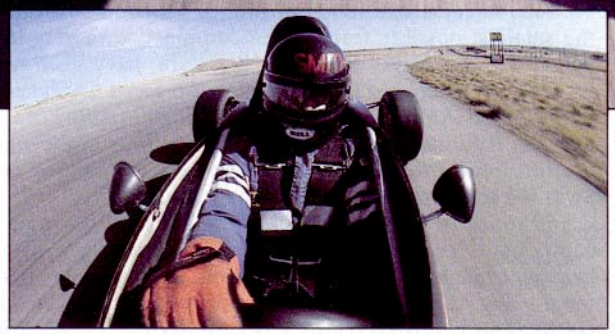
ROAD & TRACK R&T TRACK TEST

PHOTOS BY JEFFREY R. ZWART



SWIFT DB-1

Testing the new Formula Ford national champion

BY PETER EGAN

EVEN BEFORE THE race, the Swift was easy to find in the Road Atlanta paddock. All you had to do was home in on the clicking of 35-mm camera shutters. That, or look for a large cluster of concerned Formula Ford drivers gathered around the big white Centerline Wheels transporter. Nerfing your way toward the center of the crowd (excuse me, sorry about your foot, etc) earned you a glimpse of a lovely knife-narrow racing car with a fighter plane nose and its tail stretched rearward like a flying cape. When mechanics removed the bodywork, revealing the clever inboard suspension, tucked-in ancillaries and multiple bell cranks, the cameras began clicking all over again.

There were a lot of shiny new Formula Fords at the Runoffs this year, so why all the commotion over this particular car?

A couple of reasons.

First, driver R.K. (Bob) Smith had just qualified the Swift on the pole of this very competitive (borderline manic) 40-car field, edging out defending champion Bob Lobenberg's Lola. Smith is a 44-year-old businessman from Riverside, California, and he drove a racing car for the first time just three years ago, as a student at the Jim Russell school. He arrived in Atlanta more or less fresh out of the hospital, having been ill for the last half of the season with a serious lung virus.

Second, the car was designed by David Bruns and constructed by Paul White. In Formula Ford circles, hearing that Bruns and White have built a new racing car is sort of like learning that Lucas and Spielberg are about to release a new adventure movie. You get a lot of conjecture and anticipation. In 1972 Bruns and White collaborated on the cost-is-no-object ADF, setting a new class standard for price and craftsmanship. That car went on to win three national championships. It was also known that a fourth partner/investor in the Swift organization was Alex Cross—lawyer, Ford racer, SCCA driving instructor and the man credited with organizing Smith, Bruns and White into a working car company. This time around, the reputations of these men preceded them and everyone was waiting to see if the Swift would be another ADF.

They didn't have to wait long to find out. Smith and his new car won the Runoffs. He spun the car out of 2nd place halfway through the race, then made up a long 10-second deficit to beat Lobenberg on the last lap.

MIG welded, the suspension rockers are of 4130 steel and the front and rear hubs are cast aluminum. The lower A-arms are made of steel aircraft strut tubing. The beautiful fiberglass bodywork was done at a shop not far from the R&T offices by Wayne Hartman, who also did the body on the Frissbee Can-Am car.

How did the car work in testing?

Pretty well.

During our photo session at Willow Springs, R.K. Smith lapped the track consistently in the low 1:24s (about 2 sec faster than the official FF race lap record at Willow), on a set of well used tires. At one point he turned a 1:23.8. Smith admitted he "had to push a bit" to break into the 23s, but said he could lap at 1:24s all day long.

"High top speed is part of it," Smith said, "but it's also an amazingly neutral and good handling car, and it carries a lot of speed through the corners. You don't feel as though you're going that fast, but then you look at the tach and realize you're carrying an extra two or three hundred rpm coming out of a corner or at the end of a straight."

I drove the car myself for several laps, going for driving impressions rather than lap times (wishing more than anything not to be remembered as The Journalist Who Destroyed The Only Extant Swift And Must Never Be Allowed to Drive Anything Again). My only basis of comparison was the old Lola 204 I used to race and the Van Dieman I recently drove in the Jim Russell school.

The Swift is not easy to climb into, demanding much pigeon-toed and knock-kneed double-jointedness in snaking the legs and feet past frame and suspension pieces, but once you're in, the close fit of the seat and cockpit frame tubes gives you a snug, locked-in feel. I slipped the metal racing clutch as little as possible and accelerated down pit row.

Out on the track the Swift has a very tight, precise, machine-tool quality about its working parts. The shift lever moves with the shortest, most direct feel of anything I've driven, and the steering is similarly crisp. Smith likes his cars stiffly sprung so he can use minimum ride height without bashing the underpinnings, so the Swift felt harsher than the other cars I've driven, and a little more jittery over high-speed roughness. Bruns later told me the car feels smoother the faster you go because aerodynamic downforce gives it added high-speed stability. I took his word for it.

On fast or slow turns, the car is forgiving and easy to drive—so much so that you find yourself going faster than expected almost everywhere. The most distinctive element in the Swift's track behavior is the feeling it gives you of accelerating and braking in a vacuum. There is so little drag and rolling resistance that lifting at high speed doesn't produce the usual loss of speed. The car has almost a free-wheeling feel, like an old Saab 2-stroke. As a result, you end up going a bit faster everywhere than expected and it takes some getting used to. I could have spent the whole day on the track doing just that, but decided I'd better come in while we still had a 1-piece test car.

We'd never run a race car through the entire gamut of R&T road test procedures, so we decided to see how the Swift's 940-lb curb weight, 114 bhp and Goodyear slicks would fare in the world of high performance sports cars, if not against other racing cars.

At the Orange County Raceway drag strip, Smith launched the car with a fair amount of wheelspin and managed a 12.6-sec quarter mile run at 110.0 mph, getting from 0–60 mph in only 4.6 sec. The team had helped matters along by installing extremely short gears in the Webster; so short, indeed, that the Swift reached its 4th-gear redline of 6500 rpm at 116 mph just beyond the quarter-mile mark. Set up for Road Atlanta, by contrast, the Swift's top speed is more than 140 mph.

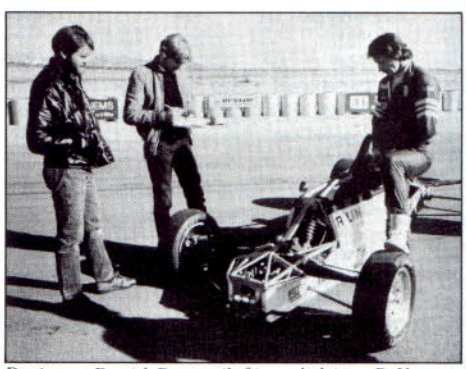
The car was similarly impressive in the slalom. Smith and Bruns both tried their hand(s) at the cones (the slalom being something of an acquired taste) and very quickly worked up to record speeds for R&T slalom testing. Our Engineering Editor then went out and clipped through slightly faster, setting a new record of 72.2 mph (9.0 mph faster than the Z51 Corvette and 3.7 mph quicker than our previous record holder, the Lancia Group 5 Turbo tested in June 1981). Brakes? Yes. From 80 mph the Swift stopped in 141 ft, about 120 ft shorter than the average sports car with big tires. Braking from 60 mph the Swift looked like a dog that had hit the end of its leash, hauling to a stop in only 84 ft. On the Chrysler skidpad, the Swift established another record, at 1.280g, far higher than anything else we've tested. The hard-sticking production Corvette, again for reference, generated "only" 0.880g on the skidpad. The Swift circled the skidpad like a slot car, maintaining a smooth, neutral arc with little change in throttle required to keep it in line.

By any standard of all-around performance, the Swift is an excellent car. Judged on the race track or by the test numbers, it simply does everything well. Tires, of course, have a lot to do with it—it's hard to compare a 940-lb formula car on Goodyear slicks with anything else we've tested. Good tires or bad, the Swift comes across as a refined racing machine with everything working in balance and harmony; the right tool for the job.

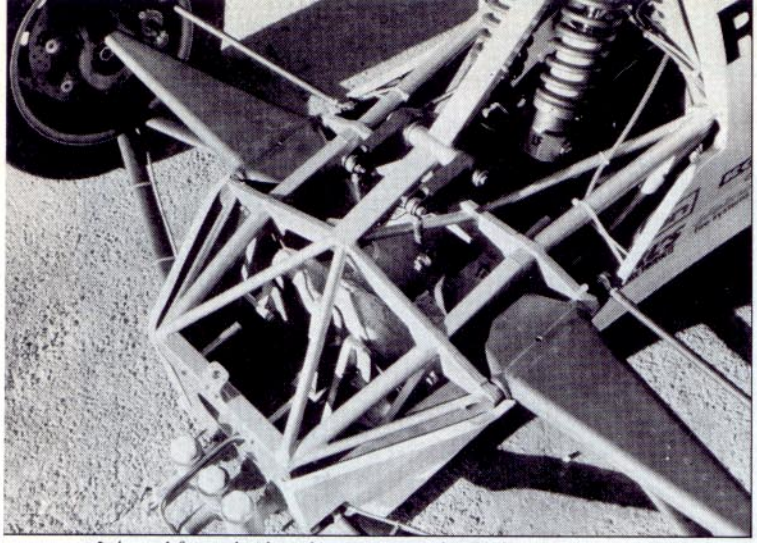
Mechanic Rusty Hurford summed it up very well at the end of our test day at Willow Springs. Smith came into the pits having just turned a 1:23.8 and explained, almost apologetically, that he could go even faster if he just had a new set of tires.

"You're already going fast enough, Bob," Hurford consoled him, "faster than everyone else goes. . . "

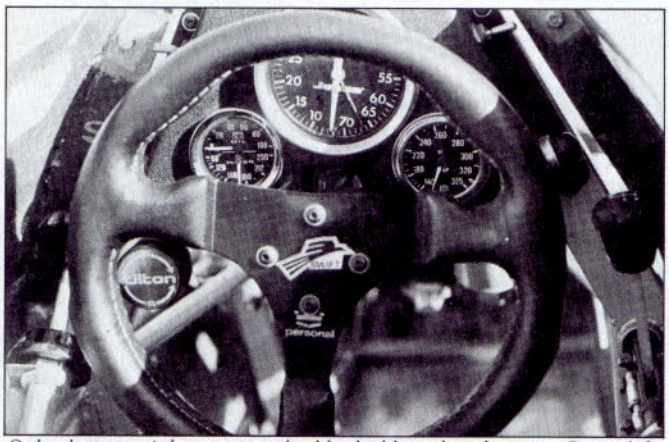
Wings are not legal in Formula Ford, but long tail sections help to generate downforce.



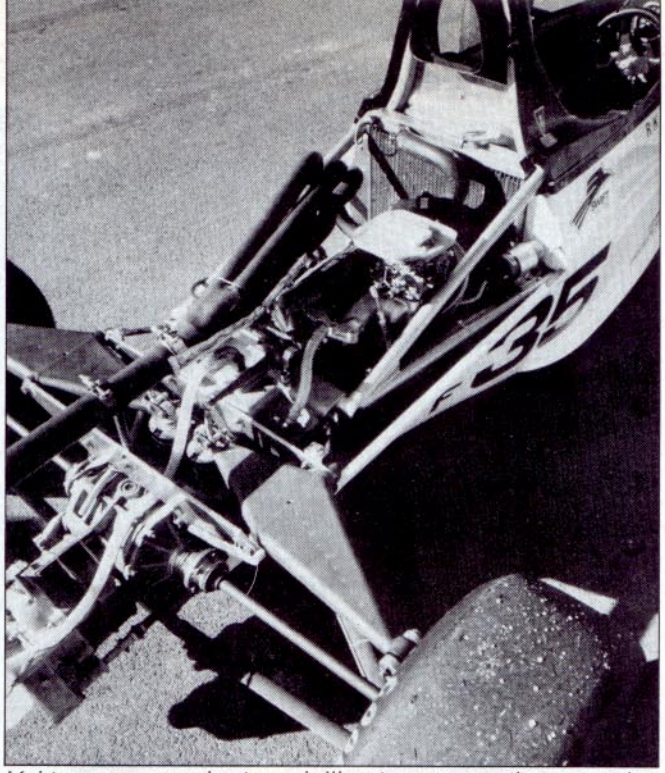
Designer David Bruns (left) and driver R.K. Smith (right) explain the Swift's inner workings at Willow Springs.



Inboard front shocks take suspension loads through a pair of bell cranks that are joined by one of the world's shorter anti-roll bars. Extensive footwell bracing provides driver protection and enables dash hoop to take spring and shock absorber loads.



Only the essentials occupy valuable dashboard real estate. Control for rear anti-roll bar adjustment is visible at left, as is knob for fore/aft brake balance.



Multipurpose cast aluminum bellhousing acts as oil sump, pickup point for rear suspension, spring and shock mount, motor mount and anti-roll bar bracket. Removal of a few bolts allows engine, transaxle and rear suspension to be backed away from chassis as one unit.

After the race, Smith said the Swift had barely been completed in time for the Runoffs, and he'd had only one afternoon of track testing at Willow Springs Raceway before loading the car into the trailer and hustling it off to Atlanta. He admitted that the Swift had "quite a bit more left in it" and said he could probably go faster with more practice and development time. Faster? Competitors rolled their eyes. By the time the Swift team headed home for California, 32 orders had been taken for the new car.

What with all the interest generated, and because R&T had never before tested a Formula Ford (and because I was talking to R.K. Smith anyway, trying to wheedle used Crossle parts out of him for my own car) we decided it would be fun to do a full track test on the Swift. The Swift crew was also curious about the measured performance of the car, so they agreed to haul it up to Willow Springs Raceway for photos and driving impressions, back down to Orange County Raceway for acceleration, braking and slalom tests and then north to Santa Fe Springs to the Chrysler skidpad to measure cornering power. By the end of the test they got very good at loading and unloading the car. We made it worth their while, of course, by catering in nearly $34.00 worth of Quarter Pounders, Cokes and fries at the drag strip. Everyone was tremendously impressed.

We met first at Willow Springs, on a clear winter morning in the high desert. The slim white car was backed carefully out of the trailer, and mechanic Rusty Hurford removed the bodywork so we could get a good look at the chassis.

Formula Ford design has gone through a lot of permutations in wheelbase, track, body shape and layout since the late Sixties, all contrived to get a driver around the track as quickly as possible with 110 to 115 bhp (plus or minus a few). The Swift's particular set of choices includes a wide front and rear track, a long 96.0-in. wheelbase, a long tail surface for good downforce and the smallest possible frontal area combined with very low ride height. Compromises, what few there are, have been made in favor of clean aerodynamics and high top speed. Designer Bruns freely credits Arnie Loyning's sleek Viking Formula Ford, which won the Runoffs last year with Bob Lobenberg at the wheel, as the inspiration for the Swift's shape and layout. He says the Swift is a refinement on the Viking theme.

Sleekness, in the Swift's case, is a matter of having a lot of components tucked into a very narrow package. The slim, heavily triangulated driver's footwell, for instance, has a lot more going on inside than the stomping of pedals. The fabricated steel A-arms are linked by short pushrods and bell cranks to a set of springs and shock absorbers over the driver's knees, just behind the instrument panel. Push/pull loads of bump and droop at the front end are taken by the reinforced dash hoop.

The radiator is just aft of the thickest part of the bodyshell, standing upright behind the driver's seat. NACA ducts on either side of the body feed air into a small space between the firewall and radiator, and the heated air flows around the engine and transaxle and out the small tail opening. A scoop behind the driver's head feeds air to the carburetor.

The *pièce de résistance* in all this slimness is the cast aluminum bellhousing between the engine and the Webster 4-speed transaxle. Never has one part of a car been called upon to do so many things. It is a bellhousing, a dry sump oil reservoir, motor mount, a rear suspension pickup platform, anti-roll bar bracket and container for the inboard rear shocks and springs. If it could propel the car down the track, it probably would. That job, however, is left to the standard 1.6-liter, 4-cylinder pushrod English Ford engine as ported, polished, blueprinted and generally made to go fast by Arnie Loyning. The Swift will be sold to customers as a roller (for $16,450) so they can choose their own engines, but Loyning supplied the engine in our test car, the very same article that won the Runoffs.

Beyond that, there is nothing terribly exotic in the car's construction or materials. The frame is made of mild steel tube,

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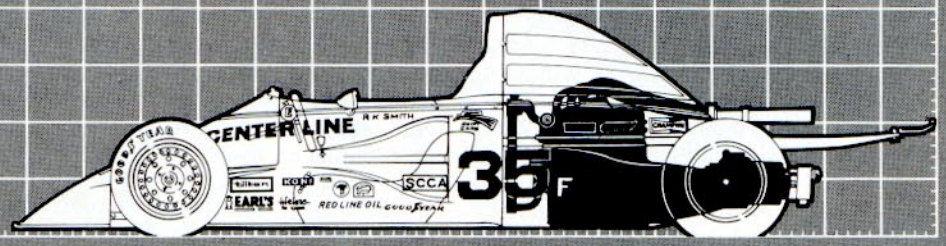

SCALE: 10 in. (254 mm) DIVISIONS
DRAWING BY BILL DOBSON

PRICE

List price, FOB Orange, Calif.	$16,450
Price as tested	$21,553

Price as tested includes race-prepped 1600-cc Ford engine ($4700), Goodyear racing tires ($403)

MANUFACTURER

Swift Cars, 501 W. Maple St, Orange, Calif. 92668

GENERAL

Curb weight, lb/kg	940	427
Test weight	1115	506
Weight dist (with driver), f/r, %		40/60
Wheelbase, in./mm	96.0	2438
Track, front/rear	60.0/58.0	1524/1473
Length	158.0	4013
Width	68.0	1727
Height	38.5	978
Ground clearance	1.5	38.1
Overhang, f/r	26.0/36.0	660/914
Fuel capacity, U.S. gal./liters	7.0	26.5

ACCOMMODATION

Seating capacity, persons	1
Seat width, in./mm	16.0 406
Seatback adjustment, deg	none

ENGINE

Type	Loyning/Ford ohv inline-4
Bore x stroke, in./mm	3.19 x 3.06 81.0 x 77.7
Displacement, cu in./cc	97.6 1600
Compression ratio	9.3:1
Bhp @ rpm, SAE net/kW	114/85 @ 6250
Equivalent mph / km/h	112/180
Torque @ rpm, lb-ft/Nm	105/142 @ 4750
Equivalent mph / km/h	85/137
Carburetion	one Weber (2V)
Fuel requirement	leaded, 105-oct

DRIVETRAIN

Transmission	Webster 4-speed manual
Gear ratios: 4th (1.22)	3.78:1
3rd (1.50)	4.65:1
2nd (2.00)	6.20:1
1st (2.85)	8.84:1
Final drive ratio	3.10:1

INSTRUMENTATION

Instruments: 7100-rpm tachometer, oil press., oil temp, coolant temp
Warning lights: none

CHASSIS & BODY

Layout ..... mid engine/rear drive
Body/frame ..... fiberglass/tubular steel with aluminum panels
Brake system ..... 9.8-in. (249-mm) discs front & rear
Swept area, sq in./sq cm 352 2271
Wheels ..... Centerline modular aluminum, 13 x 5½
Tires ..... Goodyear Eagle; 20.0 x 6.0 x 13.0 front, 22.5 x 7.5 x 13.0 rear
Steering type ..... rack & pinion
Overall ratio 11.2:1
Turns, lock-to-lock 2.0
Turning circle, ft/m ..... 35.0 ..... 10.7
Front suspension: upper rocker arms with drop links and bell cranks, lower A-arms, coil springs over tube shocks, anti-roll bar
Rear suspension: upper rocker arms, lower A-arms, coil springs over tube shocks, driver adj anti-roll bar

MAINTENANCE

Service intervals, mi:
Oil/filter change 250
Chassis lube ..... none
Tuneup 500
Warranty, mo/mi ..... none

CALCULATED DATA

Lb/bhp (test weight)	9.8
Mph/1000 rpm (4th gear)	17.9
Engine revs/mi (60 mph)	3360
Piston travel, ft/mi	1710
R&T steering index	0.70
Brake swept area, sq in./ton	631

ROAD TEST RESULTS

ACCELERATION

Time to distance, sec:

0–100 ft	2.8
0–500 ft	6.7
0–1320 ft (¼ mi)	12.6
Speed at end of ¼ mi, mph	110.0

Time to speed, sec:

0–30 mph	1.9
0–50 mph	3.7
0–60 mph	4.6
0–70 mph	5.7
0–80 mph	7.0
0–100 mph	10.3

SPEEDS IN GEARS

4th gear (6500 rpm)	116
3rd (6500)	94
2nd (6500)	71
1st (6500)	49

BRAKES

Minimum stopping distances, ft:

From 60 mph	84
From 80 mph	141
Control in panic stop	excellent
Pedal effort for 0.5g stop, lb	est 60
Fade: percent increase in pedal effort to maintain 0.5g deceleration in 6 stops from 60 mph	nil
Overall brake rating	excellent

FUEL ECONOMY

Race driving, mpg	12.0
Racing range, mi (1-gal. res)	72

HANDLING

Lateral accel, 100-ft radius, g	1.280
Speed thru 700-ft slalom, mph	72.2

ACCELERATION