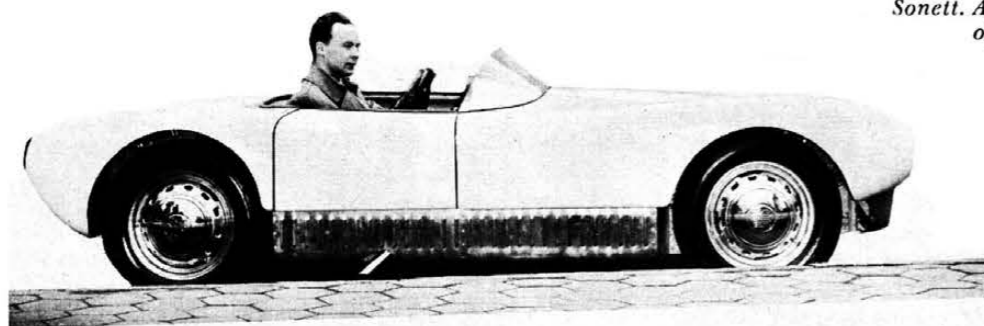


Rolf Mellde, chief designer, models the Sonett. Aerodynamic lines squat low, offer little resistance to wind.

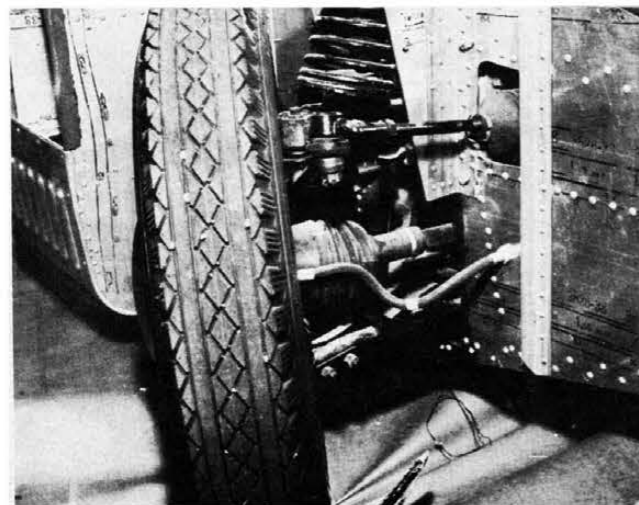


SWEDEN BREWS A STORM

The SAAB Sonett, built as an experiment, is now scheduled for production and U. S. sale. Light and quick, it could sweep the small-bore field.



The three in-line cylinders of the two-stroke engine are corked by a light alloy head with a modified water outlet. Radiator is placed at rear of mill, header tank fore.



IT'S NOW common practice in Detroit to judge public reaction by constructing and displaying "show cars" with advanced styling and engineering features. Usually such cars never appear in production in their show form, but once in a rare while the strength of response seems to justify immediate tooling-up.

Such was the case with the Corvette, and may soon be with L'Universelle and the Eldorado Brougham. The process is quickly gaining recognition, and one of the latest to put it into action is the Automotive Division of the Svenska Aeroplan AB at Trollhattan, Sweden. The experimental version of their SAAB Sonett was displayed in both Sweden and the United States, and was represented then as a mobile test-bed for modified versions of their rugged two-stroke engine. Word now is that the Sonett will reach the limited production stage, which should be interesting in view of its very unusual layout.

The SAAB automotive activities have a lot in common with the car division of Bristol of England, the basic similarity being that they both exist as small departments of primarily aircraft-building concerns. Both maintain independent car design and production staffs which can call on the airplane engineering groups when necessary, but not as a matter of course. In the case of the Sonett, design was directed by Rolf Mellde, the Chief Test Engineer at SAAB.

Also, they both admit engine layouts which relate closely to German designs, the Bristol being indebted to the BMW and the SAAB to the DKW. The latter small car was very popular in Sweden before the war, and thereafter they

Front suspension is composed of unequal wishbones with ball steering pivots. Large dust cover, center of wheel, protects constant velocity joint for driving front wheels.

SAAB SONETT SUPER SPORT

TOP SPEED:

Open, as illustrated 100 mph
In racing trim 120 mph

ACCELERATION:

50 mph 8 sec.
60 mph 12 sec.
Standing 1/4 mile 18 sec.
Standing mile 48 sec.

SPEEDS IN GEARS:

I 25 mph
II 50 mph
III 77 mph
IV 100 mph

POWER UNIT:

Type 3 cylinder in-line, two-stroke
Valve Arrangement None
Bore & Stroke (Engl. & Met.) 2.60 x 2.88 in. (66 x 73 mm)
Stroke/Bore Ratio 1.15 to 1
Displacement (Engl. & Met.) 45.8 cu. in. (748 cc)
Compression Ratio 10 to 1
Carburetion by 2 choke downshaft Solex 44 PJJ
Max. bhp @ rpm 57.5 bhp @ 5000
Max. Torque @ rpm 63 lb. ft. @ 3500
Idle Speed 700 rpm
Clutch Single dry plate, 7.1 in. dia.

DRIVE TRAIN:

Final drive ratio variable
Axle torque taken by engine mountings

CHASSIS:

Wheelbase 87 in.
Front Tread 48 in.
Rear Tread 48 in.
Suspension, front Coil springs and wishbones
Suspension, rear Semi-independent, coil springs and trailing arms
Shock absorbers Girling telescopic
Steering type rack and pinion
Steering wheel turns L to L 2-1/5
Turning diameter 36 ft.
Brake type Lockheed hydraulic
Brake Lining area 90 sq. in.
Wheel studs, circle diam. 6.7 in. dia.
Tire size 5.00 x 15
Rim width 4 in.

GENERAL:

Length 137 in.
Width 56 in.
Height 32.5 in.
Dry Weight 1100 lbs.
Weight distribution, F/R 54/46
Weight distribution, F/R, with driver 52/48
Fuel capacity—U. S. Gallons 10 gal.

RATING FACTORS:

Bhp per cu. in. 1.26
Bhp per sq. in. piston area 3.6
Torque (lb-ft) per cu. in. 1.42
Pounds per bhp—test car 19.1
Piston speed @ 60 mph 1700 fpm.
Piston speed @ max bhp 2400 fpm.
Brake lining area per ton (test car) 164 sq. in.

By KARL LUDVIGSEN

both appeared with transversely mounted two cylinder two-stroke engines driving the front wheels. In the process of changing over to three cylinder engines longitudinally placed, SAAB has moved markedly away from DKW design in many respects and now commands much attention in its own right.

Many unusual techniques are to be found in the Sonett, but the most interesting and the most "aircraft" is the fully stressed sheet chassis construction. It's not a true monocoque chassis-body structure, since the body itself is completely unstressed, but all supports and internal bulkheads contribute to stiffness. The basic members are very deep 1.5 mm aluminum sheets which are boxed at top and bottom by sheets of similar thickness. Thicker gauge U-shaped channel members provide assists at points of highest stress, while lighter 1 mm. sheet is used for non-critical paneling. All joining is done with rivets, which alone makes the unskinned Sonett look like a fuselage section. Front and rear boxes are united by the floor and big square-section door sills, which complicate entry as in the Mercedes 300SL.

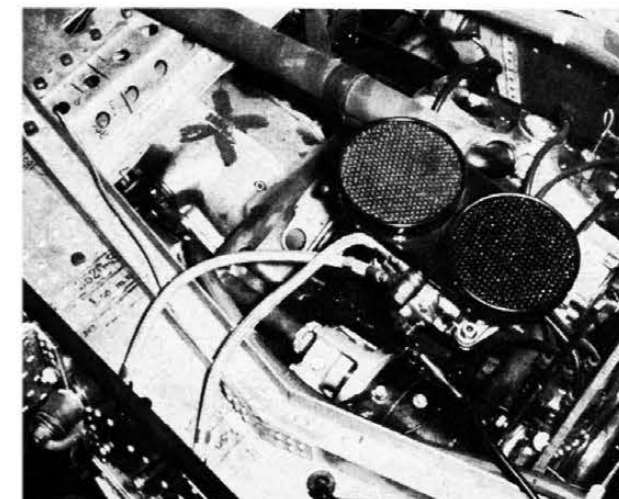
Even with the latest methods, integrated structures like this are very difficult to calculate out for maximum stresses, and in view of this the Sonett chassis was over-designed to be on the safe side. The next step is to load the structure and measure deflection by strain gauges, thereby determining where metal can be removed without affecting rigidity. SAAB engineers confidently expect to be able to remove 100 pounds from the present 1100 pounds overall by this

(Continued on page 50)

Filter screens hide the twin-choke Solex carburetor. Note water pump mounted to generator which is supplemented by a belt driven pump high at rear of engine.



Angle bars, and U-shaped channel members add to the stiffness of the sheet aluminum frame. All joints are riveted. Spare tire is carried in pocket at rear.



MARION'S MEANDERINGS

By MARION WEBER



Hill Hasn't this been a thrilling year for racing? We have certainly enjoyed the fine sports car events here in the States and, by the time this appears in print, we will be in Europe for the finish of the Grand Prix season and the Tourist Trophy go in Ireland. Actually, our trip to the continent is for the purpose of adding to the MG Mitten lines and the races will be a bonus. . . . business before pleasure, you know. . . . However, it is a pleasure to do business with you nice people, (and sports car people are the nicest) especially when I find something on which you can save money. I'm just like everyone else, I like to save money and when I see a bargain I can't resist it. . . . knowing that there will be a lot of people who will appreciate a special purchase. We have three items which fall into that category. I got these on a deal by taking the entire stock. . . . and you can have my savings till the supply runs out. It's first come, first served, and I don't think they'll be around till Christmas. . . . so, if you want to do some Xmas shopping early, do it now and pocket the difference. Make your X in the proper square, tear this out and mail it to me, c/o MG Mitten. Dept. S Please add 4% if you live in California.

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Sonett

(Continued from page 49)

means, which is standard practice in planning new unit chassis.

Suspension layouts are similar to those in the standard SAAB-93, though altered in detail to suit the new chassis. Unequal-length wishbones with ball steering pivots still guide the front wheels, but the coil spring above the upper arm has been shortened and the wheel travel reduced. This has forced the repositioning of the Girling tubular shock absorbers behind instead of inside the coils.

The rear wheels trail unusually from the extremities of a broad U-shaped bar. Inherent flexibility plus rubber mountings allow a degree of independent movement, which is controlled by coils and Girling tubular dampers. Since the bar ends trail, braking reactions tend to hold the rear end down and minimize forward weight transfer. The brakes themselves are just as on the stock SAAB, with Lockheed internals and two leading shoes at the front. Heavy lateral finning is cast into the front drums, which are nevertheless just adequate for the 93 and might be on the ragged edge in a racing Sonett.

Steering arms were moved from back to front of the hubcenters to alter the geometry, and the standard rack and pinion steering box was inverted to maintain correct wheel response. This shifted the steering column to the right hand side, which was adjudged better for most competition purposes.

Serious efforts to tune automotive two-strokes for higher outputs are seldom made due to the time and expense required, and the Sonett powerplant is thus that much more interesting. The three in-line cylinders are capped by a light alloy head with a modified water outlet, and are fitted with three-ring alloy pistons by Karl Schmidt. Nominal compression ratio has been upped to 10 to one, while the displacement remains at 748 cc.

A loop system scavenges the polished combustion chamber, and the fresh fuel-air-oil mixture is compressed in the crankcase. Better charging of a two-stroke at high speeds is facilitated by decreasing the effective power stroke and increasing the exhaust blowdown period. Both have been effected by

raising the exhaust port level from the stock position, which is akin to installing a hot cam in a four-stroke and has the same effect on idling smoothness. An adequate supply of fresh mixture is ensured by the fitting of a twin-choke downdraft Solex carburetor with 32 mm. venturis, while new manifolding has also cleaned up the exhaust side.

Much attention has been given to the cooling system, which begins to overwhelm the unprepossessing engine. The regular water pump in unit with the generator has been supplemented by a similar belt-driven pump high at the engine rear, and these two are piped to operate in parallel. Very low placement of the wide radiator has apparently called for a separate header tank, which is, however, a bypass and not a full-flow storage unit. It supplies the block when needed through the original water pump circuit only. Since the peak engine speed has not been raised, no changes have been made in the Bosch ignition system.

Fore-and-aft weight distribution of the Sonett has been made more sporting by relocating the engine behind the front wheel centers, and as a result the gearbox and front wheel drive mechanism have been thoroughly revised. While the stock 93 uses a very clever and compact three-shaft three-speed transmission, the relaxation of space restrictions on the Sonett allows the use of a more conventional two-shaft box, which is five inches longer than standard. Protruding ahead of the differential, Cord-fashion, this very special unit was built by ZF and houses four indirect forward ratios, three of which are synchronized. Its very remote mounting is ample excuse for the steering column gearshift, but floor levers may be fitted to production cars.

Production Sonetts may be fitted with aluminum instead of Fiberglas bodywork, depending on the outcome of SAAB research. In any case, the car will be available either with full weather equipment or in stripped competition trim, the latter of which may take some of the shine off the Crosley and Panhard specials. Price is a big question mark, but estimates suggest that the figure must be near \$3000. This may not incite wild cravings for touring use, and we can't help but wish they had aimed for the gap vacated at the bottom of the sports car range by the now-grown-up MG. Even without a price tag, though, the Sonett is an interesting engineering exercise, which will now be proven on the road. #