GENERAL INFORMATION & MAINTENANCE

HOW TO USE THIS INFORMATION

The introductory part of this repair guide is intended to help you learn more about the inner workings of your Camaro while saving you money on its upkeep and operation.

The beginning of the repair guide will likely be referred to the most, since that is where you will find information for maintenance and tune-up. The other information deals with the more complex systems of your vehicle. Systems (from engine through brakes) are covered to the extent that the average do-it-yourselfer can attempt. This repair guide will not explain such things as rebuilding a differential because the expertise required and the special tools necessary make this uneconomical. It will, however, give you detailed instructions to help you change your own brake pads and shoes, replace spark plugs, and perform many more jobs that can save you money and help avoid expensive problems.

A secondary purpose of this repair guide is a reference for owners who want to understand their vehicle and/or their mechanics better.

WHERE TO BEGIN

Before removing any bolts, read through the entire procedure. This will give you the overall view of what tools and supplies will be required. So read ahead and plan ahead. Each operation should be approached logically and all procedures thoroughly understood before attempting any work.

If repair of a component is not considered practical, we tell you how to remove the part and then how to install the new or rebuilt replacement. In this way, you at least save labor costs.

AVOIDING TROUBLE

Many procedures in this repair guide require you to "label and disconnect ..." a group of lines, hoses or wires. Don't be think you can remember where everything goes - you won't. If you hook up vacuum or fuel lines incorrectly, the vehicle may run poorly, if at all. If you hook up electrical wiring incorrectly, you may instantly learn a very expensive lesson.

You don't need to know the proper name for each hose or line. A piece of masking tape on the hose and a piece on its fitting will allow you to assign your own label. As long as you remember your own code, the lines can be reconnected by matching your tags. Remember that tape will dissolve in gasoline or solvents; if a part is to be washed or cleaned, use another method of identification. A permanent felt-tipped marker or a metal scribe can be very handy for marking metal parts. Remove any tape or paper labels after assembly.

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MAINTENANCE OR REPAIR?

Maintenance includes routine inspections, adjustments, and replacement of parts which show signs of normal wear. Maintenance compensates for wear or deterioration. Repair implies that something has broken or is not working. A need for a repair is often caused by lack of maintenance. for example: draining and refilling automatic transmission fluid is maintenance recommended at specific intervals. Failure to do this can shorten the life of the transmission/transaxle, requiring very expensive repairs. While no maintenance program can prevent items from eventually breaking or wearing out, a general rule is true: MAINTENANCE IS CHEAPER THAN REPAIR.

Two basic mechanic's rules should be mentioned here. First, whenever the left side of the vehicle or engine is referred to, it means the driver's side. Conversely, the right side of the vehicle means the passenger's side. Second, screws and bolts are removed by turning counterclockwise, and tightened by turning clockwise unless specifically noted.

Safety is always the most important rule. Constantly be aware of the dangers involved in working on an automobile and take the proper precautions. Please refer to the information in this section regarding SERVICING YOUR VEHICLE SAFELY and the SAFETY NOTICE on the acknowledgment page.

AVOIDING THE MOST COMMON MISTAKES

Pay attention to the instructions provided. There are 3 common mistakes in mechanical work:

1. Incorrect order of assembly, disassembly or adjustment. When taking something apart or putting it together, performing steps in the wrong order usually just costs you extra time; however, it CAN break something. Read the entire procedure before beginning. Perform everything in the order in which the instructions say you should, even if you can't see a reason for it. When you're taking apart something that is very intricate, you might want to draw a picture of how it looks when assembled in order to make sure you get everything back in its proper position. When making adjustments, perform them in the proper order. One adjustment possibly will affect another.
2. Overtorquing (or undertorquing). While it is more common for overtorquing to cause damage, undertorquing may allow a fastener to vibrate loose causing serious damage. Especially when dealing with aluminum parts, pay attention to torque specifications and utilize a torque wrench in assembly. If a torque figure is not available, remember that if you are using the right tool to perform the job, you will probably not have to strain yourself to get a fastener tight enough. The pitch of most threads is so slight that the tension you put on the wrench will be multiplied many times in actual force on what you are tightening.

There are many commercial products available for ensuring that fasteners won't come loose, even if they are not torqued just right (a very common brand is

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Loctite). If you're worried about getting something together tight enough to hold, but loose enough to avoid mechanical damage during assembly, one of these products might offer substantial insurance. Before choosing a threadlocking compound, read the label on the package and make sure the product is compatible with the materials, fluids, etc. involved.

3. Crossthreading. This occurs when a part such as a bolt is screwed into a nut or casting at the wrong angle and forced. Crossthreading is more likely to occur if access is difficult. It helps to clean and lubricate fasteners, then to start threading the bolt, spark plug, etc. with your fingers. If you encounter resistance, unscrew the part and start over again at a different angle until it can be inserted and turned several times without much effort. Keep in mind that many parts have tapered threads, so that gentle turning will automatically bring the part you're threading to the proper angle. Don't put a wrench on the part until it's been tightened a couple of turns by hand. If you suddenly encounter resistance, and the part has not seated fully, don't force it. Pull it back out to make sure it's clean and threading properly.

Be sure to take your time and be patient, and always plan ahead. Allow yourself ample time to perform repairs and maintenance.

TOOLS AND EQUIPMENT

Without the proper tools and equipment it is impossible to properly service your vehicle. It would be virtually impossible to catalog every tool that you would need to perform all of the operations in this repair guide. It would be unwise for the amateur to rush out and buy an expensive set of tools on the theory that he/she may need one or more of them at some time.

The best approach is to proceed slowly, gathering a good quality set of those tools that are used most frequently. Don't be misled by the low cost of bargain tools. It is far better to spend a little more for better quality. Forged wrenches, 6 or 12-point sockets and fine tooth ratchets are by far preferable to their less expensive counterparts. As any good mechanic can tell you, there are few worse experiences than trying to work on a vehicle with bad tools. Your monetary savings will be far outweighed by frustration and mangled knuckles.

Begin accumulating those tools that are used most frequently: those associated with routine maintenance and tune-up. In addition to the normal assortment of screwdrivers and pliers, you should have the following tools:

- Wrenches/sockets and combination open end/box end wrenches in sizes $^{1}/_{8}$ $^{3}/_{4}$ in. and/or 3mm-19mm $^{13}/_{16}$ in. or $^{5}/_{8}$ in. spark plug socket (depending on plug type).

If possible, buy various length socket drive extensions. Universal-joint and wobble extensions can be extremely useful, but be careful when using them, as they can change the amount of torque applied to the socket.

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- Jackstands for support.
- Oil filter wrench.
- Spout or funnel for pouring fluids.
- Grease gun for chassis lubrication (unless your vehicle is not equipped with any grease fittings)
- Hydrometer for checking the battery (unless equipped with a sealed, maintenance-free battery).
- A container for draining oil and other fluids.
- Rags for wiping up the inevitable mess.



Fig. 1: All but the most basic procedures will require an assortment of ratchets and sockets



Fig. 2: In addition to ratchets, a good set of wrenches and hex keys will be necessary

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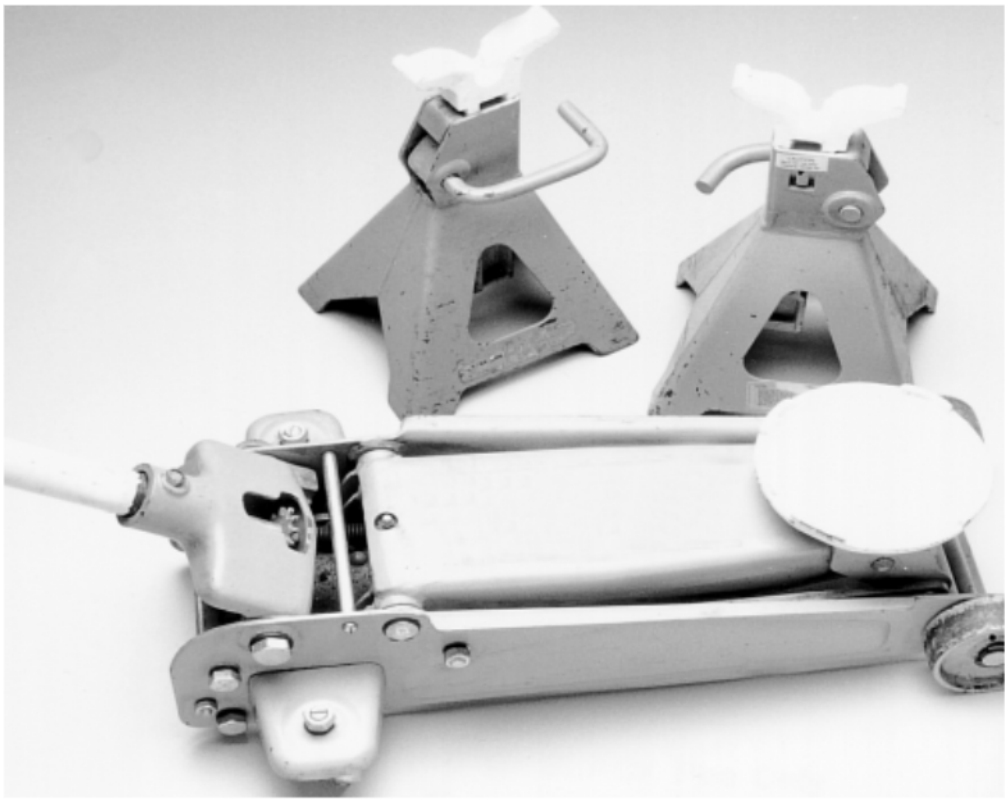


Fig. 3: A hydraulic floor jack and a set of jackstands are essential for lifting and supporting the vehicle



Fig. 4: An assortment of pliers, grippers and cutters will be handy for old rusted parts and stripped bolt heads

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Fig. 5: Various drivers, chisels and prybars are great tools to have in your toolbox



Fig. 6: Many repairs will require the use of a torque wrench to assure the components are properly fastened

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In addition to the above items there are several others that are not absolutely necessary, but handy to have around. These include an equivalent oil absorbent gravel, like cat litter, and the usual supply of lubricants, antifreeze and fluids. This is a basic list for routine maintenance, but only your personal needs and desire can accurately determine your list of tools.

After performing a few projects on the vehicle, you'll be amazed at the other tools and non-tools on your workbench. Some useful household items are: a large turkey baster or siphon, empty coffee cans and ice trays (to store parts), a ball of twine, electrical tape for wiring, small rolls of colored tape for tagging lines or hoses, markers and pens, a note pad, golf tees (for plugging vacuum lines), metal coat hangers or a roll of mechanic's wire (to hold things out of the way), dental pick or similar long, pointed probe, a strong magnet, and a small mirror (to see into recesses and under manifolds).

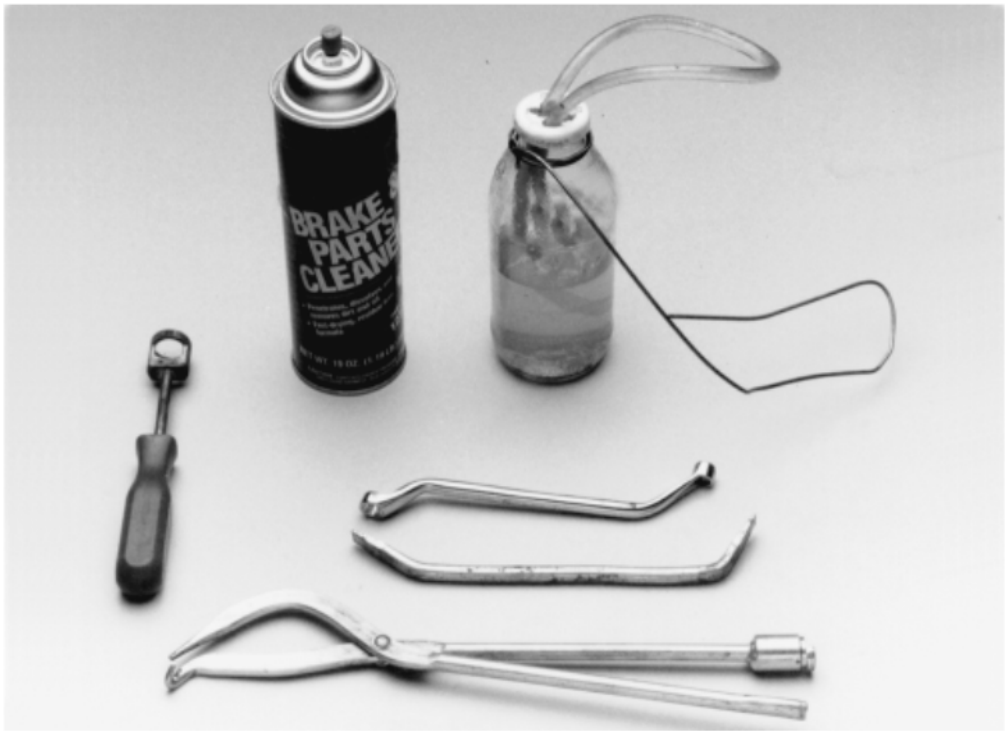


Fig. 7: Although not always necessary, using specialized brake tools will save time

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Fig. 8: A few inexpensive lubrication tools will make maintenance easier



Fig. 9: Various pullers, clamps and separator tools are needed for many larger, more complicated repairs

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Fig. 10: A variety of tools and gauges should be used for spark plug gapping and installation



Fig. 11: Inductive type timing light

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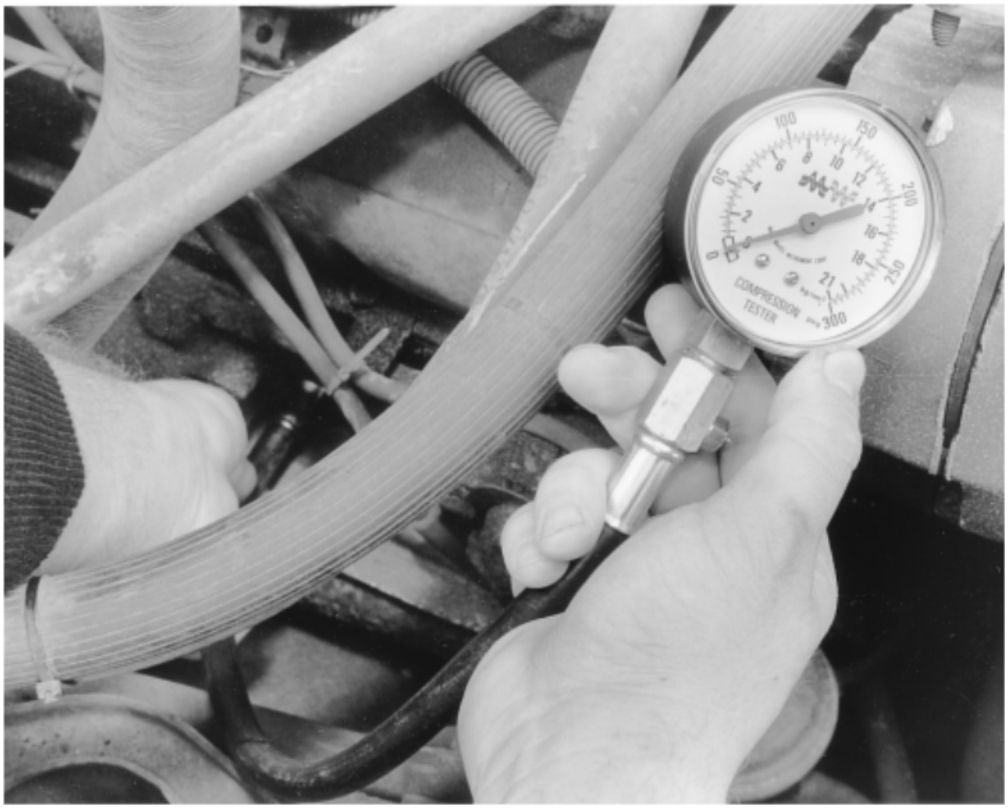
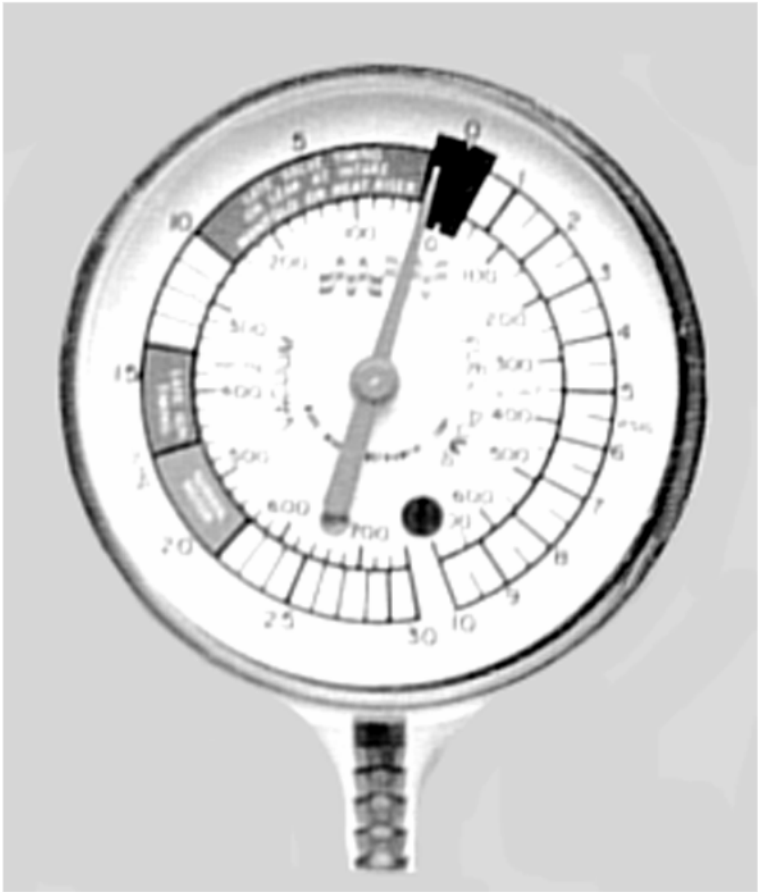


Fig. 12: A screw-in type compression gauge is recommended for compression testing


Fig. 13: A vacuum/pressure tester is necessary for many testing procedures

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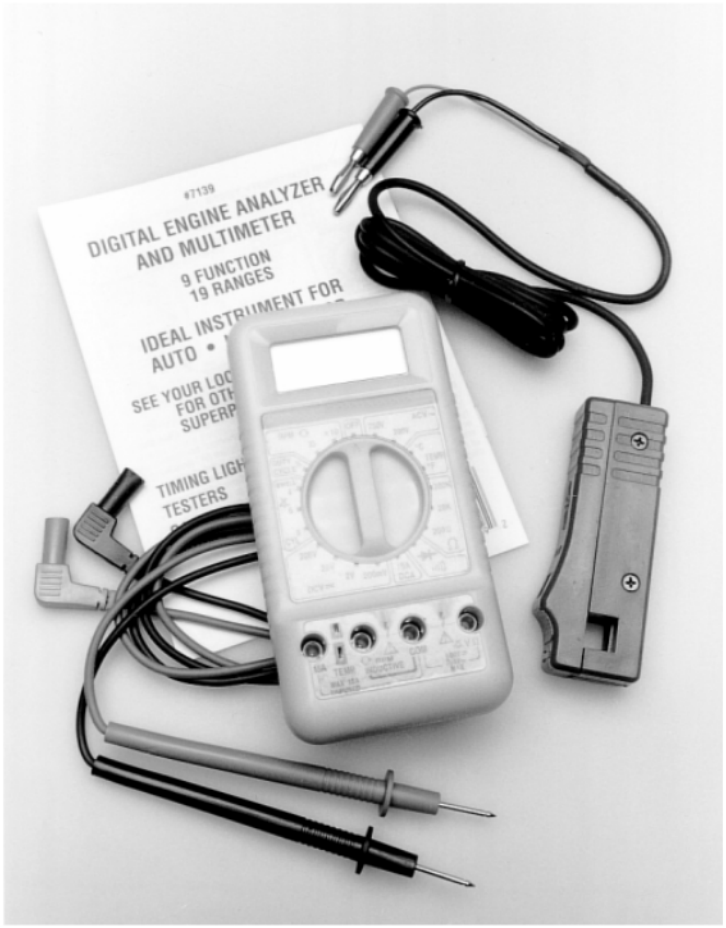


Fig. 14: Most modern automotive multimeters incorporate many helpful features



Fig. 15: Proper information is vital, so always have a repair guide or printout of this material handy

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A more advanced set of tools, suitable for tune-up work, can be drawn up easily. While the tools are slightly more sophisticated, they need not be outrageously expensive. There are several inexpensive tach/dwell meters on the market that are every bit as good for the average mechanic as a professional model. Just be sure that it goes to a least 1200-1500 rpm on the tach scale and that it works on 4, 6 and 8-cylinder engines. The key to these purchases is to make them with an eye towards adaptability and wide range. A basic list of tune-up tools could include:

- Tach/dwell meter.
- Spark plug wrench and gapping tool.
- Feeler gauges for valve adjustment.
- Timing light.

The choice of a timing light should be made carefully. A light which works on the DC current supplied by the vehicle's battery is the best choice; it should have a xenon tube for brightness. On any vehicle with an electronic ignition system, a timing light with an inductive pickup that clamps around the No. 1 spark plug cable is preferred.

In addition to these basic tools, there are several other tools and gauges you may find useful. These include:

- Compression gauge. The screw-in type is slower to use, but eliminates the possibility of a faulty reading due to escaping pressure.
- Manifold vacuum gauge.
- 12V test light.
- A combination volt/ohmmeter
- Induction Ammeter. This is used for determining whether or not there is current in a wire. These are handy for use if a wire is broken somewhere in a wiring harness.

As a final note, you will probably find a torque wrench necessary for all but the most basic work. The beam type models are perfectly adequate, although the newer click types (breakaway) are easier to use. The click type torque wrenches tend to be more expensive. Also keep in mind that all types of torque wrenches should be periodically checked and/or recalibrated. You will have to decide for yourself which better fits your pocketbook, and purpose.

SPECIAL TOOLS

Normally, the use of special factory tools is avoided for repair procedures, since these are not readily available for the do-it-yourself mechanic. When it is possible to perform the job with more commonly available tools, it will be pointed out, but occasionally, a special tool was designed to perform a specific function and should be used. Before substituting another tool, you should be convinced that neither your safety nor the performance of the vehicle will be compromised.

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Special tools can usually be purchased from an automotive parts store or from your dealer. In some cases special tools may be available directly from the tool manufacturer.

SERVICING YOUR VEHICLE SAFELY

It is virtually impossible to anticipate all of the hazards involved with automotive maintenance and service, but care and common sense will prevent most accidents.

The rules of safety for mechanics range from "don't smoke around gasoline," to "use the proper tool(s) for the job." The trick to avoiding injuries is to develop safe work habits and to take every possible precaution.

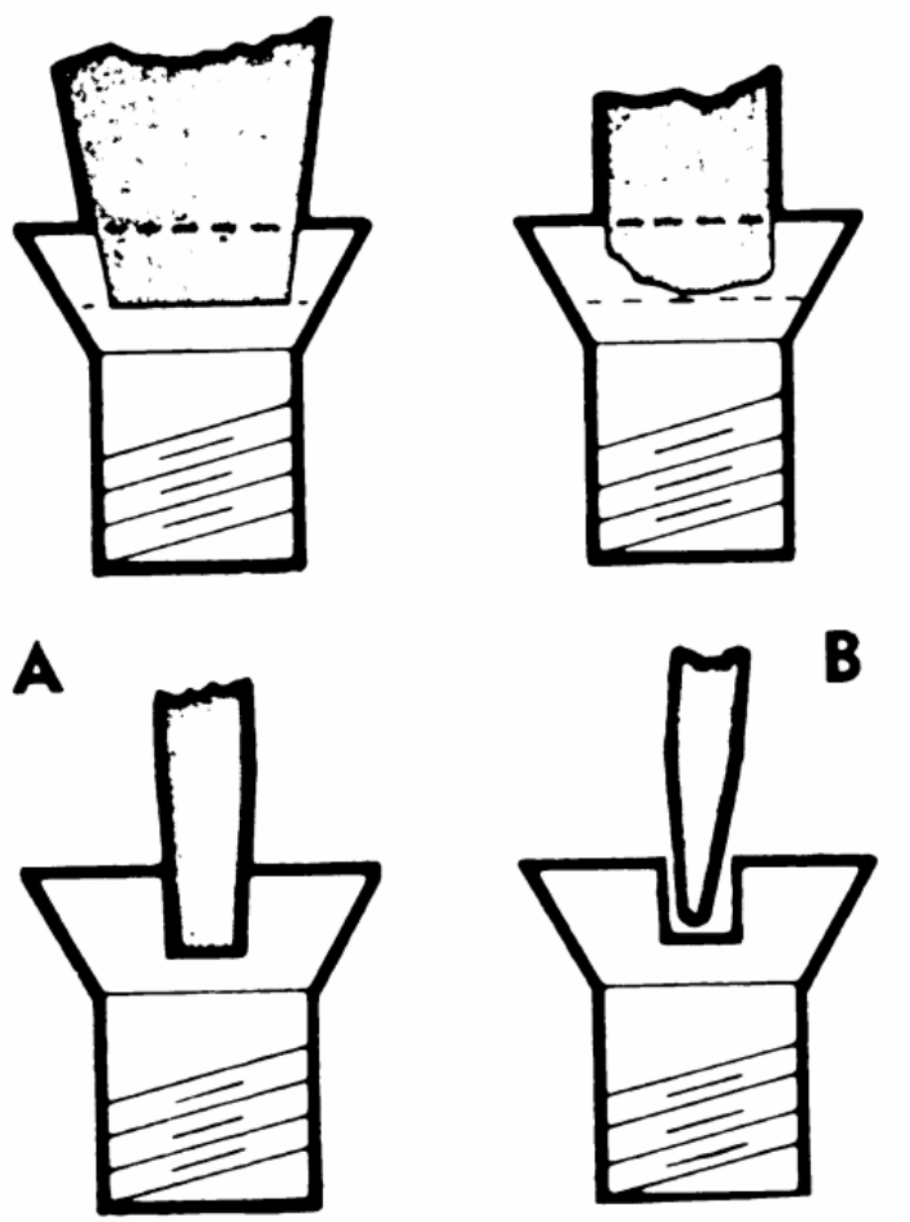


Fig. 1: Screwdrivers should be kept in good condition to prevent injury or damage which could result if the blade slips from the screw

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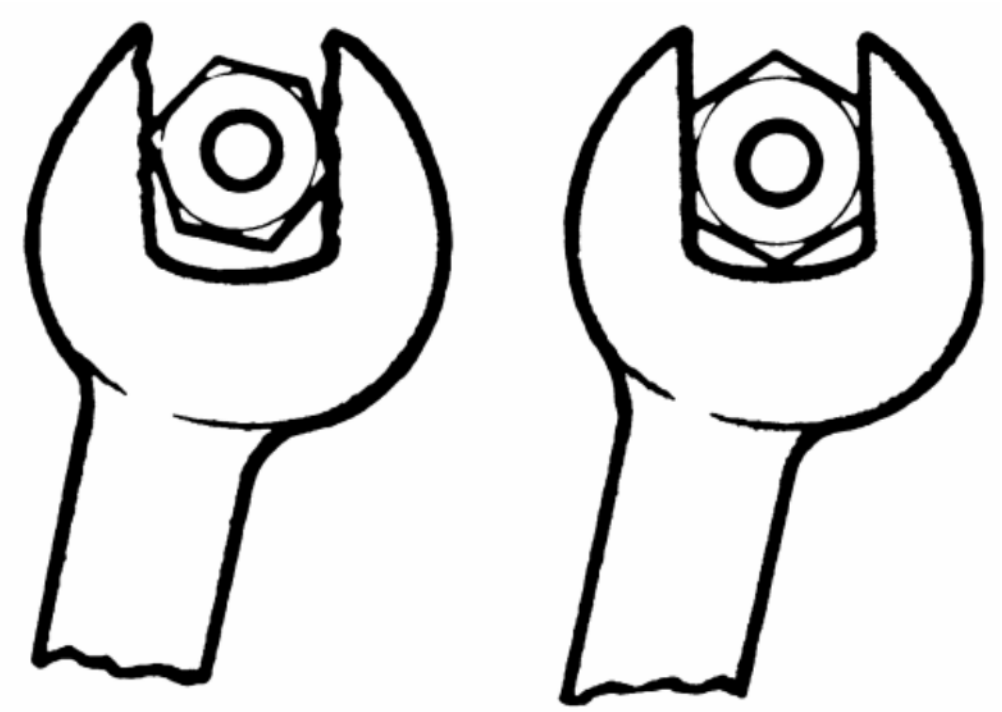


Fig. 2: Using the correct size wrench will help prevent the possibility of rounding off a nut

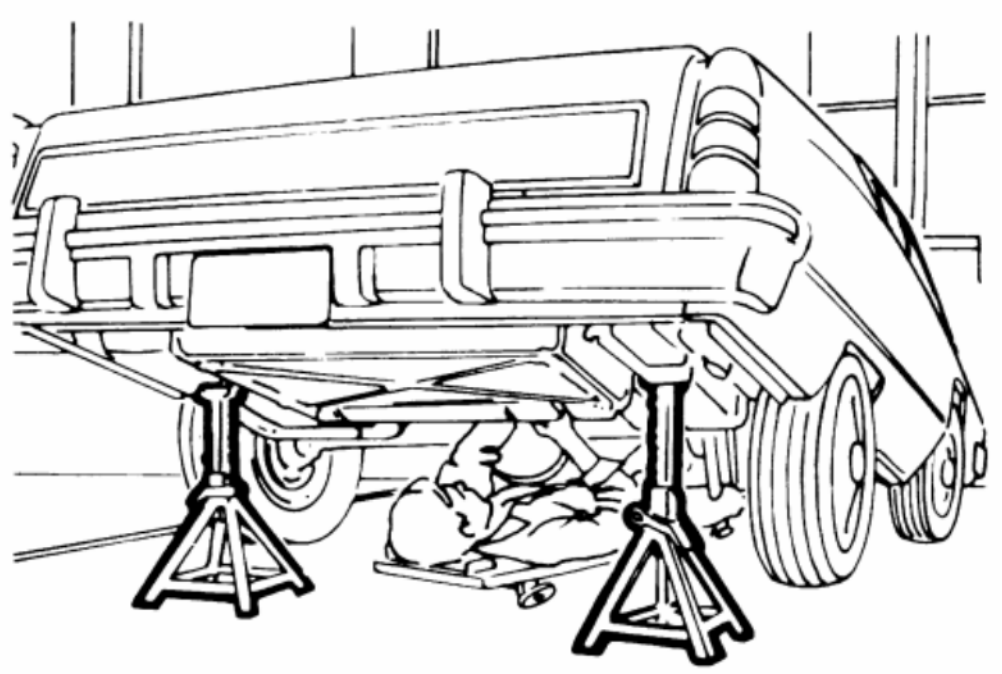


Fig. 3: NEVER work under a vehicle unless it is supported using safety stands (jackstands)

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FLUIDS AND LUBRICANTS

FLUID DISPOSAL

Used fluids such as engine oil, transmission fluid, antifreeze and brake fluid are hazardous wastes and must be disposed of properly. Before draining any fluids, consult with your local authorities; in many areas waste oil, etc. is being accepted as a part of recycling programs. A number of service stations and auto parts stores are also accepting waste fluids for recycling.

Be sure of the recycling center's policies before draining any fluids, as many will not accept different fluids that have been mixed together.

FUEL RECOMMENDATIONS

The engine is designed to operate on unleaded gasoline ONLY and is essential for the proper operation of the emission control system. The use of unleaded fuel will reduce spark plug fouling, exhaust system corrosion and engine oil deterioration.

In most parts of the United States, fuel with an octane rating of 87 should be used; in high altitude areas, fuel with an octane rating as low as 85 may be used.

In some areas, fuel consisting of a blend of alcohol may be used; this blend of gasoline and alcohol is known as gasohol. When using gasohol, never use blends exceeding 10% ethanol (ethyl or grain alcohol) or 5% methanol (methyl or wood alcohol).

The use of fuel with excessive amounts of alcohol may jeopardize the new car and emission control system warranties.

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ENGINE OIL RECOMMENDATIONS

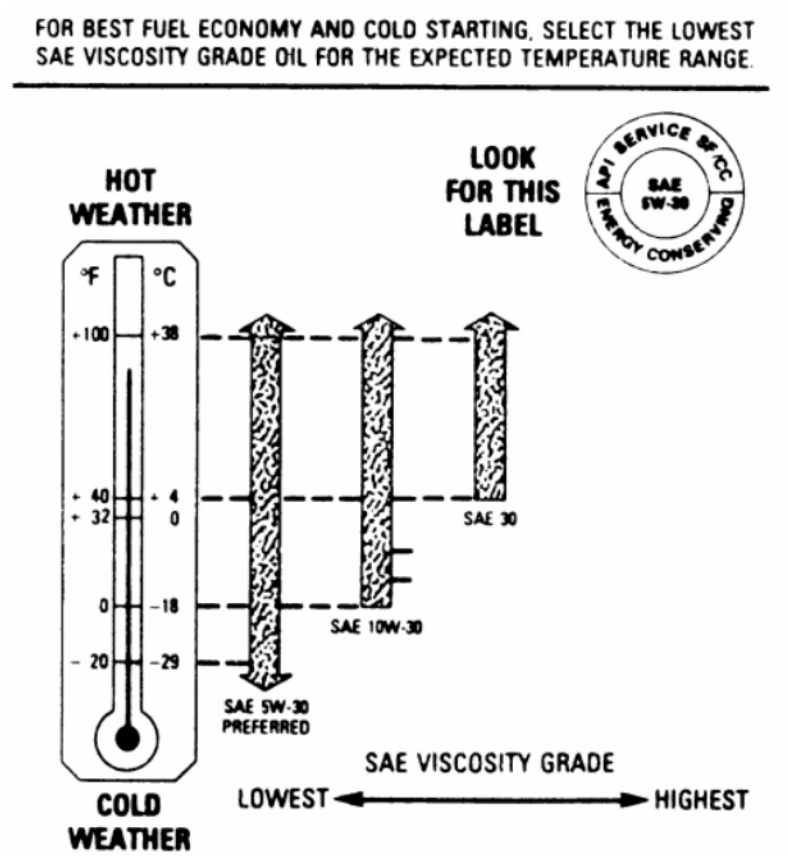


Fig. 1: Recommended SAE viscosity grade engine oil



Fig. 2: Look for the API oil identification label when choosing your engine oil

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Use only oil which has the API (American Petroleum Institute) designation *SG*, *CC*, *CD*, *SG/CC* or *SG/CD*.

Since fuel economy is effected by the viscosity (thickness) of the engine oil, it is recommended to select an oil with reference to the outside temperature. For satisfactory lubrication, use a lower viscosity oil for colder temperatures and a higher viscosity oil for warmer temperatures.

ENGINE

OIL LEVEL CHECK

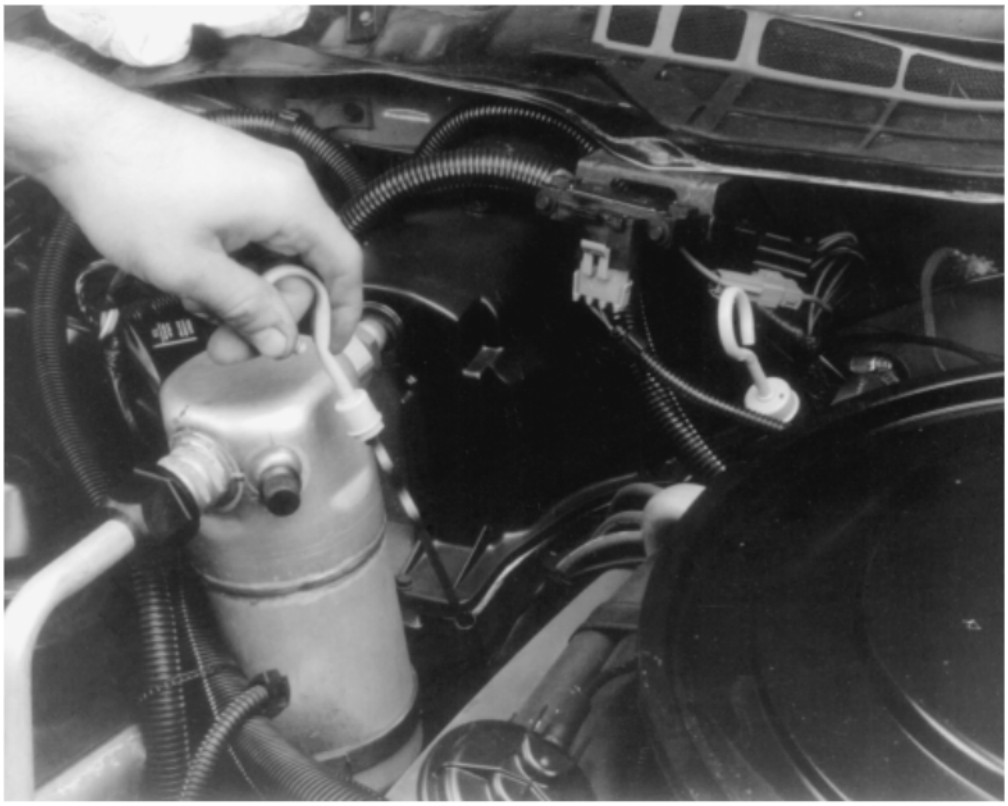


Fig. 1: Wipe the dipstick clean and insert it into the dipstick tube, making sure it is fully inserted

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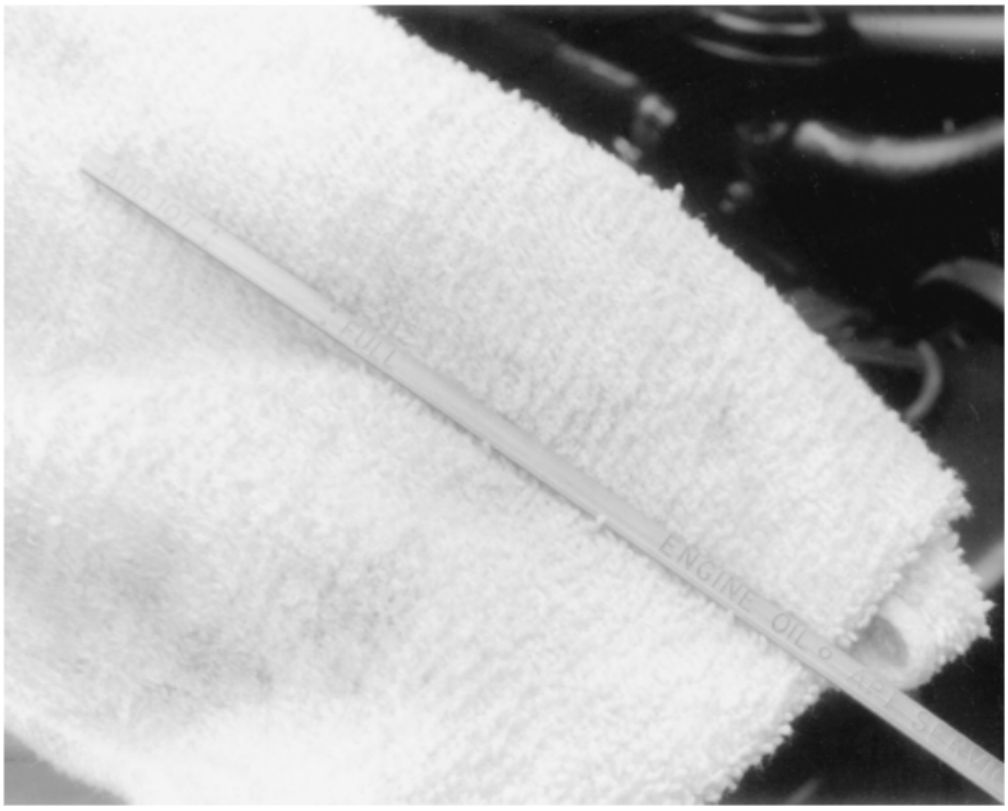


Fig. 2: While holding the dipstick level, read the oil mark on the stick

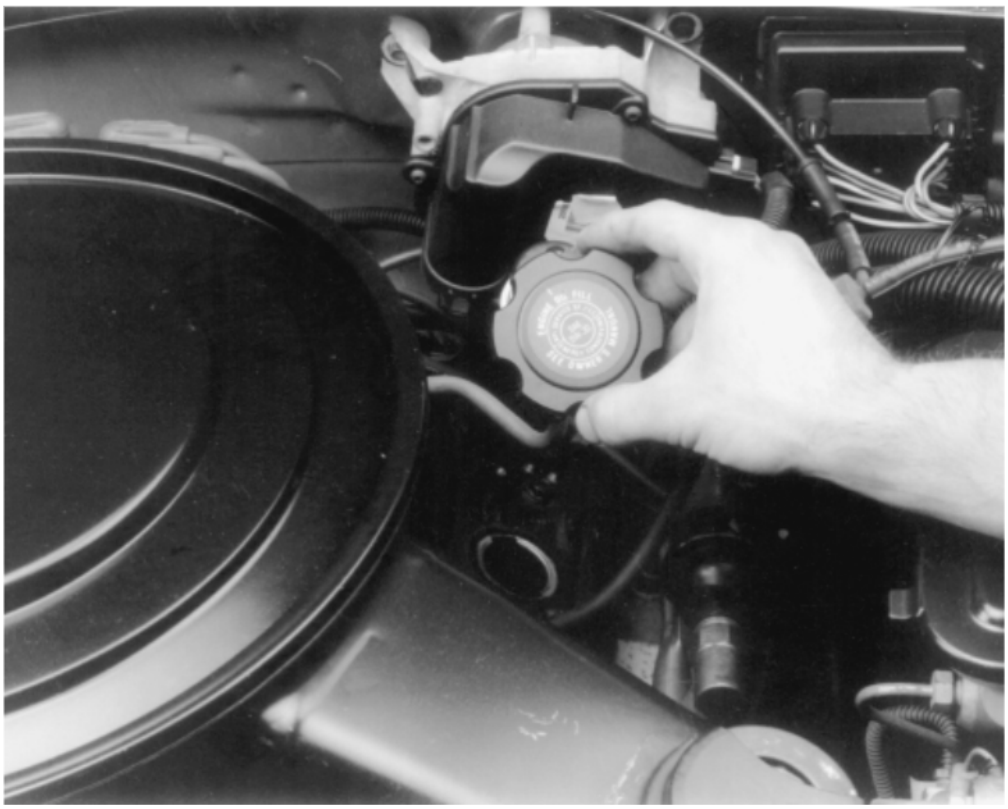


Fig. 3: Remove the oil filler cap from the valve cover. Most filler caps are marked with the proper type of fluid

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Fig. 4: Add clean oil to the engine to achieve the correct level, indicated on dipstick. Do not overfill

Your engine oil should be checked at regular intervals (such as every fuel stop). Check the engine oil as follows:

1. Make sure the car is parked on level ground.
2. When checking the oil level it is best for the engine to be at normal operating temperature, although checking the oil immediately after stopping will lead to a false reading. Wait a few minutes after turning off the engine to allow the oil to drain back into the crankcase.
3. Open the hood and locate the dipstick which should be on either the passenger's side for the V8 engine or driver's side for the L4 and V6 engines. Pull the dipstick from its tube, wipe it clean and then reinsert it.
4. Pull the dipstick out again and, holding it horizontally, read the oil level. The oil should be between the *FULL* and *ADD* marks on the dipstick. If the oil is below the *ADD* mark, add oil of the proper viscosity through the capped opening in the top of the cylinder head cover.
5. Replace the dipstick and check the oil level again after adding any oil. Be careful not to overfill the crankcase. Approximately 1 quart (0.9L) of oil will raise the level from the *ADD* mark to the *FULL* mark. Excess oil will generally be consumed at an accelerated rate.

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ENGINE OIL AND FILTER CHANGE

Under normal operating conditions, the oil is to be changed every 7,500 miles (12,000km) or 12 months, whichever occurs first.

Although the manufacturer recommends changing the filter at the first oil change and then at every other oil change, (unless 12 months pass between changes), The editors of this information recommend changing the filter with each service. It is a small price to pay for extra protection.

When driving conditions frequently include dusty or polluted areas, trailer towing, idling for long periods of time, or low speed operation, or when operating at temperatures below freezing or driving short distances (under 4 miles or 6.4km), change the oil and filter more frequently. Under these circumstances, oil has a greater chance of building up sludge and contaminants which could damage your engine. If your vehicle use fits into one or more of these categories, (as it does for most vehicles), it is suggested that the oil and filter be changed every 3,000 miles (1361km) or 3 months, whichever comes first.

The oil should be disposed of properly after it is drained from the vehicle. Store the oil in a suitable container and take the container to an official oil recycling station. Most gas stations or oil and lube facilities will take the used oil at little or no expense to you.

Oil should always be changed after the engine has been running long enough to bring it up to normal operating temperature. Hot oil will flow more easily and will carry more contaminants than will cold oil. The oil drain plug is located on the bottom of the oil pan (bottom of the engine, underneath the car). The oil filter is located on the left side of most engines covered by this information. To change the oil and filter:

1. Run the engine until it reaches normal operating temperature.
2. Raise the front of the vehicle and support it safely using a suitable pair of jackstands.
3. Slide a drain pan of a least 6 quarts capacity under the oil pan. Wipe the drain plug and surrounding area clean using an old rag.

CAUTION - The EPA warns that prolonged contact with used engine oil may cause a number of skin disorders, including cancer! You should make every effort to minimize your exposure to used engine oil. Protective gloves should be worn when changing the oil. Wash your hands and any other exposed skin areas as soon as possible after exposure to used engine oil. Soap and water, or waterless hand cleaner should be used.

4. Loosen the drain plug using a ratchet, short extension and socket or a box-wrench. Turn the plug out by hand, using a rag to shield your fingers from the hot oil. By keeping an inward pressure on the plug as you unscrew it, oil won't escape past the threads and you can remove it without being burned by hot oil.

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If the drain plug is equipped with a removable washer or gasket, check its condition and replace, if necessary, to provide a leakproof seal.

5. Quickly withdraw the plug and move your hands out of the way. Allow the oil to drain completely into the pan, then install and carefully tighten the drain plug. Be careful not to overtighten the drain plug, otherwise you'll be buying a new pan or a replacement plug for stripped threads.

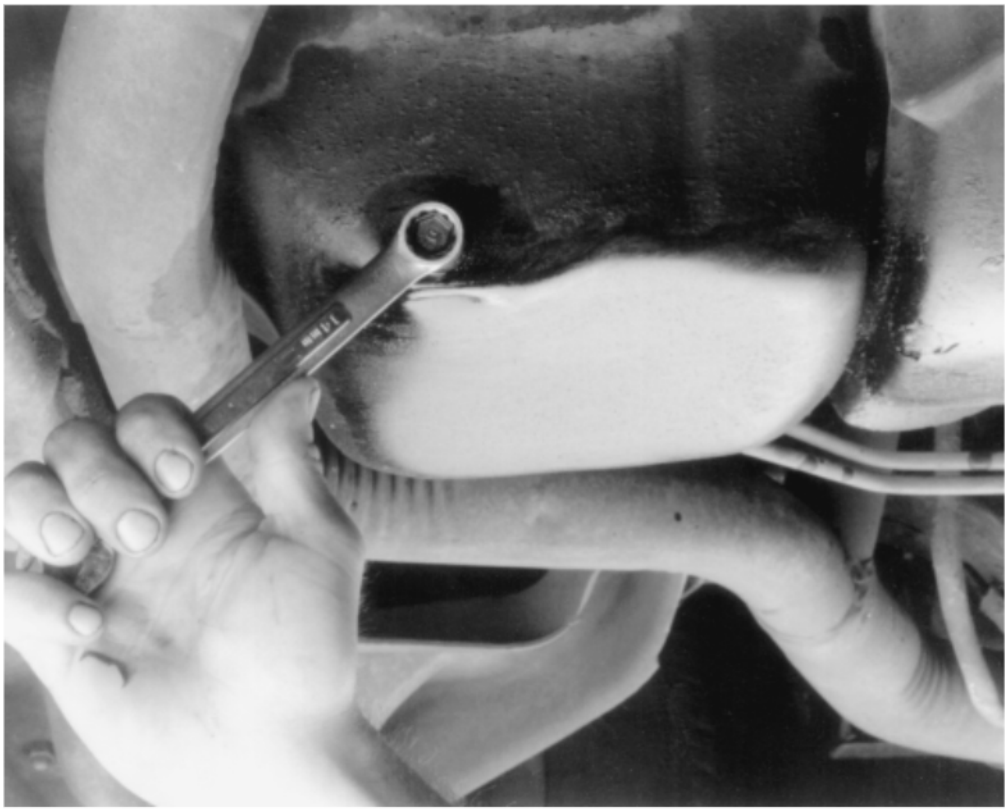


Fig. 5: Use a wrench or a socket to loosen the oil pan drain plug, but use care, the engine oil may be very hot

Although some manufacturers recommend changing the oil filter every other oil change, we recommend the filter be changed each time you change your oil. The old filter will contain up to a quart of dirty oil, which will contaminate the clean oil. Also, the benefit of clean oil is quickly lost if the old filter is clogged. The added protection for your engine far outweighs the few dollars saved by using an old filter.

6. Move the drain pan under the oil filter. Use a strap-type or cap-type filter wrench to loosen and remove the oil filter from the engine block. Keep in mind that it's holding about one quart of hot, dirty oil.
7. Empty the old filter into the drain pan and properly dispose of the filter.
8. Using a clean rag, wipe off the filter adapter on the engine block. Be sure that the rag doesn't leave any lint which could clog an oil passage.
9. Coat the rubber gasket on the filter with fresh oil, then spin it onto the engine by hand; when the gasket touches the adapter surface, give it another $^{1}/_{3}$-$^{1}/_{2}$ turn, (but no more, or you'll squash the gasket and it will leak).

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Fig. 6: Use an oil filter wrench to loosen, but not to install a filter

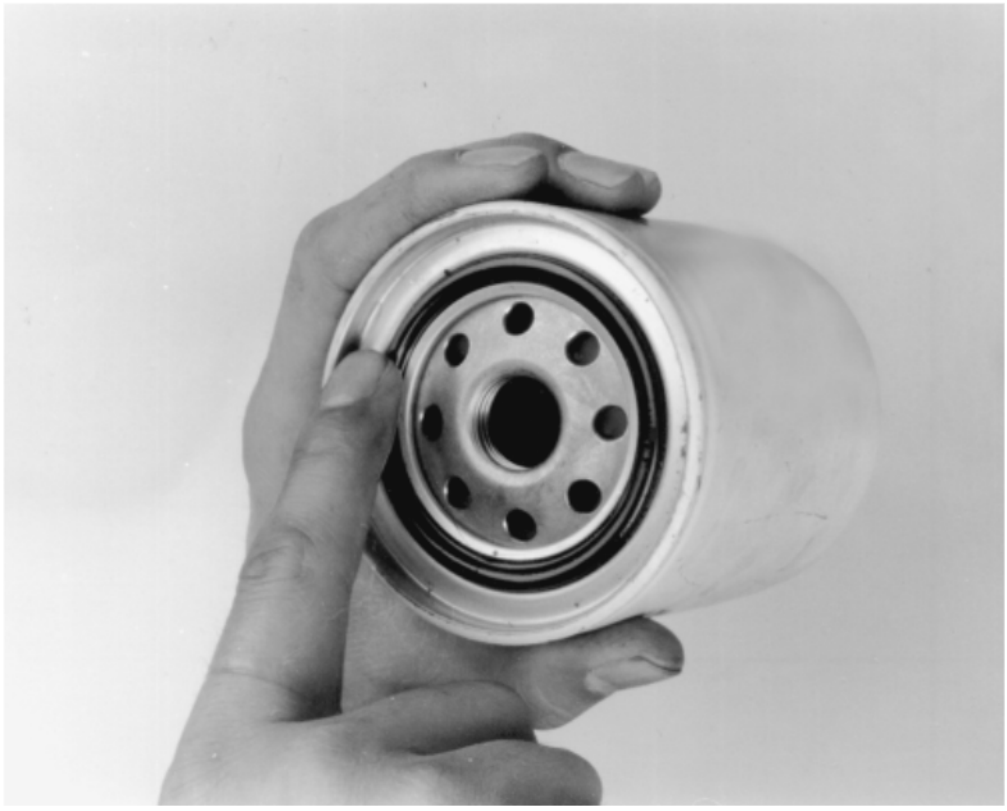


Fig. 7: Before installing a new oil filter, lightly coat the rubber gasket with clean oil

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10. Refill the engine with the correct amount of fresh oil. Please refer to the Capacities chart at the end of this section.
11. Check the oil level on the dipstick. It is normal for the level to be a bit above the full mark. Start the engine and allow it to idle for a few minutes.

CAUTION - Do not run the engine above idle speed until it has built up oil pressure, as indicated when the oil light goes out

12. Shut off the engine and allow the oil to flow back to the crankcase for a minute, then recheck the oil level. Check around the filter and drain plug for any leaks, and correct as necessary.

MANUAL TRANSMISSIONS

FLUID RECOMMENDATIONS

- 1982-85 4-speed manual transmissions - SAE 80W/90 GL-5 gear lubricant
- 1986-87 4-speed manual transmission - Dexron®®II automatic transmission fluid
- 1982-84 5-speed manual transmissions - use SAE 80W/90 GL-5 gear lubricant (SAE 80W GL-5 in Canada)
- 1985-92 5-speed manual transmissions - Dexron®II automatic transmission fluid

LEVEL CHECK

The oil in the manual transmission should be checked every 12 months or 15,000 miles.

1. Raise the car and support on jackstands as close to level as possible.
2. Remove the filler plug from the side of the transmission housing.
3. If lubricant begins to trickle out of the hole, there is enough and you need not go any further. Otherwise, carefully insert your finger (watch out for sharp threads) and check to see if the oil is up to the edge of the hole.
4. If not, add oil through the hole until the level is at the edge of the hole. Most lubricants come in a plastic squeeze bottle with a nozzle; making additions simple.
5. Install and tighten the filler plug.

DRAIN AND REFILL

The fluid in the manual transmission does not require changing. If you do choose to change the transmission fluid, the fluid can be drained out through the lower drain plug hole on the side of the transmission. Fill the transmission with the recommended lubricant to the bottom of the filler plug hole and install the filler plug.

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AUTOMATIC TRANSMISSION

FLUID RECOMMENDATIONS

Use only Dexron®II Automatic Transmission Fluid.

LEVEL CHECK



Fig. 1: Read automatic transmission fluid level on dipstick and add, as required

Check the automatic transmission fluid level at each oil change. Driving with too much or too little transmission fluid can damage the transmission. The dipstick can be found in the rear of the engine compartment. The fluid level should be checked only when the transmission is at normal operating temperature. If your Camaro has been driven at highway speeds for a long time, in city traffic in hot weather, or pulling a trailer, wait for about 30 minutes for the fluid to cool down so a correct reading can be read.

1. Park the car on a level surface, with the parking brake on. Start the engine and let it idle for about 15 minutes. Move the transmission through all the gears and then back to *P*.
2. Remove the dipstick and carefully touch the wet end of the dipstick to see if the fluid is cool, warm, or hot. Wipe it clean and then reinsert it firmly. Be sure that it has been pushed all the way in. Remove the dipstick again and check the fluid level while holding it horizontally.
    a. If fluid is cool (room temperature), the level should be about $^{1}/_{8}$-$^{3}/_{8}$ in. (3-10mm) below the ADD mark.

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b. If fluid is warm, the level should be close to the *ADD* mark, either above or below.
c. If fluid is too hot to touch, the level should be at the *FULL* mark.

3. If the fluid level is low, add Dexron®II automatic transmission fluid (ATF) through the dipstick tube. This is easily done with the aid of a funnel. Check the level often as you are filling the transmission. Be extremely careful not to overfill it. Overfilling will cause slippage, seal damage and overheating. Approximately 1 pint (0.473L) of ATF will raise the fluid level from one notch/line to the other.

If the fluid on the dipstick appears discolored (brown or black), or smells burnt, serious transmission troubles, probably due to overheating, should be suspected. The transmission should be inspected by a qualified technician to locate the cause of the burnt fluid.

DRAIN AND REFILL

Please refer to the "PAN AND FILTER SERVICE" procedure listed in this section.

PAN AND FILTER SERVICE

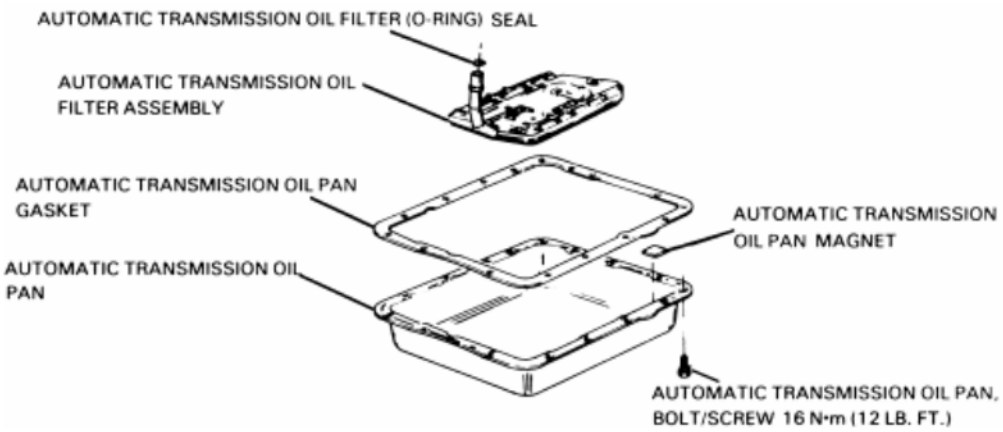
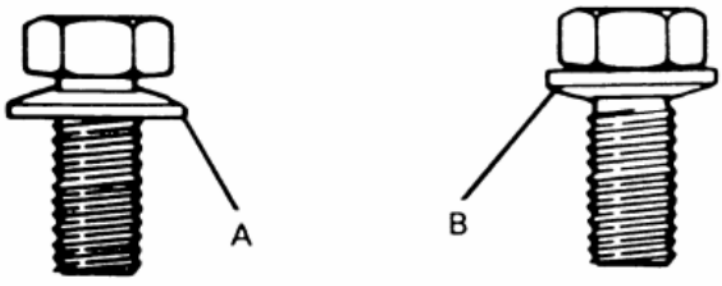


Fig. 2: Typical automatic transmission oil pan and oil filter assembly.



A AUTOMATIC TRANSMISSION OIL PAN BOLT/SCREW AND CONICAL WASHER ASSEMBLY IS REUSABLE
B AUTOMATIC TRANSMISSION OIL PAN BOLT/SCREW AND CONICAL WASHER ASSEMBLY IS NOT REUSABLE

Fig. 3: Automatic transmission oil pan bolt and conical washer assembly

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The automatic transmission fluid and filter should be changed every 15,000 miles (24,000km) if your Camaro is driven in heavy city traffic in hot weather, in hilly or mountainous terrain, frequent trailer pulling, or uses such as found in taxi, police car or delivery service. If your Camaro is driven under other than listed above conditions, change the fluid and filter every 30,000 miles (48,300km).

1. Raise and support the car on jackstands. Place an oil catch pan under the transmission.
2. Remove the oil pan bolts from the front and sides only.
3. Loosen rear oil pan bolts approximately 4 turns.

WARNING - Do not damage the transmission case or oil pan sealing surfaces.

4. Lightly tap the oil pan with a rubber mallet or gently pry it downward to allow fluid to drain.
5. Remove the remaining oil pan bolts, then remove the oil pan and pan gasket.
6. Remove the filter and seal.
7. Clean the transmission case and oil pan gasket surfaces with suitable solvent and air dry. Make sure to remove all traces of the old gasket.

To install:

8. Coat the seal with a small amount of Transjel®.
9. Install the new seal onto the filter.
10. Install the new filter into the case.
11. Install the oil pan and new gasket.

On 1991 and later vehicles, inspect the oil pan screws and washer assemblies. The screws must not be used if the conical washer is reversed. Failure to replace the screw and washer assembly may result in improper fastening of system components.

12. Install the oil pan bolts and tighten them to 12 ft. lbs. (16 Nm).
13. Lower the car.
14. Fill the transmission to proper level with Dexron®II fluid.
15. Check cold fluid level reading for initial fill. Do not overfill the transmission.
16. Follow the fluid level check procedure described before.
17. Check the oil pan gasket for leaks.

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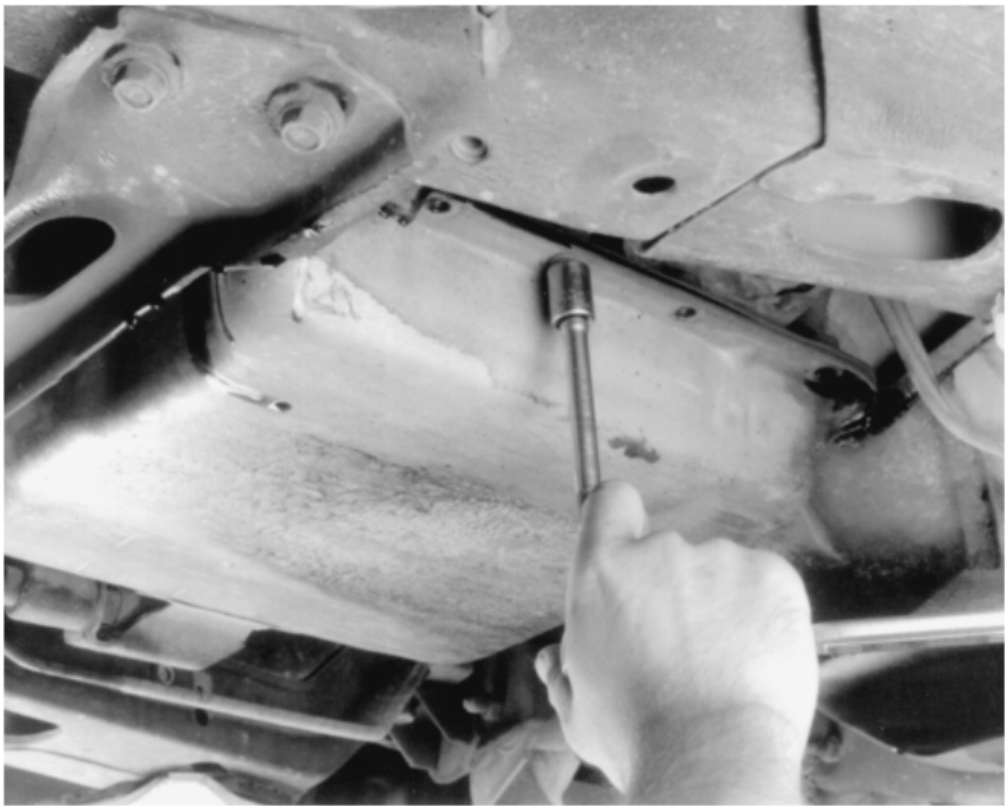


Fig. 4: Removing side transmission oil pan bolts

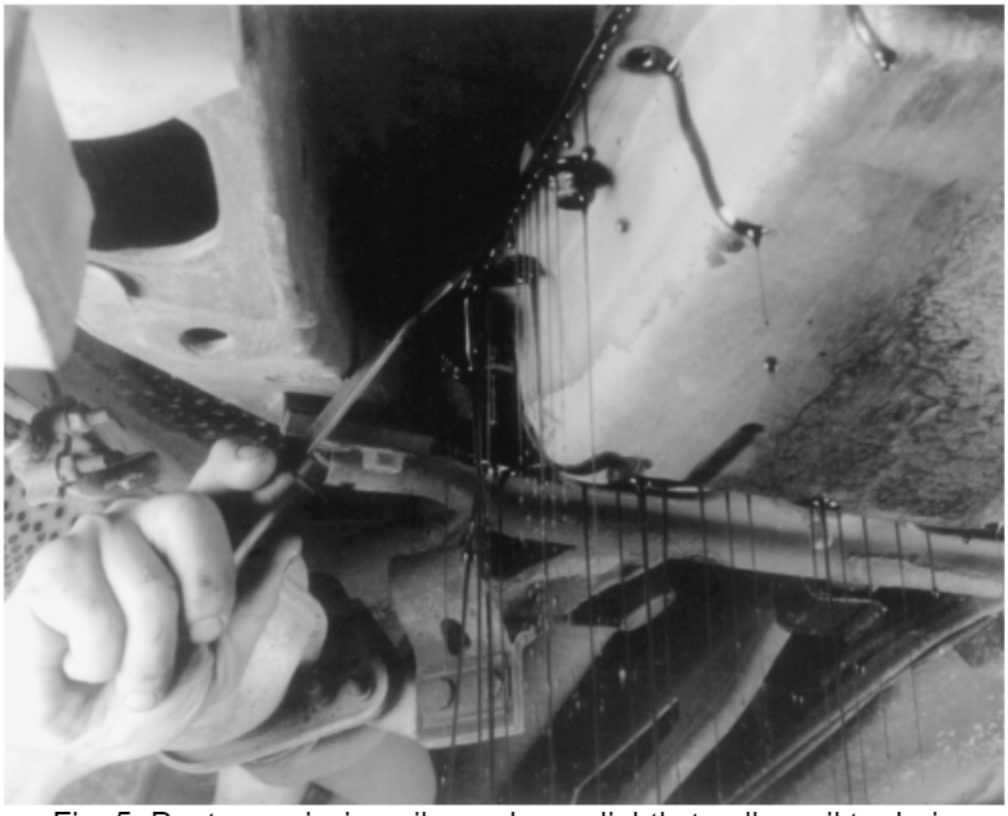


Fig. 5: Pry transmission oil pan down slightly to allow oil to drain

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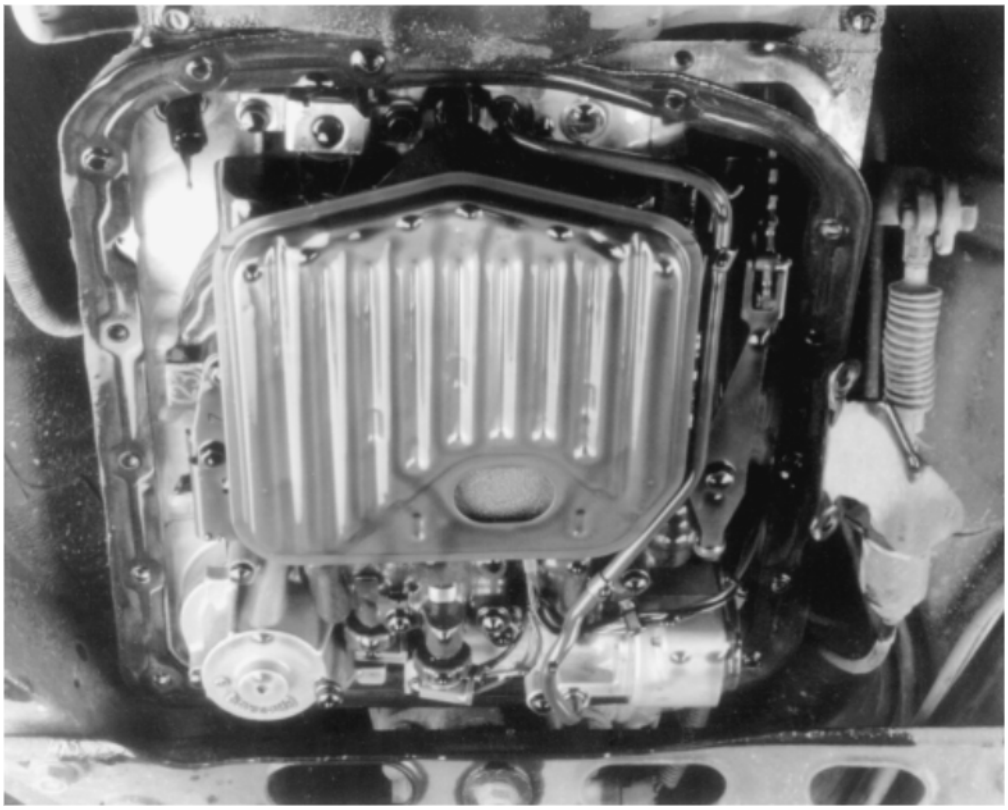


Fig. 6: Remove oil pan and allow excess oil to drain from valve body and filter assembly

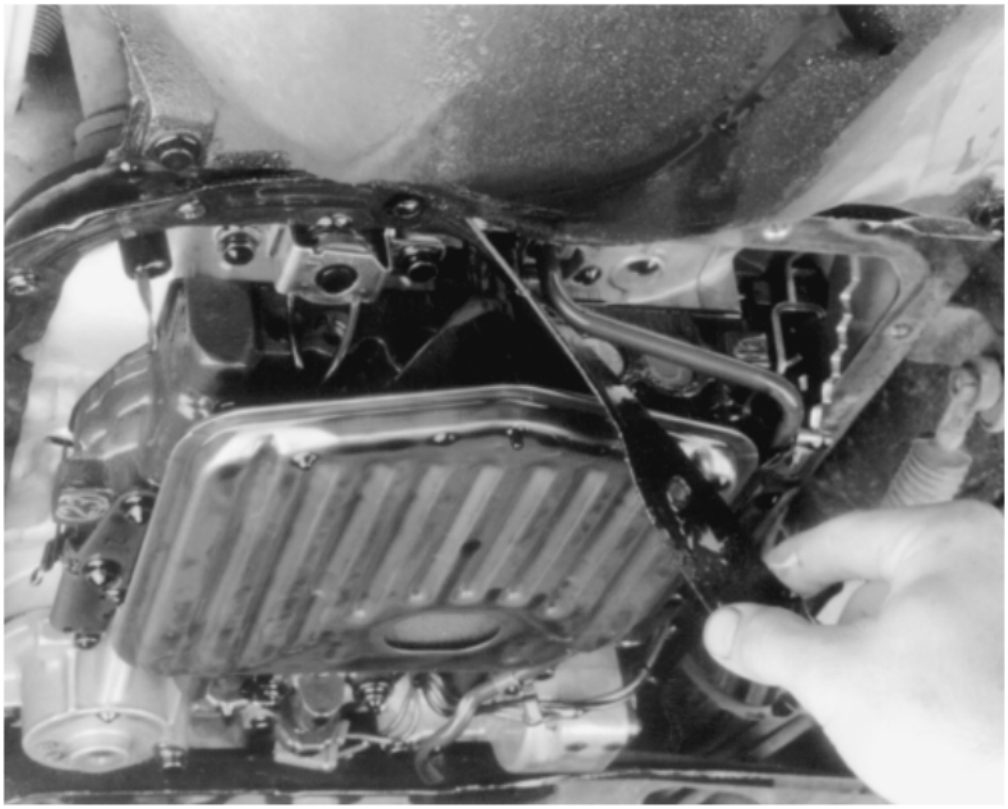


Fig. 7: Remove gasket material from transmission case and pan

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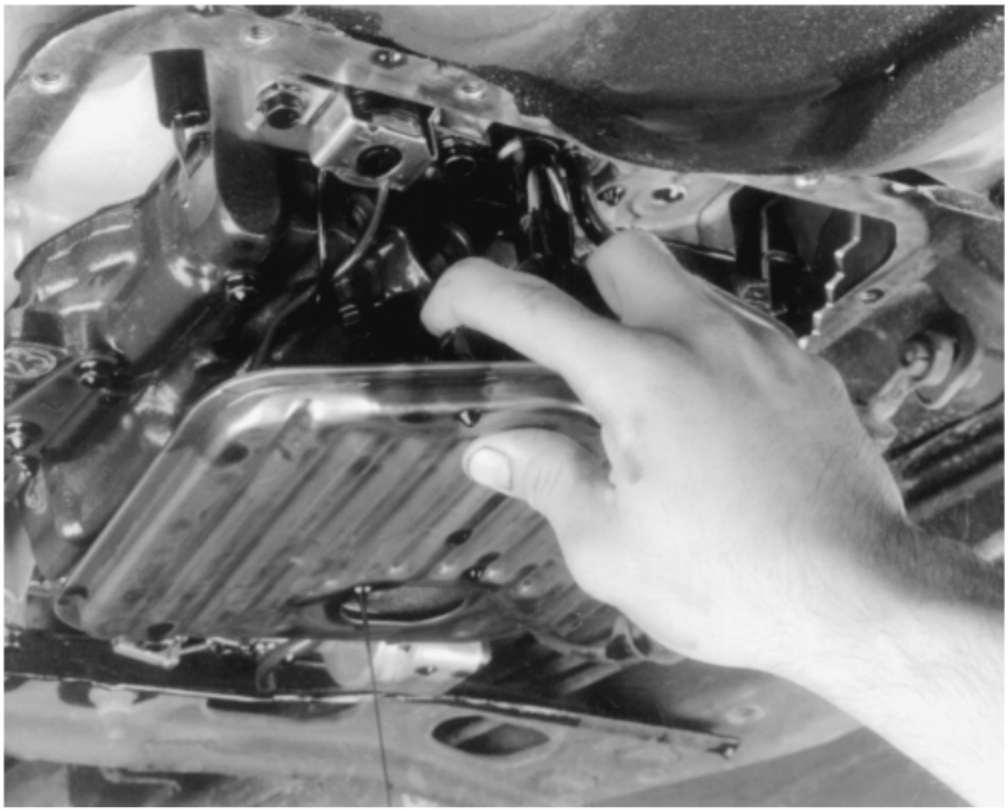


Fig. 8: Remove the transmission oil filter and O-ring from the case

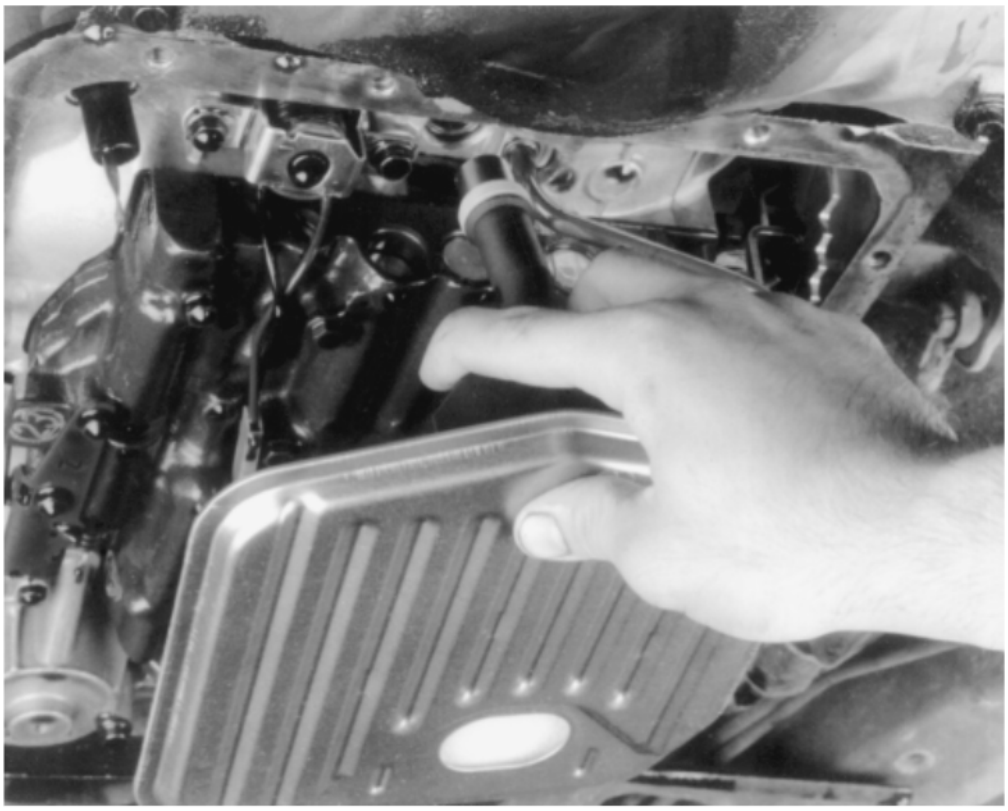


Fig. 9: Install the transmission oil filter with new O-ring, into the case

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Fig. 10: Adding transmission fluid through the dipstick tube. Be careful not to overfill the transmission.

DRIVE AXLE

FLUID RECOMMENDATIONS

On standard differential rear axle assemblies, use SAE 80W-90 GL-5 (SAE 80W GL-5 in Canada) gear lubricant. On limited slip differential rear axle assemblies, use 4 fl. oz. of limited slip differential additive lubricant and SAE 80W-90 GL-5 gear lubricant.

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LEVEL CHECK



Fig. 1: Removing filler plug to check rear axle lubricant

The gear lubricant in the drive axle should be checked every 12 months or 15,000 miles (24,000km).

1. Raise the car and support on jackstands as close to level as possible.
2. Remove the filler plug from the side of the drive axle housing.
3. If lubricant begins to trickle out of the hole, there is enough and you need not go any further. Otherwise, carefully insert your finger (watch out for sharp threads) and check to see if the lubricant is up to the edge of the hole.
4. If not, add oil through the hole until the level is at the edge of the hole. Most gear lubricants come in a plastic squeeze bottle with a nozzle; making additions simple.
5. Install and tighten the filler plug.

DRAIN AND REFILL

The rear axle should have the gear lubricant changed every 7,500 miles (12,000km). If equipped with a limited slip differential, be sure to add 4 oz. (118mL) of GM limited slip additive part No. 1052358.

1. Raise the car and support on jackstands. Place a container under the differential to catch the fluid.
2. Remove the bolts retaining the parking brake cable guides and position aside.

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3. Clean all dirt from the area around the cover. Remove the bolts retaining the cover to the housing. Pry the cover from the differential housing and allow the fluid to drain into the catch pan.

To install:

4. With the cover and housing washed free of oil and gasket material, apply sealer to the mating surfaces.
5. Using a new gasket, install the cover and torque the bolts to 20 ft. lbs. (27 Nm) in a clockwise pattern to insure uniform draw on the gasket. Fill the differential with fluid through the fill plug and add limited slip additive, as required.
6. Install the parking brake cable guides, if removed.
7. The fluid level should reached a level within $^{3}/_{8}$ in. (10mm) of the filler plug hole. Replace the filler plug. Lower the car and inspect for leaks.

COOLING SYSTEM

CAUTION - When draining the coolant, keep in mind that cats and dogs are attracted by the ethylene glycol antifreeze, and are quite likely to drink any that is left in an uncovered container or in puddles on the ground. This will prove fatal in sufficient quantity. Always drain the coolant into a sealable container. Coolant should be reused unless it is contaminated or several years old (in which case it should be taken to a recycling facility such as a service station).

FLUID RECOMMENDATIONS

When adding or changing the fluid in the system, create a 50/50 mixture of high quality ethylene glycol antifreeze and water.

LEVEL CHECK



Fig. 1: Fluid level marks on the coolant recovery tank. With a warm system, coolant level should be just below the FULL HOT mark on tank.

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The fluid level may be checked by observing the fluid level marks of the recovery tank. The level should be between the *FULL HOT* and *FULL COLD* mark when the system is at normal operating temperature. When the engine is cold, the fluid level should be above the *FULL COLD* mark on the reservoir. At normal operating temperatures, the level should be between the *ADD* and the *FULL* marks. Only add coolant to bring the level to the *FULL* mark.

CAUTION - Should it be necessary to remove the radiator cap, make sure that the system has had time to cool, reducing the internal pressure. If the system is opened while the engine is still hot, scalding fluid and steam may be blown out under pressure.

DRAINING AND REFILLING

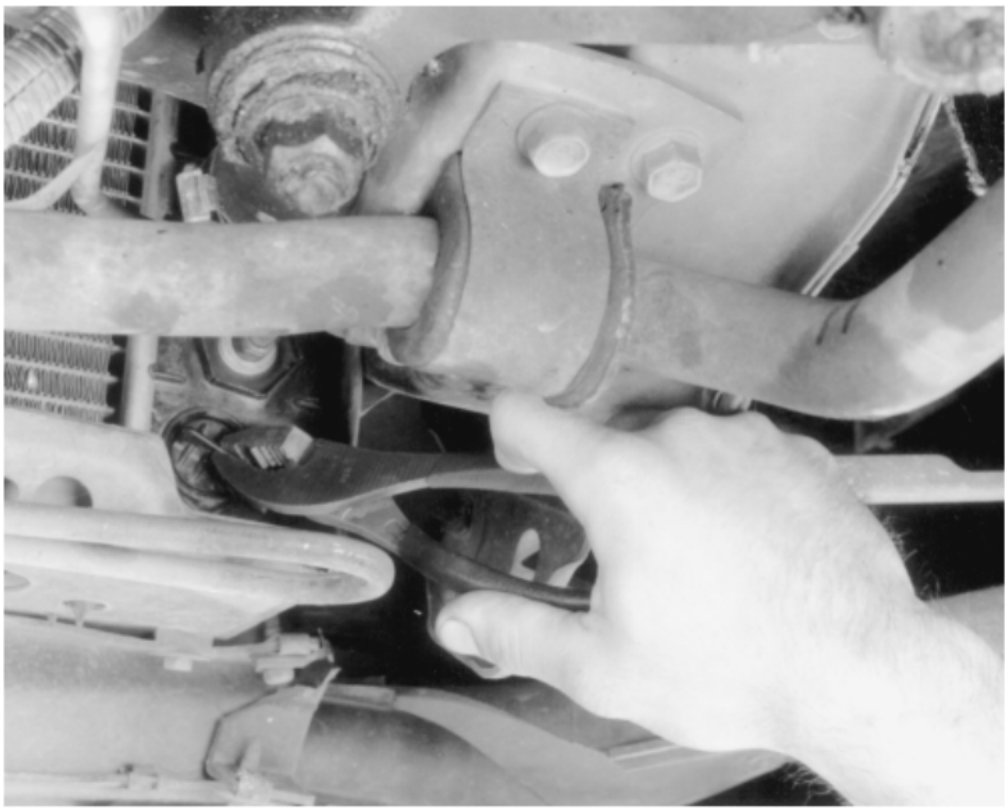


Fig. 2: Open radiator drain cock to drain coolant from the system

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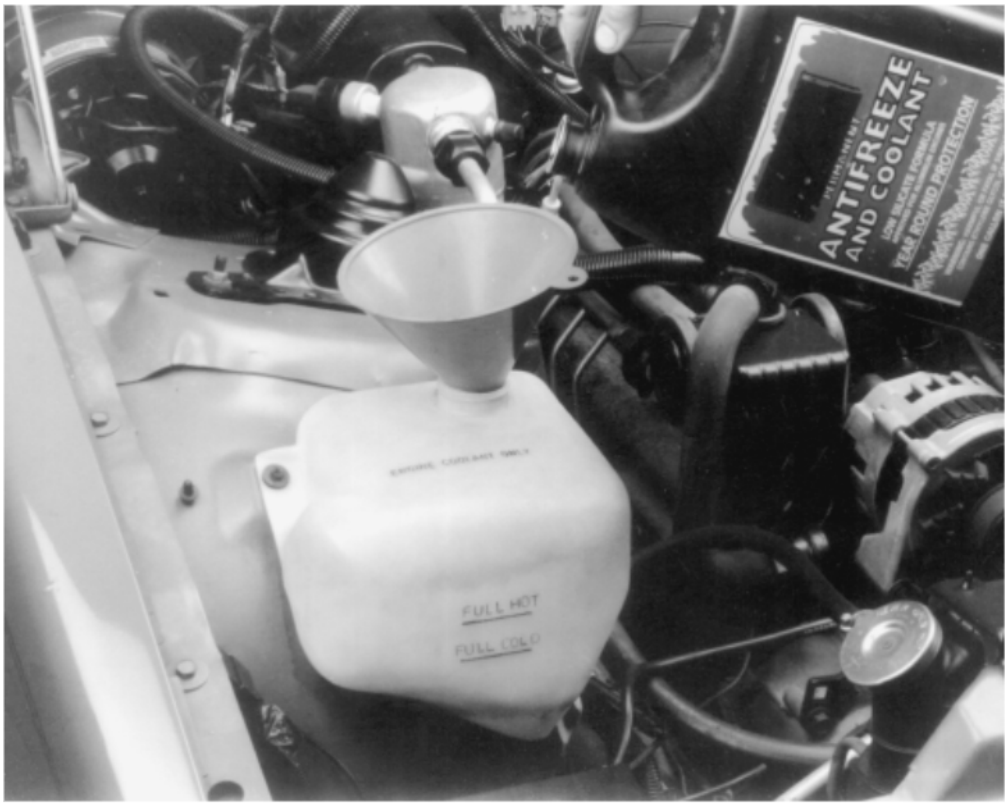


Fig. 3: Adding coolant to the recovery tank to fill to the proper level

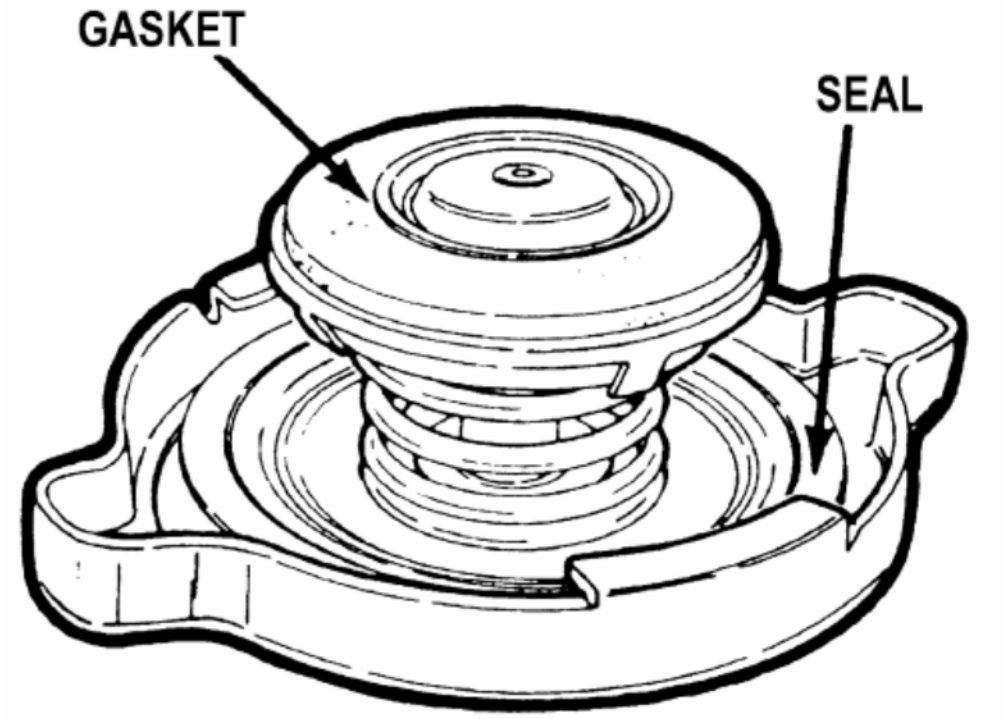


Fig. 4: Be sure the rubber gasket on the radiator cap has a tight seal

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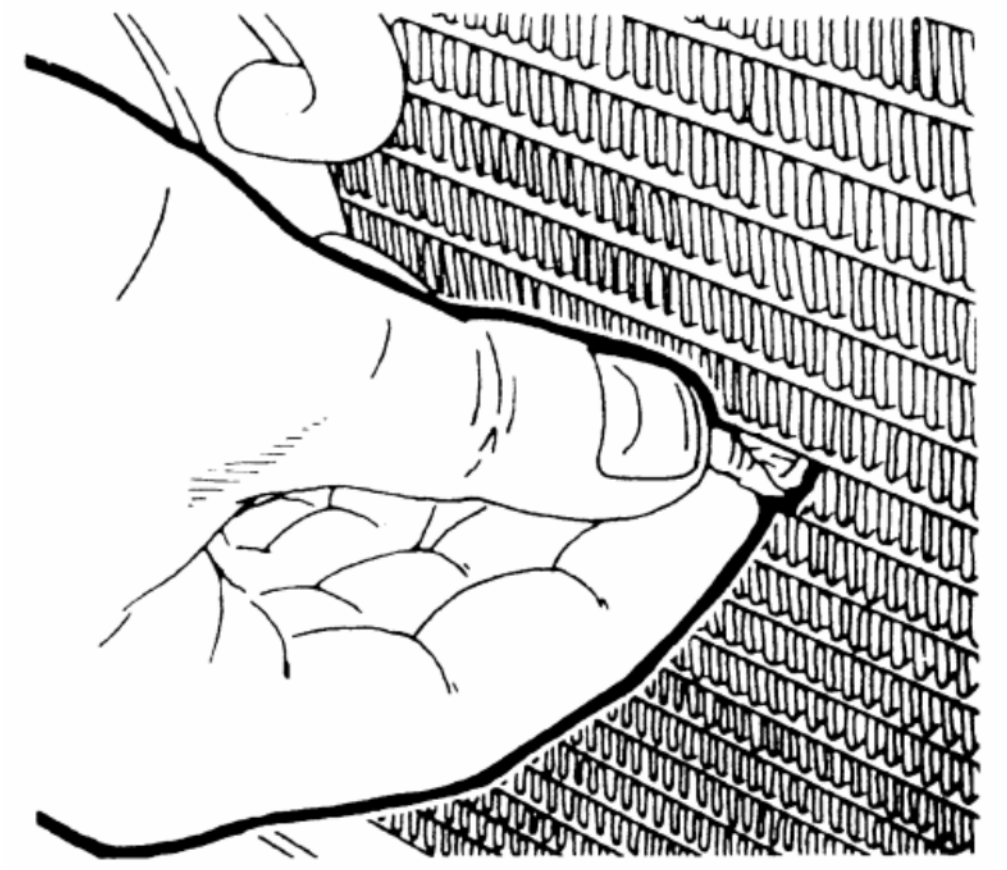


Fig. 5: Periodically remove all debris from the radiator fins

CAUTION - Do not remove a radiator cap while the engine and radiator are still hot. Danger of burns by scalding fluid and steam under pressure may result!

1. With a cool engine, slowly rotate the radiator cap counterclockwise to the detent without pressing down on the cap.
2. Wait until any remaining pressure is relieved by listening for a hissing sound.
3. After all the pressure is relieved, press down on the cap and continue to rotate the radiator cap counterclockwise.
4. With a suitable container to catch the fluid under the radiator, open the radiator drain cock.
5. If equipped, remove the engine block drain plugs and the knock sensor, located on either side of the engine block. This will help to drain the coolant from the block.
6. Loosen or slide the recovery tank hose clamp at the radiator filler neck overflow tube and remove the hose. Holding the hose down to the drain pan, allow the recovery tank to empty. Attach the hose to the filler neck overflow and tighten the clamp.
7. Close the radiator drain cock and install the engine block drain plug and knock sensor. Tighten the knock sensor to 14 ft. lbs. (19 Nm), the engine block drain plug to 15 ft. lbs. (21 Nm), and the drain cock to 13 inch lbs. (1.5 Nm).
8. Add enough coolant mixture to fill the system to a level just below the radiator neck. Fill the reservoir assembly to the "FULL COLD" mark.

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Fill the cooling system with a 50/50 mixture of water and Ethylene Glycol antifreeze. Freezing protection should be appropriate for temperatures of -34°F (-37°C). When filling the coolant system, add two cooling system sealer pellets (GM part no. 3634621 or equivalent).

9. Firmly set the parking brake. Run the engine with the radiator cap OFF, until normal operating temperature is reached.

CAUTION - Under some conditions, ethylene glycol is flammable. To avoid being burned when adding engine coolant, do not spill it on the exhaust system or on hot engine parts.

10. With the engine idling, add engine coolant to the radiator until the level reaches the bottom of the radiator fill neck. Install the cap assembly. When installing the cap, make sure that the arrows on the cap line up with the overflow tube.

Never add cold water to an overheated engine.

11. Add coolant to the recovery tank, as necessary.
12. After filling the radiator and recovery tank, run the engine until it reaches normal operating temperature, to make sure that the thermostat has opened and all the air is bled from the system.

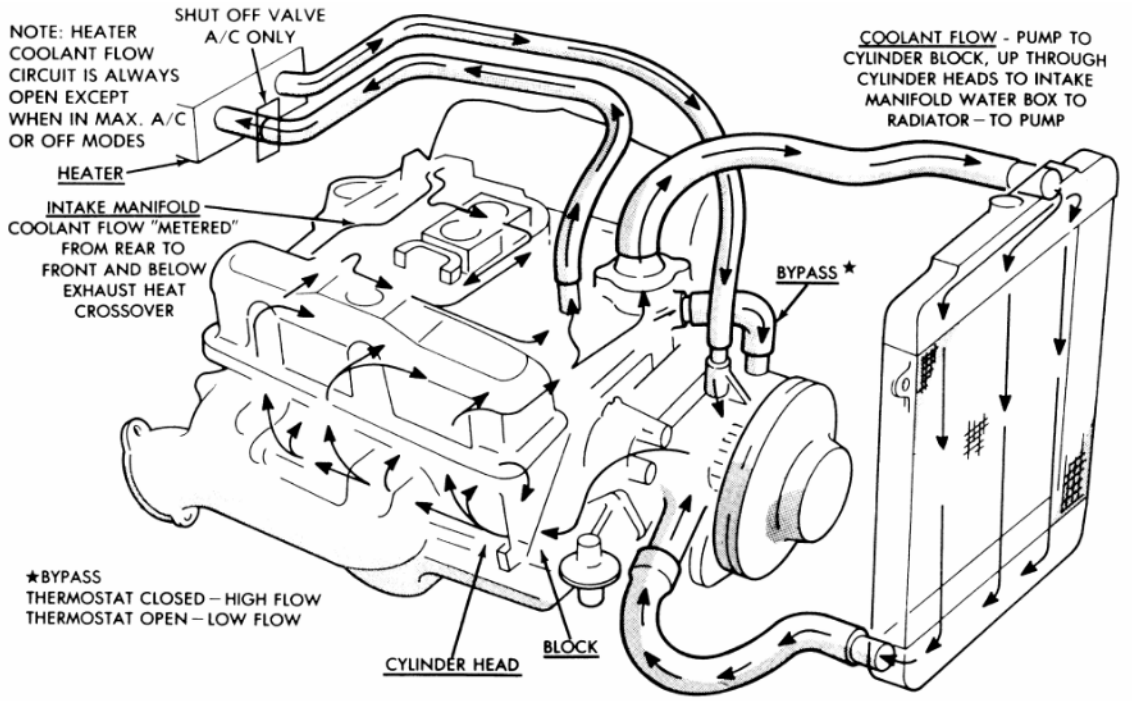


Fig. 6: Cutaway view of a typical cooling system flow

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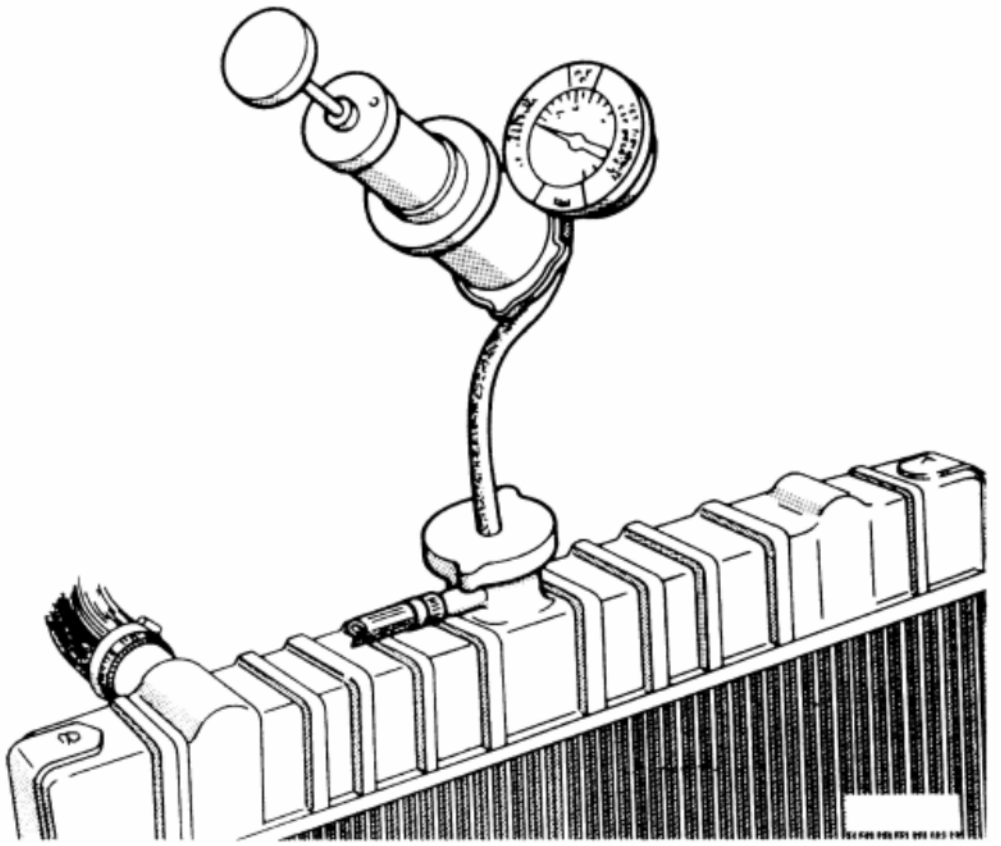


Fig. 7: Cooling systems should be pressure tested for leaks periodically

FLUSHING AND CLEANING THE SYSTEM

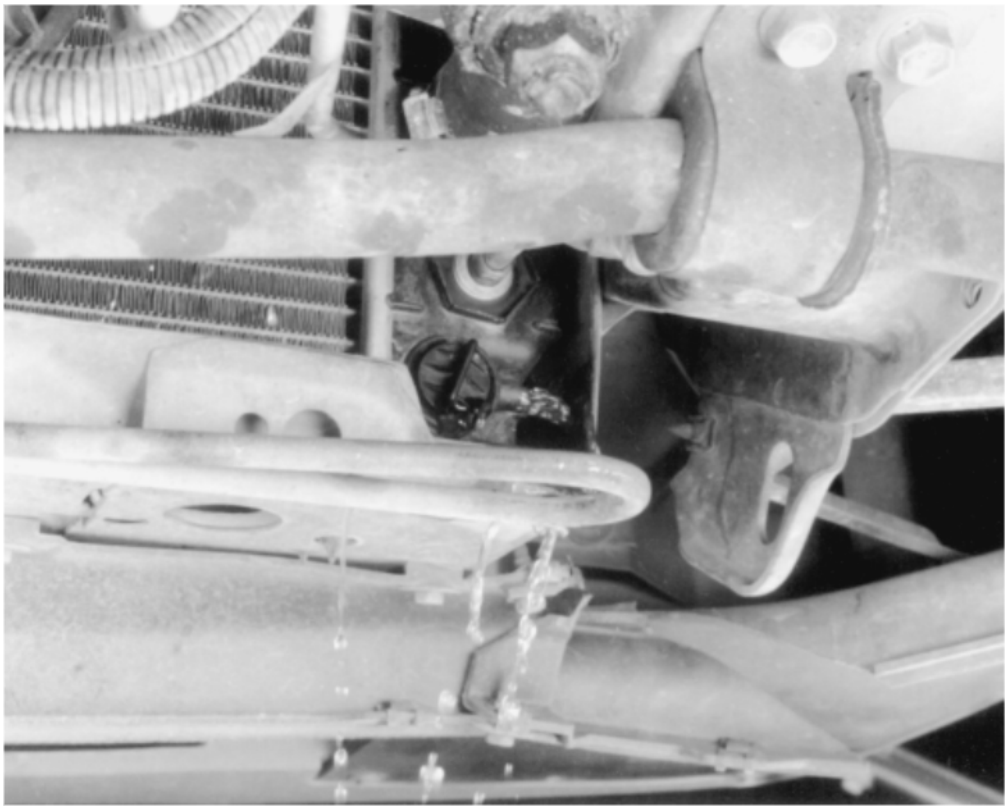


Fig. 8: Flush system until the fluid drained is nearly colorless

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The cooling system should be drained, thoroughly flushed and refilled at least every 30,000 miles or 24 months. This operation should be done with the engine cold.

1. Drain the cooling system as described earlier in this section.
2. Fill the cooling system with warm water and start the engine. Run the engine until normal operating temperature is reached.
3. At this point, turn the engine off and again drain the cooling system.
4. Repeat this procedure until the fluid draining from the system is nearly colorless.
5. Remove, empty and reinstall the coolant recovery reservoir assembly.
6. Fill the cooling system with a 50/50 mixture of ethylene glycol antifreeze, as outlined in the previous procedure.

BRAKE MASTER CYLINDER

FLUID RECOMMENDATIONS

When adding or replacing the brake fluid, always use a top quality fluid, such as Delco Supreme II or equivalent DOT-3 fluid. DO NOT allow the master cylinder reservoir to remain open for long periods of time; brake fluid absorbs moisture from the air, reducing its effectiveness and causing corrosion in the lines.

Avoid spilling brake fluid on any of the vehicle's painted surfaces, wiring cables or electrical connections. Brake fluid will damage paint and electrical connections. If any fluid is spilled on the vehicle, flush with water to lessen damage.

LEVEL CHECK



Fig. 1: Check master cylinder fluid level against indicator on side of reservoir. Fluid level should not be below MIN marking on reservoir.

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Fig. 2: Remove the reservoir cover, inspect condition of brake fluid and reservoir diaphragm

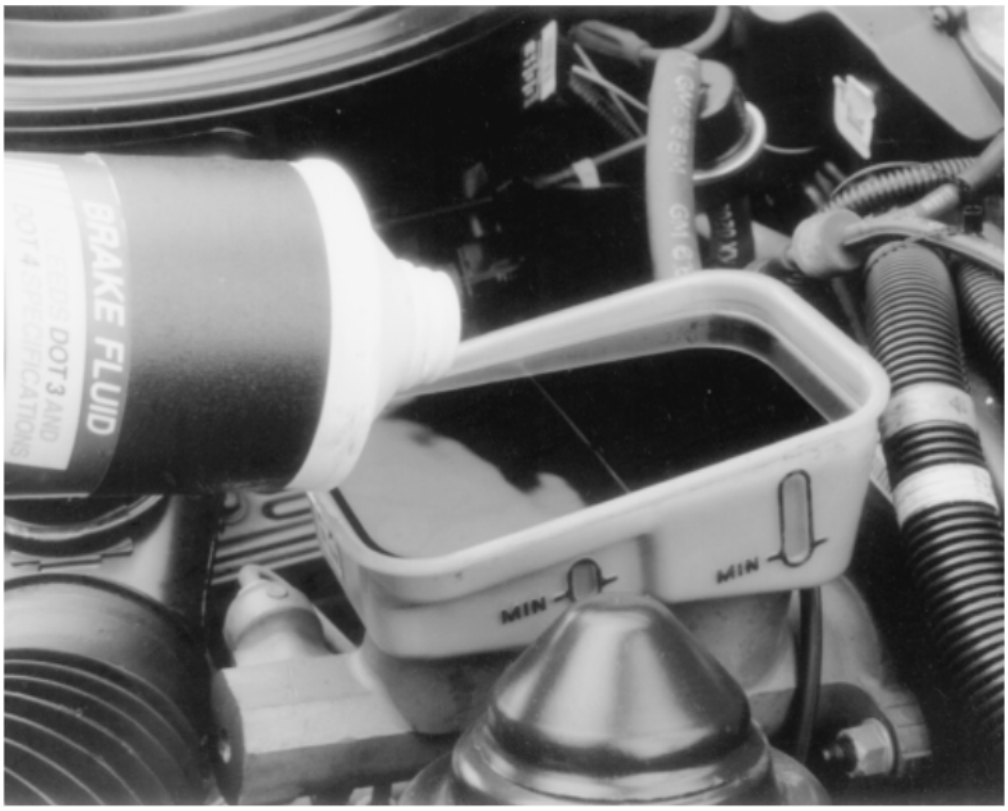


Fig. 3: Add clean brake fluid meeting DOT-3 requirements to fill reservoir to the proper level

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The master cylinder is located in the left rear section of the engine compartment. The brake master cylinder consists of an aluminum body and a translucent nylon reservoir with minimum fill indicators.

1. Check the master cylinder body for cracks. Inspect the area around the master cylinder for brake fluid. Leaks are indicated if there is at least a drop of fluid. A damp condition is not normal.
2. Inspect the level of the brake fluid to assure it is at the correct height. Clean the top of the reservoir cap so that all dirt is removed. Remove the cap(s) or reservoir cover and the reservoir diaphragm.
3. Inspect the brake fluid level. Add clean DOT-3 brake fluid as required to bring the fluid level to the line located inside the neck of the reservoir fill opening.
4. Install the reservoir cap.

WARNING - Any sudden decrease in the fluid level indicates a possible leak in the system and should be checked out immediately. Do not allow brake fluid to spill on the vehicle's finish; it will remove the paint. In case of a spill, flush the area with water and mild soap.

HYDRAULIC CLUTCH SYSTEM

FLUID RECOMMENDATIONS

- 1982-1991 - Delco Supreme II Brake fluid or an equivalent fluid that meets DOT-3 specifications
- 1992 - Hydraulic clutch fluid, GM part number 12345347 or equivalent

LEVEL CHECK

The clutch master cylinder is normally located below the brake master cylinder. The reservoir for it is located right beside the brake master cylinder and is made of translucent nylon. The fluid level of the reservoir should be kept near the top of the observation window. Before removing the cap to the reservoir, clean all dirt from the area. This will prevent system contamination due to particles falling into the reservoir when the caps are removed.

POWER STEERING PUMP

FLUID RECOMMENDATIONS

- GM power steering fluid, or equivalent.

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LEVEL CHECK



Fig. 1: Common power steering pump location

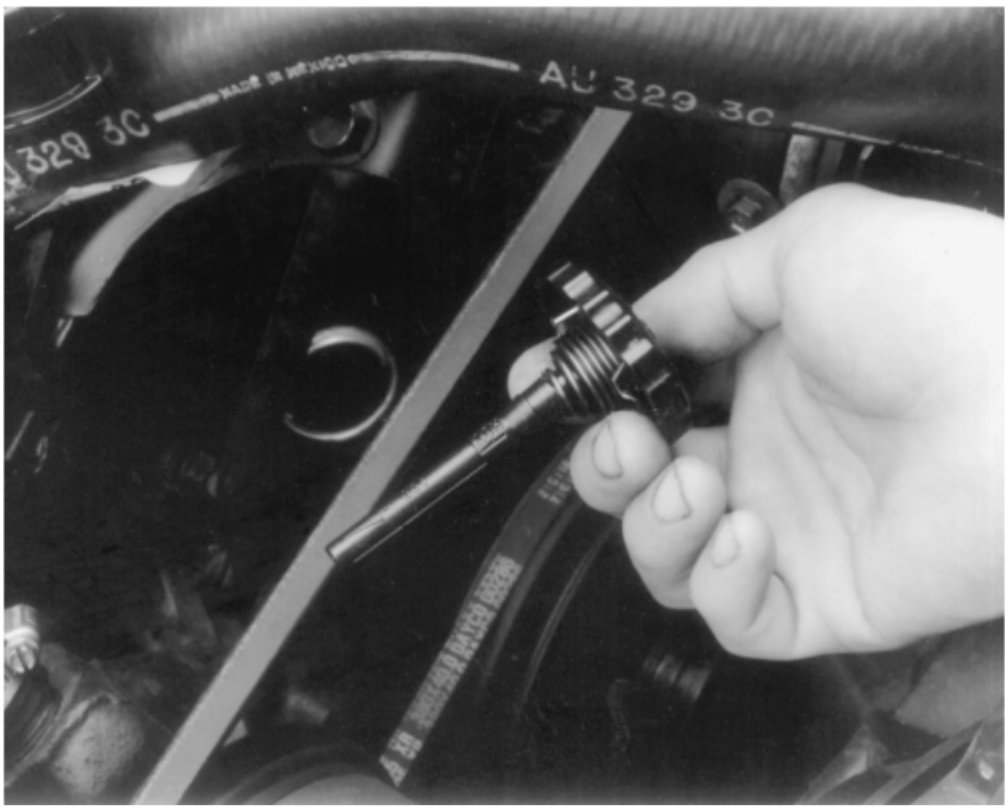


Fig. 2: Power steering pump reservoir cap with fluid level indicator attached

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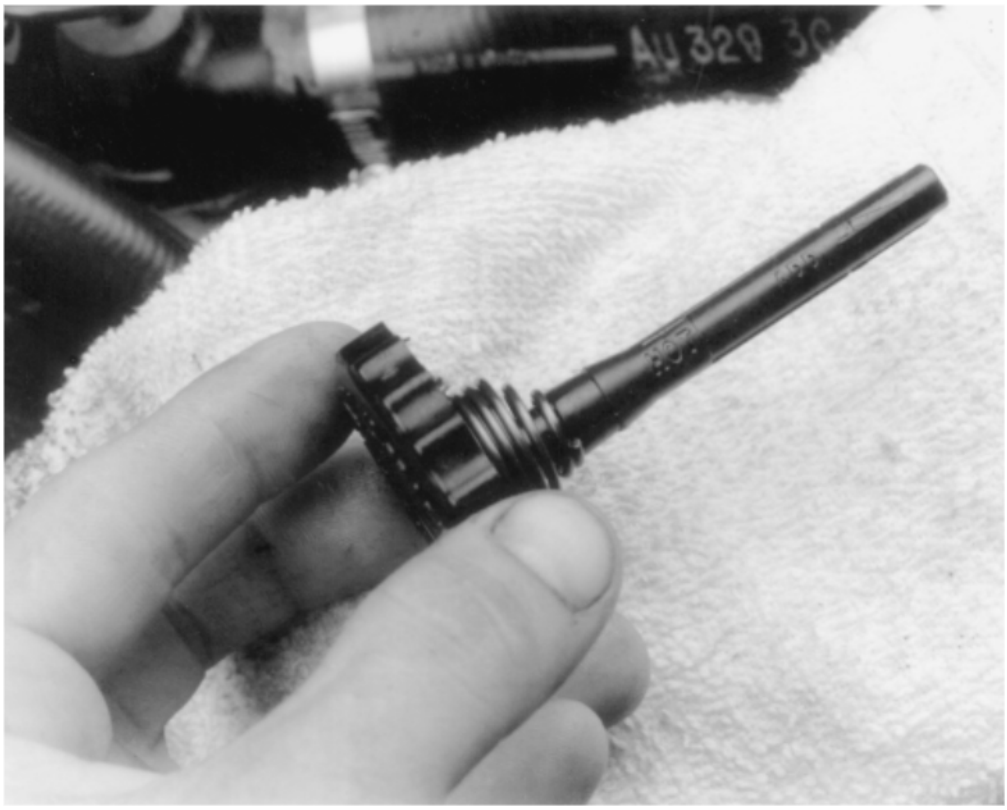


Fig. 3: Note location of power steering fluid on indicator. Do not overfill power steering pump when adding fluid.

Power steering fluid level should be checked at least twice a year. To prevent possible overfilling, check the fluid level only when the fluid has warmed to operating temperatures and the wheels are turned straight ahead. If the level is low, fill the pump reservoir until the fluid level measures between the COLD and HOT marks on the reservoir dipstick. Low fluid level usually produces a moaning sound as the wheels are turned (especially when standing still or parking) and increases steering wheel effort.

STEERING GEAR

FLUID RECOMMENDATIONS

The 1982-92 vehicles are equipped with a power steering gear. All vehicles use GM power steering fluid, or equivalent.

CHASSIS GREASING

Chassis lubrication can be performed with a pressurized grease gun or by using a hand-operated grease gun. Wipe the grease fittings clean before greasing in order to prevent the possibility of forcing any dirt into the component.

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BODY LUBRICATION

HOOD LATCH AND HINGES

Clean the latch surfaces and apply clean engine oil to the latch pilot bolts and the spring anchor. Use the engine oil to lubricate the hood hinges as well. Use a chassis grease to lubricate all the pivot points in the latch release mechanism.

DOOR HINGES

The gas tank filler door, car door, and rear hatch or trunk lid hinges should be wiped clean and lubricated with clean engine oil. Silicone spray also works well on seals, but must be applied more often. Use engine oil to lubricate the trunk or hatch lock mechanism and the lock bolt and striker. The door lock cylinders can be lubricated easily with a shot of silicone spray or one of the many dry penetrating lubricants commercially available.

PARKING BRAKE LINKAGE

Use chassis grease on the parking brake cable where it contacts the guides, links, levers, and pulleys. The grease should be water resistant for durability.

ACCELERATOR LINKAGE

Lubricate the throttle lever, and the accelerator pedal lever at the support inside the car with clean engine oil.

TRANSMISSION SHIFT LINKAGE

Lubricate the shift linkage with water resistant chassis grease which meets GM Specification 6031M or its equal.

FRONT WHEEL BEARINGS

Once every 30,000 miles, clean and repack wheel bearings with a wheel bearing packer. Remove any excess grease from the exposed surface of the hub and seal.

REMOVAL, REPACKING, INSTALLATION AND ADJUSTMENT

WARNING - It is important that wheel bearings be properly adjusted after installation. Improperly adjusted wheel bearings can cause steering instability, front end shimmy and wander, and increased tire wear.

1. Raise the car and support it at the lower arm. Remove the tire and wheel assembly.
2. Remove the brake caliper and support it on a wire.
3. Remove the dust cap, cotter pin, castle nut, thrust washer and outside wheel bearing.
4. Pull the disc/hub assembly from the steering knuckle.

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5. Pry out the inner seal and remove the inner bearing.
6. Wipe out the grease from inside the hub.
7. Clean the wheel bearings thoroughly with solvent and check their condition before installation. After cleaning, check parts for excessive wear and replace damaged parts.

WARNING - Do not allow the bearing to spin when blowing dry with compressed air, as this would allow the bearing to turn without lubrication.

8. Apply a sizable amount of lubricant to the palm of one hand. Using your other hand, work the bearing into the lubricant so that the grease is pushed through the rollers and out the other side. Keep rotating the bearing while continuing to push the lubricant through it.
9. Apply grease to the inside of the hub and install the inner bearing in the hub. Install a new grease seal, be careful not to damage the seal.
10. Install the disc/hub assembly onto the steering knuckle. Install the outer bearing, thrust washer and castle nut. Torque the nut to 12 ft. lbs. (16 Nm) while turning the wheel.
11. Back the nut off and retighten it by hand until nearest slot aligns with the cotter pin hole.
12. Insert a new cotter pin.
13. Mount a dial indicator onto the vehicle so that any end-play in the hub can be measured. Measure the end-play and record the value. End-play should be between 0.001-0.005 in. (0.025-0.127mm). If play exceeds this tolerance, the wheel bearings should be replaced.



Fig. 1: Pry the dust cap from the hub, taking care not to distort or damage its flange

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Fig. 2: Once the ends are cut, grasp the cotter pin and pull or pry it free of the spindle

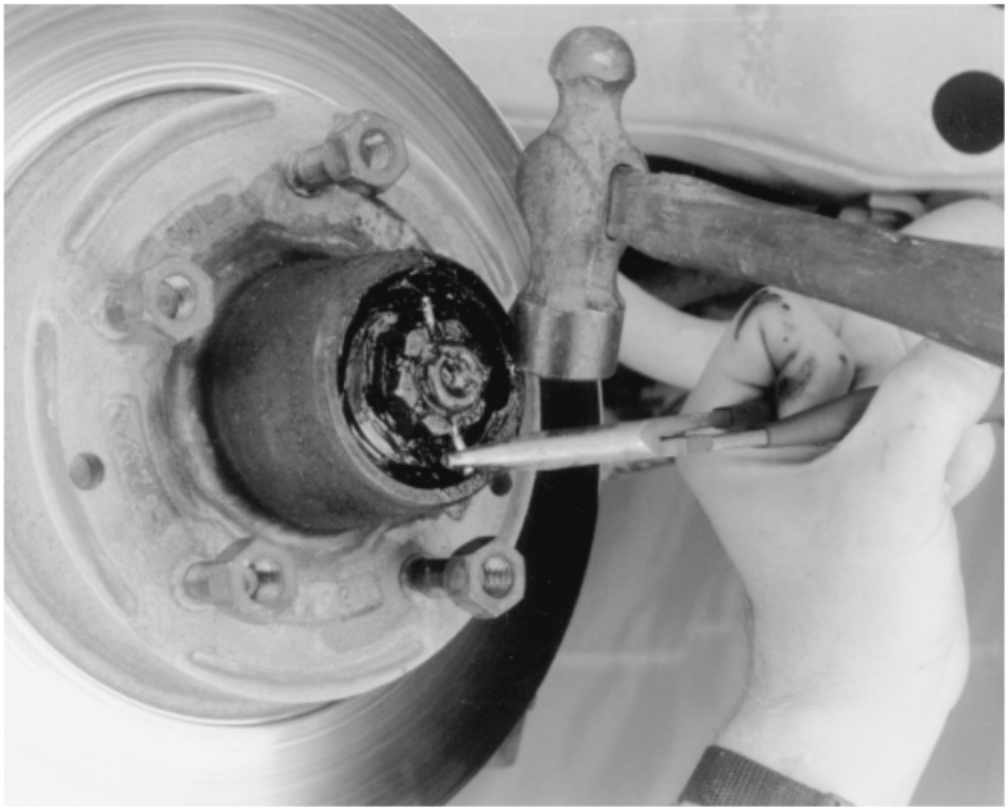


Fig. 3: If difficulty is encountered, gently tap on the pliers with a hammer to help free the cotter pin

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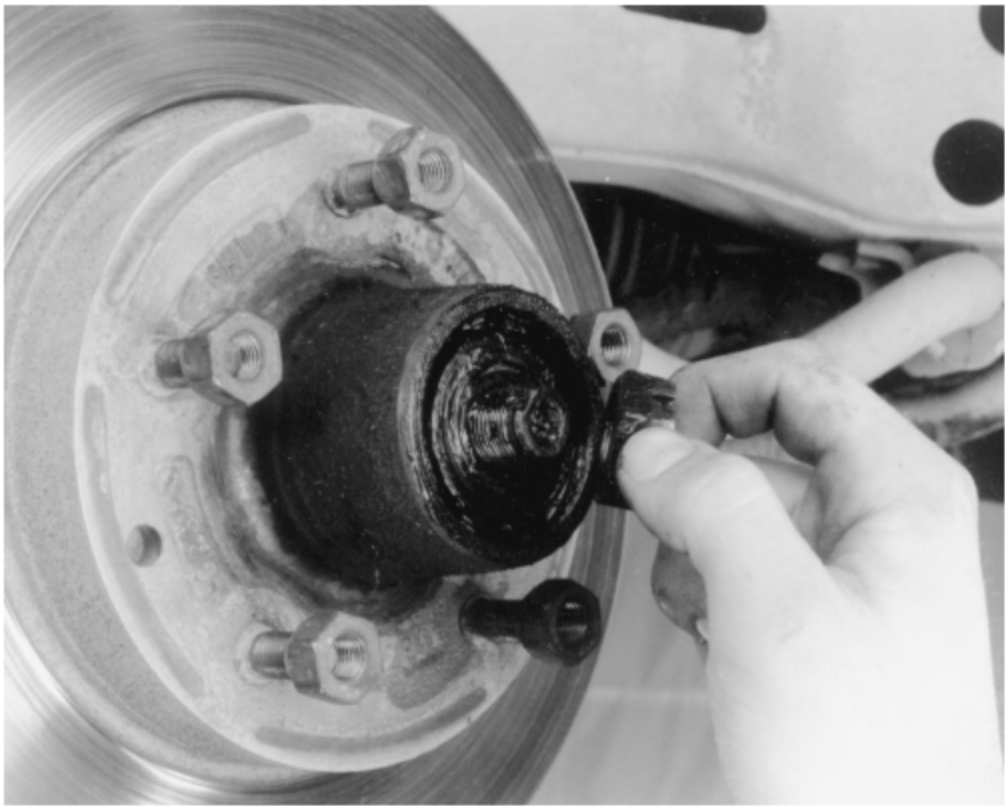


Fig. 4: Loosen and remove the castellated nut from the spindle



Fig. 5: Remove the washer from the spindle

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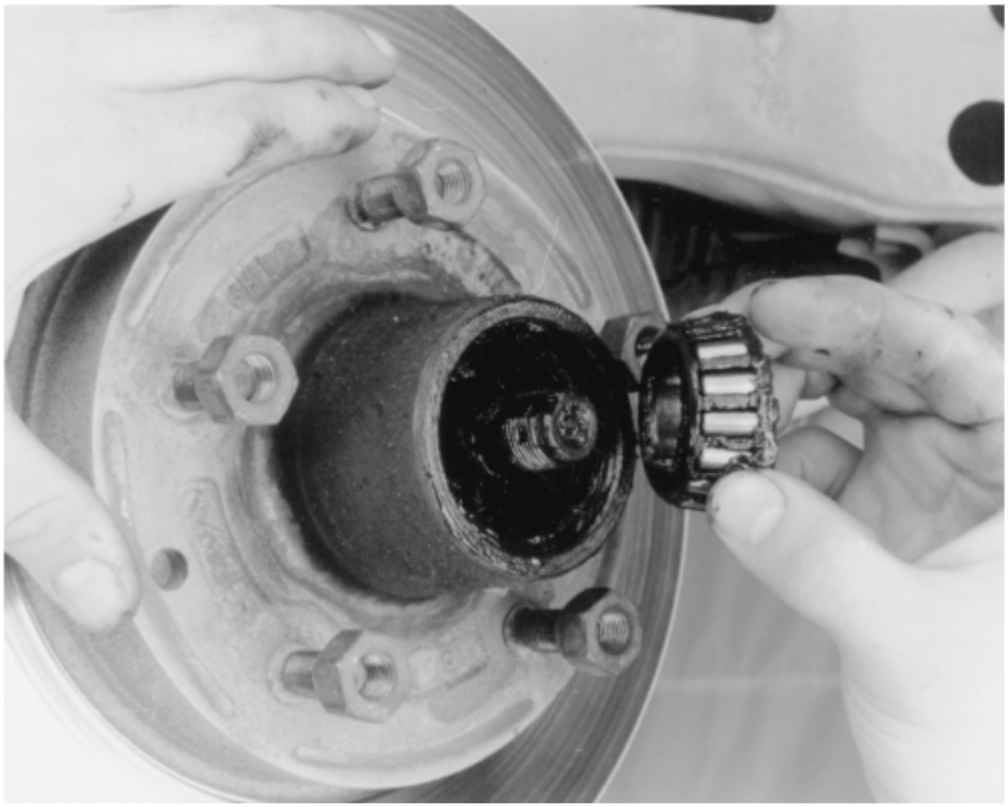


Fig. 6: With the nut and washer out of the way, the outer bearings may be removed from the hub



Fig. 7: Pull the hub and inner bearing assembly from the spindle

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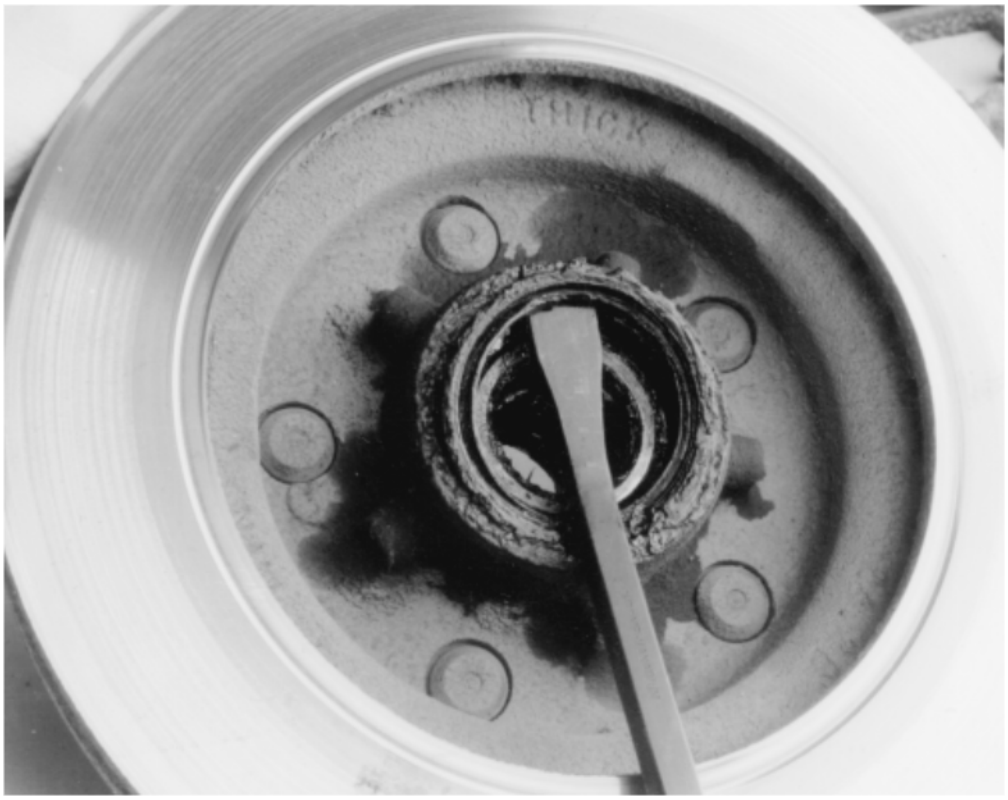


Fig. 8: Use a small prytool to remove the old inner bearing seal


Fig. 9: With the seal removed, the inner bearing may be withdrawn from the hub

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Fig. 10: Thoroughly pack the bearing with fresh, high temperature wheel bearing grease before installation



Fig. 11: Apply a thin coat of fresh grease to the new inner bearing seal lip

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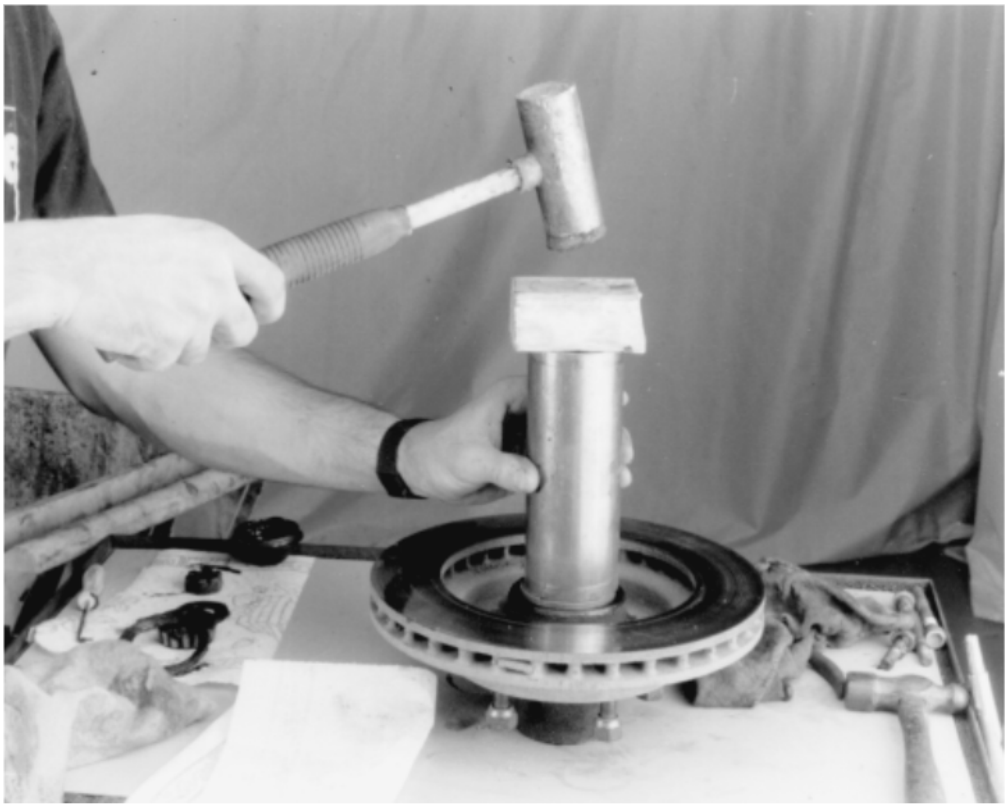


Fig. 12: Use a suitably sized driver to install the inner bearing seal to the hub



Fig. 13: With new or freshly packed bearings, tighten the nut to 12 ft. lbs. (16 Nm) while gently spinning the wheel, then adjust the bearings

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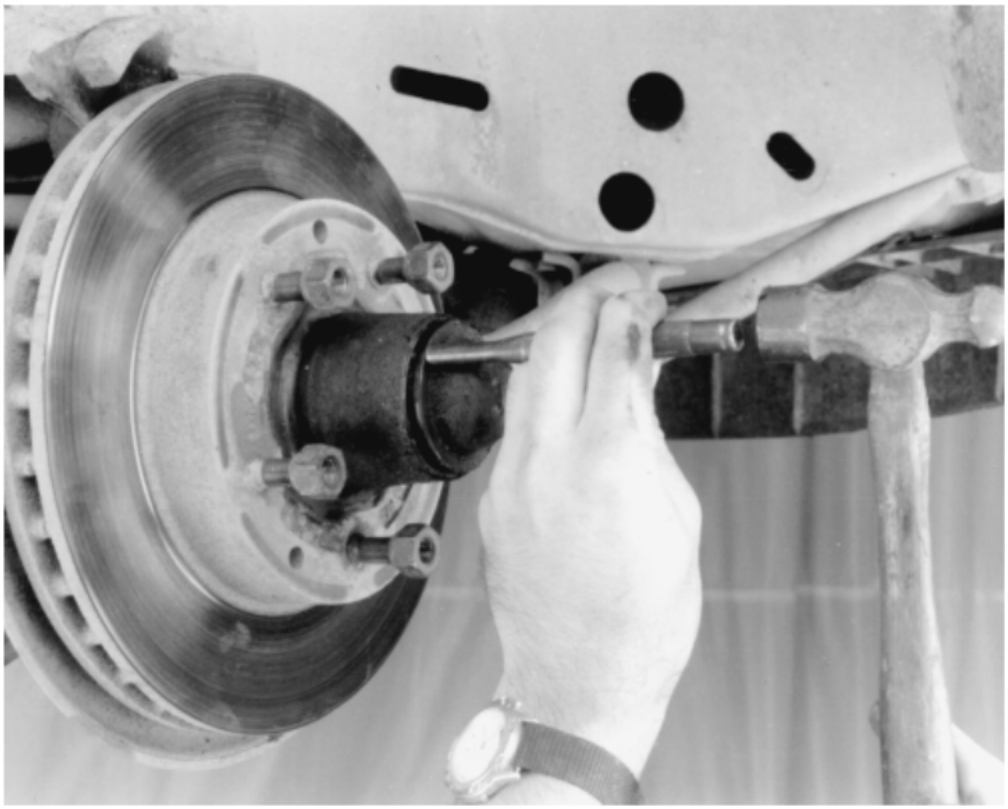


Fig. 14: After the bearings are adjusted, install the dust cap by gently tapping on the flange - DO NOT damage the cap by hammering on the center

JUMP STARTING A DEAD BATTERY

Whenever a vehicle is jump started, precautions must be followed in order to prevent the possibility of personal injury. Remember that batteries contain a small amount of explosive hydrogen gas which is a by-product of battery charging. Sparks should always be avoided when working around batteries, especially when attaching jumper cables. To minimize the possibility of accidental sparks, follow the procedure carefully.

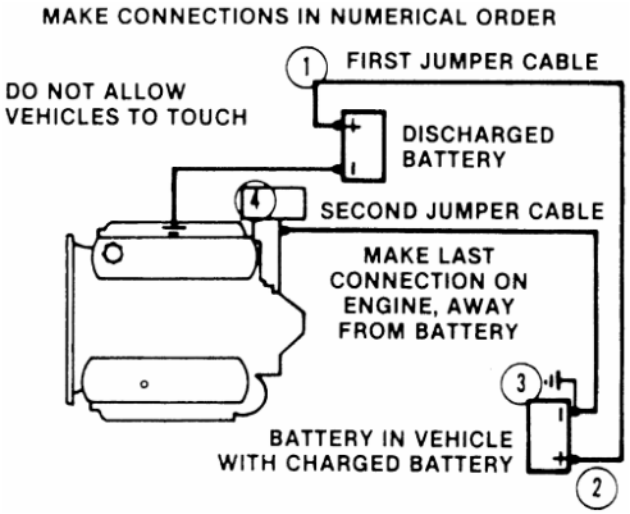


Fig. 1: Connect the jumper cables to the batteries and engine in the order shown

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CAUTION - NEVER hook the batteries up in a series circuit or the entire electrical system will go up in smoke, including the starter!

Vehicles equipped with a diesel engine may utilize two 12 volt batteries. If so, the batteries are connected in a parallel circuit (positive terminal to positive terminal, negative terminal to negative terminal). Hooking the batteries up in parallel circuit increases battery cranking power without increasing total battery voltage output. Output remains at 12 volts. On the other hand, hooking two 12 volt batteries up in a series circuit (positive terminal to negative terminal, positive terminal to negative terminal) increases total battery output to 24 volts (12 volts plus 12 volts).

JUMP STARTING PRECAUTIONS

- Be sure that both batteries are of the same voltage. Vehicles covered by this information and most vehicles on the road today utilize a 12 volt charging system.
- Be sure that both batteries are of the same polarity (have the same terminal, in most cases NEGATIVE grounded).
- Be sure that the vehicles are not touching or a short could occur.
- On serviceable batteries, be sure the vent cap holes are not obstructed.
- Do not smoke or allow sparks anywhere near the batteries.
- In cold weather, make sure the battery electrolyte is not frozen. This can occur more readily in a battery that has been in a state of discharge.
- Do not allow electrolyte to contact your skin or clothing.

JUMP STARTING PROCEDURE

1. Make sure that the voltages of the 2 batteries are the same. Most batteries and charging systems are of the 12 volt variety.
2. Pull the jumping vehicle (with the good battery) into a position so the jumper cables can reach the dead battery and that vehicle's engine. Make sure that the vehicles do NOT touch.
3. Place the transmissions of both vehicles in *Neutral* (MT) or *P* (AT), as applicable, then firmly set their parking brakes.

If necessary for safety reasons, the hazard lights on both vehicles may be operated throughout the entire procedure without significantly increasing the difficulty of jumping the dead battery.

4. Turn all lights and accessories OFF on both vehicles. Make sure the ignition switches on both vehicles are turned to the *OFF* position.
5. Cover the battery cell caps with a rag, but do not cover the terminals.
6. Make sure the terminals on both batteries are clean and free of corrosion or proper electrical connection will be impeded. If necessary, clean the battery terminals before proceeding.
7. Identify the positive (+) and negative (-) terminals on both batteries.
8. Connect the first jumper cable to the positive (+) terminal of the dead battery, then connect the other end of that cable to the positive (+) terminal of the booster (good) battery.

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9. Connect one end of the other jumper cable to the negative (-) terminal on the booster battery and the final cable clamp to an engine bolt head, alternator bracket or other solid, metallic point on the engine with the dead battery. Try to pick a ground on the engine that is positioned away from the battery in order to minimize the possibility of the 2 clamps touching should one loosen during the procedure. DO NOT connect this clamp to the negative (-) terminal of the bad battery.

CAUTION - Be very careful to keep the jumper cables away from moving parts (cooling fan, belts, etc.) on both engines.

10. Check to make sure that the cables are routed away from any moving parts, then start the donor vehicle's engine. Run the engine at moderate speed for several minutes to allow the dead battery a chance to receive some initial charge.
11. With the donor vehicle's engine still running slightly above idle, try to start the vehicle with the dead battery. Crank the engine for no more than 10 seconds at a time and let the starter cool for at least 20 seconds between tries. If the vehicle does not start in 3 tries, it is likely that something else is also wrong or that the battery needs additional time to charge.
12. Once the vehicle is started, allow it to run at idle for a few seconds to make sure that it is operating properly.
13. Turn ON the headlights, heater blower and, if equipped, the rear defroster of both vehicles in order to reduce the severity of voltage spikes and subsequent risk of damage to the vehicles' electrical systems when the cables are disconnected. This step is especially important to any vehicle equipped with computer control modules.
14. Carefully disconnect the cables in the reverse order of connection. Start with the negative cable that is attached to the engine ground, then the negative cable on the donor battery. Disconnect the positive cable from the donor battery and finally, disconnect the positive cable from the formerly dead battery. Be careful when disconnecting the cables from the positive terminals not to allow the alligator clips to touch any metal on either vehicle or a short and sparks will occur.

JACKING

Your vehicle was supplied with a jack for emergency road repairs. This jack is fine for changing a flat tire or other short term procedures not requiring you to go beneath the vehicle. If it is used in an emergency situation, carefully follow the instructions provided either with the jack or in your owner's manual. Do not attempt to use the jack on any portions of the vehicle other than specified by the vehicle manufacturer. Always block the diagonally opposite wheel when using a jack.

A more convenient way of jacking is the use of a garage or floor jack. You may use the floor jack to raise the vehicle in the areas shown in the illustration .

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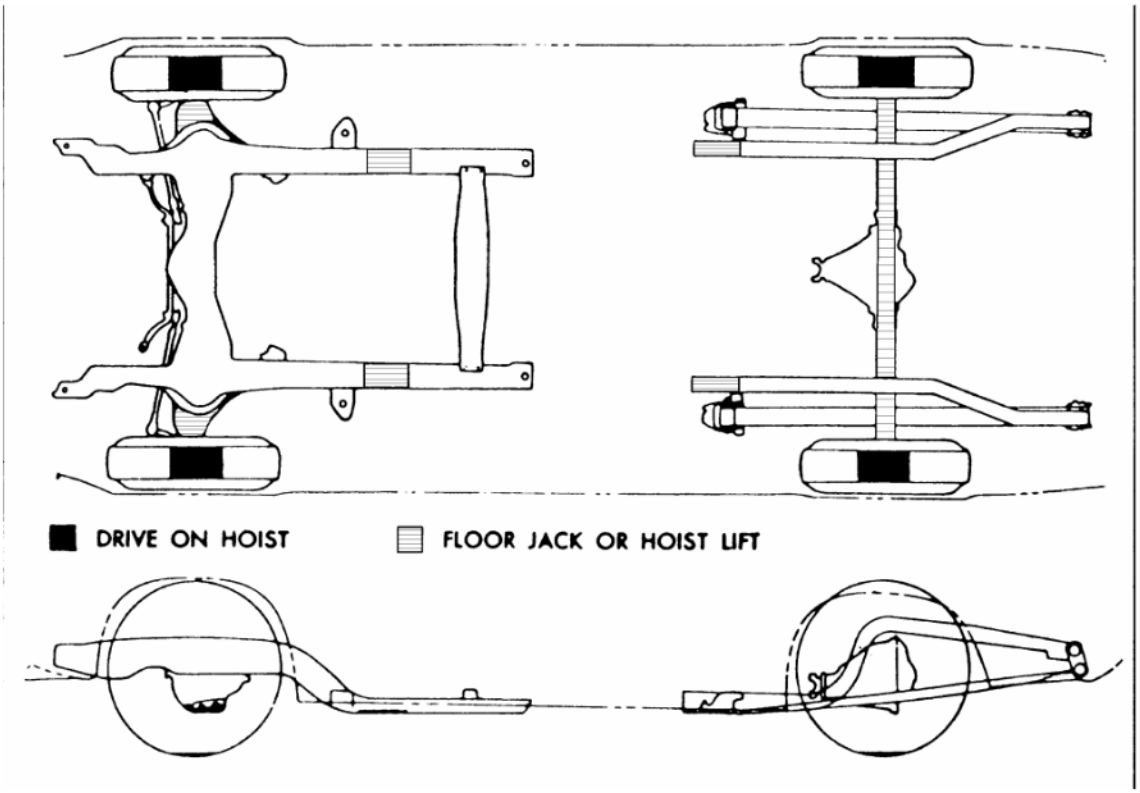


Fig. 1: Vehicle hoisting and jacking points

Never place the jack under the radiator, engine or transmission components. Severe and expensive damage will result when the jack is raised. Additionally, never jack under the floorpan or bodywork; the metal will deform.

Whenever you plan to work under the vehicle, you must support it on jackstands or ramps. Never use cinder blocks or stacks of wood to support the vehicle, even if you're only going to be under it for a few minutes. Never crawl under the vehicle when it is supported only by the tire-changing jack or other floor jack.

Always position a block of wood or small rubber pad on top of the jack or jackstand to protect the lifting point's finish when lifting or supporting the vehicle.

Small hydraulic, screw, or scissors jacks are satisfactory for raising the vehicle. Drive-on trestles or ramps are also a handy and safe way to both raise and support the vehicle. Be careful though, some ramps may be too steep to drive your vehicle onto without scraping the front bottom panels. Never support the vehicle on any suspension member (unless specifically instructed to do so by a repair manual) or by an underbody panel.

JACKING PRECAUTIONS

The following safety points cannot be overemphasized:

- Always block the opposite wheel or wheels to keep the vehicle from rolling off the jack.
- When raising the front of the vehicle, firmly apply the parking brake.

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- When the drive wheels are to remain on the ground, leave the vehicle in gear to help prevent it from rolling.
- Always use jackstands to support the vehicle when you are working underneath. Place the stands beneath the vehicle's jacking brackets. Before climbing underneath, rock the vehicle a bit to make sure it is firmly supported.

SPECIFICATIONS CHARTS

CAPACITIES

Year	VIN	Engine No. Cyl. Liters	Crankcase Includes Filter (qts.)	Transmission (pts.) 4-Sp	5-Sp	Auto.	Drive Axle (pts.)	Fuel Tank (gal.)	Cooling System (qt.) w/AC	wo/AC
1982	2	4-2.5L	3	3.5	—	7	3.5	16	9.1	8.8
	1	6-2.8L	4	3.5	—	7	3.5	16	9.1	8.8
	H	8-5.0L	5	3.5	—	7	3.5	16	9.1	8.8
	7	8-5.0L	5	3.5	—	7	3.5	16	9.1	8.8
1983	2	4-2.5L	3	3.5	3.5	7	3.5	16	9.1	8.8
	1	6-2.8L	4	3.5	3.5	7	3.5	16	9.1	8.8
	H	8-5.0L	5	3.5	3.5	7	3.5	16	9.1	8.8
	7	8-5.0L	5	3.5	3.5	7	3.5	16	9.1	8.8
1984	2	4-2.5L	3	3.5	3.5	7	3.5	16	9.1	8.8
	1	6-2.8L	4	3.5	3.5	7	3.5	16	9.1	8.8
	H	8-5.0L	5	3.5	3.5	7	3.5	16	9.1	8.8
	G	8-5.0L	5	3.5	3.5	7	3.5	16	9.1	8.8
1985	2	4-2.5L	3	—	4.0	10	3.5	15.5	13.0	12.75
	S	6-2.8L	4	—	4.0	10	3.5	15.5	12.5	12.5
	H	8-5.0L	5	—	4.0	10	3.5	16.2	17.0	15.5
	G	8-5.0L	5	—	4.0	10	3.5	16.2	17.0	17.0
	F	8-5.0L	5	—	4.0	10	3.5	15.5	17.0	17.0

CAPACITIES

Year	VIN	Engine No. Cyl. Liters	Crankcase Includes Filter (qts.)	Transmission (pts.) 4-Sp	5-Sp	Auto.	Drive Axle (pts.)	Fuel Tank (gal.)	Cooling System (qt.) w/AC	wo/AC
1986	2	4-2.5L	3	—	6.6	10	3.5	15.5	9.8	9.8
	S	6-2.8L	4	—	6.6	10	3.5	15.5	12.5	12.5
	H	8-5.0L	5	—	6.6	10	3.5	16.2	15.6	15.3
	G	8-5.0L	5	—	6.6	10	3.5	16.2	17.0	17.0
	F	8-5.0L	5	—	6.6	10	3.5	15.5	17.0	17.0
	8	8-5.7L	5	—	6.6	10	3.5	15.5	17.0	17.0
1987	S	6-2.8L	4	—	6.6	10	3.5	15.5	12.5	12.5
	H	8-5.0L	5	—	6.6	10	3.5	16.2	15.6	15.3
	F	8-5.0L	5	—	6.6	10	3.5	15.5	17.0	17.0
	8	8-5.7L	5	—	6.6	10	3.5	15.5	17.0	17.0
1988	S	6-2.8L	4	—	5.8	10	3.5	15.9	12.5	12.5
	E	8-5.0L	5	—	5.8	10	3.5	15.9	15.6	15.3
	F	8-5.0L	5	—	5.8	10	3.5	15.9	17.0	17.0
	8	8-5.7L	5	—	5.8	10	3.5	15.9	17.0	17.0
1989	S	6-2.8L	4	—	5.9	10	3.5	15.5	12.4	12.4
	E	8-5.0L	5	—	5.9	10	3.5	15.5	15.6	15.6
	F	8-5.0L	5	—	5.9	10	3.5	15.5	17.0	17.0
	8	8-5.7L	5	—	5.9	10	3.5	15.5	17.0	17.0
1990	T	6-3.1L	4	—	5.9	10	4.0	15.5	14.5	14.5
	E	8-5.0L	5	—	5.9	10	4.0	15.5	18.0	17.5
	F	8-5.0L	5	—	5.9	10	4.0	15.5	17.4	17.3
	8	8-5.7L	5	—	5.9	10	4.0	15.5	16.3	16.1
1991	T	6-3.1L	4	—	5.9	10	4.0	15.5	14.8	14.7
	E	8-5.0L	5	—	5.9	10	4.0	15.5	18.0	17.4
	F	8-5.0L	5	—	5.9	10	4.0	15.5	18.0	17.9
	8	8-5.7L	5	—	5.9	10	4.0	15.5	16.7	16.6
1992	T	6-3.1L	4	—	5.9	10	4.0	15.5	14.7	14.7
	E	8-5.0L	5	—	5.9	6.3	4.0	15.5	18.0	17.3
	F	8-5.0L	5	—	5.9	10	4.0	15.5	17.3	17.1
	8	8-5.7L	5	—	5.9	10	4.0	15.5	16.4	16.4

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ENGINE APPLICATION

Year	Engine Code	No. Cyl.	Actual Displacement cu. in.	cc	Liters	Type	Fuel System	Built By
1982	2	4	151	2474	2.5	L4	TBI	Pontiac
	1	6	173	2835	2.8	V6	Carb	Chevrolet
	H	8	305	4998	5.0	V8	Carb	Chevrolet
	7	8	305	4998	5.0	V8	CFI	Chevrolet
1983	2	4	151	2474	2.5	L4	TBI	Pontiac
	1	6	173	2835	2.8	V6	Carb	Chevrolet
	H	8	305	4998	5.0	V8	Carb	Chevrolet
	S	8	305	4998	5.0	V8	CFI	Chevrolet
1984	2	4	151	2474	2.5	L4	TBI	Pontiac
	1	6	173	2835	2.8	V6	Carb	Chevrolet
	H	8	305	4998	5.0	V8	Carb	Chevrolet
	G	8	305	4998	5.0	V8	Carb	Chevrolet
1985	2	4	151	2474	2.5	L4	TBI	Pontiac
	S	6	173	2835	2.8	V6	MPI	Chevrolet
	H	8	305	4998	5.0	V8	Carb	Chevrolet
	G	8	305	4998	5.0	V8	Carb	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
1986	2	4	151	2474	2.5	L4	TBI	Pontiac
	S	6	173	2835	2.8	V6	MPI	Chevrolet
	H	8	305	4998	5.0	V8	Carb	Chevrolet
	G	8	305	4998	5.0	V8	Carb	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet
1987	S	6	173	2835	2.8	V6	MPI	Chevrolet
	H	8	305	4998	5.0	V8	Carb	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet
1988	S	6	173	2835	2.8	V6	MPI	Chevrolet
	E	8	305	4998	5.0	V8	EFI	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet
1989	S	6	173	2835	2.8	V6	MPI	Chevrolet
	E	8	305	4998	5.0	V8	EFI	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet
1990	T	6	191	3130	3.1	V6	MPI	Chevrolet
	E	8	305	4998	5.0	V8	EFI	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet
1991	T	6	191	3130	3.1	V6	MPI	Chevrolet
	E	8	305	4998	5.0	V8	EFI	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet

ENGINE APPLICATION

Year	Engine Code	No. Cyl.	Actual Displacement cu. in.	cc	Liters	Type	Fuel System	Built By
1992	T	6	191	3130	3.1	V6	MPI	Chevrolet
	E	8	305	4998	5.0	V8	EFI	Chevrolet
	F	8	305	4998	5.0	V8	TPI	Chevrolet
	8	8	350	5735	5.7	V8	TPI	Chevrolet

Carb—Carbureted
CFI—Cross Fire Injection
EFI—Electronic Fuel Injection
MPI—Multi-Port Injection
TBI—Throttle Body Injection
TPI—Tuned Port Injection

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SCHEDULED MAINTENANCE SERVICES

SCHEDULE I

Follow Schedule I if your vehicle is MAINLY driven under one or more of the following conditions:

- When most trips are less than 6 kilometers (4 miles).
- When most trips are less than 16 kilometers (10 miles) and outside temperatures remain below freezing.
- When most trips include extended idling and/or frequent low-speed operation as in stop-and-go traffic.†
- Towing a trailer.**
- Operating in dusty areas.

ITEM NO.	TO BE SERVICED	WHEN TO PERFORM Kilometers (Miles) or Months, Whichever Occurs First	The services shown in this schedule up to 80 000 km (48,000 miles) are to be performed after 80 000 km (48,000 miles) at the same intervals.														
		KILOMETERS (000)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
		MILES (000)	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
1.	Engine Oil & Oil Filter Change*	Every 5 000 km (3,000 mi.) or 3 mos.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2.	Chassis Lubrication	Every other oil change		•		•		•		•		•		•		•		•
3.	Throttle Body Mounting Bolt Torque (some models)*	At 10 000 km (6,000 mi.) only		•														
4.	Tire & Wheel Inspection & Rotation	At 10 000 km (6,000 mi.) and then every 25 000 km (15,000 mi.)		•					•					•				
5.	Engine Accessory Drive Belt Inspection	Every 50 000 km (30,000 mi.) or 24 mos.										•						
6.	Cooling System Service*																	
7.	Front Wheel Bearing Repack	See explanation for service interval.																
8.	Transmission Service																	
9.	Spark Plug Replacement*	Every 50 000 km (30,000 mi.)										•						
10.	Spark Plug Wire Inspection (some models)*‡											•						
11.	PCV Valve Inspection (some models)*‡											•						
12.	EGR System Inspection (some models)*‡											•						
13.	Air Cleaner & PCV Filter Replacement*											•						
14.	Engine Timing Check (some models)*											•						
15.	Fuel Tank, Cap & Lines Inspection*‡											•						

† Note: Schedule I should also be followed if the vehicle is used for delivery service, police, taxi or other commercial applications.

‡ The U.S. Environmental Protection Agency has determined that the failure to perform this maintenance item will not nullify the emission warranty or limit recall liability prior to the completion of vehicle useful life. General Motors, however, urges that all recommended maintenance services be performed at the indicated intervals and the maintenance be recorded in section E of the owner's maintenance schedule.

* An Emission Control Service

** Trailering is not recommended for some models. See your Owner's Manual for details.

SCHEDULED MAINTENANCE SERVICES

SCHEDULE II

Follow Schedule II ONLY if none of the driving conditions specified in Schedule I apply.

ITEM NO.	TO BE SERVICED	WHEN TO PERFORM Kilometers (Miles) or Months, Whichever Occurs First	The services shown in this schedule up to 75 000 km (45,000 miles) are to be performed after 75 000 km (45,000 miles) at the same intervals.					
		KILOMETERS (000)	12.5	25	37.5	50	62.5	75
		MILES (000)	7.5	15	22.5	30	37.5	45
1.	Engine Oil Change*	Every 12 500 km (7,500 mi.) or 12 mos.	•	•	•	•	•	•
	Oil Filter Change*	At first and then every other oil change	•		•		•	
2.	Chassis Lubrication	Every 12 500 km (7,500 mi.) or 12 mos.	•	•	•	•	•	•
3.	Throttle Body Mounting Bolt Torque (some models)*	At 12 500 km (7,500 mi.) only	•					
4.	Tire & Wheel Inspection & Rotation	At 12 500 km (7,500 mi.) and then every 25 000 km (15,000 mi.)	•		•		•	
5.	Engine Accessory Drive Belt Inspection	Every 50 000 km (30,000 mi.) or 24 mos.				•		
6.	Cooling System Service*							
7.	Front Wheel Bearing Repack	Every 50 000 km (30,000 mi.)				•		
8.	Transmission Service	See explanation for service interval.						
9.	Spark Plug Replacement*	Every 50 000 km (30,000 mi.)				•		
10.	Spark Plug Wire Inspection (some models)*‡					•		
11.	PCV Valve Inspection (some models)*‡					•		
12.	EGR System Inspection (some models)*‡					•		
13.	Air Cleaner & PCV Filter Replacement*					•		
14.	Engine Timing Check (some models)*					•		
15.	Fuel Tank, Cap & Lines Inspection*‡					•		

‡ The U.S. Environmental Protection Agency has determined that the failure to perform this maintenance item will not nullify the emission warranty or limit recall liability prior to the completion of vehicle useful life. General Motors, however, urges that all recommended maintenance services be performed at the indicated intervals and the maintenance be recorded in section E of the owner's maintenance schedule.

* An Emission Control Service

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