

COMPACT
FRONTWHEEL
DRIVE CLUB
of AMERICA

MAR. 1981

DEDICATED TO SMALL
ENGINEED SI ALL CARS &
ENERGY CONSERVATION

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MEMBERSHIP/SUBSCRIPTION

Newsletter #91, our 74th multipaged monthly. Dues for membership/subscription are \$10 for the first year, including two back copies, 12+ tech sheets and emblem. Renewal dues: \$8.00. Renewal notification will be stamped on the open rectangle at the top of this page. A treasurer's report will be made three times a year. This is a non-profit organization.

Or: a three-ringed binder with a collection of back articles and tech sheets is available for \$6.00 postpaid. Or, 30¢ one issue.

Always specify: 96, 97, 99 or 900 and year, for appropriate sheets.

proposal can be sent to: Public Docket EN-79-9, Central Docket Section (A-130), Environmental Protection Agency, 401 M St., SW, Washington, DC 20460.

As you can see from the different styles of type in the newsletter this month, the new IBM typewriter has arrived. It allows me to type the bigger size for headlines and use italics for editorial comments and also has automatic correction when you backspace--a real time saver. Jeff Delahorne, editor

SONETTS ADD TO ICE RACING WINS IN WISC...

Saab Club members Ken Cich and Dan Page added another victory each in an International Ice Racing Association contest Feb. 15 in Eau Claire, WI. Ken won his third consecutive B-class title in his modified two-stroke Sonett and finished fourth overall behind a V-6 Sonett and two Austin Minis. Ken is also second in total series points for the overall crown.

Dan won his second consecutive showroom stock race at Eau Claire in his '69 Sonett II V-4 and now has a large point lead for the overall showroom stock series title. The March 1 race at Thunder Bay, Ont. was cancelled because of poor ice conditions after an unusual warm spell.

CLUB MEMBER RACES TURBO & 99 IN IMSA, SCCA

For the 1981 season I'll be campaigning a 900 Turbo in selected IMSA RS races and a 99 Gli in SCCA Showroom Stock B Events. The Turbo's 240 hp motor will propel it in excess of 140 mph. This car, sponsored by Saab-Scania of America, Robert Bosch Corp., and Reinertsen Motors, will compete in the hotly contested Champion Spark Plug Challenge Series. The competition will come mainly from factory backed Renault R-5s, AMC Spirits, and Mazda RX-3s. Our engine benefits from some of the European Rally Development Program and uses a large turbo, Porsche 928 fuel injection system, larger intake and exhaust valves, slightly higher compression pistons (7.8 to 1) and a competition cam. John Caldwell, our engine builder, who lists among his customers the likes of Paul Newman and Al Holbert, pronounces the Saab motor to be incredibly strong with a great deal of potential.

The 99 will compete in the SCCA's SSB class where Saab has been the dominant marque since 1978. This car will be raced in the Northeast with an eye on both the Divisional and National Championships in SSB.

I would heartily encourage any Club members in the areas near where we will be racing to come by, say hello, talk Saab, and give that always needed encouragement. Jon McKnight, New Brunswick, NJ

EDITOR/PUBLISHER'S REPORT--MARCH 1981

Treasury report: For the January and February newsletters we spent \$1075 on printing, including printing costs for flyers and a new batch of "new member" letters. Postage for two months was \$795 with another \$132 in miscellaneous postage costs for sending out samples, new member packets, etc. We paid \$165 in folding labor for the two issues, and \$275 in clerical help for the rush of mail that the Road and Track ad brought in. As of March 1 we have a bank balance of \$2600. A more detailed report is available to anyone upon request.

We have now gained 100 new members from our advertisement in the February and March issues of R&T. We have received about three times that many requests for information and sample copy from the ad and we are still getting five or six requests for samples every day. We will advertise in R&T again in a couple months; their club ad rates are now \$75 per month, so it costs too much to advertise every month, and advertising every month probably does not have twice the "pull" of every other month.

All the new members and requests for samples undoubtedly helped swell our February mail count to 596 pieces. So far in March we are ahead of Feb.'s pace with 300 articles of mail arriving in the first 12 days. So a good part of the time Carolanne and I spend is just opening mail and handling the requests that are contained in all those letters.

Of interest to those hungering after a newer 96 than available in the US is an amendment to EPA regulations on individual import of foreign cars. According to a story in R&T (Feb., p. 60), the EPA is considering allowing an individual to import one non-certified, non-conforming auto or engine for their own use. The new regulation would do away with the current rules requiring cars to be imported under bond and be certified later to meet emissions and safety regulations. While I have not seen the complete proposed rule, it seems as though an individual would be able to import any of the Saab model range available in Europe, but not here. Comments on this



DICK G. SPEAKS OUT ON U.S. AUTO INDUSTRY

The March 7 Chicago Sun-Times published an essay by R.M. Ralston, a V.P. of development and communications manager. His article confirmed my critical view of the boards of directors of Detroit auto companies. Briefly, he said, "Industry management is overloaded with MBAs (masters of business administration degrees). These MBAs have no engineering training or experience."

I said they have no "mechanical sense," no design talent, no aptitude for creative mechanical solutions. The MBAs and their supporters will argue: "but, we can hire engineers and inventors." Not so, MBAs, lawyers, accountants, are not good judges of who is a talented design engineer. They will instead pick the fellow who fits their own image; wears a vested suit, wears the same fraternity striped ties, belongs to the same clubs, and is suitable to marry their daughters.

Consequently, the designs these glorified bookkeepers pick are consistently square, bulky, fat, with five ashtrays, make-up mirrors, electric windows, fake spare-tire molds, rear drive, bench seats, air conditioning heat exchangers mounted on the engine's radiator, etc., etc.

Some bad designs in cars are there because the bookkeepers won't buy anything else; for example: the air conditioners on all cars are installed wrong, including Saabs because 'Scania must accept what is produced for the industry (Saab does not make or design A/C, neither do most other car makers). I assume some Saab or other engineer could design a better A/C installation, but they don't because they must use what is available from their suppliers.

Most all radios are installed in the dashboard--WRONG! Slowly, bit by bit they are moving it further to the right of the driver--big deal! Protruding bumpers are still "wrap-around" protecting huge square fenders. Most of the largest 6 or 7 passenger cars are promoted and sold to 65 year old goats who always drive along. Tell your uncle Max that you refuse to buy a car designed by a bookkeeper or an MBA.

Dick Grossman

Ed. Note: Another example of Detroit's backwardness is Chrysler's K-car sold mostly with bench seat in front. They advertise "Room for six Americans" but does the middle passenger get the benefit of shoulder belt? Also the bench seat design prevents the use of passive belt restraints like VW's making air bags the only passive restraint possible, thus raising the price of the car much above the belt systems and giving them another excuse to fight passive restraints and safer cars in general. Also Chrysler's bench seat and 4-speed transmission has hump mounted shift lever--right in the way of the legs of the sixth "American" in the middle. (Does six "Americans" mean you could get seven Japanese? Five Swedes? Does it take jingoism to sell K-cars?) Unfortunately, just because Detroit has "discovered" smaller size and front drive does not mean they have finally learned how to produce decent automobiles.

Jeff Delahorne, editor

MEMBER WANTS INFO ON CAPRI V-6 TRANSPLANT

In 100 words or less, are there any comments from people who have done Capri V-6 transplants?

Bill Littlefield, West Hartford, CT

USE THE RIGHT TOOLS--POZI-DRIVE SCREWDRIVER

Many of the screws used in Saabs are Pozi-drive, although they look like Phillips. If you don't want to round out their slots, you should get the proper screwdriver. I had a difficult time finding a Pozi-drive and tried all the auto and hardware stores before I found that Ez-i-drive ball handle ratchet screwdrivers had an insert, and that insert would fit my other insert type screwdriver.

In the April 1980 issue, Dick mistakenly illustrated a clutch-type screw and screwdriver and called it a Pozi-drive.

Steve Botorff, Cleveland, OH

SCREWDRIVER SELECTION



CLUTCH BLEEDING METHOD #4267? OTHER TIPS

Here is yet another way to bleed the clutch hydraulics, one person, no pumping, no pressure, no need to bleed at the master cylinder. Run the fluid through in reverse. Here is one way to do that: use a three-foot piece of 3/16" tubing. Put one end on the bleed nipple and stick the other end a few mm into a hole drilled through the bottom of a plastic bottle (a small frozen orange juice can works). If the hole is small enough for a snug fit there will be very little leakage. Hang the plastic bottle/can from the edge of the open hood and put fluid in it. Get all the air out of the tube by gently squeezing it. Open the bleed nipple, keep fluid level up in the orange juice container. When the clutch reservoir is full, close the bleed nipple.

I've been a member of the Club for almost a year, joining shortly after buying a '75 99LE. The Newsletter and tech sheets have helped fix cooling, electrical, and brake problems--to name only the main ones--and have helped prevent others.

The SEV system gave out and I have not tested the alternator to find out which of the usual ways it went. I replaced it with a Delcotron unit with built-in regulator, courtesy of Gary Thomas, and have had 8000 miles with no further electrical trouble. A piece of information: the part number for the Datsun alternator bracket in Gary's conversion is 11715-21001. Datsun calls it a "bar."

George Peranteau, Oak Park, IL

SAAB import motors, inc.

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WATER INJECTION FOR V-4 WORKS WELL

In reply to Gary Rumrill's letter, the water injection works great on the V-4. It will eliminate the need to buy premium gas--period.

There are many units available but I like the one made by Shelby-Spearco. It is advertised in the auto magazines and also J.C. Whitney. It is an expensive unit compared to others I have seen (about \$70) but it has some real advantages if you are interested in doing things right. The Shelby unit can be adjusted to start at various vacuum settings and uses an electronic unit to vary the rpm of the injector (windshield washer) motor. More rpm--more water. Also there is the possibility of various jets to control the maximum flow.

I put one of these on my 95 and the detonation went away. I also have been using one on my turbo V-4 for a year now with no problems. I mix 50-50 methanol to avoid freeze up in cold weather and a splash of methanol in the summer for fun. The jets that come with the kit are a bit large for the V-4 so I tapped the hole shut with a hammer and re-drilled them. I also installed a filter in the line as the jet could easily become plugged.

There are more basic units that consist of a vacuum switch and pump only that work well, but lack the proportional flow adjustment of the Shelby-Spearco.

CLUB MEMBERS NOT RESPONDING TO ADS?

Who is hoarding the 96 parts? I would like to appeal to the club members to respond to the want ads. I place an add with few restrictions--call collect, location not limited, etc. and I received one letter and two phone calls!

I am as guilty as the others in that I am sitting on a bunch of 96 parts and often do not reply as it is more work to remove the part and ship it than I feel its worth. However, there are those who need that part. A post card reply is not that much trouble and may keep a 96 from the crusher. Let's share the junk. For many the newsletter is their only source, or maybe the last resort.

Fred Sisson, Nashville, IN

96 BRAKES WEARING OUT PADS--MASTER AT FAULT

Recently I had trouble with a 96 V-4 wearing out brake pads quickly only on one side. After the normal checks on rotor condition and freeing up the sliding mechanism, I rebuilt the caliper. This did not solve the problem.

After a lot of thought, I found one circuit in the master cylinder was not returning all the fluid and pressure when the pedal was released. I rebuilt the cylinder since the seals had deteriorated and were hanging up, and all was fixed.

Gary Reider, Boyertown, PA

WHERE DO YOU GET A SPOILER FOR A 96?

In response to Thomas B. Mudd's letter in the February Newsletter, it would be nice if he could supply information as to where one can obtain (or fabricate) a front spoiler/air dam for a 96. Also if anyone has had any experience fitting a front spoiler onto a Sonett II V-4, please share the information. Thanks.

Mark Welden, Charlottesville, VA

MORE V-4 CARBURETOR ADVICE

Jack Lawrence summed up the V-4 carb situation pretty much as I had analyzed it. I think the Weber as once offered by Saab as part of the Stage I tuning kit might have been slightly better, but lacking that kit, the expense along with the linkage and air cleaner problems, especially in a Sonett, made me decide on the 43mm MSS carb.

I installed the carb last fall and am pleased, although I did not get much use before I put the car up for the winter. My mpg went up about 1.5. The beauty of the MSS carb is its simplicity. Several troublesome emission controls are eliminated, and there are only two adjustments: idle speed and idle mix. Best idle resulted in a complete stall when the throttle was just opened, making it impossible to ease away from a light. I solved it by adjusting the mix with the idle set for 1500-2000 rpm, then turning the idle down. (Ed. note: I experienced the same problem with my MSS carb, but talking with Jack, he says that the 1500cc V-4s need a different jetting than the 1700 and that will eliminate this problem. I haven't had a chance to check the jets in my carb yet to try this out.)

I experienced a balky choke problem, but found the problem was in the cable. I re-routed it for more generous bends and put graphite speedometer grease on the inside, and the problem was solved. I plan to re-contour the fast idle cam next spring. The 43mm is a Holley designed for a Ford product with a larger engine, and you get too much fast idle for a small engine unless you back the screw all the way back. Then you get no fast idle until the choke is all the way out.

Changing the manifold on a V-type engine is comparable to changing the head on an in-line four. That is, you break into both the water and oil passages and can mix the two if you're not careful. Be sure to drain the antifreeze (From BOTH block drains not just the radiator--Ed.) and preferably flush the block with water. A little water won't hurt your oil but antifreeze will.

Before you begin this installation, check your compression. There is no point in putting a big carb on a sick engine. You may need a valve job, and now is the time to do it because you are doing half the labor anyway. If you do a valve job, consider stiffer valve springs. Be sure to adjust the valves while you have the valve covers off. Valve failure is the largest single cause of V-4 engine failure.

Finishing touches: The water lines that went to the old choke should be plugged at both ends. The valve cover vent on the left-hand cover can be re-turned to the carb inlet by adding a tee to the hose from the carbon canister. The hole on the front of the air cleaner that went to the old float bowl vent should be plugged. Notches must be filed inside the air cleaner where it fits over the hold down bail on the carb.

Steve Bottorff, Cleveland, OH

NEW SHOP IN NORTHERN ILLINOIS--Northeast Cook and Southeast Lake County Illinois Club members and other Saab owners interested in a new service shop for all Saab models opening in May in the Highland Park area should indicate their support by calling Fred Cappeller, 312-234-2521, 327 W. Sheridan Pl., Lake Bluff, IL 60044. Fred is a club member and is familiar with both V-4s and 99s.

MISCELLANEOUS TIPS FROM ERIC KILLINGER

Regarding my note on starter solenoids in the January newsletter, an addition would be that there are two original equipment solenoids: '67-'68 is Bosch 331 302 011 and '69-'73 is 331 302 033. Solenoids CAN be taken apart and contacts cleaned, etc. usually to good functioning. Perhaps for long term reliability it is best to replace either one with a new Bosch 331 302 030 as I mentioned before.

For Dale Patterson (Jan. Newsletter): I believe silicone brake fluid to be very nearly the ultimate solution. I have had it on my '71 95 for a little over two years now without a hint of a problem. When I did it I installed a new slave cylinder and new master cylinder so as to start with the freshest system possible. Good results could probably be obtained by flushing the system with alcohol after installing new seals. If you can afford it, however, install new cylinders and silicone fluid and end your troubles. By the way, the reason that silicone fluid is superior is that it does not absorb moisture like regular fluid and it operates better at higher temperatures.

I continue to have good results with Montgomery Wards oil filters for V-4s. As reported previously in the Newsletter, they are nearly identical to the Saab original and DO have an anti-drain valve. They are often on sale for under \$2.00 each. Part numbers for their standard filter is 39202 and for their "x-tra life" filter: 39434. This filter is designed to fit most late model and not so late model Chrysler products.

V-4 oil pressure sending units often leak and/or stop working. Don't let a bad sending unit cause a blown engine! If the oil pressure idiot light doesn't come on when the ignition is turned on, check the sending unit by removing the wire from the unit and grounding it. If the light now come on, the sending unit is bad. Trouble could also be in wiring, especially in the connection at the gauge cluster of 1970 and on V-4s. Parts numbers are Beck-Arnley 201 0064 and "Standard" PS-57 available from an American parts distributor (designed to fit most GM cars, take old sender to compare).

It has been reported that a Volvo clutch slave cylinder repair kit will work on the V-4. I checked kits for both and found this to be the case. The main part of the kit, the piston seal, is identical in the Lockheed kit for the V-4 (p/n SP 2222) and '66 Volvo 122 (p/n SP 2001). The Volvo kit is a couple of dollars less than the Saab kit, but has a different dust boot, so reuse the old one.

I would like to note again the cause I have found of improper clutch action after installing a new clutch pressure plate and disc. I have found the new clutch freeplay adjusting screws supplied by Saab to be 1 3/16 long as opposed to 1 1/16 long for all the ones I have seen that I have taken off cars. The longer replacement screw will allow the excessive freeplay to be taken up and the clutch to work properly.

There was a note recently from someone wondering how a 99 distributor comes apart. Indeed it will: a couple of small screwdrivers must be used to manipulate the small wire circlip off (under the felt wick in the center of the distributor). Upon reassembly the same procedure is used to work the clip back on.

Eric Killinger, Boulder, CO

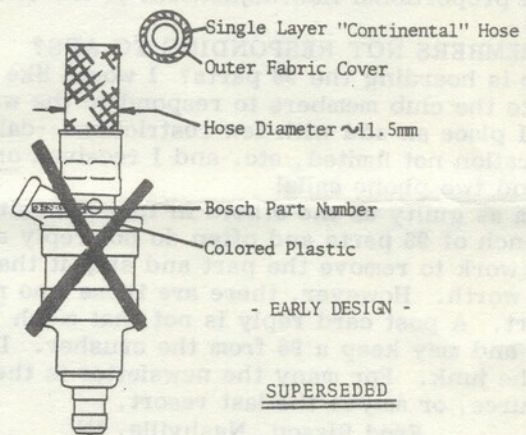
FUEL INJECTOR HOSE LEAKS ON 1.7 99 FIXED

I was flipping through some back issues of Saab Service Bulletins the other day when I came across a recall for the fuel injectors on 1970 to '74 99s. I made a mental note to check the ones on our '71 99E which we bought only two months ago and which has been much abused in the past. I had not checked the injectors yet when, upon stopping the car, I smelled gasoline. Opening the hood revealed that #four injector was leaking gas and it was of the old, "superseded" variety single layer, fabric covered hose running from injector to fuel distribution pipe.

The recall expired in 1979, but it listed a part number for a hose kit with different style clamps which Saab claims will not crimp and damage the end of the hose. The kit is part no. 0294116 and contains two hoses and four clamps so you need two kits to do all four injectors. The kit is also Bosch p/n 1 287 010 700. I got it from the Saab dealer; \$3.95.

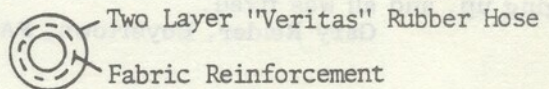
Anyone with a recently acquired '70-'73 99E should check these hoses and fit the replacement kit if necessary. I was fortunate that I hadn't driven very far and the engine was not extremely hot or I might have had an engine fire.

Jeff Delahorne, Ed., Duluth, MN



Bosch Part No.	Saab Part No.	Engine Usage	Color of Plastic
0280150001	8376055	1700cc	Black
0280150007	8376055	1700cc	Yellow
0280150004	8380719	1850, 2000cc	Green

- LATEST DESIGN -



Bosch Part No.	Saab Part No.	Engine Usage	Color of Plastic
0280150013	8376055	1700cc	Yellow
* 0280150014	8354664	1850, 2000cc	Green

* Original equipment on late 1973 and all 1974 99E models. Introduced on: 99732026629 (Manual) 99732026840 (Automatic)

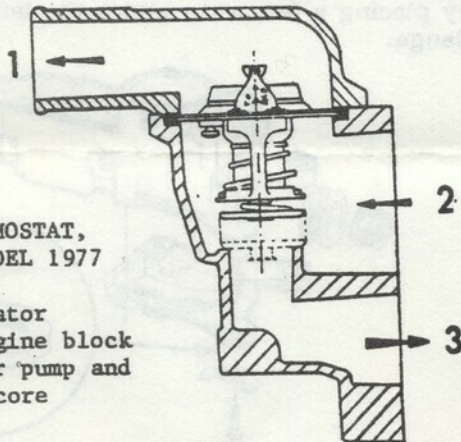
SAAB SERVICE TIPS

Three-way thermostats used on 1977-81 Saabs must not be replaced with conventional thermostats. The reasons lie in the functions of the thermostat relative to coolant flow.

a). During the initial warm-up the bottom passage of the thermostat is open while the passage to the radiator is closed. Coolant will circulate through the engine block and heater only. (passage 2 to passage 3)
b). When the thermostat opens coolant flows from the engine through the radiator and back to the pump completing the cooling circuit (passage 2 to passage 1). Passage 3 remains open.

c). The most important function of the 3-way thermostat occurs at very high operating temperatures. The thermostat main valve will be open permitting flow to the radiator (passage 2 to passage 1) but the bypass (passage 3) will be closed. This forces ALL the coolant through the radiator.

Use of a standard thermostat will not accomplish the maximum circulation available with the 3-way thermostat and overheating may occur under extreme operating conditions.



3-WAY THERMOSTAT,
AS FROM MODEL 1977

1. To radiator
2. From engine block
3. To water pump and heater core

Five-speed transmission case -- In spare parts stock, the M80 5-speed transmission case (p/n 8712390) has been superseded to the M81 case (p/n 8715484). Refer to Multiple Supersession 154 which provides the correct side covers and gaskets for the 1981 case.

Moulded taillamp housing -- If you find corrosion on the terminals of a moulded-in taillamp housing harness connector, clean it with T.V. tuner cleaner and a small wire brush. Then coat the terminals with petroleum jelly and reconnect the harness plug.

Rear door rattle -- A likely source of an annoying and persistent rattle in the rear doors of an M81 4 door model may be the bottom retaining screw of the window regulator guide. Also check the two screws holding the regulator near the crank handle shaft. Back out the screws one at a time and apply Loctite before tightening. Also, if a rattle develops between the window crank handle and the upholstery panel it can be silenced by stretching or shimming the spacer spring behind the upholstery panel.

Screw-in gas caps -- Screw-in type gas caps that defy removal can be remedied by lubricating the gasket with rubber grease. After applying the grease the cap should be removable with only hand pressure.

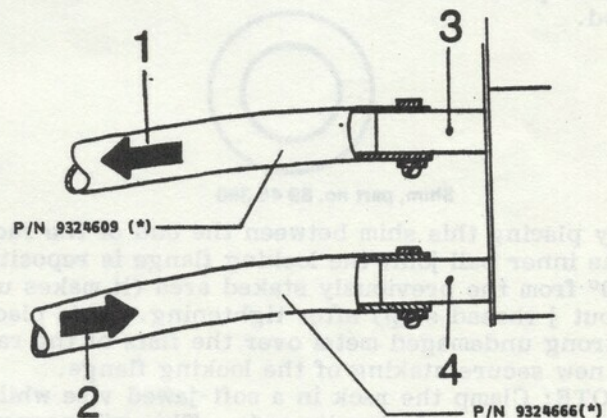
Saab Paint -- The Sherwin-Williams Company is the official paint supplier for Saab in the USA. Color formulas are produced by their laboratory to match the standards (chips) sent from Saab's production lines in Sweden. These formulas are then assigned code numbers (according to their system) and entered in the microfiche that are distributed to ALL S-W paint outlets and those of their subsidiary companies. (Subsidiary company brands are: Acme, Martin-Seymour, and Rogers.)

While others provide "color match" formulas and packaged premixed paint for Saab, you will normally be able to get new colors mixed first at the stores handling Sherwin-Williams, Acme, Martin-Seymour or Rogers brands. Their labels may differ but the formulas are the same.

Thanks to Robert J. Sinclair, president, and Daniel L. David, manager, Technical Services Department, Saab-Scania of America for making Saab Service Tips and information available.

WATER VALVE-WATER HOSE CONNECTIONS, 1981s

It is not always obvious as to which connection on the water valve the water hoses should be reconnected after having been removed, as when replacing the water valve or removing the engine. There is particular risk of interchanging hoses on the 1981 model engines, i.e., the return hose can be connected to the water valve inlet pipe and the feed hose to the water valve return pipe. Incorrect connection means that the heater cannot be shut off and heating is poor at idling speed.



- Correct water hose connections
1. To water pump
 2. From inlet manifold [**]
 3. Upper water valve connection pipe
 4. Lower water valve connection pipe.

NEW SAAB REPAIR SHOP IN BERKSHIRE COUNTY, MA

Donald H. Bush, a new club member, has opened a Saab repair shop in Berkshire County, Mass. They stock new parts as well as having a supply of used ones. They also sell upholstery that can be installed by them or by the owner. It is a family run business, and so are available seven days a week. It is called the South Adams Auto and Body Shop.



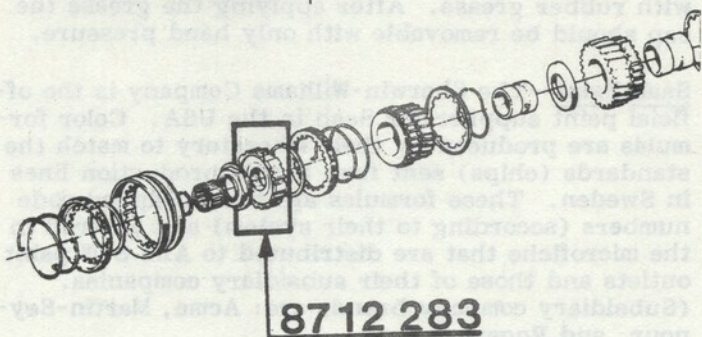
SAAB

Service Information

IMPROVING 1st & 2nd GEAR SHIFTING, 5 SPEED

Whenever difficult engagement of 1st and 2nd gear is encountered, adjust the gear shift as per instructions in S.I. 10/79-390, Sec. 4, page 49. If engagement effort remains high after adjustment use the following procedure:

Select one gear position or the other and check the side play of the shift lever.



8712 283

LATE MODEL 4-SPEED GEARBOXES JUMPING OUT OF GEAR UNDER LOAD

The problem of jumping out of third gear appeared with the introduction of synchro hub p/n 8712283. Although the hub was correctly designed, machining tolerances could create a condition that prevents the operating sleeve from accomplishing a complete engagement of third gear.

Current parts in inventory have been corrected. Therefore, to correct this condition, replace synchro hub 8712283 with a new one of the same parts number from spare parts inventory.

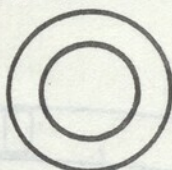


If there is no side play when 1st or 2nd gear is engaged the shift lever housing should be repositioned by placing a 3mm shim under the left front mounting flange.

REINSTALLING ORIGINAL TIE RODS ON SAGINAW POWER STEERING RACKS -- Saab Service Info

Removal of the tie rods from the power steering rack while performing other service work, has previously required replacement of the tie rods (8937088) due to distortion of the staked area of the ball joint locking flange.

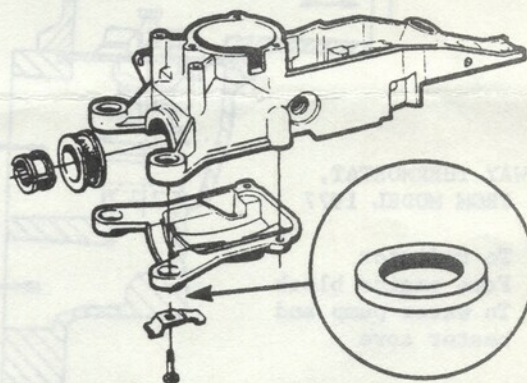
A new shim (p/n 8946360) has been introduced in spare parts that eliminates the need to replace the tie rod.



Shim, part no. 89 46 360

By placing this shim between the end of the rack and the inner ball joint the locking flange is repositioned 90° from the previously staked area (it makes up about 1/2 thread stop) after tightening. This places strong undamaged metal over the flats of the rack for a new secure staking of the locking flange.

NOTE: Clamp the rack in a soft-jawed vise while removing and replacing tie rods. This will prevent the application of torque to the pinion gear.



If selection of the other gears becomes difficult after installing a 3mm shim, reduce the angle of the housing by using a 1mm shim. When completed, the side play in 1st and 2nd gear should be about the same as in 3rd and 4th. Road test to verify reasonable shifting into all gears. NOTE: from VIN 90801020095 the shift rod shaft taper pin holes are offset 3°, a change that has an effect similar to the above service fix.

CASTROL BRAKE FLUID HELPS CLUTCH HYDRAULICS

In answer to Dale Patterson's question about clutch slave cylinder: Silicone fluid may help but this is not a high temperature application. DOT 4 (Castrol GT LMA brake fluid) is a must with the rubber parts from England. Because his (and my) slave cylinder is exposed to dirt and spray below the clutch, the cover boot condition is very important. Sealing the boot with RTV is very effective. This seal can be broken and cleaned up when replacement time comes again, hopefully not 15,000 miles.

Clark Webster, Northfield, MN

SAAB import motors, inc.

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1981 SAAB 900 EMISSIONS RELAY PANEL

The 1981 Emissions System incorporates many changes, the most significant of which is the mounting of a relay panel under the hood on the driver's side of the engine bay. The panel houses from four to six relays depending on the engine family and regulates important driveability and emissions control functions. The following briefly describes the relays as to function and identification codes.

LAMBDA WIDE OPEN THROTTLE (W.O.T.) (Turbo only) The wide open throttle enrichment circuit used on Lambda cars in previous years has been modified by the addition of an rpm sensing relay which allows an enrichment ratio of 85/15 only over 3,000 rpm with a throttle opening of 62° or more. On non-Turbo models the enrichment function has been eliminated so the relay and throttle housing micro switch are not used.

RELAY TYPE: Hella 5DA 003 987-00.

PULSE RELAY--Most "hot start" problems are a result of pockets of fuel vapor trapped in the lines. The car cannot be started until the vapor has been purged. The pulse relay allows the engine to fire on the cold start injector if the engine does not start after 1.4 seconds of cranking. The relay provides a pulsing ground; .1 sec on, .3 sec. off.

LAMBDA RELAY--This is the same 5-pin relay used in the past. Its function is identical to previous years, switching power to the Lambda control box and modulating valve.

WARM START RELAY (Identified as Interchange relay, Start Valve, or Shift Relay, Starter Valve in the Shop Manual) 1981 Cars have two ground circuits which can be used for the cold start injector--the current thermo time switch on the intake manifold and a new sensor mounted in the thermostat housing. This relay selects between the two grounds--one for normal cold start, one for hot run enrichment.

TIME RELAY--The recalibration of the warmup regulator, auxiliary air regulator and the effect of the E. C. R. system could create driveability problems following a hot restart without some form of added enrichment when accelerating. The time relay allows the vacuum impulse switch to fire the cold start injector if the car has been shut down longer than 30 minutes and the coolant temperature at the thermostat housing is at least 49°C (120°F). After 100 seconds the relay opens again and the ground circuit is broken.

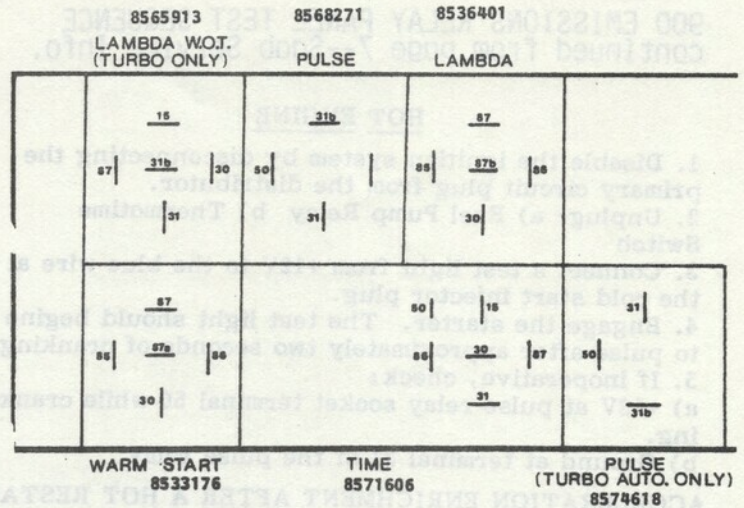
RELAY TYPE: Hella 5HE 003 988-00

PULSE RELAY (Turbo Automatic Only)--Due to the calibration of the EGR system on the Turbo Automatic the enrichment made possible by the time relay following a hot restart would be excessive. This pulse relay, which is placed in series between the warm start and time relays, reduces the length of time the cold start injector can fire each time the throttle is opened rapidly.

RELAY TYPE: Hella EBR 1717-00

LAMBDA PULSE METER--I found out that the pulse meter for the lambda system is really only a voltmeter, with full scale deflection (100% pulse)=12V. Anyone can check the system without at least that expensive part.

Michael Goldin, New York, NY



EMISSIONS RELAY PANEL TEST SEQUENCE

Many of the functions of the relay panel components are interrelated, particularly those pertaining to the cold start and full load enrichment circuits. THE FOLLOWING TEST PROCEDURE MUST BE CARRIED OUT IN THE ORDER GIVEN AND ANY DEFECTS CORRECTED BEFORE CONTINUING THE TEST IN ORDER FOR THE CHECKS TO BE RELIABLE.

COLD ENGINE

Normal Cold Start

1. Unplug--a). Time Relay b). Fuel Pump Relay c). Pulse Relay (beside Lambda Relay)
2. Connect a test light from +12V to the blue cold start injector plug wire.
 - a) Below 113°F coolant temperature the test light will be brightly lit.
 - b) Above 113°F the light will glow dimly (intensity depends on wattage of the test light).
3. If the light readings are incorrect, repeat the test at the thermotime switch (green wire). If the readings are now correct, check continuity between pins 30 and 87A of the warm start relay and at the white four-pin connector located above the clutch cover.
4. Verify the proper function of the heating element in the thermotime switch by engaging the starter and watching the test light while the engine is cranking. The light should go out after approximately five seconds and will glow dimly after the starter is disengaged. This test is only valid for a cold engine.

Enrichment Under Acceleration During Warm-Up

1. Plug in the pump and pulse relays.
2. Connect a test light between the cold start injector plug (brown wire) and ground.
3. Simulate a cold engine by jumping the green wire at the thermotime switch to ground and disconnecting the white wire at the thermal contact on the thermostat housing.
4. Start the engine. Every time the throttle is opened rapidly, the test light should flash briefly.
5. If inoperative, check:
 - a) Power to the vacuum impulse switch
 - b) Vacuum at the impulse switch
 - c) Electrical, mechanical function of the switch

EMISSIONS RELAY PANEL TEST SEQUENCE.....
Continued on next page.

900 EMISSIONS RELAY PANEL TEST SEQUENCE continued from page 7--Saab Service Info.

HOT ENGINE

1. Disable the ignition system by disconnecting the primary circuit plug from the distributor.
2. Unplug: a) Fuel Pump Relay b) Thermostat Switch
3. Connect a test light from +12V to the blue wire at the cold start injector plug.
4. Engage the starter. The test light should begin to pulse after approximately two seconds of cranking.
5. If inoperative, check:
 - a) +12V at pulse relay socket terminal 50 while cranking.
 - b) Ground at terminal 31 of the pulse relay.

ACCELERATION ENRICHMENT AFTER A HOT RESTART

Acceleration Enrichment After a Hot Restart

1. Plug in the pump relay, distributor primary lead.
2. Simulate a hot engine by jumping together the white and black leads on the thermal contact located on the thermostat housing.
3. On Turbo Automatics remove the pulse relay at the rear of the panel and place a jumper wire between terminals 31 and 31b. **FAILURE TO DO THIS WILL CAUSE THE TEST LIGHT TO PULSE RAPIDLY.**
4. Install the time relay.
5. Connect a test light from +12V to the blue lead on the cold start injector plug.
6. Start the engine. The test light should come on and remain lit for 100 seconds. Because of the timing function built into the relay, the system cannot be positively diagnosed as defective until the engine has been run briefly, shut down, and allowed to sit undisturbed for slightly more than 30 minutes before repeating steps 5 and 6.
7. Recheck by engaging the starter briefly again after the light goes out. The light should not come back on again.
8. If inoperative, check:

Terminal 30--+12V, term. 50--+12V when cranking, term. 15--+12V with fuel pump relay bypassed, term. 31--Gnd with thermal switch grounded.

Turbo Automatic Pulse Relay

1. Plug in pulse relay if removed for the last test.
2. Remove the time and warm start relays.
3. Connect a jumper lead from pin 87 of the time relay socket to ground.
4. Connect a jumper lead from +12V to the brown wire on the vacuum impulse switch.
5. Connect a test light from +12V to pin 87 of the warm start relay socket.
6. The test light should begin to pulse rapidly on and off.
7. If inoperative, check with the jumper leads in steps 3 and 4 removed. At the pulse relay socket:
 - a) Term. 50 +12V when rapidly accelerating the engine.
 - b) Term. 31 Continuity with pin 87 of the time relay.
 - c) Term. 31b Continuity with pin 87 on the warm start relay.

Wide Open Throttle Enrichment--Turbo Only

1. Plug in warm start and time relays.
 2. Unplug the oxygen sensor. Prevent the harness lead from touching body.
 3. Connect the pulse ratio meter to the test plug.
 4. With the engine idling, the pulse ratio indicated on the meter should not change when the throttle housing microswitch is closed.
 5. Hold the switch closed and slowly increase engine speed. At 3000 rpm the pulse ratio should lock on 85/15.
 6. If inoperative:
 - a) Check for continuity through the microswitch when closed.
 - b) Test the following terminals at the relay socket:
 - 30--Ground to negative bus bar at the fuse panel
 - 31--Ground when the microswitch is closed
 - 31b--Primary ignition circuit pulse read with a dwell meter
- 15--+12 when the fuel pump is operating
87--85/15 \pm 10% pulse ratio when grounded with engine running.

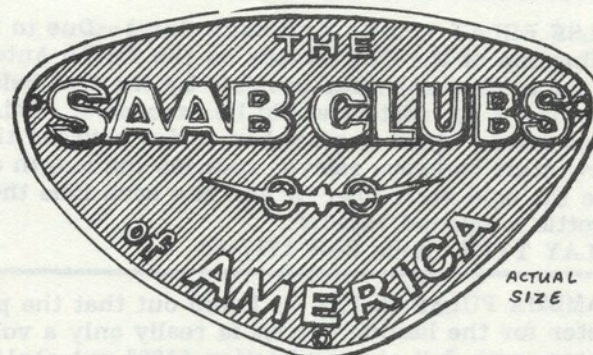
TWO-STROKE EXHAUST ICING & HEET IN 99s

For Tom Herbert in regards to the ice build up in the exhaust pipe of the two-stroke. I have heard of this happening before in severe snow storms. One explanation is backing up into a snow bank. The other is that, when the pipe is still cold when first starting out in a snow storm, if the ice builds up at a faster rate than the heating of the pipe, ice can form in the pipe to a quantity thick enough that the heat cannot dissipate it sufficiently. In other words, during such extreme cold and rapid snowfall, the pipe does not get hot enough externally to dissipate accumulation faster than it builds up.

Regarding "Heet" and the hunting fuel gauge: Since the manual recommends addition of a product such as Heet periodically, I have put it in at very few intervals. My '77 99 does not like it. There seems to be a coincidence of poor engine starting at normal temperature until the stuff is out of the tank. Has anyone had this problem? I do not intend to put it in my tank again. To prevent water accumulation and vapor lock/icing, I keep my tank filled at all times, not letting it go below the $\frac{1}{4}$ mark.

Recommended tire distributor, Champaign-Urbana-Indiana area: J.M.K., 1510 Neil St. Champaign. All types of tires, quick, courteous, dependable service.

Margrit Adler, Champaign, IL



RECOMMENDED MECHANIC--Richard C. Parr at PARRformance, Lancaster County, PA 717-626-1773.

CLUB PATCHES: 2½"x4" embroidered patch in three colors--\$1.15 each. Sticker emblems .25¢ ea.

Low Cost V4 Air Filter

GIVEN THE PRICE OF SAAB PARTS THESE DAYS, THE KEY TO HAPPY MOTORING IS INTERCHANGEABILITY WITH PARTS FOR HI-VOLUME IRON. HERE'S A \$2.00 DISCOUNT STORE REPLACEMENT FOR THE AIR FILTER FOR MOST V4S (1968-74 MODEL 95 AND 96.

THE UNIT IS A PUROLATOR AFP-59, WHICH FITS SUCH EXOTIC CARS AS '67-79 CAMARO 6, CHEVY 6 '62-74, OLDS 6 '64-71 & '73-76, AND MOST LATE MODEL CHEVY & GMC 6-CYLINDER PICKUPS.

THE PUROLATOR AFP-59 ALSO INTERCHANGES WITH:

- AC # A-169CIV
- FRAM # CA-189PL
- LEE # AFL-132
- MOPAR # L-172
- MOTORCRAFT # FA-7

TO FIT THE SAAB A SMALL MODIFICATION IS NEEDED:

TRIM THE RUBBER TOP (OR BOTTOM) OFF AN OLD V4 AIR FILTER (SEE FIG 1). USE THIS PART AS A SPACER TO INSURE A POSITIVE AIR SEAL IN THE AIR CLEANER AS THE AFP-59 IS SLIGHTLY SHORTER THAN THE REGULAR SAAB FILTER.

ASSEMBLE AS IN FIG. 2. CHANGE FILTER AS NEEDED.



FIG 1.

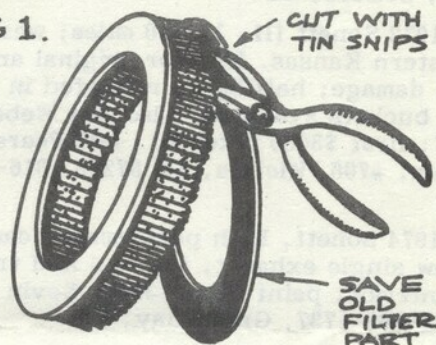
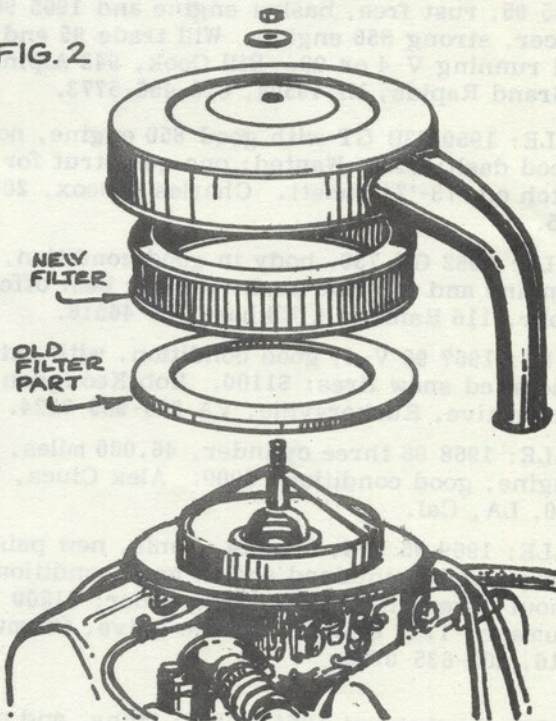


FIG. 2



RECOMMENDED MECHANIC--Tony Chin at Star Motors in Houston, TX.

RECOMMENDED MECHANIC--Lee Smith, 326 Center St., Williamsport, PA 17754 717-326-0268.
RECOMMENDED DEALER--Skeie Pontiac/Saab, Ames, Iowa.

CLASSIFIED AD RATES

Ads offering parts or Saabs for sale or wanted at prices *under \$200* are FREE to members and non-members. 25-word limit, plus name and address. Ads listing prices of \$201 to \$900, enclose \$2. Ads listing prices \$901 to \$2000, enclose \$5. \$2001 and up, enclose \$10. All ads without a price listed, enclose \$10. Commercial ads, \$10 for two inches. Please enclose sufficient funds—we will not bill.

FOR SALE: 1966 Sonett, good paint and interior; mechanically sound, lots of extras; spares include engine, starter, carbs and boxes more; must sell: \$2500 or best offer. Bob Freitas, 2358 Murdock Dr., Santa Rosa, CA 95404, 707-542-4428 eve's.

FOR SALE: 1968 Sonett V-4, good condition: \$2295 Gary Feierbach, 415-592-3580.

FOR SALE: 1973 Sonett (wrecked); left front demolished, approx. 60,000 on car, 25,000 on trans.; less than 2000 on Vredestein tires. Frame damaged, otherwise good for parts: \$1200 firm. Ralph Burnette, 203-749-7462, Somers, CT.

FOR SALE: 1972 Sonett III, 15,000 miles; was stored 7 yrs. in western Kansas. Interior original and no rust or body damage; headlights relocated in grill, but original buckets available. Also new Weber manifold and A/C; first \$3000 takes all. Jeff Pearson, 5900 Mainsgate, #706, Wichita, KS 67220, 316-684-4077.

FOR SALE: 1974 Sonett, high performance cam and carb, freeflow single exhaust, top-end and trans. rebuilt, good interior, paint fair. \$3500. Kevin Greatens, 414-468-1737, Green Bay, Wis.

FOR SALE: 1959 93 GT, plus parts for restoration; Also 1965 95, rust free, basket engine and 1965 96 Rally racer, strong 850 engine. Will trade 95 and 96 for good running V-4 or 99. Bill Cook, 943 Alpine N.W., Grand Rapids, MI 49504, 616-456-5773.

FOR SALE: 1959 93B GT with good 850 engine, no axle, good dash: \$100. Wanted: one gas strut for rear hatch on '73-'74 Sonett. Charles Simcox, 201-431-2345.

FOR SALE: 1962 GT 750, body in good condition, needs engine and interior work: \$150 or best offer. Dave Mohr, 116 Bank St., Elkhart, IN 46516.

FOR SALE: 1967 96 V-4, good condition, with extra set of mounted snow tires: \$1100. Bob Keoughan, at Loki Automotive, Ruckersville, VA 804-985-7924.

FOR SALE: 1968 96 three cylinder, 46,000 miles, rebuilt engine, good condition: \$900. Alex Ciuca, 213-284-7180, LA, Cal.

FOR SALE: 1969 96 V-4, Pirellis, Konis, new paint + upholstery, well-maintained and in good condition throughout, everything in working order: \$1500 Ken Neumann, 113F Country Squire Drive, Cromwell, CT 06416, 203-635-0729.

FOR SALE: Parting out 1964 GT850; trans. and oil injected engine rebuilt 12,000 miles ago; fenders, doors, hood, trunk lid, all instruments and interior available. Also one trans. from 1967 3 cyl. 96, runs fine but needs 3rd gear synchronizer. Jeff Pearson, 5900 Mainsgate #706, Wichita, KS 67220, 316-684-4077

FOR SALE: 1966 96 Special two-stroke, pan and body fairly good, interior poor, good parts car: \$75 1966 96 two-stroke, new exhaust, new brakes, body good, pan solid, restorable: \$150. 1967 96 two-stroke, 3 speed trans., 3 carb, rust free, disc brakes: \$300. 1972 96 V-4 without drive line: \$150. Also four two-stroke blocks with or without carb and distributor: \$25 each and up. Two V-4 engines: \$35 each, carb & distrib. extra. Two two-stroke transmissions, usable: \$75. Stage II new two-stroke exhaust: \$50. Wanted: For Sonett II, set of side draft carbs & manifold. Also V-4 headers, 2 barrel carb and manifold, any year V-4 95 or 96 must have solid rust free pan, drive line unimportant. Write J.R. Weiss, 543 Fulton St. Carnegie, PA 15106 or call Bernie Murphy, Vintage Reconstruction, 412-242-8811, 514 Jeannette St., Pittsburgh, PA 15221.

FOR SALE: Air-conditioning assembly for 95 or 96 V-4; complete with double pulley: \$150. Greg Faris, 822 Penn Ave., N., Minneapolis, MN 55411.

FOR SALE: Sonett parts; transmission, whines but driveable: \$185; door panels: \$75; dash: \$50; bumper covers and cells: \$25 per side. Max Mellner, 132 E. Fifth Ave., Berea, OH 44017 (216) 243-0224.

FOR SALE: "Sleep in Your Saab" plans for the scarce "Bedkit"--rearrange your seats with bedkit to form a double bed. Full size blueprint made from an original with instructions; made from plywood in 2 hours: \$5.00. W.T. Boys, 1567 N. Oakland, Fayetteville, Ark. 72701.

GIVE AWAY: Two Stroke parts, you pay shipping; Engine block #B86770, 66.5mm bore (8 headbolts); engine block #76699, 70.4mm bore (8 headbolts); two 8-bolt heads, detonation damaged. Wanted: Matched pair of distributor drive gears for two stroke premix engine: \$10 used in good cond., \$25 new. Crankshaft pulley for premix engine, must be thick-hub type in good condition: \$10. Neal Zeilinger, Route 2 Box 65, Neola, IA 51559, 712-545-3123.

WANTED: One early style Sonett mag wheel. Todd Gleason, 201-431-9083.

WANTED: Complete set of four coil springs for 96, low mileage preferred: \$60. For Sale: Copy of Saab V-4 high performance parts list, 9 pages, from 1970: \$1; Copy of Saab V-4 competition tuning instructions for Group 2, 17 p.: \$1.50 or \$2.00 for both. Steve Bottorff, 3549 Lynnfield Rd., Shaker Hts, OH 216-752-0430.

WANTED: Rebuilt V-4 Gearbox. Chris Roth, 303-861-5444 days; 303-733-7848 eve.

WANTED: For 1969 95, side door lower window gaskets, rear handle assembly with key, rear taillight assembly (red) and any lenses. Bill Littlefield, 101 Grennan Road, West Hartford, CT 06107, 203-521-3404.

WANTED: V-4 96 or 95 in good condition. Al Hauenstein, 721 10th St., Tell City, IN 47586, 812-547-4437 days, 547-3763 eve.

WANTED: Will pay \$10 for a left front parking light lens for 1970 95. Dave Gore, Rt. 3, Box 234, Nashville, IN 47448, 812-988-2060.

FOR SALE: 1973 99E 1.85 engine, recent valve job, no ring ridge. Many miscellaneous electrical parts, sensor, controls, etc. Sell as a lot: \$200. Robert A. Griffith, 45 Froelich Ave., Mountville, PA 17554, 717-285-5141.

FOR SALE: 1974 Automatic transmission: \$350; 1974 2.0 l engine: \$350, 98,000 on both. Four Michelin 165x15 XAS tires, 15,000 miles: \$160; Four 1979 Turbo Wheels: \$160. Victor Pardo, 3715 Pleasant Grove Rd., Lansing, MI 48910, 517-393-2766.

FOR SALE: One Pirellia CN 36, 175/70HR15 tire, less than 25 miles: \$80 post paid. Clark Webster, 712 E. 4th St., Northfield, MN 507-645-5412.

FOR SALE: 1978 99 head, 1972 99 carburetor and manifold, 1972 99 two heads, pressure plates, etc: \$20 to \$200. Also 1972 99 body parts and short block \$20 to \$75. Wanted: 1975 to '80 99 in need of repairs or body damaged. Alex Ciuca, 213-284-7180, L.A., California.

FOR SALE: One clutch master cylinder for 1975 and later, p/n 8927089, new in original box: \$50. Wanted: One rear headrest for bordeaux red interior 1978 EMS three-door: \$20-25. M. Perlmutter, 19 Peckham Hill Rd, Sherborn, MA 01770.

FOR SALE: Clarion AM-FM stereo car radio (no tape) small chassis: \$60 plus shipping. Wanted: Factory workshop manual for 1977 99, call/write with price. Eric Killinger, 974 Grandview, Boulder, CO 80302 303-444-6420.

FOR SALE: Clock to fit 900, used for only two weeks: \$80 or best offer. Bryan D. Coleman, 2739 Donna Jo Way, Allentown, PA 18103, 215-264-8921.

WANTED: 99, 96, or 95. \$600--\$2000, will pay a reasonable price for very good running condition. White preferred. 99, prefer a 2.0l wagonback, AT, AC, sunroof; can travel. Mr. Yoshi Horiuchi, 320 E. Ridley Ave., #1, Ridley Park, PA 19078, 215-534-3046.

WANTED: Electric side mirrors for 99/900, with switches and wiring: \$80/pair or ? John Betsill, 3809 White Settlement Rd., Weatherford, TX 76086 817-441-8583.

WANTED: Four small hubcaps and one hood spring to fit 1974 99LE. Offer \$5 each. Dallas G. Silvis, R.D. #4, Kittanning, PA 16201, 412-763-9590.

FREE PARTS: from 1973 99 EMS. Engine, interior, suspension and electric parts, shipping extra. Jim de Haseth, 3017 Green Grove Lane, Tuscaloosa, AL 35404, 205-553-9203.

FOR SALE: New England Sonett Club Sticker--Both body styles of Sonetts shown on the emblem: \$1.00 each. Send stamped, self-addressed envelope to: M.S. Raphael, Treasurer, New England Sonett Club, 3 Sequoia Ave., RFD 10, Manchester, NH 03103.

99 OWNER LUBRICATES SPEEDOMETER CABLE

I have devised a way to lubricate the speedometer cable on my '76 99 to eliminate cable noise and jump. (These units are made so the drive cable cannot be removed from the housing, so you replace the whole unit or put up with the noise.) At the highest point on the cable housing in the engine compartment carefully cut a small hole, about 1/8 by 1/4 inch long in the thick black plastic outer cover and the thin clear plastic inner cover. Under the plastic covers the drive cable is enclosed in an open metal spiral. Place the red extension tube on the nozzle of a spray can of WD-40 and stick the extension into an opening in the spiral and give a good spray toward both ends of the cable. Finally, put electrical tape over the hole and drive the car to distribute the lubricant.

By chance I noticed the radiator fan motor on my 99 was loose and about to fall from its bracket. A regular check and tightening of the mounting screws on the fan motor is a good idea, especially in areas where high temperatures and use of A/C cause an added load on the fan motor.

A new product I have tried is General Electric Silicone Spark Plug Boot Release, stock GED1, about \$1.60. This is a dielectric compound to use on plug boots to increase insulation and make removal easier, to use on distributor cap and rotor terminals to reduce radio static, and to use on the battery, relay, and other terminals to prevent corrosion. This product comes in a five inch long tube and is like a clear grease, but it does not attract dirt.

Breaks of one inch or less in a Saab rear window heater grid can be fixed with Ford Grid Service Compound #D8A2 19562-A available at Ford and Mercury dealers for about \$8.95. Ask to see the service bulletin describing its use before ordering.

E. Jared Erichsen, Visalia, CA

WD-40 FIX FOR STICKING IGNITION KEY IN 99

I could get my key in the ignition, but could not turn the key. I first thought that my transmission gear selector was not in reverse. By wiggling my key around I was finally able to turn the key. I got a can of WD-40 and sprayed it into the ignition lock. The WD-40 works as well as graphite. After spraying I worked the key into the lock and it appears to work much better. I also sprayed my door locks and trunk lock.

Benny J. Lum, Battle Creek, MI

"NEVER-SEEZ" ON FUSE CONTACTS--Just a dab of "Never-Seez" on fuse contacts stops the corrosion dead in its tracks. It's been six months since I applied it with no trouble during that time.

Brian Curry, Springfield, PA

SAAB import motors, inc.

SUBARU 1685 MENTOR AV PAINESVILLE, OH 44077

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Page 12

V-4 CARBURETOR FLOAT PROBLEM & FLOODING

I too had trouble with the Autolite carburetor on a '70 V-4 96 and solved it with a Solex transplant from a '68. No need to torch the throttle linkage though as it can easily be reversed by attaching a bracket.

Occasionally when hot, the engine would be very difficult to start, as if it were flooding over. Turned out the plastic float was filled with gas and had sunk. I've tried everywhere to get another but to no avail and finally plugged the hole with fiberglass resin. To find the hole and get the gas out, immerse the float for a couple minutes in 180°F water to pressurize the float and the rotate it. So far the resin hasn't leaked but I'd like to get another float if anyone knows of a source.

In regard to Eric Killinger's Jan '81 letter, engine hesitation when the throttle is opened from idle speed ('69 and later V4's) it is often because ignition advance does not begin below 1500 revs. The logical remedy would be to install slightly weaker advance springs but the distributor doesn't seem to come apart (that is if you plan to put it back together). I'm open to suggestions.

Theodore Ehlke, Cross Lanes, WVA

