



Unique vehicle concept characterized by its dynamism, elegance and versatility

Innovative Business Class: New Opel Signum

- Elegant top version of the new Vectra range offers first class comfort
- Longer wheelbase makes for a spacious interior and exceptional flexibility
- Three new powerful ECOTEC engines for superior driving dynamics
- Adaptive headlamp system sees around corners for even more safety

Rüsselsheim. Opel is breaking new ground as it continues to extend its new Vectra model series with the new Signum model line. With its unique, stretched body design, highly flexible rear seating arrangement, exceptional equipment package and pioneering new technologies, the Opel Signum breaks through conventional segment barriers and opens an entirely new market. This innovative newcomer, to be built in Rüsselsheim – the world's most modern automobile plant – will celebrate its debut at the Geneva Motor Show in March 2003 and come onto the market shortly thereafter.

The Opel Signum is a combination of stylish appearance, excellent driving dynamics and individual passenger comfort, coupled with unique interior flexibility. The proportions are also unusual: although the overall length of 4636 millimeters is only 40 millimeters longer than the Vectra sedan, the 2830 millimeter wheelbase is a full 130 millimeters longer. The rear overhang is correspondingly short and the height only slightly greater. The new Opel Signum signals its unmistakable character through a specially designed front. This unique character is seen more fully when viewed from the side, taking in the characteristic window graphic, the wraparound, dome-shaped rear window and the broad C-pillar.

The new Signum's long wheelbase provides for abundant space and comfort, similar to that found in a luxury car, for both the driver and the rear passengers. Another Signum highlight is its ingenious flexible rear seating system which accommodates up to three passengers.



Three new ECOTEC engines are among the many new innovations that will be making their debut with the Signum. The engine options include Opel's first 2.2 liter, 114 kW (155 hp) direct injection gasoline engine, a completely new two liter, 129 kW (175 hp) turbo-motor and a three-liter V6 common-rail-diesel that develops 130 kW (177 hp). Together with the Interactive Driving System (IDS), they guarantee a superb driving experience. Other pioneering features include Adaptive Forward Lighting with bi-xenon headlamps and an orthopedic air-conditioned driving seat that can be adjusted in eight different ways. These high-tech, innovative features – which contribute to optimal vehicle control and accommodate a concentrated, alert driving style – are usually found only in luxury cars.

Carl-Peter Forster, Opel's Chairman and Managing Director, expects a lot from the new model. "The Signum is the Business Class Opel – a unique car, tailor-made for demanding drivers who expect a lot in terms of dynamics, design, quality and presence, and who want to express their individual personalities and lifestyles. We're convinced that the new Signum will appeal to those who currently drive other makes of cars and so far would not have considered buying an Opel," he said.

The Design: dynamic new family member with its own personality

The Signum, which exhibits its unmistakable character from every angle, is already catching a lot of attention. "Its distinctive design generates an air of elegance, solidity and dynamism. It is the uncommon and innovative Vectra family project. Its dimensions are entirely different from the sedan or GTS," said Opel's Executive Design Director Martin Smith. One can see why at first glance: it has a longer wheelbase and shorter rear overhang, a unique stretched profile with wide C-pillars and dome-shaped rear window.

Viewed from the front, the vertical clear glass headlamps and distinctive shape of the grill's establish the fact that the Signum is unmistakably an Opel. The new model also sets itself apart from other cars in its class with features like a trapezoidal shaped lower air intake and its bold, body coloured grill bar. Round front fog lamps are elegantly integrated into chrome inserts, and the "gill slits" on the bumper sides underscore the Signum's dynamic character.



The key feature line swings up from the front bumper, around the wheel arch, and into the door, defining a strong shoulder. The shoulder line wraps around the rear corner in the tail lamps and defines the lower edge of Signum's unique rear window. Blacking out the lower band including front spoiler, rocker panels and the rear bumper lip further emphasizes the cars length. The elegant contour of the roofline is accented by an optional new, low profile roof rail made from hydro formed stainless steel.

The Signum's overall solid impression is supported by robust C-pillars positioned directly above the rear wheels combined with the side window graphic, which perfectly integrates the rear door opening. The "grab style" door handles, accentuated wheel arches and large wheels – available from the factory in 16 and 17-inch sizes – also emphasize the forceful design. "The Signum projects an air of pride and confidence in its stance, but without arrogance," Signum Chief Designer Michael Pickstone said.

The cars rear view is especially clear and pure. The crystal-like, two-color rear lamps and the smart rounded edge rear window stress this technical impression. The result is a rear section that looks somewhat like a dome and indicates the Signum's unusual space concept.

In addition, numerous subtleties show just how much a strong design can profit from clever detailing. The rear bumper step continues into the flanks and is only noticeable as an "optical break line", Pickstone noted. The C-pillar ends are offset from the edge of the rear window a couple millimeters, a feature which improves the air flow profile and helps achieve a drag co-efficiency of 0.33.

Working with their colleagues from engineering, the design team has created a revolutionary interior architecture to match the innovative exterior. They were able to develop an ambience of subtle elegance, accentuated by special seat upholstery, especially for the Signum, eloquent decorative trim and chrome-ringed instrumentation. One of the essential characteristics of the new Signum is its innovative "FlexSpace" concept with variable rear seating system.



The seats: first class comfort in front and back

One of the Opel Signum's special features is its innovative rear seating system. Thanks to a longer wheelbase, the rear seats provide a degree of space and comfort similar to that found in the luxury class. For maximum legroom (up to 985 millimeters), or more storage space, passengers can slide back each of the rear seats individually by as much as 130 millimeters. The seat backs can also be tilted to 30 degree angles. Fully reclined, they are transformed into a spacious and comfortable seating arrangement similar to that found in a commercial aircraft's business class.

And the rear seats can do more. Opel engineers have made the seat's middle section variable so that it can be turned to form a storage console and the backrest can be folded down to form an armrest. The three rear seats can also be folded forward to create a completely flat loading area. In this configuration, the trunk space amounts to about 1400 liters. Otherwise, depending on the positioning of the rear seats, up to 550 liters of storage space are available.

Rear passengers are not the only ones who travel first class. The front seats are based on those used in the new Vectra, which were developed at a total cost of some 75 million Euro. The seats, available as an option, are orthopedic and come recommended by members of the medical profession. The multi-contoured, climate-controlled driver seat will be available as an option exclusively with the Signum. Just as with the Vectra system, the Signum seats have a memory function and can be adjusted in eight different ways. They also offer the following additional functions:

- manually adjustable seat length adjustment
- multiply adjustable pneumatic lower back support
- individually adjustable seat warmers and ventilation.

"One of our main goals was to create a spacious, elegant atmosphere within the Signum's entire passenger compartment. And as a result of our efforts, customers have spontaneously responded with comments like 'this is no mid-sized car' during market research tests. The customers are right. The Signum represents an entirely new vehicle concept that combines elegance and dynamism with exceptional comfort and a revolutionary interior versatility," said Hans H. Demant, Executive Director, Engineering, of Opel's International Technical Development Center.



World First: multi-functional “Travel Assistant”

Those who wish to work – or relax – in the rear of the vehicle, or enjoy a snack or drink, will welcome the “Travel Assistant”. This inventive console, mounted between the two outer rear seats, conceals two “business class” tables, a cold-store box, a refuse container, cup-holders, a 12 volt electric power outlet, a holder for a DVD player and separate rear-seat controls for the audio system. Rear seat passengers can select programs and adjust volume separately using an integrated control module. Optional headsets are also available, thus allowing rear passengers to enjoy a CD while the radio is playing in front, or vice versa. All these intelligent solutions are similar to the ones found in modern aircraft – like the idea of stowing small items in overhead lockers. The Signum offers even more storage room with a roof-mounted console containing five additional compartments.

Communications: a wide variety of audio and infosystems

In addition to the state-of-the-art audio system for the rear, the Signum also contains a very modern and comprehensive package of infotainment and communications systems adapted from the Vectra. It includes a sophisticated audio system with CD player, equipment clusters, GSM telephone and/or the latest versions of GPS navigation systems and the Telematic OnStar Service. Each of the units is matched to the premium quality dashboard design.

Large controls with simple layouts also make for easy, safe handling. For example, the large, five-inch screen which the driver can use to call up radio program information, navigation or climate control systems, are located in clear sight on the instrument panel. Radio remote controls on the steering wheel provide another degree of ease and safety. Components like the equipment in double DIN format, like the four-way CD changer or slot for a telephone SIM card, are right on the dashboard rather than taking up storage space in the glove box or trunk and they are always within easy reach. Additional loudspeakers are located on the upper portion of the instrument panel to guarantee excellent spatial acoustics.



The equipment: safety and comfort come first

The standard decor for all Signum models is substantial. The standard package includes air conditioning, central locking with remote control for the doors and trunk, a height-adjustable driver seat, electronic windows for both the front and rear, adjustable steering wheel and heated, electronically controlled outside mirrors. As an option, customers can also choose a "Sport" package with 17-inch alloy wheels and special instrumentation or a "Premium" package which includes 17-inch wheels, leather furnishings and the electric eight-way driver's comfort seat with memory function. In addition, Signum customers can upgrade their cars with an extensive array of optional equipment including leather furnishings, climate control, remote controlled independent heating, on-board computer with Check-Control, Park Pilot, cruise control, automatic day/night interior and exterior (driver's side) mirrors and tire pressure controls. The extremely rigid passenger compartment is complemented by factory-installed safety equipment to include:

- full size front and side airbags for front-seat passengers
- full size head front and rear head airbags
- three-point automotive safety belts for all five seats and belt tighteners for the four passenger seats,
- Second-generation active headrests for the two front seats, height-adjustable headrests on all seats and
- Opel's patented Pedal-Release-System.

Premiere: Adaptive Forward Lighting looks around corners

A bi-xenon headlamp system is yet another feature designed to further improve on vehicle control and active safety that will be available as an option on the new Signum from autumn 2003. This system is a decade-long dream come true for countless drivers who have wanted practical and reliable A d a p t i v e F o r w a r d L i g h t i n g, AFL front headlamps which automatically adjust to the vehicle's directional changes. The headlamp system also provides the following functions:

- Curve light: The headlamp beams illuminate curves at an angle of up to +/-15 degrees according to speed and steering angle.
- Cornering light: Intersections are broadly illuminated by means of an additional reflector depending on vehicle speed, turn signal and steering wheel position.
- High beams: Bi-xenon headlamps provide extremely strong lighting power.



- Parking light: The wide-angle function is also activated when the reverse gear is engaged.
- Highway light: At higher speeds and during extended periods of straight-line driving, headlamp low beams are automatically adjusted somewhat higher to improve long-range visibility.

Engine power: three all-new innovative aluminium motors

Three new state-of-the-art engines are also making their debut in the Signum: two four-cylinder machines – the 2.2 ECOTEC-Direct, the first direct-injection gasoline engine from Opel, and the 2.0 liter ECOTEC Turbo, which is based on the new generation of alloy motors introduced two years ago. The 3.0 V6 CDTI is the company's first common-rail, six-cylinder diesel. These engines will in future also be available in other Vectra models. Common characteristics of the three new four-valve engines – although arrived at in different ways – are their cylinder blocks and aluminium heads, their ultra-modern carburation technology and abundant power at low rpm.

The new 2.2 Direct features gasoline direct injection and a variable intake system, which controls the two intake ports in accordance with the load. This results in an intensive swirl of the fuel in the combustion chamber and very high efficiency. When operating at partial load, fuel consumption is low thanks to high levels of exhaust recirculation. Positive effects are also gained by the higher compression ratio (12:1) compared to the conventional 2.2 ECOTEC engine. The cooling of the fuel-air mixture through the internal injection enhances efficiency further. The 114 kW (155 hp) engine requires about six percent less fuel than a comparable manifold injection unit while producing 10 percent more torque at lower rpm and six percent more power.

The new 2.0 Turbo ECOTEC motor is even more dynamic due to the turbine which injects the induction air into the combustion chamber. It produces an impressive maximum torque of 260 Newton meters within a range of 2500 – 4000 min⁻¹ and runs especially smoothly thanks to the fact that two balancing shafts must not be hidden behind a six cylinder. The 2.0-liter turbo motor is regulated by the exclusive Trionic 8 Motor-Management-System and it delivers 129 kW (175 hp).



The 130 kW (177 hp), 3.0 V6 CDTI ECOTEC is the top-of-the-line diesel engine that will make its debut with the Signum. This common-rail direct injection six-cylinder engine produces 370 Newton meters to the crankshaft at 2.000 min⁻¹. The turbo charger's variable turbine geometry also contributes to the smooth operation of the compact 66 degree V6. Modest fuel consumption, together with the exceptional propulsion power are two of the outstanding characteristics of this high-tech engine.

The other engines available with the Vectra and the Vectra GTS are also being offered with the new Signum. (see table on page nine).

The transmission: two manual and one adaptive five-gear automatic

A newly developed six-gear manual transmission, called F40-6 for short, is being offered for the first time in combination with the 2.0 Turbo ECOTEC and the 3.0 V6 CDTI ECOTEC. The new transmission, produced at new facility in Rüsselsheim, Germany, weighs only 50 kilograms (dry), thanks to a twin-section aluminum housing. The triple-shaft construction can transfer up to 400 Newton meters and it is especially flexible due to the fact that it can be manufactured with a variety of gear ratios to accommodate a broad range of engine applications. Due to its complex synchronization, this transmission is also easy to shift.

The Opel Signum can also be ordered with a five-speed manual transmission and with the new adaptive five-speed automatic. This gearbox allows for easy shifting and it is available with a variety of engines. It also features the ActiveSelect function, which enables the driver to shift manually when the shift lever is positioned in a second shift gutter. It can also be switched to the fully automatic mode in heavy city traffic. This especially light and compact five-speed automatic gearbox functions adaptively, adjusting itself automatically to driving style and road conditions. In addition, the driver can activate a winter program at the push of a button.



All engine-transmission combinations at a glance:

ECOTEC Engine	Transmission	Performance (kW/hp)	Maximum Torque (Nm)
1.8	Five-gear manual	90/122	167 @ 3.800 min ⁻¹
2.0 Turbo	Six-gear manual	129/175	265 @ 2.500 min ⁻¹
2.2 Direct	Five-gear manual	114/155	218 @ 4000 min ⁻¹
3.2 V6*	Five-gear manual	155/211	300 bei 4.000 min ⁻¹
2.0 DTI	Five-gear manual	74/100	230 bei 1.500 min ⁻¹
2.2 DTI*	Five-gear manual	92/125	280 bei 1.500 min ⁻¹
3.0 V6 CDTI*	Five-gear manual	130/177	370 bei 2.000 min ⁻¹

* also available with adaptive five-gear automatic transmission with “ActiveSelect”

Chassis: IDS system guarantees maximum vehicle control

Right from the start the automotive press agreed that the Vectra’s Interactive Driving System (IDS) represented a major step forward for Opel. IDS coordinates the advanced control and safety functions of the individual chassis components and in so doing sets new standards for dynamism, comfort and safety.

Along with its longer wheelbase, the new Signum also features, as standard equipment, a McPherson strut front suspension, a hydroformed suspension sub-frame and a four-link rear axle – both with aluminum components – the electronically-controlled Anti-Blocking System (ABS) with Cornering Brake Control (CBC), a braking assistant, EBD (Electronic Brake Force Distribution) and TC^{Plus} traction control with engine and brake engagement. Another special highlight, the latest generation ESP^{Plus}, provides an even greater degree of driving stability. In contrast to conventional electronic stability programs which prevent



severe understeer by braking the rear wheel on the inside of the corner only, the standard equipment ESP^{Plus} enhances stability by applying the brakes at up to three wheels.

An optional tire pressure control system, which constantly monitors tire pressure with the help of a pressure sensor located on the inside of the filler valve, provides for an even greater degree of security.

Economical: high quality and low maintenance costs

Even with all its innovative, high-quality features, low maintenance costs were near the top of the list of desired specifications when it came to designing the Signum. Future owners can count on low operating costs and high resale value thanks to a repair-friendly construction, extensive chassis anti-corrosion treatment (12-year guarantee against rust penetration), long service intervals with an interval indicator which is regulated by driving habits (maximum two years/gasoline: 30,000 km, diesel: 50,000 km), intensive worldwide product testing and strict quality control.

High quality is also assured by virtue of the fact that, starting in January, the Signum will be built at the world's most modern automobile facility at Rüsselsheim right along with the Vectra sedan. "The first months of Vectra production have shown us that we have achieved the highest quality model production startup in Opel history," said Ditmar W. Porth, Executive Director, Manufacturing, Adam Opel AG.

Opel's Chairman and Managing Director Carl-Peter Forster sees this third member of the Vectra family as having an important strategic role to perform: "The Signum is a fine example of the pioneering merits that future Opel products will possess, including dynamic design and a new, versatile interior space utilization concept. In future, up to 40 percent of our models will, like these, be based on innovative vehicle concepts that break down classic barriers between segments or define entirely new ones. With the Signum, as the name implies, Opel is setting a new signal in the automobile world."