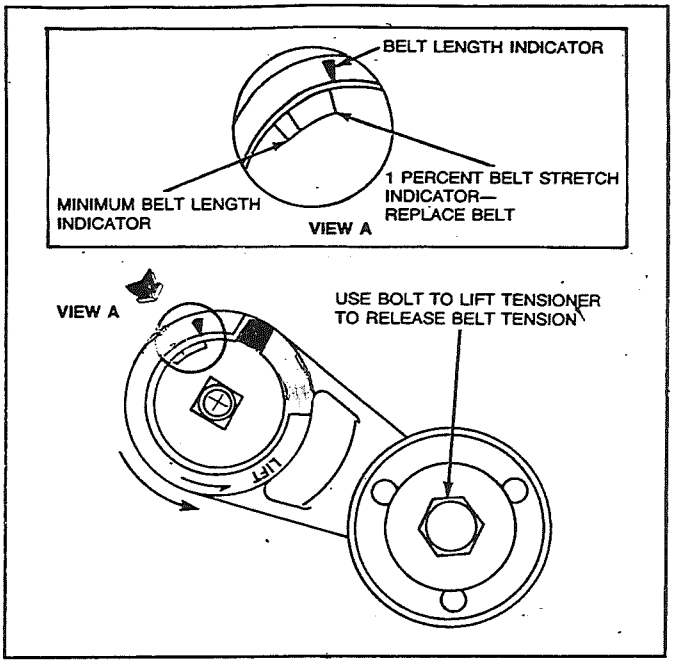
Note: DO NOT use smaller aftermarket crank pulleys as boost will drop.

'93 COBRA AND GT40 MANIFOLD SPECIAL INSTRUCTIONS

- Cobras must use a stock 1986-'93 crank pulley. The Cobra water pump and alternator pulleys work okay with the #2 position.
- '93 Cobras and GT40 manifold installations require the FMB be mounted to the left side shock tower between the windshield wiper motor and shock tower.





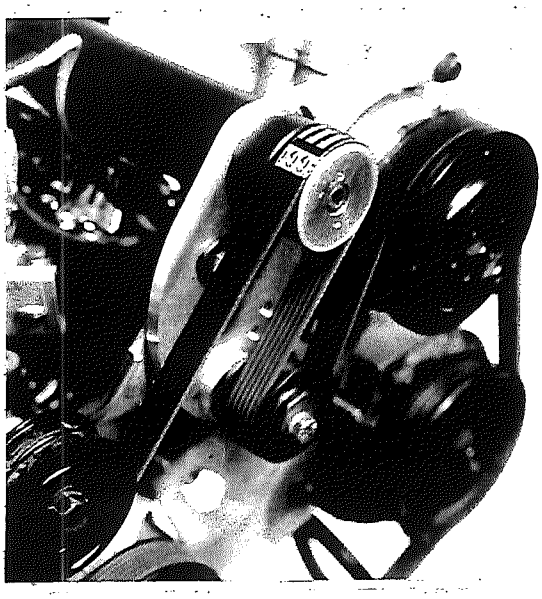


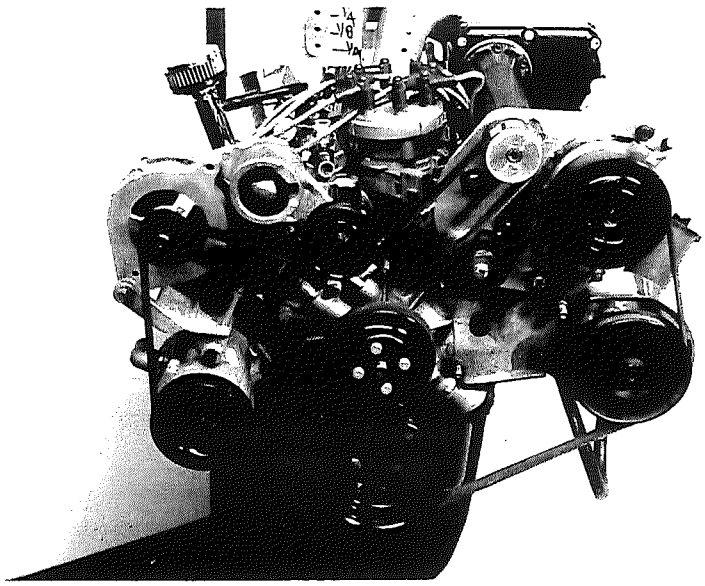
Belt Wear Indicator Marks—3.8L and 5.0L Engines

NOTE:
THE SINGLE BELT, SERPENTINE DRIVE ARRANGEMENT OF THE 5.0L ENGINE USES AN AUTOMATIC BELT TENSIONER. NO BELT TENSION ADJUSTMENT IS REQUIRED.

SPECIAL INSTRUCTIONS:
1. LIFT AUTO TENSIONER PULLEY BY APPLYING TORQUE TO IDLER PULLEY PIVOT BOLT WITH WRENCH AND SOCKET
2. INSTALL DRIVE BELT OVER PULLEYS PER APPROPRIATE BELT ROUTING
3. CHECK BELT TENSION. REFERENCE TENSION CODE E (MUSTANG, MARK VII)
4. IF TENSION IS NOT WITHIN SPECIFICATION INSTALL A NEW AUTOMATIC TENSIONER. LOCATE TANG AS SHOWN IN VIEW A.

NOTE:
The illustration above depicts a worn stretched belt. The Kenne Bell belt location should be more toward the "mimimum belt length" indicator mark. We like to see the belt in the "minimum" to "mid-way"range on the indicator





FRONT SUPERCHARGER SUPPORT BRACKET MOUNTED TO FRONT BRACKET PLATE. NOTE HOW SHADED LIP WAS REMOVED

FIG. 7 BELT TENSION ADJUSTMENT (STOCK TENSIONER)

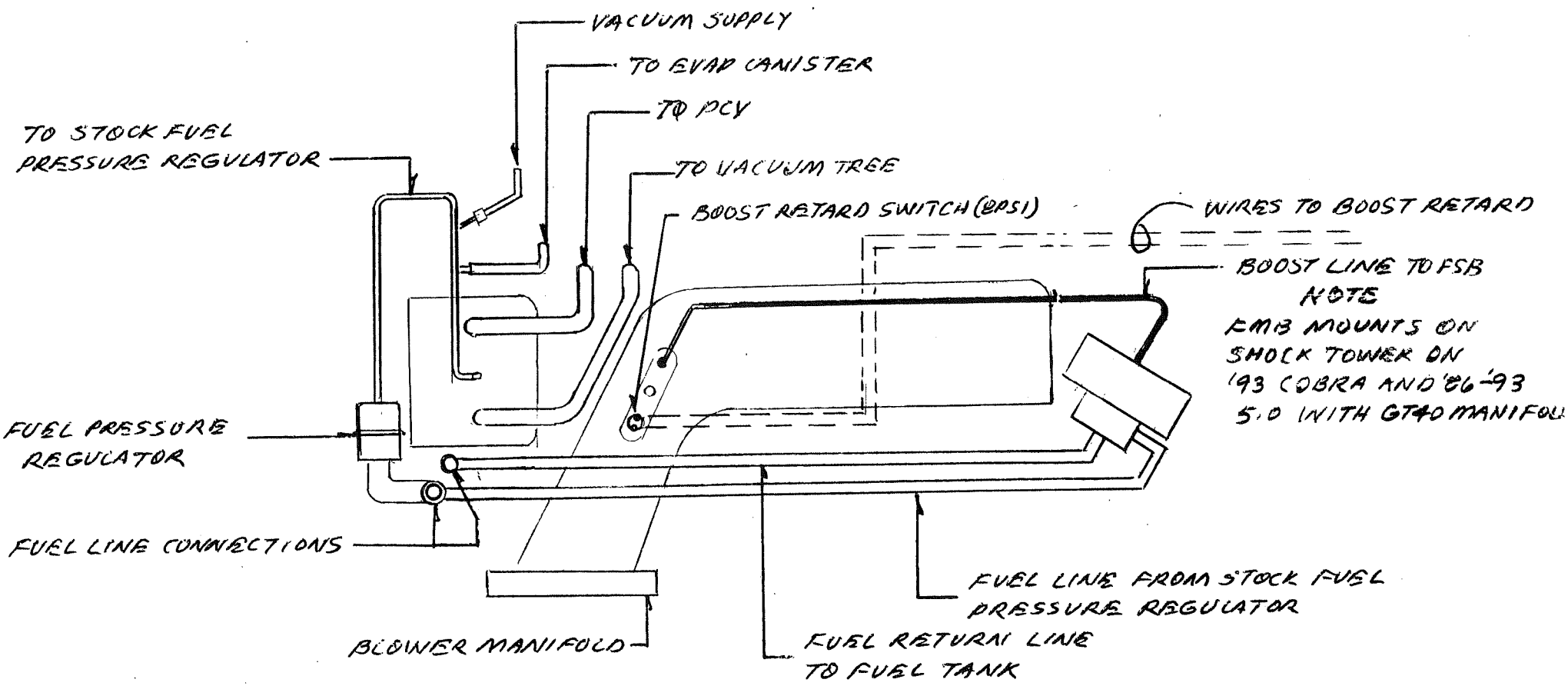


Fig. 8 LINE SCHEMATIC

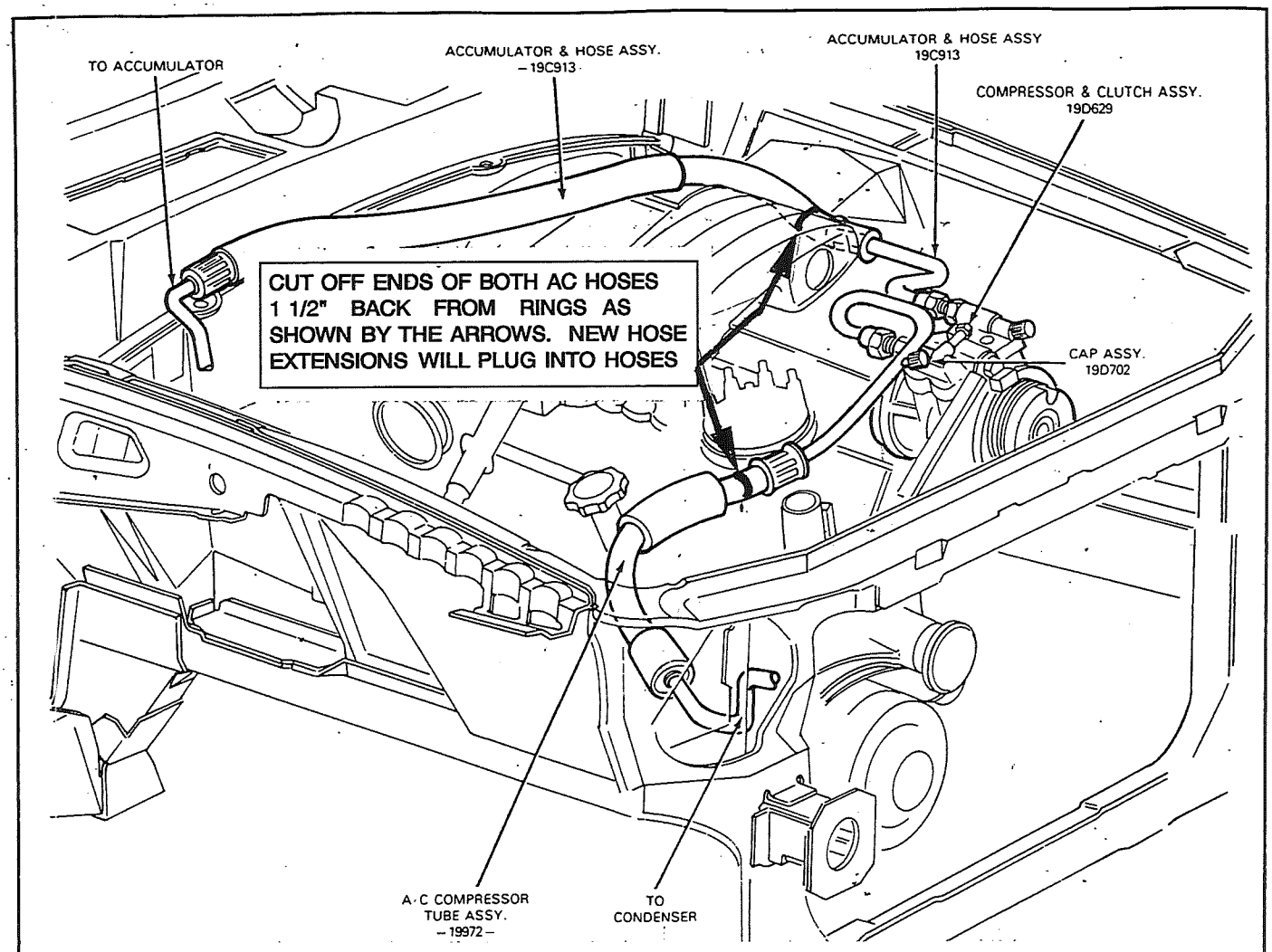
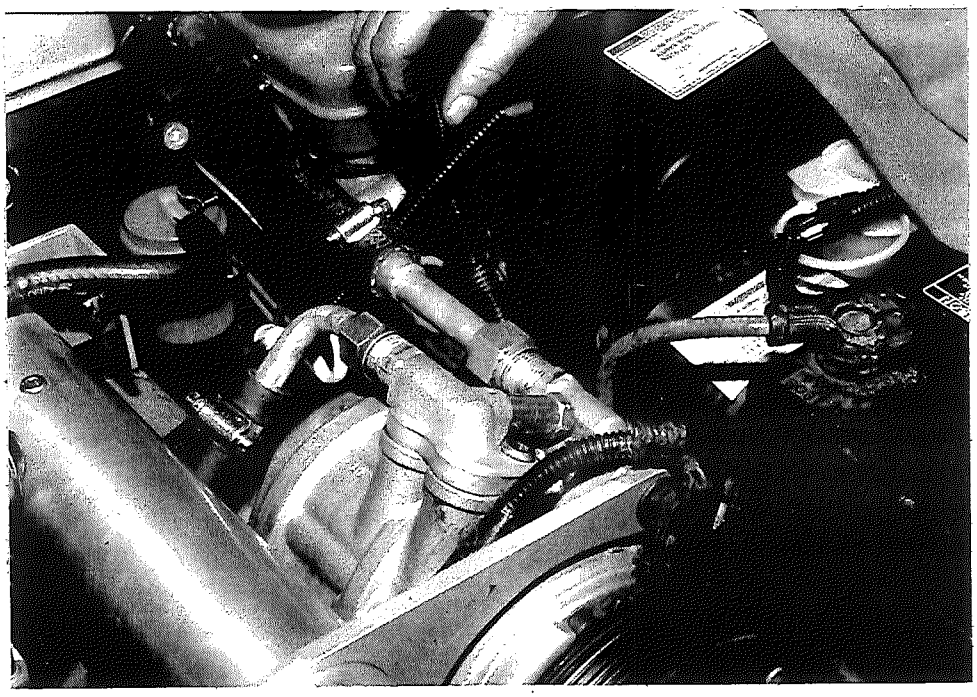


FIG. 9 AC HOSE CUT OFF LOCATIONS



NEW KENNE BELL AC HOSE EXTENSIONS
CONNECTED TO AC COMPRESSOR

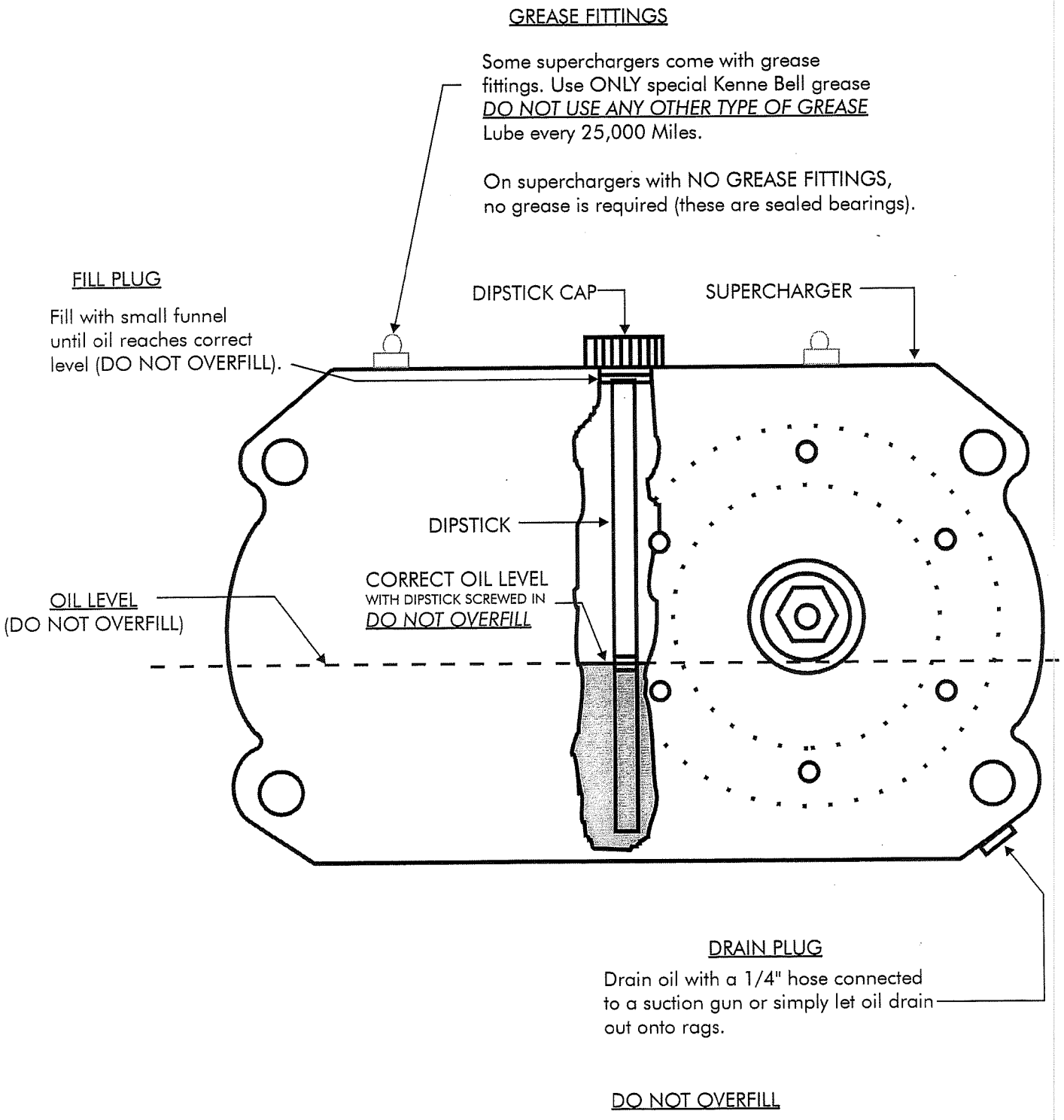


FIG. 11 SUPERCHARGER OIL LEVEL

r050897

RETARD SWITCH
Retard Switch (8 psi kit only) mounts in bottom 1/8" hole in discharge (blower) manifold, routes wires to Mallory Retard Unit

FUEL SYSTEM BOOSTER
Fuel System Booster assembly not shown. Bolts to side of discharge manifold here. Route inlet and outlet fuel lines as indicated in instructions.

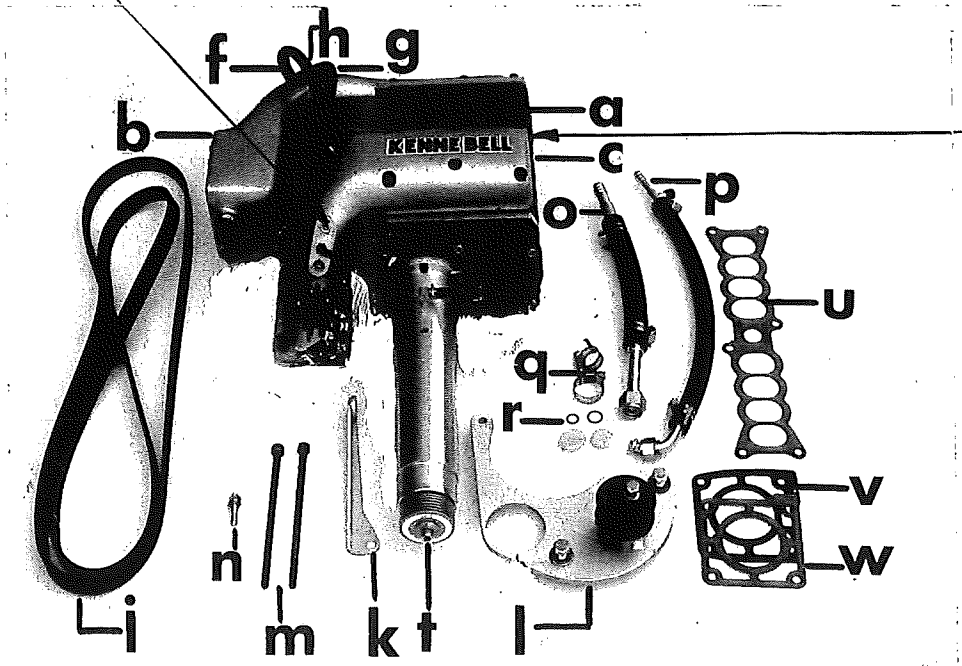


FIG. 12 SUPERCHARGER KIT COMPONENTS

KENNE BELL

PARTS LIST

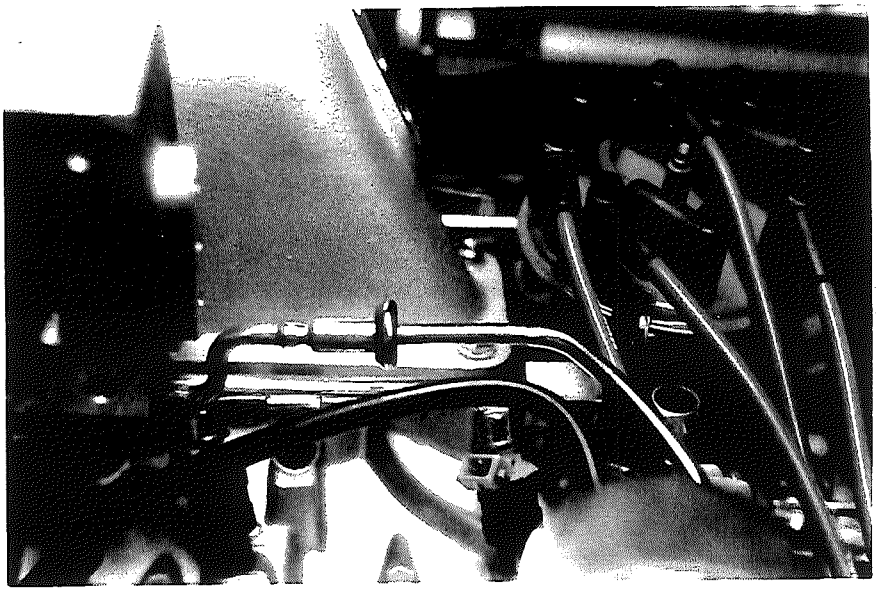
TS1000 SUPERCHARGER KIT COMPONENTS

TS1000 Supercharger Assembly includes the following:
Note: Refer to photo for letter designation of parts

DESIGNATION	PART DESCRIPTION
A	Supercharger
B	Aluminum Inlet Manifold (70 mm)
C	Aluminum Discharge "Blower" Manifold
D	Fuel System Booster
F	Top Hose (To PCV)
G	Bottom Hose
H	Center Hose (To Fuel Pressure Regulator/ Vapor Canister/Vacuum Line)

Other Kit Components:

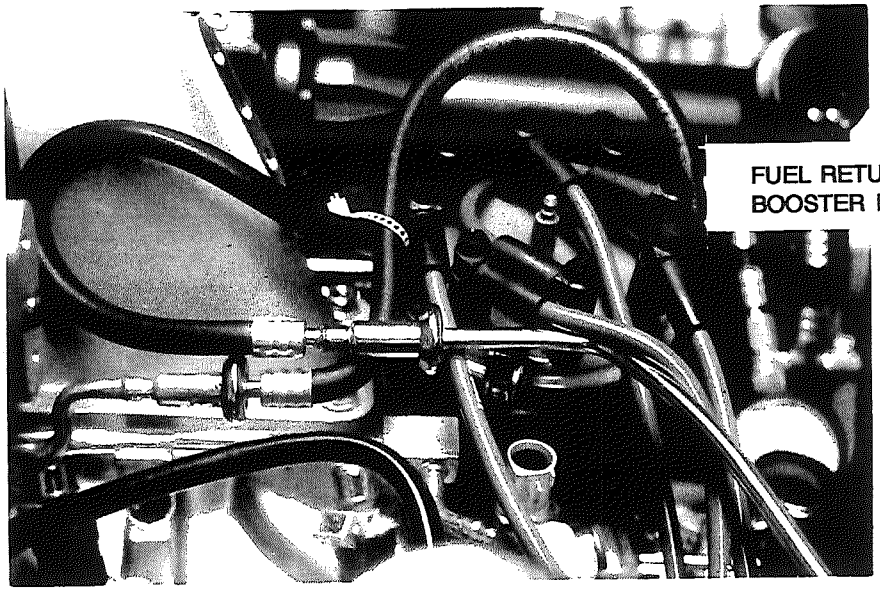
DESIGNATION	PART DESCRIPTION
J	New Drive Belt
K	Rear Supercharger Support Bracket
L	Front Supercharger Support Bracket Assembly
M	Throttle Body Bolts
N	5/16" Manifold Stud & Nut
O	A/C Hose Extension (straight fitting)
P	A/C Hose Extension (90 deg. fitting)
R	A/C O-Rings (in fittings)
T	Supercharger Shaft, Housing and Pulley
U	Lower Intake Manifold Gasket
V	EGR Plate Gasket
W	Throttle Body Gasket
X	Fuel System Booster (Packaged separately)



STOCK FUEL RETURN LINE

BEFORE

Fuel return line before disassembly



FUEL RETURN LINE WITH FUEL SYSTEM BOOSTER HOSES CONNECTED.

AFTER

Fuel return line with two new lines attached. Connect male to female and female to male. New lines run to and from the Fuel Line Booster.

FIG. 13 FUEL LINE CONNECTION

FIG. 14 CHECK VALVE (SPEED DENSITY ONLY)

The Speed Density System will not tolerate a boost signal to the MAP sensor. It is only capable of understanding vacuum signals. Connect the MAP Sensor line to the Supercharger discharge (outlet) manifold.

SPEED DENSITY (LEAN CONDITION)

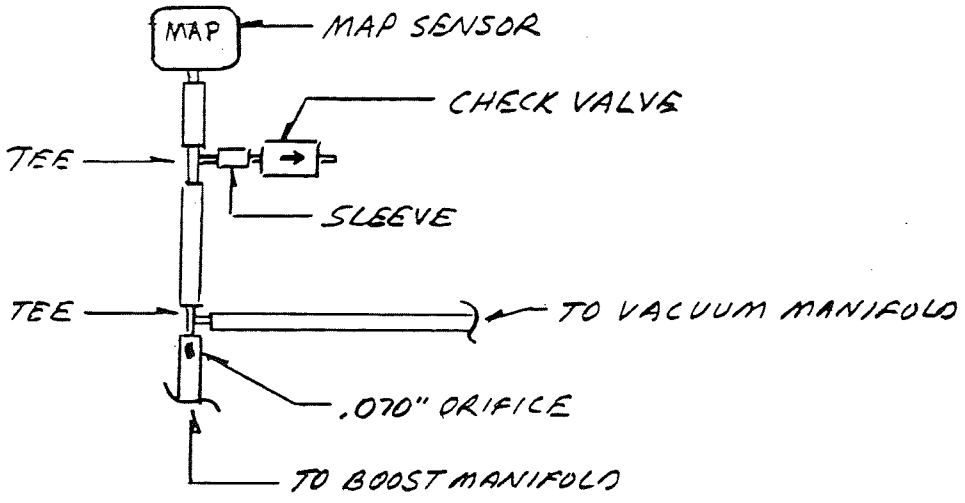
Relocating the ACT will richen the air fuel ratio at idle and part throttle, and will help compensate for a marginal sender, fuel injectors, or other causes of a lean condition.

1. Remove Air Charge Temperature Sender from front of manifold (passenger side) and re-locate in filter intake box, using same size wire to new location.

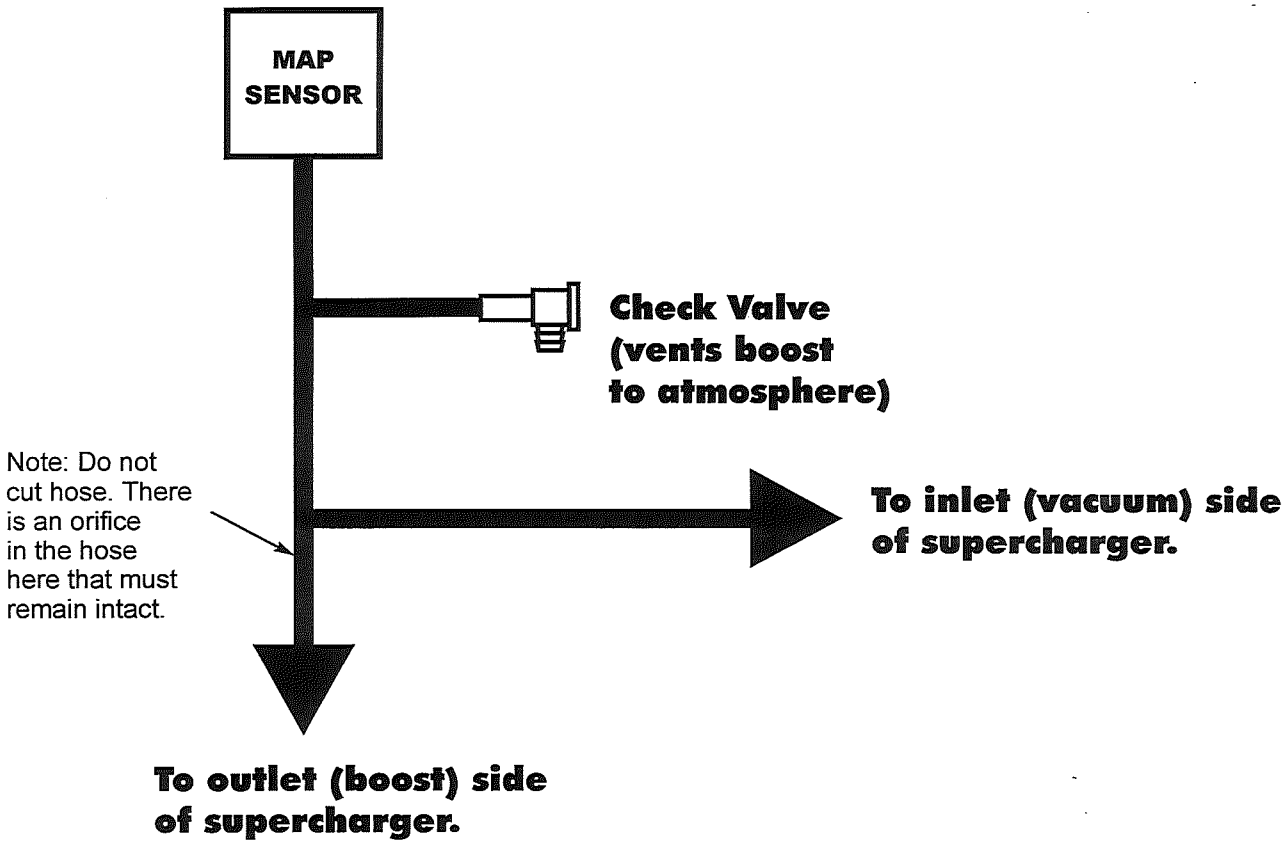
2. Drill 21/32" hole in air box with air box OFF the car so no shavings enter the engine.

3. Use solder wire on connections ONLY with hot shrink sleeves or silicone, to retain connection integrity.

Use ACT Sender #DY674 Motorcraft
Use ACT Sender Pigtail #89-6619



CHECK VALVE INSTALLATION
(SPEED DENSITY '86-'91)



CHECK VALVE INSTALLATION (Speed Density Systems)

FIG. 20

INSTRUCTION UPDATES

We are constantly monitoring installations of the Kenne Bell TS1000 Supercharger Kit with our customers; following are some useful hints, updates and suggestions.

USEFUL INSTALLATION HINTS - The rear supercharger bracket is designed for stock header manifolds. If using aftermarket headers, check out and modify the bracket before installing the supercharger, as it's much easier that way. ALWAYS INSTALL THIS BRACKET LAST.

UPDATE - Do not be concerned about a light intermittent clacking noise at idle from the supercharger. This is perfectly normal. It's merely the gear lash absorbing pulses from the crankshaft.

CAUTION - **DO NOT OVERFILL** the oil reservoir in the supercharger, or damage to the bearings may result. Fill to the level outlined in the instructions.

LACK OF BOOST OR LOW BOOST CONDITION -

1. Restricted air filter
2. Oil on belt
3. Belt tension too low
4. Worn belt
5. Loose outlet manifold to supercharger bolts.
6. Loose manifold (outlet manifold to lower manifold) bolts or blown gasket
7. Blown manifold gasket (lower intake to head)
8. Blown head gasket

VENT - The small brass 1/8" vent on the end of the supercharger snout or drive, vents the snout. A little oil around the fitting is normal.

DETONATION - Retard the timing, lower the boost or increase fuel octane (104 octane booster works best.) Increasing the octane does not reduce HP whereas retarding the spark or lowering the boost does.

SPARK PLUGS - 1 Heat range cooler (Autolite) works very well. Set gap at .035". Copper multi-heat range plugs such as the NGK also work well.

ENGINE MISFIRE AT IDLE, OR LOW IDLE WITH BIG CAMS - May cause the supercharger to be noisier at idle. Set idle as per Ford's instructions.

MANIFOLD SEALANT - The red sealant between the Kenne Bell manifolds and supercharger is Loctite Gasket Eliminator #518 Sealant. This is a precision fit requiring no gaskets.

IDLE NOISE - The supercharger may emit a slight clicking noise at idle. That is perfectly normal and won't hurt a thing. The crankshaft pulses merely take up the Supercharger drive gear lash via the drive belt.

TFS HEADS - (Old Style) - These heads (aluminum and steel) are taller than the stock heads requiring a spacer between the stock lower manifold and Kenne Bell outlet manifold be used to space the supercharger assembly up from the valve cover. On '94-'95 5.0 cars this increased height causes interference with the hood, requiring an aftermarket scoop or scooped hood be used.
A special front and rear supercharger bracket is also required to accommodate the additional height. Supercharger to hood clearance is also decreased approximately 5/16".

SUPERCHARGER BYPASS - We've thought of everything in our kit design. If someone should steal your supercharger pulley or drain the oil out of your supercharger, the engine will run well with the supercharger bypassed. Use Gates belt number K060950 and the supercharger can be bypassed. When installing the K060950, come straight off the bottom of the smog pump (SP) pulley onto the bottom of the crank pulley as shown.

FIG. 21

KENNE BELL MUSTANG SUPERCHARGER SUPPLEMENTAL TUNING TIPS

NOTE:

The recommendations are for RACING APPLICATIONS ONLY, and NOT RECOMMENDED FOR STREET USE.

The Kenne Bell TS1000 Kits are 50 State Legal. Altering the fuel system can render the kit emissions illegal.This information is intended to help you tune your Mustang for competition only in full throttle-open loop-boost conditions.

FUEL SYSTEM BOOSTER

A percentage of fuel is always bypassed through the stock fuel pressure regulator into the return line. The Fuel System Booster in our kit merely shuts off or restricts the fuel supply return line to the gas tank. Boost pressure directed to the upper chamber of the valve forces it to close or restrict the return line flow, thereby increasing pressure to the fuel injectors.

19LB/HR / FACTORY INJECTORS

When used with the stock factory injectors, the FMB effectively increases fuel pressure under boost from approximately 40 psi to 60-75 psi, and injector flow to approximately 24 lb/hr. This higher pressure supplies the additional fuel required for the added horsepwer of the supercharger.
If using 24 lb/hr injectors (rated at 45 psi) the FMB also raises fuel pressure under boost to 60-75 psi, injector flow is approximately 28 lb/hr at this higher pressure. Therefore, 30 lb/hr injectors become 35 lb/hr and 35 lb/hr become 40 lb/hr, as raising pressure 30-35 lbs adds approximately 4-5 lb/hr to the injector rating. The actual fuel pressure will be determined by the condition and size (capacity) of the fuel pump.
Note: The stock computer will not "trim" an injector over 24 lbs/hr at 40 psi in closed loop operation. Driveability will be affected because of the overly rich condition.
Correct or ideal injector size and flow for maximum performance will depend on the engine horsepower, type of fuel, etc. (See Kenne Bell "Mustang Tech Tips.") Larger injectors require a Kenne Bell Chip.

AFTERMARKET MAF METERS

The ever popular Kenne Bell 80mm Mass Air Flow meter-or any other meter-can be calibrated for 19 - 50 lb. injectors, but only with a Kenne Bell Chip. The Kenne Bell 80 mm MAF Meter and SWITCH CHIP develops more HP than any other meter we've tested (but ONLY with a Kenne Bell Chip.) The 24 lb., 30 lb., & 35 lb. ProM 77mm and other aftermarket meters cause the ignition to advance and mixture to lean, resulting in part throttle detonation. You must use a corresponding Kenne Bell chip with these meters, (24, 30, 40 lb., etc.) when used with our kits.

ADJUSTING FUEL PRESSURE

As mentioned previously, a boost condition increases fuel pressure by pressurizing the upper bonnet of the FmB and restricting the fuel flow back to the gas tank. Actual fuel pressure increase will be determined by test. You'll need a fuel pressure gauge to check wide open throttle fuel pressure under boost.
Note: Fuel pressure may be increased at idle, part throttle, by adjusting the Kenne Bell Billet Aluminum Regulator, if used. This is the best method.

IDLE FUEL PRESSURE

The Kenne Bell Kits are factory designed to work with 19 lb injectors (5.0), and 24 lb injectors (Cobra), and stock fuel pressure settings, i.e., approximately 34 psi with vacuum line on and 44 psi with vacuum line off. The boost reference vacuum line remains functional and is connected between the stock regulator and a vacuum port on the Kenne Bell Intake Manifold.
Idle pressure is best controlled with a Kenne Bell F1051 Billet Aluminum Fuel Pressure Regulator.

THERMOSTATS

A 160° thermostat WILL reduce detonation and WILL improve performance.

BYPASSING THE FMB

If a larger than stock type pump has been added, shutting off the fuel return line with the FMB (as designed into the TS1000 Kit) may result in extremely high and potentially dangerous pressure (90-160 psi) and therefore IS NOT RECOMMENDED. Also, injectors typically quit operating efficiently at pressures above 75 psi. If racing with a larger in-line pump, you may wish to bypass the FMB by hooking the return line back up. In this mode, with the FMB bypassed (disconnected) the optimum fuel system adjustment can be accomplished with the Kenne Bell F1051 Billet Aluminum Adjustable Fuel Pressure Regulator. If experimenting with fuel systems, GET A GAUGE. Fuel pressure Gauge is calibrated within 1 psi. You can't check ignition timing without a timing light. How can you check fuel pressure without a gauge?

BOOST

Our standard 5 psi kit will typically develop 6 psi on a 100% stock engine. The Kenne Bell 80mm Mass Air Flow Meter Kit will increase boost approximately .5 psi (6.5 psi.) A Ram Air Kit may add another .5 psi (7.0 psi) and a big 70mm Throttle Body, such as the Kenne Bell, adds .5 psi for a total of as much as 7.5 psi. Get a gauge and monitor boost.

- AVOID DETONATION AT ALL COSTS.
- Every 1° in timing advance requires 1 more octane.
- Every 1 psi of boost increase requires 2 more octane.
- Advancing timing 2° increases 1/4 mile times up to .1 sec/1 mph (10 HP) .4° is 20 HP.
- Retarding timing 2° decreases 1/4 mile times up to .1 sec/1 mph (10 HP) 4° is 20 HP.
- 4° advance timing is .2 sec/2 mph (20 HP). 16° is maximum.
- 2 psi(the difference between a Kenne Bell 5 psi kit (actually 6 psi) and over 8 psi kit is .2 sec/2 mph(20 HP)
- The difference between 8 psi and 10 psi is another .2 sec/2 mph (20 HP).
- 104 Brand Octane Booster increases fuel octane by up to 4 numbers.
- 10% Toluene is 2 octane and 20% Toluene is 4 octane.
- Avoid leaded fuels. The lead will damage the Cat and the O_2 sensor.
- Mixing 100 or 104 octane unleaded with 92 octane works well.
- Fuel octane varies from area to area.
- 30 - 35LB injectors with the Kenne Bell 80mm Mass Air Flow Meter Kit are the best choice for upgrading. 24 LB injectors are OK, but why go only half way?
- Kenne Bell F1051 Billet Aluminum Regulator can vary 24 LB injectors (rated at 45 psi) tp 28 LB injectors at 65 psi and 30 LB injectors (rated at 45 psi) to 36 LBS at 65 psi.
- 40 LB injectors also an option for higher horsepower cars. Again, use the Kenne Bell 80mm Mass Air Flow Meter.
- NEVER use in-line pumps. They are noisy, produce excessively high pressures, and are not adjustable. The Kenne Bell Boost-A-Pump is a much better approach.
- Kenne Bell 70 mm Throttle Body and Kenne Bell 80mm MAF and SWITCH CHIP is best combination for street/strip.
- Kenne Bell 90 mm Throttle Body and Kenne Bell 80MM MAF and SWITCH CHIP is best combination for serious racing.
- 180° thermostat, a Kenne Bell SWITCH CHIP controlling electric fan (if so equipped.)• 1 heat range cooler plug reduces detonation.
- Red Line engine oil and trans and differential lube lowered oil and water temperature 20° in a controlled test on our dyno for 5.0 Mustang Magazine.
- Kenne Bell Chips "balance" fuel curve and optimize spark.
- FMB is not the hot set-up with 24 and larger injectors. The Kenne Bell Chip will make more horsepower.
- 1/8" of supercharger pulley size is equivalent to 1 psi boost.
- 1/4" of crankshaft pulley size is equivalent to 1 psi boost.

FIG. 22

KENNE BELL

TROUBLESHOOTING TIPS

KENNE BELL TS1000 SUPERCHARGER KIT

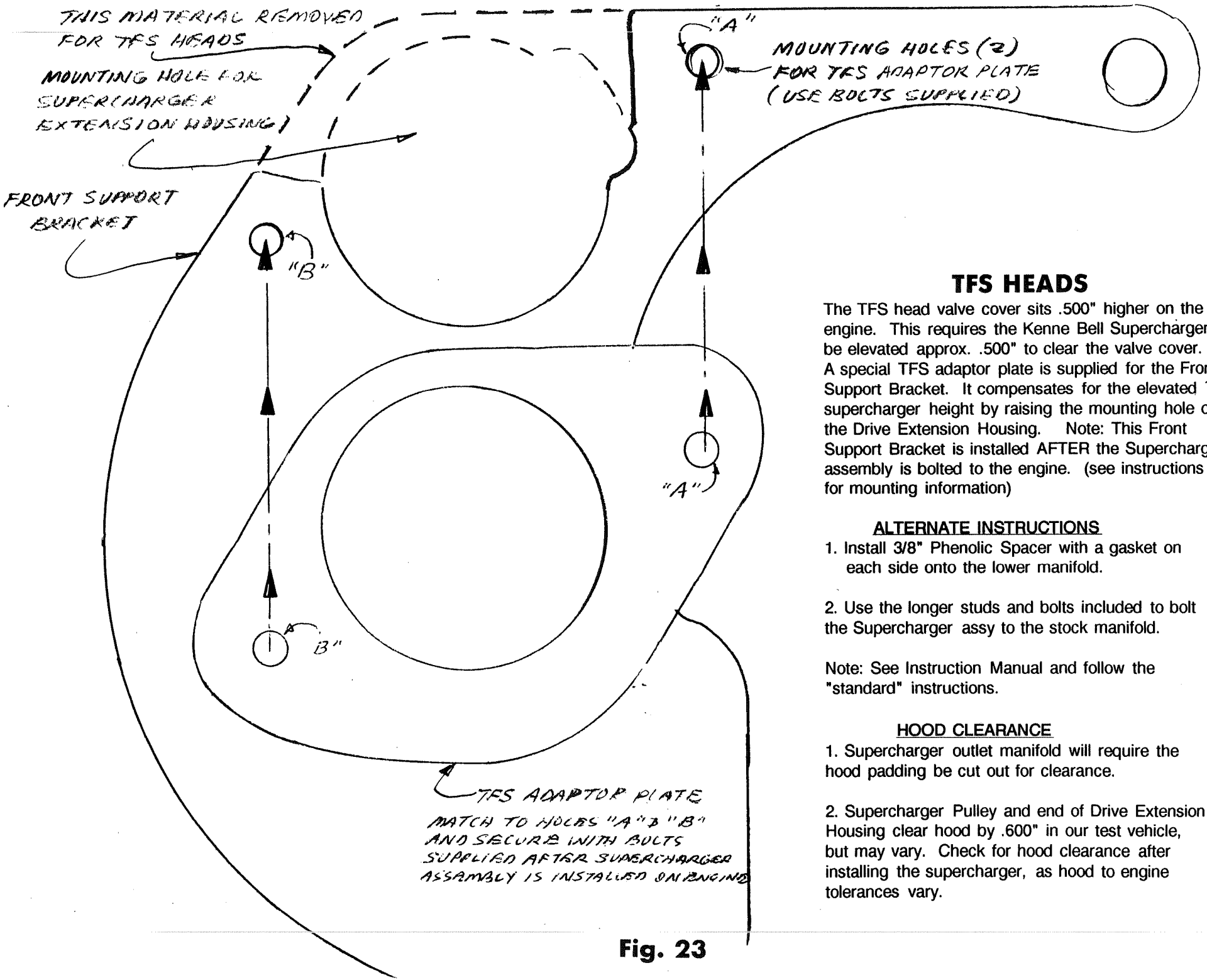
ENGINE MISSES OR DETONATES:

1. Check spark plugs (close gap to .035") Try a plug one heat-range cooler
2. Check ignition module
3. Check spark plug wires (check for arcing at night)
4. Check fuel pressure (should be 65-70 psi at WOT with 19 lb injectors)
5. Check injectors. They may be clogged, worn or not functioning. One injector can be lean (plugged)
6. Check air cleaner for restriction
7. Check fuel quality (must be 92 octane or better)
8. Check ignition Timing (10 deg. maximum,)
9. Check for aftermarket chip (they advance timing)
10. Check catalytic converters
11. Check valve springs for tension
12. Check boost. Higher boost levels require improved ignition.
13. Add 104 Octane Booster to reduce detonation. Good for 2 - 4 octane for detonation.
14. Check TPS setting
15. Retard timing 2 deg.
16. Install 1/8" larger pulley to reduce boost 1 psi.
17. Switch to a KENNE BELL Chip

Call Kenne Bell Tech Line (909) 941-0985 or FAX us at (909) 944-4883 if you require additional assistance.

IMPORTANT WARRANTY AND SAFETY INFORMATION

+ DO NOT attempt to alter the stock crankshaft or supercharger pulley ratios from the original TS1000-5 (5 psi) and TS1000-8 (8psi)
+ DO NOT remove the factory rev-limiter. The TS1000 kits were designed for 6200 RPM maximum (factory cut off RPM)
+ DO NOT operate the Kenne Bell Supercharger without a filter. The Supercharger will not tolerate debris.



TFS HEADS

The TFS head valve cover sits .500" higher on the engine. This requires the Kenne Bell Supercharger be elevated approx. .500" to clear the valve cover. A special TFS adaptor plate is supplied for the Front Support Bracket. It compensates for the elevated supercharger height by raising the mounting hole of the Drive Extension Housing. Note: This Front Support Bracket is installed AFTER the Supercharger assembly is bolted to the engine. (see instructions for mounting information)

ALTERNATE INSTRUCTIONS

1. Install 3/8" Phenolic Spacer with a gasket on each side onto the lower manifold.

2. Use the longer studs and bolts included to bolt the Supercharger assy to the stock manifold.

Note: See Instruction Manual and follow the "standard" instructions.

HOOD CLEARANCE

1. Supercharger outlet manifold will require the hood padding be cut out for clearance.

2. Supercharger Pulley and end of Drive Extension Housing clear hood by .600" in our test vehicle, but may vary. Check for hood clearance after installing the supercharger, as hood to engine tolerances vary.

Fig. 23

INSTRUCTION SUPPLEMENT

FIG. 24 '93 COBRA/'86-'93 5.0 WITH GT40 MANIFOLD

There are some minor changes required with '93 Cobras and '86-'93 5.0 cars with GT40 manifolds.

FMB (Fuel Management Booster)

The Kenne Bell GT40 discharge manifold is located approximately 3/4" closer to the driver's side, creating a clearance problem for the FMB. Therefore, there are no mounting bolt holes in the discharge manifold.

Mount the FMB to the shock tower between windshield wiper motor and shock tower.
FUEL SYSTEM NOTE: The '93 Cobra uses 24 lb. injectors. The 5.0 uses 19 lb. injectors.
The FMB will increase flow of the 19 lb. 5.0 injectors to the 23-24 lb. range.
The FMB will increase flow of the 24 lb. Cobra injectors to the 27-28 lb. range. This may be too much. If air fuel-ratio is too rich, disconnect the vacuum boost line from the top of the FMB and plug the ends. This changes the injectors back to 24 rating by keeping the FMB "open".

FRONT SUPPORT BRACKET

See GT40 mounting hole location (shaded.)

PULLEY

'93 Cobra must use the stocks 5.0 crank pulley with the Kenne Bell kit.

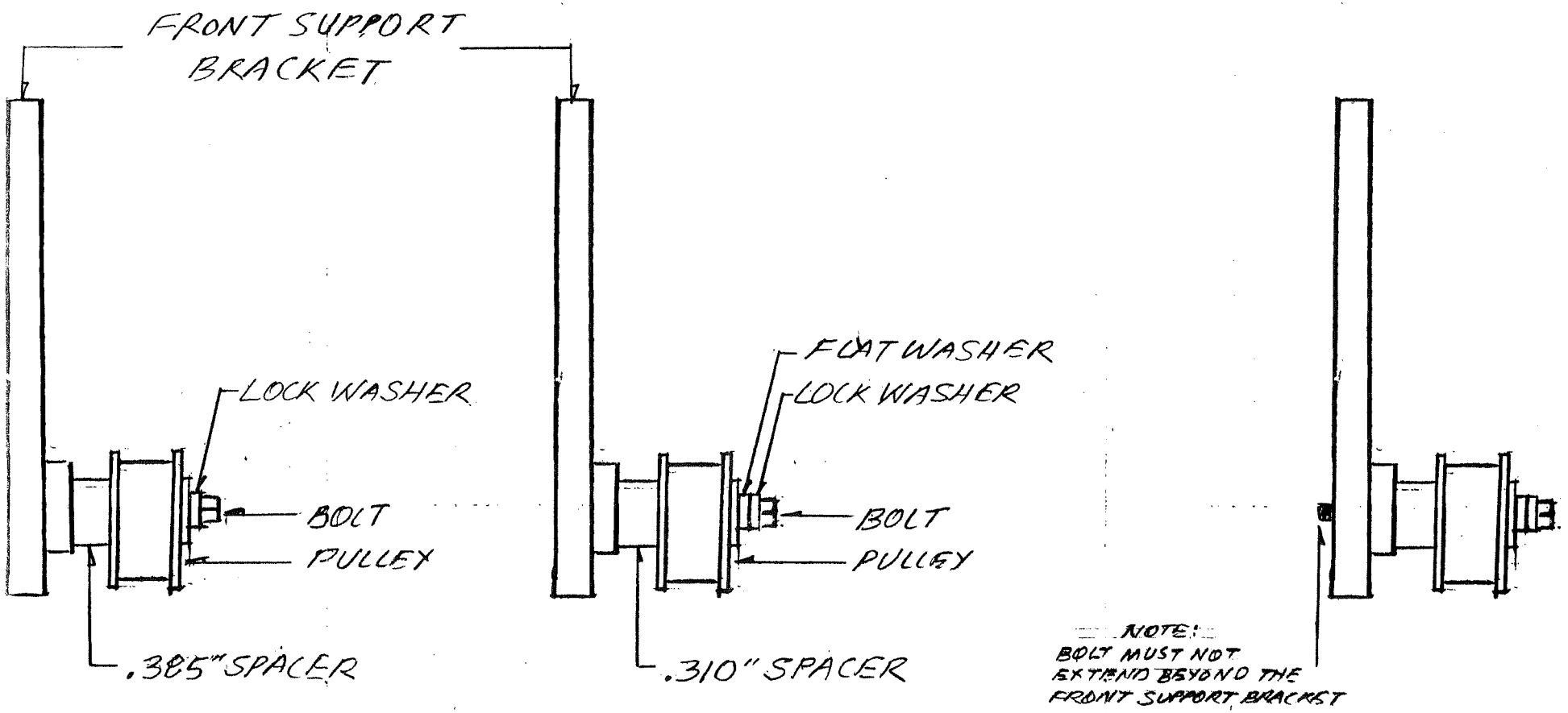
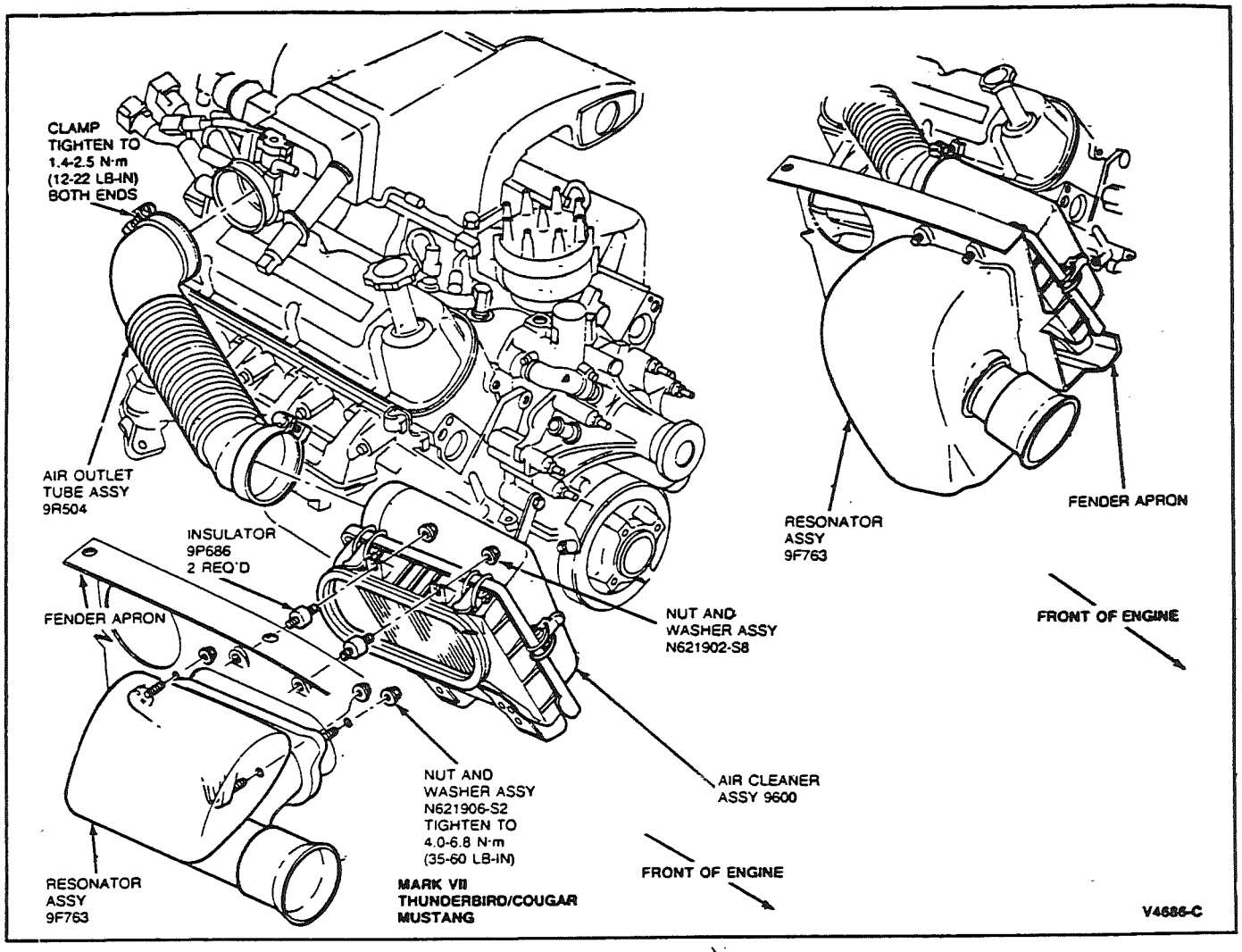


FIG. 25 IDLER PULLEY BOLT ADJUSTMENT

It is important that the end of the idler pulley bolt does not extend beyond the Supercharger front support bracket or it bottoms against the stock front plate and forces the idler pulley and Supercharger front support bracket outward and causes it to mis-align with the belt.

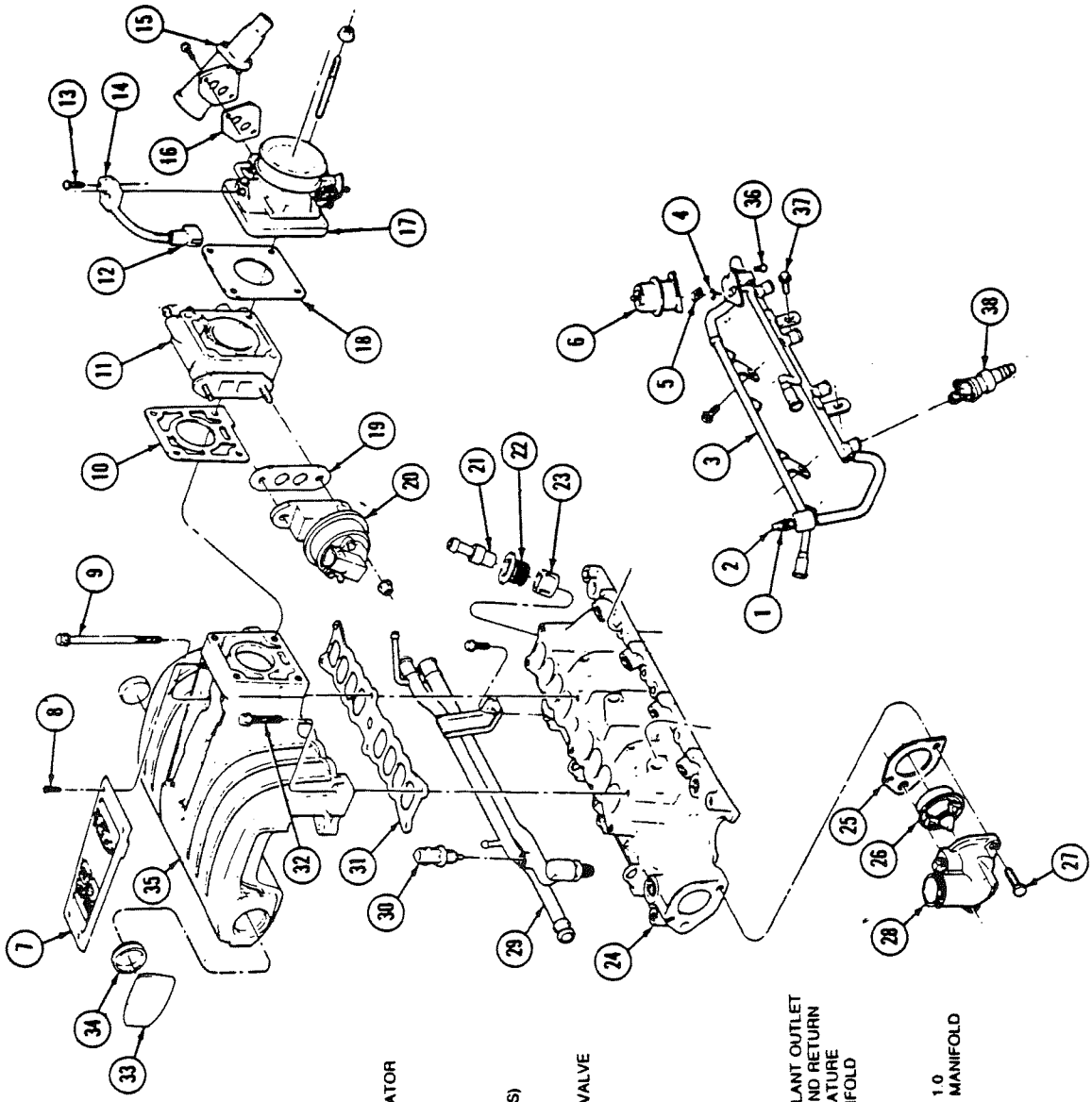
There are two different spacers (.310" and .385") used between the idler pulley and the Supercharger front support bracket. They are intended to center, or better locate the belt on the idler pulley.

Use flat washer and lock washer with .310" spacer. Use only the lock washer with .385" spacer. The washers locate between the bolt head and pulley.



Air Cleaner and Duct System, V-8 Engine—Mark VII, Thunderbird/Cougar, Mustang

DESCRIPTION (Continued)

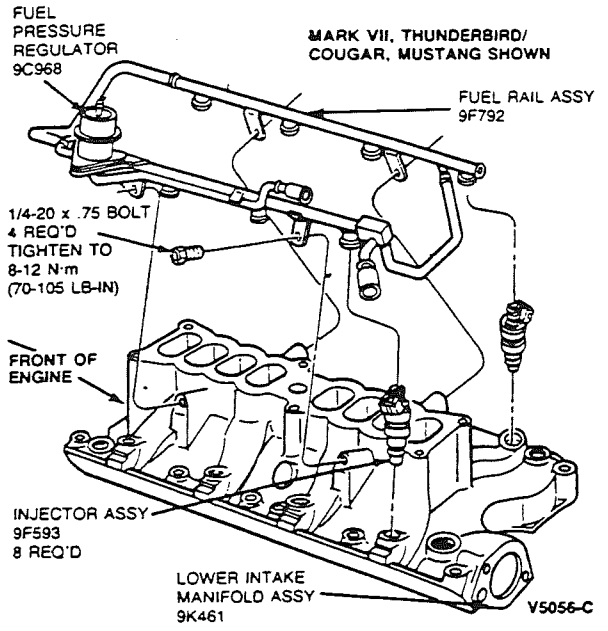


ITEM	PART NUMBER	DESCRIPTION
1.	9H321	SCHRADER VALVE
2.	9H323	CAP-SCHRADER VALVE
3.	9F792	FUEL RAIL ASSY
4.	87006-S96	SEAL O-RING 5/16-18 x 6.07 INCH
5.	9C977	GASKET, FUEL PRESSURE REGULATOR
6.	9C968	FUEL PRESSURE REGULATOR
7.	9E434	COVER, UPPER MANIFOLD
8.	57357	SCREW
9.	390397-S8	BOLT 5/16-18 x 6.07 INCH
10.	9E464	GASKET, EGR SPACER
11.	9H474	EGR SPACER
12.	14A464	CONNECTOR, TP SENSOR (PIA TPS)
13.	N804221-S52	SCREW
14.	9B989	SENSOR, THROTTLE POSITION
15.	9F715	THROTTLE AIR BYPASS VALVE
16.	9F670	GASKET, THROTTLE AIR BYPASS VALVE
17.	9E928	THROTTLE BODY ASSY
18.	9E933	GASKET, THROTTLE BODY
19.	9D476	GASKET, EGR VALVE
20.	9F483	EGR VALVE ASSY
21.	6A666	PCV VALVE ASSY
22.	6K780	PCV GROMMET
23.	6A631	ELEMENT, CRANKCASE VENT
24.	9K461	LOWER INTAKE MANIFOLD
25.	8255	GASKET, THERMOSTAT HOUSING
26.	8575	THERMOSTAT
27.	56132	BOLT 5/16-18 x 3.50 INCH
28.	8582	CONNECTOR ASSY, ENGINE COOLANT OUTLET
29.	9D424	TUBE, HEATER WATER SUPPLY AND RETURN
30.	12A648	SENSOR, EEC COOLANT TEMPERATURE
31.	9H486	GASKET, UPPER TO LOWER MANIFOLD
32.	390358-S8	BOLT 5/16-18 x 1.62 INCH
33.	9S434	COVER, DECORATIVE END
34.	376043-S36	PLUG-CAP 1.75 INCH DIA.
35.	9425	UPPER INTAKE MANIFOLD
36.	N802353-S100	SCREW-SOCKET HEAD 5.0 x 0.8 x 1.0
37.	N802626-S8	BOLT, ATT RAIL ASSY TO LOWER MANIFOLD
38.	9F593	FUEL INJECTOR

COMPONENTS (Continued)

Fuel Supply Manifold

The fuel supply manifold assembly is the component that delivers high-pressure fuel from the vehicle fuel supply line to the eight fuel injectors. The assembly consists of a tubular fuel rail, eight injector connectors, a mounting flange to the fuel pressure regulator and mounting attachments which locate the fuel manifold assembly and provide fuel injector retention. The fuel inlet and outlet connections have push connect (CCD) fittings.



REMOVAL AND INSTALLATION

Fuel Charging Assembly

Throttle Body, Upper and Lower Manifolds

Pre-Service Procedures

The fuel charging assembly consists of the air throttle body, and the upper and lower intake manifolds. Prior to service or removal of the fuel charging assembly, the following Steps must be taken:

1. Open hood and install protective covers.
2. Disconnect battery ground cable and secure it out of the way.
3. Remove fuel cap at tank pressure.
4. Release pressure from fuel system. Refer to Section 24-50 for fuel system pressure relief procedures. A pressure relief (Schrader) valve on the fuel rail assembly is provided for this procedure.

Post-Service Procedures

After the service is complete and the fuel charging assembly is installed to engine, the following Steps must be taken:

1. Install fuel cap at tank.
2. Connect battery ground cable.
3. Add engine coolant if required.
4. Turn ignition switch on/off several times without starting engine to check for fuel leaks.

   NOTE: Check all connections at fuel rails, push connect fittings, etc.

   CAUTION: The fuel system is normally pressurized to 276 kPa (39 psi).
5. Start engine and warm to operating temperature. Check for coolant leak if coolant was removed.
6. Perform EEC-IV Self-Test to check systems function. Refer to the Engine/Emissions Diagnosis* manual.

Upper Intake Manifold and Throttle Body

Removal

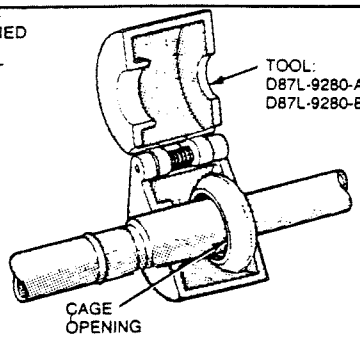
1. Disconnect electrical connectors at air bypass valve, throttle position sensor and EGR position sensor.
2. Disconnect throttle linkage at throttle ball and transmission linkage from throttle body. Remove two bolts securing bracket to intake manifold and position bracket with cables out of way.
3. Disconnect upper intake manifold vacuum fitting connections by disconnecting all vacuum lines to vacuum tree, vacuum lines to EGR valve, vacuum line to fuel pressure regulator and canister purge line.
4. Disconnect PCV system by disconnecting hose from fitting on rear of upper manifold, and disconnect PCV vent closure tube at throttle body.
5. Remove two EGR coolant lines from fittings on EGR spacer.
6. Remove six upper intake manifold retaining bolts.
7. Remove upper intake and throttle body as an assembly from lower intake manifold.

REMOVAL AND INSTALLATION

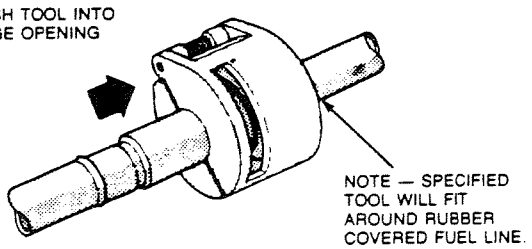
FUEL LINE SPRING LOCK COUPLING

TO DISCONNECT COUPLING

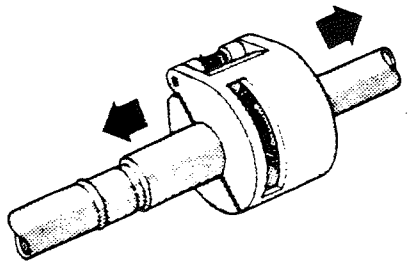
CAUTION — RELIEVE FUEL PRESSURE BEFORE DISCONNECTING COUPLING.



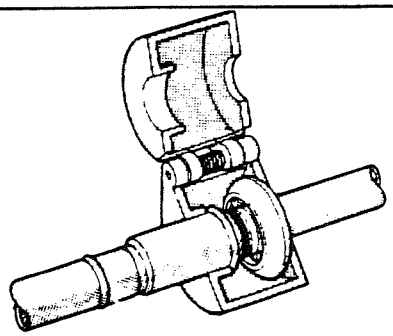
1. FIT TOOL TO COUPLING SO THAT TOOL CAN ENTER CAGE OPENING TO RELEASE THE GARTER SPRING.



2. PUSH THE TOOL INTO THE CAGE OPENING TO RELEASE THE FEMALE FITTING FROM THE GARTER SPRING.

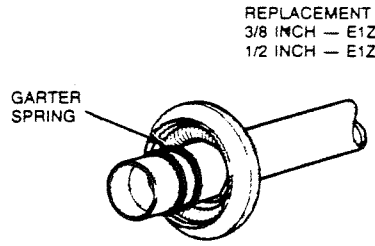


3. PULL THE COUPLING MALE AND FEMALE FITTINGS APART

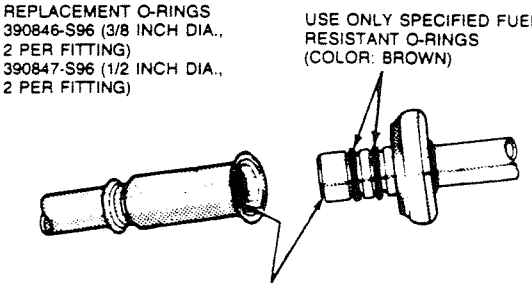


4. REMOVE THE TOOL FROM THE DISCONNECTED SPRING LOCK COUPLING.

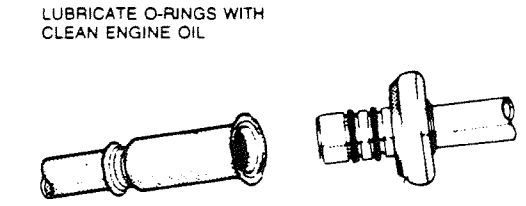
TO CONNECT COUPLING



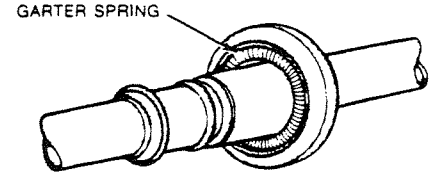
1. CHECK FOR MISSING OR DAMAGED GARTER SPRING — REMOVE DAMAGED SPRING WITH SMALL HOOKED WIRE — INSTALL NEW SPRING.



2. CLEAN FITTINGS WITH SOLVENT CHECK FOR MISSING OR DAMAGED O-RINGS REPLACE MISSING O-RINGS. IF EITHER O-RING IS DAMAGED, REPLACE BOTH O-RINGS.



3. ASSEMBLE FITTING BY PUSHING WITH A SLIGHT TWISTING MOTION



4. TO ENSURE COUPLING ENGAGEMENT, PULL ON FITTING AND VISUALLY CHECK TO BE SURE GARTER SPRING IS OVER FLARED END OF FEMALE FITTING.

V5430-A

PULLEY SIZE (millimeter)	PULLEY SIZE (appr. fractional)	PULLEY SIZE (appr. decimal)	'86-'93* MUSTANG MAF	'86-'88* MUSTANG LINCOLN SD	'94-'95** MUSTANG	'94-'95* MUSTANG COBRA	'96 MUSTANG COBRA	'88-'95** 351 TRUCK	'88-'95** 302 TRUCK	'88-'95** 460 TRUCK	'93-'95** LIGHTNING TRUCK
79	3-1/8	3.125									
76	3	3.000					5.5		5		
72	2-7/8	2.875			4-5		6.5		6		
70	2-3/4	2.770		5.5	5-6		7.5	5.5	7		
66	2-5/8	2.625	4	6.5	7-7.5	4	8.5	6.5	8		
63	2-1/2	2.500	5	7.5	8-8.5	5	9.5	7.5			
60	2-3/8	2.375	6	8.0	9-9.5	6	10.5	8.5			5
57	2-1/4	2.260	7(11)		10-10.5	7	11.5				6
55	2-1/8	2.164	8(12.5)		11-11.5	8					7
50	2	1.985	9(14)		12.0					5	8

BOOST VARIABLES

( )	= 6.5" CRANK PULLEY
+.5 psi	= LINCOLN INLET removal
+.5 psi	= 70MM MAF
+.5-1.0 psi	= KB 80MM, PRO M 77
+.2 psi	= 70,73 COBRA METER
*	= 5.85" STOCK CRANK PULLEY
**	= 6.50" STOCK CRANK PULLEY

NOTE: EACH 1/8" IN SUPERCHARGER PULLEY SIZE IS EQUIVALENT TO APPROX. 1 PSI IN BOOST

BOOST TABLES