

By Patrick Hong

# LONG-TERM Test

## Winter driving and engine grumbling



PHOTO BY PETER EGAN

■ Now wearing a winter set of Bridgestone Blizzaks on handsome MSW wheels, our long-term SVT Contour shivers in front of Madison, Wisconsin's skyline.

**Ford SVT Contour:** You could almost feel the car shivering as it left sunny California for another winter in the Midwest with yours truly (Editor-at-Large Peter Egan) at the wheel. The SVT, with its excellent seats and lumbar support, CD player, willing and highly tuned 2.5-liter V-6, comfortable ride and nimble handling, made a good traveling companion on the long drive. On several fill-ups it managed fuel economy in the high 20s, and used less than 1 quart of oil crossing the country.

Immediately after the first big snowfall, I remembered to slither in to the dealership and have the standard Goodyear P205/55ZR-16s swapped for our MSW-wheel-mounted winter set of Bridgestone Blizzaks, and the car is tracking though our current blizzard effortlessly.

Since our deer collision last spring, there have been no repair problems with the car, just basic oil changes and maintenance—and the occasional clean-out of a mouse nest that forms weekly around the intake manifold. Mice have also made a

tunnel into the heat insulation under the hood. Country livin'.

Good to have the SVT back. It's a quick, agile car with a nice song to the exhaust note and a distinctive and almost irritant-free personality (except for minuscule, hard-to-find overhead interior light switches). After a five-month absence, it feels like an old friend.—Peter Egan

**Mercedes-Benz SLK230:** As our Mercedes roadster nears the end of its 50,000-mile long-term test, criticism centers upon its grumbly supercharged inline-4. From Assistant Art Director Bert Swift: "The SLK is moving gracefully toward the 50K mark, but I wish I could say the same about the engine. It sounds like a sewing machine." Senior Editor Kim Reynolds commented, "The engine has adequate power, but this car needs a V-6 or at least a smooth-revving inline-4 to go along with its sporty character."

In contrast to complaints about the SLK's rough-sounding supercharged powerplant, all of us so far have been impressed by the little roadster's solid body structure. There are no hints of shakes or rattles inside the cabin, even after 46,500 miles.

Since our last update, we have noticed some wear and tear in the armrest area, and a broken sliding lid to the center console storage space. Also, one editor had difficulty trying to close the driver door on different occasions, requiring several tries.

Fortunately, the misaligned door and other problems were fixed under warranty at the SLK's 45,000-mile service (\$336). At that time, the mechanic advised us that we needed new front brake pads, and that a nail had become embedded in the right rear tire (\$147). So that puts the total repair cost to date at \$888. 🛠️



PHOTO BY JIM BOYLE

■ A freak solar eclipse shows off the day/night appearance of the SLK's gauges.

### MERCEDES-BENZ SLK230 SPECIFICS

Total miles	46,572
Miles since last report	7126
Average mpg to date	23.5
Best mpg since last report (avg of 3)	24.1
Worst mpg since last report (avg of 3)	18.5
Repair costs to date	\$888
Maintenance costs to date	\$1346
List price	\$42,385

### FORD SVT CONTOUR SPECIFICS

Total miles	20,749
Miles since last report	9453
Average mpg to date	22.2
Best mpg since last report (avg of 3)	28.3
Worst mpg since last report (avg of 3)	15.5
Repair costs to date	\$1314
Maintenance costs to date	\$208
List price	\$23,675

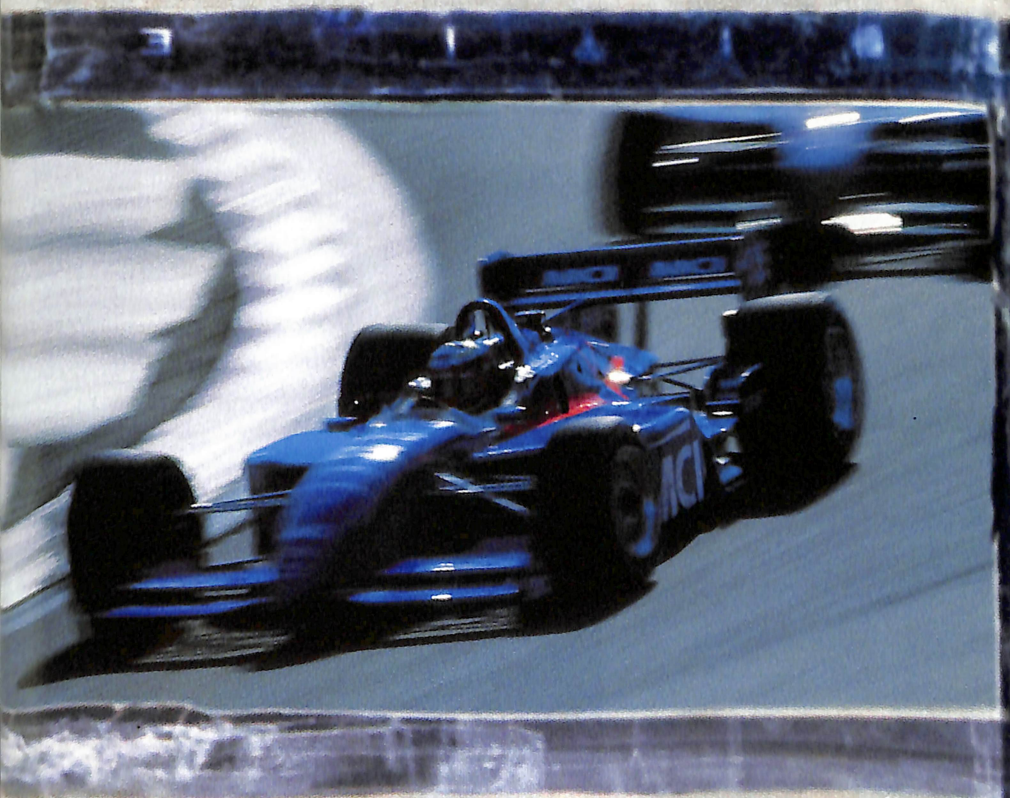
PHOTO BY JOHN LAMM





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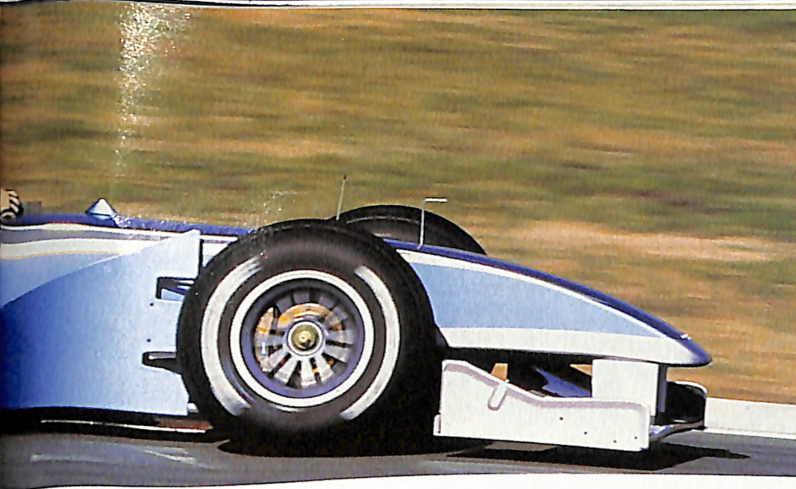
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# ABOUT THE Sport

Edited by Joe Rusz





## FORMULA 1 Villeneuve sets the BAR high

SETTING UP A GRAND PRIX team is not recommended for the faint of heart. The usual procedure is to start designing the car, make a lot of bold claims, and hope the money turns up. The last team to come in, Stewart GP, just about

made it work—but only because triple World Champion Jackie had the clout to swing a price-less deal with Ford. The trail is littered with failures; in the last decade only Jordan (est. 1991) and Sauber ('93, subsidized by Mercedes) have made it. Meanwhile, great names from the past like Brabham and Lotus have hit rocky financial ground and folded.

It's not surprising that many folks are looking at the new British American Racing outfit with some envy. A former school sports teacher and a couple of ex-Formula Ford race drivers have not only attract-

ed the biggest sponsor the sport has ever seen, but persuaded it to take equity in their new team, ensuring that it can't be poached away by a rival. To complete the picture, they've hired a Drivers World Champion to pilot the car.

Those earlier descriptions might be a little unfair, because all three men have come a long way over the years. Scottish-born Craig Pollock was a teacher at a private school in Switzerland not much more than a decade ago, but he's risen to prominence through guiding the career of a former pupil by the name of Jacques Villeneuve. After a lot of hard

work, Craig pulled off the deal of the century when he persuaded British American Tobacco—owners of the Player's brand that backed Villeneuve in CART—to commit to a global campaign in Formula 1.

He couldn't do it on his own, of course. His partners in the deal are Adrian Reynard and his longtime sidekick Rick Gorne. Both frustrated race drivers, they teamed up in the Eighties when Adrian's fledgling race-car company needed a bit of Gorne's marketing flair. Together they moved up the ranks through F3, F3000 and into CART, where they soon eased Lola out of the limelight to seize a dominant share of the customer market.

They grew close to Pollock when Jacques was racing in CART (and winning both the Indy 500 and the title for Reynard). The dream of an F1 team was floated, with Villeneuve in the cockpit. While Jacques headed off to Williams, his pals worked away behind the scenes to put the deal together.

It was an extraordinary accomplishment, as several other teams were trying hard to lure BAT. And getting the deal signed was just the start of the job. An F1 team is nothing without a top technical guru, and Reynard's CART designer Malcolm Oastler was part of the plan from the start. Beyond that, it was wide open.

The team acquired Tyrrell as part of its build-up strategy, but effectively only to take over the team's franchise—no equipment and only a handful of personnel have made the transition. Instead, a brand-new factory has been designed and built near Silverstone, and over 200 people hired. Many are well known in pit lane, such as Villeneuve's Williams race engineer

Jock Clear, number-two designer Andy Green from Jordan and Ferrari aero expert Willem Toet.

Engines are a vital piece of the equation, and Pollock managed to do a deal with Supertec, the company that markets the engines formerly known as Renaults and latterly Mecachromes. That put the team on a par with Williams and Benetton, and meant this new team was coming in with a development of the powerplant that won the World titles in 1995, 1996 and 1997.

The talk finally stopped in late December, when Villeneuve gave the new BAR 001 its first shakedown runs in Spain. Inevitably there were problems. The gearbox broke, the wing collapsed and the engine cover flew off. But in just a handful of clean laps, the car was among the quickest.

"I was very, very proud," said Pollock. "For me it was very emotional, because this is my team, the team I put together, and all the guys are coming together so beautifully. It's really been a huge team effort to get it this far so quickly."

On the car's second outing Villeneuve was fastest at the end of three days. Other drivers were running outdated '98 models, but then the BAR had done hardly any development work, and there's a lot more to be wrung out yet. The pieces appear to be falling into place.

"It's been a helluva task just getting everything together," noted Gorne, "as well as running Tyrrell (last year). Building up the new facility, building up the first car, building up the team. It's a challenge, but one we've come out on top of."

The true state of affairs will be revealed at the first GP in Melbourne. Can this bold new venture really shake up the establishment?—Adam Cooper

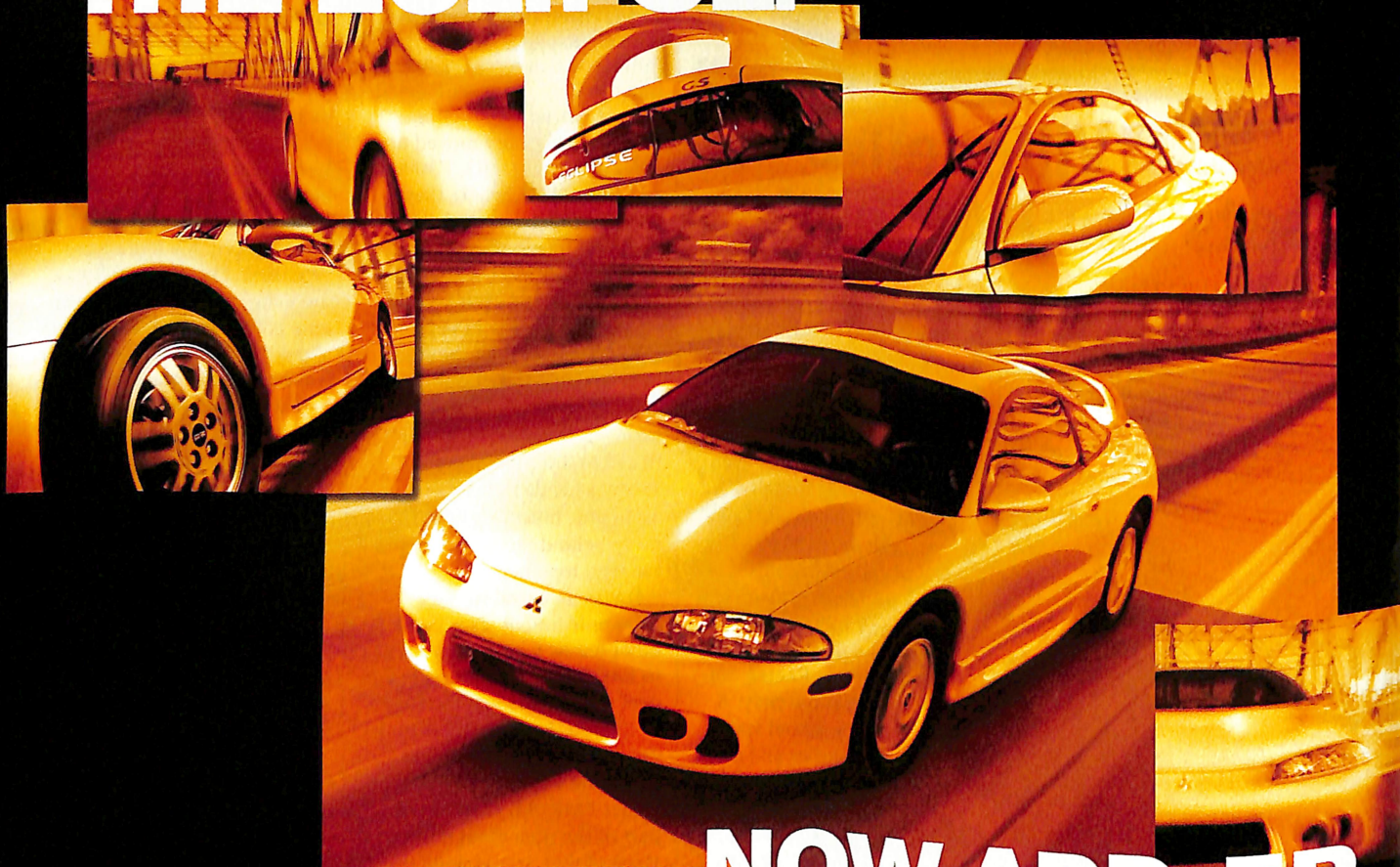
■ Formula 1's dream team dips heavily into a pool of talent that includes a championship-winning car constructor (Adrian Reynard), top-notch designer (Malcolm Oastler) and a CART and F1 Drivers World Champion (Jacques Villeneuve)—with major financial backing provided by British American Tobacco, which hopes to persuade the FIA to allow its dual-liveried cars to compete in the 1999 World Championship.

PHOTOS BY SUTTON MOTORSPORT IMAGES

### First time's a charm?

■ Adrian Reynard, whose previous single-seaters (including his CART Champ car) have won their inaugural races, has a goal: He'd like his brand-new Formula 1 car, the BAR-Supertec O1, to win its very first Grand Prix. That's a tall order. Just ask Peter Sauber or Jackie Stewart, among others, whose cars have yet to win a GP. But miracles do happen and at least one start-up F1 team did win first time out. Can you name that team? (See page 135).

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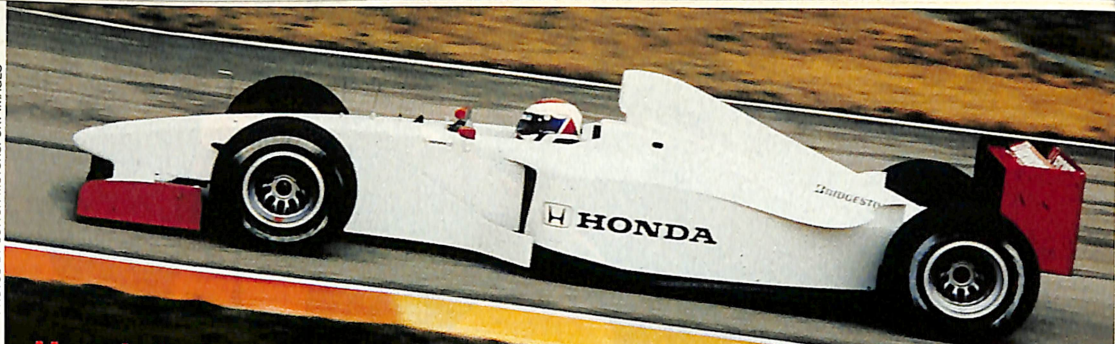
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PHOTOS BY SUTTON MOTORSPORT IMAGES



## Honda's hat is in the ring

■ Putting to rest rumors circulating for the past year, Honda officially announced that it will return to Formula 1 in the year 2000. According to company president Hiroyuki Yoshino, Honda will build not only the engine, but also the complete chassis rather than join forces with an existing team, as had been speculated. Test mules designed in-house and built by Dallara (above) will be used until Honda's own facility is up and running. Among issues to

be decided is the choice of engines—a V-10 or a V-12. Heading the operation is Dr. Harvey Postlethwaite, ex-Tyrrell managing director and renowned chassis designer who'll be joined by other former Tyrrell employees. Although Honda provided engines to Williams and McLaren and won five-straight World Championships between 1987 and 1991, this will be the first time since 1968 that the company has built and raced both car and engine.—Joe Rusz

## Q&A THE ROAD & TRACK INTERVIEW

He is one of the few drivers to have won both the Indy-car crown and Formula 1 World Championship. And after three seasons at Williams, 27-year-old Jacques has shown that he's very much his own boss, whether it has to do with his hair color or, most recently, the team he's on. Rather than sticking with Williams (as no doubt Patrick Head and Frank Williams would have liked), he jumped ship to British American Racing. Adam Cooper recently caught up with Jacques at Barcelona, where Villeneuve had just logged in some very quick times.



## Jacques Villeneuve

1 Did you expect the BAR car to be going this well this early, and does its current performance affect your expectations for the beginning of the season?

"I'm surprised by the speed of the car, yes, considering we've hardly done any setup work. The car is fast! It was born fast, it's a good stallion. I was always expecting that it would be quick, but I just didn't know when. I was aware of the people I was working with, the whole enterprise, so I knew in the long run it was going to be good. Now we just have to make the car stronger; it's still a bit fragile."

2 Can you make any comparisons with Williams?

"We haven't been in the pressure of racing yet. Everybody is gelling together, everybody is learning how to work together. One thing I've learned is the importance of chemistry, the way people relate to each other, the respect they share and so on. This team is starting on a clean sheet of paper, so it starts as it wants. It doesn't have any preconceived ideas about how people should talk and think and so on. I'm not complaining about how things were at Williams; I spent three

years there, and it changed a little bit, became better and better. But this one starts new, so it's a little bit easier to go in the direction that everybody wants to."

3 What are the biggest problems your new team faces?

"Although the people involved have experience of F1 from a lot of other teams, we have no paper landmarks, no numbers. We have nothing to compare against—we can just compare against the other cars. The jigsaw is a little bit more mixed now. When there's a problem, it will take a little bit longer to figure out why. But at the same time we have fresh ideas."

4 Are you aware of Reynard's habit of winning first time out, and does this put any pressure on you?

"I think it was different in the other series. It's going to be a lot more difficult. We should be happy with a lot smaller result than that. Of course it would be great, and we're allowed to dream, but we also have to look realistically at what's possible. Once we've done some proper testing, then I can make a comment."

5 As a former Indy 500 winner, what are your thoughts on returning to the Speedway in 2000?

"I'm looking forward to racing in the States again, because I had a great time there in CART, and it was good for my career. And Indianapolis is my greatest memory of racing in the States, because of the win [in 1995]. I'm just sad that we're not going to be racing on the oval! The oval is what Indianapolis is all about. I don't know how the track is going to be. I've seen the drawings, but it's difficult to imagine what it can be like in terms of speed and so on. It's going to be weird to go the wrong way down the front straight!"

### And the answer is:

■ In a classic display of beginner's luck, Walter Wolf Racing set the F1 world abuzz when Jody Scheckter drove the Wolf WR1 to victory in its first race, the 1977 Argentine GP. He went on to finish second in the World Championship in a car designed by Harvey Postlethwaite, late of Tyrrell, now involved in Honda's F1 reprise.

PHOTO BY GEOFFREY GODDARD



C O N C E P T N E E P E R



PATENT PENDING

# TITAN



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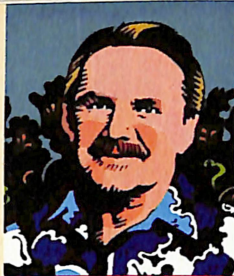
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Hate to say it, but I think it's time to say goodbye to an old friend, the International Race of Champions. Yes, it's exciting and yes, it's a good TV show and great exposure for True Value, Goodyear and other sponsors. It also fills in the show nicely at the Daytona, Talladega, Michigan and Indianapolis rounds of the Winston Cup. And it showcases some of the best drivers from NASCAR, CART, the Indy Racing League and the SCCA, namely Mark Martin (the 1998 champion), Ward Burton, Jeff Gordon, Al Unser Jr., Terry Labonte, Tony Stewart, Dale Earnhardt, Jimmy Vasser, Randy LaJoie, Dale Jarrett, Tom Kendall and Arie Luyendyk, who finished 2nd through 12th, respectively, driving identical Pontiac V-8-powered, tubular chassis Firebirds clad with replica fiberglass bodywork.

Thanks in particular to Martin (a four-time IROC champ), plus Gordon, Burton and Unser, each race was a near photo finish with an average margin of victory of just 0.195 second. That, my friends, is close!

But here's my problem: Nowadays, it seems, the International Race of Champions ain't very "International." Unlike the early IROCs that hosted the cream of Formula 1—World Champions Emerson Fittipaldi, Denis Hulme, Graham Hill, Mario Andretti, James Hunt, Alan Jones and Jody Scheckter plus top dogs Peter Revson and Ronnie Peterson—recent affairs have become shootouts among mostly American drivers representing primari-



By Joe Rusz

# Pole POSITION

## Whither IROC?



PHOTO BY BILL WARNER

ly oval-track racing, save for three-time SCCA Trans-Am champ Tom Kendall, the only sports-car racer of the lot. Where are the Mark Donohues, Peter Greggs and Al Holberts?

Meanwhile, let's look at the IROC's current, all-oval-track format. Does it provide a so-called level playing field for road racers? I'm tempted to say no, but history tells it differently. In the early days when the series included both oval and road races, winners came from almost every discipline. That said, since 1992 when the IROC became an all-oval-track series, its champions have come exclusively from the Winston Cup and CART.

Not that Roger Penske and Les Richter,

the originators of IROC, and Jay Signore, the series boss, are to blame. As Signore sees it, with the current split between the SCCA and SportsCar, there aren't many (any?) road-racing superstars around. Nor are today's F1 drivers such as 40-million-dollar man Michael Schumacher just itching to fly to the U.S. to swap paint with Mark Martin and Jeff Gordon. In fact, a few years ago when World Champion Nigel Mansell came to America to race in CART, Dale Earnhardt and Al Unser Jr. tried to persuade him to join them in the IROC—"for the love of the sport," as Junior put it. Mansell's reply (in effect): "Show me the money."

Throw in scheduling conflicts exacerbated by the Winston Cup's 36 race dates and CART's 20 and a lack of suitable venues, and you get an idea why the International Race of Champions has become a series based on expedience, of getting Unser Jr. and Vasser from Friday CART qualifying in Detroit to Indy in time for the Saturday's IROC.

So what's a mother to do? Round up some foreign road-racing talent (some of those British and European touring-car drivers would be a nice adjunct to the series and they sure do love to mix it up). Or drop International from the title (sorry, guys, but Arie's an American citizen now). Or put the IROC on hold until such a time when world conditions are right for a proper international racing series.

## CART Robby Gordon, his own boss

THE ENFANT TERRIBLE OF American racing has taken control of his own destiny. In the past seven years Robby Gordon has driven for five CART teams and one NASCAR team, and has now decided to become an owner/driver, starting his own CART team. Gordon, 30, aims to salvage his brilliant but wayward career aboard a Team Gordon Swift-Toyota in CART's FedEx Championship series.

The key to Team Gordon is well-known IRL team owner John Menard, who is Robby's primary partner in the new Anaheim, California-based team. Menard's IRL team continues as a separate entity, and Gordon is expected to be the only CART driver to break ranks and race one of Menard's Dallara-Auroras in this year's Indy 500. The third partner in Team Gordon is

Robby's manager, Mike Held, whom Gordon credits with putting the package together.

"I'm a cat, and you can throw me however you want," Robby grins, "but I always land on my feet, and this time I've got my claws in deep. We've got a great program put together. I believe John Menard will be a key part in the life and success of Team Gordon. Without him we wouldn't be getting this opportunity. I believe Team Gordon will be around for a long time."

Gordon says he believes Toyota's Champ-car engines will be capable of winning races late this year. He says his team motto is "Keep it Simple."

"I've owned my own race teams in the past and we've won off-road championships, and I believe we can do the same thing in CART," Robby

says. "We won the off-road championship a few years back by just doing the basics and doing the basics right. I'm going to model this team on Barry Green's team and Derrick Walker's team."

Although neither Gordon nor Menard will confirm it, there is little doubt that Robby will be the lone CART driver to race in the Indy 500. Menard's IRL team will run a car for Greg Ray in the IRL series with Gordon expected to join the team at Indianapolis.

Says Gordon: "We have some sponsors that are very, very interested in the Indy 500, and I think with the sponsors we have on board, there's a very good chance we're going to be at the Indy 500."

—Gordon Kirby

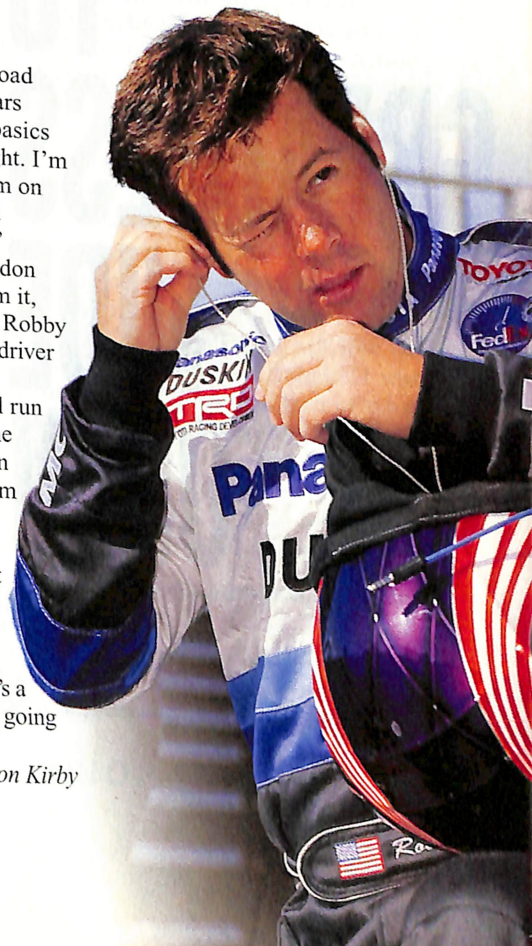


PHOTO BY BARRY HATHAWAY



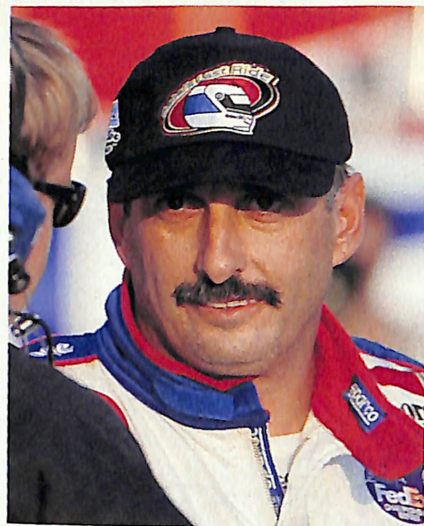
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and the  
competition  
were vital.”  
—Bobby Rahal**



**S**NAG A GLANCE at a list of Atlantic racing graduates from the last 25 years, and you'll find a roster loaded with track stars from Formula One, Champ Cars and the Indianapolis 500, plus nearly a quarter of the drivers leading the field in today's CART FedEx Championship Series. Atlantic's tradition as a "sneak-preview" series for world-class driving talent was established early on, even from its 1974 beginnings.

The first five years of the Atlantic series bred a hornet's nest of hungry, talented drivers, all itching to test their mettle and prove themselves in open-wheel battle. Their chosen weapons: lightweight, single-seat, ground-effects cars powered by a twin-cam 16-valve 1600-cc 4-cylinder engine, with 200 horsepower. Their attitude: invincibility. The Atlantic drivers of the mid-to-late Seventies saw themselves as a new pride of young lions in racing, eager to display their gifts. And they backed up their bravado with frequent displays of driving brilliance, like the 1976 Grand Prix Molson Trois-Rivières, an Atlantic race in which a handful of first-rung Formula One drivers—imported to "sweeten" the field—was stunned by the Atlantic hot shoes and sent packing in defeat back to F1.

One of the most eloquent witnesses

to this amazing early era in Atlantic racing is CART legend—and Formula Atlantic alumnus—Bobby Rahal. Rahal would go on to capture a trio of CART Championship titles (1986, 1987 and 1992), but looking back on his Atlantic career in the late Seventies, he remembers it being a full-time job just trying to get a single win in edgewise against a solid wall of competitors that included future F1 World Champion Keke Rosberg and superstar-to-be Gilles Villeneuve.

"When you consider that you were racing against the likes of Rosberg and Villeneuve, it really gives you an idea of the quality of the competition and reinforces the sense of real accomplishment that came with winning races," says Rahal, recalling the initial years of the Atlantic series.

From the start, Atlantic was pegged as the series to watch for the up-and-comers in motorsport who would become the racing heroes of tomorrow. The importance of this Golden Age of Atlantic racing is not lost on Class of '78 grad Bobby Rahal. "I was fortunate enough to be a part of what was really a renaissance period in the Atlantic championship," he says appreciatively. "That experience and the competition were vital to the next steps I eventually took in racing."



**ATLANTIC CHAMPIONSHIP**

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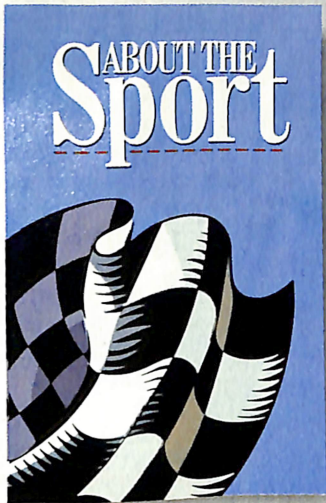


PHOTO BY DENNIS ASHLOCK



■ "I didn't know I had won until the end," admitted Eddie Cheever, whose radio quit working en route to winning the Indy Racing League opener at Orlando. Here, he dices with 3rd-place finisher, Jeff Ward.

## IRL An Infiniti win, sooner rather than later?

A ONE-HORSE RACE IT WAS never meant to be. But so far all 20 Indy Racing League races (under current rules) have been won by the 4.0-liter Oldsmobile Aurora V-8. Nissan's Infiniti Indy V-8, the league's other engine, has been nowhere. Overweight and underpowered in its debut year of 1997, the Infiniti Indy project lost its association with some top teams, relegating the engine to lesser race operations that were even further back in the field.

However, Nissan's hands-on motorsports manager Frank Honsowetz, who conceived the Infiniti Indy program, is more optimistic than ever about his company's methanol-burning 4-cam V-8. "I think we're on a par with the competition all the way across the power-band," says Honsowetz. "Even among our best engines, made of the exact same components, there's a variation of 1 percent in power from one to another. That may not seem like much but when you are making over 700 bhp, it is. Especially when you consider that 9 or 10 bhp will get you a mile per hour at a high-speed track. I think there's a huge disparity among the various Olds builders, and I think we're in competition with their upper echelon."

Bold words, for sure. And for proof of what appears to be newfound potential, look to the Brickyard last season, when Infiniti-powered cars had outstanding trap speeds. And then, in the fall, Roberto Guerrero's Infiniti-powered GForce led three times at Texas, a foot-to-the-floor high-banked oval where horsepower is king. More important to Honsowetz, however, was that Guerrero set the second-fastest race lap and that his team, recently formed by Price Cobb, showed the right chemistry and fire.

And those flames erupted again this year at an Orlando test, where Guerrero's Infiniti-powered GForce (up 20 bhp from last season, says Honsowetz) set second-fastest time.

Also at Orlando was Robbie Buhl, testing a Dallara-Infiniti for SRS Racing after spending the last two years driving for John Menard's team, which undoubtedly had some of the

best Aurora engines out there. Buhl came away impressed: "The engine didn't miss a beat and it really has good low-end torque."

According to Honsowetz, when the Infiniti V-8 came to Indianapolis in 1997, the goal was to have 650 bhp. But the engine only had 635 and was 7 mph slow as a result. By Indy last year, however, the company had completed two major re-designs and introduced its Phase 2.5 engine, all new and significantly lighter.

With the help of a Southern California development team that includes Ed Pink and Hans Hermann, the Infiniti V-8 was trimmed of 64 lb., putting it on a par with the Aurora. And thanks to reduced frictional losses (in the oil pumps and crankshaft windage), the folks at Nissan say they were able to find considerably more power, placing their V-8 at 710 bhp.

So, is victory within sight?

"I think so," says Honsowetz. And although Eddie Cheever (photo above) took the season-opener at Orlando in his Aurora-powered Dallara, Honsowetz says, "Podium finishes are reasonable to expect. All these races boil down to being in a position to race for the checkered flag over the last 50 laps. That's what it takes."

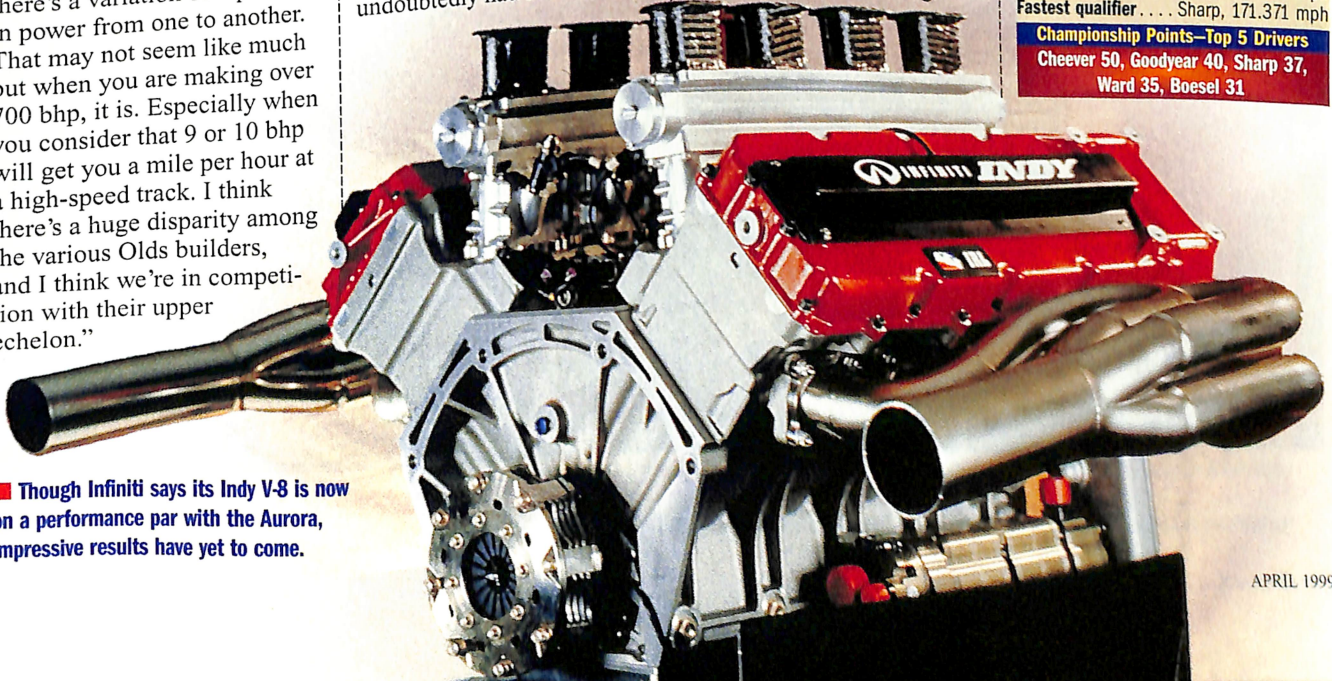
"The biggest objective for us," continues Honsowetz, "is to get associated with more good teams. Especially from now until Indy."—Andrew Bornhop

### Indy 200 Walt Disney World Speedway January 24, 1999

1. Eddie Cheever	Dallara-Aurora
2. Scott Goodyear	GForce-Aurora
3. Jeff Ward	GForce-Aurora
4. Scott Sharp	Dallara-Aurora
5. Raul Boesel	GForce-Aurora
Race distance	200 laps of 1.00 mile oval—200.00 miles
Average speed	118.538 mph
Margin of victory	5.148 seconds
Fastest lap	Sharp, 166.121 mph
Fastest qualifier	Sharp, 171.371 mph

**Championship Points—Top 5 Drivers**  
Cheever 50, Goodyear 40, Sharp 37, Ward 35, Boesel 31

■ Though Infiniti says its Indy V-8 is now on a performance par with the Aurora, impressive results have yet to come.



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# Time & Place

## COMPETITION

- April 10 **CART** Japan 500, Twin Ring Motegi, Motegi, Japan
- April 11 **Brazilian Grand Prix**, Autodromo Carlos Pace, Interlagos, São Paulo, Brazil
- April 11 **NASCAR** Winston Cup Series, Bristol Motor Speedway, Bristol, Tenn.
- April 18 **NASCAR** Winston Cup Series, Martinsville Speedway, Martinsville, Va.
- April 18 **SCCA** Trans-Am Championship & **CART** Toyota Grand Prix of Long Beach, Long Beach, Calif.
- April 18 **SportsCar** American Le Mans Series, Road Atlanta, Braselton, Ga.
- April 25 **NASCAR** Winston Cup Series, Talladega Superspeedway, Talladega, Ala.
- April 30–May 2 **HSR** Walter Mitty Challenge, Road Atlanta, Braselton, Ga.
- May 1 **Indy Racing League**, Charlotte Motor Speedway, Concord, N.C.
- May 2 **CART** Bosch Spark Plug Grand Prix, Nazareth Speedway, Nazareth, Pa.
- May 2 **NASCAR** Winston Cup Series, California Speedway, Fontana, Calif.
- May 2 **San Marino Grand Prix**, Autodromo Enzo & Dino Ferrari, Imola, Italy (tentative)
- May 6–8 **Mille Miglia**, Plaza della Vittoria, Brescia, Italy
- May 15 **CART** Rio 400, Emerson Fittipaldi Speedway at Nelson Piquet International Raceway, Rio de Janeiro, Brazil
- May 15 **NASCAR** Winston Cup Series, Richmond International Speedway, Richmond, Va.
- May 16 **Monaco Grand Prix**, Circuit de Monaco, Monte Carlo, Monaco
- May 22 **NASCAR** The Winston, Charlotte Motor Speedway, Concord, N.C.
- May 23 **SCCA** Trans-Am Championship, Mosport International Speedway, Mosport, Ontario, Canada
- May 29 **CART** Motorola 300, Gateway International Raceway, Madison, Ill.
- May 30 **Indy Racing League**, Indianapolis 500, Indianapolis Motor Speedway, Speedway, Ind.
- May 30 **NASCAR** Winston Cup Series, Charlotte Motor Speedway, Concord, N.C.
- May 30 **Spanish Grand Prix**, Circuit de Catalunya, Barcelona, Spain
- May 31 **SCCA** Trans-Am Championship, Lime Rock Park, Lime Rock, Conn.
- June 4–6 **HSR** Ginger Man Historic Races, Ginger Man Raceway, South Haven, Mich.
- June 6 **CART** Miller Lite 200, The Milwaukee Mile, West Allis, Wis.
- June 6 **NASCAR** Winston Cup Series, Dover Downs International Speedway, Dover, Del.
- June 6 **SCCA** Trans-Am Championship, Mid-Ohio Sports Car Course, Lexington, Ohio
- June 12 **Indy Racing League**, Texas Motor Speedway, Fort Worth, Texas
- June 12–13 **24 Hours of Le Mans**, Circuit de la Sarthe, Le Mans, France
- June 13 **Canadian Grand Prix**, Circuit Gilles Villeneuve, Montreal, Quebec, Canada
- June 13 **NASCAR** Winston Cup Series, Michigan Speedway, Brooklyn, Mich.
- June 20 **CART** Budweiser/G.I. Joe's 200, Portland International Raceway, Portland, Ore.
- June 20 **NASCAR** Winston Cup Series, Pocono Raceway, Long Pond, Pa.
- June 27 **CART** Medic Drug Grand Prix of Cleveland, Burke Lakefront Airport, Cleveland, Ohio
- June 27 **French Grand Prix**, Circuit de Nevers, Magny-Cours, France
- June 27 **Indy Racing League**, Pikes Peak International Raceway, Colorado Springs, Colo.
- June 27 **NASCAR** Winston Cup Series, Sears Point Raceway, Sonoma, Calif.
- June 27 **SportsCar** American Le Mans Series, Mosport International Speedway, Mosport, Ontario, Canada
- July 3 **NASCAR** Winston Cup Series, Daytona International Speedway, Daytona Beach, Fla.
- July 10–11 **SCCA** Trans-Am Championship & **CART** Texaco/Havoline 200, Road America, Elkhart Lake, Wis.
- July 11 **British Grand Prix**, Silverstone Circuit, Silverstone, England
- July 11 **NASCAR** Winston Cup Series, New Hampshire International Speedway, Loudon, N.H.
- July 17 **Indy Racing League**, Atlanta Motor Speedway, Hampton, Ga.
- July 18 **CART** Molson Indy, Exhibition Place, Toronto, Ontario, Canada
- July 25 **Austrian Grand Prix**, A1-Ring, Spielberg, Austria
- July 25 **CART** U.S. 500, Michigan Speedway, Brooklyn, Mich.
- July 25 **NASCAR** Winston Cup Series, Pocono Raceway, Long Pond, Pa.
- July 25 **SCCA** Trans-Am Championship, Road Atlanta, Braselton, Ga.
- July 25 **SportsCar** American Le Mans Series, Sears Point International Raceway, Sonoma, Calif.
- Aug. 1 **German Grand Prix**, Hockenheimring, Hockenheim, Germany
- Aug. 1 **Indy Racing League**, Dover Downs International Speedway, Dover, Del.
- Aug. 1 **SCCA** Players Grand Prix de Trois-Rivières Trans-Am Championship, Trois-Rivières, Quebec, Canada (tentative)
- Aug. 1 **SportsCar** American Le Mans Series, Portland International Raceway, Portland, Ore.
- Aug. 7 **NASCAR** Winston Cup Series, Indianapolis Motor Speedway, Speedway, Ind.
- Aug. 7–8 **SCCA** Trans-Am Championship & **CART** Grand Prix of Detroit, Belle Isle, Detroit, Mich.
- Aug. 15 **CART** Miller Lite 200, Mid-Ohio Sports Car Course, Lexington, Ohio
- Aug. 15 **Hungarian Grand Prix**, Hungaroring, Budapest, Hungary (tentative)
- Aug. 15 **NASCAR** Winston Cup Series, Watkins Glen International, Watkins Glen, N.Y.
- Aug. 22 **CART** Chicago Grand Prix, Chicago Motor Speedway, Cicero, Ill.

- Aug. 22 **NASCAR** Winston Cup Series, Michigan Speedway, Brooklyn, Mich.
- Aug. 28 **NASCAR** Winston Cup Series, Bristol Motor Speedway, Bristol, Tenn.
- Aug. 29 **Belgian Grand Prix**, Circuit de Spa-Francorchamps, Spa-Francorchamps, Belgium
- Aug. 29 **Indy Racing League**, Pikes Peak International Raceway, Colorado Springs, Colo.
- Aug. 29 **SCCA Trans-Am Championship**, Grand Rapids, Mich.
- Sept. 5 **CART** Molson Indy Vancouver, Concord Pacific Place, Vancouver, British Columbia, Canada (tentative)
- Sept. 5 **NASCAR** Winston Cup Series, Darlington Raceway, Darlington, S.C.
- Sept. 11 **NASCAR** Winston Cup Series, Richmond International Raceway, Richmond, Va.
- Sept. 12 **CART** Honda Grand Prix of Monterey, Laguna Seca Raceway, Monterey, Calif.
- Sept. 12 **Italian Grand Prix**, Autodromo Nazionale di Monza, Monza, Italy
- Sept. 18 **SportsCar** American Le Mans Series, Petit Le Mans, Road Atlanta, Braselton, Ga.
- Sept. 19 **NASCAR** Winston Cup Series, New Hampshire International Speedway, Loudon, N.H.
- Sept. 19 **SCCA Trans-Am Championship**, Pikes Peak International Raceway, Colorado Springs, Colo.
- Sept. 25-26 **SCCA Trans-Am Championship & CART** Texaco Grand Prix of Houston, Houston, Texas
- Sept. 26 **Grand Prix of Europe**, Nürburgring, Nürburg/Eifel, Germany
- Sept. 26 **Indy Racing League**, Las Vegas Motor Speedway, Las Vegas, Nev.
- Sept. 26 **NASCAR** Winston Cup Series, Dover Downs International Speedway, Dover, Del.

#### AUTO SHOWS

- March 11-21 **Geneva International Auto Show**, Palexpo, Geneva, Switzerland
- March 31-April 4 **San Diego International Auto Show**, San Diego Convention Center, San Diego, Calif.
- April 3-11 **New York International Auto Show**, Jacob Javits Convention Center, New York, N.Y.

#### EVENTS

- March 20-21 **Amelia Island Concours d'Elegance**

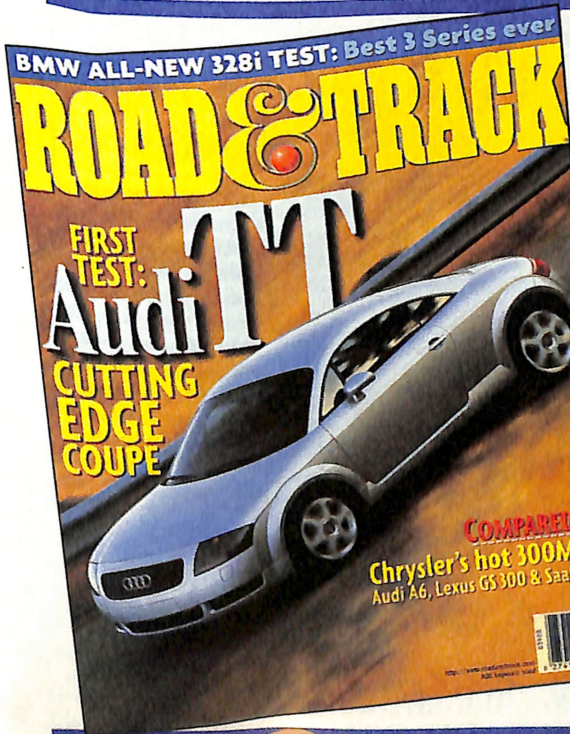
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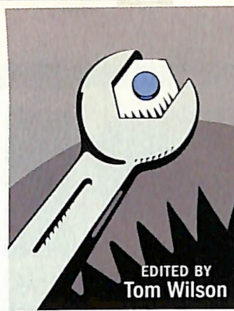
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# Technical CORRESPONDENCE

## Leak fix, limiter tricks

### Fix-a-run-flat

I have a 1999 Corvette and have questions about its run-flat tires. Should the tire pressure go down, would a can of Fix-a-Flat bring up the pressure and allow safe driving above the 55 mph advised run-flat speed? Would the sealing material affect the tire warranty or in any way affect the later proper fix of the tire? **ROGER CLAUDE**  
Lakeside, Arizona

*Goodyear says its Extended Mobility Tire (EMT) used on the Corvette relies on Beam Theory principles in the sidewall to provide extra stiffness in case of a loss of inflation. Thus the EMT's tread area follows conventional practice, and canned sealants work in the usual way. Goodyear also noted that all such fixes are temporary.*

*So, should your Low Pressure Monitor (LPM) light come on, and you seal the tire with a buzz can and reinflate, the LPM should go out and you could resume normal driving. Air will eventually leak from the tire, however, and the LPM will re-light. Then you'll be back to where you were—200 miles at 55 mph. Save for some unforeseen incompatibility between the sealant and the rubber, no problem should be posed by the sealant should the tire be repairable, a determination that requires dismounting the tire for an internal visual inspection.*

### Deflating concept

If I want to disconnect an airbag, why can't I just remove the fuse for the airbag from the fuse box? The cars I have looked at have separate fuses for the airbags. In all the discussions I have seen, the options offered are always expensive for disabling the airbags.

**LOWELL BASSETT**

Kirkland, Washington

*If the vehicle in question has separate fuses for the airbag, removing the fuse should result in de-arming the bag. However, industry experts note that airbag triggering systems are very sensitive and operate with minuscule electric power. Thus, static electricity built up from the occupant's feet shuffling on the carpet can be sufficient to trigger a bag during an accident (but not randomly).*

*Therefore, removing the airbag fuse and*

*grounding the triggering circuit are necessary to avoid airbag firing. In the end, the only sure advice is to completely remove the airbag if absolute freedom from airbag deployment is desired (none of this do we recommend, by the way).*

### Free-wheeling retiree

As a 40-year reader of *Road & Track* who is now retired, I have become a used-car buyer. A problem I am having is determining which engines can possibly suffer valve/piston interference (if the valvetrain drive breaks) and those engines which do not. The sales personnel and even shop personnel do not know or in most cases are unsure or even disagree. Is there a master guide or listing? **KEN MILLER**

Audubon, Iowa

*We know of no listing dedicated to showing an engine's ability to free-wheel (pistons clearing the valves in case the cam belt breaks). As you have discovered, such information is surprisingly difficult to come by, considering it is of reasonably practical value. A model-by-model search is thus indicated, and that's done by looking under the usual rocks, i.e.; dealerships, independent garages, professional how-to literature, hot lines, marque clubs and the like.*

*Another method is to assume an engine is not free-wheeling and replace the timing belt on schedule, which admittedly isn't overly helpful advice when considering a used car that is over the replacement mileage and may or may not have had the belt replaced. Often some portion of the timing belt is visible for a small parts-removing penalty, and while visual condition is a poor indicator of belt health, you may discover a tired-looking belt that's crazed and needs replacement.*

### Limiter wear

I am aware that some import cars have electronic top-speed limiters to reduce liabilities associated with the manufacturer's choice of OEM speed-rated tires.

Is there any possibility that operating a vehicle at the set limit could harm the engine if the electronics are designed to

reduce fuel flow, as in burned valves, or perhaps knock from altered ignition?

**PETER FEARING**  
Williams Bay, Wisconsin

The strategies built into modern speed limiters are designed to not harm the vehicle, but running "on the limiter" is still not a smart idea.

Different limiting strategies are used, but generally the fuel flow is shut off completely and not resumed until the speed has dropped a few mph. The fuel is most definitely not scaled back some percentage to hold the speed at the limit. As you suggest, this would lean the engine terribly, and result in potentially engine-damaging temperatures almost immediately.

If the ignition is used as a speed limiter, then the spark is shut off completely, or more typically, every other spark is not made. The latter gives a much "softer" rev limiter. Either method avoids immediate damage, and again, it often takes a reduction of several mph to cease speed limiting.

Retarding the ignition will also slow the vehicle, but this can also lead to abnormal combustion if protracted, is less effective as a limiter and is not plainly evident to the driver, who might then persist on driving on the limiter. Limiter-driving should be discouraged, as eventually dissimilar engine

heating may arise and driveline shock may be associated with the power coming off and on. If high-speed travel is desired, it is better to drive just under the speed-limiter intervention threshold, or "clip" the limiter electronically with an aftermarket chip.

And, of course, as tire capabilities got us into this query, the tires' limit must be considered as well.

### Plugging along

My current car's engine requires the use of a typical sparkplug that needs changing every 30,000 miles, while much newer engines change at 100,000 miles. Nothing is ever mentioned about cleaning or re-gapping. Care to comment?

**BRUCE HANGS**  
Noank, Connecticut

What mainly kills sparkplugs are contaminants and corrosion, both of which have been greatly reduced by precise mixture control, the noble metals used on modern sparkplugs, and unleaded fuels.

Computerized engine management and advanced combustion chamber shapes get the credit for excellent mixture control, says Robert Bosch Corporation. They also note that the rapid warmup of modern engines, and the much leaner mixtures used during warmup, lead to many fewer deposits on the plugs. In fact, the only downside of modern

engines from a sparkplug longevity standpoint is the high-voltage, high-amperage ignitions. By vaporizing and then redepositing the electrode material, even this electrical erosion is held to a minimum.

### Smoking Camry

I would like your opinion on my 1990 Toyota Camry. It has a 4-cylinder (3S-FE) engine with 144,500 miles. I've noticed in the past month that each time I start the car in the morning, or after it has been parked for a couple of hours, a big amount of smoke appears.

**KRIS TORRES**  
Savannah, Georgia

Blue smoke at engine start-up is indicative of oil leaking into the combustion chambers. The classic scenario, which Toyota technicians diagnosed as a common occurrence at high mileages, involves leaking valve-guide seals. Typically the exhaust valve seals, which endure hotter temperatures than their intake counterparts, are the culprits. When the engine is off, residual oil puddled around the valve stems atop the cylinder head can migrate down between the valve stem and valve guide, resulting in a good puff of smoke when the engine is next started. The cure is seal replacement, a job you don't want to put off as oil fouling can lead to other problems if prolonged. ☐

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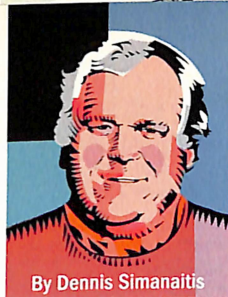


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By Dennis Simanaitis

# Tech TIDBITS

## Motorsports tidbits galore



### SAE Motorsports Engineering Conference

WHAT WITH A RECENT embarrassment of technical riches, this is the first opportunity I've had to share tidbits gleaned at the 1998 SAE Motorsports Engineering Conference, held in Dearborn, Michigan. Here's a selection, in capsule form, with R&T citations just to show that you (might have) read it here first.

### I hear you revving

WE ALL SAJOR THE NOISE OF FORMULA 1 engines, but two researchers have listened in a very special manner: "Reconstruction of Formula 1 Engine Instantaneous Speed by Acoustic Emission Analysis," SAE Paper No. 983047, describes the complex unraveling of the noise from Michael Schumacher's Ferrari and David Coulthard's McLaren during the 1998 San Marino Grand Prix at Imola.

Back in April 1994 Tech Tidbits, I described a method of using the Doppler Effect, the "yeeeeeyauuuuu" of a race car passing by, to determine the car's speed. Here, the researchers wanted to eliminate Doppler Effect, and they had a most clever approach for doing this—they examined tapes from a pay-TV channel of the sound feed from the cars' onboard cameras.

The analysis was done on a Macintosh personal computer using a commercial sound card. However, before you fire up your own computer, be aware that classical Fourier Analysis is insufficient (even if you happen to remember any).

Nonetheless, the paper is filled with excellent tidbits. For instance, exiting Imola's Rivazza Curve, the Ferrari encounters a tad of wheelspin in going from about 9000 rpm to 16,500. Curiously, the McLaren doesn't (is it using some clever traction control?). Also, the McLaren's Mercedes powerplant doesn't quite rev as high as the Ferrari's. Analysis of characteristic sound waves gave researchers insight into the drivers' threshold and trail braking, throttle feathering and even the

McLaren's apparently better choice of gear ratios for Imola.

Here's a potential for estimating a competitor's engine power, gearbox ratios, even race strategies—assuming, of course, that stealth-acoustic countermeasures aren't employed.

Fascinating. And, by the way, the researchers were from Ohio State University and the Universita di Bologna (just down the *autostrada* from Maranello).

### What's it like out there, online?

THE IDEA OF A COMPUTER-SIMULATED roadway appeared in this column back in May 1996 (see the MTS Flat-Trac Roadway Simulator). Now I hear that so many Formula 1 teams are using such related hardware—shaker tables, 4-Post rigs, K&C (as in kinematics and compliance) rigs and the like—that they arrive at a circuit with shock valving, springs and at least the first cut of anti-roll bar settings already decided. Two relevant papers at the conference included "Design of a Single Seater Racing Car Suspension System" (No. 983020) and "Suspension System Testing and Tuning with the Use of a Four-Post Rig" (No. 983023).

We used to joke about computer-staged racing, but things aren't too far away from that today. Indeed, in one of the SAE panels, Andrew Craig, president and CEO of CART, spoke of potential for a "29th car," a virtual car in which home viewers would mix it up—via computer linkup—with the actual race cars in real time during an event.

Simulations are not without their downsides. This has been noted in FIA's efforts to maintain a reasonably level, albeit high-buck ("high-euro"?) playing field: Even if the days of actual testing are limited, the computer-savvy team can test virtually as much as it likes.

### Cylinders every which way

TWO TECHNICAL PAPERS ANALYZED THE tradeoffs of F1 engine configurations, specifically V-10 versus V-12 (No. 983035) and V-12 versus W-12 (No. 983036).

Contrary to popular belief, for instance, researchers identified their theoretical V-12 as having lower frictional losses than

a corresponding V-10. Also, allowing a more optimized bore/stroke ratio, the V-12 displayed a calculated edge in fuel consumption as well as power output at slightly higher revs. A disadvantage of a V-12, however, is packaging its extreme length; and this is where a W-12 enters the picture.

The W-12, arranged in three banks of four cylinders, isn't new to F1: The Life Racing team had one back in 1990, though a fat lot of good it did them. Another more recent variation on this theme is Volkswagen's W-12, using essentially two of its narrow-angle VR6 engines aligned into four banks of three. By the way, neither of these configurations is actually a "W." However, it's useful to have a letter describing such layouts, and W is closer than most.

The researchers' W-12, aligned in three banks of four, had a shorter, stiffer, lighter crankshaft than that of their theoretical V-12. Its frictional losses were slightly lower as well. Unlike the V-12, however, the W-12 was imperfectly balanced, with secondary forces out of kilter. But, according to researchers, this was no worse than a V-10 or V-8. And who were these researchers? With each paper, there was an academician from the University of Modena. Their research colleagues were from the Engines Department of Fiat Research and from Ducati Motor S.p.A., respectively.

### Mehl on technicalities

LEO MEHL, FOR A LONG TIME THE HEAD of Goodyear's racing activity and a good friend of us all, is now executive director of Indy Racing League. As an SAE Motorsports panel member (and card-carrying iconoclast), he put racing technicalities into interesting perspective: "The most successful racing series today," Leo observed, "uses pushrods and carburetors."

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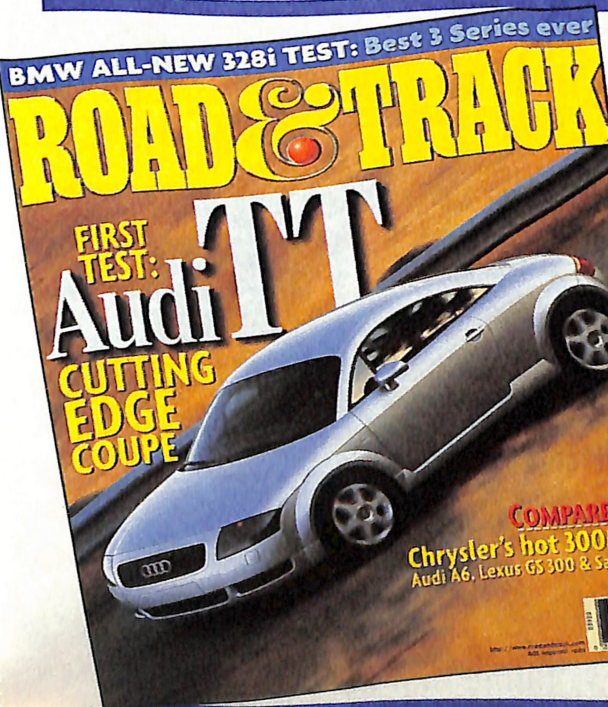
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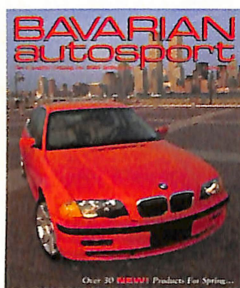
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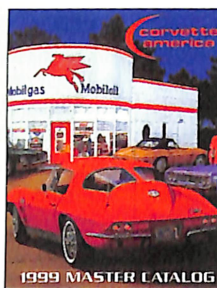
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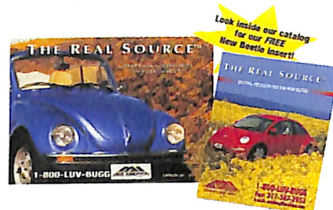


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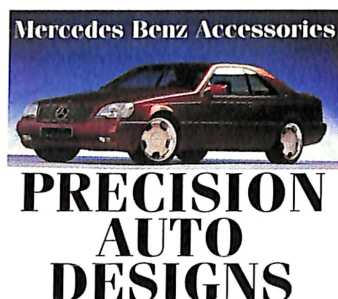
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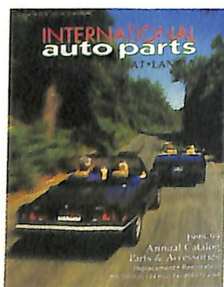


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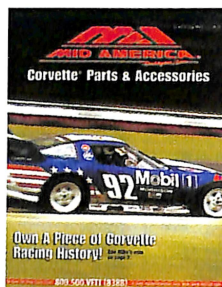


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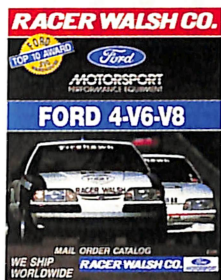
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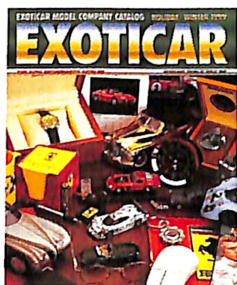
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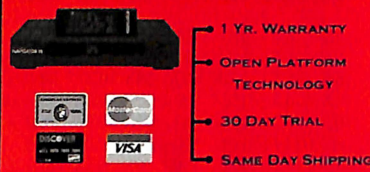
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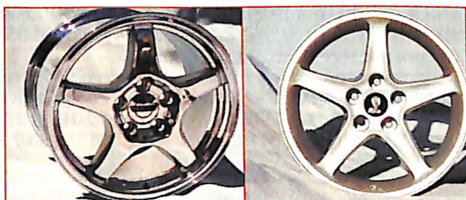
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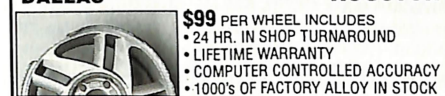
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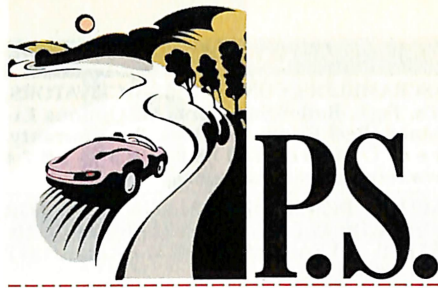
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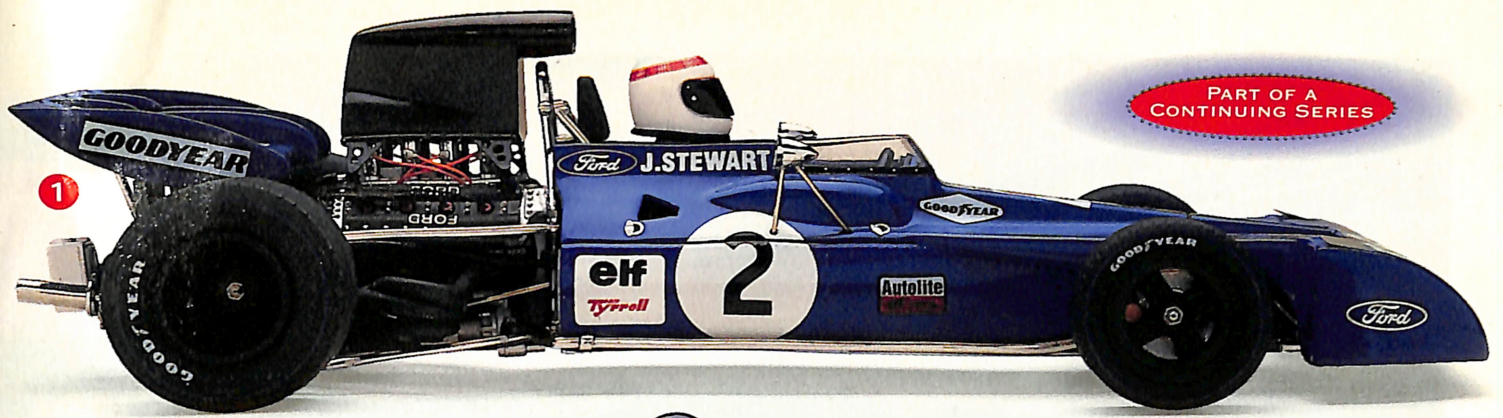
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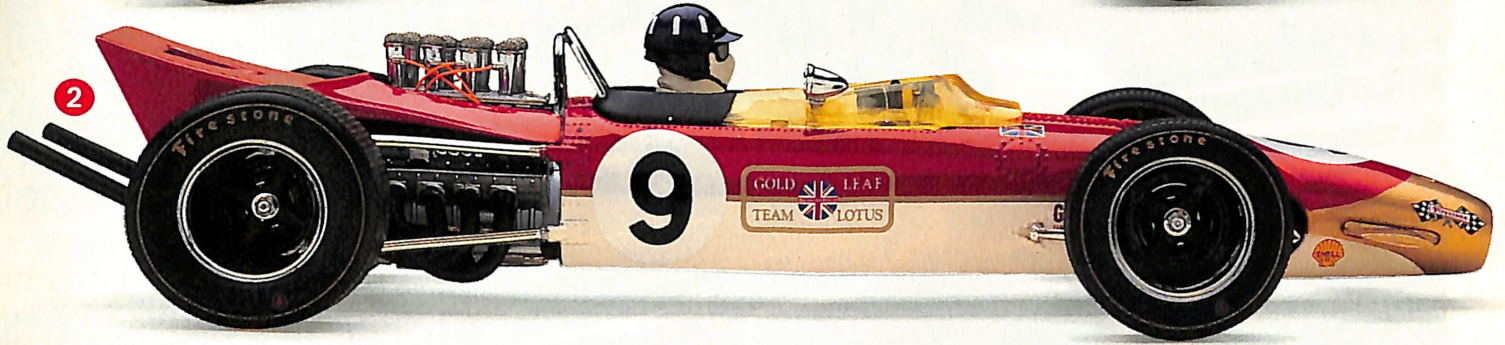
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