



THE SAAB CLUB

JUNE 1985, NEWSLETTER #138

900 MEASURES AIRPORT RUNWAY FRICTION

Orange, CT -- Five major American airports are now a bit safer, thanks to a Saab car, loaded with computer equipment. The Saab Friction Tester, as this unusual car is called, measures the friction of airport runways. It was recently certified by the FAA after exhaustive testing. The first American airports to use the Saab Friction Tester are Washington, DC; Hartford, CT; Buffalo, NY; Detroit, MI; and Atlanta, GA.

The Saab Friction Tester looks and drives just like a Saab 900 and it comes with or without a turbocharger on its 2-liter engine.

The specially added equipment makes the Saab 900 into the Saab Friction Tester, the only friction tester of its kind certified for use in the U.S. Saab's breakthrough is due to the speed with which the Friction Tester tests friction on runways without interfering with aircraft operations.

"Under critical conditions, with rapid weather and temperature shifts, or heavy precipitation, the Saab Friction Tester can send the pilot information on the runway's friction index during the landing. The pilot then knows the braking conditions on all part of the runway and will not be surprised," said Bo Rydbeck, product manager for the Saab Friction Tester at the Saab Car Division in Sweden.

All in a Single Vehicle

The Saab Friction Tester was developed as a cooperative effort of the the Saab Car Division and the Aircraft Division. The front half looks like a standard Saab, but in the rear it's mechanically different.

A fifth wheel is lowered and raised hydraulically through the floor. The wheel measures the friction coefficient of the runway surface with help from advanced electronic measuring devices and the on-board computer. Unlike earlier friction testers, everything is contained in a single vehicle. By having all the equipment self-contained in a high-performance car, the Saab Friction Tester closely matches the runway speeds and conditions of an aircraft.

Compact Measuring Equipment

The Saab-designed equipment is compact and takes up little space in the car. The tire on the fifth wheel is made of natural rubber and resembles the tread of aircraft tires. The tire is inflated to a high pressure of 100 psi.

"High tire pressure is crucial when testing a wet runway at high speed," Mr. Rydbeck said. "High pressure aircraft tires and normal, low-pressure automobile tires have completely different behavior patterns."

Story continued on p. 2



Atlanta Airport's Saab Friction Tester measures friction on runway surfaces to help pilots land under critical weather conditions.

Saab Clubs of North America

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(218) 525-3253 9 a.m.-8 p.m. except Sunday

Consultants: Dick Grossman, Jack Ashcraft, Carolanne Curtis, Andy Buc, Ted Tucker

CLUB NEWS

MID-HUDSON SAAB CLUB--has been holding meetings. For more info call Lewis Eig at 914-352-6124.

ATLANTA SAAB CLUB--Meets the last Monday of the month at Carlos McGees at The Pardo. Dinner is from 7-8 pm with meetings starting at 8. Call Lou Savage for more info. 404-394-2310.

SAAB CLUB NATIONAL CAPITAL AREA--meets the Third Tuesday of each month at the Silver Spring Public Library, 8901 Colesville Rd, Silver Spring. For more info, contact Toby Turpin, 301-384-6732.

APPALACHIA SAAB CLUB--will be meeting the Third Tuesday of each month at Pennington's Fund Raising Co., 214 Market St., Johnson City, TN. For more info, call Mike Woods, 615-753-2101, or write Rt. 6 Box 349, Jonesborough, TN 37659.

WATKINS GLEN TICKETS--Saab enthusiasts interested in Sky Box seats for Watkins Glen events should contact Alexandre Barbier, 607-565-2711.

CENTRAL ILLIANA SAAB CLUB--will not meet again until September.

WASHINGTON STATE SAAB CLUB--will meet July 14; 11:00 at Lewis & Clark State Park. The park is located near the junction of Interstate 5 and Highway 12. All Saab enthusiasts are welcome to attend. For more information contact Richard Hansen 206-256-7604 or Skip Schott 206-668-9818.

NORTHERN ILLINOIS SAAB CLUB formerly the Chicago Saab Club) has recently re-organized. Several successful meetings have been held since the first of the year including an ice race, the Auto show and an auto audio tech session. On June 8 the Club will hold its summer picnic at the Wayside Woods forest preserve on Lehigh Ave north of Dempster (IL 58) in Morton Grove. For more info, call 312-763-4752 (24 hr hotline).

NEW ENGLAND SAAB CLUB--those interested in forming a club should contact Peter Ohlweiler, Robert's Saab, 124 Broad St, Meriden, CT 06450, 203-235-1668.

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MEMBERSHIP/SUBSCRIPTION

Dues for membership/subscription are as follows:

First year, third-class mail	\$14.00
First year, first-class	\$15.00
Renewal, third-class	\$11.00
Renewal, first-class	\$12.00

First-year membership includes two back-issue newsletters and Club emblem.

A collection of 20+ back issues is available for \$10.00

'85 CONVENTION UPDATE

A big weekend for Saab owners has been planned at Wilson College in Chambersburg, PA on July 26-28. I have received many reservations and am looking forward to seeing everyone in Chambersburg. Because we are limited to 500 people for the banquet and 275 train riders, I encourage you to register for the convention as soon as possible. Advance reservations are required and I hope that everyone wanting to attend will be able to do so. Dealers needing display space at the parts meet should also contact me. (For more details on the convention see the May newsletter).

Reservations should be sent to me here at the Saab Club. Full convention weekend, including 2 nights lodging in the dorms, all meals and activities is only \$89.00/person (double occ.), \$105.00 (single occ.-limited availability. For those of you staying elsewhere but eating meals at the college, remit \$65.00 (no lodging). Saturday activities only, \$45.00. The railroad trip is \$5.00 extra per person. We urge everyone to arrive early on Friday and be part of the entire weekend planned.

Carolanne Curtis, Convention Coordinator

COMING IN FUTURE NEWSLETTERS:

- An emergency fix for a loose oil pressure sending unit.
- Replacing front wheel bearings in a 96.
- The solution to the Carter Engine Knock Eliminator installation problem.
- More from Peter McLaughlin on 96 restoration.

SAAB FRICTION TESTER, Continued from p.1

"A high-pressure tire's contact area with the runway surface decreases linearly as speed increases. With a low pressure tire--the kind used on cars--there's no direct relation between contact area and speed on a wet surface.

Mr. Rydbeck explained that, upon reaching a certain velocity, low pressure tires suddenly lose contact with the pavement and begin to glide on the layer of water that covers the wet surface. This phenomenon, called aquaplaning, renders friction measurements possible. This does not occur with high-pressure aircraft tires.

The Friction Tester's measuring wheel rotates at a 10% lower speed than the car's wheels. This makes it possible to measure to what extent the wheel is affected by the friction on the runway.

Measurements are taken in both directions on the runway. The computer divides the runway into three sections and computes the mean readings for each. This way, the driver determines if any part of the runway has a different friction reading.

For carrying out regular evaluations of wear or the build-up of rubber on the runway, the Saab Friction Tester is equipped with a 100 gallon tank which sprays a 1mm layer of water in front of the measuring wheel. The water flow is not used when measuring ice- or snow-covered runways.

OVERHEATING PROBLEMS WITH '78 TURBO

I have a '78 Turbo that seems to prefer arctic temperatures. The problem with this idiosyncrasy appears on beautiful summer days while driving at sustained highway speeds. After the motor as run for 30-45 minutes (with the temperature gauge 3/4 of the way to redline) the return fuel to the fuel tank is warm enough to apparently cause vaporization (either in the return line or in the tank itself). The fuel pump can be heard gulping vapor in its attempt to maintain ample fuel pressure. I have managed to alleviate this problem by fitting a air scoop that forces cooler air into the under-body cavity that is occupied by the fuel tank (and the muffler--which most assuredly exacerbates the problem).

It appears that the 99 Turbo's lack of front end space as compared to the 900 body has left very little room for forced air flow around the motor. This could be contributing to the problem. I have checked the cooling system thoroughly and can find no obvious malfunction. I have experimented with various thermostats and have found a 180 degree Robertshaw that seems to keep the coolant flow high enough at sustained engine speeds to all but eliminate the problem.

I can find only one possible cooling system deficiency that might explain this problem. The radiator depth (front to back) is approximately 1.25 inches. This is less than on other model 99's whose radiators measure approximately 2 inches deep. This difference in cooling capacity might be enough to make the difference between a normal and overheated motor at sustained highway speeds. There is space between the current radiator and the primary gear housing cover to accommodate a deeper radiator.

Has anyone else experienced this difficulty?

Rick Schultz, Rochester, NY

INSTALLING REAR SEATBELTS IN 900

Jeff Honig's letter in the February '85 newsletter (about adding rear belts to his 900 3-door) finally got me off my duff about doing the same to my '82 900 4-door. I too found that all the mountings were in place behind the trim; unlike the 3-door cars, the slot through which the belt runs from reel to upper pivot is part of the reel mounting plate - and the plate is provided (at least in '82s) even though no reel is fitted.

I sprang for new parts, not having easy access to a wrecked 4-door (and if I did, I wouldn't likely know if the belts had been used in the wreck, and therefore, possibly compromised for strength). Full retail approaches \$250, but installation is an hour's wrench-twisting; the only cutting that is required is for the hole needed by the upper pivot. As Jeff found out, you have to change the inner halves as the shoulder belts have a different tang design than the lap-only ones.

Very satisfactory, and I can't tell you how nice it is to sit on the back seat and not have to bump over the lap belt retractor!

David Brick, Santa Cruz, CA

START LOCK RELAY WIRING EXPLAINED

Bob Sheflin of Killington, VT has shared the following letter written to him from John Moss, Senior Instructor at Saab-Scania, explaining the start lock relay wiring:

"I can understand your puzzlement in regard to the way the start lock relay is wired. You are right in thinking that it would be more logical to use the signal from the ignition switch to energize the pull down winding. The answer lies with the folks down in Washington and their short lived seatbelt/starter interlock system which affected the 1974 and '75 vehicles. Prior to this, the starter circuit was quite simple with solid lead from the ignition switch to the starter, the relay was added on to provide a means of preventing starter engagement under certain conditions. The "start lock" relay was controlled by a logic relay under the rear seat, the logic relay reacted to input[from the seatbelt latches, ignition switch, door switches and pressure sensitive switches below the seat cushions.

In later production, after public reaction scuttled the interlock requirements, the relay was wired in the "normal" fashion and starter solenoid current was pulled off the supply side of the fuse panel (as you had considered in your letter). I am enclosing a copy of the wiring diagram for a 1975 car with that circuit highlighted.

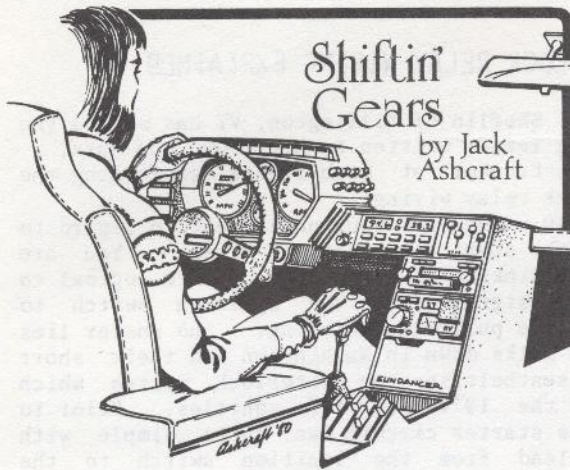
The ignition switch was designed to handle starter solenoid current without the aid of a relay but as the switch and solenoid get old and tired adding a relay as you have done is usually the quickest and cheapest cure for engagement problem. The type of voltage drop you have experienced can result from a tired switch, another area that is always suspect is the 12 pin connector shown as item 58 on the wiring diagram. This is located under the dash and a bit to the right of the air distribution box. The pins in the connector are subject to loosening from heat and vibration and can be a source of intermittent high resistance contact problems.

Another area worth checking is the manner in which the interlock system has been disabled (sic), I have seen some weird and wonderful improvisations in this area over the years. I am enclosing a bulletin instructing dealers as to the proper way to do this.

The small round six pin socket on the fuse panel is a much handier way of energizing the starter for test purposes than splicing jumper leads into the harness. A paper clip jumper between pins 1 and 3 will engage the starter--a word of caution here is that you will also bypass the neutral safety switch on an automatic transmission and can start in gear.

I hope all this has been of some interest to you".

John Moss, Senior Instructor
Saab-Scania, Orange, CT



REBUILDING A SAAB V4

A big percentage of the Saab V4's on the road today are nearing, or have already passed, the 100,000 mile mark. As a result, their engines are sort of like walking wounded, if not already dead. Oh, I know--there's a club member in Peoria who has 137,000 miles on BOTH his V4 engine and transmission and they have never yet been apart. Well, BULLY for Peoria. The rest of us can expect 100,000 miles from the V4 given reasonable maintenance and care, and that's the mark of a good engine in my book. Now, lets talk about the next 100,000 miles.

As your V4 nears 100,000 miles you'll notice some changes. The engine will be loud for a while when you first start it up, maybe giving you a little puff of smoke. It won't start as easy as it did when new, and if you check the compression it will be 20 pounds or so per cylinder below the new engine spec's. Then one cylinder will be 40 pounds below spec. My recommendation is not to even consider a top end (valve) job. Tear the whole engine down and rebuild it. And do the job right, not halfway. There are just too many tired old parts in there to just add rings and rod bearings and call it an overhaul--you're just kidding yourself, and the engine will soon come apart on you.

At 100,000 miles, cylinder bore taper will be between .006" and .010" so a bore job is in order. Cam and balance shaft bearings will have started to shell (flake off surface pieces) and the cam followers will be pitted and uneven. The timing gears will have a lot of slop and the oil pump has pumped a lot of gallons of lubricant by then. ALL need to be replaced.

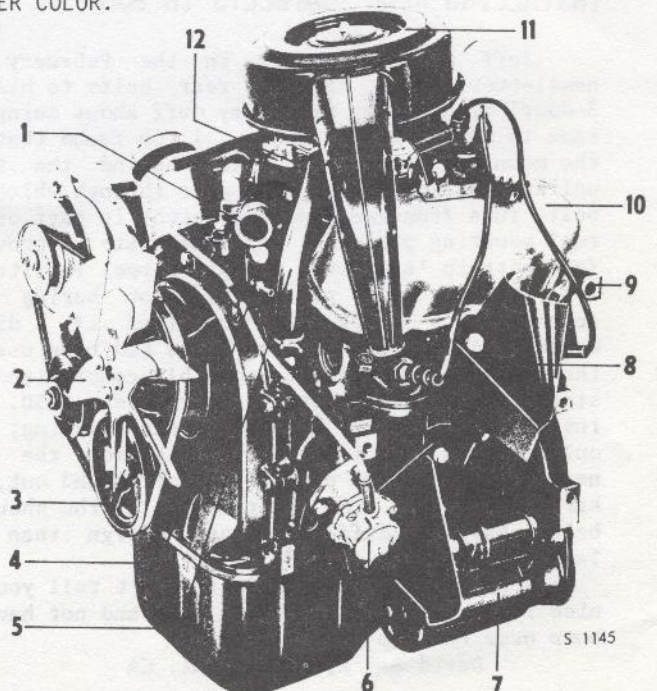
When you get ready to bore the engine you'll find that all V4 engines are not created equal. If yours is a 1700 (black engine, serial number greater than 170,000, and "1.7" stamped into the crankshaft), you can use relatively inexpensive Ford V6 oversize pistons and all you have to do is bore to the correct size and have the machine shop press

the Saab pistons off the rods and press the Ford pistons on in their place. The price of the V6 pistons is considerably less than buying them from Saab simply because A) Ford makes a lot more of them for V6 than for V4 engines, and B) Saab wants to sell you both the piston and the rod as an assembly, at about \$100 a shot. The machinist will insure that the bore job allows the necessary .002" piston skirt clearance or "running clearance" as it is sometimes referred to.

If you have a 1500 engine, it is a slightly more complex problem as there seems to be no inexpensive substitute for the Saab piston in the smaller overbores (.020", .030", etc). The solution is to punch a BIG hole and put in standard size 272 cubic inch Ford V8 truck pistons.

The stock Saab bore is 3.54" (either 1500 or 1700) and the 272 V8 is 3.625" so the overbore will be approximately .085". I use the word approximately because the machinist will measure the exact piston size and add the skirt clearance and that gives him the bore size (there is sometimes a thousandth or two variation in piston diameters). The .085" overbore is no problem for the V4 engine. Normal racing practice is to bore .100" and that still leaves room for a clean-up bore if you crack a piston ring.

THE TRUSTY SAAB V4
ENGINE IN IT'S
EARLIEST FORM:
1498cc, OPEN DECK,
SILVER COLOR.



A fallout benefit of the big bore is a big jump in displacement from 1498cc to about 1560cc. You can make the calculation yourself using this formula:

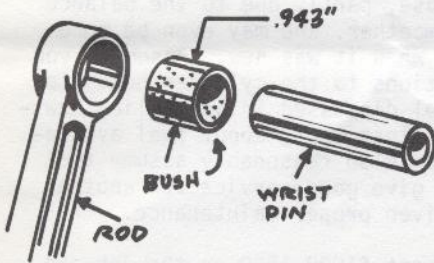
$$\left(\frac{\text{Bore}}{2}\right)^2 \times \text{PI} \times \text{Stroke} \times \#\text{Cyls} \times 16.38$$

or

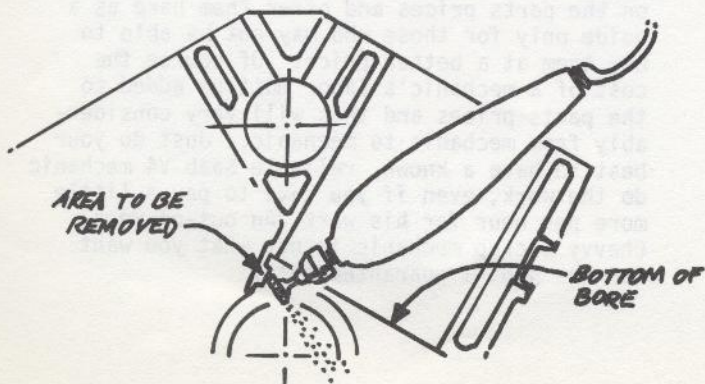
$$\left(\frac{\text{Bore}}{2}\right)^2 \times 3.1416 \times 2.32 \times 4 \times 16.38$$

Note that the stroke on the 1500 engine is 2.32" and the stroke on the 1700 is 2.63". Connecting rods are identical on both engines, but cranshafts and pistons are different.

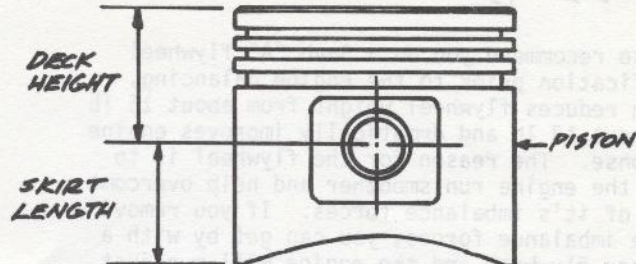
The 272 Ford V8 pistons have "floating" wrist pins in the pistons. That is, they use a bushing at the small end of the connecting rod and the pin is free to float in both the rod and the piston. It is prevented from departing the assembly by a pair of spring clips that ride in a machined recess in the sides of the pistons. It is necessary to ream the small end of the rod to about .943" to accept a Ford small end bushing. The bushing is pressed into the rod and then reamed to fit the wrist pin properly. It sounds complex but really is a simple machine shop operation.



You must modify the 1500 engine block slightly to clear the skirt of the larger piston at the bottom of the stroke. Block castings vary somewhat but usually the interference occurs in cylinders 3 and 4 near the center main bearing web. A few minutes grinding with a Dremel or similar small electric tool will eliminate the problem. If you do the block trimming yourself, be sure to clean all the fine grindings out of the engine with an oily rag before you assemble the engine.



Careful measurement of the Stock and 272 piston will reveal that there is a "deck height" difference of about .018" between the two. The V8 piston is shorter than the V4. This is just about right because an overbore of this amount will increase the compression of the engine, and the .018" decrease in deck height will just about compensate for that and keep the compression ration where it was for the engine. In this day and age of crappy fuel, we don't need to increase the compression ratio.

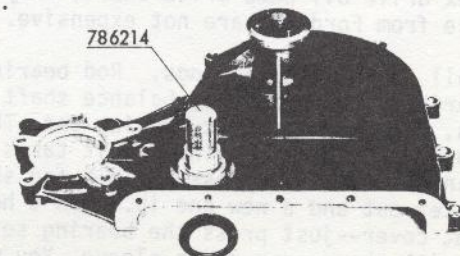


I strongly recommend that you have the engine reciprocating parts balanced. It's an \$85 investment that you won't regret. Take your crankshaft, crankshaft timing gear (plus bolt and washer), flywheel and flywheel mount bolts, a new pressure plate and the mounting bolts, the pistons and rings, plus the rod bolts and nuts and the new rod bearings with you to the balance shop. Everything gets matched for weight--pistons match each other, rods match each other (on BOTH ends as well as total weight) and the rotating parts attached to the crankshaft are all dynamically balanced.

The result is a much freer, smoother running engine. A balanced engine produces more power and uses less fuel than when it was in its normal factory balanced state simply because it is not using energy to overcome it's own internal forces that are out of balance.

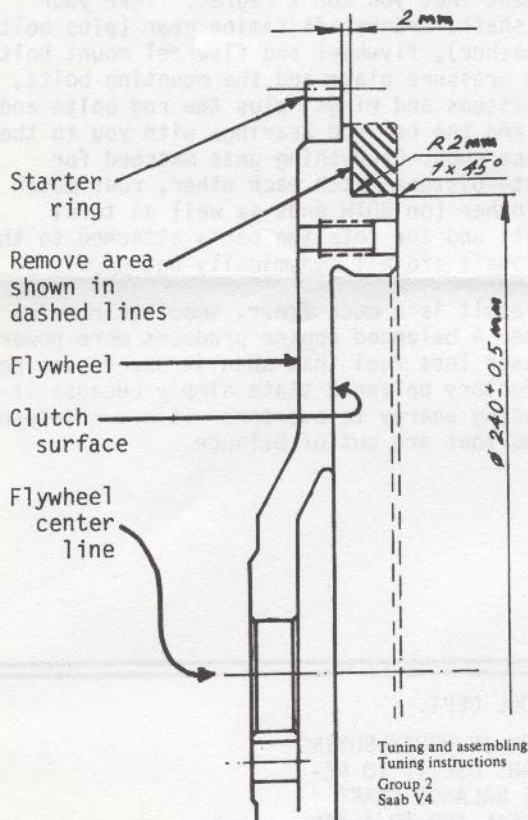
HANDY TOOL DEPT.

THIS TOOL IS WORTH BUYING FROM SAAB. USE IT TO REMOVE THE BALANCE SHAFT PULLEY SEAL AND TO ALIGN THE FRONT COVER TO THE BALANCE SHAFT CENTER WHEN YOU INSTALL THE COVER ON THE ENGINE.





I also recommend you do a Saab "A" flywheel modification prior to the engine balancing, which reduces flywheel weight from about 16 lb to about 13 lb and dramatically improves engine response. The reason for the flywheel is to help the engine run smoother and help overcome some of its imbalance forces. If you remove those imbalance forces, you can get by with a lighter flywheel and the engine will run just as smooth as a "stocker". Saab's "A" specs are shown here:



In the oiling department, put in a V6 oil pump, and a new oil idiot light switch. Also put in a new hex drive oil pump drive shaft. They are available from Ford and are not expensive.

Change all the engine bearings. Rod bearings, main bearings, cam bearings, balance shaft bearings, AND the fan shaft bearing set. The front cover is off the engine and it takes me less than 5 minutes to press the old fan shaft bearing set out and a new one in. Don't heat the front cover--just press the bearing set in and out with the proper press sleeve. You won't hurt the cover or the bearing and you won't

warp the cover with heat. Page 215-2 of the Saab shop manual shows how it's done.

Since the Saab water pumps have a normal life expectancy of 24,000 miles (except for that guy in Peoria), now is the time to change the critter. And, PLEASE, change EVERY water and heater hose in the engine bay, AND every rubber fuel hose! You're going to lay out the better part of \$1500 for this job--don't go cheap on the hoses and fry an engine 2000 miles down the road for a 50¢ piece of heater hose!

Rebuild the carburetor and distributor during this operation, too. These operations have been discussed at other times so I won't go into them here. Change all the filters--air, oil, and fuel. And if it has not been done in the last year, take the radiator to a radiator shop and have it cored out, repainted, and tested for pressure and flow. The new engine is going to run warmer than it did before so you must make sure that the radiator is up to the job. And now is a good time to replace the input shaft seal on the transmission since you will be right down there when you replace the release bearing.

Now that all this work is done and all this money spent, what do we have here? Well, you have an engine that is actually better than new. It has more power (partly due to the displacement increase, partly due to the balance job), it runs smoother, and may even be more economical than when it was new. Assuming you do the modifications to the cylinder heads to run unleaded fuel discussed in an earlier newsletter, you have less worry about fuel availability. You can also reasonably assume that the engine will give good service for another 100,000 miles given proper maintenance.

You will have spent \$1000-1500 on the job and you may question the wisdom of that in light of the value (on the market) of the car. But judge it in terms of REPLACEMENT VALUE for YOU. One pass through a new car dealership should tell you how much it will cost to get a new plastic throwaway car. You must decide for yourself. Personally, I vote for the PROPERLY DONE rebuild.

Here is a fairly complete listing of the parts you will need to rebuild the Saab V4 engine, including part numbers and retail prices. I would assume that anyone could match or improve on the parts prices and offer them here as a guide only for those who may not be able to buy them at a better price. Of course the cost of a mechanic's labor must be added to the parts prices and this will vary considerably from mechanic to mechanic. Just do your best to have a known, reliable Saab V4 mechanic do the work, even if you have to pay a little more per hour for his work. An out-of-work Chevy pickup mechanic is not what you want for the job, I guarantee that.



NOTE: NAPA--National Automotive Parts Association Stores
 SAAB--Parts from Saab Dealers
 BA--Beck-Arnley or British Auto Parts (or similar)Stores
 DH--Parts from discount houses of various brand names
 I included the price of a V4 reground cam for those who want a bit more punch from their engines along with the overhaul.

Go Swift • Go Safe • Go



Quan	Part No.	Source	Description	Price
5	219-3100	NAPA	Block Plugs	\$ 2.50
1	8810673	SAAB	Camshaft block plug	4.10
1	8810707	SAAB	Balance Sh Block Plug	6.35
4	224-1986	NAPA	.030" Pistons (1700cc)	76.60
	224-2903	NAPA	Std 272CID V8 Pistons (for 1500cc V4 engine)	86.04
1	42977	NAPA	.030" P/C Ring set 1.7	58.66
	S-5353	NAPA	Std 272 Ring set 1.5	43.72
1	B4451	BA	Rod Bearing Set	27.15
1	M3350	BA	Main Bearing Set	28.50
1	3C3059	NAPA	Cam Bearing Set	24.65
1	8812364	SAAB	Rear Bal Shaft Brg	17.40
1	8812349	SAAB	Front Bal Shaft Brg	16.90
1	8812216	SAAB	Fan Shaft Bearing	18.93
1	01-21255-71	SAAB	O'Haul Gasket Set	38.25
8	C3AZ-6214A	FORD	Rod Bolts V6	9.60
8	C3DZ-6212A	FORD	Rod Bolt Nuts V6	3.60
6	D4FZ-6379A	FORD	Flywheel Bolts	9.28
1	D4ZZ-6600A	FORD	Oil Pump	59.70
1	D2RY-6A618A	FORD	Oil Pump drive shaft	7.42
1	OF-103	BA	Oil Filter	3.50
1	D4AZ-9278A	FORD	Oil Pressure Switch	4.94
4	218-7393	NAPA	Valve Seats, Exhaust	16.00
4	211-2169	NAPA	V6 Exhaust Valves	32.00
4	217-3178	NAPA	V6 Valve Guides	8.56
1	8811812	BA	V4 Timing Gear Set	82.78
1	20-0501	BA	Water Pump	24.75
1	808	BA	Air Filter	6.95
1	4012	BA	Fuel Filter	2.95
4	NGK BP6ES	BA	Spark Plugs	5.00
1	1-237-013-044	BA	Bosche Points	2.75
1	8830694	BA	Pressure Plate	49.87
1	8801128	BA	Clutch Disc	34.97
1	7194137	BA	Release Bearing	9.95
1	7194095	SAAB	Input Sh Gearbox Seal	3.87
1	8801136	SAAB	Pilot Bushing	5.20
1	8812331	SAAB	Curved PCV Valve Hose	8.12
1	CH 1143	BA	Bottom Radiator Hose	6.20
6'	Misc	DH	Heater hose	6.00
1	515	BA	Spark Plug Wire Set	13.95
1	Gallon	DH	AntiFreeze	4.25
4	Qt	DH	Castrol 20-50 Oil	5.60
1	HPG-1	BA	Plastigage	2.50
1		DH	HiTemp Engine Paint	4.50

\$ 884.51*

*Less the cost of pistons and a ring set for the engine you are NOT building.

Sublet Labor:	Item	Price
	Install Valve Seats (4)	\$ 10.00
	Install Valve Guides (4)	20.00
	Reface 4 intake Valves & Seats	16.00
	Bore Engine for new pistons	36.00
	Install Cam & Bal shaft bearings	30.00
	Hot Tank engine	12.00
	Turn Crankshaft undersize	40.00
	Bush Rods to fit wrist pins (1500)	40.00
	Balance Engine	85.00
	Lighten Flywheel	30.00
	Regrind Cam to F66 Isky specs	72.00

\$391.00

SAAB 9000 BEATS PLANE IN PERFORMANCE RACE

In an unusual cross-country contest of car vs. aircraft, the car won--in comfort. To demonstrate the value of a high-performance tire on a high-performance car, the Italian tire-maker Pirelli pitted a Saab 9000 sedan against the commercial airlines. The object was to get from Lubeck in northern Germany to Salzburg airport in Austria.

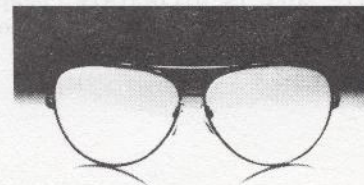
Ex-Rally Champion Erik Carlsson drove the 625 mile run accompanied by Jim Porter, consultant to the Royal Automobile Club Rally. He made sure Erik Carlsson didn't break any speed limits.

At the same time, Pat Moss-Carlsson was making her way from Hamburg to Salzburg on regularly scheduled flights via Frankfurt and Zurich.

Erik Carlsson's aim was to complete the run in 7 hours--but he made it in 6 hours and 28 minutes. So he was in good time to pick up his wife at the Salzburg airport.

The entire exercise was filmed by Pirelli and will be included in a film about the firm's new tires for high-performance cars: the Pirelli P600 and P700.

Driving force.



SERENGETI DRIVERS from Corning Optics. The first photochromic high-contrast copper-lensed sunglasses. Uniquely designed for enhanced vision in any daytime driving conditions. At optical, department and specialty stores, or call 1-800-525-4001. In New York State, call 1-800-648-4810.

Serengeti FROM CORNING OPTICS DRIVERS

SERENGETI is a registered trademark of Corning Glass Works, Corning, NY, USA.

SILICONE BRAKE FLUID, By Peter McLaughlin

In the last few months the "controversy" surrounding silicone brake fluid has raised its head again. I plan on using it in my 96 this spring, when I tear down and rebuild my caliper piston assemblies. Speaking as someone who's never used it, you might ask why I would recommend it so highly? Because SILICONE BRAKE FLUID IS BENIGN TO PAINT! "Big deal", you say? If you doubt the importance of this feature of SBF, then take some regular DOT 3 or 4 glycol fluid and put a drop of it on a horizontal scrap of painted sheet metal. Within a day or so you will find the paint softened, and soon thereafter the fluid may blister the paint as well as paint remover.

This means that anywhere there is a leak or spill of glycol fluid you have just initiated the rusting out of some adjacent sheet metal. For example, think of all the fluid flung throughout a wheel well when a cylinder springs a leak. I've heard it said that due to road salt draining toward the shoulder of the road, most cars rust out faster on the passenger side. Stands to reason. Yet I could never understand why my Saabs always developed serious cancer on the driver's side of the engine room and walls. The reason appears to be simple: That is where the clutch and brake master cylinders lie, and where the spill, leak and drip glycol fluid. In fact, the worst rust spot on my present 96 is directly below the brake master, which happens to be the bottom of the left wishbone "tower".

SBF is not a cure for sick hydraulic systems. If the rubber parts are old, they should be replaced as part of an SBF retrofit. If you believe the rubber is O.K., then I recommend you at least take apart one cylinder to inspect for rust and pitting. Rebuild, hone or replace anything that's suspect.

Why go to all this expense and bother? After all, if you end up doing all the rubber brake parts, including hoses, you could be looking at upwards of \$200 in parts. Just to prevent a little rust? Well, I can assure you that the rust in my engine compartment would cost more than that to fix to like-new condition. The point here is that hydraulic work is ultimately cheaper, easier and less dependent on the special, more artistic skills and tools used in top quality sheet metal repair.

If you do get a leak with regular glycol fluid, use copious amounts of water to flood the affected areas, until the leak is stopped. Let's face it, many of us have nursed a "leaker" for awhile until we could a) get to it, b) get the parts, or c) both a and b. During those times we drive very conservatively, if at all, right?

By the way, don't worry about the ability of plain water to wash off the spilled DOT 3 and 4. They get along just dandy with water. That's one of the problems with glycol fluid, it's hygroscopic, that is, it sucks up water like a sponge wherever it can get it. This is why the Department of Defense and the U.S. Postal Service have gone over to SBF. The DOD found that in areas of high humidity the regular glycol fluid got so saturated with water that vehicle hydraulics were overhauled every six months due to corrosion. Plus, the boiling point of glycol fluid is dangerously low when its moisture content is as high as 15%. Steve Parsons' letter (Feb '85 issue) mentions the "black, smelly..." fluid he pumped out of the brake system, and he attributes it to the possibility of being SBF (perhaps based on the Saab-Scania warning?). I suggest that what Steve saw was more that likely the result of "wet" glycol, which not only causes the system to rust, but can draw in salt saturated water, exacerbating a bad situation. On every old Saab I've bled, I've gotten fluid dark enough to use in a fountain pen. I'm disappointed but not surprised that Saab disapproves of SBF. If they gave a big thumbs-up to the aftermarket use of it, perhaps they'd be opening themselves up to a liability suit the first time someone misused SBF and had brake failure. I guess auto manufacturers tend to err on the side of caution in such matters. Plus, you probably won't be able to get SBF down at your local filling station, either. Not unlike good two-stroke oil, eh?

The information in this letter was gleaned from over two dozen articles and letters in *Skinned Knuckles*, A Journal of Car Restoration. They are at 175 May Avenue, Monrovia, CA 91016. Sent them a buck and they'll send a sample copy. If you're into older iron, from whatever angle, you may love it. It's very much like the Saab Club Newsletter, no glossies, just lots of useful information.

I've included a fact sheet on SBF that I hope Carolanne can publish someday. But if not, here's some important new advice from it: When filling the master cylinder with SBF, wait several minutes for any air bubbles to rise before beginning the bleeding operation. When bleeding, do not pump the pedal vigorously, but depress and release it slowly (about 3 to 5 seconds) to avoid agitating the system. Use the "buddy" system, one person's foot pressing the pedal, the other opening the bleed nipple only during the down stroke.

Peter McLaughlin, Evanston, IL



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The Classified Ad deadline for the July issue will be June 19 and the deadline for the August issue will be July 15.

SONETTS FOR SALE

Two Sonett IIIs, 1972 & '74, both high miles but good, plus exhaustive manuals and many spare parts: \$3000 for all. G. Sprengling, RD 4, Box 375, Blairsville, PA 15717, 412-459-8939.

1971 Sonett, #000152, Oct. 70 manufacture, runs ok, body fair, 134K mi., floor ok, rusty rockers, ideal for rehab. or parts: 4950. John Lohmann, Minnetonka, MN, 612-546-9683.

1973 Sonett III, CA car, no rust, new paint, Michelins, tuned extractor exh. & batt., rebilt, trans., driving lights, am-fm/tape, CB, strong eng.: \$4500. Roger Winters, 408-554-1884 days, 408-973-9432.

1974 Sonett III, runs great, new yellow paint, 98,500 mi., needs valve seals (?): \$2000. Bob Seath, 612-421-8885.

1974 Sonett III, exc. mech. cond., runs great, orig. orange paint, removeable top, int. needs work: \$1750. Bob Seath, 612-421-8885.

95's and 96's FOR SALE

1972 95, 72,000 orig. mi., eng. exc., trans. relatively new, little rust, much recent work and TLC., can't keep in NYC: \$2000. Gloria Jacobs, 212-226-5086.

95, 96, and SONETT PARTS FOR SALE

Sonett III Parts, both eng. & body, 4 new Michelin ZXZs \$40 ea. (165xSR15); fin style aluminum rims \$40 ea.; rear hatchback (new) \$75; etc. Dave Struyk, 6199 Sinclair, Mound, MN 55364, 612-472-6567.

96 & 97 trans. rebilt units \$500-600. Dennis Sweeney, 207 E. Church St, Ligoner, PA 15658, 412-238-4556.

95,96 AND SONETT PARTS FOR SALE, Cont'd.

3 cyl. Monte Carlo & parts, \$50 for all my parts, includes carbs, gasket sets, instruments, trim, 2 crankshafts (1 new). \$50 for car, runs well but rusty. Brakes, eng., gearbox, & int. o.k., good studded radial tires. Everlything goes to junkyard July 1. Nicholas Mango, 617-631-2146 h, 617-531-9433 wk.

3 cyl. engines & parts, '67 sedan good cond. Call for information. Robert Stirling, 516-286-1354, Long Island NY area.

95, 96, & SONETT WANTEDS

Wanted: V4 2-barrell manifold. Nelson Merrell, Box 6723, Santa Barbara, CA 93160.

Wanted: Factory dual intake manifold and intermediate mounting plate for V4 eng. to mount Weber 2bbl carb on Sonett III. Pete Briggs, 303 Wisteria Dr., Thibodaux, LA 70301, 504-446-9329.

Wanted: 1700cc V4 crankshaft. Offering \$50. Andy Buc, Box 61141, Seattle, WA 98121, 206-634-0169.

99's and 900's FOR SALE

1971 99E, eng. blown (dropped valve) with holed piston, windshield broken, otherwise eminently salvageable, minimum rust: Free to Saab Club member. Merle Janes, Idaho, 208-233-3141 (no collect calls).

1975 99LE, 2dr, 86,100 mi., exc. body, no rust, blue, rear spoiler, am-fm stereo. New fr. brake calipers, clutch, AC comp., heater core, fuel dist. 1982 Turbo-style wheels & steering wheel: \$2220. Forrest Hassell, 2612 Rolling Meadows Ln, New Haven, IN 46774, 219-493-7290 eves.

1981 900 Turbo, 4dr, auto, AC, sunroof, stereo, brn w/ maroon vel., garaged: \$8200 obo. Mark Ebbets, 33 Valliria, Groton, MA 01450, 617-448-6676.

99 & 900 PARTS FOR SALE

Set of Bilstein shocks for 900. Less than 5000 mi. use: \$100. Comer Buck, 803-886-6877.

Halogen headlights for 900, never used: 1 for \$11, 2 for \$20. Margrit Adler, 217-356-9244.

1974 EFI manifold complete, sensors, warm-up reg., wiring: \$100 obo. Bruce allexander, 4719 Pitt, Duluth, MN 55804.

99 factory service manual 69-72, also 76 manual, \$20 ea. or offer; new spedo cable drive gear for '74 99 \$5; rebilt clutch master for '74 or earlier \$10; slave \$5. John Younker, 414-923-2859 h, 424-3846 wk.

5 EMS wheels for '74 99 asking \$195; other parts available. Bill Makris, RFD 3, Box 1140, Putney, VT 05346, 802-387-4659.

99 and 900 PARTS FOR SALE, continued

Repc semi-metallic brake pads, industry size number D-227, will fit rear of '75-76 99s, probably others too: \$15; one rear mudflap for 99: \$8. I pay shipping. Mark Saklad, 4 Hilda Rd, Bedford, MA 01730, 617-274-2326.

For '75 99 2dr, dist. with curve, header, radiator, steel wheels \$15; EMS \$50; head \$120; fuel dist., half shafts, glass, hitch, other parts, '74-4sp. Rich Chenet, RD #2, Box 181, Aliquippa, PA 15001, 412-495-3633.

4 Kleber GTS radials 185/70 HR15, only 6000 mi., like new: \$250 for all 4 includes shipping UPS. David Beebe, Box 422, Geneseo, NY, 14454.

'74 99 manual trans. used \$150 + ship., eng holder for 1.7 or 1.85 eng. pn 8390452 \$70 or will trade for 2.0 holder pn 8392169; '74 alt. \$60; '74 starter \$60. Wanted: 1 wheelcover for '74 \$15. Karl Hodge, 79 Maple St, Cuba, NY 14727, 716-968-1460.

Instrument cluster from '80 GLE (speedo, clock, etc.) 26,000 mi. on spedo. \$40. Doug Marble, 39 Beverly St, Pittsfield, MA 01201, 413-442 1218.

'78 Turbo Parts, eng. \$750; trans. \$500; body parts \$50 & up, '74 trans. \$250; EMS wheels \$45. Dennis Sweeney, 207 E. Church St., Ligonier, PA 15658, 412-238-4556.

1 rubber bumper for '72 99 in poor cond., cover ok, but mounts are bent :15?; also rubber bumper for '73-79 99 in exc. cond. \$30. Call Lewis Eig, 914-352-6124.

99 AND 900 PARTS WANTED

Wanted: '81 or later fr. or rear seatbelts; '79-80 Turbo or GLE rear bench cover, velour blue only; need 900 European headlight pass. side; exh. man., Turbo wastegate assy. for '81 or later, APC sys w/ elect. Alex Barbier, The Palmer House, Waverly, NY 14892, 607-565-2711.

Wanted: Air conditioner complete for '79 900 EMS. Under \$200?. Craig Wallace, 439 N. Hwy 6 #5-11, Delta, UT 84624, 801-864-4043 h, 864-4441 ext. 5890 wk.

Wanted: 2 alloy wheels 15" for '82 900 Turbo. Walter Jaap, 110 Charlott Dr, Ligonier, PA 15658, 412-238-9212.

Wanted: Dist/water pump layshaft for '77-80 99. Will pay \$75. Also need gd used dbl belt crank pulley: \$25. Bernie Ten Cate after 7pm 517-423-6155, 4020 Allen Rd, Tecumseh, MI 49286.

ANOTHER WAY OF REMOVING 96 TRANNY

Good tip from Frank Bjorseth on removing a 96 transmission (April '85 newsletter), but I think there is a better way.

Just remove the 2 bolts that hold the bottom ball joint to the A-frame, and kick the bottom of the wheel out slightly to pull the axle out of the transmission. I Have to give credit to K&N Motors in Ann Arbor, MI for showing me this trick. By the way, they are excellent on Saabs.

While that ball joint is loose, you might as well take it completely off, disassemble, clean and adjust it. The joint has a plug that is staked. Pound the staking back, unscrew the plug and it comes apart. Clean, lube and reassemble. Screw it down tight, and back off a little and re-stake it.

I think that is one reason that I'm enamoured with old Saabs. They seem to be built with maintenance in mind rather than replacement.

On another note. I finally bought a parts washer and must say that it is the one single "tool" that will do most to insure a professional repair job. To paraphrase Dick Grossman, "A clean engine is a happy engine", and this holds true for all parts.

Fred Sisson, Norcross, GA



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- '78-79 4 spd w/Turbo---\$82.50
- '80 - 5 spd w/Turbo---\$92.50
- '80- 5 spd no Turbo----\$79.95

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INSTALLING GAUGES IN A 900, By E.C. Borchert

Recently I installed an ammeter, oil pressure and water temperature gauge in my '83 900. I also installed a center console where I placed my radio and plan to install an equalizer eventually. I referenced Steven D. Cohen's article in the club newsletter Feb. '83 p. 9 to get started on some ideas. I purchased a three hole gauge panel (Item #13-420 from IPD in Oregon, (503-287-1179) for \$8.00. They have a different item number for pre-'82's. The panel fits snugly and matches the interior finish. I purchased the VDO "Night Design" gauges. The "Night Design" come with clear, green and red bulb covers to illuminate the gauge to your desire. Obviously, the green is an optimal match for the Saab interior. These gauges are 2 1/16" diameter. As Steven mentioned, the best location for the gauges is the "normal" radio slot in the upper dash. The radio located well in the center console and an equalizer will mount comfortably under the radio with an equalizer bracket attached to the top of the console. Other gauge designs and styles are available and the VDO people (800-368-8365) were helpful in sending a free catalog with price sheet, although VDO does not sell direct. The lowest price VDO dealership I located was Buckey Sales (800-848-1320, Tom Granger) where the prices were 1/2 of VDO's list.

In wiring the ammeter, remember all current must flow through the ammeter to receive the correct reading. My '83 Saab factory manual did not accurately represent my wiring due to an earlier recall to re-route the alternator wiring. I studied and corrected my schematic and have sent Carolanne a copy.

Use crimp connectors for all the connectors at terminals which make for a clean/solid connection. Disconnect, but do not remove from the Saab, the Starter/Alternator wire. If the ammeter fails someday, all the current would be isolated from the alternator and it would be nice to reconnect the starter/alternator connections vs. either being stranded or having to find some heavy duty wire on the roadside to make connections. Use tie-loc straps tie down the ends of the Saab connectors so they will be out of the way and secure. Disconnect, but do not remove from the Saab the three #10 wires from the battery to the fuse/relay box. (This is for '83 and on. On pre-'83 non-modified Saabs, these wires are at the alternator.) Two of the #10 wires are connected to fuse terminals #5 & #6. The third #10 wire connects to the Ignition Lock Relay. I used a #6 wire (approx. 12') from the starter to ammeter terminal "B" and a #6 (approx. 12') from the battery to the ammeter terminal "B". I routed the wire along the right side of the wheel well and through some existing/plugged holes for a right-hand side brake pedal (for driver's ed. purposes). From the ammeter terminal "L", I used #6 wire (approx 8') to the alternator. From the ammeter terminal "L", I also used 3-#10 (on one #6 eye crimp connector) wire (approx. 8') to the fuse/relay box. Two #10 wires are connected to the #5 and #6 fuse terminals and the third #10 is connected to the Ignition Lock Relay. Route the

wire along the left speaker fire wall and down through an existing plugged hole. Be sure to use grommets when routing wire through the firewall. There can be considerable current travelling through the wire at any one time and care should be taken as to tying the wire securely to an existing harness or stationary object. The lengths of wire given above are conservative and trimming of excess wire will be required at one end or the other to give a "tight" wire fit. Removing the lower dash (3 bolts, on in the ash tray and the other 2 under the hood by the door hinges) to route wires and to work freely is advised.

The wiring for the temperature gauge and the oil pressure gauge are much simpler than the ammeter. The use of sending units are preferred over the old mechanical gauges. The sending units eliminate the chance of an oil/anti-freeze spill inside the Saab, as well as being much easier to install. I purchased a dual sending unit for the oil pressure so the idiot light could still be connected. An after thought would be to install a "T" connector and install the existing sending unit for the idiot light and a sending unit for the pressure gauge for a cost reduction in the sending unit as well as the installed back-up sending unit. A "T" connector was used on the water temperature indicator. The original sending unit as well as the gauge sending unit were utilized to give back-up capability at no real extra cost. The sending units were wired to terminal "G" on the gauge with #16 wire (approx. 15' for both). The "+" terminal on the temperature/pressure gauges were wired to fuse terminal #19 (warning lights) with #16 wire (approx. 8'). The indicator lights on all 3 gauges were branched wire so that only one "+" connection was made to the nearby dash dial light of the temperature dial with #16 wire (approx. 1.5'). The "-" lead from the indicator light as well as the "-" temperature/pressure gauges were combined and grounded on the heater core cover screw nearby with #16 wire (approx. 1.5'). Be sure you have a good ground. If the gauges do not light, check the fuse, then the ground. The method mentioned above minimized the amount of wire used and made for a good clean installation.

The gauges used are described below:

Gauge Range	VDO Number	Price
50-0-50 AMP	190-100	\$16.95
100-250 F Water	310-100	\$22.95
Water S.U.	323-095	\$ 5.79
Water S.U. Adapter "T"	240-856	\$ 2.39
0-150 PSIG Oil	350-101	\$22.17
150 PSIG S.U.	360-025	\$15.72
Oil S.U. Adapter	240-859	\$ 1.62

E. C. Borchert, Charleston, WV

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