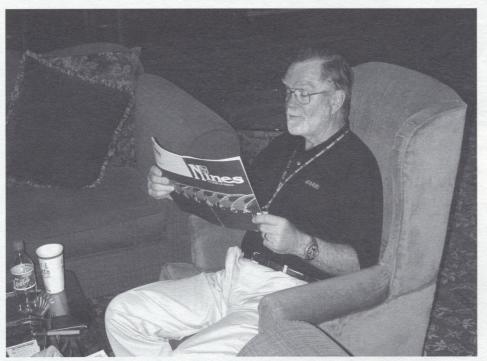


The SAAB Club Magazine

R.LUTZ



DO YOUR HOUSEGUESTS IGNORE YOU WHEN THEY SEE A COPY OF NINES ON YOUR COFFEE TABLE?

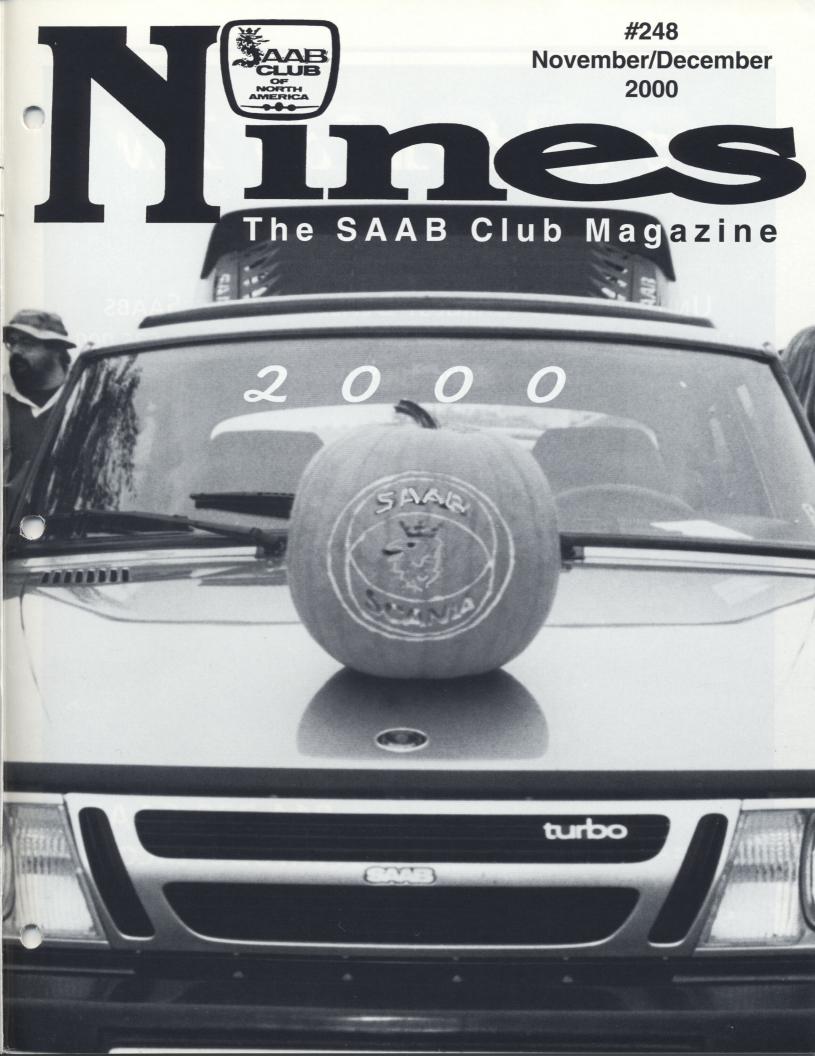
WE CAN UNDERSTAND THAT. EVERY SAAB ENTHUSIAST WANTS TO READ NINES. THEY WANT TO KEEP UP TO DATE ON SAAB'S NEWEST MODELS. THEY WANT TO READ ABOUT SAAB'S INNOVATIONS, PAST AND PRESENT. NINES HAS SOURCES FOR PARTS AND SERVICES, REPAIR AND RESTORATION ARTICLES, AND STORIES FROM OUR SUBSCRIBERS. MAYBE YOUR GUESTS FIND ALL THIS MORE INTERESTING THAN YOU ARE. BUT WE CAN HELP.

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Incidently, you needn't worry about hiding your NINES if the gentleman in the photograph comes to visit you. Robert J. Sinclair, former President and Chief Executive Officer of Saab Cars USA, Inc., receives his copy of NINES in the mail. The photo was taken at the 2000 Saab Owners' Convention, where Mr. Sincleair arrived directly from a lengthy trip abroad. He was captured on film catching up on the only important reading he missed while he was away.



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Photographed by Larry West at "SAABtoberfest, 1999" Car by Deb Lusby

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Drawing couretesy of Saab Automobile AB

We welcome our new members. Some are referrals from existing members, and we thank you. Some come from Saab Dealers and Independent Service Facilities specializing in Saab. One new member is a postman who became aware of NINES while delivering it to someone on his route!



Saab Performance!

We all hear about other marques of cars and all the things people do to them. There are all kinds of magazines revolving around these marques as well as magazines devoted to particular types of cars. Well I seem to have a hard time finding much information for people who are automotive enthusiasts and who drive Saabs. I figured the National Saab Club would be a great forum for people to tell about what they have done to their Saabs so the rest of us can see just what is possible. There has to be others out there who feel the same way I do. I wanted to see what has been done as well as have a place where I could ask for help if I needed it.

Since I have opened the call for this forum, I may as well put my money where my mouth is and start this whole thing off. Lets get to specifics. I personally own a 1996 Scarabe Green 900SE. I bought the car brand new and I have had no trouble with it at all. As good as it is, it could be much better. So after looking around and talking to a few people, I decide it would be best to start with the suspension first in my quest for a better Saab. I have looked around at various places. Accelerated Response Motoring was the first aftermarket store I was aware of and I had been talking to its founder, Dan Saarony for a couple of years. Since then I found out about Swedish Performance, Sports Car Service, and SPG 9, not to mention other people that handle parts for Saabs and other cars, like ELP Motorsports. Many of these don't carry anything for the more recent 900s yet. So I went back to Accelerated Response and purchased four Abbot Racing Springs and four Koni adjustable shocks as a starting point.

The package arrived about a week after I ordered the parts. I didn't expect the parts

that quickly. The downside was UPS decided they needed to charge me approximately \$40 for customs handling and storage fees. Not pleasant but necessary at this point. For my trouble I receive four springs painted in a nice glossy Sea Green color. They were much smaller than I anticipated. However if they did the job, I didn't care what size they were. The Koni Shocks were in two long packages. I couldn't figure out which set was for the front or which set was for the rear until I opened them up. The front set are a cartridge type which makes them easily identifiable.

Now my mechanic skills belong to the neophyte classification. Owning a Jeep Wrangler and taking it off road required me to get some skills to repair and or upgrade it. I figured this was as good a time as any to increase my skills and experience. This all came to a screeching halt as I didn't have the necessary tools (a coil spring compressor), nor could I rent the proper type where I currently reside. This meant I would have to go to someone else to install the suspension. Galling but necessary if I wanted to see what these parts could do. In the long run it was probably better this way as it took the mechanic 3.5 hours of work, most of which was spent on the front. I asked him if there was anything unusual about the installation or if it was just a pain. The fronts were considered difficult but not unusual. It definitely looked like something a person could do themselves.

After driving the car for approximately four hours since the install, I could easily tell a difference. This was an initial impression and the suspension hadn't worn in yet. I was told that takes approximately a week and after that I should have a full alignment done to make sure everything is where it should be, but the initial impression was

quite positive. The car does sit a little lower. This is most noticeable in the rear of the vehicle. There is also a definite difference in road feel. With the shocks in the lowest (read softest) setting, I can definitely feel more of what the car is doing and what the road is like. The stock suspension tended to isolate the driver from the road and that isn't something I like. However the suspension is not bone jarring by any means. It is just much more taut.

- 1. As mentioned above, road feel is much better.
- 2. There wasn't as much body roll in hard turns. While it will be possible to eliminate even more body roll by dialing up the shocks, I hadn't had the opportunity yet.
- 3. There is far less wallow upon initial turn in. The stock suspension would allow the car to heel over and then take a set. This wasn't bad performance but it's definitely NOT what I wanted. The new suspension just turns and takes a set immediately. This has corresponded to far more control in turns and makes the limits much easier to explore. I was able to add approximately five miles per hour to a sweeping right hand turn I drive almost every day, yet at the same time I was much more aware of what the car was doing.

After having the suspension on the car for a week, I finally had the time to adjust the shocks to a stiffer setting. The instructions had two recommendations beyond the factory setting. The first was a quarter turn counterclockwise. This was supposed to stiffen them up a little bit for better road feel but it wasn't something really aggressive. I found that to be a large improvement. I think the car was more comfortable at this setting. The greater resistance to impacts seemed to allow the suspension to absorb the irregularities better than when left alone. The car



Before the suspension upgrade



After the upgrade the car sits lower, especially in the rear

again handled better with even more road feel and less body roll. It made me wonder if things would get better if I dialed the shocks a little tighter. The next setting in the directions, and the last for that matter, was one full turn. I couldn't wait to try this but I held off until a week after I had them installed. I went out and played on a bunch of local roads that were very twisty to make sure I would see any difference. Comfort level has not changed. The car is still very comfortable. The ride is very good though you do feel road bumps some more. The payoff is much better road feel. In addition the car has even more responsive handling than before. I ended up hitting a sharp and blind right hand turn. I just turned the wheel and the car turned without drama. No pushing. No tire scrub, just the car rotating around the turn. Don't get me wrong. It is still a front drive car and if you push it in a corner it will understeer. However this suspension has taken my car from an OK car to one that I am really starting to love. While there is a considerable cost involved, I see no reason to buy a new car until this one is falling apart.

Quite frankly, I really don't know why Saab didn't use a suspension like this from the factory. There is a large upgrade in road feel and car control but almost no penalty in ride quality. However, that does allow the individual to go exploring and make his/her automotive adventure a little more interesting.

I will write more in the future regarding my findings on this suspension as well as any additions I will be making to the car. I can think of a few things to do to the suspension before I turn to the engine. I hope that this article gives you some more information on what is possible with a Saab. I also hope to hear about what others have done to their Saabs from the earliest 93 to the latest 9-5.

Notes:

A. For more info from some of these manufacturers, go the web to find them. Specifically you can go to my automotive page http://home.sprintmail.com/~prmetime/ Automotive.html and then bookmark the sites you are interested in.

B. I noticed as they were working on my car that the rear suspension is not independent. For shame Saab. If you really want to compete with the BMW's, Mercedes',

Audi's, or even the Lincoln's of the world, you really should put a fully independent suspension in the next Saabs.

C. There are cutouts in the rear cargo area to access the top of the shock towers. The mechanic called me out to show me these spots (I knew they were there). He mentioned that he had to cut them himself as they were not precut.

Karl A Vogelheim Columbus, MS

The "twist beam" axle used on the 9³ is generally regarded as a derivation of the pure trailing arm independent suspension. Because the beam is so close to the trailing arm pivot and because of its open cross section, it allows much more freedom of movement between the two wheels than the beam axle used from the 99 through the 9000. This same type of axle is used on the current Audi A6 front drive models. The 9⁵ uses a multilink (two lateral arm plus one trailing arm) independent rear suspension. -Ed.

Hi!

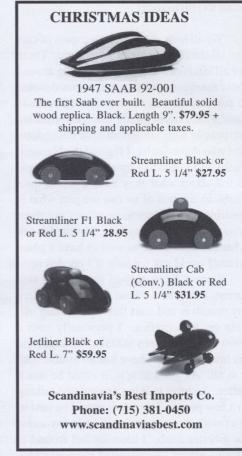
I hope that You will excuse this request, if it is beyond your normal service in SCNA.

I live in Norway, and have always driven SAABs, (99 before, and currently a 900i and a 9000CS). Now, I have been facinated by the old Sonetts. As only a handful still exist in Norway (and a few hundred in Sweden), the best place to find one must be in the US, where the majority of cars were exported.

Could You provide any advice on how to locate SAAB Sonetts? I guess that there is no common (federal) SAAB register of such used cars (vintage cars) for sale? I am considering contacting (some) SAAB dealers by fax or phone. Is it reasonable to assume that certain states (CA, FL?) had a greater import of Sonetts than others? Where should I start looking?

Again, please excuse an enthusiast's request. Hope You can give some hints.

PS: You might have interest in knowing that one of the very few Sonett IIs (it's a '68 V4) in Norway is in daily use by the ex-Minister of Cultural Affairs Mrs. Ase Kleveland. She has had this car since it was brand new in 1968. According to an article in 1994 in a 'veteran cars magazine' only two Sonett IIs and two Sonett IIIs were known to exist in Norway. By



now a few more have been imported. All the best,

--- Hilsen/Regards

--- Havard Kvernelv --- VINN, N-8512 Narvik, Norway --- Tel: +47 76 96 72 92, Fax: +47 76 96 72 01, Mobil: +47 90 52 40 14 --- havard.kvernelv@vinn.no,

www.vinn.no

We responded to Havard's email and gave him the most common sources: VSAAB The Vintage Saab List, The Saab Network, and columnists Chuck Andrews and Chip Lamb. We invite anyone wishing to deplete the Sonetts in North America by shipping them back to Europe to contact Havard directly.

WOW! How much better can it get? John Moss writing about morphing two-strokes with Trionic! Do keep up the good work with the magazine and tell John to behave - I may end up on the doorstep of his Training Center to join the Fun and Frolic!

Steven Rossi Commerce Township, MI

Any and all compliments cheerfully accepted! Thanks. -Ed.

NINES Survey.

What My Saab has Carried

Alaskan Residents are allowed to fish with a VERY large net on a pole, as long as you think you can handle, during red salmon (sockeye) season. We live/work just a mile from the beach access road of the most popular fishery, the Kenai River, so yes we did actually drive the car with the nets loaded as you see in the picture.

The tiny trailer next to the car is the home/office that we live in and run 3 businesses out of for 5 months of the year. 123 square feet isn't a whole ot of space, let me tell you!!

Cristy Breazeale Kenai, AK



Salmon Fishing Net on top of the Saab

My Saab Saved Me

I was driving in the left lane, through Northern Ohio, at about 65 miles per hour, when someone entered the highway from an on-ramp. He had his left signal on. I hit the horn, but he just came across into my lane. I was sure he would hit me.

I tried to slow down, then swerved to the left to avoid hitting him. This put me into the grass median. I knew that I didn't want to be there, so I turned hard right to get back onto the pavement. When the front wheels did get onto the pavement, the car started a door-to-door roll, then the car hit the guardrail on the other side of the road. I stopped upside down with my seatbelt holding me. I remember the radio was still playing, so I reached and turned it off. I couldn't open the doors, so I released my seatbelt (hitting my head on the sunroof in the process) opened the window and crawled out.

This was a brand new car, and I was really afraid of what my parents would say, but they were just so happy that I was not hurt at all.

> Ashwarya Nukala Bradford, CT

Story told in a phone interview with the Editor. Photographs by the Editor, taken at Dave Towell Saab in Akron, Ohio.



The sunroof and windshield glass remained unbroken.



The side and especially the rear show the severity of the crash.



Front view of the rolled Saab.

Wild and Crazy Stunts I Lived to Tell About

About three weeks back, I performed some serious modifications to my 96's cooling system while I was replacing a transmission. I also seriously dressed up the killer V4 with those nifty T-handled chrome valve cover bolts, and a lot of stainless steel braiding for the hoses as well as repainting the engine so it sparkled. Well, in the process, I was reassembling the engine and tapping in the balance shaft pulley. I was doing so very carefully to avoid popping out the rear block plug which was admittedly a little loose in its bore if I had remembered correctly back to about a year ago when I did the full rebuild. Well, what happened? You guessed it! She popped out! Stupid me! I saw this, and did the lazy-man's fixit job of inserting a very large flat-bladed screwdriver between the flywheel and the block and wedging the plug back in place. Little did I know that the plug was out of tolerance in addition!

The engine went back in the car, and I spent hours cleaning and painting everything so it was truely show stopping in there. The cooling system went back together (or should I say, together since it was entirely new!) and I started the beast up! Ka WHUMMMM! That MSS extractor sang!

Uh oh! Something WRONG! That oil pressure light is on! The new VDO gauge shows 40 PSI....it shouldn't be on! Oh well, disconnect the light! (I'm being VERY STU-PID HERE! ALL TAKE NOTE!) No, I didn't seize the engine! Thank God for that! I went on a nice highway drive to the local Mexican food joint, Mighty Taco, to take the car on a nice post-operative cruise. Then I noticed it...I thought that oil smell was just the fresh oil burning off the extractors and stuff....but the headlights from the guy behind me made it painfully obvious that I was really burning a ton of oil! Abort mission...ABORT! I drove home as quickly as possible. I checked the security of all the new oil line connections. All were painfully tight! Then I de-oiled the engine bay (all that CLEANING!!!) and revved up the V4....oil slinged out of the bellhousing like an automatic-oiling chainsaw bar! AWWW SH@T! The BLOCK PLUG!!!! I was so sick and tired of working on the V4 that I retired the 96 to the garage and drove my commuter car, my 1990 Jeep Wagoneer Limited, to school and on daily runs.

Day followed day, and week followed week. I was up to my ears in projects as an

architecture student at the University at Buffalo, and there was no time to attend to the 96, so it sat, and I started longing to drive a stick once again! Finally, yesterday, it was a gorgeous fall day (okay, late summer!) and I was stuck inside doing sectional views of a model I had built for architecture studio. I was sick and tired of the same-old, so I dropped my drawing utensils, and marched up to my room where the 96's keys (slightly tarnished from disuse!) were found, and marched to the garage and fired up the old oil slinging beast! Off to the shop I drove! I was going to lick this problem so I could drive my beloved 96 once again and regain part of the lost manhood its absence had caused!

It was 5:30. How could I expect to get anything done at that late in the day? Plus, I still had another sectional drawing to complete! I put those thoughts aside and resolved to get as much done on the 96 as possible.

In five minutes, the hood, front panel, and new Volvo 240 radiator were out and coolant was all over the floor (little did I know, the new radiator lacks a drain cock!!!!). By 6:30 (an hour later), the engine was swinging from the engine hoist,

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and I had the clutch off and was examining the badly gnashed-up block plug! Sure enough, the plug was BARELY in there! I popped another one out of a dead 1968 V4, cleaned it up, applied a little aircraft sealer, and installed it. It was tight, like it was supposed to be!

The clutch assembly was lightly surfaced and degreased ten minutes later, and the engine was ready to go back in! By 8:15, I was topping up the coolant and re-setting the radio presets, and by 8:30, the car roared to life leak-free! I had really stunned myself! This was an all-time record on my part!

The car drove flawlessly, and I finally got to test out the new cooling system without the stench of burning fresh oil hitting the extractors! I even drove the car to my afternoon class to show it off!

So, I just thought I'd share my crazy evening of Saab fixing. I'm a happy 96 daily driver once again! The 96 didn't leak even a DROP in the 50 miles I drove it to school and back! This could be quite possibly the only time my 96 hasn't left the tell-tale nickle of oil in the driveway in the five plus years I've owned it! So, this

Saaber is happy again, his manhood is back....he's got his mojo!

I guess if there's a point at all to this posting, make sure that the balance shaft block plug fits extremely tightly in its bore before installing the flywheel. Don't expect silicone to take up the empty space of a loose plug! You'll be rewarded by quarts of oil spilling on your exhaust, and all over everywhere you drive the car! And most of all, if you should ever accidentally bump the plug out slightly while re-installing the pulley, do it right and take off the flywheel and reseal that plug! I learned my lesson well!

Charlie Melonic (the Saab freak) Buffalo, NY

This story originally appeared in VSAAB the Vintage Saab Mailing List. -Ed.

Having just read the wonderful word-picture painted by Charlie Melonic---the one where he sets a record replacing the loose plug behind the balance shaft---I say:

Chaz, dump the architecture major. You don't want to be no artichoke, boy!

You need to be in the WRITIN' BIDNESS!

Think of the FAME!

Think of the STATUS!

Think of the GROUPIES!

Think of the MONEY!

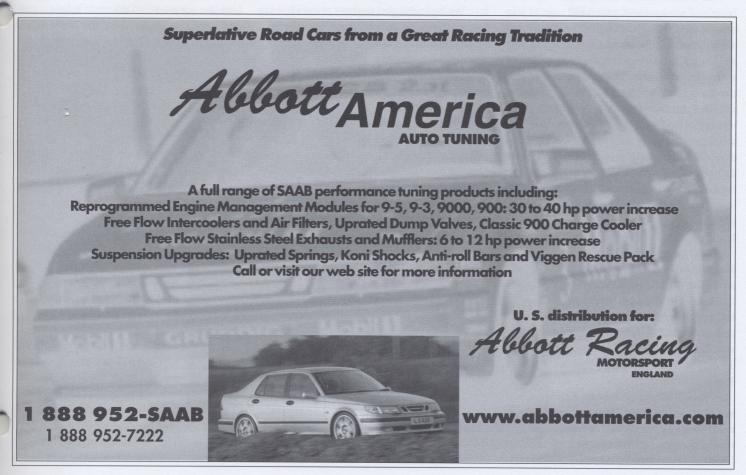
Hmmm. Wait a minute. I have a 30-year-old Sonett as my daily driver and my 401K is valued at \$136.17. Stick with architecture.

Meanwhile: I was thinking of the welding discussion (on VSAAB, the Vintage Saab Mailing List) as I re-applied Neosporin to my left hand. Note to flame welders (yes, I can run a torch... somewhat): Wear gloves! Especially if you're upside down under the back end of a car with no room to move! When you pass that flame over your hand, you will probably jerk your head reflexively and discover interesting hard bits. This will lead to an investigation of an entirely new vocabulary---although I usually stick with the tried-and-true "SON of a BITCH!" This is usually punctuated with the Olympic Tool Toss.

Oxy-Acetylene Law #1: You will run out of steel rod halfway around an exhaust pipe.

Oxy-Acetylene Law #2: They don't make coat hangers out of whatever steel they used to.

Satch Carlson Anchorage, AK



What does a '51 Nash "Bathtub" and a '62 Saab "Stroker" have in common? Well, quite a bit, actually, although certainly not the size. Both have a similar, wind tunnel tested, aerodynamic shape. Both have a frameless, one piece body construction. And both make six sparks for every two engine revolutions.

So, what does a Nash bathtub have to do with a Saab story in NINES? Well, my ownership of such a grand ole car led to the purchase of my first Saab back in 1970.



1951 Nash Ambassador (Like Father) tow vehicle and 1962 Saab 96 race (Like Son) race car.

In 1969 I had been autocrossing for a couple of seasons and gotten the urge to join some friends who had started road racing. I began scanning the competition-cars-for-sale in Competition Press (Now Autoweek). Lo and behold what should appear but a race prepared, "ex-factory" 1992 Saab 96. This immediately grabbed my attention, as the price was right (\$800) and a ride in a new "stroker" a few years earlier had left me thinking "neat car!" But what really peaked my interest was that at the time I also had a 1951 Nash Ambassador, and wouldn't a Nash bathtub pull-

ing a Saab 96 racer be a neat combination? (The answer is YES, in case you aren't sure.)

Anyway, an exchange of letters, a phone call or two, and I had arranged for the purchase of my first Saab. I still have the letter the seller sent me describing the car, and in re-reading it, I see his name was Randall Cook. Seems to me he may still be involved with vintage Saab racing.

Randall lived in Atlanta, GA at the time and he agreed to tow the car up to Nashville, where I would pick it up and flat-tow it back to Peoria with my AMX. (U-

Haul didn't have a bumper hitch that fit the Nash). A buddy and his girl friend agreed to come along and the three of us left in the two-seat AMX early one February morning, 1970. When we got to Indianapolis I decided to let my buddy drive for a while. That left me sitting crossways on the floor behind the seats. Not long after he started driving we ran into a snow storm that covered I-65. Shortly thereafter, he looped the AMX right on the Interstate! When we started spinning I closed my eyes and thought "Oh, poo!" (Well, some-

thing like that, anyway.) Luckily, we didn't hit anything and came to rest just off the road. We were able to get back on the highway and proceeded on to Nashville without further incidents. By the time we arrived in Nashville, the

snow had turned to light rain.

We had arranged to meet at the Holiday Inn, and as soon as we turned into the lot I spied the car. Oh what an exciting sight - a neat little red race car, backed up the fence, all shiny from the rain. Randall Cook soon emerged from his motel room and we looked the car over. What a neat little machine ... and quite exotic when compared to the Nashes and Ramblers I was used to. He explained a little abut the car and its spares, I handed over the money, and we proceeded to hook the Saab up to the AMX to flat tow it



Bringing It Home, February, 1970 - somewhere in Kentucky in an ice storm.

back home.

Since I wasn't very experienced with towing a vehicle and we didn't know for sure how the Saab would flat tow behind the shortwheelbase AMX, we decided to take the secondary roads back to Illinois and avoid I-65. Now that may have been a good idea, because we avoided the snow storm we found earlier, but somewhere in Western Kentucky or Southern Indiana we ran into a major ice storm. It was bad enough that we decided to stop at the next little town we came to and spend the night in a motel. But when we got there, no motel was readily found, so we crept around town until we came across the Police Station. They were helpful and directed us to a (or, maybe, the) motel. The next morning we found the roads better, and proceeded slowly, and successfully, on to Peoria. Now in looking back at that return trip, I wonder how in the world we made it without jackknifing or sliding off the road into a ditch or tree. We were flat towing the Saab with a short wheelbase, 280 HP AMX, with positraction and bias belted, red-line "performance" tires. Must have been due to the great skill of the driver!

Once back home in Peoria I began to look the car over and do some minor repairs and upgrades required by the latest SCCA racing regulations. The car was in superb condition. Never titled and always used as a race car, the Saab was solid as a rock with not a bit of rust on it. From the information in Randy Cook's letter to me, I learned that the car was assembled in mid 1962 and was used as one of the factory rallye cars until the Marlboro 12 hour race in the fall of 1962, where it was one of the three factory team cars. After that race, the car was sold to an

individual in Washington, D.C., who seldom raced it. It was sold again in 1965 to a person who was quite successful with it. He was invited to the 1966 and 1967 ARRC (SCCA's "Runoffs") after finishing 3rd in class each year in the SCCA's Midwest Division. In 1966 he finished 5th or 6th at the ARCC, but "DNF"d" (did not finish) in 1967 due to a clutch failure.

Randy Cook bought the car in February, 1968 and competed with it in 1968 and 1969. The car had a 4-speed close ratio gearbox, a bored out and ported

850 cc engine with GT crankshaft, competition exhaust, lowered suspension, and a "gutted" interior.

I raced the car from 1970 through 1973, running it in local autocrosses, hill climbs, and ice races in northern Illinois, and I also drove it on the street for many fun miles. My first drivers' school was at the Milwaukee State Fair Park, in early spring, 1970. Piles of snow were still lying around. There was some trouble with the car dying, but I believe that was caused by carburetor icing, as I wasn't using the inlet pre-heater device. I passed the the school, but the instructor (who drove an NSU in the same class as the Saab) wrote a comment on my logbook: "Drives well, but car slow." Oh, that hurt! I would have preferred "Driver marginal, but car superb!" The second drivers' school was at Blackhawk Farms Raceway, near Beloit, Wisconsin. The weather was much better, and the car ran fine. I "won" the 5-lap practice race, beating a Fiat Abarth who finished 2nd, and last in our class, and got to carry the checkered flag around the track. I also learned that you don't need to be Erik Carlsson to put a Saab 96 up on two wheels, or over on its roof, for that matter. Fortunately I did not accomplish the latter, but I did put a lot of air under the inside two wheels preventing my feeling the thrill of victory. But on the other hand, in a low budget operation, anytime you actually finish a race without breaking something, it's a victory!

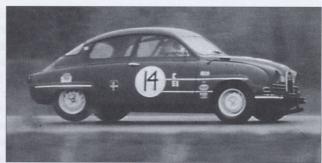
For me, the car proved to be quite reliable and trouble free. What troubles we did have were pretty much the result of changes I made to the car ... like using a set of used, oversize tires for a race, which rubbed a suspension bolt in the corners and then went flat - while I was leading! I had only one significant failure with the car. In hopes of knocking a few tenth's off my lap time, I obtained a tuning kit for the 850 engine. This consisted of a large 2 barrel carburetor (Solex, I think). It made a big difference in power - you could really feel it. Unfortunately, it also encouraged over revving the en-

gine (redline, if I remember right, was only 5500 or 6000 rpm). The first time I took the car to a race with that carb, the engine seized

in the first practice session. A roller bearing rod had failed, no doubt the result of the extra power and of over revving an already "tired" engine, as race engines go. The crank assembly was sent out to a fellow in Kansas who rebuilt it using good used rod assemblies (Saab never sold the rod assemblies separately, apparently.) I never tried the carb again. Not winning races is a

bit disappointing, but not finishing (or even getting to start) due to mechanical failure is a real downer.

By the end of 1973 I came to the realization that track racing was becoming too expensive in time and money for me to continue. Actually, if one can be content with racing only two or three times per year, and be satisfied with just finishing and not winning, it can be fairly affordable. But eventually you begin



Racing at Blackhawk Farms - on three wheels



Autocross - on two wheels

wanting to be competitive and to race more often, and the expense skyrockets.

So, in 1974 I decided to sell the Saab and get something else to autocross. The Saab was well past being competitive, at least in SCCA classes, and also wasn't very well suited for autocrossing. Eventually a fellow came down form the Chicago area to purchase it. I don't remember the actual selling price, but I think it was in the give-away range ... like \$350 to \$400. The car was still in excellent condition and ready to race. I do remember that when he came to get it I started it up to load it on his trailer, and hearing that wonderful sound the unmuffled 2 strokes make, I thought to myself, "Damn, does that sound neat. I'm going to miss this!" And I have.

The new owner repainted the car a maroon and white, adopted the number 97, and continued to race it, mostly in Midwest Council events I think. After a couple of years I lost track of the car, but I always figured it existed somewhere. If not still running, maybe it was hidden away in the back of a garage, gathering dust, waiting to be restored.

Enter the late 1990's and the Internet. I decided to put an inquiry on The Saab Network to see if someone out there might know if the car still exists. Thanks to responses from a couple of Saab enthusiasts, one of whom referred to the car as "The Wreck of Old 97"



1970 or 1971 - Note that the rear wheel is not turning

in turn one! It is easy to do with a high, narrow car (like a 96) on racing tires, so you have to learn to be smooth with throttle, brakes, and steering.

I raced the car from 1970 through 1973 at Blackhawk Farms, Indianapolis Raceway Park, and Milwaukee State Fair Park. I got a number of 2nd and 3rd place class finishes, but never actually won a race. I came close a couple of times, but "brain fade" intervened,



October, 1999 at Independent Auto Craft

McHenry, IL, at the time, and he continued racing the car for a few more years. The car was kept at Europa Motors. One day, a few years after Tom had acquired it, as it sat outside, a trash fire was started up near by. A wind came up and blew the burning trash over onto the car, resulting in some pretty severe front end damage. The car hasn't run since. Several years ago, the car was moved from Europa Motors to its present location, where Tom had hoped he would find the time to re-

store it (he still sees the soul in it!). But now Tom feels he won't ever be able to find the time, so it's for sale if anyone out there is interested. The engine and transmisison do exist, safely stored inside, so things may not be as bleak as the pictures show. Obviously a lot of work, plus spare parts, will be needed. Interested? Call Tom Low at Independent Auto Craft, 815-455-4030.

Steve Parsons Washington, IL



Depressing

(uh-oh, bad sign!), I was led to Independent Auto Craft in Crystal Lake, IL. A call to the shop owner, Tom Low, confirmed what surely sounded like my old race car. Enough, anyway, that I decided to take a vacation day and go up and look the car over and take some pictures of it - for "old times' sake." I hadn't asked if the car was for sale, but I was hoping that if it were, I wouldn't be tempted to buy it (I already have enough toys).

After a three hour trip (sunny, warm, no hint of snow or ice) I easily found Independent Auto Craft, and there, in the back of the lot under a tree, was indeed my old racer. It still had the special Illinois serial number plate I had to install in the engine compartment because the car never had been titled before I acquired it. Unfortunately, the phrase "wreck of old 97" (from a railroad song) did indeed describe the car in its present state, as the pictures show. A bit depressing, I must admit. I had told my rational self that I didn't want to be tempted to buy the car, but of course, I really was hoping that I would be tempted. Sadly, as I viewed the car, I realized that for me the "soul" I had remembered had gone out of the car.

Tom acquired the car from the fellow to whom I sold it in trade for keeping it maintained and running (the fellow was particularly hard on transmissions). Tom was Parts/ Service Manager for Europa Motors in

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NINES #248



Stroker in progress and some other twodigit SAAB stuff too

I picked up a '67 96 in July from my pal Paul in Kentucky after selling off the red '63 96 following this year's convention (more on this later). Turns out the mixer motor in the formerly 850LD equipped 96 had a rap-raprap as the needle entered the black which was bad news. Lucky for me, I had a nice LD engine in storage and a Monte Carlo crankshaft to pop in her. Off went the parts to the crank builder and no more progress has been made on that front yet! Hopefully the motor will have been back, assembled, and ready for the Wings-n-Wheels vintage car and airplane meet on the first of October.

I somehow got involved in the sale of a friend and customer's primo 1976 99EMS and even conned my way into taking her up to the convention to sell. Well wouldn't you know it, a rear wheel bearing had gone critical as the last folks to do anything about greasing the rear bearings only made it as far as the front bearing, while out and out ignoring the one on the axle side of the hub. The car sold in pictures and its new owner made plans to come retrieve the EMS during September. I had time on my hands and other stuff going on, so the car sat awaiting its bearing work. Finally put the 99 in the air one Friday afternoon and yanked the hub. Front bearing looked great, and doubts about my ability to track down rear wheel bearing noises escalated equally with the thoughts of removing a front spindle in the case it might have been one of the dreaded front bearings. I got to the rear bearing, and surprise! Destruction but not total devastation to the hub. This seems to be one of those forgotten lubrication points not only on 99s but also on the 2-stroke and V4 cars - so pull those rear hubs off occasionally and apply fresh grease to the easily starved bearings. Parts are still available, if in doubt locally, call me.

The convention was a good time. Kyndra and I spent a week in Vermont prior to the shindig, hanging out with SAAB friends old and new. I shot up to Chris Rizzon's SAAB Repair in Dorset to investigate his facility and con him out of some AC repair (of course MY 9000 decides to kill its aircon in mid summer while on the road). Kurt Krauss, longtime 99 driver, pulled in unexpectedly with some timing chain tensioner noise, and got prompt service from Chris under a particularly nice shade tree. Don't get me wrong, Chris' little shop behind his 19th century

farmhouse is enviable. Kurt and I proceeded to a swanky resort lodge, The Equinox down in Manchester, for lunch afterwards. Wednesday was spent with master barn builder Bruce Welch and his '57 93; Bruce's latest project kept him from attending the convention this year. I shot back to Chris' the following day to effect my AC repair and assured him we'd see him in New York that weekend.

The Convention organizers did a great job this year primarily from the standpoint of a very close-knit meeting - unlike previous years where I swear I've lost five pounds just walking around our appointed territory, the Hudson Valley resort had very nice parking lots, just the thing for wacky SAAB enthusiasts. We set up our small parts table outside with the rest of the major vendors, and the weather cooperated splendidly. The Concours d'SAAB took place down the road on a baseball field, the farthest anyone had to travel for the 48 hours of the Convention, and though I didn't intend to, my 9000 took best in class. I suppose despite its high tech faults it is a pretty car, and it assuaged my bruised ego in the second year of not having any oldtimer SAABs at the National Convention.

Back to 99 rear wheel bearings - it's a cinch! Pop the rim off, unbolt the caliper free from the hub, remove the 1 1/4" hub nut and remove the hub with the rotor attached. If the front bearing doesn't fall in the dirt or, in my case, on my dirty shop floor, you're doing good! If the bearing is intact, clean it really well with de-greaser or a mild parts washing solution and shoot it with an air gun to remove any remaining moisture and dead grease particles. Put it aside. Pop the rear hub seal out (I use a small Snap-On Crowbar with Handle) and drop the rear wheel bearing out in your hand. If either one requires replacement, go for it, we've got your parts; if the bearing has decided to go, you'll probably need to press out the outer race which is still in the hub! Reassembly is the reverse of removal and it's always good to have the piece of mind that your rear hub isn't about to seize up. 2-stroke and V4 guys: same procedure though you've got it easy, brakes wise, just back off the rear brake shoes, knock the drum off, and pull the front bearing out, etc.

Early 900 rear hubs also have "open" tapered roller bearings. By late 1982 the design had been changed to use sealed ball bearings. -Ed.



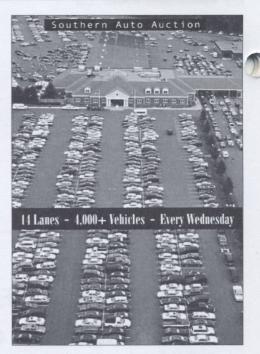
Professional Perspective

Used Car Auctions

The used car industry was about 370 billion dollars last year in the U.S. and is one of the biggest segments of our economy. New car dealers made about 39% of their dealership profits from used car sales. Paul Taylor in "USED CAR NEWS" reported that franchised dealers sold 20.1 million used cars in 1999. 12.3 million were retailed and 7.8 million were wholesaled. The average price of a used car sold in 1999 was \$13,240. Franchised dealers got 32% of their inventory from auctions in 1999. In 1989 they bought 20% and 10% were purchased from auctions in the early 80's. Inventory from trade-ins dropped from 51% in 1989 to 40% in 1999. Used car dealers, of course, derive most of their inventory from auctions but also buy from franchise dealers and private sellers. Off-lease cars from the auctions, and increasingly from Internet sales are sought by both franchised and used car dealers.

The path that lease cars take from lessor to a dealer for sale to you usually includes a car auction. If we are talking about Chase (Saab) cars you would find most of the returned Saabs are trucked to centralized auctions for re-conditioning and resale to licensed dealers. In the upper Midwest, most of the Saabs seem to end up at Metro Milwaukee Auto Auction. M.M.A.A. is one of the Manheim-owned auto auctions. Manheim just recently purchased its closest competitor (ADT) and now has nearly 100 locations, which makes them No.#1 in the world. Since we buy Saabs there frequently, I thought I could show some pictures and have some specific information about this particular auction but paranoia reigns and for security reasons it isn't possible. But, I can show pictures from an advertising brochure and describe how auctions generally work, so you have an understanding of the marketing chain.

When cars arrive at the auction, they are checked in by VIN number with a computer system which will inventory the odometer reading, owner's manual, CD player, etc. and title availability. Once entered, they are sent to whatever area or department the car has needs for. The auctions have fully equipped auto body shops and detail areas for clean up. If the leasing company or any other consignor wants top dollar for their cars, they send them through the appropriate process to ready them for sale. Once completed they will be assigned a sale date and parked in the sales lot. The sales lot is subdivided by lanes. A lane is driveway to a numbered door of the auction building that the car will arrive at for sale. Lanes will



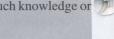
The dealer parking is in the foreground. Middle right, the cars are being checked into the auction. The upper right building is the reconditioning center. In the center at the top is the building with the cars moving in the lanes to be sold. To the right out of the picture is the transport parking area.

Going to an Auction

After reading Chuck Andrews' column describing wholesale automobile auctions, we asked him how he personally prepared for attending and purchasing inventory there.

In preparation for the sale, I would look at the past sales results. I would find out how many Saabs were sold, what age and mileage and at what price at the auctions where I'm registered. The information would be from a mailing list that I receive from the auction or from the auction's secure web site that I pay a fee to use. (You must be a registered dealer to gain access to the web site). Also, on the web site, is a list of the cars consigned for the next auction, cyber auctions, and direct sale cars from consignors. These lists become more accurate as we approach the sale date. All Manheim auctions are on the same web site but independent auctions like Southern Auto Auction have their own site.

Once that I have determined to attend a sale, I plan to arrive several hours before the sale begins. We would walk through the sales lot and find all the Saabs that are listed and available. Cars will continue to arrive well into the sale. As each Saab is located on the sales lot a walk around inspection would reveal previous body work, mis-matched paint, body seams mis-alligned, worn tires, bent rims, broken glass, scratches, dents and dings. Checking under the hood we would look for collision damage, oil leaks and general mechanical condition. We would inspect the interior and try all the accessories and look for any records or books in the car. We would open each door and hatch to inspect for paint matching lines or other evidence of collision damage. We would start the engine and listen to it's condition, check A/C, power steering and exhaust condition. All warning lamps would be checked on the dash. All fluids would be checked for a level and condition (dirty oil, burned transmission fluid, etc.) This initial inspection would take about three minutes or so and notes would be taken. After all the cars have been observed then a return visit for 3-4 minutes to recheck the worthy cars and arrive at a purchase price we are willing to pay, based on age, condition, cost of reconditioning and what similar cars have sold for in the past couple of weeks. (NADA Guidebook would be used in this process). A maximum price is established and observed unless a customer has ordered a specific car and is willing to pay a premium price. Each car is like a book ready to read. A pro buyer will read the car's condition and unless it is extremely well-detailed, evidence of the previous owners, their employment, age, driving habits and hobbies will manifest themselves. When the car comes to the block we will spend thousands of dollars in seconds to own the car. One can't have too much knowledge or experience as a buyer.



have specific cars in them, for instance: Chase lease cars will all be in one lane, Imports 1995 and newer would be in a different lane, etc. At sale time, the cars are driven through the lane to the auctioneer at the auction block. The auction block is where the auctioneer is working and the seller will be standing or sitting next to him on a raised platform.

Most cars would be current year over the country to buy Saabs. models up to maybe two years old.

This would also include rental cars that Saab may have agreed to take back and lemon law or dissatisfied customer buy-backs, and other company cars that would now be sold to dealers. You don't really think that they were going to junk those problem cars, did you?

At Chase Open Auctions, all licensed dealers who hold credentials for that auction are allowed to bid on and buy cars. At M.M.A.A. there are about 100 acres covered with over 4000 cars awaiting each week's sale. Of that number there may be 15 to 40 Saabs, including lease cars. We would expect there to be more than 1000 buyers competing for cars at each sale. They are assembled according to lane number and

car number. The Chase cars would all be together (usually in Lane #13 at M.M.A.A.) and are sequentially numbered. The dealers are allowed to look at and start the cars but cannot drive them until after they are purchased. All Chase cars, regardless of brand, would be assembled in Lane #13 (typically 250-400 cars) and sequentially numbered so the dealer can then find them for inspection and track them onto the block for bidding. Throughout most of the country, auctions have from 6 to 26 lanes. My guess is that most cars are auctioned off in a minute or less. So, if you have 26 lanes and auctioneers running at the same time you can see that it is necessary to be well organized. Yes, that's cor-



Each auction has Closed Sales Sourthern Auto Auction, East Windsor CT., showing lanes praisal of the car's condition and for specific brands of cars they have (doors into auction building). This area is located directly uses a car price guide (of his contracted with. Only authorized behind the main entrance. SAA is an independently owned choice). Lease car returns range dealers of that car "brand" will be auction that is a leader in the industry. They do an from super to very poor condition. allowed to bid. Program cars would extraordinary job with the car buyers and sellers. Saab holds Any car may sell to the high bidgenerally be in these closed sales. open and closed auctions here with dealers coming from all der or fall short of the protected

> rect. 26 cars per minute! Buyers need to move from lane-to-lane quickly so they can catch the cars they want to buy: not an easy task for buyers or sellers. Most auctions have video monitors in the lanes that list the lane number and car number at the block so buyers can keep up with the sale.

> When the auction starts, the cars are driven past the block in single file. The driver stops momentarily while the condition of the car is announced and then the bidding begins. The high bidder will be awarded the car if the seller (who is seated by this auctioneer) agrees to the price. The seller may have put a protect price on the paperwork for the car and so is not required to be there in person. Most auctions sell a little more



This is an aerial view of the SAA site, located in a scenic area for, a title may be received (some bordered in trees. The main entrance is in the middle of the shot and the remainder shows how much space it takes a for a well organized auctioneer to handle this volume of cars.

than 50% of the cars that are run through the lanes. The Chase cars (Saabs anyway) are slightly different than the other consignment cars because they have a residual price that they will accept as a minimum price, regardless of condition. As a buyer appraises the cars, he will decide what each car is worth based on his professional experience with that model, his apprice. When the bidding ends but the bid isn't high enough, the seller

will announce "his" asking price! A nod of the head from the buyer will then either negate the sale or raise the bid to a new high. Any cars that don't sell will be held over to the next week's sale or trucked to a different location. Special, Exotic or High-End Used Sales are held frequently at various auctions to sell Saabs and other premium cars. The cars and buyers always end up at the same place. The seller won't ship his Saabs to a location unless he knows that it is a good market for Saabs. The Saab buyers, likewise, only go to locations they know will have a good supply of cars. After the buyer has purchased as many cars as he wants or can afford (payment must be arranged that day) or if there aren't any more

> of the make and model that he is looking for, he can proceed to the test track. If any major defect that wasn't announced at the auction block turns up, (announcements are tape-recorded at the block) the car can be driven to the Arbitration Office for a discussion. Late model and off-lease cars have an Auction Guarantee. Older and cheaper cars are sold "As Is," whether the test drive shows up any problems or not. So, it's professional expertise and dumb luck that prevent a bad buy.

As soon as the cars are paid are sold pending arrival of title) and cars can be checked out of the auction. Typically an armed guard checks the VIN and gate

There are two reasons for purchasing a used, rather than new, Saab: one is to obtain a model which is no longer in production, and the other is to save money. For those working on the second option, one may be seeking a late model, low mileage sample, preferably one with a documented maintenance history. The reason is that depreciation is concentrated at the early years of a vehicle's life. A three year old Saab, which can sometimes be found for half its original list price, could have many years of reliable service and a year of its original factory warranty left in it.

A generation ago, cars such as these were obtained mainly from dealers' lots as new car trade-ins or obtained from the original owners through local newspaper ads. Finding a late model Saab in such away will be very

rare today, because so few Saabs are actually purchased new. Figures from Saab Cars, Inc., indicate that 70% of the new Saabs delivered are leased vehicles, and another 7% are "Program" cars. "Program" cars are mostly rental fleet returns, but a few of them are used by Saab Cars, either as "Employees' Cars" (good) or Press Fleet (flogged by journalists - maybe not so good). We expect that very few of the remaining 23% of vehicles are purchased with the owner intending to sell the car in three years. This means that the late model "pre-owned" Saabs on the dealers' lots probably came from a rental fleet if it is a year old or less, or from a lease if it is two to four years old.

Rental cars are maligned in the opinion of many. According to Heather Stewart of Saab Cars, the person whose job (among others) is the disposition of the rental fleet, such fears are unfounded. She told us:

1) Saab requires very strict adherence to Saab's maintenance schedule (which in the context of the rental companies' ownership period means a couple of oil changes). If the maintenance is not done. Saab will not repurchase the vehicle.

2) The cars are returned to Saab with low mileage and are subsequently covered by the remainder of Saab's warranty.

3) Renting in the "premium car" price category, Saabs are usually rented by business people who have more on their minds than tearing up a rental car.

4) Saab is particular about the location of the rental fleet, preferring to place the cars in cities like Denver and Miami, rather than New York, Boston, or Chicago.

To that we add part of a conversation we had with Rich Hooper, proprietor of R&H Garage in Seattle, an independent shop specializing in Saabs. When asked how he kept current with the new models, he said one way was to purchase a wrecked Saab from Budget and put it back together. According to Rich, for anything more than the most minor

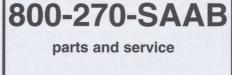
Professional Perspective (Continued)

pass with a VIN# to allow departure. Most cars go to the staging area where the truck transports are parked and loaded for delivery to the buyers' city and sales lot.

The best selection of used Saabs is the off-lease units, which now are usually '97-99's. There are enough Saabs that a buyer can sort through and find the ones he has a market for. Most have a balance of factory warranty and typically range from 10-60K miles. Of course, the Saab factory warranty is 4 years from the in-service date or 50K miles. Most of these cars are about half of their "new" price. We are reaching the end of the 1997's and the problem with the supply now is that there were only 1,500 9000's sold in 1998 and not many 900's either. The 1999 9-5's and 9-3's were introduced quite early, actually in the spring of 1998. There is a substantial price jump from the '97's to the '99's.

The Auctions are a good place to source cars. They check odometer readings, and VIN numbers against the title and guarantee delivery of a lien free title to the buyer. The selection is good in specific areas and the supply can be tracked on the auction's secure web sites. The buyers know, for instance, how many Saabs were sold the past week with a mileage and price. They can then choose which auction to attend. We are registered at 13 different locations and make decisions upon where to buy based partially on this information.

I hope this relieves some of the mystery about the auctions. I have given you some of the basics but left out a lot in between. They are well run and are a great resource for dealers and ultimately—YOU! Auctions make possible an orderly national market for used Saabs.





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collision repair, rental companies will sell the car "as is". During the time a car is in the repair shop, it is "dead money" to the rental company, and then at disposal time, the collision affects the value. They prefer to "cash in" the car by selling it and keeping the insurance settlement. This means that rental returns have not suffered major collision damage. Whether all this means more than the fact that rental cars are driven by people who are often unfamiliar with the car and unfamiliar with the roads on which they are driven is a judgement which the purchaser must make.

"Program" cars are eagerly sought out by many dealers as a means for placing customers in an essentially new car at an attractive price. After the 1999 Owners' Convention we visited with Mike Shaw Saab in Denver, who had recently sold out a very large shipment of Program Cars. They spoke very highly of the opportunity to remarket the rental fleet, as did Jim Levine of Ed Wolf Shaker Saab in Cleveland, Ohio.

In the two to four year old category, lease returns make up most of the market. This category is in a state of flux due to Saab taking a much more direct role in the lease programs. You can read the details in the NINES interview with Dan Chasins and the accompanying sidebar written by Heather Stewart. What is described below is a description of the Saab leases which are currently expiring, for most of which Chase Bank is the lessor.

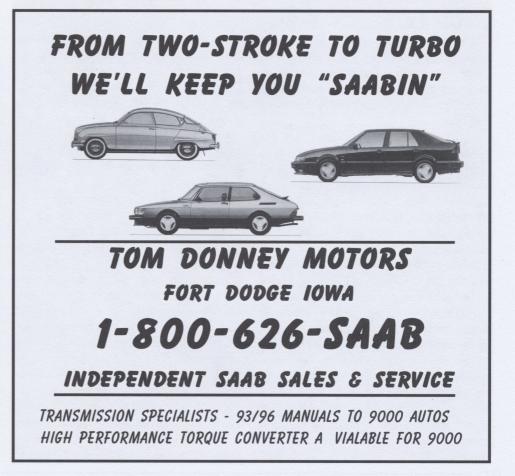
On the surface, leasing would seem to be a relatively straightforward process. The lessee pays a monthly fee which includes payment on the difference between the selling price of the car and the "residual value" of the car (an estimate of the future value of the car at the end of the lease period), plus interest on the entire unpaid balance. At the termination of the lease, the lessee usually has the option of purchasing the vehicle at the residual value or returning it to the lessor. There is also the potential for the lessee being charged for excess mileage and/or excess "wear and tear". The lessor is a finance company which pays the dealer the selling price of the car.

What adds spice to an otherwise simple transaction is the nature of the high end car business in which Saab participates: the lease incentive. The incentives can take any of three avenues to reduce the lease payments: subsidizing the interest rate charged the customer,

reducing the price of the vehicle through dealer incentives, or artificially increasing the residual value written into the lease. You can be sure that these incentives are paid by Saab. not the lessor, although in some cases the dealer must accept less than the usual markup under the pressure of a nationally advertised program. Of the three techniques, pushing down the lease rate by propping up the residual value has the greatest attraction to the manufacturer because it is paid at the end of the lease. A certain percentage of the leased cars will suffer a casualty loss, and there will be no incentive payment for them. Another fraction will suffer such excessive wear and tear or mileage that the lessee will be motivated to keep the car, rather than pay the pen-

Propping up the residual value is a necessity in any case. If Chase (for example) independently calculated the lease, they would naturally protect their interests by calculating the lease based on a residual value so low that they could be certain of recovering at least that much at the disposal auction. The result would a monthly fee so high than no Saabs would be leased, so Saab guarantees the residual value at the lease termina-





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tion, provided that the vehicle is sold at public auction. (Of course, for cars leased through SFSC, the question of guaranteeing the residual value is irrelevant.) Sometimes the owner can negotiate a purchase at a price below the residual value in the lease, but with Chase, at least, the practice is discouraged. A large leasing company dealing with thousands of lease terminations per week simply does not have the staff necessary to negotiate end-of-lease deals. The lessor (Chase) and the residual value guarantor (Saab) also do not want clerks and lessees to have the opportunity to play "lets make a deal" with "under the table kick backs" as part of the equation. Finally, an independent lessor such as Chase has no incentive to put themselves out to negotiate with lessees. They will receive at least the full residual value if the car goes to auction, with no effort.

The result of the preponderance of leasing and the realities of the lease incentive is that most lease cars go to auction. We have attended wholesale auctions: the Akron, Ohio auction does not check credentials at the door (although I suspect that a non-authorized person bidding would find himself in big trouble). We have also attended public "repossession" auctions, and by comparison the wholesale auction line moves FAST. Someone bidding must either inspect the car and do his analysis prior to the bidding or stick to something safer, like Las Vegas slot machines. Some tricks in the trade, we were told, include the auctioneer "rolling up" the price by announcing fictional bids. It was said that the car NINES purchased had this happen on the auction line, and the dealer subsequently negotiated a price with the Chase representative.

Pitfalls in Buying Returned Lease Cars

The greatest pitfall in purchasing a returned lease car is the car's maintenance history. In today's leasing market, with incentives in the form of high lease residual values, a great many of the lessees understand at the outset that they will not be keeping the car past the lease termination. Lessees often fail to follow Saab's maintenance schedule, and that maintenance schedule is very much more "relaxed" than that followed by many who intend to keep their cars a long time.

At the 2000 Saab Owners' Convention, one independent Saab service provider noted in an open discussion that several recent off lease acquisitions had their oil screens and crankcases "caked with sludge", indicating impossibly long oil change intervals. Saab officials have acknowledged the problem, as is evidenced by the "no charge scheduled maintenance" which is standard with most Saab models. Educating lessees to the importance of following the prescribed maintenance schedule is one of the goals for the new Saab leasing company, but this is small consolation for current buyers. In terms of scheduled maintenance, it's "buyer beware." At best, the selling dealer performed the maintenance on the vehicle, which means that records are readily available. Every dealer can draw the warranty history of any Saab, which provides a powerful clue for acquiring the information. Often the original lessee's name and phone numbers can be found in an owner's

manual or in other paperwork that accompanies the car Call and ask.

Another approach is to hold out for a vehicle with such low mileage and short time in service that even rarely performed maintenance provides a reasonable starting point. One must expect to pay a little extra for very low mileage. The pay off is negligible in terms of the life expectancy of a well maintained Saab, but it can be great in terms of ensuring that the Saab was sufficiently well maintained. This was our strategy: purchasing a car with just 17,000 miles, off a 30 month lease. One or two more oil changes during the interval would have been nice, but with the 5000 mile check having been performed on schedule and another oil change along the way, we believe that little harm was done.

A secondary maintenance issue is the extent to which warranty repairs are kept up. With a four-year manufacturer's warranty and with most leases expiring after three years, one might expect a car purchased off-lease to be in perfect condition. Our experience, albeit limited to just a single sample, was with a car which was delivered with several conditions which should have been noticeable by the lessee, but which had not been repaired. We live conveniently close to a Saab dealer, and the problems were mostly repaired under warranty. If a dealer is not convenient to the buyer, one must be prepared to thoroughly examine the car before purchasing it. Our examination centered on detecting evidence of a major collision and the general condition of the vehicle.

Our "New" Saab

This is the story of our latest purchase of a SAAB. We did some things right and made some mistakes. We are printing our story in the hopes that it will help our readers purchase good, reliable Saabs. Norma's contributions appear italicized.

We put our 1991 9000 up for sale in the fall of 1997, when the opportunity for purchasing a "last of the breed" 1998 9000 CSE at an attractive price was presented. It didn't sell. It was still for sale when the last batch of 1998 9000 "Program Cars" (aka Budget Rental returns) was offered at an even more attractive price. It still didn't sell. Meanwhile, Norma was becoming extremely cranky about driving manual transmission equipped cars - something about a back problem causing pain in her left leg making clutch actuation an unwelcome feature. We also had 2 new teenager drivers and I remembered son #1's teenage driving history. I wanted an automatic car to be able to hand down to the next family driver.

In December, 1998, a buyer for the 9000 appeared, and we thought we would, horrors, take a break from Saab ownership. Steve said he would sell the car only if offered full price. I think he was secretly hoping that no one would make that offer. The morning after the SAAB was sold Steve stared at the empty space in the garage whimpering. Meanwhile, our oldest son had just graduated from a medical school which allowed tuition payments by credit card. As a result we had accumulated several thousand dollars in credit from the use of a Ford Citibank Visa and from Ford's "recent graduate" financial incentive. Not wanting that credit to disappear unused, we purchased a Ford Contour automatic.

The 9000's tire marks were still warm when the former Nines editor asked us to continue for him. Naturally, editing and publishing NINES without owning and driving a Saab is a situation which cried out for rectification. Steve repeated this litany almost daily, ad nauseum.

The search proceeded in the usual way: regularly checking the local newspaper, the classifieds section of The Saab Network (TSN), and the classified ads sent to be printed in NINES. It was a misprint in the TSN classifieds that got the ball rolling - a car whose astoundingly-low-mileage-forthe-price was a result of a missing

"100,000" digit. At that point, Norma suggested looking into "cars.com", a web site advertised in our local (Knight Ritter) I was skeptical of this newspaper. approach, but upon trying it, I found that "cars.com" contains the classifieds listings for all Knight Ritter papers, many other papers, and sellers who "purchase space". That observation quickly led to "autotrader.com", a site which contains strictly paid-for ads. The cars.com site became my favorite because it shows the cars on a tightly packed screen where the search radius, the price, and the age guidelines are easily changed by "slide tabs."

It was through "cars.com" that "the one that got away" was located. It a '96 9000 CSE, owned by the sister of the original lessee, who had decided after a year of owning it that a new Range Rover was more suitable to her life style and the depth of her pockets. The seller claimed to have service records showing that the car was "serviced by the book by the local dealer", the well respected "Just Saab" franchise. In a fit of poor (I think good) judgement I hesitated driving the 200 miles to Cincinnati to investigate and (perhaps) purchase this car, just because of a mid-winter violent snow storm and an impending "NINES" publishing deadline. I probably spent more time fretting over the prospective purchase than it would have taken to drive the distance and back. In the end, a friend of the original lessee, who had perhaps been "stringing along" the car's owner, managed to secure financing for the purchase upon hearing of my intention to drive down "with cash in hand."

After that experience, the search intensified. We contacted NINES columnist Chuck Andrews for advice. We spoke with NINES advertiser Tom Donney, who had listed a suitable candidate for sale in NINES and then pulled the ad the next day as the car sold. We contacted nearby resellers of used Saabs who frequently advertise on TSN. We checked the "on-line classifieds" for area newspapers, and kept up with the listings on "cars.com."

Our strategy evolved from studying the market and the "trade in" and "retail" pricing on web sites such as "edmunds.com" and "kbb.com" (Kelly Blue Book). Being a discontinued model meant that the most

recent 9000 cars had depreciated quite a lot, with 9000 cars losing value proportionately more than the new generation 900 models. Further, we had become accustomed to the carrying capacity of the 9000, so that was the model on which we concentrated our search

The car we finally purchased was a 1997 9000, with a mere 17,000 miles and off a 30 month lease, which we had found on "cars.com." The low miles attracted us, while the dark (Scarabe Green) color made it easy to bargain on price. Had the car been the more desirable (to us) color, Cayenne Red for example, we could easily have wound up paying more. We verified the accuracy of the mileage by contacting the original dealer and through the warranty records. We searched the title through "carfax.com" an internet site that gives a title history, including the in-service date, sales transactions, and flood or crash salvage transactions for a nominal We requested that the service be "brought up to date" according to Saab's published service schedule, which, due to the low mileage and short in service time, was limited to an oil change (already done) and a brake fluid flush. Finally an inspection (including with the car on the lift) revealed nothing visibly wrong. We had just watched a TV program previously in which the consumer oriented program advocated that anytime one purchases a used car it be put on a lift with a mechanic there to explain any unusual findings.

The selling dealer, Southtowns Saab in Buffalo, NY, is 4 hours from our home: not exactly convenient. At least it was just a few miles off the path to my mother's home in Toronto, Canada. We also have a dear friend, now 54, suffering with ALS (Lou Gehrig's disease), and any visit to see her is precious and valued.

The relatively long remaining "Factory Warranty", essentially 14 months and unlimited miles, was more than a "security blanket" for us. We bought the car in Buffalo's last snow storm after a short test drive and drove it to Toronto. On the hour and a half trip we discovered a number of problems, including looseness in the steering (a worn or damaged universal joint in the steering shaft), a defective passenger's seat heater (requiring replacement heater elements), and a noisy radio (see Dr. Nio, NINES #247). The temperature gauge

indicated that the engine was running too cold.

Steve announced that the temperature problem needed to be fixed immediately. I couldn't understand the pressure of time since the car had obviously been driven that way by the previous owner. I wanted the passenger seat heater fixed. Steve called the service department of Saab of Thornhill who offered to look at the car that afternoon. The Toronto shop fixed the thermostat, which they declared be stuck open, under the warranty and said the heater was too big a job. Their service waiting room had a big bowl of fresh fruit instead of just doughnuts and cookies.

After we returned home we made a service appointment with our local dealer to get the steering, passenger's seat heater and radio fixed. Spring happened. I rolled down the passenger window to find it would not close. It started to rain. The car had to stay in the garage until its service appointment.

The car went into our local dealer who fixed the steering wheel, passenger seat heater, didn't hear anything wrong with the radio, and then called to tell us they would

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7:30-5:30 MONDAY-FRIDAY 8:00-5:00 MONDAY-FRIDAY 8:00-6:00 MONDAY-SAT., SUN. 12-6 not fix the open window under warranty. At least, they popped the glass back into the track so the window could stay closed, not open. It turned out that the door had been "dented", which had damaged the window track. The repair job was cosmetically excellent. Even after learning of the damage, it is easy to miss seeing any trace of a repair. But that repair had been done from the "outside" of the door, so the damaged track was left damaged. Saab's warranty does not cover crash damage,

We called Southtowns and explained to them that had we opened the window in the snow storm and found it wouldn't close, they would fixed it in order to sell the car. We felt that although it was 2 weeks later, they should still fix it for us as they certainly would have if we were local purchasers. Fortunately for us they agreed to repair the track but only in Buffalo which meant another 6 hour trip to Toronto.

It appeared as if the track could have been straightened, but the economics of automotive servicing means that a technician would be very reluctant to risk a "come back" by spending essentially unpaid time

(that spent repairing the track), when by installing a new part, he would know for certain that the customer would be satisfied. We believe that this episode demonstrates the benefit of purchasing a "used Saab" from someone who makes selling and/or repairing Saabs a major part of his business. The repair was done quickly by a technician who was very familiar with the procedure for disassembling a Saab door. In fact, the mechanic was one of the competing master mechanics at the SAAB convention. There is a shopping mall near the SAAB shop in Buffalo so add in the price of some clothes for a teenage daughter who accompanied us on this trip during Spring break.

Daughter complained during the whole trip about a squeal coming from one speaker when the radio was on. The Buffalo dealer tightened the ground on the antenna, but the radio still squealed on the trip to Toronto and back home. The car went back to the local Ohio dealer. The radio made no squeal when the car was in park. Steve asked the mechanic to drive around the block, and as soon as the car was shifted into drive the squeal became audible and

annoying. The mechanic then ordered a new antenna cable. The car went home and back for another service visit when the cable arrived, and this fixed the problem. Dave Towell Saab, the Akron Ohio dealer, gives a free car wash with every visit, as does Southtowns. The car was very clean with all of its service visits.

So went the saga of our latest Saab purchase. Up until now, what was repaired has remained in repair, and no new problems have arisen. The car runs, rides, handles, and hauls people and their belongings as expected. The closest thing to a disappointment is the extent to which the original owner had allowed faults which were covered under Saabs warranty to accumulate, along with the seller pretty much leaving it to the buyer to discover One might hope that the Saab Certified Used Car 100 point checklist, referred to by Dan Chasins in his interview in this issue, would have resulted in those items being repaired prior to the original purchase (but without increasing the price, of course).



Interview with Dan Chasins, President and COO of Saab Cars

It's been a year since our interview at the last Owners' Convention. In that time, on the product front: Saab has essentially filled out the 9-5 line, with an earlier than originally planned US launch of the Aero Wagon, the Gary Fisher Edition Wagon, and for the 9-3, the announced expansion of the Viggen line to include all 3 body styles. On the sales front: Saab's sales grew pretty well in 1999, with the best year in a long time and very strong growth over 1998. Your goal for 2000 was a modest increase, but so far you're down for the year. I'd like your comments in both areas.

The easiest part to answer is the sales. While nothing is for sure, our Dealer Sales to date - those to individual customers or small business, are actually up 8% over last year. What is way down are the fleet sales those going into rental service. When those sales, which are definitely going to happen, are added back into the equation, we are in very good standing for meeting our sales goal for 2000.

What kind of numbers are involved?

There's a general rule of thumb in the industry that fleet sales shouldn't be more than 10% of total sales. That would put our maximum total at around 4,000, and even that number is more than we want. In 1999, fleet sales were about 2800, and for 2000 we want about the same number, or between 2500 and 3000.

What are the benefits for fleet sales? Obviously it builds your total volume, but it must also depress the retail sales a little, too.

On the marketing side, having Saabs in rental service gives people who otherwise might not even consider Saab an opportunity to test-drive the car in a "real world" environment. We think that getting someone behind the wheel of a Saab is the best way to sell them. For our dealers, it provides them a source of "almost new" cars that they can offer at a price that can bring in buyers who otherwise couldn't afford a new Saab. Many dealers have been very successful at building their volume levels thanks to these "program cars."

What about the stigma of a rental car having been "beaten up" or neglected in service.

First of all, Saabs are rented at premium prices, and therefore the kind of people who rent them are more interested in getting their business done than exploring the cars' performance envelope. Saab cars have so much performance potential and durability built into them, it's hard to really do any damage without intentionally abusing the cars. Second, the rental companies are quite aware that if the maintenance program is not performed, Saab will not buy the cars back. Finally, the cars are brought back at relatively low mileage. These cars really are "almost new."

And on the product front?

Prototypes of the next generation 9-3 are being tested now. We call them "alpha cars" since they are the first driving prototypes. The people in Sweden tell us that just as the 9-5 was a quantum improvement over the 9000 and even the new generation 900 in terms of overall quality at this early stage of development, the new 9-3 is shaping up as a quantum improvement over the new generation 900 and even the 9-5. As Saab and General Motors gain experience with shared platform development, the synergies of being part of GM are really showing.

And let me stress that it truly is a program of shared development. Saab's needs are now factored into the design equation from the very beginning, and what we are ultimately given as the starting point of the design - the platform, if you will - accommodates our needs. From there, what we build will embody 100% of what we all know and expect from Saab.

We've heard that the next generation 9-3 convertible will be made by Styer Daimler Puch, in Austria, rather than by Valmet in Finland. Is this true, and if so, why?

Valmet and Saab have a long history of working together, and Saab is not dissatisfied with the relationship. While Valmet did not receive the contract to build the next generation 9-3 convertible, this does not preclude cooperation on future projects.

And the widely rumored SUV type vehicle?

I said last year that it was no longer a question of "if" Saab would build AWD models, but rather "when" and "how". Let

me add that there can be more than one solution to the question of how to implement AWD, one aimed more towards the American SUV market, and a different one aimed more towards our traditional European Sport Vehicle market. There is no reason why we couldn't have products to address both mar-

We spoke last year about Saab's marketing and the dealer network. Any changes?

We are continuing to invest in our dealer network: backfilling market gaps and moving toward a unified brand presentation business model. A lot of the backfilling is being done through satellite operations of existing dealers - for example, a new retail point in Mission Viejo (California) will be operated by Saab Santa Anna. In joint ventures, with Saab providing design assistance and in some cases financing for dealer facilities, we have 15 projects in the planning stages or breaking ground.

Our marketing plan is to continue to build demand by increasing the awareness of Saab as a strong competitor in the minds of our potential customers. Toward that end, we are using less conventional advertising in favor of a more focused advertising strategy. We are using more direct mail advertising, radio, and particularly through supporting National Public Radio, and local TV. For print ads, we are using smaller, niche market publications such as Architectural Digest, rather than mass media like Time or Newsweek.

Just as important as acquiring new customers is customer retention - keeping the loyalty of our existing customers. For a number of years Saab has used incentives on new car purchases to reward customer loyalty. With the preponderance of leasing in today's market, we are addressing the issue of loyalty and retention through our own captive leasing company, Saab Financial Services Corporation (SFSC). This allows us to keep in close contact with our leasing customers and better manage both the interaction the customer has with Saab and to manage the lease termination process.

We wanted to ask about the "new" leasing company. Saab has had quite a bit of turnover in that area in the past few years, first leasing through GMAC, then Chase, and now on your own. When, and why, did SFSC take over the business?



First to set the record straight, Dealers and Customers have a variety of lenders that they may choose from to finance or lease their Saab vehicle. Saab Financial Services competes with a variety of financial institutions to attract our dealers and to utilize us as their preferred lender. We do this by offering competitive programs, fair and consistent policies, and a single focus on the Saab customer and product. Also as the captive finance company of Saab we are the sole provider of any sales and leasing support programs.

We began originating SFSC leases with Pilot dealers in April of 1999. The majority of the states were moved over to SFSC by August, 1999. We just recently obtained our leasing license in Nevada and started leasing there a few months back.

Do you receive funding through GMAC or use their credit umbrella?

SFSC raises its own capital for all leasing and retail financing. We have not used GM funds in the past and we are not currently doing so, and we are not using the GMAC rating umbrella. That said, the markets where SFSC obtains funding know that Saab Cars, and by extension, SFSC, are wholly owned by GM.

Maintenance on leased cars can be something of a problem. At your seminar, one

Saab Financial Services Corporation

As referenced in the accompanying interview with Dan Chasins, Saab Financial Service Corporation, a subsidiary of Saab Cars Holding Corp., is the financing company through which Saab now provides financial services support to Saab dealers. We interviewed Heather Stewart, Director of Marketing and Operations for SFSC, to uncover Saab's goals and reasons for entering the finance business. While substituting SFSC for an independent leasing company may increase profits - leasing cars and trucks must be profitable for the lessor or the independent companies would quickly exit the business - the primary benefits to Saab from SFSC is in the area of customer relations: consistent credit policies, improved ownership experience and protecting Saab pre-owned vehicle values. Ms. Stewart told us that Chase had been a good partner to Saab during the years when they handled the sales support

independent Saab service provider even made a point about the lack of maintenance on the lease returns he had bought at auction.

This is one of the reasons we are now offering no-cost scheduled maintenance for three years on most of our models, a period corresponding to the most common Saab lease. We contact the new lessees at the beginning of the lease, make sure they are aware that maintaining the vehicle is their responsibility under the lease, and that they will be liable for any damages which occur due to their failure to maintain it.

As President of Saab Cars, I occasionally get letters from people who purchase used Saabs and subsequently have a bad experience. I know that's someone who unfortunately will not become a long-term Saab buyer. We want to do as much as we can to ensure that our leased cars - those which will soon be back on our dealers' lots in a few years, get the maintenance they need so that the bad experiences can be avoided as much as possible.

On the positive side, we are starting a Certified Pre-owned Saab Program. We began this program in anticipation of having the cars we leased through SFSC coming back into the system, and after passing a rigorous 100 point inspection, these cars will then carry a 12 month, 12,000 mile

warranty from Saab. It's our way of reassuring the customer that the used Saab they purchase is in good condition, and the Certified vehicles will be eligible for financing through SFSC. We've offered this in a pilot program with some dealers, and we expect to roll it out nationally this fall.

Speaking of that maintenance, many believe that the maintenance intervals - those you pay for and specify in the owners manuals, are way too long.

We've done a tremendous amount of testing, and we are satisfied that the specified maintenance interval, the 10,000 mile oil change interval, for example, is adequate. Certainly more frequent maintenance will enhance the car's life, and the Chasins family's cars get more frequent maintenance, as I'm sure yours do. People also need to be aware that if their use falls into the "severe service" category, they must use the relevant maintenance schedule. For example, we consider that anyone living here in the "tri-state area" of New York, Connecticut, and New Jersey, near New York City, falls into the severe service category.

Last year we talked about invigorating the 3-door 9-3 body style by offering a low priced performance version - one with the HOT engine and a minimum of costly stan-

programs for Saab, but they lacked the kind of focus on the Saab customer and product that SFSC, as the captive finance agency of Saab Cars, can provide.

The biggest difference occurs during the vehicle disposal process, along with some difference at the time the lease is executed. For SFSC, the most desired outcome is for the lessee to either purchase the car he or she has been leasing, or for the person to lease another Saab. Toward that end, the policy of SFSC is to contact the lessee well in advance of the termination date and explore the options available to the lessee. It was also said to be the policy of SFSC to contact the lessee at the beginning of the lease to ensure that the terms and conditions of the lease are understood. For Chase, on the other hand, the goal is to process the paperwork as efficiently as possible, and to dispose of the vehicle as quickly and as expeditiously as possible. In the event that the leased vehicle is returned to SFSC, the next most desirable outcome is

for the original dealer to reacquire the car, followed by placement with a Saab dealer or Authorized Service Point as a result of a "closed auction." The last resort for disposing of lease returns will be a public "Dealers' Auction", which is often the first choice for Chase.

During our conversation with Ms. Stewart, which took place this past spring, we asked about Saab rental car availability during the 2000 Owners' Convention. She noted that SFSC is also responsible for the disposition of Saab's Program Cars, and spoke a bit about that program. Ms. Stewart told us that to best manage the disposition of program cars, it is important that the cars be placed on the market while they are still in the current model year. By the time of the conversation, she said, it was unlikely that Saab would place cars into rental service prior to the 2001 model year, because by that time the returning 2000 Saabs would reach market when they'd be "last year's models".

August, September Sales

Saab's sales continued to be on track to reach their 2000 sales goals of just over 40,000, so long as sales don't wither in the last quarter as badly as they did in 1999. Again, the year-to-date "fleet sales," or sales to rental car companies, are minimal, a Saab representative told us, but fleet sales of approximately 2600 cars are contracted for the fourth quarter. As was explained in the Saab Financial Services Corporation article in this issue, loading fleet sales to the beginning of a model year enables SFSC to dispose of the returned cars while they are still the current model year, which greatly enhances their value.

This is the first period in which we have reported 9⁵ sales greater than the 9³'s. This was attributed to low inventory levels of 9³ models in general and very low inventory of convertibles.

Saab's sales of 209 Viggens was very strong, and the sale of 100 5-door Viggens in September is probably a record for any Viggen model.

Interview with Dan Chasins (continued)

dard equipment. In the mean time, 3-door sales have remained pretty anemic. Any progress on that?

To be honest, it's an item which we haven't given any attention to. When I mentioned it last year I thought the idea had merit, and I still think it does. Fortunately it doesn't require any engineering effort - it's something we can do very quickly if we decide to go ahead with it.

Aug	ust	September	period
model 900	1	1	2
coupe 9-3	47	41	88
viggen coupe	16	17	33
sedan 9-3	705	583	1288
sedan 9-3 se	349	297	646
viggen sedan	39	100	139
convertible 9-3	252	181	433
convertible 9-3 se	144	117	261
viggen convertible	25	12	37
campaign convert.	51	35	86
total 9-3	1628	1383	3011
sedan 9-5	585	866	1451
sedan 9-5se (4cyl)	8	3	11
sedan 9-5 V6 (se)	700	717	1417
aero 9-5	182	171	353
wagon 9-5	202	201	403
wagon 9-5se	243	190	433
wagon 9-5 g fisher	164	195	359
aero wagon	40	54	94
total 9-5	2124	2397	4521
current year (2000)	3753	3781	7534
last year (1999)	4044	4659	8703
percent increase	-7.20	-18.85	-13.43
Year to Date			28914
1999 Year to Date			31494

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2001 Saab Owners' Convention

In 2001 the Saab Owners' Convention returns to the South-eastern United States, and will be held in Florida in late June. The most likely dates for the convention as of press time are June 22-24. Watch NINES for further details.

Saab Combustion Control system: Lower emissions through extensive use of exhaust gases

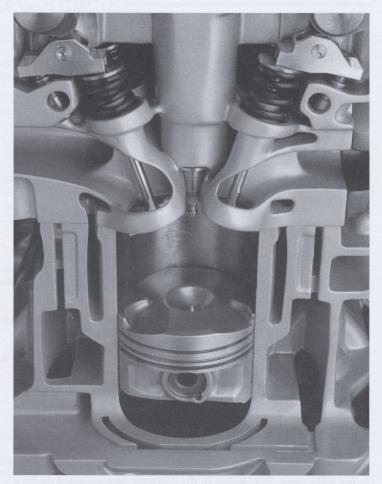
The Saab Combustion Control (SCC) system, introduced to the public at the 2000 Paris Auto Show, is a new engine control system developed to lower fuel consumption while radically reducing the exhaust emissions, but without impairing engine performance. By mixing a large proportion of exhaust gases into the combustion process, the fuel consumption can be reduced by up to 10 percent, at the same time lowering the exhaust emissions to a value below the American Ultra Low Emission Vehicle 2 (ULEV2) requirements that will come into force in the year 2005. Compared to today's Saab engines with equivalent performance, this will almost halve the carbon monoxide and hydrocarbon emissions, and will cut the nitrogen oxide emissions by 75 percent.

The SCC system is based on a combination of direct injection of petrol (gasoline), variable valve timing and variable spark gap. Unlike the direct injection systems available on the market today, the SCC system gains the benefits of direct injection, but without disturbing the ideal air-to-fuel ratio (14.6:1 = lambda 1) necessary for a conventional three-way catalytic converter to perform satisfactorily.

The most important components of the SCC system are:

- 1) Air-assisted fuel injection with turbulence generator The injector unit and spark plug are integrated into one unit known as the spark plug injector (SPI). The fuel is injected directly into the cylinder by means of compressed air. Immediately before the fuel is ignited, a brief blast of air creates turbulence in the cylinder, which assists combustion and shortens the combustion time.
- 2) Variable valve timing: The SCC system uses camshafts with a mechanism to enable the opening and closing of the inlet and exhaust valves to be continuously varied. This allows exhaust gases to be mixed into the combustion air in the cylinder, which allows the benefits of direct injection while maintaining a 14.6:1 air-fuel ratio under almost all operating conditions. Up to 70 percent of the cylinder contents during combustion consists of exhaust gases. The exact proportion depends on the prevailing operating conditions.
- 3) Variable spark plug gap with high spark energy: The spark plug gap is variable between 1 and 3.5 mm. The spark is struck from a central electrode in the spark plug injector either to a fixed earth electrode at a distance of 3.5 mm or to an earth electrode on the piston. The variable spark gap together with a high spark firing energy (80 mJ) is essential for igniting an air/fuel mixture that is so highly diluted with exhaust gases.

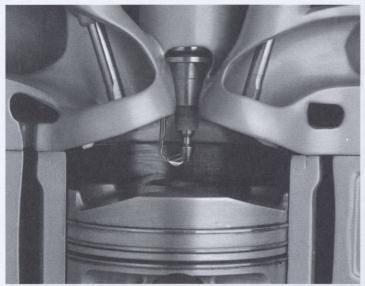
The three-way catalytic converter is still most important single exhaust emission control component. During normal operation, it



Cut away view of SCC engine. Note the roller cam follower. Also note the intricate geometry and fine surface finish made possible by GM's "lost foam" aluminum casting process. The existing SCC engine was developed from the GM "Corporate" 4 cylinder engine. That engine features an aluminum cylinder block and its original design incorporated turbocharging and variable valve timing capability. The protrusion in the center of the piston is the spark electrode.

will convert up to 99 percent of the harmful chemical compounds in the exhaust gases into inert gas. The inside of the catalytic converter consists of a perforated core, the walls of which are coated with a precious metal catalyst (platinum and rhodium). The precious metal coating traps carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) in the exhaust gases and enables these substances to react with one another so that the end product will be carbon dioxide (CO2), water (H2O) and nitrogen (N2).

Although it is highly effective in neutralizing the harmful substances in the exhaust gases, the catalytic converter suffers certain limitations. For the three-way catalyst to be fully effective, its temperature must be around 400 C. Moreover, the proportion of free oxygen in the exhaust gases must be kept constant. The amount of oxygen, in turn, is decided by the air/fuel ratio in the cylinder during combustion. The ideal ratio is 1 part of fuel to 14.6 parts of air (i.e. lambda = 1). If the mixture is richer, i.e. if the proportion of fuel is higher, the emissions of carbon monoxide (CO) and hydro-



View showing spark during light-load operation. At high load the spark timing is retarded and the spark jumps to the piston-mounted pin electrode visible in the other view.

carbons (HC) will increase. If the mixture is leaner, i.e. if the amount of fuel is lower, the nitrogen oxide (NOx) emissions will increase.

Direct injection of gasoline into the engine cylinders has long been known to minimize the pumping loss in an engine and therefore improve fuel economy. Pumping loss is the energy consumed by an internal combustion engine as it draws air, and it increases dramatically when the engine is running at low load and the throttle is not fully open. The piston in the cylinder then operates under a partial vacuum during the suction stroke in order to draw in the air. The principle is roughly the same as when you pull out a cycle pump plunger while shutting off the air opening with your thumb. The extra energy needed for pulling down the piston causes increased fuel consumption. The reduction of pumping losses is one of the reasons diesel engines are more fuel efficient.

The first impediment to direct injection had been the inability to ignite the extremely lean fuel air ratio mixtures which resulted from that strategy. Stratified charge designs were developed, where only the fuel/air mixture nearest to the spark plug is ignitable, and the remainder of the cylinder is filled with air. This leaner fuel/air mixture results in lower fuel consumption under certain operating conditions, but it is impossible to use a conventional three-way catalytic converter to neutralize the higher nitrogen oxide emissions because of the excess oxygen in the mixture.

A special catalytic converter with a 'nitrogen oxide trap' has been developed, and some manufacturers have introduced vehicles with direct injection gasoline engines using them. Compared to conventional three-way catalytic converters, these special converters suffer a number of major disadvantages. In the first place, they are more expensive to produce, since they have higher contents of precious metals. Moreover, they are more temperature-sensitive and need cooling when under heavy load, which is usually done by injecting extra fuel into the engine. The nitrogen oxide trap must also be regenerated when full, i.e. the nitrogen oxide stored must be removed, which is done by the engine being run briefly on a

richer fuel/air mixture. Both cooling and regeneration have a significant effect on the fuel consumption.

In addition, special catalytic converters of this type are sensitive to sulphur, and the engine must therefore be run on fuel with extremely low sulphur content. The process for producing low sulphur gasoline causes higher carbon dioxide emissions from the refinery and increases the price of fuel.

In evolving the SCC system, Saab engineers have developed a way of putting to use the benefits of direct injection, while still maintaining lambda 1. Compressed air is used to inject the fuel directly into the cylinder through the spark plug injector. However, unlike other direct injection systems, the cylinder is still supplied with only a sufficient amount of air to achieve lambda 1. The remainder of the cylinder is filled with exhaust gases from the previous combustion process. The exhaust gases making up the cylinder fill are inert. They do not affect the fuel-air ratio, so the SCC system performs well with a conventional three-way catalyst. Moreover, process recycles some of the heat of combustion which would otherwise be wasted out the tailpipe.

The SCC system also contributes towards minimizing the pumping losses. The cylinder is supplied with only the amount of fuel and air needed for the operating conditions at any particular time. The remainder of the cylinder is filled with inert exhaust gases. Because the engine need not draw in more air than that necessary for achieving lambda 1, pumping losses are even smaller than a conventional direct injection gasoline engine.

An ignition system that provides good spark firing quality is needed to ignite a gas mixture consisting of such a high proportion of exhaust gases and to ensure that the mixture will burn sufficiently quickly. A large amount of energy must be applied locally in the combustion chamber. In the SCC system, this is achieved by employing a variable spark gap and a high spark firing energy (80 mJ).

The spark gap is variable between 1 and 3.5 mm. At low load, the spark is fired from the central electrode in the spark plug injector to the ground electrode at a distance of 3.5 mm. This large gap is essential for igniting the rarified mixture. At high load the gas density in the combustion chamber is too high for the spark to bridge a gap of 3.5 mm, but also the spark timing is retarded. Under those conditions, a pin on the piston is used instead as the ground electrode. Following the laws of physics, the spark will jump to the electrode on the piston as soon as the gap is less than 3.5 mm.

The Saab Combustion Control system has been developed at the Saab Engine Development Department, which is also the Center of Expertise for the development of turbocharged gasoline engines in the GM Group. In an interesting turn of events, the compressed-air-assisted direct injection concept was invented by Orbital for the purpose of developing two stroke engines suitable for today's use. The variable cam timing mechanism which is fundamental to the SCC system's operation was incorporated into the original design of GM's Global 4 cylinder engine (see NINES #243, January 2000). Extraordinary spark energy capability is already a hallmark of Saab's Direct Ignition system, introduced in production by Saab in 1989, and the spark-to-piston concept was demonstrated by Saab in 1995. The SCC system will be launched in the next generation of Saab cars.



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2000 Owners' Convention: Track Events _

Optional pre-convention activities at three of the last four Saab Owners' Conventions have been at the race track. Conducted each time so far by the Skip Barber Racing School, the format has included a one day of performance driving instruction using cars supplied by Saab Cars USA, Inc., and a second day comprised of lapping sessions at the host race track and autocross competition at or near the track. During the first day, we tagged along with one of the groups for part of the day to follow the instruction and to see how the performance driving lessons apply to every day driving. Groups attended the different stations in different order, but each instructor station was pretty much independent. Second day, we took some ride-along laps to get some photos of the action, took some shots of "Competition Parade", and visited the autocross.

We strongly encourage our readers to take an advanced car control course. One really can gain a great deal of driving skill, and having lessons on a closed race course allows exploring the limits of control in a way that is not possible, or at least not advisable on public roadways. These events are sponsored at many tracks across the country by organizations such as the Skip Barber Racing School, the Panoz School which teaches the Viggen Flight Academy, "Track Time", with its home office in Northeastern Ohio, and many others. Scheduling your performance driving experience as part of your attendance at a Saab Owners' Convention allows you to take your lessons in a new Saab, it generally is less expensive than the publicly offered courses, and leads into the great time convention attendees experience. Or, purchase a Viggen and have your lessons "on the house" (see Jay Vivian's letter in issue #247, September/October, 2000).

The school included Classroom, Heeland-Toe, Lane Change, Skid Pad, Autocross, Track Lapping, and the Reverse Steering Car. Following are some of the highlights of the training.

Classroom. In an ideal setting, the classroom instruction would have run first for each group, but with multiple groups of drivers that was not possible. Even having run some of the stations, the classroom lessons serve to both reinforce the instructions received at the individual stations as well as providing the broad overview of vehicle and tire dynamics as they apply to performance driving. Tire dynamics lessons explain the

way side force (turning), longitudinal force (accelerating or braking), and down force (the weight) on tire interact to determine whether the tire will "grip" or "slip". Vehicle dynamics lessons cover how accelerating, braking, and turning change the weight distribution among the tires. Choosing the correct line through a corner and the optimum driving procedure through that corner was then interpreted in relation to vehicle and tire dynamics.

The importance of the classroom lessons is that they describe the car's behavior all the time: on the road as well as on the track, and on ice and snow as well as on dry pavement.

"Heel and Toe" Downshifting. One of the more esoteric lessons of the day was heel and toe downshifting. The application is obviously limited to manual transmission cars. This technique is motivated by the need to slow for a corner, then downshift and accelerate upon leaving the corner. It involves the use of all three pedals: the accelerator, the brake, and the clutch, all at the same time using two feet. With the left foot relegated in conventional driving to clutch use only, this leaves the right foot to simultaneously operate the accelerator and brake pedals.

Heel and toe downshifting is done to synchronize the engine speed to the car's road speed during the time that the driver is applying brakes to slow the car and while the clutch is pressed in and the transmission has already been placed in the lower gear. The purpose on the race course is to allow the driver to transition from maximum braking effort to maximum cornering power to maximum acceleration as quickly and as smoothly as possible. The purpose in ordinary driving is to minimize wear on the clutch and drive train and to develop the

habit of driving smoothly, reducing the chance of losing control on slippery pavement.

The technique is performed as follows. Keeping the heel of the right foot pretty much in the same place as it is during normal driv-

ing, the foot is turned slightly "pigeon toe" and the brakes are applied with the ball of the foot. As the car slows, the clutch is depressed and the shift lever is moved to the desired gear. Then the driver, while still applying the brakes, rolls his foot so that the edge of the foot "blips" the throttle. The engine speed runs up and then down, and as the engine speed and road speed (for the engaged gear) equalize, the clutch is released. All this is supposed to happen while braking into the corner, to be completed by the time the brakes are being released during the turn. This leaves the car with the clutch engaged, in the correct gear for accelerating out of the corner, and with minimal disturbance to the car's dynamics.

The term "heel and toe" is an anachronism, dating back to earlier days of motoring when pedals were mounted on shafts extending down through the floorboards, and "power brakes" meant "all the power you have to the brakes." In those days, one pressed down hard on the brake pedal with the ball of the foot and stabbed at the accelerator with the heel. With today's cars, pedals are smaller, the effort levels are much lower, and pedal spacing is much closer. As reported in earlier reviews of Saab's Viggen and 95 Wagon models, the pedals and brake effort in Saab's cars are designed for easy heel and toe, as are most cars these days with sporting pretensions.

Autocross. Autocross is an exercise in car control, understanding vehicle dynamics, and reading a course. During our lesson, parts two and three were given to us by the instructor. In addition to the cones marking the course boundary, additional cones indicating the "correct" line through the course were placed. The instructor was in the car guiding the driver's speed, shifting, braking,



Steven Church in his race-modified Sonett on the Autocross



The Lane Change lesson. The left photo shows approach. The right photo shows only the right approach lane open, and the "green light" applied to the left lane. The instructor (standing) triggers the green light at the last moment.

and accelerating. All that remained was to drive the line and listen to the instructor. Right. The point is that "we're racing", which is to say driving the car as near its theoretical limits as possible, and lacking a great deal of experience we alternately err too far to the side of caution (losing the race) and then blunder well past the limits of control (losing the race).

In terms of street driving, autocross has two lessons. One lesson contains the familiar first words of your beginning driving instructor: "Watch where you are going". This means looking ahead past the immediate corner (in autocross) or position on the roadway (in daily driving) to be aware of "the big picture." On the track, it means driving each corner both to get through as quickly as possible and to make the corner after it easier (which means faster). On the street, it means being aware of the movement of traffic far enough ahead to avoid dangerous situations as much as possible. The example given to us was a dozen cars screeching to a halt, nose to tail, behind a bus, to be subsequently accordioned when driver 13 (using a cell phone, no doubt) plows into the end of the line. Look ahead, and when you see a bus, you know it will be stopping. So, switch to the other lane! Looking ahead: the first application of autocross training to street driving.

The second lesson of autocross to apply to street driving is an appreciation for the correct line through a corner: something which you will see not one person in ten do in every day driving. The "racing line" through a corner is the line of travel which takes the least amount of time. But this relationship can be turned backwards to say that for a given speed through a corner, the racing line is the one which the car negotiates most easily. Why is this important? If something suddenly goes wrong: a patch of ice,, a pedestrian darting into the street, or

another driver making an error, being on the "best" line means that you have the greatest margin of control to work with. If one is accelerating through a corner, and something bad happens, just letting up the accelerator improves one's chances. If one is riding the brakes through a corner and something bad happens, what more can be done? Hitting the brakes still harder will probably result in control problems, and accelerating is seldom the way to avoid trouble.

Lane Change. In this exercise one drives toward three lanes with "red lights" at the end of each, and at the last possible moment one or more of the lights turns green, indicating the lane in which you are to stop. This exercise is much the same as one which we covered in "Teaching Teens to Drive" (NINES # 234) with the addition of three entering lanes, not just a center lane, and the approach speed is 45 mph, not 25 mph. There is a short enough space between the approach and end lane segments that to avoid hitting cones one must brake hard while turning. It was the understanding of our group that one was to stop, or nearly stop, in the departure lane, but subsequently we observed groups simply driving through the open lane(s).

The application to daily driving of this exercise is clear: training oneself to be alert, aware, and to understand that when an emergency situation occurs immediately ahead, there are options other than plowing into the nearest stationary object. Part of the exercise is to teach steering wheel manipulation. To switch from the extreme lane to the opposite lane requires more than the half turn one can accomplish when both hands have a death grip on the wheel. The old familiar "hand over hand" is too slow and clumsy for the task: one must shuffle.

The lesson also provides experience maneuvering with maximum braking, with ABS working hard, in a scenario which can

commonly occur in daily driving. In driving the exercise and speaking with others, there was widespread belief that Saab's current generation of ABS is very effective.

Skid Pad. With anti-lock brakes, electronic rear brake proportioning, and a chassis designed for stability on nordic winter roadways, Saabs are not usually very exciting on a skid pad. For the driving school, the skid pad was watered, "baldies" were mounted to the rear wheels of the test cars, and the driving instructor momentarily pulled up on the handbrake to initiate a rearwheel skid. Even in Saabs it can happen, and steering into the direction of a skid is not intuitive.

Track laps. Track Lapping is like the autocross training, but on a much larger scale. Here again the emphasis is on recognizing and then driving the optimum path through the course. During the next day's open lapping, drivers were first given a "familiarizing tour" by the instructors, who pointed out in a few laps what was covered in the training session. But during the training, the correct line was marked off by cones and participants drove the course with the instructor advising.

Reverse Steering Car. While the "advanced" driving class was running laps of the Lime Rock Park road course, the plan was for the beginning driving class to try the Reverse Steering Car. Turn left to go right, and vice versa, driving the reverse steer car is really a handful. Thinking of the reverse steer as sailing a small boat with a tiller worked well for us, the main confusion then being that the boat's tiller is behind, not in front, of the pilot. Unfortunately one of the participants "lost it" at just the wrong time, and one of the Skip Barber instructors was struck and injured. He returned to the track the next day to cheer the participants, but experience will probably mean less exposure for the reverse steer car at future conventions.



Across Germany 2000 Tour

The idea of taking this tour started during the 1999 Saab Colorado Tour. My wife and I had enjoyed this tour immensely and when Dieter Kutzer, one of the German participants gave us a flyer on the Across Germany tour we were hooked. Besides, it was time to visit some of our cousins in Sweden just before the tour took place.

Weissbauer, the president of the Saab Club of Germany. He led us in this tour with his 1968 Sonett (which he purchased in California). We discovered later that my Sonett and his were only five chassis numbers apart, therefore they must have come over on the same ship. Klaus had made arrangements for us to pick up a new 9-5 at "Etehaus Saab" outside of Hamburg, Germany. We found the car freshly washed, a full tank of gas, and they were very gracious about making sure we were familiar with the car's technology (at home we drive a 9000).

The tour began at the port of Kiel, Germany about an hour away from Hamburg. Kiel is located about 80k (50 miles) from the Danish-German border. The tour participants included 50 cars from various countries on the European continent except for two American couples and one couple from New Zealand.

The evening before the tour began we met as a group at the Saab dealership in Kiel. Here we were given a light lunch (bratwurst, drinks and a dessert), materials and an orientation about the tour. Before returning to our hotel we took some time with our Saab friends from Great Britain to tour the waterfront and the town's shopping center.

The next morning, as was our experience every morning, we had a very traditional buffet style European breakfast (meats, vegetables, fruits, cheese, juices and other drinks, yogurt, cereal, eggs, and fresh German bread). It was now Saturday, the first day of the back roads of Germany, and we were to discover how challenging it would be to find our destination each day. The reason is that many of the back roads are not marked as we are used to in the "States" other than a sign telling us which town we would come to if we continued in that direction. Yes, even the Germans were getting lost momentarily. We solved this problem by following a young German family who were pulling a tandem wheel travel trailer behind their Saab 9000. Because, even



The town of Eltville through the windshield of the 9⁵, with tour Leader Klaus Weissbauer in the Sonett.

when were delayed momentarily behind a stop light we could still see them in the distance. We were very impressed with the performance of his Saab 9000 and his ability to pull a travel trailer weighing more than 3,000 pounds. He kept it moving at a pace basically equal to the rest of the group.

Each night of the tour our destination point was usually a Saab dealership. Here we were given, once again, a light lunch, drinks and a dessert. The first two nights the main course was bratwurst, but after a little friendly teasing directed towards our leader, Klaus, our main course had more variety. Sometimes we even had a full course meal.

At each dealership we found the staff very gracious and accommodating. At Bonn, for example, their lead mechanic was offering his services (free) for minor service items and/or diagnosing more chronic problems and fixing them. At each dealership we would also find an older Saab, displayed in their showroom, and in perfectly restored condition.

One thing I noticed at the dealerships was that their used cars were fairly new. I spoke to a Saab salesman (he was with us on the tour) and he said that the German public tends to buy

new cars and this is presenting a problem for both the dealers and the owners when the consumer wants a meaningful price for his trade-in. This problem has created a very slow used car market. He said, one way they move their older Saabs (9000's and 900's) is to transport them back to the Scandinavian countries for sale.

On the fifth day of our tour we arrived in Bad Hamburg, the hometown of Saab Germany. Here Saab-Germany "rolled out the red carpet" for us. They had us drive our cars to the city shopping center where they were displayed to the public. Here our leader, Klaus, was interviewed before the media. The interviewer recognized that there were many old Saabs in the tour group. And, we all smiled, when Klaus re-

sponded by saying, "this testifies to the quality of the Saab automobile". Afterwards we were treated to cheese cake, drinks and later to a full buffet meal.

The next day, the sixth day, Saab of Germany had arranged for us to participate in one of the highlights of the tour. We were all allowed (at the same time) to take our cars on Germany's famous grand prix race track, the Hockenheim ring. We could drive on it for 20 to 30 minutes. I must admit that I am a novice because I had never driven on a race track. Therefore, I faced this experience with some trepidation. But once my adrenaline got going it was "pedal to the metal" on the brief straightaway and then hold on to the steering wheel through the corners. Fun, fun, fun! On the straightaway, without success, I tried to catch a yellow 900 convertible. Later, I had some conversation with the driver and he revealed to me that he had his own auto repair shop and had made some modifications to the engine.



50 Saabs at the starting line of Germany's famous Hockenheim Race track.

The tour included, of course, visits to two auto museums. One even had refreshments waiting for us. And, every day we would take a short break to do some sightseeing in famous old cities, view the spectacular German architecture, visit a castle, or a beautiful old church. Our tour also included driving on many famous old roads. For example; the "old salt road"; the "street of mills"; the "mountain route"; and the "romantic road". Perhaps some of the most spectacular views were when we drove along the Rhine River with its many castles, hills, and vineyards.

On the last day of our tour we arrived at Friedrickshafen. Here a special car ferry was waiting to take our Saabs across Lake Konstanz to Romanshorn, Switzerland. Here we were met by the Swiss Saab club and once again treated to a nice lunch. From there we drove to a small village south of St. Gallen, Stein, Switzerland. Here our accommodations were once again in a family owned inn. That night when we settled in our beds we noticed that our inn was right next to the village church. The church bells would chime every hour on the hour. At six the next morning the bells not



Riding the ferry across Lake Konstanz

only chimed six times but another fifty times. We think Klaus wanted to make sure we all got on the road that morning so that his duties were completed. The international convention on Saturday and Sunday was mainly a social and concourse event. There were many, many nice Saabs of all vintages being shown. And, on Saturday evening there was a very enjoyable banquet with good music, comedy and food.

At the banquet I found myself sitting next to David Nameri, "chairman" of the Saab club of Israel. He talked about how at one time Saab

had an important place in the Israeli automotive market but now it was dominated by Volvo and others. He went on to express a real desire to be involved with Saab and help them get back into the Israeli marketplace. The following day, Sunday afternoon, we met up with some of our new German and Norwegian friends and decided to tour the Swiss Alps with two of our cars. We spent four hours on mountain roads viewing spectacular scenery of valleys, moun-

tains, lakes, and small villages. Sunday night we said good-byes and then on Monday it was my first long trip on the autobahn. We were now in Luzern (central Switzerland) and I had to bring the 9-5 back to Hamburg (northern Germany) by that evening.

Monday, fortunately, was a religious holiday therefore the truck traffic was light. We left Luzern early in the morning and we didn't hit any heavy traffic until mid-morning in Germany. The autobahn we were on had three lanes going north. I elected to drive the center lane which was moving at 135-145k (85-90mph). At times I would have to get out of



someone's way and I noticed I was traveling at 160k. At the same time traffic in the outer lane was traveling at 180k or what seemed much more. In these conditions I found myself constantly scanning all sides of my vehicle in order to reach my destination safely. Well, we arrived in Hamburg in good time, 8 1/2 hours.

One thing that was interesting was how the Germans handled heavy traffic when there was road construction. They would keep the same number of lanes, but would be very narrow, and slow the traffic to 50k (30mph) in order to keep the traffic moving smoothly. To my amazement even the fast cars were following the rules (DOT wake up).

In closing, we found this tour to be very well organized, a very good value, and the German and Swiss hospitality exceptional. We understand, according to our new German friends, Klaus is talking about another tour in a few years. If possible, we'll be there. And perhaps the most important result of this tour is the expansion of our friendship in the Saab family.

p.s. The Norwegians are talking about organizing a tour from the western coast of Norway and ending at the 2001 International Convention in Nokia, Finland.



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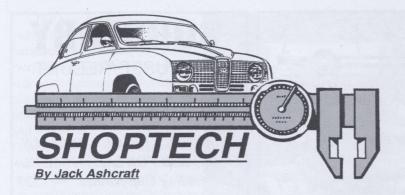
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THE BOSCH ALTERNATOR FOR THE SAAB V4

PART 3—REBUILDING THE ALTERNATOR

Bosch alternators—particularly those used in the V4 Saabs—are really not difficult to rebuild, if you own an inexpensive multimeter and some hand tools. An impact wrench is very helpful and so is a bench vise. A gear puller is necessary. Proper use of the multimeter is explained in detail in my book, *Saab Electrics For Everyone*.

Editor's Note: The drawings and techniques described in this section are generally valid for all Bosch alternators and alternators of different makes as well, but specific details such as torque levels and resistances should be checked in an appropriate repair manual. For diagnosing the electrical system on modern cars, a DIGITAL multimeter is recommended to preclude any chance of damaging integrated circuits.

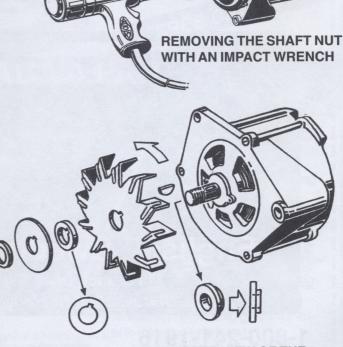
The first step in rebuilding an alternator is to de-slime the unit. Wipe it down with mineral spirits or solvent, then wipe it dry with an old cloth.

Remove the securing nut on the front of the shaft with an impact wrench.

Remove the lock washer and flat washer. Note whether the flat washer has a shoulder or not. MAKE A SKETCH of it and note if the shoulder faces toward, or away from, the alternator body.

Remove the pulley and make a note as to which side faces the alternator body.

Remove the fan and make a note as to which side faces the alternator body.



NOTE: If MAKING NOTES about seemingly simple things sounds silly to you, try to humor me and just draw the things correctly on your note pad. I guarantee you that when you go to reassemble this thing, there will be SOMETHING you can't remember and you will be thankful for the notes.

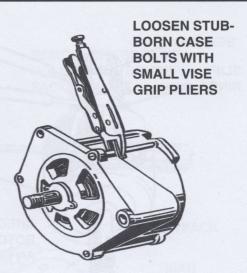
EXPLODED VIEW OF THE ALTERNATOR PULLEY AND FAN

Mark the case with a sharp scribe, awl or screwdriver so you can re-fit the case halves correctly upon reassembly.

Loosen the three long case bolts holding the alternator together. If they are corroded and refuse to budge with a screwdriver, use small vise grip pliers to loosen them. Remove the bolts.



MARKING THE CASE HALVES FOR FUTURE RE-ASSEMBLY

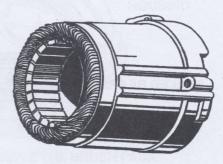






EXPLODED VIEW





Pull the case apart. Usually the front-end casting and the rotor come out as one piece. Tap the rotor off, out off the front casting. Two cycle and V4 alternators have two bolts holding the front bearing in place. Remove the bolts, the bearing retainer plate, the front bearing, and any spacer washers. MAKEASKETCH showing where all the parts go, and note whether any washer has a shoulder, and if so, which way the shoulder faces.

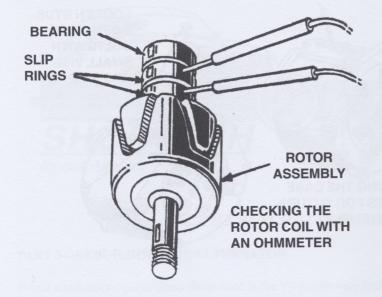
Using a gear puller, remove the rear bearing from the rotor shaft.

Wrap the rotor shaft in a shop cloth and place it in your vise. Tighten gently. Inspect the slip rings. If they have no—or very little—grooving, you can carefully sand them smooth with a long piece of 600 grit silicon carbide or garnet paper. DON'T use emery cloth, as it is a conductor. Grit from the sanding process can short out the alternator later.



REMOVING THE BEARING FROM THE ROTOR SHAFT USING A GEAR PULLER





Blow all the sanding grit off the rotor shaft and armature.

Use a multimeter (on the Ohms scale, ohms x 1 setting) and make a continuity check of the rotor assembly. Short the meter leads together and zero the multimeter.

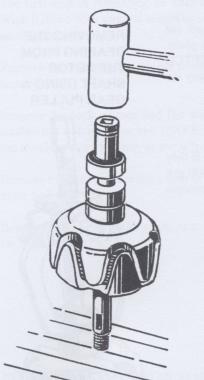
Touch the meter leads across the slip rings as shown. The meter should read 3.5 to 4.5 ohms, depending upon the alternator. If the reading is infinity (no meter reading) the rotor windings are open and the rotor will have to be replaced.

Test for any connection between each slip ring and the main body of the rotor. There should be no connection. If you DO read a connection (short) in this test, the winding has shorted to the rotor and the rotor must be replaced.



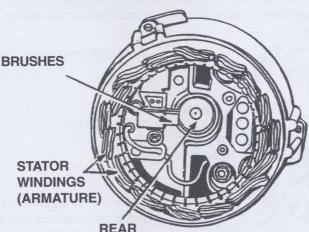


The old bearings you removed must be replaced. Take the bearings with you to the bearing house or automotive parts store and match them with new bearings. Note that the bearings are sealed units and that you MUST replace them with new sealed bearings.



TAPPING THE NEW BEARING INTO PLACE ON THE ROTOR SHAFT

Set the rotor assembly on a solid surface—such as your vise. Put a bit of engine oil on the inside of the bearing shaft hole. Set the bearing on the shaft—squarely—and tap the bearing into place. Use a sleeve or a socket that is just slightly larger in inside diameter than the rotor shaft and tap the bearing home against the slip rings.



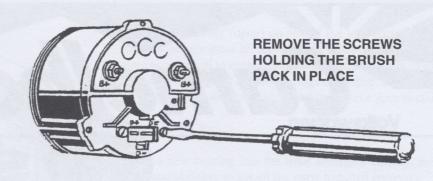
Look inside the housing of the alternator, and check the length of the brushes. The brushes are spring loaded and extend from their brush holders as shown. MINIMUM length of the brushes for the 2-stroke and V4 alternators is about a quarter of an inch. If they are shorter, the brushes or the brush pack must be replaced.

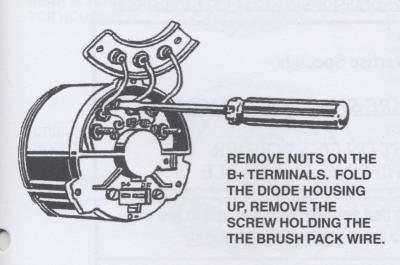
REAR BEARING MOUNT

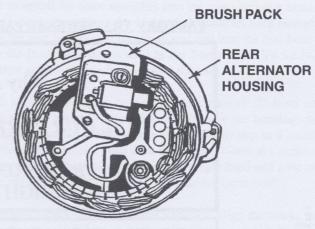
VIEW LOOKING INSIDE THE REAR ALTERNATOR HOUSING

Remove the brush pack by removing two screws on the outside of the rear alternator housing, then remove two nuts and washers holding the diode housing. Fold the diode housing UP, out of the way, and remove the screw holding the wire from the brush pack. MAKE A SKETCH showing how the brush pack wire is run from the inside of the alternator housing to the outside.

Install the new brush pack in the reverse order of removal.







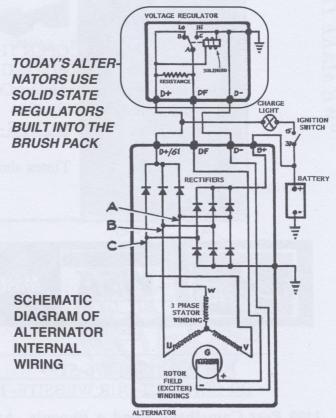
REMOVE THE BRUSH PACK FROM THE ALTERNATOR

As the schematic of the alternator circuit shows, there are nine diodes mounted in the diode housing. These CAN be tested with a multimeter BUT must first be unsoldered from the circuit.

NOTE: Diodes are VERY heat sensitive. If you unsolder them, you MUST isolate the diode from the physical heat of the soldering gun, using a suitable heat sink (such as a fat duck bill pliers) when un- or re-soldering them.

Measure the resistance of the diode in BOTH directions, noting the ohms reading in each case. The resistance value you read is not particularly critical, but you MUST read 10 times as much resistance in one direction as in the other. If not, the diode is bad and must be replaced by pressing it out of the housing and pressing in a new diode. I usually let an alternator shop test the diodes, but you can do as you like.

Once you have the diodes disconnected, you can test the stator windings. Refer to the schematic. The windings must be disconnected at A, B and C in order to isolate the windings from the rest of the circuit. Be sure to zero the meter for this test, as the resistance readings you will get are quite small, on the order of 0.09 to 0.30 ohms across each leg of the windings.





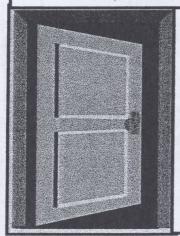
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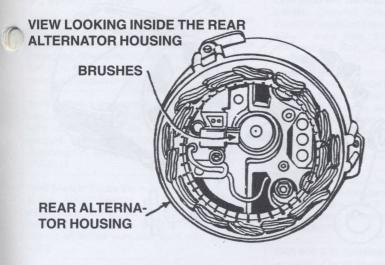




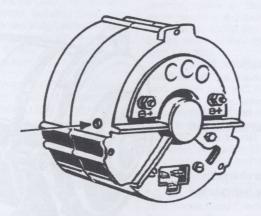
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DRILL 1/4" HOLE TO ASSIST ASSEMBLY



If you read infinity (open) on any of the legs during the test, the stator windings must be replaced. In this event, you may find it more economical to exchange the entire unit for a rebuilt alternator instead of having the stator windings re-wound. Discuss the alternatives with the alternator shop and then make your decision.

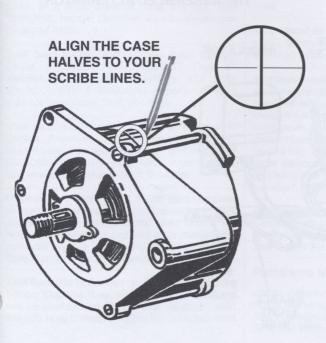
REASSEMBLY

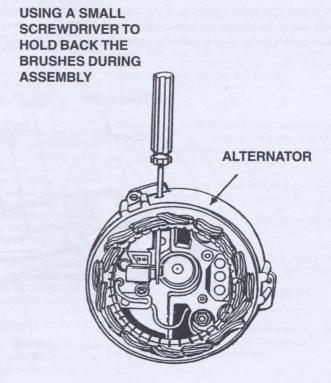
Install a new bearing into the front alternator casting, using your notes and sketches to get all the parts installed correctly.

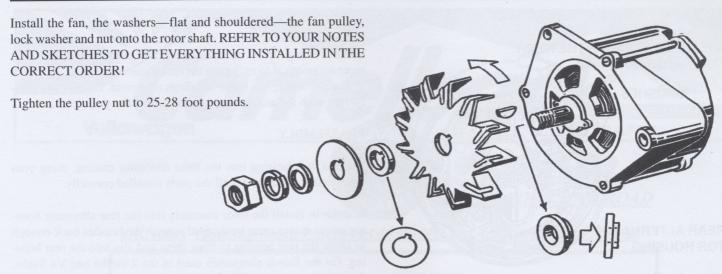
In order to install the rotor assembly into the rear alternator housing, some means must be devised to push the brushes back enough to allow the rear bearing to clear them and slip into the rear housing. On the Bosch alternators used in the 2-stroke and V4 Saabs, the brushes are not visible from outside the case.

We drill a 1/4" hole in the case at a location about .5" from an external rib and about .5" from the rear face of the housing, as shown in the drawings. This makes it possible to slip in a small screwdriver and carefully push back the brushes—one at a time—as the rotor assembly is eased into place. A light hand and a bit of patience are required for this, but it does the job quite well.

Mate the two halves of the alternator together. Align the marks as you ease the rotor shaft through the front bearing and push the halves together. Install the three long bolts and tighten them evenly.





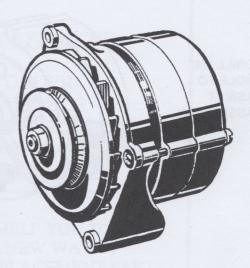


Spin the fan-pulley-rotor assembly. It should spin freely, in both directions. If so, you are ready to install the unit in the car.

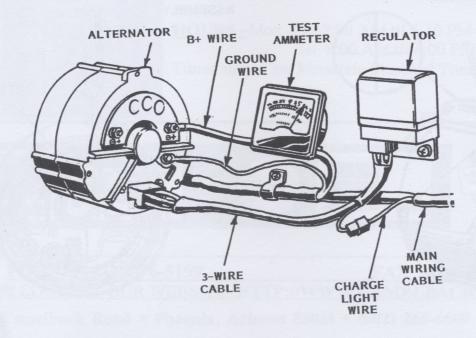
REFER TO YOUR SKETCH of the electrical wire hookup on the back of the alternator and reconnect them once the alternator is put into place and the fan belt tension set.

Reconnect the negative battery cable. Turn on the ignition. The amber charge light on the instrument panel should come on. Start the engine. The charge light should immediately go off.

Now if you check the charging of the alternator with an inductive ammeter, you should see a rise in the current reading as the RPM increases, then the needle should jump a little, then stabilize at about 2-3 amps continuous charge.



THE ASSEMBLED ALTERNATOR



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Wanted - restorable model 96 SAAB for a project. Morton or Dylan Sherry, Kenner LA Morton: compsi@worldnet.att.net or Dylan: dylansherry@hotmail.com Morton: (504) 443-3350 or Dylan: (650) 992-0151

Wanted - 95 round nose two-stroke (1960-1964). Any colour, but must be immaculate. Tony Grestock, Isle of Wight ENGLAND tony@grestock.fsnet.co.uk 01983 298493

The marking "TSN" indicates that there is a photo available at The Saab Network Classifieds: http://www.saabnet.com/tsn/class/ Looking Out-

Unless you just returned from a sabbatical in Outer Mongolia, you know that The Ford Motor Company and the Bridgestone/ Firestone Tire Company have been battling it out as to which company is more to blame for the deaths and injuries which have occurred as a result of rear-tire blow outs in Ford Explorers. I planned to comment on this situation, but first I spoke with a friend who was previously employed in the legal department of Uniroyal Goodrich Tire Company (UGTC). I had expected our friend to say something in legalese, but the response was so much in line with my own thoughts on the subject that I am using my friend's words:

"There's a serious problem out there, but it's not just Firestone's problem and its not just Ford's problem. The Explorers and vehicles like them are the wrong vehicles to be driving on the highway, and those Firestones (the AT, ATX, and Wilderness AT model tires subject to recall) are the wrong tires to be doing it on. It's an off-road truck, and those tires are off-road tires, and yet I see people all the time, kids even, zipping around in them like they were convertibles. I'm surprised that there haven't been more cases of rollovers.

"Where's the sales consultant when someone comes in to buy one of these? Does he say "Pardon me, ma' am, but do you live in the woods? Do you live in Appalachia? Maybe you should look at something more suitable to highway driving." But no, once something becomes a fad, it's always a contest to sell the most of them. As far as I'm concerned, the only way to drive these things safely on the highway is the way O. J. Simpson did it: at 35 mph and with a police escort."

Our friend then elaborated on Firestone's "Corporate Culture." It had not, we were told, been one of openly and aggressively confronting potential problems prior to Bridgestone's purchase of Firestone in the 1980's, and seems to have become even less so after the purchase. This was different from the approach used at UGTC, where solving problems was the issue, not hiding them or placing blame.

We all have the utmost sympathy for the individuals who have been injured and the families of those who have been injured or killed in Ford Explorer crashes. At the same time, we believe that buyers of these vehicles are either uninformed about or have

disregarded their relative safety and suitability for ordinary driving. Tires occasionally fail, and sometimes they fail at highway speeds. What are people doing by purchasing a vehicle for ordinary highway use that is so dynamically unstable that it is bound to roll over every time a tire blows out at speed? Vehicles occasionally roll over in crashes, and Saabs are not immune to this. Look in this month's NINES Survey. What are people doing by purchasing a vehicle for ordinary highway use if the roof on that vehicle is likely to collapse in a rollover (as happens often with the Explorer)? Look again at the pictures of Ms. Nukala's Saab: the glass sunroof isn't even broken!

The whole issue is brought into focus in an interview with Chuck Mueller, which was published in the Akron Beacon Journal. He said of his Mercury Mountaineer, "I thought it was a nice, big, safe car." Well, it's a truck, not a car, and it's only safety advantage comes into play when it collides with a smaller, lighter, vehicle. The data and information regarding the merits and safety of driving offroad trucks in daily highway use are in the public domain. From Consumer Reports and the Insurance Institute for Highway Safety to automotive enthusiast magazines such as Car and Driver, the driving characteristics of off-road trucks have been questioned. The Ford Explorer may be particularly unsuitable, since press reports have revealed evidence that Ford specified unusually low rear tire pressures to reduce the tendency of the Explorer roll over during lane-change maneuvers. The Explorer driver is faced with the choice of low rear tire pressures, which can promote catastrophic tire failure, leading to rollovers, or normal tire pressures, which makes the vehicle prone to rollovers in normal driving.

Finally, this fiasco demonstrates the folly of rating vehicle safety entirely on the results of bashing an instrumented test vehicle into a wall. Even when their cars perform exceptionally well in such a test, Saab is quick to point out that the record they are most proud of and strive to improve is their performance in "real world crashes" and the way their vehicle design enables drivers to avoid "real world crashes." By contrast, The Ford Motor Company advertises the dickens out of the "Five Star" barrier crash rating achieved by their "Taurus" and "Windstar" models, and then proceeds to market for a decade a vehicle for which rollovers are all

but unavoidable as a "big, safe family car."

There was a great deal of coverage of the disposal and marketing of lease and fleet (rental) vehicles in this issue, which we believe is consistent with the subject's importance. When you see a current model Saab on the road, odds are four-to-one that the car started out as being either leased or a fleet vehicle. The fact is that for the fore-seeable future, most people who actually purchase a Saab, rather than lease it, will be purchasing a lease return or rental return. Being informed about the way lease returns are handled gives the used-car buyer a better chance of making a wise decision.

In other news, Saab's new direct injection gasoline engine was "built" on an existing GM engine in much the same way that Saab's cars are "built" on existing GM "platforms." This new engine, which promises a substantial improvement in fuel economy and reduced emissions without penalizing power or emissions, is approved for production on the next generation 9³ automobile, according to Saab. Following last spring's variable compression engine, we see that the Saab engine development team that developed turbocharging, automatic performance control, and "Trionic" is blossoming under GM's stewardship.

Finally, the Statement of Ownership and Circulation shown below, which the Postal Service requires us to print annually as a condition for receiving Periodicals mailing privileges, demands that NINES have a "managing editor." Somehow Norma manages to put up with the Editor's tirades and petulance during the "deadline" rush, so for sure she's earned the title.

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