

# BMW Motorrad Six-Cylinder Technology Day. Table of contents.



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# 1. Overall concept.

## **BMW K 1600 GT and BMW K 1600 GTL – fascination with six cylinders.**

Since BMW Motorrad presented the concept study Concept 6 in autumn 2009, the six-cylinder in-line engine featured in it has captured the imagination of many motorcycle fans. With BMW, six-cylinder in-line engines have stood for fascinating engine technology in automobiles for over seven decades, in a way which is unique among brands. In the near future, BMW motorcycles will also be available with an internally developed six-cylinder in-line engine.

With the BMW K 1600 GT and the BMW K 1600 GTL, BMW Motorrad is penetrating a whole new dimension in the Touring world of experience. Both motorcycles stand for a supreme, impressive and equally distinctive appearance, arousing a desire to travel at first sight.

This press release contains a range of information on all aspects of BMW Motorrad's new touring bikes. Additional data and background information will be added for the world premiere.

## **Riding dynamics, long-distance suitability and comfort.**

For decades, six-cylinder in-line engines have offered a special fascination. In addition to their perfect running smoothness they also offer supreme output and torque, giving the rider powerful emotional impressions, too. And of course the sound of a six-cylinder engine is beyond compare.

In addition to safety, equipment and prestige, the key criteria for a supreme touring bike are comfort and dynamics. With the most compact in-line six-cylinder engine in serial motorcycle production to date, the K 1600 GT and the K 1600 GTL penetrate a whole new dimension in terms of riding properties, long-distance suitability and comfort. They combine maximum agility and riding dynamics with a luxurious overall package. With an engine output of 118 kW (160 bhp) and a maximum torque of approx. 175 newton metres, their six-cylinder engine provides superb propulsion in all conditions.

**BMW K 1600 GT with active riding ergonomics for proactive touring.**

The dynamic touring bike BMW K 1600 GT is characterised by an active seating position which nonetheless offers a high level of long-distance comfort. The reason for this is the favourable set-up of the ergonomics triangle made up of footrests, seat and handlebars. The K 1600 GT has a very extensive range of standard features ex works consisting of xenon (HID) headlight, heated grips and seat, cruise control and on-board computer. These features in conjunction with the supreme riding qualities of the new BMW Motorrad six-cylinder engine leave nothing to be desired for the proactive tour rider.

**BMW K 1600 GTL with very comfortable, relaxed ergonomics set-up for long trips with pillion passenger.**

The luxurious touring bike BMW K 1600 GTL meets the highest demands. Rider and pillion passenger benefit from the relaxed, upright seating position as is especially appreciated over long distances. The ergonomics design is geared towards even further enhanced comfort and derives from a two-level seat in conjunction with rider footrests which are positioned further forward and lower down, as well as handlebars which reach further back. The standard topcase rounds off the range of comfort features for the pillion passenger. Like the K 1600 GT, the K 1600 GTL has a very extensive range of standard features consisting of xenon headlight, heated grips and seat, cruise control and on-board computer. The overall impression of this fascinating six-cylinder motorcycle with a carefully conceived storage concept, audio system as standard and numerous design elements make the BMW K 1600 GTL the flagship among BMW touring bikes.

## **An overview of highlights of the BMW K 1600 GT/GTL.**

- Supreme in-line six-cylinder engine with a high level of pulling power, especially in the lower and medium engine speed range.
- Engine output 118 kW (160 bhp) at approx 7 500 rpm and maximum torque approx. 175 Nm at approx. 5 000 rpm.
- Over 70% of maximum torque available from 1 500 rpm.
- Lightest and most compact six-cylinder in-line engine in serial motorcycle production, weighing just 102.6 kg and measuring 560 mm in width.
- Consistent lightweight construction throughout the entire vehicle (magnesium front panel carrier, aluminium rear frame, crankshaft etc.).
- E-Gas (ride-by-wire).
- Three modes to choose from ("Rain", "Road", "Dynamic")
- High active safety due to standard BMW Motorrad Integral ABS (part integral).
- Traction control DTC (Dynamic Traction Control) for maximum safety when accelerating (optional extra).
- Chassis with Duolever and Paralever and ideal concentration of masses for dynamic riding properties combined with optimum comfort.
- Electronic Suspension Adjustment ESA II for optimum adaptation to all uses and load states (optional extra).
- World premiere in motorcycles: Adaptive Headlight (optional extra) in conjunction with standard xenon headlight and lighting rings for increased safety at night.

- Integrated operating concept for the first time with Multi-Controller, TFT colour screen and menu guidance.
- Audio system with preparation for navigation device and controllable interface for iPod, MP3, USB, Bluetooth and satellite radio (only USA and Canada) (standard in the K 1600 GTL).
- Innovative design with outstanding wind and weather protection.
- K 1600 GT with active riding ergonomics for proactive touring.
- K 1600 GTL with very comfortable, relaxed ergonomics set-up for long trips with pillion passenger, as well as luxury touring features.
- Extensive fittings and individually tailored accessories at the familiar high level of BMW Motorrad.



## 2. Drive.

### **Lightest and most compact serial production six-cylinder in-line engine in a motorcycle.**

Previously the in-line arrangement of six cylinders resulted in either very long or very wide constructions, depending on installation position, which in turn led to drawbacks in terms of chassis geometry, weight distribution and centre of gravity. This where the K 1600 models break new ground.

The engine is approximately 100 mm narrower than all previous serial production six-cylinder in-line engines used in motorcycle construction. This extremely compact construction and reduced width was achieved in particular by means of a just slightly undersquare stroke-bore ratio of 67.5 to 72 millimetres (0.938) with a relatively long stroke and very small cylinder centre distance spacings of 77 millimetres. The effective distance between the cylinder sleeves is thus only 5 millimetres.

Weighing 102.6 kilograms (basic engine including throttle valve, intake system, clutch, gearbox and alternator), the engine is by far the lightest serially produced six-cylinder in-line engine for motorcycles.

### **Supremacy and drive comfort.**

The transversely mounted six-cylinder in-line engine of the BMW K 1600 models has a capacity of 1649 cc. Its rated output is 118 kW (160 bhp) at approx. 7 500 rpm. The maximum torque of approx. 175 Nm is reached at approx. 5 000 rpm. 70 per cent of maximum torque is available from just 1 500 rpm. The development goals here were highly superior touring characteristics and ridability combined with maximum running smoothness.

### **Compact overall design and space-saving construction.**

In order to achieve the narrow construction, the electrical ancillary units and their drive units were shifted behind the crankshaft into the free space above the gearbox. This also made it possible create a drivetrain with ideal concentration of masses at the centre of the vehicle. The total width of the

engine is 560 millimetres. This means that the engine is only slightly wider than a current large-volume four-cylinder in-line power unit.

Due to the perfect mass balance created by the construction, the six-cylinder engine does not require a compensation shaft and the required drive elements, which results both in weight benefits and increased running smoothness.

In its layout, the six-cylinder in-line engine is based on the familiar four-cylinder in-line engine of the K 1300 series and, like the latter, has a cylinder axis which is tilted forwards by 55 degrees. This not only results in a low centre of gravity but also a balanced weight distribution of 52 to 48 per cent (K 1600 GT unladen) - imperative for a precise ride feel and transparent feedback of the front section when driving dynamically. The tilt of the engine also creates space for an aerodynamically optimised intake system directly above the engine, as well as providing the ideal frame profile design in accordance with the distribution of forces.

### **Crankshaft drive and basic engine - narrow and light construction with six cylinders and 1649 cc capacity.**

The crankshaft of the K 1600 engine is a single-piece construction forged in heat-treated steel. It has counterweights and inertia-optimised discs as well as the usual six-cylinder offset of 120 degrees for even firing intervals. Particular attention was also paid here to the issue of lightweight construction, so the weight of the crankshaft is only very slightly in excess of a comparable four-cylinder engine at just 12.9 kilograms. The crankshaft is friction-bearing. All main bearings are supplied directly with pressure oil. The lubrication supply to the connecting-rod bearing comes from the main bearings.

One of the crankshaft web counterweights acts as a cogwheel for the primary drive to the clutch. Another cogwheel on the outer crankshaft web is used for engine speed sensing. The drive of the camshafts in the cylinder is effected by means of a tooth-type chain which runs over a compression-moulded toothed chain wheel on the right-hand end of the crankshaft. The friction-bearing connecting rods are light forged parts made of heat-treated steel. Measuring 124.45 millimetres in length, they benefit smooth engine running and ensure low lateral forces in the pistons, thereby ensuring a low

level of inner friction in this area. The well-established crack technology is used for horizontal partitioning.

Lightweight slipper pistons with a short piston skirt, two narrow piston rings optimised for frictional loss and a narrow oil scraper ring are used. The flat design of the combustion chamber means that in spite of the high compression ratio of 12.2:1, it was possible to keep the piston head and piston relief flat. This supports thermodynamically favourable combustion and enables a weight-optimised piston head shape.

### **Horizontally separated case in open-deck design.**

The dual-section cylinder crankcase is made of highly rigid aluminium alloys. The partition level is at the centre of the crankshaft. The compact sand-cast upper section forms a highly rigid composite unit made up of the six cylinders and the upper bearing pedestal for the crankshaft.

The cylinder block with water jacket is designed in open-deck construction, the running surfaces having a wear-resistant, low-friction nickel-silicon dispersion coating. The die-cast lower section forms the counterpiece to the main bearing of the crankshaft and carries the six-speed gearbox.

### **Cylinder head with barrel camshafts and bucket-type tappets.**

The output, characteristics, efficiency and therefore fuel consumption of engines are largely determined by the cylinder head and valve gear. The design of the chill-cast four-valve cylinder head in the K 1600 models GT and GTL is designed for optimum channel geometry, compactness, excellent thermodynamics and a reliable heat balance.

With a view to maximising inspection intervals in particular, the BMW Motorrad engine experts opted for a valve operating system using bucket tappets. This also combines the qualities of rigidity, compact construction and reliability.

The two overhead shafts are powered by a tooth-type chain. The tooth-type chain drive is hydraulically tensed and damped, and is characterised by a high level of running smoothness.

The design and manufacture of the camshafts represents an innovation in motorcycle engine construction. They are composite camshafts in which the individual cams are compression-moulded for positive coupling with the shaft, which has a tubular design. The advantages as compared to conventional clear-chill cast or steel camshafts derive mainly from the reduced weight. Around 1 kilogram is saved here. The rotational speed limit defined for serial production is 8 500 rpm, though the purely mechanical rotational speed tolerance is much higher.

In the attempt to reduce the weight of the drive unit as far as possible the valve cover and the clutch cover are made of light magnesium.

### **High compression for maximum efficiency.**

A tight valve angle enables a very compact combustion chamber with a flat calotte, thereby providing the basis for a high geometrical compression ratio of 12.2:1 with a thermodynamically favourable, largely evenly designed piston head. This high level reflects the effectiveness of the combustion chamber design in terms of achieving an ideal combustion process and optimum efficiency.

### **Integrated dry sump lubrication for optimum oil supply.**

The six-cylinder in-line engine of the K 1600 GT and GTL uses an integrated dry sump lubrication system. In addition to providing a high level of operating reliability, it enables flat construction of the crankcase and therefore a lower installation position of the engine and a concentration of masses close to the centre of gravity. This makes it possible to do without a conventional oil sump with oil reservoir, so the engine can be placed much lower in the vehicle than would be the case with a conventional design. The oil reservoir forms an integrated oil tank in the rear section of the engine casing. A separate tank is therefore not required, which again has a positive effect in terms of the compact construction of the motorcycle and overall weight.

### **Carefully conceived cooling concept for maximum thermal stability.**

A sophisticated cooling concept ensures perfect thermal balance in the six-cylinder engine. Coolant flows transversely through the cylinder head. The intake of the cooling agent is effected via the cylinder bank on the "hot" outlet side, which is also cooled in this way. Precisely at the point where the greatest

thermal stress occurs, the intensive cooling at the cylinder head ensures rapid heat dissipation and therefore an excellent temperature balance. The reduced water flow at the cylinders reduces the warm-up phase and reduces cold-running wear-and-tear and friction, which also benefits fuel consumption.

The water pump is powered together with the oil pump by the primary drive via cogwheels. The radiator is trapezoid and curved in shape and housed in the trim at the bottom front to optimise the centre of gravity.

**Power transmission: narrow three-shaft transmission and self-energising clutch with anti-hopping function.**

Torque is transmitted from the crankshaft to a self-energising 10-disc wet clutch with anti-hopping function via a straight-toothed primary drive. Here, the developers paid particular attention to a low level of control force at the hand lever.

The gearbox complete with bevel gear is integrated in the engine casing. In order to reduce construction width in the area of the rider footrests in particular, the gearbox is designed as a three-shaft transmission with three gearbox shafts arranged one on top of the other. The cogwheels are helical-cut, enabling a particularly low level of running noise to be achieved.

Shifting between transmission stages is effected by means of a shift drum, shift forks and shift sleeves to achieve a force-fit connection. In order to save weight, the hollow shift drum is made of a highly rigid aluminium alloy and supported by antifriction bearings.

**E-Gas (ride-by-wire) for excellent response and precise fuel dosage.**

The control of the central throttle valve with a diameter of 52 millimetres is effected via an E-Gas, also known as a ride-by-wire system. This means that the rider's wishes are transferred directly from the sensor in the accelerator twist grip. The fully electronic engine management system converts this command into a torque requirement and electronically regulates the throttle valve accordingly.

The sensing of all factors in terms of torque makes it possible to achieve optimum rideability in the most diverse situations, as well as enabling electronic

cruise control and traction control. The use of the electromotive throttle actuator via various selectable modes also opens up new potential in terms of fuel consumption and riding dynamics.

**Intake system with long tract lengths for excellent torque.**

The central throttle valve enables the achievement of long induction tract lengths, which benefits an especially full torque development in the lower and medium engine speed ranges - a desirable characteristic in a touring bike. For example, some 125 Nm of torque is already available at 1 500 rpm.

The heavily tilted engine position means that an air box in perfect shape and position can be installed directly above the engine. With a volume of 8.5 litres, the air box with upright panel air filter contributes to superior power delivery and high torque development.

**Low fuel consumption due to efficiency optimisation.**

Low engine speed level, high gas velocities, efficient combustion and minimised frictional loss in the engine of the K 1600 GT and GTL result in a high degree of efficiency and therefore a low level of fuel consumption. The exact fuel consumption figures will be announced at a later date. In view of its power potential, the engine achieves top figures in this area, which are at the level of a comparable four-cylinder motorcycle when a touring-oriented riding style is maintained. This is largely due to the high geometrical compactness and the orientation of the in-line six-cylinder engine towards maximum efficiency.

**A choice of three modes - "Rain", "Road" and "Dynamic" - for optimum adaptation to surface conditions and riding style.**

The rider has three different riding modes available at the press of a button at the right-hand end of the handlebars ("Rain", "Road", "Dynamic") so as to be able to adapt to different uses such as touring on the road, riding on wet surfaces and dynamic motorcycling.



### 3. Chassis.

#### **Low overall centre of gravity, very favourable concentration of masses and ideal static wheel load distribution.**

The chassis of the BMW six-cylinder motorcycles is based on the innovative BMW Motorrad concept as already used in the current four-cylinder models of the K series. The essential elements are the light alloy bridge frame, Duolever and lightweight construction Paralever for wheel control at front and rear.

However, the masses have been newly balanced for the special demands posed by a touring bike with a six-cylinder engine. All in all, the interplay of chassis and engine position, together with the seating position of the rider, not only makes for a low overall centre of gravity with a very favourable concentration of masses, it also provides an ideally balanced static wheel load distribution of 52 per cent at the front to 48 percent (K 1600 GT unladen) at the rear. Even with a pillion passenger and a heavy load, this guarantees outstanding riding properties.

#### **Bridge-type main frame made of light alloy.**

The central bearing component is the main frame in bridge-type construction. Due to the fact that the engine is tilted heavily forward, the profiles of the main frame can run above the cylinder head, so their configuration is largely independent on the latter's width. This means that the frame can be very narrow, especially in the ergonomically important knee area. The main frame weighs just 16 kilograms. The six-cylinder in-line engine is firmly bolted to the frame at eight points and thus acts as a rigidifying and supporting element.

#### **Adapted Paralever swing arm and cardan shaft drive.**

In large-volume BMW touring bikes in particular, the cardan shaft drive is an indispensable part of the overall concept due to its numerous advantages. Starting from the familiar Paralever swing arm, the rear wheel control and cardan shaft drive have been adapted to the new six-cylinder engine in terms of their design. In keeping with the high performance figures, the propeller shaft, cardan joints and rear axle final drive were newly designed.

**Electronic Suspension Adjustment ESA II for optimum adaptation to all uses and load states.**

The new BMW K 1600 GT and K 1600 GTL also benefit from the innovative Electronic Suspension Adjustment ESA II, which is offered as a special equipment feature ex works.

With this system, globally unique on the motorcycle market, the rider can conveniently press a button to electronically adapt not only the rebound damping properties of the front and rear spring strut but also the spring rest ("spring preload") of the rear spring strut as well as the latter's spring rate and therefore the "hardness" of the suspension. The additional adaptation of the spring rate allows the settings "Sport, Normal, Comfort" to be spread widely in ESA II, giving them clearly perceptible characteristics on the road. In the "Sport" mode, the two motorcycles are more dynamic and precise, in "Comfort" mode they offer even greater comfort while retaining excellent stability.

**EVO brake system with BMW Motorrad Integral ABS (part integral) for optimum deceleration.**

The very highest safety standards are provided by the well-established EVO brake system with the BMW Motorrad Integral ABS in the part integral version, which is fitted as standard. It has been revised for enhanced controllability and even more sensitive control response. This has been achieved in particular by the use of an additional pressure sensor, which also enables shorter braking distances. In this way, maximum yet controllable deceleration at low levels of control force give the rider additional safety.

**Traction control DTC (Dynamic Traction Control) for maximum safety when accelerating.**

For both K 1600 models, traction control DTC (Dynamic Traction Control) is available as a special equipment feature ex works. This contributes significantly to a high level of riding dynamics and exemplary riding safety.

Traction control DTC was used for the first time in the supersports bike BMW S 1000 RR. It provides the rider with valuable support especially in changing conditions, on surfaces with limited grip and where there are big changes in friction levels.

By comparing the rotational speeds of the front and rear wheel via the ABS sensors and using the data collected by the sensor box, the electronics system detects spin in the rear wheel and cuts back drive torque accordingly by reducing the ignition angle as well as adapting injection via the engine management.

Unlike previous BMW Motorrad ASC systems, the traction control system DTC also calculates the banking position of the vehicle by means of sophisticated sensor clusters, taking this into account in its control response.

Traction control DTC is combined individually with the different modes and is fully harmonised with these so as to provide maximum riding safety.



## 4. Electrical system and electronics.

### **The first motorcycles in the world with adaptive xenon headlight for even greater safety at night.**

With the new BMW Motorrad touring bikes, the first ever "Adaptive Headlight" for motorcycles is available as option ex works, in addition to the standard xenon (HID) headlight.

The main headlight fitted as standard consists of a centrally positioned, movable xenon projection module with reflector mirror. Level sensors at the front and rear axle provide data for permanent headlight levelling. Due to the pitch compensation, the headlight sheds light in the optimum pre-set area when the motorcycle is travelling straight ahead, regardless of riding and load conditions.

The optional extra "Adaptive Headlight" also features a stepper motor which turns the standard static reflector mirror into a movable mirror. In relation to the banking angle the mirror is then turned on an axis and compensates for the roll angle. In addition to pitch compensation, the light of the main headlight is also balanced in relation to the banking angle. This results in significantly improved illumination of the road when cornering and therefore an enormous increase in active riding safety.

Calculation of the vehicle's banking angle is carried out by means of a centrally positioned sensor box as already used in BMW Motorrad's supersports bike, the S 1000 RR. The information is distributed by the CAN bus and used by the traction control system DTC as well as by the ABS. The complex algorithms used here were developed entirely by BMW Motorrad.

The two halogen high beam lights with lighting rings, positioned to the right and left of the xenon module, give the K 1600 GT/GTL a striking face. And for the first time, BMW Motorrad uses the side lights which are so characteristic of BMW automobiles.

### **Integrated operating concept, for the first time with Multi-Controller, TFT colour monitor and menu guidance.**

The instrument panel of the K 1600 models based on digital technology comprises a speedometer and tachometer - each powered by a stepper motor - as well as an information display which takes the form of a 5.7-inch colour monitor. The design of the display is also completely new to the motorcycle field and provides a very high level of brightness. Among other things, the display enables the attractive presentation of text and graphics over several lines. The entire instrument unit is controlled by a photovoltaic cell and is automatically illuminated in the dark.

Another new feature to motorcycles in this form is the Multi-Controller, presented in the R 1200 RT at the end of 2009 as part of an integrated operating concept. Positioned on the inner side of the left-hand handlebar grip and therefore always within optimum reach, it replaces the functional unit previously installed on the handlebars. The significant advantage of the Multi-Controller as compared to a cluster of operating buttons is that the rider's hand can remain on the handlebars during operation. Operation is carried out by rotating the control up and down as well as toggling to the left or right. Unlike a key pad, this means that operation is possible without taking your eyes off the road.

The functional range of the Multi-Controller has been significantly expanded for use in the new touring bikes. In addition to operating the audio system, it is also possible to select other functions with the Multi-Controller with reference to the menus shown on the TFT colour monitor. The on-board computer, ESA II, the navigation system as well as grip and seat heating can all be operated in this way. What is more, the set-up menu can be used to configure settings specific to both rider and vehicle. For example, different languages are available as is the adjustment of the "Adaptive Headlight" to riding on the right-hand or left-hand side of the road. The menu structure was specially developed for the specific demands of motorcycling and optimised by means of user tests. Flat hierarchies completely do away with the need for complex clicking through sub-menus during travel. The rider also has the option to program his or her most important function on a bookmark button, thus providing constant direct access to this menu (e.g. navigation system).

### **Audio system with extended range of functions.**

The audio system itself has likewise been newly designed. It has interfaces for MP3 players, iPod and USB stick as well as for conventional devices such as a CD player. These are housed to the right in the interior trim and available for the K 1600 GT as a special equipment feature ex works, while the K 1600 GTL has them as standard. With USB/MP3 and iPod it is possible to manage a number of playlists. Alternatively, all titles can be played randomly. The selected volume level and current title are shown on the TFT colour monitor. External devices can be housed in a lockable, waterproof and ventilated storage compartment in the interior trim on the right where they are excellently protected from the weather. They are operated using the Multi-Controller and the audio control panel.

The radio function also includes the satellite radio Sirius XM, available in the USA and Canada, and offers a 24-channel memory. Channels can be chosen either manually in conjunction with the memory function or using the scan function which selects the station with the best reception (Autostore). The current channel is shown on the colour monitor. The speed-related volume control function can be set at three different levels. In addition to the functions provided by the Multi-Controller, the audio system can also be operated by four buttons in the interior trim on the left (audio control unit).

### **Navigation system integrated in the vehicle electrical system.**

The BMW Motorrad Navigator IV available as a special accessory is integrated in the vehicle electrical system if the customer chooses the special equipment features audio system or preparation for audio system, which are available ex works. This means that the most important functions such as zoom or voice output can be operated using the Multi-Controller. In this way, the rider's hands can stay on the handlebars - there is no need to use the touchscreen.

Data is also exchanged between the navigation system and the vehicle electrical system. For example, the navigation system automatically relays the date and time to the instrument panel or suggests the nearest filling station after a certain residual range has been covered. The TMC data of the audio platform also enables dynamic routing so as to avoid congested traffic.



## 5. Body and design.

### **Innovative design which sets the benchmark for touring bikes.**

As new high-end products among the BMW Motorrad touring bikes, the new K 1600 GT and K 1600 GTL stand for a supreme, impressive and equally distinctive appearance, arousing a desire to travel at first sight. What is more, their striking lines and surfaces and the visibility of the six-cylinder engine radiate a powerful sense of dynamic performance, with a perfect finish standing premium value and quality.

The front view includes elements of the overriding design line of BMW Motorrad. Although the two new models K 1600 GT and K 1600 GTL offer a powerful visual presence from the front, they nonetheless come over as slim-lined with the extremely narrow six-cylinder engine, thus conveying agility and dynamism very much in keeping with their proactive riding character.

### **Lightweight construction: magnesium front panel carrier with vibration isolation and aluminium rear frame.**

The upper trim section, headlight, cockpit and rear mirror are all supported by a highly rigid front panel carrier. With the aim of achieving optimum concentration of masses near to the machine's centre of gravity, this dual section front panel carrier is made of a very light but highly rigid magnesium alloy.

In spite of the demands made by a motorcycle such as the K 1600 GT/GTL in terms of pillion passenger riding and load, the BMW Motorrad developers have nonetheless succeeded in creating a rear frame as a light aluminium construction. It consists of welded aluminium extruded sections and is bolted to the main frame at four points.

### **Optimum storage concept.**

In keeping with the dynamic touring aspiration of both K 1600 models, the standard panniers are designed to be removable but fit into the vehicle line seamlessly as design elements. The K 1600 GTL is fitted as standard with a

topcase featuring two gas-filled dampers which support opening and interior lighting.

### **Seats and seating positions for supreme, dynamic long-distance comfort.**

The new K 1600 GT and GTL benefit from a very slim design in the area of the rider's seat. This has been made possible by the use of a three-shaft gearbox and a very slim-line frame configuration. Due to the special design of the gearbox, the clutch has been placed much further inwards, thereby creating space for the rider's foot.

The design of the ergonomics triangle made up of footrests, seat top and handlebars makes for a proactive seating position on the K 1600 GT while retaining a high level of long-distance comfort. The rider and pillion passenger enjoy a comfortable knee angle but the seating position is geared towards the front wheel for a proactive riding style. The two-section seat of the K 16000 GT is height-adjustable in the rider area so that it can be adapted to individual needs.

The K 1600 GTL offers outstanding pillion passenger suitability and ergonomics geared towards an even higher level of comfort. It has a single-section, two-level seat and in conjunction with rider footrests which are placed further forward and lower down, as well as handlebars which reach further backwards, the seating position is very relaxed - something which is especially appreciated over long distances. The K 1600 GTL also does justice to individual adjustment requirements with an adjustable foot shift lever. The pillion passenger likewise benefits from a slightly longer and wider seat top on the K 1600 GTL, as well as the comfortable backrest in the standard topcase. The K 1600 GTL can also be equipped with pillion passenger armrests as a special accessory in order to further enhance safety.

For both the K 1600 GT and the K 1600 GTL the BMW Motorrad equipment range offers special comfort seats so as to enhance individual touring enjoyment further still.



## 6. Equipment program.

### **Special equipment features and special accessories - perfect individualisation from BMW Motorrad.**

Both the K 1600 GT and the K 1600 GTL fulfil their Gran Turismo promise with a fascinating blend of supremacy, dynamic performance and comfort to a virtually perfect degree even in standard trim. In addition, BMW Motorrad offers its usual extensive range of special equipment features and special accessories for further optimisation.

Special equipment features are supplied directly ex works and are integrated in the production process.

This includes such features as the Electronic Suspension Adjustment ESA II, traction control DTC, the tyre pressure control system RDC, the Adaptive Headlight and (for the K 1600 GT) the audio system.

Special accessories are installed by the BMW Motorrad dealer. These are features which can be retrofitted, too. Special accessories which will be available include the topcase for the K 1600 GT, a wide range of chrome parts for the K 1600 GTL and a sports silencer.

Further details of technology and fittings for the new BMW touring bikes K 1600 GT and K 1600 GTL will be published at a later date.