

Things To Do After You Bought That Studebaker

By: Ingvar Vik, with a foreword and updates by Herb Phillips

FOREWORD: The following article was published in the October 1978 edition of TURNING WHEELS Magazine, and is used here with permission. A few items have been updated by the author, Ingvar Vic, and the changes are in parentheses. I have also made a few notes of my own, identified by my initials. The subjects are separated by paragraph, and it can therefore be used in the form of a checklist. I recommend that you print a working copy, and check off each section as it is performed. Obviously every vehicle is unique, and your own judgment must be used as to the extent of any work needed.

Ingvar and I agree that any serious Studebaker love affair should begin with two things: A genuine Studebaker Shop manual, and a membership in one of the outstanding clubs dedicated to the preservation of this remarkable make. The information presented in this article occasionally references the Shop Manual, but many tasks can be easily performed before yours arrives. Ingvar is presently one of the 9 Technical Advisors to the Studebaker Drivers Club magazine, TURNING WHEELS, and can be contacted through it for specific advise at no charge. SDC also publishes the SDC ROSTER, which contains the names, addresses and phone numbers of every member, and also contains an INTERNATIONAL PARTS AND SERVICE DIRECTORY listing over 400 companies and individuals by State or Country. Excellent advice is also available through the Studebaker Discussion Newsgroup (alt.autos.studebaker) Please be aware that the quality of advise obtained through a Newsgroup can vary, as these forums are open to the general public.

Studebaker is gone, but through the efforts of un-paid volunteers like Ingvar, and 13,000 dedicated members in SDC alone, the magnificent products created over it's 112 year history live on.

This article stands as the finest mechanical overview that I have seen. If you wish to return a Studebaker vehicle to it's original safe and reliable operating condition, short of a complete restoration, Start reading!

*Herb Phillips
Old Kentucky Studebaker*

Okay, you finally convinced yourself and your spouse that you really needed another Studebaker, and it is now sitting there in the driveway. "What do I do now?" you ask yourself. Well, here are a few things that you can do to that new (to you) Stude that will help you while away a few evenings and weekends. While you are At it you should probably do something to that faithful-old Stude that you have been driving all these years too. All used cars require some attention and minor repair work. After all, many people do not service their cars as often as they should, or they just get enough done to them to keep them alive until they can unload them on some Stude nut.

NORMAL WEAR ITEMS

Some things wear out with normal use, like tires and brakes. Batteries deteriorate with age and use. The first thing to check is the battery. Determine its age and condition, and if you suspect that it is old, replace it. Of all the used cars that I have owned, I have had to replace the battery in all but one within six months. Buy a good battery. After all, you are going to keep that Stude for a long time.

Tires

Check for tread depth, cuts, bulges, etc. Are the tires the same size? They should be, but at least make sure that both fronts and both rears match.

Brakes

Take off one front hub and drum. The front brakes wear most. If the linings are thin, you can look forward to a brake job. If they look new, check the rear brakes. Some cheapskates replace only the front brakes and then sell the car.

(NOTE: Removal of rear brake drums when mounted on tapered axles requires a special drum puller. All Studebakers except for the last few years of production used tapered axle shafts. Do NOT attempt to remove the drums from these without obtaining this tool, and reviewing the shop manual procedure. This is not something to be apprehensive about, it is just a little different from today's cars. With the right tool, the job is simple to perform. Without it, you will probably destroy more than you will repair. HP)

When replacing the brake linings be sure to replace the hydraulic cylinder seals and cups. Wash all the cylinder parts in alcohol. Do not use gasoline, kerosene, or solvent. Even if the brake linings look good front and back, you should get after the hydraulic system. Those \$34.95 brake jobs don't do anything to the hydraulic system, and after a few years they get loaded up with dirt and water. Rebuild the master cylinder too. If you have a hill holder, take it apart and clean it. Flush the lines with clean brake fluid. Check the flexible lines. Sometimes they have worn spots from rubbing on the frame or suspension. Replace them if they are cracked, swollen, or cut.

(NOTE: This was written 20 years ago. The newest Studebaker will be 32 this year, and was never really expected to last this long. When you combine this with the fact that most of the brake systems were using a single master cylinder, and it was filled with the finest paint stripper/moister absorbent 1940's technology could devise, (DOT 3 brake fluid) you have an accident looking for a date. If you are still using DOT 3, OR if you cannot verify the age of the hydraulic lines and hoses, REPLACE THEM NOW! The emergency brake is a sad myth. It may slow you down a bit, but try it sometime in a simulated panic situation. Do you really think it will save your hide when an internally rusted brake line pops open? If you have a later Studebaker with the modern dual master cylinder, you will be in a lot better position in an emergency, but losing half of your normal braking ability is no picnic either. Ingvar and I agree, that a full line and hose replacement is the only way to go on the unknown car. After that, an upgrade to DOT 5 silicon fluid will probably eliminate the need for any further hydraulic work during your ownership of the vehicle. -HP)

While you have the brake drums off, check to see if they are grooved. If so you should have them trued up on a brake drum lathe. Most good auto parts stores have facilities to do this work. If you get the drums trued you should get oversize linings and have them arced to fit the new drum diameter. While you are working on the brakes, don't forget the hand brake. Adjust it after you get the service brakes set. Oil the cables with engine oil.

Bearings and seals

Before you put the brake drums back on, you should clean and pack the wheel bearings. The rear ones too! To pack the rear bearings, you must have the hub and drum off. Then remove the backing plate. Don't lose the gaskets or the shims. You can pull the axles out by using the hub and drum as an impact puller. Put the hub on the axle without the key, then put an axle nut on at least four turns.: Rap the hub against the nut a few times. This should pull the bearing race out of the axle housing. The bearings should be washed in solvent and packed with wheel bearing grease. With the axles out, clean the ends of the axle housing and replace the inner seals. These seals keep the oil in the differential from running out and washing out the wheel bearing grease when the car is parked on a side hill. By replacing them now you will alleviate any problems later on. When you put the rear backing plates back on the car you should set the axle end play. The shims that were between the backing plate and the axle housing on the right side are for this purpose. There should be from .006 to .003 end play. The best way to check it is to use a dial indicator with a magnetic base. Put the contact button on the end of the axle and try to move the axle in and out. Take out shims till you get the correct reading on the indicator.

*(Note: **DO NOT** under any circumstances put the drum back on the tapered shaft axle with any type of lubricant on the mating surfaces. It is tempting to do this after seeing how much power must be exerted by the drum puller to pop them free. When reassembling, the surfaces should be clean and dry. If lubricated, as you tighten the attachment nut to the specified torque, the axle will continue to slide inside the drum hub, eventually splitting it open. The friction of the dry surfaces is allowed for when torquing the nut. It may sound strange, but this design works, and did so for many decades. Just get the tool! HP)*

Now that you have done all that, let's look at the engine. There are five systems to check: Cooling, Electrical, Fuel, Lubrication, and Mechanical.

THE COOLING SYSTEM

The cooling system probably needs flushing and some new hoses. Check the hoses first and replace the ones that are soft, cracked, or swollen. Next check the water pump. Grab the fan and try to move it up and down or back and

forth. If there is any movement there at all, replace it. They usually get noisy before they get loose, so if you hear a rumbly or chirpy noise from the front of the engine, it could be the water pump.

The next item to check is the core plugs, or soft plugs. You might as well replace them now. Some radiator cleaners cause a galvanic corrosion between the mud that has accumulated in the block and the mild steel in the core plugs. These plugs are inexpensive but they are sort of messy to replace.

Here is what to do: Run the car up on some ramps about 19" high, preferably on a gravel driveway. Drain the radiator and remove the two pipe plugs at the lower sides of the engine block toward the rear. Six cylinder engines have only one plug - on the left side toward the rear above the starter. The coolant should drain out. If it doesn't, jam a screwdriver or an icepick in the hole to break the dirt loose. After the block has drained, take a punch and hammer and punch a hole through each core plug, then pry them out. (These are sometimes referred to as freeze-plugs. HP) On V8 engines you have to remove the starter from the drivers side. Now comes the messy part. Get a garden hose and nozzle. Stick the nozzle into each core plug hole and flush out all the mud and sediment that has accumulated in the block.

(Note: it is common to find strange bits of weird looking wire in these dark cavities. These are old casting form wires that were sometimes left in place at the factory. Pull them out and dig around in there with coat hangers, tentacles, whatever, until it is as clear as you can make it. -HP)

After you have accomplished that, you can install new core plugs. Coat the edges with zinc chromate primer and put them in with the convex side out. On the older style engines without the full flow oil filter, the holes have a shoulder inside with the plugs stop against. Hit the plugs in the center with a punch and hammer so they will swell up and stay in place. Seat them firmly - it is sort of embarrassing to suddenly lose all your antifreeze on the freeway. On the blocks with the full flow oil filter the core plug holes are bored the same size clear through. You can use either the cupped type core plug, or some that can be expanded with a wrench. Dorman makes a copper plug that works well because it is difficult to get a hammer up there, but there is enough room for a wrench. The Dorman part number for the V8 engines is DC-9. You will need six of them.

(Note: Full-flow filter type engines have the oil filter canister screwed directly onto the side of the block. The older engines were sometimes equipped with an optional partial-flow type filter system. These were filters mounted on brackets and had steel lines running to fittings in the block. On partial-flow blocks, not all of the oil was forced to go through the lines and filter, hence the name.- HP)

Now that the plugs are installed, get a can of heavy duty radiator flush. The kind with the cleaner in one end and the neutralizer in the other end. Follow the instructions on the can. Drain and flush the engine thoroughly each time too. And be sure to open the heater valve so the heater will also be flushed. The best way to flush the system is to remove one of the heater hoses and stick the garden hose nozzle into the end of the hose and run lots of water through it with the drains open. Be sure to flush out all the cleaner and neutralizer. Then fill the radiator with clean water or antifreeze. Add a can of water pump lubricant and cooling system conditioner at least once a year. It will make the water pump last longer.

THE ELECTRICAL SYSTEM

Start with the ignition system. Check the condition of the points. Replace them if they are pitted or burned. They can be replaced without removing the distributor, but you have to be careful about dropping the screws in the distributor. I find it a lot easier to remove the distributor and hold it in a vise. This gives me a chance to clean it up good and check the condition of the advance weights. Incidentally, I was given a nice '64 Cruiser with disc brakes and reclining seats just because the distributor self-destructed and the owner had to have the car towed home. If you take the distributor out you have to be sure to get it in time when you reinstall it. Take the distributor cap off and jog the starter until the rotor points forward before you remove it, then when you reinstall it, put it in the same way. You will still have to set the timing, but you should do that anyway. Check the condition of the rotor and distributor cap. If the contacts are all pitted and burned or greenish, you should replace them. If you do not replace them, at least clean the inside of the cap with solvent or WD-40. Later model Studebakers used spark plug wires that had a powdered carbon conductor to suppress radio noise. These will build up a lot of resistance as they get older and should be replaced with a new set using a nickel conductor. A good set will cost about \$15, but they are worth it. (Note: Ingvar and I part company here. I would rather have a static free radio.-HP)

Take the spark plugs out and check their condition. If the tips look like they have been fried or they are all carboned up, replace them. Studebaker recommends Champion H14-Y's for the V8's and OHV sixes. They are OK for normal driving, but if you drive faster than average or take a lot of trips, you should try the next range cooler, which is J12-Y. If they are still too hot, try J10-Y. I use J10-Y's in my 63 Daytona 289 V8, and J12-Y's in my wife's car. with a 259 V8.

Set the gap at .033 to .038 inches before installing them.

The points should be set with a dwell meter before setting the timing. The timing should be set with a timing light with the hose from the distributor disconnected from the carburetor. Idle the engine as slow as it will go and set it on the IGN mark. The number one cylinder is the front one on the drivers side, except for England, Japan, and Australia (and maybe a few other countries where they drive on the wrong side of the road).

Now that you have that done, let's look at the generator or alternator. About all that can go wrong with them is the brushes get worn short or the bearings get loose. On generators you can check the brushes by shining a flashlight in the back end. If they are 1/2" long or less or it looks awfully dirty in there, you should take it apart, clean it, and install new brushes. You can wash the generator in solvent, or use GUNK and hot water, but you should blow it out with compressed air to dry it out. If the commutator is arced or grooved it should be trued up on a lathe. Most auto parts stores can do this for you.

When you reassemble the generator be sure that all the contacting surfaces are clean. Electricity won't go through dirt or rust. *(Note: An excellent product to keep around the garage is something called PENETROX. It is sold at electrical supply houses for use in building wiring. It is an electrically conducting paste, and will prevent corrosion on any connection. I have used it for years on cars, jets, and helicopters-HP)*

Oil the generator bearings sparingly. Too much oil will run out and mess up the inside of the generator. When you put it back in the car, be sure you hook up the wires to the correct terminals. If you are unsure, you should label them when you remove them. Adjust the fan belt so it is snug. Having it too tight will wear out the generator or water pump bearings. If it is too loose it will chirp and squeal.

Next let's check the voltage regulator. About all you can do is watch the ammeter. If it jiggles a lot, or if the needle stays way over on charge all the time, or if it stays in the middle and then goes to discharge with the engine running and the lights and heater on, you should replace it. They can be cleaned and adjusted, but that takes a lot of time and patience. Be sure to polarize the new regulator before you start the engine. Follow the directions that come with the new regulator.

Now let's look at the starter. These little gems suffer more from dirt than from wear and tear, so a cleaning job will usually make them run like new. You can do this while you have the starter out to replace the core plugs. Check the brushes and oil the drive unit with WD-40 or equivalent. If you use oil and live where it gets cold in the winter, the oil will congeal and give you some problems when you try to start your car at -30 F. The whole unit can be washed in solvent or Gunk and hot water. Blow it dry with compressed air. Here again, make sure that all contacting surfaces are clean.

Check the battery cables while you are at it. Lead is a good conductor, but lead oxide is not. Take the cables off the battery posts and scrape them inside with a pocket knife or scraper till they are shiny. Then scrape the posts too. Do not oil the cables or terminals until after they are clamped securely on the posts.

(UPDATE: Ingvar is a firm believer in the serviceability of a well maintained six volt electrical system. 12 volt systems are cheaper to mass produce, and tolerate dirty connections better to some degree. Beyond that, there is no advantage. Both types develop the same horsepower at the starter. Be sure that the cables are as fat as Groucho's cigar, and that the connections are clean, and you will have no more problems than any of today's 12 volt systems. Also, ALL Studebaker 6 volt systems are POSITIVE GROUND!!! -IV/HP)

Now let's set the valve clearances (tappets). Chances are they have not been set in a long time. They should be set (on a V8) at .023 to .025 hot, or .025 to .027 cold. The best way to set them is at top dead center on the firing stroke, one cylinder at a time. The shop manual outlines the procedure as follows:

Take off the distributor cap and rotate the engine either by turning the fan or jogging the starter solenoid with a remote starter switch until the rotor approaches the position corresponding to the number one spark plug. Then carefully rotate the crankshaft until the IGN mark is under the pointer near the crankshaft pulley. You now have it in position to set the valves of the number one cylinder. The cylinders are numbered from front to back 1,3,5,7 on the drivers side (left facing forward), and 2,4,6,8 on the passengers side. To set the other cylinders at top dead center, hook up a 12 volt bulb with one contact grounded and the other one attached to the terminal on the coil that goes to the distributor. Turn on the ignition switch and rotate the crankshaft slowly until the bulb lights up. You are now in position for the next cylinder. Follow the firing order around till you have set all 16 valves. Then go through them all again to double check your work. Be sure to put new gaskets on the valve covers. Use the neoprene type if possible. They can be re-used, and they are not as likely to leak.

While you have your hands dirty from setting the valves, you should remove the oil pressure relief valve and clean it. There is a small orifice in the plunger that gets clogged up sometimes and when this happens your timing gears won't get any oil when the engine is running slow when it is warm. The pressure relief valve is located on the lower block toward the front, below the water pump on the passengers side. Use a 3/4" socket with a short extension and a ratchet to remove the cap. Take out the spring and plunger. If the plunger won't come out easily, a small magnet-tipped rod will usually coax it out. Sometimes a small screwdriver or a 3/16" drill can be used if you can get it into the hole in the plunger and, lifting up slightly, pull it out. Do not enlarge the hole on the plunger. Wash the parts in solvent before reinstalling them. Do not stretch the spring either.

If the engine smokes some and you are uncertain about what to do about it, try this before you talk yourself into a ring job. Remove the spark plugs and check the compression pressure. Write the readings down on a piece of paper. Then squirt some oil into each cylinder through the spark plug hole (about three squirts from an oil can). Then check the compression pressure again. If the pressure has changed, you have worn rings. If the pressure did not change and is high (145 psi or so) on all cylinders, your rings are good. If it is high on some cylinders and low on others, and the readings were the same both times, you have leaky valves. Repairing either leaky valves or worn rings requires some major surgery. However, if the compression pressure is high on all cylinders and the engine smokes, you probably need to change the valve seals. These seals are sort of like umbrellas and are designed to keep the oil from flowing down the valve guides. They are neoprene and will deteriorate with age regardless of the miles on the engine. They can be replaced simply and inexpensively. The shop manual gives a run down on how to replace them without removing the cylinder heads. Special tools are required, but they are easy to make if you have access to a lathe. I made up a set to do my cars, and I will send a sketch of them to anyone who wants to make up a set of his own.

Tool 1 reaches through a spark plug hole and holds the valve up against the seat. Tool 2 compresses the valve spring so the keepers can be removed safely. All you have to do is remove the rocker arm covers, the rocker arms, and the spark plugs. Then insert tool 1 through one spark plug hole to hold up the valve. Bolt tool 2 to the cylinder head and compress the spring. You can now remove the keepers and release the spring and remove it. The seals are then accessible. Remove the old one and install a new one. Repeat this for the other 15 valves and reinstall the rocker arms. Be sure to set the valve clearances when finished.

(Note: On overhead valve engines there is another trick that works. Buy about 15 feet of smooth, flexible nylon rope about the diameter of a pencil. The best type has a shiny, silk look to it and is very soft. With the piston down a few inches from TDC, feed the rope into the plug hole, but don't loose the end you are holding! Now move the piston up by turning the engine crank BY HAND until the pile of rope seats against the bottom of the valves, and resistance is felt. Now, you should be able to use tool 2 to compress the spring as outlined. When done, move the piston down again, and pull out the rope.-HP)

THE FUEL SYSTEM

Take the sediment bowl off the fuel pump and note what comes out. If there is a lot of rust and water the tank should be removed and cleaned out. Here in the Puget Sound region where the humidity is high there seems to be a lot of moisture condensing on any surface. This happens inside of gas tanks, too, especially if the car sits outside. If you don't want to remove the tank, you can add some de-icer type stuff to the gas with each fill up. This stuff is available at most auto parts stores. It absorbs the moisture and cleans out the fuel lines.

Next check the fuel pump pressure. A vacuum gage usually has graduations on it for fuel pump pressure. If it is weak, you should replace it. *(Note: It is also a good idea to check the suction side of the pump. A quick way to check is to put a finger over the inlet port and stroke the pump. It should make a little circle on your skin and the suction should be obvious. Pumps can put out normal pressure, but have low suction. The problems thus created are hard to troubleshoot, but usually show up during very hot weather. Also, Ingvar now recommends using modern rubber compounds to alleviate any potential problems when using modern fuels. Several Studebaker vendors sell kits to make this improvement. If the pump starts to leak internally, fuel will run into the engine's crankcase and mix with the oil. A little bit won't damage anything, but it does increase the danger of fire, and it will reduce the lubrication ability of the oil before it evaporates through the crankcase vents. Avanti owners need to be particularly cautious about keeping the fuel pump in good condition. The Avanti fuel tank sits above the level of the engine, and if the pump leaks internally, has been known to empty it's entire contents into the engine! -HP)*

Next comes the carburetor. If the outside of the carburetor is dirty and gummy, chances are it hasn't been touched in a while. The biggest problem for carburetors is trying to digest water and dirty fuel. If you have a shop manual, you can take the carburetor off and rebuild it. Carb kits are available at most good auto stores. Take the carb apart and wash the parts in carburetor cleaner or lacquer thinner. Blow out all the passages with compressed air before reassembling it. Set everything the way the shop manual says. Any experimenting with different settings will bring you grief and poor mileage. Incidentally, I have gotten some good mileage out of my Studes. Some of my non-Studebaker

driving friends have a hard time believing me, but I got 25 MPG with a 289 in a '63 Daytona.

When reinstalling the carburetor on the engine, be sure to adjust the throttle linkage. This affects the automatic transmission settings. The shop manual outlines the procedure for setting this. I strongly recommend that you install a fuel filter and a fuel pressure regulator in the fuel line between the fuel pump and the carburetor. This will reduce your chances of flooding with a hot engine. Be sure to change the air cleaner element periodically, too.

LUBRICATION

The automatic transmission is a complex unit and is very susceptible to dirt, misadjustment, and sloppy mechanicing. I would advise against trying any major surgery unless you have some experience, the right tools, and a shop manual. There are a few things that you can do, though, such as changing the fluid and adjusting the shift and throttle linkages. Studebaker recommends changing the fluid and cleaning the oil pump screen periodically. If the seal at the propeller shaft leaks, you can change it while you have the transmission drained. The transmission and torque converter hold about 9 quarts of fluid, so get the fluid (Type F) and a new pan gasket before you start.

Before draining the fluid, run the front wheels up on some ramps so you can get under it. Do not ever crawl under a car that is held up with a bumper jack! Block the wheels firmly so the car can not roll over you. Take a 1 1/16 open end wrench and remove the tube that goes from the engine compartment to the rear of the transmission pan. On earlier models there is a drain plug on the back of the pan. Drain the fluid in a pan. This will get about 2/3 of the fluid. To drain the rest you have to turn the engine flywheel with a big screwdriver prying on the gear teeth until you see a 7/16 hexagon pipe plug in the torque converter, looking through the access hole in the converter housing. Remove the plug through the access hole and catch the fluid in a pan. As soon as the torque converter is drained, replace the plug so you won't lose it.

Next, remove the pan by removing the 5/16" bolts with a socket. You will then behold the innards of the transmission. There is a fine mesh screen that should be taken off and washed in solvent. There are some servos and valves that can be taken off and cleaned, but you had better have a good memory or a shop manual before you attempt this because you could put them back together wrong and end up cussing. There are two bands to adjust, but you should not attempt this unless you have a shop manual or a Motors Auto Repair Manual. The Motors manual tells you how to adjust the bands without special tools.

If the rear seal leaks, now is the time to replace it. Take the propeller shaft off at the rear universal joint and pull the yoke out of the transmission. You can get the old seal out with a screwdriver or a punch. Pry it out by sticking the screwdriver through the hole. The new seal can be installed by tapping it in with a hammer and a block of wood. Be sure to drive it in straight. When you have everything cleaned up and back together you can put the pan on, using a new gasket. Connect the dipstick tube. To fill the transmission, pour 3 quarts of the fluid into the dipstick tube or the filler through the access hole in the floor of the car. Set the handbrake, hold the foot brake down, start the engine and put the gearshift in drive, low, reverse, and then back to neutral. Pour in 5 more quarts with the engine running, and check the fluid level with the shift in drive and the brakes set. Add fluid to the full mark.

When the transmission has been filled and checked for leaks, you can set the shift linkage and the throttle shift valve linkage. To adjust the shift linkage, disconnect the shift rod at the transmission. Put the selector in Drive (with the engine shut off) and put the transmission shift lever in the center notch. Loosen the lock nuts on the shift rod and turn the clevis in or out until the pin slips freely through the hole. Lock both nuts on the rod and put a cotter pin through the hole.

To adjust the throttle valve you will need a tachometer and a pressure gauge that reads to at least 85 psi. Run the car until it is warmed up. Stop the engine and remove the 1/8" pipe plug that is located in the front of the case directly ahead of the shift and throttle levers. Install the pressure gauge with a long hose so you can read it from inside of the car. Connect the tachometer. Start the engine. Put the selector in Drive and hold the brake pedal down with your left foot. Accelerate to 1000 rpm. The gauge should read 80 to 85 psi. If it does not, you have to lengthen or shorten the rod that goes from the accelerator to the transmission valve. Do not run the engine at 1000 rpm any longer than is necessary to get a reading on the gauge. When you have that done, remove the gauge and reinstall the plug. Then wash your hands and take it for a test drive.

Now, let's talk about standard, overdrive, and four-speed transmissions. They are relatively easy to work on and quite trouble free if they are given a minimum of maintenance.

The best indicator of the condition of your transmission is noise, or the lack of it. Does it stay in gear? If it slips out of gear, you will have to do a rebuild job, or it could be that the flywheel housing is not centered on the engine, causing the transmission input shaft to run at an angle. All transmissions have some gear noise which is natural, but if you get

a loud howl in one gear or a grating sound you had better plan on taking it apart. The best way to start out with a new (to you) car is to drain and flush the transmission and overdrive unit. Raise the car so you can get under it. Block it securely and jack up the rear wheels. Remove the drain plugs from the overdrive and the transmission. Remove the filler plugs from the side. Replace the drain plugs and fill the transmission with solvent, diesel fuel, furnace oil, or light engine oil. Do NOT use gasoline. Replace the side plugs. Start the engine and run it in and out of overdrive and through the gears for about five minutes. Drain the transmission and overdrive immediately. Replace the drain plugs and fill the transmission and overdrive with SAE 80 mineral oil or SAE 40 non detergent engine oil. Do not let anyone talk you into using a multi purpose gear lube. This stuff makes the synchronizers slip and makes overdrive lurch when you shift it. Be sure to replace the filler plugs. A good method for filling the transmission is to use a plastic squeeze bottle like you use for ketchup.

(Note: Straight SAE 80 mineral oil is readily available if you look in the right places. It is still commonly used in large trucks, so try either a truck stop, or contact an oil distributor directly. It may not be available at the neighborhood auto parts store. If the lube you are considering has the letters EP on it, it contains Extreme Pressure additives, and will lead to the problems Ingvar described above. -HP)

If the rear seal leaks, you should replace it before you fill the transmission. You can pry the old seal out with a punch or a screwdriver. When installing the new seal, tap it in evenly until it is flush with the case. Now that you have that done, you can adjust the shift linkage. You should check the engine mounts now and replace them if they are bad because if the engine drifts forward or backward too much you will have trouble shifting. To adjust the shift linkage, first put the gearshift in neutral, and remove the clevis pins from the linkage at the transmission. On 1961 and later models you can put a 3/16" diameter rod or drill through the two levers on the steering column and through the block between the levers. Then adjust the length of each rod at the clevis until the pin slips in easily. On pre 1961's you need a tool or you can feel or eyeball the linkage. The main thing is to align the two levers on the steering column when the shift lever is in neutral so the holes line up.

The housing under the steering wheel that holds the shift lever may need some attention, too. In order to get at this item you have to take the steering wheel off. For this you need a puller. When the steering wheel is off you will see two 1/4" nuts that hold the upper housing to the steering column. Loosen the nuts with a socket wrench. Do not take them all the way off, just loosen them. You have to unhook the turn signal wires too. Tag them so you will get them together again in the right order. The housing should pull up easily. If you pull the shift tube up with it you have to make sure that the tube lines up with the lower shift lever arms when you reinstall it. When you get the housing off, clean the lower end, lubricate it with Lubriplate or chassis lube. Lubricate the top steering shaft bearing too. When reassembling the shifter and top bearing support, the two 1/4" bolts have to hook into the notches in the steering column. Be sure to tighten the nuts evenly. Lubricate the horn contact ring on the underside of the steering wheel with chassis lube. When installing the steering wheel make sure the marks line up so the wheel will be level with the car pointing straight ahead.

(Blatant commercial promotion: If the shift tube is worn out, you should be able to purchase a new one from any good Kentucky-based Studebaker parts vendor. They usually keep a box of them in the barn. -HP)

The clutch should be set and lubricated too. On the suspended pedal type, spray the pivot shaft with WD-40 or equivalent. On the older models with the pedals through the floor, check to see that the clamp bolt is tight that holds the clutch pedal arm to the shaft. There is a lube fitting between the pedals somewhere under all that grease and dirt. Be sure to lube it every time you service the car. The free play should be set so you get at least 3/4" of pedal movement before you feel any resistance in the clutch. If you did everything right, you should have a smooth shifting car.

As long as you have the rear wheels up, you can flush the rear axle in the same manner as the transmission. To drain the rear axle on the later models you have to remove the rear cover. Be careful not to get any dirt in the gears. Reinstall the cover with a new gasket. On standard rear axles fill it up with SAE 90 hypoid gear lube. On Twin Traction units you have to use a special limited slip lubricant. Most auto parts stores have it, or you may be able to still get it from a Ford dealer.

MECHANICAL ITEMS

Every car has some things that require attention but which may be perfectly OK on the next car. There are a lot of little tinker-type jobs that you can do to make that Studebaker a real pleasure to own and drive. For instance, I enjoy showing my non-Stude driving friends how easily the doors open and close on my wife's '62 Lark 4 door. "Just like a refrigerator" they say. The car has over 166,000 miles on it now, so the doors have been opened and slammed a few times. One thing that you should do which is often overlooked is to aim the headlights. When driving at night I can judge the condition of an oncoming car by the headlights. You will notice, for instance, that State patrol cars always

have even headlights. The best way to aim the lights is to pick out a dark straight level unused piece of road. Take off the headlight rims. There are two screws on each unit, one to the side, and one at the bottom or top. With these you can move the light to raise or lower the beam or move it from side to side. Turn on the brights and aim the light straight ahead and far enough out so that you can see the beam hit the roadway 100 yards or so ahead of the car. The dims will fall about 30 to 50 feet ahead of the car and a little to the right.

Another thing that is often overlooked is the lubrication of the door hinges and latches, and the hood and trunk hinges and latches. An oil can filled with light oil and STP will work wonders. Be sure to wipe up the excess oil from the door latches so your wife or girl friend doesn't get oil on her dress or coat when she gets in the car. A few squirts of WD-40 or the equivalent will make the door, trunk, and ignition lock cylinders work freely. Just squirt some in the key hole and insert the key and work it a few times. Also squirt some around the push-button on the outside door handle. Do not use oil here, it will congeal in cold weather and you will have to pull the button back out.

To make door and window adjustments you have to take the upholstery panel off the door. If the door sags or rattles against the body it can be raised or moved by loosening the three screws that hold the hinge to the door and then moving the door to the desired position. The windows have upper and lower stops that can be adjusted. The hood latch should be adjusted so it does not raise up or vibrate while driving but still can be closed without slamming it too hard. The round catch can be moved up or down by loosening the locknut and turning the catch. Adjust it to where it takes a firm pressure on the hood to close it.

The trunk latch should be adjusted in the same manner. The catch on the body can be moved up or down by loosening the two screws. If you set the trunk latch too tight on the Larks that have spring loaded hinges, the trunk lid may spring open while driving. Set it so the latch will catch (you will hear it click) with a firm push of your hand, rather than a slam. Here in the rain country the windshield wipers should get much attention. Replace the blades once a year, preferably in the fall. Studebaker put some felt rings on each link on the wiper mechanisms. They should be oiled once a year. On some models these felt rings are hard to get at, but there are few things in life that are more annoying than squeaky wipers.

A front end alignment requires special equipment. Make sure everything is tight in the front end before taking it to a shop. Replace the loose or worn tie rod ends, inner control arm bushings, and shock absorbers. Then take it to a good front end alignment shop. Don't take it to one of those places where they advertise a \$9.98 alignment just to get your car in so they can sell you a lot of parts that you do not need. If the front end is set correctly it should last 50,000 to 80,000 miles. My '55 has been set twice in 197,000 miles. Be sure to lubricate the fittings every 1000 miles. Grease is cheap.

(Note: Studebakers have more grease fittings than modern cars. Make a photocopy from the shop manual, and give it to the person doing the lubrication. There are very few people that will know where to look for the critical fittings. If a fitting will not take grease, note it on the chart, and correct the problem as soon as you can.-HP)

Loose or worn shock absorbers can be dangerous. To check the shocks, grab the bumper and bounce the car up and down a few times, then let go. Good shocks will stop the car at the bottom of the first bounce.

Stiff wind-wings are a small item but can be a nuisance. If they are difficult to move, open them and squirt some WD-40 into the hole in the rubber weatherseal about one inch ahead of the pivot. It should work loose immediately.

Make sure that all the wiring has rubber grommets on where it goes through sheet metal. Short circuits can be dangerous.

If you replace the universal joints, get the kind with a grease fitting. They will cost more, but they will last forever if you lubricate them with wheel bearing grease every 5000 miles.

Many engines have sticking manifold heater valves. If yours is stuck, make sure it is stuck with the weight down. Here in the Puget Sound region you can get along without a manifold valve. I took the one out of my '63 Daytona and put a spacer in its place. If the valve is stuck shut (up) it can cause the exhaust valves to get hot and burn out.

If you have done all these things, you should have a good-running and dependable STUDEBAKER.

HAPPY STUDEBAKERING!
Ingvar Vik, Technical Advisor, Turning Wheels magazine

I hope you enjoyed this and found it as useful as I have. Thanks again to Ingvar for graciously allowing its use, and for giving me permission to add my own annoying comments.

Herb Phillips Technical Advisor Groupie -- Herb Phillips President/Curator AKA: The Kentucky Open Air Museum of Hoosier Automotive History