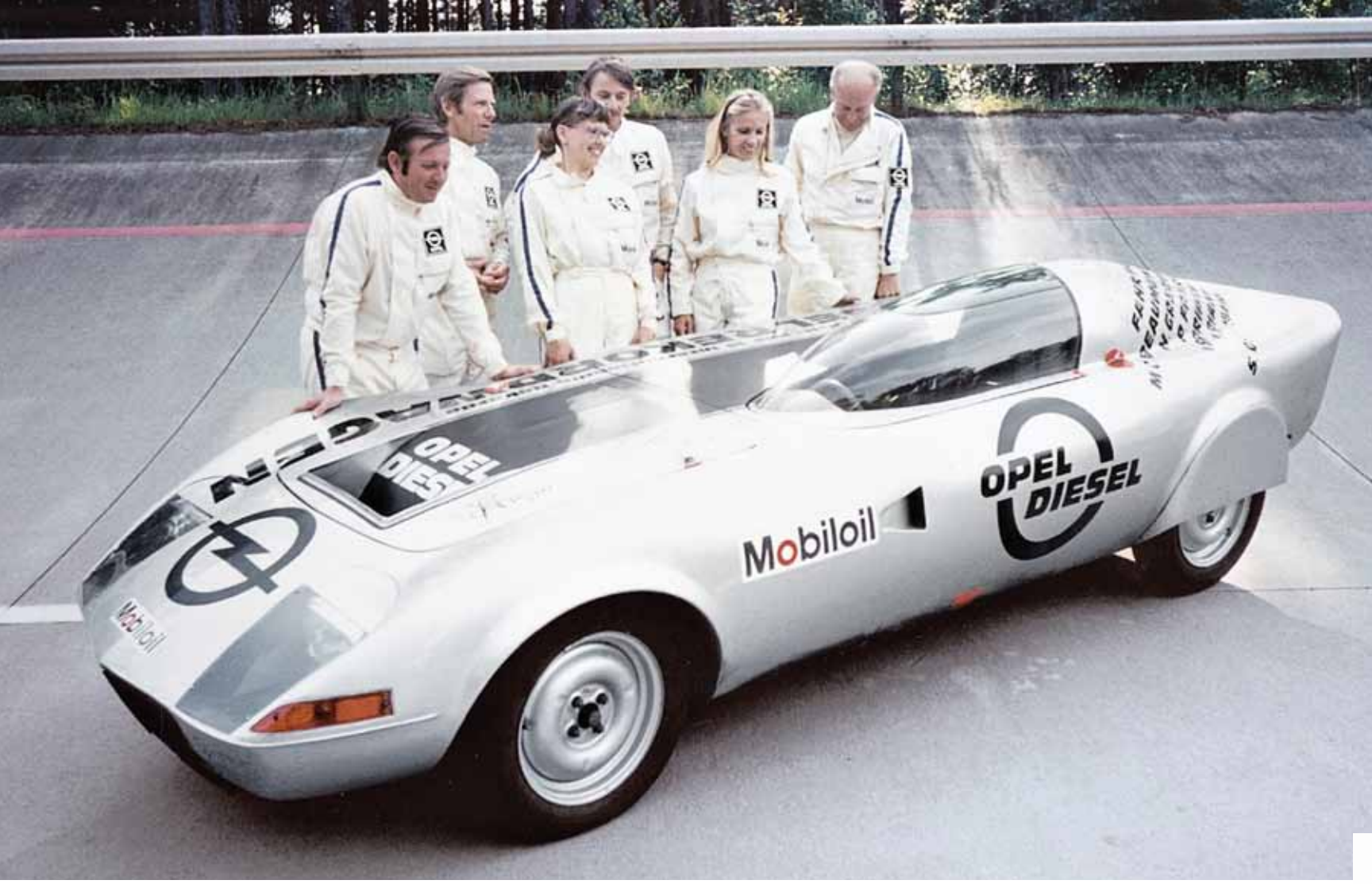


Ein Weltrekorde Diesel?

Opel's Diesel GT answered a question no one had asked

BY ERIC TEGLER
PHOTOGRAPHY PROVIDED BY THE AUTHOR

Why not pair a true sports car platform with a diesel engine? For years, it has been a question no one has seriously asked, perhaps because Rudolf Diesel's compression ignition engine has never been associated with high performance. But, after a summer's worth of high fuel prices and two hurricanes, the idea of a diesel-powered sports car doesn't seem, well…wrong.

Though secretive about its plans, Opel may be on the cusp of producing a two-seat diesel sports car based on a version of the Pontiac Solstice/Saturn Sky. Mercedes has already shown its two-seat SLK 320 Triturbo, a car which, in late summer 2005, looked ready for production. Whichever hits the market earliest will have the honor of being the first production diesel sports car—but not the first diesel sports car. Opel answered that question over 30 years ago.

Cast your mind back to 1972. The drama and terror of the Munich Olympics surely make it the best-remembered sporting event of the summer, yet barely a month earlier, an event of arguably equal significance unfolded about 170 miles to the northwest. Opel set out to show the world what a diesel engine could do.

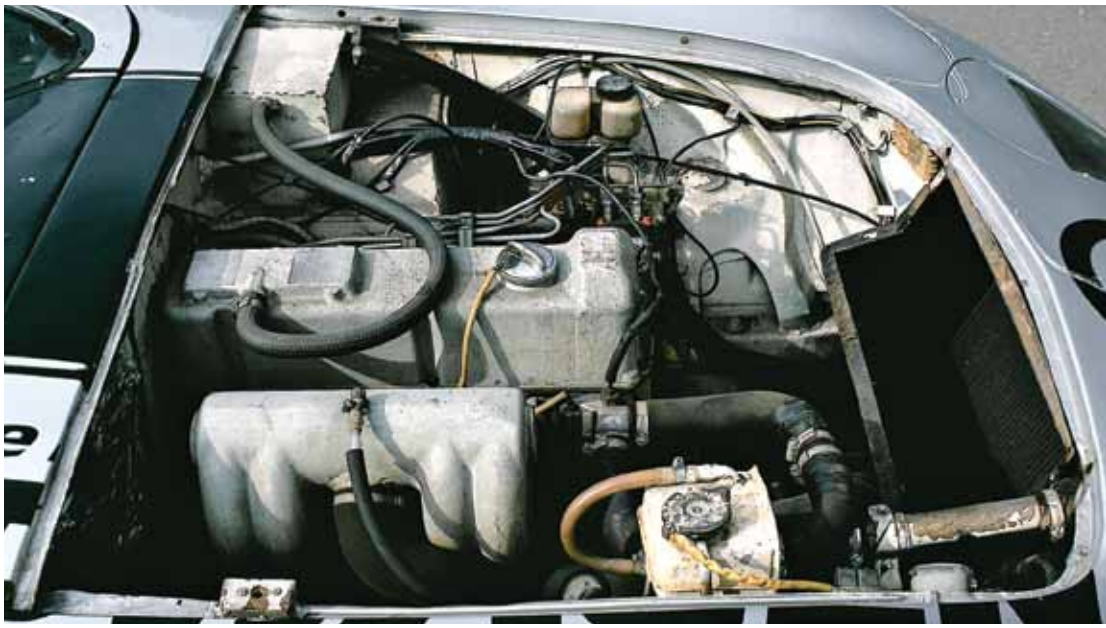
Engineers, commercial vehicle operators and a few enthusiasts already knew about the benefits of diesel engines, but in those pre-oil crisis days, virtually no one else did. Nor did they care. With plans to introduce diesel passenger cars in the offing, Opel knew of only one thing that would surely get public attention—speed. So, they took to the company's Dudenhofen test track on June 1, 1972, with the goal of breaking speed records. They would do it with the world's first true diesel sports car.

Breaking speed records usually comes with the prospect of getting media coverage in return, but Opel improved its chances significantly by inviting a combination of journalists and racing figures, male and female, to drive its experimental diesel sports car. The invitees, six in all, included renowned Belgian journalist, Formula 1 driver, and 1960 Le Mans winner, Paul Frére. He was joined by Italy's Giorgio Pianta, an

international rally champion, open-wheel driver, and Abarth engineer who would later become competition director of Alfa Romeo's touring car program.

From France came Marie-Claude Beaumont, a national rally champion and, in 1971, the first woman to compete at Le Mans since racing resumed there after World War II. Countryman Henri Greder was France's national rally champion in 1965, '66, and '67, as well as a tuning specialist for GM, Chevrolet and Opel. Sweden's Sylvia Osterberg was another rally-bred racer, European ladies' rally champion in 1963 and 1969 and winner of numerous events. Jochen Springer represented Germany, bringing credentials including three wins of the Tour de Europe rally, careers as a journalist and engineer, and tenure as ADAC Sport president.

The group assembled at the Dudenhofen proving grounds along with an engineering team from Opel's R & D center in Ruesselsheim and a gathering of print and broadcast press. It would be their first look at the machine they were expected to break records with.



Opel hoped to smash the record with the company's new 2.1-liter, four-cylinder, turbocharged diesel. The engine featured a single overhead cam and two valves per cylinder

Logic might have suggested that Opel scratch-build a prototype to go after speed records, but cost and the need to generate publicity sooner rather than later suggested modifying an off-the-shelf model. Opel engineers planned to use a new 2.1-liter turbocharged cast-iron, swirl-chamber diesel in the record car. With speed the objective, there were only two realistic possibilities in Opel's lineup.

The Manta coupe was considered, but its engine compartment would need modification to accommodate the turbocharger. The same was true of Opel's other sports coupe, but it had one unbeatable advantage. The Opel GT had a better drag coefficient than anything else the automaker had. In fact, the GT was the most aerodynamic car produced by General Motors in the 1960s, wind tunnel-tested for cruise speeds above 120 mph. Stylistically reminiscent of the mid 1960s Corvette, the GT was the best received of all Opels imported to the U.S. market. Of the 100,000 GTs produced, 70,000 sold in North America.

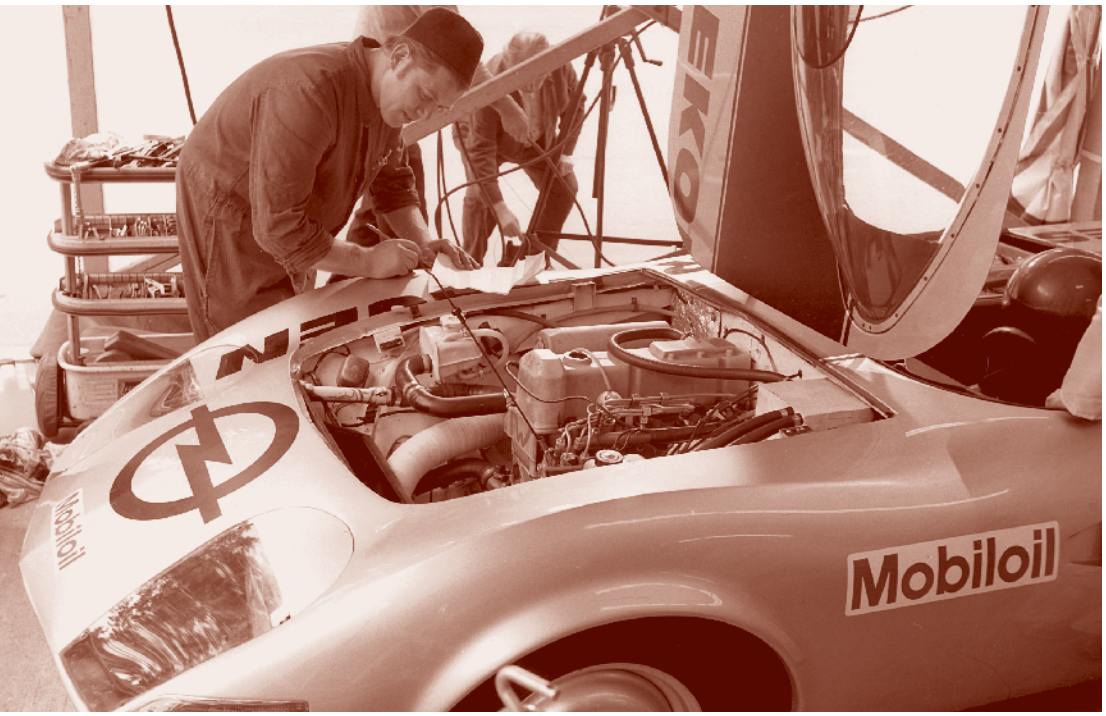
Built on the Opel Kadett platform, the GT featured a conventional monocoque body and front wishbone-leaf spring/live rear axle trailing-arm suspension. Its motivation came from either 1.1-liter or 1.9-liter inline four-cylinders, making 67 and 102 horsepower, respectively. European-spec cars had more power (128hp). The GT was no rocket, but its high-speed stability and relatively simple construction made it the best candidate for modification.

"They only had to cut off the roof, weld the doors, and put a bubble over the driver," Opel Heritage Communications Director Ernst-Peter Berresheim says facetiously.

While significant changes were made, Berresheim is right in that much of the GT's body, its chassis, four-speed transmission, steering and brakes remained stock. What body changes there were focused on lightening, lowering, and cleaning up the car aerodynamically.

The passenger compartment was elimi-

In 2,076 laps of the company's Dudenhofen test facility, the car averaged 120 mph, and returned 18 mpg



The engine was modified with a steel exhaust manifold, a dry sump and an aluminum oil cooler. Minus its turbocharger, this engine powered the production Opel Rekord D sedan

nated entirely, a fuel tank located in place of the seat. The driver sat inside a plexiglass canopy with a fairing which blended back into the GT's conventional "duck tail." The GT's drag-inducing pop-up headlamps were eliminated and replaced with inset, glass-covered units. The rear wheels were faired-over "continental style" and a down-draft-type hood cutout provided cool air to the turbo. On the left side, a NACA-type duct supplied air to the driver, while on the right, a large vent behind the front wheel dissipated engine heat. Further back, the turbodiesel exhaled through a side-mounted exhaust. The engine received air cooling through an egg-crate type grille opening situated low in the nose.

The car's new 2.1-liter four-cylinder, flat-head turbodiesel employed a single overhead cam and two valves per cylinder. The engine's robustness was augmented with hardened valve seats, a new steel exhaust manifold, new pistons, a dry sump and aluminum oil cooler. As with other contemporary diesels, fuel was injected into a bowl or "swirl chamber" which housed the injector nozzle and glow plug. The fuel inside the bowl (which made up about 40 percent of the total compression volume) heated dramatically, forming a mixture which simultaneously seeped out into the cylinder, mixed with the compressed air charge and ignited.

With the addition of the turbo, the engine made 95 horsepower at 4,400 rpm. That corresponds to a specific output of 46 horsepower per liter, quite high for the era. Lubrication was provided by Mobil, which formulated a special oil for the record run and continuously monitored engine performance throughout.

The drivers sat in a significantly reclined position, though the steering wheel (a small one for easier ingress/egress) and gearshift remained in their stock locations. A spare parts/tool box was placed above the passenger-side fuel tank. The extra fuel gave the Diesel GT a range in excess of 500 kilometers (310 miles). Drivers faced an instrument panel, which included gauges for water and oil temperature, oil pressure, crankcase pressure and a digital tachometer.

Lighter wheels and narrow, staggered low-drag tires (145HR15XAS front/165HR15XAS rear) underpinned the car. Altogether, the Diesel GT weighed in at 2,228 pounds including the few spares it carried. FIA regulations required that any repairs to the car be made using parts it carried onboard.

A crew of Opel mechanics stood ready to refuel the car, assist with driver changes, add oil or make any necessary repairs. Radios in the car and pits allowed for time checks, oral telemetry and provided a measure of safety and encouragement. Leaving nothing to chance, Opel took the additional precaution of placing blaring sirens around the track at locations where wildlife (rabbits and deer) was known to wander across.

Much of the production Opel GT remained in the record-holding car: the chassis, transmission, steering and brakes were all stock

At precisely 9:00 a.m., the starting signal was given and the Diesel GT charged out of the pits. Each of the six drivers would rotate, with three- to four-hour stints behind the wheel, for over 52 hours. The weather was generally good, with daytime highs in the low 80s and nighttime lows in the 40s. With the exception of slowing for refueling and accelerating back onto the track, the turbodiesel was run flat-out, spinning continuously between 4,300 and 4,400 rpm. The Diesel GT circulated Dudenhofen like the second hand of a watch, ceaselessly running above 120 mph.

Driving it required concentration, as Opel's Director of Engineering Communication, Karl Mauer, can attest. He's driven the Diesel GT on the Dudenhofen track and on the street.

"The car was made for driving on an oval, on our test track, specifically, and within the framework of a record attempt. The speed was not very high, so downforce was not an issue, and the tires are very narrow."

Today, the Diesel GT is part of Opel's Heritage Collection and is driven regularly at vintage events around Europe, most recently at the Nürburgring where Mauer made several exhibition laps before the start of a vintage grand prix. Look casually at photographs of the car and you might surmise, as I did, that it could have a tendency to lift at high speed.

When asked about it, Karl Mauer simply chuckles and says, "I wasn't going to go that far but, yeah, you're right. The narrow tires don't help. If you're driving it on normal roads or on a flat track, the rear end is very loose, and the car isn't stable under cornering conditions."

That the rear end should be loose is no surprise. The street-going GT had a nose-heavy 54/46 weight distribution. The modifications made to create the diesel GT moved the weight even further forward and, naturally, altered the car's aerodynamic center of pressure. But in its environment, the Diesel GT worked well.

"There, it gives you a stable impression," Mauer relates. "It doesn't move around. It fits the purpose it was built for. For everything else, it's difficult."

Acceleration is not brisk, according to Mauer, but the powerband is linear throughout the rev range. The brakes, he adds, are "not a miracle," but stopping quickly wasn't part of the Diesel GT's job description. For the driver, visibility is good, but creature comforts are few.

"You recline, but your head is upright, so it's okay. It's tight under the glass bubble, and you feel very squeezed in the car."

In July 2003, Opel revisited international record-breaking at Dudenhofen with its diesel-powered Eco-Speedster. The records it shattered over 24 hours were the very ones set by the Diesel GT 30 years earlier. As one of the Eco-Speedster drivers, Karl Mauer can provide some insight as to what the six Diesel GT drivers went through in the 1970s.

"It's tiring, especially at night. After 20 minutes or so, you completely lose the feeling that you are driving on a highly banked track. You feel as if you're driving on a flat road. You need to adapt because once you get out of the pits, you go flat-out and that's it for the next two hours or so. You don't have to do anything, just stay concentrated. There are crosswinds occasionally."

To maintain their concentration, Mauer and his co-drivers focused on finding the fastest line around the 4.6-kilometer track much as their predecessors must have done.

"You have to find a fine balance. The higher you drive, the longer the distance, and lower the lateral G forces. The lower line costs you speed because the lateral forces and friction are higher. You really have to find the ideal line. That keeps you busy, at least for a while."

For two days, the Diesel GT drivers kept busy, completing 2,076 laps in the process. When the GT came to a rest, it had averaged 190.88 km/h (118.6 mph) and broken 20 national/international records for both diesel and petroleum-powered passenger cars. The car achieved its highest speed (197.5 km/h—122.7 mph) over the flying kilometer with Marie-Claude Beaumont at the wheel.

Despite withstanding mechanical and thermal stresses well beyond those faced by contemporary gas and diesel engines, the flying kilometer and flying mile record runs were made after the engine completed its 52-hour marathon. At consistent 120 mph speeds, the turbodiesel consumed 13 liters per 100 kilometers, or about 18 mpg. It was an impressive performance that netted the publicity for which Opel had hoped.

The 2.1-liter diesel would be introduced, minus its turbocharger, in the Opel Rekord D sedan. Other variants of the engine would power Opel's Omega and even its luxury-class Senator. But a Diesel GT would never see production.

"At that time, there was no market for a turbodiesel," Ernst-Peter Berresheim contends. "The diesel just wasn't regarded as sporty enough for the GT."

That is not the case in the new millennium. Opel proved the point by resetting the diesel passenger-car speed record with the 1.3-liter CDTI-powered Eco-Speedster which hit 256.3 km/h (159.2 mph) over a kilometer. Opel's 2005 Astra GTC already features a high-performance turbodiesel. Do the company's future plans include a real diesel sports car? Ask GM Europe spokesman, Steve Janisse, and you get a suggestive answer.

"We have some very good diesel engines, and there is so much technology to come. In the future, sports cars, all cars could have diesels."

Why not pair a sports car with a diesel engine? The question which Opel answered three decades ago is finally being asked.

WELT- und INTERNATIONALE REKORDE für AUTOMOBILE

BESTEHENDE REKORDE — Stand: Mai 1972

VON OPEL NEU AUFGESTELLTE REKORDE (vorbehaltlich der Anerkennung durch die F.I.A.)

Anerkannte Zeiten und Strecken	Start	Datum	Ort	Fahrer	Marke	Erreichte Zeit bzw. Distanz	Durchschnittsgeschwindigkeit km/h	Durchschnittsgeschwindigkeit mph	Anerkannte Zeiten und Strecken	Datum	Ort	Fahrer	Marke	Erreichte Zeit bzw. Distanz	Durchschnittsgeschwindigkeit km/h	Durchschnittsgeschwindigkeit mph
WELTREKORDE für AUTOMOBILE (aller Kategorien)																
Streckenrekorde	Stehend								Streckenrekorde							
10 km		11.5.70	Monza	Sauro Stella	Stella	3'41"	162,895	101,209	10 km	1.6.72	Dudenhofen	S	Opel	3'22.909"	177.42	110.232
10 Meilen		11.5.70	"	"	"	5'41,9"	169,447	105,28	10 Meilen	1.6.72	"	S	"	5'14.101"	184.45	114.612
INTERN. REKORDE, KATEGORIE A-SPEZIAL-WAGEN, GRUPPE III - AUTOMOBILE mit DIESELMOTOR mit/ohne AUFLADUNG, KLASSE 8, 2000-3000 ccm																
Streckenrekorde	fliegend								Streckenrekorde							
1 km		3.10.70	Elvington-Airfield	Miss P.M.Burt	Daiml.Benz	21"615	166,55	103,49	1 km	3.6.72	Dudenhofen	B	Opel	18.228"	197.49	122.719
1 Meile		3.10.70	"	"	"	36"095	160,52	99,74	1 Meile	1.6.72	"	S	"	29.589"	195.80	121.666
Beschleunigungsrekorde	stehend								Beschleunigungsrekorde							
1/4 Meile		3.10.70	Elvington-Airfield	Miss P.M.Burt	Daiml.Benz	18"365	78,85	49,00	1/4 Meile		Dudenhofen		Opel			
0,5 km		3.10.70	"	"	"	21"095	85,32	53,02	0,5 km		"		"			
1 km		27.11.61	Hockenheim	"Rosenheimer"	"	36"51	98,6	61,3	1 km	3.6.72	"	B	"	31.713"	113.52	70.536
Streckenrekorde	stehend								Streckenrekorde							
100 km		4.-5.6.65	Montlhéry	Besnadiere, de Lageneste, Tchekemian	Peugeot	36'54"18	162,59	101,03	100 km	1.6.72	Dudenhofen	S	Opel	30'44.515"	195.17	121.275
500 km		"	"		"	3h04'29"06	162,69	101,08	500 km	1.6.72	"	S	"	2h33'05.877"	195.95	121.757
1000 km		"	"	"	"	6h11'24"72	161,55	100,38	1000 km	1.6.72	"	S/G	"	5h07'53.330"	194.87	121.089
5000 km		"	"	"	"	31h10'17"50	160,40	99,67	5000 km	2.6.72	"	S/G/Ö/B/F/P	"	25h57'39.956"	192.59	119.670
10.000 km		4.-11.4.72	Monza		Ford-Trans.		118,334		10.000 km	3.6.72	"		"	52h23'13.810"	190.88	118.607
100 Meilen		4.-5.6.65	Montlhéry	Besnadiere, de Lageneste, Tchekemian	Peugeot	59'23"95	162,56	101,01	100 Meilen	1.6.72	"	S	"	52'10.122"	195.24	121.317
500 Meilen		"	"		"	4h59'30"61	161,20	100,16	500 Meilen	1.6.72	"	S/G	"	4h07'49.128"	194.82	121.055
1000 Meilen		"	"	"	"	9h59'45"73	161,00	100,04	1000 Meilen	1.6.72	"	S/G/Ö	"	8h19'47.271"	193.20	120.049
5000 Meilen		11.-14.6.65	"	"	"	49h51'30"52	161,39	100,28	5000 Meilen	3.6.72	"	S/G/Ö/B/F/P	"	42h03'55.391"	191.29	118.862
Zeitrekorde	stehend								Zeitrekorde							
1 Stunde		4.-5.6.65	Montlhéry	Besnadiere, de Lageneste, Tchekemian	Peugeot	162 km 563	162,56	101,01	1 Stunde	1.6.72	Dudenhofen	S	Opel	195,972 km	195.97	121.811
6 Stunden		"	"		"	969 km 032	161,51	100,35	6 Stunden	1.6.72	"	S/G	"	1 164,547 km	194.09	120.602
12 Stunden		"	"	"	"	1936 km 604	161,38	100,28	12 Stunden	1.6.72	"	S/G/Ö/B	"	2 303,245 km	191.94	119.246
24 Stunden		"	"	"	"	3928 km 177	161,50	100,41	24 Stunden	2.6.72	"	S/G/Ö/B/F/P	"	4 625,224 km	192.72	119.784

Zusammenstellung: OPEL-Sportbetreuung
Alle Angaben nach bestem Wissen aufgrund der F.I.A.-Unterlagen

Fahrer: S = J. Springer, G = H. Greder, Ö = S. Österberg, B = M.C. Beaumont, F = P. Frére, P = G. Piantz

The Opel broke 20 national and international diesel and gas-powered records. The flying kilometer record (197.5 km/h or 122.7 mph) was set after the 52-hour marathon