# SHOP TIPS

Autolite Ford

VOL. 9, NO. 12 AUGUST, 1971

# SAFETY IN THE

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



## SPECIAL NOTE

**Because the information in this publication was obtained from a variety of sources as shown in the acknowledgements, the publisher of *Shop Tips* cannot assume responsibility or liability in connection with this information and offers it as suggestions only.**

**Also, it cannot be assumed that every acceptable safety procedure is contained herein; or that abnormal or unusual circumstances may require further or additional procedure.**

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 and the Customer Service Divisions 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.

Autolite Ford



VOL. 71 MSD 61 LITHO IN U.S.A.



## WHAT IT'S ALL ABOUT

As a professional service technician, skilled in the maintenance and repair of automotive products, you must also know how to work safely by practicing safe work habits.

We're sure you never deliberately work in an unsafe manner. We're also sure you never purposely work on your job with the thought of endangering your life, your livelihood, or the lives of your co-workers.

And, we feel equally sure that not one of you really believes you could be classified as an unsafe worker.

However, all accident causes can be classified under the heading of unsafe acts and unsafe conditions. The question then is . . . how does anyone know whether or not he is working safely?

Two things are necessary. First, it takes someone to point out the right and wrong way of working around cars and trucks. Secondly, everyone needs to be reminded now and then of poor work habits when using hand tools and power operated equipment, poor shopkeeping practices and unsafe ways of doing service work. These unsafe habits, if allowed to continue, can be potentially dangerous to you and the men who work near you.

Without a doubt, the service area of a dealership, service station or independent garage has numerous opportunities for personal injury.

There are volatile liquids . . . air and electric tools . . . lifting devices . . . grinding tools and hundreds of other seemingly innocent looking items with built-in hazards.

Probably more so than in any of the other related service fields.

To remain healthy, well and alive in this working environment takes a lot of skill . . . a lot of safety skill. That's what this issue of *Shop Tips* is all about!

## ACKNOWLEDGEMENTS

We wish to take this opportunity to thank the companies listed for their printed materials used in the research and preparation of this issue of *Shop Tips:*

Insurance Information Institute
110 William Street, New York, N.Y. 10038

The Home Insurance Company
59 Maiden Lane, New York, N.Y. 10038

American Hardware Mutual
3033 Excelsior Boulevard, Minneapolis, Minnesota 55440

Fireman's Fund American
700 First National Building, Detroit, Michigan 48226

The Continental Insurance Companies
80 Maiden Lane, New York, N.Y. 10038

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5115 Oak, Kansas City, Missouri 64112

Engineering and Safety Department
American Insurance Association
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Buhl Building, Detroit, Michigan 48226

CAUTION

## SAFETY WITH HAND TOOLS

Safety with hand tools falls into two separate and distinct categories.

The first is that it's extremely important to keep hand tools in *safe working condition.*

And second, it's equally important to *use hand tools safely.*

Without question, hand tools in poor working condition can be dangerous and may result in serious injuries.

This statement is also true if they are improperly used.

### KEEPING HAND TOOLS IN SAFE WORKING CONDITION

Since hand tools generally have no moving parts, many technicians never realize they can cause severe personal injuries.

Don't be fooled.

A slipping wrench can cause you to lose a few inches of your skin. Especially around your knuckles! A mushroomed head on a chisel or punch when hit with a hammer can send metal chips or sharp slivers flying off in all directions . . . usually they head straight for a person's eye.

A badly ground tip on a screwdriver can cause you to slip and poke a hole in your hand. And that smarts!

So, with those two examples in mind, the first thing you should do is to take a searching look at each and every one of your hand tools. Look them over for signs or indications of hazardous conditions.

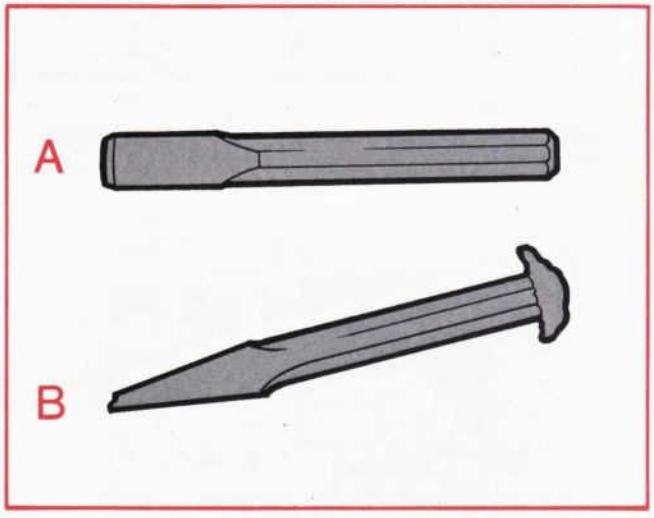



*Figure 1—Never let your chisels or punches become as bad as shown in "B." If any in your tool kit look like this, repair immediately so that they appear as in "A."*

- Examine your chisels and punches. Do they have battered heads? If so, grind or file off the "mushroom" effect. See Figure 1.
- Are the screwdriver tips rounded or poorly ground? If so, regrind them to proper angle and size so they fit the screw slot snugly. See Figure 2.
- Are there any cracked, badly worn sockets or box-type wrenches? Do you own any open end wrenches that have "spread" and result in a sloppy fit? See Figure 3. If so, get rid of them immediately. Your personal safety is certainly worth more, much more, than the cost of a new socket or wrench.

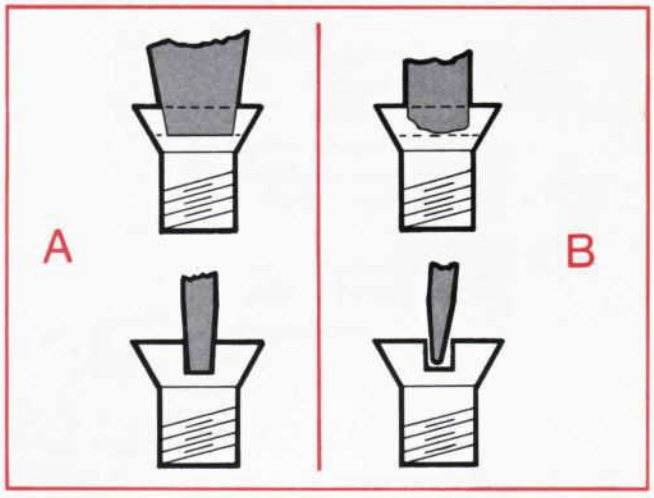



*Figure 2—A screwdriver tip must fit into the slot of a screw as shown in "A" to prevent it from slipping and causing personal injury or damage to adjacent parts. If any of your screwdrivers look like "B," take the time to grind them properly.*

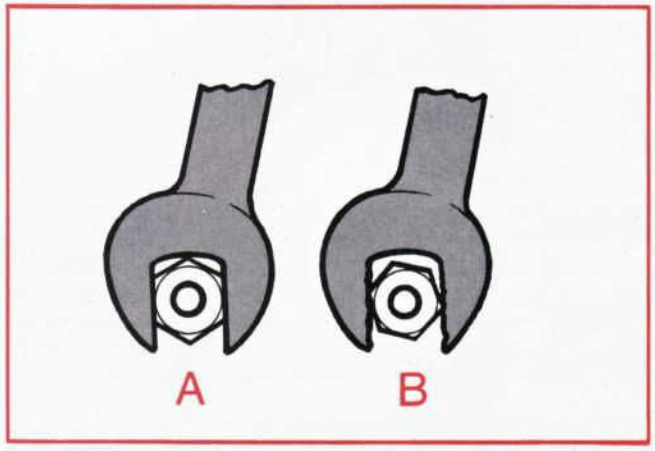



*Figure 3—Open end wrenches and box type wrenches must fit the nut or bolt head snugly as shown in "A." If the wrench is worn badly or "spread" as shown in "B," the head of the bolt or the nut can become rounded. When this happens, even the correct wrench will fail to fit properly. A slipping wrench also leads to damaged knuckles and torn skin.*

- Are any of the hammer heads loose on the handle? If so, either reset and tighten the hammer head with a new wedge or if necessary, purchase a new handle. If the hammer head should let go, it will probably not hit you, but chances are good that it will fly off and hit a co-worker. No one wants to be pointed out as the one who caused someone else to be hospitalized.
- Are any of your chisels dull? If so, regrind them so that you do not have to use excessive pounding effort. A dull chisel, like a dull knife, can lead to all kinds of problems. Keep cutting edges sharp and at the correct angle. See Figures 4 and 5.

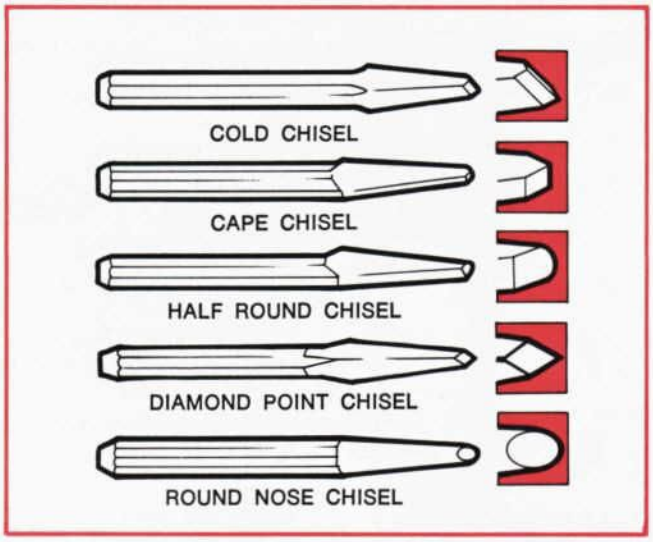



*Figure 4—Five of the most common chisels and their correct cutting edges. Chisels should always be kept sharp to minimize effort required. A sharp chisel prevents injury.*

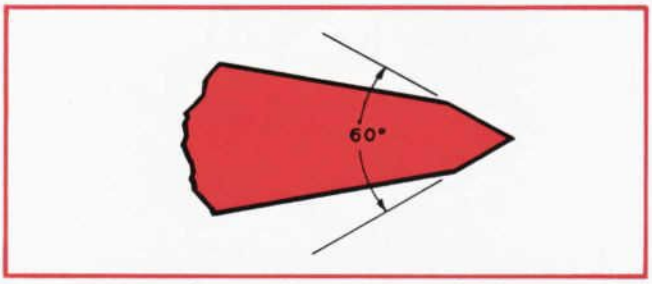



*Figure 5—Notice that a cold chisel should be sharpened to an angle of 60 degrees for best and safest results.*

- Are you using any speed ratchets that have missing or broken teeth? If so, get them repaired immediately. Kits are available from most of the better known tool suppliers. Some technicians have injured themselves severely when the ratchet slipped.
- Do any of your pliers have teeth that are worn out or jaws that slip? Getting pinched fingers or skinned knuckles can be painful. The cost of new pliers is small in comparison to the injuries and inconvenience you may experience.
- Do all of your files have handles? Never use a file without a suitable handle since the file could "grab" and the pointed tang end may penetrate the palm of your hand.

## USING HAND-HELD TOOLS SAFELY

There are only two ways to use hand tools . . . the right way and the unsafe way. Also, you must use the right tool for the right job.

### Screwdrivers

One of the quickest ways to get injured is to use a screwdriver as a chisel or as a pry bar. Screwdrivers are intended to tighten or loosen screws . . . not for any of the other purposes mentioned. For one thing, a screwdriver blade is generally not built strong enough to handle heavy bending loads or case-hardened sufficiently to act as a cutting device.

If used improperly, the shank may break and send a piece flying off to injure someone. Or, when it lets go, your hand may rake a sharp object. Then you've got a few busted knuckles.

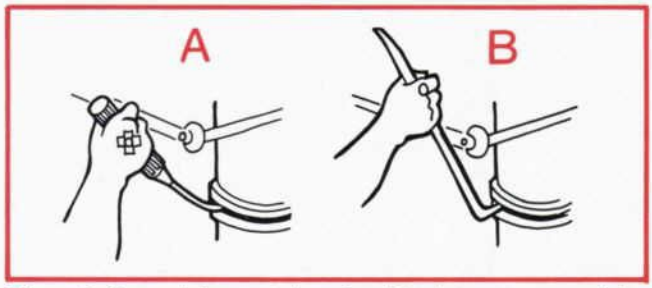



*Figure 6—One quick way to lose knuckles is to use a screwdriver as a pry bar as shown in "A." Do your job professionally as shown in "B," using the right tool for the right job.*

### Wrenches

When tightening bolts or nuts you should remember that it is much safer to *pull* on a wrench handle than it is to *push*. If the wrench or tool slips when pushing, you're apt to end up with gouges on your arms or hands.

A professional service technician never uses his tools or wrenches with grease or oil on the handles. Before using them, wipe off any traces so that your grip is anchored firmly with no chance for slippage.

### Drilling

When drilling, always hold the material being drilled firmly . . . preferably in a vise. If you don't, the drill bit may grab and bind in the part, causing it to spin out of your grasp. The end result can very likely be a torn hand.

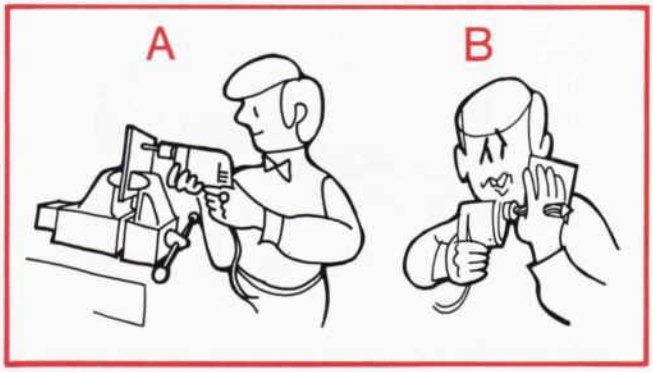



*Figure 7—The incorrect way "B" to drill a small part and the correct way as shown in "A."*

CAUTION

## SAFETY USING POWER TOOLS/ EQUIPMENT/AIR

One sure way to get into a hospital via an ambulance, is to use power operated tools and equipment in an unsafe manner. And there are countless opportunities to become injured through misuse of such equipment, or failure to observe safety precautions. Let's discuss the THREE types of power equipment or tools used in the service area that can cause personal injury. One . . . electric . . . two . . . hydraulic, and three . . . air.

### ELECTRICAL TOOLS/EQUIPMENT

Before you use any electrically operated, portable tool or piece of equipment, always make sure that it is grounded. And of equal importance, make certain that the electrical lead has good insulation and no bare wires. If not, repair at once. Also, never, never stand on wet or damp floors using electrically operated equipment or tools. Under those conditions, use some form of insulation. For example, stand on wood blocks or use heavy cardboard to act as an insulator. See the chart below for methods to ground portable type electrical tools.

### WAYS TO GROUND PORTABLE ELECTRIC TOOLS

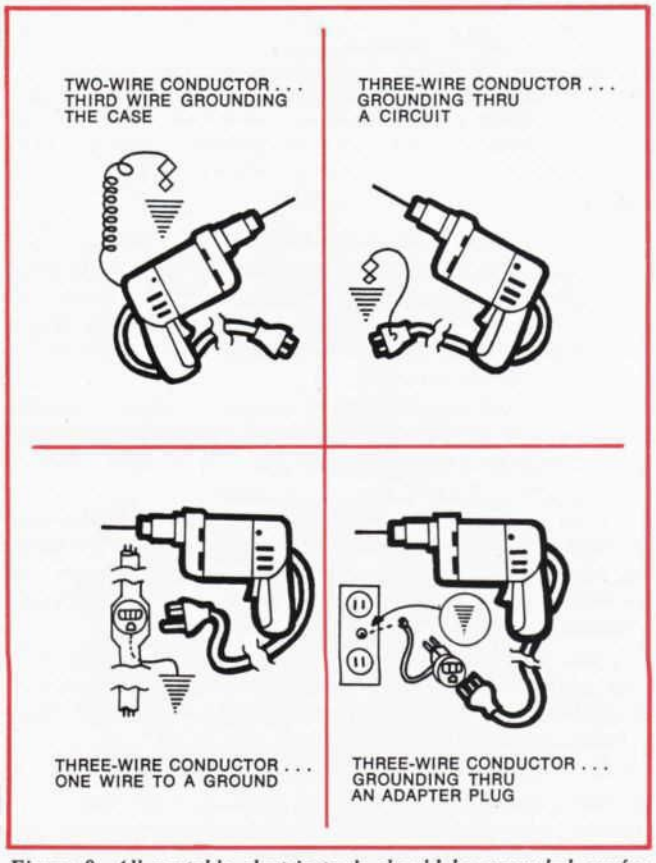



*Figure 8—All portable electric tools should be grounded, preferably at the plug by a 3-wire conductor.*

### LIFTS/HOISTS/JACKS

When using hydraulic, air or electrically operated lifting equipment, there are certain important details you must constantly be on the lookout for . . . in terms of your own safety and those around you. For one thing, never overload a lift, hoist, or jack. In other words, don't use a three-ton lift or hoist to raise a six-ton vehicle. And make certain that the lift or hoist safety pin or leg is in position when it is fully raised.

Keep your hands on the hoist or lift controls when raising or lowering the vehicle. Never walk away with the hoist or lift moving. One thing more to remember. Never permit anyone to remain in the car or truck as it is being raised. Have a firm rule in your service shop that NO ONE stays inside the vehicle when it is being hoisted off the ground. Be careful there are no small children sleeping or resting on a seat.

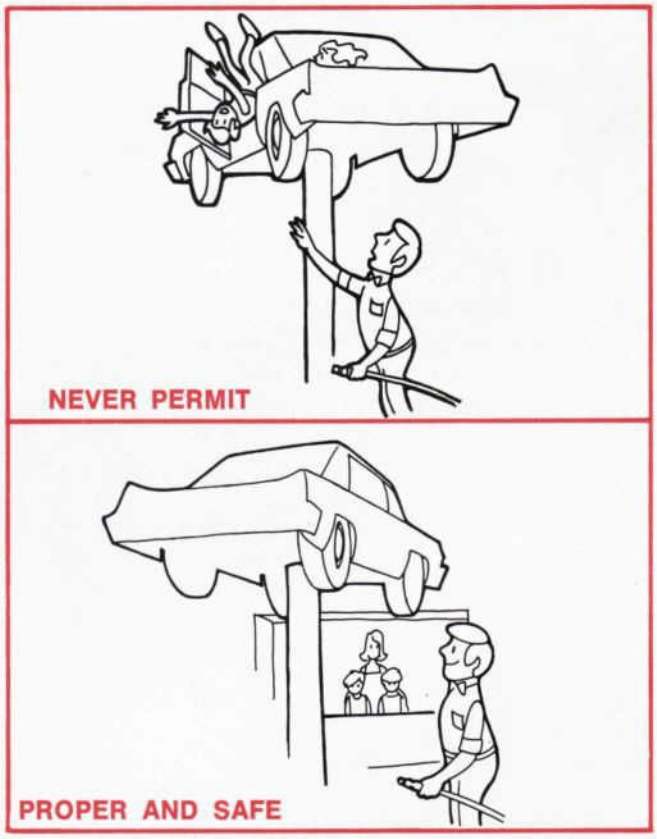



*Figure 9—Make it a hard and fast rule to never allow anyone in the car as it is being raised on a lift/hoist or jack.*

You should also constantly remind yourself when raising a vehicle using a hydraulic jack, to NEVER crawl under the car or truck without necessary support stands . . . often called "horses."

If you see any of your co-workers crawling under a car without "horses" in position, call it to his attention immediately. You may just be the one who saves his life. Some service shops have a strict rule for such an unsafe work habit. The service technician is sent home for the day if he fails to use supports.

## GRINDING/CHIPPING/ SANDING OR WELDING

Eye injuries far exceed all other injuries in number and frequency reported around a service shop area.

To protect your eyes, always use goggles or a suitable facing shield when grinding, chipping, sanding, welding, recharging batteries or using refrigerant 12 in air conditioning units. If, over the years you've never experienced an eye injury even though you've never used eye protection, there's always the first time! And when it happens, by failing to wear the right kind of goggles or face shield, you'll kick yourself around the block . . . but only after you return from an eye doctor. If you're lucky, he'll remove the jagged object in a matter of minutes. If not . . . how do you like the thought of eye surgery . . . with or without anesthetic?

Better wear the right eye protection EVERY TIME you're called upon to do any of the above mentioned work functions. You're the one who wins!

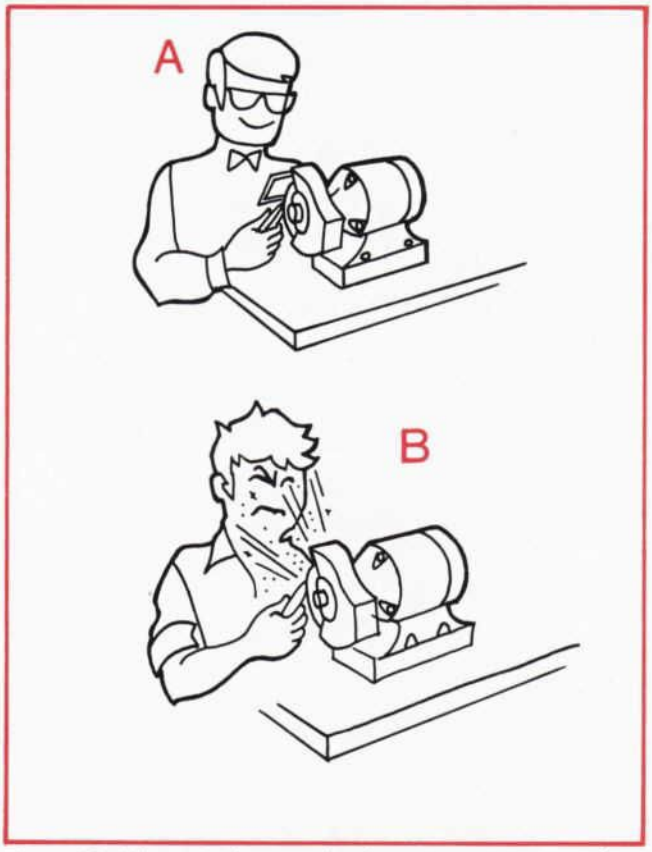



*Figure 10—When grinding metal, why treat your eyes to sharp, jagged metal particles as shown in "B"? Always wear safety goggles and be sure the glass shield is in position as shown in "A."*

## BATTERIES AND AIR CONDITIONERS

While we're on the subject of eye protection, remember wet cell batteries are potentially dangerous and can be the cause of serious eye damage. Sulphuric acid, contained in every car or truck battery, is just what it means . . . an ACID.

And acid getting into your eyes is deadly.

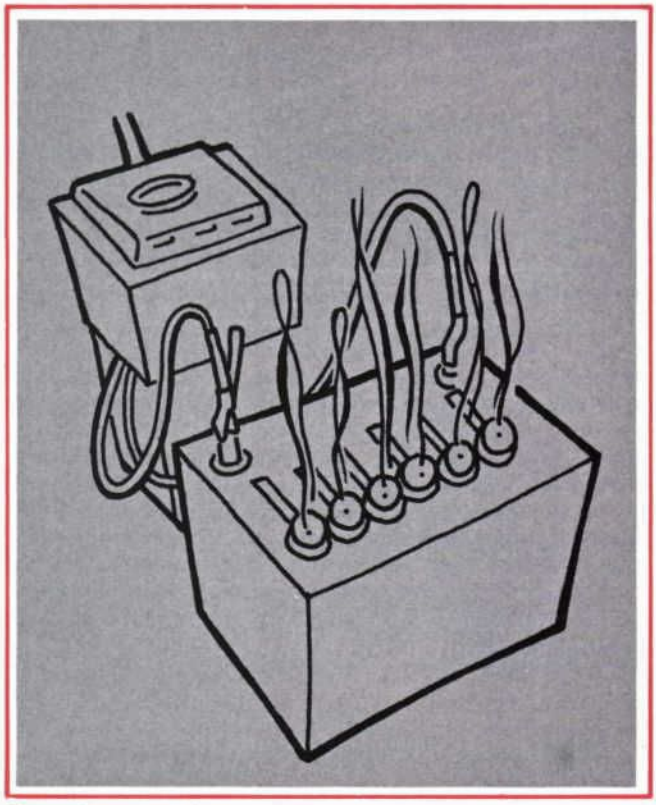


*Figure 11—During the recharging process, a highly flammable and invisible hydrogen gas is being generated. This process also occurs when a car has been driven for long distances in hot weather. In either case, never smoke, weld or cause a spark to occur at or near the battery case. You may be lucky and then again the battery may blow up causing serious injury.*

You must also be constantly aware of the fact that when a battery is being recharged, either in the car or at a charging station, highly flammable and invisible hydrogen gas is being generated. Because of this, never permit any metal object to contact both terminals and create a spark. And never smoke or weld near a battery.

There are too many reported cases of a battery literally exploding and causing serious injuries when the hydrogen gas ignited from a spark or flame. Don't *you* become one of the statistics.

Another potentially serious situation exists when working on automotive air conditioner systems. When you're discharging, purging, evacuating or recharging, always remember to use suitable goggles. If refrigerant (R-12) gets in your eyes, it can cause serious eye damage.

If this should happen, rinse your eyes immediately with pure mineral oil to absorb the refrigerant, then follow this procedure by flooding your eyes with clear water and contact a doctor immediately.

While we're on the subject of R-12, remember that it vaporizes so quickly and takes on so much latent heat in the process that even a drop on your skin will cause severe and painful frostbite. Therefore, refrigerant fittings should be opened carefully and slowly to gradually release internal pressure.

CAUTION

## COMPRESSED AIR

Who would think that air could be dangerous? It can, when it is compressed anywhere from 40 psi or even higher.

When it comes to airing truck tires, those with lock rings, many service men have become severely injured because the lock ring wasn't fully in position. If this happens, the ring may fly off and crease your skull or break an arm, leg or ribs.

The safest way to do this job is to put the tire and wheel in a cage before inflating the tire. However, if a cage is not available, turn the wheel over so that the lock ring side of the wheel is facing down or have it facing directly towards a brick or concrete wall.

After inflating the tire to the recommended pressure, tap the ring with a hammer from the opposite side of the wheel, to be sure it is properly seated and cannot accidentally fly off.

Compressed air can also be dangerous when used improperly in the servicing procedures of a car or truck. One of the most dangerous work habits (many service technicians are prone to do this), is to use compressed air to spin roller or ball bearings dry after being cleaned in a solvent.

The hazardous condition results from the fact that compressed air can spin the bearing at speeds up to 10 times faster than it ever would rotate in normal driving. As a result, it may shatter and fly apart like shrapnel, sending pieces in all directions. Why take the chance? Rinse bearings in a clean solvent, then let them air dry for a few minutes on a clean cloth.

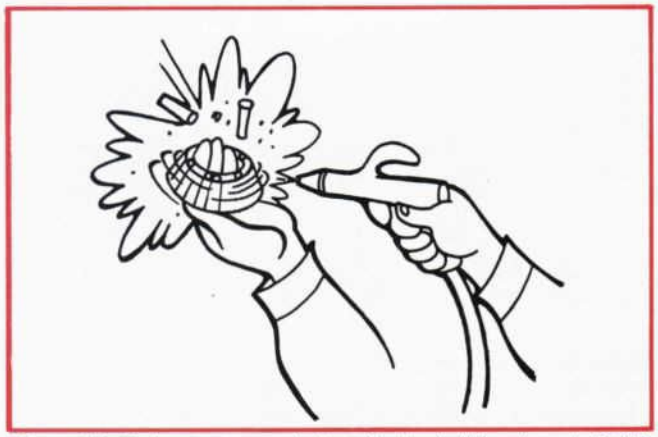


*Figure 12—Using compressed air to "spin dry" bearings is DANGEROUS. The bearing may shatter and throw jagged pieces in all directions. The safe way is to let it air dry.*

Also, make it a hard and fast rule in your service shop to ban the use of compressed air for blowing off clothes, for personal cooling purposes, or any horseplay with the compressed air hose. Any one of these can lead to major injuries.

# PERSONAL SAFETY

There are a number of safe personal work rules to follow when servicing cars and trucks. When practiced, they become good habits that help prevent personal injuries.

Let's discuss a few.

## APPAREL

Wearing clean and properly fitted work clothes is essential. Sleeves or cuffs that are torn or hang too loosely can be dangerous when working around a running engine or close to rotating equipment. Keep any outer garment buttoned and refrain from wearing long ties. If you must wear any tie, the clip-on bow tie is preferable.

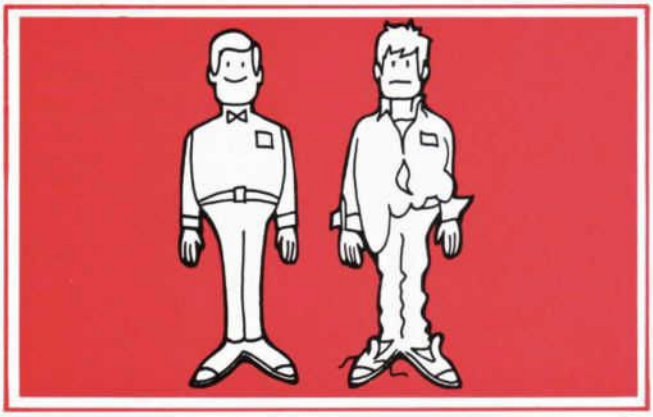


*Figure 13—A professional service technician is also professional in the way he dresses for work. Customers also have more confidence in a technician who keeps his work clothes neat and clean. Sloppiness, flowing ties, torn sleeves are dangerous around moving machinery.*

If a pulley, a gear, a fan blade or drive belt catches loose or torn clothing or a hanging tie, there is usually no time to free the caught piece. The result is often as serious as loss of a hand or fingers.

Removing rings or watches with metal bands is another safe habit to follow. Especially when working on or testing electrical units of the vehicle.

## CARRYING/LIFTING

When carrying or lifting heavy objects, there are specific safety rules you should remember to prevent personal injury.

In fact, in seriousness of injuries, (measured in dollar benefits according to a nationally known insurance company) back injuries are the most severe. More sums of money are paid out for back injuries than for any other single cause.

How do these injuries originate?

The principal contributor is lifting improperly or the improper use of lifting aids.

And, a great many of the injuries to backs, legs and arms are the result of slips and falls because of poor housekeeping around the service area.

You've got to remember to lift heavy objects by bending your knees and keeping your arms and back as straight and vertical as possible, then straightening up rather than by bending over and picking the object up. See Figure 14.

It is also important to ask someone to help when the object is very heavy or too bulky. Don't try to be a Samson and show off your strength. You may end up with a serious back condition. And, where possible, use a hand truck for moving heavy objects. Also, when you must carry a long tailpipe or ladder, watch the ends when you move it. When possible, get another worker to help . . . one at each end.

Often it is a good idea to study the object you're carrying or lifting. Look for any "pinch points" and be sure your hands and fingers are out of the way should the part being carried fold, collapse or shut unexpectedly.

*Figure 14—Here's the Right way to lift:*

- *Get a Good Footing*
- *Place Feet About Shoulder Width Apart*
- *Bend at the Knees to Grasp the Weight*
- *Keep the Back Straight*
- *Get a Firm Hold*
- *Keep the Back as Upright as Possible*
- *Then Lift Gradually by Straightening the Legs*

## CONDUCT

Many injuries result from personal things that happen during a normal working day in a service shop. For one thing, never attempt to repair or clean a piece of service equipment that is moving or operating; and equally important, never do so unless the unit is disconnected from its power source.

Another cause of many reported injuries is due to the old "American Indoor Sport" . . . Horseplay. Such actions often lead to serious injury to the participants.

One such incident, to give you an idea of the consequence, occurred when a wire from a spark plug testing machine was hooked up to a car being worked on by another technician. Unaware of all this, he crawled under the car. As he began working the sparks flew off his wrench handle and instinctively he reacted. In doing so, he received a large gash in his forehead. To prevent such incidents, why not set a rule in your service shop to ban all horseplay and practical jokes since they often lead to a tragedy such as the one described.

## WORKING AROUND GASOLINE

Fire and explosions often result from the mishandling of gasoline. Many serious and often fatal injuries are reported each year as well as property damage running into the millions of dollars from careless use of or carelessness in handling gasoline.

As you know, gasoline is highly volatile and vaporizes rapidly when in contact with air.

And, these vapors . . . heavier than air . . . tend to collect in low places such as in basements of buildings or near the floor of a lubrication pit. Only a small spark, a lit cigarette dropped, or an open flame from a match, is usually all that is needed to ignite it.

Gasoline should never be used for washing your hands or cleaning clothing. Also, never transfer gasoline in an open container.

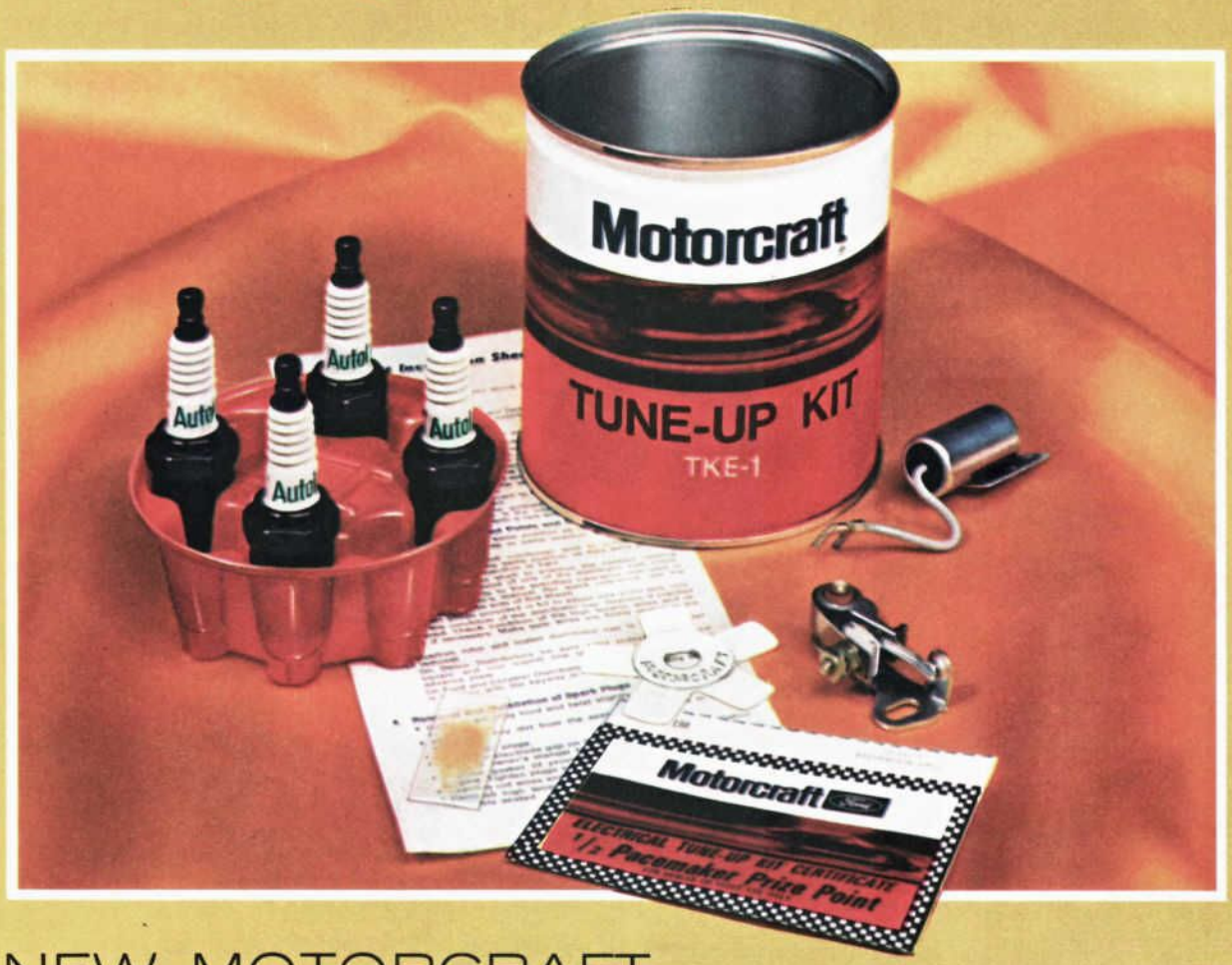
And, in an emergency where gasoline is needed for a car, it must be carried in an approved safety can container.

There's enough power in a gallon of gasoline, if all the energy is used, to lift the Empire State Building right off its foundation.

Think of gasoline as an explosive and by doing so, you'll have greater respect for this fuel. See Figure 15.


*Figure 15—A dangerous way to wash your hands or parts is using gasoline as the cleaning agent. The approved and safe way is to use a non-caustic type of solution. Don't take chances. Gasoline must always be carried in a closed container, painted red, with the word "Gasoline" clearly legible.*

# To help you get the "bugs" in...




NEW MOTORCRAFT

# TUNE-UP KITS FOR VW'S

## Motorcraft Tune-up Kits for Volkswagen are here!

This news means extra profit opportunities.

These new Tune-up Kits include all the time and money saving features so popular in all the other Motorcraft Tune-up Kits.

The new Motorcraft Tune-up Kits for Volkswagen applications contain everything in one convenient package: four Autolite Spark Plugs; Motorcraft Distributor Points; Motorcraft Condenser; Cam Lube; Feeler Gauge; and installation instructions. Tune up "bugs" . . . and enjoy extra profits!

## *More* Good News . . . PACEMAKER PRIZE POINTS included in each kit.

At the bottom of the instruction sheet in each Motorcraft Tune-up Kit is a bonus ½ Pacemaker Prize Point Certificate. Save these Certificates and combine them with other Pacemaker offerings. Pacemaker Prize Points can be redeemed for your choice of the more than 1800 merchandise awards shown in the Pacemaker Awards Catalog!


STOCK UP AT OUR PARTS COUNTER TODAY!

# Motorcraft

## ... our NEW brand of automotive parts.

### YOU KNEW THEM AS AUTOLITE.

Motorcraft is now the name for all automotive parts that used to be labeled Autolite . . . except spark plugs which will continue to be labeled Autolite. We've changed the name to Motorcraft on all other parts but everything else is the same. Motorcraft parts and Autolite spark plugs have the same excellent design, the same high quality and durability you've come to expect from us.

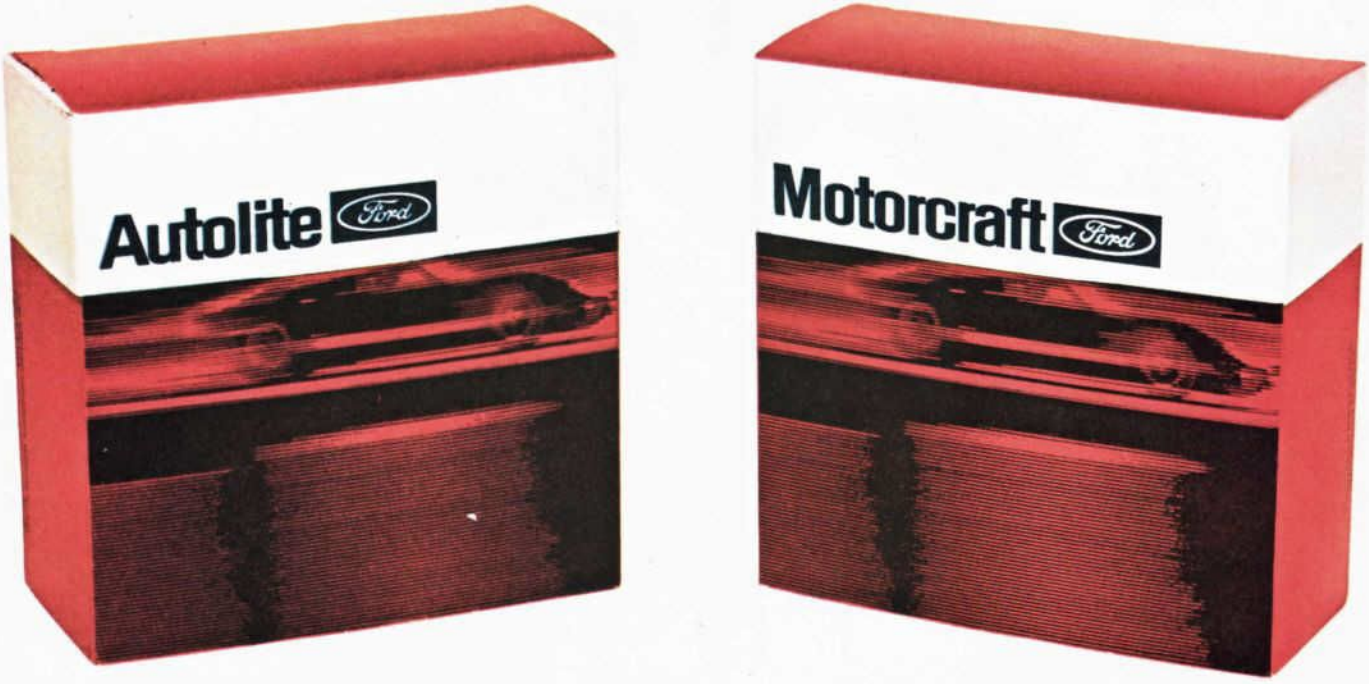
**Motorcraft parts are original equipment**—In 1972, Ford-built cars and trucks will have Motorcraft as original equipment. That means built-in customer acceptance and a huge replacement business potential. Motorcraft and Autolite are interchangeable so your current Autolite stock is as salable as ever for 1972 replacement and for the more than 30 million Ford-made vehicles now on the road.

**Motorcraft and Autolite have the same part numbers**—* When you place a Motorcraft order, simply use the Autolite number. For spark plug replacement, continue to order Autolite.

**Mixed shipments for awhile**—You may receive shipments containing both Motorcraft and Autolite parts during the change-over. Box design, part number and parts will all be the same whether the name is Autolite or Motorcraft, so ordering, handling and stocking remain unchanged.

*Some Motorcraft battery and electrical part numbers have been modified to reflect product changes and to simplify inventory and ordering procedures.

## same package ... same parts ... same part numbers ... Only the name has changed!



Motorcraft Service Center Program . . . the most comprehensive, profitable, modern and informative sales and service program in the automotive parts market! It was Autolite. It's still the same program . . . only the name has been changed.

# Motorcraft SERVICE CENTER

## (Only the name has been changed!!)

And, it's just as easy as ever to become a Service Center. Simply order Motorcraft/Autolite parts in a minimum of three product lines totalling at least $400 or $200—at the normal stocking dealer prices. You will automatically receive all the unique benefits of the program FREE!

**FREE**
**WITH A $400 PURCHASE**

- Service Control Center
- Wall Chart Rack
- Illuminated Clock Sign
- Service Information Plan

**FREE**
**WITH A $200 PURCHASE**

- Wall/Bench Merchandiser
- Wall Chart Rack
- Illuminated Clock Sign
- Service Information Plan

**(ASK AT OUR PARTS COUNTER FOR COMPLETE DETAILS!)**

Here's how existing Autolite Service Centers can convert their Autolite cabinets to Motorcraft with Motorcraft decals.


# YOU'VE GOT A LOT GOING FOR YOU

**...with Ford Authorized Remanufactured Parts!** Look at it in terms of your Ford-owner customer. Wouldn't you, too, feel more confident with a replacement part in *your* car that gives like-new performance . . . and at lower cost?

Every part is remanufactured to the strictest Ford Motor Company engineering specifications and is made exclusively for Ford-built cars and trucks.

Ford Authorized Remanufactured parts build customer satisfaction with your Ford or Lincoln-Mercury owners. They save time and minimize comebacks. You've got a lot more going for you with Ford Authorized Remanufactured parts.

**See us when you need a Remanufactured part for any Ford-built car or truck, available at our parts counter.**

## BETTER BUSINESS BUILDERS

**ELECTRICAL PARTS** • *Alternators* • *Armatures* • *Generators* • *Distributors* • *Voltage Regulators* • *Starters*

**ENGINES** • *Complete Assemblies* • *Short Block Assemblies*

**ENGINE COMPONENTS** • *Cylinder Heads* • *Water Pumps* • *Carburetors* • *Rocker Arm Kits* • *Crankshaft Kits* • *Fuel Pumps* • *Power Steering Pumps*

**POWER TRAIN COMPONENTS** • *Clutch Discs* • *Pressure Plates* • *Brake Shoes* • *Torque Converters* • *Transmissions* • *Power Brake Boosters*

***NATIONAL WARRANTY***

**Every Remanufactured Ford Part is warranted nationally by the Remanufacturer to be free of defects in materials and workmanship for 90 days or 4000 miles from date of installation, whichever occurs first. Complete OHV engine assemblies are warranted for 12 months or 12,000 miles on passenger vehicles, and 6 months or 12,000 miles on trucks, whichever occurs first. This Warranty includes parts replacement plus related labor.**

**Ford and Lincoln-Mercury dealers will honor this warranty anywhere in the country.**

Remanufactured

Ford

Engines · Parts


### STAIRWAY . . . FLOORS . . . RAMPS . . . PITS

When you're working, work at a speed that is consistent with safety. In other words, running on stairs or aisleways is dangerous. For example, someone may be carrying a large object or long slender chrome moldings or metal body panels that can penetrate the eyeball or run a hole into your skin. Take your time—walk—when going from one area of your work to another. A minute gained in speed may turn out to be a month in the hospital.

Another unsafe work practice is jumping from benches, platforms or into or across the lubrication pit. Doing so can cause serious injury. No point in trying to be superman when all it can accomplish is broken bones.

Talking about pits brings us to the next point we feel is worth emphasizing; if a pit is connected to a ventilating system, always turn on the fan when working in the pit area. And, when spotting a car or truck on the pit, always center the vehicle over the pit so that in case of an emergency, there is room at either end to get out of the pit in a hurry.

Another safe work practice is to keep your entire body under the car or truck when making repairs. Never have legs or arms extended beyond the body or bumpers of the vehicle.

*Figure 16—Arms and legs sticking out from under a car can lead to serious injury. Drivers of other cars pulling into the adjacent area may not be able to see you. Protect yourself and avoid injury.*

## SHOPKEEPING SAFETY

Proper upkeep of your service area is a must if you are thoughtful about your own safety and the safety of those who work with you.

Grease and oil spilled or dropped on the floor should be cleaned up promptly. As long as the slippery material remains on the floor, it is a distinct hazard. It might also be tracked to other areas, such as onto ramps and stairs where it can become even more hazardous. If you cannot clean up the oil, grease or solvent immediately, then cover the spot with an oil absorbent for the moment.

Supplies of this material should be kept in convenient locations to get all service personnel into the habit of using it promptly in such circumstances.

If you notice any drain covers or any underfloor exhaust eliminating equipment outlets that are broken, have projections that could catch your foot, or any covers that are missing or do not fit properly, then report these conditions. Tripping over such items is not uncommon and can easily lead to shattered bones or bad cuts.

Another unsafe housekeeping practice is to park a creeper in the middle of the floor where someone can step on it and/or trip. And keep workbenches neat and orderly. Tools and materials should be well back from the edge of the workbench so they cannot fall or be knocked off.

There's an old "Selective Gravity" principle that works in such instances. It goes like this: Whenever a part that weighs more than 3 pounds is accidentally knocked from a workbench, it will always land directly on the foot of the person nearest to it!

In any service area, there is a great need to safely store oily rags, waste materials and other such flammable items in containers designed specifically for that purpose. These containers should have metal tops that close tightly. If your service shop does not provide this type of receptacle, why not bring this potential fire hazard to the attention of the boss or owner!

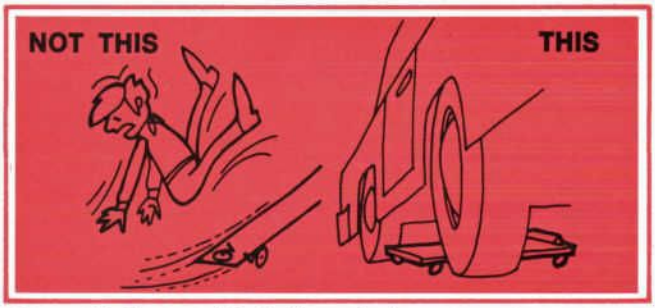



*Figure 17—Creepers "Parked" on the floor are as dangerous as a floor littered with ball bearings. To prevent needless injury to you and your co-workers, after using a creeper, always prop it against a wall or shove it under the car being worked on. Think Safety.*

If your service shop does any acetylene welding, the compressed gas cylinders must be stored with protective caps over the valves. Another *must* in any welding operation is to make absolutely sure the compressed gas cylinder is securely chained or strapped in position so that there is no chance for it to be knocked over or tipped. And, at any time when welding is being done, there should always be a serviceable water handpump extinguisher nearby.

Also, handling a lighted torch too close to other personnel or flammables when welding is asking for big trouble. Sometimes a welder will become so involved in what he is doing, he forgets these precautions. If you see such careless and unsafe work practices, point it out as part of your responsibility for maintaining safe work conditions for everyone.

# SAFETY IN THE

## SAFETY IN HANDLING CARS

There are so many unusual circumstances and hazards prevailing around a service shop, that operating a car in this area requires the greatest respect for being careful, watchful and alert.

Here are some examples to be on guard against as you go about your daily work:

When taking charge of a car, never assume the brakes and steering are operating properly. Before driving the car, quickly test the brakes and steering to find out if the mechanisms or systems are normal. Never rely on the fact that the car was OK when it came into your shop. It may have been pushed in because of NO BRAKES or because the power steering pump is NOT WORKING. If you should find such a condition, immediately place a large hand-lettered sign on the windshield, cautioning everyone of the danger.

Another important safety factor is to never permit a customer to park his car in a stall, over a pit, or drive over a lift or front end alignment machine.

If you must permit this because of conditions or the situation, never stand in front of the car as you guide and direct the driver. You may end up pinned to the workbench. Customers are not experienced in this type of precise driving skill. Therefore, why take a chance on serious injury when it can be so easily avoided?

When testing a running engine, it's always a sensible and safe work practice to place chocks in front of the front wheels and set the parking brake firmly. A moment spent doing this is cheap, sensible and safe insurance against an avoidable accident.

While we're talking about working around an engine (either running or not running), make it a hard and fast rule to NEVER PERMIT a customer or any passengers, especially children, to remain in the car. They may try to start it, or accidentally bump the shift lever if the engine is running. Don't take that kind of a chance. Making sure everyone is out of the car is not only sensible, it is a sign of a safe professional service employee.

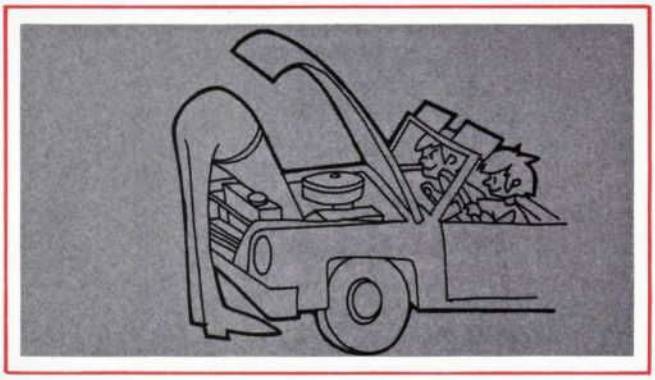


*Figure 18—An unsafe work practice is to permit passengers or a driver to remain in the car when you are working around the engine. To be safe, politely ask all occupants to get out of the car. Doing this will help you to keep all 10 fingers attached.*

## SAFETY DURING FIRES

All fire departments strongly urge service employees to notify their local fire department as soon as a fire is discovered. The alarm should never be delayed while observing the results of the use of portable firefighting extinguishers.

If you're busy attempting to put out the fire, have someone else run to the phone and call the alarm in immediately.

Various types of fire extinguishers are available but all are not equally effective for every kind of a fire. Study the FIRE CLASSIFICATION CHART on the following page and learn the proper type of extinguisher to use in a particular fire situation.

Also important is that the usefulness of an extinguisher depends to a great extent on how promptly it can be operated and how best to use the extinguishing agent. Do you know where your fire exinguishers are located?

Become familiar with such equipment in advance. An extinguisher is useless in the hands of someone who does not know how to make it work. Practice sessions plus running through the steps required for different types of fires can make the difference between stopping a small fire or letting it get out of control.

Since all types of portable fire extinguishers require at least an annual inspection and recharging, here is an excellent opportunity to run through the procedures so they become automatic in the event of a fire.

*CAUTION:* An extinguisher that has been used, even though the contents are only partially discharged should never be returned to its mounting bracket until it is properly refilled.

# SERVICE SHOP

*Continued*

CAUTION

## FIRE CLASSIFICATION CHART

**FIRES IN A SERVICE AREA GENERALLY FALL INTO THREE CLASSIFICATIONS**

### CLASS A FIRES

Ordinary Combustible Materials such as Wood, Paper, Textiles and So Forth.

**REQUIRES . . . Cooling-Quenching**

### CLASS B FIRES

Flammable Liquids, Greases, Gasoline, Oils, Paints and So Forth.

**REQUIRES . . . Blanketing or Smothering**

### CLASS C FIRES

Electrical Equipment, Motors, Switches and So Forth.

**REQUIRES . . . A Non-Conducting Agent**

## HERE'S HOW TO OPERATE THE PORTABLE FIRE EXTINGUISHER


| | | | |
|---|---|---|---|
|  | **FOAM**<br>Solution of Aluminum Sulphate and Bicarbonate of Soda | OK FOR | A-B |
| | | NOT FOR | C |
|  | **CARBON DIOXIDE**<br>Carbon Dioxide Gas Under Pressure | NOT FOR | A |
| | | OK FOR | B-C |
|  | **DRY CHEMICAL** | MULTI-PURPOSE TYPE: OK FOR A B C | ORDINARY B-C TYPE: NOT FOR A; OK FOR B C |
|  | **PUMP TANK**<br>Plain Water | OK FOR | A |
| | | NOT FOR | B-C |
|  | **GAS CARTRIDGE**<br>Water Expelled By Carbon Dioxide Gas | OK FOR | A |
| | | NOT FOR | B-C |
|  | **SODA-ACID**<br>Bicarbonate of Soda Solution and Sulphuric Acid | OK FOR | A |
| | | NOT FOR | B-C |

# TECHNICAL SERVICE BRIEFS

## 1971 PINTO CARBURETOR

### WEBER MODEL 5200C CARBURETOR LUBRICATION GUIDE AND SERVICE INTERVAL

Bearing surfaces of the Weber Model 5200C Carburetor used on the 1971 Pinto with 2000 cc engine are lubricated in production with Dri-Slide lubricant. The lubricant improves carburetor durability by reducing friction during vehicle operation. The lubricant is a commercial grade of Molybdenum Di-sulfide which is squirted generously onto bearing surfaces. The liquid carrier of the lubricant evaporates leaving a dry, slick surface that will not absorb engine compartment contaminants such as dust, moisture and fuel vapors.

### SERVICE INTERVAL—Friction points are to be lubricated with Dri-Slide

- At 12,000 mile intervals as part of routine vehicle maintenance
- Whenever solvent has been applied to choke mechanisms or throttle linkages
- After carburetor tune-up kit installation
- Whenever a carburetor choke or throttle component is replaced, lubricate the bearing surfaces

### CRITICAL CARBURETOR AREAS REQUIRING LUBRICATION

- The three choke shaft bearing surfaces (see Figure 1)
- Both ends of the choke rod
- Fast idle cam and bushing pivot area (Figure 2)
- Primary throttle lever and bushing surfaces–both ends (Figure 3)
- Thermostatic choke bimetal coil, tang area, and surface beneath the coil (Figure 4)
- Choke modulator "D" washer and bearing surfaces (Figure 5)
- Throttle shaft bearing surfaces (Figure 6)

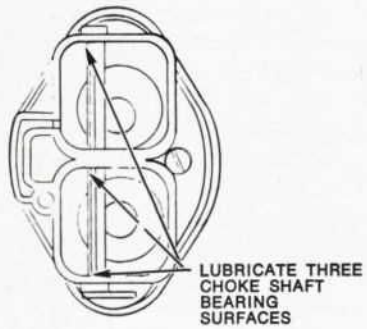


FIGURE 1:

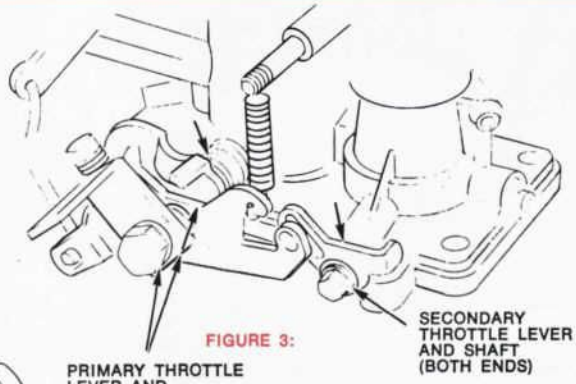


FIGURE 3:

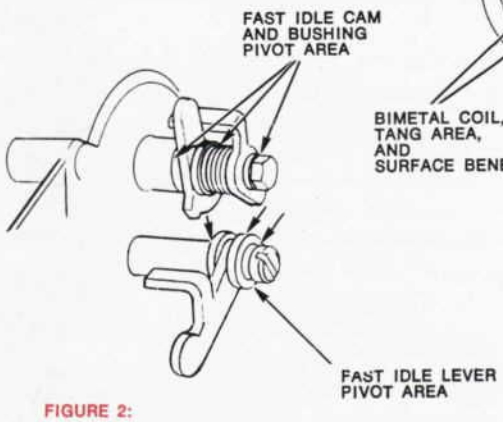


FIGURE 2:

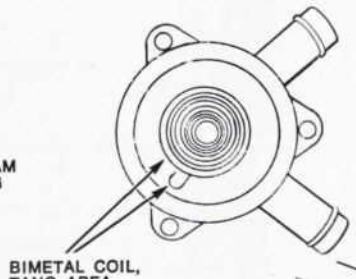


FIGURE 4:

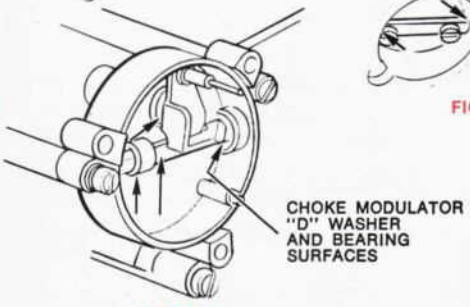


FIGURE 5:

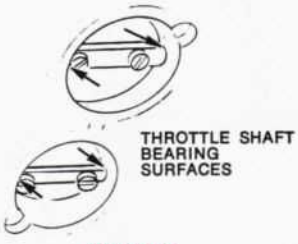


FIGURE 6:

# MOTORCRAFT
# ELECTRICAL PARTS SALES NUMBERING STANDARDIZATION

The Motorcraft electrical parts numbering system will soon be standardized to better aid you in servicing your customers' vehicles with Motorcraft products. Therefore, it is important that you read the following two pages in detail. It will prove to be a great benefit to you in the servicing of your customers.

# MOTORCRAFT
# ELECTRICAL PARTS SALES NUMBERING STANDARDIZATION

*(Continued)*

The Motorcraft electrical parts numbering system will soon be standardized to better aid you in servicing your customers' vehicles with Motorcraft products. Basically this means that both Ford and non-Ford application Motorcraft parts will be identified with an alpha (letter) prefix.

Under the new numbering system, all Motorcraft electrical parts will be assigned an alpha (letter) prefix that follows the electrical parts category designation currently used for Ford vehicle applications, for example:

DA - Distributor Assembly
DC - Distributor Condenser
DP - Distributor Point Sets

A complete listing of long-established numeric prefixes for Motorcraft electrical parts with non-Ford application and the alpha (letter) prefixes replacing them are listed on the next page.

A third letter will be included with the first two prefix designations to provide vehicle application identification; except for Ford applications where the part number retains its current **two** alpha (letter) prefixes:

| Vehicle Manufacturer | Part Name | Prefix |
|---|---|---|
| Chrysler | Point Set | DPC |
| General Motors | Point Set | DPG |
| Ford | Point Set | DP |
| Other American Vehicles | Point Set | DPX |
| Import Car | Point Set | DPE |

The part number standardization is being implemented in two phases.

**Phase I.** Phase I, currently in process, provides that all new Motorcraft electrical parts sales numbers added to the electrical line for competitive make vehicles (General Motors, Chrysler, import cars and others) are assigned a **three** alpha prefix sales number. For example, the addition of a new distributor point set for a General Motors application is then identified with DPG prefix rather than a one (1). By this time you may have received new non-Ford application parts identified with a **three** alpha prefix sales number and possibly noticed that some of these numbers have appeared in your price list.

**Phase II.** Phase II of this program will be the carton imprinting (for a period of time) of both the old and new Motorcraft sales numbers (present numeric prefix and new alpha prefix with the same base number) for all existing non-Ford application Motorcraft electrical parts. As an example, the present 1-303 Chrysler Point Set will be identified with both the old 1-303 and the new DPC-303 sales numbers on the carton endflap for a while. Typical samples of carton imprinting are likewise shown on the next page. You will also note on the example previously given that the base number (303 will not be affected) always remains the same, which precludes the part from totally losing its current identity. Example:

| Part Name | Present Part Number | Application | New Part Number |
|---|---|---|---|
| Point Set | 1-44 | Chrysler | DPC-44 |
| Point Set | 1-303 | Chrysler | DPC-303 |
| Point Set | 1-210 | General Motors | DPG-210 |
| Point Set | DP-12 | Ford | DP-12 |

During the period when two Motorcraft sales numbers will be appearing on cartons, affected parts will be ordered and shipped under only the old numeric prefix part number. After you have had ample time to become familiar with the new non-Ford application alpha prefix sales numbers, you will be notified that the numeric prefix sales numbers are to be dropped. From that time on catalogs and price lists will list only alpha prefix sales numbers for both Ford and non-Ford applications.

The standardization of the Motorcraft electrical parts numbering system will make it easier for you to order parts from your Motorcraft supplier. It will also aid your Motorcraft supplier to serve you better. These plus factors mean service for your customers . . . and of course, that is what's really important.

## TYPICAL CARTON IMPRINTING . . .

Motorcraft

**ONE PIECE**

**DP-12**
**B8Q 12171-A**
**CONDENSER**

*Current Ford Electrical Parts Box Marking (no change)*

Motorcraft

**ONE PIECE**

**2-300**
**CONDENSER**

*Current Non-Ford Electrical Parts Box Marking*

Motorcraft

**ONE PIECE**

**2-300**
**DCC-300**
**CONDENSER**

*Interim Non-Ford Electrical Parts Box Marking*

## MOTORCRAFT ELECTRICAL PARTS NUMERIC TO ALPHA . . .

| | Present Non-Ford Prefix | First Two Letters of New Prefix |
|---|---|---|
| Distributor Point Sets | 1 | DP |
| Condensers | 2 | DC |
| Distributor Caps | 3 | DH |
| Distributor Rotors | 4 | DR |
| Ignition Coils | 5 | DG |
| Vacuum Controls | 6 | DD |
| Regulators | 8 | GR |
| Relays | 9 | MR |
| Armatures or Rotors—Alternator, Generator | 10 | GM |
| Brush Sets—Alternator, Generator | 11 | GB |
| Commutator End Head Assy.—Alternator, Generator | 12 | GH |
| Field Coils or Stators—Alternator, Generator | 13 | GC |
| Drive End Head Assy.—Alternator, Generator | 14 | GD |
| Switches and Switch Kits | 15 | SW |
| Armatures or Rotors—Starter Motor | 16 | SM |
| Brush Sets—Starter Motor | 17 | SB |
| Commutator End Head Assy.—Starter Motor | 19 | SH |
| Field Coils or Stators—Starter Motor | 20 | SC |
| Drive End Head Assy.—Starter Motor | 22 | SE |
| Bearings—Alternator, Distributor, Generator, Starter Motor | 24 | MC |
| Distributor Leads—Primary | — | DW |
| Ground | 26 | ML |
| Ignition Coil Resistors and Brackets | 32 | DY |
| Pulleys—Alternator, Generator | 34 | GP |
| Diodes—Alternator | 35 | GY |
| Wiper Motors | 38 | WM |
| Small Motors | 40 | MM |
| Distributors | 44 | DA |
| Generators | 45 | GA |
| Starter Motors | 46 | SA |
| Alternators | 51 | GL |
| Drive Assy. | 63 | SD |

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