

Reynard

Production base: Bicester, England; U.S. base: Indianapolis, Ind.

Number of cars built in 1996: 33

Wins: 8 (Vasser 4, Zanardi 3, de Ferran 1);

Poles: 11 (Zanardi 6, Vasser 4, de Ferran 1)

After winning eight races, 13 poles and the PPG Cup championship in 1995, Reynard faced a tough task in improving its package for the new season. Nevertheless, Reynard's practical chief designer Malcolm Oastler and his staff produced another extremely effective car which, despite even tougher opposition, produced similarly impressive results, including another championship.

New aerodynamic regulations effectively cut the amount of downforce generated by the cars by as much as 30 percent, so, in common with its competition, Reynard spent a massive amount of time in the wind tunnel attempting to recoup the losses. The outcome was a slightly reprofiled composite monocoque tub. The windscreen was marginally lower than before, while a new engine cover proved more efficient. The most obvious changes were to the sidepods, which featured a distinctive, bulbous leading edge.

Suspension components were little changed from the 95I, although a new front anti-roll bar package permitted the use of a third shock, a third spring and bumpstop or any combination preferred by the indi-



vidual teams. The rear pickup points were altered to suit a revised gearbox casing designed to provide more aerodynamic benefit to the new underbody. Reynard, in contrast to Lola and Penske, retained its use of a longitudinal layout, although different internals included a complete Xtrac system rather than the Reynard/Xtrac mechanism which proved troublesome in the early part of 1995. A refined oil scavenge system

also was employed. (Incidentally, a new transverse box for the 1997 car was raced for the first time in Vancouver by Robby Gordon.)

The Reynard 96I proved especially effective when mated to Honda engines and Firestone tires. The Reynard-Mercedes option also seemed to work well, with Greg Moore, on Firestone tires, posting some excellent results in his rookie campaign. Team Rahal, on Goodyears, came on

strong in the latter part of the season after taking advantage of some aerodynamic gains provided by new front wings and additional winglets on the rear end of the sidepods. Whether by coincidence or not, however, all of the teams employing a Reynard/Ford/Goodyear package – Brahma Sports Team, Walker Racing and the PacWest Racing Group (which used the older XB engines) – tended to struggle rather more.

The Lola Cars design team has undergone several changes during recent years. Most significantly, aerodynamicist Chris Saunders was spirited away from Williams Grand Prix Engineering in order to spearhead an extensive wind-tunnel program made even more critical by the rule changes introduced for 1996. Saunders' first task was to upgrade the Cranfield Institute facility (used exclusively for auto racing purposes by Lola) to allow the use of 40 percent scale models and provide more up-to-date instrumentation.

John Travis, meanwhile, who took charge of Indy Car design after Bruce Ashmore's defection to Reynard late in 1993, left the company shortly after the beginning of the season. He later found employment at Penske Cars.

In comparison to recent years, Lola founder Eric Broadley became more heavily involved in laying down specifications for the T96/00, joining Travis' team in an extensive redesign of the previous year's challenger.

The result was an extremely effective, well-engineered car which won three more races than in '95. New aerodynamics, refined following an estimated 1000 hours in the wind tunnel, were the most noticeable change, featuring longer and taller sidepods which offered substantially improved airflow. The profile of the sidepods was more

Lola

Production base: Huntingdon, England;

U.S. base: Indianapolis, Ind.

Number of cars built in 1996: 19

Wins: 8 (Andretti 5, Ribeiro 2, Fernandez 1);

Poles: 2 (Pruett 1, Ribeiro 1)

akin to the Reynard 95I, tapering gradually from a high point almost level with the mirrors.

The T96/00 chassis featured, for the first time, composite internal bulkheads, which provided more overall stiffness. The suspension geometry front and rear also was altered, primarily in response to constant advancements being made by the tire companies. The transverse five-speed gearbox (with an option for six speeds, minus reverse, for the ovals) featured a lighter magnesium casing compared to the '95 car.

Three teams, featuring two different engines and both tire companies, achieved notable success with the latest Lola. Newman/Haas continued to be the benchmark, although Tasman added three more wins and Patrick Racing, with Scott Pruett, was unfortunate not to claim at least one of its own. Adrian Fernandez's win at Toronto, incidentally, represented Lola's landmark 100th Indy Car victory.



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Penske**Production base: Poole, England; U.S. base: Reading, Pa.****Number of cars built in 1996: 7****Wins: 0; Poles: 3 (Tracy)**

If Penske Racing thought it had a difficult time in 1995, that proved to be nothing in comparison with its travails in '96. In fact, for the first time since 1987, no Penske-built car won on the Indy Car circuit. To find the last time the team failed to record a victory, however, one had to go all the way back to 1976 (or 1974 if one counted John Watson's victory in the Austrian Grand Prix Formula 1 race with the Penske PC4).

Nevertheless, with even a modicum of good fortune, Penske could easily have nabbed at least three or four wins. At Homestead, for example, Paul Tracy had taken command of the race before jamming his car into gear after a pit stop and wrecking the transmission. Both one-mile oval races also seemed to be going Penske's way. Tracy, though, erred during a pit stop at Nazareth, collecting several crew members, while teammate Al Unser Jr. led convincingly on the Milwaukee Mile until a full-course caution in the late stages enabled Michael Andretti to make use of his softer tires. Finally, at Road America, Unser again was in charge until, unbelievably, his Mer-

cedes engine blew itself apart less than a mile from the finish line.

Unser, furthermore, remained in contention for the PPG Cup championship until the final race at Laguna Seca. So what was the problem?

Nigel Bennett's Penske PC25 design featured a revised weight distribution and changes to the suspension geometry as a result of lessons learned in '95, when the PC24 proved not to make optimal use of the latest Goodyear tires. Initial impressions, indeed, following a test at Firebird Raceway, Ariz. in December, were extremely positive: 'You know when a car is good when it's fast right out of the box,' said Unser, 'and this one went pretty quick right away.'

Subsequent experience confirmed the car was very efficient on flat, smooth circuits – such as Firebird – where it was able to maintain a constant ride-height and attitude. Unfortunately, it proved overly pitch-sensitive, such that the car's balance tended to alter dramatically between the entry and exit of corners, which made it almost impossible to achieve an optimal setup and a consistent level of performance.

**Eagle****Production base: Santa Ana, Calif.****Number of cars built in 1996: 3****Wins: 0; Poles: 0**

Dan Gurney's All American Racers team made a welcome reappearance in 1996 following a 10-year absence from the Indy Car circuit. In all, 30 years have passed since AAR constructed its first Indy Car chassis. Its most recent success came in 1981, when Mike Mosley guided a Chevrolet/AAR-powered car to victory at Milwaukee. Incidentally, that was also the last win for a non-turbocharged motor.

The initial go-ahead to develop a new Eagle chassis was made in early 1993, whereupon Gurney's team began its development phase by learning lessons from a pair of '93 Lolas (and later a '94 car too), which had been acquired primarily as mobile test beds for the fledgling Toyota engine project.

The Eagle Mk.IV was designed, like the ultra-successful IMSA GTP Eagle Mk.III, by John Ward (who in fact parted company with AAR shortly before the end of the season), aerodynamicist Hiro Fujimori and chassis dynamics specialist Jim Hamilton. It involved a rather longer than expected gestation period but was ready for testing early in 1995. Soon thereafter, however, the IndyCar Technical

Committee issued a substantial array of rule changes to be implemented in time for the 1996 season. So Ward & Co. went back to their respective drawing boards.

The AAR team has a well-equipped construction and test facility within its spacious premises in Santa Ana, Calif., including a 40 percent scale wind tunnel and fluid dynamics chamber, both of which saw extensive use while the Mk.V's design was finalized.

The all-composite tub, incorporating composite bulkheads for added rigidity, was constructed entirely in-house, while the transmission, designed in cooperation with Xtrac in England (which also produced customized work for Lola, Penske and Reynard), featured six forward gears mounted longitudinally.

The Mk.V was more often than not outpaced by the Arciero-Wells team's Reynard-Toyota, although not by a significant amount. Furthermore, AAR made steady gains as it learned more about the car from experience. The 1997 Mk.VI chassis, scheduled for completion in early January, was expected to offer a considerable improvement.

