



Press Information

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The new Mercedes-Benz A-class

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The new Mercedes-Benz A-class

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The future starts here

- Milestone in the Daimler-Benz car tradition
- More than 20 innovative technical features in this market segment
- City car, family car, estate and small van all in one
- The same high standard of occupant protection as the E-class
- Innovative seating concept with 72 possible variations
- Fuel consumption between 4.7 and 6.9 litres per 100 kilometres

Brussels. The A-class is on the starting grid. In October 1997 the A-class will be appearing at Mercedes-Benz branches and dealers.

Despite being only 3.57 metres short and about 1000 kg light, the A-class offers all the typical qualities people have come to expect of a Mercedes, in particular exemplary safety, high reliability and quality, reference-standard comfort and perfect driving pleasure. The A-class incorporates as standard more than 20 technical innovations previously unheard of in this market segment. They make driving even more comfortable, more economical, more environmentally acceptable and above all safer. With the development of the A-class the sub-compact car is entering a new era.

"The new A-class is more than just an important part of the successful drive by Mercedes to renew its product range. It is a milestone in the history of our com-



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pany and a trend-setter for the future of car development," declares Jürgen Hubbert, member of the Board of Management of Daimler-Benz AG with responsibility for the Passenger Car Division, emphasising the considerable importance of this new model range for the Stuttgart-based car manufacturer. The A-class is manufactured at the Mercedes plant in Rastatt (Germany). This plant will employ about 3,900 people once it reaches its full production capacity of 200,000 vehicles per year.

The A-class is about 50 centimetres shorter than a conventional sub-compact car, but despite this small exterior it combines the positive features of four different types of car: it has the agility of a city car, the spaciousness of a family car, the comfort of a mid-sized saloon and the practicality of a small van. The A-class creates a new market segment of its own, emphasising its role as a trend-setter among cars.

Future-oriented design and wide range of colours for the interior

The avant-garde body design underlines the unique character of the entire vehicle concept and gives the A-class an appealing, youthful appearance. This character is also highlighted by the bright and friendly interior design, which offers four special-effect equipment colours. All in all, a total of 23 different colour combinations are available for the interior of the A-class.

The standard equipment of the four-door A-class includes innovative safety features such as airbags for the driver and front passenger, side airbags in the front doors, belt tensioners on the front and rear seats and belt force limiters on the front seats. Other technical highlights included as standard are the automatic



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child seat recognition feature, the electronic driver authorisation system ELCODE (Electronic Code System) and the "ASSYST" Active Service System which makes it possible to reduce annual maintenance costs by around 30 percent.

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As for the C and E-class and the new CLK coupé, Daimler-Benz has developed special design and equipment lines for the A-class, meeting the customers' wishes for greater individuality. The lines are called Classic, Elegance and Avantgarde.

New safety standards for the 3.60 metre class

The occupants of the A-class are given optimal protection in a frontal accident, because the engine and drive assembly can be shunted back underneath the body. This ingenious layout means that the new Mercedes model, with a length of only 3.57 metres, achieves the high safety standard of the E-class; also, in the combined sum of all crash criteria, it is the safest car of the 3.60 metre class. Even in the event of a side impact the "sandwich" concept of the double-layer floor provides clear advantages, because the occupants sit about 20 centimetres higher than in other cars, with the result that the impact occurs below the occupant cell. Side airbags are also optionally available for the front doors. The A-class not only satisfies the future EU crash guideline for a frontal impact but also complies with the strict safety standards laid down in the USA and the European Union for side-impact collisions.



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The comfort of a mid-sized saloon, the load space of an estate

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The sandwich floor concept also makes the A-class an extremely roomy and versatile car. With an interior length of 1.83 metres, the new Mercedes model has the interior spaciousness of the C-class, which has a 90 centimetre longer body. This large interior is also variable to adapt to different uses. With its innovative rear bench system and lift-out front passenger seat, the A-class can be rapidly transformed from five-seater to three, two or even single-seater. In total, the new Mercedes model offers 72 different seat variations, making it as flexible as an MPV.

In its cargo space, the A-class achieves the dimensions of large estates. Even when already carrying four people, the A-class can fit up to six suitcases and a suit carrier in the boot. In other words, depending on the position of the rear bench, the A-class has a cargo capacity of between 390 and a maximum of 1340 litres (VDA measuring method, with TIREFIT). If the front passenger seat is also taken out, the cargo space expands to a hefty 1740 litres.

Newly developed four-cylinder engines delivering 44 kW/60 to 102 hp

Mercedes-Benz has developed four new four-cylinder engines for the A-class, with a power spectrum ranging from 44 kW/60 hp to 75 kW/102 hp. At launch, the A-class will be available with a choice of two petrol engines, of 1.4 litre and 1.6 litre capacity. In 1998, two 1.7 litre turbodiesels will be added to the range. These diesel engines will feature direct injection using the common rail principle and will have four valves per cylinder, charge air cooling and electronic engine management. With a fuel consumption of 4.7 to 6.9 litres per 100 kilometres (total fuel



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consumption measured in accordance with the new European driving cycle), the A-class models are among the most economical cars in the world. The engines also present excellent environmental credentials, with low exhaust emissions up to 40% below the applicable EU limits ("Euro 2"). Due to the car's low pollutant emissions, A-class buyers in Germany will benefit from the tax concessions granted under the German Motor Vehicle Tax Amendment Law that will come into force on 1 July 1997.

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In a word

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"The A-class is an important milestone in the product drive of Mercedes-Benz. With its unique concept, the A-class creates a new segment of its own. It sets traditional Mercedes standards while pointing the way forward in design and innovative technology. The A-class is high-tech at its most refined. At the same time, the A-class is also a symbol for the dynamic development of the Mercedes-Benz company and serves as a driving force for growth and employment in Germany. In Germany alone, the A-class has created or secured about 5500 jobs. Furthermore, it is also a milestone in our globalisation strategy. Do those two aspects appear self-contradictory? Only at first sight, because, for example, by producing the A-class in Brazil, we open up new markets and win over new customers to the Mercedes marque. This gain establishes the Car Division on a broader international basis, thereby securing its long-term future. With the expanded product range we are better prepared for the coming challenges in the automotive industry."

Jürgen Hubbert, member of the Board of Management of Daimler-Benz AG, Passenger Car business unit.

"The future. What fascinates us more than to look into the future? In Geneva, a key part of the future is right here in front of your eyes - the A-class. With this Mercedes model, a new and revolutionary car concept has entered large-scale production, breaking new ground for compact car development. With a length of only 3.57 metres, the A-class provides all the quality features you have come to expect of a Mercedes - safety, comfort, reliability and environmental compatibility - whilst at the same time offering an interior with dimensions and variability that set new standards. The A-class makes the marque accessible to new customer groups and gives the three-pointed star a new air of youth and freshness."

Dr. Dieter Zetsche, Member of the Board of Management of Daimler-Benz AG, Sales Division.



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"With the A-class, in an exterior length of only 3.57 metres, technical innovations are packed with a density almost totally unprecedented in the history of automobile construction. The safety concept is unique, with ABS, twin front airbags, side airbags, seat belt tensioners, belt force limiters and the sandwich floor concept, including the engine that slides obliquely underneath the occupant cell in the event of a frontal collision. This concept is completed by optional extras such as ASR or even ESP. The versatility and flexibility of the interior, with the asymmetrically split, folding and removable rear bench and a cargo space of 350 to 1700 litres, are almost unbeatable. We also have much new to offer in the engines, with two petrol units delivering 82 or 102 hp and two direct injection turbodiesels that use common-rail technology and make the new Mercedes model one of the most economical cars in the world. The interpretation and contours of the one-box concept produce a striking and unique design line that adopts the traditional elements of the Mercedes family and takes them further."

Helmut Petri, Daimler-Benz AG, Passenger Car Business Unit, member of the Business Unit Board, responsible for Development.

"For production at our Rastatt plant, we set productivity targets oriented to the world market and planned the factory from the outset with these targets in mind. Suppliers were also integrated in our planning processes from the very start, as has been the successful policy of our "tandem concept" for many years. For example, in combination with our partners, we have established an entirely new, innovative and integrated paint concept: the water-based base coat is topped by a clear coat finish made of a powder-slurry paint that is similarly environment-friendly. With the production of the A-class in Rastatt, we have gone one step further towards even closer partnership with our suppliers: we have integrated key suppliers in a business park directly in the grounds of our plant. At full capacity, just under 500 people will be employed by the suppliers in these modules."

Manfred Remmel, Daimler-Benz AG, Passenger Car Business Unit, member of the Business Unit Board, responsible for Production.



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Model concept and equipment

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The short and long of it

- **Innovative:** Mercedes standards packed into an exterior length of only 3.57 metres
- **Versatile:** the roomy comfort of a saloon, the variability of an estate
- **Environment-friendly:** exhaust emissions 40% below EU limits
- **Individualised:** three design/equipment lines each with a special flair
- **Complete:** standard equipment with typical Mercedes safety features

Breaking new ground. Rethinking. Transforming pioneering ideas into concepts for large-scale production. Resolving conflicting technical aims. Admittedly, the development of the new Mercedes-Benz A-class was no ordinary task. It was a major challenge - and also an opportunity. And for a while, it was one of the most interesting jobs to be had in the entire automotive industry.

The development process only lasted about two and a half years from design approval to production of the first customer car. Much was achieved during these 32 months, or 960 days filled with commitment, ambition and creativity. The end-result is convincing: the A-class is more than a new Mercedes model range. It is a milestone in the history of the oldest motor manufacturer in the world. And it is already a trend-setter for new car development.



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The big challenge and attraction of the A-class development project was to build a car with the dimensions of the sub-compact class whilst retaining typical Mercedes qualities. It was obvious from the start that these ambitious aims could not be met by a traditional vehicle concept. So, even in the initial concept phase, it was necessary to rethink and break new ground: with the A-class, for the first time, Daimler-Benz engineers did not plan and design a new model from front to rear but from bottom to top. In this way, an innovative construction principle was born, fundamentally distinguishing the new Mercedes model from all other cars - the sandwich floor concept.

The central element of this technology is a flat floor panel that stretches in a straight line from the pedals to the rear bumper, separating the interior from a major component compartment underneath. In other words, the front and rear axles, fuel tank, battery, fuse box and exhaust system are entirely located in the "basement" of the body, whilst the engine and gearbox are positioned in a space-saving inclined position partly in front of the raised floor panel and partly underneath it.

Passengers on top, the works underneath. Simply expressed, that is the pioneering concept that gives the Mercedes model range six essential product advantages. With an exterior length of only 3.57 metres, the A-class provides...

- **... the exemplary safety standard of a Mercedes:** as a result of this innovative configuration, in a front-end crash the engine is not shunted straight backwards in the direction of the interior but can slide downwards along the inclined pedal floor. This trick gives the A-class the customary high safety standard of all the other Mercedes cars.



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- **... above-average economy of space:** by positioning the engine and gear-box underneath the occupant cell, the front-end structure can be made extremely short, so that 70% of the exterior length can be used for passenger and boot space. This impressive ratio exceeds the values of other cars in the 3.60 to 4.00 metre class.
- **... the roomy comfort of a mid-sized saloon:** with an interior length of 1835 millimetres, measured from the driver's heel-point to the hip-point of the rear passenger behind the driver, the new A-class provides its occupants with the comfortable spaciousness of a mid-sized saloon. For comparison, the length of the C-class interior is 1839 millimetres.
- **.... 36 rear seat variations:** the rear seats are anchored to the floor panel by special mounts so that they can be easily taken out by hand or folded up into a space-saving "package" for transport. With the 1/3 to 2/3 split of the folding rear bench and the optional lift-out front passenger seat, the A-class can be transformed easily and manually from a five-seater to a four, three, two or even single-seater, entirely as required to suit the purpose in hand. For the rear bench alone, 36 different seat variations are possible. The A-class is as variable as an MPV.
- **... the boot space of an estate:** depending on the position of the rear seats, the boot of the A-class offers a capacity of 390 to 1040 litres, measured by the method recommended by the Association of the German Automotive Industry (VDA), with the car loaded level with the top edge of the



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rear seat backrests and the conventional spare wheel replaced by the TIREFIT tyre sealant. These boot capacity ratings are at the top of the 3.60 metre class. If the front passenger seat is also removed, the total effective cargo space increases to 1740 litres, corresponding to the boot space of a large estate.

- **... the benefits of all-round visibility:** due to the sandwich concept with the double-layer floor, the passengers in the A-class sit about 20 centimetres higher than the occupants of other cars. The driver benefits from this high seating position with an unrestricted all-round view. Moreover, the high seating position offers good protection in the event of a side-on collision and also makes climbing in and out of the car a lot more convenient.

Customer wishes satisfied: from "Study A" to the A-class

Summer 1993: Mercedes-Benz set its course for the future. The product drive was rolling on, with the presentation of the new C-class. The next bombshell was to follow a few months later at the International Motor Show (IAA) in Frankfurt: the Study A - the predecessor, concept-bearer and test object for the future A-class. From Frankfurt, this innovative concept car travelled round the world, delighting the public wherever it went. The question whether Mercedes should actually build it was answered with a resounding "Yes" by 90% of motor show visitors in Germany, because a Mercedes in this vehicle class, providing all the qualities habitually associated with the Mercedes name, would fulfil long-cherished customer dreams. In Japan, as many as 95% of respondents shared this view.

Customer opinion also remained constantly in the foreground during the concept phase of the A-class. Customer interviews at regular intervals provided further pointers and suggestions to be considered. For example, Mercedes took the wishes of young families into account by extending the body of the new model to 3.57 metres (compared to 3.35 metres for the Study A), primarily for the benefit of boot space. The result is that even when the rear seats are occupied a pram can be comfortably stored in the rear of the A-class.



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Synthesis: positive features of four types of car combined in one model

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The versatile qualities of the A-class show that this Mercedes model meets the mobility requirements of modern people - it is a city car, family car, estate and mini-van rolled into one. The new Mercedes model range unites the qualities of four different types of car and combines them with traditional Mercedes attributes such as safety, reliability, lasting value and quality. In other words, the A-class cannot be classified and described using traditional segment terminology. If "length" alone were to be taken as criterion, the pioneering concept of the A-class and its customer-oriented advantages would be passed over in silence: in the 3.60 metre category or "sub-compact" class, the reference standards for occupant safety, roominess and variability, to name but three examples, are much lower.

In other words, in the sum of its properties, the A-class creates a new market segment of its own, with considerable future potential. Even in this respect, the new Mercedes model range is therefore living up to its objective to stand as a trend-setter among cars.



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**Typical
product
properties of
four segments**

**The Mercedes A-class
offers additional features
in every segment**

Versatility: In the A-class, traditional Mercedes qualities are added to the properties associated with four different market segments	Sub-compact class	<ul style="list-style-type: none"> • Compact exterior dimensions • Low fuel consumption 	<ul style="list-style-type: none"> ➤ + better safety ➤ + increased variability ➤ + increased roominess
	Compact class	<ul style="list-style-type: none"> • Good performance • Low fuel consumption • Good value for money 	<ul style="list-style-type: none"> ➤ + better safety ➤ + more compact exterior ➤ + better variability
	Van class	<ul style="list-style-type: none"> • Good interior variability • High seating position 	<ul style="list-style-type: none"> ➤ + more compact exterior ➤ + better agility ➤ + lower fuel consumption
	Mid-sized class	<ul style="list-style-type: none"> • Large interior • High safety level • Good ride comfort 	<ul style="list-style-type: none"> ➤ + more compact exterior ➤ + better variability ➤ + lower price

Engines: exemplary fuel consumption and exhaust emissions

Typical Mercedes safety despite the compact exterior dimensions; highly comfortable roominess in a body only 3.57 metres long; estate-like cargo space and variability on a footprint of only 6.1 square metres - the list of conflicting aims that the project team of the A-class had to solve is certainly long. However, these conflicts are not confined to the apparent contradiction between compact dimensions and traditional Mercedes qualities but also extend to other important areas of car development. One example is the demand for both environmental compatibility and driving pleasure - even these two aims have been brought into harmony in the A-class. The newly developed four-



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cylinder engines are primarily responsible for this harmony, since they not only provide high torque, good elasticity in fourth or fifth gear and sovereign power development but also set new trends in the discipline of care for the environment:

- **Fuel consumption between 4.7 and 6.9 litres per 100 km:** the two petrol models, A 140 and A 160, which will be the first to be brought on the market, respectively consume an average of only 6.8 and 6.9 litres of premium petrol per 100 km when driven under mixed conditions in the "new European driving cycle" (NEDC). The two turbodiesel models that will follow the petrol models in 1998 are among the most economical cars in the world, with an NEDC consumption of 4.7 and 5.1 litres per 100 km respectively.
- **Exhaust emissions 40% below the EU 2 limits:** all the engines for the Mercedes A-class, both petrol and turbodiesel, undercut the applicable exhaust limits of the EU 2 Directive by up to 40% and have the technical potential to meet even stricter exhaust regulations planned for the future.



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Potential for the future - space for electric drive and fuel cell

In terms of drive systems too, the sandwich concept makes the Mercedes-Benz A-class a car for the future. The raised floor allows sufficient space to house the energy storage units of future alternative drive systems in protected positions away from the force of impact. This potential applies to both the traction battery of an electric drive system and the hydrogen tank of a fuel-cell car. Both systems are currently being put through their high-revving paces by the Mercedes-Benz Research Institute. With the sandwich concept, the battery or hydrogen tank is surrounded by a solid framework of side members and cross-members underneath the occupant cell, giving clear safety benefits. In conventional vehicle concepts, the rigid, non-deformable blocks formed by these energy storage devices would impair the protective function of the front or rear crumple zones.

Standard equipment: airbags, belt tensioners and child seat recognition

Mercedes-Benz has applied the principle of individuality even to its smallest model range. In addition to the four engines - yet another petrol engine with 1.9 litre capacity will follow later - a choice of three design/equipment lines is available for the A-class to cater for different customer requirements. All model variants share a copious range of standard equipment, which includes important safety details that were not previously available for the sub-compact car class, such as belt tensioners, belt force limiters and the automatic child seat recognition system. The ASSYST Active Service System is another technical innovation unique to Mercedes. The standard equipment catalogue includes, among other things:

- Airbags for driver and front passenger
- Anti-lock brakes
- ASSYST Active Service System
- Belt tensioners and belt force limiters for both front seats
- Belt tensioners for the two outside seats on the rear bench



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Standard
equipment:
More than
30 useful
comfort
and safety
features.

- Central door locking from inside while driving
- Central locking
- Child seat recognition for the front passenger seat
- Driver/access authorisation system ELCODE
- Electric window in the front doors
- Electrically adjustable and heated door mirrors
- First aid kit
- Front fog lamps
- Front passenger seat occupancy recognition
- Headlamp range adjustment
- Heating with dust/pollen filter and air recirculation setting
- Height-adjustable driver's seat
- Height-adjustable headrests for all five seats
- Lashing eyelets in the boot
- Manual five-speed gearbox
- Outside temperature display
- Passenger seat occupancy recognition
- Power steering
- Provision for the connection of radio and loudspeakers
- Radio aerial in the rear spoiler
- Rear bench 1/3 : 2/3 split, fully folding and removable, also with fore/aft and backrest adjustment
- Rear screen wiper
- Rev counter
- Side airbags in the front doors
- Tinted glass
- TIREFIT tyre sealant (in Germany)
- Warning triangle

Lines: individuality ex factory

Compared to the Classic model, the Elegance and Avantgarde lines additionally feature the following equipment items as standard:



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- The **Elegance** line of the Mercedes-Benz A-class is, among other things, equipped electric windows front and rear, light-alloy wheels, radio remote control for the central locking, a luggage compartment cover, leather-covered steering wheel and shift lever and a height-adjustable steering column. The bodywork of this version is upgraded by a radiator mask and exterior mirror housings painted in bodywork colour, chrome trim on the door handles, dichromatic rear light units and door sill panels with metal trim.
- The **Avantgarde's** standard specifications include, among other things, a luggage compartment cover, radio remote control for the central locking, a height-adjustable steering column, sports suspension and light-alloy wheels with wide tyres in size 195/50 R 16. The radiator mask is painted silver, the exterior mirror housings are painted in bodywork colour. Inside the car, dashboard trim in special-effect colours, gauges with light faces and seats with fabric/leather covers create a particularly dynamic appearance.



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Additional equipment* of the Elegance and Avantgarde lines

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Elegance	Avantgarde
<ul style="list-style-type: none"> • Stowage boxes under the driver's and front passenger's seats • Wide tyres in size 175/65 R 15 • Electric windows front and rear • Radio remote control for the central locking • Luggage compartment cover • Cast light-alloy wheels • Leather-covered steering wheel • Height-adjustable steering column • Ruffled pockets on front seat backs • Leather-covered shift lever 	<ul style="list-style-type: none"> • Wide tyres in size 195/50 R 16 • Windscreen with blue band filter • Radio remote control for the central locking • Luggage compartment cover • Gauges with light faces • Light-alloy wheels, five-spoke design • Leather-covered steering wheel • Height-adjustable steering column • Leather-covered shift lever • Sports suspension

Lines:
Elegance
and Avant-
garde
each with
a special
flair.

*excerpts

A 160 TURBODIESEL: fuel consumption of just 4.7 litres/100 km

The A 160 TURBODIESEL, whose most remarkable feature is a fuel consumption of just 4.7 litres per 100 km (NEDC total consumption), will be available with 155/70 R 15 tyres with a low rolling resistance. Special aerodynamic features bring the drag coefficient (Cd value) of this model down to 0.30 (A 170 TURBODIESEL: 0.32).



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Design

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The likeable type

- **Progressive: car design with a view to the future**
- **Youthful: dynamic looks with timeless charm**
- **Harmonious: typical Mercedes design in new proportions**

Despite its compact dimensions, the new A-class is impossible to overlook. Its original design irresistibly catches the eye. At the same time, its avant-garde exterior reflects the innovative technology of this new small Mercedes and fascinates the observer with several detailed solutions that set both functional and stylistic trends for the future. In other words, the originality of the design underlines the originality of the entire vehicle concept. The design of the A-class consciously flaunts its boldness to go down new paths, whilst remaining likeable from the very first glance.

The clear lines of the body, with its unusual ratio of vehicle length to height, not only serve a practical purpose but are at the same time innovative and expressive. The front and rear design reveals creative power, an abundance of ideas, youthful appeal and charm. In other words, the A-class is a car to fall in love with.



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The "A-class" design project sent the designers into new dimensions where many rules and empirical values of their trade suddenly lost their relevance. For example, the revolutionary concept forced designers to work with vehicle dimensions that ran against the general tide of contemporary design. "Short but high" was the shape dictated in particular by safety imperatives and by the innovative space concept. Despite these unusual proportions, the car was also expected to blend harmoniously into normal traffic and to look appealing and attractive. In short, the A-class had to have a progressive shape characterised by both practicality and fantasy in equal proportions, and even with this mixture it had to succeed in establishing a new vehicle class. Unconventional intellectual approaches and imagination were therefore required, but so were various typical Mercedes features - in particular timelessness. The Daimler-Benz aesthetic implies convincing the eye with unusual but harmonious solutions, without attempting to dazzle with short-term modish effects.

New car class - unexplored territory for the designers

Every entirely new car development is a major challenge, including for designers. But the A-class was much more: it was a journey into unknown territory. The unique vehicle concept forced the designers to adopt fundamentally new approaches. Nothing was declared right or wrong in advance. This creative freedom was almost a natural development, because even the normal segment definitions of the car sector were inadequate to categorise the A-class: the new model had to be much shorter than a conventional sub-compact car, whilst offering the generous space conditions of a mid-size saloon and providing outstanding comfort and typical Mercedes safety: it had to provide a synthesis of the positive points of several different classes.



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Proportions: strength and harmony

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The first impression of the A-class is without doubt marked by the unusual vehicle proportions. The small Mercedes is much higher and at the same time considerably shorter than other cars of this size class. The designers achieved this feat by systematically applying the one-box principle and therefore also rejecting a conventional engine bonnet or notchback boot. Nevertheless, the proportions of the A-class come across as very balanced. This effect is especially due to the long wheelbase and extremely short overhangs. These overhangs harmonise with the short bonnet and long windscreen, which rises at a sloping angle of about 60° toward the rear, as well as with the longitudinally convex roof that arches back to meet the rear hatch. This powerful contour gives the body a stretched appearance. More particularly, the striking geometry of the lines and surfaces gives the body an attractive and individual appearance from all angles.

Side view: tension and transparency

The side view is dominated by the lower window edge, which is set low at the front and rises progressively before reaching the rear-facing C-pillar configuration. It culminates in the rear edge of the integrated rear spoiler, which not only visually prolongs the rear end but also performs useful aerodynamic functions. The large windows create a pleasant sense of transparency, giving the A-class a generous character. The rear windows are particularly important in this respect. The fixed rear quarterlight of the C-pillar lets additional light into the interior. A second glass quarterlight in the C-pillar, creating a visual link with the rear screen, provides even greater transparency to this area. Strong



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visual signals are also given by the structuring of the sides to create a sense of suspense, so that even from the side the A-class has a lively appearance that would normally only be expected from the rear or front view.

To ensure comfortable access despite the seat height, the designers have given the A-class deep, all-covering doors that conceal the main sill area. The narrow black plastic trim strips over the side members which close the bottom of the side panels have been given a dual function by the stylists: they optimise aerodynamics through their precisely defined shape while also acting as stone guards. At the same time, their dynamic design gives the car an unmistakably sporty tone.

Front end: sporty character and charm

From the front, the little Mercedes provides a modern variant of the Mercedes "face", with a newly interpreted radiator. The three horizontal ridges traverse the mask, emphasising its width. At the top and bottom, they are each framed by a chrome sealing piece. The Mercedes star is vividly inset in the middle, identifying the A-class immediately as a Mercedes-Benz. In addition, the radiator mask gives a sporty character, which is further enhanced by the muscular wheel cut-outs and the air inlet integrated in the bumper.

Two teardrop-shaped headlights blend perfectly into the front design and provide a harmonious visual link between the wings, bonnet and front bumper. This effect is particularly enhanced by the refined lines that partly embed the headlights in each of these three components, so that from every viewing an-



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gle the headlight appears to be the natural and harmonious extension of its adjacent parts.

The bumpers are fully integrated in the visual effect of the body contour, eliminating the normal separation lines. This design detail, which was difficult to achieve because of the reduced tolerances allowed, helps to give stylistic unity to the flowing forms and provides the vehicle with soft, naturally rounded contours that enhance its engaging charm. Another typical Mercedes detail is the flowing joint between wing and A-pillar, giving a particular impression of unity and refinement combined with formal suspense.

Rear end: identity and aesthetics

The three-part "wrap-around" rear screen gives the rear view of the A-class an unmistakable character, emphasising the breadth and generosity of the car. The ample glazing of the rear hatch continues into the side panels and is also the starting point for the well-designed aesthetic flow of body joints. These joints integrate the rear hatch into their bold movement, while carefully and harmoniously framing the prominent and slightly ribbed rear light units within the distinctive Mercedes profile. Another highly distinctive feature of the rear end of the A-class is the rear spoiler, which is perfectly integrated into the hatch and extends the roof contour rearwards, emphasising the stylistic unity of the design - faultlessly executed yet resolutely simple.



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Interior

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New dimensions

- **Exemplary: trend-setter in space and comfort**
- **Colourful: individual interior design options**
- **Versatile: rear seat system with 36 possible variations**
- **Capacious: boot space variable from 390 to 1740 litres**
- **Innovative: wide-opening louvred sunroof**

The A-class reveals its true size on the inside. After climbing into the car, the driver and front passenger will soon forget that the A-class is only 3.57 metres long and therefore shorter than many sub-compact cars. Inside, there is no sense of being cramped and no sacrifice of freedom of movement. In other words, the A-class has the roomy comfort of a mid-sized saloon.

The fact that this impression is more than just a subjective illusion is proved by the figures and data of the dimensional concept. On the other hand, what good are measurements if the atmosphere of the interior is oppressive and literally does not "fit"?

In the Mercedes A-class, these two qualities are in harmony - the physical space available and the subjective impression of spaciousness. This achievement is partly due to the pioneering sandwich concept with the special positioning of the drive system and partly due to the styling and colour scheme of the interior. The wide glazed area of the "wrap-around" rear screen and the



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windows in the C-pillars bring light into the interior and provide not only good all-round visibility and a comprehensive overview but also ensure a bright, friendly atmosphere. This transparency and openness invite you in and make your stay in the A-class more agreeable.

Spaciousness: dimensions of a mid-sized saloon

We will start with the facts: despite the highly compact length of only 3.57 metres, the passengers of the A-class are not asked to make any compromises on comfort, freedom of movement and ergonomics. The sandwich principle - "engine, drive assemblies and running gear underneath - passengers on top" - allows for a dimensional design that corresponds in several respects to a mid-sized saloon. This claim is borne out by various measurements of key importance to the subjective impression of roominess. For example, the A-class provides...

- **... an interior length of 1835 millimetres:** although the body of the A-class is a good 90 centimetres shorter than, for example, a Mercedes C-class saloon, the interior length (measured from the driver's heel-point to the rear passenger's hip-point) is roughly the same for both cars. In the C-class, this value is 1839 millimetres. Few small car-based vans - and certainly no model of the sub-compact class - can match the generous interior length of the A-class.
- **... passenger distance of 775 millimetres:** the distance between the driver's hip-point and the rear passenger's hip-point is a measure of the freedom of movement of the occupants. With 775 millimetres, the A-class



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again attains the levels of mid-sized saloons (C-class: 785 millimetres) and clearly exceeds sub-compact cars with a body up to 500 millimetres longer.

- **... front headroom of 980 millimetres:** this measurement is also well above the equivalent values of many other cars in the 3.60 metre class and attains the levels of mid-sized saloons. In the C-class, the front passengers have a headroom of 987 millimetres.
- **... front legroom of 1060 millimetres:** the advantage of the sandwich concept is especially clear from this dimension. Since the drive assemblies and front suspension have vanished below the occupant cell, the driver and front passenger can make themselves comfortable. The front legroom of the A-class exceeds all rivals in the sub-compact and compact classes. Even the Mercedes C-class falls just short of this value, measuring in with a front legroom of 1054 millimetres.

Colour range: up to 23 individual combinations

A first impression of the interior styling of the new Mercedes comes while you are still a few metres away. The full-width velour trim on the inside of the doors visibly extends over the bottom edge of the side windows, thereby giving a visual foretaste of the youthful, unconventional atmosphere. This feature is particularly evident when a brightly coloured fabric - in green or red - or dyed leather is chosen for the interior equipment. The general rule is that the colour scheme makes the A-class experience even brighter.



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The designers have therefore complemented the basic colour, slate grey, by four highlight colours - slate grey, blue-violet, blue-green and brick red. These special colours appear as trim in the instrument panel, in the gear lever console, on the gear shift knob clasp, interior door cladding and interior door pull handles. These colours are also available for the fabric or leather seat covers of the A-class.

The choice of colour combinations is left to the car owner. Depending on the line, bodywork finish and fabric or leather equipment, he or she can choose between up to 23 different colour combinations for the interior and exterior:

- For the **Classic** line, two fabric seat covers - "Bruges" and "Ghent" - are available; the "Ghent" fabric can be combined with the four highlight colours. The coloured gear shift knob clasp and the steering wheel cover are made of plastic.
- For the **Elegance**, the designers have selected fabric seat covers in a pattern called "Brussels" which is available in the four interior appointment colours of the A-class. The steering wheel and shift lever are leather-covered.
- For the **Avantgarde**, Daimler-Benz offers "Rotterdam" fabric/leather seat covers in slate grey. This shade is also used for the dashboard trim, door openers and interior door cladding as well as for the leather gear shift knob clasp. The steering wheel is also leather-covered in this line. The cockpit panel and door handles are coated with a special-effect soft paint. The dynamic, progressive character of this version is underlined by light faces in the instrument cluster.



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Instrument panel: soft contours, natural shapes

The instrument panel also plays an important part in the open and friendly atmosphere of the interior, which spontaneously seems to invite you to climb in. At first sight, the instrument panel does not appear to have any direct connection to the front bulkhead of the vehicle and also has no visual connection with the doors. The effect is to make the instrument panel appear light and delicate. The designers compare the design of this component to the light and playful form of a wing - an impression that is particularly reinforced by a glance at the rounded cover over the instrument cluster or the curved shape of the air recirculation switch in the centre console. The oval ventilation nozzles in the instrument panel, emphasising the youthful character of this Mercedes model, are also key stylistic features of the A-class interior.

Cockpit: clear controls for the driver

The engineers also broke new ground in the design of the instrument cluster, where the maxim "as little as possible and as much as necessary" was applied. This principle is fully justified by the fact that the driver must not be distracted from his or her main task by a confusing array of displays and lights. Consequently, the engineers developed an instrument cluster with displays that only come into view when needed - but when they are needed they are easily recognisable and have clear symbols. For example, the pointers for the speedometer, rev counter and fuel tank contents are of transparent design and only visible after the ignition has been switched on. Only their coloured tips are displayed, leaving the view of the central multi-information display unobscured. The multi-information display contains, among other features, the data on total



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vehicle mileage, trip mileage, outside temperature, time of day, oil level and the notices of the ASSYST Active Service System.

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Variations: removable front passenger seat made of lightweight materials

The practicality of the seat system is something one could spend all night discussing. It starts at the front, on the driver's side. The driver's seat offers several adjustment facilities to allow both lady and gentleman drivers of different builds to find a comfortable position behind the steering wheel. As special option, Daimler-Benz supplies a front passenger seat that can be easily removed without a tool or massive muscular exertion. The secret is its intelligent lightweight design: the backrest is made of an aluminium tubular frame joined by die-cast magnesium components to the side seat fittings, whilst the shells of the squab and backrest are made of fibre-reinforced plastic. As a result, the sturdy front passenger seat only weighs 15 kilograms.



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Advantage of the sandwich concept - high seating position, comfortable access

The sandwich principle of the A-class offers even more than the advantages of safety and the efficient use of space. In the raised interior, the occupants of the A-class are seated about 20 centimetres higher than in a conventional car. Consequently, the driver always has a clear overview of the traffic situation and benefits from faultless all-round visibility over the car, especially when squeezing into parking spaces, changing lanes or carrying out other tricky manoeuvres.

Comfortable entry and exit are further benefits: the raised floor of the occupant cell lets people climb in and out comfortably, almost in an upright position. Passengers do not tumble deep down into their seats on climbing in but glide at almost constant height into the car. Only slight physical exertion is required to climb out. In addition, entry and exit is further enhanced by the flat floor panel without obstructive door sills, which are recessed inwards in the door zones.

Rear seats: a theme with 36 variations

The 1/3 to 2/3 split of the rear bench is the highlight of the A-class interior. Thanks to the versatility of this seat, the car can be transformed with a few manual sleights of hand from a family car with five seats to a leisure car with space for sports equipment or a small van with plenty of cargo space for bulk purchases. Both parts of the rear bench can be adjusted independently of the other and can be set to 36 different positions, entirely as required for the particular transport need in hand. For example, the rear seat system permits...

- **... infinitely variable fore/aft adjustment by a total of 111 millimetres:**
to increase the boot space, both parts of the rear bench can be pushed forward individually or together.



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- **... backrest adjustment in three stages:** the passengers on the rear bench of the A-class are also able to adjust the angle of their backrest. Three angles are possible: 24, 18 and 12 degrees.
- **... folding the backrests forwards:** left side only, right side only or both parts together - the quick and convenient backrest folding system takes much of the bother out of transporting cumbersome articles.
- **... folding both squabs and backrests forwards into the transport position:** if you do not want to remove the rear seats altogether but still need a large boot space, you can opt for the space-saving "package" position. With the headrests retracted, the seat parts fold together and can be stood almost upright behind the front seat backrests. The result is almost 150% more boot space.
- **... the complete removal of one or both rear seat sections:** the quick dismantling process consists of four phases: unlock the backrest and fold it forwards; release the rear of the squab and fold it into the package position; activate the release mechanism; remove the seat. The two parts of the rear seat system weigh just 17 kg (1/3 section) and 24 kg (2/3 section).

Boot: estate dimensions over an outside length of only 3.57 metres

When it comes to boot space, the smallest Mercedes is able to offer estate-like dimensions due to its versatility and intelligent body concept: depending on the position of the seats, the rear compartment offers a capacity of between 390



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and 1340 litres (VDA measuring method, with TIREFIT). If the front passenger seat is also lifted out of the car, the cargo space increases to 1740 litres. The flat floor panel, stretching from the rear bumper to the front passenger's footwell, in combination with the wide rear hatch and the low loading edge of only 585 millimetres all make for easy loading of the boot.

Fit for the holidays - four passengers and six suitcases

What a boot space specification in litres actually means in practice has been demonstrated by cargo loading tests conducted by Daimler-Benz engineers with suitcases: if four passengers are in the car, the 1/3 part of the rear bench can be removed to allow space in the boot for four large suitcases (WHD: 565 x 745 x 190 mm), two mid-sized suitcases (WHD: 550 x 655 x 190 mm) and a suit carrier (WHD: 550 x 570 x 165 mm). Alternatively, if only three seats are occupied (2/3 rear bench section removed), the A-class boot can hold five large suitcases, three mid-sized suitcases and one suit carrier.

Louvred sunroof: 60% larger opening area

Fresh air and a pleasant climate in the A-class are provided by a new development used for the first time in the A-class, namely an electrically operated sunroof made of five individual steel louvres each measuring 180 millimetres wide. When the sunroof is opened, four louvres retract on top of one another at the back of the roof, whilst the front louvre remains at the front to act as wind deflector. This system offers several advantages: since the louvres retract on the outside, there is no impingement of passenger headroom. Also, the louvred sunroof provides even greater "open-air" motoring pleasure because the roof opening is 60% larger than with a conventional sunroof.



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Above it all

- **Good in traffic: short dimensions, good visibility**
- **Lightweight: aluminium/steel front module, plastic wings**
- **Exemplary: occupant safety at the high level of the E-class**
- **Versatile: engine range with four newly developed power units**
- **Customer-friendly: service intervals of up to 40,000 kilometres**
- **Comfortable: manual gearbox with automatic clutch**

3575 - 1719 - 1598: these are the vital statistics that are currently setting new standards on the car market. They represent the body dimensions of the new Mercedes-Benz A-class: 3575 millimetres short, 1719 millimetres wide and 1598 millimetres high.

A detailed look at these dimensions reveals the unique feature of this innovative car, namely the sandwich concept which enables the engine, gearbox and suspension assemblies to be housed partly in front of the occupant cell and partly underneath it. This concept raises the occupants of the A-class up a level, so that they sit about 20 centimetres higher than in a normal car. As a result, the new Mercedes literally stands head and shoulders above the other cars on the street.



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With its ideal statistics of 3575 - 1719 - 1598, the footprint of the A-class, at just 6.15 square metres, is about a fifth smaller than that of a mid-sized saloon, yet the car nevertheless offers the safety, roominess and variability of a larger car. A glance underneath the body of the A-class reveals further advantages of the sandwich concept. For example, there is the innovative floor structure, which consists of a combination of straight side members and cross-members. These members are made of high-strength sheet steel welded to the floor structure in the form of a ladder, with the cross-members representing the rungs, and the side members, which stretch all the way from the front end to the rear, acting as the two stringers of the solid ladder frame. This load-bearing structure gives the occupant cell the requisite robustness in a frontal, rear-end or side-on crash and is therefore an essential component of the innovative safety concept of the A-class.

Front module: easy-to-repair aluminium construction

Another new development is the two-part front module at the front end of the "ladder". The lower part of this module consists of two lateral crash-boxes and a cross-member which supports the foamed body of the front bumper. The Daimler-Benz engineers opted for lightweight aluminium material for this crash-box structure, which is up to 40% lighter than a comparable structure made of steel. In addition to its excellent deformation characteristics in the frontal impact crash test, the aluminium module is mainly characterised by its easily repaired construction. The crash-boxes are joined to the side members by bolts, so that workshop mechanics can simply replace them after an accident. The same applies to the steel upper part of the front module, which holds the headlamps and radiator. This part too can be unscrewed without welding.



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Wings: large-scale production premiere for lightweight plastic

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The "repair crash" at 15 km/h, which simulates about 80% of all frontal crashes on our roads, leaves the front wings of the A-class totally undamaged. The reason rests in the material: for the first time in large-scale production, Mercedes uses plastic as the material for the wings, thereby saving customers money twice over. The first advantage is that in an accident, the wings of the A-class deform only slightly and then recover their original shape, making repairs or repainting unnecessary. The second advantage is that plastic wings are about 2 kg lighter than conventional steel components and therefore help save weight and fuel.

Intelligent lightweight design - shedding weight by the material mix

With the A-class, Mercedes-Benz has systematically pursued the concept of "intelligent lightweight design". The aim of this concept is to use a mix of different materials that yield an optimal result in terms of weight, costs and environmental compatibility. In the A-class, this "multi-material diet" is based essentially on three particularly lightweight materials: aluminium, magnesium and plastic. These materials represent about 26% of the overall weight of the vehicle and permit weight savings of more than 30% compared to a conventional steel construction. Magnesium is used, for example, in various brackets, struts, holders and parts of the cross-member underneath the instrument panel. Aluminium is used not only for the front module but also for the tubular frame structure of the seats.

Further lightweight design potential has been exploited by the engineers in Sindelfingen on the basis of their experience in the field of optimised steel body-in-white design. Here, specialists particularly refer to the stronger types of steel which can be used in reduced sheet thickness to provide the same strength as thicker conventional panels. About 45% of the panels in the body-in-white structure of the A-class are made of higher-strength steel.



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The rear hatch of the A-class is also made of plastic. It is about 25% lighter than a comparable part made of steel and is just as insensitive to minor damage as the plastic wings.

Safety: a typical Mercedes

There is no doubt that in terms of safety a car only 3.57 metres long and with an unladen weight of only about 1000 kg (DIN) has a number of conceptual disadvantages - especially if it is built according to the conventional principle. The low vehicle mass, short front-end structure and limited space available for crumple zones are fundamental handicaps that until now have left little room in this vehicle class for further progress in vehicle safety. This situation has been revolutionised with the new A-class. This four-door model is a small car with a massive safety potential and includes all the typical Mercedes qualities for optimal occupant protection.

The main aim of development was to be able to utilise the full extent of the short front crumple zone in a frontal crash and to clear all components that may obstruct the deformation process out of the way. The components referred to in this case are essentially the engine and gearbox. Because of their rigid structure, they perform practically no deformation work, and in conventional sub-compact cars they can be pushed back in a single block that can intrude into the interior and injure the occupants. To combat this typical safety problem of small cars takes considerable expertise, long experience - and an entirely new design principle: the sandwich concept.



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The innovative "sandwiched" arrangement of engine and gearbox reduces the risk of their forming a single block and therefore makes an essential contribution to occupant safety. In the A-class, the engine and gearbox are positioned at an angle partly in front of the occupant cell and partly underneath it, so that in the event of a frontal impact they can slide downwards rather than straight back. Only through the invention of the sandwich concept and the intelligent frontal crash principle has it become possible to transfer the strict Mercedes safety standards to a car only 3.57 metres long. In this way, the A-class attains the safety level of its bigger brother, the E-class, and is the safest car of the 3.60 metre class, not only in the frontal crash but in all crash criteria.

Even in a frontal collision with a larger car, the occupants of the A-class are not at a major disadvantage. This fact is shown by the results of tests against the deformable barrier designed to simulate a typical head-on collision, and by practical vehicle-against-vehicle crash tests, which were performed on the A-class from an early stage of development. In both cases, the occupant cell was only slightly damaged, and the occupants were only exposed to very low loads. The A-class therefore also already complies with the requirements of the future European Union crash test guideline scheduled to come into force in October 1998: this standard specifies a frontal crash with a 40% overlap against a deformable barrier at 56 km/h.

Side and rear impact: clear advantages of the sandwich concept

However, the strengths of the sandwich concept of the new Mercedes model are not confined to front-end crashes. They also apply to side and rear impact collisions:



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- **In the side-on crash** the other car hits the A-class at the precise level where the body of the A-class is at its strongest, i.e. at the level of the load-bearing floor structure. The occupants are seated above this impact level and are therefore optimally protected.
- **In the rear crash** the straight, high-strength side members again prove their effectiveness; they are reinforced at the rear and combine with the C-pillars, wheels and rear axle to form a solid structure.

Restraint system: long stopping distance for the occupants

In equipping the A-class with restraint systems, the best and latest existing technologies were just about good enough for the Mercedes engineers. They developed the belt and airbag system still further and adapted the functions of the restraint system to the innovative vehicle concept. The short crumple zones at the front of the A-class make it necessary to activate the belt tensioners right at the beginning of the crash.

As a result, the occupants not only take part earlier and longer in the deceleration of the vehicle, but they also have a long distance for their crash-induced forward displacement. Safety experts therefore also refer to the "occupant stopping distance". The earlier the seat belt builds up its restraining force, the longer the distance over which the forward displacement of the occupants can be stopped by the belt and belt tensioner. In this way, the forces unleashed on the occupants are low, despite the massive deceleration of the occupant cell.



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The highlights of the innovative restraint system in the new Mercedes A-class are full-size airbags for the driver and front passenger, automatic inertia-reel belts with belt tensioners for both front seats, belt force limiters on both front seats, side airbags in the front doors, inertia-reel seat belts with belt tensioners at the rear, headrests for all seats, integrated child safety seats in the rear (optional) and automatic front passenger/child seat recognition.

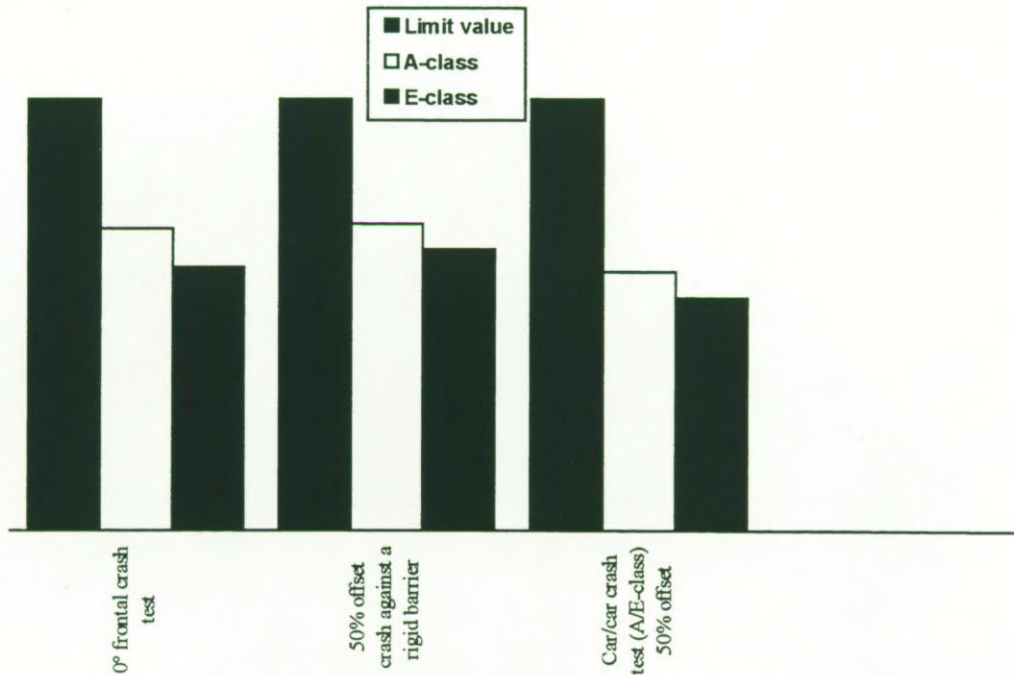
Results: occupant protection at the level of the E-class

The perfect interplay of the sandwich concept, intelligent body design and efficient restraint system yields impressive results in the A-class: despite the compact exterior dimensions and the short crumple zone at the front, the forces unleashed on the occupants in a frontal collision are marginally greater than the exemplary values of the E-class and well below the relevant limits. This fact is demonstrated by the example of the loads on the driver's chest:



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Chest load
on the driver
in the frontal
crash:
well below
the limit in
both A and
E-class.



Engines: four-cylinder engines with a power spectrum of 60 to 102 hp

To an extent unparalleled in any other car, the engine and gearbox of the A-class are included as elementary parts of the entire body/safety system. It is only because engineers managed to design drive systems suitable for the special under-floor oblique-angled installation position in front of the pedal wall that the sandwich principle with its extremely short nose and high safety potential was finally able to see the light of day.



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The engine range at a glance:

	A 140	A 160	A 170 TURBODIESEL	A 170 TURBODIESEL
Cylinders/valves	in-line 4/2	in-line 4/2	in-line 4/4	in-line 4/4
Capacity cm ³	1397	1598	1689	1689
Output kW/hp at 1/min	60/82 5000	75/102 5250	44/60 3600	66/90 4200
Max. torque Nm at 1/min	130 3750	150 4000	160 1500 - 2400	180 1600 - 3200
Fuel consumption NEDC total l/100 km	6.8	6.9	4.7	5.1
Top speed km/h	170	182	153	175

Engine range:
top values for
torque and
fuel con-
sumption.

Turbodiesel: premiere for new high-pressure injection

In spring 1998, with the two 1.7 litre diesel engines for the A-class, two engines with a full range of innovations will be entering large-scale production. Daimler-Benz is relying systematically on direct diesel injection for these engines, because this system permits considerable further advances to be made in fuel economy and exhaust emissions, especially when combined with a turbocharger, intercooler and the four-valves-per-cylinder technology specially developed for diesel engines by the Daimler-Benz engineers. With "common rail" injection, which is used for the first time in the A-class, a new chapter is opening in the rich history of Mercedes diesel engine development. In the common rail system, a single pipe is used to distribute the fuel to all the injec-



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tors, while the electronic engine management controls the injection pressure - i.e. as a function of engine speed and load.

Pressure in the system - progress by common rail

Conventional high-pressure injection systems have separate pipes feeding each cylinder. The injection pump must therefore generate the injection pressure for each combustion chamber separately with each new working stroke of the engine. By contrast, the Mercedes system uses a high-pressure pump that runs at constant speed and supplies the fuel to the common rail pipe. This pipe acts as a pressure accumulator and distributes the fuel to the injectors. Sensor data from the engine camshaft and crankshaft are used by the electronic engine management system as the basis for precisely adjusting the injection pressure as needed.

The injection timing and the quantity of fuel injected are determined by rapid-action solenoid valves on each of the four injectors. These solenoid valves are also variably controlled by the computer, so that the opening time of the valves - and therefore the quantity of fuel injected - can be freely modified at any time.

However, high-pressure injection also causes an increase in the nitrogen oxides contained in the exhaust. To resolve this conflict of interests, Mercedes engineers have come up with a special trick called "pilot injection". With this system, a tiny quantity of fuel is injected first into the cylinder, where it burns immediately, thereby preheating the combustion chamber and reducing nitrogen oxide emissions.



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Service System: service intervals of up to 40,000 kilometres

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The ASSYST Active Service System that Mercedes-Benz will be applying in future to all its car models offers motorists sure-fire cost savings. The service intervals are no longer determined according to fixed schedules but are based on the actual load and operating conditions of the car. The advantage of this system: the service intervals of the petrol engines are increased from the previous 15,000 kilometres to up to 30,000 kilometres, and for the turbodiesel engines the intervals can be as long as 40,000 kilometres. To put it another way, ASSYST reduces engine service costs by up to 30%. The information on how many kilometres can be driven before the next service or how much time remains is displayed in the instrument cluster in the form of a screwdriver symbol and the appropriate figure, i.e. kilometres or time.

Transmission: extra comfort with automatic clutch

Like the engines, the gearboxes of the A-class are also newly developed, with their oblique outer surface exactly fitting the unique body design and safety concept of the new Mercedes model. Customers can choose between a five-speed manual gearbox, which can be combined with an optional automatic clutch, and a five-speed automatic transmission. The manual gearbox weighs only 32 kg and is therefore the lightest gearbox of its torque category. For drivers who want even greater gearshift comfort, Mercedes-Benz has developed the automatic clutch, a low-cost alternative to automatic transmission. When the driver lifts his or her foot off the accelerator pedal and moves the shift lever, the automatic clutch recognises the intention to change gear and instantly opens the clutch by means of an electric motor.



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Automatic: smallest and lightest five-speed transmission in the world

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From early 1998, Daimler-Benz will also be supplying an optional electronically-controlled five-speed automatic transmission for the A-class. This automatic unit represents another technical milestone of the new Mercedes: it is only 315 millimetres short and 68 kilograms light, and is therefore the shortest and lightest five-speed automatic transmission in the world. Its electronic control unit is integrated in the databus network of the A-class and therefore constantly exchanges information with other on-board microcomputers.

Suspension and running gear: comparative tests in the simulator

For the design and tuning of the suspension, the engineers used one of the most modern development tools in the world - the driving simulator of the Daimler-Benz Research Institute in Berlin. Here, they selected the best solutions from a variety of suspension and axle designs, tried out different steering ratios and also obtained a realistic impression of the optimal tuning of springs and dampers. These tests were followed by months of road trials on different test and race tracks in all parts of the world. The results of this sophisticated and exhaustive test schedule provide a good compromise between driving dynamics and ride comfort, characterising the A-class as an agile and safe car.

- **Front axle:** the A-class has a modified McPherson strut suspension with coil springs, twin-tube shock absorbers and stabiliser. The suspension components are mounted on a frame-type integral support together with the rack-and-pinion steering gear, engine and gearbox. This integral support is bolted to the body at eight points. Unlike the original McPherson suspen-



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sion, the stabiliser of the A-class does not play any part in wheel location but is connected to the spring strut by a plastic linkage. A rigid wishbone takes over the function of wheel location. The advantage of this arrangement is that it offers more possibilities for suspension tuning, as reflected in improved elasto-kinematics and greater ride comfort.

- **For the rear axle** of the A-class, there were several alternatives to choose from. Each alternative was examined in the driving simulator. Finally, the engineers opted for trailing arm suspension with coil springs, stabiliser and single-tube gas-pressure shock absorbers - a system that has several advantages for this car concept: the trailing arm suspension can be designed to house all components under the boot floor, thereby not impinging on the space inside. The shock absorbers and springs are positioned in an otherwise unusable space at an angle in front of the wheel centre.



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MERCEDES-BENZ A 140

Engine

Cylinder no./arrangement		4/in-line, 2 valves per cylinder
Displacement	cm ³	1397
Bore x stroke	mm	80 x 69.5
Rated power	kW (hp)	60 (82) at 5000/min
Rated torque	Nm	130 at 3750/min
Top speed	l/min	6000
Compression ratio		11 : 1
Mixture preparation		Microprocessor-controlled petrol injection with hot-film air mass measurement (HFM)

Transmission

Clutch		Single plate dry clutch
Type of gearbox		five-speed manual five-speed automatic
Transmission ratios	Final drive	4.06 3.76
	1st	3.267 3.625
	2nd	1.923 2.09
	3rd	1.257 1.314
	4th	0.881 0.902
	5th	0.696 0.721
	Reverse	3.286 3.673

Suspension and running gear

Front	- Wheel location	McPherson axle, wishbones
	- Springing	Coil springs, twin-tube shock absorbers
Rear	- Wheel location	Trailing arm axle
	- Springing	Coil springs, single-tube shock absorbers
Brakes		Hydraulic dual-circuit brakes with vacuum booster, disc brakes at front, drum brakes at rear, ABS
Steering		Rack-and-pinion steering with electronically controlled servo pump
Wheels/Tyres		5.5 J x 15 ET 54 / 175/65 R 15

Dimensions and weights

Wheelbase	mm	2423
Track front/rear	mm	1502/1440
Overall length	mm	3575
- width	mm	1719
- height	mm	1598
Turning circle/between kerbs	m	10.6/10.3
Boot volume when loaded level with top of front seat backrests	litres	390 - 1040
EU unladen weight	kg	1085
DIN unladen weight	kg	1010
Payload	kg	460
Permissible gross vehicle weight	kg	1470
Roof load	kg	100
Tank capacity/inc. reserve, approx.	litres	54/8

Performance

		five-speed manual	five-speed automatic
Acceleration 0-100 km/h	s	12.9	14.5
Top speed	km/h	170	167
Fuel consumption, NEDC total	l/100 km	6.8	7.4

as of: 23 May 1997



Mercedes-Benz



MERCEDES-BENZ A 160

Engine

Cylinder no./arrangement		4/in-line, 2 valves per cylinder
Displacement	cm ³	1598
Bore x stroke	mm	80 x 79.5
Rated power	kW (hp)	75 (102) at 5250/min
Rated torque	Nm	150 at 4000/min
Top speed	1/min	6000
Compression ratio		11 : 1
Mixture preparation		Microprocessor-controlled petrol injection with hot-film air mass measurement (HFM)

Transmission

Clutch		Single plate dry clutch
Type of gearbox		five-speed manual five-speed automatic
Transmission ratios	Final drive	4.06 3.76
	1st	3.267 3.625
	2nd	1.923 2.09
	3rd	1.257 1.314
	4th	0.881 0.902
	5th	0.696 0.721
	Reverse	3.286 3.673

Suspension and running gear

Front	- Wheel location	McPherson axle, wishbones
	- Springing	Coil springs, twin-tube shock absorbers
Rear	- Wheel location	Trailing arm axle
	- Springing	Coil springs, single-tube shock absorbers
Brakes		Hydraulic dual-circuit brakes with vacuum booster, ventilated disc brakes at front, drum brakes at rear, ABS
Steering		Rack-and-pinion steering with electronically controlled servo pump
Wheels/Tyres		5.5 J x 15 ET 54 / 175/65 R 15

Dimensions and weights

Wheelbase	mm	2423
Track front/rear	mm	1502/1440
Overall length	mm	3575
- width	mm	1719
- height	mm	1598
Turning circle/between kerbs	m	10.6/10.3
Boot volume when loaded level with top of front seat backrests	litres	390 - 1040
EU unladen weight	kg	1095
DIN unladen weight	kg	1020
Payload	kg	460
Permissible gross vehicle weight	kg	1480
Roof load	kg	100
Tank capacity/inc. reserve, approx.	litres	54/8

Performance*

		five-speed manual	five-speed automatic
Acceleration 0-100 km/h	s	10.8	11.9
Top speed	km/h	182	180
Fuel consumption, NEDC total l/100 km		6.9	7.5

as of: 23 May 1997



Mercedes-Benz

MERCEDES-BENZ A 160 TURBODIESEL

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Engine

Cylinder no./arrangement		4/in-line, 4 valves per cylinder
Displacement	cm ³	1689
Bore x stroke	mm	80 x 84
Rated power	kW (hp)	44 (60) at 3600/min
Rated torque	Nm	160 at 1500 - 2400/min
Top speed	1/min	3650
Compression ratio		19.5 : 1
Mixture preparation		High-pressure direct injection, common rail, EDC control

Transmission

Clutch		Single plate dry clutch
Type of gearbox		five-speed manual five-speed automatic
Transmission ratios	Final drive	4.06 3.76
	1st	3.267 3.625
	2nd	1.923 2.09
	3rd	1.257 1.314
	4th	0.881 0.902
	5th	0.696 0.721
	Reverse	3.286 3.673

Suspension and running gear

Front	- Wheel location	McPherson axle, wishbones
	- Springing	Coil springs, twin-tube shock absorbers
Rear	- Wheel location	Trailing arm axle
	- Springing	Coil springs, single-tube shock absorbers
Brakes		Hydraulic dual circuit brakes with vacuum booster, disc brakes at front, drum brakes at rear, ABS
Steering		Rack-and-pinion steering with electronically controlled servo pump
Wheels/tyres		5 J x 15 ET 44 / 155/70 R 15

Dimensions and weights

Wheelbase	mm	2423
Track front/rear	mm	1522/1460
Overall length	mm	3575
- width	mm	1719
- height	mm	1595
Turning circle/between kerbs	m	10.6/10.3
Boot volume when loaded level with top of front seat backrests	litres	390 - 1040
EU unladen weight	kg	1125
DIN unladen weight	kg	1050
Payload	kg	460
Permissible gross vehicle weight	kg	1510
Roof load	kg	100
Tank capacity/inc. reserve, approx.	litres	54/8

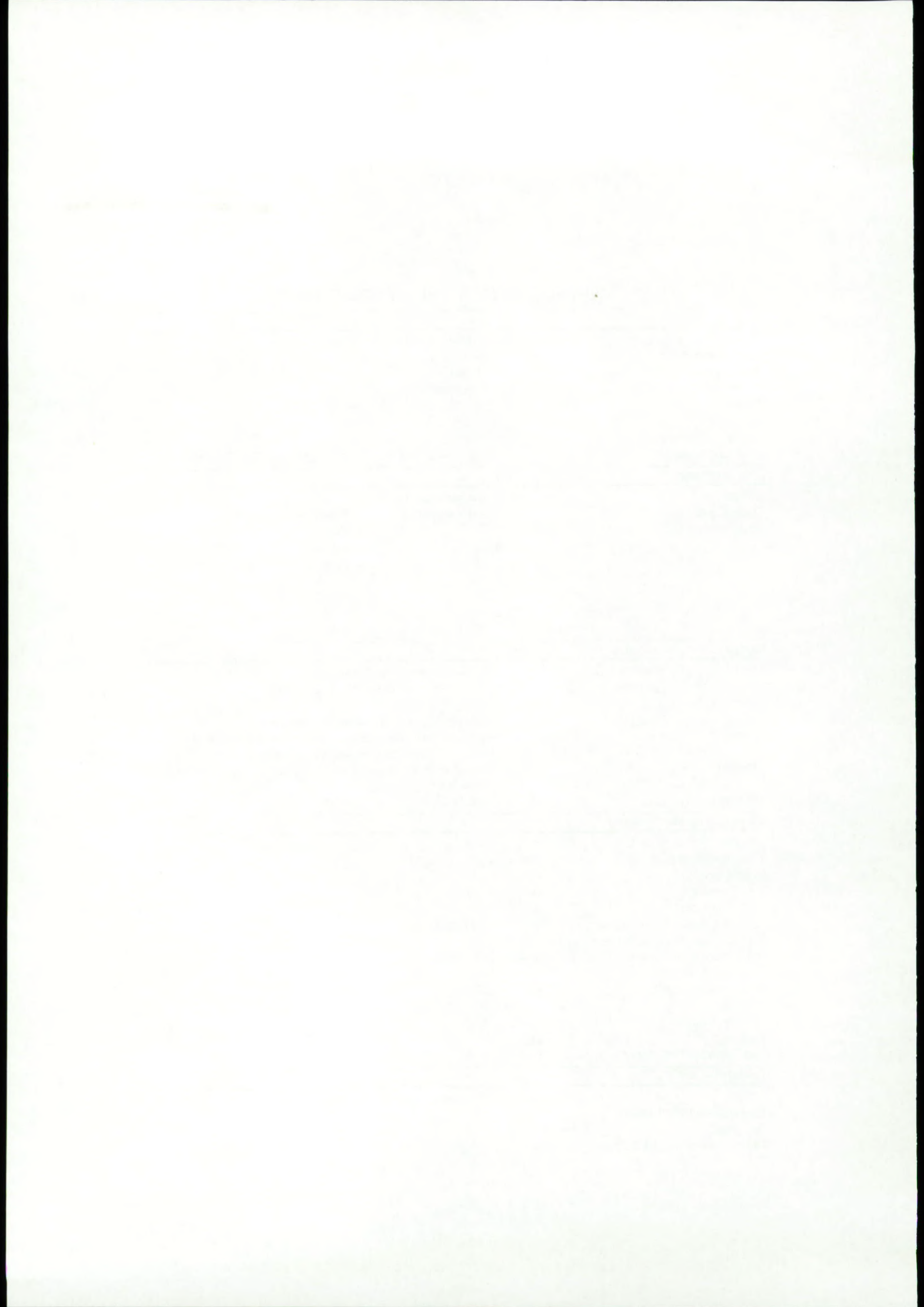
Performance*

		five-speed manual	five-speed automatic
Acceleration 0-100 km/h	s	17.7	18.8
Top speed	km/h	153	150
Fuel consumption, NEDC total	l/100 km	4.7	5.1

as of: 23 May 1997



Mercedes-Benz



MERCEDES-BENZ A 170 TURBODIESEL

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Engine			
Cylinder no./arrangement		4/in-line, 4 valves per cylinder	
Displacement	cm ³	1689	
Bore x stroke	mm	80 x 84	
Rated power	kW (hp)	66 (90) at 4200/min	
Rated torque	Nm	180 at 1600 - 3200/min	
Top speed	l/min	4400	
Compression ratio		19.5 : 1	
Mixture preparation		High pressure direct injection, common rail, EDC control	

Transmission			
Clutch		Single plate dry clutch	
Type of gearbox		five-speed manual	five-speed automatic
Transmission ratios	Final drive	4.06	3.76
	1st	3.267	3.625
	2nd	1.923	2.09
	3rd	1.257	1.314
	4th	0.881	0.902
	5th	0.696	0.721
	Reverse	3.286	3.673

Suspension and running gear		
Front	- Wheel location	McPherson axle, wishbones
	- Springing	Coil springs, twin-tube shock absorbers
Rear	- Wheel location	Trailing arm axle
	- Springing	Coil springs, single-tube shock absorbers
Brakes		Hydraulic dual circuit brakes with vacuum booster, internally ventilated disc brakes front, drum brakes rear, ABS
Steering		Rack-and-pinion steering with electronically controlled servo pump
Wheels/tyres		5.5 J x 15 ET 54 / 175/65 R 15

Dimensions and weights			
Wheelbase	mm	2423	
Track front/rear	mm	1502/1440	
Overall length	mm	3575	
- width	mm	1719	
- height	mm	1598	
Turning circle/between kerbs	m	10.6/10.3	
Boot volume when loaded level with top of front seat backrests	litres	390 - 1040	
EU unladen weight	kg	1140	
DIN unladen weight	kg	1065	
Payload	kg	460	
Permissible gross vehicle weight	kg	1525	
Roof load	kg	100	
Tank capacity/inc. reserve, approx.	litres	54/8	

Performance			
Acceleration 0-100 km/h	s	five-speed automatic	five-speed manual
		12.5	13.7
Top speed	km/h	175	172
Fuel consumption, NEDC total l/100 km		4.9	5.4
			as of: 23 May 1997



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