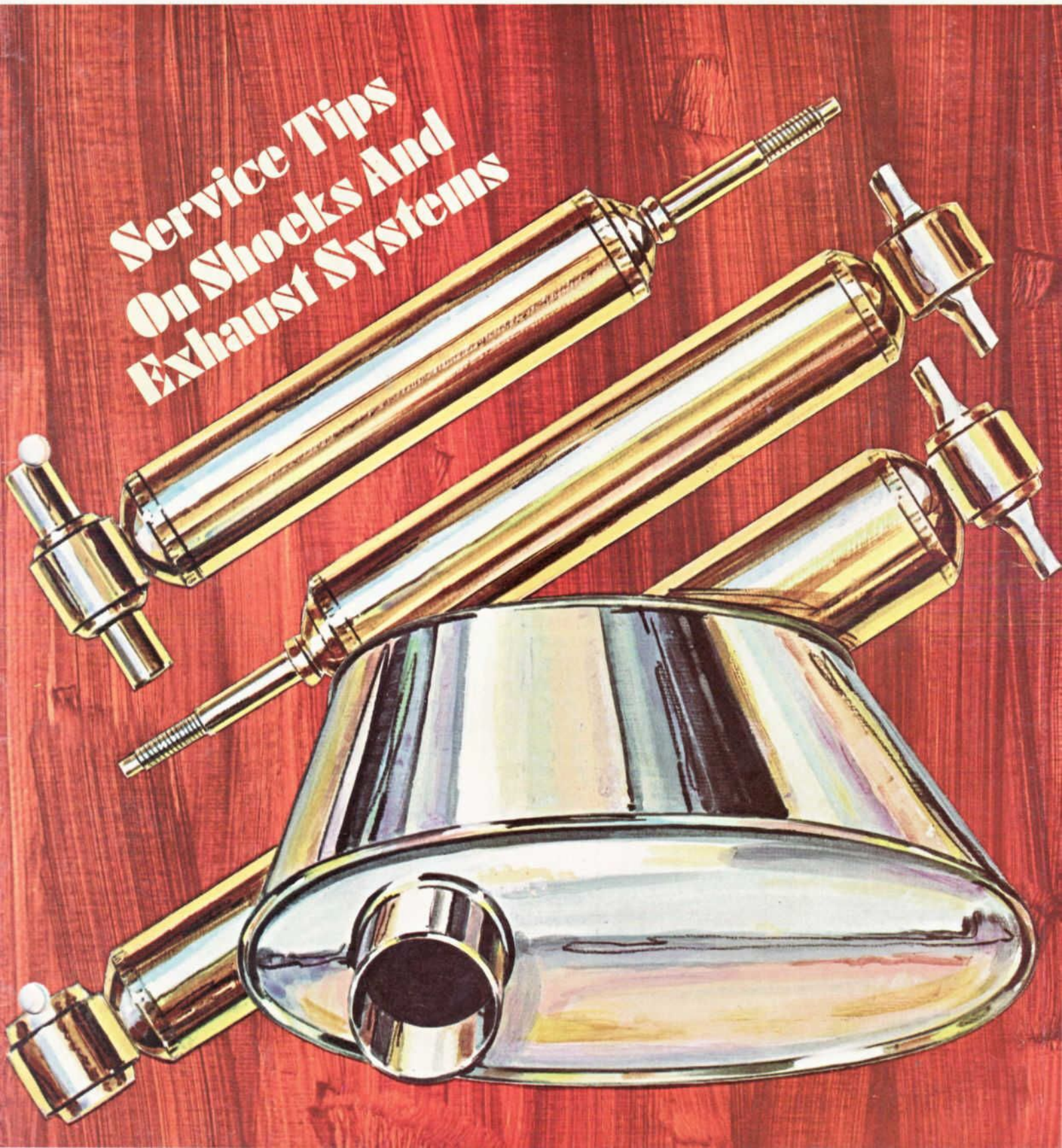
SHOP TIPS

Motorcraft

VOL. 10, NO. 8 APRIL, 1972

Service Tips On Shocks And Exhaust Systems



SERVICE TIPS ON SHOCKS

Technical parts and service information published by the Autolite-Ford Parts Division and distributed by Ford and Lincoln-Mercury Dealers to assist servicemen in Service Stations, Independent Garages and Fleets.

IN THIS ISSUE

Be sure to file this and future issues for ready reference. If you have any suggestions for articles that you would like to see included in this publication, please write to: Autolite-Ford Parts Division Merchandising Services Dept., P.O. Box 3000, Livonia, Michigan 48151.

The information in this publication was gathered from materials released by the National Service Department of Autolite-Ford Parts Division and the Ford Customer Service Division of the Ford Marketing Corporation, as well as other vehicle and parts manufacturers. The descriptions and specifications contained in this issue were in effect at the time it was approved for printing. Our policy is one of continuous improvement and we reserve the right to change specifications or design without notice and without incurring obligation.

Motorcraft Ford

VOL. 72 MSD 44 LITHO IN U.S.A.

THE SAFETY TWINS

Shocks and exhaust systems take a real beating in the performance of their job. Shock absorbers bounce and jounce millions of times in just a few months while mufflers and pipes are attacked from the inside by hot corrosive gases. These acid-bearing vapors "eat" at the metal from the interior . . . while water, salt and road debris take their toll from the exterior. It's no wonder shocks and mufflers should be checked twice a year and replacements made whenever inspection reveals they no longer are capable of protecting the driver's safety.

And the key word is SAFETY.

Mufflers and pipes that are rotted through are not only noisy but more importantly, they are the direct cause of carbon monoxide poisoning if the exhaust fumes seep into the car's interior.

Shock absorbers that no longer are capable of keeping the wheels firmly to the roadway or that permit the car to sway or lean abnormally are certainly unsafe. In an emergency, these conditions (if not corrected by new shocks) could make the difference between the driver having control of his car or an accident.

GREAT OPPORTUNITY

Shocks and mufflers offer you a great opportunity for increasing your parts and service potential. Everything is in your favor to get your major share of this business before it is lured away by specialists who make up your direct competition.

You have several opportunities a year to spot and point out an exhaust system needing service or replacement, or bad shock absorbers, BEFORE the customer is persuaded to take advantage of high-powered specialty promotions.

The average customer will buy from you because he has confidence in your ability to protect his car and insure his safety. He also comes to you because you are conveniently located.

With all of these factors in your favor, you can't avoid getting more of the profitable safety business. But . . . only if you go after it aggressively!

FAST INSTALLATION IS IMPORTANT

With specialty shops advertising 15-30 minute installations you CANNOT AFFORD to tell your customers you need four hours or more of his time. You need to take every short-cut you can and still turn out a professional service job. This issue of *Shop Tips* is designed to help you in that direction.

AND EXHAUST SYSTEMS

WHAT IS AN EXHAUST SYSTEM?

An automotive exhaust system carries burnt engine gases produced by combustion of fuel/air, to a point that is far behind the driver's area before it releases them to the outside atmosphere.

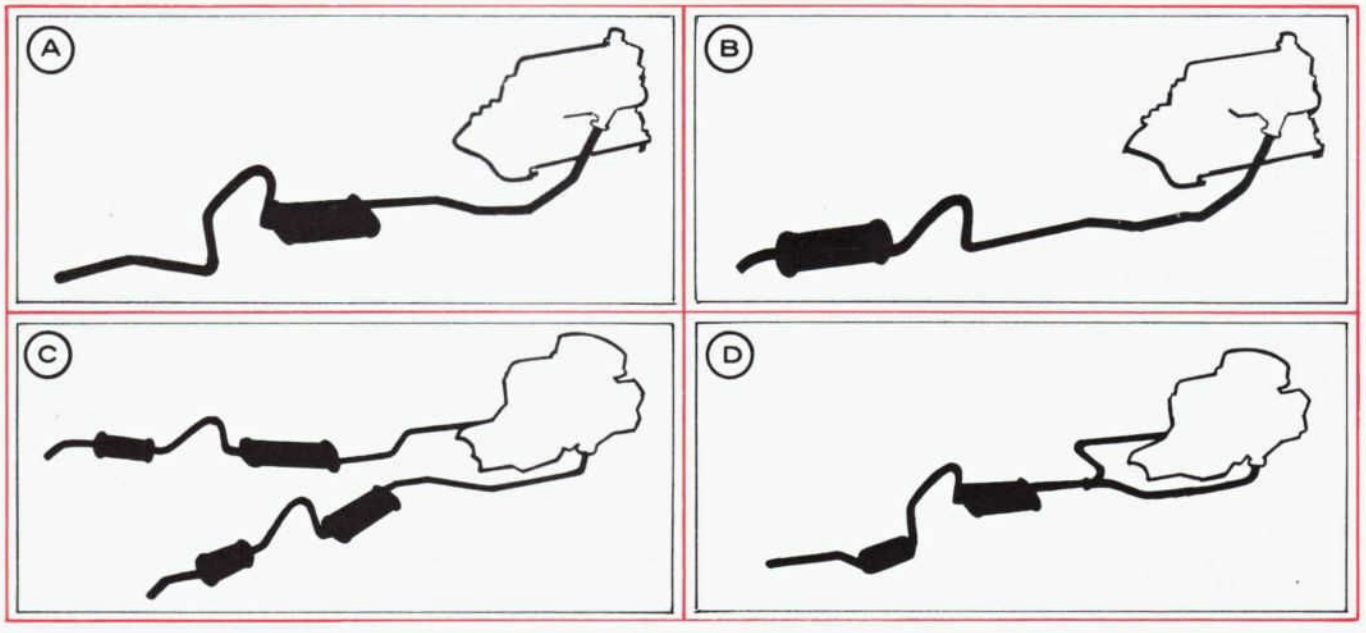
Secondly, an exhaust system (and particularly the muffler) is also designed to reduce the objectionable noise that is made by the explosion of air/fuel mixture in the combustion chamber to an acceptable level. Because of these two demands, exhaust systems are generally designed to fit a compromise. Engineering departments are capable of reducing noise levels to almost zero . . . if that happened to be the only problem. It isn't! Controlling exhaust noise levels to a minimum and at the same time permitting the engine to breathe easy for top performance is the other factor engineers must contend with.

In general, when exhaust systems go bad, they are almost always noisy. However, new parts are always sold better when sold on the basis of *SAFETY* . . . not on the condition of sound control.

Motorists who hesitate to spend a few dollars to eliminate a noisy exhaust system muffler or header pipes, will generally spend the necessary dollars more willingly if they are advised that escaping fumes are not only endangering their own personal health but also the lives of others who ride with them.

Ford's exhaust system parts stocking plan (mufflers and pipes) helps you to handle the customers' needs . . . right now! And these needs vary as you will note in the illustrations below.

To cover over 80% of Ford and Lincoln-Mercury car models from 1967 to 1972 all you need have on hand is a minimum inventory of 47 parts for the Ford line and 58 parts for the Lincoln-Mercury line. Ford's new simplified exhaust system parts plan helps you to maintain the right parts at the right place at the right time without a large inventory. And customers who are sold on exhaust system service can be taken care of immediately . . . a big plus in today's fast-moving society. Motorists want their cars back on the road just as soon as possible.



Three basic parts generally make up a passenger car's exhaust system. At the front and attached to the engine exhaust manifold is the EXHAUST INLET PIPE. This pipe carries the exhaust fumes from the engine to the muffler. Some are on the right side of the chassis . . . others on the opposite side . . . some on both sides.

Next comes the MUFFLER which has internal sound-deadening chambers to "Tune" the roar of the exhaust to a more acceptable level; and baffles to also help reduce the noise of the engine explosions. See (A) above.

Behind the muffler is a TAIL PIPE and generally this round metal tubing extends to the rear bumper area.

Some passenger cars with the muffler located right at the rear of the chassis may have no tail pipe because of this particular arrangement. See (B) above.

With some high performance cars you will find dual exhaust systems such as the one illustrated here to gain improved engine performance through freer breathing. See (C) above.

Some higher-priced cars with V-8 engines will have another unit in the exhaust system called a RESONATOR. This device helps to further reduce exhaust noise to a quieter level. See (D) above.

SERVICE TIPS ON SHOCKS

INSPECTION

It takes only a few short minutes to check the entife exhaust system. You should always check for ruptures . . . loose connections . . . or broken parts in an attempt to locate weak spots or grounded or misaligned pipes.

If the muffler is not too hot, feel around the hidden top section of the muffler. Be sure and show the motorist any defects you find and if possible tell him you can have it fixed while he waits. And most importantly . . . ASK HIM FOR THE BUSINESS.

To do this and deliver in the time promised, you must make sure you have all the replacement parts on hand . . . BEFORE you start dismantling the system. Ford and Lincoln-Mercury Dealers offer a complete line of fast-moving exhaust system parts for all Ford-built vehicles.

During your inspection look for kinks or other severe forms of damage in the pipes . . . both the one going into the muffler and the other from the muffler to the rear of the car. See (1). Check carefully where the tail pipe extends over the rear axle. Back pressure in the exhaust system caused by a restriction in the pipes can cause a loss of engine power and is often the primary reason for burnt exhaust valves.

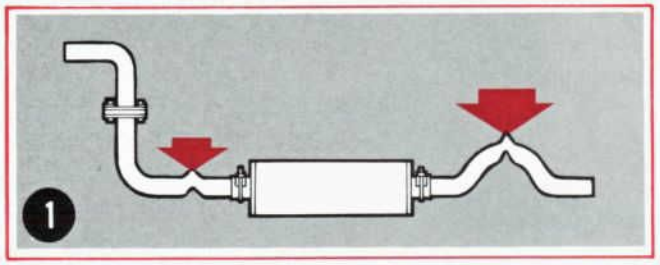


Figure 1—Kinks in any one of the exhaust pipes create back pressure in the exhaust system and can lead to engine damage. Check to make certain the tail pipe is not folded over or collapsed at the end. Damage here may have also caused the pipes to kink and bend severely farther forward since whatever struck or caused the pipe to crush may also have transferred the force up front. See (2).

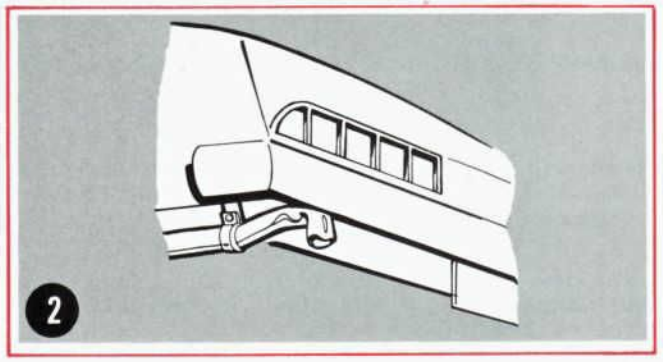


Figure 2—When damage to the tail pipe occurs here, look at the condition of the pipes forward of the impact. This, too, will restrict the free flow of exhaust gases and create a back pressure condition.

Check for loose end tubes at the muffler body. Check also to make certain these tubes are not broken at the muffler end caps. Observe this area while you attempt to move the muffler by hand. See (3).

Also, check for loose baffles in the muffler. To do this, lightly tap the muffler with your hand or a large rubber-type mallet. If you hear a rattling sound you know that the muffler has broken down internally due to corrosion . . . rust . . . and extremes of moisture and heat. Broken baffles are often the cause of back pressure, especially when they block the free flow of burnt gases.

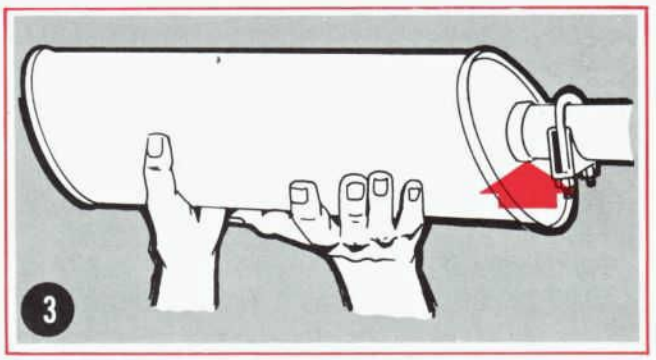


Figure 3—Slight movement of the muffler using hand pressure will often reveal the presence of cracks and small ruptures. Tapping with a rubber mallet will also reveal loose internal baffles.

Look, too, for broken or weakened hangers. Exhaust system parts that are not supported properly are subjected to damaging road shocks and vibrations during the normal course of driving the vehicle. See (4).

NOTE: *Any damaged parts of the exhaust system should never be repaired with makeshift . . . unprofessional . . . and temporary materials. Make it a rule to REPLACE any defective mufflers . . . tailpipes . . . intermediate pipes . . . exhaust inlet pipes . . . and hangers . . . with new ones. When you're dealing with a motorist's safety (and that of his family) don't become part of a possible tragedy by making slipshod repairs.*

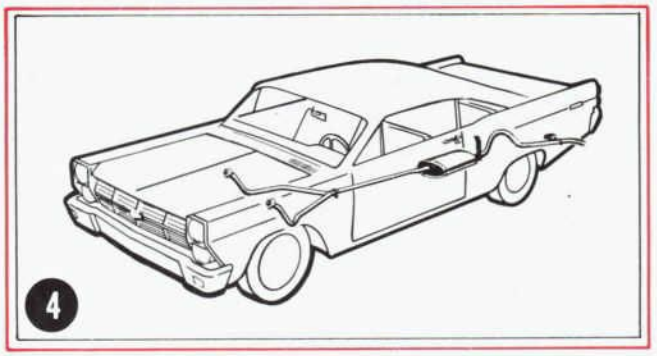


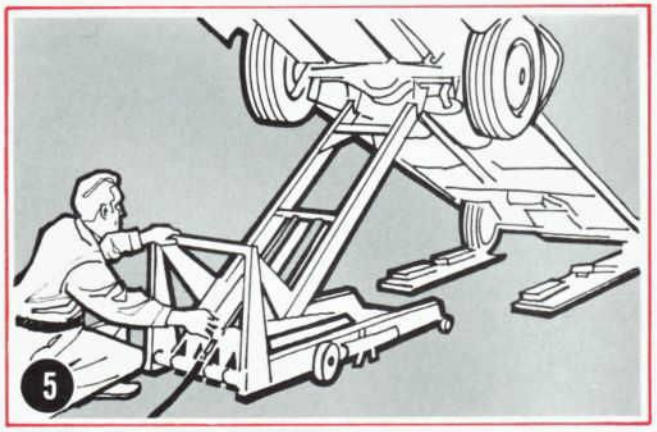
Figure 4—The exhaust system of a car is primarily a safety device. Muffling the sound of explosions that occur in the combustion chambers is its secondary task. Makeshift methods for repairing weak or ruptured areas in this vital system are not only non-professional but may also endanger the lives of the car's occupants. When exhaust system parts are damaged, rusted through, or split . . . always replace with new units. Ford and Lincoln-Mercury Dealers have a complete line of quality exhaust system parts for all Ford-built cars and trucks.

TOOL POWER A MUST

Having the right tools and equipment conveniently on hand for complete muffler and exhaust pipe service will help you to compete with the mass merchandisers and high-powered specialists. Their claim to the motoring public is fast service. Don't let them take away your fair share of this tremendous market by using old-fashioned methods and outdated tools.

Get tooled up and properly equipped . . . then tell your customers about your shop's ability to perform fast, quality work. These special tools and equipment will not only help you to turn out the jobs easier but you'll be able to sell customers on your professional workmanship. There's good profit in exhaust system service but you can only realize the potential when you go after it and can deliver what you claim.

There are many nationally known special-tool and equipment makers who offer a wide variety of time-saving devices for muffler and tail pipe service. When you have made up your mind to get into this business, then go "all the way"! Many tool and equipment suppliers will be glad to assist you in planning your needs so that you will be fully prepared to handle the volume of business.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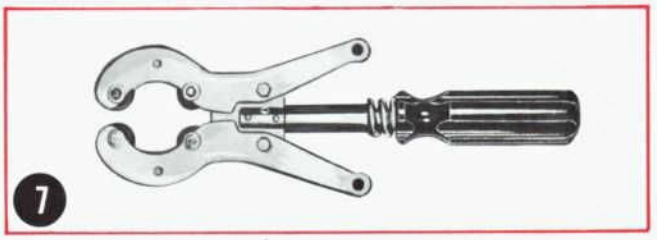
Some of the items you'll require are as follows:
First . . . an air-powered jack such as the one shown here in (5) is highly desirable and completely portable. If your lift is tied up, this piece of special equipment will permit you to handle the waiting customer and get the job out quickly. It beats the old-fashioned time-consuming method of jacking the car up on horses and using a creeper. Naturally, it will also come in handy for many other services you offer, such as shock absorber replacements . . . axle work . . . brake jobs . . . and many others.

Here is a Pneumatic Muffler Gun that will vastly simplify installation problems of exhaust system units. See (6). These special air guns (sometimes called air hammers) are usually sold in a kit which includes three different chisels; a straight chisel, a muffler cutter chisel, and a tail pipe cutter. They're designed to make clean easy cuts even on rusted connections . . . cut pipes in hard-to-reach locations . . . and make removal of outside or inside sections of pipes a breeze without seriously damaging adjacent parts that you may want to save.


6

A Muffler Tail Pipe Cut-Off Tool such as the one shown in (7), will help you keep the skin on your knuckles and make clean cuts on inlet or exhaust pipes. Generally less than ½ a turn will permit the pipe to be completely cut all the way around. Saves time and effort and is much safer than using a torch or a hacksaw.

CAUTION: *The use of an acetylene torch in servicing exhaust systems is not only dangerous, but in many states, cities and towns it is a violation of local laws and such practices may also adversely affect your insurance rates.*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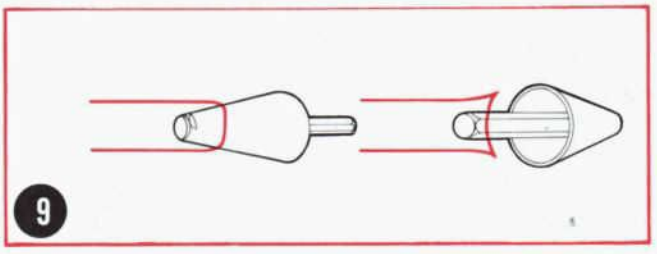
When you're faced with the problem of rounding out a tail pipe or the inlet or outlet tubes of a muffler so that the parts fit together snugly and easily, then a Tail Pipe Expander (8), is the answer. Some of them are designed to be used in combination with an impact wrench. This special tool can save many minutes (and your temper) and will pay for itself in a few weeks.


8

If you're confronted with the difficulty of shaping the inside or outside diameter of exhaust system pipes then a Pipe End Shaper (9) is the answer. This special tool is capable of reshaping pipes that are crushed, bent, or flared . . . either inward or outward. Some on the market have a removable handle to permit shaping ends near curves or obstructions.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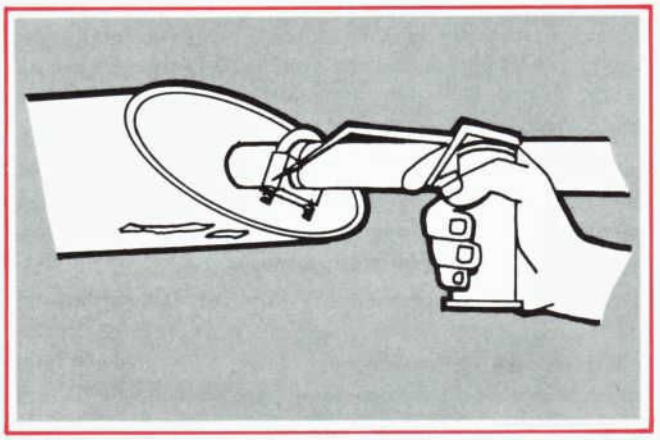
SERVICE TIPS ON SHOCKS

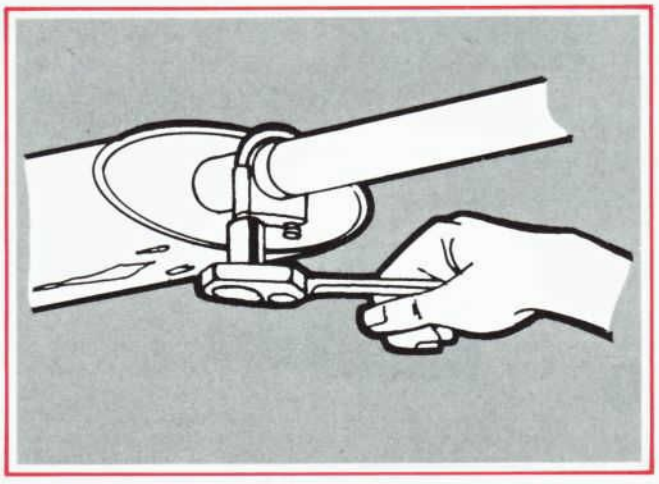
INSTALLATION TIPS

REMOVAL

To start out, apply a penetrating type oil to all bolts, clamp nuts and pipe connections, such as Ford Rust Penetrant and Inhibitor (part no. C4AZ-19A501-A). This will "break" the rust barrier and make nut or bolt removal a cinch.



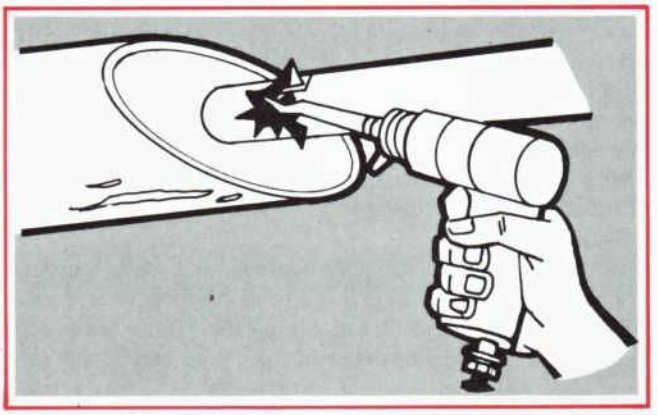
Now remove the rear tail pipe from the rear bracket fasteners using a ratchet type wrench or an impact wrench. If they are rusted too badly or cross threaded discard them.



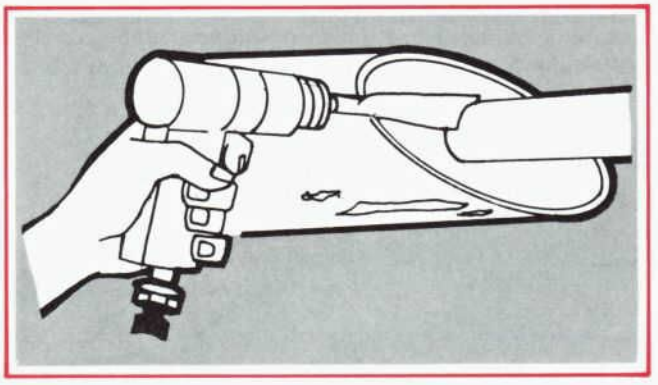
Next in the service sequence, remove the tail pipe from the front bracket and also the muffler outlet clamp. Attempt to work the tail pipe up . . . down . . . sideways, until it separates from the muffler.

NOTE: *Some factory installations have the muffler and outlet pipe welded together. Instructions for this situation are outlined later on.*

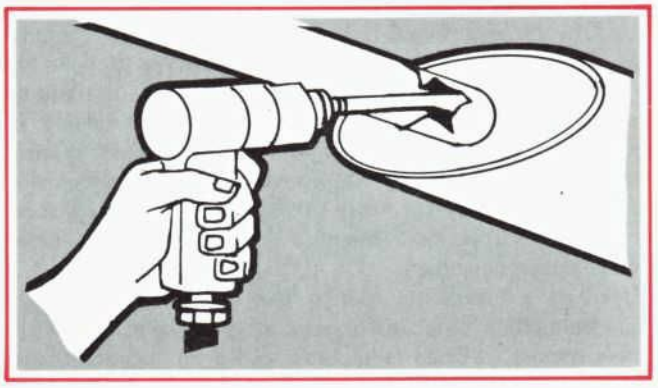
If you are going to save the tail pipe (and only replace the muffler) then use the pneumatic gun and attach either an INSIDE CUT CHISEL or an OUTSIDE CUT CHISEL to free the tail pipe. In other words, if the tail pipe fits INSIDE the muffler tube then cut slits in the muffler outlet tube. If the tail pipe fits OUTSIDE the muffler then cut off the



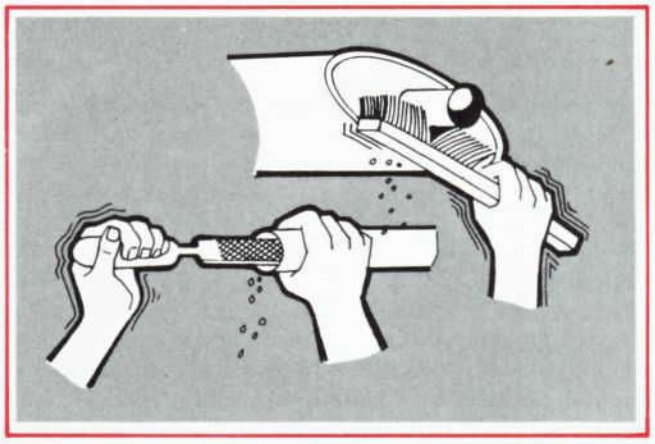
muffler outlet tube close to the muffler end cap. This will permit you to slit the remaining section of the muffler outlet tube rusted inside the tail pipe without damaging the pipe to be saved.



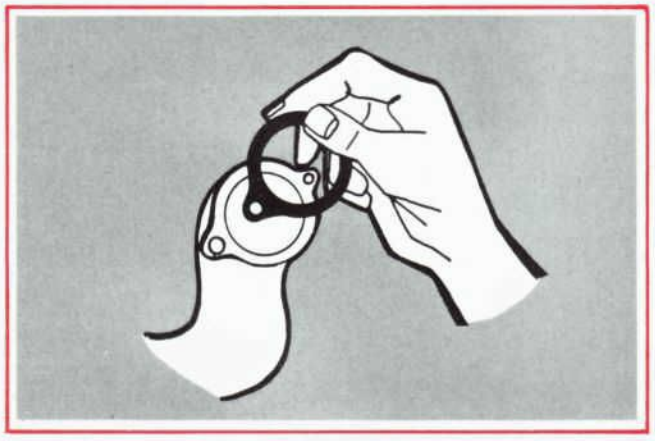
If you work on an exhaust system where the muffler and inlet pipe are welded together, use the pneumatic gun and flat chisel to cut the inlet pipe as near to the muffler head as possible. Or, use a wheel-type cutter. Remove the old muffler and then with the INSIDE CUT CHISEL slit the remaining section of pipe inside the inlet pipe.



If the muffler and inlet pipe are clamped together, then remove the inlet clamp and oil the bolt and nut. Discard them if badly rusted or cross threaded. Next, slit the muffler inlet tube with the pneumatic gun (using either an inside or outside cut chisel) and remove the old muffler. Note that the "outside cut" chisel is being used in this illustration.



On those parts of the exhaust system that you are going to reinstall, remove all rust . . . burrs . . . and corrosion from the connecting points using a wire brush or heavy duty emery cloth.



If you are replacing the inlet pipe (exhaust-manifold-to-front of muffler or the exhaust-manifold-to-intermediate pipe) install a new flange gasket (if one is used in the assembly) and install snugly. Stagger tighten the attaching nuts to bed the flange down evenly.

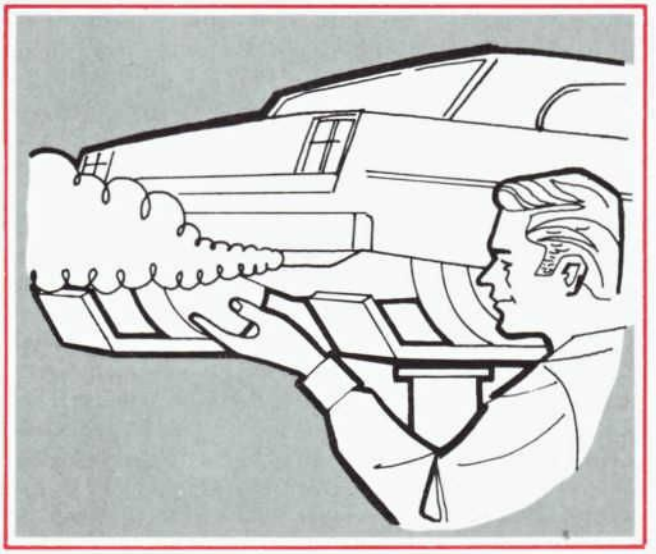
INSTALLATION

When installing the new muffler over the inlet pipe (or the intermediate pipe) make certain the muffler is in the correct position. Then, install the front muffler clamp and draw down the clamp nuts snug but not tight.

You may want to shift the muffler slightly in the mounting after the entire system has been connected and before final tightening is performed. Install the tail pipe into the muffler rear outlet tube and loosely attach all tail pipe brackets and hangers. Check tail pipe alignment and maximum clearances to the body, frame, axle, brake and fuel lines, and springs, then tighten all clamps securely.

Jar or shake the entire exhaust system with your hands to make certain that exhaust system parts are not touching another unit which could cause a rattle.

Start the engine and check for leaks at all connections from front to rear. Listen closely for a leakage condition. When possible . . . drive the car a short distance to make sure the exhaust system is free of noise and rattles.



SERVICE TIPS ON SHOCKS AND EXHAUST SYSTEMS *Continued*

THOSE HARD-WORKING SHOCK ABSORBERS

Few motorists are fully aware that inoperative shock absorbers can cause complete loss of control of their car. And, because they are out of sight under the car, they tend to be forgotten . . . by the owner.

Another thing . . . shock absorbers generally lose their effectiveness on a gradual basis. As a result, owners become accustomed to a softer ride and often compensate (or over-compensate) in their driving habits to overcome increased vehicle instability on curves and corners. Let's face it . . . "dead" shocks are deadly, not only for the driver and his passengers but for all of us who travel the roads and highways.

Generally, shock absorber "life" for original equipment shocks is in excess of 50,000 miles. However, the type of driving often dictates shock life. Rough roads, rutted and country roads reduce shock "life" faster than smooth super-highways or well-paved surface streets.

Regardless of the type of driving . . . your customers should be advised to have their shock absorbers checked and inspected every 6,000 miles . . . more from a *safety* standpoint than for any other mechanical reason. Shock absorbers that are functioning properly help promote driver safety and the safety of others on the highways.

Here are six conditions that occur when shock absorbers go bad. Protect your customers' safety on the highway by inspecting and testing shock absorbers every chance you get. Tell your customers what can happen when their shocks go bad . . . ask to test them . . . then ask for their business.

INSPECTING / TESTING SHOCKS

Strange as it seems, no one has yet invented a practical shock absorber tester for use in service departments, service stations or independent garages. That is, within an attractive price bracket. As a result, service technicians across the country are forced to rely on other means for detecting bad and unsafe shocks.

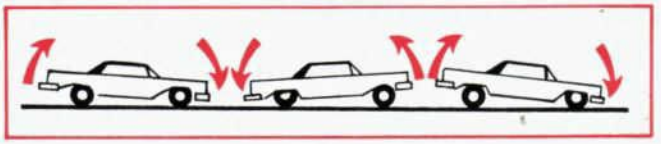
How then do you check the condition of shock absorbers?

One of the easiest ways, other than removing the shock from the car and testing its action by hand, is to drive the car on a level and smooth surface at approximately 7 to 10 mph while lightly applying and releasing the brakes. The object is to find out if the car dips excessively in the front and then rocks back more than normal on its horizontal plane. The front end dipping and the rear end rising with this light brake pedal application usually indicates the shocks are weak and should be replaced. However, a small amount of dip and rock is considered normal. To find out the difference between good operating shocks and those that are bad, road test (in the manner described) about 5 or 6 cars. From this you will be able to form a comparison you can use for judging shock action on other cars. If you are not able to determine the exact condition of the shocks from making this type of test, the only other procedure you can follow is to disconnect the lower end of the shock and move the piston in and out through its full length of travel. Little or no resistance in piston travel is a good indication that the shock needs replacing.

Piston travel should be uniform, smooth and not skip or jerk. It is also good shop practice to check the shock on the opposite side of the car so that you will have a more accurate comparison of shock condition.

A jerky, skipping condition is a good indication that the fluid level is very low (reserve fluid lost) and that air has entered the hydraulic system of the shock . . . or that the valving mechanism has failed for one reason or another. If you notice a heavy film of oil or drops of oil on the surface of the piston rod or the area where the piston rod enters the seal cover you can almost be assured the shock is leaking and should be replaced. However, make sure the oil is from the shock and not thrown back or splashed on the shock surfaces from another source.

Remember too . . . a slight film of oil (indications of wetness) around the shock piston rod where it enters the main body is considered normal and acceptable.



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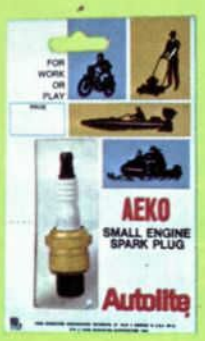

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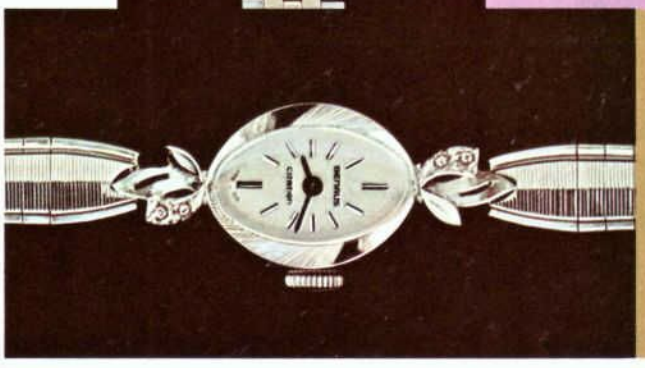
Benrus Citation Electronic Automatic Calendar Watch

Benrus Lady Citation Diamond Dress Watch



Get in on this Big Time Deal at our Parts Counter NOW!

The 1972 Motorcraft Spring Shock Absorber Program

ORDER NOW AND GET A TOP QUALITY COLOR OR BLACK AND WHITE PHILCO TV WITH A QUALIFYING ORDER FOR MOTORCRAFT SHOCK ABSORBERS

Turn on more sales . . . Tune in for additional profits with Motorcraft Shock Absorbers this Spring. Qualify now for your choice of either a 14" Philco Cosmetic Color Circuit TV or the new Philco Challenger personal size transistorized Solid State portable black and white television.

LOOK TO MOTORCRAFT for a brighter sales picture!

PLUS... AN ADDED BONUS!

Every Motorcraft Shock Absorber carton end flap imprinted with a part number is equivalent to one-half Pacemaker Prize Point—an exclusive from Motorcraft to you.

Tune in on this special <u>now</u> at our parts counter!

SERVICE TIPS ON SHOCKS AND EXHAUST SYSTEMS *Continued*

WHAT'S INSIDE MOTORCRAFT SHOCKS?

There's no secret about the way shock absorbers function. All present-day telescoping-type shocks use a piston riding inside a hollow steel tube which contains a special type hydraulic fluid. Rebound and compression valves are employed to control the bounce and jounce of the car's wheels and springs, and by doing so dampen road shock effectively.

One end of the shock absorber is attached to the unsprung weight and the other end to the sprung weight. Precision seals are designed to keep the fluid from leaking out the piston rod as it moves up and down inside the steel tube.

And, no doubt about it, shock absorbers take a real battering day after day. Motorcraft shock absorbers stand up under this pounding and help to smooth out the roughest roads. And even more importantly . . . they are designed to help keep the wheels firmly on the road so the driver can maintain control of his vehicle.

All three Motorcraft shock absorbers—the popular heavy duty Auto-Flex shock . . . the XD extra heavy duty Auto-Flex shock . . . and the Super-Flex shock—are built to high engineering standards. Each has a PRESSURE TUBE of heavy gauge metal to withstand the great internal working pressures. The inside of the tubes are highly burnished for a mirror-like finish to provide closer piston tolerances and longer piston life. They can withstand exceedingly high burst pressures.

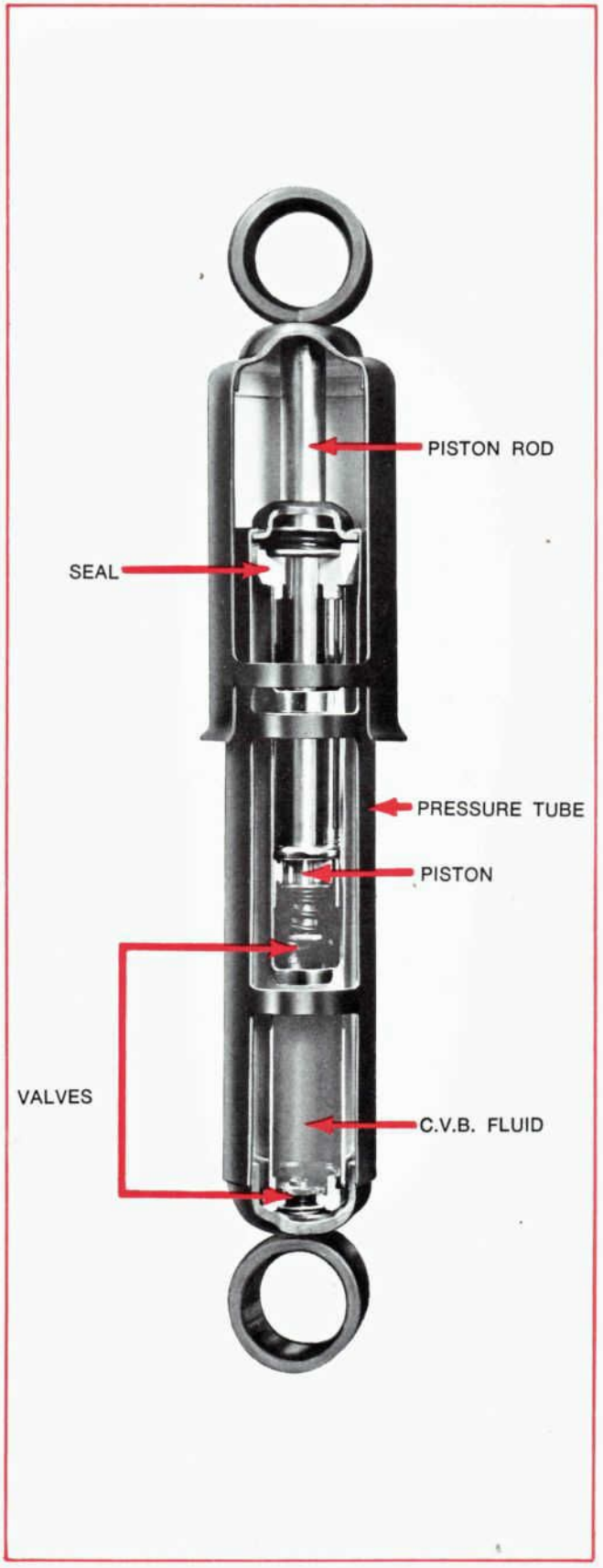
The PISTON ROD is made of a hardened steel alloy with tolerance of .0015".

A low-pressure Buna-N SEAL is incorporated in the top of the shock tube to prevent loss of fluid. Wear on this seal is negligible due to the very smooth surface of the piston rod.

Motorcraft was the first with CONSTANT VISCOSITY BLEND FLUID (C.V.B.). This specially prepared fluid works in much the same manner as multi-viscosity motor oil. Since C.V.B. fluid runs thinner in cold weather and thicker in warm weather than standard oil, there is less loss of shock action because of normal temperature changes. Because of the C.V.B. fluid there is no bump or solid (no-spring-action) ride in the winter and no fade out in summer heat. Interesting too is the fact that Motorcraft was the first to use up to a whopping 80% fluid reserve capacity. Because of normal shock action and wear on the seal . . . some loss of fluid is considered normal. However, due to the large fluid reserve . . . Motorcraft shock absorbers can take it . . . mile after mile!

The 3-STAGE VALVING assures better road control because it dampens and controls vehicle spring action. With the C.V.B. fluid and the anti-foam baffle, plus the 3-stage valving, foaming of the fluid inside the shock is reduced to a minimum, thus helping to prevent loss of shock action.

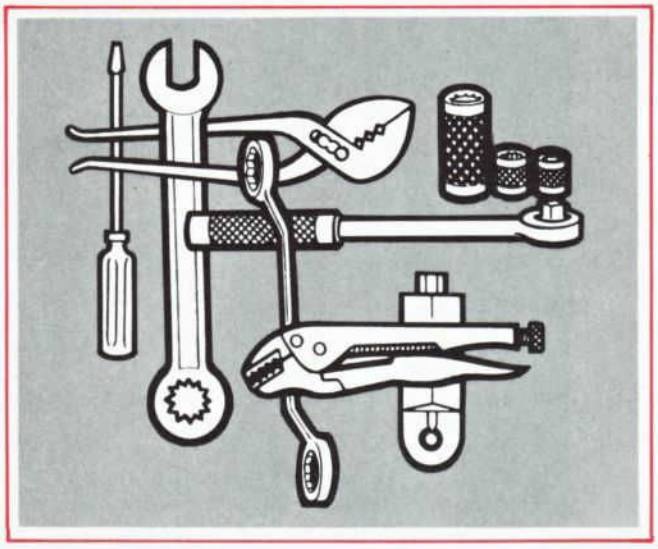
The sintered IRON PISTON (rather than the plastic-type), is another Motorcraft feature. Sintering is a process whereby iron particles are compressed and formed into the desired shape by means of a high-pressure die.



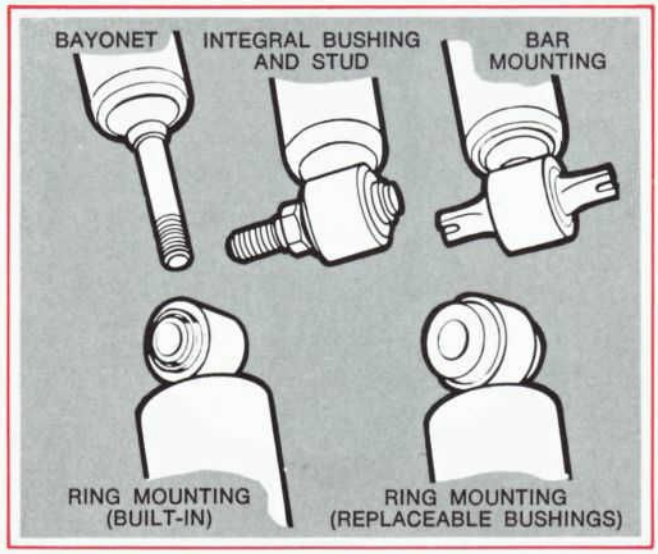
SERVICE TIPS ON SHOCKS

SHOCK ABSORBER APPLICATION AND INSTALLATION

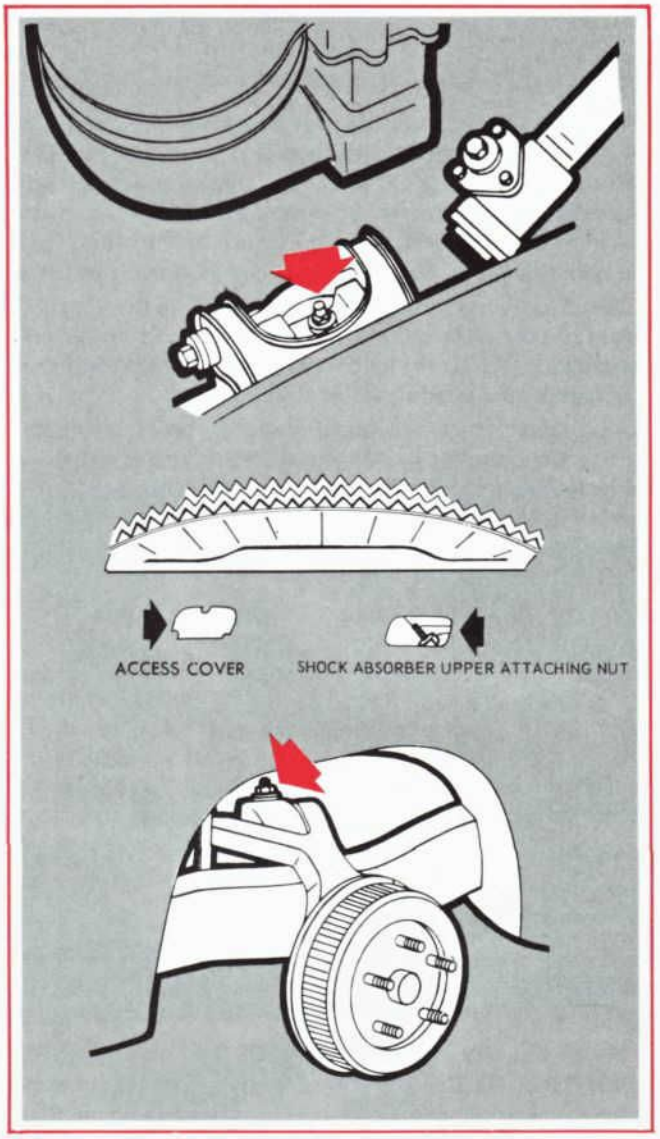
Installation of shock absorbers is easy. No special training is necessary! All you need is a few everyday tools like the ones shown below. However, investing in a "nutcracker" type of special tool will also prove valuable and cut down on job time. A cold chisel, a hacksaw and a good ball-peen hammer will round out your tool inventory.



The only difference in the various kinds of telescoping type shock absorbers is in their mounting method. FIVE basic types make up the full range of most modern American-built passenger cars.



Some mountings are concealed under the hood at the side of the engine. Others may be in the wheel well and removal of the wheel will make shock removal and installation easier. Often you will find the rear shock upper mounting located inside the rear trunk area as shown



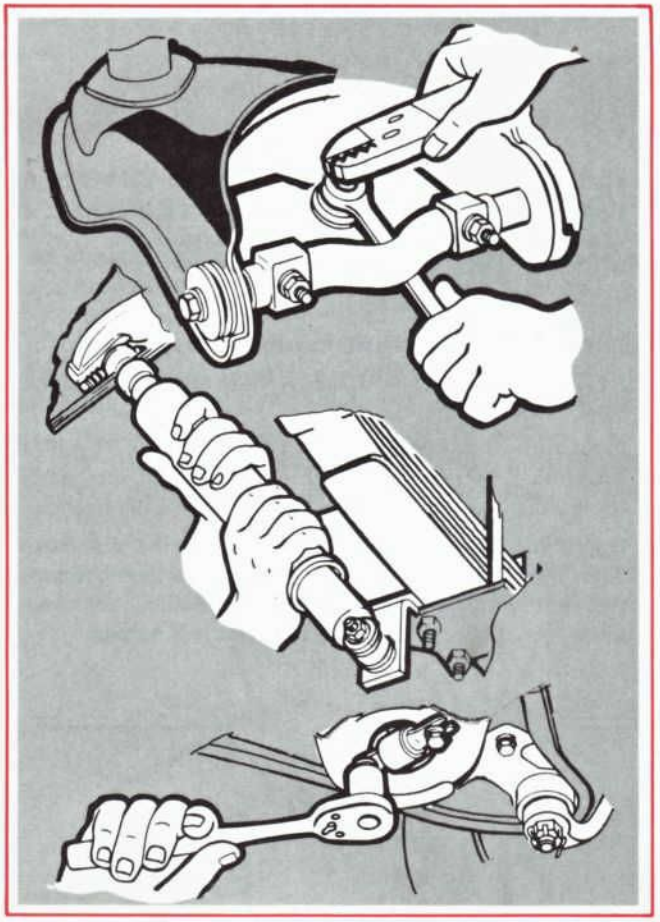
SERVICE STEPS

As a first step in removal and installation, wipe the shock mountings clean so that your wrenches or sockets will fit easily over the stud nuts. A good quality penetrating oil applied to the thread surfaces will aid in their removal.

On BAYONET TYPE shock studs, use a suitable open-end wrench to hold the stud from turning while you remove the stud nut.

When you are faced with one-man removal of an upper rear stud nut, use a pair of snap-type pliers to grip the bayonet end or you may want to use a deep-seated socket, extension and wrench on the nut. Then raise the car and turn the dust cover counterclockwise to remove it from the stationary held nut.

Usually it is easier to remove all of the upper shock mounting attachments first. Next, raise the car and wipe all lower attachment points clean. Use a good quality penetrating oil on the threads and remove the nut or bolts. The shock will then come free in your hand.

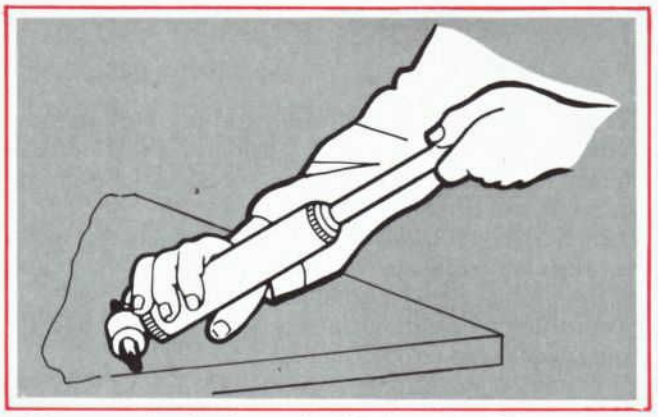


THE HALF-WAY POINT

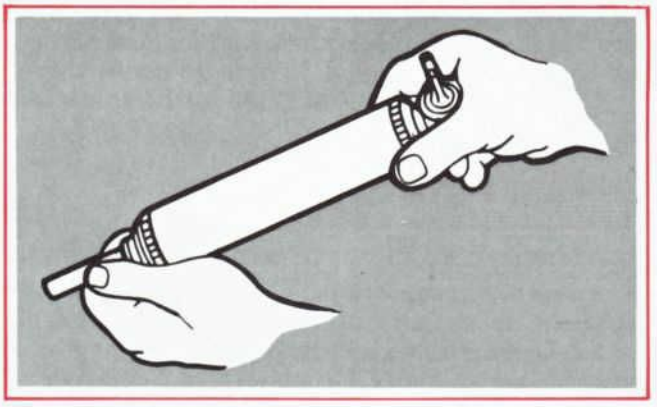
Before you install new shocks, here are some tips that may save you time and eliminate trouble.

When the old shocks are off the car, be sure to check them against new ones. This "almost too simple" check will prevent any chance of a mix-up. In the case of Motorcraft shock absorbers, the manufacturer's name and part number will indicate the upper top end.

Make sure the shock cylinders are free of air bubbles. Pump all new shocks before installing them by setting the shock right side up and pulling the piston rod out to its full length.



Next, turn the shock over (upside down) and fully compress it. Repeat this procedure at least three times to be sure you have expelled any trapped air. Finally, turn the shock right side up again and stretch it out to its full length as you did earlier.



Install the shock using new bushings. A soap base solution applied to the bushing surfaces will help you to properly position the new bushings on their mountings.

SERVICE HINTS FOR MOTORCRAFT SHOCK ABSORBERS

When removing old shocks:

- Use penetrating oil such as Ford Rust Penetrant and Inhibitor (Part No. C4AZ-19A501-A) to lubricate all rusted retaining nuts and threads. Encourage oil penetration by tapping nuts lightly with a hammer.
- Use a stiff brush and solvents to remove all undercoating material from threads.
- Use water-pipe pliers or pipe wrench to hold old shock absorber from turning while retaining nuts are being removed.

When installing new Auto-Flex and Auto-Flex XD Shocks:

- Expel air from pressure tube by holding shock in vertical position with piston rod end at top. Part number will appear in upright position. Extend shock to maximum length.
- Invert shock and compress to minimum length.
- Repeat these steps until piston rod travels smoothly.

When installing a new Super-Flex Shock Absorber:

- Use weight of body to compress shock absorber into spring as far as possible.
- Hold shock in vertical position with piston rod end at top and extend to maximum length.

DISTRIBUTOR "SEALED VACUUM DIAPHRAGM" ADJUSTMENT

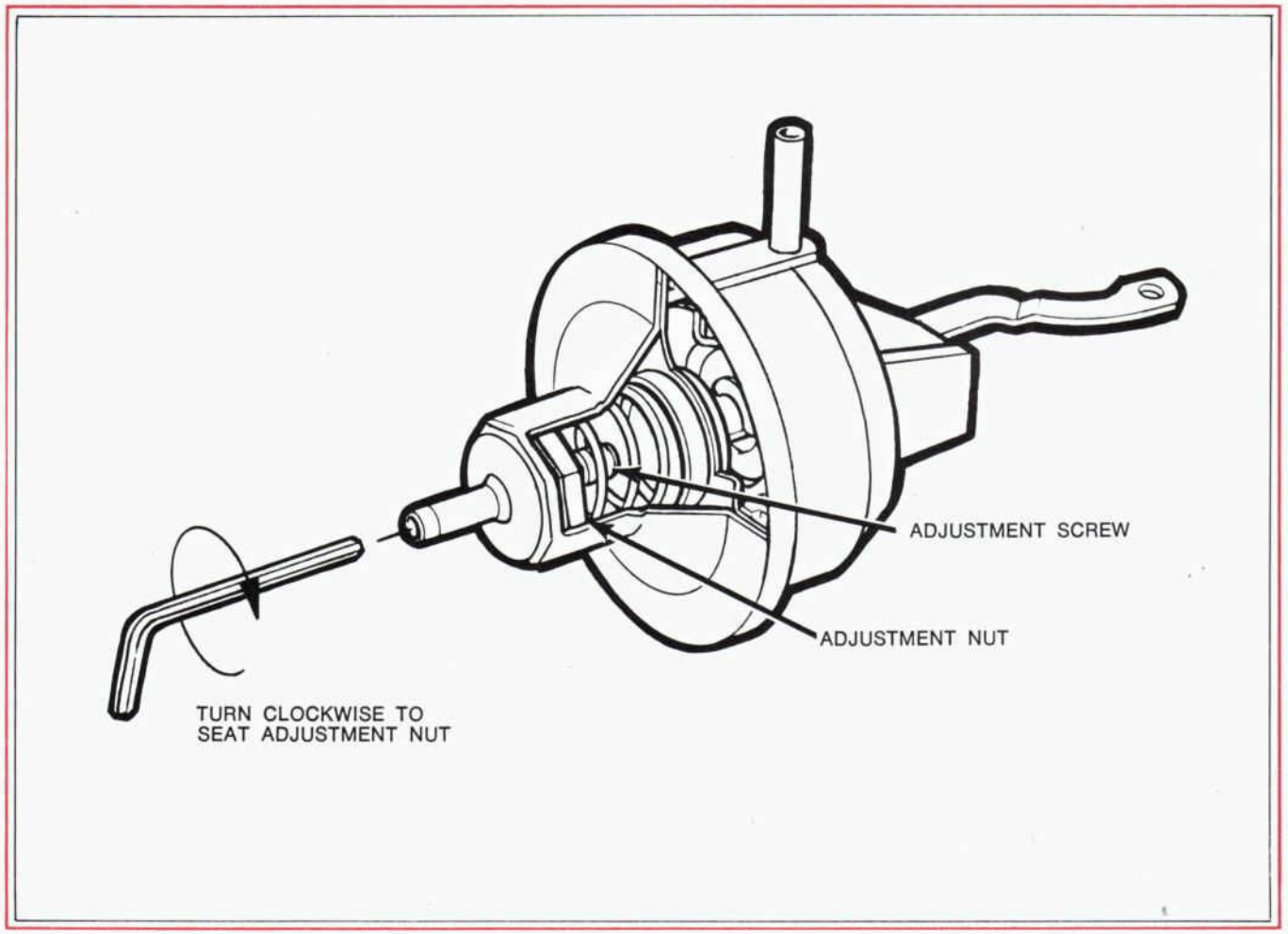
1972 FORD MOTOR COMPANY VEHICLES

In past models (1971 and earlier), it has been common practice during replacement of a defective distributor diaphragm, to remove the spring, stop and shims from the old diaphragm and reinstall them in the new one.

However for 1972, the Ford Motor Company distributor line (with a few exceptions) features a new "sealed" diaphragm and this practice is no longer applicable.

Follow the procedure listed here when replacing and adjusting diaphragms on 1972 models:

1. Remove the old diaphragm from the distributor.
2. Select the proper replacement diaphragm.
3. Insert a ⅛" Allen wrench into the primary vacuum hose fitting far enough to engage the adjustment screw. (See illustration.)
4. Turn the Allen wrench *CLOCKWISE* and *CAREFULLY* count the number of turns—and any partial turns—of the wrench until the wrench comes to a stop. Remove the wrench.
5. Throw away old diaphragm
6. Insert the Allen wrench in the new diaphragm.
7. Again, turn the wrench *CLOCKWISE* until it comes to a stop.
8. Now turn the Allen wrench *COUNTER-CLOCKWISE EXACTLY* the same number of turns—and any partial turns—that were counted in step 4. Remove the wrench.
9. Install the new diaphragm assembly on the distributor. After the diaphragm has been assembled to the distributor, the calibration should be checked and final adjustment made on a stroboscope to be sure that it is correct.



SERVICE BRIEFS

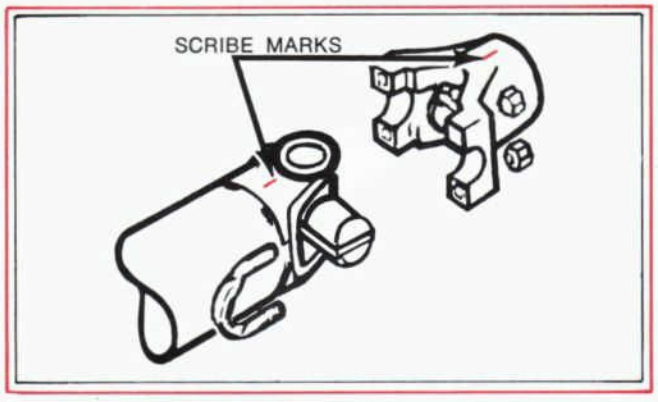
MARKING DRIVE SHAFT AND SLIP YOKE FOR REFERENCE

ALL FORD MOTOR COMPANY CAR LINES AND MODEL YEARS

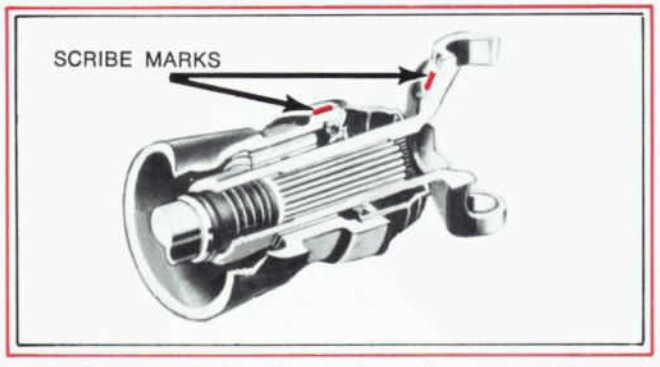
An objectionable driveline vibration may result when driveshafts or universal joints are removed for service and *not reinstalled* in the original assembled position.

Before you remove any driveline components, the transmission extension housing, slip yoke, driveshaft and companion flange should be marked in such a way that they can be returned to their original assembled position.

If a new slip yoke is installed, the vehicle should be road tested. If a vibration occurs, check the driveshaft for balance and runout.



Typical location of drive line scribe marks at axle end.



Typical location of drive line scribe marks at transmission end.

HEAT DAMAGE

PLASTIC ORNAMENTATION— 1972 LIGHT TRUCK AND ALL CAR LINES

During a repaint of sheet metal, particularly in the grille assembly area, care must be taken to protect plastic ornamentation from the heat generated by drying lamps. A cardboard deflector should be used to protect the grille components from warping.

SHEARING OF DISTRIBUTOR GEAR PIN 351, 429, 460 CID V-8 ENGINES

Unless the distributor shaft is seized in the bushings, there is no reason for a distributor gear pin to shear unless the gear is a loose fit on the shaft. The gear should be an interference fit. A loose fit is one wherein the gear, if held by hand or by pliers, can be turned on a fixed shaft. An interference fit prohibits turning by this method.

Where engine failure has been traced to distributor gear pin shear and a loose fit is verified, DO NOT REPLACE THE PIN. Instead, replace the distributor.

"HISSING" NOISE WITH SAGINAW POWER STEERING GEAR

1971 MUSTANG

A steering gear "hissing" noise, or high frequency sound, that can be heard while slowly turning the steering wheel, is normal on the above vehicle. There is no relationship between this noise and performance of the steering gear. "Hiss" may be expected during standstill parking or when turning the wheel against the steering stops.

NO. 3 CROSSMEMBER MOUNTING BOLT REPLACEMENT

1972 FORD TORINO AND MERCURY MONTEGO

The No. 3 crossmember-to-frame mounting bolts are coated with a plastic locking compound on the threads. Whenever the bolts are to be removed, removal can be accomplished by heating each bolt head surface with a torch for one minute to soften the locking compound.

ENGINE OIL CLASSIFICATION

FORD PASSENGER CARS AND TRUCKS (GASOLINE ENGINES)

Only engine oils that are marked on the container as meeting the S.A.E. classification "SE" or the Ford specification ESE-M2C-101-C, should be used to properly protect a Ford-built engine.

ALTERNATOR REAR HOUSING AND STATOR ROTATION

ALL 1972 FORD-BUILT VEHICLES

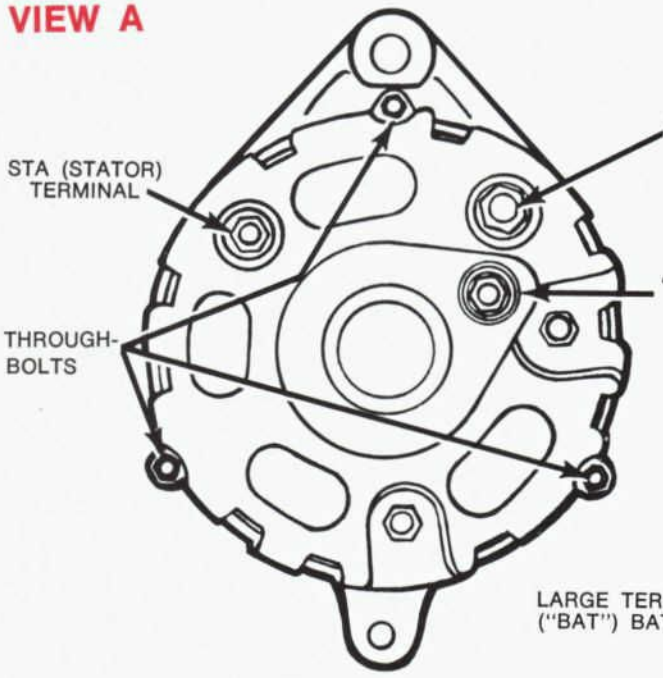
The illustration below is a copy of the instruction sheet that will soon be packaged with all alternator assemblies sold for use as replacement parts. The alternator rear housing has been rotated 120° clockwise to reduce corrosive damage associated with most applications. Note that in the new position, View "A," the "BAT" terminal and the "STA" terminal are both located on the side opposite from the adjusting ear.

In order to use this new alternator to replace past model alternators, it is necessary to remove all three through-bolts and rotate the rear housing and stator, as a unit, 120° COUNTERCLOCKWISE.

CAUTION: *Use care to keep the stator core in full contact with the front housing at all times while rotating housing, and while reassembling the through-bolts. Damaged brushes can result if contact is not maintained.*

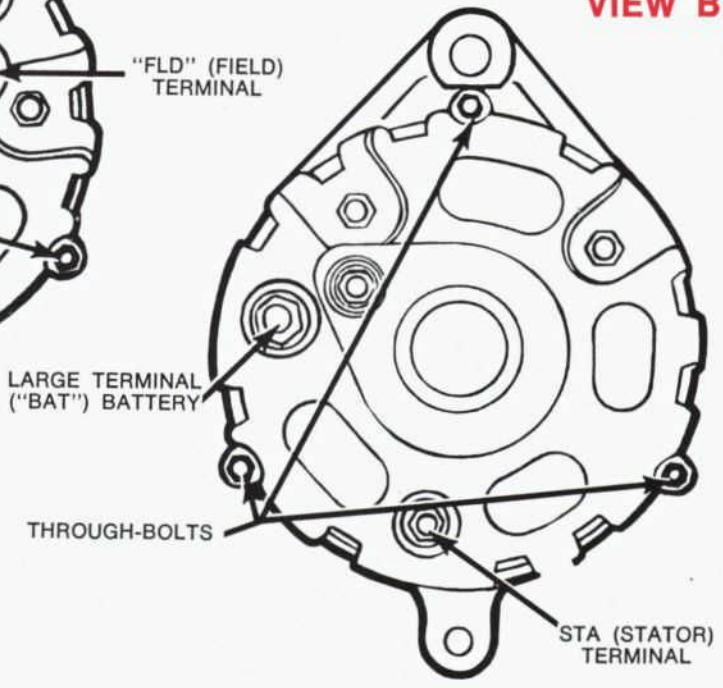
Some prior applications will work without rotating as described, but this must be done on a trial basis because the wiring harness may not be long enough to allow sufficient slack between engine and body. The correct position for prior application is with the "STA" terminal located close to the adjusting ear, as shown in View "B."

VIEW A



LATE 1972 ALTERNATOR REAR HOUSING POSITION

VIEW B



EARLY 1972 TO 1965 ALTERNATOR REAR HOUSING POSITION

TO ROTATE HOUSING AND STATOR:
REMOVE THREE THROUGH-BOLTS. ROTATE STATOR AND REAR HOUSING AS A UNIT TO REQUIRED POSITION WITH RESPECT TO FRONT HOUSING.

CAUTION: DO NOT LIFT STATOR CORE OUT OF CONTACT WITH FRONT HOUSING BECAUSE THE BRUSHES MUST BE KEPT IN FULL CONTACT WITH THE ROTOR SLIP-RINGS IN ORDER TO KEEP THEM IN THEIR HOLDER.

SERVICE BRIEFS

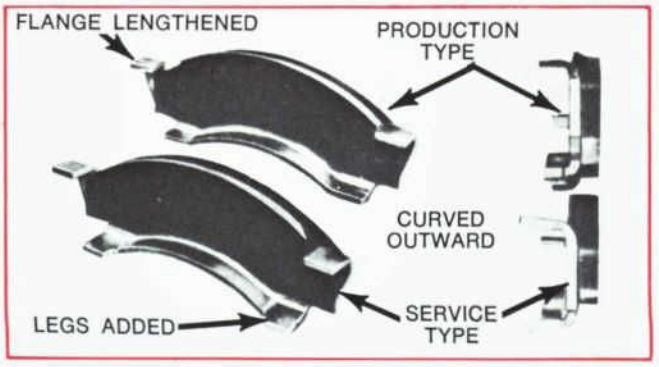
SLIDING CALIPER DISC BRAKE... NEW SERVICE SHOE AND LINING ASSEMBLY

1972 FORD TORINO, MERCURY MONTEGO, THUNDERBIRD AND MARK IV

A new outer shoe and lining assembly has been released for service. The changes (see illustration) made to the shoe are as follows:

1. Both flanges on the rear end of the shoe are lengthened.
2. An outward bend was added to these longer flanges for easier installation.
3. Short extensions were added to both ends of the forward flange for positioning the shoe and lining on the caliper.

CAUTION: *It is mandatory that a new inner shoe anti-rattle spring, a new caliper support spring, and key, be installed whenever shoe and lining assemblies are replaced.*



MISFIRE OR ROUGH ENGINE OPERATION

1971-1972 FORD PINTO WITH 2000cc (2.0 LITER) ENGINE

Complaints of engine misfire or rough engine operation on 1971-1972 2000cc (2.0 Liter) Pintos may be caused by a broken distributor breaker plate ground wire.

When complaints of such nature are experienced, remove the distributor cap and inspect the breaker plate ground wire. If the wire is broken, replace it with an insulated service ground wire, Part No. D2PZ-12264-A. The service wire is to be installed with one end under the point set hold-down screw and the other end behind the lower breaker plate flange. This flange also secures the cap clamp to the housing. During the ground wire installation, the breaker plate assembly should be pressed down firmly against its supporting shoulder in the housing. After installation, the point gap has to be reset to specification.

Proper installation is shown in the illustration below.