

# Race to the Swift

## Skinned Knuckles and Ego Fodder

By John Rorquist

**A**s the borders of the Swift Formula Ford "metal puzzle" described in Part Three of this series — the clever cast bellhousing, the intricate frame and the tricky fiberglass — were complete, one would think it a simple and rapid process to get this prototype on the road.

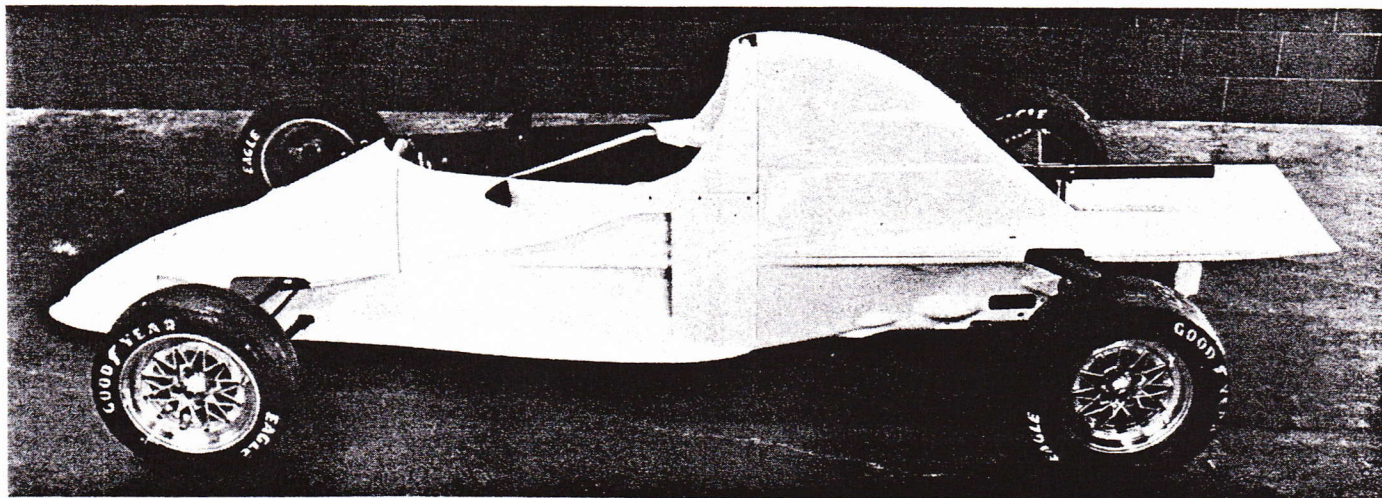
One can picture designer Dave Bruns sitting in the bare chassis mimicking engine noises as his soon to be finished creation blasts down imaginary Road Atlanta straights as Swift principals R.K. "Bob" Smith, Alex Cross

### Delays

An axiom about prototype building one must realize and understand is that no matter how well one plans, not all will go according to schedule. The Swift was no exception. Crippling delays were avoided, true, but various minor problems set the ambitious (dare we say optimistic?) schedule back about six weeks. The planned debut, a National race at Riverside on the Labor Day weekend, came and went with the spaceframe on stands in the shop, relatively bare.

problems. The one-piece body was at this time blank, offering only general reference points. Defining and locating the corresponding attachment points between body and frame was at best a slow process. Only when all the mountings were finally determined could the body be scribed and cut to match the brackets. Extreme care in defining the locations was necessary; all production mountings will be based on this shell.

Carefully drawn blueprints gave way to shop design in certain instances as the plans were transformed from paper to



At last it was off the stands...

and Paul White await their "turns" at "the wheel."

But not so fast! There's more work left here than meets the eye....

The late winter, design-induced headaches are replaced by late summer skinned knuckles, sore backs, headaches ... and pride, as the final construction stage moves along steadily but surely. Together with Bruns, spanner-masters John Gianelli, Murray McLaren and Dave Robertson have the responsibility of turning hundreds of separate minor components into a rolling prototype. The major hurdles are past; now comes the hard part.

Major concerns centered around two important pieces: the bellhousing casting and the bodywork. The former suffered from common teething problems, primarily material flow. Prototype castings had to be completed by hand to ensure that all walls in the tricky piece were cast to the required thickness. Once the raw castings became available, of course, intricate machine work was necessary, further delaying the process.

Brun's own demanding specifications were in part responsible for a short delay in receiving the body. This plastic torso by its very nature (and small size) created special and unusual fitting

metal and plastic. Noticed immediately, improvements were incorporated into the prototype, purging hassles that might appear during production. For instance: Measurements of spaceframe and body quickly uncovered some additional clearance between the front rocker bulkhead and the plastic shell. Marc Bahner's welds were barely cool before Bruns, himself, was bent over the footbox area, strengthening and enlarging, making room for pedal-caressing size 12s.

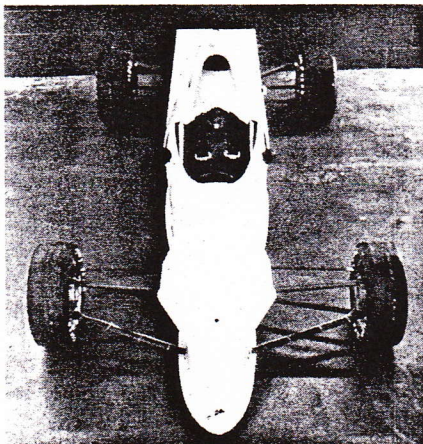
Another discovery concerned the internal radiator ducts leading from the large, side NACA openings. Ducted air flow, important to the radiator ▶

positioning, was critical. Originally of hand-formed aluminum, the process of fabricating these ducts quickly became one of starting, stopping and regressing. Three days of effort and a foam model finally determined the solution.

And then there was the language barriers which raised a puzzler in one case, if you can believe it! Of all the many kinds of problems you'd think would cause delays, difficulties with the King's English to be one would not be on the list. (On the other hand, you're dealing with a language that calls a sedan a "saloon," and a tractor-trailer rig an "articulated lorry...")

A coupling for the steering rack was needed and the Jack Knight Co. of England delivered one. An English coupling, you see, which was an American union ... not the same. As this clearly wouldn't do, much discussion (read confusion) commenced. The correct piece finally arrived with an invoice that cleared up the quandry: "Two square things with splines on the insides," it said.

The Swift's timetable admittedly had much to do with its tardy debut. Paul White candidly agreed, "Some aspects were a direct result of an optimism that comes from not taking on a project of this size lately. Not all our time was spent with the car, though. Finding suppliers took longer than anticipated and while this was going on the facilities here were



*Sleek body, useful wide track.*

updated to handle the initial orders."

This is not to say the prototype was fraught with delays and changes. That simply was not the case. As uncomplicated as a Formula Ford is in comparison to its bigger open-wheeled brothers, well over 100 separate components were nonetheless required to complete the task. All parts, large and small, received the careful attention each demanded.

Once the time pressure of a Labor Day debut passed, a decision was made not to press the construction pace unduly. After all, a tardy debut with a car that works is far better than a hastily-built, problem-riddled example.

Was the extra time worth it? Testing would tell....

## Will It Work?

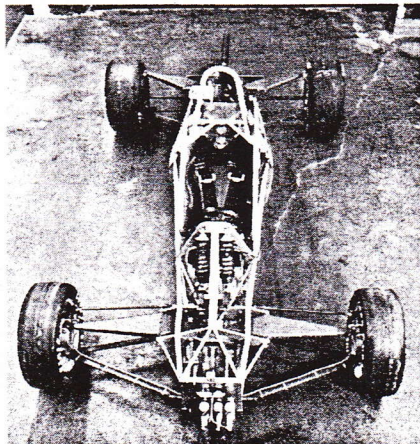
Time, as these things are measured, began for the Swift DB-1 on Oct. 3 at Willow Springs Raceway. As the unblemished (save for one small "Swift" emblem on its needle nose) white prototype was rolled out of the Centerline Racing Wheel trailer, guarded optimism to the day's success in the back of every-one's mind.

Most detail preparation had been completed the previous night, which meant the car was ready almost immediately. Bleeding the Lockheed clutch and adjusting the brake pedal for easy heel and toe operation were all that separated the Swift from its maiden journey.

After just two laps, test pilot Bruns returned to adjust the shift mechanism away from the steering wheel and to check for leaks. Good so far ... no dripping fluid to stain the tarmac.

These two slowish laps also found the suspension too stiff for Bruns' liking. The 245 lb. springs were a rattling introduction to his first laps behind the wheel in over a year. The springs would be softened, but not yet; not until other aspects could be looked into first.

The second time out, three circuits were completed with an unofficial best of 1:30.9. Water temperature, one of the



*Note the novel front coilover location.*

primary concerns, was no problem. The gauge recorded a cool 170 degrees. The centrally located radiator might be too efficient....

Again nose and tail were removed to check for leaks. Pavement still stain free. The anti-roll bar blade, however, had bent itself into the full stiff position. Removal of the controlling blade found it tweaked severely enough to warrant heat treating.

As the blade went under the torch, some other adjustments were made. More bump (compression) was dialed in as was rebound (extension) to the double adjustable Koni shocks, front and rear.

Oil temperature readings, like the

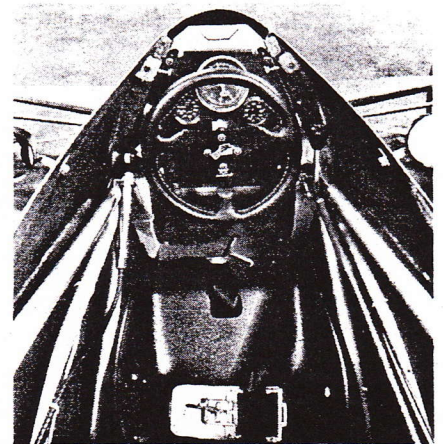
water, were too low ... 160 degrees. To boost the temperature toward optimum operating levels, the oil cooler had to be taped over. This, White explained, was to take advantage of the Red Line Oil's synthetic properties. The higher the temperature the more efficient the oil. Temperatures targeted were a minimum 225 degrees.

The next time out, cooling to the rear shocks (buried inside the bellhousing) was checked. To accomplish this, a tuft of cloth was taped near the cooling opening. If the tuft was sucked in, cooling air was getting in; if the cloth was out, fluttering in the airstream, scoops would be necessary to direct the air into the bellhousing. Three more laps showed the air flowing the wrong way. Scoops for the production models.

Even then, lap times were starting to fall. A best of 1:27.4 this time out was recorded. Oil temps were on the rise, but at only 180 degrees, it was still too cool.

A structural check after 12 laps revealed that pan, bellhousing and chassis bolts were still properly torqued. Throughout the morning the lip on the rear tray had been far too floppy. A heavier gauge lip, fabricated during this stop, solved the problem.

After the fifth run Bruns started to complain of a skating problem. In an effort to alleviate this, ride height (unloaded) was set at 2½ inches front and 2¼ inches rear; springs were



*View from the bridge....*

changed, as well as the rates dropped to a softer 210 lbs. front and 225 lbs. rear.

These changes were what Bruns must have had in mind, for on his penultimate run, on scrubbed-in new tires, he turned a 1:25.8 ... only ticks of the watch shy of Southern Pacific FF Champ Mike VanKralingen's unofficial record of 1:25.6. Tire temperatures demonstrated the efficiency of the setup as the readings proved ideal for Willow's two fast, unique and wide right-handers.

One more time, just for extra measure, Bruns took to the track. His final effort of the day was to be his personal icing on the cake — as he turned

a 1:25.3! More readings testified to the overall balance of the car. The Tilton-supplied AP brake disc temperatures ranged from 140 to 155 degrees. Balanced braking indeed!

As the morning began, Bruns harbored little thoughts of breaking a record, let alone one by over a second. More importantly, his thoughts focused on durability and cooling. Now fully satisfied with himself and his car, Bruns turned the DB-1 over to its future CSPRRC pilot, R.K. Smith.

Smith, anxious to get the feel for the car, was down to competitive times immediately, running a 1:26.1 on his second lap. Pitting for fuel and out on a full tank, his times dropped into the 24s by the third lap. A quick stop for tire and brake temperatures and it was back out for a few more laps before the California high desert sun dropped behind the mountain.

His last five laps were all in the 24s, with the best time of 1:24.4 — 1.2 seconds below the pre-Swift track record!

All told, the car completed only about 30 laps on the day. Much to everyone's pleasure — and perhaps surprise — no major problems surfaced. At all.

## Joy

The guarded optimism of eight hours previous was replaced by the joy and confidence of turning an untested quantity into a class leader the Swift principals have felt it would be from the outset.

White, conservative in his forecasts about the first test, had based his feelings on past tests of various marques. "All you can do is be prepared as much as possible. Things can happen that are out of control, no matter how good the car is. I was prepared to go home early today if the car wasn't working. But it's obvious we don't have any major problems. The fact that the prototype worked its first time out is encouraging."

The overall fore and aft balance of the car should have come as no surprise. A weight budget done during the design stages had tabulated the individual weight of each component. This budget was worked front to rear, side to side, and finally overall. And the end measured result was only five pounds difference.

John Gianelli "hoped all the small components would work well. We weren't thinking of speed yet. If all the parts worked, though, the car would be fast. Today's session was remarkable!"

## On the Road

The debut answered many basic questions, but many remained. Maximum straightline speed, the Swift's intended forte, was apparent immediately. Initial handling results, though, weren't

completely what the car is capable of. Mild understeer characteristics plagued the session. Ride harshness, felt to be excessive by both drivers, was also a problem.

The cure for the understeer should lie with still softer settings, while the harshness, a function of the shocks, will require further testing to determine the proper valving. With the first test behind them — and the desire to optimize what precious little time remained — the decision was made to trek off to Road Atlanta two weeks early. There, the car could continue its development as the Runoffs rapidly approach.

Certainly the first results were impressive, but this doesn't crown Swift a championship contender just yet. One could say of parts failure "nothing should break; the parts are new." Quite true, a point Bruns himself raised. What the results do show is that the design is sound. The car performed as conceived.

As the prototype is complete and running, so we end this behind-the-scenes series of articles. From now on, the Swift Group's results will be a matter of public record. It may be very public, as not only will the prototype's first appearance be at the very pinnacle of club racing, the CSPRRC, but also the constructors have received firm cash deposits on over 20 cars — sight unseen.

The Formula Ford world is watching....

## Dateline: Road Atlanta

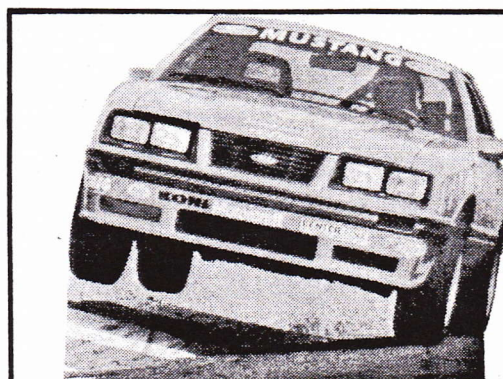
## You Aren't Going To Believe This....

... but history — an *impossible* history — has repeated itself! Ten years ago, designer Dave Bruns and builder Paul White unleashed the revolutionary new ADF Formula Ford on the world at the Road Atlanta CSPRRC and, incredibly enough, it won the race.

A week ago (as this is written), the same duo, characters in a new band of players flying the Swift Group flag, unleashed the revolutionary new Swift FF on the world at the Road Atlanta CSPRRC. Today, Oct. 22, they have done it again!

Driver R.K. Smith, still recovering from the effects of a summer battle with valley fever, was among the fastest men throughout the long week of practice and qualifying. He wound up on the pole and, after a spin (and after trailing early leader Bob Lobenberg by a large margin), won the race.

More stuff of legends. Afraid we have no more details, as all and sundry are said to be suffering the effects of about two bottles of champagne ... apiece. (The party may become a legend all on its own!) Hearty *Sports Car*® congratulations!-Steve Nickless



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