

OWNERS MANUAL

WITH INSTALLATION
INSTRUCTIONS

banks

POWERPACK

S Y S T E M

INCLUDING STINGER® & TORQUETUBE® SYSTEMS

1987-97 FORD PICKUPS WITH 460 EFI ENGINE

POWERPACK SYSTEMS, STANDARD-CAB 48801, 48804, 48807, 48810, 48815, 48824, 48829, 48839 & 48848
POWERPACK SYSTEMS, SUPER/CREW-CAB 48828, 48838, 48842, 48843, 48844, 48845, 48846, 48847 & 48850
POWERPACK SYSTEM, SUPER-DUTY 48859
TORQUETUBE SYSTEMS 48803, 48809, 48812, 48814, 48817, 48826, 48827, 48841 & 48849
STINGER SYSTEMS 49207, 49218, 49250, 49252, 49253 & 49254,

PREPARATION AND PRECAUTIONS

1. For ease of installation of your Banks PowerPack® Stinger® or TorqueTube® system, familiarize yourself with the procedure by reading the entire manual before starting work. This manual contains 20 pages of copy, illustrations and parts listing. If any pages are missing from this manual please call Gale Banks Engineering immediately for a replacement.

2. The exploded view of the PowerPack assembly provides only general guidance. Refer to each step and section diagram in this manual for proper instruction.

3. Throughout this manual, the left side of the vehicle refers to the driver's side, and the right side to the passenger's side.

4. Disconnect the ground cable from the battery before beginning work. If there are two batteries, disconnect both.

5. Route and tie wires and hoses a minimum of 6 inches away from exhaust heat, moving parts and sharp edges. Clearance of 8 inches or more is recommended where possible.

6. The front of your vehicle should be raised a minimum of 5-6 inches to allow the installation of Banks TorqueTube exhaust manifolds. If you have access to a hoist, the vehicle can be

elevated and the front wheels removed for easiest access.

7. When raising the vehicle, support it on properly weight-rated safety stands, ramps or a commercial hoist. Follow the manufacturer's safety precautions. Take care to balance the vehicle to prevent it from slipping or falling. When using ramps, be sure the front wheels are centered squarely on the topsides; put the transmission in park; set the hand brake; and place blocks behind the rear wheels. **CAUTION!** Do not use floor jacks to support the vehicle while working under it. Do not raise the vehicle onto concrete blocks, masonry or any other item not intended specifically for this use.

8. During installation, keep the work area clean. If foreign debris is transferred to any Banks PowerPack component, clean it thoroughly before installing.

Notification

The Banks Ram-Air Filter comes pre-oiled and no oiling is necessary for initial installation. Service the filter as specified in the Cleaning and Oiling the Banks Ram-Air Filter Section of this manual.

IMPORTANT!

Read This Before Installing Banks TorqueTube® Manifolds on Super-Duty and 1-Ton 4WD Trucks

When installing the Banks PowerPack or Banks TorqueTubes on 2WD Super-Duty and 1-ton 4WD trucks with a single I-beam or tubular front axle (not swing-arm independent), a new sway bar link bracket (part no. 48899) must be installed for exhaust manifold clearance.

This bracket must be installed and assembled to the sway bar link before installing the Banks TorqueTubes. This bracket is not required on 2 or 4-wheel drive trucks with the dual swing-arm front axle.

SWAY BAR LINK BRACKET INSTALLATION PROCEDURE

1. Disconnect right sway-bar link from sway bar and bracket at right frame rail. Retain all hardware for reinstallation.

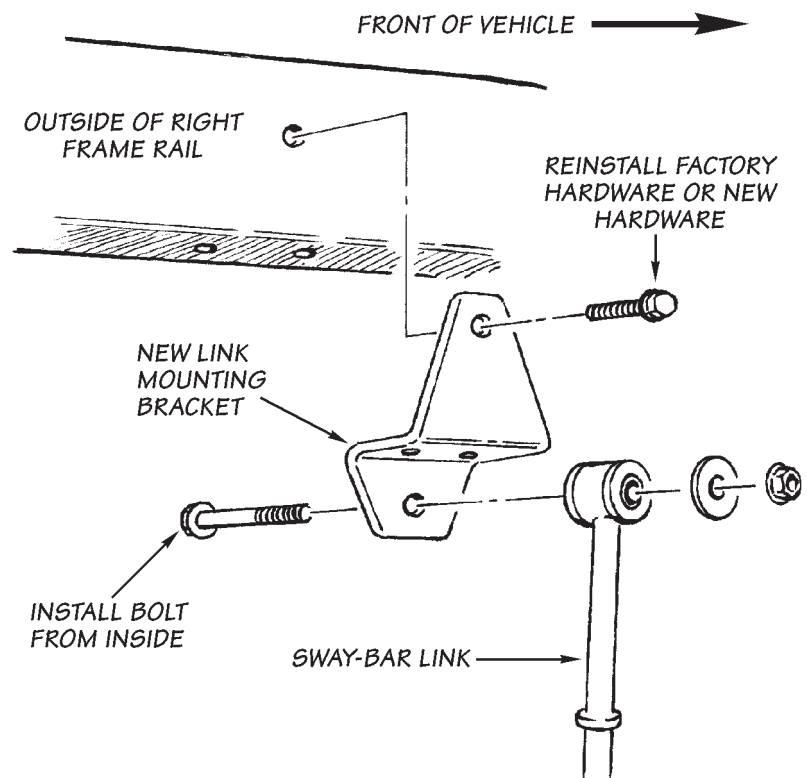
2. Unbolt sway-bar bracket from inside of right frame rail. Retain 3 bolts and nuts for reinstallation.

NOTE: Some trucks use rivets to mount this bracket. Rivets must be drilled out to remove factory bracket.

3. Using original hardware or new hardware, if required, install new bracket supplied to the outside of the frame rail where the original bracket was removed. Clean frame rail of any undercoat or road dirt in area where bracket will contact frame.

4. Install original sway-bar link bolt through the lower hole in the bracket with the head of the bolt facing the engine. Install sway-bar link on the outside of the bracket over the bolt, then install and tighten original nut and washer.

5. Reassemble sway-bar link to sway bar with original hardware and rubber bushings.



EXHAUST SYSTEM INSTALLATION PROCEDURE

For Stinger installation, proceed to step 3.

1. Unbolt air filter cover. Remove air filter cover and entire air inlet hose assembly as a unit by loosening hose clamps at the throttle body on the engine. Cover throttle opening to prevent foreign objects from entering.

2. Remove sparkplug wires from sparkplugs. Label wires for reinstallation if not familiar with firing order. Lay sparkplug wires away from exhaust manifolds. Now remove sparkplugs from engine.

For TorqueTube only installation, proceed to step 5.

3. Remove muffler and tailpipes from over rear axle. If this assembly will not be reused, cutting off the tailpipes will allow the muffler/tailpipe assembly to be removed more quickly. If this assembly is to be saved intact, the vehicle must be raised high enough so the muffler/tailpipe assembly can be lifted over the rear axle.

Heat from a torch will most likely be required to separate slip joints. To remove the exhaust system from the rubber hangers, squirt some WD40, silicone spray or similar lubricant onto the lower end of the rubber hangers, where the hanger rod protrudes through the rubber, then use a pry bar to pop the rubber hangers off the rod.

4. Remove the intermediate pipe from between the muffler and catalytic converter. This will be a short stub adapter on short wheelbase models, or a pipe, or pipe with hanger on longer wheelbase models. Heat the catalytic converter outlet slip joint as required to remove the pipe.

For Stinger installation, proceed to step 19.

5. Disconnect the oxygen sensor plug where oxygen sensor wires join the wire loom (not at the oxygen sensor). Carefully unscrew the oxygen sensor from the exhaust Y-pipe. On 1996 and later California trucks, disconnect and remove all three oxygen sensors. Be sure to note and label the sensors and wire connectors to ensure that upon reinstallation each is returned to its original location.

6. Separate the catalytic converter from the Y-pipe assembly and the air injection tubing. Use heat at slip joints as required. Remove Y-pipe assembly by unbolting flanges at exhaust manifolds.

7. On vehicle models with air injection into the exhaust manifolds, unbolt the air injection tube from the rear of the right exhaust manifold. Penetrating oil may be necessary for bolt removal.

8. Remove dipstick and dipstick tube from left exhaust manifold and oil pan. Disconnect air

injection tube (if equipped) and EGR tube from fittings on rear and bottom of left exhaust manifold. Use penetrating oil as required.

NOTE: Unscrew tubing nut from fittings on exhaust manifold, do not attempt to remove the adapter fittings from the manifold. In extreme cases, heat from a torch may be required to loosen the tube nuts. Heat the nut to a dull red color, let it cool, then spray the nut with penetrating oil and attempt to loosen the tube nut. DO NOT kink or deform the tubes.

9. Unbolt and remove exhaust manifolds from engine, loosen any brackets attached to exhaust manifold bolts as required (other side of brackets may be left attached to engine during manifold removal). Remove and retain sparkplug wire heat shields, if equipped. Mark right and left heat shield for reinstallation.

NOTE: Banks TorqueTubes are designed to allow for the reinstallation of the factory spark plug heatshields. However, due to the nature of tubular manifolds, heat retention is not a problem and the spark plug heatshields may be eliminated. Should you decide to reinstall the heatshields, instructions to do so are provided.

IMPORTANT

On Super-Duty and 1-ton 4WD trucks, a Banks Sway Bar Link Bracket (Part #48899) must be installed at this time (before installing Banks TorqueTubes) for clearance. Please see information on page 3 for bracket installation.

10. Inspect the exhaust manifold flange surfaces on the cylinder heads. Remove any foreign material from these surfaces that might prevent proper manifold sealing. If cylinder heads have been heavily eroded from leaking factory manifolds, exhaust manifold gaskets will be required, or the heads must be removed and the exhaust flange area resurfaced as necessary. Otherwise, no gaskets are used between the Banks TorqueTube manifolds and the cylinder head, as the Banks manifolds have machined flanges like the original factory iron manifolds.

11. Install right-hand Banks TorqueTube® manifold from under the vehicle. See caution note on jacking and raising vehicle in Preparation and Precautions section. Install all bolts finger-tight, then tighten bolts from the center out. Use a dab of anti-seize lubricant (provided) on the bolt threads where they enter the head. See Figure 1 for bolt locations. Reconnect air injection tube (if used) two-bolt flange at rear of TorqueTube head flange. (Only manifolds for air injected engines will have this flange.)

Use new gasket, provided, two $\frac{5}{16}$ -24 x $\frac{5}{8}$ hex bolts, and four $\frac{5}{16}$ " circle-lock washers. Washers are used in pairs on each bolt, the ramps on the surface of each

FIGURE 1

NOTE: BECAUSE OF VARIATIONS IN ACCESSORY MOUNTING BRACKETS THAT SHARE EXHAUST MANIFOLD BOLTS, THESE BOLT LOCATIONS ARE TYPICAL BUT MAY NOT EXACTLY MATCH YOUR CONFIGURATION. AN ADDITIONAL 5/8" SPACER AND 2"-LONG MANIFOLD BOLT ARE PROVIDED, IF NEEDED.

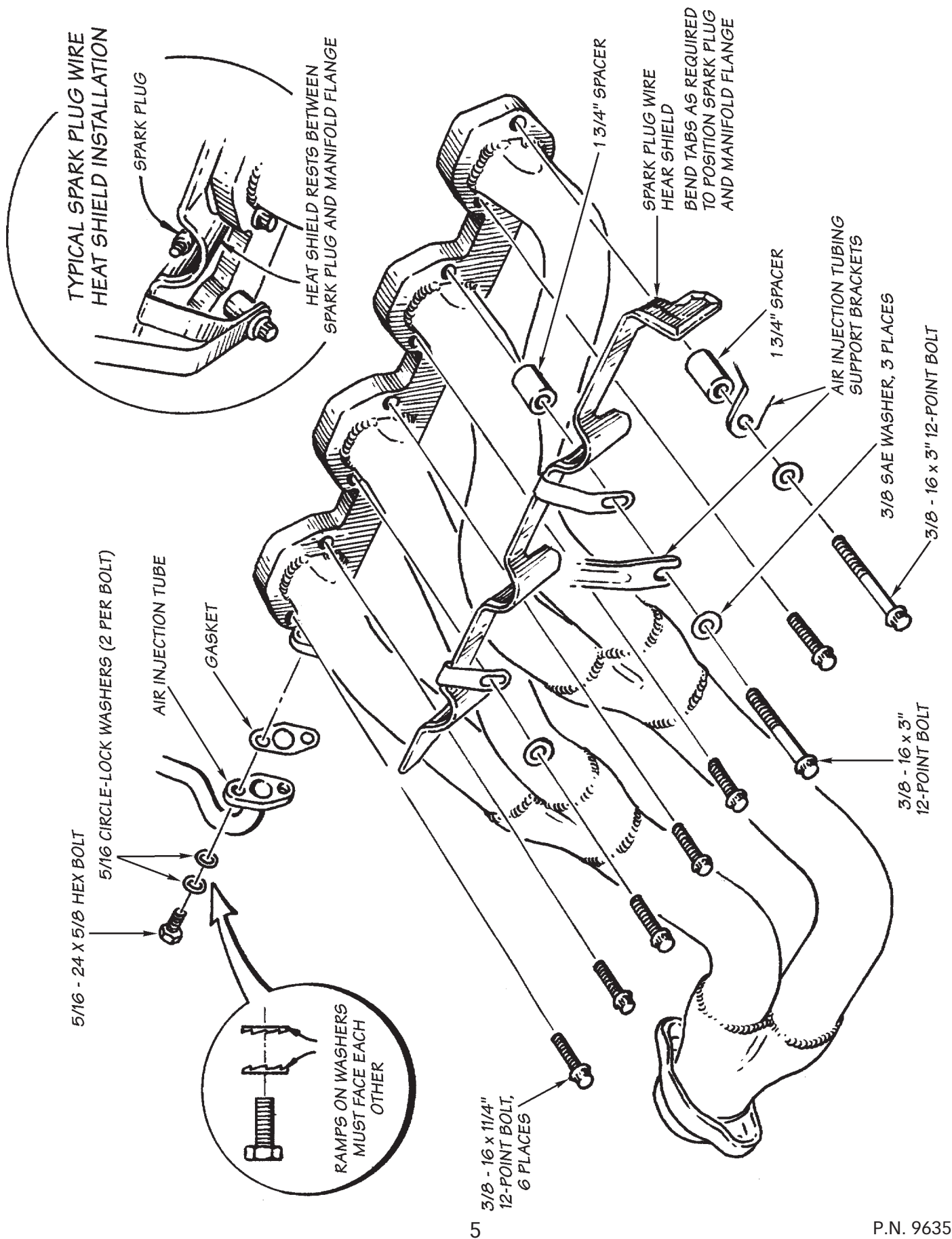


FIGURE 2

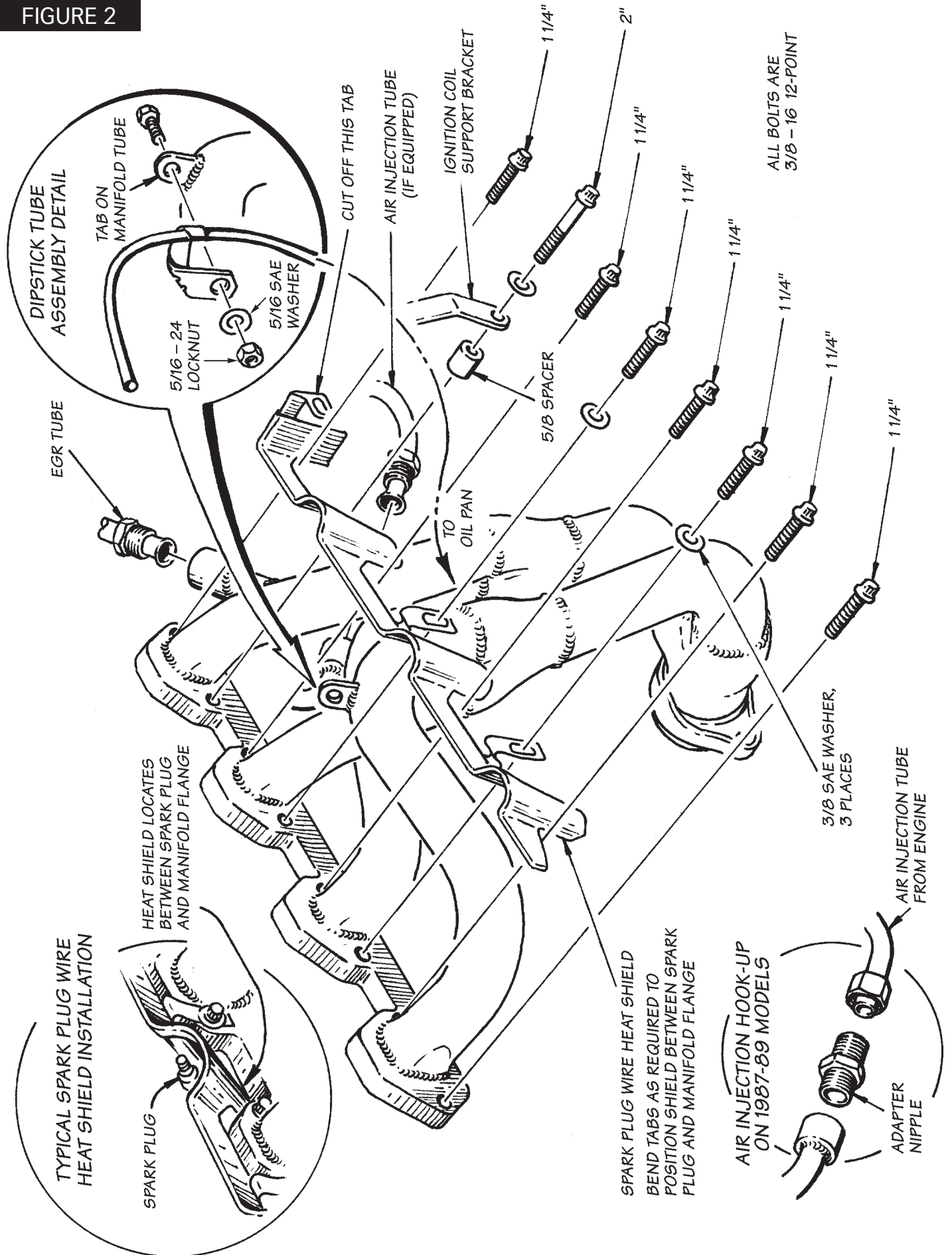
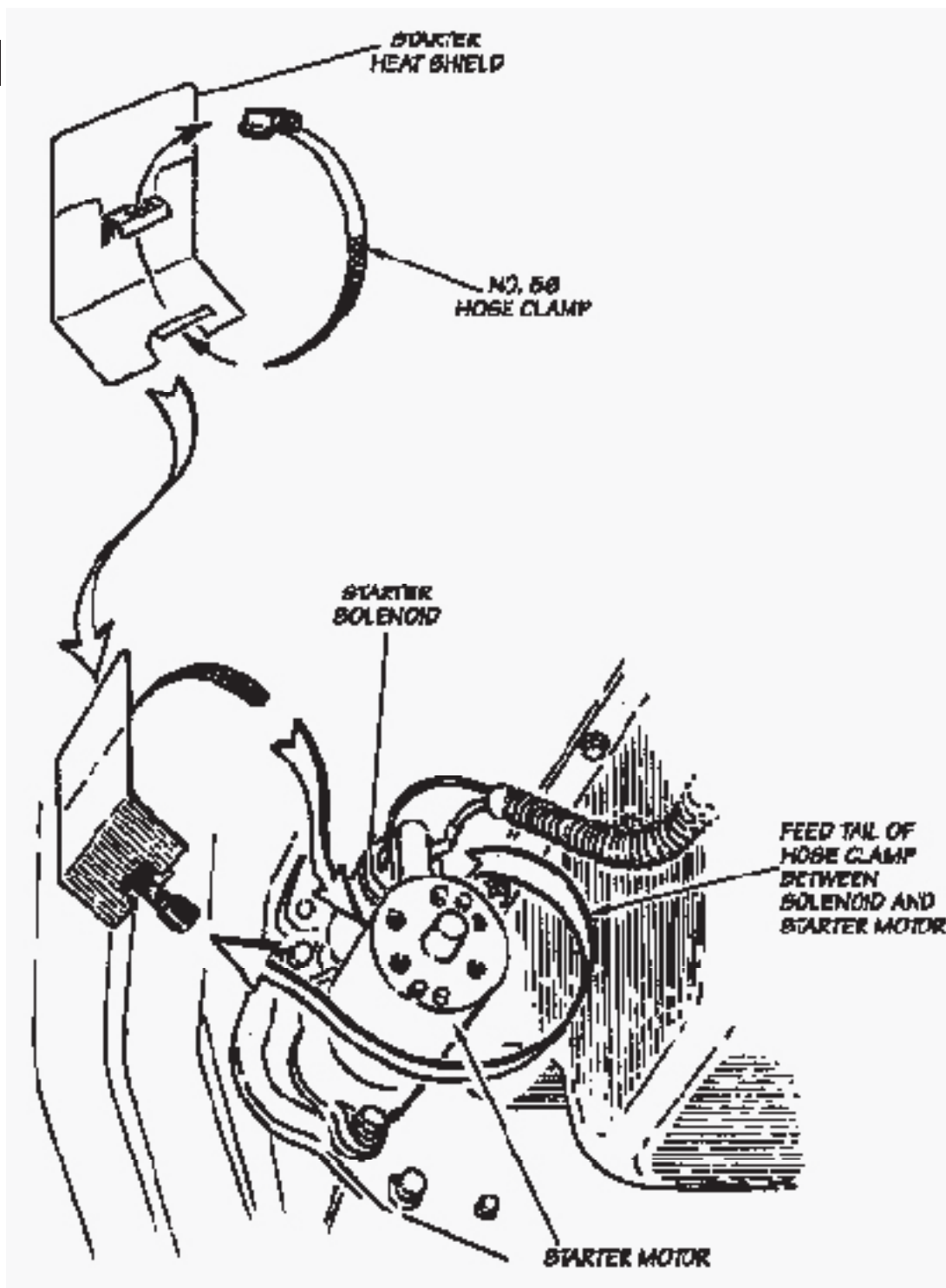


FIGURE 3



washer must face each other when installed on bolt. See Figure 1 for proper washer installation.

12. Install left-hand Banks TorqueTube manifold from under the vehicle. Use two bolts to temporarily hang and position the manifold on the cylinder head. Thread EGR tube and air injection tube (if equipped) in fittings on Banks TorqueTubes. *NOTE: Early-model air injection systems require an adapter nipple (supplied) for hook-up, see Figure 2.*

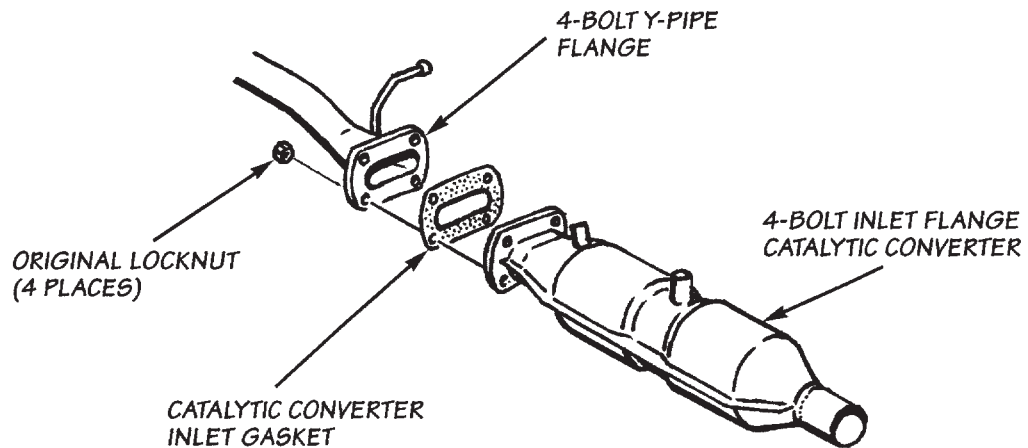
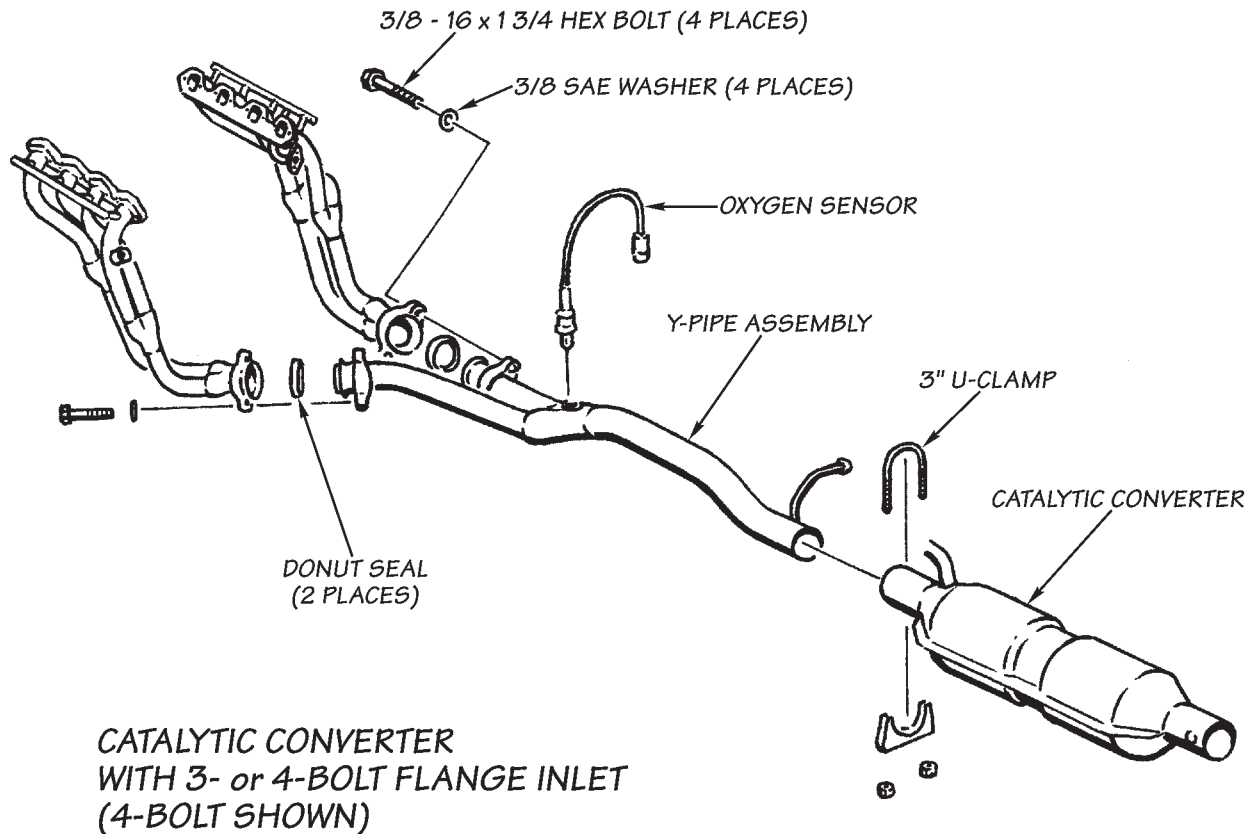
Because of the tight confines, we suggest that the EGR tube and air injection tube (if equipped) be tightened into the manifold with the manifold loosely attached to the head (this allows for some additional freedom of movement). In some cases, the EGR and air injection

tubes may have to be tightened with the manifold completely separated from the head, then bolted to the head when wrenching the tubes is completed. Air injection tube may be loosened from its upper support bracket to aid in alignment during installation. A dab of anti-seize on the tube threads will aid in assembly.

Once this procedure is complete, install remaining manifold bolts finger tight, with anti-seize applied. See Figure 2 for bolt locations. Reinstall dipstick tube and dipstick, bolt dipstick to tab on manifold with hardware indicated in Figure 2.

13. Reinstall sparkplugs and sparkplug wires. Sparkplug wire heat shields should be positioned between sparkplug wire boot and manifold

FIGURE 4



flange, and should be adjusted by bending as necessary so heatshield does not press against plug boot. Contact of plug wire boot by heat shield could cause a shorted plug if insulation is marginal. In some cases it may be advisable to trim material from the heat shield with snips to provide adequate clearance between the shield and plug wire boot.

14. On '93 and later models, install the starter heatshield by first slipping the No. 56 hose clamp through the slots in the heatshield as shown in Figure 3. Now with the heatshield between the TorqueTube exhaust manifold and the starter, feed the tail of the No. 56 hose clamp between the solenoid and

starter motor, and tighten.

NOTE: Banks PowerPack system #48859 fits Super Duty applications that do not utilize a catalytic converter. For steps 15 through 17, disregard references to a catalytic converter and refer to illustration 5a rather than 5.

15. Install new Y-pipe between TorqueTube manifold outlets and catalytic converter. Install exhaust donut seal gaskets between Y-pipe and TorqueTube manifold outlets as shown in Figure 4, install bolts to join floating flanges but leave bolts just tight enough to allow for Y-pipe position adjustment.

FIGURE 5

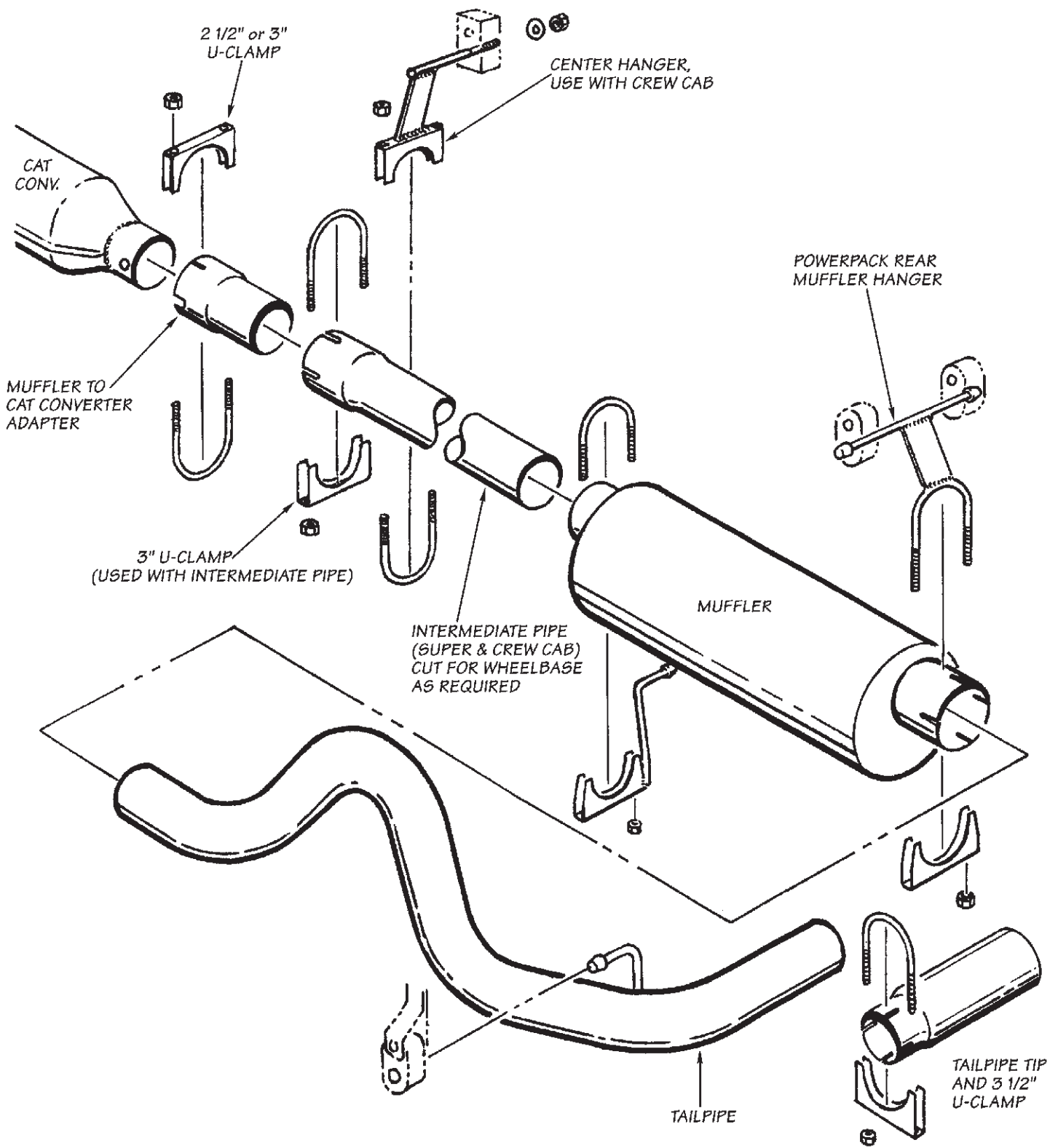
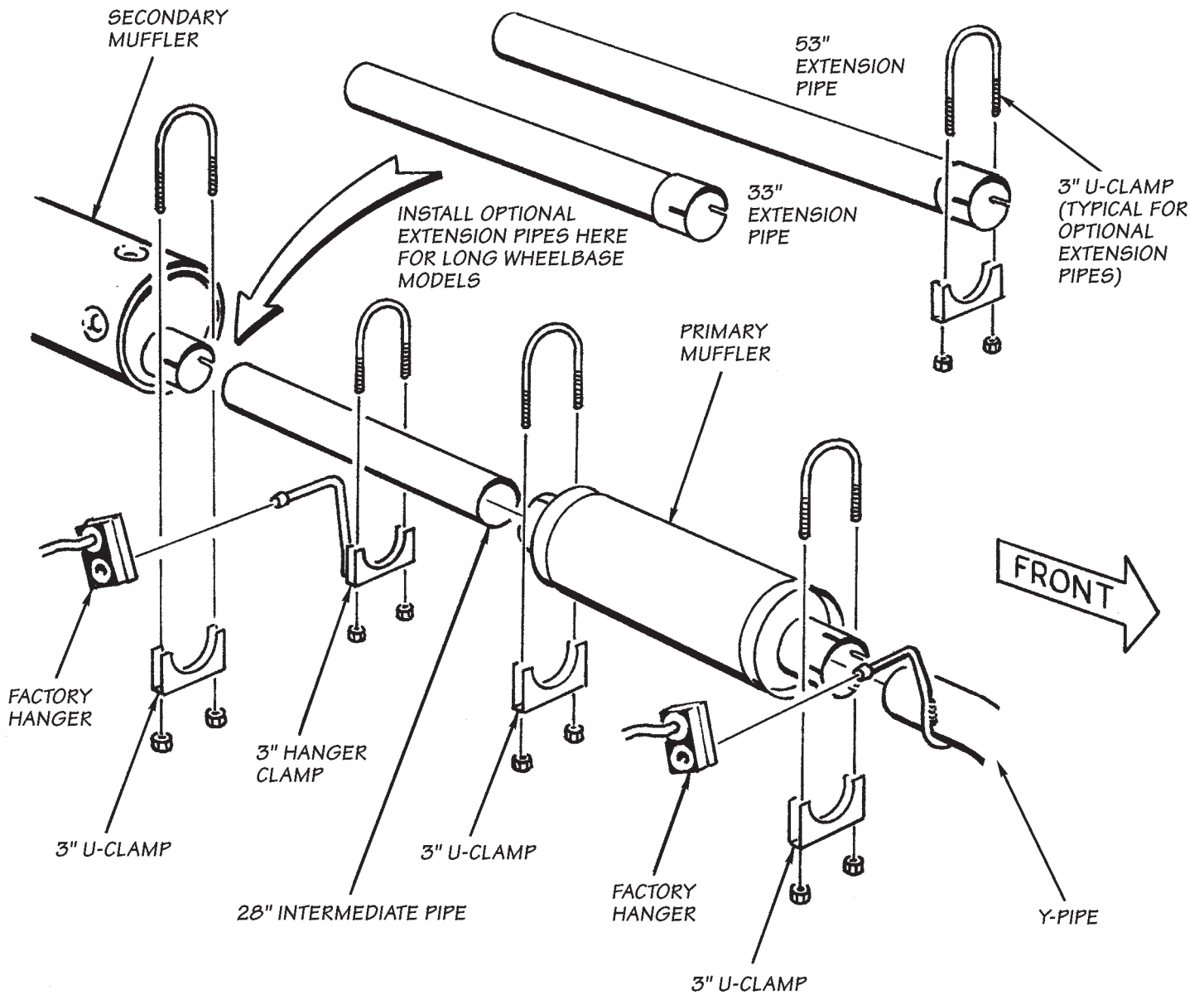


Figure 5a



16. Reinstall oxygen sensor in Y-pipe and plug oxygen sensor lead into vehicle wire loom. Make sure oxygen sensor wiring is routed to prevent it from contacting hot exhaust piping. Use a small dab of anti-seize on the sensor threads only. **On 1996 and later California models**, reinstall all three sensors, making sure that each one is installed in its original location with the proper wire connected to it.

17. Install the catalytic converter on the Y-pipe assembly. On models with a 3" slip connection at the converter inlet, install 3" U-clamp, but leave clamp loose enough for adjustment. On models with a 4-bolt converter inlet flange, install new inlet gasket,

provided, then mount converter using original lock nuts. Reconnect air injection piping to catalytic converter using original hardware. **See Figure 4.**

18. Place the CARB E.O. decal under the hood in a place that will be visible to service personnel.

For TorqueTube only installation, proceed to step 25.

19. If the vehicle is a Standard Cab (not Super Cab or Crew Cab) model, install a catalytic-converter outlet adapter on the catalytic converter. Install a 3 x 3" adapter on converters with a 2 1/2" outlet. **See Figure 5.**

20. If the vehicle is anything other than Standard Cab 133" wheelbase model, an extension pipe must be used between the catalytic converter and the muffler. Vehicle with catalytic converters having a 2½" converter outlet will require the 2½ x 3" adapter and the extension pipe. Most applications require that the extension pipe be cut to a specific length. The following chart lists the extension pipe and adapter requirements for the various cab/chassis application.

Cab/Chassis	Cat Conv. Outlet Size	Pipe/Adapter	Modification
Std. Cab/Long Bed 133" wheelbase	3" dia.	3 x 3" Adapter	None
Std. Cab/Long Bed 133" wheelbase	2½" dia.	2½ x 3" Adapter	None
Super Cab/Long Bed 155" wheelbase	3" dia.	Extension Pipe	Cut off 13"
Super Cab/Long Bed 155" wheelbase	2½" dia.	Extension Pipe/ 2½ x 3" Adapter	Cut off 16"
Super Cab/Short Bed 139" wheelbase	3" dia.	Extension Pipe	Cut off 29"
Crew Cab/Long Bed 168" wheelbase	3" dia.	Extension Pipe	None
Crew Cab/Long Bed 168" wheelbase	2½" dia.	Extension Pipe/ 2½ x 3" Adapter	Cut off 3"
Crew Cab/Short Bed 152" wheelbase	3" dia.	Extension Pipe	Cut off 16"

21. Crew Cab models use an additional hanger to support the center of the extension pipe. A 3" clamp/hanger is supplied with the 41" extension pipe. Install this hanger clamp into the factory rubber hanger to support the pipe. Do not tighten at this time.

22. Install Banks Dynaflow muffler onto the catalytic converter or intermediate pipe. Hang the muffler by the front and rear hanger clamps in the factory rubber hangers. Leave clamps loose enough for adjustment.

23. Install the Monster tailpipe over the axle and into the muffler outlet and original factory rubber hanger. Install stainless tip tailpipe and 3½" U-clamp.

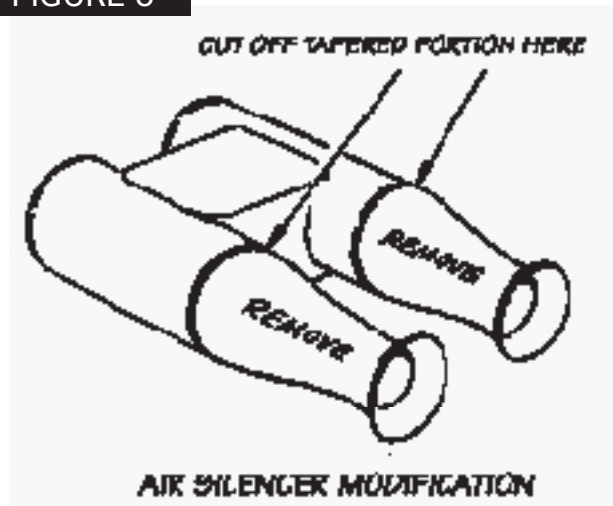
24. Check the alignment of the muffler and tailpipe. Make sure tailpipe has adequate clearance to all chassis and suspension components (¾" minimum) to prevent rattles. When alignment looks good, tighten all clamps, including flanges at exhaust manifold donut seal connections.

25. Remove the plastic silencer from the engine air inlet hoses between the air cleaner housing and throttle body. Use a hacksaw to cut 5/8" of hose from the small end of each of the hoses that went between the plastic silencer and air cleaner cover. Clean all rubber chips from inside the hoses after cutting.

26. Using a hacksaw, remove the tapered portion of the silencer by sawing as shown in **Figure 6**. Remove any plastic shavings after cuts are completed.

27. Reinstall the modified silencer in the inlet air hoses.

FIGURE 6



For TorqueTube only installation, proceed to step 30.

28. Replace the original paper element type air filter with the low restriction reusable Banks Ram-Air filter provided. Make sure the filter is seated in the housing. See the filter service section of these instructions for filter maintenance and care.

29. Install new Banks Ram-Air filter cover using four 6mm x 40mm metric hex bolts. Tighten bolts just enough for cover feet to contact housing base. Do not overtighten, as this can distort cover and base. Reinstall hoses and tighten clamps.

NOTE: All 1996 and later California-Only systems (P.N. 48828, 48829, 48838, & 48839) reinstall factory air filter cover.

30. Test drive the vehicle. Listen for any exhaust leaks and rattles. Correct leaks and rattles by tightening or repositioning exhaust piping as required. **NOTE: The exhaust system may smoke somewhat at first as the grease used in the tube-bending process burns off the pipes.**

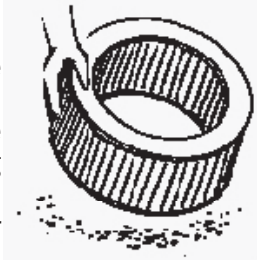
CLEANING AND OILING THE BANKS RAM-AIR FILTER

Notification

The Banks Ram-Air Filter comes pre-oiled and no oiling is necessary for initial installation. Use Banks Ram-Air Filter cleaning system (part#90094), available from Gale Banks Engineering to service the Air Filter. Follow the instructions included with the cleaning system to clean and re-oil your Banks Ram-Air Filter.

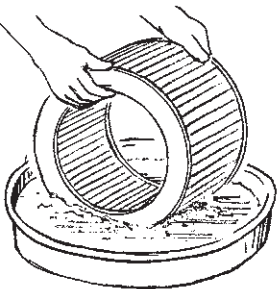
1. PRE-CLEANING

Tap the element to dislodge any large embedded dirt, then gently brush with a soft bristle brush. NOTE: If complete cleaning is not practical at this time, reoil the element and reinstall in your vehicle.



2. SPRAY-ON CLEANING

Spray Banks air-filter cleaner liberally onto the entire element and let soak for 10 minutes.



PAN CLEANING

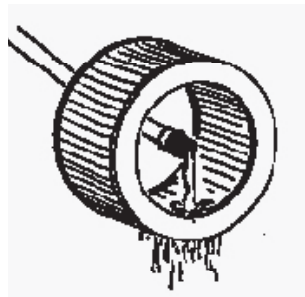
Large air-filter elements can be rolled or soaked in a shallow pan of Banks air-filter cleaner. Remove immediately and let soak for approximately 10 minutes.

3. CLEANING HINTS

Use only Banks air-filter cleaner. NO gasoline cleaning, NO steam cleaning, NO caustic cleaning solutions, NO strong detergents, NO high-pressure car wash, NO parts cleaning solvents. Any of these NOs can cause harm to the cotton filter media plus SHRINK and HARDEN the rubber end caps.

4. RINSE OFF

Rinse off the element with low-pressure water. Tap water is okay. Always flush from the clean side to dirty side. This removes the dirt and does not drive it into the filter.



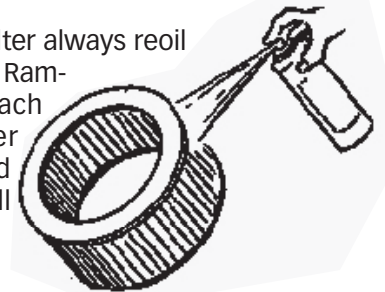
5. DRYING HINTS

Always dry naturally. After rinsing, shake off all excess water and let the element dry naturally. DO NOT

USE COMPRESSED AIR – DO NOT USE OPEN FLAME – DO NOT USE HEAT DRYERS!
EXCESS HEAT WILL SHRINK THE COTTON FILTER MEDIA.
COMPRESSED AIR WILL BLOW HOLES IN THE ELEMENT.

6. AEROSOL OILING

After cleaning air filter always reoil before using. Spray Banks Ram-Air filter oil down into each pleat with one pass per pleat. Wait 10 minutes and re-oil any white spots still showing.



7. OILING HINTS

Never use a Banks Ram-Air filter without oil (the filter will not stop the dirt without the oil). Use only Banks Ram-Air filter oil. Banks air-filter oil is a compound of mineral and animal oil blended with special polymers to form a very efficient tack barrier. Red dye is added to show just where you have applied the oil. Eventually the red color will fade but the oil will remain and filter the air. NEVER USE Automatic Transmission Fluid. NEVER USE Motor Oil. NEVER USE Diesel Fuel. NEVER USE WD40, LPS, or other light-weight oils.

8. REINSTALL

Reinstall your Banks Ram-Air filter element with proper care. Make sure the element seats properly in the filter case. Install the cover making sure it's in the right position. Tighten all the nuts, bolts, screws or clips to factory specifications.

9. DO NOT DISCARD

Affix the "Do Not Discard" sticker to the filter case (included with every Banks replacement element). Make sure you put the sticker in a highly visible place to alert your mechanic not to discard.

10. PERFORMANCE HINTS

Service every 50-100,000 miles on street-driven applications. Service more often in offroad or heavy-dust conditions. If an air-filter restriction gauge is installed, then change the element when the air-filter restriction reaches 18"/H₂O.

CAUTION! Extremely fine dust from agriculture or offroad use will pull the oil from the element. Frequent reoiling of the element's clean side might be required. Completely service when practicable. For extra protection use an air-filter sealing grease on rubber ends of the element. Service only with Banks air-filter cleaner and Banks air-filter oil.